CIVIC

2002-2003
Service Manual
Hatchback

INTRODUCTION

How to Use This Manual

This manual is divided into 23 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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HONDA MOTOR CO., LTD.
Service Publication Office

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

General Information

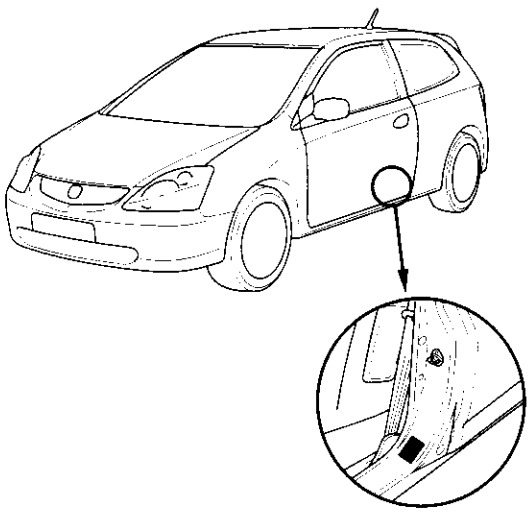
Chassis and Paint Codes - 2002 Model

Vehicle Identification Number

SHH EP3 3 5 * 2 U 300001

a b c d e f g h

a. Manufacturer, Make and Type of Vehicle
SHH: HONDA OF THE U.K. MFG., LTD. U.K. HONDA Passenger vehicle
b. Line, Body and Engine Type
EP3: CIVIC/K20A3
c. Body Type and Transmission Type
3: 2-door Hatchback/5-speed Manual
d. Vehicle Grade (Series)
5: Si (U.S.)
5: SiR (Canada)
6: Si with side airbag system (U.S.)
6: SiR with side airbag system (Canada)
e. Check Digit
f. Model Year
2: 2002
g. Factory Code
U: Honda of U.K. Manufacturing in Swindon, England
h. Serial Number
U.S.: 300001—
Canada: 600001—



Vehicle Identification Number and Federal Motor Vehicle Safety Standard Certification/ Color Label.

Engine Number

K20A3 - 1700001

a b

a. Engine Type
K20A3: 2.0 ℓ DOHC VTEC Sequential Multiport Fuel-injected engine
b. Serial Number

Transmission Number

NRH3 - 1000001

a b

a. Transmission Type
NRH3: 5-speed Manual
b. Serial Number

Paint Code

Code	Color	U.S.	Canada
B-92P	Nighthawk Black Pearl	○	○
NH-578	Taffeta White	○	○
NH-623M	Satin Silver Metallic	○	○
R-81	Milano Red		
Y-62P	Euro Yellow Pearl	○	

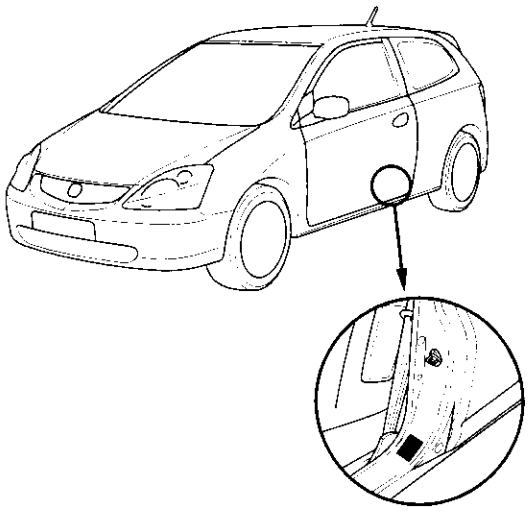
Chassis and Paint Codes - 2003 Model

Vehicle Identification Number

SHH EP3 3 5 * 3 U 400001

a b c d e f g h

a. **Manufacturer, Make and Type of Vehicle**
SHH: HONDA OF THE U.K. MFG., LTD. U.K. HONDA Passenger vehicle
b. **Line, Body and Engine Type**
EP3: CIVIC/K20A3
c. **Body Type and Transmission Type**
3: 2-door Hatchback/5-speed Manual
d. **Vehicle Grade (Series)**
5: Si (U.S.)
5: SiR (Canada)
6: Si with side airbag system (U.S.)
6: SiR with side airbag system (Canada)
e. **Check Digit**
f. **Model Year**
3: 2003
g. **Factory Code**
U: Honda of U.K. Manufacturing in Swindon, England
h. **Serial Number**
U.S.: 400001—
Canada: 700001—



Vehicle Identification Number and Federal Motor Vehicle Safety Standard Certification/ Color Label.

Engine Number

K20A3 - 2700001

a b

a. **Engine Type**
K20A3: 2.0 ℓ DOHC VTEC Sequential Multiport Fuel-injected engine
b. **Serial Number**

Transmission Number

NRH3 - 2000001

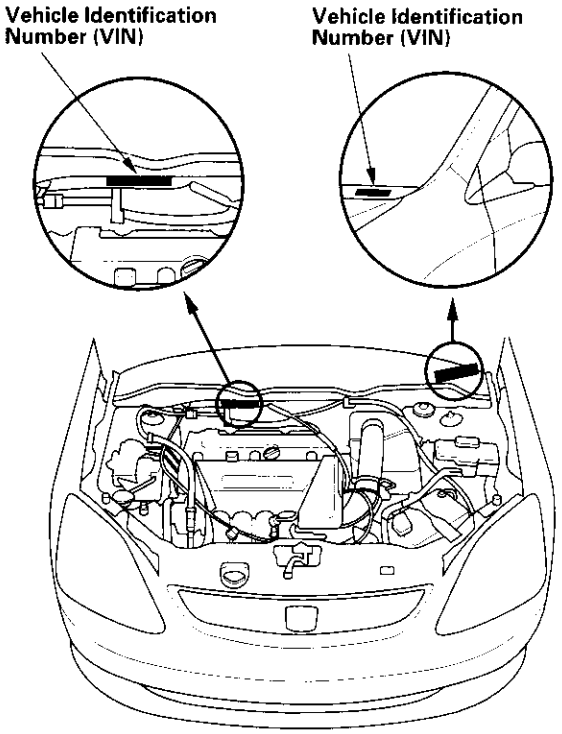
a b

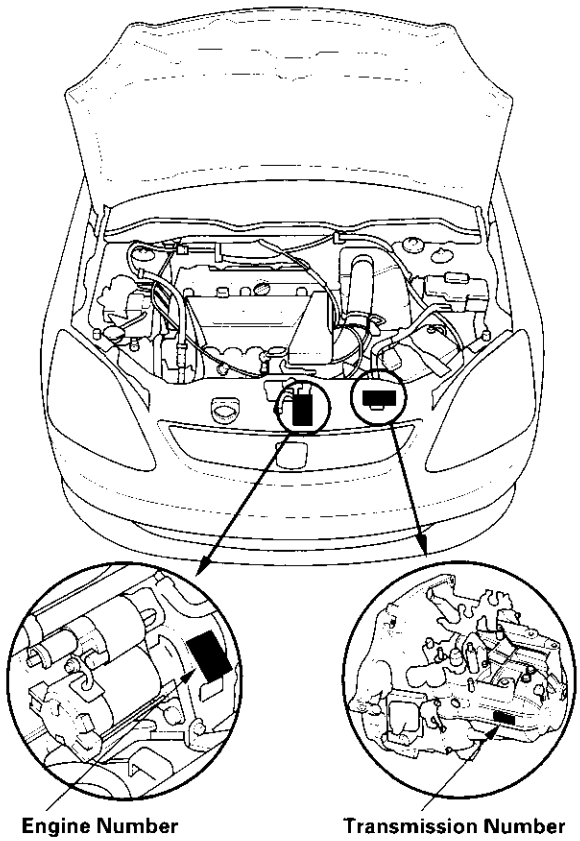
a. **Transmission Type**
NRH3: 5-speed Manual
b. **Serial Number**

Paint Code

Code	Color	U.S.	Canada
B-92P	Nighthawk Black Pearl	○	○
B-520P	Vivid Blue Pearl	○	○
NH-578	Taffeta White	○	○
NH-623M	Satin Silver Metallic	○	○
R-81	Milano Red		○
Y-62P	Euro Yellow Pearl		○

Identification Number Locations

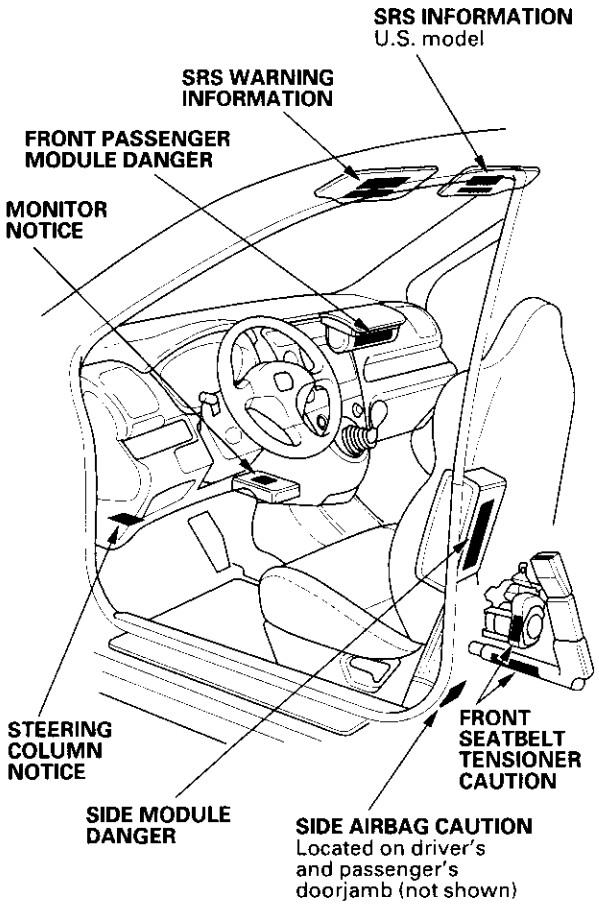




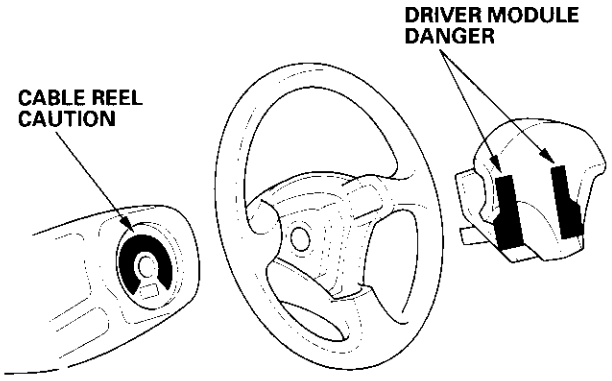
Warning/Caution Label Locations

NOTE: FRONT PASSENGER AIRBAG WARNING TAG (CHILD SEAT) is installed on the glove box on the U.S. model.

Passenger's Compartment:



Steering Wheel:



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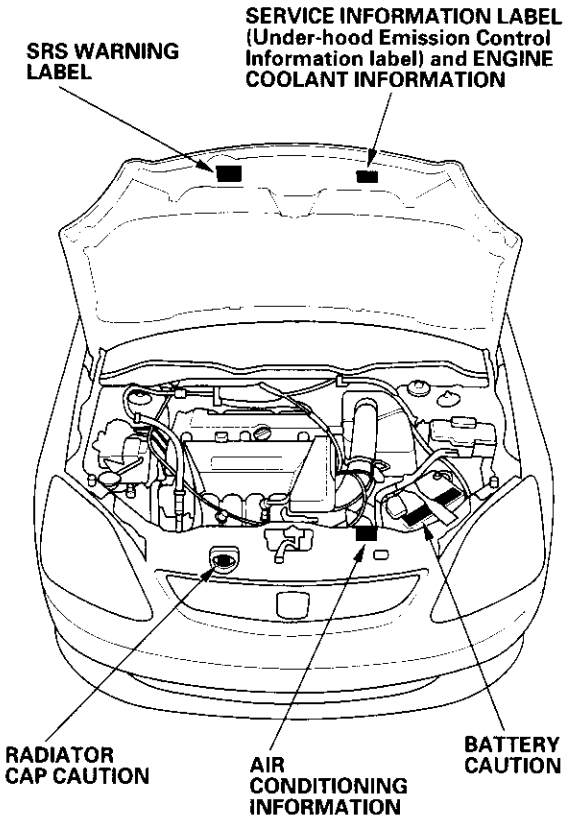
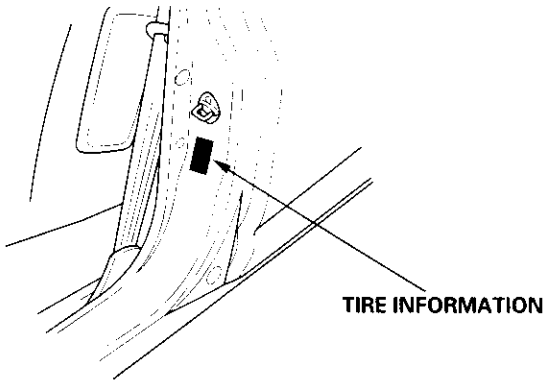
Warning/Caution Label Locations (cont'd)

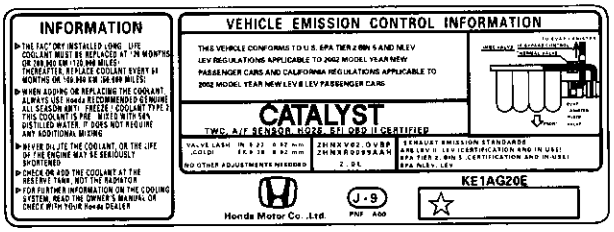




Under-hood Emission Control Label

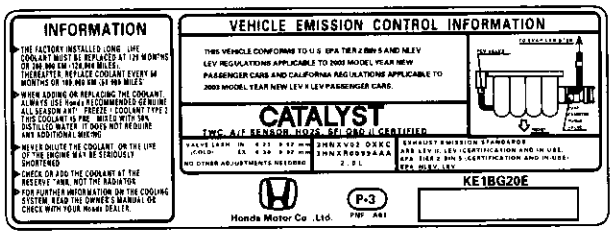
Emission Group Identification

Example: 2002 model



THIS VEHICLE CONFORMS TO U.S. EPA TIER 2 BIN 5 AND NLEV LEV REGULATIONS APPLICABLE TO 2002 MODEL YEAR NEW PASSENGER CARS AND CALIFORNIA REGULATIONS APPLICABLE TO 2002 MODEL YEAR NEW LEV II LEV PASSENGER CARS.

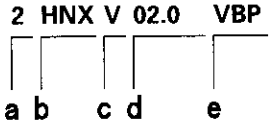
Example: 2003 model



THIS VEHICLE CONFORMS TO U.S. EPA TIER 2 BIN 5 AND NLEV LEV REGULATIONS APPLICABLE TO 2003 MODEL YEAR NEW PASSENGER CARS AND CALIFORNIA REGULATIONS APPLICABLE TO 2003 MODEL YEAR NEW LEV II LEV PASSENGER CARS.

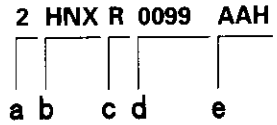
Engine and Evaporative Families:

Engine Family:



a. **Model Year**
   2: 2002
   3: 2003
b. **Manufacturer Subcode**
   HNX: HONDA
c. **Family Type**
   V: LDV
d. **Displacement**
e. **Sequence Characters**
   VBP: 2002
   XKC: 2003

Evaporative Family:



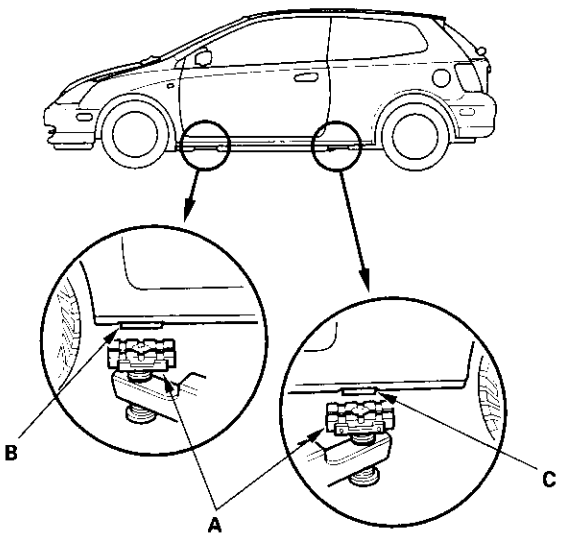
a. **Model Year**
   2: 2002
   3: 2003
b. **Manufacturer Subcode**
   HNX: HONDA
c. **Family Type**
   R: EVAP/ORVR
d. **Canister Work Capacity**
e. **Sequence Characters**
   AAH: 2002
   AAA: 2003

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 and cause the vehicle to tip forward on the hoist.

Frame Hoist

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



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

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

Safety Stands

To support the vehicle on safety stands, use the same support points (B and C) as for a frame hoist. Always use safety stands when working on or under any vehicle that is supported only by a jack.

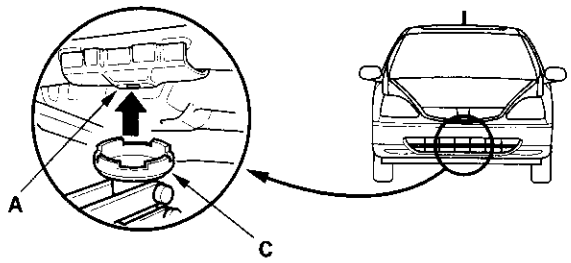
Floor Jack

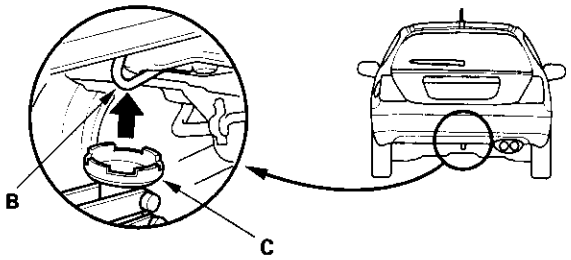
1. Set the parking brake.

2. Block the wheels that are not being lifted.

3. When lifting the rear of the vehicle, put the gearshift lever in reverse.

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





5. Position the safety stands under the support points and adjust them so the vehicle will level.

6. Lower the vehicle onto the stands.

Towing

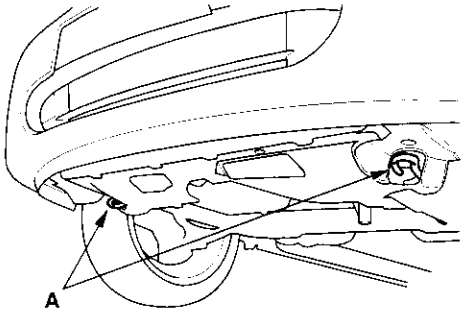
If the vehicle needs to be towed, call a professional towing service. Never tow the vehicle behind another vehicle with just a rope or chain. It is very dangerous.

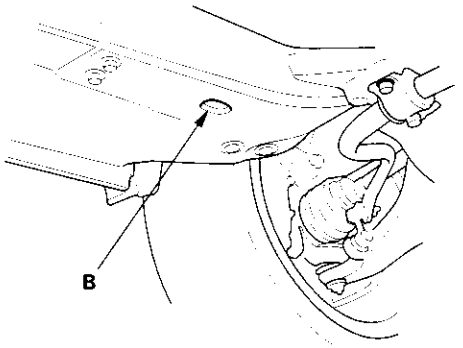
Emergency Towing
There are three popular methods of towing a vehicle.

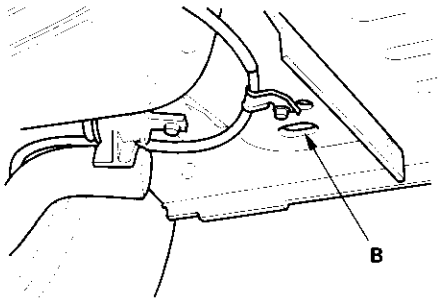
Flat-bed Equipment — The operator loads the vehicle on the back of a truck. This is the best way of transporting the vehicle.

To accommodate flat-bed equipment, the vehicle is equipped with towing hooks (A) and tie down hooks (B).

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







Wheel Lift Equipment — The tow truck uses two pivoting arms that go under the tires (front or rear) and lifts 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 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.

If the vehicle cannot be transported by flat-bed, it should be towed with the front wheels off the ground. If due to damage, the vehicle must be towed with the front wheels on the ground, do the following:

- Release the parking brake.
- Shift the transmission in Neutral.

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

NOTICE

- Improper towing preparation will damage the transmission. Follow the above procedure exactly. If you cannot shift the 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. The original engine or transmission VIN plate is transferred to a replacement engine or transmission and attached with break-off bolts.

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

Body 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		NGK: IZFR6K11 DENSO: SKJ20DR-M11	
	Gap		1.0−1.1 mm (0.039−0.043 in.)	1.3 mm (0.051 in.)
Ignition timing		At idle (check the *red* mark)	in neutral: 8±2° BTDC at 650±50 rpm	
Alternator	Output	At 13.5 V and normal engine temperature	80 A	
	Coil (rotor) resistance	At 68°F (20°C)	2.2−3.0 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		2.9−3.5 N (0.30−0.36 kgf, 0.7−0.8 lbs)	
Starter	Output		1.1 kW	
	Commutator mica depth		0.50−0.80 mm (0.020−0.031 in.)	0.20 mm (0.008 in.)
	Commutator runout		0.02 mm (0.001 in.) max.	0.05 mm (0.002 in.)
	Commutator O.D.		28.0 mm (1.10 in.)	27.0 mm (1.06 in.)
	Brush length		14.0−14.5 mm (0.55−0.57 in.)	9.0 mm (0.35 in.)

Engine Assembly

Item	Measurement	Qualification	Standard or New	Service Limit
Compression	Pressure check at 250 rpm with wide open throttle. (See Design Specs for ratio)	Minimum	930 kPa (9.5 kgf/cm², 135 psi)	
		Maximum variation	200 kPa (2.0 kgf/cm², 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	Intake, primary	33.925 mm (1.3356 in.)	
		Intake, secondary	29.638 mm (1.1668 in.)	
		Exhaust	34.092 mm (1.3422 in.)	
Valves	Clearance (cold)	Intake	0.21—0.25 mm (0.008—0.010 in.)	
		Exhaust	0.28—0.32 mm (0.011—0.013 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.)	5.42 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 seats	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	40.8—41.0 mm (1.606—1.614 in.)	
		Exhaust	54.6—54.8 mm (2.150—2.157 in.)	
Valve springs	Free length	Intake	47.61 mm (1.874 in.)	
		Exhaust	49.64 mm (1.954 in.)	
Valve guides	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 arms	Arm-to-shaft clearance	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.)

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.)
	Ring groove width	Top	1.220–1.230 mm (0.0481–0.0484 in.)	1.25 mm (0.049 in.)
		Second	1.220–1.230 mm (0.0481–0.0484 in.)	1.25 mm (0.049 in.)
		Oil	2.005 –2.025 mm (0.0789 –0.0797 in.)	2.05 mm (0.081 in.)
Piston ring	Ring-to-groove clearance	Top	0.035– 0.060 mm (0.0014 0.0024 in.)	0.13 mm (0.005 in.)
		Second (REKEN)	0.030 –0.055 mm (0.0012–0.0022 in.)	0.13 mm (0.005 in.)
		Second (FEDERAL MOGUL)	0.025 –0.060 mm (0.0010–0.0024 in.)	0.13 mm (0.005 in.)
	Ring end gap	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 (REKEN)	0.25 –0.65 mm (0.010 0.026 in.)	0.75 mm (0.030 in.)
		Oil (FEDERAL MOGUL)	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– +0.002 mm (–0.00020– + 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 (Normal)		48.0 mm (1.89 in.)	
	End play installed on crankshaft		0.15–0.30 mm (0.006 –0.012 in.)	0.40 mm (0.016 in.)
Crankshaft	Main journal diameter	No. 1 journal No. 2 journal No. 4 journal No. 5 journal	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		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 bearings	Main bearing-to-journal oil clearance	No. 1 journal No. 2 journal No. 4 journal No. 5 journal	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.)
	Rod bearing clearance		0.021 0.049 mm (0.0008 0.0019 in.)	0.060 mm (0.0024 in.)

Engine Lubrication

Item	Measurement	Qualification	Standard or New	Service Limit
Engine oil	Capacity		5.3 ℓ (5.6 US qt) for engine overhaul 4.2 ℓ (4.4 US qt) for oil change, including filter 4.0 ℓ (4.2 US qt) for oil change, without filter	
Oil pump	Inner-to-outer rotor clearance		0.02—0.16 mm (0.001—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		0.02—0.07 mm (0.001—0.003 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	0.070—0.135 mm (0.0028—0.0053 in.)	0.15 mm (0.006 in.)
		Rear	0.070—0.135 mm (0.0028—0.0053 in.)	0.15 mm (0.006 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 176°F (80°C)	At idle	70 kPa (0.7 kgf/cm², 10 psi) min.	
		At 3,000 rpm	300 kPa (3.1 kgf/cm², 44 psi) min.	

Cooling

Item	Measurement	Qualification	Standard or New	Service Limit
Radiator	Coolant capacity (includes engine, heater, hoses, and reservoir)	Engine overhaul	6.7 L (7.1 US qt)	
		Coolant change	5.0 L (5.3 US qt)	
Reservoir	Coolant capacity		0.53 L (0.56 US qt)	
Radiator cap	Opening pressure		93—123 kPa (0.95—1.25 kgf/cm², 14—18 psi)	
Thermostat	Opening temperature	Begins to open	169—176°F (76—80°C)	
		Fully open	194°F (90°C)	
	Valve lift at fully open		8.0 mm (0.31 in.) min.	
Radiator fan switch	Switching temperature	Turns ON	196—203°F (91—95°C)	
		Turns OFF	Subtract 5—15°F (3—8°C) from actual ON temperature	

Standards and Service Limits

Fuel and Emissions

Item	Measurement	Qualification	Standard or New	Service Limit
Fuel pressure regulator	Pressure with fuel pressure gauge connected		320−370 kPa (3.3−3.8 kgf/cm², 47−52 psi)	
Fuel tank	Capacity		50 ℓ (13.2 US gal)	
Engine idle	Idle speed with headlights and radiator fan off	Neutral	750±50 rpm	
	Fast idle	Neutral	1,600±50 rpm	

Clutch

Item	Measurement	Qualification	Standard or New	Service Limit
Clutch pedal	Height from the floor		193 mm (7.60 in.)	
	Stroke		130−140 mm (5.1−5.5 in.)	
	Play		10−16 mm (0.39−0.63 in.)	
	Disengagement height from the floor		115 mm (4.53 in.) min.	
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 (0.001 in.)
	Height of diaphragm spring fingers	Measured with special tool and feeler gauge	0.6 mm (0.02 in.) max.	0.8 mm (0.03 in.)

Manual Transmission and M/T Differential

Item	Measurement	Qualification	Standard or New	Service Limit
Transmission fluid	Capacity		For fluid change: 1.5 ℓ (1.6 US qt)	
			For overhaul: 1.7 ℓ (1.8 US qt)	
Mainshaft	End play		0.11 – 0.17 mm (0.004 – 0.007 in.)	Adjust
	Diameter of bushing surface		20.80 – 20.85 mm (0.819 – 0.821 in.)	20.75 mm (0.817 in.)
	Diameter of distance collar		31.984 – 32.000 mm (1.2594 – 1.2598 in.)	31.93 mm (1.257 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 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 (transmission housing side)		27.987 – 28.000 mm (1.1019 – 1.1024 in.)	27.93 mm (1.100 in.)
	Runout		0.02 mm (0.001 in.) max.	0.05 mm (0.002 in.)
Mainshaft 3rd, 4th and 5th gears	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 (0.941 – 0.944 in.)	23.80 mm (0.937 in.)
Countershaft	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.)
	Diameter of distance collar contact area		39.937 – 39.950 mm (1.5723 – 1.5728 in.)	39.88 mm (1.570 in.)
	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.)
	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 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		22.92 – 22.97 mm (0.902 – 0.904 in.)	22.87 mm (0.900 in.)
Countershaft 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		27.92 – 27.97 mm (1.099 – 1.101 in.)	27.87 mm (1.097 in.)
Countershaft 1st 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 (1.8499 – 1.8504 in.)	46.94 mm (1.848 in.)
	Length		23.03 – 23.08 mm (0.907 – 0.909 in.)	
Countershaft 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 (1.8499 – 1.8504 in.)	46.94 mm (1.848 in.)
	Length		28.03 – 28.08 mm (1.104 – 1.106 in.)	

Standards and Service Limits

Manual Transmission and Differential (cont'd)

Item	Measurement	Qualification	Standard or New	Service Limit
Mainshaft 4th and 5th gears 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 (0.946–0.947 in.)	
MBS distance collar	I.D.		28.00–28.01 mm (1.102–1.103 in.)	28.02 mm (1.103 in.)
	Length		23.95–24.05 mm (0.943–0.947 in.)	
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 cone 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 thinkness		13.4–13.7 mm (0.527–0.539 in.)	
	Fork-to-reverse idler gear clearance		0.20–0.59 mm (0.007–0.024 in.)	1.3 mm (0.051 in.)
Shift arm	I.D.		13.973–14.000 mm (0.5501–0.5512 in.)	
	Shift fork diameter at contact area		16.9–17.0 mm (0.665–0.669 in.)	
	Shift arm-to-shift lever 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.)	
Shift lever	Shaft-to-select lever clearance		0.05–0.25 mm (0.002–0.010 in.)	0.50 mm (0.020 in.)
	Groove (to select lever)		15.00–15.10 mm (0.591–0.594 in.)	
	Shaft-to-shift arm clearance		0.013–0.07 mm (0.0005–0.003 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.)
80 mm shim	80 mm shim-to-bearing outer race clearance in transmission housing		0–0.10 mm (0–0.0039 in.)	Adjust

Steering

Item	Measurement	Qualification	Standard or New	Service Limit
Steering wheel	Rotational play measured at outside edge with engine running		0 – 10 mm (0 – 0.39 in.)	
	Starting load measured at outside edge with engine running		29 N (3.0 kgf, 6.6 lbs)	
Gearbox	Angle of rack guide screw loosened from locked position		5° Max.	

Suspension

Item	Measurement	Qualification	Standard or New	Service Limit
Wheel alignment	Camber	Front	−0°00′ ± 45′	
		Rear	−0°45′ ± 45′	
	Caster	Front	1°33′ ± 1°	
	Total Toe	Front	0 ± 3 mm (0 ± 0.12 in.)	
		Rear	IN 2 $^{2}_{1}$ mm (0.08 $^{0.08}_{0.04}$ in.)	
	Front wheel turning angle	Inside wheel	37°40′ ± 2°	
		Outside wheel	29°50′ (Reference)	
Wheel	Aluminum 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.)	

Standards and Service Limits

Brakes

Item	Measurement	Qualification	Standard or New	Service Limit
Parking brake lever	Distance traveled when lever pulled with 196 N (20 kgf, 44 lbs) of force		7–8 clicks	
Brake pedal	Pedal height (carpet removed)		184 mm (7 4/16 in.)	
	Free play		0.4–3.0 mm (0.016–0.118 in.)	
Master cylinder	Piston-to-pushrod clearance		0–0.4 mm (0–0.02 in.)	
Brake disc	Thickness	Front	21.0 mm (0.83 in.)	19.00 mm (0.75 in.)
		Rear	9.0 mm (0.35 in.)	8.0 mm (0.31 in.)
	Runout	Front		0.10 mm (0.004 in.)
		Rear		0.10 mm (0.004 in.)
	Parallelism	Front and rear		0.015 mm (0.0006 in.)
Brake pads	Thickness	Front	10.0 mm (0.39 in.)	1.6 mm (0.06 in.)
		Rear	9.0 mm (0.35 in.)	1.6 mm (0.06 in.)

Air Conditioning

Item	Measurement	Qualification	Standard or New	Service Limit
Refrigerant	Type		HFC-134 a (R-134 a)	
	Capacity of system		500–550 g (17.6–19.4 oz)	
Refrigerant oil	Type		SP-10 (P/N 38897-P13-A01AH or 38899-P13-A01)	
	Capacity of components	Condenser	25 mℓ (5/6 fl oz)	
		Evaporator	45 mℓ (1 1/2 fl oz)	
		Each line and hose	10 mℓ (1/3 fl oz)	
		Compressor	130–150 mℓ (4 1/3–5 fl oz)	
Compressor	Starter coil resistance	At 68°F (20°C)	3.05–3.35 Ω	
	Pulley-to-pressure plate clearance		0.35–0.6 mm (0.014–0.024 in.)	
Drive belt	Tension		Auto tensioner (needs no adjustment)	

Design Specifications

Item	Measurement	Qualification	Specification
DIMENSIONS	Overall length		4,210 mm (165.8 in.)
	Overall width		1,695 mm (66.7 in.)
	Overall height		1,440 mm (56.7 in.)
	Wheelbase		2,570 mm (101.2 in.)
	Track	Front	1,470 mm (57.9 in.)
		Rear	1,470 mm (57.9 in.)
	Ground clearance		152 mm (5.98 in.)
	Seating capacity		four (4)
WEIGHT (U.S.A.)	Gross Vehicle Weight Rating (GVWR)		3,660 lbs
WEIGHT (CANADA)	Gross Vehicle Weight Rating (GVWR)		1,660 kg
ENGINE	Type		Water cooled, 4-stroke DOHC 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		9.8
	Valve train		Chain drive, DOHC VTEC 4 valves per cylinder
	Lubrication system		Forced, wet sump, with trochoid pump
	Oil pump displacement	At 6,000 engine rpm	54.3 ℓ (57.4 US qt)/minute
	Water pump displacement	At 3,400 engine rpm	82 ℓ (87 US qt)/minute
	Fuel required		UNLEADED gasoline with 86 pump octane number or higher
STARTER	Type		Gear reduction
	Normal output		1.1 kW
	Nominal voltage		12 V
	Hour rating		30 seconds
	Direction of rotation		Clockwise as viewed from gear end
CLUTCH	Clutch type		Single plate dry, diaphragm spring
	Clutch friction material surface area		174 cm^2 (26.97 sq in.)
MANUAL TRANSMISSION	Type		Synchronized, 5-speed forward, 1 reverse
	Primary reduction		Direct 1:1
	Gear ratio	1st	3.062
		2nd	1.769
		3rd	1.212
		4th	0.921
		5th	0.738
		Reverse	3.583
	Final reduction	Type	Single helical gear
		Gear ratio	4.764

Design Specifications

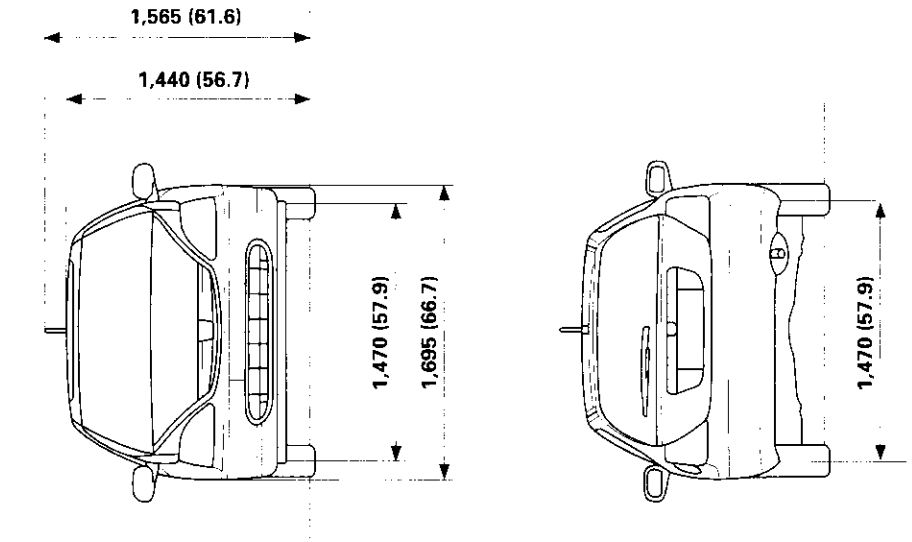
(cont'd)

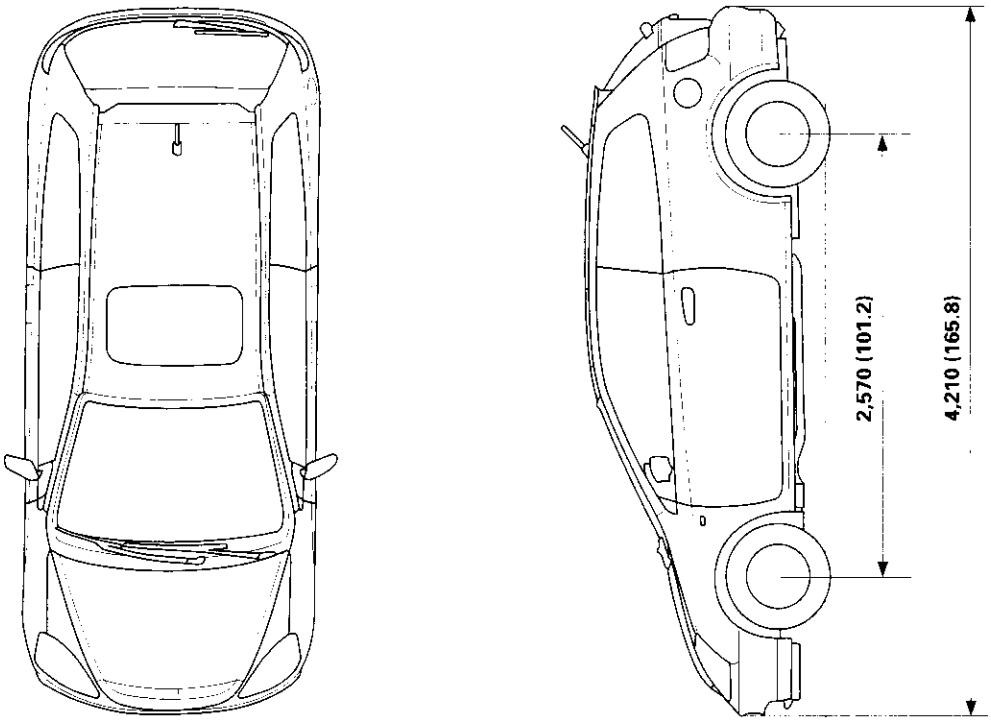
Item	Measurement	Qualification	Specification
STEERING	Type		Electric, Power-assisted rack and pinion
	Overall ratio		15.1
	Turns, lock-to-lock		2.835
	Steering wheel diameter		360 mm (14.2 in)
SUSPENSION	Type	Front	Independent strut with stabilizer, coil spring
		Rear	Double wishbone
	Shock absorber	Front	Telescopic, hydraulic, nitrogen gas-filled
		Rear	Telescopic, hydraulic, nitrogen gas-filled
WHEEL ALIGNMENT	Camber	Front	−0°00′
		Rear	−0°45′
	Caster	Front	1°33′
	Total toe	Front	0 mm (0 in.)
		Rear	In 2 mm (1/16 in.)
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	45 cm^2 (7.0 sq in.) x 2
		Rear	28 cm^2 (4.3 sq in.) x 2
TIRES	Size of front and rear tires		P195/60 R15 88V
	Size of spare tire		T125/70 D15 95M
AIR CONDITIONING	Compressor	Type	Scroll
		Number of cylinders	
		Capacity	85.7 mℓ (5.23 cu in.)/rev.
		Maximum speed	12,000 rpm
		Lubricant capacity	130 mℓ (4 1/3 fl oz)
		Lubricant type	SP-10 (P/N 38897-P13-A01AH or 38899-P13-A01)
	Condenser	Type	Corrugated fin
	Evaporator	Type	Corrugated fin
	Blower	Type	Sirocco fan
		Motor type	220 W/12 V
		Speed control	4 speed
		Maximum capacity	480 m^3 (16.900 cu ft)/h
	Temperature control		Air-mix type
	Compressor clutch	Type	Dry, single plate, poly-V belt drive
		Electrical power consumption at 68°F (20°C)	42 W maximum at 12 V
	Refrigerant	Type	HFC-134a (R-134a)
		Capacity	500—550 g (17.6—19.4 oz)

Item	Measurement	Qualification	Specification
ELECTRICAL RATINGS	Battery		12 V—36 AH/5 hours
	Starter		12 V—1.1 kW, 1.2 kW
	Alternator		12 V—95A, 90A
	Fuses	Under-hood fuse relay box	80 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
		Headlight low beam	12 V—55 W
		Front turn signal lights	12 V—21 W
		Front parking lights	12 V—5 W
		Rear turn signal lights	12 V—21 W
		Front/rear side marker lights	12 V—5 W
		Brake/taillights	12 V—21/5 W
		High mount brake light	12 V—5 W
		Back-up lights	12 V—21 W
		License plate light	12 V—5 W
		Ceiling light	12 V—8 W
		Cargo area light	12 V—5 W
		Spotlights	12 V—5 W
		Gauge lights	14 V—1.4 W
		Indicator lights	LED
		Side turn signal light	12 V—5 W

Body Specifications

Unit: mm (in.)





Maintenance

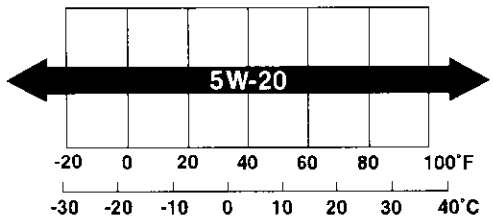
Lubricants and Fluids

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

NO.	LUBRICATION POINTS	LUBRICANT
1	Engine	Honda Motor Oil (P/N 08798-9023). The oil container must display the API Certification seal shown below. Make sure it says "For Gasoline Engines." SAE Viscosity: See chart below.
2	Transmission	Honda MTF*1 (P/N 08798-9016)
3	Brake system (includes ABS line)	Honda DOT 3 Brake Fluid*2 (P/N 08798-9008)
4	Clutch line	
5	Release fork (manual transmission)	Super High Temp Urea Grease (P/N 08798-9002)
6	Throttle cable end (throttle link)	
7	Shift and select cable ends (manual transmission)	Silicone grease
8	Throttle cable end (dashboard lower panel hole)	
9	Brake booster clevis	Multi-purpose grease
10	Clutch booster clevis	
11	Shift lever pivot	
12	Pedal linkage	
13	Battery terminals	
14	Fuel fill door	
15	Hood hinges and hood latch	
16	Hatch hinges	
17	Door hinges, upper and lower	
18	Caliper piston boot, caliper pins and boots	Honda Caliper Grease (P/N 08C30-B0234M)
19	Air conditioning compressor	Compressor oil: SP-10 (P/N 38897-P13-A01AH or 38899-P13-A01) For refrigerant: HFC-134 a (R-134 a)

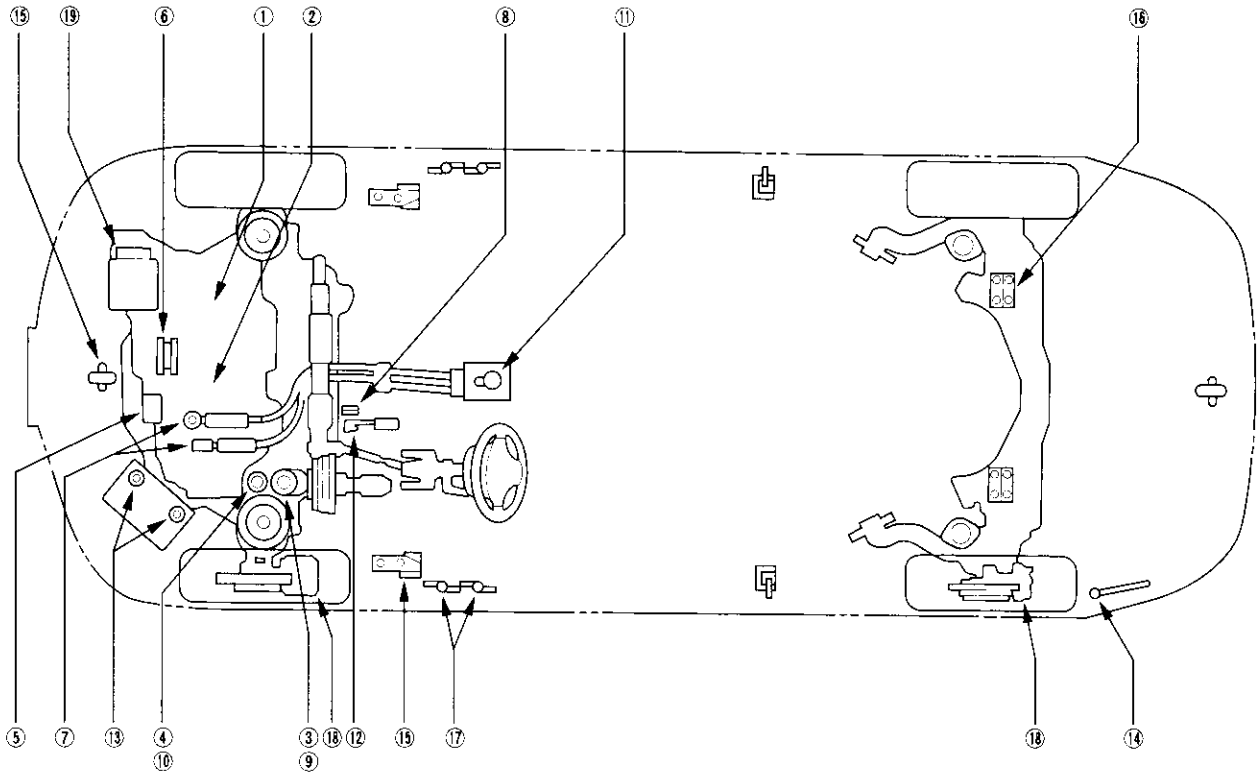
API CERTIFICATION SEAL

Recommended Engine Oil
Engine oil viscosity for ambient temperature ranges



*1: Always use Honda Manual Transmission Fluid (MTF). Using motor oil can cause stiffer shifting because it does not contain the proper additives.

*2: Always use Honda DOT 3 Brake Fluid. Using a non-Honda brake fluid can cause corrosion and decrease the life of the system.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⑤ ⑦ ⑬ ④ ⑩ ③ ⑨ ⑱ ⑫ ⑮ ⑰ ⑱ ⑭

Maintenance Schedule

Listed by Distance/Time for Normal Conditions

This two-page Manitenance Schedule outlines the minimun required maintenance. Service at the indicated distance or time, whichever comes first. Use the Maintenance Schedule for Severe conditions if the vehicle meets any of the qualifiers in the Severe Conditions schedule or if the vehicle is normally driven in Canada.

10,000 mi/ 16,000 km/ 1 year	Do items in A.
20,000 mi/ 32,000 km/ 1 year	Do items in A and B.
30,000 mi/ 48,000 km/ 2 years	Do items in A and C.
30,000 mi/ 48,000 km	Do item in D.
40,000 mi/ 64,000 km/ 2 years	Do items in A and B.
50,000 mi/ 80,000 km/ 3 years	Do items in A.
—/—/ 3 years	Do item in E.
60,000 mi/ 96,000 km/ 3 years	Do items in A, B, and C.
60,000 mi/ 96,000 km	Do item in D.
70,000 mi/ 112,000 km/ 4 years	Do items in A.
80,000 mi/ 128,000 km/ 4 years	Do items in A and B.
90,000 mi/ 144,000 km/ 5 years	Do items in A, and C.
90,000 mi/ 144,000 km	Do item in D.
100,000 mi/ 160,000 km/ 5 years	Do items in A and B.
110,000 mi/ 176,000 km/—	
Inspect valve clearance. (cold) (see page 6-32): Intake: 0.21—0.25 mm (0.008—0.010 in.) Exhaust: 0.28—0.32 mm (0.011—0.013 in.)	
Replace spark plugs. Use IZFR6K11 (NGK) or SKJ20DR-M11 (DENSO). Gap: 1.0—1.1 mm (0.039—0.043 in.)	
110,000 mi/ 176,000 km/ 6 years	Do items in A.
—/—/ 6 years	Do item in E.
120,000 mi/ 192,000 km/ 6 years	
Replace transmission fluid. Use Honda MTF (see page 13-3).	
Do items in A,B, and C.	
120,000 mi/ 192,000 km	Do item in D.
—/—/ 9 years	Do item in E.
120,000 mi/ 192,000 km/ 10 years, then every 60,000 mi/ 96,000 km/ 5 years	
Replace coolant (see page 10-6). Capacity: 5.0 ℓ (5.3 US qt). Use Honda All Season Antifreeze/Coolant Type 2.	

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

Do the items in parts A, B, C, D, and E as required for mileage/time interval listed.

A

- Replace engine oil (see page 8-5). —Capacity without filter change: 4.0 ℓ (4.2 US qt, 3.5 Imp qt)
- Rotate tires. Follow the pattern shown in the Owner's Manual —Check tire information and condition.

B

- Replace engine oil filter (see page 8-6). —Capacity with filter change: 4.2ℓ (4.4 US qt, 3.7 Imp qt)
- Inspect front and rear brakes (see page 19-3).
  - Check pads and discs for wear (thickness), damage, and cracks.
  - Check calipers for damage, leaks, and tightness of mount bolts.
- Check parking brake adjustment. Should be fully applied within 7 to 9 clicks.
- Inspect tie-rod ends, steering gearbox, and boots (see page 17-5).
  - Check rack grease and steering linkage.
  - Check boots for damage and leaking grease.
  - Check fluid line for damage and leaks.
- Inspect suspension components.
  - Check bolts for tightness.
  - Check condition of ball joint boots for deterioration and damage.
- Inspect driveshaft boots. Check boots for cracks and boot bands for tightness (see page 16-3).
- Inspect brake hoses and lines (including ABS). —Check the master cylinder, proportioning control valve, and ABS modulator for damage and leakage.
- Check all fluid levels and condition of fluids; check for leaks. If necessary, add MTF (see page 13-3), engine coolant, brake fluid, and windshield washer fluid.
- Inspect exhaust system*. Check catalytic converter heat shield, exhaust pipe and muffler for damage, leaks, and tightness (see page 9-8).
- Inspect fuel lines and connections*. Check for loose connections, cracks and deterioration; retighten loose connections and replace damaged parts (see page 11-146).

C

- Inspect and adjust drive belt.
  - Look for cracks and damage, and inspect auto tensioner (needs no adjustment).
- Replace the dust and pollen filter (see page 21-39).
  - Replace the dust and pollen filter whenever airflow from the heating and cooling system is less than normal.

D

- Replace air cleaner element every 30,000 miles (48,000 km) (independent of time).

E

- Replace brake fluid every 3 years (independent of mileage).

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

Maintenance Schedule

Listed by Distance/Time for Severe Conditions

Service at the indicated distance or time, whichever comes first. Use this schedule if the vehicle is driven MAINLY in Canada or in any of the following conditions; if only OCCASIONALLY driven in these conditions, use the Normal Conditions schedule (see page 3-4).

Severe Driving Conditions

- Driving less than 5 miles (8 km) per trip or, in freezing temperatures, driving less than 10 miles (16 km) per trip
- Driving in extremely hot (over 90°F/32°C) conditions
- Extensive idling or long periods of stop-and-go driving, such as a taxi or a commercial delivery vehicle.
- Trailer towing, driving with a car-top carrier, or driving in mountainous conditions.
- Driving on muddy, dusty, or de-iced roads

5,000 mi/ 8,000 km/ 6 months	Do item in A.
10,000 mi/ 16,000 km/ 1 year	Do items in A and B.
15,000 mi/ 24,000 km/—	Do items in E and H.
15,000 mi/ 24,000 km/ 1-1/2 years	Do item in A.
20,000 mi/ 32,000 km/ 1 year	Do items in A, B, and C.
25,000 mi/ 40,000 km/ 2 years	Do item in A.
30,000 mi/ 48,000 km/—	Do item in F.
30,000 mi/ 48,000 km/ 2 years	Do items in A, B, and D.
35,000 mi/ 56,000 km/ 2-1/2 years	Do item in A.
40,000 mi/ 64,000 km/ 2 years	Do items in A, B, and C.
45,000 mi/ 72,000 km/—	Do items in E and H.
45,000 mi/ 72,000 km/ 3 years	Do item in A.
—/—/ 3 years	Do item in G.
50,000 mi/ 80,000 km/ 3 years	Do items in A and B.
55,000 mi/ 88,000 km/ 3-1/2 years	Do item in A.
60,000 mi/ 96,000 km/—	Do item in F.
60,000 mi/ 96,000 km/ 3 year	
Replace transmission fluid. Use Honda MTF (see page 13-3).	
Do items in A, B, C, and D.	
65,000 mi/ 104,000 km/ 4 years	Do item in A.
70,000mi/ 112,000 km/ 4 years	Do items in A and B.
75,000 mi/ 120,000 km/—	Do items in E and H.
75,000 mi/ 120,000 km/ 4-1/2 years	Do item in A.
80,000 mi/ 128,000 km/ 4 years	Do items in A, B, and C.
85,000 mi/ 136,000 km/ 5 years	Do item in A.
90,000 mi/ 144,000 km/—	Do item in F.
90,000 mi/ 144,000 km/ 5 years	Do items in A, B, and D.
95,000 mi/ 152,000 km/ 5-1/2 years	Do item in A.
100,000 mi/ 160,000 km/ 5 years	Do items in A, B, and C.
105,000 mi/ 168,000 km/—	Do items in A, E, and H.
—/—/ 6 years	Do item in G.
110,000 mi/ 176,000 km/—	
Inspect valve clearance. (cold) (see page 6-32): Intake: 0.21—0.25 mm (0.008—0.010 in.) Exhaust: 0.28—0.32 mm (0.011—0.013 in.)	
Replace spark plugs.Use IZFR6K11 (NGK) or SKJ20DR-M11 (DENSO)	
Gap: 1.0—1.1 mm (0.039—0.043 in.)	
110,000 mi/ 176,000 km/ 6 years	Do items in A and B.
115,000 mi/ 184,000 km/ 6-1/2 years	Do item in A.
120,000 mi/ 192,000 km/—	Do item in F.
120,000 mi/ 192,000 km/ 6 years	
Replace transmission fluid. Use Honda MTF (see page 13-3).	
Do items in A, B, C, and D.	
—/—/9 years	Do item in G.
120,000 mi/ 192,000 km/ 10 years, then every 60,000 mi/ 96,000 km/ 5 years	
Replace coolant (see page 10-6). Capacity: 5.0 ℓ (5.3 US qt) Use Honda All Season Antifreeze/coolant Type 2.	

Do the items in parts A, B, C, D, E, F, and G as required for mileage/time interval listed.

A

- [ ] Replace engine oil (see page 8-5). —Capacity without filter change: 4.0 ℓ (4.2 US qt, 3.5 Imp qt)

B

- [ ] Replace engine oil filter (see page 8-6). —Capacity with filter change: 4.2 ℓ (4.4 US qt, 3.7 Imp qt)
- [ ] Inspect front and rear brakes.
  - Check pads and discs for wear (thickness), damage, and cracks.
  - Check calipers for damage, leaks, and tightness of mount bolts.
- [ ] Lubricate door locks, latches and hinges with Honda white lithium grease.
- [ ] Rotate tires, if the vehicle has been driven the distance listed. Follow the pattern shown in the Owner's Manual—Check tire inflation and condition.
- [ ] Inspect tie-rod ends, steering gearbox, and boots (see page 17-5).
  - Check rack grease and steering linkage.
  - Check boots for damage and leaking grease.
  - Check fluid line for damage and leaks.
- [ ] Inspect suspension components
  - Check bolts for tightness.
  - Check condition of ball joint boots for deterioration and damage.
- [ ] Inspect driveshaft boots. Check boots for cracks and boot bands for tightness (see page 16-3).

C

- [ ] Check parking brake adjustment. Should be fully applied within 7 to 9 clicks.
- [ ] Inspect brake hoses and lines. (including ABS). —Check the master cylinder, proportioning control valve, and ABS modulator for damage and leakage (see page 19-24).
- [ ] Check all fluid levels and condition of fluids; check for leaks. If necessary, add MTF (see page 13-3), engine coolant, brake fluid, and windshield washer fluid.
- [ ] Inspect exhaust system*. Check catalytic converter heat shield, exhaust pipe and muffler for damage, leaks, and tightness (see page 9-8).
- [ ] Inspect fuel lines and connections*. Check for loose connections, cracks and deterioration; retighten loose connections and replace damaged parts (see page 11-146).
- [ ] Check all lights. Check function of all interior and exterior lights, and the position of the headlights (see page 22-68).
- [ ] Inspect the vehicle underbody. Check the paint for damage, scratches, stone chipping, and dents.

D

- [ ] Inspect and adjust drive belt.
  - Look for cracks and damage, and inspect auto tensioner (needs no adjustment).
- [ ] Replace dust and pollen filter.

E

- [ ] Replace air cleaner element every 15,000 miles (24,000 km) in dusty condition (independent of time) otherwise use Normal Conditions scredule (see page 11-162).

F

- [ ] Replace air cleaner element every 30,000 miles (48,000 km) (independent of time) (see page 11-162).

G

- [ ] Replace brake fluid every 3 years (independent of mileage).

H

- [ ] Replace the dust and pollen filter every 15,000 miles if vehicle is driven mostly where air has high concentration of soot from industry and diesel-powered vehicles; also replace the dust and pollen filter anytime airflow is less than usual (see page 21-39).

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

Maintenance Schedule

Listed by Maintenance Item for Normal Conditions

Follow the Normal Schedule if the severe driving conditions specified in the Maintenance Schedule for Severe Conditions on the next page do not apply, and if only OCCASIONALLY driven in severe driving conditions.
Follow the Severe Conditions schedule if the vehicle is driven MAINLY in Canada.

Service at the indicated distance or time, whichever comes first.													
	miles x 1,000	10	20	30	40	50	60	70	80	90	100	110	120
	km x 1,000	16	32	48	64	80	96	112	128	144	160	176	192
	months	12		24		36		48		60		72	
Replace engine oil		●	●	●	●	●	●	●	●	●	●	●	●
Rotate tires (Check tire inflation and condition at least once per month)													
Replace engine oil filter			●		●		●		●		●		●
Inspect front and rear brakes													
Check parking brake adjustment													
Visually inspect the following items: • Tie-rod ends, steering gearbox and boots • Suspension components • Driveshaft boots • Brake hoses and lines (including ABS) • All fluid levels and condition of fluids • Exhaust system* • Fuel lines and connections*													
Inspect and adjust drive belt				●			●			●			●
Replace dust and pollen filter													
Replace transmission fluid													●

Service the following items at the recommended intervals	
Replace air cleaner element	Every 30,000 miles (48,000 km)
Replace spark plugs	Every 110,000 miles (176,000 km)
Inspect valve clearance	Inspect every 110,000 miles (176,000 km), otherwise adjust only if noisy.
Inspect idle speed*	Every 160,000 miles (256,000 km) or 8 years
Replace engine coolant	At 120,000 miles (192,000 km) or 10 years, then every 60,000 miles (96,000 km) or 5 years
Replace brake fluid	Every 3 years

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

Listed by Maintenance Item for Severe Conditions

Use this schedule if the vehicle is driven MAINLY in Canada or in any of the following conditions. NOTE: if only OCCASIONALLY driven in these conditions, use the Normal Conditions schedule.

Severe Driving Conditions

- Driving less than 5 miles (8 km) per trip or, in freezing temperatures, driving less than 10 miles (16 km) per trip.
- Driving in extremely hot over 90 °F (32 °C) conditions.
- Extensive idling, or long periods of stop-and-go-driving, such as a taxi or a commercial delivery vehicle.
- Trailer towing, driving with a car-top carrier, or driving in mountainous conditions.
- Driving on muddy, dusty, or de-iced roads.

Service at the indicated distance or time, whichever comes first.	miles x 1,000	10	20	30	40	50	60	70	80	90	100	110	120
	km x 1,000	16	32	48	64	80	96	112	128	144	160	176	192
	months	12		24		36		48		60		72	
Replace engine oil		Replace every 5,000 miles (8,000 km) or 6 months											
Rotate tires (Check tire inflation and condition at least once per month)		●	●	●	●	●	●	●	●	●	●	●	●
Replace engine oil filter													
Inspect front and rear brakes													
Lubricate all locks, hinges, and latches													
Visually inspect the following items: • Tie-rod ends, steering gearbox and boots • Suspension components • Driveshaft boots													
Check parking brake adjustment			●		●		●		●		●		●
Visually inspect the following items: • Brake hoses and lines (including ABS) • All fluid levels and condition of fluids • Exhaust system* • Fuel lines and connections* • Lights and controls, vehicle underbody													
Inspect and adjust drive belt				●			●			●			●
Replace dust and pollen filter[NOTE 1]													
Replace transmission fluid							●						●
Service the following items at the recommended intervals													
Replace air cleaner element		Every 15,000 miles (24,000 km) in dusty conditions, otherwise use normal schedule.											
Replace spark plugs		Every 110,000 miles (176,000 km)											
Inspect valve clearance		Inspect every 110,000 miles (176,000 km), otherwise adjust only if noisy.											
Inspect idle speed*		Every 160,000 miles (256,000 km) or 8 years											
Replace engine coolant		At 120,000 miles (192,000 km) or 10 years, then every 60,000 miles (96,000 km) or 5 years											
Replace brake fluid		Every 3 years											

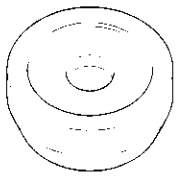
* : According to state and federal regulations, failure to do the maintenance items marked with asterisk (*) will not void customer's emissions warranties. However, Honda recommends that all maintenance service be done at the recommended interval to ensure long-term reliability.

NOTE 1: Replace the dust and pollen filter at 15,000 miles/24,000 km if the vehicle is driven mostly in urban areas that have high concentrations of soot in the air from industry and diesel-powered vehicles.

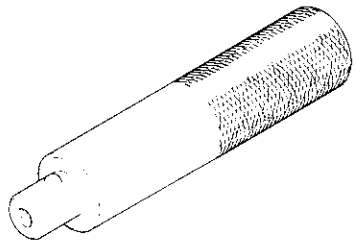
Engine Electrical

Special Tools

Number	Tool Number	Description	Qty
①	07746-0010400	Attachment, 52 x 55 mm	1
②	07749-0010000	Driver	1

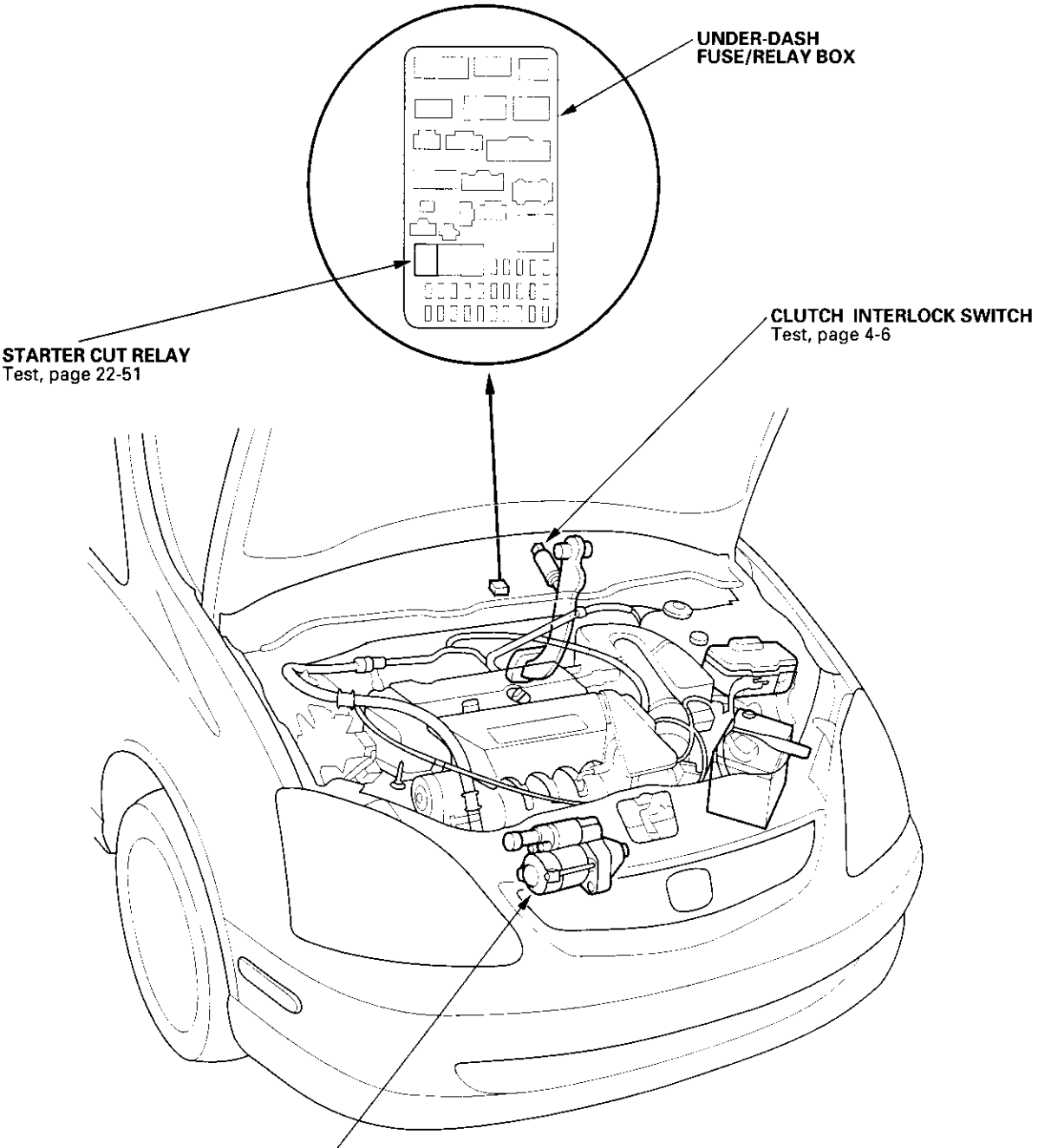


①

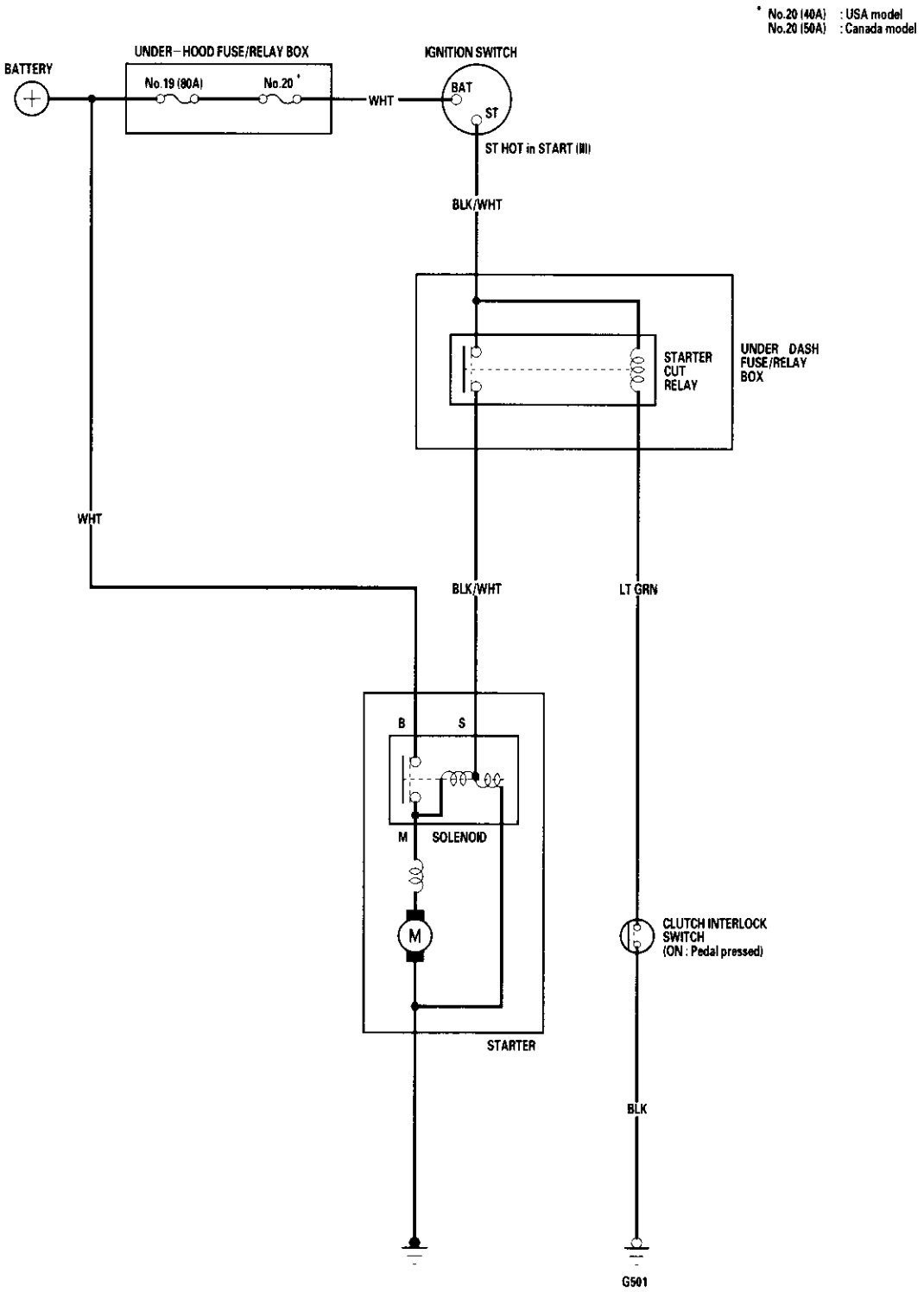


②

Component Location Index



Circuit Diagram



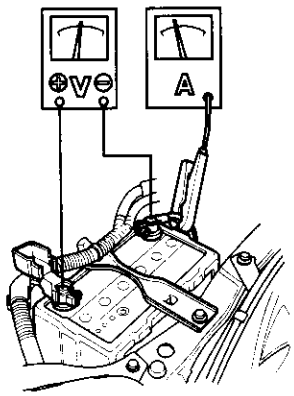
Starter Circuit Troubleshooting

NOTE:
- Air temperature must be between 59° and 100°F (15° and 38°C) during this procedure.
- After this test, or any subsequent repair, reset the engine controle module (ECM) to clear any diagnostic trouble codes (DTCs) (see page 11-4).
- The battery must be in good condition and fully charged.
- If you disconnect the battery, do the ECM idle learn procedure (see page 11-139).

Recommended Procedure:
- Use a starter system tester.
- Connect and operate the equipment in accordance with the manufacturer's instructions.

Alternate Procedure

1. Hook up the following equipment:
   - Ammeter, 0—400 A
   - Voltmeter, 0—20 V (accurate within 0.1 volt)
   - Tachometer, 0—1200 rpm



2. Remove the No. 17 (15A) fuse from the under-dash fuse/relay box.

3. With the clutch pedal pressed, turn the ignition switch to start (III).

   Did the starter crank the engine normally?

   YES—The starting system is OK.■

   NO—Go to step 4.

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

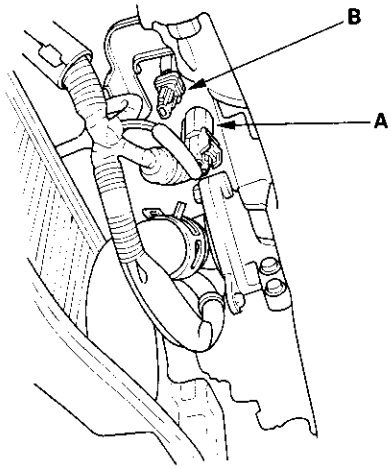
   Did the starter crank the engine?

   YES—Repairing the loose connection fixed the problem. The starting system is now OK.■

   NO—If starter will not crank the engine at all, go to step 5. If it cranks the engine erratically or too slowly, go to step 7. If it won't disengage from the flywheel ring gear when you release the key, check for the following until you find the cause.

   - Solenoid plunger and switch malfunction
   - Dirty drive gear or damaged overrunning clutch

5. Make sure the transmission is in neutral, then disconnect the starter subharness 1P connector (A) from the engine wire harness 1P connector (B). Connect a jumper wire from the battery positive terminal to the starter subharness 1P connector.



   Did the starter crank the engine?

   YES—Go to step 6.

   NO—Check the BLK/WHT wire between the starter subharness 1P connector and the starter. If wire is OK, remove the starter, and repair or replace as necessary.

(cont'd)

Starter Circuit Troubleshooting (cont'd)

6. Check the following items in the order listed until you find the open circuit.

   - Check the BLK/WHT wire and connectors between the under-dash fuse/relay box and the ignition switch, and between the under-dash fuse/relay box and the starter.
   - Check the ignition switch (see page 22-53).
   - Check the clutch interlock switch and connector.
   - Check the starter cut relay (see page 22-51).
   - Check LT GRN wire between the starter cut relay/ under-dash fuse/relay box and the clutch interlock switch.
   - Check the BLK wire between the clutch interlock switch and G501.

7. Check the cranking voltage and current draw.

   Is cranking voltage greater than or equal to 8.7 V and current draw less than or equal to 230 A?

   YES—Go to step 8.

   NO—Replace the starter, or remove and disassemble it, and check these items until you find the cause.

   - Starter armature dragging
   - Shorted armature winding
   - Excessive drag in engine

8. Check the engine speed while cranking the engine.

   Is the engine speed above 100 rpm?

   YES—Go to step 9.

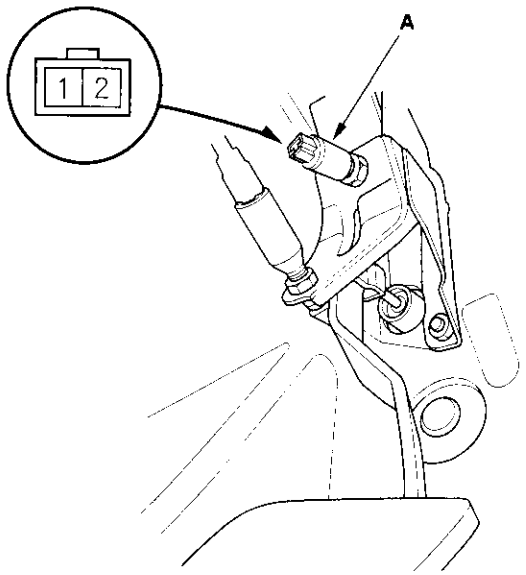
   NO—Replace the starter, or remove and disassemble it, and check for the following until you find the cause.

   - Excessively worn starter brushes
   - Open circuit in commutator brushes
   - Open circuit in starter armature commutator segments
   - Dirty or damaged helical splines or drive gear
   - Faulty drive gear clutch

9. Remove the starter, and inspect its drive gear and the flywheel ring gear for damage. Replace any damaged parts. ■

Clutch Interlock Switch Test

1. Disconnect the clutch interlock switch 2P connector.



2. Remove the clutch interlock switch (A).

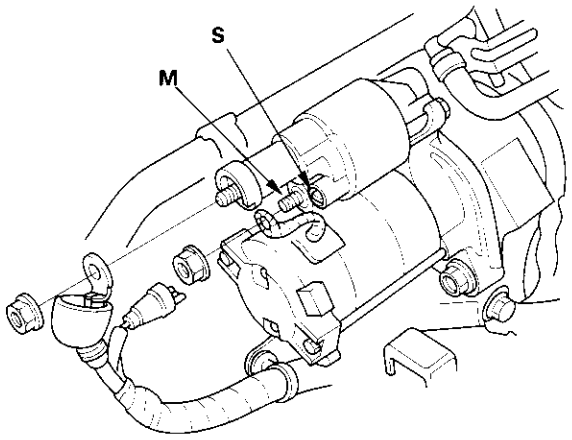
3. Check for continuity between the terminals according to the table.

   - If the continuity is not as specified, replace the clutch interlock switch.
   - If OK, install clutch interlock switch and adjust the pedal height (see page 12-4).

Terminal / Clutch Interlock Switch	1	2
PRESSED	○	○
RELEASED		

Starter Solenoid Test

1. Disconnect the S and M connectors from the starter solenoid.



2. Check the hold-in coil for continuity between the S terminal and the armature housing (ground). There should be continuity.

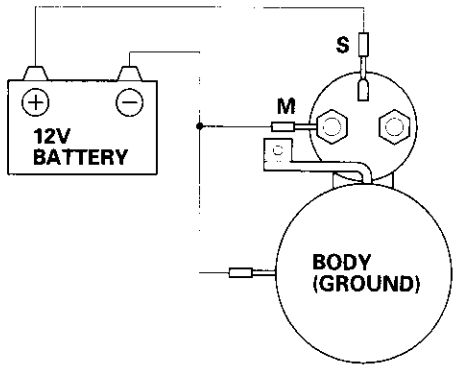
   - If there is continuity, go to step 3.
   - If there is no continuity, replace the solenoid.

3. Check the pull-in coil for continuity between the S terminal and M terminal. There should be continuity.

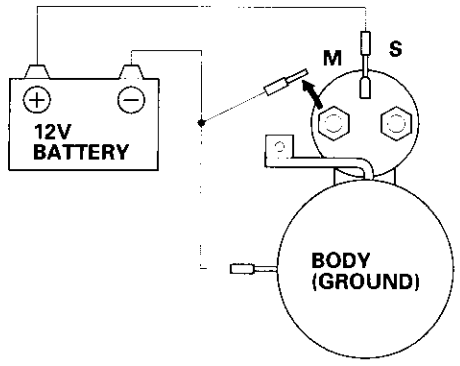
   - If there is continuity, the solenoid is OK.
   - If there is no continuity, replace the solenoid.

Starter Performance Test

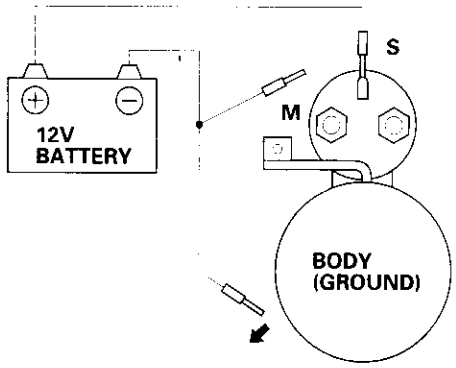
1. Disconnect the wires from the S terminal and the M terminal.
2. Make a connection as described below using as heavy a wire as possible (preferably equivalent to the wire used for the vehicle). To avoid damaging the starter, never leave the battery connected for more than 10 seconds.
3. Connect the battery as shown. Be sure to disconnect the starter motor wire from the solenoid. If the starter pinion moves out, it is working properly.



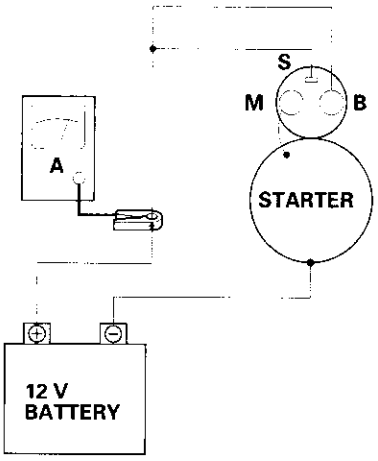
4. Disconnect the battery from the M terminal. If the pinion does not retract, the hold-in coil of the solenoid is working properly.



5. Disconnect the battery from the starter body. If the pinion retracts immediately, it is working properly.



6. Clamp the starter firmly in a vise.
7. Connect the starter to the battery as described in the diagram below, and confirm that the motor starts and keeps rotating.



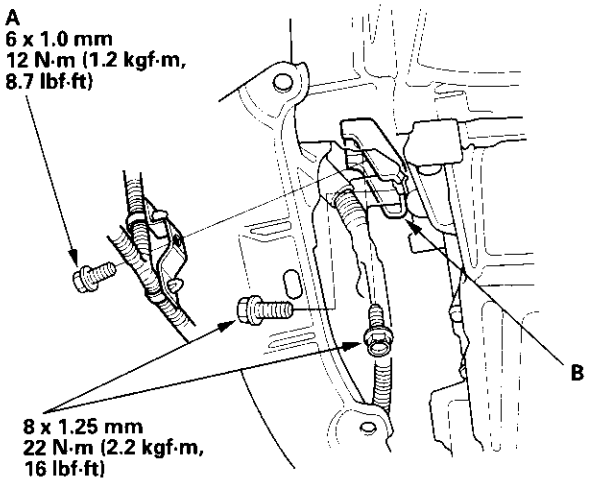
8. If the electric current and motor speed meet the specifications when the battery voltage is at 11.5 V, the starter is working properly.

Specifications:

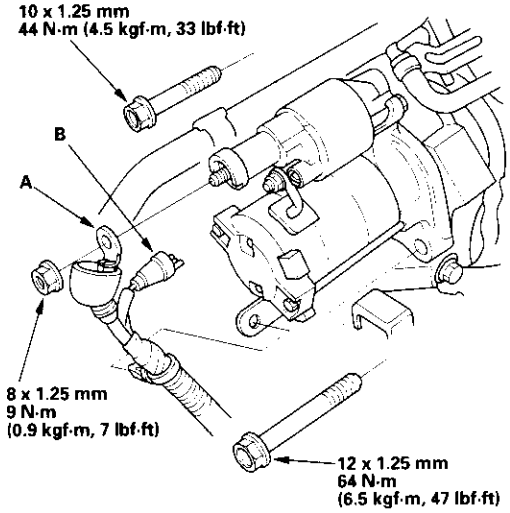
1.1 kw	**90 A or less (Electric current), 3,000 rpm or more (Motor-speed)**

Starter Replacement

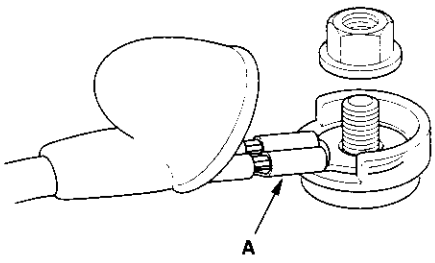
1. Make sure you have the anti-theft code for the radio, then write down the frequencies for the radio's preset buttons.
2. Disconnect the negative cable from the battery first, then disconnect the positive cable.
3. Disconnect the knock sensor connector.
4. Remove the bolt (A) securing the harness bracket, then remove the intake manifold bracket (B).



5. Disconnect the starter cable (A) from the B terminal on the solenoid, then disconnect the BLK/WHT wire (B) from the S terminal.



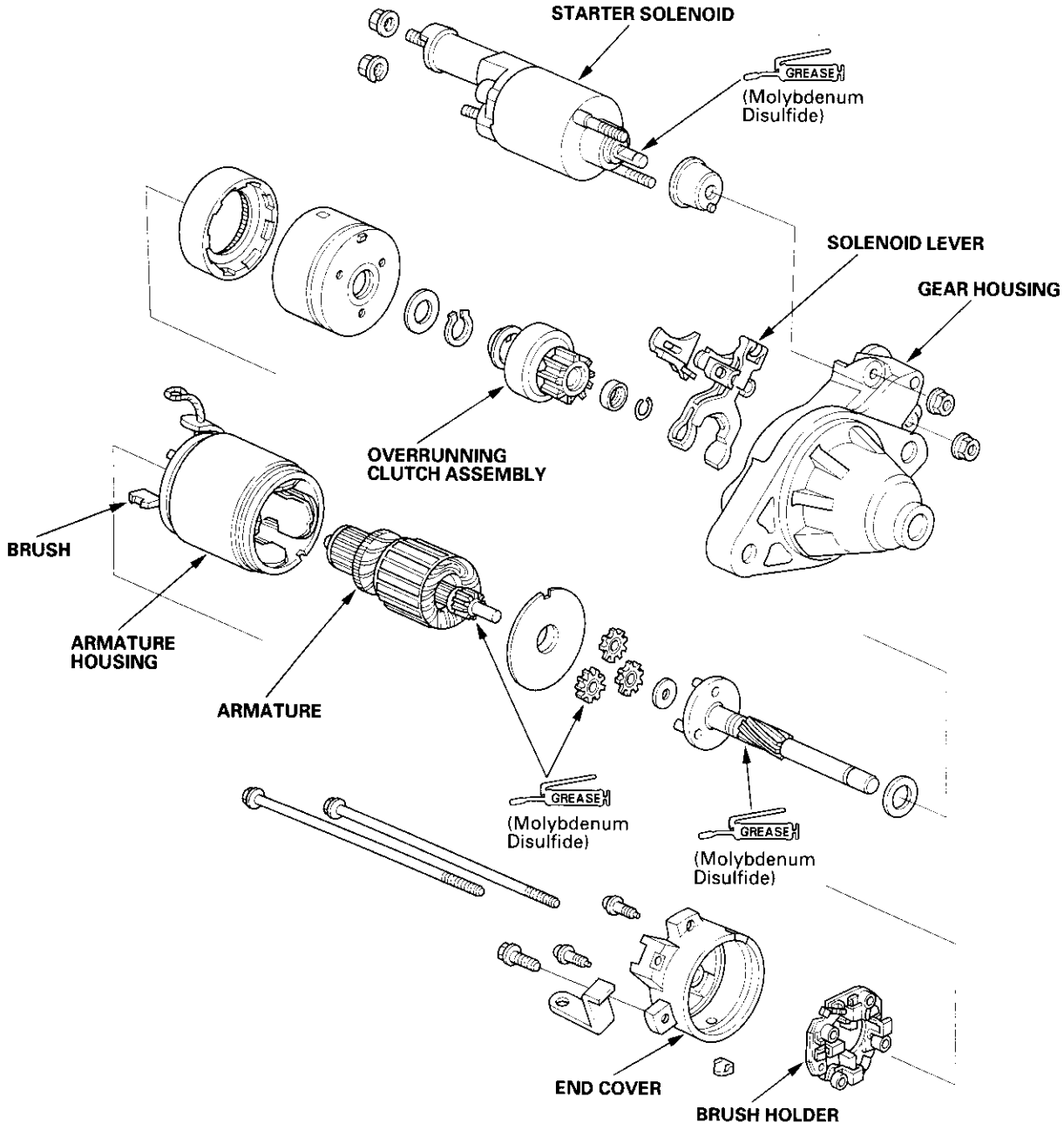
6. Remove the two bolts holding the starter, then remove the starter.
7. Install the starter in the reverse order of removal. Make sure the crimped side of the ring terminal (A) is facing out.



8. Connect the positive cable and negative cable to the battery.
9. Start the engine to make sure the starter operates properly.
10. Enter the anti-theft code for the radio, then enter the customer's radio station presets.
11. Set the clock.
12. Perform the engine control module (ECM) idle learn procedure (see page 11-139).

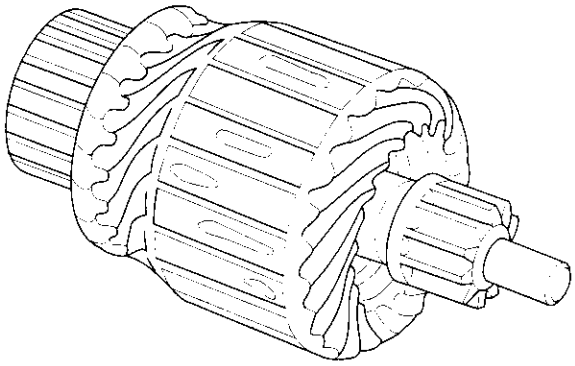
Starter Overhaul

Disassembly/Reassembly

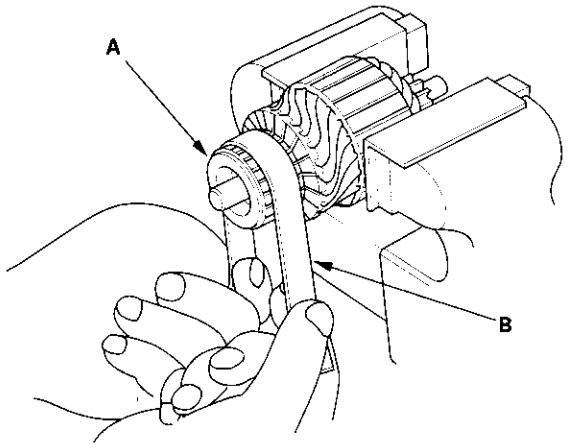


Armature Inspection and Test

1. Remove the starter (see page 4-9).
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.

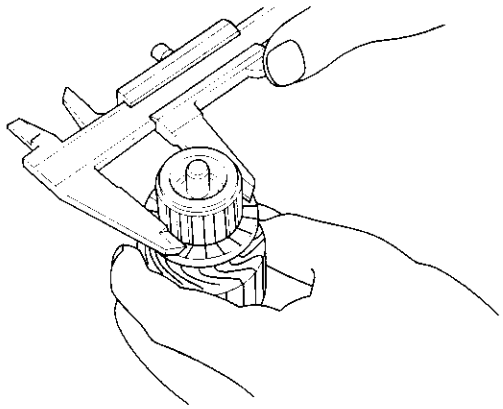


4. Check the commutator (A) surface. If the surface is dirty or burnt, resurface with emery cloth or a lathe within the specifications in step 5, or recondition with #500 or #600 sandpaper (B).



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

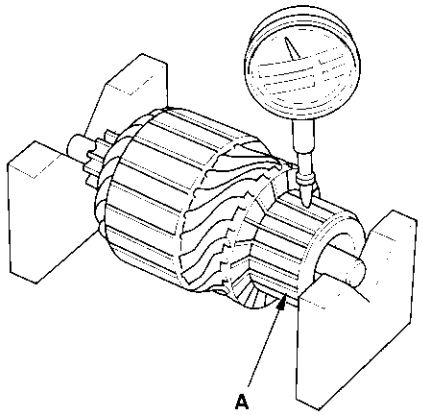
Commutator Diameter
Standard (New): 28.0 mm (1.10 in.)
Service Limit: 27.0 mm (1.06 in.)



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 (0.001 in.) max.
Service Limit: 0.05 mm (0.002 in.)

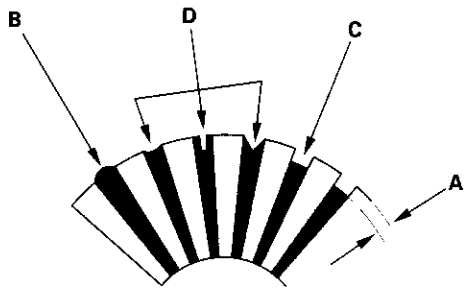


(cont'd)

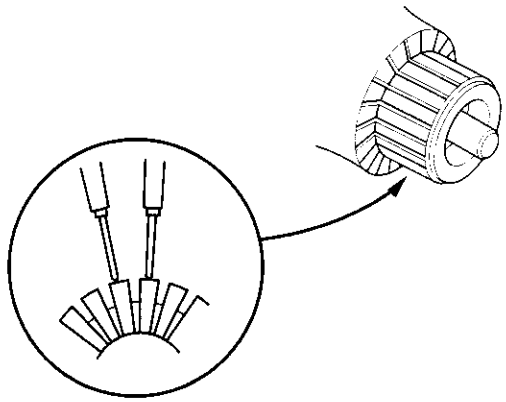
Starter Overhaul (cont'd)

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).

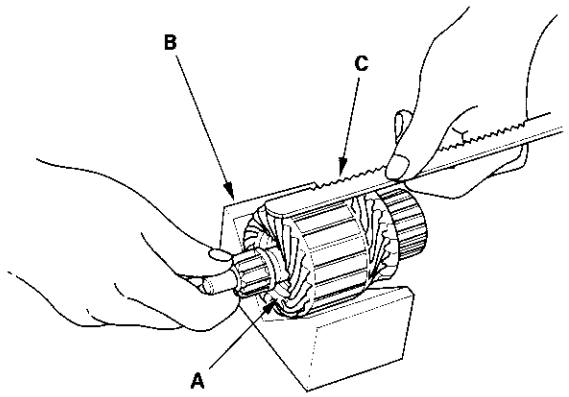
Commutator Mica Depth
Standard (New): 0.50—0.80 mm (0.020—0.031 in.)
Service Limit: 0.20 mm (0.008 in.)



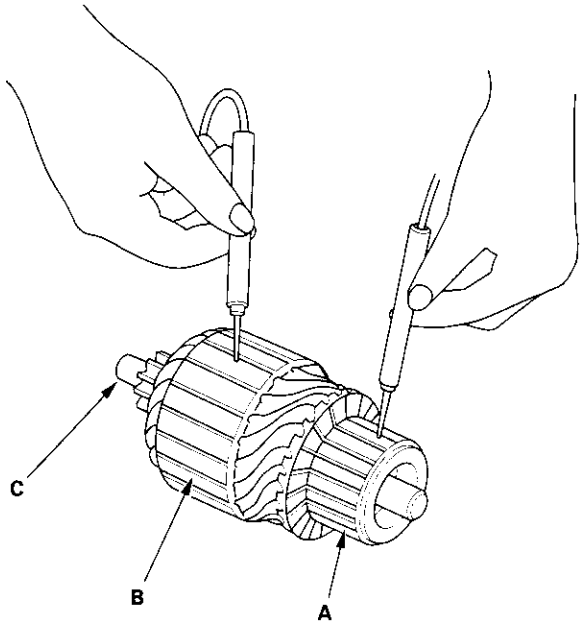
8. Check for continuity between the segments of the commutator. If an open circuit exists between any segments, replace the armature.



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.



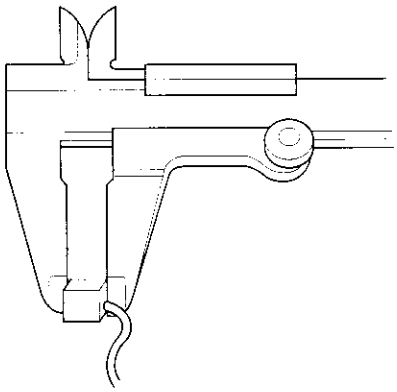
10. Check with an ohmmeter that no continuity exists between the commutator (A) and armature coil core (B), and between the commutator and armature shaft (C). If continuity exists, replace the armature.



Starter Brush Inspection

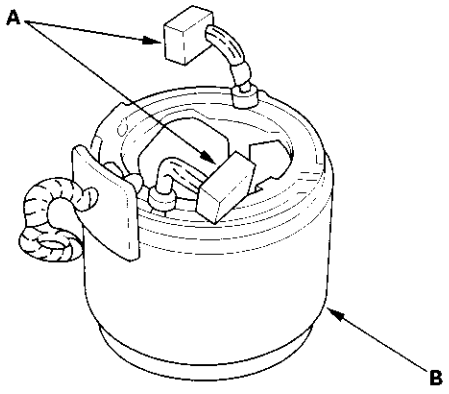
11. Measure the brush length. If it is not within the service limit, replace the brush holder assembly.

Brush Length
Standard (New): 14.0—14.5 mm (0.55—0.57 in.)
Service Limit: 9.0 mm (0.35 in.)



Starter Field Winding Test

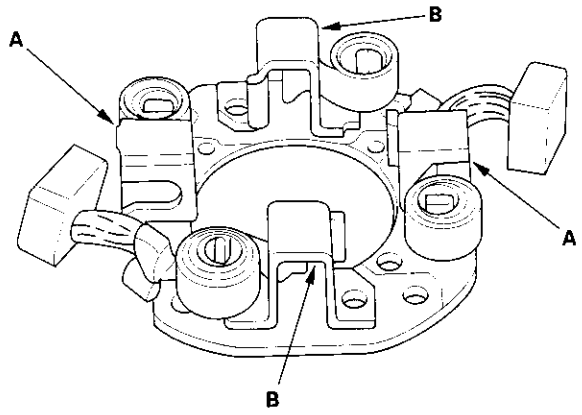
12. Check for continuity between the brushes (A). If there is no continuity, replace the armature housing (B).



13. Check for continuity between each brush (A) and the armature housing (B). If there is continuity, replace the armature housing.

Starter Brush Holder Test

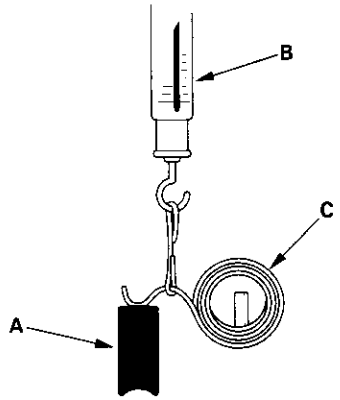
14. Check that there is no continuity between the (+) brush holder (A) and (—) brush holder (B). If there is continuity, replace the brush holder assembly.



Brush Spring Inspection

15. Insert the brush (A) into the brush holder, and bring the brush into contact with the commutator, then attach a spring scale (B) to the spring (C). Measure the spring tension at the moment the spring lifts off the brush. If the spring tension is not within specification, replace the spring.

Spring Tension: 13.7—17.7 N (1.40—1.80 kgf, 3.09—3.97 lbf)

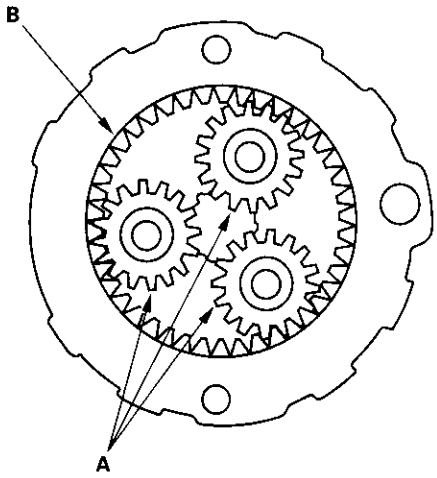


(cont'd)

Starter Overhaul (cont'd)

Planetary Gear Inspection

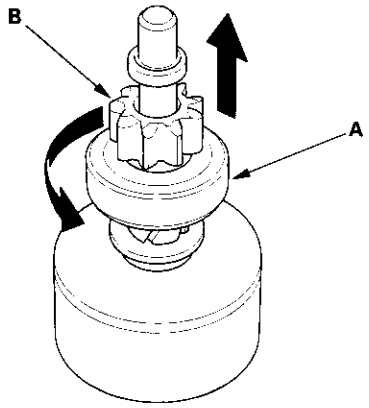
16. Check the planetary gears (A) and ring gear (B). Replace them if they are worn or damaged.



Overrunning Clutch Inspection

17. Slide the overrunning clutch along the shaft. Replace it if it does not slide smoothly.

18. Rotate the overrunning clutch (A) both ways. Does it lock in one direction and rotate smoothly in reverse? If it does not lock in either direction or it locks in both directions, replace it.

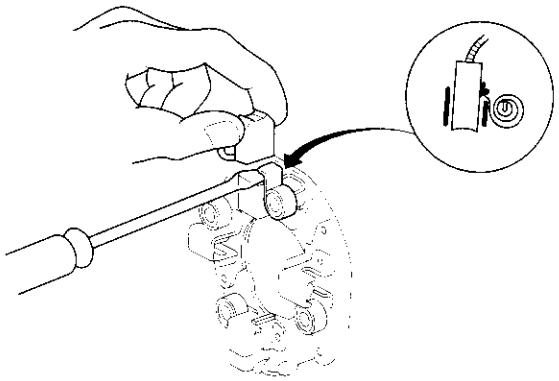


19. If the starter drive gear (B) is worn or damaged, replace the overrunning clutch assembly; the gear is not available separately.
Check the condition of the flywheel ring gear. Replace it if the starter drive gear teeth are damaged.

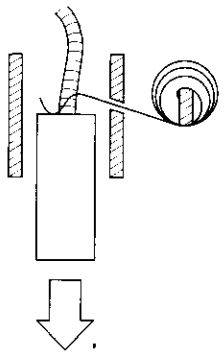
Starter Reassembly

20. Pry back each brush spring with a screwdriver, then position the brush about halfway out of its holder, and release the spring to hold it there.

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

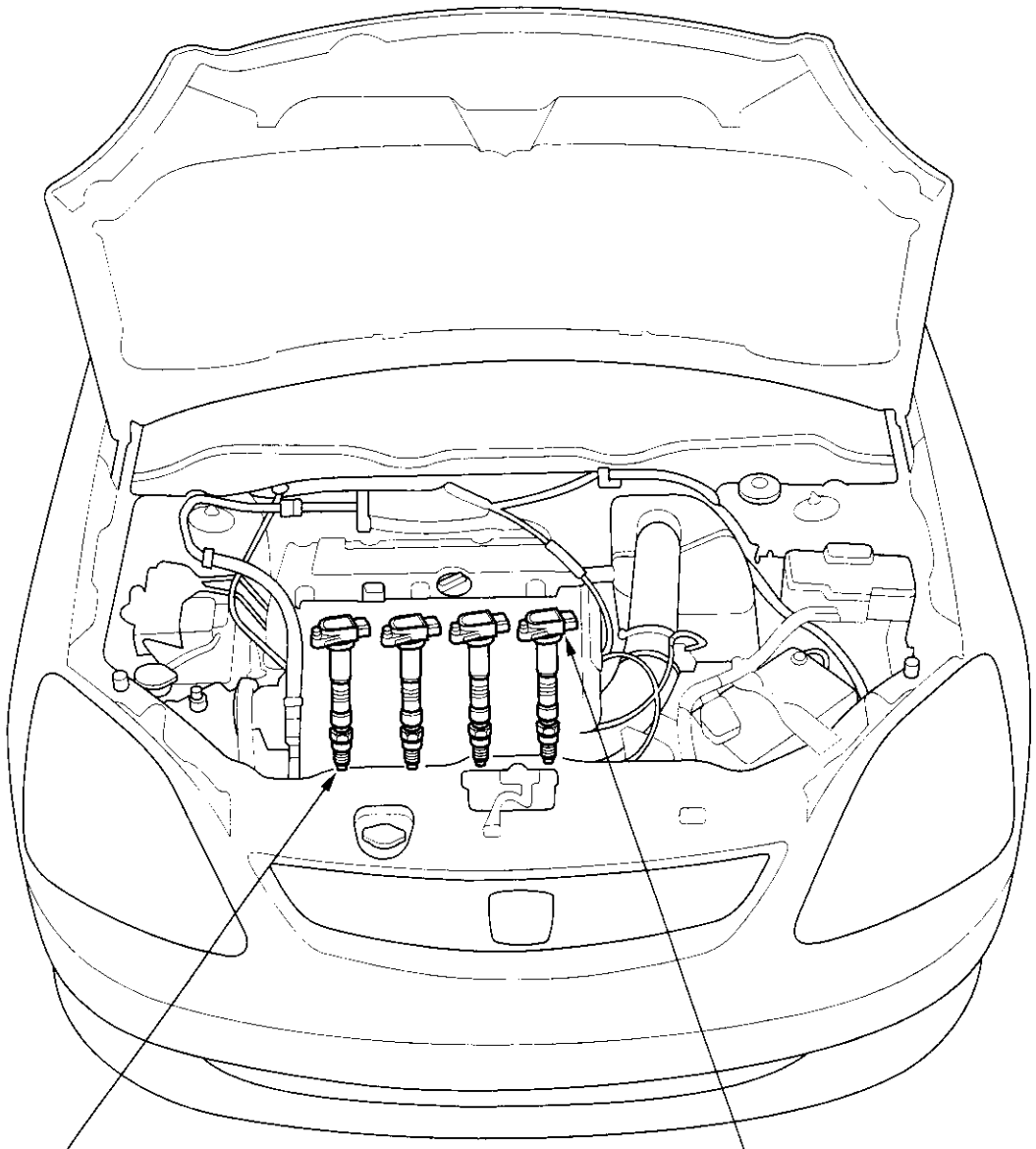


21. Install the armature in the housing, and install the brush holder. Next, pry back each brush spring again, and push the brush down until it seats against the commutator, then release the spring against the end of the brush.



22. Install the starter end cover to retain the brush holder.

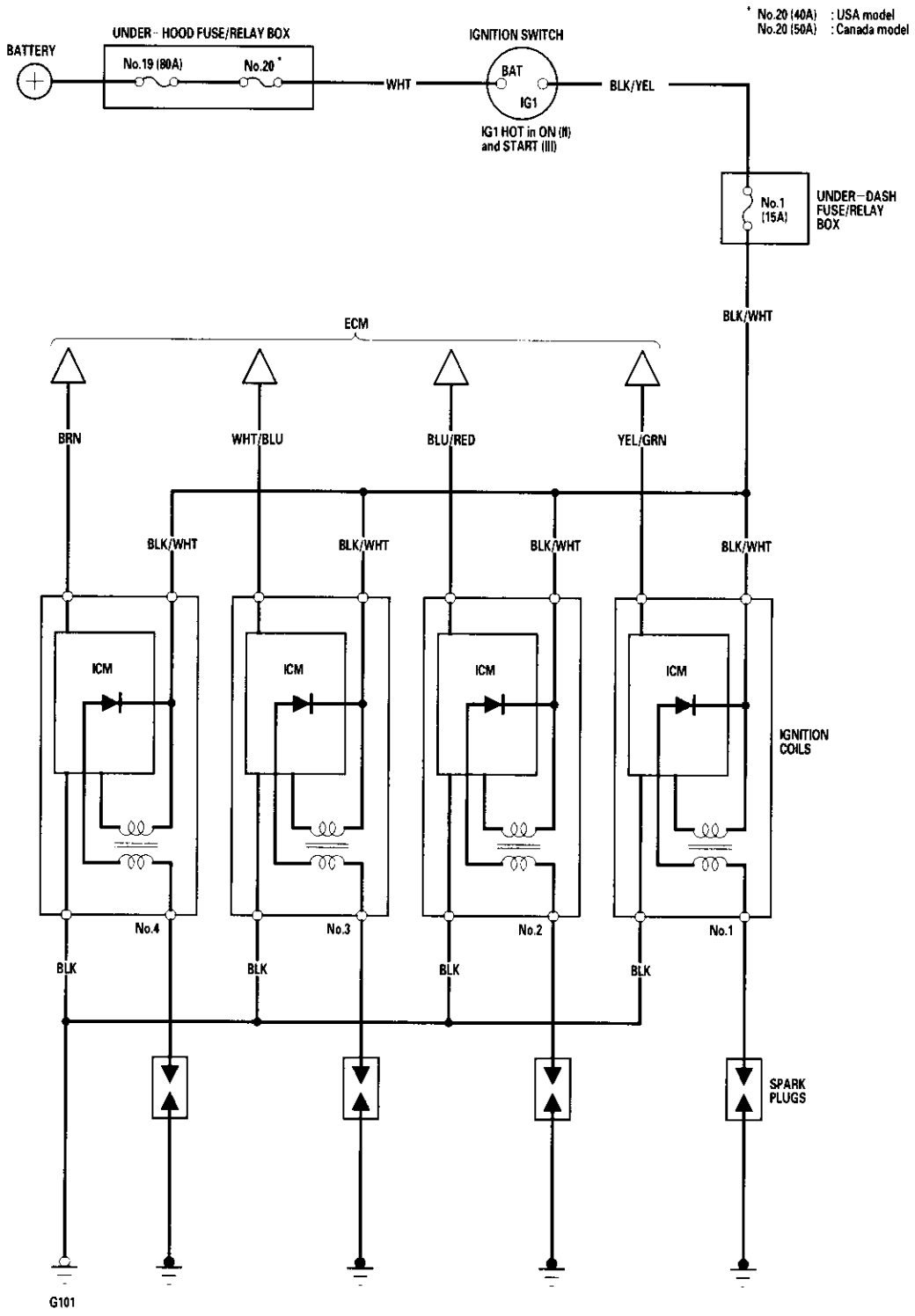
Component Location Index



SPARK PLUG
Inspection, page 4-19

IGNITION COIL
Ignition Timing Inspection, page 4-17
Removal/Installation, page 4-18

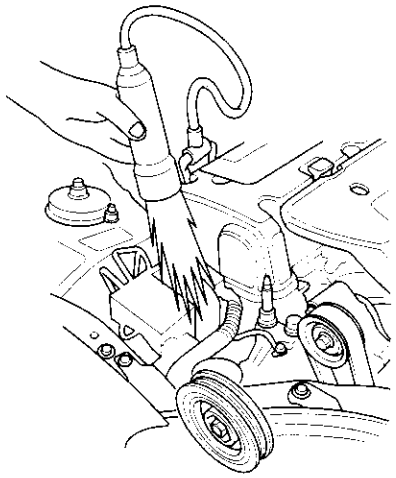
Circuit Diagram



ICM : Ignition Control Module

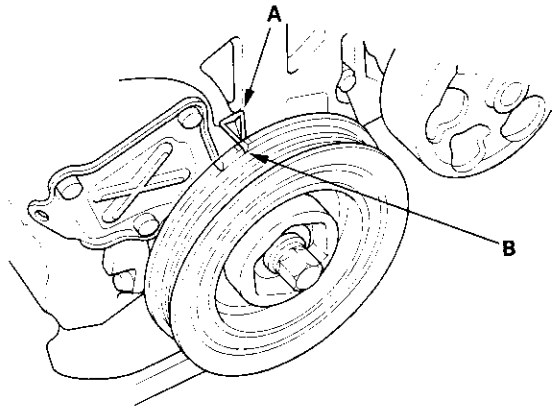
Ignition Timing Inspection

1. Connect the Honda PGM Tester to the data link connector (DTC), and check for DTC's. If a DTC is present, diagnose and repair the cause before inspecting the ignition timing.
2. Start the engine. Hold the engine at 3,000 rpm with no load (in Neutral) until the radiator fan comes on, then let it idle.
3. Check the idle speed (see page 11-138).
4. Follow the tester's prompts in the "SCS" menu (see the tester operator's manual).
5. Connect the timing light to the service loop.



6. Point the light toward the pointer (A) on the cam chain case. Check the ignition timing under no load conditions: headlights, blower fan, rear window defogger, and air conditioner are not operating. If the ignition timing differs from the specification, and there are no engine control module (ECM)DTCs, replace the ECM (see page 11-4).

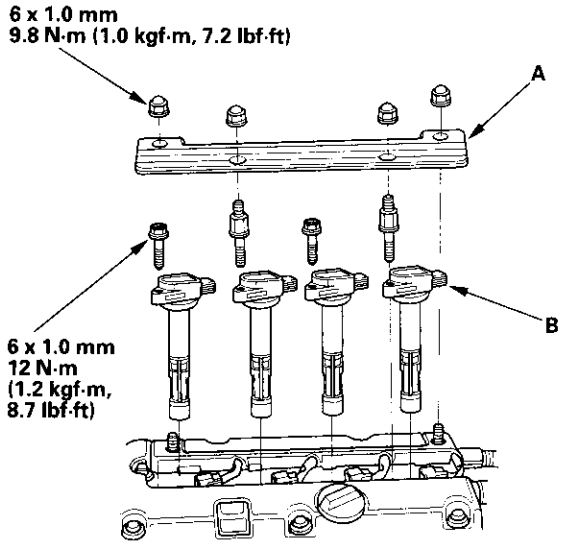
Ignition Timing:
8° ± 2° BTDC (RED mark (B)) during idling in neutral



7. Turn the ignition switch OFF.
8. Disconnect the Honda PGM Tester and the timing light.

Ignition Coil Removal/Installation

1. Remove the ignition coil cover (A), then remove the ignition coils (B).



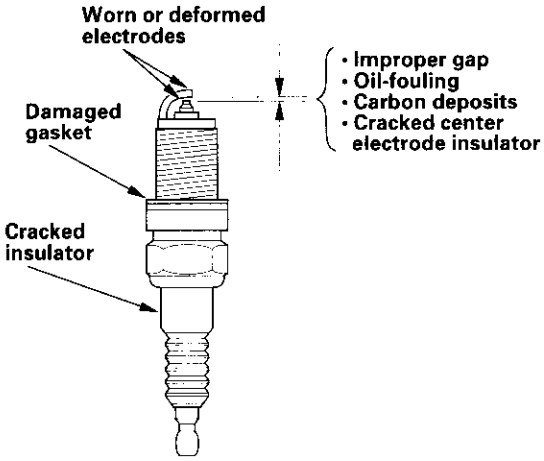
2. Install the ignition coils in the reverse order of removal.

Spark Plug Inspection

1. Inspect the electrodes and ceramic insulator.

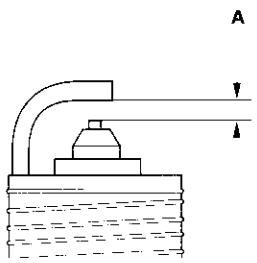
   Burned or worn electrodes may be caused by:
   - Advanced ignition timing
   - Loose spark plug
   - Plug heat range too hot
   - Insufficient cooling

   Fouled plug may be caused by:
   - 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



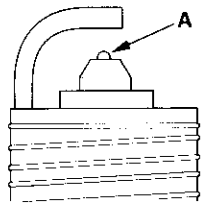
2. Do not adjust the gap of iridium tip plugs (A); replace the spark plug if the gap is out of specification.

   Electrode Gap:
   Standard (New): 1.0—1.1 mm (0.039—0.043 in.)
   Service Limit: 1.3 mm (0.051 in.)



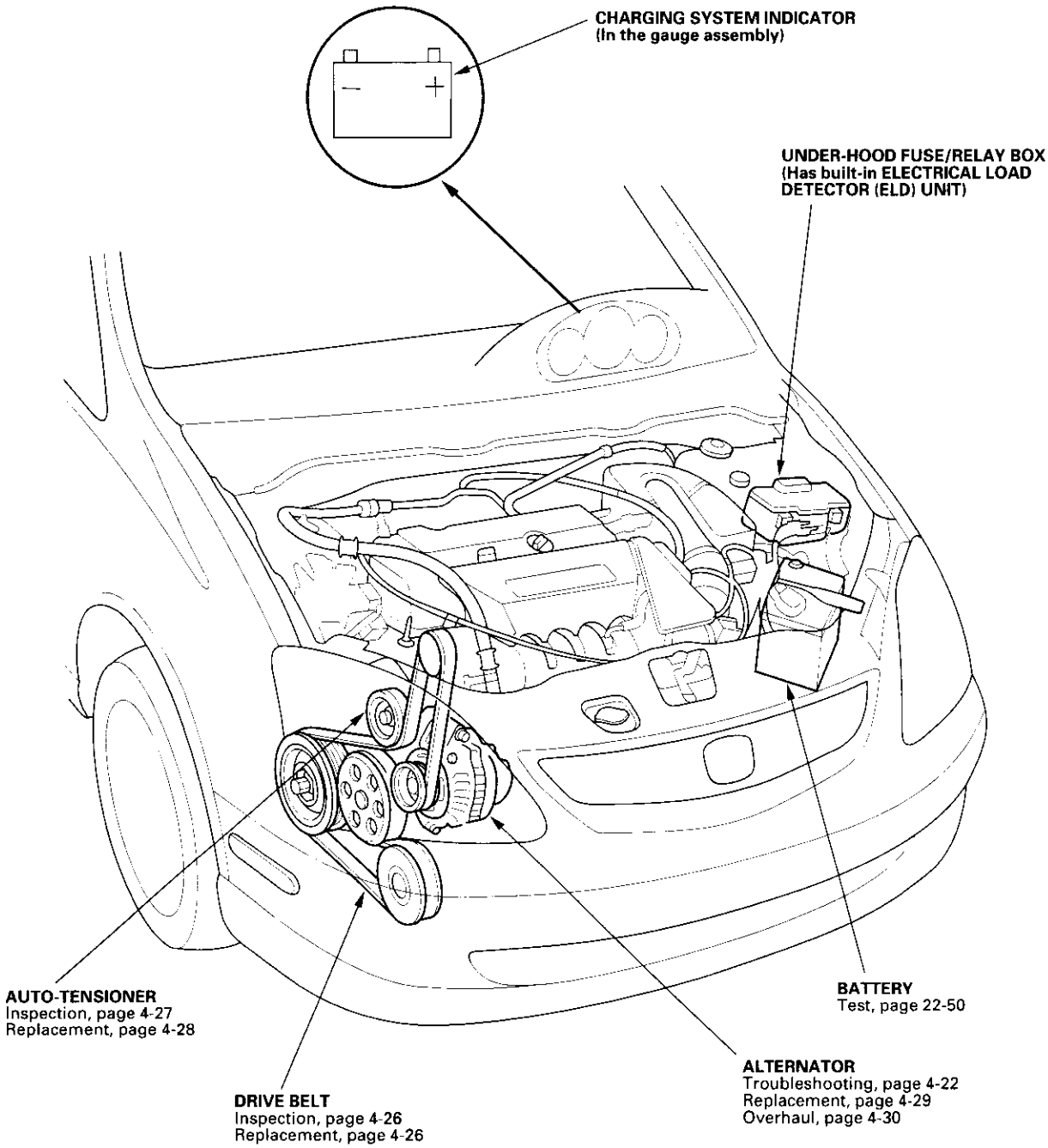
3. Replace the plug at the specified interval, or if the center electrode is rounded (A). Use only the spark plugs listed below.

   Spark Plugs: IZFR6K11 (NGK)
   SKJ20DR-M11 (DENSO)

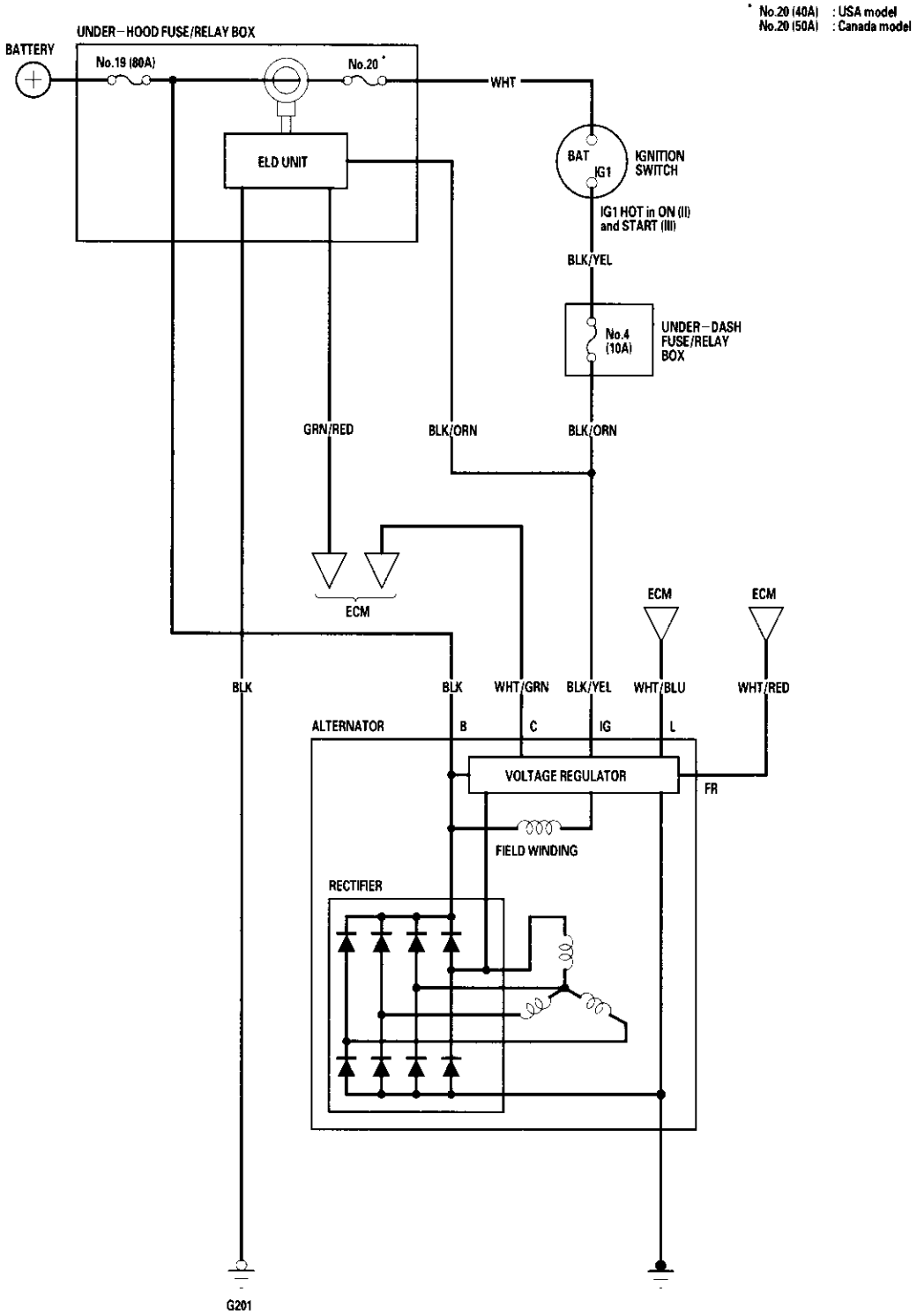


4. Apply a small quantity of anti-seize compound to the plug threads, and screw the plugs into the cylinder head finger-tight. Then torque them to 18 N·m (1.8 kgf·m, 13 lbf·ft).

Component Location Index



Circuit Diagram



Charging Circuit Troubleshooting

If the charging system indicator does not come on or does not go off, or the battery is dead or low, test these items in the order listed below:

Battery (see page 22-50)
Charging system indicator
Alternator and regulator circuit
Alternator control system

Charging System Indicator Test

1. Turn the ignition switch ON (II).

   Does the charging system indicator come on?

   YES—Go to step 2.

   NO—Go to step 3.

2. Start the engine.

   Does the charging system indicator go off?

   YES—Charging system indicator circuit is OK. Go to the Alternator and Regulator circuit Test.■

   NO—Go to step 3.

3. Turn the ignition switch OFF.

4. Troubleshoot the multiplex control system (see page 22-172).

   Is the multiplex control system OK?

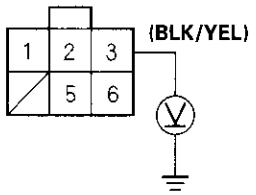
   YES—Go to step 5.

   NO—Check the multiplex control system as indicated by the diagnostic trouble code (DTC) (see step 8 on page 22-172).■

5. Disconnect the engine wire harness 6P connector from the starter sub harness 6P connector.

6. Measure the voltage at the No. 3 terminal of the engine wire harness 6P connector with the ignition switch ON (II).

ENGINE WIRE HARNESS 6P CONNECTOR



Wire side of female terminals

Is there battery voltage?

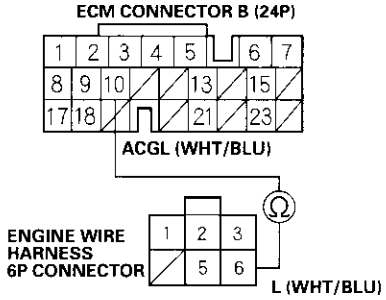
YES—Go to step 7.

NO—Check for a blown No.4 (10A) fuse in the under-dash fuse/relay box. If the fuse is OK, repair open in the wire between the alternator and the under-dash fuse/relay box.■

7. Turn the ignition switch OFF.

8. Disconnect engine control module (ECM) connector B (24P).

9. Check continuity between the ECM connector terminal B10 and engine wire harness 6P connector terminal No. 6.



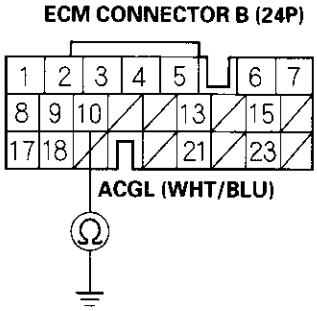
Wire side of female terminals

Is there continuity?

YES—Go to step 10.

NO—Repair open in the wire between the alternator and the ECM.■

10. Check continuity between the ECM connector terminal B10 and body ground.



Wire side of female terminals

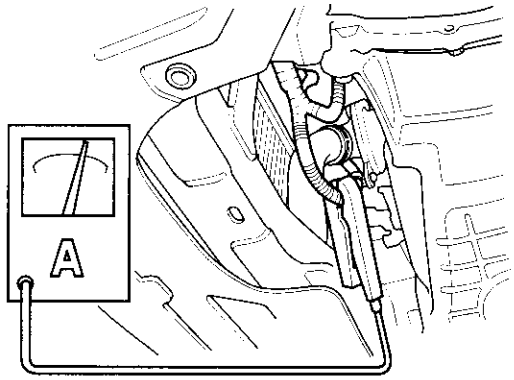
Is there continuity?

YES—Repair short to ground in the wire between the ECM and the engine wire harness 6P connector. ■

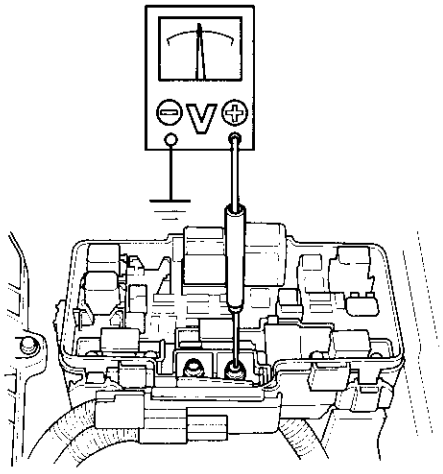
NO—Go to alternator and regulator test.

Alternator and Regulator Circuit Test

1. Be sure the battery is sufficiently charged and in good condition (see page 22-50), and the connections at the fuse box and alternator are clean and tight.
2. Raise the hoist to full height.
3. Hook up the ammeter, 0—400 A, to the starter sub harness.



4. Lower the hoist.
5. Hook up the voltmeter, 0—20 V (accurate within 0.1 V), to T101.



(cont'd)

Charging Circuit Troubleshooting (cont'd)

6. Start the engine. Hold the engine at 3,000 rpm with no load (in Neutral) until the radiator fan comes on, then let it idle.

7. Raise the engine speed to 2,000 rpm, and hold it there.

8. Turn the headlights (high beam) on, and measure voltage at the under-hood fuse/relay box terminal.

   Is the voltage between 13.9 and 15.1 V?

   YES—Go to step 9.

   NO—Repair or replace the alternator components (see page 4-30).■

9. Read the amperage at 13.5 V.

   NOTE: Adjust the voltage by turning the blower motor, rear window defogger, brake lights, etc. ON.

   Is the amperage 60A or more?

   YES—Alternator/regulator operation is OK.■

   NO—Repair or replace the alternator components (see page 4-30).■

Alternator Control System Test

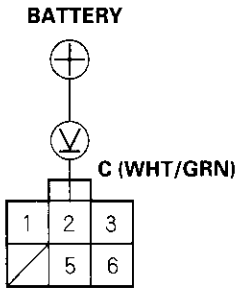
NOTE: After troubleshooting, perform the engine control module (ECM) idle learn procedure (see page 11-139).

1. Check for proper operation of the electrical load detector (ELD) by checking the malfunction indicator lamp (MIL) (see page 11-3). If a DTC is present, diagnose and repair the cause before continuing with this test.

2. Disconnect the engine wire harness 6P connector from the starter sub harness 6P connector.

3. Start the engine, and turn the headlights (high beam) ON.

4. Measure voltage between the engine wire harness 6P connector terminal No. 2 and the positive terminal of the battery.



ENGINE WIRE HARNESS 6P CONNECTOR

Wire side of female terminals

Is there 1 V or less?

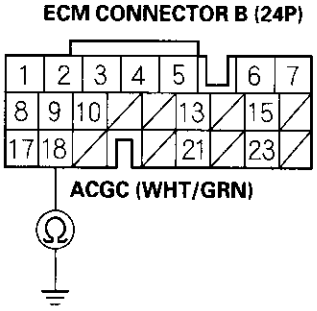
YES—Go to step 8.

NO—Go to step 5.

5. Turn the headlights and ignition switch OFF.

6. Disconnect ECM connector B (24P).

7. Check for continuity between ECM connector terminal B18 and body ground.



Wire side of female terminals

Is there continuity?

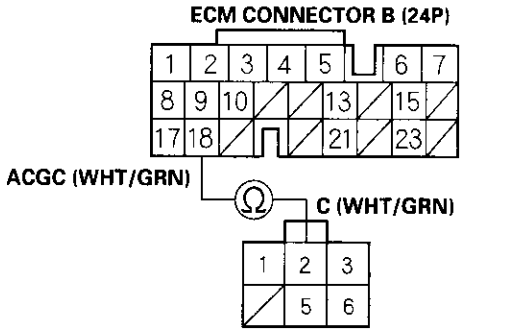
YES—Repair short to ground in the wire between the alternator and the ECM.■

NO—Check that the terminals are firmly seated at the ECM connector B. If OK, substitute a known-good ECM, and recheck (see page 11-6).
If prescribed voltage is now available, replace the original ECM.■

8. Turn the headlights and ignition switch OFF.

9. Disconnect ECM connector B (24P).

10. Check for continuity between ECM connector terminal B18 and engine wire harness 6P connector terminal No. 2.



Wire side of female terminals

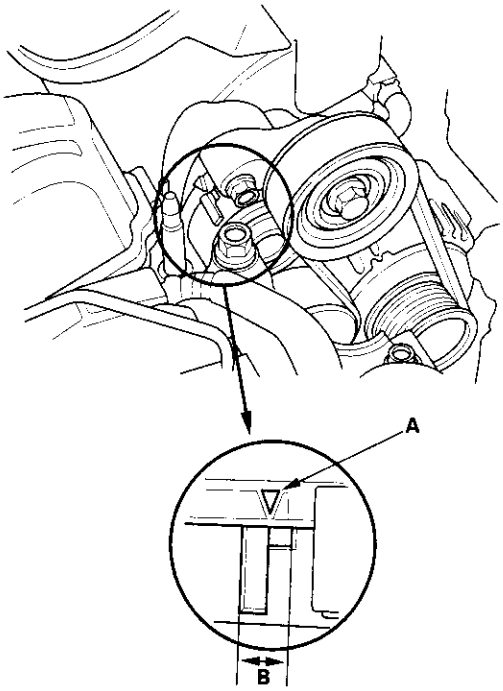
Is there continuity?

YES—Repair or replace the starter subharness or the alternator (see page 4-30).■

NO—Repair open in the wire between the alternator and the ECM.■

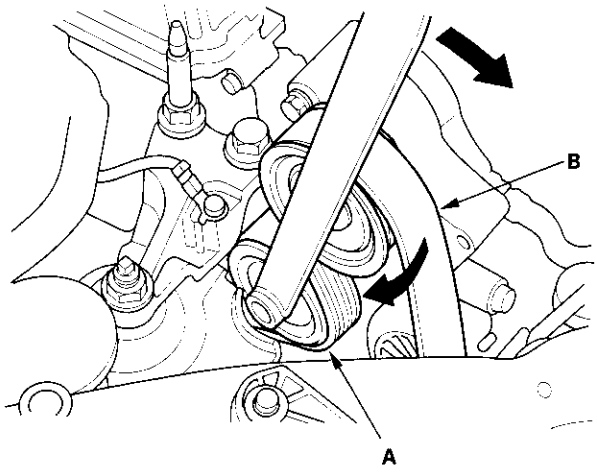
Drive Belt Inspection

Check that 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 4-26).



Drive Belt Replacement

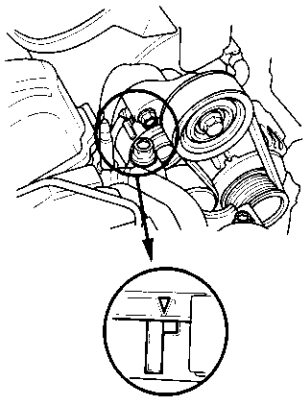
1. Move the auto-tensioner (A) to relieve tension from the drive belt (B), and remove the drive belt.



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

Drive Belt Auto-tensioner Inspection

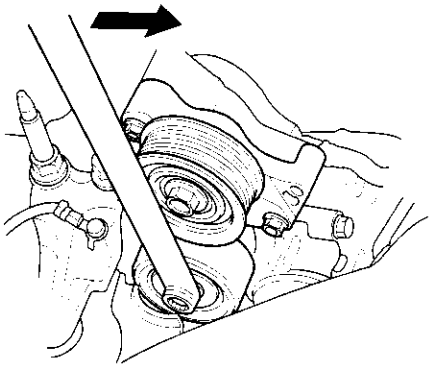
1. Check whether there is a change in the position of the auto-tensioner indicator before starting the engine and after starting the engine. If there is a change in the position, replace the auto-tensioner.



2. Check for abnormal noise from the tensioner pulley. If abnormal noise is heard, replace the tensioner pulley.

3. Remove the drive belt (see page 4-26).

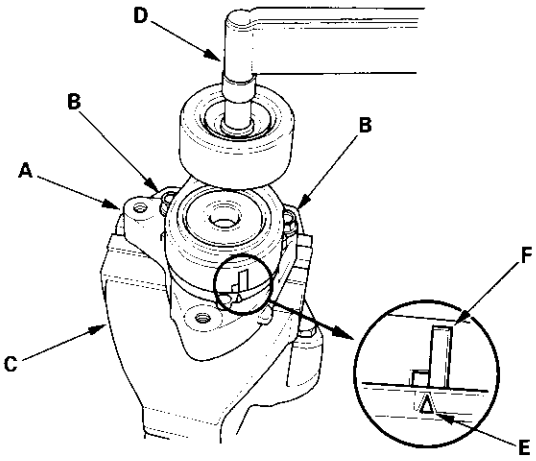
4. Move the auto-tensioner within its limit with the belt tension release tool in the direction shown. Check that the tensioner moves smoothly and without any abnormal noise. If the tensioner does not move smoothly or there is abnormal noise, replace the auto-tensioner.



5. Remove the auto-tensioner (see page 4-28).

6. Install the tensioner pulley.

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.

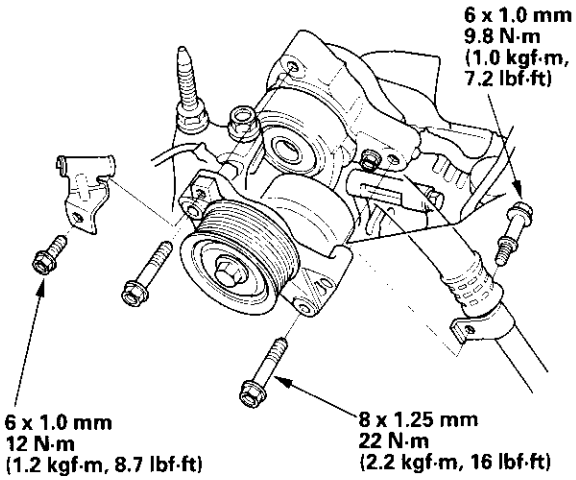
9. Align the indicator (E) on the tensioner base with center mark (F) on the tensioner arm by using the torque wrench, and measure the torque. If the torque value is out of specification, replace the auto-tensioner.
   NOTE: If the indicator exceeds the center mark, recheck the torque.

   Auto-tensioner spring torque:
   26.5—36.3 N·m (2.7—3.7 kg·m, 19.5—26.8 lbf·ft)

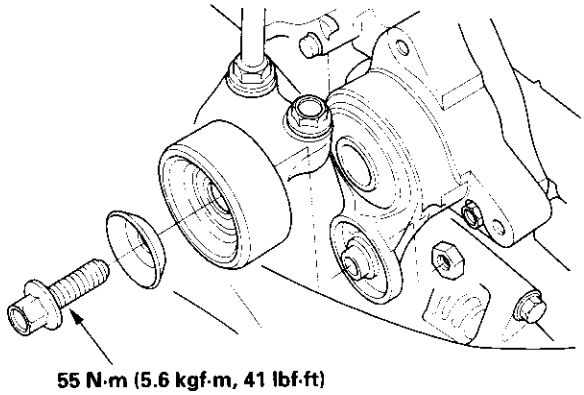
Drive Belt Auto-tensioner Replacement

1. Remove the drive belt (see page 4-26).

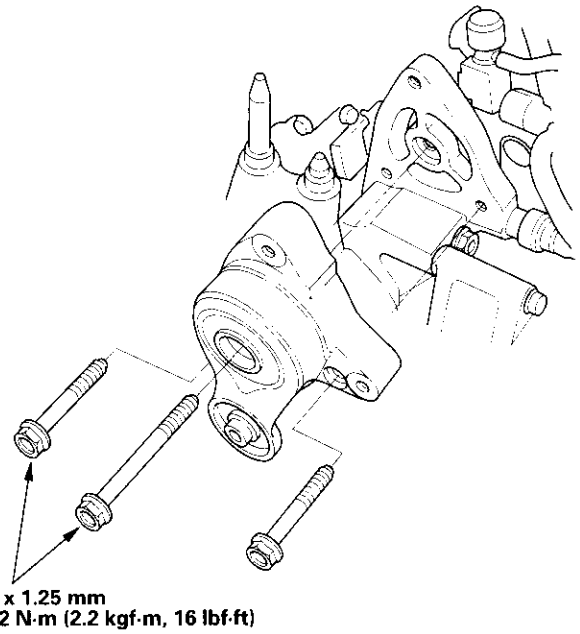
2. Remove the idler pulley.



3. Remove the tensioner pulley.



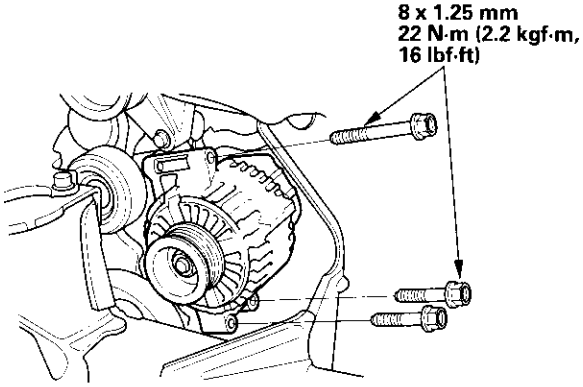
4. Remove the auto-tensioner.



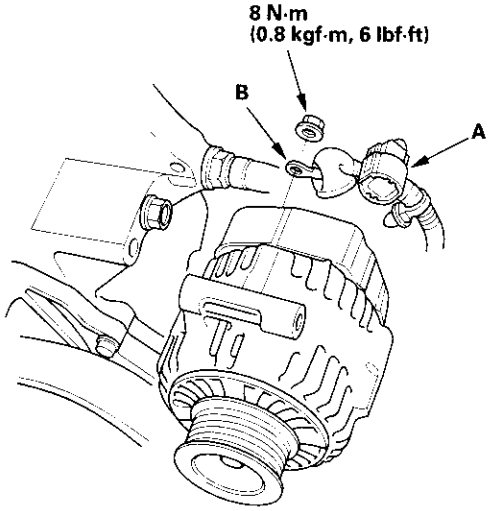
5. Install in the reverse order of removal.

Alternator Replacement

1. Make sure you have the anti-theft code for the radio, then write down the frequencies for the radio's preset buttons.
2. Disconnect the negative cable from the battery first, then disconnect the positive cable.
3. Remove the front bumper (see page 20-85).
4. Remove the right side headlight (see page 22-79).
5. Remove the reserve tank from the bracket.
6. Remove the drive belt (see page 4-26).
7. Remove the three bolts securing the alternator.



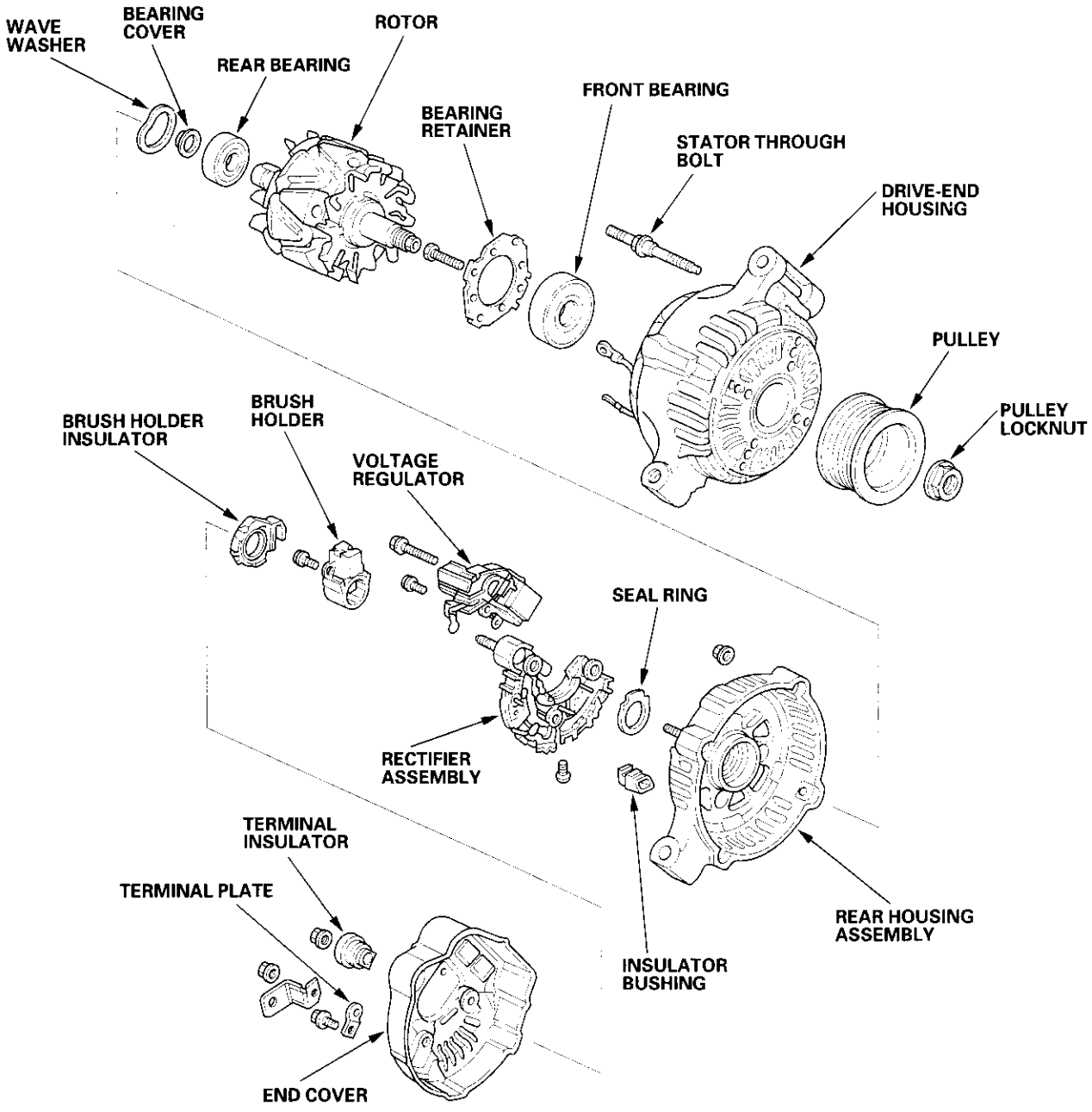
8. Disconnect the alternator connector (A) and BLK wire (B) from the alternator.



9. Remove the alternator.
10. Install the alternator and drive belt in the reverse order of removal.
11. Connect the positive cable and negative cable to the battery.
12. Enter the anti-theft code for the radio, then enter the customer's radio station presets.
13. Set the clock.
14. Perform the engine control module (ECM) idle learn procedure (see page 11-139).

Alternator Overhaul

Exploded View



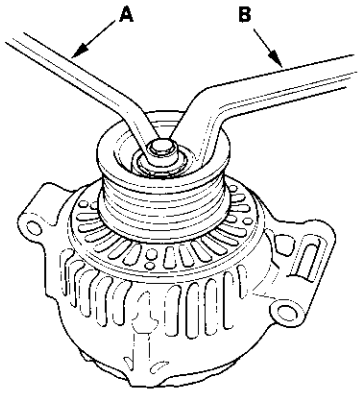
Special Tools Required
- Driver 07749-0010000
- Attachment, 52 x 55 mm 07746-0010400

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

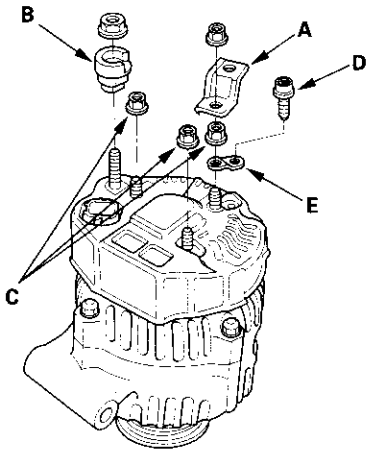
1. Test the alternator and regulator before you remove them (see page 4-22).

2. Remove the alternator (see page 4-29).

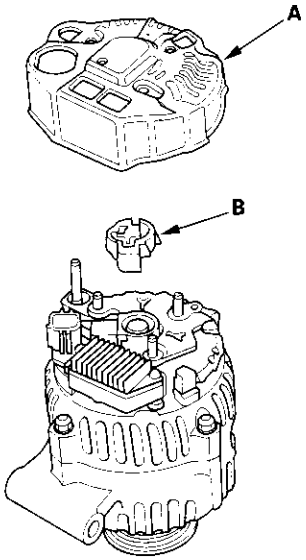
3. If the front bearing needs replacing, remove the pulley locknut with a 10 mm wrench (A) and a 22 mm wrench (B). If necessary, use an impact wrench.



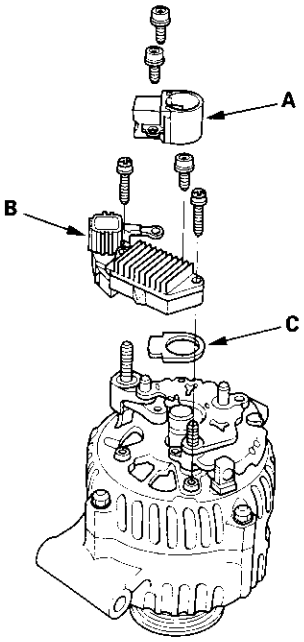
4. Remove the harness bracket (A), insulator (B), three flange nuts (C), and the screw (D), then remove the plate terminal (E).



5. Remove the end cover (A) and dust seal (B).



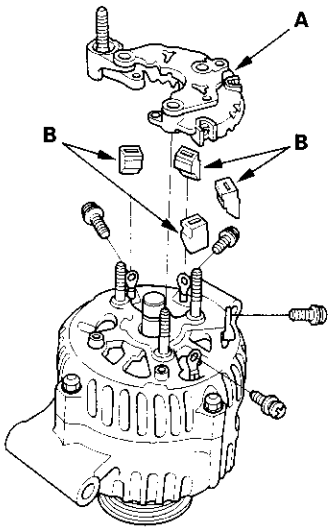
6. Remove the brush holder (A), voltage regulator (B), and the rubber seal (C).



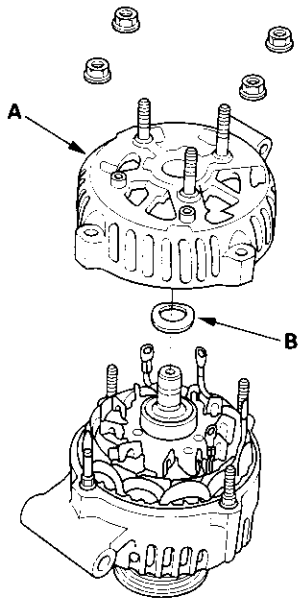
(cont'd)

Alternator Overhaul (cont'd)

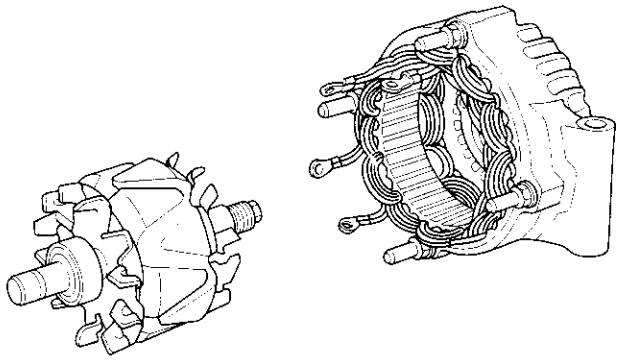
7. Remove the four screws, then remove the rectifier (A) and four insulators (B).



8. Remove the four flange nuts, then remove the rear housing (A) and washer (B).



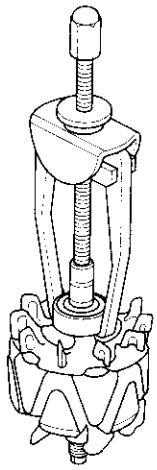
9. If you are not replacing the front bearing and/or rear bearing, go to step 16. Remove the rotor from the stator drive end housing.



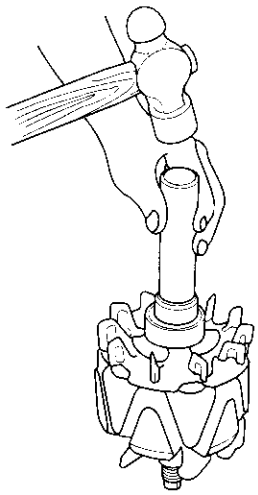
10. Inspect the rotor shaft for scoring, and inspect the bearing journal surface in the stator housing for seizure marks.

    - If either the rotor or stator housing is damaged, replace the alternator.
    - If both the rotor and the stator housing are OK, go to step 11.

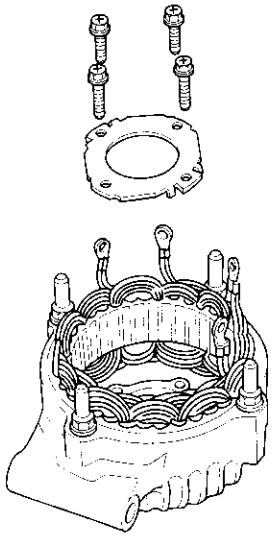
11. Remove the rear bearing using a puller as shown.



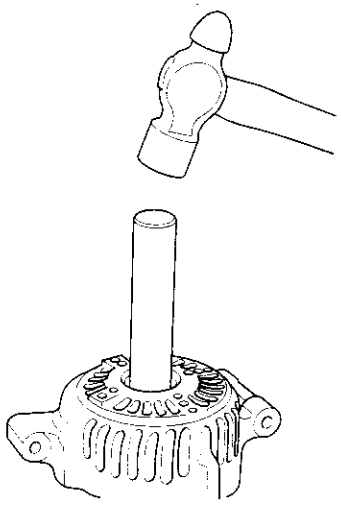
12. With a hammer and commercially available tools shown, install a new rear bearing on the rotor shaft. NOTE: Install the bearing using the inner race.



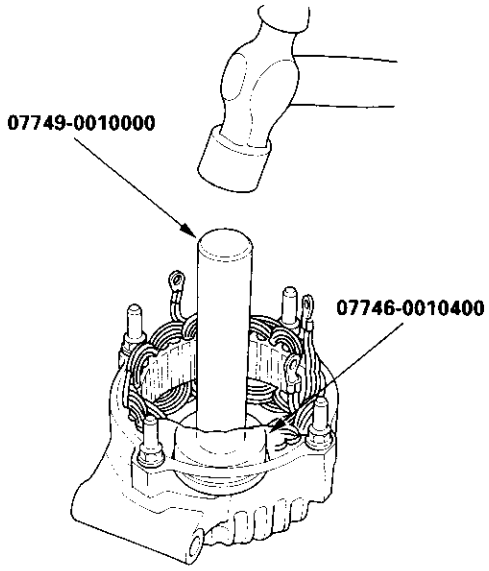
13. Remove the front bearing retainer plate.



14. Support the stator housing in a vise, and drive out the front bearing with a brass drift and hammer.



15. With a hammer and the special tools, install a new front bearing in the stator housing.



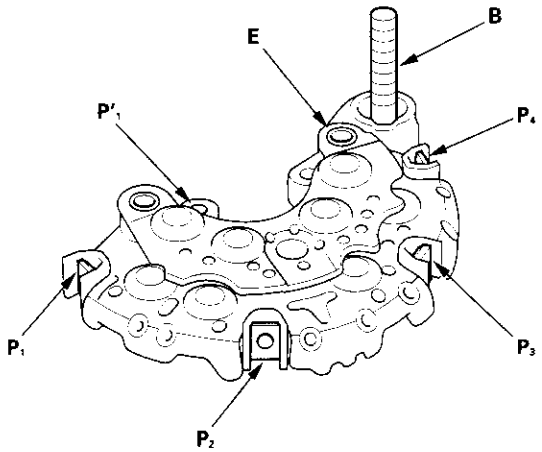
(cont'd)

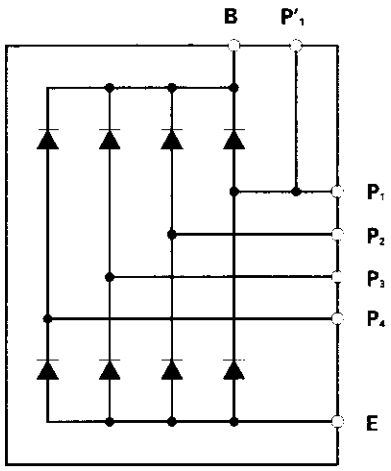
Alternator Overhaul (cont'd)

Rectifier Test

16. Check for continuity in each direction, between the B terminal and P terminals, and between the E terminal and P terminals of each diode pair. All diodes should have continuity in only one direction. Because the rectifier diodes are designed to allow current to pass in one direction, and the rectifier is made up of eight diodes (four pairs), you must test each diode in both directions for continuity with an ohmmeter that has diode checking capability: a total of 16 checks.

    - If any diode is faulty, replace the rectifier assembly. (Diodes are not available separately.)
    - If all the diodes are OK, go to step 17.



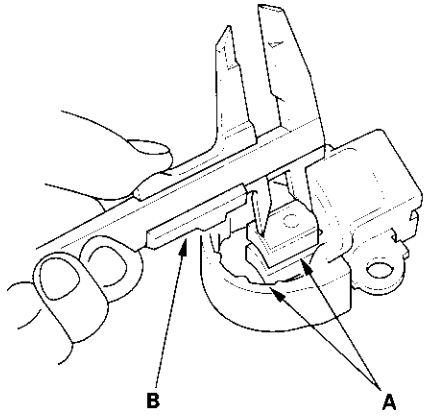


Alternator Brush Inspection

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

    - If either brush is shorter than the service limit, replace the brush assembly.
    - If brush length is OK, go to step 18.

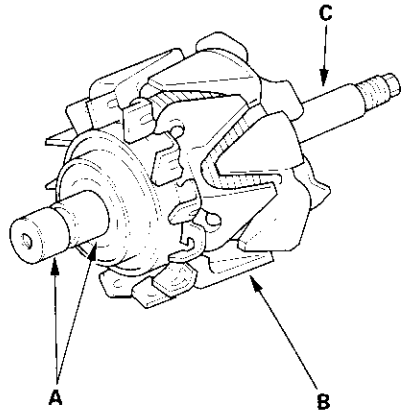
    Alternator Brush Length:
    Standard (New): 10.5 mm (0.41 in.)
    Service Limit: 1.5 mm (0.06 in.)



Rotor Slip Ring Test

18. Check that there is continuity between the slip rings (A).

    - If there is continuity, go to step 19.
    - If there is no continuity, replace the alternator.



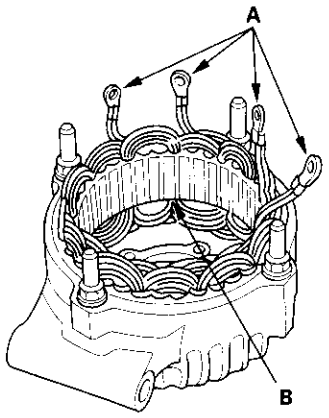
19. Check that there is no continuity between each slip ring and the rotor (B) and the rotor shaft (C).

    - If there is no continuity, go to step 20.
    - If there is continuity, replace the alternator.

Stator Test

20. Check that there is continuity between each pair of leads (A).

    - If there is continuity, go to step 21.
    - If there is no continuity, replace the alternator.



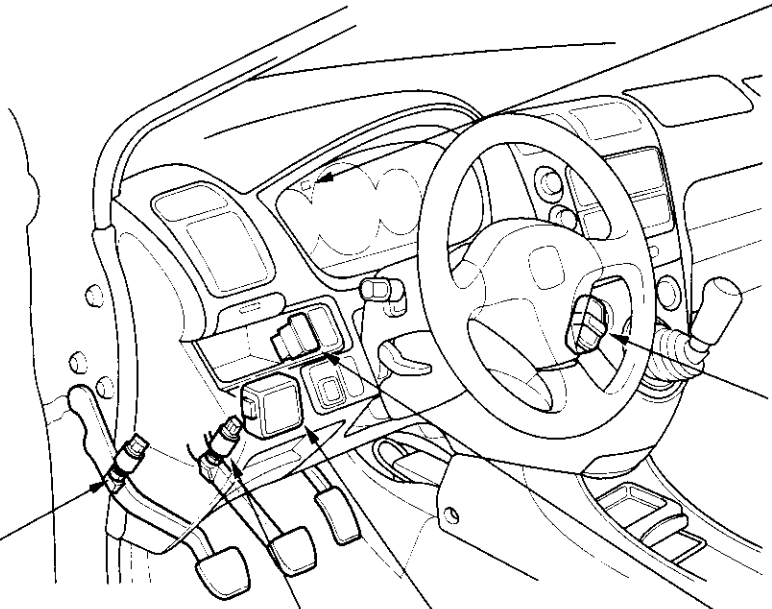
21. Check for no continuity between each lead and the coil core (B).

    - If there is no continuity, go to step 22.
    - If there is continuity, replace the alternator.

22. Assemble the alternator in reverse order of disassembly, and note these items:

    - Be careful not to get any grease or oil on the slip rings.
    - If you removed the pulley, tighten its locknut to 111 N·m (11.3 kgf·m, 81.7 lbf·ft) when you install it.

Component Location Index



CRUISE CONTROL INDICATOR
(Built into gauge assembly)

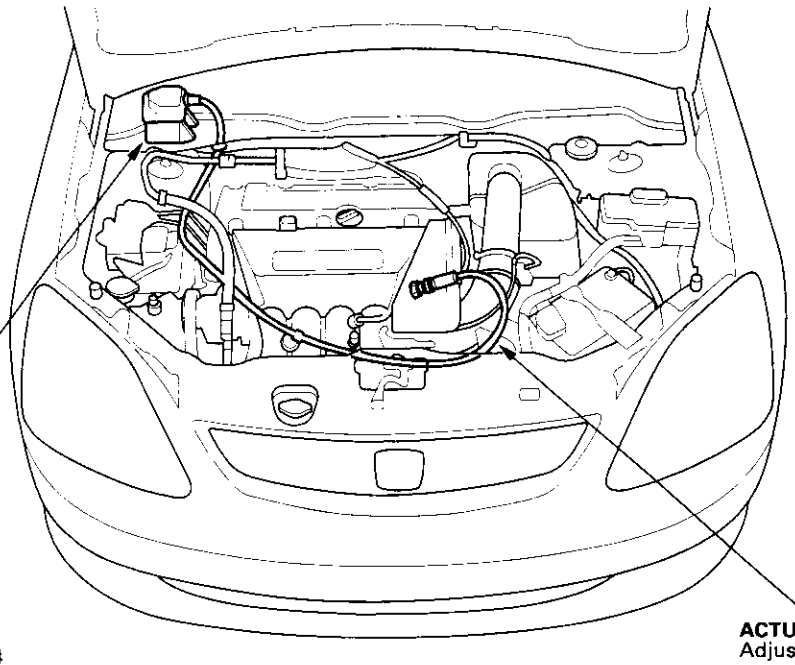
CRUISE CONTROL SET/RESUME/CANCEL SWITCH
Test/Replacement, page 4-42

CLUTCH PEDAL POSITION SWITCH
Test, page 4-45
Clutch Pedal Adjustment, page 12-4

CRUISE CONTROL UNIT
Input Test, page 4-40

BRAKE PEDAL POSITION SWITCH
Test, page 22-84
Pedal Height Adjustment, page 19-6

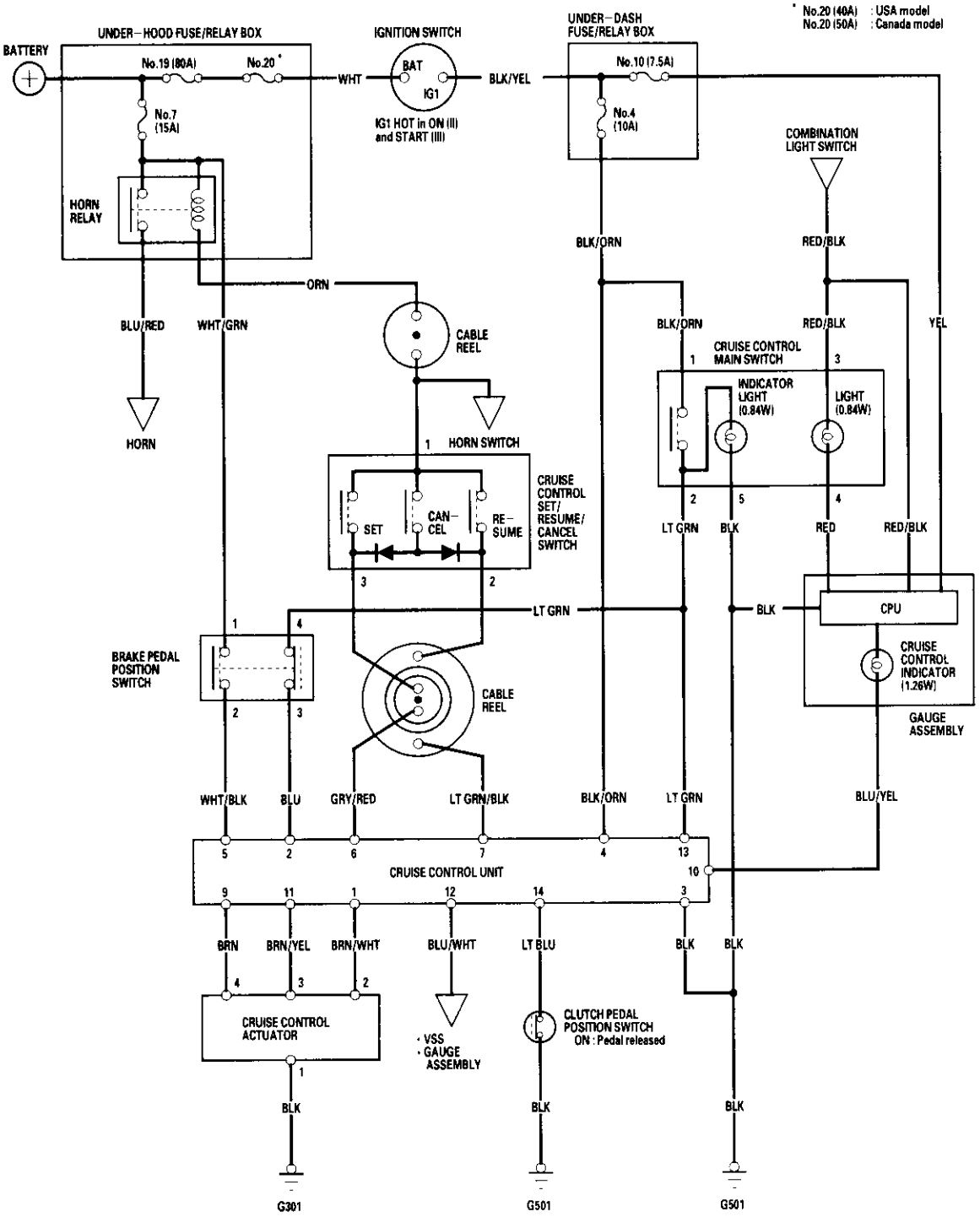
CRUISE CONTROL MAIN SWITCH
Test/Replacement, page 4-42



CRUISE CONTROL ACTUATOR
Test, page 4-43
Replacement, page 4-44

ACTUATOR CABLE
Adjustment, page 4-45

Circuit Diagram



Symptom Troubleshooting Index

NOTE:
- The numbers in the table show the troubleshooting sequence.
- Before troubleshooting,
  - check the No. 10 (7.5A) and No. 4 (10A) fuses in the under-dash fuse/relay box, and the No. 7 (15A) fuse in the under-hood fuse/relay box.
  - check that the horn sounds.
  - check the tachometer to see if it works properly.
  - check the speedometer to see if it works properly.

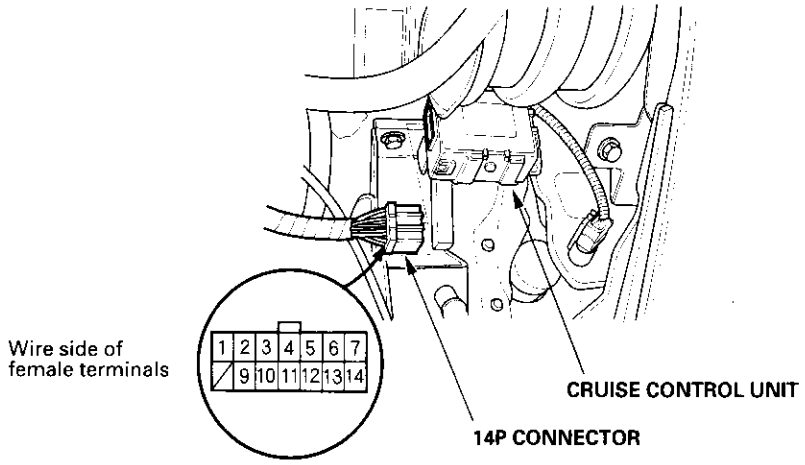
Symptom	Diagnostic procedure	Also check for
Cruise control cannot be set	1. Check main switch (see page 4-42) 2. Check SET/RESUME/CANCEL switch (see page 4-42) 3. Test brake pedal position switch (see page 22-84) and check its adjustment (see page 19-6) 4. Test clutch pedal position switch (see page 4-45) and check its adjustment (see page 12-4) 5. Check cruise control unit (see page 4-40) 6. Check vehicle speed sensor (VSS) (see page 22-65)	• Poor ground: G501 • Open circuit, loose or disconnected terminals: LT GRN, BLK/ORN, GRY/RED, BLU, LT BLU, BLU/WHT
Cruise control can be set but indicator light does not go on	1. Check cruise control indicator bulb in gauge assembly (see page 22-63) 2. Check cruise control unit (see page 4-40)	• Poor ground: G501 • Open circuit, loose or disconnected terminals: YEL, BLU/YEL
Cruise speed is noticeably higher or lower than what was set	1. Check vehicle speed sensor (VSS) (see page 22-65) Check cruise control actuator (see page 4-43) 2. Check cruise control unit (see page 4-40) 3.	
Excessive overshooting or undershooting when trying to set speed	1. Check cruise control actuator (see page 4-43) 2. Check vehicle speed sensor (VSS) (see page 22-65) Check cruise control unit (see page 4-40) 3.	
Speed fluctuation on a flat road with cruise control set	1. Check vehicle speed sensor (VSS) (see page 22-65) Check cruise control actuator (see page 4-43) 2. Check cruise control unit (see page 4-40) 3.	
Vehicle does not decelerate or accelerate accordingly when SET/RESUME/CANCEL button is pushed	1. Check SET/RESUME/CANCEL switch (see page 4-42) 2. Check cruise control unit (see page 4-40)	Open circuit, loose or disconnected terminals: GRY/RED, LT GRN/BLK
Set speed does not cancel (engine rpm stays high) when clutch pedal is pushed	1. Test clutch pedal position switch (see page 4-45) and check its adjustment (see page 12-4) 2. Check cruise control unit (see page 4-40)	Short to ground in the LT BLU wire
Set speed does not cancel when brake pedal is pushed	1. Test brake pedal position switch (see page 22-84) and check its adjustment (see page 19-6) 2. Check cruise control unit (see page 4-40)	Open circuit, loose or disconnected terminals: WHT/BLK

Symptom	Diagnostic procedure	Also check for
Set speed does not cancel when main switch is pushed OFF	1. Check main switch (see page 4-42) 2. Check cruise control unit (see page 4-40)	Short to power in the LT GRN wire.
Set speed does not cancel when CANCEL button is pushed	1. Check SET/RESUME/CANCEL switch (see page 4-42) 2. Check cruise control unit (see page 4-40)	Open circuit, loose or disconnected terminals: GRY/RED, LT GRN/BLK
Set speed will not resume when RESUME button is pushed (with main switch on, and set speed temporarily cancelled by pressing the brake pedal)	1. Check SET/RESUME/CANCEL switch (see page 4-42) 2. Check cruise control unit (see page 4-40)	Open circuit, loose or disconnected terminals: LT GRN/BLK

Cruise Control Unit Input Test

SRS components are located in this area. Review the SRS component locations (see page 23-13) and precautions and procedures (see page 23-14) in the SRS section before performing repairs or service.

1. Disconnect the 14P connector from the control unit.
2. 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 3.



3. With the 14P connector disconnected, make these input tests.

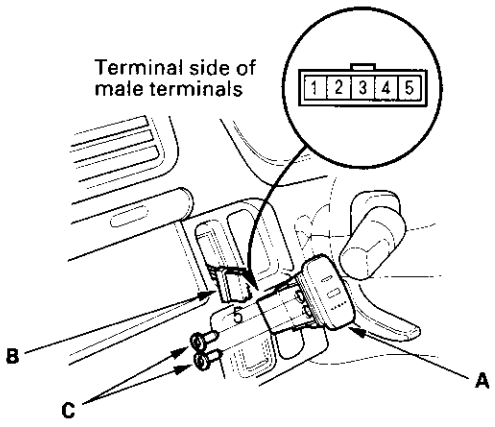
Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
1	BRN/WHT	Connect battery power	Check the operation of the magnetic clutch: Clutch should click and output link should be locked.	• Faulty actuator • Poor ground (G301) • An open in the wire • Short to ground (arcs when power is connected)
2	BLU	Ignition switch ON (II), main switch ON and brake pedal pressed, then released	Check for voltage to ground: There should be 0 V with the pedal pressed and battery voltage with the pedal released.	• Faulty brake pedal position switch • An open in the wire • Open in cruise control main switch • Blown No. 4 (10 A) fuse in the under/dash fuse/relay box
3	BLK	Under all conditions	Check for continuity to ground: There should be continuity.	• Poor ground (G501) • An open in the wire
4	BLK/ORN	Ignition switch ON (II)	Check for voltage to ground: There should be battery voltage.	• Blown No. 4 (10 A) fuse in the under-dash fuse/relay box • An open in the wire
5	WHT/BLK	Brake pedal pressed, then released	Check for voltage to ground: There should be battery voltage with the pedal pressed, and 0 V with the pedal released.	• Blown No. 7 (15 A) fuse in the under-hood fuse/relay box • Faulty brake pedal position switch • An open in the wire

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
6	GRY/RED	Set button pushed	Check for voltage to ground: There should be battery voltage. When testing terminal No. 6, there should be no voltage on terminal No. 7.	• Blown No. 7 (15 A) fuse in the under-hood fuse/relay box • Faulty horn relay • Faulty set/resume/cancel switch • Faulty cable reel • An open in the wire • Short to ground (horn sounds when button is pressed)
7	LT GRN/ BLK	Resume button pushed	Check for voltage to ground: There should be battery voltage. When testing terminal No. 7, there should be no voltage on terminal No. 6.	
9 11	BRN BRN/YEL	Connect battery power to the BRN terminal and ground to the BRN/YEL terminal	Check the operation of the actuator motor: You should be able to hear the motor.	• Faulty actuator • An open in the wire
10	BLU/YEL	Ignition switch ON (II)	Attach to ground: Cruise indicator light in the gauge assembly should come on.	• Blown No. 10 (7.5 A) fuse in the under-dash fuse/relay box • Blown cruise indicator bulb • Faulty gauge assembly • An open in the wire
12	BLU/WHT	Ignition switch ON (II) and main switch ON; raise the front of the vehicle, and rotate one wheel slowly while holding the other wheel	Check for voltage between the BLU/WHT (+) and BLK (−) terminals: There should be 0−5 V or more repeatedly.	• Faulty VSS • An open in the wire • Short to ground
13	LT GRN	Ignition switch ON (II) and main switch ON	Check for voltage to ground: There should be battery voltage.	• Blown No. 4 (10 A) fuse in the under-dash fuse/relay box • Faulty main switch • An open in the wire
14	LT BLU	Clutch pedal released	Check for continuity to ground: There should be continuity. NOTE: There should be no continuity when the clutch pedal is pressed.	• Faulty clutch pedal position switch • Poor ground (G501) • Incorrect clutch switch adjustment • An open in the wire

4. If any test indicates a problem, find and correct the cause, then recheck the system. If all the input tests prove OK, the cruise control unit may be faulty. Substitute a known-good cruise control unit and retest. If the system works properly, replace the cruise control unit.

Main Switch Test/Replacement

1. Remove the driver's dashboard lower cover (see page 20-59).
2. Release the clips of the main switch and push the main switch (A) out of the panel, then disconnect the 5P connector (B) from the main switch.

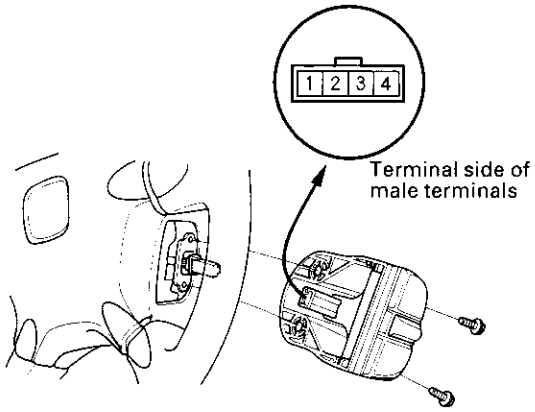


3. Check for continuity between the terminals in each switch position according to the table. If the continuity is not as specified, replace illumination bulbs (C) or the switch.

Position \ Terminal	5		2	1	3		4
OFF	○	⊗	○		○	⊗	○
ON	○	⊗	○	○	○	⊗	○

Set/Resume/Cancel Switch Test/ Replacement

1. Remove the two screws, then remove the switch.

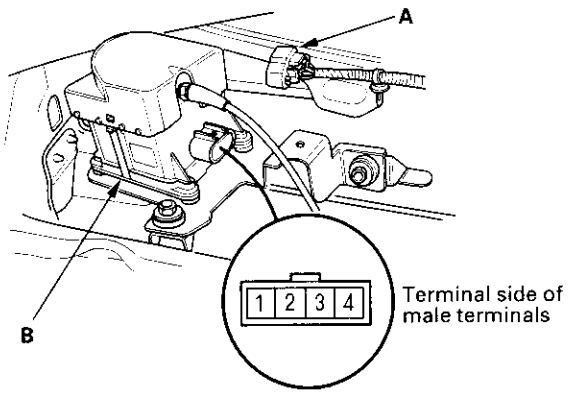


2. Check for continuity between the terminals in each switch position according to the table.
   - If there is continuity, and it matches the table, but switch failure occurred on the cruise control unit input test, check and repair the switch circuit.
   - If there is no continuity in one or both positions, replace the switch.

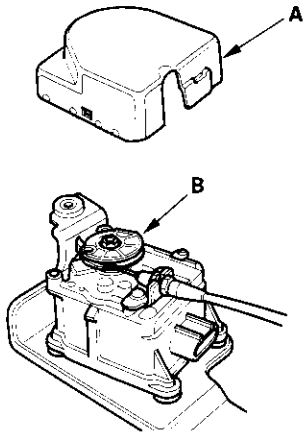
Position \ Terminal	1		2	3
SET (ON)	○			○
RESUME (ON)	○		○	
CANCEL (ON)	○			○
			○	

Cruise Control Actuator Test

1. Disconnect the 4P connector (A) from the cruise control actuator (B).



2. Remove the cover (A), and check the output linkage (B) for smooth movement.



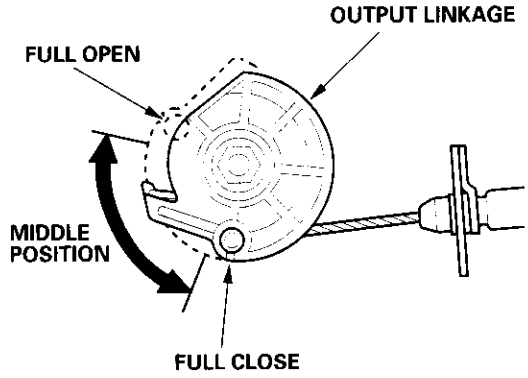
3. Connect battery power to the No. 2 terminal and ground to the No. 1 terminal.

4. Check for a clicking sound from the magnetic clutch. The output linkage should be locked.

5. If the output linkage is not locked, replace the cruise control actuator assembly.

6. Check the operation of the actuator motor in each output linkage position according to the table. You should be able to hear the motor.

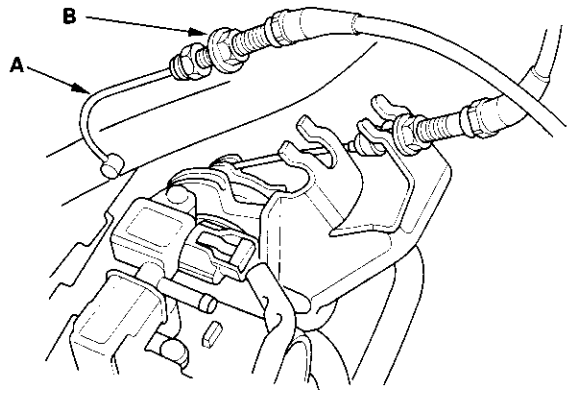
Battery power polarities		Output linkage position		
(+)	(−)	FULL CLOSE	MIDDLE POSITION	FULL OPEN
No. 4 Terminal	No. 3 Terminal	The motor runs.	The motor runs.	The motor stops.
No. 3 Terminal	No. 4 Terminal	The motor stops.	The motor runs.	The motor runs.



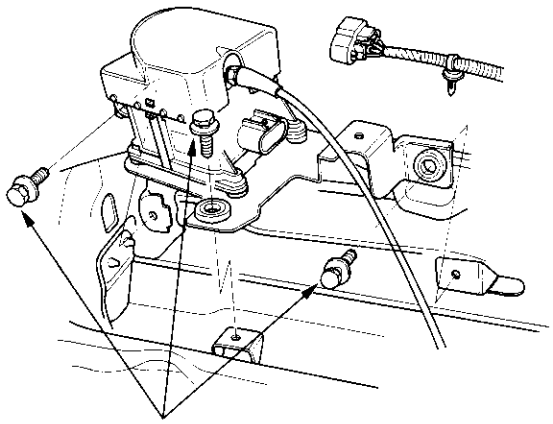
7. If the actuator motor does not operate as specified, replace the cruise control actuator assembly.

Cruise Control Actuator/Cable Replacement

1. Fully open the cruise control link by hand, then remove the cruise control cable (A) from link. Loosen the locknut (B), and remove the cable from the bracket.

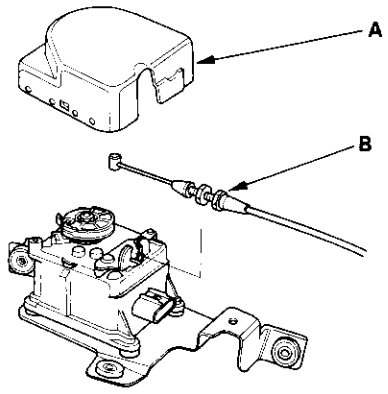


2. Disconnect the 4P connector, and remove the three bolts securing the cruise control actuator.



6 x 1.0 mm
12 N·m (1.2 kgf·m, 8.7 lbf·ft)

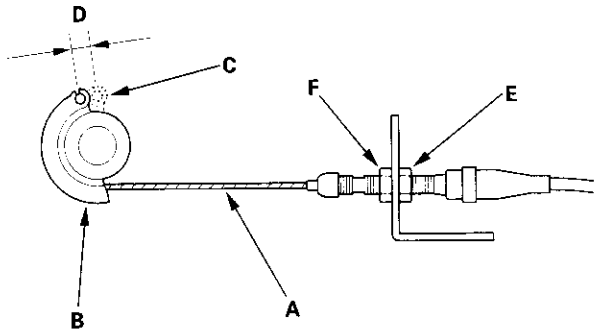
3. Remove the actuator cover (A), then remove the actuator cable (B) from the cruise control actuator.



4. Install in the reverse order of removal, and adjust the free play at the throttle linkage after connecting the actuator cable.

Actuator Cable Adjustment

1. Check that the actuator cable (A) moves smoothly with no binding or sticking.

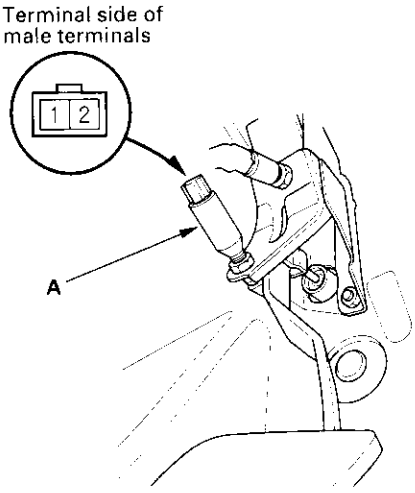


2. Start the engine.
3. Measure the amount of movement of the output linkage (B) until the engine speed starts to increase. At first, the output linkage should be located at the fully closed position (C). The free play (D) should be 3.75±0.5 mm (0.15±0.02 in.).
4. If the free play is not within specs, loosen the locknut (E), and turn the adjusting nut (F) until the free play is as specified, then retighten the locknut.

Clutch Pedal Position Switch Test

1. Disconnect the 2P connector from the clutch pedal position switch (A).

CLUTCH PEDAL POSITION SWITCH 2P CONNECTOR



2. Remove the clutch pedal position switch.
3. Check for continuity between the terminals according to the table.
   - If the continuity is not as specified, replace the clutch pedal position switch.
   - If OK, install the clutch pedal position switch and adjust the pedal height (see page 12-4).

Terminal / Clutch Pedal Position Switch	1	2
PRESSED		
RELEASED	○	○

Engine Mechanical

Engine Assembly

Engine Removal

Special Tools Required
Front subframe adapter EQS02C000011

NOTE:
- Use fender covers to avoid damaging painted surfaces.
- To avoid damage, 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.

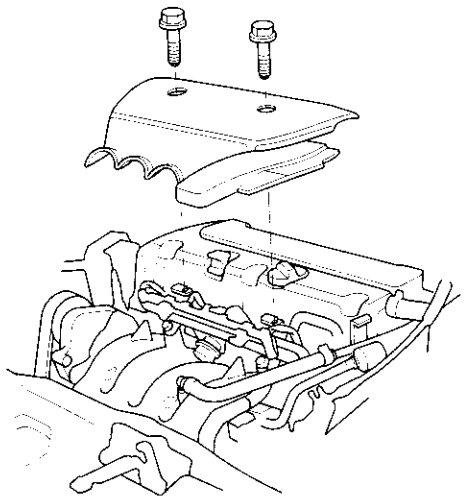
1. Secure the hood in the wide open position (support rod in the lower hole).

2. Make sure you have the anti-theft code for the radio, then write down the frequencies for the radio's preset buttons.

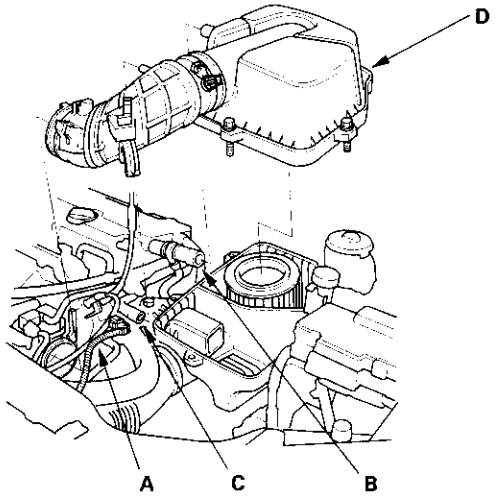
3. Disconnect the negative cable from the battery first, then disconnect the positive cable.

4. Remove the battery.

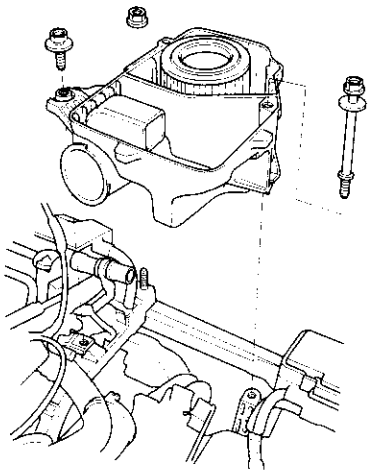
5. Remove the intake manifold cover.



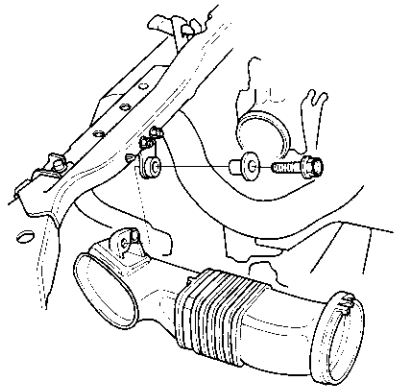
6. Disconnect the intake air temperature (IAT) sensor connector (A), remove the breather hose (B) and vacuum hose (C), then remove the air cleaner housing cover/intake air duct assembly (D).



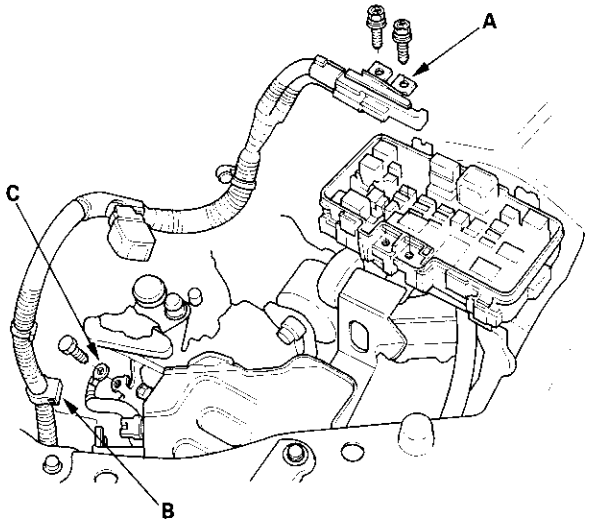
7. Remove the air cleaner housing.



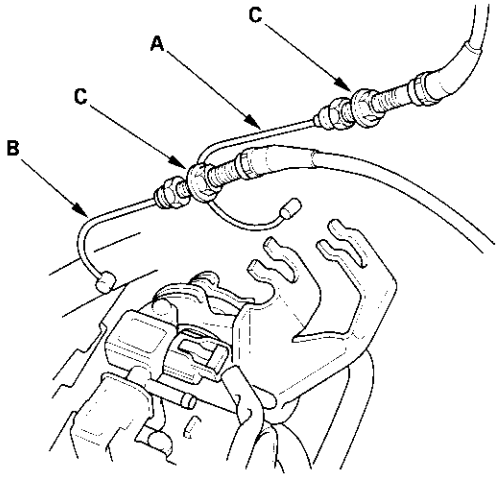
8. Remove the intake air duct.



9. Remove the battery cables (A) from the under-hood fuse/relay box, then remove the harness clamp (B) and ground cable (C).



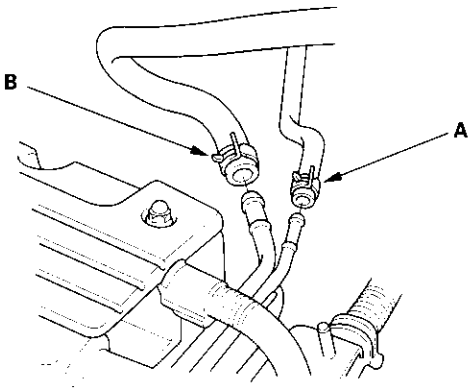
10. Fully open the throttle link and cruise control link by hand, then remove the throttle cable (A) and cruise control cable (B) from the links. Loosen the locknuts (C), and remove the cables from the bracket.



11. Relieve fuel pressure (see page 11-144).

12. Remove the fuel line (see page 11-149).

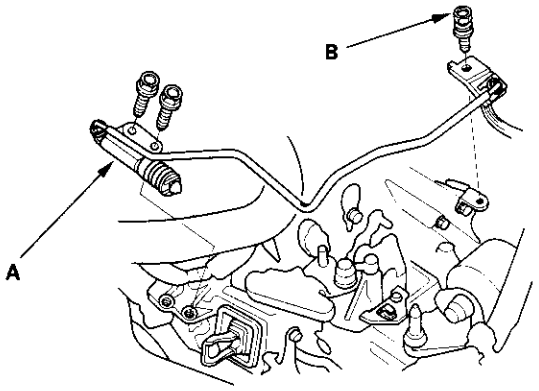
13. Remove the evaporative emission (EVAP) canister hose (A) and brake booster vacuum hose (B).



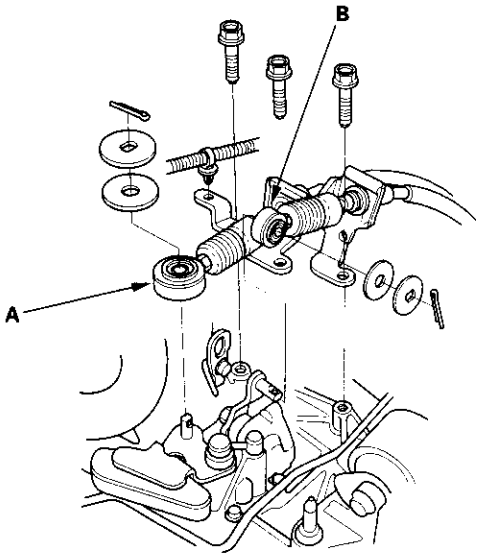
(cont'd)

Engine Removal (cont'd)

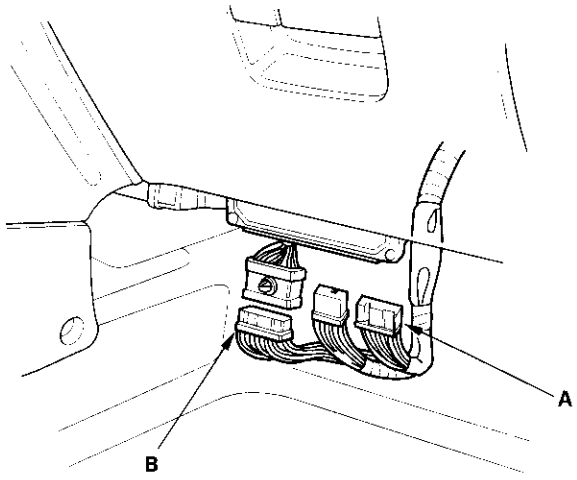
14. Remove the clutch slave cylinder (A) and clutch line bracket mounting bolt (B).



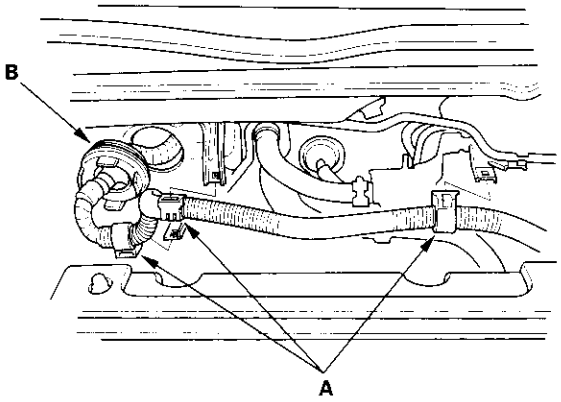
15. Remove the shift cable (A) and select cable (B).



16. Disconnect the engine control module (ECM) connectors (A) and main wire harness connector (B).

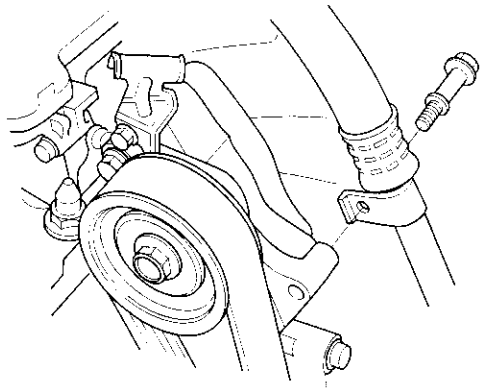


17. Remove the harness clamps (A) and grommet (B), then pull the engine wire harness through the bulkhead.



18. Remove the drive belt (see page 4-26).

19. Remove the A/C line mounting bolt.

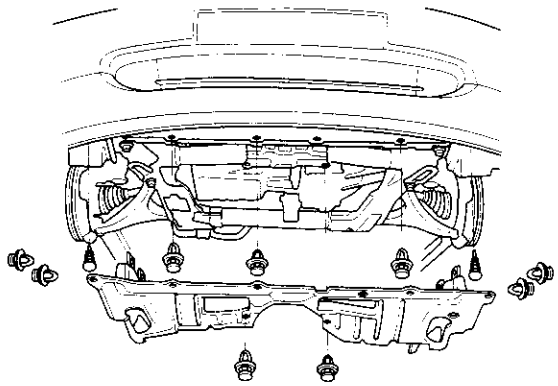


20. Remove the radiator cap.

21. Raise the hoist to full height.

22. Remove the front tires/wheels.

23. Remove the splash shield.



24. Loosen the drain plug in the radiator to drain the engine coolant (see page 10-6).

25. Drain the transmission fluid (see page 13-3).

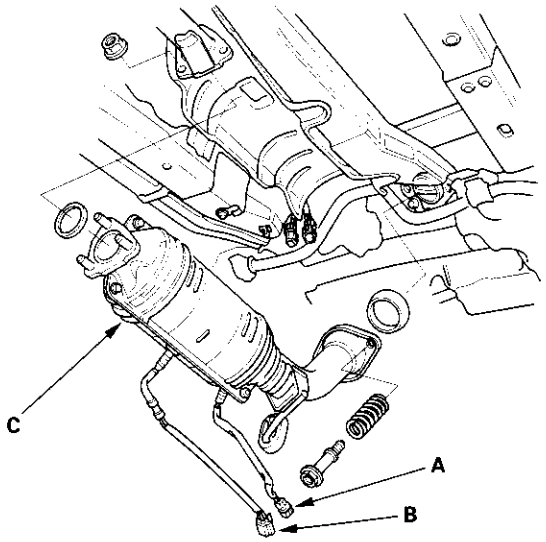
26. Drain the engine oil (see page 8-5).

27. Disconnect the stabilizer links (see page 18-18).

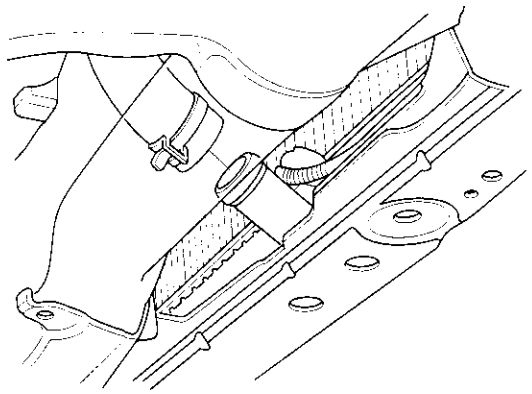
28. Disconnect the suspension lower arm ball joints (see step 3 on page 18-19).

29. Remove the driveshafts (see page 16-3). Coat all precision finished surfaces with clean engine oil. Tie plastic bags over the driveshaft ends.

30. Disconnect the air fuel ratio (A/F) sensor connector (A) and secondary heated oxygen sensor (secondary HO2S) connector (B), then remove the three way catalytic converter (TWC) assembly (C).



31. Remove the lower hose.

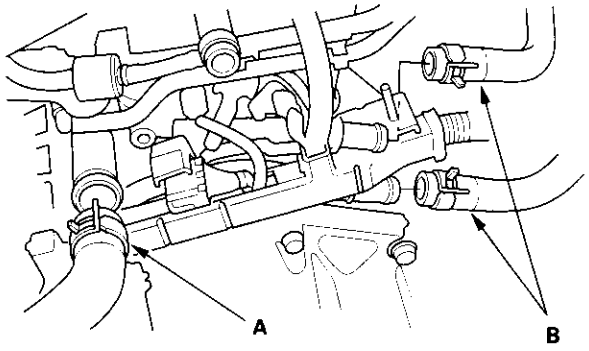


(cont'd)

Engine Removal (cont'd)

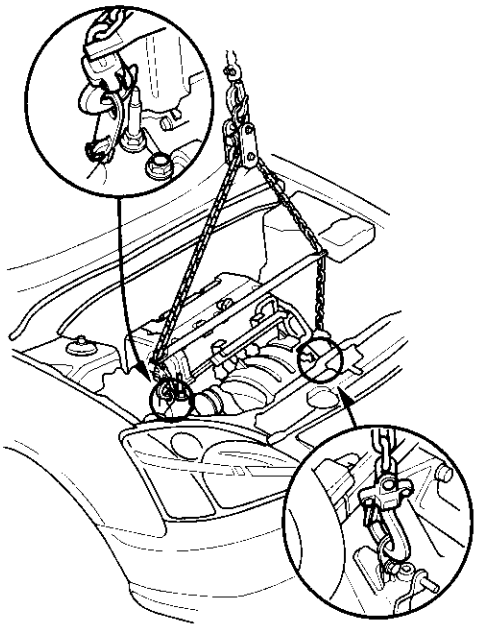
32. Lower the hoist.

33. Remove the upper hose (A) and heater hoses (B).

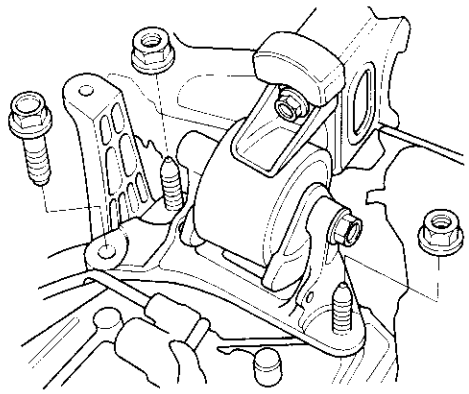


34. Remove the radiator (see page 10-10).

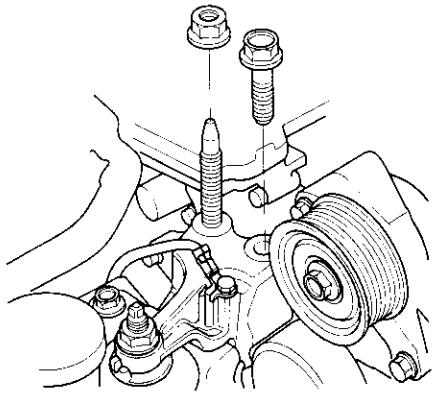
35. Attach the chain hoist to the engine as shown.



36. Remove the transmission mount bracket support bolt and nuts.

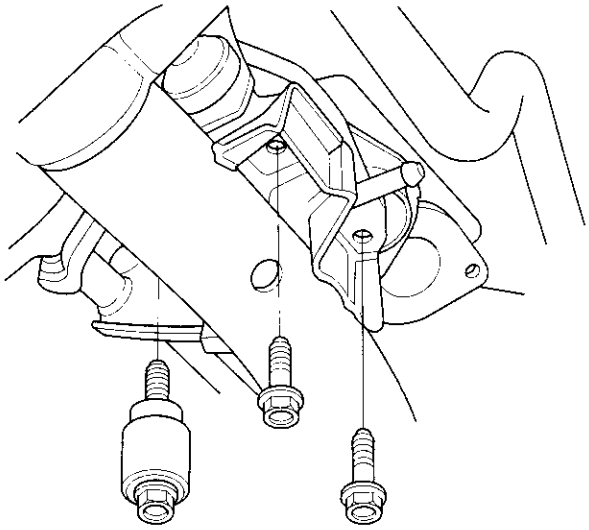


37. Remove the upper bracket mounting bolt and nut.

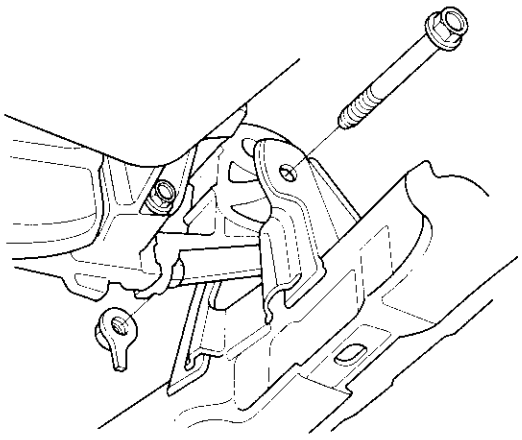


38. Make sure the hoist brackets are positioned properly. Raise the hoist to full height.

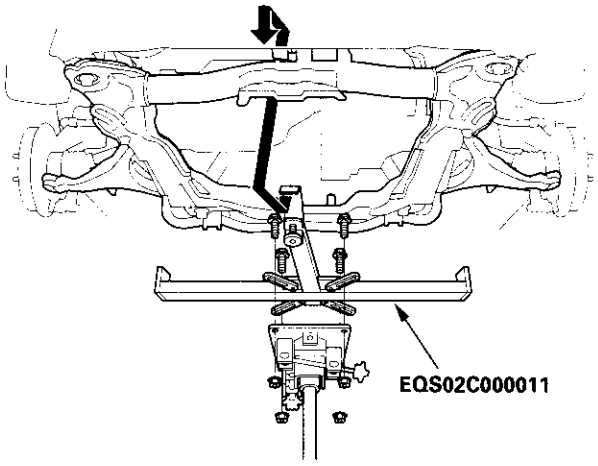
39. Remove the rear mount mounting bolts.



40. Remove the front mount bracket mounting bolt.



41. Attach the subframe adapter to front of the subframe, then tighten the knurled knob.

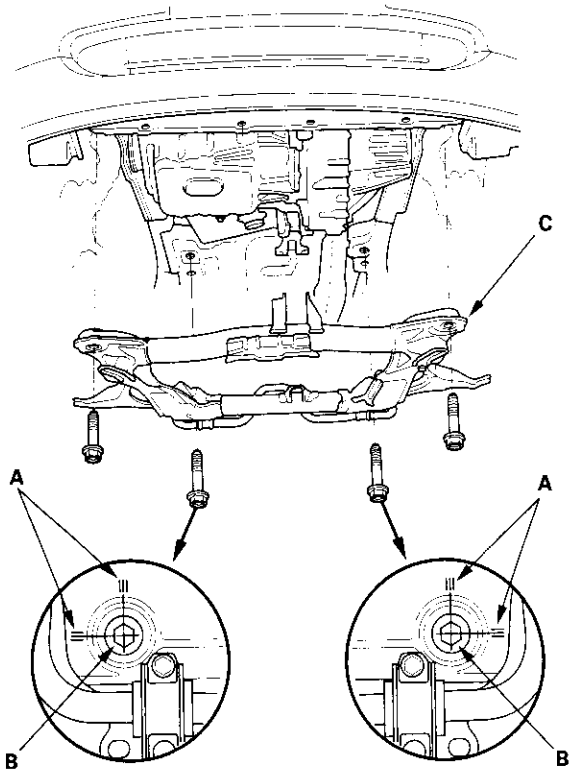


42. Raise the jack. Line up the slots in the arms with the bolt holes on the corner of the jack base, then attach the adapter to the jack base with the bolts.

(cont'd)

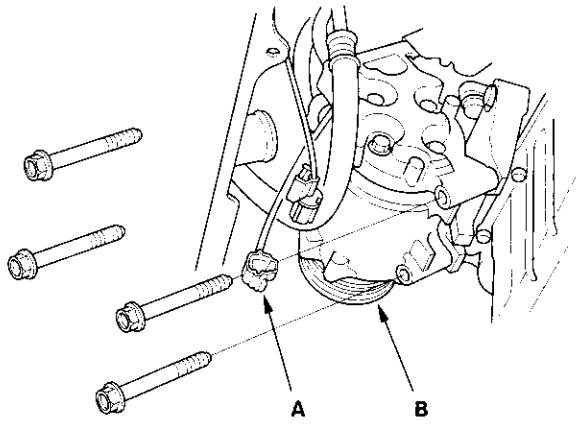
Engine Removal (cont'd)

43. Use a marker to make alignment marks on the reference lines (A) that align with the centers of the rear subframe mounting bolts (B).



44. Remove the front subframe (C).

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



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

47. Slowly lower the engine about 150 mm (6 in.). Check once again that all hoses and wires are disconnected from the engine/transmission.

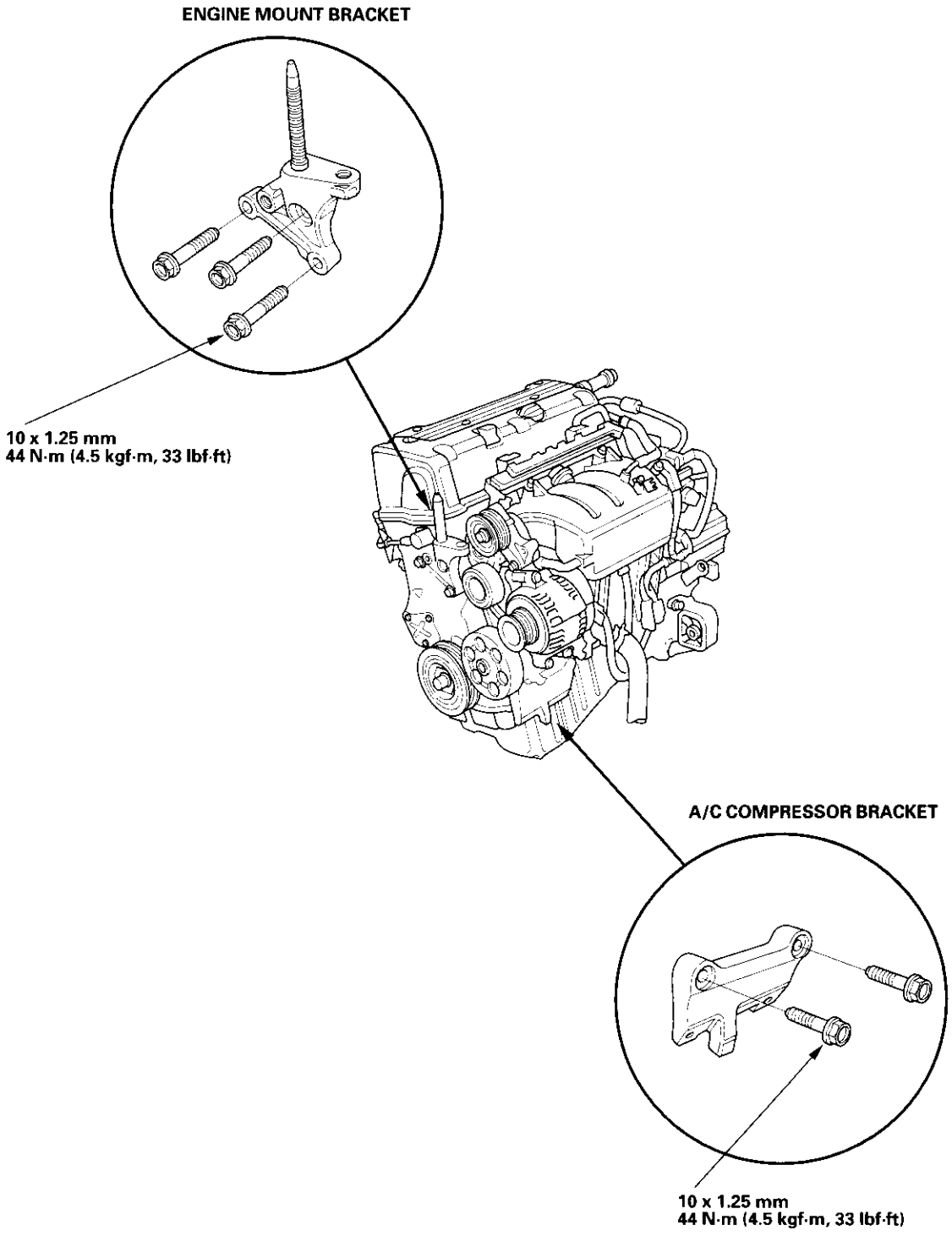
48. Lower the engine all the way. Remove the chain hoist from the engine.

49. Remove the engine from under the vehicle.

Engine Installation

Special Tools Required
Front subframe adapter EQS02C000011

1. Install the accessory brackets, and tighten their bolts and nuts to the specified torques.



(cont'd)

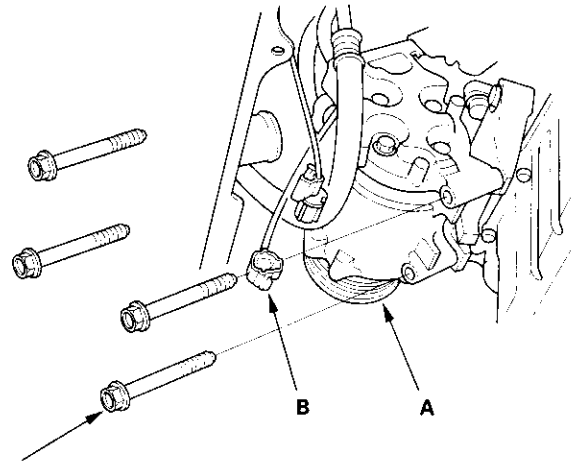
Engine Installation (cont'd)

2. Position the engine under the vehicle. Attach the chain hoist to the engine, then lift the engine into position in the vehicle.

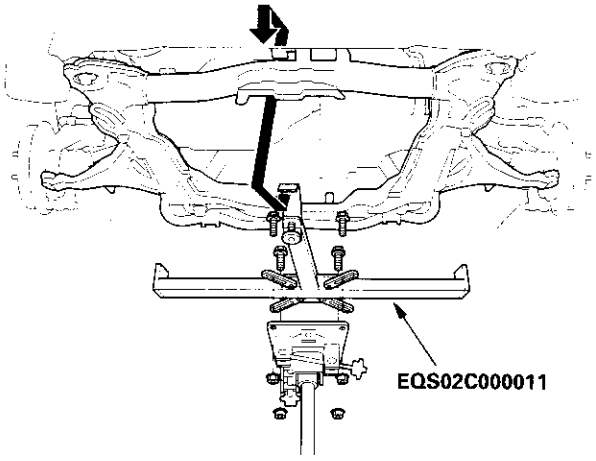
NOTICE

Reinstall the mounting bolts/support nuts in the sequence given. Failure to follow this sequence may cause excessive noise and vibration, and reduce bushing life.

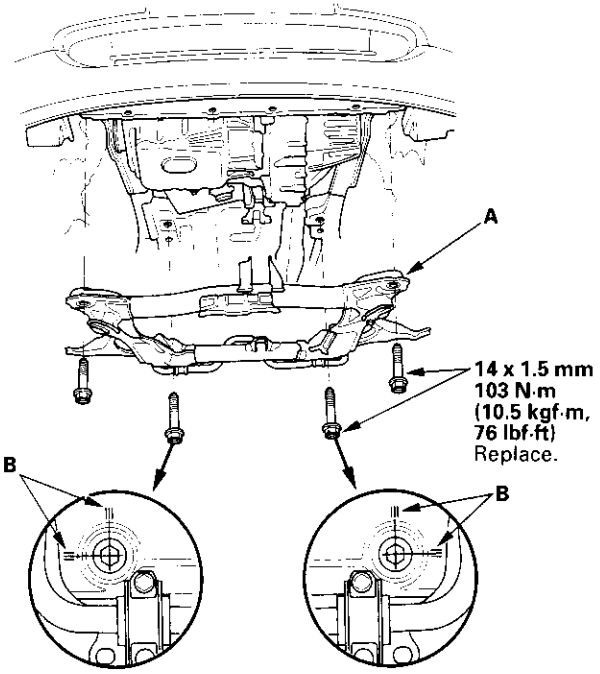
3. Install the A/C compressor (A), and connect the compressor clutch connector (B).



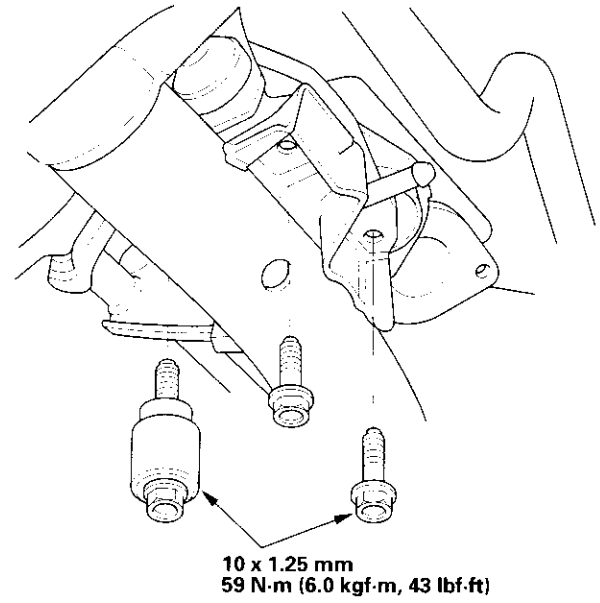
4. Support the subframe with the subframe adapter and a jack.



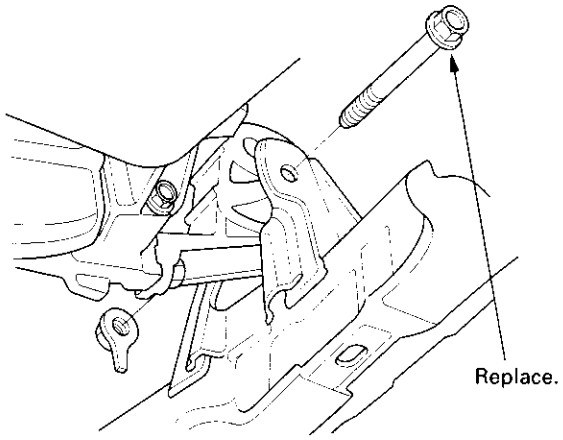
5. Install the subframe (A). Align the reference marks (B) on the subframe with the center of the bolt heads, then tighten the bolts.



6. Tighten the rear mount mounting bolts.

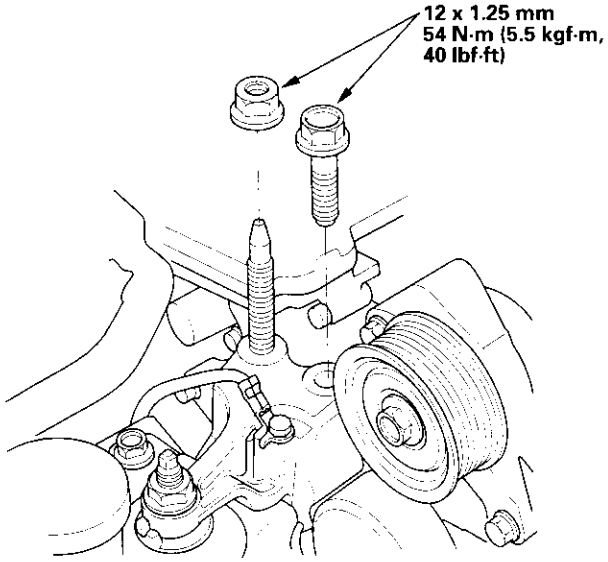


7. Loosely tighten the front mount bracket mounting bolt.

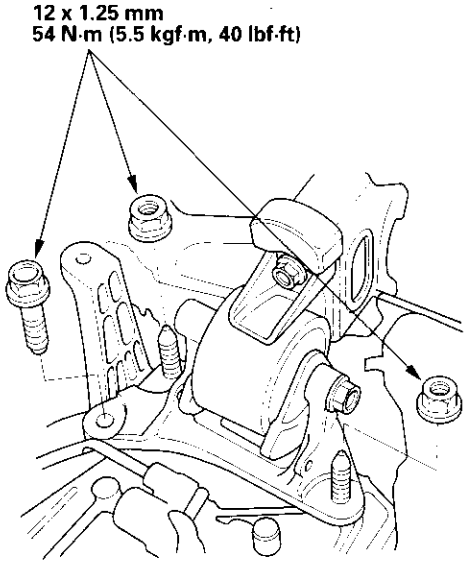


8. Lower the hoist.

9. Tighten the upper bracket mounting bolt and nut.

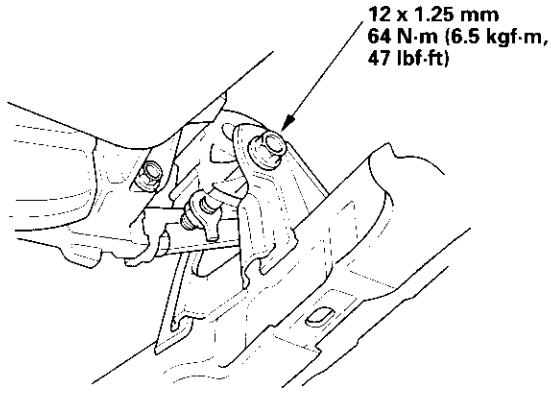


10. Tighten the transmission mount bracket support bolt and nuts.



11. Raise the hoist to full height.

12. Tighten the front engine mount bracket mounting bolt.



13. Lower the hoist.

14. Remove the chain hoist from the engine.

15. Install the radiator (see page 10-10).

16. Raise the hoist to full height.

17. Install a new set ring on the end of each driveshaft, then install the driveshafts. Make sure each ring "clicks" into place in the differential and intermediate shaft.

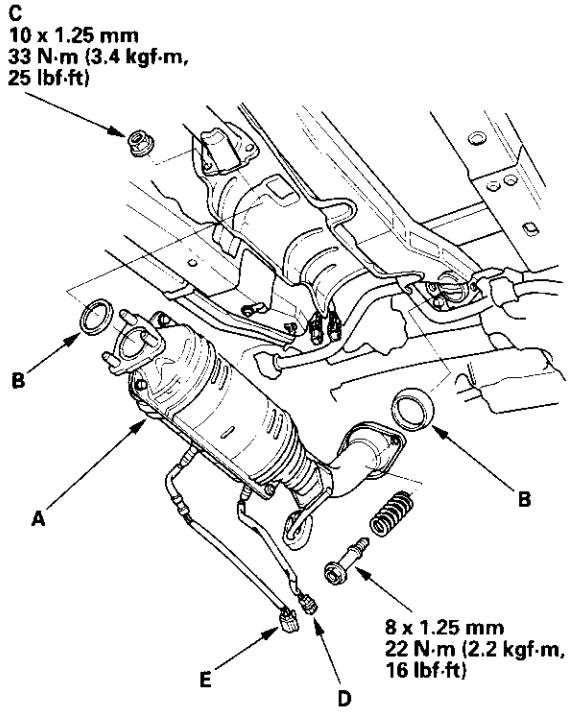
(cont'd)

Engine Installation (cont'd)

18. Connect the suspension lower arm ball joints (see step 6 on page 18-19).

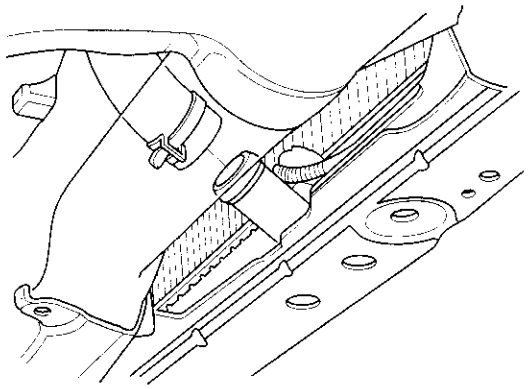
19. Connect the stabilizer links (see page 18-18).

20. Install the three way catalytic converter (TWC) assembly (A); use new gaskets (B) and new self-locking nuts (C).

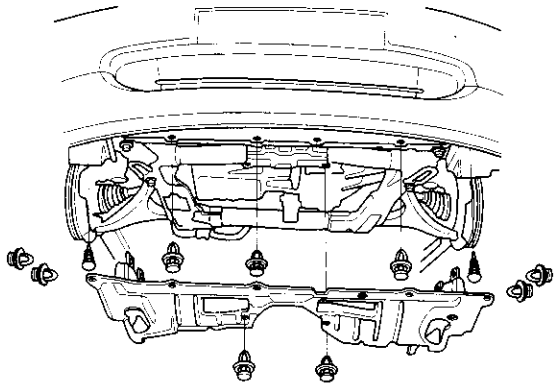


21. Connect the air fuel ratio (A/F) sensor connector (D) and secondary heated oxygen sensor (secondary HO2S) connector (E).

22. Install the lower radiator hose.



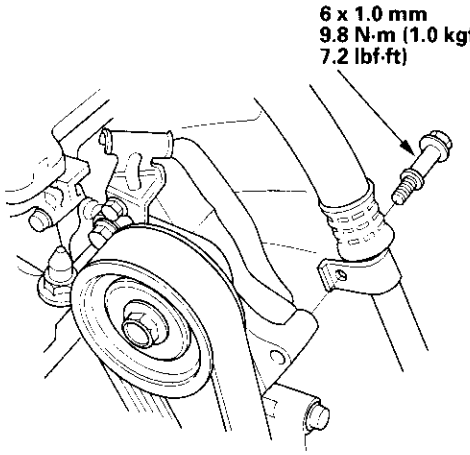
23. Install the splash shield.



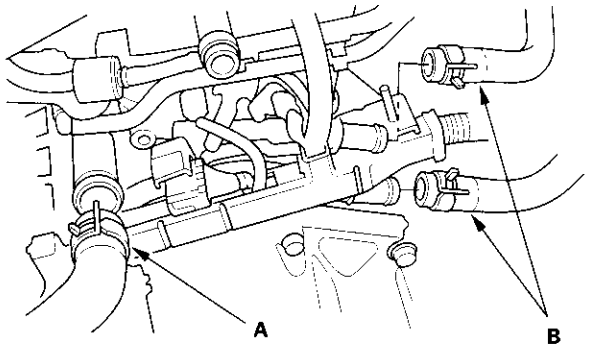
24. Lower the hoist.

25. Install the drive belt.

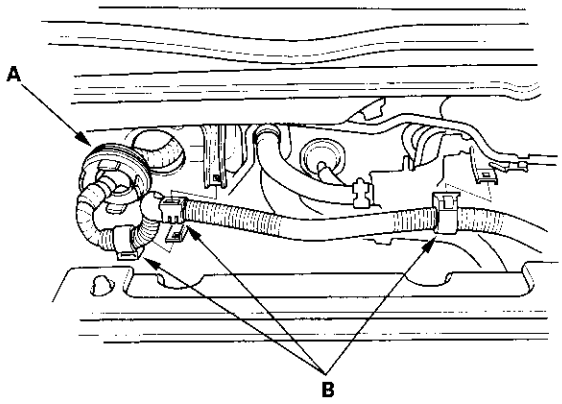
26. Install the A/C line mounting bolt.



27. Install the upper radiator hose (A) and heater hoses (B).

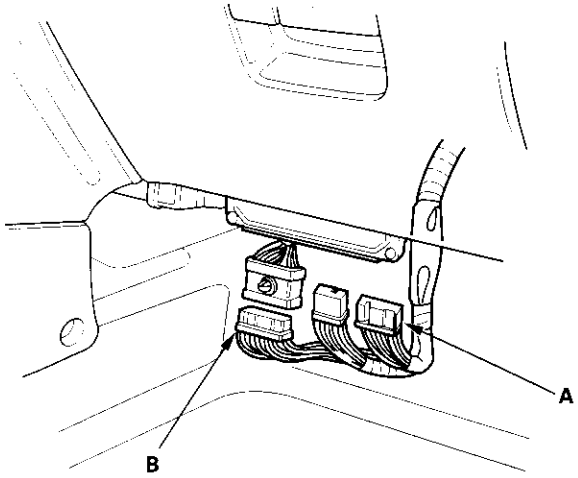


28. Push the engine control module (ECM) connectors through the bulkhead, then install the grommet (A).



29. Install the harness clamps (B).

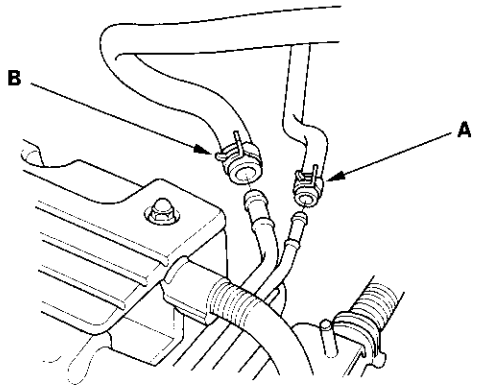
30. Connect the ECM connectors (A) and main wire harness connector (B).



31. Install the throttle cable (see page 11-164), then adjust the cable (see page 11-163).

32. Install the cruise control cable (see page 4-44), then adjust the cable (see page 4-45).

33. Install the brake booster vacuum hose (A) and the evaporative emission (EVAP) canister hose (B).

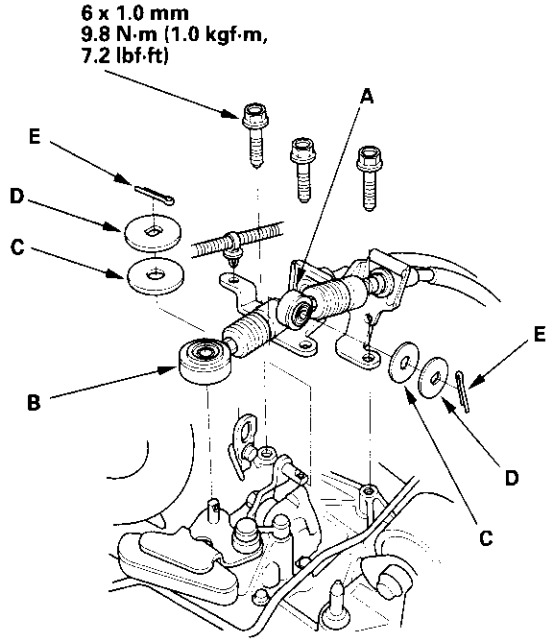


34. Install the fuel line (see page 11-150).

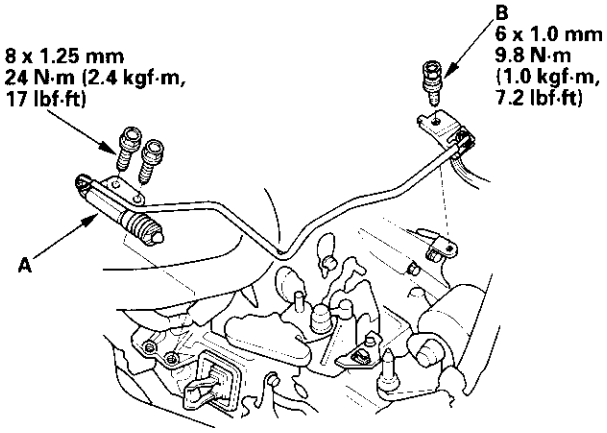
(cont'd)

Engine Installation (cont'd)

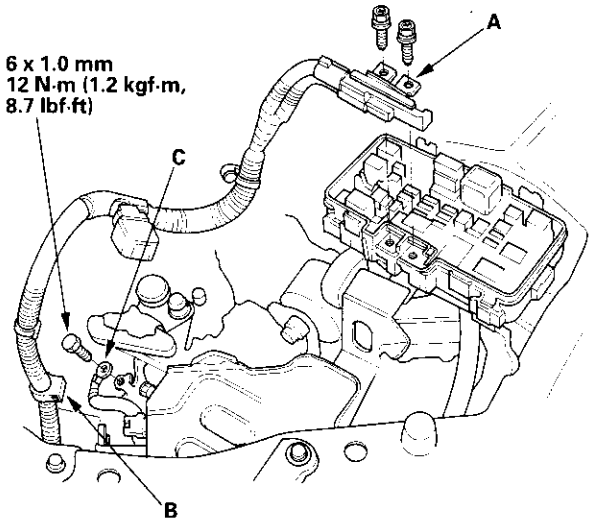
35. Install the select cable (A) and shift cable (B) using the plastic washers (C), washers (D), and new cotter pins (E).



36. Install the clutch slave cylinder (A) and clutch line bracket mounting bolt (B).

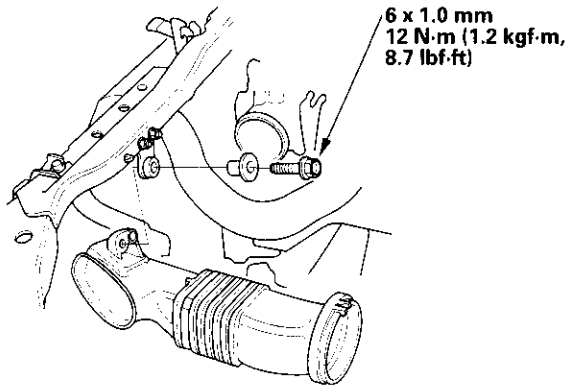


37. Install the battery cables (A) on the under-hood fuse/relay box, then install the harness clamp (B).

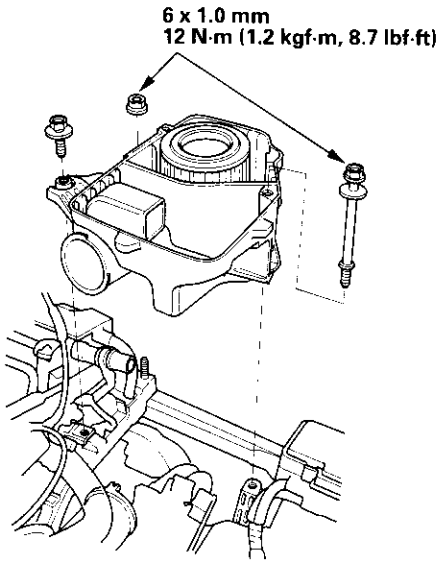


38. Install the ground cable (C).

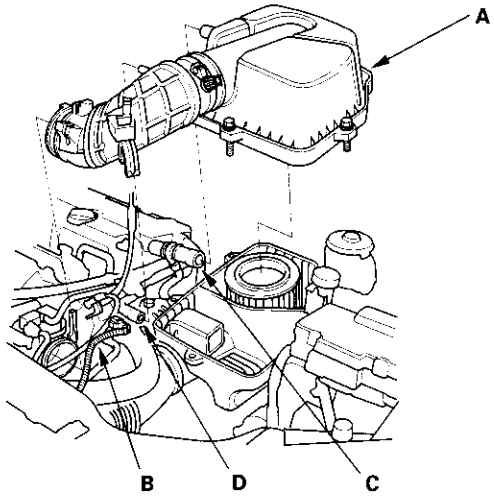
39. Install the intake air duct.



40. Install the air cleaner housing.

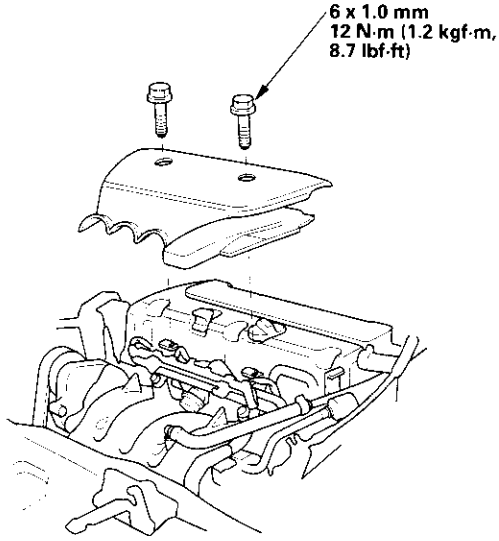


41. Install the air cleaner housing cover (A) and connect the intake air temperature (IAT) sensor connector (B).



42. Install the breather hose (C) and vacuum hose (D).

43. Install the intake manifold cover.



44. Install the battery. Clean the battery posts and cable terminals with sandpaper, then assemble them and apply grease to prevent corrosion.

45. Check that the transmission shifts into gear smoothly.

46. Inspect for fuel leaks. Turn the ignition switch 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 two or three times, then check for fuel leakage at any point in the fuel line.

47. Refill the engine with engine oil (see page 8-5).

48. Refill the transmission with fluid (see page 13-3).

49. Refill the radiator with engine coolant, and bleed air from the cooling system with the heater valve open (see page 10-6).

50. Perform the engine control module (ECM) idle learn procedure (see page 11-139).

51. Inspect the idle speed (see page 11-138).

52. Inspect the ignition timing (see page 4-17).

53. Check the wheel alignment (see page 18-4).

54. Enter the anti-theft code for the radio, then enter the customer's radio station presets.

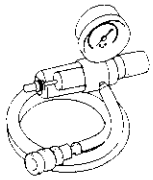
55. Set the clock.

Engine Mechanical

Cylinder Head

Special Tools

Ref. No.	Tool Number	Description	Qty
①	07AAJ-PNAA100	Air Pressure Regulator	1
②	07HAH-PJ7010B	Valve Guide Reamer, 5.5 mm	1
③	07JAA-001020A	Socket, 19 mm	1
④	07JAB-001020A	Holder Handle	1
⑤	07NAB-001040A	Holder Attachment, 50 mm	1
⑥	07VAE-001010A	Valve Spring Compressor Attachment	1
⑦	07ZAJ-PNAA100	VTEC Air Adapter	2
⑧	07ZAJ-PNAA200	VTEC Air Stopper	1
⑨	07ZAJ-PNAA300	Air Joint Adapter	1
⑩	07742-0010100	Valve Guide Driver, 5.5 mm	1
⑪	07746-0010400	Attachment, 52 x 55 mm	1
⑫	07749-0010000	Driver	1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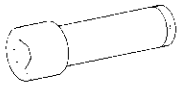
②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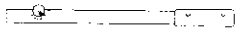
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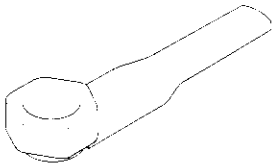
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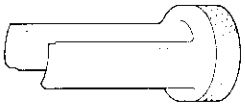
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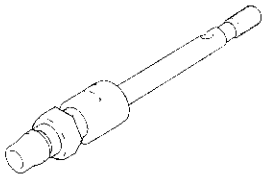
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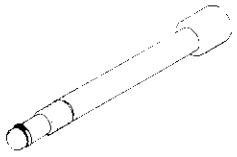
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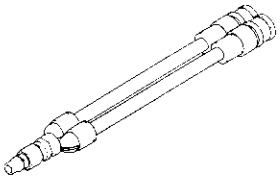
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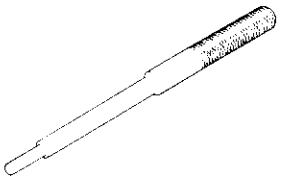
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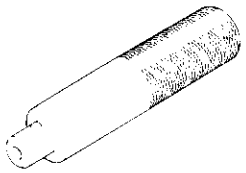
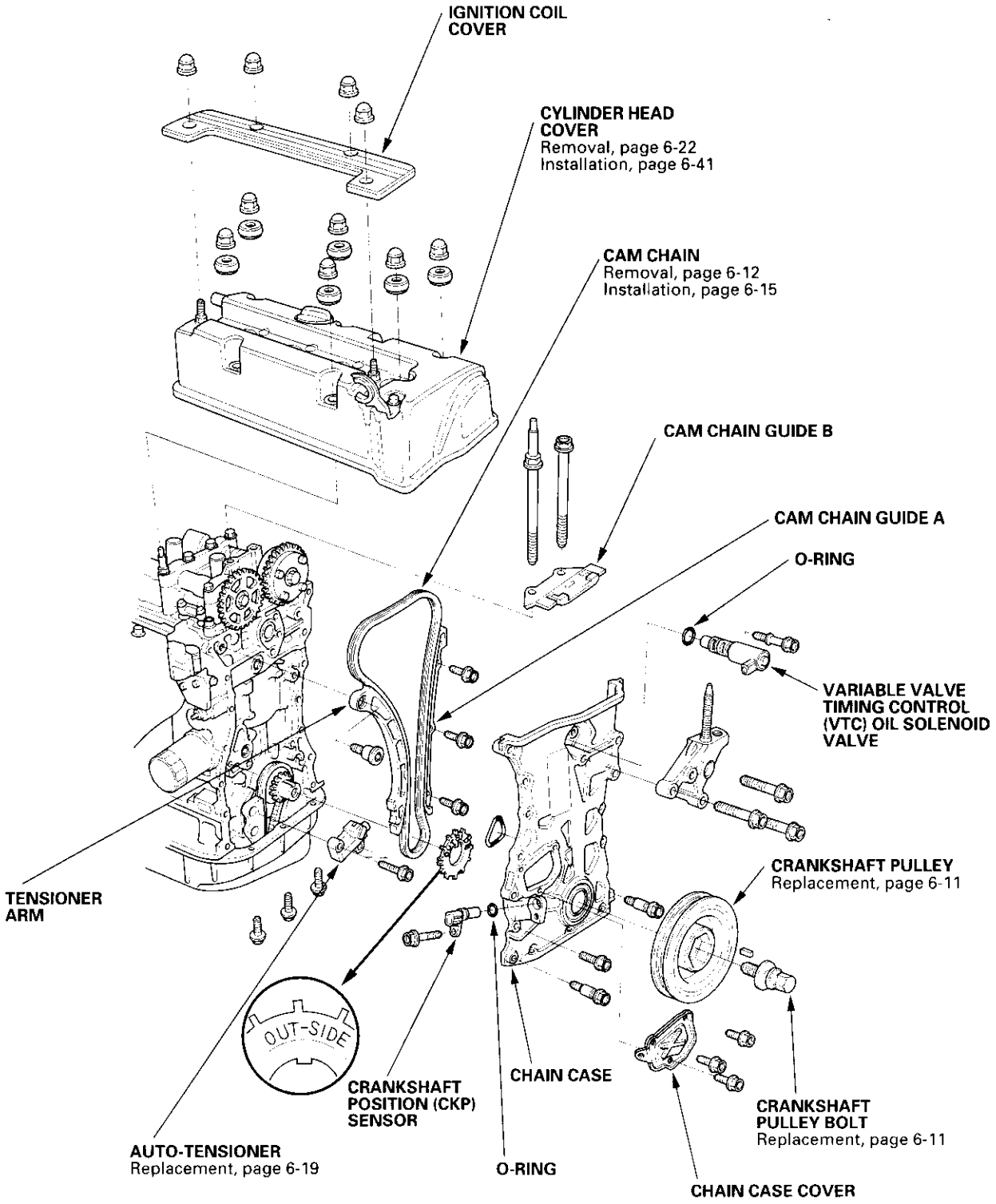

⑫

Component Location Index



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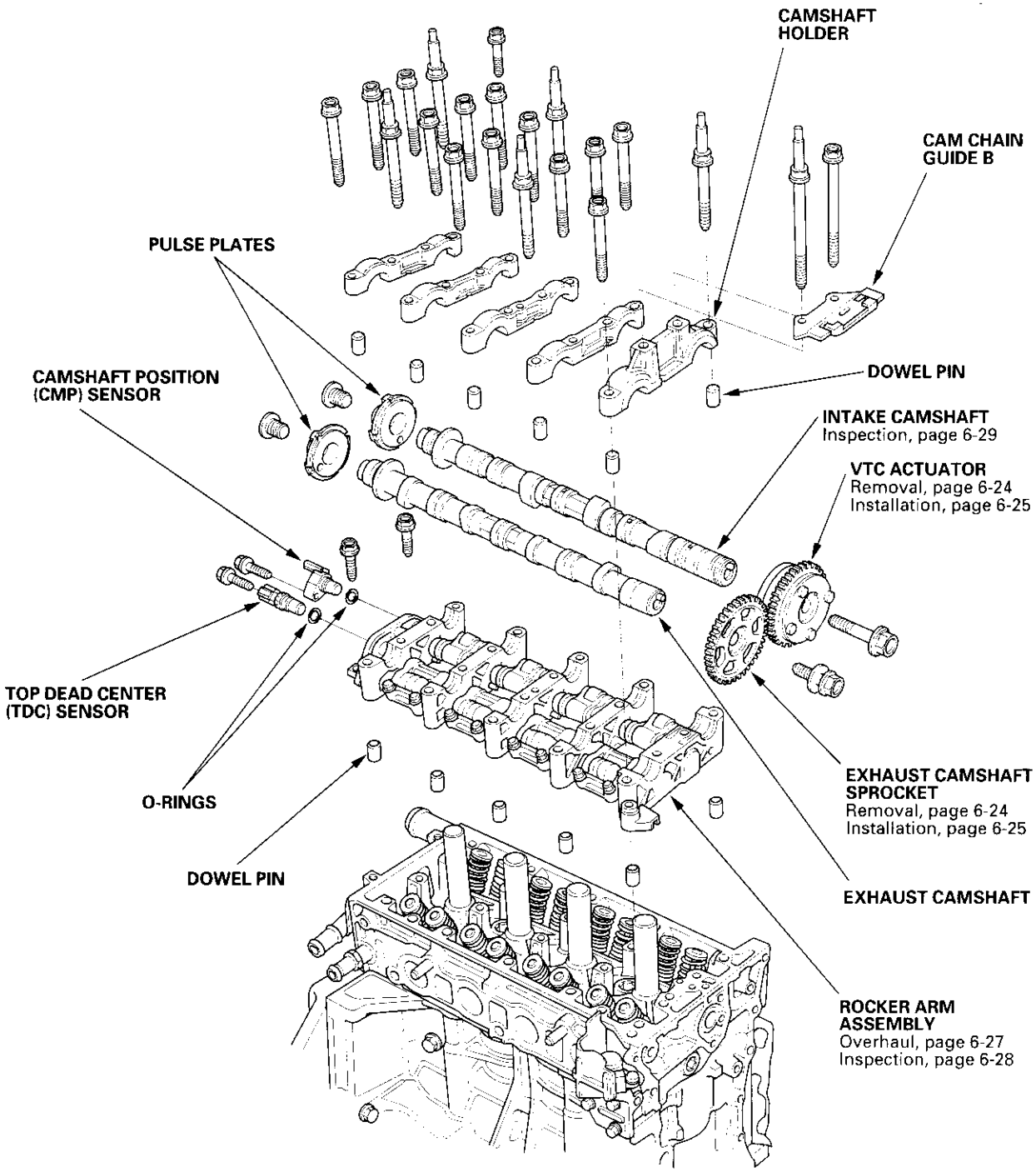
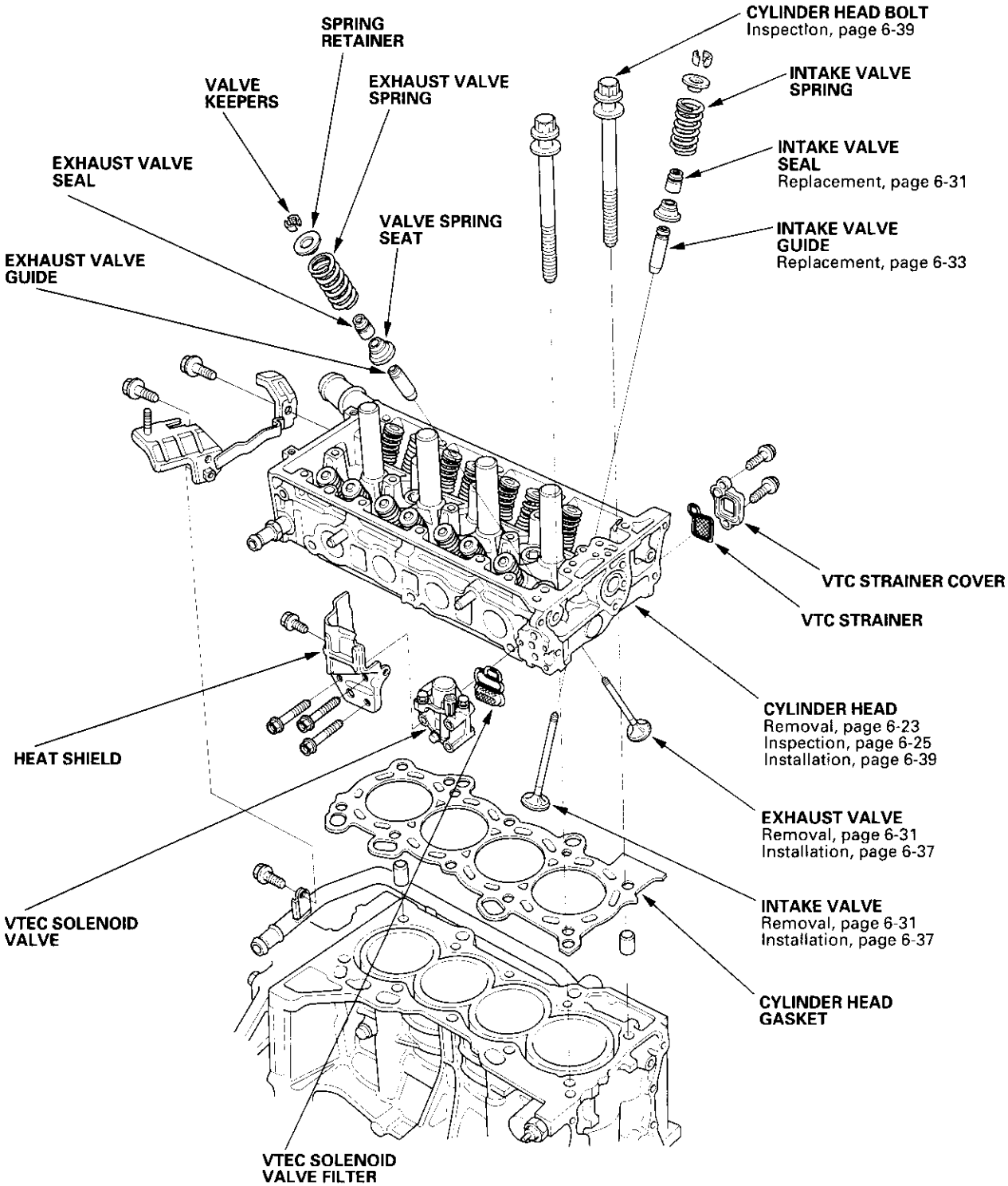
Component Location Index (cont'd)




SPRING RETAINER
VALVE KEEPERS
EXHAUST VALVE SPRING
EXHAUST VALVE SEAL
VALVE SPRING SEAT
EXHAUST VALVE GUIDE
CYLINDER HEAD BOLT
Inspection, page 6-39
INTAKE VALVE SPRING
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INTAKE VALVE GUIDE
Replacement, page 6-33
VTC STRAINER COVER
VTC STRAINER
CYLINDER HEAD
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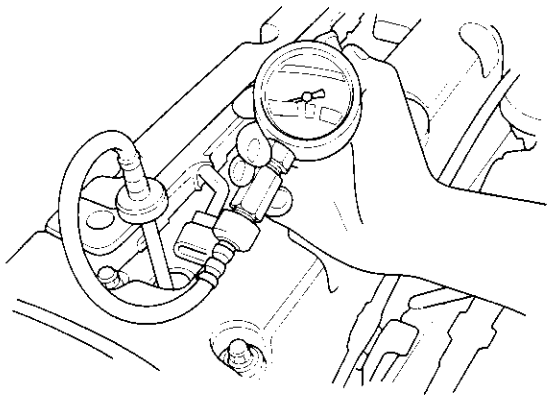
HEAT SHIELD
EXHAUST VALVE
Removal, page 6-31
Installation, page 6-37
INTAKE VALVE
Removal, page 6-31
Installation, page 6-37
VTEC SOLENOID VALVE
CYLINDER HEAD GASKET
VTEC SOLENOID VALVE FILTER

Engine Compression Inspection

1. Warm up the engine to normal operating temperature (cooling fan comes on).
2. Turn the ignition switch OFF.
3. Remove the intake manifold cover (see step 1 on page 6-22).
4. Disconnect all four injector connectors.
5. Start the engine, and let it run until it stalls.
6. Remove the four ignition coils (see page 4-18).
7. Remove the four spark plugs.
8. Attach the compression gauge to the spark plug hole.



9. Open the throttle fully, then crank the engine with the starter motor and measure the compression.

   Compression Pressure
   Above 930 kpa (9.5 kgf/cm², 135 psi)

10. Measure the compression on the remaining cylinders.

    Maximum variation
    Within 200 kPa (2.0 kgf/cm², 28 psi)

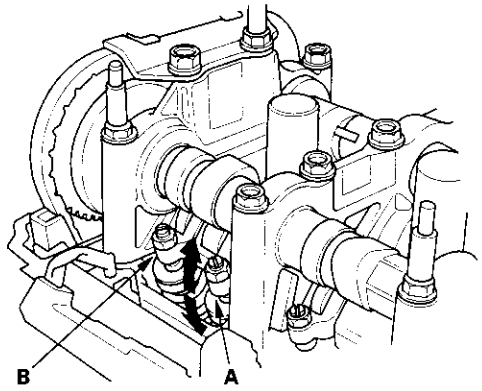
11. If the compression is not within specifications, check these items, then remeasure the compression.

    - Damaged or worn valves and seats
    - Damaged cylinder head gasket
    - Damaged or worn piston rings
    - Damaged or worn piston and cylinder bore

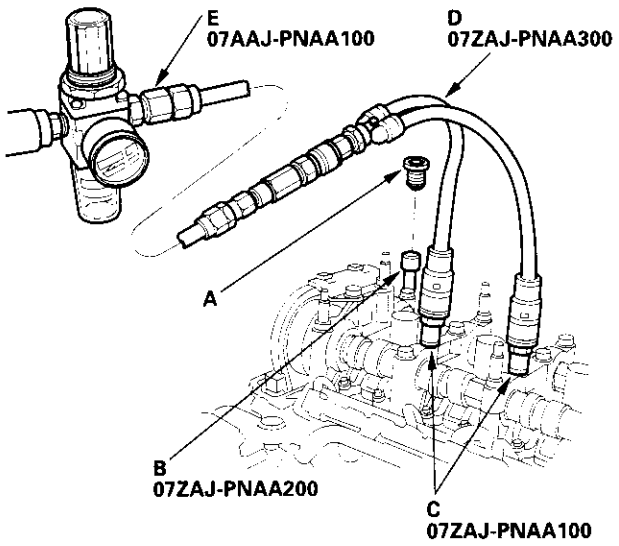
VTEC Rocker Arms Test

Special Tools Required
- Air pressure regulator 07AAJ-PNAA100
- VTEC air adapter 07ZAJ-PNAA100
- VTEC air stopper 07ZAJ-PNAA200
- Air joint adapter 07ZAJ-PNAA300

1. Remove the cylinder head cover (see page 6-22).
2. Set the No. 1 piston at top dead center (TDC) (see step 1 on page 6-12).
3. Verify that the intake primary rocker arm (A) moves independently of the intake secondary rocker arm (B).
   - If the intake primary rocker arm does not move, 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, and test.
   - If the intake primary rocker arm moves freely, go to step 4.



4. Repeat step 3 on the remaining intake primary rocker arms with each piston at TDC. When all the primary rocker arms pass the test, go to step 5.
5. Check that the air pressure on the shop air compressor gauge indicates over 400 kPa (4 kgf/cm², 57 psi).
6. Inspect the valve clearance (see page 6-9).
7. Remove the sealing bolt (A) from the relief hole, and install the VTEC air stopper (B).



8. Remove the No. 2 and No. 3 camshaft holder bolts, and install the VTEC air adapters (C) finger-tight.
9. Connect the air joint adapter (D), and air pressure regulator with a 0-100 psi gauge (E).

(cont'd)

VTEC Rocker Arms Test (cont'd)

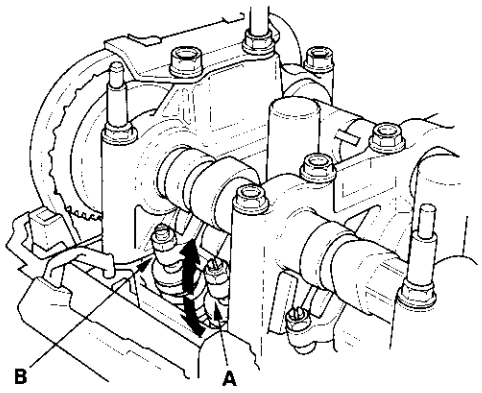
10. Loosen the valve on the regulator, and apply the specified air pressure.

    Specified air pressure:
    290 kPa (3.0 kgf/cm², 42 psi)

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

11. 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 intake secondary rocker arm does not move, 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, and test.



12. Remove the special tools.

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

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

15. Install the cylinder head cover (see page 6-41).

VTC Actuator Inspection

1. Remove the cylinder head cover (see page 6-22).

2. Remove the auto-tensioner (see page 6-19).

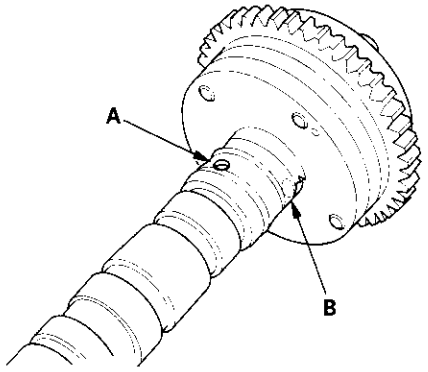
3. Loosen the rocker arm adjusting screws (see step 2 on page 6-26).

4. Remove the camshaft holder (see step 3 on page 6-26).

5. Remove the intake camshaft.

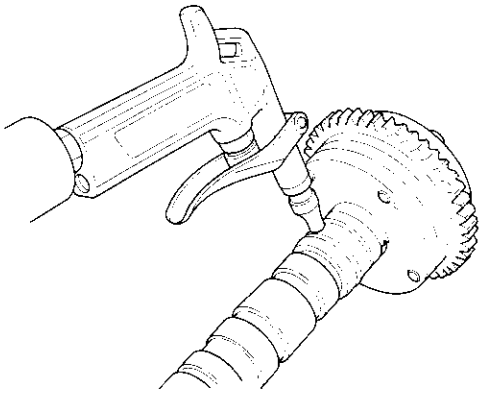
6. Check that the variable valve timing control (VTC) actuator is locked by turning the VTC actuator clockwise and counterclockwise. If the VTC actuator is not locked, replace the VTC actuator.

7. Seal the advance holes (A) and retard holes (B) in the No. 1 camshaft journal with tape.

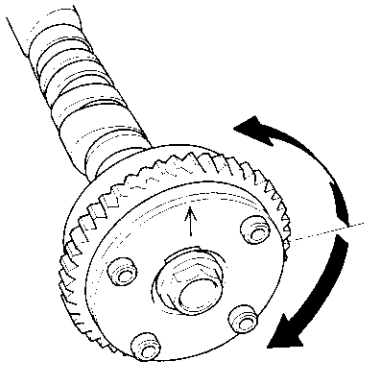


8. Punch a hole through the tape over one of the advance holes.

9. Apply air to the advance hole to release the lock.



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

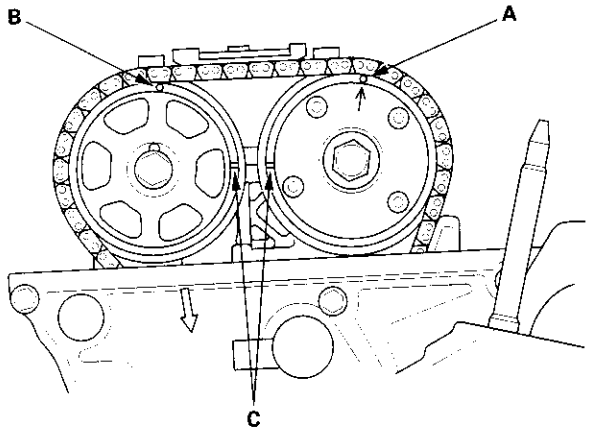


Valve Clearance Adjustment

NOTE: Adjust the valves only when the cylinder head temperature is less than 100°F (38°C).

1. Remove the cylinder head cover (see page 6-22).

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 exhaust camshaft sprocket.



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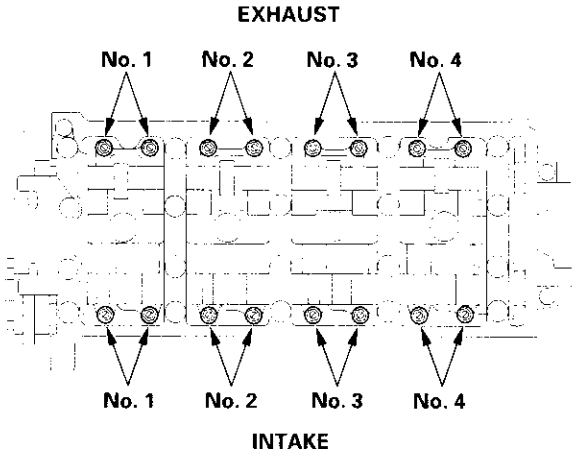
Valve Clearance Adjustment (cont'd)

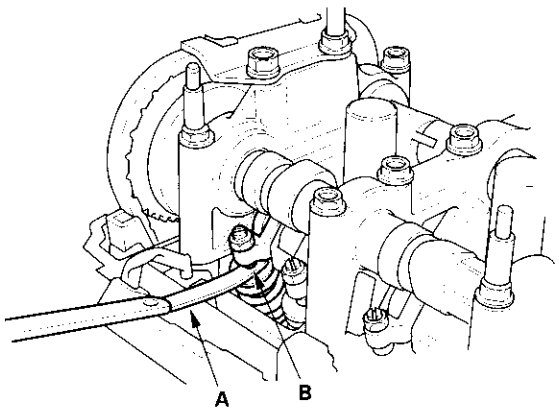
3. Select the correct thickness feeler gauge for the valves you're going to check.

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

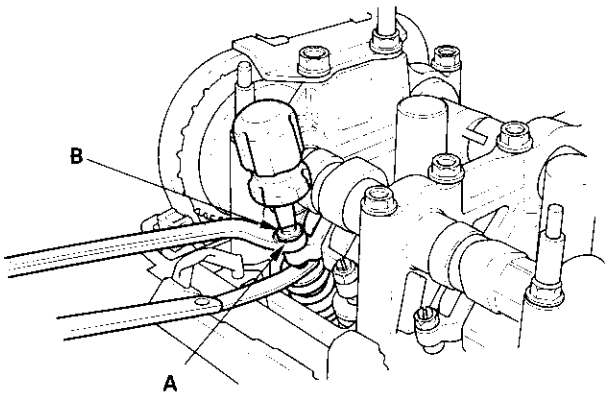
   Adjusting screw locations:



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



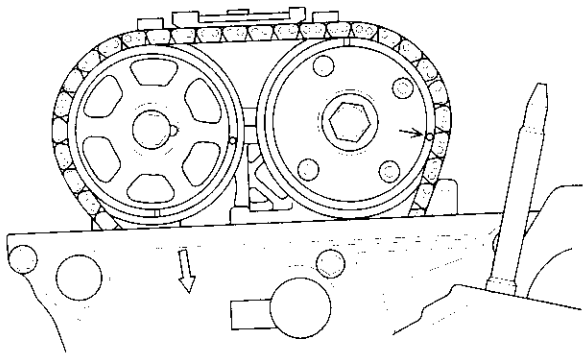
5. If you feel too much or too little drag, loosen the locknut (A), and turn the adjusting screw (B) until the drag on the feeler gauge is correct.



INTAKE: 20 N·m (2.0 kgf·m, 14 lbf·ft)
EXHAUST: 14 N·m (1.4 kgf·m, 10 lbf·ft)

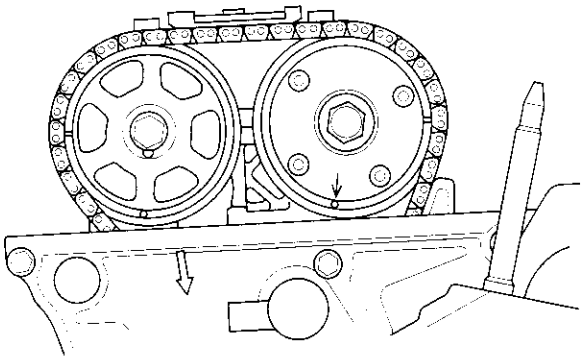
6. Tighten the locknut, and recheck the clearance. Repeat the adjustment if necessary.

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



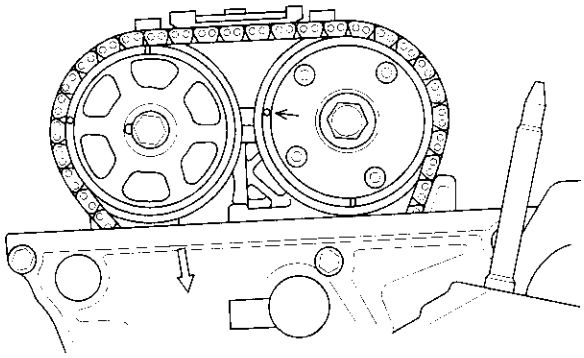
8. Check and, if necessary, adjust the valve clearance on No. 3 cylinder.

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



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

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



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

13. Install the cylinder head cover (see page 6-41).

Crankshaft Pulley Removal and Installation

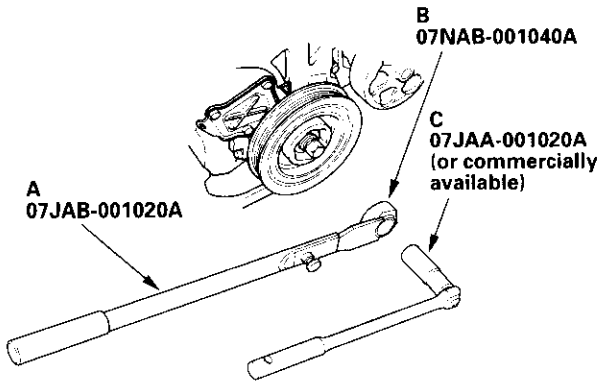
Special Tools Required
- Holder handle 07JAB-001020A
- Holder attachment, 50 mm 07NAB-001040A
- Socket, 19 mm 07JAA-001020A or a commercially available 19 mm socket

Removal

1. Remove front tires/wheels.

2. Remove the splash shield (see step 23 on page 5-5).

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



4. Remove the bolt with a 19 mm socket (C) and breaker bar.

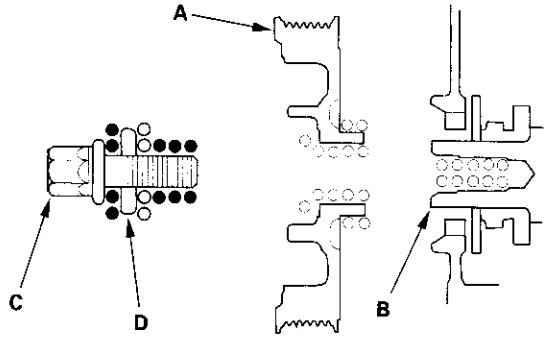
(cont'd)

Crankshaft Pulley Removal and Installation (cont'd)

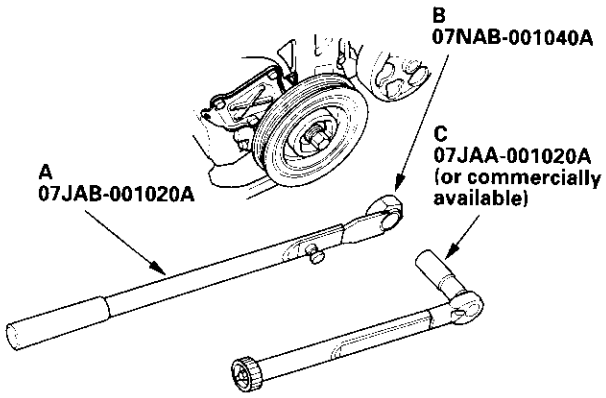
Installation

1. Clean the crankshaft pulley (A), crankshaft (B), bolt (C), and washer (D). Lubricate as shown below.

○: Clean
●: Lubricate



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



3. Tighten the bolt to 245 N·m (25.0 kgf·m, 181 lbf·ft) with a torque wrench and 19 mm socket (C). Do not use an impact wrench.

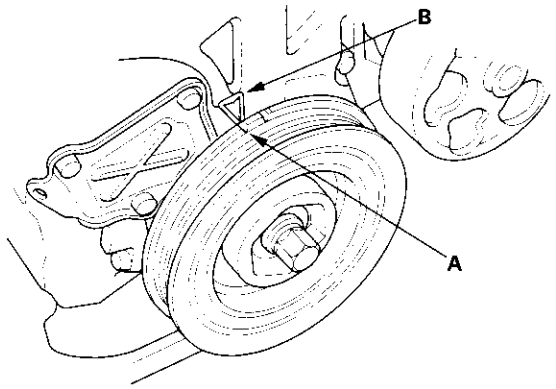
4. Install the splash shield (see step 20 on page 5-12).

5. Install front tires/wheels.

Cam Chain Removal

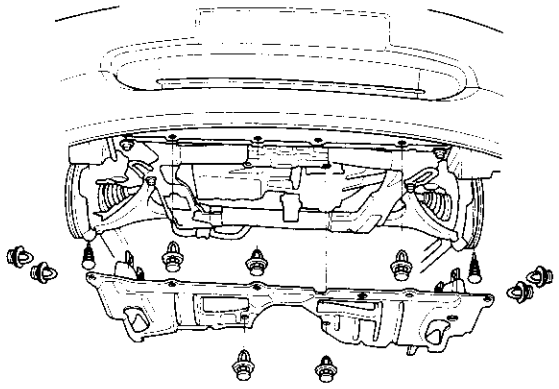
NOTE: Keep the cam chain away from magnetic fields.

1. Turn the crankshaft pulley so its top dead center (TDC) mark (A) lines up with the pointer (B).



2. Remove the front tires/wheels.

3. Remove the splash shield.

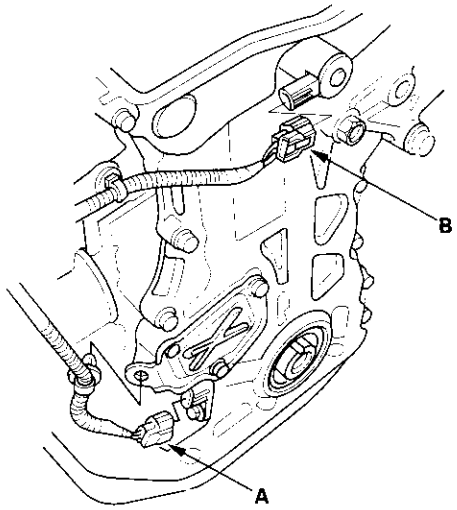


4. Remove the drive belt (see page 4-26).

5. Remove the cylinder head cover (see page 6-22).

6. Remove the crankshaft pulley (see page 6-11).

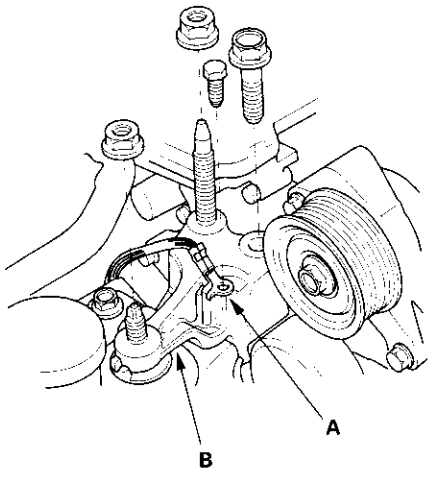
7. Disconnect the crankshaft position (CKP) sensor connector (A) and variable valve timing control (VTC) oil control solenoid valve connector (B).



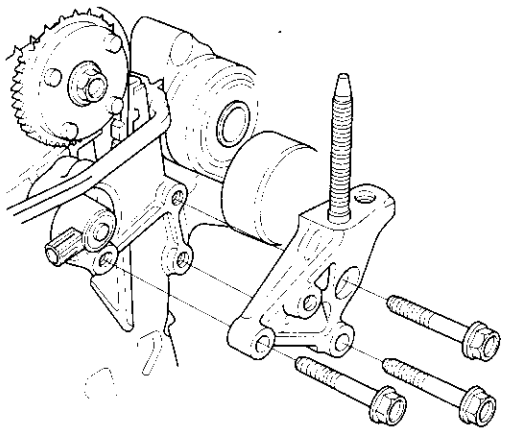
8. Remove the VTC oil control solenoid valve (see step 1 on page 11-127).

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

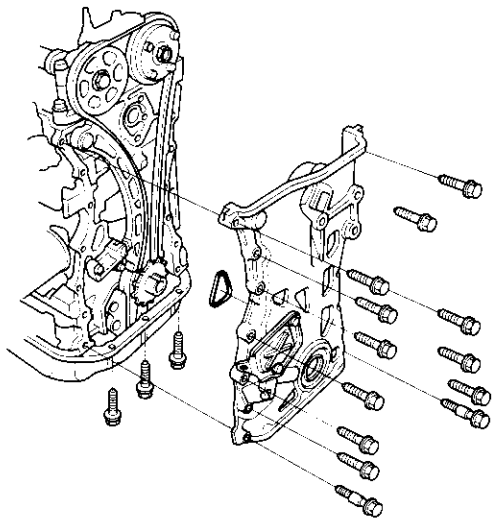
10. Remove the ground cable (A), and remove the upper bracket (B).



11. Remove the side engine mount bracket.



12. Remove the chain case.

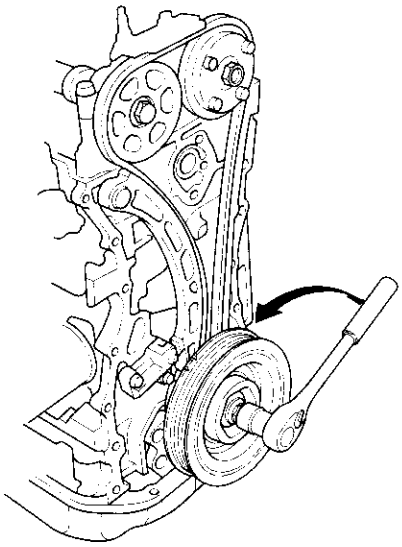


(cont'd)

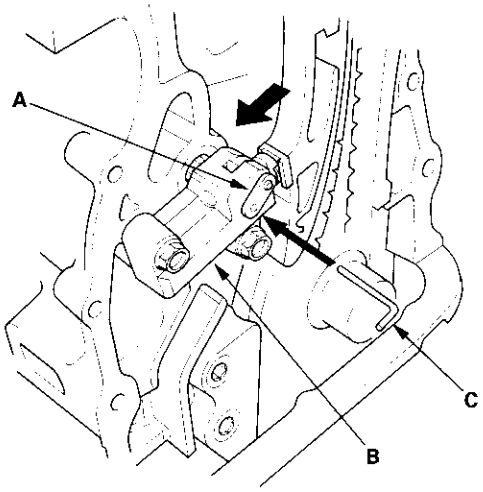
Cam Chain Removal (cont'd)

13. Loosely install the crankshaft pulley.

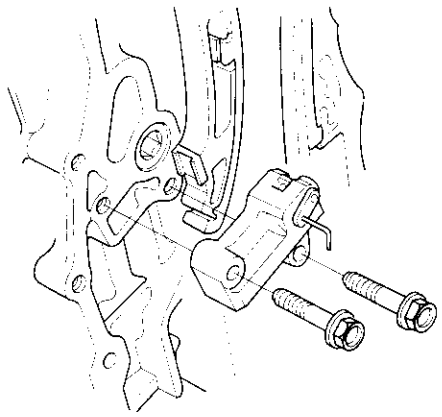
14. Turn the crankshaft counterclockwise to compress the auto-tensioner.



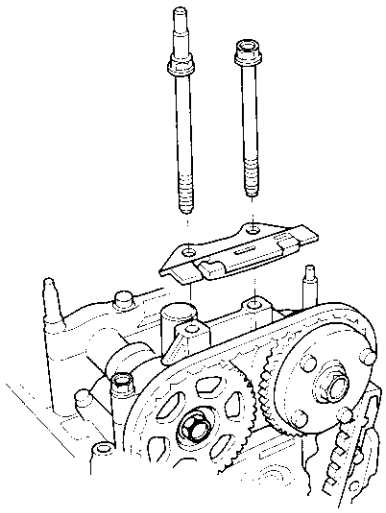
15. Align the holes on the lock (A) and the auto-tensioner (B), then insert a 1.5 mm (0.06 in.) diameter pin (C) into the holes. Turn the crankshaft clockwise to secure the pin.



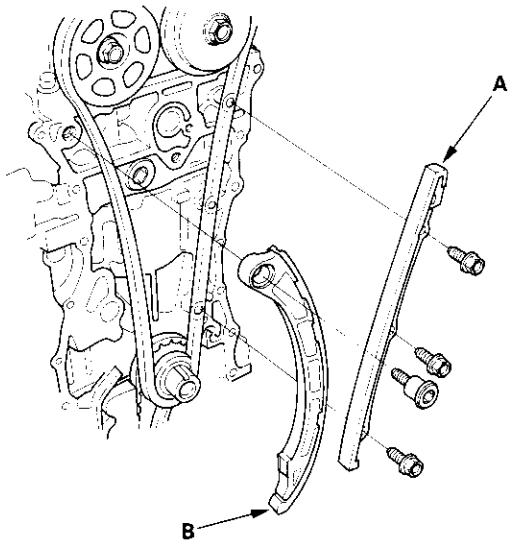
16. Remove the auto-tensioner.



17. Remove the cam chain guide B.



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

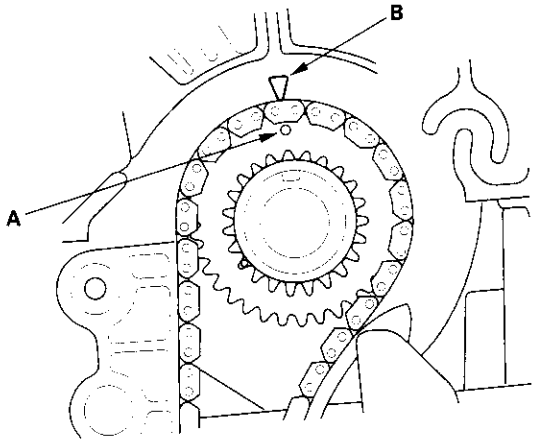


19. Remove the cam chain.

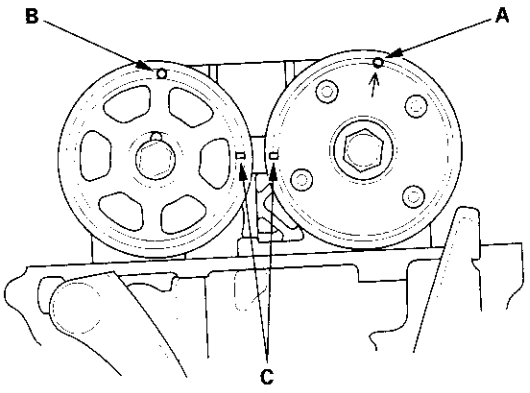
Cam Chain Installation

NOTE: Keep the cam chain away from magnetic fields.

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



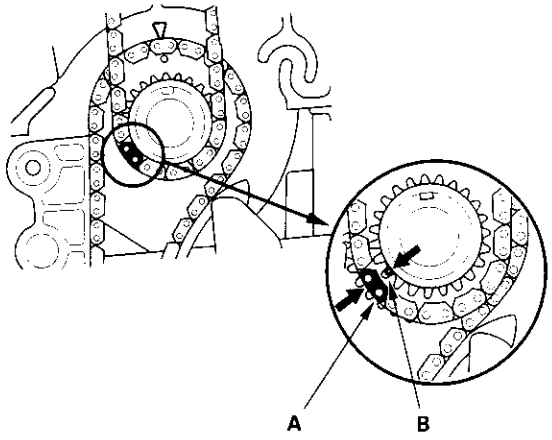
2. Set the camshafts to TDC. The punch mark (A) on the variable valve timing control (VTC) actuator and the punch mark (B) on the exhaust camshaft sprocket should be at the top. Align the TDC marks (C) on the VTC actuator and exhaust camshaft sprocket.



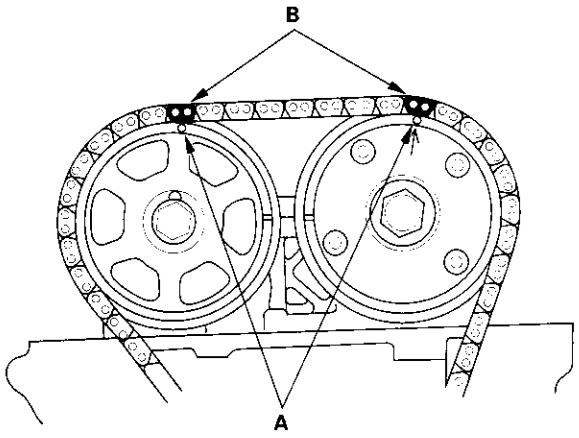
(cont'd)

Cam Chain Installation (cont'd)

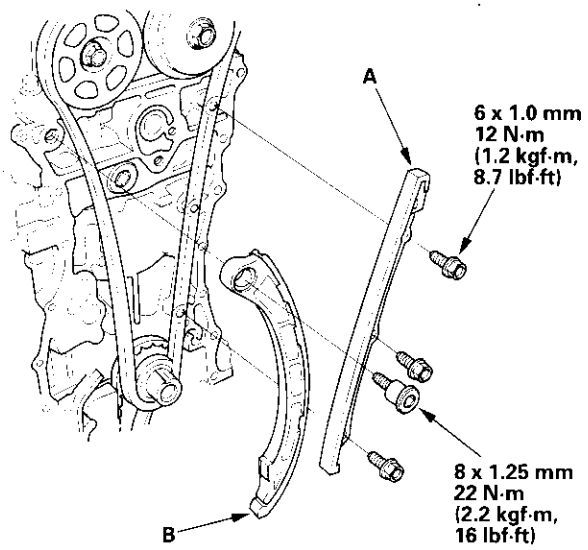
3. Install the cam chain on the crankshaft sprocket with the colored piece (A) aligned with the punch mark (B) on the crankshaft sprocket.



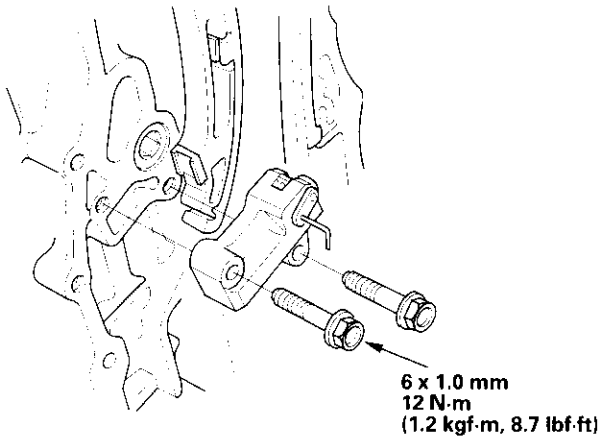
4. Install the cam chain on the VTC actuator and exhaust camshaft sprocket with the punch marks (A) aligned with the two colored pieces (B).



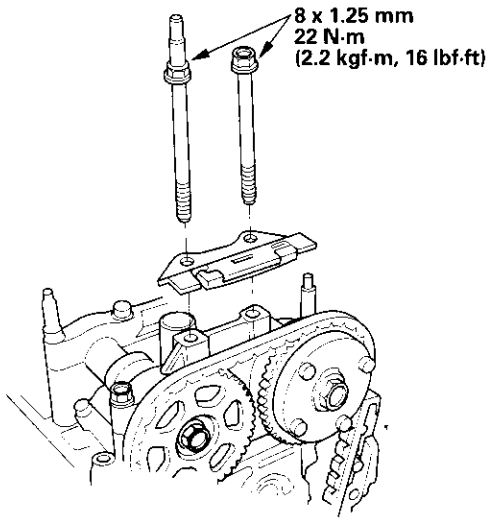
5. Install the cam chain guide A (A) and tensioner arm (B).



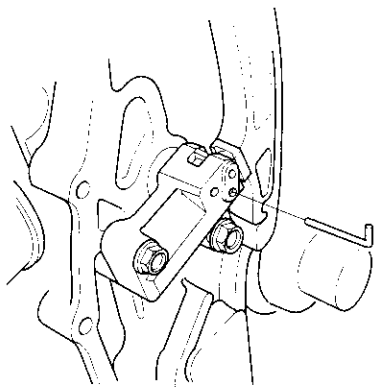
6. Install the auto-tensioner.



7. Install the cam chain guide B.



8. Remove the pin from the auto-tensioner.

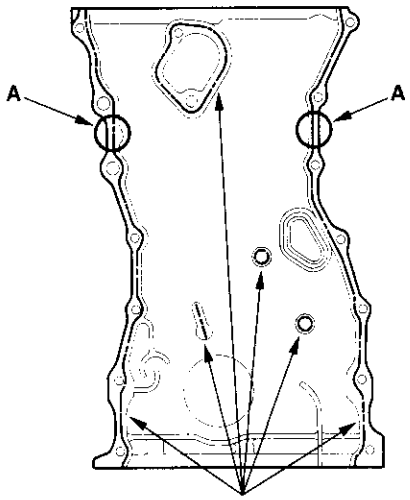


9. Check the chain case oil seal for damage. If the oil seal is damaged, replace the chain case oil seal (see page 6-21).

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

11. Clean and dry the chain case mating surfaces.

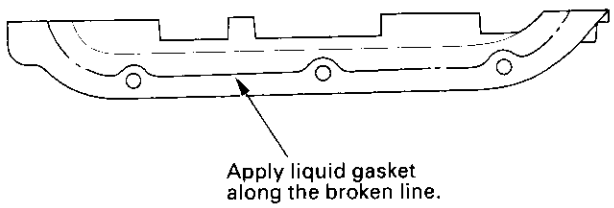
12. Apply liquid gasket, P/N 08718-0009, evenly to the cylinder block mating surface of the chain case and to the inner threads of the holes.



13. Apply liquid gasket to the cylinder block upper surface contact areas (A) on the chain case.

14. Apply liquid gasket, P/N 08718-0009, evenly to the oil pan mating surface of the chain case and to the inner threads of the holes.

NOTE: Do not install the parts if 5 minutes or more have elapsed since applying liquid gasket. Instead, reapply liquid gasket after removing old residue.

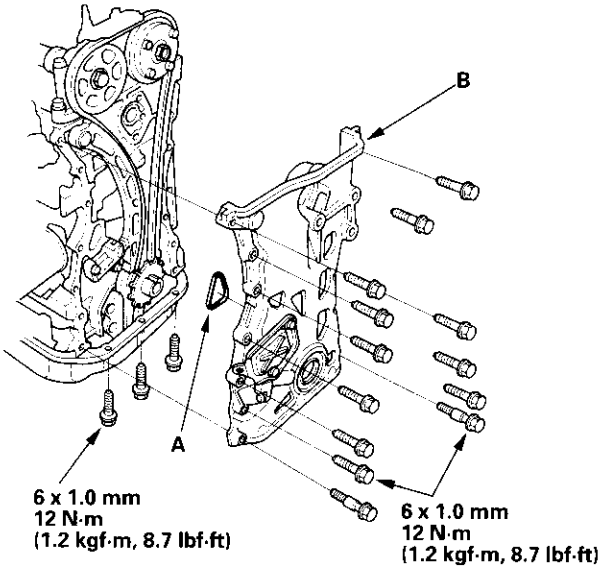


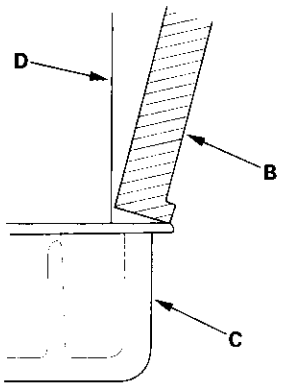
(cont'd)

Cam Chain Installation (cont'd)

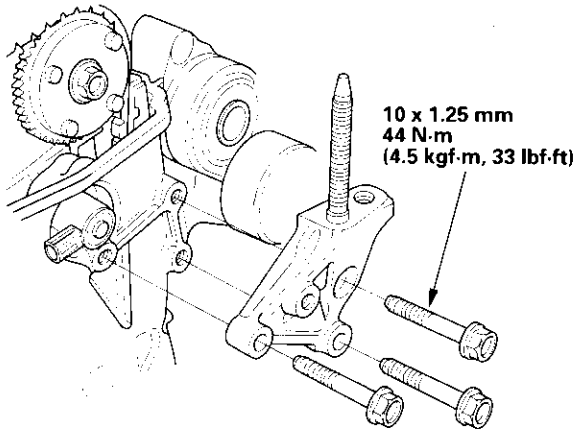
15. Install the new O-ring (A) on the chain case. Set the edge of the chain case (B) to the edge of the oil pan (C), then install the chain case on the cylinder block (D).

    NOTE: When installing the chain case, do not slide the bottom surface on the oil pan mounting surface.

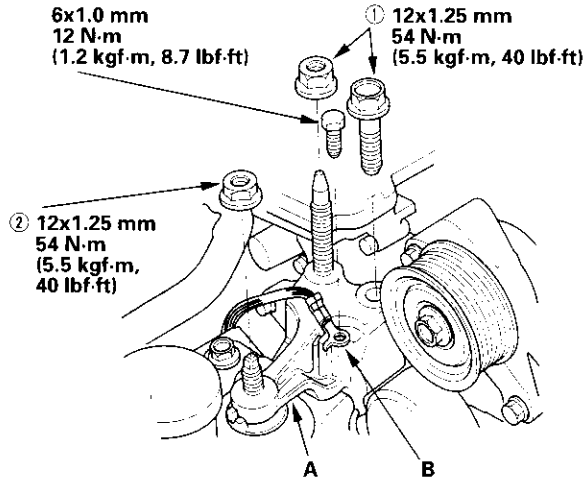




16. Install the side engine mount bracket.



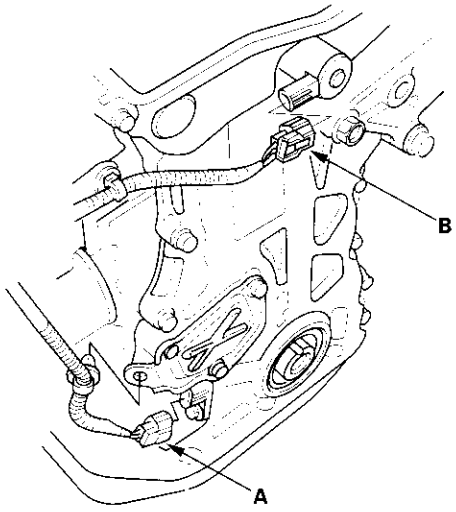
17. Install the upper bracket (A), then tighten the bolt/nuts in the numbered sequence shown.



18. Install the ground cable (B).

19. Install the variable valve timing control (VTC) oil control solenoid valve (see step 1 on page 11-127).

20. Connect the crankshaft position (CKP) sensor connector (A) and VTC oil control solenoid valve connector (B).

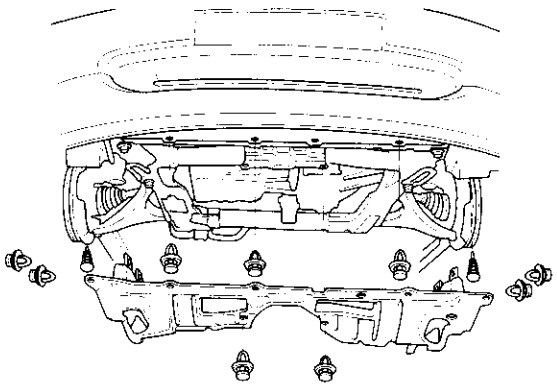


21. Install the crankshaft pulley (see page 6-12).

22. Install the cylinder head cover (see page 6-41).

23. Install the drive belt.

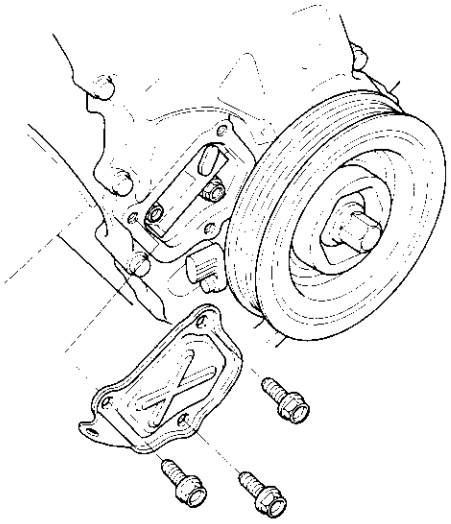
24. Install the splash shield.



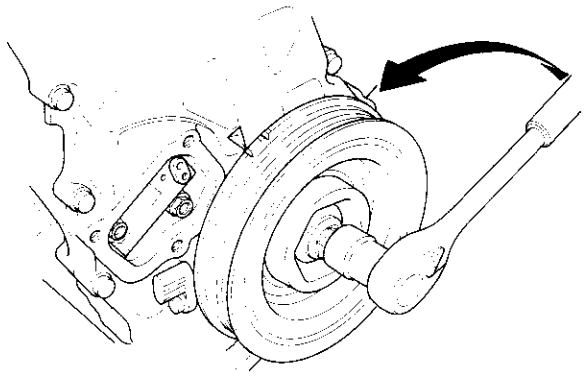
Auto-Tensioner Removal/ Installation

Removal:

1. Remove the chain case cover.



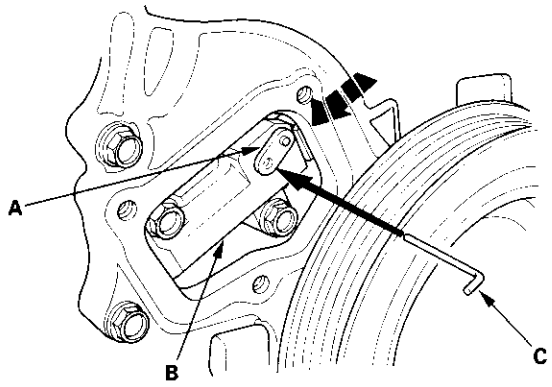
2. Turn the crankshaft counterclockwise to compress the auto-tensioner.



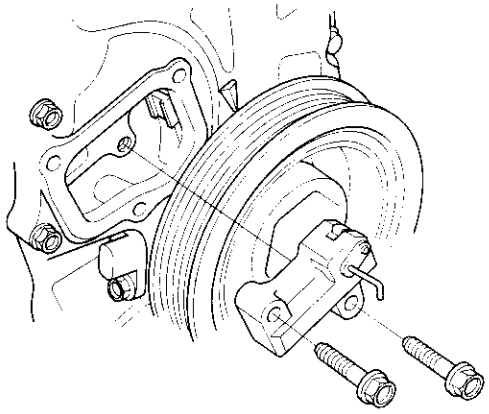
(cont'd)

Auto-Tensioner Removal/Installation (cont'd)

3. Align the holes on the lock (A) and the auto-tensioner (B), then insert a 1.5 mm (0.06 in.) diameter pin (C) into the holes. Turn the crankshaft clockwise to secure the pin.

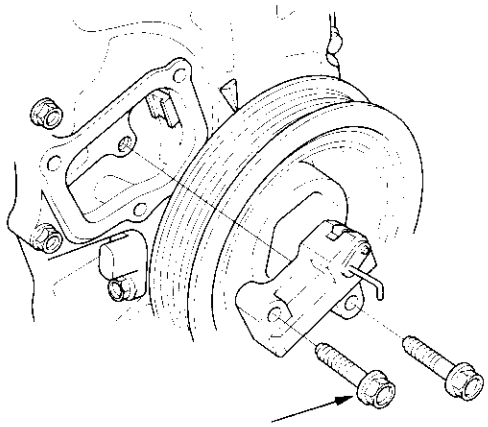


4. Remove the auto-tensioner.



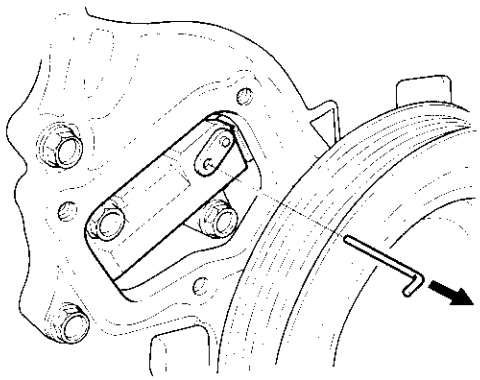
Installation:

1. Install the auto-tensioner.



6 x 1.0 mm
12 N·m (1.2 kgf·m, 8.7 lbf·ft)

2. Remove the pin from the auto-tensioner.

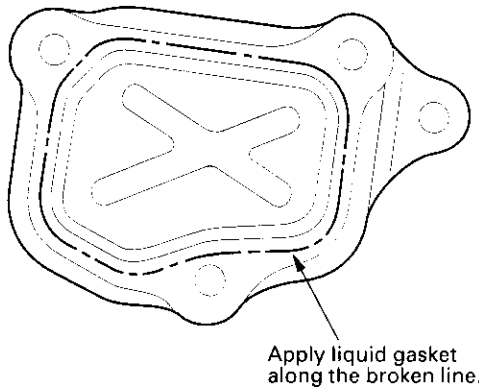


3. Remove old liquid gasket from the chain case cover mating surfaces, bolts, and bolt holes.

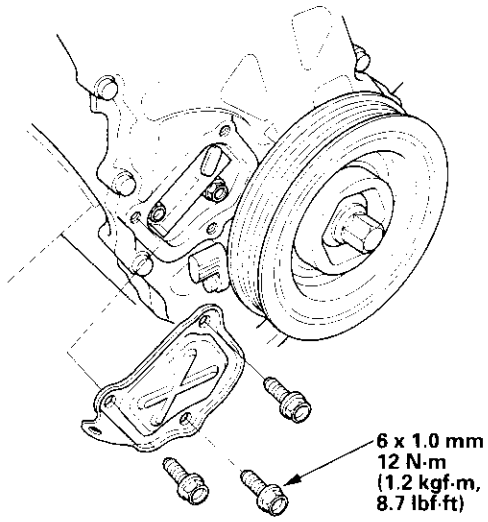
4. Clean and dry the chain case cover mating surfaces.

5. Apply liquid gasket, P/N 08718-0009, evenly to the chain case mating surface of the chain case cover and to the inner threads of the holes.

   NOTE: Do not install the parts if 5 minutes or more have elapsed since applying liquid gasket. Instead, reapply liquid gasket after removing old residue.



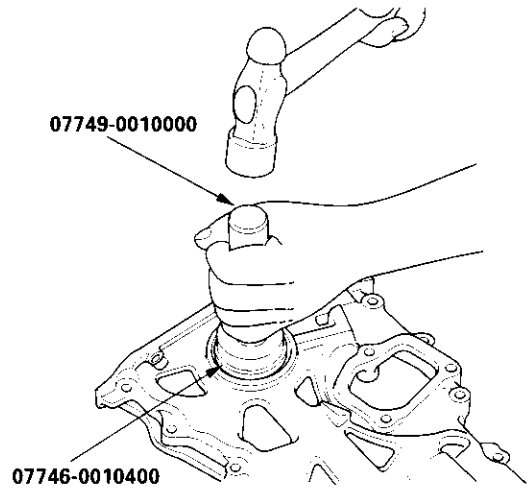
6. Install the chain case cover.



Chain Case Oil Seal Installation

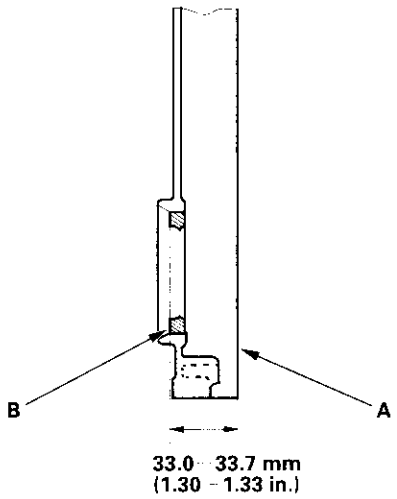
Special Tools Required
- Driver 07749-0010000
- Attachment, 52 x 55 mm 07746-0010400

1. Use the special tools to drive a new oil seal squarely into the chain case to the specified installed height.



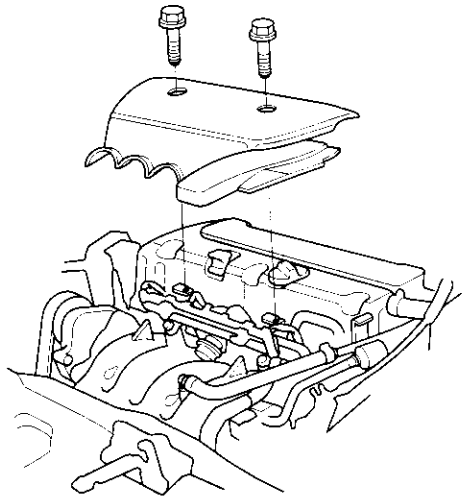
2. Measure the distance between the chain case surface (A) and oil seal (B).

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



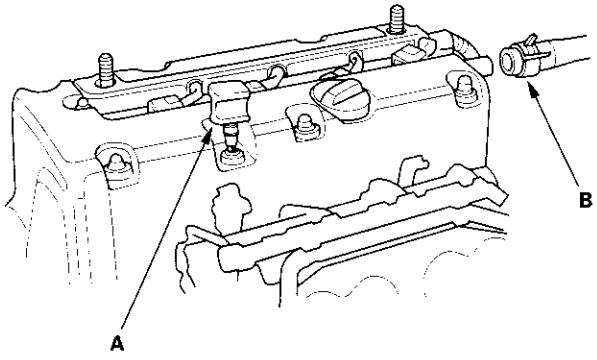
Cylinder Head Cover Removal

1. Remove the intake manifold cover.

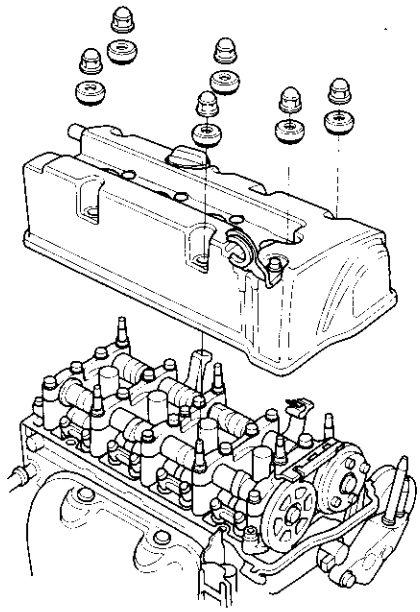


2. Remove the four ignition coils (see page 4-18).

3. Remove the dipstick (A) and breather hose (B).



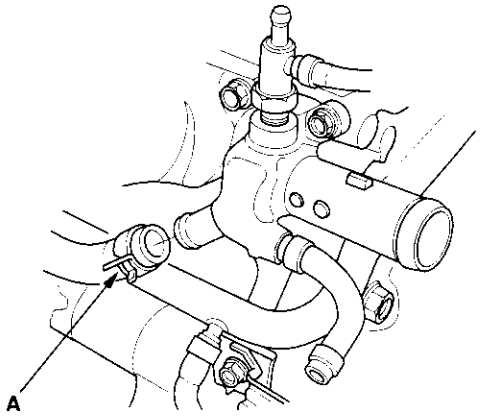
4. Remove the cylinder head cover.



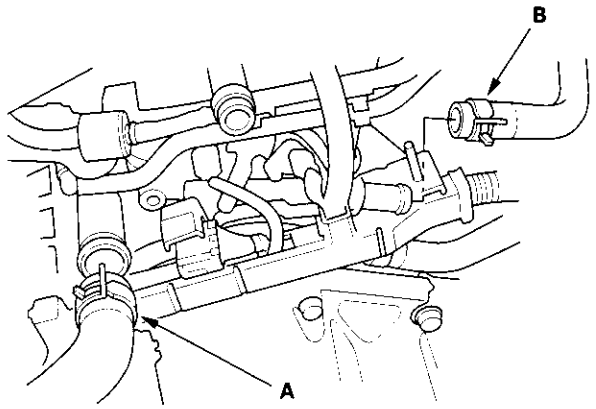
Cylinder Head Removal

NOTE:
- Use fender covers to avoid damaging painted surfaces.
- To avoid damage, unplug the wiring connectors carefully while holding the connector portion.
- To avoid damaging the cylinder head, wait until the engine coolant temperature drops below 100°F (38°C) 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.

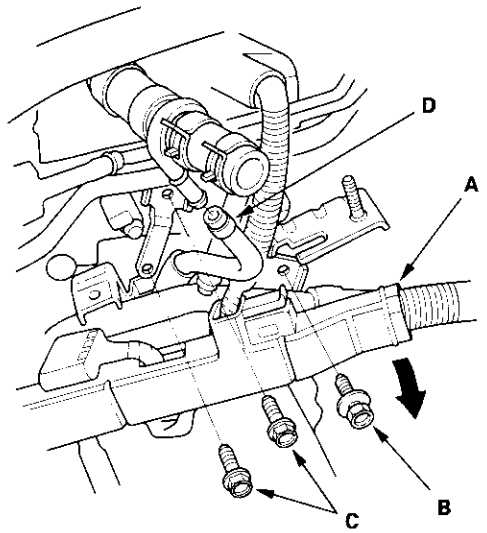
1. Drain the engine coolant (see page 10-6).
2. Remove the drive belt (see page 4-26).
3. Remove the intake manifold (see page 9-3).
4. Remove the air cleaner housing (see step 7 on page 5-2).
5. Remove the water bypass hose (A).



6. Remove the exhaust manifold (see page 9-7).
7. Remove the cam chain (see page 6-12).
8. Remove the engine wire harness connectors and wire harness clamps from the cylinder head.
   - Engine coolant temperature (ECT) sensor connector
   - Camshaft position (CMP) (top dead center (TDC)) sensor B connector
   - Camshaft position (CMP) sensor A connector
9. Remove the upper radiator hose (A) and heater hose (B).



10. Remove the harness holder (A) from the bracket, then remove the connecting pipe mounting bolt (B) and brake booster vacuum line mounting bolts (C).



11. Remove the water bypass hose (D).

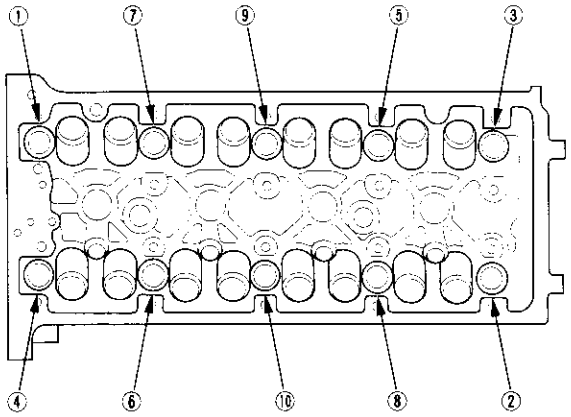
(cont'd)

Cylinder Head Removal (cont'd)

12. Remove the rocker arm assembly (see page 6-26).

13. Remove the cylinder head bolts. To prevent warpage, unscrew the bolts in sequence 1/3 turn at a time; repeat the sequence until all bolts are loosened.

CYLINDER HEAD BOLTS LOOSENING SEQUENCE:



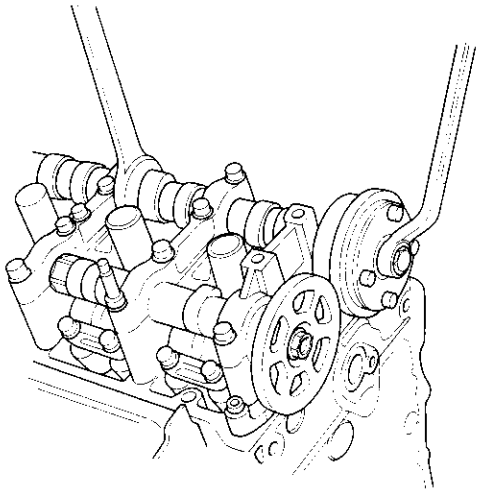
14. Remove the cylinder head.

VTC Actuator, Exhaust Camshaft Sprocket Replacement

Removal:

1. Remove the cam chain (see page 6-12).

2. Hold the camshaft with an open-end wrench, then loosen the variable valve timing control (VTC) actuator mounting bolt and exhaust camshaft sprocket mounting bolt.

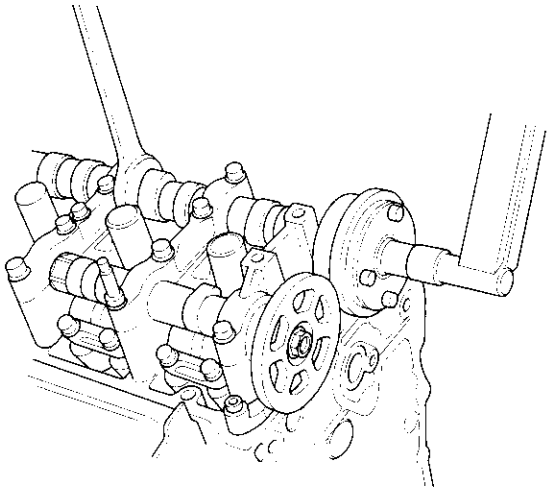


3. Remove the VTC actuator and exhaust camshaft sprocket.

Installation:

1. Install the VTC actuator and exhaust camshaft sprocket.
2. Apply engine oil to the threads of the VTC actuator mounting bolt and exhaust camshaft mounting bolt, then install them.
3. Hold the camshaft with an open-end wrench, then tighten the bolts.

   Specified torque:
   VTC actuator mounting bolt:
   113 N·m (11.5 kgf·m, 83 lbf·ft)
   Exhaust camshaft sprocket mounting bolt:
   72 N·m (7.3 kgf·m, 53 lbf·ft)



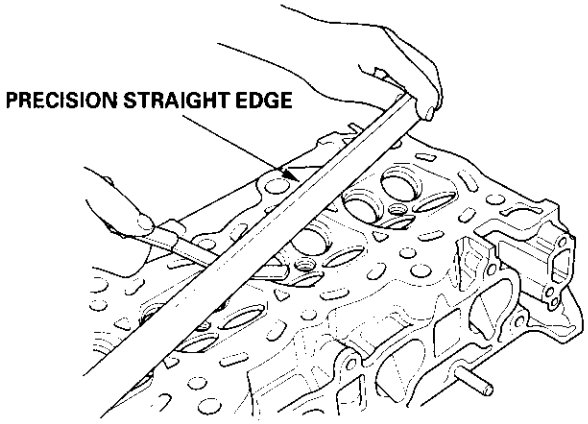
4. Install the cam chain (see page 6-15).

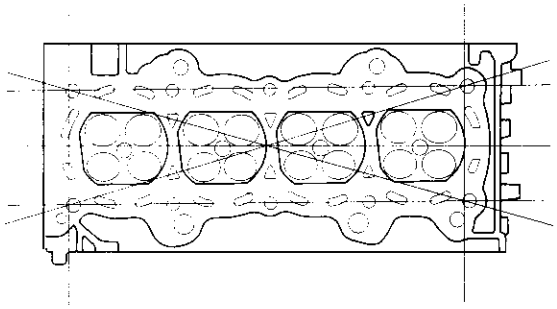
Cylinder Head Inspection for Warpage

1. Remove the cylinder head (see page 6-23).
2. Inspect the camshaft (see page 6-29).
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.).

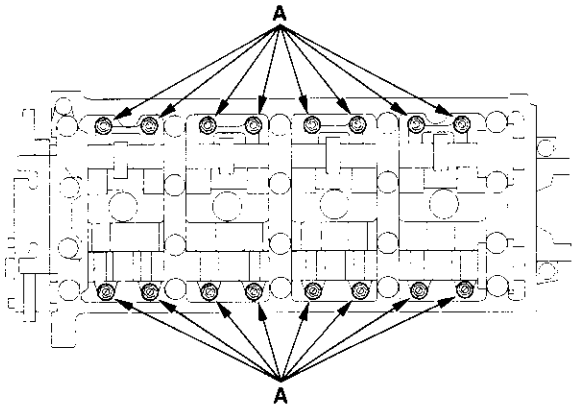
   Cylinder Head Height:
   Standard (New): 103.95—104.05 mm (4.093—4.096 in.)





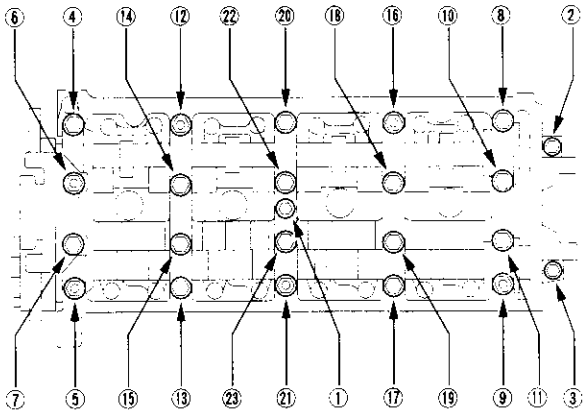
Rocker Arm Assembly Removal

1. Remove the cam chain (see page 6-12).
2. Loosen the rocker arm adjusting screws (A).

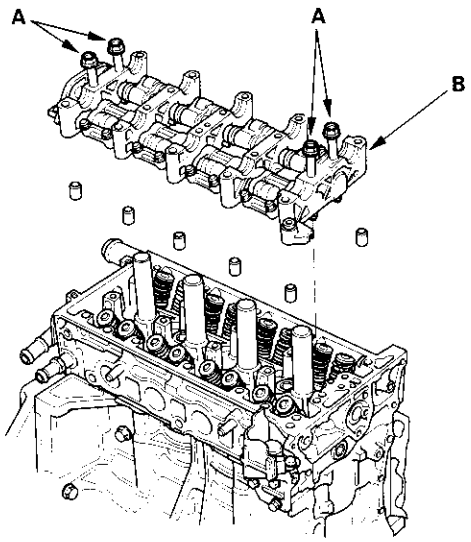


3. Remove the camshaft holder bolts. To prevent damaging the camshafts, unscrew the bolts two turns at a time, in a crisscross pattern.

CAMSHAFT HOLDER BOLTS LOOSENING SEQUENCE:



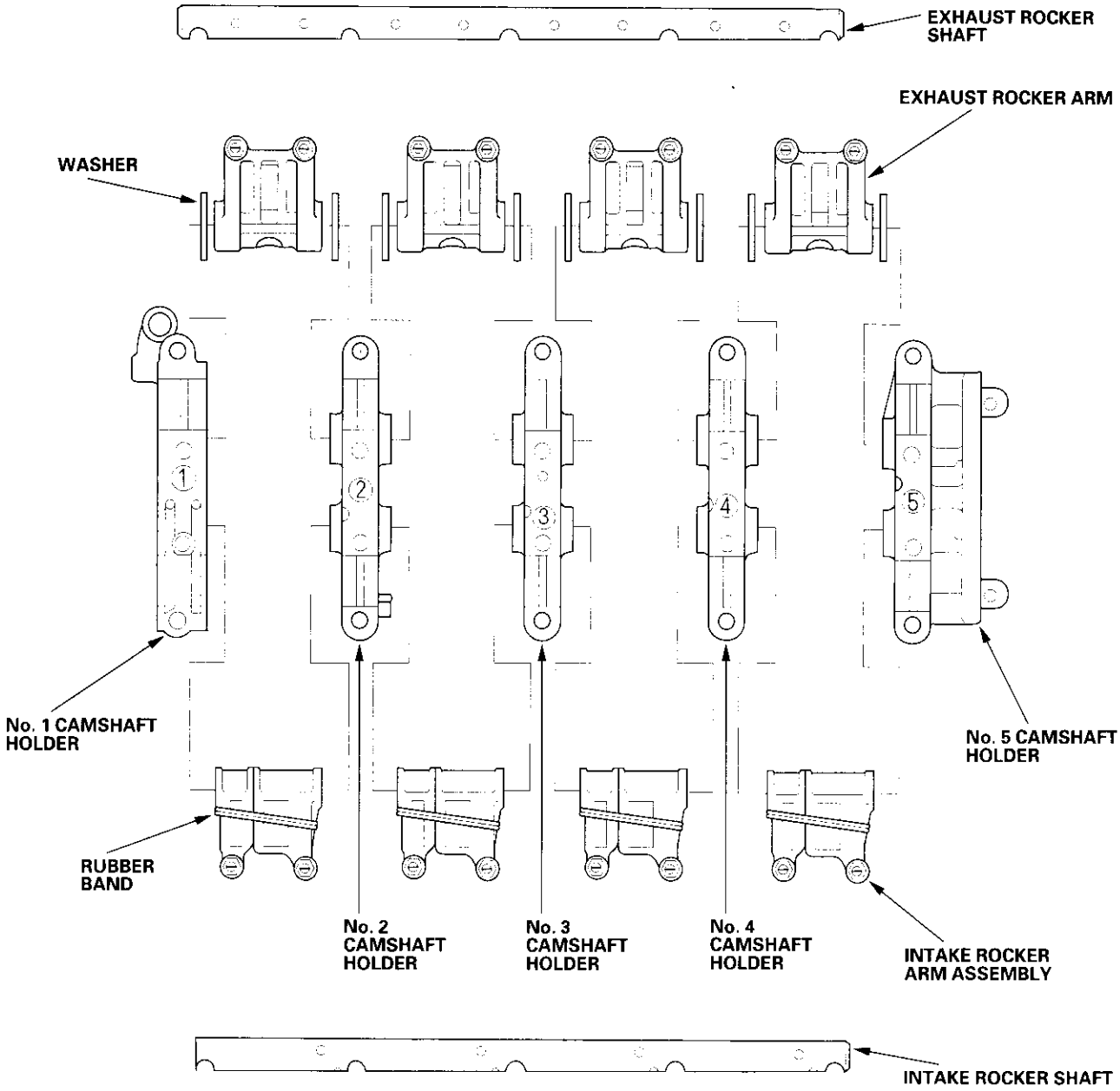
4. Remove the cam chain guide B, camshaft holders, and camshafts.
5. Insert the bolts (A) into the rocker shaft holder, then remove the rocker arm assembly (B).



Rocker Arms and Shafts Disassembly/Reassembly

NOTE:

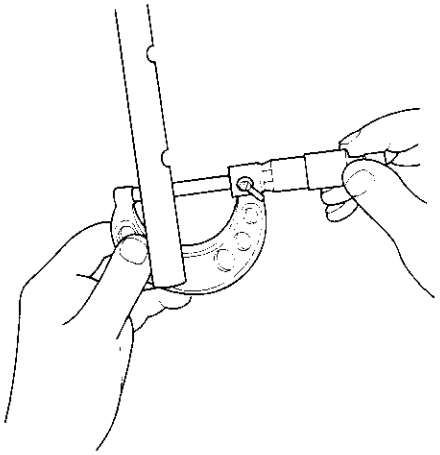
- Identify parts as they are removed to ensure reinstallation in original location.
- Inspect the rocker shafts and rocker arms (see page 6-28).
- The rocker arms must be installed in the same positions if reused.
- When removing or installing the rocker arm assembly, do not remove the camshaft holder bolts. The bolts will keep the holders, springs and rocker arms on the shaft.
- Prior to reassembling, clean all the parts in solvent, dry them, and apply lubricant to any contact points.
- Bundle the rocker arms with rubber bands to keep them together as a set.



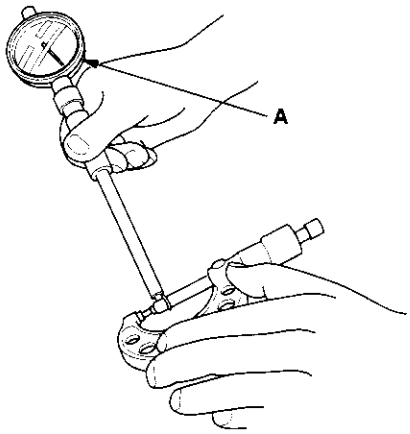
Rocker Arms and Shafts Inspection

1. Remove the rocker arm assembly (see page 6-26).

2. Measure the diameter of the shaft at the first rocker location.



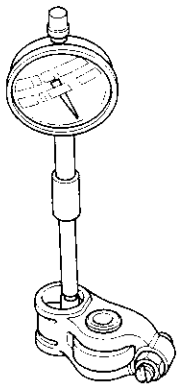
3. Zero the gauge (A) to the shaft diameter.



4. Measure the inside diameter of the rocker arm, and check it for an out-of-round condition.

Rocker Arm-to-Shaft Clearance:
Standard (New):

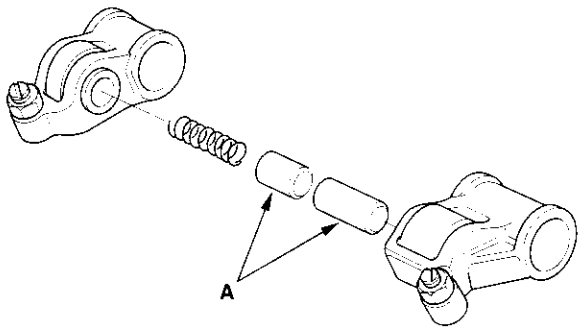
Intake:	**0.025—0.052 mm (0.0010—0.0020 in.)**
Exhaust:	**0.018—0.056 mm (0.0007—0.0022 in.)**
Service Limit:	**0.08 mm (0.003 in.)**



5. Repeat for all rocker arms and both shafts. If the clearance is over the limit, replace the rocker shaft and all overtolerance rocker arms. If any VTEC rocker arm needs replacement, replace the rocker arms (primary and secondary) as a set.

6. Inspect the rocker arm pistons (A). Push each piston manually.
If it does not move smoothly, replace the rocker arm set.

NOTE: Apply oil to the pistons when reassembling.



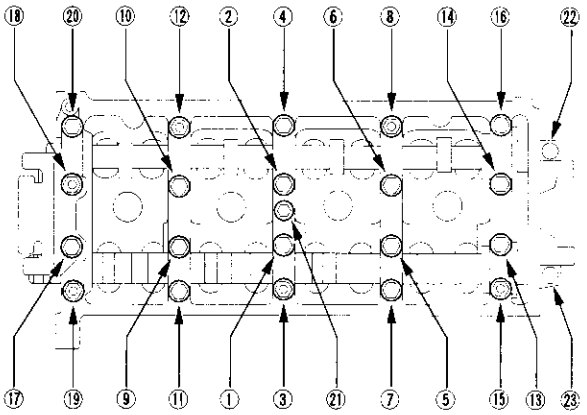
Camshaft Inspection

NOTE: Do not rotate the camshaft during inspection.

1. Remove the rocker arm assembly (see page 6-26), and disassemble it (see page 6-27).

2. Put the rocker shaft holders, camshaft, and camshaft holders on the cylinder head, then tighten the bolts to the specified torque.

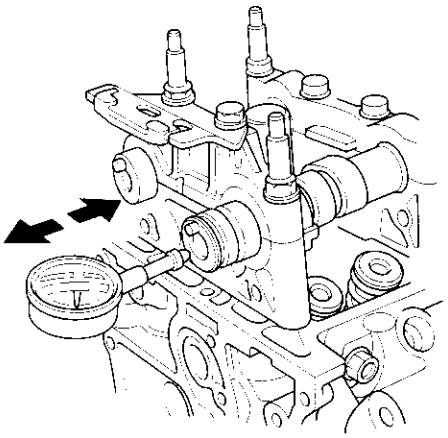
   Specified torque:
   8 mm bolts:
   22 N·m (2.2 kgf·m, 16 lbf·ft)
   6 mm bolts:
   12 N·m (1.2 kgf·m, 8.7 lbf·ft)
   6 mm bolts: ㉑, ㉒, ㉓



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 camshaft head and recheck. If it is still beyond the service limit, replace the cylinder.

   Camshaft End Play:
   Standard (New): 0.05—0.20 mm (0.002—0.008 in.)
   Service Limit: 0.4 mm (0.02 in.)



(cont'd)

Camshaft Inspection (cont'd)

5. Unscrew 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.

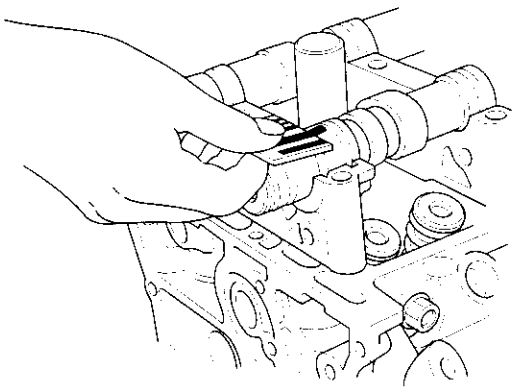
8. Install the camshaft holders, then tighten the bolts to the specified torque as shown in step 2.

9. Remove the camshaft holders. Measure the widest portion of plastigage on each journal.

   - If the camshaft-to-holder clearance is within 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):

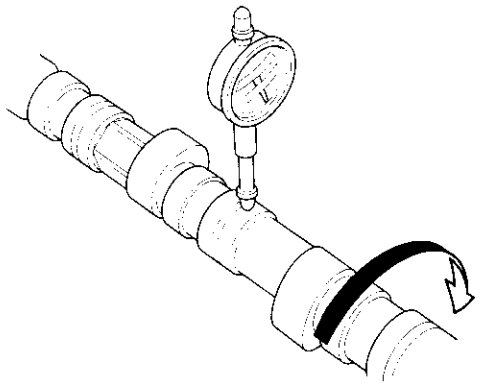
No. 1 Journal:	**0.030—0.069 mm (0.001—0.003 in.)**
No. 2, 3, 4, 5 Journals:	**0.060—0.099 mm (0.002—0.004 in.)**
Service Limit:	**0.15 mm (0.006 in.)**



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.)

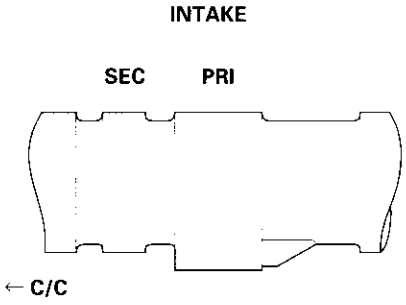


11. Measure cam lobe height.

Cam Lobe Height Standard (New):

	INTAKE	EXHAUST
PRI	33.925 mm (1.3356 in.)	34.092 mm (1.3422 in.)
SEC	29.638 mm (1.1668 in.)	

PRI: Primary SEC: Secondary
C/C: Cam Chain



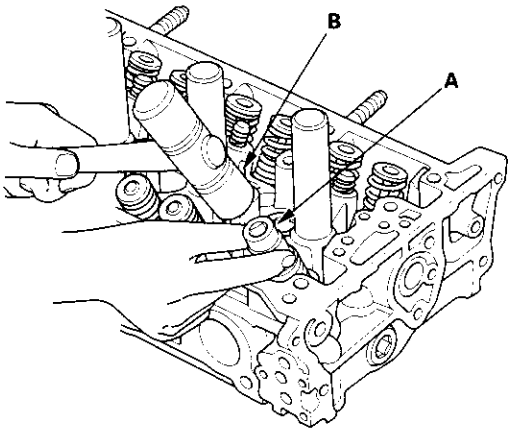
Valves, Springs, and Valve Seals Removal

Special Tools Required
Valve spring compressor attachment 07VAE-001010A

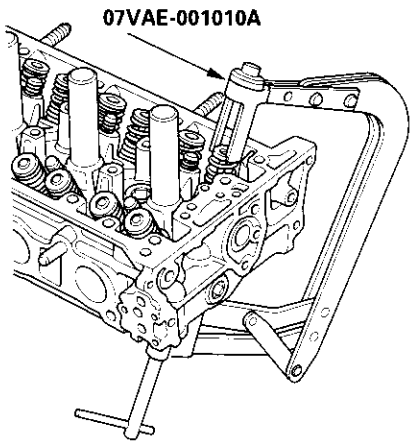
Identify the valves and valve springs as they are removed so that each item can be reinstalled in its original position.

1. Remove the cylinder head (see page 6-23).

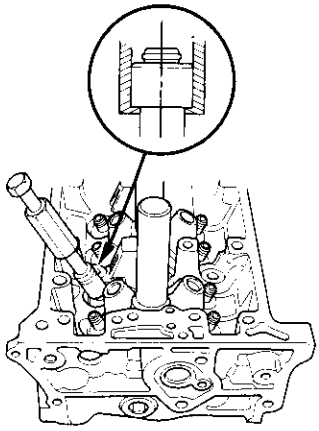
2. Using an appropriate-sized socket (A) and plastic mallet (B), lightly tap the valve retainer to loosen the valve keepers.



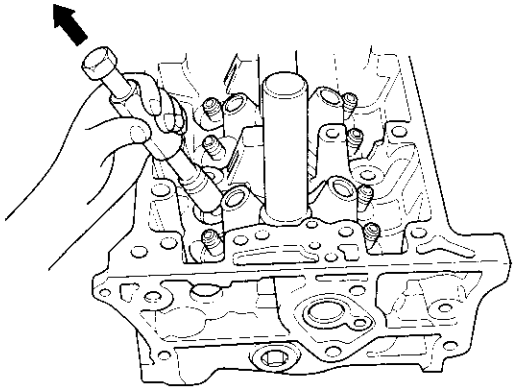
3. Install the spring compressor. Compress the spring, and remove the valve keepers.



4. Install the valve guide seal remover.



5. Remove the valve seal.

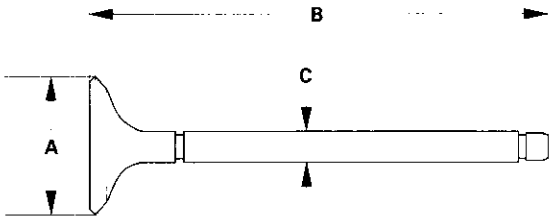


Valve Inspection

1. Remove the valves (see page 6-31).
2. Measure the valve in these areas.

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: 5.42 mm (0.213 in.)

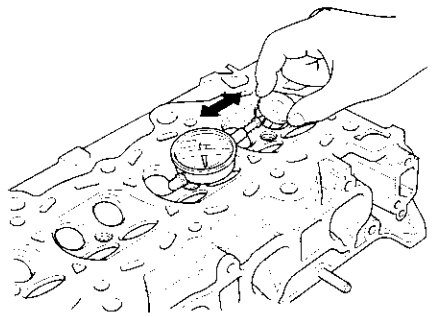


Valve Stem-to-Guide Clearance Inspection

1. Remove the valves (see page 6-31).
2. Slide the valve out of its guide about 10 mm, then measure the guide-to-stem 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.)

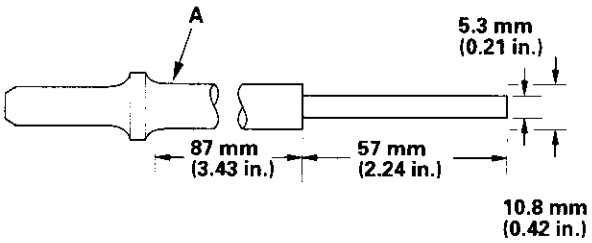
Exhaust Valve Stem-to-Guide Clearance:
Standard (New): 0.055—0.080 mm (0.0022—0.0031 in.)
Service Limit: 0.11 mm (0.004 in.)

Valve Guide Replacement

Special Tools Required
- Valve guide driver, 5.5 mm 07742-0010100
- Valve guide reamer, 5.5 mm 07HAH-PJ7010B

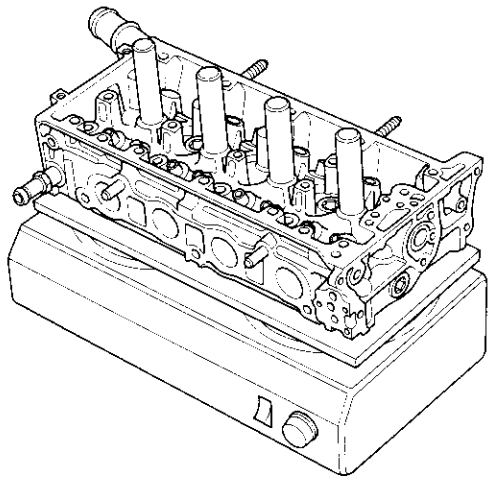
1. Inspect valve stem-to-guide clearance (see page 6-32).

2. As illustrated below, 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 special tool and a conventional hammer.



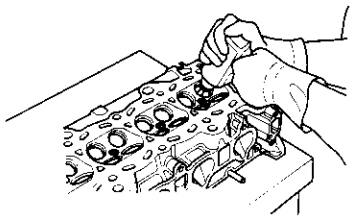
3. Select the proper replacement guides, and chill them in the freezer section of a refrigerator for about an hour.

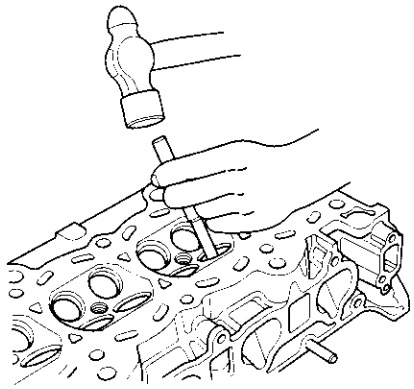
4. Use a hot plate or oven to evenly heat the cylinder head to 300°F (150°C). Monitor the temperature with a cooking thermometer. Do not get the head hotter than 300°F (150°C); excessive heat may loosen the valve seats.



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 inch) bit, then try again. Drill guides only in extreme cases; you could damage the cylinder head if the guide breaks.

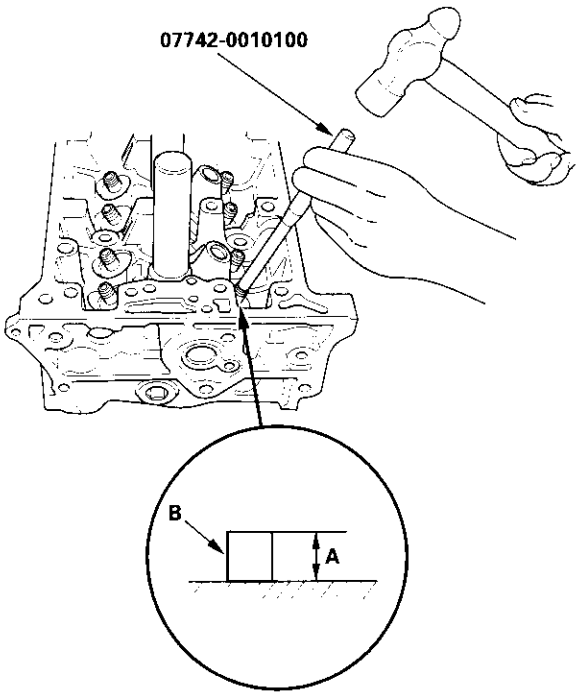
8. Remove the new guide(s) from the freezer, one at a time, as you need them.

(cont'd)

Valve Guide Replacement (cont'd)

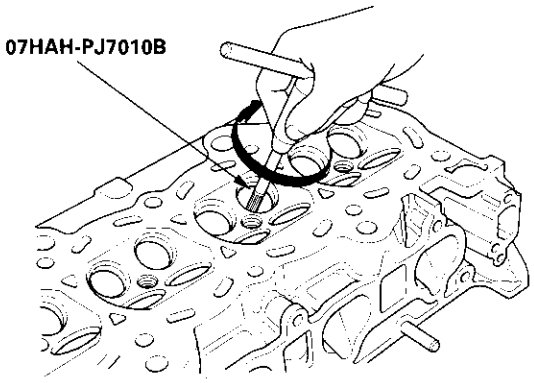
9. Apply a thin coat of clean engine oil to the outside of the new valve guide. Install the guide from the camshaft side of the head; use the special tool to drive the guide in to the specified installed height (A) of the guide (B). If you have all 16 guides to do, you may have to reheat the head.

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 reamer and valve guide with cutting oil.

11. Rotate the reamer clockwise the full length of the valve guide bore.



12. Continue to rotate the reamer clockwise while removing it from the bore.

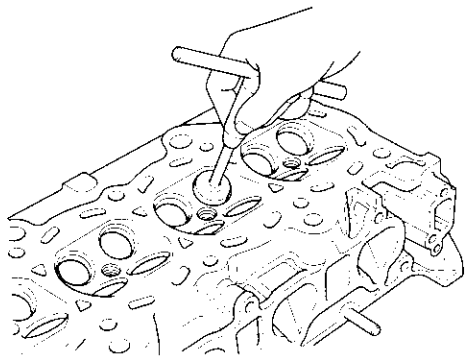
13. Thoroughly wash the guide in detergent and water to remove any cutting residue.

14. Check the clearances with a valve (see page 6-32). Verify that a valve slides in the intake and exhaust valve guides without exerting pressure.

Valve Seat Reconditioning

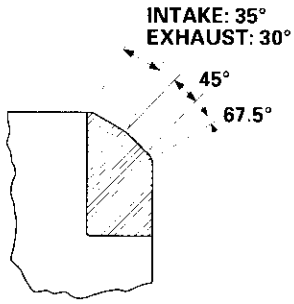
1. Inspect valve stem-to-guide clearance (see page 6-32). If the valve guides are worn, replace them (see page 6-33) before cutting the valve seats.

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.

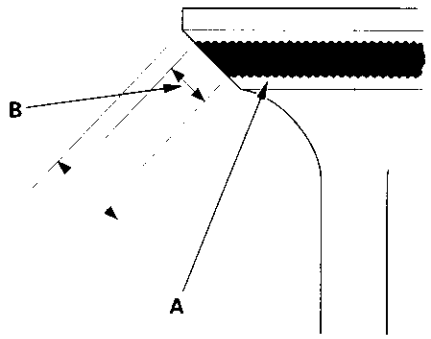
4. Bevel the upper and lower edges at the angles shown in the illustration.
   Check the width of the seat and adjust accordingly.



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.

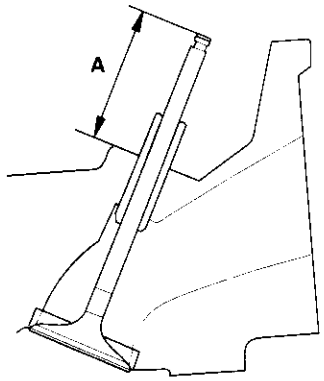
(cont'd)

Valve Seat Reconditioning (cont'd)

8. Insert the intake and exhaust valves in the head, and measure valve stem installed height (A).

   Intake Valve Stem Installed Height:
   Standard (New): 40.8—41.0 mm (1.606—1.614 in.)

   Exhaust Valve Stem Installed Height:
   Standard (New): 54.6—54.8 mm (2.150—2.157 in.)



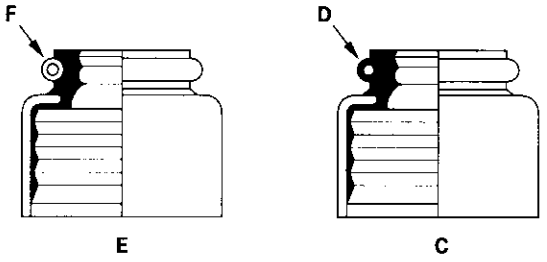
9. If valve stem installed height is over the standard, replace the valve and recheck. If it is still over the standard, replace the cylinder head; the valve seat in the head is too deep.

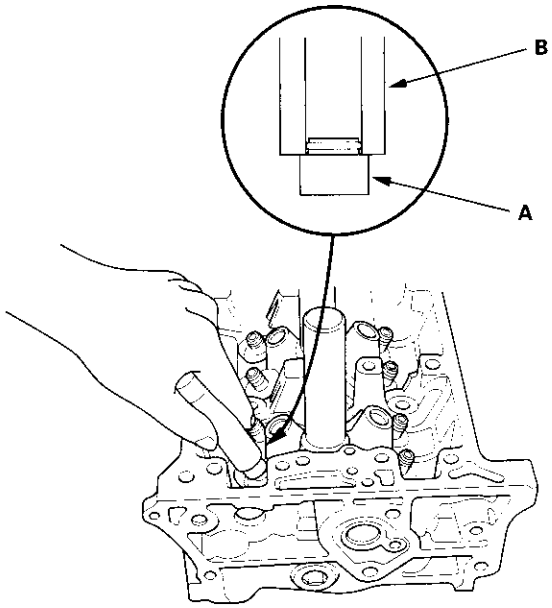
Valves, Springs, and Valve Seals Installation

Special Tools Required
Valve spring compressor attachment 07VAE-001010A

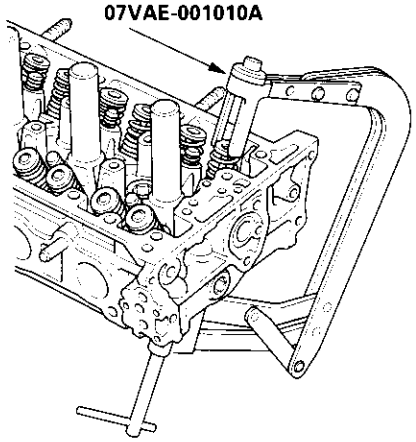
1. Coat the valve stems with engine oil. Install the valves in the valve guides.
2. Check that the valves move up and down smoothly.
3. Install the spring seats on the cylinder head.
4. Install the new valve seals (A) using the valve guide seal installer (B).

   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.

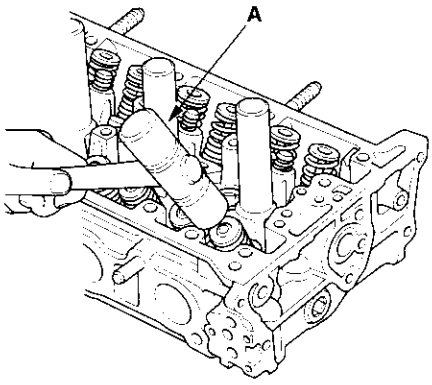




5. Install the valve spring. Place the end of the valve spring with closely wound coils toward the cylinder head.
6. Install the valve retainer.
7. Install the valve spring compressor. Compress the spring, and install the valve keepers. Remove the valve spring compressor.



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.



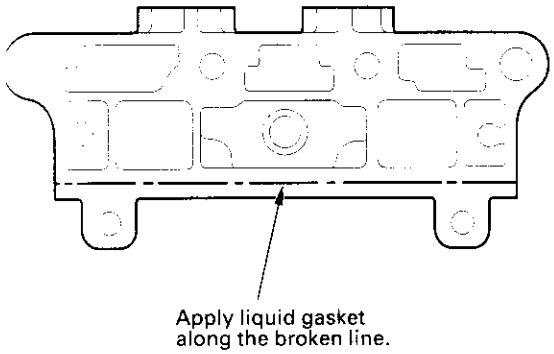
Rocker Arm Assembly Installation

1. Clean and dry the No. 5 rocker shaft holder mating surfaces.

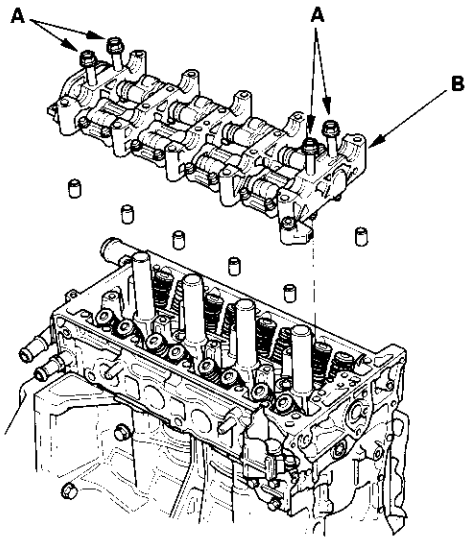
2. Reassemble the rocker arm assembly (see page 6-27).

3. Apply liquid gasket, P/N 08718-0009, evenly to the cylinder head mating surface of the No. 5 rocker shaft holder.

   NOTE: Do not install the parts if 5 minutes or more have elapsed since applying liquid gasket. Instead, reapply liquid gasket after removing old residue.

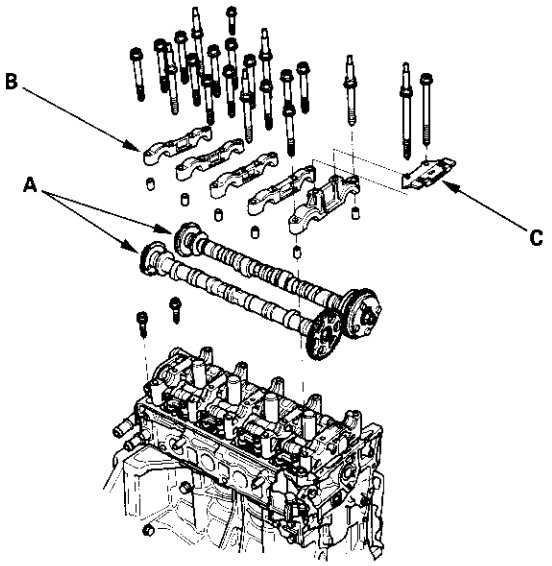


4. Insert the bolts (A) into the rocker shaft holder, then install the rocker arm assembly (B) on the cylinder head.



5. Remove the bolts from the rocker shaft holder.

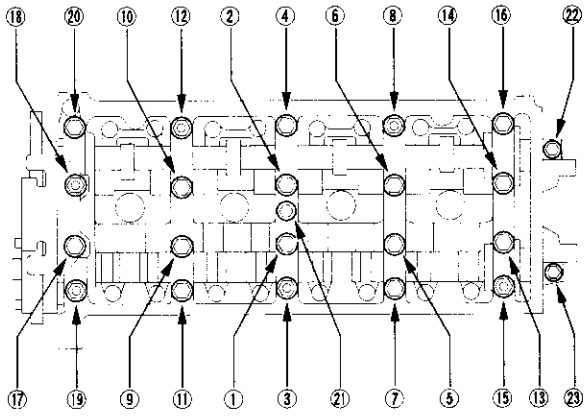
6. Make sure the punch marks on the variable valve timing control (VTC) actuator and exhaust camshaft sprocket are facing up, then set the camshafts (A) in the holder.



7. Set the camshaft holders (B) and cam chain guide B (C) in place.

8. Tighten the bolts to the specified torque.

   Specified torque:
   8 mm bolts: 22 N·m (2.2 kgf·m, 16 lbf·ft)
   6 mm bolts: 12 N·m (1.2 kgf·m, 8.7 lbf·ft)
   6 mm bolts: ㉑, ㉒, ㉓

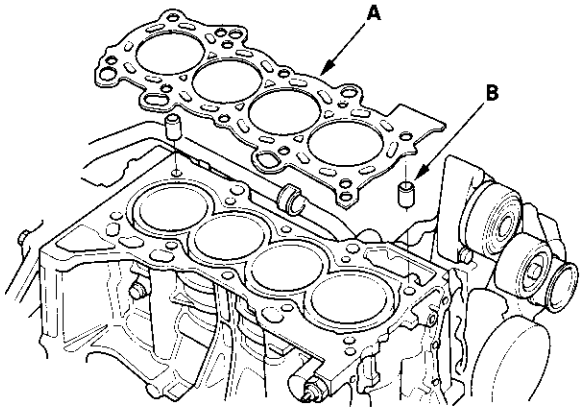


9. Install the cam chain (see page 6-15), and adjust the valve clearance (see page 6-9).

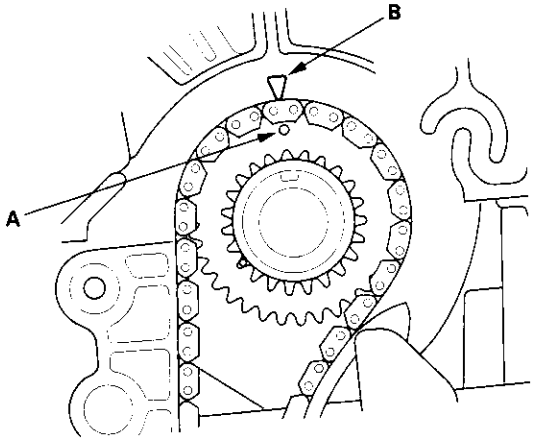
Cylinder Head Installation

Install the cylinder head in the reverse order of removal:

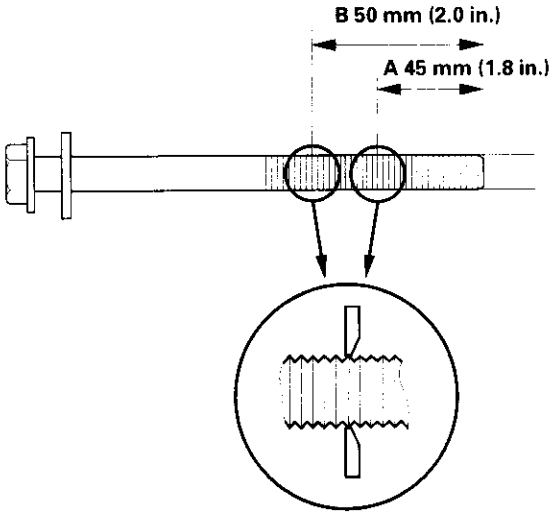
1. Clean the cylinder head and block surface.
2. Install the new cylinder head gasket (A) and dowel pins (B) on the cylinder block. Always use a new cylinder head gasket.



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



4. Install the cylinder head on the block.
5. Measure the diameter of each cylinder head bolt at point A and point B.



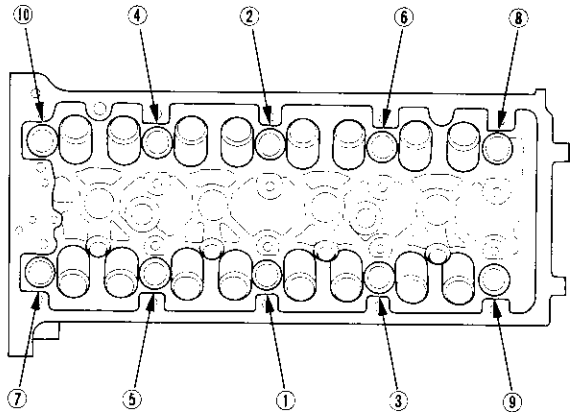
6. If either diameter is less than 10.6 mm (0.42 in.), replace the cylinder head bolt.

(cont'd)

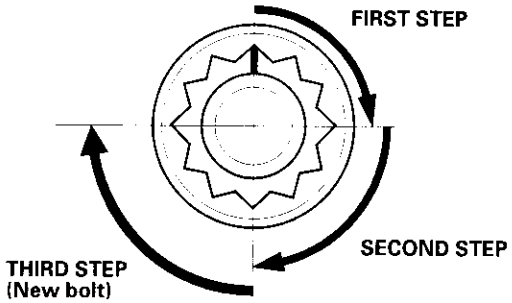
Cylinder Head Installation (cont'd)

7. Apply engine oil to the bolt threads and under the bolt heads of all the cylinder head bolts.

8. 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-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.

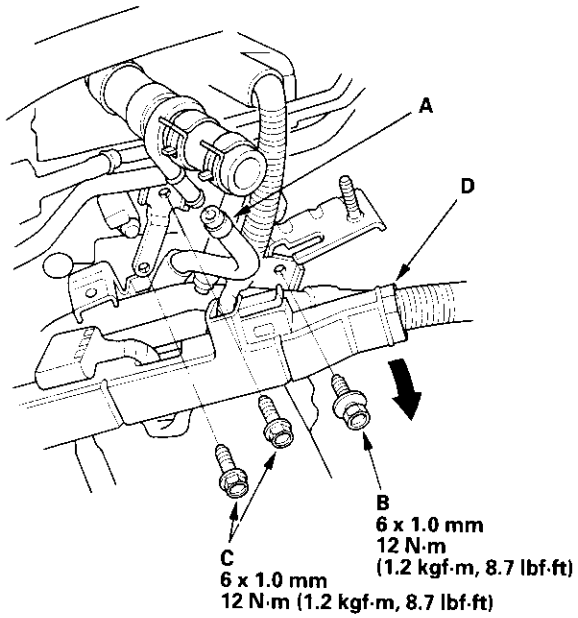


9. After torquing, tighten all cylinder head bolts in two steps (90° per step). If you are using a new cylinder head bolt, tighten the bolt an extra 90°.



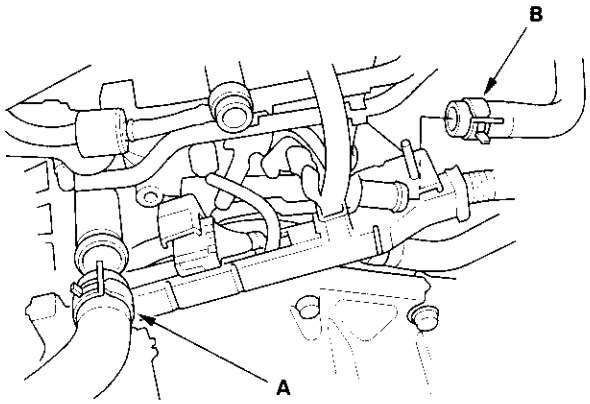
10. Install the rocker arm assembly (see page 6-38).

11. Install the water bypass hose (A).

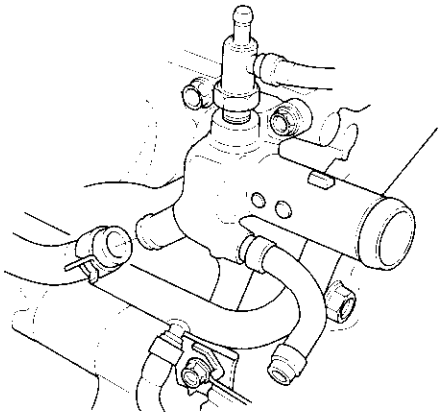


12. Tighten the connecting pipe mounting bolt (B) and brake booster vacuum line mounting bolts (C), then install the harness holder (D) on the bracket.

13. Install the upper radiator hose (A) and heater hose (B).



14. Install the water bypass hose.



15. Install the air cleaner housing (see step 37 on page 5-15).

16. Install the intake manifold (see page 9-5).

17. Install the exhaust manifold (see page 9-7).

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

19. Adjust the valve clearance (see page 6-9).

20. Install the drive belt (see page 4-26).

21. Clean the battery posts and cable terminals with sandpaper, then assemble them and apply grease to prevent corrosion.

22. After installation, check that all tubes, hoses and connectors are installed correctly.

23. Inspect for fuel leaks. Turn the ignition switch 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 two or three times, then check for fuel leakage at any point in the fuel line.

24. Refill the radiator with engine coolant, and bleed air from the cooling system with the heater valve open (see page 10-6).

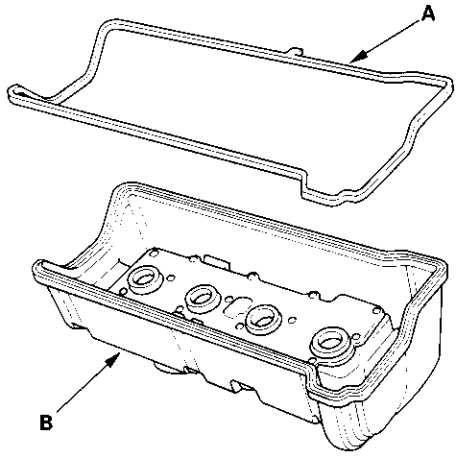
25. Inspect the idle speed (see page 11-138).

26. Inspect the ignition timing (see page 4-17).

Cylinder Head Cover Installation

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

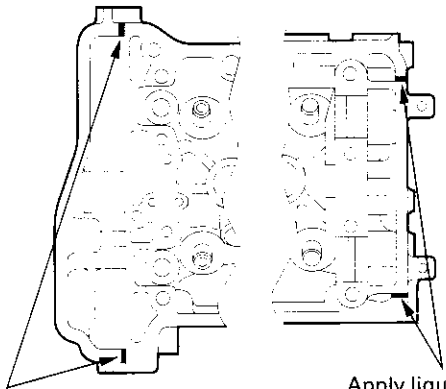
2. Install the head cover gasket (A) in the groove of the cylinder head cover (B).



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

4. Apply liquid gasket, P/N 08718-0009, on the chain case and the No. 5 rocker shaft holder mating areas.

   NOTE: Do not install the parts if 5 minutes or more have elapsed since applying liquid gasket. Instead, reapply liquid gasket after removing old residue.



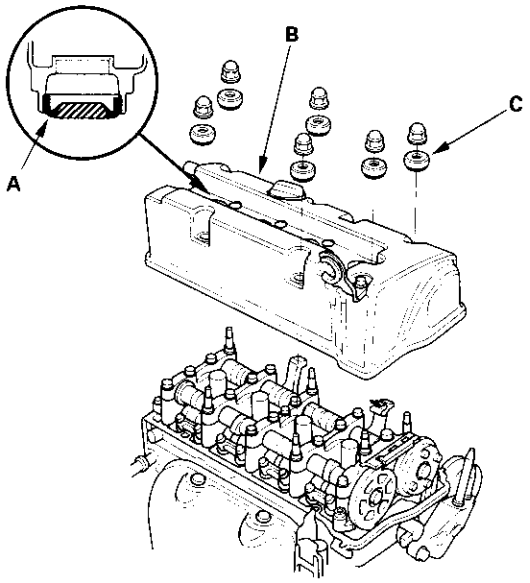
Apply liquid gasket to these points.

Apply liquid gasket to these points.

(cont'd)

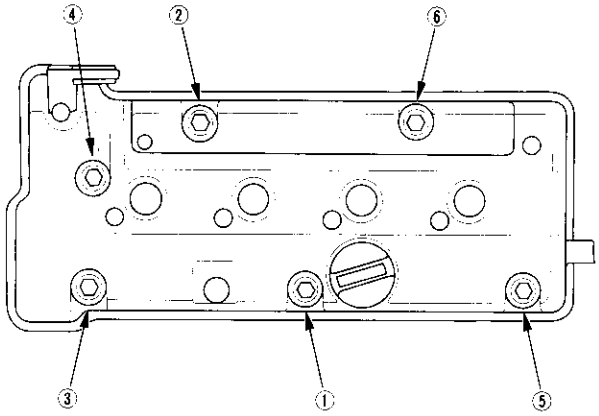
Cylinder Head Cover Installation (cont'd)

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

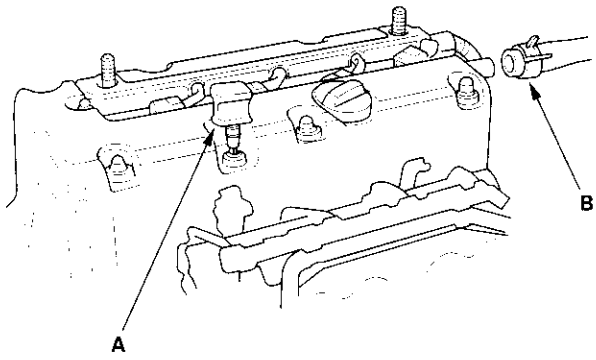


6. Inspect the cover washers (C). Replace any washer that is damaged or deteriorated.

7. Tighten the bolts in two or three steps. In the final step, tighten all bolts, in sequence, to 9.8 N·m (1.0 kgf·m, 7.2 lbf·ft).



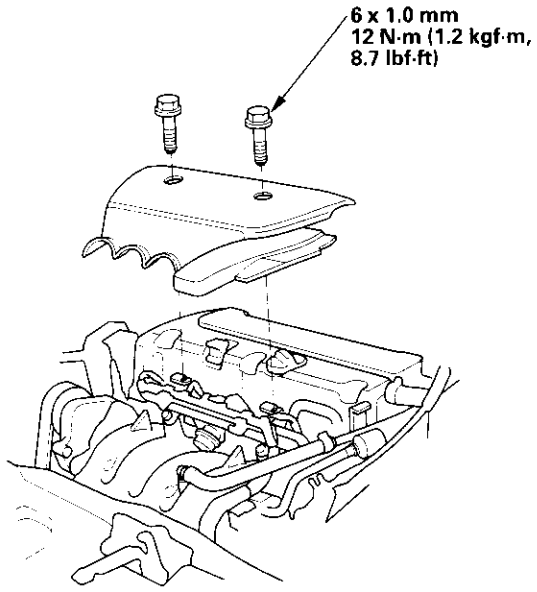
8. Install the dipstick (A) and breather hose (B).



9. Install the four ignition coils (see page 4-18).

10. Check that all tubes, hoses, and connectors are installed correctly.

11. Install the intake manifold cover.



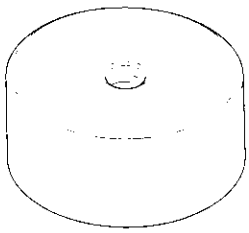
12. After assembly, wait at least 30 minutes before filling the engine with oil.

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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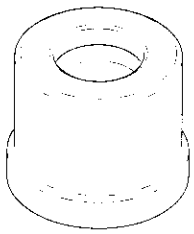

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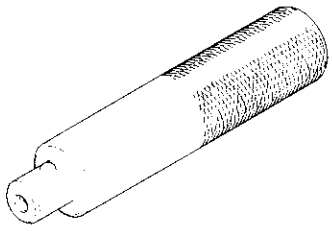

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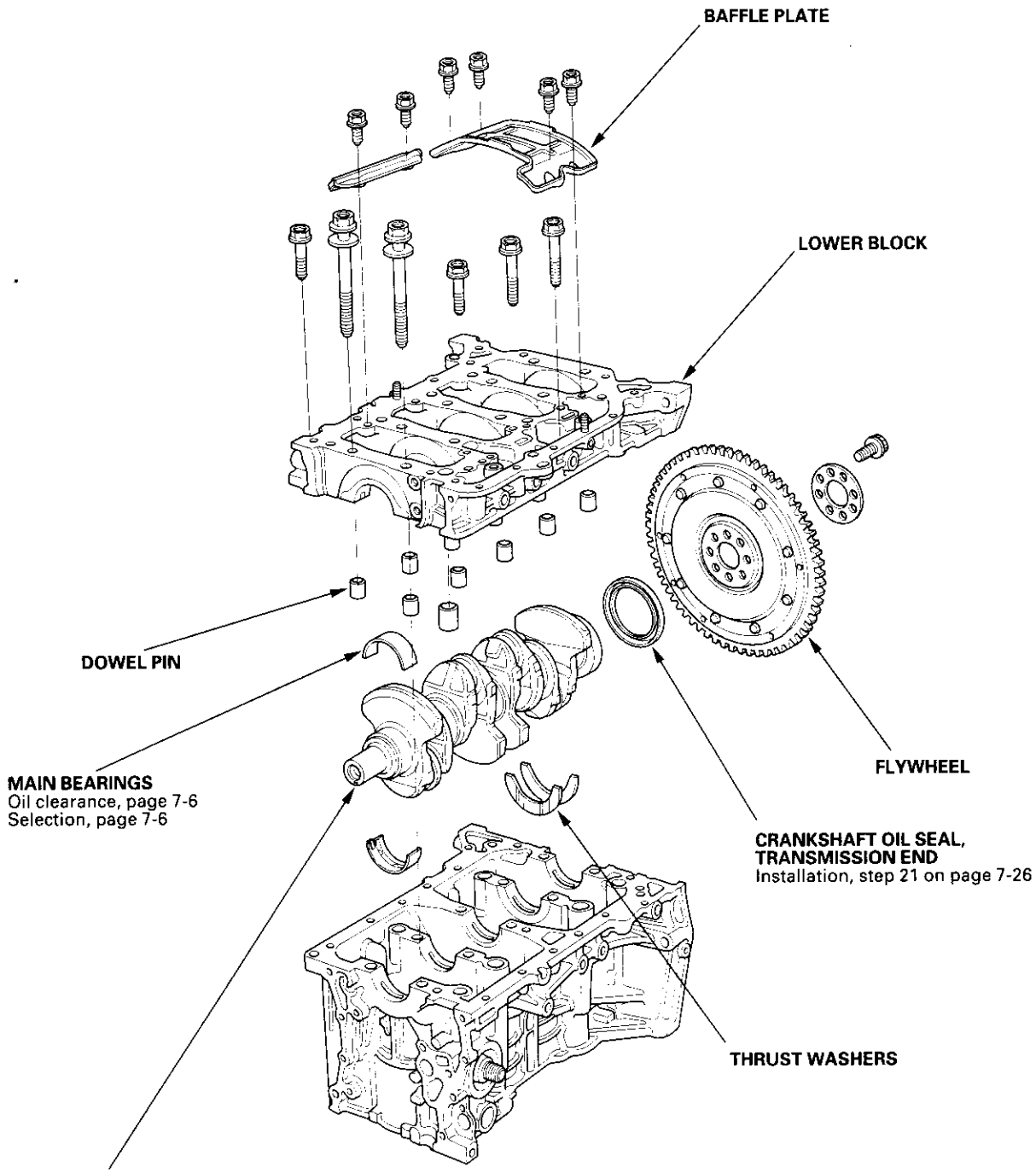
Component Location Index



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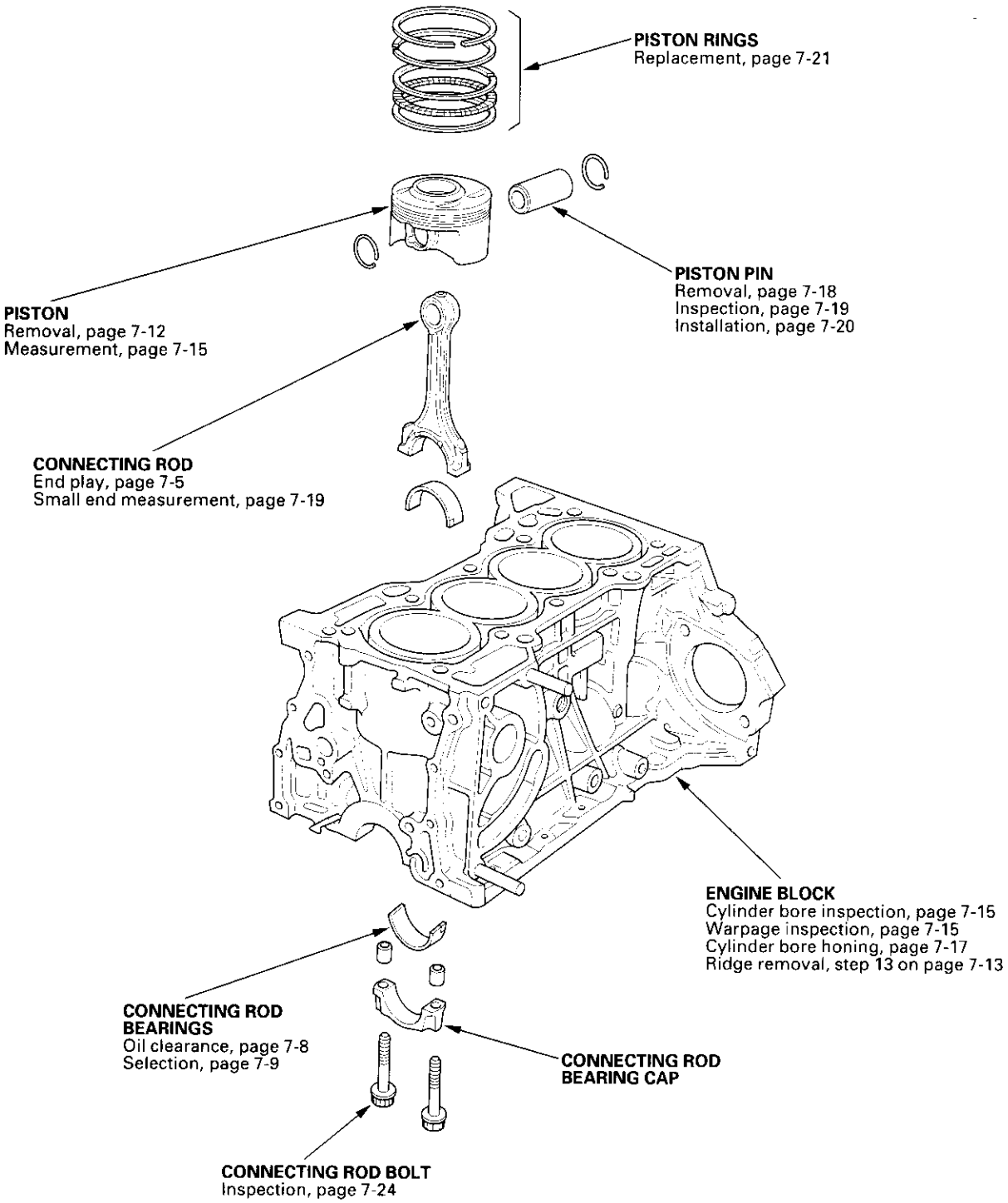
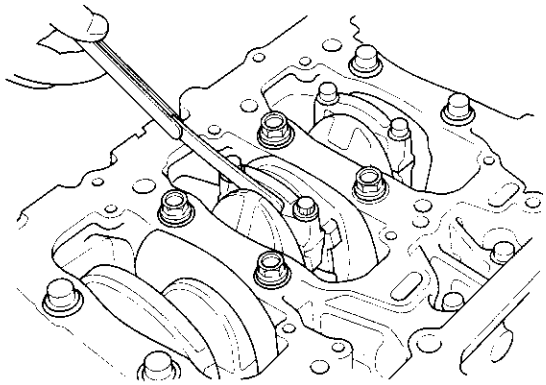
Component Location Index (cont'd)



Connecting Rod and Crankshaft End Play Inspection

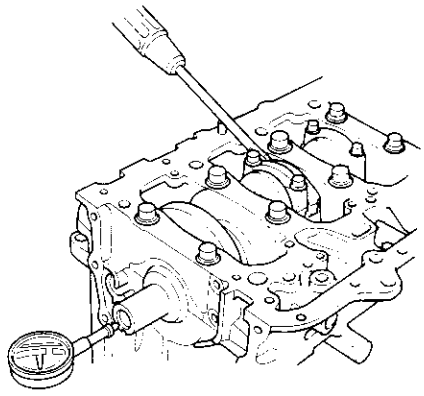
1. Remove the oil pump (see page 8-9).
2. Remove the baffle plates (see step 6 on page 7-12).
3. Measure the connecting rod end play with a feeler gauge between the connecting rod and crankshaft.

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 out-of-tolerance, install a new connecting rod, and recheck. If it is still out-of-tolerance, replace the crankshaft (see page 7-12).
5. Install a dial indicator as shown. 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 out-of-tolerance, replace the thrust washers and recheck. If it is still out-of-tolerance, replace the crankshaft.

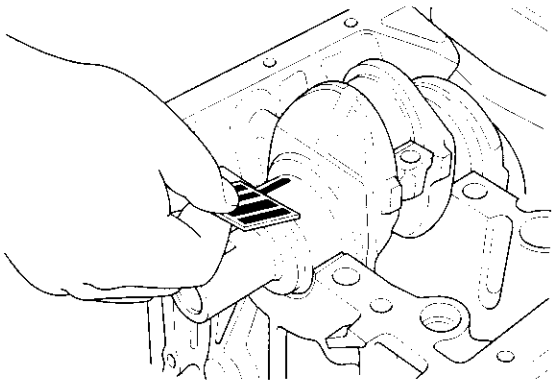
Crankshaft Main Bearing Replacement

Main Bearing Clearance Inspection

1. To check main bearing-to-journal oil clearance, remove the lower block and bearing halves (see page 7-12).
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 torque the bolts to 29 N·m (3.0 kgf·m, 22 lbf·ft) + 56°.

   NOTE: Do not rotate the crankshaft during inspection.
5. Remove the lower block and 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.)

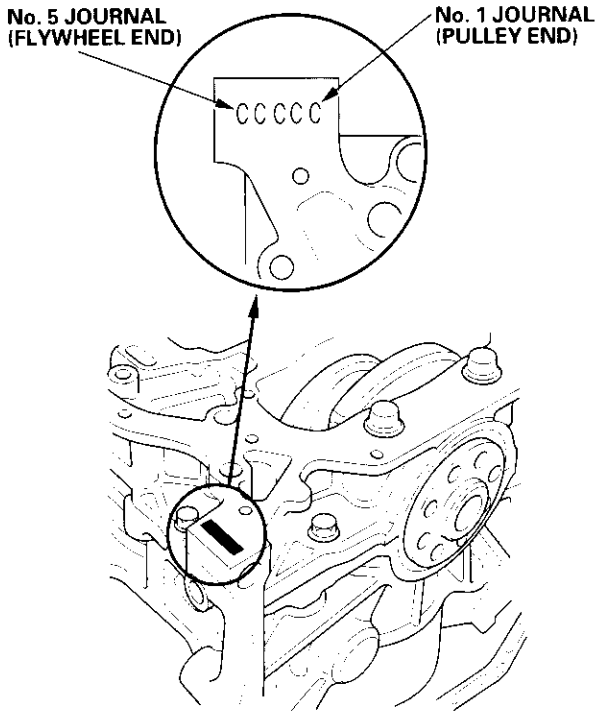


6. If the plastigage measures too wide or too narrow, remove the crankshaft, and remove the upper half of the bearing. Install a new, complete bearing with the same color code(s), and recheck the clearance. Do not file, shim, or scrape the bearings or the caps to adjust clearance.
7. If the plastigage shows the clearance is still incorrect, try the next larger or smaller bearing (the color listed above or below that 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

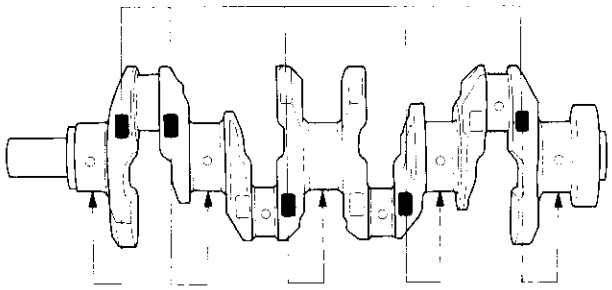
Crankshaft Bore Code Location

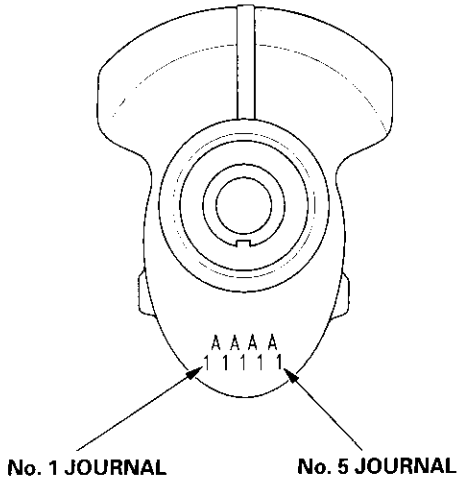
1. Numbers or letters or bars have been stamped on the end of the block as a code for the size of each of the five main journal bores. Write down the crank bore codes. If you can't read the codes because of accumulated dirt and dust, do not scrub them with a wire brush or scraper. Clean them only with solvent or detergent.



Main Journal Code Location

2. The main journal codes are stamped on the crankshaft.





(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

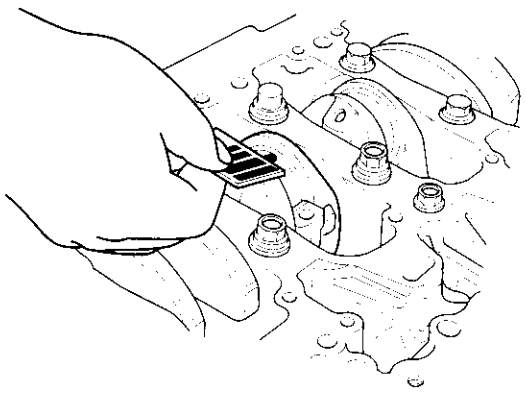
Rod Bearing Clearance Inspection

1. Remove the oil pump (see page 8-9).
2. Remove the baffle plates (see step 6 on page 7-12).
3. Remove the connecting rod cap and bearing half.
4. Clean the crankshaft rod journal and bearing half with a clean shop towel.
5. Place plastigage across the rod journal.
6. Reinstall the bearing half and cap, and torque the bolts to 20 N·m (2.0 kgf·m, 14 lbf·ft) + 90 °.

   NOTE: Do not rotate the crankshaft during inspection.

7. Remove the rod cap and bearing half, and measure the widest part of the plastigage.

Connecting Rod Bearing-to-Journal Oil Clearance:
Standard (New): **0.020—0.050 mm (0.0008—0.0020 in.)**
Service Limit: **0.060 mm (0.0024 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 same 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 that 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.

Rod Bearing Selection

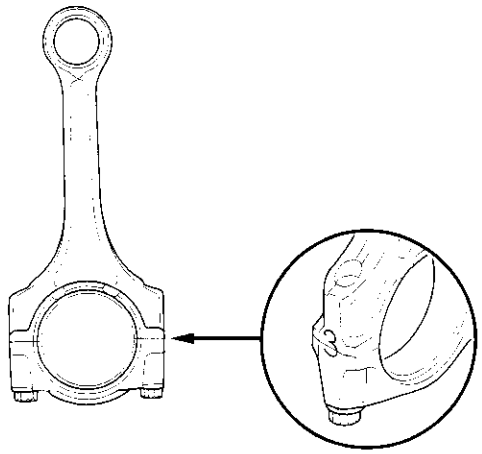
1. Inspect each connecting rod for cracks and heat damage.

Connecting Rod Big End Bore Code Locations

2. Each rod has a tolerance range from 0—0.024 mm (0.0009 in.), in 0.006 mm (0.0002 in.) increments, depending on the size of its big end bore. It's 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 on the rod.)

   If you can't 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: 48.0 mm (1.89 in.)



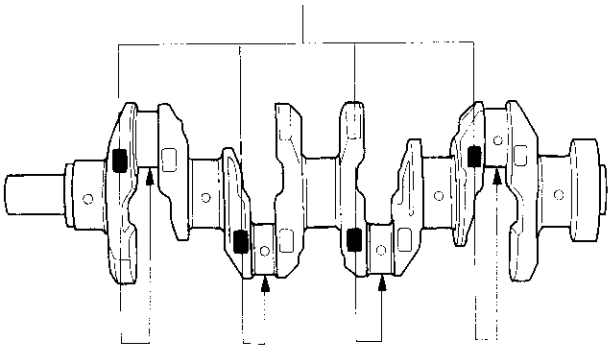
(cont'd)

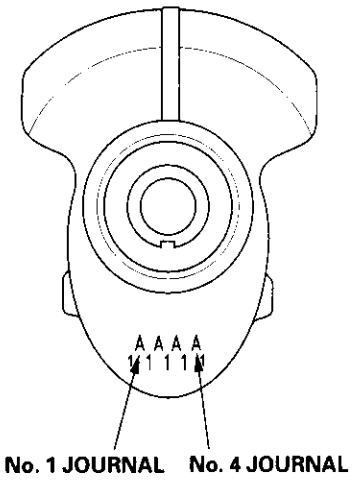
Connecting Rod Bearing Replacement (cont'd)

Connecting Rod Journal Code Location

3. The connecting rod journal codes are stamped on the crankshaft.

Connecting Rod Journal Code Location (Letters or Bars)





4. Use the big end bore codes and rod journal codes to select 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.

Rod journal code (Smaller rod journal ↓) / Big end bore code (Larger big end bore →)	1 or I	2 or II	3 or III	4 or IIII
	Smaller bearing (Thicker) →			
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

Oil Pan Removal

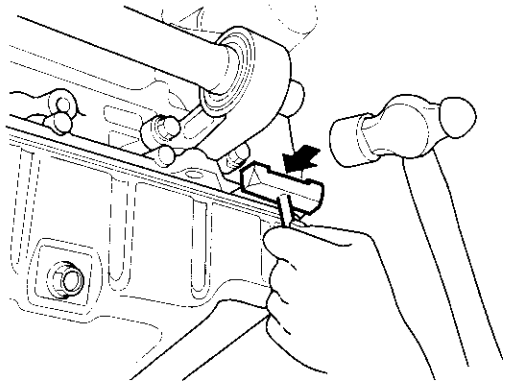
1. Drain the engine oil (see page 8-5).

2. If the engine is still in the vehicle, remove the subframe.

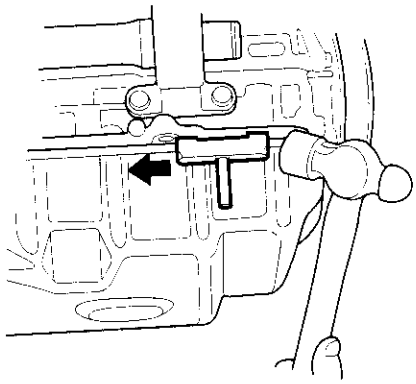
   -1 Attach the chain hoist to the engine (see step 35 on page 5-6).
   -2 Disconnect the suspension lower arm ball joints (see step 3 on page 18-19).
   -3 Remove the rear mount mounting bolts (see step 39 on page 5-7).
   -4 Remove the front mount mounting bolt (see step 40 on page 5-7).
   -5 Use a marker to make alignment marks on the reference lines that align with the centers of the rear subframe mounting bolts. Remove the front subframe (see step 43 on page 5-8).

3. Remove the bolts/nuts securing the oil pan.

4. Drive an oil pan seal cutter between the oil pan and cylinder block.



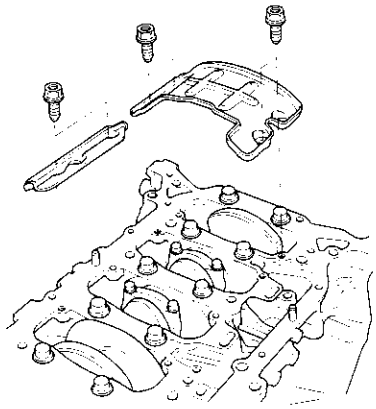
5. Cut the oil pan seal by striking the side of the cutter to slide the cutter along the oil pan.



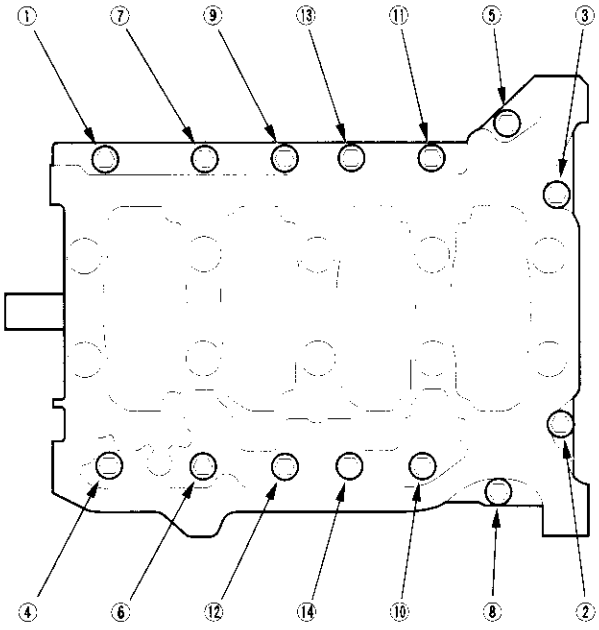
6. Remove the oil pan.

Crankshaft and Piston Removal

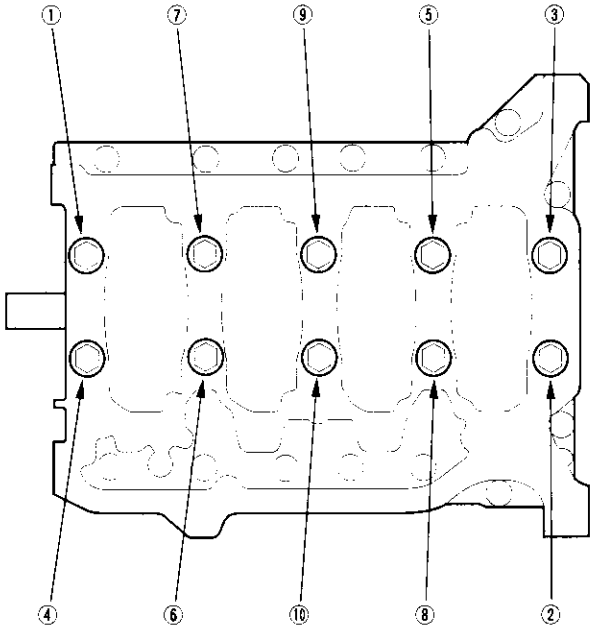
1. Remove the engine assembly (see page 5-2).
2. Remove the transmission (see page 13-4).
3. Remove the oil pan (see page 7-11).
4. Remove the oil pump (see page 8-9).
5. Remove the cylinder head (see page 6-23).
6. Remove the baffle plates.



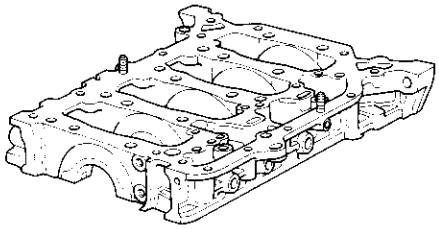
7. Remove the 8 mm bolts.

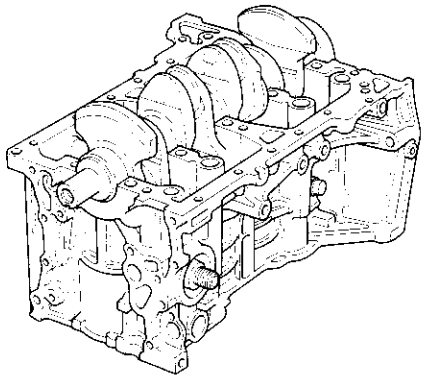


8. Remove the bearing cap bolts. To prevent warpage, unscrew the bolts in sequence 1/3 turn at a time: repeat the sequence until all bolts are loosened.



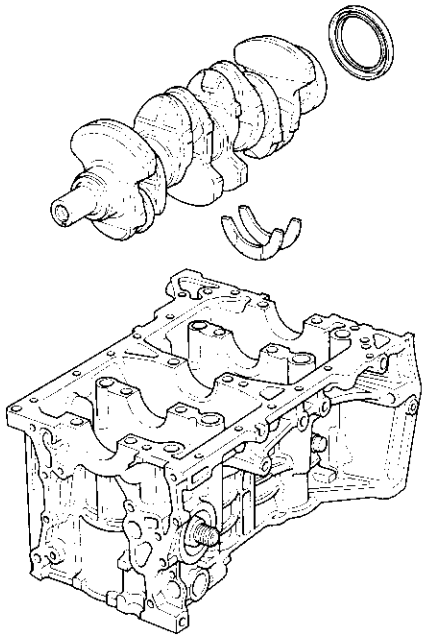
9. Remove the lower block and bearings. Keep all bearings in order.





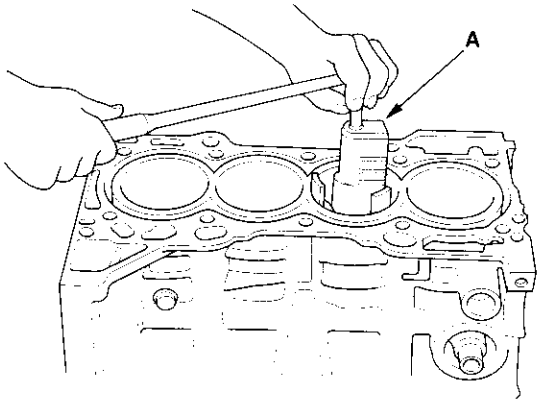
10. Remove the rod caps/bearings. Keep all caps/bearings in order.

11. Lift the crankshaft out of the engine, being careful not to damage the journals.

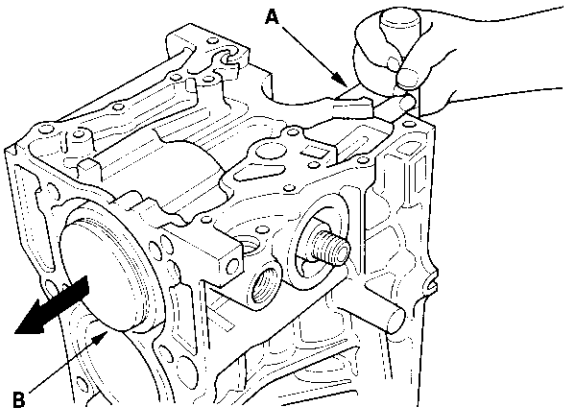


12. Remove the upper bearing halves from the connecting rods, and set them aside with their respective caps.

13. 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.



14. Use the wooden handle of a hammer (A) to drive out the pistons (B).



15. Reinstall the lower block and bearings on the engine in the proper order.

16. Reinstall the connecting rod bearings and caps after removing each piston/connecting rod assembly.

17. To avoid mixup on reassembly, mark each piston/connecting rod assembly with its cylinder number.

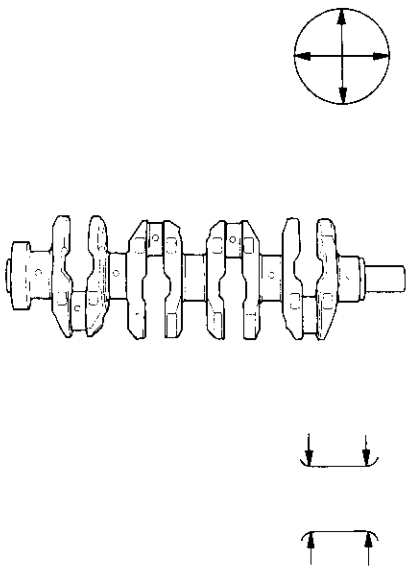
    NOTE: The existing number on the connecting rod does not indicate its position in the engine, it indicates the rod bore size.

Crankshaft Inspection

Out-of-Round and Taper

1. Remove the crankshaft from the cylinder block (see page 7-12).
2. Clean the crankshaft oil passages with pipe cleaners or a suitable brush.
3. Clean the keyway and threads.
4. Measure 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.)



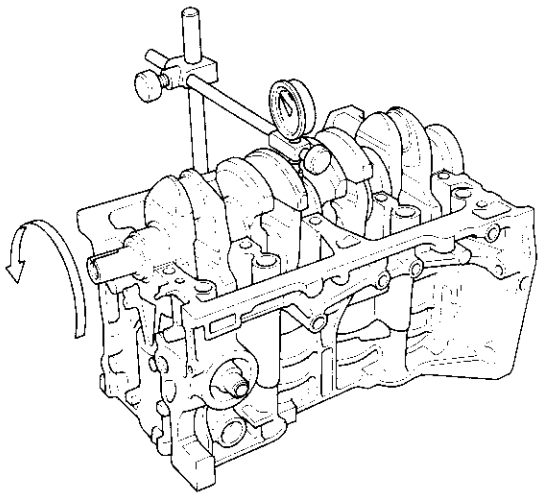
5. Measure taper at the edges of each rod and main journal. The difference between measurements on each journal must not be more than the service limit.

Journal Taper
Standard (New): 0.005 mm (0.0002 in.) max.
Service Limit: 0.010 mm (0.0004 in.)

Straightness

6. Place the cylinder block on the surface plate.
7. Clean and install the bearigns on the No.1 and No.5 journal of the cylinder block.
8. Lower the crankshaft into the block.
9. Measure 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

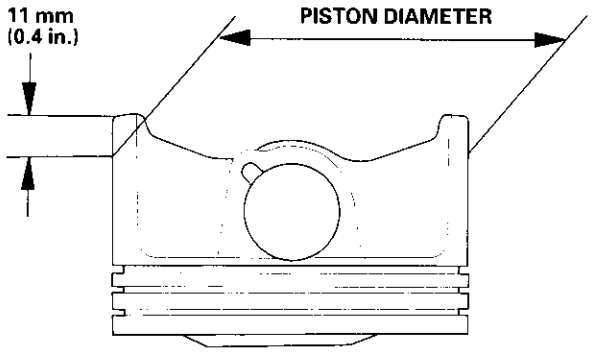
1. Remove the crankshaft and pistons (see page 7-12).

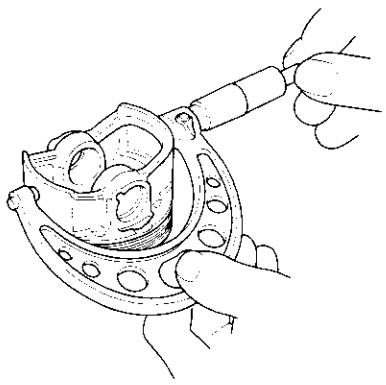
2. Check the piston for distortion or cracks.

3. Measure the piston 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 block as cylinder bore sizes.

Piston 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 Diameter:
0.25: 86.230—86.240 mm (3.3949—3.3953 in.)

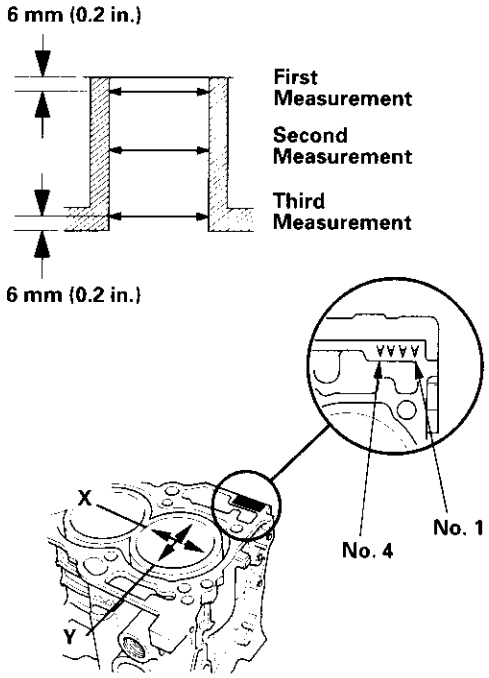
4. Measure wear and taper in direction X and Y at three levels in each cylinder as shown. If measurements in any cylinder are beyond the oversize bore service limit, replace the block. If the block is to be rebored, refer to step 7 after reboring.

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:
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.)



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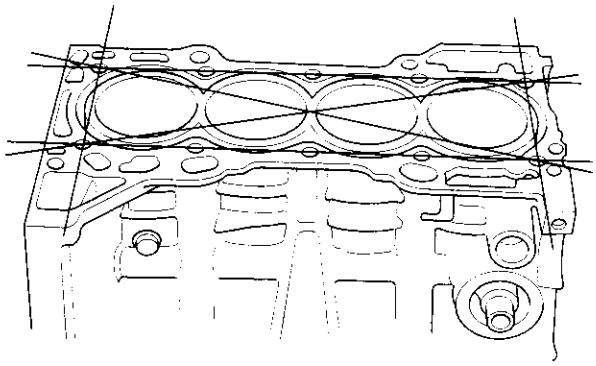
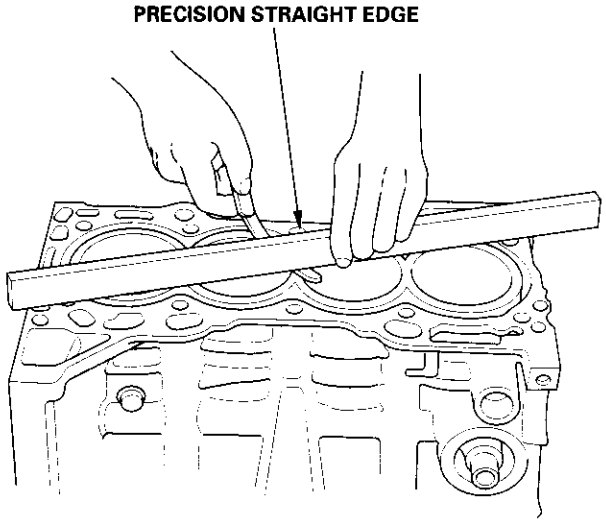
Block and Piston Inspection (cont'd)

5. Scored or scratched cylinder bores must be honed.

6. Check the top of the block for warpage. Measure along the edges and across the center as shown.

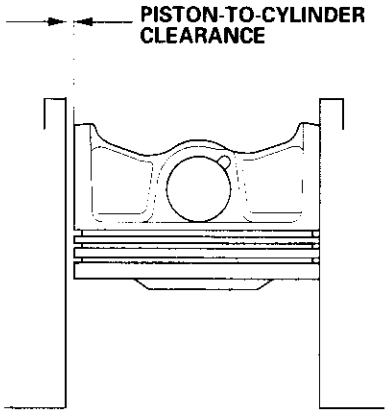
Engine Block Warpage
Standard (New): 0.07 mm (0.003 in.) max.
Service Limit: 0.10 mm (0.004 in.)





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 cylinder block for excessive wear.

Piston-to-Cylinder Clearance
Standard (New): 0.020—0.040 mm (0.0008—0.0016 in.)
Service Limit: 0.05 mm (0.002 in.)

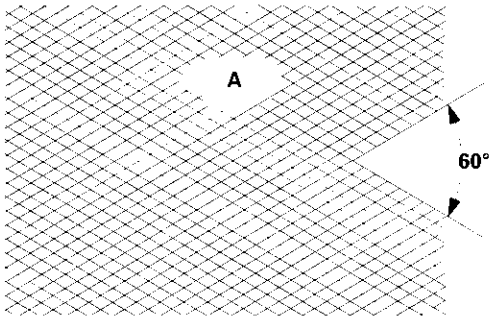


Cylinder Honing

Only a scored or scratched cylinder bore should be honed.

1. Measure the cylinder bores (see page 7-15). If the block is to be reused, hone the cylinders and remeasure the bores.

2. 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.



3. 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.

4. If scoring or scratches are still present in the cylinder bores after honing to the service limit, rebore the cylinder 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.

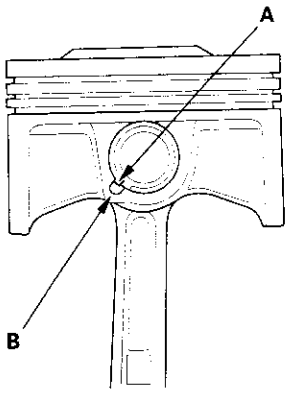
Piston, Pin, and Connecting Rod Replacement

Disassembly

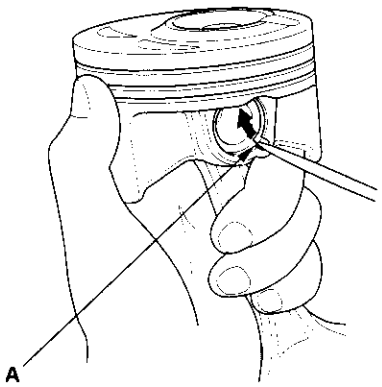
1. Remove the piston from the cylinder block (see page 7-12).

2. Apply 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).

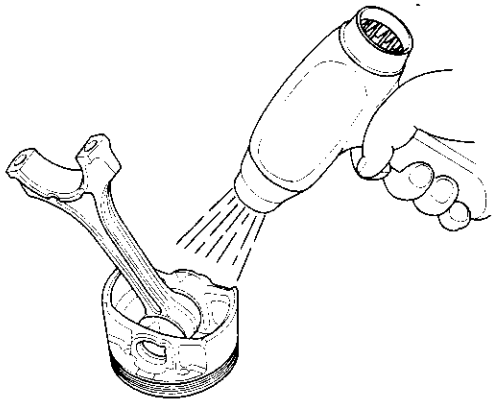
   NOTE: Take care not to damage the ring grooves.



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 158°F (70°C), then remove the piston pin.

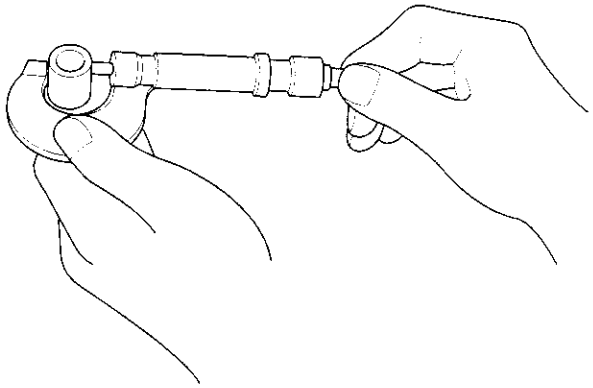


Inspection

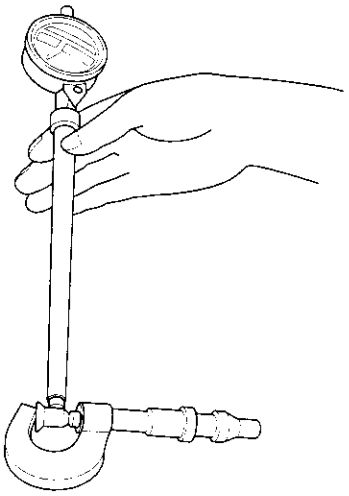
NOTE: Inspect the piston, piston pin, and connecting rod when they are at room temperature.

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.)

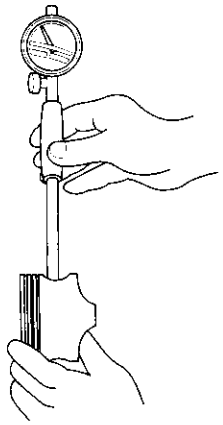


2. Zero the dial indicator to the piston pin diameter.



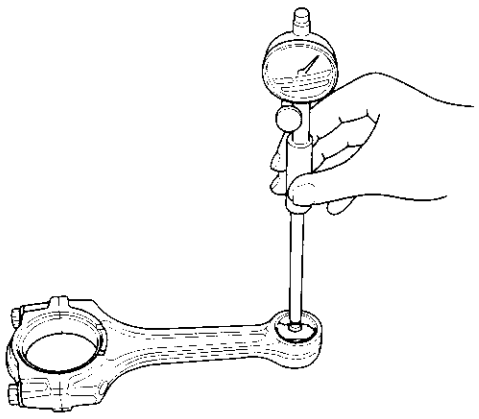
3. Check the difference between the piston pin diameter and piston pin hole diameter in the piston.

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.)



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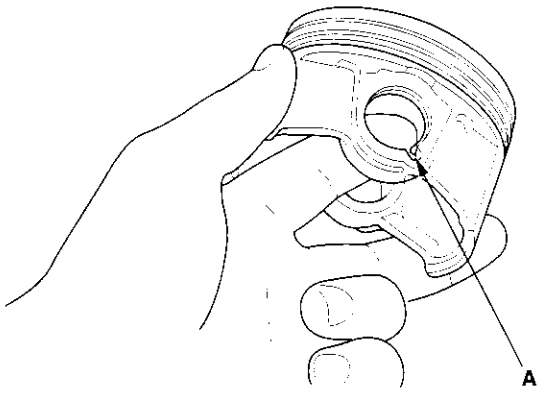
Piston, Pin, and Connecting Rod Replacement (cont'd)

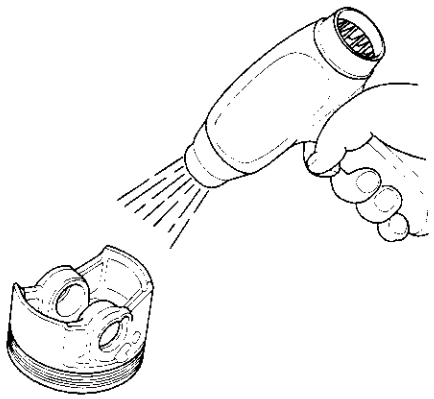
Reassembly

1. Install a piston pin snap ring (A).

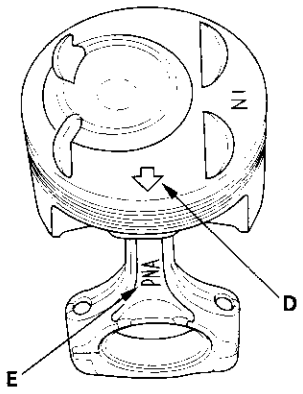


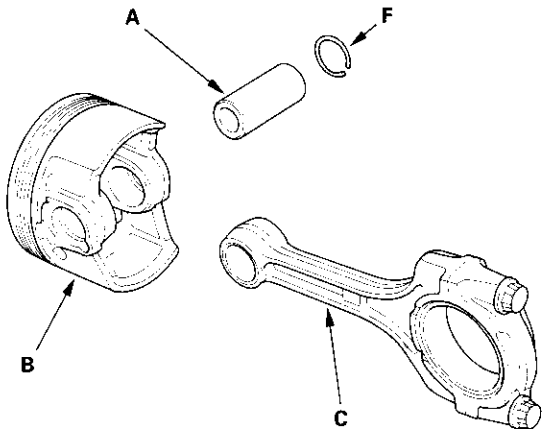
2. Coat the piston pin bore in the piston, the bore in the connecting rod, and the piston pin with engine oil.

3. Heat the piston to about 158°F (70°C).



4. Install the piston pin (A). Assemble the piston (B) and connecting rod (C) with the arrow (D) and the embossed mark (E) on the same side. .





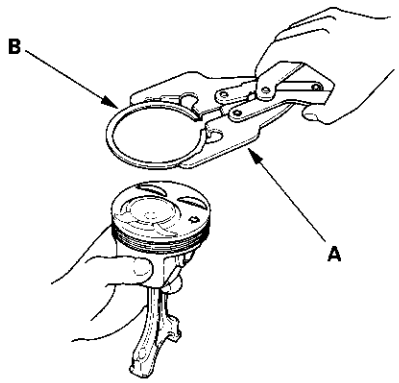
5. Install the remaining snap ring (F).

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 cylinder block (see page 7-12).

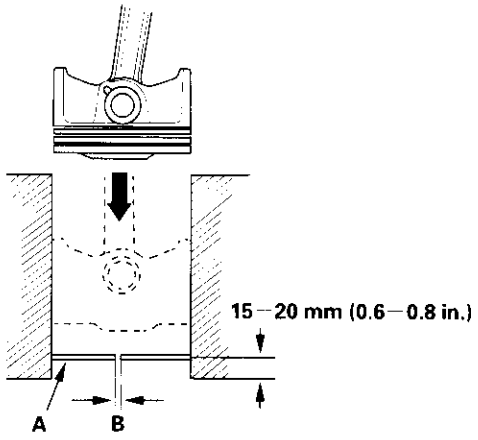
2. Using a ring expander (A), remove the old piston rings (B).



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.

4. Using a piston, 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 step 4 on page 7-15).
   - If the bore is over the service limit, the cylinder 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
Standard (New): 0.40—0.55 mm (0.016—0.022 in.)
Service Limit: 0.70 mm (0.028 in.)

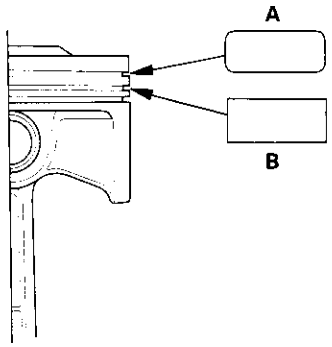
Oil Ring
REKEN manufactured ring
Standard (New): 0.25—0.65 mm (0.010—0.026 in.)
Service Limit: 0.75 mm (0.030 in.)

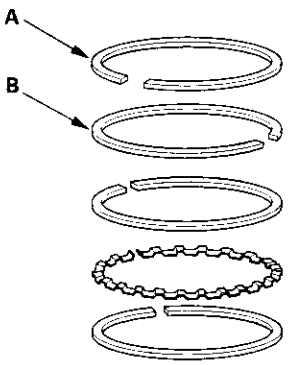
FEDERAL MOGUL manufactured ring
Standard (New): 0.20—0.70 mm (0.008—0.028 in.)
Service Limit: 0.80 mm (0.031 in.)

(cont'd)

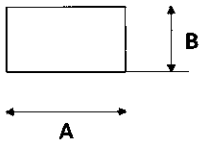
Piston Ring Replacement (cont'd)

6. Install the top ring and second ring as shown.The top ring (A) has a 1R mark or no mark and the second ring (B) has a 2R mark or 2ND mark. The marks must be facing upward.





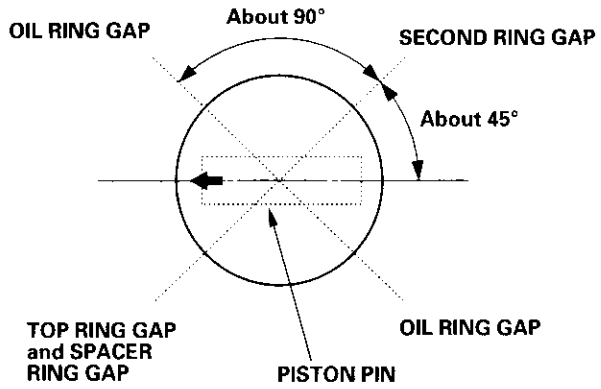
Piston Ring Dimensions:



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. Rotate the rings in their grooves to make sure they do not bind.

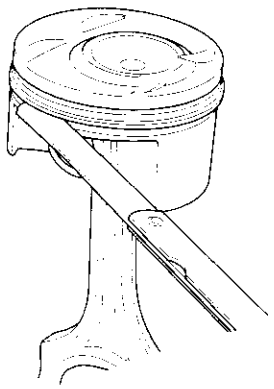
8. Position the ring end gaps as shown:



9. After installing a new set of rings, measure the ring-to-groove clearances:

Top Ring Clearance
Standard (New):
0.035-0.060 mm (0.0014-0.0024 in.)
Service Limit: 0.13 mm (0.005 in.)

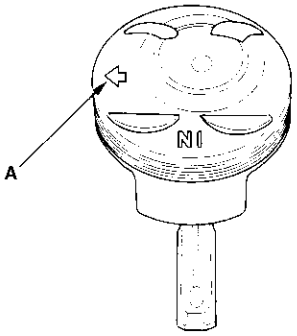
Second Ring Clearance
Standard (New):
REKEN manufactured ring
0.030-0.055 mm (0.0012-0.0022 in.)
FEDERAL MOGUL manufactured ring
0.025-0.060 mm (0.0010-0.0024 in.)
Service Limit: 0.13 mm (0.005 in.)



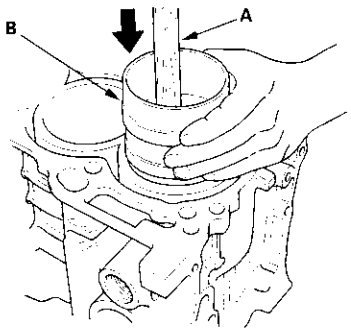
Piston Installation

If the crankshaft is already installed

1. Set the crankshaft to bottom dead center (BDC) for each cylinder.
2. Remove the connecting rod caps, then install the ring compressor, and check that the bearing is securely in place.
3. Position the arrow (A) facing the cam chain side of the engine.



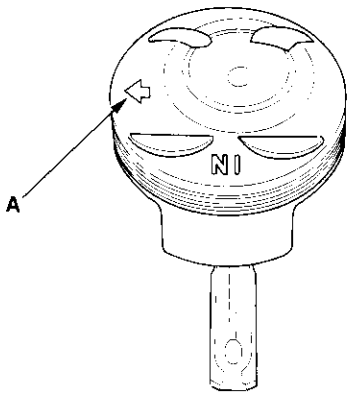
4. Position the piston in the cylinder, and tap it in using the wooden handle of a hammer (A). Maintain downward force on the ring compressor (B) to prevent the rings from expanding before entering the cylinder bore.



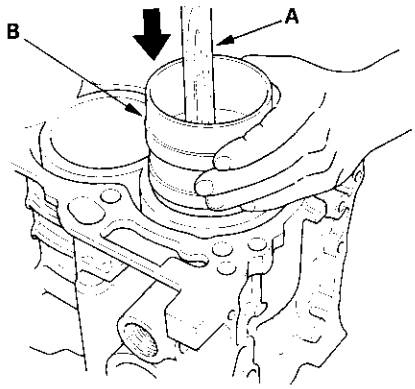
5. Stop after the ring compressor pops free, and check the connecting rod-to-crank journal alignment before pushing the piston into place.
6. Check the connecting rod bearing clearance with plastigage (see page 7-8).
7. Inspect the connecting rod bolts (see page 7-24).
8. Apply engine oil to the bolt threads, then install the rod caps with bearings. Torque the bolts to 20 N·m (2.0 kgf·m, 14 lbf·ft) + 90°.

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. Position the arrow (A) facing the cam chain side of the engine.



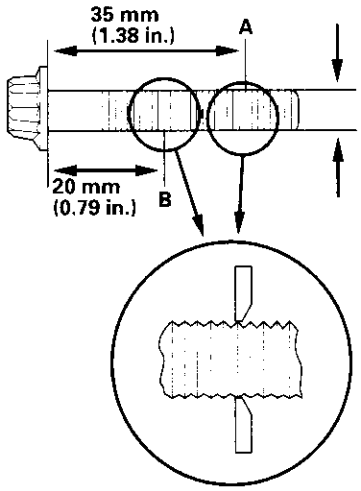
3. Position the piston in the cylinder, and tap it in using the wooden handle of a hammer (A). Maintain downward force on the ring compressor (B) to prevent the rings from expanding before entering the cylinder bore.



4. Position all pistons at top dead center.

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

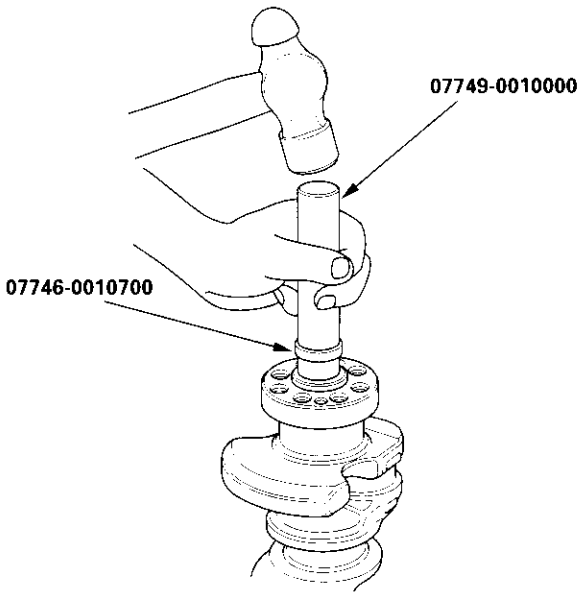
   Difference in Diameter:
   Specification: 0—0.1 mm (0—0.004 in.)

3. If the difference in diameter is out of tolerance, 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. Install the crankshaft end bushing with the special tools when replacing the crankshaft. Drive in the crankshaft end bushing until the special tools 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).

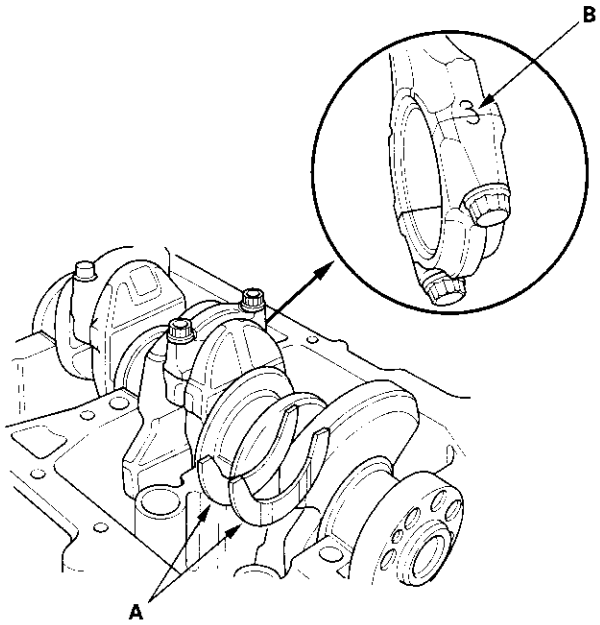
4. Inspect the connecting rod bolts (see page 7-24).

5. Install the bearing halves in the cylinder block and connecting rods.

6. Apply a coat of engine oil to the main bearings and rod bearings.

7. Hold the crankshaft so rod journal No. 2 and rod journal No. 3 are straight up, and lower the crankshaft into the block.

8. Install the thrust washers (A) in the No. 4 journal of the cylinder block.



9. Apply 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 cap, then install the caps and 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 cap, then install the caps and bolts finger-tight.

12. Tighten the connecting rod bolts to 20 N·m (2.0 kgf·m, 14 lbf·ft).

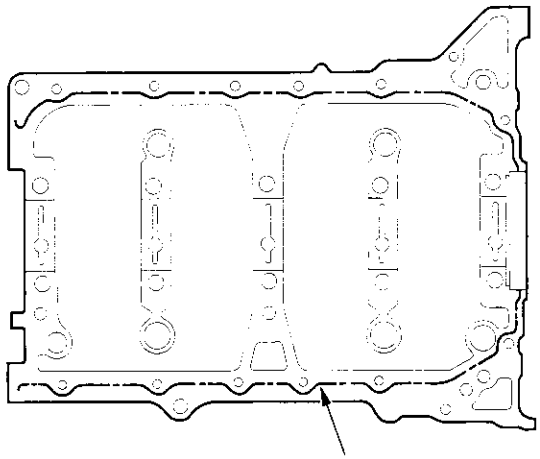
13. Tighten the connecting rod bolts an additional 90°.

14. Remove old liquid gasket from the lower block mating surfaces, bolts and bolt holes.

15. Clean and dry the lower block mating surfaces.

16. Apply liquid gasket, P/N 08718-0009, evenly to the cylinder block mating surface of the lower block and to the inner threads of the bolt holes.

    NOTE: Do not install the parts if 5 minutes or more have elapsed since applying liquid gasket. Instead, reapply liquid gasket after removing old residue.

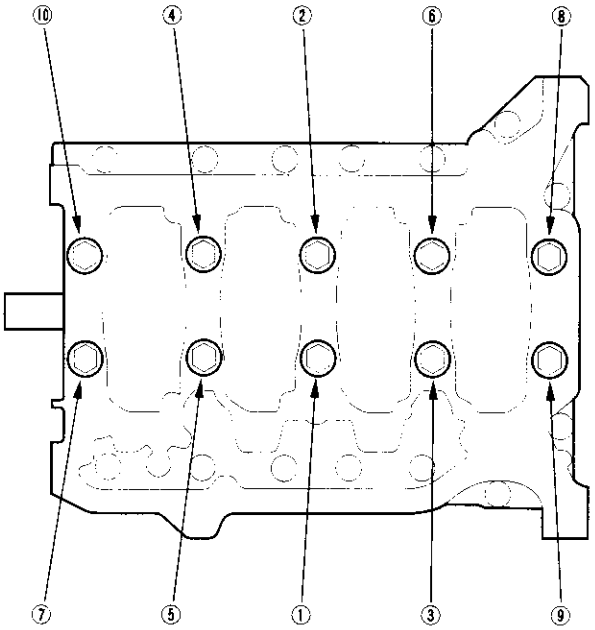


(cont'd)

Crankshaft Installation (cont'd)

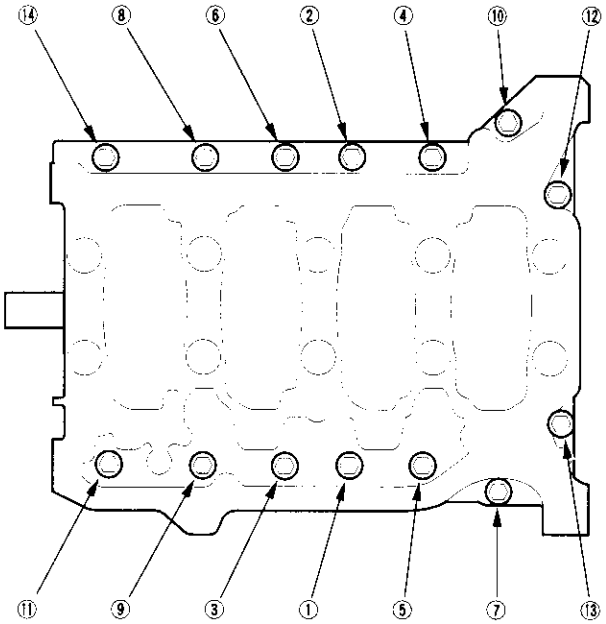
17. Put the lower block on the cylinder block.

18. Tighten the bearing cap bolts in sequence to 29 N·m (3.0 kgf·m, 22 lbf·ft).

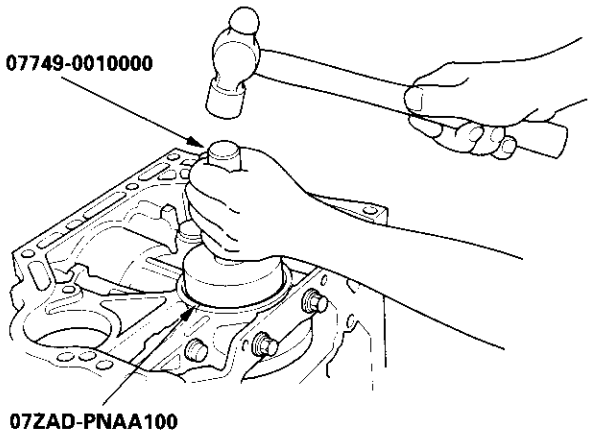


19. Tighten the bearing cap bolts an additional 56°.

20. Tighten the 8 mm bolts in sequence to 22 N·m (2.2 kgf·m, 16 lbf·ft).

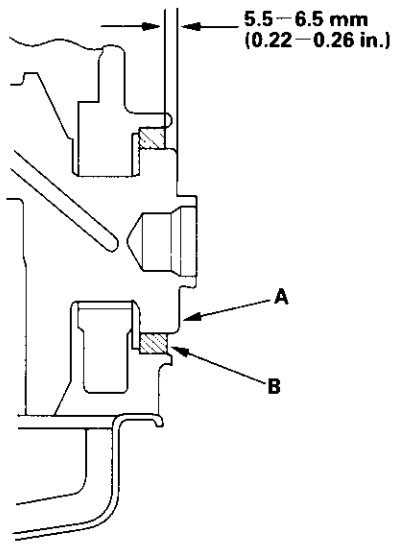


21. Use the special tools to drive a new oil seal squarely into the block to the specified installed height.

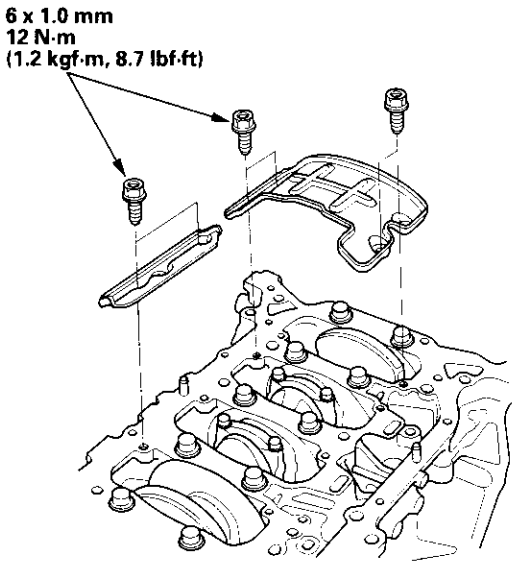


22. Measure the distance between the crankshaft (A) and oil seal (B).

Oil Seal Installed Height: 5.5—6.5 mm (0.22—0.26 in.)



23. Install the baffle plates.

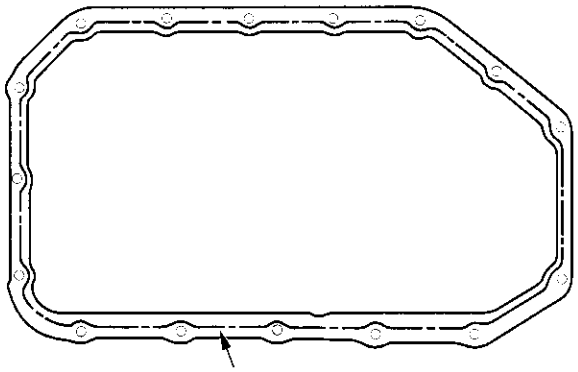


24. Install the oil pump (see page 8-14).
25. Install the oil pan (see page 7-27).
26. Install the cylinder head (see page 6-39).
27. Install the transmission (see page 13-8).
28. Install the engine assembly (see page 5-9).

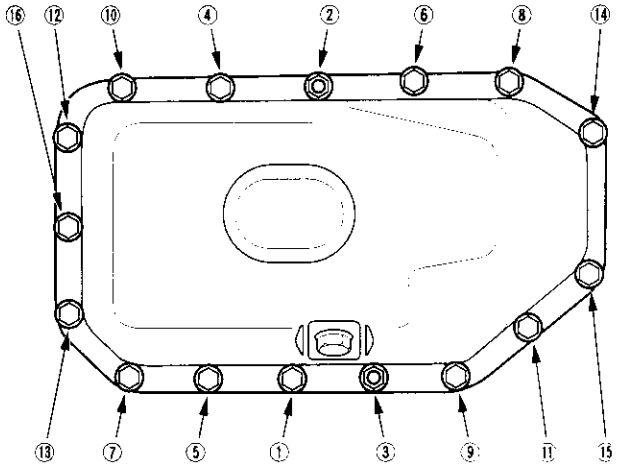
Oil Pan Installation

1. Remove old liquid gasket from the oil pan mating surfaces, bolts, and bolt holes.
2. Clean and dry the oil pan mating surfaces.
3. Apply liquid gasket, P/N 08718-0009, evenly to the cylinder block mating surface of the oil pan and to the inner threads of the bolt holes.

   NOTE: Do not install the parts if 5 minutes or more have elapsed since applying liquid gasket. Instead, reapply liquid gasket after removing old residue.



4. Install the oil pan.
5. Tighten the bolts in two or three steps. In the final step, tighten all bolts, in sequence, to 12 N·m (1.2 kgf·m, 8.7 lbf·ft).



(cont'd)

Oil Pan Installation (cont'd)

6. If the engine is still in the vehicle, install the subframe.

   –1 Install the subframe. Align the reference lines on the subframe with the bolt head center, then tighten the bolts (see step 5 on page 5-10).
   –2 Tighten the front mounting bolt (see step 6 on page 5-10).
   –3 Tighten the rear mount mounting bolts (see step 7 on page 5-11).
   –4 Connect the suspension lower arm ball joints (see step 6 on page 18-19).

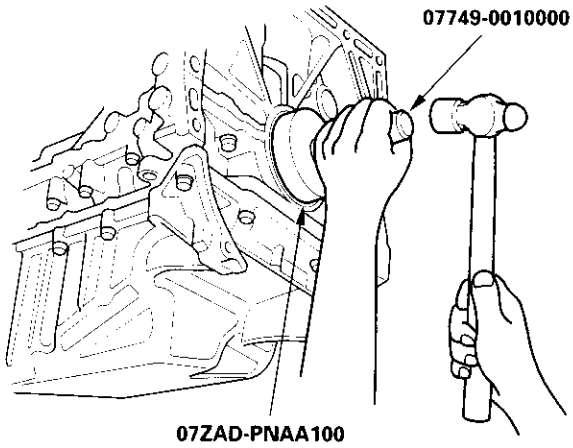
7. After assembly, wait at least 30 minutes before filling the engine with oil.

Transmission End Crankshaft Seal Installation - In Car

Special Tools Required
- Driver 07749-0010000
- Oil seal driver attachment 96 07ZAD-PNAA100

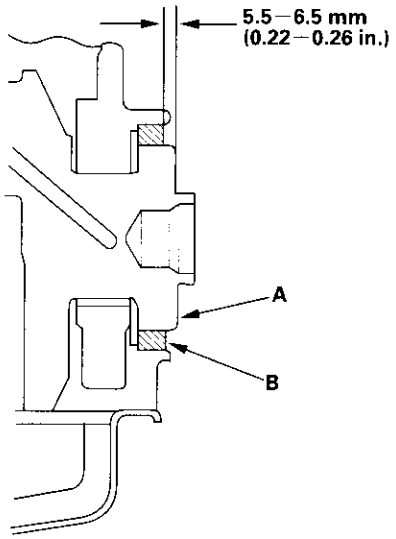
1. Dry the crankshaft oil seal housing.

2. Use the special tools to drive a new oil seal squarely into the block to the specified installed height.



3. Measure the distance between the crankshaft (A) and oil seal (B).

Oil Seal Installed Height:
5.5–6.5 mm (0.22–0.26 in.)

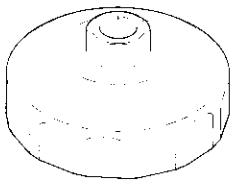


Engine Mechanical

Engine Lubrication

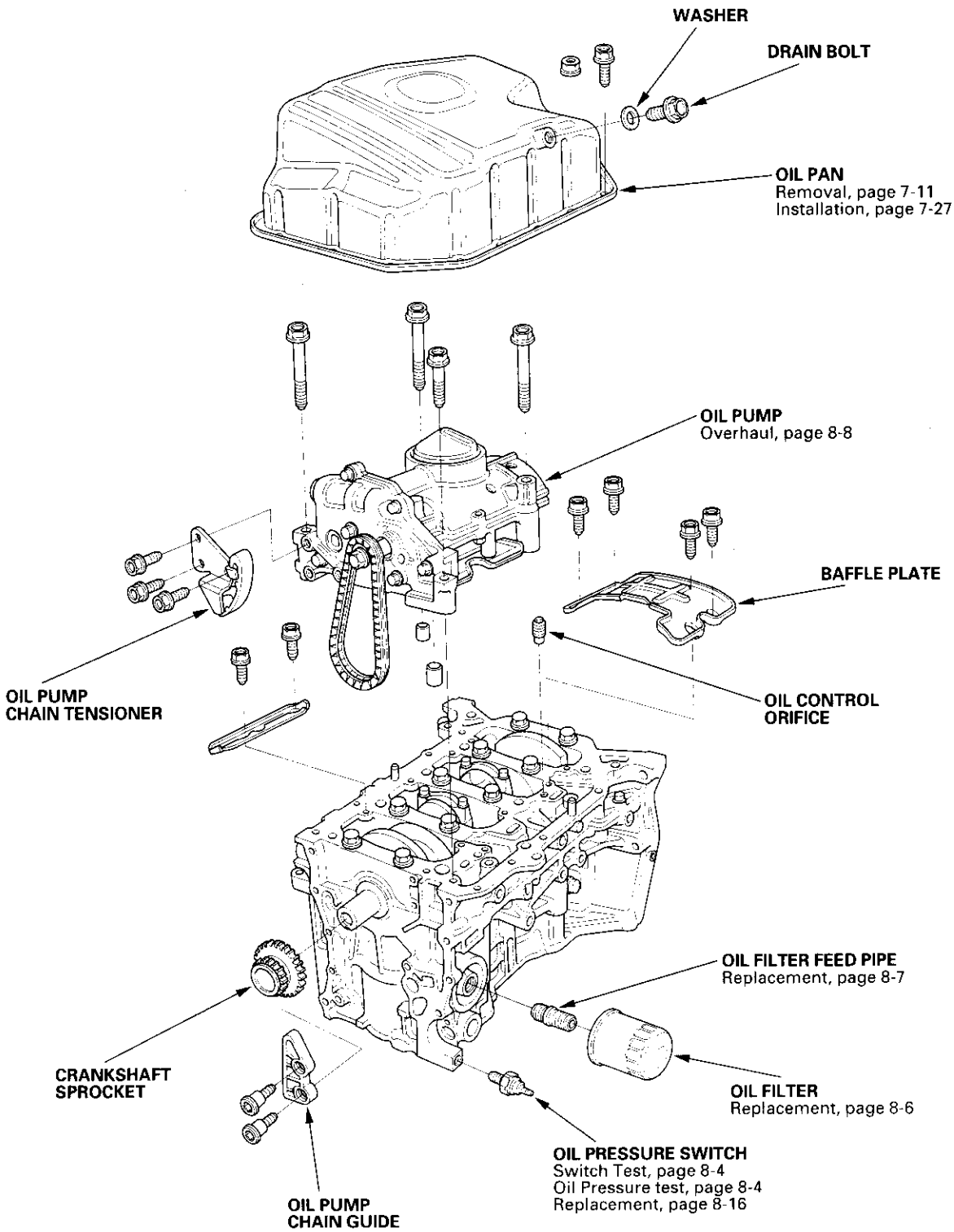
Special Tools

Ref. No.	Tool Number	Description	Qty
①	07HAA-PJ70100	Oil Filter Wrench	1



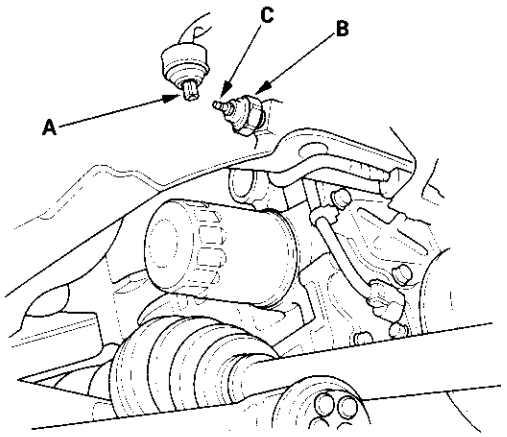
①

Component Location Index



Oil Pressure Switch Test

1. Remove the YEL/RED wire (A) from the engine 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.

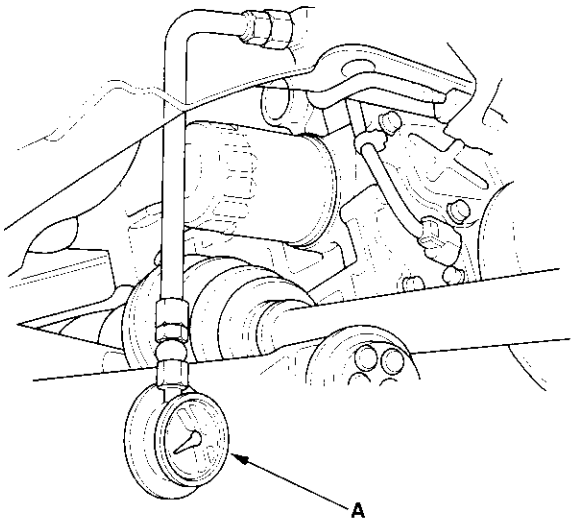
3. If the switch fails to operate, check the engine oil level. If the engine oil level is OK, check the engine oil pressure. If the oil pressure is OK, replace the oil pressure switch.

Oil Pressure Test

If the oil pressure indicator stays on with the engine running, check the engine oil level. If the oil level is correct:

1. Connect a tachometer.

2. Remove the engine oil pressure switch, and install an oil pressure gauge (A).



3. Start the engine. Shut it off immediately if the gauge registers no oil pressure. Repair the problem before continuing.

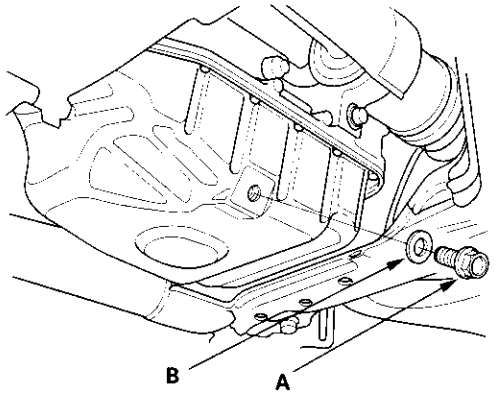
4. Allow the engine to reach operating temperature (fan comes on at least twice). The pressure should be:

Engine Oil Temperature: 176°F (80°C)
Engine Oil Pressure:
At Idle: 70 kPa (0.7 kgf/cm², 10 psi) minimum
At 3,000 rpm: 300 kPa (3.1 kgf/cm², 44 psi) minimum

5. If the oil pressure is NOT within specifications, inspect these items:
   - Check the oil screen for clogging.
   - Check the oil pump (see page 8-8).
   - Check crankshaft and connecting rod bearing clearances.

Engine Oil Replacement

1. Warm up the engine.
2. Remove the drain bolt (A), and drain the engine oil.



44 N·m (4.5 kgf·m, 33 lbf·ft)
Do not overtighten.

3. Reinstall the drain bolt with a new washer (B).
4. Refill with the recommended oil (see page 3-2).

Capacity
4.0 ℓ (4.2 US qt) at oil change.
4.2 ℓ (4.4 US qt) at oil change including filter.
5.3 ℓ (5.6 US qt) after engine overhaul.

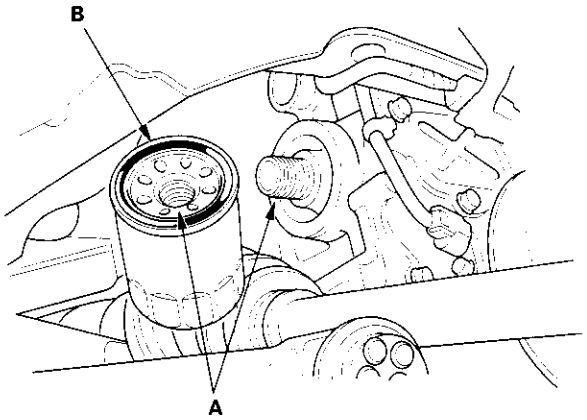
5. Run the engine for more than 3 minutes, then check for oil leakage.

Engine Oil Filter Replacement

Special Tool Required
Oil filter wrench 07HAA-PJ70100

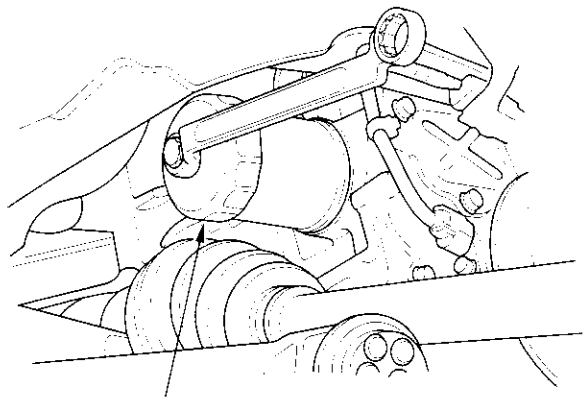
Engine Oil Filter (3/4-turn type)

1. Remove the oil filter with the special tool.
2. Inspect the threads (A) and rubber seal (B) on the new filter. Wipe off the seat on the engine block, then apply a light coat of oil to the filter rubber seal. Use only filters with a built-in bypass system.



3. Install the oil filter by hand.
4. After the rubber seal seats, tighten the oil filter clockwise with the special tool.

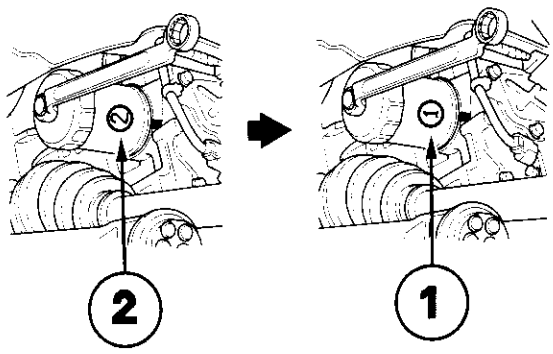
Tighten: **3/4 turn clockwise.**
Tightening torque: **12 N·m (1.2 kgf·m, 8.7 lbf·ft)**



07HAA-PJ70100

5. If 4 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 block, and note which number or mark is at the bottom.
   - Tighten the filter by turning it clockwise 3 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.



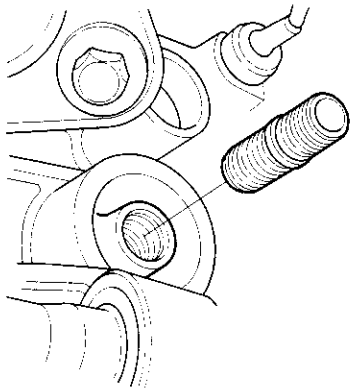
Number when rubber seal is seated. **Number after tightening.**

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 ▼▼▼

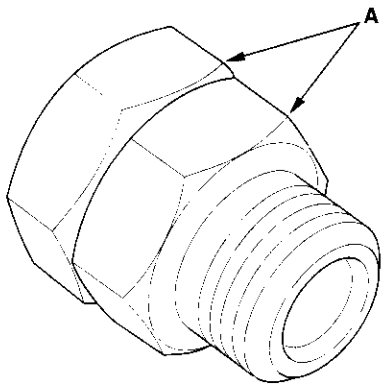
6. After installation, fill the engine with oil up to the specified level, run the engine for more than 3 minutes, then check for oil leakage.

Oil Filter Feed Pipe Replacement

1. Remove the oil filter (see page 8-6).
2. Remove the oil filter feed pipe.



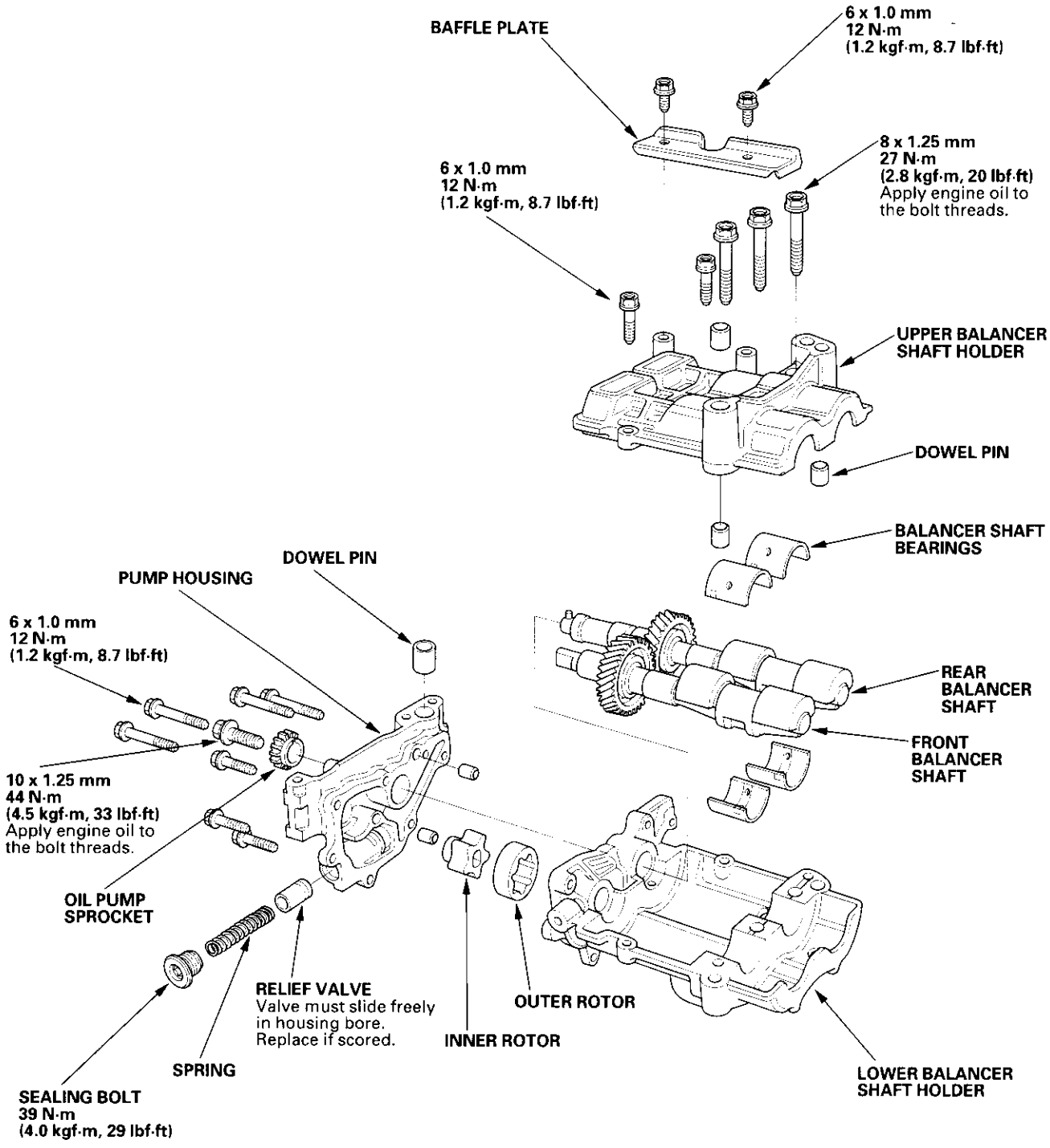
3. Install the two 20 × 1.5 mm nuts (A) onto the new oil filter feed pipe. Hold the nut with a wrench, then tighten the other nut.



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.

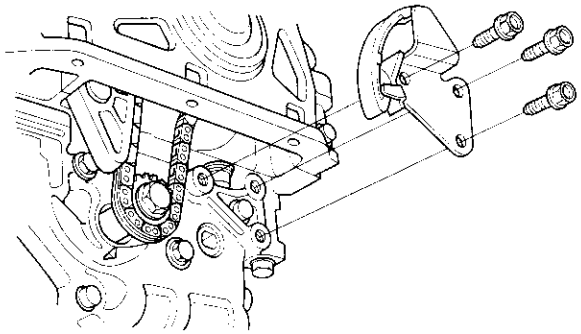
Oil Pump Overhaul

Exploded View

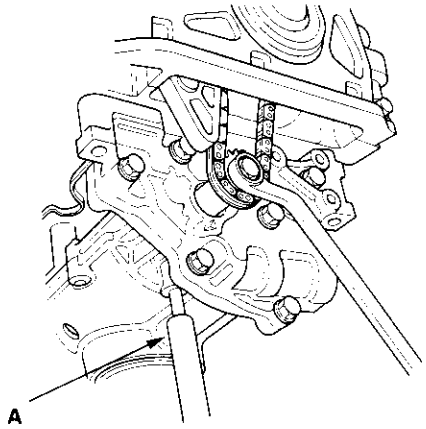


Oil Pump Removal

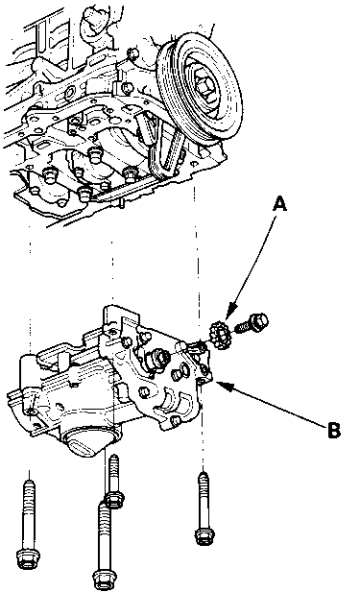
1. Set the No. 1 piston at top dead center (TDC) (see step 1 on page 6-12).
2. Remove the oil pan (see page 7-11).
3. Remove and discard the oil pump chain tensioner.



4. To hold the rear balancer shaft, insert a 6 mm pin driver (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).

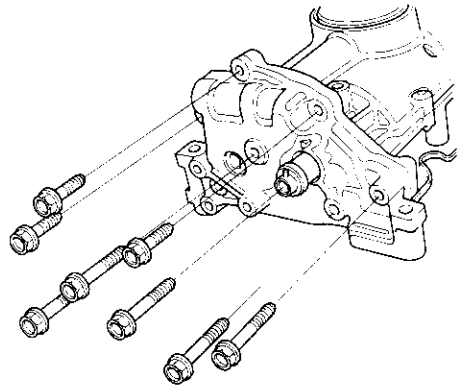


(cont'd)

Oil Pump Overhaul (cont'd)

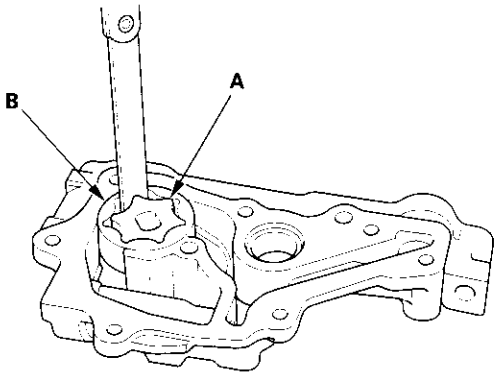
Oil Pump Inspection

1. Remove the pump housing.



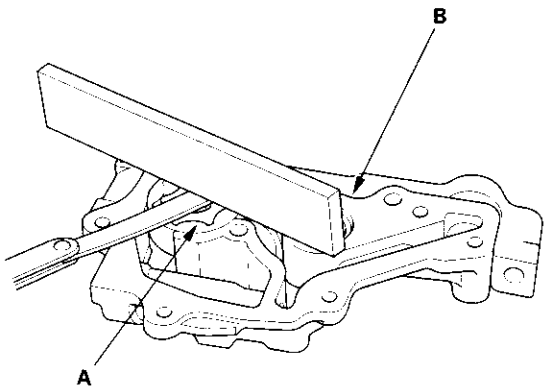
2. Check the inner-to-outer rotor radial clearance between the inner rotor (A) and outer rotor (B). If the inner-to-outer rotor radial clearance exceeds the service limit, replace the oil pump.

Inner Rotor-to-Outer Rotor Radial Clearance
Standard (New): 0.02—0.16 mm (0.001—0.006 in.)
Service Limit: 0.20 mm (0.008 in.)



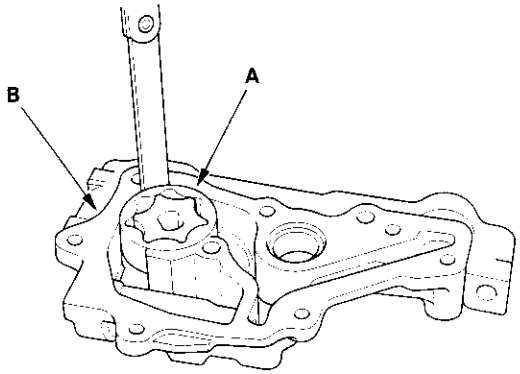
3. Check the housing-to-rotor axial clearance between the rotor (A) and pump housing (B). If the housing-to-rotor axial clearance exceeds the service limit, replace the oil pump.

Housing-to-Rotor Axial Clearance
Standard (New): 0.02—0.07 mm (0.001—0.003 in.)
Service Limit: 0.12 mm (0.005 in.)



4. Check the housing-to-outer rotor radial clearance between the outer rotor (A) and pump housing (B). If the housing-to-outer rotor radial clearance exceeds the service limit, replace the oil 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.)



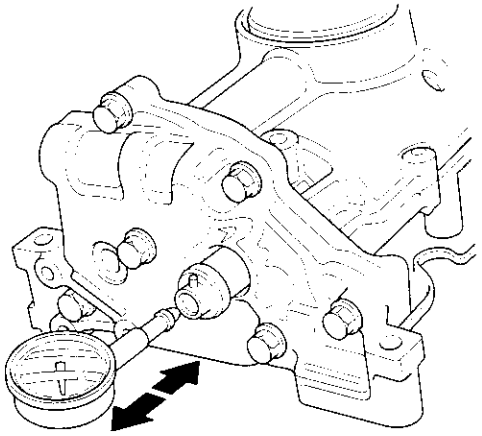
5. Inspect both rotors and the pump housing for scoring or other damage. Replace parts if necessary.

Balancer Shaft Inspection

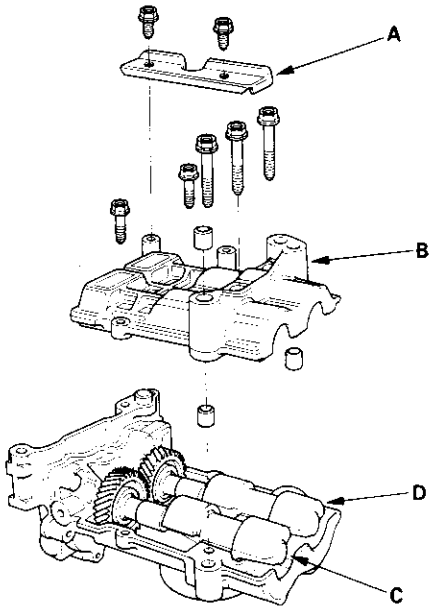
1. Seat the balancer shaft by pushing it away from the oil pump sprocket end of the oil pump.

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): 0.070—0.135 mm (0.0028—0.0053 in.)
Service Limit: 0.15 mm (0.006 in.)
Rear Balancer Shaft:
Standard (New): 0.070—0.135 mm (0.0028—0.0053 in.)
Service Limit: 0.15 mm (0.006 in.)



3. Remove the baffle plate (A) and upper balancer shaft holder (with bearings) (B), then remove the front balancer shaft (C) and rear balancer shaft (D).



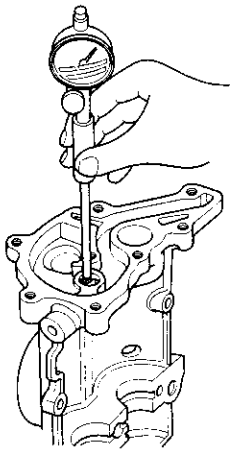
(cont'd)

Oil Pump Overhaul (cont'd)

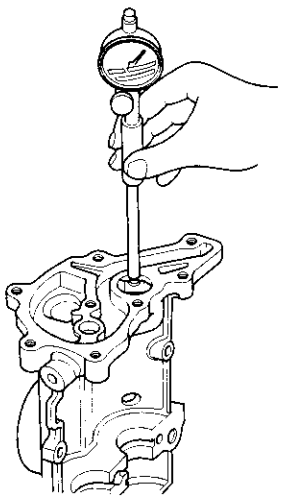
4. Measure the inner diameter of the No. 1 bearing for the front balancer shaft hole and the rear balancer shaft hole.

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:



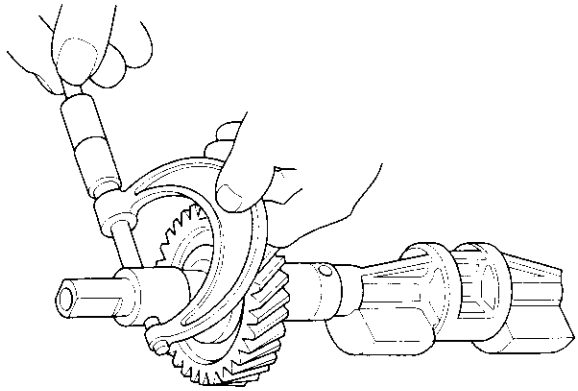
Rear:



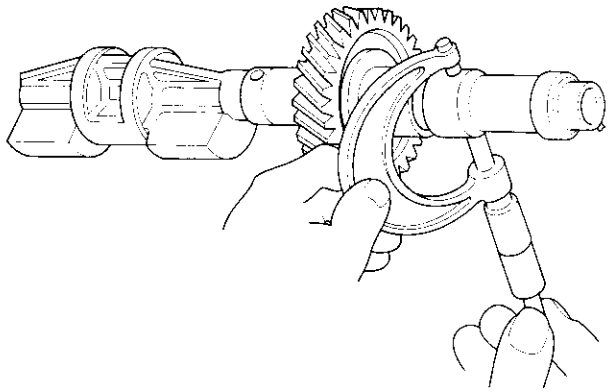
5. Measure the diameters of the No. 1 journals on the front balancer shaft and rear balancer shaft.

NO.1 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:



6. Clean both balancer shaft No. 2 journals and bearing halves with a clean shop towel.

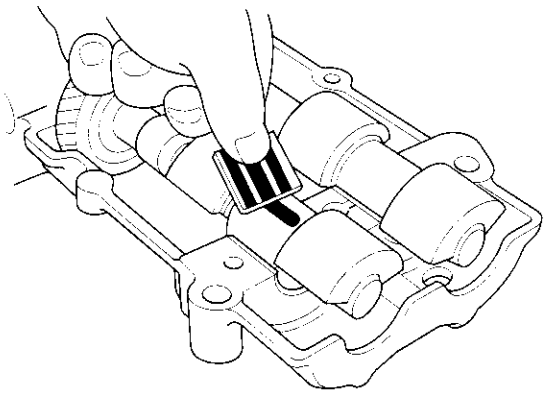
7. Place one strip of plastigage across each No. 2 journal.

8. Reinstall the bearings and upper balancer shaft holder, then torque the bolts.

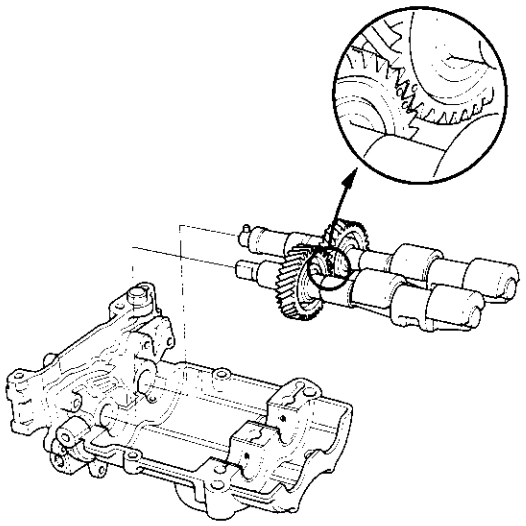
   NOTE: Do not rotate the balancer shaft during inspection.

9. Remove the upper balancer shaft holder and bearings again, and measure the widest part of the plastigage. If the balancer shaft No. 2 journal oil clearance is out-of-tolerance, install the new bearings, and recheck. If it is still out-of-tolerance, replace the balancer shafts.

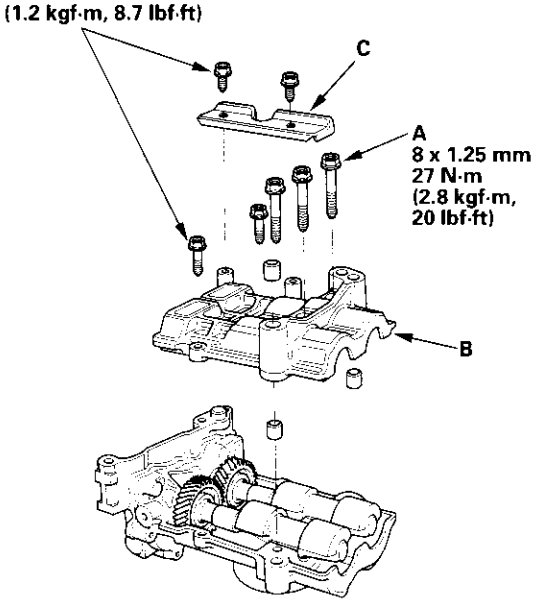
   No. 2 Journal Oil Clearance:
   Standard (New): 0.060—0.120 mm (0.0024—0.0047 in.)
   Service Limit: 0.15 mm (0.006 in.)



10. Align the punch mark on the rear balancer shaft with the center of the two punch marks on the front balancer shaft, then install the balancer shafts in the lower balancer shaft holder.



11. Apply engine oil to the threads of the 8 mm bolts (A).

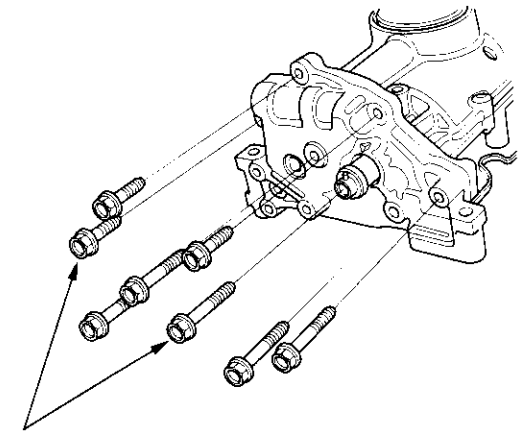


12. Install the upper balancer shaft holder (B) and baffle plate (C).

(cont'd)

Oil Pump Overhaul (cont'd)

13. Install the pump housing.

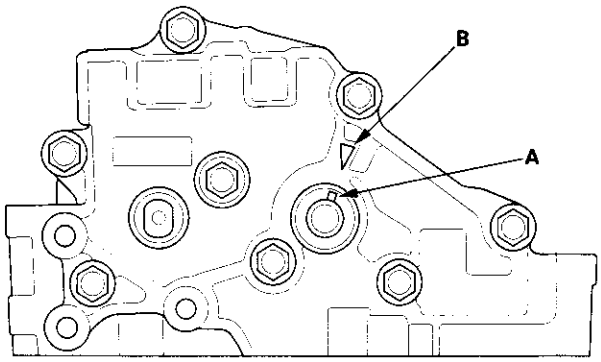


6 x 1.0 mm
12 N·m
(1.2 kgf·m, 8.7 lbf·ft)

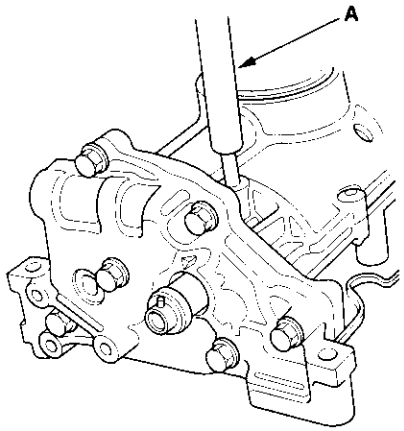
Oil Pump Installation

1. Make sure the No. 1 piston is at TDC (see step 1 on page 6-12).

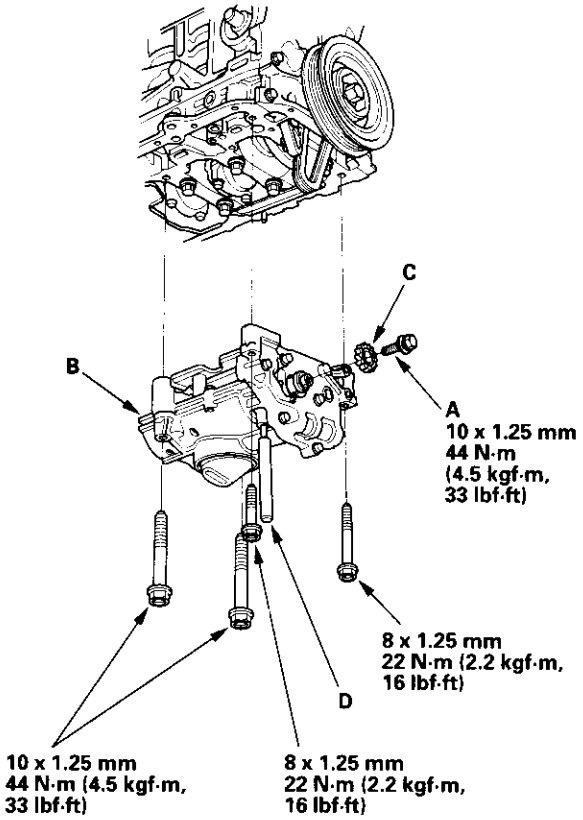
2. Align the dowel pin (A) on the rear balancer shaft with the mark (B) on the oil pump.



3. To hold the rear balancer shaft, insert a 6 mm pin driver (A) into the maintenance hole in the lower balancer shaft holder and through the rear balancer shaft.



4. Apply engine oil to the threads of the oil pump sprocket mounting bolt (A).



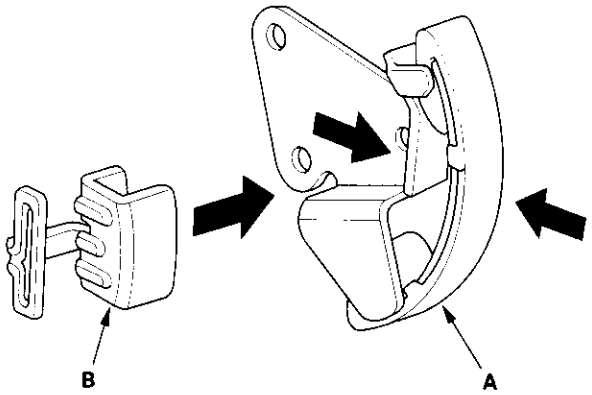
5. Loosely install the oil pump (B), then install the oil pump sprocket (C).

6. Remove the pin driver (D).

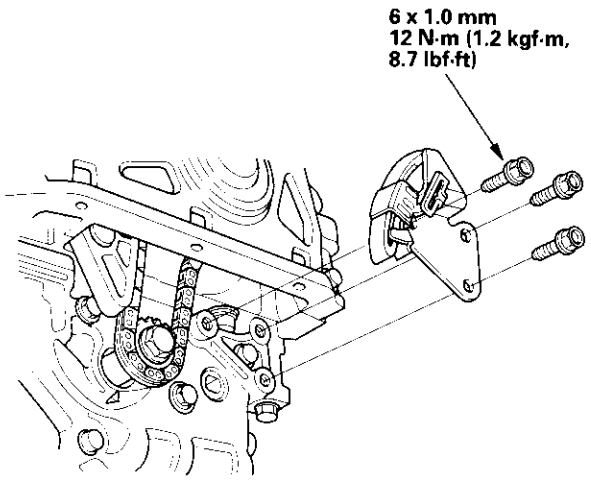
7. Tighten the oil pump mounting bolts.

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.



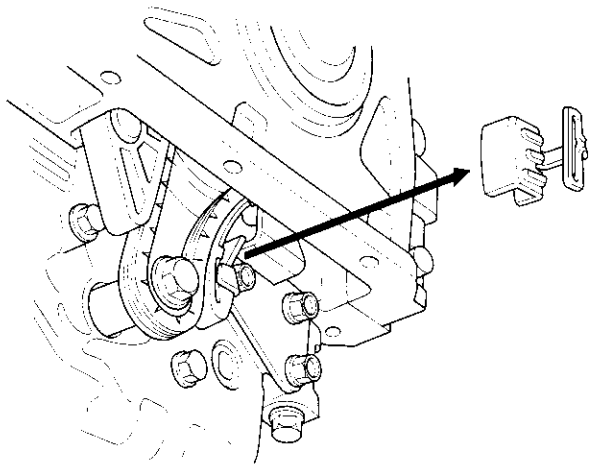
9. Install the oil pump chain tensioner.



(cont'd)

Oil Pump Overhaul (cont'd)

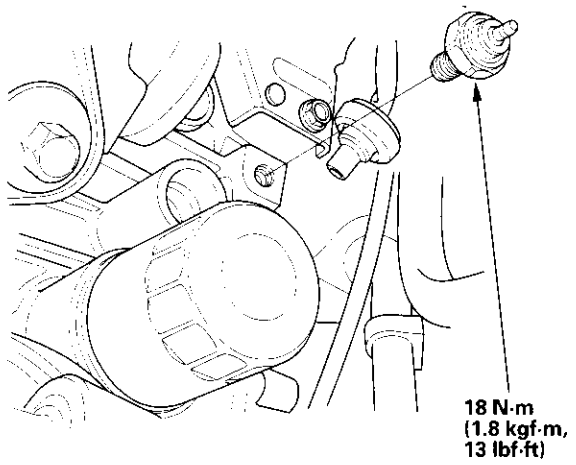
10. Remove the set clip from the oil pump chain tensioner.



11. Install the oil pan (see page 7-27).

Oil Pressure Switch Replacement

1. Disconnect the oil pressure switch connector, then remove the oil pressure switch.



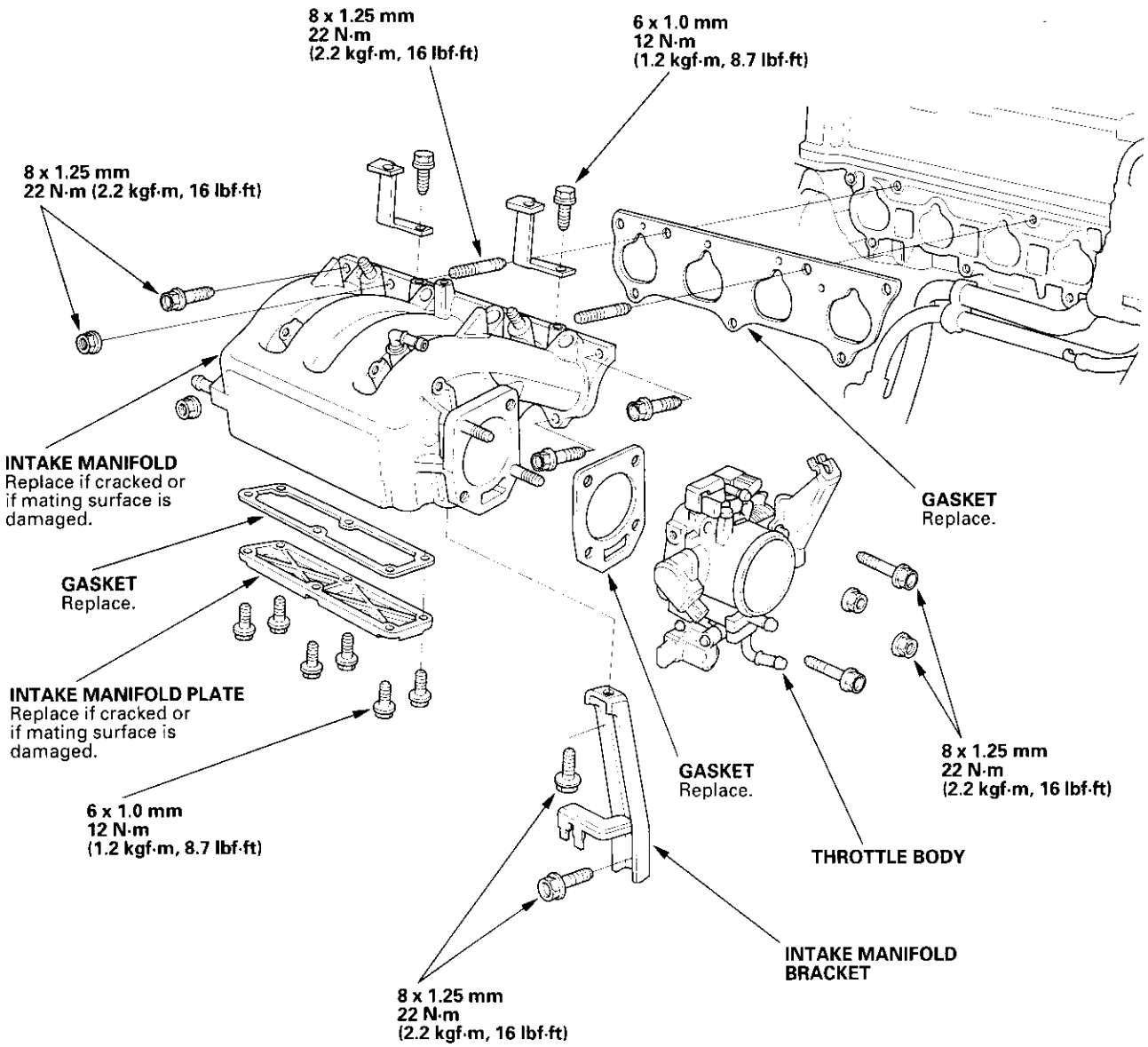
2. Apply liquid gasket to the oil pressure switch threads, then install the oil pressure switch.

Engine Mechanical

Intake Manifold and Exhaust System

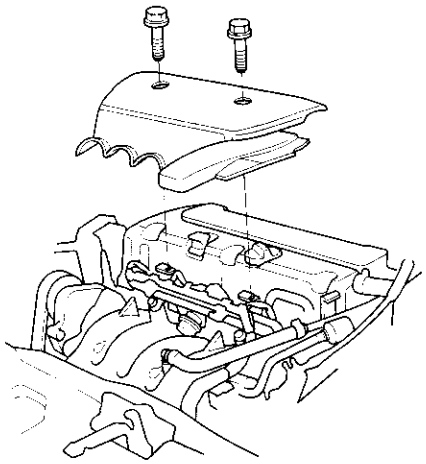
Intake Manifold Removal and Installation

Exploded View:

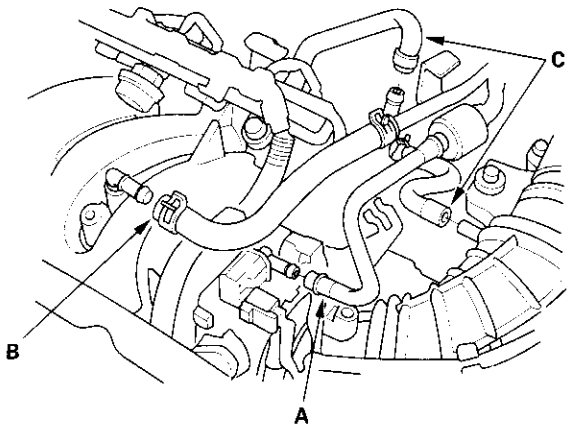


Removal:

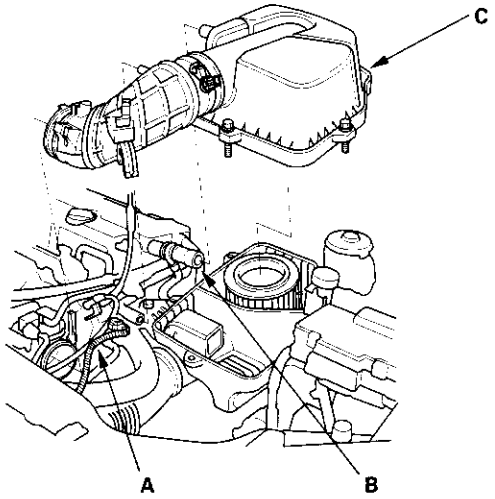
1. Remove the intake manifold cover.



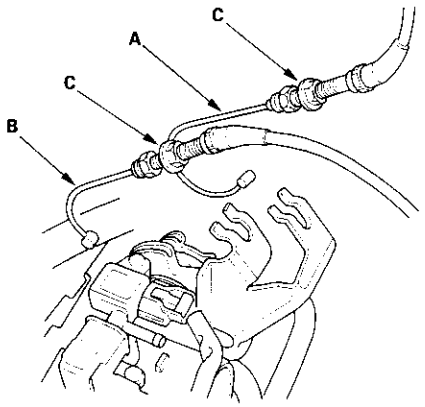
2. Remove the evaporative emission (EVAP) canister hose (A), brake booster vacuum hose (B), and vacuum hoses (C).



3. Disconnect the intake air temperature (IAT) sensor connector (A), and remove the breather hose (B), then remove the air cleaner housing cover/intake air duct assembly (C).



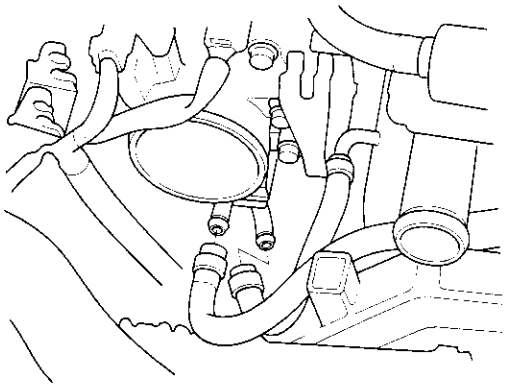
4. Fully open the throttle link and cruise control link by hand, then remove the throttle cable (A) and cruise control cable (B) from the links. Loosen the locknuts (C), and remove the cables from the bracket.



(cont'd)

Intake Manifold Removal and Installation (cont'd)

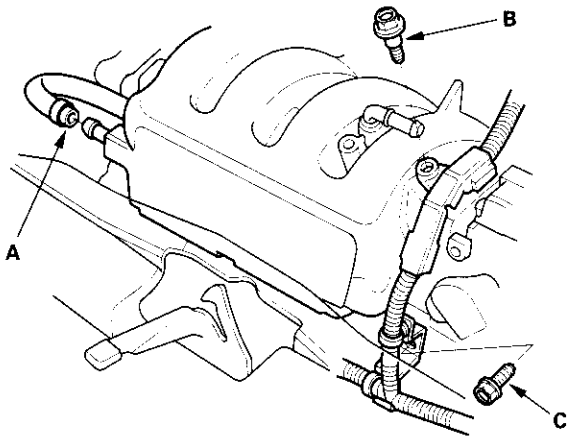
5. Be prepared to catch and clean up spilled coolant. Remove the water bypass hoses, then plug the water bypass hoses.



6. Relieve fuel pressure (see page 11-144).

7. Remove the fuel line (see page 11-149).

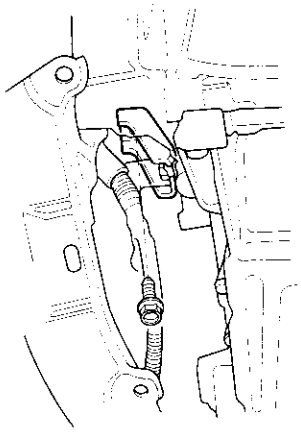
8. Remove the positive crankcase ventilation (PCV) hose (A), harness holder mounting bolt (B) and harness clamp mounting bolt (C).



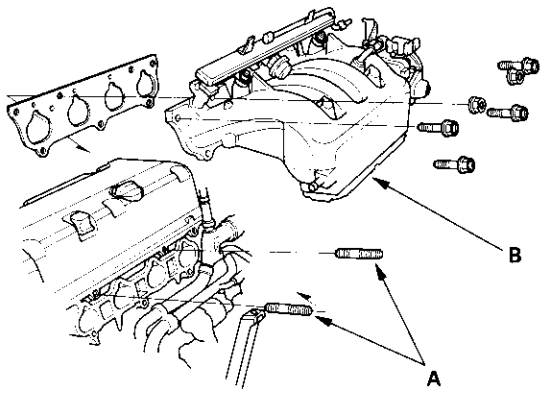
9. Remove the engine wire harness connectors and wire harness clamps from the intake manifold.

   - Four injector connectors
   - Idle air control (IAC) valve connector
   - Throttle position (TP) sensor connector
   - Manifold absolute pressure (MAP) sensor connector
   - Evaporative emission (EVAP) canister purge valve connector

10. Remove the bolt securing the intake manifold and bracket.



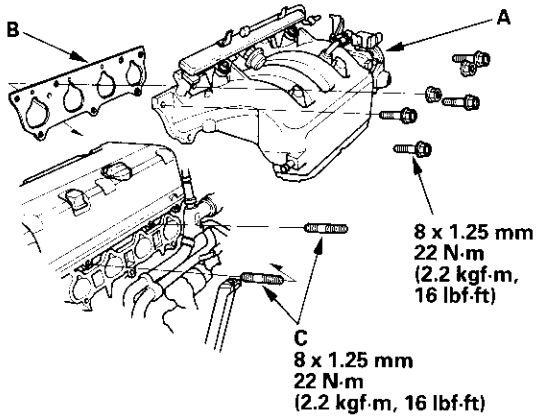
11. Remove all the intake manifold mounting bolts/ nuts.



12. Remove the two stud bolts (A), then remove the intake manifold (B).

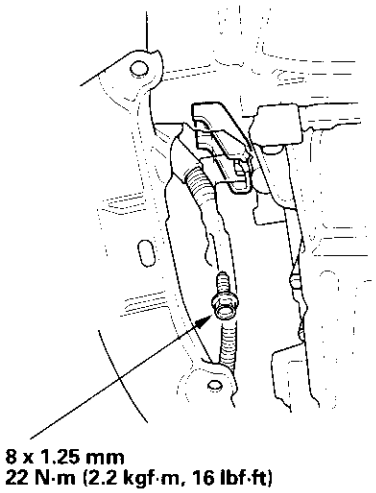
Installation:

1. Install the intake manifold (A) with a new gasket (B), then install and tighten the two stud bolts (C).

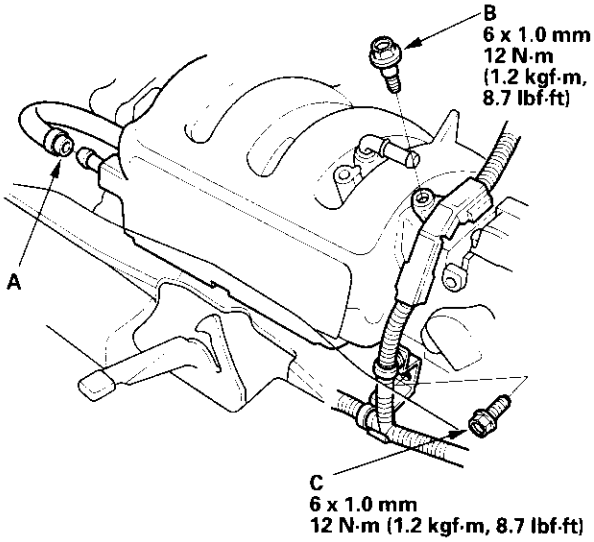


2. Tighten all intake manifold mounting bolts/nuts in a crisscross pattern in two or three steps, beginning with the inner bolt.

3. Tighten the bolt securing the intake manifold and bracket.

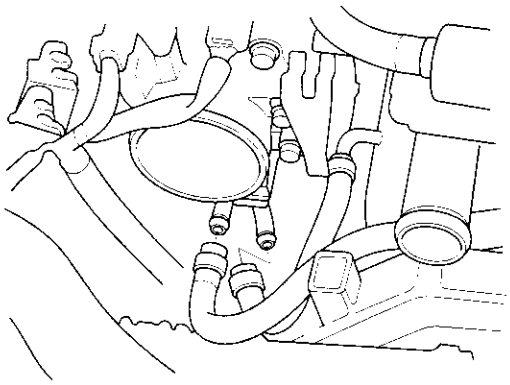


4. Install the PCV hose (A), harness holder mounting bolt (B), and harness clamp mounting bolt (C).



5. Install the fuel line (see page 11-150).

6. Install the water bypass hoses.



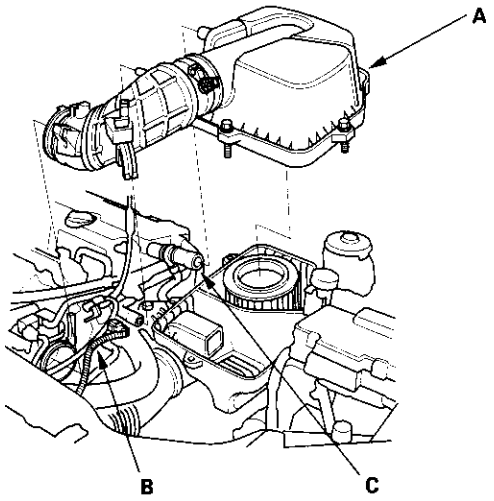
7. Install the throttle cable (see page 11-164), then adjust the cable (see page 11-163).

8. Install the cruise control cable (see page 4-44), then adjust the cable (see page 4-45).

(cont'd)

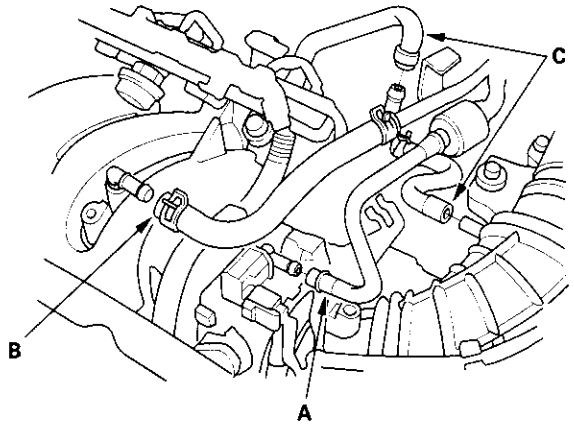
Intake Manifold Removal and Installation (cont'd)

9. Install the air cleaner housing cover (A), and connect the IAT sensor connector (B).

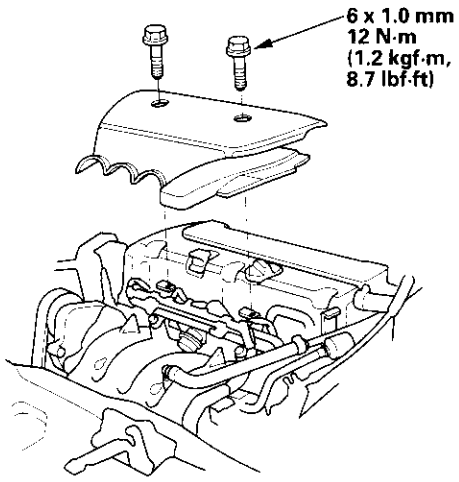


10. Install the breather hose (C).

11. Install the EVAP canister hose (A), brake booster vacuum hose (B), and vacuum hoses (C).



12. Install the intake manifold cover.



13. Clean up any spilled engine coolant.

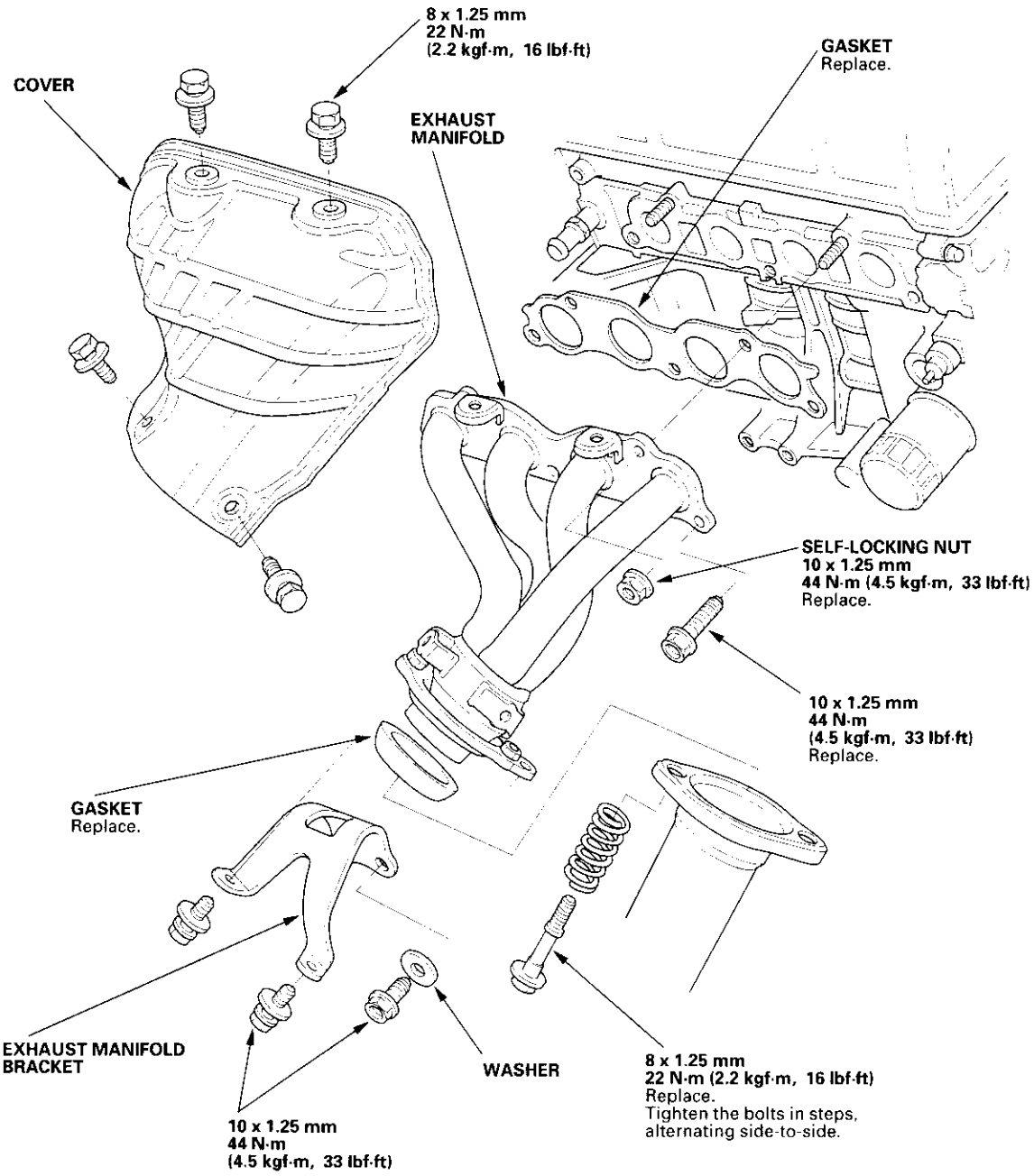
14. After installation, check that all tubes, hoses, and connectors are installed correctly.

15. Inspect for fuel leaks. Turn the ignition switch 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 two or three times, then check for fuel leakage at any point in the fuel line.

16. Refill the radiator with engine coolant, and bleed air from the cooling system with the heater valve open (see page 10-6).

Exhaust Manifold Removal and Installation

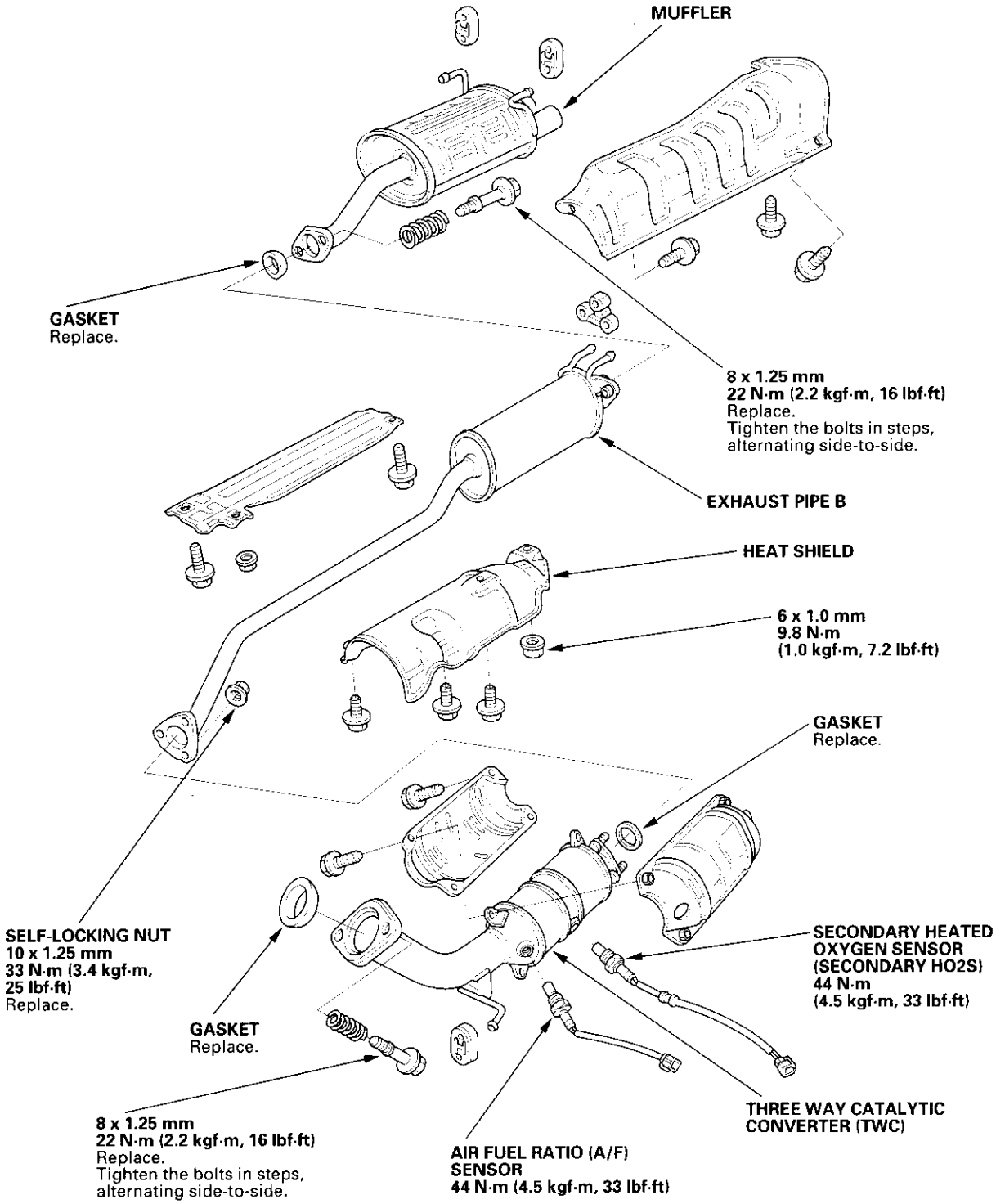
1. Remove the VTEC solenoid valve (see page 11-128).
2. Remove the driveshaft heat shield (see page 16-19).
3. Remove the cover and exhaust manifold bracket, then remove the exhaust manifold.



4. Install the exhaust manifold and tighten the bolts/nuts in a crisscross pattern in two or three steps, beginning with the inner bolt.
5. Install the other parts in the reverse order of removal.

Exhaust Pipe and Muffler Replacement

NOTE: Use new gaskets and self-locking nuts when reassembling.

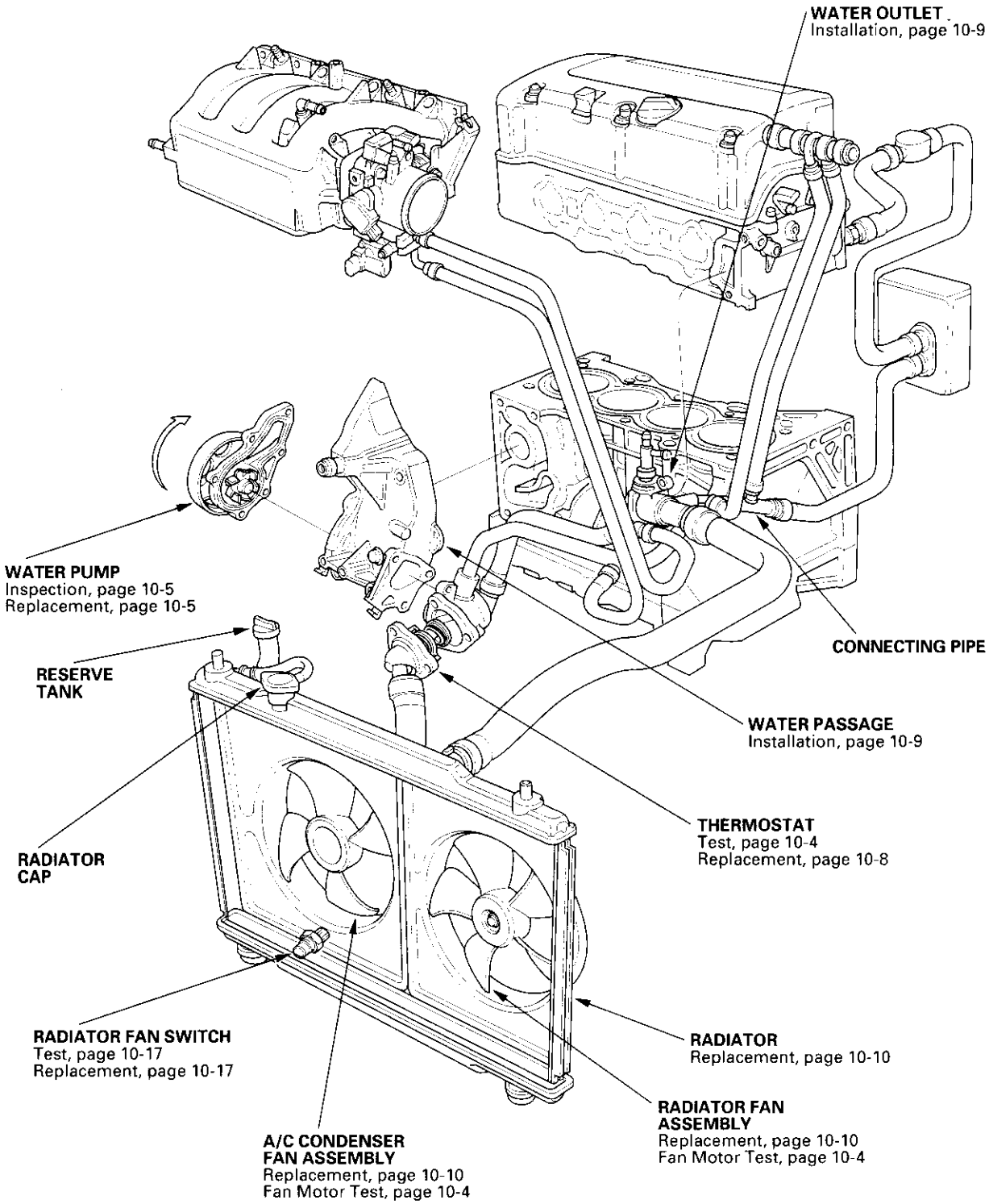


Engine Cooling

Cooling System

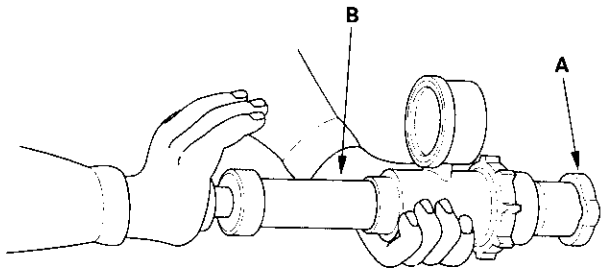
Fan Controls

Component Location Index



Radiator Cap Test

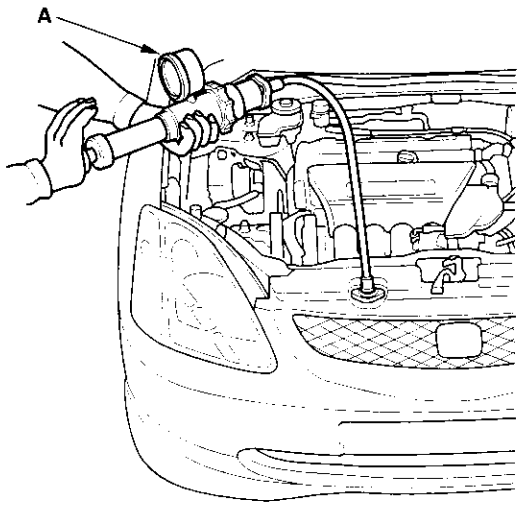
1. Remove the radiator cap (A), wet its seal with engine coolant, then install it on the pressure tester (B) (commercially available).



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

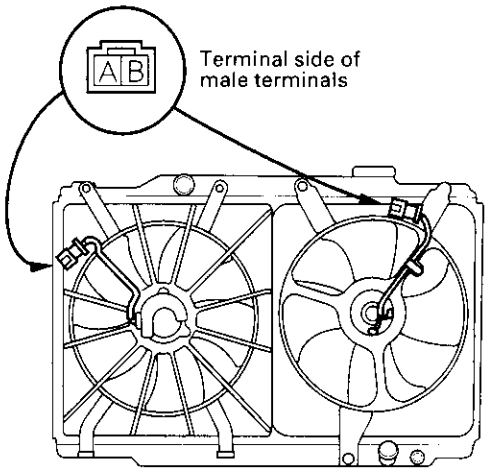
1. Wait until the engine is cool, then carefully remove the radiator cap and fill the radiator with engine coolant to the top of the filler neck.
2. Attach the pressure tester (A) (commercially available) to the radiator.



3. Apply a pressure of 93—123 kPa (0.95—1.25 kgf/cm^2, 14—18 psi).
4. Inspect for engine coolant leaks and a drop in pressure.
5. Remove the tester, and reinstall the radiator cap.

Fan Motor Test

1. Disconnect the 2P connectors from the radiator fan motor and condenser fan motor.



2. Test the motor by connecting battery power to the B terminal and ground to the A terminal.

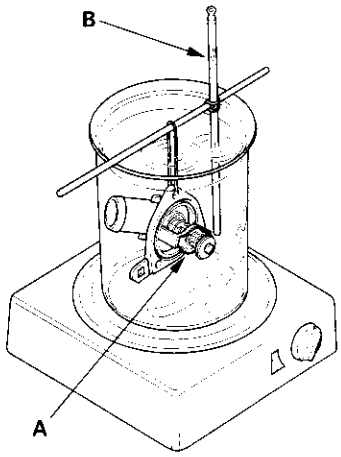
3. If the motor fails to run or does not run smoothly, replace it.

Thermostat Test

Replace the thermostat if it is open at room temperature.

To test a closed thermostat:

1. Suspend the thermostat (A) in a container of water. Do not let the thermometer (B) touch the bottom of the hot container.



2. Heat the water, and check the temperature with a thermometer. Check the temperature at which the thermostat first opens, and at which it is fully open.

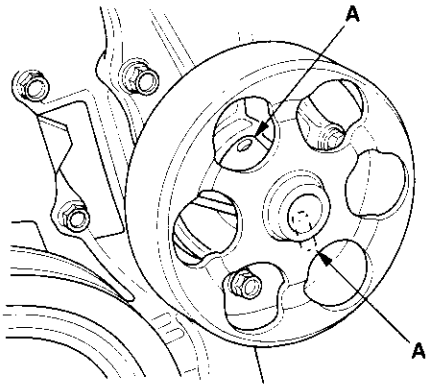
3. Measure the lift height of the thermostat when it is fully open.

STANDARD THERMOSTAT

Lift height:	**above 8.0 mm (0.31 in.)**
Starts opening:	**169—176°F (76—80°C)**
Fully open:	**194°F (90°C)**

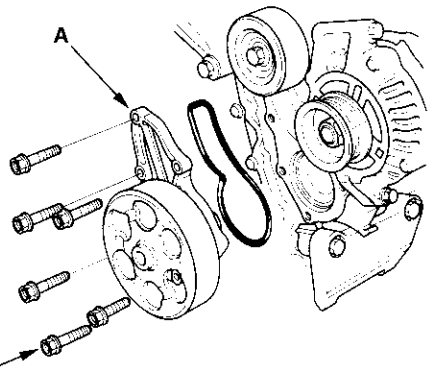
Water Pump Inspection

1. Remove the drive belt (see page 4-26).
2. Turn the water pump pulley counterclockwise. Check that it turns freely.
3. Check for signs of seal leakage. A small amount of "weeping" from the bleed holes (A) is normal.



Water Pump Replacement

1. Remove the drive belt (see page 4-26).
2. Drain the engine coolant (see page 10-6).
3. Remove the crankshaft pulley (see page 6-11).
4. Remove the six bolts securing the water pump, then remove the water pump (A).

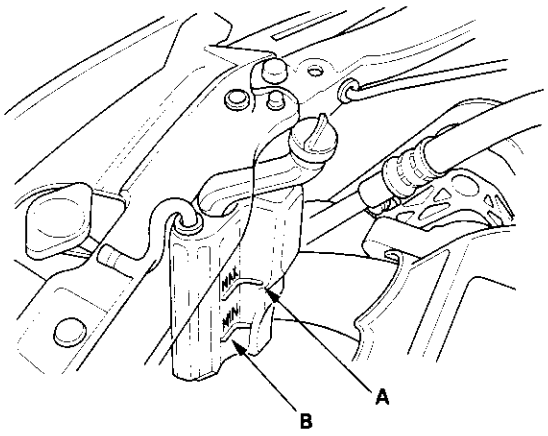


6 x 1.0 mm
12 N·m (1.2 kgf·m, 8.7 lbf·ft)

5. Inspect and clean the O-ring groove and mating surface with the water passage.
6. Install the water pump with new O-rings in the reverse order of removal.
7. Clean up any spilled engine coolant.
8. Install the crankshaft pulley (see page 6-12).
9. Refill the radiator with engine coolant, and bleed air from the cooling system with the heater valve open (see page 10-6).

Coolant Check

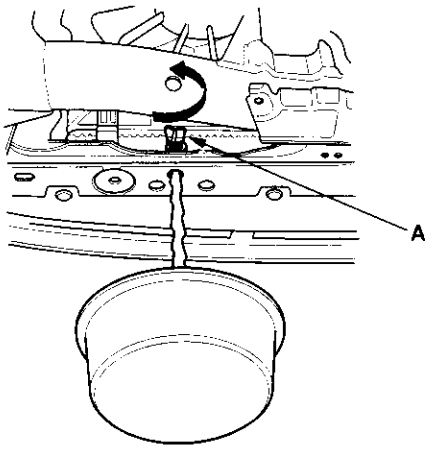
1. Look at the coolant level in the reserve tank. Make sure it is between the MAX mark (A) and MIN mark (B).



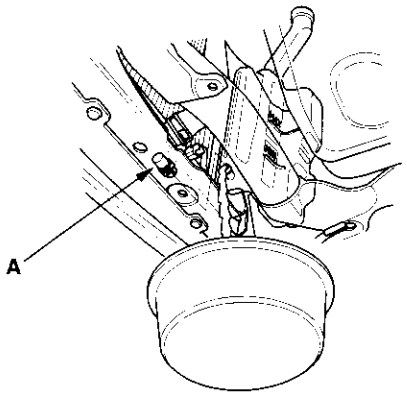
2. If the coolant level in the reserve tank is at or below the MIN mark, add coolant to bring it up to the MAX mark, and inspect the cooling system for leaks.

Coolant Replacement

1. Start the engine. Set the heater temperature control dial to maximum heat, then turn off the ignition switch. Make sure the engine and radiator are cool to the touch.
2. Remove the radiator cap.
3. Remove the splash shield (see step 23 on page 5-5).
4. Loosen the drain plug (A), and drain the coolant.

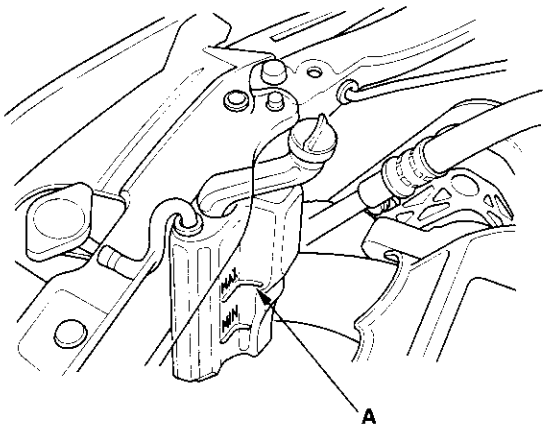


5. Remove the reserve tank drain cap (A), and drain the coolant.



6. After the coolant has drained, tighten the radiator drain plug securely, and install the reserve tank drain cap securely.

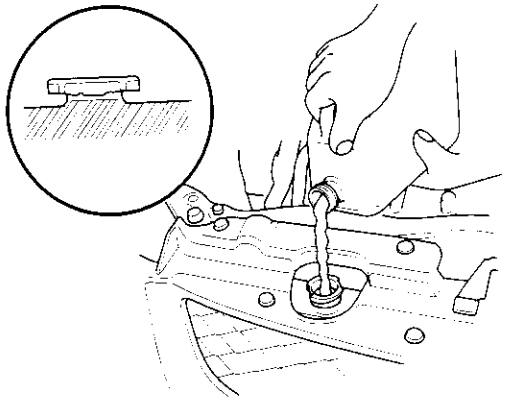
7. Fill the reserve tank to the MAX mark (A) with Honda All Season Antifreeze/Coolant Type 2 (P/N OL999-9001).



8. Pour Honda All Season Antifreeze/Coolant Type 2 into the radiator up to the base of the filler neck.

   NOTE:
   - Always use Honda All Season Antifreeze/Coolant Type 2 (P/N OL999-9001). Using a non-Honda coolant can result in corrosion, causing the cooling system to malfunction or fail.
   - Honda All Season Antifreeze/Coolant Type 2 is a mixture of 50% antifreeze and 50% water. Premixing is not required.

   Engine Coolant Refill Capacity [including the reserve tank capacity of 0.53 ℓ (0.56 US qt)] : 5.0 ℓ (5.3 US qt)



9. Install the radiator cap loosely.

10. Start the engine, and let it run until it warms up (the radiator fan comes on at least twice).

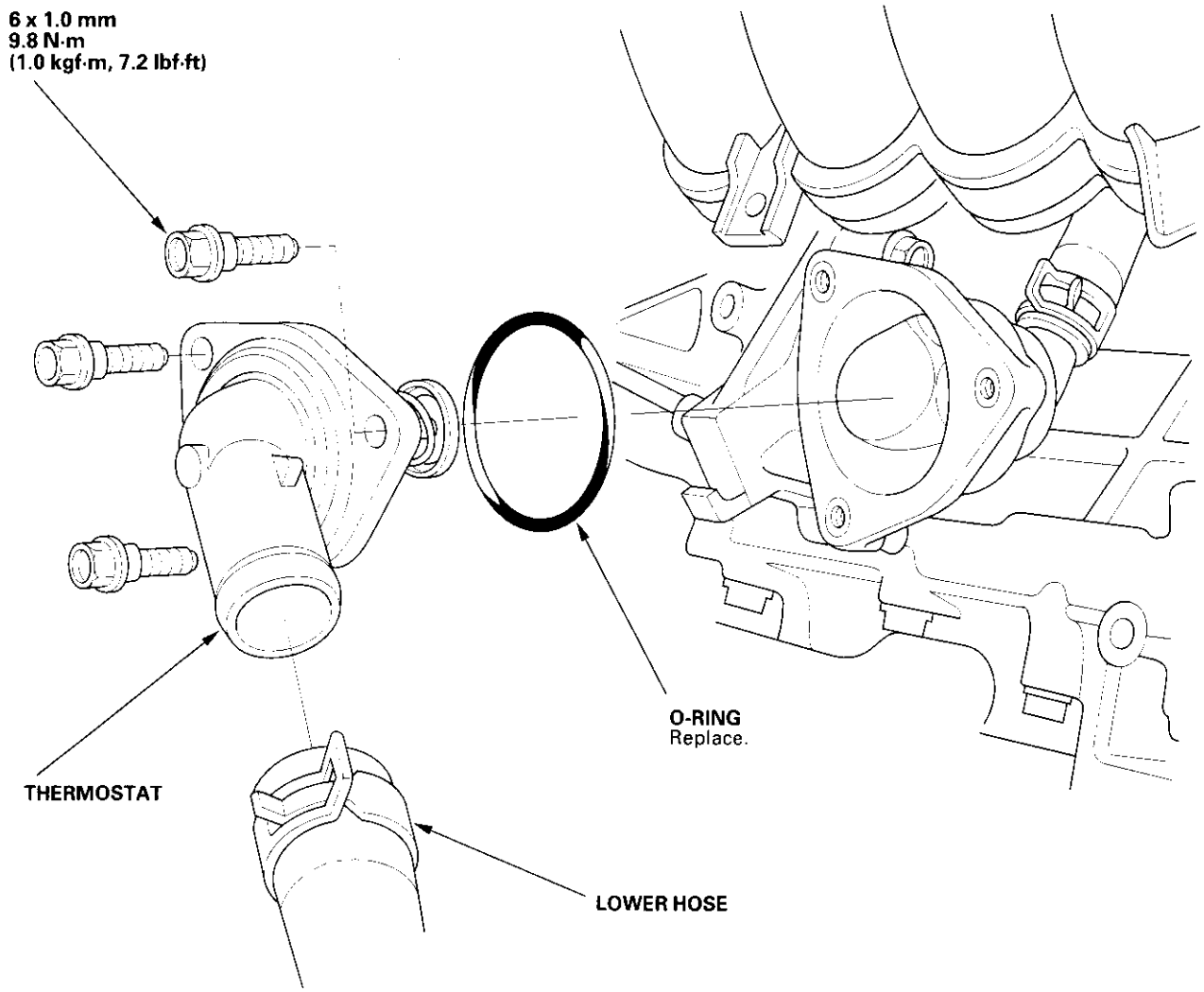
11. Turn off the engine. Check the level in the radiator, and add Honda All Season Antifreeze/Coolant Type 2 if needed.

12. Put the radiator cap on tightly, then run the engine again and check for leaks.

13. Install the splash shield (see step 22 on page 5-12).

Thermostat Replacement

1. Drain the engine coolant (see page 10-6).
2. Remove the splash shield (see step 23 on page 5-5).
3. Remove the lower hose, then remove the thermostat.

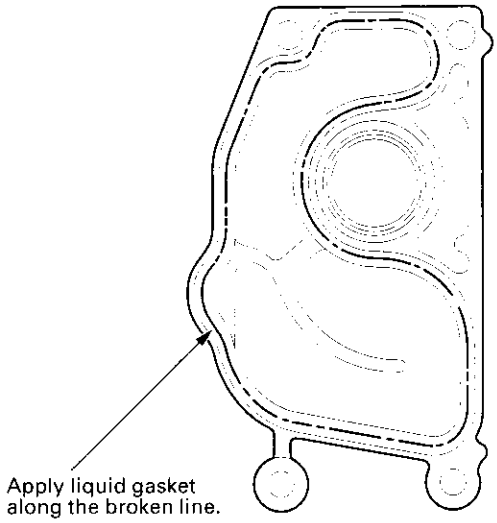


4. Install the thermostat with a new O-ring, then install the lower hose.
5. Install the splash shield (see step 22 on page 5-12).
6. Refill the radiator with engine coolant, and bleed air from the cooling system with the heater valve open (see page 10-6).

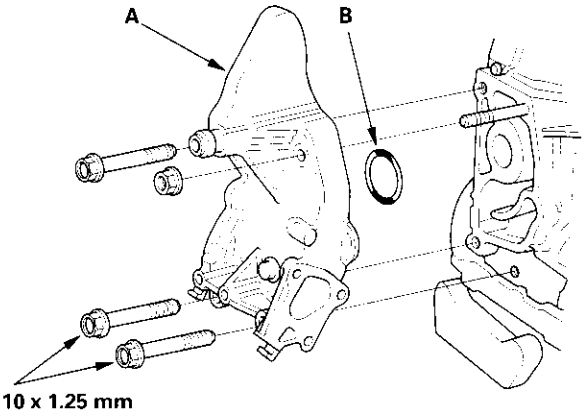
Water Passage Installation

1. Clean and dry the water passage mating surfaces.
2. Apply liquid gasket P/N 08718-0009, evenly to the cylinder block mating surface of the water passage and to the inner threads of the bolt holes.

   NOTE: Do not install the parts if 5 minutes or more have elapsed since applying liquid gasket. Instead, reapply liquid gasket after removing old residue.



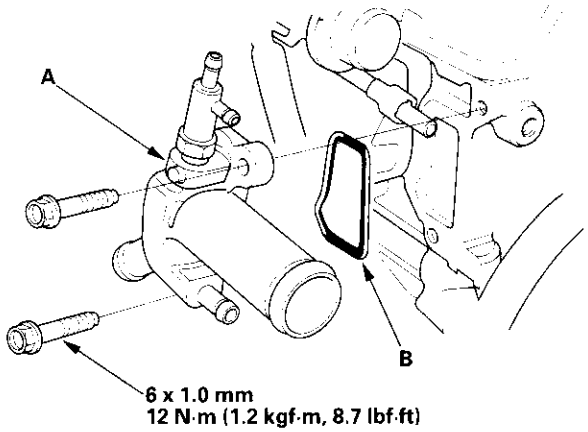
3. Install the water passage (A) with a new O-ring (B).



4. After assembly, wait at least 30 minutes before filling the engine with oil.

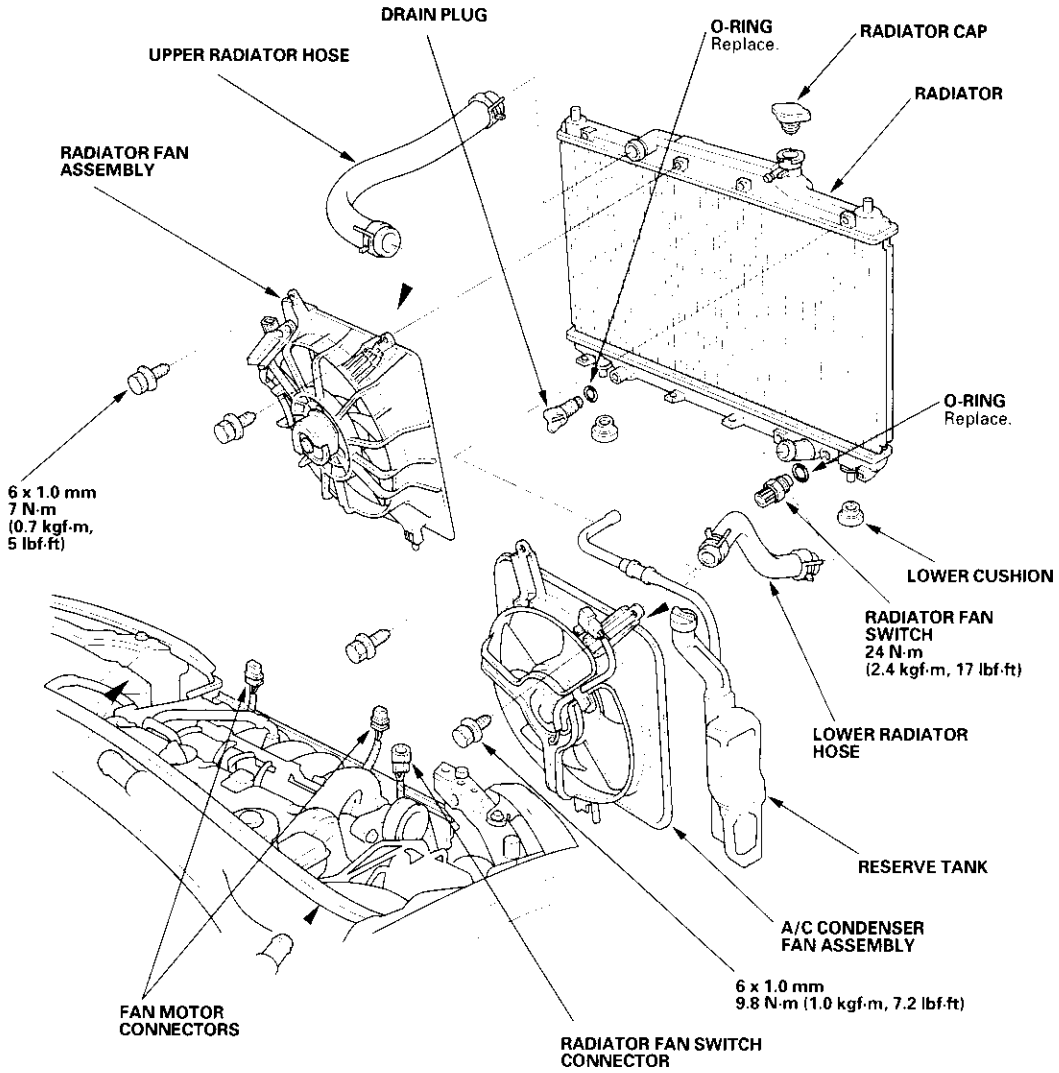
Water Outlet Installation

Install the water outlet (A) with a new O-ring (B).



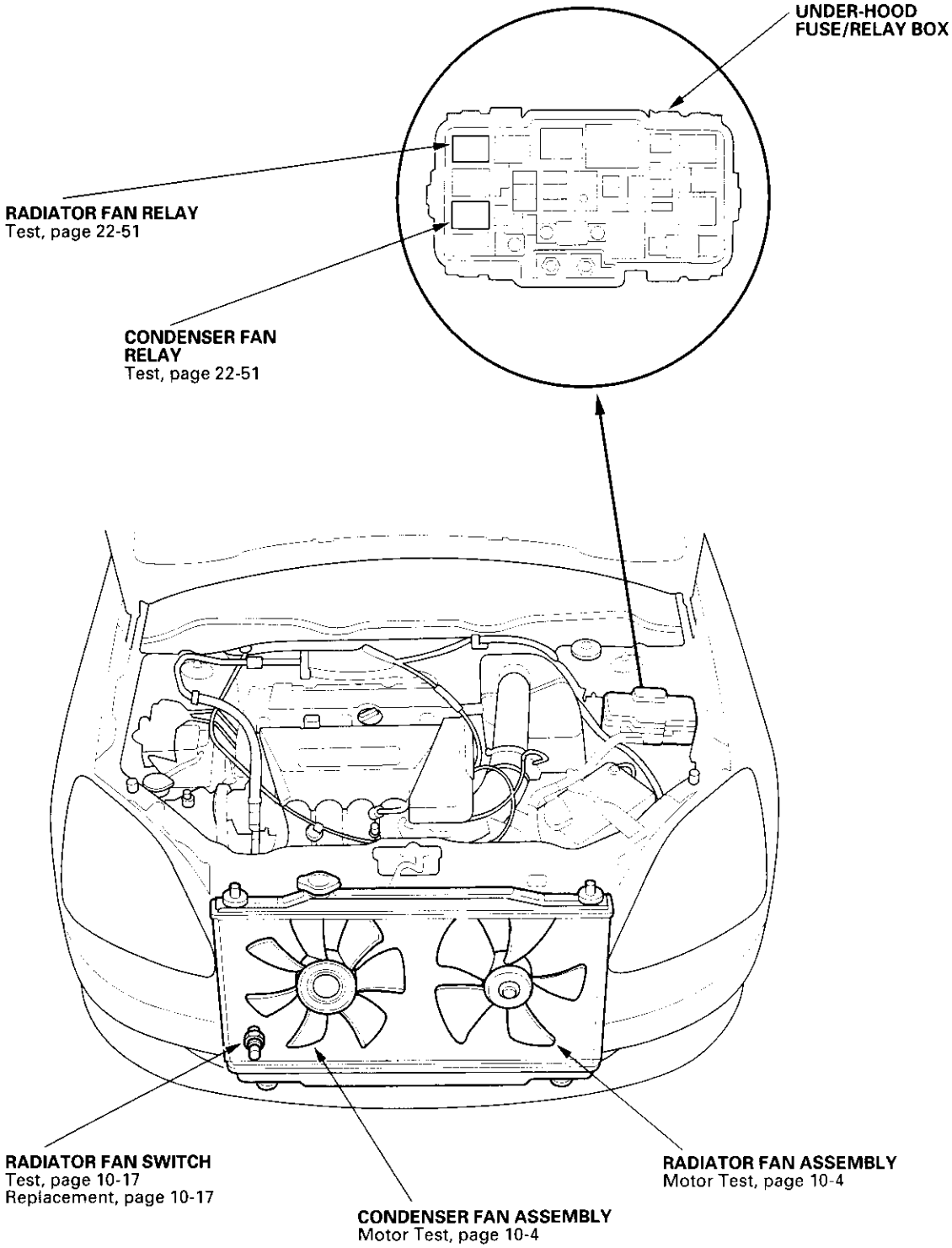
Radiator and Fans Replacement

1. Drain the engine coolant (see page 10-6).
2. Remove the front bumper (see page 20-85).
3. Remove the bulkhead.
4. Remove the upper radiator hose and lower radiator hose.



5. Disconnect the fan motor connectors and radiator fan switch connector, then pull the radiator up and out.
6. Remove the fan shroud assemblies and other parts from the radiator.
7. Install the radiator in the reverse order of removal. Make sure the upper and lower cushions are set securely.
8. Install the bulkhead in the reverse order of removal. Apply body paint to the bulkhead mounting bolts.
9. Fill the radiator with engine coolant and bleed the air (see page 10-6).

Component Location Index

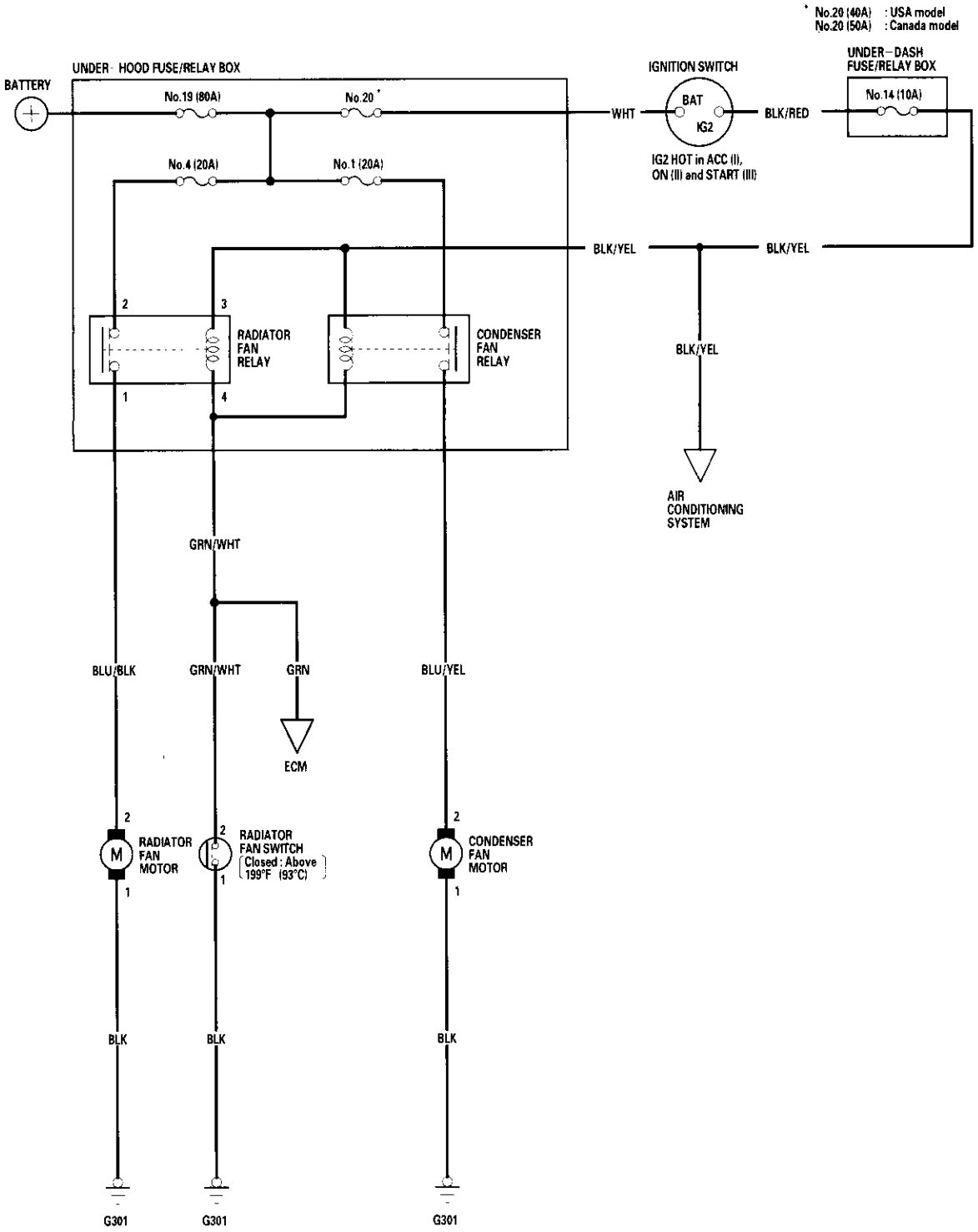


Symptom Troubleshooting Index

Before performing any troubleshooting procedures check:
- Fuses
- Grounds
- Cleanliness and tightness of all connectors

SYMPTOM	PROCEDURE
Radiator fan does not run at all	Radiator Fan Circuit Troubleshooting (see page 10-14).
Radiator fan does not run for engine cooling, but it runs with A/C ON	Radiator Fan Switch Circuit Troubleshooting (Open) (see page 10-16).
Radiator fan runs with ignition switch ON (II), A/C OFF, and engine temperature below 199°F (93°C)	Radiator Fan Switch Circuit Troubleshooting (Short) (see page 10-16).

Circuit Diagram



Radiator Fan Circuit Troubleshooting

1. Check the No. 4 (20A) fuse in the under-hood fuse/relay box, and the No. 14 (10A) fuse in the under-dash fuse/relay box.

   Is the fuse (s) OK?

   YES—Go to step 2.

   NO—Replace the fuse (s) and recheck.■

2. Remove the radiator fan relay from the under-hood fuse/relay box, and test it (see page 22-51).

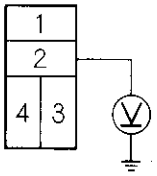
   Is the relay OK?

   YES—Go to step 3.

   NO—Replace the radiator fan relay.■

3. Measure the voltage between the No. 2 terminal of the radiator fan relay 4P socket and body ground.

   RADIATOR FAN RELAY 4P SOCKET



   Terminal side of female terminals

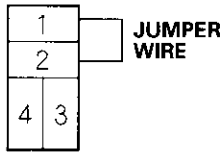
   Is there battery voltage?

   YES—Go to step 4.

   NO—Replace the under-hood fuse/relay box.■

4. Connect the No. 1 and No. 2 terminals of the radiator fan relay 4P socket with a jumper wire.

   RADIATOR FAN RELAY 4P SOCKET



   Terminal side of female terminals

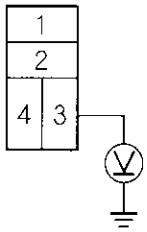
   Does the radiator fan run?

   YES—Go to step 5.

   NO—Go to step 6.

5. Disconnect the jumper, and turn the ignition switch ON (II). Check for voltage between the No. 3 terminal of the radiator fan relay 4P socket and body ground.

   RADIATOR FAN RELAY 4P SOCKET



   Terminal side of female terminals

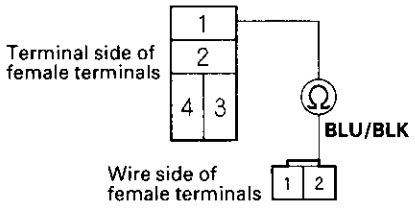
   Is there battery voltage?

   YES—Go to step 9.

   NO—Check for an open in the wire between the under-hood fuse/relay box and under-dash fuse/relay box.■

6. Disconnect the radiator fan motor 2P connector.
7. Check for continuity between the No. 1 terminal of the radiator fan relay 4P socket and the No. 2 terminal of the radiator fan motor 2P connector.

RADIATOR FAN RELAY 4P SOCKET



RADIATOR FAN MOTOR 2P CONNECTOR

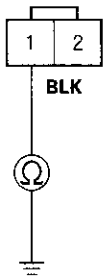
Is there continuity?

YES—Go to step 8.

NO—Repair open in the wire between the under-hood fuse/relay box and the radiator fan motor 2P connector terminal No. 2.■

8. Check for continuity between the No. 1 terminal of the radiator fan motor 2P connector and body ground.

RADIATOR FAN MOTOR 2P CONNECTOR



Wire side of female terminals

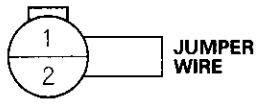
Is there continuity?

YES—Replace the radiator fan motor.■

NO—Check for an open in the wire between radiator fan motor 2P connector terminal No. 1 and body ground. If the wire is OK, check for a poor ground at G301.■

9. Reinstall the radiator fan relay.
10. Disconnect the radiator fan switch 2P connector.
11. Connect the No. 1 and No. 2 terminals, of the radiator fan switch 2P connector with a jumper wire.

RADIATOR FAN SWITCH 2P CONNECTOR



Wire side of female terminals

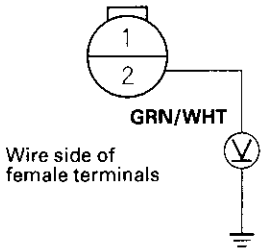
Does the radiator fan run?

YES—Replace the radiator fan switch.■

NO—Go to step 12.

12. Remove the jumper wire, and measure the voltage between the No. 2 terminal of the radiator fan switch connector and body ground.

RADIATOR FAN SWITCH 2P CONNECTOR



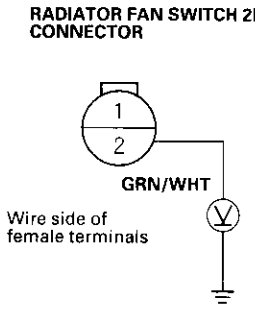
Is there battery voltage?

YES—Check for an open in the wire between radiator fan switch 2P connector terminal No. 1 and body ground. If the wire is OK, check for a poor ground at G301.■

NO—Repair open in the wire between the radiator fan switch terminal No. 2 and the under-hood fuse/relay box.■

Radiator Fan Switch Circuit Troubleshooting (Open)

1. Disconnect the radiator fan switch 2P connector.
2. Turn the ignition switch ON (II).
3. Measure voltage between the No. 2 terminal of the radiator fan switch 2P connector and body ground.

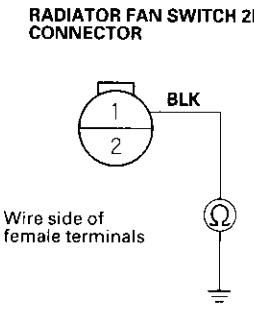


Is there battery voltage?

YES—Go to step 4.

NO—Repair open in the wire between the radiator fan switch 2P connector terminal No. 2 and under-hood fuse/relay box.■

4. Turn the ignition switch OFF, and check for continuity between the No. 1 terminal of the radiator fan switch 2P connector and body ground.



Is there continuity?

YES—Replace the radiator fan switch.■

NO—Check for an open in the wire between the radiator fan switch 2P connector terminal No. 1 and body ground. If the wire is OK, check for a poor ground at G301.■

Radiator Fan Switch Circuit Troubleshooting (Short)

NOTE: After troubleshooting, perform the engine control module (ECM) idle learn procedure (see page 11-139).

1. Remove the radiator fan relay from the under-hood fuse/relay box, and test it (see page 22-51).

   Is the relay OK?

   YES—Go to step 2.

   NO—Replace the radiator fan relay.■

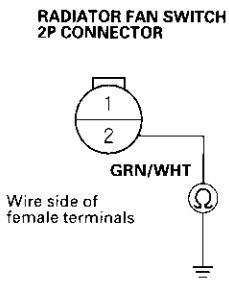
2. Remove the radiator fan switch, and test it (see page 10-17).

   Is the radiator fan switch OK?

   YES—Go to step 3.

   NO—Replace the radiator fan switch.■

3. Disconnect the battery negative cable from the battery.
4. Disconnect engine control module (ECM) connector B (24P) and the under-hood fuse relay box 14P connector.
5. Check for continuity between the No. 2 terminal of the radiator fan switch 2P connector and body ground.



Is there continuity?

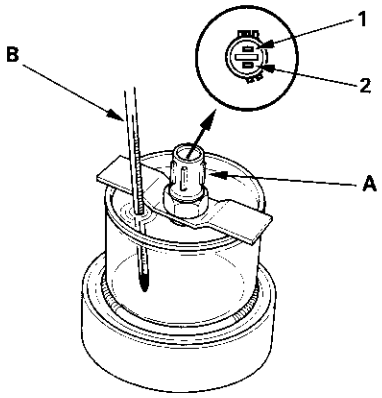
YES—Repair short in the wire between the radiator fan switch 2P connector terminal No. 2 and under-hood fuse/relay box.■

NO—Replace the under-hood fuse/relay box.■

Radiator Fan Switch Test

NOTE: Bleed air from the cooling system after installing the radiator fan switch (see page 10-6).

1. Remove the radiator fan switch from the radiator (see page 10-17).
2. Suspend the radiator fan switch (A) in a container of water as shown.

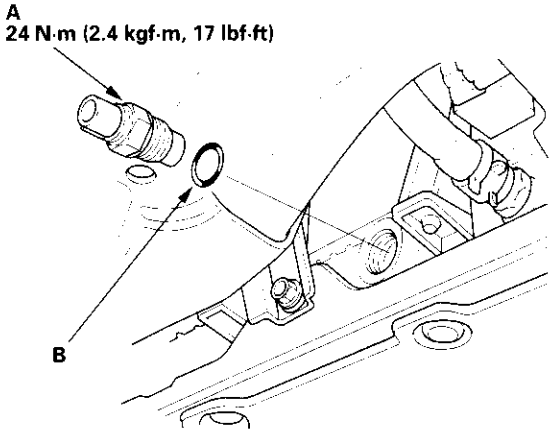


3. Heat the water, and check the temperature with a thermometer. Do not let the thermometer (B) touch the bottom of the hot container.
4. Measure the continuity between terminal No. 1 and terminal No. 2 according to the table.

Operation		Temperature	Terminal 1	Terminal 2
SWITCH	ON	196°—203°F (91°—95°C)	○—○	
	OFF	5°—15°F (3°—8°C) lower than the temperature when it goes on		

Radiator Fan Switch Replacement

1. Disconnect the radiator fan switch connector, then remove the radiator fan switch (A).

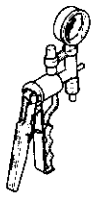


2. Install the radiator fan switch with a new O-ring (B).

Fuel and Emissions

Special Tools

Ref. No.	Tool Number	Description	Qty
①	A973X-041-XXXXX	Vacuum Pump/Gauge, 0—30 in.Hg	1
②	07JAZ-001000B	Vacuum/Pressure Gauge, 0—4 in.Hg	1
③	07SAZ-001000A	Backprobe Set	2
④	07VAJ-0040100	Fuel Pressure Gauge Adapter	1
⑤	07NAJ-P07010A	Pressure Gauge Adapter	1
⑥	07XAA-001010A	Fuel Sender Wrench	1
⑦	07ZAJ-S5AA200	Hose, Oil Pressure	1
⑧-1	07406-0020201	A/T Pressure Hose	1
⑧-2	07406-0070300	A/T Low Pressure Gauge W/Panel	1
⑧-3	07MAJ-PY4011A	A/T Pressure Hose, 2,210 mm	1
⑧-4	07MAJ-PY40120	A/T Pressure Hose Adapter	1
⑨	07406-004000A	Fuel Pressure Gauge	1
⑩	07ZAJ-S5A0100	Fuel Pressure Gauge Set	1



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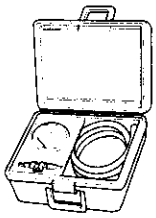

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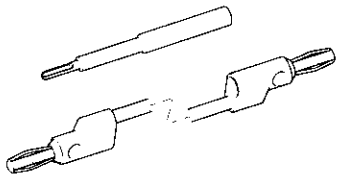

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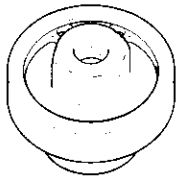

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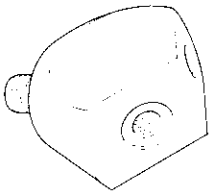

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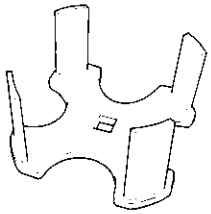

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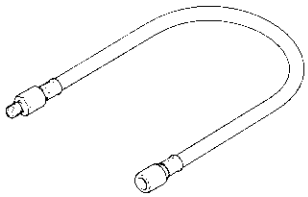

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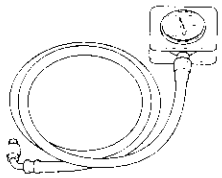
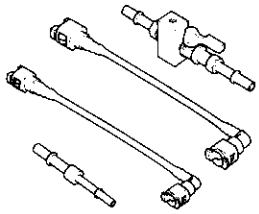


⑧-1, ⑧-2, ⑧-3, ⑧-4

⑨



⑩

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.

Opens and Shorts

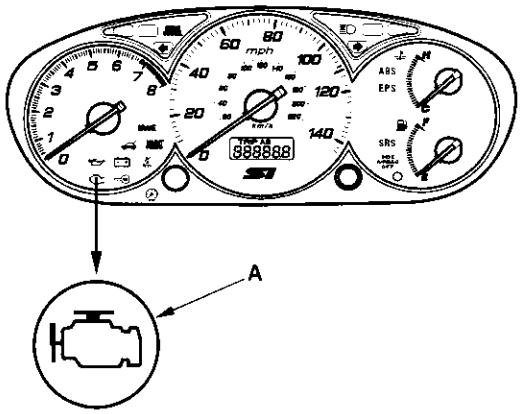
"Open" and "Short" are common electrical terms. An open is a break in a wire or at a connection. A short is an accidental connection of a wire to ground or to another wire. In simple electronics, this usually means something won't work at all. With complex electronics (such as ECMs) this can sometimes mean something works, but not the way it's supposed to.

How to Use the PGM Tester or a Scan Tool

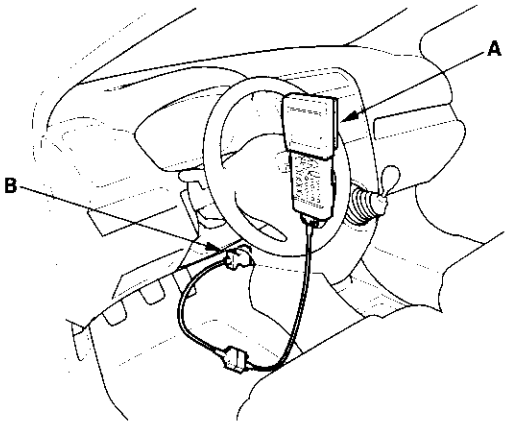
If the MIL (Malfunction Indicator Lamp) has come on

1. Start the engine and check the MIL (A).

   NOTE: If the ignition switch is turned ON (II), and the engine is not started, the MIL will stay on for 15—20 seconds (see page 11-46).



2. If the MIL stays on, connect the Honda PGM Tester (A) or an OBD II scan tool to the Data Link Connector (DLC) (B) located under the driver's side of the dashboard.



3. Turn the ignition switch ON (II).

4. Check the Diagnostic Trouble Code (DTC) and note it. Also check the freeze data. Refer to the DTC Troubleshooting Index, and begin the appropriate troubleshooting procedure.

5. If you do not find any DTCs, go to MIL circuit troubleshooting (see page 11-97).

NOTE:
- Freeze data indicates the engine conditions when the first malfunction, misfire, or fuel trim malfunction was detected.
- The scan tool and the Honda PGM Tester can read the DTC, freeze data, current data, and other Engine Control Module (ECM) data.
- For specific operations, refer to the user's manual that came with the scan tool or Honda PGM Tester.

If the MIL did not stay
If the MIL did not come on but there is a driveability problem, refer to the Symptom Troubleshooting Index in this section.

If you can't duplicate the DTC
Some of the troubleshooting in this section requires you to reset the ECM 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.

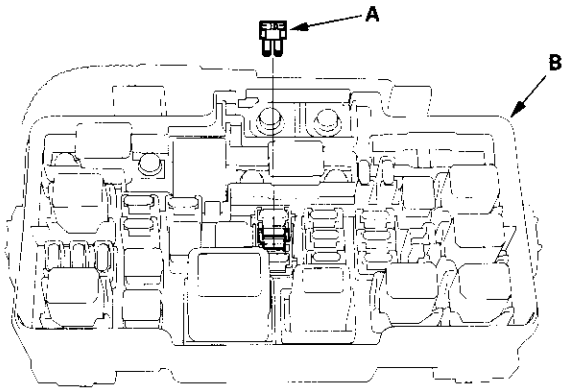
(cont'd)

General Troubleshooting Information (cont'd)

How to Reset the ECM

You can reset the ECM in either of two ways:

- Use the OBD II scan tool or Honda PGM Tester to reset the ECM memory.
  See the OBD II scan tool or Honda PGM Tester user's manuals for specific instructions.
- Turn the ignition switch OFF, and remove the No. 6 ECU (ECM) (15A) fuse (A) from the under-hood fuse/relay box (B) for 10 seconds.



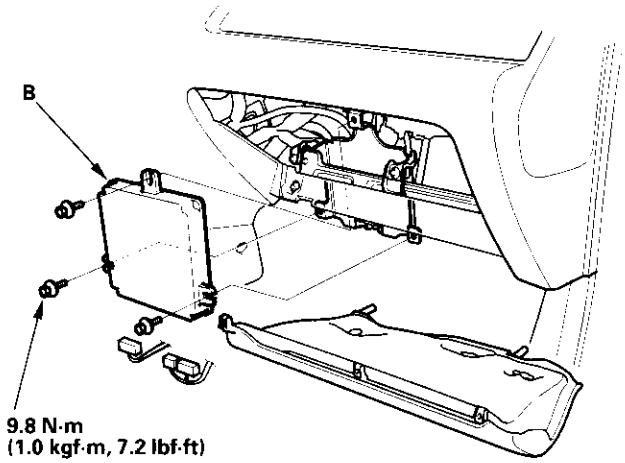
How to End a Troubleshooting Session (required after any troubleshooting)

1. Reset the ECM as described above.
2. Do the ECM idle learn procedure (see page 11-139)
3. Turn the ignition switch OFF.
4. Disconnect the OBD II scan tool or Honda PGM Tester from the DLC.

   NOTE: The ECM is part of the immobilizer system. If you replace the ECM, it will have a different immobilizer code. In order for the engine to start, you must rewrite the immobilizer code with the Honda PGM Tester.

How to Remove the ECM for Testing

1. Remove the passenger's dashboard lower cover (see page 20-63), the passenger's kick panel (see page 20-63), and the glove box (see page 20-63).
2. Remove the ECM mounting bolts (B) and the ECM (C).



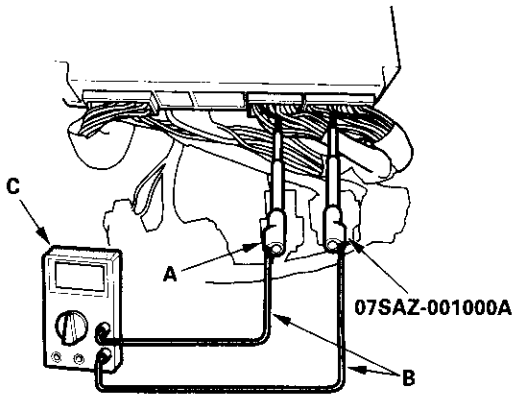
3. Remove the ECM (B).
4. Install the ECM in the reverse order of removal.

How to Troubleshoot Circuits at the ECM

Special Tools Required

- Digital Multimeter KS-AHM-32-003 (1) or a commercially available digital multimeter
- Backprobe Set 07SAZ-001000A (2)

1. Connect the backprobe adapters (A) to the stacking patch cords (B), and connect the cords to a digital multimeter (C).

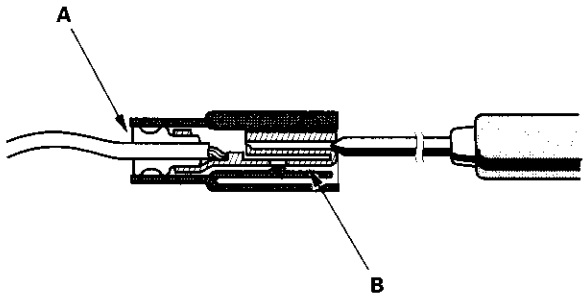


2. Using the wire insulation as a guide for the contoured tip of the backprobe adapter, gently slide the tip into the connector from the wire side until it touches the end of the wire terminal.

3. If you cannot get to the wire side of the connector or the wire side is sealed (A), disconnect the connector and probe the terminals (B) from the terminal side. Do not force the probe into the connector.

NOTICE

Do not puncture the insulation on a wire. Punctures can cause poor or intermittent electrical connections.



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General Troubleshooting Information (cont'd)

ECM Updating and Substitution for Testing

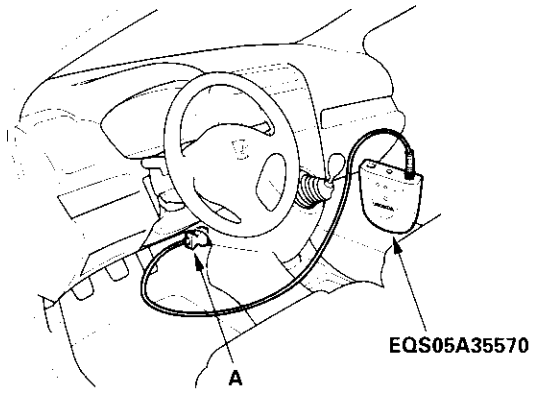
Special Tools Required
Honda Interface Module (HIM) EQS05A35570

Use this procedure when you have to substitute a known-good ECM in a troubleshooting procedure. Update the ECM only if the ECM does not already have the latest software loaded.

NOTE:
- Make sure the battery is fully charged before you update the ECM.
- To prevent ECM damage during the update, do not turn the ignition switch OFF, and do not use any of the vehicle's electrical devices (light, horn, radio, etc.).

How to Update the ECM

1. Turn the ignition switch ON (II). Do not start the engine.
2. Connect the Honda Interface Module (HIM) to the Data Link Connector (DLC) (A) located under the driver's side of dashboard.



3. Do the ECM update procedure as described on the HIM label and in the ECM update system.

How to Substitute the ECM

1. Remove the ECM from the vehicle.
2. Install a known-good ECM in the vehicle.
3. Rewrite the immobilizer code with the ECM replacement procedure from the Honda PGM Tester. It allows you to start the engine.
4. After completing your tests, reinstall the original ECM and rewrite the immobilizer code with the ECM replacement procedure on the Honda PGM Tester again.

DTC Troubleshooting Index

DTC (MIL indication*)	Temporary DTC	Detection Item	Note
P0010 (56)	———	Variable Valve Timing Control (VTC) Oil Control Solenoid Valve Malfunction	(see page 11-118)
P0011 (56)	P0011	Variable Valve Timing Control (VTC) System Malfunction	(see page 11-119)
P0107 (3)	———	Manifold Absolute Pressure (MAP) Sensor Circuit Low Voltage	(see page 11-52)
P0108 (3)	———	Manifold Absolute Pressure (MAP) Sensor Circuit High Voltage	(see page 11-53)
P0112 (10)		Intake Air Temperature (IAT) Sensor Circuit Low Voltage	(see page 11-55)
P0113 (10)	———	Intake Air Temperature (IAT) Sensor Circuit High Voltage	(see page 11-56)
P0116 (86)	P0116	Engine Coolant Temperature (ECT) Sensor Range/ Performance Problem	(see page 11-57)
P0117 (6)	———	Engine Coolant Temperature (ECT) Sensor Circuit Low Voltage	(see page 11-58)
P0118 (6)	———	Engine Coolant Temperature (ECT) Sensor Circuit High Voltage	(see page 11-59)
P0122 (7)	———	Throttle Position (TP) Sensor Circuit Low Voltage	(see page 11-60)
P0123 (7)	———	Throttle Position (TP) Sensor Circuit High Voltage	(see page 11-62)
P0128 (87)	P0128	Cooling System Malfunction	(see page 11-64)
P0134 (41)		Air Fuel Ratio (A/F) Sensor (Sensor 1) No Activity Detected	(see page 11-65)
P0137 (63)	P0137	Secondary Heated Oxygen Sensor (Secondary HO2S) (Sensor 2) Circuit Low Voltage	(see page 11-65)
P0138 (63)	P0138	Secondary Heated Oxygen Sensor (Secondary HO2S) (Sensor 2) Circuit High Voltage	(see page 11-66)
P0139 (63)	P0139	Secondary Heated Oxygen Sensor (Secondary HO2S) (Sensor 2) Slow Response	(see page 11-67)
P0141 (65)	———	Secondary Heated Oxygen Sensor (Secondary HO2S) (Sensor 2) Heater Circuit Malfunction	(see page 11-68)
P0171 (45)	P0171	Fuel System Too Lean	(see page 11-70)
P0172 (45)	P0172	Fuel System Too Rich	(see page 11-70)
P0300 and any of P0301 (71) P0302 (72) P0303 (73) P0304 (74)	P0300 and any of P0301 P0302 P0303 P0304	Random Misfire	(see page 11-71)
P0301 (71)	P0301	No. 1 Cylinder Misfire	(see page 11-72)
P0302 (72)	P0302	No. 2 Cylinder Misfire	(see page 11-72)
P0303 (73)	P0303	No. 3 Cylinder Misfire	(see page 11-72)
P0304 (74)	P0304	No. 4 Cylinder Misfire	(see page 11-72)

* : These DTCs are indicated by a blinking malfunction indicator lamp (MIL) when the SCS service signal line is jumped with the Honda PGM Tester.

(cont'd)

DTC Troubleshooting Index (cont'd)

DTC (MIL indication*)	Temporary DTC	Detection Item	Note
P0325 (23)		Knock Sensor Circuit Malfunction	(see page 11-77)
P0335 (4)		Crankshaft Position (CKP) Sensor No Signal	(see page 11-78)
P0336 (4)		Crankshaft Position (CKP) Sensor Intermittent Interruption	(see page 11-78)
P0340 (57)		Camshaft Position (CMP) Sensor A No Signal	(see page 11-121)
P0344 (57)		Camshaft Position (CMP) Sensor A Intermittent Interruption	(see page 11-121)
P0341 (57)		Variable Valve Timing Control (VTC) Phase Gap	(see page 11-122)
P0420 (67)	P0420	Catalyst System Efficiency Below Threshold	(see page 11-167)
P0451 (91)	P0451	Fuel Tank Pressure (FTP) Sensor Range/Performance Problem	(see page 11-171)
P0452 (91)	P0452	Fuel Tank Pressure (FTP) Sensor Circuit Low Voltage	(see page 11-172)
P0453 (91)	P0453	Fuel Tank Pressure (FTP) Sensor Circuit High Voltage	(see page 11-173)
P0500 (17)		Vehicle Speed Sensor (VSS) Circuit Malfunction	(see page 11-80)
P0505 (14)	P0505	Idle Control System Malfunction	(see page 11-130)
P0563 (34)		Engine Control Module (ECM) Power Source Circuit Unexpected Voltage	(see page 11-81)
P0600 (39)		Serial Communication Link Malfunction	Refer to the Multiplex Control System Troubleshooting (see page 22-172).
P1106 (13)	P1106	Barometric Pressure (BARO) Sensor Range/ Performance Problem	(see page 11-83)
P1107 (13)		Barometric Pressure (BARO) Sensor Circuit Low Voltage	(see page 11-83)
P1108 (13)		Barometric Pressure (BARO) Sensor Circuit High Voltage	(see page 11-83)
P1121 (7)	P1121	Throttle Position (TP) Sensor Signal Lower Than Expected	(see page 11-63)
P1122 (7)	P1122	Throttle Position (TP) Sensor Signal Higher Than Expected	(see page 11-63)
P1128 (5)	P1128	Manifold Absolute Pressure (MAP) Sensor Signal Lower Than Expected	(see page 11-54)
P1129 (5)	P1129	Manifold Absolute Pressure (MAP) Sensor Signal Higher Than Expected	(see page 11-54)
P1157 (48)		Air Fuel Ratio (A/F) Sensor (Sensor 1) Range/ Rerformance Problem	(see page 11-84)
P1158 (48)		Air Fuel Ratio (A/F) Sensor (Sensor 1) AFS − Terminal Low Voltage	(see page 11-85)
P1159 (48)		Air Fuel Ratio (A/F) Sensor (Sensor 1) AFS + Terminal Low Voltage	(see page 11-86)
P1163 (61)	P1163	Air Fuel Ratio (A/F) Sensor (Sensor 1) Slow Response	(see page 11-88)
P1164 (61)	P1164	Air Fuel Ratio (A/F) Sensor (Sensor 1) Range/ Performance Problem	(see page 11-88)
P1166 (41)		Air Fuel Ratio (A/F) Sensor (Sensor 1) Heater Circuit Malfunction	(see page 11-89)
P1167 (41)*1		Air Fuel Ratio (A/F) Sensor (Sensor 1) Heater System Malfunction	(see page 11-91)

* : These DTCs are indicated by a blinking MIL when the SCS service signal line is jumped with the Honda PGM Tester.
* 1: '02 model

DTC (MIL indication*)	Temporary DTC	Detection Item	Page
P1259 (22)	———	VTEC System Malfunction	(see page 11-123)
P1297 (20)	———	Electrical Load Detector (ELD) Circuit Low Voltage	(see page 11-92)
P1298 (20)	———	Electrical Load Detector (ELD) Circuit High Voltage	(see page 11-93)
P1361 (8)	———	Camshaft Position (CMP) Sensor B (Top Dead Center (TDC) Sensor) Intermittent Signal Interruption	(see page 11-95)
P1362 (8)	———	Camshaft Position (CMP) Sensor B (Top Dead Center (TDC) Sensor) No Signal	(see page 11-95)
P1456 (90)	P1456	Evaporative Emissions (EVAP) Control System Leakage (Fuel Tank System)	(see page 11-175)
P1457 (90)	P1457	Evaporative Emissions (EVAP) Control System Leakage (EVAP Canister System)	(see page 11-180)
P1505 (109)	P1505	Positive Crankcase Ventilation (PCV) Air Leakage	(see page 11-168)
P1519 (14)	———	Idle Air Control (IAC) Valve Circuit Malfunction	(see page 11-131)
P1607 (—)	———	Engine Control Module (ECM) Internal Circuit Malfunction	(see page 11-96)

*: These DTCs are indicated by a blinking MIL when the SCS service signal line is jumped with the Honda PGM Tester.

Symptom Troubleshooting Index

When the vehicle has one of these symptoms, check the diagnostic trouble code (DTC) with the scan tool. 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 22-50). 2. Test the starter (see page 4-8). 3. Troubleshoot the fuel pump circuit (see page 11-141).	• Low compression • No ignition spark • Intake air leaks • Locked up engine • Broken timing chain • Contaminated fuel
Engine will not start (MIL comes on and stays on, or never comes on at all, no DTCs set)	Troubleshoot the MIL circuit (see page 11-97).	
Engine will not start (immobilizer indicator stays on or flashs)	Troubleshoot the immobilizer system (see page 22-165).	
Hard starting (MIL works OK, no DTCs set)	1. Test the battery (see page 22-50). 2. Check the fuel pressure (see page 11-145).	• Low compression • Intake air leaks • Contaminated fuel
Cold fast idle too low (MIL works OK, no DTCs set)	1. Do the ECM idle learn procedure (see page 11-139). 2. Check the idle speed (see page 11-138).	
Cold fast idle too high (MIL works OK, no DTCs set)	1. Do the ECM idle learn procedure (see page 11-139). 2. Check the idle speed (see page 11-138). 3. Inspect/adjust the throttle cable (see page 11-163). 4. Inspect and test the throttle body (see page 11-160).	
Idle speed fluctuates (MIL works OK, no DTCs set)	1. Do the ECM idle learn procedure (see page 11-139). 2. Check the idle speed (see page 11-138). 3. Inspect/adjust the throttle cable (see page 11-163). 4. Inspect and test the throttle body (see page 11-160)	Intake air leaks
After warming up, idle speed is below specifications with no load (MIL works OK, no DTCs set)	1. Do the ECM idle learn procedure (see page 11-139). 2. Troubleshoot the alternator FR signal circuit (see page 11-134). 3. Inspect and test the throttle body (see page 11-160).	Vacuum hose clogged/ cracked/poor connection
After warming up, idle speed is above specifications with no load (MIL works OK, no DTCs set)	1. Do the ECM idle learn procedure (see page 11-139). 2. Troubleshoot the alternator FR signal circuit (see page 11-134).	
Low power (MIL works OK, no DTCs set)	1. Check the fuel pressure (see page 11-145). 2. Inspect and test the throttle body (see page 11-160). 3. Inspect/adjust the throttle cable (see page 11-163).	• Low compression • Camshaft timing problem • Engine oil level problem
Engine stalls (MIL works OK, no DTCs set)	1. Do the ECM idle learn procedure (see page 11-139). 2. Check the fuel pressure (see page 11-145). 3. Check the idle speed (see page 11-138). 4. Troubleshoot the brake pedal position switch signal circuit (see page 11-137).	• Intake air leaks • Faulty harness and sensor connections

Symptom	Diagnostic procedure	Also check for
Difficult to refuel (MIL works OK, no DTCs set)	1. Test the fuel tank vapor control valve (see page 11-187). 2. Inspect the fuel tank vapor control signal tube between the fuel pipe and the fuel tank vapor control valve. 3. Inspect the fuel tank vapor vent tube between the EVAP canister and the fuel tank vapor control valve. 4. Check the EVAP canister.	Malfunctioning gas station filling nozzle.
Fuel overflows during refueling (No DTCs set)	Replace the fuel tank vapor control valve (see page 11-189).	Malfunctioning gas station filling nozzle.

System Descriptions

Electronic Control System

The functions of the fuel and emission control systems are managed by the engine control module (ECM).

Fail-safe Function
When an abnormality occurs in the signal from a sensor, the ECM ignores that signal and assumes a pre-programmed value for that sensor that allows the engine to continue to run.

Back-up Function
When an abnormality occurs in the ECM, the injectors are controlled by a back-up circuit independent of the system to permit minimal driving.

Self-diagnosis
When an abnormality occurs in the signal from a sensor, the ECM supplies ground for the malfunction indicator lamp (MIL) and stores the diagnostic trouble code (DTC) in erasable memory. When the ignition is first turned on, the ECM supplies ground to the MIL for 15 to 20 seconds to check the MIL bulb condition.

Two Driving Cycle Detection Method
To prevent false indications, the "two driving cycle detection method" is used for some self-diagnostic functions. When an abnormality occurs, the ECM stores it in its memory. When the same abnormality recurs after the ignition switch is turned OFF and ON (II) again, the ECM turns on the MIL.

ECM Data

You can retrieve data from the ECM by connecting the OBD II scan tool or the Honda PGM Tester to the data link connector (DLC). The items listed in the table below conform to SAE recommended practice. The Honda PGM Tester also reads data beyond that recommended by SAE to help you find the causes of intermittent problems.
NOTE:

- The "operating values" listed are approximate and may vary depending on the environment and the individual vehicle.
- Unless noted otherwise, "at idle speed" means idling with the engine completely warmed up in the neutral position, and the A/C and all accessories turned off.

Data	Description	Operating Value	Freeze Data
Diagnostic Trouble Code (DTC)	If the ECM detects a problem, it will store it as a code consisting of one letter and four numbers. Depending on the problem, an SAE-defined code (P0xxx) or a Honda-defined code (P1xxx) will be output to the tester.	If no problem is detected, there is no output.	YES
Engine Speed	The ECM computes engine speed from the signals sent from the crankshaft position (CKP) sensor. This data is used for determining the time and amount of injected fuel.	Nearly the same as tachometer indication At idle speed: 750±50 rpm	YES
Vehicle Speed	The ECM converts pulse signals from the vehicle speed sensor (VSS).	Nearly the same as speedometer indication	YES
Manifold Absolute Pressure (MAP)	The absolute pressure caused in the intake manifold by engine load and speed.	With engine stopped: Nearly the same as atmospheric pressure. At idle speed: about 20—41 kPa (150—310 mmHg, 6—12 in.Hg), 0.7—1.3 V	YES
Engine Coolant Temperature (ECT)	The ECT sensor converts coolant temperature into voltage and signals the ECM. The sensor is a thermistor whose internal resistance changes with coolant temperature. The ECM uses the voltage signals from the ECT sensor to determine the amount of injected fuel.	With cold engine: Same as ambient temperature and IAT With engine warmed up: about 176—212°F (80—100°C), 0.5—0.8 V	YES
Air Fuel Ratio (A/F) Sensor, (Sensor 1)	The A/F sensor detects the oxygen content in the exhaust gas and sends voltage signals to the ECM. Based on these signals, the ECM controls the air/fuel ratio. When the oxygen content is high (that is, when the ratio is leaner than the stoichiometric ratio), the voltage signal is lower. When the oxygen content is low (that is, when the ratio is richer than the stoichiometric ratio), the voltage signal is higher. The A/F sensor signals are electrical current that are indicated as voltage on the scan tool.	0.0—1.25 V —8.0—11.0 mA (PGM Tester) At idle speed: about 0.1—0.9 V	NO
Secondary Heated Oxygen Sensor (Secondary HO2S, Sensor2)	The HO2S detects the oxygen content in the exhaust gas and sends voltage signals to the ECM. Based on these signals, the ECM controls the air/fuel ratio. When the oxygen content is high (that is, when the ratio is leaner than the stoichiometric ratio), the voltage signal is lower. When the oxygen content is low (that is, when the ratio is richer than the stoichiometric ratio), the voltage signal is higher.	0.0—1.25 V At idle speed: about 0.1—0.9 V	NO

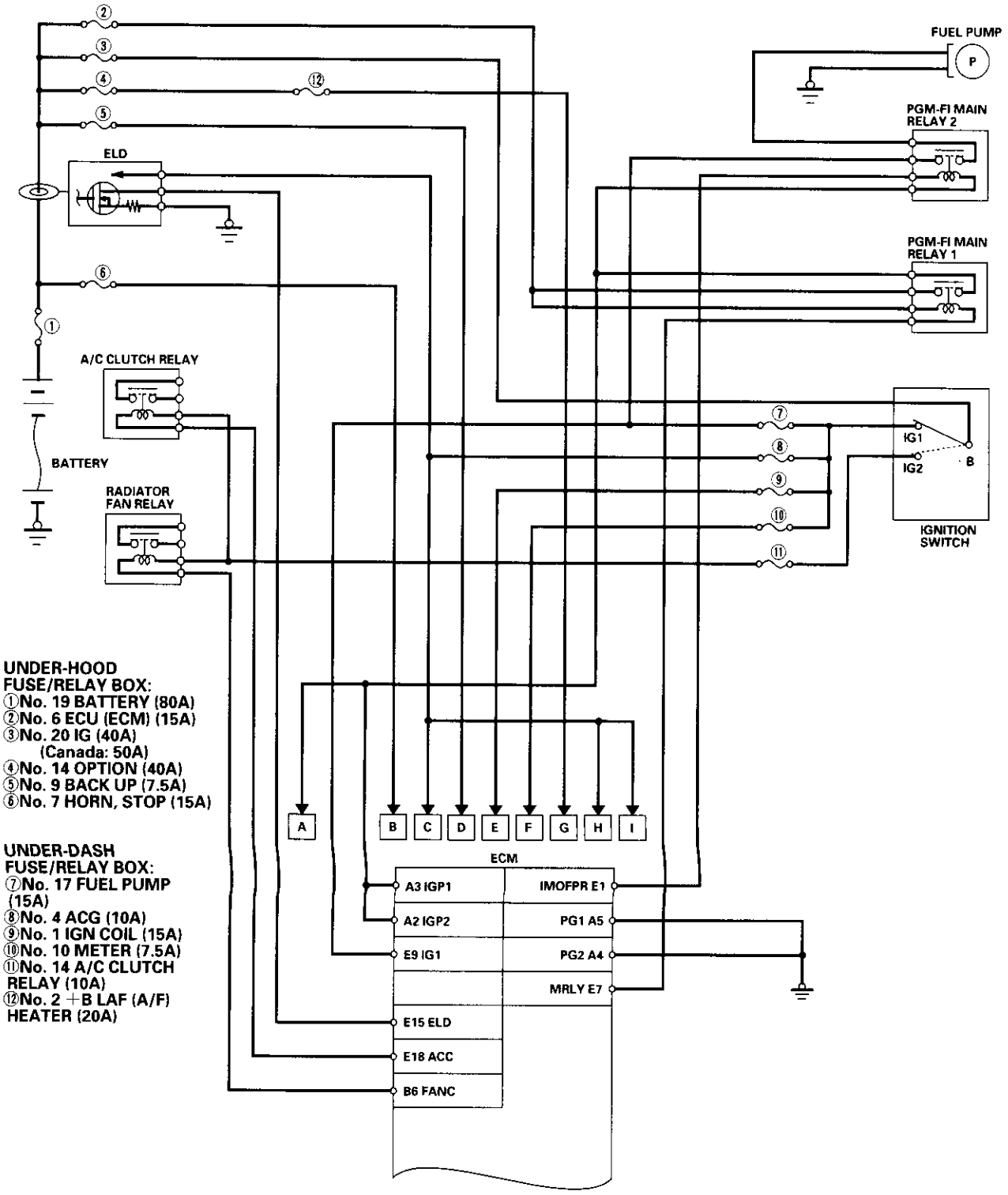
(cont'd)

System Descriptions (cont'd)

ECM Data (cont'd)

Data	Description	Operating Value	Freeze Data
Fuel System Status	Fuel system status is indicated as "open" or "closed". Closed: Based on the A/F Sensor output, the ECM determines the air/fuel ratio and controls the amount of injected fuel. Open: Ignoring A/F Sensor output, the ECM refers to signals from the throttle position (TP), manifold absolute pressure (MAP), intake air temperature (IAT), barometric pressure (BARO), and engine coolant temperature (ECT)) sensors to control the amount of injected fuel.	At idle speed: closed	YES
Short Term Fuel Trim	The air/fuel ratio correction coefficient for correcting the amount of injected fuel when the fuel system status is "closed." When the ratio is leaner than the stoichiometric ratio, the ECM increases short term fuel trim gradually, and the amount of injected fuel increases. The air/fuel ratio gradually gets richer, causing a lower oxygen content in the exhaust gas. Consequently, the short term fuel trim is lowered, and the ECM reduces the amount of injected fuel. This cycle keeps the air/fuel ratio close to the stoichiometric ratio when in closed loop status.	0.7—1.5	YES
Long Term Fuel Trim	Long term fuel trim is computed from short term fuel trim and indicates changes occurring in the fuel supply system over a long period. If long term fuel trim is higher than 1.00, the amount of injected fuel must be increased. If it is lower than 1.00, the amount of injected fuel must be reduced.	0.8—1.2	YES
Intake Air Temperature (IAT)	The IAT sensor converts intake air temperature into voltage and signals the ECM. When intake air temperature is low, the internal resistance of the sensor increases, and the voltage signal is higher.	With cold engine: Same as ambient temperature and ECT	YES
Throttle Position	Based on the accelerator pedal position, the opening angle of the throttle valve is indicated.	At idle speed: about 10 %	YES
Ignition Timing	Ignition timing is the ignition advance angle set by the ECM. The ECM matches ignition timing to driving conditions.	At idle speed: 8° ± 5° BTDC when the SCS service signal line is jumped with the Honda PGM Tester	NO
Calculated Load Value (CLV)	CLV is the engine load calculated from MAP data.	At idle speed: 12—34% At 2,500 rpm with no load: 14—34%	YES

ECM Electrical Connections



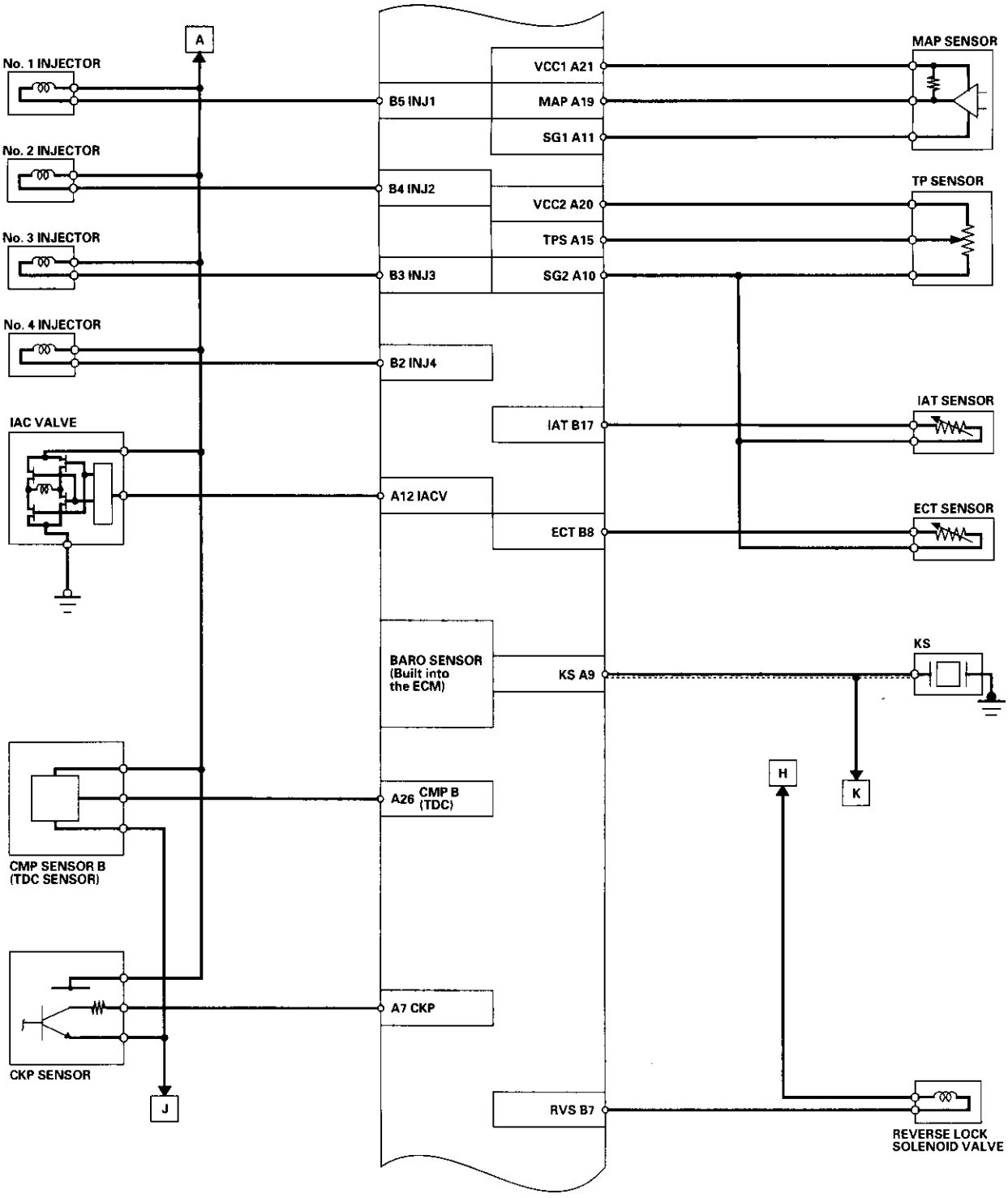
UNDER-HOOD FUSE/RELAY BOX:
①No. 19 BATTERY (80A)
②No. 6 ECU (ECM) (15A)
③No. 20 IG (40A)
(Canada: 50A)
④No. 14 OPTION (40A)
⑤No. 9 BACK UP (7.5A)
⑥No. 7 HORN, STOP (15A)

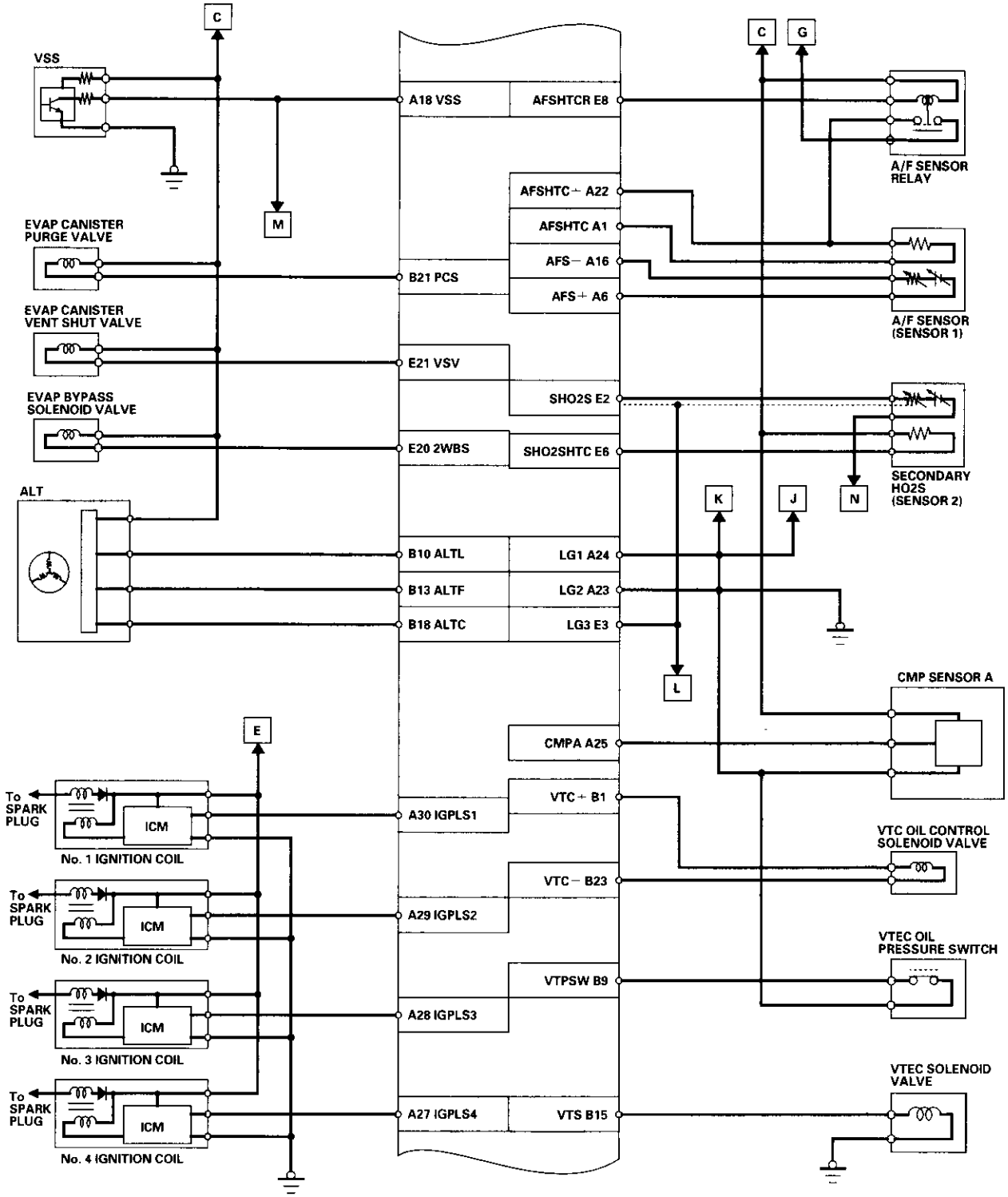
UNDER-DASH FUSE/RELAY BOX:
⑦No. 17 FUEL PUMP (15A)
⑧No. 4 ACG (10A)
⑨No. 1 IGN COIL (15A)
⑩No. 10 METER (7.5A)
⑪No. 14 A/C CLUTCH RELAY (10A)
⑫No. 2 +B LAF (A/F) HEATER (20A)

(cont'd)

System Descriptions (cont'd)

ECM Electrical Connections

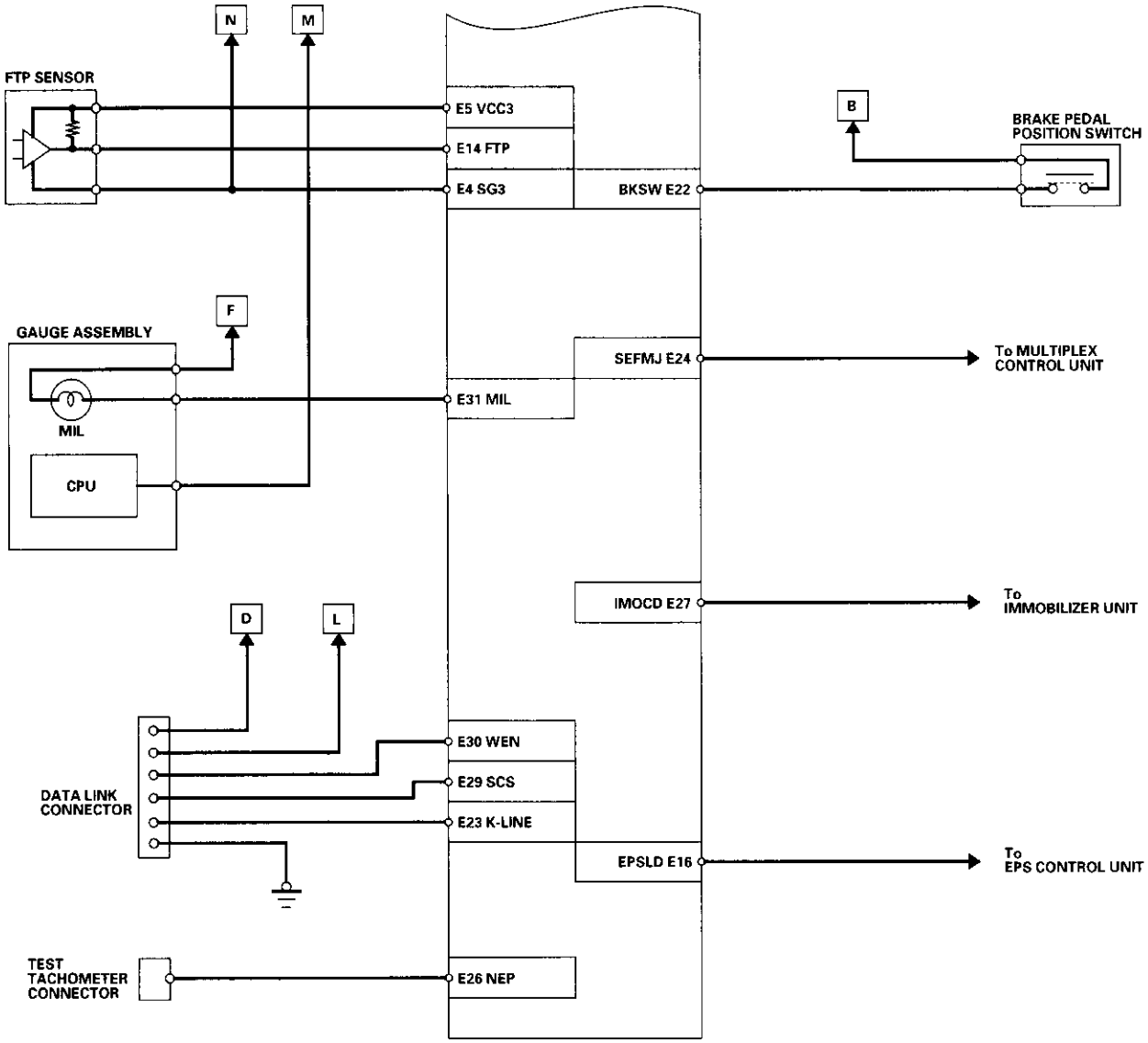


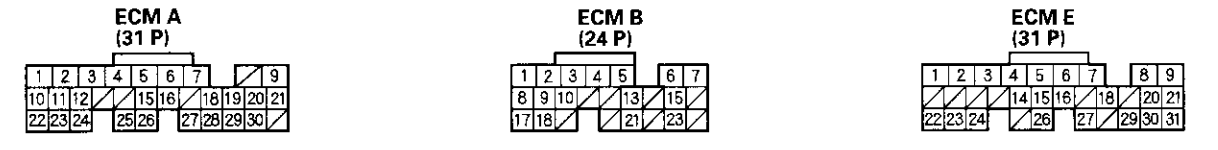

C
VSS
A18 VSS
AFSHTCR E8
C
G
A/F SENSOR RELAY
M
AFSHTC– A22
AFSHTC A1
AFS– A16
AFS+ A6
EVAP CANISTER PURGE VALVE
B21 PCS
A/F SENSOR (SENSOR 1)
EVAP CANISTER VENT SHUT VALVE
E21 VSV
SHO2S E2
EVAP BYPASS SOLENOID VALVE
E20 2WBS
SHO2SHTC E6
SECONDARY HO2S (SENSOR 2)
ALT
K
J
N
B10 ALTL
LG1 A24
B13 ALTF
LG2 A23
B18 ALTC
LG3 E3
L
CMP SENSOR A
E
CMPA A25
To SPARK PLUG
ICM
No. 1 IGNITION COIL
A30 IGPLS1
VTC+ B1
VTC OIL CONTROL SOLENOID VALVE
VTC– B23
No. 2 IGNITION COIL
A29 IGPLS2
VTEC OIL PRESSURE SWITCH
VTPSW B9
No. 3 IGNITION COIL
A28 IGPLS3
VTEC SOLENOID VALVE
No. 4 IGNITION COIL
A27 IGPLS4
VTS B15

(cont'd)

System Descriptions (cont'd)

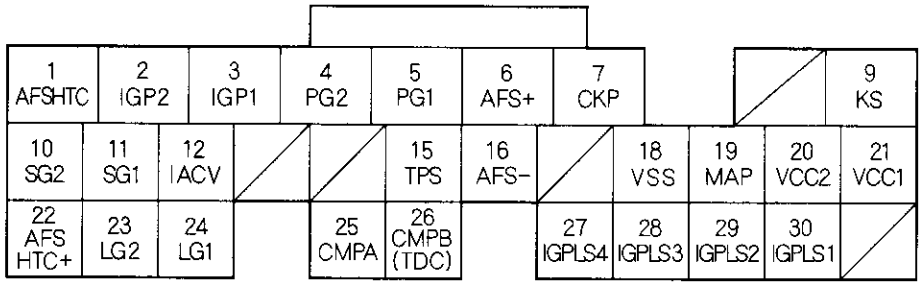
ECM Electrical Connections





TERMINAL LOCATIONS

ECM Inputs and Outputs at Connector A (31P)



Wire side of female terminals

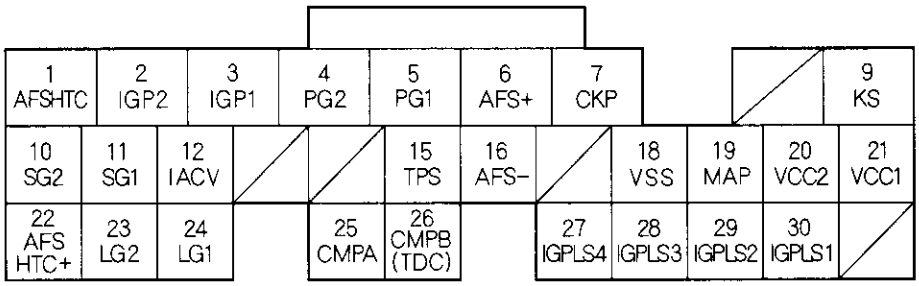
NOTE: Standard battery voltage is 12 V.

Terminal number	Wire color	Terminal name	Description	Signal
1	BLK/WHT	AFSHTC (AIR FUEL RATIO (A/F) SENSOR HEATER CONTROL)	Drives A/F sensor heater	With ignition switch ON (II): battery voltage With fully warmed up engine running: 0 V
2	YEL/BLK	IGP2 (POWER SOURCE)	Power source for the ECM circuit	With the ignition switch ON (II): battery voltage With the ignition switch OFF: about 0 V
3	YEL/BLK	IGP1 (POWER SOURCE)	Power source for the ECM circuit	With the ignition switch ON (II): battery voltage With the ignition switch OFF: about 0 V
4	BLK	PG2 (POWER GROUND)	Ground for the ECM circuit	Less than 1.0 V at all times
5	BLK	PG1 (POWER GROUND)	Ground for the ECM circuit	Less than 1.0 V at all times
6	RED	AFS + (AIR FUEL RATIO (A/F) SENSOR, SENSOR 1 + SIDE)	Detects A/F sensor (sensor 1) signal	
7	BLU	CKP (CRANKSHAFT POSITION SENSOR)	Detects CKP sensor signal	With engine running: pulses
9	RED/BLU	KS (KNOCK SENSOR)	Detects knock sensor signal	With engine knocking: pulses
10	GRN/YEL	SG2 (SENSOR GROUND)	Sensor ground	Less than 1.0 V at all times
11	GRN/WHT	SG1 (SENSOR GROUND)	Sensor ground	Less than 1.0 V at all times
12	BLK/RED	IACV (IDLE AIR CONTROL (IAC) VALVE)	Drives IAC valve	With engine running: duty controlled
15	RED/BLK	TPS (THROTTLE POSITION SENSOR)	Detects TP sensor signal	With throttle fully open: about 4.8 V With throttle fully closed: about 0.5 V
16	RED/YEL	AFS − (AIR FUEL RATIO (A/F) SENSOR, SENSOR 1 − SIDE)	Detects A/F sensor (sensor 1) signal	
18	WHT/GRN	VSS (VEHICLE SPEED SENSOR)	Detects VSS signal	With ignition switch ON (II) and front wheels rotating: cycles from about 0 V to about 5 V or battery voltage

(cont'd)

System Descriptions (cont'd)

ECM Inputs and Outputs at Connector A (31P)

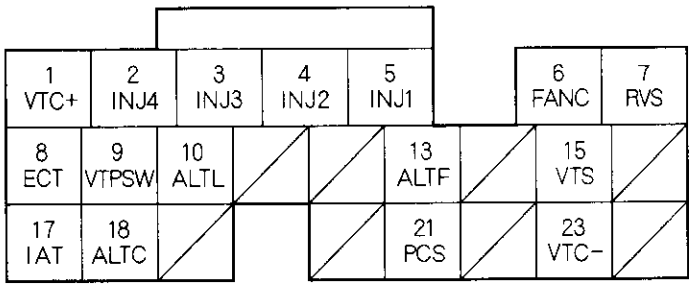


Wire side of female terminals

NOTE: Standard battery voltage is 12 V.

Terminal number	Wire color	Terminal name	Description	Signal
19	GRN/RED	MAP (MANIFOLD ABSOLUTE PRESSURE SENSOR)	Detects MAP sensor signal	With ignition switch ON (II): about 3 V At idle: about 1.0 V (depending on engine speed)
20	YEL/BLU	VCC2 (SENSOR VOLTAGE)	Provides sensor voltage	With ignition switch ON (II): about 5 V With ignition switch OFF: about 0 V
21	YEL/RED	VCC1 (SENSOR VOLTAGE)	Provides sensor voltage	With ignition switch ON (II): about 5 V With ignition switch OFF: about 0 V
22	WHT	AFSHTC − (AIR FUEL RATIO (A/F) SENSOR HEATER CONTROL − SIDE)	Detects A/F sensor heater voltage	With ignition switch ON (II): battery voltage
23	BRN/YEL	LG2 (LOGIC GROUND)	Ground for the ECM circuit	Less than 1.0 V at all times
24	BRN/YEL	LG1 (LOGIC GROUND)	Ground for the ECM circuit	Less than 1.0 V at all times
25	BLU/WHT	CMP A (CAMSHAFT POSITION SENSOR A)	Detects CMP sensor A signal	With engine running: pulses
26	GRN	CMP B CAMSHAFT POSITION (CMP) SENSOR B (TDC (TOP DEAD CENTER SENSOR))	Detects CMP sensor B (TDC sensor)	With engine running: pulses
27	BRN	IGPLS4 (No. 4 IGNITION COIL PULSE)	Drives No. 4 ignition coil	With ignition switch ON (II): about 0 V With engine running: pulses
28	WHT/BLU	IGPLS3 (No. 3 IGNITION COIL PULSE)	Drives No. 3 ignition coil	
29	BLU/RED	IGPLS2 (No. 2 IGNITION COIL PULSE)	Drives No. 2 ignition coil	
30	YEL/GRN	IGPLS1 (No. 1 IGNITION COIL PULSE)	Drives No. 1 ignition coil	

ECM Inputs and Outputs at Connector B (24P)



Wire side of female terminals

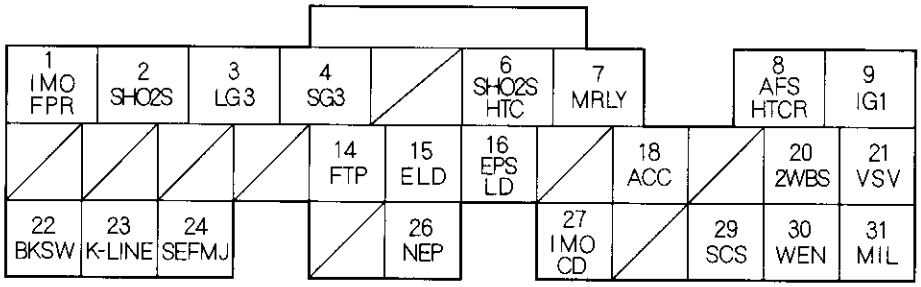
NOTE: Standard battery voltage is 12 V.

Terminal number	Wire color	Terminal name	Description	Signal
1	BLU/WHT	VTC+ (VTC OIL CONTROL SOLENOID VALVE +SIDE)	Drives VTC oil control solenoid valve	With ignition switch ON (II): 0 V
2	YEL	INJ4 (No. 4 INJECTOR)	Drives No. 4 injector	At idle: duty controlled
3	BLU	INJ3 (No. 3 INJECTOR)	Drives No. 3 injector	
4	RED	INJ2 (No. 2 INJECTOR)	Drives No. 2 injector	
5	BRN	INJ1 (No. 1 INJECTOR)	Drives No. 1 injector	
6	GRN	FANC (RADIATOR FAN CONTROL)	Drives radiator fan relay	With radiator fan running: about 0 V With radiator fan stopped: battery voltage
7	GRN/WHT	RVS (REVERSE LOCK SOLENOID VALVE)	Drives reverse lock solenoid valve	With vehicle speed below 9.4 mph (15 km/h): battery voltage With vehicle speed above 12.5 mph (20 km/h): 0 V
8	RED/WHT	ECT (ENGINE COOLANT TEMPERATURE SENSOR)	Detects ECT sensor signal	With the ignition switch ON (II): about 0.1−4.8 V (depending on engine coolant temperature)
9	BLU/BLK	VTPSW (VTEC OIL PRESSURE SWITCH)	Detects VTEC oil pressure switch signal	With engine at low engine speed: about 0 V With engine at high engine speed: battery voltage
10	WHT/BLU	ALTL (ALTERNATOR L SIGNAL)	Detects alternator L signal	With ignition switch ON (II): about 0 V With engine running: battery voltage
13	WHT/RED	ALTF (ALTERNATOR FR SIGNAL)	Detects alternator FR signal	With engine running: about 0 V−5 V (depending on electrical load)
15	GRN/YEL	VTS (VTEC SOLENOID VALVE)	Drives VTEC solenoid valve	At idle: about 0 V
17	RED/YEL	IAT (INTAKE AIR TEMPERATURE SENSOR)	Detects IAT sensor signal	With ignition switch ON (II): about 0.1 V−4.8 V (depending on intake air temperature)
18	WHT/GRN	ALTC (ALTERNATOR CONTROL)	Sends alternator control signal	With engine running: about 0 V−5 V (depending on electrical load)
21	YEL/BLU	PCS (EVAPORATIVE EMISSION CANISTER PURGE VALVE)	Drives EVAP canister purge valve	With engine running, engine coolant below 149°F (65°C): battery voltage With engine running, engine coolant above 149°F (65°C): duty controlled
23	BLK/WHT	VTC− (VTC OIL CONTROL SOLENOID VALVE −SIDE)	Drives VTC oil control solenoid valve	With the ignition switch ON (II): 0 V

(cont'd)

System Descriptions (cont'd)

ECM Inputs and Outputs at Connector E (31P)

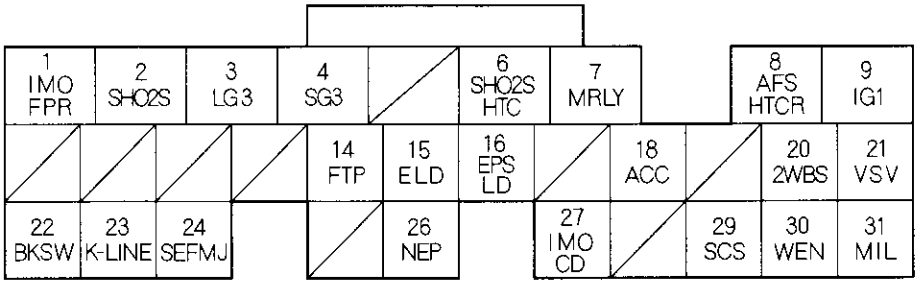


Wire side of female terminals

NOTE: Standard battery voltage is 12 V.

Terminal number	Wire color	Terminal name	Description	Signal
1	GRN/YEL	IMO FPR (IMMOBILIZER FUEL PUMP RELAY)	Drives PGM-FI main relay 2	0 V for 2 seconds after turning ignition switch ON (II), then battery voltage
2	WHT/RED	SHO2S (SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO2S), SENSOR 2)	Detects secondary HO2S (sensor 2) signal	With throttle fully opened from idle with fully warmed up engine: above 0.6 V With throttle quickly closed: below 0.4 V
3	BRN/YEL	LG3 (LOGIC GROUND)	Ground for the ECM/PCM control circuit	Less than 1.0 V at all times
4	PNK	SG3 (SENSOR GROUND)	Sensor ground	Less than 1.0 V at all times
5	YEL/BLU	VCC3 (SENSOR VOLTAGE)	Provides sensor voltage	With ignition switch ON (II): about 5 V With ignition switch OFF: about 0 V
6	BLK/WHT	SO2SHTC (SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO2S) HEATER CONTROL)	Drives secondary HO2S heater	With ignition switch ON (II): battery voltage With fully warmed up engine running: duty controlled
7	RED/YEL	MRLY (PGM-FI MAIN RELAY)	Drives PGM-FI main relay 1 Power source for the DTC memory	With ignition switch ON (II): about 0 V With ignition switch OFF: battery voltage
8	ORN	AFSHTCR (AIR FUEL RATIO (A/F) SENSOR HEATER CONTROL RELAY)	Drives air fuel ratio sensor heater relay	With ignition switch ON (II): 0 V
9	YEL/BLK	IG1 (IGNITION SIGNAL)	Detects ignition signal	With ignition switch ON (II): battery voltage With ignition switch OFF: about 0 V
14	LT GRN	FTP (FUEL TANK PRESSURE (FTP) SENSOR)	Detects FTP sensor signal	With ignition switch ON (II) and fuel fill cap open: about 2.5 V
15	GRN/RED	ELD (ELECTRICAL LOAD DETECTOR)	Detects ELD signal	With ignition switch ON (II): about 0.1 V—4.8 V (depending on electrical load)
16	LT GRN/BLK	EPSLD (ELECTRICAL POWER STEERING LOAD DETECT)	Detects Power steering load signal	At idle with steering wheel in straight ahead position: about 0 V At idle with steering wheel at full lock: momentary battery voltage
18	RED	ACC (A/C CLUTCH RELAY)	Drives A/C clutch relay	With compressor ON: about 0 V With compressor OFF: battery voltage

ECM Inputs and Outputs at Connector E (31P)



Wire side of female terminals

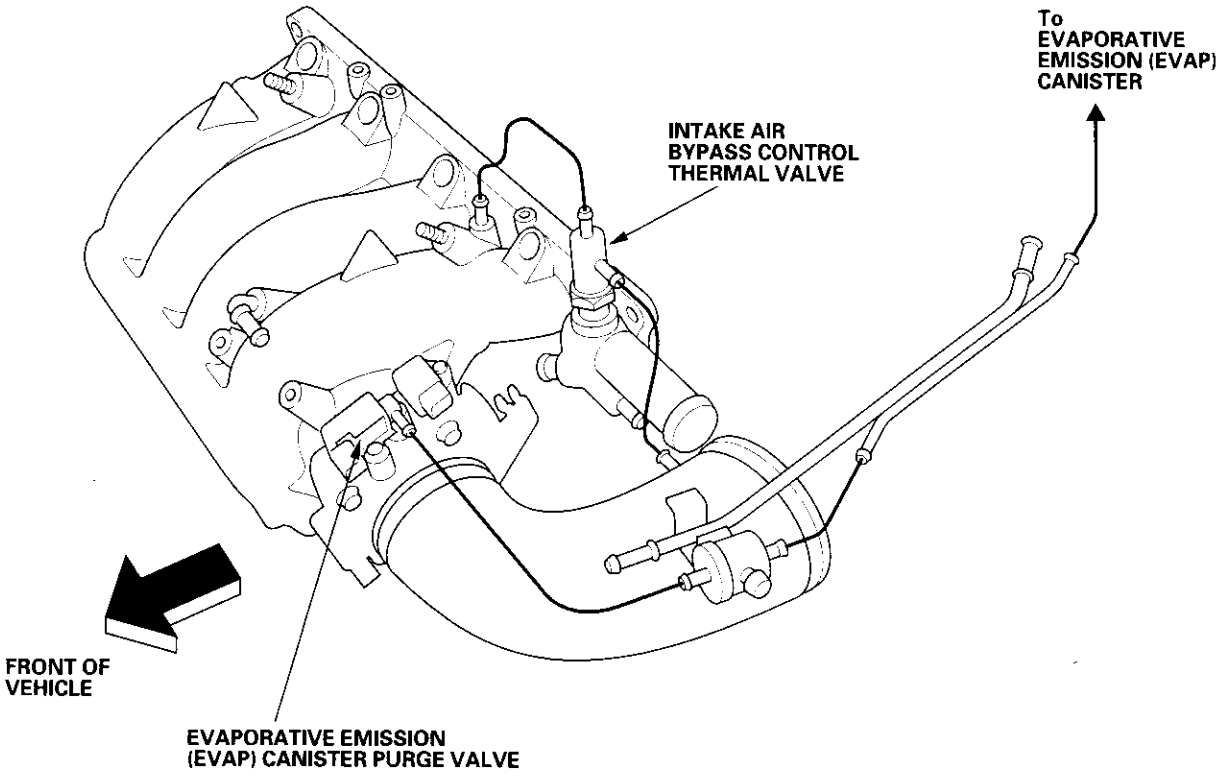
NOTE: Standard battery voltage is 12 V.

Terminal number	Wire color	Terminal name	Description	Signal
20	BLU/RED	2WBS (EVAPORATIVE EMISSION (EVAP) BYPASS SOLENOID VALVE)	Drives EVAP bypass solenoid valve	With ignition switch ON (II): battery voltage
21	LT GRN/RED	VSV (EVAPORATIVE EMISSION (EVAP) CANISTER VENT SHUT VALVE)	Drives EVAP canister vent shut valve	With ignition switch ON (II): battery voltage
22	WHT/BLK	BKSW (BRAKE PEDAL POSITION SWITCH)	Detects brake pedal position switch signal	With brake pedal released: about 0 V With brake pedal pressed: battery voltage
23	LT BLU	K-LINE	Sends and receives scan tool signals	With ignition switch ON (II): pulses or battery voltage
24	YEL	SEFMJ	Communicates with multiplex control unit	With ignition switch ON (II): about 5 V With engine running under load: pulses
26	BLU	NEP (ENGINE SPEED PULSE)	Outputs engine speed pulse	With engine running: pulses
27	RED/BLU	IMOCD (IMMOBILIZER CODE)	Detects immobilizer signal	
29	BRN	SCS (SERVICE CHECK SIGNAL)	Detects service check signal	With the service check signal shorted with the PGM Tester: about 0 V With the service check signal opened: about 5 V
30	RED/WHT	WEN (WRITE ENABLE SIGNAL)	Detects write enable signal	With ignition switch ON (II): about 0 V
31	GRN/ORN	MIL (MALFUNCTION INDICATOR LAMP)	Drives MIL	With MIL turned ON: about 0 V With MIL turned OFF: battery voltage

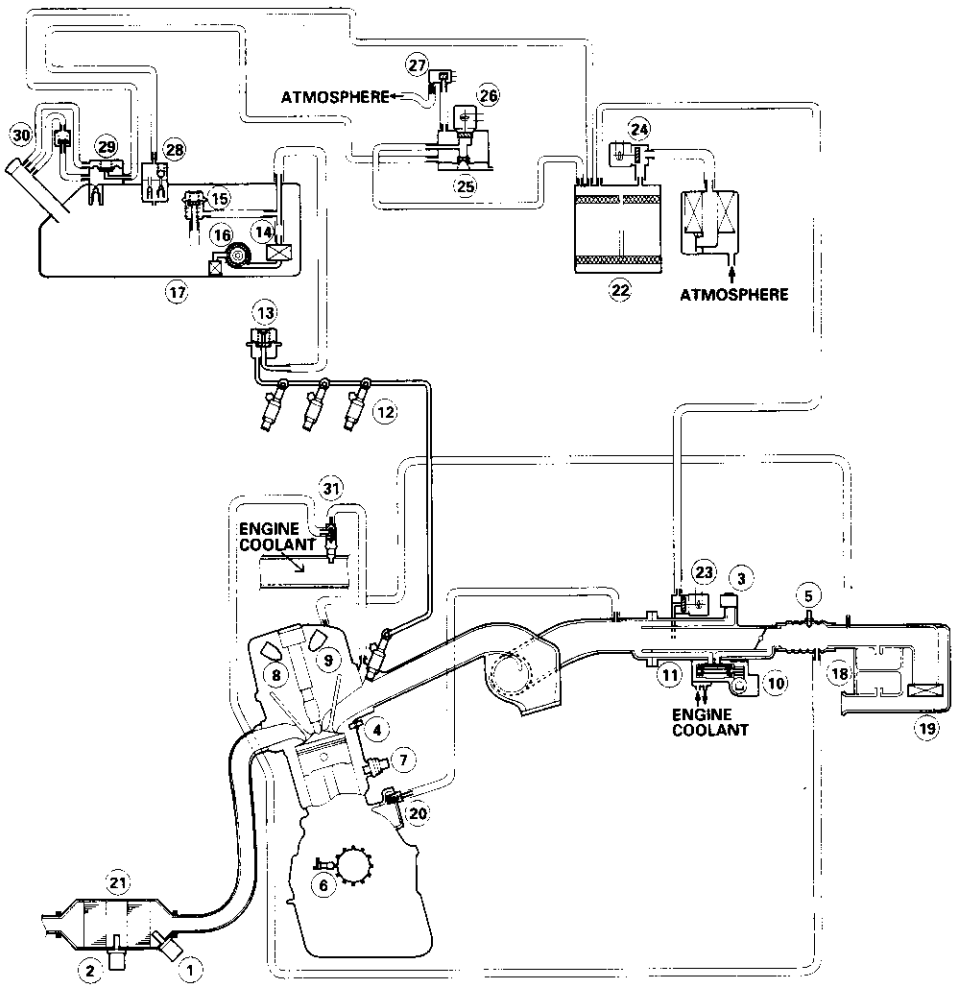
(cont'd)

System Descriptions (cont'd)

Vacuum Hose Routing



Vacuum Hose Routing



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
⑤ INTAKE AIR TEMPERATURE (IAT) SENSOR
⑥ CRANKSHAFT POSITION (CKP) SENSOR
⑦ KNOCK SENSOR
⑧ CAMSHAFT POSITION (CMP) SENSOR B (TOP DEAD CENTER (TDC) SENSOR)
⑨ CAMSHAFT POSITION (CMP) SENSOR A
⑩ IDLE AIR CONTROL (IAC) VALVE
⑪ THROTTLE BODY
⑫ INJECTOR
⑬ FUEL PULSATION DAMPER
⑭ FUEL FILTER
⑮ FUEL PRESSURE REGULATOR
⑯ FUEL PUMP
⑰ FUEL TANK
⑱ RESONATOR
⑲ AIR CLEANER
⑳ POSITIVE CRANKCASE VENTILATION (PCV) VALVE
㉑ THREE WAY CATALYTIC CONVERTER
㉒ EVAPORATIVE EMISSION (EVAP) CANISTER
㉓ EVAPORATIVE EMISSION (EVAP) CANISTER PURGE VALVE
㉔ EVAPORATIVE EMISSION (EVAP) CANISTER VENT SHUT VALVE
㉕ EVAPORATIVE EMISSION (EVAP) TWO WAY VALVE
㉖ EVAPORATIVE EMISSION (EVAP) BYPASS SOLENOID VALVE
㉗ FUEL TANK PRESSURE (FTP) SENSOR
㉘ EVAPORATIVE EMISSION (EVAP) VALVE
㉙ FUEL TANK VAPOR CONTROL VALVE
㉚ FUEL TANK VAPOR RECIRCULATION VALVE
㉛ INTAKE AIR BYPASS CONTROL THERMAL VALVE

(cont'd)

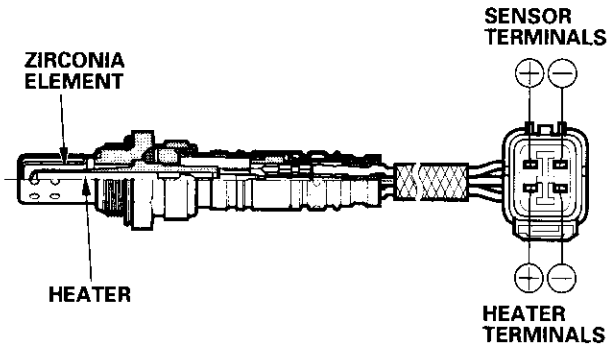
System Descriptions (cont'd)

PGM-FI System

The Programmed Fuel Injection (PGM-FI) system is a sequential multiport fuel injection system.

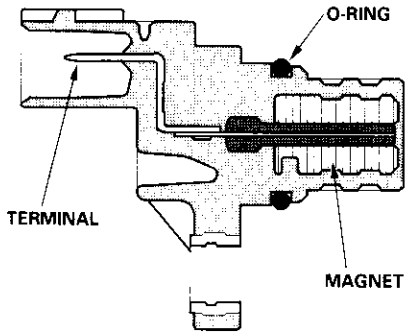
Air Conditioning (A/C) Compressor Clutch Relay
When the ECM receives a demand for cooling from the A/C system, it delays the compressor from being energized, and enriches the mixture to assure smooth transition to the A/C mode.

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 which varies the duration of fuel injection accordingly.

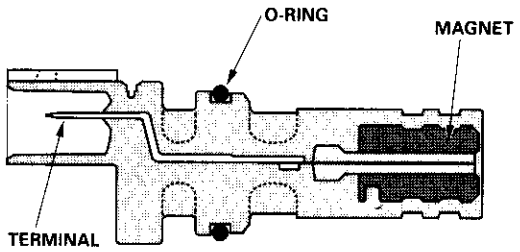


Barometric Pressure (BARO) Sensor
The BARO sensor is inside the ECM. It converts atmospheric pressure into a voltage signal that the ECM uses to modify the basic duration of the fuel injection discharge.

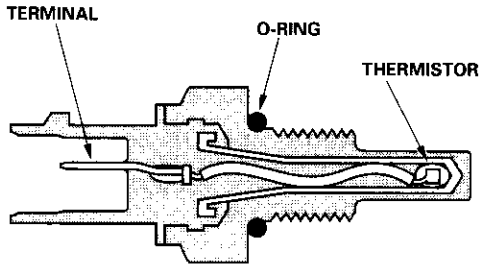
Camshaft Position (CMP) Sensor B (Top Dead Center (TDC) Sensor)
The CMP sensor B (TDC sensor) detects the position of the No. 1 cylinder as a reference for sequential fuel injection to each cylinder.



Crankshaft Position (CKP) Sensor
The CKP sensor detects crankshaft speed and determines ignition timing and timing for fuel injection of each cylinder as well as detecting engine misfire.



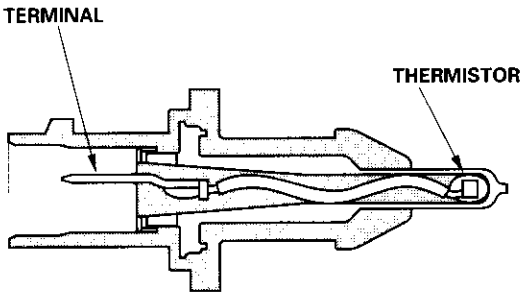
Engine Coolant Temperature (ECT) Sensor
The ECT sensor is a temperature dependent resistor (thermistor). The resistance of the thermistor decreases as the engine coolant temperature increases.



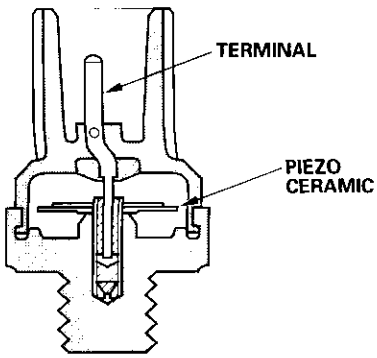
Ignition Timing Control
The ECM contains the memory for basic ignition timing at various engine speeds and manifold absolute pressure. It also adjusts the timing according to engine coolant temperature.

Injector Timing and Duration
The ECM 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 detects long term malfunctions in the fuel system and sets a Diagnostic Trouble Code (DTC).

Intake Air Temperature (IAT) Sensor
The IAT sensor is a temperature dependent resistor (thermistor). The resistance of the thermistor decreases as the intake air temperature increases.



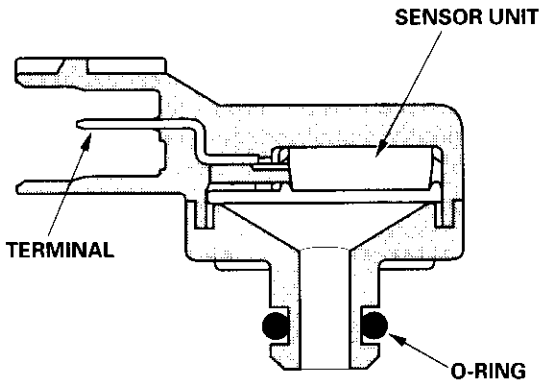
Knock Sensor
The knock control system adjusts the ignition timing to minimize knock.



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 has been reset, these codes are set 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 test and the test cannot be finished.

To check if the readiness codes are set to complete, turn the ignition switch 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 blinks several times, one or more readiness codes are not set to complete. To set each code, drive the vehicle or run the engine as described in the procedures to set them in this section (see page 11-46).

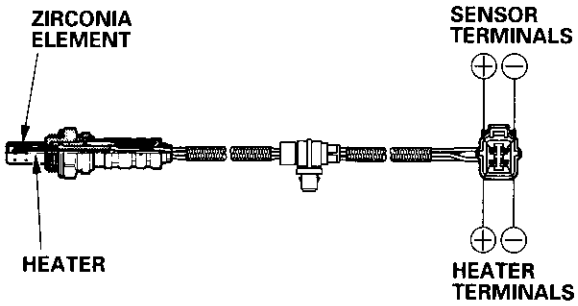
Manifold Absolute Pressure (MAP) Sensor
The MAP sensor converts manifold absolute pressure into electrical signals to the ECM.



(cont'd)

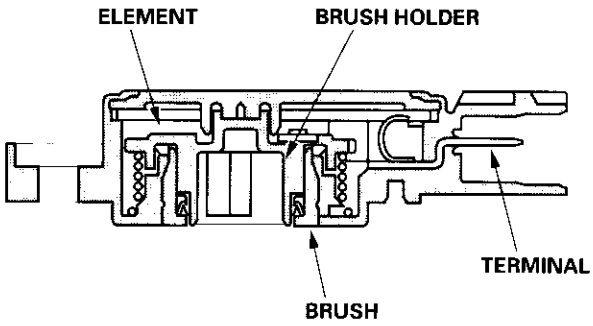
System Descriptions (cont'd)

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 which checks the efficiency of the TWC. To stabilize its output, the sensor has an internal heater. The secondary HO2S is installed in the TWC.

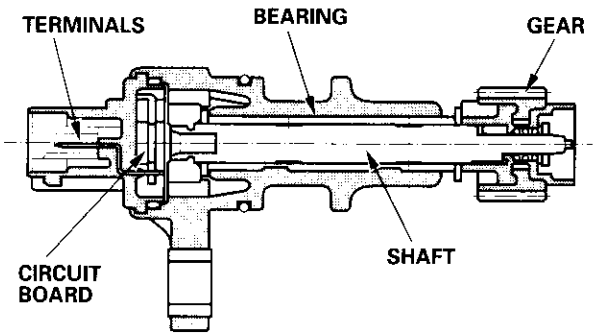


Starting Control
When the engine is started, the ECM provides a rich mixture by increasing injector duration.

Throttle Position (TP) Sensor
The TP sensor is a potentiometer connected to the throttle valve shaft. As the throttle position changes, the sensor varies the signal voltage to the ECM. The TP sensor is not replaceable apart from the throttle body.

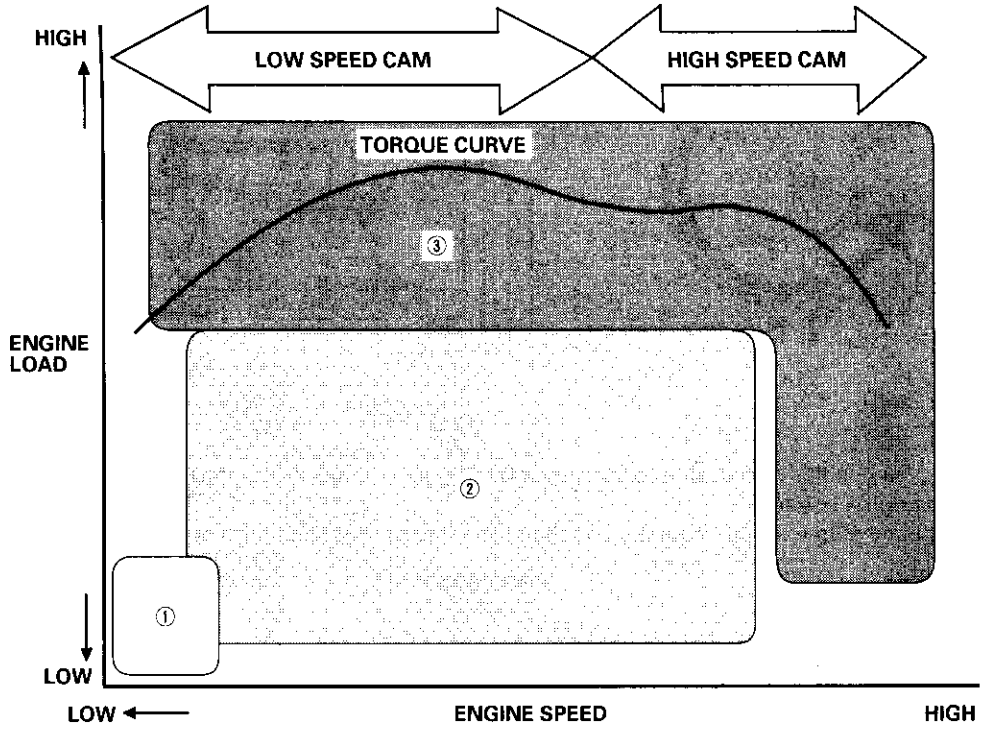


Vehicle Speed Sensor (VSS)
The VSS is driven by the differential. It generates a pulsed signal from an input of 5 volts. The number of pulses per minute increases/decreases with the speed of the vehicle.



VTEC/VTC

- The i-VTEC has a VTC (Variable Valve Timing Control) mechanism on the intake camshaft in addition to the usual VTEC.
  This mechanism improves fuel efficiency and reduces exhaust emissions at all levels of engine speed, vehicle speed, and engine load.
- The VTEC mechanism changes the valve lift and timing by using more than one cam profile.
- The VTC changes the phase of the intake camshaft via oil pressure. It changes the intake valve timing continuously.



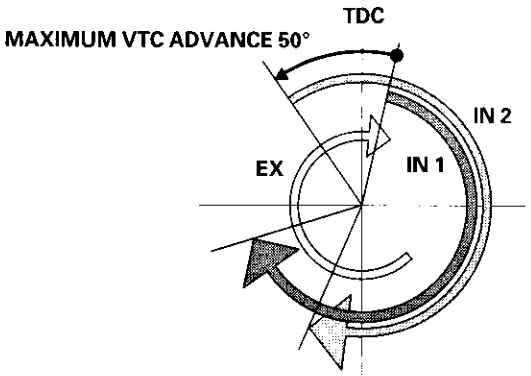
Driving Condition	VTC Control	Description
① Light-load	Base Position	Cam angle is retarded to reduce the entry of exhaust gas into the intake port and to achieve stable fuel consumption during lean burn.
② Medium/high-load	Advance Control	Cam angle is advanced for EGR effect and to reduce this pumping loss. The intake valve is closed quickly to help reduce the entry of air/fuel mixture into the intake port and improve the charging effect.
③ High speed	Advance-Base Position	Cam phase angle is controlled for optimum valve timing and maximum engine power.

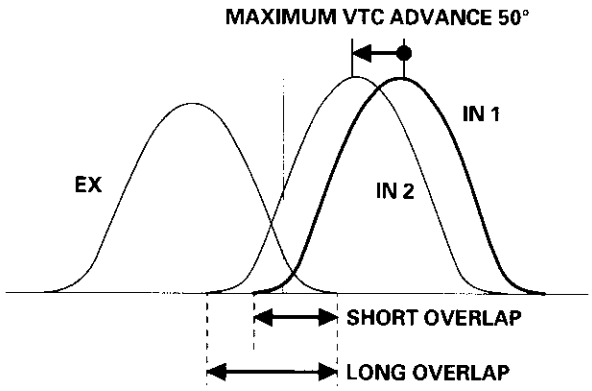
(cont'd)

System Descriptions (cont'd)

VTC system

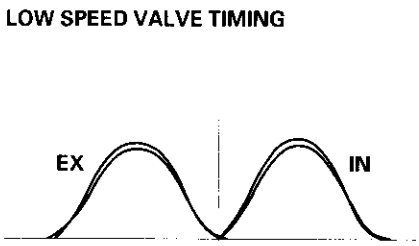
- The VTC system makes continuous intake valve timing changes based on operating conditions.
- Intake valve timing is optimized to allow the engine to produce maximum power.
- Cam angle is advanced to obtain the EGR effect and reduce the pumping loss. The intake valve is closed quickly to reduce the entry of the air/fuel mixture into the intake port and improve the charging effect.
- Cam angle is reduced at idle to stabilize 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.

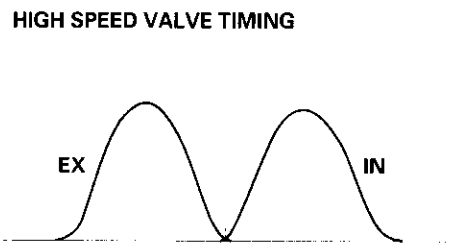




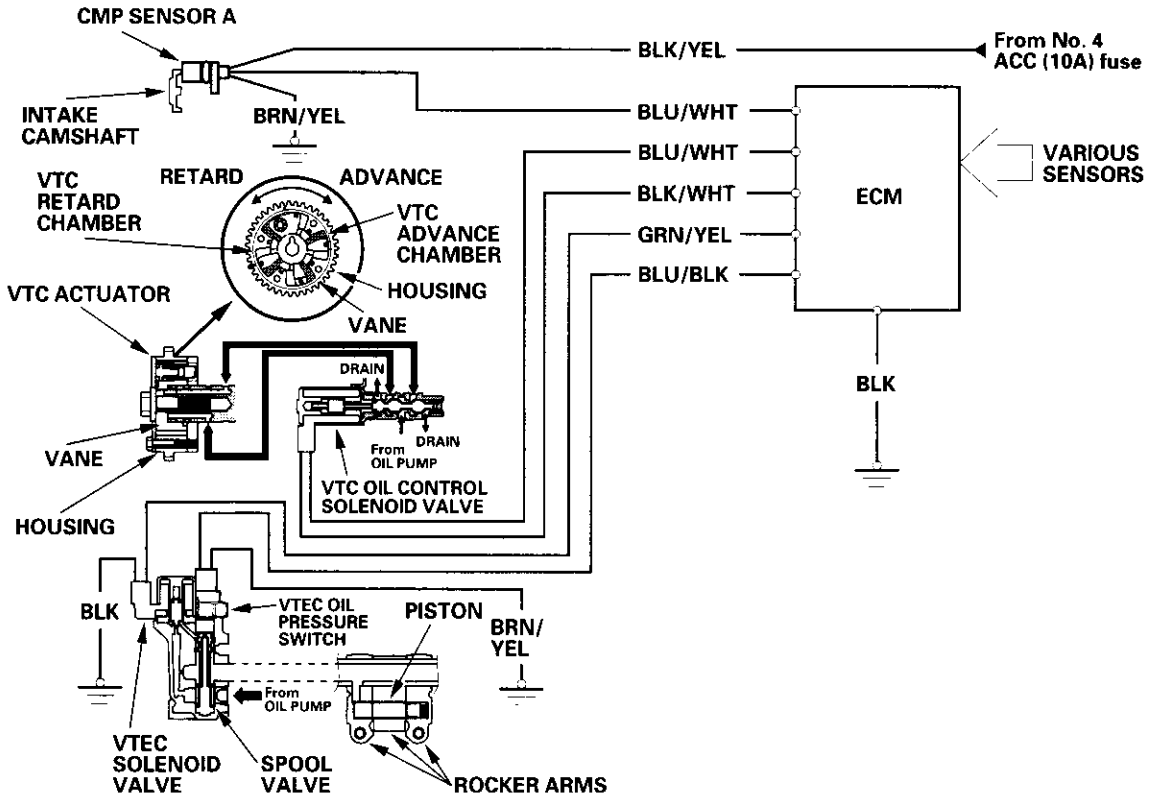
VTEC system

- The VTEC system changes the cam profile to correspond to 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.



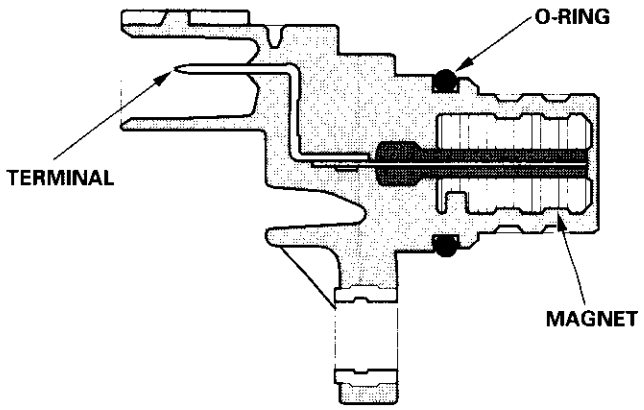


System Diagram



Camshaft Position (CMP) Sensor

The CMP sensor detects camshaft angle position for the VTC system.



(cont'd)

System Descriptions (cont'd)

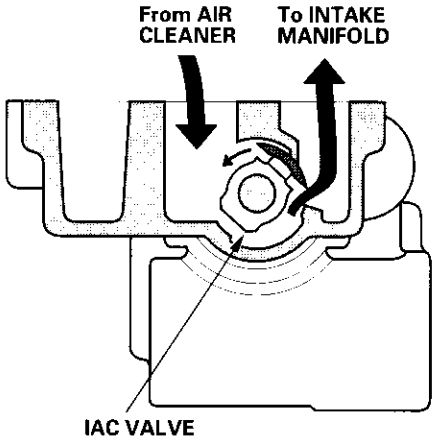
Idle Control System

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 controls current to the Idle Air Control (IAC) valve to maintain the correct idle speed. Refer to the System Diagram to see the functional layout of the system.

Brake Pedal Position Switch
The brake pedal position switch signals the ECM when the brake pedal is pressed.

Electrical Power Steering (EPS) Senser
The EPS sensor signals the ECM when the power steering load is high.

Idle Air Control (IAC) Valve
To maintain the proper idle speed, the IAC valve changes the amount of air bypassing the throttle body in response to an electrical signal from the ECM.



Fuel Supply System

Fuel Cut-off Control
During deceleration with the throttle valve closed, current to the injectors is cut off to improve fuel economy at engine speeds over 1,030 rpm. Fuel cut-off action also occurs when engine speed exceeds 6,900 rpm, regardless of the position of the throttle valve, to protect the engine from over-revving. When the vehicle is stopped, the ECM cuts the fuel at engine speeds over 6,500 rpm.

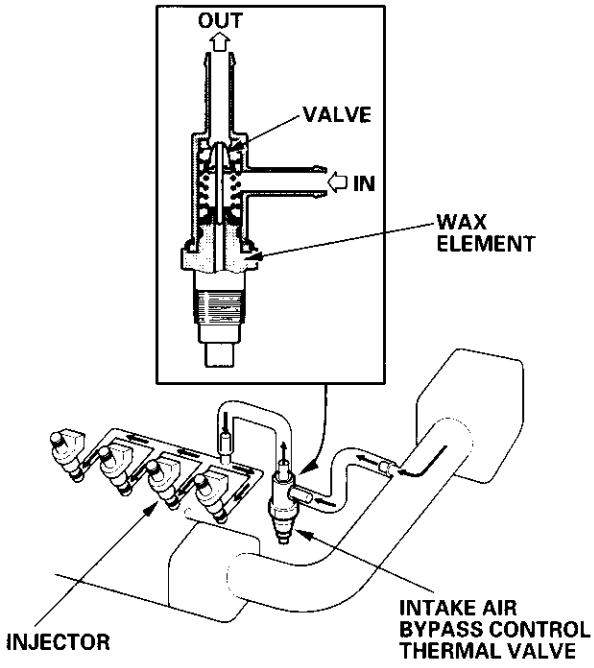
Fuel Pump Control
When the ignition is turned on, the ECM grounds the PGM-FI main relay which feeds current to the fuel pump for 2 seconds to pressurize the fuel system. With the engine running, the ECM grounds the PGM-FI main relay and feeds current to the fuel pump. When the engine is not running and the ignition is on, the ECM cuts ground to the PGM-FI main relay which cuts current to the fuel pump.

PGM-FI Main Relay 1 and 2
The PGM-FI main relay consists of two separate relays. Relay 1 is energized whenever the ignition switch is ON (II) to supply battery voltage to the ECM power to the injectors, and power for relay. Relay 2 is energized to supply power to the fuel pump for 2 seconds when the ignition switch is turned ON (II), and when the engine is running.

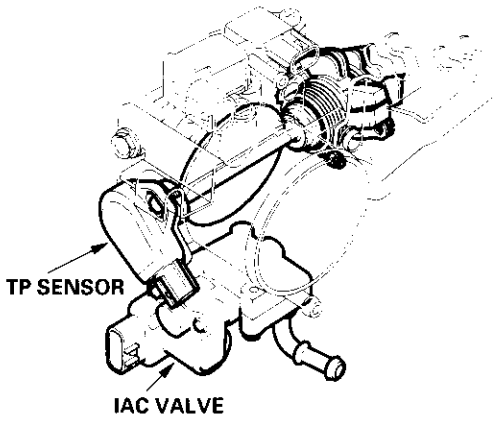
Intake Air System

Refer to the System Diagram to see the functional layout of the system.

Intake Air Bypass Control Thermal Valve
When the engine is running, the intake air bypass control thermal valve sends air to the injectors.



Throttle Body
The throttle body is a single-barrel side draft type. It houses the TP senser and the IAC valve. The lower portion of the IAC valve is heated by engine coolant from the cylinder head.

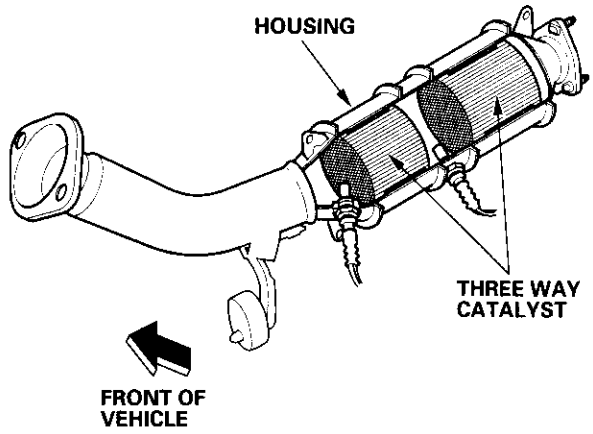


(cont'd)

System Descriptions (cont'd)

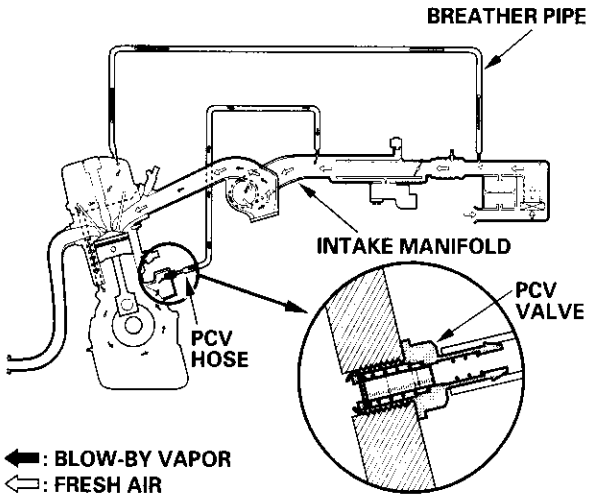
Catalytic Converter System

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 (CO2), dinitrogen (N2), 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.



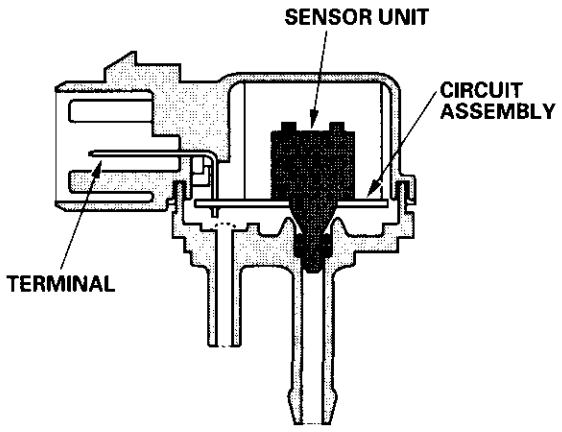
Evaporative Emission (EVAP) Control System

Refer to the System Diagram to see the functional layout of the system.

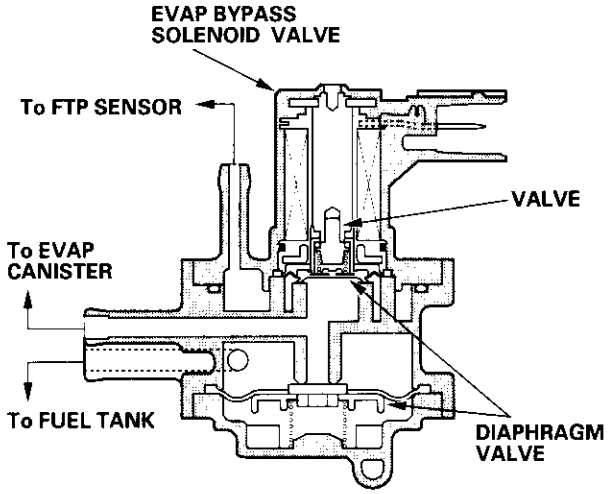
EVAP Canister
The EVAP canister temporarily stores fuel vapor from the fuel tank until it can be purged back into the engine and burned.

EVAP Canister Purge Valve
When the engine coolant temperature is below 149°F (65°C), the ECM 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 during the EVAP leak check.



EVAP Two Way Valve and EVAP Bypass Solenoid Valve
The EVAP two way valve is installed between the fuel tank and the EVAP canister line.
The EVAP two way valve sends fuel vapor to the EVAP canister corresponding to the pressure inside the fuel tank. It also relieves excess vacuum in the tank by allowing fresh air to be drawn into the tank through the EVAP canister.
The EVAP bypass solenoid valve opens to bypass the two way valve during the EVAP leak check.



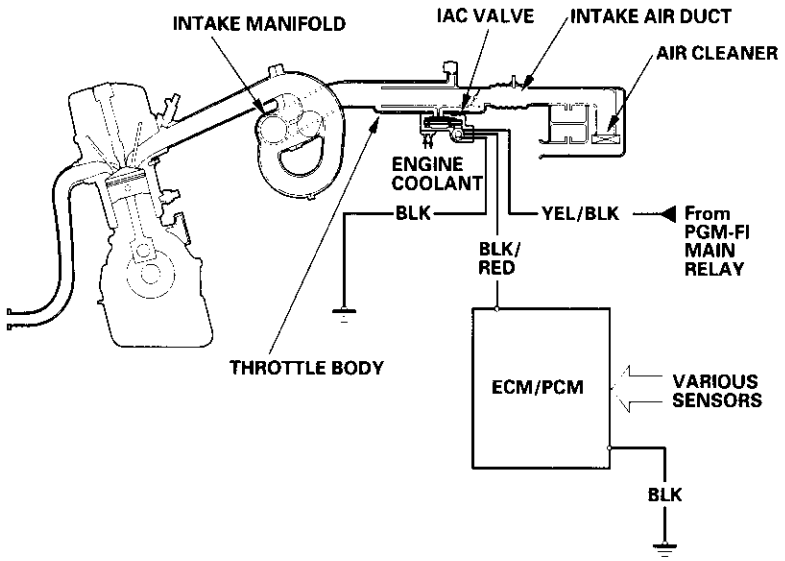
(cont'd)

System Descriptions (cont'd)

Idle Control System Diagram

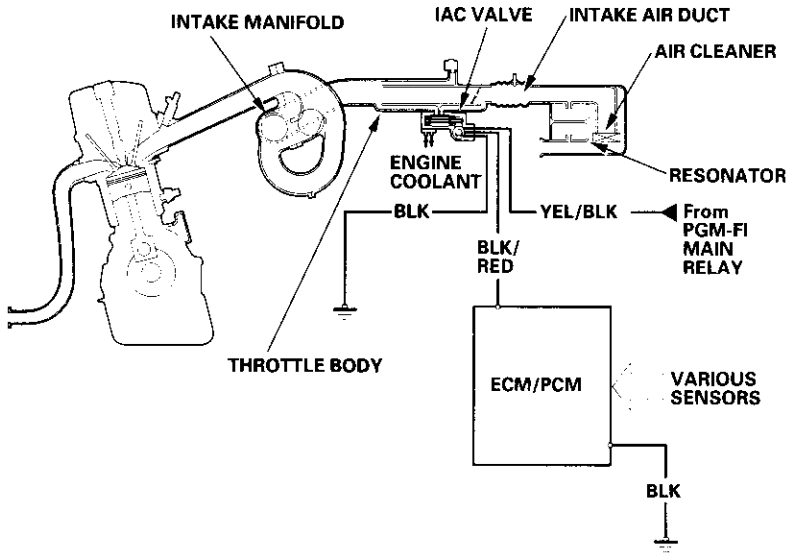
The idle speed of the engine is controlled by the Idle Air Control (IAC) valve:

- After the engine starts, the IAC valve opens for a certain amount of time. The amount of air is increased to raise the idle speed.
- When the engine coolant temperature is low, the IAC valve is opened to obtain the proper fast idle speed. The amount of bypassed air is controlled in relation to engine coolant temperature.



Intake Air System Diagram

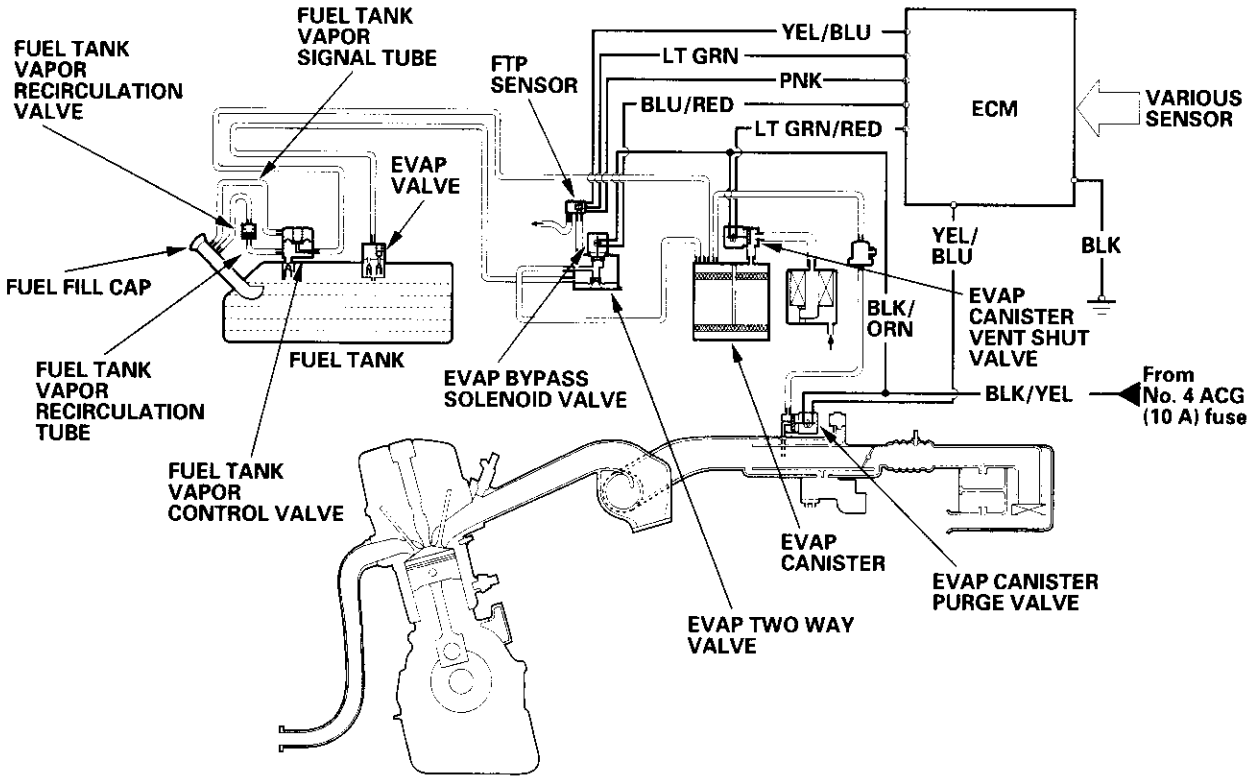
This system supplies air for engine needs. A resonator in the intake air pipe provides additional silencing as air is drawn into the system.



Evaporative Emission (EVAP) Control Diagram

The EVAP controls minimize the amount of fuel vapor escaping to 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.

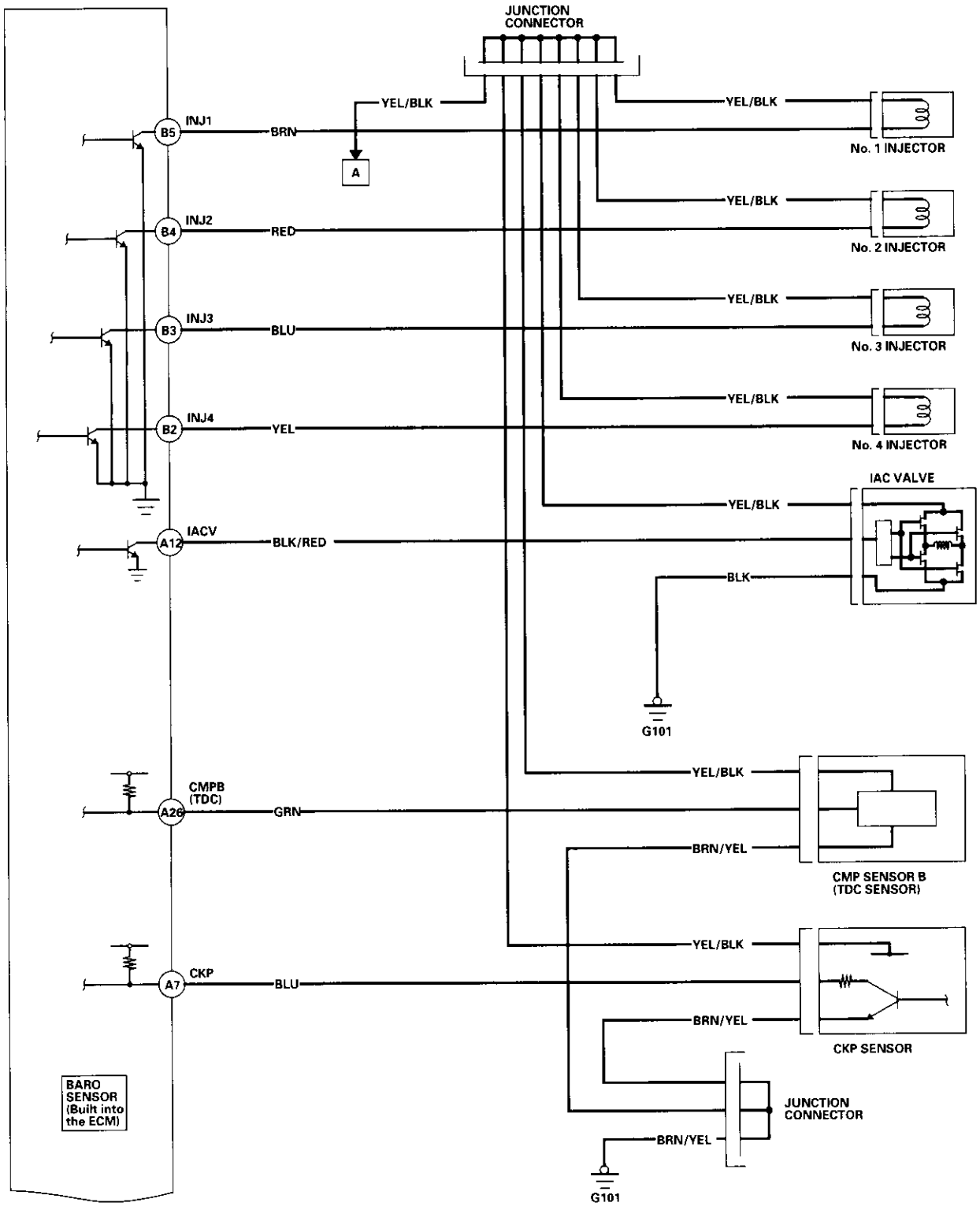
- The EVAP canister is purged by drawing fresh air through it and into a port on the intake manifold. The purging vacuum is controlled by the EVAP canister purge valve, which operates whenever engine coolant temperature is above 149°F (65°C).
- When vapor pressure in the fuel tank is higher than the set value of the EVAP two way valve, the valve opens and regulates the flow of fuel vapor to the EVAP canister.
- During refueling, the fuel tank vapor control valve opens with the pressure in the fuel tank, and feeds the fuel vapor to the EVAP canister.

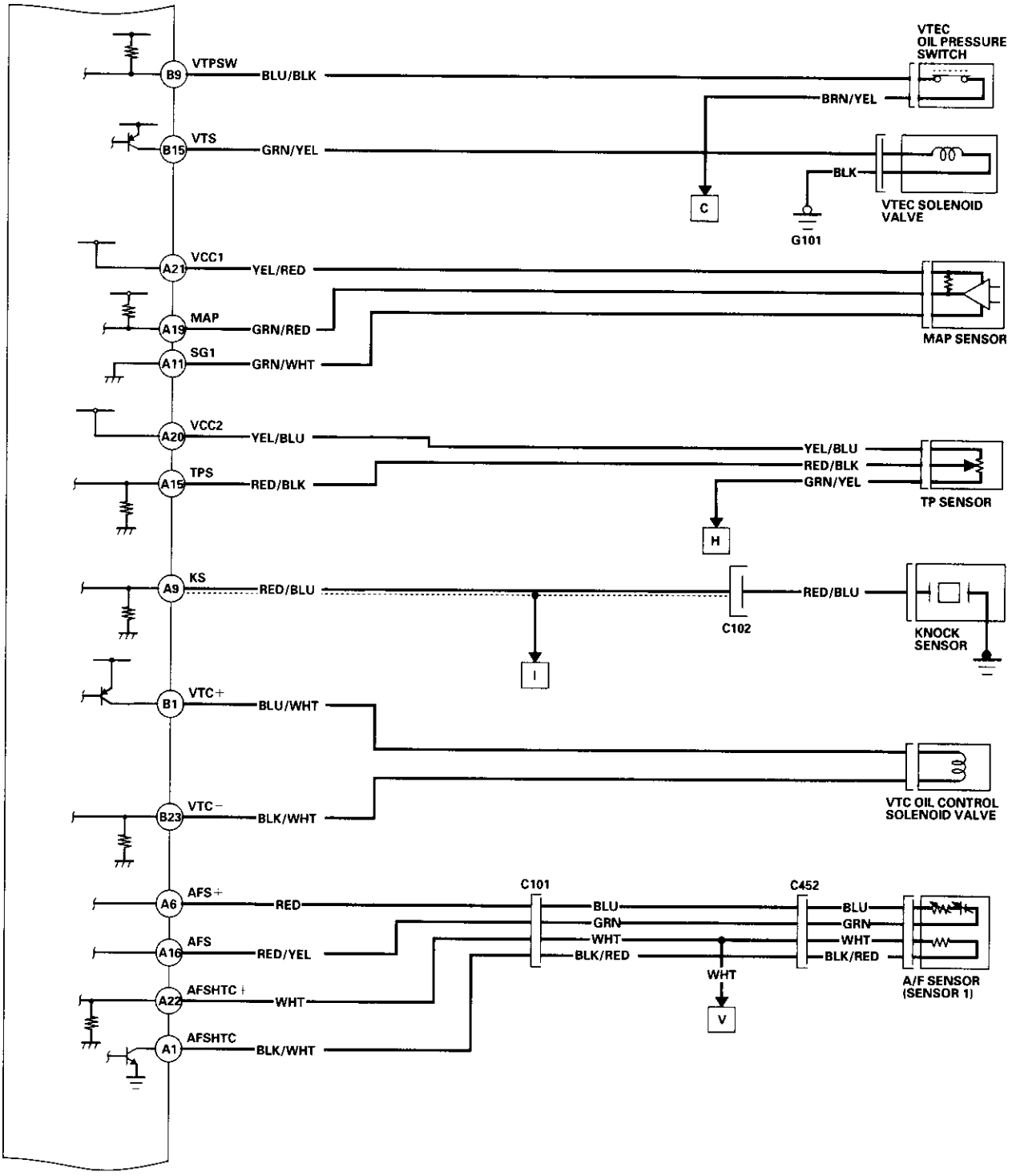


(cont'd)

System Descriptions (cont'd)

ECM Circuit Diagram

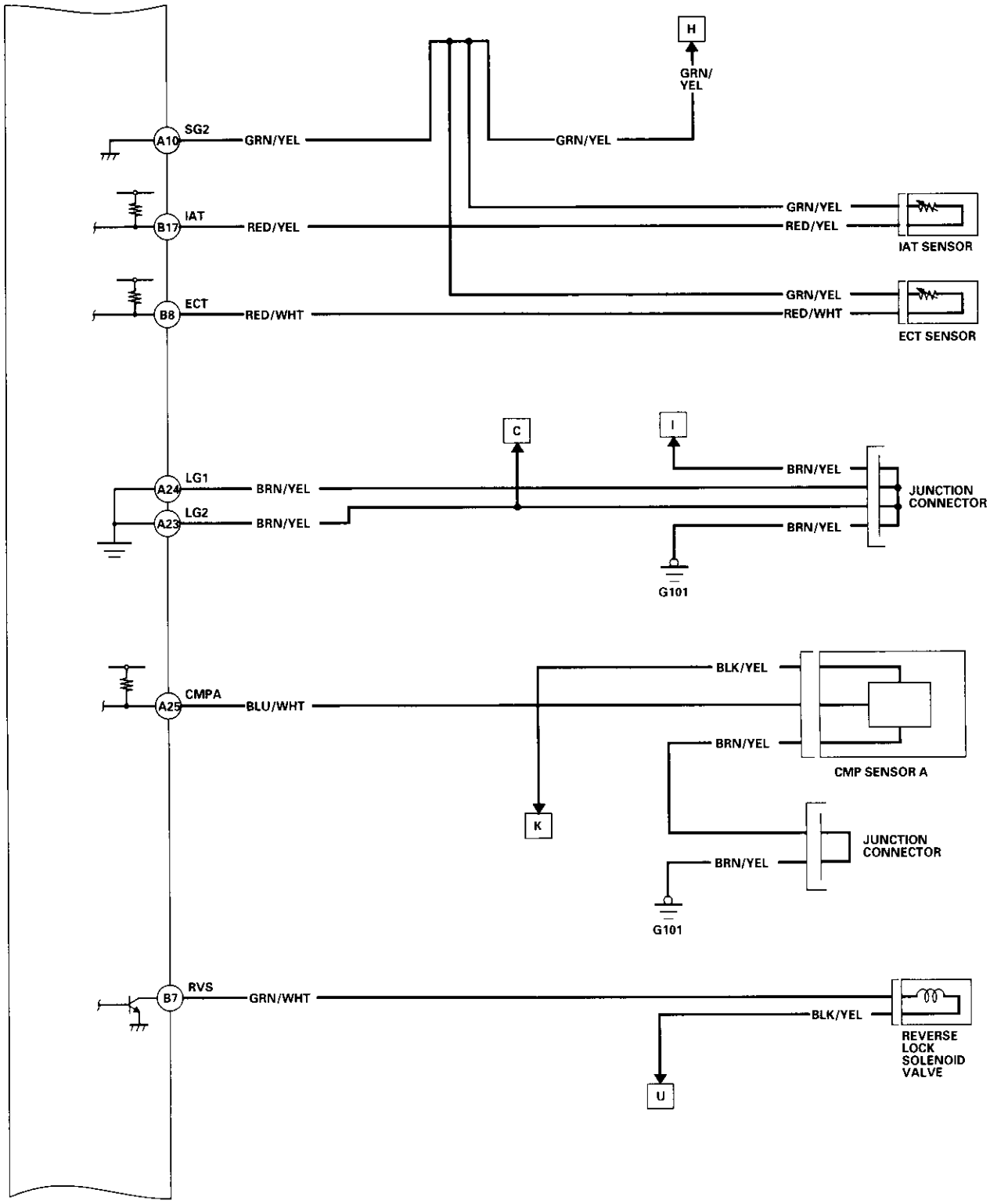


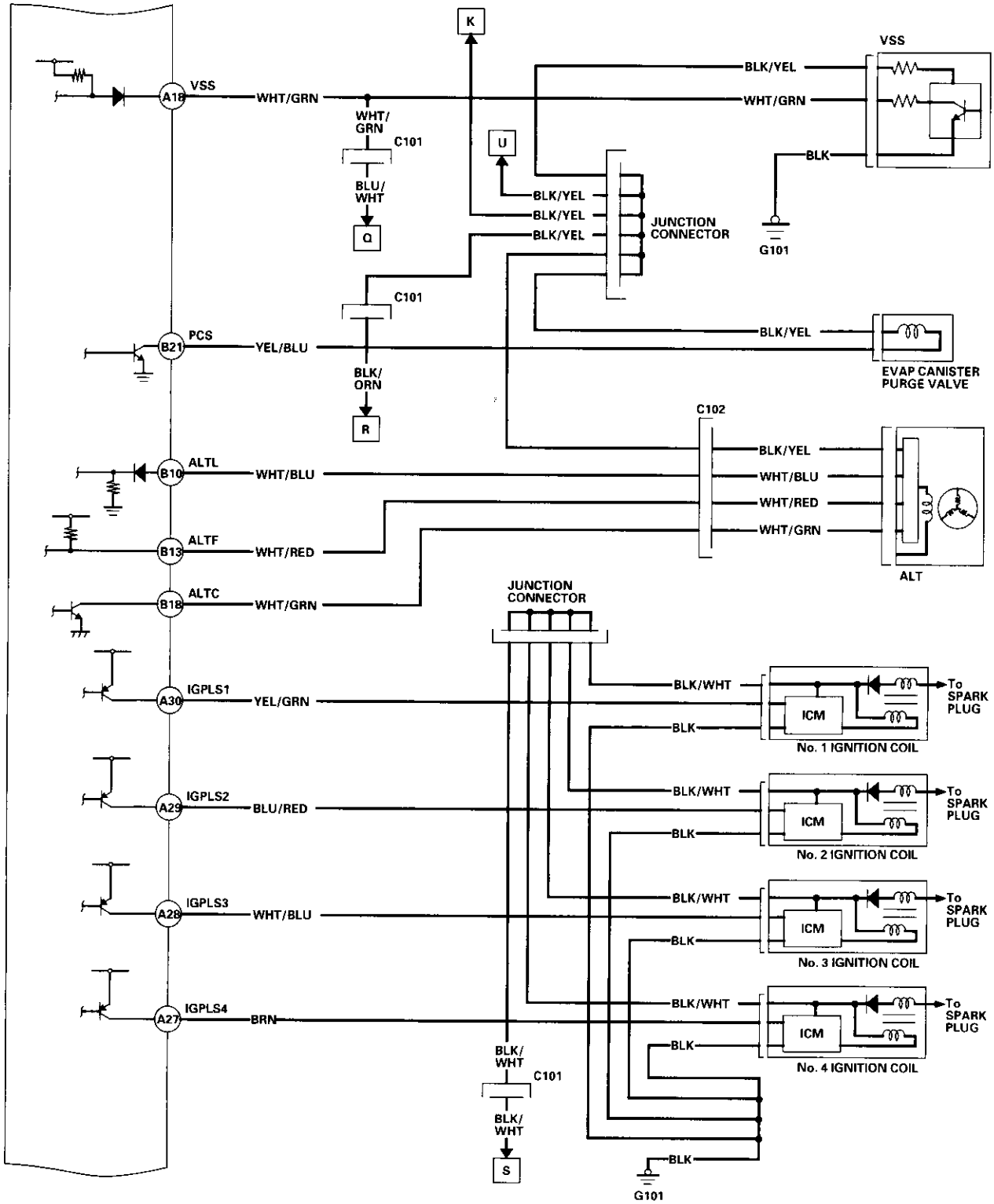

VTPSW
B9
BLU/BLK
VTEC OIL PRESSURE SWITCH
BRN/YEL
VTS
B15
GRN/YEL
C
BLK
VTEC SOLENOID VALVE
G101
VCC1
A21
YEL/RED
MAP
A19
GRN/RED
MAP SENSOR
SG1
A11
GRN/WHT
VCC2
A20
YEL/BLU
YEL/BLU
RED/BLK
GRN/YEL
TPS
A15
RED/BLK
TP SENSOR
H
KS
A9
RED/BLU
C102
RED/BLU
KNOCK SENSOR
I
VTC+
B1
BLU/WHT
VTC OIL CONTROL SOLENOID VALVE
VTC−
B23
BLK/WHT
C101
C452
AFS+
A6
RED
BLU
GRN
WHT
BLK/RED
AFS
A16
RED/YEL
AFSHTC+
A22
WHT
WHT
V
AFSHTC−
A1
BLK/WHT
A/F SENSOR (SENSOR 1)

(cont'd)

System Descriptions (cont'd)

ECM Circuit Diagram (cont'd)

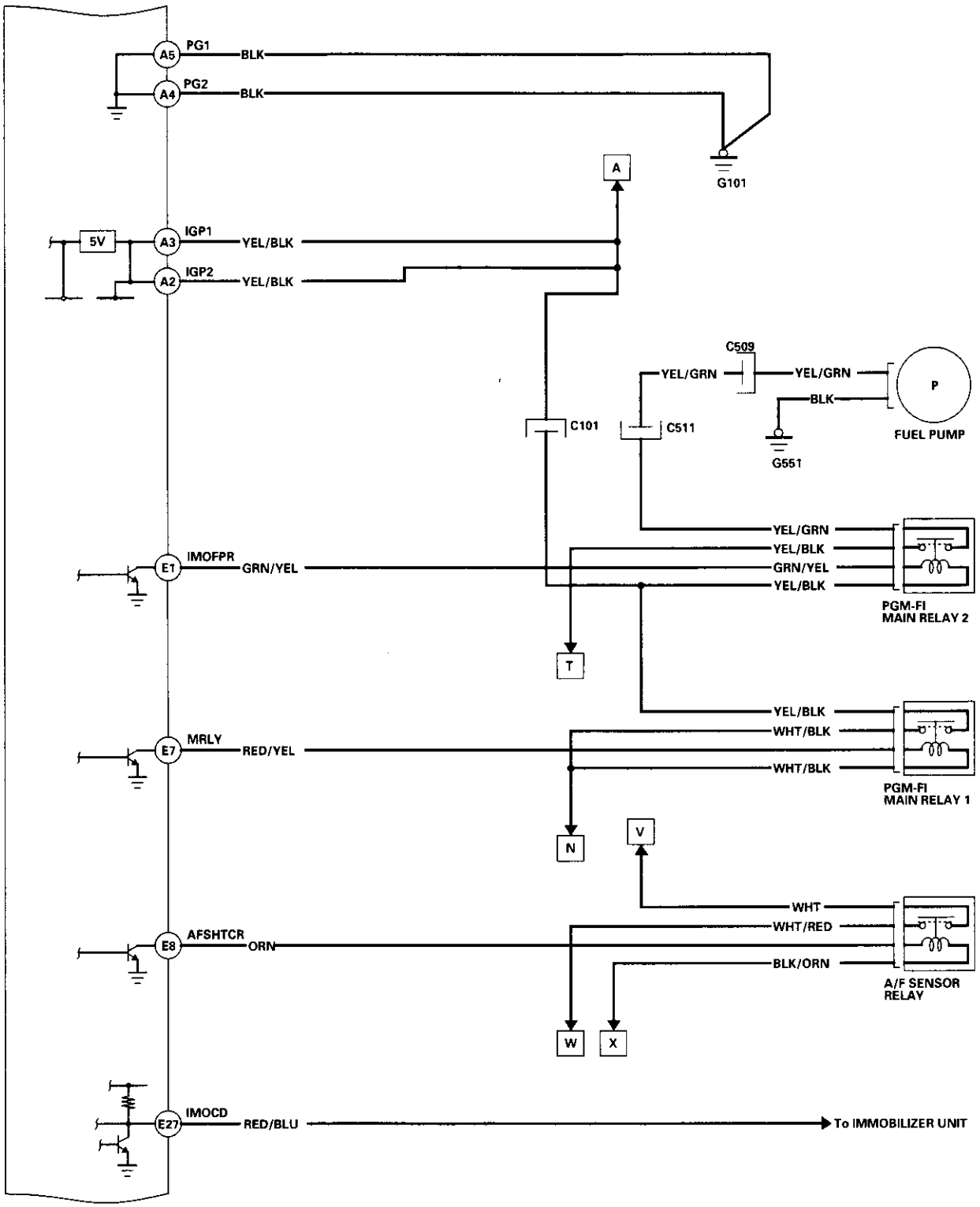


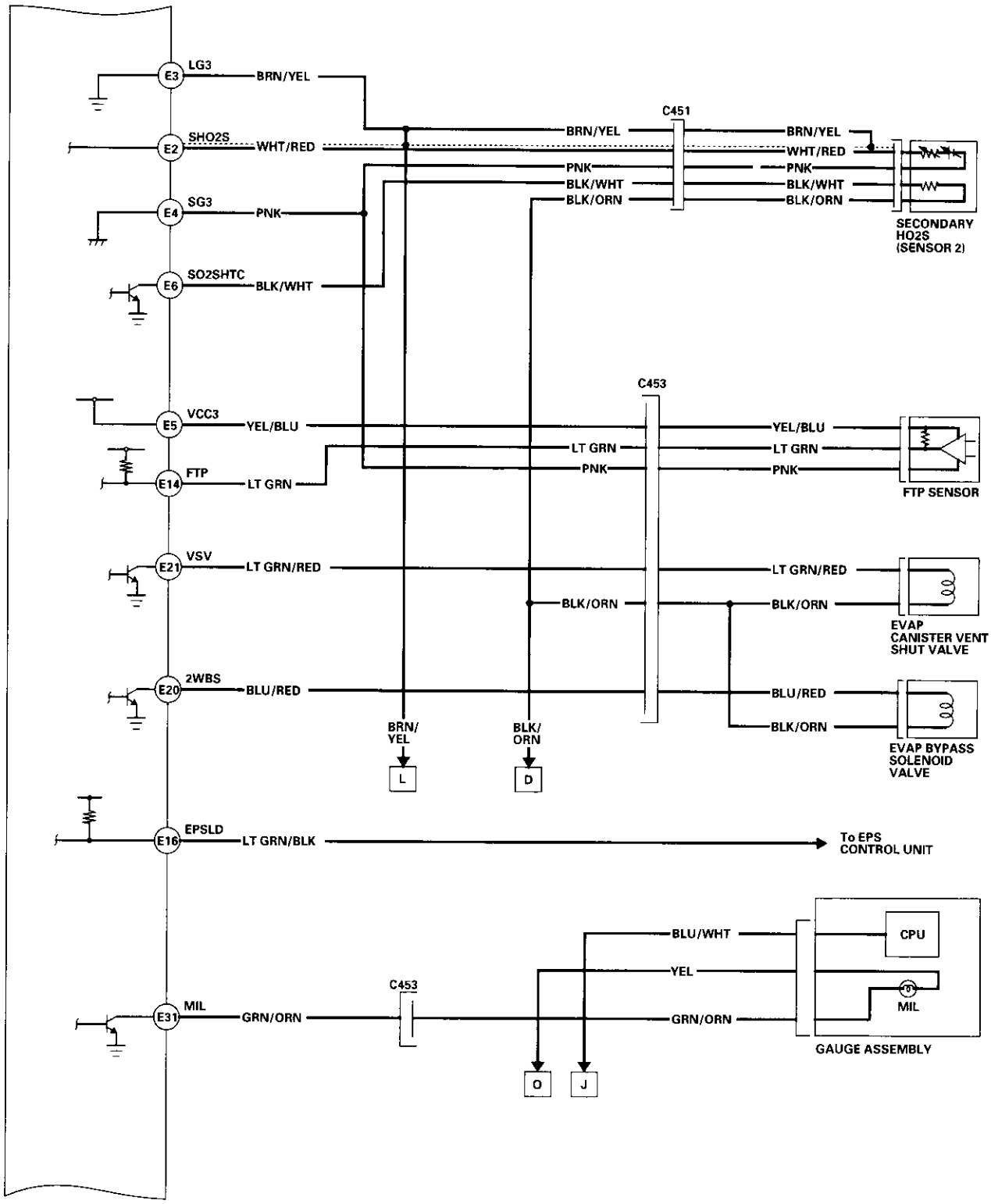

VSS
A18
WHT/GRN
WHT/
GRN
C101
BLU/
WHT
Q
K
U
BLK/YEL
BLK/YEL
BLK/YEL
JUNCTION
CONNECTOR
BLK/YEL
WHT/GRN
BLK
VSS
G101
C101
PCS
B21
YEL/BLU
BLK/
ORN
R
BLK/YEL
EVAP CANISTER
PURGE VALVE
C102
ALTL
B10
WHT/BLU
ALTF
B13
WHT/RED
ALTC
B18
WHT/GRN
BLK/YEL
WHT/BLU
WHT/RED
WHT/GRN
ALT
JUNCTION
CONNECTOR
IGPLS1
A30
YEL/GRN
IGPLS2
A29
BLU/RED
IGPLS3
A28
WHT/BLU
IGPLS4
A27
BRN
BLK/WHT
BLK
ICM
No. 1 IGNITION COIL
To
SPARK
PLUG
BLK/WHT
BLK
ICM
No. 2 IGNITION COIL
To
SPARK
PLUG
BLK/WHT
BLK
ICM
No. 3 IGNITION COIL
To
SPARK
PLUG
BLK/WHT
BLK
ICM
No. 4 IGNITION COIL
To
SPARK
PLUG
BLK/
WHT
C101
BLK/
WHT
S
BLK
G101

(cont'd)

System Descriptions (cont'd)

ECM Circuit Diagram (cont'd)

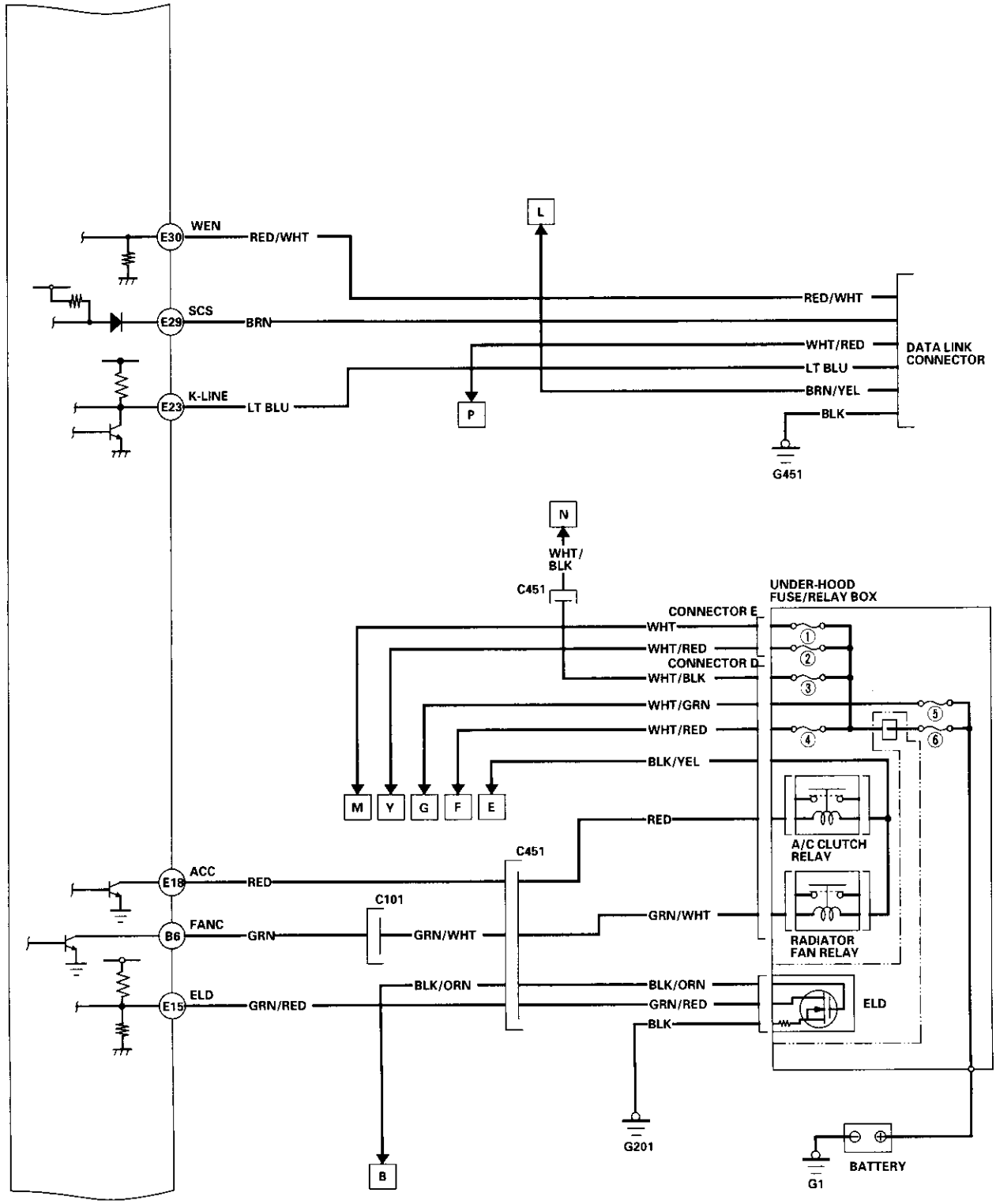


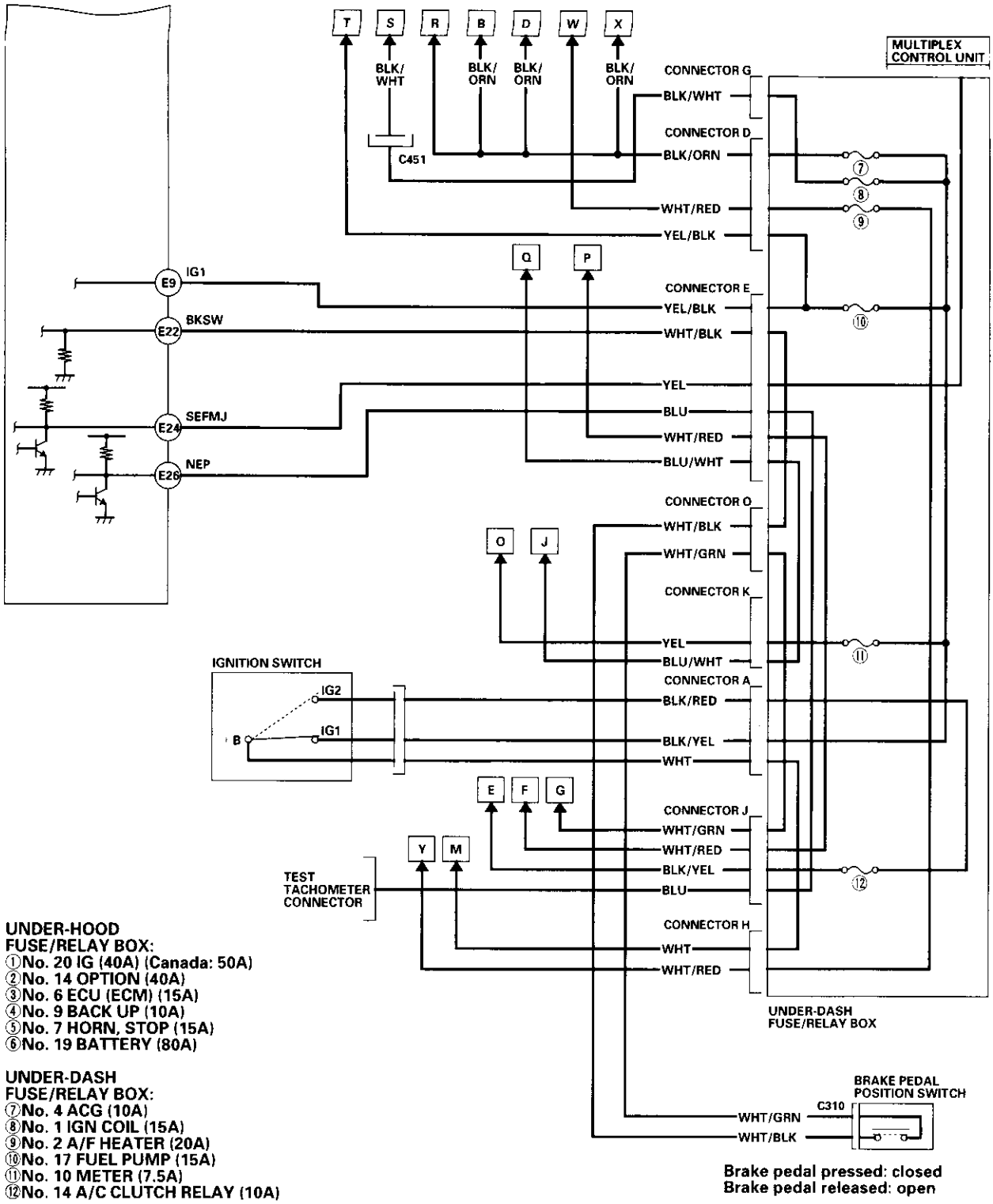

E3
LG3
BRN/YEL
E2
SHO2S
WHT/RED
E4
SG3
PNK
E6
SO2SHTC
BLK/WHT
C451
BRN/YEL
WHT/RED
PNK
BLK/WHT
BLK/ORN
SECONDARY HO2S (SENSOR 2)
C453
E5
VCC3
YEL/BLU
E14
FTP
LT GRN
FTP SENSOR
E21
VSV
LT GRN/RED
BLK/ORN
EVAP CANISTER VENT SHUT VALVE
E20
2WBS
BLU/RED
EVAP BYPASS SOLENOID VALVE
BRN/YEL
BLK/ORN
L
D
E16
EPSLD
LT GRN/BLK
To EPS CONTROL UNIT
E31
MIL
GRN/ORN
BLU/WHT
YEL
CPU
MIL
GAUGE ASSEMBLY
O
J

(cont'd)

System Descriptions (cont'd)

ECM Circuit Diagram (cont'd)





UNDER-HOOD FUSE/RELAY BOX:
①No. 20 IG (40A) (Canada: 50A)
②No. 14 OPTION (40A)
③No. 6 ECU (ECM) (15A)
④No. 9 BACK UP (10A)
⑤No. 7 HORN, STOP (15A)
⑥No. 19 BATTERY (80A)

UNDER-DASH FUSE/RELAY BOX:
⑦No. 4 ACG (10A)
⑧No. 1 IGN COIL (15A)
⑨No. 2 A/F HEATER (20A)
⑩No. 17 FUEL PUMP (15A)
⑪No. 10 METER (7.5A)
⑫No. 14 A/C CLUTCH RELAY (10A)

Brake pedal pressed: closed
Brake pedal released: open

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 has been reset, these codes are set to incomplete. In some states, part of the emission 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 complete, turn the ignition switch 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 blinks several times, one or more readiness codes are not complete. To set readiness codes from incomplete to complete, do the procedure for the appropriate code.

Catalytic Converter Monitor and Readiness Code

NOTE:
- Do not turn the ignition switch off during the procedure.
- All readiness codes are cleared when the battery is disconnected or when the ECM is cleared with the OBD II scan tool or Honda PGM Tester.
- 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 at 158°F (70°C) or higher.
- Intake air temperature (IAT) at 20°F (−7°C) or higher.
- Vehicle speed is steady, and vehicle speed sensor (VSS) reads more then 25 mph (13km/h).

Procedure
1. Connect the scan tool to the vehicle's data link connector (DLC), and bring up the tool's generic OBD II mode.
2. Start the engine.
3. Test-drive the vehicle under stop-and-go conditions with short periods of steady cruise. After about 5 miles (3 km), the readiness code should switch from incomplete to complete.
4. If the readiness code is still set to incomplete, check for a temporary DTC. If there is no DTC, one or more of the enable criteria were probably not met; repeat the procedure.

Evaporative Emissions (EVAP) Control System Monitor and Readiness code

NOTE:
- All readiness code are cleared when the battery is disconnected or when the ECM is cleared with the OBD II scan tool or Honda PGM Tester.
- The enable criteria must be repeated if the intake air temperature (IAT) drops lower than 36°F (20°C) from its value at engine start up.

Enable Criteria
- At engine start up, ECT and IAT are higher than 32°F (0°C) , but lower than 95°F (35°C).
- At engine start up, the ECT and IAT are within 12°F (7°C) of each other.

Procedure
1. Connect the scan tool to the vehicle's data link connector (DLC), and bring up the tool's generic OBD II mode.
2. Start the engine.
3. Test-drive the vehicle under stop-and-go conditions with short periods of steady cruise. After about 2.5 miles (1.6 km), the readiness code should switch from incomplete to complete.
4. If the readiness code is still set to incomplete, 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 off during the procedure.
- All readiness codes are cleared when the battery is disconnected or when the ECM is cleared with the OBD II scan tool or Honda PGM Tester.

Enable Criteria
ECT at 140°F (60°C) or higher.

Procedure
1. Connect the scan tool to the vehicle's data link connector (DLC), and bring up the tool's generic OBD II mode.
2. Start the engine.
3. Test-drive the vehicle under stop-and-go conditions with short periods of steady cruise. During the drive, decelerate (wirh the throttle fully closed) for 5 seconds. After about 3.5 miles (2.2 km), the readiness code should switch from incomplete to complete.
4. If the readiness code is still set to incomplete, check for a temporary DTC. If there is no DTC, the enable criteria was probably not met; repeat the procedure.

Air/Fuel Ratio (A/F) Sensor Heater Monitor Readiness Code

NOTE: All readiness codes are cleared when the battery is disconnected or when the ECM is cleared with the OBD II scan tool or Honda PGM Tester.

Procedure
1. Connect the scan tool to the vehicle's data link connector (DLC), and bring up the tool's generic OBD II mode.
2. Start the engine, and let it idle for 1 minute. The readiness code should switch from incomplete to complete.
3. If the readiness code is still set to incomplete, check for a temporary DTC. If there is no DTC, repeat the procedure.

(cont'd)

How to Set Readiness Codes (cont'd)

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.

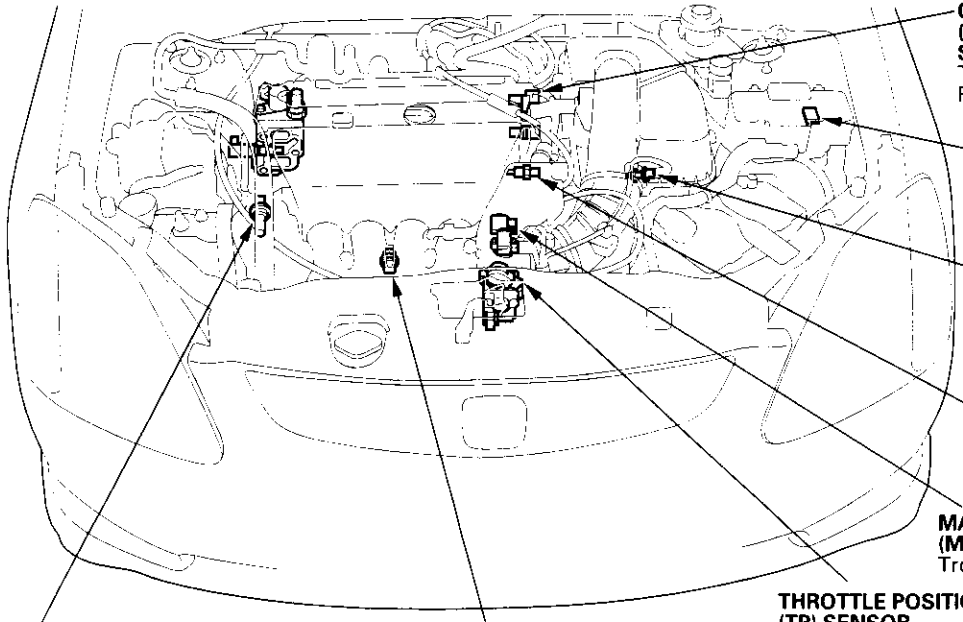
Fuel System Monitor and Readiness Code

- 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.

Component Location Index



CAMSHAFT POSITION (CMP) SENSOR B (TOP DEAD CENTER (TDC) SENSOR)
Troubleshooting, page 11-95
Replacement, page 11-114

ELECTRICAL LOAD DETECTOR (ELD)
Troubleshooting, page 11-92

INTAKE AIR TEMPERATURE (IAT) SENSOR
Troubleshooting, page 11-55
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ENGINE COOLANT TEMPERATURE (ECT) SENSOR
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MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR
Troubleshooting, page 11-52

THROTTLE POSITION (TP) SENSOR
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CRANKSHAFT POSITION (CKP) SENSOR
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KNOCK SENSOR
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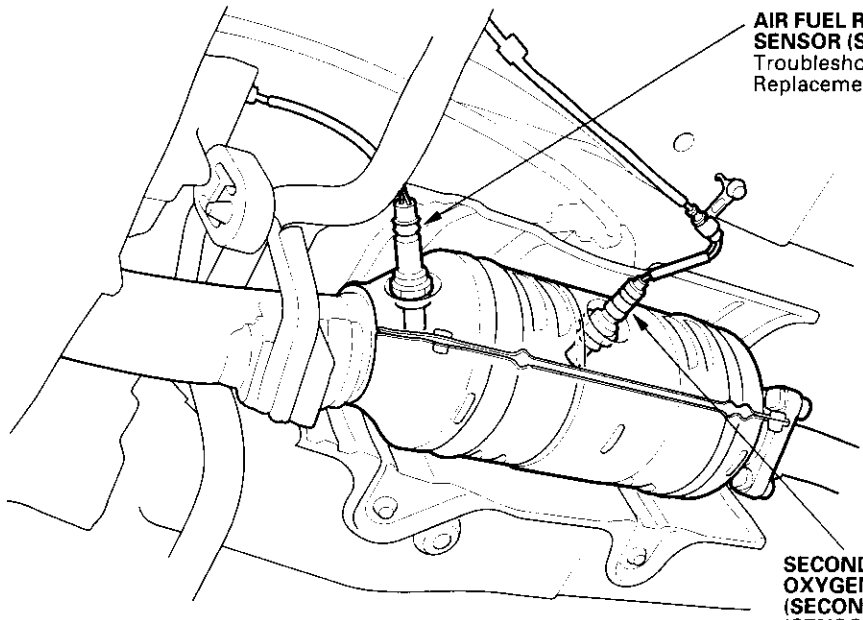
Replacement, page 11-115



AIR FUEL RATIO (A/F) SENSOR (SENSOR 1)
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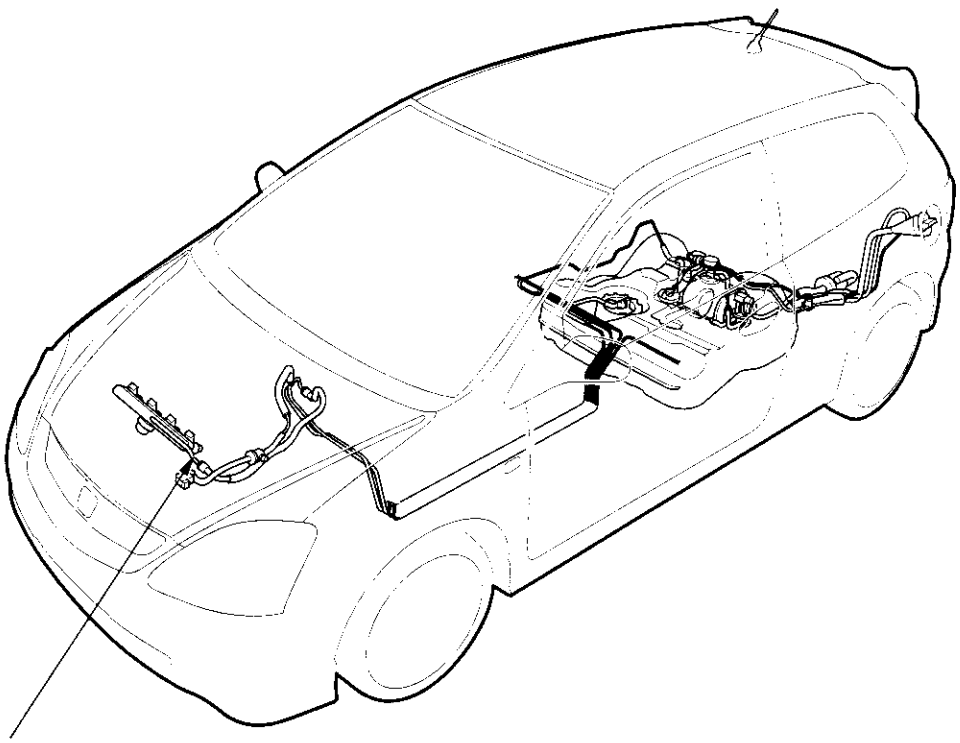
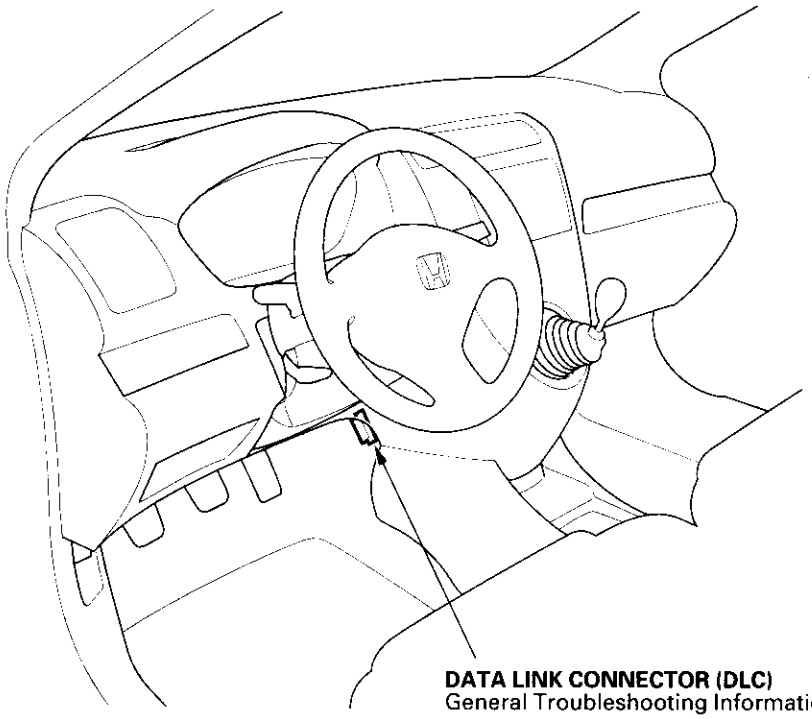
SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO2S) (SENSOR 2)
Troubleshooting, page 11-65
Replacement, page 11-113

(cont'd)

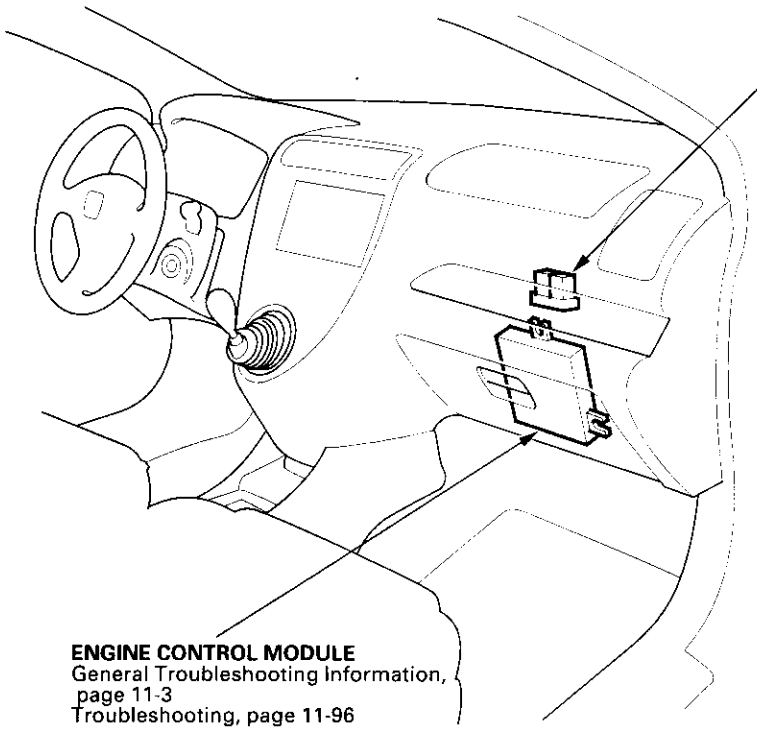
Component Location Index (cont'd)



INJECTORS
Replacement, page 11-111



DATA LINK CONNECTOR (DLC)
General Troubleshooting Information, page 11-3



PGM-FI MAIN RELAY 1
Troubleshooting, page 11-97

ENGINE CONTROL MODULE
General Troubleshooting Information, page 11-3
Troubleshooting, page 11-96

DTC Troubleshooting

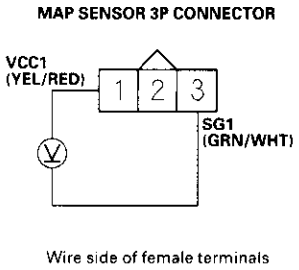
DTC P0107: MAP Sensor Circuit Low Voltage

1. Turn the ignition switch ON (II).
2. Check the MAP with the scan tool.

   Is about 101 kPa (760 mmHg, 30 in.Hg) or 2.9 V indicated?

   YES—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the MAP sensor and at the ECM.■

   NO—Go to step 3.
3. Turn the ignition switch OFF.
4. Disconnect the MAP sensor 3P connector.
5. Turn the ignition switch ON (II).
6. Measure voltage between MAP sensor 3P connector terminals No. 1 and No. 3.



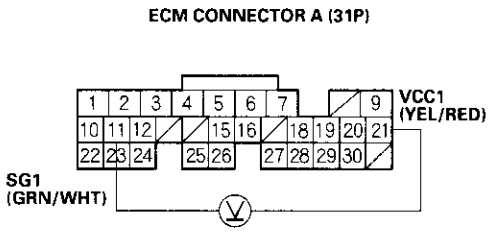
Wire side of female terminals

Is there about 5 V?

YES—Go to step 8.

NO—Go to step 7.

7. Measure voltage between ECM connector terminals A11 and A21.



Wire side of female terminals

Is there about 5 V?

YES—Repair open in the wire between the ECM (A21) and the MAP sensor.■

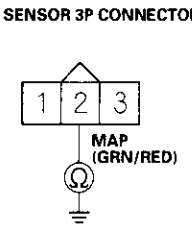
NO—Update the ECM if it does not have the latest software, or substitute a known-good ECM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM, replace the original ECM.■

8. Check the MAP with the scan tool.

   Is 2 kPa (15 mmHg, 0.6 in.Hg) or less or 0 V indicated?

   YES—Go to step 9.

   NO—Replace the MAP sensor.■
9. Turn the ignition switch OFF.
10. Disconnect ECM connector A (31P).
11. Check for continuity between MAP sensor connector terminal No. 2 and body ground.



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the ECM (A19) and the MAP sensor.■

NO—Update the ECM if it does not have the latest software, or substitute a known-good ECM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM, replace the original ECM.■

DTC P0108: MAP Sensor Circuit High Voltage

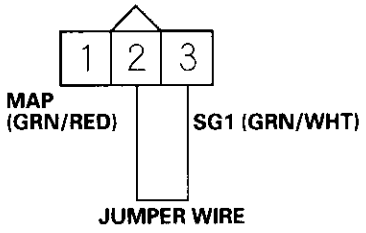
1. Start the engine. Hold the engine at 3,000 rpm with no load (in neutral) until the radiator fan comes on, then let it idle.
2. Check the MAP with the scan tool.

   Is about 101 kPa (780 mmHg, 30 in.Hg) or higher, or about 2.9 V or higher indicated?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the MAP sensor and at the ECM.■
3. Turn the ignition switch OFF.
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

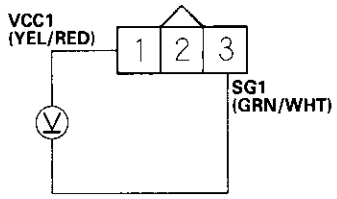
6. Turn the ignition switch ON (II).
7. Check the MAP with the scan tool.

   Is about 101 kPa (760 mmHg, 30 in.Hg) or higher, or about 2.9 V or higher indicated?

   YES—Go to step 8.

   NO—Replace the MAP sensor.■
8. Remove the jumper wire.
9. Measure voltage between MAP sensor 3P connector terminals No. 1 and No. 3.

MAP SENSOR 3P CONNECTOR



Wire side of female terminals

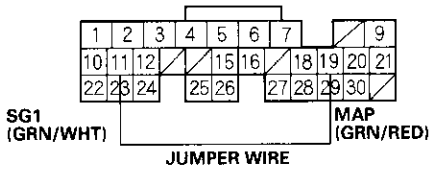
Is there about 5 V?

YES—Go to step 10.

NO—Repair open in the wire between the ECM (A11) and the MAP sensor.■

10. Turn the ignition switch OFF.
11. Connect ECM connector terminals A11 and A19 with a jumper wire.

ECM CONNECTOR A (31P)



Wire side of female terminals

12. Turn the ignition switch ON (II).
13. Check the MAP with the scan tool.

    Is about 101 kPa (760 mmHg, 30 in.Hg) or higher, or about 2.9 V or higher indicated?

    YES—Update the ECM if it does not have the latest software, or substitute a known-good ECM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM, replace the original ECM.■

    NO—Repair open in the wire between the ECM (A19) and the MAP sensor.■

DTC Troubleshooting (cont'd)

DTC P1128: MAP Sensor Signal Lower Than Expected

1. Turn the ignition switch ON (II).
2. Check the MAP with the scan tool.

   Is 54.1 kPa (406 mmHg, 16.0 in.Hg), 1.6 V, or higher indicated?

   YES—Intermittent failure, system is OK at this time. ■

   NO—Replace the MAP sensor. ■

DTC P1129: MAP Sensor Signal Higher Than Expected

1. Start the engine. Hold the engine at 3,000 rpm with no load (in neutral) until the radiator fan comes on, then let it idle.
2. Check the MAP with the scan tool.

   Is 36.9 kPa (277 mmHg, 10.9 in.Hg), 1.1 V, or less indicated?

   YES—Intermittent failure, system is OK at this time. ■

   NO—Replace the MAP sensor. ■

DTC P0112: IAT Sensor Circuit Low Voltage

1. Turn the ignition switch ON (II).
2. Check the IAT with the scan tool.

   Is 302°F (150°C) or higher (or H-Limit in Honda mode of PGM Tester), or 0 V indicated?

   YES—Go to step 3.

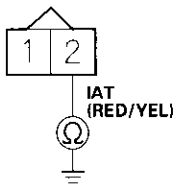
   NO—Go to step 8.
3. Disconnect the IAT sensor 2P connector.
4. Check the IAT with the scan tool.

   Is 302°F(150°C) or higher (or H-Limit in Honda mode of PGM Tester), or 0 V indicated?

   YES—Go to step 5.

   NO—Replace the IAT sensor.■
5. Turn the ignition switch OFF.
6. Disconnect ECM connector B (24P).
7. Check for continuity between IAT sensor 2P connector terminal No. 2 and body ground.

IAT SENSOR 2P CONNECTOR



Wire side of female terminals

   Is there continuity?

   YES—Repair short in the wire between the ECM (B17) and the IAT sensor.■

   NO—Update the ECM if it does not have the latest software, or substitute a known-good ECM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM, replace the original ECM.■
8. Check the temperature reading on the scan tool. Be aware that if the engine is warm, the reading will be higher than ambient temperature. If the engine is cold, the IAT and ECT will have the same value.

   Is the correct ambient temperature indicated?

   YES—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the IAT sensor and at the ECM.■

   NO—Replace the IAT sensor.■

DTC Troubleshooting (cont'd)

DTC P0113: IAT Sensor Circuit High Voltage

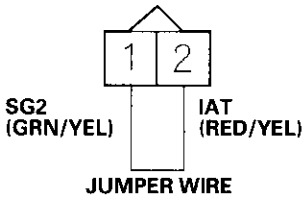
1. Turn the ignition switch ON (II).
2. Check the IAT with the scan tool.

   Is −4°F (−20°C) or less (or L-Limit in Honda mode of PGM Tester) or 5 V indicated?

   YES—Go to step 3.

   NO—Intermitent failure, system is OK at this time. Check for poor connections or loose terminals at the IAT sensor and at the ECM. ■
3. Turn the ignition switch OFF.
4. Disconnect the IAT sensor 2P connector.
5. Connect IAT sensor 2P connector terminals No. 1 and No. 2 with a jumper wire.

IAT SENSOR 2P CONNECTOR



Wire side of female terminals

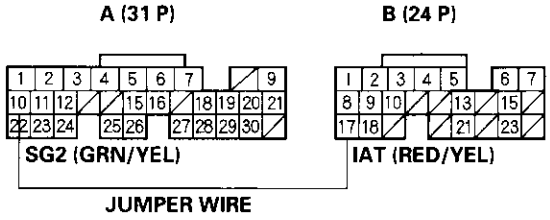
6. Turn the ignition switch ON (II).
7. Check the IAT with the scan tool.

   Is −4°F (−20°C) or less (or L-Limit in Honda mode of PGM Tester) or 5 V indicated?

   YES—Go to step 8.

   NO—Replace the IAT sensor. ■
8. Turn the ignition switch OFF.
9. Remove the jumper wire.
10. Connect ECM connector terminals A10 and B17 with a jumper wire.

ECM CONNECTORS



Wire side of female terminals

11. Turn the ignition switch ON (II).
12. Check the IAT with the scan tool.

    Is −4°F (−20°C) or less (or L-Limit in Honda mode of PGM Tester) or 5 V indicated?

    YES—Update the ECM if it does not have the latest software, or substitute a known-good ECM then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM, replace the original ECM. ■

    NO—Repair open in the wire between the ECM (A10, B17) and the IAT sensor. ■

DTC P0116: ECT Sensor Range/Performance Problem

NOTE: If DTC P0117 and/or P0118 are stored at the same time as DTC P0116, troubleshoot those DTCs first, then recheck for DTC P0116.

1. Start the engine. Hold the engine at 3,000 rpm with no load (in neutral) until the radiator fan comes on, then let it idle.

2. Check the ECT with the scan tool.

   Is 176—212°F (80—100°C) or 0.5—0.8 V indicated?

   YES—Intermittent failure, system is OK at this time. Check the thermostat and the cooling system. ■

   NO—Check the thermostat and the cooling system. If they are OK, replace the ECT sensor. ■

DTC Troubleshooting (cont'd)

DTC P0117: ECT Sensor Circuit Low Voltage

1. Turn the ignition switch ON (II).
2. Check the ECT with the scan tool.

   Is 150°C (302°F) or higher (or H-Limit in Honda mode of PGM Tester) or 0 V indicated?

   YES—Go to step 3.

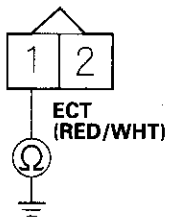
   NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the ECT sensor and at the ECM.■
3. Disconnect the ECT sensor 2P connector.
4. Check the ECT with the scan tool.

   Is 150°C (302°F) or higher (or H-Limit in Honda mode of PGM Tester) or 0 V indicated?

   YES—Go to step 5.

   NO—Replace the ECT sensor.■
5. Turn the ignition switch OFF.
6. Disconnect ECM connector B (24P).
7. Check for continuity between the ECT sensor 2P connector terminal No. 1 and body ground.

ECT SENSOR 2P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the ECM (B8) and the ECT sensor.■

NO—Update the ECM if it does not have the latest software,or substitute a known-good ECM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM, replace the original ECM.■

DTC P0118: ECT Sensor Circuit High Voltage

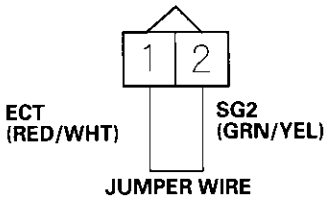
1. Turn the ignition switch ON (II).
2. Check the ECT with the scan tool.

   Is −20°C (−4°F) or less (or L-Limit in Honda mode of PGM Tester) or 5 V indicated?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the ECT sensor and at the ECM. ■
3. Turn the ignition switch OFF.
4. Disconnect the ECT sensor 2P connector.
5. Connect the ECT sensor 2P connector terminals No. 1 and No. 2 with a jumper wire.

ECT SENSOR 2P CONNECTOR



Wire side of female terminals

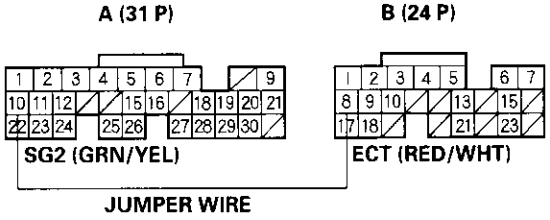
6. Turn the ignition switch ON (II).
7. Check the ECT with the scan tool.

   Is −20°C (−4°F) or less (or L-Limit in Honda mode of PGM Tester) or 5 V indicated?

   YES—Go to step 8.

   NO—Replace the ECT sensor. ■
8. Turn the ignition switch OFF.
9. Remove the jumper wire.
10. Connect ECM connector terminals A10 and B8 with a jumper wire.

ECM CONNECTORS



Wire side of female terminals

11. Turn the ignition switch ON (II).
12. Check the ECT with the scan tool.

    Is −20°C (−4°F) or less (or L-Limit in Honda mode of PGM Tester) or 5 V indicated?

    YES—Update the ECM if it does not have the latest software, or substitute a known-good ECM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM, replace the original ECM. ■

    NO—Repair open in the wire between the ECM (A10, B8) and the ECT sensor. ■

DTC Troubleshooting (cont'd)

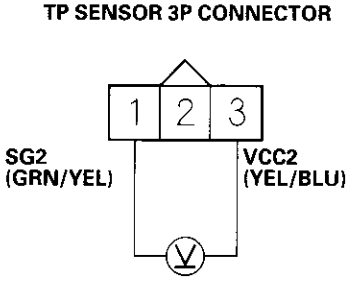
DTC P0122: TP Sensor Circuit Low Voltage

1. Turn the ignition switch ON (II).
2. Check the throttle position with the scan tool.

   Is there about 10% or 0.5 V when the throttle is fully closed and about 90% or 4.5 V when the throttle is fully opened?

   YES—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the TP sensor and at the ECM.■

   NO—Go to step 3.
3. Turn the ignition switch OFF.
4. Disconnect the TP sensor 3P connector.
5. Turn the ignition switch ON (II).
6. Measure voltage between the TP sensor 3P connector terminals No. 1 and No. 3.



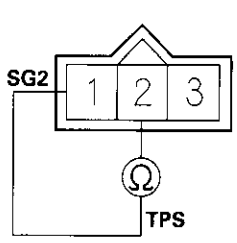
Wire side of female terminals

Is there about 5 V?

YES—Go to step 7.

NO—Go to step 14.

7. Turn the ignition switch OFF.
8. At the sensor side, measure resistance between the TP sensor 3P connector terminals No. 1 and No. 2 with the throttle fully closed.



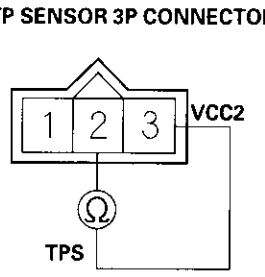
Terminal side of male terminals

Is there about 0.5—0.9 kΩ ?

YES—Go to step 9.

NO—Replace the throttle body (the TP sensor is not available separately).■

9. Measure resistance between the TP sensor 3P connector terminals No. 2 and No. 3 with the throttle fully closed.



Terminal side of male terminals

Is there about 4.5kΩ ?

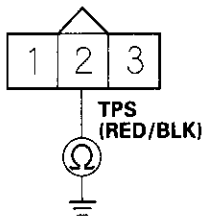
YES—Go to step 10.

NO—Replace the throttle body (the TP sensor is not available separately).■

10. Disconnect ECM connector A (31P).

11. At the wire harness side, check for continuity between TP sensor 3P connector terminal No. 2 and body ground.

TP SENSOR 3P CONNECTOR



Wire side of female terminals

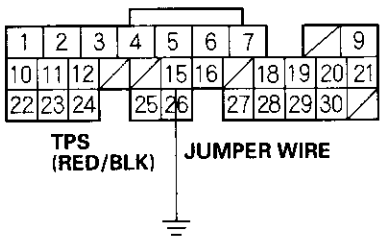
Is there continuity?

YES—Repair short in the wire between the ECM (A15) and the TP sensor. ■

NO—Go to step 12.

12. Connect ECM connector terminal A15 to body ground with a jumper wire.

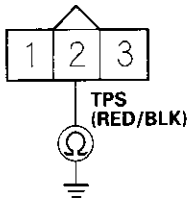
ECM CONNECTOR A (31P)



Wire side of female terminals

13. At the wire harness side, check for continuity between TP sensor 3P connector terminal No. 2 and body ground.

TP SENSOR 3P CONNECTOR



Wire side of female terminals

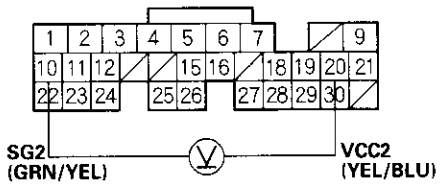
Is there continuity?

YES—Update the ECM if it does not have the latest software, or substitute a known-good ECM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM, replace the original ECM. ■

NO—Repair open in the wire between the ECM (A15) and the TP sensor. ■

14. Measure voltage between ECM connector terminals A10 and A20.

ECM CONNECTOR A (31P)



Wire side of female terminals

Is there about 5 V?

YES—Repair open in the wire between the ECM (A20) and the TP sensor. ■

NO—Update the ECM if it does not have the latest software, or substitute a known-good ECM, then recheck (see page 11-6). If the symptom indication goes away with a known-good ECM, replace the original ECM. ■

DTC Troubleshooting (cont'd)

DTC P0123: TP Sensor Circuit High Voltage

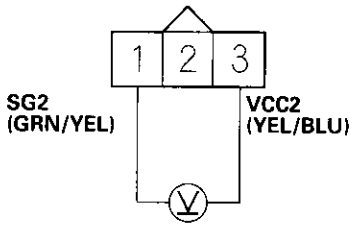
1. Turn the ignition switch ON (II).
2. Check the throttle position with the scan tool.

   Is there about 10% or 0.5 V when the throttle is fully closed and about 90% or 4.5 V when the throttle is fully opened?

   YES—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the TP sensor and at the ECM. ■

   NO—Go to step 3.
3. Turn the ignition switch OFF.
4. Disconnect the TP sensor 3P connector.
5. Turn the ignition switch ON (II).
6. At the wire harness side, measure voltage between the TP sensor 3P connector terminals No. 1 and No. 3.

TP SENSOR 3P CONNECTOR



Wire side of female terminals

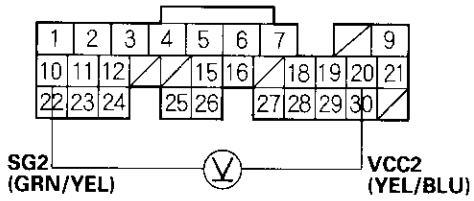
Is there about 5 V?

YES—Replace the throttle body (the TP sensor is not available separately). ■

NO—Go to step 7.

7. Measure voltage between ECM connector terminals A10 and A20.

ECM CONNECTOR A (31P)



Wire side of female terminals

Is there about 5 V?

YES—Repair open in the wire between the ECM (A10) and the TP sensor. ■

NO—Update the ECM if it does not have the latest software, or substitute a known-good ECM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM, replace the original ECM. ■

DTC P1121: TP Sensor Signal Lower Than Expected

1. Turn the ignition switch ON (II).
2. Check the throttle position with the scan tool.

   Is 12.9 %, 0.6 V, or higher indicated when the throttle is fully opened?

   YES—Intermittent failure, system is OK at this time. ■

   NO—Replace the TP sensor (the TP sensor is not available separately). ■

DTC P1122: TP Sensor Signal Higher Than Expected

1. Turn the ignition switch ON (II).
2. Check the throttle position with the scan tool.

   Is 12.9 %, 0.6 V, or less indicated when the throttle is fully closed?

   YES—Intermittent failure, system is OK at this time. ■

   NO—Replace the TP sensor (the TP sensor is not available separately). ■

DTC Troubleshooting (cont'd)

DTC P0128: Cooling System Malfunction

NOTE: If the DTCs listed below are stored at the same time as DTC P0128, troubleshoot those DTCs first, then recheck for P0128.

P0107, P0108, P1128, P1129: Manifold absolute pressure (MAP) sensor
P1106, P1107, P1108: Barometric pressure (BARO) sensor
P1259: VTEC system
P0116, P0117, P0118: Engine coolant temperature (ECT) sensor
P0112, P0113: Intake air temperature (IAT) sensor
P0500: Vehicle speed sensor (VSS)
P0335, P0336: Crankshaft position (CKP) sensor
P0300: Random misfire
P0301, P0302, P0303, P0304: No. 1, No. 2, No. 3 or No. 4 cylinder misfire
P0505: Idle control system malfunction
P1519: Idle air control (IAC) valve

DTC P0128 can occasionally set when the hood is opened while the engine is running.

1. Check the engine coolant level.

   Is the engine coolant level low?

   YES—Refill the engine coolant. If necessary, repair the coolant leakage.■

   NO—Go to step 2.

2. Turn the ignition switch ON (II), and make sure the A/C is off.

3. Check the radiator fan.

   Does the radiator fan keep running?

   YES—Check the radiator fan circuit (see page 10-14), the radiator fan switch circuit (Short) (see page 10-16), and the radiator fan switch (see page 10-17). Also, inspect the ECT and IAT circuits and terminal connections. If the circuits, the switch, and the connections are OK, update the ECM if it does not have the latest software, or substitute a known-good ECM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM, replace the original ECM.■

   NO—Replace the thermostat (see page 10-8).■

DTC P0134: A/F Sensor (Sensor 1) No Activity Detected

1. Check the attachment state of the A/F sensor (Sensor 1).

   Is it slacked from the exhaust pipe?

   YES—Reinstall the A/F sensor (Seneor 1) (see page 11-113).■

   NO—Go to step 2.

2. Reset the ECM (see page 11-4).

3. Start the engine. Hold the engine speed at 3,000rpm with no load (in neutral) until the radiator fan comes on, then let it idle for 2 minute.

   Is DTC PO134 indicated?

   YES—Replace the A/F sensor (Seneor 1) (see page 11-113).■

   NO—Intermittent failure, sistem is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Seneor 1) and the ECM.■

DTC P0137: Secondary HO2S (Sensor 2) Circuit Low Voltage

1. Reset the ECM (see page 11-4).

2. Start the engine. Hold the engine at 3,000 rpm with no load (in neutral) until the radiator fan comes on.

3. Check the secondary HO2S (Sensor 2) output voltage at 3,000 rpm with the scan tool.

   Is there 0.3 V or less?

   YES—Go to step 4.

   NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and at the ECM.■

4. Turn the ignition switch OFF.

5. Disconnect the secondary HO2S (Sensor 2) 4P connector.

6. Turn the ignition switch ON (II).

7. Check the secondary HO2S (Sensor 2) output voltage with the scan tool.

   Is there 0.3 V or less?

   YES—Go to step 8.

   NO—Replace the secondary HO2S (Sensor 2).■

8. Turn the ignition switch OFF.

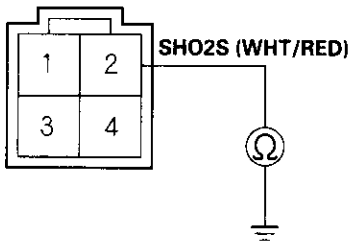
9. Disconnect ECM connector E (31P).

(cont'd)

DTC Troubleshooting (cont'd)

10. Check for continuity between the 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 (E2) and the secondary HO2S (Sensor 2).■

NO—Update the ECM if it does not have the latest software, or substitute a known-good ECM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM, replace the original ECM.■

DTC P0138: Secondary HO2S (Sensor 2) Circuit High Voltage

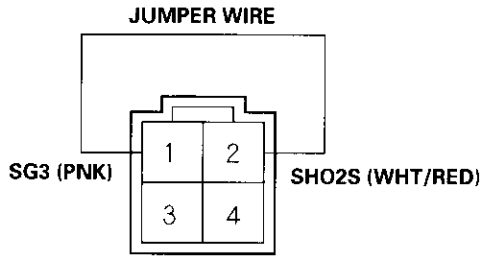
1. Reset the ECM (see page 11-4).
2. Start the engine. Hold the engine at 3,000 rpm with no load (in neutral) until the radiator fan comes on.
3. Check the secondary HO2S (Sensor 2) output voltage at 3,000 rpm with the scan tool.

   Is there 1.0 V or more?

   YES—Go to step 4.

   NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and at the ECM.■
4. Turn the ignition switch OFF.
5. Disconnect the secondary HO2S (Sensor 2) 4P connector.
6. 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

7. Turn the ignition switch ON (II).

8. Check the secondary HO2S (Sensor 2) output voltage with the scan tool.

   Is there 1.0 V or more?

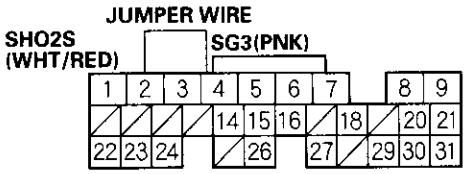
   YES—Go to step 9.

   NO—Replace the secondary HO2S (Sensor 2). ■

9. Turn the ignition switch OFF.

10. Connect ECM connector terminals E2 and E4 with a jumper wire.

ECM CONNECTOR E (31P)



Wire side of female terminals

11. Turn the ignition switch ON (II).

12. Check the secondary HO2S (Sensor 2) output voltage with the scan tool.

    Is there 1.0 V or more?

    YES—Update the ECM if it does not have the latest software, or substitute a known-good ECM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM, replace the original ECM. ■

    NO—Repair open in the wire between the ECM (E2, E4) and the secondary HO2S (Sensor 2). ■

DTC P0139: Secondary HO2S (Sensor 2) Slow Response

1. Reset the ECM (see page 11-4).

2. Start the engine. Hold the engine at 3,000 rpm with no load (in neutral) until the radiator fan comes on.

3. Check the secondary HO2S (Sensor 2) output voltage at 3,000 rpm with the scan tool.

   Is there 0.3—0.8 V, for 2 minutes?

   YES—Replace the secondary HO2S (Sensor 2). ■

   NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and at the ECM. ■

DTC Troubleshooting (cont'd)

DTC P0141: Secondary HO2S (Sensor 2) Heater Circuit Malfunction

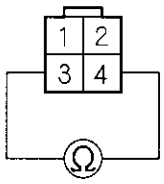
1. Reset the ECM (see page 11-4).
2. Start the engine.

   Is DTC P0141 indicated?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and at the ECM. ■
3. Turn the ignition switch OFF.
4. Disconnect the secondary HO2S (Sensor 2) 4P connector.
5. At the secondary HO2S (Sensor 2) side, measure resistance between HO2S 4P connector terminals No. 3 and No. 4.

SECONDARY HO2S (SENSOR 2) 4P CONNECTOR



Wire side of female terminals

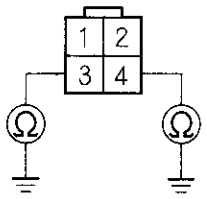
Is there about 3.3 Ω ?

YES—Go to step 6.

NO—Replace the secondary HO2S (Sensor 2). ■

6. 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

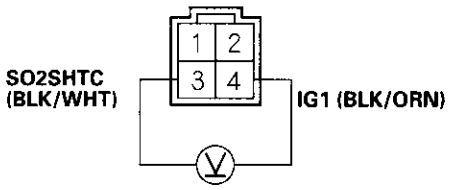
Is there continuity?

YES—Replace the secondary HO2S (Sensor 2). ■

NO—Go to step 7.

7. Turn the ignition switch ON (II).
8. Measure voltage between secondary HO2S 4P connector terminals No. 3 and No. 4.

SECONDARY HO2S (SENSOR 2) 4P CONNECTOR



Terminal side of male terminals

Is there battery voltage?

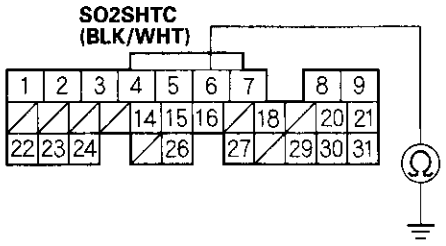
YES—Go to step 9.

NO—Go to step 12.

9. Turn the ignition switch OFF.
10. Disconnect ECM connector E (31P) .

11. Check for continuity between ECM connector terminal E6 and body ground.

ECM CONNECTOR E (31P)



Wire side of female terminals

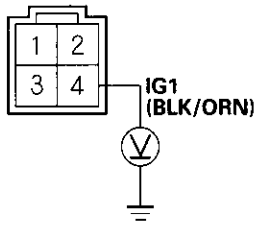
Is there continuity?

YES—Repair short in the wire between the ECM (E6) and the secondary HO2S (Sensor 2).■

NO—Update the ECM if it does not have the latest software, or substitute a known-good ECM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM, replace the original ECM.■

12. Measure 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 13.

NO—Check the No. 4 ACG (10A) fuse in the under-dash fuse/relay box. If the fuse is OK, repair open in the wire between the secondary HO2S (Sensor 2) and No. 4 ACG (10A) fuse.■

13. Turn the ignition switch OFF.

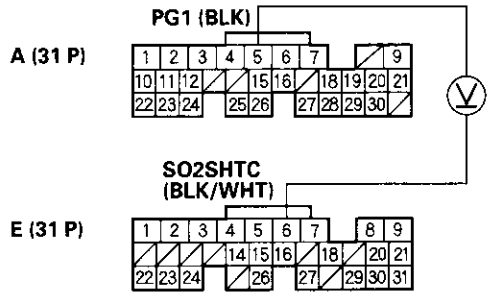
14. Reconnect the secondary HO2S (Sensor 2) 4P connector.

15. Disconnect ECM connector E (31P).

16. Turn the ignition switch ON (II).

17. Measure voltage between ECM connector terminal E6 and A5.

ECM CONNECTORS



Wire side of female terminals

Is there 0.1 V or less?

YES—Repair open in the wire between the ECM (E6) and the secondary HO2S (Sensor 2).■

NO—Update the ECM if it does not have the latest software, or substitute a known-good ECM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM, replace the original ECM.■

DTC Troubleshooting (cont'd)

DTC P0171: Fuel System Too Lean

DTC P0172: Fuel System Too Rich

NOTE: If some of the DTCs listed below are stored at the same time as DTC P0171 and/or P0172, troubleshoot those DTCs first, then recheck for P0171 and/or P0172.

P0107, P0108, P1128, P1129: Manifold absolute pressure (MAP) sensor
P1162, P1166, P1167: A/F sensor (Sensor 1) heater
P0137, P0138: Secondary HO2S (Sensor 2)
P0141: Secondary HO2S (Sensor 2) heater
P1259: VTEC system

1. Check the fuel pressure (see page 11-145).

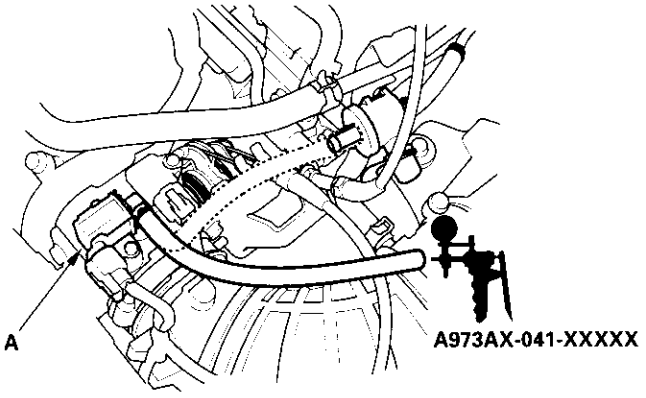
   Is fuel pressure OK?

   YES—Go to step 2.

   NO—Check these items:

   - If the pressure is too high, replace the fuel pressure regulator (see page 11-152).■
   - If the pressure is too low, check the fuel pump, the fuel feed pipe, the fuel filter, and replace the fuel pressure regulator (see page 11-152).■

2. Start the engine. Hold the engine at 3,000 rpm with no load (in neutral) until the radiator fan comes on.
3. Turn the ignition switch OFF.
4. With a vacuum pump, apply vacuum to the evaporative emission (EVAP) canister purge valve (A) from the evaporative emission (EVAP) canister side.



Does it hold vacuum?

YES—Check the engine valve clearances and adjust if necessary. If the valve clearances are OK, replace the injectors (see page 11-111).■

NO—Replace the EVAP canister purge valve.■

DTC P0300: Random Misfire and Any Combination of the Following:

DTC P0301: No. 1 Cylinder Misfire

DTC P0302: No. 2 Cylinder Misfire

DTC P0303: No. 3 Cylinder Misfire

DTC P0304: No. 4 Cylinder Misfire

NOTE:
- If the misfiring is frequent enough to trigger detection of increased emissions during two consecutive driving cycles, the MIL will come on, and DTC P0300 (and some combination of P0301 through P0304) will be stored.
- If the misfiring is frequent enough to damage the catalyst, the MIL will blink whenever the misfiring occurs, and DTC P0300 (and some combination of P0301 through P0304) will be stored. When the misfiring stops, the MIL will remain on.

1. Troubleshoot the following DTCs first if any of them were stored along with the random misfire DTC(s):
   P0107, P0108, P1128, P1129: Manifold absolute pressure (MAP) sensor
   P0171, P0172: Fuel system
   P0335, P0336: Crankshaft position (CKP) sensor
   P0505: Idle control system
   P1149, P1162, P1163, P1164, P1165: Air fuel ratio (A/F) sensor
   P1259: VTEC system
   P1361, P1362: Camshaft position (CMP) sensor B (Top dead center (TDC) sensor)
   P1519: Idle air control (IAC) valve

2. Test-drive the vehicle to verify the symptom.

3. Find the symptom in the chart below, and do the related procedures in the order listed until you find the cause.

Symptom	Procedure(s)	Also check for:
Random misfire only at low RPM and under load	Check fuel pressure (see page 11-145).	• Low compression. • Low quality fuel.
Random misfire only during acceleration	Check fuel pressure (see page 11-145).	Malfunction in the VTEC system (see page 11-123).
Random misfire at high RPM, under load, or under random conditions	Check fuel pressure (see page 11-145).	Correct engine valve clearances (see page 6-9).

DTC Troubleshooting (cont'd)

DTC P0301: No. 1 Cylinder Misfire

DTC P0302: No. 2 Cylinder Misfire

DTC P0303: No. 3 Cylinder Misfire

DTC P0304: No. 4 Cylinder Misfire

1. After checking and recording the freeze data, reset the ECM (see page 11-4). If there is no freeze data of the misfire, just clear the DTC.
2. Start the engine, and listen for a clicking sound from the injector at the problem cylinder.

   Does the injector click?

   YES—Go to step 3.

   NO—Go to step 30.
3. Turn the ignition switch OFF.
4. Exchange the ignition coil from the problem cylinder with one from another cylinder.
5. Test-drive the vehicle for several minutes in the range of the freeze data or under various conditions if there was no freeze data.
6. Check for a DTC or a Temporary DTC with the scan tool.

   Is DTC or Temporary DTC P0301, P0302, P0303 or P0304 indicated?

   YES—Go to step 7.

   NO—Intermittent misfire due to poor contact at the ignition coil connectors (no misfire at this time). Make sure the coil connections are secure.■
7. Determine which cylinder(s) had the misfire.

   Does the misfire occur in the cylinder where the ignition coil was exchanged?

   YES—Replace the faulty ignition coil.■

   NO—Go to step 8.
8. Turn the ignition switch OFF.
9. Exchange the spark plug from the problem cylinder with one from another cylinder.
10. Test-drive the vehicle for several minutes in the range of the freeze data or under various conditions if there was no freeze data.
11. Check for a DTC or Temporary DTC with the scan Tool.

    Is DTC or Temporary DTC P0301, P0302, P0303 or P0304 indicated?

    YES—Go to step 12.

    NO—Intermittent misfire due to spark plug fouling, etc. (no misfire at this time).■
12. Determine which cylinder(s) had the misfire.

    Does the misfire occur in the cylinder where the spark plug was exchanged?

    YES—Replace the faulty spark plug.■

    NO—Go to step 13.
13. Turn the ignition switch OFF.
14. Exchange the injector from the problem cylinder with one from another cylinder.
15. Let the engine idle for 2 minutes.

16. Test-drive the vehicle for several minutes in the range of the freeze data or under various conditions if there was no freeze data.

17. Check for a DTC or a Temporary DTC with the scan Tool.

    Is DTC or Temporary DTC P0301, P0302, P0303 or P0304 indicated?

    YES—Go to step 18.

    NO—Intermittent misfire due to bad contact at the injector connector (no misfire at this time). Make sure the injector connection is secure. Check for poor connections or loose terminals at the injector.■

18. Determine which cylinder(s) had the misfire.

    Does the misfire occur in the cylinder where the injector was exchanged?

    YES—Replace the faulty injector.■

    NO—Go to step 19.

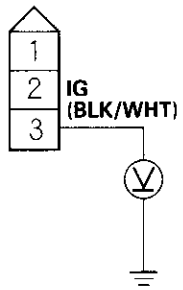
19. Turn the ignition switch OFF.

20. Disconnect the ignition coil 3P connector from the problem cylinder.

21. Turn the ignition switch ON (II).

22. Measure 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?

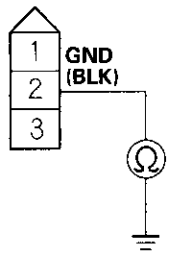
YES—Go to step 23.

NO—Repair open in the wire between the No. 1 IGN COIL (15A) fuse and the ignition coil.■

23. Turn the ignition switch OFF.

24. 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 25.

NO—Repair open in the wire between the ignition coil and G101.■

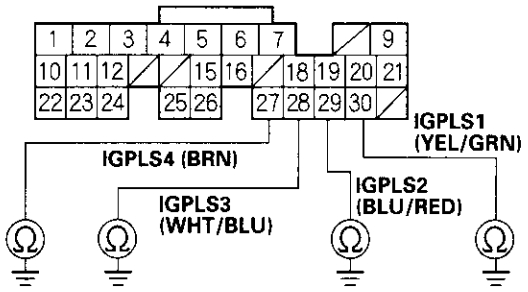
25. Disconnect ECM connector A (31P).

(cont'd)

DTC Troubleshooting (cont'd)

26. Check for continuity between body ground and ECM connector terminal (see table).

ECM CONNECTOR A (31P)



Wire side of female terminals

PROBLEM CYLINDER	DTC	ECM TERMINAL	WIRE COLOR
No. 1	P0301	A30	YEL/GRN
No. 2	P0302	A29	BLU/RED
No. 3	P0303	A28	WHT/BLU
No. 4	P0304	A27	BRN

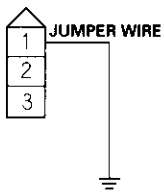
Is there continuity?

YES—Repair short in the wire between the ECM and the ignition coil.■

NO—Go to step 27.

27. Connect ignition coil 3P connector terminal No. 1 to body ground with a jumper wire (see table).

IGNITION COIL 3P CONNECTOR

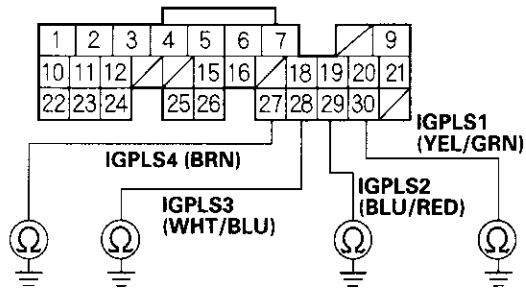


Wire side of female terminals

PROBLEM CYLINDER	DTC	WIRE COLOR
No. 1	P0301	YEL/GRN
No. 2	P0302	BLU/RED
No. 3	P0303	WHT/BLU
No. 4	P0304	BRN

28. Check for continuity between body ground and ECM connector terminal (see table).

ECM CONNECTOR A (31P)



Wire side of female terminals

PROBLEM CYLINDER	DTC	ECM TERMINAL	WIRE COLOR
No. 1	P0301	A30	YEL/GRN
No. 2	P0302	A29	BLU/RED
No. 3	P0303	A28	WHT/BLU
No. 4	P0304	A27	BRN

Is there continuity?

YES—Go to step 29.

NO—Repair open in the wire between the ECM and the ignition coil.■

29. Check the engine compression.

Is the compression OK?

YES—Update the ECM if it does not have the latest software, or substitute a known-good ECM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM, replace the original ECM.■

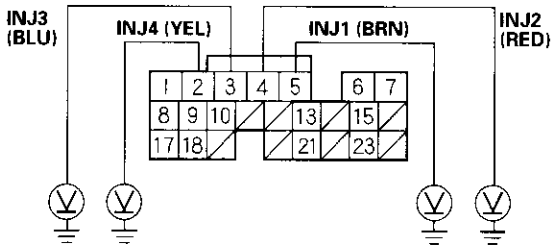
NO—Repair the engine.■

30. Disconnect ECM connector B (24P).

31. Turn the ignition switch ON (II).

32. Measure voltage between body ground and ECM connector terminal (see table).

ECM CONNECTOR B (24P)



Wire side of female terminals

PROBLEM CYLINDER	DTC	ECM TERMINAL	WIRE COLOR
No. 1	P0301	B5	BRN
No. 2	P0302	B4	RED
No. 3	P0303	B3	BLU
No. 4	P0304	B2	YEL

Is there battery voltage?

YES—Go to step 33.

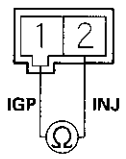
NO—Go to step 41.

33. Turn the ignition switch OFF, and remove the engine cover.

34. Disconnect the injector 2P connector from the problem cylinder.

35. Measure the resistance between injector 2P connector terminals No. 1 and No. 2.

INJECTOR 2P CONNECTOR



Terminal side of male terminals

Is there 10 Ω — 13Ω ?

YES—Go to step 36.

NO—Replace the injector (see page 11-111).■

36. Exchange the injector from the problem cylinder with one from another cylinder.

37. Let the engine idle for 2 minutes.

38. Test-drive the vehicle for several minutes in the range of the freeze data or under various conditions if there was no freeze data.

39. Check for a DTC or Temporary DTC with the scan tool.

Is DTC or Temporary DTC P0301, P0302, P0303, or P0304 indicated?

YES—Go to step 40.

NO—Intermittent misfire due to injector malfunction, etc. Make sure the injector connections are secure. Check for poor connections or loose terminals at the injector connector.■

40. Determine which cylinder(s) had the misfire.

Does the misfire occur in the cylinder where the injector was exchanged?

YES - Replace the faulty injector.■

NO Update the ECM if it does not have the latest software, or substitute a known-good ECM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM, replace the original ECM.■

41. Turn the ignition switch OFF.

42. Remove the engine cover.

43. Disconnect the injector 2P connector from the problem cylinder.

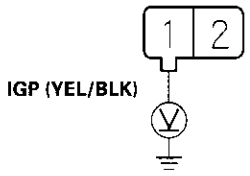
44. Turn the ignition switch ON (II).

(cont'd)

DTC Troubleshooting (cont'd)

45. Measure voltage between injector 2P connector terminal No. 1 and body ground.

INJECTOR 2P CONNECTOR



Wire side of female terminals

Is there battery voltage?

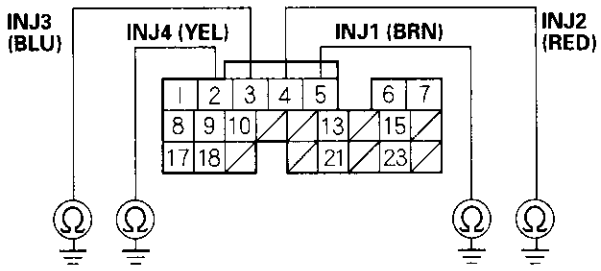
YES—Go to step 46.

NO—Repair open in the wire between the injector and the PGM-FI main relay 1.■

46. Turn the ignition switch OFF.

47. Check for continuity between body ground and ECM connector terminal (see table).

ECM CONNECTOR B (24P)



Wire side of female terminals

PROBLEM CYLINDER	DTC	ECM TERMINAL	WIRE COLOR
No. 1	P0301	B5	BRN
No. 2	P0302	B4	RED
No. 3	P0303	B3	BLU
No. 4	P0304	B2	YEL

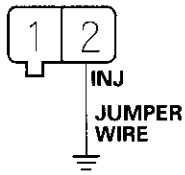
Is there continuity?

YES—Repair short in the wire between the ECM and the injector.■

NO—Go to step 48.

48. Connect injector 2P connector terminal No. 2 to body ground with a jumper wire (see table).

INJECTOR 2P CONNECTOR

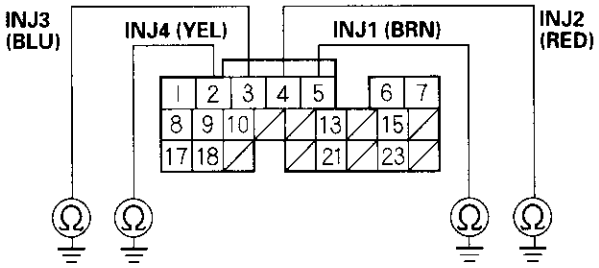


Wire side of female terminals

PROBLEM CYLINDER	DTC	WIRE COLOR
No. 1	P0301	BRN
No. 2	P0302	RED
No. 3	P0303	BLU
No. 4	P0304	YEL

49. Check for continuity between body ground and ECM connector terminal (see table).

ECM CONNECTOR B (24P)



Wire side of female terminals

PROBLEM CYLINDER	DTC	ECM TERMINAL	WIRE COLOR
No. 1	P0301	B5	BRN
No. 2	P0302	B4	RED
No. 3	P0303	B3	BLU
No. 4	P0304	B2	YEL

Is there continuity?

YES—Replace the injector, then recheck.■

NO—Repair open in the wire between the ECM and the injector.■

DTC P0325: Malfunction in Knock Sensor Circuit

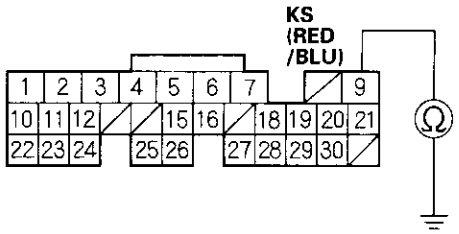
1. Reset the ECM (see page 11-4).
2. Start the engine. Hold the engine at 3,000 rpm with no load (in neutral) until the radiator fan comes on, then let it idle.
3. Hold the engine at 3,000—4,000 rpm for at least 60 seconds.

   Is DTC P0325 indicated?

   YES—Go to step 4.

   NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the knock sensor and at the ECM. ■
4. Turn the ignition switch OFF.
5. Disconnect the starter subharness 6P connector.
6. Check for continuity between ECM connector terminal A9 and body ground.

ECM CONNECTOR A (31P)



Wire side of female terminals

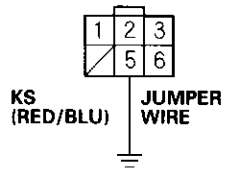
Is there continuity?

YES—Repair short in the wire between the ECM (A9) and the starter subharness 6P connector. ■

NO—Go to step 7.

7. Connect starter subharness 6P connector terminal No. 5 to body ground with a jumper wire.

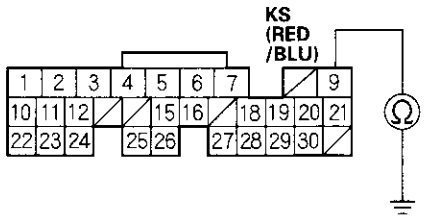
STARTER SUBHARNESS 6P CONNECTOR



Wire side of female terminals

8. Check for continuity between body ground and ECM connector terminal A9.

ECM CONNECTOR A (31P)



Wire side of female terminals

Is there continuity?

YES—Go to step 9.

NO—Repair open in the wire between the ECM (A9) and the starter subharness 6P connector. ■

9. Check the starter subharness between the 6P connector and the knock sensor for an open or short. If it's OK, substitute a known-good knock sensor and recheck.

   Is DTC P0325 indicated?

   YES—Update the ECM if it does not have the latest software, or substitute a known-good ECM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM, replace the original ECM. ■

   NO—Replace the original knock sensor and/or starter subharness. ■

DTC Troubleshooting (cont'd)

DTC P0335: CKP Sensor No Signal

DTC P0336: CKP Sensor Intermittent Interruption

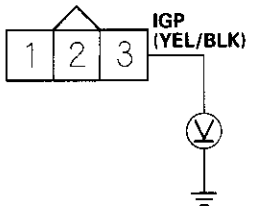
1. Reset the ECM (see page 11-4).
2. Start the engine.

   Is DTC P0335 and/or P0336 indicated?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the CKP sensor and at the ECM.■
3. Turn the ignition switch OFF.
4. Disconnect the CKP sensor 3P connector.
5. Turn the ignition switch ON (II).
6. Measure voltage between CKP sensor 3P connector terminal No. 3 and body ground.

CKP SENSOR 3P CONNECTOR



Wire side of female terminals

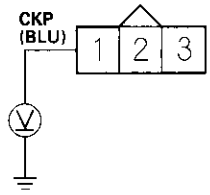
Is there battery voltage?

YES—Go to step 7.

NO—Repair open in the wire between PGM-FI main relay 1 and the CKP sensor.■

7. Measure voltage between CKP sensor 3P connector terminal No. 1 and body ground.

CKP SENSOR 3P CONNECTOR



Wire side of female terminals

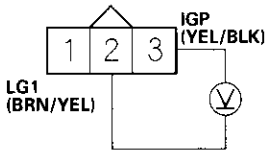
Is there about 5 V?

YES—Go to step 8.

NO—Go to step 10.

8. Measure 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 9.

NO—Repair open in the wire between the CKP sensor and G101.■

9. Substitute a known-good CKP sensor and recheck.

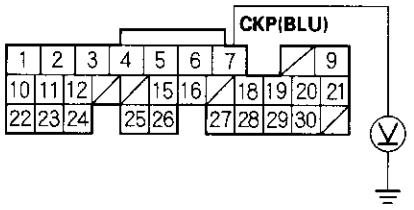
   Is DTC P0335 and/or P0336 indicated?

   YES—Update the ECM if it does not have the latest software, or substitute a known-good ECM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM, replace the original ECM.■

   NO—Replace the original CKP sensor.■

10. Measure voltage between ECM connector terminal A7 and body ground.

ECM CONNECTOR A (31P)



Wire side of female terminals

Is there about 5 V?

YES—Repair open in the wire between the ECM (A7) and the CKP sensor. ■

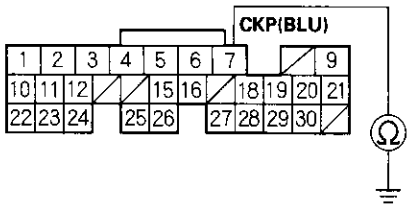
NO—Go to step 11.

11. Turn the ignition switch OFF.

12. Disconnect ECM connector A (31P).

13. Check for continuity between ECM connector terminal A7 and body ground.

ECM CONNECTOR A (31P)



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the ECM (A7) and the CKP sensor. ■

NO—Update the ECM if it does not have the latest software, or substitute a known-good ECM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM, replace the original ECM. ■

DTC Troubleshooting (cont'd)

DTC P0500: VSS Circuit Malfunction

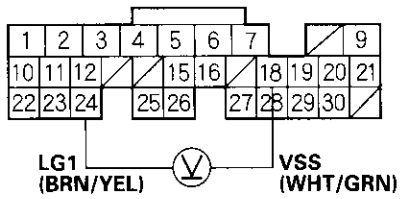
1. Test-drive the vehicle.
2. Check the vehicle speed with the scan tool.

   Is the correct speed indicated?

   YES—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the VSS and at the ECM.■

   NO—Go to step 3.
3. Turn the ignition switch OFF.
4. Block the rear wheels, and set the parking brake.
5. Raise the front of the vehicle, and make sure it is securely supported.
6. Turn the ignition switch ON (II).
7. Block the right front wheel, and slowly rotate the left front wheel.
8. Measure voltage between ECM connector terminals A18 and A24.

ECM CONNECTOR A (31P)



Wire side of female terminals

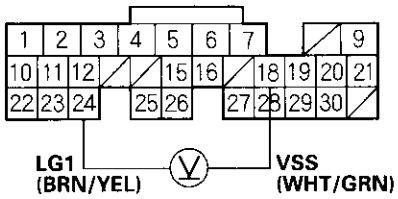
Does the voltage pulse between 0 V and 5 V or between 0V and battery voltage?

YES—Update the ECM if it does not have the latest software, or substitute a known-good ECM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM, replace the original ECM.■

NO—Go to step 9.

9. Turn the ignition switch OFF.
10. Disconnect ECM connector A (31P).
11. Turn the ignition switch ON (II).
12. Block the right front wheel, and slowly rotate the left front wheel.
13. Measure voltage between ECM connector terminals A18 and A24.

ECM CONNECTOR A (31P)



Wire side of female terminals

Does the voltage pulse between 0 V and 5 V or between 0V and battery voltage?

YES—Update the ECM if it does not have the latest software, or substitute a known-good ECM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM, replace the original ECM.■

NO—Check these items:

- A short or an open in the wire between the ECM (A18) and the VSS.■
- If the wire is OK, test the VSS (see page 22-71).■

DTC P0563: ECM Power Source Circuit Unexpected Voltage

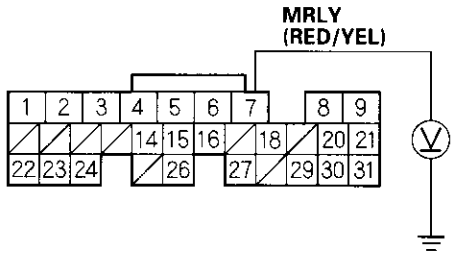
1. Reset the ECM (see page 11-4).
2. Turn the ignition switch OFF.
3. Wait 5 seconds.
4. Turn the ignition switch ON (II).

   Is DTC P0563 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the No. 6 ECU (ECM) (15 A) fuse in the under-hood fuse/relay box and at the ECM.■
5. Turn the ignition switch OFF.
6. Disconnect ECM connector E (31P).
7. Turn the ignition switch ON (II).
8. Measure voltage between ECM connector terminal E7 and body ground.

ECM CONNECTOR E (31P)



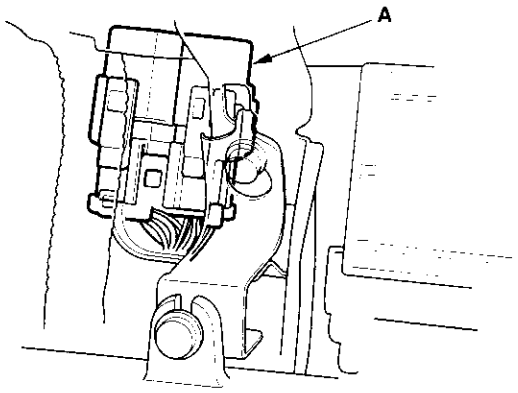
Wire side of female terminals

Is there battery voltage?

YES—Go to step 12.

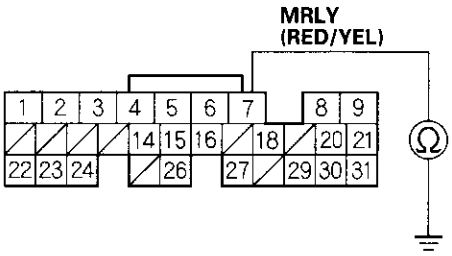
NO—Go to step 9.

9. Remove the glove box (see page 20-63).
10. Remove the PGM-FI main relay 1 (A).



11. Check for continuity between ECM connector terminal E7 and body ground.

ECM CONNECTOR E (31P)



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the ECM (E7) and the PGM-FI main relay 1.■

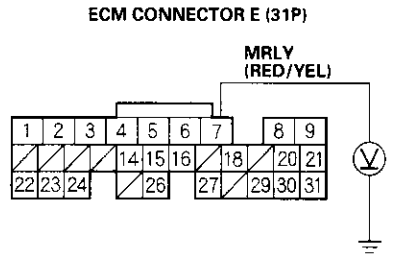
NO—Replace the PGM-FI main relay 1.■

12. Turn the ignition suitch OFF.
13. Reconnect ECM connector E (31P).

(cont'd)

DTC Troubleshooting (cont'd)

14. Measure voltage between ECM connector terminal E7 and body ground.



Wire side of female terminals

Is there battery voltage?

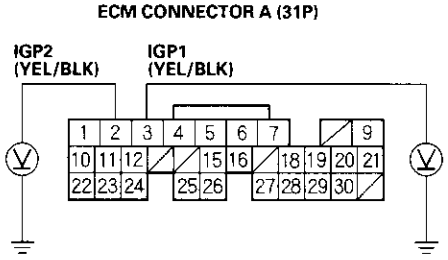
YES—Go to step 15.

NO—Update the ECM if it does not have the latest software, or substitute a known-good ECM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM, replace the original ECM.■

15. Disconnect ECM connector A (31P).

16. Turn the ignition switch ON (II).

17. Measure voltage between body ground and ECM connector terminals A3 and A2 individually.



Wire side of female terminals

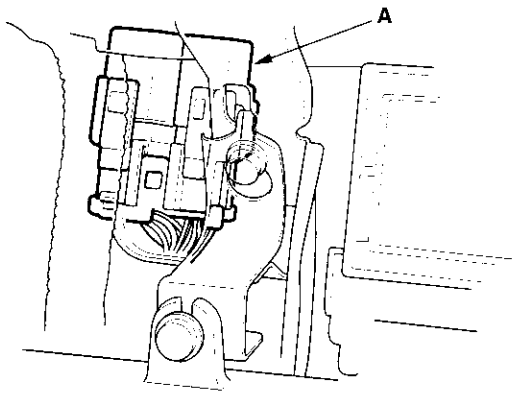
Is there battery voltage?

YES—Go to step 18.

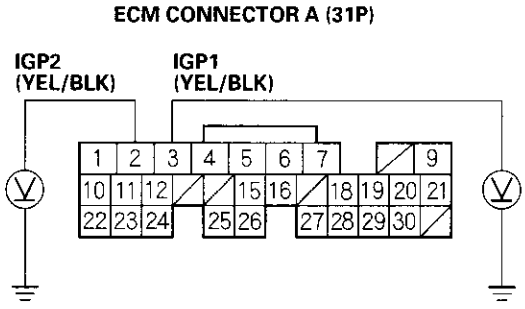
NO—Update the ECM if it does not have the latest software, or substitute a known-good ECM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM, replace the original ECM/PCM.■

18. Remove the glove box (see page 20-63).

19. Remove the PGM-FI main relay 1 (A).



20. Measure voltage between body ground and ECM connector terminals A3 and A2 individually.



Wire side of female terminals

Is there battery voltage?

YES—Repair short to power in the wire between the ECM (A2,A3) and the PGM-FI main relay 1.■

NO—Replace the PGM-FI main relay 1.■

DTC P1106: BARO Sensor Range/Perfomance Problem

1. Reset the ECM (see page 11-4).
2. Start the engine. Hold the engine at 3,000 rpm with no load (in neutral) until the radiator fan comes on, then let it idle.
3. Test-drive with the transmission in 4th gear.
4. Accelerate for 5 seconds using wide open throttle.
5. Check for a Temporary DTC with the scan tool.

   Is Temporary DTC P1106 indicated?

   YES—Update the ECM if it does not have the latest software, or substitute a known-good ECM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM, replace the original ECM.■

   NO—Intermittent failure, system is OK at this time.■

DTC P1107: BARO Sensor Circuit Low Voltage

DTC P1108: BARO Sensor Circuit High Voltage

1. Reset the ECM (see page 11-4).
2. Turn the ignition switch ON (II).

   Is DTC P1107 or P1108 indicated?

   YES—Update the ECM if it does not have the latest software, or substitute a known-good ECM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM, replace the original ECM.■

   NO—Intermittent failure, system is OK at this time.■

DTC Troubleshooting (cont'd)

DTC P1157: A/F Sensor (Sensor 1) Range/ Performance Problem

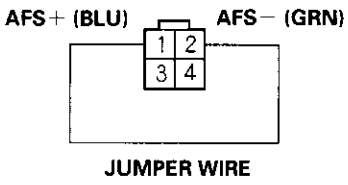
1. Reset the ECM (see page 11-4).
2. Start the engine.

   Is DTC P1157 indicated?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and at the ECM.■
3. Turn the ignition switch OFF.
4. Disconnect the A/F sensor (Sensor 1) 4P connector and ECM connector A (31P).
5. Connect A/F sensor (Sensor 1) 4P connector terminals No. 1 and No. 2 with a jumper wire.

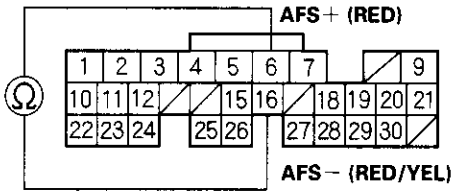
A/F SENSOR (SENSOR 1) 4P CONNECTOR



Wire side of female terminals

6. Check for continuity between ECM connector terminals A6 and A16.

ECM CONNECTOR A (31P)



Wire side of female terminals

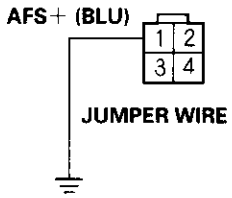
Is there continuity?

YES—Go to step 9.

NO—Go to step 7.

7. Connect A/F sensor (Sensor 1) 4P connector terminal No. 1 to body ground with a jumper wire.

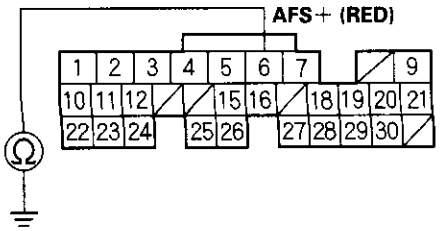
A/F SENSOR (SENSOR 1) 4P CONNECTOR



Wire side of female terminals

8. Check for continuity between ECM connector terminals A6 and body ground.

ECM CONNECTOR A (31P)



Wire side of female terminals

Is there continuity?

YES—Repair open in the wire between the A/F sensor (Sensor 1) and the ECM (A16).■

NO—Repair open in the wire between the A/F sensor (Sensor 1) and the ECM (A6).■

9. Substitute a known-good A/F sensor (Sensor 1) and recheck.

Is DTC P1157 indicated?

YES—Update the ECM if it does not have the latest software, or substitute a known-good ECM, then recheck (see page 11-6). if the symptom/indication goes away with a known-good ECM, replace the original ECM.■

NO—Replace the A/F sensor (Sensor 1).■

DTC P1158: A/F Sensor (Sensor 1) AFS — Terminal Low Voltage

1. Reset the ECM (see page 11-4).
2. Start the engine.

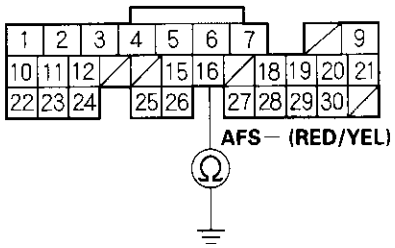
Is DTC P1158 indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and at the ECM■

3. Turn the ignition switch OFF.
4. Disconnect the A/F sensor (Sensor 1) 4P connector, and ECM connector A (31P).
5. Check for continuity between ECM connector terminal A16 and body ground.

ECM CONNECTOR A (31P)



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the A/F sensor (Sensor 1) and the ECM (A16).■

NO—Go to step 6.

(cont'd)

DTC Troubleshooting (cont'd)

6. Substitute a known-good A/F sensor (Sensor 1) and recheck.

   Is DTC P1158 indicated?

   YES—Update the ECM if it does not have the latest software, or substitute a known-good ECM, then recheck (see page 11-6). if the symptom/indication goes away with a known-good ECM, replace the original ECM. ■

   NO—Replace the A/F sensor (Sensor 1). ■

DTC P1159: A/F Sensor (Sensor 1) AFS + Terminal Low Voltage

1. Reset the ECM (see page 11-4).
2. Start the engine.

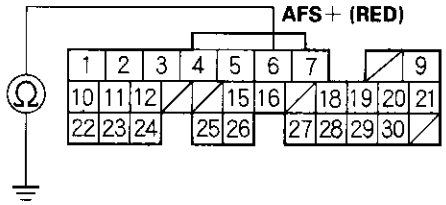
   Is DTC P1159 indicated?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and at the ECM. ■

3. Turn the ignition switch OFF.
4. Disconnect the A/F sensor (Sensor 1) 4P connector and ECM connector A (31P).
5. Check for continuity between ECM connector terminal A6 and body ground.

ECM CONNECTOR A (31P)



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the A/F sensor (Sensor 1) and the ECM (A6). ■

NO—Go to step 6.

6. Substitute a known-good A/F sensor (Sensor 1) and recheck.

Is DTC P1159 indicated?

YES—Update the ECM if it does not have the latest software, or substitute a known-good ECM, then recheck (see page 11-6). if the symptom/indication goes away with a known-good ECM, replace the original ECM.■

NO—Replace the A/F sensor (Sensor 1).■

DTC Troubleshooting (cont'd)

DTC P1163: A/F Sensor (Sensor 1) Slow Response

NOTE: If DTC P1162 is stored at the same time as DTC P1163, troubleshoot DTC P1162 first, then recheck for DTC P1163.

1. Reset the ECM (see page 11-4).
2. Start the engine. Hold the engine at 3,000 rpm with no load (in neutral) until the radiator fan comes on.
3. Test-drive under the following conditions:
   - 55 mph (89 km/h) steady speed
   - Transmission in 5th gear
   - Until the A/F sensor readiness code or Temporary DTC P1163 comes on
4. Check for a Temporary DTC with the scan tool.

   Is Temporary DTC P1163 indicated?

   YES—Replace the A/F sensor (Sensor 1).■

   NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and at the ECM.■

DTC P1164: A/F Sensor (Sensor 1) Circuit Range/Performance Problem

1. Reset the ECM (see page 11-4).
2. Start the engine. Hold the engine at 3,000 rpm with no load (in neutral) until the radiator fan comes on.
3. Test-drive in 3rd gear. Starting at 1,600 rpm, accelerate using wide open throttle for at least 5 seconds. Then decelerate for at least 5 seconds with the throttle completely closed until the A/F sensor readiness code is set to complete or Temporary DTC P1164 comes on.
4. Check for a Temporary DTC with the scan tool.

   Is Temporary DTC P1164 indicated?

   YES—Replace the A/F sensor (Sensor 1).■

   NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the A/F sensor relay, at the A/F sensor (Sensor 1), and at the ECM.■

DTC P1166: A/F Sensor (Sensor 1) Heater Circuit Malfunction

1. Reset the ECM (see page 11-4).
2. Start the engine.

   Is DTC P1166 indicated?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the A/F sensor relay, the A/F sensor (Sensor 1), and the ECM. ■

3. Check the following fuse:

   - No. 14 OPTION (30A) fuse in under-hood fuse/relay box.
   - No. 2+B LAF (A/F) HEATER (20A) fuse in under-dash fuse/relay box.
   - No. 4 ACG (10A) in under-dash fuse/relay box.

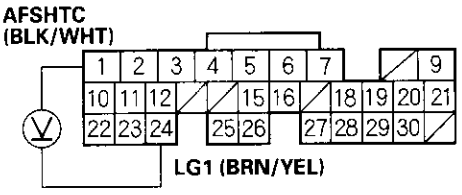
   Are any of the fuses blown?

   YES—Repair short in the wire between the A/F sensor relay and the fuses. ■

   NO—Go to step 4.

4. Measure voltage between ECM connector terminals A1 and A24, 30 seconds after the ignition switch is turned ON (II).

ECM CONNECTOR A (31P)



Wire side of female terminals

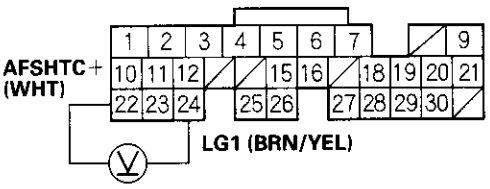
Is there battery voltage?

YES—Update the ECM if it does not have the latest software, or substitute a known-good ECM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM, replace the original ECM. ■

NO—Go to step 5.

5. Measure voltage between ECM connector terminals A22 and A24.

ECM CONNECTOR A (31P)



Wire side of female terminals

Is there battery voltage?

YES—Go to step 6.

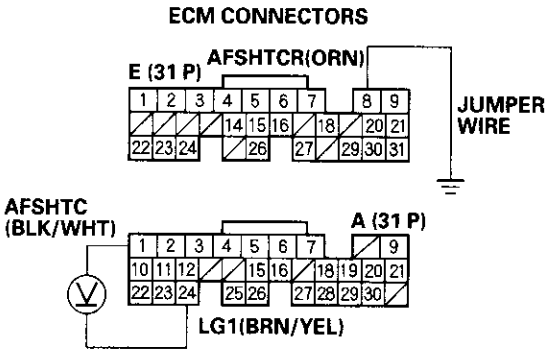
NO—Go to step 10.

6. Turn the ignition switch OFF.
7. Disconnect ECM connector E (31P).
8. Turn the ignition switch ON (II).

(cont'd)

DTC Troubleshooting (cont'd)

9. Connect ECM connector terminal E8 to body ground with a jumper wire, then measure voltage between ECM connector terminals A1 and A24.



Wire side of female terminals

Is there battery voltage?

YES—Update the ECM if it does not have the latest software, or substitute a known-good ECM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM, replace the original ECM.■

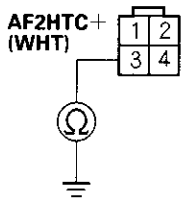
NO—Repair open in the wire between the A/F sensor (Sensor 1) and ECM (A1).■

10. Turn the ignition switch OFF.

11. Disconnect the ECM connector A (31P) and the A/F sensor (Sensor 1) 4P connector.

12. Check for continuity between the A/F sensor (Sensor 1) 4P connector terminal No. 3 and body ground.

A/F SENSOR (SENSOR 1) 4P CONNECTOR



Wire side of female terminals

Is there continuity?

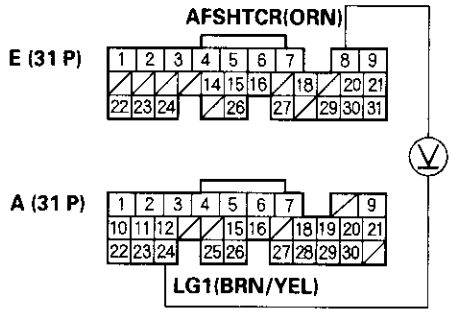
YES—Repair short in the wire between the A/F sensor relay, A/F sensor (Sensor 1) and ECM (A22).■

NO—Go to step 13.

13. Turn the ignition switch ON (II).

14. Measure voltage between ECM connector terminals E8 and A24.

ECM CONNECTORS



Wire side of female terminals

Is there battery voltage?

YES—Repair open in the wire between the ECM (A22) and the A/F sensor (Sensor 1).■

NO—Go to step 15.

15. Check for continuity in the wires between the A/F sensor and the fuses.

Is there continuity?

YES—The wires are OK. Replace the A/F sensor relay.■

NO—Repair open in the wire between the A/F sensor relay and the fuses.■

DTC P1167: A/F Sensor (Sensor 1) Heater Circuit Malfunction

NOTE: If DTC P1162 is stored at the same time as DTC P1167, troubleshoot DTC P1162 first, then troubleshoot DTC P1167.

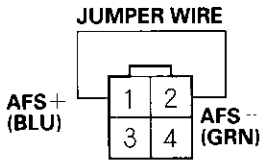
1. Reset the ECM (see page 11-4).
2. Start the engine. Wait for at least 80 seconds.

   Is DTC P01167 indicated?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the A/F sensor relay, at the A/F sensor (Sensor 1), and at the ECM.■
3. Turn the ignition switch OFF.
4. Disconnect the A/F sensor 4P connector and ECM connector A (31P).
5. Connect the A/F sensor (Sensor 1) 4P connector terminals No. 2 and No. 1 with a jumper wire.

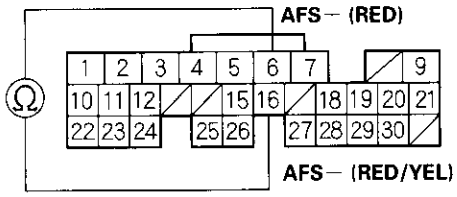
A/F SENSOR (SENSOR 1) 4P CONNECTOR



Wire side of female terminals

6. Check for continuity between ECM connector terminals A6 and A16.

ECM CONNECTOR A (31P)



Wire side of female terminals

Is there continuity?

YES—Replace the A/F sensor (Sensor 1).■

NO—Repair open in the wire between the A/F sensor (Sensor 1) and the ECM (A6 or A16).■

DTC Troubleshooting (cont'd)

DTC P1297: ELD Circuit Low Voltage

1. Reset the ECM (see page 11-4).
2. Start the engine.
3. Turn on the headlights.

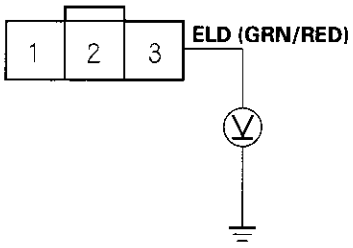
   Is DTC P1297 indicated?

   YES—Go to step 4.

   NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the ELD and at the ECM.■

4. Turn the ignition switch and the headlights OFF.
5. Disconnect the ELD 3P connector.
6. Turn the ignition switch ON (II).
7. Measure voltage between body ground and ELD 3P connector terminal No. 3.

ELD 3P CONNECTOR



Wire side of female terminals

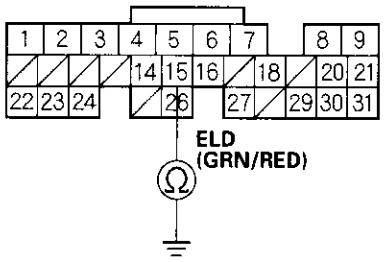
Is there about 5 V?

YES—Replace the ELD.■

NO—Go to step 8.

8. Turn the ignition switch OFF.
9. Disconnect ECM connector E (31P).
10. Check for continuity between body ground and ECM connector terminal E15.

ECM CONNECTOR E (31P)



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the ECM (E15) and the ELD.■

NO—Update the ECM if it does not have the latest software, or substitute a known-good ECM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM, replace the original ECM.■

DTC P1298: ELD Circuit High Voltage

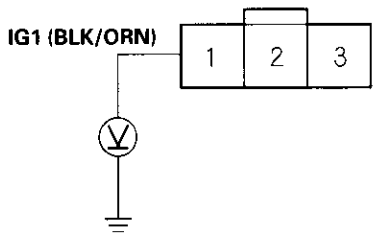
1. Reset the ECM (see page 11-4).
2. Start the engine.
3. Turn on the headlights.

   Is DTC P1298 indicated?

   YES—Go to step 4.

   NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the ELD and at the ECM.■
4. Turn the ignition switch and headlights OFF.
5. Disconnect the ELD 3P connector.
6. Turn the ignition switch ON (II).
7. Measure voltage between body ground and ELD 3P connector terminal No. 1.

ELD 3P CONNECTOR



Wire side of female terminals

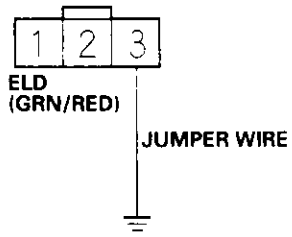
Is there battery voltage?

YES—Go to step 8.

NO—Check the No. 4 ACG (10A) fuse in the under-dash fuse/relay box. If the fuse is OK, repair open in the wire between the No. 4 ACG (10A) fuse and the ELD.■

8. Turn the ignition switch OFF.
9. Connect ELD 3P connector terminal No. 3 to body ground with a jumper wire.

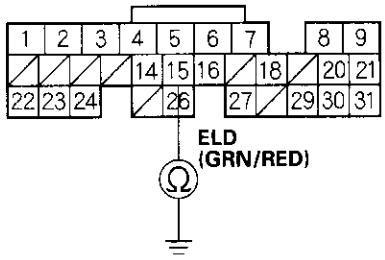
ELD 3P CONNECTOR



Wire side of female terminals

10. Disconnect ECM connector E (31P).
11. Check for continuity between body ground and ECM connector terminal E15.

ECM CONNECTOR E (31P)



Wire side of female terminals

Is there continuity?

YES—Go to step 12.

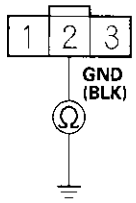
NO—Repair open in the wire between the ECM (E15) and the ELD.

(cont'd)

DTC Troubleshooting (cont'd)

12. 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 13.

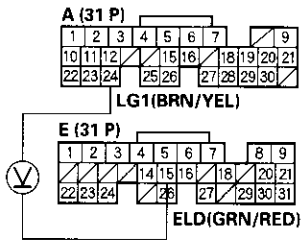
NO—Repair open in the wire between the ELD and G201.■

13. Reconnect the ELD 3P connector and ECM connector E (31P).

14. Start the engine and let it idle.

15. While measuring voltage between ECM connector terminals A24 and E15, turn the headlights on (high).

ECM CONNECTORS



Wire side of female terminals

Does the voltage drop?

YES—Update the ECM if it does not have the latest software, or substitute a known-good ECM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM, replace the original ECM.■

NO—Replace the ELD.■

DTC P1361: Camshaft Position (CMP) Sensor B (TDC Sensor) Intermittent Interruption

DTC P1362: Camshaft Position (CMP) Sensor B (TDC Sensor) No Signal

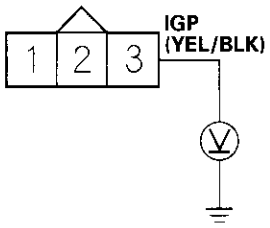
1. Reset the ECM (see page 11-4).
2. Start the engine.

   Is DTC P1361 and/or P1362 indicated?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the CMP sensor B (TDC sensor) and at the ECM. ■
3. Turn the ignition switch OFF.
4. Disconnect the CMP sensor B (TDC sensor) 3P connector.
5. Turn the ignition switch ON (II).
6. Measure voltage between CMP sensor B (TDC sensor) 3P connector terminal No. 3 and body ground.

CMP SENSOR B (TDC SENSOR) 3P CONNECTOR



Wire side of female terminals

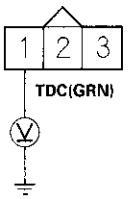
Is there battery voltage?

YES—Go to step 7.

NO—Repair open in the wire between the PGM-FI main relay 1 and the CMP sensor B (TDC sensor). ■

7. Measure voltage between CMP sensor B (TDC sensor) 3P connector terminal No. 1 and body ground.

CMP SENSOR B (TDC SENSOR) 3P CONNECTOR



Wire side of female terminals

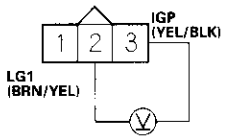
Is there about 5 V?

YES—Go to step 8.

NO—Go to step 10.

8. Measure voltage between CMP sensor B (TDC sensor) 3P connector terminals No. 2 and No. 3.

CMP SENSOR B (TDC 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 CMP sensor B (TDC sensor) and G101. ■

9. Substitute a known-good CMP sensor B (TDC sensor) and recheck.

   Is DTC P1361 and/or P1362 indicated?

   YES—Update the ECM if it does not have the latest software, or substitute a known-good ECM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM, replace the original ECM. ■

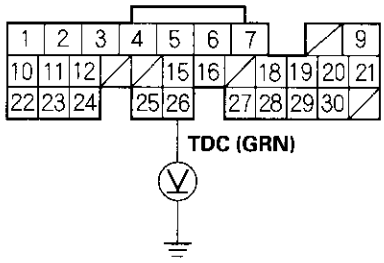
   NO—Replace the original CMP sensor B (TDC sensor). ■

(cont'd)

DTC Troubleshooting (cont'd)

10. Measure voltage between ECM connector terminal A26 and body ground.

ECM CONNECTOR A (31P)



Wire side of female terminals

Is there about 5 V?

YES—Repair open in the wire between the ECM (A26) and CMP sensor B (TDC sensor). ■

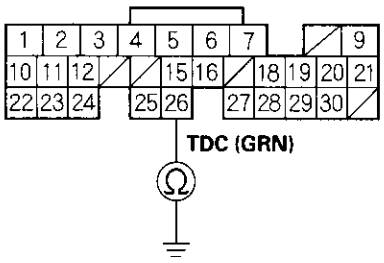
NO—Go to step 11.

11. Turn the ignition switch OFF.

12. Disconnect ECM connector A (31P).

13. Check for continuity between ECM connector terminal A26 and body ground.

ECM CONNECTOR A (31P)



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the ECM (A26) and the CMP sensor B (TDC sensor). ■

NO—Update the ECM if it does not have the latest software, or substitute a known-good ECM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM, replace the original ECM. ■

DTC P1607: Malfunction in ECM Internal Circuit

1. Reset the ECM (see page 11-4).

2. Turn the ignition switch ON (II), and wait for 40 seconds.

Is DTC P1607 indicated?

YES—Update the ECM if it does not have the latest software, or substitute a known-good ECM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM, replace the original ECM. ■

NO—Intermittent failure, system is OK at this time. A low battery can cause this problem . Ask the customer if there has been any recent trouble starting the engine. ■

MIL Circuit Troubleshooting

1. Connect an OBD II scan tool/Honda PGM Tester (see page 11-3).

2. Turn the ignition switch ON (II) and read the OBD II scan tool/Honda PGM Tester.

   Does the OBD II scan tool/Honda PGM Tester communicate with the ECM?

   YES—Go to step 3.

   NO—Go to troubleshooting " DLC Circuit Troubleshooting" (see page 11-109).

3. Check the OBD II scan tool/Honda PGM Tester for DTCs.

   Are any DTCs indicated?

   YES—Go to the DTC Troubleshooting Index.

   NO—Go to step 4.

4. Turn the ignition switch OFF.

5. Turn the ignition switch ON (II) and watch the Malfunction Indicator Lamp (MIL).

   Does the MIL come on and stay on for more than 20 seconds after turning the ignition switch ON (II)?

   YES—If the MIL always comes on and stays on, go to step 76. But if the MIL sometimes works normally, first check for these problems.

   - An intermittent short in the wire between the ECM (E29) and the data link connector (DLC).
   - An intermittent short in the wire between the ECM (E31) and the gauge assembly.

   NO—If the MIL is always off, go to step 6. But if the MIL sometimes works normally, first check for these problems.

   - A loose No. 10 METER (7.5A) fuse in the under-dash fuse/relay box.
   - A loose No. 20 IG (40A) (Canada: 50A) fuse in the under-hood fuse/relay box.
   - A loose No. 6 ECU (ECM) (15A) fuse in the under-hood fuse/relay box.
   - A loose No. 17 FUEL PUMP (15A) fuse in the under-dash fuse/relay box.
   - A poor connection at ECM terminal E31.
   - An intermittent open in the GRN/ORN wire between the ECM (E31) and the gauge assembly.
   - An intermittent short in the wire between the ECM (A21) and the manifold absolute pressure (MAP) sensor.
   - An intermittent short in the wire between the ECM (A20) and the throttle position (TP) sensor.
   - An intermittent short in the wire between the ECM (E5) and the fuel tank pressure (FTP) sensor.

6. Turn the ignition switch OFF.

7. Turn the ignition switch ON (II).

   Is the low oil pressure light on?

   YES—Go to step 10.

   NO—Go to step 8.

8. Inspect the No. 10 METER (7.5A) fuse in the under-dash fuse/relay box.

   Is the fuse OK?

   YES—Go to step 9.

   NO—Repair short in the wire between No. 10 METER (7.5A) fuse and the gauge assembly. Also replace the No. 10 METER (7.5A) fuse.■

9. Inspect the No. 20 IG1 (40A) (Canada: 50A) fuse in the under-hood fuse/relay box.

   Is the fuse OK?

   YES—Repair open in the wire between the No. 20 IG (40A) (Canada: 50A) fuse and the gauge assembly. If the wire is OK, test the ignition switch (see page 22-53).

   NO—Repair short in the wire between No. 20 IG (40A) (Canada: 50A) fuse and the under-dash fuse/relay box. Also replace the No. 20 IG (40A) (Canada: 50A) fuse.■

(cont'd)

MIL Circuit Troubleshooting (cont'd)

10. Try to start the engine.

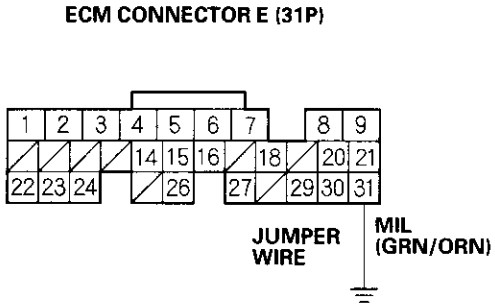
    Does the engine start?

    YES—Go to step 11.

    NO—Go to step 14.

11. Turn the ignition switch OFF.

12. Connect ECM connector terminal E31 to body ground with a jumper wire.



Wire side of female terminals

13. Turn the ignition switch ON (II).

    Is the MIL on?

    YES—Update the ECM if it does not have the latest software, or substitute a known-good ECM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM, replace the original ECM.■

    NO—Check for an open in the wire between the ECM (E31) and the gauge assembly. Also check for a blown MIL bulb. If the wires and the bulb are OK, replace the gauge assembly.■

14. Turn the ignition switch OFF.

15. Inspect the No. 6 ECU (ECM) (15A) fuse in the under-hood fuse/relay box.

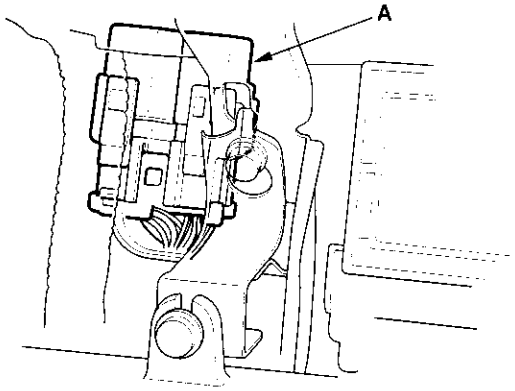
    Is the fuse OK?

    YES—Go to step 22.

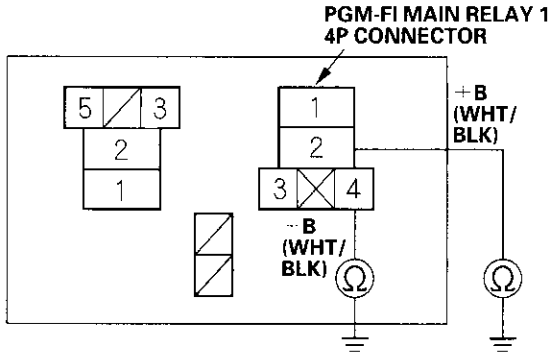
    NO—Go to step 16.

16. Remove the blown No. 6 ECU (ECM) (15A) fuse from the under-hood fuse/relay box.

17. Remove the glove box (see page 20-63) and the PGM-FI main relay 1.



18. Check for continuity between body ground and PGM-FI main relay 1 4P connector terminals No. 2 and No. 4 individually.



Wire side of female terminals

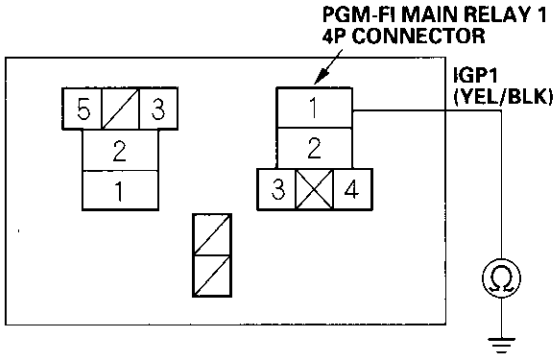
Is there continuity?

YES—Repair short in the wire between the No. 6 ECU (ECM) (15A) fuse and the PGM-FI main relay 1. Also replace the No. 6 ECU (ECM) (15A) fuse.■

NO—Go to step 19.

19. Disconnect each of the components or the connectors below, one at a time, and check for continuity between PGM-FI main relay 1 4P connector terminal No. 1 and body ground.

    - PGM-FI main relay 2
    - ECM connector A (31P)
    - Each injector 2P connector
    - Idle air control (IAC) valve 3P connector
    - Camshaft Position (CMP) sensor B (Top dead center (TDC) sensor) 3P connector
    - Crankshaft position (CKP) sensor 3P connector



Wire side of female terminals

Is there continuity?

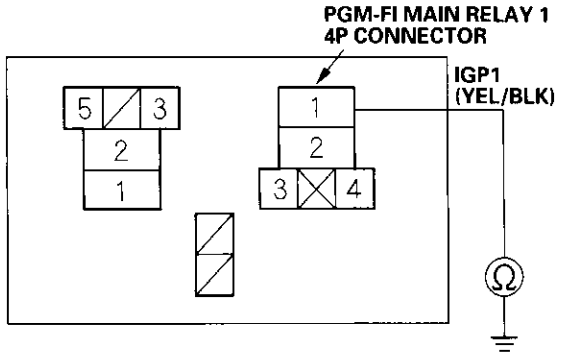
YES—Go to step 20.

NO—Replace the component that made continuity to body ground go away when disconnected. If the item is the ECM, update the ECM if it does not have the latest software, or substitute a known-good ECM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM, replace the original ECM.
Also replace the No. 6 ECU (ECM) (15 A) fuse.

20. Disconnect the connectors of all these components.

    - PGM-FI main relay 2
    - ECM connector A (31P)
    - Injectors
    - Idle air control (IAC) valve
    - Camshaft Position (CMP) sensor B (Top dead center (TDC) sensor)
    - Crankshaft position (CKP) sensor

21. Check for continuity between PGM-FI main relay 1 4P connector terminal No. 1 and body ground.



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the PGM-FI main relay 1 and each item. Also replace the No. 6 ECU (ECM) (15A) fuse.■

NO—Replace the PGM-FI main relay 1. Also replace the No 6 ECU (ECM) (15A) fuse.■

22. Inspect the No. 17 FUEL PUMP (15A) fuse in the under-dash fuse/relay box.

    Is the fuse OK?

    YES—Go to step 34.

    NO—Go to step 23.

23. Remove the blown No. 17 FUEL PUMP (15A) fuse from the under-dash fuse/relay box.

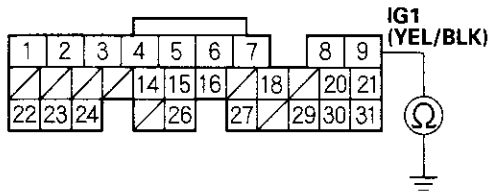
24. Disconnect ECM connector E (31P).

(cont'd)

MIL Circuit Troubleshooting (cont'd)

25. Check for continuity between ECM connector terminal E9 and body ground.

ECM CONNECTOR E (31P)



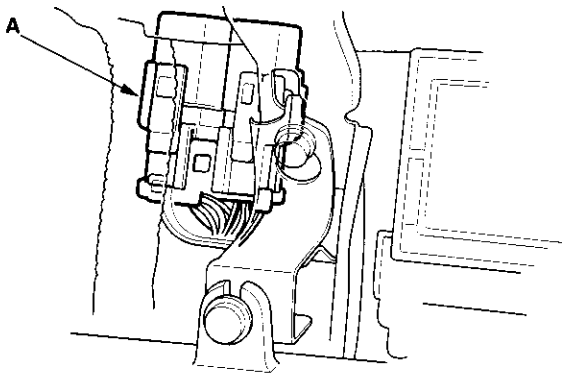
Wire side of female terminals

Is there continuity?

YES—Go to step 26.

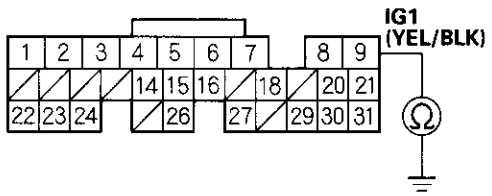
NO—Replace the No. 17 FUEL PUMP (15 A) fuse, and update the ECM if it does not have the latest software, or substitute a known-good ECM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM, replace the original ECM.■

26. Remove the PGM-FI main relay 2 (A).



27. Check for continuity between ECM connector terminal E9 and body ground.

ECM CONNECTOR E (31P)



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the No. 17 FUEL PUMP (15A) fuse and the ECM (E9), or between the No. 17 FUEL PUMP (15 A) fuse and the PGM-FI main relay 2. Also replace the No. 17 FUEL PUMP (15A) fuse.■

NO—Go to step 28.

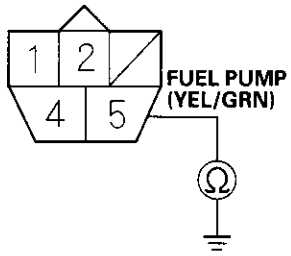
28. Remove the rear seat cushion (see page 20-80).

29. Remove the access panel from the floor.

30. Disconnect the fuel pump 5P connector.

31. Check for continuity between fuel pump 5P connector terminal No. 5 and body ground.

FUEL PUMP 5P CONNECTOR



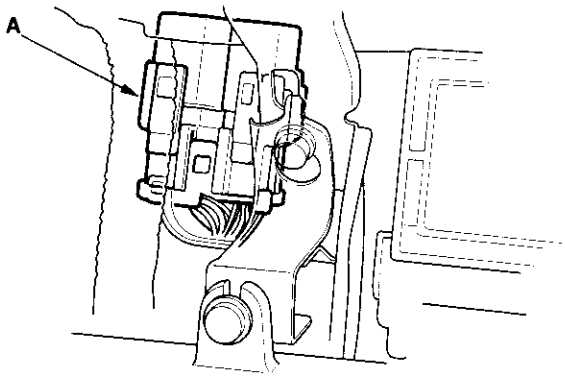
Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the fuel pump and the PGM-FI main relay 2. Also replace the No. 17 FUEL PUMP (15A) fuse. ■

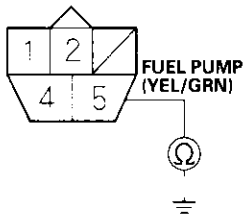
NO—Go to step 32.

32. Reinstall the PGM-FI main relay 2 (A).



33. Check for continuity between fuel pump 5P connector terminal No. 5 and body ground.

FUEL PUMP 5P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Replace the PGM-FI main relay 2. Also replace the No. 17 FUEL PUMP (15A) fuse. ■

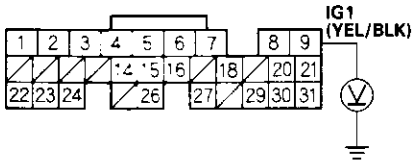
NO—Check the fuel pump, and replace it if necessary. Also replace the No. 17 FUEL PUMP (15A) fuse. ■

34. Disconnect ECM connector E (31P).

35. Turn the ignition switch ON (II).

36. Measure voltage between ECM connector terminal E9 and body ground.

ECM CONNECTOR E (31P)



Wire side of female terminals

Is there battery voltage?

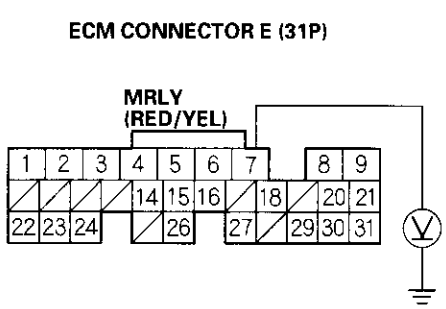
YES—Go to step 37.

NO—Repair open in the wire between the No. 17 FUEL PUMP (15A) fuse and the ECM (E9). ■

(cont'd)

MIL Circuit Troubleshooting (cont'd)

37. Measure voltage between ECM/PCM connector terminal E7 and body ground.



Wire side of female terminals

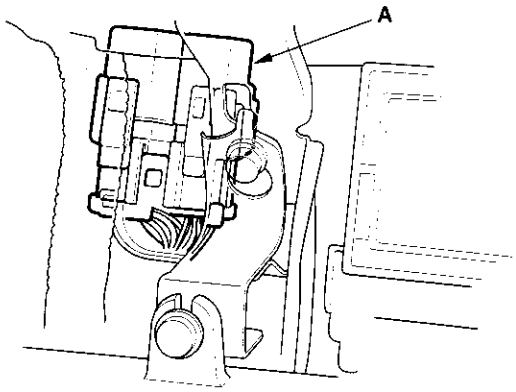
Is there battery voltage?

YES—Go to step 42.

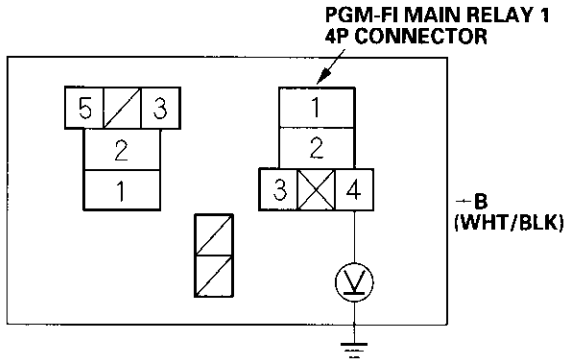
NO—Go to step 38.

38. Turn the ignition switch OFF.

39. Remove the PGM-FI main relay 1 (A).



40. Measure voltage between PGM-FI main relay 1 4P connector terminal No. 4 and body ground.



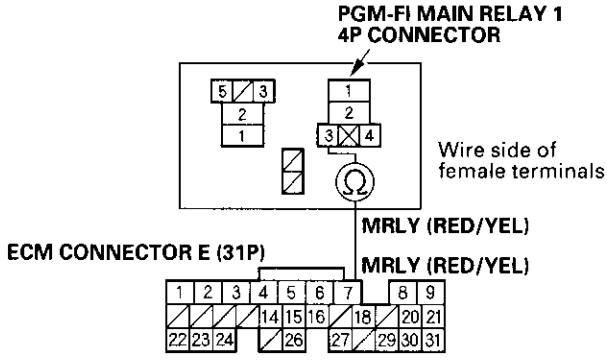
Wire side of female terminals

Is there battery voltage?

YES—Go to step 41.

NO—Repair open in the wire between the No. 6 ECU (ECM) (15A) fuse and the PGM-FI main relay 1. ■

41. Check for continuity between PGM-FI main relay 1 4P connector terminal No. 3 and ECM connector terminal E7.



Wire side of female terminals

Is there continuity?

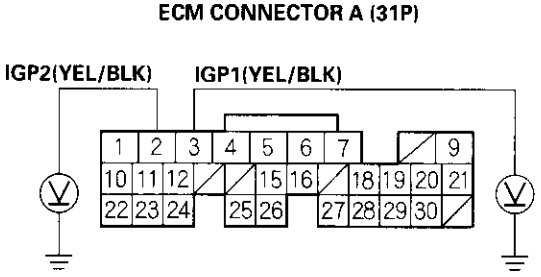
YES—Test the PGM-FI main relay 1 (see page 22-51). If the relay is OK, update the ECM if it does not have the latest software, or substitute a known-good ECM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM, replace the original ECM. ■

NO—Repair open in the wire between the PGM-FI main relay 1 and the ECM (E7). ■

42. Reconnect ECM connector E (31P).

43. Turn the ignition switch ON (II).

44. Measure voltage between body ground and ECM connector terminals A2 and A3 individually.



Wire side of female terminals

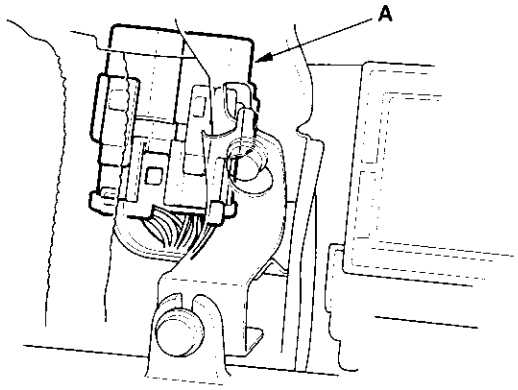
Is there battery voltage?

YES—Go to step 51.

NO—Go to step 45.

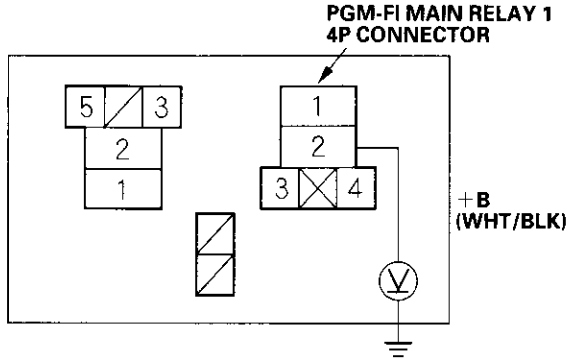
45. Turn the ignition switch OFF.

46. Remove the PGM-FI main relay 1 (A).



47. Turn the ignition switch ON (II).

48. Measure voltage between PGM-FI main relay 1 4P connector terminal No. 2 and body ground.



Wire side of female terminals

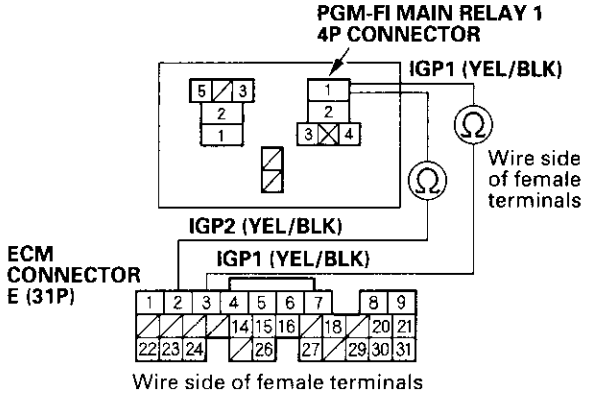
Is there battery voltage?

YES—Go to step 49.

NO—Repair open in the wire between the No. 6 ECU (ECM) (15A) fuse and the PGM-FI main relay 1.■

49. Turn the ignition switch OFF.

50. Check for continuity between PGM-FI main relay 1 4P connector terminal No. 1 and ECM connector terminals A2 and A3 individually.



Wire side of female terminals

Is there continuity?

YES—Replace the PGM-FI main relay 1.■

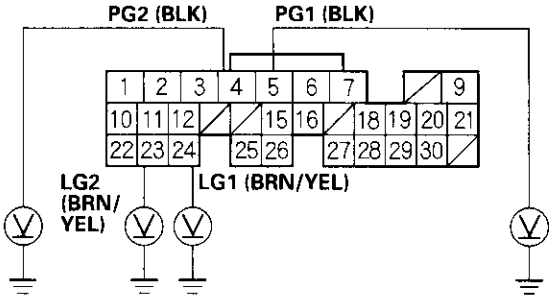
NO—Repair open in the wire between the PGM-FI main relay 1 and the ECM (A2, A3).■

(cont'd)

MIL Circuit Troubleshooting (cont'd)

51. Measure voltage between body ground and ECM connector terminals A4, A5, A23, and A24 individually.

ECM CONNECTOR A (31P)



Wire side of female terminals

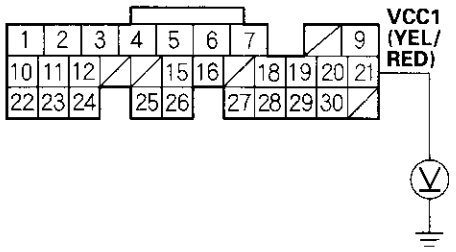
Is there more than 1.0 V?

YES—Go to step 52.

NO—Repair open in the wire(s) that had more than 1.0 V between G101 and the ECM (A4, A5, A23, A24).■

52. Measure voltage between body ground and ECM connector terminal A21.

ECM CONNECTOR A (31P)



Wire side of female terminals

Is there about 5 V?

YES—Go to step 60.

NO—Go to step 53.

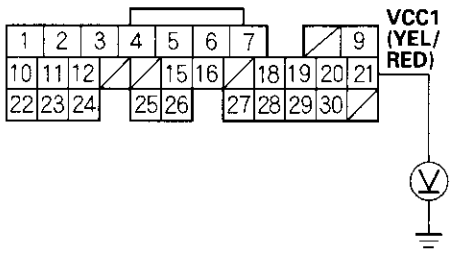
53. Turn the ignition switch OFF.

54. Disconnect the manifold absolute pressure (MAP) sensor 3P connector.

55. Turn the ignition switch ON (II).

56. Measure voltage between body ground and ECM connector terminal A21.

ECM CONNECTOR A (31P)



Wire side of female terminals

Is there about 5 V?

YES—Replace the MAP sensor.■

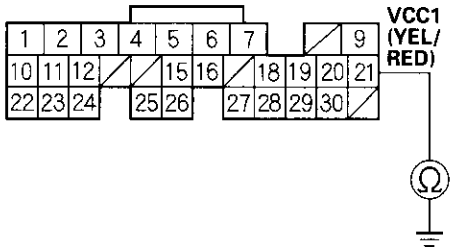
NO—Go to step 57.

57. Turn the ignition switch OFF.

58. Disconnect ECM connector A (31P).

59. Check for continuity between ECM connector terminal A21 and body ground.

ECM CONNECTOR A (31P)



Wire side of female terminals

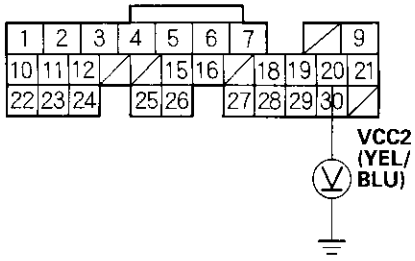
Is there continuity?

YES—Repair short in the wire between the ECM (A21) and the MAP sensor. ■

NO—Update the ECM if it does not have the latest software, or substitute a known-good ECM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM, replace the original ECM. ■

60. Measure voltage between body ground and ECM connector terminal A20.

ECM CONNECTOR A (31P)



Wire side of female terminals

Is there about 5 V?

YES—Go to step 68.

NO—Go to step 61.

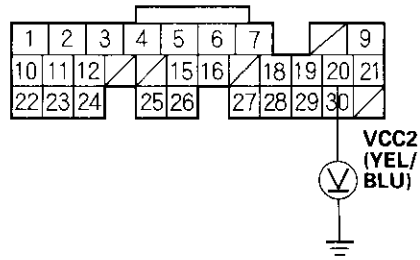
61. Turn the ignition switch OFF.

62. Disconnect the throttle position (TP) sensor 3P connector.

63. Turn the ignition switch ON (II).

64. Measure voltage between body ground and ECM connector terminal A20.

ECM CONNECTOR A (31P)



Wire side of female terminals

Is there about 5 V?

YES—Replace the throttle body (the TP sensor is not available separately). ■

NO—Go to step 65.

65. Turn the ignition switch OFF.

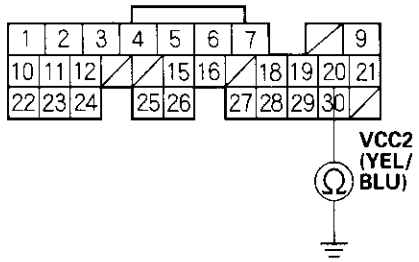
66. Disconnect ECM connector A (31P).

cont d

MIL Circuit Troubleshooting (cont'd)

67. Check for continuity between ECM connector terminal A20 and body ground.

ECM CONNECTOR A (31P)



Wire side of female terminals

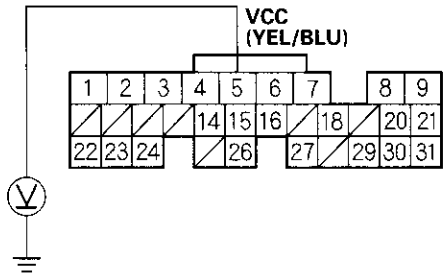
Is there continuity?

YES—Repair short in the wire between the ECM (A20) and the TP sensor, or repair short in the wire between the ECM (A8) and the knock sensor. ■

NO—Update the ECM if it does not have the latest software, or substitute a known-good ECM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM, replace the original ECM. ■

68. Measure voltage between body ground and ECM connector terminal E5.

ECM CONNECTOR E (31P)



Wire side of female terminals

Is there about 5 V?

YES—Update the ECM if it does not have the latest software, or substitute a known-good ECM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM, replace the original ECM. ■

NO—Go to step 69.

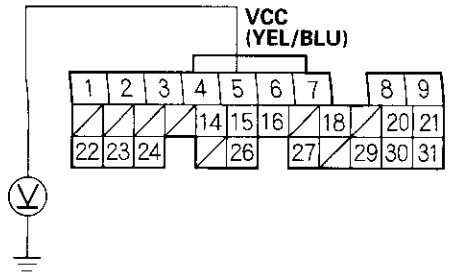
69. Turn the ignition switch OFF.

70. Disconnect the fuel tank pressure (FTP) sensor 3P connector.

71. Turn the ignition switch ON (II).

72. Measure voltage between body ground and ECM connector terminal E5.

ECM CONNECTOR E (31P)



Wire side of female terminals

Is there about 5 V?

YES—Replace the FTP sensor.■

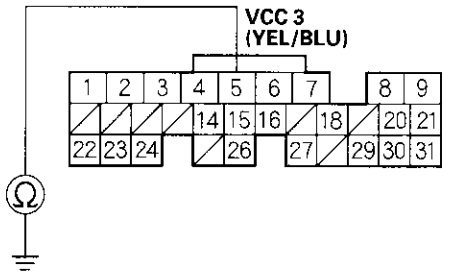
NO—Go to step 73.

73. Turn the ignition switch OFF.

74. Disconnect ECM connector E (31P).

75. Check for continuity between ECM connector terminal E5 and body ground.

ECM CONNECTOR E (31P)



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the ECM (E5) and the FTP sensor.■

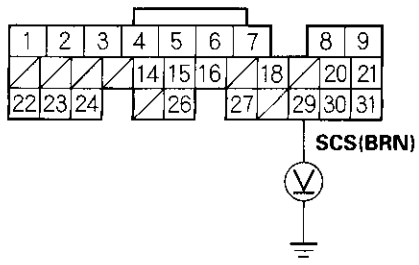
NO—Update the ECM if it does not have the latest software, or substitute a known-good ECM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM, replace the original ECM.■

76. Turn the ignition switch OFF.

77. Turn the ignition switch ON (II).

78. Measure voltage between ECM connector terminal E29 and body ground.

ECM CONNECTOR E (31P)



Wire side of female terminals

Is there about 5 V (or battery voltage)?

YES—Go to step 82.

NO—Go to step 79.

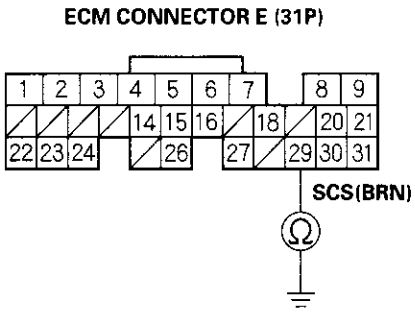
79. Turn the ignition switch OFF.

80. Disconnect ECM connector E (31P).

(cont'd)

MIL Circuit Troubleshooting (cont'd)

81. Check for continuity between ECM connector terminal E29 and body ground.



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the data link connector (DLC) and the ECM (E29).■

NO—Update the ECM if it does not have the latest software, or substitute a known-good ECM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM, replace the original ECM.■

82. Turn the ignition switch OFF.

83. Disconnect ECM connector E (31P).

84. Turn the ignition switch ON (II).

Does the MIL stay on?

YES—Repair short in the wire between the gauge assembly and the ECM (E31). If the wire is OK, replace the gauge assembly.■

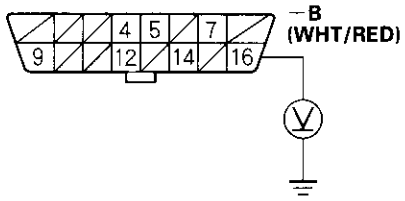
NO—Update the ECM if it does not have the latest software, or substitute a known-good ECM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM, replace the original ECM.■

DLC Circuit Troubleshooting

If the ECM does not communicate with the OBD II scan tool, Honda PGM Tester, or I/M test equipment, do this troubleshooting procedure.

1. Measure voltage between DLC terminal No. 16 and body ground.

DATA LINK CONNECTOR (DLC)



Terminal side of female terminals

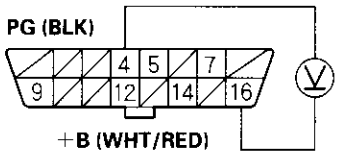
Is there battery voltage?

YES—Go to step 2.

NO—Repair open in the wire between DLC terminal No. 16 and the No. 9 BACK UP (7.5 A) fuse in the under-hood fuse/relay box.■

2. Measure voltage between DLC terminals No. 4 and No. 16.

DATA LINK CONNECTOR (DLC)



Terminal side of female terminals

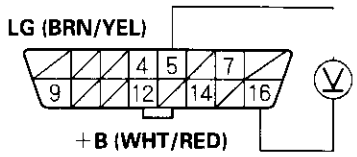
Is there battery voltage?

YES—Go to step 3.

NO—Repair open in the wire between DLC terminal No. 4 and body ground.■

3. Measure voltage between DLC terminals No. 5 and No. 16.

DATA LINK CONNECTOR (DLC)



Terminal side of female terminals

Is there battery voltage?

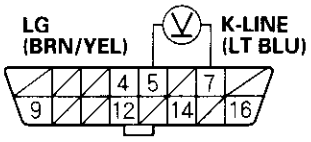
YES—Go to step 4.

NO—Repair open in the wire between DLC terminal No. 5 and the ECM (E3).■

4. Turn the ignition switch ON (II).

5. Measure voltage between DLC terminals No. 5 and No. 7.

DATA LINK CONNECTOR (DLC)



Terminal side of female terminals

Is there 8.5 V or more?

YES—Go to step 10.

NO—Go to step 6.

6. Turn the ignition switch OFF.

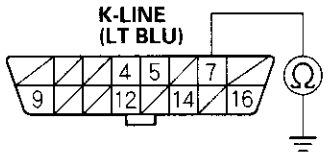
(cont'd)

DLC Circuit Troubleshooting (cont'd)

7. Disconnect ECM connector E (31P). Make sure the OBD II scan tool or Honda PGM Tester is disconnected from the DLC.

8. Check for continuity between DLC terminal No. 7 and body ground.

DATA LINK CONNECTOR (DLC)



Terminal side of female terminals

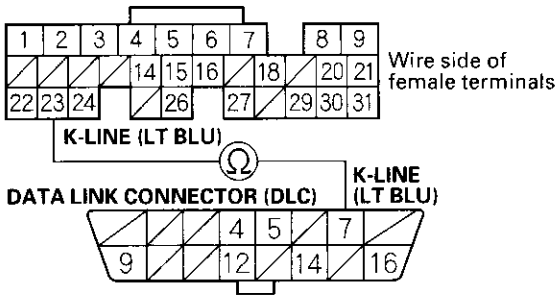
Is there continuity?

YES—Repair short to ground in the wire between DLC terminal No. 7 and the ECM (E23). After repairing the wire, check the DTC with the OBD II scan tool/Honda PGM Tester, and go to the DTC Troubleshooting index.■

NO—Go to step 9.

9. Check for continuity between DLC terminal No. 7 and ECM terminal E23.

ECM CONNECTOR E (31P)



Terminal side of female terminals

Is there continuity?

YES—Update the ECM if it does not have the latest software, or substitute a known-good ECM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM, replace the original ECM.■

NO—Repair open in the wire between DLC terminal No. 7 and the ECM (E23). After repairing the wire, check the DTC with the OBD II scan tool/Honda PGM Tester, and go to the DTC Troubleshooting index.■

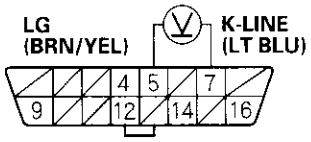
10. Turn the ignition switch OFF.

11. Disconnect ECM connector E (31P). Make sure the OBD II scan tool or Honda PGM Tester is disconnected from the DLC.

12. Turn the ignition switch ON (II).

13. Measure voltage between DLC terminals No. 5 and No. 7.

DATA LINK CONNECTOR (DLC)



Terminal side of female terminals

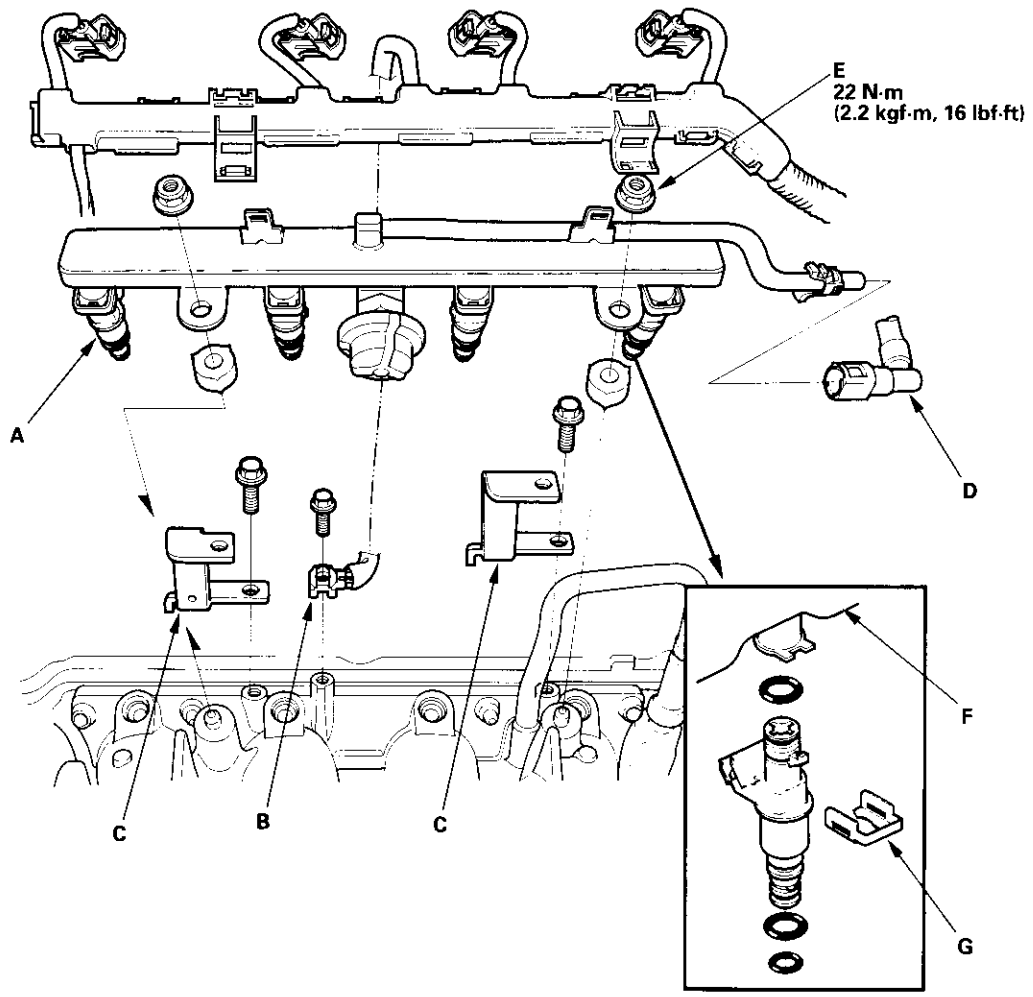
Is there 0 V?

YES—Update the ECM if it does not have the latest software, or substitute a known-good ECM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM, replace the original ECM.■

NO—Repair short to power in the wire between the DLC terminal No. 7 and the ECM (E23). After repairing the wire, check the DTC with the OBD II scan tool/Honda PGM Tester, and go to the DTC Troubleshooting index.■

Injector Replacement

1. Relieve fuel pressure (see page 11-144).
2. Disconnect the connectors from the injectors (A), disconnect the ground cable (B), and remove the bracket (C).

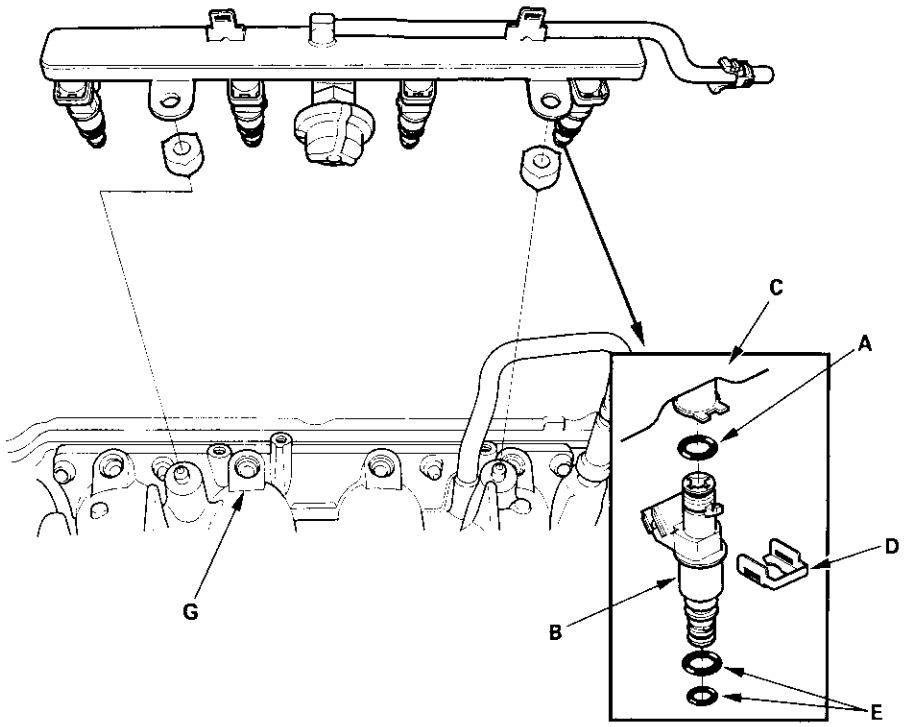


3. Disconnect the quick-connect fittings (D).
4. Remove the fuel rail mounting nuts (E) from the fuel rail (F) then remove the fuel rail and injectors as an assembly.
5. Remove the injector clip (G) from the injector.
6. Remove the injector from the fuel rail.

(cont'd)

Injector Replacement (cont'd)

7. Coat the new o-rings (A) with clean engine oil, and insert the injectors (B) into the fuel rail (C).

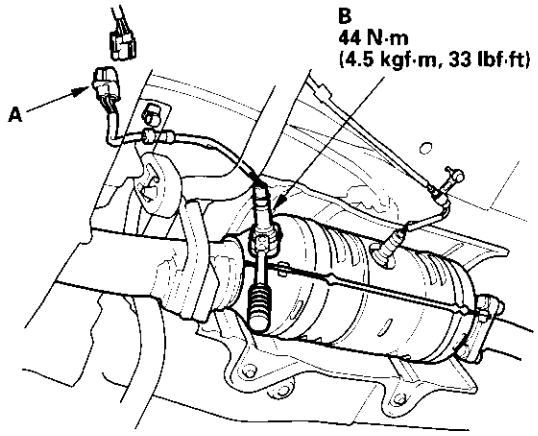


8. Install the injector clip (D).
9. Coat the injector o-rings (E) with clean engine oil.
10. Install the injectors into the fuel rail, then install the fuel rail into the intake manifold (G).
11. Install the fuel rail mounting nuts, ground cable, and bracket.
12. Connect the connectors to the injectors.
13. Connect the quick-connect fittings.
14. Turn the ignition switch ON (II), but do not operate the starter. After the fuel pump runs for about 2 seconds, the fuel pressure in the fuel line rises. Repeat this two or three times, then check for fuel leakage.

A/F Sensor Replacement

Special Tools Required
O2 sensor wrench, Snap-on YA8875, SP Tools 93750 , or equivalent, commercially available

1. Disconnect the A/F sensor 4P connector (A), then remove the A/F sensor (B).

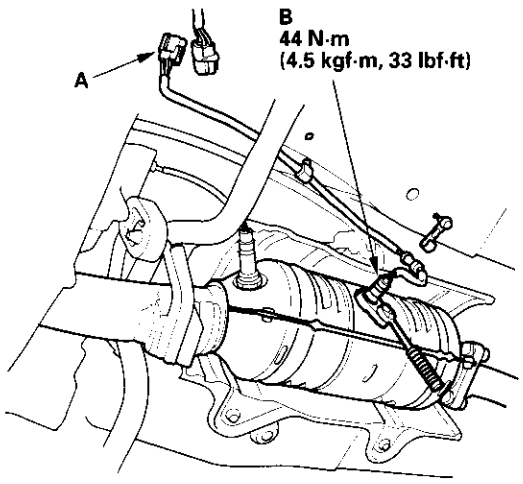


2. Install the A/F sensor in the reverse order of removal.

Secondary HO2S Replacement

Special Tools Required
O2 sensor wrench, Snap-on YA8875, SP Tools 93750 , or equivalent, commercially available

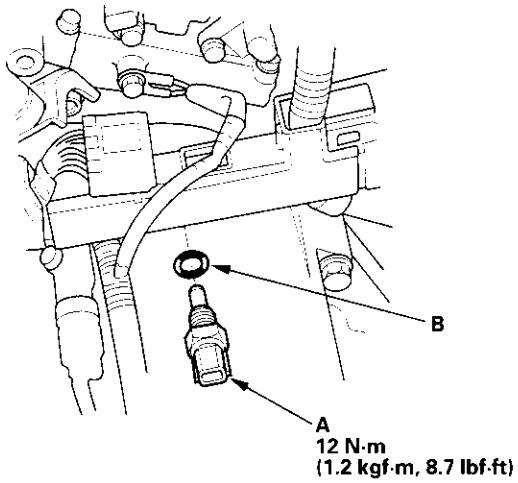
1. Disconnect the secondary HO2S 4P connector (A), then remove the secondary HO2S (B).



2. Install the secondary HO2S in the reverse order of removal.

ECT Sensor Replacement

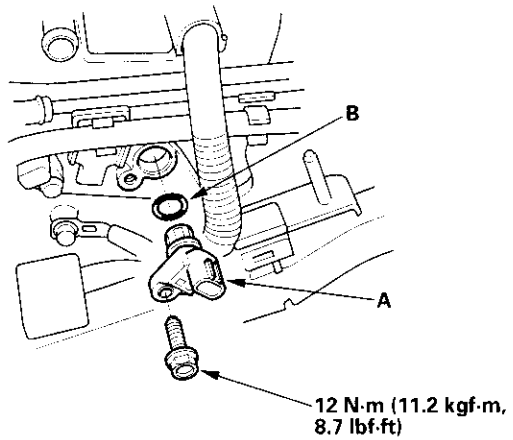
1. Remove the air cleaner (see page 11-162).
2. Disconnect the ECT sensor 2P connector.
3. Remove the ECT sensor (A).



4. Install the sensor in the reverse order of removal with a new o-ring (B).

CMP Sensor B (TDC Sensor) Replacement

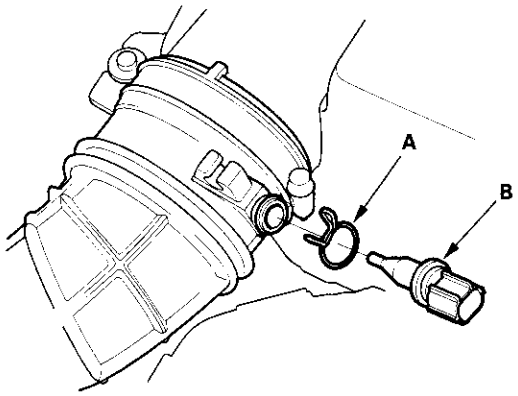
1. Remove the air cleaner (see page 11-162).
2. Disconnect the CMP sensor B (TDC sensor) 3P connector.
3. Remove the CMP sensor B (TDC sensor) (A).



4. Install the sensor in the reverse order of removal with a new o-ring (B).

IAT Sensor Replacement

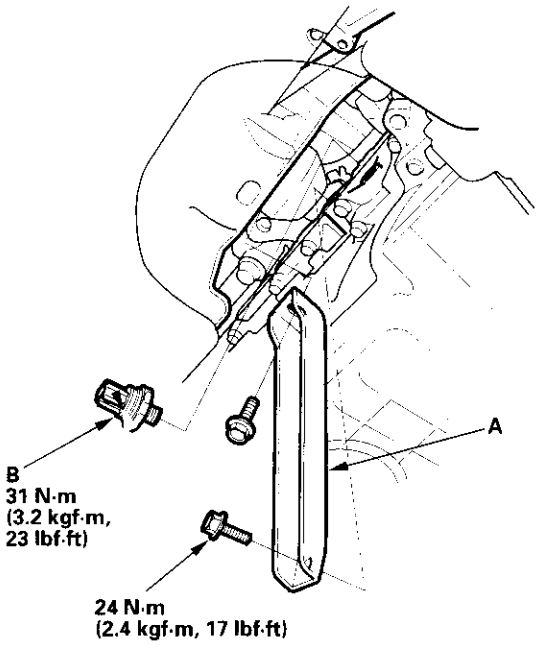
1. Disconnect the IAT sensor 2P connector.
2. Remove the clip (A) and the IAT sensor (B).



3. Install the sensor in the reverse order of removal.

Knock Sensor Replacement

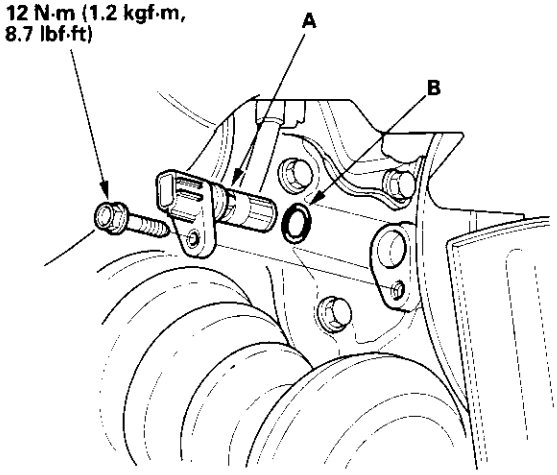
1. Remove the intake manifold bracket (A).



2. Disconnect the knock sensor 1P connector.
3. Remove the knock sensor (B).
4. Install the sensor in the reverse order of removal.

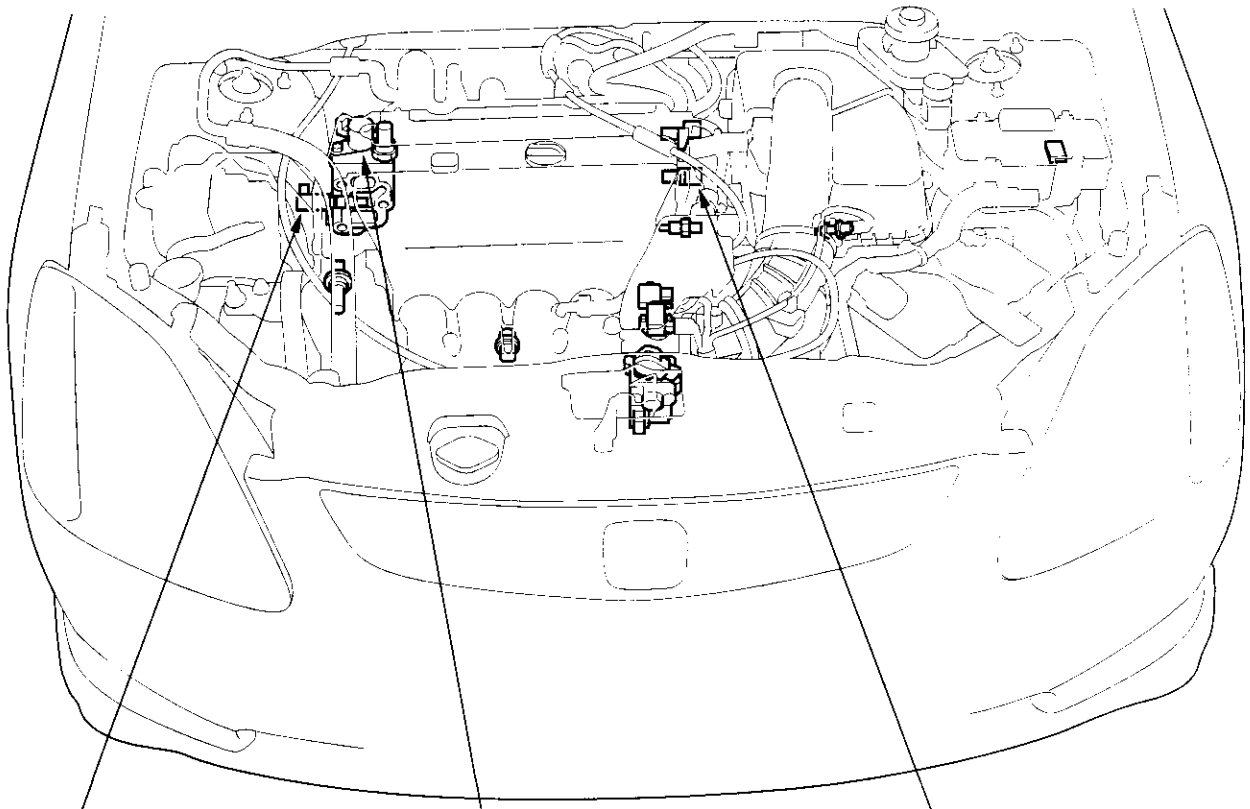
CKP Sensor Replacement

1. Disconnect the CKP sensor 3P connector.
2. Remove the CKP sensor (A).



3. Install the sensor in the reverse order of removal with a new o-ring (B).

Component Location Index



VTC OIL CONTROL SOLENOID VALVE
Troubleshooting, page 11-118
Test,page 11-127

VTC SOLENOID VALVE
Troubleshooting, page 11-123
Removal/Inspection, page 11-128

CAMSHAFT POSITION (CMP) SENSOR A
Troubleshooting, page 11-121
Replacement, page 11-128

DTC Troubleshooting

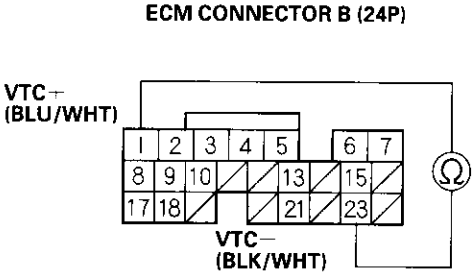
DTC P0010: VTC Oil Control Solenoid Valve Malfunction

1. Reset the ECM (see page 11-4).
2. Start the engine. Hold the engine at 3,000 rpm with no load (in neutral) until the radiator fan comes on, then let it idle.
3. Test-drive at a steady speed between 20-40 mph (30-60 km/h) for 10 minutes.

   Is DTC P0010 indicated?

   YES—Go to step 4.

   NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the VTC oil control solenoid valve and at the ECM.■
4. Turn the ignition switch OFF.
5. Disconnect the ECM connector B (24P).
6. Measure resistance between ECM connector terminals B1 and B23.



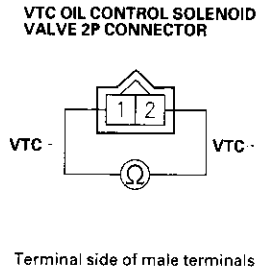
Wire side of female terminals

Is there 6.75—8.25 Ω ?

YES—Go to step 11.

NO—Go to step 7.

7. Disconnect the VTC oil control solenoid valve 2P connector.
8. Measure resistance between VTC oil control solenoid valve 2P terminals No. 1 and No. 2.



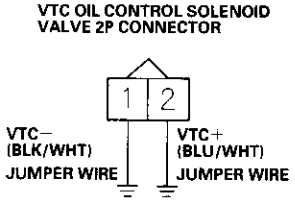
Terminal side of male terminals

Is there 6.75—8.25 Ω ?

YES—Go to step 9.

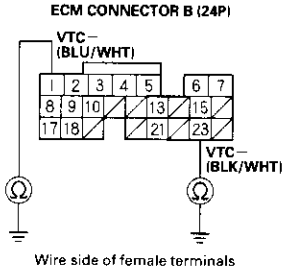
NO—Replace the VTC oil control solenoid valve (see page 11-127).■

9. Connect VTC oil control solenoid valve 2P connector terminals No. 1 and No. 2 to body ground with a jumper wire individually.



Wire side of female terminals

10. Check for continuity between ECM connector terminals B1 and B23 and body ground individually.



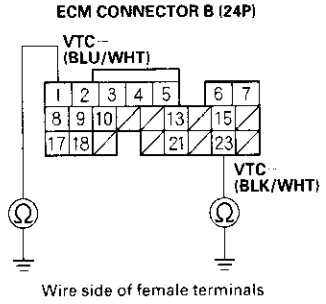
Wire side of female terminals

Is there continuity?

YES—Go to step 11.

NO—Repair open in the wire between the ECM (B1, B23) and the VTC oil control solenoid valve.■

11. Check for continuity between ECM connector terminals B1 and B23 and body ground individually.



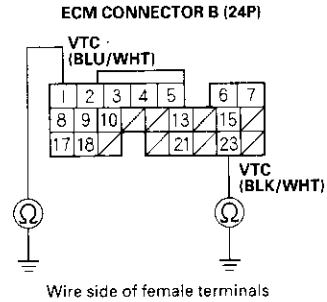
Is there continuity?

YES—Go to step 12.

NO—Update the ECM if it does not have the latest software, or substitute a known-good ECM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM, replace the original ECM. ■

12. Disconnect the VTC oil control solenoid valve 2P connector.

13. Check for continuity between ECM connector terminals B1 and B23 and body ground individually.



Is there continuity?

YES—Repair short in the wire between the ECM (B1, B23) and the VTC oil control solenoid valve. ■

NO—Replace the VTC oil control solenoid valve (see page 11-127). ■

DTC P0011: VTC System Malfunction

1. Reset the ECM (see page 11-4).

2. Start the engine. Hold the engine at 3,000 rpm with no load (in neutral) until the radiator fan comes on.

3. Test-drive at a steady speed between 20—40 mph (30—60 km/h) for 10 minutes.

4. Check for Temporary DTC P0011 with the scan tool.

   Is Temporary DTC P0011 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the VTC oil control solenoid valve and at the ECM. ■

5. Watch the low oil pressure light with the engine running.

   Is the low oil pressure light on?

   YES—Check the oil pressure (see page 8-4). ■

   NO—Go to step 6.

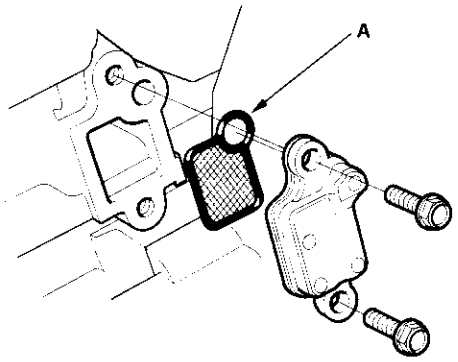
6. Turn the ignition switch OFF.

7. Remove the auto-tensioner (see page 4-28).

(cont'd)

DTC Troubleshooting (cont'd)

8. Remove the VTC strainer (A). Check the VTC strainer for clogging.



Is the strainer OK?

YES—Go to step 9.

NO—Clean the VTC strainer, then replace the engine oil filter and the engine oil. ■

9. Check the VTC oil control solenoid valve (see page 11-127).

Is the VTC oil control solenoid valve OK?

YES—Go to step 10.

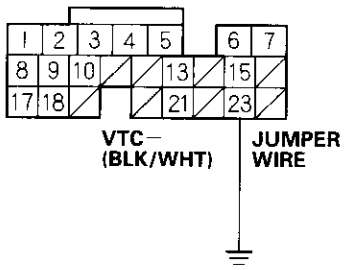
NO—Clean the ports of the VTC oil control solenoid valve, or replace the VTC oil control solenoid valve (see page 11-127). ■

10. Install the VTC oil control solenoid valve.

11. Start the engine. Hold the engine at 700—1,000 rpm.

12. Connect ECM connector terminal B23 to body ground with a jumper wire.

ECM CONNECTOR B (24P)

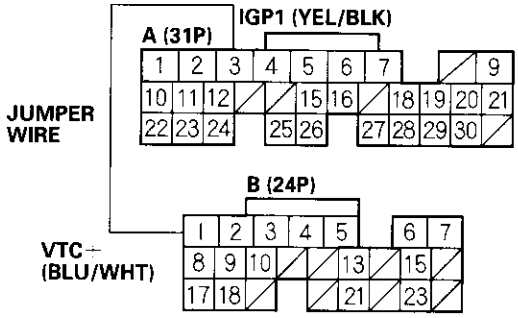


Wire side of female terminals

13. Connect ECM connector terminals A3 and B1 with a jumper wire momentarily.

NOTE: Do not jump for more than 1 minute.

ECM CONNECTORS



Wire side of female terminals

Did the engine stall or run rough?

YES—Test-drive at a steady speed between 20—40 mph (30—60 km/h) for 10 minutes. If temporary DTC P0011 is indicated, update the ECM if it does not have the latest software, or substitute a known-good ECM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM, replace the original ECM. ■

NO—Go to step 14.

14. Check the VTC actuator (see page 6-8).

Is the VTC actuator OK?

YES—Remove the auto-tensioner (see page 4-28), and clean or replace the VTC oil strainer. Update the ECM if it does not have the latest software, or substitute a known-good ECM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM, replace the original ECM. ■

NO—Replace the VTC actuator. ■

DTC P0340: CMP Sensor A No Signal

DTC P0344: CMP Sensor A Intermittent Interruption

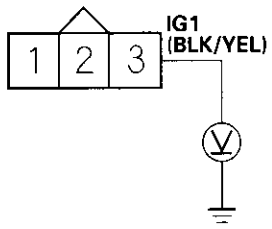
1. Reset the ECM (see page 11-4).
2. Start the engine.

   Is DTC P0340 and/or P0344 indicated?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the CMP sensor A and at the ECM.■
3. Turn the ignition switch OFF.
4. Disconnect the CMP sensor A 3P connector.
5. Turn the ignition switch ON (II).
6. Measure voltage between CMP sensor A 3P connector terminal No. 3 and body ground.

CMP SENSOR A 3P CONNECTOR



Wire side of female terminals

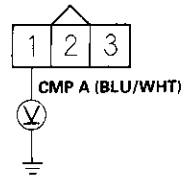
Is there battery voltage?

YES—Go to step 7.

NO—Check the No. 4 ACG (10A) fuse in the under-dash fuse/relay box. If the fuse is OK, repair open in the wire between the CMP sensor A and No. 4 ACG (10A) fuse.■

7. Measure voltage between CMP sensor A 3P connector terminal No. 1 and body ground.

CMP SENSOR A 3P CONNECTOR



Wire side of female terminals

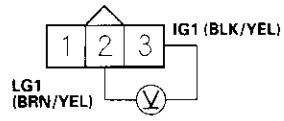
Is there about 5 V?

YES—Go to step 8.

NO—Go to step 10.

8. Measure 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 9.

NO—Repair open in the wire between the CMP sensor A and G101.■

9. Substitute a known-good CMP sensor A and recheck.

   Is DTC P0340 and/or P0344 indicated?

   YES—Update the ECM if it does not have the latest software, or substitute a known-good ECM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM, replace the original ECM.■

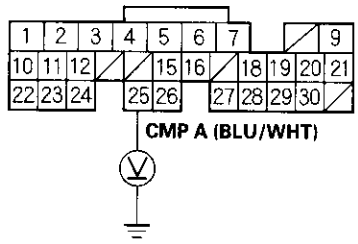
   NO—Replace the original CMP sensor A (see page 11-128).■

(cont'd)

DTC Troubleshooting (cont'd)

10. Measure voltage between ECM connector terminal A25 and body ground.

ECM CONNECTOR A (31P)



Wire side of female terminals

Is there about 5 V?

YES—Repair open in the wire between the ECM (A25) and CMP sensor A. ■

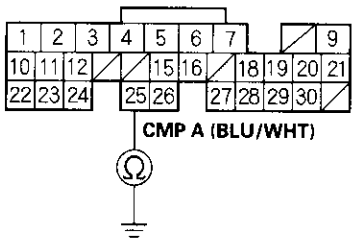
NO—Go to step 11.

11. Turn the ignition switch OFF.

12. Disconnect ECM connector A (31P).

13. Check for continuity between ECM connector terminal A25 and body ground.

ECM CONNECTOR A (31P)



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the ECM (A25) and the CMP sensor A. ■

NO—Update the ECM if it does not have the latest software, or substitute a known-good ECM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM, replace the original ECM. ■

DTC P0341: VTC Phase Gap

1. Reset the ECM (see page 11-4).

2. Start the engine.

Is DTC P0341 indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the CMP sensor A and at the ECM. ■

3. Check the VTC oil control solenoid valve (see page 11-127).

Is the VTC oil control solenoid valve OK?

YES—Go to step 4.

NO—Clean the VTC oil control solenoid valve, or replace it (see page 11-127). ■

4. Remove the head cover, and check the cam chain (see page 6-12).

Is the cam chain OK?

YES—Go to step 5.

NO—Replace the cam chain (see page 6-12). ■

5. Check the VTC actuator (see page 6-8).

Is the VTC actuator OK?

YES—Update the ECM if it does not have the latest software, or substitute a known-good ECM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM, replace the original ECM. ■

NO—Replace the VTC actuator. ■

DTC P1259: VTEC System Malfunction

Special Tools Required
- Pressure gauge adapter 07NAJ-P07010A
- A/T low pressure gauge w/panel 07406-0070300
- 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

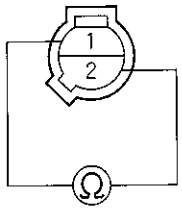
1. Reset the ECM (see page 11-4).
2. Check the engine oil level, and refill if necessary.
3. Start the engine. Hold the engine at 3,000 rpm with no load (in neutral) until the radiator fan comes on.
4. Road test the vehicle:
   Accelerate in the 1st gear to an engine speed over 4,000 rpm. Hold the speed for at least 2 seconds. If DTC P1259 is not repeated during the first road test, repeat the test two more times.

   Is DTC P1259 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, system is OK at this time. Check the oil consumption if oil was added in step 2. Check for poor connections or loose terminals at the VTEC solenoid valve, the VTEC oil pressure switch, and at the ECM. ■
5. Turn the ignition switch OFF.
6. Disconnect the VTEC oil pressure switch 2P connector.
7. Check for continuity between VTEC oil pressure switch 2P connector terminals No. 1 and No. 2.

VTEC OIL PRESSURE SWITCH 2P CONNECTOR



Terminal side of male terminals

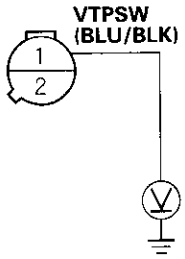
Is there continuity?

YES—Go to step 8.

NO—Replace the VTEC oil pressure switch. ■

8. Turn the ignition switch ON (II).
9. Measure voltage between VTEC oil pressure switch 2P connector terminal No. 1 and body ground.

VTEC OIL PRESSURE SWITCH 2P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Go to step 14.

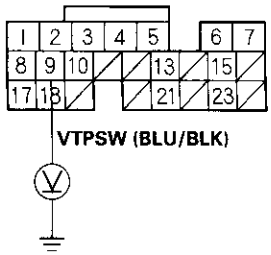
NO—Go to step 10.

(cont'd)

DTC Troubleshooting (cont'd)

10. Measure voltage between ECM connector terminal B9 and body ground.

ECM CONNECTOR B (24P)



Wire side of female terminals

Is there battery voltage?

YES—Repair open in the wire between the VTEC oil pressure switch and the ECM (B9).■

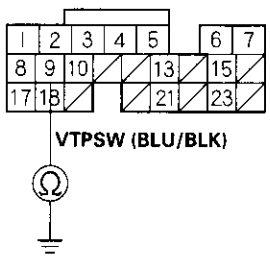
NO—Go to step 11.

11. Turn the ignition switch OFF.

12. Disconnect ECM connector B (24P).

13. Check for continuity between ECM connector terminal B9 and body ground.

ECM CONNECTOR B (24P)



Wire side of female terminals

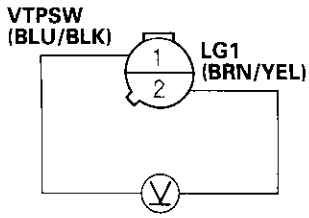
Is there continuity?

YES—Repair short in the wire between the VTEC oil pressure switch and the ECM (B9).■

NO—Update the ECM if it does not have the latest software, or substitute a known-good ECM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM, replace the original ECM.■

14. Measure voltage between VTEC oil pressure switch 2P connector terminals No. 1 and No. 2.

VTEC OIL PRESSURE SWITCH 2P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Go to step 15.

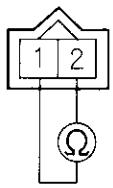
NO—Repair open in the wire between the VTEC oil pressure switch and G101.■

15. Turn the ignition switch OFF.

16. Disconnect the VTEC solenoid valve 2P connector.

17. Check for resistance between VTEC solenoid valve 2P connector terminals No. 1 and No. 2.

VTEC SOLENOID VALVE 2P CONNECTOR



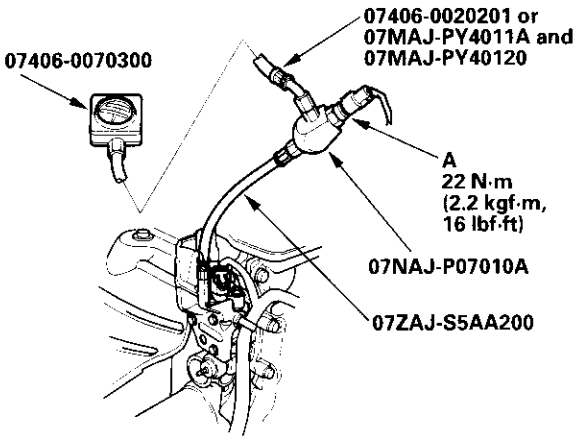
Terminal side of male terminals

Is there 14–30 Ω ?

YES—Go to step 18.

NO—Replace the VTEC solenoid valve (see page 11-128).■

18. Remove the VTEC oil pressure switch (A) and install the special tools as shown, then reinstall the VTEC oil pressure switch.



19. Reconnect the VTEC solenoid valve 2P connector and VTEC oil pressure switch 2P connector.

20. Connect a tachometer or OBD II scan tool/Honda PGM Tester to the DLC.

21. Start the engine. Hold the engine at 3,000 rpm with no load (in neutral) until the radiator fan comes on.

22. Check the oil pressure at engine speeds of 1,000 and 2,000 rpm. Keep the measuring time as short as possible (less than 1 minute) because the engine is running with no load.

    Is the oil pressure below 49 kPa (0.5 kgf/cm², 7 psi)?

    YES—Go to step 23.

    NO—Inspect the VTEC solenoid valve (see page 11-128).■

23. Turn the ignition switch OFF.

24. Disconnect the VTEC solenoid valve 2P connector.

25. Attach the battery positive terminal to VTEC solenoid valve 2P connector terminal No. 2.

26. Start the engine, then connect the battery negative terminal to VTEC solenoid valve 2P connector terminal No. 1, and check the oil pressure at an engine speed of 3,000 rpm.

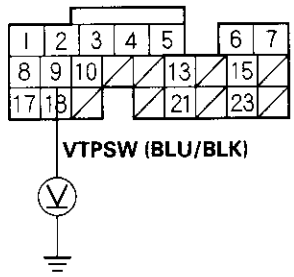
    Is the oil pressure above 390 kPa (4.0 kgf/cm², 57 psi)?

    YES—Go to step 27.

    NO—Inspect the VTEC solenoid valve (see page 11-128).■

27. With the battery terminals still connected to the VTEC solenoid valve connector, measure voltage between ECM connector terminal B9 and body ground.

ECM CONNECTOR B (24P)



Wire side of female terminals

    Is there battery voltage above 4,000 rpm?

    YES—Go to step 28.

    NO—Replace the VTEC oil pressure switch (see page 11-128).■

28. Turn the ignition switch OFF.

29. Disconnect the battery terminals from the VTEC solenoid valve terminal connector.

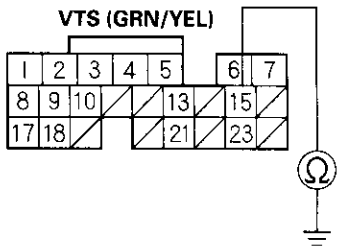
(cont'd)

DTC Troubleshooting (cont'd)

30. Disconnect ECM connector B (24P).

31. Check for continuity between ECM connector terminal B15 and body ground.

ECM CONNECTOR B (24P)



Wire side of female terminals

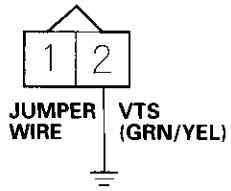
Is there continuity?

YES—Repair short in the wire between the VTEC solenoid valve and the ECM (B15).■

NO—Go to step 32.

32. Connect VTEC solenoid valve 2P connector terminal No. 2 to body ground with a jumper wire.

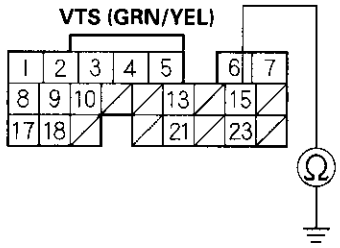
VTEC SOLENOID VALVE 2P CONNECTOR



Wire side of female terminals

33. Check for continuity between ECM connector terminal B15 and body ground.

ECM CONNECTOR B (24P)



Wire side of female terminals

Is there continuity?

YES—Update the ECM if it does not have the latest software, or substitute a known-good ECM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM, replace the original ECM.■

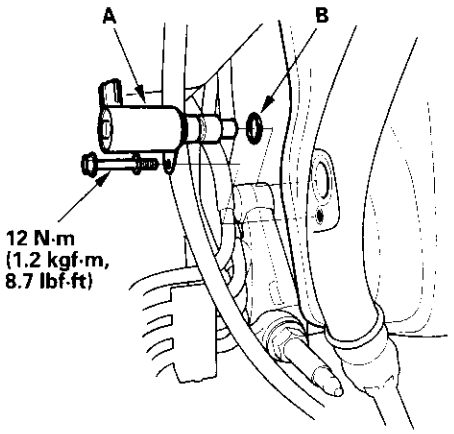
NO—Repair open in the wire between the VTEC solenoid valve and the ECM (B15).■

VTC Oil Control Solenoid Valve Removal/Test

1. Remove the VTC oil control solenoid valve (A).

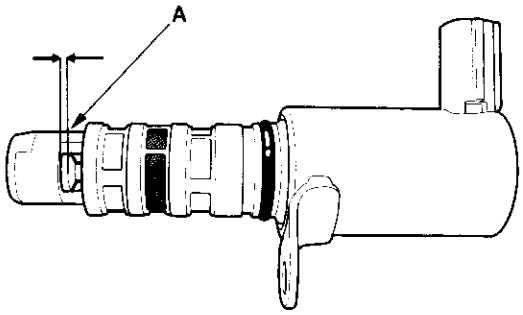
   NOTE: Install the valve in the reverse order of removal with a new o-ring (B), then check these items:

   - Clean and dry the VTC oil control solenoid valve mating surface.
   - Coat the O-ring with engine oil.
   - Do not install the VTC oil control solenoid valve while wearing fibrous gloves.
   - Be careful not to contaminate the cylinder head opening.

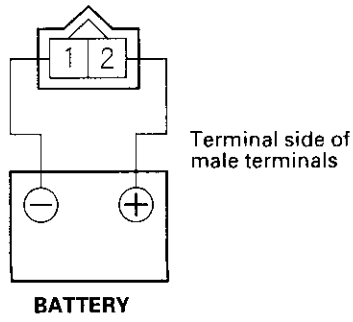


2. Check the VTC oil control solenoid valve filter for clogging. If it is clogged, replace the VTC oil control solenoid valve.

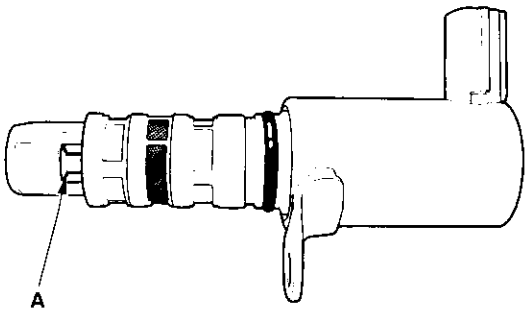
3. Check the clearance between the port (advance side) and the valve. The clearance (A) should be at least 2.8 mm (1/8 in.).



4. Connect the battery positive terminal to VTC oil control solenoid valve 2P connector terminal No. 2.

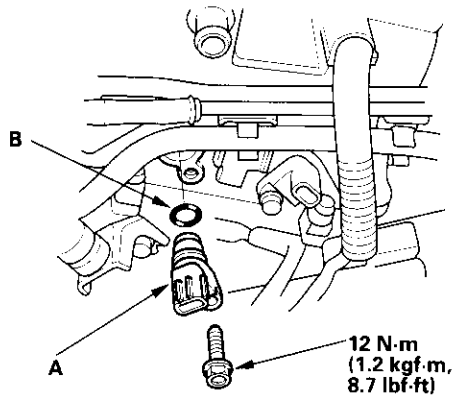


5. Connect the battery negative terminal to VTC oil control solenoid valve 2P connector terminal No. 1, then make sure the valve (A) opens fully.



CMP Sensor A Replacement

1. Remove the air cleaner (see page 11-162).
2. Disconnect the CMP sensor A 3P connector.
3. Remove the CMP sensor A (A).

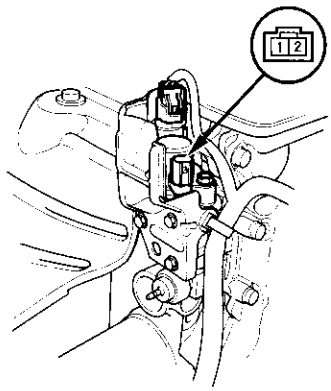


4. Install the sensor in the reverse order of removal with a new o-ring (B).

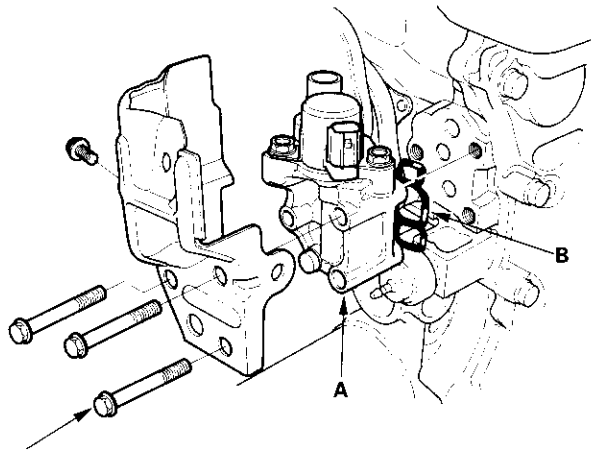
VTEC Solenoid Valve Removal/ Inspection

1. Disconnect the VTEC solenoid valve 2P connector.
2. Measure resistance between VTEC solenoid valve connector terminals No. 1 and No. 2.

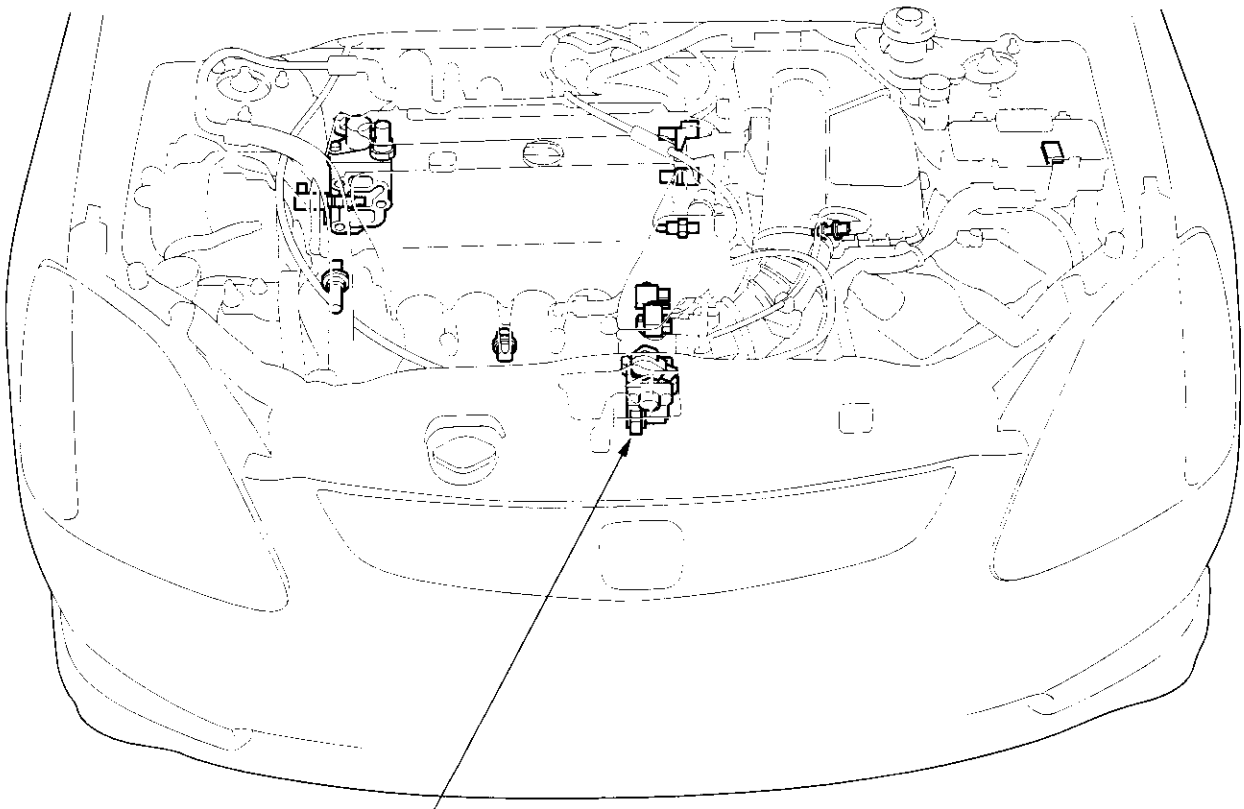
Resistance: 14—30 Ω



3. If the resistance is within specifications, remove the VTEC solenoid valve assembly (A) from the cylinder head, and check the VTEC solenoid valve filter (B) for clogging. If it is clogged, replace the solenoid valve filter, the engine oil filter, and the engine oil.



Component Location Index



IDLE AIR CONTROL (IAC) VALVE
Troubleshooting, page 11-131

DTC Troubleshooting

DTC P0505: Idle Control System Malfunction

NOTE: If DTC P1519 is stored at the same time as DTC P0505, troubleshoot DTC P1519 first, then recheck for DTC P0505.

1. Start the engine. Hold the engine at 3,000 rpm with no load (in neutral) until the radiator fan comes on, then let it idle.
2. Check the engine speed at idle with no-load conditions: headlights, blower fan, rear defogger, radiator fan, and air conditioner off.

   Is the engine running at 750±50 rpm?

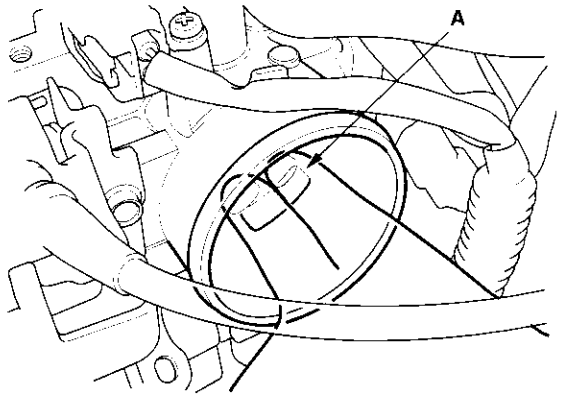
   YES—Intermittent failure, system is OK at this time. ■

   NO—If the idle speed is less than 700 rpm, go to step 3; if it's 800 rpm or higher, go to step 4.
3. Disconnect the idle air control (IAC) valve 3P connector.

   Does the engine speed increase or fluctuate?

   YES—Check the idle speed (see page 11-138). If the idle will not adjust properly, clean the passage in the throttle body, and then adjust the idle. ■

   NO—Replace the IAC valve. ■
4. Turn the ignition switch OFF.
5. Remove the intake air duct from the throttle body.
6. Start the engine, and let it idle.
7. Put your fingers on the lower port (A) in the throttle body.



Does the engine stall?

YES—Check the idle speed (see page 11-138). If it's out of specification, replace the IAC valve. ■

NO—With the throttle valve completely closed, check for vacuum leaks, and repair as necessary. ■

DTC P1519: IAC Valve Circuit Malfunction

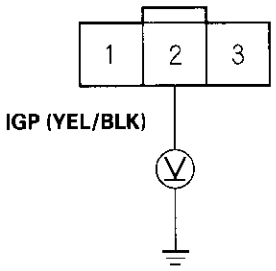
1. Reset the ECM (see page 11-4).
2. Turn the ignition switch ON (II).

   Is DTC P1519 indicated?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the IAC valve and at the ECM.■
3. Turn the ignition switch OFF.
4. Disconnect the IAC valve 3P connector.
5. Turn the ignition switch ON (II).
6. Measure voltage between IAC valve 3P connector terminal No. 2 and body ground.

IAC VALVE 3P CONNECTOR



Wire side of female terminals

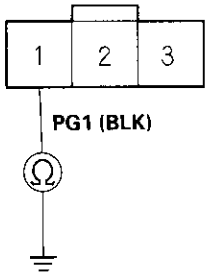
Is there battery voltage?

YES—Go to step 7.

NO—Repair open in the wire between the IAC valve and the PGM-FI main relay 1.■

7. Turn the ignition switch OFF.
8. Check for continuity between body ground and IAC valve 3P connector terminal No. 1.

IAC VALVE 3P CONNECTOR



Wire side of female terminals

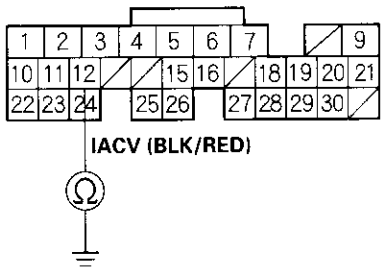
Is there continuity?

YES—Go to step 9.

NO—Repair open in the wire between the IAC valve and G101.■

9. Disconnect ECM connector A (31P).
10. Check for continuity between body ground and ECM connector terminal A12.

ECM CONNECTOR A (31P)



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the IAC valve and the ECM (A12).■

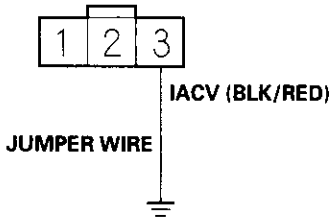
NO—Go to step 11.

(cont'd)

DTC Troubleshooting (cont'd)

11. Connect IAC valve 3P connector terminal No. 3 to body ground with a jumper wire.

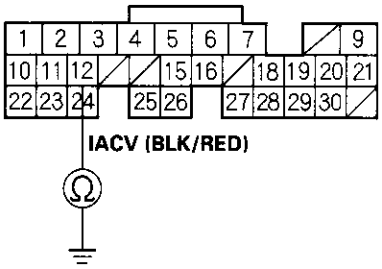
IAC VALVE 3P CONNECTOR



Wire side of female terminals

12. Check for continuity between ECM connector terminal A12 and body ground.

ECM CONNECTOR A (31P)



Wire side of female terminals

Is there continuity?

YES—Go to step 13.

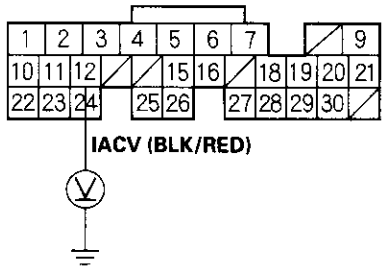
NO—Repair open in the wire between the IAC valve and the ECM (A12). ■

13. Reconnect the IAC valve 3P connector.

14. Turn the ignition switch ON (II).

15. Measure voltage between body ground and ECM connector terminal A12.

ECM CONNECTOR A (31P)



Wire side of female terminals

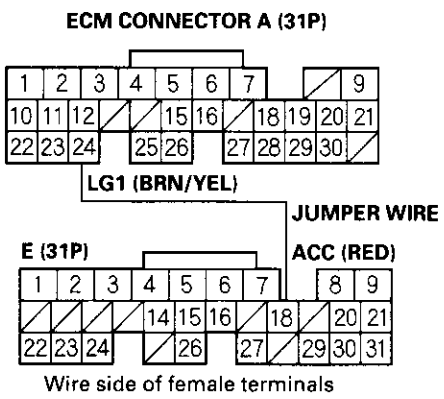
Is there battery voltage?

YES—Update the ECM if it does not have the latest software, or substitute a known-good ECM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM, replace the original ECM. ■

NO—Replace the IAC valve. ■

A/C Signal Circuit Troubleshooting

1. Turn the ignition switch ON (II).
2. Momentarily connect ECM connector terminals A24 and E18 with a jumper wire several times.



Is there a clicking noise from the A/C compressor clutch?

YES—Go to step 3.

NO—Go to step 6.

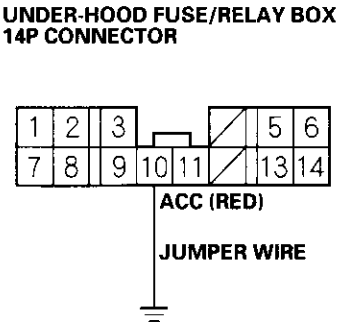
3. Start the engine.
4. Turn the blower switch ON.
5. Turn the A/C switch ON.

Does the A/C operate?

YES—The air conditioning signal is OK. ■

NO—Update the ECM if it does not have the latest software, or substitute a known-good ECM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM, replace the original ECM. ■

6. Momentarily connect under-hood fuse/relay box 14P connector terminal No. 10 to body ground with a jumper wire several times.



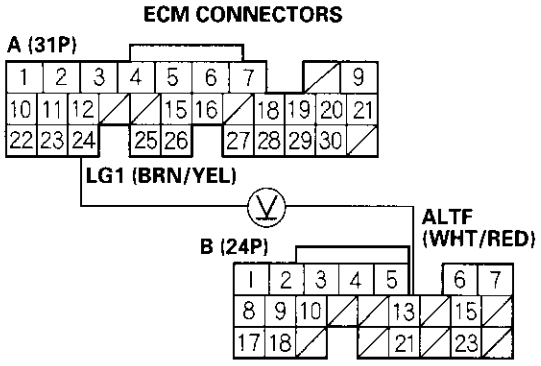
Is there a clicking noise from the A/C compressor clutch?

YES—Repair open in the wire between the ECM (E18) and the A/C clutch relay. ■

NO—Check the A/C system for other symptoms. ■

Alternator FR Signal Circuit Troubleshooting

1. Disconnect the alternator 4P connector from the alternator.
2. Turn the ignition switch ON (II).
3. Measure voltage between ECM connector terminals A24 and B13.



Wire side of female terminals

Is there about 5 V?

YES—Go to step 4.

NO—Go to step 13.

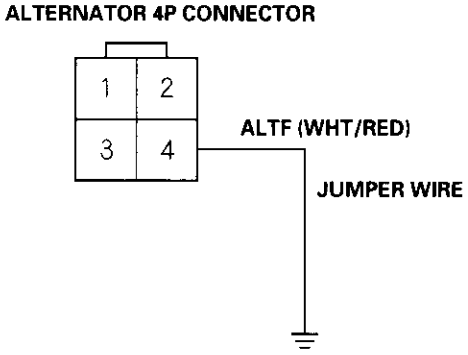
4. Turn the ignition switch OFF.
5. Reconnect the alternator 4P connector.
6. Start the engine. Hold the engine at 3,000 rpm with no load (in neutral) until the radiator fan comes on, then let it idle.
7. Measure voltage between ECM connector terminals A24 and B13.

Does the voltage decrease when the headlights and rear window defogger are turned on?

YES—The alternator FR signal is OK.■

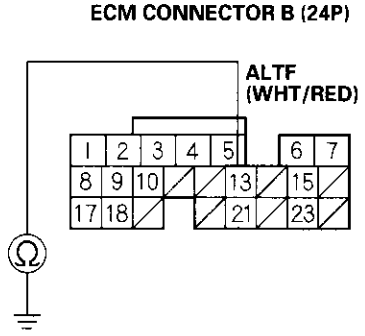
NO—Go to step 8.

8. Turn the ignition switch OFF.
9. Disconnect ECM connector B (24P).
10. Disconnect the alternator 4P connector.
11. Connect alternator 4P connector terminal No. 4 to body ground with a jumper wire.



Wire side of female terminals

12. Check for continuity between body ground and ECM connector terminal B13.



Wire side of female terminals

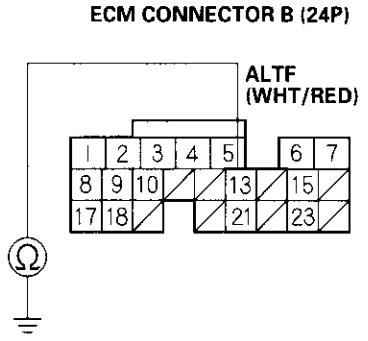
Is there continuity?

YES—Test the alternator (see page 4-22).■

NO—Repair open in the wire between the ECM (B13) and the alternator.■

13. Turn the ignition switch OFF.
14. Disconnect ECM connector B (24P).

15. Check for continuity between body ground and ECM connector terminal B13.



Wire side of female terminals

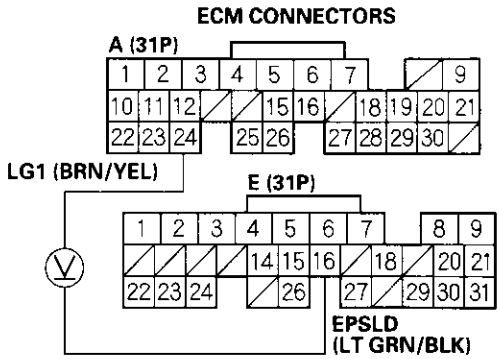
Is there continuity?

YES—Repair short in the wire between the ECM (B13) and the alternator. ■

NO—Update the ECM if it does not have the latest software, or substitute a known-good ECM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM, replace the original ECM. ■

Electrical Power Steering (EPS) Signal Circuit Troubleshooting

1. Turn the ignition switch ON (II).
2. Measure voltage between ECM connector terminals A24 and E16.



Wire side of female terminals

Is there battery voltage?

YES—Go to step 6.

NO—Go to step 3.

3. Start the engine.
4. Turn the steering wheel to the full lock position.
5. Measure voltage between ECM connector terminals A24 and E16.

Is there momentary battery voltage?

YES—The EPS signal is OK. ■

NO—Go to step 10.

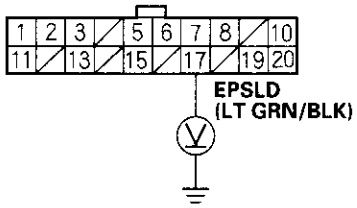
6. Turn the ignition switch OFF.
7. Disconnect the EPS control unit 20P connector.
8. Turn the ignition switch ON (II).

(cont'd)

Electrical Power Steering (EPS) Signal Circuit Troubleshooting (cont'd)

9. Measure voltage between EPS control unit terminal No.17 and body ground.

EPS CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

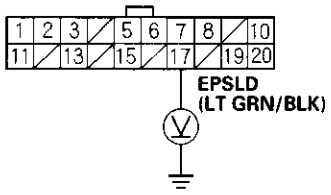
Is there battery voltage?

YES—Substitute a known-good EPS control unit and recheck.■

NO—Repair open in the wire between the ECM (E16) and the EPS control unit.■

10. Turn the ignition switch OFF.
11. Disconnect the EPS control unit 20P connector.
12. Turn the ignition switch ON (II).
13. Measure voltage between EPS control unit terminal No. 17 and the body ground.

EPS CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

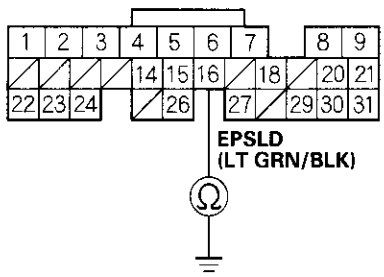
Is there battery voltage?

YES—Substitute a known-good EPS control unit and recheck.■

NO—Go to step 14.

14. Turn the ignition switch OFF.
15. Disconnect the ECM connector E (31P).
16. Check for continuity between body ground and ECM connector terminal E16.

ECM CONNECTOR E (31P)



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the ECM (E16) and the EPS control unit.■

NO—Update the ECM if it does not have the latest software, or substitute a known-good ECM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM, replace the original ECM.■

Brake Pedal Position Switch Signal Circuit Troubleshooting

1. Check the brake lights.

   Are the brake lights on without pressing the brake pedal?

   YES—Inspect the brake pedal position switch (see page 19-6).■

   NO—Go to step 2.

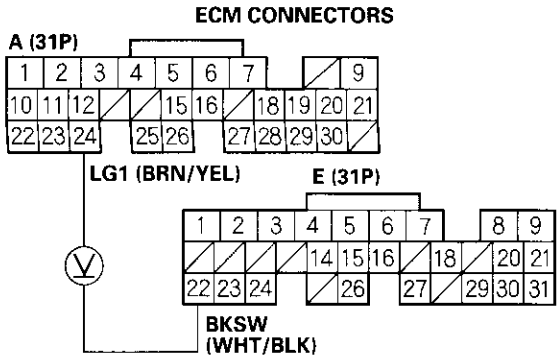
2. Press the brake pedal.

   Do the brake lights come on?

   YES—Go to step 3.

   NO—Go to step 4.

3. Measure voltage between ECM connector terminals A24 and E22 with the brake pedal pressed.



Wire side of female terminals

   Is there battery voltage?

   YES—The brake pedal position switch signal is OK.■

   NO—Repair open in the wire between the ECM (E22) and the brake pedal position switch.■

4. Inspect the No. 7 HORN, STOP (15A) fuse in the under-hood fuse/relay box.

   Is the fuse OK?

   YES—Repair open in the wire between the brake pedal position switch and the No. 7 HORN, STOP (15A) fuse. Inspect the brake pedal position switch (see page 19-10).■

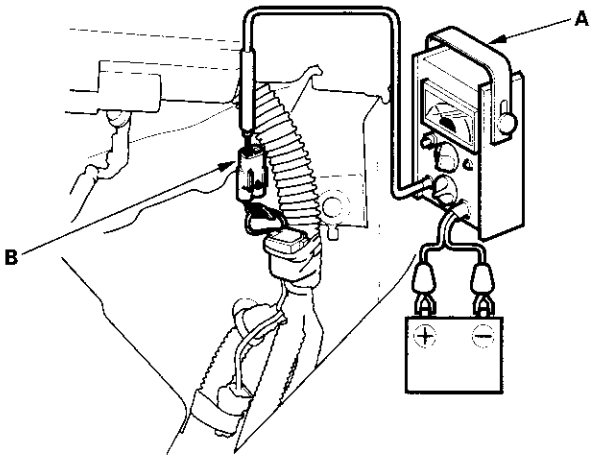
   NO—Repair short in the wire between the ECM (E22) and the No. 7 HORN, STOP (15A) fuse. Replace the No. 7 HORN, STOP (15A) fuse.■

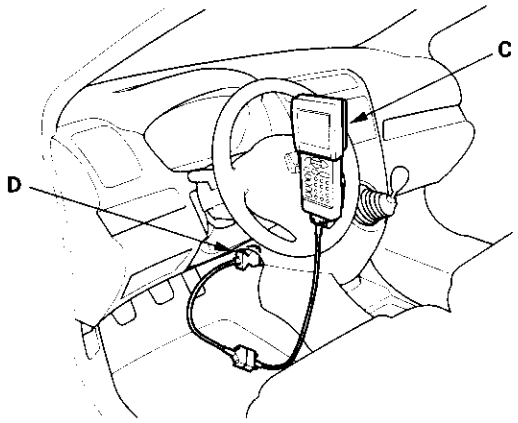
Idle Speed Inspection

NOTE:
- Leave the idle air control (IAC) valve connected.
- Before checking the idle speed, check these items:
  - The malfunction indicator lamp (MIL) has not been reported on.
  - Ignition timing
  - Spark plugs
  - Air cleaner
  - PCV system
- Pull the parking brake lever up. Start the engine, and make sure the headlights are off.

1. Disconnect the evaporative emission (EVAP) canister purge valve 2P connector.

2. Connect a tachometer (A) to the test tachometer connector (B), or connect the Honda PGM Tester (C) or an OBD II scan tool to the data link connector (DLC) (D) located under the driver's side of the dashboard.





3. Start the engine. Hold the engine at 3,000 rpm with no load (in neutral) until the radiator fan comes on, then let it idle.

4. Check the idle speed with no-load conditions: headlights, blower fan, radiator fan, and air conditioner off.

   Idle speed should be: 750 ± 50 rpm

5. Let the engine idle for 1 minute with the heater fan switch on HI and air conditioner on, then check the idle speed.

   Idle speed should be: 750 ± 50 rpm

   NOTE: If the idle speed is not within specification, go to the Symptom Troubleshooting Index.

6. Reconnect the EVAP canister purge valve 2P connector.

ECM Idle Learn Procedure

The idle learn procedure must be done so the ECM can learn the engine idle characteristics.

Do the idle learn procedure whenever you do any of these actions:

- Disconnect the battery.
- Replace the ECM or disconnect its connector.
- Reset the ECM.
  NOTE: Erasing DTCs with the Honda PGM Tester does not require you to do the idle learn procedure.
- Remove the No.6 ECU (ECM) (15A) fuse from the under-hood fuse/relay box.
- Remove the No.19 battery (80A) fuse from the under-hood fuse/relay box.
- Remove PGM-FI main relay 1.
- Remove any of the wires from the under-hood fuse/relay box.
- Disconnect any of the connectors from the under-hood fuse/relay box.
- Disconnect the connector between the engine compartment wire harness and ECM wire harness.
- Disconnect the G2 terminal from the transmission housing.
- Disconnect the G1 terminal from the body.
- Disconnect the G101 terminal from the cylinder head cover.

Procedure:

To complete the idle learn procedure, do this:

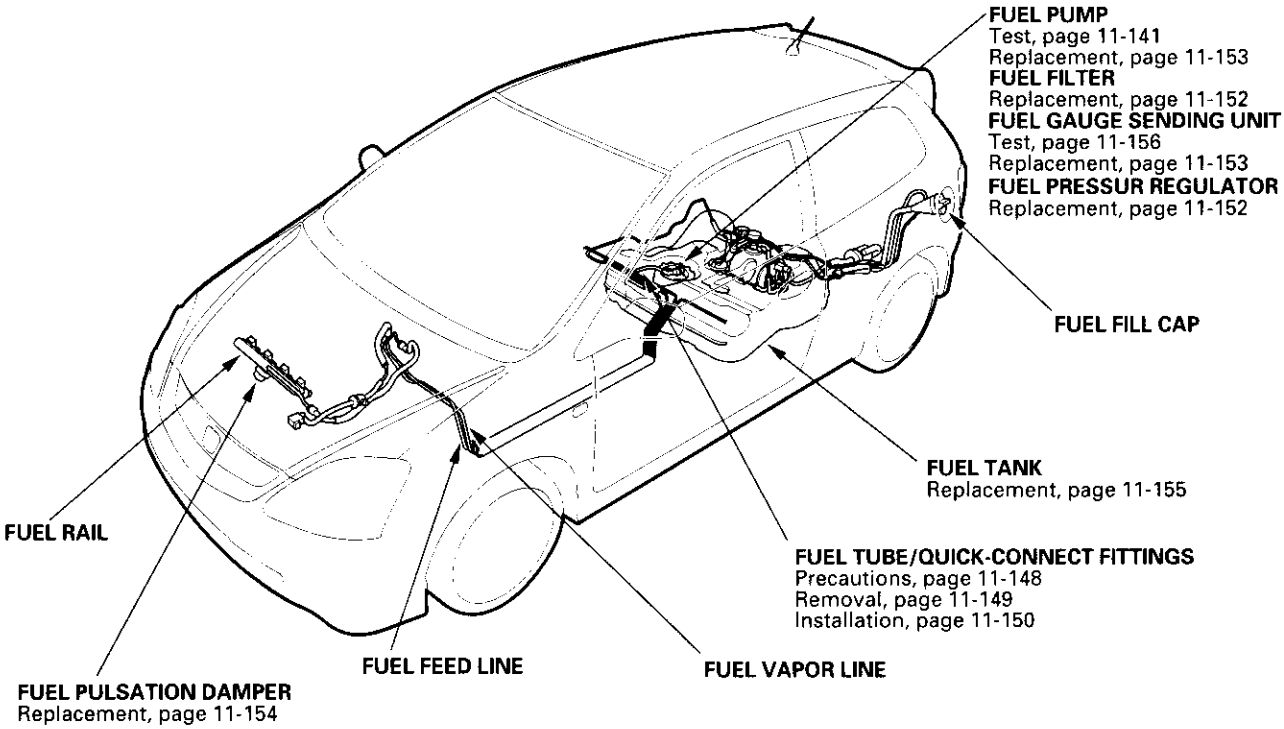
1. Make sure all electrical items (A/C, audio, rear defogger, lights, etc.,) are off.

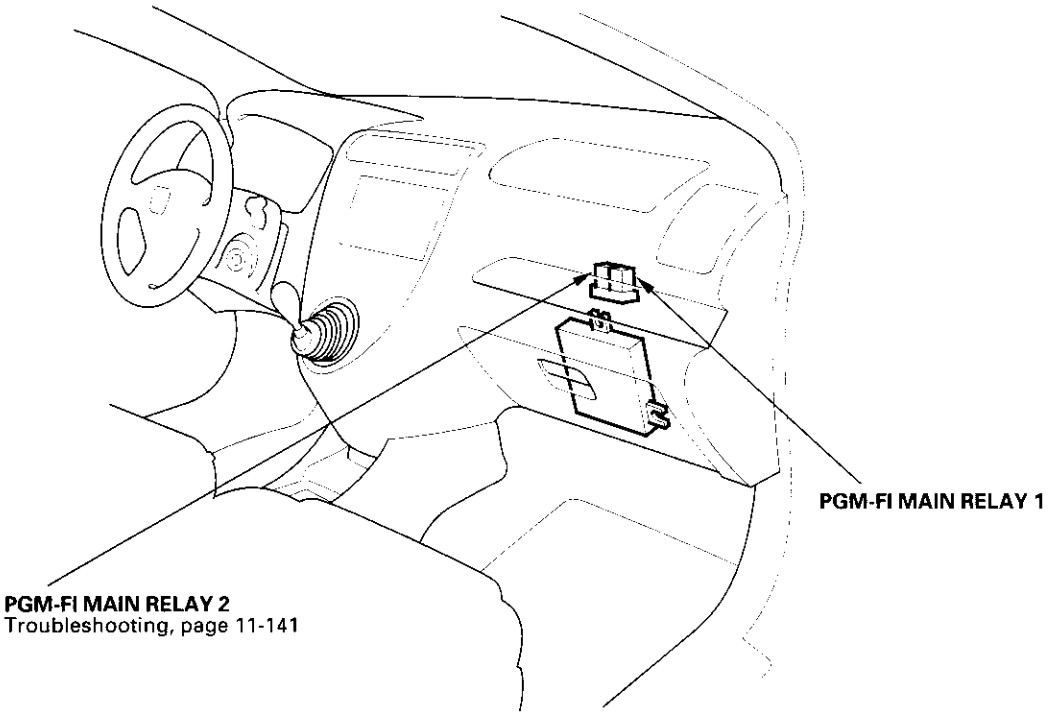
2. Start the engine, and hold it at 3,000 rpm with no load (in neutral) until the radiator fan comes on, or until the engine coolant temperature reaches 194°F (90°C).

3. 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

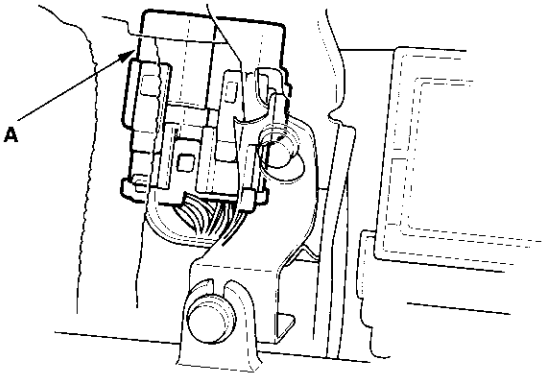




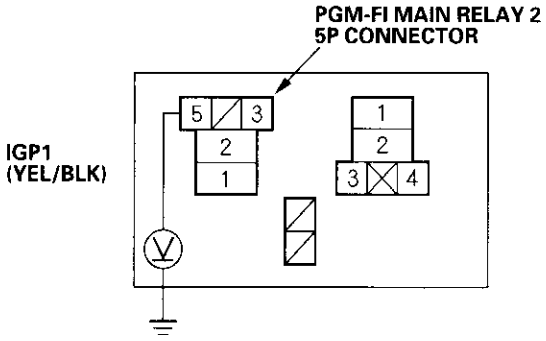
Fuel Pump Circuit Troubleshooting

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 OFF.
2. Remove the glove box (see page 20-63), then remove the PGM-FI main relay 2 (A).



3. Turn the ignition switch ON (II).
4. Measure voltage between PGM-FI main relay 2 5P connector terminal No. 5 and body ground.



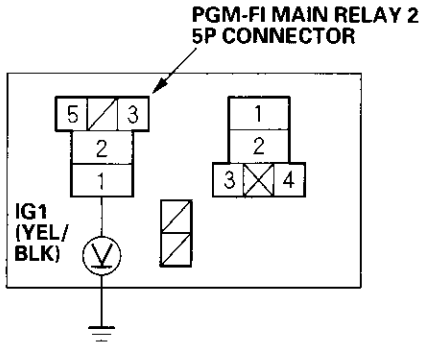
Wire side of female terminals

Is there battery voltage?

YES—Go to step 5.

NO—Repair open in the wire between the PGM-FI main relay 1 and the PGM-FI main relay 2.■

5. Measure voltage between PGM-FI main relay 2 5P connector terminal No. 1 and body ground.



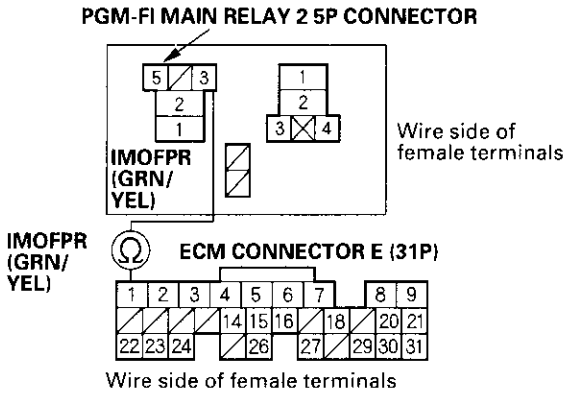
Wire side of female terminals

Is there battery voltage?

YES—Go to step 6.

NO—Repair open in the wire between the under-dash fuse/relay box and PGM-FI main relay 2.■

6. Turn the ignition switch OFF.
7. Disconnect ECM connector E (31P).
8. Check for continuity between PGM-FI main relay 2 5P connector terminal No. 3 and ECM connector terminal E1.



Wire side of female terminals

Is there continuity?

YES—Go to step 9.

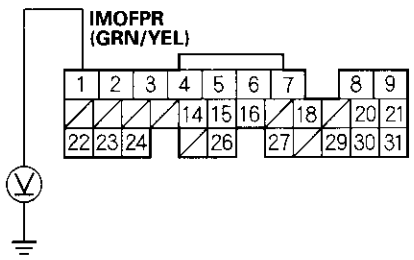
NO—Repair open in the wire between the PGM-FI main relay 2 and the ECM (E1).■

(cont'd)

Fuel Pump Circuit Troubleshooting (cont'd)

9. Reinstall the PGM-FI main relay 2.
10. Turn the ignition switch ON (II).
11. Measure voltage between ECM/PCM connector terminal E1 and body ground.

ECM CONNECTOR E (31P)



Wire side of female terminals

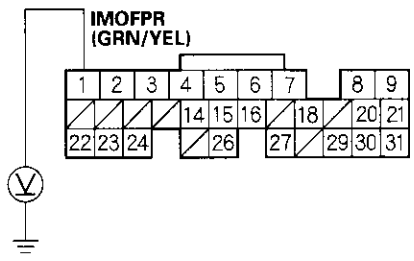
Is there battery voltage?

YES—Go to step 12.

NO—Replace the PGM-FI main relay 2.■

12. Turn the ignition switch OFF.
13. Reconnect ECM connector E (31P).
14. Turn the ignition switch ON (II), and measure voltage between ECM connector terminal E1 and body ground within the first 2 seconds after the ignition switch was turned ON (II).

ECM CONNECTOR E (31P)



Wire side of female terminals

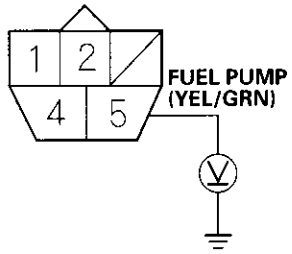
Is there battery voltage?

YES—Update the ECM if it does not have the latest software, or substitute a known-good ECM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM, replace the original ECM.■

NO—Go to step 15.

15. Turn the ignition switch OFF.
16. Remove the rear seat cushion (see page 20-80).
17. Remove the access panel from the floor.
18. Measure voltage between fuel pump 5P connector terminal No. 5 and body ground within the first 2 seconds after the ignition switch was turned ON (II).

FUEL PUMP 5P CONNECTOR



Wire side of female terminals

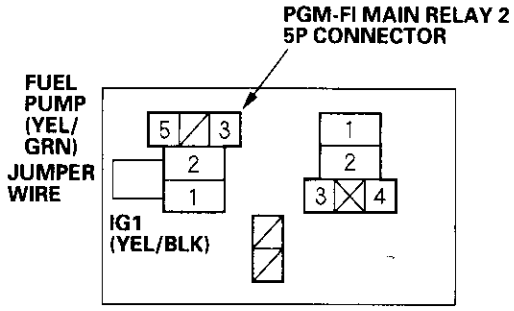
Is there battery voltage?

YES—Go to step 24.

NO—Go to step 19.

19. Turn the ignition switch OFF.
20. Remove the PGM-FI main relay 2.

21. Connect PGM-FI main relay 2 5P connector terminals No. 1 and No. 2 with a jumper wire.

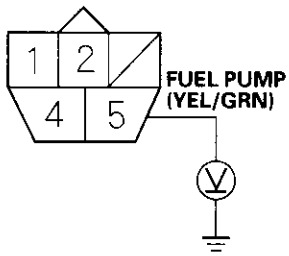


Wire side of female terminals

22. Turn the ignition switch ON (II).

23. Measure voltage between fuel pump 5P connector terminal No. 5 and body ground.

FUEL PUMP 5P CONNECTOR



Wire side of female terminals

Is there battery voltage?

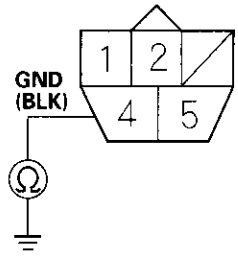
YES—Replace the PGM-FI main relay 2.■

NO—Repair open in the wire between the PGM-FI main relay 2 and the fuel pump 5P connector.■

24. Turn the ignition switch OFF.

25. Check for continuity between fuel pump 5P connector terminal No. 4 and body ground.

FUEL PUMP 5P CONNECTOR



Wire side of female terminals

Is there continuity?

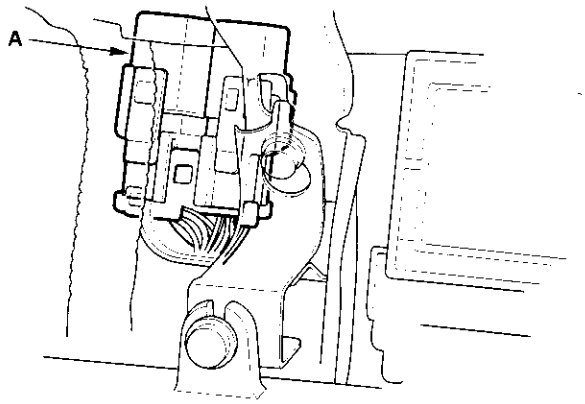
YES—Replace the fuel pump.■

NO—Repair open in the wire between the fuel pump 5P connector and G551.■

Fuel Pressure Relieving

Before disconnecting fuel lines or hoses, relieve pressure from the system by disconnecting the fuel tube/quick connect fitting in the engine compartment.

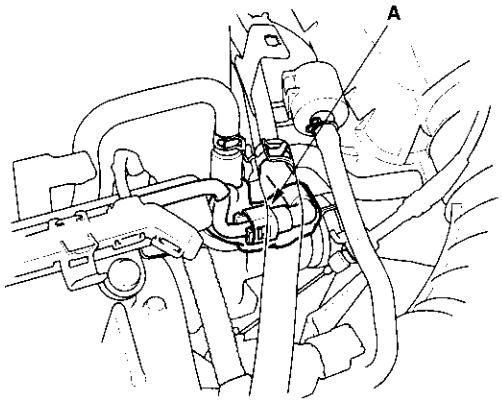
1. Turn the ignition switch OFF.
2. Remove the PGM-FI main relay 2 (A).



3. Start the engine, and let it idle until it is stalls.

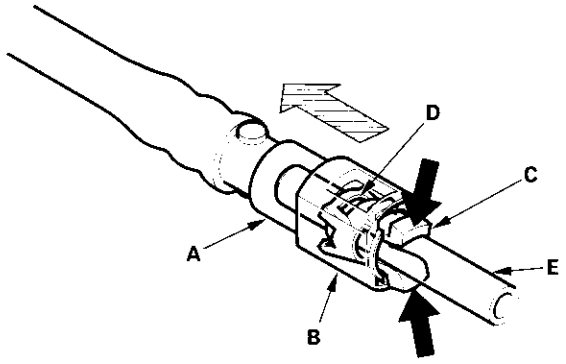
   NOTE: The DTCs or Temporary DTCs P0301, P0302, P0303, P0304 may come on during this procedure. If any DTCs are stored, ignore them.

4. Turn the ignition switch OFF.
5. Remove the fuel fill cap, and relieve fuel pressure in the fuel tank.
6. Remove the engine cover.
7. Disconnect the negative cable from the battery.
8. Check the fuel quick-connect fitting for dirt, and clean it if necessary.
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 pawls (D). Pull the connector off.

    NOTE:
    - Prevent the remaining fuel in the fuel feed line or hose from flowing out with a rag or shop towel.
    - 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.



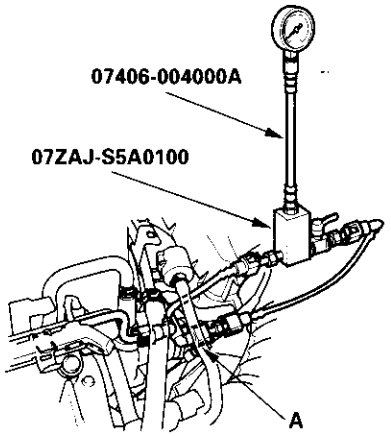
11. After disconnecting the quick-connect fitting, check it for dirt or damage (see page 11-149).

Fuel Pressure Test

Special Tools Required
- Fuel pressure gauge 07406-004000A
- Fuel pressure gauge set 07ZAJ-S5A0100

1. Relieve the fuel pressure (see page 11-144).

2. Disconnect the quick-connect fitting (A). Attach the fuel pressure gauge set and 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 fill port with the fuel fill cap removed. The fuel pump should run for 2 seconds when the ignition switch is first turned on.

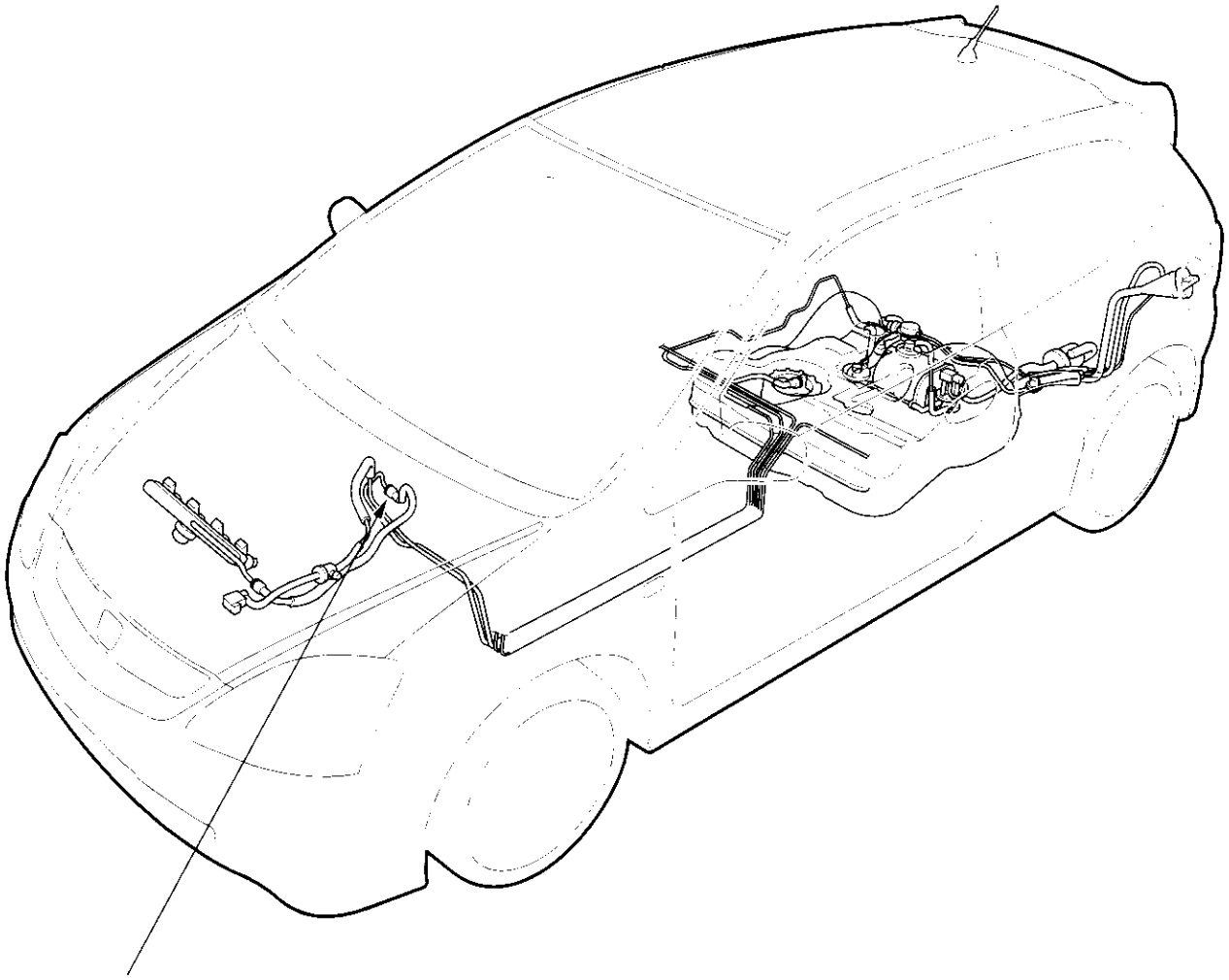
   - If the pump runs, go to step 5.
   - If the pump does not run, do the fuel pump circuit troubleshooting (see page 11-141).

5. Read the pressure gauge. The pressure should be 320—370 kpa (3.3—3.8 kgf/cm^2, 47—52 psi)

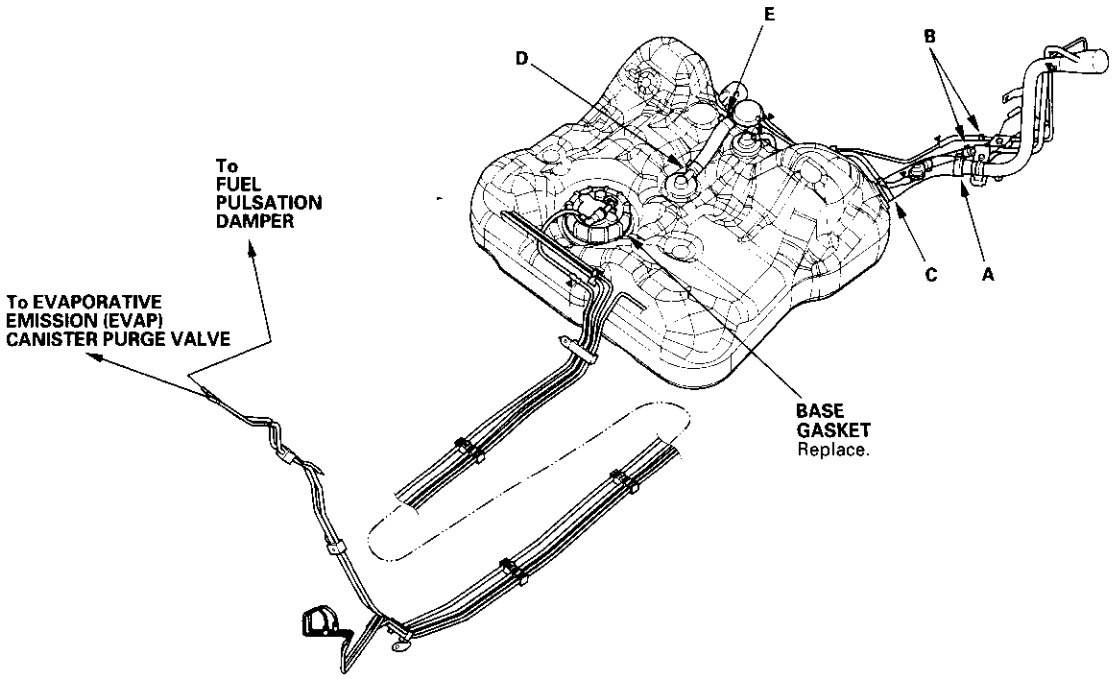
   - If the pressure is OK, the test is complete.
   - If the pressure is out of specification, replace the fuel pressure regulator and the fuel filter (see page 11-152), then recheck the fuel pressure.

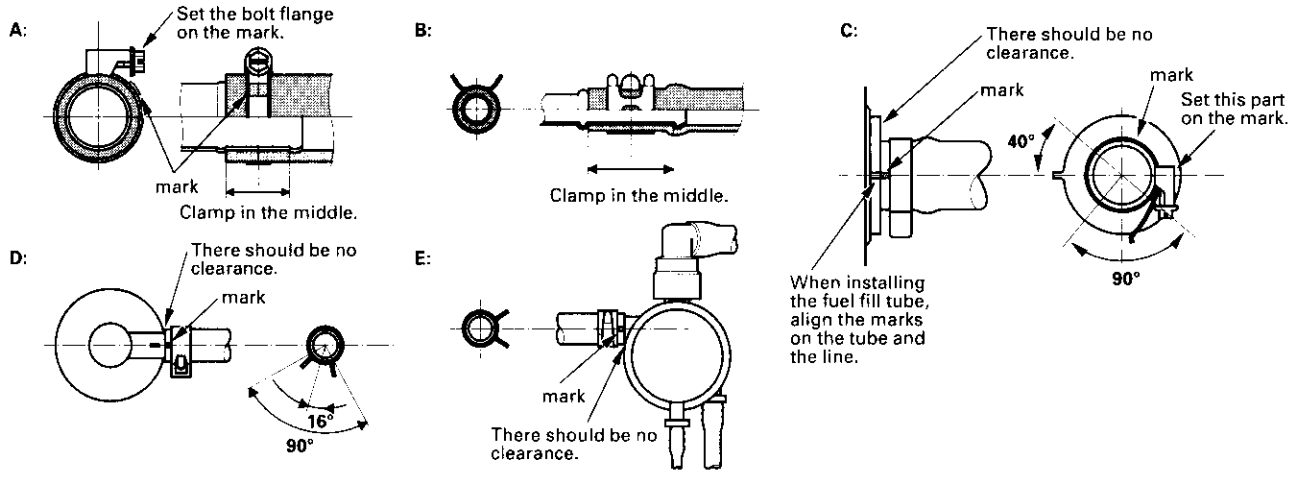
Fuel Line Inspection

Check the fuel system lines, hoses, and fuel filter for damage, leaks, and deterioration. Replace any damaged parts.



Check all clamps and retighten if necessary.
▲: Do not disconnect the hose from the line at these joints.

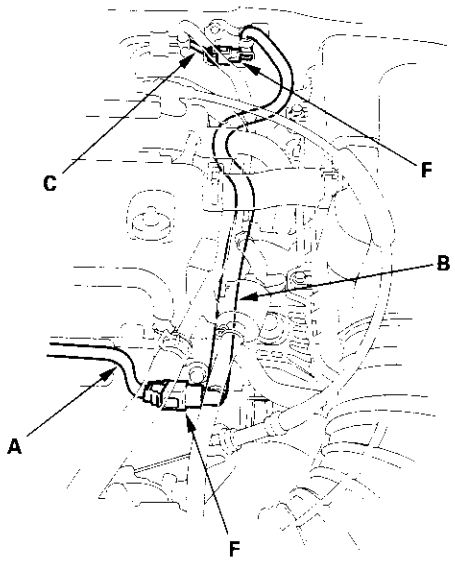


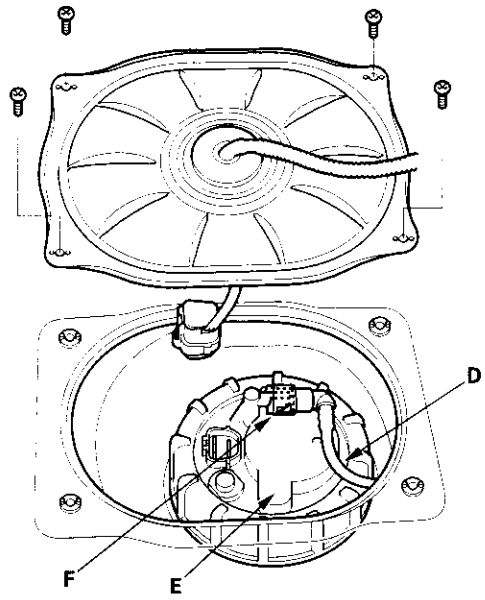


Fuel Line/Quick-Connect Fittings Precaution

The fuel tube/quick-connect fittings connect the fuel rail (A) to fuel feed hose (B), the fuel feed hose (B) to the fuel line (C), and the fuel tube (D) to the fuel pump assembly (E). When removing or installing the fuel feed hose, fuel pump assembly, or fuel tank, it is necessary to disconnect or connect the quick-connect fittings. Pay attention to the following:

- The fuel feed hose (B), fuel tube (D), and quick-connect fittings (F) are not heat-resistant; be careful not to damage them during welding or other heat-generating procedures.
- The fuel feed hose (B), fuel tube (D) and quick-connect fittings (F) are not acid-proof; do not touch them with a shop towel which was used for wiping battery electrolyte. Replace them if they came into contact with electrolyte or something similar.
- When connecting or disconnecting the fuel feed hose (B), fuel tube (D), and quick-connect fittings (F), be careful not to bend or twist them excessively. Replace them it they are damaged.





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.
- it has been removed from the line.
- it is damaged.

PART	MANUFACTURER	RETAINER COLOR
ENGINE COMPARTMENT (FUEL FEED HOSE: FUEL LINE SIDE)	TOKAI	GREEN
ENGINE COMPARTMENT (FUEL FEED HOSE: FUEL RAIL SIDE)	TOKAI	BLU
FUEL TANK UNIT	SANOH	WHITE

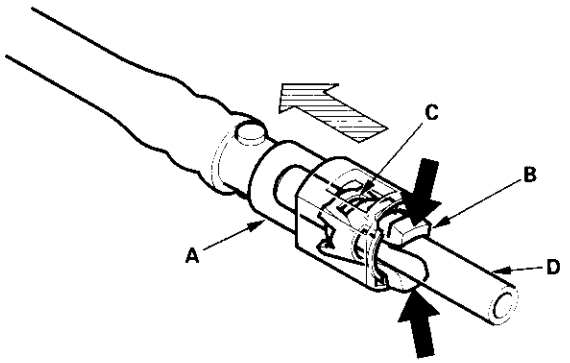
Fuel Line/Quick-Connect Fittings Removal

1. Relieve fuel pressure (see page 11-144).

2. Check the fuel quick-connect fittings for dirt, and clean if necessary.

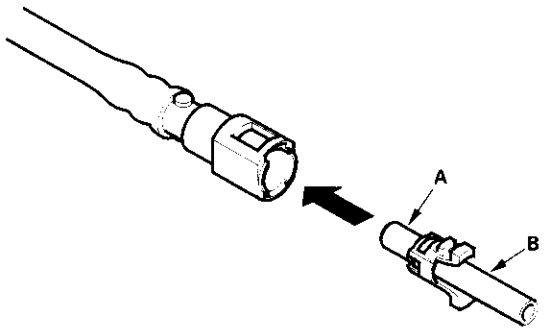
3. Hold the connector (A) with one hand and squeeze the retainer tabs (B) with the other hand to release them from the locking paws (C). Pull the connector off.

   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.



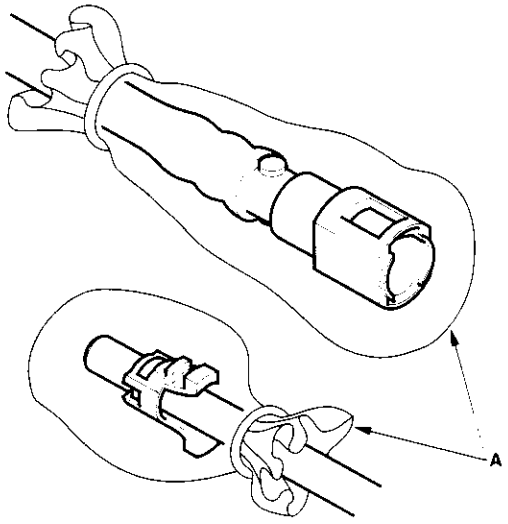
4. Check the contact area (A) of the line (B) for dirt and damage.

   - If the surface is dirty, clean it.
   - if the surface is rusty or damaged, replace the fuel pump, fuel filter, fuel feed line.



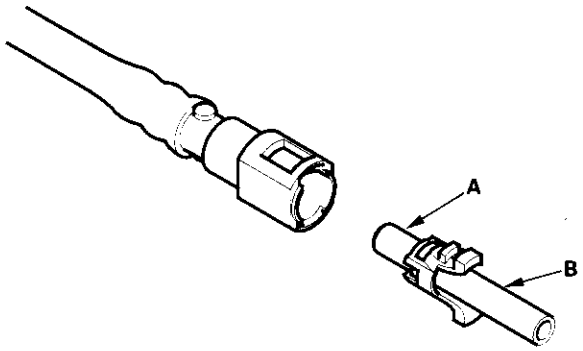
5. To prevent damaged and keep foreign matter out, cover the disconnected connector and line end with plastic bags (A).

   NOTE:
   - The retainer cannot be reused once it has been removed from the line.
     Replaced 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.
     - it has been removed from the line.
     - it is damaged.

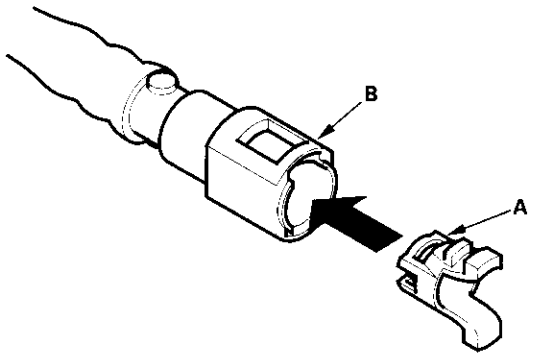


Fuel Line/Quick-Connect Fittings Installation

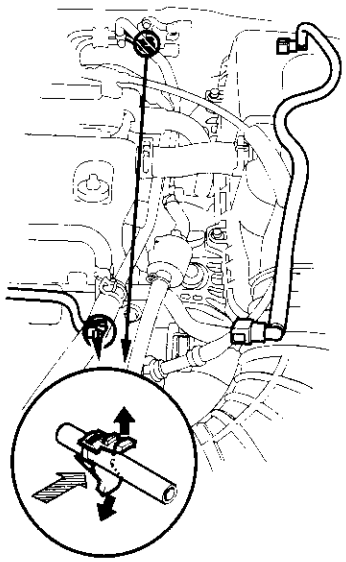
1. Check the contact area (A) of the line (B) for dirt and damage, and clean if necessary.

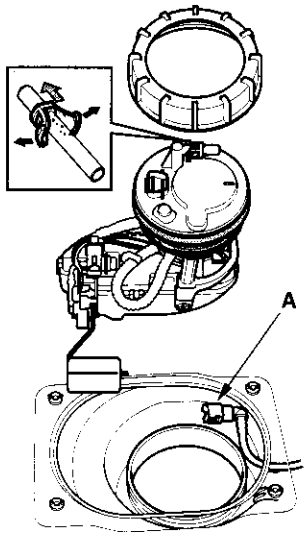


2. Insert a new retainer (A) into the connector (B) if the retainer is damaged, or after
   - replacing the fuel rail.
   - replacing the fuel feed line.
   - replacing the fuel pump.
   - replacing the fuel filter.
   - replacing the fuel gauge sending unit
   - removing the retainer from the line.



3. Before connecting a new fuel tube/quick-connect fitting assembly (A), remove the old retainer from the mating line.

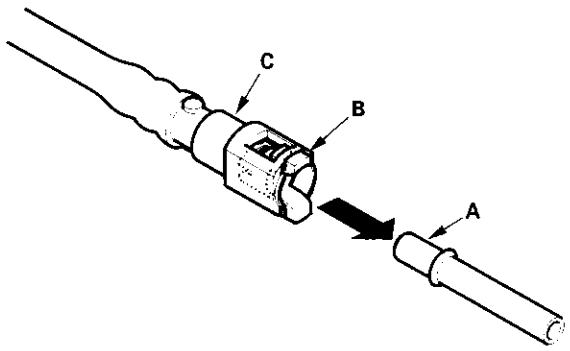




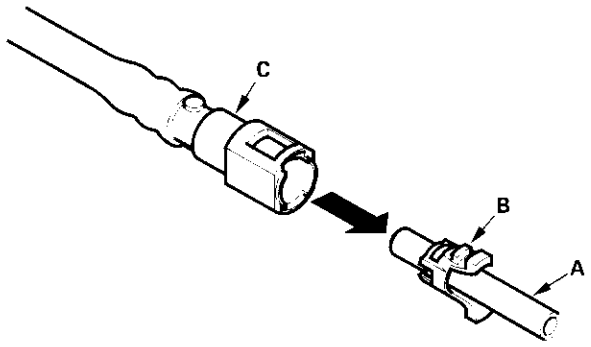
4. Align the quick-connect fittings with the line (A), and align the retainer (B) locking pawls with the connector (C) grooves. Then press the quick-connect fittings onto the line until both retainer pawls lock with a clicking sound.

   NOTE: If it is hard to connect, put a small amount of new engine oil on the line end.

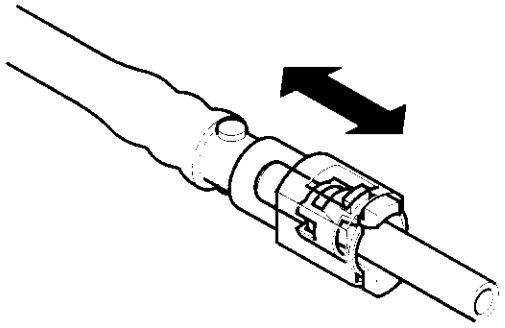
Connection with new retainer:



Reconnection to existing retainer:



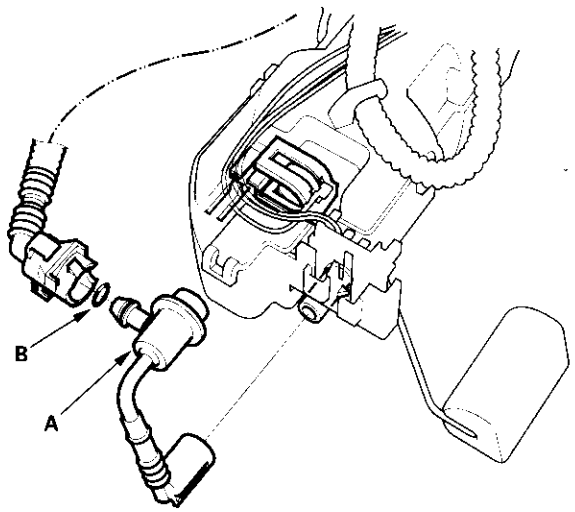
5. Make sure the connection is secure and that the pawls are firmly locked into place; check visually and by pulling the connector.



6. Reconnect the negative cable to the battery, and turn the ignition switch ON (II). The fuel pump will run for about 2 seconds, and fuel pressure will rise. Repeat 2 or 3 times, and check that there are no fuel leaks.

Fuel Pressure Regulator Replacement

1. Remove the fuel pump (see page 11-153).
2. Remove the fuel pressure regulator (A).

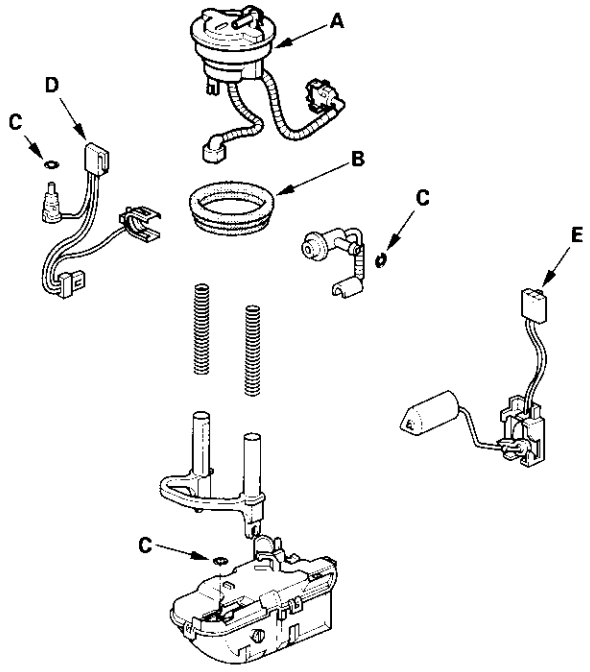


3. Install the part in the reverse order of removal with a new o-ring (B).

Fuel Filter Replacement

The fuel filter should be replaced whenever the fuel pressure drops below the specified value (270—320 kPa, 2.8—3.3 kgf/cm², 40—47 psi), after making sure that the fuel pump and the fuel pressure regulator are OK.

1. Remove the fuel pump (see page 11-153).
2. Remove the fuel filter (A).

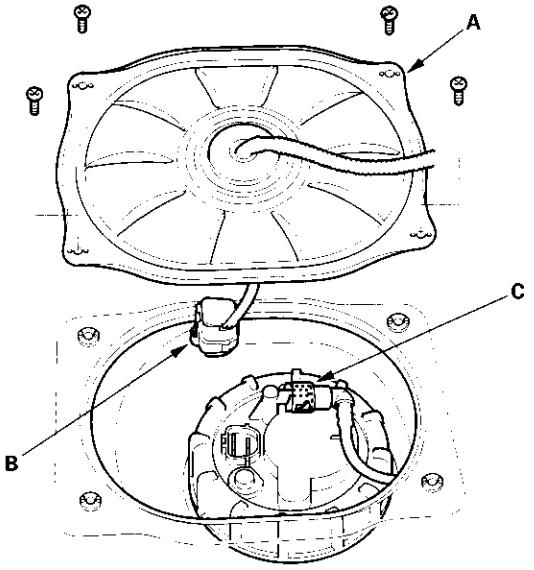


3. Install in the reverse order of removal with a new base gasket (B) and a new o-ring (C), then check these items:
   - When connecting the wire harness, make sure the connection is secure and the terminal (D) is firmly locked into place.
   - When installing the fuel gauge sending unit (E), make sure the connection is secure and the connector is firmly locked into place. Be careful not to bend or twist it excessively.

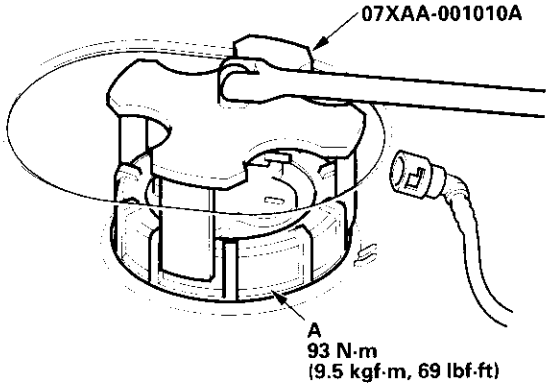
Fuel Pump/Fuel Gauge Sending Unit Replacement

Special Tools Required
Fuel sender wrench 07XAA-001010A

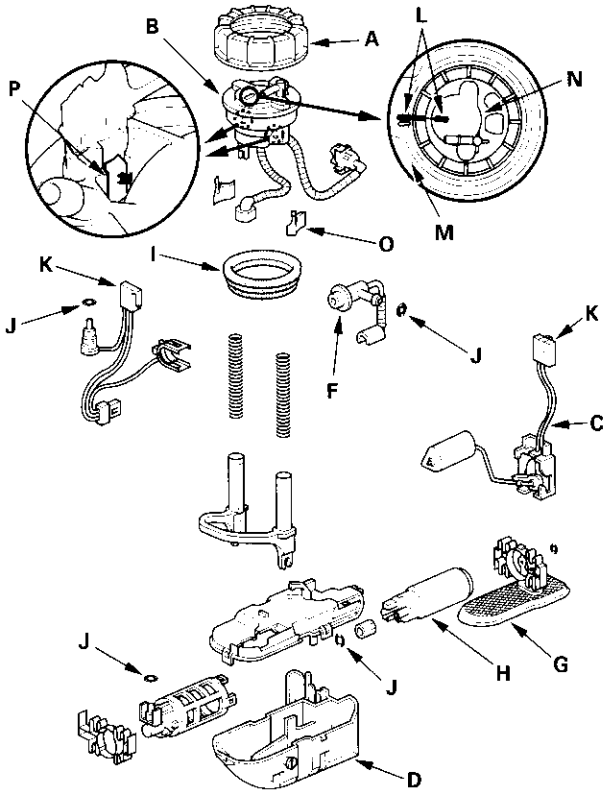
1. Relieve the fuel pressure (see page 11-144).
2. Remove the fuel fill cap.
3. Remove the seat cushion (see page 20-80).
4. Remove the access panel (A) from the floor.



5. Disconnect the fuel pump 5P connector (B).
6. Disconnect the quick-connect fitting (C) from the fuel tank unit.
7. Using the special tool, loosen the fuel tank unit locknut (A).



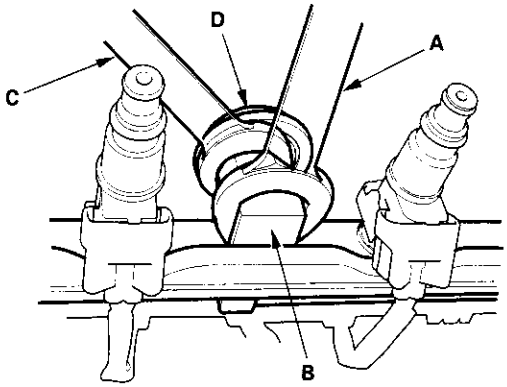
8. Remove the locknut (A) and the fuel tank unit.



9. Remove the stopper (O). Release the hook (P) and remove the fuel filter (B), the fuel gauge sending unit (C), the case (D), the wire harness (E), and the fuel pressure regulator (F).
10. When connecting the fuel tank unit, make sure the connection is secure and the suction filter (G) is firmly connected to the fuel pump (H).
11. Install the fuel tank unit in the reverse order of removal with a new base gasket (I) and new o-rings (J), then check these items:
    - When connecting the wire harness, make sure the connection is secure and the connector (K) is firmly locked into the place.
    - When installing the fuel gauge sending unit, make sure the connection is secure and the connector is firmly locked into place. Be careful not to bend or twist the connector excessively.
    - When installing the fuel tank unit, align the marks (L) on the fuel tank (M) and the fuel tank unit (N).

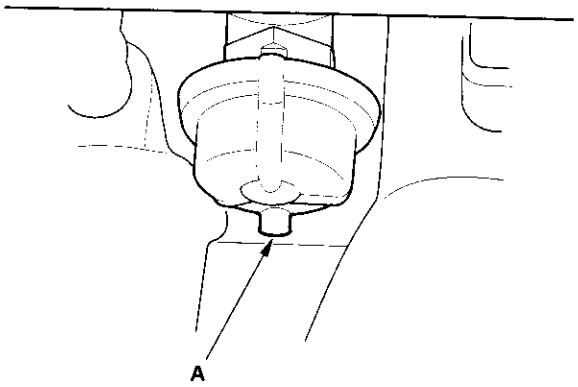
Fuel Pulsation Damper Replacement

1. Relieve the fuel pressure (see page 11-144).
2. Remove the engine cover.
3. Remove the fuel rail mounting nuts from the fuel rail.
4. Remove the ground cable (G101).
5. Raise the fuel rail.
6. Place a wrench (A) on the fuel rail (B).



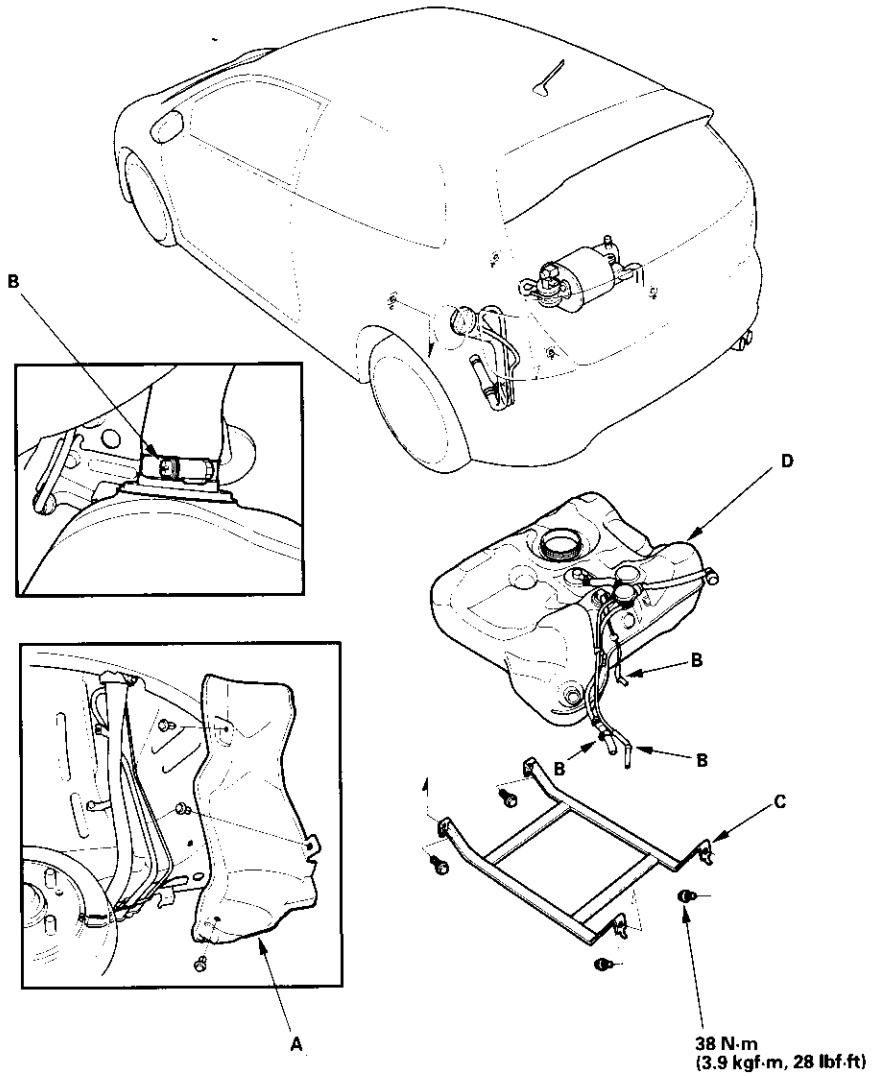
7. Place a wrench (C) on the fuel pulsation damper (D).
8. Remove the pulsation damper.
9. Install the fuel pulsation damper in the reverse order of removal with new washers.

NOTE:
- Replace all washers whenever the fuel pulsation damper is loosened or removed.
- If the drain hole (A) of the fuel pulsation damper cover does not face bottom, reinstall it as shown.



Fuel Tank Replacement

1. Relieve the fuel pressure (see page 11-144).
2. Drain the fuel tank: Remove the fuel pump (see page 11-153). Using a hand pump, hose, and container suitable for gasoline, draw the fuel from the fuel tank.
3. Jack up the vehicle, and support it with safety stands.
4. Remove the fuel pipe cover (A). Disconnect the fuel vapor hose and quick-connect fittings. Disconnect the hoses. Slide back the clamps (B), then twist the hoses as you pull to avoid damaging them.



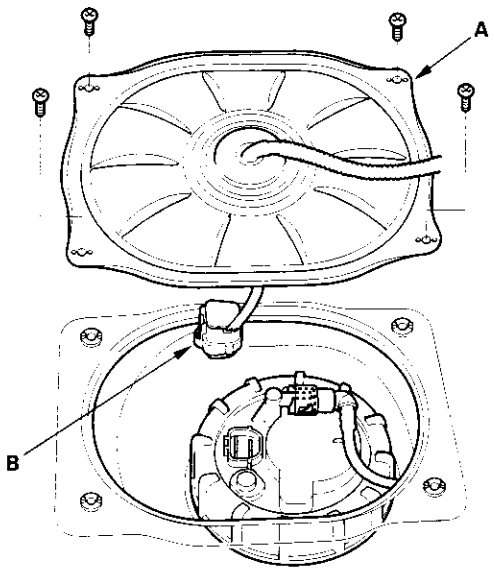
5. Place a jack or other support under the tank.
6. Remove the strap bolts, and let the strap (C) hang free.
7. Remove the fuel tank (D). If it sticks to the undercoat on its mount, carefully pry it off the mount.
8. Install the parts in the reverse order of removal.

Fuel Gauge Sending Unit Test

Special Tools Required
Fuel sender wrench 07XAA-001010A

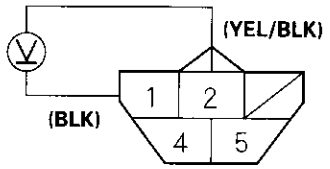
NOTE: For the fuel gauge system circuit diagram, refer to the Gauges Circuit Diagram (see page 22-58).

1. Check the No. 10 METER (7.5A) fuse in the under-dash fuse/relay box before testing.
2. Do the gauge drive circuit check (see page 22-56).
   - If the fuel gauge needle sweeps from minimum to maximum position and then returns to the minimum position, the gauge is OK. Go to step 3.
   - If the fuel gauge needle does not sweep from minimum to maximum position position and then return to the minimum position, replace the gauge assembly and retest.
3. Turn the ignition switch OFF.
4. Remove the rear seat cushion (see page 20-80).
5. Remove the access panel (A) from the floor.



6. Disconnect the fuel pump 5P connector (B).
7. Measure voltage between fuel pump 5P connector terminals No. 1 and No. 2 with the ignition switch ON (II). There should be battery voltage.
   - If the voltage is as specified, go to step 8.
   - If the voltage is not as specified, check for:
     - an open in the YEL/BLK or BLK wire.
     - poor ground (G551).

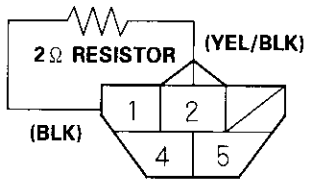
FUEL PUMP 5P CONNECTOR



Wire side of female terminals

8. Turn the ignition switch OFF. Remove the No. 9 BACK UP (7.5A) fuse from the under-hood fuse/relay box for at least 10 seconds, then reinstall it.
9. Install a 2 Ω resistor between fuel pump 5P connector terminals No. 1 and No. 2, then turn the ignition switch ON (II).

FUEL PUMP 5P CONNECTOR



Wire side of female terminals

10. Check that the pointer of the fuel gauge indicates "F".

    - If the pointer does not indicate "F", replace the gauge.
    - If the pointer indicates "F", inspect the fuel gauge sending unit.

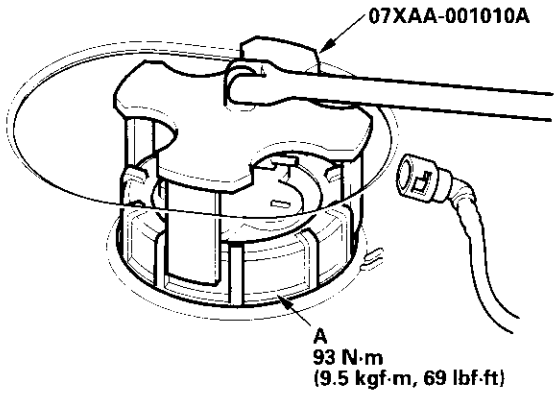
    NOTE: The pointer of the fuel gauge returns to the bottom of the gauge dial when the ignition switch is OFF, regardless of the fuel level.

11. Relieve the fuel pressure (see page 11-144).

12. Remove the fuel fill cap.

13. Disconnect the quick-connect fittings from the fuel pump.

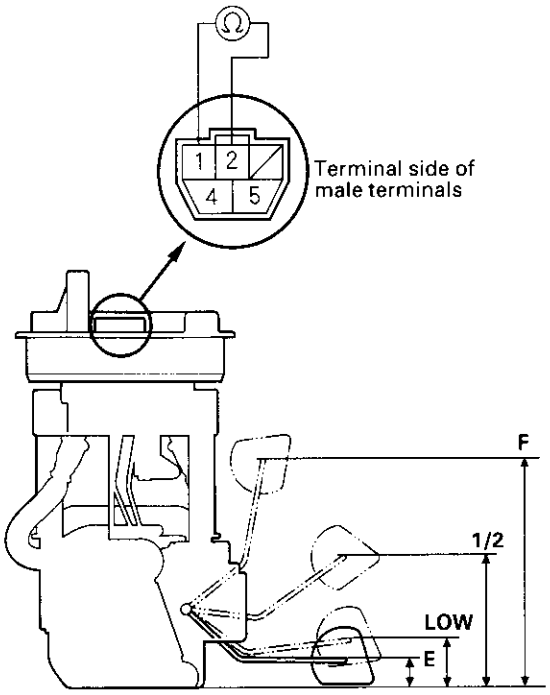
14. Using the special tool, loosen the fuel tank unit locknut (A).



15. Measure resistance between the No. 1 and No. 2 terminals with the float at E (EMPTY), 1/2 (HALF FULL), and F (FULL) positions.
    If you do not get the following readings, replace the fuel gauge sending unit (see page 11-163).

Float Position	F	1/2	LOW	E
Resistance (Ω)	11 to 13	68.5 to 74.5	114.4 to 126.6	130 to 132

NOTE: Remove the No. 9 BACK UP (7.5A) 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 fuel gauge sending unit test (see page 11-156).

   - If the system is OK, go to step 2.
   - If the system has any malfunction, repair it.

2. Turn the ignition switch OFF. Remove the No. 9 BACK UP (10A) fuse from the under-hood fuse/relay box for at least 30 seconds, then reinstall it.

3. Turn the ignition switch ON (II) with the float at the E (EMPTY) position.

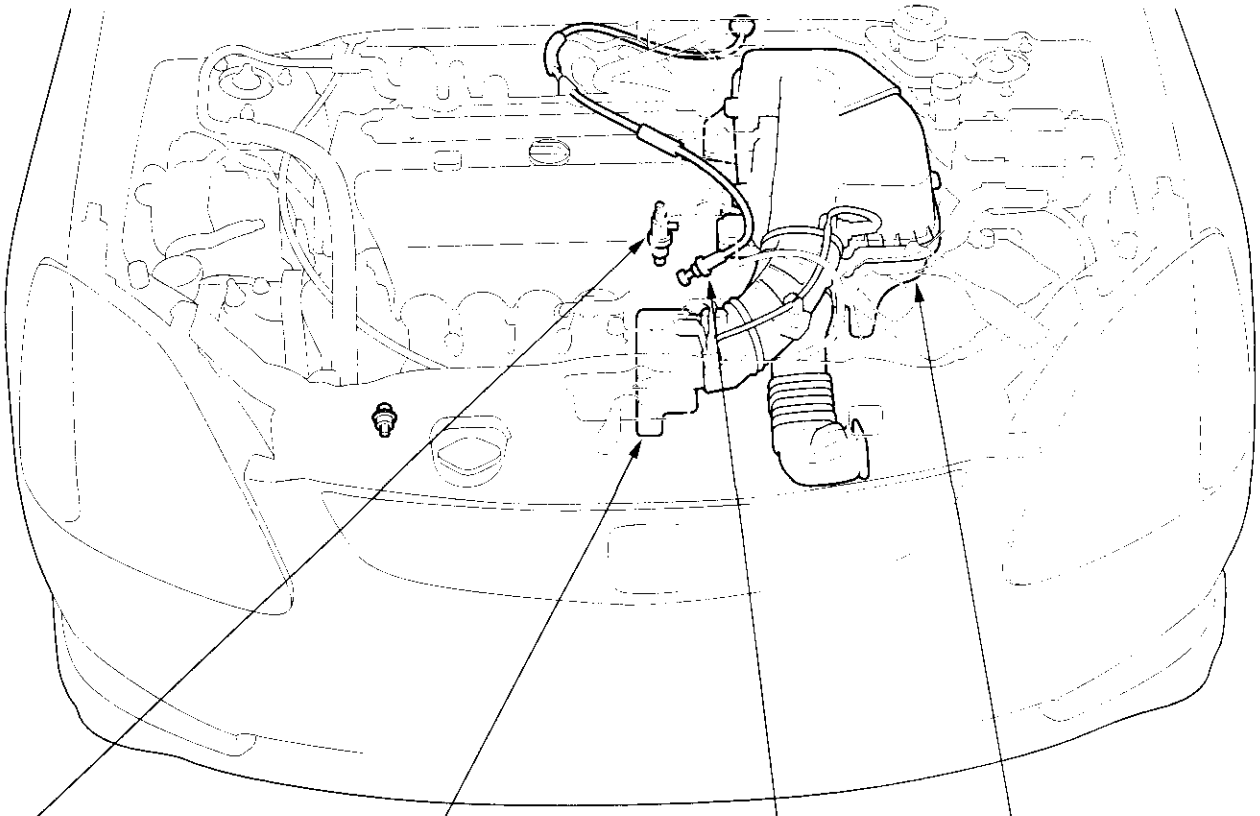
   - If the low fuel indicator is on, go to step 4.
   - If the low fuel indicator is not on, refer to the low fuel indicator Circuit Diagram (see page 22-58) and check the circuit.

4. Turn the ignition switch OFF. Remove the No. 9 BACK UP (10A) fuse from the under-hood fuse/relay box for at least 30 seconds, then reinstall it.

5. Lift the float above the LOW position.

   - If the low fuel indicator goes off, the system is OK.
   - If the low fuel indicator is still on, refer to the low fuel indicator Circuit Diagram (see page 22-58), and check the circuit.

Component Location Index



INTAKE AIR BYPASS CONTROL THERMAL VALVE
Test, page 11-161

THROTTLE BODY
Test, page 11-160
Removal/Installation, page 11-165
Disassembly/Reassembly, page 11-166

THROTTLE CABLE
Adjustment, page 11-163
Removal/Installation, page 11-164

AIR CLEANER
Replacement, page 11-162
AIR CLEANER ELEMENT
Replacement, page 11-162

Throttle Body Test

NOTE:
- Do not adjust the throttle stop screw. It is preset at the factory.
- If the malfunction indicator lamp (MIL) has been reported on, check for diagnostic trouble codes (DLCs) (see page 11-3).

1. With the engine off, check the throttle cable movement. The cable should move without binding or sticking.

   - If the cable moves OK, go to step 2.
   - If the cable binds or sticks, check it and its routing.
   - If the cable is faulty, reroute it or replace it and adjust it (see page 11-163), then go to step 2.

2. Move the throttle lever by hand to see if the throttle valve and/or shaft are too loose or too tight.

   - If there is excessive play in the throttle valve shaft, or any binding in the throttle valve at the fully closed position, replace the throttle body.
   - If the throttle valve and shaft are OK, go to step 3.

3. Connect the scan tool to the DLC.

4. Turn the ignition switch ON (II).

5. Check the throttle position with the scan tool. The reading should be about 10% when the throttle is fully closed and about 90% when the throttle is fully opened.

   - If the throttle position is correct, the throttle body is OK.
   - If the throttle position is not correct, replace the throttle body.

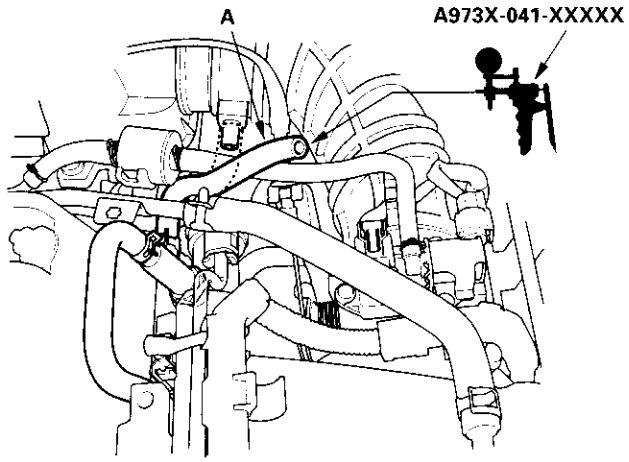
Intake Air Bypass Control Thermal Valve Test

Special Tools Required
Vacuum Pump/Gauge, 0—30 in. Hg A973X-041-XXXXX

1. Start the engine. Then let it idle.

   NOTE: The engine coolant temperature must be below 149 °F (65 °C).

2. Remove the vacuum hose (A) from the intake air duct, and connect a vacuum pump/gauge to the hose.



3. 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.

4. Hold the engine at 3,000 rpm with no load (in neutral) until the radiator fan comes on, then let it idle.

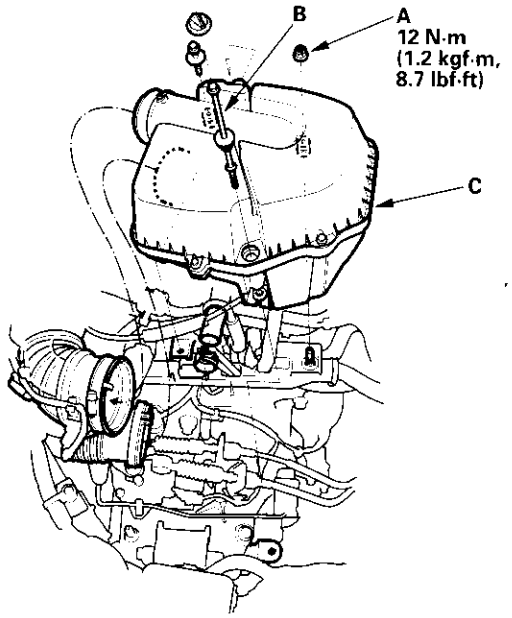
5. Raise and lower the engine speed, and make sure the vacuum gauge reading does not change as the rpm changes.

   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.

Air Cleaner Replacement

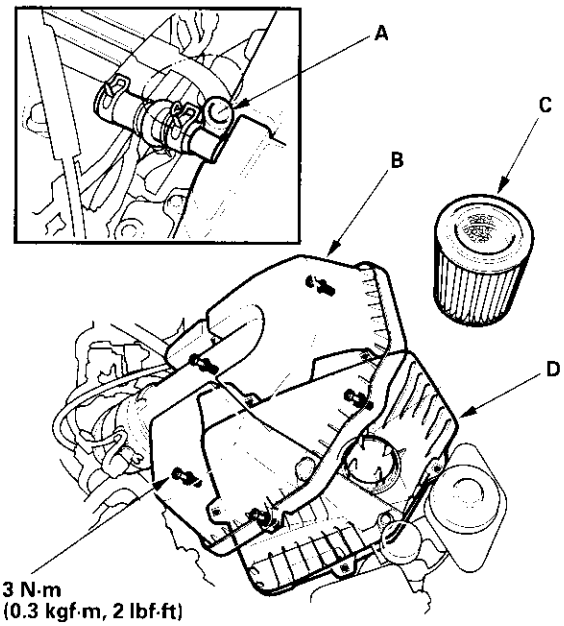
1. Remove the nuts (A) and the stud (B).



2. Remove the air cleaner (C).
3. Install in the reverse order of removal.

Air Cleaner Element Replacement

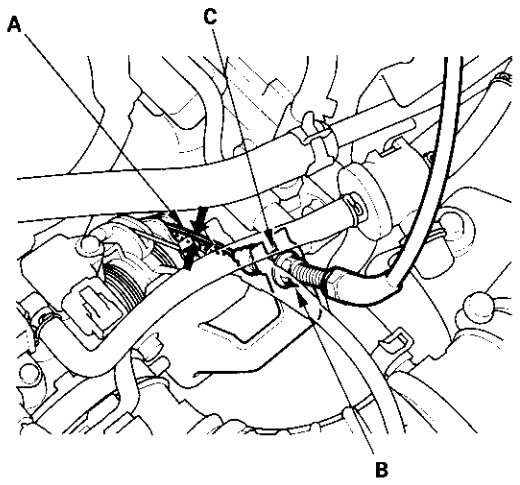
1. Disconnect the PCV hose (A).



2. Open the air cleaner housing cover (B).
3. Remove the air cleaner (C) from the air cleaner housing (D).
4. Install in the reverse order of removal.

Throttle Cable Adjustment

1. Check cable free play at the throttle linkage. Cable free play (A) should be 10—12 mm (3/8—1/2 in.).

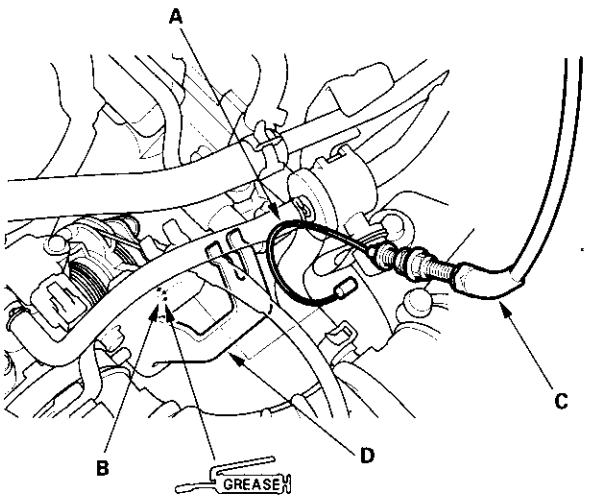


2. If the free play is not within spec (10—12 mm, 3/8—1/2 in.), loosen the locknut (B), turn the adjusting nut (C) until the free play is as specified, then retighten the locknut.

3. With the cable properly adjusted, check the throttle valve to be sure it opens fully when you push the accelerator pedal to the floor. Also check the throttle valve to be sure it returns to the idle position whenever you release the accelerator pedal.

Throttle Cable Removal/Installation

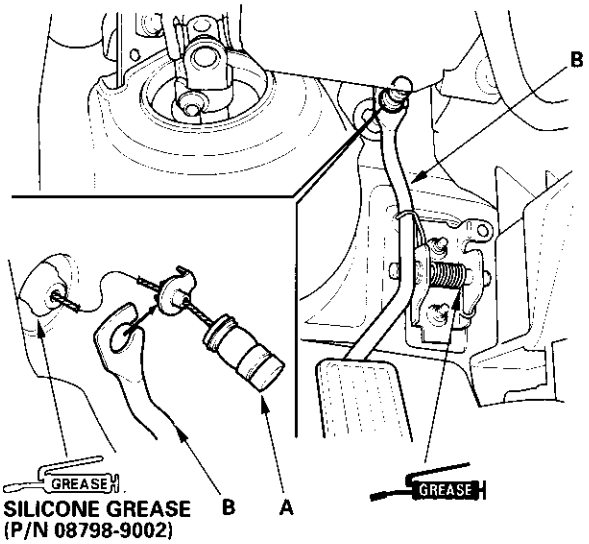
1. Fully open the throttle valve, then remove the throttle cable (A) from the throttle link (B).



(P/N 08798-9002)

2. Remove the cable housing (C) from the cable bracket (D).

3. Remove the throttle cable (A) from the accelerator pedal (B).



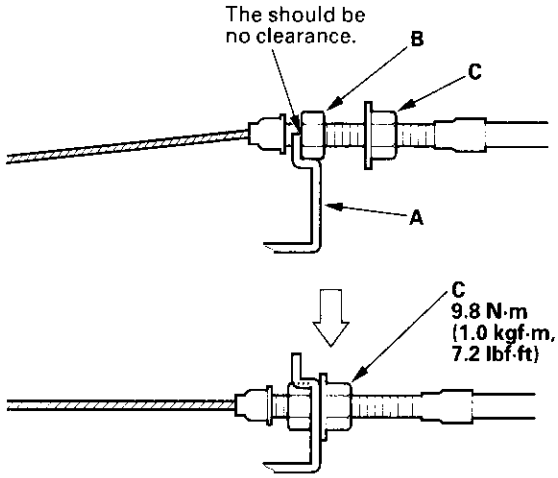
SILICONE GREASE
(P/N 08798-9002)

4. Install in the reverse order of removal.

5. After installing, start the engine. Hold the engine at 3,000 rpm with no load (in neutral) until the radiator fan comes on, then let it idle.

6. Hold the cable, removing all slack from it.

7. Set the locknut on the cable bracket (A). Turn the adjusting nut (B) so that its free play is 0 mm.

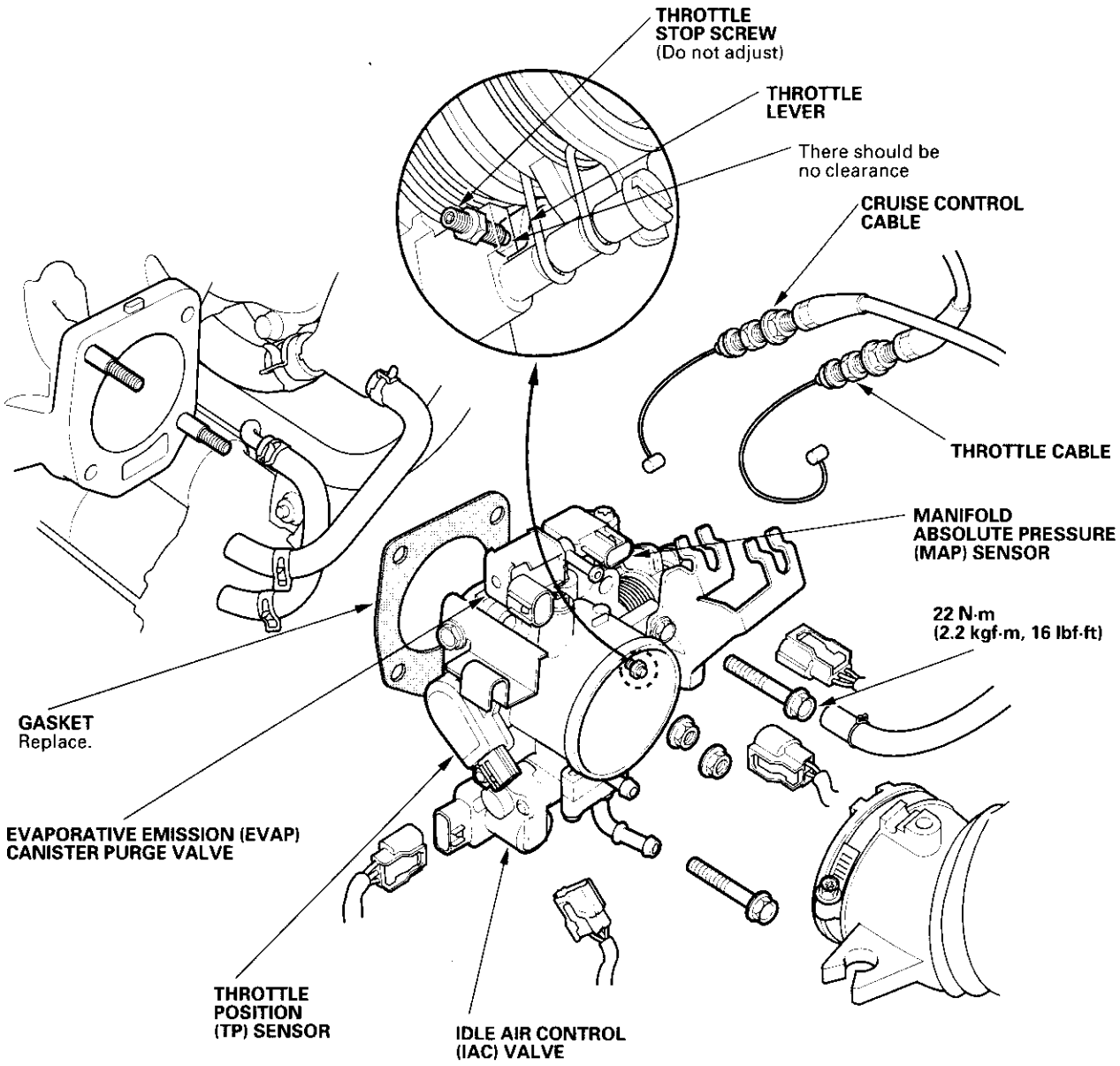


8. Remove the cable from the cable bracket (A). Set the adjusting nut on the other side of the throttle bracket, then tighten the locknut (C).

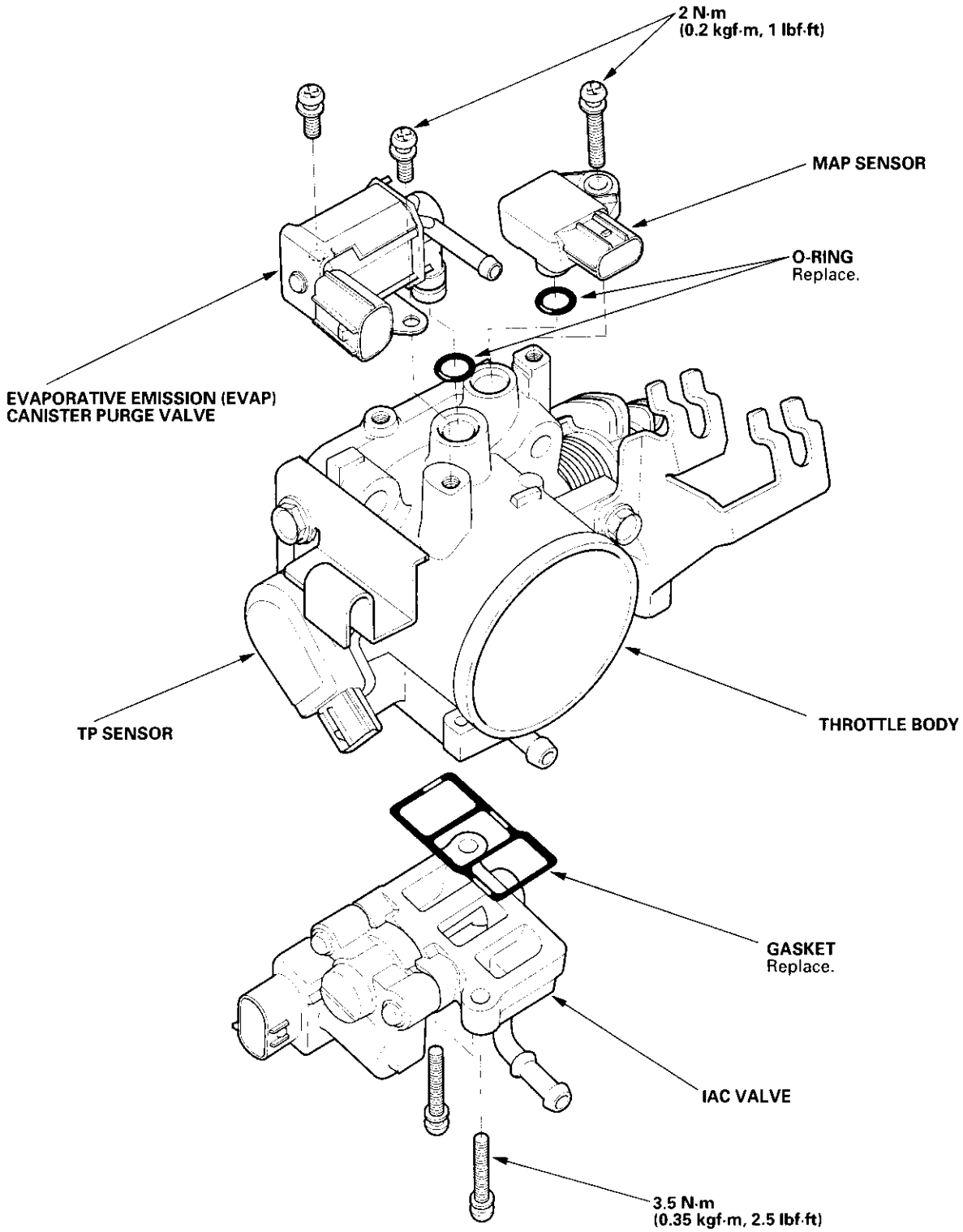
9. With the cable properly adjusted, check the throttle valve to be sure it opens fully when you push the accelerator pedal to the floor. Also check the throttle valve to be sure it returns to the idle position whenever you release the accelerator pedal.

Throttle Body Removal/Installation

NOTE:
- Do not adjust the throttle stop screw.
- After reassembly, adjust the throttle cable (see page 11-163) and the cruise control cable (see page 4-45).
- The throttle position (TP) sensor is not removable.



Throttle Body Disassembly/Reassembly



DTC Troubleshooting

DTC P0420: Catalytic System Efficiency Below Threshold

NOTE: If some of the DTCs listed below are stored at the same time as DTC P0420, troubleshoot those DTCs first, then recheck for DTC P0420.

P0137, P0138: Secondary Heated Oxygen Sensor (secondary HO2S) (Sensor 2)
P0141: Secondary HO2S (Sensor 2) heater

1. Reset the ECM (see page 11-4), then continue to step 2 through 5 to reset the readiness code.
2. Start the engine. Hold the engine at 3,000 rpm with no load (in neutral) until the radiator fan comes on.
3. Drive for about 10 minutes without stopping. Your speed can vary.
4. With the transmission in 4th gear, drive at a steady speed between 50—62 mph (80—100 km/h) for 30 seconds.
5. Repeat step 4 three times. Between each repetition, close the throttle completely for 1—2 seconds. If the engine is stopped during this part of the procedure, repeat steps 3, 4 and 5.
6. Check for a Temporary DTC with the scan tool.

   Does the scan tool indicate Temporary DTC P0420?

   YES—Check the TWC. If necessary, replace the TWC. ■

   NO—Check for readiness code completion. If the readiness is complete, it was a intermittent failure, and the system is OK at this time. If the readiness code is incomplete, repeat steps 2 through 5. ■

DTC Troubleshooting

DTC P1505: PCV Air Leakage

1. Reset the ECM (see page 11-4).
2. Start the engine. Hold the engine at 3,000 rpm with no load (in neutral) until the radiator fan comes on.
3. Let the engine idle for at least 40 seconds with the throttle fully closed.
4. Check for a DTC P1505 with the scan tool.

   Is DTC P1505 indicated?

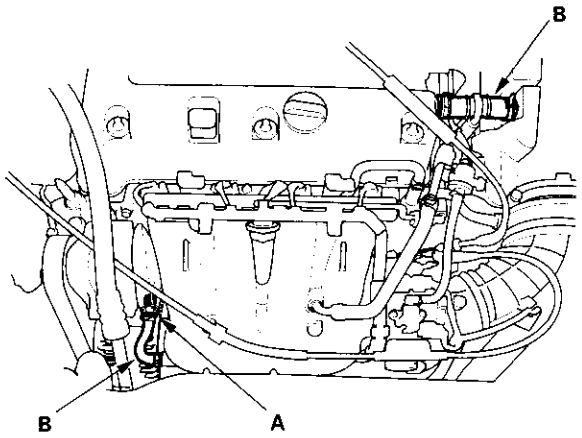
   YES—Check these parts for vacuum leaks.■

   - PCV valve
   - PCV hose
   - EVAP canister purge valve
   - Throttle body
   - Brake booster hose

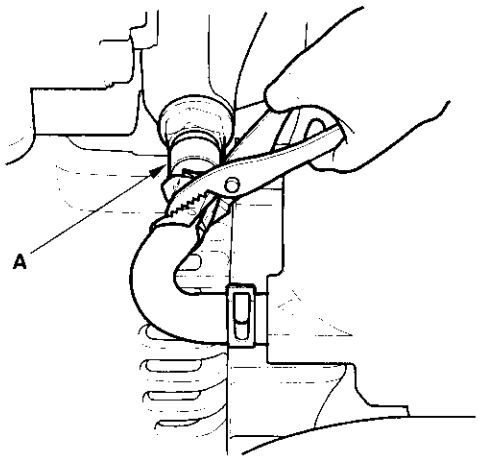
   NO—Intermittent failure, system is OK at this time.■

PCV Valve Inspection and Test

1. Check the PCV valve (A), hoses (B), and connections for leaks or restrictions.

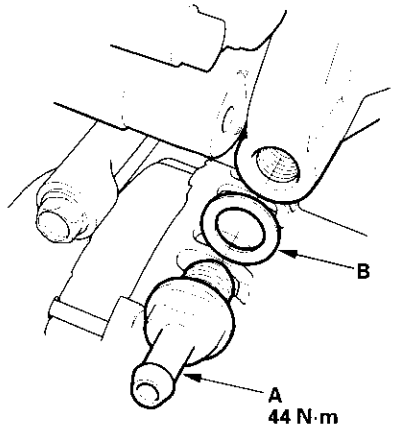


2. At idle, make sure there is a clicking sound from the PCV valve when the hose between the PCV valve and intake manifold is lightly pinched (A) with your fingers or pliers.
   If there is no clicking sound, check the PCV valve grommet for cracks or damage. If the grommet is OK, replace the PCV valve and recheck.



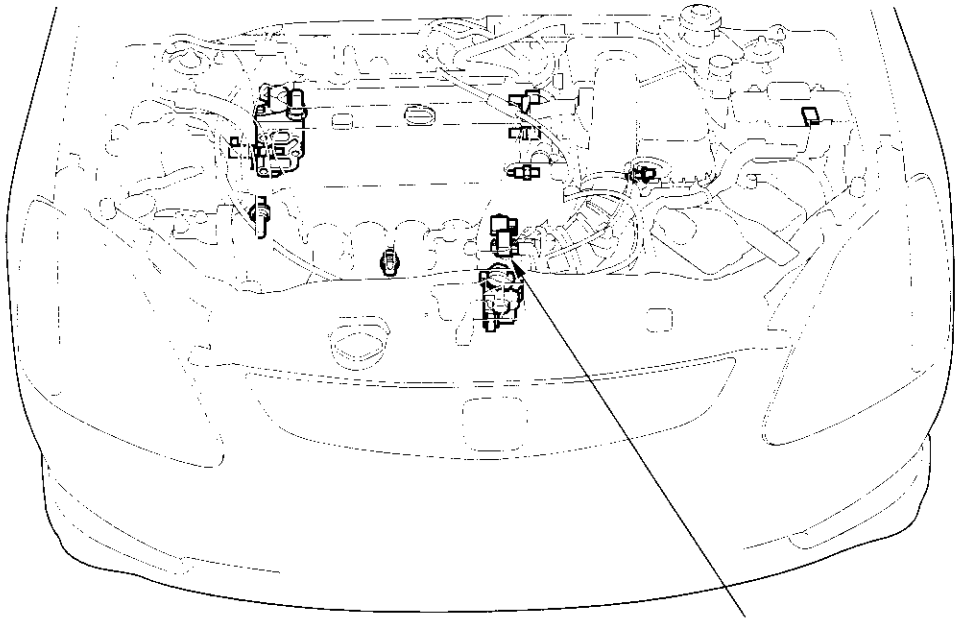
PCV Valve Replacement

1. Disconnect the PCV hose.
2. Remove the PCV valve (A).

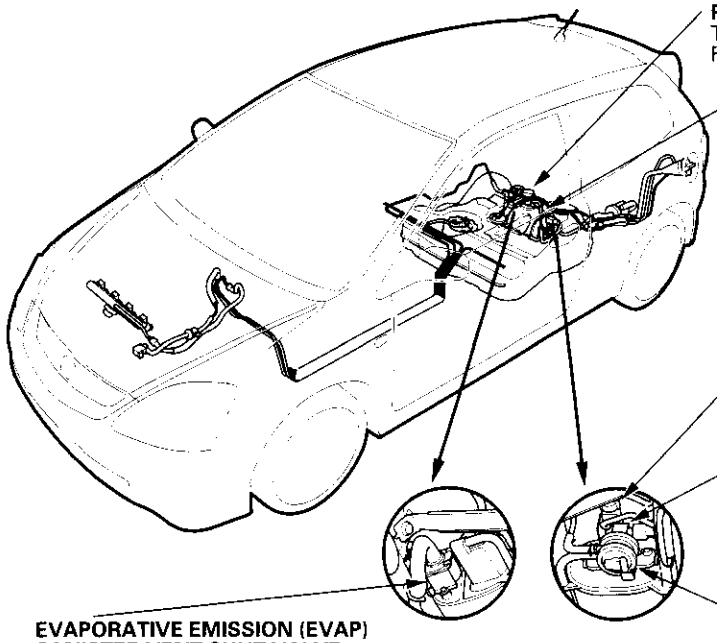


3. Install the parts in the reverse order of removal with a new gasket (B).

Component Location Index



EVAPORATIVE EMISSION (EVAP) CANISTER PURGE VALVE
Troubleshooting,
step 3 on page 11-175,
step 1 on page 11-180



FUEL TANK VAPOR CONTROL VALVE
Test, page 11-187
Replacement, page 11-189

EVAPORATIVE EMISSION (EVAP) CANISTER
Troubleshooting, step 28 on page 11-183
Replacement, page 11-189

FUEL TANK PRESSURE SENSOR
Troubleshooting, page 11-171

EVAPORATIVE EMISSION (EVAP) BYPASS SOLENOID VALVE
Troubleshooting,
step 12 on page 11-176,
step 10 on page 11-181

EVAPORATIVE EMISSION (EVAP) CANISTER VENT SHUT VALVE
Troubleshooting,
step 23 on page 11-178,
step 19 on page 11-182

EVAPORATIVE EMISSON (EVAP) TWO WAY VALVE
Test, page 11-186

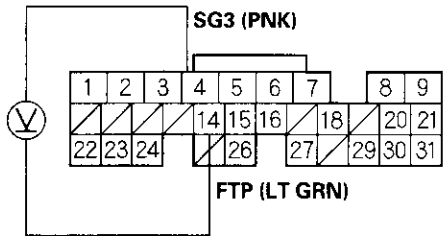
DTC Troubleshooting

DTC P0451: FTP Sensor Range/Performance Problem

Special Tools Required
Vacuum Pump/Gauge, 0—30 in. Hg A973X-041-XXXXX

1. Remove the fuel fill cap.
2. Turn the ignition switch ON (II).
3. Monitor fuel tank pressure (FTP) sensor voltage with the Honda PGM Tester, or measure voltage between ECM connector terminals E4 and E14.

ECM CONNECTOR E (31P)



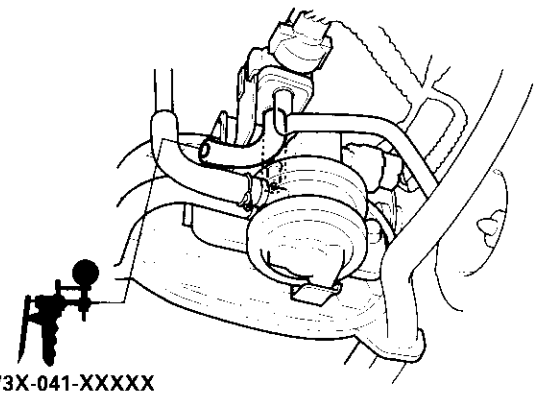
Wire side of female terminals

Is there about 2.5V?

YES—Go to step 4.

NO—Replace the FTP sensor. ■

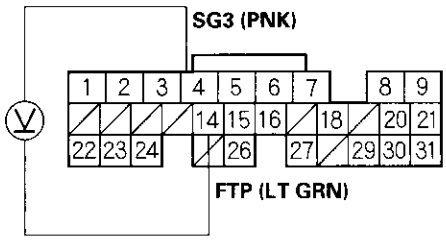
4. Turn the ignition switch OFF.
5. Disconnect the hose between the EVAP two way valve and the FTP sensor at the EVAP two way valve end.
6. Connect a vacuum pump to the open end of the hose.



A973X-041-XXXXX

7. Turn the ignition switch ON (II).
8. Monitor FTP sensor voltage with the Honda PGM Tester, or measure voltage between ECM connector terminals E4 and E14, and carefully squeeze the vacuum pump a little.

ECM CONNECTOR E (31P)



Wire side of female terminals

9. The voltage should smoothly drop from about 2.5 V to about 1.5 V. Stop applying vacuum when the voltage drops to about 1.5 V or damage to the FTP sensor may occur.

Does the voltage drop to about 1.5 V and hold?

YES—Check for misrouted, leaking, or broken FTP sensor vacuum lines. If the vacuum lines are OK, update the ECM if it does not have the latest software, or substitute a known-good ECM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM, replace the original ECM. ■

NO—Replace the FTP sensor. ■

DTC Troubleshooting (cont'd)

DTC P0452: FTP Sensor Circuit Low Voltage

1. Check the vacuum lines at the FTP sensor for misrouting, leakage, breakage, or clogging.

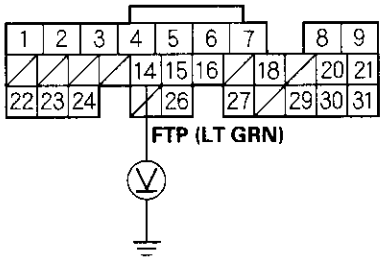
   Are the vacuum lines OK?

   YES—Go to step 2.

   NO—Repair or replace vacuum lines as necessary.■

2. Reset the ECM (see page 11-4).
3. Remove the fuel fill cap.
4. Turn the ignition switch ON (II).
5. Monitor FTP sensor voltage with the Honda PGM Tester, or measure voltage between body ground and ECM connector terminal E14.

ECM CONNECTOR E (31P)



Wire side of female terminals

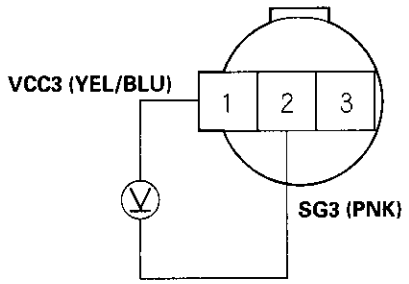
Is there about 2.5 V?

YES—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the FTP sensor and at the ECM.■

NO—Go to step 6.

6. Turn the ignition switch OFF.
7. Reinstall the fuel fill cap.
8. Disconnect the FTP sensor 3P connector.
9. Turn the ignition switch ON (II).
10. Measure voltage between FTP sensor 3P connector terminals No. 1 and No. 2.

FUEL TANK PRESSURE SENSOR 3P CONNECTOR



Wire side of female terminals

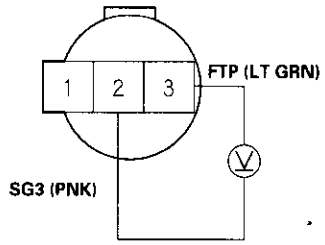
Is there about 5 V?

YES—Go to step 11.

NO—Repair open in the wire between the FTP sensor and the ECM (E5).■

11. Measure voltage between FTP sensor 3P connector terminals No. 2 and No. 3.

FUEL TANK PRESSURE SENSOR 3P CONNECTOR



Wire side of female terminals

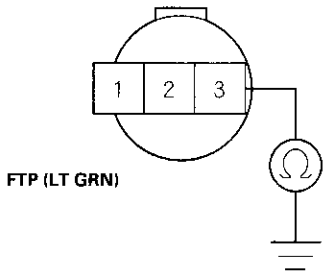
Is there about 5 V?

YES—Replace the FTP sensor.■

NO—Go to step 12.

12. Turn the ignition switch OFF.
13. Disconnect ECM connector E (31P).
14. Check for continuity between FTP sensor 3P connector terminal No. 3 and body ground.

FTP SENSOR 3P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the FTP sensor and the ECM (E14).■

NO—Update the ECM if it does not have the latest software, or substitute a known-good ECM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM, replace the original ECM.■

DTC P0453: FTP Sensor Circuit High Voltage

1. Check the vacuum lines at the FTP sensor for misrouting, leakage, breakage, or clogging.

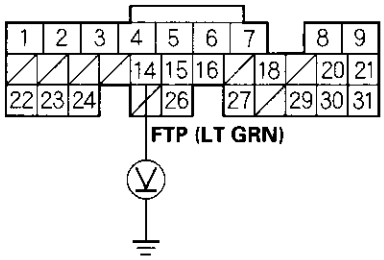
   Are the vacuum lines OK?

   YES—Go to step 2.

   NO—Repair or replace vacuum lines as necessary.■

2. Reset the ECM (see page 11-4).
3. Remove the fuel fill cap.
4. Turn the ignition switch ON (II).
5. Monitor FTP sensor voltage with the Honda PGM Tester, or measure voltage between body ground and ECM connector terminal E14.

ECM CONNECTOR E (31P)



Wire side of female terminals

Is there about 2.5 V?

YES—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the FTP sensor and at the ECM.■

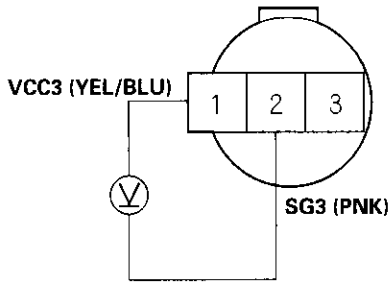
NO—Go to step 6.

(cont'd)

DTC Troubleshooting (cont'd)

6. Turn the ignition switch OFF.
7. Reinstall the fuel fill cap.
8. Disconnect the FTP sensor 3P connector.
9. Turn the ignition switch ON (II).
10. Measure voltage between FTP sensor 3P connector terminals No. 1 and No. 2.

FTP SENSOR 3P CONNECTOR



Wire side of female terminals

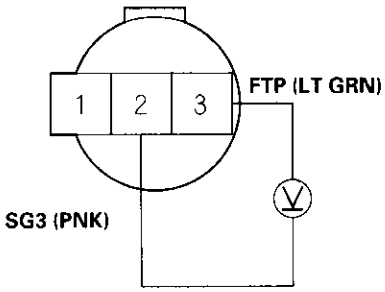
Is there about 5 V?

YES—Go to step 11.

NO—Repair open in the wire between the FTP sensor and the ECM (E4).■

11. Measure voltage between FTP sensor 3P connector terminals No. 2 and No. 3.

FTP SENSOR 3P CONNECTOR



Wire side of female terminals

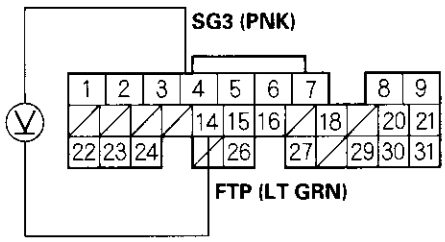
Is there about 5 V?

YES—Replace the FTP sensor.■

NO—Go to step 12.

12. Measure voltage between ECM connector terminals E4 and E14.

ECM CONNECTOR E (31P)



Wire side of female terminals

Is there about 5 V?

YES—Repair open in the wire between the FTP sensor and the ECM (E14).■

NO—Update the ECM if it does not have the latest software, or substitute a known-good ECM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM, replace the original ECM.■

DTC P1456: EVAP Control System Leakage (Fuel Tank System)

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 A973X-041-XXXXX

This is a two-trip code. Once cleared, it cannot be reproduced in one trip. Also, certain specific driving and ambient conditions must occur before the ECM will complete the system checks. Additional test drives may still not meet the specific conditions needed to reproduce the code.

Follow these troubleshooting procedures carefully to ensure the integrity of the system and to confirm the cause of the problem or code.

NOTE: Fresh fuel has a higher volatility that creates greater pressure/vacuum. The optimum condition for testing is fresh fuel, and must be less than a full tank. 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.

Fuel Fill Cap Check

1. Check the fuel fill cap (the cap must say "If not tightened 3 clicks check engine light may come on").

   Is the proper fuel fill cap installed and properly tightened?

   YES—Go to step 2.

   NO—Replace or tighten the cap.■

2. Check the fuel fill cap seal.

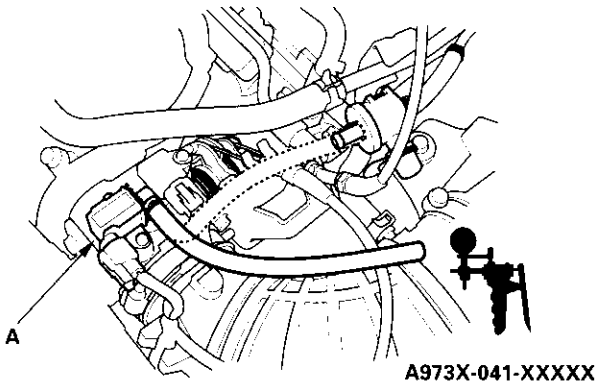
   Is the fuel fill cap seal missing or damaged?

   YES—Replace the fuel fill cap.■

   NO—The fuel fill cap is OK. Go to step 3.

EVAP Canister Purge Valve Test

3. Disconnect the vacuum hose from the EVAP canister purge valve (A), and connect a vacuum pump to the hose.



A973X-041-XXXXX

4. Turn the ignition switch ON (II).

5. Apply vacuum to the hose.

   Does the valve hold vacuum?

   YES—The EVAP canister purge valve is OK. Go to step 11.

   NO—Go to step 6.

6. Turn the ignition switch OFF.

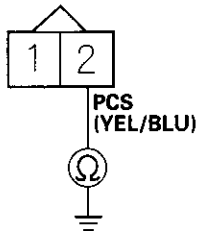
7. Disconnect the EVAP canister purge valve 2P connector.

(cont'd)

DTC Troubleshooting (cont'd)

8. Check for continuity between EVAP canister purge valve 2P connenctor terminal No. 2 and body ground.

EVAP CANISTER PURGE VALVE 2P CONNECTOR



Wire side of female terminals

Is there continuity?

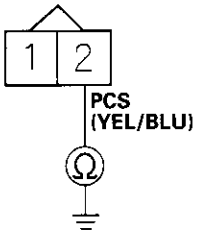
YES—Go to step 9.

NO—Replace the EVAP canister purge valve.■

9. Disconnect ECM connector B (24P).

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

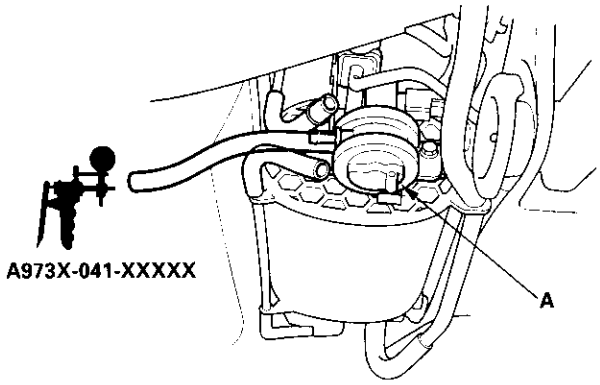
Is there continuity?

YES—Repair short in the wire between the EVAP canister purge valve and the ECM (B21).■

NO—Update the ECM if it does not have the latest software, or substitute a known-good ECM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM, replace the original ECM.■

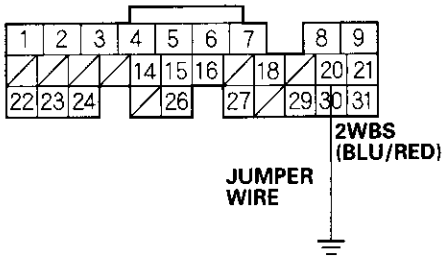
EVAP Bypass Solenoid Valve Test

11. Disconnect both vacuum hoses from the EVAP two way valve (A), and connect a vacuum pump to the canister port on the EVAP two way valve.



12. Turn the EVAP bypass solenoid valve on with the Honda PGM Tester, or connect ECM connecter terminal E20 to body ground with a jumper wire.

ECM CONNECTOR E (31P)



Wire side of female terminals

13. Turn the ignition switch ON (II).

14. Apply vacuum to the hose.

Does the valve hold vacuum?

YES—Go to step 15.

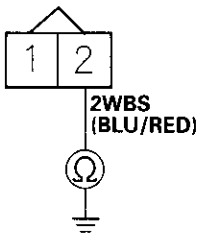
NO—Go to step 20.

15. Turn the ignition switch OFF.

16. Disconnect the EVAP bypass solenoid valve 2P connector.

17. Check for continuity between EVAP bypass solenoid valve 2P connector terminal No. 2 and body ground.

EVAP BYPASS SOLENOID VALVE 2P CONNECTOR



Wire side of female terminals

Is there continuity?

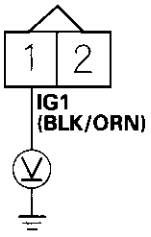
YES—Go to step 18.

NO—Repair open in the wire between the EVAP bypass solenoid valve and the ECM (E20).■

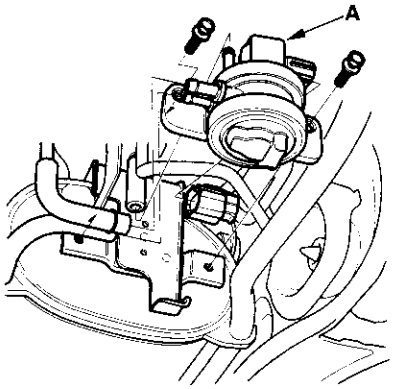
18. Turn the ignition switch ON (II).

19. Measure voltage between EVAP bypass solenoid valve 2P connector terminal No. 1 and body ground.

EVAP BYPASS SOLENOID VALVE 2P CONNECTOR



Wire side of female terminals



Is there battery voltage?

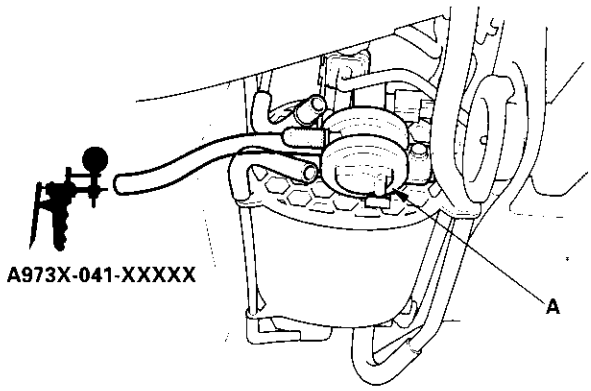
YES—Replace the EVAP two way/bypass solenoid valve (A).■

NO—Repair open in the wire between the EVAP bypass solenoid valve and the No. 4 ACG (10A) fuse.■

(cont'd)

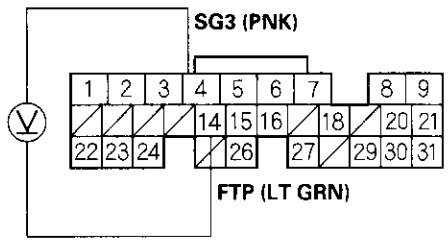
DTC Troubleshooting (cont'd)

20. Plug the fuel tank port (A) of the EVAP two way valve.



21. While monitoring FTP sensor voltage with the Honda PGM Tester, or measuring the voltage between ECM connector terminals E4 and E14, slowly pump the vacuum pump until the voltage drops to about 1.5 volts.

ECM CONNECTOR E (31P)



Wire side of female terminals

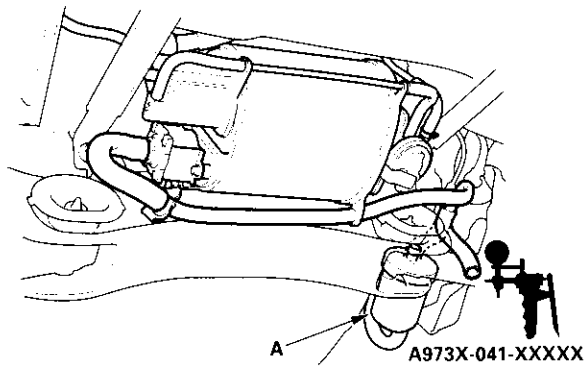
Does the voltage drop to 1.5 V and hold for at least 20 seconds?

YES—The EVAP bypass solenoid valve/EVAP two way valve is OK. Go to step 22.

NO—Repair the leak from the EVAP bypass solenoid valve, EVAP two way valve, or FTP sensor. ■

EVAP Canister Vent Shut Valve Test

22. Disconnect the vacuum hose from the EVAP canister vent filter (A), and connect a vacuum pump to the hose.



23. Turn the ignition switch ON (II).

24. Apply vacuum to the hose with five strokes of the pump.

Does the valve hold vacuum?

YES—Go to step 25.

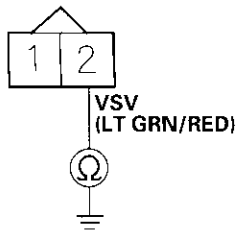
NO—The EVAP canister vent shut valve is OK. Go to step 30.

25. Turn the ignition switch OFF.

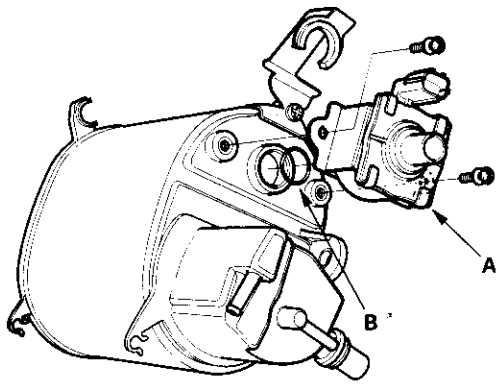
26. Disconnect the EVAP canister vent shut valve 2P connector.

27. Check for continuity 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 continuity?

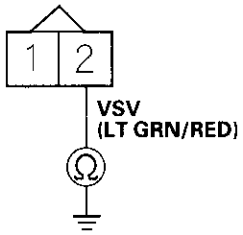
YES—Go to step 28.

NO—Replace the EVAP canister vent shut valve (A) and o-ring (B).■

28. Disconnect ECM connector E (31P).

29. Check for continuity between EVAP canister vent solenoid valve 2P connector terminal No. 2 and body ground.

EVAP CANISTER VENT SHUT VALVE 2P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the EVAP canister vent shut valve and the ECM (E21).■

NO—Update the ECM if it does not have the latest software, or substitute a known-good ECM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM, replace the original ECM.■

Vacuum Hoses and Connections Test

30. Do the fuel tank vapor control valve test (see page 11-187).

Is the fuel tank vapor control valve OK?

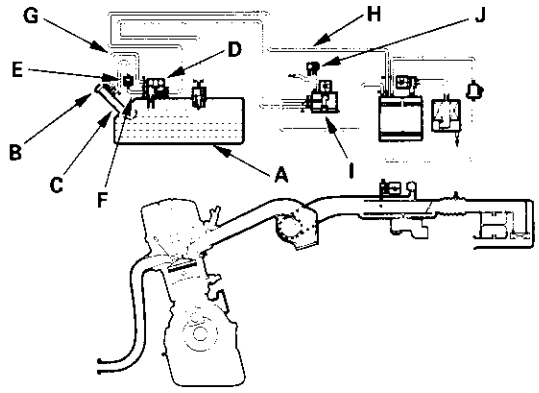
YES—Go to step 31.

NO—Replace the fuel tank vapor control valve.■

31. Tighten the fuel cap 3 "clicks", then monitor the FTP sensor readings with the Honda PGM Tester.

32. Start the engine, and let it idle for 5 minutes.

33. Check the FTP sensor readings.



Is the reading above 0.5 kpa (4 mm Hg, 0.16 in. Hg) pressure, or about 3 V?

YES—Update the ECM if it does not have the latest software, or substitute a known-good ECM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM, replace the original ECM.■

NO—Check the following parts for leaks:■

- Fuel tank (A)
- Fuel fill cap (B)
- Fuel fill pipe (C)
- Fuel tank vapor control valve (D)
- Fuel tank vapor recirculation valve (E)
- Fuel tank vapor recirculation tube (F)
- Fuel tank vapor signal tube (G)
- Fuel tank vapor control vent tube (H)
- FTP sensor (J)
  - Repair or replace any leaking parts.

DTC Troubleshooting (cont'd)

DTC P1457: EVAP Control System Leakage (EVAP Canister System)

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 system failure.

Special Tools Required

Vacuum pump/gauge, 0—30 in.Hg A973X-041-XXXXX

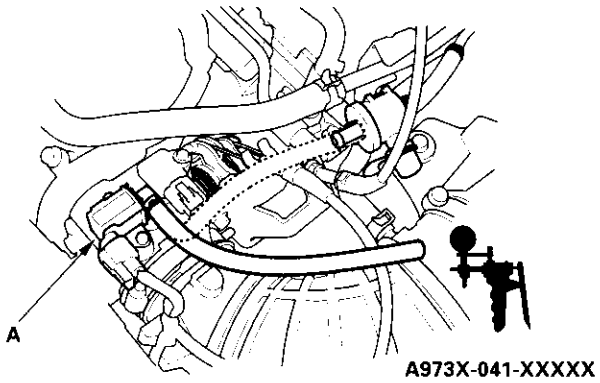
This is a two-trip code. Once cleared, it cannot be reproduced in one trip. Also, certain specific driving and ambient conditions must occur before the ECM will complete the system checks. Additional test drives may still not meet the specific conditions needed to reproduce the code.

Follow these troubleshooting procedures carefully to ensure the integrity of the system and to confirm the cause of the problem or code.

NOTE: Fresh fuel has a higher volatility that creates greater pressure/vacuum. The optimum condition for testing is fresh fuel, and there must be less than a full tank. 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.

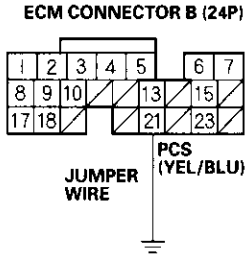
EVAP Canister Purge Valve Test

1. Disconnect the vacuum hose from the EVAP canister purge valve (A), and connect a vacuum pump to the hose.



A973X-041-XXXXX

2. Turn the EVAP canister purge valve on with the Honda PGM Tester, or connect ECM connector terminal B21 to body ground with a jumper wire.



Wire side of female terminals

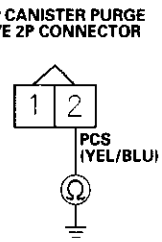
3. Turn the ignition switch ON (II).
4. Apply vacuum to the hose.

   Does the valve hold vacuum?

   YES—Go to step 5.

   NO—The EVAP canister purge valve is OK. Go to step 10.

5. Turn the ignition switch OFF.
6. Disconnect the EVAP canister purge valve 2P connector.
7. Check for continuity between EVAP canister purge valve 2P connector terminal No. 2 and body ground.



Wire side of female terminals

   Is there continuity?

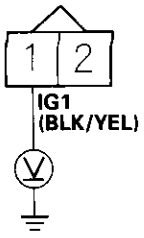
   YES—Go to step 8.

   NO—Repair open in the wire between the EVAP canister purge valve and the ECM/PCM (B21).■

8. Turn the ignition switch ON (II).

9. Measure 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

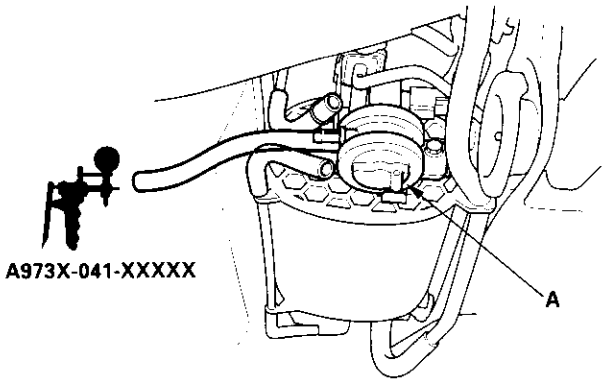
Is there battery voltage?

YES—Replace the EVAP canister purge valve. ■

NO—Repair open in the wire between the EVAP canister purge valve and the No. 4 ACG (10A) fuse. ■

EVAP Bypass Solenoid Valve Test

10. Disconnect both vacuum hoses from the EVAP two way valve (A), and connect a vacuum pump to the canister port on the two way valve.



11. Turn the ignition switch ON (II).

12. Apply vacuum to the hose.

Does the valve hold vacuum?

YES—The EVAP two way/bypass solenoid valve is OK. Go to step 18.

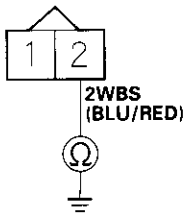
NO—Go to step 13.

13. Turn the ignition switch OFF.

14. Disconnect the EVAP bypass solenoid valve 2P connector.

15. Check for continuity between EVAP bypass solenoid valve 2P connector terminal No. 2 and body ground.

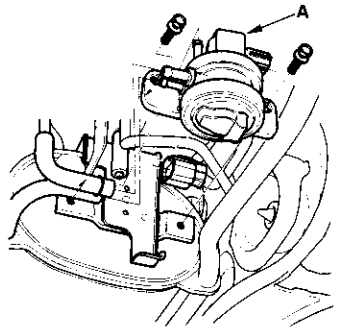
EVAP BYPASS SOLENOID VALVE 2P CONNECTOR



Wire side of female terminals

(cont'd)

DTC Troubleshooting (cont'd)



Is there continuity?

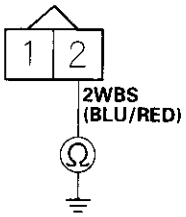
YES—Go to step 16.

NO—Replace the EVAP two way/bypass solenoid valve (A).■

16. Disconnect ECM connector E (31P).

17. Check for continuity between EVAP bypass solenoid valve 2P connector terminal No. 2 and body ground.

EVAP BYPASS SOLENOID VALVE 2P CONNECTOR



Wire side of female terminals

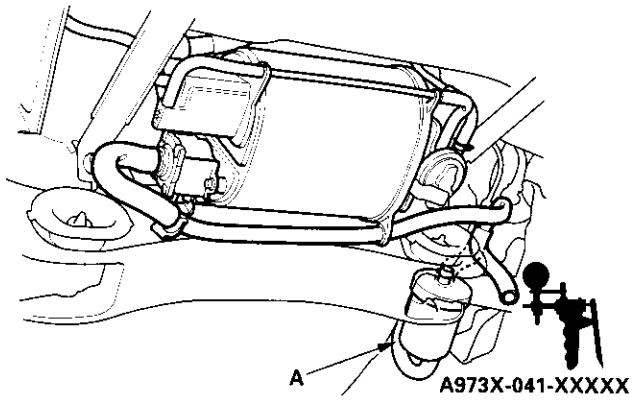
Is there continuity?

YES—Repair the short in the wire between the EVAP bypass solenoid valve and the ECM (E20).■

NO—Update the ECM if it does not have the latest software, or substitute a known-good ECM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM, replace the original ECM.■

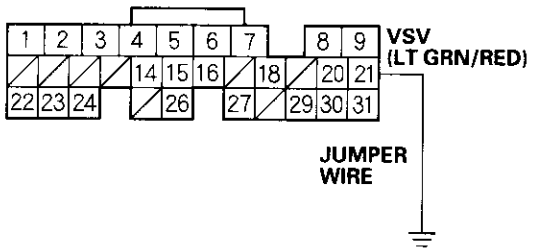
EVAP Canister Vent Shut Valve Test

18. Disconnect the vacuum hose from the EVAP canister vent filter (A), and connect a vacuum pump to the hose.



19. Turn the EVAP canister vent shut valve on with the Honda PGM Tester, or connect ECM connector terminal E21 to body ground with a jumper wire.

ECM CONNECTOR E (31P)



Wire side of female terminals

20. Turn the ignition switch ON (II)

21. Apply vacuum to the hose.

Does the valve hold vacuum?

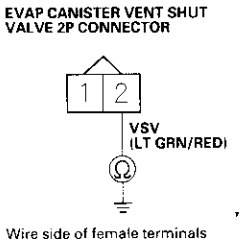
YES—The EVAP canister vent shut valve is OK. Go to step 27.

NO—Go to step 22.

22. Turn the ignition switch OFF.

23. Disconnect the EVAP canister vent shut valve 2P connector.

24. Check for continuity between EVAP canister vent shut valve 2P connector terminal No. 2 and body ground.



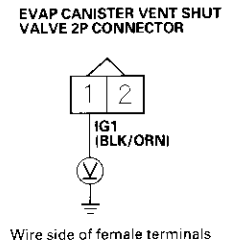
Is there continuity?

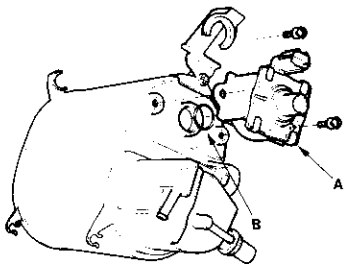
YES—Go to step 25.

NO—Repair open in the wire between the EVAP canister vent shut valve and the ECM (E21).■

25. Turn the ignition switch ON (II).

26. Measure voltage between EVAP canister vent shut valve 2P connector terminal No. 1 and body ground.





Is there battery voltage?

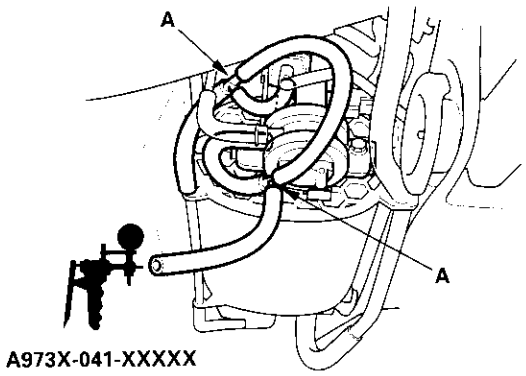
YES—Replace the EVAP canister vent shut valve (A) and the o-ring (B).■

NO—Repair open in the wire between the EVAP canister vent shut valve and the No. 4 ACG (10A) fuse.■

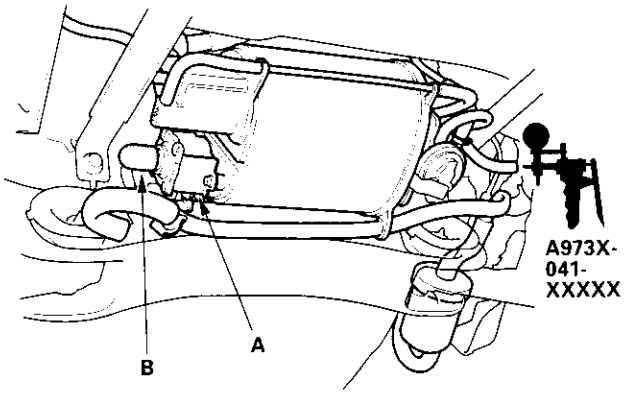
Canister System Leak Test

27. Turn the ignition switch OFF.

28. Connect two, three-way T-fittings (A) into the hose from the EVAP canister to the EVAP two way valve. Connect the FTP sensor to one of the T-fittings and the vacuum pump to the other.



29. Remove the vent hose from the EVAP canister vent shut valve (A), and cap the port (B) to seal the fresh air vent of the EVAP canister.



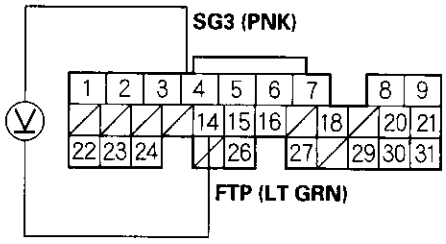
30. Turn the ignition switch ON (II).

(cont'd)

DTC Troubleshooting (cont'd)

31. While monitoring FTP sensor voltage with the Honda PGM Tester, or measuring voltage between ECM connector terminals E4 and E14, slowly pump the vacuum pump.

ECM CONNECTOR E (31P)



Wire side of female terminals

32. Continue to pump vacuum until the voltage drops to about 1.5 V. Make sure the engine coolant temperature is still above 95°F (35°C) and your vacuum pump has no leak.

33. Monitor the voltage for 20 seconds.

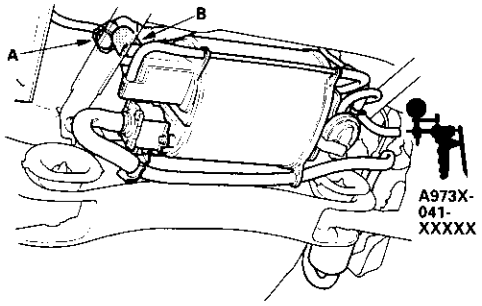
Does the voltage drop 1.5V and hold for at least 20 seconds?

YES—Inspect the EVAP canister vent shut valve line and connections. ■

NO—Go to step 34.

34. Turn the ignition switch OFF.

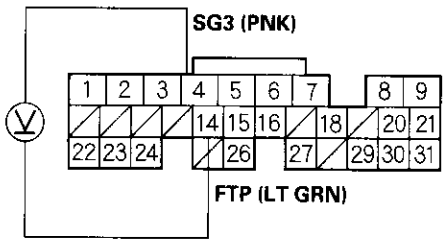
35. Disconnect the quick-connect fitting (A) from the EVAP canister, and plug the canister port (B).



36. Turn the ignition switch ON (II).

37. While monitoring FTP sensor voltage with the Honda PGM Tester, or measuring voltage between ECM connector terminals E4 and E14, slowly pump the vacuum pump.

ECM CONNECTOR E (31P)



Wire side of female terminals

38. Continue to pump vacuum until the voltage drops to about 1.5V. Make sure the engine coolant temperature is still above 95°F (35°C) and your vacuum pump has no leak.

39. Monitor the voltage for 20 seconds.

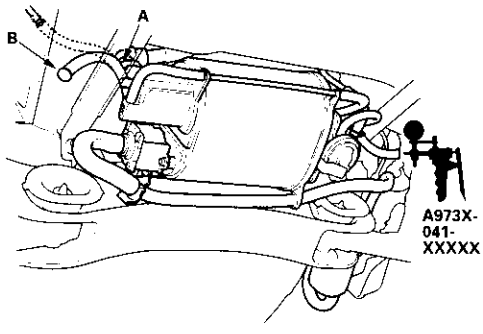
Does the voltage hold for at least 20 seconds?

YES—Inspect the fuel tank vapor control line and connections. ■

NO—Go to step 40.

40. Turn the ignition switch OFF.

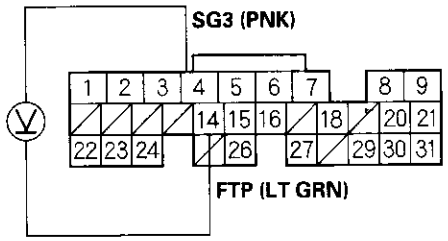
41. Disconnect the purge line hose (A) from the canister at the metal line and plug the hose (B).



42. Turn the ignition switch ON (II).

43. While monitoring FTP sensor voltage with the Honda PGM Tester, or measuring voltage between ECM connector terminals E4 and E14, slowly pump the vacuum pump.

ECM CONNECTOR E (31P)



Wire side of female terminals

44. Continue to pump vacuum until the voltage drops to about 1.5V. Make sure the engine coolant temperature is still above 95°F (35°C) and your vacuum pump has no leak.

45. Monitor the voltage continuously for 20 seconds.

Does the voltage drop to 1.5 V and hold for at least 20 seconds?

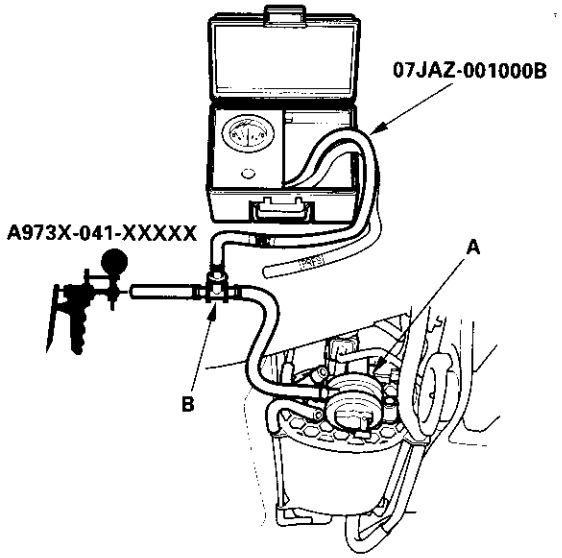
YES—Inspect the EVAP canister purge valve line and connections. If they are OK, perform the EVAP two way valve test (see page 11-186) and the fuel tank vapor control valve test (see page 11-187).■

NO—Replace the EVAP canister (see page 11-189).■

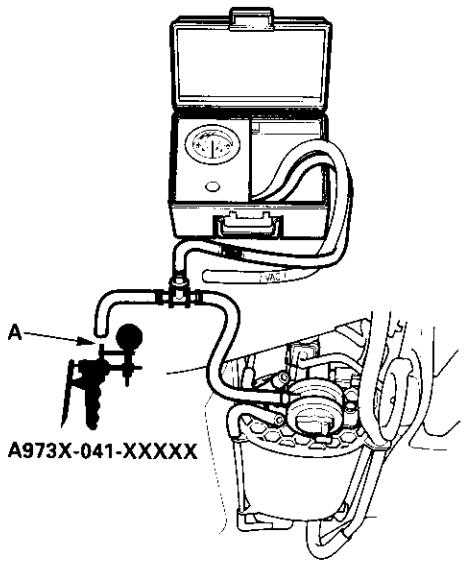
EVAP Two Way Valve Test

Special Tools Required
- Vacuum pump/Gauge, 0—30 in. Hg A973X-041-XXXXX
- Vacuum/Pressure Gauge, 0—4 in. Hg 07JAZ-001000B

1. Remove the fuel fill cap.
2. Disconnect the vapor line from the EVAP two way valve (A). Connect it to a T-fitting (B) from the vacuum gauge and the vacuum pump as shown.



3. Apply vacuum slowly and continuously while watching the gauge. The vacuum should stabilize momentarily at 0.8—2.1 kPa (6—16 mmHg, 0.2—0.6 in.Hg).
   If the vacuum stabilizes (valve opens) below 0.8 kPa (6 mmHg, 0.2 in.Hg) or above 2.1 kPa (16 mmHg, 0.6 in.Hg), install a new valve and retest.
4. Move the vacuum pump hose from the vacuum fitting to the pressure fitting, and move the vacuum gauge hose from the vacuum side to the pressure side (A) as shown.



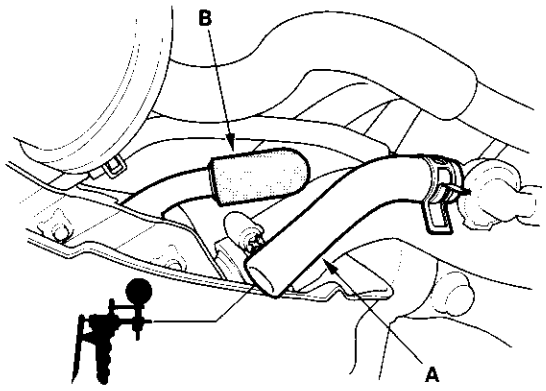
5. Slowly pressurize the vapor line while watching the gauge. The pressure should stabilize momentarily above 1.0 kPa (8 mmHg, 0.3 in.Hg).
   - If the pressure momentarily stabilizes (valve opens) above 1.0 kPa (8 mmHg, 0.3 in.Hg), the valve is OK.
   - If the pressure stabilizes below 1.0 kPa (8 mmHg, 0.3 in.Hg), install a new valve and retest.

Fuel Tank Vapor Control Valve Test

Special Tools Required
Vacuum Pump/Gauge, 0—30 in. Hg A973X-041-XXXXX

Float Test

1. Make sure the fuel tank is less than half full.
2. Remove the fuel fill cap to relieve fuel tank pressure, then reinstall the cap.
3. Disconnect the fuel tank vapor recirculation tube (A), and connect a vacuum pump to it.

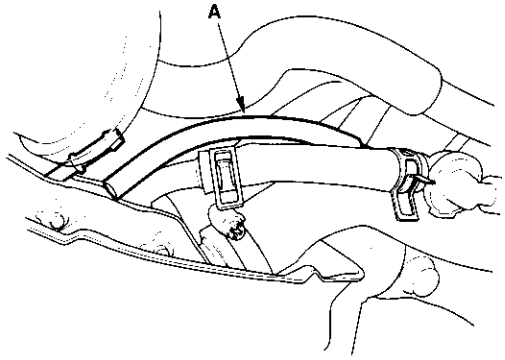


A973X-041-XXXXX

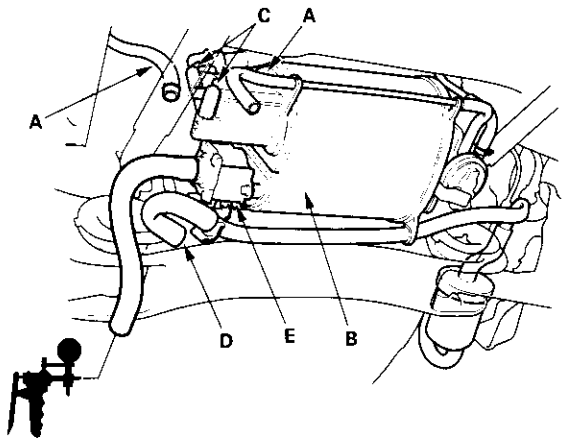
4. Plug the line (B).
5. Apply vacuum to the fuel tank vapor recirculation tube.
   - If the vacuum holds, replace the fuel tank vapor control valve (see page 11-189).
   - If the vacuum does not hold, the float is OK. Do the valve test.

Valve Test

1. Make sure the fuel tank is less than half full.
2. Remove the fuel fill cap.
3. Disconnect the fuel tank vapor signal tube (A).



4. Disconnect the vacuum hoses (A) from the EVAP canister (B), then plug the ports with plugs (C).



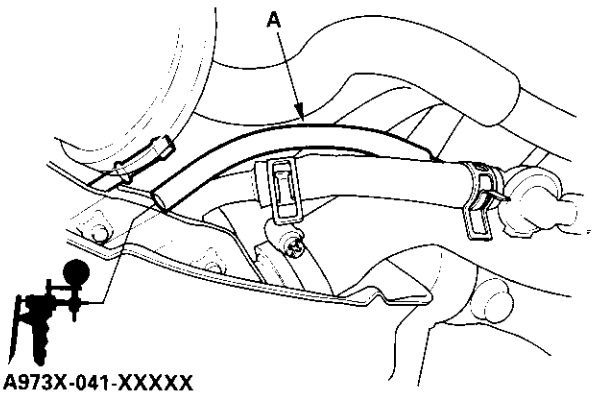
A973X-041-XXXXX

5. Disconnect the vacuum hose (D) from the EVAP canister vent shut valve (E), and connect a vacuum pump to the vacuum hose.
6. Pump the vacuum pump 80 times.
   - If the vacuum holds, go to step 7.
   - If the vacuum does not hold, go to step 10.

(cont'd)

Fuel Tank Vapor Control Valve Test (cont'd)

7. Connect a second vacuum pump to the fuel tank vapor signal tube (A).



A973X-041-XXXXX

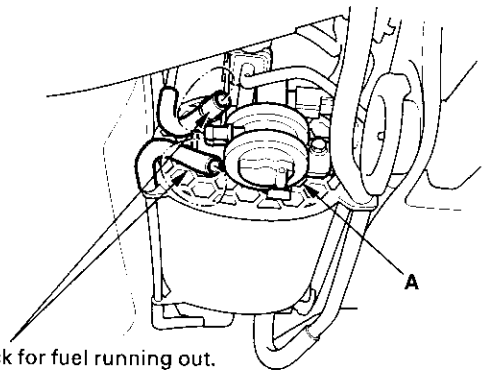
8. Apply vacuum (1 pump) to the fuel tank vapor signal tube (A), then check the vacuum on the pump in step 6.

   - If the vacuum holds, replace the fuel tank vapor control valve (see page 11-189).
   - If the vacuum is released, go to step 9.

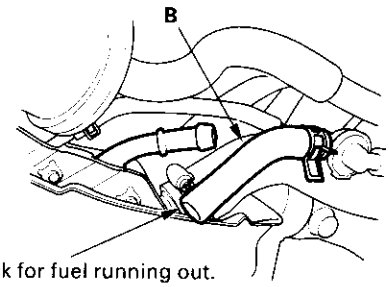
9. Fill the fuel tank with fuel, then check for fuel in the EVAP two way valve (A), and fuel tank vapor recirculation hose (B).

   NOTE: At either location, tiny droplets of fuel are normal.

   - If fuel runs out of the hoses at either location, replace the fuel tank vapor control valve.
   - If the fuel does not run out of the hoses, the fuel tank vapor system function is normal.



Check for fuel running out.



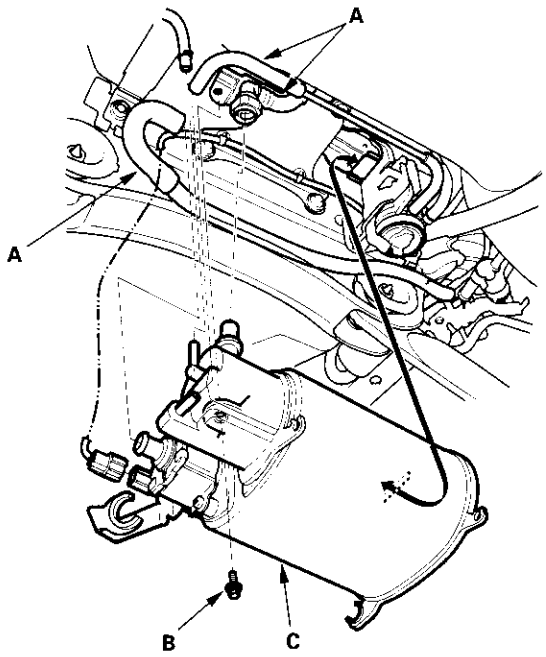
Check for fuel running out.

10. Disconnect the fuel tank vapor quick disconnect from the EVAP canister, then plug the port on the canister. Reapply vacuum (80 pumps).

    - If the vacuum holds, replace the fuel tank control valve (see page 11-189).
    - If the vacuum does not hold, inspect the EVAP canister vent shut valve o-ring. If the o-ring is OK, replace the EVAP canister, and repeat step 4.

EVAP Canister Replacement

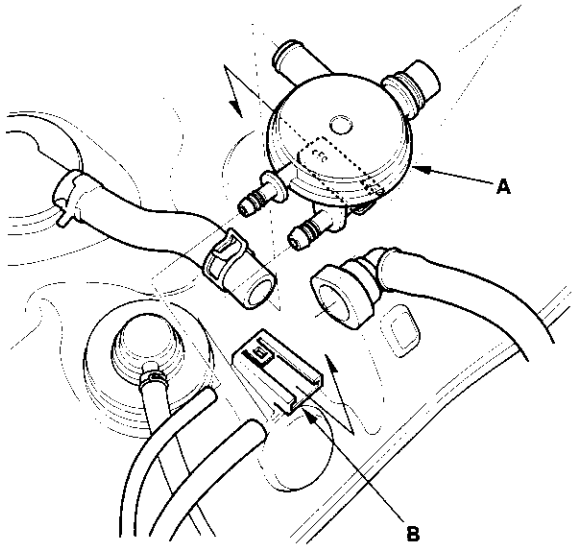
1. Remove the vacuum hoses (A).



2. Remove the bolt (B).
3. Remove the EVAP canister (C).
4. Install in the reverse order of removal.

Fuel Tank Vapor Control Valve Replacement

1. Remove the fuel tank (see page 11-155).
2. Remove the fuel tank vapor control valve (A) from the fuel tank (B).



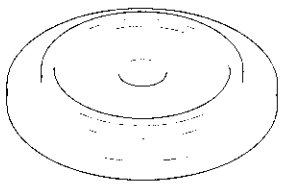
3. Install the fuel tank vapor control valve.
4. Install the fuel tank (see page 11-155).

Transaxle

Clutch

Special Tools

Ref. No.	Tool Number	Description	Qty
①	07JAF-PM7011A	Clutch Alignment Disc	1
②	07LAB-PV00100 or 07924-PD20003	Ring Gear Holder	1
③	07ZAF-PR8A100	Clutch Alignment Shaft	1
④	07936-3710100	Remover Handle	1



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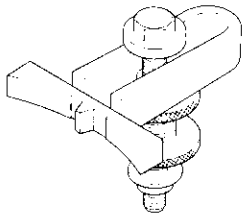
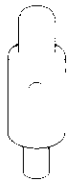
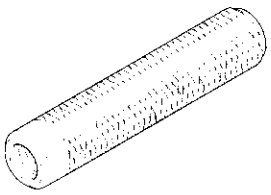


②

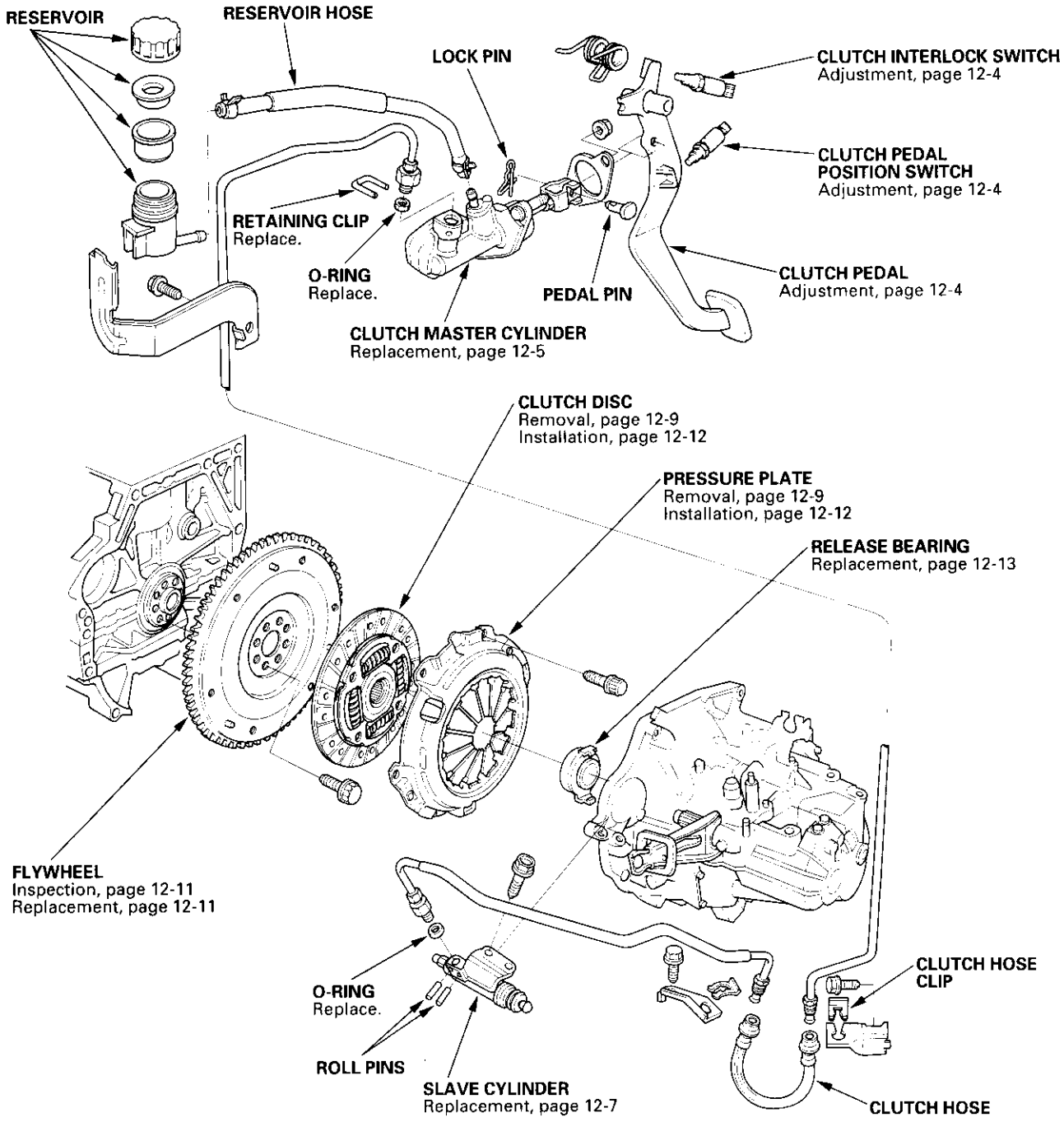


③



④

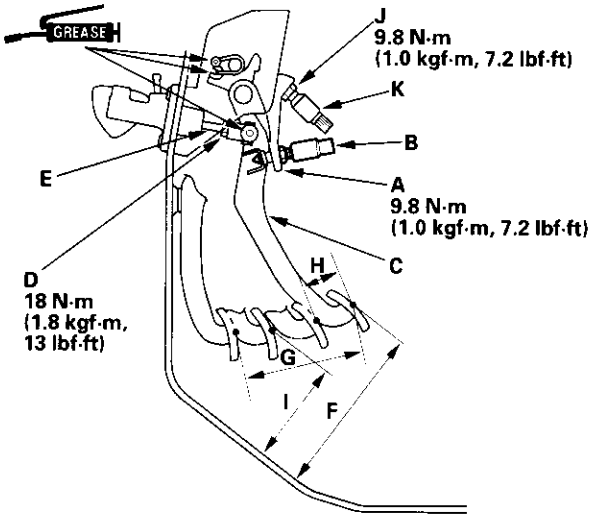
Component Location Index



Clutch Pedal, Clutch Pedal Position Switch, and Clutch Interlock Switch Adjustment

NOTE:
- To check the clutch pedal position switch (see page 4-45).
- To check the clutch interlock switch (see page 4-6).
- Remove the driver's side floor mat before adjusting the clutch pedal.
- The clutch is self-adjusting to compensate for wear.
- If there is no clearance between the master cylinder piston and push rod, the release bearing will be held against the diaphragm spring, which can result in clutch slippage or other clutch problems.

1. 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).



2. Loosen the clutch push-rod locknut (D), and turn the push rod (E) in or out to get the specified height (F), stroke (G), free play (H) and disengagement height (I) at the clutch pedal.

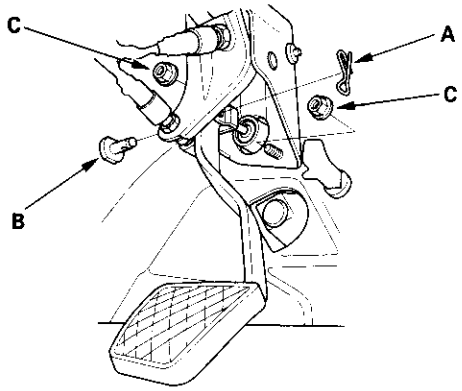
Clutch Pedal Stroke:	**130—140 mm (5.12—5.51 in.)**
Clutch Pedal Free Play:	**10—16 mm (0.39—0.63 in.)**
Clutch Pedal Height:	**193 mm (7.60 in.)**
Disengagement Height:	**115 mm (4.53 in.)**
Between Floor And Carpet Height (Approximate Value):	**38 mm (1.50 in.)**

3. Tighten the clutch push-rod locknut (D).
4. With the clutch pedal released, turn the clutch pedal position switch (B) in until it contacts the clutch pedal (C).
5. Turn the clutch pedal position switch (B) in an additional 3/4 to 1 turn.
6. Tighten the clutch pedal position switch locknut (A).
7. Loosen locknut (J) and the clutch interlock switch (K).
8. Press the clutch pedal to the floor.
9. Release the clutch pedal 10—16 mm (0.39—0.63 in.) from the fully pressed position, and hold it there. Adjust the position of the clutch interlock switch (K) so that the engine will start with the clutch pedal in this position.
10. Tighten the clutch interlock switch locknut (J).

Clutch Master Cylinder Replacement

NOTE: 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.

1. Pry out the lock pin (A), and pull the pedal pin (B) out of the yoke. Remove the master cylinder mounting nuts (C).

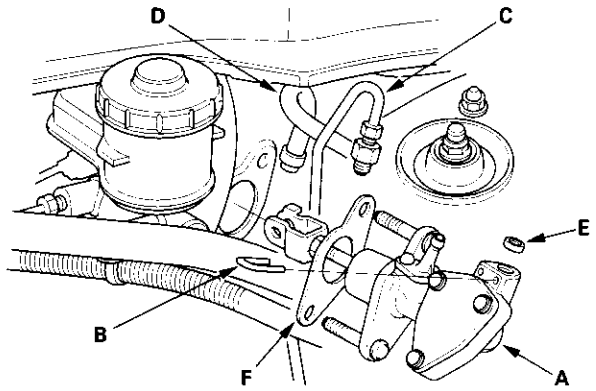


2. Remove the air cleaner housing cover and the air cleaner housing (see step 6 on page 5-2).

3. Remove the brake fluid from the clutch master cylinder reservoir with a syringe.

4. Remove the clutch line bracket from the frame rail, and remove the clutch line clip.

5. Remove the clutch master cylinder (A), and pull it toward the middle of the engine compartment. Remove the retaining clip (B). Disconnect the clutch line (C). Plug the end of the clutch line with a shop towel to prevent brake fluid from coming out.

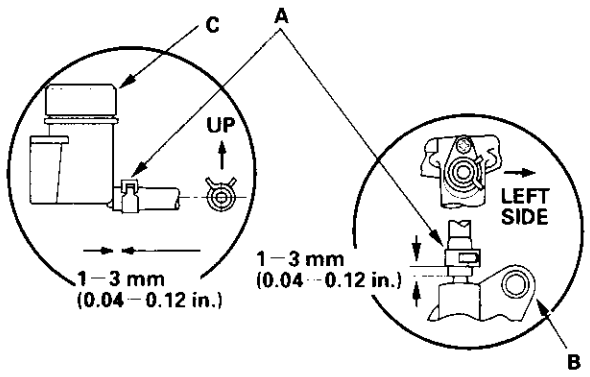


6. Disconnect the reservoir hose (D) from the clutch master cylinder reservoir. Plug the end of the reservoir hose with a shop towel to prevent brake fluid from coming out.

7. Remove the O-ring (E) and the clutch master cylinder seal (F) from the master cylinder.

8. Install the clutch master cylinder in the reverse order of removal. Install a new O-ring.

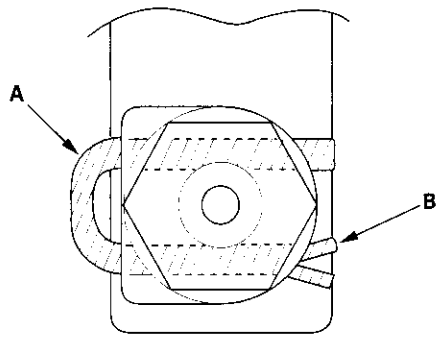
9. Make sure the hose clamps (A) are positioned on the master cylinder (B) and reservoir (C) as shown.



(cont'd)

Clutch Master Cylinder Replacement (cont'd)

10. To prevent the retaining clip (A) from coming off, pry open the tip of the retaining clip (B) with a screwdriver.



11. Tighten the master cylinder mounting nuts to 13 N·m (1.3 kgf·m, 9.4 lbf· ft).

12. Bleed the clutch master hydraulic system (see step 11 on page 12-8).

    NOTE: The reservoir filling is covered in the bleeding procedure.

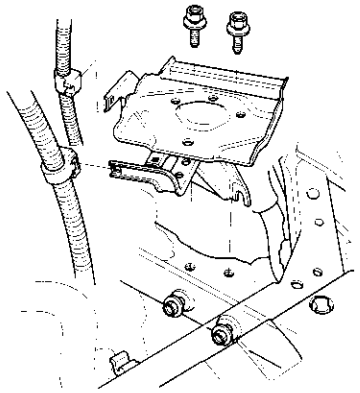
13. Install the air cleaner housing (see step 37 on page 5-15).

Slave Cylinder Replacement

NOTE:
- Use fender covers to avoid damaging painted surfaces.
- 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.

1. Write down the frequencies for the radio's preset buttons. Disconnect the negative (−) cable first, then the positive (+) cable from the battery. Remove the battery.

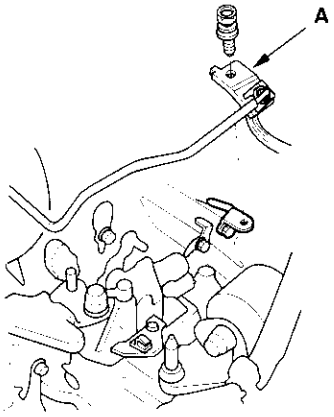
2. Remove the battery tray.



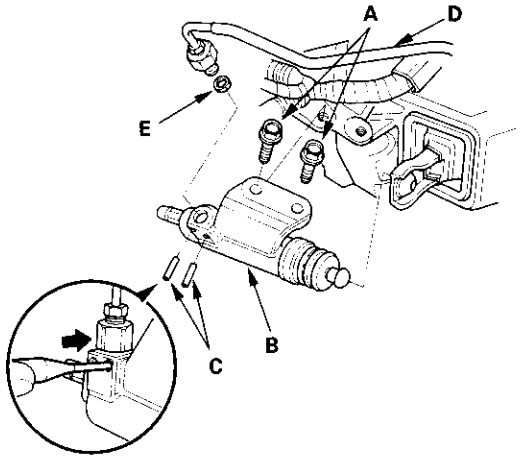
3. Remove the air cleaner housing cover and the air cleaner housing (see step 6 on page 5-2).

4. Remove the intake air duct (see step 8 on page 5-3) .

5. Remove the clutch line bracket (A).

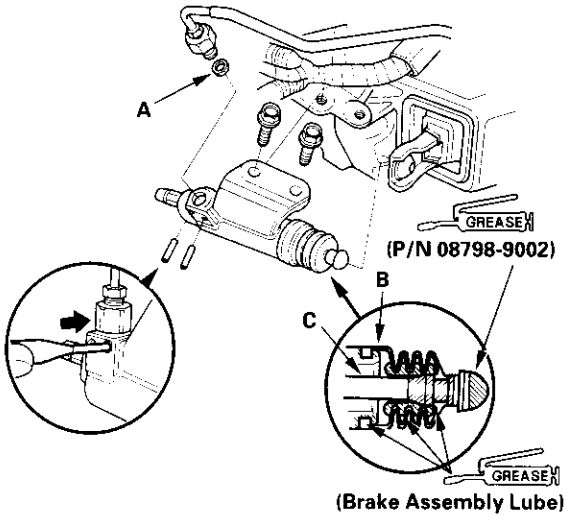


6. Remove the mounting bolts (A) and the slave cylinder (B).



7. Remove the roll pins (C). Disconnect the clutch line (D), and remove the O-ring (E). Plug the end of the clutch line with a shop towel to prevent brake fluid from coming out.

8. Install the slave cylinder in the reverse order of removal. Install a new O-ring (A).



9. Pull the boot (B) back, and apply brake assembly lube to the boot and slave cylinder rod (C). Reinstall the boot.

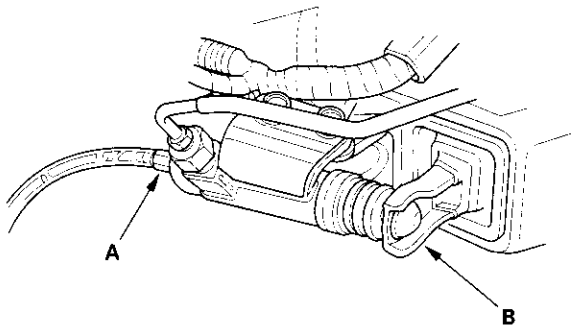
10. Apply super high temp urea grease (P/N 08798-9002) to the push rod of the slave cylinder. Tighten the slave cylinder mounting bolts to 22 N· m (2.2 kgf·m, 16 lbf·ft).

(cont'd)

Slave Cylinder Replacement (cont'd)

11. Bleed the clutch hydraulic system.

    - Attach a hose to the bleeder screw (A), and suspend the hose in a container of brake fluid.
    - Make sure there is an adequate supply of fluid in the clutch master cylinder, then slowly pump the clutch pedal until no more bubbles appear at the bleeder hose.
    - It may be necessary to limit the movement of the release fork (B) with a block of wood to remove all the air from the system.
    - Tighten the bleed screw to 8 N·m (0.8 kgf·m, 6 lbf·ft); do not overtighten it.
    - Refill the clutch master cylinder with fluid when done.
    - Always use only Honda DOT 3 brake fluid.



12. Install the intake air duct (see step 36 on page 5-14).

13. Install the air cleaner housing (see step 37 on page 5-15).

14. Install the battery tray.

15. Install the battery, connect the positive (+) cable first, then the negative (−) cable.

16. Reset the frequencies for the radio station preset buttons.

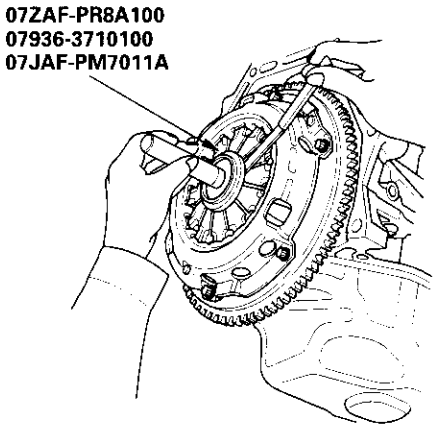
Clutch Replacement

Special Tools Required
- Clutch alignment disc 07JAF-PM7011A
- Ring gear holder 07LAB-PV00100 or 07924-PD20003
- Clutch alignment shaft 07ZAF-PR8A100
- Remover handle 07936-3710100

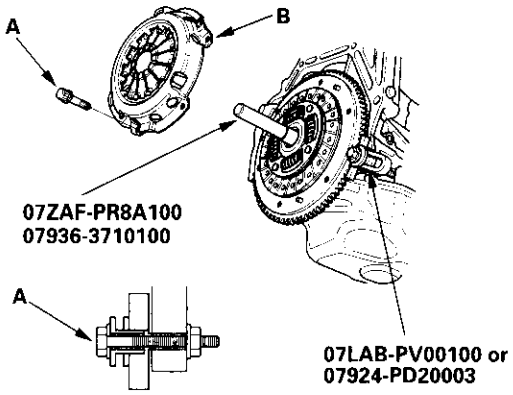
Pressure Plate and Clutch Disc Removal

1. Check the diaphragm spring fingers for height using the special tool and feeler gauge. 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.)

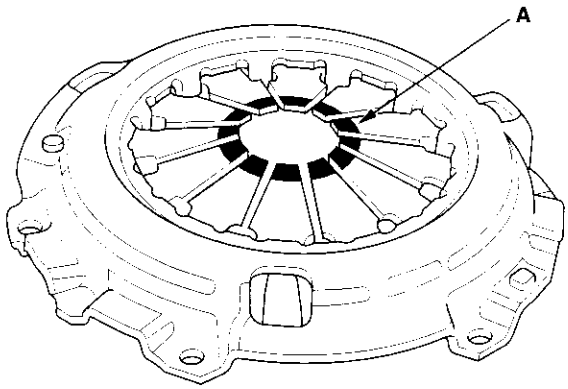


2. Install the special tools.

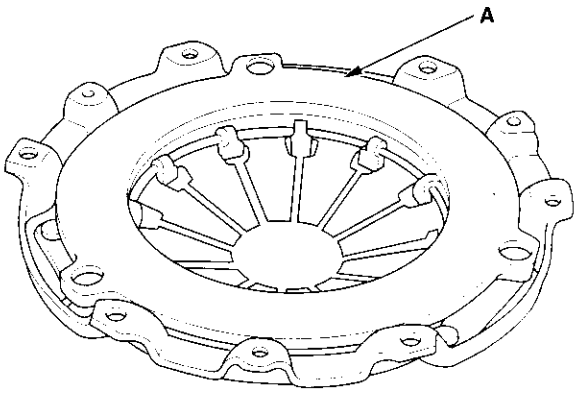


3. To prevent warping, unscrew the pressure plate mounting bolts (A) in a crisscross pattern in several steps, then remove the pressure plate (B).

4. Inspect the fingers of the diaphragm spring (A) for wear at the release bearing contact area.



5. Inspect the pressure plate (A) surface for wear, cracks, and burning.

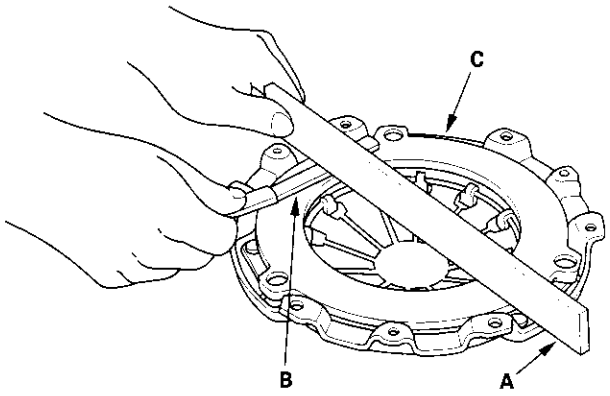


(cont'd)

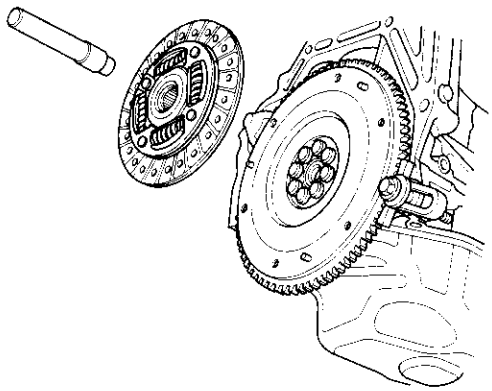
Clutch Replacement (cont'd)

6. Inspect for warpage using a straight edge (A) and feeler gauge (B). Measure across the pressure plate (C). If the warpage 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.)



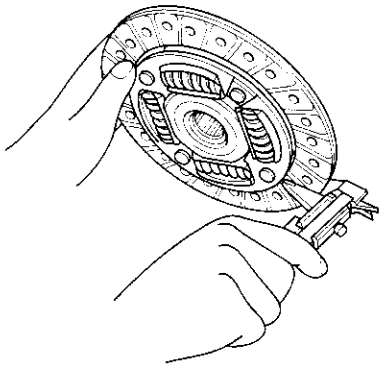
7. Remove the clutch disc and special tools.



8. Inspect the lining of the clutch disc for signs of slipping or oil. If the clutch disc is burned black or oil soaked, replace it.

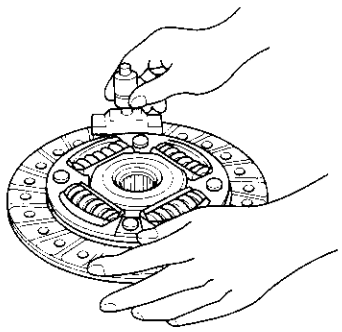
9. Measure the clutch disc thickness. If the thickness is less than the service limit, replace the clutch disc.

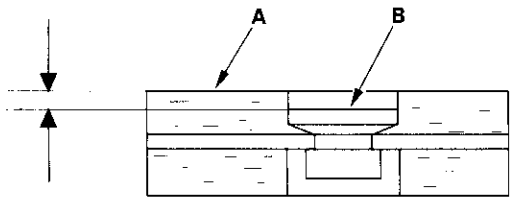
Standard (New): 8.3—8.9 mm (0.33—0.35 in.)
Service Limit: 6.0 mm (0.24 in.)



10. Measure the rivet depth from the clutch disc lining surface (A) to the rivets (B) on both sides. If the rivet depth 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.)

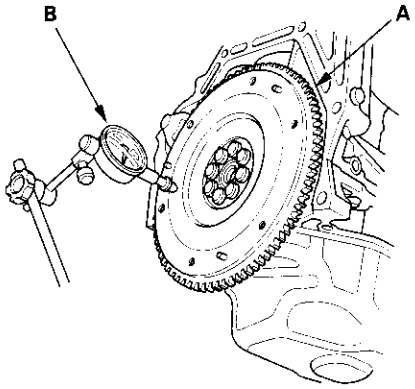




Flywheel Inspection

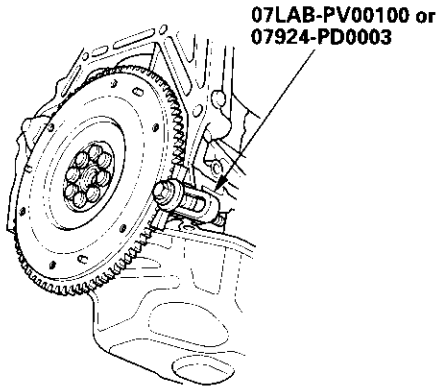
1. Inspect the ring gear teeth for wear and damage.
2. Inspect the clutch disc mating surface on the flywheel for wear, cracks, and burning.
3. Measure the flywheel (A) runout using a dial indicator (B) through at least two full turns. Push against the flywheel each time you turn it to take up the crankshaft thrust washer clearance. If the runout is more than the service limit, replace the flywheel and recheck the runout. Resurfacing the flywheel is not recommended.

Standard (New): 0.05 mm (0.002 in.) max.
Service Limit: 0.15 mm (0.006 in.)

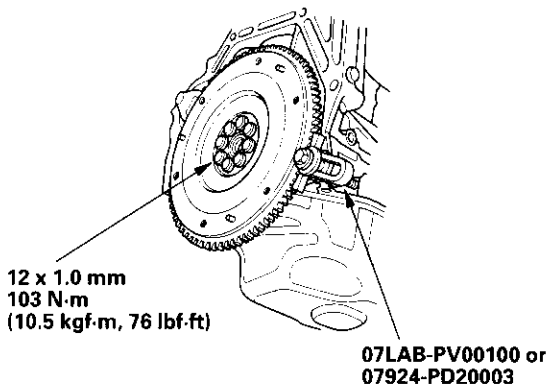


Flywheel Replacement

1. Install the special tool.



2. Remove the flywheel mounting bolts in a crisscross pattern in several steps, then remove the flywheel.
3. Install the flywheel on the crankshaft, and install the mounting bolts finger-tight.
4. Install the special tool, then torque the flywheel mounting bolts in a crisscross pattern in several steps.



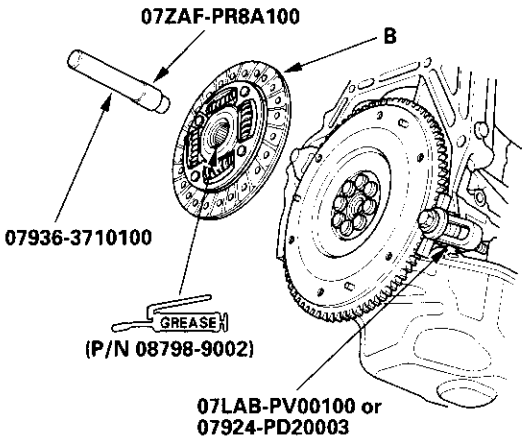
(cont'd)

Clutch Replacement (cont'd)

Clutch Disc and Pressure Plate Installation

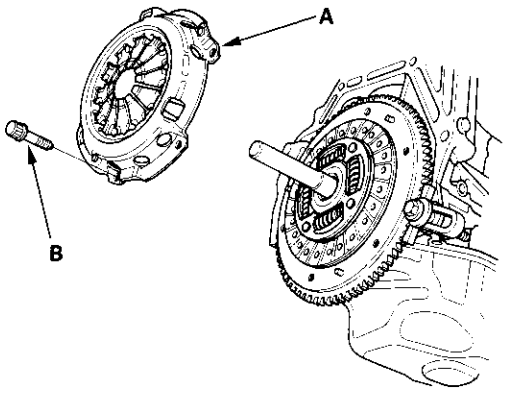
1. Temporarily install the clutch disc onto the splines of the transmission mainshaft. Make sure the clutch disc slides freely on the mainshaft.

2. Install the ring gear holder.



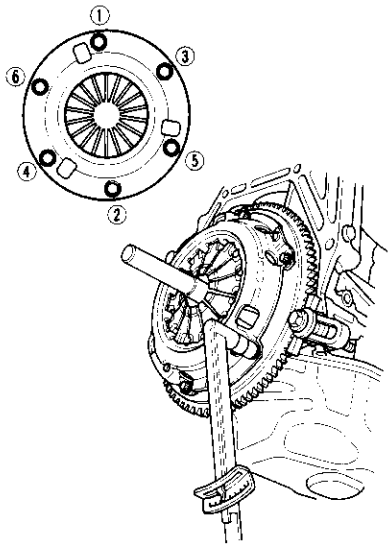
3. Apply super high temp urea grease (P/N 08798-9002) to the splines (A) of the clutch disc (B), then install the clutch disc using the special tools.

4. Install the pressure plate (A) and the mounting bolts (B) finger-tight.



5. Torque the mounting bolts in a crisscross pattern. Tighten the bolts in several steps to prevent warping the diaphragm spring.

PRESSURE PLATE MOUNTING BOLT TORQUE:
25 N·m (2.6 kgf·m, 19 lbf·ft)

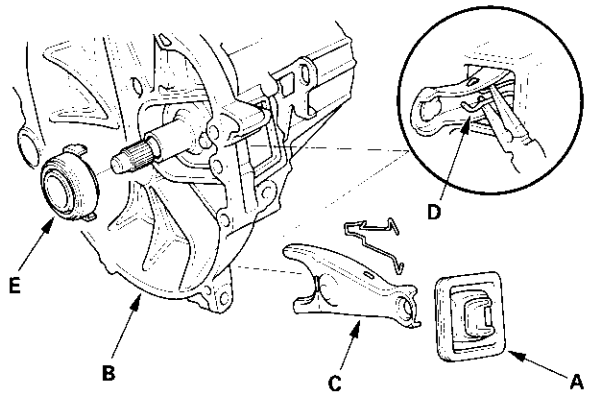


6. Remove the special tools.

7. Make sure the diaphragm spring fingers are all the same height.

Release Bearing Replacement

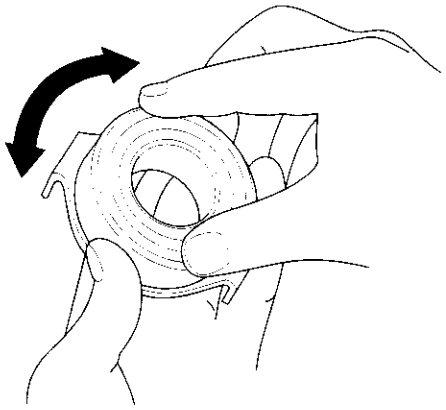
1. Remove the release fork boot (A) from the clutch housing (B).



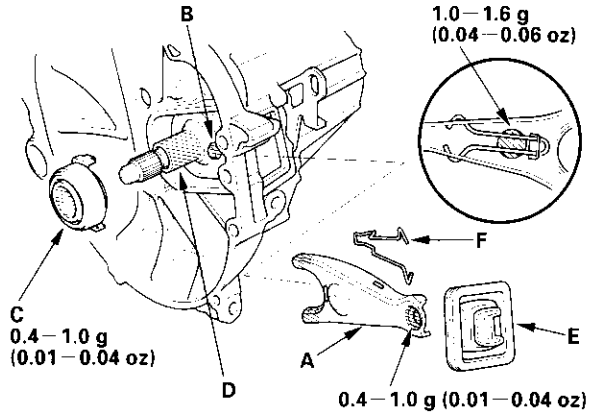
2. Remove the release fork (C) from the clutch housing (B) by squeezing the release fork set spring (D) with pliers. Remove the release bearing (E).

3. Check the release bearing for play and noise by spinning it by hand. If there is excessive play or noise, replace the release bearing with a new one.

   NOTE: The release bearing is packed with grease. Do not wash it in solvent.



4. 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.

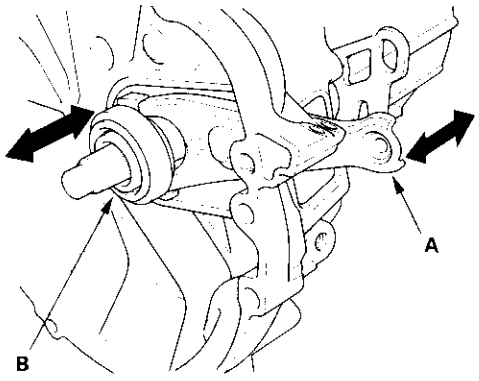


5. With the release fork slid between the release bearing pawls, install the release bearing on the mainshaft while inserting the release fork through the hole in the clutch housing.

6. Align the detent of the release fork with the release fork bolt, then press the release fork over the release fork bolt squarely. Make sure the release fork set spring (F) is properly set.

7. Install the release fork boot (E). Make sure the boot seals around the release fork and clutch housing.

8. 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.



Manual Transmission

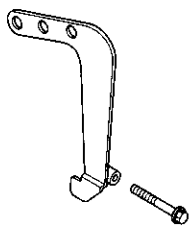
M/T Differential

Special Tools

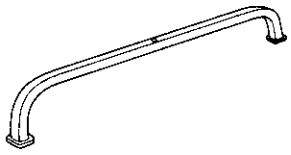
Ref.No.	Tool Number	Description	Qty
①	VSB02C000015	Engine Hanger Adapter, 2.0 to 2.4 Liter	1
②	VSB02C000018	Engine Hanger	1
*③	07GAJ-PG20110	Mainshaft Holder	1
*④	07GAJ-PG20130	Mainshaft Base	1
⑤	07JAD-PL90100	Oil Seal Driver	1
⑥	07NAD-P20A100	Oil Seal Driver Attachment	1
**⑦	07736-A01000B	Adjustable Bearing Puller, 20-40 mm	1
⑧	07746-0010300	Attachment, 42 x 47 mm	1
⑨	07746-0030100	Driver, 40 mm I.D.	1
⑩	07746-0030300	Driver, 30 mm I.D.	1
⑪	07749-0010000	Driver	1

* Part of Mainshaft Inspection Tool Set, 07GAJ-PG20102.

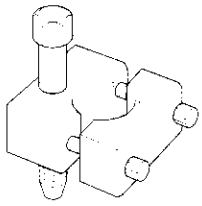
* * Must be used with commercially available 3/8" — 16 Slide Hammer.



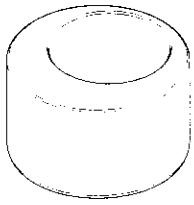
①



②



③



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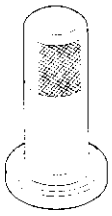
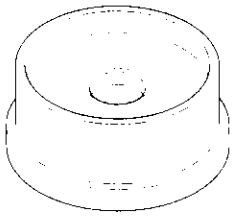


⑤



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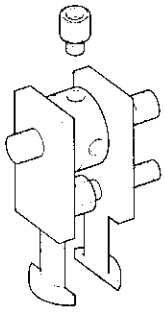
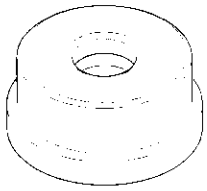
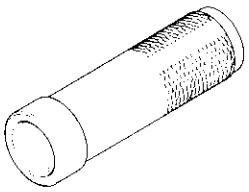


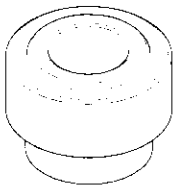
⑦



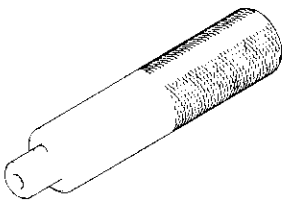
⑧



⑨



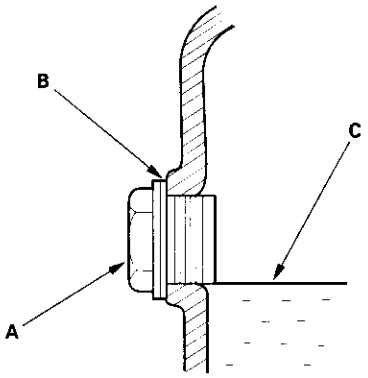
⑩



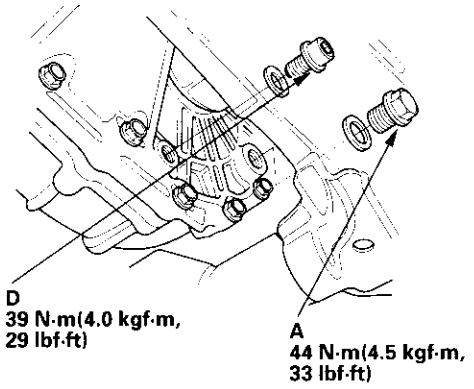
⑪

Transmission Fluid Inspection and Replacement

1. Park the vehicle on level ground, and turn the engine OFF.
2. Remove the oil filler plug (A) and washer (B), check the condition of the fluid, and make sure the fluid is at the proper level (C).



3. If the transmission fluid is dirty, remove the drain plug (D) and drain the fluid.



4. Reinstall the drain plug with a new washer, and refill the transmission fluid to the proper level.

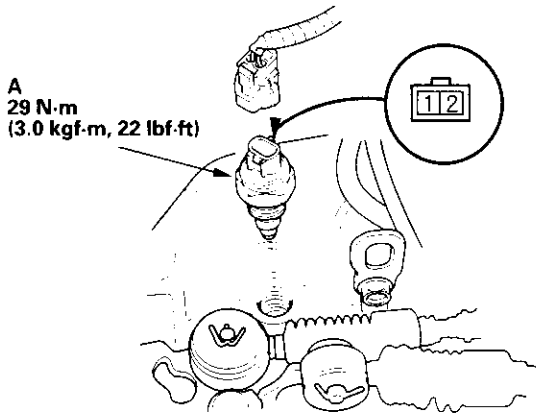
   Oil Capacity
   1.5 ℓ (1.6 US qt) at fluid change
   1.7 ℓ (1.8 US qt) at overhaul

   Always use Honda Manual Transmission Fluid (MTF). Using motor oil can cause stiffer shifting and noise because it does not contain the proper additives.

5. Reinstall the oil filler plug with a new washer.

Back-Up Light Switch Test

1. Disconnect the back-up light switch (A) connector.



2. Check for continuity between the back-up light switch 2P connector No. 1 and No. 2 terminals. There should be continuity when the shift lever is in reverse.
3. If necessary, replace the back-up light switch. Apply liquid gasket (P/N 08718-0001), and install it on the transmission housing.

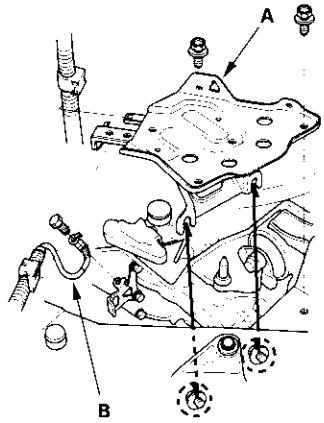
Transmission Removal

Special Tools Required
- Engine hanger adapter, 2.0 to 2.4 liter VSB02C000015
- Engine hanger VSB02C000018
- Engine support hanger, A & Reds AAR-T-12566*
- Subframe adapter EQS02C000011*

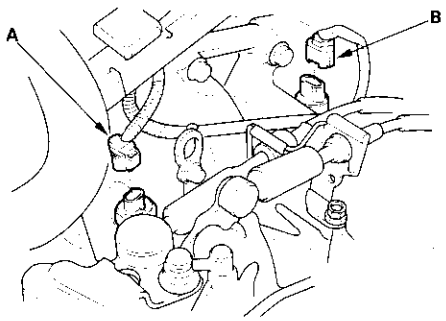
  * Available through the Honda Tool and Equipment Program 888-424-6857

NOTE: Use fender covers to avoid damaging painted surfaces.

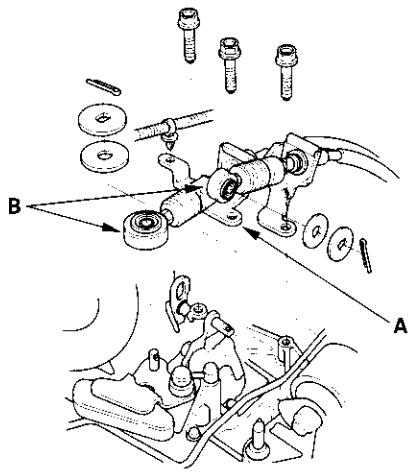
1. Write down the frequencies for the radio's preset buttons. Disconnect the negative (−) cable first, then the positive (+) cable from the battery. Remove the battery.
2. Remove the intake manifold cover (see page 9-3).
3. Remove the air cleaner housing (see page 11-162).
4. Remove the intake air duct (see step 8 on page 5-3).
5. Remove the battery tray (A).



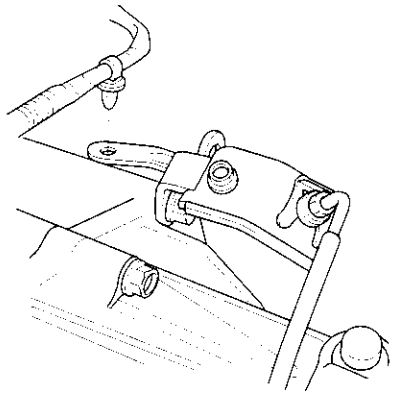
6. Disconnect the transmission ground cable (B).
7. Disconnect the back-up light switch connector (A) and vehicle speed sensor (VSS) connector (B).



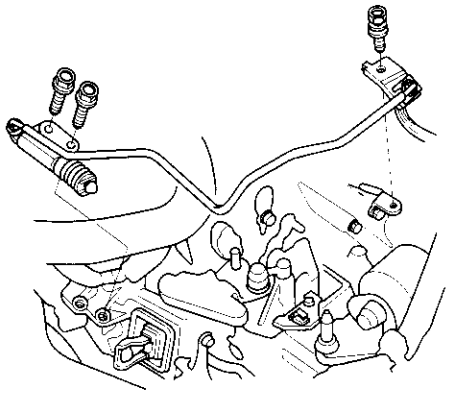
8. Remove the cable bracket (A), then disconnect the cables (B) from the top of the transmission housing. Carefully remove both cables and the bracket together so as not to bend the cables.



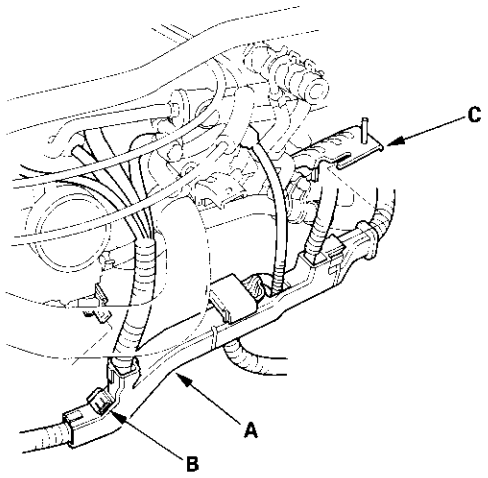
9. Remove the harness clip.



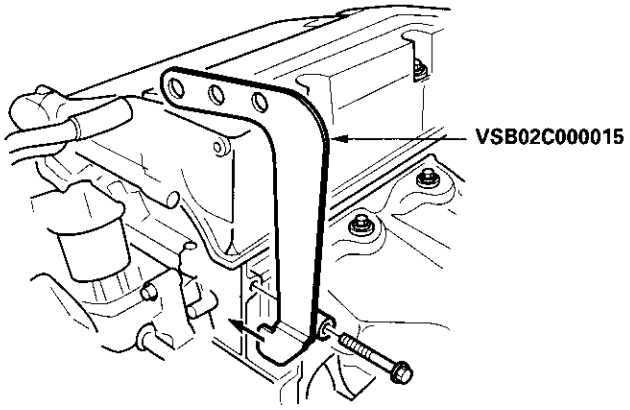
10. Carefully remove the slave cylinder and clutch line bracket so as not to bend the clutch line. Do not operate the clutch pedal once the slave cylinder has been removed.



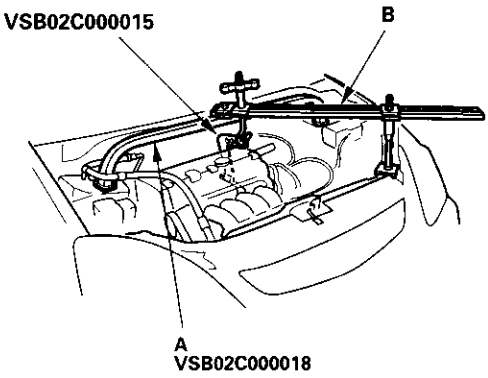
11. Remove the engine wire harness cover (A) by lifting up on the lock tab (B), then slide the harness forward off the air cleaner housing mounting bracket (C).



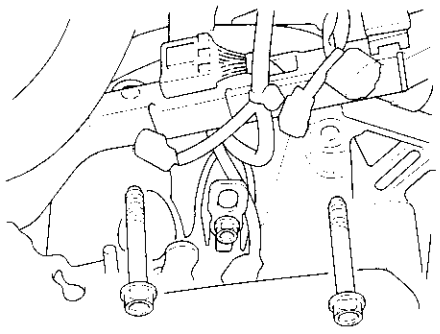
12. Attach the special tool to the threaded hole in the cylinder head.



13. Install the engine hanger (A) and the engine support hanger (B) to the vehicle, then attach the hook to the special tool.



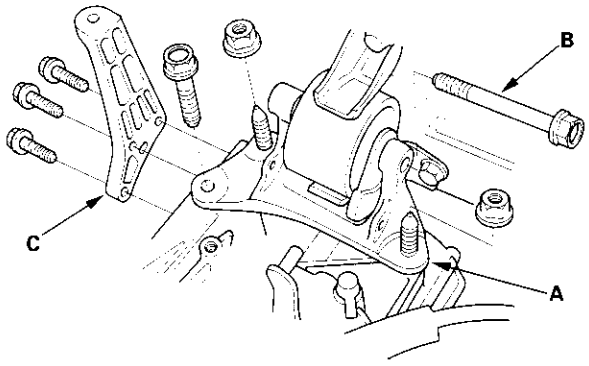
14. Remove the two upper transmission mounting bolts.



(cont'd)

Transmission Removal (cont'd)

15. Remove the transmission mount bracket (A) and transmission mounting bolt (B).

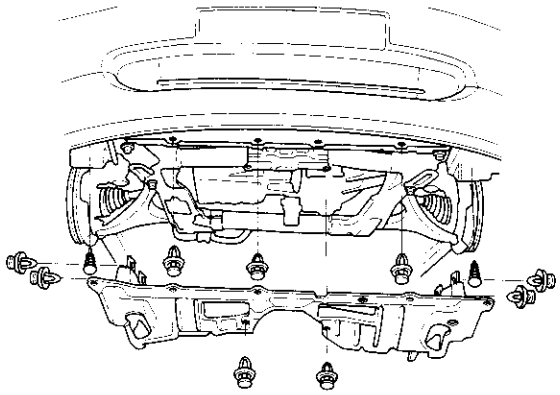


16. Remove the air cleaner bracket (C).

17. Raise the vehicle, and make sure it is securely supported.

18. Drain the transmission fluid. Reinstall the drain bolt with a new washer (see page 13-3).

19. Remove the splash shield.

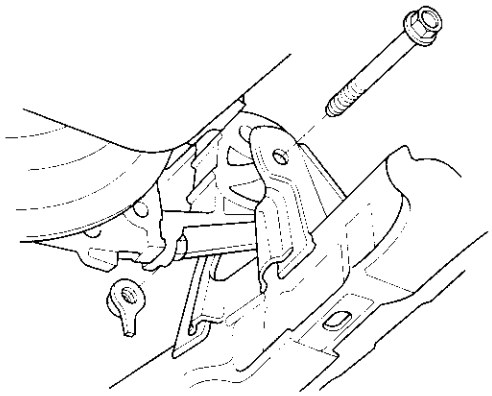


20. Remove the three way catalytic converter (TWC) assembly (see step 30 on page 5-5).

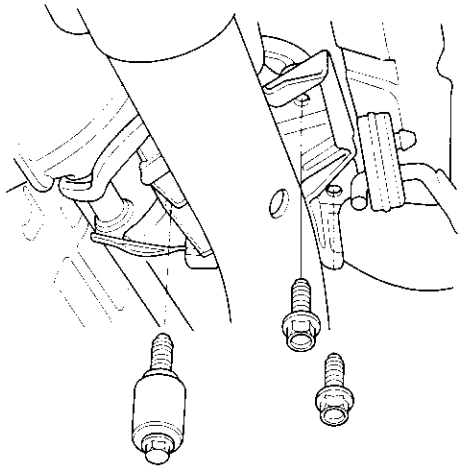
21. Remove the driveshafts (see page 16-3).

22. Remove the intermediate shaft (see page 16-19).

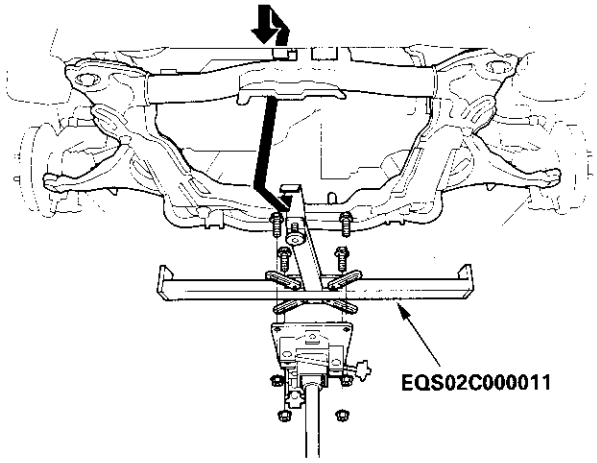
23. Remove the front engine mount bracket mounting bolt.



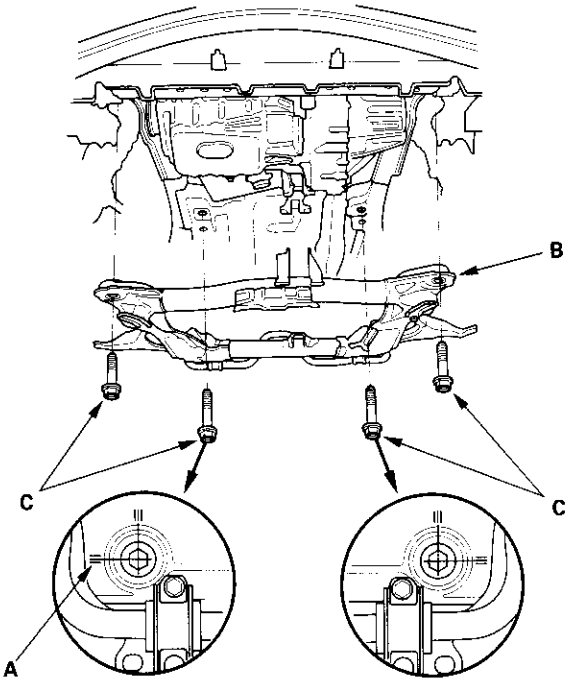
24. Remove the three bolts securing the transmission rear mount.



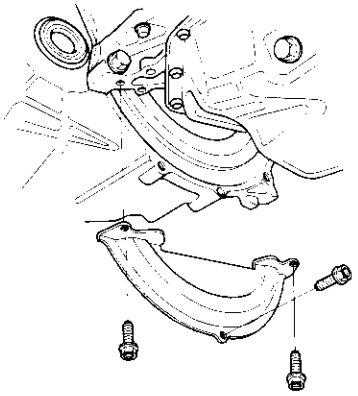
25. Support the subframe with the subframe adapter and a jack.



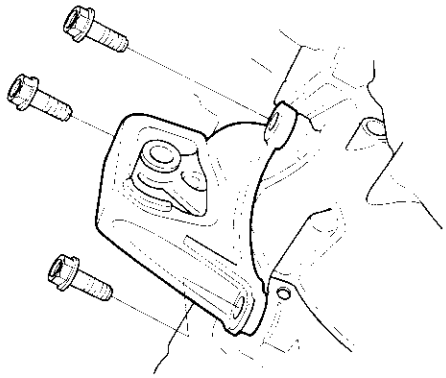
26. Make reference marks (A) on the front suspension subframe (B) and mounting bolts (C), then remove the front suspension subframe.



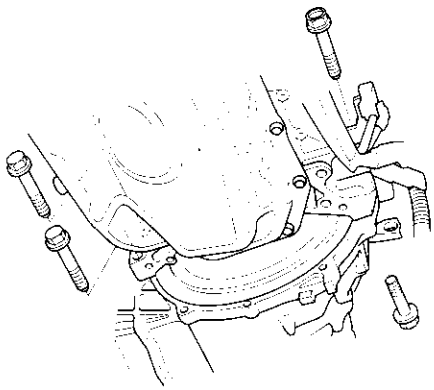
27. Remove the clutch cover.



28. Remove the front engine mount.



29. Place the transmission jack under the transmission, and remove the transmission mounting bolts.

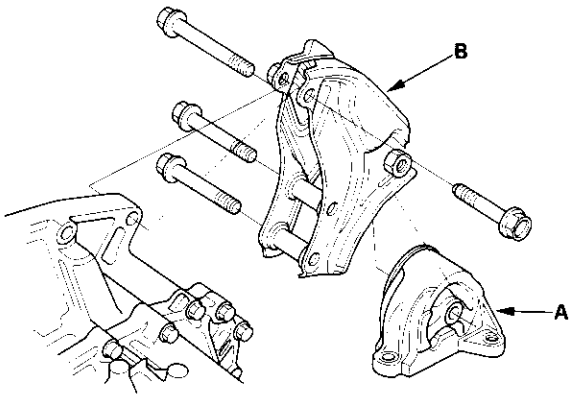


(cont'd)

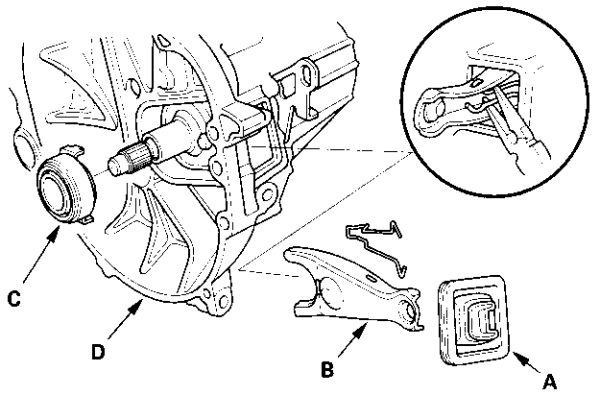
Transmission Removal (cont'd)

30. Pull the transmission away from the engine until the transmission mainshaft clears the clutch pressure plate, then lower the transmission on the transmission jack.

31. Remove the transmission rear mount (A) and the transmission rear mount bracket (B).



32. Remove the boot (A), the release fork (B), and the release bearing (C) from the transmission (D).



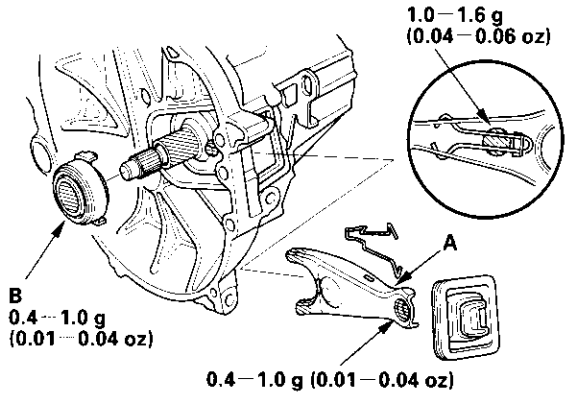
Transmission Installation

Special Tools Required
- Engine hanger adapter, 2.0 to 2.4 liter VSB02C000015
- Engine hanger VSB02C000018
- Engine support hanger, A & Reds AAR-T-12566*
- Subframe adapter EQS02C000011

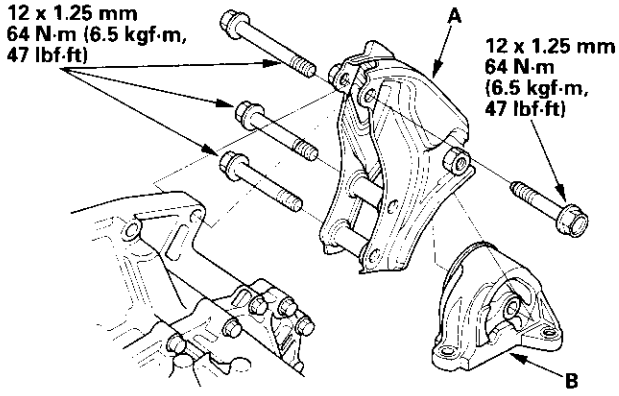
* Available through the Honda Tool and Equipment Program 888-424-6857

1. Check the two dowel pins are installed in the clutch housing.

2. Apply super high temp urea grease (P/N 08798-9002) to the release fork (A) and the release bearing (B). Install the release fork and the release bearing.

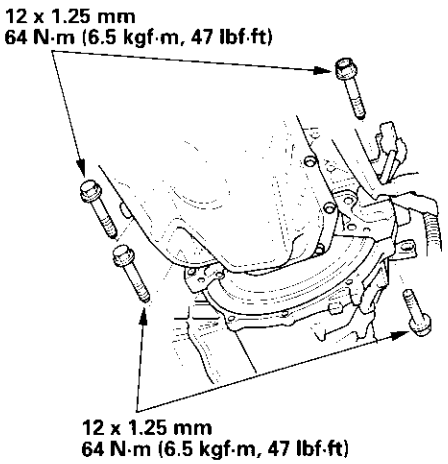


3. Install the transmission rear mount bracket (A) and the transmission rear mount (B).

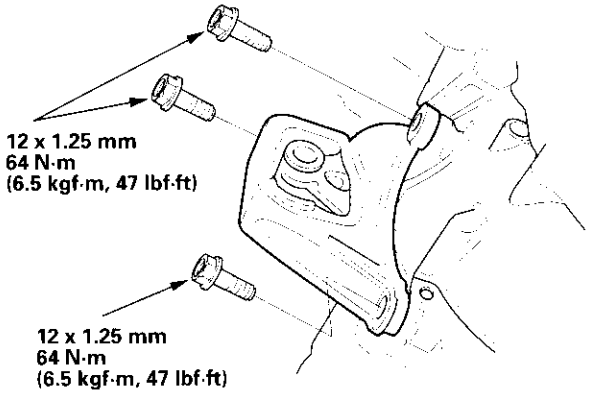


4. Place the transmission on the transmission jack, and raise it to the engine level.

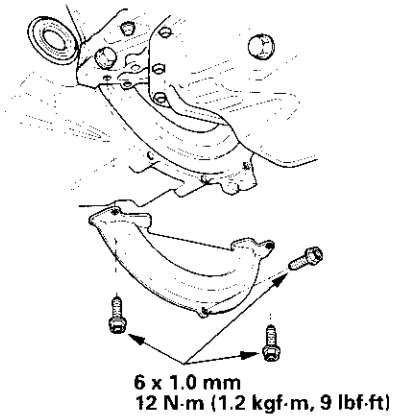
5. Install the transmission mounting bolts.



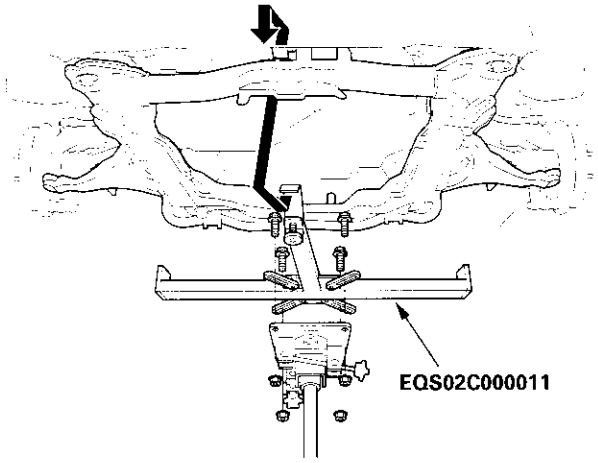
6. Install the front engine mount.



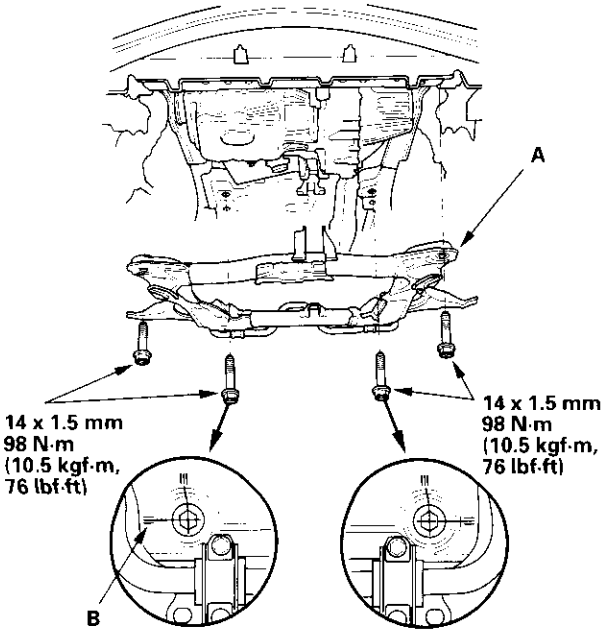
7. Install the clutch cover.



8. Support the subframe with the subframe adapter and a jack.



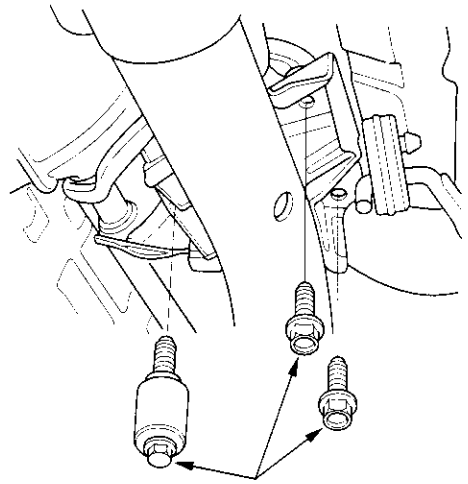
9. Install the front suspension subframe (A) in its original position by aligning the marks (B) you made in the removal procedure.



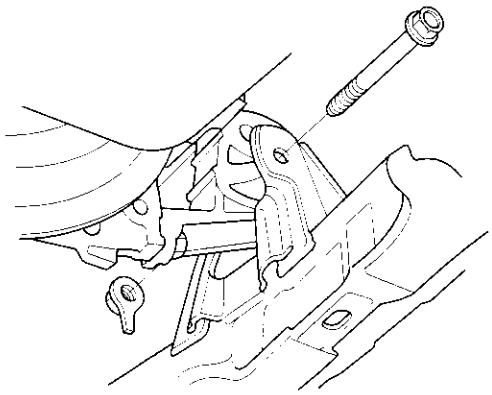
(cont'd)

Transmission Installation (cont'd)

10. Install the three rear mounting bolts for the transmission rear mount.



11. Loosely tighten the front engine mount bracket mounting bolt.

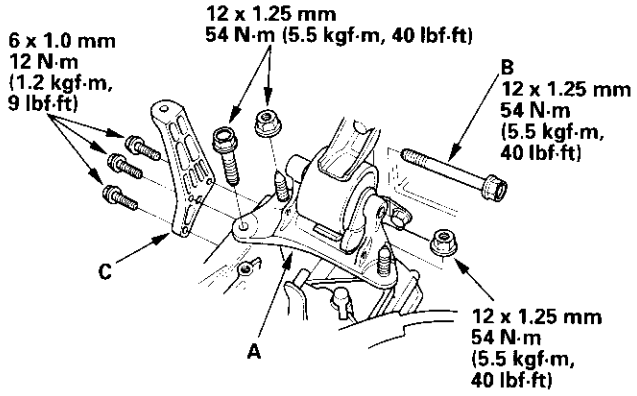


12. Install the intermediate shaft (see page 16-24).

13. Install the drivershafts (see page 16-17).

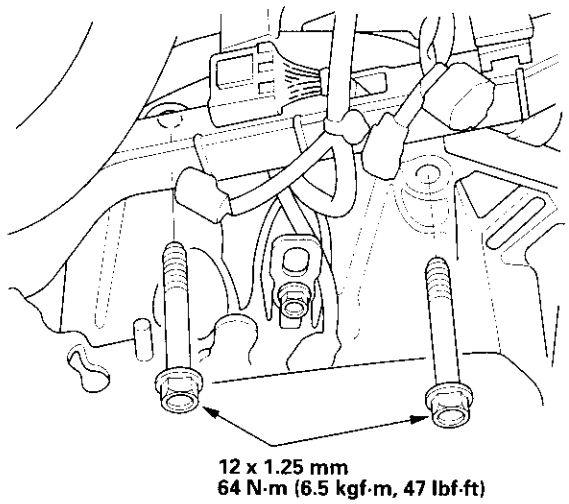
14. Install the three way catalytic converter (TWC) assembly (see step 17 on page 5-12).

15. Install the transmission mount bracket (A) and the transmission mounting bolt (B).



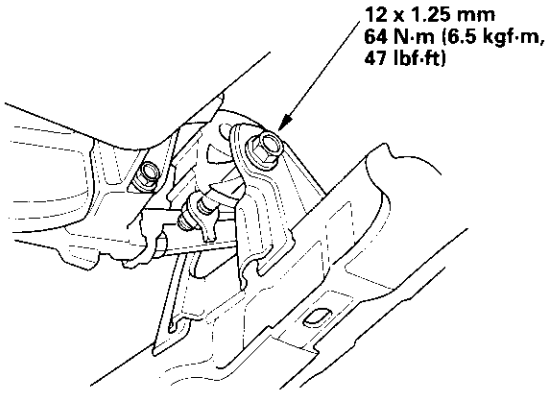
16. Install the air cleaner bracket (C).

17. Install the two upper transmission mounting bolts.

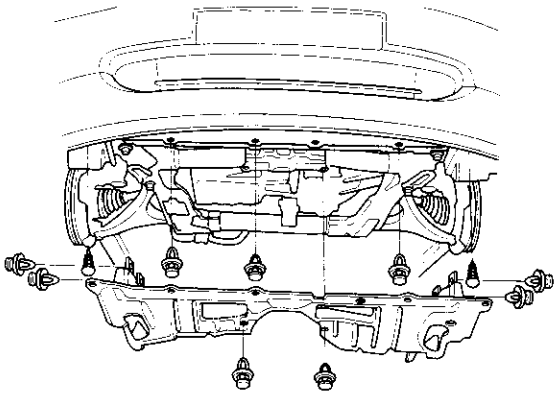


18. Remove the engine hanger and special tool from engine.

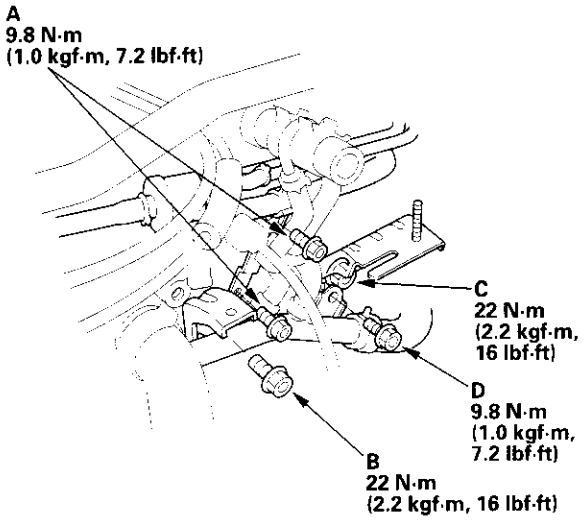
19. Tighten the front engine mount bracket mounting bolt.



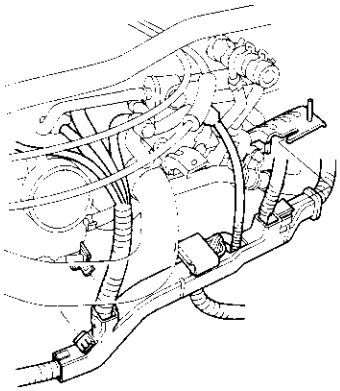
20. Install the splash shield.



21. Install the brake booster and EVAP line bracket mounting bolts (A), and air cleaner housing bracket mounting bolt (B). Tighten the air cleaner housing bracket mounting bolt (C), and install the water pipe mounting bolt (D).



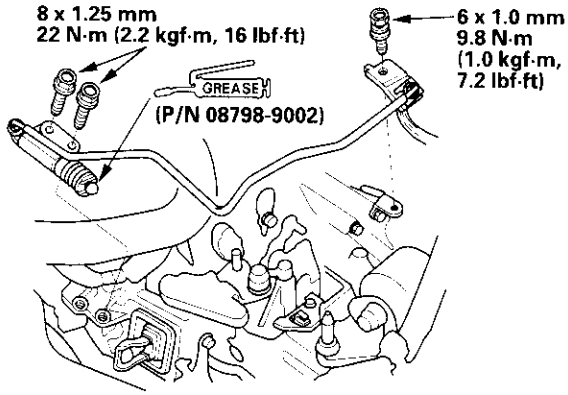
22. Install the engine harness cover.



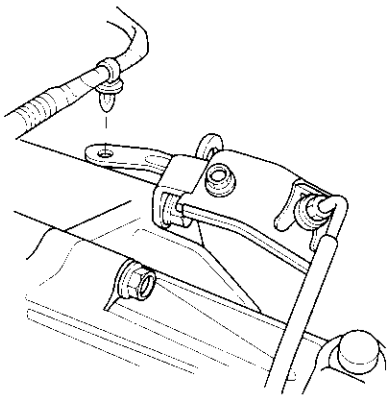
(cont'd)

Transmission Installation (cont'd)

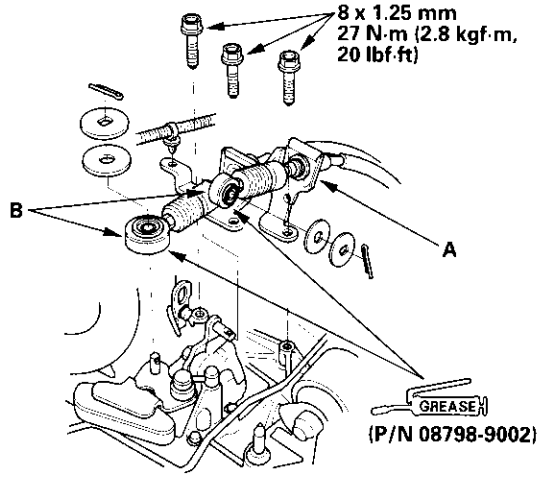
23. Apply super high temp urea grease (P/N 08798-9002) to the end of the slave cylinder rod. Install the slave cylinder and the clutch line bracket. Take care not to bend the clutch line.



24. Install the harness clip.

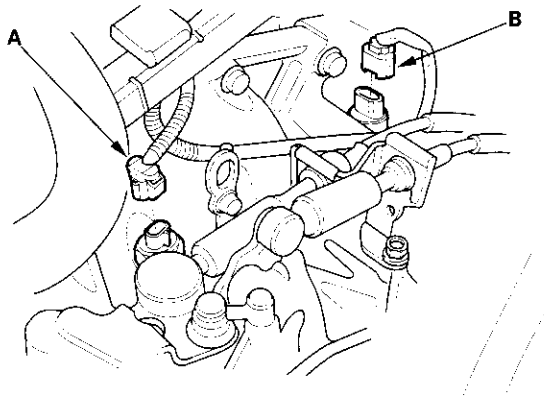


25. Install the cable bracket (A) and cables (B).

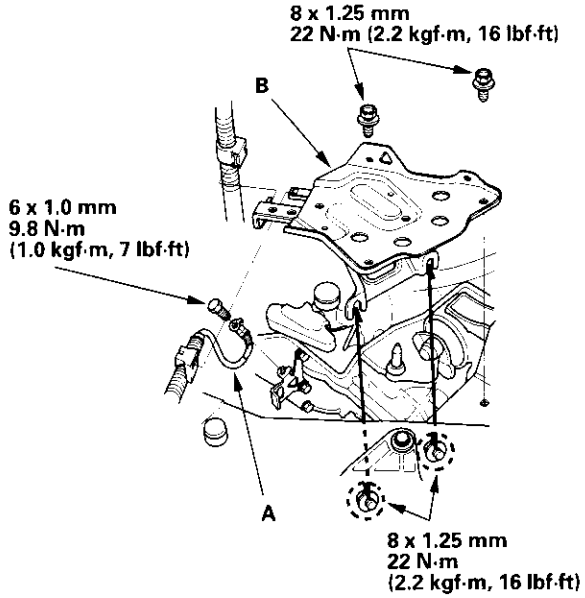


26. Apply a light coat of super high temp urea grease (P/N 08798 - 9002) to the cable ends.

27. Connect the back-up light switch connector (A) and the vehicle speed sensor (VSS) connector (B).



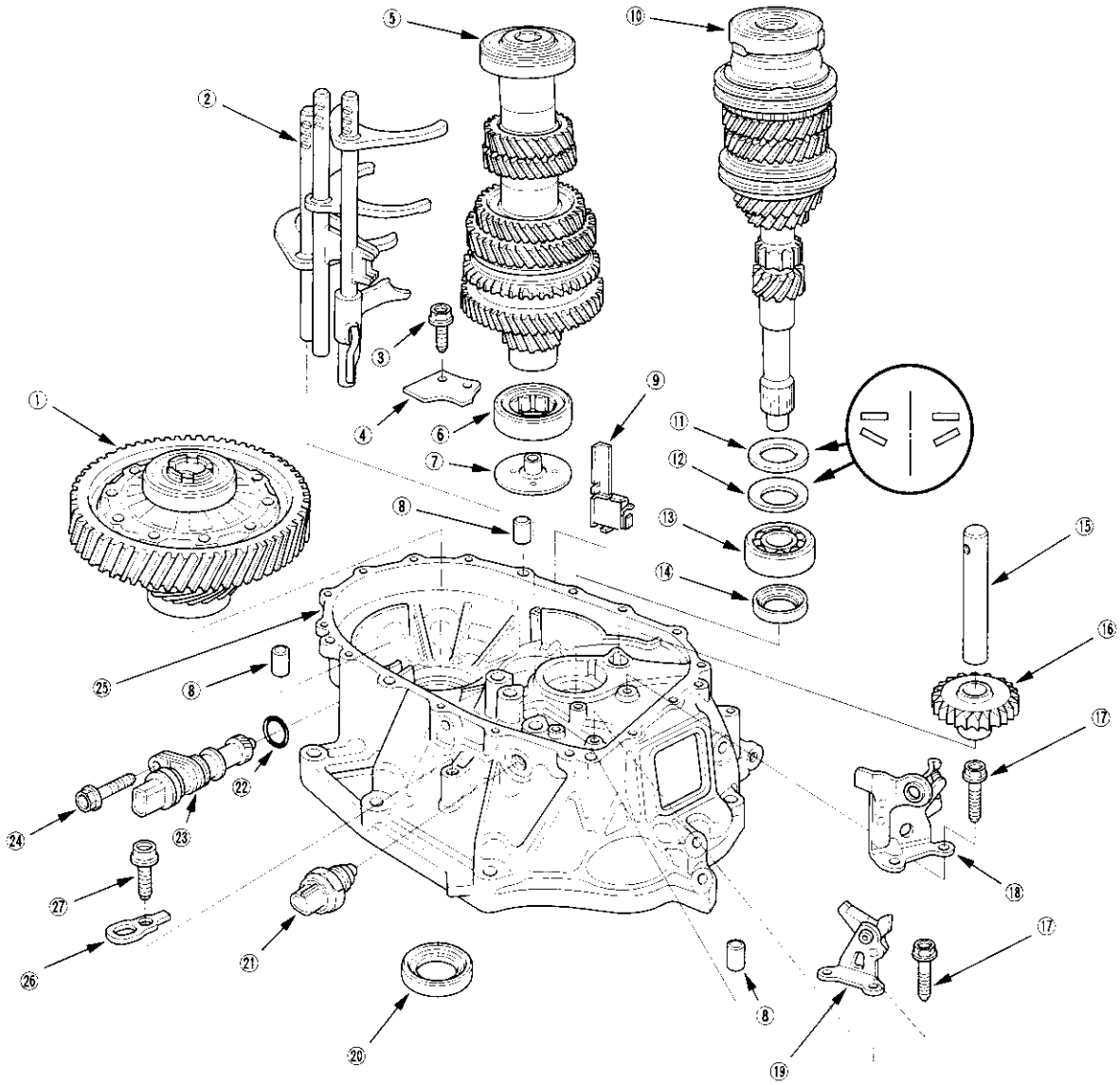
28. Connect the transmission ground cable (A).



29. Install the battery tray (B).
30. Install the intake air duct (see step 36 on page 5-14).
31. Install the air cleaner housing (see step 39 on page 5-15).
32. Install the intake manifold cover (see step 41 on page 5-15).
33. Install the battery. Connect the positive (+) cable first, then the negative (−) cable to the battery.
34. Refill the transmission fluid (see page 13-3).
35. Test-drive the vehicle.
36. Check the clutch operation.
37. Check the front wheel alignment (see page 18-4).
38. Enter the anti-theft code for the radio, then enter the customer's radio station presets.
39. Do the engine control module (ECM) idle learn procedure (see page 11-139).

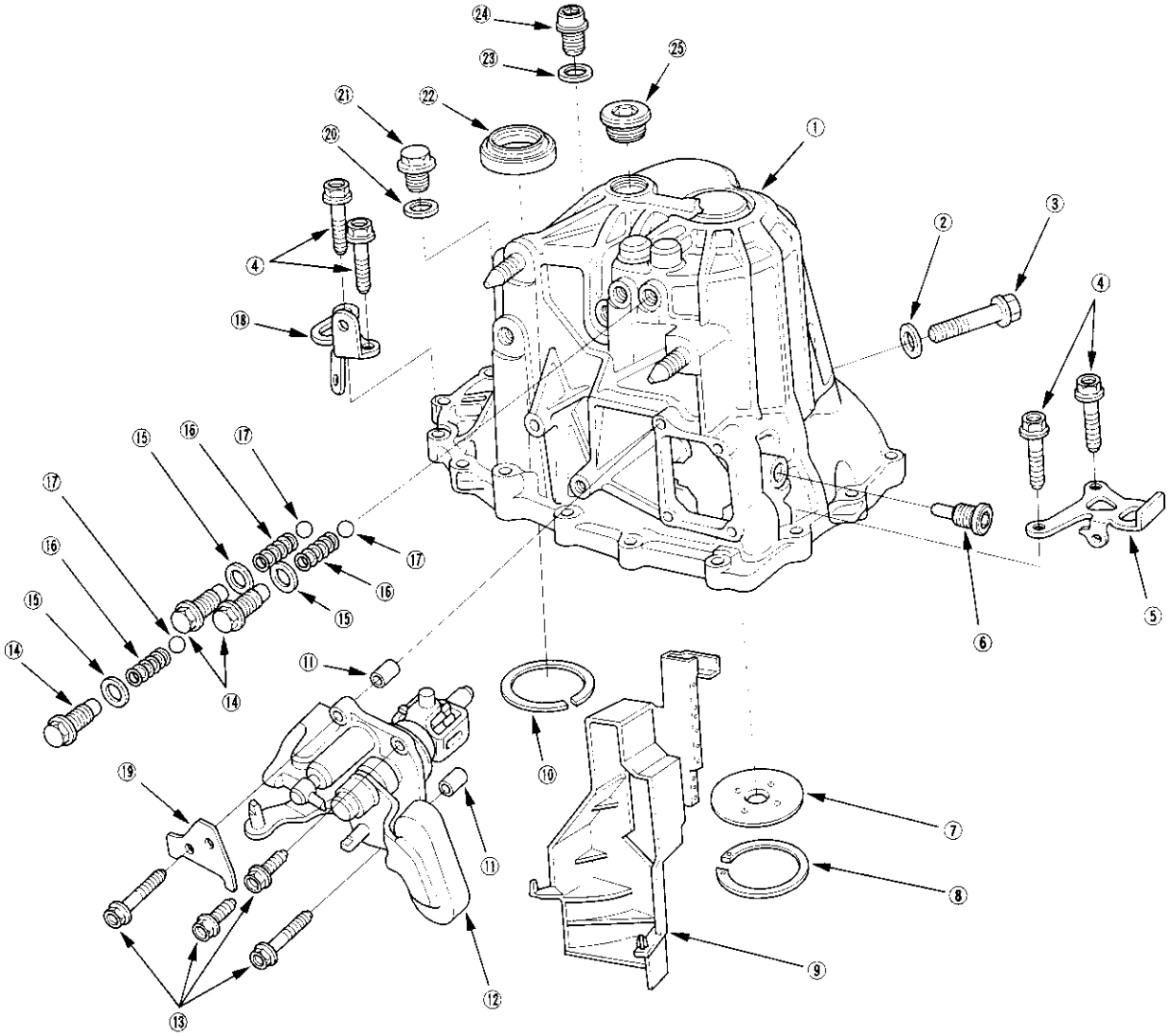
Transmission Disassembly

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 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 O-RING
Replace.
㉓ VEHICLE SPEED SENSOR (VSS)
㉔ 8 mm FLANGE BOLT
22 N·m (2.2 kgf·m, 16 lbf·ft)
㉕ CLUTCH HOUSING
㉖ TRANSMISSION HANGER
㉗ 10 mm FLANGE BOLT
44 N·m (4.5 kgf·m, 33 lbf·ft)

Exploded View-Transmission Housing



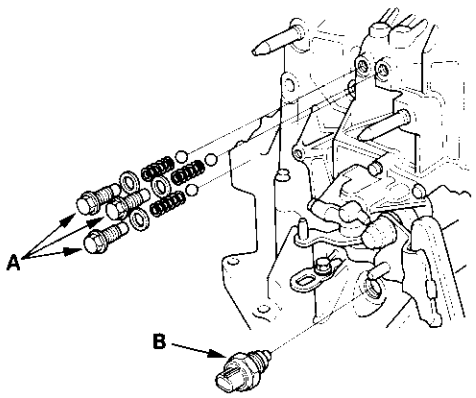
① TRANSMISSION HOUSING
② 10 mm WASHER
Replace.
③ 10 mm FLANGE BOLT
44 N·m (4.5 kgf·m, 33 lbf·ft)
④ 8 mm FLANGE BOLT
27 N·m (2.8 kgf·m, 20 lbf·ft)
⑤ TRANSMISSION HANGER A
⑥ INTERLOCK BOLT
39 N·m (4.0 kgf·m, 29 lbf·ft)
⑦ OIL GUIDE PLATE M
⑧ 72 mm SHIM
⑨ OIL GUTTER PLATE
⑩ 80 mm SHIM
⑪ 8 x 14 mm DOWEL PIN
⑫ CHANGE LEVER ASSEMBLY
⑬ 6 mm FLANGE BOLT
12 N·m (1.2 kgf·m, 9 lbf·ft)
⑭ DETENT BOLT
22 N·m (2.2 kgf·m, 16 lbf·ft)
⑮ 12 mm WASHER
Replace.
⑯ SPRING
⑰ STEEL BALL
⑱ TRANSMISSION HANGER B
⑲ CLUTCH LINE CLIP BRACKET
⑳ 20 mm WASHER
Replace.
㉑ FILLER PLUG
44 N·m (4.5 kgf·m, 33 lbf·ft)
㉒ 40 x 56 x 8 mm OIL SEAL
Replace.
㉓ 14 mm WASHER
Replace.
㉔ DRAIN PLUG
39 N·m (4.0 kgf·m, 29 lbf·ft)
㉕ 32 mm SEALING CAP
34 N·m (3.5 kgf·m, 25 lbf·ft)

(cont'd)

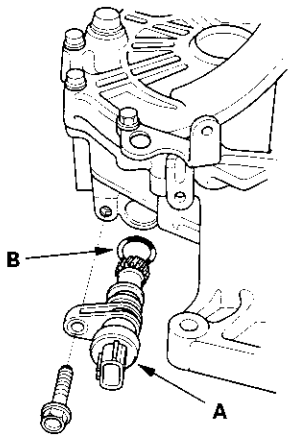
Transmission Disassembly (cont'd)

NOTE: Place the clutch housing on two pieces of wood thick enough to keep the mainshaft from hitting the workbench.

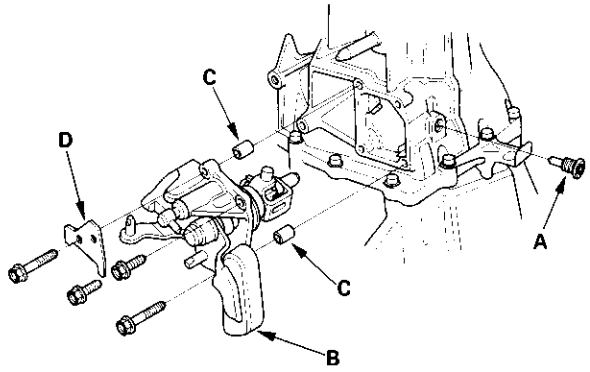
1. Remove the detent bolts (A), springs, steel balls, and back-up light switch (B).



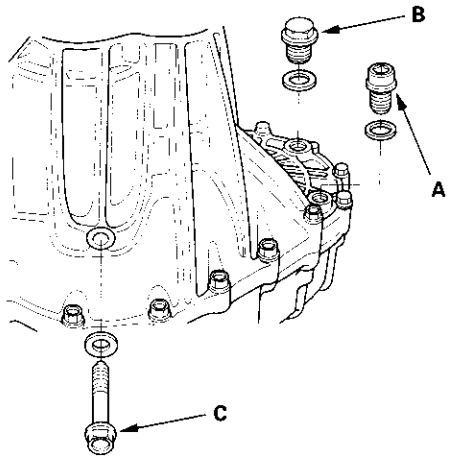
2. Remove the vehicle speed sensor (VSS) (A) and O-ring (B).



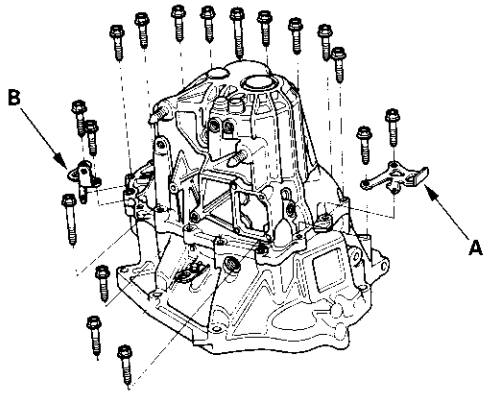
3. Remove the interlock bolt (A), the change lever assembly (B), 8 x 14 mm dowel pins (C), and the clutch line clip bracket (D).



4. Remove the drain plug (A), filler plug (B), and 10 mm flange bolt (C).

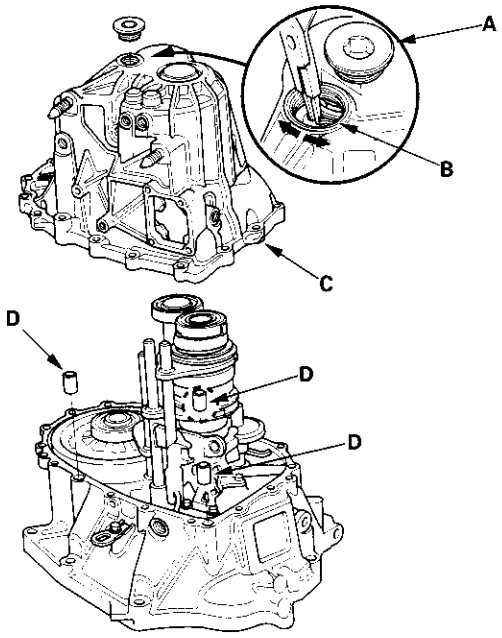


5. Remove the 8 mm flange bolts in a crisscross pattern in several steps.



6. Remove the transmission hanger A, and transmission hanger B.

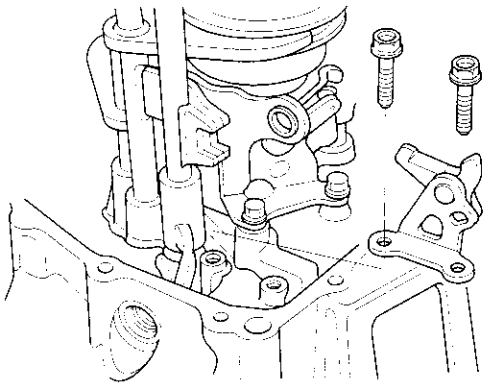
7. Remove the 32 mm sealing cap (A).



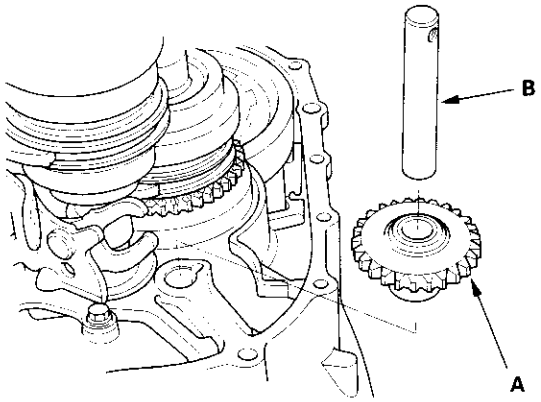
8. Expand the 72 mm snap ring (B) on the countershaft ball bearing, and remove it from the groove using a pair of snap ring pliers.

9. Remove the transmission housing (C) and 14 x 20 mm dowel pins (D).

10. Remove the reverse lock cam.



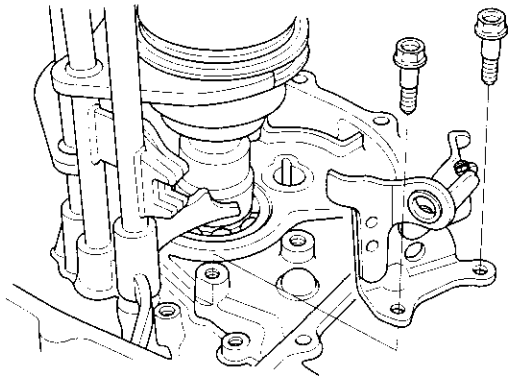
11. Remove the reverse idler gear (A) and reverse gear shaft (B).



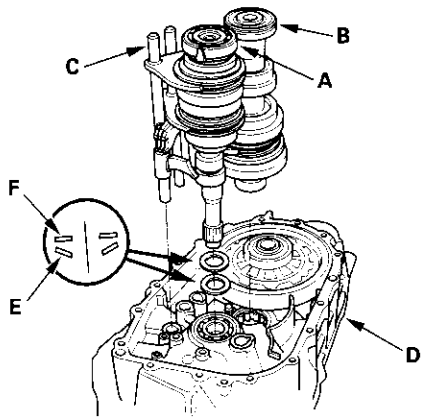
(cont'd)

Transmission Disassembly (cont'd)

12. Remove the reverse shift fork.

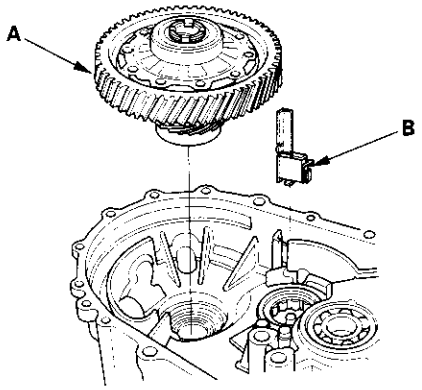


13. Apply vinyl tape to the mainshaft splines to protect the seal, then remove the mainshaft assembly (A) and countershaft assembly (B) with the shift forks (C) from the clutch housing (D).

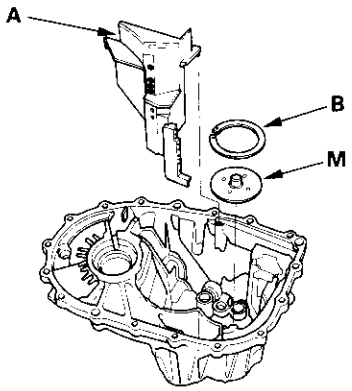


14. Remove the 28 mm spring washer (E) and 28 mm washer (F).

15. Remove the differential assembly (A) and magnet (B).



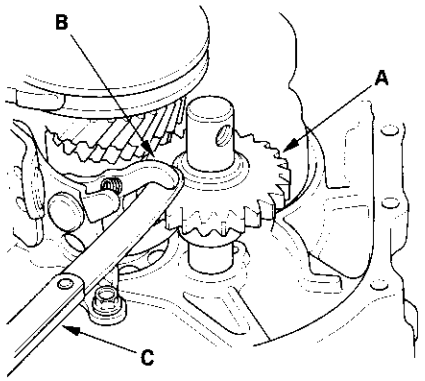
16. Remove the oil gutter plate (A), 72mm shim (B), and oil guide plate M.



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 is more than the service limit, go to step 2.

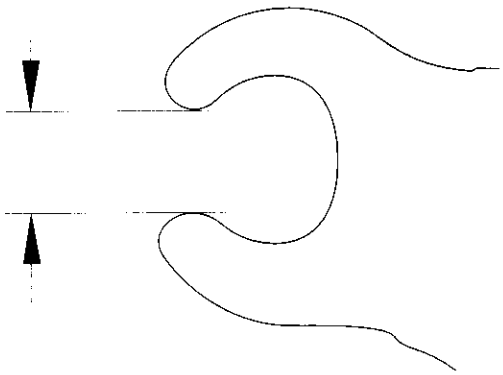
Standard: 0.20—0.59 mm (0.007—0.024 in.)
Service Limit: 1.3 mm (0.051 in.)



2. Measure the width of the reverse shift fork.

- If distance is not within the standard, replace the reverse shift fork with a new one.
- If distance is within the standard, replace the reverse gear with a new one.

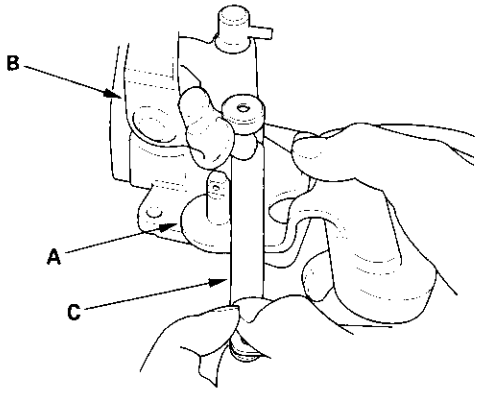
Standard: 13.4—13.7 mm (0.527—0.539 in.)



Change Lever Clearance Inspection

1. Measure the clearance between change lever (A) and the select lever (B) with a feeler gauge (C). If the clearance is more than the service limit, go to step 2.

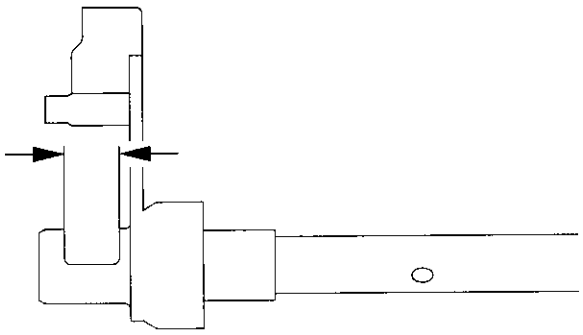
Standard: 0.05—0.25 mm (0.002—0.010 in.)
Service Limit: 0.50 mm (0.020 in.)



2. Measure the groove of the change lever.

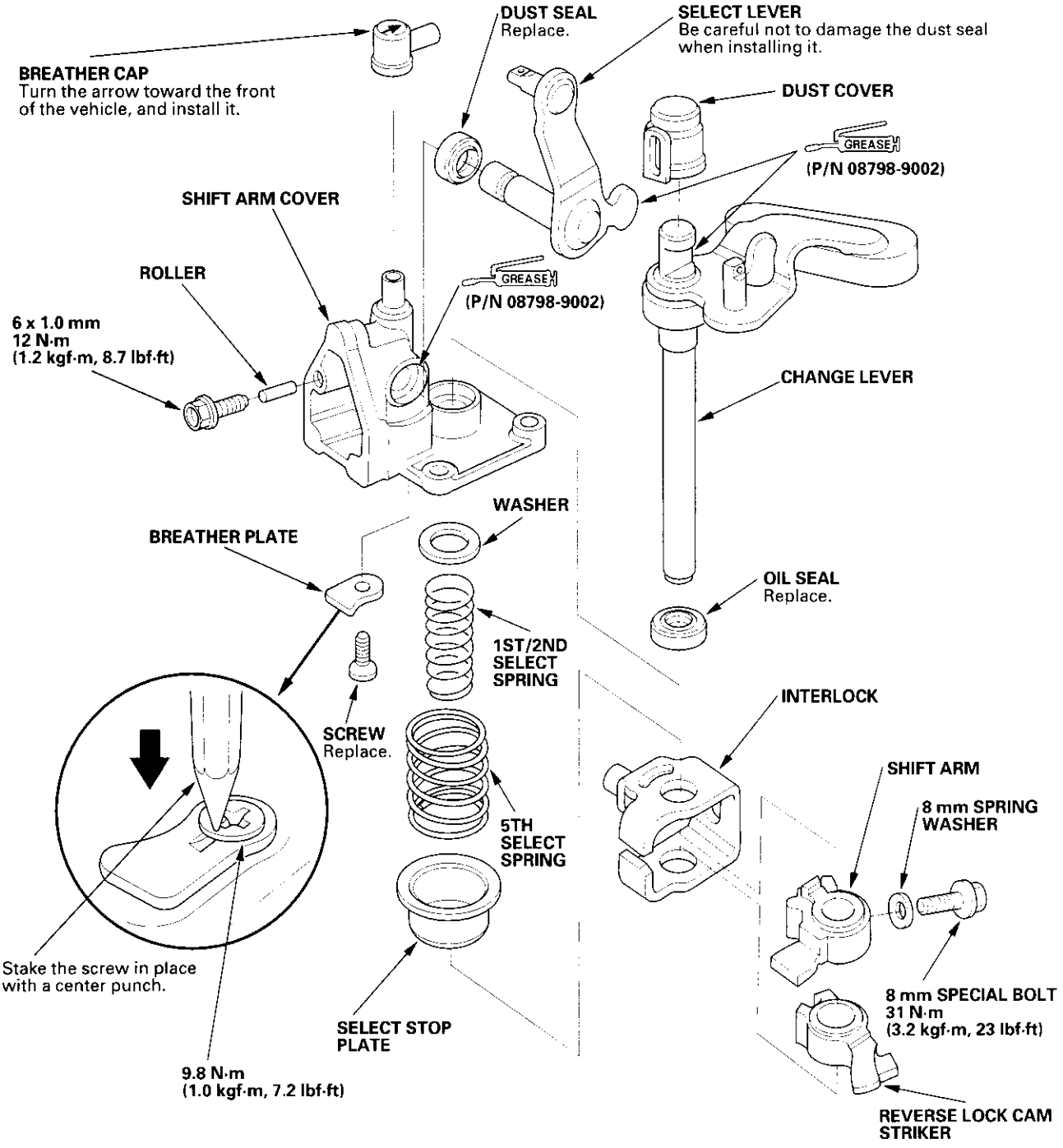
- If distance is not within the standard, replace the change lever with a new one.
- If distance is within the standard, replace the select lever with a new one.

Standard: 15.00—15.10 mm (0.591—0.594 in.)



Change Lever Assembly Disassembly/Reassembly

Prior to reassembling, clean all the parts in solvent, dry them, and apply lubricant to any contact surface.

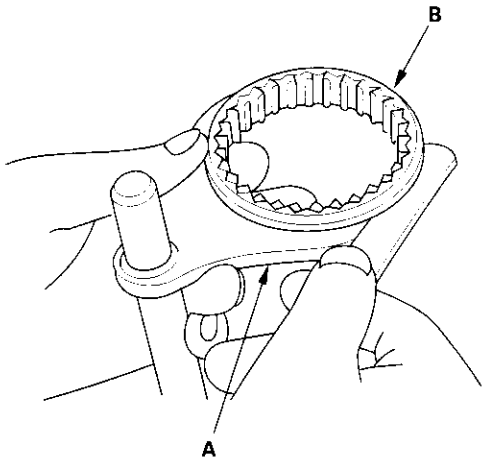


Shift Forks Clearance Inspection

NOTE: The synchro sleeve and synchro hub should be replaced as a set.

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.

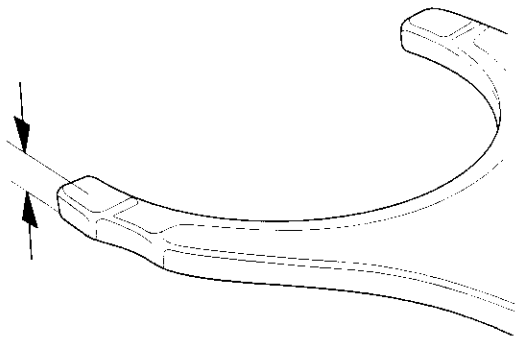
   Standard: 0.35—0.65 mm (0.014—0.026 in.)
   Service Limit: 1.0 mm (0.039 in.)



2. Measure the thickness of the shift fork fingers.

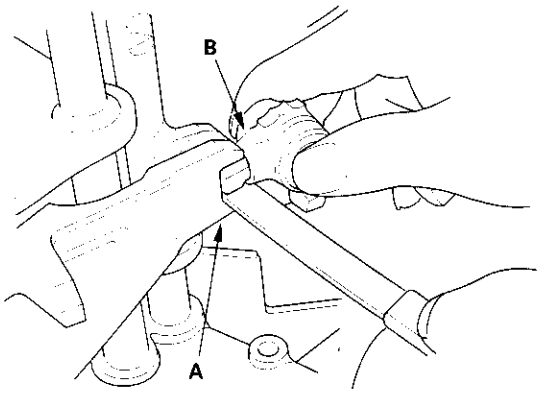
   - If the thickness of the shift fork finger is not within the standard, replace the shift fork with a new one.
   - If the thickness of the shift fork finger is within the standard, replace the synchro sleeve with a new one.

   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.

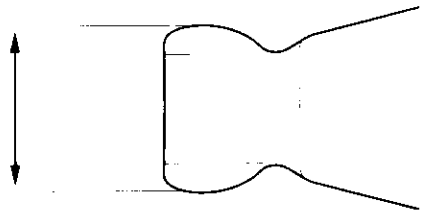
   Standard: 0.2—0.5 mm (0.007—0.020 in.)
   Service Limit: 0.62 mm (0.024 in.)



4. Measure the width of the shift arm.

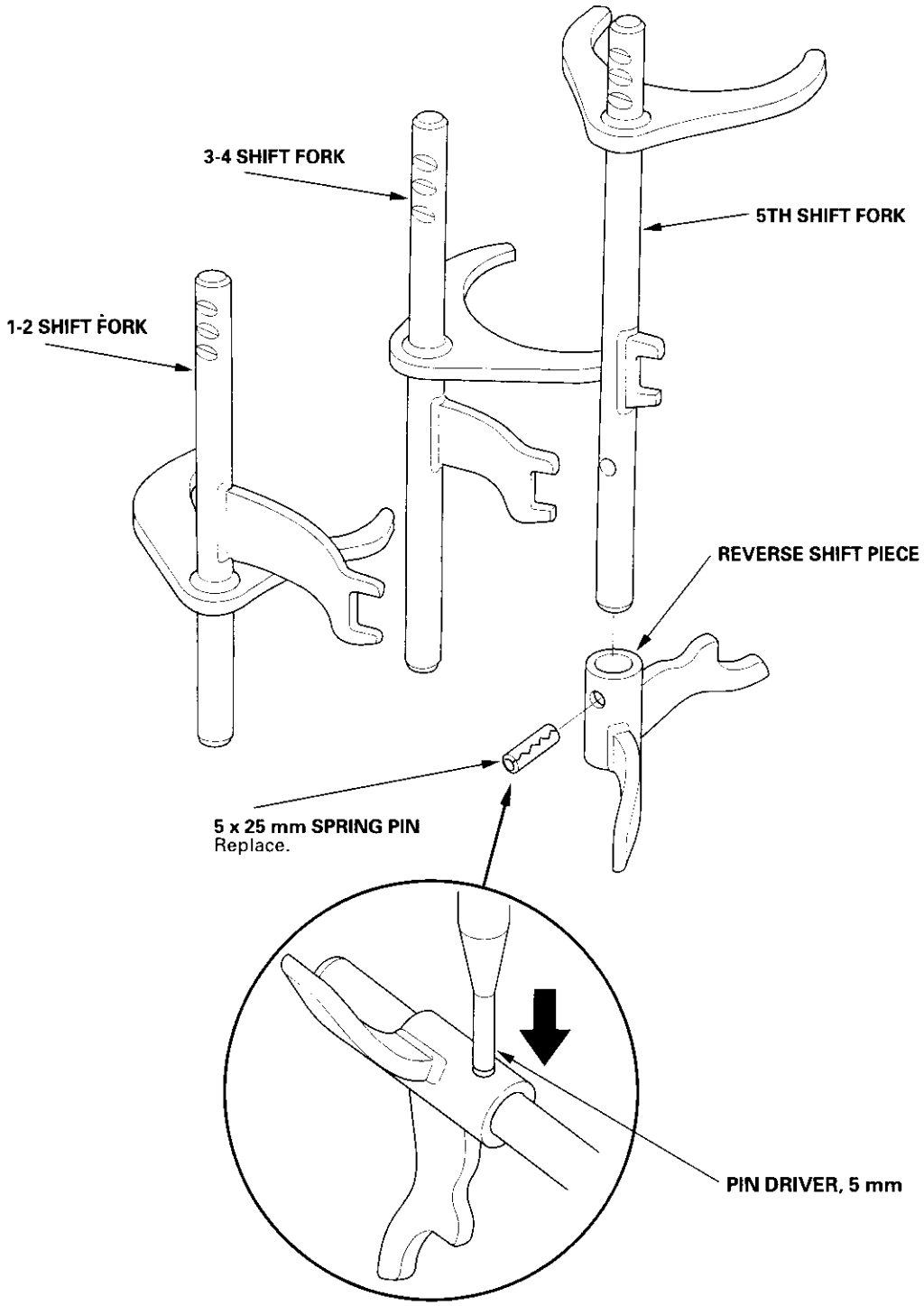
   - If the width of the shift arm is not within the standard, replace the shift arm with a new one.
   - If the width of the shift arm is within the standard, replace the shift fork and shift piece with a new one.

   Standard: 16.9—17.0 mm (0.665—0.669 in.)



Shift Forks Disassembly/Reassembly

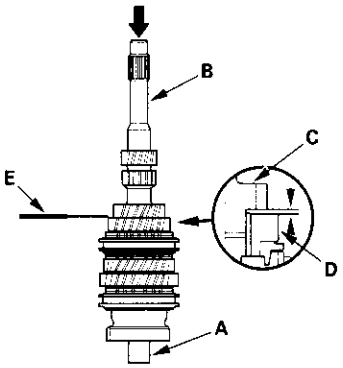
Prior to reassembling, clean all the parts in solvent, dry them, and apply lubricant to any contact parts.



Mainshaft Assembly Clearance Inspection

NOTE: If replacement is required, always replace the synchro sleeve and hub as a set.

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 (C) and 3rd (D) gears with a feeler gauge (E).

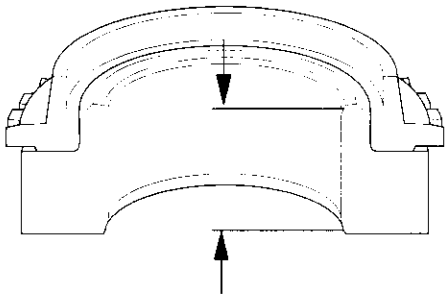
   - If the clearance is more than the service limit, go to step 3.
   - If the clearance is within the service limit, go to step 4.

   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 of 3rd gear is less than the service limit, replace 3rd gear with a new one.
   - If the thickness of 3rd gear is within the service limit, replace the 3rd/4th synchro hub with a new one.

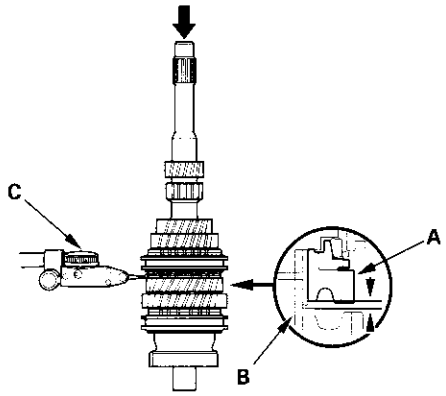
   Standard: **23.92—23.97 mm (0.941—0.944 in.)**
   Service Limit: **23.80 mm (0.937 in.)**



4. Measure the clearance between 4th gear (A) and the distance collar (B) with a dial indicator (C).

   - If the clearance is more than the service limit, go to step 5.
   - If the clearance is within the service limit, go to step 7.

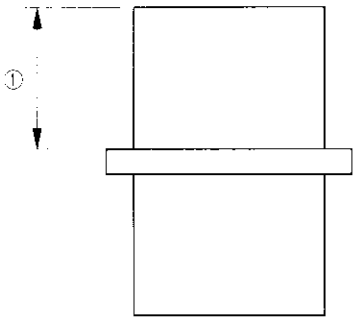
   Standard: **0.06—0.16 mm (0.002—0.006 in.)**
   Service Limit: **0.25 mm (0.010 in.)**



5. Measure distance ① on the distance collar.

   - If distance ① is not within the standard, replace the distance collar with a new one.
   - If distance ① is within the standard, go to step 6.

   Standard: **24.03—24.08 mm (0.946—0.947 in.)**



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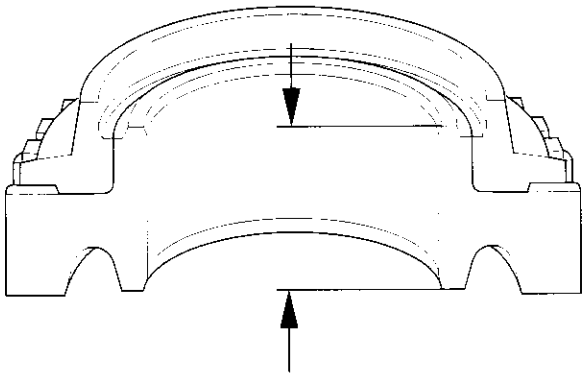
Mainshaft Assembly Clearance Inspection (cont'd)

6. Measure the thickness of 4th gear.

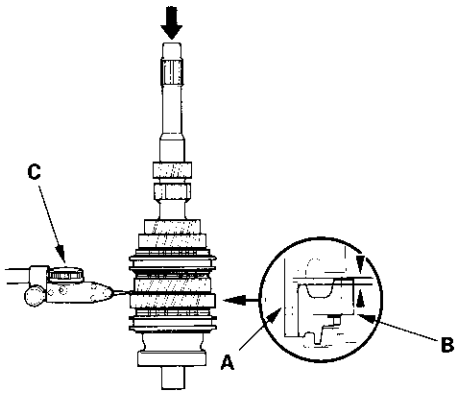
   - If the thickness of 4th gear is less than the service limit, replace 4th gear with a new one.
   - If the thickness of 4th gear is within the service limit, replace the 3rd/4th synchro hub with a new one.

Standard: **23.92—23.97 mm (0.941—0.944 in.)**
Service Limit: **23.80 mm (0.937 in.)**



7. Measure the clearance between the distance collar (A) and 5th gear (B) with a dial indicator (C). If the clearance is more than the service limit, go to step 8. If the clearance is within the service limit, go to step 10.

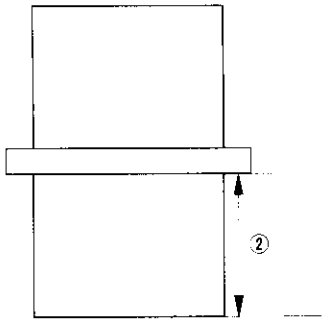
Standard: **0.06—0.16 mm (0.002—0.006 in.)**
Service Limit: **0.25 mm (0.010 in.)**



8. Measure distance ② on the distance collar.

   - If distance ② is not within the standard, replace the distance collar with a new one.
   - If distance ② is within the standard, go to step 9.

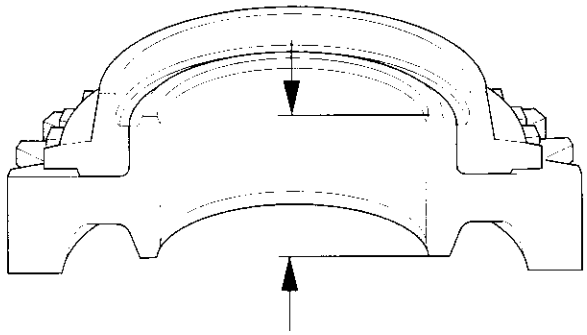
Standard: **24.03—24.08 mm (0.946—0.947 in.)**



9. Measure the thickness of 5th gear.

   - If the thickness of 5th gear is less than the service limit, replace 5th gear with a new one.
   - If the thickness of 5th gear is within the service limit, replace the 5th synchro hub with a new one.

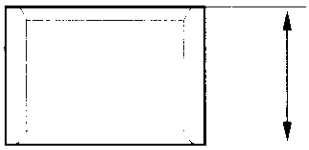
Standard: **23.92—23.97 mm (0.941—0.944 in.)**
Service Limit: **23.80 mm (0.937 in.)**



10. Measure the thickness of the MBS distance collar.

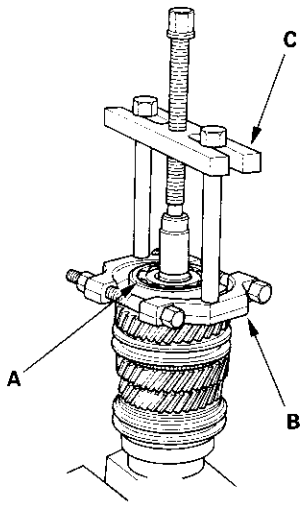
    • If the thickness of MBS distance collar is less than the standard, replace the MBS distance collar with a new one.

    Standard: **23.95—24.05 mm (0.943—0.947 in.)**

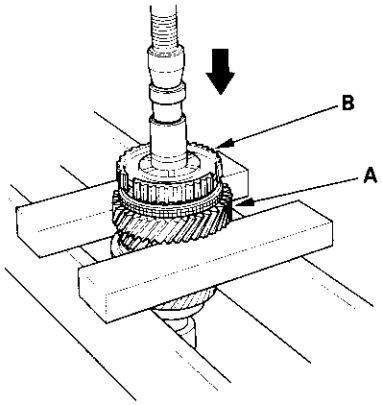


Mainshaft Disassembly

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). Be sure the bearing separator is under the tapered cone ring.



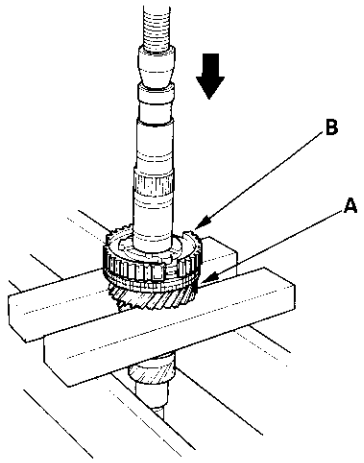
2. Support 5th gear (A) on steel blocks, and press the mainshaft out of the 5th synchro hub (B). Use of a jaw-type puller can damage the gear teeth.



(cont'd)

Mainshaft Disassembly (cont'd)

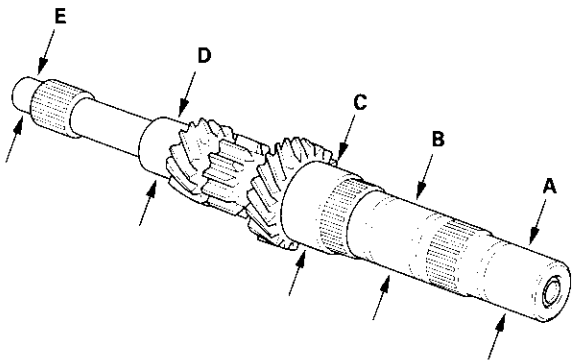
3. Support the 3rd gear (A) on steel blocks, and press the mainshaft out of the 3rd/4th synchro hub (B). Use of a jaw-type puller can damage the gear teeth.



Mainshaft Inspection

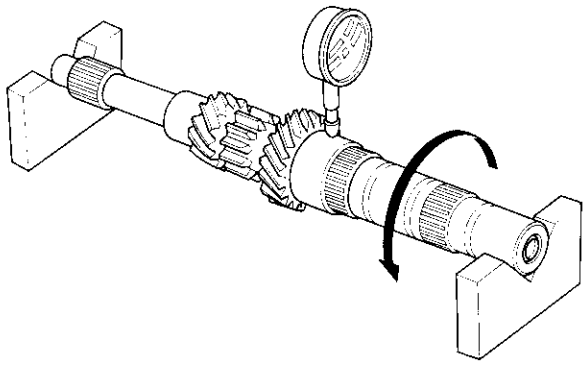
1. Inspect the gear surface and bearing surface for wear and damage, then measure the mainshaft at points A, B, C, D, and E. If any part of the mainshaft is less than the service limit, replace it with a new one.

Standard:
A Ball bearing surface (transmission housing side):
27.987—28.000 mm (1.1019—1.1024 in.)
B Distance collar surface:
31.984—32.000 mm (1.2594—1.2598 in.)
C Needle bearing surface:
38.984—39.000 mm (1.5348—1.5354 in.)
D Ball bearing surface (clutch housing side):
27.977—27.990 mm (1.1015—1.1020 in.)
E Bushing surface:
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.)



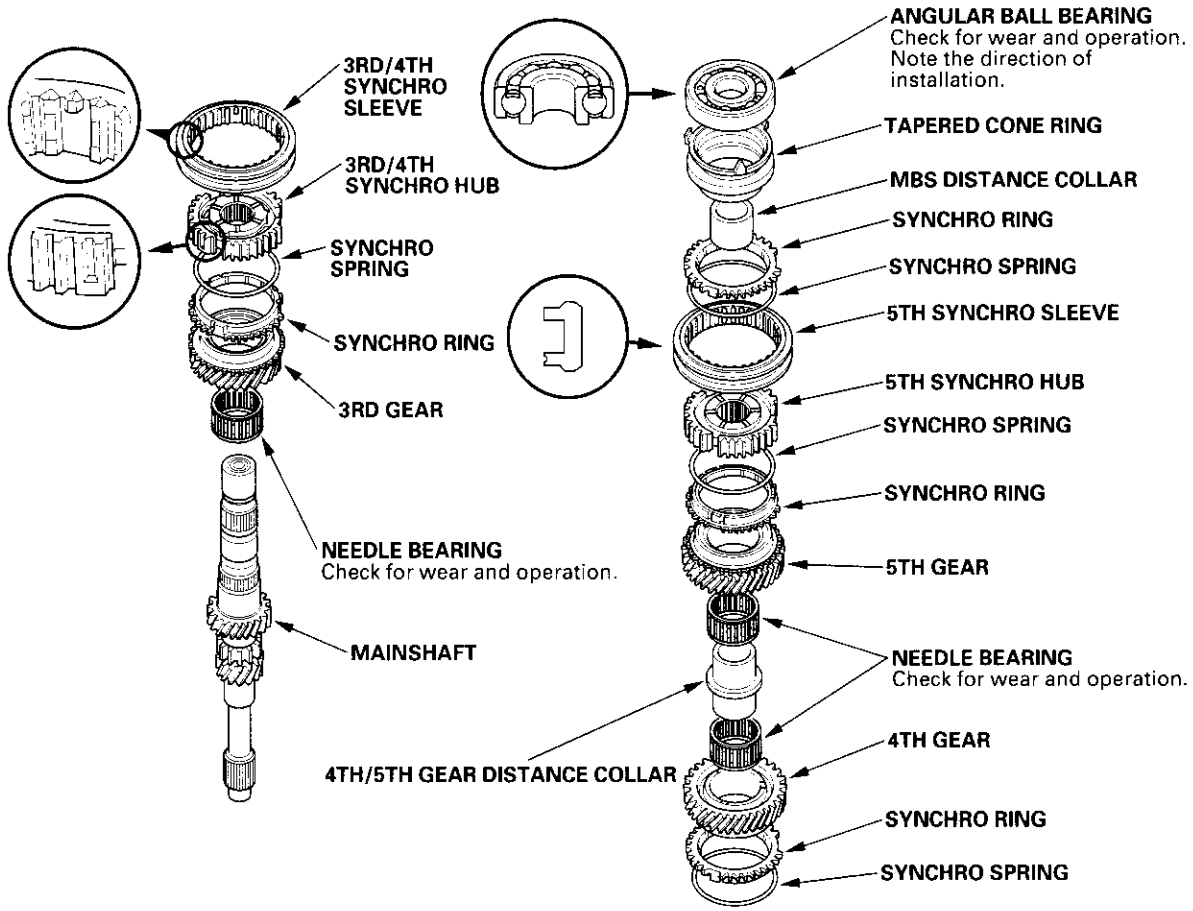
2. Inspect the runout by supporting both ends of the mainshaft. Rotate the mainshaft two complete revolutions when measuring the runout. If the runout is more than the service limit, replace the mainshaft with a new one.

Standard: **0.02 mm (0.001 in.) max.**
Service Limit: **0.05 mm (0.002 in.)**



Mainshaft Reassembly

Exploded View



Special Tools Required
- Driver, 40 mm I.D. 07746-0030100
- Attachment, 30 mm I.D. 07746-0030300

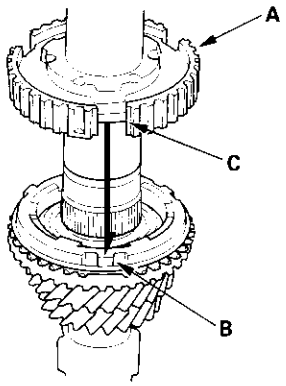
NOTE: Refer to the Exploded View as needed during this procedure.

1. Clean all the parts in solvent, dry them, and apply lubricant to all contact surfaces except the 3rd/4th and 5th synchro hubs.

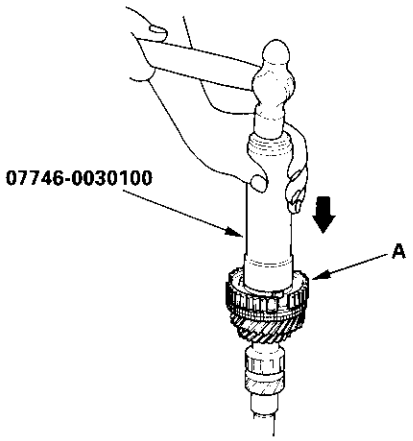
2. Install the needle bearing and 3rd gear on the mainshaft.

3. Install the synchro ring and the synchro spring.

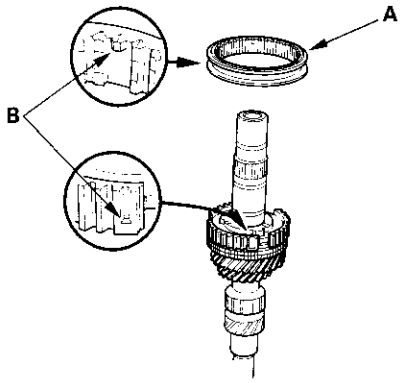
4. Install the 3rd/4th synchro hub (A) by aligning the synchro ring fingers (B) with 3rd/4th synchro hub grooves (C).



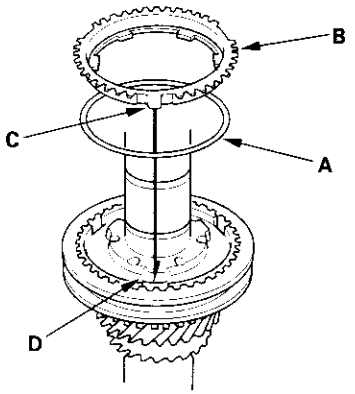
5. Install the 3rd/4th synchro hub (A) using the special tool.



6. Install the 3rd/4th synchro sleeve (A) by aligning the stops (B) with the 3rd/4th synchro sleeve and hub. After installing, check the operation of the 3rd/4th synchro hub set.



7. Install the synchro spring (A).



8. Install the synchro ring (B) by aliging the synchro cone fingers (C) with 3rd/4th synchro hub grooves (D).

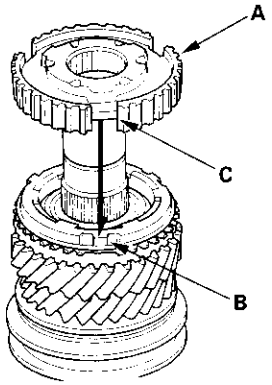
9. Install the 4th gear, needle bearing, distance collar, needle bearing, and 5th gear.

(cont'd)

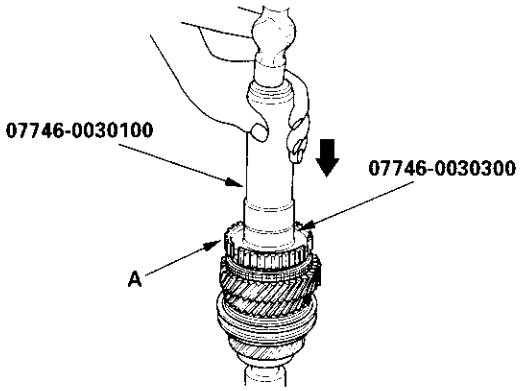
Mainshaft Reassembly (cont'd)

10. Install the synchro ring and the synchro spring.

11. Install the 5th synchro hub (A) by aligning the synchro cone fingers (B) with 5th synchro hub grooves (C).

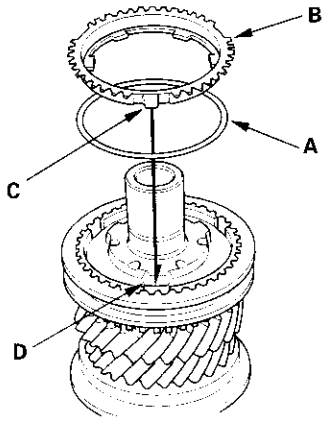


12. Install the 5th synchro hub (A) using the special tools.



13. Install the 5th synchro sleeve.

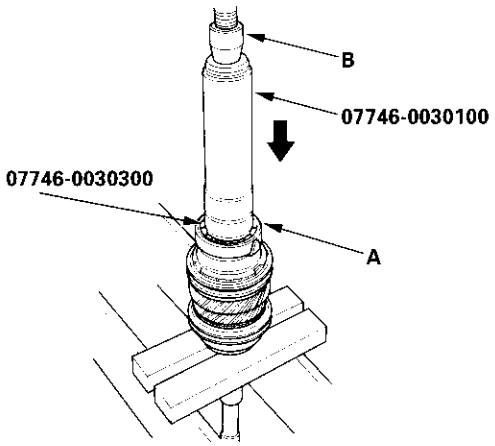
14. Install the synchro spring (A).



15. Install the synchro ring (B) by aligning the synchro cone fingers (C) with 5th synchro hub grooves (D).

16. Install the MBS distance collar and the tapered cone ring.

17. Install the new ball bearing (A) using the special tools and a press (B).

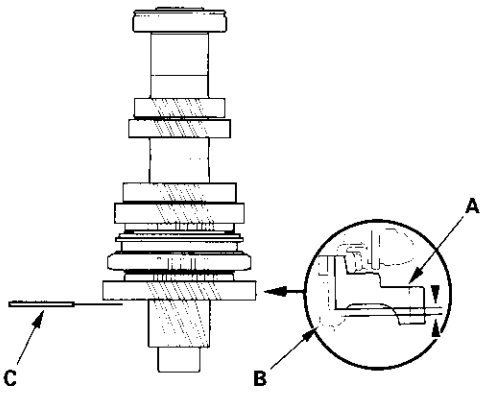


Countershaft Assembly Clearance Inspection

1. Measure the clearance between the 1st gear (A) and the distance collar (B) with a feeler gauge (C).

   - If the clearance is more than the service limit, go to step 2.
   - If the clearance is within the service limit, go to step 4.

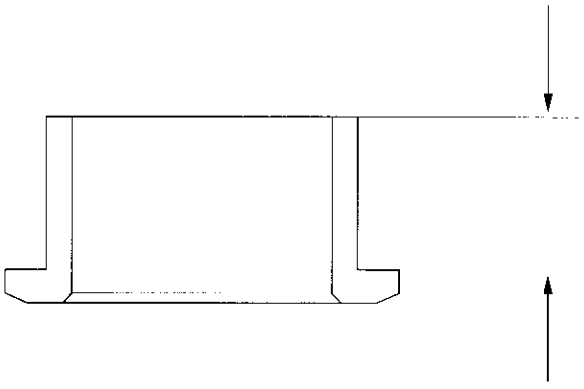
   Standard: 0.06—0.16 mm (0.002—0.006 in.)
   Service Limit: 0.25 mm (0.010 in.)



2. Measure the thickness of the distance collar.

   - If the thickness is not within the standard, replace the distance collar with a new one.
   - If the thickness is within the standard, go to step 3.

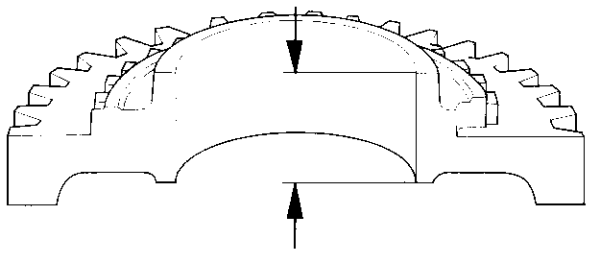
   Standard: 23.03—23.08 mm (0.907—0.909 in.)



3. Measure the thickness of the 1st gear.

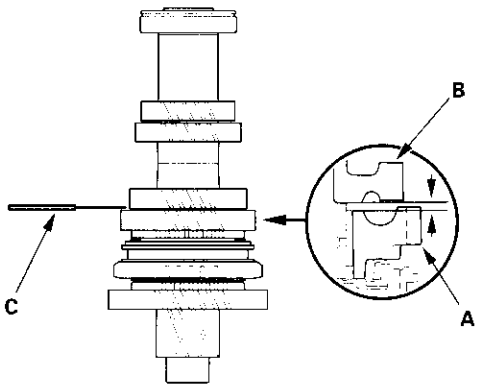
   - If the thickness of 1st gear is less than the service limit, replace 1st gear with a new one.
   - If the thickness of 1st gear is within the service limit, replace the 1st/2nd synchro hub with a new one.

   Standard: 22.92—22.97 mm (0.902—0.904 in.)
   Service Limit: 22.87 mm (0.900 in.)



4. Measure the clearance between the 2nd gear (A) and 3rd gear (B) with a feeler gauge (C). If the clearance is more than 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.)



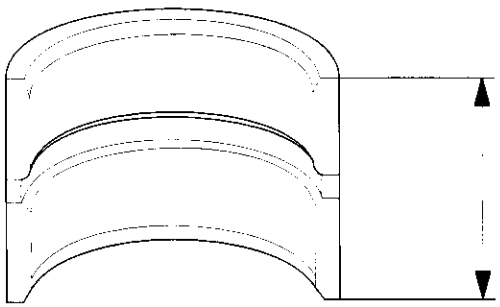
(cont'd)

Countershaft Assembly Clearance Inspection (cont'd)

5. Measure the thickness of the distance collar.

   - If the thickness is not within the standard, replace the distance collar with a new one.
   - If the thickness is within the standard, go to step 6.

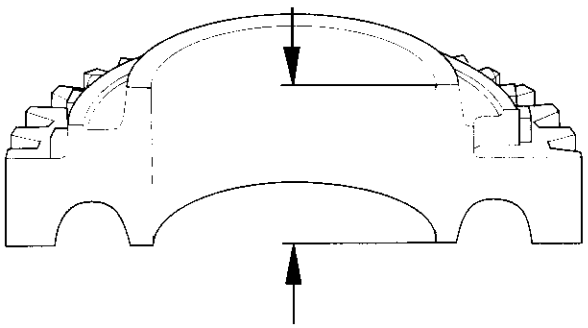
Standard: 28.03—28.08 mm (1.104—1.106 in.)



6. Measure the thickness of the 2nd gear.

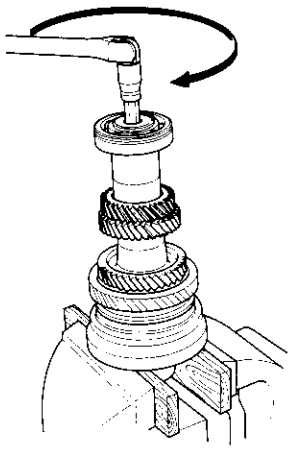
   - If the thickness of 2nd gear is less than the service limit, replace 2nd gear with a new one.
   - If the thickness of 2nd gear is within the service limit, replace the 1st/2nd synchro hub with a new one.

Standard: 27.92—27.97 mm (1.099—1.101 in.)
Service Limit: 27.87 mm (1.097 in.)



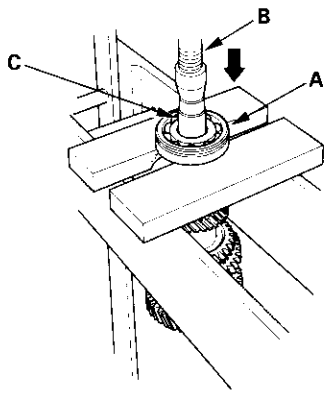
Countershaft Disassembly

1. Securely clamp the countershaft assembly in a bench vise with wood blocks.



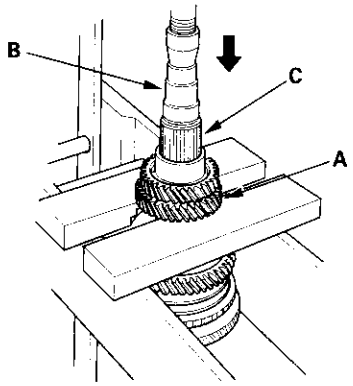
2. Remove the special bolt (left-hand threads).

3. Support the ball bearing (A) on steel blocks, then use a press (B) and an attachment (C) to press the countershaft out of the ball bearing.

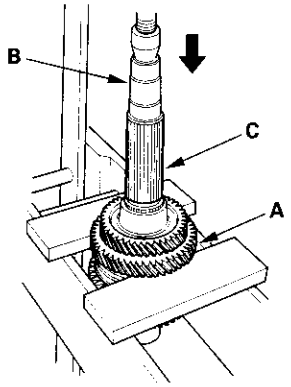


4. Remove the 35 mm shim and distance collar.

5. Support 4th gear (A) on steel blocks, then use a press and an attachment (B) to press the countershaft (C) out of the 5th gear.



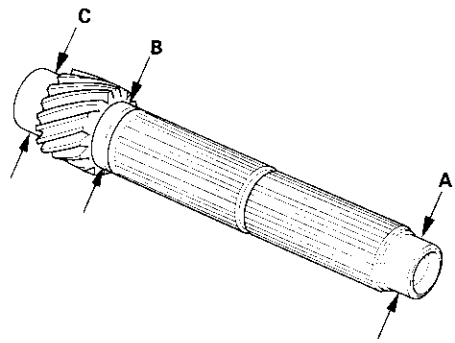
6. Support 2nd gear (A) on steel blocks, then use a press and an attachment (B) to press the countershaft (C) out of the 3rd gear.



Countershaft Inspection

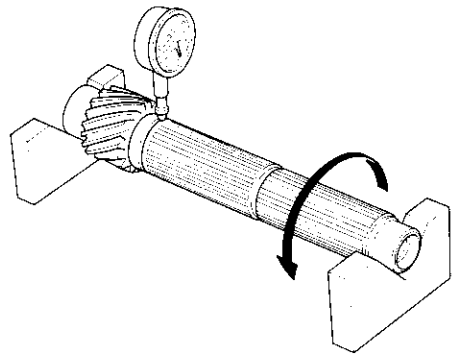
1. Inspect the gear surface and bearing surface for wear and damage, then measure the countershaft at points A, B, and C. If any part of the countershaft is less than the service limit, replace it with a new one.

Standard:
A Ball bearing surface (transmission housing side):
30.020–30.033 mm (1.1819–1.1824 in.)
B Distance collar surface:
39.937–39.950 mm (1.5723–1.5728 in.)
C Needle bearing surface (clutch housing side):
35.000–35.015 mm (1.3780–1.3785 in.)
Service Limit:
A: 29.97 mm (1.180 in.)
B: 39.88 mm (1.570 in.)
C: 34.95 mm (1.376 in.)



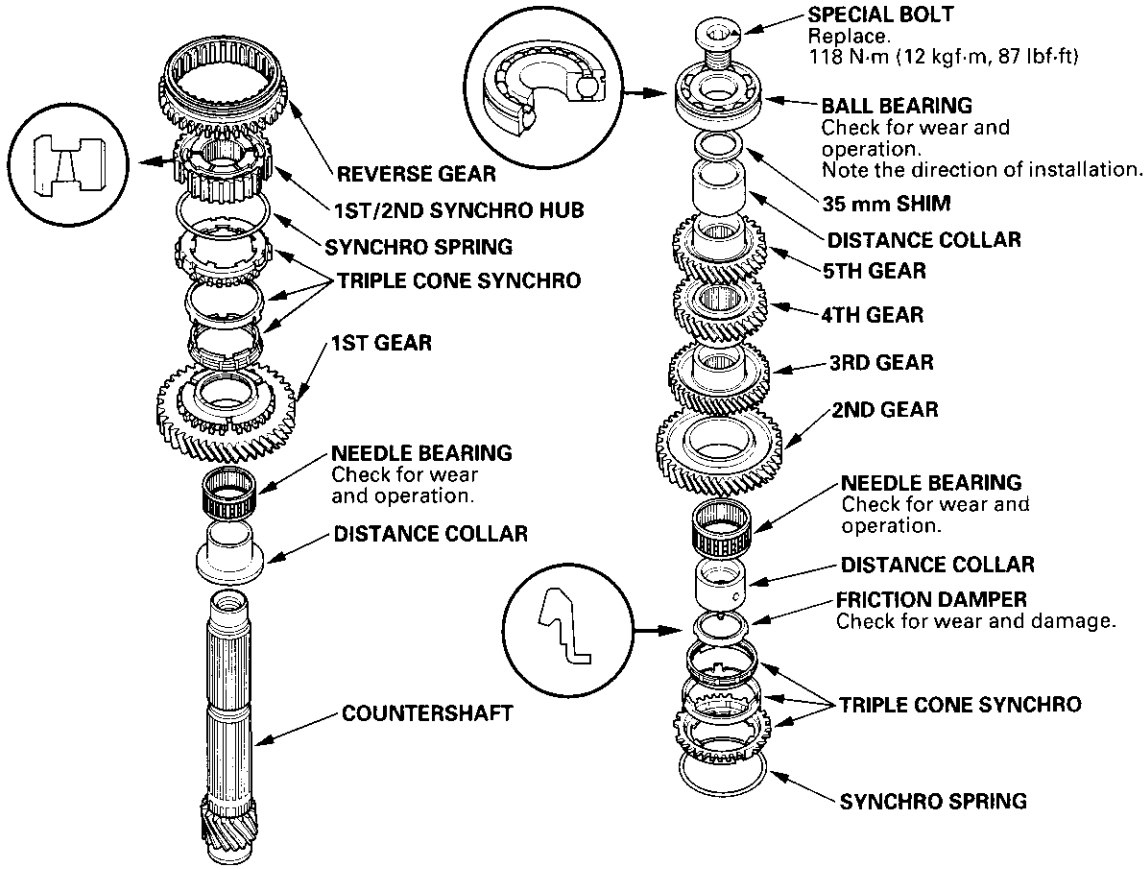
2. Inspect the runout by supporting both ends of the countershaft. Rotate the countershaft two complete revolutions when measuring the runout. If the runout exceeds the service limit, replace the countershaft with a new one.

Standard: 0.02 mm (0.001 in.) max.
Service Limit: 0.05 mm (0.002 in.)



Countershaft Reassembly

Exploded View



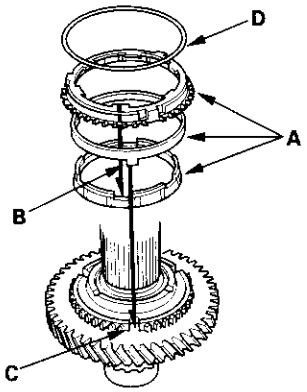
Special Tools Required
- Driver, 40 mm I.D. 07746-0030100
- Attachment, 30 mm 07746-0030300

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

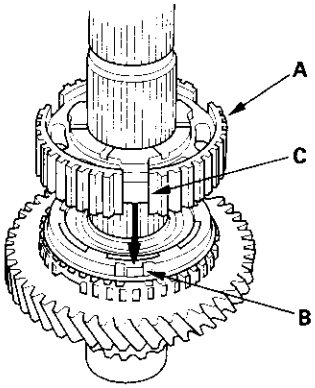
1. Clean all parts in solvent, dry them, and apply lubricant to all contact surfaces.

2. Install the distance collar, needle bearing, and 1st gear onto the countershaft.

3. Install the triple cone synchro assembly (A) by aligning the synchro cone fingers (B) with 1st gear grooves (C), then install the synchro spring (D).

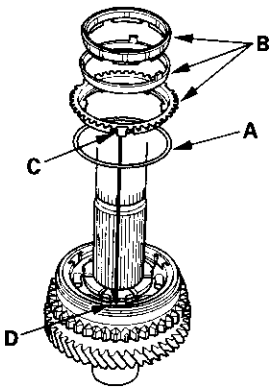


4. Install the 1st/2nd synchro hub (A) by aligning the synchro cone fingers (B) with 1st/2nd synchro hub grooves (C).



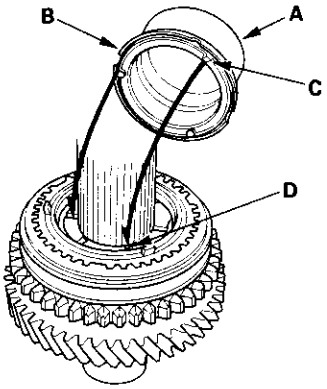
5. Install the reverse gear.

6. Install the synchro spring (A).



7. Install the triple cone synchro assembly (B) by aligning the synchro cone fingers (C) with the 1st/2nd synchro hub grooves (D).

8. Install the distance collar (A) and friction damper (B) by aligning the friction damper fingers (C) with the 1st/2nd synchro hub grooves (D).

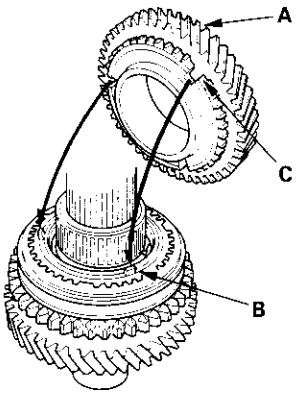


(cont'd)

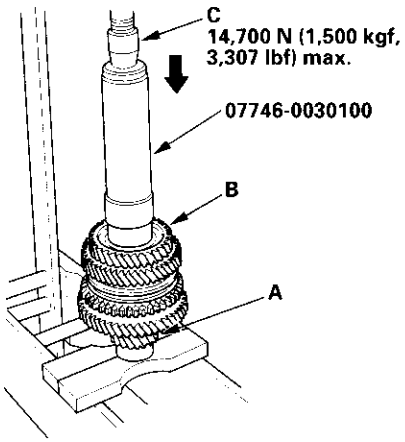
Countershaft Reassembly (cont'd)

9. Install the needle bearing.

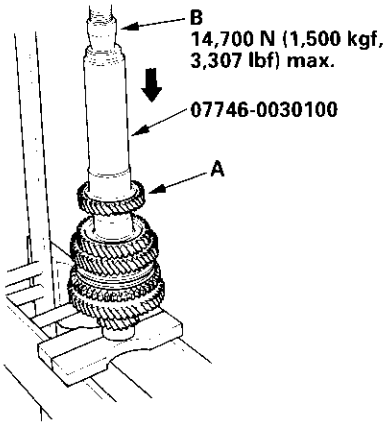
10. Install the 2nd gear (A) by aligning the synchro cone fingers (B) with 2nd gear grooves (C).



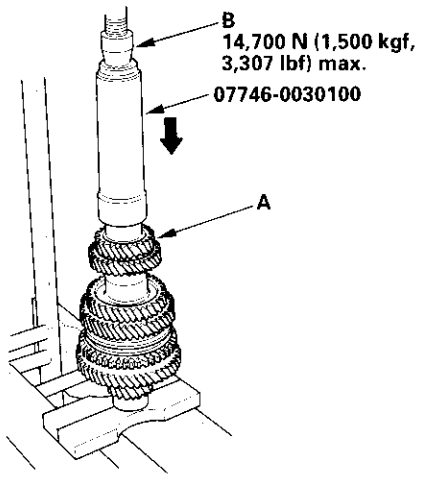
11. Support the countershaft (A) on the steel blocks, then install the 3rd gear (B) using the special tool and a press (C). Do not exceed the maximum pressure.



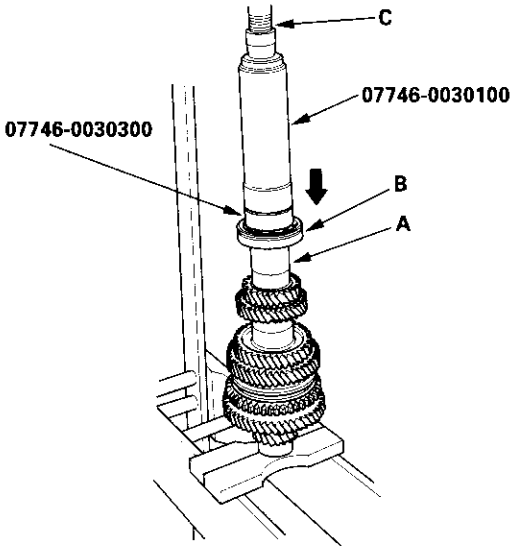
12. Install the 4th gear (A) using the special tool and a press (B). Do not exceed the maximum pressure.



13. Install the 5th gear (A) using the special tool and a press (B). Do not exceed the maximum pressure.

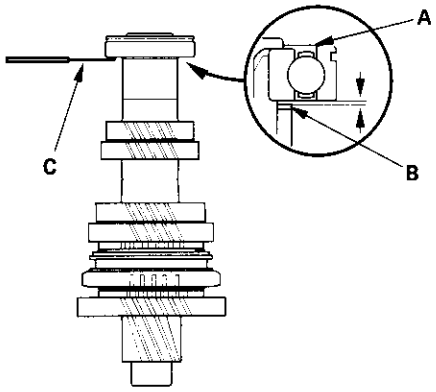


14. Install the distance collar (A), 35 mm shim, and old ball bearing (B) using the special tools and a press (C).



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 (0.002—0.004 in.)



16. If the clearance is more than the standard, select a new shim from the following table. If the clearance measured in step 15 is within the standard, replace only the ball bearing.

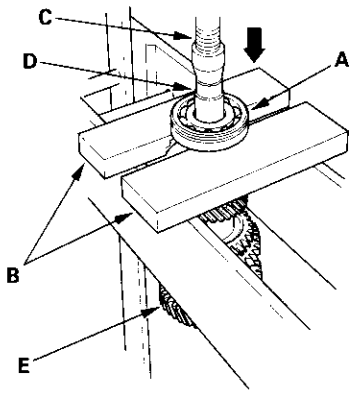
35 mm Shim

	Part Number	Thickness
A	23981-PPP-000	0.87 mm (0.0343 in.)
B	23981-PPP-900	0.91 mm (0.0358 in.)
C	23982-PPP-000	0.95 mm (0.0374 in.)
D	23982-PPP-900	0.99 mm (0.0390 in.)
E	23983-PPP-000	1.03 mm (0.0406 in.)
F	23983-PPP-900	1.07 mm (0.0421 in.)
G	23984-PPP-000	1.11 mm (0.0437 in.)
H	23984-PPP-900	1.15 mm (0.0453 in.)
J	23985-PPP-000	1.19 mm (0.0469 in.)
K	23985-PPP-900	1.23 mm (0.0484 in.)
L	23986-PPP-000	1.27 mm (0.0500 in.)
M	23986-PPP-900	1.31 mm (0.0516 in.)
N	23987-PPP-000	1.35 mm (0.0531 in.)
P	23987-PPP-900	1.39 mm (0.0547 in.)
Q	23988-PPP-000	1.43 mm (0.0563 in.)
R	23988-PPP-900	1.47 mm (0.0579 in.)
S	23989-PPP-000	1.51 mm (0.0594 in.)
T	23989-PPP-900	1.55 mm (0.0610 in.)
U	23990-PPP-000	1.59 mm (0.0626 in.)
W	23990-PPP-900	1.63 mm (0.0642 in.)
X	23991-PPP-000	1.67 mm (0.0657 in.)
Y	23991-PPP-900	1.71 mm (0.0673 in.)
Z	23992-PPP-000	1.75 mm (0.0689 in.)
AA	23992-PPP-900	1.79 mm (0.0705 in.)
AB	23993-PPP-000	1.83 mm (0.0720 in.)
AC	23993-PPP-900	1.87 mm (0.0736 in.)
AD	23994-PPP-000	1.91 mm (0.0752 in.)
AE	23994-PPP-900	1.95 mm (0.0768 in.)
AF	23995-PPP-000	1.99 mm (0.0783 in.)

(cont'd)

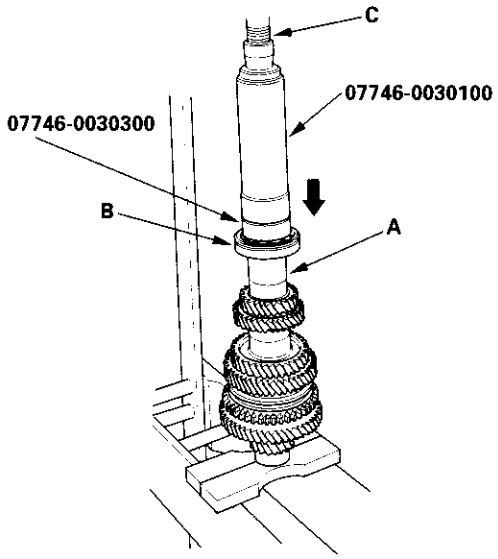
Countershaft Reassembly (cont'd)

17. Support ball bearing (A) on steel blocks (B), then use a press (C) and an attachment (D) to press the countershaft (E) out of the ball bearing.

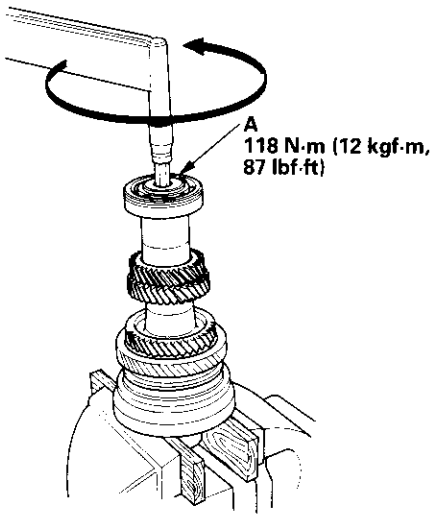


18. If necessary, install the 35 mm shim selected in step 16, then recheck the clearance.

19. Install the distance collar (A), 35 mm shim, and new ball bearing (B) using the special tools and a press (C).



20. Tighten the new special bolt (A) (left-hand threads).

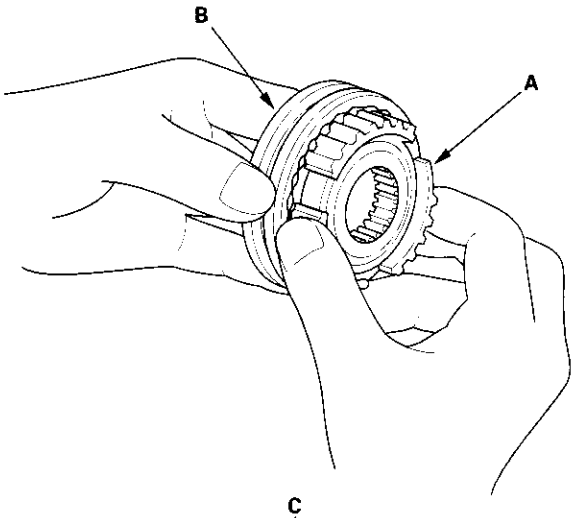


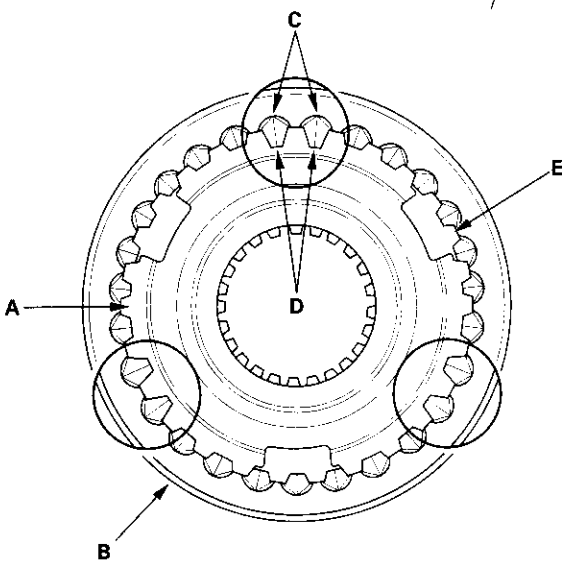
Synchro Sleeve and Hub Inspection and Reassembly

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 freedom of movement. Be 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. Do not install the synchro sleeve with its longer teeth in the 1st/2nd synchro hub slots (E) because it will damage the spring ring.

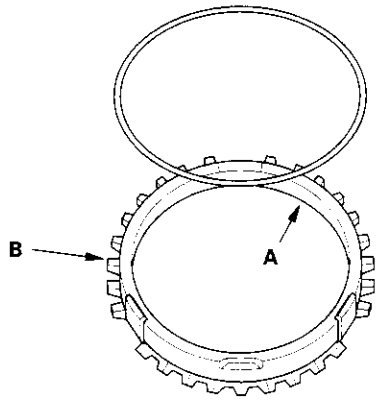
   NOTE: If replacement is required, always replace the synchro sleeve and synchro hub as a set.





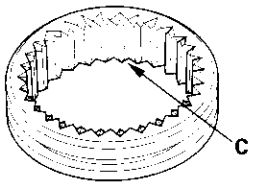
Synchro Ring and Gear Inspection

1. Inspect the inside of each synchro ring (A) for wear. Inspect the teeth (B) on each synchro ring for wear (rounded off).

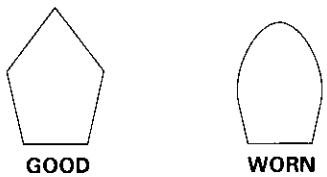


Example of synchro ring teeth

2. Inspect the teeth (C) on each synchro sleeve and matching teeth on each gear for wear (rounded off).



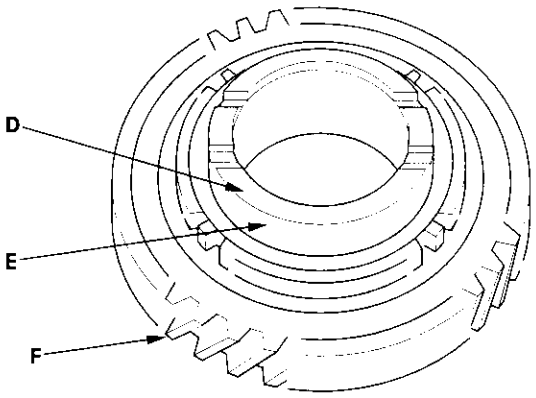
Example of synchro sleeve teeth and gear teeth



(cont'd)

Synchro Ring and Gear Inspection (cont'd)

3. Inspect the thrust surface (D) on each gear hub for wear.



4. Inspect the cone surface (E) on each gear hub for wear and roughness.

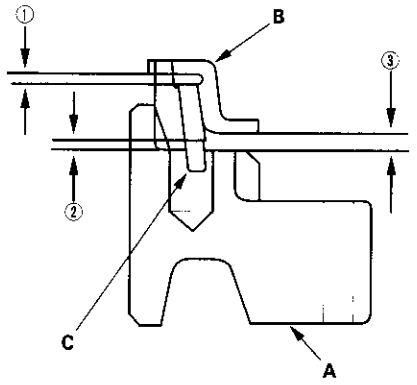
5. Inspect the teeth on all gears (F) for uneven wear, scoring, galling, and cracks.

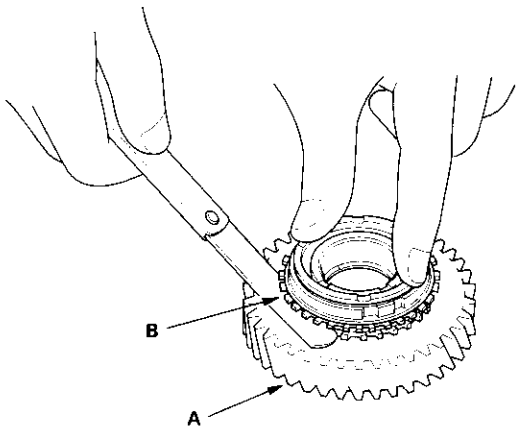
6. Coat the cone surface of each gear (E) with oil, and place its synchro ring on it. Rotate the synchro ring, making sure that it does not slip.

7. Measure the clearance between each gear (A) and its synchro ring (B) all the way around. 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.)

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.)



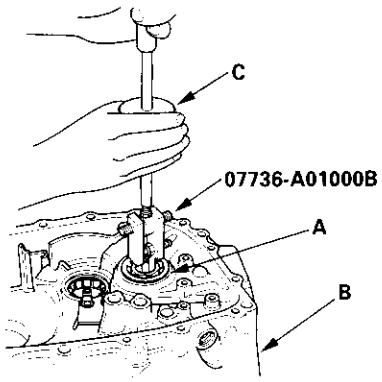


Mainshaft Bearing and Oil Seal Replacement

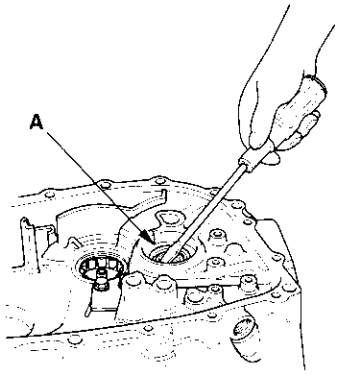
Special Tools Required
- Oil seal driver 07JAD-PL90100
- Adjustable bearing puller, 20—40 mm 07736-A01000B
- Driver 07749-0010000
- Attachment, 42 x 47 mm 07746-0010300
- Slide hammer, commercially available

1. Remove the differential assembly.

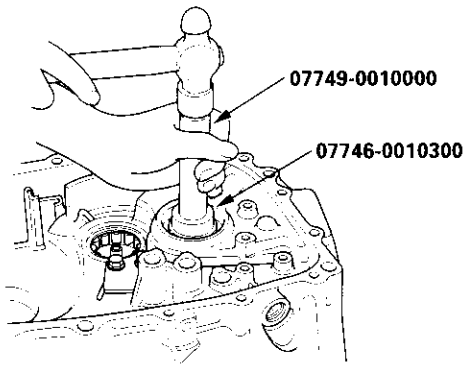
2. Remove the ball bearing (A) from the clutch housing (B) using the special tool and a commercially available 3/8" — 16 slide hammer (C).



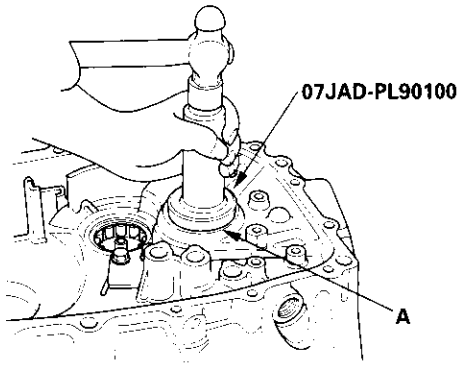
3. Remove the oil seal (A) from the clutch side. Be careful when removing the seal so the clutch housing is not damaged.



4. Drive the new oil seal in from the transmission side using the special tools.



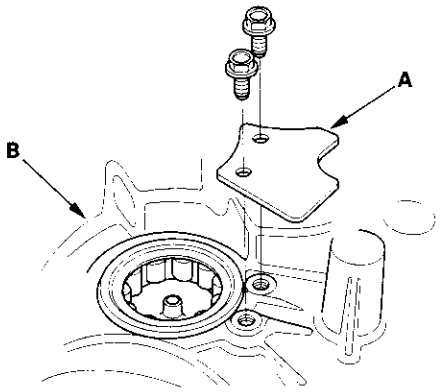
5. Drive the new ball bearing (A) in from the transmission side using the special tool.



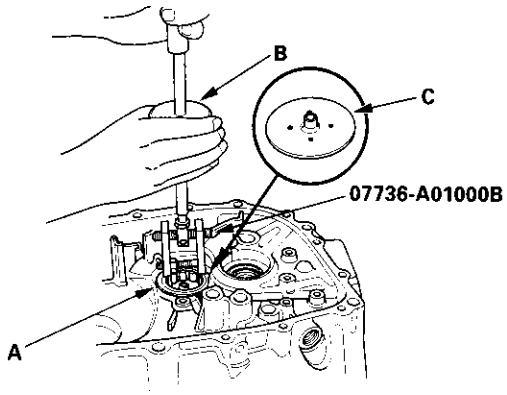
Countershaft Bearing Replacement

Special Tools Required
- Adjustable bearing puller, 20—40 mm 07736-A01000B
- Oil seal driver 07JAD-APL90100
- Slide hammer, commercially available

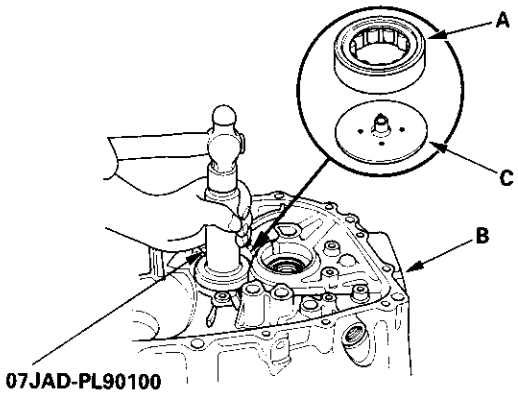
1. Remove the bearing set plate (A) from the clutch housing (B).



2. Remove the needle bearing (A) using the special tool and a commercially available 3/8" — 16 slide hammer (B), then remove the oil guide plate C.

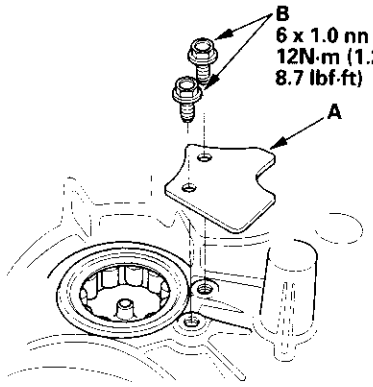


3. Position the oil guide plate C and new needle bearing (A) in the bore of the clutch housing (B).



4. Install the needle bearing using the special tool.

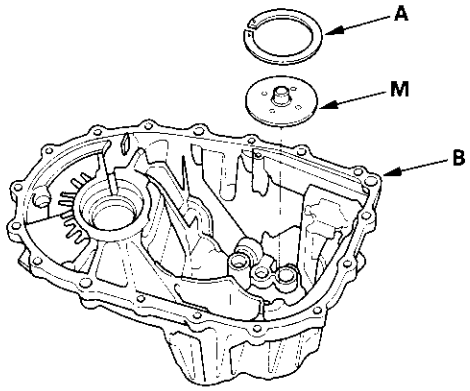
5. Install the bearing set plate (A) with bolts (B).



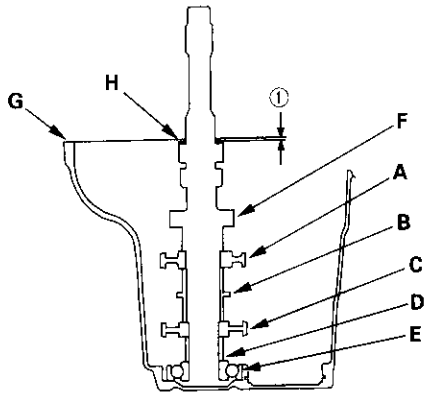
Mainshaft Thrust Clearance Adjustment

Special Tools Required
- Mainshaft base 07GAJ-PG20130
- Mainshaft holder 07GAJ-PG20110

1. Remove the 72 mm shim (A) and oil guide plate M from the transmission housing (B).



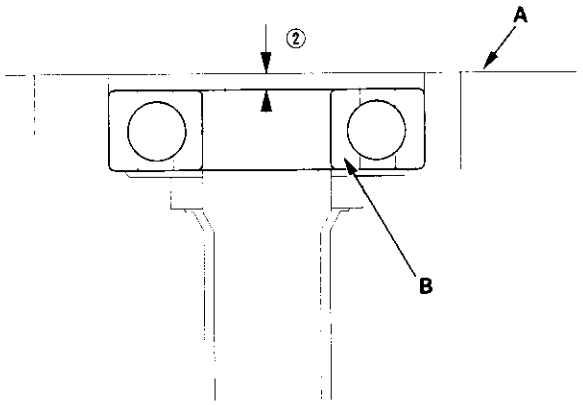
2. Install the 3rd/4th synchro hub (A), the distance collar (B), the 5th synchro hub (C), distance collar (D), and ball bearing (E) on the mainshaft (F), then install the assembled mainshaft in the transmission housing (G).



3. Install the washer (H) on the mainshaft.

4. Measure distance ① between the end of the transmission housing and washer with a straight edge and vernier caliper. Measure at three locations and average the reading.

5. Measure distance ② between the end of the clutch housing (A) and the bearing inner race (B) with a straight edge and depth gauge. Measure at three locations and average the readings.



Shim Selection Formula:

6. Select the proper 72 mm shim from the chart. Follow the example below, and use the measurements you made in steps 4 and 5:

(Basic Formula)
① + ② − (0.8 + 0.11) = shim thickness (maximum)
① + ② − (0.8 + 0.17) = shim thickness (minimum)

- Add distance ② (step 5) to distance ① (step 4).
- 0.8 mm (0.031 in): Spring washer, a dimension in the installation.
- 0.11 mm (0.004 in): Minimum thrust clearance.
- 0.17 mm (0.007 in): Maximum thrust clearance.

(For example)
2.32 + 0.15 − (0.8 + 0.11) = 1.56 mm (0.061 in.)
2.32 + 0.15 − (0.8 + 0.17) = 1.50 mm (0.059 in.)

Take the middle value of the minimum value and the maximum value, and select the 1.53 mm (0.060 in.) shim.

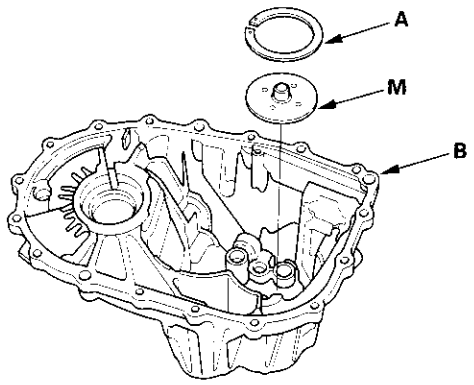
(cont'd)

Mainshaft Thrust Clearance Adjustment (cont'd)

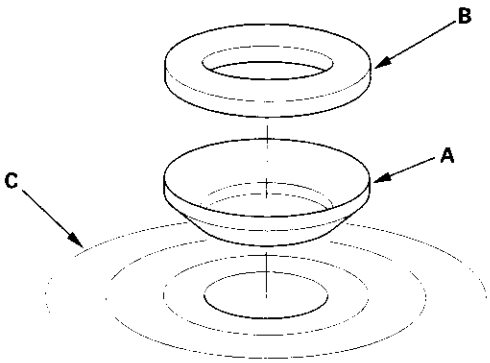
72 mm Shim

	Part Number	Thickness
A	23931-P21-000	0.60 mm (0.0236 in.)
B	23932-P21-000	0.63 mm (0.0248 in.)
C	23933-P21-000	0.66 mm (0.0260 in.)
D	23934-P21-000	0.69 mm (0.0271 in.)
E	23935-P21-000	0.72 mm (0.0283 in.)
F	23936-P21-000	0.75 mm (0.0295 in.)
G	23937-P21-000	0.78 mm (0.0307 in.)
H	23938-P21-000	0.81 mm (0.0319 in.)
I	23939-P21-000	0.84 mm (0.0331 in.)
J	23940-P21-000	0.87 mm (0.0343 in.)
K	23941-P21-000	0.90 mm (0.0354 in.)
L	23942-P21-000	0.93 mm (0.0366 in.)
M	23943-P21-000	0.96 mm (0.0378 in.)
N	23944-P21-000	0.99 mm (0.0390 in.)
O	23945-P21-000	1.02 mm (0.0402 in.)
P	23946-P21-000	1.05 mm (0.0413 in.)
Q	23947-P21-000	1.08 mm (0.0425 in.)
R	23948-P21-000	1.11 mm (0.0437 in.)
S	23949-P21-000	1.14 mm (0.0449 in.)
T	23950-P21-000	1.17 mm (0.0461 in.)
U	23951-P21-000	1.20 mm (0.0472 in.)
V	23952-P21-000	1.23 mm (0.0484 in.)
W	23953-P21-000	1.26 mm (0.0496 in.)
X	23954-P21-000	1.29 mm (0.0508 in.)
Y	23955-P21-000	1.32 mm (0.0520 in.)
Z	23956-P21-000	1.35 mm (0.0531 in.)
AA	23957-P21-000	1.38 mm (0.0543 in.)
AB	23958-P21-000	1.41 mm (0.0555 in.)
AC	23959-P21-000	1.44 mm (0.0567 in.)
AD	23960-P21-000	1.47 mm (0.0579 in.)
AE	23961-P21-000	1.50 mm (0.0591 in.)
AF	23962-P21-000	1.53 mm (0.0602 in.)
AG	23963-P21-000	1.56 mm (0.0614 in.)
AH	23964-P21-000	1.59 mm (0.0626 in.)
AI	23965-P21-000	1.62 mm (0.0638 in.)
AJ	23966-P21-000	1.65 mm (0.0650 in.)
AK	23967-P21-000	1.68 mm (0.0661 in.)
AL	23968-P21-000	1.71 mm (0.0673 in.)
AM	23969-P21-000	1.74 mm (0.0685 in.)
AN	23970-P21-000	1.77 mm (0.0697 in.)
AO	23971-P21-000	1.80 mm (0.0709 in.)

7. Install the 72 mm shim (A) selected and oil guide plate M in the transmission housing (B).



8. Thoroughly clean the spring washer (A) and washer (B) before installing them on the clutch housing side ball bearing (C). Note the installation direction of the spring washer.



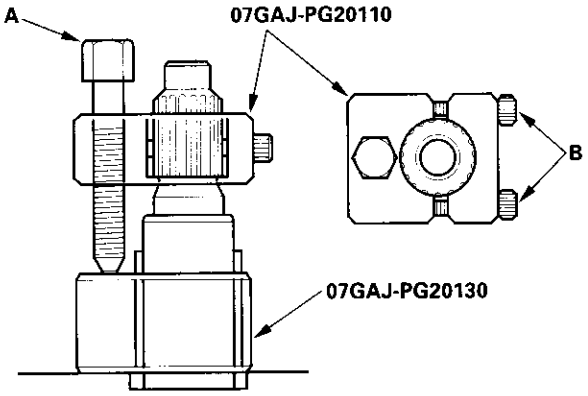
9. Install the mainshaft in the clutch housing.
10. Place the transmission housing over the mainshaft and onto the clutch housing.
11. Tighten the clutch and transmission housings with several 8 mm bolts.

    NOTE: It is not necessary to use sealing agent between the housings.

12. Tap the mainshaft with a plastic hammer.

13. Attach the special tool to the mainshaft as follows:

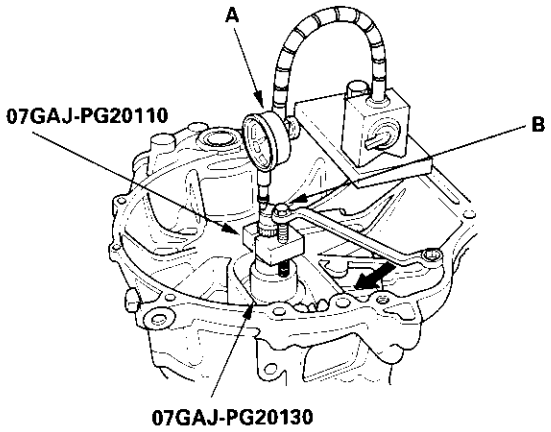
    - Back-out the mainshaft holder bolt (A) and loosen the two hex bolts (B).
    - Fit the holder over the mainshaft so its lip is towards the transmission.
    - Align the mainshaft holder's lip around the groove at the inside of the mainshaft splines, then tighten the hex bolts.



14. Seat the mainshaft fully by tapping its end with a plastic hammer.

15. Thread the mainshaft holder bolt in until it just contacts the wide surface of the mainshaft base.

16. Zero a dial gauge (A) on the end of the mainshaft.



17. Turn the mainshaft holder bolt (B) clockwise; stop turning when the dial gauge (A) has reached its maximum movement. The reading on the dial gauge is the amount of mainshaft end play.

    NOTE: Do not turn the mainshaft holder bolt more than 60 degrees after the needle of the dial gauge stops moving, this may damage the transmission.

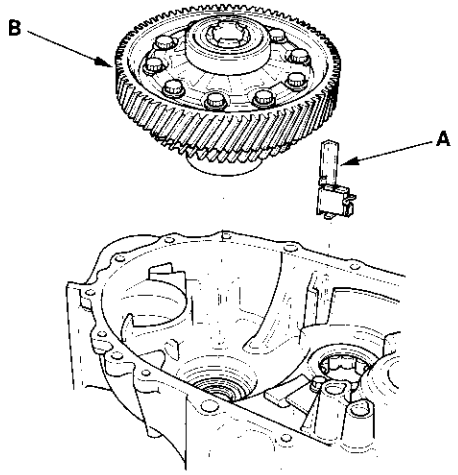
18. If the reading is within the standard, the clearance is correct. If the reading is not within the standard, recheck the shim thickness.

    Standard: 0.11—0.17 mm (0.004—0.007 in.)

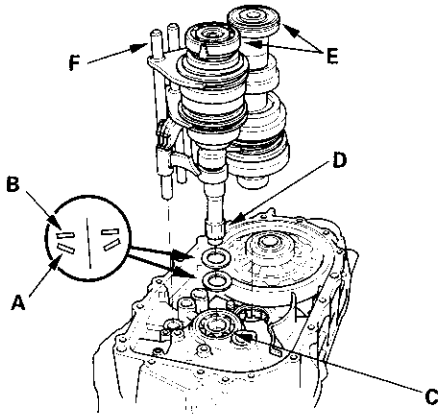
Transmission Reassembly

NOTE: Prior to reassembling, clean all the parts in solvent, dry them, and apply lubricant to any contact surfaces.

1. Install the magnet (A) and differential assembly (B).

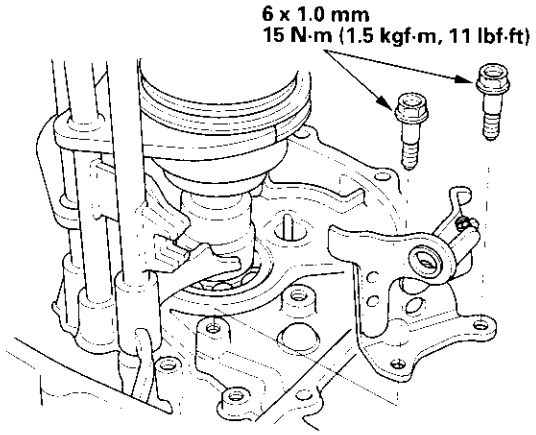


2. Install the 28 mm spring washer (A) and 28 mm washer (B) over the ball bearing (C). Note the installation direction of the spring washer (A).

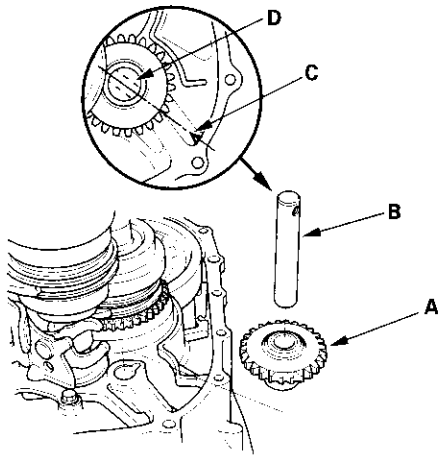


3. Apply vinyl tape to the mainshaft splines (D) to protect the seal. Install the mainshaft and countershaft (E) into the shift forks (F), and install them as an assembly.

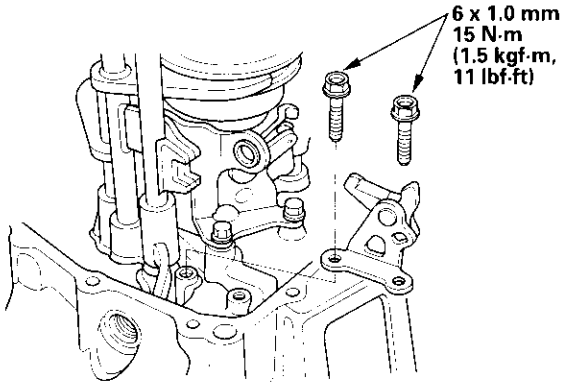
4. Install the reverse shift fork.



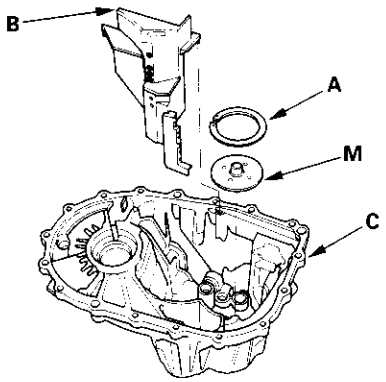
5. Install the reverse idler gear (A) and reverse gear shaft (B) by aligning the mark (C) with the reverse gear shaft hole (D).



6. Install the reverse lock cam.

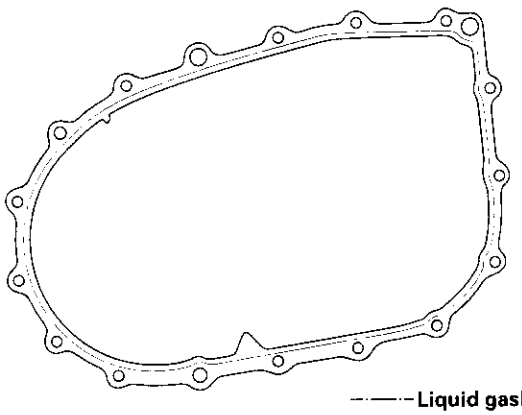


7. Select the proper size 72 mm shim (A) according to the measurements made during the Mainshaft Thrust Clearance Adjustment (see page 13-43). Install the oil gutter plate (B), oil guide plate M, and 72 mm shim into the transmission housing (C).



8. Remove the dirt and oil from the tramsmission housing sealing surface. Apply liquid gasket (P/N 08718-0001) to the sealing surface. Be sure to seal the entire circumference of the bolt holes to prevent oil leakage.

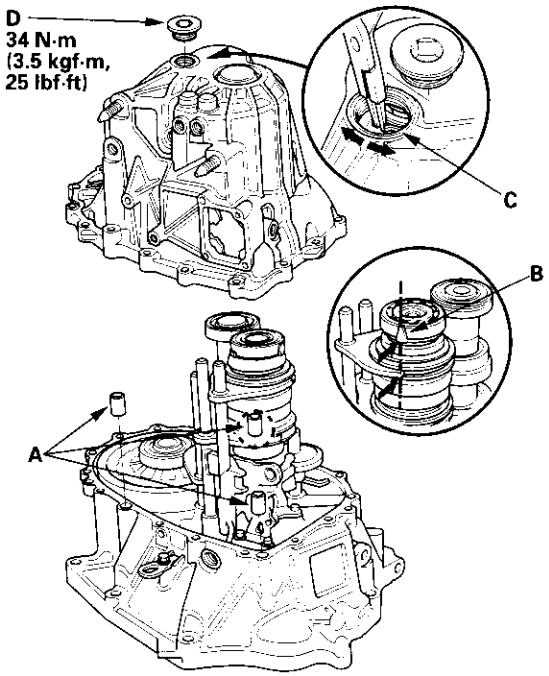
NOTE: If 5 minutes have passed after applying liquid gasket, reapply it and assemble the housings. Allow it to cure at least 20 minutes after assembly before filling the transmission with oil.

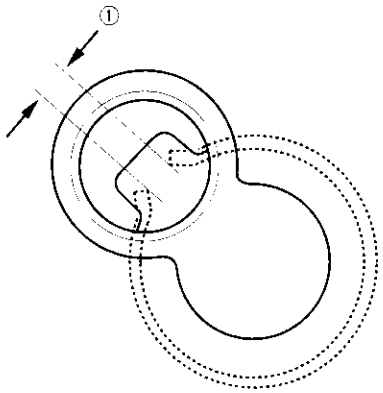


(cont'd)

Transmission Reassembly (cont'd)

9. Install the 14 x 20 mm dowel pins (A).





10. Set the tapered cone ring (B) as shown. Place the transmission housing over the clutch housing, being careful to line up the shafts.

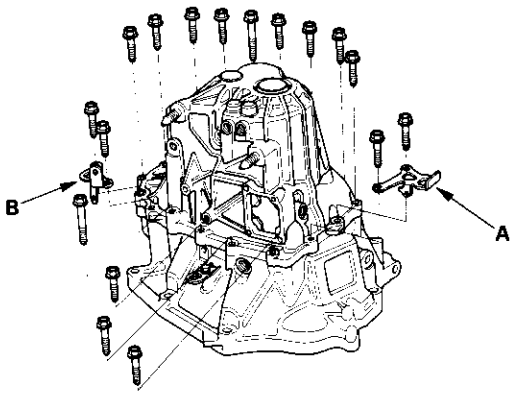
11. Lower the transmission housing the rest of the way as you expand the 72 mm snap ring (C). Release the snap ring so it seats in the groove of the countershaft bearing.

12. Check that the 52 mm snap ring is securely seated in the groove of the countershaft bearing.

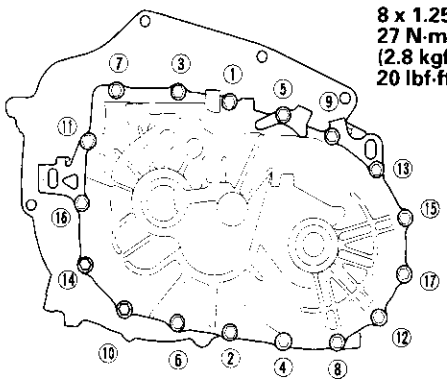
    Dimension ① as installed: 3.3—6.0 mm (0.13—0.24 in.)

13. Apply liquid gasket (P/N 08718-0001) to the threads of the 32 mm sealing cap (D), and install it on the transmission housing.

14. Install the transmission hangers A, and B, and the 8 mm flange bolts finger-tight.

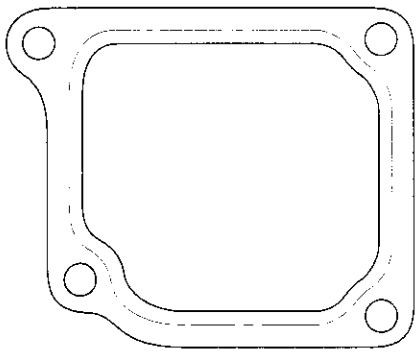


15. Tighten the 8 mm flange bolts in a crisscross pattern in several steps.



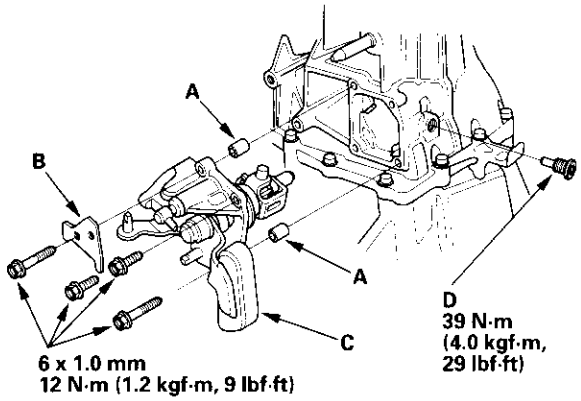
16. Remove the dirt and oil from the shift lever cover sealing surface. Apply liquid gasket (P/N 08718-0001) to the sealing surface.

    NOTE: If 5 minutes have passed after applying liquid gasket, reapply it and assemble the housings. Allow it to cure at least 20 minutes after assembly before filling the transmission with oil.



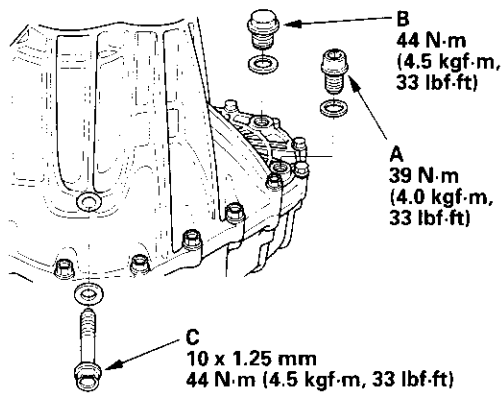
-·——Liquid gasket

17. Install the 8 x 14 mm dowel pins (A), clutch line clip bracket (B), and change lever assembly (C).

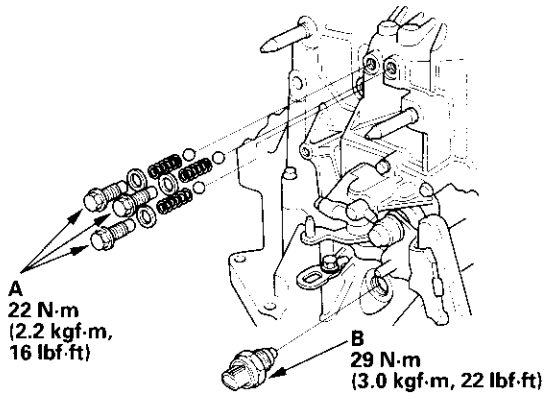


18. Apply liquid gasket (P/N 08718-0001) to the threads of the interlock bolt (D), and install it on the transmission housing.

19. Install the drain plug (A), filler plug (B), and 10 mm flange bolt (C) with new washers.



20. Install the detent bolts (A), spring, and steel balls with new washers.

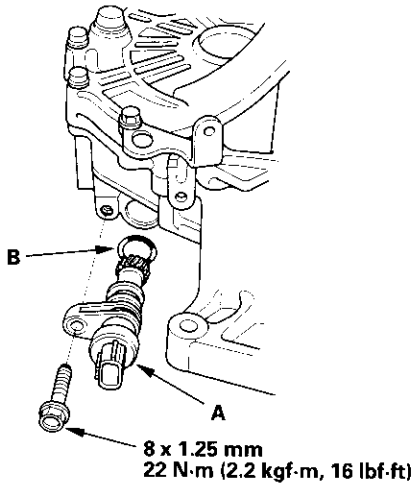


21. Apply liquid gasket (P/N 08718-0001) to the threads of the back-up light switch (B), and install it in the transmission housing.

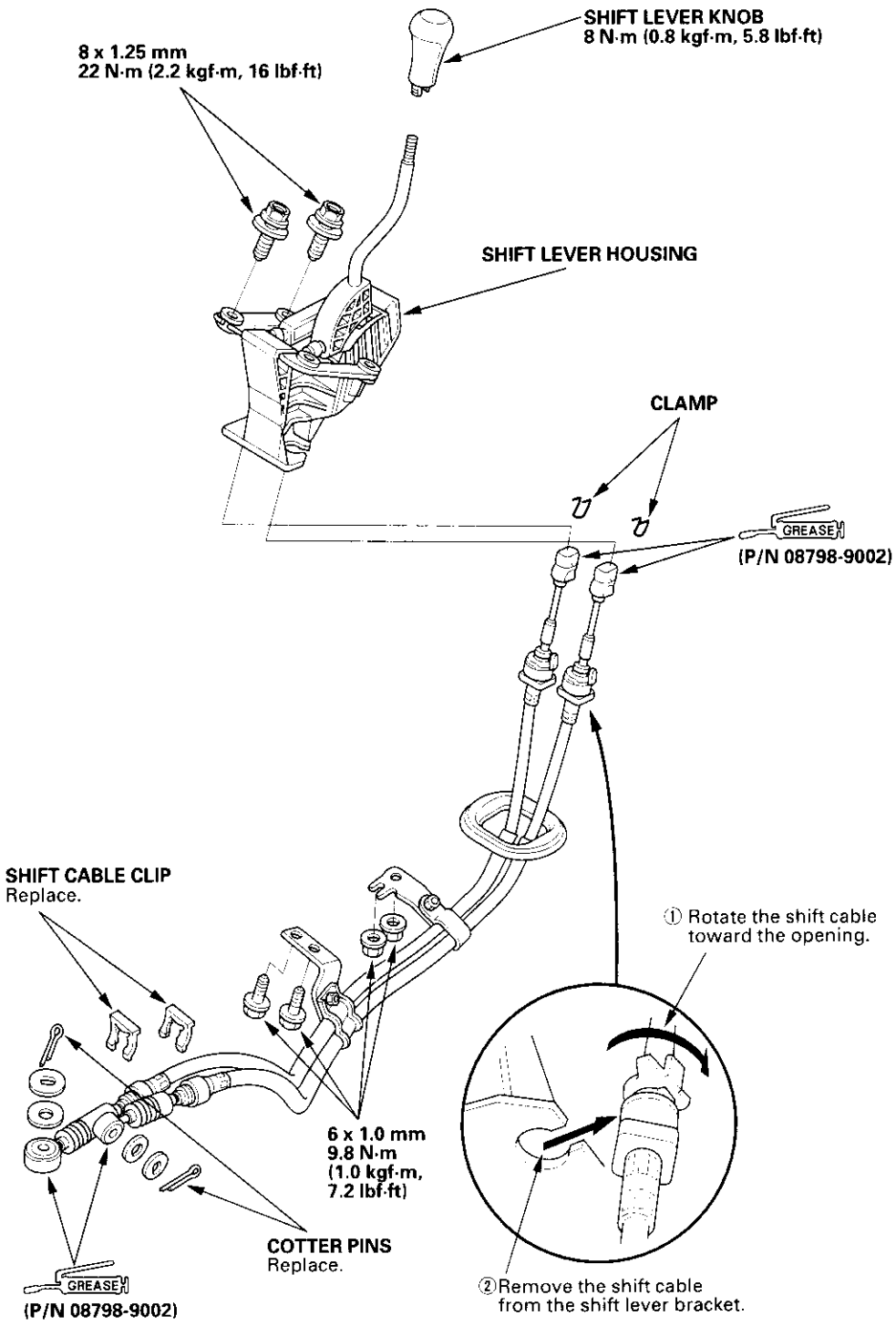
(cont'd)

Transmission Reassembly (cont'd)

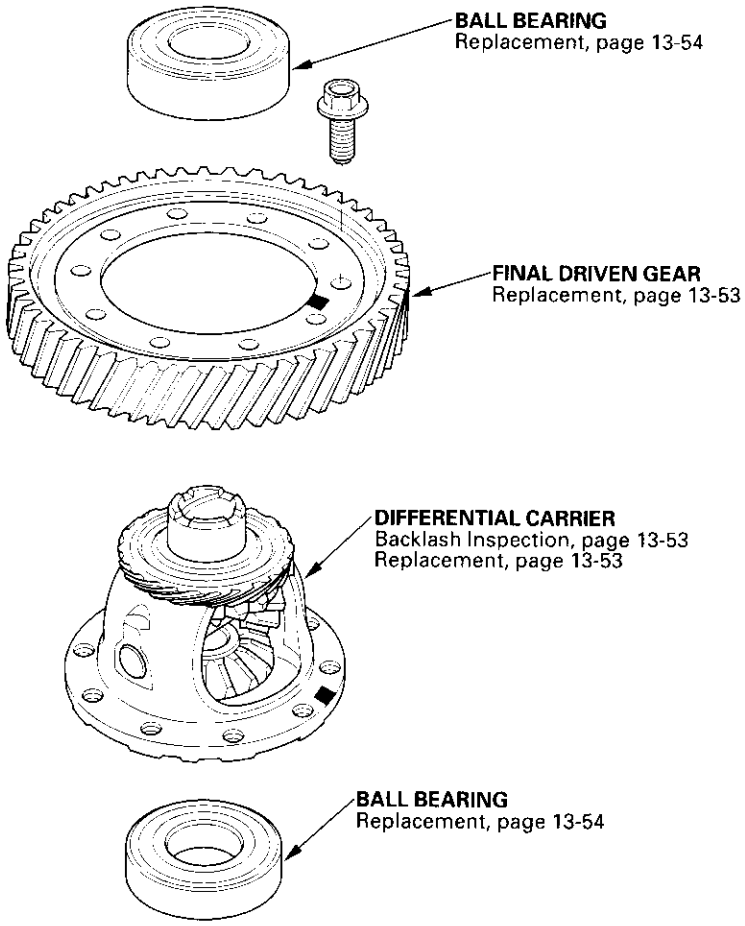
22. Install the vehicle speed sensor (VSS) (A) and O-ring (B).



Gearshift Mechanism Replacement

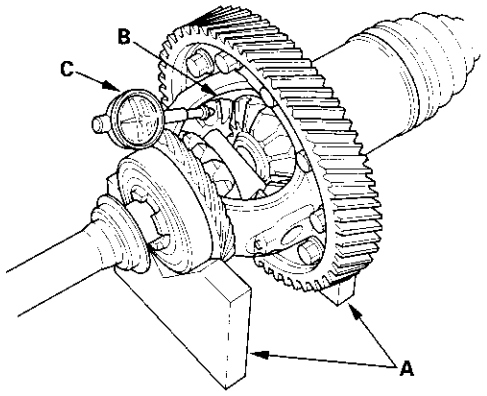


Component Location Index



Backlash Inspection

1. Place the differential assembly on V-blocks (A), and install both axles.

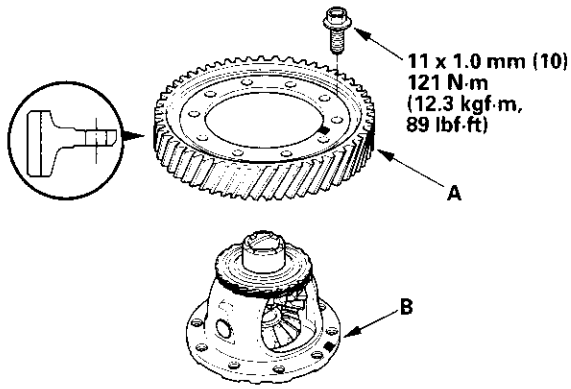


2. Measure the backlash of both pinion gears (B) with a dial indicator (C). If the backlash is not within the standard, replace the differential carrier.

Standard (New): 0.05—0.15 mm (0.002—0.006 in.)

Final Driven Gear/Carrier Replacement

1. Remove the bolts (left-hand threads) in a crisscross pattern in several steps, then remove the final driven gear (A) from the differential carrier (B).



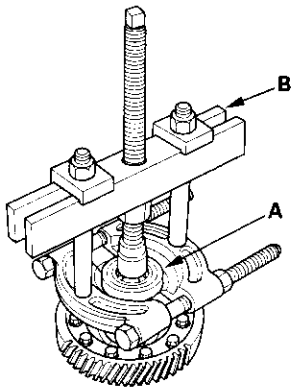
2. Install the final driven gear with the chamfer on the inside diameter facing the carrier. Align the marks on the final driven gear and the carrier. Tighten the bolts in a crisscross pattern in several steps.

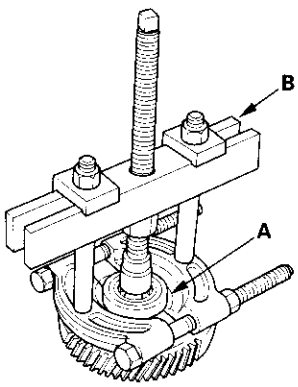
Carrier Bearings Replacement

Special Tool Required
Driver, 40 mm I.D. 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.

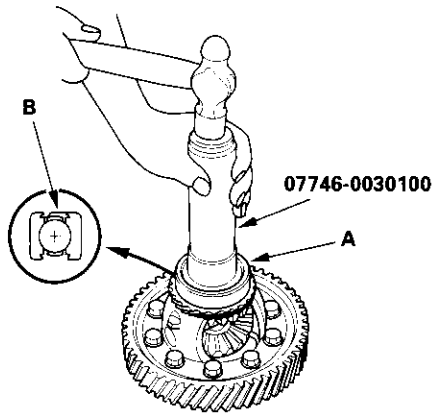
2. Remove the carrier bearing (A) with a commercially-available bearing puller (B).

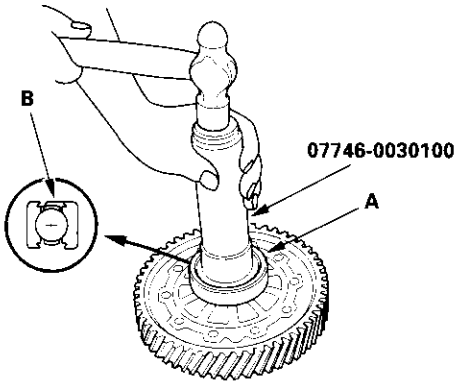




3. Install the new bearings (A) with the special tool and a press. Press each bearing on until it bottoms. There should be no clearance between the bearings and the carrier.

   NOTE: Turn the sealed (B) side of the bearing away from the differential to install it.

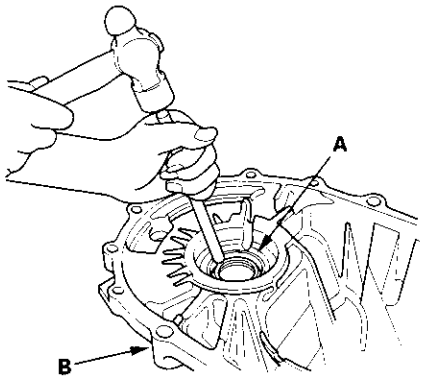




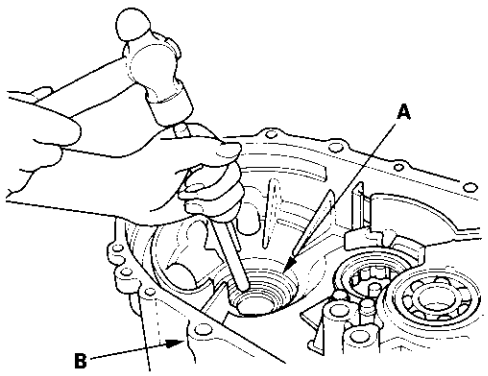
Oil Seal Replacement

Special Tools Required
- Driver 07749-0010000
- Oil seal driver attachment 07NAD-P20A100

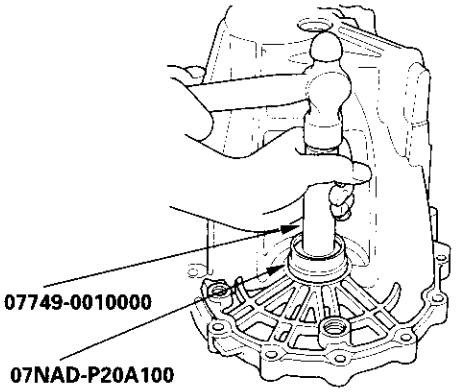
1. Remove the differential assembly.
2. Remove the oil seal (A) from the transmission housing (B).



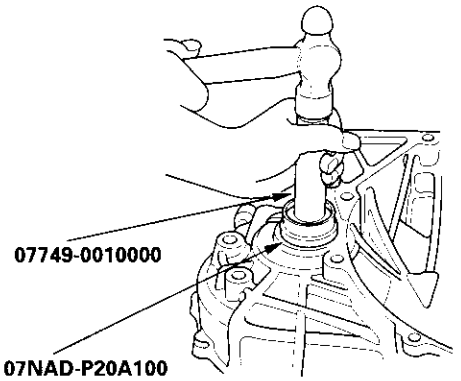
3. Remove the oil seal (A) from the clutch housing (B).



4. Install the new oil seal in the transmission housing with the special tools.



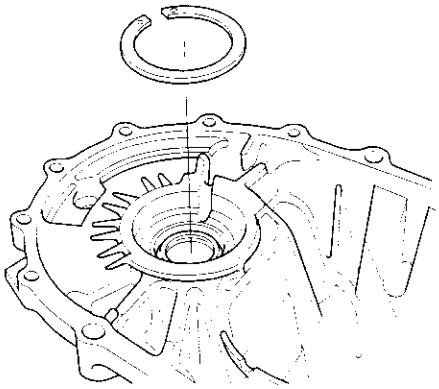
5. Install the new oil seal in the clutch housing with the special tools.



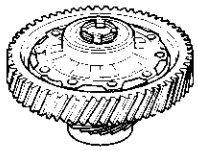
Differential Thrust Clearance Adjustment

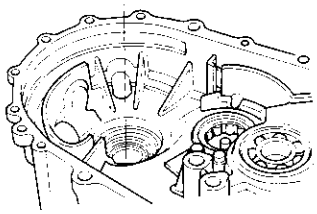
Special Tool Required
Driver, 40 mm I.D. 07746-0030100

1. Install an 80 mm shim that's the same size as the one you removed.



2. Install the differential assembly into the clutch housing.

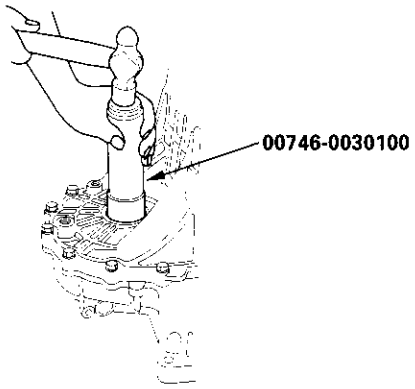




3. Install the transmission housing onto the clutch housing, then tighten the 8 mm flange bolts in a crisscross pattern in several steps (see step 15 on page 13-48).

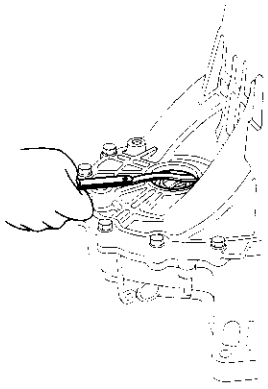
8 x 1.25 mm
27 N·m (2.8 kgf·m, 20 lbf·ft)

4. Use the special tool to bottom the differential assembly in the clutch housing.



5. Measure the clearance between the 80 mm shim and bearing outer race in the transmission housing.

Standard: 0—0.10 mm (0—0.004 in.)



6. If the clearance is more than the standard, select a new shim from the following table. If the clearance measured in step 5 is within the standard, go to step 9.

80 mm Shim

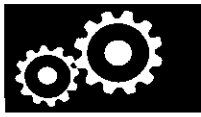
	Part Number	Thickness
A	41441-PL3-B001	1.0 mm (0.0394 in.)
B	41442-PL3-B001	1.1 mm (0.0433 in.)
C	41443-PL3-B001	1.2 mm (0.0472 in.)
D	41444-PL3-B001	1.3 mm (0.0512 in.)
E	41445-PL3-B001	1.4 mm (0.0551 in.)
F	41446-PL3-B001	1.5 mm (0.0591 in.)
G	41447-PL3-B001	1.6 mm (0.0630 in.)
H	41448-PL3-B001	1.7 mm (0.0669 in.)
J	41449-PL3-B001	1.8 mm (0.0709 in.)
K	41450-PL3-B000	1.05 mm (0.0413 in.)
L	41451-PL3-B000	1.15 mm (0.0453 in.)
M	41452-PL3-B000	1.25 mm (0.0492 in.)
N	41453-PL3-B000	1.35 mm (0.0531 in.)
P	41454-PL3-B000	1.45 mm (0.0571 in.)
Q	41455-PL3-B000	1.55 mm (0.0610 in.)
R	41456-PL3-B000	1.65 mm (0.0650 in.)
S	41457-PL3-B000	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.

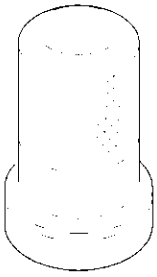
9. Reinstall the transmission.

Driveline/Axle



Special Tools

Ref. No.	Tool Number	Description	Qty
①	07GAD-PH70201	Oil Seal Driver	1
②	07MAC-SL00200	Ball Joint Remover, 28 mm	1
③	07NAF-SR30101	Half Shaft Base	1
④	07XAC-001010A	Threaded Adapter, 22 x 1.5 mm	1
⑤	07746-0010400	Attachment, 52 x 55 mm	1
⑥	07746-0030400	Driver, 35 mm I.D.	1
⑦	07749-0010000	Driver	1
⑧	07947-SB00100	Oil Seal Driver	1



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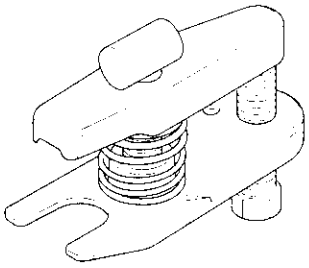

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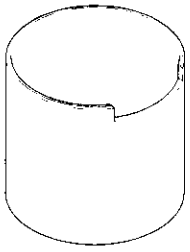

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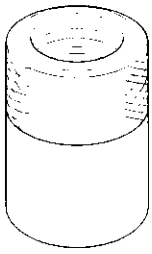

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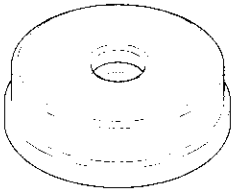

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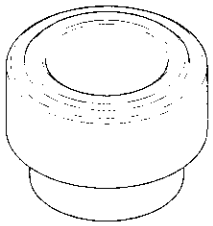

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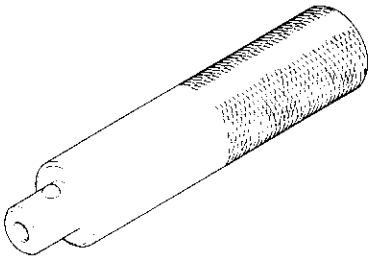

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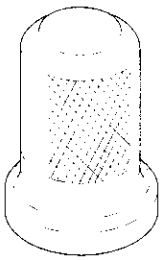
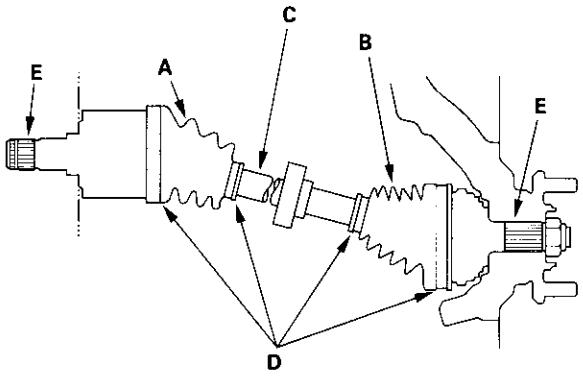


⑧

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 boot bands.



2. Turn the driveshaft by hand, and make sure the splines (E) and joint are not excessively loose.

3. Make sure the driveshaft is not twisted or cracked; if it is, replace it.

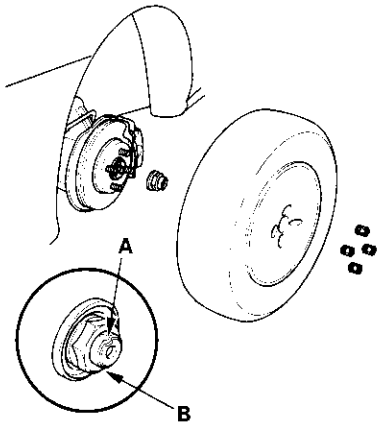
Driveshafts Removal

Special Tool Required
Ball joint remover, 28 mm 07MAC-SL00200

1. Loosen the wheel nuts slightly.

2. Raise the front of the vehicle, and support it with safety stands in the proper locations (see page 1-8).

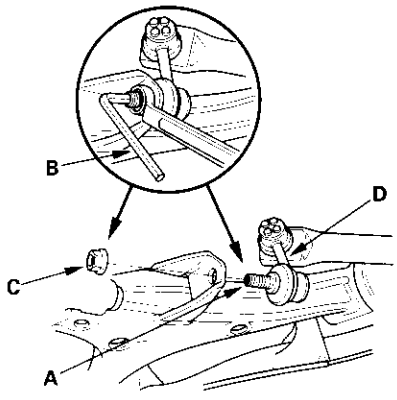
3. Remove the wheel nuts and front wheels.



4. Lift up the locking tab (A) on the spindle nut (B), then remove the nut.

5. If the left driveshaft or the intermediate shaft is to be removed, drain the transmission fluid. Reinstall the drain plug using a new washer (see page 13-3).

6. Hold the stabilizer ball joint pin (A) with a hex wrench (B), and remove the flange nut (C). Separate the front stabilizer link (D) from the lower arm.

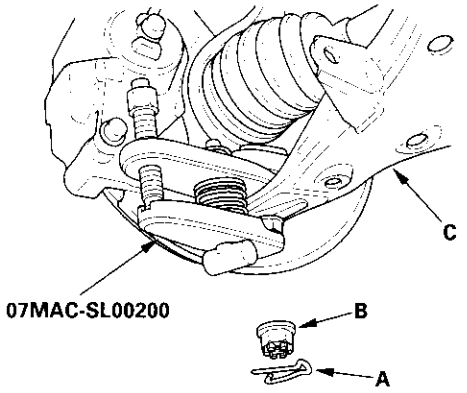


(cont'd)

Driveshafts Removal (cont'd)

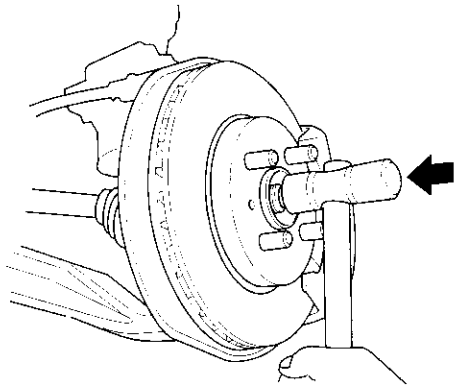
7. Remove the lock pin (A) from the lower arm ball joint castle nut (B), and remove the nut.

   NOTE:
   - To avoid damaging the ball joint, install a hex nut on to the threads of the ball joint.
   - Be careful not to damage the ball joint boot when installing the remover.



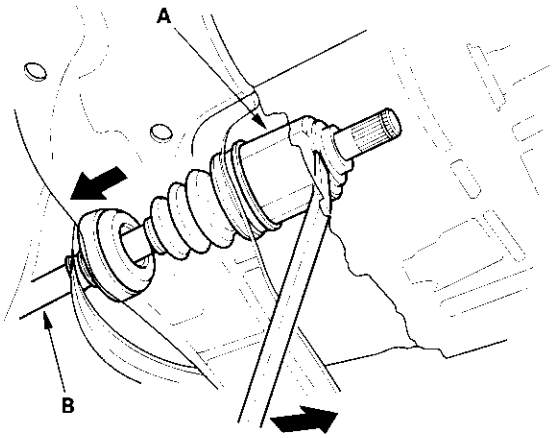
8. Separate the ball joint from the lower arm (C) with the special tool (see step 3 on page 18-19). Be careful not to dislodge the lower ball joint from the knuckle.

9. Pull the knuckle outward, and remove the driveshaft outboard joint from the front wheel hub using a plastic hammer.

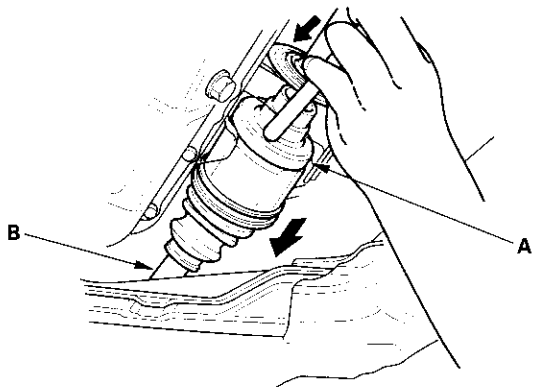


10. Left driveshaft: Pry the inboard joint (A) from the differential case with a prybar. Right driveshaft: Drive the inboard joint (A) off of the intermediate shaft with a drift and hammer. Remove the driveshaft as an assembly. Do not pull on the driveshaft (B), because the inboard joint may come apart. Draw the driveshaft straight out to avoid damaging the oil seal.

Left driveshaft:



Right driveshaft:

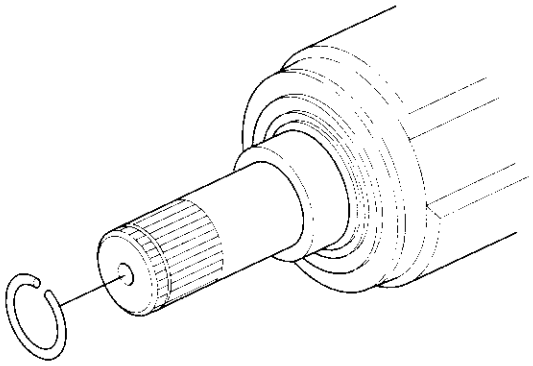


Driveshafts Disassembly

Special Tools Required
- Threaded adapter, 22 x 1.5 mm 07XAC-001010A
- Slide hammer, commercially available
- Boot band pincers, commercially available

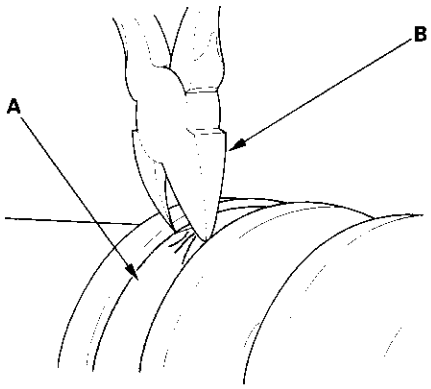
Inboard Joint Side:

1. Remove the set ring from the inboard joint.

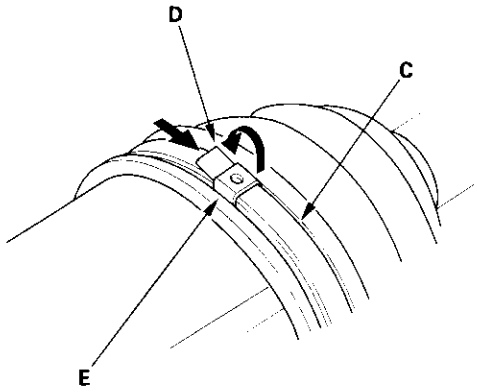


2. Remove the boot bands. Be careful not to damage the boot and dynamic damper.
   - If the boot band is a welded type (A), cut the boot band (B).
   - If the boot band is a double loop type (C), lift up the band bend (D), and push it into the clip (E).
   - If the boot band is a low profile type (F), pinch the boot band using a commercially available boot band pincers (G).

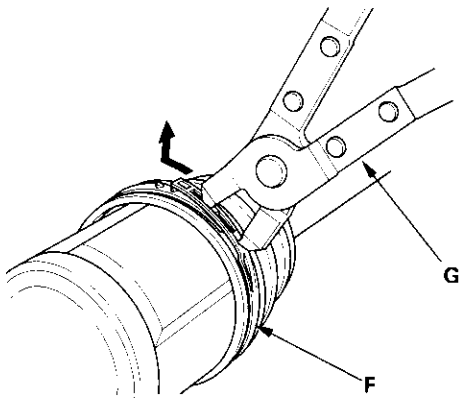
Welded Type



Double Loop Type



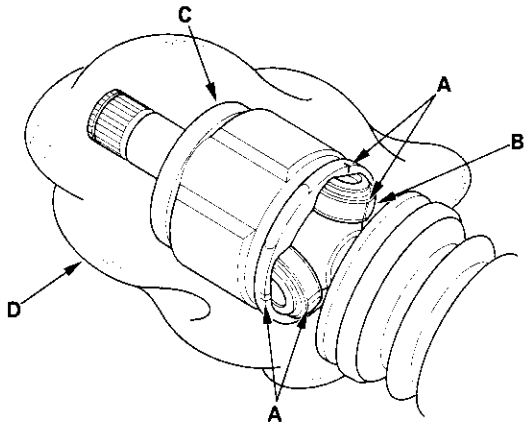
Low Profile Type



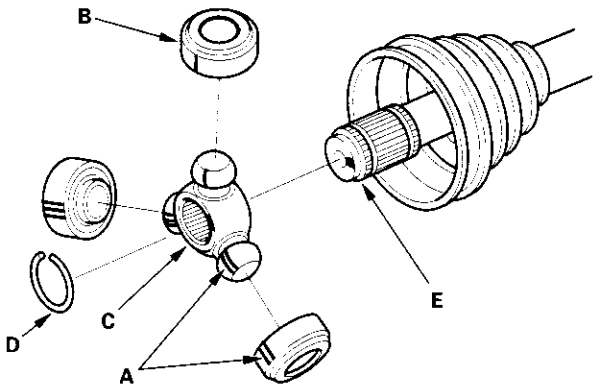
(cont'd)

Driveshafts Disassembly (cont'd)

3. Make a mark (A) on each roller (B) and inboard joint (C) to identify the locations of rollers and grooves in the inboard joint. Then remove the inboard joint on the shop towel (D). Be careful not to drop the rollers when separating them from the inboard joint.



4. Make a mark (A) on the rollers (B) and spider (C) to identify the locations of rollers on the spider, then remove the rollers.

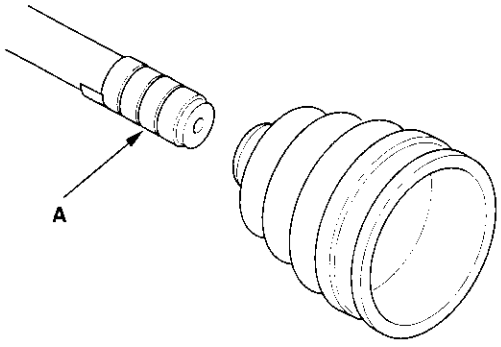


5. Remove the circlip (D).

6. Mark the spider (C) and driveshaft (E) to identify the position of the spider on the shaft.

7. Remove the spider (C).

8. Wrap the splines on the driveshaft with vinyl tape (A) to prevent damage to the boot.



9. Remove the inboard boot. Be careful not to damage the boot.

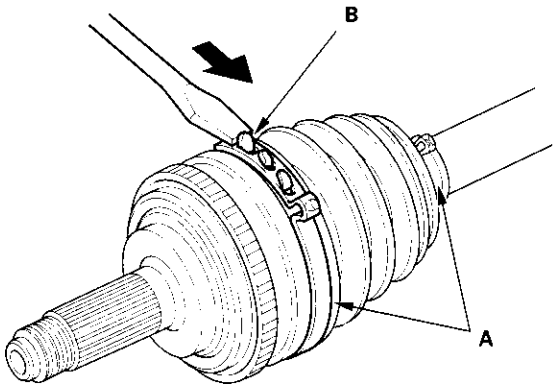
10. Remove the vinyl tape.

Outboard Joint Side:

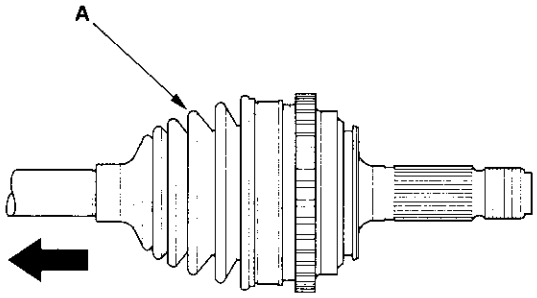
1. Remove the boot bands. Be careful not to damage the boot and dynamic damper.

   • If the boot band is an ear clamp type (A), lift up the three tabs (B) with a screwdriver.

Ear Clamp Type

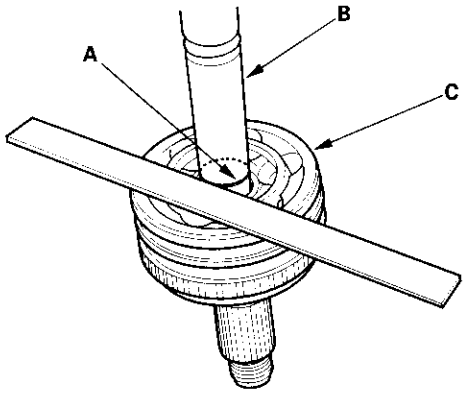


2. Slide the outboard boot (A) to the inboard joint side. Be careful not to damage the boot.

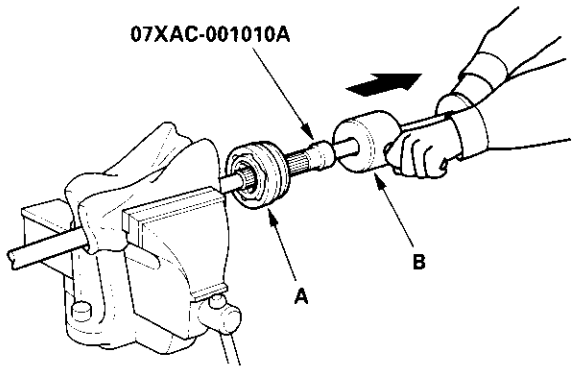


3. Wipe off the grease to expose the driveshaft and the outboard joint inner race.

4. Make a mark (A) on the driveshaft (B) at the same position of the outboard joint end (C).



5. Carefully clamp the driveshaft in a vise.



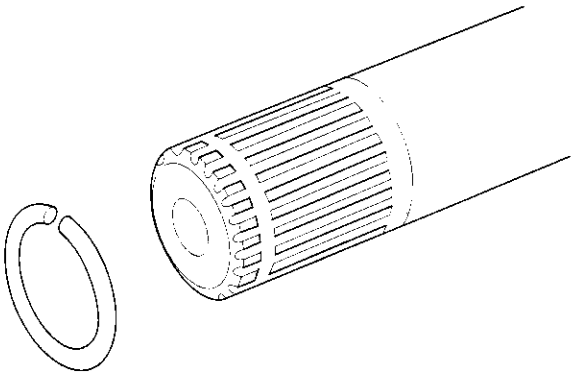
6. Remove the outboard joint (A) using the special tool and a commercially available 5/8''x18 slide hammer (B).

7. Remove the driveshaft from the vise.

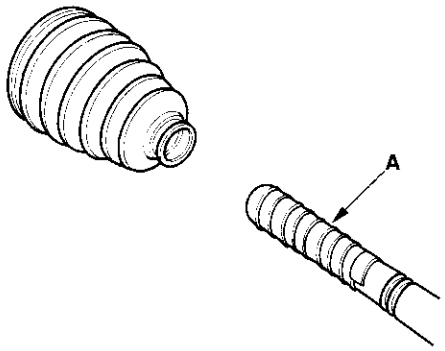
(cont'd)

Driveshafts Disassembly (cont'd)

8. Remove the stop ring from the driveshaft.



9. Wrap the splines on the driveshaft with vinyl tape (A) to prevent damage to the boot.



10. Remove the outboard boot. Be careful not to damage the boot.

11. Remove the vinyl tape.

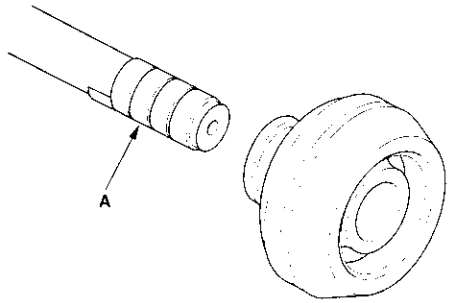
Dynamic Damper Replacement

1. Remove the inboard joint (see page 16-5).

2. Remove the dynamic damper bands. Be careful not to damage the dynamic damper (see page 16-5).

   - If the boot band is a welded type, cut the boot band.
   - If the boot band is a double loop type, lift up the band bend, and push it into the clip.
   - If the boot band is a low profile type, pinch the boot band using a commercially available boot band pincers.

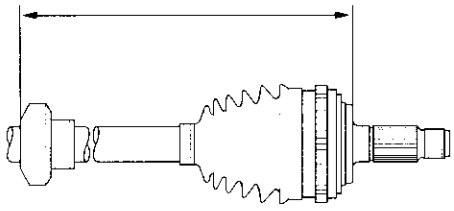
3. Wrap the splines on the driveshaft with vinyl tape (A) to prevent damage to the dynamic damper.



4. Remove the dynamic damper. Be careful not to damage the dynamic damper.

5. Adjust the position of the new dynamic damper to the figure below.

Left driveshaft (Directional):	**296—300 mm (11.6—11.8 in.)**
Right driveshaft (Directional):	**301—305 mm (11.9—12.0 in.)**



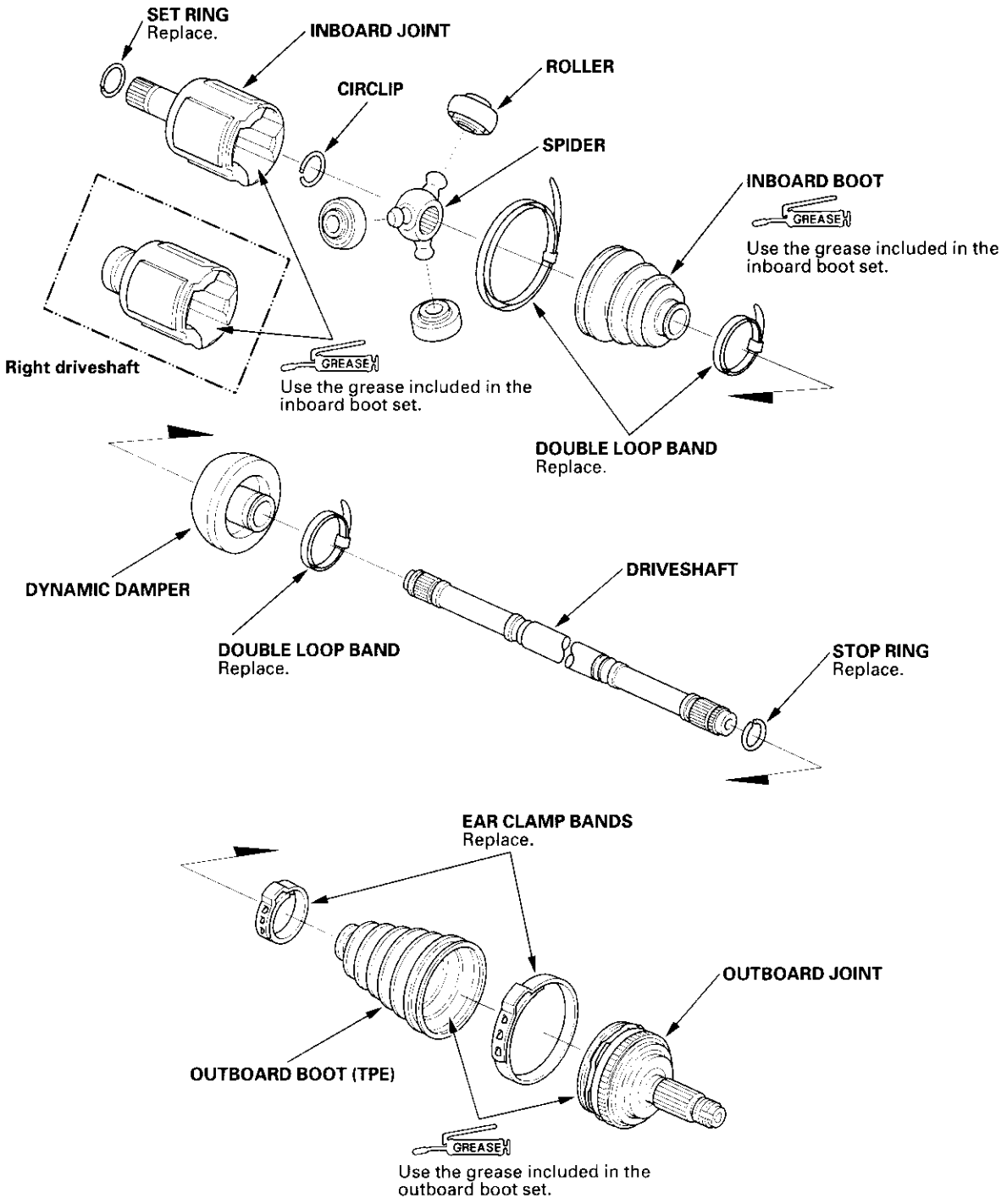
6. Install the dynamic damper band (see step 9 on page 16-12).

7. Install the inboard joint (see page 16-11).

Driveshafts Reassembly

Exploded View

'02 model

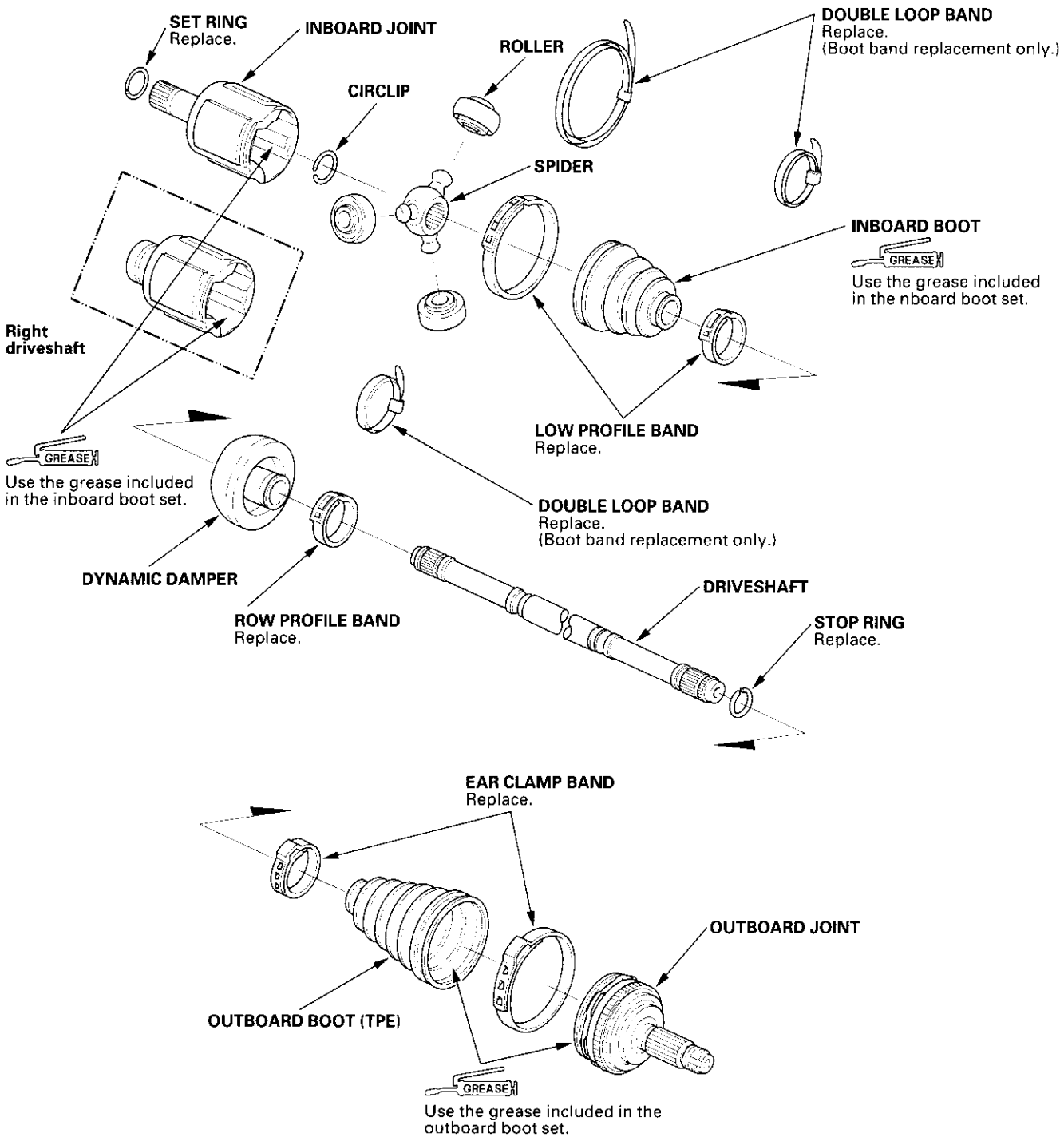


(cont'd)

Driveshafts Reassembly (cont'd)

Exploded View

'03 model

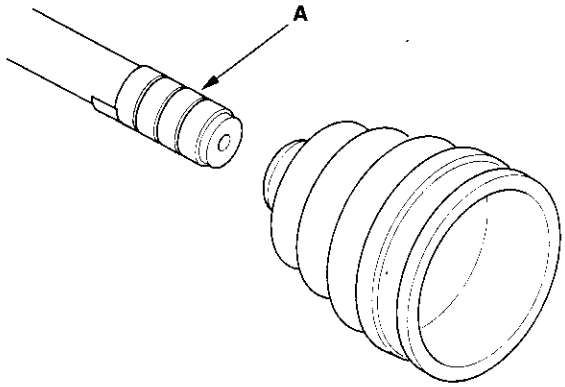


Special Tools Required
- Boot band tool, KD-3191 or equivalent, commercially available
- Boot band pincers, Kent-Moore J-35910 or equivalent, commercially available
- Boot band pincers,commercially available

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

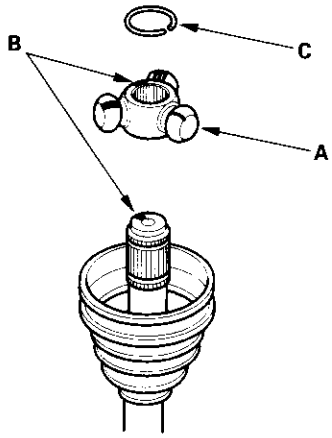
Inboard Joint Side:

1. Wrap the splines with vinyl tape (A) to prevent damage to the inboard boot.



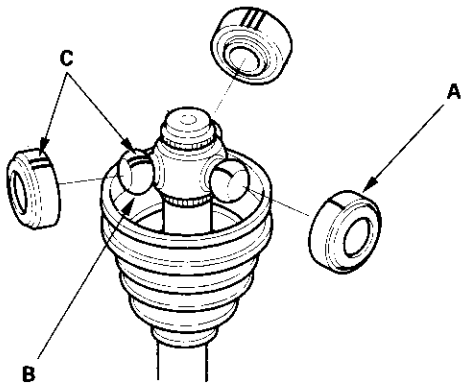
2. Install the inboard boot onto the driveshaft, then remove the vinyl tape. Be careful not to damage the inboard boot.

3. Install the spider (A) onto the driveshaft by aligning the marks (B) on the spider and the end of the driveshaft.



4. Fit the 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 facing outward, and note these items:
   - Reinstall the rollers in their original positions on the spider by aligning the marks (C).
   - Hold the driveshaft pointed up to prevent the rollers from falling off.

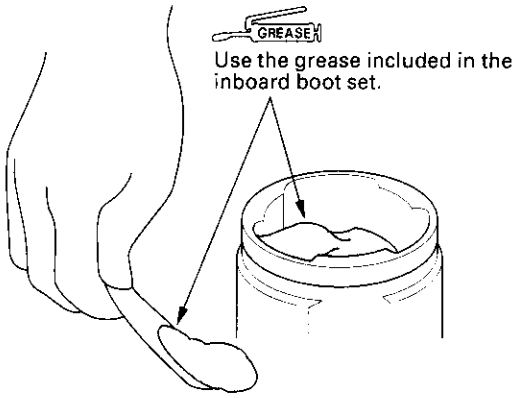


(cont'd)

Driveshafts Reassembly (cont'd)

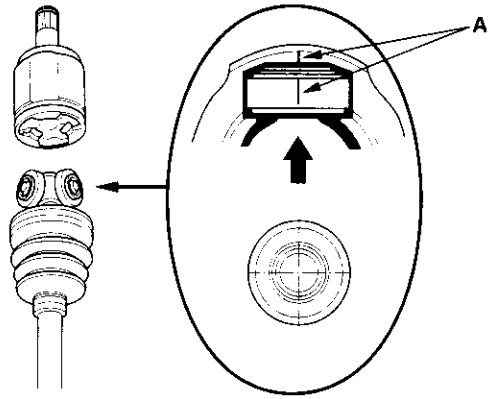
6. Pack the inboard joint with the joint grease included in the new driveshaft set.

   Grease quantity
   Inboard joint: 130—140 g (4.6—4.9 oz)



7. Fit the inboard joint onto the driveshaft, and note these items:

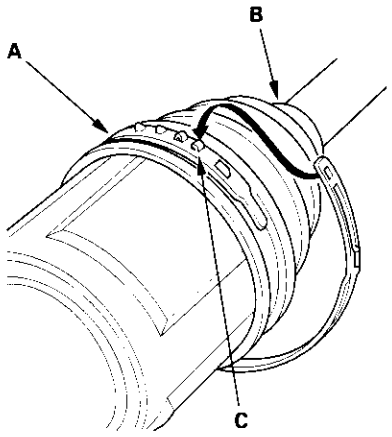
   - Reinstall the inboard joint onto the driveshaft by aligning the marks (A) on the inboard joint and the rollers.
   - Hold the driveshaft so the inboard joint is pointing up to prevent it from falling off.



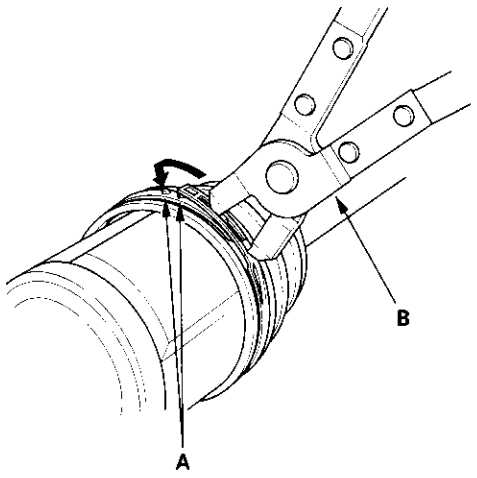
8. Make sure the ends of the boot are seated in the grooves in the driveshaft and joint, then install the boot bands.

   - For the double loop type, go to step 12. (Replacement boot bands only)
   - For the low profile type, go to step 9.

9. Install the new low profile band (A) onto the boot (B), then hook the tab (C) of the band.

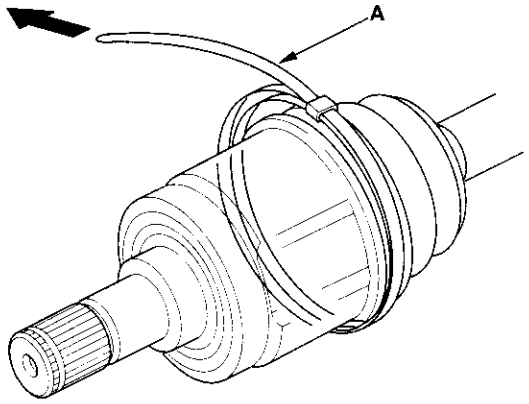


10. Close the hook portion of the band (A) with a commercially available boot band pincers (B), then hook the tabs of the band.



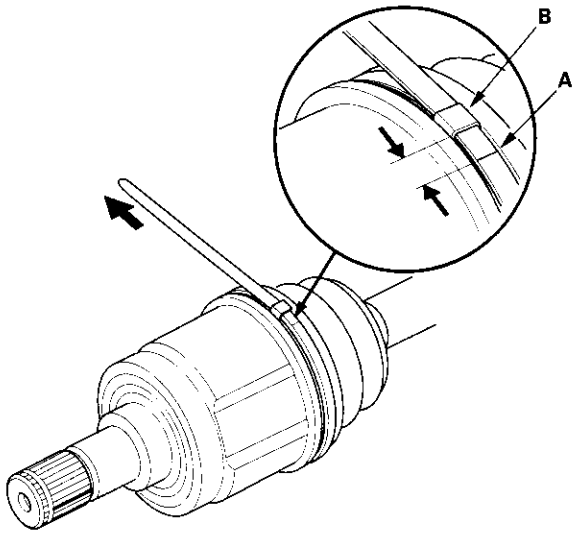
11. Install the boot band on the other end of the boot, and repeat steps 9 and 10.

12. Fit the boot ends onto the driveshaft and the inboard joint, then install the new double loop band (A) onto the boot.

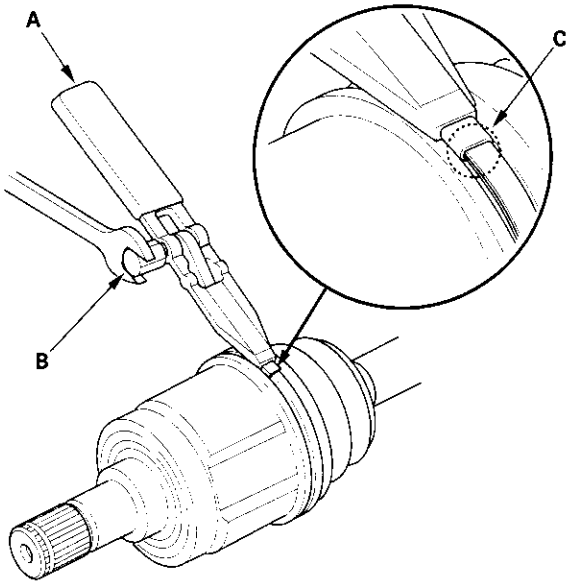


13. Pull up the slack in the band by hand.

14. Mark a position (A) on the band 10—14 mm (0.4—0.6 in.) from the clip (B).

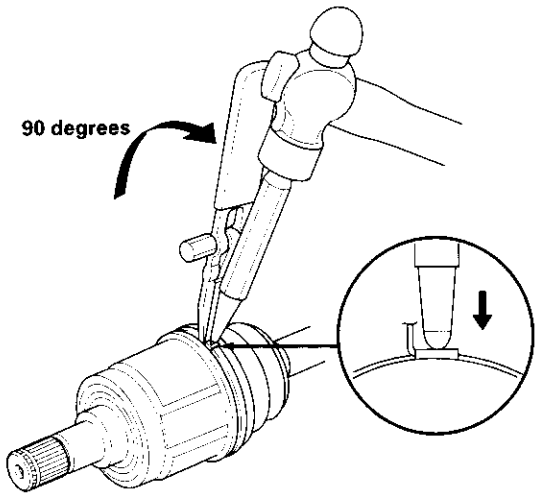


15. Thread the free end of the band through the nose section of the commercially available boot band tool KD-3191 or equivalent (A), and into the slot on the winding mandrel (B).



16. Place a wrench on the winding mandrel of the boot band tool, and tighten the band until the marked spot (C) on the band meets the edge of the clip.

17. 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.



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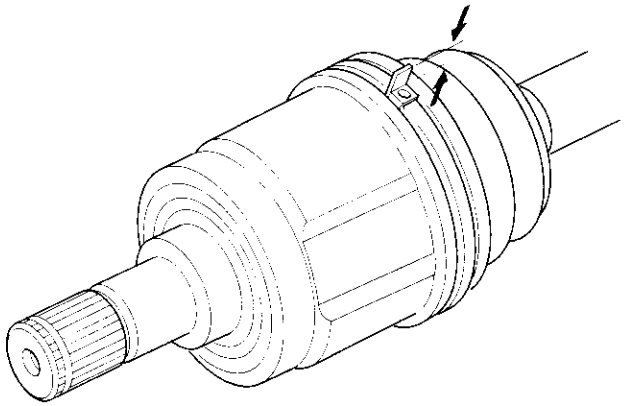
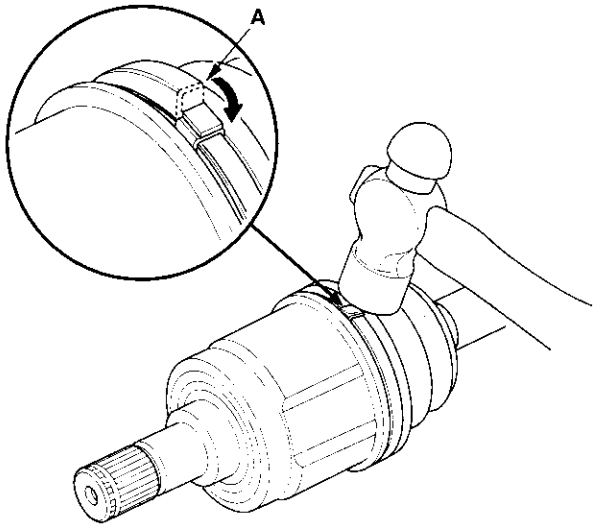
Driveshafts Reassembly (cont'd)

18. 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.



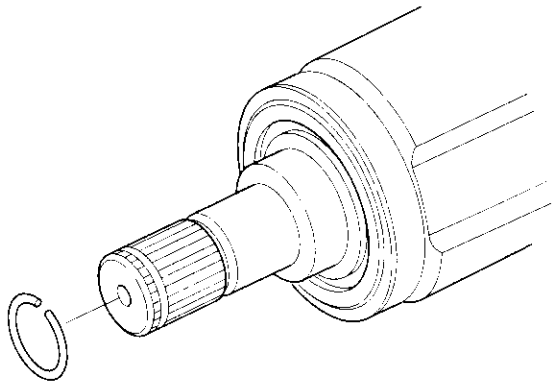
19. Bend the band end (A) by tapping it down with a hammer.

NOTE:
- Make sure the band and clip do not interfere with anything and the band does not move.
- Remove any grease remaining on the surrounding surfaces



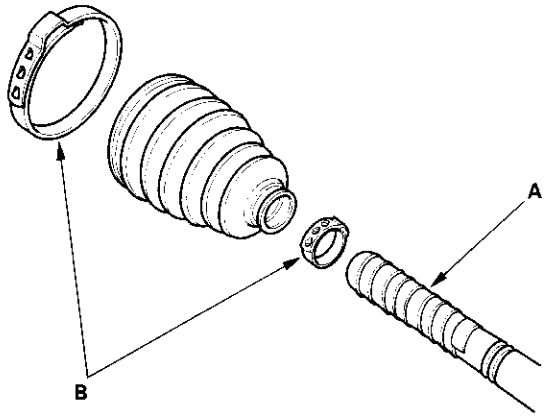
20. Repeat steps 12 through 19 for the band on the other end of the boot.

21. Install the new set ring.



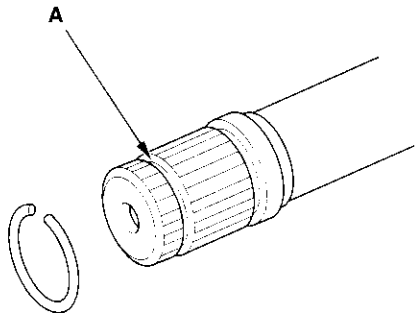
Outboard Joint Side:

1. Wrap the splines with vinyl tape (A) to prevent damage to the outboard boot.

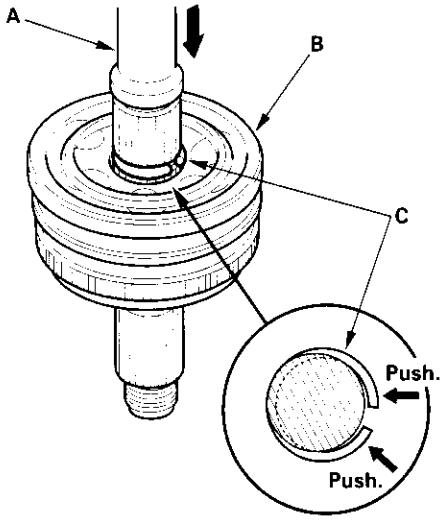


2. Install the new ear clamp bands (B) and outboard boot, then remove the vinyl tape. Be careful not to damage the outboard boot.

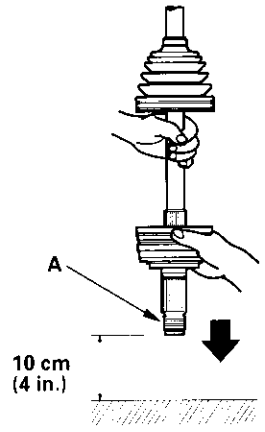
3. Install the new stop ring into the driveshaft groove (A).



4. Insert the driveshaft (A) into the outboard joint (B) until the stop ring (C) is close to the joint.



5. To completely seat the outboard joint, pick up the driveshaft and joint, and drop them from about 10 cm (4 in.) onto a hard surface. 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.



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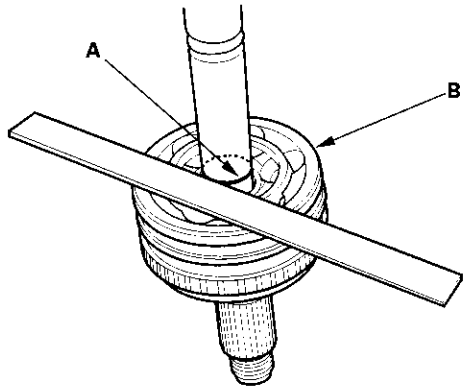
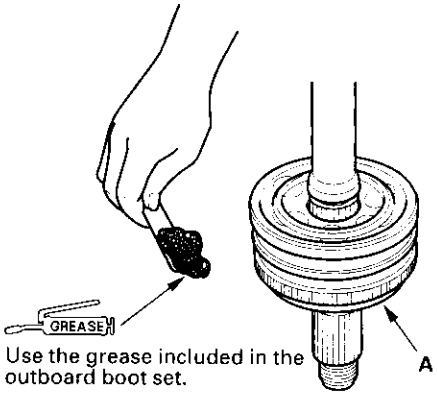
Driveshafts Reassembly (cont'd)

6. Check the alignment of the paint mark (A) with the outboard joint end (B).



7. Pack the outboard joint (A) with the joint grease included in the new joint boot set.

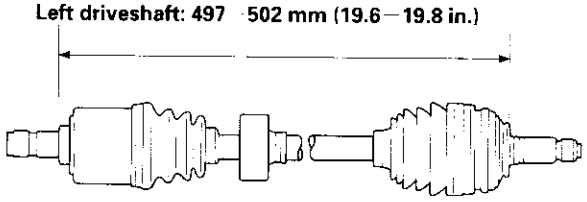
Grease quantity
Outboard joint: 105—115 g (3.7—4.1 oz)



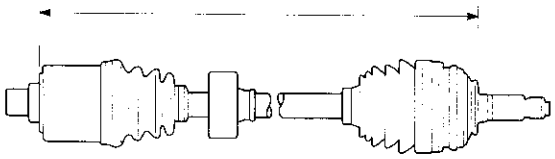
Use the grease included in the outboard boot set.

8. Adjust the length of the driveshafts to the figure below, then adjust the boots to halfway between full compression and full extension. Make sure the ends of the boots seat in the grooves of the driveshaft and joint.

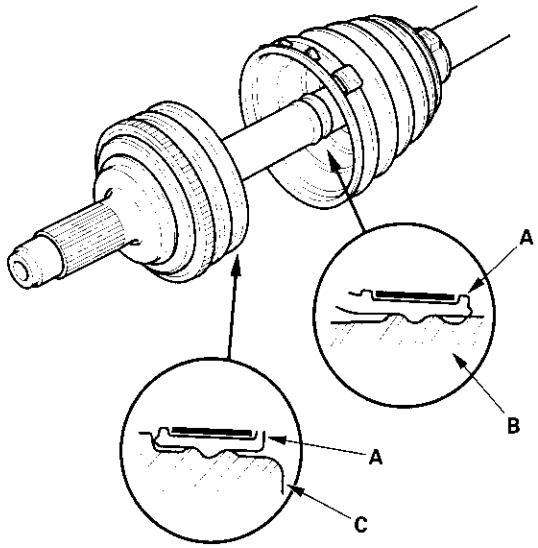
Left driveshaft: 497—502 mm (19.6—19.8 in.)



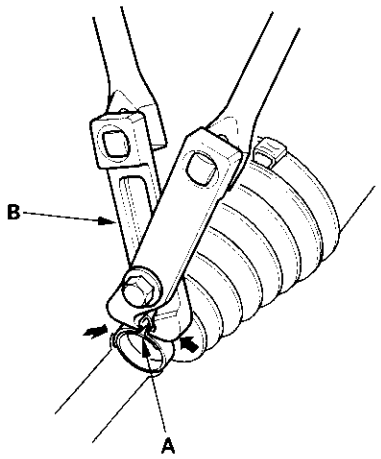
Right driveshaft: 475—480 mm (18.7—18.9 in.)



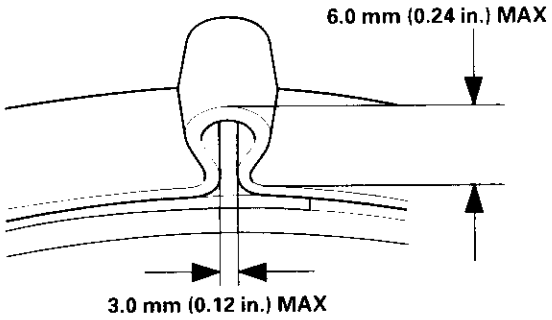
9. Fit the boot (A) ends onto the driveshaft (B) and outboard joint (C).



10. Close the ear portion (A) of the band with a commercially available boot band pincers Kent-Moore J-35910 or equivalent (B).



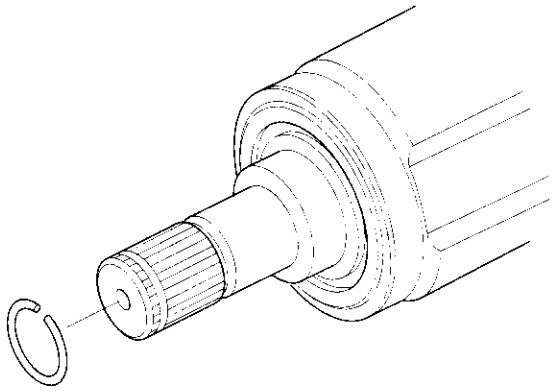
11. Check the clearance between the closed ear portion of the bands. If the clearance is not within the standard, close the ear portion of the bands farther.



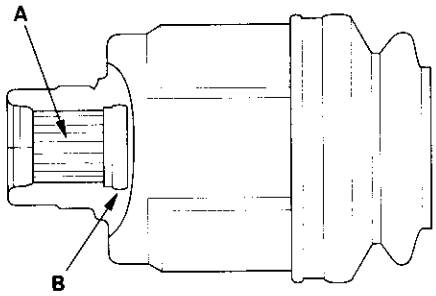
12. Repeat steps 10 and 11 for the band on the other end of the boot.

Driveshafts Installation

1. Install a new set ring onto the set ring groove of the driveshaft (left driveshaft).



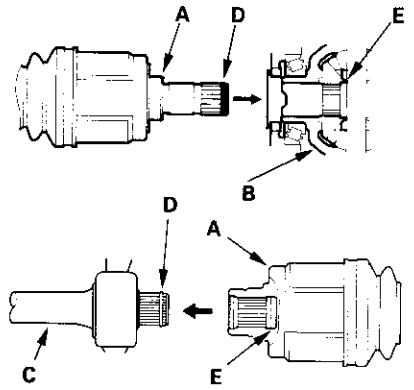
2. Apply 0.5—1.0 g (0.02—0.04 oz) of specified grease to the whole splined surface (A) of the right driveshaft. After applying grease, remove the grease from the splined grooves at intervals of 2—3 splines and from the set ring groove (B) so that air can bleed from the intermediate shaft.



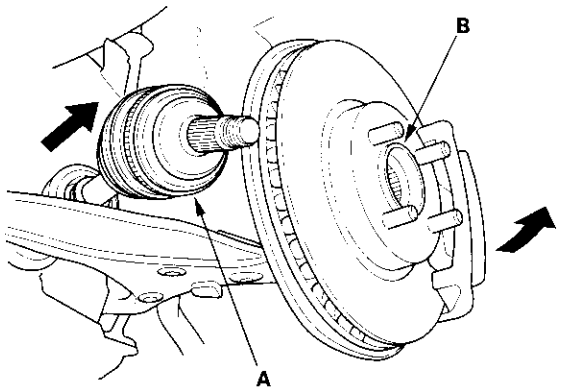
(cont'd)

Driveshafts Installation (cont'd)

3. Clean the areas where the driveshaft contacts the differential thoroughly with solvent, and dry with compressed air. Insert the inboard end (A) of the driveshaft into the differential (B) or intermediate shaft (C) until the set ring (D) locks in the groove (E).

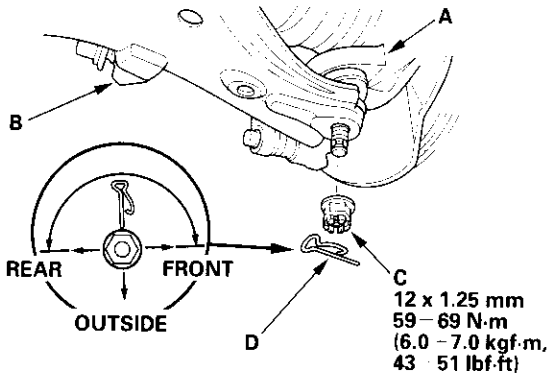


4. Install the outboard joint (A) into the front hub (B).



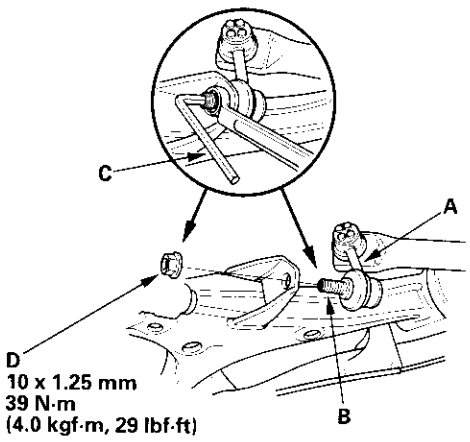
5. Wipe off the grease from the ball joint and lower arm tapered surfaces. Install the knuckle (A) onto the lower arm (B). Be careful not to damage the ball joint boot. Wipe off the grease before tightening the nut at the ball joint. Torque the new castle nut (C) to the lower torque specification, then tighten it only far enough to align the slot with the ball joint pin hole. Do not align the nut by loosening it.

   NOTE: Make sure the ball joint boot is not damage or cracks.

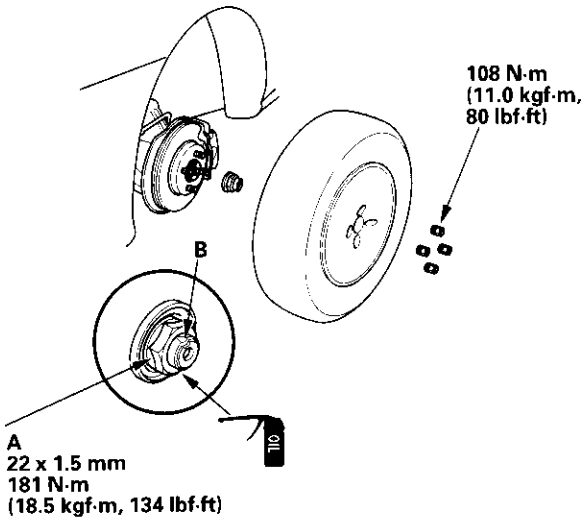


6. Install the new lock pin (D) into the ball joint pin hole from the inside to the outside of the vehicle.

7. Connect the front stabilizer link (A) to the lower arm. Hold the stabilizer link ball joint pin (B) with a hex wrench (C), and tighten the new flange nut (D).



8. Install a new spindle nut (A), then tighten the nut. After tightening, use a drift to stake the spindle nut shoulder (B) against the driveshaft.



9. Clean the mating surfaces of the brake disc and the front wheel, then install the front wheel with the wheel nuts.

10. Turn the front wheel by hand, and make sure the clearance between the driveshaft and circumference parts.

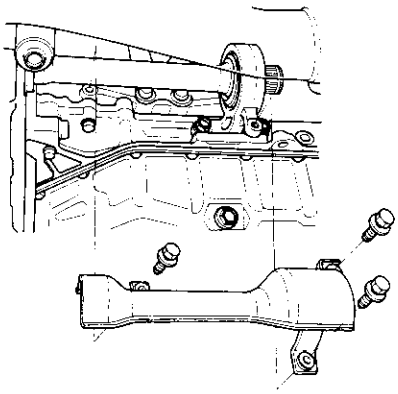
11. Refill the transmission with recommended transmission fluid (see page 13-3).

12. Check the front wheel alignment, and adjust it if necessary (see page 18-4).

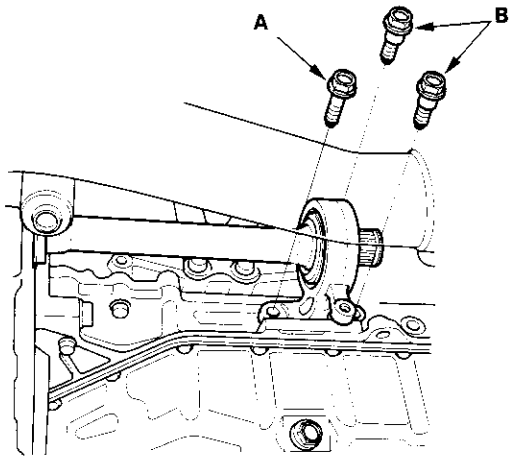
Intermediate Shaft Removal

1. Remove the right driveshaft (see page 16-3).

2. Remove the heat shield.



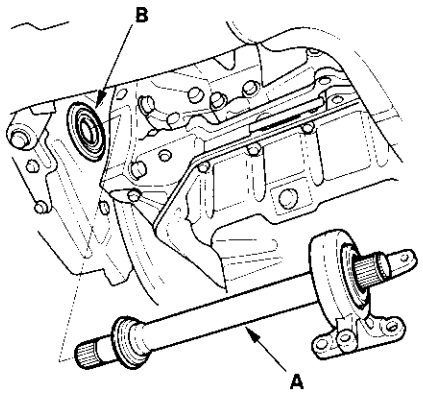
3. Remove the flange bolt (A) and two dowel bolts (B).



(cont'd)

Intermediate Shaft Removal (cont'd)

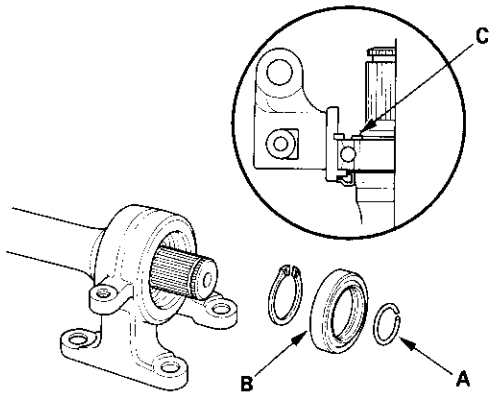
4. Remove the intermediate shaft (A) from the differential. Hold the intermediate shaft horizontal until it is clear of the differential to prevent damage to the differential oil seal (B).



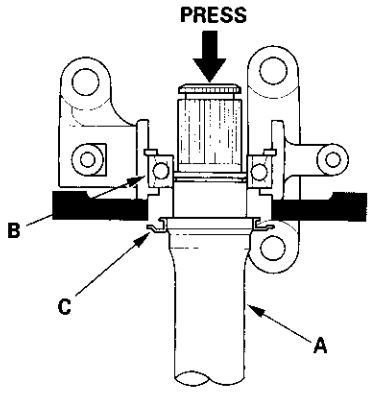
Intermediate Shaft Disassembly

Special Tools Required
- Oil seal driver 07947-SB00100
- Half shaft base 07NAF-SR30101

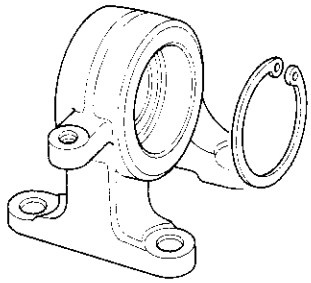
1. Remove the set ring (A), outer seal (B), and external snap ring (C).



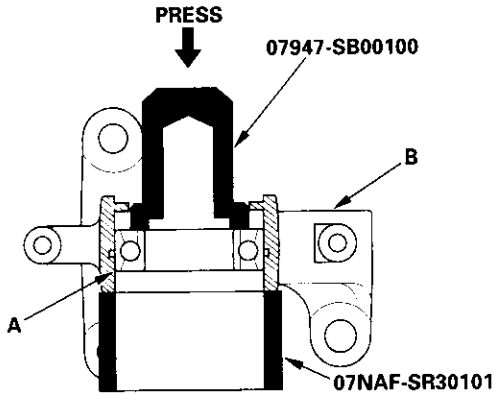
2. Press the intermediate shaft (A) out of the intermediate shaft bearing (B) using a press. Be careful not to damage the metal rings (C) on the intermediate shaft during disassembly.



3. Remove the internal snap ring.

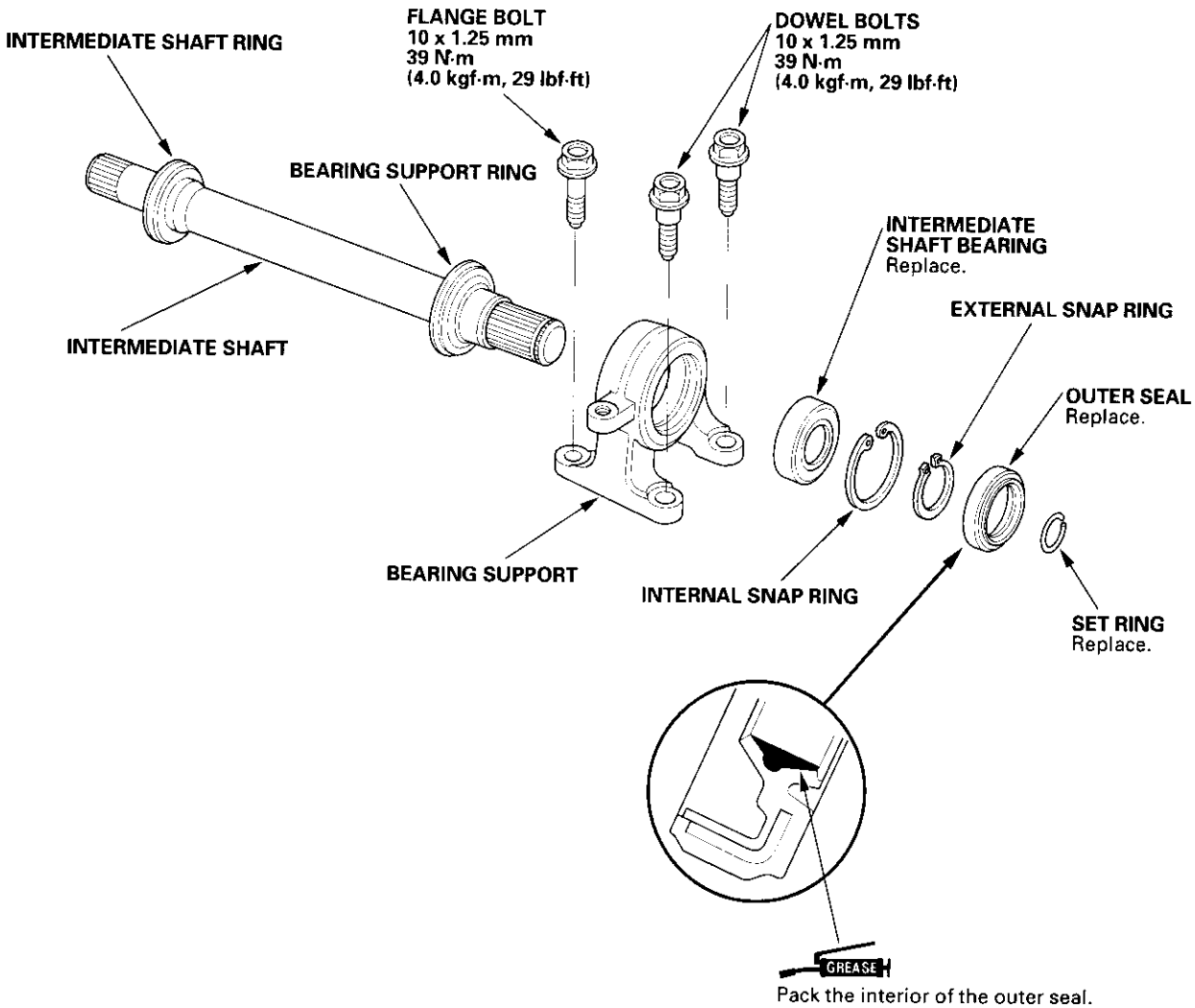


4. Press the intermediate shaft bearing (A) out of the bearing support (B) using the special tools and a press.



Intermediate Shaft Reassembly

Exploded View

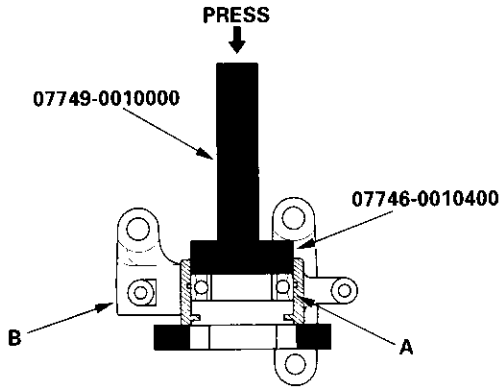


Special Tools Required
- Driver 07749-0010000
- Attachment, 52 x 55 mm 07746-0010400
- Attachment, 35 mm I.D. 07746-0030400
- Oil seal driver 07GAD-PH70201

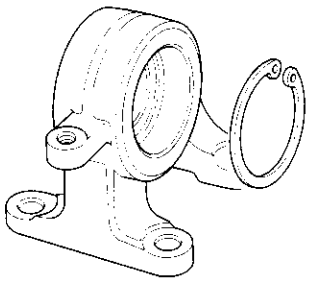
NOTE: Refer to the Exploded View as needed during this procedure.

1. Clean the disassembled parts with solvent, and dry them with compressed air. Do not wash the rubber parts with solvent.

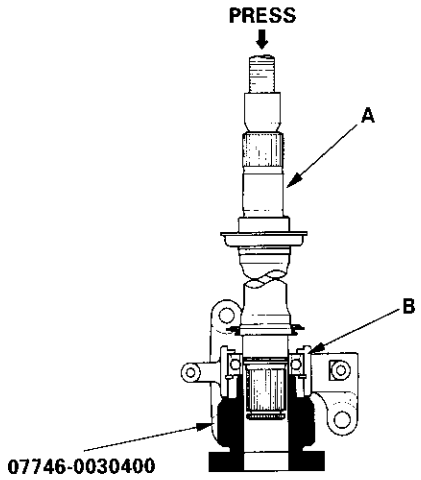
2. Press the intermediate shaft bearing (A) into the bearing support (B) using the special tools and a press.



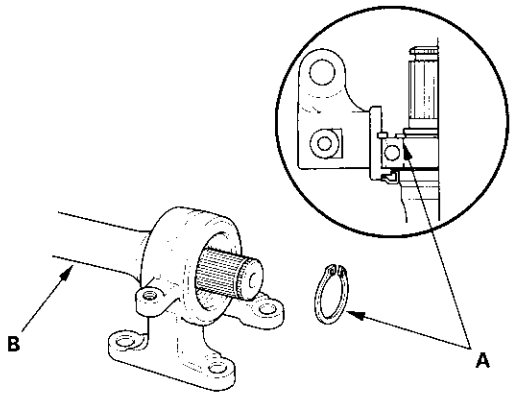
3. Install, then seat the internal snap ring into the groove of the bearing support.



4. Press the intermediate shaft (A) into the shaft bearing (B) using the special tool and a press.



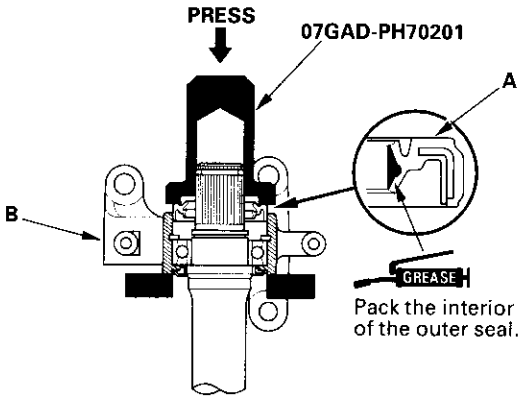
5. Install, then seat the external snap ring (A) into the groove of the intermediate shaft (B).



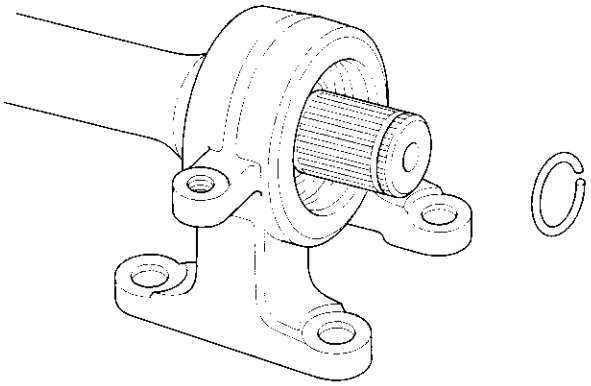
(cont'd)

Intermediate Shaft Reassembly (cont'd)

6. Install the outer seal (A) into the bearing support (B) using the special tool and a press.

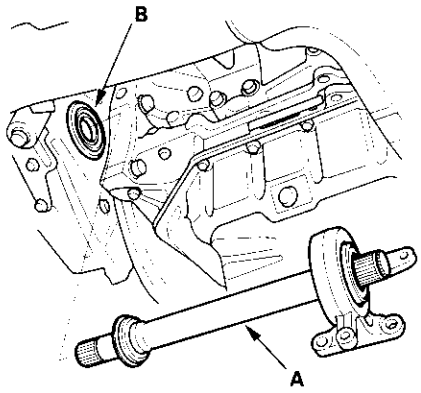


7. Install the set ring.

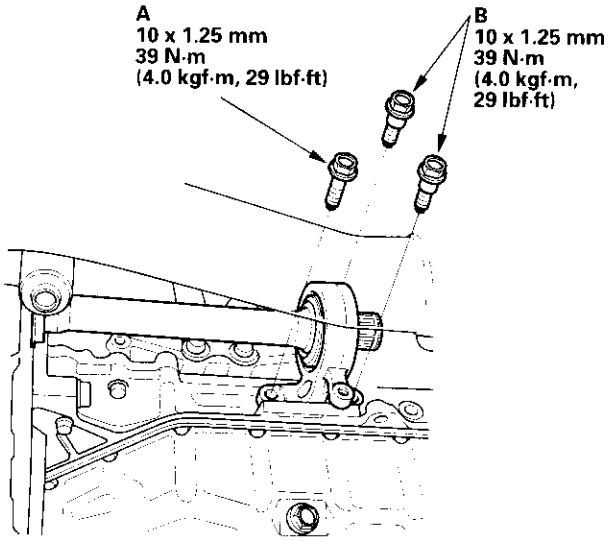


Intermediate Shaft Installation

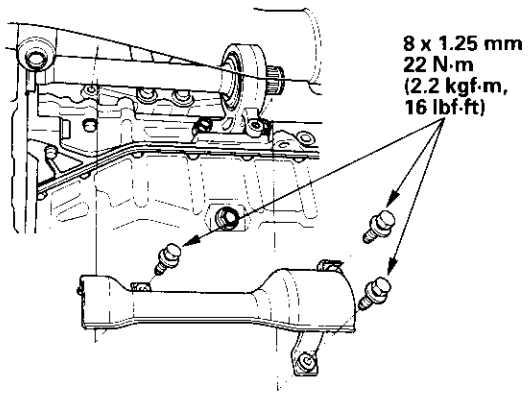
1. Use solvent or brake cleaner to thoroughly clean the areas where the intermediate shaft (A) contacts the transmission (differential), and dry with compressed air. Insert the intermediate shaft assembly into the differential. Hold the intermediate shaft horizontal to prevent damage to the differential oil seal (B).



2. Install the flange bolt (A) and two dowel bolts (B).



3. Install the heat shield, and tighten the three bolts.

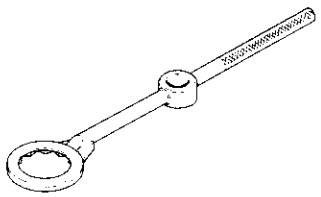


4. Install the right driveshaft (see page 16-17).

Steering

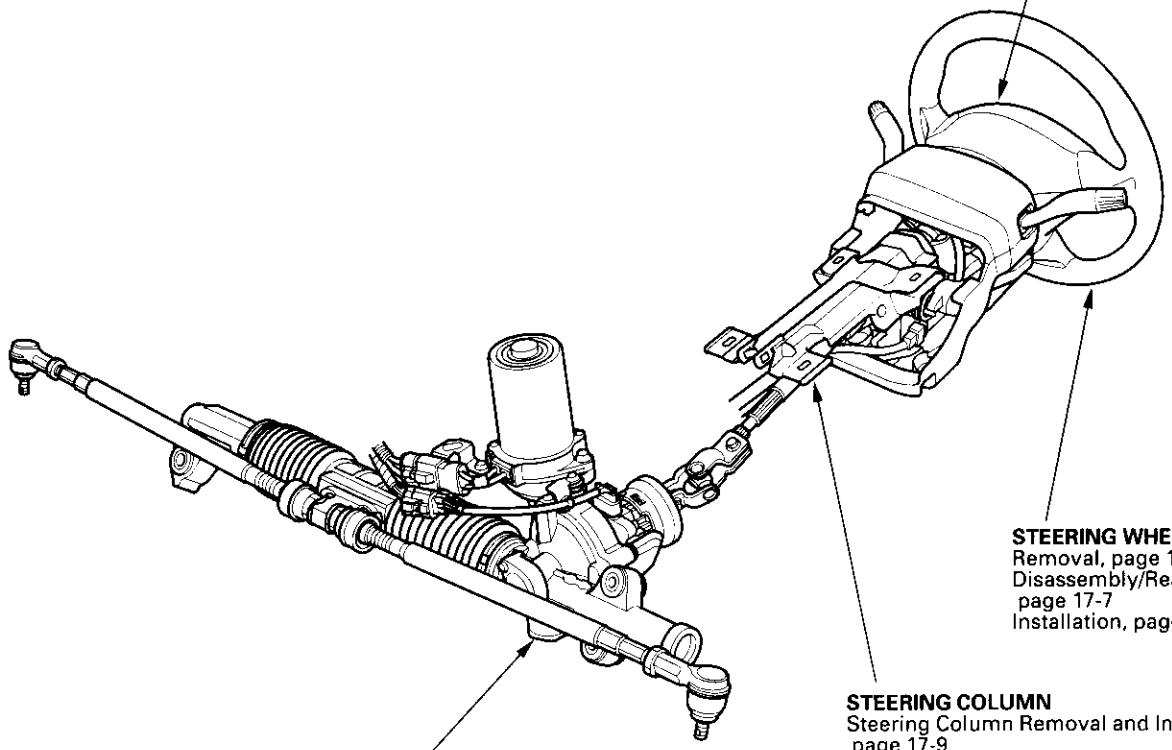
Special Tools

Ref.No.	Tool Number	Description	Qty
①	07MAA-SL00200	Locknut Wrench, 43 mm	1



①

Component Location Index



DRIVER'S AIRBAG ASSEMBLY
Removal/Installation, page 23-113

STEERING WHEEL
Removal, page 17-6
Disassembly/Reassembly, page 17-7
Installation, page 17-8

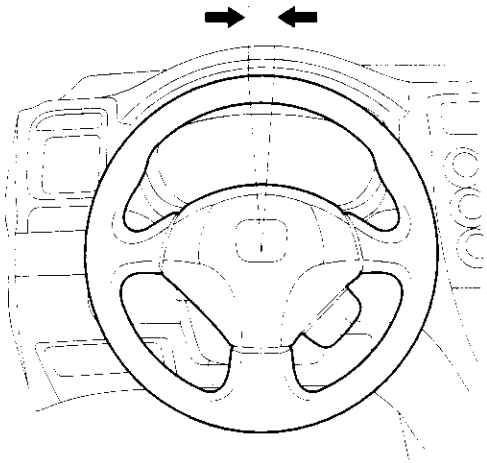
STEERING COLUMN
Steering Column Removal and Installation, page 17-9
Steering Column Inspection, page 17-11
Steering Lock Replacement, page 17-12

STEERING GEARBOX
Rack Guide Adjustment, page 17-13

Steering Wheel Rotational Play Check

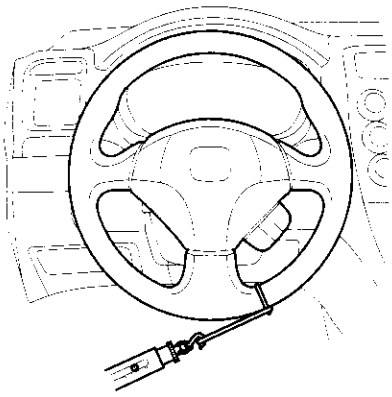
1. Turn the front wheels to the straight ahead position.
2. Measure how far you can turn the steering wheel left and right without moving the front wheels.
   - If the play is within the limit, the gearbox and linkage are OK.
   - If the play exceeds the limit, adjust the rack guide (see page 17-13). If the play is still excessive after rack guide adjustment, inspect the steering linkage and gearbox (see page 17-5).

ROTATIONAL PLAY: 0—10 mm (0—0.39 in.)



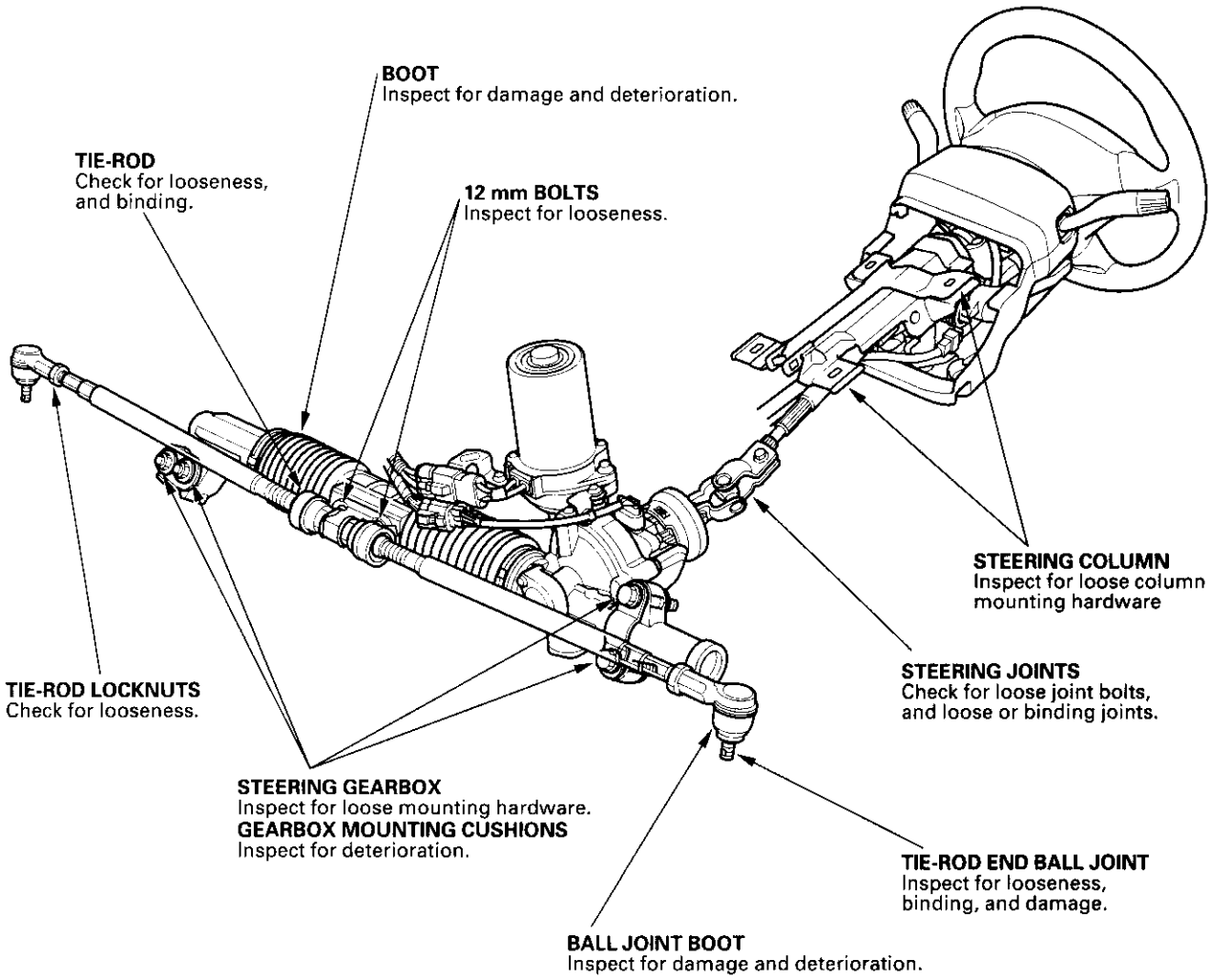
Power Assist Check

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 29 N (3.0 kgf, 6.6 lbf), the power assist is OK. If it reads more, check these items:
   - Front tire pressure
   - Steering linkage (see page 17-5)
   - Rack guide adjustment (see page 17-13)
   - EPS system (see page 17-18)

Steering Linkage and Gearbox Inspection

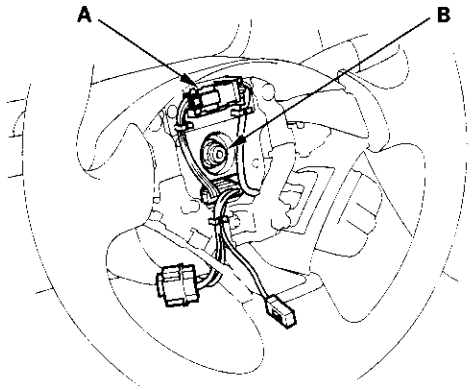


Steering Wheel Removal

SRS components are located in this area. Review the SRS component locations (see page 23-13), and precautions and procedures (see page 23-14) in the SRS section before performing repairs or service.

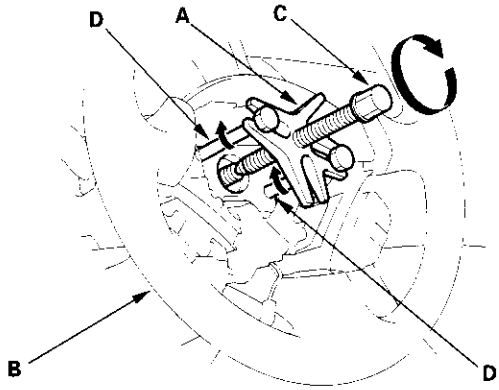
1. Align the front wheels straight ahead, then remove the driver's airbag from the steering wheel (see page 23-113).

2. Disconnect the cruise control set/resume switch connector (A), and loosen the steering wheel nut (B).

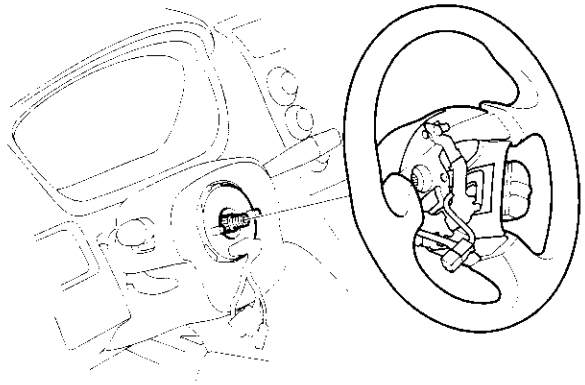


3. Install a commercially available steering wheel puller (A) on the steering wheel (B). Free the steering wheel from the steering column shaft by turning the pressure bolt (C) of the puller.

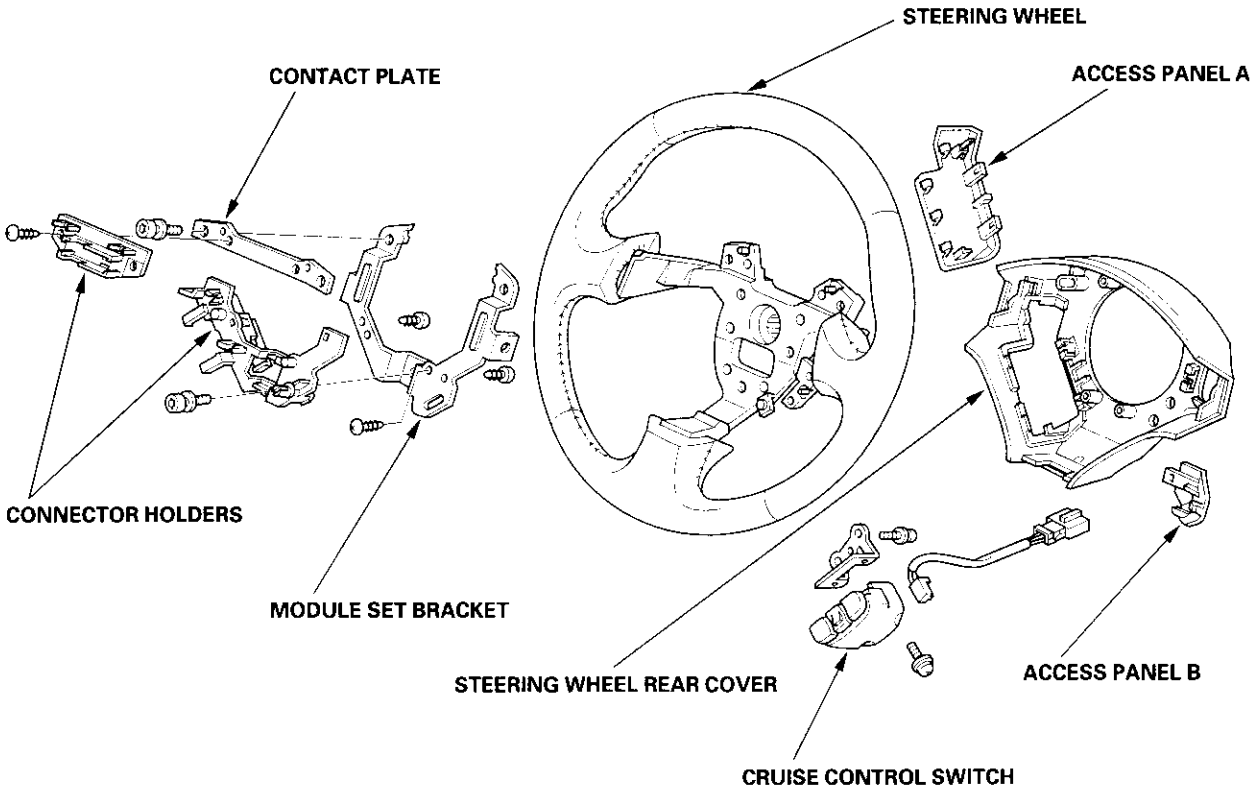
Note these items when removing the steering wheel:
- Do not tap on the steering wheel or the steering column shaft when removing the steering wheel.
- If you thread the puller bolts (D) into the wheel hub more than 5 threads, the bolts will hit the cable reel and damage it. To prevent this, install a pair of jam nuts 5 threads up on each puller bolt.



4. Remove the steering wheel puller, then remove the steering wheel nut and steering wheel from the steering column.

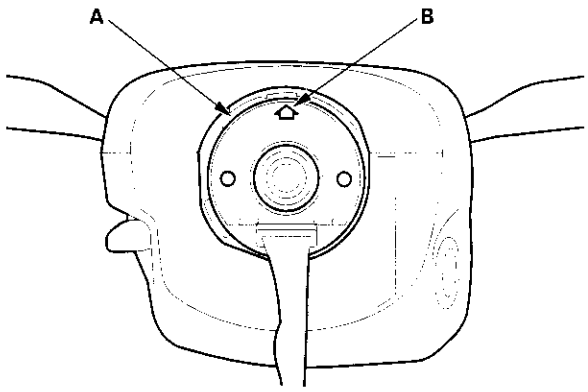


Steering Wheel Disassembly/Reassembly

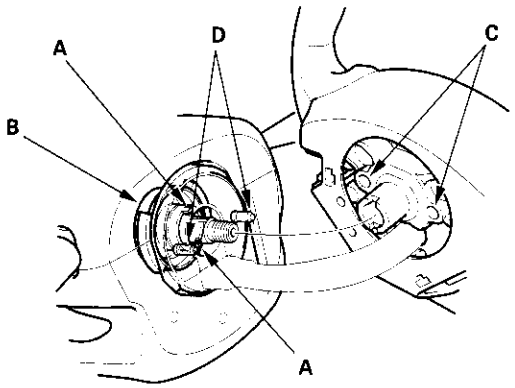


Steering Wheel Installation

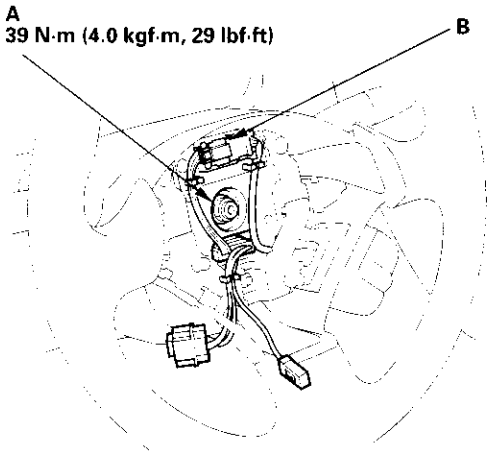
1. Before installing the steering wheel, make sure the front wheels are aligned straight ahead, then center the cable reel (A). Do this by first rotating the cable reel clockwise until it stops. Then rotate it counterclockwise about two and a half turns. The arrow mark (B) on the cable reel label should point straight up.



2. Position the two tabs (A) of the turn signal canceling sleeve (B) as shown. Install the steering wheel onto the steering column shaft, making sure the steering wheel hub (C) engages the pins (D) of the cable reel and tabs of the canceling sleeve. Do not tap on the steering wheel or steering column shaft when installing the steering wheel.



3. Install the steering wheel nut (A), and tighten it to the specified torgue.



4. Connect the cruise control set/resume switch connector (B). Make sure the wire harness is routed and fastened properly.

5. Install the driver's airbag, and confirm that the system is operating properly (see page 23-113).

6. Check the horn, turn signal canceling and cruise control switches for proper operation.

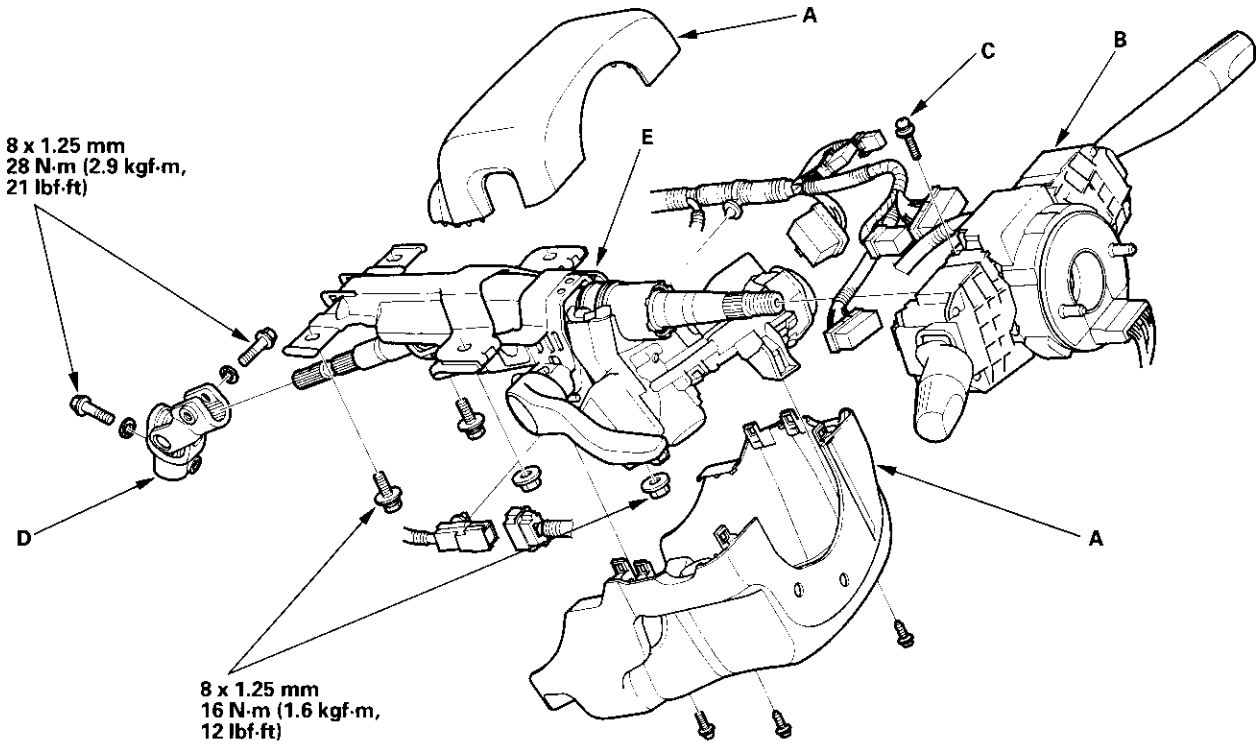
7. Reconnect the battery and do the following:
   - Do the engine control module (ECM) idle learn procedure (see page 11-139).
   - Power window control unit resetting procedure (see page 22-128).
   - Enter the anti-theft cord for the radio, then enter the custmer's radio station presets.
   - Set the clock.

Steering Column Removal and Installation

SRS components are located in this area. Review the SRS component locations (see page 23-13) and precautions and procedures (see page 23-14) in the SRS section before performing repairs or service.

Removal

1. Record the radio station presets, and disconnect the battery.
2. Remove the driver's airbag assembly (see page 23-113) and the steering wheel (see page 17-6).
3. Remove the driver's dashboard lower cover (see page 20-59) and under cover (see page 20-60).
4. Remove the column covers (A).



5. Disconnect the wire harness connectors from the combination switch assembly (B).
6. Remove the combination switch assembly from the steering column shaft by removing the screw (C) on the top of the combination switch.
7. Disconnect the connectors from the ignition switch, and release the wire harness clips from the steering column.
8. Disconnect the steering joint (D), and remove it from the column shaft.
9. Remove the steering column (E) by removing the attaching nuts and bolts.

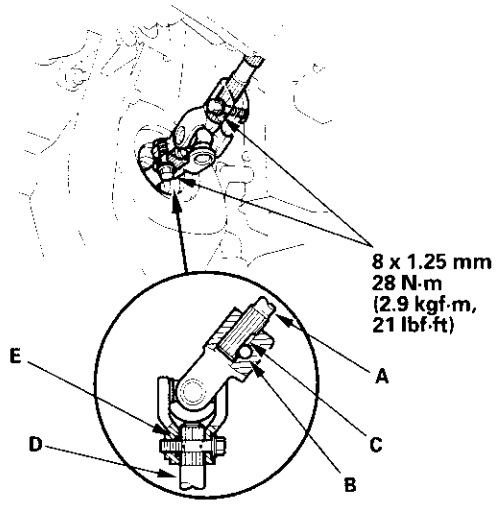
(cont'd)

Steering Column Removal and Installation (cont'd)

Installation

1. Install the steering column, and make sure the wires are not caught or pinched by any parts.

2. Insert the upper end of the steering joint onto the steering shaft (A) (line up the bolt hole (B) with the flat portion (C) on the shaft).



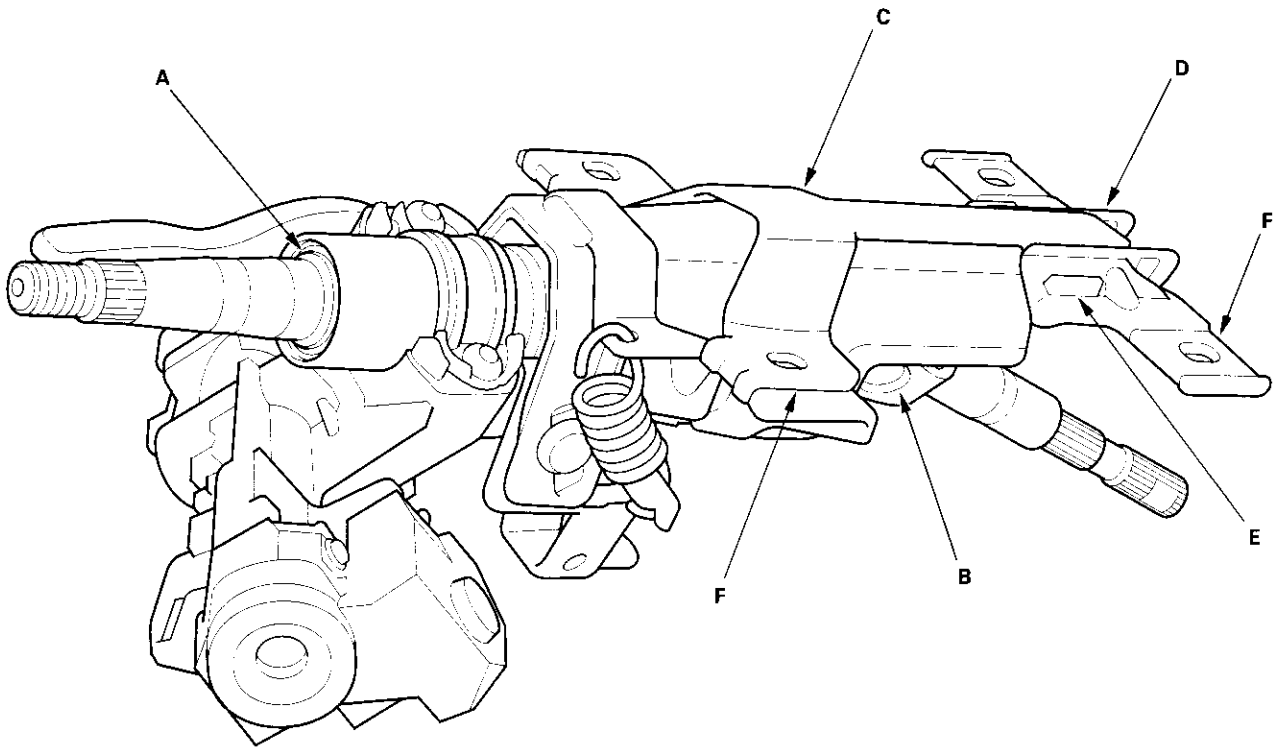
3. Slip the lower end of the steering joint onto the pinion shaft (D) (line up the bolt hole with the groove (E) around the shaft), and loosely install the lower joint bolt. Be sure that the lower joint bolt is securely in the groove in the pinion shaft.

4. Pull on the steering joint to make sure that the steering joint is fully seated. Then install the upper joint bolt, and tighten it to the specified torque. Tighten the lower joint bolt to the specified torque.

5. Finish the installation, and note these items:
   - Make sure the wire harness is routed and fastened properly.
   - Make sure the connectors are properly connected.
   - Reinstall the steering wheel (see page 17-8).
   - Reconnect the battery.
     - Do the power window control unit reset procedure (see page 22-128).
     - Enter the anti-theft code for the radio, then enter the custmer's radio station presets.
     - Set the clock.
   - Verify horn, turn signal switch, and cruise control switch operation.
   - Check wheel alignment, if necessary (see page 18-4).
   - Do the engine control module (ECM) idle learn procedure (see page 11-139).

Steering Column Inspection

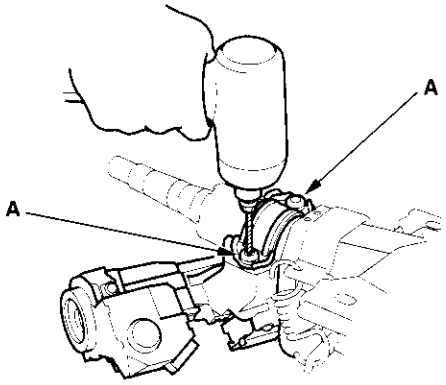
- Check the steering column ball bearing (A) and the steering joint bearings (B) for play and proper movement. If any bearing is noisy or has excessive play, replace the steering column as an assembly.
- Check the absorbing plates (C), absorbing plate guides (D), stop (E), and coating plates (F) for distortion and breakage. If there is distortion or breakage, replace the steering column as an assembly.



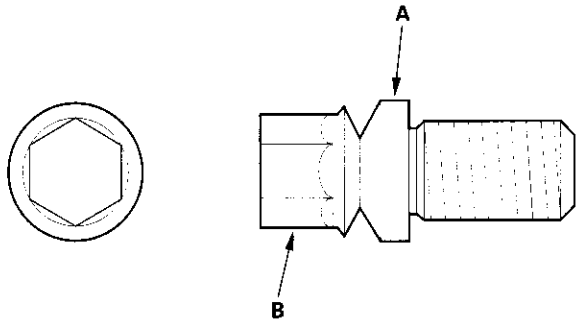
Steering Lock Replacement

NOTE: Do not try to re-key a replacement steering lock. If necessary, re-key the other locks.

1. Remove the steering column (see page 17-9).
2. Center punch each of the two shear bolts (A), and drill their heads off with a 5 mm (3/16 in.) drill bit. Be careful not to damage the switch body when removing the shear bolts.



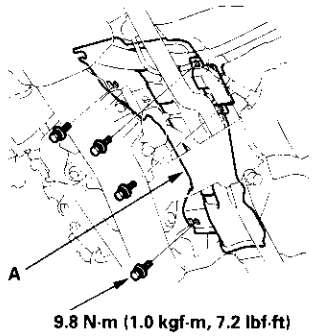
3. Remove the shear bolts from the switch body.
4. Install the switch body without the key inserted.
5. Loosely tighten the new shear bolts.
6. Insert the ignition key, and check for proper operation of the steering wheel lock and that the ignition key turns freely.
7. Tighten the shear bolts (A) until the hex heads (B) twist off.



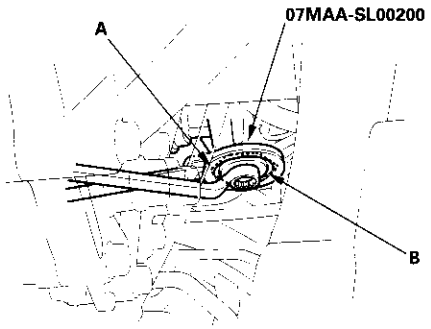
Rack Guide Adjustment

Special Tool Required
Locknut wrench, 43 mm 07MAA-SL00200

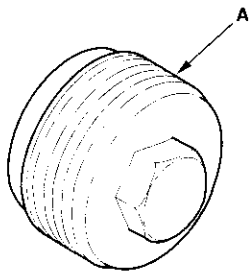
1. Set the wheels in the straight ahead position.
2. Remove the heat shield (A).



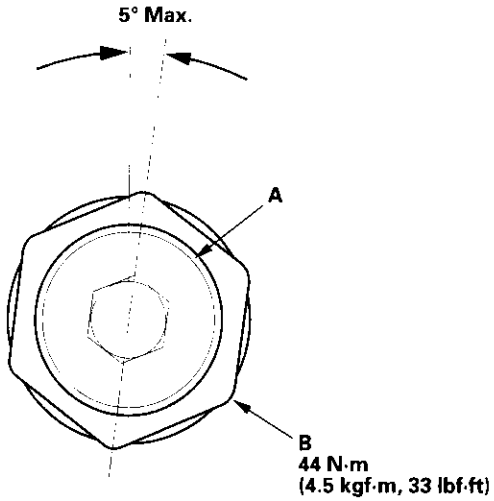
3. Remove the transmission mount bracket (see step 32 on page 13-8).
4. Loosen the rack guide screw locknut (A) with the special tool, then remove the rack guide screw (B).



5. Remove the old sealant from rack guide screw, and apply new sealant to the middle of the threads (A). Loosely install the rack guide screw on the steering gearbox.



6. Tighten the rack guide screw (A) to 25 N·m (2.5 kgf·m, 18 lbf·ft), then loosen it.



7. Retighten the rack guide screw to 6 N·m (0.6 kgf·m, 4 lbf·ft), then back it off to the specified angle.

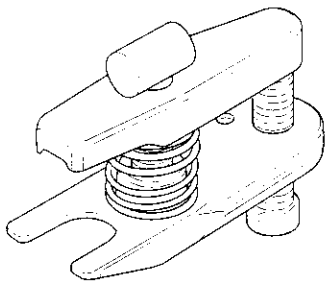
   Specified Return Angle: 5° Max.

8. Hold the rack guide screw stationary with a wrench, and tighten the locknut by hand until it's fully seated.
9. Install the special tool on the locknut (B), and hold the rack guide screw (A) stationary with a wrench. Tighten the locknut an additional 30° with the special tool.
10. Reinstall the transmission mount bracket and heat shield.
11. Check for unusual steering effort through the complete turning travel.
12. Check the steering wheel rotation play (see page 17-4) and the power assist (see page 17-4).

Electrical Power Steering (EPS)

Special Tools

Ref.No.	Tool Number	Description	Qty
①	07MAC-SL00200	Ball Joint Remover, 28 mm	1
②	07QAD-P0A0100	Attachment, 42 mm	1
③	07ZAA-S5A0100	Locknut Wrench	1



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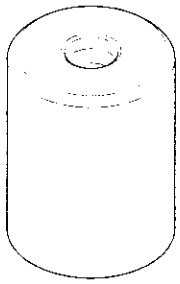

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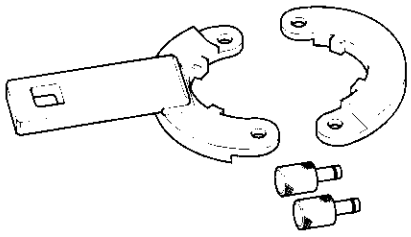

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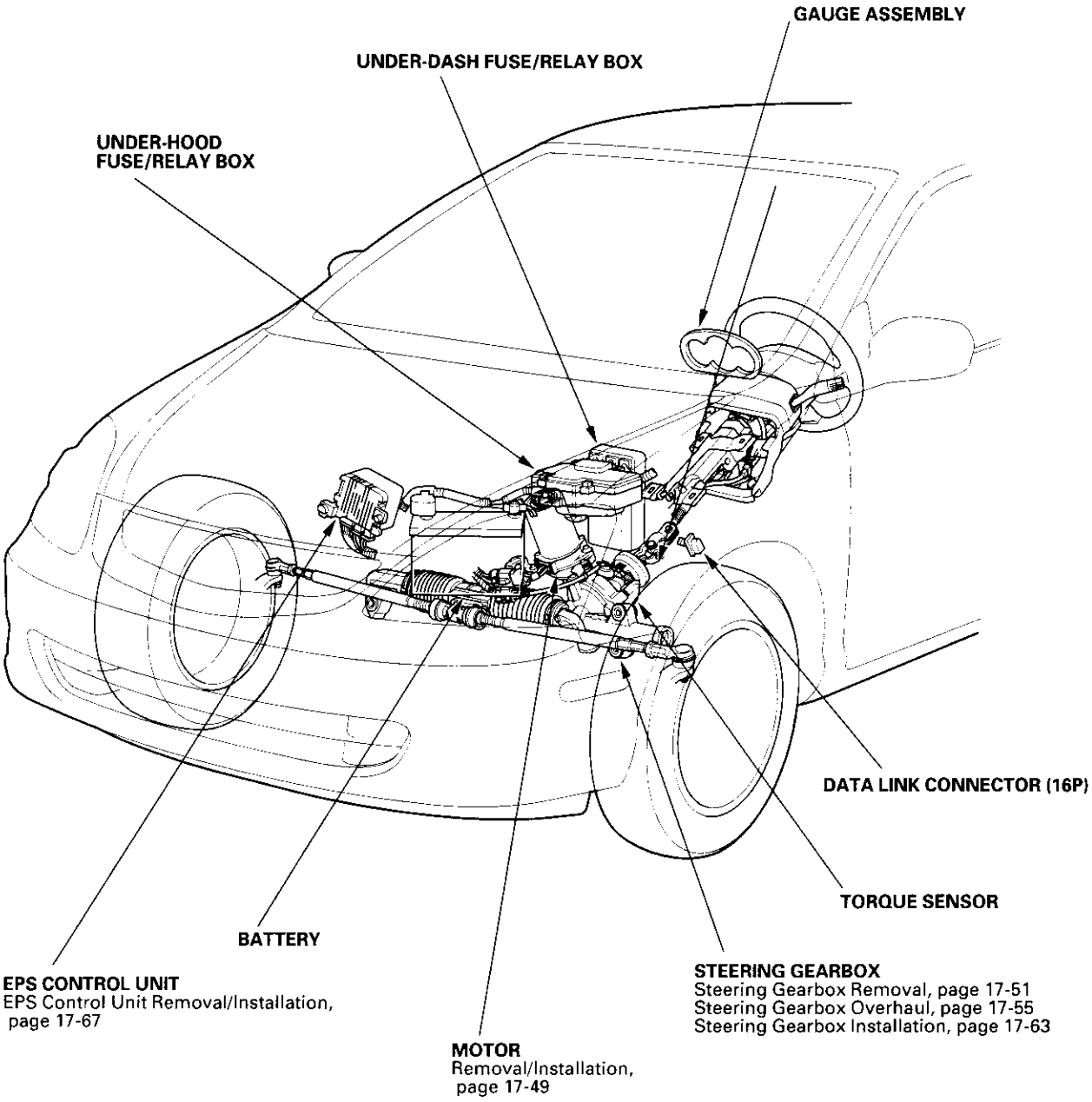
Component Location Index



General Troubleshooting Information

EPS Indicator

Under normal conditions, the EPS indicator comes on when the ignition switch is turned to the ON (II) position, then goes off after the engine is started. This indicates that the bulb and its circuit are operating correctly.
If there is any trouble in the system after the engine is started, the EPS indicator will stay on, and the power assist is turned off.

When EPS indicator light 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 12, 16, 17, 18 or 67 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 OFF, 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:

Condition 1:
- The vehicle was traveling at least 12.4 mph (20 km/h), then
- A rapid change in vehicle speed was detected, then
- The vehicle (or the vehicle speed sensor signal) stopped for at least 5 seconds
- The engine speed was still 1,640 rpm or higher for at least 5 seconds

Condition 2:
After the vehicle (or the vehicle speed sensor signal) has stopped for at least 10 seconds, yet the engine speed was still 1,640 rpm or higher for at least 20 seconds.

Condition 3:
When the engine speed is 280 rpm or less, and the vehicle is traveling at a speed of 6.2 mph (10 km/h) or more for 3 seconds.

To determine the actual cause of the problem, question the customer about the conditions during which the problem occured, 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 DTCs are indicated repeatedly until the ignition switch is turned OFF.
- If the DTC is not memorized, the EPS indicator blinks.
- The DTCs are memorized in the EEPROM (non-volatile memory) therefore the memorized DTCs cannot be erased by disconnecting the battery. Perform the specified procedures to clear DTCs.

Self-diagnosis

Self-diagnosis can be classified into two categories:
- Initial diagnosis: performed right after the engine starts and until the EPS indicator goes off.
- Regular diagnosis: performed right after the initial diagnosis until the ignition switch is turned OFF.

The EPS control unit performs the following 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 begins.

   NOTE:
   - When DTC 23 (a problem with the circuit for engine speed signal) is detected, the power assist will return to normal when the vehicle speed is 0.62 mph (1 km/h) or above.
   - For DTCs 22, 23, 64, or 66 the EPS indicator goes off automatically when the system returns to normal. For all other codes, the EPS indicator goes off when the system is OK after the ignition switch is turned from OFF to ON (II).

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 motor to heat up. Because this heat adversely affects the system, the control unit monitors the electric current of the motor.

When the control unit detects heat build-up in the motor, it reduces the electric current to the 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 off, and the motor cools, the control unit will restore the power assist gradually until it's fully restored (after approximately 15 minutes maximum).

How to Troubleshoot EPS DTCs

The troubleshooting flowchart procedures assume that the cause of the problem is still present and the EPS indicator is still on. Following the flowchart when the EPS indicator does not come on can result in incorrect diagnosis.
The connector illustrations show the female terminal connectors with a single outline and the male terminal connectors with a double outline.

1. Question the customer about the conditions when the problem occured, 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.

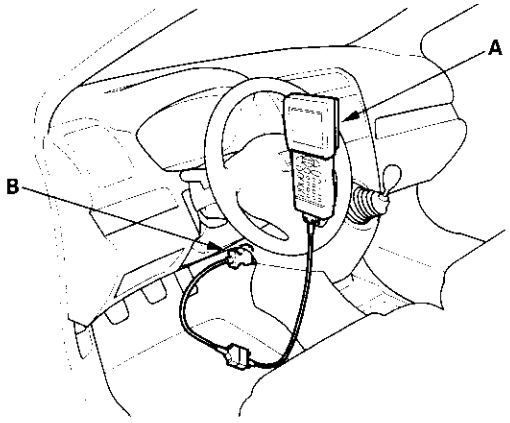
2. When the EPS indicator does not come on during the test drive, but troubleshooting is done based on the DTC, check for loose connectors, poor terminal contact, etc in the affected circuit, before you start troubleshooting.

3. After troubleshooting, clear the DTC and test-drive the vehicle. Be sure the EPS indicator does not come on.

How to Retrieve EPS DTCs

Honda PGM Tester Method:

1. With the ignition switch OFF, connect the Honda PGM Tester (A) to the 16P data link connector (DLC) (B) located under the dash on the driver's side of the vehicle.

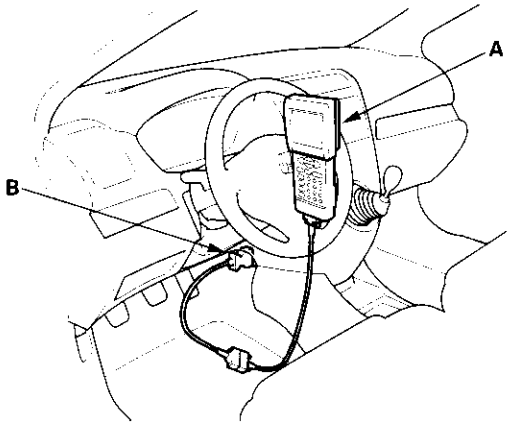


2. Turn the ignition ON (II), and follow the prompts on the PGM Tester to display the DTC(s) on the screen. After determining the DTC, refer to the DTC Troubleshooting Index.

   NOTE: See the Honda PGM Tester user's manual for specific instructions.

Service Check Signal Circuit Method:

1. With the ignition switch OFF, connect the Honda PGM Tester (A) to the 16P data link connector (DLC) (B) located under the dash on the driver's side of the vehicle.



2. Short the SCS circuit to body ground using the Honda PGM Tester.

3. Turn the ignition switch ON (II).

4. Record the DTC.

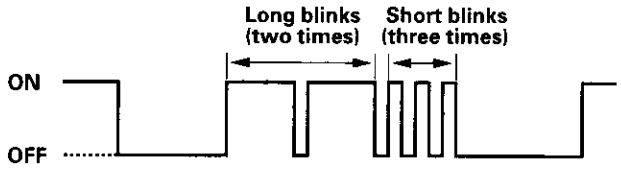
(cont'd)

General Troubleshooting Information (cont'd)

5. The blinking frequency indicates the DTC. DTCs 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 DTC. After determining the DTC, refer to the DTC Troubleshooting Index.

   The system will not indicate the DTC unless these conditions are met:
   - Set the front wheels in the straight ahead driving position.
   - The ignition switch is turned ON (II).
   - The engine is stopped.
   - The SCS circuit is shorted to body ground before the ignition switch is turned ON (II).

Example of DTC 23



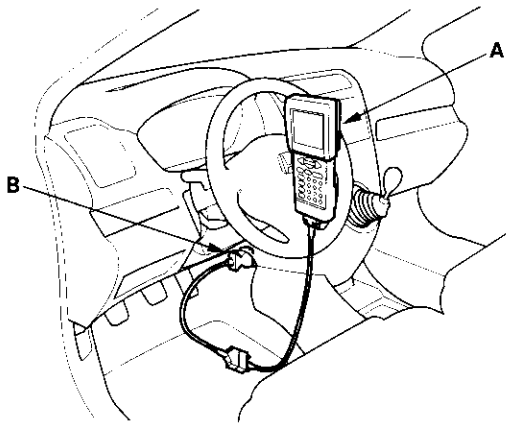
6. Turn the ignition switch OFF.

7. Disconnect the Honda PGM Tester from the DLC.

How to Clear EPS DTCs

Honda PGM Tester Method:

1. With the ignition switch OFF, connect the Honda PGM Tester (A) to the 16P data link connector (DLC) (B) located under the dash on the driver's side of the vehicle.



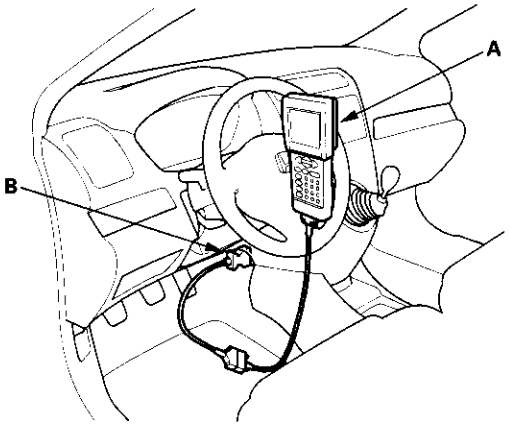
2. Turn the ignition switch ON (II), and clear the DTC(s) by following the screen prompts on the PGM Tester.

   NOTE: See the Honda PGM Tester user's manual for specific instructions.

Service Check Signal Circuit Method:

NOTE: Use this procedure when the PGM Tester software does not match the year/model vehicle you are working on.

1. With the ignition switch OFF, connect the Honda PGM Tester (A) to the 16P data link connector (DLC) (B) located under the dash on the driver's side of the vehicle.



2. With the vehicle on the ground, set the front wheels in the straight ahead driving position.

3. Short the SCS circuit to body ground using the Honda PGM Tester.

4. Turn the ignition switch ON (II). The EPS indicator comes on for about 6 seconds. Within 4 seconds of turning the switch ON, while the EPS indicator is on, turn the steering wheel 45 degrees to the left from the straight ahead driving position, and hold the steering wheel in that position until the EPS indicator goes off.

5. Within 4 seconds after the EPS indicator goes off, return the steering wheel to the straight ahead driving position and release the steering wheel. The EPS indicator comes on again 4 seconds after releasing the steering wheel.

6. Within 4 seconds after the EPS indicator comes on, turn the steering wheel 45 degrees to the left again and hold it in that position.
   The EPS indicator goes off after 4 seconds.

7. Within 4 seconds after the EPS indicator goes off, return the steering wheel to the straight ahead driving position again and release the steering wheel. The EPS indicator blinks twice 4 seconds after releasing the steering wheel, indicating that the DTC was erased.

   NOTE: If the EPS indicator does not blink twice, an error was made in the procedure and the DTC was not erased. Turn the ignition switch OFF, and repeat the operation from step 3.

8. Turn the ignition switch OFF after the EPS indicator blinks twice.

9. Disconnect the Honda PGM Tester from the DLC.

10. Perform the DTC code output operation, and be sure that the code has been erased.

DTC Troubleshooting Index

DTC	Detection Item	Note
DTC: 12	A problem with voltage for torque sensor T/SIG	(see page 17-28)
DTC: 16	A problem with average of voltage for torque sensor VT3 and VT6	(see page 17-29)
DTC: 17	A problem with the voltage for torque sensor 12 V power source Vcc 1	(see page 17-31)
DTC: 18	A problem with the voltage for torque sensor 5 V power source Vcc 2	(see page 17-31)
DTC: 22	A problem with the average for vehicle speed and engine speed	(see page 17-33)
	Excessive change of the vehicle speed sensor signal	(see page 17-33)
DTC: 23	A problem with the engine speed signal circuit	(see page 17-33)
DTC: 37	A problem with the circuit for input motor voltage in the EPS control unit	(see page 17-35)
DTC: 41	A problem with the motor voltage	(see page 17-36)
DTC: 42	A problem with the motor driven current (open circuit or short to ground)	(see page 17-38)
DTC: 43	A problem with the motor driven current (short to power)	(see page 17-41)
DTC: 45	A problem with the motor driven current (open circuit or short to ground)	(see page 17-38)
DTC: 47	A problem with the motor relay in the EPS control unit	(see page 17-42)
DTC: 50	A problem with the CPU in the EPS control unit	(see page 17-43)
DTC: 51	A problem with EEPROM in the EPS control unit	(see page 17-43)
DTC: 62	Fail-safe relay stuck ON	(see page 17-44)
DTC: 64	A problem with low battery voltage	(see page 17-44)
	Fail-safe relay contact failure	(see page 17-44)
DTC: 66	A problem with the motor driven voltage	(see page 17-45)
DTC: 67	A problem with the torque sensor I/F circuit	(see page 17-45)
DTC: 68	A problem with the interlock circuit (torque)	(see page 17-45)
DTC: 69	A problem with the interlock circuit (current)	(see page 17-46)

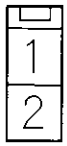
Symptom Troubleshooting Index

Symptom	Diagnostic procedure	Also check for
EPS indicator does not come on	EPS Indicator Circuit Troubleshooting (see page 17-47)	
EPS indicator does not go off and no DTC is stored	EPS Indicator Circuit Troubleshooting (see page 17-47)	
EPS indicator does not stay on, no DTC is stored, and there is no power assist	1. Check the motor wires between the EPS control unit and the motor for a short to ground. Repair as needed. 2. If the motor wires are OK, replace the steering gearbox (short in the motor).	

System Description

EPS Control Unit Inputs and Outputs at Connector A (2P)

EPS CONTROL UNIT CONNECTOR A (2P)

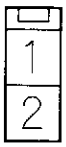


Wire side of female terminals

Terminal number	Wire color	Terminal sign (Terminal name)	Description	Measurement		
				Terminals	Conditions Ignition switch ON (II)	Voltage
1	WHT/BLU	+ BAT (Plus battery)	Power source for the actuator motor	1-Ground	Constant	Battery voltage
2	BLK	PG (Power ground)	Ground for the actuator motor	2-Ground		

EPS Control Unit Inputs and Outputs at Connector B (2P)

EPS CONTROL UNIT CONNECTOR B (2P)

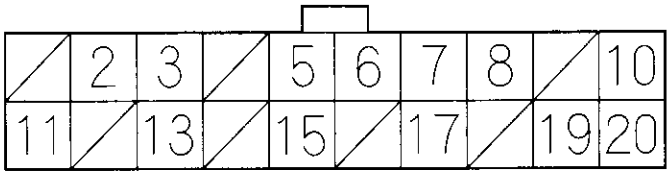


Wire side of female terminals

Terminal number	Wire color	Terminal sign (Terminal name)	Description	Measurement		
				Terminals	Conditions Ignition switch ON (II)	Voltage
1	RED	M1 (Motor 1)	Drives the actuator motor	1-Ground		
2	GRN	M2 (Motor 2)	Drives the actuator motor	2-Ground		

EPS Control Unit Inputs and Outputs at Connector C (20P)

EPS CONTROL UNIT CONNECTOR C (20P)

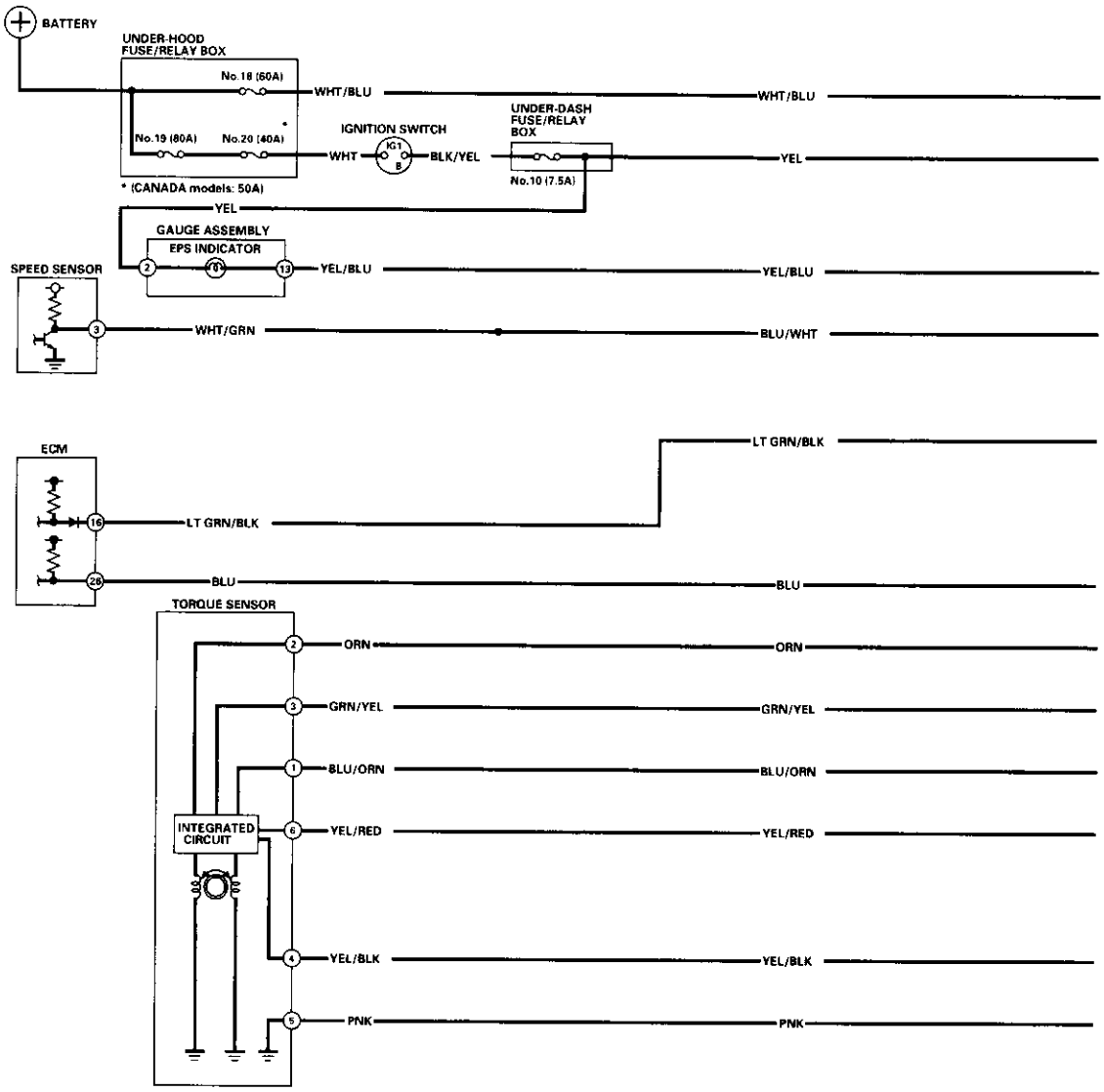


Wire side of female terminals

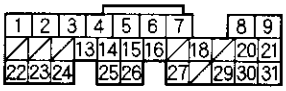
Terminal number	Wire color	Terminal sign (Terminal name)	Description	Measurement		
				Terminals	Conditions (Ignition switch ON (II))	Voltage
2	PNK	T/S GND (Torque sensor ground)	Ground for the torque sensor			
3	ORN	VCC1 (Voltage common 1)	Power source for torque sensor (12 V)	3-Ground	Start the engine	Battery voltage
					Ignition switch OFF	0 V
5	YEL/RED	VT6 (Voltage torque 6)	Detects torque sensor signal	5-Ground	Start the engine and turn the steering wheel	About 5—0 V
6	YEL/BLU	WLP (Warning lamp)	Drives the EPS indicator light	6-Ground	EPS indicator ON	0 V
					EPS indicator OFF	Battery voltage
7	BLU/WHT	VSP (Vehicle speed pulse)	Detects the vehicle speed input signal for the speed sensor or the ECM (4 pulse/Rev).	7-Ground	Raise the vehicle off the ground and spin the front wheel	Alternating voltage about 0 V—5 V—0 V—5 V
8	BRN	SCS (Service check signal)	Detects service check connector signal	8-Ground	SCS not grounded	Battery voltage
10	YEL	IG1 (Ignition 1)	Power source for activating the system	10-Ground	Ignition switch ON (II)	Battery voltage
					Ignition switch OFF	0 V
11	GRN/YEL	VCC2 (Voltage common 2)	Drives the torque sensor (5 V)	11-Ground	Start the engine	About 5 V
					Ignition switch OFF	0 V
13	BLU/ORN	VT3 (Voltage torque 3)	Detects torque sensor signal	13-Ground	Start the engine and turn the steering wheel	About 5—0 V
15	YEL/BLK	T/SIG (Torque sensor F/S signal)	Detects torque sensor signal	15-Ground	Start the engine	Momentarily 5 V
17	LT GRN/BLK	PSW (Power steering switch)	Provides power steering switch signal	17-Ground	Start the engine and turn the steering wheel	0—12 V
19	BLU	NEP (Engine pulse)	Detects the engine pulse	19-Ground	Start the engine, and let it idle	About 0—12 V
20	GRY	DIAG-H (Diagnosis-H)	Communications with Honda PGM Tester	20-Ground	PGM Tester not connected	5 V

EPS Components

Circuit Diagram

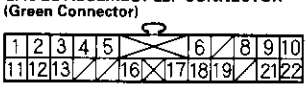


ECM 31P CONNECTOR (E)

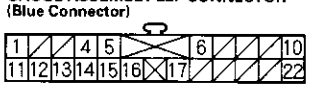


SPEED SENSOR 3P CONNECTOR

GAUGE ASSEMBLY 22P CONNECTOR (Green Connector)

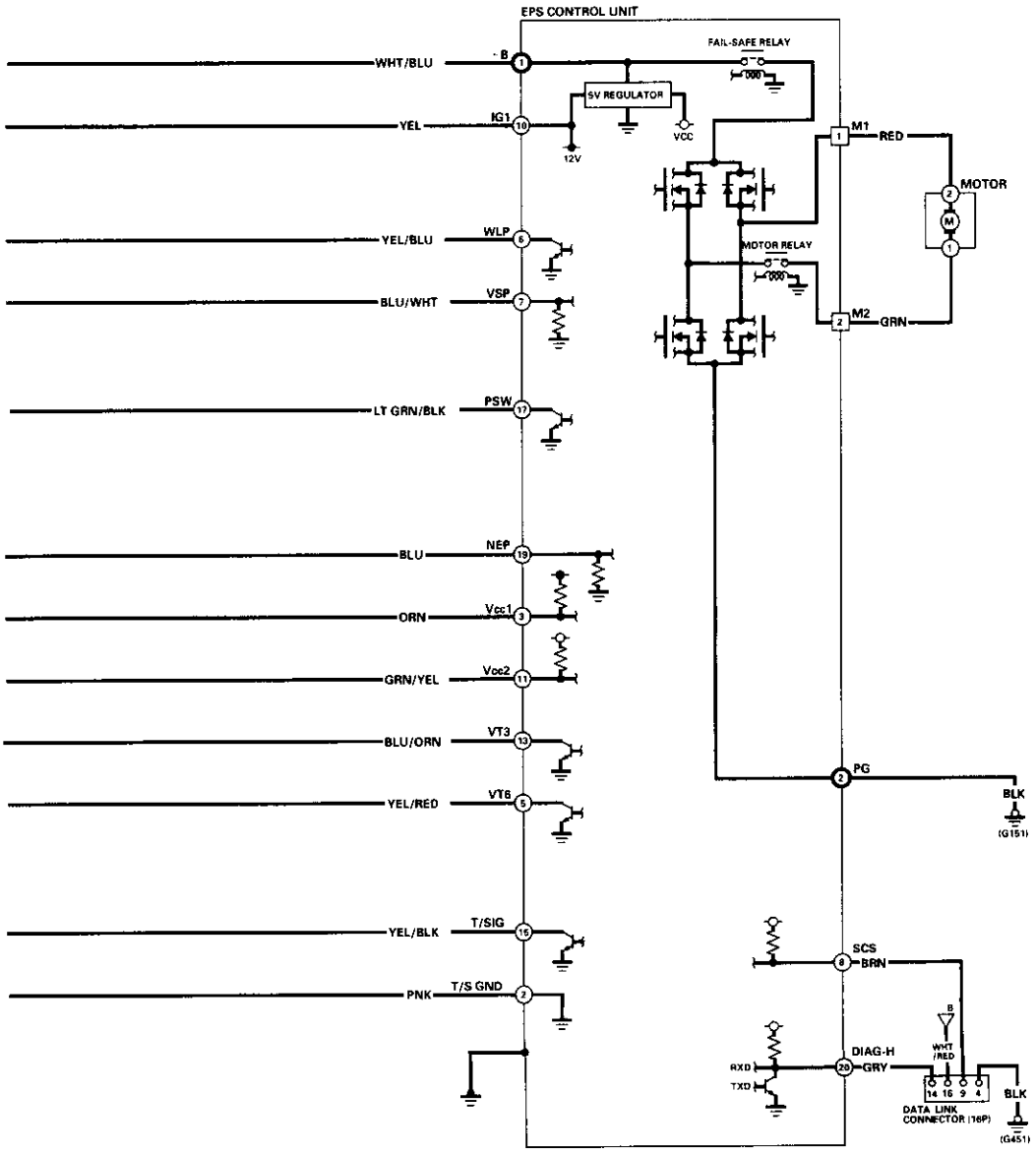


GAUGE ASSEMBLY 22P CONNECTOR (Blue Connector)



TORQUE SENSOR 6P CONNECTOR

Wire side of female terminals

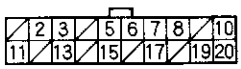


EPS CONTROL UNIT CONNECTOR A (2P)
(◌: Connector)

EPS CONTROL UNIT CONNECTOR B (2P)
(□: Connector)

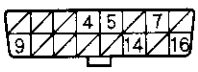
Wire side of female terminals

EPS CONTROL UNIT CONNECTOR C (20P)
(⋮⋮: Connector)



MOTOR CONNECTOR (2P)

DATA LINK CONNECTOR (16P)



Terminal side of female terminals

DTC Troubleshooting

DTC 12: Torque Sensor T/SIG

1. Clear the DTC.
2. Start the engine.
3. Wait at least 10 seconds.

   Does the EPS indicator come on?

   YES—Go to step 4.

   NO—Check for loose wires or poor connections. If the connections are good, the system is OK at this time. ■

4. Stop the engine, and verify the DTC.

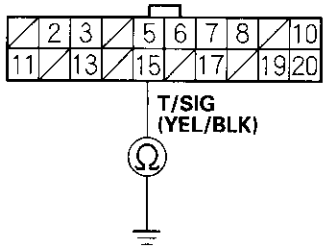
   Is DTC12 indicated?

   YES—Go to step 5.

   NO—Perform the appropriate troubleshooting for the code indicated. ■

5. Make sure the ignition switch is OFF, then disconnect EPS control unit connector C (20P) and the torque sensor 6P connector.
6. Check for continuity between EPS control unit connector C (20P) terminal No. 15 and body ground.

EPS CONTROL UNIT CONNECTOR C (20P)



Wire side of female terminals

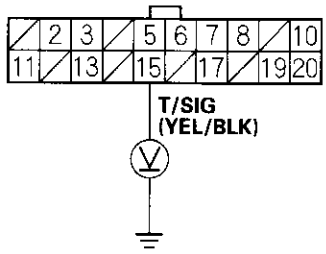
Is there continuity?

YES—Repair short to body ground in the wire between the torque sensor and EPS control unit. ■

NO—Go to step 7.

7. Turn the ignition switch ON (II).
8. Measure the voltage between EPS control unit connector C (20P) terminal No. 15 and body ground.

EPS CONTROL UNIT CONNECTOR C (20P)



Wire side of female terminals

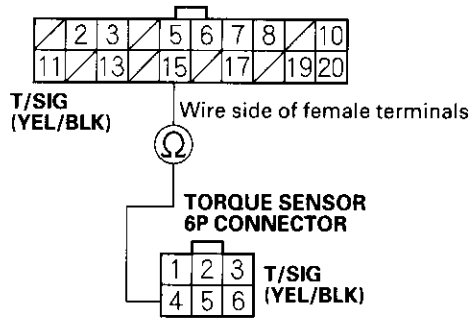
Is there battery voltage?

YES—Repair short to power in the + circuit wire between the torque sensor and EPS control unit. ■

NO—Go to step 9.

9. Turn the ignition switch OFF.
10. Check for continuity between EPS control unit connector C (20P) terminal No. 15 and the torque sensor 6P connector terminal No. 4.

EPS CONTROL UNIT CONNECTOR C (20P)



Wire side of female terminals

Is there continuity?

YES—Go to step 11.

NO—Repair open in the wire between the torque sensor and the EPS control unit. ■

11. Substitute a known-good EPS control unit, and connect the all disconnected connectors.

12. Start the engine.

    Does the EPS indicator come on?

    YES—Go to step 13.

    NO—Check for loose EPS control unit connectors. If necessary, replace the EPS control unit and retest.■

13. Stop the engine, and verify the DTC.

    Is DTC12 indicated?

    YES—Check for loose torque sensor connectors. If necessary, substitute a known-good steering gearbox and recheck.■

    NO—Perform the appropriate troubleshooting for the code indicated.■

DTC 16: Torque Sensor VT3 and VT6

1. Clear the DTC.
2. Start the engine.
3. Wait at least 10 seconds.

   Does the EPS indicator come on?

   YES—Go to step 4.

   NO—Check for loose wires or poor connnections. If the connections are good, the system is OK at this time.■

4. Stop the engine, and verify the DTC.

   Is DTC16 indicated?

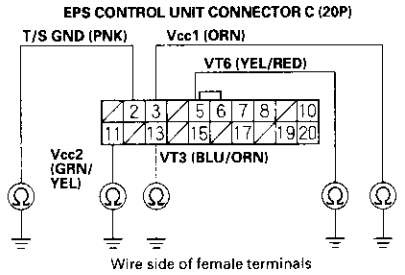
   YES—Go to step 5.

   NO—Perform the appropriate troubleshooting for the code indicated.■

5. Make sure the ignition switch is OFF, then disconnect EPS control unit connector C (20P) and the torque sensor 6P connector.

6. Check for continuity between the appropriate EPS control unit connector C (20P) terminal and body ground (see table).

Terminal name	EPS control unit connector C terminal No.
Vccl	3
Vcc2	11
VT3	13
VT6	5
T/S GND	2



Is there continuity?

YES—Repair short to body ground in the appropriate sensor circuit between the torque sensor and EPS control unit.■

NO—Go to step 7.

(cont'd)

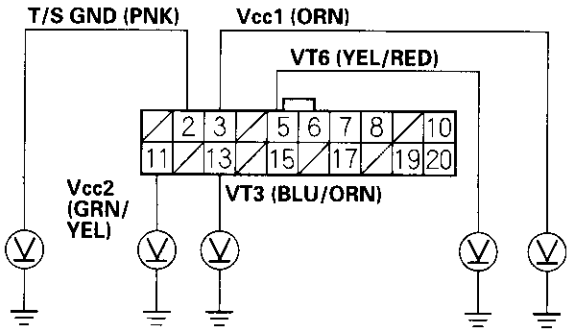
DTC Troubleshooting (cont'd)

7. Turn the ignition switch ON (II).

8. Measure the voltage between the appropriate EPS control unit connector C (20P) terminal and body ground (see table).

Terminal name	EPS control unit connector C terminal No.
Vcc1	3
Vcc2	11
VT3	13
VT6	5
T/S GND	2

EPS CONTROL UNIT CONNECTOR C (20P)



Wire side of female terminals

Is there battery voltage?

YES—Repair short to power in the + circuit wire between the EPS control unit and torque sensor. ■

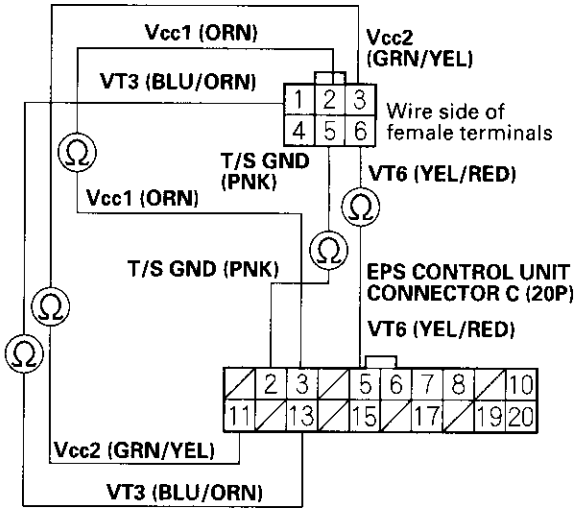
NO—Go to step 9.

9. Turn the ignition switch OFF.

10. Check for continuity between the appropriate EPS control unit connector C (20P) terminal and the torque sensor terminal (see table).

Terminal name	Torque Sensor terminal No.	EPS control unit connector C terminal No.
Vcc1	2	3
Vcc2	3	11
VT3	1	13
VT6	6	5
T/S GND	5	2

TORQUE SENSOR 6P CONNECTOR



Wire side of female terminals

Is there continuty?

YES—Go to step 11.

NO—Repair open in the appropriate torque sensor wire circuit between the EPS control unit and the torque sensor. ■

11. Substitute a known-good EPS control unit, and reconnect the disconnected connectors.

12. Start the engine.

    Does the EPS indicator come on?

    YES—Go to step 13.

    NO—Check for loose or poor connections at the EPS control unit and the torque sensor connectors. If the connections are good, replace the EPS control unit and recheck.■

13. Stop the engine, and verify the DTC.

    Is DTC16 indicated?

    YES—Replace the steering gearbox and recheck.■

    NO—Perform the appropriate troubleshooting for the code indicated.■

DTC 17: Torque Sensor Vcc1

DTC 18: Torque Sensor Vcc2

1. Clear the DTC.

2. Start the engine.

3. Wait at least 10 seconds.

    Does the EPS indicator come on?

    YES—Go to step 4.

    NO—Check for loose wires or poor connections. If the connections are good, the system is OK at this time.■

4. Stop the engine, and verify the DTC.

    Is DTC17 or DTC18 indicated?

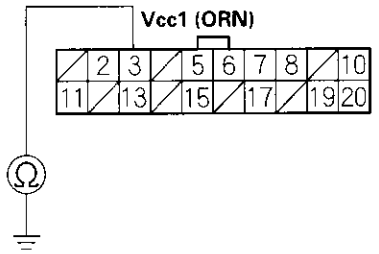
    YES—Go to step 5.

    NO—Do the troubleshooting for the DTC indicated.■

5. Make sure the ignition switch is OFF, then disconnect EPS control unit connector C (20P) and the torque sensor 6P connector.

6. Check for continuity between EPS control unit connector C (20P) terminal No. 3 and body ground.

EPS CONTROL UNIT CONNECTOR C (20P)



Wire side of female terminals

Is there continuity?

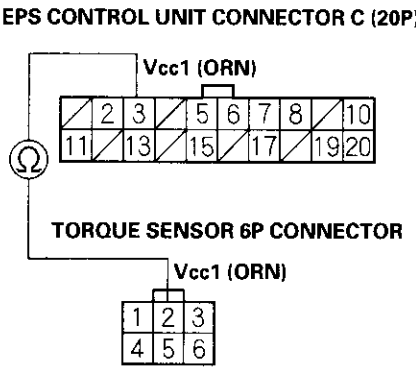
YES—Repair short to body ground in the wire between the torque sensor and EPS control unit.■

NO—Go to step 7.

(cont'd)

DTC Troubleshooting (cont'd)

7. Check for continuity between EPS control unit connector C (20P) terminal No. 3 and the torque sensor 6P connector terminal No. 2.

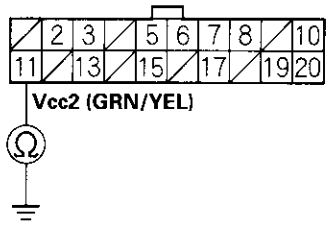


Is there continuity?

YES—Go to step 8.

NO—Repair open in the wire between the torque sensor and EPS control unit. ■

8. Check for continuity between EPS control unit connector C (20P) terminal No. 11 and body ground.

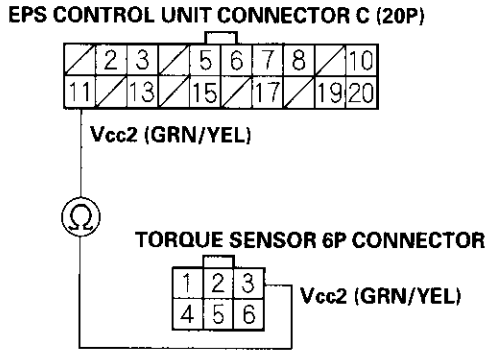


Is there continuity?

YES—Repair short to body ground in the wire between the torque sensor and EPS control unit. ■

NO—Go to step 9.

9. Check for continuity between EPS control unit connector C (20P) terminal No. 11 and the torque sensor 6P connector terminal No. 3.



Is there continuity?

YES—Go to step 10.

NO—Repair open in the wire between the torque sensor and EPS control unit. ■

10. Substitute a known-good EPS control unit, and connect all the disconnected connectors.

11. Start the engine.

Does the EPS indicator come on?

YES—Go to step 12.

NO—Check for loose or poor connections at the EPS control unit and the torque sensor connectors. If the connections are good, replace the EPS control unit and recheck. ■

12. Stop the engine, and verify the DTC.

Is DTC17 or DTC18 indicated?

YES—Replace the steering gearbox and recheck. ■

NO—Perform the appropriate troubleshooting for the code indicated. ■

DTC 22: Vehicle Speed Sensor Signal

DTC 23: Engine Speed Signal

NOTE:
- If the MIL indicator is ON, troubleshoot the PGM-FI system first.
- Even though the system is operating normally, the EPS indicator will come on under the following conditions.

  – Condition 1:
    - The vehicle was traveling at least 12.4 mph (20 km/h), then
    - A rapid change in vehicle speed was detected, then
    - The vehicle (or the vehicle speed sensor signal) stopped for at least 5 seconds, and
    - The engine speed was still 1,640 rpm or higher for at least 5 seconds
  – Condition 2:
    After the vehicle (or the vehicle speed sensor signal) has stopped for at least 10 seconds, yet the engine speed was still 1,640 rpm or higher for at least 20 seconds.
  – Condition 3:
    When the vehicle speed is 10 km/h (6.2 mph) or above and the engine is running at 280 rpm or below for 3 seconds.

1. Start the engine and check the tachometer.

   Is the tachometer working correctly?

   YES—Go to step 2.

   NO—Go to step 9.

2. Test-drive the vehicle above 15 km/h (9.3 mph).

   Is the speedometer working correctly?

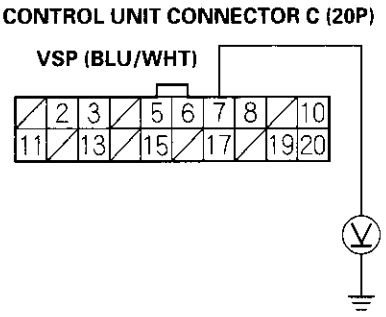
   YES—Go to step 3.

   NO—Perform the speedometer system troubleshooting (see page 22-65).■

3. Block the rear wheels and raise the vehicle, and make sure it is securely supported.

4. Turn the ignition switch ON (II).

5. Block the right front wheel, and slowly rotate the left front wheel, and measure the voltage between EPS control unit connector C (20P) terminal No.7 and body ground.



Wire side of female terminals

Does the voltage pulse 0 V and 5 V?

YES—Go to step 6.

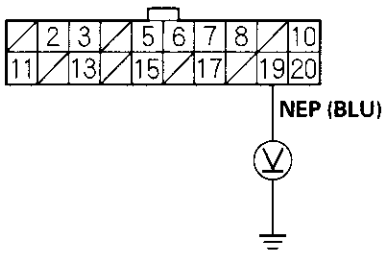
NO—Repair open in the wire between the EPS control unit and the VSS. If the wire is OK,check for a loose or poor connections at the EPS control unit. If necessary, substitute a known-good EPS control unit, and recheck.■

(cont'd)

DTC Troubleshooting (cont'd)

6. Turn the ignition switch OFF, and disconnect EPS control unit connector C (20P).
7. Start the engine, and let it idle.
8. Measure the voltage between EPS control unit connector C (20P) terminal No.19 and body ground.

EPS CONTROL UNIT CONNECTOR C (20P)



Wire side of female terminals

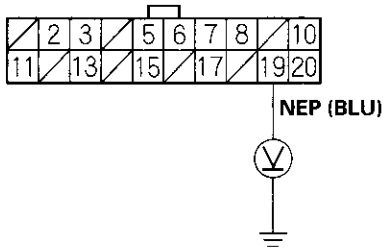
Is there about 6 V at idle? (With the meter set for frequency, is there 33 Hz per 1,000 engine rpm?)

YES—Check for loose EPS control unit connectors. If necessary, substitute a known-good EPS control unit and recheck. ■

NO—Repair open in the wire between the EPS control unit and the ECM. ■

9. Turn the ignition switch OFF, and disconnect EPS control unit connector C (20P).
10. Start the engine, and let it idle.
11. Measure the voltage between EPS control unit connector C (20P) terminal No. 19 and body ground.

EPS CONTROL UNIT CONNECTOR C (20P)



Wire side of female terminals

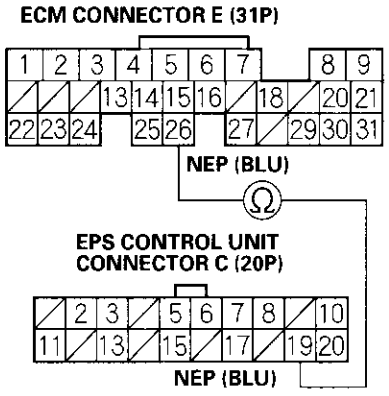
Is there about 6 V at idle? (With the meter set for frequency, is there 33 Hz per 1,000 engine rpm?)

YES—Check for loose EPS control unit connectors. If necessary, substitute a known-good EPS control unit and recheck. ■

NO—Go to step 12.

12. Turn the ignition switch OFF.
13. Disconnect the ECM connector E (31P) connector.

14. Check for continuity between EPS control unit connector C (20P) terminal No. 19 and ECM connector E (31P) terminal No. 26.



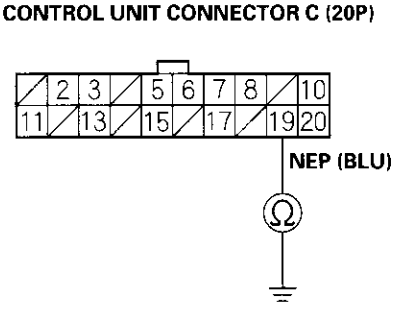
Is there continuity?

YES—Go to step 15.

NO—Repair open in the wire between the EPS control unit and ECM. ■

15. Disconnect the gauge assembly 22P connector.

16. Check for continuity between EPS control unit connector C (20P) terminal No. 19 and body ground.



Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire between the EPS control unit, the test tachometer connector, the gauge assembly, and the ECM. ■

NO—Check for loose ECM control unit connectors. If necessary, substitute a known-good ECM control unit and recheck. ■

DTC 37: EPS Control Unit Internal Circuit (Input Circuit For Motor Voltage)

1. Clear the DTC.

2. Start the engine.

3. Turn the steering wheel from lock-to-lock several times, and wait 10 seconds or more.

   Does the EPS indicator come on?

   YES—Go to step 4.

   NO—Check for loose wires or poor connections. If the connections are good, the system is OK at this time. ■

4. Stop the engine, and verify the DTC.

   Is DTC 37 indicated?

   YES—Check for loose EPS control unit connectors. If necessary, substitute a known-good EPS control unit and recheck. ■

   NO—Perform the appropriate troubleshooting for the code indicated. ■

DTC Troubleshooting (cont'd)

DTC 41: Voltage For Motor

1. Clear the DTC.
2. Start the engine.
3. Turn the steering wheel from lock-to-lock several times, and wait 10 seconds or more.

   Does the EPS indicator come on?

   YES—Go to step 4.

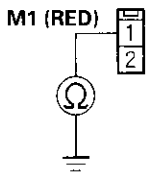
   NO—Check for loose wires or poor connections. If the connections are good, the system is OK at this time.■
4. Stop the engine, and verify the DTC.

   Is DTC 41 indicated?

   YES—Go to step 5.

   NO—Perform the appropriate troubleshooting for the code indicated.■
5. Make sure the ignition switch is OFF, then disconnect EPS control unit connector B (2P) and the motor 2P connector.
6. Check for continuity between EPS control unit connector B (2P) terminal No. 1 and body ground.

   EPS CONTROL UNIT CONNECTOR B (2P)



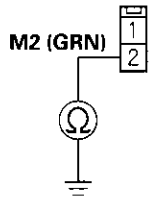
   Wire side of female terminals

   Is there continuity?

   YES—Repair short to body ground in the RED wire between the EPS control unit and the motor.■

   NO—Go to step 7.
7. Check for continuity between EPS control unit connector B (2P) terminal No. 2 and body ground.

   EPS CONTROL UNIT CONNECTOR B (2P)



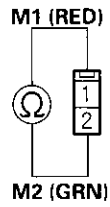
   Wire side of female terminals

   Is there continuity?

   YES—Repair short to body ground in the GRN wire between the EPS control unit and the motor.■

   NO—Go to step 8.
8. Check for continuity between EPS control unit connector B (2P) terminal No. 1 and No. 2.

   EPS CONTROL UNIT CONNECTOR B (2P)



   Wire side of female terminals

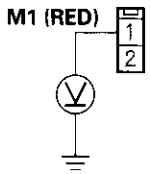
   Is there continuity?

   YES—Repair short between the RED and GRN wires in the motor circuit between the EPS control unit and the motor.■

   NO—Go to step 9.

9. Turn the ignition switch ON (II), and measure the voltage between EPS control unit connector B (2P) terminal No. 1 and body ground.

EPS CONTROL UNIT CONNECTOR B (2P)



Wire side of female terminals

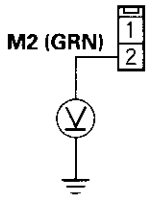
Is there battery voltage?

YES—Repair short to power in the + circuit wire between the EPS control unit and the motor.■

NO—Go to step 10.

10. Measure the voltage between EPS control unit connector B (2P) terminal No. 2 and body ground.

EPS CONTROL UNIT CONNECTOR B (2P)



Wire side of female terminals

Is there battery voltage?

YES—Repair short to power in the − circuit wire between the EPS control unit and the motor.■

NO—Go to step 11.

11. Turn the ignition switch is OFF.

12. Substitute a known-good EPS control unit, and connect all the disconnected connectors.

13. Start the engine, and turn the steering wheel from lock to lock several times.

Does the EPS indicator come on?

YES—Go to step 14.

NO—Check for loose or poor connections at the EPS control unit and the motor connections. If the connections are good, replace the EPS control unit and recheck.■

14. Stop the engine, and verify the DTC.

Is DTC 41 indicated?

YES—Replace the steering gearbox motor and recheck.■

NO—Perform the appropriate troubleshooting for the code indicated.■

DTC Troubleshooting (cont'd)

DTC 42, 45: Motor Driven Current

1. Clear the DTC.
2. Start the engine.
3. Turn the steering wheel from lock-to-lock several times, and wait 10 seconds or more.

   Does the EPS indicator come on?

   YES—Go to step 4.

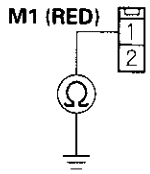
   NO—Check for loose wires or poor connections. If the connections are good, the system is OK at this time.■
4. Stop the engine, and verify the DTC.

   Is DTC 42 or 45 indicated?

   YES—Go to step 5.

   NO—Perform the appropriate troubleshooting for the code indicated.■
5. Make sure the ignition switch is OFF, then disconnect EPS control unit B connector (2P) and the motor 2P connector.
6. Check for continuity between EPS control unit connector B (2P) terminal No. 1 and body ground.

   EPS CONTROL UNIT CONNECTOR B (2P)



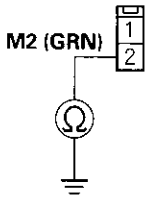
   Wire side of female terminals

   Is there continuity?

   YES—Repair short to body ground in the RED wire between the EPS control unit and the motor.■

   NO—Go to step 7.
7. Check for continuity between EPS control unit connector B (2P) terminal No. 2 and body ground.

   EPS CONTROL UNIT CONNECTOR B (2P)



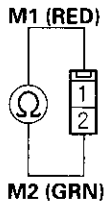
   Wire side of female terminals

   Is there continuity?

   YES—Repair short to body ground in the GRN wire between the EPS control unit and the motor.■

   NO—Go to step 8.
8. Check for continuity between EPS control unit connector B (2P) terminal No. 1 and No. 2.

   EPS CONTROL UNIT CONNECTOR B (2P)



   Wire side of female terminals

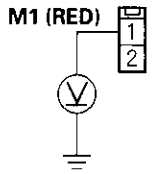
   Is there continuity?

   YES—Repair short between the RED and GRN wires in the motor circuit between the EPS control unit and the motor.■

   NO—Go to step 9.

9. Turn the ignition switch ON (II), and measure the voltage between EPS control unit connector B (2P) terminal No. 1 and body ground.

EPS CONTROL UNIT CONNECTOR B (2P)



Wire side of female terminals

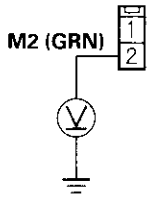
Is there battery voltage?

YES—Repair short to power in the + circuit wire between the EPS control unit and motor.■

NO—Go to step 10.

10. Measure the voltage between EPS control unit connector B (2P) terminal No. 2 and body ground.

EPS CONTROL UNIT CONNECTOR B (2P)



Wire side of female terminals

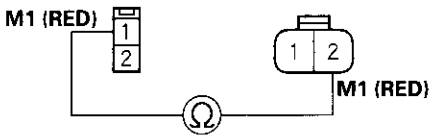
Is there battery voltage?

YES—Repair short to power in the + circuit wire between the EPS control unit and the motor.■

NO—Go to step 11.

11. Check for continuity between EPS control unit connector B (2P) terminal No. 1 and the motor 2P connector terminal No. 2.

EPS CONTROL UNIT CONNECTOR B (2P) **MOTOR CONNECTOR (2P)**



Wire side of female terminals

Is there continuity?

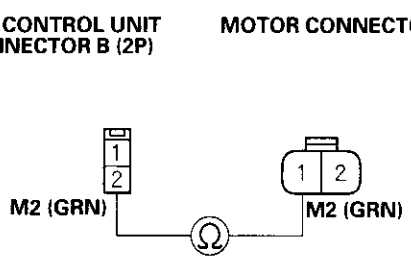
YES—Go to step 12.

NO—Repair open in the RED wire between the EPS control unit and the motor.■

(cont'd)

DTC Troubleshooting (cont'd)

12. Check for continuity between EPS control unit connector B (2P) terminal No. 2 and the motor 2P connector terminal No. 1.



Wire side of female terminals

Is there continuity?

YES—Go to step 13.

NO—Repair open in the GRN wire between the EPS control unit and the motor. ■

13. Check for loose wires or poor connections, if the connections are good, substitute a known-good EPS control unit, and connect all the disconnected connectors.

14. Start the engine, and turn the steering wheel from lock to lock several times.

Does the EPS indicator come on?

YES—Go to step 15.

NO—Check for loose EPS control unit connectors. If necessary, replace the EPS control unit and recheck. ■

15. Stop the engine, and verify the DTC.

Is DTC 42 or 45 indicated?

YES—Replace the steering gearbox motor and recheck. ■

NO—Perform the appropriate troubleshooting for the code indicated. ■

DTC 43: Motor Driven Current is Excessively High

1. Clear the DTC.
2. Start the engine.
3. Turn the steering wheel from lock-to-lock several times, and wait 10 seconds or more.

   Does the EPS indicator come on?

   YES—Go to step 4.

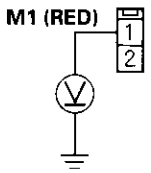
   NO—Check for loose wires or poor connections. If the connections are good, the system is OK at this time.■
4. Stop the engine, and verify the DTC.

   Is DTC 43 indicated?

   YES—Go to step 5.

   NO—Perform the appropriate troubleshooting for the code indicated.■
5. Make sure the ignition switch is OFF, then disconnect EPS control unit connector B (2P) and the motor 2P connector.
6. Turn the ignition switch ON (II).
7. Measure the voltage between EPS control unit connector B (2P) terminal No. 1 and body ground.

EPS CONTROL UNIT CONNECTOR B (2P)



Wire side of female terminals

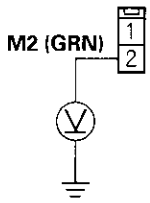
Is there battery voltage?

YES—Repair short to power in the + circuit wire between EPS control unit and motor.■

NO—Go to step 8.

8. Measure the voltage between EPS control unit connector B (2P) terminal No. 2 and body ground.

EPS CONTROL UNIT CONNECTOR B (2P)



Wire side of female terminals

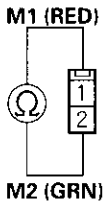
Is there battery voltage?

YES—Repair short to power in the − circuit wire between the EPS contorl unit and the motor.■

NO—Go to step 9.

9. Turn the ignition switch OFF.
10. Check for continuity between EPS control unit connector B (2P) terminals No. 1 and No. 2.

EPS CONTROL UNIT CONNECTOR B (2P)



Wire side of female terminals

Is there continuity?

YES—Repair short between the GRN and RED wires in the motor circuit between the EPS control unit and the motor.■

NO—Go to step 11.

(cont'd)

DTC Troubleshooting (cont'd)

11. Substitute a known-good EPS control unit, and connect all the disconnected connectors.

12. Start the engine, and turn the steering wheel from lock to lock several times.

    Does the EPS indicator come on?

    YES—Go to step 13.

    NO—Check for loose or poor connections at the EPS control unit and the motor connections. If the connections are good, replace the EPS control unit and recheck.■

13. Stop the engine, and verify the DTC.

    Is DTC 43 indicated?

    YES—Replace the steering gearbox motor and recheck.■

    NO—Perform the appropriate troubleshooting for the code indicated.■

DTC 47: EPS Control Unit Internal Circuit (Power Relay)

1. Clear the DTC.

2. Start the engine.

    Does the EPS indicator come on?

    YES—Go to step 3.

    NO—Check for loose wires or poor connections. If the connections are good, the system is OK at this time.■

3. Stop the engine, and verify the DTC.

    Is DTC 47 indicated?

    YES—Check for loose EPS control unit connectors. If necessary, substitute a known-good EPS control unit and recheck.■

    NO—Perform the appropriate troubleshooting for the code indicated.■

DTC 50: EPS Control Unit Internal Circuit (CPU or Microcomputer)

1. Clear the DTC.
2. Start the engine.

   Does the EPS indicator come on?

   YES—Go to step 3.

   NO—Check for loose wires or poor connections. If the connections are good, the system is OK at this time.■
3. Stop the engine, and verify the DTC.

   Is DTC 50 indicated?

   YES—Check for loose or poor connections at the EPS control unit connections. If the connections are good, substitute a known-good EPS control unit. If the symptom/indication goes away, replace the original EPS control unit.■

   NO—Perform the appropriate troubleshooting for the code indicated.■

DTC 51: EPS Control Unit Internal Circuit (EEPROM)

1. Clear the DTC.
2. Start the engine.

   Does the EPS indicator come on?

   YES—Go to step 3.

   NO—Check for loose wires or poor connections. If the connections are good, the system is OK at this time.■
3. Stop the engine, and verify the DTC.

   Is DTC 51 indicated?

   YES—Check for loose or poor connections at the EPS control unit connections. If the connections are good, substitute a known-good EPS control unit. If the symptom/indication goes away, replace the original EPS control unit.■

   NO—Perform the appropriate troubleshooting for the code indicated.■

DTC Troubleshooting (cont'd)

DTC 62: EPS Control Unit Internal Circuit (Fail-safe Relay Stuck ON)

1. Clear the DTC.
2. Start the engine.

   Does the EPS indicator come on?

   YES—Go to step 3.

   NO—Check for loose wires or poor connections. If the connections are good, the system is OK at this time.■
3. Stop the engine, and verify the DTC.

   Is DTC 62 indicated?

   YES—Check for loose or poor connections at the EPS control unit. If the connections are good, substitute a known-good EPS control unit. If the symptom/indication goes away, replace the original EPS control unit and recheck.■

   NO—Perform the appropriate troubleshooting for the code indicated.■

DTC 64: Battery Voltage is Excessively Low (Fail-safe Relay Contact Failure and Motor Voltage Fall Off)

1. Clear the DTC.
2. Start the engine.

   Does the EPS indicator come on?

   YES—Go to step 3.

   NO—Check for loose wires or poor connections. If the connections are good, the system is OK at this time.■
3. Stop the engine, and verify the DTC.

   Is DTC 64 indicated?

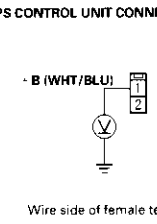
   YES—Go to step 4.

   NO—Perform the appropriate troubleshooting for the code indicated.
4. Check the No. 18 (60A) fuse in the under-hood fuse/relay box, and reinstall the fuse if it is OK.

   Is the fuse OK?

   YES—Go to step 5.

   NO—Replace the fuse and recheck.■
5. Disconnect EPS control unit connector A (2P).
6. Measure the voltage between EPS control unit connector A (2P) terminal No. 1 and body ground.



   Is there battery voltage?

   YES—Check for loose or poor connections at the EPS control unit connectors, and check for a poor ground at G151. If necessary, substitute a known-good EPS control unit and recheck.■

   NO—Repair open in the WHT/BLU wire between the No. 18 (60A) fuse and EPS control unit.■

DTC 66, 68: EPS Control Unit Internal Circuit

1. Clear the DTC.
2. Start the engine.
3. Turn the steering wheel from lock-to-lock several times, and wait 10 seconds or more.

   Does the EPS indicator come on?

   YES—Go to step 4.

   NO—Check for loose wires or poor connections. If the connections are good, the system is OK at this time. ■
4. Stop the engine, and verify the DTC.

   Is DTC 66 or 68 indicated?

   YES—Check for loose or poor connections at the EPS control unit. If the connections are good, substitute a known-good EPS control unit. If the symptom/indication goes away, replace the original EPS control unit and recheck. ■

   NO—Perform the appropriate troubleshooting for the code indicated. ■

DTC 67: Torque Sensor I/F Circuit

1. Clear the DTC.
2. Start the engine.
3. Turn the steering wheel from lock-to-lock several times, and wait 10 seconds or more.

   Does the EPS indicator come on?

   YES—Go to step 4.

   NO—Check for loose wires or poor connections. If the connections are good, the system is OK at this time. ■
4. Stop the engine, and verify the DTC.

   Is DTC 67 indicated?

   YES—Check for loose or poor connections at the EPS control unit. If the connections are good, substitute a known-good EPS control unit. If the symptom/indication goes away, replace the original EPS control unit and recheck. ■

   NO—Perform the appropriate troubleshooting for the code indicated. ■

DTC Troubleshooting (cont'd)

DTC 69: EPS Control Unit Internal Circuit

1. Clear the DTC.
2. Start the engine.
3. Turn the steering wheel from lock-to-lock several times, and wait 10 seconds or more.

   Does the EPS indicator come on?

   YES—Go to step 4.

   NO—Check for loose wires or poor connections. If the connections are good, the system is OK at this time.■
4. Stop the engine, and verify the DTC.

   Is DTC 69 indicated?

   YES—Check for loose or poor connections at the EPS control unit. If the connections are good, substitute a known-good EPS control unit. If the symptom/indication goes away, replace the original EPS control unit and recheck.■

   NO—Perform the appropriate troubleshooting for the code indicated.■

EPS Indicator Circuit Troubleshooting

1. Turn the ignition switch ON (II), start the engine, and watch the EPS indicator.

   Does the EPS indicator come on?

   YES—If the EPS indicator comes on and goes off, it's OK. If the EPS indicator stays on or blinks, go to step 12.

   NO—Go to step 2.

2. Turn the ignition switch OFF, then ON (II) again, and watch the brake system indicator.

   Does the brake system indicator come on?

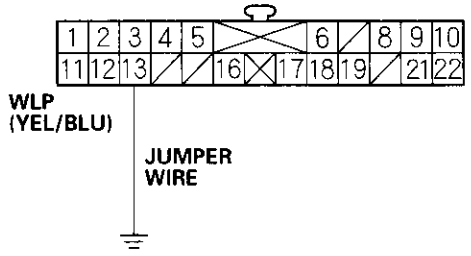
   YES—Go to step 3.

   NO—Repair open in the indicator power source circuit.■
   - Blown No. 10 (7.5A) fuse.
   - Open in the wire between the No. 10 (7.5A) fuse and gauge assembly.
   - Open circuit inside the under-dash fuse/relay box.
   - Faulty gauge assembly.

3. Turn the ignition switch OFF.

4. Connect a jumper wire between the gauge assembly 22P connector terminal No. 13 and body ground, then turn the ignition switch ON (II).

GAUGE ASSEMBLY 22P CONNECTOR (Blue connector)



Wire side of female terminals

Does the EPS indicator come on?

YES—Go to step 5.

NO—Inspect the EPS indicator bulb, if the bulb is OK, replace the bulb circuit board in the gauge assembly.■

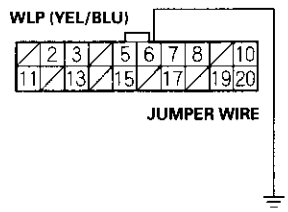
5. Turn the ignition switch OFF.

6. Disconnect EPS control unit connector C (20P).

7. Turn the ignition switch ON (II).

8. Connect EPS control unit connector C (20P) terminal No. 6 to body ground with a jumper wire.

EPS CONTROL UNIT CONNECTOR C (20P)



Wire side of female terminals

Does the EPS indicator come on?

YES—Go to step 9.

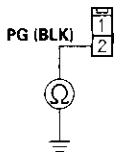
NO—Repair open in the wire between the gauge assembly and the EPS control unit.■

9. Turn the ignition switch OFF.

10. Disconnect EPS control unit connector A (2P).

11. Check for continuity between EPS control unit connector A terminal No. 2 and body ground.

EPS CONTROL UNIT CONNECTOR A (2P)



Wire side of female terminals

Is there continuity?

YES—Check for loose or poor connections at the EPS control unit. If the connections are good, substitute a known-good EPS control unit. If the symptom/indication goes away, replace the original EPS control unit and recheck.■

NO—Repair open in the wire or a bad ground at G151.■

(cont'd)

EPS Indicator Circuit Troubleshooting (cont'd)

12. Turn the ignition switch OFF.
13. Disconnect EPS control unit connector C (20P).
14. Turn the ignition switch ON (II).

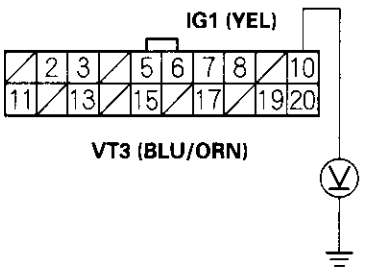
Does the EPS indicator come on?

YES—Repair short to ground in the YEL/BLU wire between the gauge assembly and the EPS control unit, or replace the bulb circuit board in the gauge assembly.■

NO—Go to step 15.

15. Measure the voltage between EPS control unit connector C (20P) terminal No. 10 and body ground.

EPS CONTROL UNIT CONNECTOR C (20P)



Wire side of female terminals

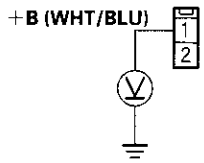
Is there battery voltage?

YES—Go to step 16.

NO—Repair open in the wire between EPS control unit connector C (20P) and the No. 10 (7.5A) fuse.■

16. Measure the voltage between EPS control unit connector A (2P) terminal No. 1 and body ground.

EPS CONTROL UNIT CONNECTOR A (2P)



Wire side of female terminals

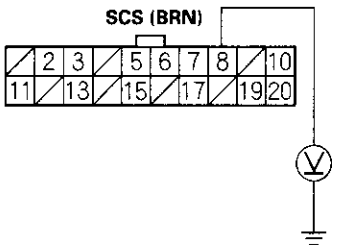
Is there battery voltage?

YES—Go to step 17.

NO—Check for a blown No. 18 (60A) fuse in the under-hood fuse/relay box or open/short in the WHT/BLU wire between the under-hood fuse/relay box and the EPS control unit.■

17. Turn the ignition switch OFF.
18. Reconnect EPS control unit connector A (2P).
19. Turn the ignition switch ON (II).
20. Measure the voltage between EPS control unit connector C (20P) terminal No. 8 and body ground.

EPS CONTROL UNIT CONNECTOR C (20P)



Wire side of female terminals

Is there about 10 V?

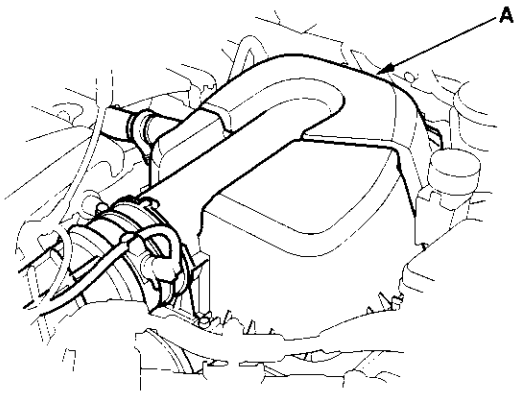
YES—Check for loose or poor connections at the EPS control unit. If the connections are good, substitute a known-good EPS control unit. If the symptom/indication goes away, replace the original EPS control unit and recheck.■

NO—Repair short to ground in the BRN wire between the data link connector and the EPS control unit.■

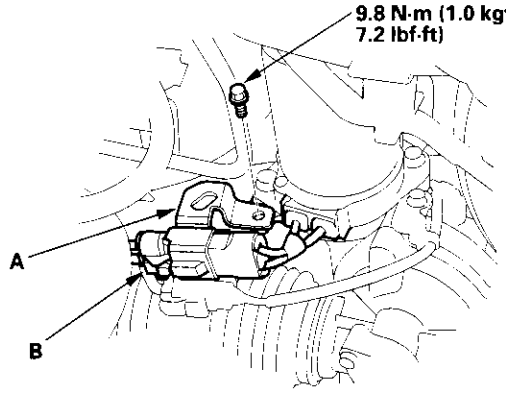
Motor Removal/Installation

Removal

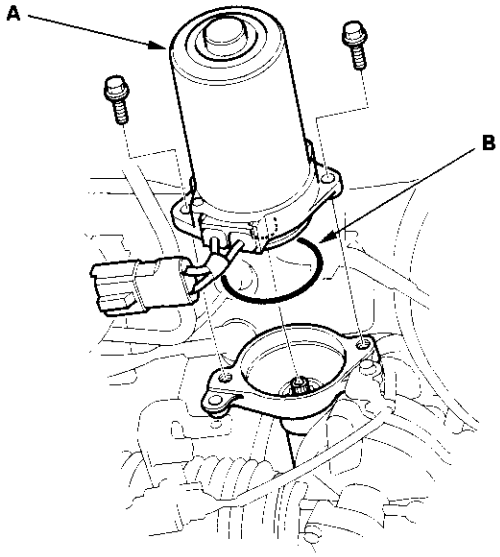
1. Make sure you have the anti-theft code for the radio, then write down the frequencies for the preset buttons.
2. Disconnect the negative cable from the battery, and wait 3 minutes before beginning work.
3. Remove the air cleaner assembly (A).



4. Remove the connector bracket (A) on the gearbox housing, and disconnect the motor 2P connector (B).



5. Remove the motor (A) from the gearbox housing.



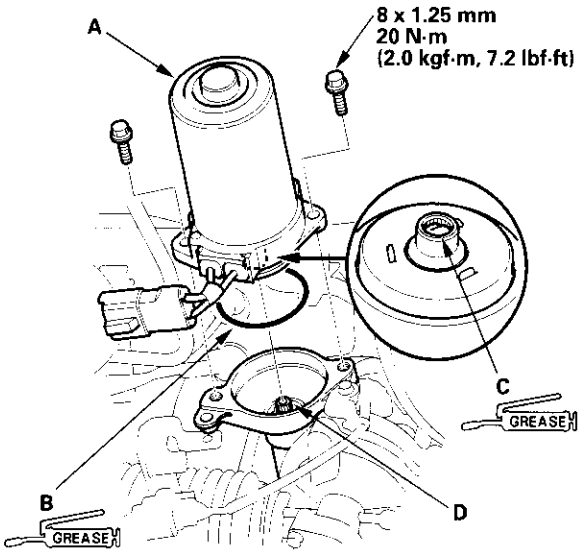
6. Remove the O-ring (B) and discard it.

(cont'd)

Motor Removal/Installation (cont'd)

Installation

7. Clean the mating surface of the motor (A) and gearbox.



8. Apply a thin coat of silicone grease (P/N 08733-B070E) to the new O-ring (B), and carefully fit it on the motor.

9. Apply grease (Nippon Grease WR-S or equivalent steering gear grease) into the motor shaft (C).

10. Install the motor on the gearbox by engaging the motor shaft and worm shaft (D). Note the motor installation position (direction of motor wires).

11. Before tightening the bolts, turn the motor two or three times right and left about 45 degrees. Make sure the motor is evenly seated on the steering gearbox and that the O-ring is not pinched between the mating surfaces.

12. Install the removed parts in the reverse order of removal, and note these items:

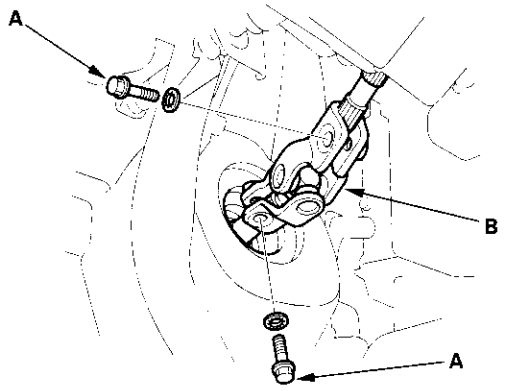
    - Make sure the motor 2P connector is properly connected.
    - Make sure the motor and EPS wires are not caught or pinched by any parts.
    - Reconnect the negative cable to the battery.
    - Do the engine control module (ECM) idle learn procedure (see page 11-139).
    - Enter the anti-theft code for the radio station presets. Reset the clock.
    - Do the power window control unit reset procedure (see page 22-128).

13. 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.

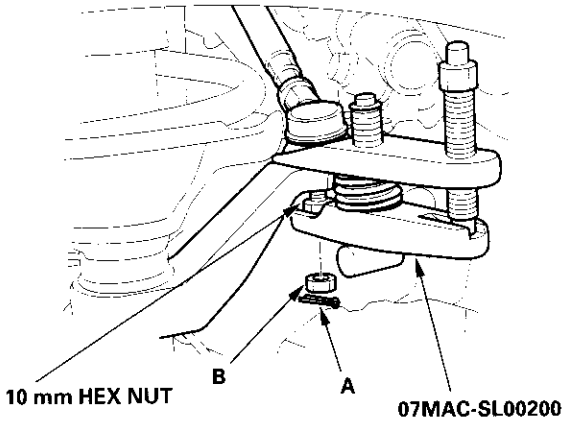
Steering Gearbox Removal

Special Tool Required
Ball joint remover, 28 mm 07MAC-SL00200

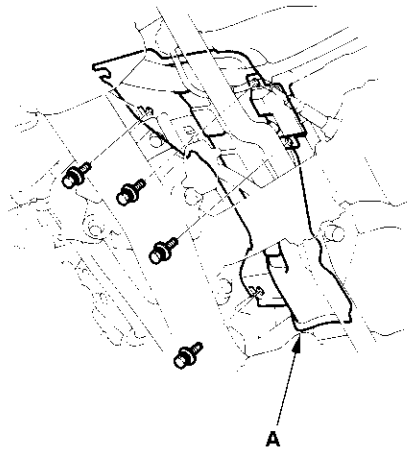
1. Raise the front of vehicle, and make sure it is securely supported.
2. Remove the front wheels.
3. Remove the driver's airbag (see page 23-113).
4. Remove the steering wheel (see page 17-6).
5. Remove the motor on the steering gearbox (see page 17-49).
6. Remove the driver's dashboard lower cover (see page 20-59) and under cover (see page 20-60).
7. Remove the steering joint bolts (A), and disconnect the steering joint by moving the steering joint (B) toward the column.



8. Remove the cotter pin (A) from the tie-rod ball joint nut (B), and loosen the nut.



9. Separate the tie-rod ball joint and damper steering arm using the special tool (see page 18-10). Repeat on the other side of the vehicle.
10. Grasp the right side tie-rod, and pull the rack all the way to the passenger's side.
11. Remove the heat shield (A) mounting bolts from the body stiffener, and let the heat shield lay against the exhaust.



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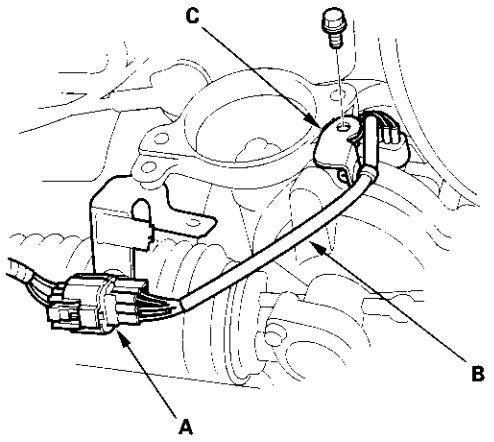
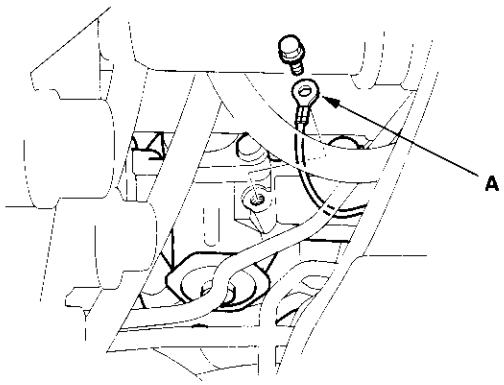
Steering Gearbox Removal (cont'd)

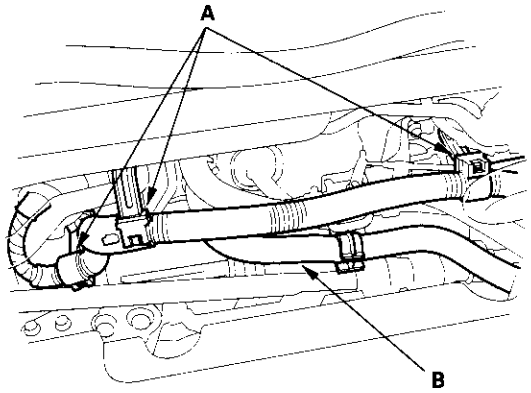
12. Disconnect the EPS wire harness 6P connector (A), and remove the EPS wire harness (B) and mounting bracket (C).



13. Remove the ground cable terminal (A) from the steering gearbox housing.

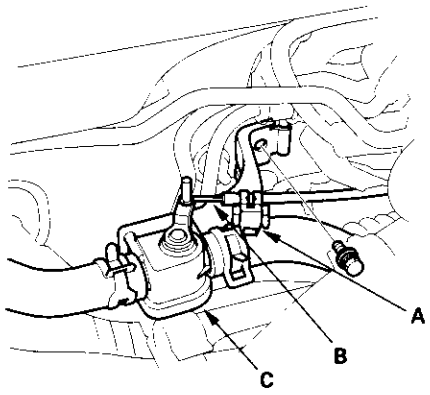


14. Remove the engine wire harness clamps (A) from the three mounting brackets.

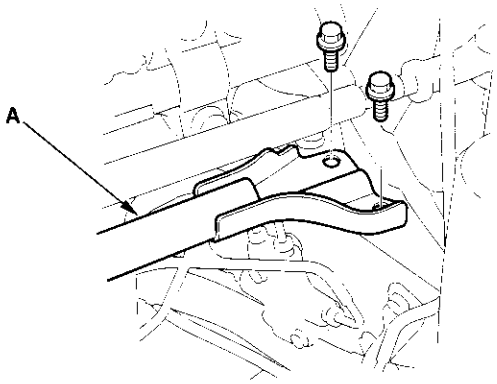


15. Remove the heater hose (B) from the bracket.

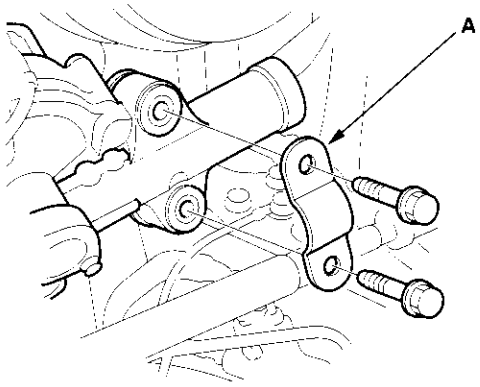
16. Open the heater valve cable clamp (A), and disconnect the heater valve cable (B). Remove the heater valve (C) from the bulkhead, and move it aside.



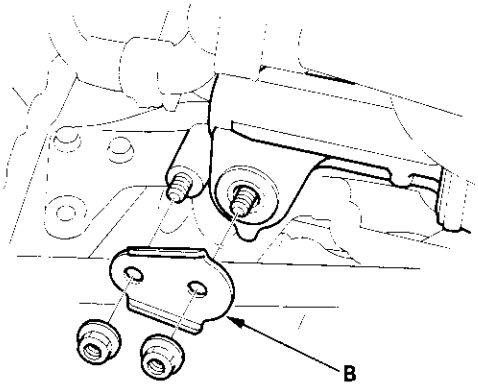
17. Remove the body stiffener (A).



18. Remove the steering stiffener A from the left side of the steering gearbox.

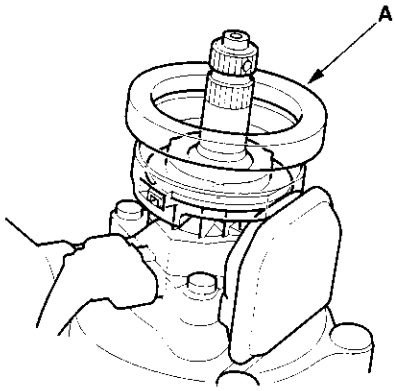


19. Remove the steering stiffener B from the right side of the steering gearbox.



20. Lower the steering gearbox, and rotate it so the pinion shaft points upward.

21. Remove the pinion shaft grommet (A) from the top of the torque sensor.

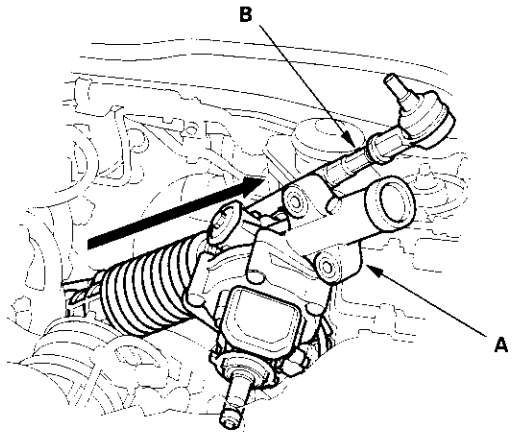


(cont'd)

Steering Gearbox Removal (cont'd)

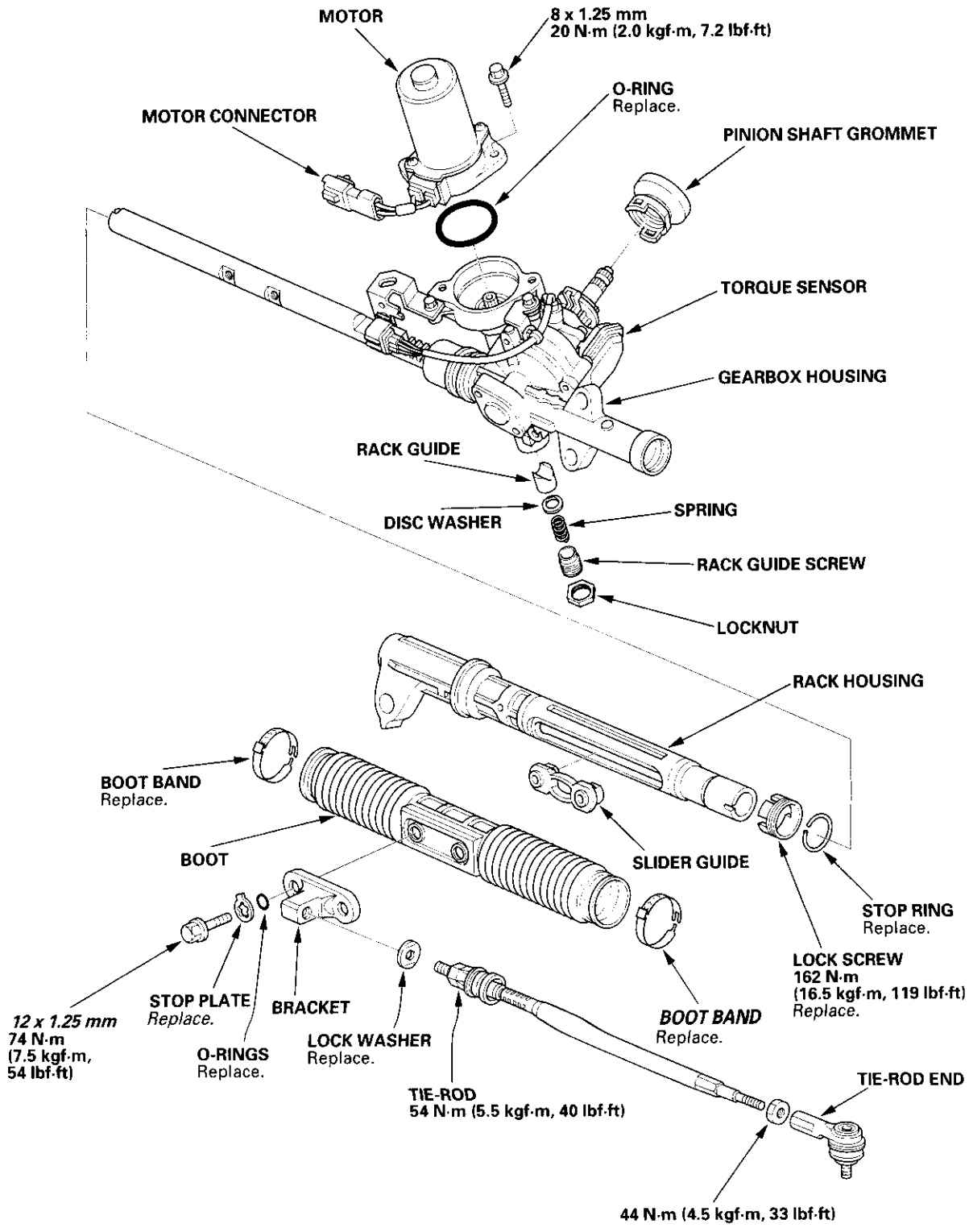
22. Move the steering gearbox and tie-rod ends as an assembly to the wheelwell opening on the passenger's side.

23. Carefully raise the driver's side (pinion side) of the steering gearbox (A) and tie-rod (B) until clears the master cylinder and under-hood fuse relay box, then remove the steering gearbox. Be careful not to damage the hoses, lines and wire harnesses.



Steering Gearbox Overhaul

Exploded View



(cont'd)

Steering Gearbox Overhaul (cont'd)

Special Tools Required
- Locknut wrench 07ZAA-S5A0100
- Pincers, Oetiker 1098 or equivalent, commercially available.

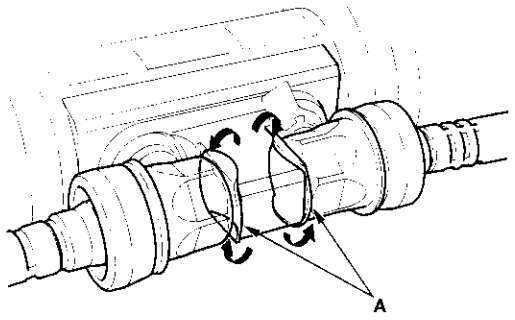
NOTE:
- Refer to the Exploded View as needed during this procedure.
- Do not allow dust, dirt, or other foreign materials to enter into the steering gearbox.

Removal

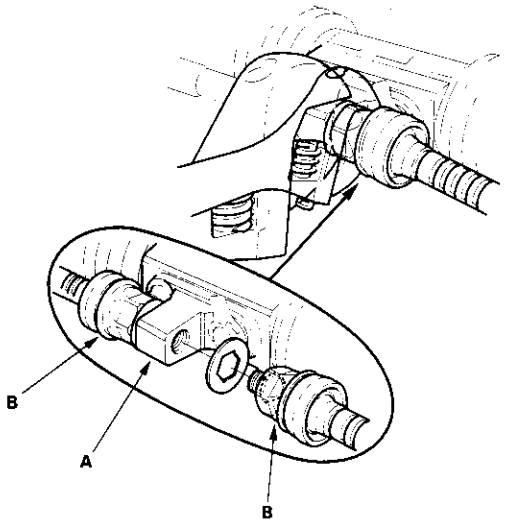
1. Remove the steering gearbox (see page 17-51).

Disassembly

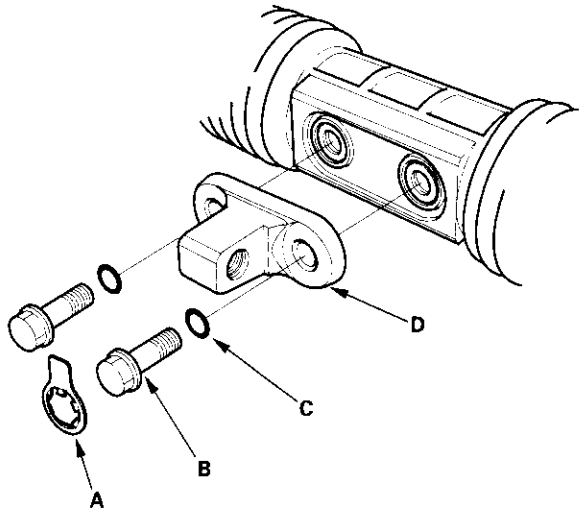
2. Unbend the lock washer (A).



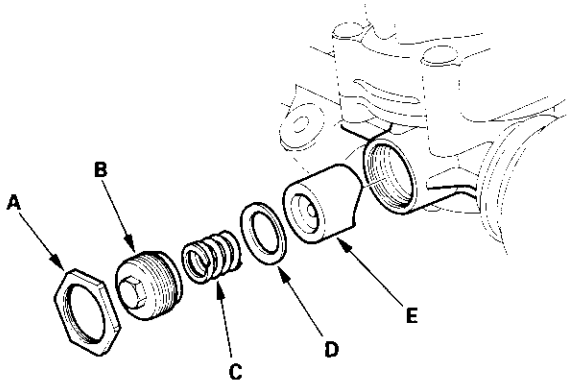
3. Hold the bracket (A) with one wrench, and unscrew both tie-rod ends (B) with another wrench. Remove the lock washers.



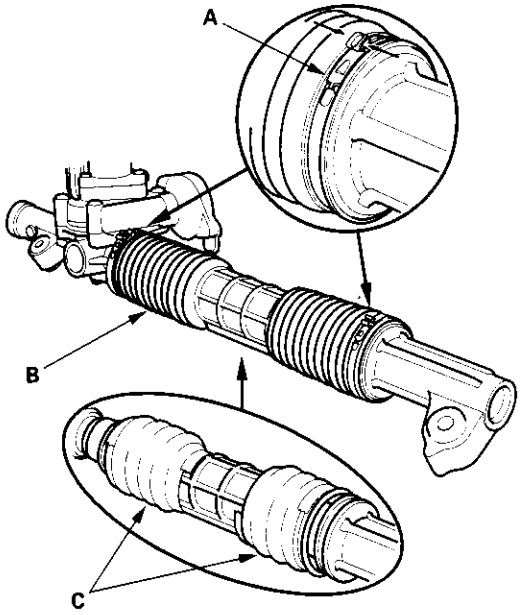
4. Remove the stop plate (A), the 12 mm flange bolts (B), the O-rings (C), and the bracket (D) from the steering gearbox.



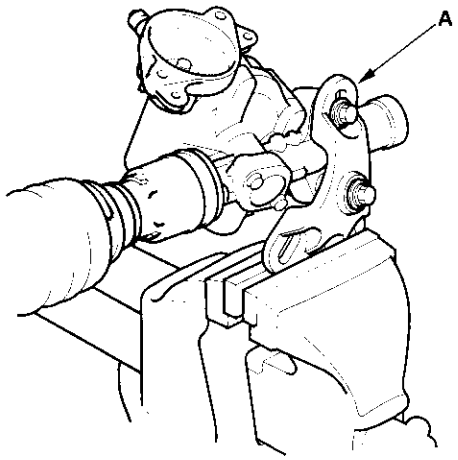
5. Loosen the locknut (A), then remove the rack guide screw (B), spring (C), disc washer (D), and rack guide (E) from the steering gearbox.



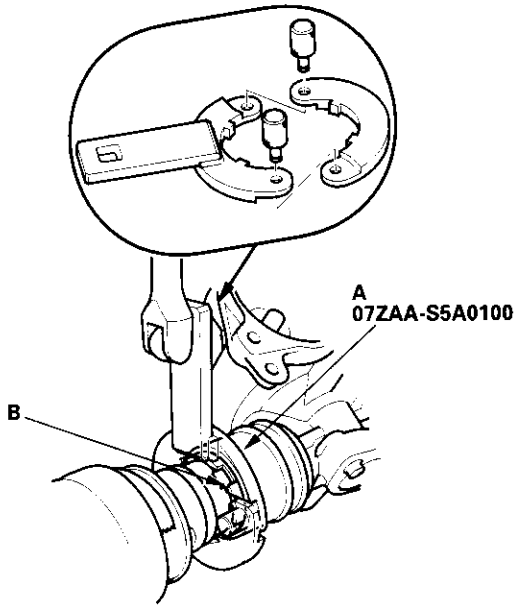
6. Remove the two boot bands (A) from boot (B). Compress the boot by hand, and apply vinyl tape (C) so the boot ends stay collapsed and pulled back.



7. Attach the yoke (A) of a universal puller to the steering gearbox mounts with bolts. Securely clamp the yoke in a vise as shown. Do not clamp the steering gearbox housing in the vise.

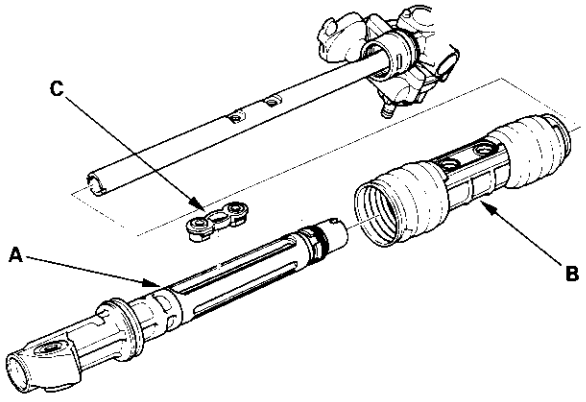


8. Install the special tool (A) on the lock screw (B) securely, then loosen and remove the lock screw from the steering gearbox housing.



9. Remove the special tool.

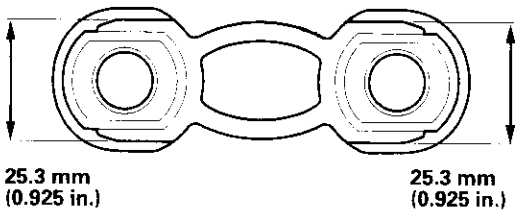
10. Pull on the rack housing (A) to remove it from the steering gearbox housing. Remove the boot (B) and slider guide (C) from the cylinder.



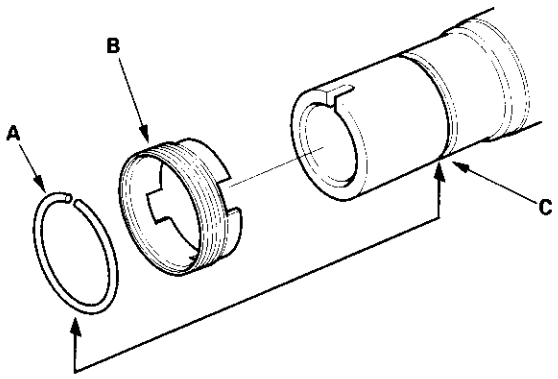
(cont'd)

Steering Gearbox Overhaul (cont'd)

11. Check the slider guide for damage and cracks. Using vernier calipers to measure the thickness of the slider guide. If the thickness is less than service limit, replace the slider guide.



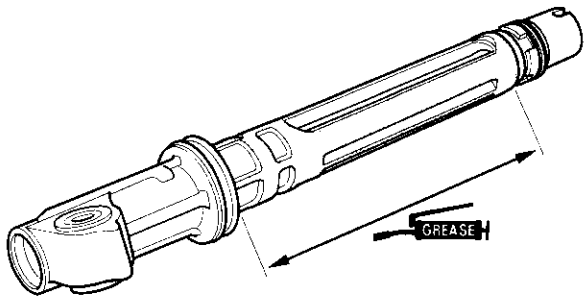
12. Remove and discard the stop ring (A) on the cylinder by expanding it with snap ring pliers. Remove and discard the lock screw (B).



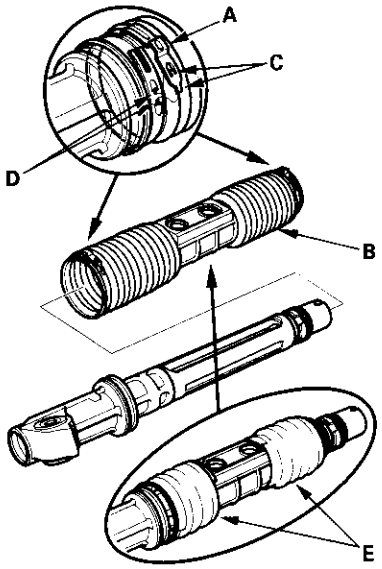
13. Install the new lock screw on the rack housing.

14. Install the new stop ring in the groove (C) on the cylinder by expanding it with a snap ring pliers. Be careful not to scratch or damage the housing surface with the stop ring edges.

15. Apply multipurpose grease to the indicated part (shaded part) of the outer surface of the rack housing. Do not apply to the dents and grooves.

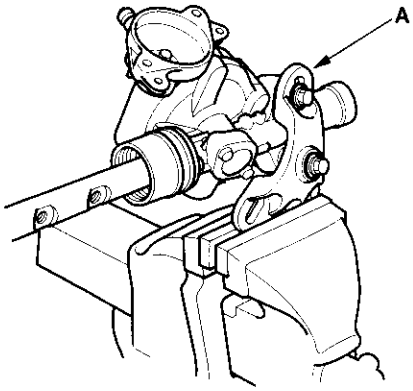


16. Set the new boot bands (A) on the band installation grooves of the boot (B) by aligning the tabs (C) with the holes (D) of the band. Do not close the ear of the boot band in this step.

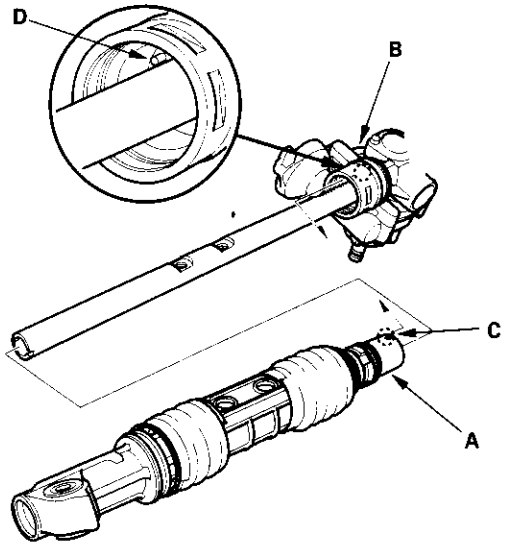


17. Compress the boot by hand, and apply vinyl tape (E) to the bellows so the boot ends stay collapsed and pulled back.
Pass the boot over the rack housing so the smaller diameter end of the boot faces the steering gearbox housing.

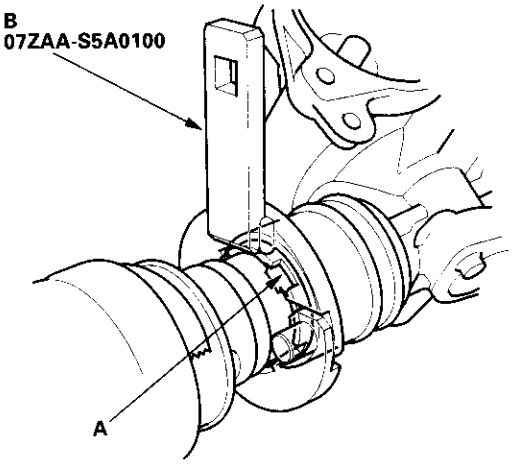
18. Attach the yoke (A) of a universal puller to the gearbox housing mounts with bolts, then securely clamp the yoke in a vise as shown. Do not clamp the steering gearbox housing in a vise.



19. Push the rack housing (A) into the steering gearbox housing (B) so the notch (C) is aligned with the pin (D) on the bottom of the gearbox housing inside.



20. Tighten the lock screw (A) by hand first, then install the special tool (B) on the lock screw. Lightly tighten the lock screw. Do not tighten the lock screw to the specified torque yet.

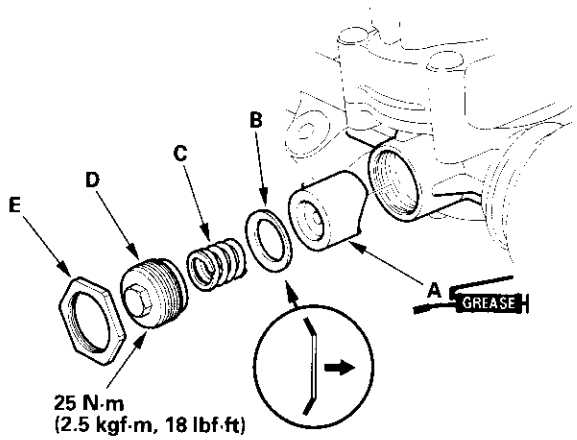


21. Remove the special tool.

(cont'd)

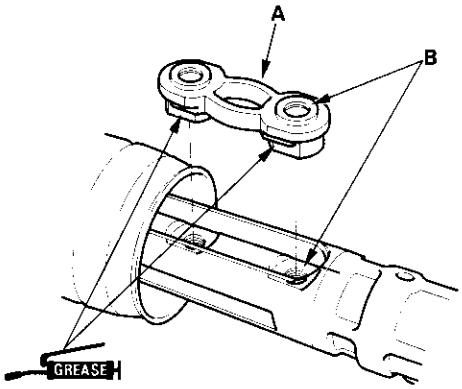
Steering Gearbox Overhaul (cont'd)

22. Apply multipurpose grease to the sliding surface and circumference of the rack guide (A), and install it onto the gearbox housing. Wipe the grease off the threaded section of the housing.

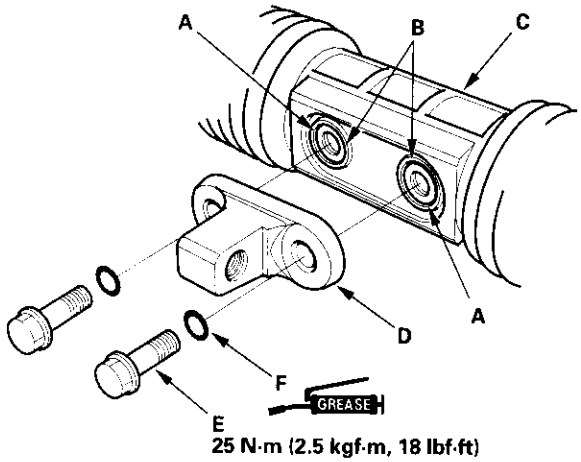


23. Install the disc washer (B) with its convex side facing the rack guide. Install the spring (C). Apply sealant to the middle of the threads on the rack guide screw (D), then install and tighten it to 25 N·m (2.5 kgf·m, 18 lbf·ft). Loosely install the locknut (E).

24. Apply multipurpose grease to the sliding surface of the slider guide (A). Keep grease off of the rack-to-slider guide mating surfaces and the boot-to-slider guide mating surfaces.
Slide the steering rack all the way to left, and place the slider guide on the steering rack by aligning the bolt holes (B).



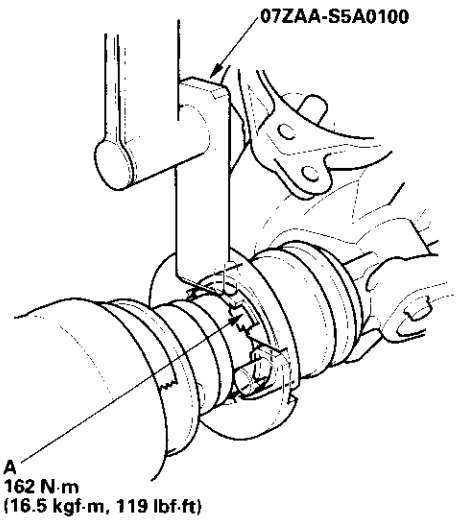
25. Center the steering rack within its stroke, and align the slider guide (A) with the holes (B) in the boot (C). Fit the slider guide to the boot by pressing around the edges of the holes securely.



26. Before installing the bracket (D), clean the mating surface of the 12 mm flange bolts (E) and the bracket. Coat the new O-rings (F) with multipurpose grease, and install them on the 12 mm flange bolts.

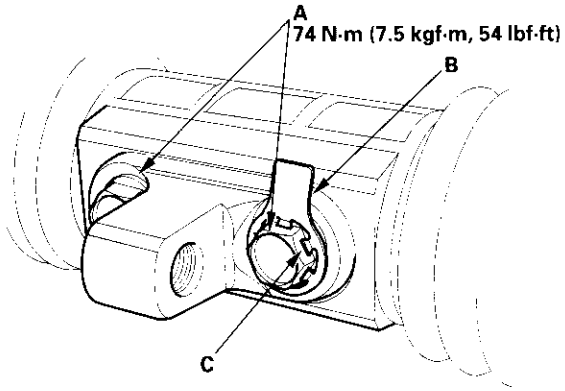
27. Loosely install the bracket on the steering rack by tightening the 12 mm flange bolts to 25 N·m (2.5 kgf·m, 18 lbf·ft).

28. Hold the gearbox housing using a yoke, then install the special tool on the lock screw (A). Retighten the lock screw to the specified torque values.



29. Remove the special tool.

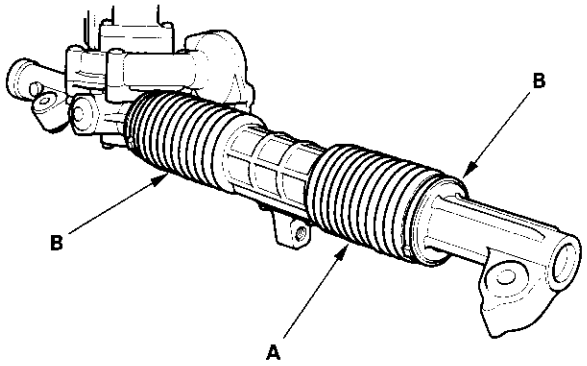
30. Retighten the 12 mm flange bolts (A) to the specified torque value.



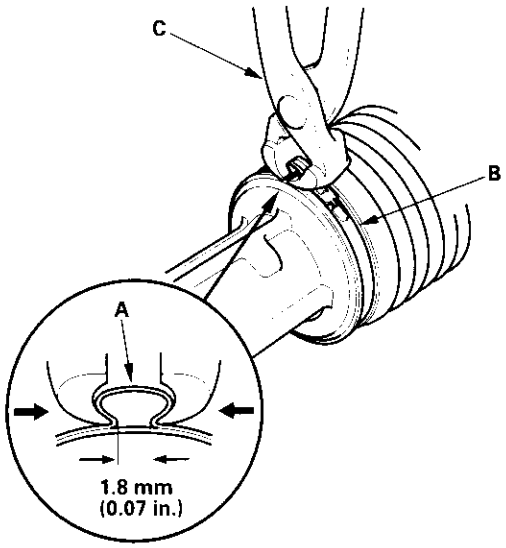
31. After tightening the 12 mm flange bolts, install a new stop plate (B) over one of the bolt heads. Be sure the tabs (C) of the stop plate are aligned with the flat surfaces of the bolt head.

32. Clean off any grease or contamination from the boot installation grooves on the housing.

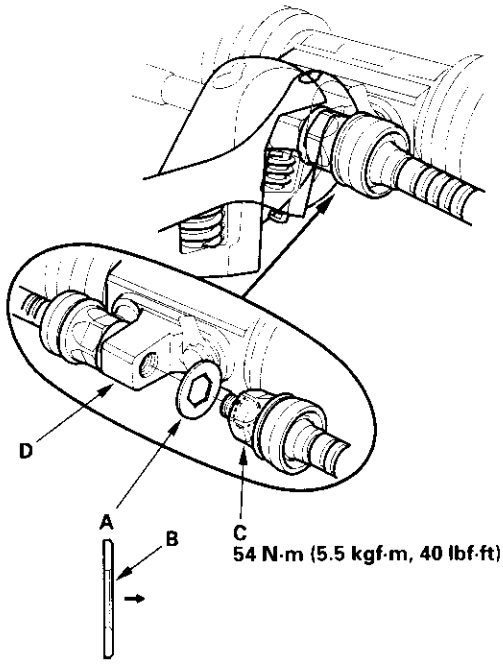
33. Expand the boot (A) by removing the vinyl tape, and fit the boot ends (B) in the installation grooves on the cylinder housing.



34. Close the ear portion (A) of the bands (B) with commercially available pincers, Oetiker 1098 or equivalent (C).



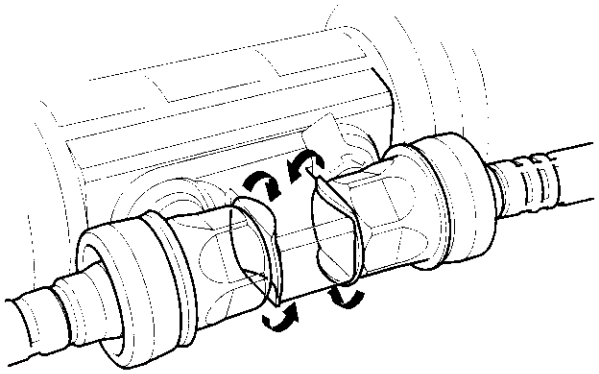
35. Install the new lock washer (A) with its radiused side facing (B) the tie-rod (C), and screw the tie-rod on the bracket (D). Repeat this step for the other side of the tie-rod. Hold the bracket with one wrench, and tighten the tie-rods to the specified torque with another wrench.



(cont'd)

Steering Gearbox Overhaul (cont'd)

36. Bend the lock washer against the flat spots on the bracket with a large pair of pliers.



37. Adjust the rack guide screw (see page 17-13).

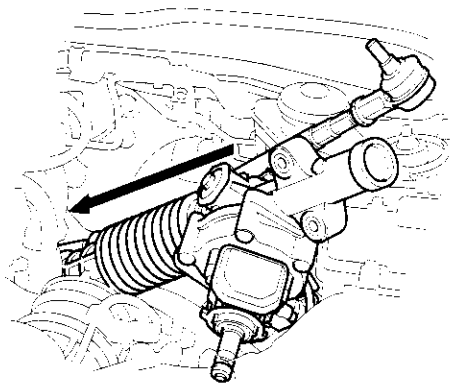
Steering Gearbox Installation

1. Before installing the steering gearbox, slide the rack all the way to the passenger's side (right direction).

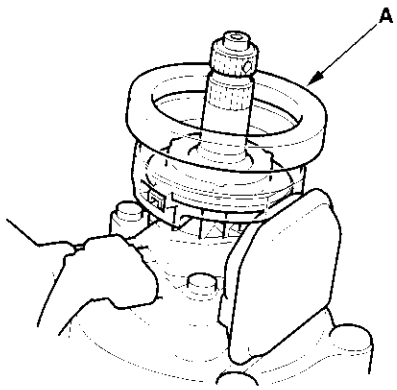
2. Pass the right side of the steering gearbox together with the tie-rods through the wheelwell opening on the passenger's side. Continue moving the steering gearbox toward the passenger's side until the driver's side tie-rod end and gearbox clears the master cylinder and under-hood fuse relay box. Lower the steering gearbox, and move it toward the driver's side until the steering gearbox is in position.

NOTICE

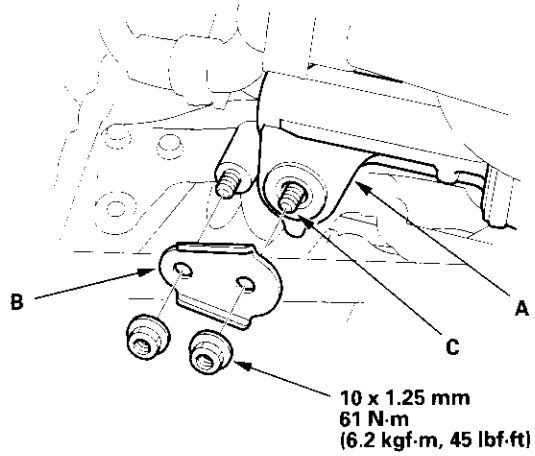
Be careful not to damage the hoses, lines and wire harnesses.



3. Install the pinion shaft grommet (A).

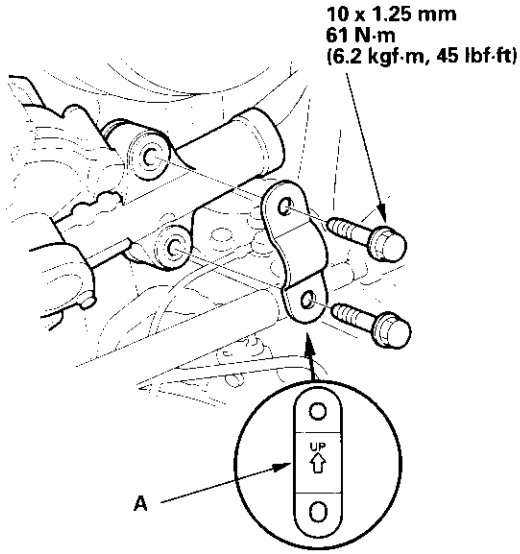


4. Insert the pinion shaft up through the bulkhead, then slip the right side of the steering gearbox housing (A) over the mounting stud (C) on the gearbox mounting bracket.



5. Install the steering stiffener B, and lightly tighten the steering gearbox mounting nuts.

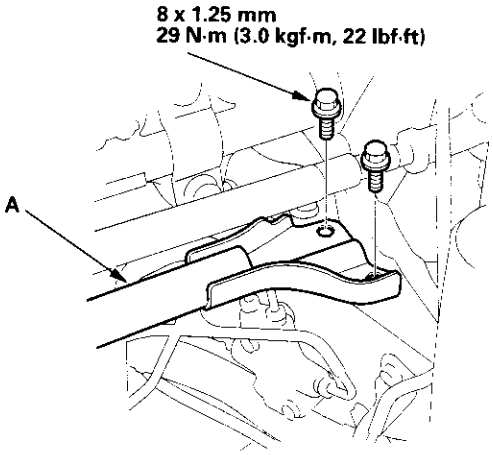
6. Install the steering stiffener A with the gearbox mounting bolts. Then tighten all the steering gearbox mounting hardware to the specified torque.



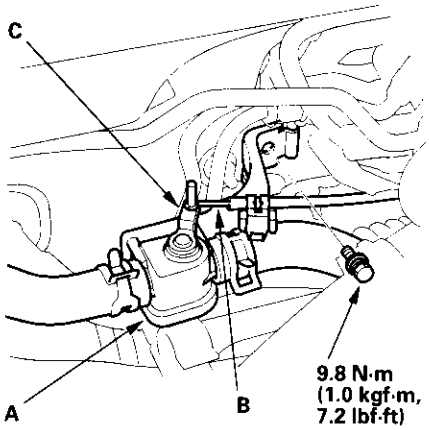
(cont'd)

Steering Gearbox Installation (cont'd)

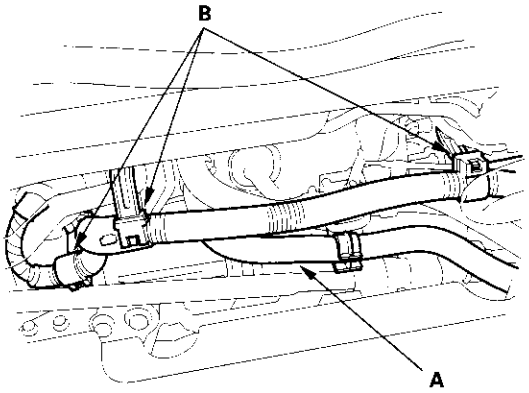
7. Install the body stiffener (A), and torque the mounting bolts to the specified torque.



8. Install the heater valve (A) on the bulkhead, and connect the heater valve cable end (B) to the heater valve arm (C). Readjust the heater valve cable (see page 21-46).

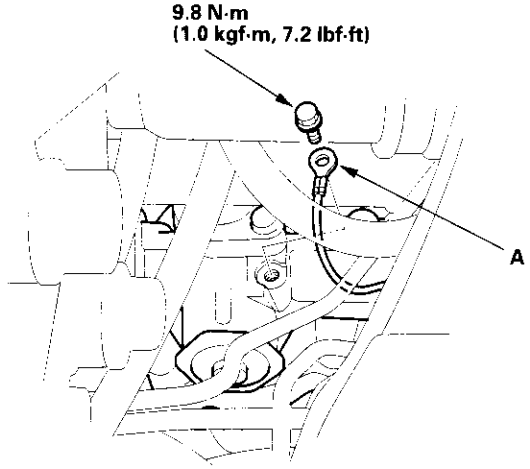


9. Reinstall the heater hose (A) on the hose bracket.

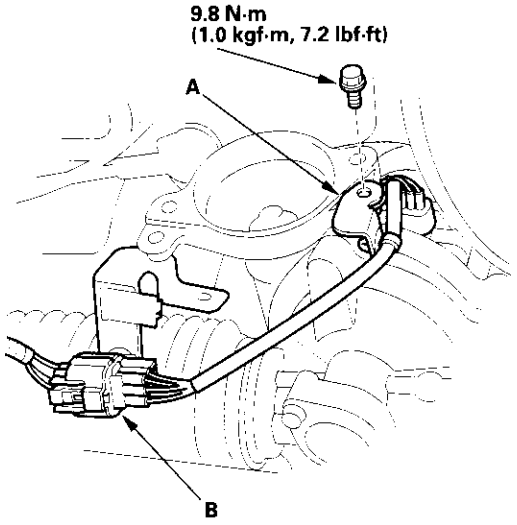


10. Install the engine wire harness clamps (B) to the three harness brackets.

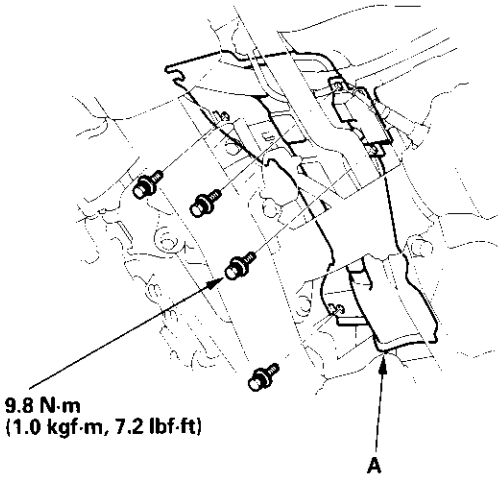
11. Under the steering gearbox, install the ground cable terminal (A) on the steering gearbox housing.



12. Install the EPS wire harness bracket (A) on the gearbox housing, and connect the 6P connector (B) properly.

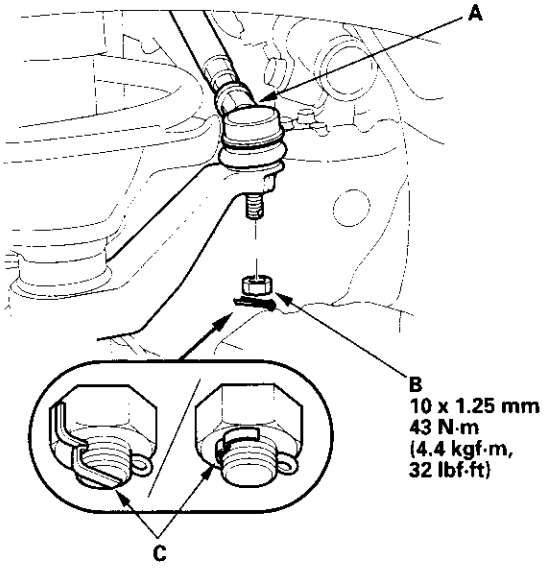


13. Install the heat shield (A).



14. Center the steering rack within its stroke.

15. Wipe off any grease contamination from the ball joint tapered section and threads. Then reconnect the tie-rod ends (A) to the damper steering arms. Install the ball joint nut (B) and tighten them.



16. Install the new cotter pins (C), and bend them as shown.

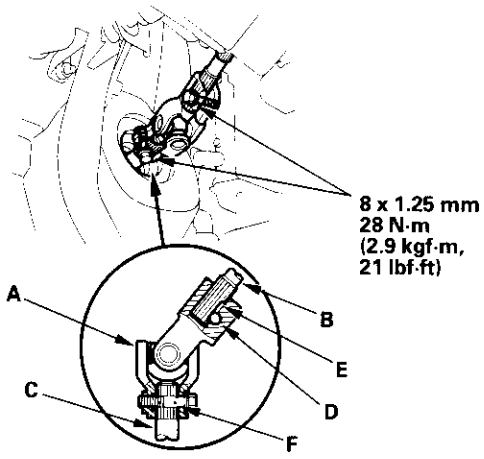
(cont'd)

Steering Gearbox Installation (cont'd)

17. Install the motor on the steering gearbox (see page 17-49).

18. Install the steering joint (A), and reconnect the steering shaft (B) and pinion shaft (C). Make sure the steering joint is connected as follows:

    - Insert the upper end of the steering joint onto the steering shaft (line up the bolt hole (D) with the flat portion (E) on the shaft).
    - Slip the lower end of the steering joint onto the pinion shaft (line up the bolt hole with the groove (F) around the shaft), and loosely install the lower joint bolt. Be sure that the lower 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. Then install the upper joint bolt, and tighten it to the specified torque. Tighten the lower joint bolt to the specified torque.



19. Install the driver's dashboard lower cover (see page 20-59) and under cover (see page 20-60).

20. If the steering wheel was turned, center the cable reel by first rotating it clockwise until it stops. Then rotate it counterclockwise (about two and half turns) until the arrow mark on the label points straight up. Reinstall the steering wheel (see page 17-8).

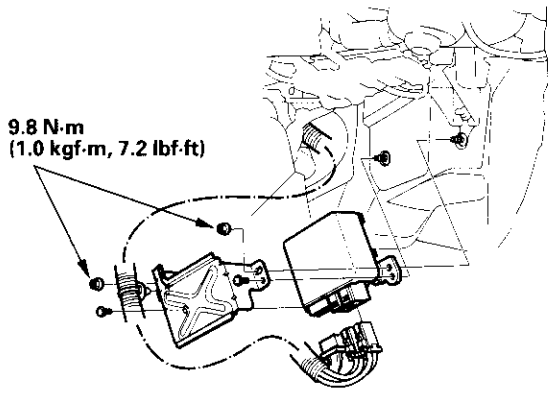
21. Install the front wheels.

22. After installation, perform the following checks.

    - Perform the front toe inspection.
    - 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 serrations, then adjust the front toe by turning the tie-rods, if necessary.

EPS Control Unit Removal/ Installation

1. Remove the passenger's under panel.
2. Turn up the floor carpet, remove the EPS control unit.

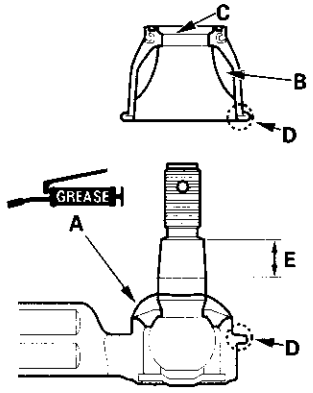


3. Disconnect the EPS control unit connectors.
4. Install the EPS control unit in the reverse order of removal.
5. After installation, start the engine, and let it idle. Turn the steering wheel from lock-to-lock several times. Check that the EPS indicator does not come on.

Tie-rod Ball Joint Boot Replacement

Special Tool Required
Attachment, 42 mm 07QAD-P0A0100

1. Remove the boot from the tie-rod end, and wipe the old grease off the ball pin.
2. Pack the lower area of the ball pin (A) with fresh multipurpose grease.

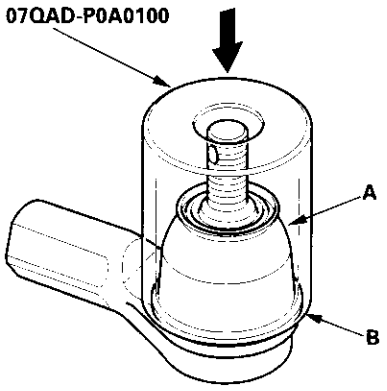


3. Pack the interior of the new boot (B) and lip (C) with fresh multipurpose grease.

   Note these items when installing new grease:

   - Keep grease off the boot installation section (D) and the tapered section (E) of the ball pin.
   - Do not allow dust, dirt, or other foreign materials to enter the boot.

4. Install the new boot (A) using the special tool. 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.

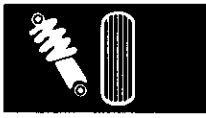


Suspension

Front and Rear Suspension

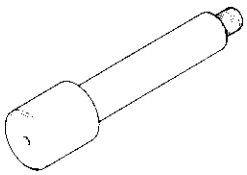
Front Suspension

Rear Suspension



Special Tools

Ref.No.	Tool Number	Description	Qty
①	07GAF-SE00100	Hub Dis/Assembly Tool	1
②	07MAC-SL00200	Ball Joint Remover, 28 mm	1
③	07746-0010500	Attachment, 62 x 68 mm	1
④	07749-0010000	Driver	1
⑤	07965-SA50500	Front Hub Dis/Assembly Tool	1
⑥	07965-SD90100	Support Base	1



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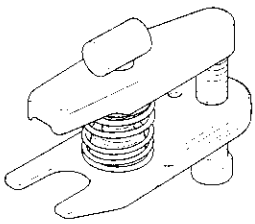
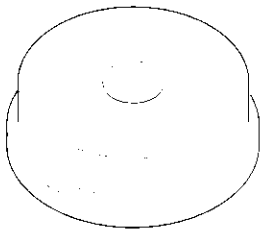


②



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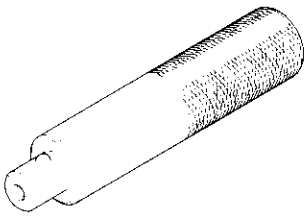
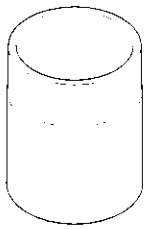


④

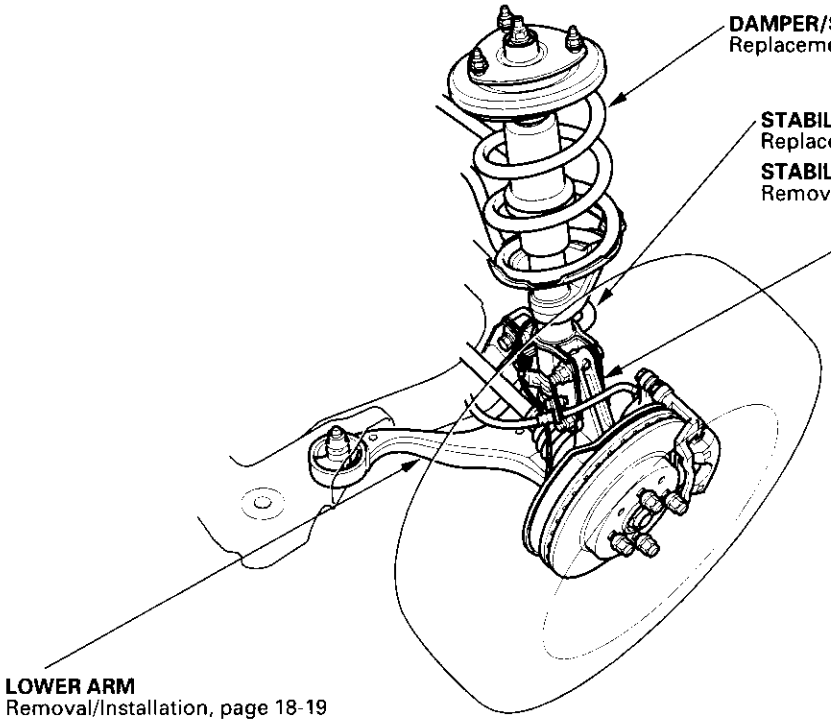
⑤



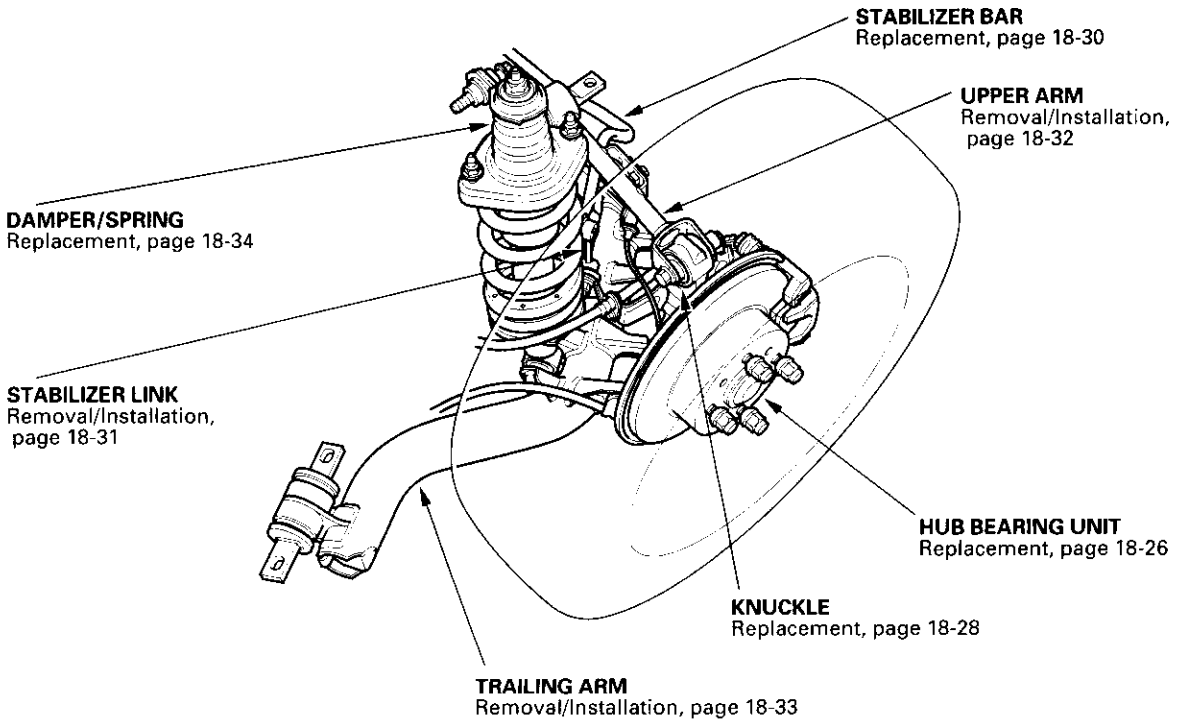
⑥

Component Location Index

Front Suspension:



Rear Suspension:



Wheel Alignment

The suspension can be adjusted for front camber, front toe, and rear toe. However, each of these adjustments are interrelated to each other. For example, when you adjust the toe, the camber changes. Therefore, you must adjust the front wheel alignment whenever you adjust the camber or toe.

Pre-Alignment Checks

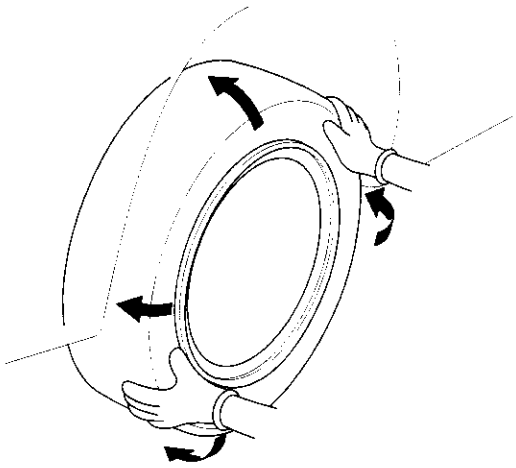
For proper inspection and adjustment of the wheel alignment, do these checks:

1. Release the parking brake to avoid an incorrect measurement.
2. Make sure the suspension is not modified.
3. Check the tire size and tire pressure.

   Tire size:
   Front/rear: 195/60R15

   Tire pressure:
   Front: 230 kPa (2.3 kgf/cm², 33 psi)
   Rear: 210 kPa (2.1 kgf/cm², 30 psi)

4. Check the runout of the wheels and tires.
5. Check the suspension ball joints. (Hold a wheel with your hands, and move it up and down and right and left to check for wobbling).



6. Bounce the vehicle up and down several times to stabilize the suspension.

Front 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.

Check the caster angle. If the caster angle is not within the specification, check for bent or damaged suspension components.

Front caster angle: 1°40′ ± 1°

Front 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.

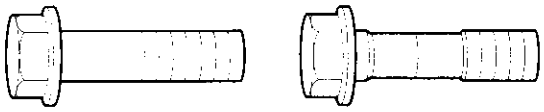
Check the camber angle. If the camber angle is not within the specification, adjust the camber.

Front camber angle: −0°30′ ± 45′

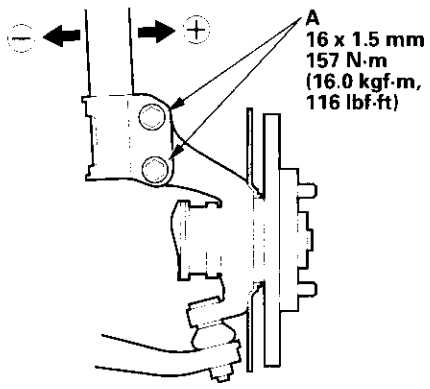
Front Camber Adjustment

The front camber can be adjusted by exchanging one or both of the damper pinch bolts with the smaller diameter adjusting bolt(s). The difference between the adjusting bolt diameter and the pinch bolt hole diameter allows a small range of adjustment.

Damper Pinch Bolt: **Adjusting Bolt: P/N 90188-S5A-000**



1. Raise the front of the vehicle, and support it with safety stands in the proper location (see page 1-8). Remove the front wheels.
2. Loosen the damper pinch nuts and bolts (A), and adjust the camber by moving the bottom of the damper within the range of the damper pinch bolt free play.



3. Tighten the bolts to the specified torque.
4. Reinstall the front wheels. Lower the front of the vehicle to the ground, and bounce the vehicle several times to stabilize the suspension.
5. Check the camber angle. If it is within the specification, check the front toe. If it is not within the specification, go to step 6.

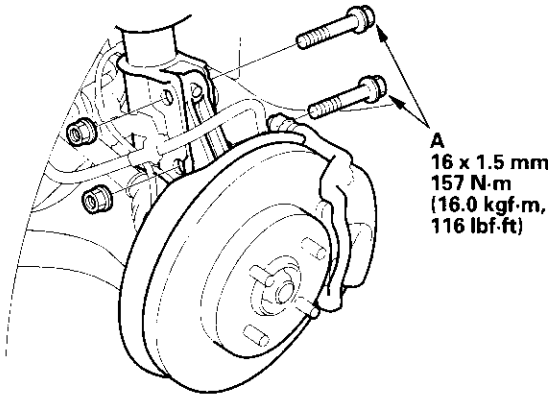
(cont'd)

Wheel Alignment (cont'd)

6. Raise the front of the vehicle, and support it with safety stands in the proper location (see page 1-8). Remove the front wheels.

7. Replace the damper pinch bolts with the adjusting bolts (A), and adjust the camber angle.

   NOTE: The camber angle can be adjusted up to ± 15' (center of tolerance) by replacing one damper pinch bolt with the adjusting bolt. The camber angle can be adjusted up to ± 30' by replacing both upper and lower damper pinch bolts with the adjusting bolts.



8. Tighten the bolts to the specified torque.

9. Reinstall the front wheels. Lower the front of the vehicle to the ground, and bounce the vehicle several times to stabilize the suspension.

10. Check the camber angle. If it is within the specification, check the front toe, and adjust it if necessary. If it is not within the specification, readjust, and recheck. If the camber angle cannot be adjusted to the specification, check for bent or damaged suspension components.

Rear 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.

Check the camber angle. If the camber angle is not within the specification, check for bent or damaged suspension components.

Rear camber angle: −0°55' ± 45'

NOTICE

Do not loosen the special bolts on the trailing arm.

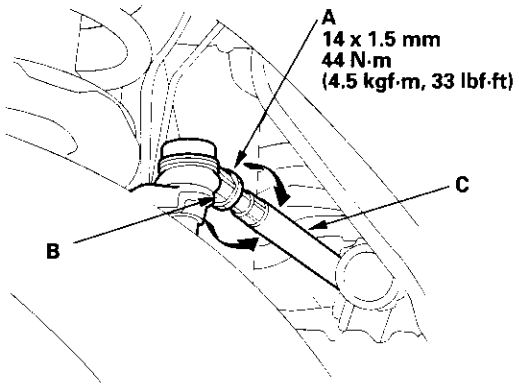
Front Toe Inspection/Adjustment

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. Center the steering wheel spokes.
2. Check the toe. If it is not within the specification, go to step 3.

   Front toe-in: 0 ± 3 mm (0 ± 0.12 in.)

3. Loosen the locknut (A) while holding the tie-rod end (B).



4. Turn the tie-rod (C) until the toe is correct.
5. After adjusting, tighten the locknut while holding the tie-rod end. Make sure the toe setting does not change.

Rear Toe Inspection/Adjustment

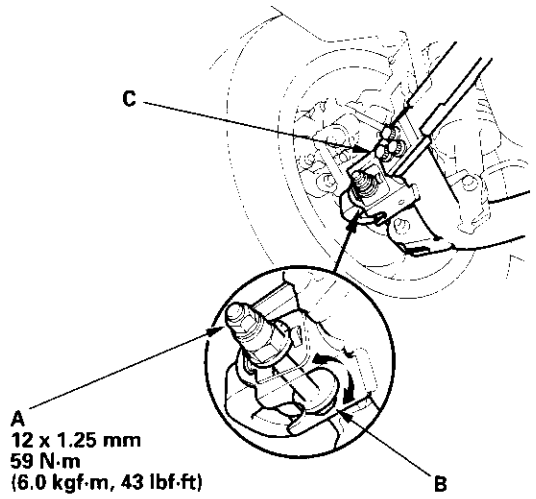
Use commercially-available computerized four wheel alignment equipment to measure wheel alignment (caster, camber, toe, and turning angle). Follow the equipment manufacturer's instructions.

1. Release the parking brake.
2. Check the toe. If it is not within the specification, go to step 3.

   Rear toe-in (inspection):
   1 ± 3 mm (0.04 ± 0.12 in.)

3. Loosen the self-locking nut (A) while holding the adjusting bolt (B).

   NOTICE
   Do not loosen the special bolts (C) on the lower arm to adjust the alignment.



4. Replace the self-locking nut with a new one, and lightly tighten.

   NOTE: Always use a new self-locking nut whenever it has been loosened.

5. Turn the adjusting bolt until the toe is correct.

   Rear toe-in (adjustment):
   2 $^{2}_{1}$ mm (0.08 $^{0.08}_{0.04}$ in.)

6. Tighten the self-locking nut to the specified torque while holding the adjusting bolt.

(cont'd)

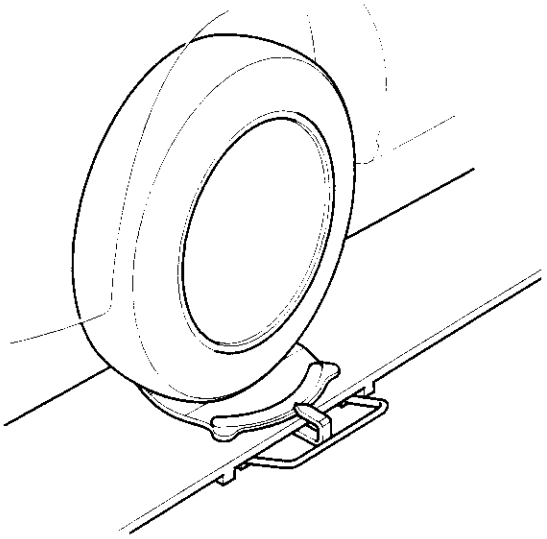
Wheel Alignment (cont'd)

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 steering wheel fully to the right and left while applying the brake, and check the turning angles of both front wheels. If the turning angle is not within the specification or the inward turning angles differ between the right and left side, go to step 2.

Turning angle:
Inward: 34°00′ ± 2°
Outward: 28°00′ (reference)



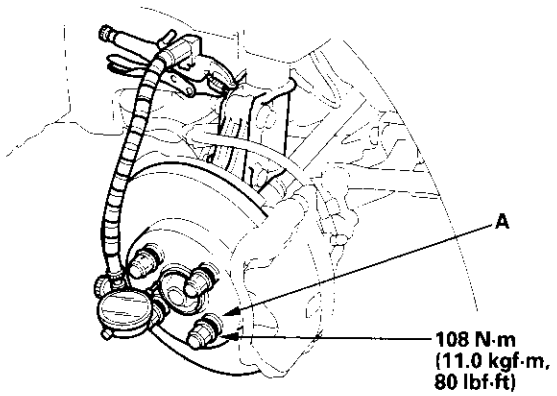
2. Check the toe. If it is correct, but the turning angle is not within the specification, check for bent or damaged suspension components.

Wheel Bearing End Play Inspection

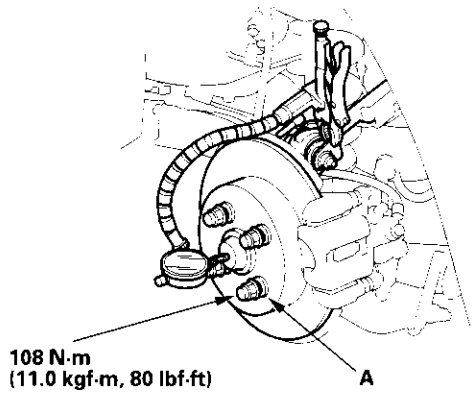
1. Raise the vehicle, and support it with safety stands in the proper location (see page 1-8). Remove the wheels.

2. Install suitable flat washers (A) and wheel nuts, and tighten the nuts to the specified torque to hold the brake disc securely against the hub.

Front:



Rear:



3. Set up the dial gauge against the hub flange as shown, and measure the bearing end play moving the brake disc inward and outward.

Bearing end play:
Standard:
Front/rear: 0—0.05 mm (0—0.002 in.)

4. If the bearing end play is more than the standard, replace the wheel bearing.

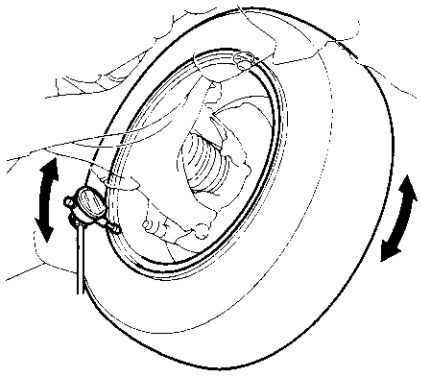
Wheel Runout Inspection

1. Raise the vehicle, and support it with safety stands in the proper location (see page 1-8).

2. Check for a bent or deformed wheel.

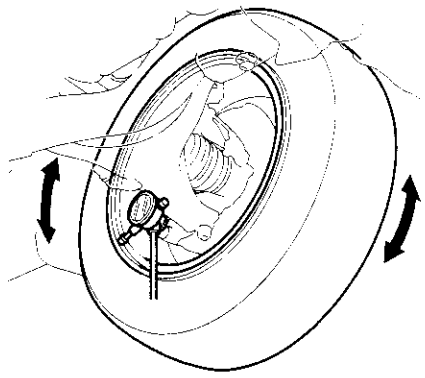
3. Set up the dial gauge as shown, and measure the axial runout by turning the wheel.

   Front and rear wheel axial runout:
   Standard:
   Aluminum wheel: 0—0.7 mm (0—0.03 in.)
   Service limit: 2.0 mm (0.08 in.)



4. Reset the dial gauge to the position shown, and measure the radial runout.

   Front and rear wheel radial runout:
   Standard:
   Aluminum wheel: 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 18-8), and make sure the mating surfaces on the brake disc and the inside of the wheel are clean.

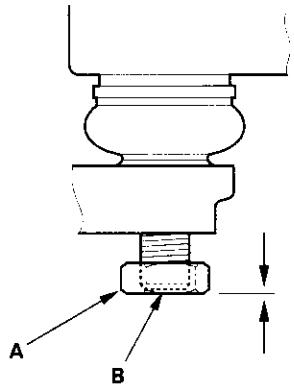
6. If the bearing end play is within the specification but the wheel runout is more than the service limit, replace the wheel.

Ball Joint Removal

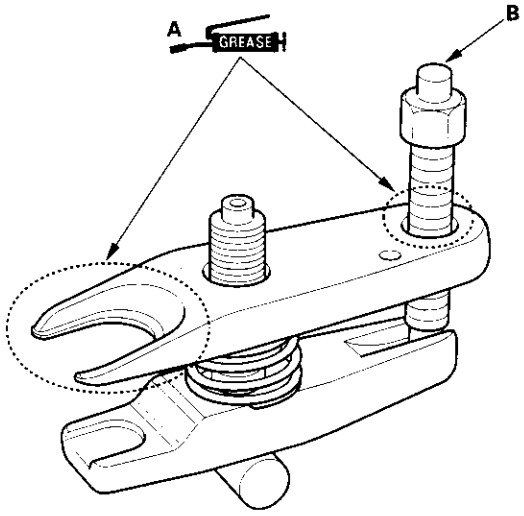
Special Tools Required
Ball joint remover, 28 mm 07MAC-SL00200

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.

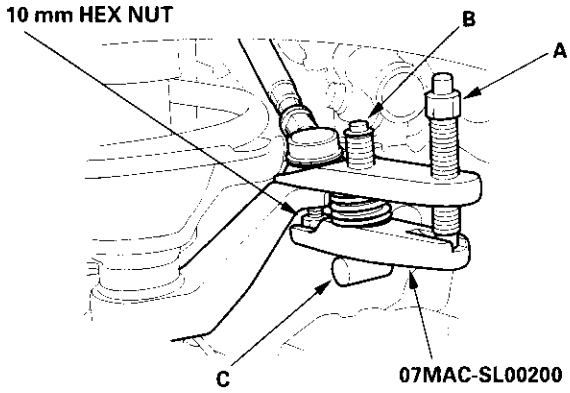
1. Install a hex nut (A) onto the threads of the ball joint (B). Make sure the nut is flush with the ball joint pin end to prevent damage to the threaded end of the ball joint pin.



2. Apply grease to the special tool on the areas shown (A). This will ease installation of the tool and prevent damage to the pressure bolt (B) threads.



3. Loosen the pressure bolt (A), and install the special tool 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).



4. After adjusting the adjusting bolt, make sure the head (C) of the adjusting bolt is in the position shown to allow the jaw to pivot.

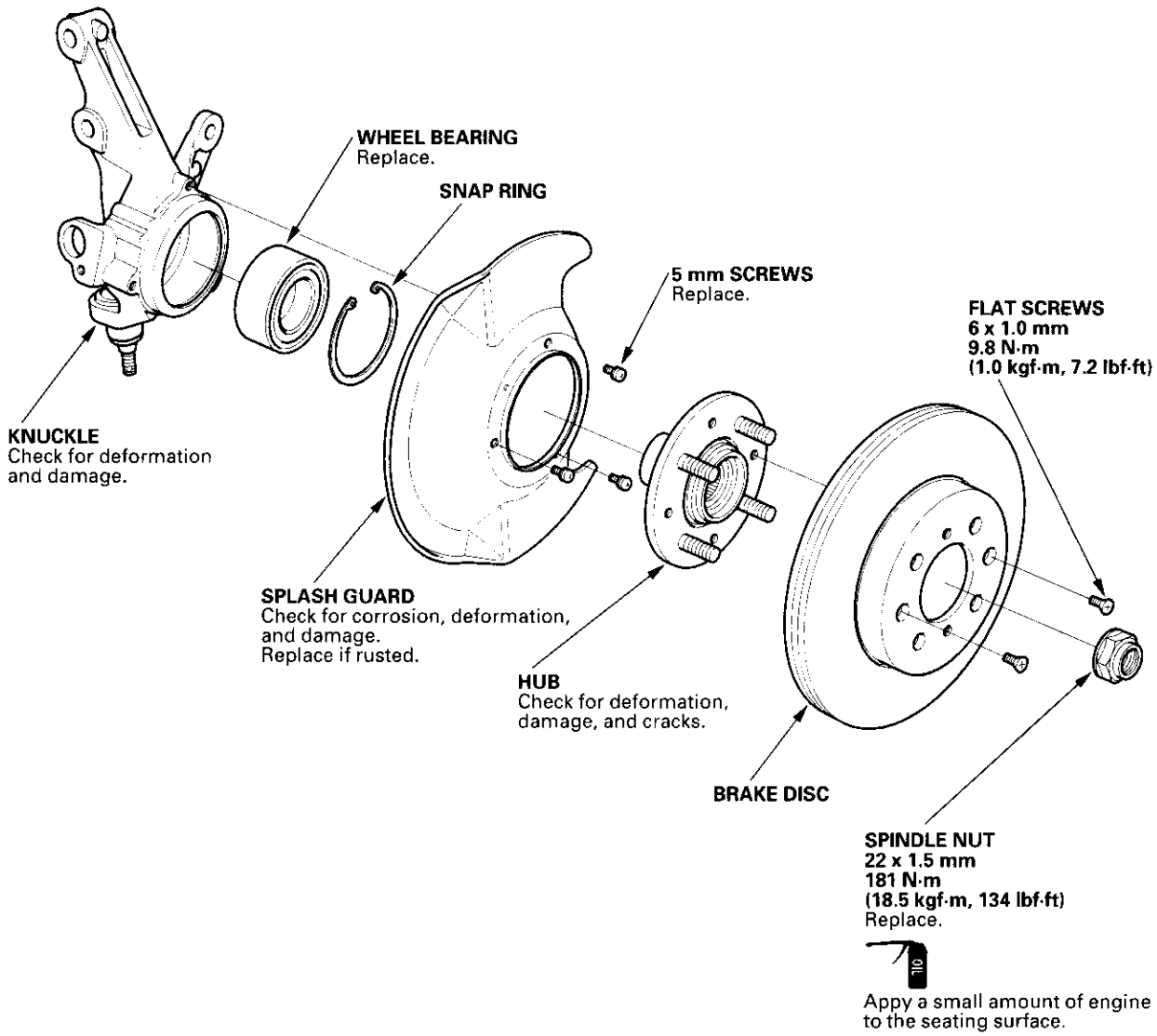
5. With a wrench, tighten the pressure bolt until the ball joint pin pops loose from the steering arm or knuckle. If necessary, apply penetrating type lubricant to loosen the ball joint pin.

   NOTE: Do not use pneumatic or electric tools on the pressure bolt.

6. Remove the tool, then remove the nut from the end of the ball joint pin, and pull the ball joint out of the steering arm or knuckle. Inspect the ball joint boot, and replace it if damaged.

Knuckle/Hub/Wheel Bearing Replacement

Exploded View



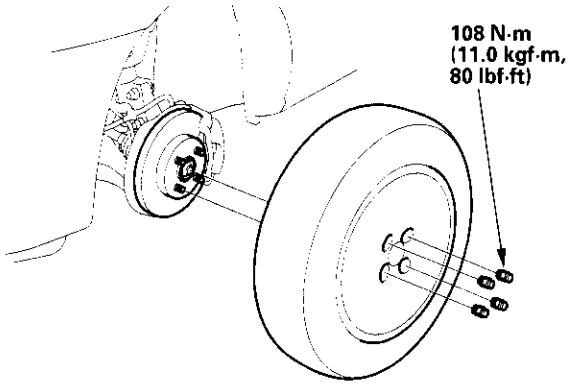
(cont'd)

Knuckle/Hub/Wheel Bearing Replacement (cont'd)

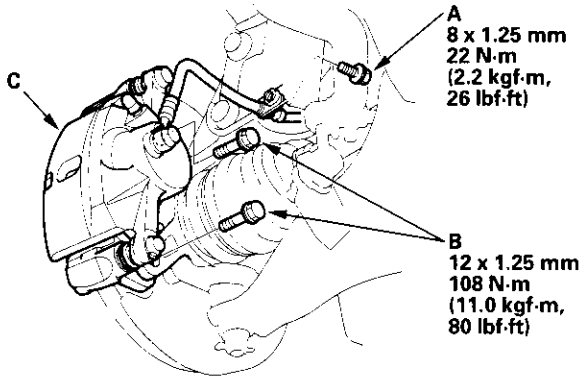
Special Tools Required
- Hub dis/assembly tool 07GAF-SE00100
- Ball joint remover, 28 mm 07MAC-SL00200
- Attachment 62 x 68 mm 07746-0010500
- Driver 07749-0010000
- Support base 07965-SD90100

1. Raise the front of the vehicle, and support it with safety stands in the proper location (see page 1-8).

2. Remove the wheel cap, wheel nuts, and front wheel.

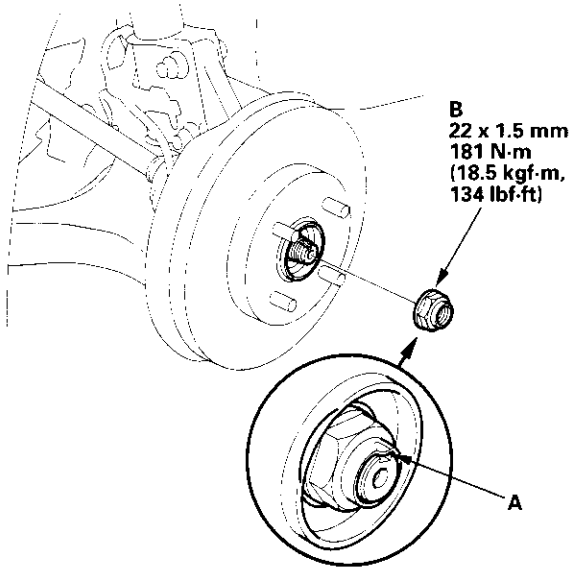


3. Remove the brake hose bracket mounting bolt (A).

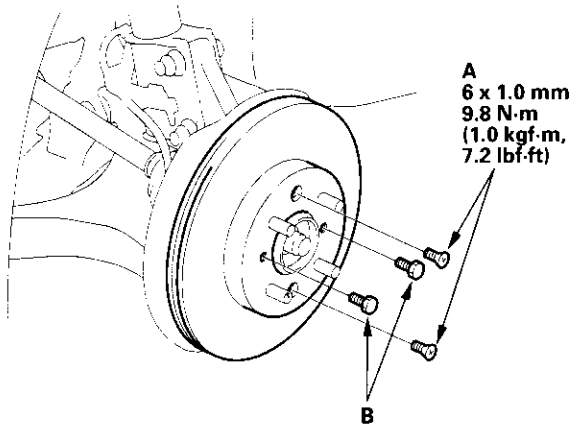


4. Remove the caliper bracket mounting bolts (B), and remove the caliper assembly (C) from the knuckle. To prevent damage to the caliper assembly or brake hose, use a short piece of wire to hang the caliper assembly from the undercarriage. Do not twist the brake hose with force.

5. Raise the stake (A), and remove the spindle nut (B).

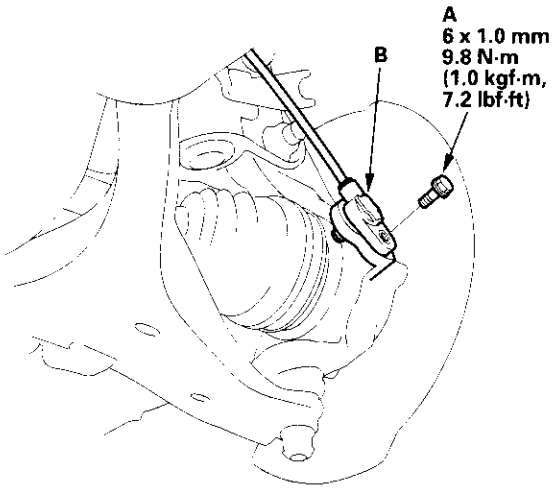


6. Remove the brake disc retaining flat screws (A).

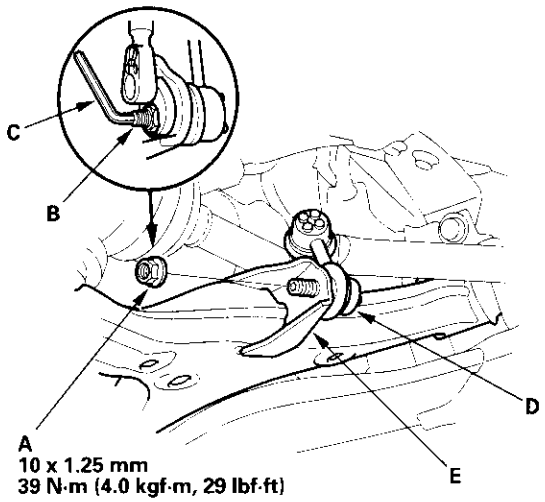


7. Screw two 8 x 1.25 mm bolts (B) into the disc to push it away from the hub. Turn each bolt two turns at a time to prevent cocking the disc excessively.

8. Remove the flange bolt (A) and wheel sensor (B) from the knuckle. Do not disconnect the wheel sensor connector.

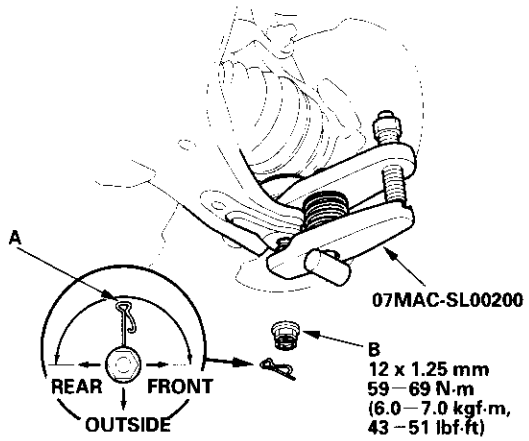


9. Remove the flange nut (A) while holding the joint pin (B) with a hex wrench (C), and disconnect the stabilizer link (D) from the lower arm (E).



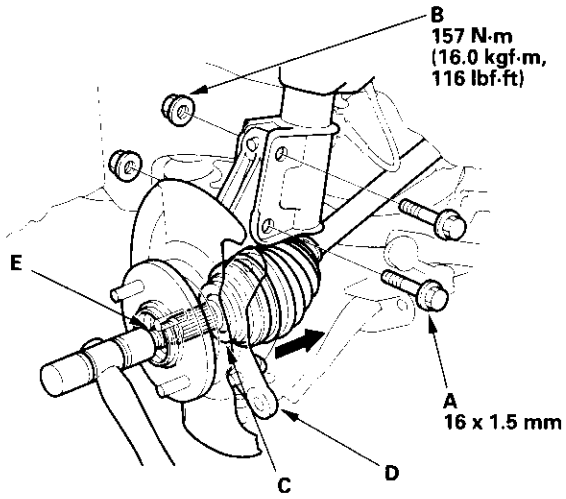
10. Remove the lock pin (A) from the lower arm ball joint, and remove the castle nut (B).

NOTE: During installation, insert the lock pin into the ball joint pin from the inside to the outside of the vehicle. The closed end of the lock pin must be in the range shown.



11. Disconnect the lower arm from the knuckle using the special tool (see page 18-10).

12. Loosen the damper pinch bolts (A) while holding the nuts (B), and remove the bolts and nuts.



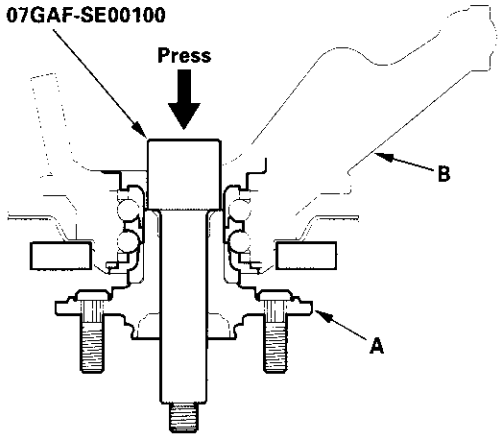
13. Remove the driveshaft outboard joint (C) from the knuckle (D) by tapping the driveshaft end (E) with a plastic hammer while drawing the knuckle outward, then remove the knuckle.

NOTE: Do not pull the driveshaft end outward. The driveshaft joint may come off.

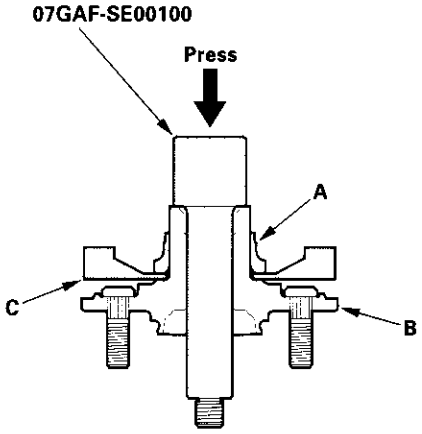
(cont'd)

Knuckle/Hub/Wheel Bearing Replacement (cont'd)

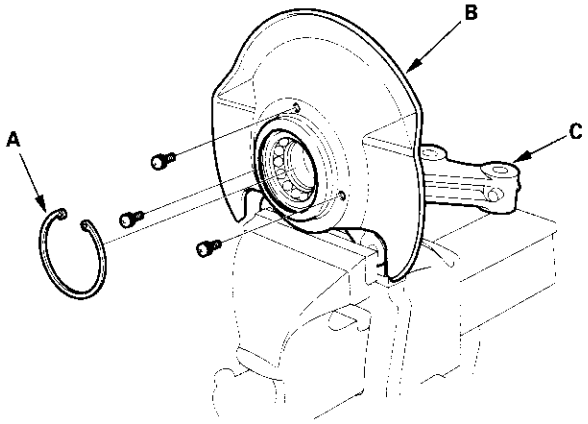
14. Separate the hub (A) from the knuckle (B) using the special tool and a hydraulic press. Be careful not to deform the splash guard. Hold onto the hub to keep it from falling when pressed clear.



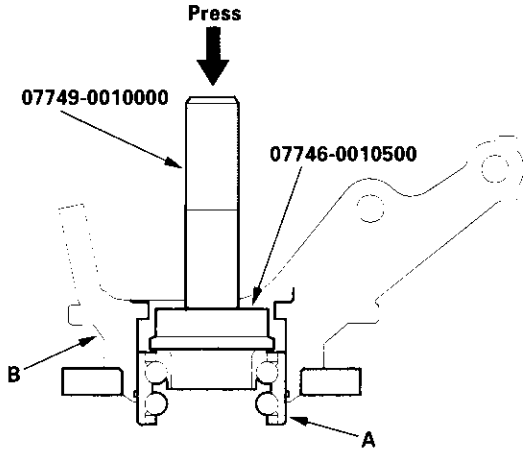
15. Press the wheel bearing inner race (A) off of the hub (B) using the special tool, a commercially available bearing separator (C), and a press.



16. Remove the snap ring (A) and the splash guard (B) from the knuckle (C).

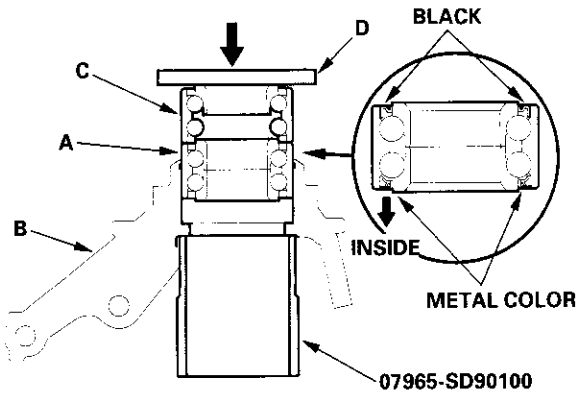


17. Press the wheel bearing (A) out of the knuckle (B) using the special tool and a press.

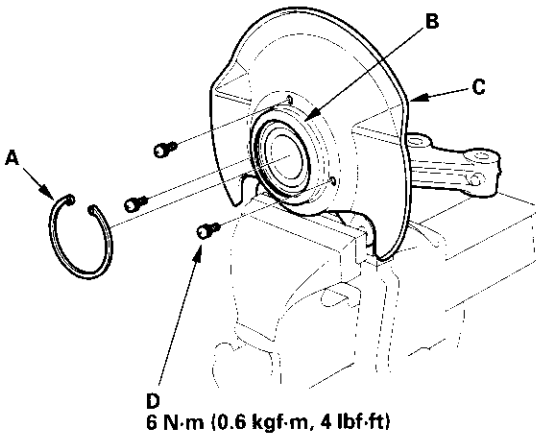


18. Wash the knuckle and hub thoroughly in high flash point solvent before reassembly.

19. Press a new wheel bearing (A) into the knuckle (B) using the old bearing (C), a steel plate (D), the special tool, and a press. Place the wheel bearing on the knuckle with the pack seal side facing (metal color) toward the inside. Be careful not to damage the sleeve of the pack seal.

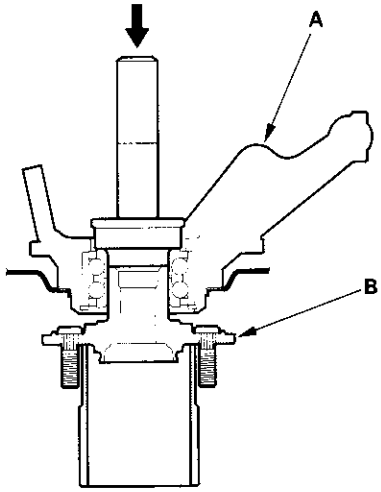


20. Install the snap ring (A) securely in the knuckle (B).



21. Install the splash guard (C), and tighten the screws (D) to the specified torque.

22. Press a new hub bearing unit (A) onto the hub (B) using the special tools and a press.



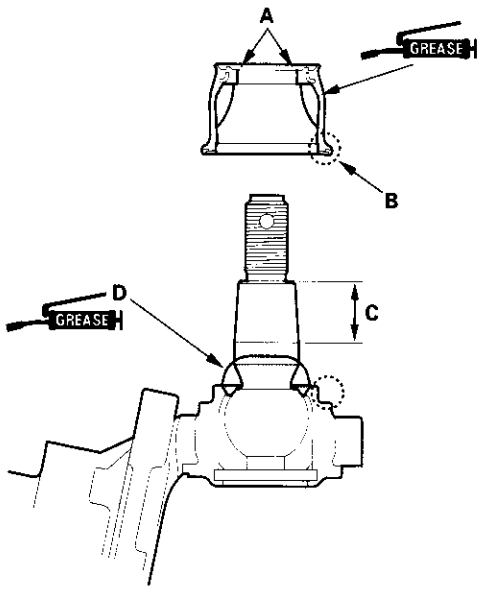
23. Install the knuckle/hub/hub bearing unit in the reverse order of removal, and note these items:

- Be careful not to damage the ball joint boot when installing the knuckle.
- Tighten all mounting hardware to the specified torque values.
- 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.
- Install a new look pin on the castle nut after torquing.
- Use a new spindle nut on 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 surface of the front hub and the inside of the brake disc.
- Before installing the wheel, clean the mating surface of the brake disc and the inside of the wheel.
- Check the front wheel alignment, and adjust it if necessary (see page 18-4).

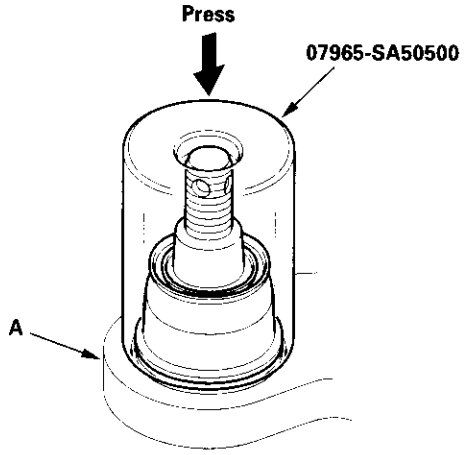
Ball Joint Boot Replacement

Special Tools Required
Front hub dis/assembly tool 07965-SA50500

1. Remove the boot.
2. Pack the interior and lip (A) of a new boot with fresh grease. Keep the grease off of the boot-to-knuckle mating surfaces (B).



3. Wipe the grease off the tapered section of the pin (C), and pack fresh grease onto the base (D).
4. Install the boot onto the ball joint pin, then squeeze it gently to force out any air. Do not let dirt or other foreign materials get into the boot.
5. Press the boot with the special tool until the bottom seats on the knuckle (A) evenly around.

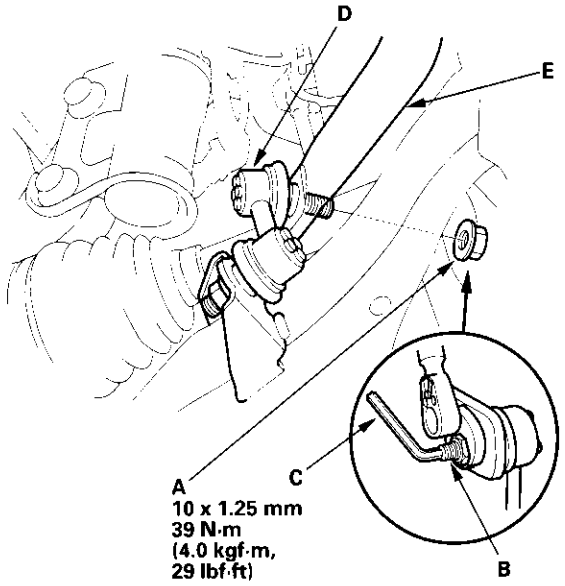


6. After installing a boot, wipe any grease off the exposed portion of the ball joint pin.

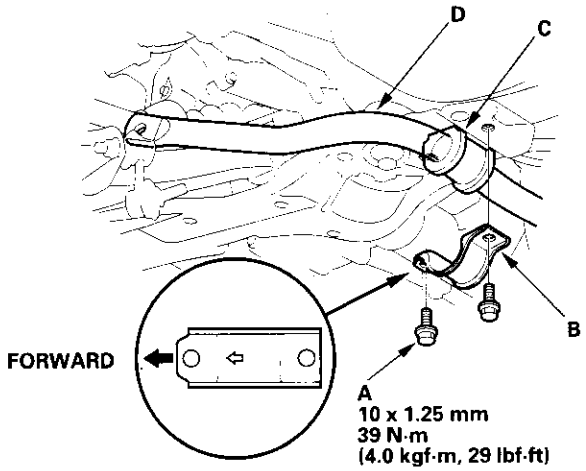
Stabilizer Bar Replacement

1. Raise the front of the vehicle, and support it with safety stands in the proper location (see page 1-8). Remove the front wheels.

2. Remove the self-locking nuts (A) while holding the joint pin (B) with a hex wrench (C), and disconnect the stabilizer links (D) from the stabilizer bar (E) on the right and left.

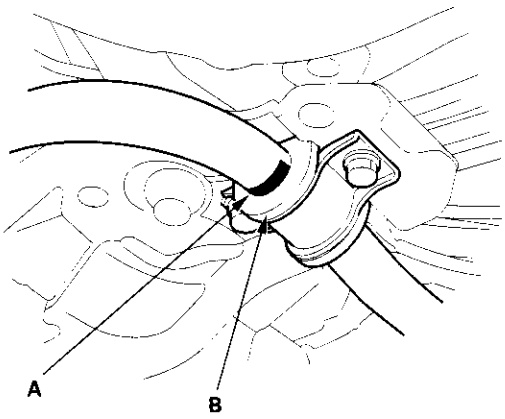


3. Remove the flange bolts (A) and bushing holders (B), then remove the bushings (C) and the stabilizer bar (D).



4. Install the stabilizer bar in the reverse order of removal, and note these items:

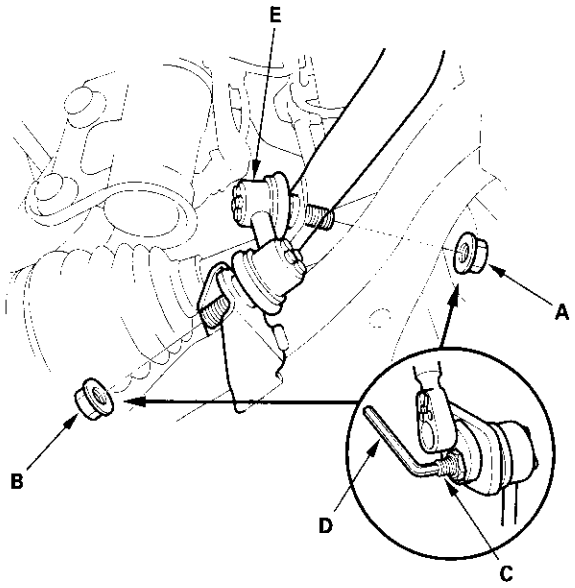
   - Use new self-locking nuts on reassembly.
   - Note the right and left direction of the stabilizer bar.
   - Align the ends of the paint marks (A) on the stabilizer bar with each end of the bushings (B).
   - Note the fore/aft direction of the bushing holders.
   - Refer to Stabilizer Link Replacement to connect the stabilizer bar to the links (see page 18-18).



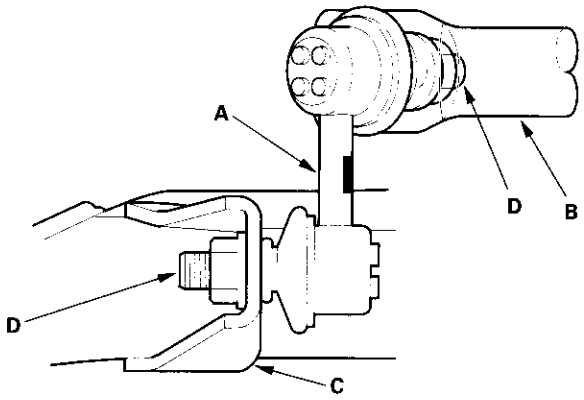
Stabilizer Link Removal/Installation

1. Raise the front of the vehicle, and support it with safety stands in the proper location (see page 1-8). Remove the front wheels.

2. Remove the self-locking nut (A) and flange nut (B) while holding the respective joint pin (C) with a hex wrench (D), and remove the stabilizer link (E).



3. Install the stabilizer link (A) on the stabilizer bar (B) and lower arm (C) with the joint pins (D) set at the center of their range of movement.



4. Install the self-locking nut and flange nut, and lightly tighten them.

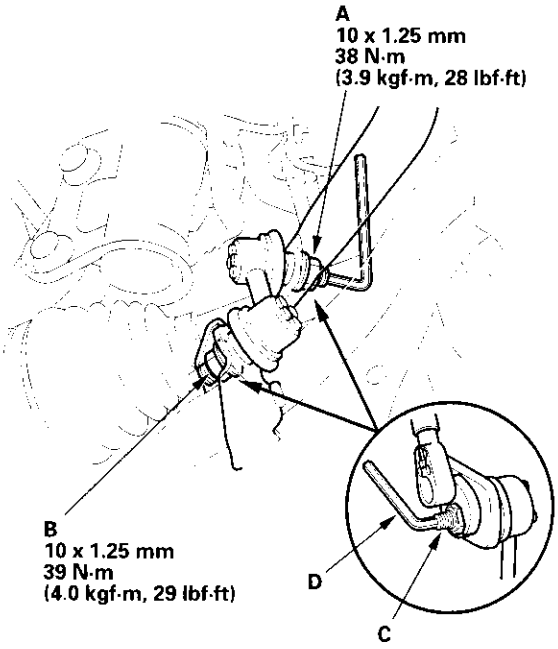
   NOTE: Use a new self-locking nut on reassembly.

5. Place the floor jack under the lower arm ball joint, and raise the suspension to load it with the vehicle's weight.

   NOTICE

   Do not place the jack against the lower arm ball joint.

6. Tighten the self-locking nut (A) and flange nut (B) to the specified torque values while holding the respective joint pins (C) with a hex wrench (D).



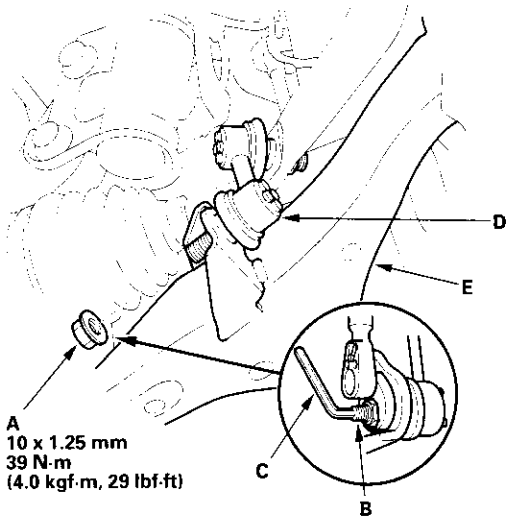
7. After 5 minutes of driving, re-tighten the self-locking nut again to the specified torque.

Lower Arm Removal/Installation

Special Tools Required
Ball joint remover, 28 mm 07MAC-SL00200

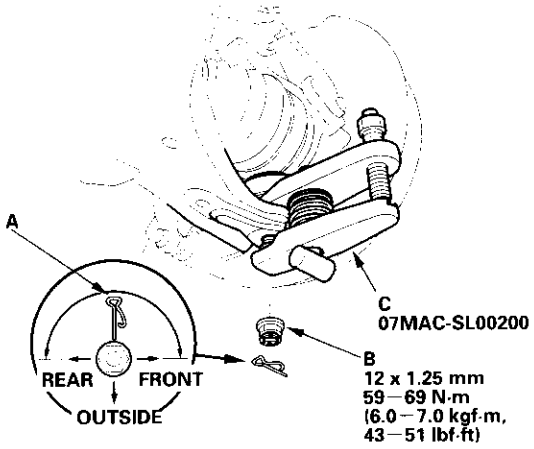
1. Raise the front of the vehicle, and support it with safety stands in the proper location (see page 1-8). Remove the front wheels.

2. Remove the flange nut (A) while holding the joint pin (B) with a hex wrench (C), and disconnect the stabilizer link (D) from the lower arm (E).



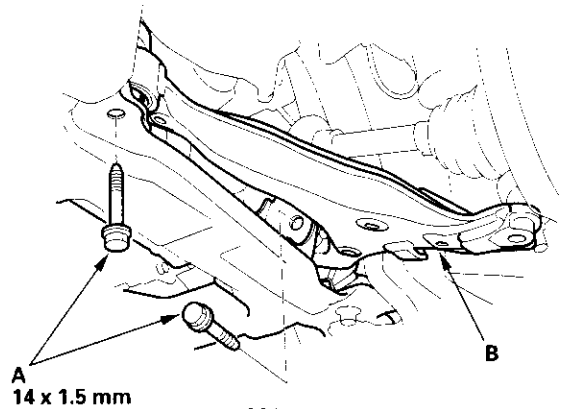
3. Remove the lock pin (A) from the lower arm ball joint, and remove the castle nut (B).

   NOTE: During installation, insert the lock pin into the ball joint pin from the inside to the outside of the vehicle. The closed end of the lock pin must be in the range shown.



4. Disconnect the lower arm from the knuckle using the special tool (see page 18-10).

5. Remove the flange bolts (A), and remove the lower arm (B).

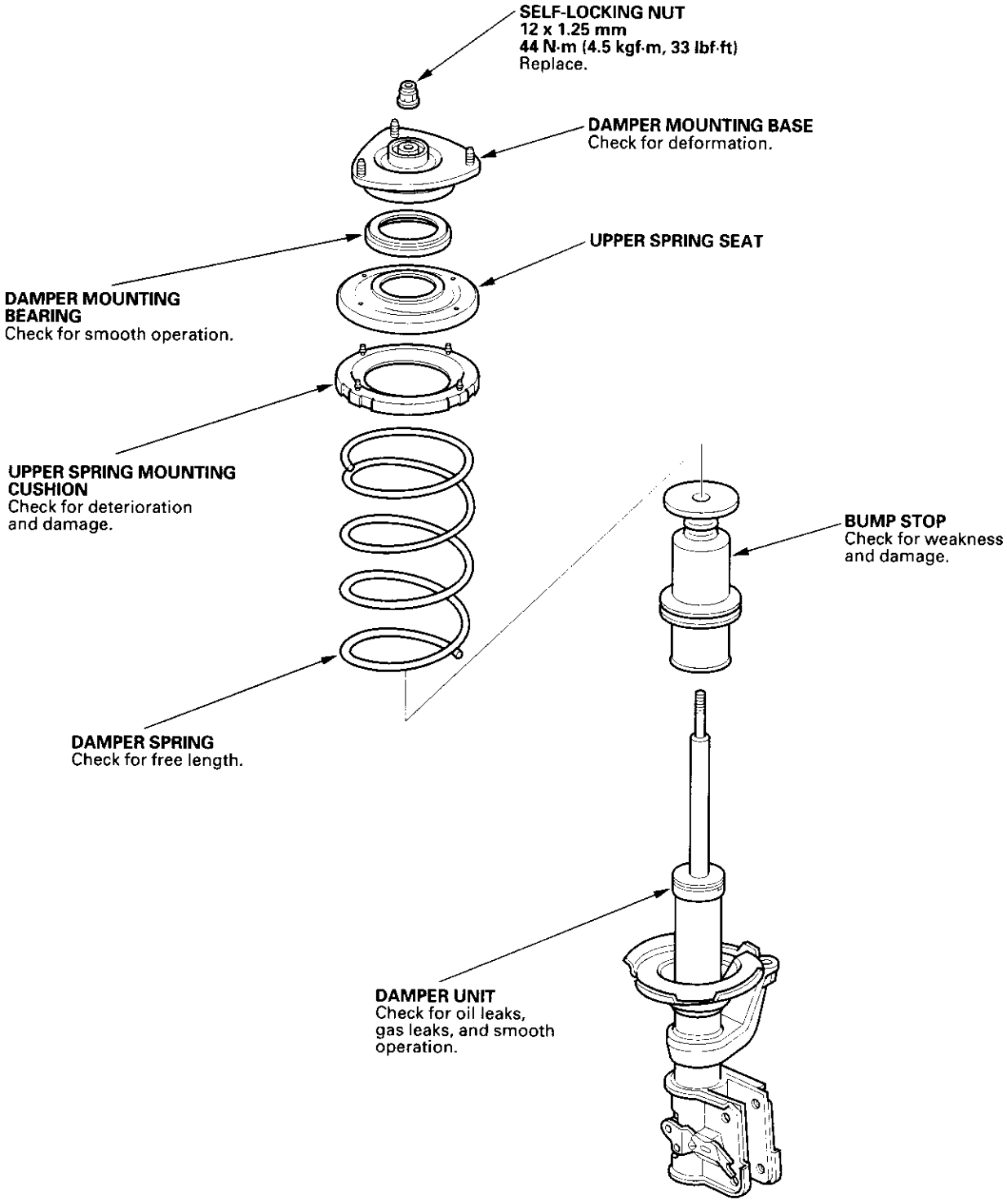


6. Install the lower arm in the reverse order of removal, and note these items:

   - Be careful not to damage the ball joint boot when connecting the lower arm to the knuckle.
   - Tighten all mounting hardware to the specified torque values.
   - First install all the components and lightly tighten the bolts and nuts, then raise the suspension to load it with the vehicle's weight before fully tightening it to the specified torques.
   - 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.
   - Install a new lock pin on the castle nut after torquing.
   - Before installing the wheel, clean the mating surface of the brake disc and the inside of the wheel.
   - Check the wheel alignment, and adjust it if necessary (see page 18-4).

Damper/Spring Replacement

Exploded View

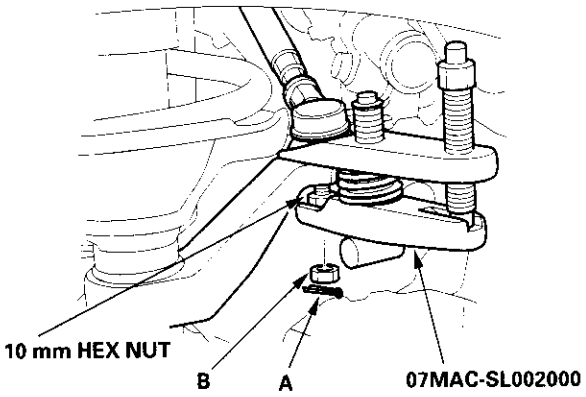


Special Tools Required
Ball joint remover, 28 mm 07MAC-SL00200

Removal

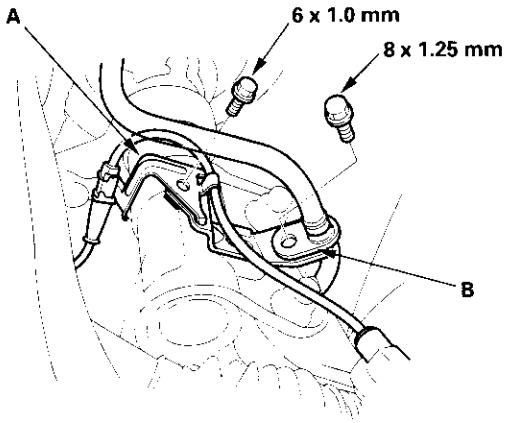
1. Raise the front of the vehicle, and support it with safety stands in the proper location (see page 1-8). Remove the front wheels.

2. Remove the cotter pin (A) from the tie-rod end ball joint, and remove the nut (B).

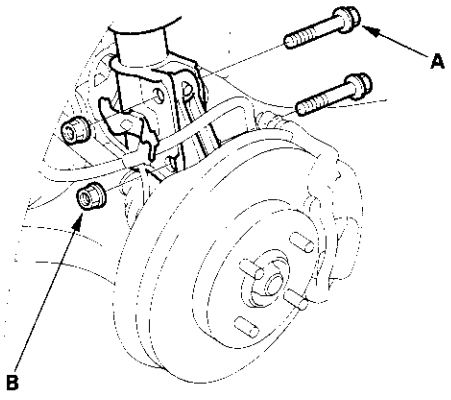


3. Disconnect the tie-rod end from the steering arm on the damper using the special tool (see page 18-10).

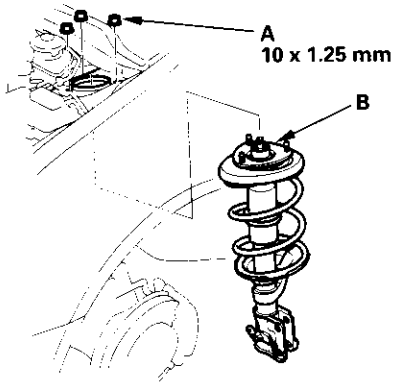
4. Remove the bolts, and remove the wheel sensor harness bracket (A) and brake hose bracket (B) from the damper. Do not disconnect the wheel sensor connector.



5. Remove the damper pinch bolts (A) while holding the nuts (B).



6. Remove the flange nuts (A) from the top of the damper.



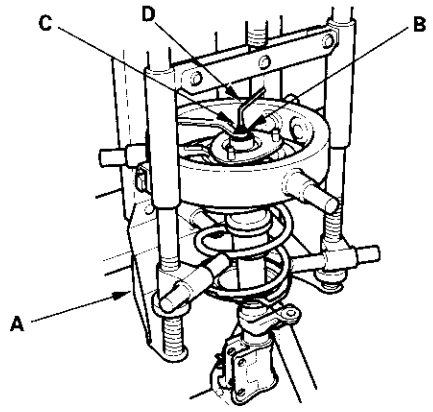
7. Lower the lower arm, and remove the damper assembly (B).

(cont'd)

Damper/Spring Replacement (cont'd)

Disassembly/Inspection

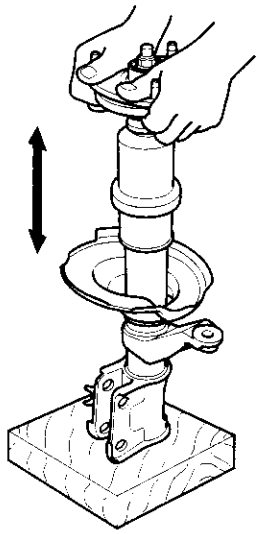
1. Compress the damper spring with a commercially available strut spring compressor (A) according to the manufacturer's instructions, then remove the self-locking nut (B) while holding the damper shaft (C) with a hex wrench (D). Do not compress the spring more than necessary to remove the nut.



2. Release the pressure from the strut spring compressor, then disassemble the damper as shown in the Exploded View.

3. Reassemble all the parts, except for the upper spring seat and spring.

4. 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.

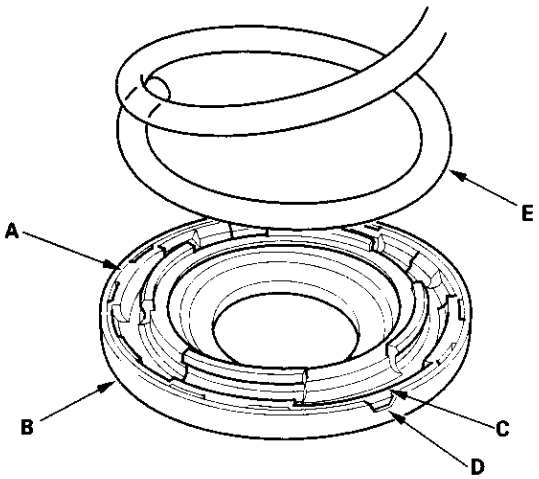


5. Check for oil leaks, abnormal noises, and binding during these tests.

Reassembly

NOTE: Refer to the Exploded View as needed.

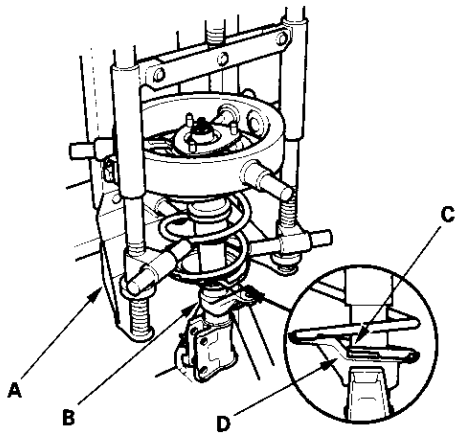
1. Install the upper spring mounting cushion (A) on the upper spring seat (B) by aligning the tab portion (C) on the cushion with the cutout (D) in the seat.



2. Install the spring (E) in the groove of the cushion securely.

3. Install the damper mounting bearing and damper mounting base on the upper spring seat.

4. Install the upper spring seat and the spring on a commercially available strut spring compressor (A), and compress the spring lightly.

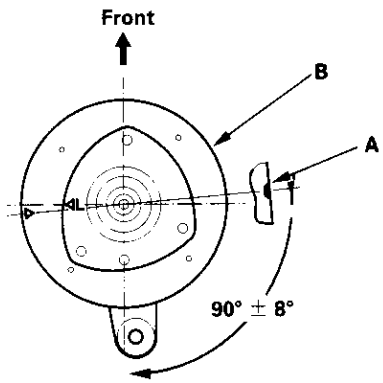


5. Insert the damper unit (B) up through the compressed spring.

6. Align the bottom of the spring (C) and the stepped part (D) of the lower spring seat.

7. Check that the cutout (A) in the side of the upper spring seat (B) is in position shown. If the cutout is out of position, remove all of the components from the spring compressor. Go to step 2, and reassemble the spring and upper spring seat accordingly.

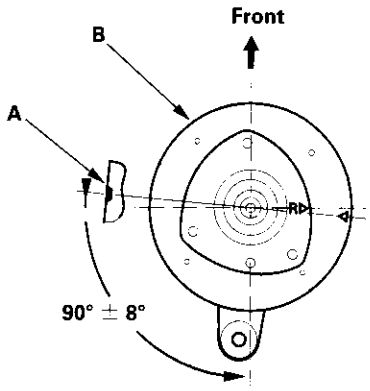
Left side:



(cont'd)

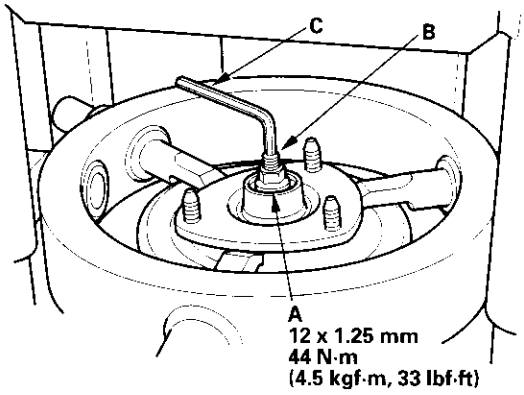
Damper/Spring Replacement (cont'd)

Right side:



8. Hold the bottom of the damper with your hand, and compress the spring. Do not compress the spring excessively.

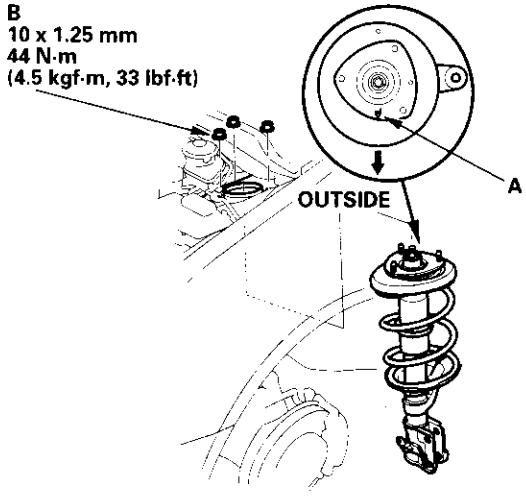
9. Install the 12 mm nut (A) on the damper shaft (B). Hold the damper shaft with a hex wrench (C), and tighten the 12 mm nut to the specified torque.



10. Remove the damper assembly from the strut spring compressor.

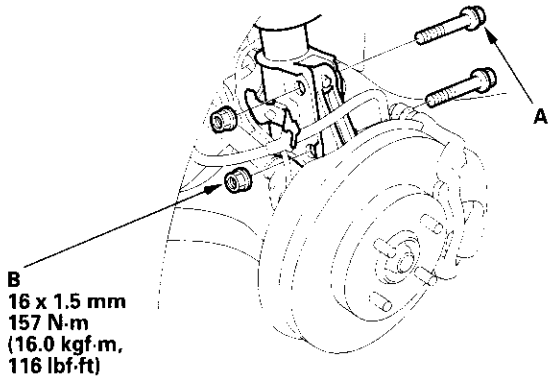
Installation

1. Lower the lower arm, and position the damper assembly in the body. Turn the damper mounting base so the "△L" or "△R" mark (A) faces toward the outside of the vehicle.



2. Loosely install the flange nuts (A) onto the top of the damper.

3. Position the damper on the knuckle, and install the new damper pinch bolts (A) and nuts (B), and lightly tighten the nuts.



4. Place the floor jack under the lower arm ball joint, and raise the suspension to load it with the vehicle's weight.

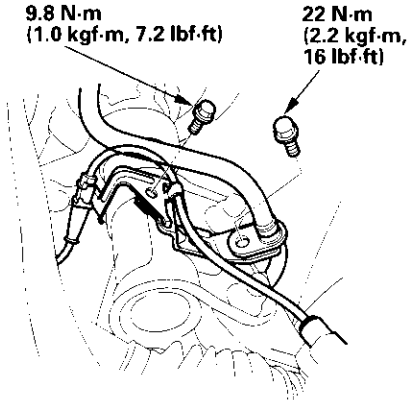
NOTICE

Do not place the jack against the lower arm ball joint.

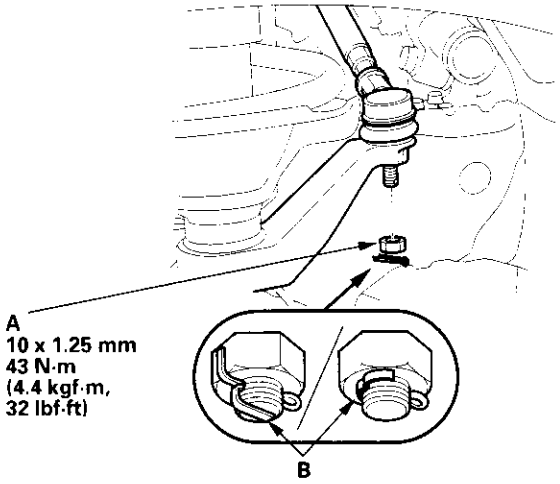
5. Tighten the flange nuts on the top of the damper to the specified torque.

6. Tighten the damper pinch nuts to the specified torque.

7. Install the brake hose bracket (A) and the wheel sensor harness bracket (B) onto the damper, and tighten the bolt to the specified torque.



8. Connect the tie-rod end to the steering arm, and tighten the nut (A) to the specified torque. Install the cotter pin (B) after tightening, and bend its end as shown.

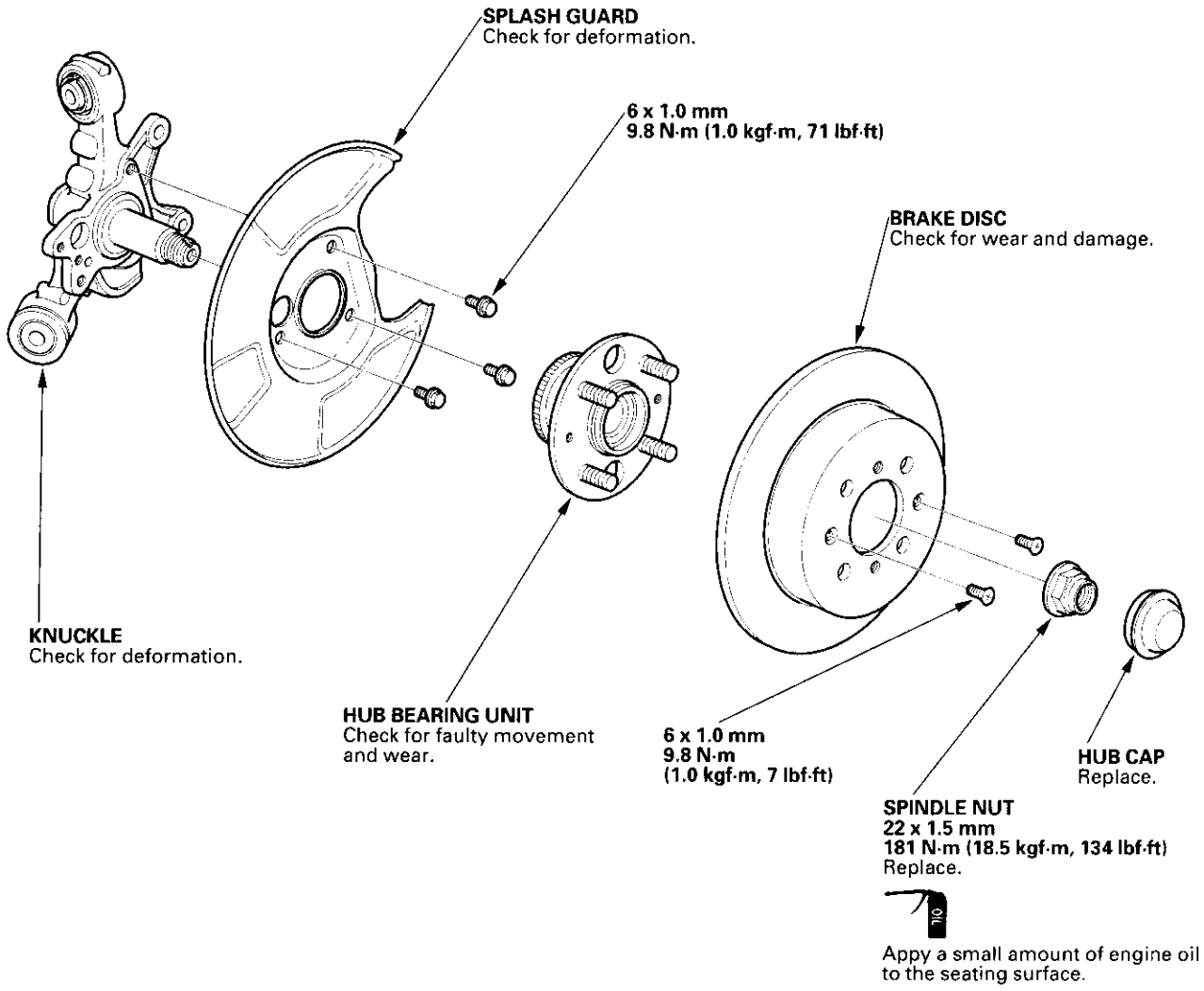


9. Clean the mating surface of the brake disc and the inside of the wheel, then install the front wheels.

10. Check the wheel alignment, and adjust it if necessary (see page 18-4).

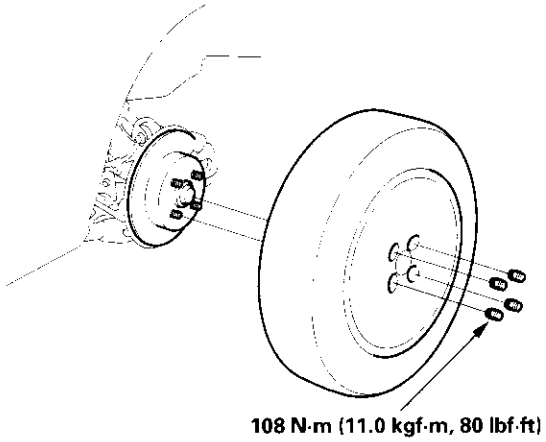
Hub Bearing Unit Replacement

Exploded View

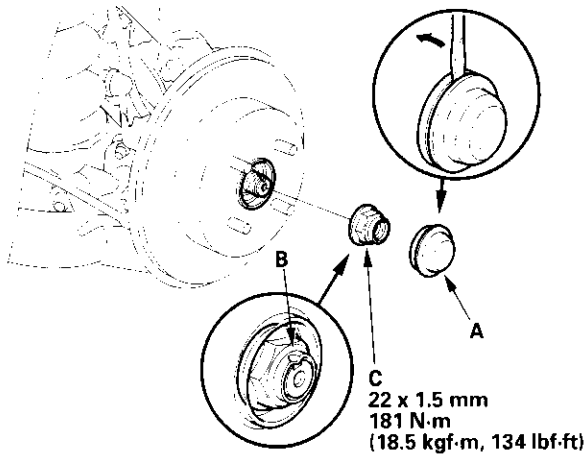


1. Raise the rear of the vehicle, and support it with safety stands in the proper location (see page 1-8).

2. Remove the wheel cap, wheel nuts, and rear wheel.

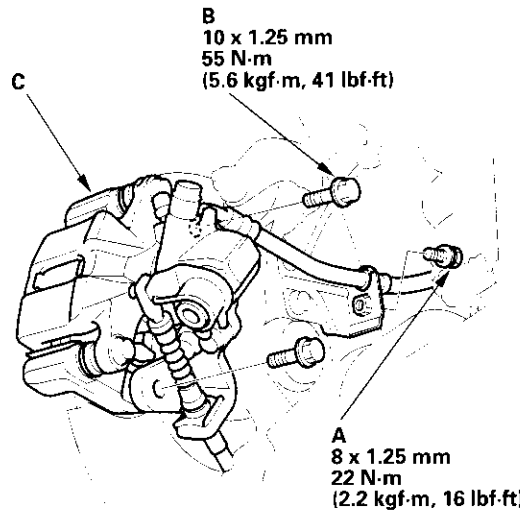


3. Remove the hub cap (A), raise the stake (B), and remove the spindle nut (C).



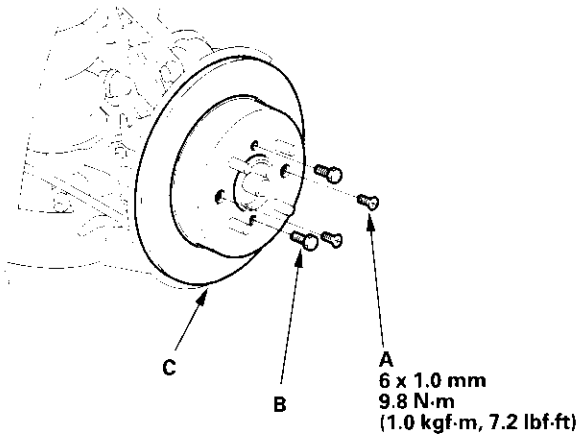
4. Release the parking brake lever.

5. Remove the brake hose mounting bolt (A).



6. Remove the caliper bracket mounting bolts (B), and hang the caliper (C) to one side. To prevent damage to the caliper or brake hose, use a short piece of wire to hang the caliper from the undercarriage.

7. Remove the brake disc retaining screws (A).

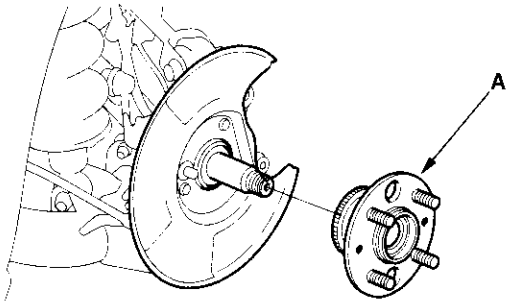


8. Screw two 8 x 1.25 mm bolts (B) into the disc (C) to push it away from the hub. Turn each bolt two turns at a time to prevent cocking the disc excessively. Remove the brake disc.

(cont'd)

Hub Bearing Unit Replacement (cont'd)

9. Remove the hub bearing unit (A) from the spindle.



10. Install the hub bearing unit in the reverse order of removal, and note these items:

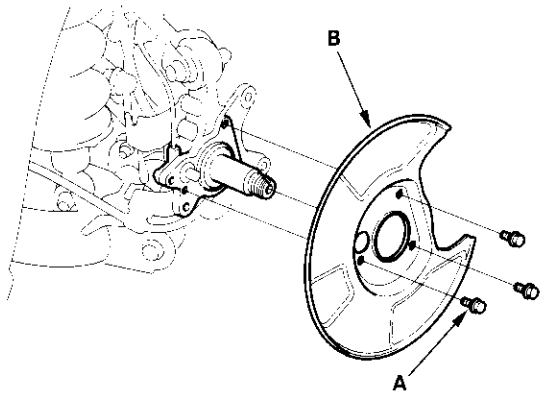
- Tighten all mounting hardware to the specified torque values.
- Before installing the brake disc, clean the mating surface of the hub and the inside of the brake disc.
- Use a new spindle nut on reassembly.
- After tightening, use a drift to stake the spindle nut shoulder against the spindle.
- Use a new hub cap on reassembly.
- Before installing the wheel, clean the mating surface of the brake disc and the inside of the wheel.

Knuckle Replacement

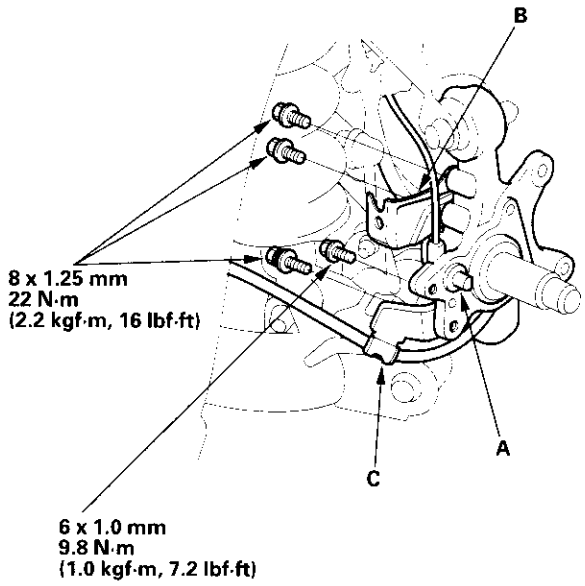
1. Raise the rear of the vehicle, and support it with safety stands in the proper location (see page 1-8). Remove the rear wheels.

2. Remove the brake disc and hub bearing unit (see step 1 on page 18-27).

3. Remove the flange bolts (A) and splash guard (B) from the knuckle.



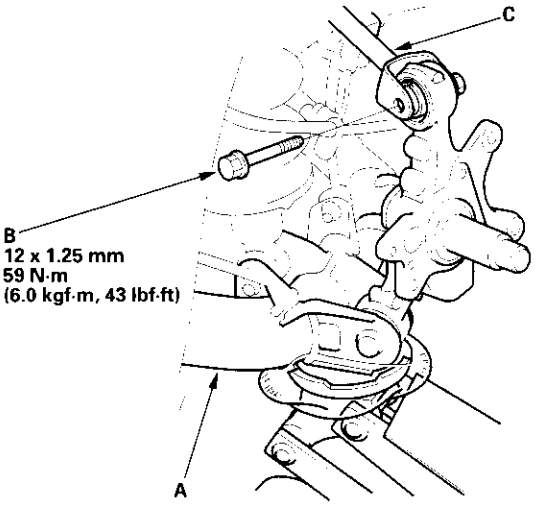
4. Remove the wheel sensor (A), brake hose mounting bracket (B), and parking cable mounting bracket (C) from the knuckle. Do not disconnect the wheel sensor connector.



5. Place the floor jack under the trailing arm (A), to support it.

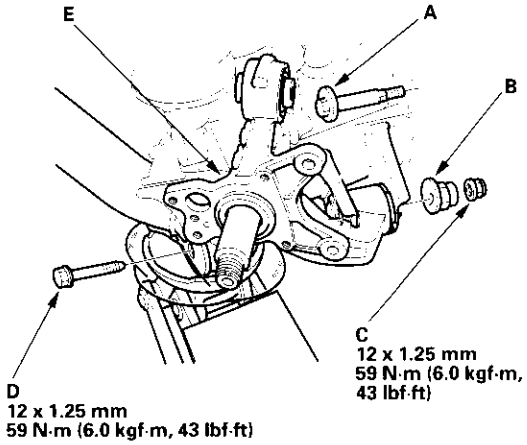
NOTICE

Do not place the jack against the plate section of the lower arm. Be careful not to damage any suspension components.



6. Remove the flange bolt (B), and disconnect the upper arm (C) from the knuckle.

7. Mark the cam positions of the adjusting bolt (A) and adjusting cam (B), the remove the self-locking nut (C), adjusting cam, and adjusting bolt. Discard the self-locking nut.



8. Remove the flange bolt (D), and remove the knuckle (E).

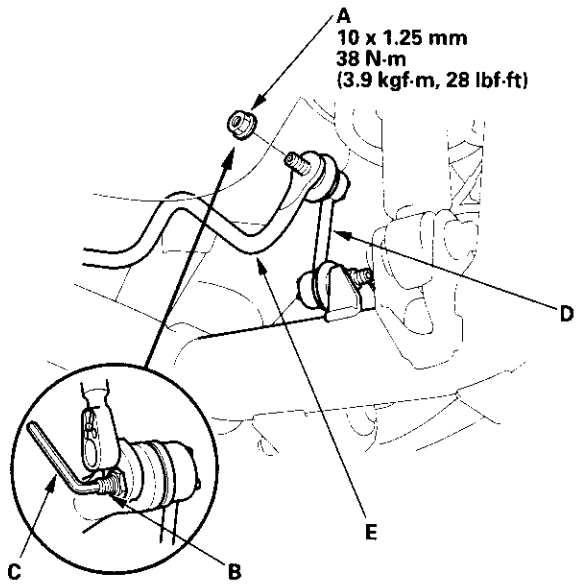
9. Install the knuckle in the reverse order of removal, and note these items:

- First install all the suspension components, and lightly tighten the bolts and nuts, then place a floor jack under the lower arm, and raise the suspension to load it with the vehicle's weight before fully tightening the bolts and nuts to the specified torque values.
- Align the cam positions of the adjusting bolt (A) and adjusting cam (B) with the marked positions when tightening.
- Use a new self-locking nut on reassembly.
- Tighten all the mounting hardware to the specified torque values.
- Use a new spindle nut on 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 surface of the hub and the inside of the brake disc.
- Use a new hub cap on reassembly.
- Before installing the wheel, clean the mating surface of the brake disc and the inside of the wheel.
- Check the wheel alignment, and adjust it if necessary (see page 18-4).

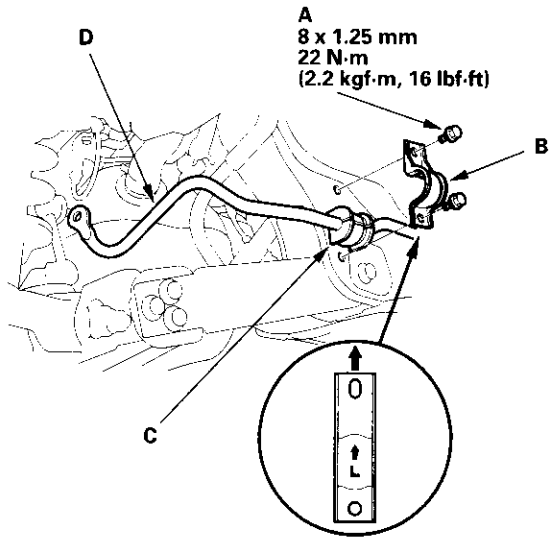
Stabilizer Bar Replacement

1. Raise the rear of the vehicle, and support it with safety stands in the proper location (see page 1-8). Remove the rear wheels.

2. Remove the self-locking nuts (A) while holding the joint pins (B) with a hex wrench (C), and disconnect the stabilizer links (D) from the stabilizer bar (E) on the right and left.

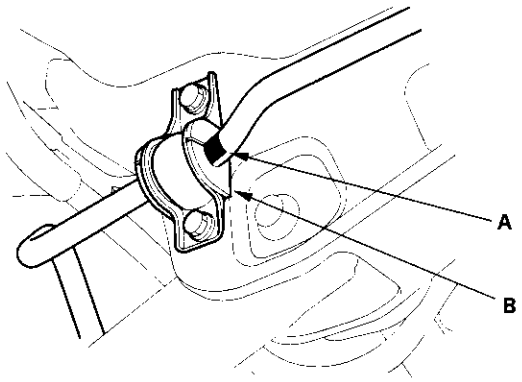


3. Remove the flange bolts (A) and bushing holders (B), then remove the bushings (C) and the stabilizer bar (D).



4. Install the stabilizer bar in the reverse order of removal, and note these items:

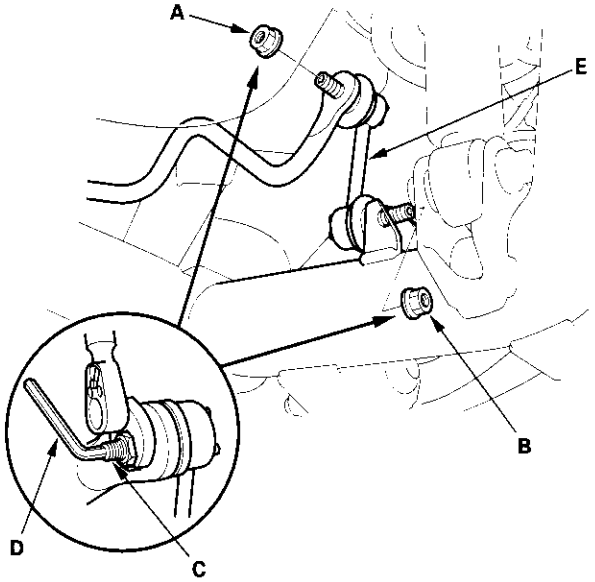
   - Use new self-locking nuts on reassembly.
   - Make sure the right and left ends of the stabilizer bar are installed on their respective sides of the vehicle.
   - Align the ends of the paint marks (A) on the stabilizer bar with the bushings (B).
   - Refer to Stabilizer Link Replacement to connect the stabilizer bar to the links (see page 18-31).



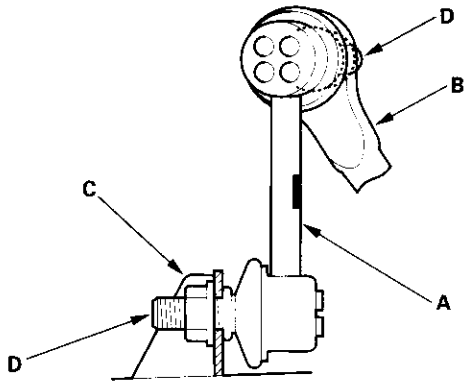
Stabilizer Link Removal/Installation

1. Raise the rear of the vehicle, and support it with safety stands in the proper location (see page 1-8). Remove the rear wheels.

2. Remove the self-locking nut (A) and flange nut (B) while holding the respective joint pin (C) with a hex wrench (D), and remove the stabilizer link (E).



3. Install the stabilizer link (A) on the stabilizer bar (B) and trailing arm (C) with the joint pins (D) set at the center of each moving range.

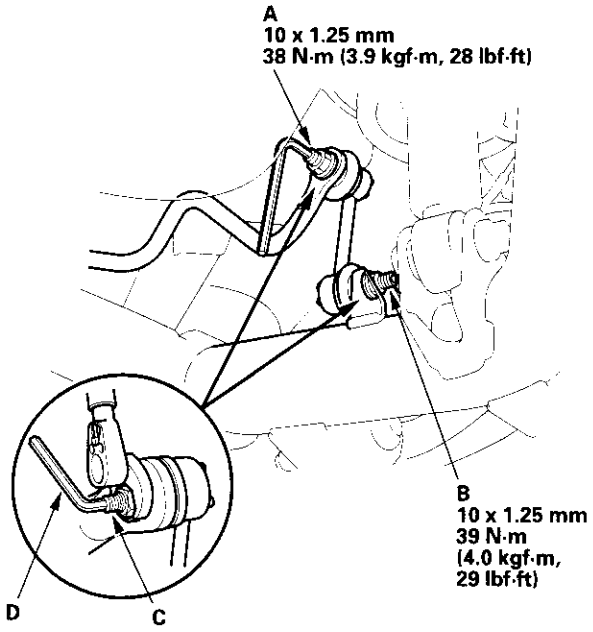


4. Install the self-locking nut and flange nut, and lightly tighten them.

   NOTE: Use a new self-locking nut on reassembly.

5. Place a jack under the trailing arm at the knuckle side end, and raise the suspension to load it with the vehicle's weight.

6. Tighten the self-locking nut (A) and flange nut (B) to the specified torque values while holding the respective joint pins (C) with a hex wrench (D).



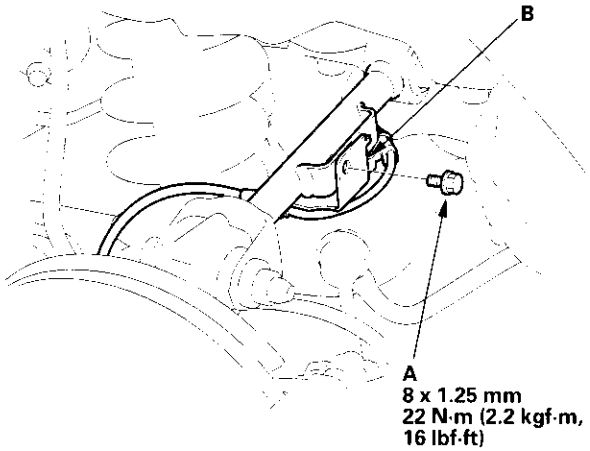
7. After 5 minutes of driving, re-tighten the self-locking nut again to the specified torque.

Upper Arm Removal/Installation

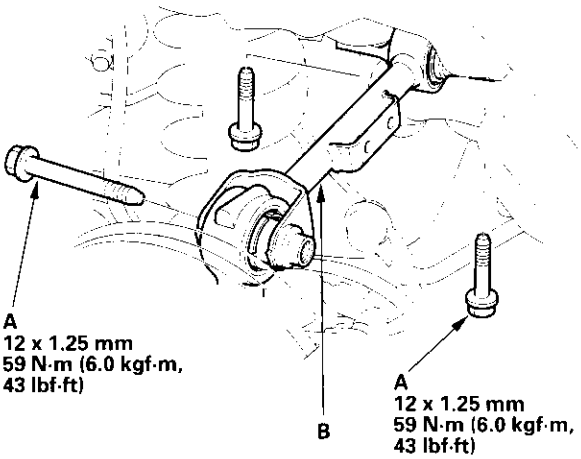
1. Raise the rear of the vehicle, and support it with safety stands in the proper location (see page 1-8). Remove the rear wheels.

2. Place a floor jack under the trailing arm, and support the suspension.

3. Remove the flange bolt (A) and wheel sensor harness bracket (B).



4. Remove the flange bolts (A), and remove the upper arm (B).



5. Install the upper arm in the reverse order of removal, and note these items:

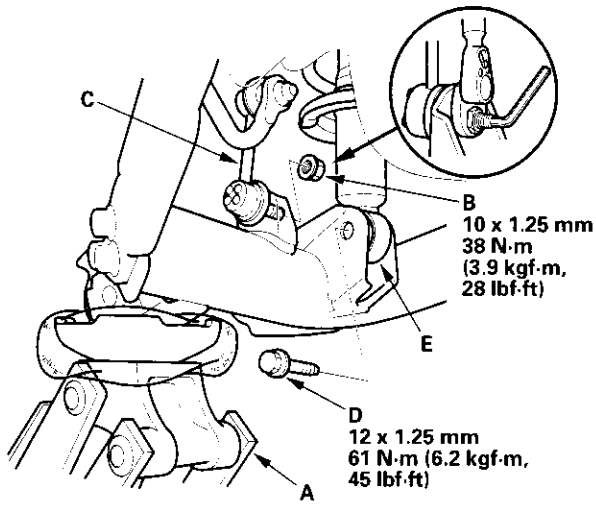
   - First install all the suspension components and lightly tighten the bolts and nuts, then place a jack under the trailing arm, and raise the suspension to load it with the vehicle's weight before fully tightening the bolts and nuts to the specified torque values.
   - Tighten all the mounting hardware to the specified torque values.
   - Before installing the wheel, clean the mating surface of the brake disc and the inside of the wheel.
   - Check the wheel alignment, and adjust it if necessary (see page 18-4).

Trailing Arm Removal/Installation

1. Raise the rear of the vehicle, and support it with safety stands in the proper location (see page 1-8). Remove the rear wheels.

2. Remove the knuckle (see page 18-28).

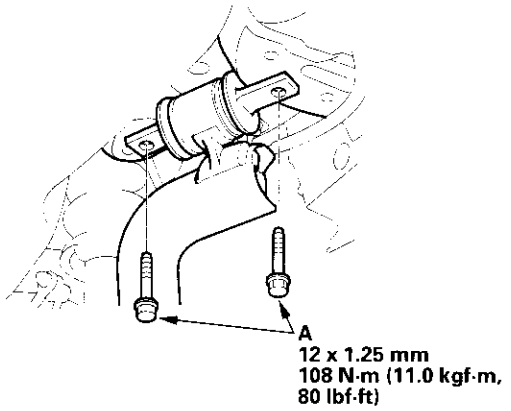
3. Place the floor jack under the trailing arm (A) to support it.



4. Remove the flange nut (B), and disconnect the stabilizer link (C) from the trailing arm.

5. Remove the flange bolt (D), and disconnect the damper (E) from the trailing arm.

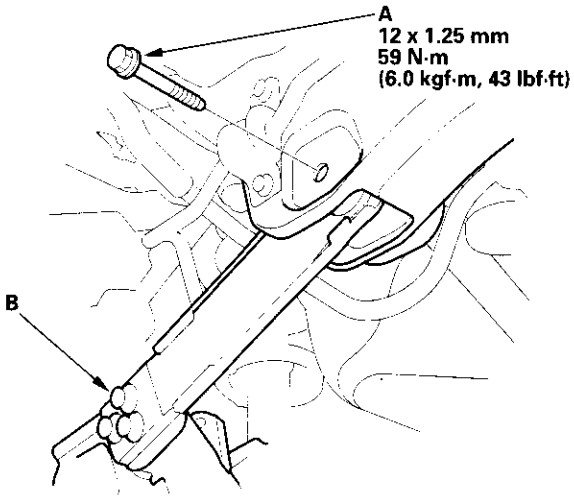
6. Remove the trailing arm front mounting bolts (A).



7. Remove the trailing arm rear mounting bolt (A).

NOTICE

Do not loosen the special bolts (B) on the trailing arm.



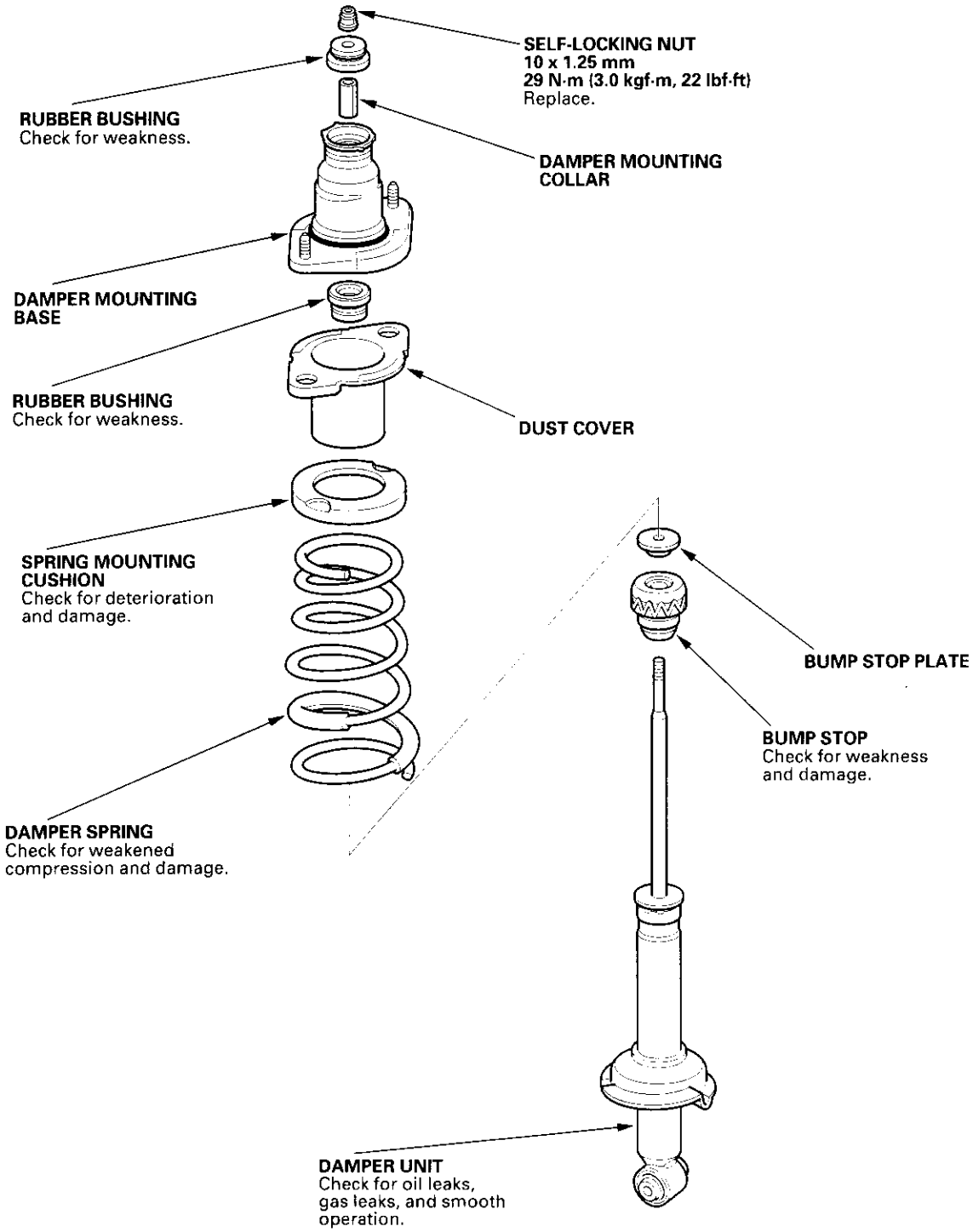
8. Lower the jack, and remove the trailing arm.

9. Install the trailing arm in the reverse order of removal, and note these items:

   - First install all the suspension components and lightly tighten the bolts and nuts, then place a jack under the trailing arm, and raise the suspension to load it with the vehicle's weight before fully tightening the bolts and nuts to the specified torque values.
   - Tighten all the mounting hardware to the specified torque values.
   - Before installing the wheel, clean the mating surface of the brake disc and the inside of the wheel.
   - Check the wheel alignment, and adjust it if necessary (see page 18-4).

Damper/Spring Replacement

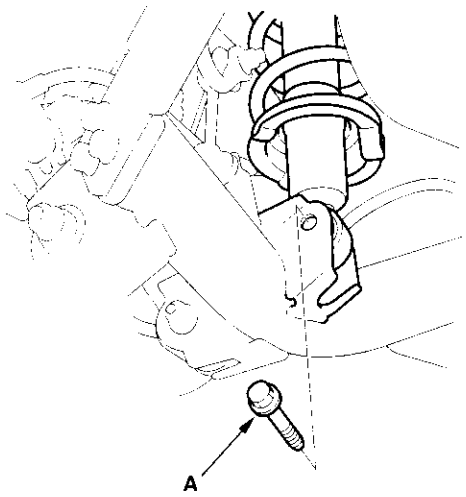
Exploded View



Removal

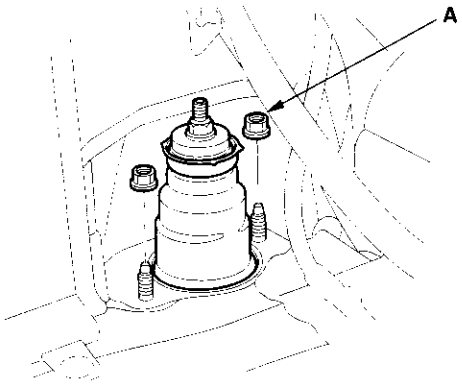
1. Raise the rear of the vehicle, and support it with safety stands in the proper location (see page 1-8). Remove the rear wheels.

2. Remove the flange bolt (A) from the bottom of the damper.

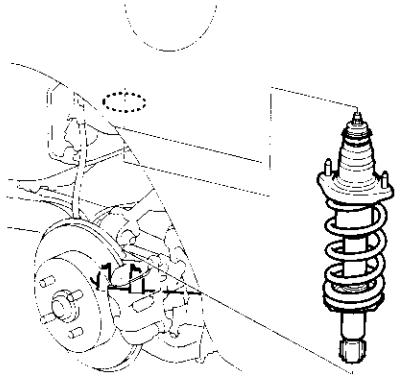


3. Remove the rear bulkhead cover (see page 20-51).

4. Remove the flange nuts (A) from the top of the damper in the trunk.



5. Remove the damper assembly from the body.

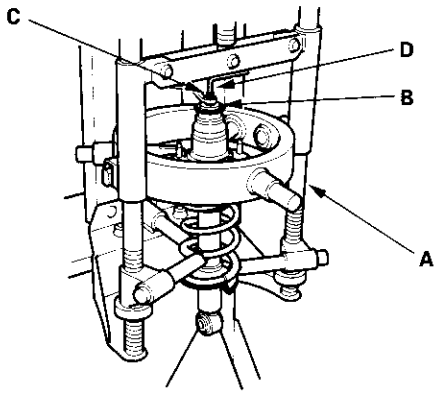


(cont'd)

Damper/Spring Replacement (cont'd)

Disassembly/Inspection

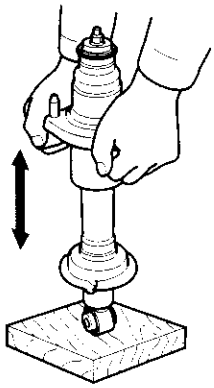
1. Compress the damper spring with a commercially available strut compressor (A) according to the manufacturer's instructions, then remove the self-locking nut (B) while holding the damper shaft (C) with a hex wrench (D). Do not compress the spring more than necessary to remove the nut.



2. Release the pressure from the strut spring compressor, then disassemble the damper as shown in the Exploded View.

3. Reassemble all the parts, except for the spring.

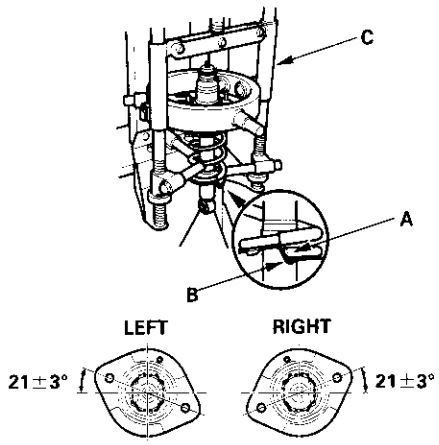
4. Compress the damper assembly by hand, and check for smooth operation through a full stroke, both compression and extension. The damper should extend smoothly and constantly when compression is released. If it does not, the gas is leaking and the damper should be replaced.



5. Check for oil leaks, abnormal noises, or binding during these tests.

Reassembly

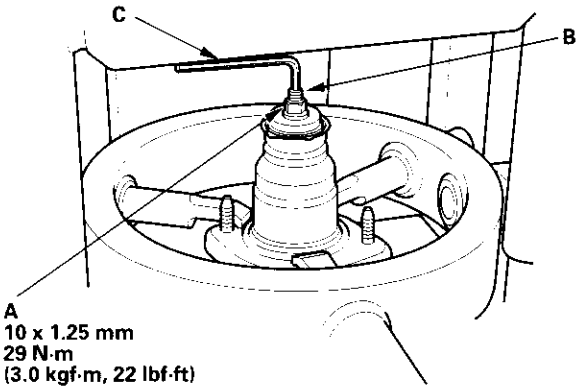
1. Install all the parts except the self-locking nut onto the damper unit by referring to the Exploded View. Align the bottom of the spring (A) and the stepped part of the lower spring seat (B), and align the damper mounting base as shown.



2. Install the damper assembly on a commercially available strut spring compressor (C).

3. Compress the damper spring with the spring compressor.

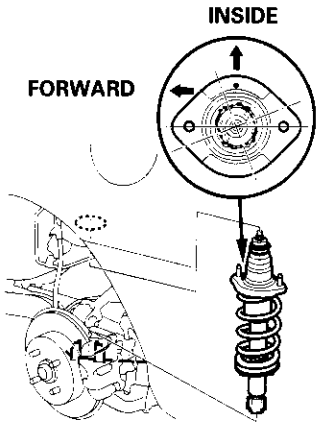
4. Install the new self-locking nut (A) on the damper shaft.



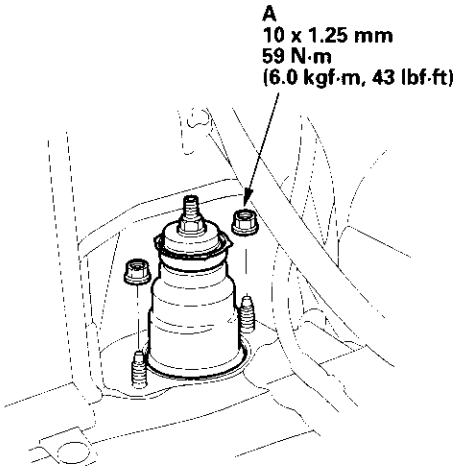
5. Hold the damper shaft (B) with a hex wrench (C), and tighten the self-locking nut to the specified torque.

Installation

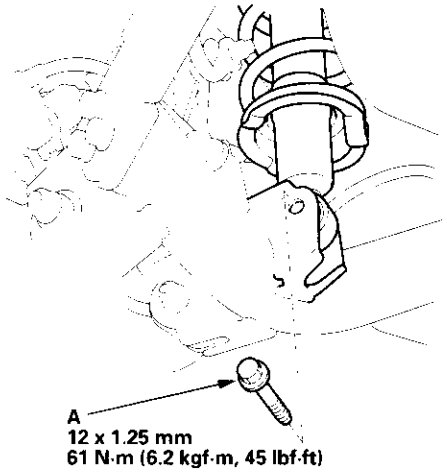
1. Position the damper assembly in the body. Note the direction of the damper mounting base so that the small hole dot on it is toward the front and inside of the vehicle.



2. Loosely install the flange nuts (A) onto the top of the damper.



3. Loosely install the flange bolt (A) on the bottom of the damper.



4. Raise the suspension with a floor jack to load the vehicle weight, and tighten the nuts and bolt to the specified torque values.

5. Clean the mating surface of the brake disc and the inside of the wheel, then install the rear wheel.

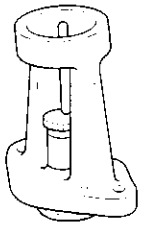
6. Check the wheel alignment, and adjust it if necessary (see page 18-4).

Brakes

Conventional Brake Components

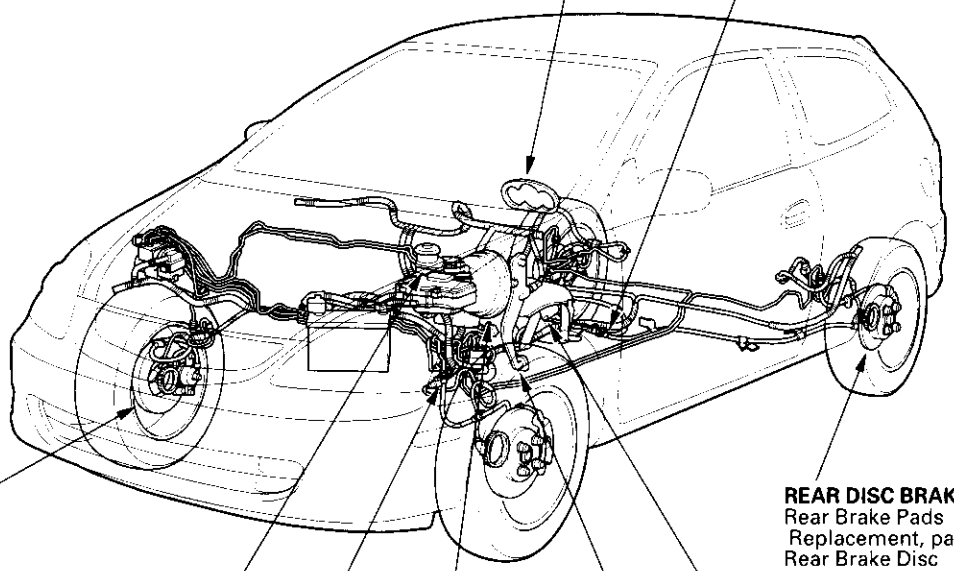
Special Tools

Ref.No.	Tool Number	Description	Qty
①	07JAG-SD40100	Pushrod Adjustment Gauge	1



①

Component Location Index



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PARKING BRAKE CABLE
Parking Brake Cable Replacement, page 19-26

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Brake System Inspection and Tests

Component Inspections:

Component	Procedure	Also check for:
Master Cylinder	Look for damage or signs of fluid leakage at: • Reservoir or reservoir grommets • Line joints • Between master cylinder and booster	
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 • Bleeder screw	Seized or sticking caliper pins.
ABS Modulator	Look for damage or signs of fluid leakage at: • Line joints • Modulator	

Brake System Test

Brake pedal sinks/fades when braking

1. Start the engine, and let it warm up to operating temperature.
2. Attach a 2-inch 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, press and hold the brake pedal lightly, then release the parking brake.
4. While still holding the brake pedal, hook the end of the tape measure behind it. Then pull the tape up to the steering wheel, noting where the tape measure lines up with the reference mark you made on the masking tape.
5. Apply steady pressure to the brake pedal for 3 minutes.
6. Watch the tape measure.
   - if it moves less than 10 mm, the master cylinder is OK.
   - if it moves more than 10 mm replace the master cylinder.

Rapid brake pad wear, Vehicle vibration (after a long drive), or High, hard brake pedal

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 the pad wear, high pedal, or vehicle vibration.■

3. Turn the engine off, pump the brake pedal 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.■

4. Without removing the brake lines, unbolt and separate the master cylinder from the 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.■

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—Replace the master cylinder.■

6. Loosen the bleeder screws at each caliper, then spin the wheels to check for brake drag.

   Is there brake drag at any of the wheels?

   YES—Disassemble and repair the caliper on the wheel(s) with brake drag.■

   NO—Inspect brake hose (s)/line (s).

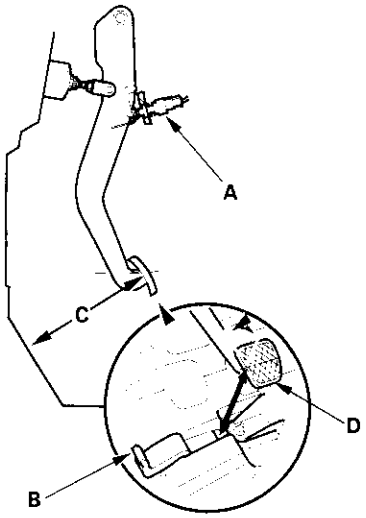
Brake Pedal and Brake Pedal Position Switch Adjustment

Pedal Height

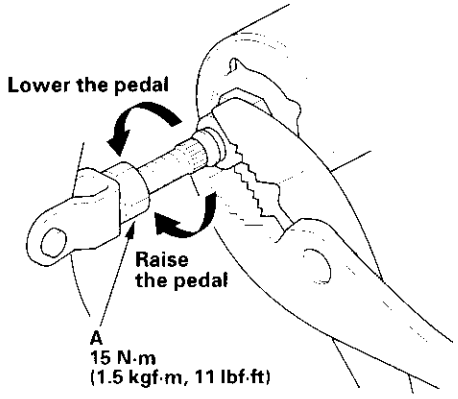
1. Disconnect the brake pedal position switch connector, turn the brake pedal position switch (A) counterclockwise, and pull it back until it is no longer touching the brake pedal.

2. Lift up the carpet and the insulator cutout (B). Measure the pedal height (C) from the middle of the left side of the pedal pad (D).

   Standard Pedal Height (with carpet removed): 184 mm (7 4/16 in.)



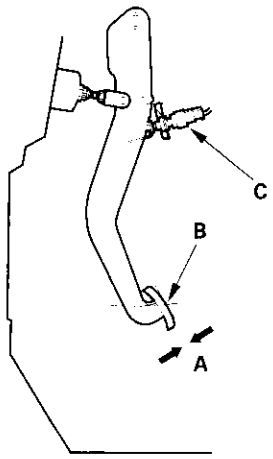
3. Loosen the pushrod locknut (A), and screw the pushrod in or out with pliers until the standard pedal height from the floor is reached. After adjustment, tighten the locknut firmly. Do not adjust the pedal height with the pushrod pressed.



Pedal Free Play

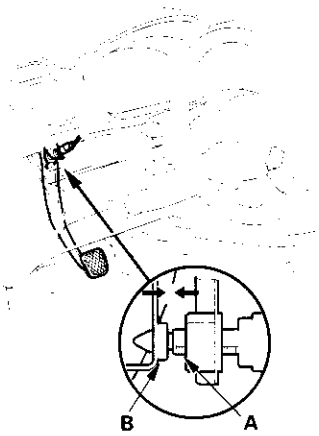
4. With the engine off, inspect the play (A) on the pedal pad (B) by pushing the pedal by hand.

   Free Play: 0.4 – 3.0 mm (0.016–0.118 in.)



5. If the pedal free play is out of specification, adjust the brake pedal position switch (C). If the pedal free play is insufficient, it may result in brake drag.

6. Push in the brake pedal position switch until its plunger is fully pressed (threaded end (A) touching the pad (B) on the pedal arm). Then, turn the switch 45° clockwise to lock it. The gap between the brake pedal position switch and the pad is automatically adjusted to 0.4 to 3.0 mm (0.016–0.118 in.) by locking the switch. Make sure the brake lights go off when the pedal is released.



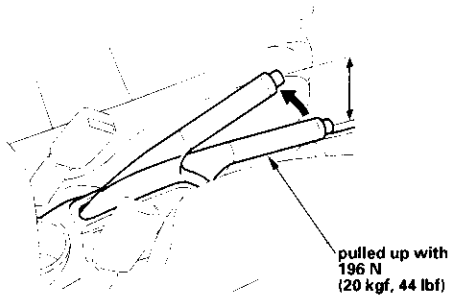
7. Check the brake pedal free play as described below.

Parking Brake Check and Adjustment

Check

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 (B).

   Lever locked clicks: 7—8

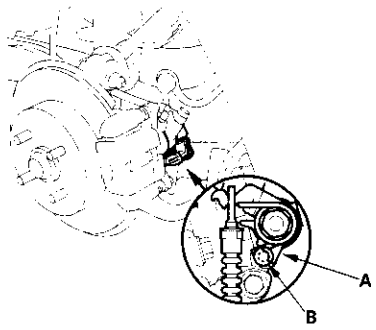


2. Adjust the parking brake if the lever clicks are not within the specification.

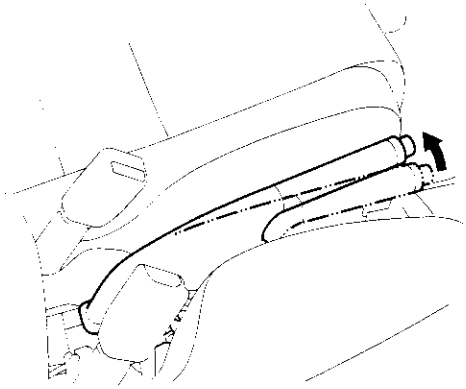
Adjustment

1. Release the parking brake lever fully.
2. Loosen the parking brake adjusting nut, start the engine, and press the brake pedal several times to set the self-adjusting brake before adjusting the parking brake.
3. Block the front wheels, then raise the rear of the vehicle, and support it with safety stands in the proper location (see page 1-8).
4. Make sure the parking brake arm (A) on the rear brake caliper contacts the brake caliper pin (B).

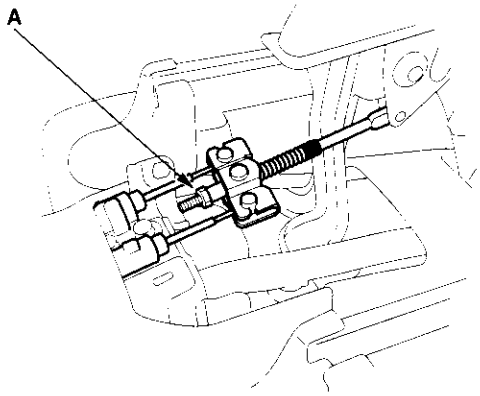
   NOTE: The parking brake arm will only contact the brake caliper pin when the parking brake adjusting nut is loosened.



5. Remove the rear console (see page 20-57).
6. Pull the parking brake lever up one click.



7. Tighten the adjusting nut (A) until the parking brakes drag slightly when the rear wheels are turned.

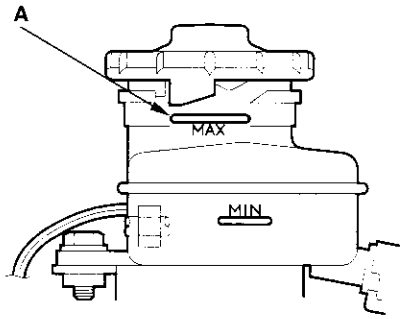


8. Release the parking brake lever fully, and check that the parking brakes do not drag when the rear wheels are turned. Readjust if necessary.
9. Make sure the parking brakes are fully applied when the parking brake lever is pulled up fully.
10. Reinstall the rear console.

Brake System Bleeding

NOTE:
- 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 on the master cylinder must be at the MAX (upper) level mark at the start of the bleeding procedure and checked after bleeding each brake caliper. Add fluid as required.
- Do not reuse the drained fluid.
- Always use Honda DOT 3 brake fluid. 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.

1. Make sure the brake fluid level in the reservoir is at the MAX (upper) level line (A).



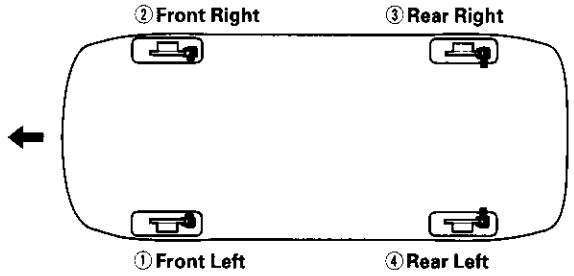
2. Slide a piece of clear plastic hose over the first bleed screw, and submerge the other end in a container of new brake fluid.

3. Have someone slowly pump the brake pedal several times, then apply steady pressure.

4. Starting at the left-front, loosen the brake bleed screw to allow air to escape from the system. Then tighten the bleed screw securely.

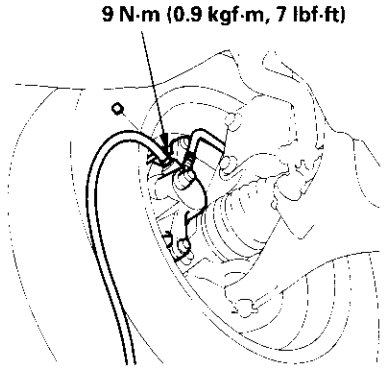
5. Repeat the procedure for each wheel in the sequence shown below until air bubbles no longer appear in the fluid.

BLEEDING SEQUENCE:

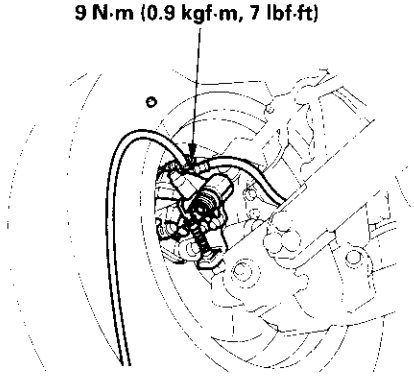


6. Refill the master cylinder reservoir to the MAX (upper) level line.

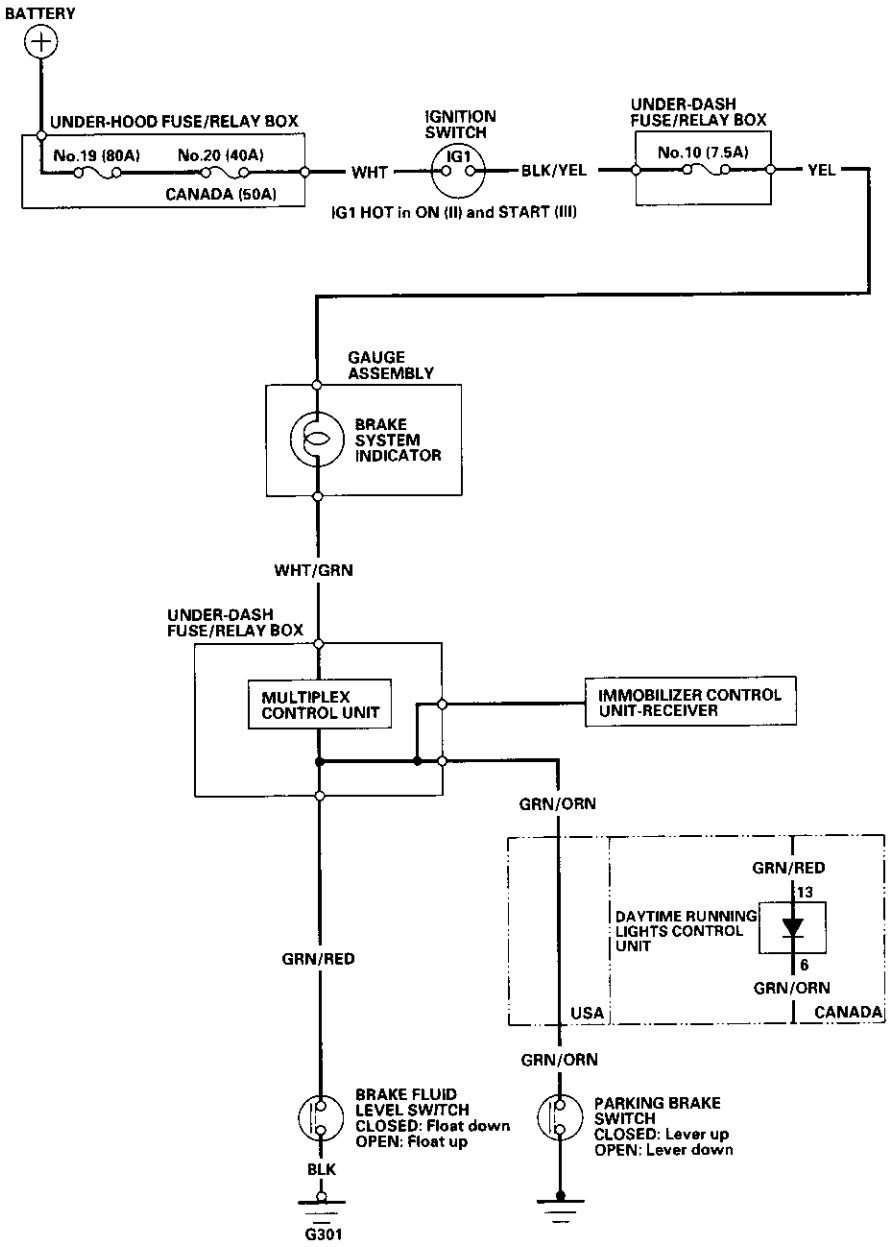
FRONT BRAKE:



REAR BRAKE:

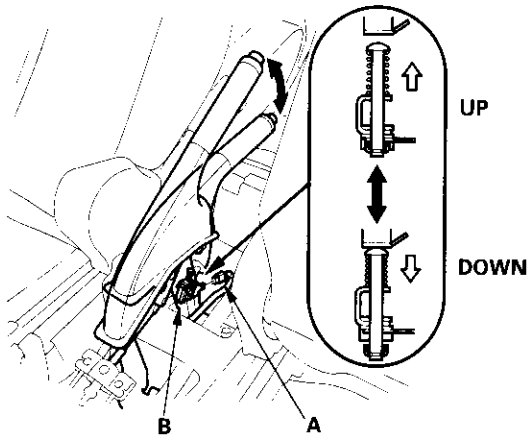


Brake System Indicator Circuit Diagram



Parking Brake Switch Test

1. Remove the rear console, and disconnect the connector (A) from the switch (B).



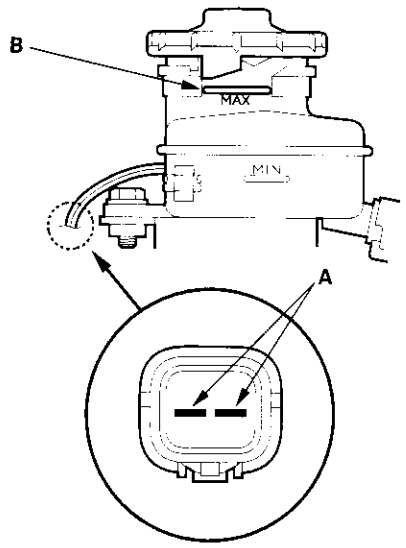
2. Check for continuity between the switch terminal and body ground:

   - With the brake lever up, there should be continuity.
   - With the brake lever down, there should be no continuity.

Brake Fluid Level Switch Test

Check for continuity between the terminals (A) with the float in the down position and the up position.

- Remove the brake fluid completely from the reservoir. With the float down, there should be continuity.
- Fill the reservoir with brake fluid to MAX (upper) level (B). With the float up, there should be no continuity.



Front Brake Pads 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.

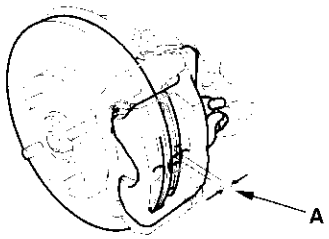
Inspection

1. Raise the front of the vehicle, and support it with safety stands in the proper location (see page 1-8). Remove the front wheels.

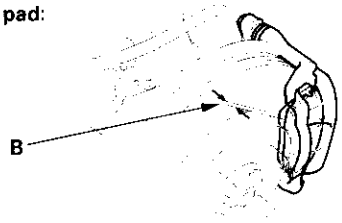
2. Check the thickness of the inner pad (A) and outer pad (B). Do not include the thickness of the brake pad backing plate.

   Brake pad thickness:
   Standard: 9.5—10.5 mm (0.37—0.41 in.)
   Service limit: 1.6 mm (0.06 in.)

Inner pad:



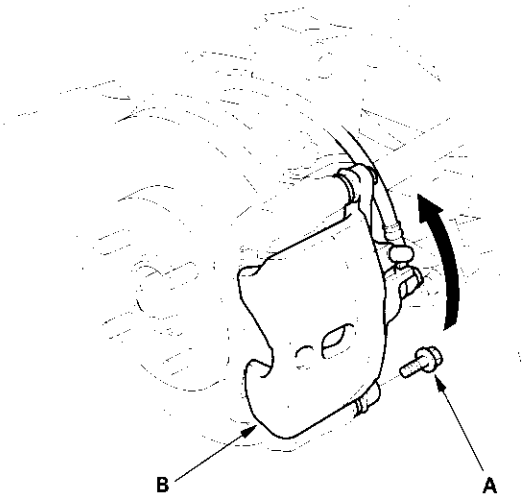
Outer pad:



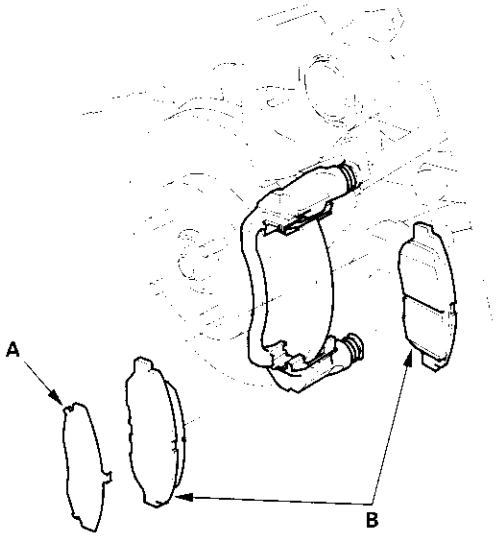
3. If the brake pad thickness is less than the service limit, replace all the pads as a set.

Replacement

1. Remove the bolt (A), and pivot the caliper (B) up out of the way. Check the hose and pin boots for damage and deterioration.



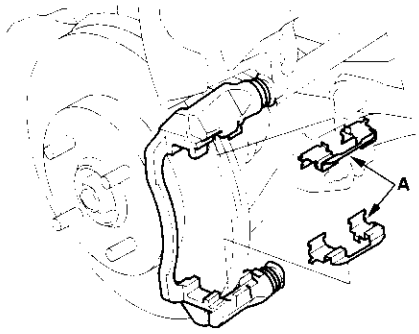
2. Remove the pad shim (A) and pads (B).



(cont'd)

Front Brake Pads Inspection and Replacement (cont'd)

3. Remove the pad retainers (A), and check the caliper pins for free movement.



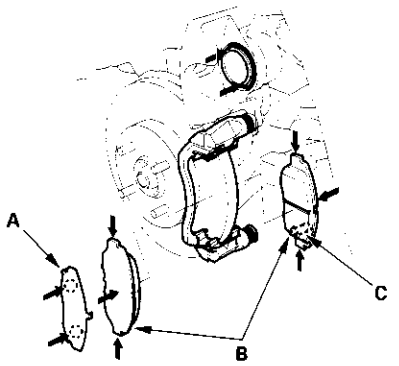
4. Clean the caliper thoroughly; remove any rust, and check for grooves and cracks.

5. Check the brake disc for damage and cracks.

6. Apply Dow Corning Molykote M77 grease to the retainers on their mating surfaces against the caliper bracket.

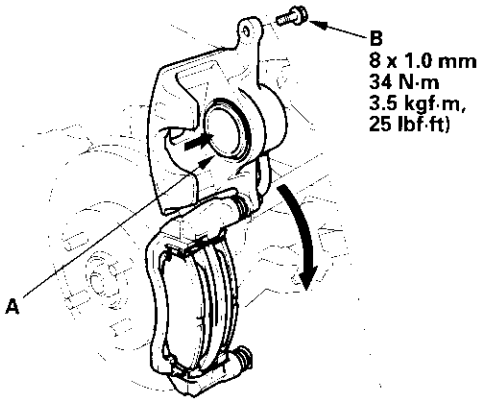
7. Install the pad retainers. Wipe excess grease off the retainers. Contaminated brake discs and pads reduce stopping ability. Keep grease off the discs and pads.

8. Apply Molykote M77 grease to both sides of the pad shim (A), the back of the pads (B), and the other areas indicated by the arrows.
Wipe excess grease off the shim. Contaminated brake discs and pads reduce stopping ability. Keep grease off the discs and pads.



9. Install the brake pads and pad shim correctly. Install the pads with the wear indicators (C) on the inside.
If you are reusing the pads, always reinstall the brake pads in their original positions to prevent a momentary loss of braking efficiency.

10. Push in the piston (A) so the caliper will fit over the pads. Check the brake fluid level. The brake fluid may overflow if the reservoir is too full. Make sure the piston boot is in position to prevent damaging it when pivoting the caliper down.



11. Pivot the caliper down into position. Being careful not to damage the pin boots, install the bolt (B), and tighten it to the specified torque.

12. Press the brake pedal several times to make sure the brake works, then test-drive.

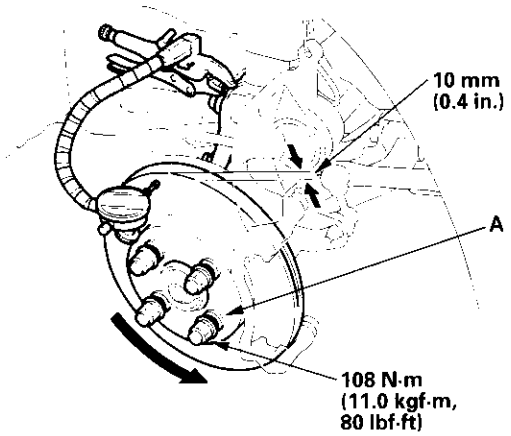
NOTE: Engagement of the brake may require a greater pedal stroke immediately after the brake pads have been replaced as a set. Several applications of the brake pedal will restore the normal pedal stroke.

13. After installation, check for leaks at hose and line joints or connections, and retighten if necessary.

Front Brake Disc Inspection

Runout

1. Raise the front of the vehicle, and support it with safety stands in the proper location (see page 1-8). Remove the front wheels.
2. Remove the brake pads (see page 19-11).
3. Inspect the disc surface for damage and cracks. Clean the disc thoroughly, and remove all rust.
4. Install suitable flat washers (A) and wheel nuts, and tighten the nuts to the specified torque to hold the brake disc securely against the hub.



5. Set up the dial gauge against the brake disc as shown, and measure the runout at 10 mm (0.4 in.) from the outer edge of the disc.

   Brake Disc Runout:
   Service Limit: 0.10 mm (0.004 in.)

6. If the disc is beyond the service limit, refinish the brake disc.

   Max. Refinish Limit: 19.0 mm (0.75 in.)

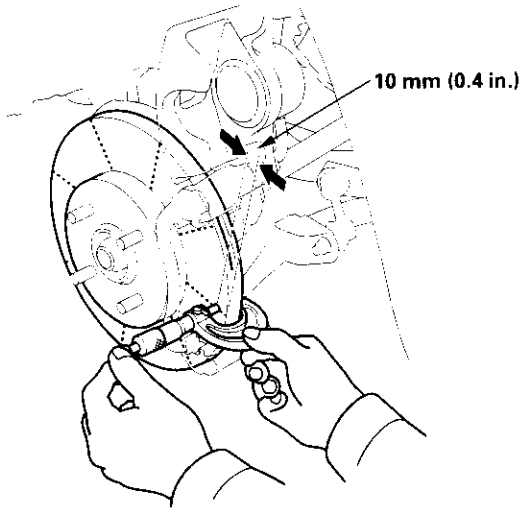
   NOTE:
   - If the brake disc is beyond the service limit for refinishing, replace it (see page 18-11).
   - A new disc should be refinished if its runout is greater than 0.10 mm (0.004 in.).

Thickness and Parallelism

1. Raise the front of the vehicle, and support it with safety stands in the proper location (see page 1-8). Remove the front wheels.
2. Remove the brake pads (see page 19-11).
3. Using a micrometer, measure disc thickness at eight points, approximately 45° apart and 10 mm (0.4 in.) in from the outer edge of the disc.

   Brake Disc Thickness:
   Standard: 20.9—21.8 mm (0.82—0.86 in.)
   Max. Refinishing Limit: 19.0 mm (0.75 in.)
   Brake Disc Parallelism: 0.015 mm (0.0006 in.) max.

   NOTE: This is the maximum allowable difference between the thickness measurements.



4. If the smallest measurement is less than the max. refinishing limit, replace the brake disc (see page 18-11).
5. If the disc is beyond the service limit for parallelism, refinish the brake disc with an on-car brake lathe. The Kwik-Lathe produced by Kwik-way Manufacturing Co. and the "Front Brake Disc Lathe" offered by Snap-on Tools Co. are approved for this operation.

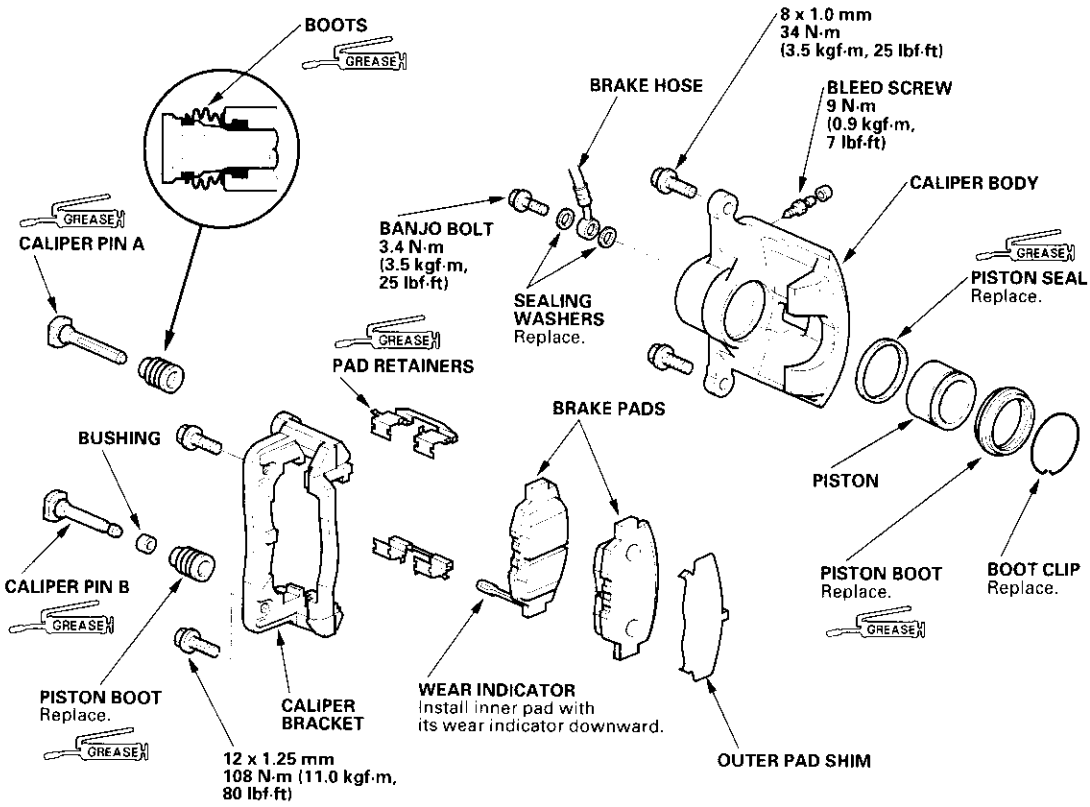
Front Brake Caliper Overhaul

⚠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.

Remove, disassemble, inspect, reassemble, and install the caliper, and note these items:
- 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, 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 dust and other foreign particles.
- Replace parts with new ones as specified in the illustration.
- Make sure no dirt or other foreign matter is allowed to contaminate the brake fluid.
- When reusing pads, always reinstall them in their original positions to prevent loss of braking efficiency.
- Do not reuse drained brake fluid.
- Always use Honda DOT 3 brake fluid. Non-Honda brake fluid can cause corrosion and shorten the life of the system.
- Do not mix different brands of brake fluid as they may not be compatible.
- Coat the piston, piston seal groove, and caliper bore with clean brake fluid.
- Make sure no grease or oil gets on the brake discs or pads.
- Replace all rubber parts with new ones whenever disassembled.
- After installing the caliper, check the brake hose and line for leaks, interference, and twisting.

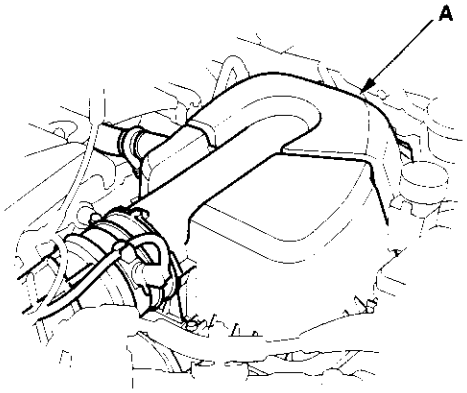
GREASE: **Honda caliper grease (P/N 08C30-B0234M)**



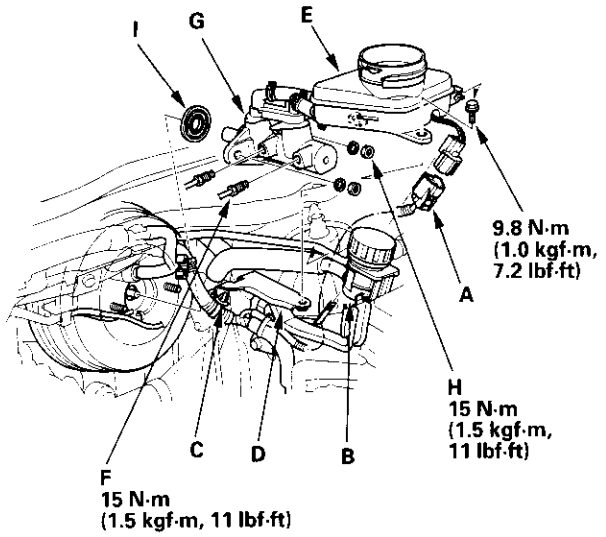
Master Cylinder Replacement

NOTE: 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.

1. Remove the air cleaner assembly (A).



2. Disconnect the brake fluid level sensor connector (A).



3. Remove the clutch reservoir (B) and engine wire harness clip (C) from the master cylinder mounting base (D).

4. Remove the reservoir cap and brake fuid from the reservoir.

5. Remove the reservoir (E) on the master cylinder mounting base.

6. Disconnect the brake lines (F) from the master cylinder (G). To prevent spills, cover the hose joints with rags or shop towels.

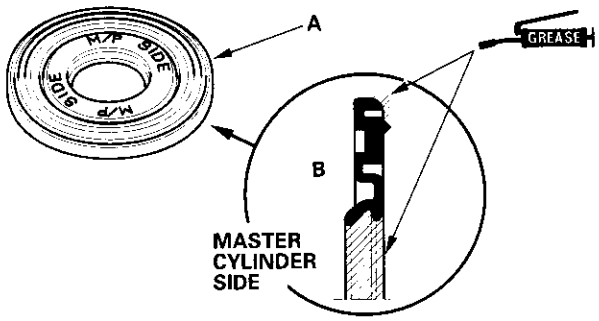
7. Remove the master cylinder mounting nuts (H) and washers.

8. Remove the master cylinder from the brake booster. Be careful not to bend or damage the brake lines when removing the master cylinder.

9. Remove the rod seal (I) from the master cylinder.

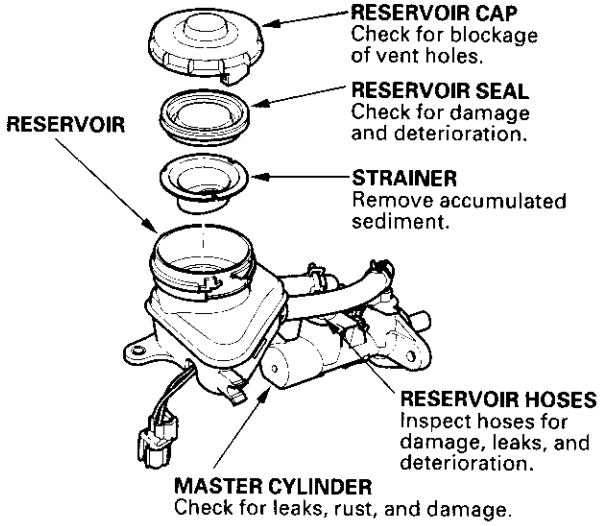
10. Install the master cylinder in the reverse order of removal, and note these items:

- Replace all the rubber parts with new ones whenever the master cylinder is removed.
- Check the pushrod clearance before installing the master cylinder, and adjust it if necessary (see page 19-16).
- Use a new rod seal on reassembly.
- Coat the inner bore lip and outer circumference of the new rod seal (A) with the recommended seal grease in the master cylinder set.
- Install the rod seal onto the master cylinder with its grooved side (B) toward the master cylinder.
- Check the brake pedal height and free play after installing the master cylinder, and adjust it if necessary (see page 19-6).



Master Cylinder Inspection

NOTE:
- Before reassembling, check that all parts are free of dust 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.

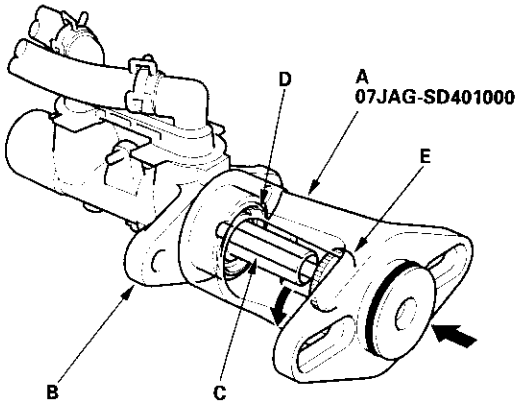


Brake Booster Pushrod Clearance Adjustment

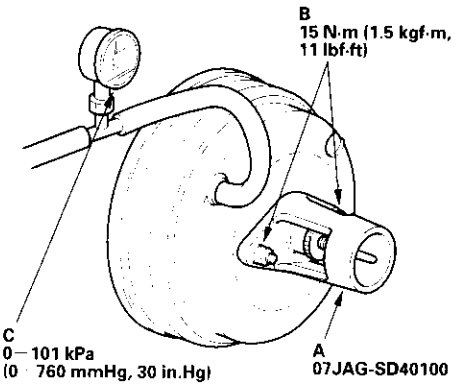
Special Tools Required
Pushrod adjustment gauge 07JAG-SD40100

NOTE: Brake booster pushrod-to-piston clearance must be checked and adjustments made, if necessary, before installing the master cylinder.

1. Set the special tool (A) on the master cylinder body (B), push in the center shaft (C) until the top of it contacts the end of the secondary piston (D) by turning the adjusting nut (E).



2. Without disturbing the center shaft's position, install the special tool (A) backwards on the booster.

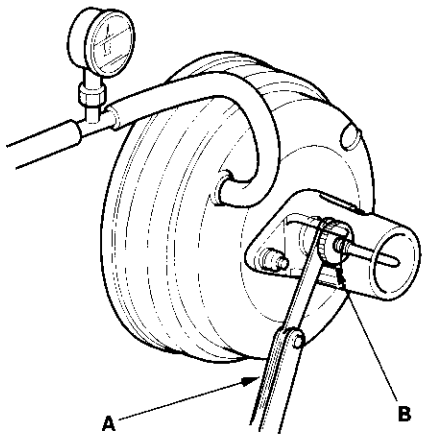


3. Install the master cylinder nuts (B), and tighten them to the specified torque.

4. Connect the booster in-line with a vacuum gauge (C) 0 – 101 kPa (0 – 760 mmHg, 30 in.Hg) to the booster's engine vacuum supply, and maintain an engine speed that will deliver 66 kPa (500 mmHg, 20 in.Hg) vacuum.

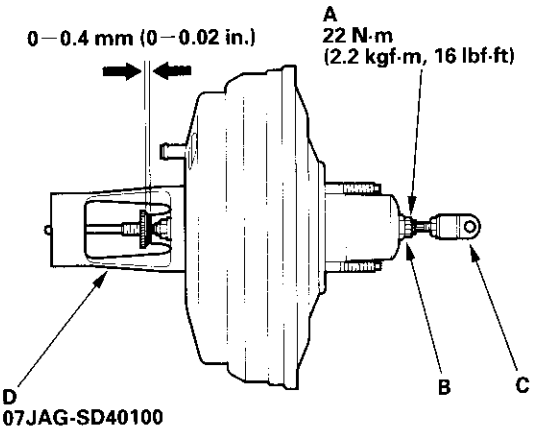
5. With a feeler gauge (A), measure the clearance between the gauge body and the adjusting nut (B) as shown.
   If the clearance between the gauge body and the adjusting nut is 0.4 mm (0.02 in.), the pushrod-to-piston clearance is 0 mm. However, if the clearance between the gauge body and the adjusting nut is 0 mm, the pushrod-to-piston clearance is 0.4 mm (0.02 in.) or more. Therefore it must be adjusted and rechecked.

   Clearance: 0—0.4 mm (0—0.02 in.)



6. If the clearance is incorrect, loosen the star locknut (A), and turn the adjuster (B) in or out to adjust.

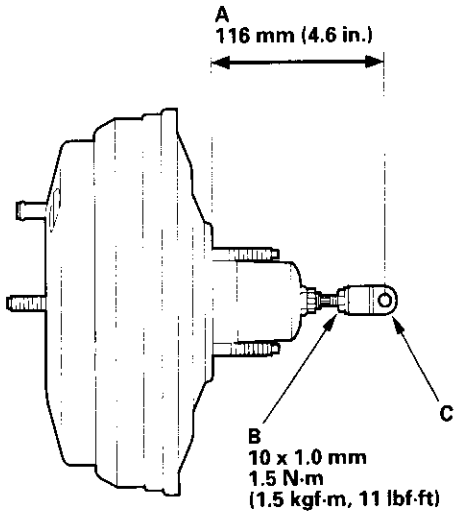
   - Adjust the clearance while the specified vacuum is applied to the booster.
   - Hold the clevis (C) while adjusting.



7. Tighten the star locknut securely.

8. Remove the special tool (D).

9. Check the pushrod length (A) as shown if the booster is removed. If the length is incorrect, loosen the pushrod locknut (B), and turn the clevis (C) in or out to adjust.



10. Install the master cylinder (see page 19-15).

Brake Booster Test

Functional Test

1. With the engine stopped, press the brake pedal several times to deplete the vacuum reservoir, then press the pedal hard, and hold it for 15 seconds. If the pedal sinks, either the master cylinder is bypassing internally, or the brake system (master cylinder, lines, modulator, or calipers) is leaking.

2. Start the engine with the brake pedal pressed. If the pedal sinks slightly, the vacuum booster is working properly. If the pedal height does not vary, the booster or check valve is faulty.

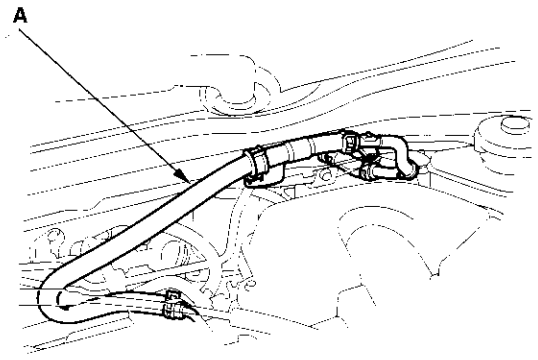
3. With the engine running, press the brake pedal lightly. If the brake pedal sinks more than 10 mm (3/8 in.) in 3 minutes, the master cylinder is faulty. A slight change in pedal height when the A/C compressor cycles on and off is normal. (The A/C compressor load changes the vacuum available to the booster.)

Leak Test

1. Press the brake pedal with the engine running, then stop the engine. If the pedal height does not vary while pressed for 30 seconds, the vacuum booster is OK. If the pedal rises, the booster is faulty.

2. With the engine stopped, 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, check the booster check valve.

3. Disconnect the brake booster vacuum hose (check valve built-in) (A) at the booster side.



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.

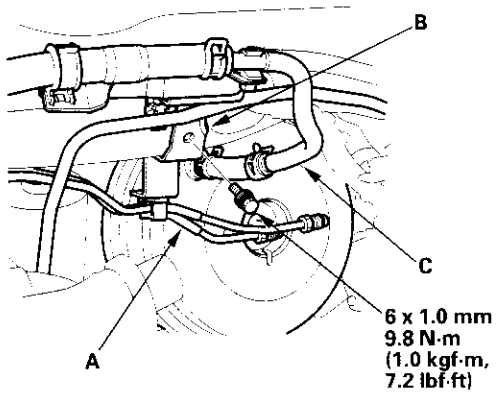
5. Reconnect the brake booster vacuum hose.
   Start the engine, and then pinch the brake booster vacuum hose between the check valve and the booster.

6. Turn the ignition switch OFF, 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.

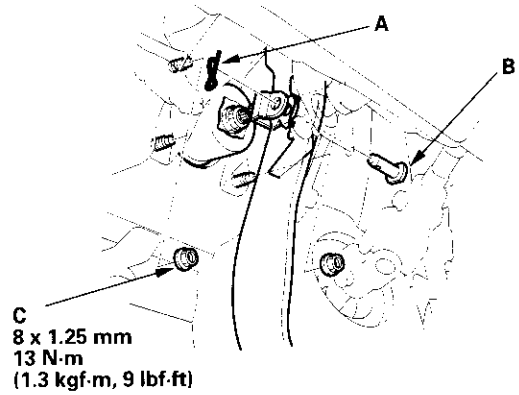
   - If the pedal position does not vary, replace the brake booster.
   - If the pedal position varies, replace the brake booster vacuum hose/check valve assembly.

Brake Booster Replacement

1. Remove the master cylinder (see page 19-15).
2. Remove the master cylinder brake lines (A) from the brake line clip.



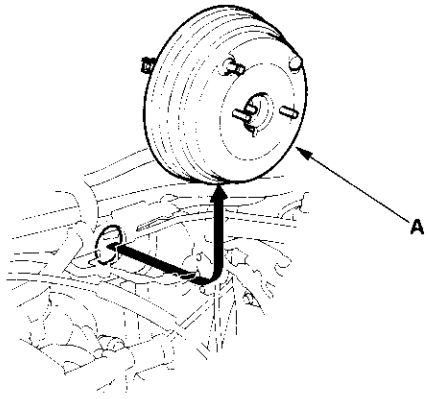
3. Remove the vacuum hose mounting bracket (B).
4. Disconnect the vacuum hose (C) from the brake booster.
5. Remove the clip (A) and the joint pin (B), and disconnect the yoke from the brake pedal.



6. Remove the brake booster mounting nuts (C).
7. Remove the brake booster (A) from the engine compartment.

NOTICE

- Be careful not to damage the booster surfaces and threads of the booster stud bolts.
- Be careful not to bend or damage the brake lines.



8. Install the brake booster in the reverse order of removal, and note these items:

- Adjust the pushrod clearance before installing the brake booster (see page 19-16).
- Use a new clip whenever installing.
- After installing the brake booster and master cylinder, fill the reservoir with new brake fluid, bleed the brake system (see page 19-8), and adjust the brake pedal height and free play (see page 19-6).

Rear Brake Pads Inspection and Replacement

⚠CAUTION

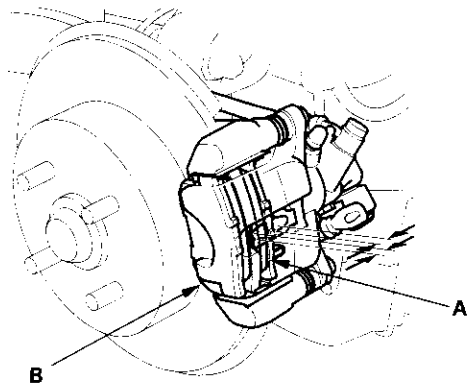
Frequent inhalation of brake pad dust, regardless of material composition, could be hazardous to your health.
- Avoid breathing dust particles.
- Never use an air hose or brush to clean brake assemblies. Use an OSHA-approved vacuum cleaner.

Inspection

1. Raise the rear of the vehicle, and support it with safety stands in the proper location (see page 1-8). Remove the rear wheels.

2. Check the thickness of the inner pad (A) and outer pad (B). Do not include the thickness of the brake pad backing plate.

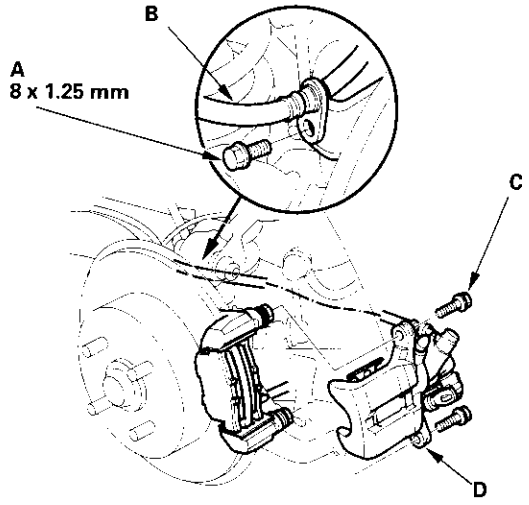
Brake pad thickness:
Standard: 8.5—9.5 mm (0.33—0.37 in.)
Service limit: 1.6 mm (0.06 in.)



3. If the brake pad thickness is less than the service limit, replace all the pads as a set.

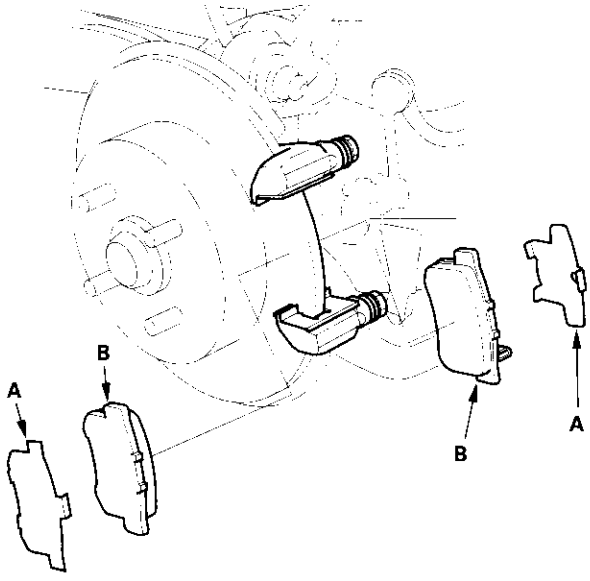
Replacement

1. Remove the bolt (A) and brake hose (B) from the mounting bracket.

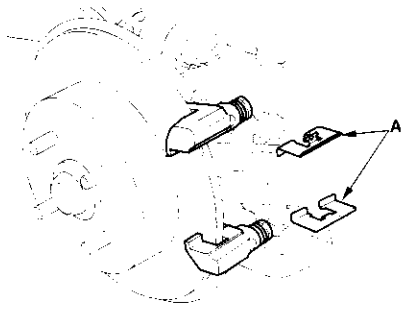


2. Remove the caliper bolts (C), and remove the caliper (D) from the caliper bracket.

3. Remove the pad shims (A) and pads (B).



4. Remove the pad retainers (A), and check the caliper pins for free movement.



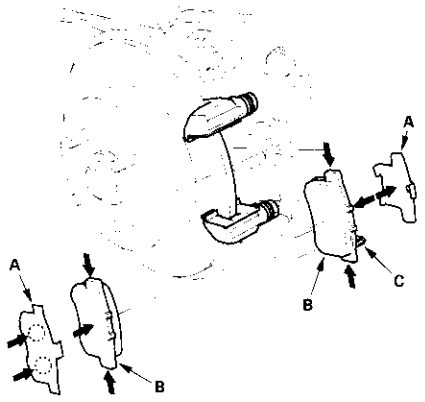
5. Clean the caliper thoroughly; remove any rust, and check for grooves and cracks.

6. Check the brake disc for damage and cracks.

7. Apply Dow Corning Molykote M77 grease to the retainers on their mating surfaces against the caliper bracket.

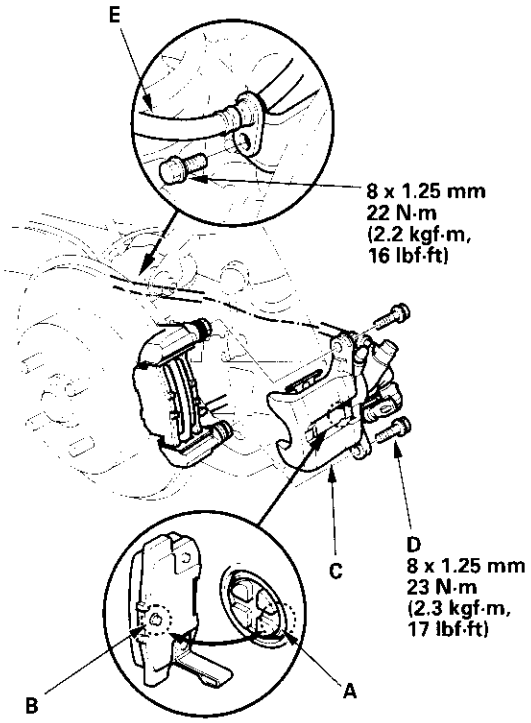
8. Install the pad retainers. Wipe excess grease off the retainers. Contaminated brake discs and pads reduce stopping ability. Keep grease off the discs and pads.

9. Apply Dow Corning Molykote M77 grease to both sides of the pad shims (A), the back of the pads (B), and the other areas indicated by the arrows. Wipe excess grease off the shim. Contaminated brake discs and pads reduce stopping ability. Keep grease off the discs and pads.



10. Install the brake pads and pad shims correctly. Install the pads with the wear indicators (C) on the inside.
    If you are reusing the pads, always reinstall the brake pads in their original positions to prevent a momentary loss of braking efficiency.

11. Rotate the caliper piston clockwise into the cylinder, then align the cutout (A) in the piston with the tab (B) on the inner pad by turning the piston back so the caliper can be installed on the pad. 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.



12. Install the brake caliper (C) and caliper bolts (D), and tighten the bolts to the specified torque.

13. Install the brake hose (E).

14. Press the brake pedal several times to make sure the brake works, then test-drive.

    NOTE: Engagement of the brake may require a greeter 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.

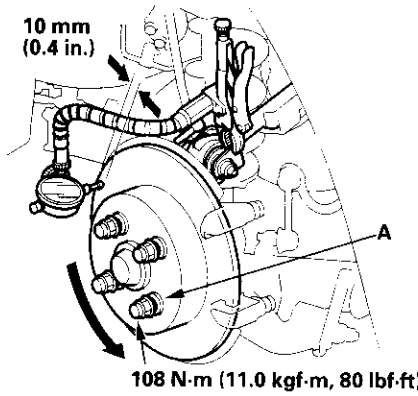
15. Check the parking brake adjustment (see page 19-7).

16. After installation, check for leaks at hose and line joints or connections, and retighten if necessary.

Rear Brake Disc Inspection

Runout

1. Raise the rear of the vehicle, and support it with safety stands in the proper location (see page 1-8). Remove the rear wheels.
2. Remove the brake pads (see page 19-20).
3. Inspect the disc surface for damage and cracks. Clean the disc thoroughly, and remove all rust.
4. Install suitable flat washers (A) and wheel nuts, and tighten the nuts to the specified torque to hold the brake disc securely against the hub.



5. Set up the dial gauge against the brake disc as shown, and measure the runout at 10 mm (0.4 in.) from the outer edge of the disc.

   Brake Disc Runout:
   Service Limit: 0.10 mm (0.004 in.)

6. If the disc is beyond the service limit, refinish the brake disc.

   Max. Refinish Limit: 9.0 mm (0.35 in.)

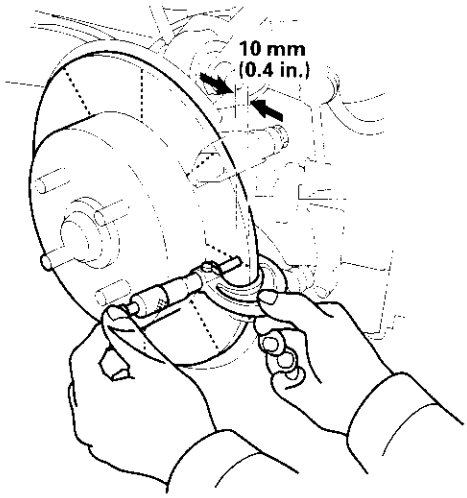
   NOTE:
   - If the brake disc is beyond the service limit for refinishing, replace it (see page 18-26).
   - A new disc should be refinished if its runout is greater than 0.10 mm (0.004 in.).

Thickness and Parallelism

1. Raise the rear of the vehicle, and support with safety stands in the proper location (see page 1-8). Remove the rear wheels.
2. Remove the brake pads (see page 19-20).
3. Using a micrometer, measure disc thickness at eight points, approximately 45° apart and 10 mm (0.4 in.) from the outer edge of the disc.

   Brake Disc Thickness:
   Standard: 9.9—10.1 mm (0.389—0.397 in.)
   Max. Refinishing Limit: 9.0 mm (0.35 in.)
   Brake Disc Parallelism: 0.016 mm (0.0006 in.) max.

   NOTE: This is the maximum allowable difference between the thickness measurements.



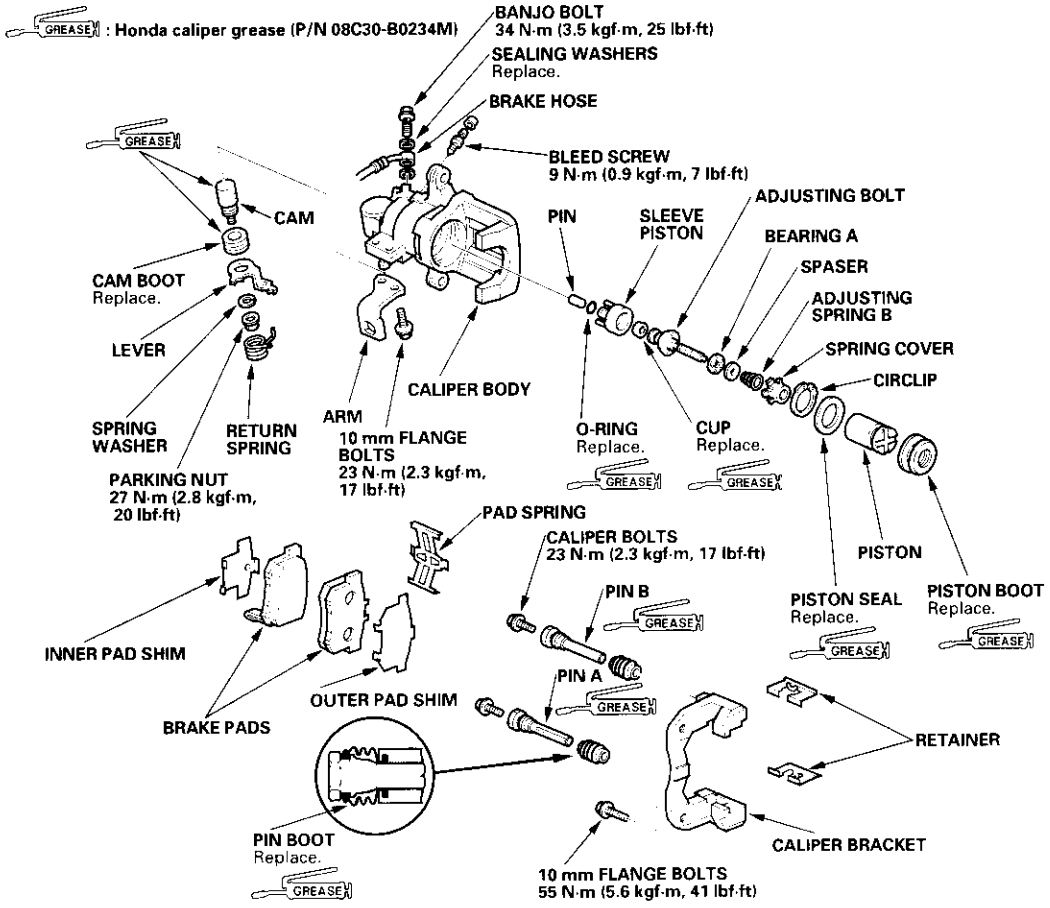
4. If the smallest measurement is less than the max. refinishing limit, replace the brake disc (see page 18-26).
5. If the disc is beyond the service limit for parallelism, refinish the brake disc with an on-car brake lathe.

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.

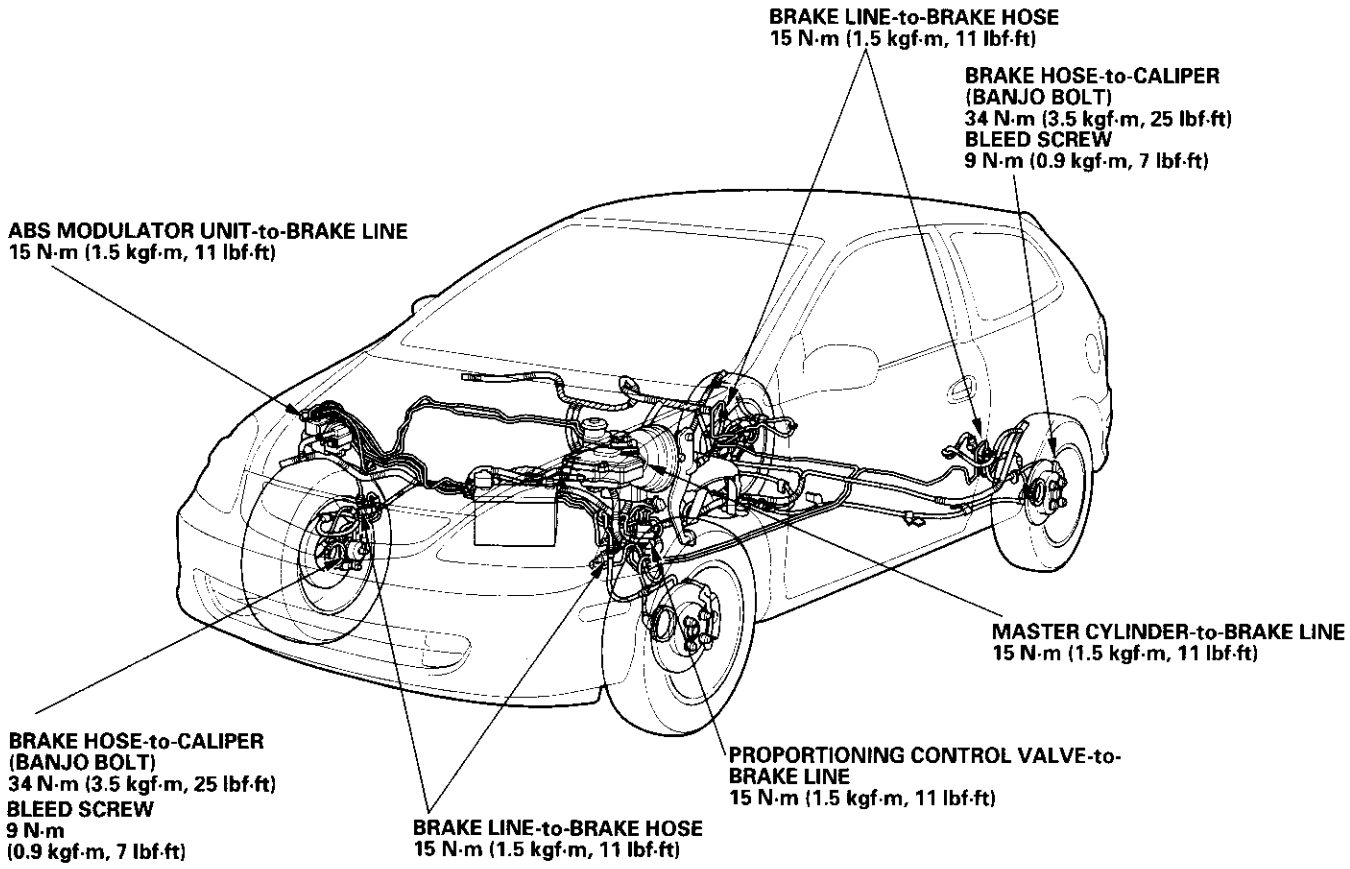
Remove, disassemble, inspect, reassemble, and install the caliper, and note these items:
- Do not spill brake fluid on the vehicle; it may damage the paint; if brake fluid gets on the paint, wash it off immediately with water.
- To prevent dripping, cover disconnected hose joints with rags or shop towels.
- 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 dust and other foreign particles.
- Replace parts with new ones as specified in the illustration.
- Make sure no dirt or other foreign matter contaminates the brake fluid.
- When reusing 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. Non-Honda brake fluid can cause corrosion and shorten the life of the system.
- Do not mix different brands of brake fluid as they may not be compatible.
- Coat the piston, piston seal groove, and caliper bore with clean brake fluid.
- Make sure no grease or oil gets on the brake discs or pads.
- Replace all rubber parts with new ones whenever disassembled.
- After installing the caliper, check the brake hose and line for leaks, interference, and twisting.



Brake Hoses and Lines Inspection

1. Inspect the brake hoses for damage, deterioration, leaks, interference, and twisting.
2. Check the brake lines for damage, rusting, and leakage. Also check for bent brake lines.
3. Check for leaks at hose and line joints or connections, and retighten if necessary.
4. Check the master cylinder and ABS modulator unit for damage and leakage.

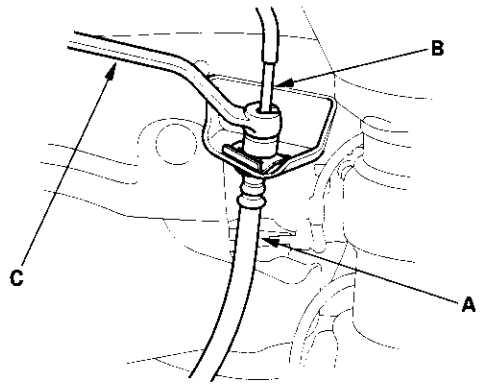
NOTE: Replace the brake hose clip whenever the brake hose is serviced.



Brake Hose Replacement

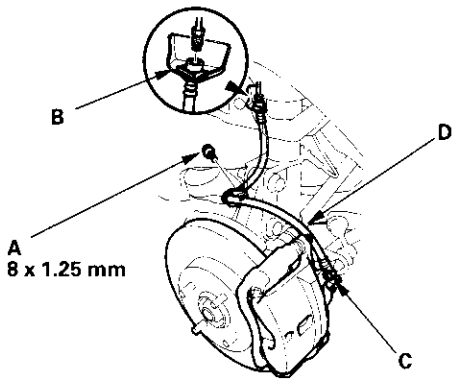
NOTE:
- Do not spill brake fluid on the vehicle; it may damage the paint; if brake fluid gets on the paint, wash it off immediately with water.
- To prevent dripping, cover disconnected line joints with rags or shop towels.
- Before reassembling, check that all parts are free of dust and other foreign particles.
- Replace parts with new ones whenever specified to do so.

1. Replace the brake hose (A) if the hose is twisted, cracked, or if it leaks.



2. Disconnect the brake hose from the brake line (B) using a 10 mm flare nut wrench (C).

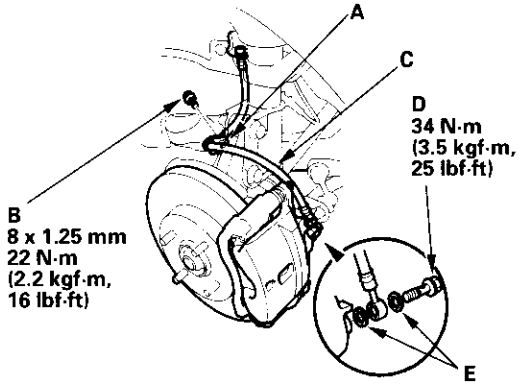
3. Remove the flange bolt (A), and remove the brake hose brackets from the damper.



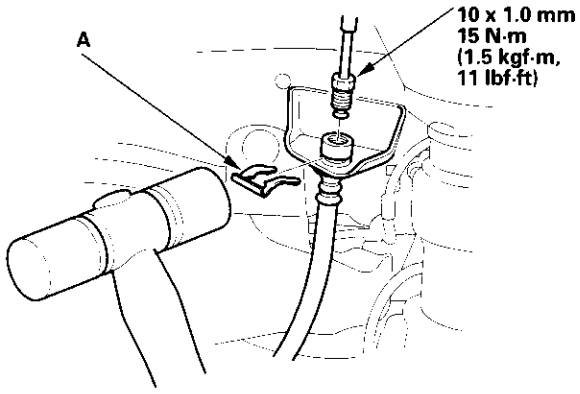
4. Remove and discard the hose clip (B).

5. Remove the banjo bolt (C), and remove the brake hose (D) from the caliper.

6. Install the brake hose bracket (A) on the damper with the flange bolt (B) first, then connect the brake hose (C) to the caliper with the banjo bolt (D) and new sealing washers (E).



7. Install the hose onto the hose bracket on the body with a new hose clip (A).



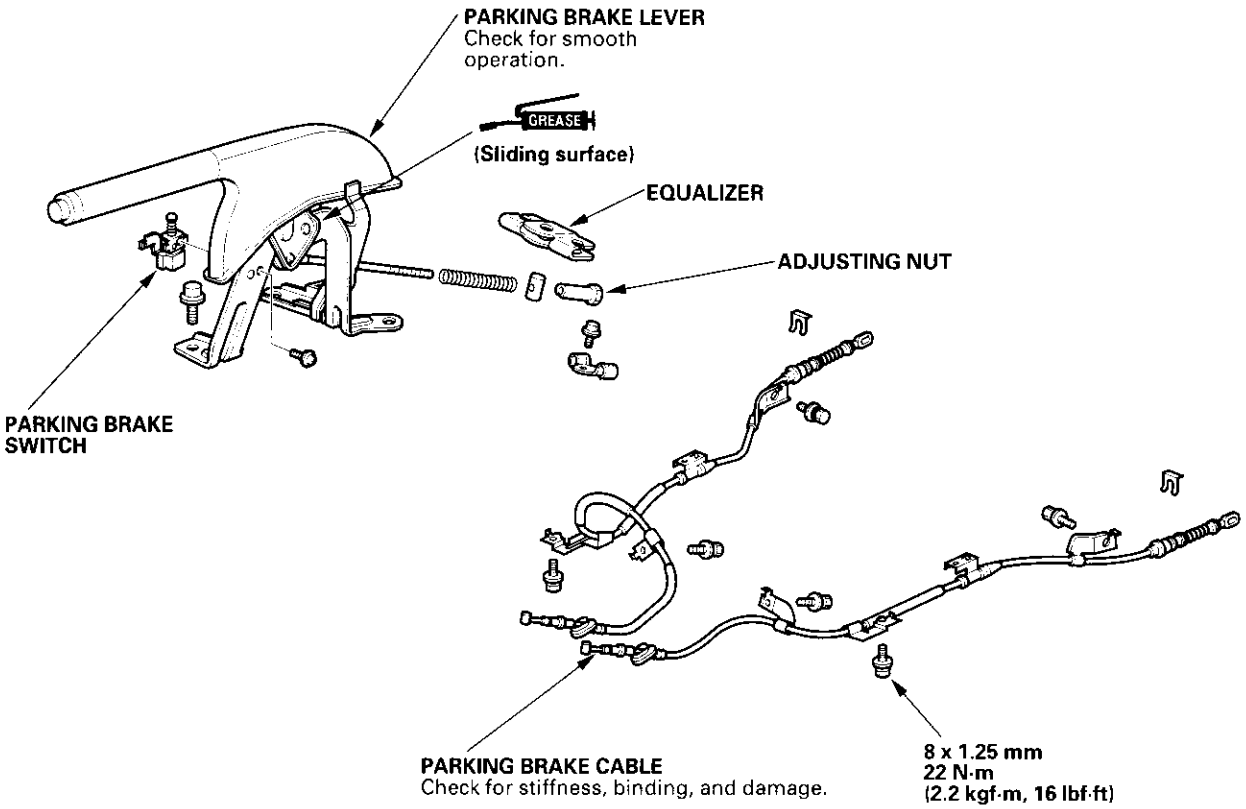
8. Connect the brake line to the brake hose.

9. After installing the brake hose, bleed the brake system (see page 19-8).

10. 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.

Parking Brake Cable Replacement

Exploded View

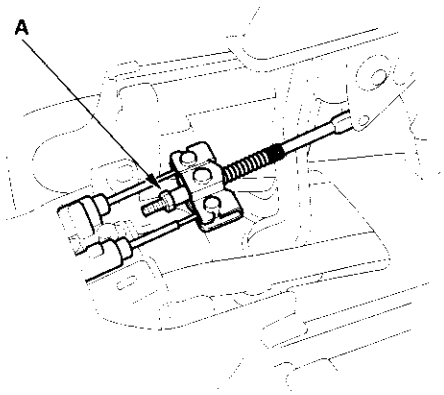


NOTE:
- The parking brake cables must not be bent or distorted. This will lead to stiff operation and premature failure.
- Refer to the Exploded View as needed during this procedure.

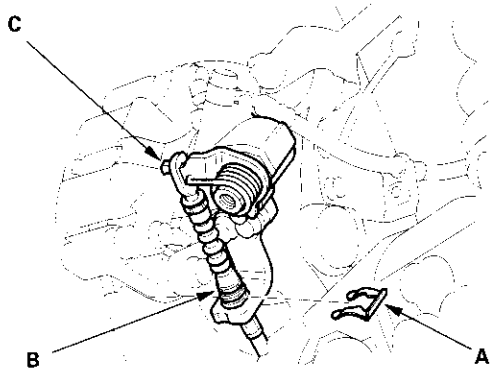
1. Release the parking brake lever fully.

2. Remove the rear console (see page 20-57).

3. Loosen the parking brake cable adjusting nut (A).



4. Remove the parking brake cable clip (A) from the brake cable (B).



5. Disconnect the parking brake cable from the lever (C).

6. Remove the parking brake cable mounting hardware, then remove the cable.

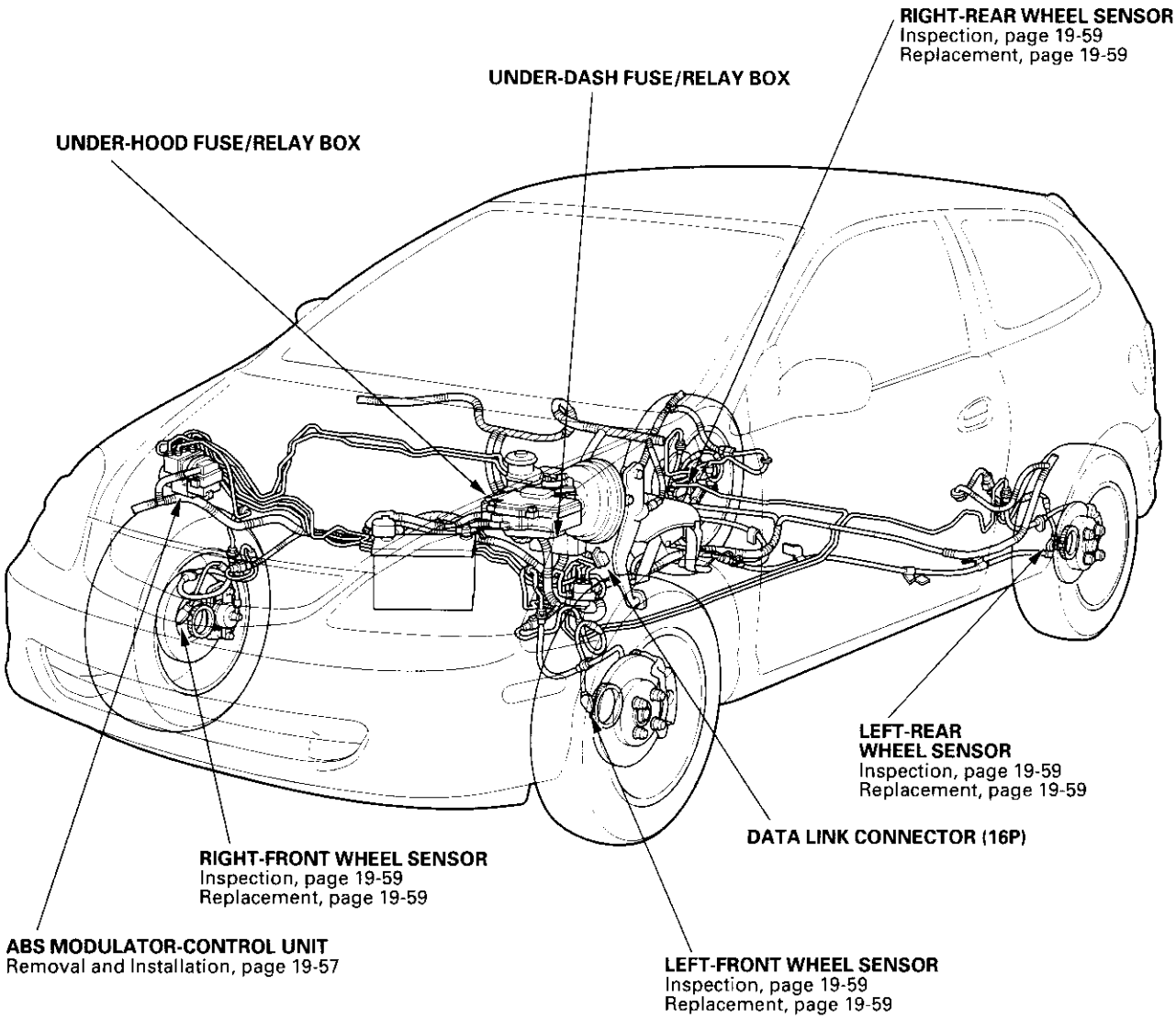
7. Install the new cable in the reverse order of removal, and note these items:

   - Be careful not to bend or distort the cable.
   - Make sure the parking brake cable clip is fully seated on the cable housing.
   - Do the parking brake cable adjustment (see page 19-7).

Brakes

ABS Components

Component Location Index



General Troubleshooting Information

ABS Indicator

- If the system is OK, the ABS indicator goes off 2 seconds after turning the ignition switch ON (II) without starting the engine, and then comes on again and goes off 2 seconds later after starting the engine. This occurs because the ABS control unit is turned on by the IG2 power source.
- The ABS indicator comes on when the ABS control unit detects a problem in the system. However, even though the system is operating properly, the indicator will come on under these conditions:
  - Only the drive wheels rotate
  - One drive wheel is stuck
  - The vehicle goes into a spin
  - The ABS continues to operate for a long time.
  - The vehicle is subjected to an electrical signal disturbance

To determine the actual cause of the problem, question the customer about the problem, taking the above conditions into consideration.

- When a problem is detected and the ABS indicator comes on, there are cases when the indicator stays on until the ignition switch is turned OFF, and cases when the indicator goes off automatically when the system returns to normal.
  - DTC 61: The ABS indicator goes off automatically when the system returns to normal.
  - DTC 11, 13, 15, 17, 31, 32, 33, 34, 35, 36, 37, 38, 54, or 81: The ABS indicator stays on until the ignition switch is turned OFF whether or not the system returns to normal.
  - DTC 12, 14, 16, 18, 21, 51, 52, or 53: The ABS indicator goes off when the vehicle is driven again and the system is OK after the ignition switch is turned from OFF to ON (II).

Diagnostic Trouble Code (DTC)

- The memory can hold three 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 in the order they occurred, beginning with the most recent.
- The DTCs are memorized in the EEPROM (non-volatile memory). Therefore, the memorized DTCs are not cleared when the battery is disconnected, the ignition switch is turned off, or the system returns to normal. Do the specified procedures to clear the DTCs.

Self-diagnosis

- Self-diagnosis can be classified into two categories:
  - Initial diagnosis:
    Done right after the engine starts and until the ABS indicator goes off
  - Regular diagnosis:
    Done right after the initial diagnosis until the ignition switch is turned OFF
- When a problem is detected by self-diagnosis, the system does the following:
  - Turns the ABS indicator on
  - Memorizes the DTC
  - Stops ABS control

Kickback

The pump motor operates when the ABS 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 is functioning.
- The ABS control unit checks the pump motor operation when the vehicle is started the first time after the ignition switch is turned ON (II). You may hear the motor operate at this time, but it is normal.

(cont'd)

General Troubleshooting Information (cont'd)

How to Troubleshoot ABS DTCs

The troubleshooting flowchart procedures assume that the cause of the problem is still present and the ABS indicator is still on. Following the flowchart when the ABS indicator does not come on can result in incorrect diagnosis.
The connector illustrations show the female terminal connectors with a single outline and the male terminal connectors with a double outline.

1. Question the customer about the conditions when the problem occured, and try to reproduce the same conditions for troubleshooting. Find out when the ABS indicator came on, such as during ABS control, after ABS control, when the vehicle was at a certain speed, etc.

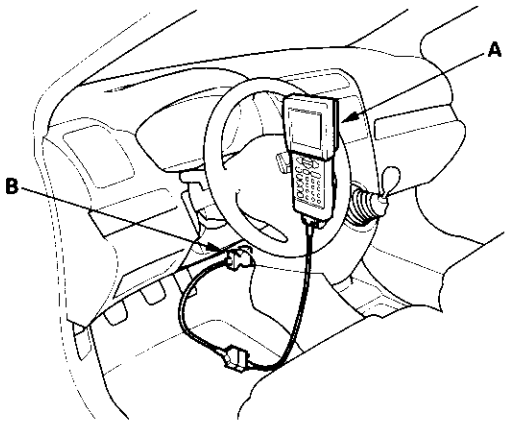
2. When the ABS indicator does not come on during the test-drive, but troubleshooting is done based on the DTC, check for loose connectors, poor terminal contact, etc., before you start troubleshooting.

3. After troubleshooting, clear the DTC,disconnect the Honda PGM Tester, and test-drive the vehicle. Make sure the ABS indicator does not come on.

How to Retrieve ABS DTCs

Honda PGM Tester Method:

1. With the ignition switch OFF, connect the Honda PGM Tester (A) to the 16P data link connector (DLC) (B) under the driver's side of the dashboard.

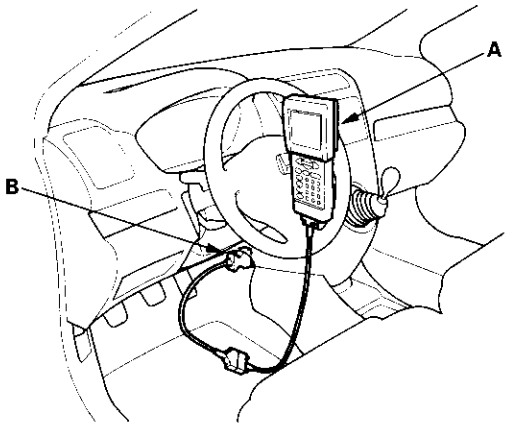


2. Turn the ignition switch ON (II), and follow the prompts on the PGM Tester to display the DTC(s) on the screen. After determining the DTC, refer to the DTC Troubleshooting Index.

   NOTE: See the Honda PGM Tester user's manual for specific instructions.

Service Check Signal (SCS) Circuit Method:

1. With the ignition switch OFF, connect the Honda PGM Tester (A) to the 16P data link connector (DLC) (B) under the driver's side of the dashboard.



2. Short the SCS circuit to body ground using the Honda PGM Tester.

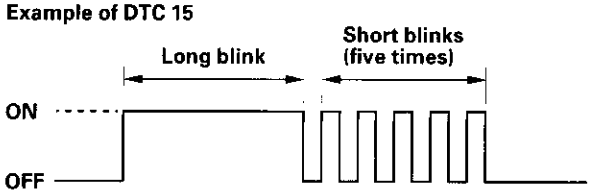
3. Turn the ignition switch ON (II).

4. The blinking frequency indicates the DTC. DTCs 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 DTC. After determining the DTC, refer to the DTC Troubleshooting Index.

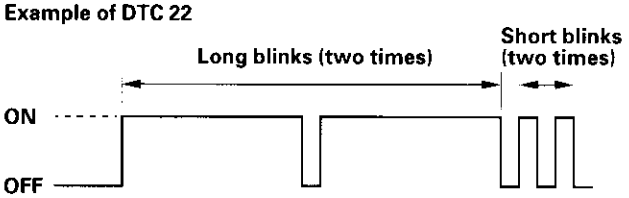
   NOTE:
   - If the DTC is not memorized, the ABS indicator will go off for 3.6 seconds, and then come back on.
   - If the ABS indicator stays on, troubleshoot for "ABS indicator does not go off" (see step 1 on page 19-53).

   The system will not indicate the DTC unless these conditions are met:
   - The brake pedal is not pressed.
   - The ignition switch is turned ON (II).
   - The SCS circuit is shorted to body ground before the ignition switch is turned ON (II).

Example of DTC 15



Example of DTC 22



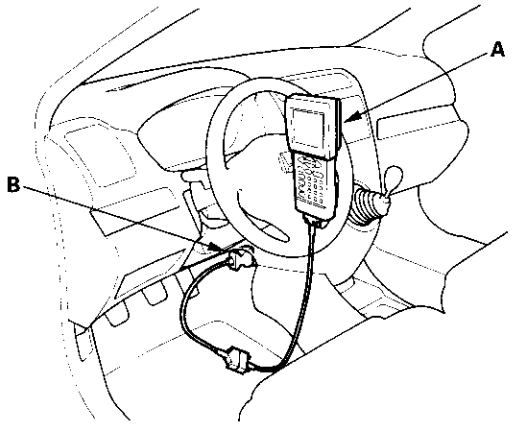
5. Turn the ignition switch OFF.

6. Disconnect the Honda PGM Tester from the DLC.

How to Clear ABS DTCs

Honda PGM Tester Method:

1. With the ignition switch OFF, connect the Honda PGM Tester (A) to the 16P data link connector (DLC) (B) under the driver's side of the dashboard.



2. Turn the ignition switch ON (II), and clear the DTC(s) by following the screen prompts on the PGM Tester.

   NOTE: See the Honda PGM Tester user's manual for specific instructions.

Cycling the Ignition Switch Method:

Clear the DTC by turning the ignition switch ON (II) then OFF at least 20 times.

DTC Troubleshooting Index

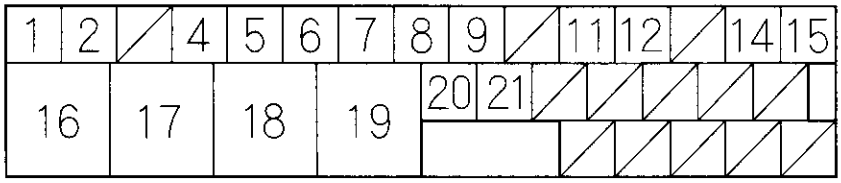
DTC	Detection Item	Note
DTC:11	Right-front wheel sensor (open/short to body ground/short to power)	(see page 19-45)
DTC:12	Faulty right-front wheel sensor pulse signal	(see page 19-46)
DTC:13	Left-front wheel sensor (open/short to body ground/short to power)	(see page 19-45)
DTC:14	Faulty left-front wheel sensor pulse signal	(see page 19-46)
DTC:15	Right-rear wheel sensor (open/short to body ground/short to power)	(see page 19-45)
DTC:16	Faulty right-rear wheel sensor pulse signal	(see page 19-46)
DTC:17	Left-rear wheel sensor (open/short to body ground/short to power)	(see page 19-45)
DTC:18	Faulty left-rear wheel sensor pulse signal	(see page 19-46)
DTC:21	Continuous operation (chipped pulser)	(see page 19-47)
DTC:31	Solenoid	(see page 19-48)
DTC:32	Solenoid	(see page 19-48)
DTC:33	Solenoid	(see page 19-48)
DTC:34	Solenoid	(see page 19-48)
DTC:35	Solenoid	(see page 19-48)
DTC:36	Solenoid	(see page 19-48)
DTC:37	Solenoid	(see page 19-48)
DTC:38	Solenoid	(see page 19-48)
DTC:51	Motor locked	(see page 19-48)
DTC:52	Motor stuck off	(see page 19-49)
DTC:53	Motor stuck on	(see page 19-50)
DTC:54	Main relay stuck off	(see page 19-51)
DTC:61	IG2 voltage	(see page 19-51)
DTC:81	CPU (Central Processing Unit)	(see page 19-52)

Symptom Troubleshooting Index

Symptom	Diagnostic procedure	Also check for
ABS indicator does not come on	ABS Indicator Circuit Troubleshooting (see page 19-52)	
ABS indicator does not go off and no ABS DTC is stored	ABS Indicator Circuit Troubleshooting (see step 1 on page 19-53)	
Brake system indicator does not come on	Brake System Indicator Circuit Troubleshooting (see page 19-55)	
Brake system indicator does not go off and no ABS DTC is stored	Brake System Indicator Circuit Troubleshooting (see step 1 on page 19-55)	

System Description

ABS Control Unit Inputs and Outputs for 31P Connector



Wire side of female terminals

Terminal number	Wire color	Terminal sign	Description	Measurement		
				Terminals	Conditions (Ignition switch ON (II))	Voltage
1	BLU/YEL	RRS (−)	Detects right-rear wheel sensor signal	1−2	Spin wheel at 1 turn/second	AC: 0.053 V or above
2	GRN/YEL	RRS (+)				
4	BLU	FRS (−)	Detects right-front wheel sensor signal	4−5		
5	GRN/BLK	FRS (+)				Oscilloscope 0.15 Vp-p or above
6	BRN/WHT	FLS (−)	Detects left-front wheel sensor signal	6−7		
7	BLU/ORN	FLS (+)				
8	GRY/RED	RLS (−)	Detects left-rear wheel sensor signal	8−9		
9	YEL/RED	RLS (+)				
11	LT BLU	DIAG−K	Communications with Honda PGM tester	—	—	—
12	BRN	DIAG−L	DTC indication	—	—	—

Terminal number	Wire color	Terminal sign	Description	Measurement			
				Terminals	Conditions (Ignition switch ON (II))		Voltage
14	WHT/BLK	STOP	Detects brake switch signal	14-GND	Brake pedal	Pressed	Battery voltage
						Released	
15	BLK/ORN	IG2	Power source for activating the system	15-GND	———		Battery voltage
16	BLK	M-GND	Ground for the pump motor	16-GND	———		Below 0.3 V
17	WHT/RED	+B-MR	Power source for the pump motor	17-GND	At all times		Battery voltage
18	WHT/GRN	+B-FSR	Power source for the valve relay	18-GND	At all times		Battery voltage
19	BLK	GND	Ground for the modulator assembly	19-GND	———		Below 0.3 V
20	BLU/RED	ABS	Drives ABS indicator	20-GND	ABS indicator	ON	About 11 V
						OFF	Below 1 V
21	BRN/YEL	EBD (Electronic brake distribution)	Drives brake system indicator	21-GND	Brake system indicator	OFF	Below 0.3 V
						ON for bulb check	Battery voltage

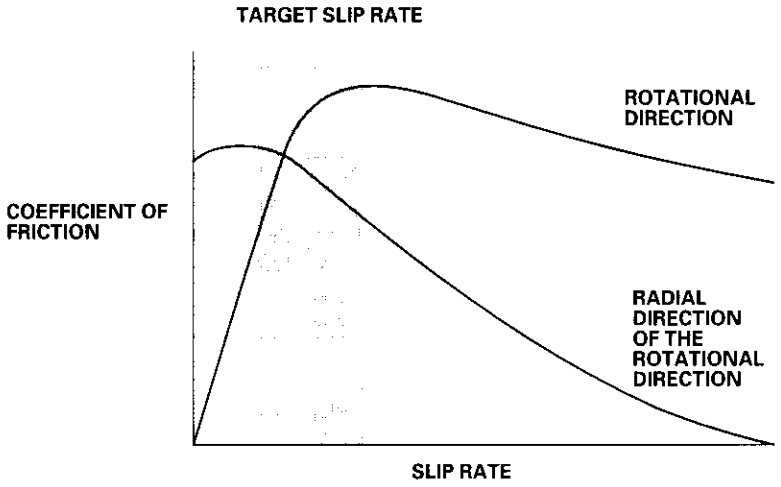
(cont'd)

System Description (cont'd)

Features

When the brake pedal is pressed during driving, the wheels can 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. The ABS precisely controls the slip rate of the wheels to ensure maximum grip force from the tires, thereby ensuring the maneuverability and stability of the vehicle.
The ABS calculates the slip rate of the wheels based on the vehicle speed and the wheel speed, then it controls the brake fluid pressure to reach the target slip rate.

Grip Force of Tire and Road Surface



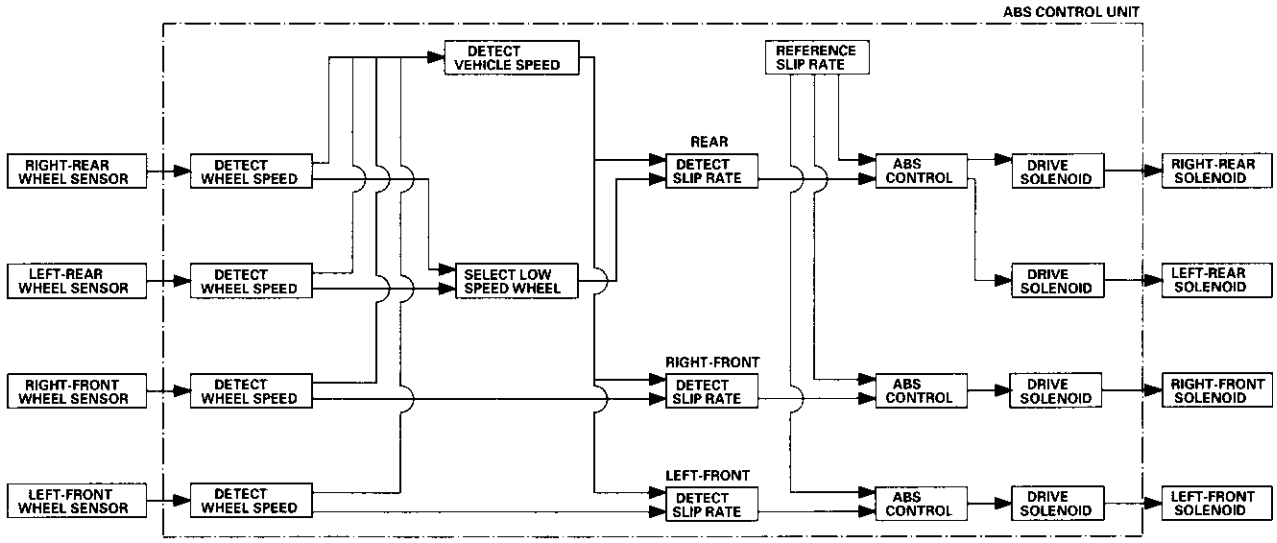
ABS Control Unit

Main Control

The ABS control unit detects the wheel speed based on the wheel sensor signal it received, then it calculates the vehicle speed based on the detected wheel speed. The control unit detects the vehicle speed during deceleration based on the rate of deceleration.

The ABS 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 pressure reduction control has three modes: pressure reducing, pressure retaining, and pressure intensifying.



Self-diagnosis Function

1. The ABS control unit is equipped with a main CPU and a sub-CPU. Each CPU checks the other for problems.
2. The CPUs check the circuit of the system.
3. The ABS control unit turns on the ABS indicator when the unit detects a problem and the unit stops the system.
4. The self-diagnosis can be classified into these two categories:
   - Initial diagnosis
   - Regular diagnosis

On-board Diagnosis Function

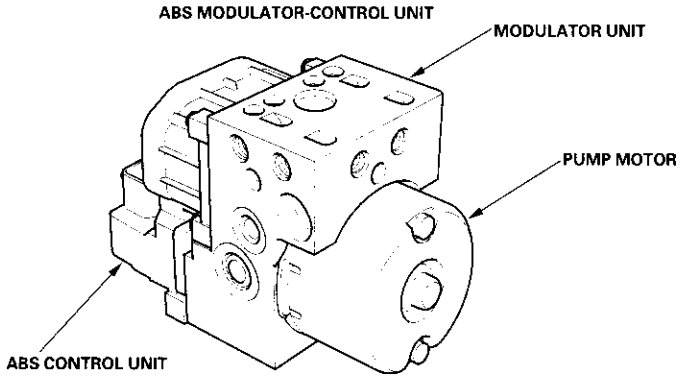
The ABS can be diagnosed with the Honda PGM Tester.
The ALB Checker cannot be used with this system. For air bleeding and checking wheel sensor signals, use the Honda PGM Tester. See the Honda PGM Tester user's manual for specific operating instructions.

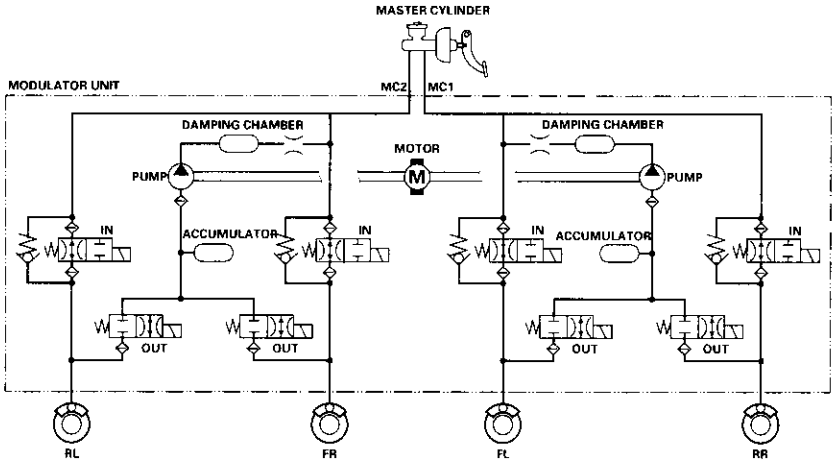
(cont'd)

System Description (cont'd)

ABS Modulator

The ABS modulator consists of the inlet solenoid valves, outlet solenoid valves, reservoir, pump, 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, 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.





Pressure intensifying mode: Inlet valve open, outlet valve closed
Master cylinder fluid is pumped out to the caliper.

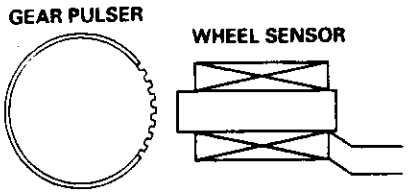
Pressure retaining mode: Inlet valve closed, outlet valve closed
Caliper fluid is retained by the inlet valve and outlet valve.

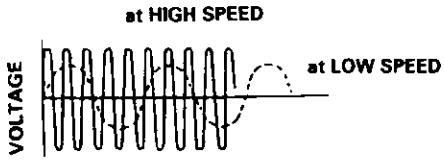
Pressure reducing mode: Inlet valve closed, outlet valve open
Caliper fluid flows through the outlet valve to the reservoir.

Motor operation mode: When starting the pressure reducing mode, the pump motor is ON.
When stopping ABS operation, the pump motor is OFF.
The caliper fluid is pumped out by the pump, through the damping chamber, to the master cylinder.

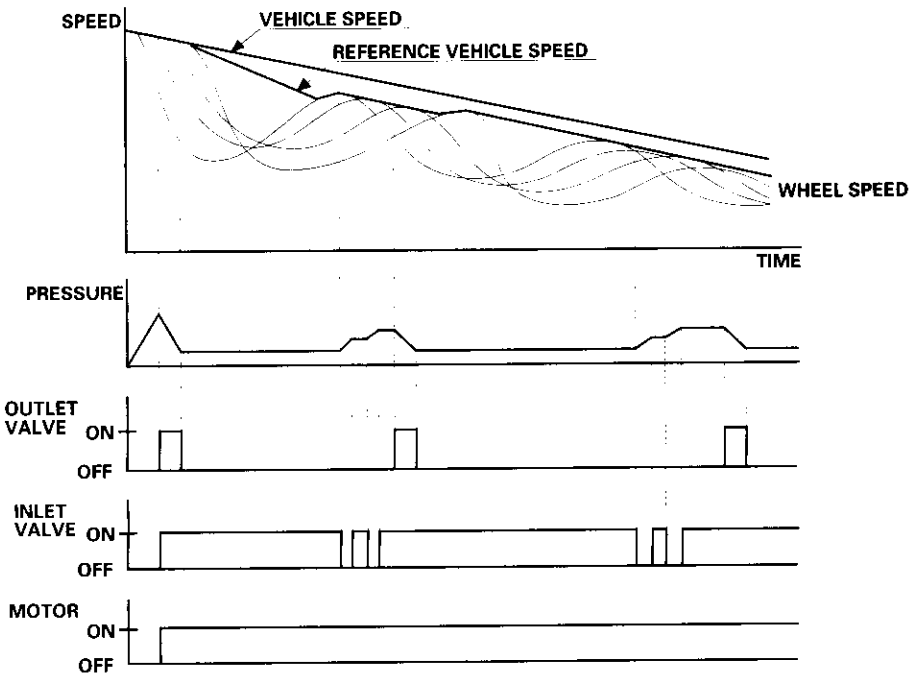
Wheel Sensors

The wheel sensors are the magnetic contactless type. As the gear pulser teeth rotate past the wheel sensor's magnetic coil, AC current is generated. The AC frequency changes in accordance with the wheel speed. The ABS control unit detects the wheel sensor signal frequency and thereby detects the wheel speed.





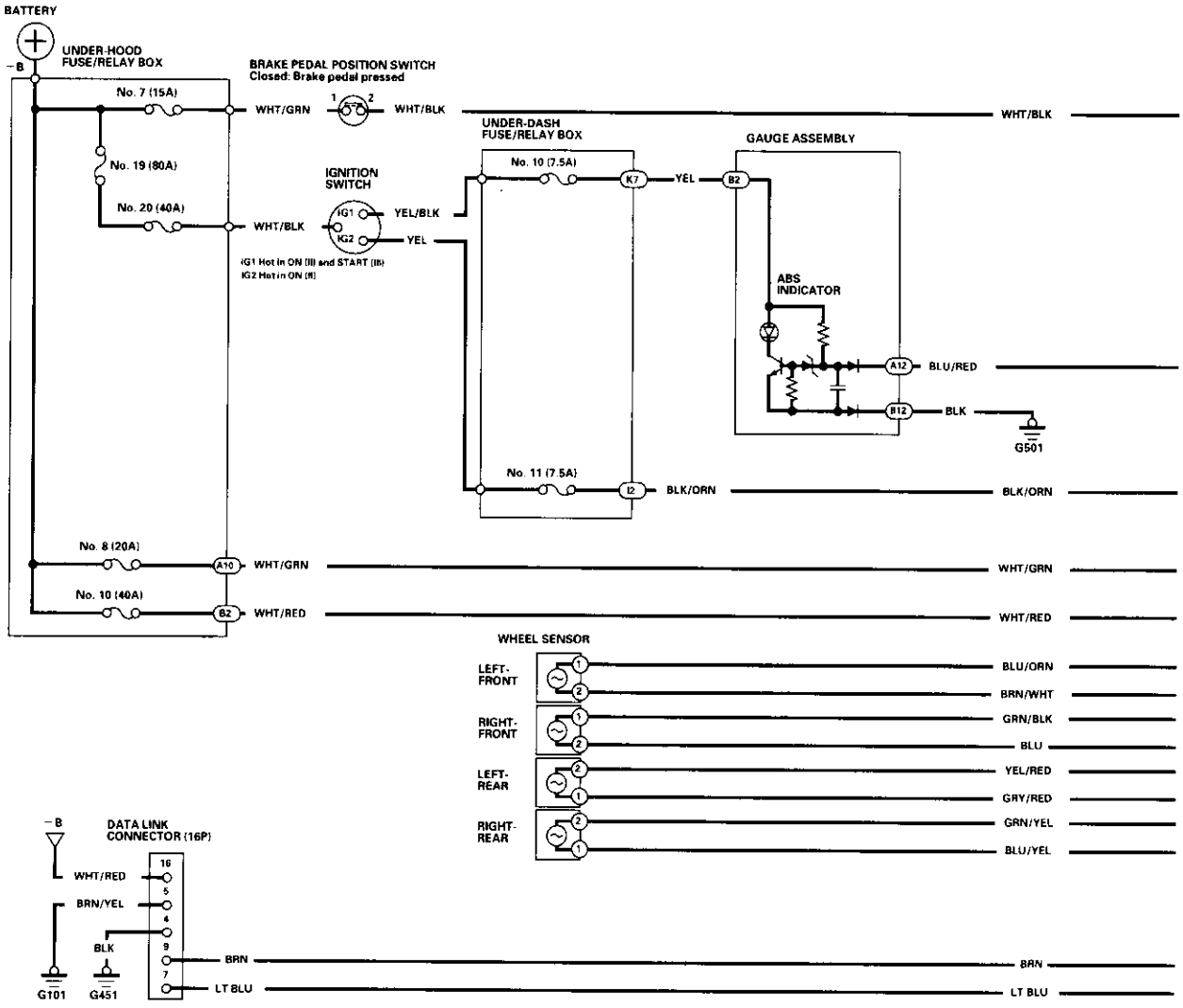
Wheel Speed and Modulator Control

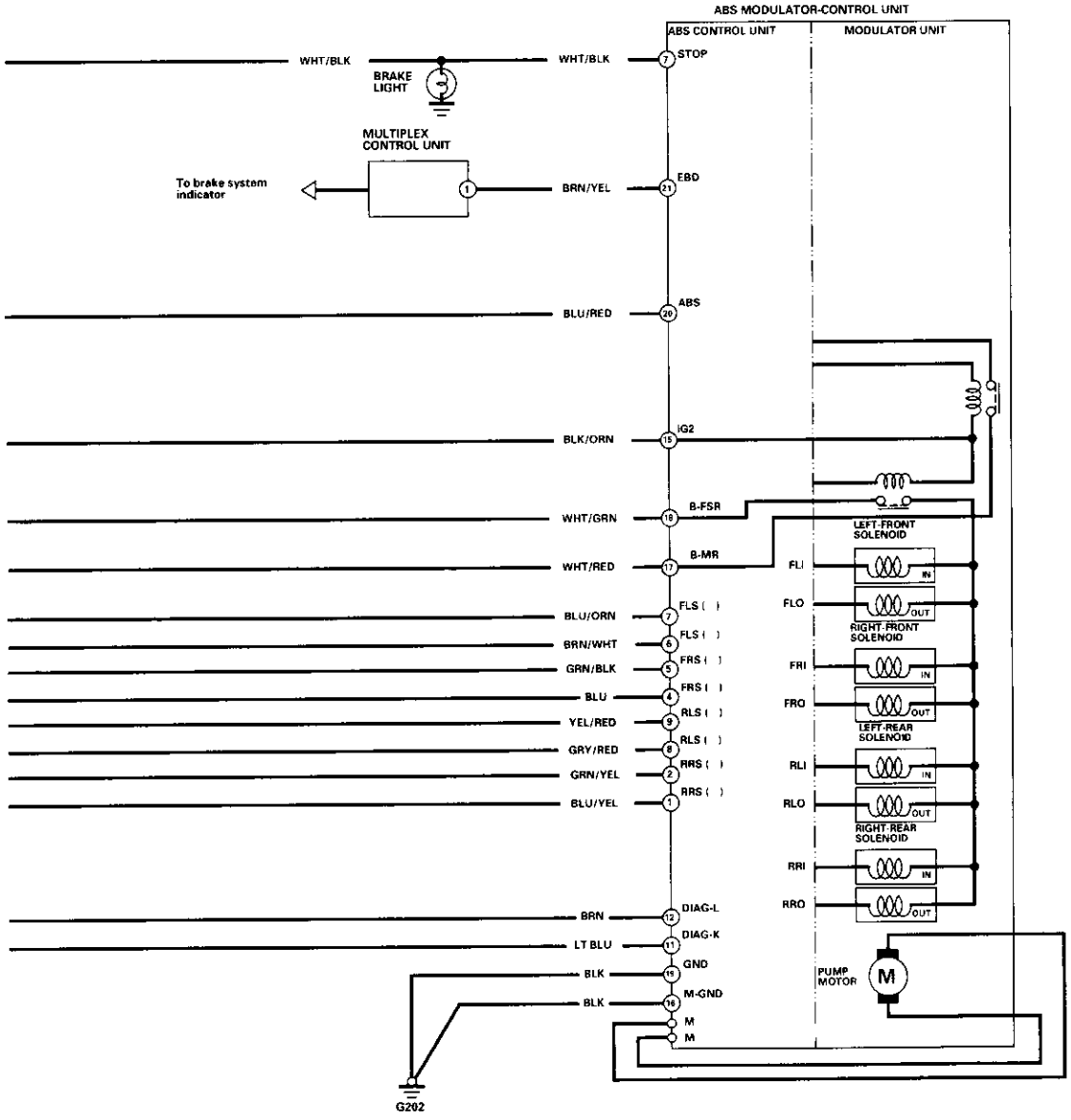


When the wheel speed drops sharply below the vehicle speed, the inlet valve closes and if necessary, the outlet valve opens momentarily to reduce the caliper fluid pressure. The pump motor starts at this time. As the wheel speed is restored, and the outlet valve closes, the inlet valve opens momentarily to increase the caliper fluid pressure.

ABS Components

Circuit Diagram

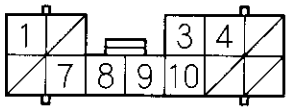



ABS MODULATOR-CONTROL UNIT
ABS CONTROL UNIT
MODULATOR UNIT
WHT/BLK
BRAKE LIGHT
WHT/BLK
7 STOP
MULTIPLEX CONTROL UNIT
To brake system indicator
1
BRN/YEL
21 EBD
BLU/RED
20 ABS
BLK/ORN
15 IG2
WHT/GRN
18 B-FSR
WHT/RED
17 B-MR
BLU/ORN
7 FLS ( )
BRN/WHT
6 FLS ( )
GRN/BLK
5 FRS ( )
BLU
4 FRS ( )
YEL/RED
9 RLS ( )
GRY/RED
8 RLS ( )
GRN/YEL
2 RRS ( )
BLU/YEL
1 RRS ( )
LEFT-FRONT SOLENOID
FLI
FLO
IN
OUT
RIGHT-FRONT SOLENOID
FRI
FRO
LEFT-REAR SOLENOID
RLI
RLO
RIGHT-REAR SOLENOID
RRI
RRO
BRN
12 DIAG-L
LT BLU
11 DIAG-K
BLK
19 GND
BLK
16 M-GND
M
M
PUMP MOTOR
M
G202

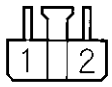
(cont'd)

Circuit Diagram (cont'd)

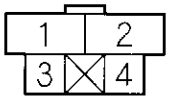
UNDER-HOOD FUSE/RELAY BOX CONNECTORS
CONNECTOR A (12P)



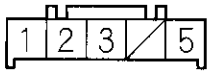
CONNECTOR B (2P)



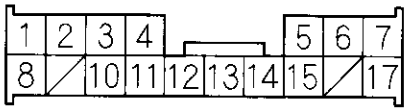
BRAKE PEDAL POSITION SWITCH 4P CONNECTOR



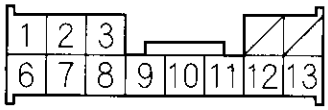
UNDER-DASH FUSE/RELAY BOX CONNECTORS
CONNECTOR I (5P)



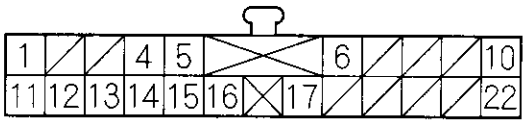
CONNECTOR K (17P)



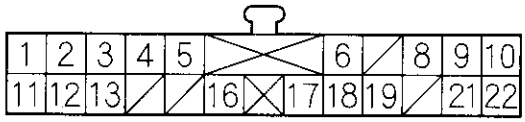
MULTIPLEX CONTROL UNIT 13P CONNECTOR



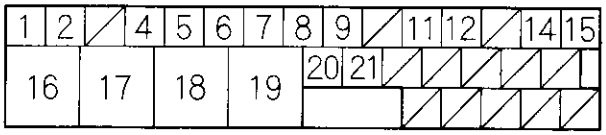
GAUGE ASSEMBLY CONNECTORS
CONNECTOR A (22P)



CONNECTOR B (22P)

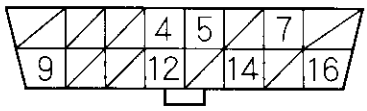


ABS CONTROL UNIT 31P CONNECTOR



Wire side of female terminals

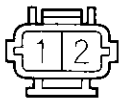
DATA LINK CONNECTOR (16P)



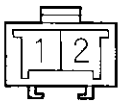
Terminal side of female terminals

WHEEL SENSOR 2P CONNECTORS

FRONT



RIGHT-REAR



LEFT-REAR

Terminal side of male terminals

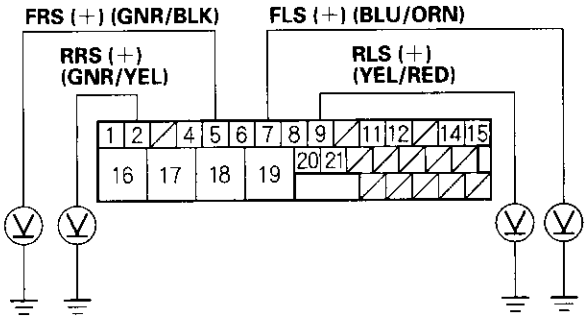
DTC Troubleshooting

DTC 11, 13, 15, 17: Wheel Sensor (Open/Short to Body Ground/Short to Power)

1. Disconnect the ABS control unit 31P connector.
2. Start the engine.
3. Measure the voltage between the appropriate wheel sensor (+) circuit terminal of the ABS control unit 31P connector and body ground (see table).

DTC	Appropriate Terminal
11 (Right-front)	No. 5: FRS (+)
13 (Left-front)	No. 7: FLS (+)
15 (Right-rear)	No. 2: RRS (+)
17 (Left-rear)	No. 9 RLS (+)

ABS CONTROL UNIT 31P CONNECTOR



Wire side of female terminals

Is there battery voltage?

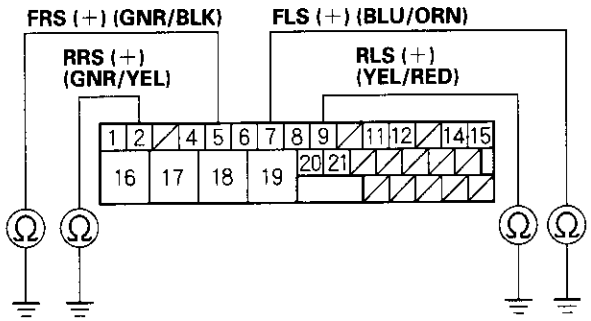
YES—Repair short to power in the (+) circuit wire between the ABS modulator-control unit and the appropriate wheel sensor. ■

NO—Go to step 4.

4. Turn the ignition switch OFF.
5. Check for continuity between the appropriate wheel sensor (+) circuit terminal and body ground (see table).

DTC	Appropriate Terminal
11 (Right-front)	No. 5: FRS (+)
13 (Left-front)	No. 7: FLS (+)
15 (Right-rear)	No. 2: RRS (+)
17 (Left-rear)	No. 9 RLS (+)

ABS CONTROL UNIT 31P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 6.

NO—Go to step 7.

6. Disconnect the harness 2P connector from the appropriate wheel sensor, then check for continuity between the (+) and (−) terminals of the harness and body ground.

Is there continuity?

YES—Repair short to body ground in the (+) or (−) circuit wire between the ABS modulator-control unit and the wheel sensor. ■

NO—Replace the wheel sensor. ■

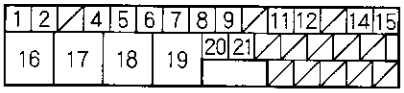
(cont'd)

DTC Troubleshooting (cont'd)

7. Check the resistance between the appropriate wheel sensor (+) and (−) circuit terminals (see table).

DTC	Appropriate Terminal	
	(+) Side	(−) Side
11 (Right-front)	No. 5: FRS (+)	No. 4: FRS (-)
13 (Left-front)	No. 7: FLS (+)	No. 6: FLS (-)
15 (Right-rear)	No. 2: RRS (+)	No. 1: RRS (-)
17 (Left-rear)	No. 9: RLS (−)	No. 8: RLS (-)

ABS CONTROL UNIT 31P CONNECTOR



Wire side of female terminals

Is the resistance between 450—2,000 Ω ?

YES—Check for a loose ABS control unit 31P connector. If necessary, substitute a known-good ABS modulator-control unit, and recheck.■

NO—Go to step 8.

8. Disconnect the harness 2P connector from the appropriate wheel sensor, and check the resistance between the (+) and (−) terminals of the wheel sensor.

Is the resistance between 450—2,000 Ω ?

YES—Repair open in the (+) or (−) circuit wire, or short between the (+) circuit wire and the (−) circuit wire between the ABS modulator-control unit and the wheel sensor.■

NO—Replace the wheel sensor.■

DTC 12, 14, 16, 18: Wheel Sensor Pulse Signal

NOTE: If the ABS indicator comes on for the reasons described below, the indicator goes off when you test-drive the vehicle at 31 mph (50 km/h).

- Only the drive wheel rotated
- The vehicle spun
- Electrical noise

1. Visually check for appropriate wheel sensor and pulser installation and condition (see table).

DTC	Appropriate Wheel Sensor
12	Right-front
14	Left-front
16	Right-rear
18	Left-rear

Are they installed correctly and not damaged?

YES—Go to step 2.

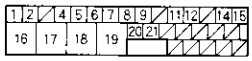
NO—Reinstall or replace the appropriate wheel sensor or pulser.■

2. Disconnect the ABS control unit 31P connector.

3. Measure the resistance between the appropriate wheel sensor (+) and (−) circuit terminals (see table).

DTC	Appropriate Terminal	
	(+) Side	(−) Side
12 (Right-front)	No. 5: FRS (+)	No. 4: FRS (−)
14 (Left-front)	No. 7: FLS (+)	No. 6: FLS (−)
16 (Right-rear)	No. 2: RRS (+)	No. 1: RRS (−)
18 (Left-rear)	No. 9: RLS (−)	No. 8: RLS (−)

ABS CONTROL UNIT 31P CONNECTOR



Wire side of female terminals

Is there less than 450 Ω ?

YES—Go to step 1.

NO—Go to step 4.

4. Check for continuity between the appropriate wheel sensor (+) circuit terminal and other wheel sensor (+) circuit terminals (see table).

DTC	Appropriate Terminal	Other Terminal		
12	No. 5: FRW (+)	No. 7	No. 2	No. 9
14	No. 7: FLW (+)	No. 5	No. 2	No. 9
16	No. 2: RRW (+)	No. 5	No. 7	No. 9
18	No. 9: RLW (+)	No. 5	No. 7	No. 2

Is there continuity?

YES—Repair short in the wires between the appropriate wheel sensor and the other wheel sensor harnesses.■

NO—Clear the DTC, disconnect the Honda PGM Tester, and test-drive the vehicle. If the ABS indicator comes on and the same DTC is indicated, replace the ABS modulator-control unit.■

5. Disconnect the harness 2P connector from the appropriate wheel sensor and check the resistance between the (+) side and the (−) side of the wheel sensor.

Is there less than 450 Ω ?

YES—Replace the wheel sensor.

NO—Repair short to wire between the appropriate wheel sensor (+) and (−) circuits.■

DTC 21: Continuous Operation (Chipped pulser)

1. Clear the DTC, then disconnect the Honda PGM tester.

2. Test-drive the vehicle at 19 mph (30 km/h) or more.

Does the ABS indicator come on and is DTC 21 indicated?

YES—Go to step 3.

NO—The system is OK at this time.■

3. Check the pulser gear for a chipped tooth.

Is the pulser OK?

YES—Check for a loose ABS control unit 31P connector. If necessary, substitute a known-good ABS modulator-control unit, and recheck.■

NO—Replace the driveshaft or hub unit (chipped pulser gear).■

DTC Troubleshooting (cont'd)

DTC 31, 32, 33, 34, 35, 36, 37, 38: Solenoid

1. Clear the DTC, then disconnect the Honda PGM Tester.
2. Test-drive the vehicle.

   Does the ABS indicator come on and are DTCs 31, 32, 33, 34, 35, 36, 37, 38 indicated?

   YES—Replace the ABS modulator-control unit. ■

   NO—The system is OK at this time. ■

DTC 51: Motor Locked

1. Check the No. 10 (40A) fuse in the under-hood fuse/relay box.

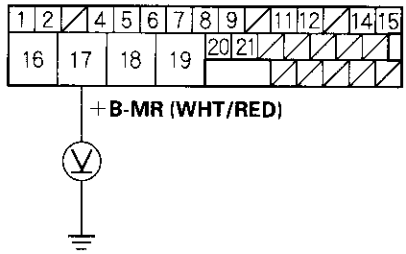
   Is the fuse OK?

   YES—Reinstall the fuse, and go to step 2.

   NO—Replace the fuse, and recheck. ■

2. Disconnect the ABS control unit 31P connector.
3. Measure the voltage between the ABS control unit 31P connector terminal No. 17 and body ground.

ABS CONTROL UNIT 31P CONNECTOR



Wire side of female terminals

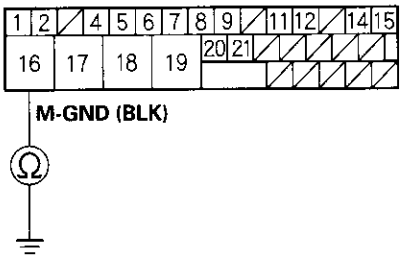
Is there battery voltage?

YES—Go to step 4.

NO—Repair open in the wire between the No. 10 (40A) fuse and the ABS control unit. ■

4. Check for continuity between the ABS control unit 31P connector terminal No. 16 and body ground.

ABS CONTROL UNIT 31P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 5.

NO—Repair open in the wire between the ABS control unit and body ground (G202).■

5. Reconnect the ABS control unit 31P connector.
6. Clear the DTC, then disconnect the Honda PGM tester.
7. Test-drive the vehicle at 6 mph (10 km/h) or more.

Does the ABS indicator come on, and is DTC 51 indicated?

YES—Replace the ABS modulator-control unit.■

NO—The system is OK at this time.■

DTC 52: Motor Stuck OFF

1. Check the No. 10 (40A) fuse in the under-hood fuse/relay box.

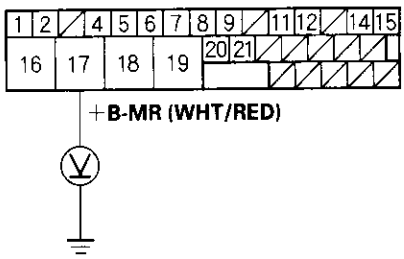
Is the fuse OK?

YES—Reinstall the fuse, and go to step 2.

NO—Replace the fuse, and recheck.■

2. Disconnect the ABS control unit 31P connector.
3. Measure the voltage between the ABS control unit 31P connector terminal No. 17 and body ground.

ABS CONTROL UNIT 31P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Go to step 4.

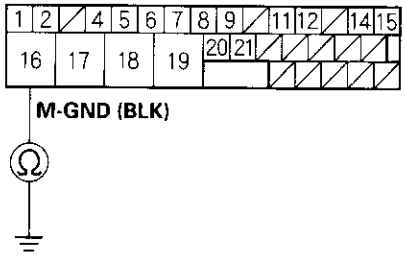
NO—Repair open in the wire between the No. 10 (40A) fuse and the ABS control unit.■

(cont'd)

DTC Troubleshooting (cont'd)

4. Check for continuity between the ABS control unit 31P connector terminal No. 16 and body ground.

ABS CONTROL UNIT 31P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Check for loose terminals in the ABS control unit 31P connector. If necessary, substitute a known-good ABS modulator-control unit, and recheck. ■

NO—Repair open in the wire between the ABS control unit and body ground (G202). ■

DTC 53: Motor Stuck ON

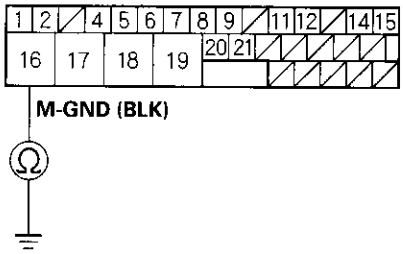
1. Clear the DTC, then disconnect the Honda PGM Tester.
2. Test-drive the vehicle.

   Does the ABS indicator come on and is DTC 53 indicated?

   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. ■
3. Disconnect the ABS control unit 31P connector.
4. Check for continuity between the ABS control unit 31P connector terminal No. 16 and body ground.

ABS CONTROL UNIT 31P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Replace the ABS modulator-control unit. ■

NO—Repair open in the wire between the ABS control unit and body ground (G202). ■

DTC 54: Main Relay Stuck OFF

1. Check the No. 8 (20A) fuse in the under-hood fuse/relay box, and reinstall the fuse if it is OK.

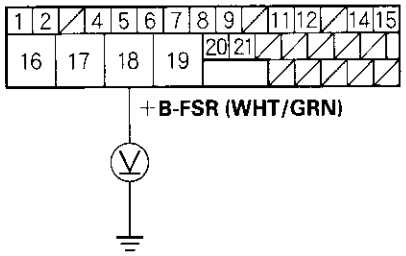
   Is the fuse OK?

   YES—Go to step 2.

   NO—Replace the fuse, and recheck. ■

2. Disconnect the ABS control unit 31P connector.
3. Measure the voltage between the ABS control unit connector terminal No. 18 and body ground.

ABS CONTROL UNIT 31P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Replace the ABS modulator-control unit. ■

NO—Repair open in the wire between the ABS control unit and the under-hood fuse/relay box. ■

DTC 61: IG2 Voltage

NOTE: Check the No. 11 (7.5A) fuse in the under-dash fuse/relay box before troubleshooting.

1. Clear the DTC, then disconnect the Honda PGM tester.
2. Test-drive the vehicle.

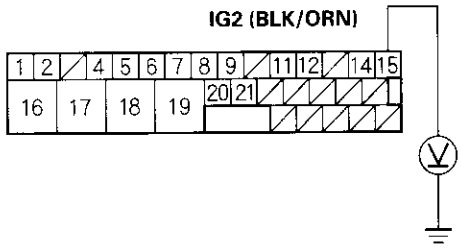
   Does the ABS indicator come on and is DTC 61 indicated?

   YES—Go to step 3.

   NO—The system is OK at this time. ■

3. Disconnect the ABS control unit 31P connector.
4. Turn the ignition switch ON (II).
5. Measure the voltage between the ABS control unit 31P connector terminal No. 15 and body ground.

ABS CONTROL UNIT 31P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Replace the ABS modulator-control unit. ■

NO—Repair open in the wire between the ABS control unit and the under-hood fuse/relay box. ■

DTC Troubleshooting (cont'd)

DTC 81: CPU (Central Processing Unit)

1. Clear the DTC, then disconnect the Honda PGM Tester.
2. Test-drive the vehicle.

   Does the ABS indicator come on and is DTC 81 indicated?

   YES—Replace the ABS modulator-control unit. ■

   NO—The system is OK at this time. ■

ABS Indicator Circuit Troubleshooting

ABS indicator does not come on

1. Turn the ignition switch ON (II), and watch the ABS indicator.

   Does the ABS indicator come on?

   YES—The system is OK at this time. ■

   NO—Go to step 2.

2. Pull up the parking brake lever.

   Does the brake system indicator come on?

   YES—Go to step 3.

   NO—Repair open in the indicator power source circuit. If necassary, substitute a known-good ABS modulator-control unit, and recheck. ■
   - Blown No. 10 (7.5A) fuse.
   - Open in the wire between the No. 10 (7.5A) fuse and the gauge assembly.
   - Open circuit inside the fuse box.

3. Turn the ignition switch OFF.
4. Disconnect the ABS control unit 31P connector.
5. Turn the ignition switch ON (II).

   Does the ABS indicator come on?

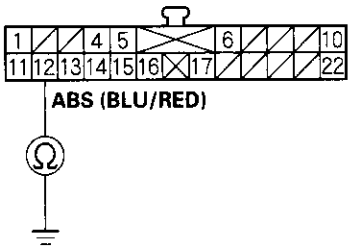
   YES—Check for loose terminals in the ABS control unit 31P connector. If necessary, substitute a known-good ABS modulator-control unit, and recheck. ■

   NO—Go to step 6.

6. Turn the ignition switch OFF.
7. Remove the gauge assembly (see page 22-64).

8. Disconnect the gauge assembly connector A (22P).
9. Check for continuity between gauge assembly connector A (22P) terminal No. 12 and body ground.

GAUGE ASSEMBLY CONNECTOR A (22P)



Wire side of female terminals

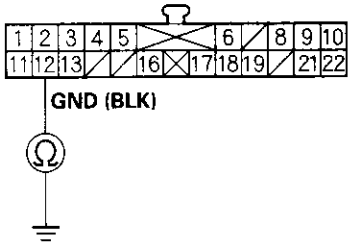
Is there continuity?

YES—Repair short to body ground in the wire between the gauge assembly and the ABS control unit.■

NO—Go to step 10.

10. Disconnect the gauge assembly connector B (22P).
11. Check for continuity between gauge assembly connector B (22P) terminal No. 12 and body ground.

GAUGE ASSEMBLY CONNECTOR B (22P)



Wire side of female terminals

Is there continuity?

YES—Check for loose terminals in the gauge assembly connectors. If the connectors are OK, replace the gauge assembly.■

NO—Repair open in the wire between the gauge assembly and body ground (G501).■

ABS indicator does not go off

1. Check the No. 8 (20A) fuse in the under-hood 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. If the fuse is blown, check for a short to body ground in this fuse circuit. If the circuit is OK, replace the ABS modulator-control unit.■

2. Check the No. 11 (7.5A) fuse in the under-dash fuse/relay box, and reinstall the fuse if it is OK.

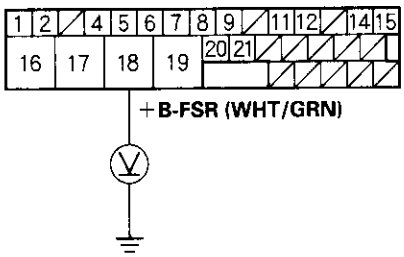
Is the fuse OK?

YES—Go to step 3.

NO—Replace the fuse, and recheck. If the fuse is blown, check for a short to body ground in this fuse circuit. If the circuit is OK, replace the ABS modulator-control unit.■

3. Disconnect the ABS control unit 31P connector.
4. Measure the voltage between terminal No. 18 and body ground.

ABS CONTROL UNIT 31P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Go to step 5.

NO—Repair open in the wire between the No. 8 (20A) fuse and the ABS control unit.■

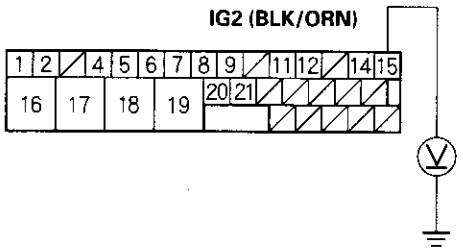
(cont'd)

ABS Indicator Circuit Troubleshooting (cont'd)

5. Turn the ignition switch ON (II).

6. Measure the voltage between the ABS control unit 31P connector terminal No. 15 and body ground.

ABS CONTROL UNIT 31P CONNECTOR



Wire side of female terminals

Is there battery voltage?

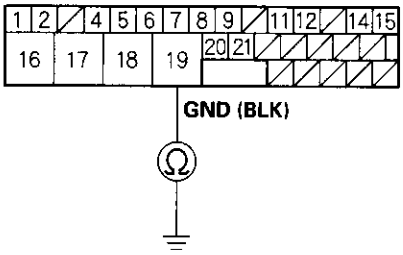
YES—Go to step 7.

NO—Repair open in the wire between the No. 11 (7.5A) fuse and the ABS control unit. ■

7. Turn the ignition switch OFF.

8. Check for continuity between the ABS control unit 31P connector terminal No. 19 and body ground.

ABS CONTROL UNIT 31P CONNECTOR



Wire side of female terminals

Is there continuity?

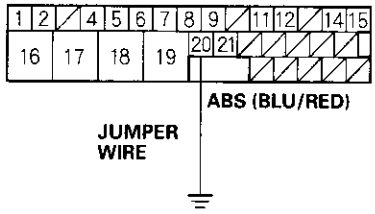
YES—Go to step 9.

NO—Repair open in the wire between the ABS control unit and body ground (G202). ■

9. Turn the ignition switch ON (II).

10. Connect the ABS control unit 31P connector terminal No. 20 and body ground with a jumper wire.

ABS CONTROL UNIT 31P CONNECTOR



Wire side of female terminals

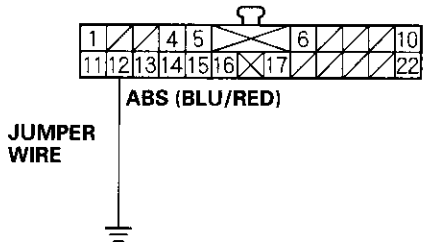
Does the ABS indicator go off?

YES—Check for loose terminals in the ABS control unit 31P connector. If necessary, substitute a known-good ABS modulator-control unit, and recheck. ■

NO—Go to step 11.

11. Remove the gauge assembly, and leave the connectors connected. Connect the gauge assembly connector A (22P) terminal No. 12 and body ground with a jumper wire.

GAUGE ASSEMBLY CONNECTOR A (22P)



Wire side of female terminals

Does the ABS indicator go off?

YES—Repair open in the wire between the gauge assembly and the ABS control unit. ■

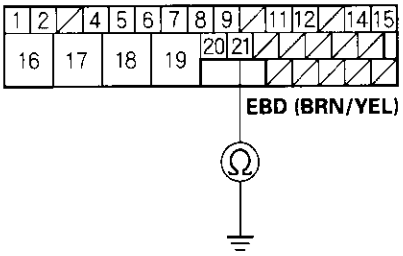
NO—Check for loose gauge assembly connectors. If the connectors are OK, replace the printed circuit board in the gauge assembly. ■

Brake System Indicator Circuit Troubleshooting

Brake system indicator does not come on

1. Disconnect the multiplex control unit 13P connector and the ABS control unit 31P connector.
2. Check for continuity between the ABS control unit 31P connector terminal No. 21 and body ground.

ABS CONTROL UNIT 31P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire between the multiplex control unit and the ABS control unit.■

NO—Go to multiplex control system troubleshooting (see page 22-172).■

Brake system indicator does not go off

1. Turn the ignition switch ON (II).
2. Release the parking brake.

   Does the brake system indicator go off after several seconds?

   YES—The system is OK at this time.■

   NO—Go to step 3.
3. Check the brake fluid level.

   Is the level OK?

   YES—Go to step 4.

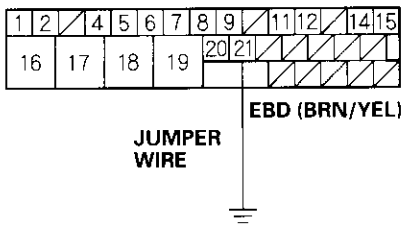
   NO—Refill the brake fluid, and recheck.■
4. Check the ABS indicator.

   Does the ABS indicator stay on?

   YES—Read the ABS DTC (see step 1 on page 19-32). and do the applicable troubleshooting for the DTC.

   NO—Go to step 5.
5. Turn the ignition switch OFF.
6. Disconnect the ABS control unit 31P connector.
7. Connect the ABS control unit 31P connector terminal No. 21 and body ground with a jumper wire.

ABS CONTROL UNIT 31P CONNECTOR



Wire side of female terminals

(cont'd)

Brake System Indicator Circuit Troubleshooting (cont'd)

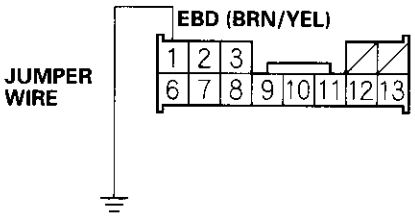
8. Turn the ignititon switch ON (II).
9. Check the brake system indicator.

   Does the brake system indicator go off?

   YES—Replace the ABS modulator-control unit. ■

   NO—Go to step 10.
10. Turn the ignition switch OFF.
11. Connect the multiplex control unit 13P connector terminal No. 1 and body ground with a jumper wire.

MULTIPLEX CONTROL UNIT 13P CONNECTOR



Wire side of female terminals

12. Turn the ignition switch ON (II).
13. Check the brake system indicator.

    Does the brake system indicator go off?

    YES—Repair open in the wire between the multiplex control unit and the ABS control unit. ■

    NO—Go to multiplex control system troubleshooting (see page 22-172). ■

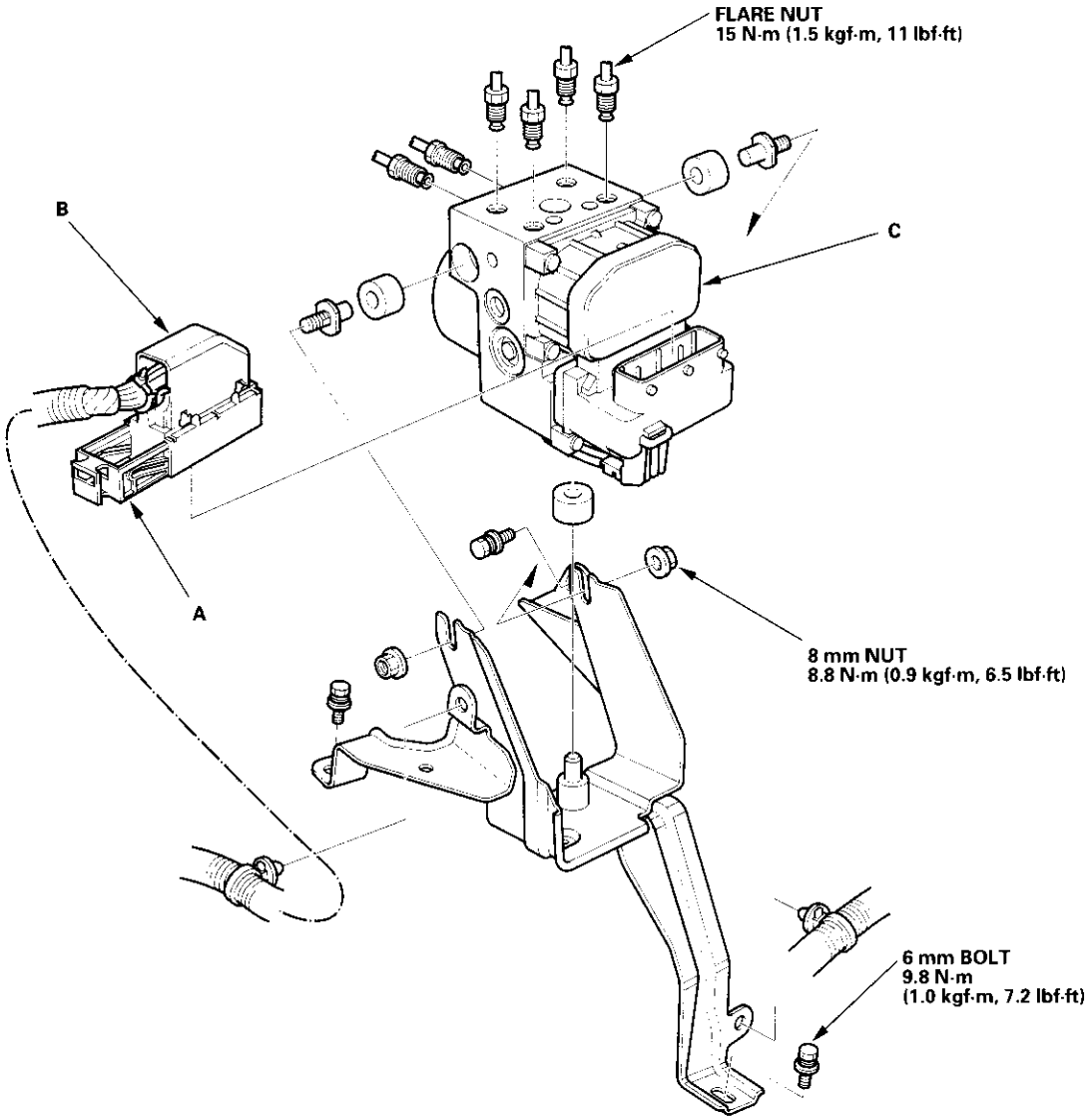
ABS Modulator-Control Unit Removal and Installation

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.
- To prevent the brake fluid from flowing, plug and cover the hose ends and joints with a shop towel or equivalent material.

Removal

1. Turn the ignition switch OFF.

2. Pull up the lock (A) of the ABS control unit 31P connector (B), then disconnect the connector.



(cont'd)

ABS Modulator-Control Unit Removal and Installation (cont'd)

3. Disconnect the six brake lines.
4. Remove the two 8 mm nuts.
5. Remove the ABS modulator-control unit (C).

Installation

1. Install the ABS modulator-control unit, then tighten the two 8 mm nuts.
2. Align the connecting surface of the ABS control unit 31P connector.
3. Push in the lock of the ABS control unit 31P connector until you hear it click into place, then connect the connector.
4. Connect the six brake lines.
5. Bleed the brake system, starting with the front wheels.
6. Connect the PGM Tester, and do the solenoid function test for each wheel.
7. Bleed the brake system again, starting with the front wheels.
8. Start the engine, and check that the ABS indicator and brake system indicator go off.
9. Disconnect the Honda PGM Tester. Test-drive the vehicle, and check that the ABS indicator and brake system indicator do not come on.

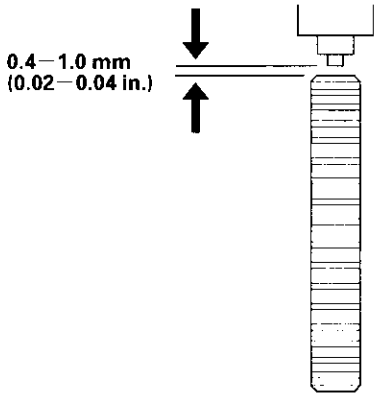
Wheel Sensor Inspection

1. Inspect the front and rear pulsers for chipped or damaged teeth.
2. Measure the air gap between the wheel sensor and the pulser all the way around while rotating the pulser. Remove the rear brake disc to measure the gap on the rear wheel sensor. If the gap exceeds 1.0 mm (0.04 in.), check for a bent suspension arm.

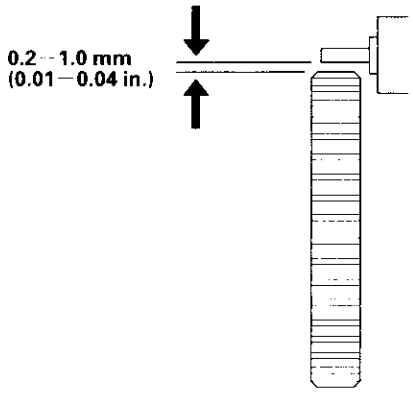
Standard:

Front:	**0.4—1.0 mm (0.02—0.04 in.)**
Rear:	**0.2—1.0 mm (0.01—0.04 in.)**

Front:



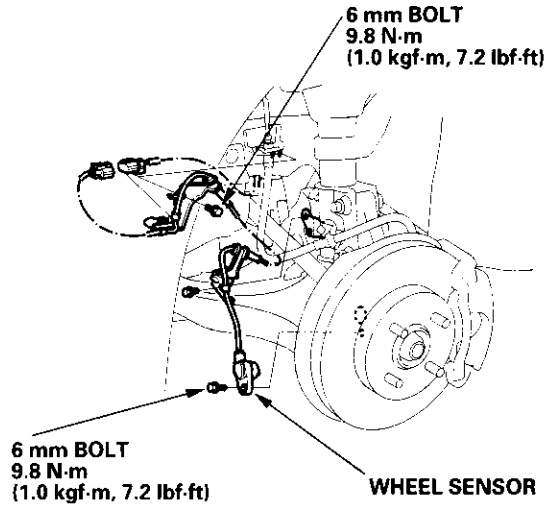
Rear:



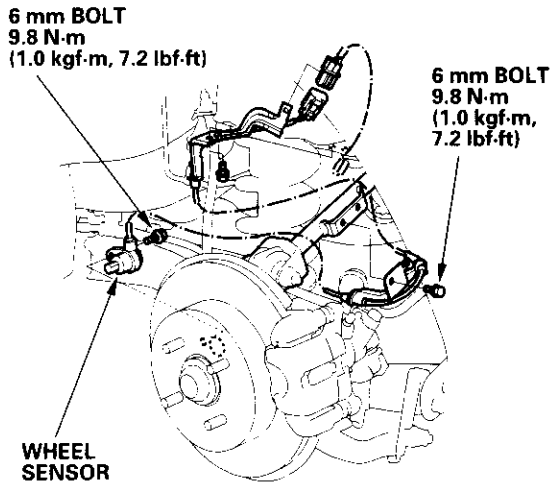
Wheel Sensor Replacement

NOTE: Install the sensors carefully to avoid twisting the wires.

Front:



Rear:



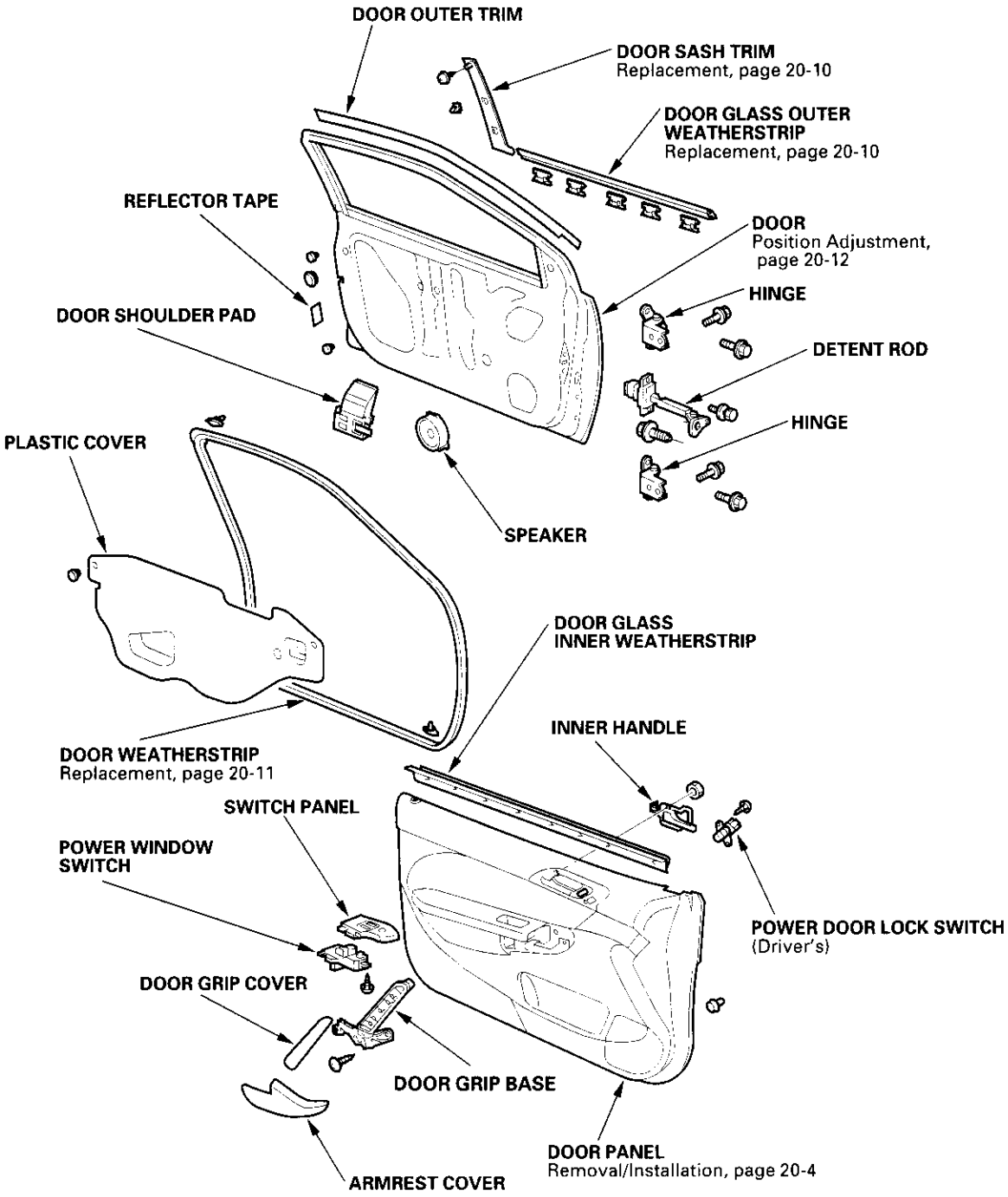
Body

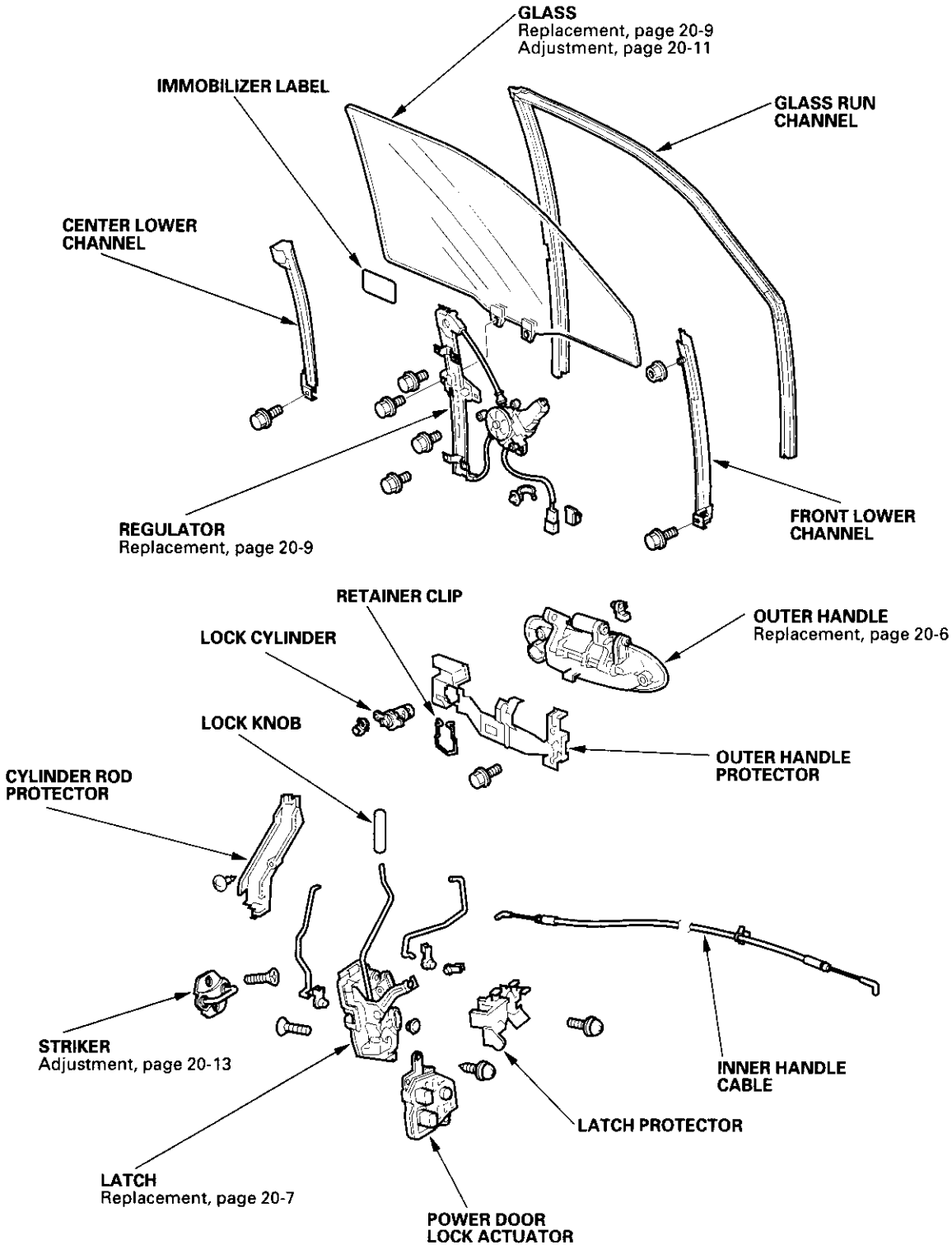
Fenderwell

Openers

Frame

Component Location Index




GLASS
Replacement, page 20-9
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IMMOBILIZER LABEL
GLASS RUN CHANNEL
CENTER LOWER CHANNEL
REGULATOR
Replacement, page 20-9
FRONT LOWER CHANNEL
RETAINER CLIP
OUTER HANDLE
Replacement, page 20-6
LOCK CYLINDER
LOCK KNOB
OUTER HANDLE PROTECTOR
CYLINDER ROD PROTECTOR
STRIKER
Adjustment, page 20-13
INNER HANDLE CABLE
LATCH PROTECTOR
LATCH
Replacement, page 20-7
POWER DOOR LOCK ACTUATOR

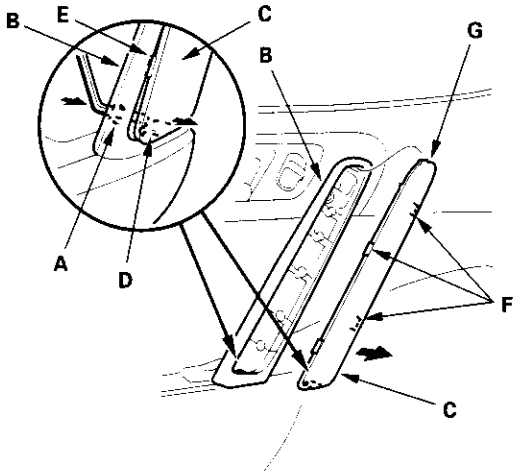
Door Panel Removal/Installation

Special Tools Required
Trim pad remover, Snap-on A 177A or equivalent, commercially available.

NOTE: When prying with a flat-tip screwdriver, wrap it with protective tape, and apply protective tape around the related parts, to prevent damage.

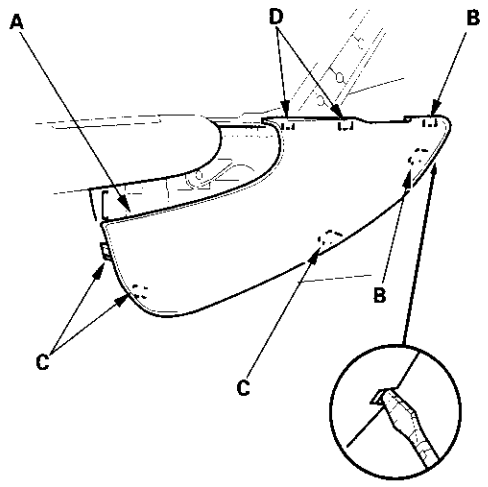
1. Remove the mirror mount cover (see page 20-15).

2. Insert a hex wrench through the hole (A) in the door grip base (B). Push the door grip cover (C) out to release the hook (D) and tab (E), and pull out the cover to release the tabs (F) and hook (G) by hand, then remove the cover.



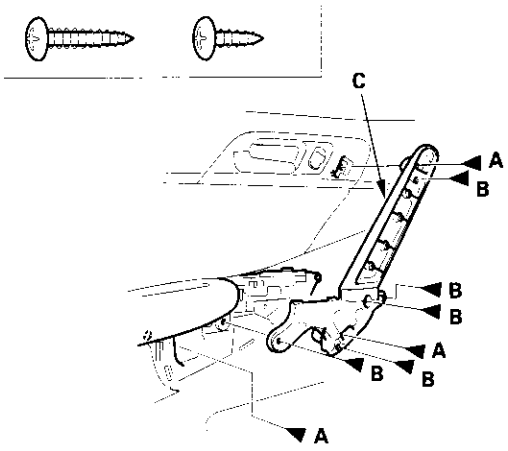
3. Remove the armrest cover (A). Take care not to scratch the door panel.

   -1 Pry out the front edge of the cover to release the hooks (B).
   -2 Pry out the bottom and rear edge of the cover to release the hooks (C).
   -3 Pry out along the top to release the tabs (D).

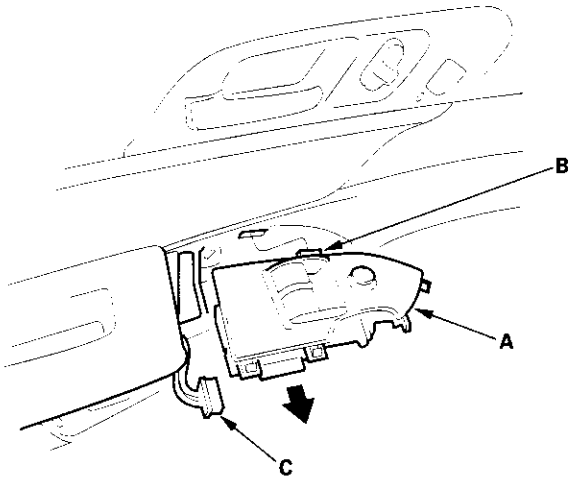


4. Remove the screws (A, B), and release the tabs (C), then remove the door grip base (D). Remove the screw (A) securing the door panel from the armrest portion.

Fastener Locations
A ▶ : Screw, 3 B ▶ : Screw, 5



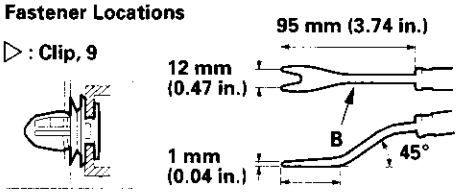
5. Pull out the switch panel (A) to release the hook (B), then remove the panel from the door panel. Disconnect the power window switch connector (C).

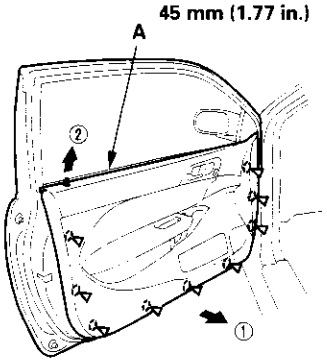


6. Release the clips that hold the door panel (A) with a commercially available trim pad remover (B), then remove the door panel by pulling it upward. Remove the door panel with as little bending as possible to avoid creasing or breaking it.

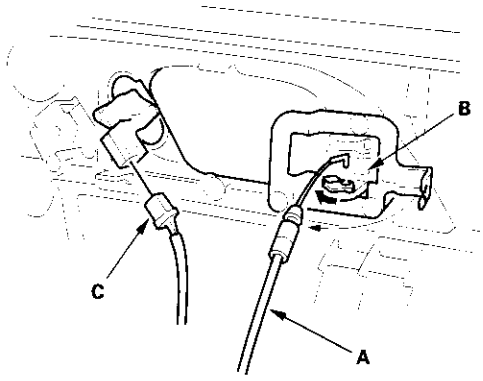
Fastener Locations

▷ : Clip, 9

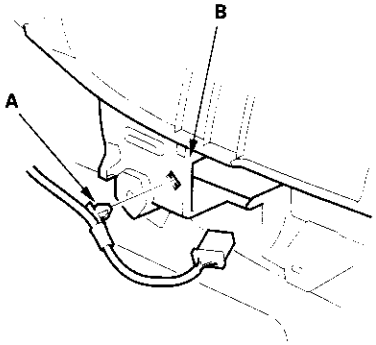




7. Disconnect the inner handle cable (A) from the inner handle (B), and disconnect the power door lock switch connector (C) (driver's). Take care not to bend the cable.



8. Detach the harness clip (A) from the door panel (B).



9. Install the door panel in the reverse order of removal, and note these items:

- Replace any damaged clips.
- Make sure the cable is connected securely, and the connector is plugged in properly.
- Check the window and power door lock operations.

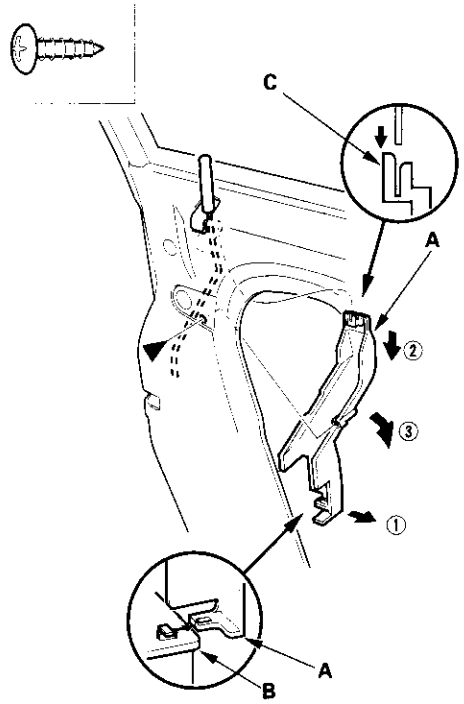
Door Outer Handle Replacement

NOTE: Put on gloves to protect your hands.

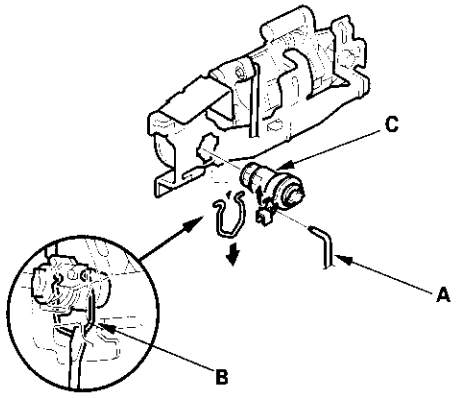
1. Remove these items:
   - Door panel (see page 20-4)
   - Plastic cover, as necessary (see page 20-2)
2. Raise the glass fully.
3. Remove the lock rod protector (A).
   -1 Remove the screw.
   -2 Release the protector from the latch protector (B).
   -3 Pull the protector down to release the hook (C) from the door.

Fastener Location

▶ : Screw, 1



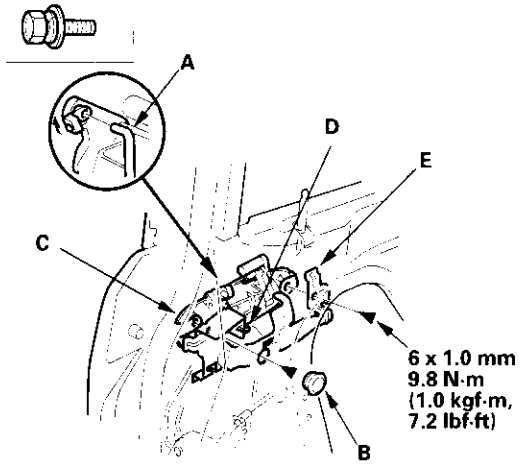
4. Disconnect the cylinder rod (A), and release the retainer clip (B), then remove the lock cylinder (C).



5. Disconnect the outer handle rod (A).

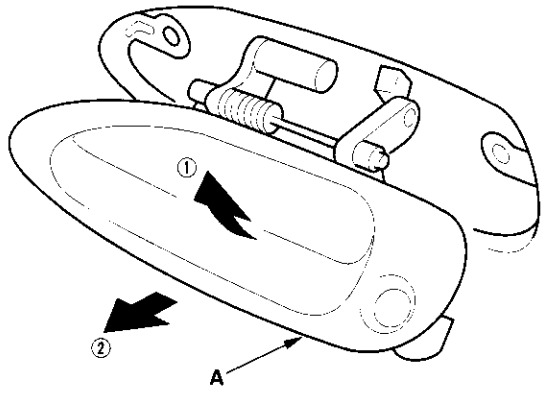
Fastener Locations

▶ : Bolt, 2



6. Remove the maintenance cap (B), and remove the bolts securing the outer handle (C) while holding the handle from outside. Release the hook (D), then remove the outer handle protector (E).

7. Pull out the outer handle (A), then remove it.



8. Install the handle in the reverse order of removal, and note these items:

   - Make sure each rod is connected securely.
   - Make sure the door locks and opens properly.
   - When installing the lock cylinder, leave the outer door handle bolts loose so the inner protector does not interfere with the lock cylinder installation, then tighten the handle bolts.
   - Install the lock cylinder retaining clip on the handle, then install the lock cylinder. Be sure the clip is fully seated in the slot on the lock cylinder.
   - When reinstalling the door panel, make sure the plastic cover is installed properly, and is sealed around the covers perimeter.

Door Latch Replacement

NOTE: Put on gloves to protect your hands.

1. Remove these items:

   - Door panel (see page 20-4)
   - Plastic cover, as necessary (see page 20-2)

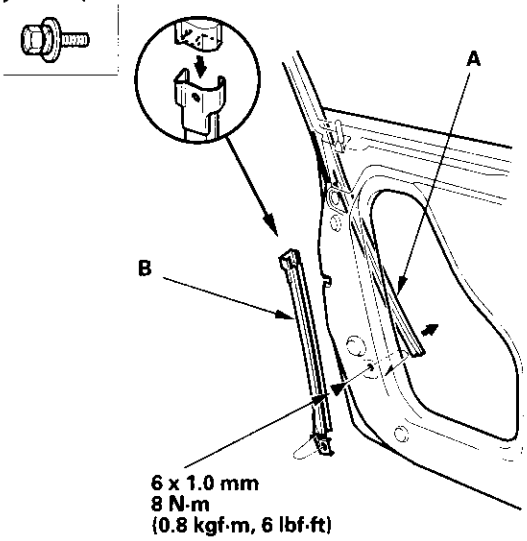
2. Raise the glass fully.

3. Remove the lock rod protector (see step 3 on page 20-6).

4. Pull the glass run channel (A) away as necessary, and remove the bolt, then remove the center lower channel (B) by pulling it downward.

Fastener Location

▶ : Bolt, 1



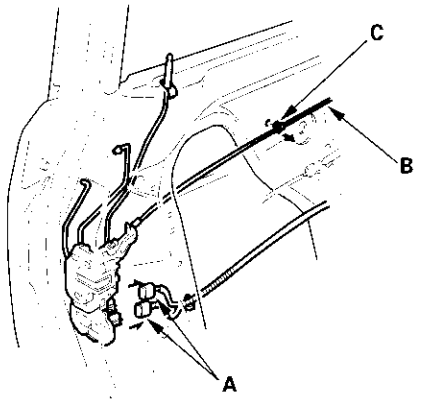
(cont'd)

Door Latch Replacement (cont'd)

5. Disconnect the cylinder rod (see step 4 on page 20-6).

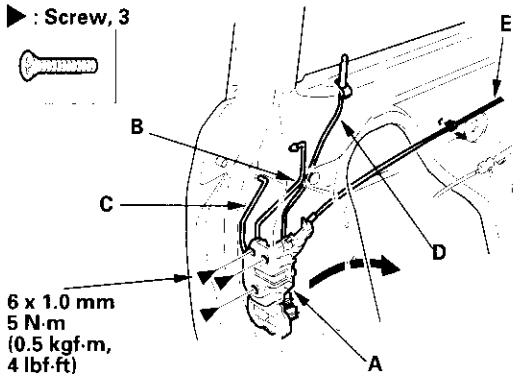
6. Disconnect the outer handle rod (see step 5 on page 20-6).

7. Disconnect the actuator connectors (A), and release the inner handle cable (B) from the door by detaching the cable clip (C).



8. Remove the screws, then remove the latch (A) through the hole in the door. Take care not to bend the outer handle rod (B), cylinder rod (C), lock rod (D), and inner handle cable (E).

Fastener Locations



9. Install the latch in the reverse order of removal, and note these items:

- Make sure the actuator connectors are plugged in properly, and that each rod and cable are connected securely.
- When reinstalling the door panel, make sure the plastic cover is installed properly, and is sealed around the covers perimeter.
- Make sure the door locks and opens properly.

Door Glass and Regulator Replacement

NOTE: Put on gloves to protect your hands.

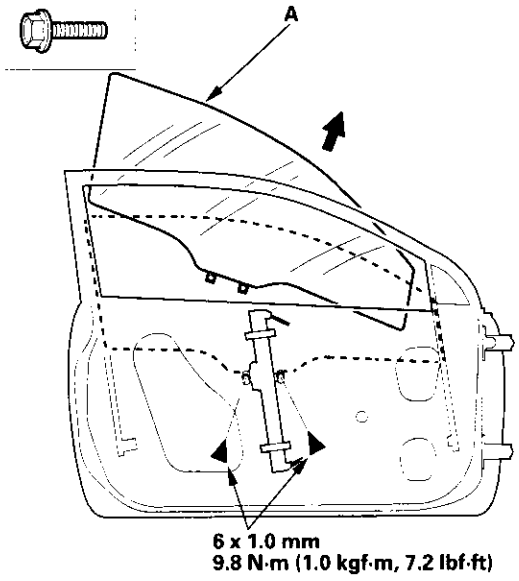
1. Remove these items:

   - Door panel (see page 20-4)
   - Plastic cover, as necessary (see page 20-2)

2. 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

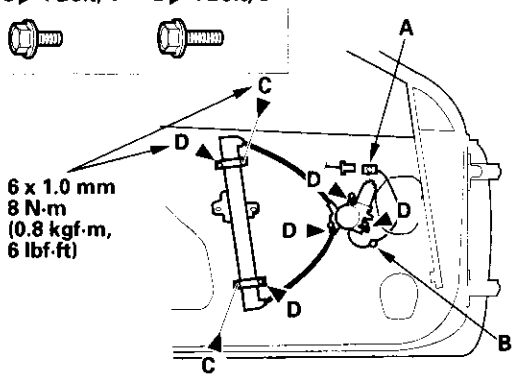
▶ : Bolt, 2



3. Disconnect and detach the connector (A) and harness clip (B) from the door.

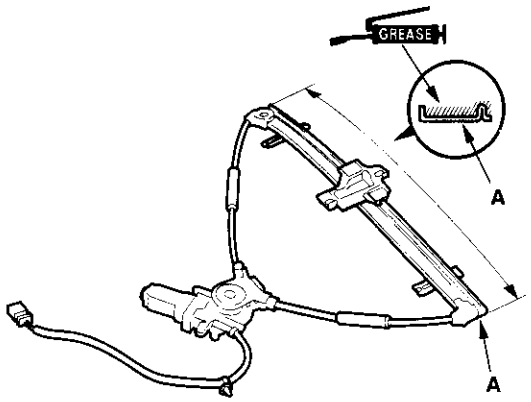
Fastener Locations

C▶ : Bolt, 1 **D▶ : Bolt, 5**



4. Remove the bolts (C), and loosen the bolts (D), then remove the regulator (E) through the hole in the door.

5. Apply multipurpose grease to all the sliding surfaces of the regulator (A) where shown.



6. Install the glass and regulator in the reverse order of removal, and note these items:

   - Roll the glass up and down to see 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 20-11).
   - Check for water leaks (see step 7 on page 20-12).
   - Test-drive and check for wind noise and rattles.
   - When reinstalling the door panel, make sure the plastic cover is installed properly and sealed around its perimeter.

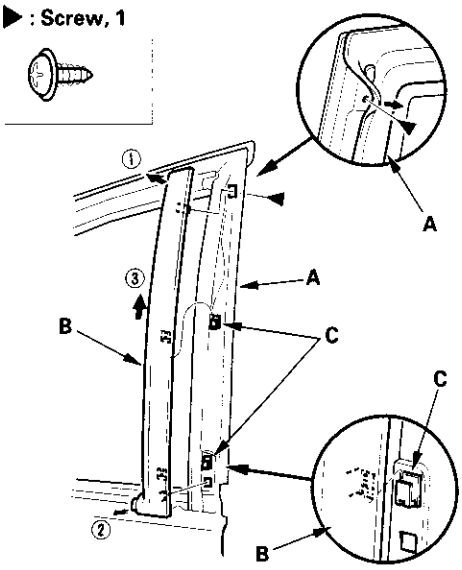
Door Sash Trim Replacement

NOTE: Take care not to scratch the door.

1. Remove the door glass outer weatherstrip.
2. Pull back the door weatherstrip (A) at the rear upper corner, and remove the screw.

Fastener Location

▶ : Screw, 1



3. Lift up the door sash trim (B) to release the hooks (C), then remove the trim.
4. Install the trim in the reverse order of removal.

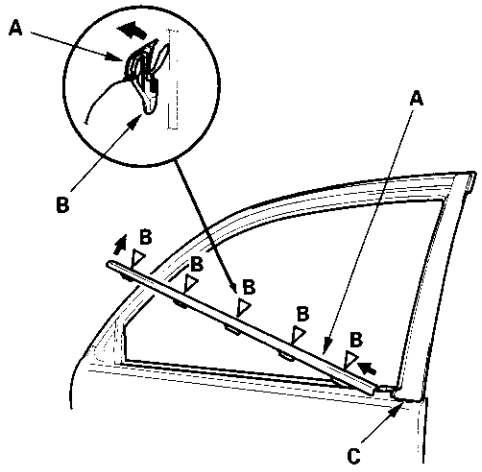
Door Glass Outer Weatherstrip Replacement

NOTE:
- Put on gloves to protect your hands.
- Take care not to scratch the door.

1. Remove the power mirror (see page 20-15).
2. Starting at the front, pry the door glass outer weatherstrip (A) up to detach the clips (B), and release the weatherstrip from the door sash trim (C), then remove the weatherstrip.

Fastener Locations

B ▷ : Clip, 5



3. Install the weatherstrip in the reverse order of removal, and replace any damaged clips.

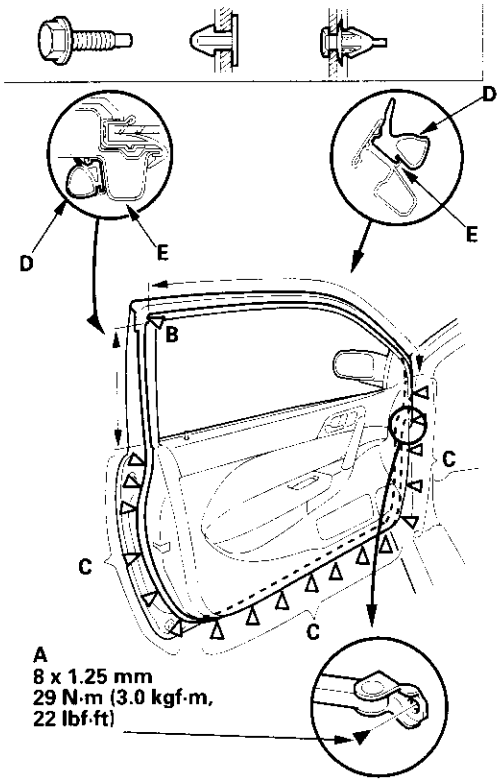
Door Weatherstrip Replacement

NOTE:
- Take care not to scratch the door.
- Use a clip remover to remove the clips.

1. At the A-pillar, remove the door stop mounting bolt (A).

Fastener Locations

A▶ : Bolt, 1 B▷ : Clip, 1 C▷ : Clip, 18



2. Detach the clips (B, C), then remove the door weatherstrip (D).

3. Install the weatherstrip in the reverse order of removal and note these items:

- Replace any damaged clips.
- Make sure the weatherstrip is installed in the holder (E) securely.
- Apply liquid thread lock to door stop mounting bolt before installation.
- Check for water leaks (see step 7 on page 20-12).
- Test-drive and check for wind noise.

Door Glass Adjustment

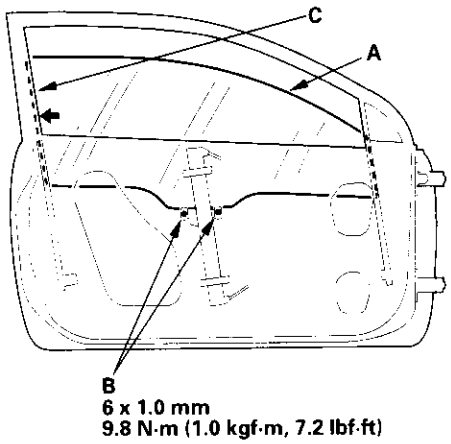
NOTE:
- Check the weatherstrips and glass run channel for damage or deterioration, and replace them if necessary.
- Wipe the run channel clean with a shop towel.
- Lubricate the run channel with Shin-Etsu grease P/N 08798-9013.

1. Place the vehicle on a firm, level surface.

2. Remove these items:

- Door panel (see page 20-4)
- Plastic cover (see page 20-2)

3. Carefully move the glass (A) until you can see the glass mounting bolts (B), then loosen them.



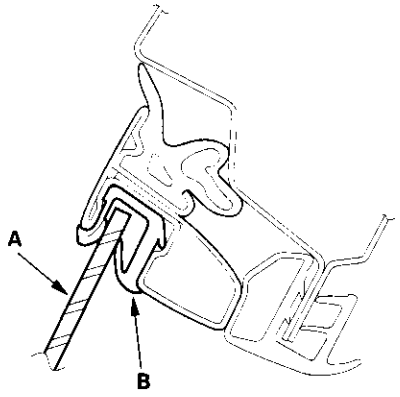
4. Push the glass against the channel (C), then tighten the glass mounting bolts.

5. Check that the glass moves smoothly.

(cont'd)

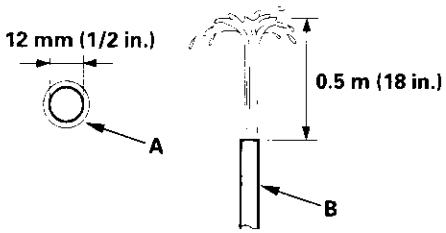
Door Glass Adjustment (cont'd)

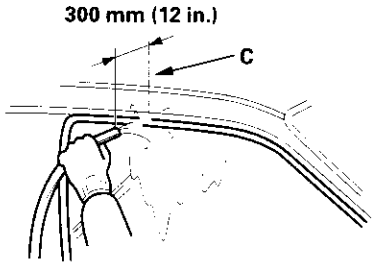
6. Raise the glass fully, and check for gaps. Check that the glass (A) contacts the glass run channel (B) evenly.



7. Check for water leaks. Run water over the roof and on the sealing area as shown, and note these items:

   - Use a 12 mm (1/2 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).





8. Attach the plastic cover, and install the door panel (see page 20-4).

9. Test-drive and check for wind noise.

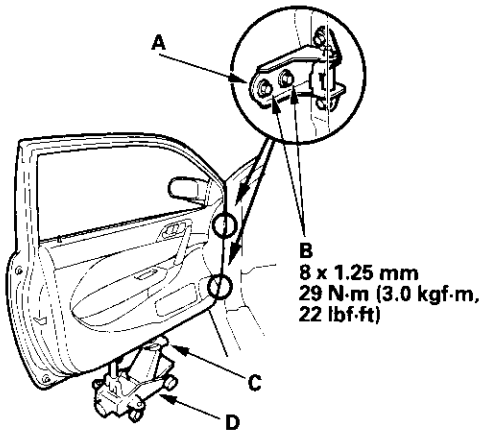
Door Position Adjustment

NOTE: Check for equal gaps between the front, rear, and bottom door edges and the body. Check that the door and body edges are parallel.

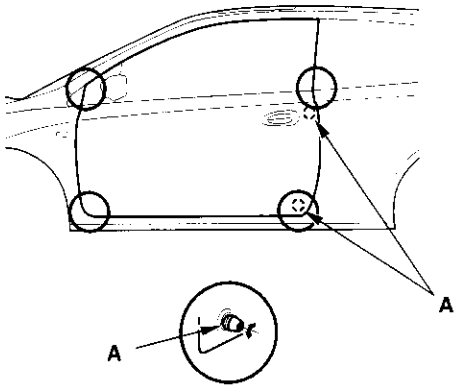
1. Place the vehicle on a firm, level surface when adjusting the door.

2. Adjust at the hinges (A):

   - Remove the front inner fender (see page 20-102) and front fender fairing (see page 20-103). Loosen the hinge mounting bolts (B) slightly, and move the door backward or forward, up or down as necessary to equalize the gaps.
   - Place a shop towel (C) on the jack (D) to prevent damage to the door when adjusting the door.



3. Check that the door and body edges are parallel. If necessary, adjust the door cushions (A) to make the rear of the door flush with the body.



4. Apply body paint to the hinge mounting bolts and around the hinges.

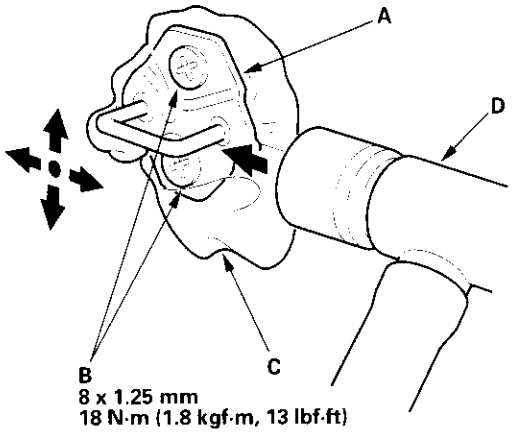
5. Check for water leaks (see step 7 on page 20-12).

6. Test-drive and check for wind noise.

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), then insert a shop towel (C) between the body and striker.



2. Lightly tighten the screws.

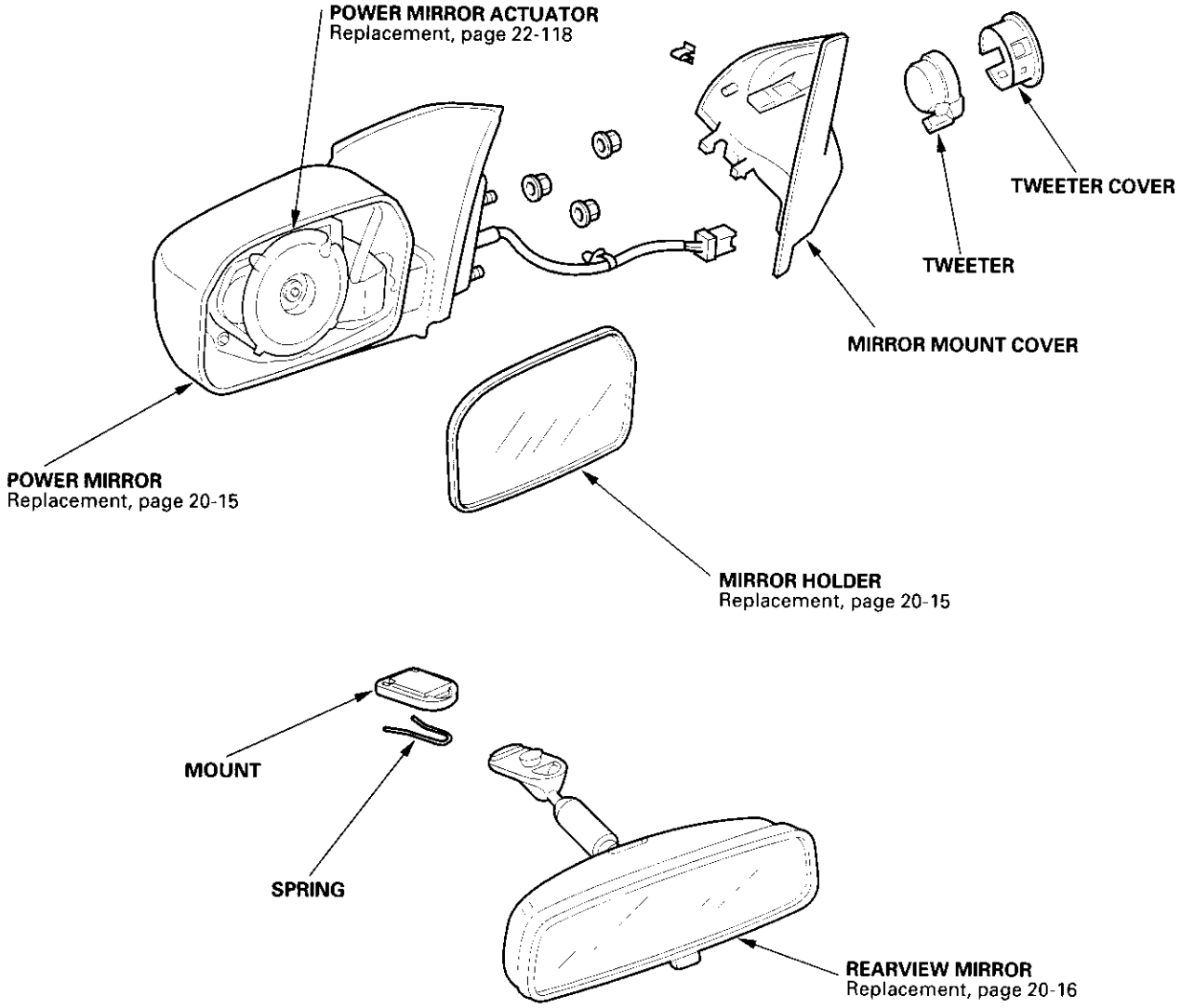
3. Wrap the striker with a shop towel, then adjust the striker by tapping it with a plastic hammer (D). Do not tap the striker too hard.

4. Loosen the screws, and remove the shop towel.

5. Lightly tighten the screws.

6. 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 and recheck.

Component Location Index

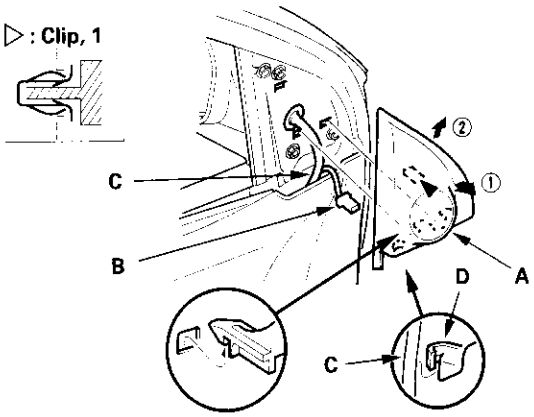


Power Mirror Replacement

1. Lower the door glass fully.

2. Carefully pry out the mirror mount cover (A) by hand in the sequence shown. Disconnect the tweeter connector (B), and release the wire harness (C) from the hook (D).

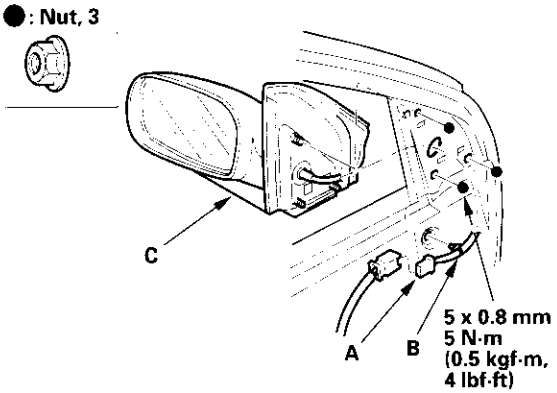
Fastener Location



3. Remove the door panel (see page 20-4).

4. Disconnect the connector (A), and detach the harness clip (B). While holding the mirror (C), remove the nuts, then remove the mirror. Take care not to scratch the door.

Fastener Locations

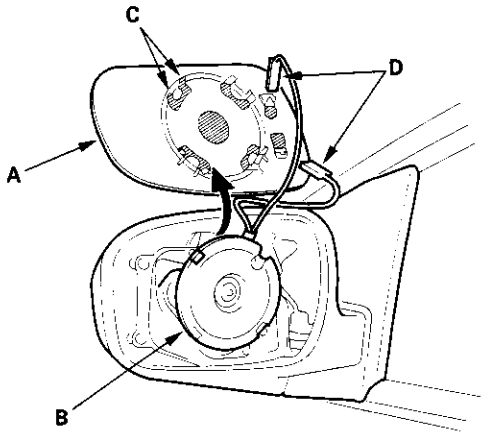


5. Install the mirror in the reverse order of removal, and note these items:

- Make sure the connector is plugged in properly.
- Attach the harness clip.

Mirror Holder Replacement

1. Carefully pull out the bottom edge of the mirror holder (A) by hand. Take care not to scratch the mirror.



2. Separate the mirror holder from the actuator (B) by slowly pulling them apart while detaching the clips (C). If equipped, disconnect the mirror defogger connectors(D) from the heater pad terminals.

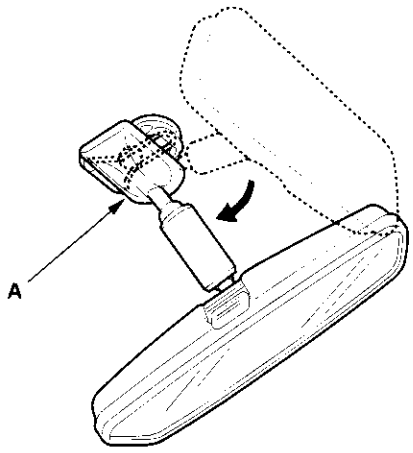
3. If equipped, reconnect the mirror defogger connectors.

4. Reattach the clips 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.

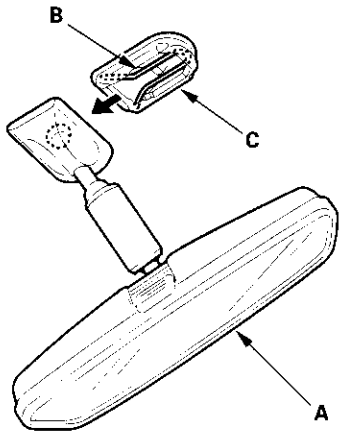
5. Check the operation of the actuator.

Rearview Mirror Replacement

1. Turn the mirror base (A) 90° in either direction.

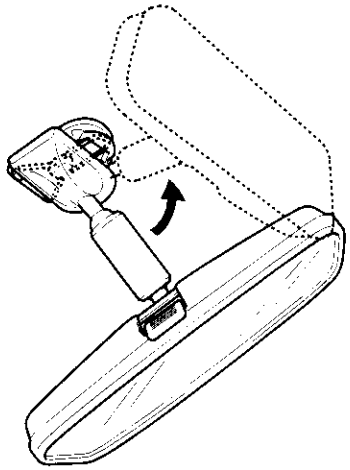


2. Slide the rearview mirror (A) down toward the bottom of the windshield, then detach it from the spring (B) in the mount (C), and remove the rearview mirror. Take care not to scratch the mirror base.

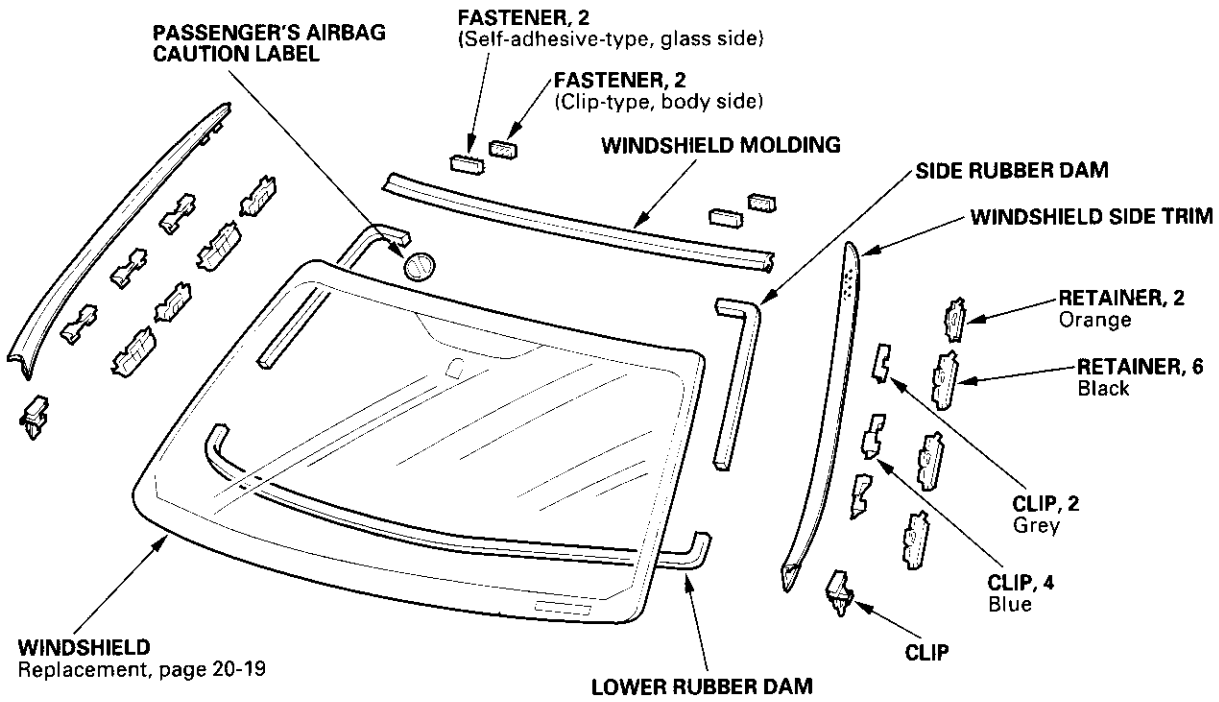


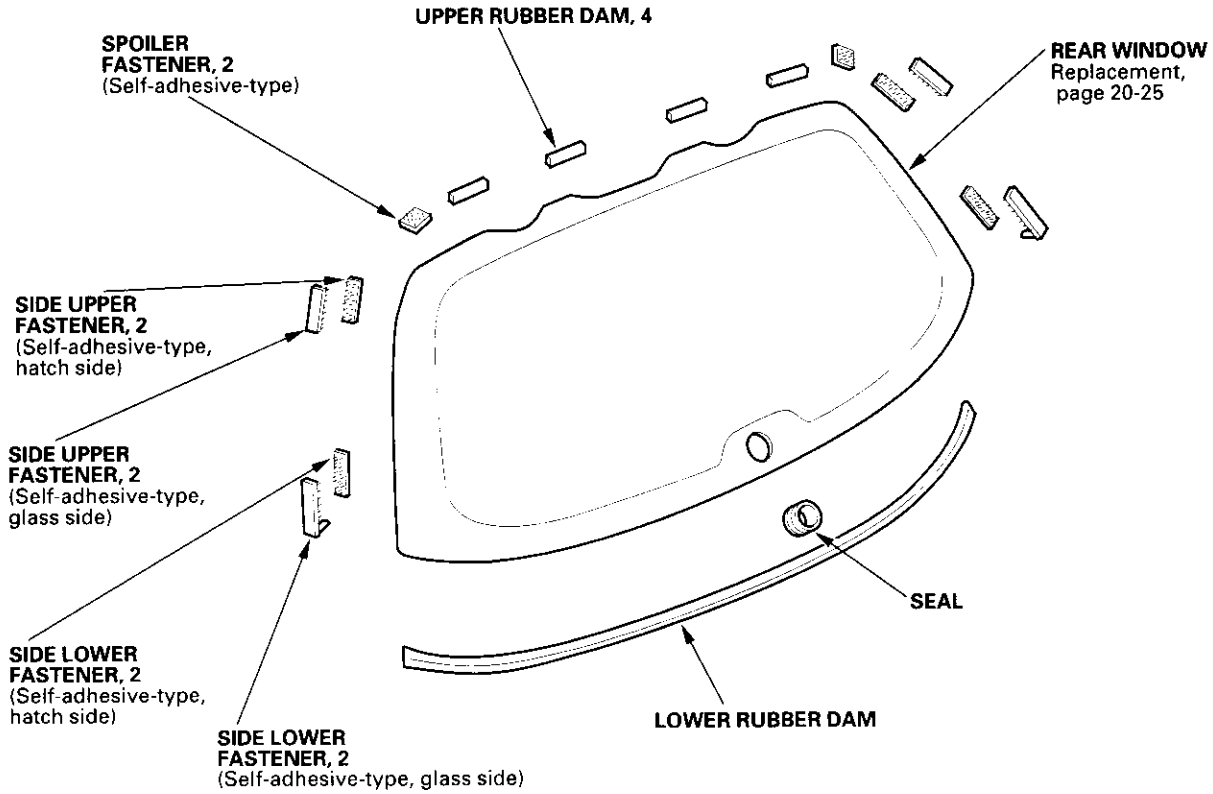
3. If necessary, remove the spring from the mount.

4. Fit the mirror base over the mount, and secure the mirror by turning the base 90°.



Component Location Index





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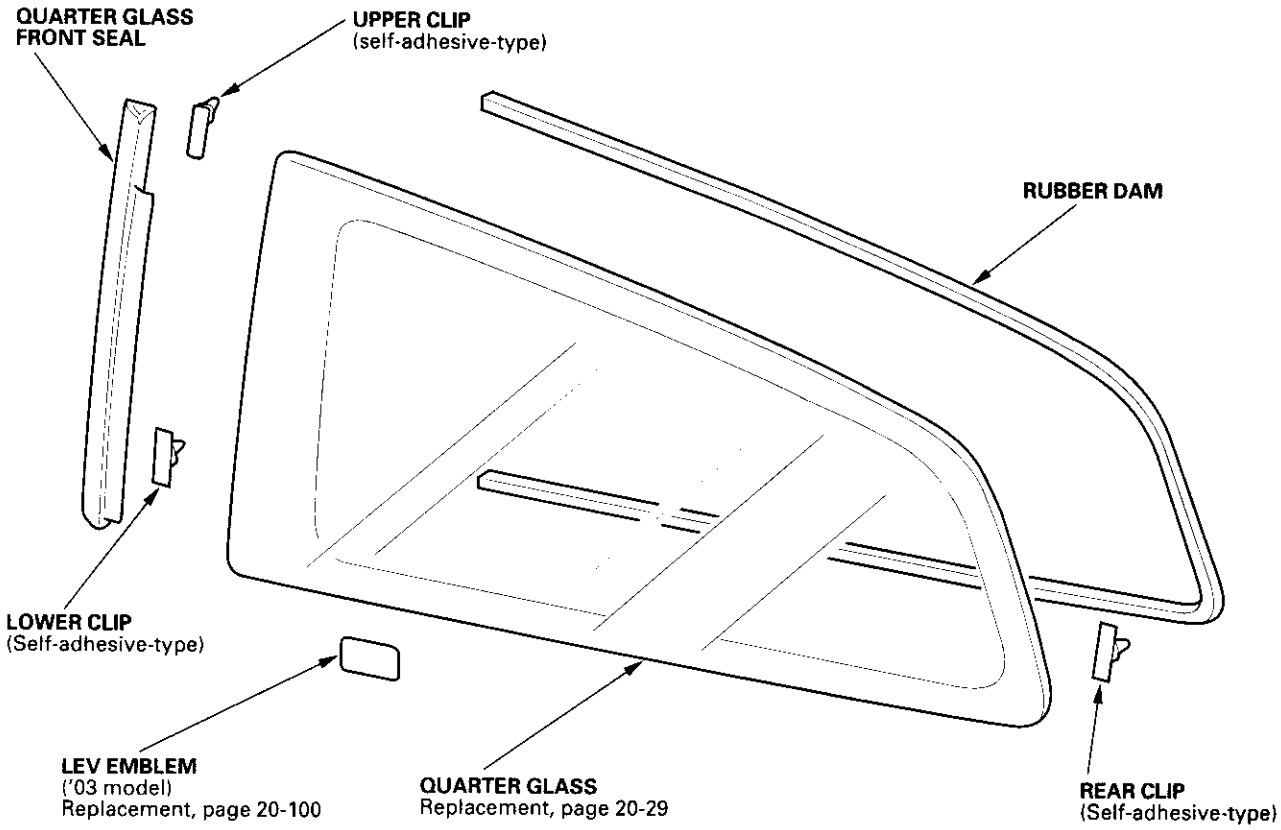
Component Location Index (cont'd)

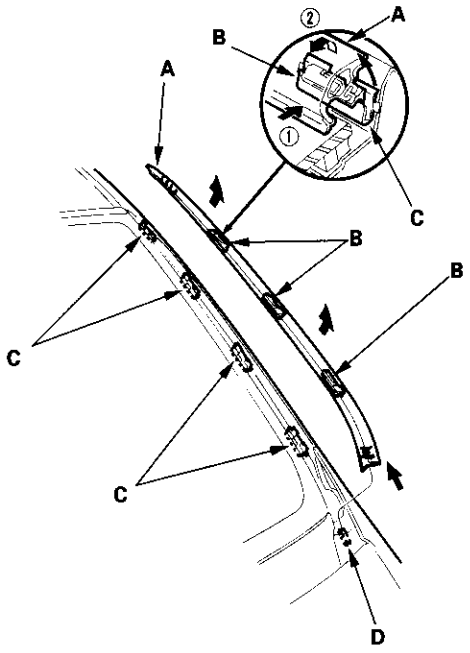


Windshield Replacement

NOTE:
- Put on gloves to protect your hands.
- Wear eye protection while cutting the glass adhesive with piano wire.
- Use seat covers to avoid damaging the seats.

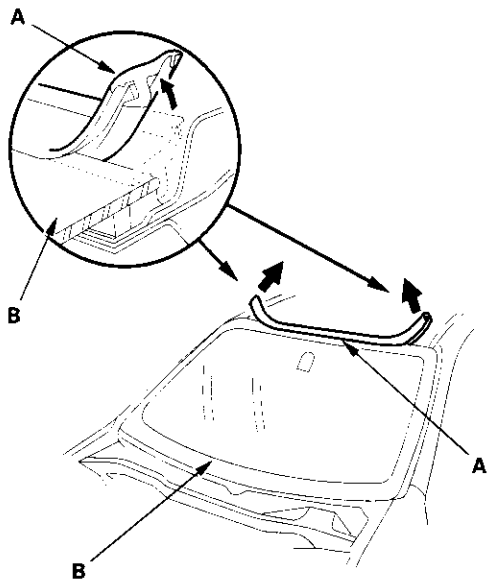
1. Remove these items:
   - Rearview mirror (see page 20-16)
   - Windshield wiper arms (see page 22-145)

2. Pull up the side trim (A) to release the clips (B) from the retainers (C), and pull the trim rearward to release it from the clip (D) then remove the trim from each side of the windshield.



3. Remove the cowl covers (see page 20-95).

4. Remove the molding (A) from the upper edge of the windshield (B). If necessary, cut the molding with a utility knife.



5. If the old windshield is to be reinstalled, make alignment marks across the glass and body with a grease pencil.

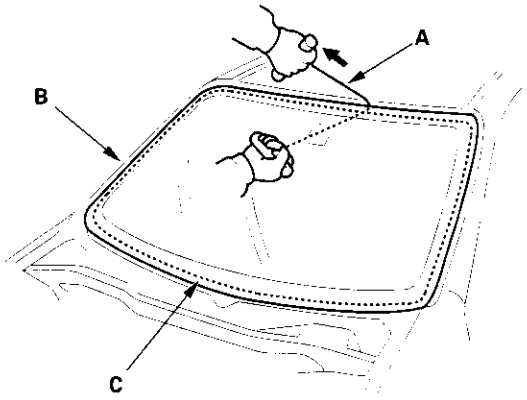
6. Pull down the front portion of the headliner (see page 20-54). Take care not to bend the headliner excessively, or you may crease or break it.

7. Apply protective tape along the edge of the dashboard and body. Using an awl, make a hole through the rubber dam, adhesive, and dashboard seal from inside the vehicle at the corner portion of the windshield. Push a piece of piano wire through the hole, and wrap each end around a piece of wood.

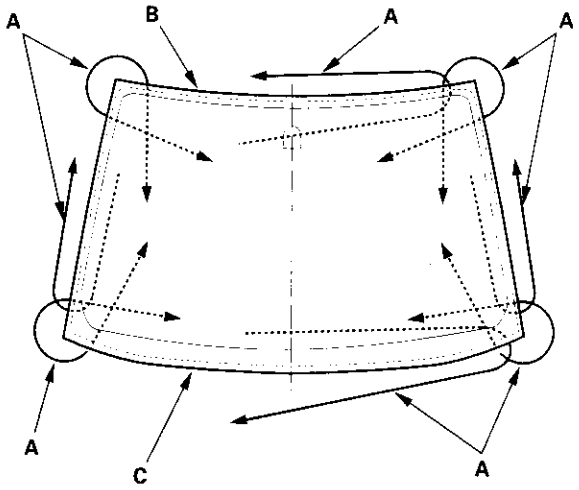
(cont'd)

Windshield Replacement (cont'd)

8. 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 dashboard. Carefully cut through the rubber dam and adhesive (C) around the entire windshield.



Cutting portions:



9. Carefully remove the windshield.

10. With a knife, scrape the old adhesive smooth to a thickness of about 2 mm (0.08 in.) on the bonding surface around the entire windshield opening flange:

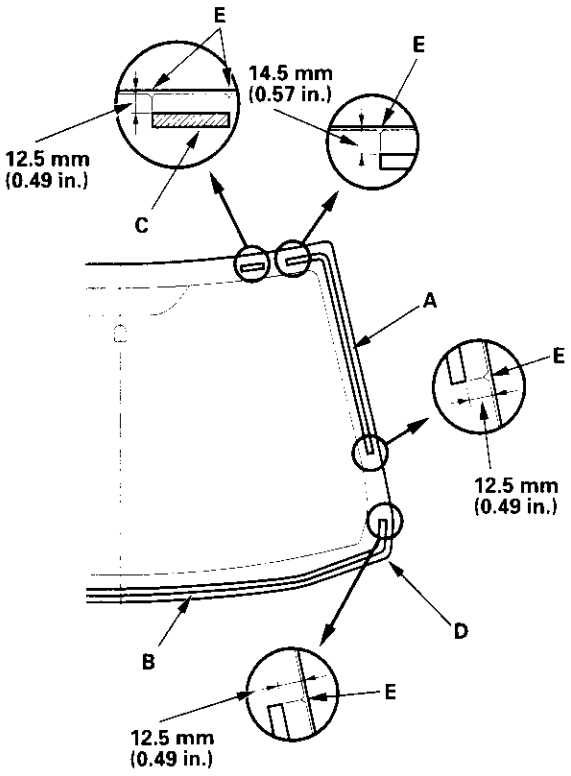
    - Do not scrape down to the painted surface of the body; damaged paint will interfere with proper bonding.
    - Remove the rubber dam and fasteners from the body.

11. Clean the body bonding surface with a sponge dampened in alcohol. After cleaning, keep oil, grease and water from getting on the clean surface.

12. If the old windshield is to be reinstalled, use a putty knife to scrape off all of the old adhesive, the fasteners and the rubber dam from the windshield. Clean the inside face and the edge of the windshield with alcohol where new adhesive is to be applied. Make sure the bonding surface is kept free of water, oil, and grease.

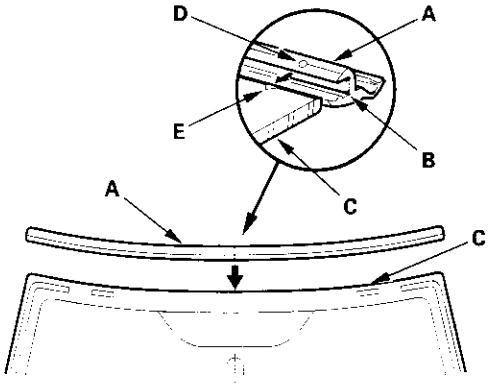
13. Glue the side rubber dams (A) and lower rubber dam (B) with adhesive tape (NITTO 501M, or equivalent). Glue the fasteners (C) with adhesive tape (3M 4215, or equivalent) to the inside face of the windshield (D) as shown:

    - Be sure the rubber dams and fasteners line up with the alignment marks (E).
    - Be careful not to touch the windshield where adhesive will be applied.



14. Glue the molding (A) with adhesive tape (B) (3M 4212, or equivalent) to the upper edge of the windshield (C):

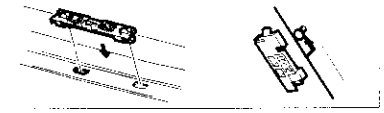
    - Be sure the alignment mark (D) of the molding lines up with the alignment mark (E) of the windshield.
    - Be careful not to touch the windshield where adhesive will be applied.



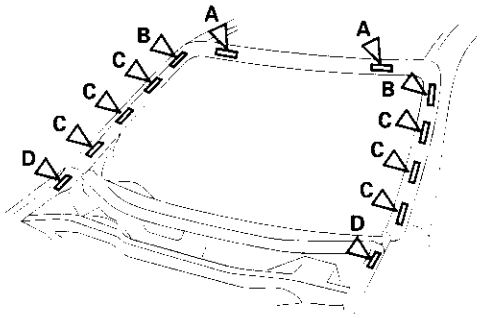
15. Install the fasteners (A), retainers (B, C), and clips (D) to the body.

Fastener Locations

A ▷: Fastener, 2 B ▷: Retainer, 2



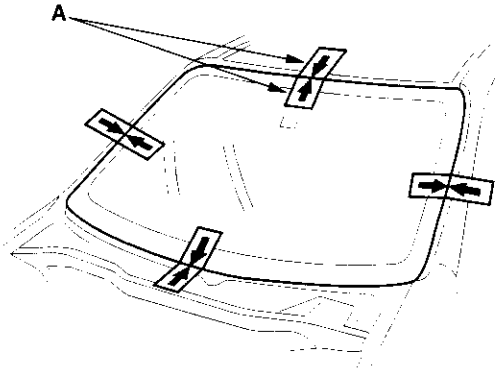
C ▷: Retainer, 6 D ▷: Clip, 2



(cont'd)

Windshield Replacement (cont'd)

16. Set the windshield in the opening, and center it. Make alignment marks (A) across the windshield and body with a grease pencil at the four points shown. Be careful not to touch the windshield where adhesive will be applied.

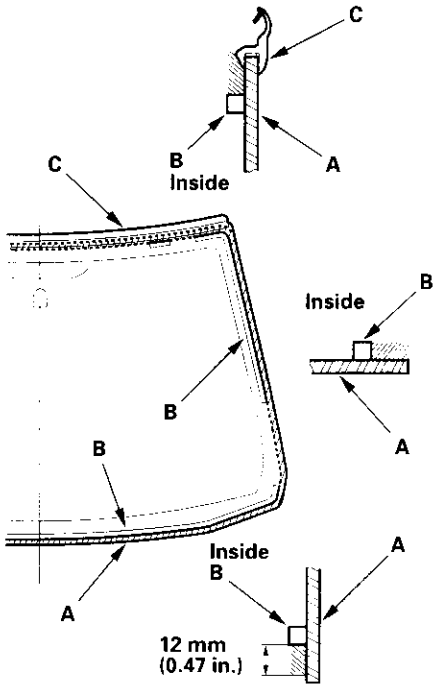


17. Remove the windshield.

18. With a sponge, apply a light coat of glass primer 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:

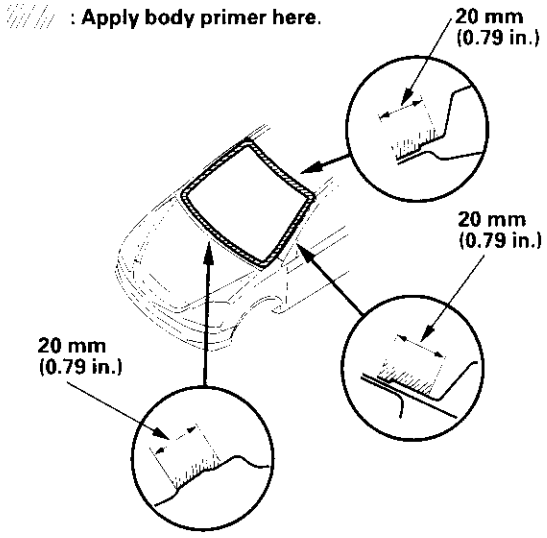
- Apply glass primer to the molding.
- Do not apply body primer to the windshield, and do not get body and glass primer sponges mixed up.
- Never touch the primed surfaces with your hands. If you do, the adhesive may not bond to the windshield properly, causing a leak after the windshield is installed.
- Keep water, dust, and abrasive materials away from the primed surface.

: **Apply glass primer here.**

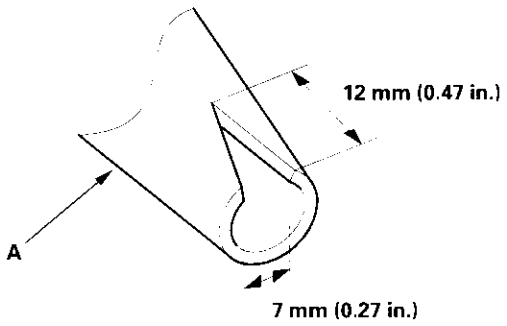


19. With a sponge, apply a light coat of body primer to the original adhesive remaining around the windshield opening flange. Let the body primer dry for at least 10 minutes:

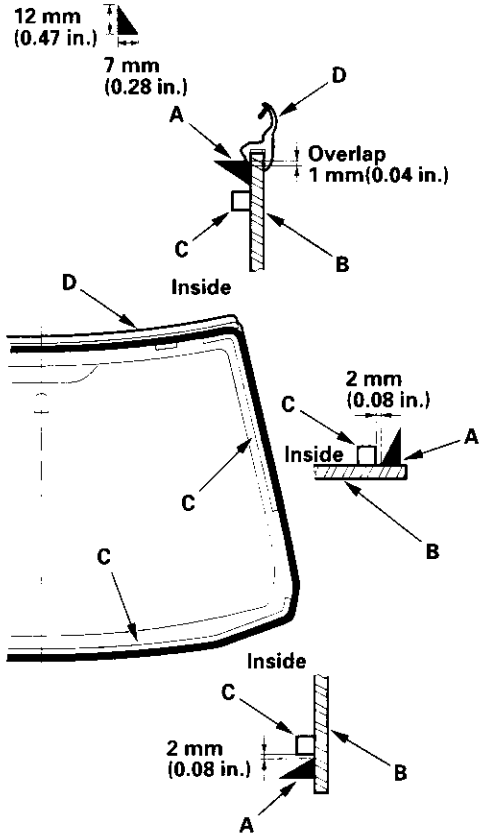
    - Do not apply glass primer to the body, and be careful not to mix up glass and body primer sponges.
    - Never touch the primed surfaces with your hands.
    - Mask off the dashboard before painting the flange.



20. Before filling a cartridge, cut a "V" in the end of the nozzle (A) as shown.



21. Pack adhesive into the cartridge without air pockets to ensure continuous delivery. Put the cartridge in a caulking gun, and run a bead of adhesive (A) around the edge of the windshield (B) between the dams (C) and molding (D) as shown. Apply the adhesive within 30 minutes after applying the glass primer. Make a slightly thicker bead at each corner.



22. Use suction cups to hold the windshield over the opening, align it with the alignment marks made in step 16, 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. Do not open or close the doors until the adhesive is dry.

(cont'd)

Windshield Replacement (cont'd)

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 alcohol.

24. Let the adhesive dry for at least 1 hour, then spray water over the windshield and check for leaks. Mark leaking areas, and let the windshield dry, then seal with sealant:

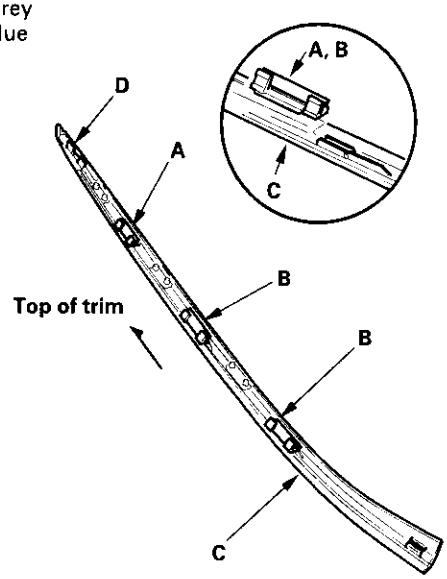
    - Let the vehicle stand for at least 4 hours after windshield installation. If the vehicle has to be used within the first 4 hours, it must be driven slowly.
    - Keep the windshield dry for the first hour after installation.

25. Reinstall the cowl covers (see page 20-95).

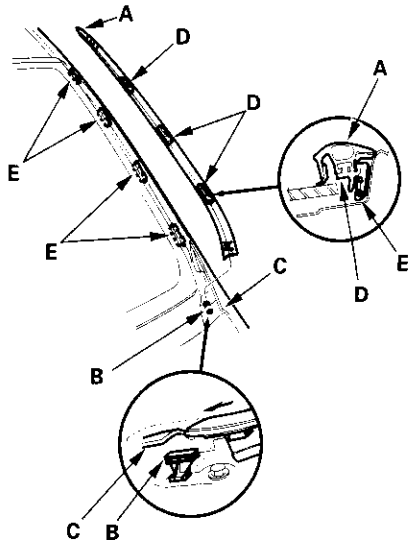
    NOTE: The cowl cover clips may not set properly if the windshield adhesive is too wet.

26. Install the clips (A, B) on both side trim (C). If the clip (D) is damaged, replace the side trim and clips as an assembly.

A: Grey
B: Blue



27. On both sides of the windshield, install the side trim (A) to the clip (B), then set the bottom edge of the side trim over the cowl cover (C), and align the clips (D) with the retainers (E), and push on the clip portions of the trim until the trim is fully seated on the windshield.



28. Reinstall all remaining removed parts. Install the rearview mirror after the adhesive has dried thoroughly.

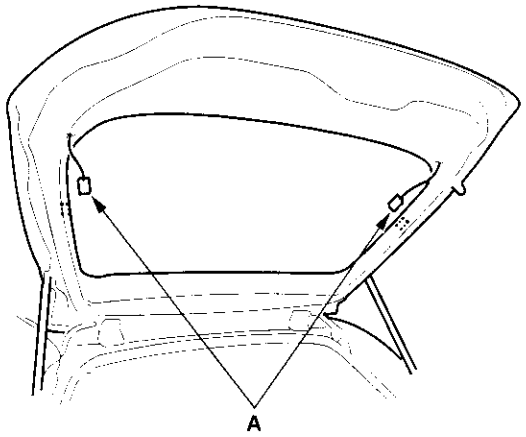
    NOTE: Advise the customer not to do the following things for 2 to 3 days:

    - 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).

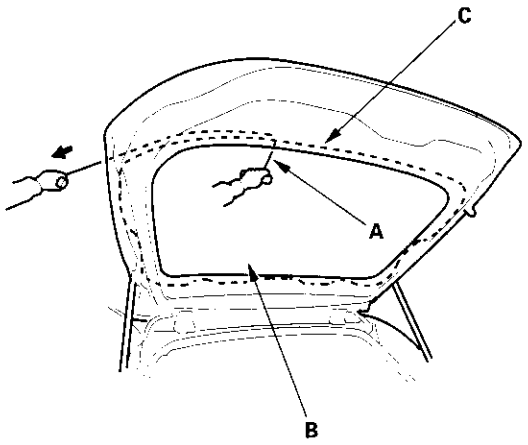
Rear Window Replacement

NOTE:
- Put on gloves to protect your hands.
- Wear eye protection while cutting the glass adhesive with piano wire.
- Use seat covers to avoid damaging any surfaces.
- Do not damage the rear window defogger grid lines and terminals.

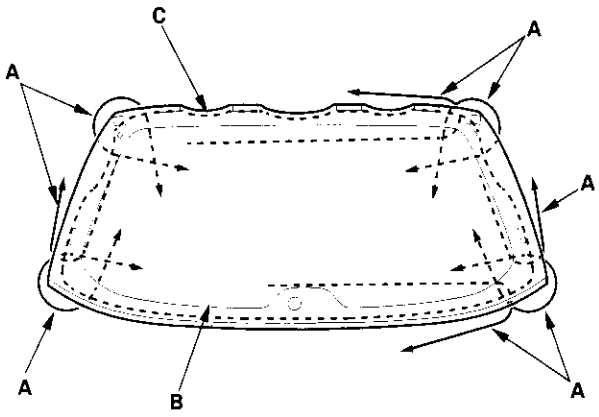
1. Remove these items:
   - Hatch lower trim panel (see page 20-53)
   - Hatch spoiler (see page 20-99)
2. Remove these items:
   - High mount brake light (see page 22-82)
   - Rear window wiper motor (see page 22-146)
3. Disconnect the rear window defogger connectors (A).



4. If the old rear window is to be reinstalled, make alignment marks across the glass and body with a grease pencil.
5. Apply protective tape along the inside and outside edges of the hatch. Using an awl, make a hole through the adhesive from inside the vehicle at the corner portion of the rear window. Push the 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 rear window (B) as possible to prevent damage to the hatch, and carefully cut through the adhesive (C) around the entire rear window.



Cutting positions:



7. Carefully remove the rear window.

(cont'd)

Rear Window Replacement (cont'd)

8. With a putty knife, scrape the old adhesive smooth to a thickness of about 2 mm (0.08 in.) on the bonding surface around the entire rear window opening flange:

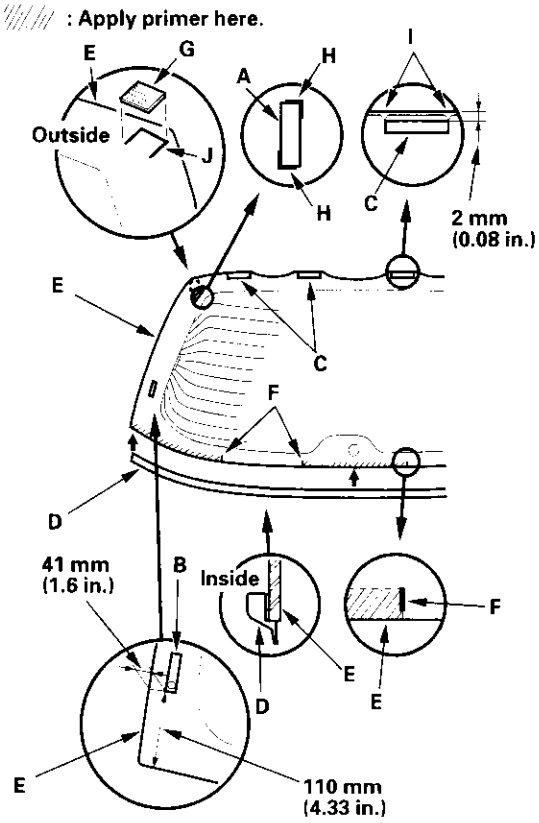
   - Do not scrape down to the painted surface of the body; damaged paint will interfere with proper bonding
   - Remove the fasteners from the tailgate.

9. Clean the hatch bonding surface with a sponge dampened in alcohol. After cleaning, keep oil, grease and water from getting on the surface.

10. If the old rear window is to be reinstalled, use a putty knife to scrape off all of the old adhesive, the fasteners and the rubber dams from the rear window. Clean the inside face and the edge of the rear window with alcohol where new adhesive is to be applied. Make sure the bonding surface is kept free of water, oil and grease.

11. Glue the side upper fasteners (A) and side lower fasteners (B) with adhesive tape (3M 5312, or equivalent). Glue the upper rubber dams (C) with adhesive tape (NITTO 501M, or equivalent) and glue the lower rubber dam (D) with adhesive tape (3M 4216, or equivalent) to the inside face of the rear window (E) as shown. Before installing the lower rubber dam, apply primer (3M N-200, or equivalent) to the areas between the alignment marks (F), then glue the rubber dam on. If necessary, glue the spoiler fasteners (G) with adhesive tape (3M 5671, or equivalent) to the outside face of the rear window:

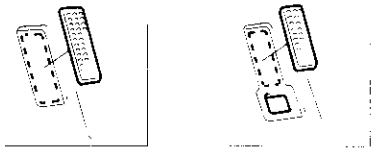
    - Be sure the side upper fasteners, and upper rubber dams line up with alignment marks (H, I).
    - Be sure both ends of the lower rubber dam line up with the edge of the glass.
    - Be sure the spoiler fasteners line up with alignment marks (J).
    - Be careful not to touch the rear window where adhesive will be applied.

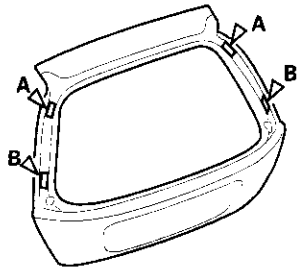


12. Glue the side upper fasteners (A) and side lower fasteners (B) with adhesive tape (3M 5312, or equivalent) to the hatch as shown.

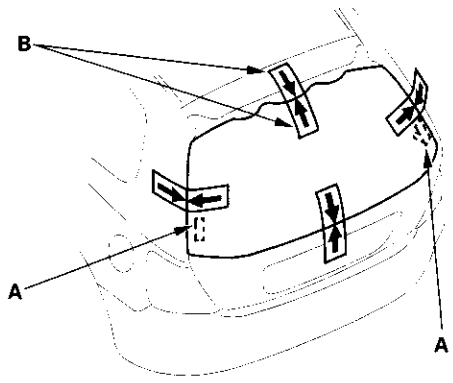
Fastener Locations

A▷: Fastener, 2 **B▷: Fastener, 2**





13. Set the rear window in the opening, and center it. Align the clips (A) of the rear window with the holes in the opening flange. Make alignment marks (B) across the rear window, hatch, and body with a grease pencil at the four points shown. Be careful not to touch the rear window where adhesive will be applied.

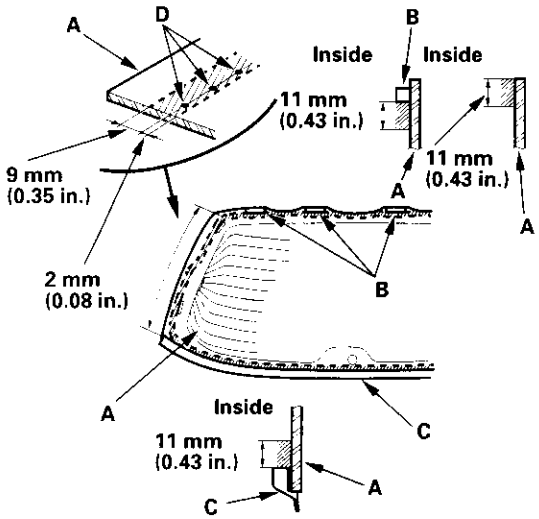


14. Remove the rear window.

15. With a sponge, apply a light coat of glass primer along the edge of the rear window (A), upper rubber dams (B), and lower rubber dam (C) as shown, then lightly wipe it off with gauze or cheesecloth:

- With the printed dots (D) on the rear window as a guide, apply the glass primer to both side portions of the rear window.
- Do not apply body primer to the rear window, and do not get hatch and glass primer sponges 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 the primed surface.

: **Apply glass primer here.**



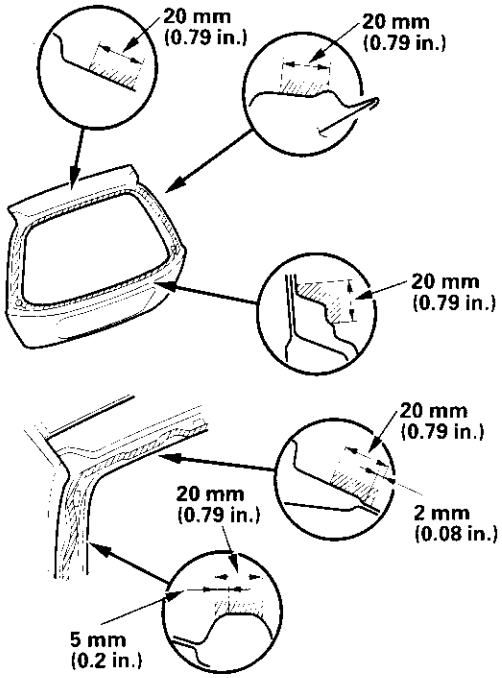
(cont'd)

Rear Window Replacement (cont'd)

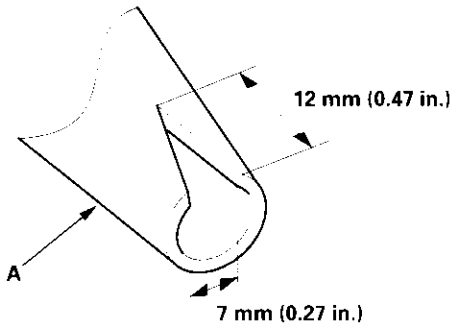
16. With a sponge, apply a light coat of body primer to the original adhesive remaining around the rear window opening flange. Let the body primer dry for at least 10 minutes:

    - Do not apply glass primer to the body, and be careful not to mix up glass and body primer sponges.
    - Never touch the primed surfaces with your hands.

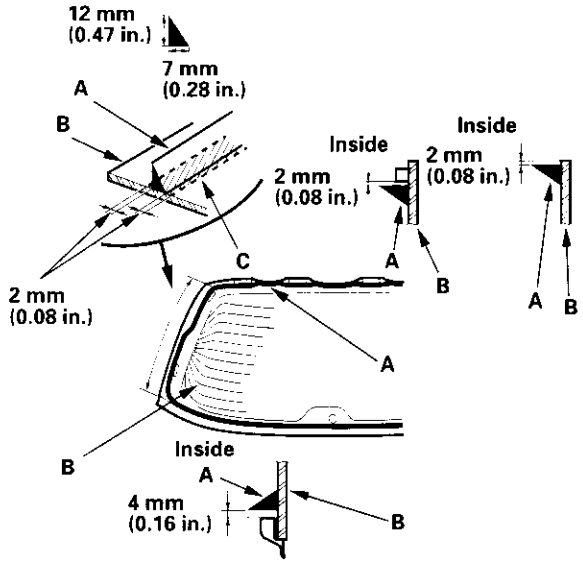
    : **Apply body primer here.**



17. Before filling a cartridge, cut a "V" in the end of the nozzle (A) as shown.



18. Pack adhesive into the cartridge without air pockets to ensure continuous delivery. Put the cartridge in a caulking gun, and run a bead of adhesive (A) around the edge of the rear window (B) as shown. With the glass primer (C) you applied in step 15 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.



19. Use suction cups to hold the rear window over the opening, align it with the alignment marks you made in step 13, 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. Do not open or close the doors until the adhesive is dry.

20. 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 alcohol.

21. Let the adhesive dry for at least 1 hour, then spray water over the rear window and check for leaks. Mark the leaking areas, 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.

22. Reinstall all remaining removed parts.

    NOTE: Advise the customer not to do the following things for 2 to 3 days:

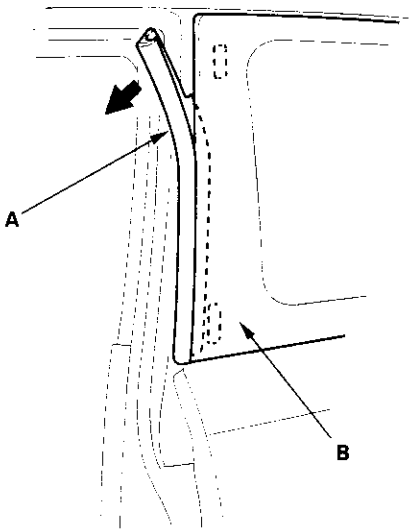
    - Slam the doors with all the windows rolled up.
    - Twist the body excessively (such as when going in and out of driveways at an angle or driving over rough, uneven roads).

Quarter Glass Replacement

NOTE:
- Put on gloves to protect your hands.
- Wear eye protection while cutting the glass adhesive with piano wire.
- Use seat covers to avoid damaging any surfaces.

1. Remove the C-pillar trim (see page 20-51). If necessary, remove the rear side trim panel (see page 20-51) and B-pillar upper trim (see page 20-50).

2. Remove the front seal (A) from the front edge of the glass (B). If necessary, cut the seal with a utility knife.

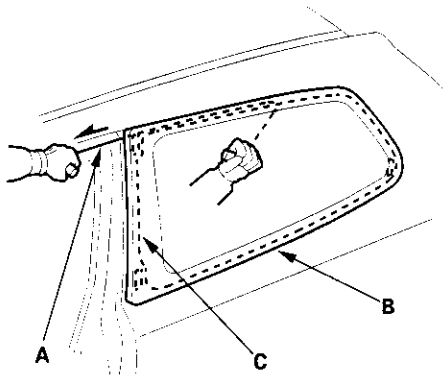


(cont'd)

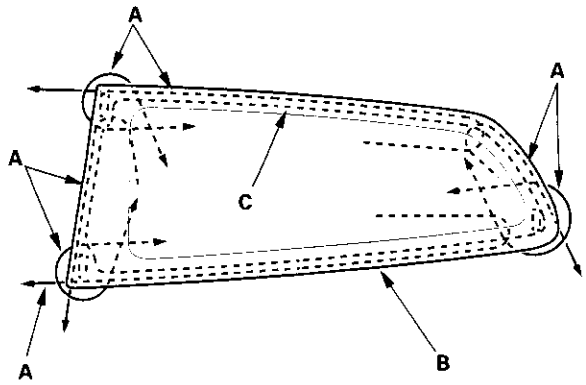
Quarter Glass Replacement (cont'd)

3. Apply protective tape to along the inside and outside edges of the body. Using an awl, make a hole through the adhesive from inside the vehicle. Push a piece of piano wire through the hole, and wrap each end around a piece of wood.

4. 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 quarter glass (B) as possible to prevent damage to the body, and carefully cut through the adhesive (C) around the entire quarter glass.



Cutting positions:



5. Carefully remove the quarter glass.

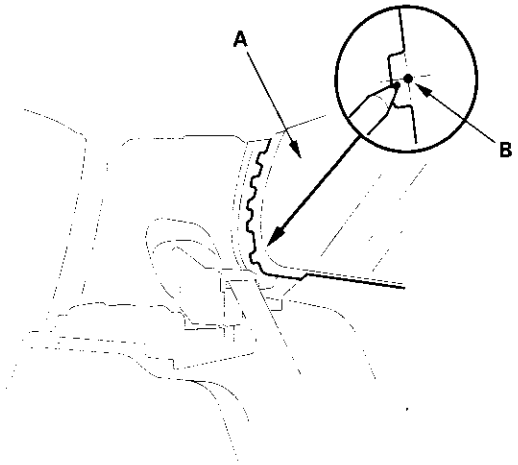
6. With a putty knife, scrape the old adhesive smooth to a thickness of about 2 mm (0.08 in.) on the bonding surface around the entire quarter glass opening flange:

   - Do not scrape down to the painted surface of the body; damaged paint will interfere with proper bonding
   - Remove the clips from the body.

7. Clean the body bonding surface with a sponge dampened in alcohol. After cleaning, keep oil, grease and water from getting on the surface.

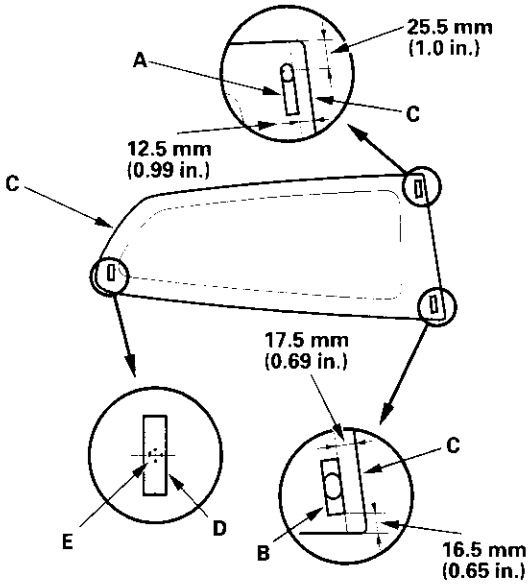
8. If the old quarter glass is to be reinstalled, use a putty knife to scrape off all of the old adhesive and the rubber dam from the glass. Clean the inside face and the edge of the glass with alcohol where new adhesive is to be applied. Make sure the bonding surface is kept free of water, oil, and grease.

9. Set the quarter glass (A) in the opening, and center it. From inside the vehicle, make an alignment mark (B) to the quarter glass where the rear clip will be installed with a grease pencil. Be careful not to touch the glass where adhesive will be applied.



10. Remove the quarter glass.

11. Align the upper clip (A) and lower clip (B) with the edge of the quarter glass (C), then attach them with adhesive tape (NITTO 571, or equivalent) to the inside face of the quarter glass, and align the center of the rear clip (D) with the alignment mark (E) you made in step 9, and attach it with adhesive tape (3 M 4215, or equivalent) to the inside face of the quarter glass as shown. Be careful not to touch the glass where the adhesive tape will be applied.



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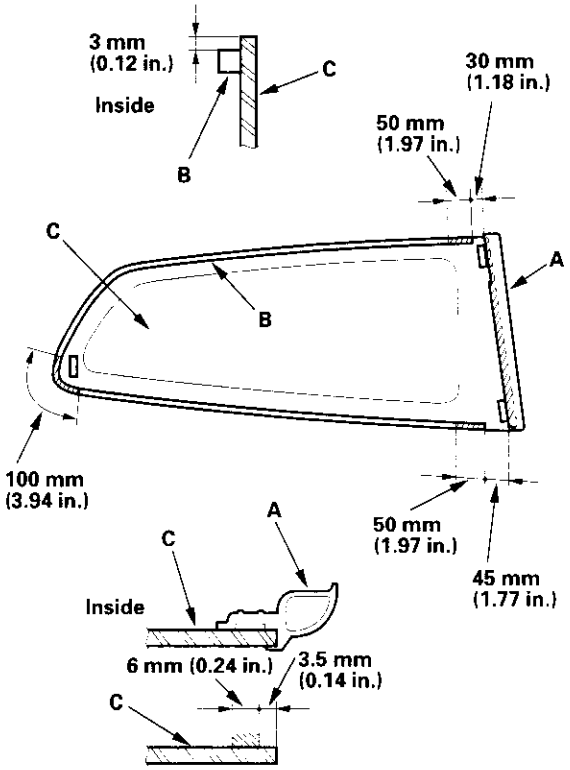
Quarter Glass Replacement (cont'd)

12. First glue the front seal (A) with adhesive tape (3M 4213, or equivalent), and glue the rubber dam (B) with adhesive tape (NITTO 501M, or equivalent) to the inside face of the quarter glass (C) as shown. Before installing the front seal and rubber dam, apply primer (3M N-200, or equivalent) to the inside face of the glass, then glue the seal on:

    - Be sure the front seal lines up with the bottom and front edges of the glass.
    - Be careful not to touch the glass where adhesive will be applied.

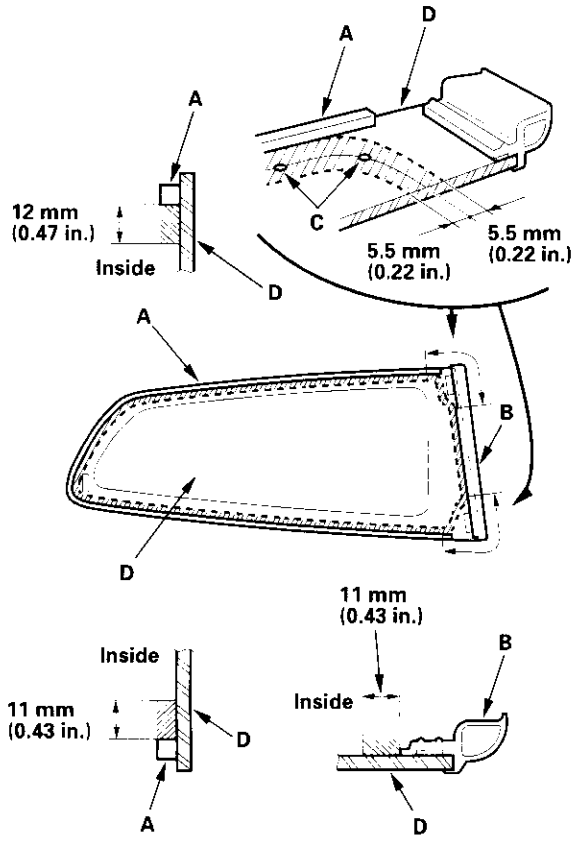
    : **Apply primer here.**



13. With a sponge, apply a light coat of glass primer along the edge of the rubber dam (A) and front seal (B) as shown, then lightly wipe it off with gauze or cheesecloth:

    - With the printed dots (C) on the quarter glass (D) as a guide, apply the glass primer to the upper and lower corner portions of the quarter glass.
    - Do not apply body primer to the quarter glass, and do not get body and glass primer sponges mixed up.
    - Never touch the primed surfaces with your hands. If you do, the adhesive may not bond to the quarter glass properly, causing a leak after the quarter glass is installed.
    - Keep water, dust, and abrasive materials away from the primed surface.

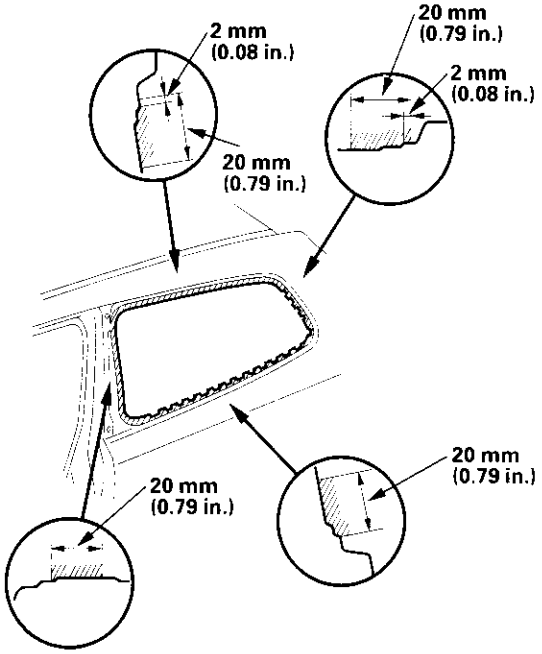
    : **Apply primer here.**



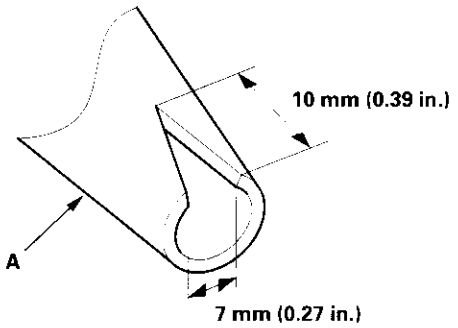
14. With a sponge, apply a light coat of body primer to the original adhesive remaining around the quarter glass opening flange. Let the body primer dry for at least 10 minutes:

    - Do not apply glass primer to the body, and be careful not to mix up glass and body primer sponges.
    - Never touch the primed surfaces with your hands.

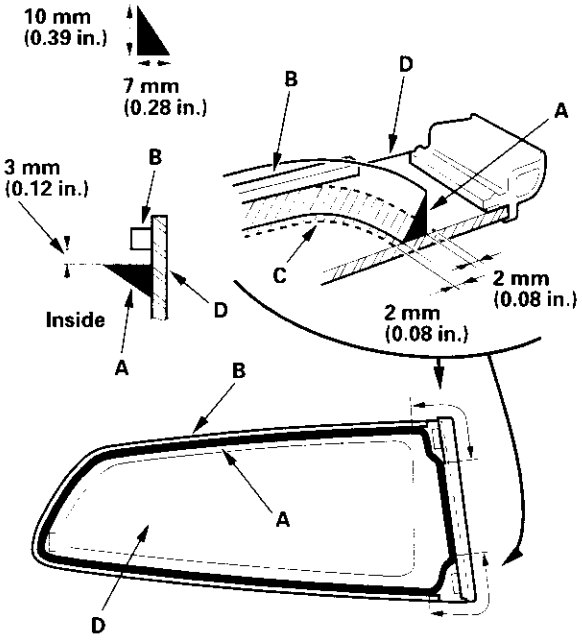
    : **Apply body primer here.**

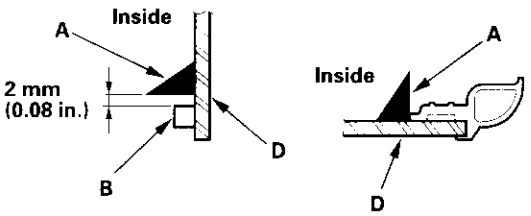


15. Before filling a cartridge, cut a "V" in the end of the nozzle (A) as shown.



16. Pack adhesive into the cartridge without air pockets to ensure continuous delivery. Put the cartridge in a caulking gun, and run a bead of adhesive (A) around the edge of the rubber dam (B) as shown. With the glass primer (C) you applied in step 13 on the quarter glass (D) as a guide, apply the adhesive to the upper and lower corner portions of the quarter glass. Apply the adhesive within 30 minutes after applying the glass primer. Make a slightly thicker bead at each corner.

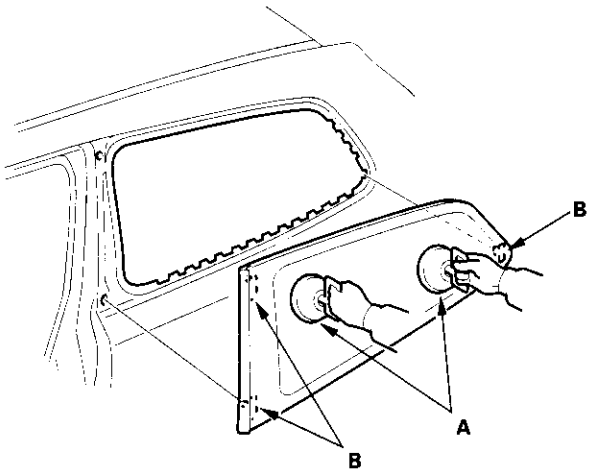




(cont'd)

Quarter Glass Replacement (cont'd)

17. Use suction cups (A) to hold the quarter glass over the opening, align it with the clips (B) and set it down on the adhesive. Lightly push on the quarter glass until its edges are fully seated on the adhesive all the way around. Do not open or close the doors until the adhesive is dry.



18. Scrape or wipe the excess adhesive off with a putty knife or towel. To remove adhesive from a painted surface or the quarter glass, use a soft shop towel dampened with alcohol.

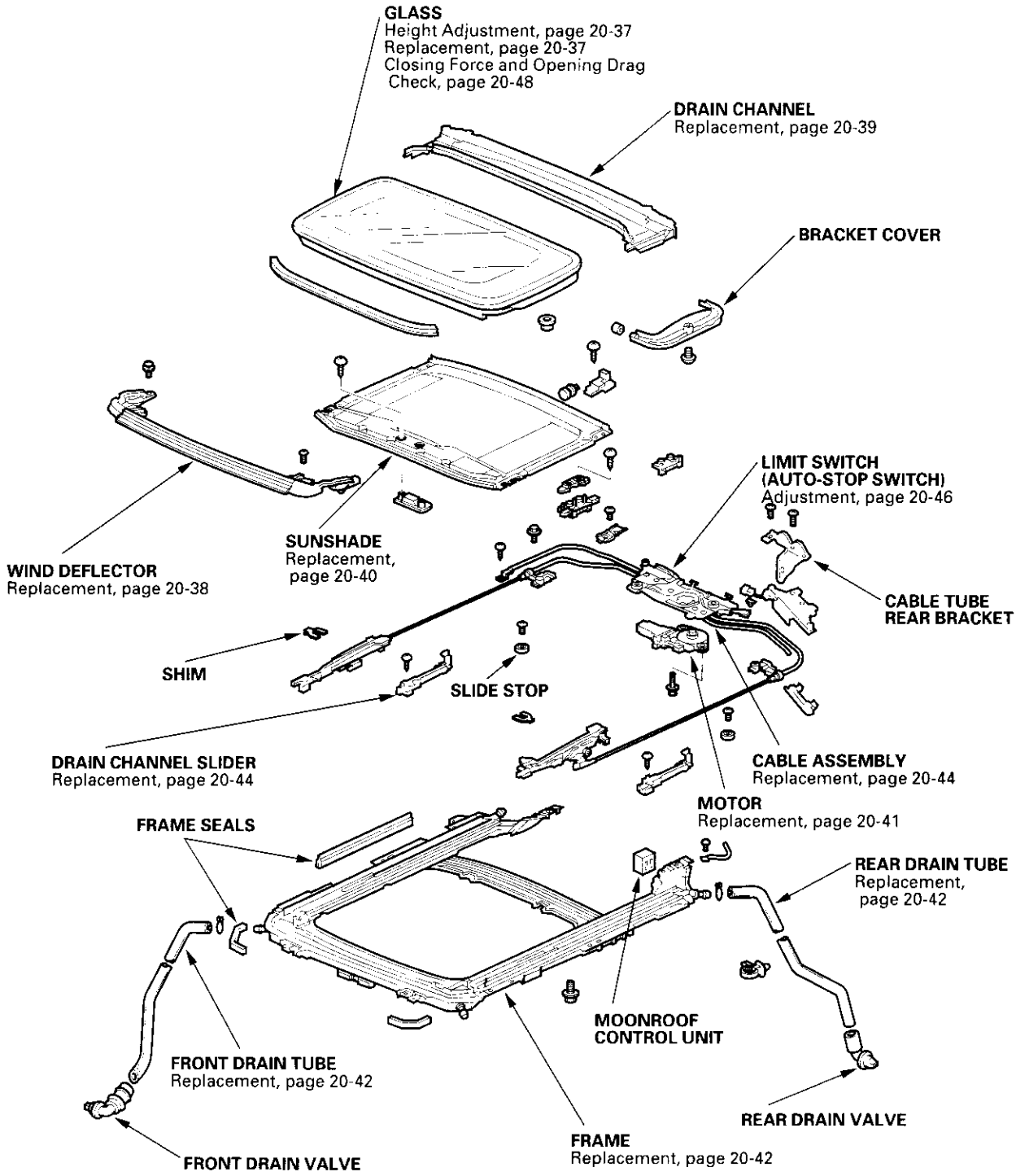
19. Let the adhesive dry for at least 1 hour, then spray water over the quarter glass and check for leaks. Mark the leaking areas, let the quarter glass dry, then seal with sealant. Let the vehicle stand for at least 4 hours after quarter glass installation. If the vehicle has to be used within the first 4 hours, it must be driven slowly.

20. 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

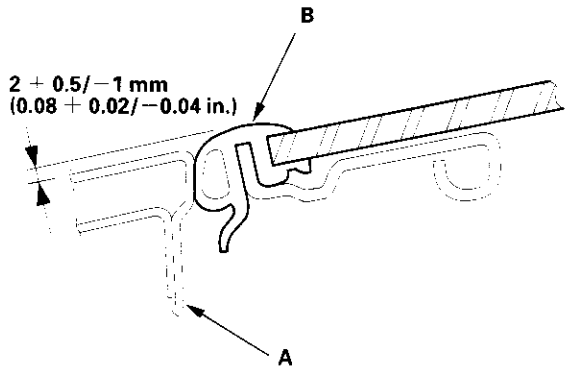


Symptom Troubleshooting Index

Symptom	Diagnostic procedure	Also check for
Water leaks	1. Check for a clogged drain tube. 2. Check for a gap between the glass weatherstrip and the roof panel. 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.	Glass height adjustment
Wind noise	1. Check for excessive clearance between the glass weatherstrip and the roof panel.	Glass height adjustment
Deflector noise	1. Check for a improper clearance between deflector seal and roof panel. 2. Check for a insufficient deflector extension. 3. Check for a deformed deflector.	
Motor noise	1. Check for a loose motor. 2. Check for a worn gear or bearing. 3. Check for a deformed cable assembly.	Check closing force
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.	
Glass does not move and motor does not turn (glass can be moved with moonroof wrench)	1. Check for a blown fuse. 2. Check for a faulty moonroof switch. 3. Check the limit switch. 4. Check for a run down battery. 5. Check for a defective motor. 6. Check for a faulty relay.	

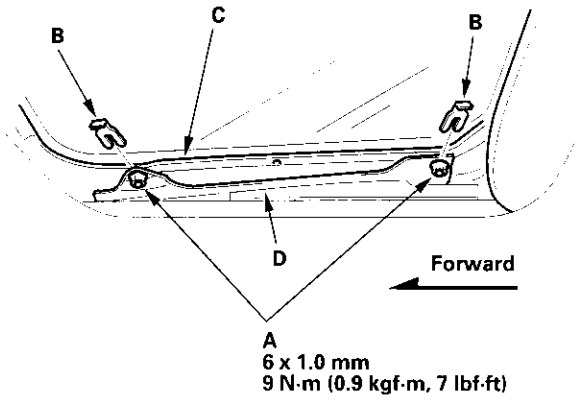
Glass Height Adjustment

The roof panel (A) should be even with the glass weatherstrip (B), to within 2+0.5/−1 mm (0.08+0.02/−0.04 in.) all the way around. If not, make the following adjustment:



1. Remove the bracket cover from each side.
2. Loosen the nuts (A), and install the shims (B) between the glass frame (C) and glass bracket (D) on each side.

Shim thickness: Front and rear max. 2 mm (0.08 in.)



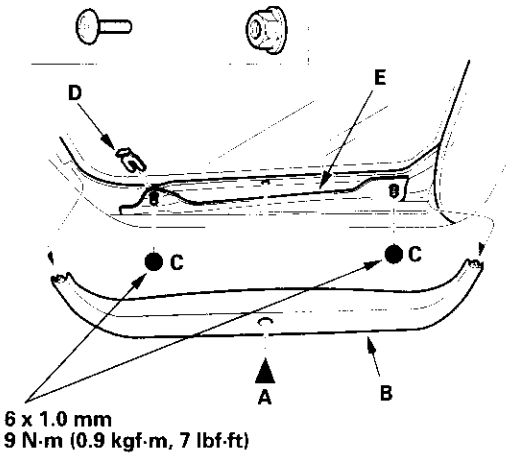
3. If necessary, repeat on the opposite side.

Glass Replacement

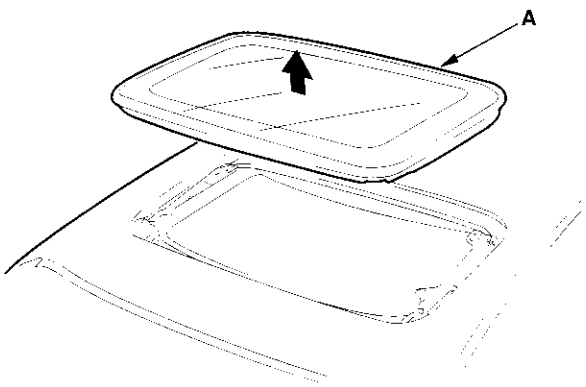
1. Close the glass fully.
2. Slide the sunshade all the way back.
3. Remove the screws (A), then remove both bracket covers (B). Remove the nuts (C) and shims (D) from both glass brackets (E).

Fastener Locations

A▶: Screw, 2 C●: Nut, 4



4. Remove the glass (A) by lifting it up. Do not damage the roof panel.



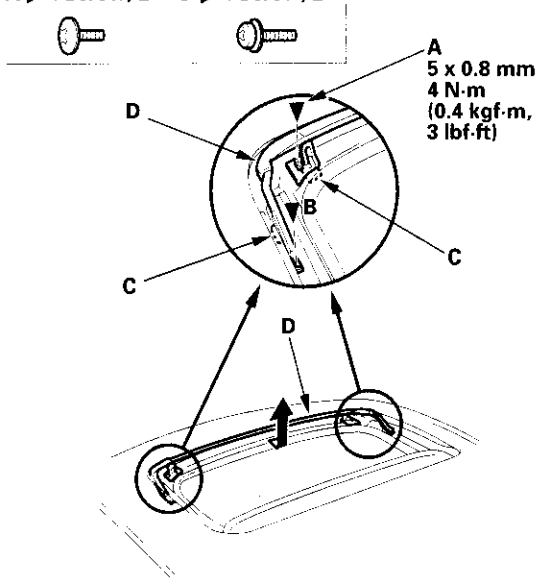
5. Install the glass in the reverse order of the removal, and adjust the glass height alignment.
6. Check for water leaks. Use free-flowing water from a hose without a nozzle. Do not use high-pressure water.

Wind Deflector Replacement

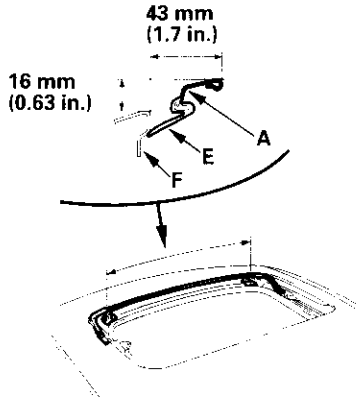
1. Open the glass fully.
2. Remove the screws (A, B), and release the hooks (C), then remove the wind deflector (D).

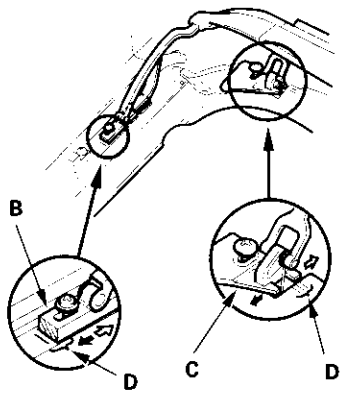
Fastener Locations

A ▶ : Screw, 2 B ▶ : Screw, 2



3. Install the deflector (A) in the reverse order of removal, and check that the deflector arm base (B) and deflector link pivot base (C) line up with the same alignment lines (D). If necessary, adjust them forward or backward so the edge of the deflector seal (E) touches the roof panel (F) evenly. Each base must be moved the same amount for adjustment. If the deflector seal and roof panel make a rubbing sound, move the deflector backward as necessary to position it properly.





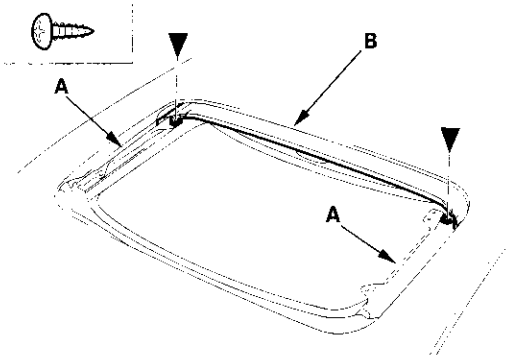
Drain Channel Replacement

1. Remove the moonroof glass (see page 20-37).

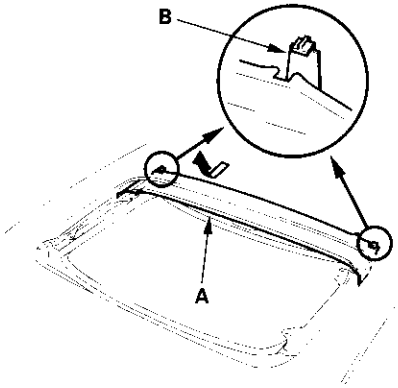
2. With the moonroof wrench, move both glass brackets (A) to the position where the moonroof normally pivots down, and remove the screws securing the drain channel (B).

Fastener Locations

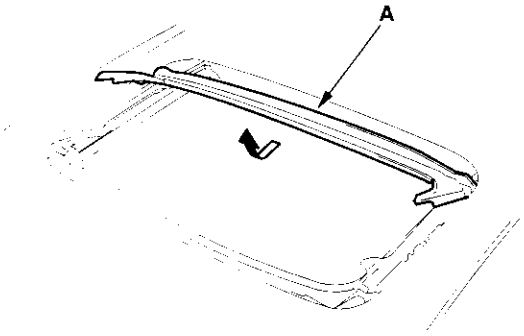
▶ : Screw, 2



3. Release the drain channel (A) from both hooks (B) of the drain channel slider by pulling the drain channel forward.



4. Remove the drain channel (A).



5. Install the channel in the reverse order of removal, and note these items:

   - Push the drain channel onto the hooks until a faint click is heard.
   - Check the glass height adjustment (see page 20-37).

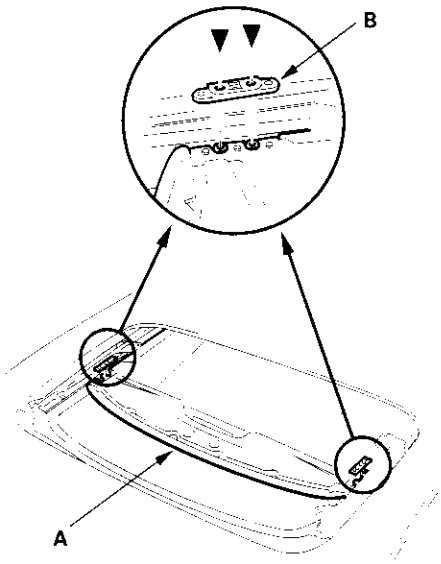
6. Check for water leaks. Let the water run freely from a hose without a nozzle. Do not use a high-pressure spray.

Sunshade Replacement

1. Remove the drain channel.
2. Slide the sunshade (A) until you can see both sunshade slider spacers (B).

Fastener Locations

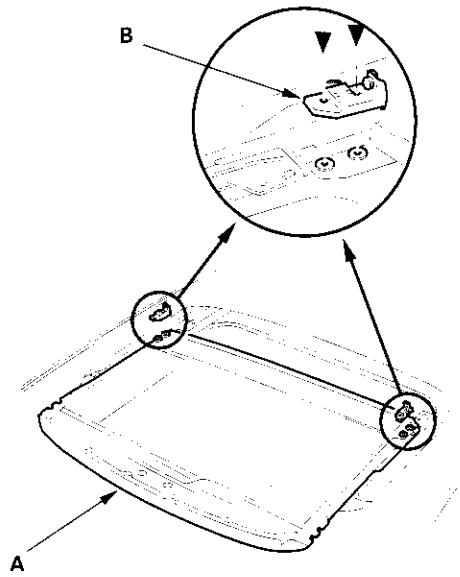
▶ : Screw, 4



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 and hooks.

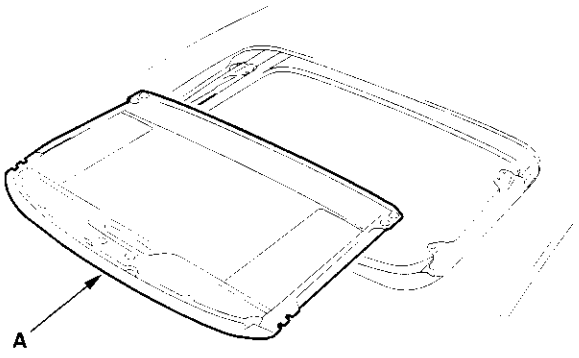
Fastener Locations

▶ : Screw, 4

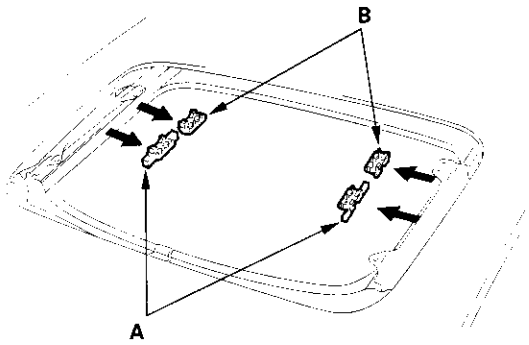


5. Remove the screws, then remove both hooks.

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 height adjustment (see page 20-37).

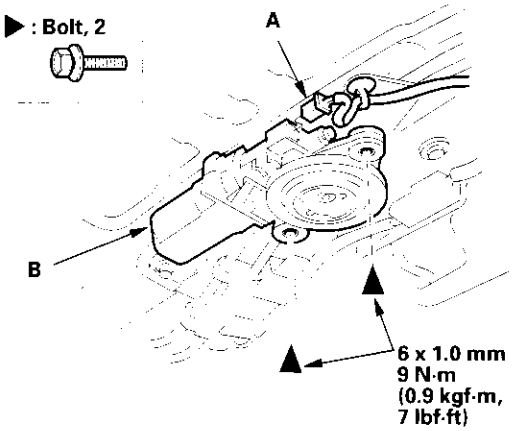
9. Check for water leaks. Let the water run freely from a hose without a nozzle. Do not use a high-pressure spray.

Motor Replacement

1. Remove the headliner (see page 20-54).

2. Put on gloves to protect your hands. Disconnect the connector (A), and remove the bolts, then remove the motor (B).

Fastener Locations



3. Install the motor in the reverse order of removal, and note these items:

- Make sure the connector is plugged in properly.
- Check the motor operation.

Frame and Drain Tube Replacement

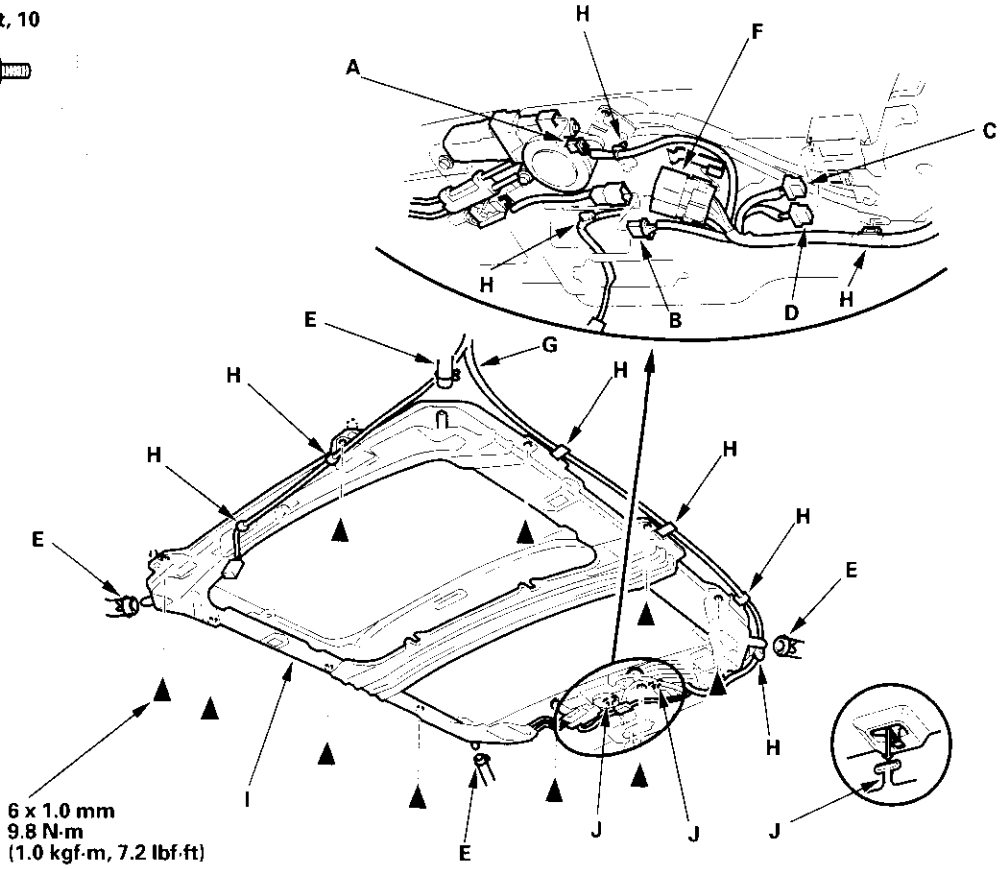
1. Remove these items:

   - Headliner (see page 20-54)
   - Moonroof glass (see page 20-37)

2. Put on gloves to protect your hands. Disconnect the motor connector (A), open/close-tilt/close switch connector (B), moonroof control unit connector (C), auto-stop switch connector (D), and the drain tubes (E), and remove the moonroof relays (F).

Fastener Locations

▶ : **Bolt, 10**

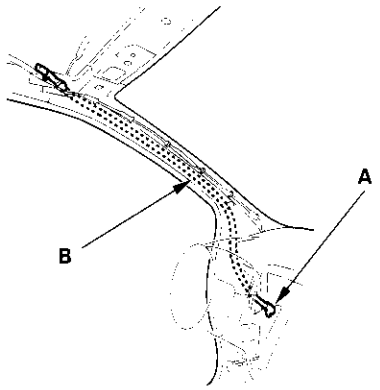


3. Remove the interior harness (G) by detaching the harness clips (H).

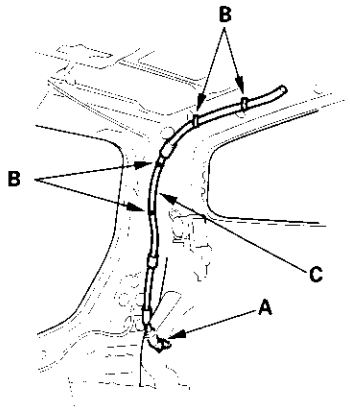
4. With an assistant holding the frame (I), remove the bolts, starting at the rear, and release the rear hooks (J) by moving the frame forward, then remove the frame.

5. With the help of an assistant, carefully remove the frame through the passenger's door opening. Take care not to scratch the interior trim and body, or tear the seat covers.

6. To remove a front drain valve (A) from the body, remove the kick panel, left or right (see page 20-50). Tie a string to the end of the drain tube, then pull the front drain tube (B) down out of the front pillar.

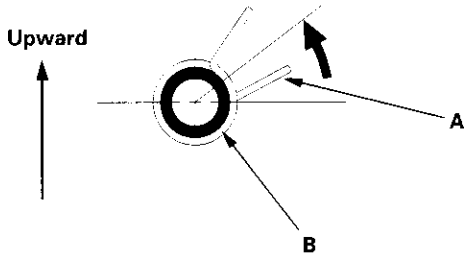


7. To remove a rear drain valve (A) from the cargo compartment, remove the rear side trim panel (see page 20-51).Detach the clips (B), then remove the drain tube (C).



8. Install the frame and drain tube in the reverse order of removal, and note these items:

- Before installing the frame, clear the drain tubes and drain valves using compressed air.
- 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 tube, slide it over the frame nozzle at least 10 mm (0.39 in.).
- Install the tube clip (A) on the drain tube (B) as shown.



9. 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

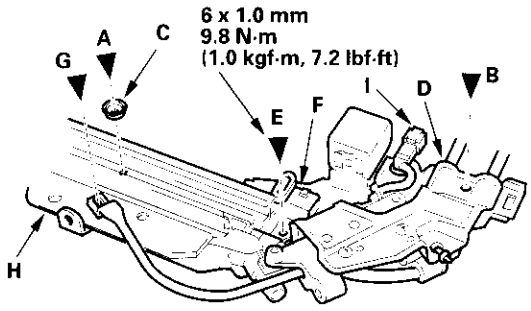
1. Remove the frame (see page 20-42).
2. Remove these parts from the frame:
   - Sunshade (see page 20-40)
   - Moonroof motor (see page 20-41)
3. Put on gloves to protect your hands. Remove the screws (A, B), then remove the slide stops (C) and cable tube rear brackets (D). Remove the bolts (E) from the cable tube side bracket (F) and the cable tube mounting screws (G) from both sides of the frame (H).

Fastener Locations

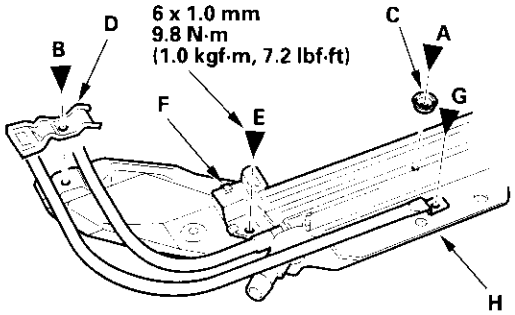
A▶: Screw, 2 **B▶: Screw, 2** **E▶: Bolt, 2**

F▶: Screw, 2

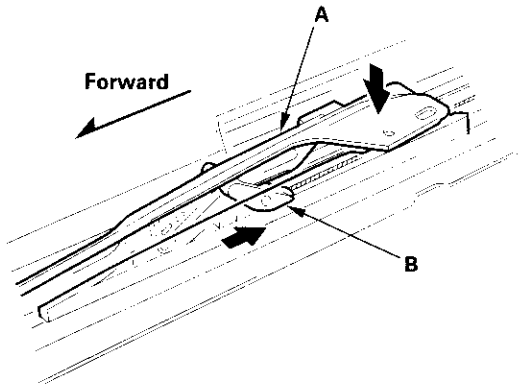
Position switch side:



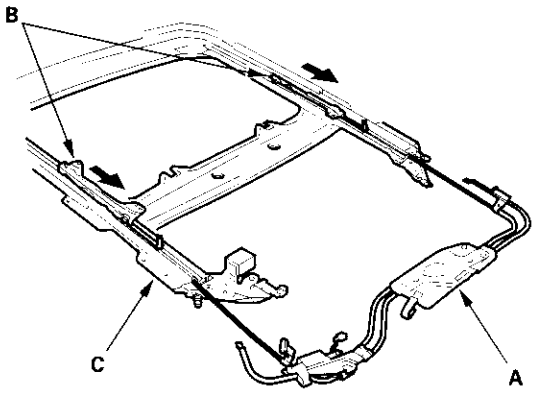
No switch side:



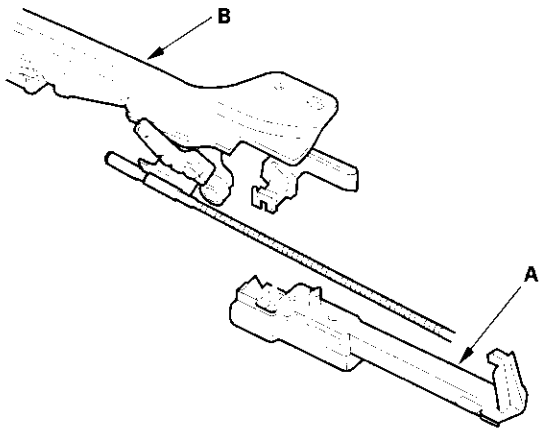
4. Detach the onen switch connector clip (I) from the frame.
5. Pivot the glass bracket (A) down by sliding the link lifter (B) back, then slide both glass brackets back with the link lifter.



6. Slide the cable assembly (A) and both glass brackets (B) back, then remove them from the frame (C).

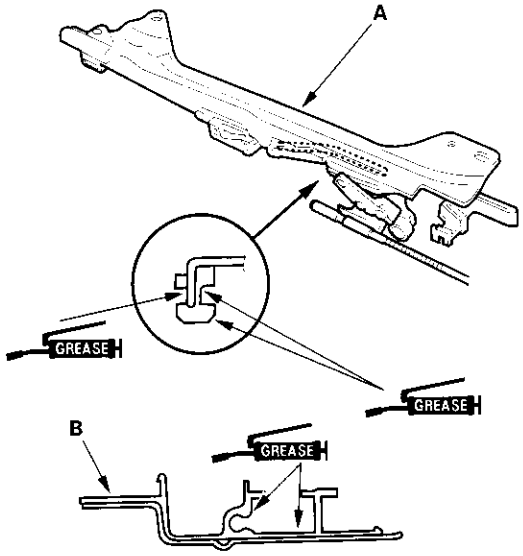


7. Remove the drain channel slider (A) from the glass bracket (B).



8. Install the slider and 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 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 glass, then check the opening drag (see page 20-48).



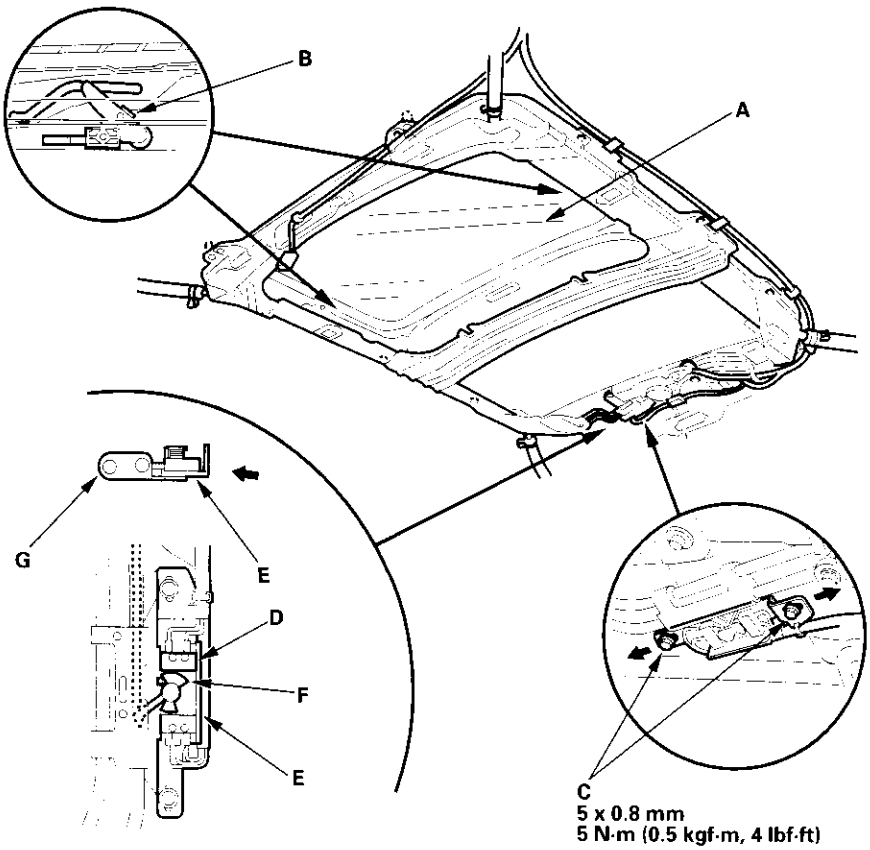
Limit Switch Adjustment

1. Remove the headliner (see page 20-54).

Fully closed position adjustment

2. With the moonroof wrench, close the glass (A) fully:

   - Make sure both link lifters (B) are parallel, and in the position shown.
   - Check the glass fit to the roof panel and the glass height (see page 20-37).



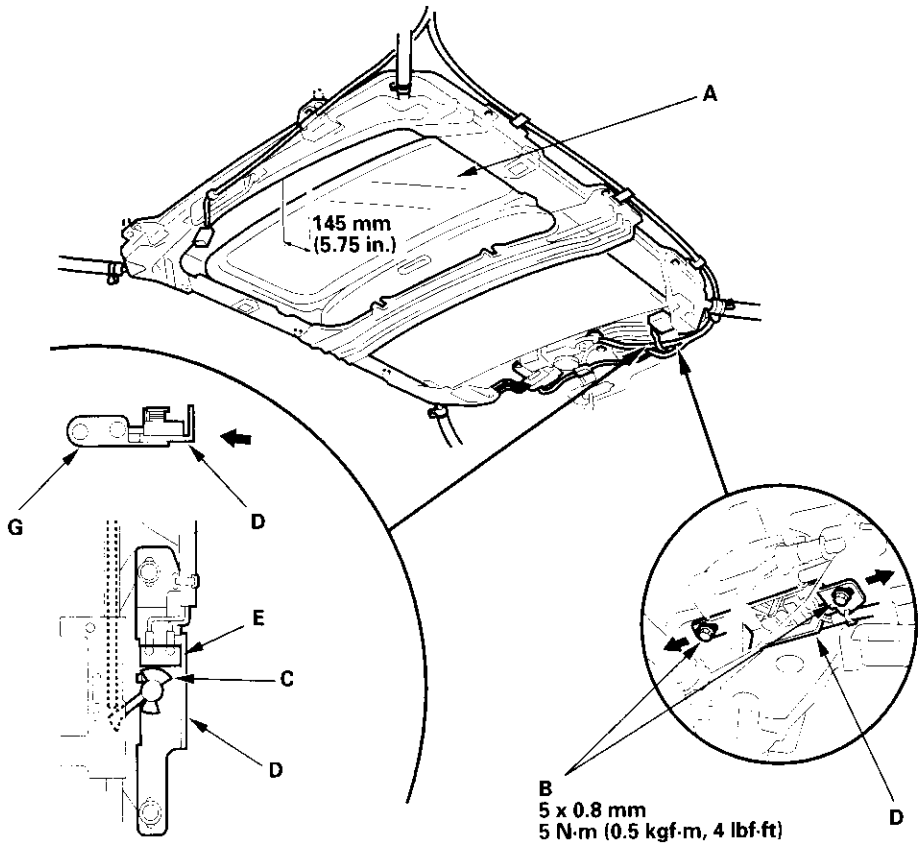
3. With an open-end wrench, loosen the limit switch mounting bolts (C).

4. Adjust the limit switch (D):

   - Move the switch plate (E) a little at a time, then secure it at the position where you hear a faint click when the switch cam (F) pushes the position switch (open/close).
   - Check that the switch plate contacts the switch bracket (G).

Auto-stop position adjustment

5. With the moonroof wrench, operate the glass (A) to the auto-stop position.



6. With an open-end wrench, loosen the auto-stop switch mounting bolts (C).

7. Adjust the auto-stop switch (D):

   - Move the switch plate (E) a little at a time, then secure it at the position where you hear a faint click when the switch cam (F) pushes the switch (auto-stop).
   - Check that the switch plate contacts the switch bracket (G).

8. Check the operation of the glass by operating the moonroof switch: From the tilt-up position to the fully closed position, from the fully open position to the auto-stop position, from the auto-stop position to the fully closed position.

9. Check for water leaks. Let the water run fleely from a hose without a nozzle. Do not use a high-pressure spray.

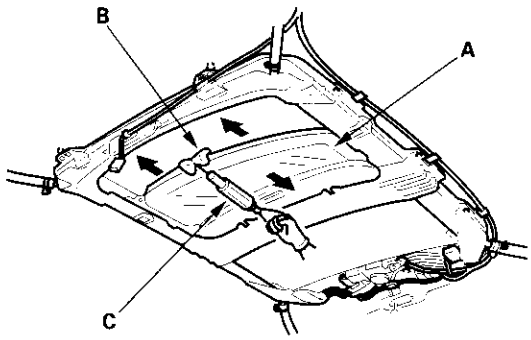
Closing Force and Opening Drag Check

1. Remove the headliner (see page 20-54).

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.

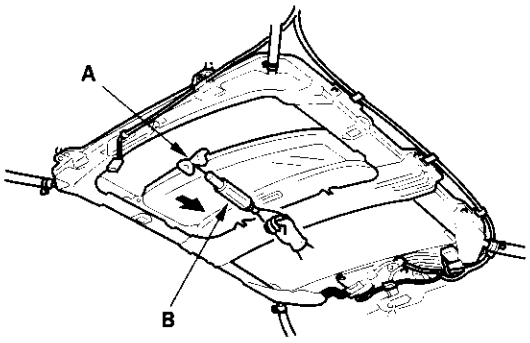
   Closing Force: 200—290 N (20—30 kgf, 44—66 lbf)



3. If the force in not within specification, remove the moonroof motor (see page 20-41), then 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 20-42), and replace the cable assembly (see page 20-44).
   - The moonroof motor (see page 22-112). If the motor fails to run or doesn't turn smoothly, replace it (see page 20-41).
   - The opening drag. Go to step 4.

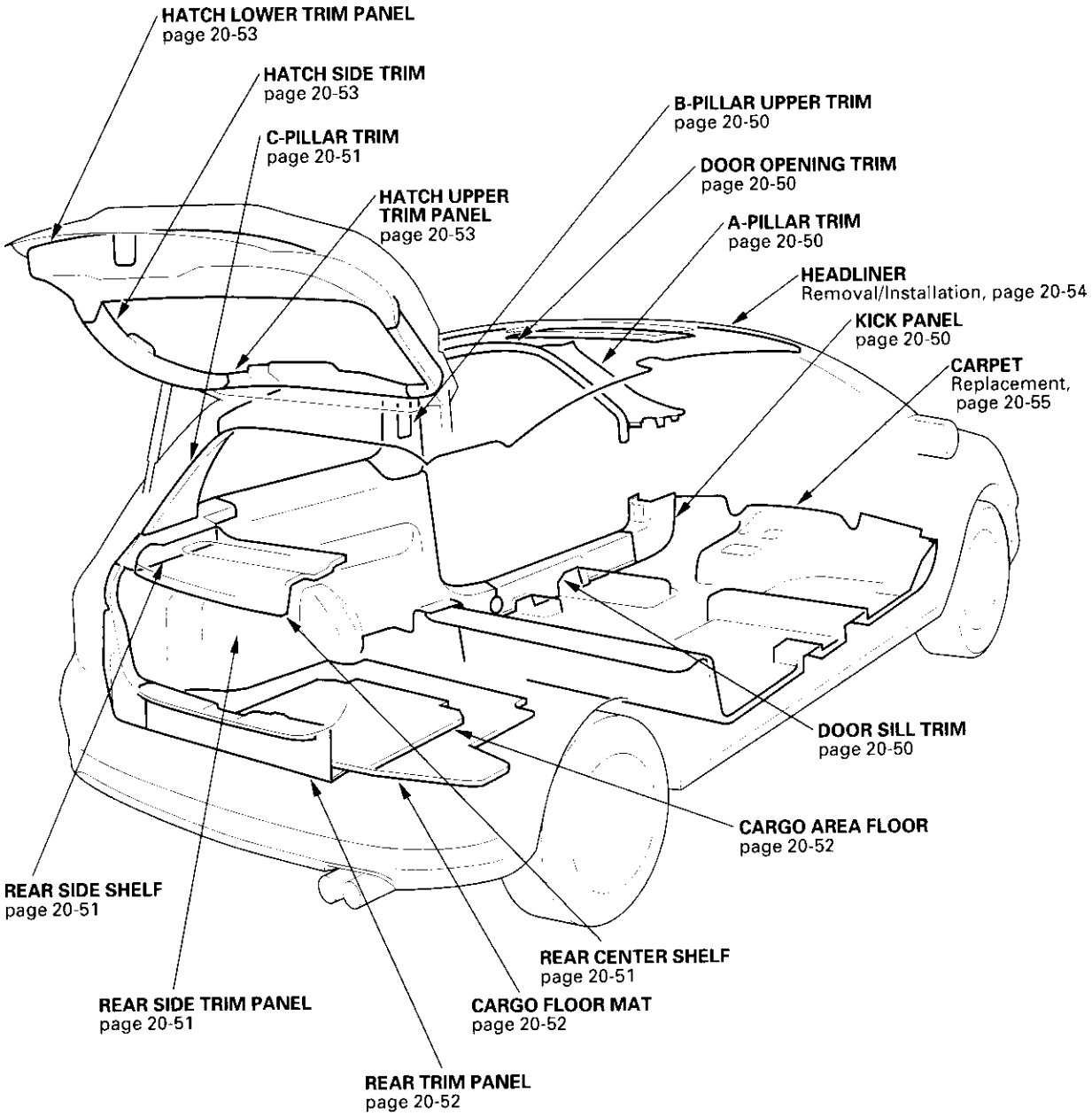
4. Opening drag check: Protect the leading edge of the glass with a shop towel (A). Measure the effort required to open the glass using a spring scale (B) as shown.



5. If the load is over 40 N (4 kgf, 9 lbf), check:

   - The side clearance and glass height adjustment (see page 20-37).
   - For broken or damaged sliding parts. If any sliding parts are damaged, replace them.

Component Location Index



Trim Removal/Installation - Door Area

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 bend or scratch the trim and panels.

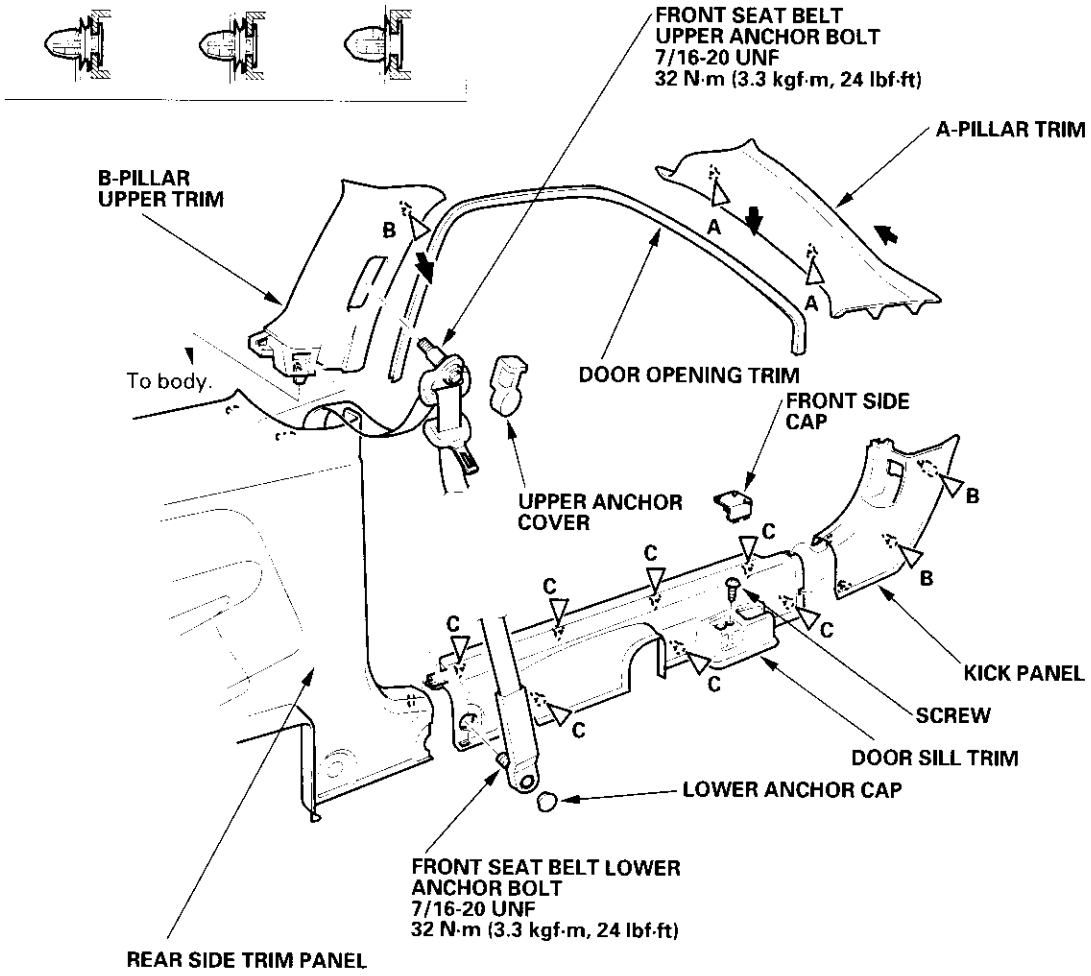
1. Remove the trim as shown. To remove the door sill trim and B-pillar upper trim, remove the rear side trim panel as necessary (see page 20-51).

2. Install the trim in the reverse order of removal, and note these items:

   - Replace any damaged clips.
   - Apply liquid thread lock to the anchor bolts before reinstallation.
   - Before installing the anchor bolts, make sure there are no twists or kinks in the belts.

Fastener Locations

A ▷: Clip, 2 (Black) **B ▷: Clip, 3** (White) **C ▷: Clip, 7**



Trim Removal/Installation - Rear Side Area

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 bend or scratch the trim and panels.

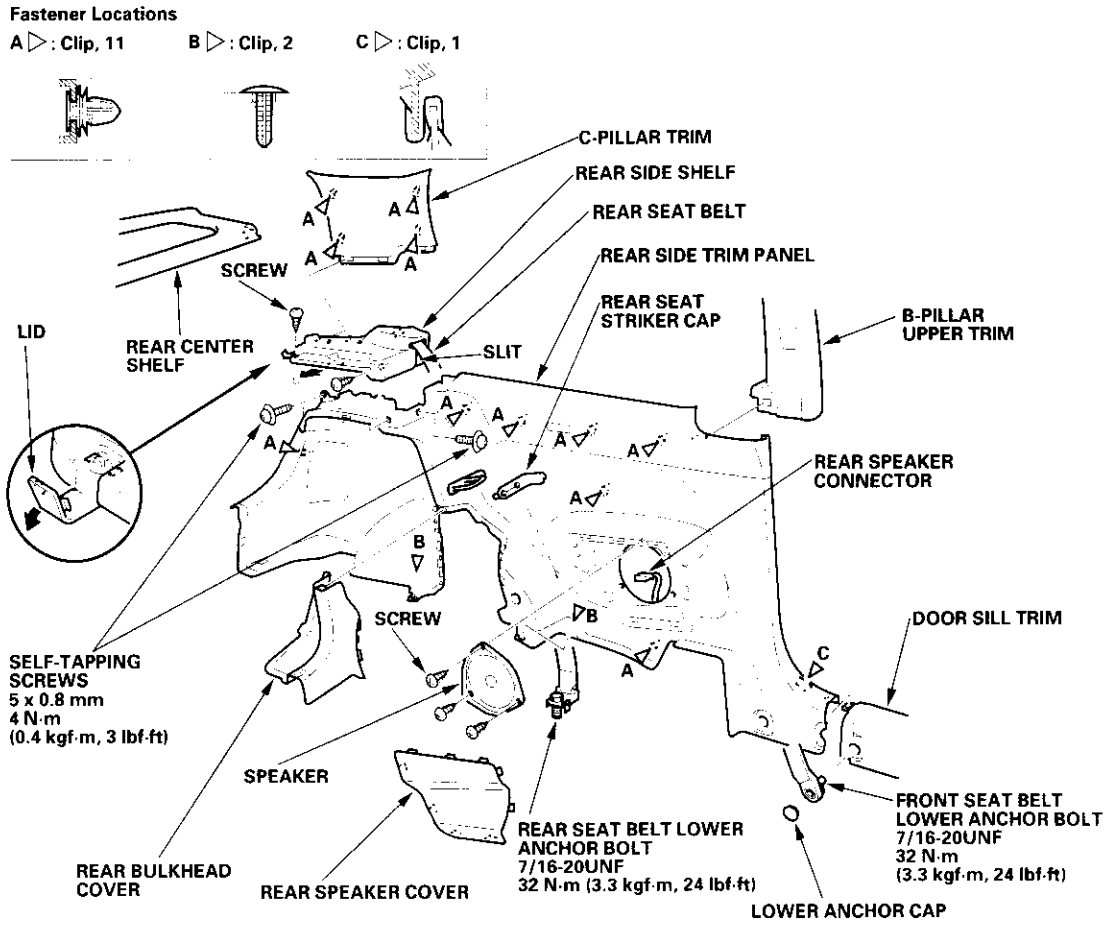
1. To remove the rear side trim panel, remove these items:

   - Rear seat cushion and rear seat-back (see page 20-80)
   - Cargo floor mat and cargo area floor (see page 20-52)
   - Rear trim panel (see page 20-52)

2. Remove the trim as shown. On the right side, disconnect the cargo compartment light connector.

3. Install the trim in the reverse order of removal, and note these items:

   - Replace any damaged clips.
   - Make sure the cargo compartment light connector is plugged in properly.
   - If the threads on the rear side trim panel mounting self-tapping ET screws are worn out, use an oversized self-tapping ET screw (P/N 90137-S1A-E011) made specifically for this application.
   - When installing the rear side shelf, slip the rear seat belt through the slit in the trim.
   - Apply liquid thread lock to the anchor bolts before reinstallation.
   - Before installing the anchor bolts, make sure there are no twists or kinks in the belt.



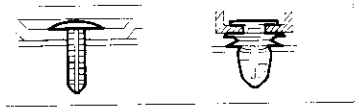
Trim Removal/Installation - Cargo Floor Area

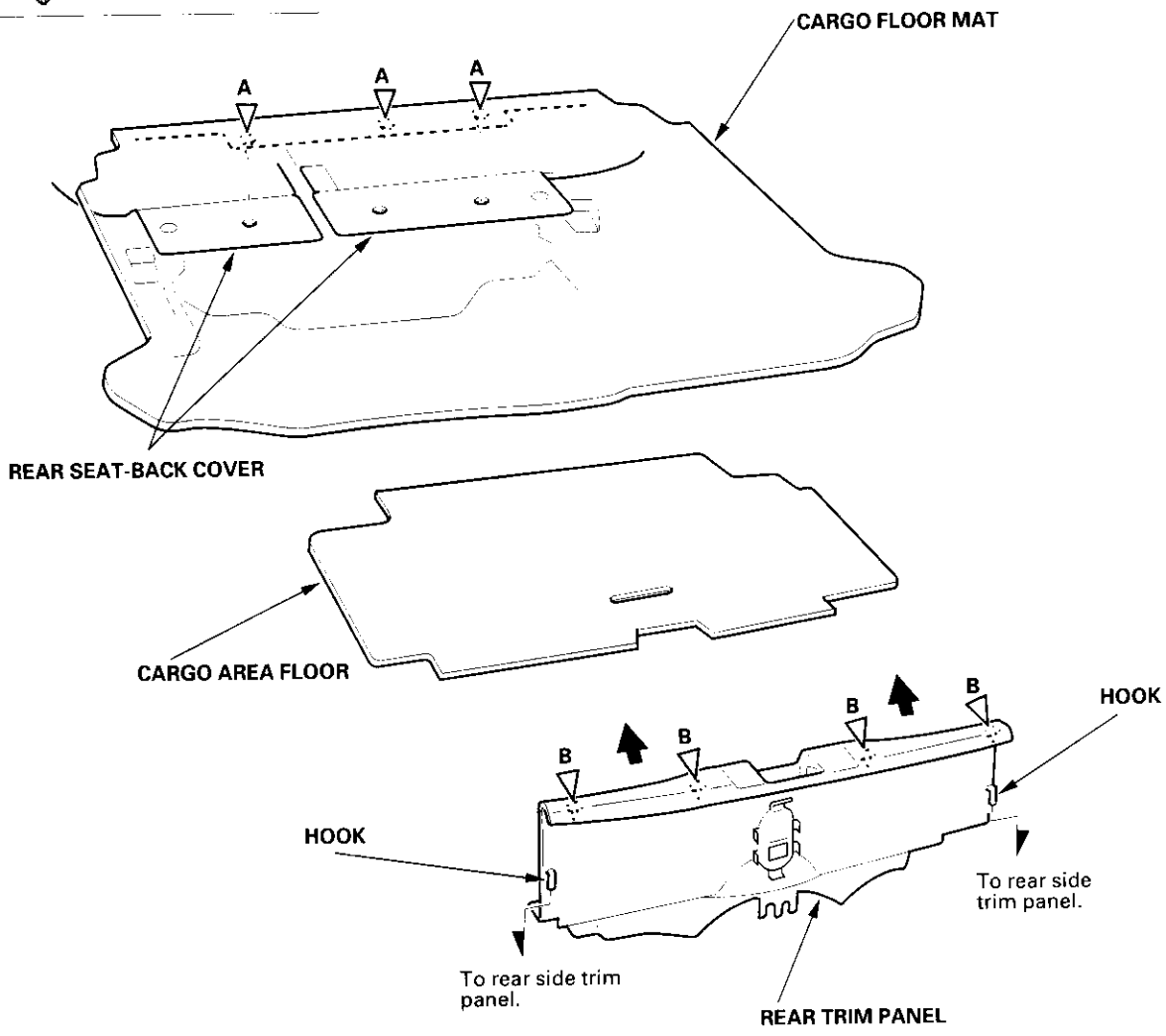
NOTE:
- Put on gloves to protect your hands.
- When prying with a flat-tip screwdriver, wrap it with protective tape to prevent damage.
- Take care not to bend or scratch the trim and panels.

1. To remove the rear trim panel, remove the child seat tether anchor (see page 23-11).
2. Remove the trim as shown.
3. Install the trim in the reverse order of removal, and replace any damaged clips.

Fastener Locations

A▷ : Clip, 3 B▷ : Clip, 4





Trim Removal/Installation - Hatch Area

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 bend or scratch the trim and panels.

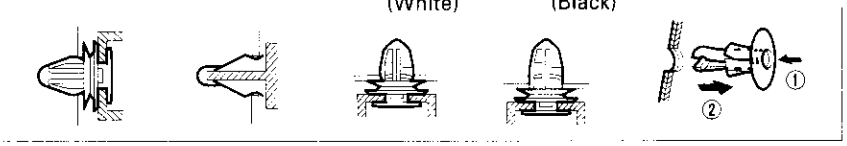
1. Remove the trim in the sequence shown.

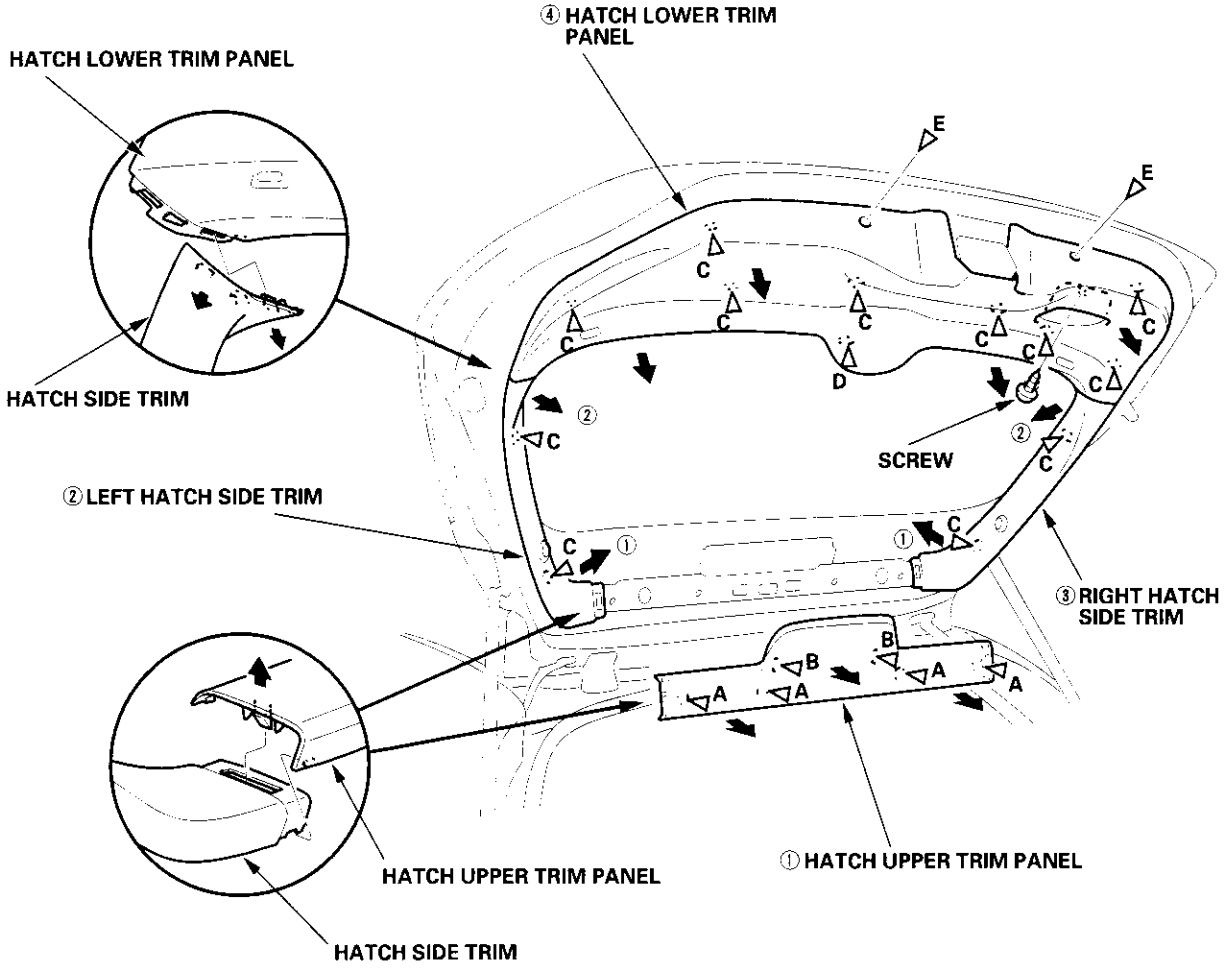
   - Hatch upper trim panel
   - Left hatch side trim
   - Right hatch side trim
   - Hatch lower trim panel

2. Install the trim in the reverse order of removal, and replace any damaged clips.

Fastener Locations

A ▷ : Clip, 4 **B ▷: Clip, 2** **C ▷: Clip, 12** (White) **D ▷: Clip, 1** (Black) **E ▷: Clip, 2**





Headliner Removal/Installation

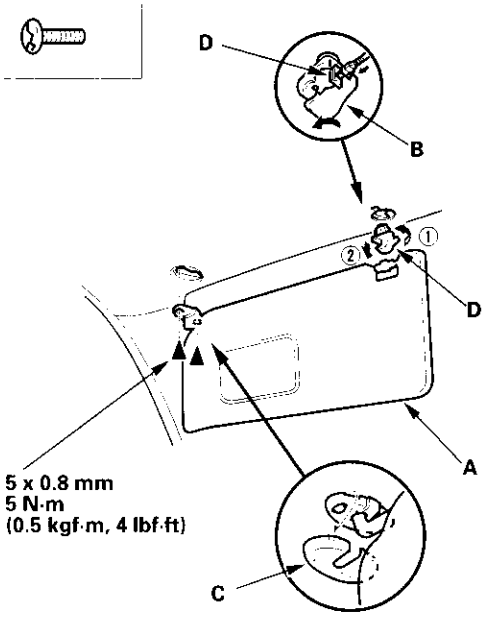
NOTE:
- When prying with a flat-tip screwdriver, wrap it with protective tape to prevent damage.
- Take care not to bend and scratch the headliner.
- Be careful not to damage the dashboard and other interior trim.

1. Remove these items:
   - A-pillar trim, both sides (see page 20-50)
   - B-pillar upper trim, both sides (see page 20-50)
   - Hatch weatherstrip, as necessary (see page 20-92)
   - C-pillar trim, both sides (see page 20-51)
   - Moonroof switch (see page 22-112)
   - Spotlights (see page 22-96)
   - Ceiling light (see page 22-96)

2. Remove the sunvisor (A) and holder (B) from both sides.
   - –1 Remove the caps (C).
   - –2 Remove the screws.
   - –3 Remove the sunvisor from the body and holder.
   - –4 Using a flat-tip screwdriver, push the hook (D), and turn the holder 90°, then pull it out.

Fastener Locations

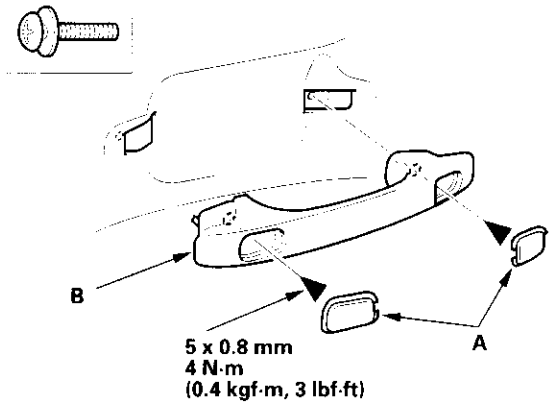
▶ : Screw, 4



3. From both rear passenger's, remove the caps (A), and remove the screws, then remove the grab handles (B).

Fastener Locations

▶ : Screw, 4

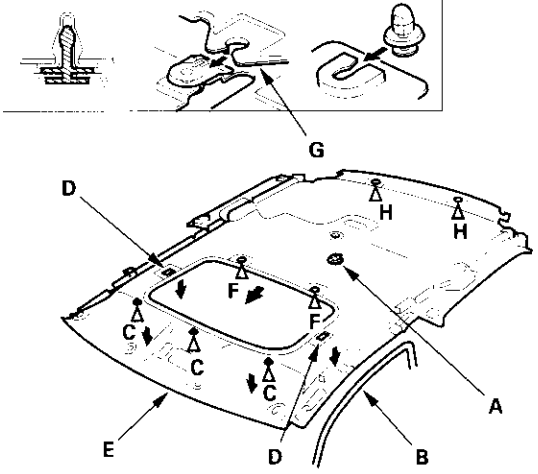


4. Remove the headliner.

   -1 Remove the socket plug (A).
   -2 Remove the remaining door opening trim (B) from each roof portion.
   -3 Detach the clips (C), and release the fasteners (D) by pulling the front portion of the headliner (E) down.
   -4 With the help of an assistant, release the clips (F) of the headliner from the moonroof frame (G), and release the headliner from the clips (H) by sliding the headliner forward, and lowering the headliner.
   -5 Remove the headliner through the passenger's opening.

Fastener Locations

C ▷: Clip, 3 F ▷: Clip, 2 H ▷: Clip, 2



5. Install the headliner in the reverse order of removal, and note these items:

   - When reinstalling the headliner through the passenger's door opening, be careful not to fold or bend it. Also, be careful not to scratch the body.
   - Check that both sides of the headliner are securely attached to the trim.
   - Replace any clips that remain in the roof during removal. Reinstall the clips back in the headliner before installation.

Carpet Replacement

SRS components are located in this area. Review the SRS component locations (see page 23-13) and the precautions and procedures (see page 23-14) in the SRS section before performing repairs or service.

NOTE:
- Put on gloves to protect your hands.
- Take care not to damage, wrinkle, or twist the carpet.
- Be careful not to damage the dashboard or other interior trim pieces.

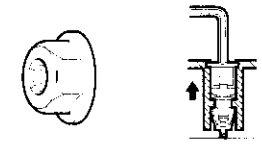
1. Remove these items:

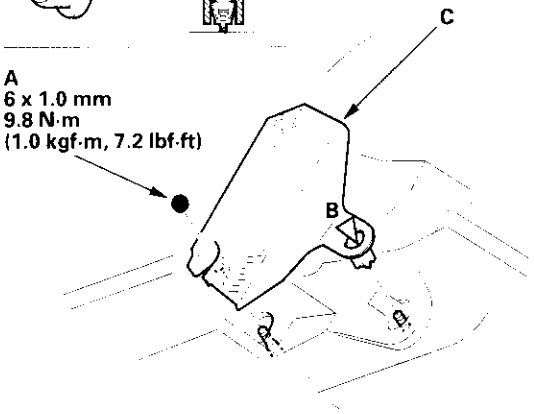
   - Front seats, both sides (see page 20-71)
   - Driver's dashboard under cover (see page 20-60)
   - Passenger's dashboard lower cover (see page 20-63)
   - Rear seat cushion (see page 20-80)
   - Kick panels, both sides (see page 20-50)
   - Door sill trim, both sides (see page 20-50)
   - Consoles, front and rear (see page 20-57)

2. Remove the nut (A), and using a hex wrench, release the clip (B), then remove the footrest (C).

Fastener Locations

A ●: Nut, 1 B ▷: Clip, 1

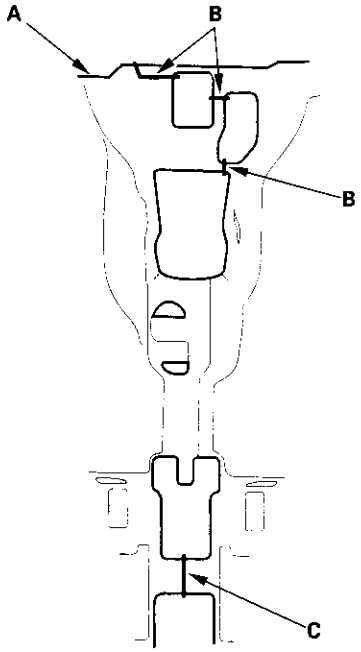




(cont'd)

Carpet Replacement (cont'd)

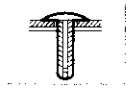
3. Using a utility knife, cut the carpet (A) under the heater areas (B), and cut out the parking brake lever area (C) as shown, then pull back the carpet.

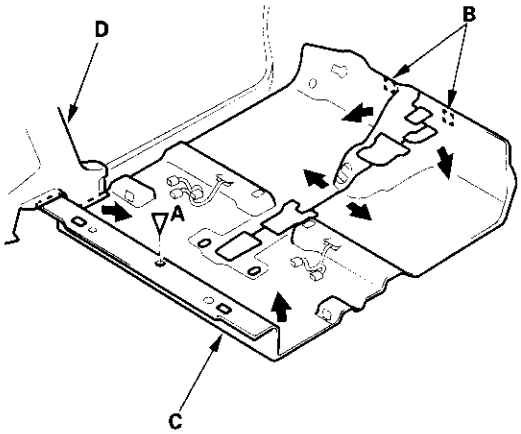


4. Remove the clip (A), and release the fasteners (B). Pull the carpet out from both rear side trim panels (D), then remove the carpet (C).

Fastener Location

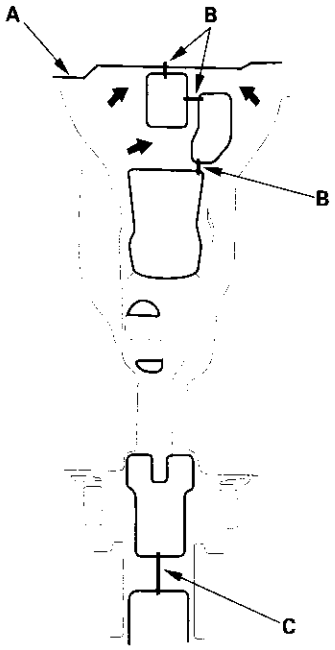
A▷: Clip, 1





5. 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 are routed correctly.
- Slip the carpet under the rear side trim panel on each side properly.
- Replace the clip if it's damaged.
- Reattach the cut areas under the heater around the parking brake lever with a wire tie.
- When installing new carpet, cut the carpet (A) under the heater areas (B), and around the parking brake lever (C). After installing the new carpet, slip the carpet from the driver's and passenger's side through the space between the heater unit and body, and reattach the cut area (C) around the parking brake lever with wire ties.



Console, Front and Rear Removal/Installation

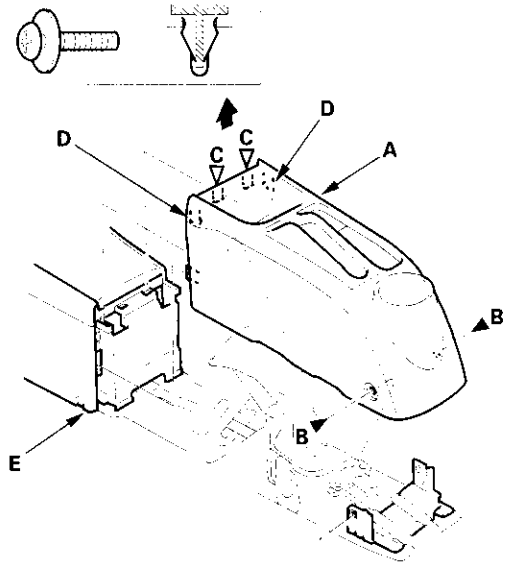
NOTE: Take care not to scratch the front seat, dashboard, and related parts.

1. Remove the rear console (A).

   –1 Slide the front seat forward fully on each side.
   –2 Remove the screws (B) from the rear portion of the rear console.
   –3 Slide the front seat rearward fully on each side.
   –4 Pull the front portion of the rear console up to detach the clips (C) and hooks (D), then release the rear console from the front console (E).
   –5 Starting at the rear, pull the rear console up, then remove it.

Fastener Locations

B ▶:Screw, 2 C ▷: Clip, 2

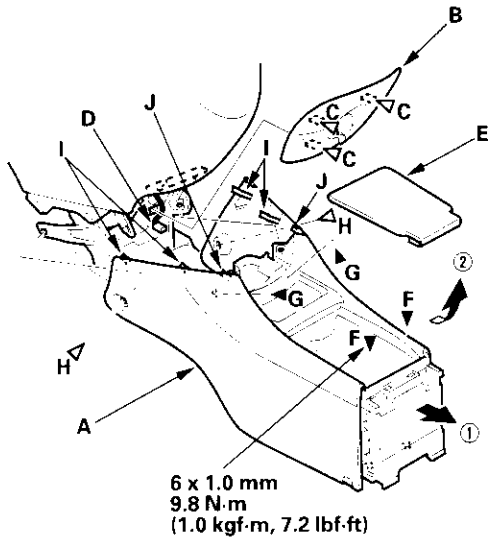


2. Remove the front console (A).

   –1 Pull out the dashboard center lower cover (B) to detach the clips (C).
   –2 Disconnect the accessory power socket connector (D).
   –3 Remove the console box mat (E).
   –4 Remove the bolts (F), screws (G), and clips (H).
   –5 Gently pull out the front console to release the hooks (I) and pins (J).

Fastener Locations

C ▷: Clip, 3 F ▶: Bolt, 2 G ▶:Screw, 2 H ▷:Clip, 2



3. Install the console in the reverse order of removal, and note these items:

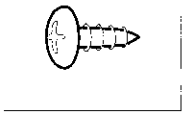
   • Replace any damaged clips.
   • Make sure the accessory power socket connector is plugged in properly.
   • Push the clips into place securely.

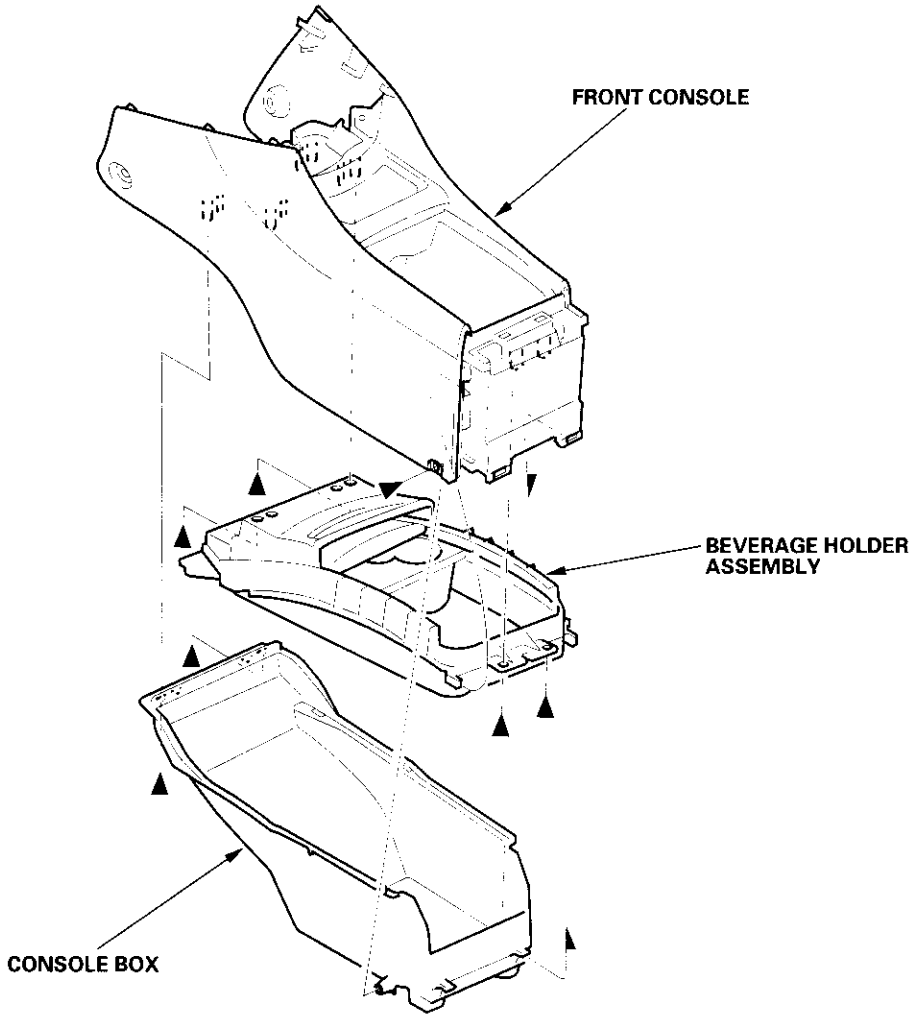
Front Console Disassembly/Reassembly

NOTE: Take care not to scratch the console and related parts.

Fastener Locations

▶:Screw, 8



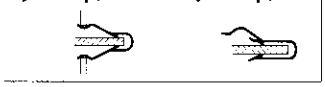


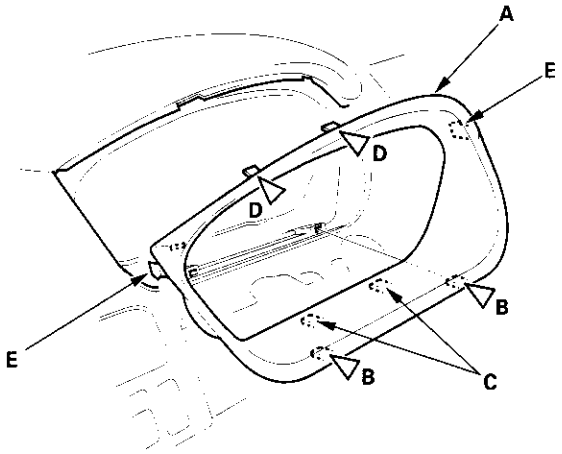
Instrument Panel Removal/ Installation

NOTE:
- When prying with a flat-tip screwdriver, wrap it with protective tape, and apply protective tape around the related parts, to prevent damage.
- Take care not to scratch the dashboard and related parts.

1. Tilt the steering column down.
2. Remove the steering column upper cover (see page 17-9).
3. Remove the instrument panel (A).
   - –1 Gently pull out along the bottom to release the clips (B) and hooks (C).
   - –2 Gently pull out the upper portion to release the clips (D) and hooks (E).

Fastener Locations
B▷: Clip, 2 **D▷: Clip, 2**



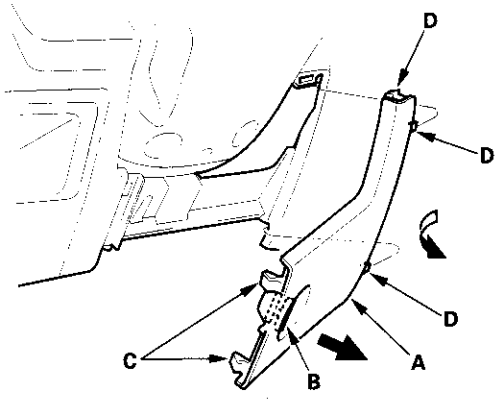


4. Install the panel in the reverse order of removal, and push the clip and hook portions into place securely.

Driver's Dashboard Lower Cover Removal/Installation

NOTE: Take care not to scratch the dashboard and related parts.

1. Remove the driver's dashboard lower cover (A).
   - –1 Turn the lock knob (B) 90°.
   - –2 Gently pull out the left side to release the hooks (C).
   - –3 Pull out the panel to release the hooks (D).



2. Install the cover in the reverse order of removal, and push the hook portions into place securely.

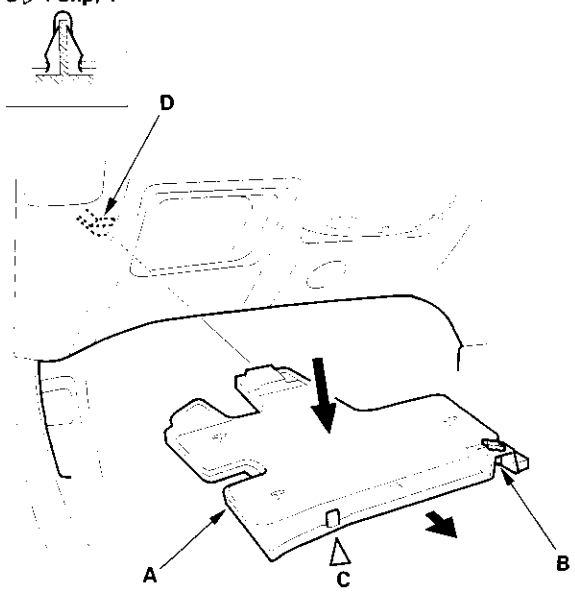
Driver's Dashboard Under Cover Removal/Installation

NOTE: Take care not to scratch the dashboard and related parts.

1. Remove the driver's dashboard under cover (A).
   - -1 Turn the lock knob (B) 90°.
   - -2 Gently pull down the rear edge to release the clip (C).
   - -3 Pull the cover away to release it from the clip (D).

Fastener Locations

C▷: Clip, 1



2. Install the cover in the reverse order of removal, and push the clip portion into place securely.

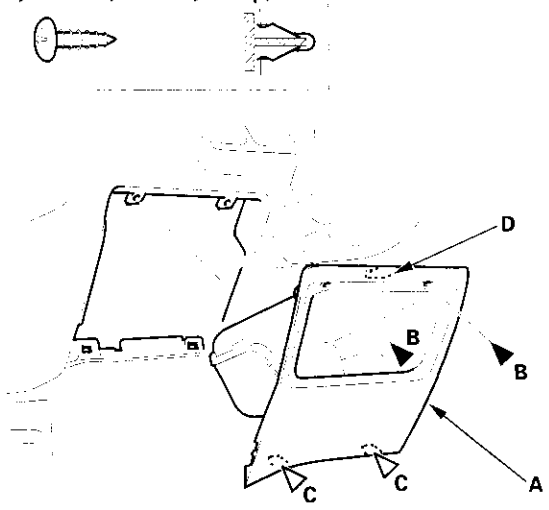
Driver's Pocket Removal/Installation

NOTE:
- Put on gloves to protect your hands.
- Take care not to scratch the dashboard and related parts.

1. Remove the driver's pocket (A).
   - -1 Remove the driver's dashboard under cover.
   - -2 Remove the screws (B).
   - -3 From behind the dashboard, push the pocket back by hand to release the clips (C).
   - -4 Release the hook (D).

Fastener Locations

B▶:Screw, 2 **C▷: Clip, 2**



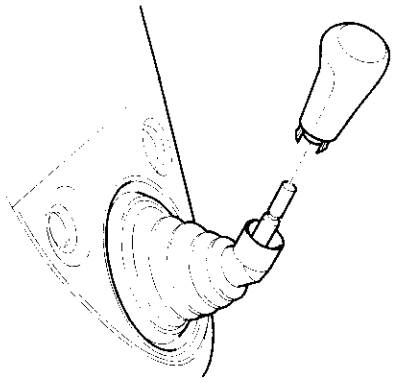
2. Install the pocket in the reverse order of removal, and push the clip portions into place securely.

Shift Lever Trim Removal/Installation

NOTE:
- Take care not to scratch the dashboard and related parts.
- Put on gloves to protect your hands.

1. Remove the glove box (see page 20-63).

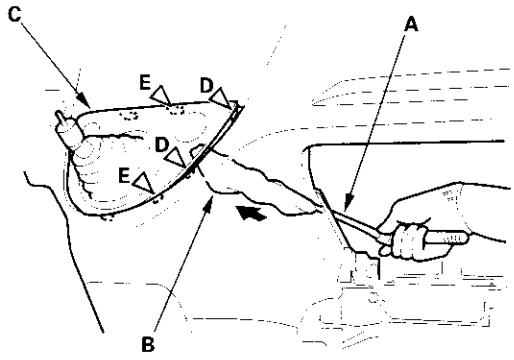
2. Remove the shift knob.



3. Using a ratchet wrench and an 11 inch extension (A) wrapped with a shop towel (B), carefully insert the extension through the glove box opening, and push the shift lever trim (C) from under the trim to release the clips (D) and hooks (E) of the left side.

Fastener Locations

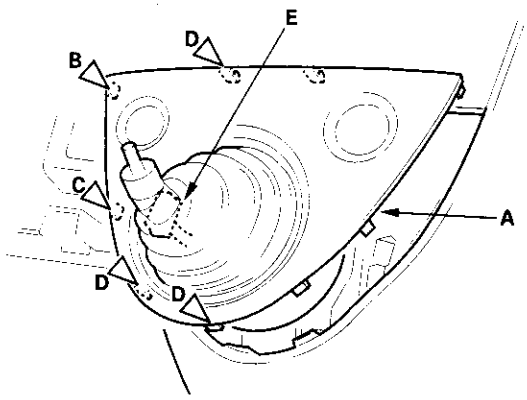
D▷Clip, 2 **E▷Hook, 2**



4. Pull out the shift lever trim (A) by hand to release the remaining clips (B, C) and hooks (D), and disconnect the hazard warning switch connector (E), then remove the trim.

Fastener Locations

B▷:Clip, 1 **C▷: Clip, 1** **D▷: Hook, 3**



5. Install the trim in the reverse order of removal, and note these items.

- Make sure the hazard warning switch connector is plugged in properly.
- Push the clip and hook portions into place securely.

Dashboard Center Panel Removal/Installation

NOTE:
- Put on gloves to protect your hands.
- When prying with a flat-tip screwdriver, wrap it with protective tape, and apply protective tape around the related parts, to prevent damage.
- Take care not to scratch the dashboard and related parts.

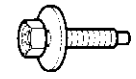
1. Make sure you have the anti-theft code for the radio, the write down the frequencies for the preset buttons.

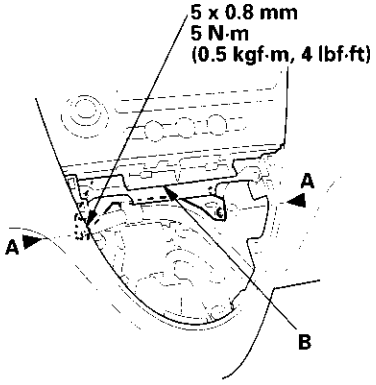
2. Remove these items:

   - Driver's dashboard lower cover (see page 20-59)
   - Passenger's dashboard lower cover (see page 20-63).
   - Glove box (see page 20-63).
   - Shift lever trim (see page 20-61).

3. From the glove box and driver's dashboard lower cover openings, loosen the bolts (A) securing the center panel (B).

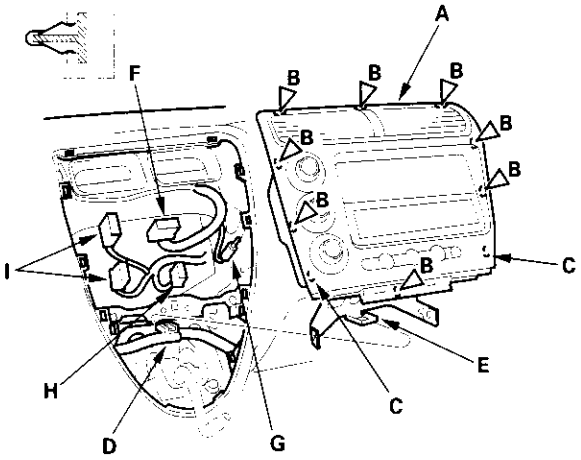
Fastener Locations
A▶: Bolt, 2





4. Pull out the center panel (A) to release the clips (B) and hooks (C), and remove the harness holder (D) from the bracket (E). Disconnect the audio unit connector (F), antenna lead (G), heater switch connector (H) and heater control unit connectors (I).

Fastener Locations
B▷: Clip, 8



5. Install the panel in the reverse order of removal, and note these items:

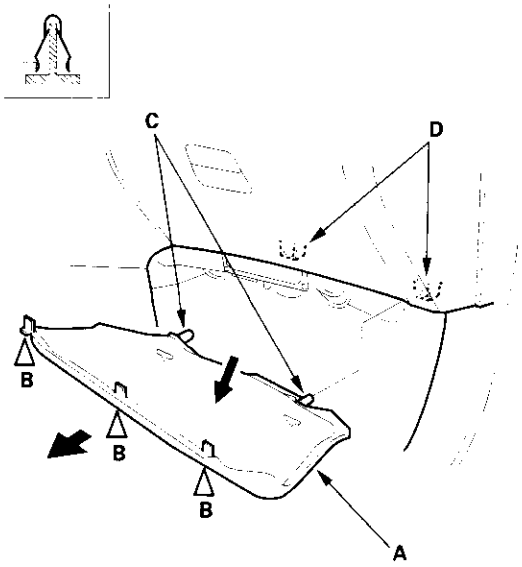
   - Make sure each connector is plugged in properly, and antenna lead is connected properly.
   - Push the clip portions into place securely.
   - Reconnect the negative cable to the battery.
   - Do the ECM/PCM idle learn procedure (see page 11-139).
   - Enter the anti-theft code for the radio, then enter the customer's radio station presets.
   - Reset the clock.

Passenger's Dashboard Lower Cover Removal/Installation

NOTE: Take care not to scratch the dashboard and related parts.

1. Remove the passenger's dashboard lower cover (A).
   - –1 Gently pull down the rear edge to release the clips (B).
   - –2 Pull the cover away to release the pins (C) from the holders (D).

Fastener Locations
B ▷: Clip, 3



2. Install the under cover in the reverse order of removal, and push the clip portions into place securely.

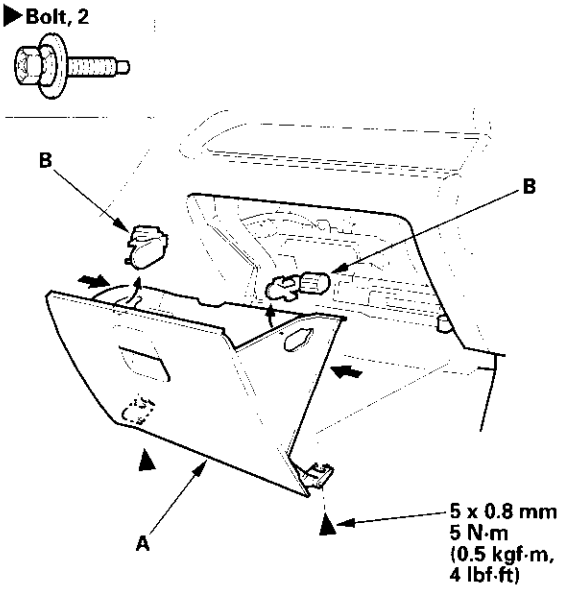
Glove Box Removal/Installation

SRS components are located in this area. Review the SRS component locations (see page 23-13) and the precautions and procedures (see page 23-14) in the SRS section before performing repairs or service.

NOTE: Take care not to scratch the dashboard and related parts.

1. Remove the passenger's dashboard lower cover.
2. While holding the glove box (A), remove the glove box stop (B) on each side.

Fastener Locations
▶Bolt, 2



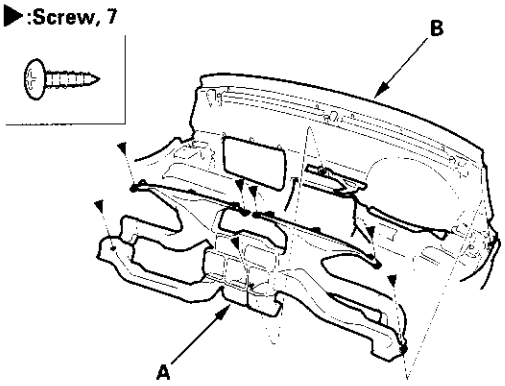
3. Remove the bolts, then remove the glove box.
4. Install the glove box in the reverse order of removal.

Dashboard Side Vent Removal/ Installation

NOTE:
- Take care not to scratch the dashboard.
- Put on gloves to protect your hands.

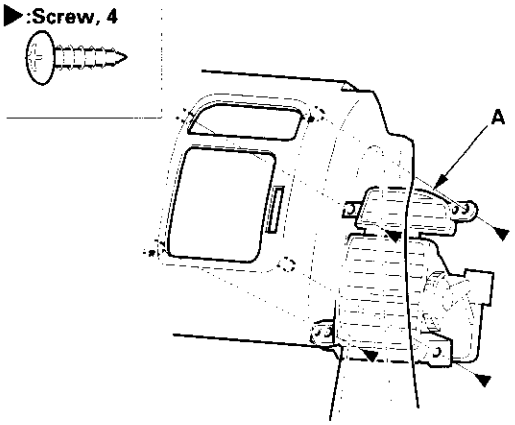
1. Remove the dashboard (see page 20-66).
2. Remove the steering hanger beam from the dashboard (see page 20-68).
3. Remove the screws, then remove the air duct (A) from the dashboard (B).

Fastener Locations
▶:Screw, 7



4. Remove the screws, then remove the side vent (A).

Fastener Locations
▶:Screw, 4



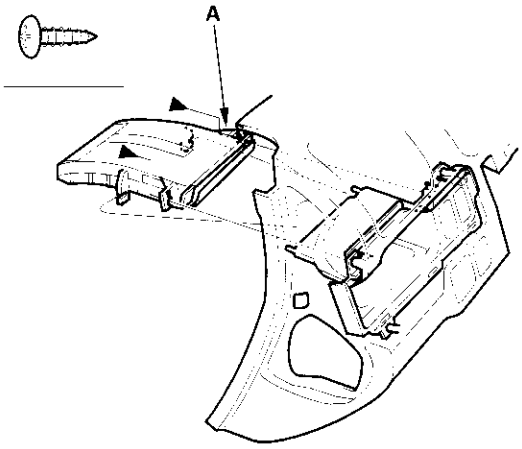
5. Install the side vent in the reverse order of removal.

Beverage Holder Removal/ Installation

NOTE:
- Take care not to scratch the dashboard.
- Put on gloves to protect your hands.

1. Remove the dashboard (see page 20-66).
2. Remove the screws, then remove the beverage holder (A).

Fastener Locations
▶:Screw, 2



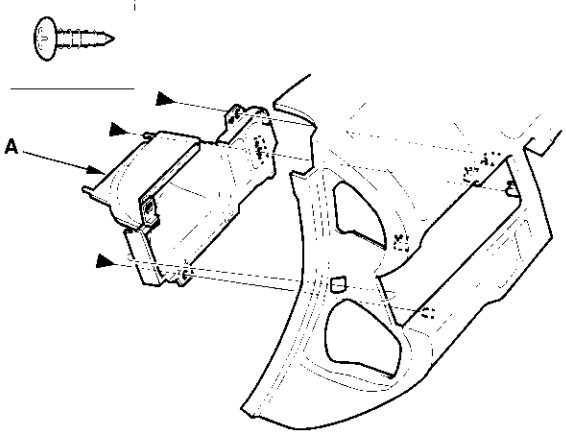
3. Install the beverage holder in the reverse order of removal.

Driver's Tray Removal/Installation

NOTE:
- Take care not to scratch the dashboard.
- Put on gloves to protect your hands.

1. Remove the dashboard (see page 20-66).
2. Remove the beverage holder (see page 20-64).
3. Remove the screws, then remove the driver's tray (A).

Fastener Locations
▶:Screw, 3



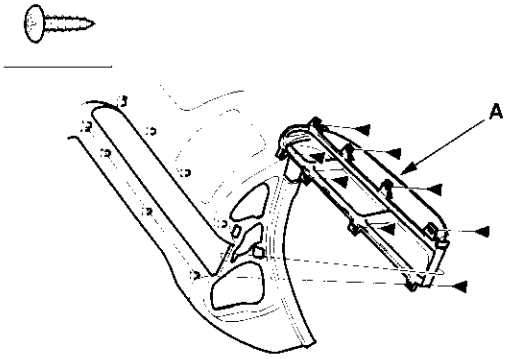
4. Install the tray in the reverse order of removal.

Passenger's Tray Removal/ Installation

NOTE:
- Take care not to scratch the dashboard.
- Put on gloves to protect your hands.

1. Remove the dashboard (see page 20-66).
2. Remove the steering hanger beam from the dashboard (see page 20-68).
3. Remove the air duct (see step 3 on page 20-64).
4. Remove the screws, then remove the passenger's tray (A).

Fastener Locations
▶:Screw, 8



5. Install the tray in the reverse order of removal.

Dashboard Removal/Installation

SRS components are located in this area. Review the SRS component locations (see page 23-13) and the precautions and procedures (see page 23-14) in the SRS section before performing repairs or service.

NOTE:
- When prying with a flat-tip screwdriver, wrap it with protective tape, and apply protective tape around the related parts to prevent damage.
- Have an assistant help you when removing and installing the dashboard.
- Take care not to scratch the dashboard, body, and other related parts.
- Put on gloves to protect your hands.

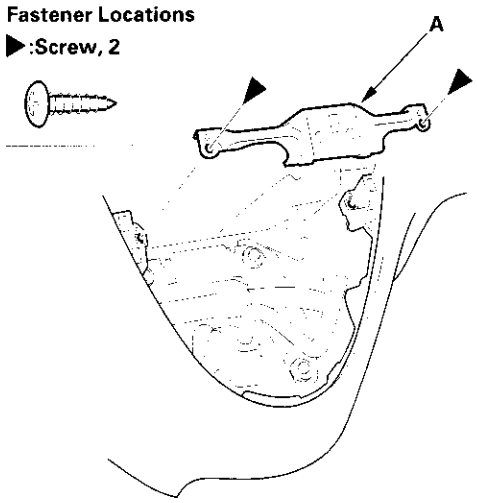
1. Make sure you have the anti-theft code for the radio, then write down the frequencies for the preset buttons.

2. Disconnect the negative cable from the battery, and wait at least three minutes before beginning work.

3. Remove these items:

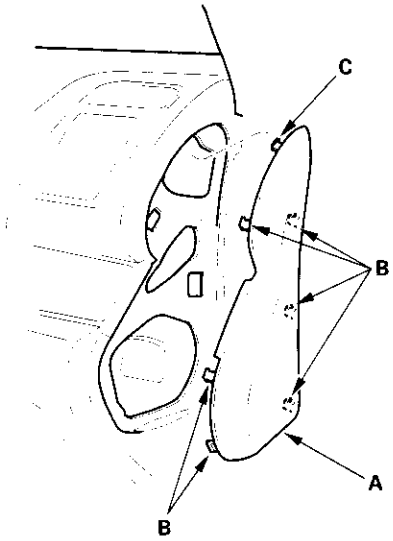
   - Driver's dashboard lower cover (see page 20-59)
   - Driver's dashboard under cover (see page 20-60)
   - Passenger's dashboard lower cover (see page 20-63)
   - Glove box (see page 20-63)
   - Consoles, front and rear (see page 20-57)
   - Shift lever trim (see page 20-61)
   - Center panel (see page 20-62)
   - Kick panels, both sides (see page 20-50)
   - A-pillar trim, both sides (see page 20-50)
   - Steering column (see page 17-9)

4. From the center panel opening, remove the screws, then remove the center bracket (A).



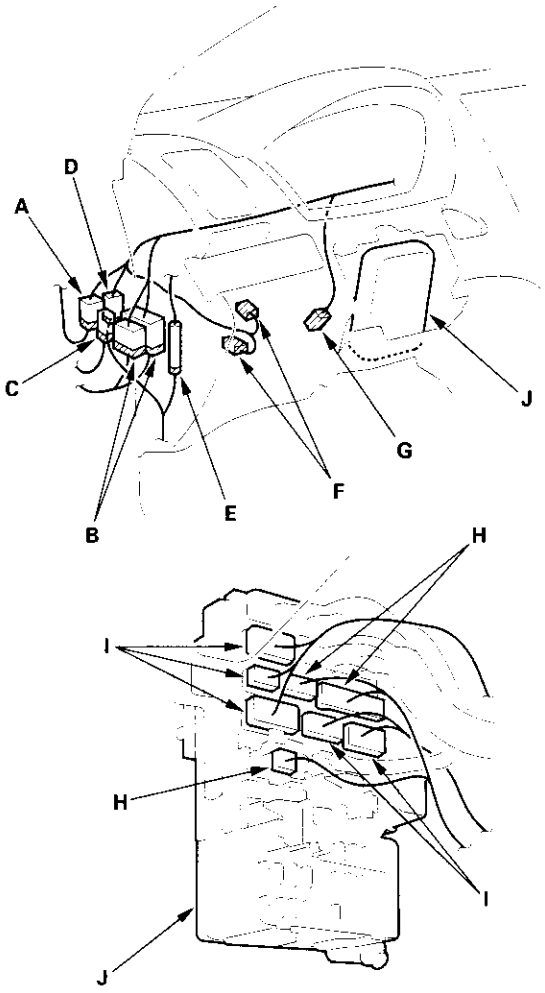
5. Remove the shift lever (see page 13-51).

6. From outside of the passenger's door, gently pull out along the edge of the dashboard side cover (A) to release the hooks (B), then release the upper hook (C), to remove the cover.



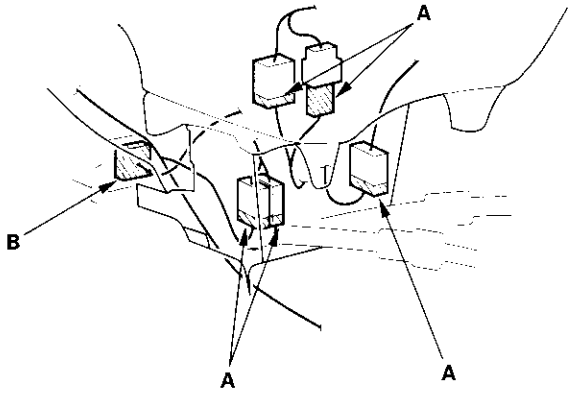
Driver's side:

7. From under the dash, disconnect the interior wire harness connector (A), driver's door wire harness connectors (B), side turn signal light connector (C), roof antenna connector (D), antenna lead (E), clutch switch connectors (F), and brake switch connector (G), and disconnect the floor wire harness connectors (H) and engine compartment wire harness connectors (I) from the under-dash fuse/relay box (J).



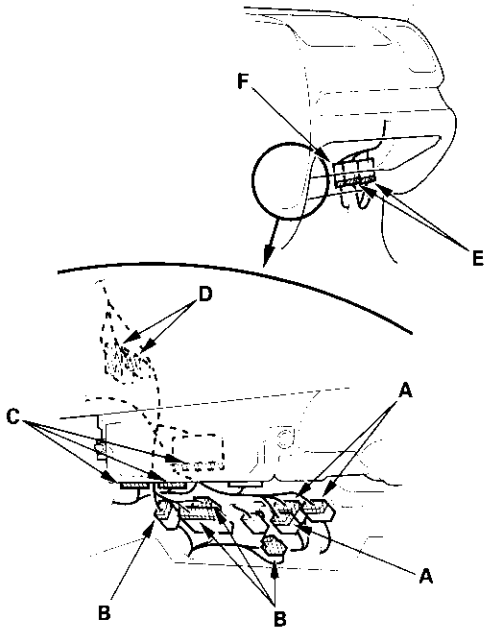
Middle portion:

8. Disconnect the floor wire harness connectors (A) and combination subharness connector (B).



Passenger's side:

9. From under the dash, disconnect the dashboard wire harness connectors (A), EPS subharness connectors (B), engine compartment wire harness connectors (C), A/C subharness connectors (D), passenger's door wire harness connectors (E), and side turn signal light connector (F).



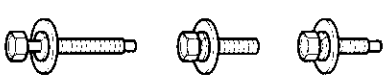
10. Detach all of the harness and connector clips.

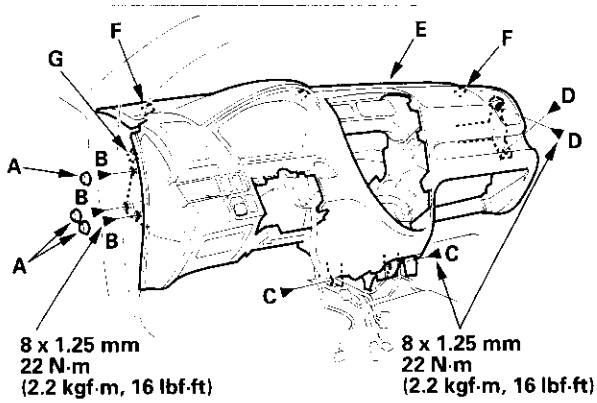
(cont'd)

Dashboard Removal/Installation (cont'd)

11. From outside the driver's door, remove the caps (A), then remove the bolts (B, C, D), and lift up on the dashboard (E) to release it from the guide pins (F, G) on the body.

Fastener Locations
B ▶:Bolt, 3 C ▶: Bolt, 2 D ▶: Bolt, 2





12. Carefully remove the dashboard through the front door opening.

13. Install the dashboard in the reverse order of removal, and note these items:

- Make sure the dashboard fits onto the guide pins correctly.
- Apply liquid thread lock to the dashboard mounting bolts of the middle portion before reinstallation.
- Before tightening the bolts, make sure each wire harness and control cables are not pinched.
- Make sure the connectors are plugged in properly, and the antenna lead is connected properly.
- Reconnect the negative cable to the battery.
- Enter the anti-theft code for the radio, then enter the customer's radio station presets.
- Reset the clock.
- Do the ECM/PCM idle learn procedure (see page 11-139).

Steering Hanger Beam Replacement

NOTE: Put on gloves to protect your hands.

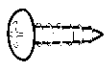
1. Remove the dashboard (see page 20-66).

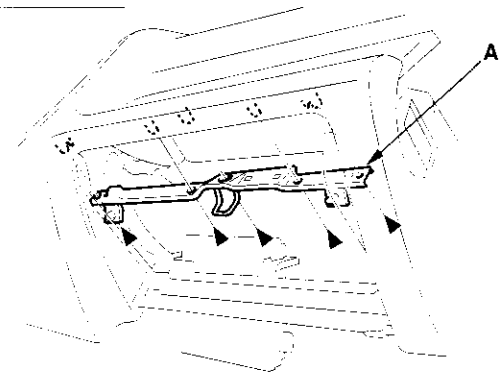
2. Remove these items from the dashboard:

- Instrument panel (see page 20-59)
- Driver's pocket (see page 20-60)
- Gauge assembly (see page 22-64)
- Passenger's airbag (see page 23-114)

3. Remove the screws, then remove the glove box striker (A).

Fastener Locations
▶:Screw, 4

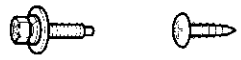


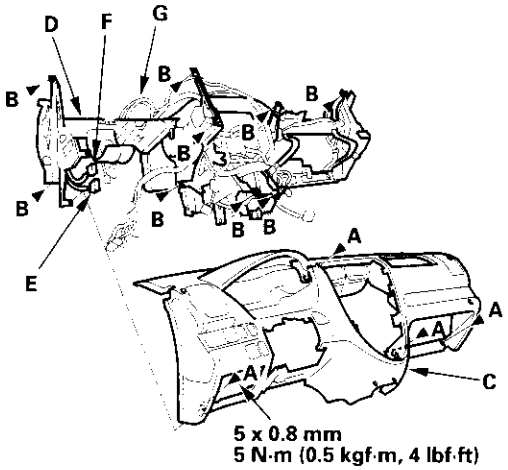


4. Remove the bolts (A) and screws (B) securing the dashboard (C) and steering hanger beam (D), and disconnect the power mirror switch connector (E) and cruise control main switch connector (F). Separate the dashboard and steering hanger beam.

Fastener Locations

A ▶ : Bolt, 4 B ▶ : Screw, 9

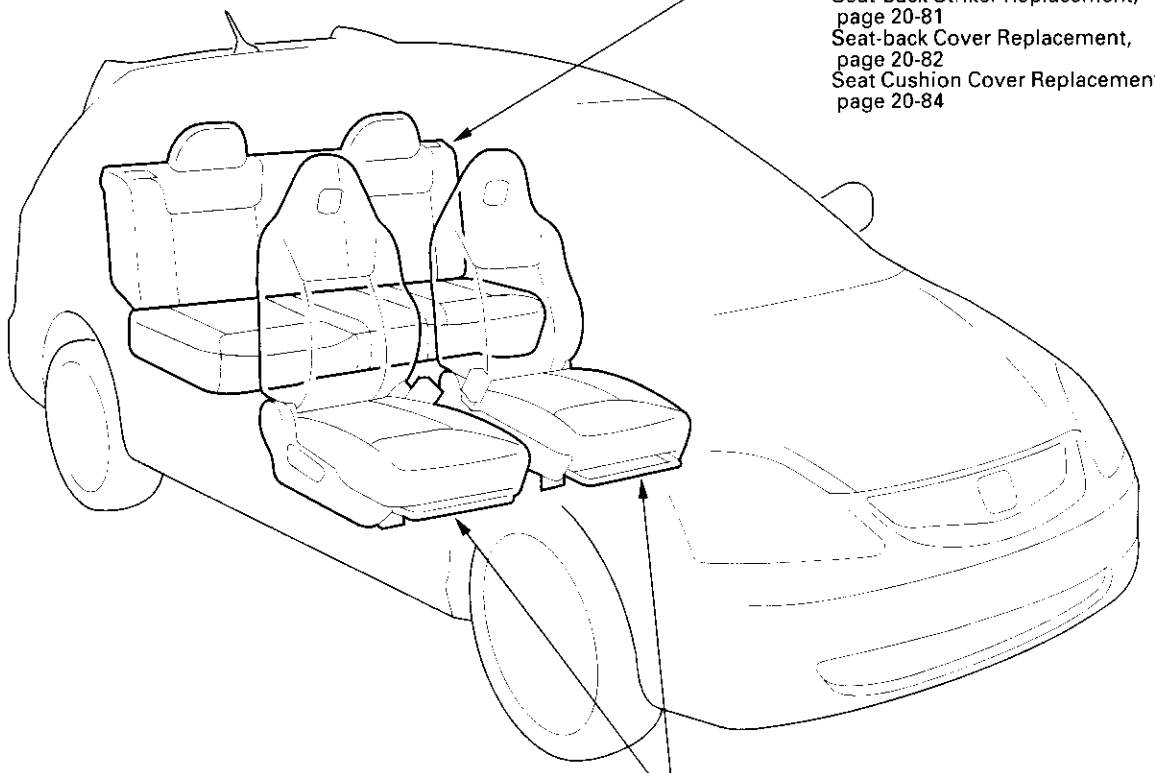




5. Install the beam in the reverse order of removal, and note these items:

   - Make sure the dashboard wire harness (G) is not pinched.
   - Make sure the connectors are plugged in properly.

Component Location Index



REAR SEAT
Removal/Installation, page 20-80
Seat-back Latch Replacement, page 20-81
Seat-back Striker Replacement, page 20-81
Seat-back Cover Replacement, page 20-82
Seat Cushion Cover Replacement, page 20-84

FRONT SEAT
Removal/Installation, page 20-71
Disassembly/Reassembly-Driver's, page 20-73
Disassembly/Reassembly-Passenger's, page 20-74
Seat Cover Replacement, page 20-75

Front Seat Removal/Installation

For some models: SRS components are located in this area. Review the SRS component locations (see page 23-13) and the precautions and procedures (see page 23-14) in the SRS section before performing repairs or service.

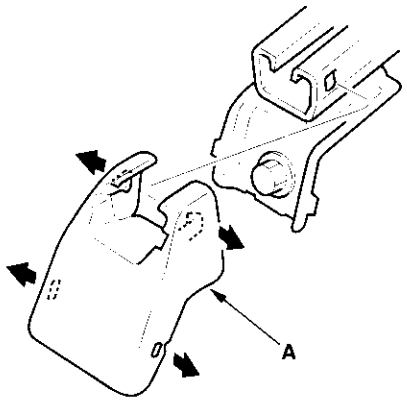
NOTE
- When prying with a flat-tip screwdriver, wrap it with protective tape to prevent damage.
- Take care not to scratch the body or tear the seat covers.
- Put on gloves to protect your hands.

1. Make sure you have the anti-theft code for the radio, then write down the frequencies for the preset buttons.

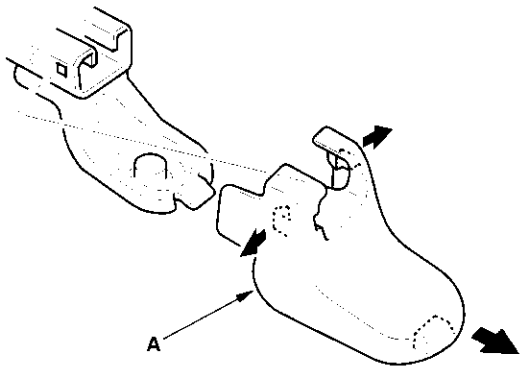
2. Disconnect the negative cable from the battery, and wait at least 3 minutes before beginning work.

3. Remove the seat track end covers (A) from the back of both seat tracks.

Outer:



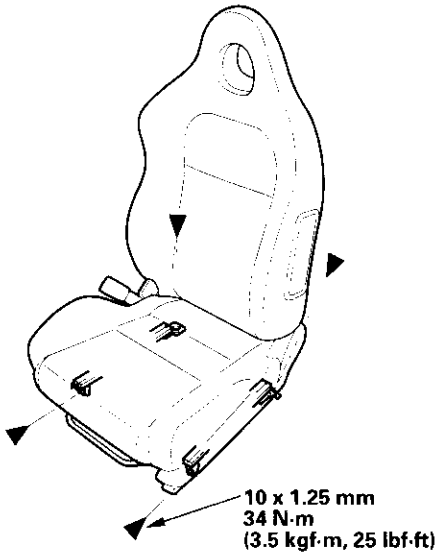
Inner:



4. Remove the bolts securing the front seat.

Fastener Locations

▶ : Bolt, 4



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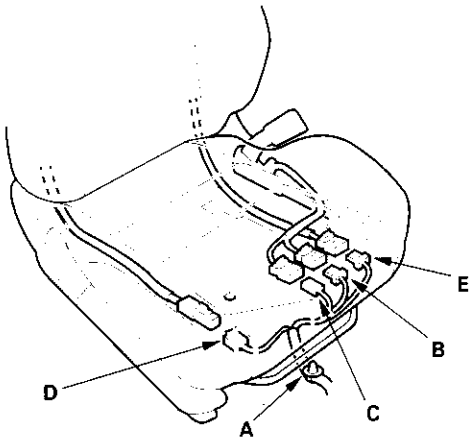
Front Seat Removal/Installation (cont'd)

5. Lift up the front seat, then detach the harness clip (A), and disconnect the seat belt switch connector (B) and seat belt buckle tensioner connector (C). If equipped with a side airbag, disconnect the side airbag connector (D), and on the passenger's seat, disconnect the OPDS unit connector (E). The passenger's seat is shown, the driver's seat is similar except it has no OPDS unit connector.



6. With the help of an assistant, carefully remove the front seat through the front door opening.

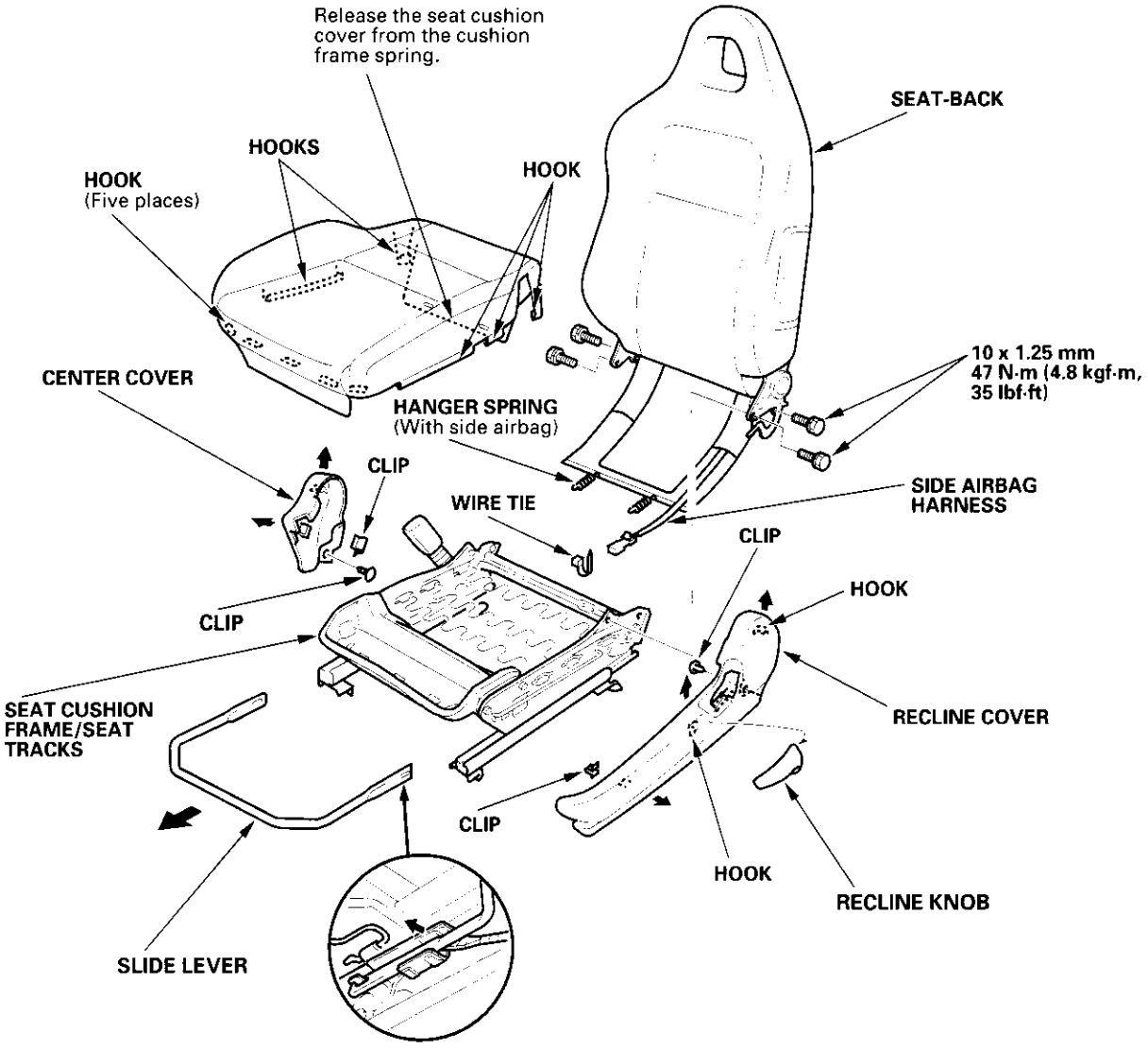
7. Install the seat in the reverse order of removal, and note these items:

   - Make sure each connector is plugged in properly.
   - Apply liquid thread lock to the seat mounting bolts before reinstallation.
   - Reconnect the negative cable to the battery.
   - Enter the anti-theft code for the radio, then enter the customer's radio station presets.
   - Reset the clock.
   - Do the ECM/PCM idle learn procedure (see page 11-139).

Front Seat Disassembly/Reassembly - Driver's

For some models: SRS components are located in this area. Review the SRS component locations (see page 23-13) and the precautions and procedures (see page 23-14) in the SRS section before performing repairs or service.

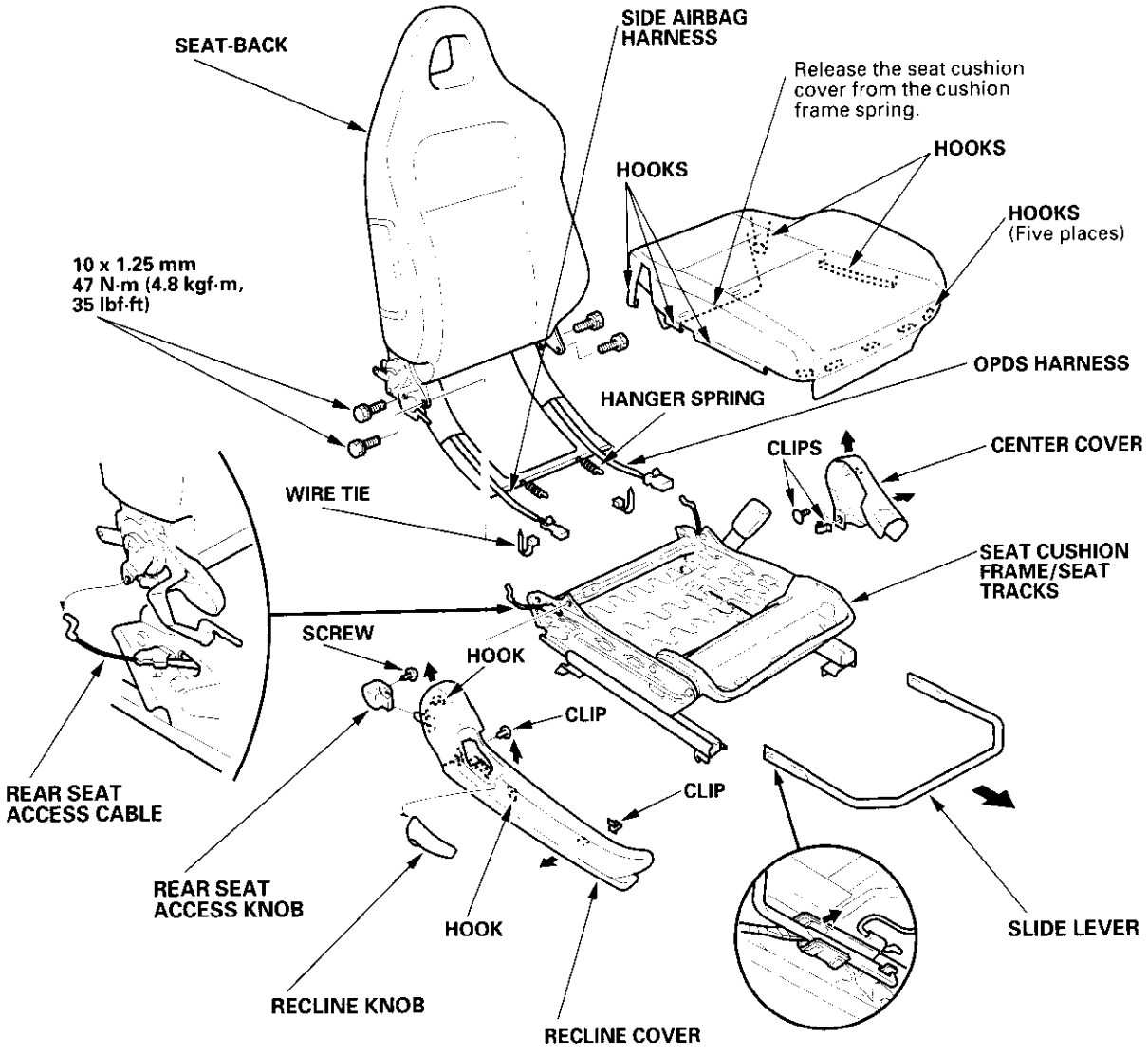
NOTE:
- Take care not to tear the seams or damage the seat covers.
- Put on gloves to protect your hands.
- When prying with a flat-tip screwdriver, wrap it with protective tape to prevent damage.
- Apply multipurpose grease to the moving portion of the seat track.
- To prevent wrinkles in the seat cushion cover, stretch the material evenly over the pad.



Front Seat Disassembly/Reassembly - Passenger's

For some models: SRS components are located in this area. Review the SRS component locations (see page 23-13) and the precautions and procedures (see page 23-14) before doing repairs or service.

NOTE:
- Take care not to tear the seams or damage the seat covers.
- Put on gloves to protect your hands.
- When prying with a flat-tip screwdriver, wrap it with protective tape to prevent damage.
- Apply multipurpose grease to the moving portion of the seat track.
- To prevent wrinkles in the seat cushion cover, stretch the material evenly over the pad.
- Make sure the rear seat access cable is connected properly on each side.
- Replace any damaged clips, and replace the wire ties with new ones.



Front Seat Cover Replacement

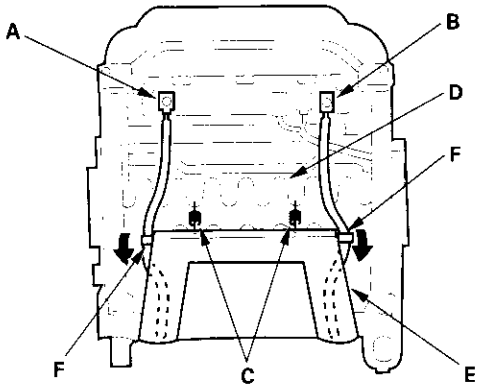
For some models: SRS components are located in this area. Review the SRS component locations (see page 23-13) and the precautions and procedures (see page 23-14) in the SRS section before performing repairs or service.

NOTE:
- Take care not to tear the seams or damage the seat covers.
- On the passenger's seat with side airbag, do not touch the OPDS sensor in the seat-back pad, and keep it away from oil. Oil can corrode the sensor causing it to fail.
- Put on gloves to protect your hands.

Seat-back Cover

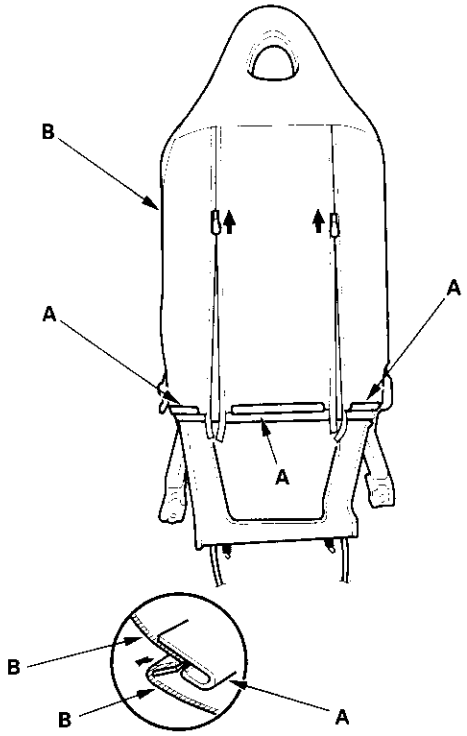
1. Remove the front seat (see page 20-71).

2. With side airbag: From under the seat cushion, detach the side airbag connector clip (A), and on the passenger's seat, detach the OPDS unit connector clip (B). Release the hook springs (C) from the seat cushion frame spring (D), then pull the guide cover (E) back, and remove the wire ties (F). The passenger's seat is shown, the driver's seat is symmetrical except it has no OPDS unit connector.



3. Fold the seat-back forward.

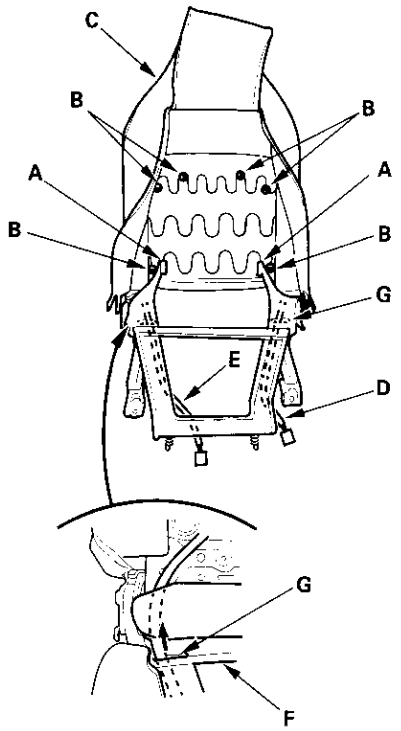
4. Release the hooks (A), and unzip the seat-back cover (B).



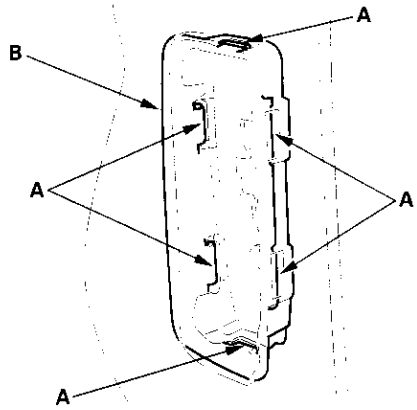
(cont'd)

Front Seat Cover Replacement (cont'd)

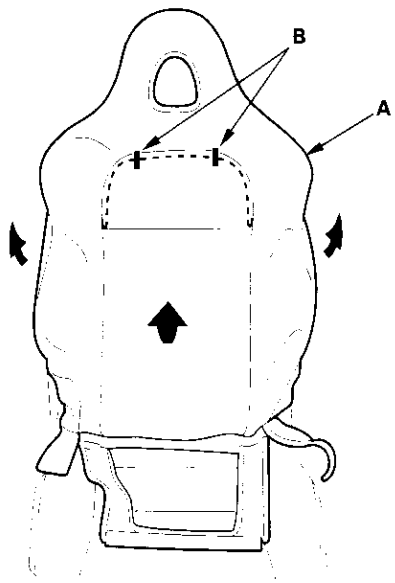
5. Release the hooks (A) and hook springs (B), then loosen the seat-back cover (C). Pull the side airbag harness (D) and the OPDS harness (E) (passengr's seat) out through the guide cover (F) and holes (G). Take care not to bend the cable.



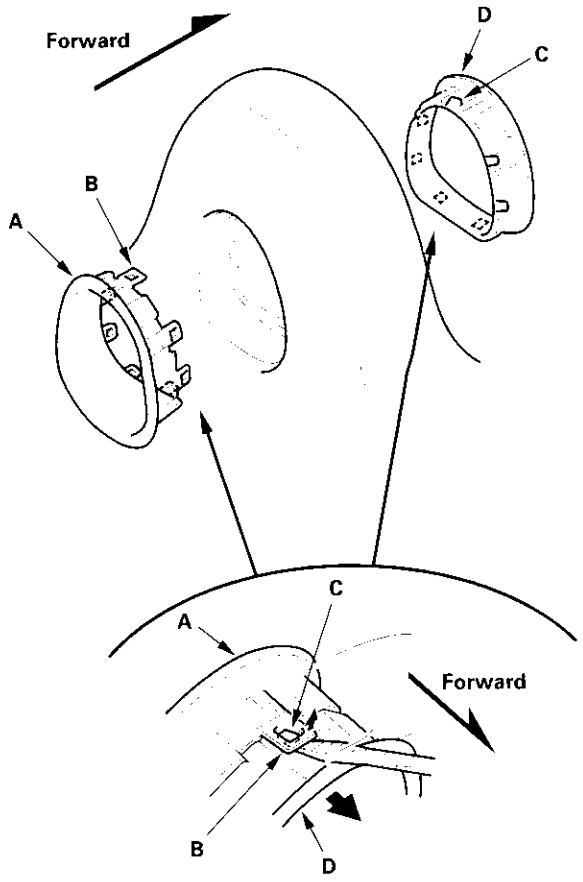
6. With side airbag: Remove the side airbag (see page 23-115), and release the hooks (A) from the airbag module holder (B).



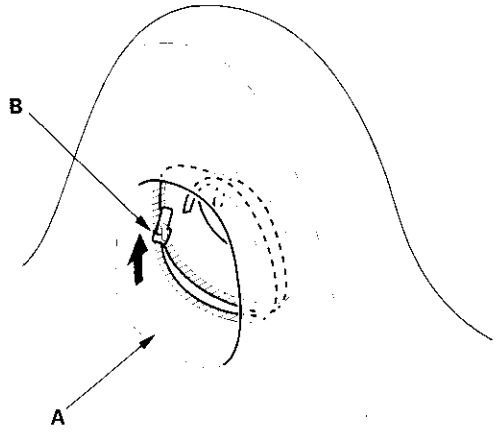
7. Pull back the seat-back cover (A) all the way around, and release the clips (B).



8. Using a flat-tip screwdriver wrapped with protective tape, insert it into the hook portions (seven places) of the headrest rear trim (A) from the headrest front trim side. Pry up the hooks (B) to release the tabs (C) of the headrest front trim (D) while pulling the headrest front trim forward, and remove the trim.



9. Unzip the headrest portion of the seat-back cover (A), then remove the zipper (B), and remove the cover.



10. Install the cover in the reverse order of removal, and note these items:

- Fit all the hooks of the headrest front trim into the holes in the headrest rear trim, then push on the headrest trim until the hooks snap into place.
- To prevent wrinkles when installing a seat-back cover, make sure the material is stretched evenly over the pad before securing the clips, hooks, and hook springs.
- Make sure the side airbag harness, OPDS harness (passenger's seat), and rear seat access cable (passenger's seat) are routed properly.
- If necessary, reinitialize the OPDS control unit (see page 23-124).

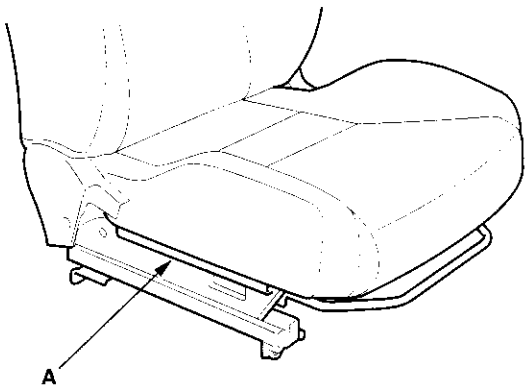
(cont'd)

Front Seat Cover Replacement (cont'd)

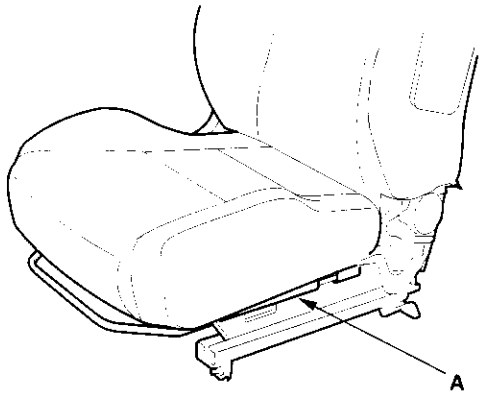
Seat Cushion Cover

1. Remove the front seat (see page 20-71).
2. Remove these items from the front seat:
   - Recline cover, driver's seat (see page 20-73) passenger's seat (see page 20-74)
   - Front seat belt buckle (see step 4 on page 23-6)
3. From under the seat cushion, detach the side airbag connector clip, and on the passenger's seat, detach the OPDS unit connector clip. Release the hook springs from the seat cushion frame spring, then pull the guide cover back, and remove the wire ties.
4. Release the hooks (A).

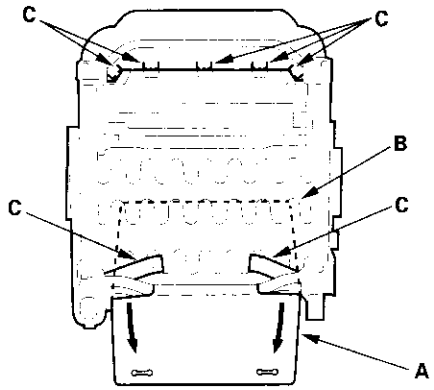
Inside:



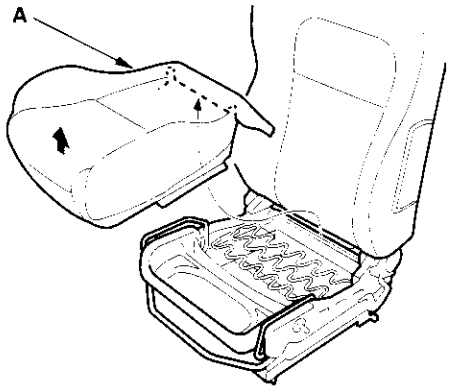
Outside:



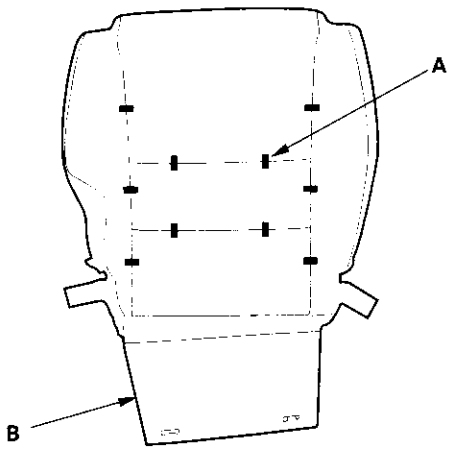
5. Release the seat-back cover (A) from the cushion frame spring (B), and release the hooks (C) from under the seat cushion.



6. Remove the seat cushion cover (A) with the seat cushion pad from the seat cushion frame.

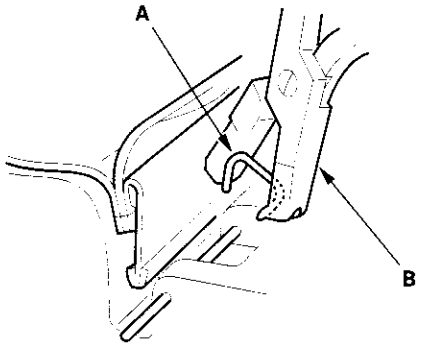


7. Pull back the edge of the seat cushion cover all the way around, and release the clips (A), then remove the seat cushion cover (B).



8. 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 clips and hooks.
- Make sure the side airbag harness and OPDS harness (passenger's seat) are routed properly.
- Replace any clips you removed with new ones (A). Install them with commercially available upholstery ring pliers (B).



Rear Seat Removal/Installation

NOTE: Take care not to scratch the body or tear the seat covers.

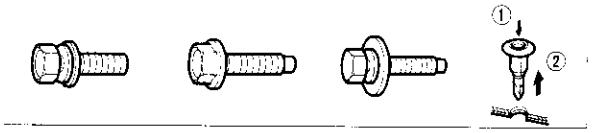
1. Remove the rear seat as shown. To remove the seat-back, remove the front portion of the cargo floor mat (see page 20-52).

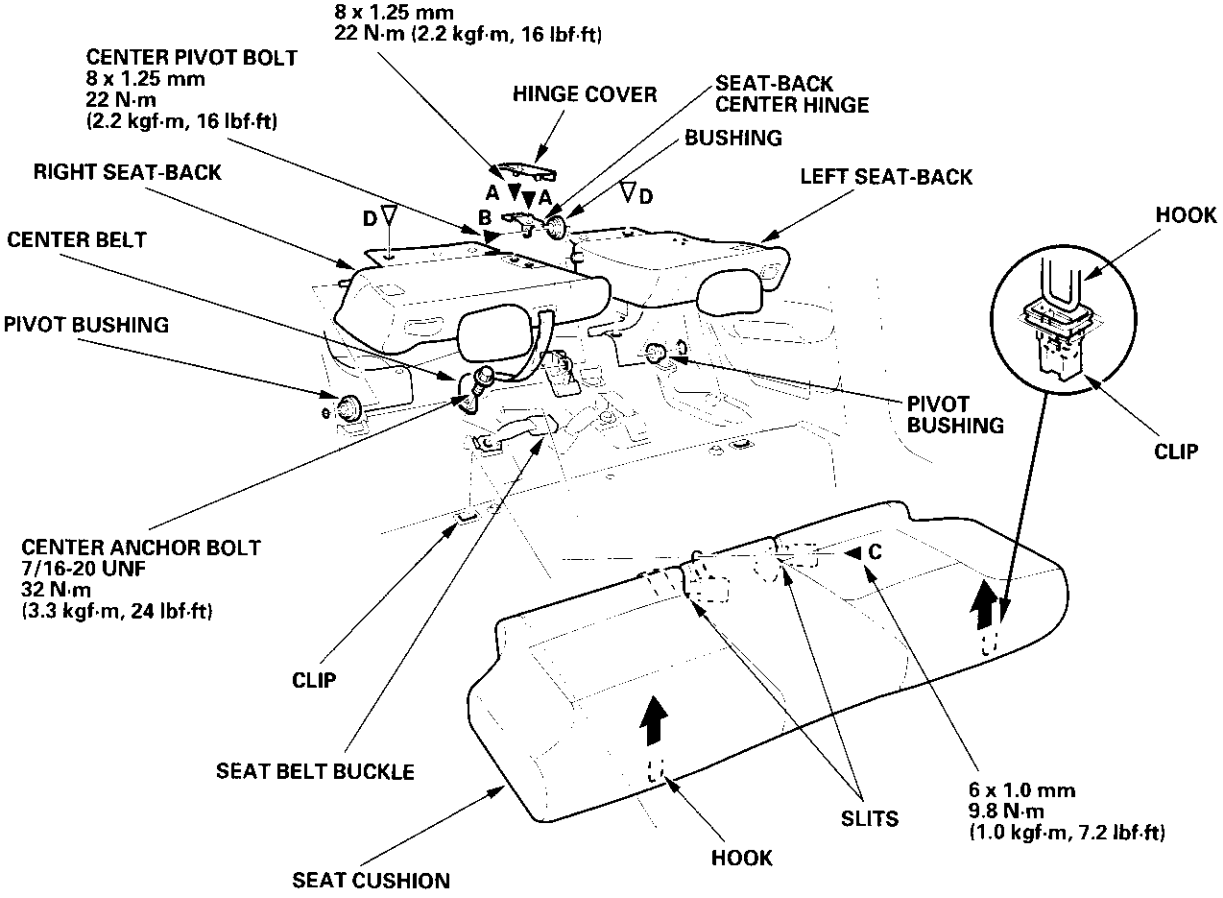
2. Install the seat in the reverse order of removal, and note these items:

   - Before installing the center anchor bolts on the seat-back with the center shoulder belt, make sure there are no twists or kinks in the belt.
   - Make sure the seat-backs lock securely.

Fastener Locations

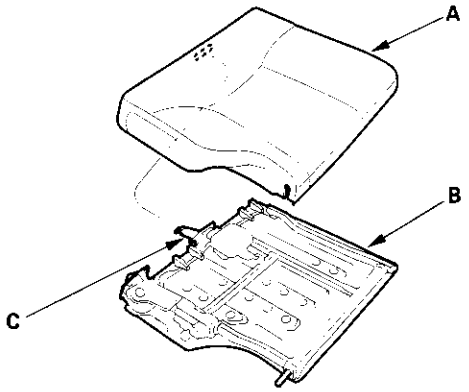
A ▶: Bolt, 2 B ▶: Bolt, 1 C ▶: Bolt, 1 D ▷: Clip, 2





Rear Seat-back Latch Replacement

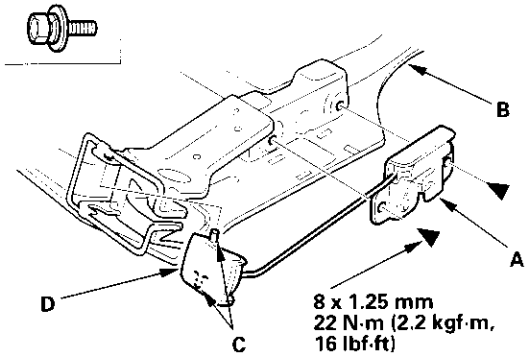
1. Remove the seat-back (see page 20-80).
2. Remove the seat-back cover (see page 20-82).
3. Remove the seat-back pad (A) from the seat-back frame (B). On right seat-back with center shoulder belt, pass the center belt (C) through the hole in the seat-back pad.



4. Remove the bolts, then remove the seat-back latch (A) from the seat-back frame (B), and release the pivot pin (C) of the latch lever (D) from the seat-back frame.

Fastener Locations

▶ : Bolt, 2



5. Install the latch in the reverse order of removal, and make sure the seat-back locks and unlocks properly.

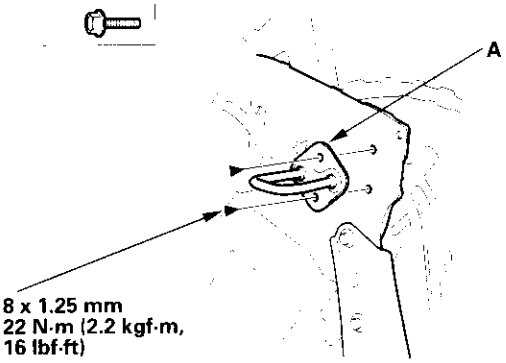
Rear Seat-back Striker Replacement

NOTE: Take care not to scratch the interior trim.

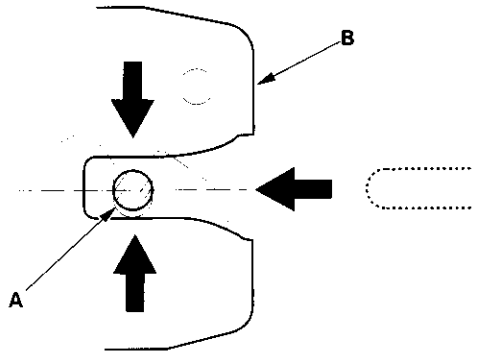
1. Remove the rear side trim panel (see page 20-51).
2. Remove the bolts, then remove the seat-back striker (A).

Fastener Locations

▶ : Bolt, 2



3. Install the striker in the reverse order of removal, and move the striker (A) up or down until it is centered in the seat-back latch (B).



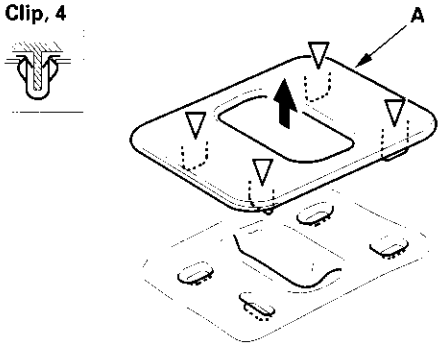
Rear Seat-back Cover Replacement

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 20-80).
2. Remove the headrest.
3. Pull up the latch cover (A) to release the clips, then remove it.

Fastener Locations

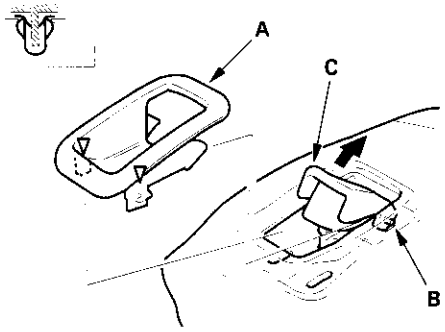
▷ : Clip, 4



4. Pull up the outside edge of the latch lever cover (A) to release the clips, and release the cover from the pivot pins (B) of the latch lever (C) while pulling the latch lever.

Fastener Locations

▷ : Clip, 2

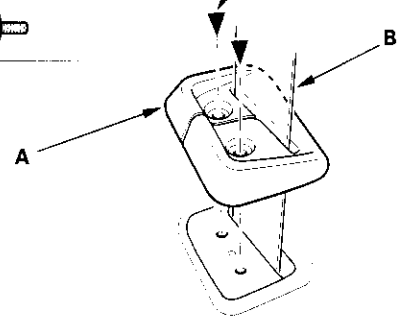


5. On right seat-back: Using a Torx T30 bit, remove the bolts, then remove the belt holder trim (A), and remove the trim from the center belt (B).

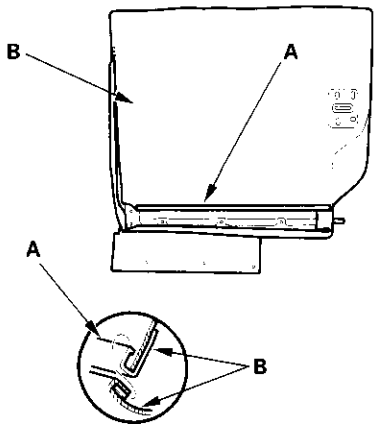
Fastener Locations

▶ : Bolt, 2

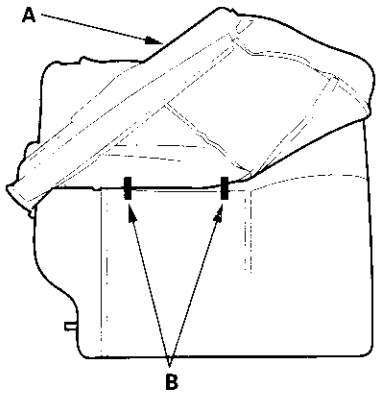
6 x 1.0 mm
9.8 N·m
(1.0 kgf·m, 7.2 lbf·ft)



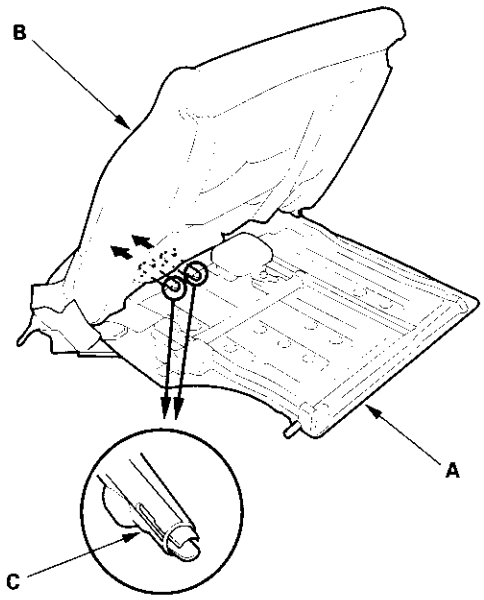
6. Release the hook (A), and unzip the seat-back cover (B). The right seat-back is shown, the left seat-back is similar.



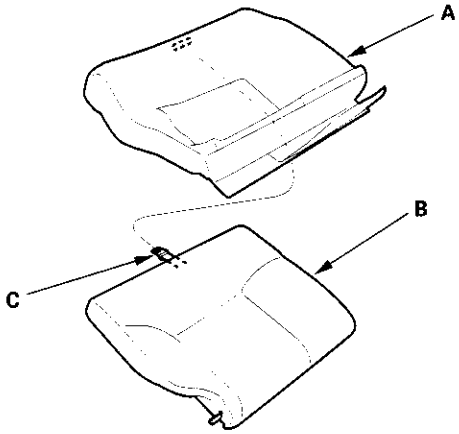
7. Pull back the edge of the seat-back cover (A), and release the clips (B).



8. Pull back the edge of the seat-back cover, and pull out the seat-back frame (A) from the seat-back pad (B), then pull out the headrest guide (C) while pinching the end of the guides, and remove them.



9. Remove the seat-back cover (A) from the seat-back pad (B). On right seat-back with center shoulder belt, pass the center belt (C) through the hole in the seat-back cover.



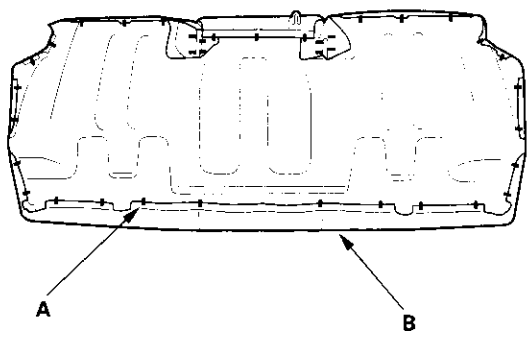
10. Install the cover in the reverse order of removal, and note these items:

- To prevent wrinkles when installing a seat-back cover, make sure the material is stretched evenly over the pad before securing the hooks and clips.
- On right seat-back: When installing the seat-back frame to the pad, slip the center belt through the hole in the seat-back cover and pad.
- Replace any clips you removed with new ones. Install them with commercially available upholstery ring pliers.

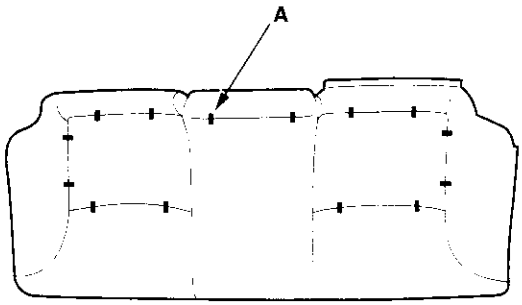
Rear Seat Cushion Cover Replacement

1. Remove the rear seat cushion (see page 20-80).

2. Release all the clips (A) from under the seat cushion, and fold back the seat cushion cover (B).

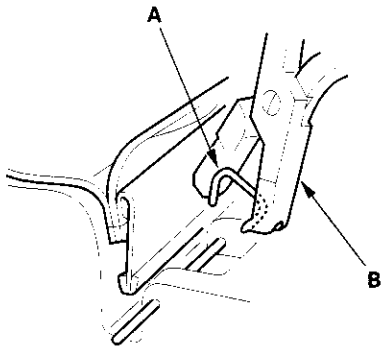


3. Pull back the edge of the seat cushion cover all the way around, and release the clips (A), then remove the seat cushion cover.



4. Install the cover in the reverse order of removal, and note these items:

   - To prevent wrinkles, make sure the material is stretched evenly over the pad before securing the clips.
   - Replace any clips (A) you removed with new ones. Install them with commercially available upholstery ring pliers (B).



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.

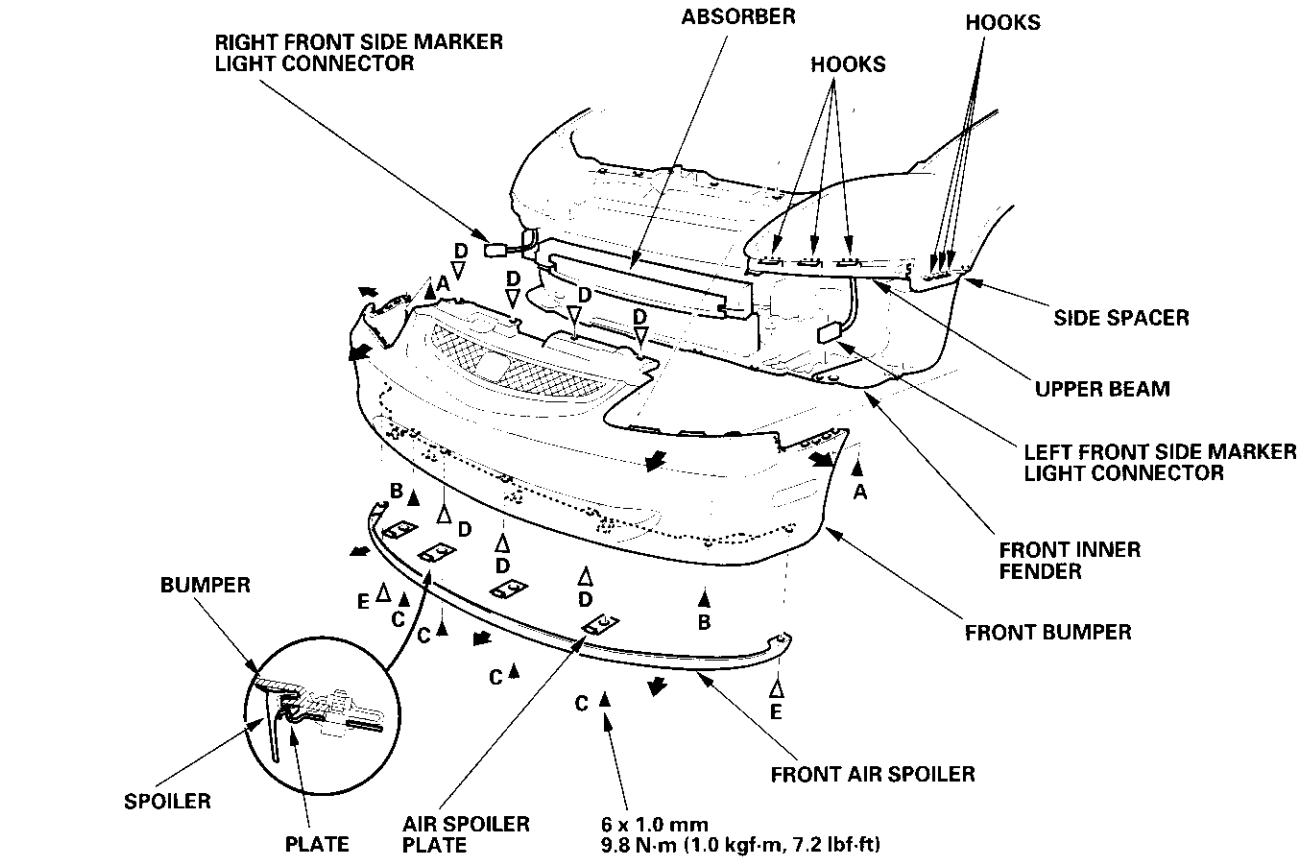
1. Remove the front bumper as shown.

2. Install the bumper in the reverse order of removal, and note these items:

   - Make sure both front side marker light connectors are plugged in properly.
   - Make sure the front bumper engages the hooks of the side spacers and upper beams on both sides securely.
   - Replace any damaged clips.

Fastener Locations

A ▶ : Screw, 2 B ▶ : Screw, 2 C ▶ : Bolt, 4 D ▷ : Clip, 7 E ▷ : Clip, 2



Rear Bumper Removal/Installation

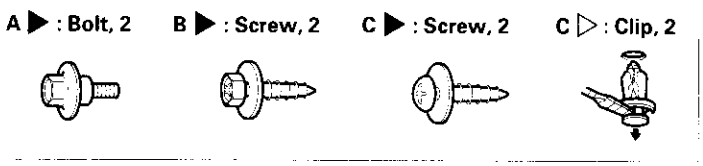
NOTE:
- Have an assistant help you when removing and installing the rear bumper.
- Take care not to scratch the rear bumper and body.
- When prying with a flat-tip screwdriver, wrap it with protective tape to prevent damage.
- Put on gloves to protect your hands.

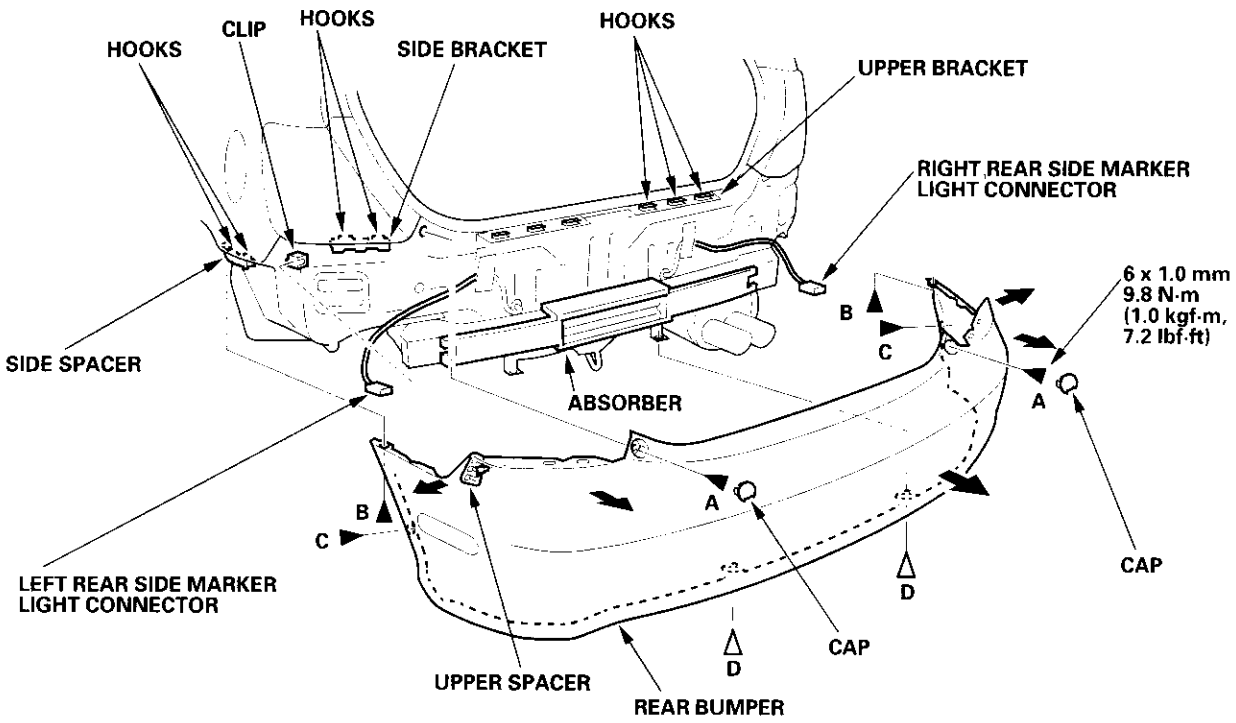
1. Remove the rear bumper as shown.

2. Install the bumper in the reverse order of removal, and note these items:

   - Make sure both rear side marker light connectors are plugged in properly.
   - Make sure the rear bumper engages the hooks of the side spacers, side brackets, and upper brackets on both sides securely.
   - Make sure the upper spacers of the rear bumper engage the clips on the body securely.
   - Replace any damaged clips.

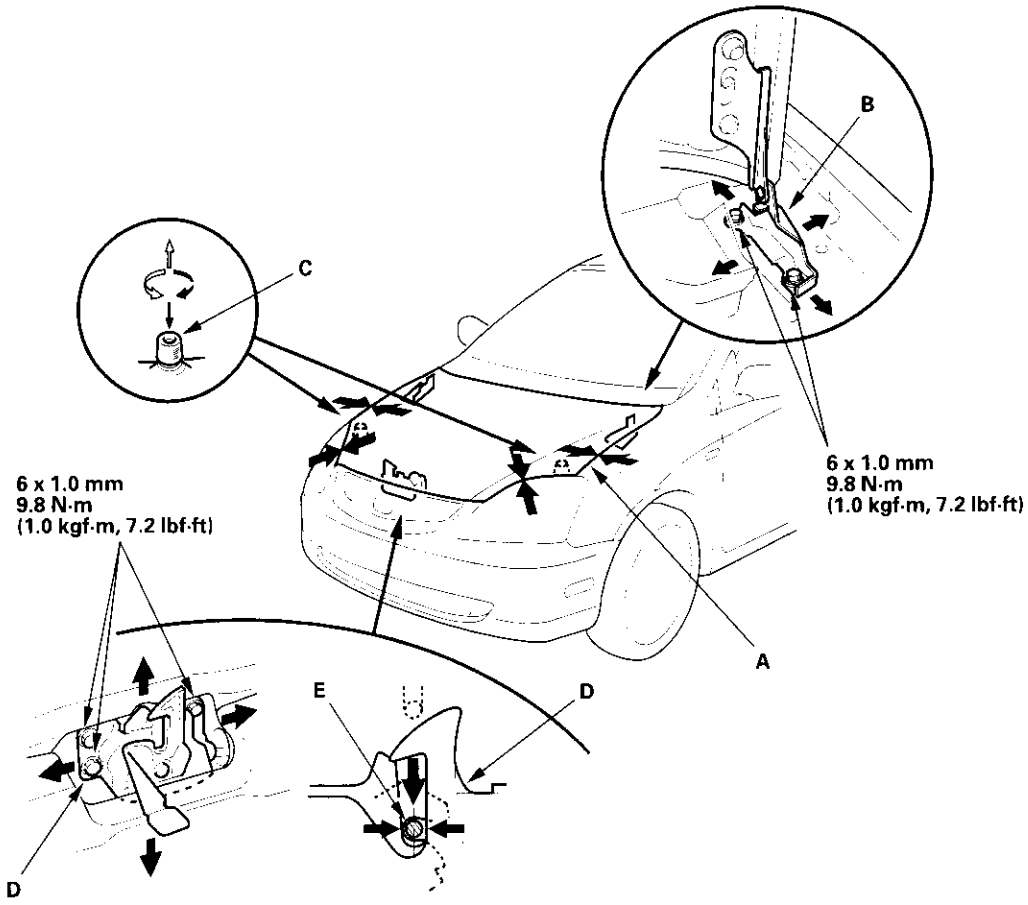
Fastener Locations





Adjustment

1. Slightly loosen each hood hinge bolt.
2. Adjust the hood (A) alignment in this sequence.
   - Adjust the hood right and left, as well as forward and rearward, by using the elongated holes on the hood hinge (B).
   - Turn the hood edge cushions (C), as necessary, to make the hood fit flush with the body at the front and side edges.

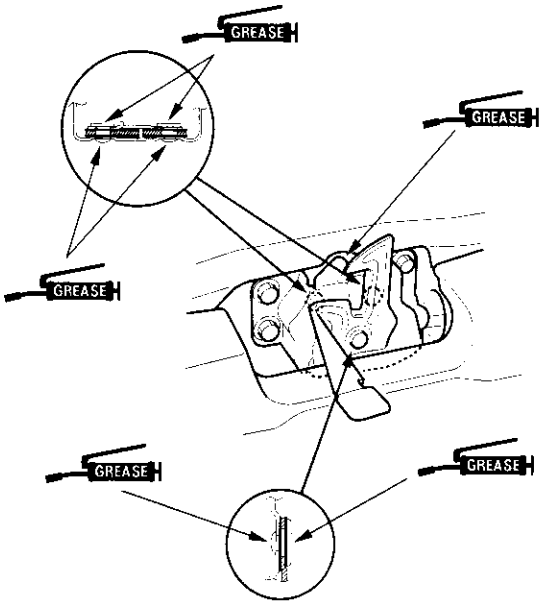


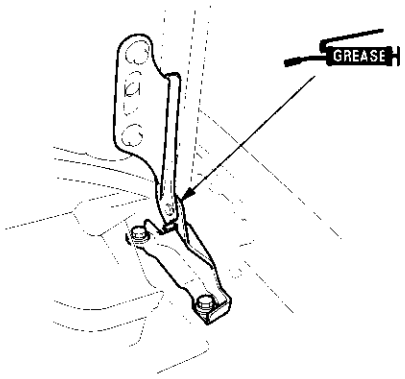
3. Adjust the hood latch (D) to obtain the proper height at the forward edge, and move the hood latch right or left until the striker (E) is centered in the hood latch.
4. Tighten each bolt securely.

(cont'd)

Adjustment (cont'd)

5. Check that the hood opens properly and locks securely.
6. Apply body paint to the hinge mounting bolts and around the hinges.
7. Apply multipurpose grease to each location of the hood latch and hood hinge as indicated by the arrows.



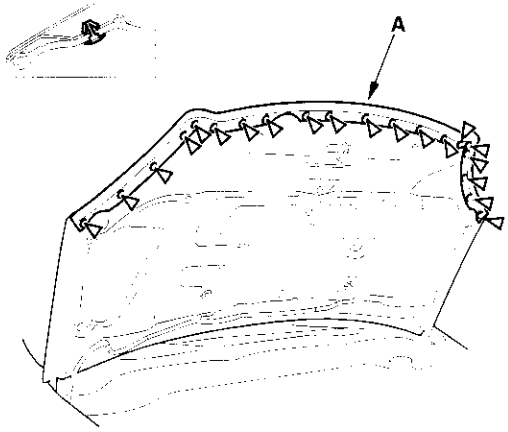


Hood Seal Replacement

1. Using a clip remover, detach the clips, then remove the hood seal (A). Take care not to scratch the hood.

Fastener Locations

▷: Clip, 20



2. Install the seal in the reverse order of removal, and note these items:

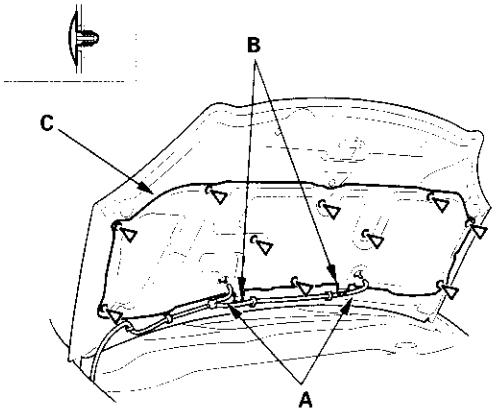
- Replace any damaged clips.
- Push the clips into place securely.

Hood Insulator Replacement

1. Disconnect the windshield washer tubes (A).

Fastener Locations

▷ : **Clip, 10**



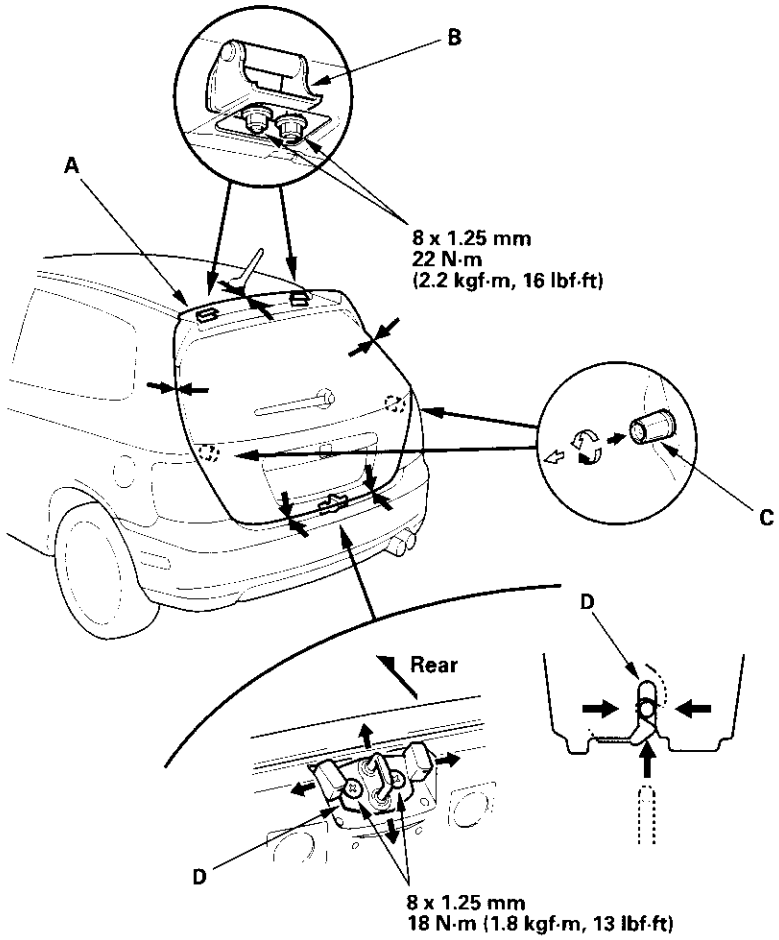
2. Using a clip remover, detach the clips. Release the hooks (B), then remove the hood insulator (C). Take care not to scratch the hood.

3. Install the insulator in the reverse order of removal, and note these items:

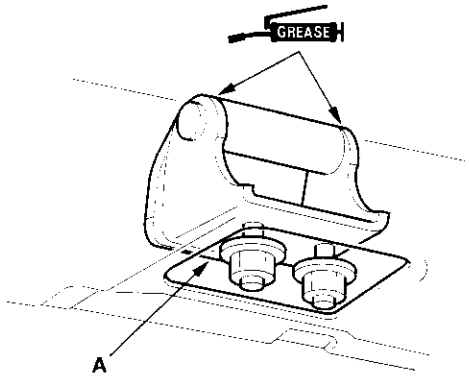
   - Replace any damaged clips.
   - Push the clips into place securely.

Adjustment

1. Remove the support strut from each side (see page 20-91).
2. Remove the C-pillar trim from each side (see page 20-51), and pull down the rear portion of the headliner (see page 20-54). Take care not to bend the headliner excessively.
3. Remove the rear trim panel (see page 20-52).
4. Slightly loosen each bolt and nut.
5. Adjust the hatch (A) alignment in the following sequence.
   - Adjust the hatch hinges (B) right and left, as well as forward and rearward, using the elongated holes.
   - Turn the hatch edge cushions (C), in or out as necessary, to make the hatch (D), fit flush with the body at the side edges.
   - Adjust the fit between the hatch and hatch opening by moving the striker (D).

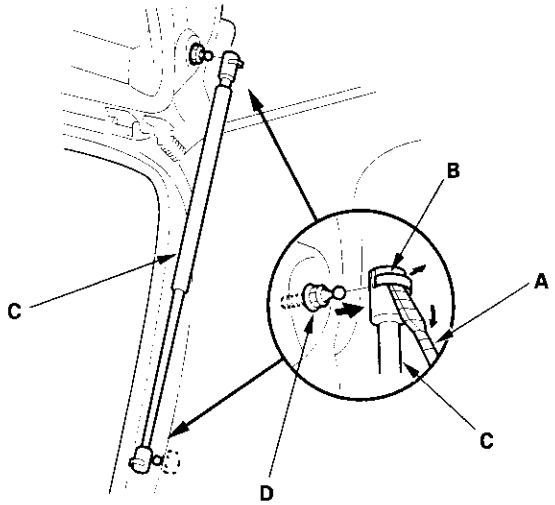


6. Tighten each bolt and nut securely.
7. Check that the hatch opens properly and locks securely.
8. Reinstall the support struts securely.
9. Reinstall all remaining removed parts.
10. Apply multipurpose grease to the pivot portion of the hatch hinges (A) as indicated by the arrows.

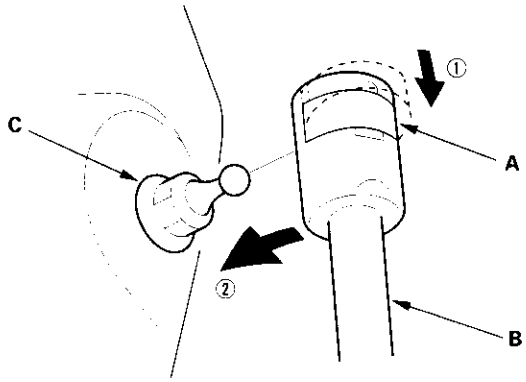


Hatch Support Strut Replacement

1. With the help of an assistant, use a flat-tip screwdriver (A) to pry the support strut clips (B) from each end of the support strut (C) at the hatch and body, then release the support strut from the pivot bolts (D). Do not remove the clips from the support strut.

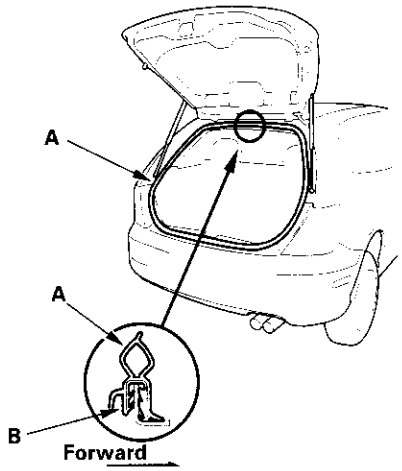


2. Set the clips (A) to the original position, then reattach the support strut (B) on the pivot bolts (C) by pushing on the support strut.



Hatch Weatherstrip Replacement

1. Remove the hatch weatherstrip (A) by pulling out on it.

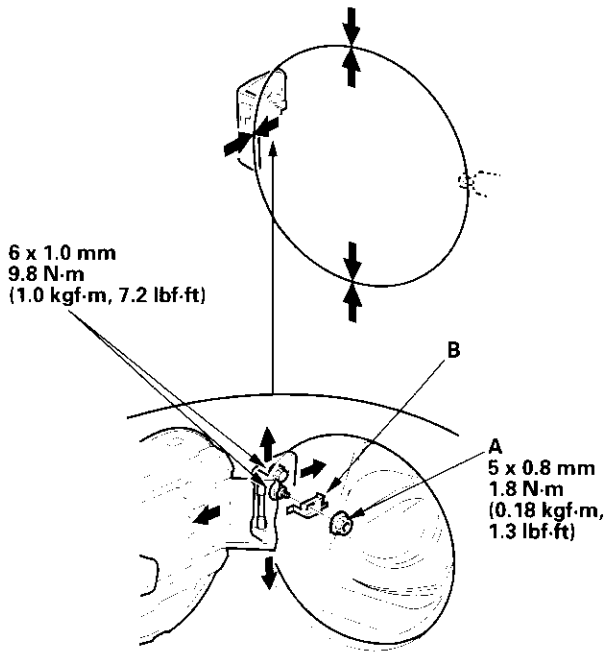


2. Locate the painted alignment mark (B) on the hatch weatherstrip. Align the painted mark with the alignment tab in the the center of the hatch opening, and install the hatch weatherstrip all the way around in the direction shown. Make sure there are no wrinkles in the weatherstrip.

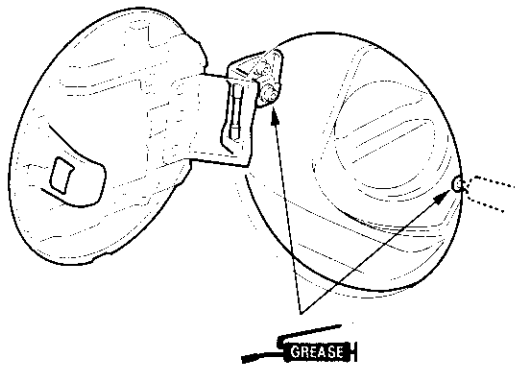
3. Check for water leaks.

Adjustment

1. Remove the nut (A), and remove the fuel fill door open spring (B).



2. Slightly loosen the hinge mounting bolts (A).
3. 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.
4. Tighten the hinge mounting bolts.
5. Reinstall the fuel fill door spring.
6. Check that the fuel fill door opens properly and locks securely, and check that the rear of the door is flush with the body.
7. Apply multipurpose grease to each location indicated by the arrows.



8. Apply body paint to the hinge mounting bolts and around the hinges.

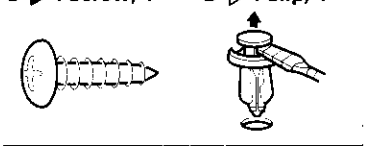
Front Grille Replacement

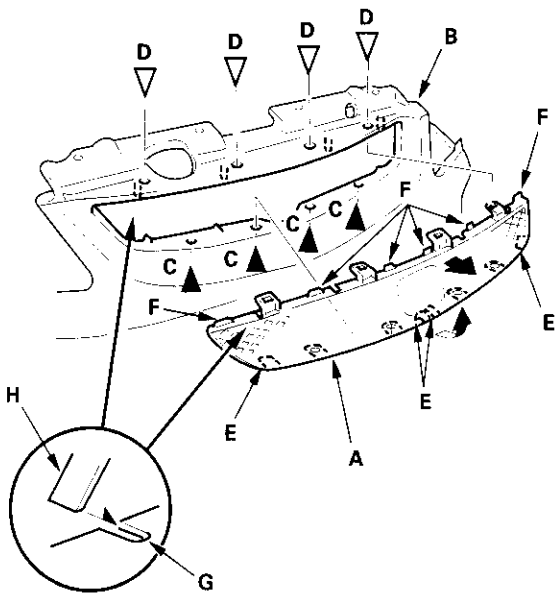
1. Remove the front bumper (see page 20-85).

2. Remove the front grille (A). Take care not to scratch the front bumper (B).

   –1 Remove the screws (C).
   –2 Remove the clips (D).
   –3 Release the bottom hooks (E) of the grille.
   –4 Pull out the bottom of the grille to release the upper hooks (F).
   –5 Pull out the grille to release the slits (G) from the ribs (H), then remove the grille.

Fastener Locations
C ▶ : Screw, 4 **D ▷ : Clip, 4**





3. Install the grille in the reverse order of removal, and replace any damaged clips.

4. Reinstall the front bumper.

Cowl Covers Replacement

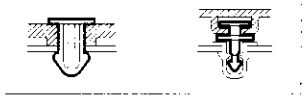
1. Remove the windshield wiper arms (see page 22-145).

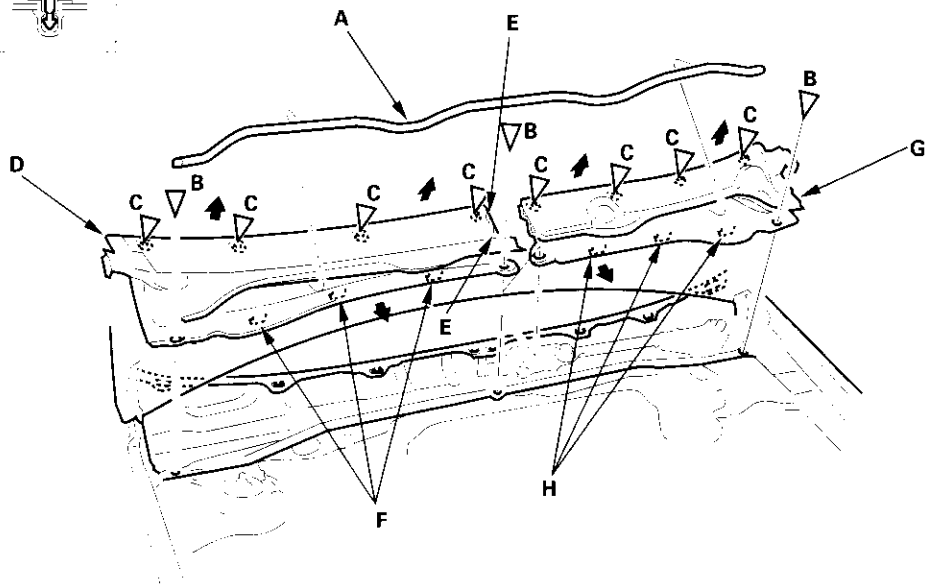
2. Remove the windshield side trim from both sides (see step 2 on page 20-19).

3. Pull the hood rear seal (A) away from the cowl covers, then remove it, and using a clip remover, detach the clips (B) from the cowl covers. Take care not to scratch the cowl covers.

Fastener Locations

B ▷ : Clip, 3 **C ▷ : Clip, 8**





4. Detach the clips (C) by carefully pulling the passenger's cowl cover (D) upward, to release the hooks (E), and pull out the cover forward to release the hooks (F), then remove the cover. Take care not to scratch the body.

5. Detach the clips (C) by carefully pulling the driver's cowl cover (G) upward, and pull out the cover forward to release the hooks (H), then remove the cover. Take care not to scratch the body.

6. Install the covers in the reverse order of removal, and note these items:

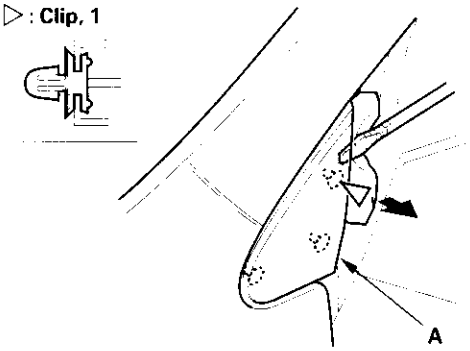
   - Replace any damaged clips.
   - Push the clip portions into place securely.
   - Reinstall both windshield side trim properly (see step 26 on page 20-24).

A-Pillar Corner Trim Replacement

1. Open the door.
2. Wrap a flat-tip screwdriver with protective tape, and apply protective tape around the body to prevent damage. Carefully insert a flat-tip screwdriver next to the upper clip, and detach the clip by prying on the A-pillar corner trim (A). Take care not to scratch the body and related parts.

Fastener Location

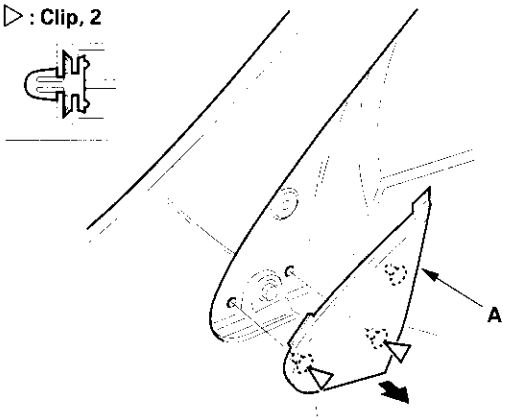
▷: **Clip, 1**



3. Close the door half-way.
4. Pull the A-piller corner trim (A) out to detach the lower clips, then remove the trim.

Fastener Locations

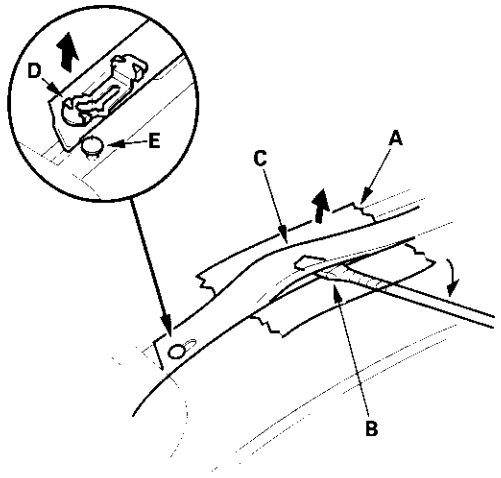
▷: **Clip, 2**



5. Replace any damaged clips.
6. Hold the trim up, and fit the upper clip and lower clips into the holes in the body, then push on the trim until the clips snap into place.

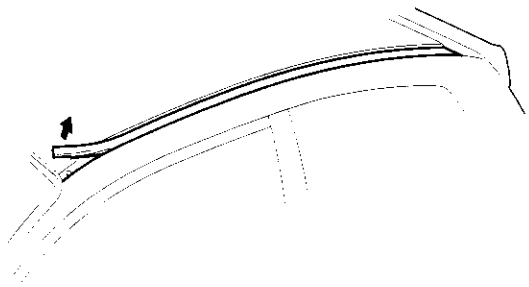
Roof Molding Replacement

1. Apply protective tape to the body (A). Using a flat-tip screwdriver wrapped with protective tape (B), pry up on the roof molding (C). Take care not to scratch the body.

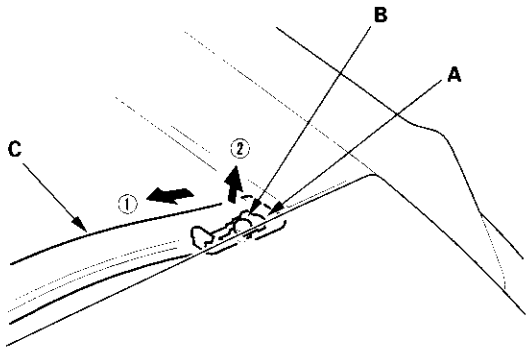


2. Pull up and slide the roof molding to release the front bracket (D) from the pin (E).

3. Pull up the front portion of roof molding.

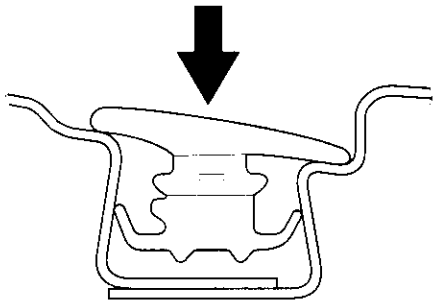


4. Pull up and release the rear bracket (A) from the pin (B), then remove the roof molding (C).



5. Install the molding in the reverse order of removal, and note these items:

   - Take care not to damage the windshield molding.
   - Make sure the roof molding is installed securely.



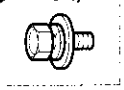
Rear License Trim Replacement

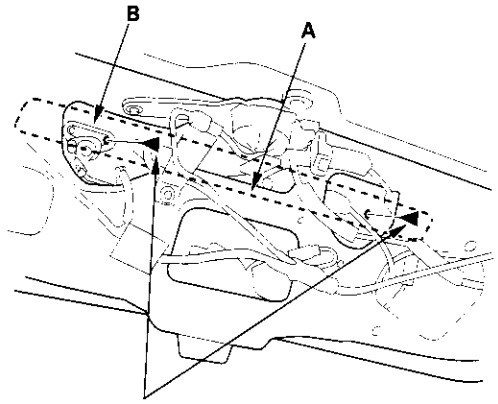
NOTE: Put on gloves to protect your hands.

1. Remove the hatch lower trim panel (see page 20-53).
2. On inside the hatch, remove the bolts securing the rear license trim (A) and hatch lock cylinder (B).

Fastener Locations

▶ : Bolt, 2



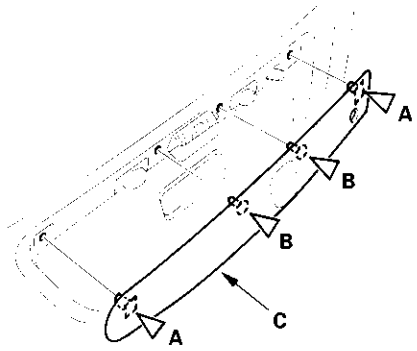


6 x 1.0 mm
9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)

3. From inside the hatch, release the clips (A, B) while holding the rear license trim (C), then remove the trim. Take care not to scratch the hatch.

Fastener Locations

A ▷ : Clip, 2 **B ▷ : Clip, 2**



4. Install the trim in the reverse order of removal, and note these items:

- Replace any damaged clips.
- Push the clip portions into place securely.

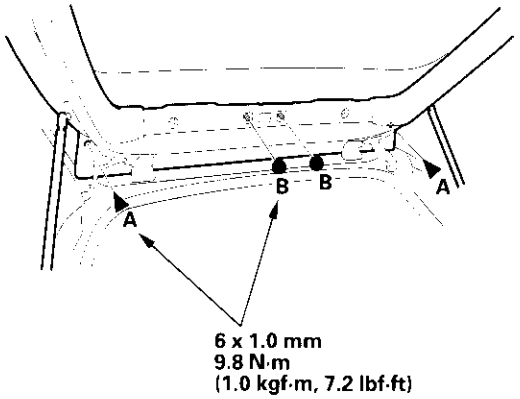
Hatch Spoiler Replacement

NOTE: Put on gloves to protect your hands.

1. Remove the hatch upper trim (see page 20-53).
2. Remove the high mount brake light (see page 22-82).
3. From inside the hatch, remove the bolts (A) and nuts (B).

Fastener Locations

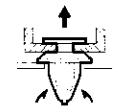
A▶: Bolt, 2 B●: Nut, 2

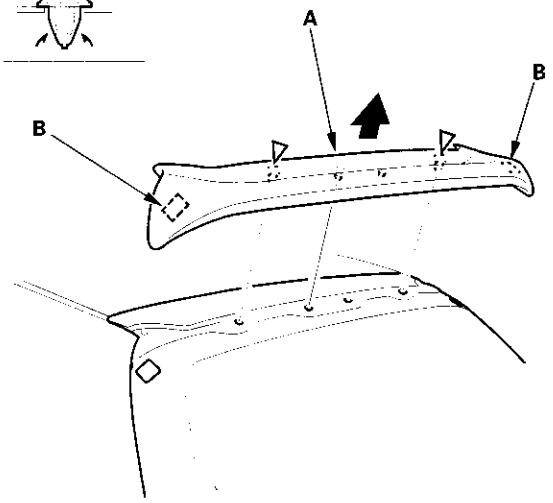


4. From inside the hatch, release the clips, while pulling the hatch spoiler (A) away, and release the fasteners (B), then remove the spoiler. Take care not to scratch the body.

Fastener Locations

▷: Clip, 2





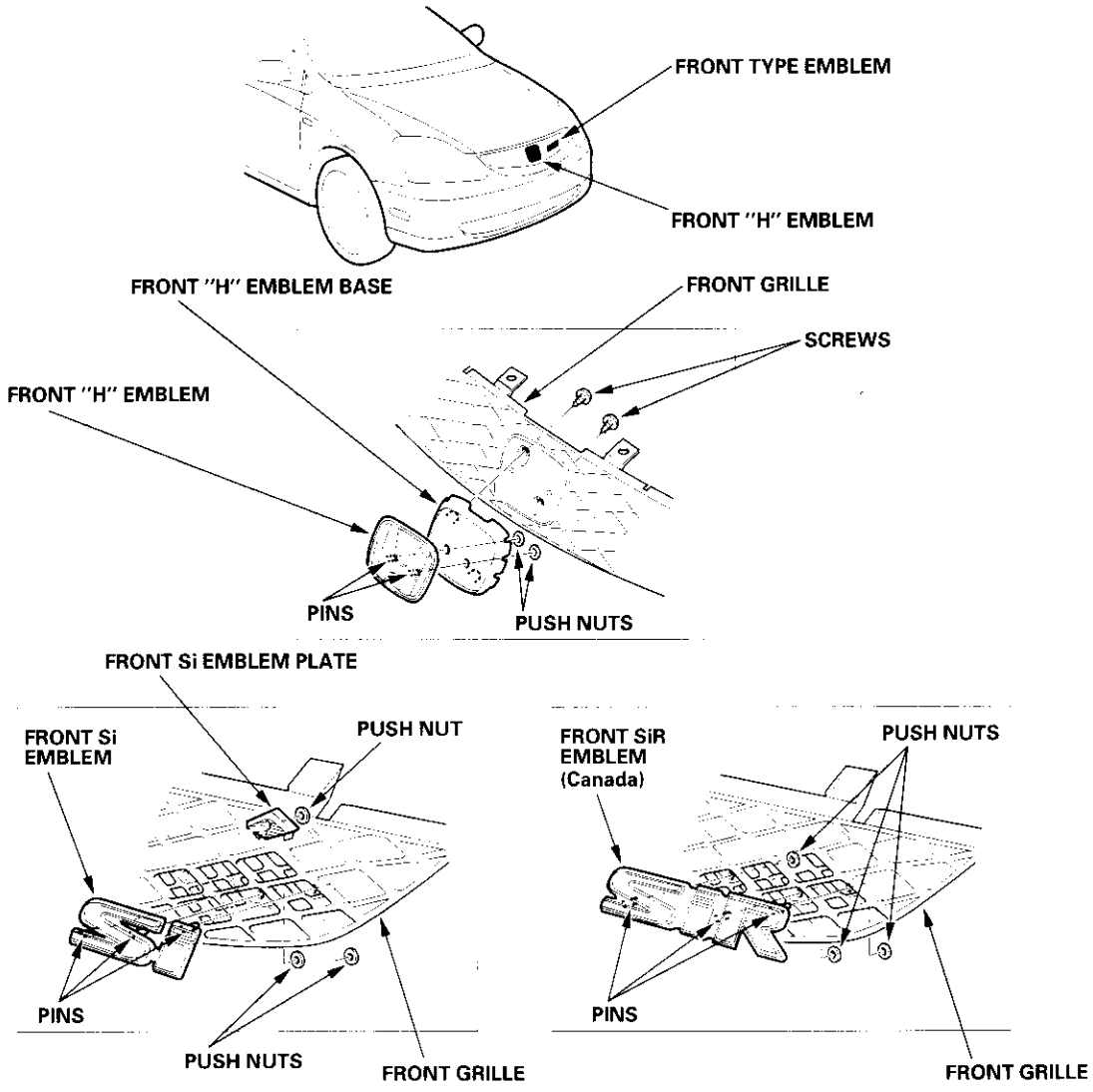
5. Install the spoiler in the reverse order of removal, and note these items:

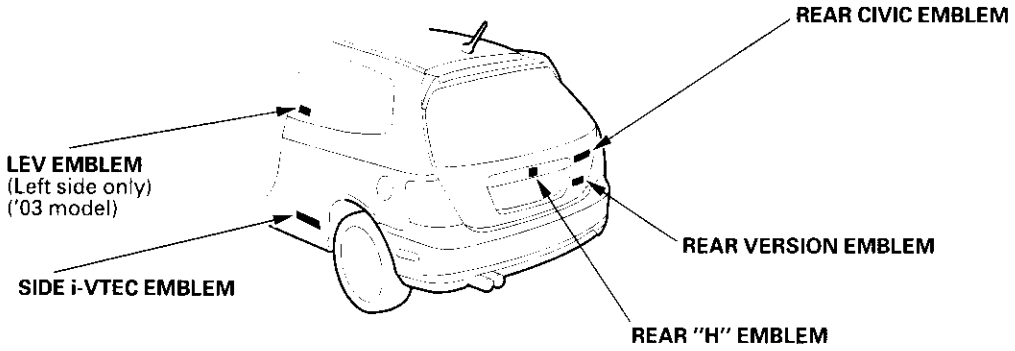
- Replace any damaged clips.
- Replace any damaged fasteners. Before installing the fastener to the spoiler, clean the spoiler bonding surface with a sponge dampened in alcohol. Glue the fastener with adhesive tape (3M 5671, or equivalent) to the spoiler.
- Push the clip and fastener portions into place securely.

Emblem Replacement

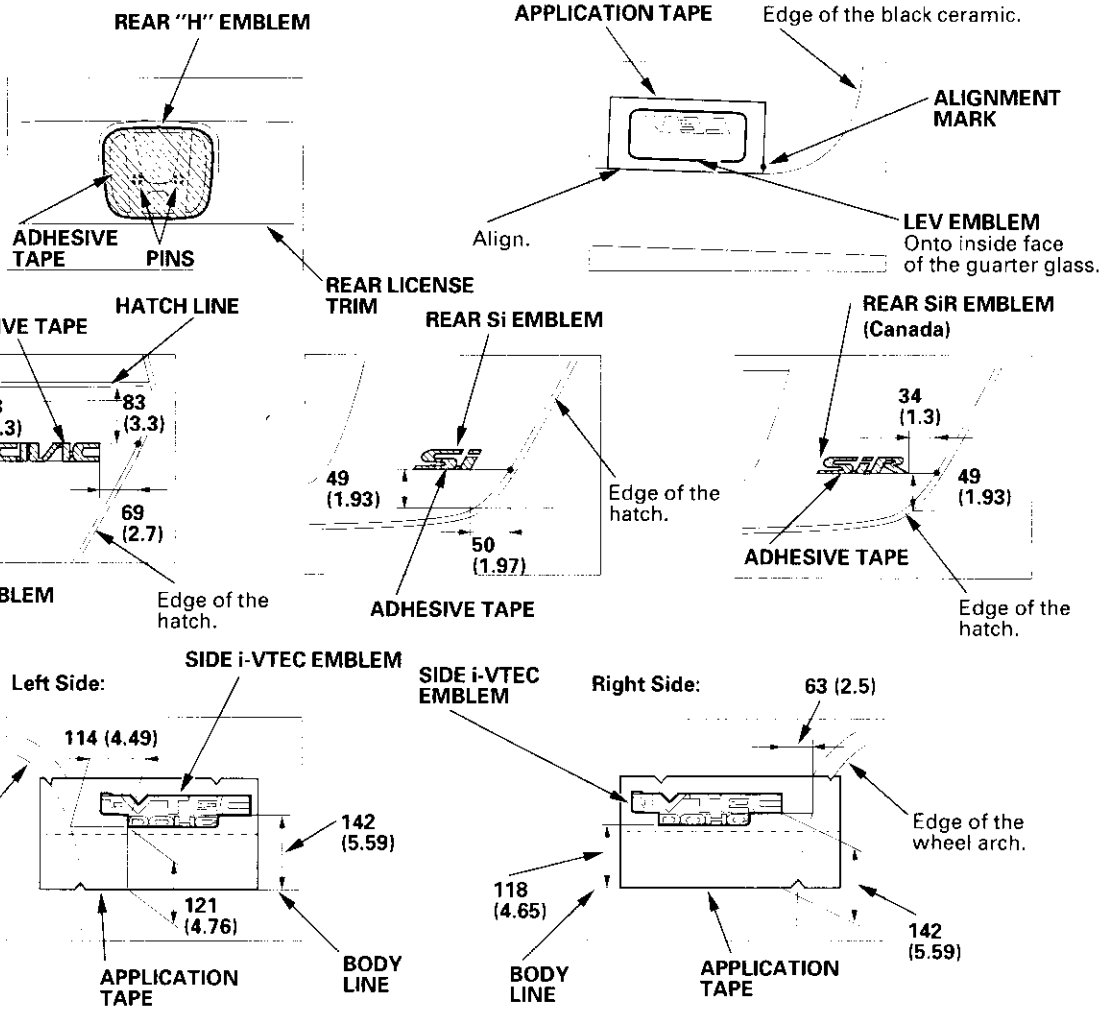
NOTE: When removing the emblem, take care not to scratch the body.

1. To remove the front "H" emblem and front type emblem, remove the front bumper (see page 20-85).
2. Clean the bonding surface with a sponge dampened in alcohol. After cleaning, keep oil, grease, and water from getting on the surface.
3. Apply the emblem, where shown.
   - When installing the side i-VTEC emblem on the body, align the application tape with the edge of the wheel arch, then press the emblem into place, and remove the application tape.
   - '03 model: When installing the LEV emblem on the quarter glass, align the application tape with the edge of the black ceramic and alignment mark on the quarter glass, then press the emblem into place, and remove the application tape.





Unit: mm (in.)
Adhesive tape: **3M 4213E, or equivalent**
Thickness: 0.8 mm (0.03 in.)



4. After installing the front "H" enblem and front type emblem, reinstall the front bumper.

Front Inner Fender Replacement

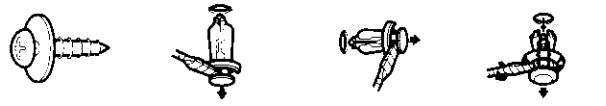
NOTE: Take care not to scratch the body.

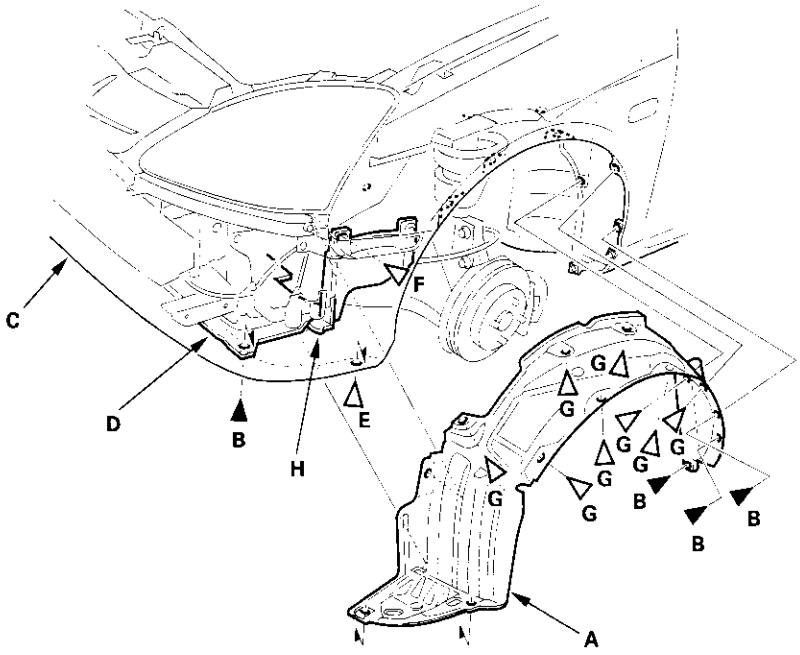
1. Remove the front inner fender (A).

   -1 On the back of the wheel arch, remove the screws (B).
   -2 From under the front bumper (C), remove the screw (B) securing the front bumper, splash shield (D), and front inner fender, and remove the clip (E) securing the front air spoiler, front bumper, and front inner fender.
   -3 From the wheel arch, remove the clips (F, G) securing the front inner fender (and splash shield) on the body.
   -4 Release the hook (H) of the splash shield, then remove the front inner fender.

Fastener Locations

B ▶ : Screw, 4 **E ▷ : Clip, 1** **F ▷ : Clip, 1** **G ▷ : Clip, 8**





2. Install the inner fender in the reverse order of removal, and note these items:

   - Replace any damaged clips.
   - Push the clips into place securely.

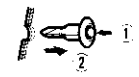
Front Fender Fairing Replacement

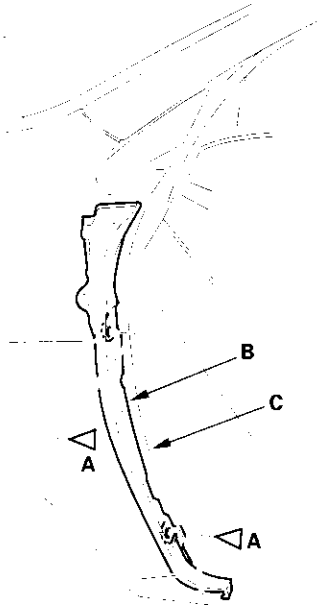
1. Remove the front inner fender as necessary (see page 20-102).

2. Open the front door. From outside the door, remove the upper clip (A), and from inside the door, remove the lower clip (A) securing the front fender fairing (B) and front fender (C).

Fastener Locations

A ▷ : Clip, 2

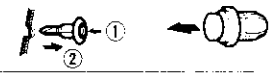


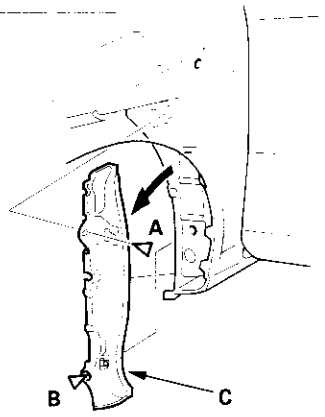


3. From the wheel arch, remove the clip (A), and release the clip (B), then remove the front fender fairing (C).

Fastener Locations

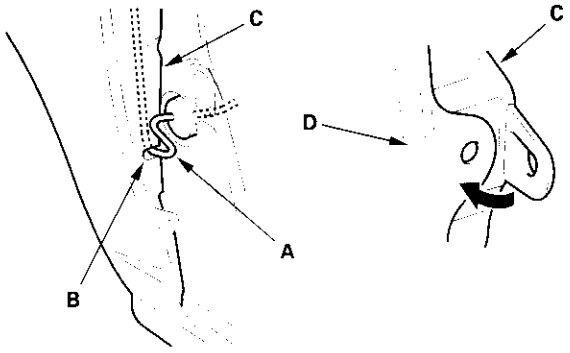
A ▷ : Clip, 1 B ▷ : Clip, 1





4. Install the fender fairing in the reverse order of removal, and note these items:

- Replace any damaged clips.
- Route the side turn signal light harness (A) through the slit (B) of the front fender fairing (C).
- Before installing the clips of the door upper and lower portions, install the front fender fairing (A) to the front fender (B) properly as shown.
- Push the clips into place securely.

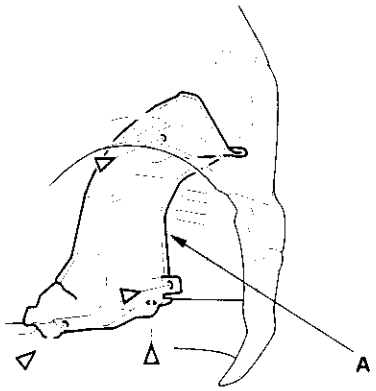


Fuel Pipe Protector Replacement

1. Remove the clips, then remove the fuel pipe protector (A). Take care not to scratch the body.

Fastener Locations

▷ : **Clip, 4**



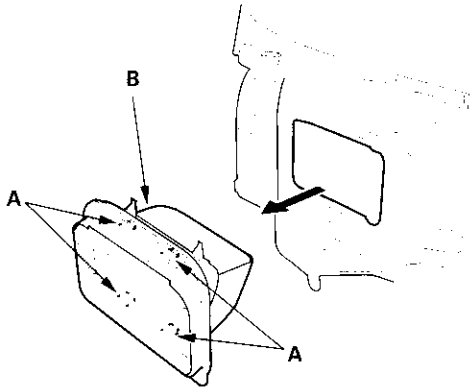
2. Install the protector in the reverse order of removal, and note these items:

- Replace any damaged clips.
- Push the clips into place securely.

Rear Air Outlet Replacement

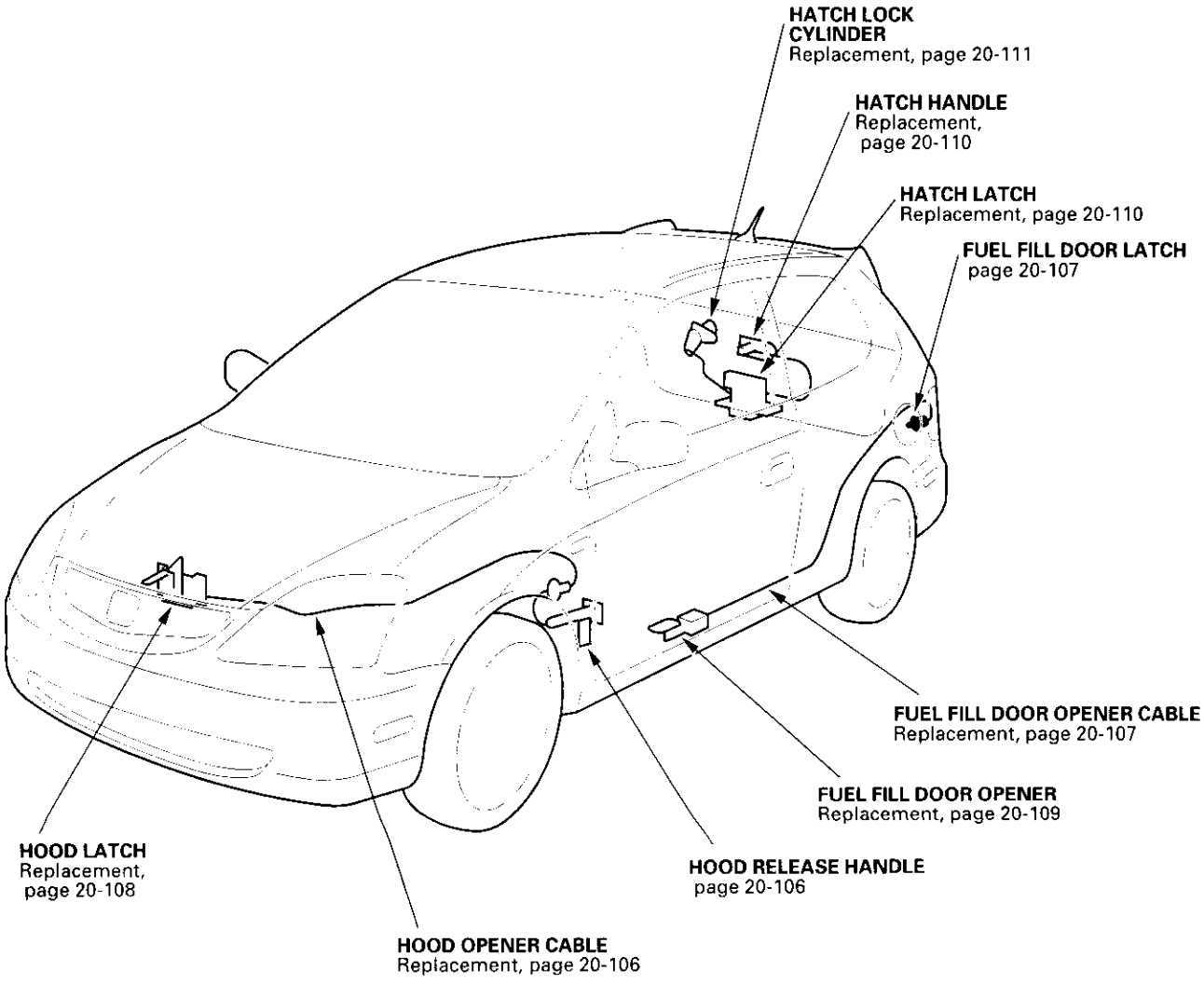
1. Remove the rear bumper (see page 20-86).

2. Detach the hooks (A), then remove the rear air outlets (B). Take care not to scratch the body.



3. Install the air outlets 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.

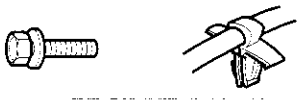
1. Remove these items:

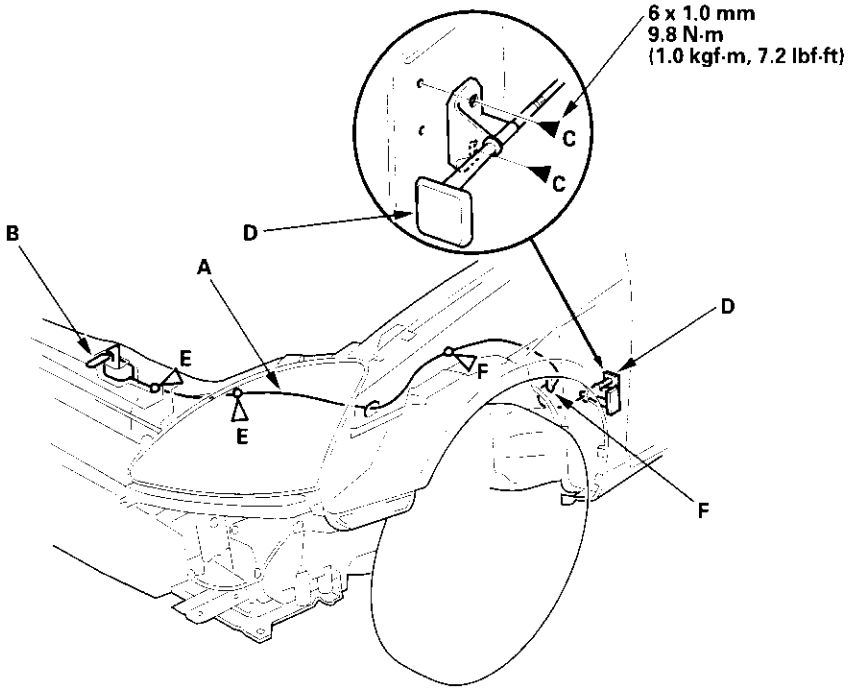
   - Front bumper (see page 20-85)
   - Front inner fender, left side (see page 20-102)
   - Kick panel, left side (see page 20-50)

2. Disconnect the hood opener cable (A) from the hood latch (B) (see page 20-108), and remove the bolts (C), then remove the hood release handle (D) from the body.

Fastener Locations

C ▶ : Bolt, 2 **E ▷ : Clip, 3**





3. Using a clip remover, detach the clips (E), and remove the grommet (F) from the body, then remove the hood opener cable from the vehicle. Take care not to bend the cable.

4. Install the cable in the reverse order of removal, and replace any damaged clips.

Fuel Fill Door Opener Cable Replacement

SRS components are located in this area. Review the SRS component locations (see page 23-13) and the precautions and procedures (see page 23-14) in the SRS section before performing repairs or service.

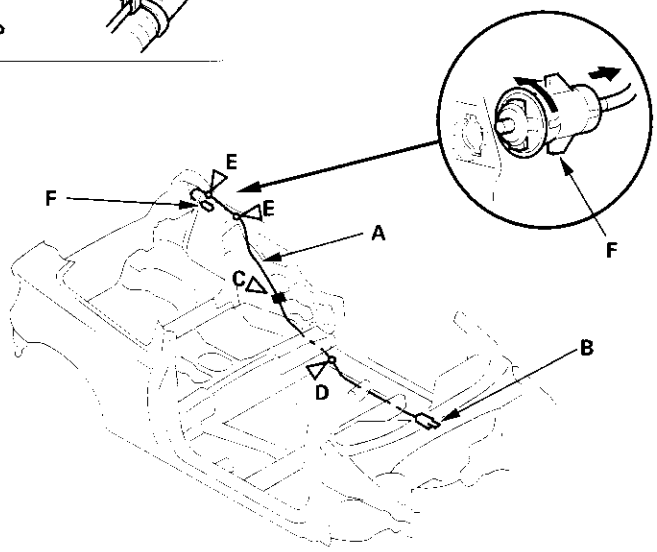
NOTE:
- Put on gloves to protect your hands.
- Take care not to scratch the body and related parts.

1. Remove these items from the left side of the vehicle:
   - Door sill trim (see page 20-50)
   - Rear side trim panel (see page 20-51)
2. Pull the carpet back as necessary (see page 20-55).
3. Disconnect the fuel fill door opener cable (A) from the opener (B) (see step 3 on page 20-109).

Fastener Locations

C ▷ : Cushion tape, 1 **D ▷ : Clip, 1** **E ▷ : Clip, 2**





4. KC model: Remove the left middle floor cross-member gusset (see page 20-113).
5. Remove the cushion tape (C), and release the cable from the clips (D, E).
6. Remove the fuel fill door latch (F) from the body by turning it 90°.
7. Remove the fuel fill door opener cable from the vehicle. Take care not to bend the cable.
8. Install the opener cable in the reverse order of removal, replace the cushion tape, and replace the clip if it is damaged.

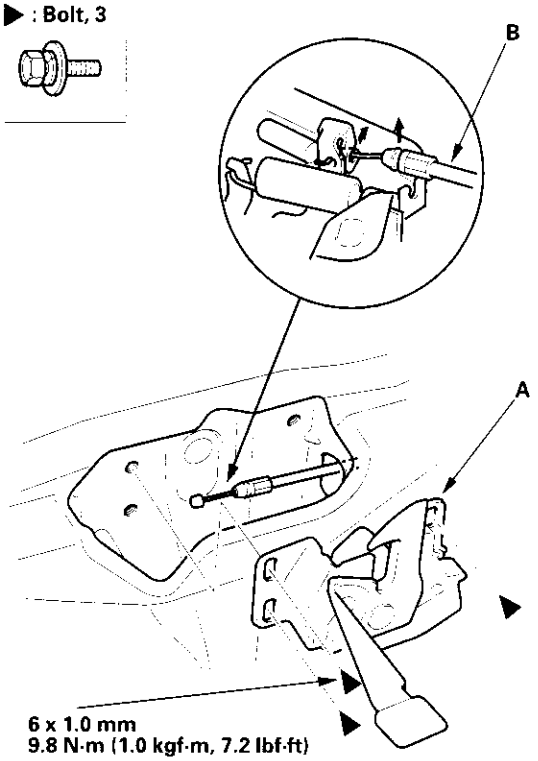
Hood Latch Replacement

NOTE:
- Put on gloves to protect your hands.
- Take care not to scratch the body.

1. Remove the bolts, then remove the hood latch (A) from the body.

Fastener Locations

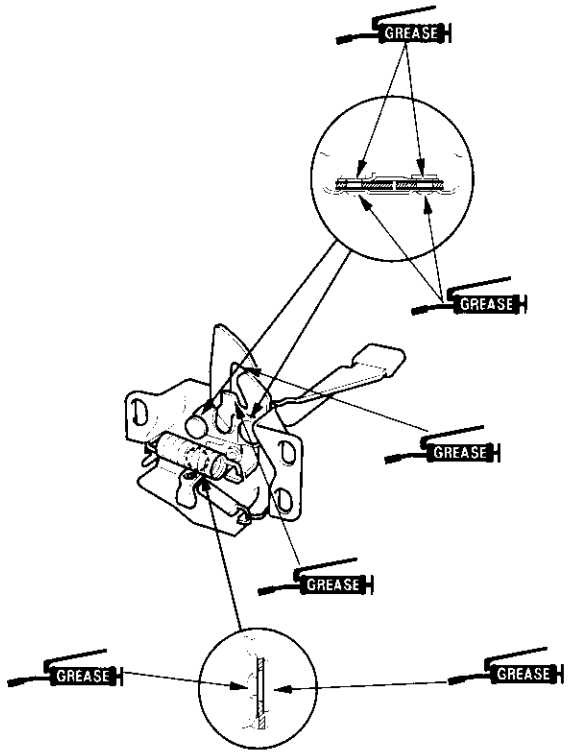
▶ : Bolt, 3



2. Disconnect the hood opener cable (B) from the hood latch. Take care not to bend the cable.

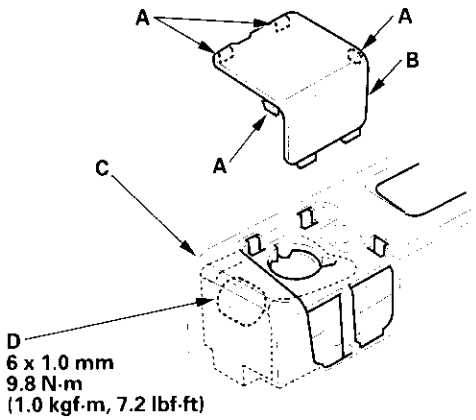
3. Install the hood latch in the reverse order of removal, and note these items:

- Apply multipurpose grease to each location of the hood latch indicated by the arrows.
- Make sure the hood opener cable is connected properly.
- Make sure the cable actuates the latch before you close the hood.
- Adjust the hood latch alignment (see step 3 on page 20-87).
- Make sure the hood opens properly and locks securely.



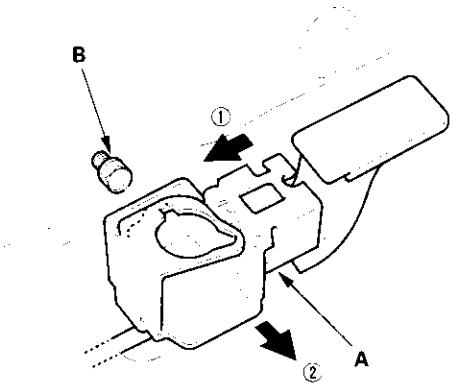
Fuel Fill Door Opener Replacement

1. Using a flat-tip screwdriver wrapped with protective tape, detach the hooks (A) by prying the front side cap (B), then remove it from the left door sill trim (C), and loosen the bolt (D) securing the fuel fill door opener.

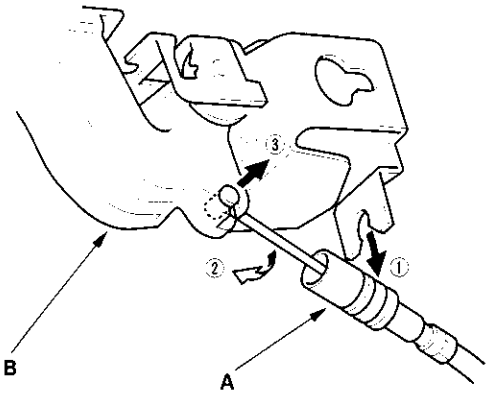


2. Remove the left door sill trim (see page 20-50).

3. Remove the opener (A) from the bolt (B).



4. Disconnect the fuel fill door opener cable (A), then remove the opener (B). Take care not to bend the cable.



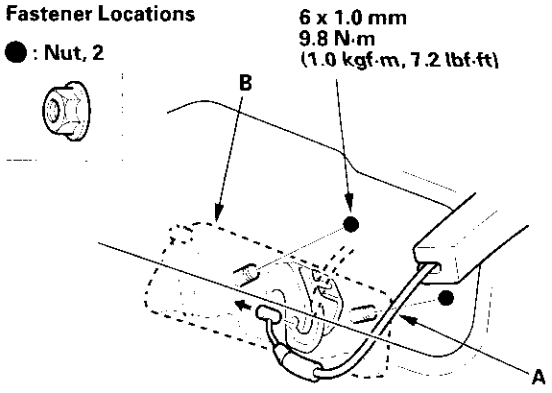
5. Install the opener in the reverse order of removal, and note these items:

   - Make sure the opener cable is connected properly.
   - Make sure the fuel fill door opens properly and locks securely.

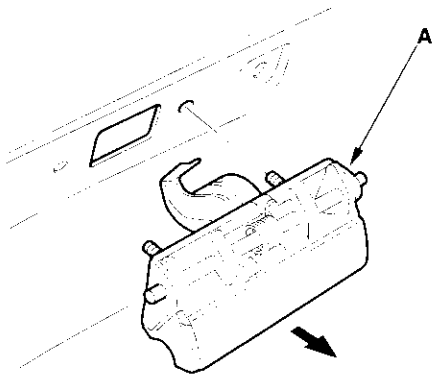
Hatch Handle Replacement

NOTE: Put on gloves to protect your hands.

1. Remove these items:
   - Hatch lower trim panel (see page 20-53)
   - Rear license trim panel (see page 20-98)
2. Remove the rear window wiper motor (see page 22-146).
3. Disconnect the hatch opener cable (A) from the hatch handle (B), and remove the nuts.



4. Pull out the hatch handle (A), then remove it.

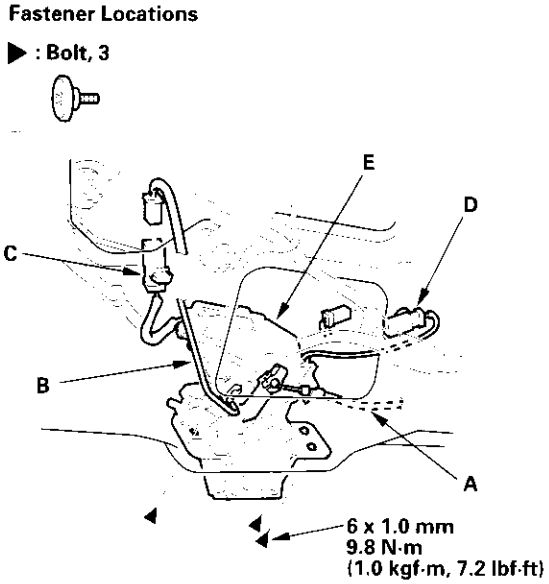


5. Install the handle in the reverse order of removal, and note these items:
   - Make sure the hatch opener cable is connected securely.
   - Make sure the hatch opens properly.

Hatch Latch Replacement

NOTE: Put on gloves to protect your hands.

1. Remove the hatch lower trim panel (see page 20-53).
2. Disconnect the hatch opener cable (A), cylinder rod (B), hatch actuator connector (C), and hatch latch switch connector (D), and detach the hatch actuator connector and hatch latch switch connector from the hatch.

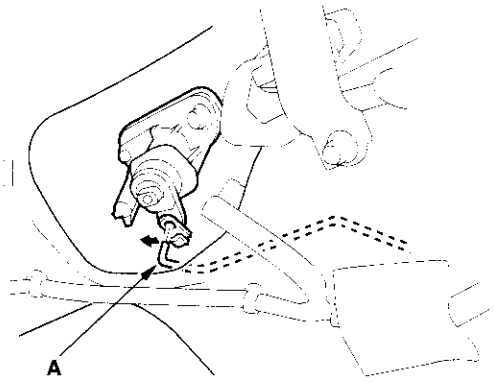


3. Remove the bolts, then pull the hatch latch (E) out, then remove it.
4. Install the latch in the reverse order of removal, and note these items:
   - Make sure each connector is plugged in properly, and the rod and cable are connected properly.
   - Make sure the cable actuates the latch before you close the hatch.
   - Make sure the hatch opens properly and locks securely.

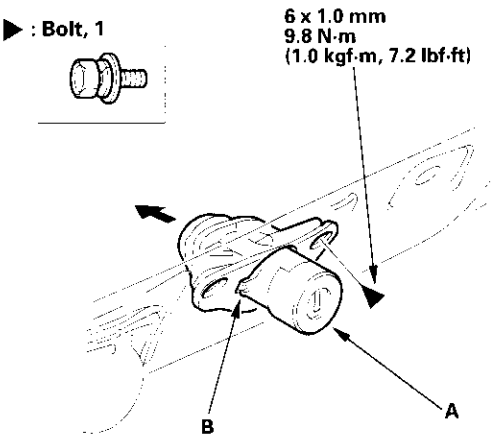
Hatch Lock Cylinder Replacement

NOTE: Put on gloves to protect your hands.

1. Remove these items:
   - Hatch lower trim panel (see page 20-53).
   - Rear license trim (see page 20-98).
2. Disconnect the cylinder rod (A).



3. From outside the hatch, remove the bolt securing the lock cylinder (A). From inside the hatch, pull the lock cylinder out by releasing the hook (B).

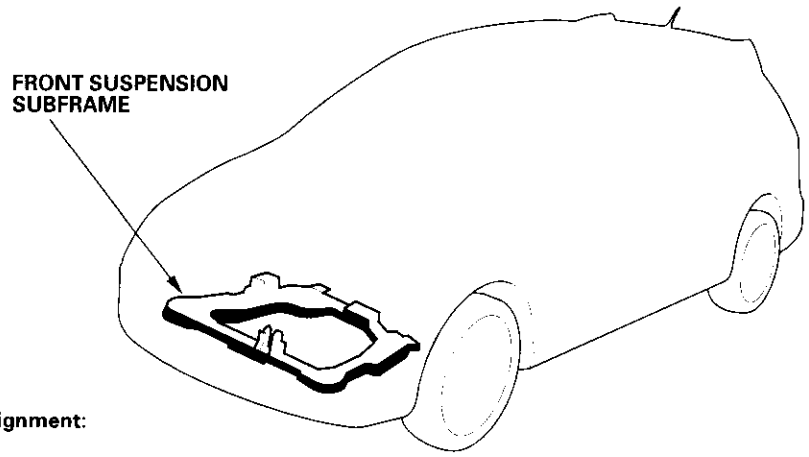


4. Install the lock cylinder in the reverse order of removal, and note these items:
   - Make sure the rod is connected properly.
   - Make sure the hatch opens properly and locks securely.

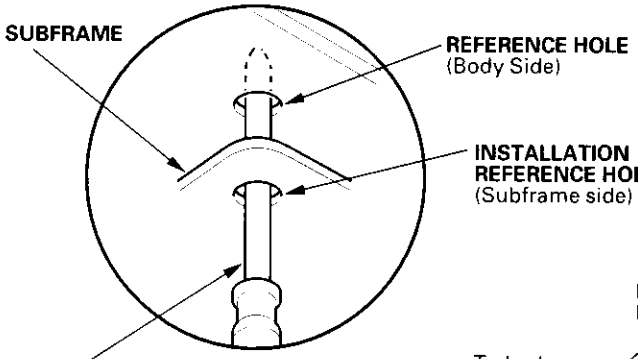
Subframe Replacement

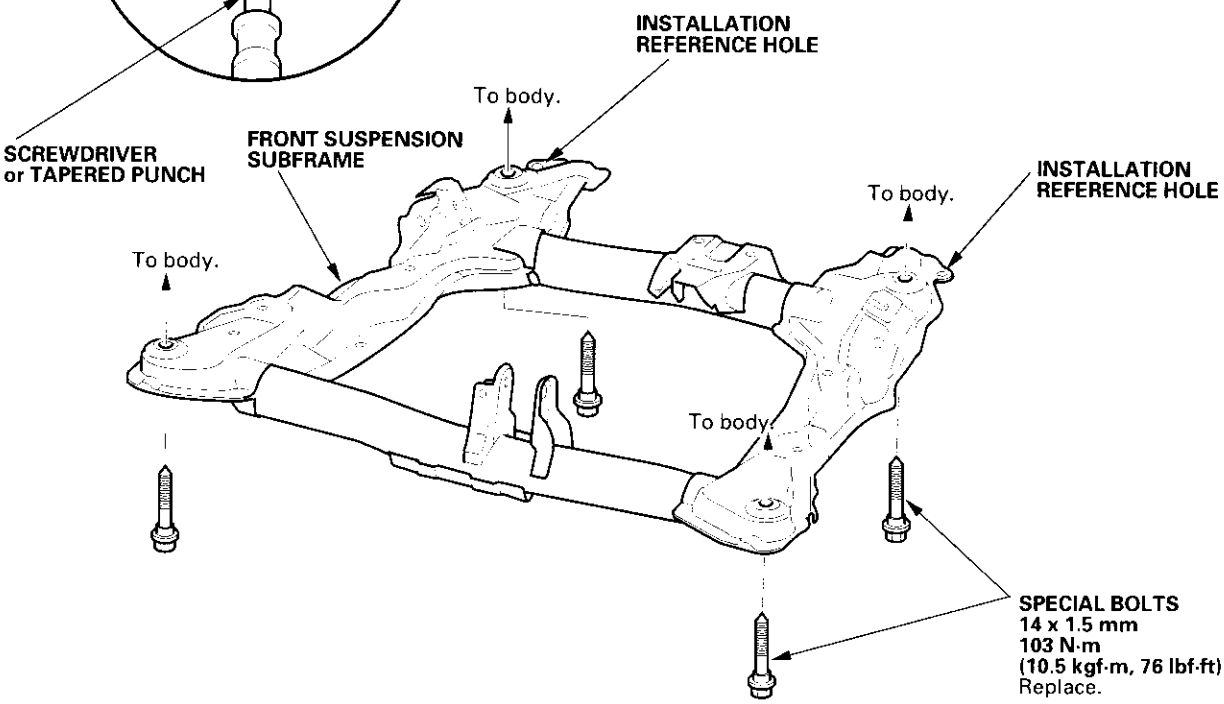
Subframe Torque

NOTE: After loosening the subframe mounting bolts, be sure to replace them with new ones.



Reference holes alignment:

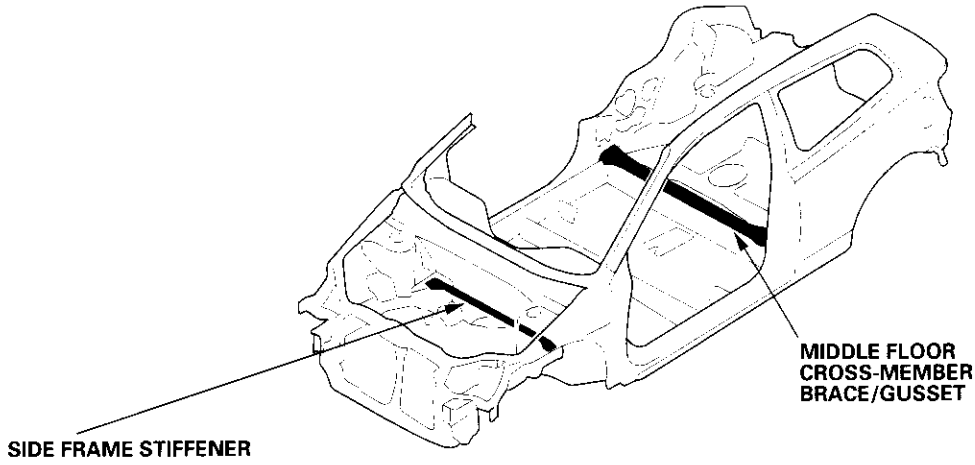


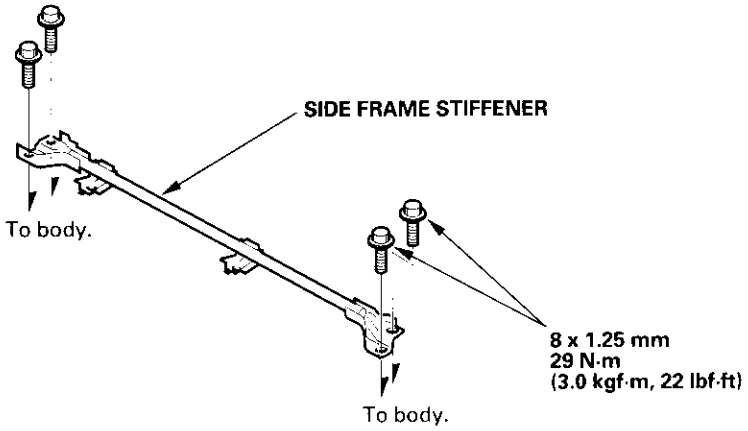


Frame Stiffener, Brace, and Gusset Replacement

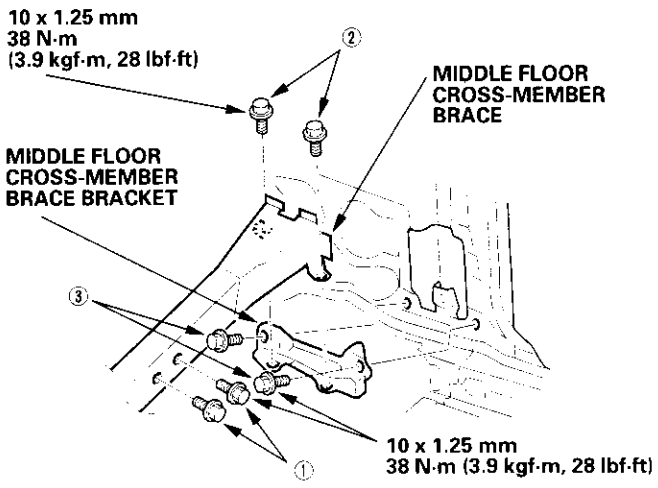
Frame Stiffener, Brace, and Gusset Torque

NOTE: When installing the middle floor cross-member brace or gussets, torque the mounting hardware in the following sequence to avoid damage to the quarter panel.

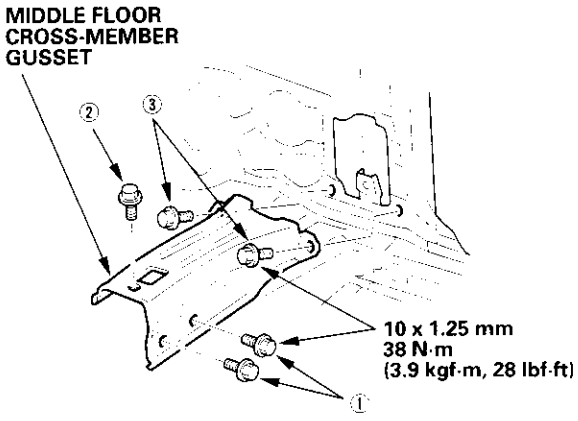




U.S. model:



Canada model:

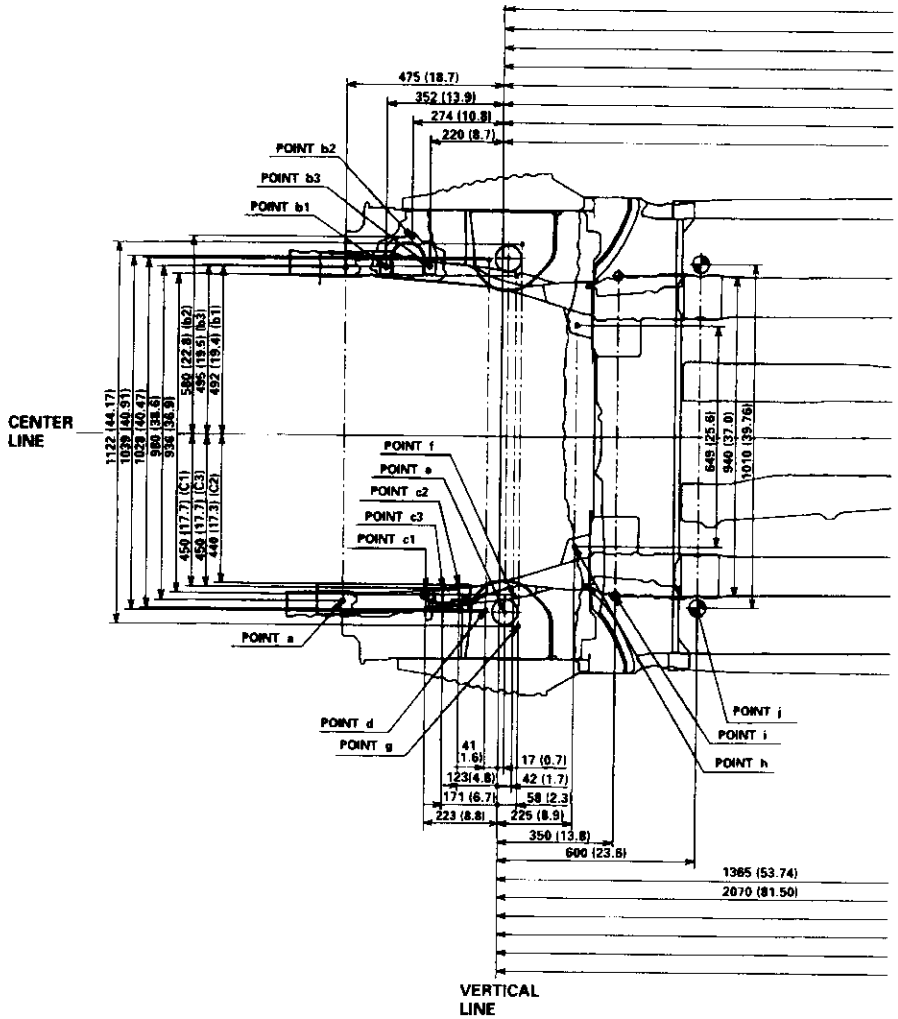


Frame Repair Chart

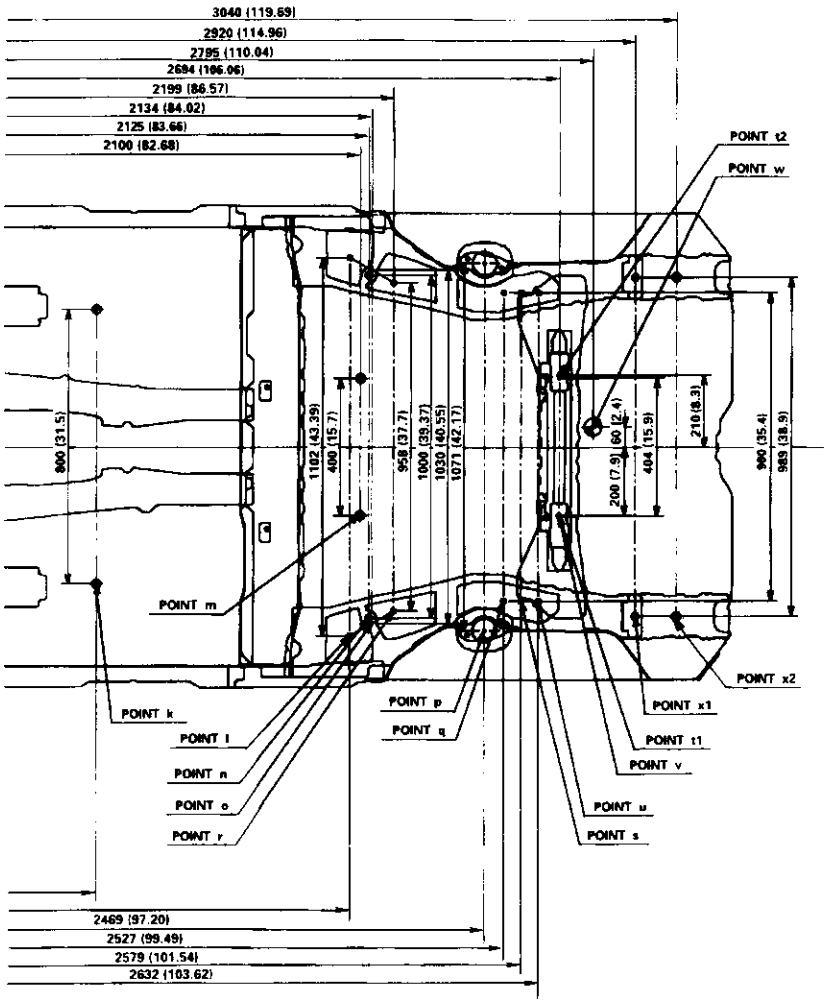
Top view

Unit: mm (in.)
ø: Inner diameter

a	For subframe ø15 (0.59)	d	For damper mount ø11.5 (0.45)
b1	For engine mount ø13 (0.51)	e	For damper center ø78 (3.07)
b2	For engine mount ø13 (0.51)	f	For damper mount ø11.5 (0.45)
b3	For engine mount ø13 (0.51)	g	For damper mount ø11.5 (0.45)
c1	For manual transmission mount ø13 (0.51)	h	For subframe ø15 (0.59)
c2	For manual transmission mount ø13 (0.51)	i	Locating hole ø25 (0.98)
c3	For manual transmission mount ø13 (0.51)	j	Locating hole ø50 (1.97)



k	Locating hole ø25 (0.98)	r	For trailing arm ø13 (0.51)
l	For trailing arm ø13 (0.51)	s	For upper arm bracket center ø15 (0.59)
m	Locating hole ø25 (0.98)	t1, t2	Locating hole ø13 (0.51)
n	Locating hole ø20 (0.79)	u	For upper arm ø13 (0.51)
o	Trailing arm center	v	For rear lower arm center
p	Rear damper center	w	Locating hole ø50 (1.97)
q	For upper arm ø13 (0.51)	x1	Locating hole ø20 (0.79)
		x2	Locating hole ø25 (0.98)



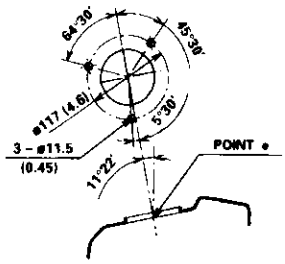
(cont'd)

Frame Repair Chart (cont'd)

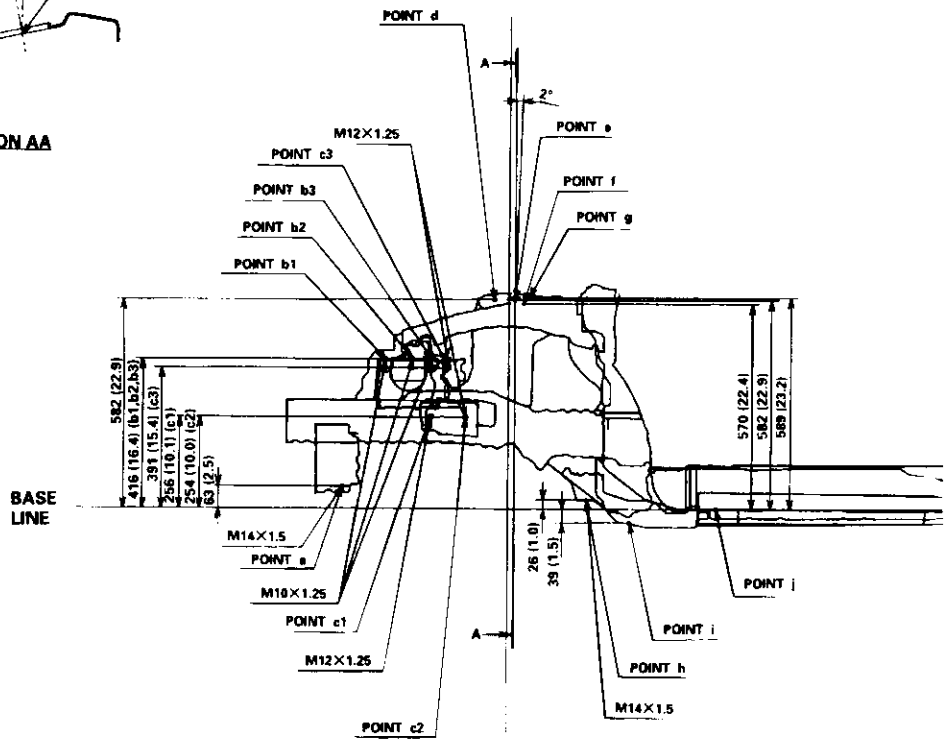
Side view

Unit: mm (in.)
ø: Inner diameter

a	For subframe ø15 (0.59)	d	For damper mount ø11.5 (0.45)
b1	For engine mount ø13 (0.51)	e	For damper center ø78 (3.07)
b2	For engine mount ø13 (0.51)	f	For damper mount ø11.5 (0.45)
b3	For engine mount ø13 (0.51)	g	For damper mount ø11.5 (0.45)
c1	For manual transmission mount ø13 (0.51)	h	For subframe ø15 (0.59)
c2	For manual transmission mount ø13 (0.51)	i	Locating hole ø25 (0.98)
c3	For manual transmission mount ø13 (0.51)	j	Locating hole ø (1.97)



SECTION AA



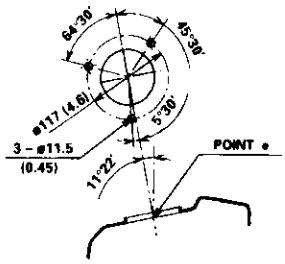
VERTICAL LINE

Frame Repair Chart (cont'd)

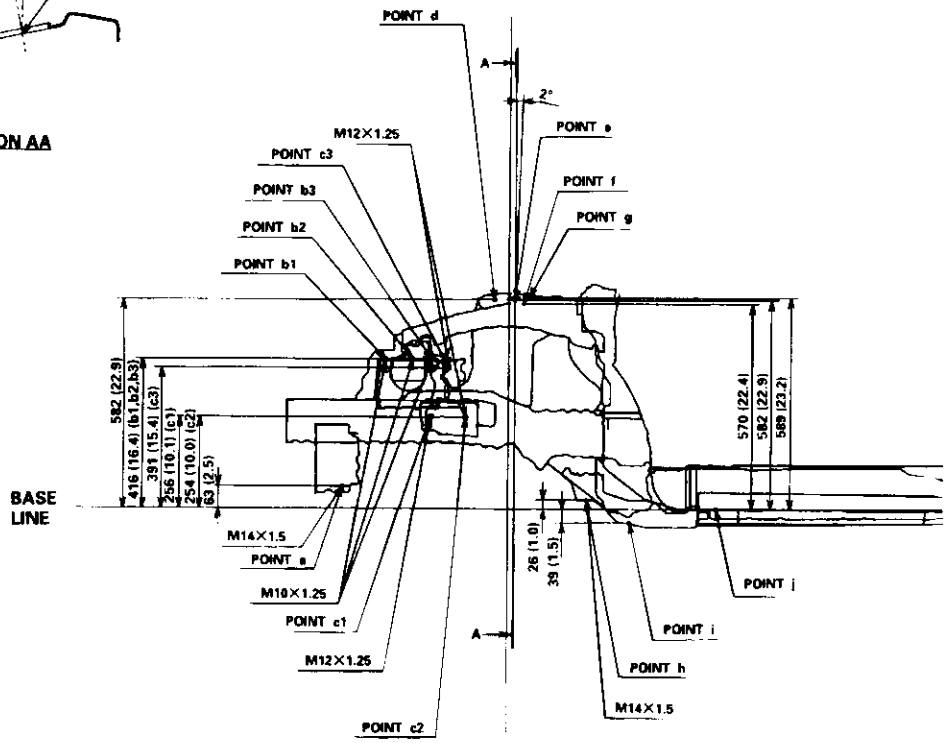
Side view

Unit: mm (in.)
ø: Inner diameter

a	For subframe ø15 (0.59)	d	For damper mount ø11.5 (0.45)
b1	For engine mount ø13 (0.51)	e	For damper center ø78 (3.07)
b2	For engine mount ø13 (0.51)	f	For damper mount ø11.5 (0.45)
b3	For engine mount ø13 (0.51)	g	For damper mount ø11.5 (0.45)
c1	For manual transmission mount ø13 (0.51)	h	For subframe ø15 (0.59)
c2	For manual transmission mount ø13 (0.51)	i	Locating hole ø25 (0.98)
c3	For manual transmission mount ø13 (0.51)	j	Locating hole ø (1.97)

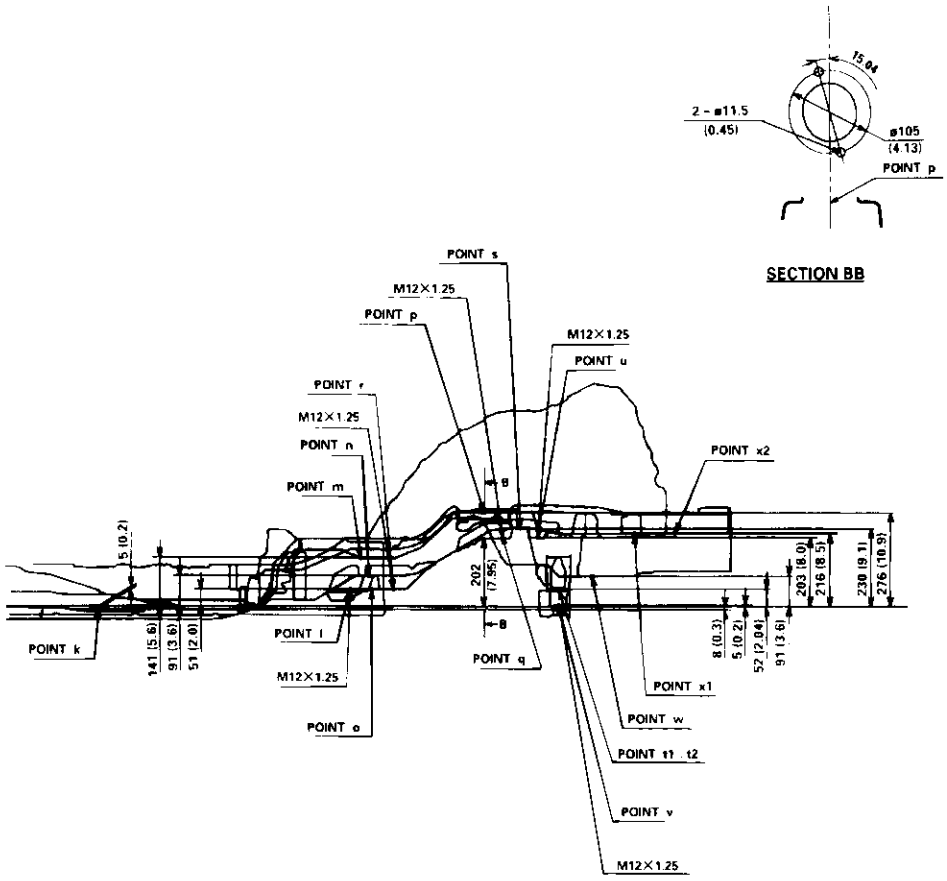


SECTION AA



VERTICAL LINE

k	Locating hole ø25 (0.98)	r	For trailing arm ø13 (0.51)
l	For trailing arm ø13 (0.51)	s	For upper arm bracket center ø15 (0.59)
m	Locating hole ø25 (0.98)	t1, t2	Locating hole ø13 (0.51)
n	Locating hole ø20 (0.79)	u	For upper arm ø13 (0.51)
o	Trailing arm center	v	For rear lower arm center
p	Rear damper center	w	Locating hole ø50 (1.97)
q	For upper arm ø13 (0.51)	x1	Locating hole ø20 (0.79)
		x2	Locating hole ø25 (0.98)

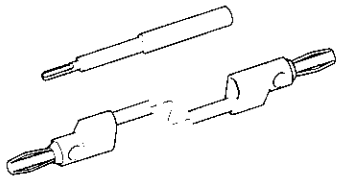


HVAC (Heating, Ventilation, and Air Conditioning)

Heating and Air Conditioning

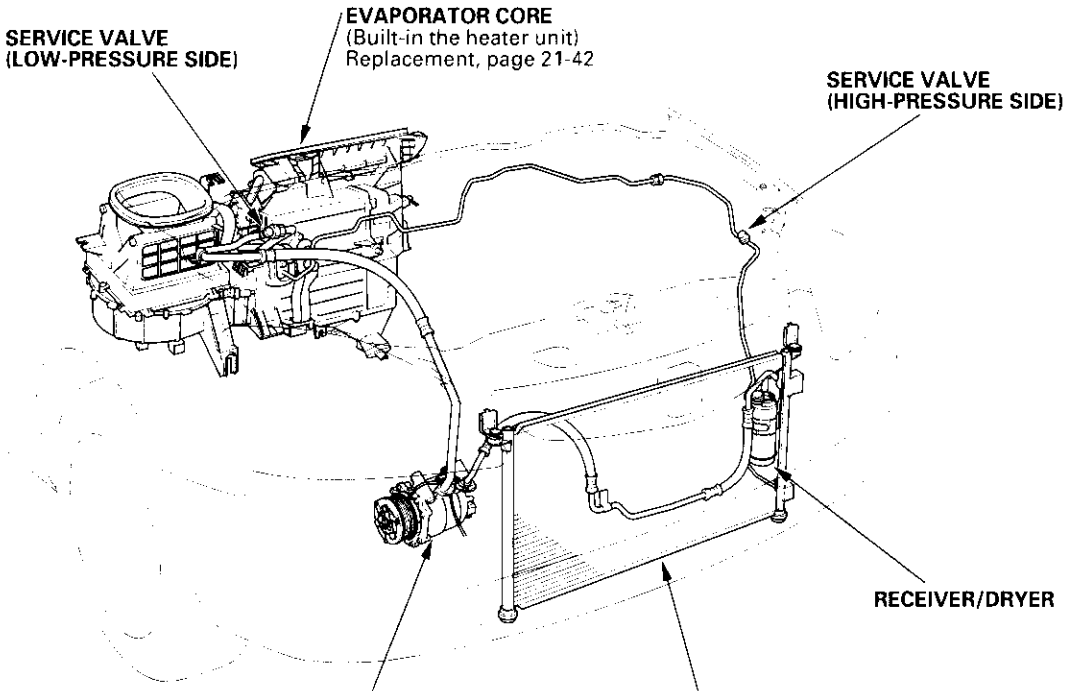
Special Tools

Ref.No.	Tool Number	Description	Qty
①	07SAZ-001000A	Backprobe Set	2



①

Component Location Index



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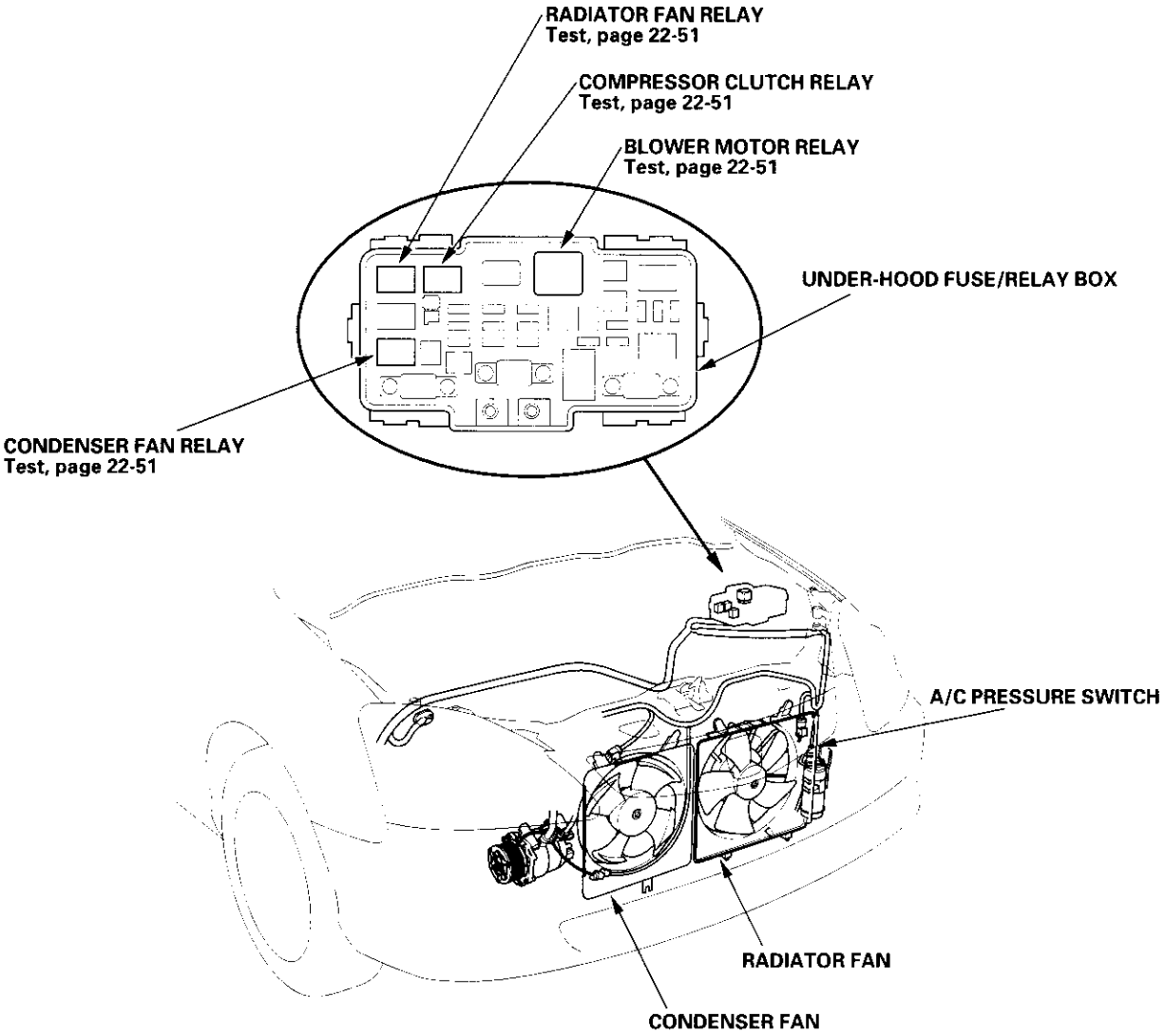
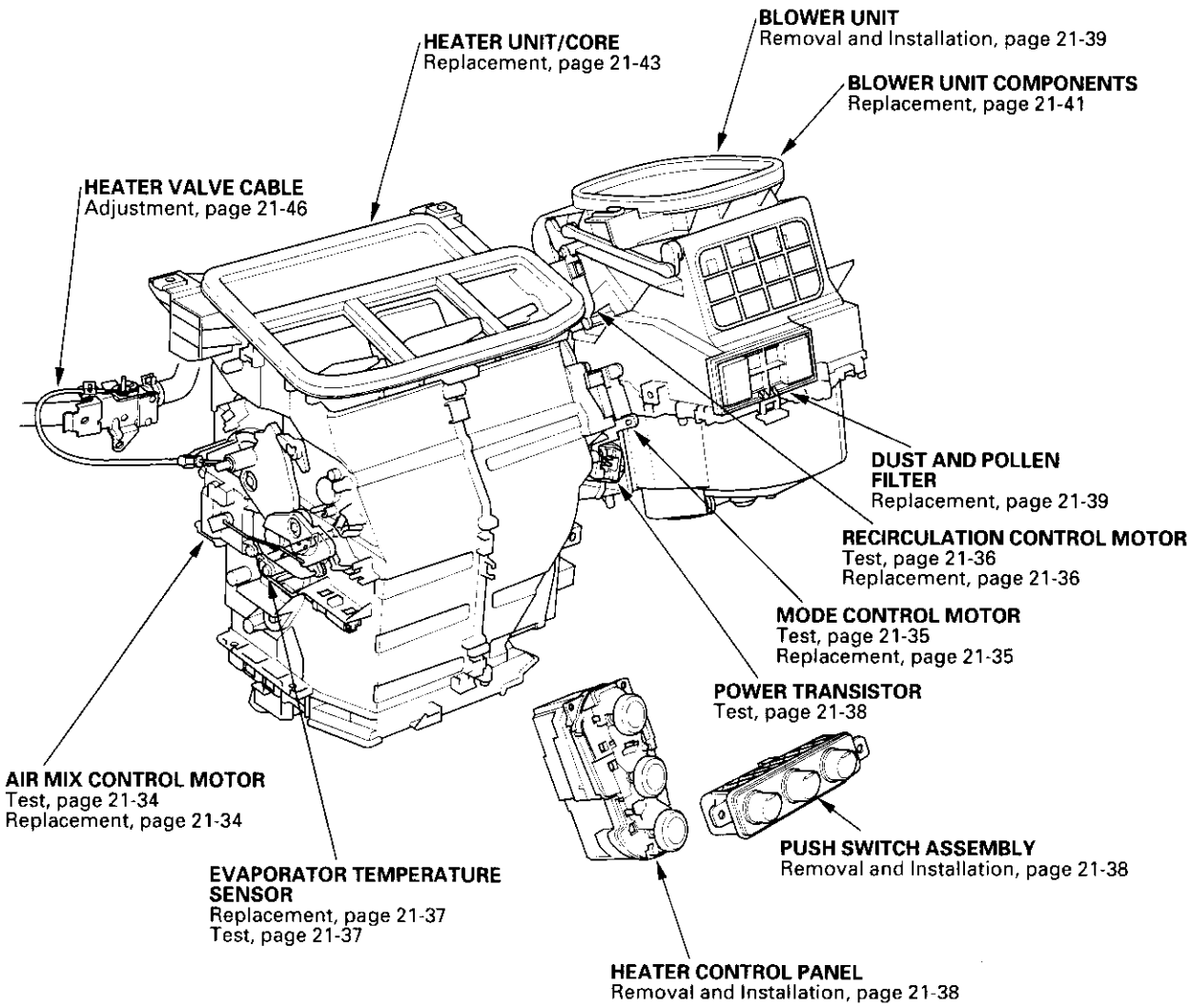
Component Location Index (cont'd)




HEATER UNIT/CORE
Replacement, page 21-43
BLOWER UNIT
Removal and Installation, page 21-39
BLOWER UNIT COMPONENTS
Replacement, page 21-41
HEATER VALVE CABLE
Adjustment, page 21-46
DUST AND POLLEN FILTER
Replacement, page 21-39
RECIRCULATION CONTROL MOTOR
Test, page 21-36
Replacement, page 21-36
MODE CONTROL MOTOR
Test, page 21-35
Replacement, page 21-35
POWER TRANSISTOR
Test, page 21-38
AIR MIX CONTROL MOTOR
Test, page 21-34
Replacement, page 21-34
PUSH SWITCH ASSEMBLY
Removal and Installation, page 21-38
EVAPORATOR TEMPERATURE SENSOR
Replacement, page 21-37
Test, page 21-37
HEATER CONTROL PANEL
Removal and Installation, page 21-38

A/C Service Tips and Precautions

⚠WARNING

- Compressed air mixed with 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 and 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 a R-134a refrigerant recovery/recycling/charging station; don't release refrigerant into the atmosphere.

A/C Refrigerant Oil Replacement

Recommended PAG oil: KEIHIN SP-10:

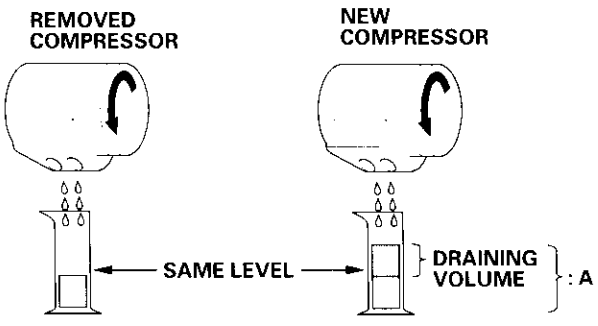
- P/N 38897-P13-A01AH: 120 mℓ (4 fl·oz)
- P/N 38899-P13-A01: 40 mℓ (1 1/3 fl·oz)

Add the recommended refrigerant oil in the amount listed if you replace any of the following parts.

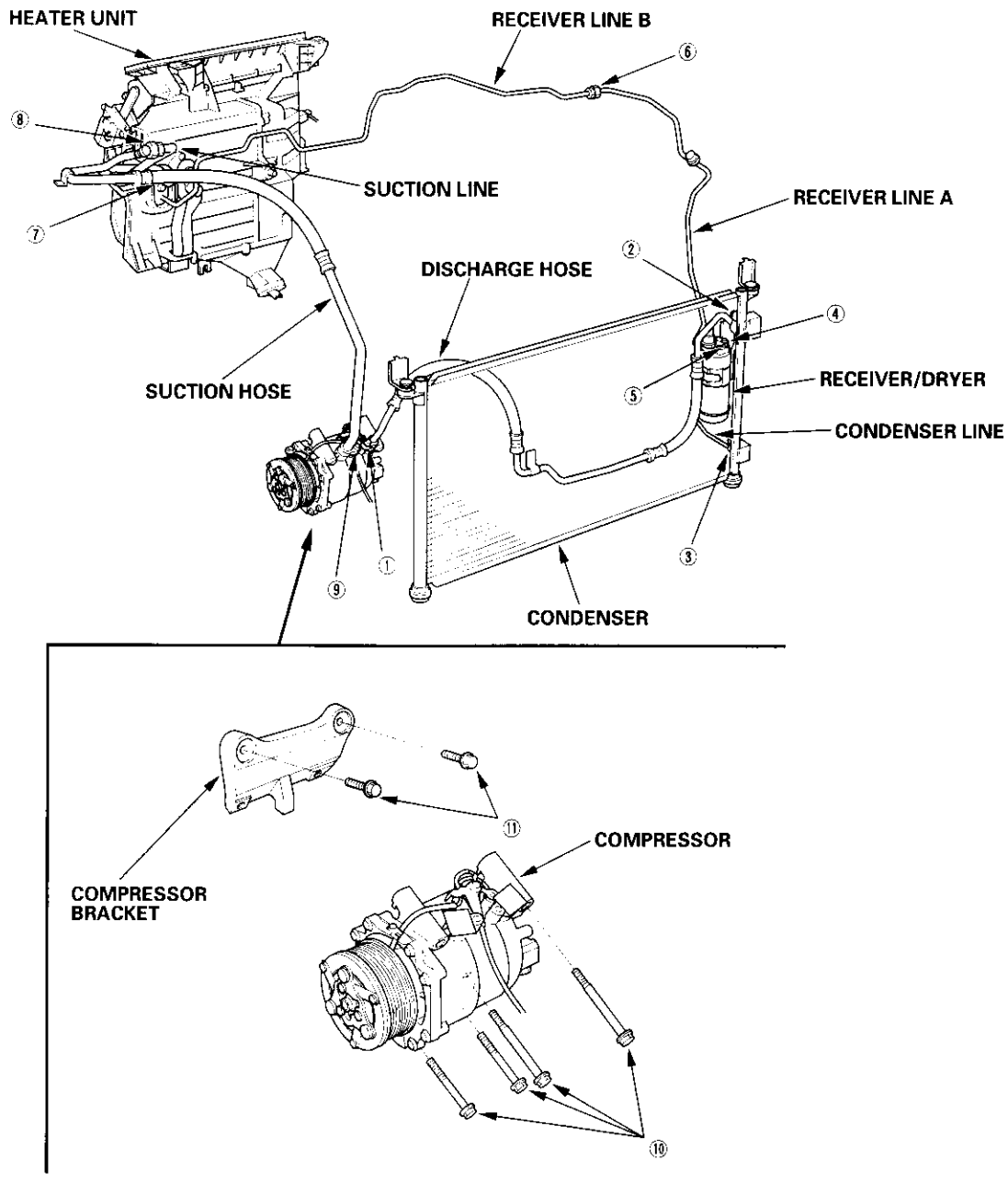
- To avoid contamination, do not return the oil to the container once dispensed, and never mix it with other refrigerant oils.
- Immediately after using the oil, reinstall the cap on the container, and seal it to avoid moisture absorption.
- Do not spill the refrigerant oil on the vehicle; it may damage the paint. If it gets on the paint, wash it off immediately.

Condenser ..... 25 mℓ (5/6 fl·oz, 0.9 Imp·oz)
Evaporator ..... 45 mℓ (1 1/3 fl·oz, 1.4 Imp·oz)
Line or hose ..... 10 mℓ (1/3 fl·oz, 0.4 Imp·oz)
Receiver/Dryer .... 10 mℓ (1/3 fl·oz, 0.4 Imp·oz)
Leakage repair .... 25 mℓ (5/6 fl·oz, 0.9 Imp·oz)
Compressor ..... For compressor replacement, subtract the volume of oil drained from the removed compressor from 130 mℓ (4 1/3 fl·oz, 4.6 Imp·oz), and drain the calculated volume of oil from the new compressor: 130 mℓ (4 1/3 fl·oz, 4.6 Imp·oz) − Volume of removed compressor = Volume to drain from new compressor.

NOTE: Even if no oil is drained from the removed compressor, don't drain more than 50 mℓ (1 2/3 fl·oz, 1.8 Imp·oz) from the new compressor.



A: 130 mℓ (4 1/3 fl·oz, 4.6 Imp·oz)



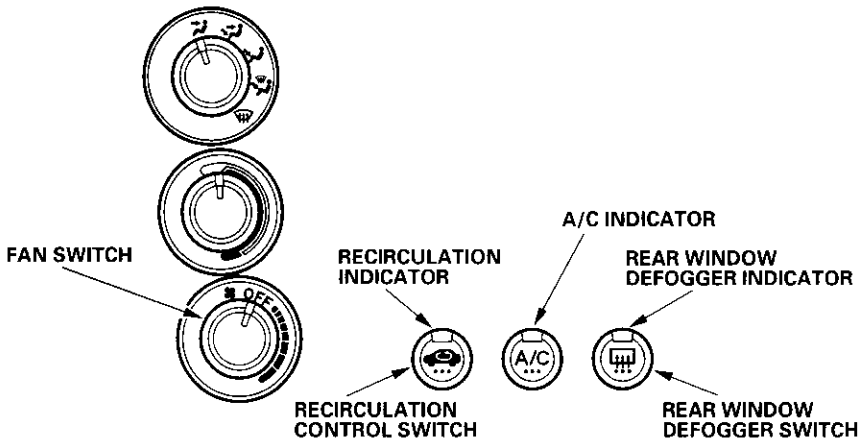
① Discharge hose to the compressor (6 x 1.0 mm) : 9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)
② Discharge hose to the condenser (6 x 1.0 mm) : 9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)
③ Condenser line to the condenser (6 x 1.0 mm) : 9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)
④ Condenser line to the receiver/dryer (6 x 1.0 mm) : 9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)
⑤ Receiver line A to the receiver/dryer (6 x 1.0 mm) : 9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)
⑥ Receiver line A to the receiver line B : 13 N·m (1.3 kgf·m, 9.4 lbf·ft)
⑦ Receiver line B and the suction line to the evaporator (6 x 1.0 mm) : 9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)
⑧ Suction line to the suction hose : 31 N·m (3.2 kgf·m, 23 lbf·ft)
⑨ Suction hose to the compressor (6 x 1.0 mm) : 9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)
⑩ Compressor to the compressor bracket (8 x 1.25 mm) : 22 N·m (2.2 kgf·m, 16 lbf·ft)
⑪ Compressor bracket to the engine block (10 x 1.25 mm) : 44 N·m (4.5 kgf·m, 33 lbf·ft)

General Troubleshooting Information

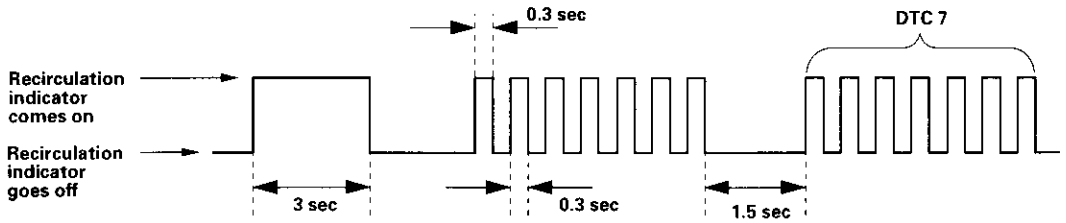
How to Retrieve a DTC

The heater control panel has a self-diagnosis function. To run the self-diagnosis function, do the following:

1. Turn the fan switch OFF.
2. Press and hold the recirculation control switch and the rear window defogger switch down.
3. Turn the ignition switch ON (II).
4. Release both switches. The recirculation indicator and the rear window defogger indicator come on. The recirculation indicator goes off 3 seconds later and the A/C indicator comes on, then the self-diagnosis will begin. About 10 seconds later, the self-diagnosis will finish and the A/C indicator goes off.
   - If any trouble is found, the recirculation indicator blinks the diagnostic trouble code (DTC) to indicate a faulty circuit or component.
   - If the system is OK, the recirculation indicator stays off.



Example of DTC indication Pattern (DTC 7)



Resetting the Self-diagnosis Function

Turn the ignition switch OFF to cancel the self-diagnosis function. After completing repair work, run the self-diagnosis function again to make sure that there are no other malfunctions.

DTC Troubleshooting Index

DTC (Recirculation Indication Blinks)	Detection Item	Page
7	An open in the air mix control motor circuit	(see page 21-16)
8	A short in the air mix control motor circuit	(see page 21-16)
9	A problem in the air mix control linkage, door, or motor	(see page 21-17)
10	An open or short in the mode control motor circuit	(see page 21-18)
11	A problem in the mode control linkage, doors, or motor	(see page 21-19)
12	A problem in the blower motor circuit	(see page 21-20)
13	A problem in the EEPROM in the heater control panel; the control panel must be replaced	(see page 21-38)
14	An open in the evaporator temperature sensor circuit	(see page 21-23)
15	A short in the evaporator temperature sensor circuit	(see page 21-24)

- In case of multiple problems, the recirculation indicator will indicate only the DTC with the least number of blinks.
- In case of an intermittent failure, the heater control panel will store the DTC until the ignition is turned off.

Symptom Troubleshooting Index

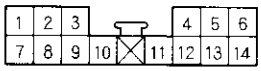
Symptom	Diagnostic procedure	Also check for
Recirculation control doors do not change between Fresh and Recirculate	Recirculation Control Motor Circuit Troubleshooting (see page 21-25)	Cleanliness and tightness of all connectors
Both heater and A/C do not work	Heater Control Power and Ground Circuits Troubleshooting (see page 21-27)	• Blown fuse No. 14 (10A) in the under-dash fuse/relay box • Poor ground at G501 • Cleanliness and tightness of all connectors
Condenser fan does not run at all (but radiator fan runs with the A/C on)	Condenser Fan Circuit Troubleshooting (see page 21-28)	• Poor ground at G301 • Cleanliness and tightness of all connectors
Both fans do not run with the A/C on	Radiator and Condenser Fans Common Circuit Troubleshooting (see page 21-29)	• Blown fuse No. 1 (20A) and No. 4 (20A) in the under-hood fuse/relay box • Poor ground at G301 • Cleanliness and tightness of all connectors
Compressor clutch does not engage (both fans run with A/C on)	Compressor Clutch Circuit Troubleshooting (see page 21-30)	Cleanliness and tightness of all connectors
A/C system does not come on (both fans and compressor)	A/C Pressure Switch Circuit Troubleshooting (see page 21-32)	• Blown fuse No. 1 (20A) and No. 4 (20A) in the under-hood fuse/relay box • Poor ground at G301 • Cleanliness and tightness of all connectors

System Description

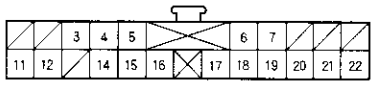
Heater Control Panel Inputs and Outputs

HEATER CONTROL PANEL CONNECTORS

CONNECTOR A (14P)



CONNECTOR B (22P)



Wire side of female terminals

CONNECTOR A (◌ on Circuit Diagram)

Cavity	Wire color	Signal	
1	GRY	AIR MIX POTENTIAL +5V	OUTPUT
2	LT GRN	SENSOR COMMON GROUND	INPUT
3	PNK/BLU	AIR MIX HOT	OUTPUT
4	BLU	A/C PRESSURE SWITCH	INPUT
5	GRN/YEL	RECIRCULATE	INPUT
6	GRN/WHT	FRESH	INPUT
7	BLU/YEL	POWER TRANSISTOR	OUTPUT
8	BLU/RED	BLOWER FEEDBACK	INPUT
9	GRN	AIR MIX COOL	OUTPUT
10	YEL/RED	MODE DEF	OUTPUT
11	YEL/BLU	MODE VENT	OUTPUT
12	YEL/BLK	REAR WINDOW DEFOGGER RELAY	INPUT
13	BLK	GROUND	OUTPUT
14	BLK/YEL	IG2 (Power)	INPUT

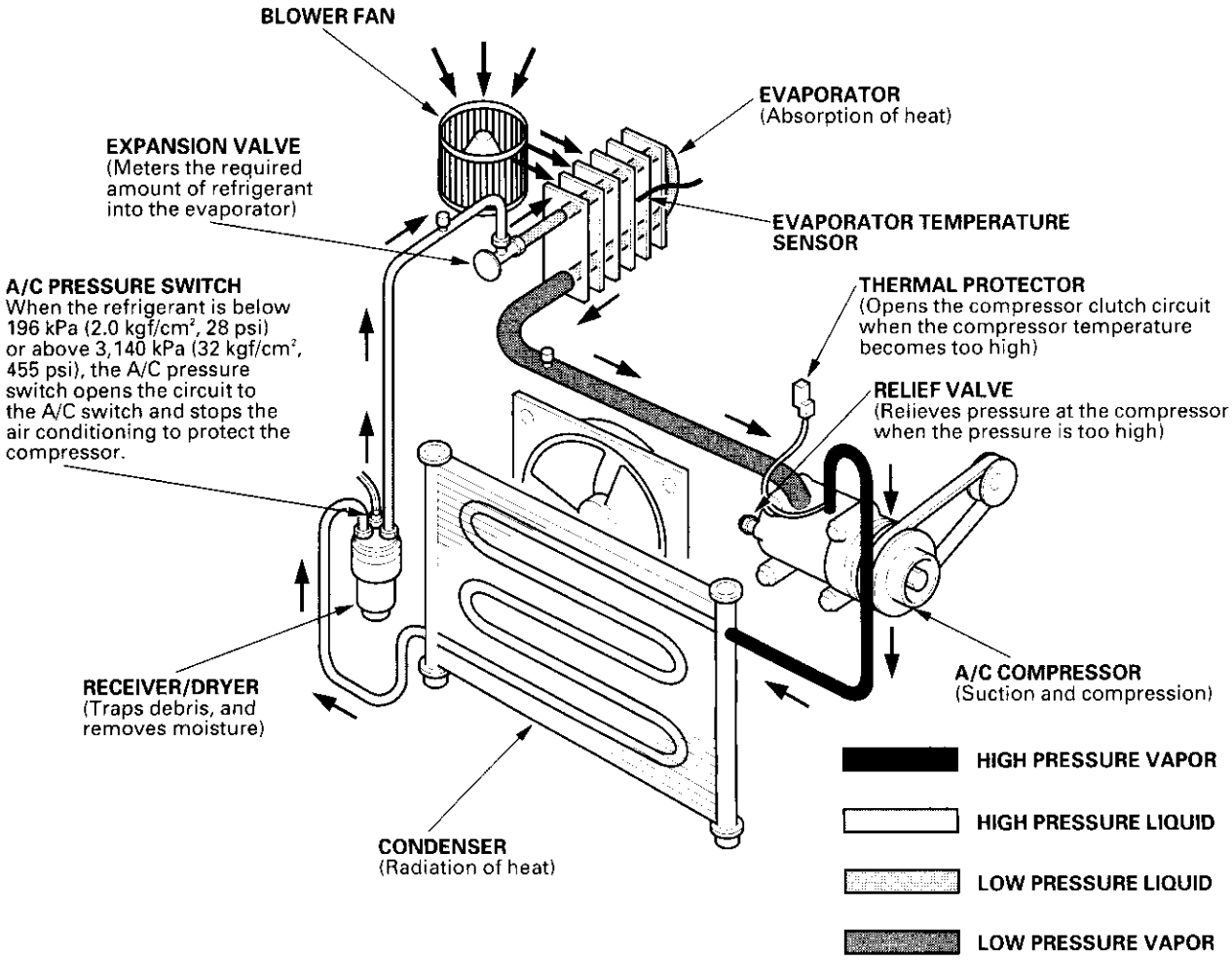
CONNECTOR B (_ on Circuit Diagram)

Cavity	Wire color	Signal	
1	———	———	———
2	———	———	———
3	BLK/RED	REAR WINDOW DEFOGGER SWITCH LED	INPUT
4	LT GRN	A/C SWITCH LED	INPUT
5	LT GRN/BLK	RECIRCULATION CONTROL SWITCH LED	INPUT
6	PNK/BLK	AIR MIX POTENTIAL	OUTPUT
7	BRN	EVAPORATOR TEMPERATURE SENSOR	OUTPUT
8	———	———	———
9	———	———	———
10	———	———	———
11	RED	GAUGE ASSEMBLY	OUTPUT
12	RED/BLK	TAILLIGHTS RELAY	INPUT
13	———	———	———
14	BLU	REAR WINDOW DEFOGGER SWITCH	INPUT
15	LT GRN/RED	A/C SWITCH	INPUT
16	YEL/RED	RECIRCULATION CONTROL SWITCH	INPUT
17	YEL/GRN	MODE 4	OUTPUT
18	WHT/BLU	MODE 3	OUTPUT
19	RED/BLU	MODE 2	OUTPUT
20	RED/YEL	MODE 1	OUTPUT
21	BRN/WHT	IGN (Power)	OUTPUT
22	RED/WHT	(Not used)	

(cont'd)

System Description (cont'd)

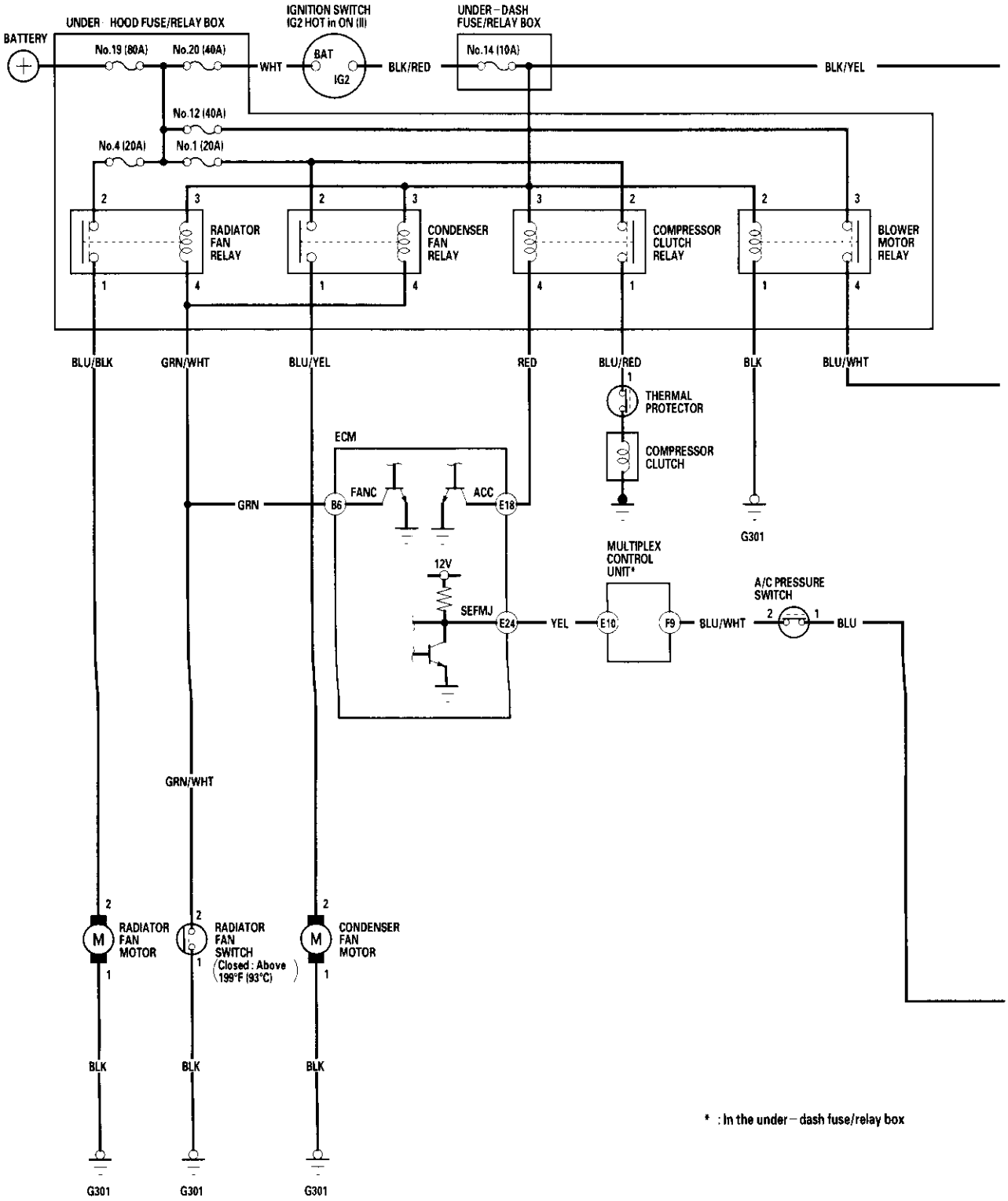
The air conditioning system removes heat from the passenger compartment by circulating refrigerant through the system as shown below.

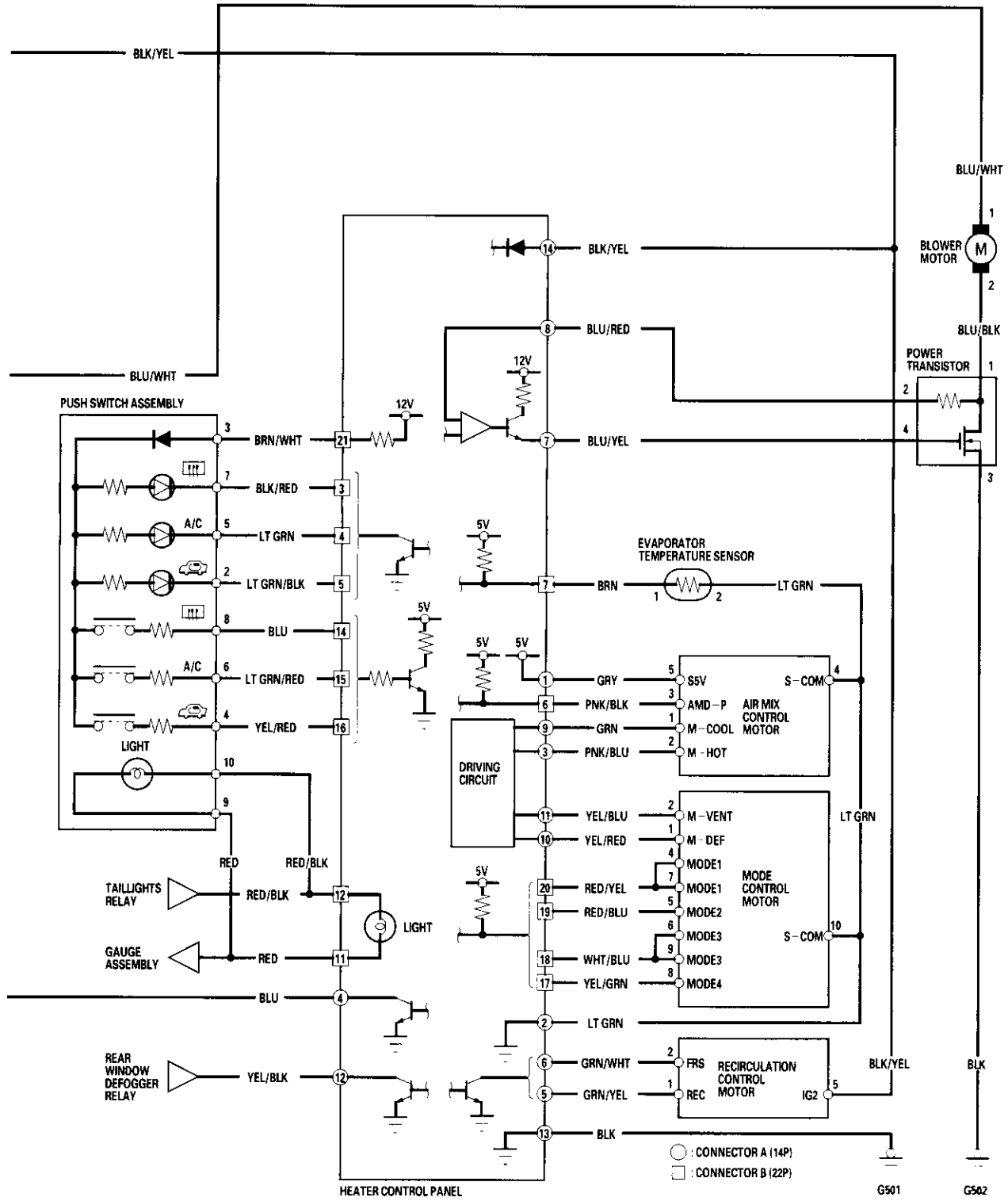


This vehicle uses HFC-134a (R-134a) refrigerant which does not contain chlorofluorocarbons. Pay attention to the following service items:

- 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 (KEIHIN SP-10) designed for the R-134a compressor. Intermixing the recommended (PAG) refrigerant oil with any other refrigerant oil will result in compressor failure.
- All A/C system parts (compressor, discharge line, suction line, evaporator, condenser, receiver/dryer, expansion valve, O-rings for joints) have to be 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 R-134a air conditioning system.
- Always recover the refrigerant R-134a with an approved recovery/recycling/charging station before disconnecting any A/C fitting.

Circuit Diagram




BLK/YEL
BLU/WHT
PUSH SWITCH ASSEMBLY
BRN/WHT
BLK/RED
A/C
LT GRN
LT GRN/BLK
BLU
A/C
LT GRN/RED
YEL/RED
LIGHT
RED
RED/BLK
TAILLIGHTS RELAY
RED/BLK
GAUGE ASSEMBLY
RED
LIGHT
BLU
REAR WINDOW DEFOGGER RELAY
YEL/BLK
12V
5V
BLK/YEL
BLU/RED
BLU/YEL
BLOWER MOTOR
BLU/WHT
BLU/BLK
POWER TRANSISTOR
EVAPORATOR TEMPERATURE SENSOR
BRN
LT GRN
DRIVING CIRCUIT
GRY
PNK/BLK
GRN
PNK/BLU
S5V
AMD-P
M-COOL
M-HOT
S-COM
AIR MIX CONTROL MOTOR
YEL/BLU
YEL/RED
M-VENT
M-DEF
MODE1
MODE2
MODE3
MODE4
MODE CONTROL MOTOR
RED/YEL
RED/BLU
WHT/BLU
YEL/GRN
LT GRN
GRN/WHT
GRN/YEL
FRS
REC
IG2
RECIRCULATION CONTROL MOTOR
BLK/YEL
BLK
: CONNECTOR A (14P)
: CONNECTOR B (22P)
HEATER CONTROL PANEL
G501
G502

DTC Troubleshooting

DTC 7: An Open in the Air Mix Control Motor Circuit

1. Test the air mix control motor (see page 21-34).

   Is the air mix control motor OK?
   YES—Go to step 2.
   NO—Replace the air mix control motor.■

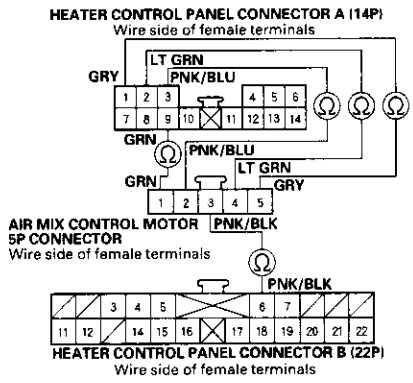
2. Disconnect the air mix control motor 5P connector.

3. Disconnect heater control panel connectors A (14P) and B (22P).

4. Check for continuity between the following terminals of heater control panel connectors A (14P) and B (22P) and the air mix control motor 5P connector.

14P:	5P:
No. 1	No. 5
No. 2	No. 4
No. 3	No. 2
No. 9	No. 1

22P:	5P:
No. 6	No. 3



Is there continuity?
YES—Check for loose wires or poor connections at heater control panel connectors A (14P) and B (22P) and at the air mix control motor 5P connector. If the connections are good, substitute a known-good air mix control motor, and recheck. If the symptom/indication goes away, replace the original air mix control motor. If the symptom/indication continues, substitute a known-good heater control panel, and recheck. If the symptom/indication goes away, replace the original heater control panel.■
NO—Repair any open in the wire(s) between the heater control panel and the air mix control motor.■

DTC 8: A Short in the Air Mix Control Motor Circuit

1. Test the air mix control motor (see page 21-34).

   Is the air mix control motor OK?

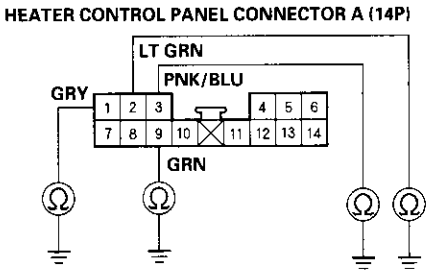
   YES—Go to step 2.

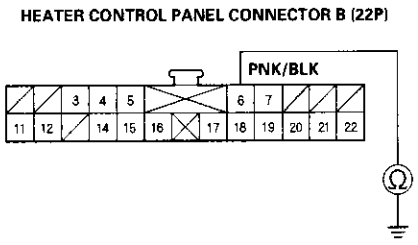
   NO—Replace the air mix contorol motor.■

2. Disconnect the air mix control motor 5P connector.

3. Disconnect heater control panel connectors A (14P) and B (22P).

4. Check for continuity between body ground and heater control panel connector A (14P) terminals No. 1, 2, 3, and 9 individually, and between body ground and heater control panel connector B (22P) terminal No. 6.





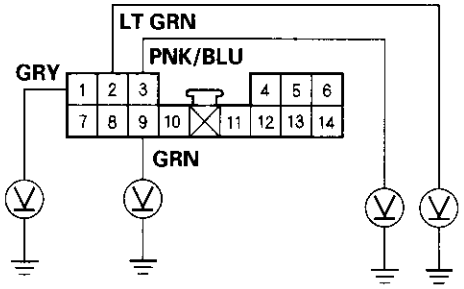
Is there continuity?

YES—Repair any short to body ground in the wire(s) between the heater control panel and the air mix control motor.■

NO—Go to step 5.

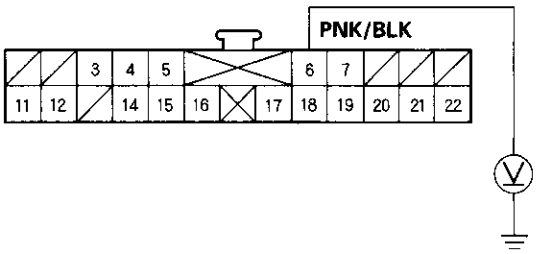
5. Turn the ignition switch ON (II), and check the same terminals for voltage.

HEATER CONTROL PANEL CONNECTOR A (14P)



Wire side of female terminals

HEATER CONTROL PANEL CONNECTOR B (22P)



Wire side of female terminals

Is there any voltage?

YES—Repair any short to power in the wire(s) between the heater control panel and the air mix control motor. This short may also damage the heater control panel. Repair the short to power before replacing the heater control panel. ■

NO—Substitute a known-good air mix control motor, and recheck. If the symptom/indication goes away, replace the original air mix control motor. If the symptom/indication continues, substitute a known-good heater control panel, and recheck. If the symptom/indication goes away, replace the original heater control panel. ■

DTC 9: A Problem in the Air Mix Control Linkage, Door, or Motor

1. Test the air mix control motor (see page 21-34).

Is the air mix control motor OK?

YES—Substitute a known-good heater control panel, and recheck. If the symptom/indication goes away, replace the original heater control panel. ■

NO—Replace the air mix control motor, or repair the linkage and door. ■

DTC Troubleshooting (cont'd)

DTC 10: An Open or Short in the Mode Control Motor Circuit

1. Test the mode control motor (see page 21-35).

   Is the mode cotrol motor OK?

   YES—Go to step 2.

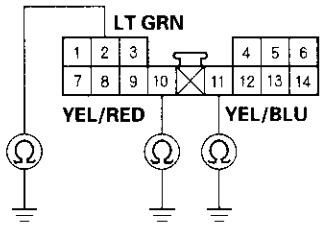
   NO—Replace the mode control motor.■

2. Disconnect the mode control motor 10P connector.

3. Disconnect heater control panel connectors A (14P) and B (22P).

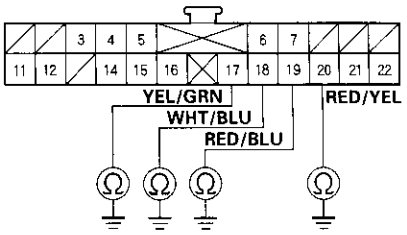
4. Check for continuity between body ground and heater control panel connector A (14P) terminals No. 2, 10, and 11 individually, and between body ground and heater control panel connector B (22P) terminals No. 17, 18, 19, and 20 individually.

HEATER CONTROL PANEL CONNECTOR A (14P)



Wire side of female terminals

HEATER CONTROL PANEL CONNECTOR B (22P)



Wire side of female terminals

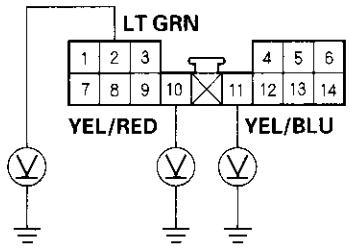
Is there continuity?

YES—Repair any short to body ground in the wire(s) between the heater control panel and the mode control motor.■

NO—Go to step 5.

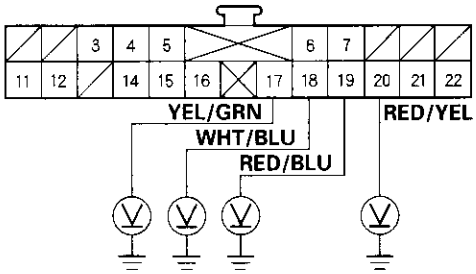
5. Turn the ignition switch ON (II), and check the same terminals for voltage.

HEATER CONTROL PANEL CONNECTOR A (14P)



Wire side of female terminals

HEATER CONTROL PANEL CONNECTOR B (22P)



Wire side of female terminals

Is there any voltage?

YES—Repair any short to power in the wire(s) between the heater control panel and the mode control motor. This short may also damage the heater control panel. Repair the short to power before replacing the heater control panel.■

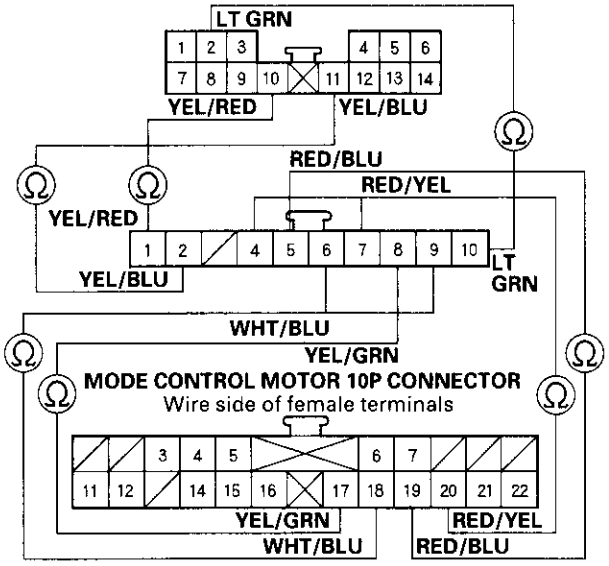
NO—Go to step 6.

6. Turn the ignition switch OFF, and check for continuity between the following terminals of heater control panel connectors A (14P) and B (22P) and the mode control motor 10P connector.

14P:	10P:
No. 2	No. 10
No. 10	No. 1
No. 11	No. 2

22P:	10P:
No. 17	No. 8
No. 18	No. 6, 9
No. 19	No. 5
No. 20	No. 4, 7

HEATER CONTROL PANEL CONNECTOR A (14P)
Wire side of female terminals



HEATER CONTROL PANEL CONNECTOR B (22P)
Wire side of female terminals

Is there continuity?

YES—Check for loose wires or poor connections at heater control panel connectors A (14P) and B (22P), and at the mode control motor 10P connector. If the connections are good, substitute a known-good mode control motor, and recheck. If the symptom/indication goes away, replace the original mode control motor.If the symptom/indication continues, substitute a known-good heater control panel, and recheck. If the symptom/indication goes away, replace the original heater control panel. ■

NO—Repair any open in the wire(s) between the heater control panel and the mode control motor. ■

DTC 11: A Problem in the Mode Control Linkage, Doors, or Motor

1. Test the mode control motor (see page 21-35).

Is the mode control motor OK?

YES—Substitute a known-good heater control panel, and recheck. If the symptom/indication goes away, replace the original heater control panel. ■

NO—Replace the mode control motor, or repair the linkage and doors. ■

DTC Troubleshooting (cont'd)

DTC 12: A Problem in the Blower Motor Circuit

1. Check the No. 12 (40A) fuse in the under-hood fuse/relay box, and the No. 14 (10A) fuse in the under-dash fuse/relay box.

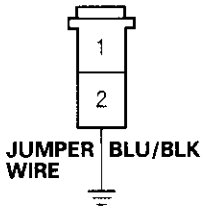
   Are the fuses OK?

   YES—Go to step 2.

   NO—Replace the fuse(s), and recheck.■

2. Connect the No. 2 terminal of the blower motor 2P connector to body ground with a jumper wire.

BLOWER MOTOR 2P CONNECTOR



Wire side of female terminals

3. Turn the ignition switch ON (II).

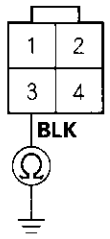
   Does the blower motor run?

   YES—Go to step 4.

   NO—Go to step 17.

4. Turn the ignition switch OFF.
5. Disconnect the jumper wire.
6. Disconnect the power transistor 4P connector.
7. Check for continuity between the No. 3 terminal of the power transistor 4P connector and body ground.

POWER TRANSISTOR 4P CONNECTOR



Wire side of female terminals

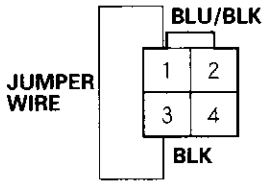
Is there continuity?

YES—Go to step 8.

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 G502.■

8. Connect the No. 1 and No. 3 terminals of the power transistor 4P connector with a jumper wire.

POWER TRANSISTOR 4P CONNECTOR



Wire side of female terminals

9. Turn the ignition switch ON (II).

   Does the blower motor run at high speed?

   YES—Go to step 10.

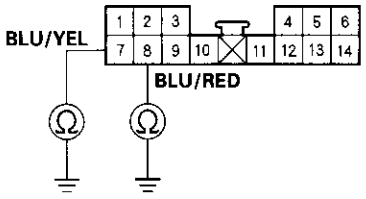
   NO—Repair open in the wire between the power transistor and the blower motor.■

10. Turn the ignition switch OFF.
11. Disconnect the jumper wire.

12. Disconnect heater control panel connector A (14P).

13. Check for continuity between the No. 7 and No. 8 terminals of heater control panel connector A (14P) and body ground individually.

HEATER CONTROL PANEL CONNECTOR A (14P)



Wire side of female terminals

Is there continuity?

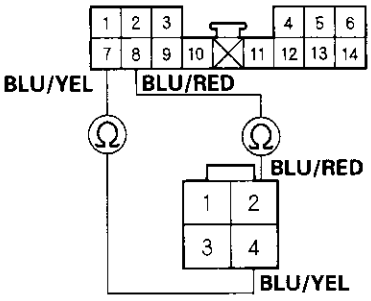
YES—Repair any short to body ground in the wire(s) between the heater control panel and the power transistor. ■

NO—Go to step 14.

14. Check for continuity between the following terminals of heater control panel connector A (14P) and power transistor 4P connector.

14P:	4P:
No. 7	No. 4
No. 8	No. 2

HEATER CONTROL PANEL CONNECTOR A (14P)
Wire side of female terminals



POWER TRANSISTOR 4P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Go to step 15.

NO—Repair any open in the wire(s) between the heater control panel and the power transistor. ■

15. Reconnect heater control panel connector A (14P).

16. Test the power transistor (see page 21-38).

Is the power transistor OK?

YES—Check for loose wires or poor connections at heater control panel connector A (14P) and at the power transistor 4P connector. If the connections are good, substitute a known-good heater control panel, and recheck. If the symptom/indication goes away, replace the original heater control panel. ■

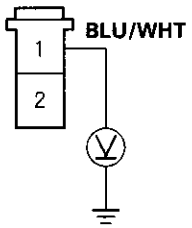
NO—Replace the power transistor. ■

17. Disconnect the jumper wire.

18. Disconnect the blower motor 2P connector.

19. Measure the voltage between the No. 1 terminal of the blower motor 2P connector 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 20.

20. Turn the ignition switch OFF.

21. Remove the blower motor relay from the under-hood fuse/relay box, and test it (see page 22-51).

Is the relay OK?

YES—Go to step 22.

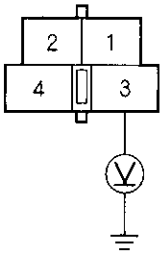
NO—Replace the blower motor relay. ■

(cont'd)

DTC Troubleshooting (cont'd)

22. Measure the voltage between the No. 3 terminal of the blower motor relay 4P socket and body ground.

BLOWER MOTOR RELAY 4P SOCKET



Is there battery voltage?

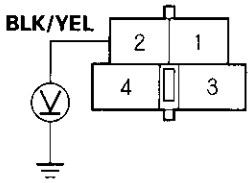
YES—Go to step 23.

NO—Replace the under-hood fuse/relay box. ■

23. Turn the ignition switch ON (II).

24. Measure the voltage between the No. 2 terminal of the blower motor relay 4P socket and body ground.

BLOWER MOTOR RELAY 4P SOCKET



Is there battery voltage?

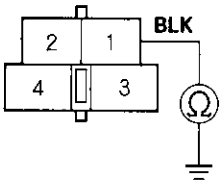
YES—Go to step 25.

NO—Repair open in the wire between the No. 14 fuse in the under-dash fuse/relay box and the blower motor relay. ■

25. Turn the ignition switch OFF.

26. Check for continuity between the No. 1 terminal of the blower motor relay 4P socket and body ground.

BLOWER MOTOR RELAY 4P SOCKET



Is there continuity?

YES—Repair open in the BLU/WHT wire between the blower motor relay and the blower motor. ■

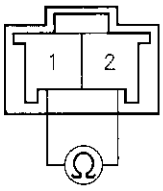
NO—Check for an open in the wire between the blower motor relay and body ground. If the wire is OK, check for poor ground at G301. ■

DTC 14: An Open in the Evaporator Temperature Sensor Circuit

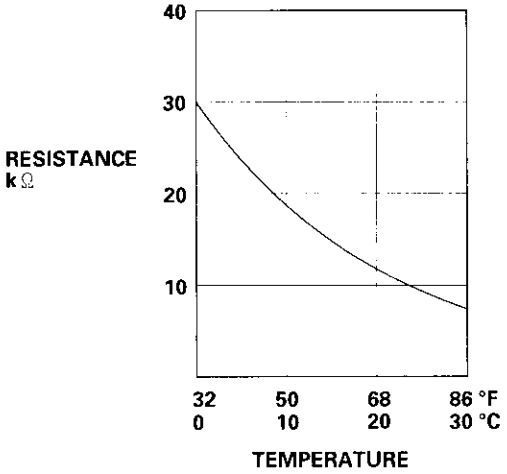
1. Remove the evaporator temperature sensor (see page 21-37).

2. Measure the resistance between the No. 1 and No. 2 terminals of the evaporator temperature sensor.
   * Dip the sensor in ice water, and measure resistance. Then pour hot water on the sensor, and check for change in resistance.

EVAPORATOR TEMPERATURE SENSOR



Terminal side of male terminals



Is the resistance within the specifications shown on the graph?

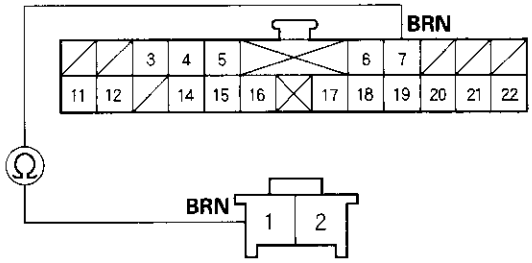
YES—Go to step 3.

NO—Replace the evaporator temperature sensor. ■

3. Disconnect heater control panel connector B (22P).

4. Check for continuity between the No. 7 terminal of heater control panel connector B (22P) and the No. 1 terminal of the evaporator temperature sensor 2P connector.

HEATER CONTROL PANEL CONNECTOR B (22P)
Wire side of female terminals



EVAPORATOR TEMPERATURE SENSOR 2P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Go to step 5.

NO—Repair open in the wire between the heater control panel and the evaporator temperature sensor. ■

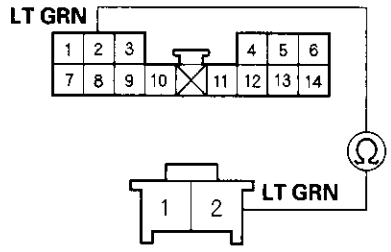
5. Disconnect heater control panel connector A (14P).

(cont'd)

DTC Troubleshooting (cont'd)

6. Check for continuity between the No. 2 terminal of heater control panel connector A (14P) and the No. 2 terminal of the evaporator temperature sensor 2P connector.

HEATER CONTROL PANEL CONNECTOR A (14P)
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 heater control panel connector A (14P) and B (22P) and at the evaporator temperature sensor 2P connector. If the connections are good, substitute a known-good heater control panel, and recheck. If the symptom/indication goes away, replace the original heater control panel. ■

NO—Repair open in the wire between the heater control panel and the evaporator temperature sensor. ■

DTC 15: A Short in the Evaporator Temperature Sensor Circuit

1. Remove the evaporator temperature sensor (see page 21-37).
2. Test the evaporator temperature sensor (see page 21-37).

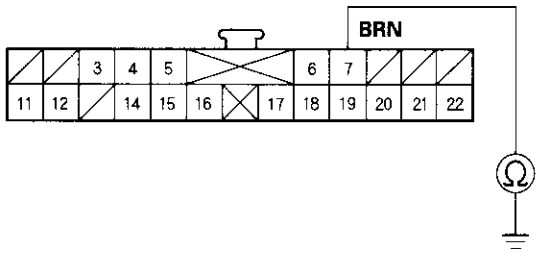
Is the resistance within the specifications shown on the graph?

YES—Go to step 3.

NO—Replace the evaporator temperature sensor. ■

3. Disconnect heater control panel connector B (22P).
4. Check for continuity between the No. 7 terminal of heater control panel connector B (22P) and body ground.

HEATER CONTROL PANEL CONNECTOR B (22P)



Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire between the heater control panel and the evaporator temperature sensor. ■

NO—Substitute a known-good heater control panel, and recheck. If the symptom/indication goes away, replace the original heater control panel. ■

Recirculation Control Motor Circuit Troubleshooting

1. Check the No. 14 (10A) fuse in the under-dash fuse/relay box.

   Is the fuse OK?

   YES—Go to step 2.

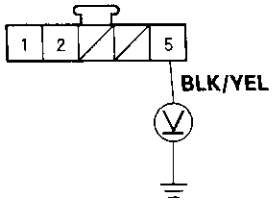
   NO—Replace the fuse, and recheck.■

2. Disconnect the recirculation control motor 5P connector.

3. Turn the ignition switch ON (II).

4. Measure the voltage between the No. 5 terminal of the recirculation control motor 5P connector and body ground.

RECIRCULATION CONTROL MOTOR 5P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Go to step 5.

NO—Repair open in the wire between the No. 14 fuse in the under-dash fuse/relay box and the recirculation control motor.■

5. Turn the ignition switch OFF.

6. Test the recirculation control motor (see page 21-36).

   Is the recirculation control motor OK?

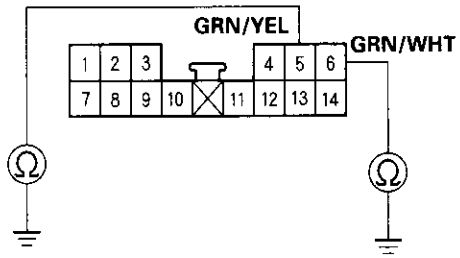
   YES—Go to step 7.

   NO—Replace the recirculation control motor, or repair the linkage and doors.■

7. Disconnect heater control panel connector A (14P).

8. Check for continuity between the No. 5 and No. 6 terminals of heater control panel connector A (14P) and body ground individually.

HEATER CONTROL PANEL CONNECTOR A (14P)



Wire side of female terminals

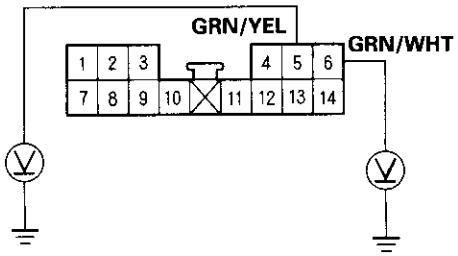
Is there continuity?

YES—Repair any short to body ground in the wire(s) between the heater control panel and the recirculation control motor.■

NO—Go to step 9.

9. Turn the ignition switch ON (II), and check the same wires for voltage.

HEATER CONTROL PANEL CONNECTOR A (14P)



Wire side of female terminals

Is there any voltage?

YES—Repair any short to power in the wire(s) between the heater control panel and the recirculation control motor. This short may also damage the heater control panel. Repair the short to power before replacing the heater control panel.■

NO—Go to step 10.

(cont'd)

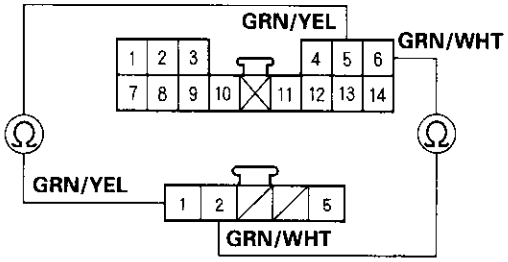
Recirculation Control Motor Circuit Troubleshooting (cont'd)

10. Turn the ignition switch OFF.

11. Check for continuity between the following terminals of heater control panel connector A (14P) and the recirculation control motor 5P connector.

14P:	5P:
No. 5	No. 1
No. 6	No. 2

HEATER CONTROL PANEL CONNECTOR A (14P)
Wire side of female terminals



RECIRCULATION CONTROL MOTOR 5P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Check for loose wires or poor connections at heater control panel connector A (14P) and at the recirculation control motor 5P connector. If the connections are good, substitute a known-good heater control panel, and recheck. If the symptom/indication goes away, replace the original heater control panel.■

NO—Repair any open in the wire(s) between the heater control panel and the recirculation control motor.■

Heater Control Power and Ground Circuits Troubleshooting

1. Check the No.14 (10A) fuse in the under-dash fuse/relay box.

   Is the fuse OK?

   YES—Go to step 2.

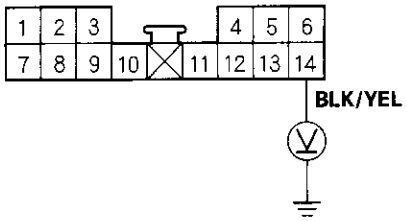
   NO—Replace the fuse, and recheck.■

2. Disconnect heater control panel connector A (14P).

3. Turn the ignition switch ON (II).

4. Measure the voltage between the No. 14 terminal of heater control panel connector A (14P) and body ground.

HEATER CONTROL PANEL CONNECTOR A (14P)



Wire side of female terminals

Is there battery voltage?

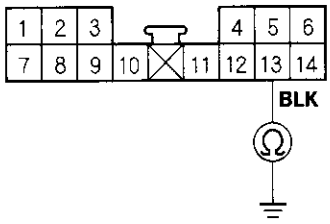
YES—Go to step 5.

NO—Repair open in the wire between the No. 14 fuse in the under-dash fuse/relay box and the heater control panel.■

5. Turn the ignition switch OFF.

6. Check for continuity between the No. 13 terminal of heater control panel connector A (14P) and body ground.

HEATER CONTROL PANEL CONNECTOR A (14P)



Wire side of female terminals

Is there continuity?

YES—Check for loose wires or poor connections at heater control panel connector A (14P). If the connections are good, substitute a known-good heater control panel, and recheck. If the symptom/indication goes away, replace the original heater control panel.■

NO—Check for an open in the wire between the heater control panel and body ground. If the wire is OK, check for poor ground at G501.■

Condenser Fan Circuit Troubleshooting

NOTE: If neither the condenser fan nor the radiator fan work, go to Radiator and Condenser Fans Common Circuit Troubleshooting (see page 21-29).

1. Check the No. 1 (20A) fuse in the under-hood fuse/relay box, and the No. 14 (10A) fuse in the under-dash fuse/relay box.

   Are the fuses OK?

   YES—Go to step 2.

   NO—Replace the fuse(s), and recheck.■

2. Remove the condenser fan relay from the under-hood fuse/relay box, and test it (see page 22-51).

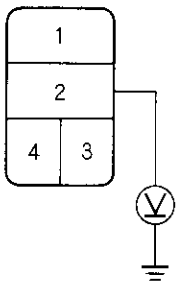
   Is the relay OK?

   YES—Go to step 3.

   NO—Replace the condenser fan relay.■

3. Measure the voltage between the No. 2 terminal of the condenser fan relay 4P socket and body ground.

   CONDENSER FAN RELAY 4P SOCKET



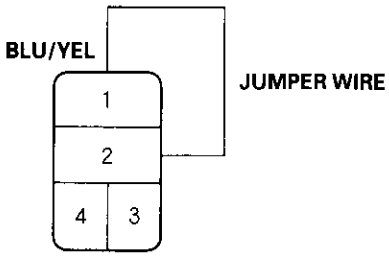
   Is there battery voltage?

   YES—Go to step 4.

   NO—Replace the under-hood fuse/relay box.■

4. Connect the No. 1 and No. 2 terminals of the condenser fan relay 4P socket with a jumper wire.

   CONDENSER FAN RELAY 4P SOCKET



   Does the condenser fan run?

   YES—Go to step 5.

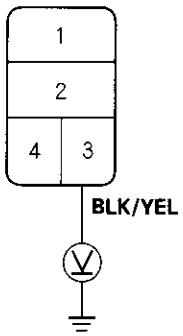
   NO—Go to step 8.

5. Disconnect the jumper wire.

6. Turn the ignition switch ON (II).

7. Measure the voltage between the No. 3 terminal of the condenser fan relay 4P socket and body ground.

   CONDENSER FAN RELAY 4P SOCKET



   Is there battery voltage?

   YES—Replace the under-hood fuse/relay box.■

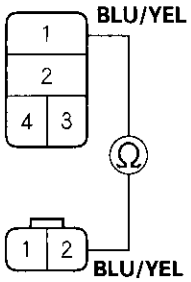
   NO—Repair open in the wire between the No. 14 fuse in the under-dash fuse/relay box and the condenser fan relay.■

8. Disconnect the jumper wire.

9. Disconnect the condenser fan 2P connector.

10. Check for continuity between the No. 1 terminal of the condenser fan relay 4P socket and the No. 2 terminal of the condenser fan 2P connector.

CONDENSER FAN RELAY 4P SOCKET



CONDENSER FAN 2P CONNECTOR
Wire side of female terminals

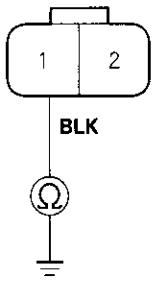
Is there continuity?

YES—Go to step 11.

NO—Repair open in the wire between the condenser fan relay and the condenser fan.■

11. Check for continuity between the No. 1 terminal of the condenser fan 2P connector and body ground.

CONDENSER FAN 2P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Replace the condenser fan motor.■

NO—Check for an open in the wire between the condenser fan and body ground. If the wire is OK, check for poor ground at G301.■

Radiator and Condenser Fans Common Circuit Troubleshooting

NOTE: If both fans and the A/C compressor clutch do not work when the A/C switch is on, go to A/C Pressure Switch Circuit Troubleshooting (see page 21-32).

1. Check the No. 1 (20A) and No. 4 (20A) fuses in the under-hood fuse/relay box, and the No. 14 (10A) fuse in the under-dash fuse/relay box.

   Are the fuses OK?

   YES—Go to step 2.

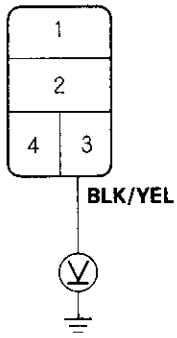
   NO—Replace the fuse(s), and recheck.■

2. Remove the condenser fan relay from the under-hood fuse/relay box.

3. Turn the ignition switch ON (II).

4. Measure the voltage between the No. 3 terminal of the condenser fan relay 4P socket and body ground.

CONDENSER FAN RELAY 4P SOCKET



Is there battery voltage?

YES—Go to step 5.

NO—Repair open in the wire between the No. 14 fuse in the under-dash fuse/relay box and the radiator fan relay, and the condenser fan relay.■

5. Turn the ignition switch OFF.

6. Reinstall the condenser fan relay.

7. Make sure the A/C switch is OFF.

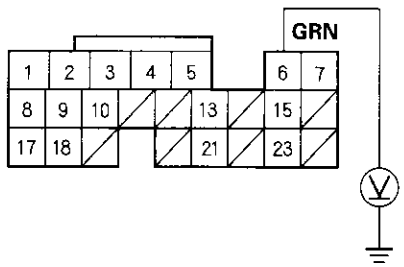
8. Turn the ignition switch ON (II).

(cont'd)

Radiator and Condenser Fans Common Circuit Troubleshooting (cont'd)

9. Using a Backprobe Set, measure the voltage between the No. 6 terminal of ECM connector B (24P) and body ground with the ECM connectors connected.

ECM CONNECTOR B (24P)



Wire side of female terminals

Is there battery voltage?

YES—Update the ECM if it does not have the latest software, or substitute a known-good ECM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM, replace the original ECM. ■

NO—Repair open in the wire between the radiator fan relay, the condenser fan relay and the ECM. ■

Compressor Clutch Circuit Troubleshooting

1. Check the No. 1 (20A) fuse in the under-hood fuse/relay box, and the No. 14 (10A) fuse in the under-dash fuse/relay box.

   Are the fuses OK?

   YES—Go to step 2.

   NO—Replace the fuse(s), and recheck. ■

2. Check the engine coolant temperature, the throttle position sensor, and the idle speed (use the Honda PGM Tester PGM-FI data list if possible).

   Is the coolant temperature above nomal, the throttle position sensor reading too high, or the idle speed too low?

   YES—Troubleshoot and repair the cause of the high engine coolant temperature, high throttle position sensor reading, or low idle speed. ■

   NO—Go to step 3.

3. Remove the compressor clutch relay from the under-hood fuse/relay box, and test it (see page 22-51).

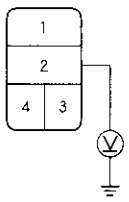
   Is the relay OK?

   YES—Go to step 4.

   NO—Replace the compressor clutch relay. ■

4. Measure the voltage between the No. 2 terminal of the compressor clutch relay 4P socket and body ground.

COMPRESSOR CLUTCH RELAY 4P SOCKET



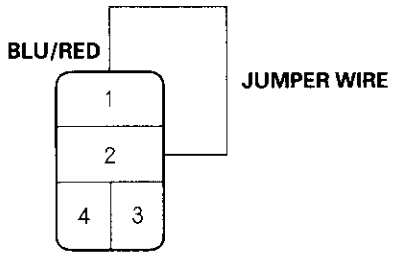
Is there battery voltage?

YES—Go to step 5.

NO—Replace the under-hood fuse/relay box. ■

5. Connect the No. 1 and No. 2 terminals of the compressor clutch relay 4P socket with a jumper wire.

COMPRESSOR CLUTCH RELAY 4P SOCKET



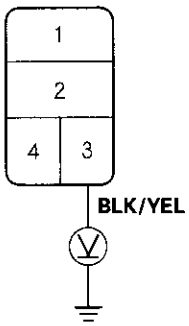
Does the compressor clutch click ?

YES—Go to step 6.

NO—Go to step 14.

6. Disconnect the jumper wire.
7. Turn the ignition switch ON (II).
8. Measure the voltage between the No. 3 terminal of the compressor clutch relay 4P socket and body ground.

COMPRESSOR CLUTCH RELAY 4P SOCKET



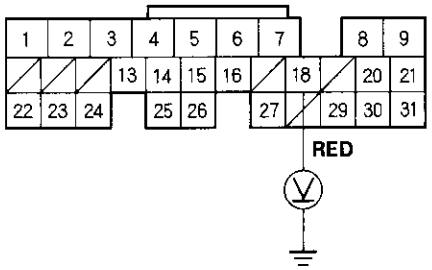
Is there battery voltage?

YES—Go to step 9.

NO—Repair open in the wire between the No. 14 fuse in the under-dash fuse/relay box and the compressor clutch relay.■

9. Turn the ignition switch OFF.
10. Reinstall the compressor clutch relay.
11. Make sure the A/C switch is OFF.
12. Turn the ignition switch ON (II).
13. Using the Backprobe Set, measure the voltage between the No. 18 terminal of ECM connector E (31P) and body ground with the ECM connectors connected.

ECM CONNECTOR E (31P)



Wire side of female terminals

Is there battery voltage?

YES—Update the ECM if it does not have the latest software, or substitute a known-good ECM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM, replace the original ECM.■

NO—Repair open in the wire between the compressor clutch relay and the ECM.■

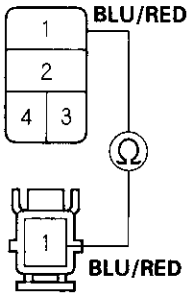
14. Disconnect the jumper wire.
15. Disconnect the compressor clutch 1P connector.

(cont'd)

Compressor Clutch Circuit Troubleshooting (cont'd)

16. Check for continuity between the No. 1 terminal of the compressor clutch relay 4P socket and the No. 1 terminal of the compressor clutch 1P connector.

COMPRESSOR CLUTCH RELAY 4P SOCKET



COMPRESSOR CLUTCH 1P CONNECTOR
Terminal side of male terminals

Is there continuity?

YES—Check the compressor clutch clearance, the thermal protector, and the compressor clutch field coil (see page 21-48).■

NO—Repair open in the wire between the compressor clutch relay and the compressor clutch.■

A/C Pressure Switch Circuit Troubleshooting

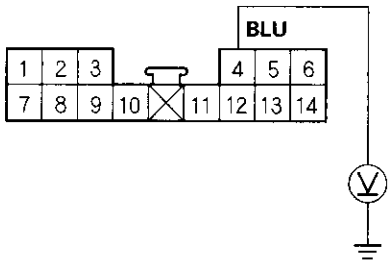
1. Turn the ignition switch ON (II).
2. Turn the blower switch on, and check for blower motor operation.

   Does the blower motor run on all speeds?

   YES—Go to step 3.

   NO—Troubleshoot the blower motor circuit (see page 21-20).
3. Turn the ignition switch OFF.
4. Disconnect heater control panel connector A (14P).
5. Turn the ignition switch ON (II).
6. Measure the voltage between the No. 4 terminal of heater control panel connector A (14P) and body ground.

HEATER CONTROL PANEL CONNECTOR A (14P)



Wire side of female terminals

Is there battery voltage?

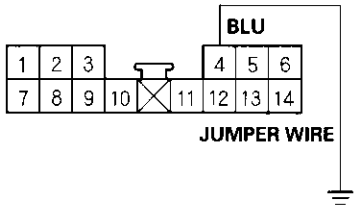
YES—Go to step 7.

NO—Go to step 9.

7. Start the engine.

8. Connect the No.4 terminal of heater control connector A (14P) to body ground with a jumper wire.

HEATER CONTROL PANEL CONNECTOR A (14P)



Wire side of female terminals

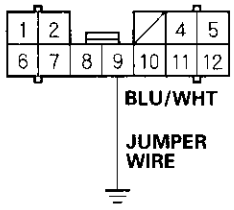
Does the A/C system come on?

YES—Replace the heater control panel. ■

NO—Refer to the multiplex control system (see page 22-168). ■

9. Using the Backprobe Set, connect the No. 9 terminal of under-dash fuse/relay box connector F (12P) to body ground with a jumper wire.

UNDER-DASH FUSE/RELAY BOX CONNECTOR F (12P)



Wire side of female terminals

Does the A/C system come on?

YES—Go to step 10.

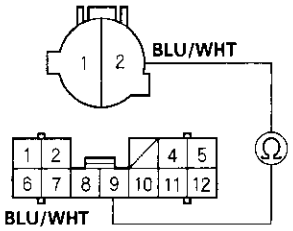
NO—Refer to the multiplex control system (see page 22-168). ■

NOTE: Check for multiplex codes in mode 1. Follow the troubleshooting for any codes found. If no codes are found, subsititute a known-good multiplex control unit and a ECM one at a time.

10. Disconnect the A/C pressure switch 2P connector and under-dash fuse/relay box connector F (12P).

11. Check for continuity between the No. 2 terminal of the A/C pressure switch 2P connector and the No. 9 terminal of under-dash fuse relay box connector F (12P).

A/C PRESSURE SWITCH 2P CONNECTOR
Wire side of female terminals



UNDER-DASH FUSE/RELAY BOX CONNECTOR F (12P)
Wire side of female terminals

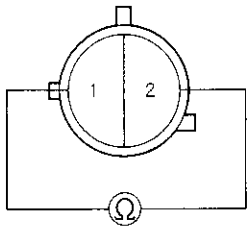
Is there continuity?

YES—Go to step 12.

NO—Repair open in the wire between the under-dash fuse/relay box and the A/C pressure switch. ■

12. Check for continuity between the No. 1 and No. 2 terminals of the A/C pressure switch.

A/C PRESSURE SWITCH



Is there continuity?

YES—Repair open in the wire between the heater control panel and the A/C pressure switch. ■

NO—Go to step 13.

13. Check for proper A/C system pressure.

Is the pressure within specifications?

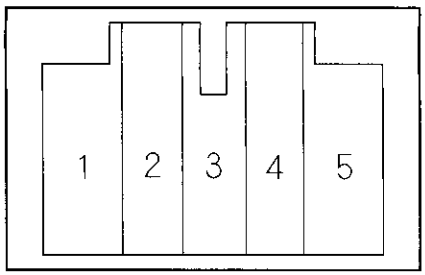
YES—Replace the A/C pressure switch. ■

NO—Repair the A/C pressure problem. ■

Air Mix Control Motor Test

1. Disconnect the 5P connector from the air mix control motor.
2. Connect battery power to the No. 1 terminal of the air mix control motor, and ground the No. 2 terminal; the air mix control motor should run, and stop at Max Cool. If it doesn't, reverse the connections; the air mix control motor should run, and stop at Max Hot. If the air mix control motor does not run, 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.
   - If the linkage or door stick or bind, repair them as needed.
   - If the air mix control motor runs smoothly, go to step 3.

AIR MIX CONTROL MOTOR



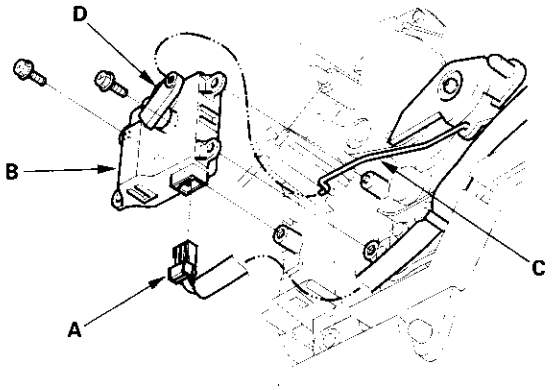
3. Measure the resistance between the No. 4 and No. 5 terminals. It should be between 2.1 k to 3.9 kΩ.
4. Reconnect the air mix control motor 5P connector, then turn the ignition switch ON (II).
5. Using the Backprobe Set, measure the voltage between the No. 3 and No. 4 terminals.

   Max Cool — about 1 V
   Max Hot — about 4 V

6. If either the resistance or voltage readings are not as specified, replace the air mix cotrol motor.

Air Mix Control Motor Replacement

1. Remove the under-dash fuse/relay box (see page 22-49).
2. Disconnect the 5P connector (A) from the air mix control motor (B). Remove the self-tapping screws and the air mix control motor from the heater unit. Remove the rod (C) from the arm (D) of the air mix control motor.



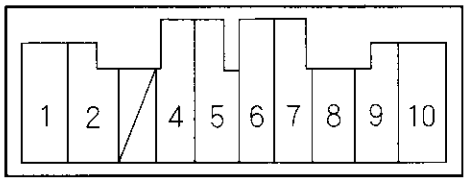
3. Install the motor in the reverse order of removal. After installation, make sure the motor runs smoothly.

Mode Control Motor Test

1. Disconnect the 10P connector from the mode control motor.

2. Connect battery power to the No. 1 terminal of the mode control motor, and ground the No. 2 terminal; the mode control motor should run smoothly and stop at Defrost. If it doesn't, reverse the connections; the mode control motor should run smoothly and stop at Vent. When the mode control motor stops running, disconnect battery power immediately.

MODE CONTROL MOTOR



3. If the mode control motor does 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.
   - 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 the No. 4, 5, 6, 7, 8, and 9 terminals and the No. 10 terminal individually. There should be continuity for a moment at each terminal as the motor moves past each mode position.

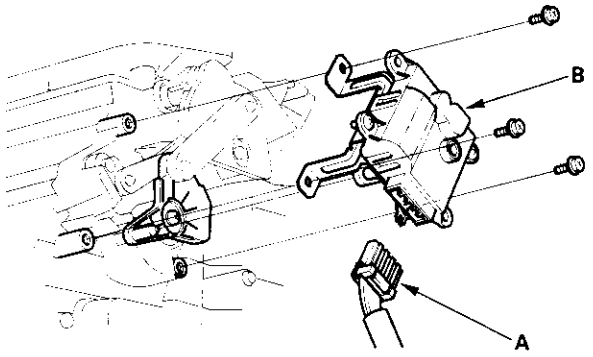
5. If there is no continuity for a moment at each terminal, replace the mode control motor.

Mode Control Motor Replacement

1. Remove the ECM (see page 11-4).

2. Remove the relay mount bracket bolt, and move the relays out of the way.

3. Disconnect the 10P 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 linkage is properly engaged with the motor. After installation, make sure the motor runs smoothly.

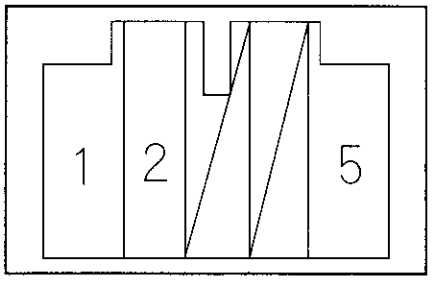
Recirculation Control Motor Test

1. Disconnect the 5P connector from the recirculation control motor.

NOTICE
Incorrectly applying power and ground to the recirculation control motor will damge it. Follow the instructions carefully.

2. Connect battery power to the No. 5 terminal of the recirculation control motor, and ground the No. 1 and No. 2 terminals; the recirculation control motor should run smoothly. To avoid damaging the recirculation control motor, do not reverse power and ground. Disconnect the No. 1 or No. 2 terminals from ground; the recirculation control motor should stop at Fresh or Recirculate. Don't cycle the recirculation control motor for a long time.

RECIRCULATION CONTROL MOTOR



3. If the recirculation control motor does not run in step 2, remove it, then check the recirculation control linkage and doors for smooth movement.

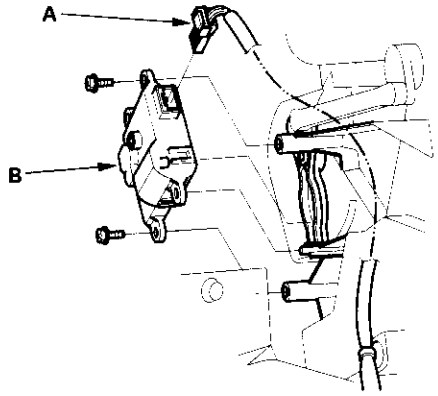
- If the linkage and doors move smoothly, replace the recirculation control motor.
- If the linkage or doors stick or bind, repair them as needed.

Recirculation Control Motor Replacement

1. Remove the ECM (see page 11-4).

2. Remove the relay mount bracket bolt, and move the relays out of the way.

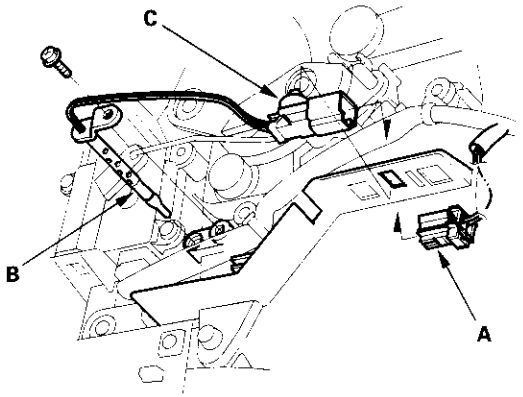
3. Disconnect the 5P connector (A) from the recirculation control motor (B). Remove the self-tapping screws and the recirculation control motor from the blower unit.



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.

Evaporator Temperature Sensor Replacement

1. Remove the driver's dashboard lower cover (see page 20-59) and the under cover (see page 20-60).
2. Remove the under-dash fuse/relay box (see page 22-49).
3. Disconnect the 2P connector (A) from the evaporator temperature sensor (B), then remove the connector clip (C). Remove the self-tapping screw, and carefully pull out the evaporator temperature.

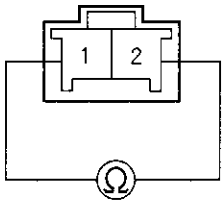


4. Install the sensor in the reverse order of removal.

Evaporator Temperature Sensor Test

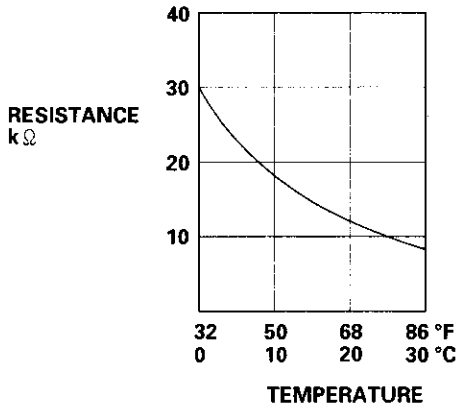
1. Dip the sensor in ice water, and measure the resistance between its terminals.

EVAPORATOR TEMPERATURE SENSOR



Terminal side of male terminals

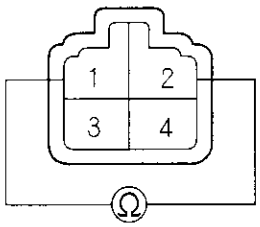
2. Then pour hot water on the sensor, and check for a change in resistance.
3. Compare the resistance readings with the specifications shown in the graph; the resistance should be within the specifications.



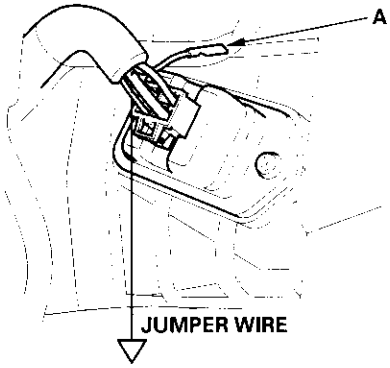
Power Transistor Test

1. Disconnect the 4P connector from the power transistor.
2. Measure the resistance between the No. 1 and No. 2 terminals of the power transistor. It should be about 1.4—1.5 kΩ.
   - If the resistance is within the specifications, go to step 3.
   - If the resistance is not within the specifications, replace the power transistor.

POWER TRANSISTOR



3. Carefully release the lock tab on the No. 4 terminal (BLU/YEL) (A) in the 4P connector, then remove the terminal and insulate it from body ground.

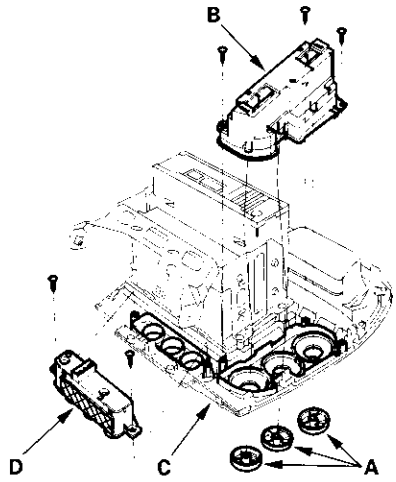


(To 12 V power source on vehicle)

4. Reconnect the 4P connector to the power transistor.
5. Supply 12 volts to the No. 4 cavity with a jumper wire.
6. Turn the ignition switch ON (II), and check that the blower motor runs.
   - If the blower motor does not run, replace the power transistor.
   - If the blower motor runs, the power transistor is OK.

Heater Control Panel and Push Switch Assembly Removal and Installation

1. Remove the center panel (see page 20-62).
2. Remove the dials (A), then remove the self-tapping screws and the heater control panel (B) from the center panel (C). Remove the self-tapping screws and the push switch assembly (D) from the center panel.

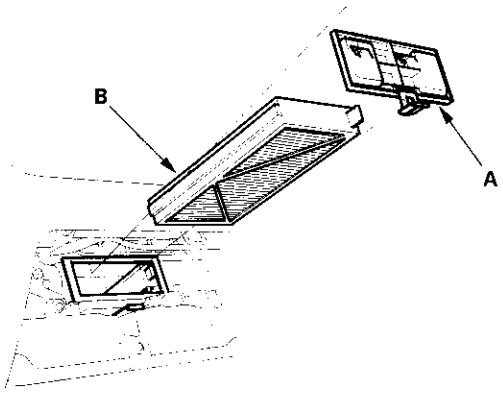


3. Install the control panel and push switch assembly in the reverse order of removal. After installation, operate the control panel controls to see whether it works properly.
4. Run the self-diagnosis function to confirm that there are no problems in the system (see page 21-8).

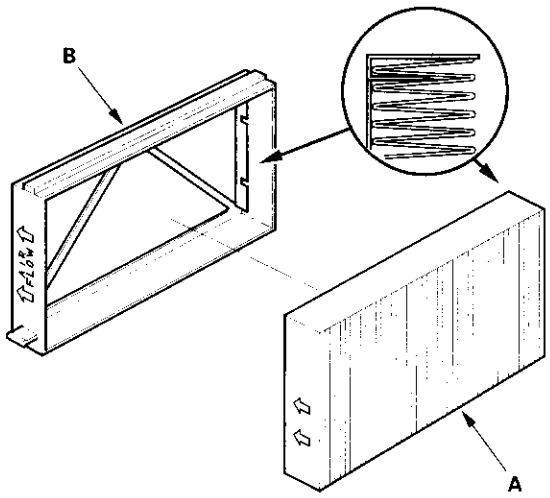
Dust and Pollen Filter Replacement

The dust and pollen filters should be replaced every 30,000 miles (48,000 km) or 24 months whichever comes first. Replace the filters more often if the air flow is less than usual.

1. Open the glove box. Remove both glove box stops, then let the glove box hang down (see page 20-63).
2. Remove the filter lid (A) from the blower unit, then pull out the first dust and pollen filter (B). Slide the second filter to the left, and pull it out.



3. Remove the filter (A) from the housing (B), and replace the filter.

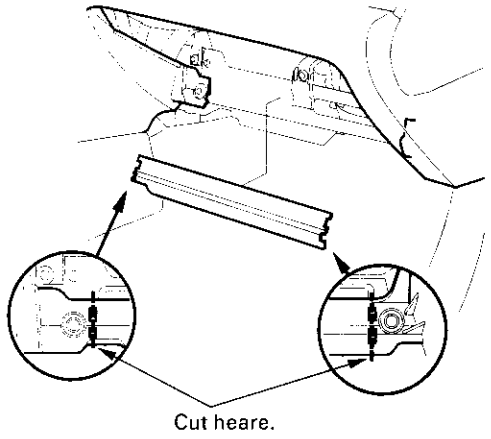


4. Install the filters in the reverse order of removal.

Blower Unit Removal and Installation

For some models: SRS components are located in this area. Review the SRS component locations (see page 23-13) and precautions and procedures (see page 23-14) in the SRS section before performing repairs or service.

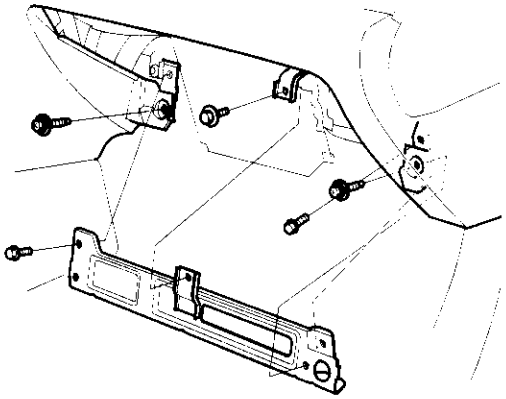
1. Make sure you have the anti-theft code for the radio, then write down the frequencies for the preset buttons.
2. Disconnect the battery negative cable, and wait 3 minutes before beginning work.
3. Remove the right kick panel (see page 20-50), passenger's dashboard lower cover, and the glove box (see page 20-63).
4. Cut the plastic cross brace in the glove box opening with diagonal cutters in the area shown. Remove and discard the plastic cross brace.



(cont'd)

Blower Unit Removal and Installation (cont'd)

5. Remove the steering hanger beam bracket cover from the right side of the glove box opening, then remove the bolts and the glove box frame.

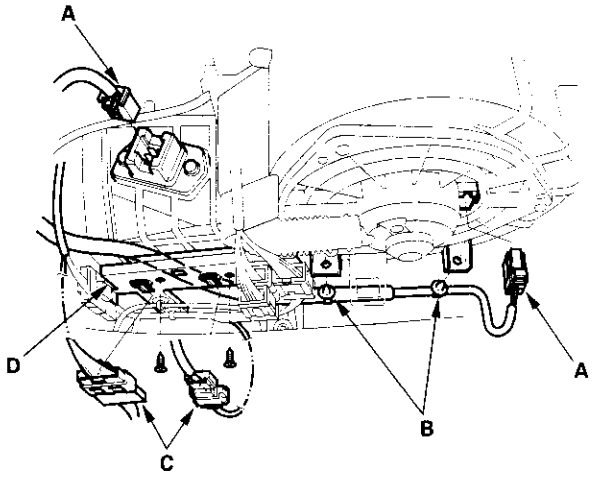


6. Remove the ECM (see page 11-4).

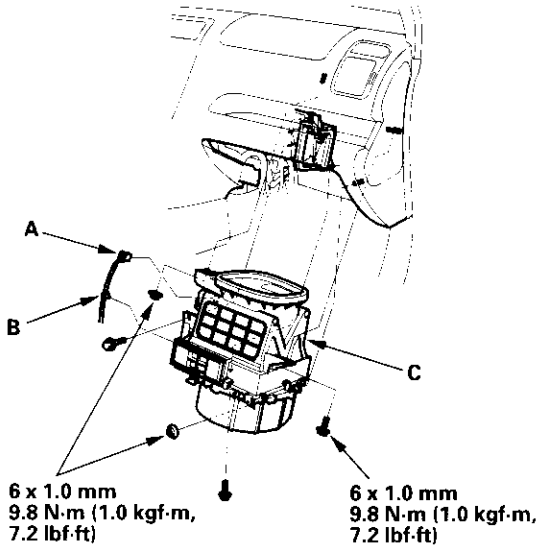
7. Remove the EPS control unit (see page 17-67).

8. Disconnect and remove the PGM-FI main relays and bracket assembly, then remove the ECM bracket.

9. Disconnect the connectors (A) from the blower motor and the power transistor, then remove the wire harness clips (B) and the connectors (C). Remove the self-tapping screws and the bracket (D).



10. Disconnect the connector (A) from the recirculation control motor, then remove the wire harness clip (B). Remove the mounting bolts, the mounting nuts and the blower unit (C).



11. Install the unit in the reverse order of removal. Make sure that there is no air leakage.

12. Reconnect the negative battery terminal.

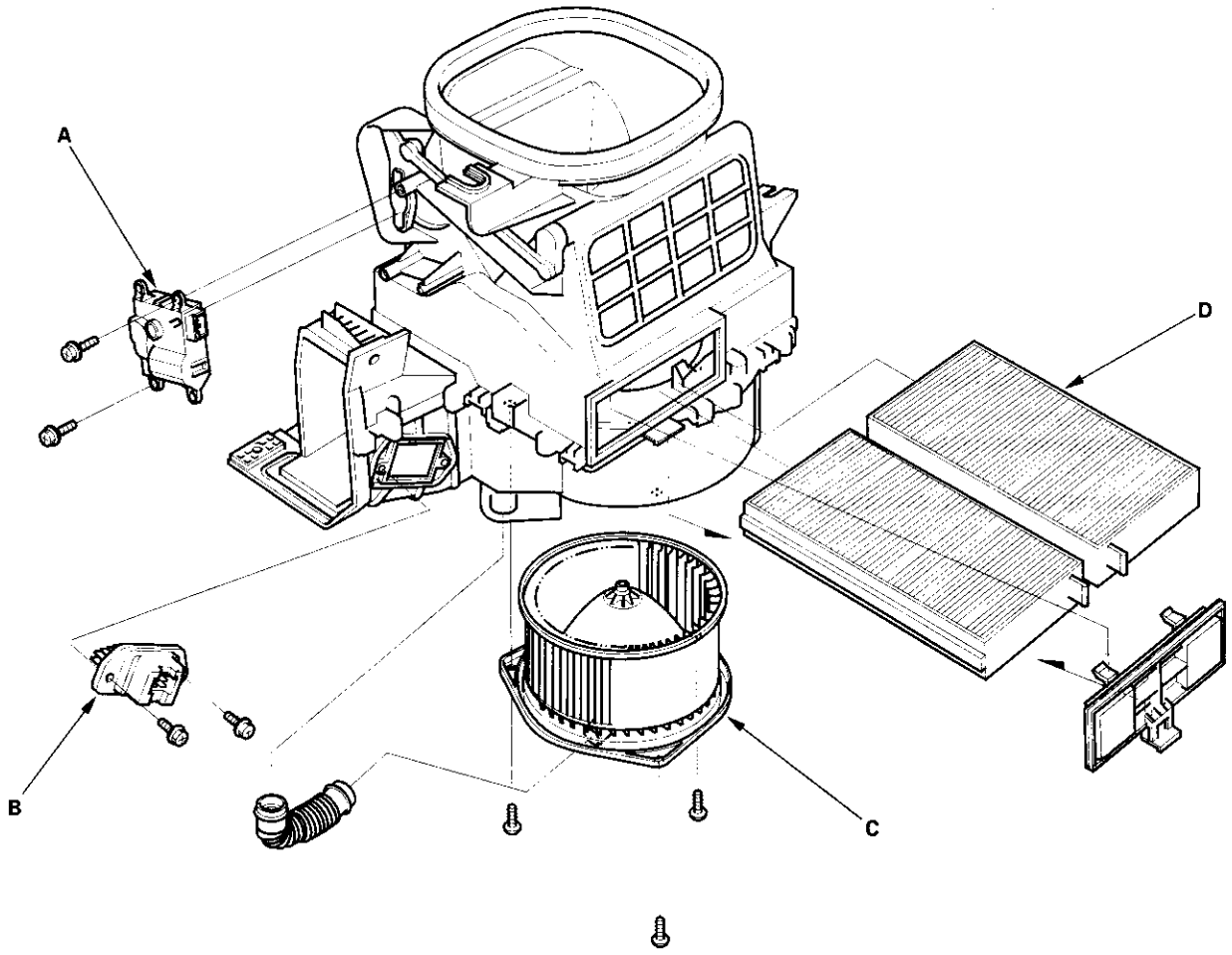
13. Do the engine control module (ECM) idle learn procedure (see page 11-139).

14. Enter the anti-theft code for the radio, then enter the customer's radio station presets.

Blower Unit Components Replacement

Note these items when overhauling the blower unit:

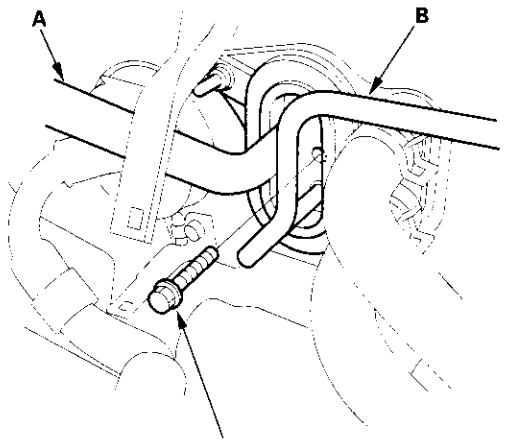
- The recirculation control motor (A), the power transistor (B), the blower motor (C), and the dust and pollen filters (D) can be replaced without removing the blower unit.
- Before reassembly, make sure that the recirculation control linkage and doors move smoothly.
- After reassembly, make sure the recirculation control motor runs smoothly (see page 21-36).



Evaporator Core Replacement

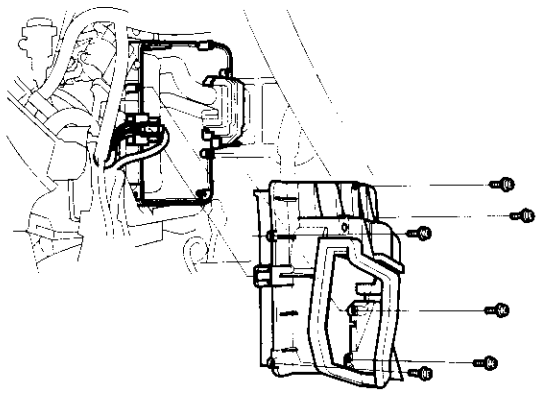
1. Recover the refrigerant with a recovery/recycling/charging station (see page 21-53).

2. Remove the bolt, then disconnect the suction line (A) and the receiver line (B) from the evaporator core.

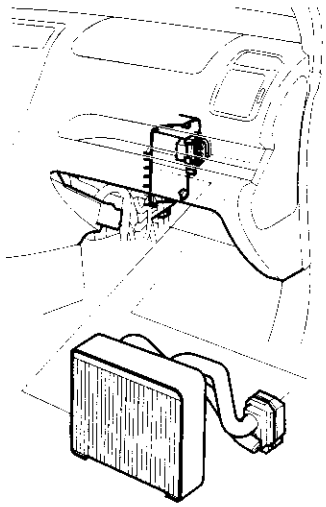


3. Remove the blower unit (see page 21-39).

4. Remove the self-tapping screws and the expansion valve cover.



5. Carefully pull out the evaporator core without bending the pipes.



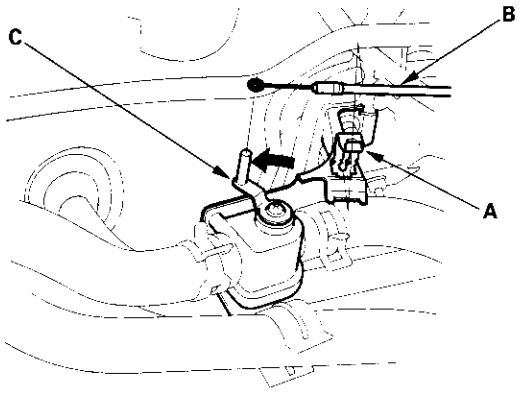
6. Install the core in the reverse order of removal, and note these items.

   - If you're installing a new evaporator core, add refrigerant oil (KEIHIN SP-10) (see page 21-6).
   - 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 21-55).

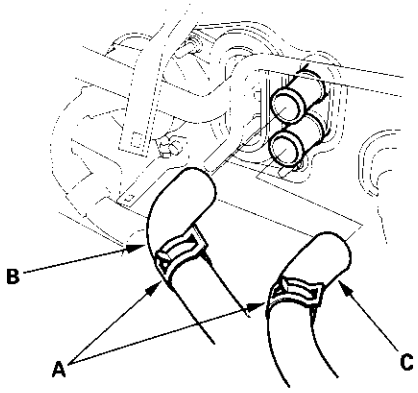
Heater Unit/Core Replacement

SRS components are located in this area. Review the SRS component locations (see page 23-13), and precautions and procedures (see page 23-14) in the SRS section before performing repairs or service.

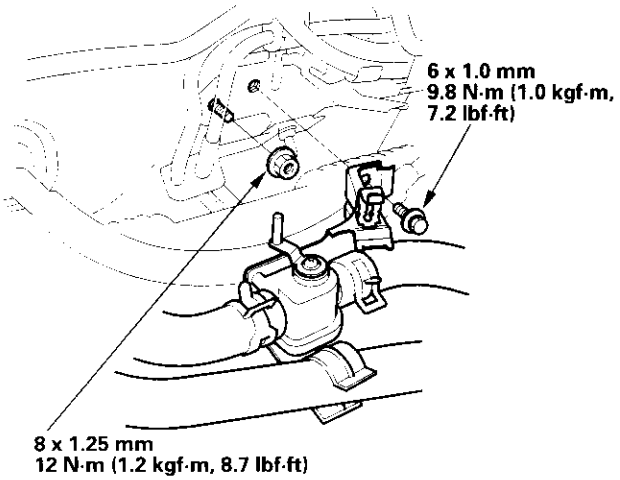
1. Make sure you have the anti-theft code for the radio, then write down the frequencies for the radio's preset buttons.
2. Disconnect the negative cable from the battery.
3. Disconnect the suction and receiver lines from the evaporator core (see page 21-42).
4. From under the hood, open the cable clamp (A), then disconnect the heater valve cable (B) from the heater valve arm (C). Turn the heater valve arm to the fully opened position as shown.



5. When the engine is cool, drain the engine coolant from the radiator (see page 10-6).
6. Slide the hose clamps (A) back, then disconnect the inlet heater hose (B) and the outlet heater hose (C) from the heater core. 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.



7. Remove the bolt and the heater valve, then remove the mounting nut from the heater unit. Take care not to damage or bend the fuel lines and the brake lines, etc.

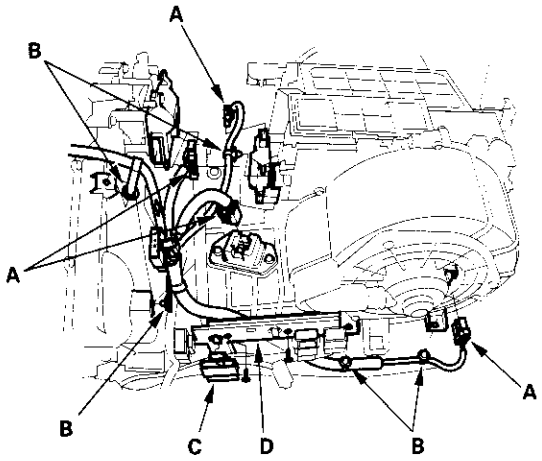


(cont'd)

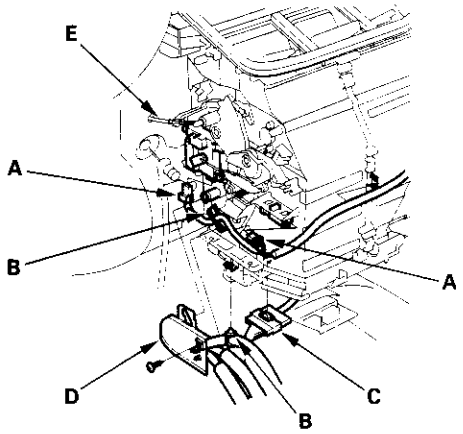
Heater Unit/Core Replacement (cont'd)

8. Remove the dashboard (see page 20-66).

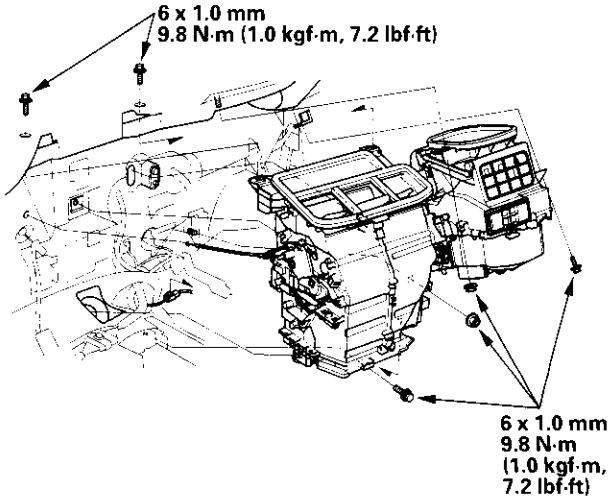
9. Disconnect the connectors (A) from the blower motor, the recirculation control motor, the mode control motor, and the power transistor, then remove the wire harness clips (B) and the connector (C). Remove the self-tapping screws and the bracket (D).



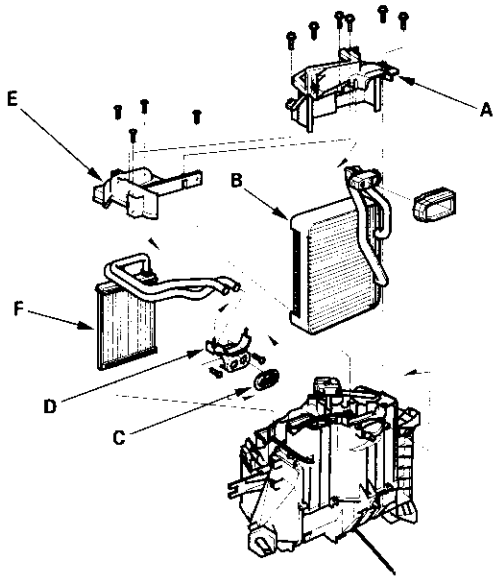
10. Disconnect the connectors (A) from the evaporator temperature sensor and the air mix control motor, then remove the wire harness clips (B) and the connector (C). Remove the self-tapping screw and the cover (D). Disconnect the heater valve cable (E).



11. Remove the mounting bolts, the mounting nuts, and the heater unit.



12. Remove the self-tapping screws and the expansion valve cover (A). Carefully pull out the evaporator core (B) so you don't bend the inlet and outlet pipes. Remove the grommet (C), then remove the self-tapping screws and the flange cover (D). Remove the self-tapping screws and the pipe cover (E), then carefully pull out the heater core (F) so you don't bend the inlet and outlet pipes.



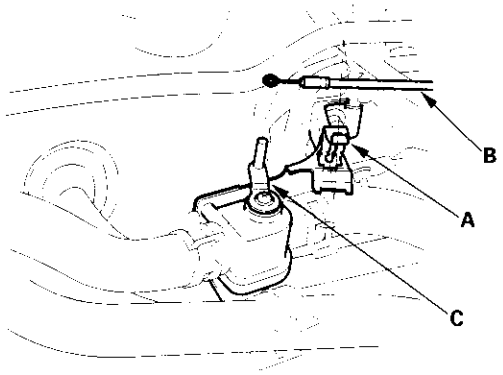
13. Install the heater core and the evaporator core in the reverse order of removal.

14. Install the heater unit in the reverse order of removal, and note these items:

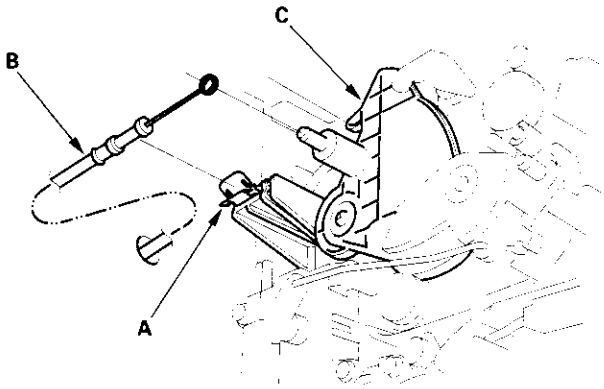
    - Do not interchange the inlet and outlet heater hoses, and install the hose clamps securely.
    - Refill the cooling system with engine coolant (see page 10-6).
    - Adjust the heater valve cable (see page 21-46).
    - Make sure that there is no coolant leakage.
    - Make sure that there is no air leakage.
    - Refer to evaporator core replacement (see step 6 on page 21-42).
    - Do the engine control module (ECM) idle learn procedure (see page 11-139).
    - Enter the anti-theft code for the radio, then enter the customer's radio station presets.

Heater Valve Cable Adjustment

1. From under the hood, open the cable clamp (A), then disconnect the heater valve cable (B) from the heater valve arm (C).



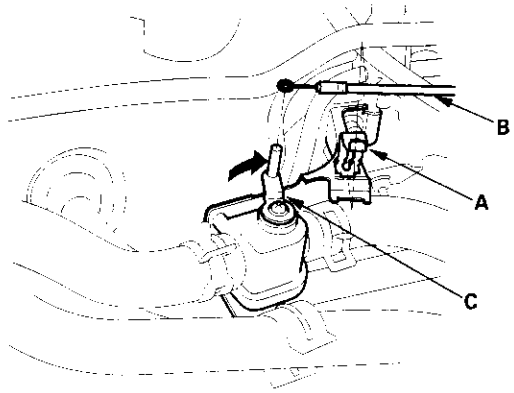
2. From under the dash, disconnect the heater valve cable housing from the cable clamp (A), and disconnect the heater valve cable (B) from the air mix control linkage (C).



3. Set the temperature control dial on Max Cool with the ignition switch ON (II).

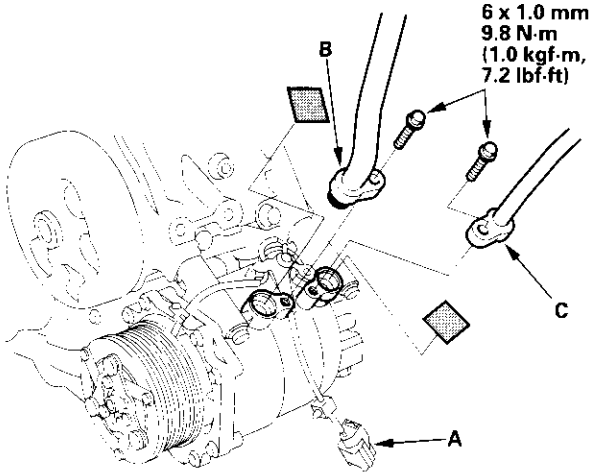
4. Attach the heater valve cable (B) to the air mix control linkage (C) as shown above, then snap the heater valve cable housing into the cable clamp (A).

5. From under the hood, turn the heater valve arm (C) to the fully closed position as shown, and hold it. Attach the heater valve cable (B) to the heater valve arm, and gently pull on the heater valve cable housing to take up any slack, then install the heater valve cable housing into the cable clamp (A).

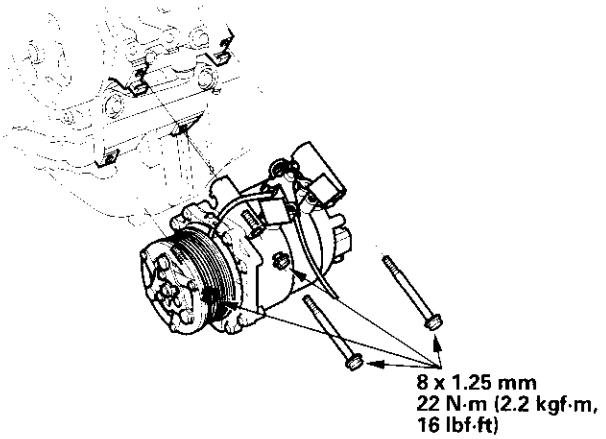


Compressor Replacement

1. If the 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. Make sure you have the anti-theft code for the radio, then write down the frequencies for the radio's preset buttons.
3. Disconnect the negative cable from the battery.
4. Recover the refrigerant with a recovery/recycling/charging station (see page 21-53).
5. Remove the alternator (see page 4-29).
6. Remove the A/C condenser fan assembly (see page 10-10).
7. Disconnect the compressor clutch connector (A), remove the bolts, then disconnect the suction line (B) and the discharge line (C) from the compressor. Plug or cap the lines immediately after disconnecting them to avoid moisture and dust contamination.



8. Remove the mounting bolts and the compressor.



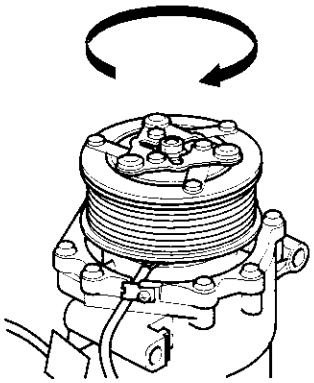
9. Install the compressor in the reverse order of removal, and note these items:

- Before installing the new compressor, check for metal or other contamination in the line. Replace any contaminated parts.
- If you're installing a new compressor, you must calculate the amount of refrigerant oil to be removed from it (see page 21-6).
- 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 (KEIHIN SP-10) for HFC-134a KEIHIN spiral type 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 21-55).
- Do the engine control module (ECM) idle learn procedure (see page 11-139).
- Enter the anti-theft code for the radio, then enter the customer's radio station presets.

Compressor Clutch Check

1. Check the armature plate for discoloration, peeling, or other damage. If there is damage, replace the clutch set (see page 21-49).

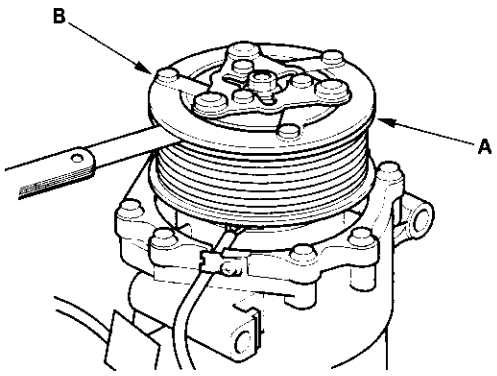
2. Check the rotor pulley bearing play and drag by rotating the rotor pulley by hand. Replace the clutch set with a new one if it is noisy or has excessive play/drag (see page 21-49).



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 21-49) and add or remove shims as needed to increase or decrease clearance.

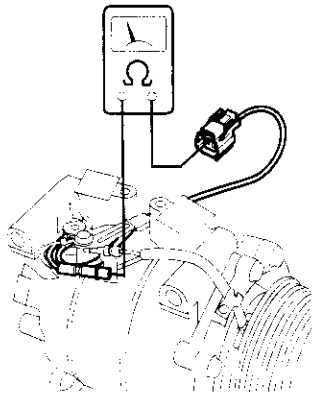
Clearance: 0.5±0.15 mm (0.020±0.006 in.)

NOTE: The shims are available in four thicknesses: 0.1 mm, 0.2 mm, 0.4 mm, and 0.5 mm.



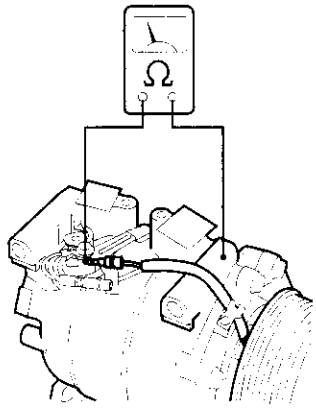
4. Release the field coil connector from the holder, then disconnect it. Check the thermal protector for continuity. If there is no continuity, replace the thermal protector (see page 21-51).

NOTE: The thermal protector will have no continuity above 252 to 270°F (122 to 132°C). When the temperature drops below 241 to 219°F (116 to 104°C), the thermal protector will have continuity.



5. Check resistance of the field coil. If resistance is not within specifications, replace the field coil (see page 21-49).

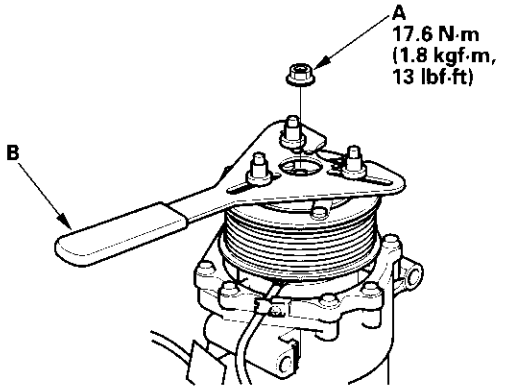
Field Coil Resistance: 3.05–3.35 ohms at 68°F (20°C)



Compressor Clutch Overhaul

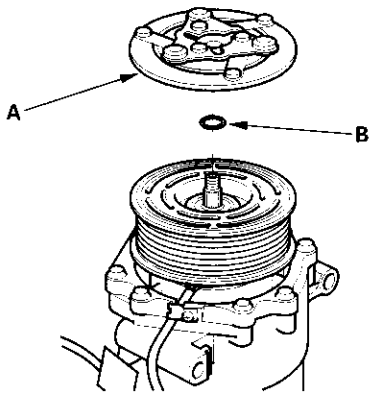
Special Tool Required
A/C clutch holder, Robinair 10204, Kent-Moore J37872, or Honda Tool and Equipment KMT-J33939, commercially available

1. Remove the center nut (A) while holding the armature plate with a commercially available A/C clutch holder (B).

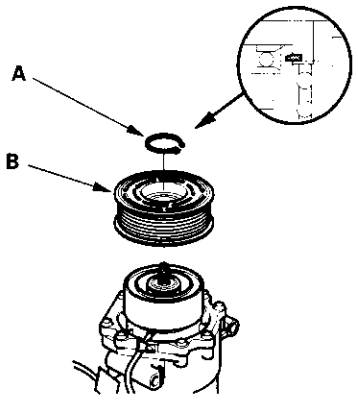


2. Remove the armature plate (A) and shim(s) (B), taking care not to lose the shim(s). If the clutch needs adjustment, increase or decrease the number and thickness of shims as necessary, then reinstall the armature plate, and recheck its clearance (see page 21-48).

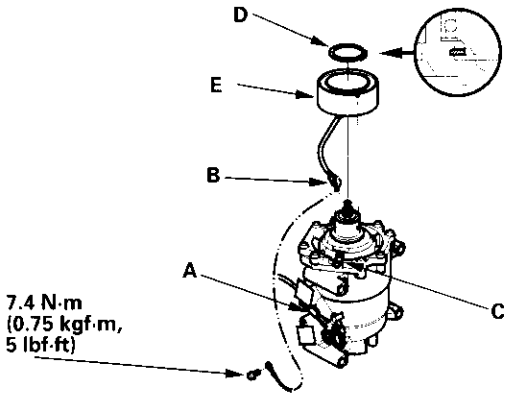
   NOTE: The shims are available in four thicknesses: 0.1 mm, 0.2 mm, 0.4 mm, and 0.5 mm.



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 or the compressor.



4. Remove the bolt and holder (A), then disconnect the field coil connector (B). Loosen the clamp screw (C) to free the field coil wire. Remove the snap ring (D) with snap ring pliers, then remove the field coil (E). Be careful not to damage the field coil or the compressor.



(cont'd)

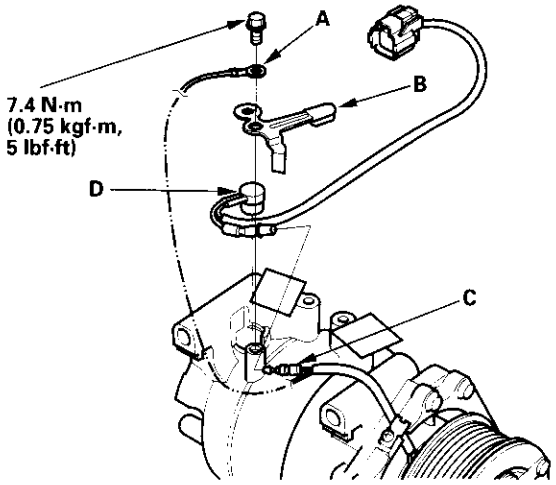
Compressor Clutch Overhaul (cont'd)

5. Reassemble the clutch in the reverse order of disassembly, and note these items:

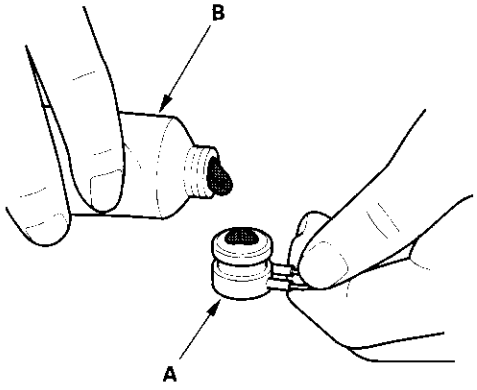
   - Install the field coil with the wire side facing down, and align the boss on the field coil with the hole in the compressor.
   - Clean the rotor pulley and compressor sliding surfaces with contact cleaner or other non-petroleum solvent.
   - Install new snap rings, note the installation direction, 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.

Compressor Thermal Protector Replacement

1. Remove the bolt, the ground terminal (A), and the holder (B). Disconnect the field coil connector (C), then remove the thermal protector (D).



2. Replace the thermal protector (A) with a new one, and apply silicone sealant (B) to the bottom of the thermal protector.

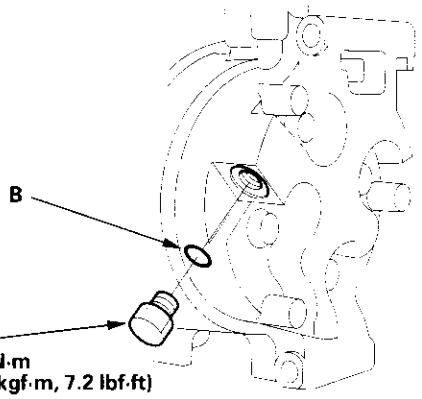


3. Install in the reverse order of removal.

Compressor Relief Valve Replacement

1. Recover the refrigerant with a recovery/recycling/charging station (see page 21-53).

2. Remove the relief valve (A) and the O-ring (B). Plug the opening to keep foreign matter from entering the system and the compressor oil from running out.



3. Clean the mating surfaces.

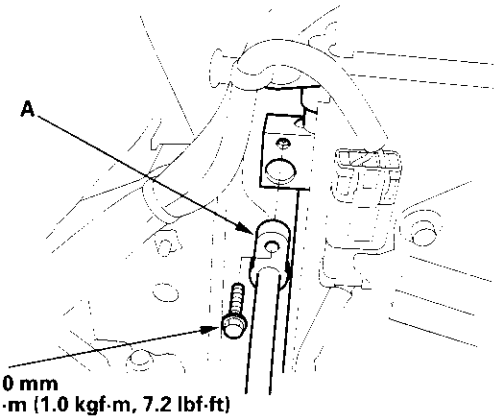
4. Install a new O-ring on the relief valve, and apply a thin coat of refrigerant oil to the O-ring.

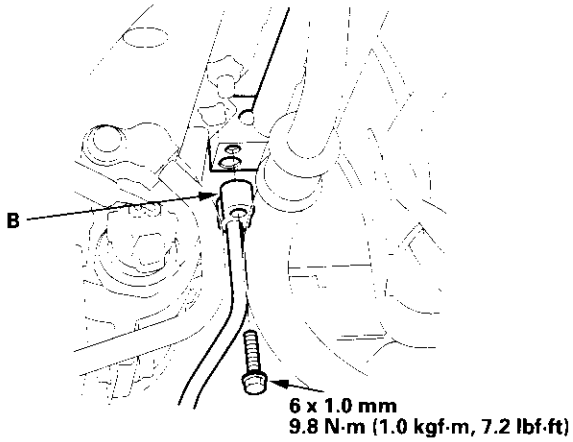
5. Remove the plug, and install and tighten the relief valve.

6. Charge the system (see page 21-55).

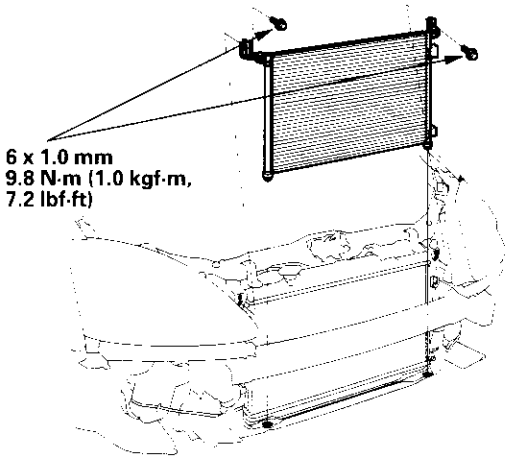
Condenser Replacement

1. Recover the refrigerant with a recovery/recycling/charging station (see page 21-53).
2. Remove the front bumper (see page 20-85).
3. Remove the bolts, then disconnect the discharge line (A) and the condenser line (B) from the condenser. Plug or cap the lines immediately after disconnecting them to avoid moisture and dust contamination.





4. Remove the mounting bolts, then remove the condenser by lifting it up. Be careful not to damage the radiator or the condenser fins when removing the condenser.



5. Install the condenser in the reverse order of removal, and note these items.

- If you're installing a new condenser, add refrigerant oil (KEIHIN SP-10) (see page 21-6).
- 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.
- Be careful not to damage the radiator or the condenser fins when installing the condenser.
- Charge the system (see page 21-55).

Refrigerant Recovery

⚠CAUTION

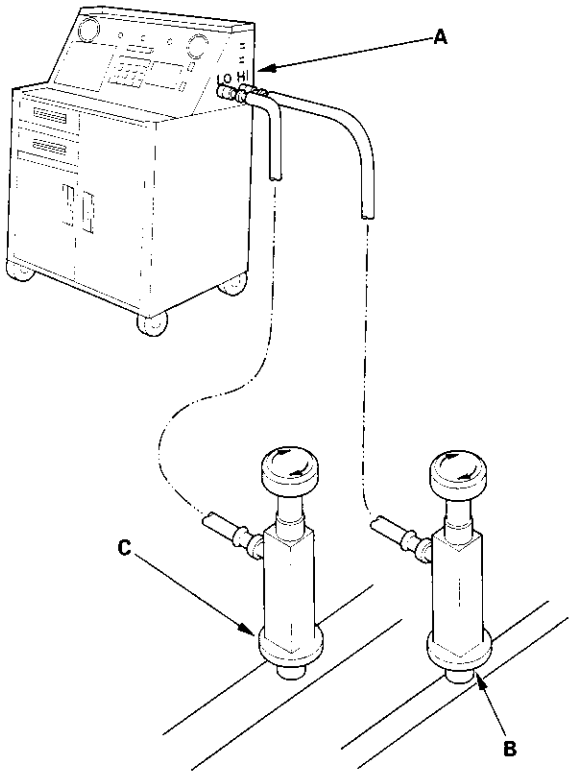
- Air conditioning refrigerant or lubricant vapor can irritate your eyes, nose, or throat.
- Be careful when connecting service equipment.
- Do not breathe refrigerant or vapor.

Use only service equipment that is U.L.-listed and is certified to meet the requirements of SAE J2210 to remove HFC-134a (R-134a) from the air conditioning system.

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 a 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

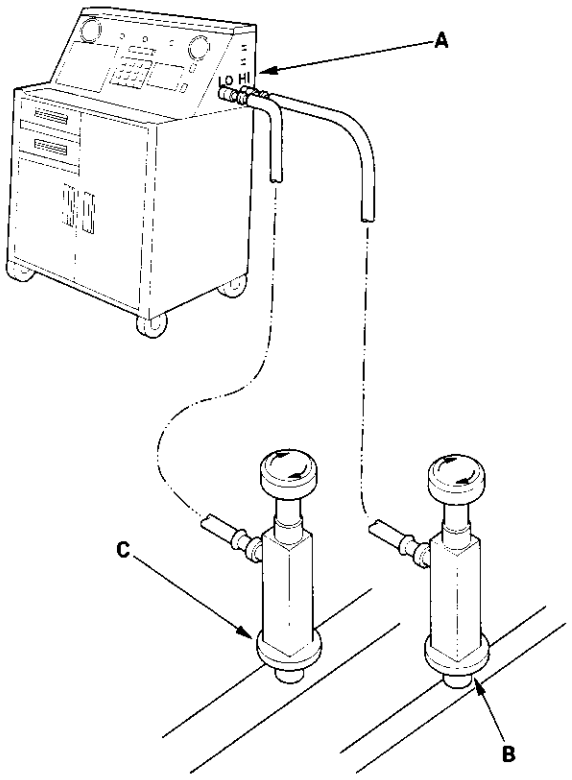
- Air conditioning refrigerant or lubricant vapor can irritate your eyes, nose, or throat.
- Be careful when connecting service equipment.
- Do not breathe refrigerant or vapor.

Use only service equipment that is U.L.-listed and is certified to meet the requirements of SAE J2210 to remove HFC-134a (R-134a) from the air conditioning system.

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. When an A/C system has been opened to the atmosphere, such as during installation or repair, it must be evacuated using a R-134a refrigerant recovery/recycling/charging station (If the system has been open for several days, the receiver/dryer should be replaced, and the system should be evacuated for several hours.)
2. Connect a 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. Evacuate the system.



3. If the low-pressure does not reach more than 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 step 3 on page 21-56).

System Charging

⚠CAUTION

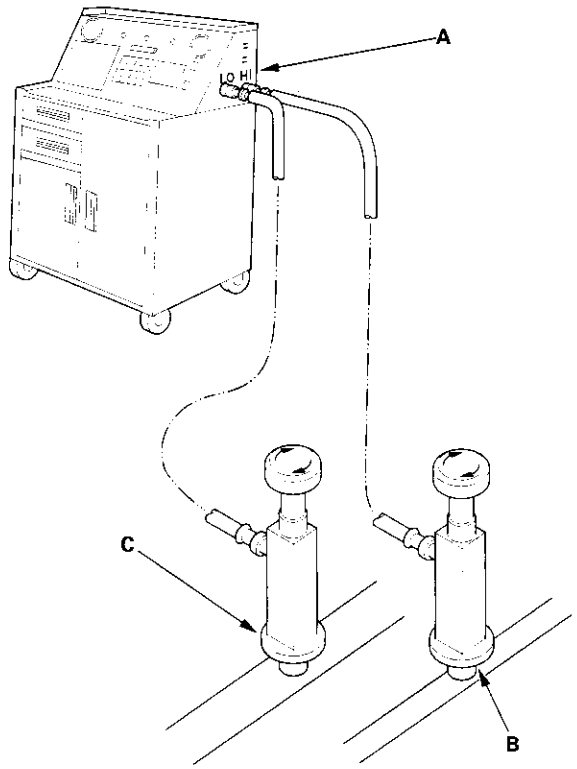
- Air conditioning refrigerant or lubricant vapor can irritate your eyes, nose, or throat.
- Be careful when connecting service equipment.
- Do not breathe refrigerant or vapor.

Use only service equipment that is U.L.-listed and is certified to meet the requirements of SAE J2210 to remove HFC-134a (R-134a) from the air conditioning system.

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 a 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. Evacuate the system (see page 21-54).
3. Add the same amount of new refrigerant oil to the system that was removed during recovery. Use only KEIHIN SP-10 refrigerant oil.
4. Charge the system with the specified amount of R-134a refrigerant. Do not overcharge the system; the compressor will be damaged.

   Select the appropriate units of measure for your refrigerant charging station.

   Refrigerant capacity:
   500 to 550 g
   0.50 to 0.55 kg
   1.10 to 1.21 lbs
   17.6 to 19.4 oz
5. Check for refrigerant leaks (see page 21-56).
6. Check for system performance (see page 21-58).

Refrigerant Leak Test

Special Tool Required
Leak detector, Honda Tool and Equipment YGK-H-10PM commercially available

⚠ WARNING

- Compressed air mixed with 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 system.

⚠ 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.

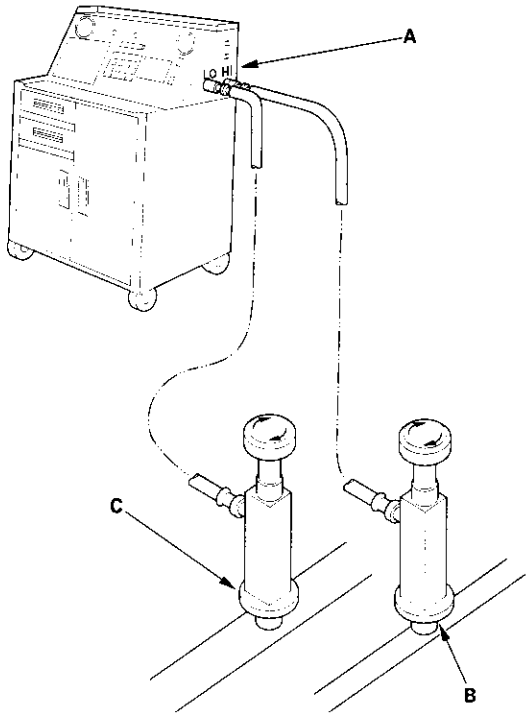
Use only service equipment that is U.L.-listed and is certiified to meet the requirements of SAE J2210 to remove HFC-134a (R-134a) from the air conditioning system.

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.

1. Connect a 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. Open the high pressure valve to charge the system to the specified capacity, then close the supply valve, and remove the charging system couplers.

   Select the appropriate units of measure for your refrigerant charging station.

   Refrigerant capacity:
   500 to 550 g
   0.50 to 0.55 kg
   1.10 to 1.21 lbs
   17.6 to 19.4 oz

3. Check the system for leaks using a R-134a refrigerant leak detector with an accuracy of 14 g (0.5 oz) per year or better.

4. If you find leaks that require the system to be opened (to repair or replace hoses, fittings, etc.), recover the system.

5. After checking and repairing leaks, evacuate the system.

A/C System Tests

Pressure Test

Test results	Related symptoms	Probable cause	Remedy
Discharge (high) pressure abnormally high	After stopping compressor, pressure drops quickly, and then continues to fall gradually.	Air in system	Recover, evacuate (see page 21-54), and recharge with specified amount (see page 21-55).
	Reduced or no air flow through condenser	• Clogged condenser or radiator fins • Condenser or radiator fan not working properly	• Clean • Check fan voltage and rpm. • Check fan direction.
	Line to condenser is excessively hot.	Restricted flow of refrigerant in system	Replace restricted lines.
Discharge pressure abnormally low	High and low pressures are balanced soon after stopping compressor. Low side is higher than normal.	• Faulty compressor discharge valve • Faulty compressor seal	Replace the compressor.
	Outlet of expansion valve is not frosted, low-pressure gauge indicates vacuum.	• Faulty expansion valve • Moisture in system	• Replace the expansion valve. • Recover, evacuate for at least 30 minutes, and recharge with specified amount.
Suction (low) pressure abnormally low	Expansion valve is not frosted, and low-pressure line is not cold. Low-pressure gauge indicates vacuum.	• Frozen expansion valve (Moisture in system) • Faulty expansion valve	• Recover, evacuate for at least 30 minutes, and recharge with specified amount. • Replace the expansion valve.
	Discharge temperature is low, and the air flow from vents is restricted.	Frozen evaporator	Run the fan with compressor off, then check evaporator temperature sensor.
	Expansion valve is frosted.	Clogged expansion valve	Clean or replace.
	Receiver/dryer outlet is cool, and inlet is warm (should be warm during operation).	Clogged receiver/dryer	Replace receiver/dryer.
Suction pressure abnormally high	Low-pressure hose and check joint are cooler than the temperature around evaporator.	Expansion valve open too long	Repair or replace.
	Suction pressure is lowered when condenser is cooled by water.	Excessive refrigerant in system	Recover, evacuate, and recharge with specified amount.
	High and low-pressure are equalized as soon as the compressor is stopped, and both gauges fluctuate while running.	• Faulty gasket • Faulty high-pressure valve • Foreign particle stuck in high-pressure valve	Replace the compressor.
Suction and discharge pressures abnormally high	Reduced air flow through condenser.	• Clogged condenser or radiator fins • Condenser or radiator fan not working properly	• Clean • Check voltage and fan rpm. • Check fan direction.
Suction and discharge pressure abnormally low	Low-pressure hose and metal end areas are cooler than evaporator.	Clogged or kinked low-pressure hose parts	Repair or replace.
	Temperature around expansion valve is too low compared with that around receiver/dryer.	Clogged high-pressure line	Repair or replace.
Refrigerant leaks	Compressor clutch is dirty.	Compressor shaft seal leaking	Replace the compressor.
	Compressor bolt(s) are dirty.	Leaking around bolt(s)	Tighten bolt(s) or replace compressor.
	Compressor gasket is wet with oil.	Gasket leaking	Replace the compressor.

(cont'd)

A/C System Tests (cont'd)

Performance Test

⚠ WARNING

- Compressed air mixed with 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 performance test will help determine if the air conditioner system is operating within specifications.

Use only service equipment that is U.L.-listed and is certified to meet the requirements of SAE J2210 to remove HFC-134a (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.

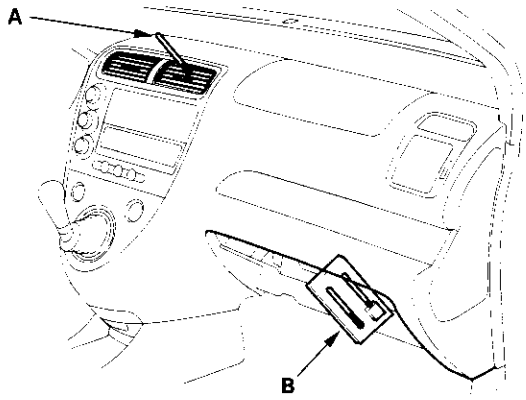
Additional health and safety information may be obtained from the refrigerant and lubricant manufacturers.

1. Connect a R-134a refrigerant recover/recycling/charging station to the high-pressure service port and the low-pressure service port, following the equipment manufacturer's instructions.

2. Determine the relative humidity and air temperature.

3. Open the glove box. Remove both glove box stops, then let the glove box hang down (see page 20-63).

4. Insert a thermometer (A) in the center vent, and place another thermometer (B) near the blower unit.



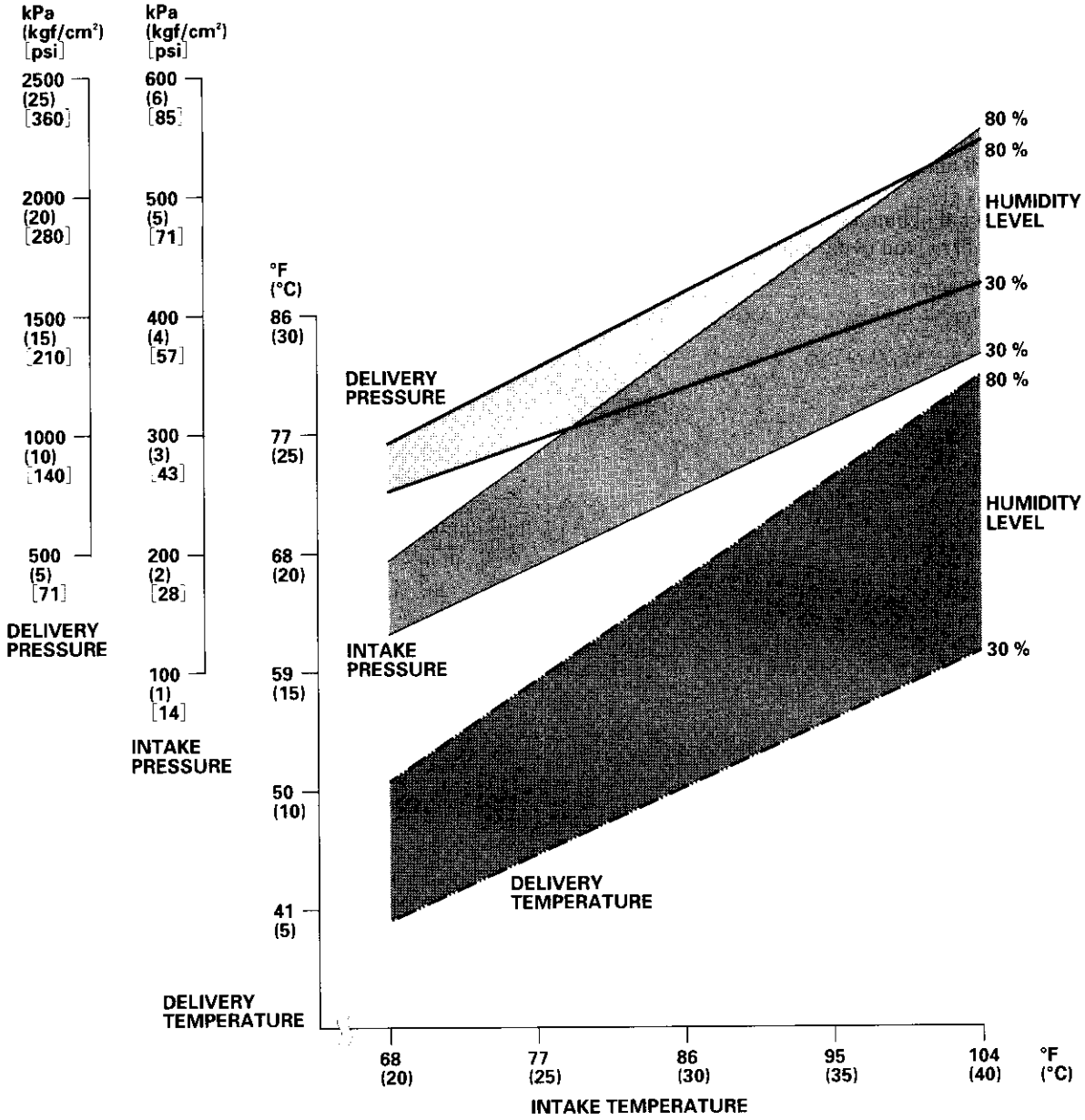
5. Test conditions:

   - Avoid direct sunlight.
   - Open the hood.
   - Open the front doors.
   - Set the temperature control dial on Max Cool, the mode control dial on Vent, and the recirculation control switch on Recirculate.
   - Turn the A/C switch on and the fan switch on Max.
   - Run the engine at 750 rpm.
   - No driver or passengers in vehicle.

6. 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 high and low system pressure from the A/C gauges.

7. To complete the charts:

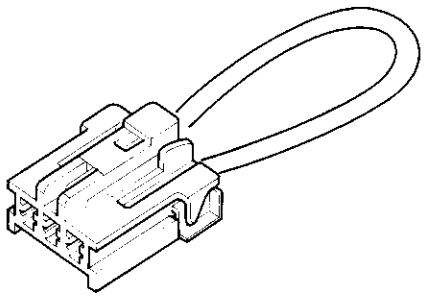
- Mark the delivery temperature along the vertical line.
- Mark the intake temperature (ambient air temperature) along the bottom line.
- Draw a line straight up from the air temperature to the humidity.
- Mark a point 10 % above and 10 % below the humidity level.
- From each point, draw a horizontal line across the delivery temperature.
- The delivery temperature should fall between the two lines.
- Complete the low-side pressure test and high-side pressure test in the same way.
- Any measurements outside the line may indicate the need for further inspection.



Body Electrical

Special Tools

Ref. No.	Tool Number	Description	Qty
①	07WAZ-001010A	MPCS Service Connector	1
②	07LAJ-PT3020A	Test Harness	1
③	07TAZ-001020A	Back Probe Adapter	1



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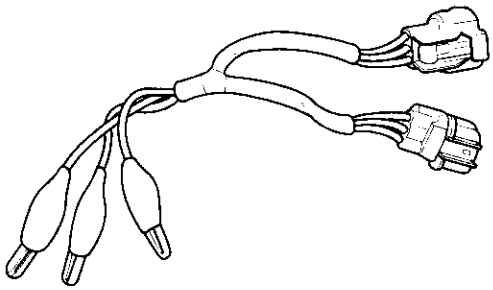

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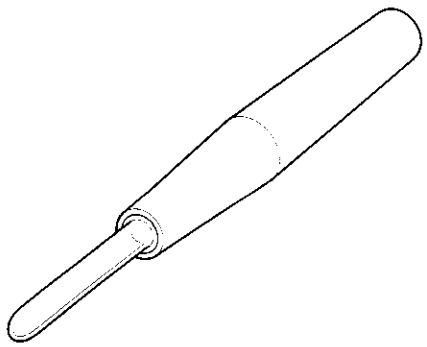

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General Troubleshooting Information

Tips and Precautions

Before Troubleshooting

1. Check applicable fuses in the appropriate fuse/relay box.

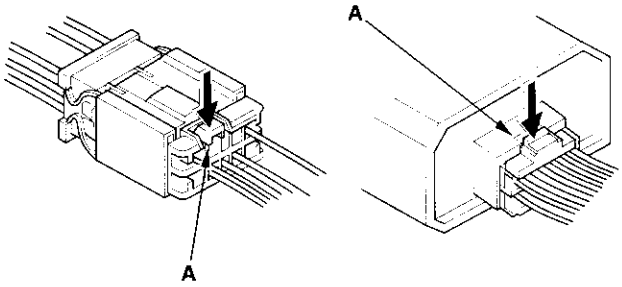
2. Check the battery for damage, state of charge, and clean and tight connections.

NOTICE

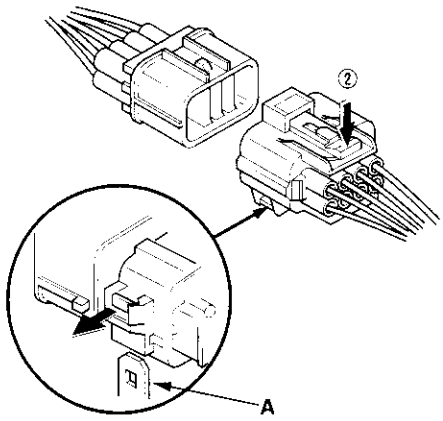
- Do not quick-charge a battery unless the battery ground cable has been disconnected, otherwise you will damage the alternator diodes.
- Do not attempt to crank the engine with the battery ground cable loosely connected or you will severely damage the wiring.

Handling Connectors

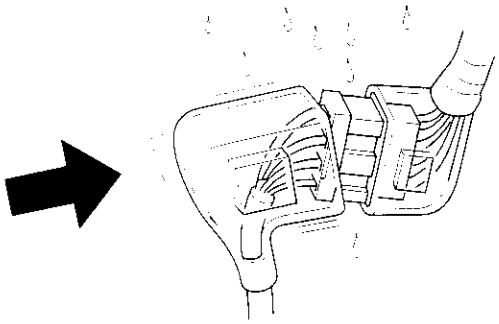
- Make sure the connectors are clean and have no loose wire terminals.
- Make sure multiple cavity connectors are packed with dielectric grease (except watertight connectors).
- All connectors have push-down release type locks (A).



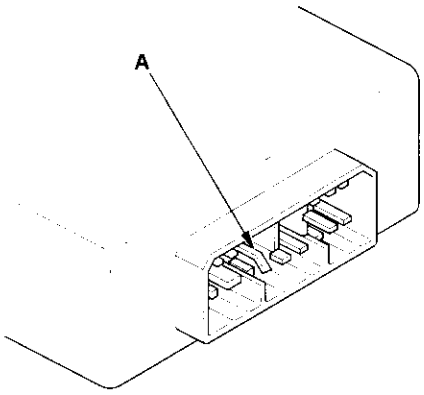
- Some connectors have a clip on their side used to attach them to a mount bracket on the body or on another component. This clip has a pull type lock.
- Some mounted connectors cannot be disconnected unless you first release the lock and remove the connector from its mount bracket (A).



- 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.



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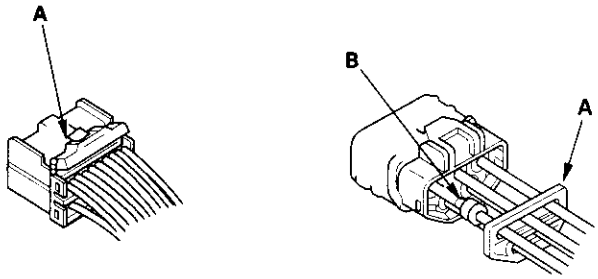
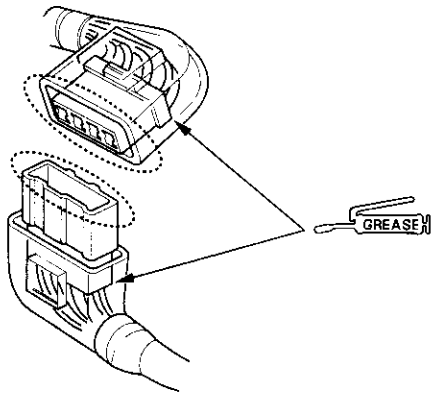
General Troubleshooting Information (cont'd)

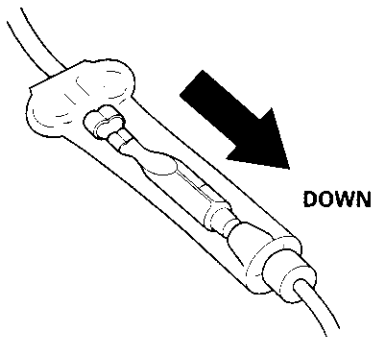
- Check for loose retainer (A) and rubber seals (B).



- The backs of some connectors are packed with dielectric grease. Add grease if necessary. If the grease is contaminated, replace it.

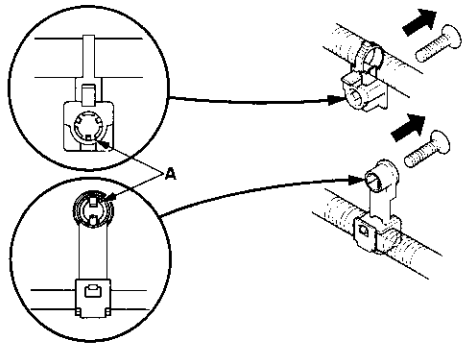


- Insert the connector all the way and make sure it is securely locked.
- Position wires so that the open end of the cover faces down.

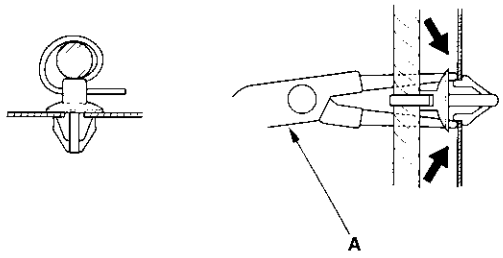


Handling Wires and Harnesses

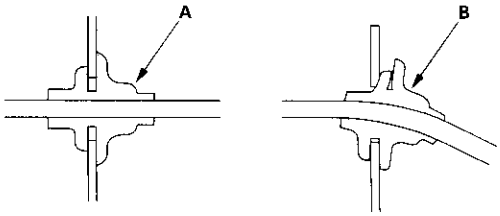
- Secure wires and wire harnesses to the frame with their respective wire ties at the designated locations.
- Remove clips carefully; don't damage their locks (A).



- Slip pliers (A) under the clip base and through the hole at an angle, then squeeze the expansion tabs to release the clip.

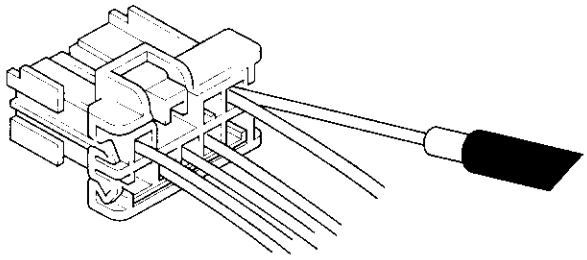


- After installing harness clips, make sure the harness doesn't interfere with any moving parts.
- Keep wire harnesses away from exhaust pipes and other hot parts, from sharp edges of brackets and holes, and from exposed screws and bolts.
- Seat grommets in their grooves properly (A). Do not leave grommets distorted (B).

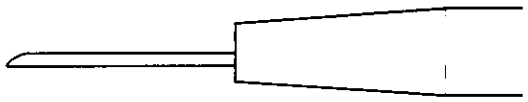


Testing and Repairs

- Do not use wires or harnesses with broken insulation. Replace them or repair them by wrapping the break with electrical tape.
- 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.

(cont'd)

General Troubleshooting Information (cont'd)

Five-step Troubleshooting

1. Verify The Complaint
   Turn on all the components in the problem circuit to verify the customer 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 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.

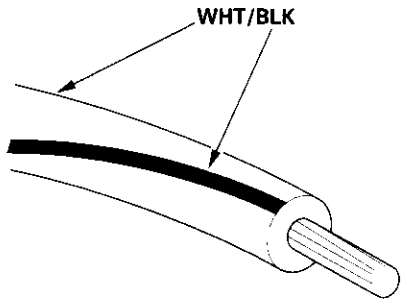
5. Make Sure The Circuit Works
   Turn on all components in the repaired circuit in all modes to make sure you've fixed the entire problem. If the problem was a blown fuse, be sure to test all of the circuits on the fuse. Make sure no new problems turn up and the original problem does not recur.

Wire Color Codes

The following abbreviations are used to identify wire colors in the circuit schematics:

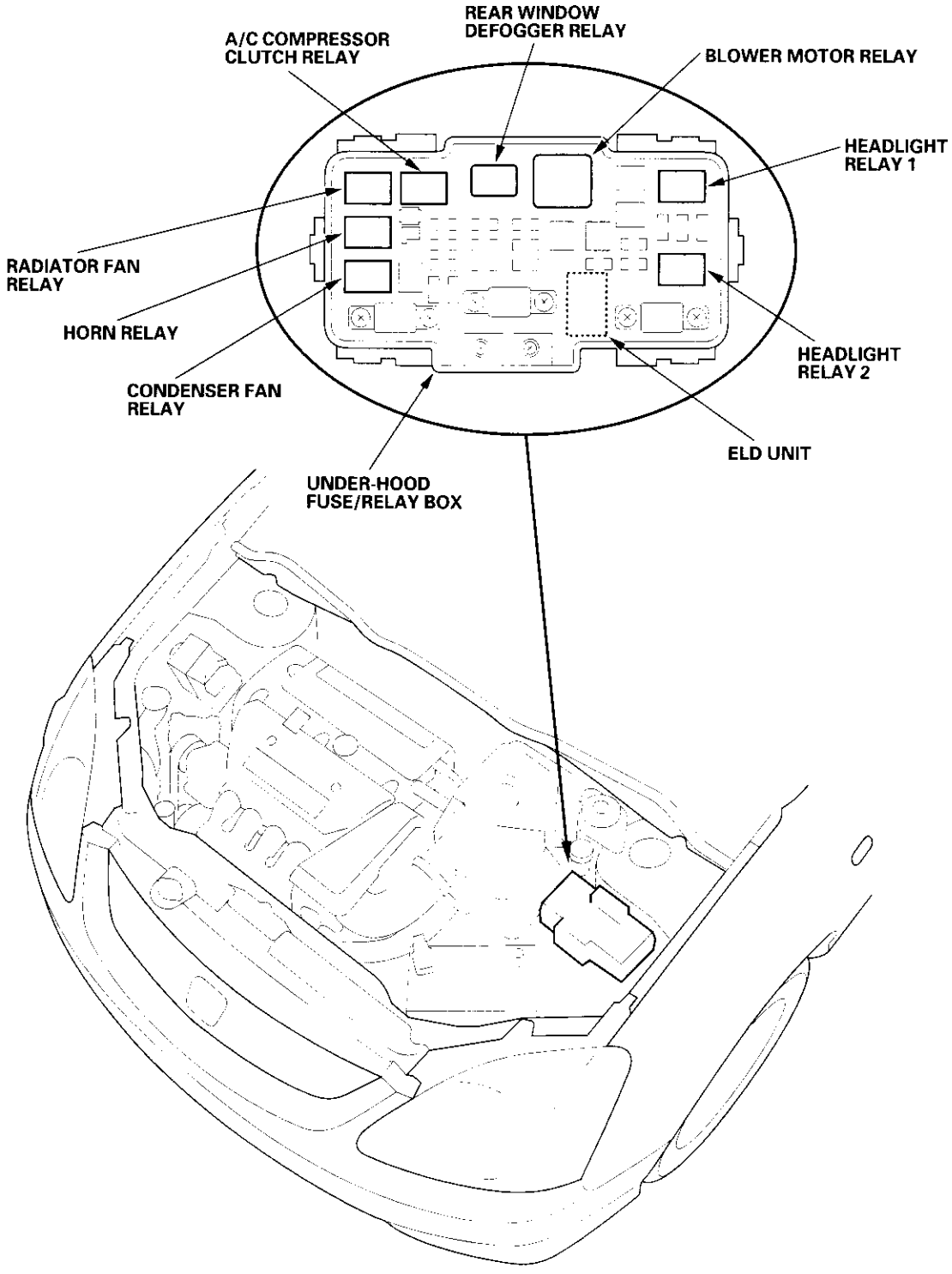
WHT	White
YEL	Yellow
BLK	Black
BLU	Blue
GRN	Green
RED	Red
ORN	Orange
PNK	Pink
BRN	Brown
GRY	Gray
PUR	Purple
LT BLU	Light Blue
LT GRN	Light Green

The wire insulation has one color or one color with another color stripe. The second color is the stripe.



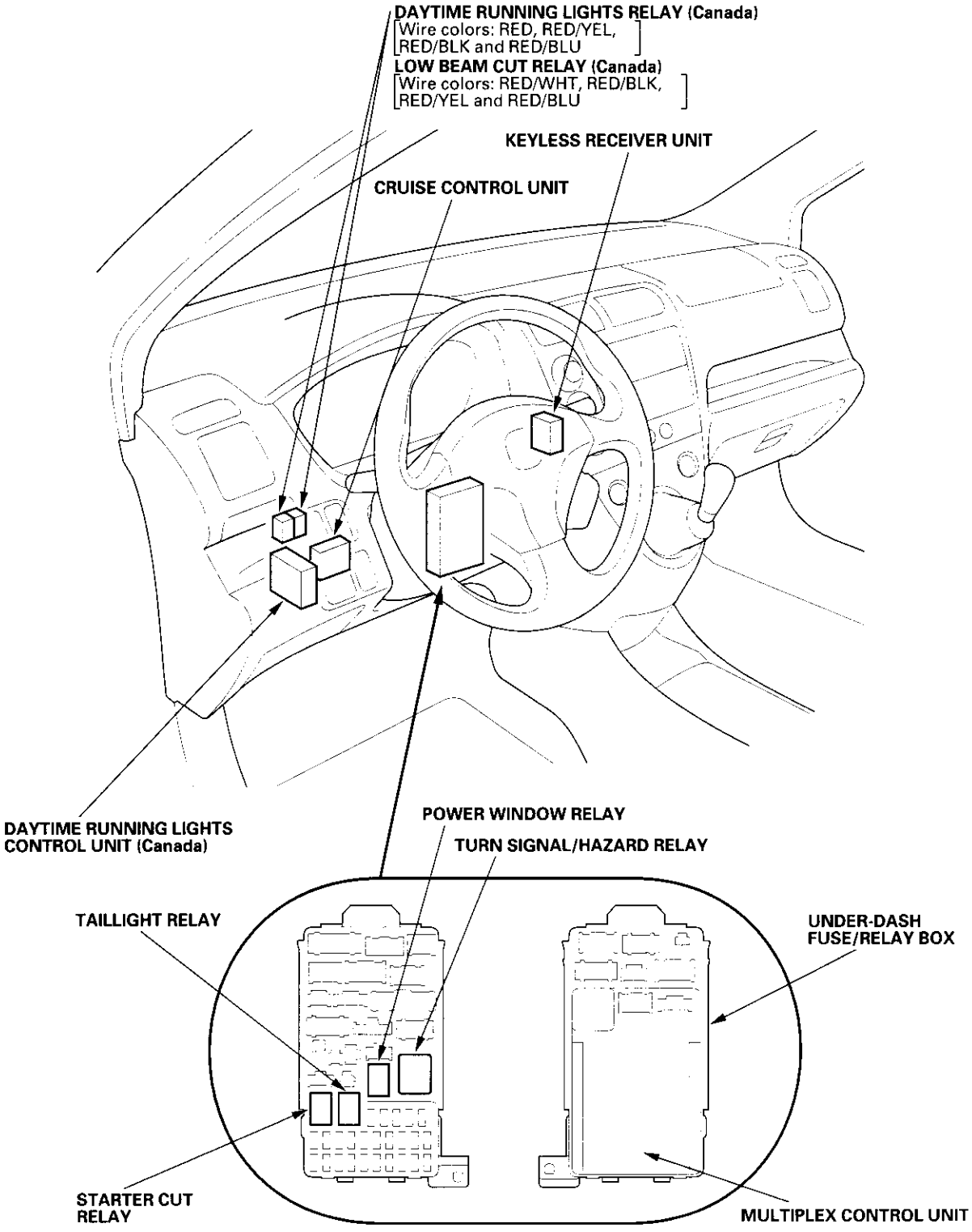
Relay and Control Unit Locations

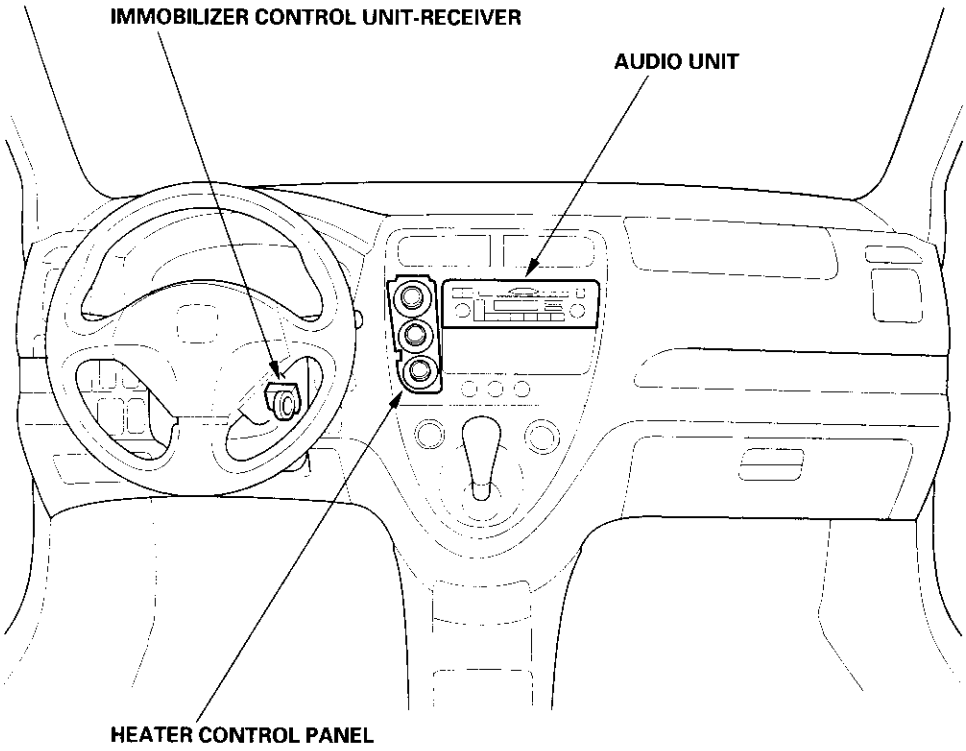
Engine Compartment



Relay and Control Unit Locations

Dashboard

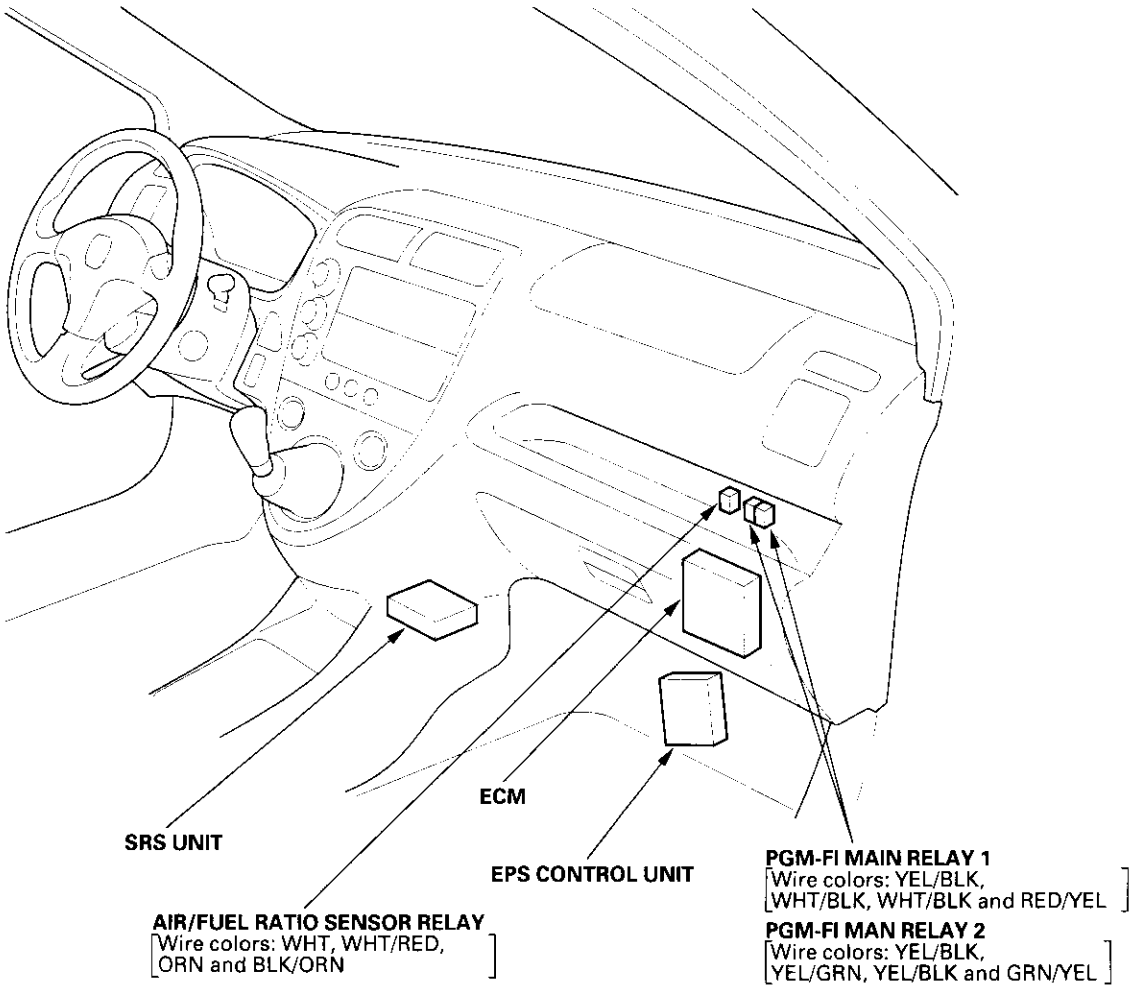



IMMOBILIZER CONTROL UNIT-RECEIVER
AUDIO UNIT
HEATER CONTROL PANEL

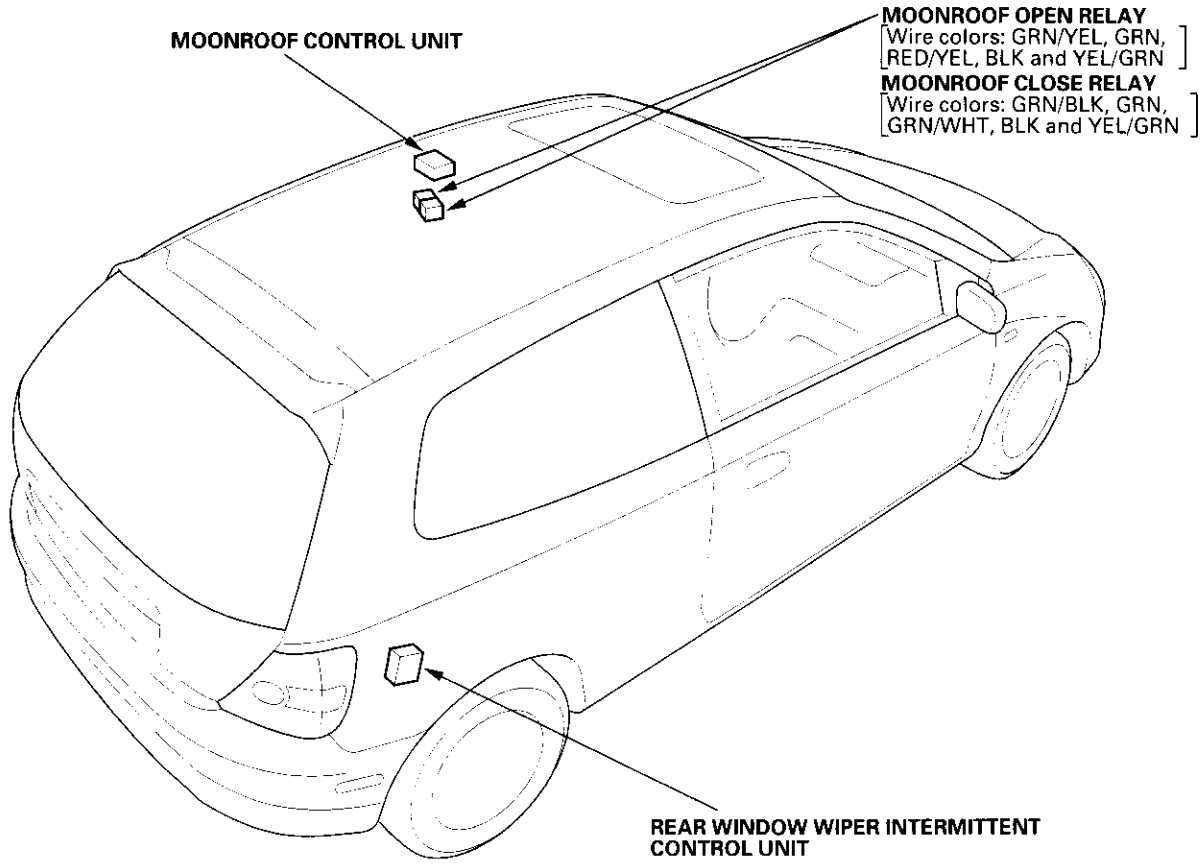
(cont'd)

Relay and Control Unit Locations

Dashboard (cont'd)



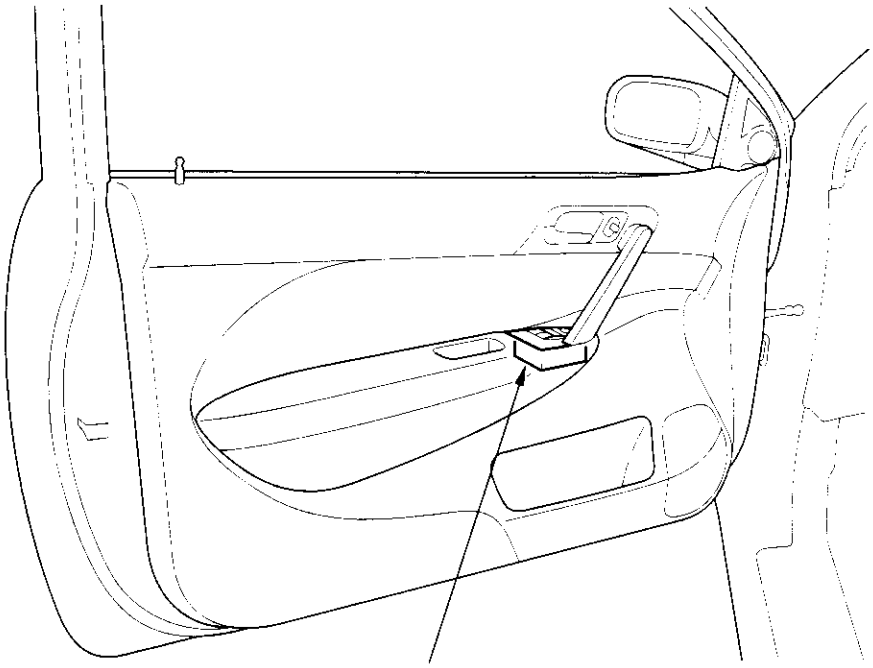
Rear and Roof



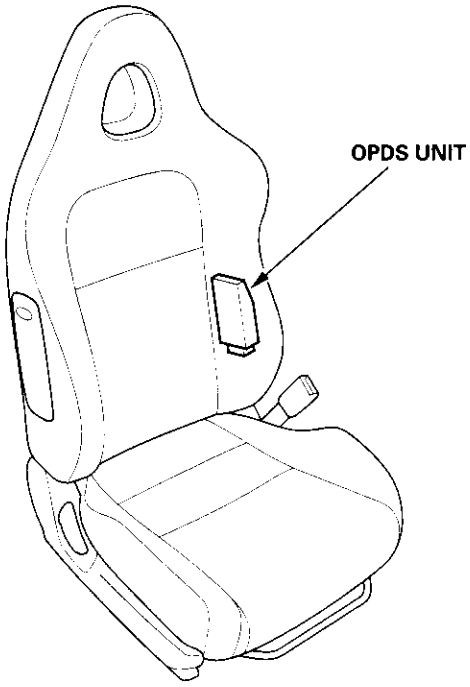
Relay and Control Unit Locations

Door and Seat

Driver's Door:



Passenger's Seat:



Connector Index

Identification numbers have been assigned to in-line connectors. 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
Starter subharness	C102 and C103 T1 and T2 T101 and T102 (+)			(see page 22-15)
Battery ground cable	T3 G1 and (−)			(see page 22-14)
Engine ground cable	T4 G2			(see page 22-14)
Engine wire harness	C101 through C104 G101			(see page 22-16)
Engine compartment wire harness (right branch)	G201 and G202			(see page 22-18)
Engine compartment wire harness (left branch)	G301			(see page 22-18)
Engine compartment wire harness (dashboard)		C151 C401 C451 and C452 C501 through C503 C551 C851 G402		(see page 22-18)
EPS subharness		C151 and C152 G151		(see page 22-24)
Dashboard wire harness A (left branch)		C504 through C510 G501 and G503		(see page 22-26)
Left side turn signal light sub harness		C506		(see page 22-26)
Dashboard wire harness A (right branch)		C501 through C503 C511 through C515 C852 and C853 G502		(see page 22-26)
Right side turn signal light sub harness		C513		(see page 22-26)
Dashboard wire harness B		C401 through C403 C510 G401		(see page 22-30)
ECM wire harness		C101 C152 C451 through C453 C511 G451		(see page 22-32)
Floor wire harness (front side)		C402 and C403 C453 C508 and C509 C512 C551 and C552	G551	(see page 22-34)
Floor wire harness (rear side)			C553 and C554 G552 and G553	(see page 22-34)
Roof wire harness			C507	(see page 22-38)
Hatch wire harness			C553 and C554	(see page 22-39)
Driver's door wire harness			C504 and C505	(see page 22-40)
Passenger's door wire harness			C514 and C515	(see page 22-41)
OPDS wire harness			C552	(see page 22-42)
A/C wire harness			C851 through C853	(see page 22-43)

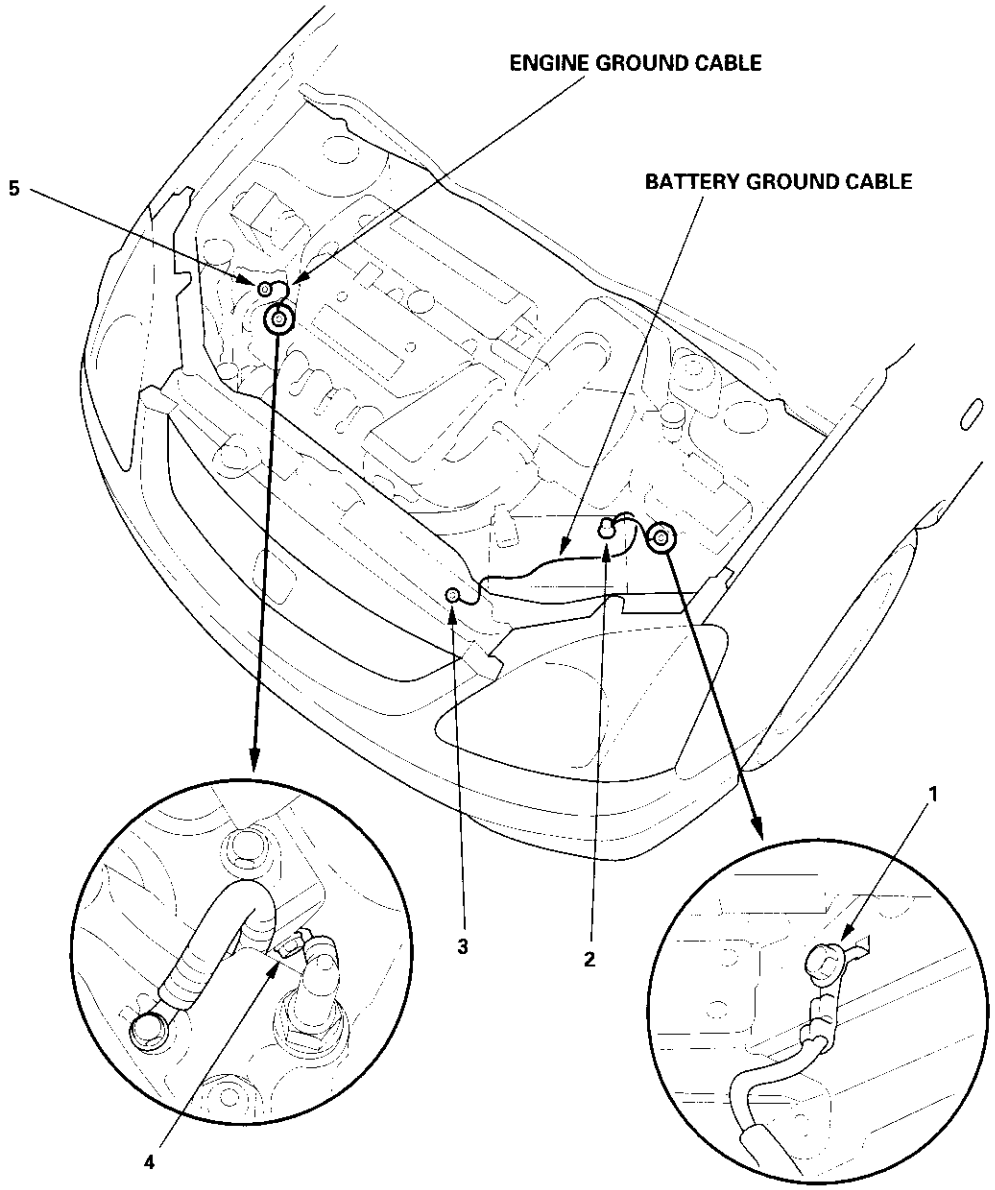
Connector to Harness Index

Battery Ground Cable

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
T3	3		Left side of engine compartment		
G1	1		Left side of engine compartment	Body ground via battery ground cable	
(−)	2		Battery	Battery negative terminal	

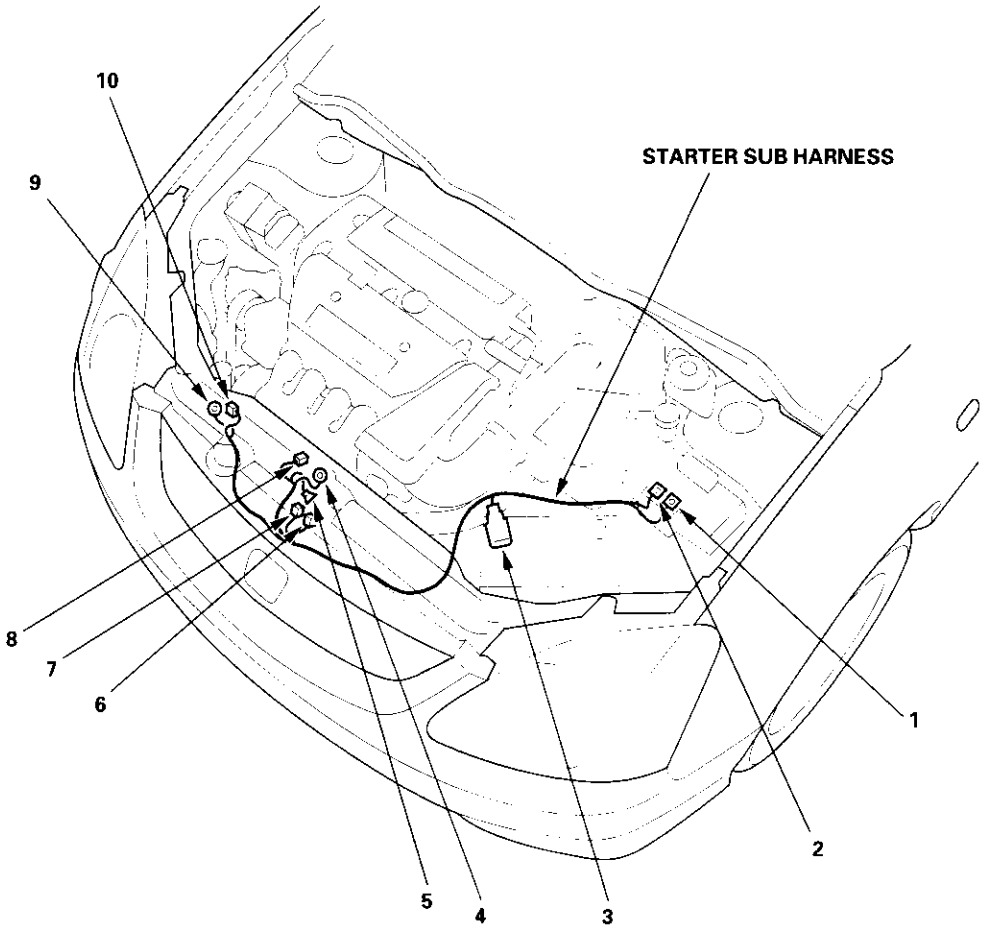
Engine Ground Cable

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
T4	5		Right side of engine		
G2	4		Right side of engine compartment	Body ground via engine ground cable	



Starter Subharness

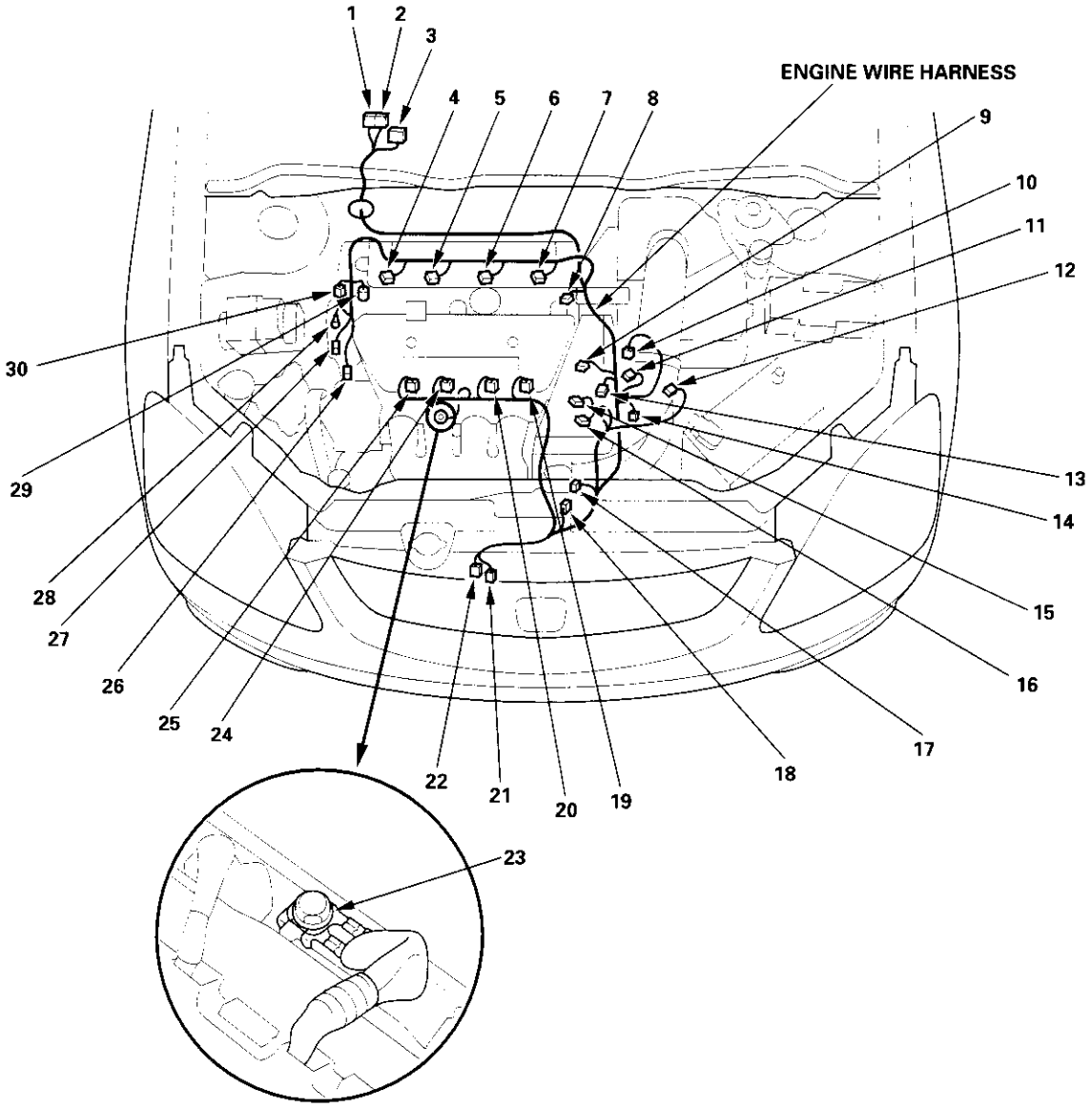
Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Alternator	10	4	Right side of engine compartment		
Knock sensor	8	1	Front of engine		
Starter solenoid	5	1	Middle of engine compartment		
C102	7	6	Front of engine compartment	Engine wire harness (see page 22-16)	
C103	6	1	Front of engine compartment	Engine wire harness (see page 22-16)	
T1	2		Left side of engine compartment	Under-hood fuse/relay box	
T2	4		Middle or engine compartment	Starter motor	
T101	1		Under-hood fuse/relay box		
T102	9		Alternator		
(+)	3		Battery	Battery positive terminal	



Connector to Harness Index (cont'd)

Engine Wire Harness

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Back-up light switch	14	2	Transmission housing		
Camshaft position (CMP) sensor	9	3	Left side of engine		
CKP sensor	26	3	Right side of engine		
ECM connector A	2	31	Under glove box		
ECM connector B	1	24	Under glove box		
Engine coolant temperature (ECT) sensor	11	2	Left side of engine		
Engine oil pressure switch	28	1	Right side of engine		
EVAP canister purge valve	16	2	Left side of intake manifold		
Idle air control (IAC) valve	18	3	Left side of intake manifold		
Ignition coil No. 1	4	3	Middle of engine compartment		
Ignition coil No. 2	5	3	Middle of engine compartment		
Ignition coil No. 3	6	3	Middle of engine compartment		
Ignition coil No. 4	7	3	Middle of engine compartment		
Injector No. 1	25	2	Middle of engine compartment		
Injector No. 2	24	2	Middle of engine compartment		
Injector No. 3	20	2	Middle of engine compartment		
Injector No. 4	19	2	Middle of engine compartment		
Intake air temperature (IAT) sensor	12	2	Intake air duct		
MAP sensor	15	3	Left side of intake manifold		
TDC sensor	8	3	Left side of engine		
Throttle position (TP) sensor	17	3	Left side of intake manifold		
Vehicle speed sensor (VSS)	10	3	Transmission housing		
VTC oil control solenoid valve	27	2	Right side of engine		
VTEC oil pressure switch	29	2	Right side of engine		
VTEC solenoid valve	30	2	Right side of engine		
C101	3	20	Under right side of dash	ECM wire harness (see page 22-32)	
C102	22	6	Front of engine compartment	Starter subharness (see page 22-15)	
C103	21	1	Front of engine compartment	Starter subharness (see page 22-15)	
C104	13	24	Left side of engine	Junction connector	
G101	23		Cylinder head cover	Engine ground via engine wire harness	


ENGINE WIRE HARNESS
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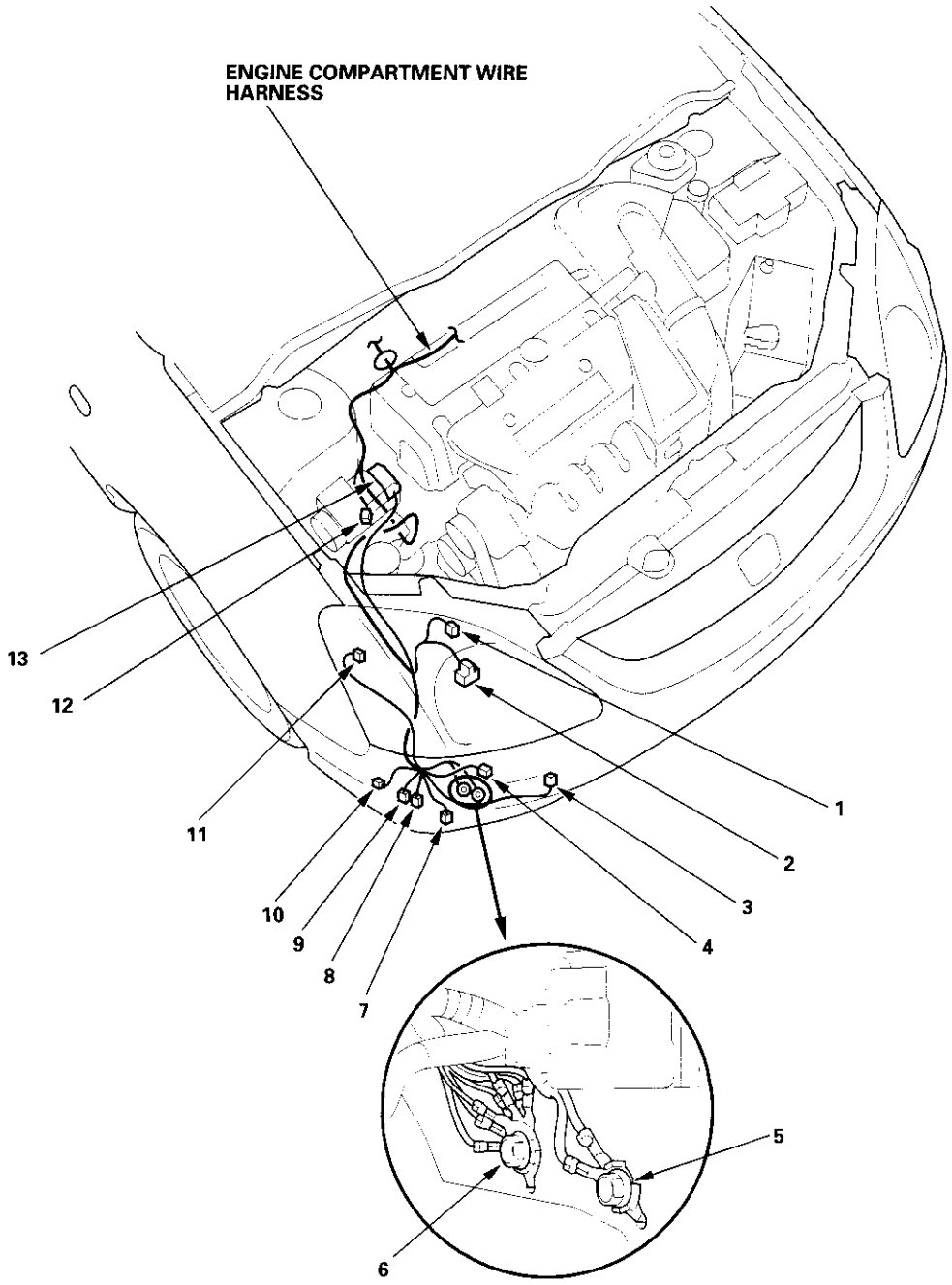
Connector to Harness Index (cont'd)

Engine Compartment Wire Harness (Right branch)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
ABS modulator-control unit	13	26	Right side of engine compartment		
Rear washer motor	8	2	Behind right side of front bumper		
Right front ABS wheel sensor	12	2	Right side of engine compartment		
Right front airbag sensor	4	2	Behind right side of front bumper		
Right front parking light	1	2	Behind right headlight		
Right front side marker light	10	2	Behind right side of front bumper		
Right front turn signal light	11	2	Behind right headlight		
Right headlight	2	3	Behind right headlight		
Right horn	3	1	Behind front bumper		
Washer fluid level switch	7	2	Behind right side of front bumper		Canada
Windshield washer motor	9	2	Behind right side of front bumper		
G201	6		Behind right side of front bumper	Body ground via engine compartment wire harness	
G202	5		Behind right side of front bumper	Body ground via engine compartment wire harness	



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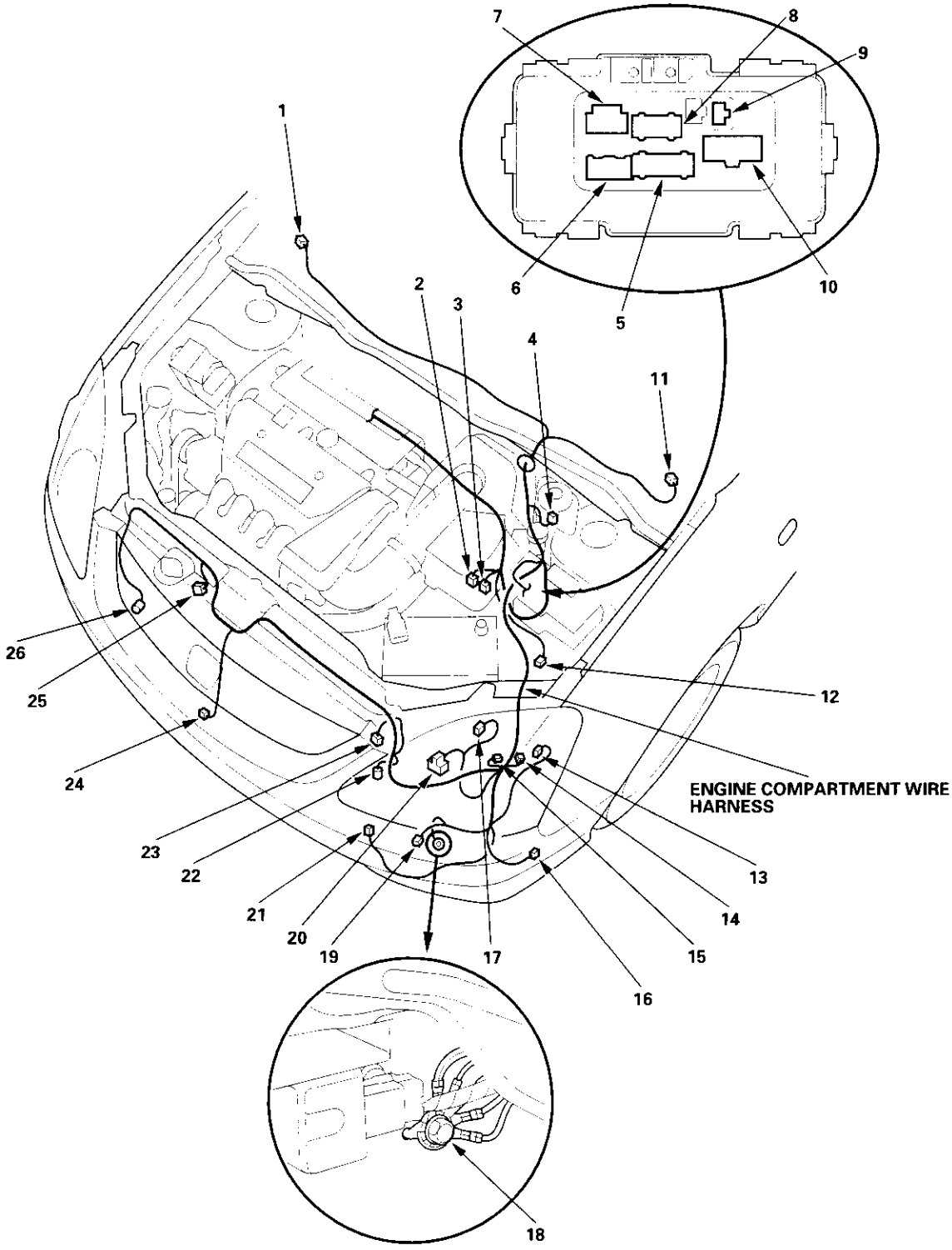
Connector to Harness Index (cont'd)

Engine Compartment Wire Harness (Left branch)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
A/C compressor clutch	24	1	Front of engine compartment		
A/C pressure switch	22	2	Left side of engine compartment		
Air fuel (A/F) ratio sensor	2	4	Left side of engine compartment		
Brake fluid level switch	4	2	Left side of engine compartment		
Condenser fan motor	25	2	Front of engine compartment		
Cruise control actuator	1	4	Under right side of cowl cover		
ELD unit	9	3	Under-hood fuse/relay box		
Fog light connector	15	1	Left side of engine compartment		Option
Left front ABS wheel sensor	12	2	Left side of engine compartment		
Left front airbag sensor	19	2	Behind left side of front bumper		
Left front parking light	17	2	Behind left headlight		
Left front side marker light	16	2	Behind left side of front bumper		
Left front turn signal light	13	2	Behind left headlight		
Left headlight	20	3	Behind left headlight		
Left horn	21	1	Behind front bumper		
Radiator fan motor	23	2	Left side of engine compartment		
Radiator fan switch	26	2	Front of engine compartment		
Secondary heated oxygen (SHO2S) sensor	3	4	Left side of engine compartment		
Test tachometer connector	14	2	Left side of engine compartment		
Windshield wiper motor	11	5	Under left side of cowl cover		
Under-hood fuse/relay box connector A (see page 22-44)	7	2	Under-hood fuse/relay box		
Under-hood fuse/relay box connector B (see page 22-44)	8	5	Under-hood fuse/relay box		
Under-hood fuse/relay box connector C (see page 22-44)	10	12	Under-hood fuse/relay box		
Under-hood fuse/relay box connector D (see page 22-44)	5	14	Under-hood fuse/relay box		
Under-hood fuse/relay box connector E (see page 22-44)	6	7	Under-hood fuse/relay box		
G301	18		Behind left side of front bumper	Body ground via engine compartment wire harness	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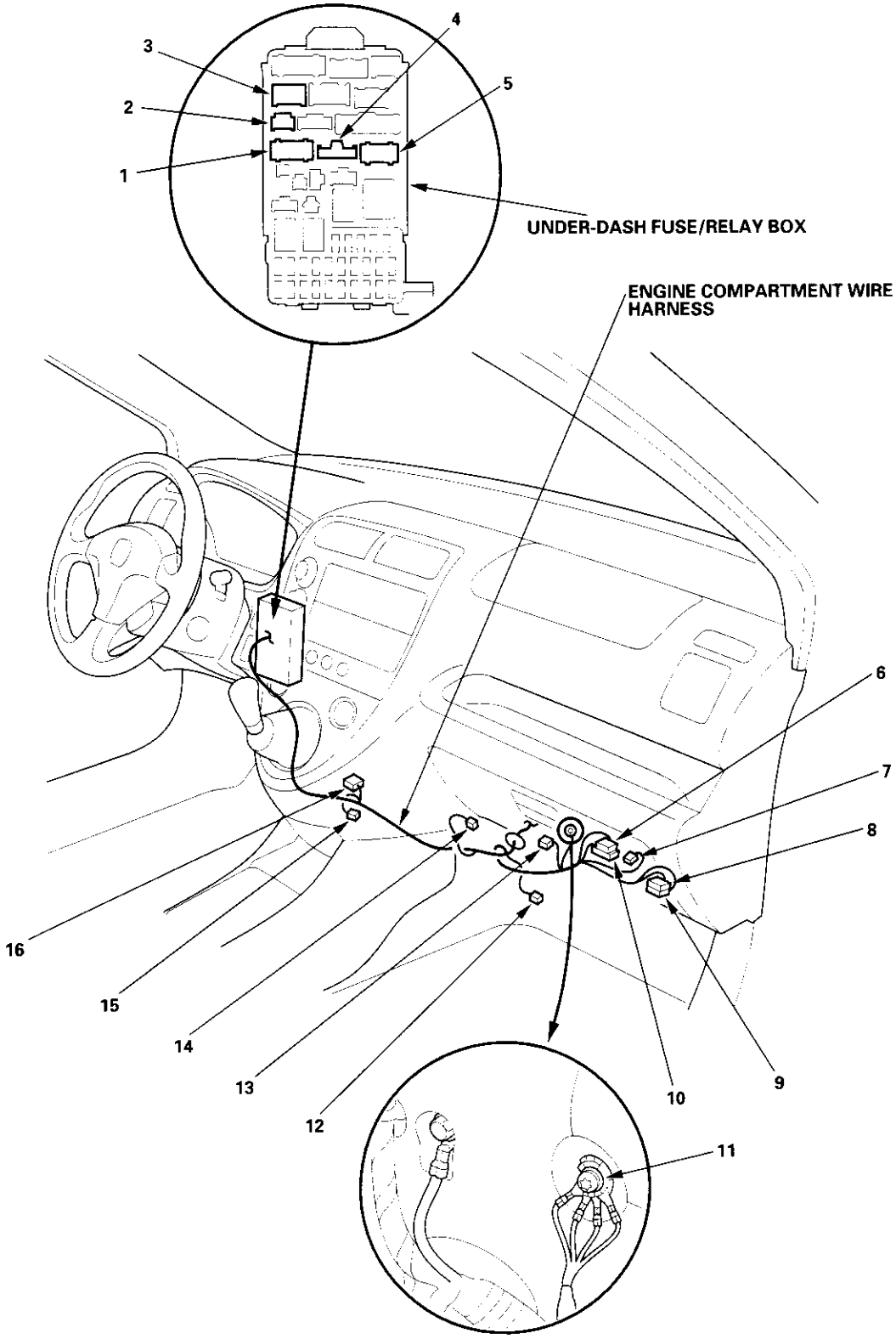
ENGINE COMPARTMENT WIRE HARNESS

(cont'd)

Connector to Harness Index (cont'd)

Engine Compartment Wire Harness (Dashboard)(cont'd)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Fog light connector	15	1	Under middle of dash		Option
Under-dash fuse/relay box connector F (see page 22-45)	1	12	Under left side of dash		
Under-dash fuse/relay box connector G (see page 22-45)	5	10	Under left side of dash		
Under-dash fuse/relay box connector H (see page 22-45)	4	3	Under left side of dash		
Under-dash fuse/relay box connector I (see page 22-45)	2	5	Under left side of dash		
Under-dash fuse/relay box connector J (see page 22-45)	3	8	Under left side of dash		
C151	12	2	Under right side of dash	EPS subharness (see page 22-24)	
C401	7	4	Under right side of dash	Dashboard wire harness B (see page 22-30)	
C451	8	13	Under right side of dash	ECM wire harness (see page 22-32)	
C452	9	4	Under right side of dash	ECM wire harness (see page 22-32)	
C501	10	10	Under right side of dash	Dashboard wire harness A (see page 22-26)	
C502	6	4	Under right side of dash	Dashboard wire harness A (see page 22-26)	USA
C502	6	8	Under right side of dash	Dashboard wire harness A (see page 22-26)	Canada
C503	13	5	Under right side of dash	Dashboard wire harness A (see page 22-26)	
C551	16	10	Under middle of dash	Floor wire harness (see page 22-34)	
C851	14	1	Under right side of dash	A/C wire harness (see page 22-43)	
G402	11			Body ground via engine compartment wire harness	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UNDER-DASH FUSE/RELAY BOX
ENGINE COMPARTMENT WIRE HARNESS
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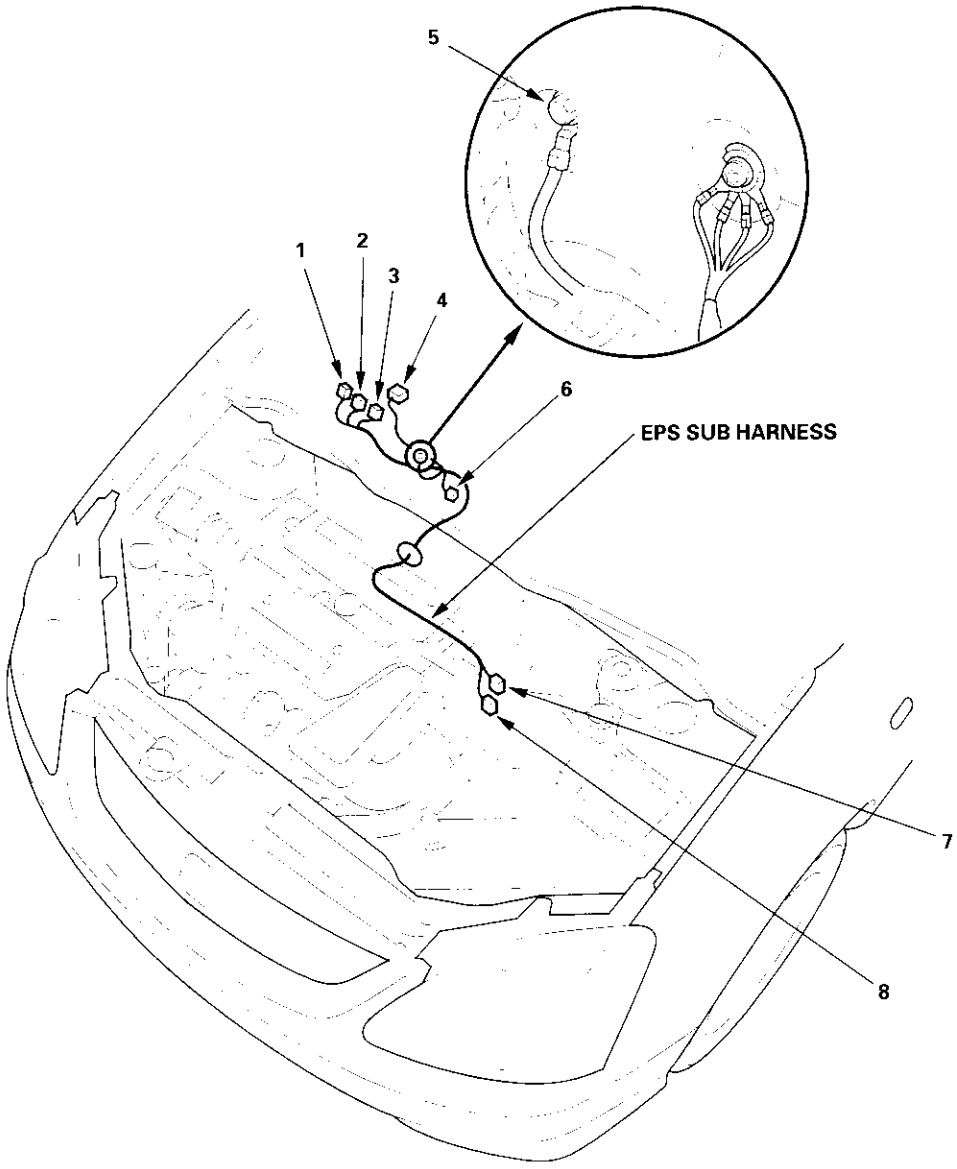
Connector to Harness Index (cont'd)

EPS Subharness

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
EPS control unit connector A	2	2	Under right side of dash		
EPS control unit connector B	1	2	Under right side of dash		
EPS control unit connector C	3	20	Under right side of dash		
EPS motor	7	2	Middle of engine compartment		
EPS torque sensor	8	6	Middle of engine compartment		
C151	6	2	Under right side of dash	Engine compartment wire harness (see page 22-18)	
C152	4	8	Under right side of dash	ECM wire harness (see page 22-32)	
G151	5			Body ground via EPS sub harness	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EPS SUB HARNESS
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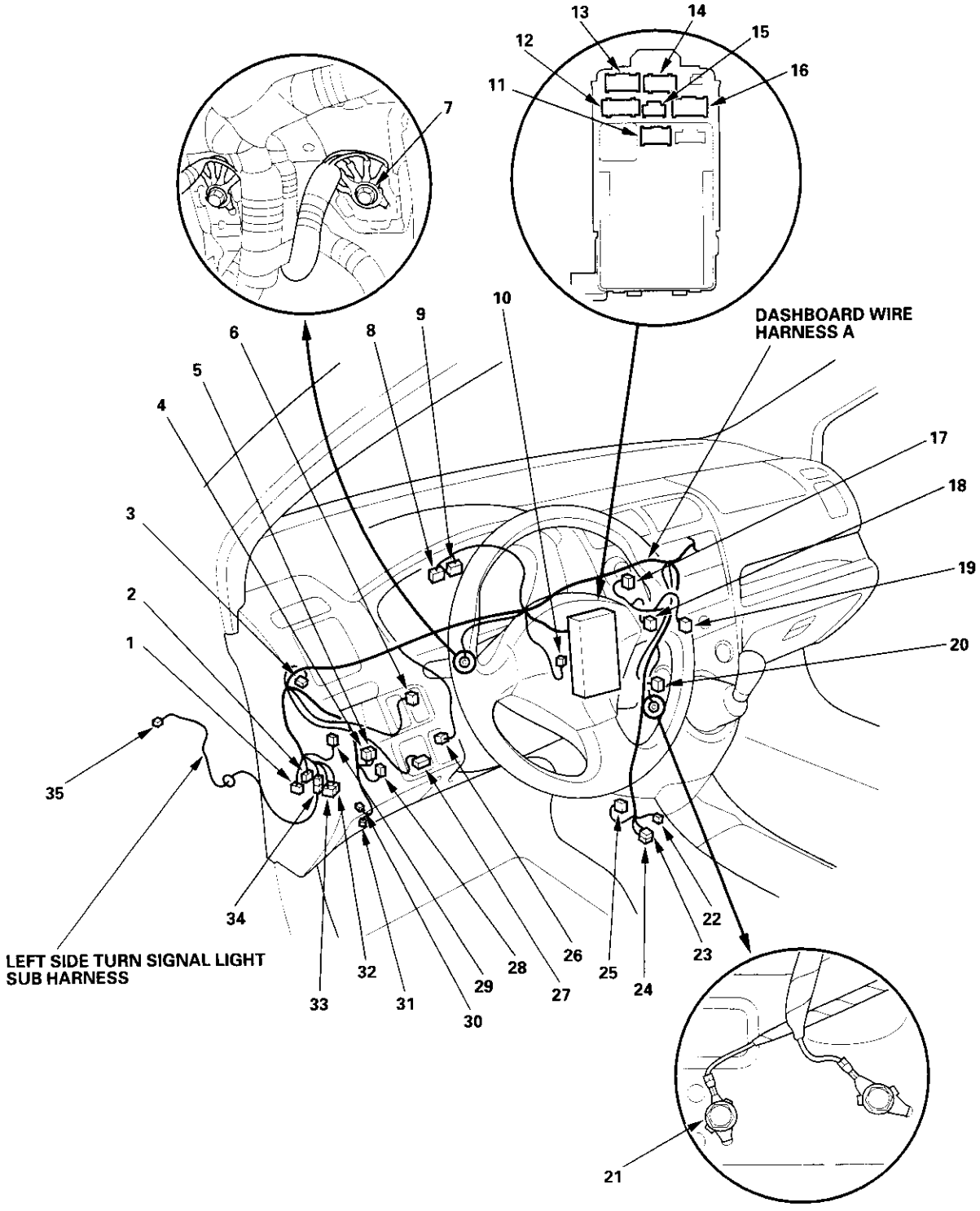
Connector to Harness Index (cont'd)

Dashboard Wire Harness A (Left branch)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Accessory power socket	22	2	Under middle of dash		
Audio antenna	2	2	Under left side of dash		
Brake pedal position switch	26	4	Under left side of dash		
Clutch interlock switch	31	2	Under left side of dash		
Clutch pedal poistion switch	30	2	Under left side of dash		
Cruise control unit	29	14	Under left side of dash		
Cruise main switch	6	5	Under left side of dash		
Daytime running lights control unit	28	14	Under left side of dash		Canada
Daytime running lights relay	4	4	Under left side of dash		Canada
Gauge assembly connector A	9	22	Behind gauge assembly		
Gauge assembly connector B	8	22	Behind gauge assembly		
Hazard warning switch	20	10	Behind hazard warnning switch		
Heater control panel connector A	17	22	Behind heater control panel		
Heater control panel connector B	18	14	Behind heater control panel		
HVAC push switch assembly	19	10	Behind HVAC switch assembly		
Keyless receiver unit	10	5	Under middle of dash		
Low beam cut relay	5	5	Under left side of dash		
Optional security connector	3	16	Under left side of dash		
Power mirror switch	27	13	Under left side of dash		
Under-dash fuse/relay box connector K (see page 22-45)	13	17	In the under-dash fuse/relay box		
Under-dash fuse/relay box connector L (see page 22-45)	14	10	In the under-dash fuse/relay box		
Under-dash fuse/relay box connector M (see page 22-45)	12	12	In the under-dash fuse/relay box		
Under-dash fuse/relay box connector N (see page 22-45)	15	6	In the under-dash fuse/relay box		
Under-dash fuse/relay box connector O (see page 22-45)	16	12	In the under-dash fuse/relay box		
Under-dash fuse/relay box connector Y (see page 22-45)	11	13	In the under-dash fuse/relay box		
C504	32	20	Under left side of dash	Driver's door wire harness (see page 22-40)	
C505	33	13	Under left side of dash	Driver's door wire harness (see page 22-40)	
C506	34	2	Under left side of dash	Left side turn signal light subharness	
C507	1	8	Under left side of dash	Roof wire harness (see page 22-38)	
C508	23	4	Under middle of dash	Floor wire harness (see page 22-34)	
C509	24	6	Under middle of dash	Floor wire harness (see page 22-34)	
C510	25	12	Under middle of dash	Dashboard wire harness B (see page 22-30)	
G501	7		Under gauge assembly	Body ground via dashboard wire harness A	
G503	21		Under left side of dash	Body ground via dashboard wire harness A	

Left Side Turn Signal Light Sub harness

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Left side turn signal light	35	2	Behind left side turn signal light		
C506	34	2	Under left side of dash	Dashboard wire harness A	


DASHBOARD WIRE HARNESS A
LEFT SIDE TURN SIGNAL LIGHT SUB HARNESS
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(cont'd)

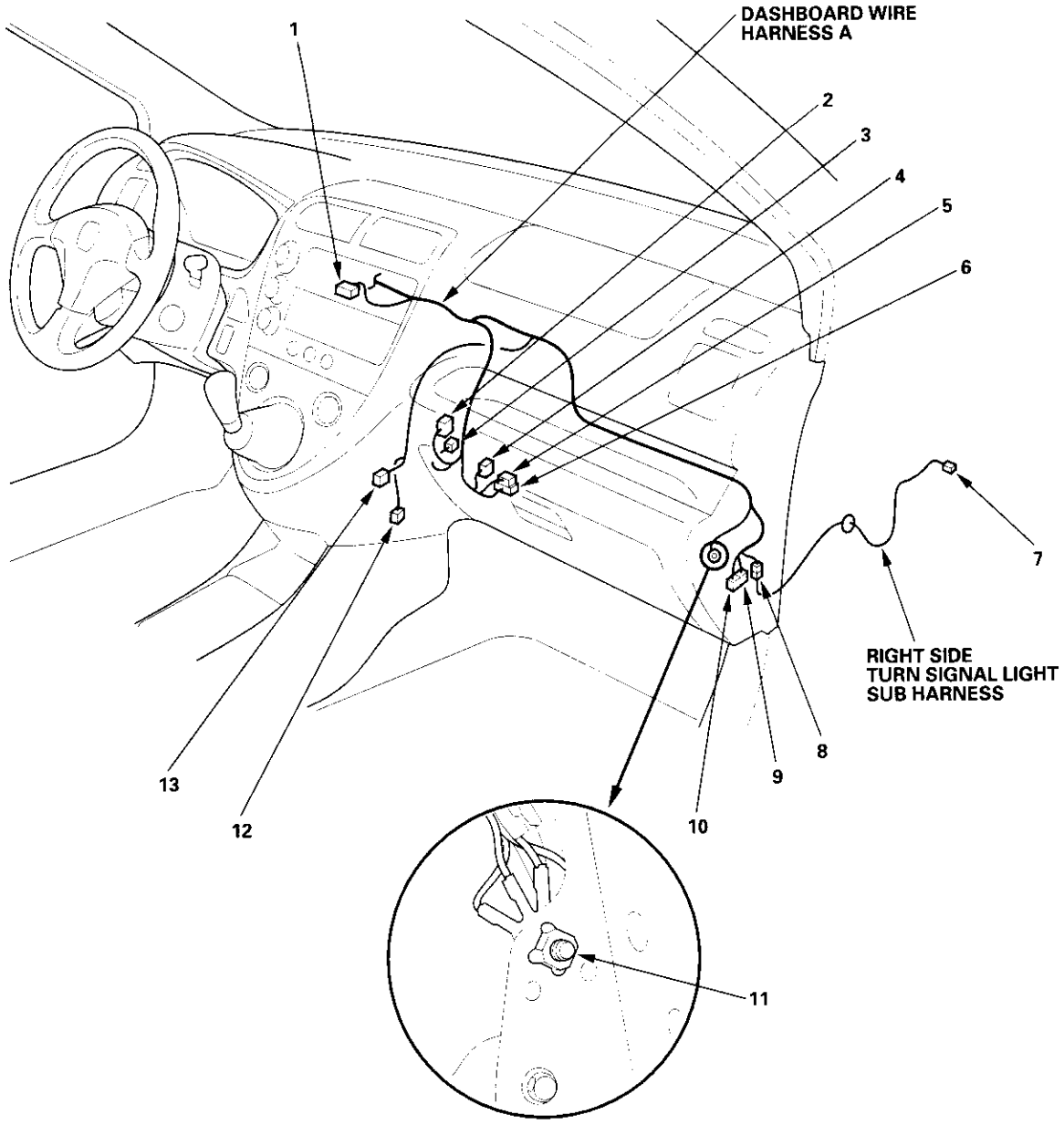
Connector to Harness Index (cont'd)

Dashboard Wire Harness A (Right branch)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Audio unit connector A	1	20	Behind audio unit		
C501	6	10	Under right side of dash	Engine compartment wire harness (see page 22-18)	
C502	5	4	Under right side of dash	Engine compartment wire harness (see page 22-18)	USA
C502	5	8	Under right side of dash	Engine compartment wire harness (see page 22-18)	Canada
C503	4	5	Under right side of dash	Engine compartment wire harness (see page 22-18)	
C511	13	13	Under middle of dash	ECM wire harness (see page 22-32)	
C512	12	8	Under middle of dash	Floor wire harness (see page 22-34)	
C513	8	2	Under right side of dash	Right side turn signal light subharness	
C514	9	13	Under right side of dash	Passenger's door wire harness (see page 22-41)	
C515	10	6	Under right side of dash	Passenger's door wire harness (see page 22-41)	
C852	2	21	Under middle of dash	A/C wire harness (see page 22-43)	
C853	3	1	Under middle of dash	A/C wire harness (see page 22-43)	
G502	11		Under right side of dash	Body ground via dashboard wire harness A	

Right Side Turn Signal Light Sub harness

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Right side turn signal light	7	2	Behind right side turn signal light		
C513	8	2	Under right side of dash	Dashboard wire harness A	


DASHBOARD WIRE HARNESS A
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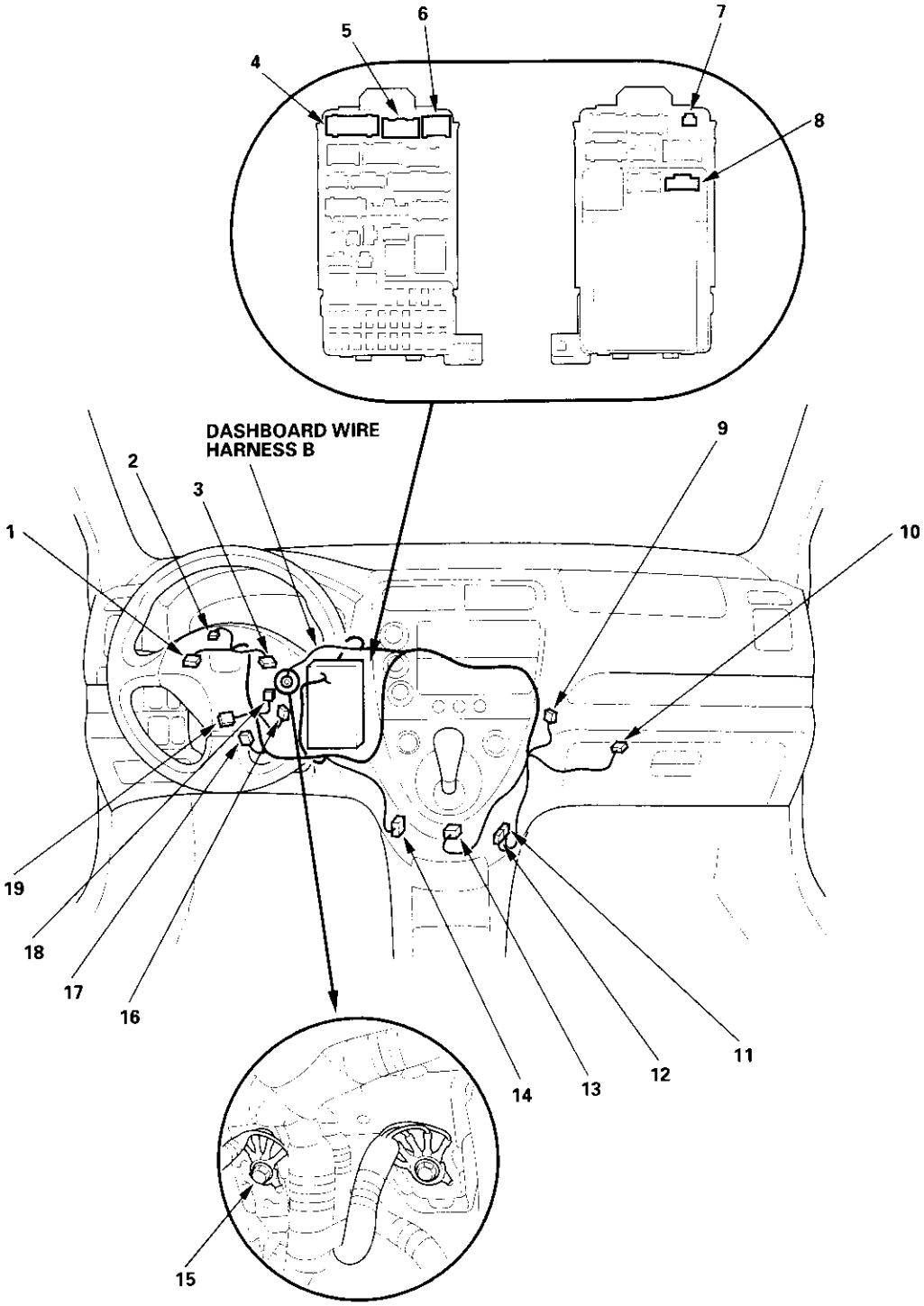
RIGHT SIDE TURN SIGNAL LIGHT SUB HARNESS

Connector to Harness Index (cont'd)

Dashboard Wire Harness B

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Cable reel	2	5	In steering column cover		
Combination light switch	1	16	In steering column cover		
Driver's airbag inflator	17	4	In steering column cover		
Ignition key switch	16	6	In steering column cover		
Ignition switch	19	7	In steering column cover		
Immobilizer control unit-receiver	18	7	In steering column cover		
Passenger's airbag inflator	9	4	Under middle of dash		
SRS unit connector A	13	18	Under middle of dash		
Wiper/washer switch	3	14	In steering column cover		
Under-dash fuse/relay box connector A (see page 22-45)	5	5	Under left side of dash		
Under-dash fuse/relay box connector B (see page 22-45)	6	6	Under left side of dash		
Under-dash fuse/relay box connector C (see page 22-45)	4	14	Under left side of dash		
Under-dash fuse/relay box connector S (see page 22-45)	7	2	Under left side of dash		
Under-dash fuse/relay box connector X (see page 22-45)	8	8	Under left side of dash		
C401	10	4	Under right side of dash	Engine compartment wire harness (see page 22-18)	
C402	12	10	Under middle of dash	Floor wire harness (see page 22-34)	
C403	11	4	Under middle of dash	Floor wire harness (see page 22-34)	
G510	14	12	Under middle side of dash	Dashboard wire harness A (see page 22-26)	
G401	15		Under gauge assembly	Body ground via dashboard wire harness B	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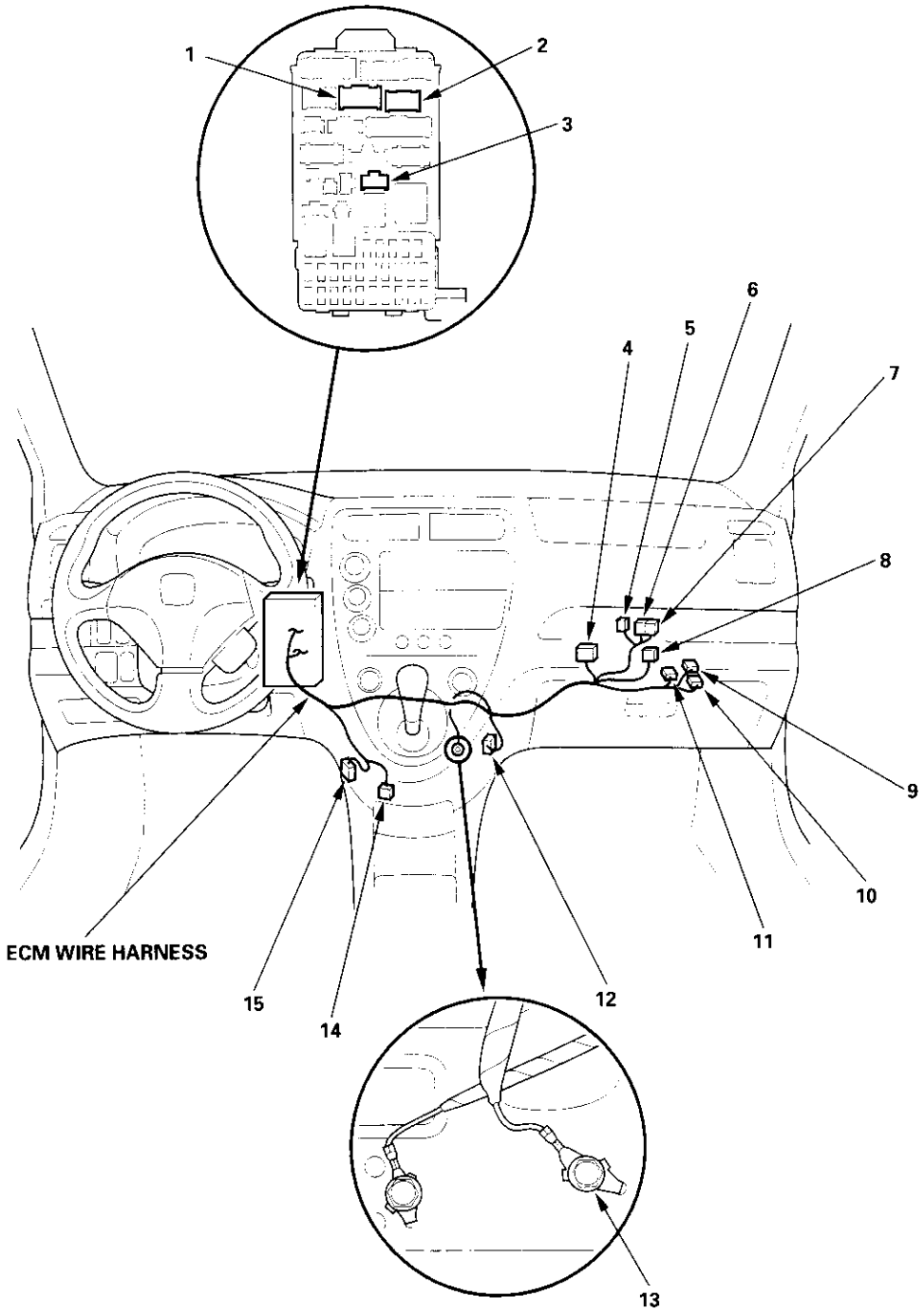
Connector to Harness Index (cont'd)

ECM Wire Harness

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Air fuel (A/F) ratio sensor relay	5	4	Behind glove box		
Data link connector	15	16	Under middle of dash		
ECM connector E	8	31	Behind glove box		
PGM-FI main relay 1	7	4	Behind glove box		
PGM-FI main relay 2	6	4	Behind glove box		
Under-dash fuse/relay box connector D (see page 22-45)	1	12	In the under-dash fuse/relay box		
Under-dash fuse/relay box connector E (see page 22-45)	2	13	In the under-dash fuse/relay box		
Under-dash fuse/relay box connector R (see page 22-45)	3	6	In the under-dash fuse/relay box		
C101	4	20	Under right side of dash	Engine wire harness (see page 22-16)	
C152	11	8	Under right side of dash	EPS sub harness (see page 22-24)	
C451	9	13	Under right side of dash	Engine compartment wire harness (see page 22-18)	
C452	10	4	Under right side of dash	Engine compartment wire harness (see page 22-18)	
C453	14	6	Under middle of dash	Floor wire harness (see page 22-34)	
C511	12	13	Under middle of dash	Dashboard wire harness A (see page 22-26)	
G451	13		Under gauge assembly	Body ground via ECM wire harness	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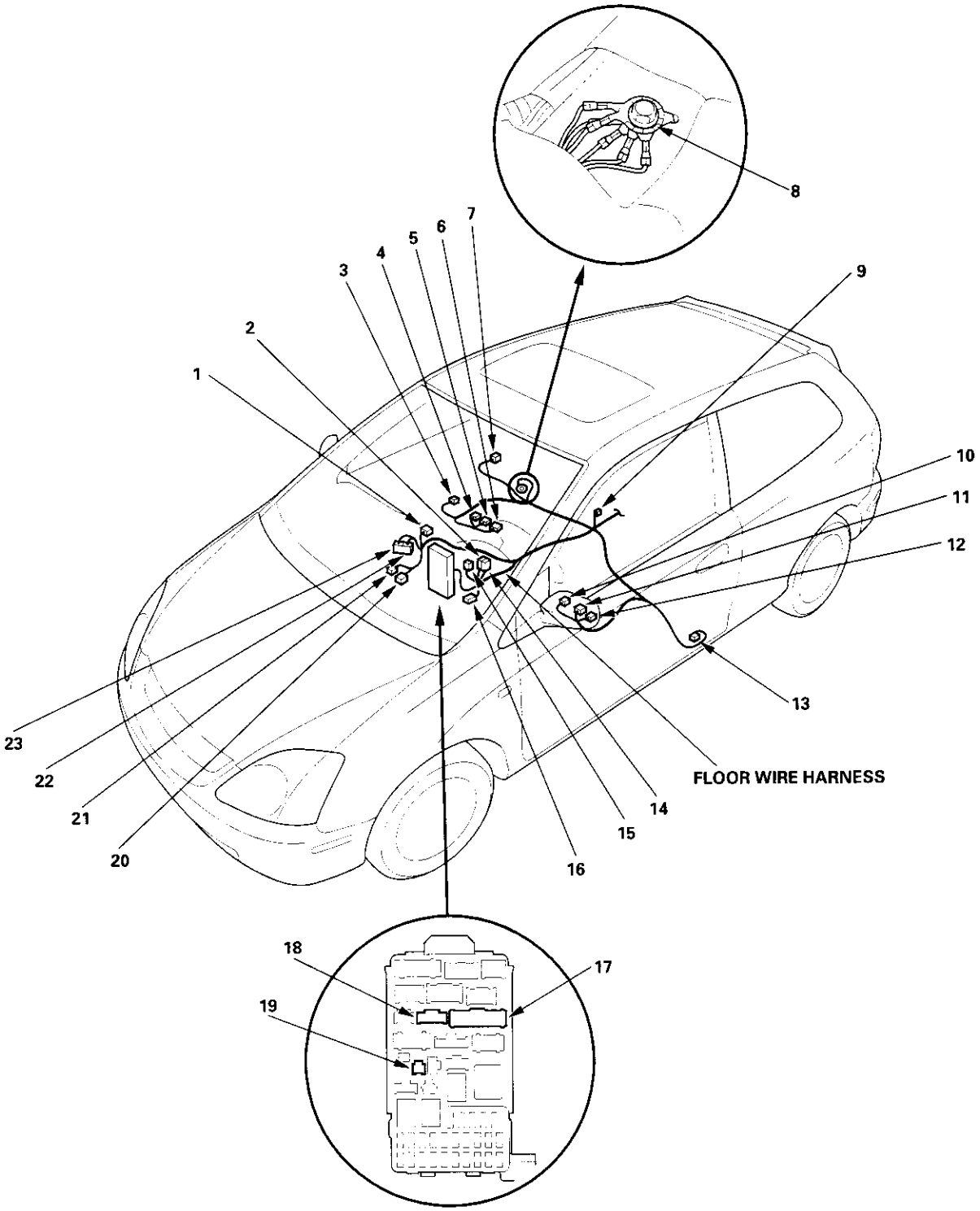
ECM WIRE HARNESS

Connector to Harness Index (cont'd)

Floor Wire Harness (Front side)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Driver's seat belt switch	11	3	Under driver's seat		
Driver's side airbag inflator	10	2	Under driver's seat		
Driver's side impact sensor	13	2	Left side of floor		
Left side seat belt buckle tensioner	12	4	Under driver's seat		
Memory erase signal (MES) connector	19	2	Under-dash fuse/relay box		
Parking brake switch	9	1	Middle of floor		
Passenger's seat belt switch	5	3	Under passenger's seat		
Passenger's side airbag inflator	3	2	Under passenger's seat		
Passenger's side impact sensor	7	2	Right side of floor		
Right side seat belt buckle tensioner	4	4	Under passenger's seat		
SRS unit connector B	20	18	Under middle of dash		
SRS unit connector C	21	8	Under middle of dash		
Under-dash fuse/relay box connector P (see page 22-45)	17	18	Under-dash fuse/relay box		
Under-dash fuse/relay box connector Q (see page 22-45)	18	8	Under-dash fuse/relay box		
C402	22	10	Under middle of dash	Dashboard wire harness B (see page 22-30)	
C403	23	4	Under middle of dash	Dashboard wire harness B (see page 22-30)	
C453	15	6	Under middle of dash	ECM wire harness (see page 22-32)	
C508	2	4	Under middle of dash	Dashboard wire harness A (see page 22-26)	
C509	14	6	Under middle of dash	Dashboard wire harness A (see page 22-26)	
C512	1	8	Under middle of dash	Dashboard wire harness A (see page 22-26)	
C551	16	10	Under middle of dash	Engine compartment wire harness (see page 22-18)	
C552	6	4	Under middle of dash	OPDS unit harness (see page 22-42)	
G551	8		Under passenger's seat	Body ground via floor wire harness	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FLOOR WIRE HARNESS
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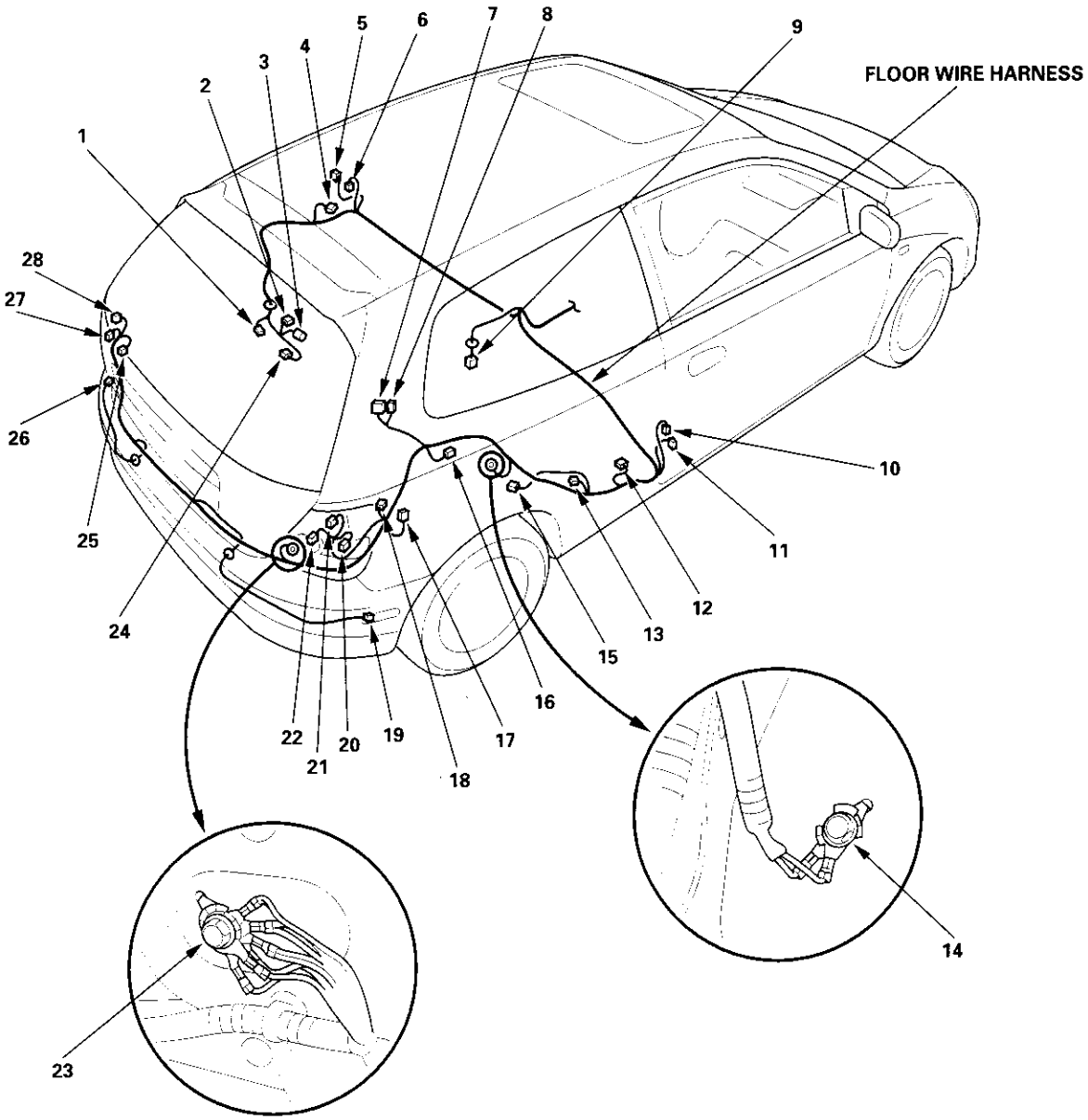
(cont'd)

Connector to Harness Index (cont'd)

Floor Wire Harness (Rear side)(cont'd)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Cargo area light	16	2	Right side of cargo area		
Driver's door switch	6	1	Left B-pillar		
EVAP emission bypass solenoid valve	2	2	Fuel tank		
EVAP emission control canister vent shut valve	24	2	Fuel tank		
Fuel pump/sending unit	9	5	Fuel tank		
Fuel tank pressure sensor	3	3	Fuel tank		
Left back-up light	25	2	Left taillight		
Left rear ABS wheel sensor	1	2	Left rear of floor		
Left rear side marker light	26	2	Behind left side of rear bumper		
Left rear speaker	4	2	Left quarter panel		
Left rear turn signal light	28	2	Left taillight		
Left side seat belt tensioner	5	2	Left B-pillar		
Left taillight/brake light	27	3	Left taillight		
Noise condenser (rear window defogger)	13	2	Right quarter panel		
Noise condenser (rear window wiper)	18	2	Right quarter panel		
Passenger's door switch	10	1	Right B-pillar		
Rear window wiper intermittent control unit	17	20	Right quarter panel		
Right back-up light	22	2	Right taillight		
Right taillight/brake light	20	3	Right taillight		
Right rear turn signal light	21	2	Right taillight		
Right rear ABS wheel sensor	15	2	Right side of cargo area		
Right rear side marker light	19	2	Behind right side of rear bumper		
Right rear speaker	12	2	Right quarter panel		
Right side seat belt tensioner	11	2	Right B-pillar		
C553	7	12	Right quarter panel	Hatch wire harness (see page 22-39)	
C554	8	12	Right quarter panel	Hatch wire harness (see page 22-39)	
G552	14		Behind right rear seat back	Body ground via floor wire harness	
G553	23		Right side of cargo area	Body ground via floor wire harness	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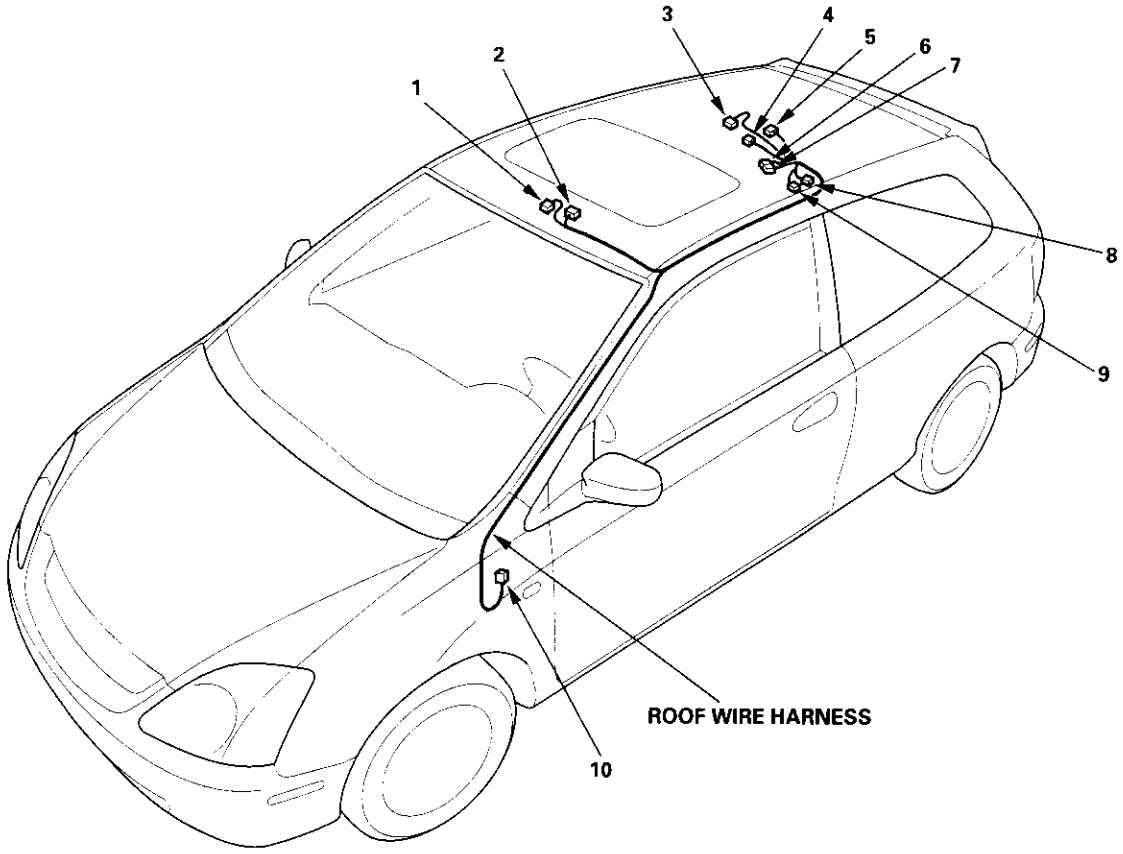
Connector to Harness Index (cont'd)

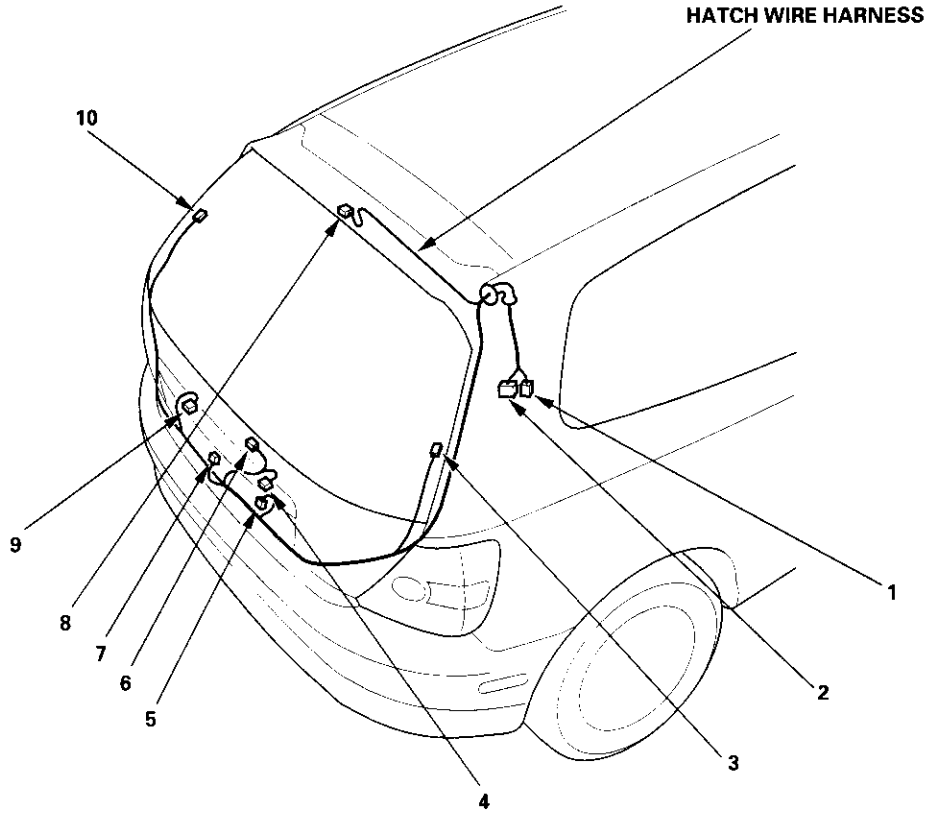
Roof Wire Harness

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Moonroof close relay	6	5	Middle of roof		
Moonroof control unit	9	5	Middle of roof		
Moonroof motor	4	2	Middle of roof		
Moonroof open relay	7	5	Middle of roof		
Moonroof position sensor 1	8	2	Middle of roof		
Moonroof position sensor 2	5	4	Middle of roof		
Moonroof switch	1	5	Front of roof		
Rear ceiling light	3	3	Middle of roof		
Spotlight/ceiling light	2	4	Front of roof		
C507	10	8	Under left side of dash	Dashboard wire harness A (see page 22-26)	



Hatch Wire Harness

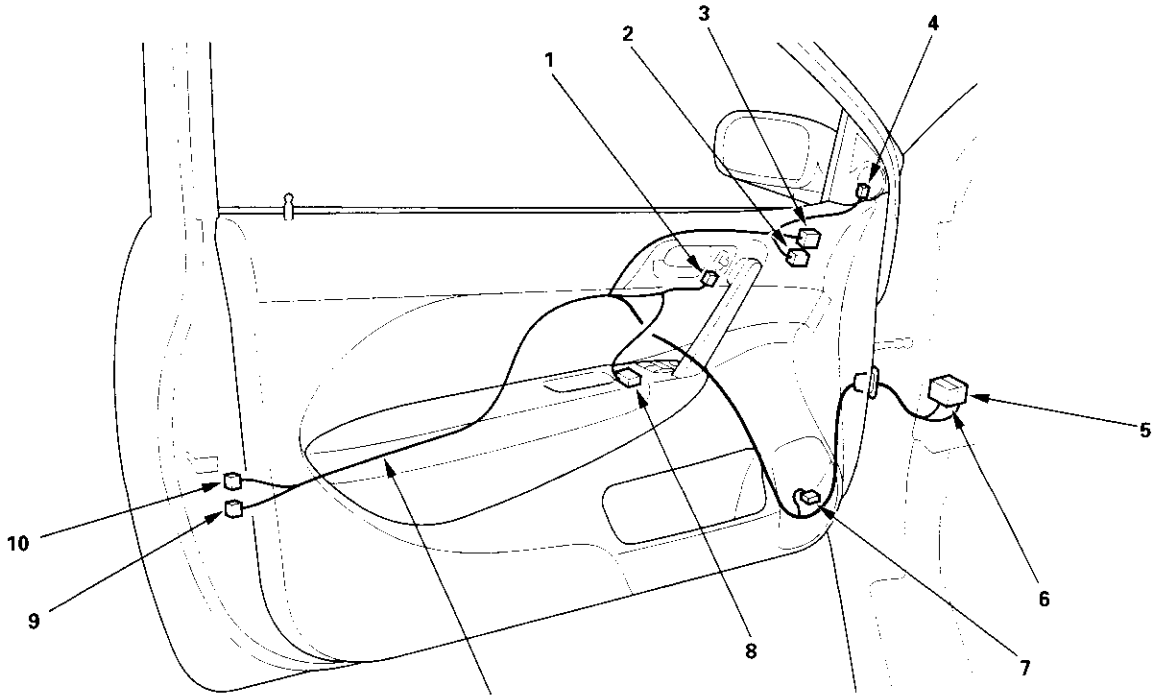
Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Hatch latch switch	7	2	Middle of hatch		
Hatch lock actuator	5	2	Middle of hatch		
High mount brake light	8	2	Behind high mount brake light		
License plate light connector A	4	2	Middle of hatch		
License plate light connector B	9	2	Middle of hatch		
Rear window defogger connector A (+)	3	1	Right C-pillar		
Rear window defogger connector B (−)	10	1	Left C-pillar		
Rear window wiper motor	6	4	Middle of hatch		
C553	2	12	Right quarter panel	Floor wire harness (see page 22-34)	
C554	1	2	Right quarter panel	Floor wire harness (see page 22-34)	



Connector to Harness Index (cont'd)

Driver's Door Wire Harness

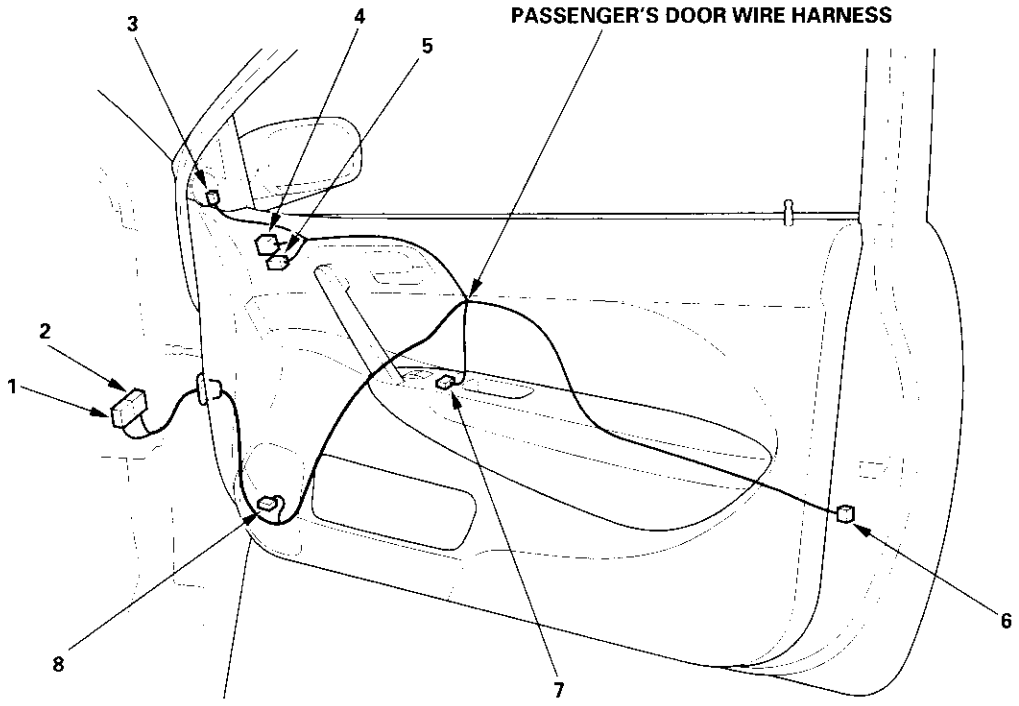
Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Driver's door lock actuator	9	2	Driver's door		
Driver's door lock knob switch	10	3	Driver's door		
Driver's door lock switch	1	3	Driver's door		
Driver's door speaker	7	2	Driver's door		
Driver's power window motor	2	4	Driver's door		
Left power mirror actuator	3	6	Driver's door		
Left tweeter	4	2	Driver's door		
Power window master switch	8	14	Driver's door		
C504	5	20	Under left side of dash	Dashboard wire harness A (see page 22-26)	
C505	6	13	Under left side of dash	Dashboard wire harness A (see page 22-26)	



DRIVER'S DOOR WIRE HARNESS

Passenger's Door Wire Harness

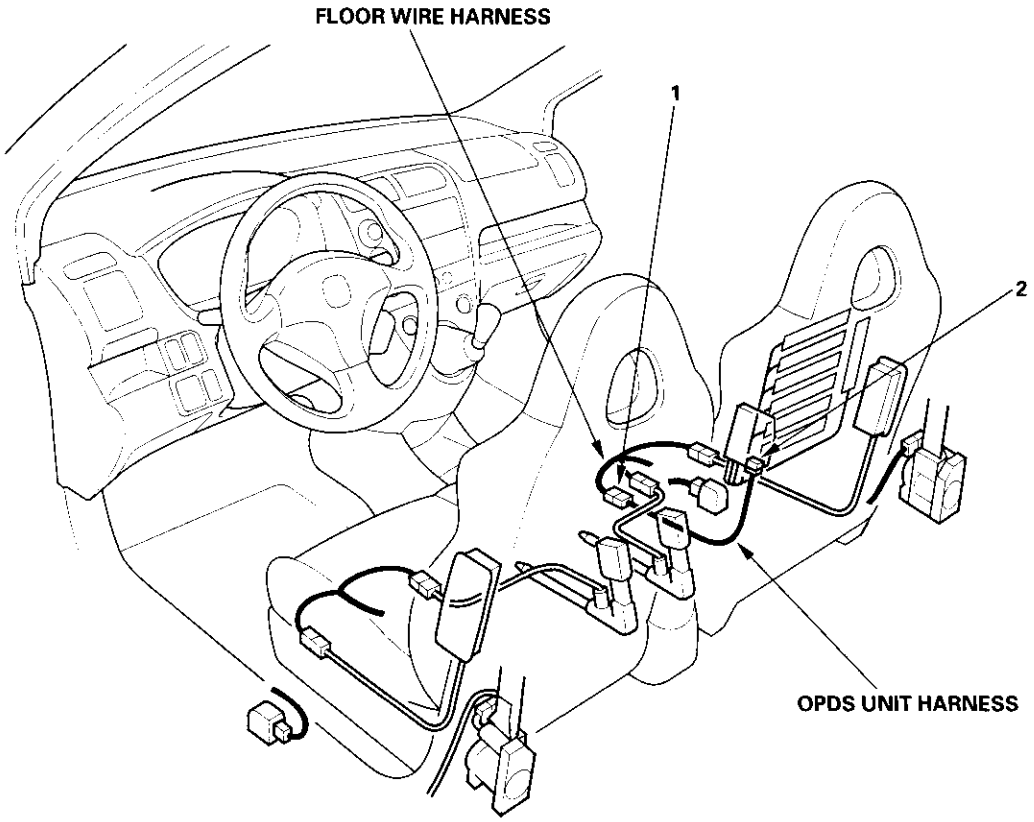
Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Passenger's door lock actuator	6	2	Passenger's door		
Passenger's door speaker	8	2	Passenger's door		
Passenger's power window motor	5	2	Passenger's door		
Passenger's power window switch	7	5	Passenger's door		
Right power mirror actuator	4	6	Passenger's door		
Right tweeter	3	2	Passenger's door		
C514	2	13	Under right side of dash	Dashboard wire harness A (see page 22-26)	
C515	1	6	Under right side of dash	Dashboard wire harness A (see page 22-26)	



Connector to Harness Index (cont'd)

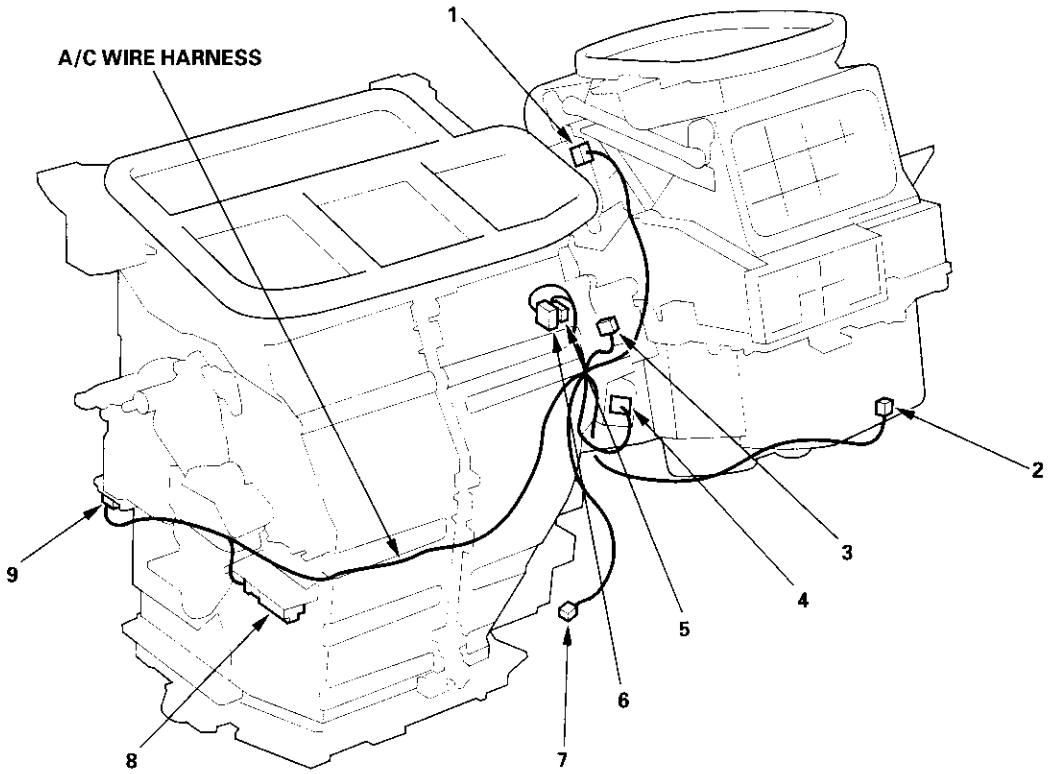
OPDS Unit Harness

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
OPDS unit	2	8	In front passenger's seat		
C552	1	4	Under front passenger's seat	Floor wire harness (see page 22-34)	



A/C Wire Harness

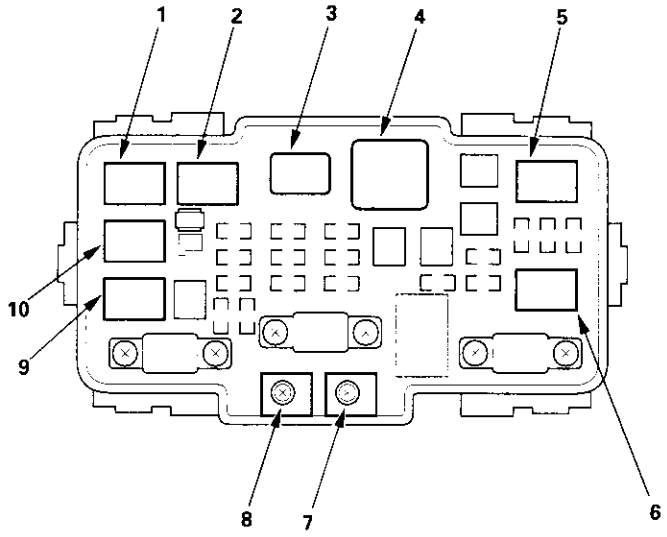
Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Air mix control motor	9	5	Under middle of dash		
Blower motor	2	2	Under right side of dash		
Evaporator temperature sensor	8	2	Under middle of dash		
Mode control motor	3	10	Under right side of dash		
Power transistor	4	4	Under right side of dash		
Recirculation control motor	1	5	Under right side of dash		
C851	7	1	Under middle of dash	Engine compartment wire harness (see page 22-18)	
C852	6	21	Under middle of dash	Dashboard wire harness A (see page 22-26)	
C853	5	1	Under middle of dash	Dashboard wire harness A (see page 22-26)	



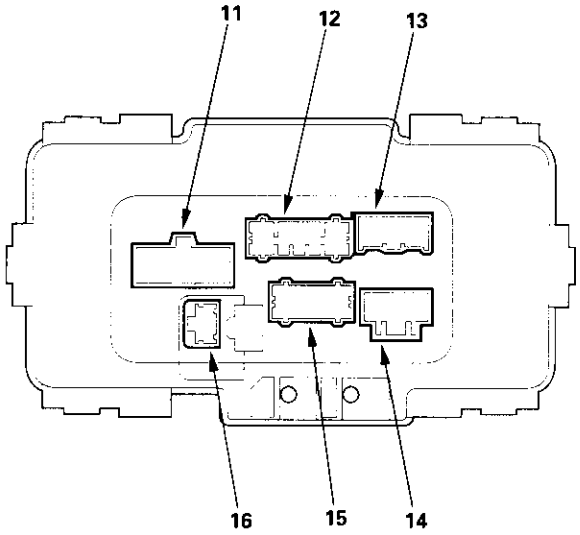
Connector to Fuse/Relay Box Index

Under-hood Fuse/Relay Box

Socket	Ref	Terminal	Connects to
A	14	2	Engine compartment wire harness (see page 22-18)
A/C compressor clutch relay	2	4	
B	13	5	Engine compartment wire harness (see page 22-18)
Blower motor relay	4	4	
C	15	12	Engine compartment wire harness (see page 22-18)
Condenser fan relay	9	4	
D	12	14	Engine compartment wire harness (see page 22-18)
E	11	7	Engine compartment wire harness (see page 22-18)
ELD unit	16	3	Engine compartment wire harness (see page 22-18)
Headlight relay 1	5	4	
Headlight relay 2	6	4	
Horn relay	10	4	
Radiator fan relay	1	4	
Rear window defogger relay	3	4	
T1 (Battery)	8		Starter subharness (see page 22-15)
T101 (Alternator)	7		Starter subharness (see page 22-15)



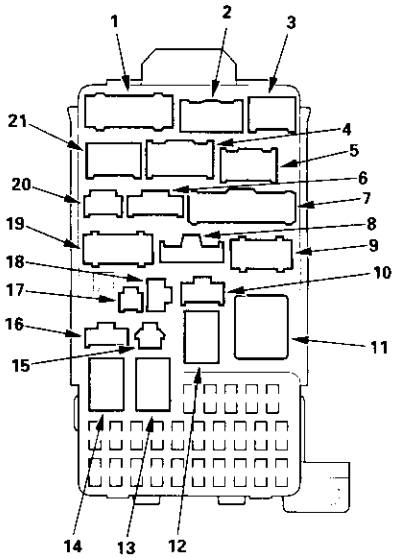
(View of front side)



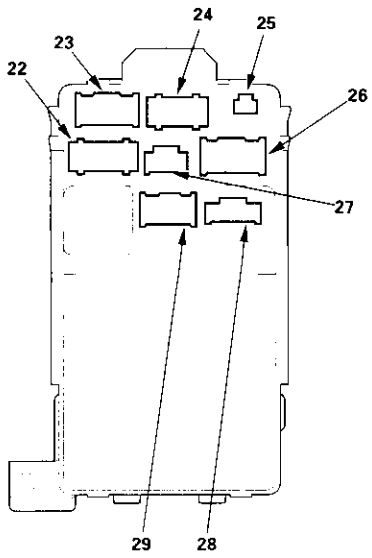
(View of back side)

Under-dash Fuse/Relay Box

Socket	Ref	Terminal	Connects to
A	2	5	Dashboard wire harness B (see page 22-30)
B	3	6	Dashboard wire harness B (see page 22-30)
C	1	14	Dashboard wire harness B (see page 22-30)
D	4	12	ECM wire harness (see page 22-32)
E	5	13	ECM wire harness (see page 22-32)
F	19	12	Engine compartment wire harness (see page 22-18)
G	9	10	Engine compartment wire harness (see page 22-18)
H	8	3	Engine compartment wire harness (see page 22-18)
I	20	5	Engine compartment wire harness (see page 22-18)
J	21	8	Engine compartment wire harness (see page 22-18)
K	23	17	Dashboard wire harness A (see page 22-26)
L	24	10	Dashboard wire harness A (see page 22-26)
M	22	12	Dashboard wire harness A (see page 22-26)
N	27	6	Dashboard wire harness A (see page 22-26)
O	26	12	Dashboard wire harness A (see page 22-26)
P	7	18	Floor wire harness (see page 22-34)
Power window relay	12	4	
Q	6	8	Floor wire harness (see page 22-34)
R	10	6	ECM wire harness (see page 22-32)
S	25	2	Dashboard wire harness B (see page 22-30)
Starter cut relay	14	4	
T	18	3	Multiplex control unit service check connector
Taillight relay	13	4	
Turn signal/hazard relay	11	3	
U	15	1	Optional connector
V	16	4	Optional connector
W (Memory erase signal (MES) connector)	17	2	Floor wire harness (see page 22-34)
X	28	8	(Plugs directly into the multiplex control unit)
Y	29	13	(Plugs directly into the multiplex control unit)



(View of front side)



(View of back side)

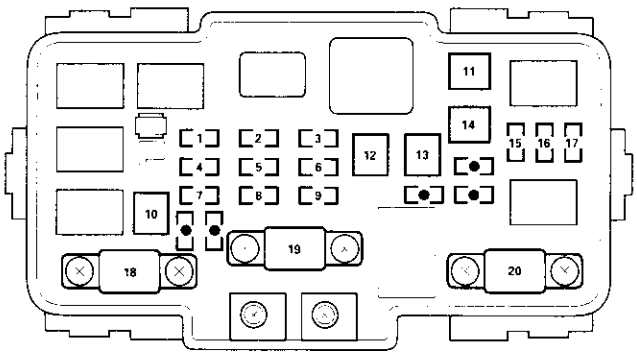
Power Distribution

Fuse to Components Index

Under-hood Fuse/Relay Box

Fuse Number	Amps	Wire Color	Component(s) or Circuit(s) Protected
1	20A	BLU/YEL	Condenser fan motor
		BLU/RED	A/C compressor clutch
2	15A	WHT/GRN	Dash lights, Front parking lights, Front side marker lights, License plate light, Rear side marker lights, Taillights
3	7.5A	WHT/BLU	Cargo area light, Ceiling lights, Ignition Key light, Spotlights
4	20A	BLU/BLK	Radiator fan motor
5	10A	WHT/BLK	Turn signal/hazard relay, Turn signal lights
6	15A	WHT/BLK	CKP sensor, ECM, IAC valve, Immobilizer control unit-receiver, Injectors, PGM-FI main relay 1 and 2, TDC sensor
7	15A	WHT/GRN	Brake lights, Brake signals (to ABS modulator-control unit, Cruise control unit, ECM)
		BLU/RED	Horns
8	20A	WHT/GRN	ABS modulator-control unit
9	10A	WHT/RED	Audio unit, Data link connector (DLC), Gauge assembly, Immobilizer control unit-receiver, Immobilizer indicator light, Keyless receiver unit, Multiplex control unit
10	40A	WHT/RED	ABS modulator-control unit
11	30A	BLK/YEL	Noise condenser, Rear window defogger
12	40A	BLU/WHT	Blower motor
13	40A	WHT/BLK	No. 7 fuse (in the under-dash fuse/relay box), Power window relay
14	40A	WHT/RED	No. 2 and No. 3 fuses (in the under-dash fuse/relay box)
15	15A	RED/YEL	Daytime running lights control unit (Canada), Daytime running lights relay (Canada), High beam indicator light, Left headlight
16	20A	WHT	Multiplex control unit
17	15A	RED	Daytime running lights control unit (Canada), Right headlight
18	60A	WHT/BLU	EPS control unit
19	80A	—	Battery, Power distribution
20	40A*1 50A*2	WHT	Ignition switch (BAT)

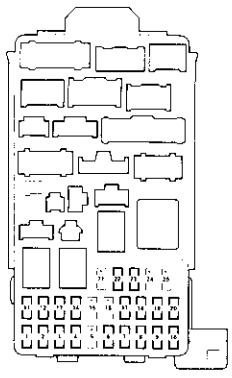
* 1: USA
* 2: Canada



●: Spare fuse

Under-dash Fuse/Relay Box

Fuse Number	Amps	Wire Color	Component(s) or Circuit(s) Protected
1	15A	BLK/WHT	Ignition coils
2	20A	WHT/RED	Air/fuel ratio sensor, ECM
3	10A	RED/BLU	Daytime running lights control unit (Canada)
4	10A	BLK/ORN	Air/fuel ratio sensor relay, Alternator, CMP sensor, Cruise control main switch, Cruise control unit, ELD unit, Evaporative emission (EVAP) bypass solenoid valve, Evaporative emission (EVAP) canister purge valve, Evaporative emission (EVAP) canister vent shut valve, Secondary HO2S, Vehicle speed sensor
5	———	———	Not used
6	7.5A	YEL/GRN	Moonroof control unit, Moonroof open and close relay, Power window relay
7	20A	GRN	Moonroof motor
8	7.5A	YEL/RED	Audio unit
9	10A	GRN	OPDS unit, Rear window wiper motor, Rear window washer motor, Rear window wiper intermittent control unit
10	7.5A	YEL	Back-up lights, Cruise indicator light, EPS control unit, Gauge assembly, Keyless receiver unit, Multiplex control unit, Security control unit connector (optional)
11	7.5A	BLK/ORN	ABS modulator-control unit
12	7.5A	YEL/RED	Daytime running lights control unit (Canada)
13	10A	PNK	SRS unit
14	10A	BLK/YEL	A/C compressor clutch relay, Blower motor relay, Condenser fan relay, Heater control panel, Power mirror actuator, Power mirror defogger (Canada), Radiator fan relay, Rear window defogger relay, Recirculation control motor
15	———	———	Not used
16	———	———	Not used
17	15A	YEL/BLK	ECM, Fuel pump
		BLK/YEL	SRS unit
18	15A	YEL/GRN	Accessory power socket
19	7.5A	YEL/BLK	Turn signal/hazard relay, Turn signal lights
20	30A	GRN/BLK	Multiplex control unit, Windshield washer motor, Windshield wiper motor
21	———	———	Not used
22	20A	GRN/BLK	Passenger's window motor
23	20A	GRN/WHT	Driver's window motor
24	———	———	Not used
25	———	———	Not used



*: Not used

Ground Distribution

Ground to Components Index

Ground	Component or circuit grounded
G1	Battery, Transmission housing
G2	Engine
G101	ECM (PG is BLK; LG is BRN/YEL) BLK: IAC valve, Ignition coils, Vehicle speed sensor, VTEC solenoid valve BRN/YEL: Camshaft position (CMP) sensor, CKP sensor, TDC sensor, VTEC oil pressure switch
G151	EPS control unit
G201	ELD unit, Multiplex control inspection connector, Multiplex control unit, Power window relay, Rear window washer motor, Right front parking light, Right front side marker light, Right front turn signal light, Turn signal/hazard relay, Washer fluid level sensor (Canada) , Windshield washer motor, Windshield wiper motor
G202	ABS modulator-control unit
G301	Blower motor relay, Brake fluid level switch, Condensor fan motor, Cruise control actuator, Left front parking light, Left front side marker light, Left front turn signal light, Radiator fan motor, Radiator fan switch
G401	Combination light switch, Ignition key switch, Wiper/washer switch
G402	Left and right airbag sensors, SRS unit
G451	Data link connector (DLC)
G501	Clutch interlock switchm Clutch pedal position switch (for cruise control), Cruise control main switch, Cruise control unit, Daytime running lights control unit (Canada), Driver's door lock knob switch, Driver's door lock switch, Driver's power window motor, Heater control panel, Left power mirror defogger (Canada), left side turn signal light, Moonroof control unit, Monroof open and close relays, Moonroof position sensor 1, Moonroof seitch, Power mirror switch, Power transistor, Power window master switch, Spotlights
G502	Accessory power socket, Gauge assembly, Keyless receiver unit, Multiplex control unit, Right power mirror defogger (Canada)
G503	Audio unit
G551	Driver's seat belt switch, Fuel gauge sending unit, Fuel pump, Memory erase signal (MES) connector, OPDS unit, Right seat belt switch
G552	High mount brake light, License plate lights, Rear window defogger, Rear window defogger noise condenser, Rear window wiper motor, Hatch latch switch
G553	Back-up lights, Brake lights, Rear side marker lights, Rear turn signal lights, Rear window wiper noise condenser, Rear window wiper intermittent control unit, Taillights

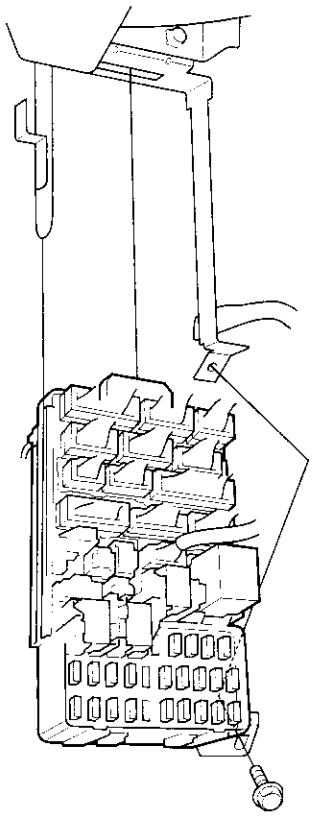
Under-dash Fuse/Relay Box

Removal and Installation

SRS components are located in this area. Review the SRS component locations (see page 23-13) and precautions and procedures (see page 23-14) in the SRS section before performing repairs or service.

Removal

1. Make sure you have the anti-theft code for the radio, then write down the frequencies for the radio's preset buttons.
2. Disconnect the battery negative cable, then disconnect the positive cable, and wait at least three minutes.
3. Remove the driver's dashboard lower cover (see page 20-59).
4. Disconnect the connectors from the fuse side of the under-dash fuse/relay box.



5. Remove the mounting bolt, and slide the under-dash fuse/relay box (A) down from the bracket (B).
6. Disconnect the back side from connectors from the back of the under-dash fuse/relay box, and remove the fuse/relay box.

   NOTE: The SRS connector is a spring-loaded lock type (see page 23-11).

Installation

1. Install the under-dash fuse/relay box in the reverse order of removal and connect all connectors to the under-dash fuse/relay box.
2. Install the driver's dashboard lower cover.
3. Connect both the negative cable and positive cable to the battery.
4. Enter the anti-theft code for the radio, then enter the customer's radio station presets.
5. Confirm that all systems work properly.
6. Do the engine control module (ECM) idle learn procedure (see page 11-139).

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.

Use either a JCI or Bear ARBST tester, and follow the manufacturer's procedures. If you don't have one of these computerized testers, follow this conventional test procedure:

1. Be sure the temperature of the electrolyte is between 70°F (21°C) and 100°F (38°C).
2. Inspect the battery case for cracks or leaks.
   - If the case is damaged, replace the battery. ■
   - If the case looks OK, go to step 3.
3. Check the indicator EYE.
   - If the EYE indicates the battery is charged, go to step 4.
   - If the EYE indicates a low charge, go to step 7.
4. Apply a 300 amp load for 15 seconds to remove the surface charge.
5. Wait 15 seconds, then apply a test load of 280 amps for 15 seconds.
6. Record battery voltage.
   - If voltage is above 9.6 volts, the battery is OK. ■
   - If voltage is below 9.6 volts, go to step 7.
7. Charge the battery on High (40 amps) until the EYE shows the battery is charged, plus an additional 30 minutes. If the battery charge is very low, it may be necessary to bypass the charger's polarity protection circuitry.
   - If the EYE indicates the battery is charged within 3 hours, the battery is OK. ■
   - If the EYE indicates the battery is not charged within 3 hours, replace the battery. ■

Power Relay Test

Use this chart to identify the type of relay, then do the test listed for it.

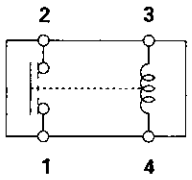
NOTE: Turn signal/hazard relay input test (see page 22-87).

Relay	Test
A/C compressor clutch relay	Normally-open type A
Air/fuel ratio sensor relay	
Condenser fan relay	
Headlight relay 1	
Headlight relay 2	
Horn relay	
Power window relay	
Radiator fan relay	
Reverse relay	
Starter cut relay	
Taillight relay	
Daytime running lights relay (Canada)	
PGM-FI main relay 1	
PGM-FI main relay 2	
Blower motor relay	Normally-open type B
Rear window defogger relay	
Moonroof close relay	Five terminal type
Moonroof open relay	
Low beam cut relay (Canada)	

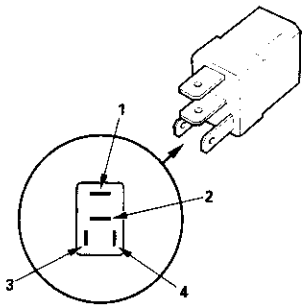
Normally-open type A:

Check for continuity between the terminals.

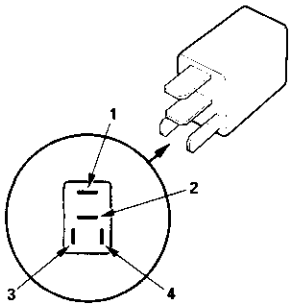
- There should be continuity between the No. 1 and No. 2 terminals when power and ground are connected to the No. 3 and No. 4 terminals.
- There should be no continuity between the No. 1 and No. 2 terminals when power is disconnected.



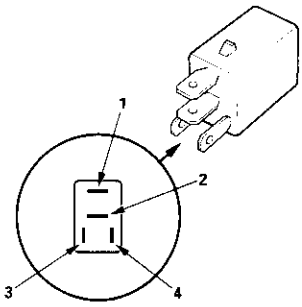
type 1:



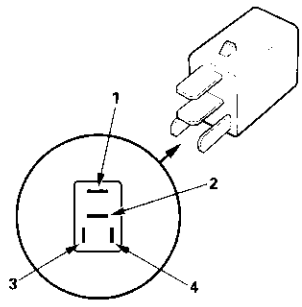
type 2:



PGM-FI main relay 1
PGM-FI main relay 2
type 1:



type 2:



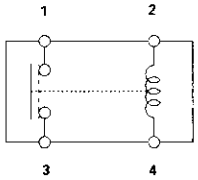
(cont'd)

Power Relay Test (cont'd)

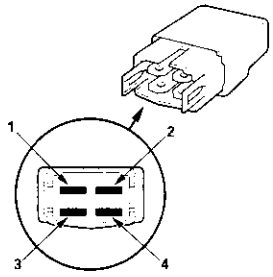
Normally-open type B:

Check for continuity between the terminals.

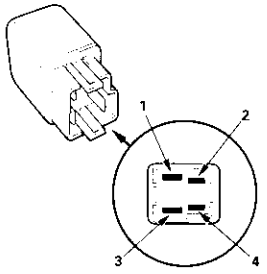
- There should be continuity between the No. 1 and No. 3 terminals when power and ground are connected to the No. 2 and No. 4 terminals.
- There should be no continuity between the No. 1 and No. 3 terminals when power is disconnected.



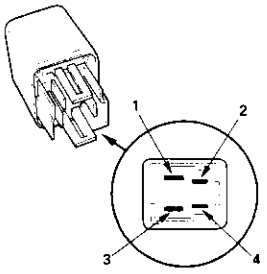
Rear window defogger relay



Blower motor relay
type 1:



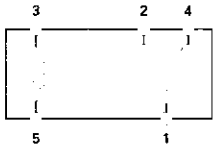
type 2:



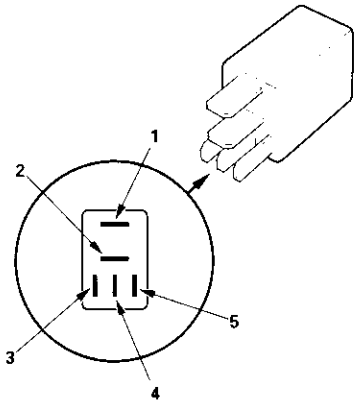
Five-terminal type

Check for continuity between the terminals.

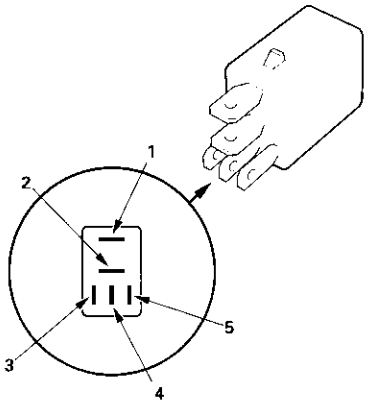
- There should be continuity between the No. 1 and No. 2 terminals when power and ground are connected to the No. 3 and No. 5 terminals.
- There should be continuity between the No. 1 and No. 4 terminals when power is disconnected.



type 1:



type 2:



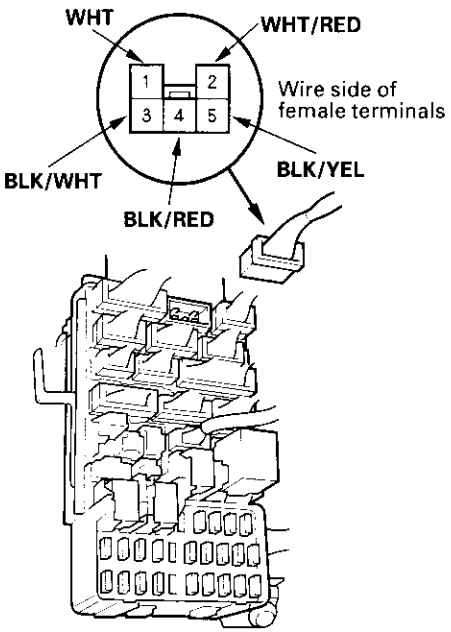
Ignition Switch

Test

SRS components are located in this area. Review the SRS component locations (see page 23-13) and precautions and procedures (see page 23-14) in the SRS section before performing repairs or service.

1. Remove the driver's dashboard lower cover (see page 20-59).

2. Disconnect the 5P connector from the under-dash fuse/relay box.

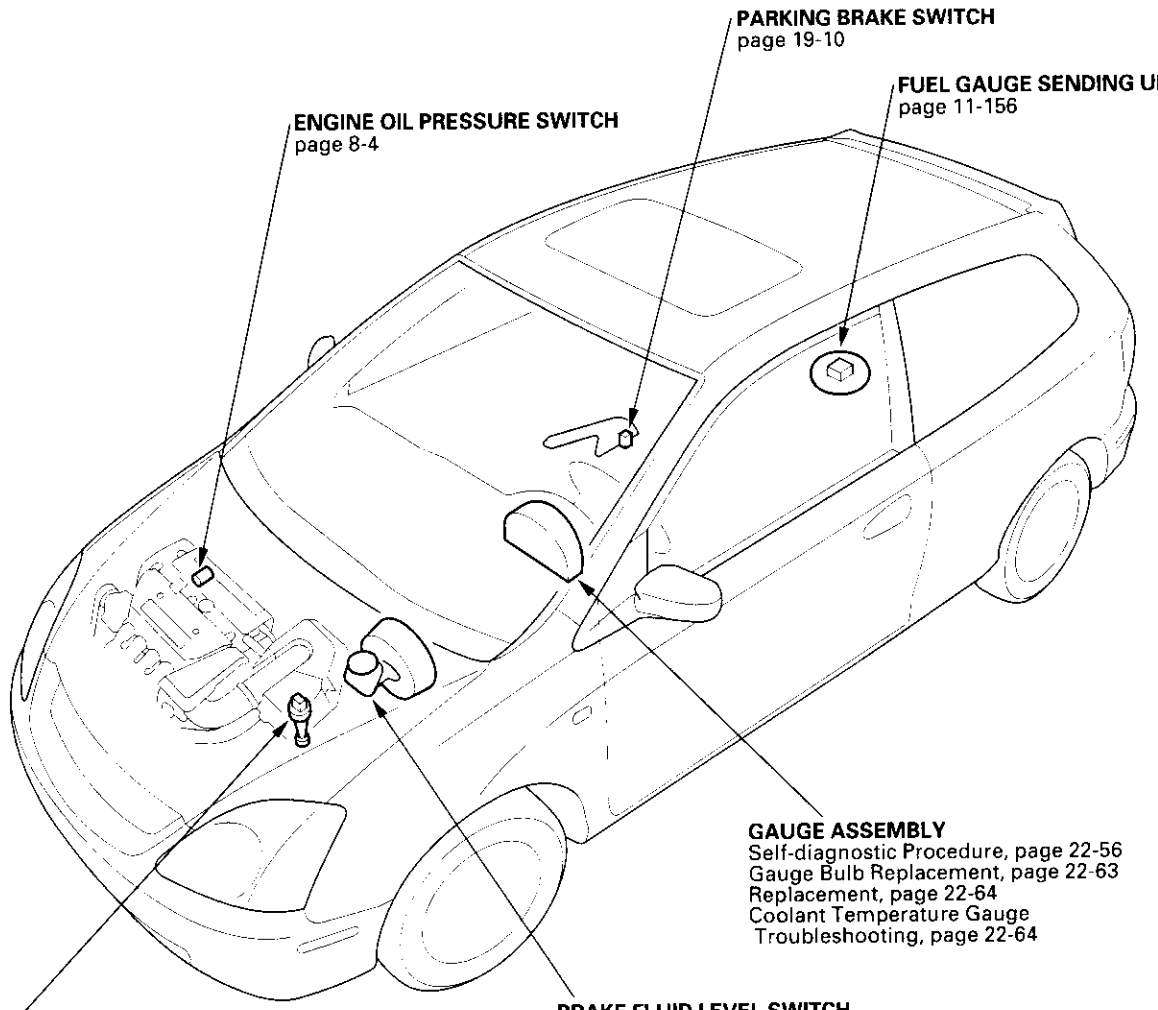


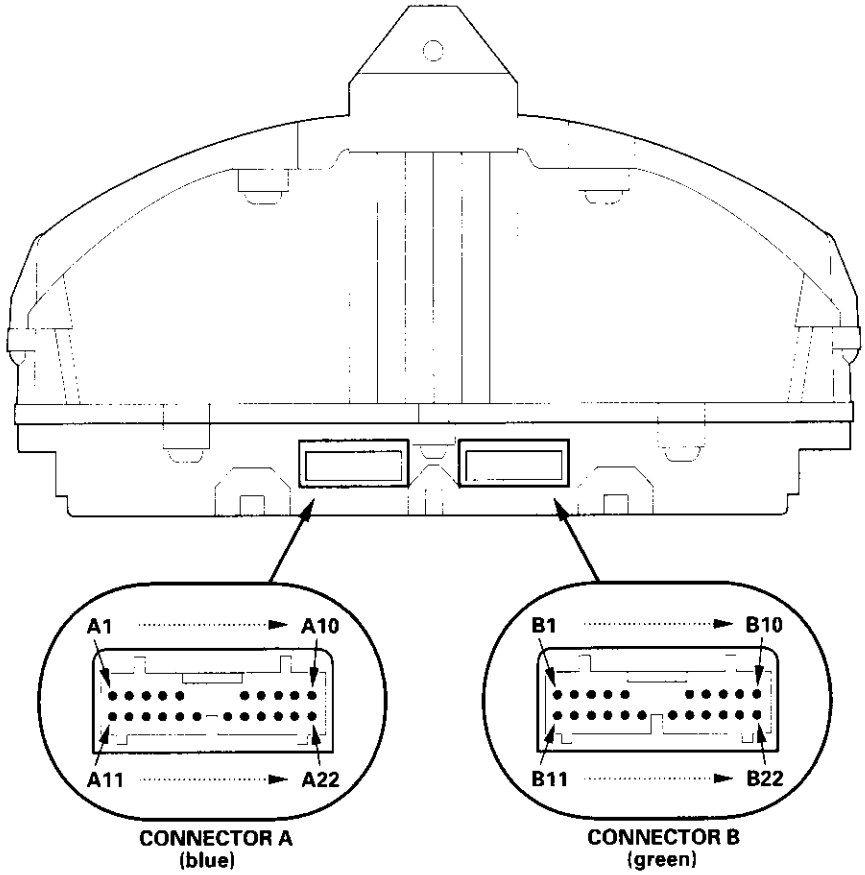
3. Check for continuity between the terminals in each switch position according to the table.

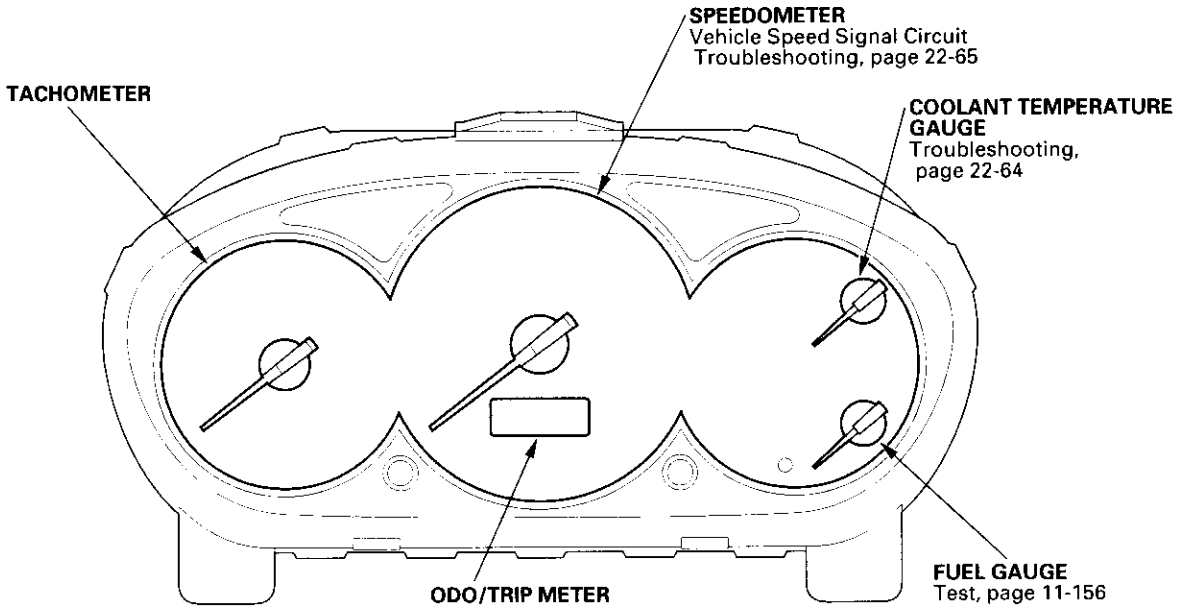
Terminal / Position	WHT/RED (ACC)	WHT (BAT)	BLK/YEL (IG1)	BLK/RED (IG2)	BLK/WHT (ST)
O (LOCK)					
I (ACC)	○—○				
II (ON)	○—○	○—○	○—○		
III (START)		○—○	○—○	○—○	

4. If the continuity checks do not agree with the table, replace the steering lock assembly (see page 17-12).

Component Location Index




A1
A10
A11
A22
CONNECTOR A
(blue)
B1
B10
B11
B22
CONNECTOR B
(green)


SPEEDOMETER
Vehicle Speed Signal Circuit
Troubleshooting, page 22-65
TACHOMETER
COOLANT TEMPERATURE
GAUGE
Troubleshooting,
page 22-64
ODO/TRIP METER
FUEL GAUGE
Test, page 11-156

Self-diagnostic Procedure

The gauge assembly has a self-diagnosis function.
- The Beeper Drive Circuit Check
- The Indicator Drive Circuit Check
- The LCD Segments Check
- The Gauges Drive Circuit Check (Speedometer, Tachometer, Fuel gauge, Coolant temperature gauge)
- The Communication Line Check (the coolant temperature signal line between the gauge and ECM)

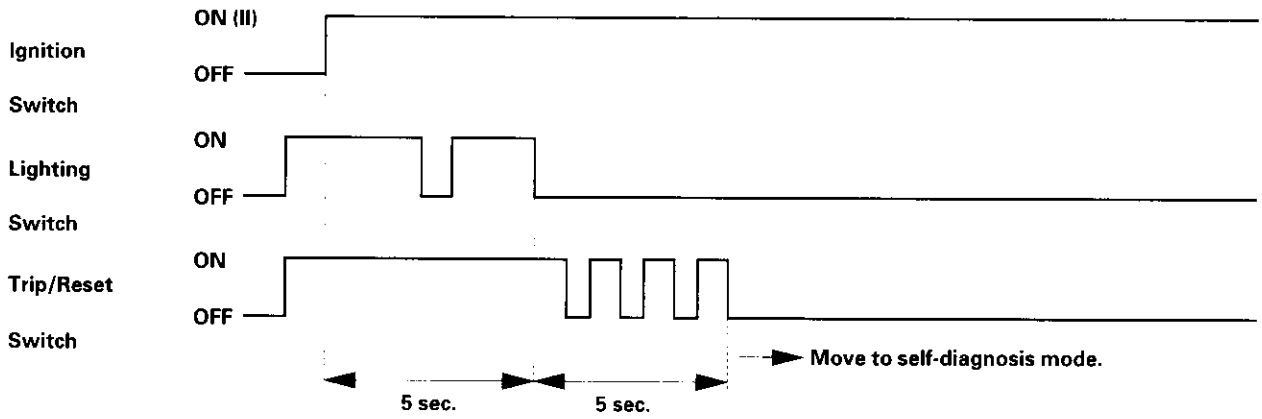
NOTE: Indicators are also controlled via the communication line.

Entering the self-diagnosis function:

Before doing the self-diagnosis function, check the No. 9 (10A) fuse in the under-hood fuse/relay box and No. 10 (7.5A) fuse in the under-dash fuse/relay box.

1. Push and hold the trip/reset button.
2. Turn the lighting switch ON.
3. Turn the ignition switch ON (II).
4. Within 5 sec., turn the lighting switch OFF, then ON and OFF again.
5. Within 5 sec., release the trip/reset button, then push and release the button four times repeatedly.

NOTE:
- While in the self-diagnosis mode, the dash lights brightness controller operates normally.
- While in the self-diagnosis mode, the trip/reset button is used to start the beeper drive circuit check and the gauge drive cicuit check.
- If the vehicle speed exceeds 1.2 mph (2 km/h) or the ignition switch is turned OFF, the self-diagnosis mode ends.



The Beeper Drive Circuit Check:

When entering the self-diagnosis mode, the beeper sounds five times.

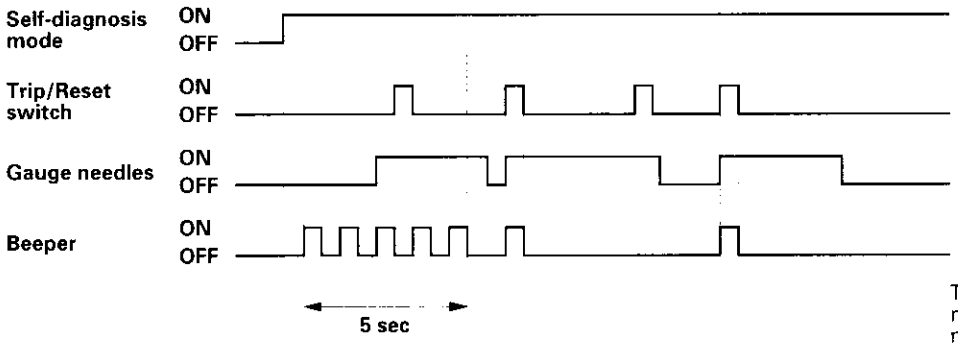
The Indicator Drive Circuit Check:

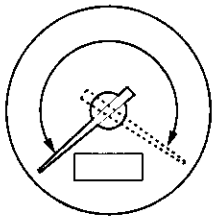
When entering the self-diagnosis mode, the following indicators blink.
Seat belt indicator, Door/hatch indicator, Brake system, Low fuel indicator, Maintenance required indicator (USA), Washer fluid level indicator (Canada), Oil pressure light.

The LCD Segment Check:
When entering the self-diagnosis mode, the odo/trip segment blinks five times.

The Gauge Drive Circuit Check:
When entering the self-diagnosis mode, the speedometer, the tachometer, the fuel gauge, and the coolant temperature gauge needles sweep from the minimum position to maximum position, then return to the minimum position.

NOTE: After the beeper stops sounding and the needles return to the minimum position, pushing the trip/reset button starts the beeper drive circuit check (one beep) and the gauge drive circuit check again.
The check cannot be started until the needles return to the minimum position.





The needles sweep from the minimum position to the maximum position, then return to the minimum position.

The Communication Line Check:
In the self-diagnosis mode, after the odo/trip LCD segments check, the self-diagnosis starts the communication line check.
If all segments comes on, the communication line is OK.
If the word "Error" is indicated, there is a malfunction in the communication line between the gauge assembly, the multiplex control unit, and the ECM.

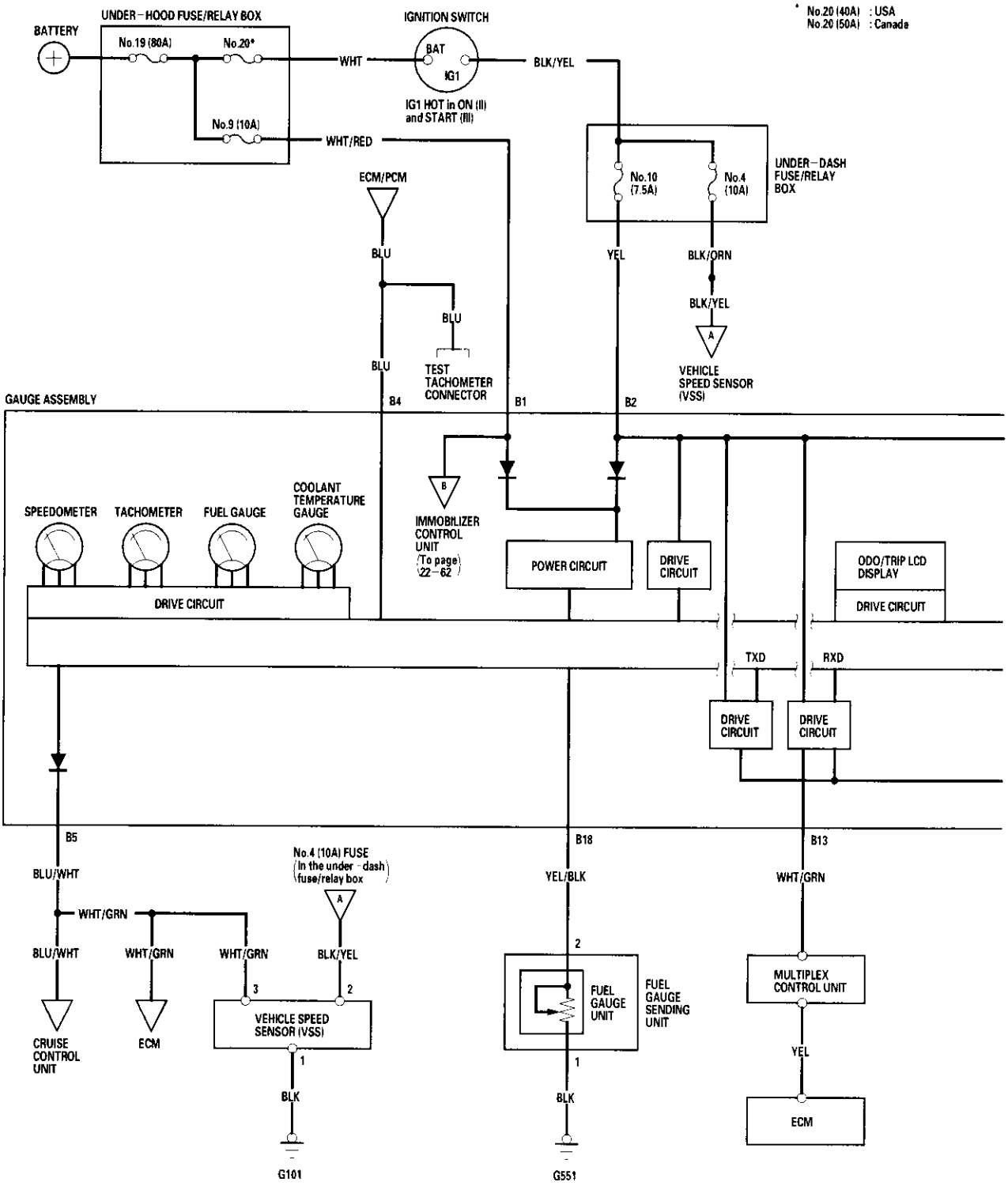
Normal:

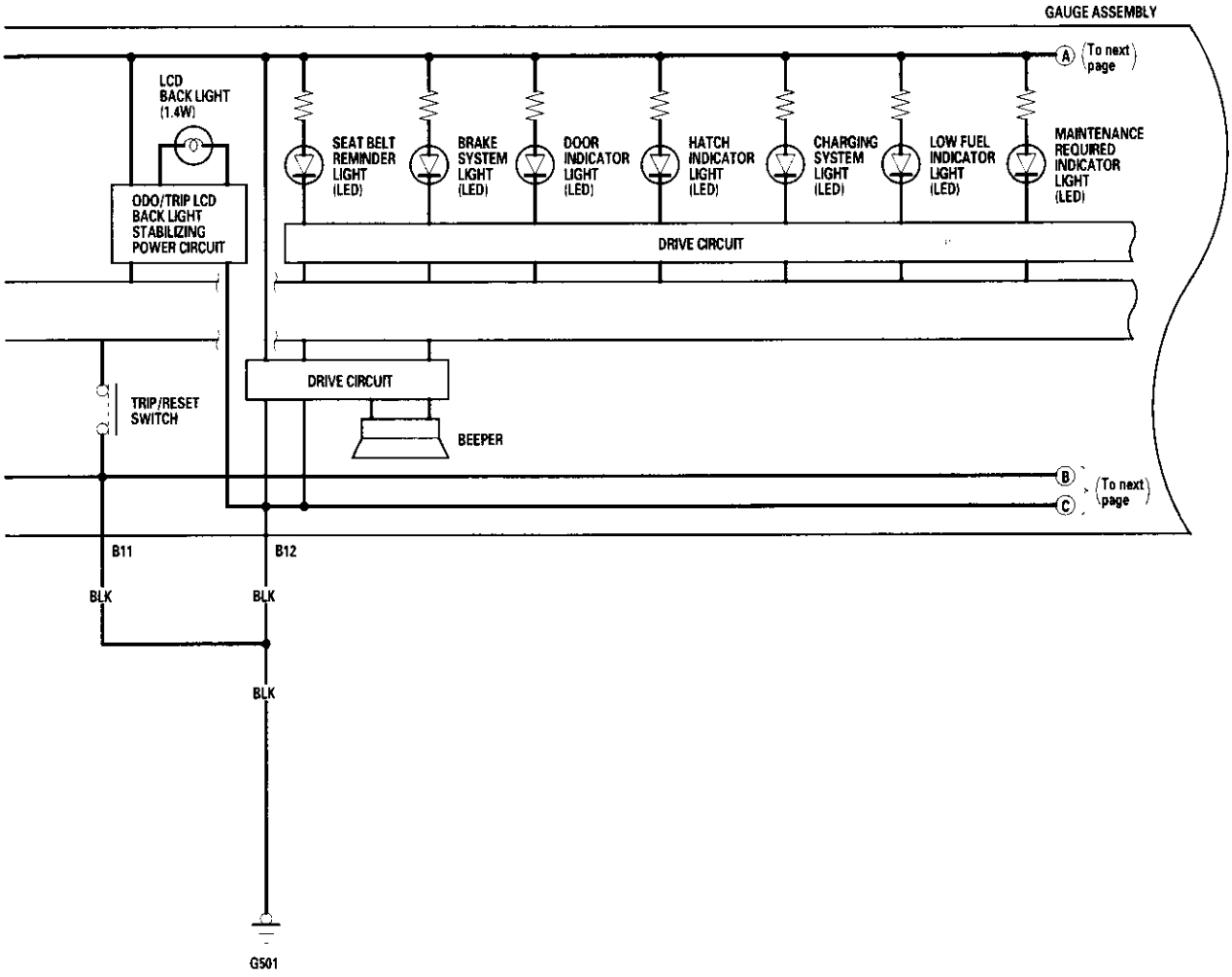
Faulty:

Ending the self-diagnosis function:
Turn the ignition switch OFF.

NOTE: If the vehicle speed exceeds 1.2 mph (2 km/h), the self-diagnosis function ends.

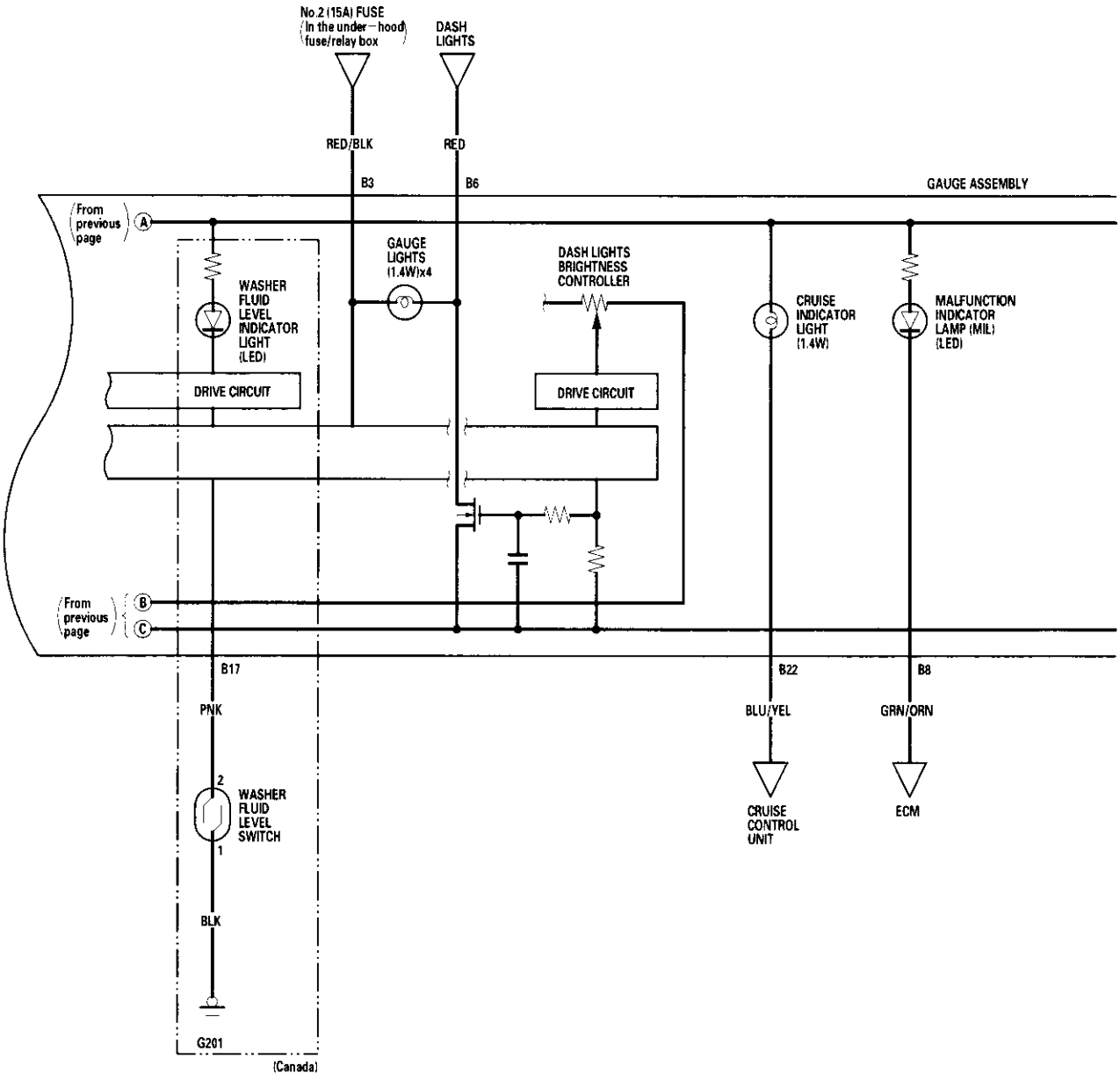
Circuit Diagram

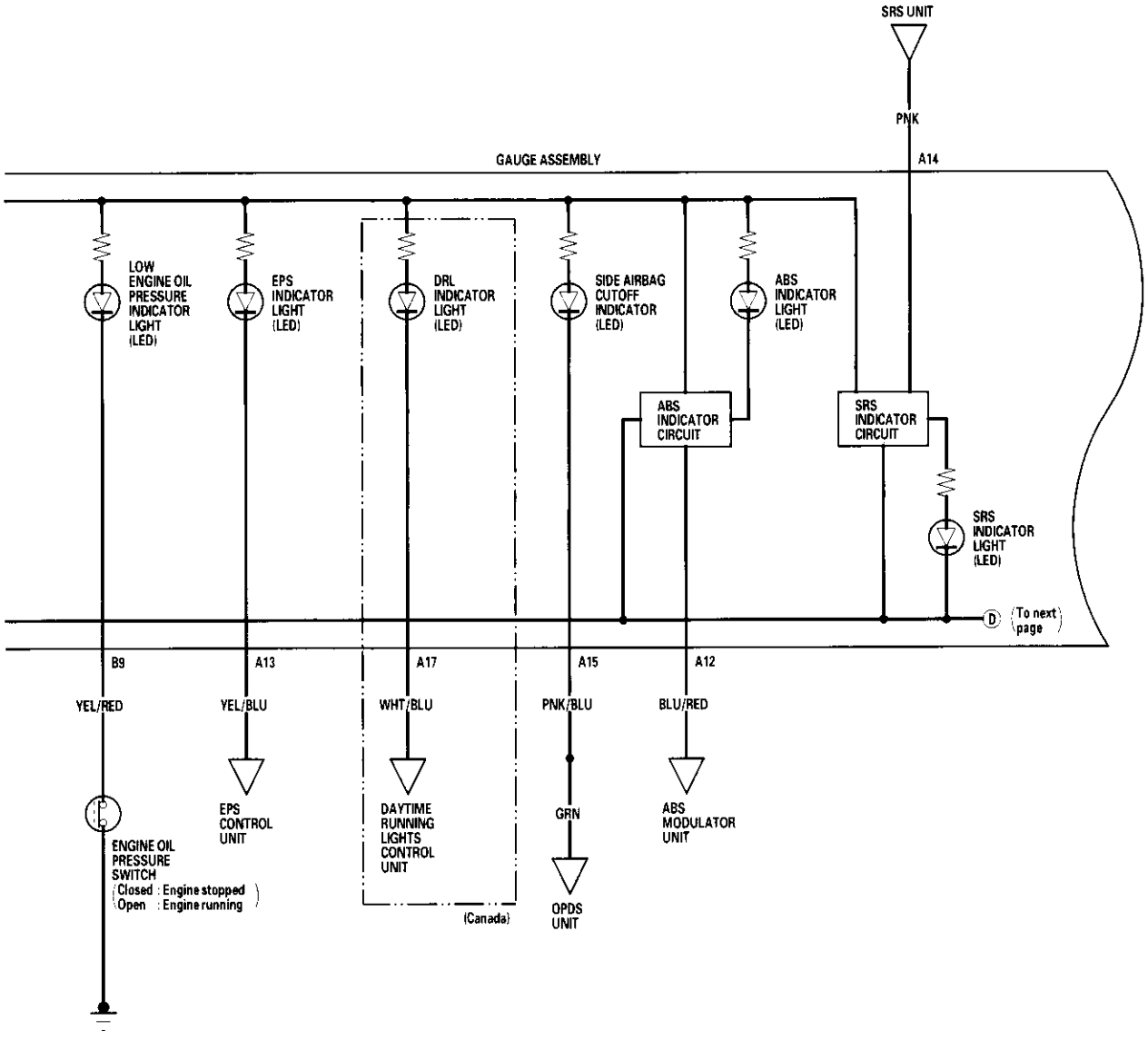



GAUGE ASSEMBLY
LCD BACK LIGHT (1.4W)
ODO/TRIP LCD BACK LIGHT STABILIZING POWER CIRCUIT
SEAT BELT REMINDER LIGHT (LED)
BRAKE SYSTEM LIGHT (LED)
DOOR INDICATOR LIGHT (LED)
HATCH INDICATOR LIGHT (LED)
CHARGING SYSTEM LIGHT (LED)
LOW FUEL INDICATOR LIGHT (LED)
MAINTENANCE REQUIRED INDICATOR LIGHT (LED)
DRIVE CIRCUIT
DRIVE CIRCUIT
TRIP/RESET SWITCH
BEEPER
A (To next page)
B
C (To next page)
B11
B12
BLK
BLK
BLK
G501

(cont'd)

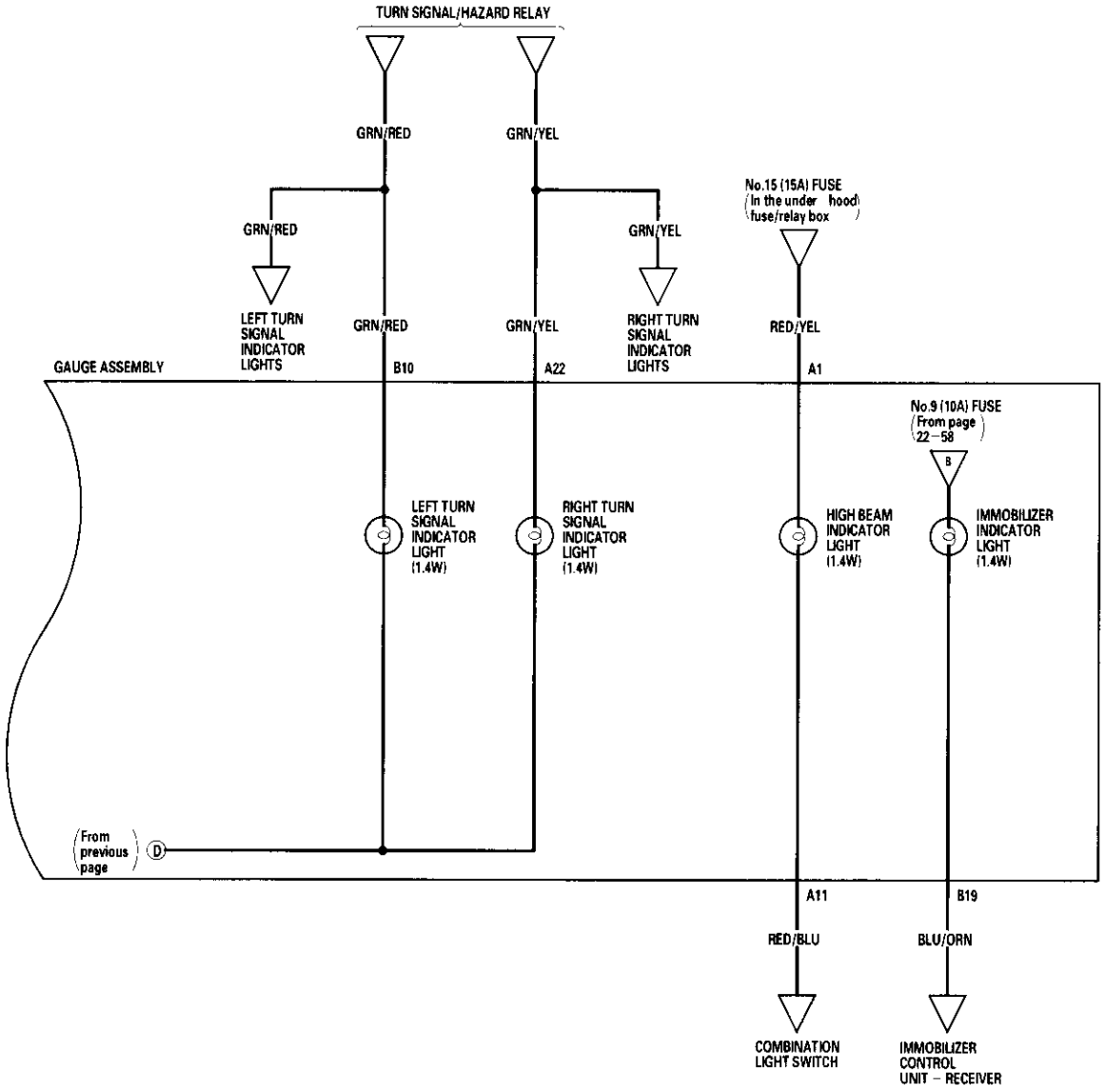
Circuit Diagram (cont'd)



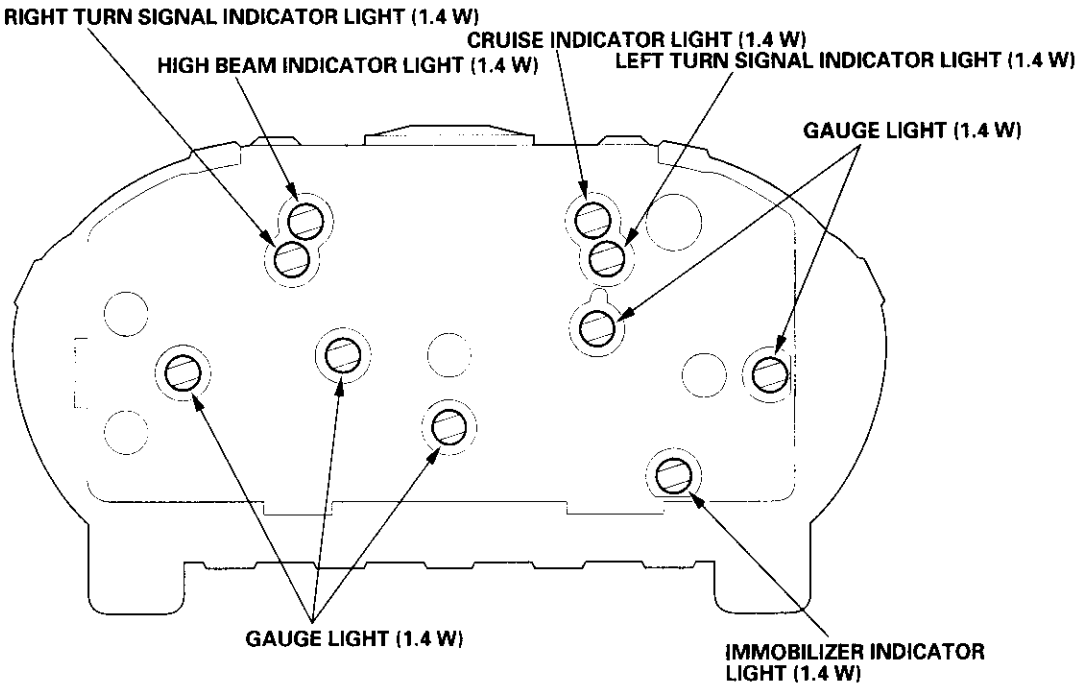

SRS UNIT
PNK
GAUGE ASSEMBLY
A14
LOW ENGINE OIL PRESSURE INDICATOR LIGHT (LED)
EPS INDICATOR LIGHT (LED)
DRL INDICATOR LIGHT (LED)
SIDE AIRBAG CUTOFF INDICATOR (LED)
ABS INDICATOR LIGHT (LED)
ABS INDICATOR CIRCUIT
SRS INDICATOR CIRCUIT
SRS INDICATOR LIGHT (LED)
D
(To next page)
B9
A13
A17
A15
A12
YEL/RED
YEL/BLU
WHT/BLU
PNK/BLU
BLU/RED
EPS CONTROL UNIT
DAYTIME RUNNING LIGHTS CONTROL UNIT
GRN
ABS MODULATOR UNIT
ENGINE OIL PRESSURE SWITCH
(Closed : Engine stopped
Open : Engine running)
(Canada)
OPDS UNIT

(cont'd)

Circuit Diagram (cont'd)

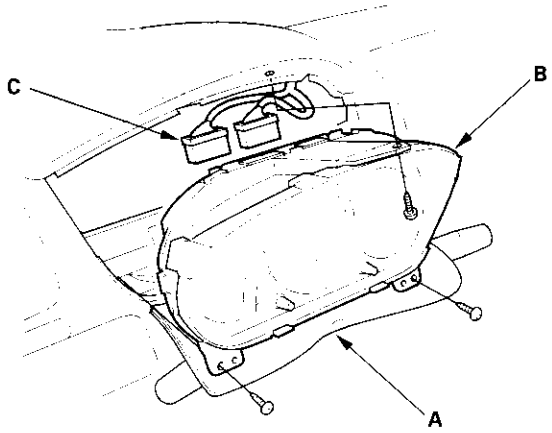


Gauge Bulb Replacement



Gauge Assembly Replacement

1. Remove the instrument panel (see page 20-59), then remove the upper column cover (see page 17-9).
2. Place a clean shop towel (A) under the gauge assembly to prevent scratching the steering column or dash panel.
3. Remove the screws from the gauge assembly (B).



4. Disconnect the connectors (C), and remove the gauge assembly.
5. Install the gauge assembly in the reverse order of removal.

Coolant Temperature Gauge Troubleshooting

Before testing, check the No. 9 (10A) fuse in the under-hood fuse/relay box and the No. 10 (7.5A) fuse in the under-dash fuse/relay box.

1. Start the engine, and check the malfunction indicator lamp (MIL).

   Does the MIL come on?

   YES—Troubleshoot the cause of the ECM DTC (see page 11-57), and recheck.
   NO—Go to step 2.

2. Check for a multiplex control unit DTC (see page 22-168).

   Is a DTC indicated?

   YES—Troubleshooting the cause of the multiplex control unit DTC (see page 22-168), and recheck.
   NO—Go to step 3.

3. Do the communication line check with the self-diagnosis procedure (see page 22-56).

   Is the word "Error" indicated on the odo/trip display?

   YES—The gauge cannot receive the signal from the multiplex control unit and the ECM. Check for an open in the WHT/GRN wire (gauge connector terminal B13). If no open is found, go to step 5.
   NO—Go to step 4.

4. Do the gauge drive circuit check with the self-diagnosis procedure (see page 22-56).

   Does the temperature gauge needle sweep from the minimum position to the maximum, then return to the minimum position?

   YES—Go to step 5.
   NO—Replace the gauge assembly.■

5. Substitute a known-good ECM and recheck.

   Did the symptom/indication go away?

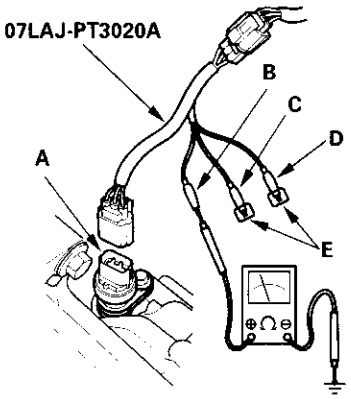
   YES—Replace the ECM.
   NO—Substitute a known-good gauge assembly. If the symptom/indication goes away, replace the gauge assembly.■

Vehicle Speed Signal Circuit Troubleshooting

Special Tools Required:
Test Harness 07LAJ-PT3020A

Before testing, inspect the No. 4 (10A) and No. 10 (7.5A) fuses in the under-dash fuse/relay box.

1. Disconnect the 3P connector from the vehicle speed sensor (VSS) (A).



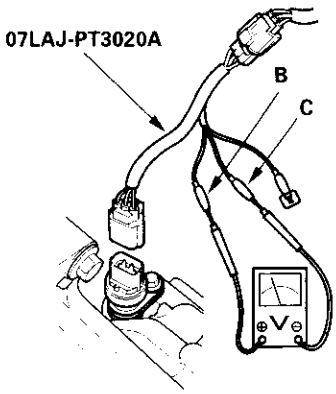
2. Connect the test harness only to the engine wire harness.
3. Connect the RED test harness clip (B) to the positive probe of an ohmmeter. Cover the white (C) and green (D) test harness leads with protective tape (E).
4. Check for continuity between the RED test harness clip and body ground.

   Is there continuity?

   YES—Go to step 5.

   NO—Repair open in the BLK wire between the VSS and G101.■

5. Connect the WHT test harness clip (B) to the positive probe of a voltmeter, and connect the RED test harness clip (C) to the negative probe.



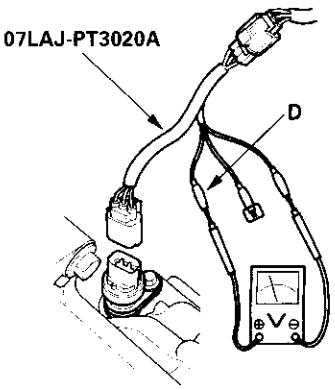
6. Turn the ignition switch ON (II).

   Is there battery voltage?

   YES—Go to step 7.

   NO—Repair open in the BLK/YEL wire between the VSS and the under-dash fuse/relay box.■

7. Disconnect the WHT test harness clip (B).
8. Connect the GRN test harness clip (D) to the positive probe of a voltmeter.



   Is there 5 V or more?

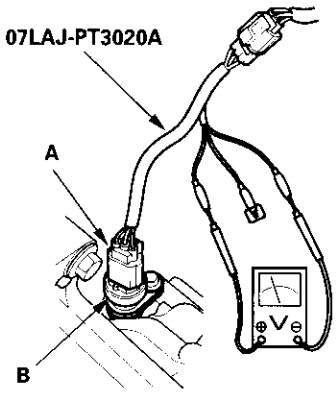
   YES—Go to step 9.

   NO—Repair short or open in the BLU/WHT or WHT/GRN wire between the VSS and the cruise control unit, or the ECM.■

(cont'd)

Vehicle Speed Signal Circuit Troubleshooting (cont'd)

9. Turn the ignition switch OFF.
10. Connect the other test harness connector (A) to the VSS (B).



11. Raise the front of the vehicle, and make sure it is securely supported.
12. Put the vehicle in neutral with the ignition switch ON (II).
13. Slowly rotate one wheel with the other wheel blocked.

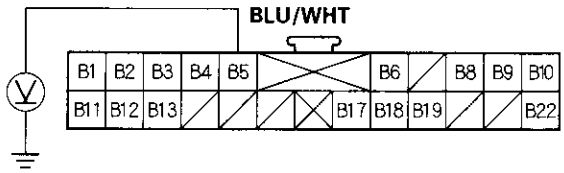
    Does voltage pulse from 0 to about 5 V or more?

    YES—Go to step 14.

    NO—Replace the VSS.■

14. Disconnect the 22P connector "B" from the gauge assembly.

GAUGE ASSEMBLY CONNECTOR B (22P)



Wire side of female terminals

15. Connect the positive probe of a voltmeter to the BLU/WHT wire and the negative probe to ground.
16. Slowly rotate one wheel with the other wheel blocked.

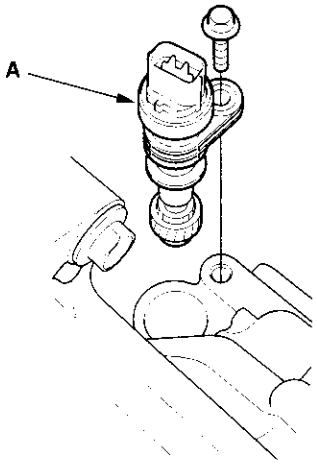
    Does voltage pulse from 0 to about 5 V or more?

    YES—Replace the speedometer assembly.■

    NO—Repair open in the BLU/WHT wire between the VSS and the speedometer.■

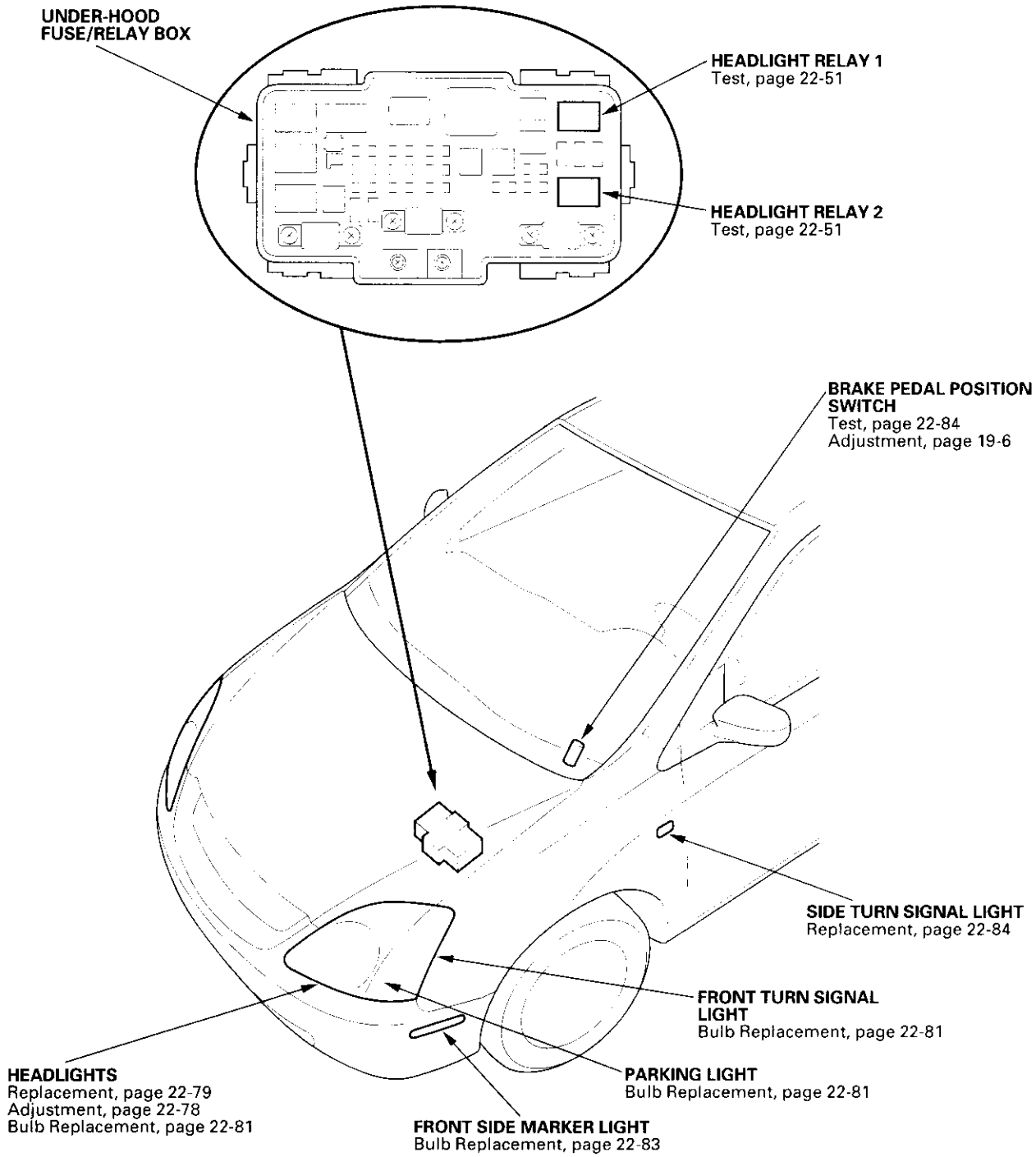
VSS Replacement

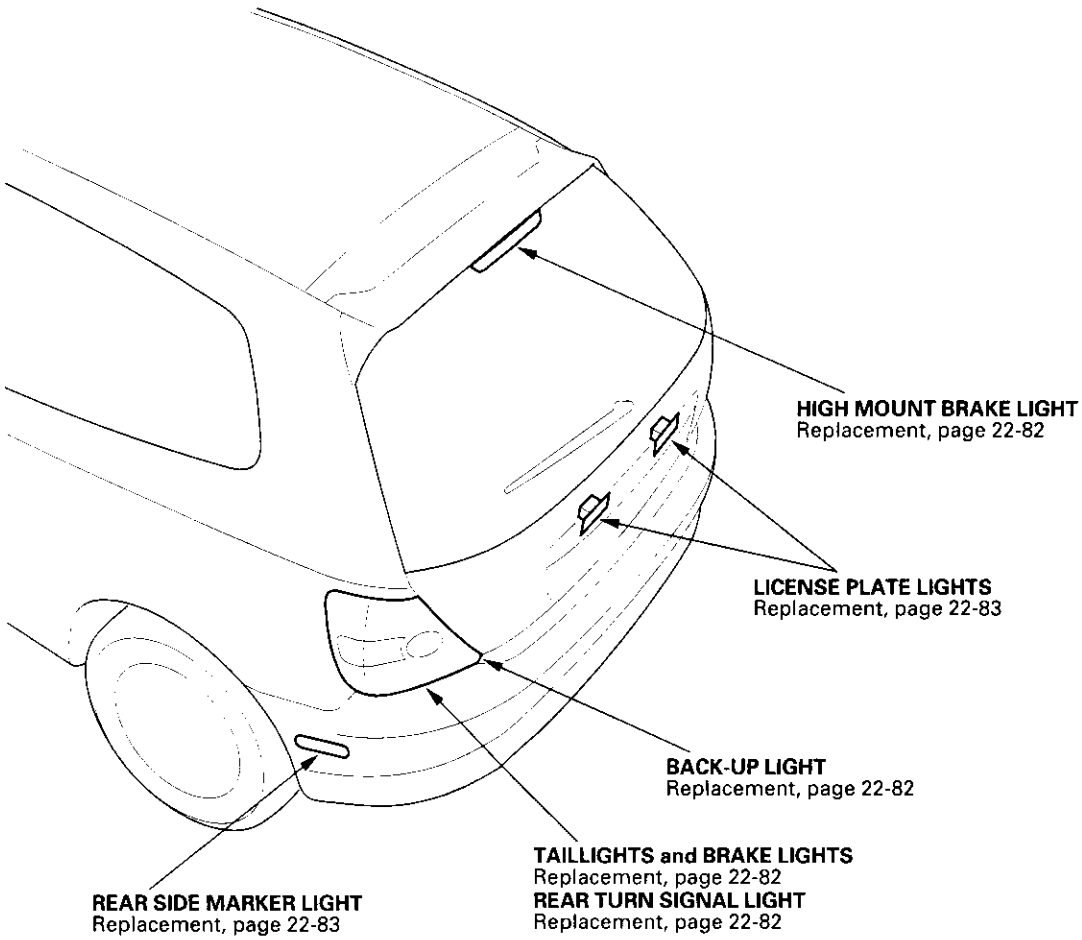
1. Remove the intake resonator.
2. Disconnect the 3P connector from the vehicle speed sensor (VSS) (A).



3. Remove the mounting bolt, then remove the VSS.
4. Install the VSS in the reverse order of removal.

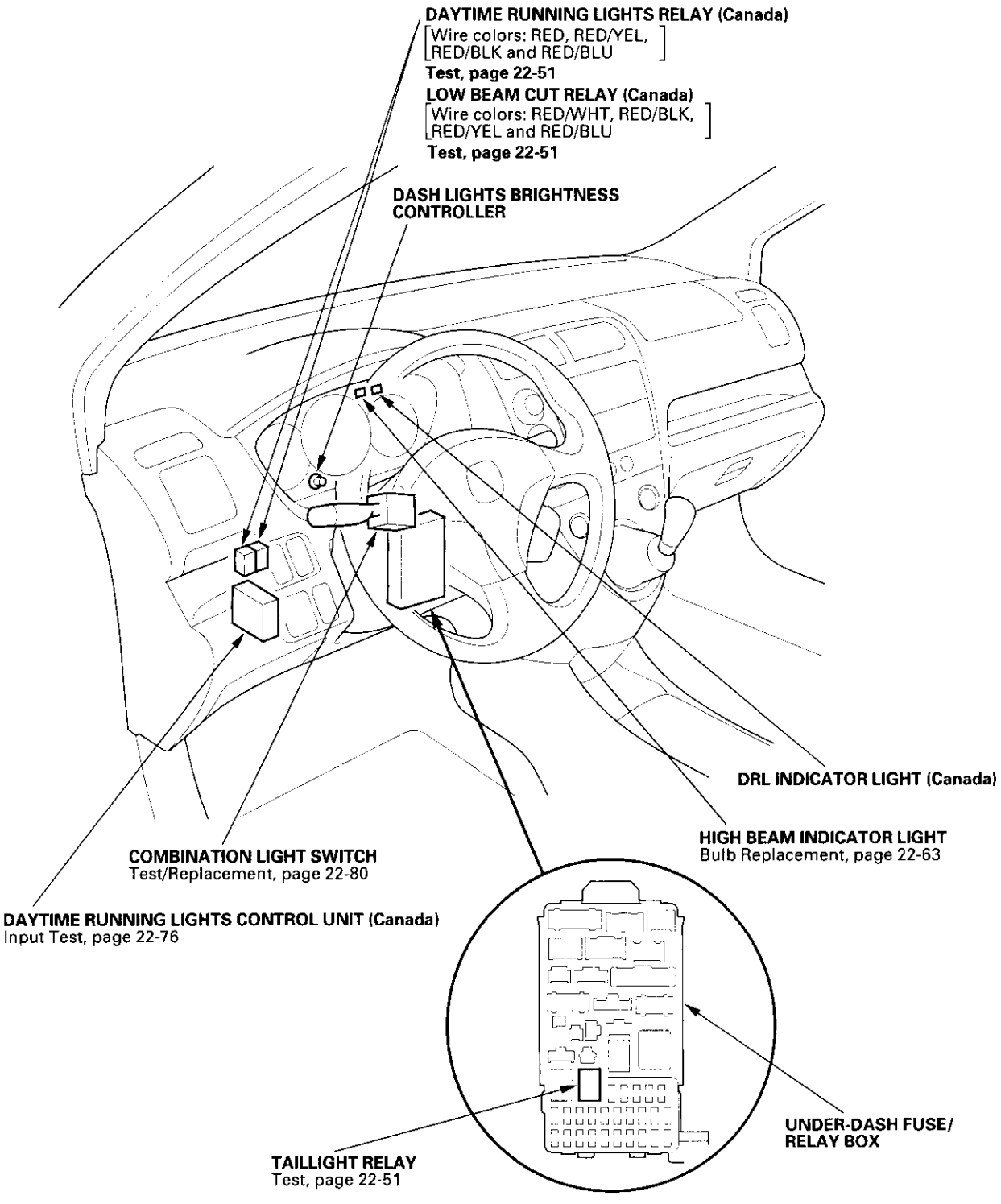
Component Location Index



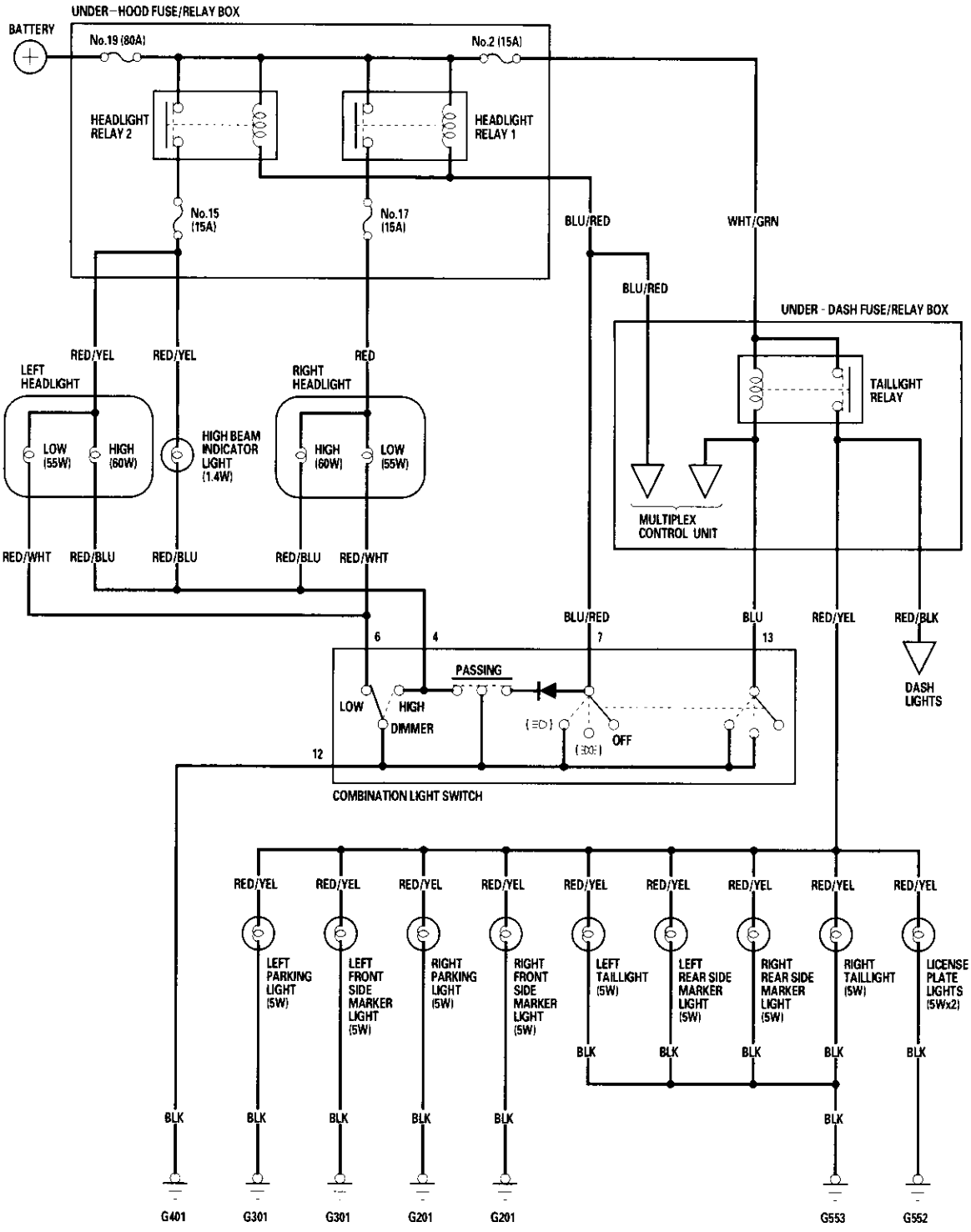

HIGH MOUNT BRAKE LIGHT
Replacement, page 22-82
LICENSE PLATE LIGHTS
Replacement, page 22-83
BACK-UP LIGHT
Replacement, page 22-82
TAILLIGHTS and BRAKE LIGHTS
Replacement, page 22-82
REAR TURN SIGNAL LIGHT
Replacement, page 22-82
REAR SIDE MARKER LIGHT
Replacement, page 22-83

(cont'd)

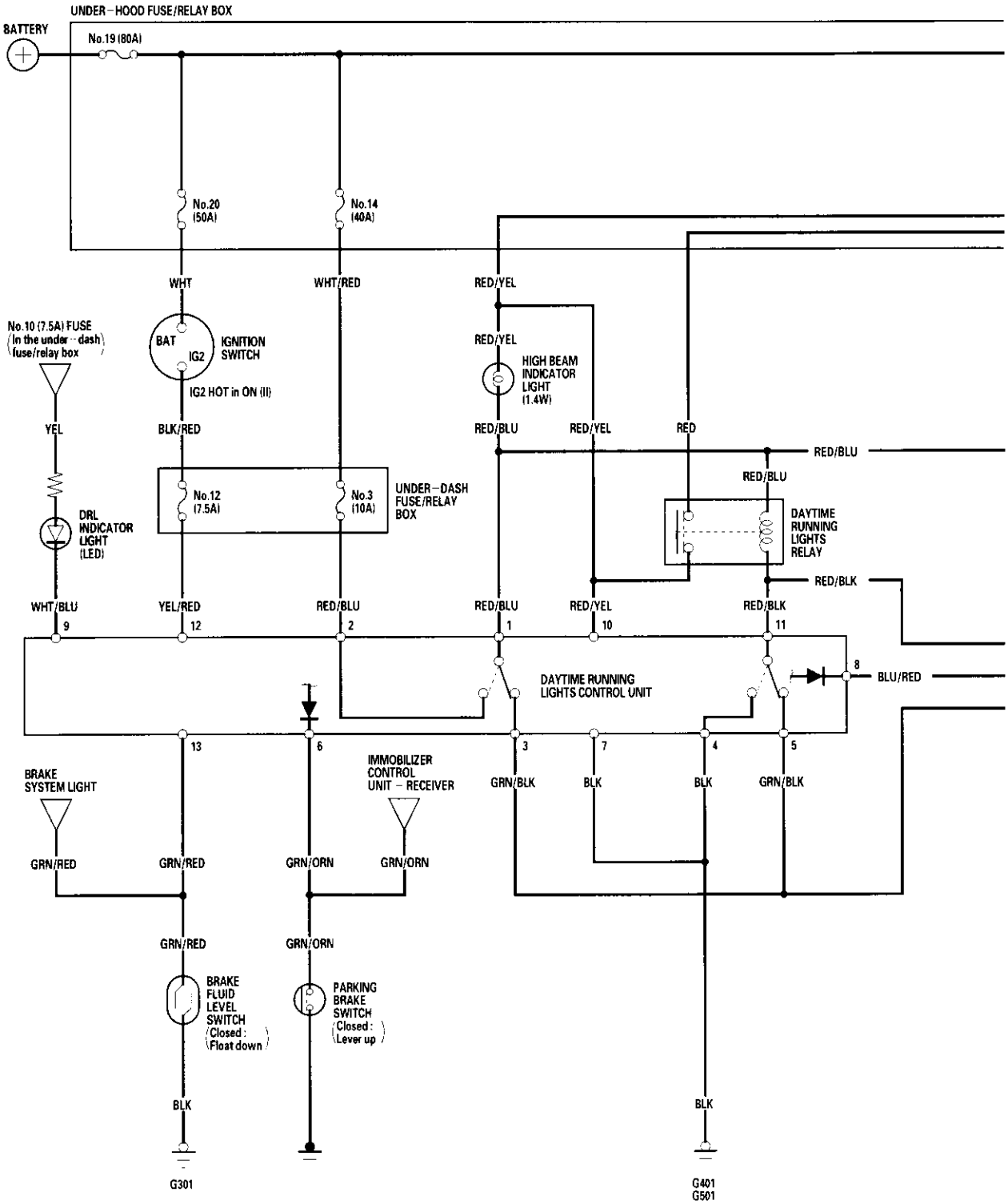
Component Location Index (cont'd)

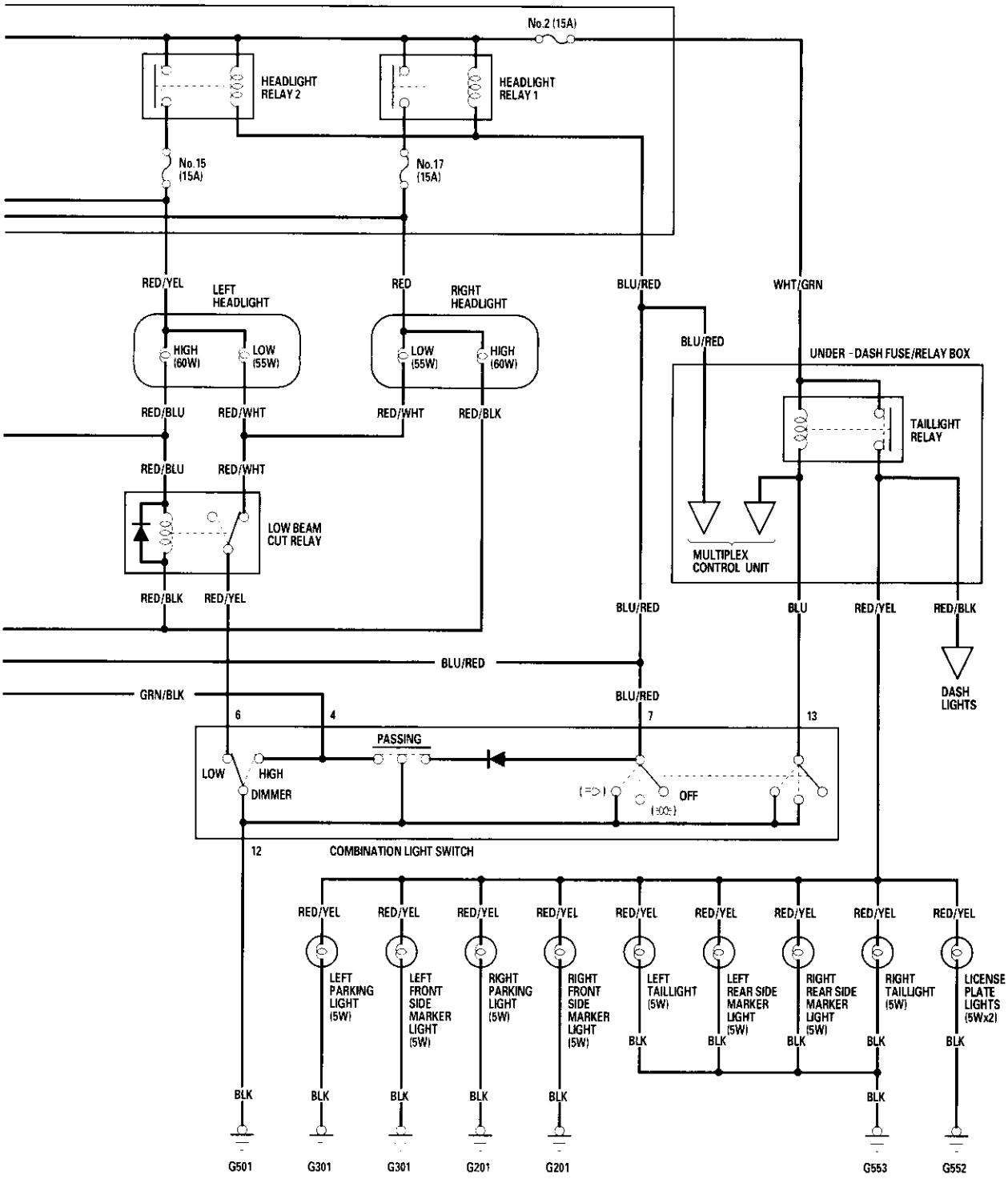


Circuit Diagram - USA

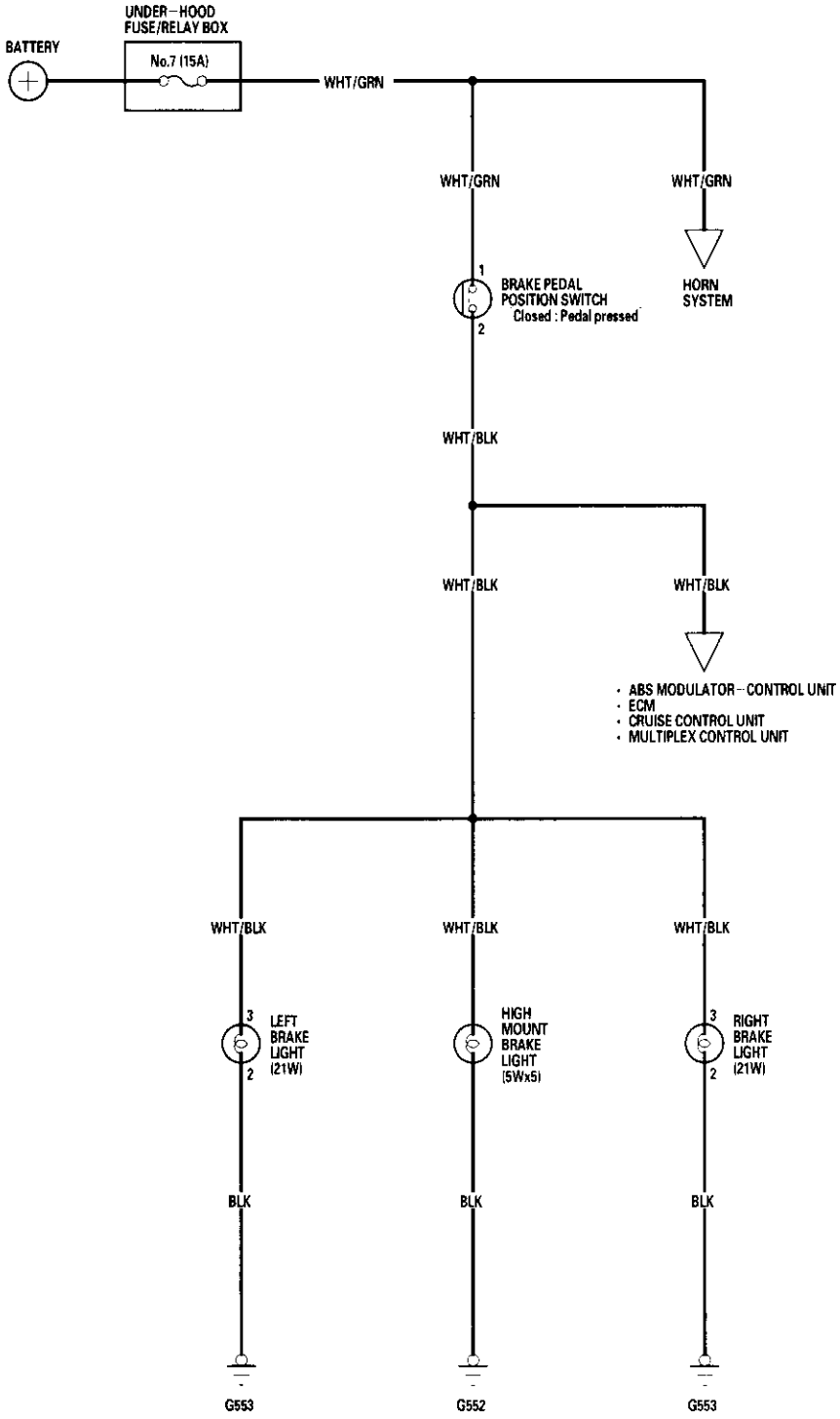


Circuit Diagram - Canada

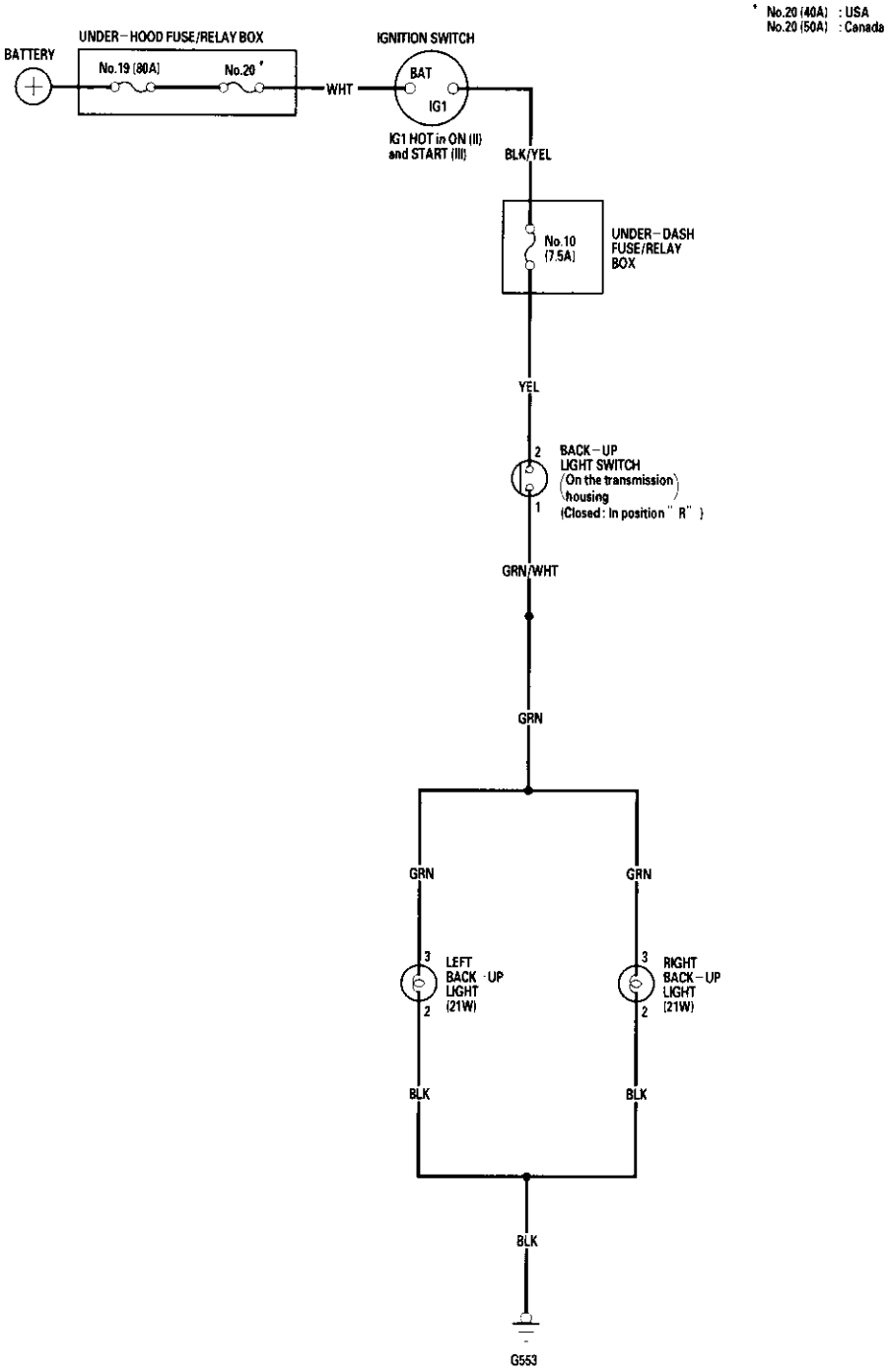



No.2 (15A)
HEADLIGHT RELAY 2
HEADLIGHT RELAY 1
No.15 (15A)
No.17 (15A)
RED/YEL
LEFT HEADLIGHT
HIGH (60W)
LOW (55W)
RED
RIGHT HEADLIGHT
LOW (55W)
HIGH (60W)
BLU/RED
WHT/GRN
BLU/RED
UNDER - DASH FUSE/RELAY BOX
TAILLIGHT RELAY
MULTIPLEX CONTROL UNIT
RED/BLU
RED/WHT
RED/WHT
RED/BLK
RED/BLU
RED/WHT
LOW BEAM CUT RELAY
RED/BLK
RED/YEL
BLU/RED
BLU
RED/YEL
RED/BLK
DASH LIGHTS
BLU/RED
GRN/BLK
BLU/RED
6
4
7
13
PASSING
LOW
HIGH
DIMMER
OFF
12
COMBINATION LIGHT SWITCH
RED/YEL
LEFT PARKING LIGHT (5W)
LEFT FRONT SIDE MARKER LIGHT (5W)
RIGHT PARKING LIGHT (5W)
RIGHT FRONT SIDE MARKER LIGHT (5W)
LEFT TAILLIGHT (5W)
LEFT REAR SIDE MARKER LIGHT (5W)
RIGHT REAR SIDE MARKER LIGHT (5W)
RIGHT TAILLIGHT (5W)
LICENSE PLATE LIGHTS (5Wx2)
BLK
G501
G301
G301
G201
G201
G553
G552

Circuit Diagram - Brake Lights



Circuit Diagram - Back-up Lights



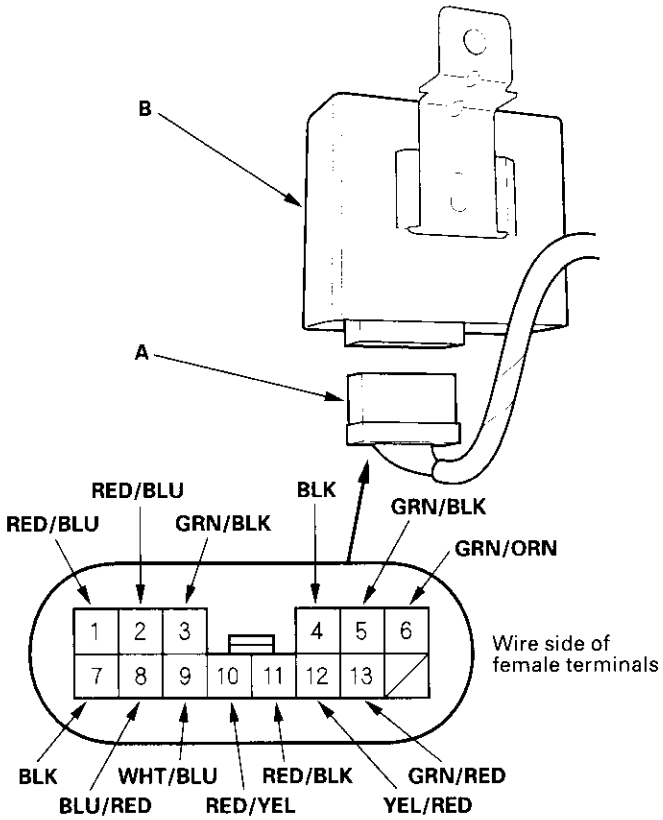
Daytime Running Lights Control Unit Input Test - Canada

The DRL indicator light in the gauge assembly will come on when you turn the ignition switch to ON (II) with the headlight switch off and the parking brake set. It should go off when you turn on the headlight switch and release the parking brake. If it comes on at any other time, do the control unit input test.

NOTE: When the daytime running lights are on, the high beam indicator will glow at half its normal intensity.

1. Remove the driver's dashboard lower cover (see page 20-60).

2. Disconnect the 14P connector (A) from the daytime running lights control unit (B).



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. 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, the control unit must be faulty. Replace it.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
2	RED/BLU	Under all conditions	Check for voltage to ground: There should be battery voltage.	• Blown No. 14 (40A) fuse in the under-hood fuse/relay box • Blown No. 3 (10A) fuse in the under-dash fuse/relay box • An open in the wire
12	YEL/RED	Ignition switch ON (II)	Check for voltage to ground: There should be battery voltage.	• Blown No. 12 (7.5A) fuse in the under-dash fuse/relay box • An open in the wire
4	BLK	Under all conditions	Check for continuity to ground: There should be continuity.	• Poor ground (G501) • An open in the wire
7	BLK	Under all conditions	Check for continuity to ground: There should be continuity.	• Poor ground (G501) • An open in the wire
10	RED/YEL	Combination light switch ON (≣D)	Check for voltage to ground: There should be battery voltage.	• Blown No. 15 (15A) fuse in the under-hood fuse/relay box • Faulty headlight relay 2 • Faulty combination light switch • An open in the wire
1	RED/BLU	Combination light switch ON (≣D), and dimmer switch in HIGH	Connect a jumper wire between No. 3 and No. 1 terminals. Both headlights (HIGH) and high beam indicator light should come on.	• Blown bulb • Faulty low beam cut relay • Faulty combination light switch • Poor ground (G501) • An open in the wire
11	RED/BLK	Combination light switch ON (≣D), and dimmer switch in HIGH	Connect a jumper wire between No. 5 and No. 11 terminals. Right headlight (HIGH) should come on.	• Blown bulb • Faulty combination light switch • Poor ground (G501) • An open in the wire
3 5	GRN/BLK	Combination light switch ON (≣D), and dimmer switch in HIGH	Check for continuity to ground: There should be continuity.	• Faulty combination light switch • Poor ground (G501) • An open in the wire
6	GRN/ORN	Parking brake lever pulled	Check for continuity to ground: There should be continuity.	• Faulty parking brake switch • An open in the wire
8	BLU/RED	Combination light switch OFF	Check for voltage to ground: There should be battery voltage.	• Faulty headlight relays • Short to ground • An open in the wire
9	WHT/BLU	Ignition switch ON (II)	Attach to ground: The DRL indicator light should come on.	• Blown No. 10 (7.5A) fuse in the under-dash fuse/relay box • Faulty DRL indicator • An open in the wire
13	GRN/RED	Ignition switch ON (II)	Attach to ground: The brake system light should come on.	• Faulty brake system indicator • An open in the wire

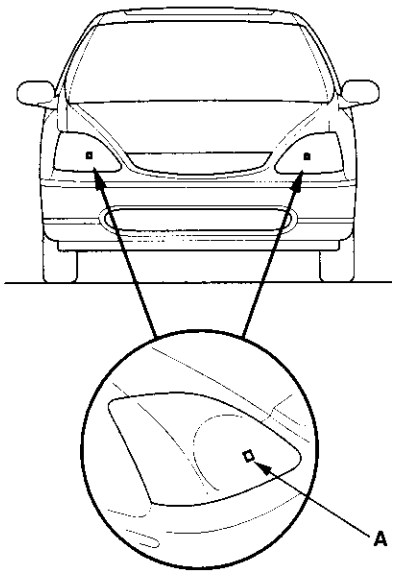
Headlight Adjustment

⚠CAUTION

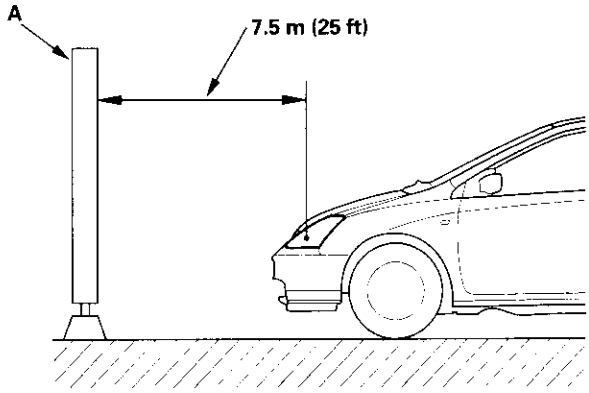
Headlights become very hot during use; do not touch them or any attaching hardware immediately after they have been turned off.

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 of the headlights (A).



2. Park the vehicle 7.5 m (25 ft) away from a wall or a screen (A).

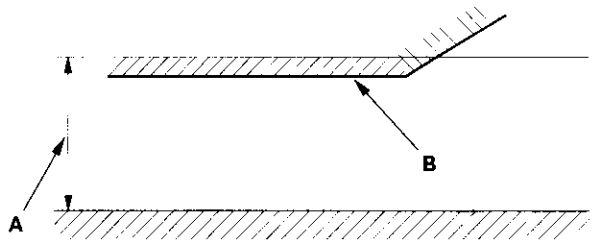


3. Open the hood.

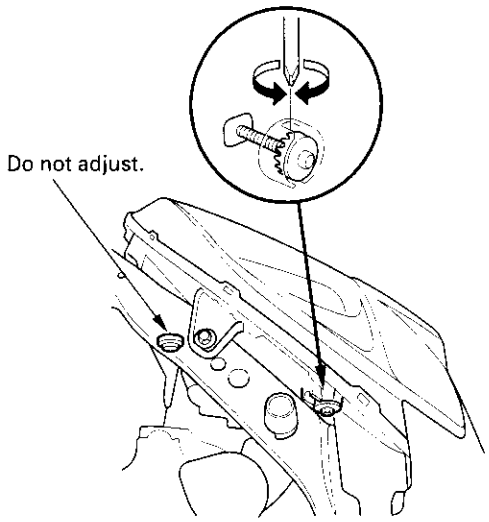
4. Turn the low beams on.

5. Determine if the headlights are aimed properly.

   Vertical adjustment:
   Measure the height of the headlights (A). The lights should reflect 52 mm (2.1 in.) below headlight height (B).



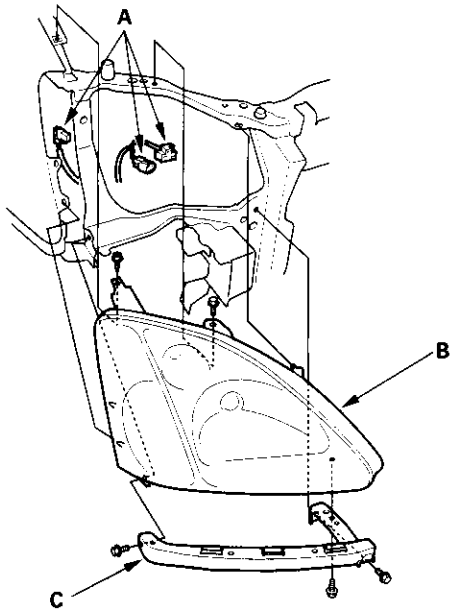
6. If necessary, adjust the headlights to local requirements by turning the vertical adjuster.



Headlight Replacement

1. Remove the front bumper (see page 20-85).

2. Disconnect the connectors (A) from the headlight (B).



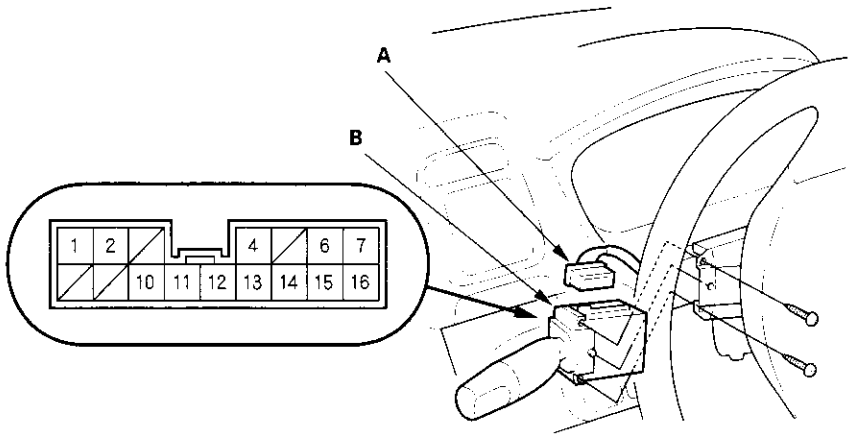
3. Remove the five mounting bolts, then remove the corner upper beam (C) and headlight assembly.

4. Install in the reverse order of removal.

5. After replacement, adjust the headlights to local requirements.

Combination Light Switch Test/Replacement

1. Remove the driver's dashboard lower cover (see page 20-60).
2. Remove the steering column covers (see page 17-9).
3. Disconnect the 16P connector (A) from the combination light switch (B).



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	5	6	7		12	13
Headlight switch	OFF				○	——	——	○	
	≡D							○	○
		LOW			○	——	——	○	○
		HIGH	○	——	——	○	——	○	○
Passing switch	OFF								
	ON		○	——	——	○	▶	○	
			○	——	——	——	——	○	

Turn signal switch:

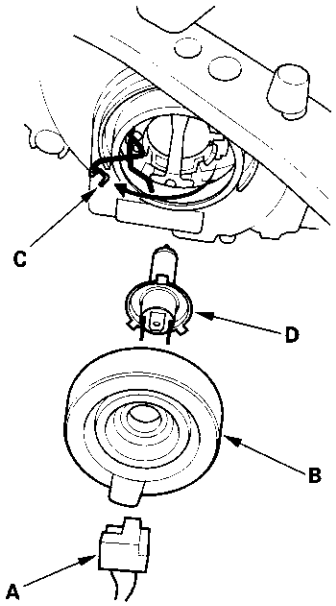
Position \ Terminal	2	10	11
LEFT	○	—— ○	
NEUTRAL			
RIGHT		○ ——	○

Bulb Replacement

Headlight:

1. Disconnect the 3P connector (A) from the headlight.

Headlight (high/low): 60/55 W

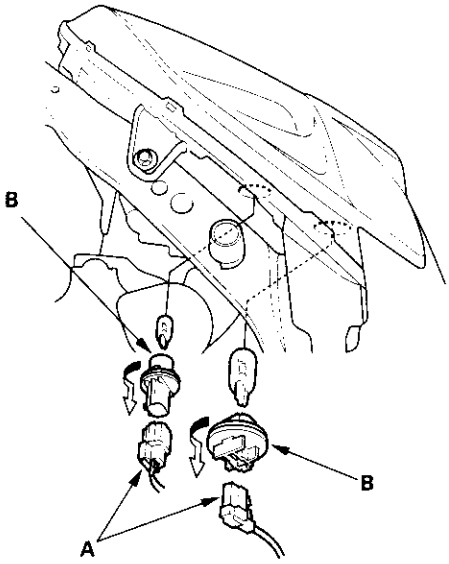


2. Remove the rubber cover (B).
3. Pull the retaining spring (C) away from the bulb (D), then remove the bulb.
4. Install a new bulb in the reverse order of removal. Make sure the notches in the bulb align with the tabs in the headlight.

Front Turn Signal Light: Parking Light:

1. Remove the inner fender (see page 20-102).
2. Disconnect the connectors (A) from the lights.

Front turn signal light:	**21 W**
Parking light:	**5 W**

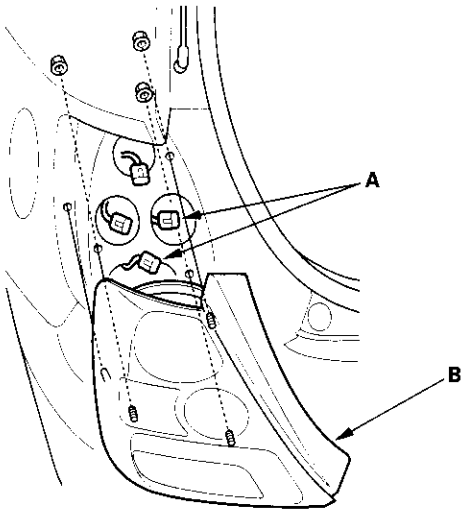


3. Turn the bulb sockets (B) 45° counterclockwise to remove them from the headlight housing.
4. Install the new bulb(s) in the reverse order of removal.

Taillight Replacement

1. Remove the rear bumper (see page 20-86).
2. Open the tailgate, and disconnect the connectors (A) from the taillight (B).

Brake/Taillight: **21/5 W**
Turn Signal Light: **21 W**
Back-up Light: **21 W**

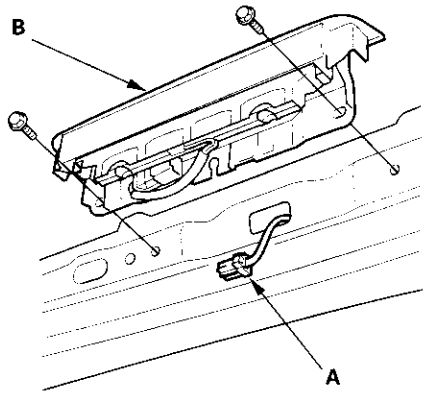


3. Remove the mounting nuts and bolts, then remove the taillight.
4. Turn the bulb socket 45° counterclockwise to remove the bulb socket.
5. When installing the taillight, check the gasket; if it is distorted or stays compressed, replace it.
6. After installing the taillight, run water over the taillight to make sure it does not leak.

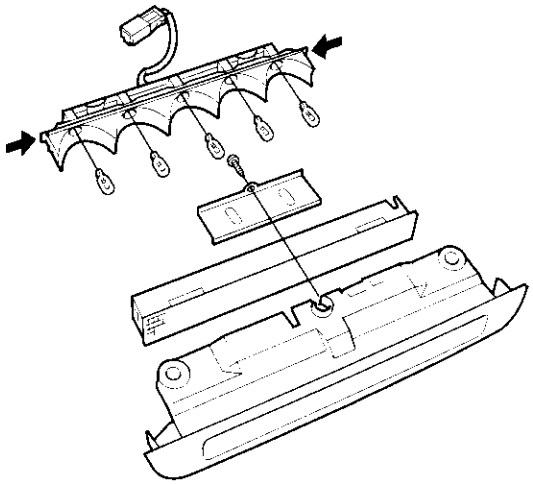
High Mount Brake Light Replacement

1. Open the hatch.
2. Remove the plastic trim.
3. Disconnect the 2P connectors (A) from the high mount brake light (B).

High Mount Brake Light: **5 W x 5**



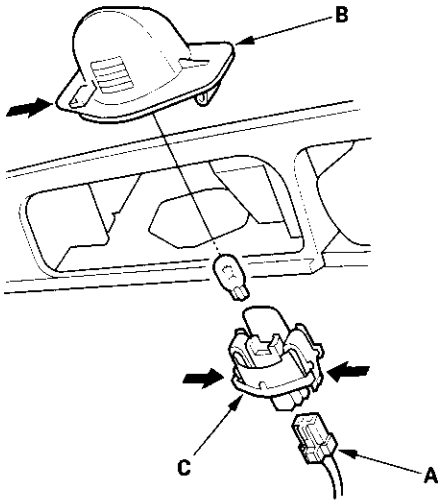
4. Carefully remove the high mount brake light.
5. Install the light in the reverse order of removal.



License Plate Light Replacement

1. Remove the hatch lower trim panel (see page 20-53).
2. Pull the license plate light assembly out, and disconnect the 2P connector (A) from the light.

License Plate Light: 5 W x 2

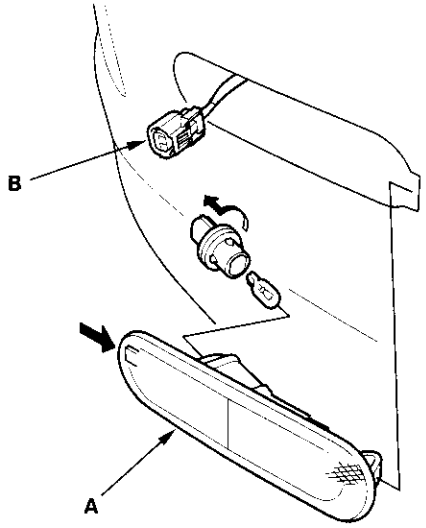


3. Separate the lens (B) and housing (C), then remove the bulb.
4. Install the light in the reverse order of removal.

Side Marker Light Replacement

1. Carefully pry the light (A) out of the rear bumper, and disconnect the 2P connector (B) from the light. Be careful not to damage the rear bumper.

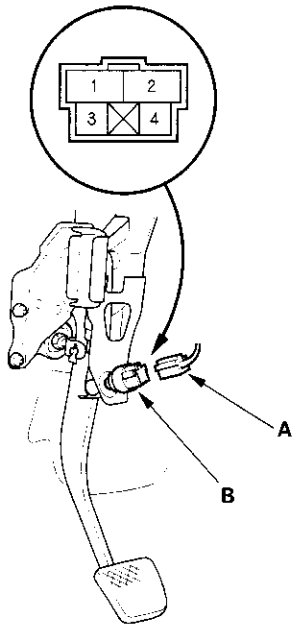
Side Marker Light: 5 W



2. Remove the bulb socket (A) by turning it 45° counterclockwise, then replace the bulb.

Brake Pedal Position Switch Test

1. Disconnect the 4P connector (A) from the brake pedal position switch (B).



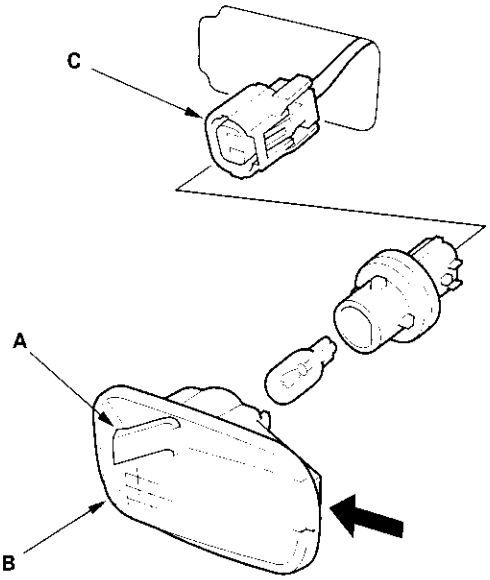
2. Check for continuity between the No. 1 and No. 2 terminals.
   - There should be continuity when the brake pedal is pressed.
   - There should be no continuity when the brake pedal is released.
3. Check for continuity between the No. 3 and No. 4 terminals (with cruise control).
   - There should be 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).

Side Turn Signal Light Replacement

NOTE: Be careful not to damage the fender.

1. Push the retaining spring (A), and remove the side turn signal light (B).

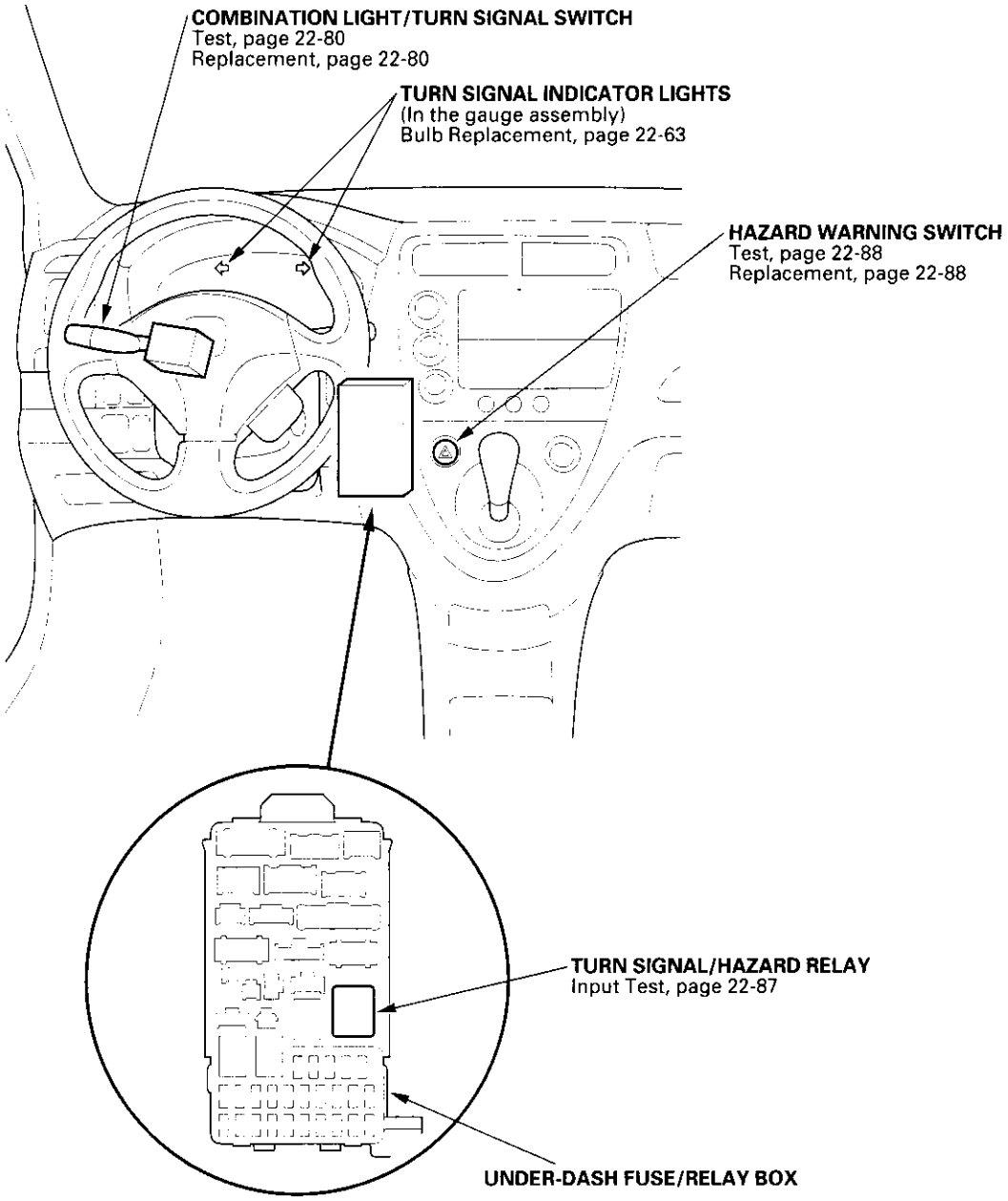
Side Turn Signal Light: 5 W



2. Disconnect the 2P connector (C) from the light.

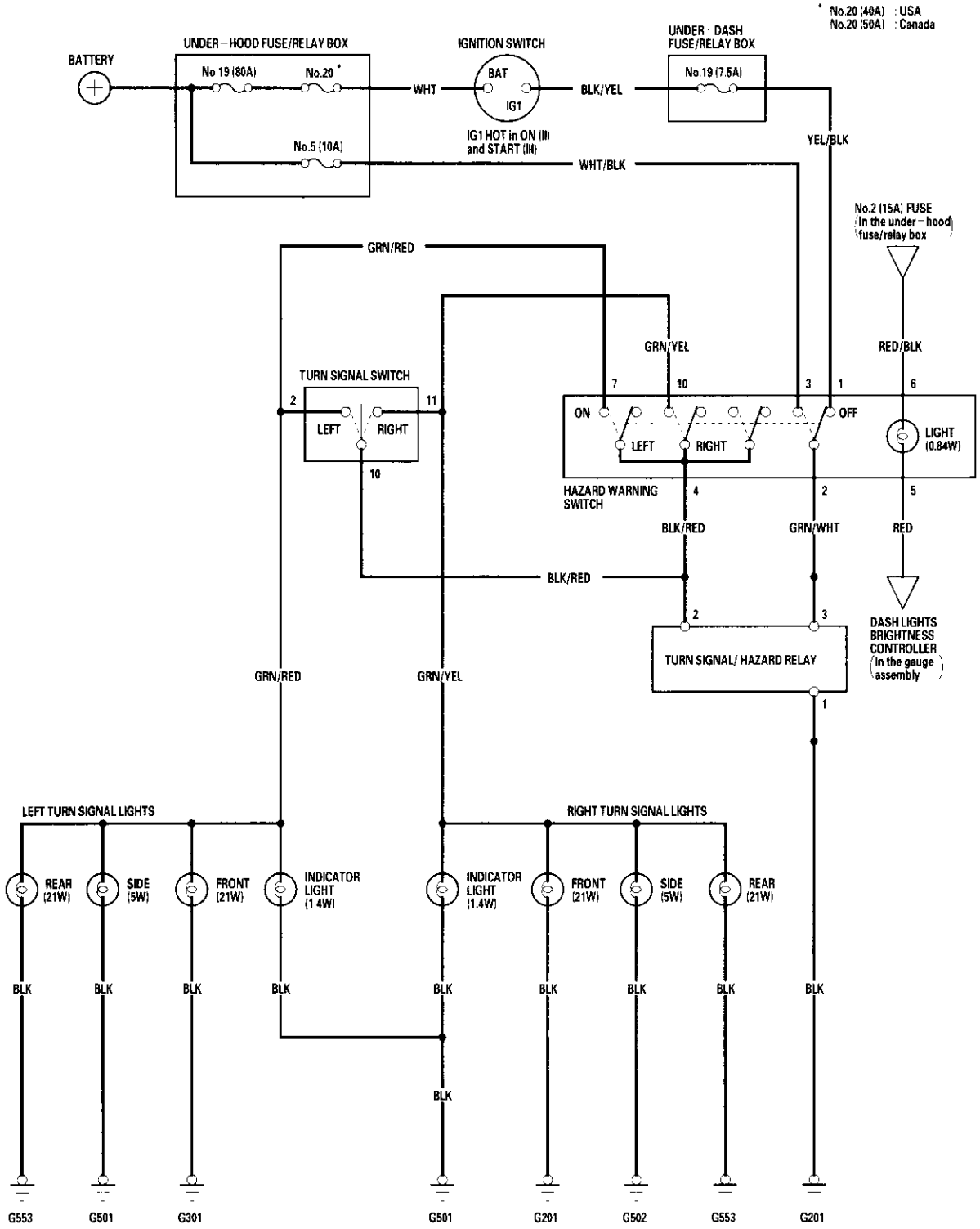
Turn Signal/Hazard Flasher

Component Location Index



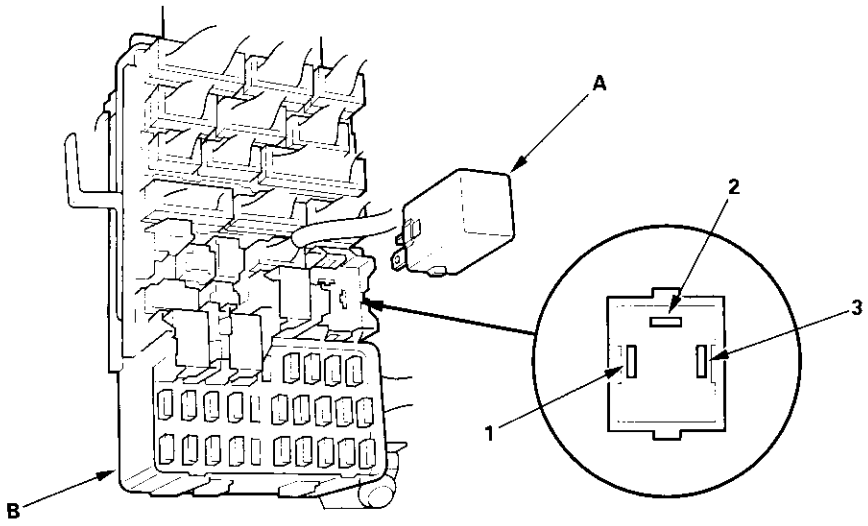
Turn Signal/Hazard Flasher

Circuit Diagram



Turn Signal/Hazard Relay Input Test

1. Remove the turn signal/hazard relay (A) from the under-dash fuse/relay box (B).



2. Inspect the relay and fuse/relay box 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 3.

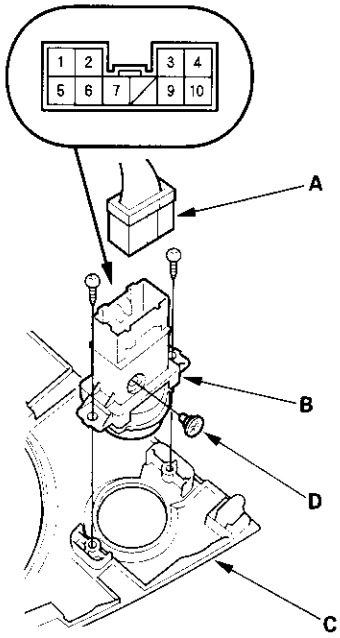
3. Make these input tests at the fuse/relay box.

   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If all the input tests prove OK, the turn signal/hazard relay must be faulty. Replace it.

Cavity	Test condition	Test: Desired result	Possible cause if result is not obtained
1	Under all conditions	Check for continuity to ground: There should be continuity.	• Poor ground (G201) • An open in the wire
3	Ignition switch ON (II) Hazard warning switch OFF	Check for voltage to ground: There should be battery voltage.	• Blown No. 19 (7.5A) fuse in the under-dash fuse/relay box • Faulty hazard warning switch • An open in the wire
	Hazard warning switch ON Ignition switch OFF	Check for voltage to ground: There should be battery voltage.	• Blown No. 5 (10A) fuse in the under-hood fuse/relay box • Faulty hazard warning switch • An open in the wire
2	Ignition switch ON (II) and turn signal switch in Right or Left position	Connect No. 2 terminal to No. 3 terminal: Right or left turn signal lights should come on.	• Poor ground (G201, G301, G501, G502, G553) • Faulty turn signal switch • An open in the wire
	Ignition switch OFF Hazard warning switch ON	Connect No. 2 terminal to No. 3 terminal: Hazard warning lights should come on.	• Poor ground (G201, G301, G501, G502, G553) • Faulty hazard warning switch • An open in the wire

Hazard Warning Switch Test

1. Remove the center panel (see page 20-62).
2. Disconnect the 10P connector (A) from the hazard warning switch (B).

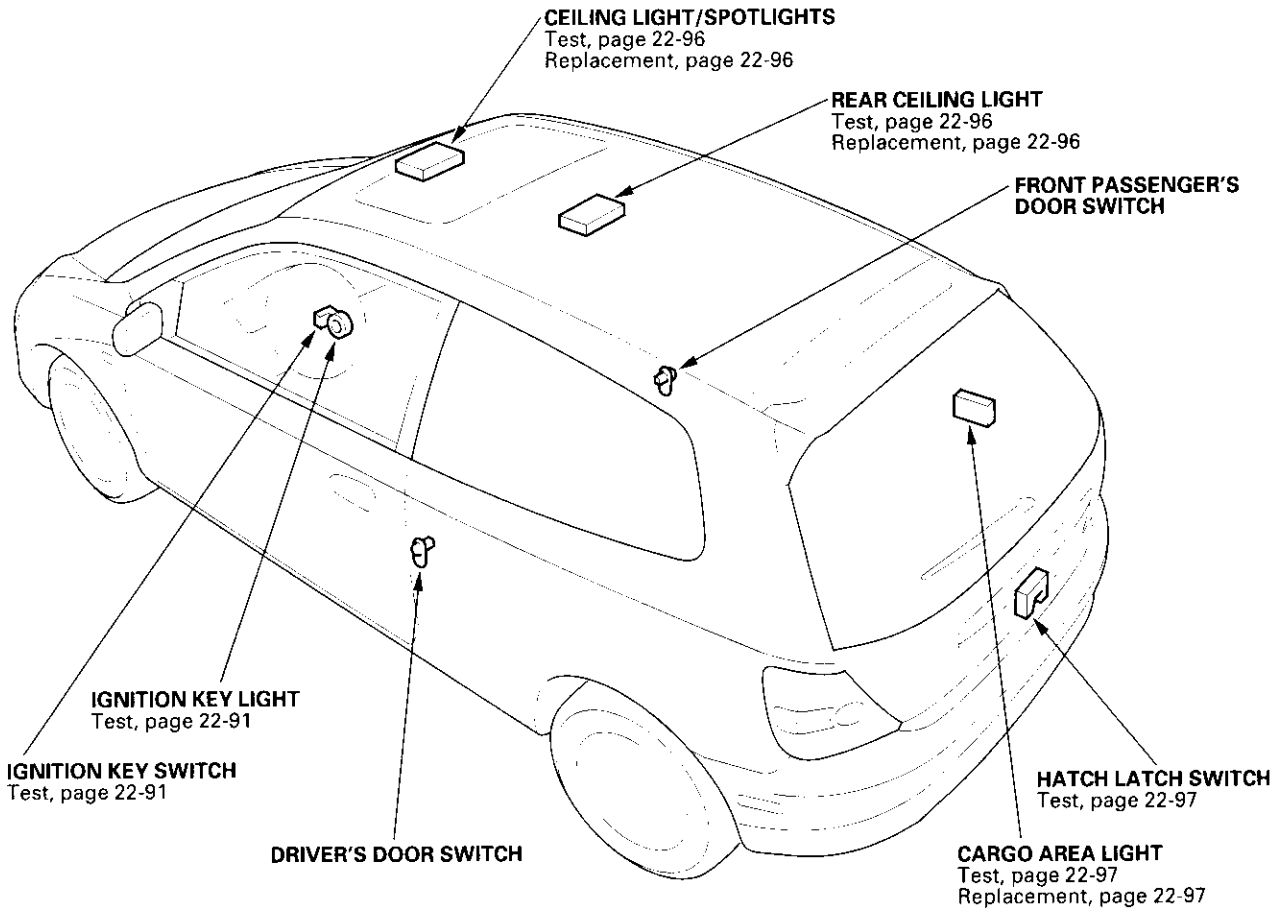


3. Push out the hazard warning switch from behind the center panel (C).
4. Check for continuity between the terminals in each switch position according to the table.
5. If the continuity is not as specified, replace the bulb (D) or the hazard warning switch.

Terminal / Position	5		6	1	2	3	4	7	10
OFF	○	⊗	○	○	○				
ON	○	⊗	○		○	○	○	○	○

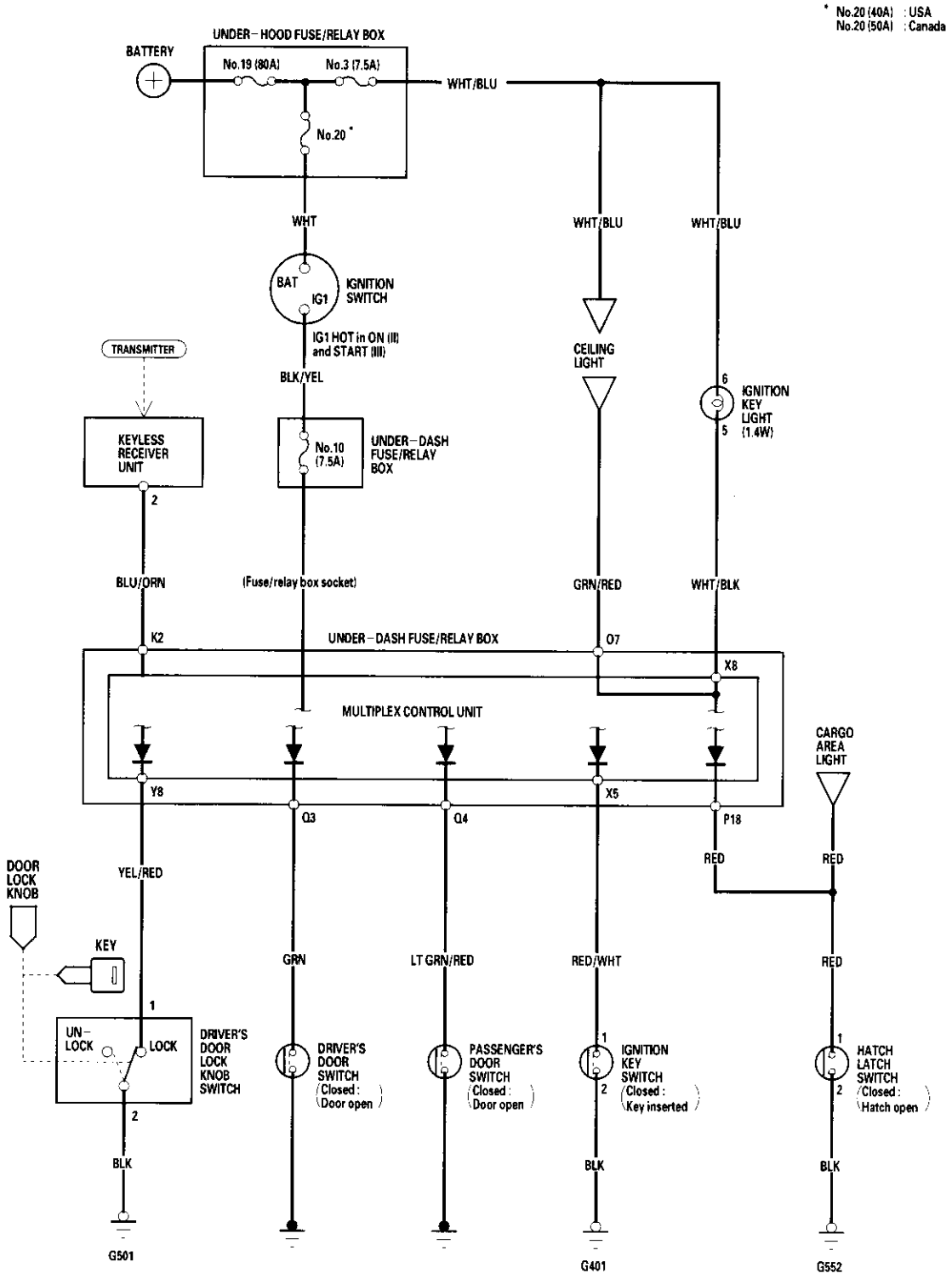
Entry Light Control System

Component Location Index



Entry Light Control System

Circuit Diagram

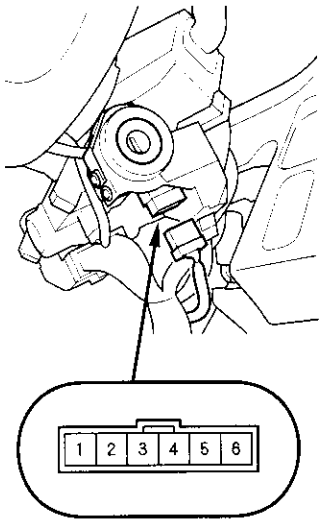


Ignition Key Switch Test

NOTE: For more key-in beeper information, refer to the circuit diagram (see page 22-90) and input test (see page 22-92).

When the ignition key is in the ignition switch the multiplex control unit senses ground through the closed ignition key switch. When you open the driver's door, the multiplex control unit senses ground through the closed door switch and sounds the beeper.

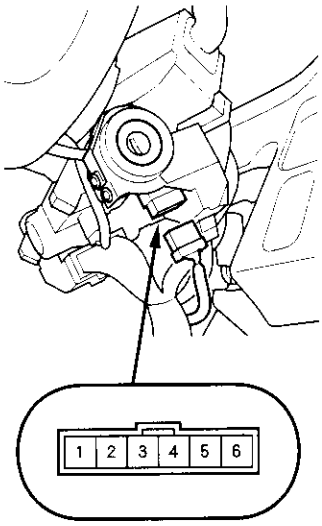
1. Remove the steering column upper and lower covers (see page 17-9).
2. Disconnect the 6P connector.



3. Check for continuity between the No. 1 and No. 2 terminals.
   - There should be continuity with the key in the ignition switch.
   - There should be no continuity with the key removed from the ignition switch.
4. If the continuity is not as specfied, replace the ignition switch.

Ignition Key Light Test

1. Remove the steering column upper and lower covers (see page 17-9).
2. Disconnect the 6P connector.



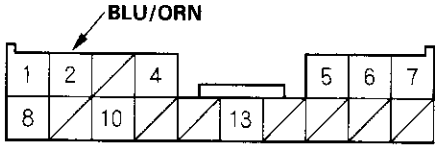
3. The LED should come on when power is connected to the No. 6 terminal and ground is connected to No. 5 terminal.
4. If the LED does not come on, replace the ignition switch.

Control Unit Input Test

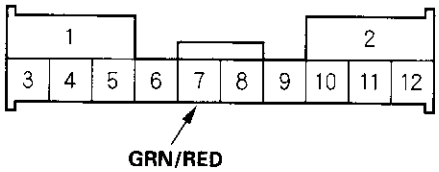
1. Before testing, troubleshoot the multiplex control system (see page 22-172).
2. Remove the dashboard lower cover.
3. Disconnect the under-dash fuse/relay box connectors.

   NOTE: All connectors are wire side of female terminals.

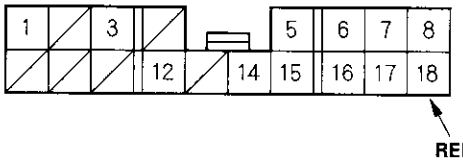
UNDER-DASH FUSE/RELAY BOX CONNECTOR K (17P)



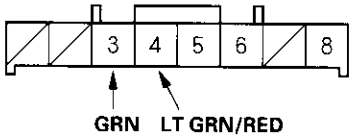
UNDER-DASH FUSE/RELAY BOX CONNECTOR O (12P)



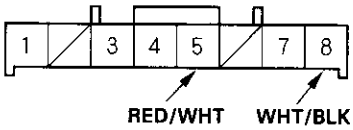
UNDER-DASH FUSE/RELAY BOX CONNECTOR P (18P)



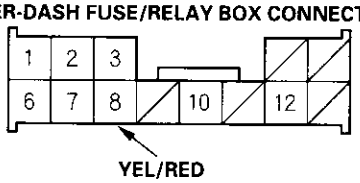
UNDER-DASH FUSE/RELAY BOX CONNECTOR Q (8P)



UNDER-DASH FUSE/RELAY BOX CONNECTOR X (8P)



UNDER-DASH FUSE/RELAY BOX CONNECTOR Y (13P)



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, 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.

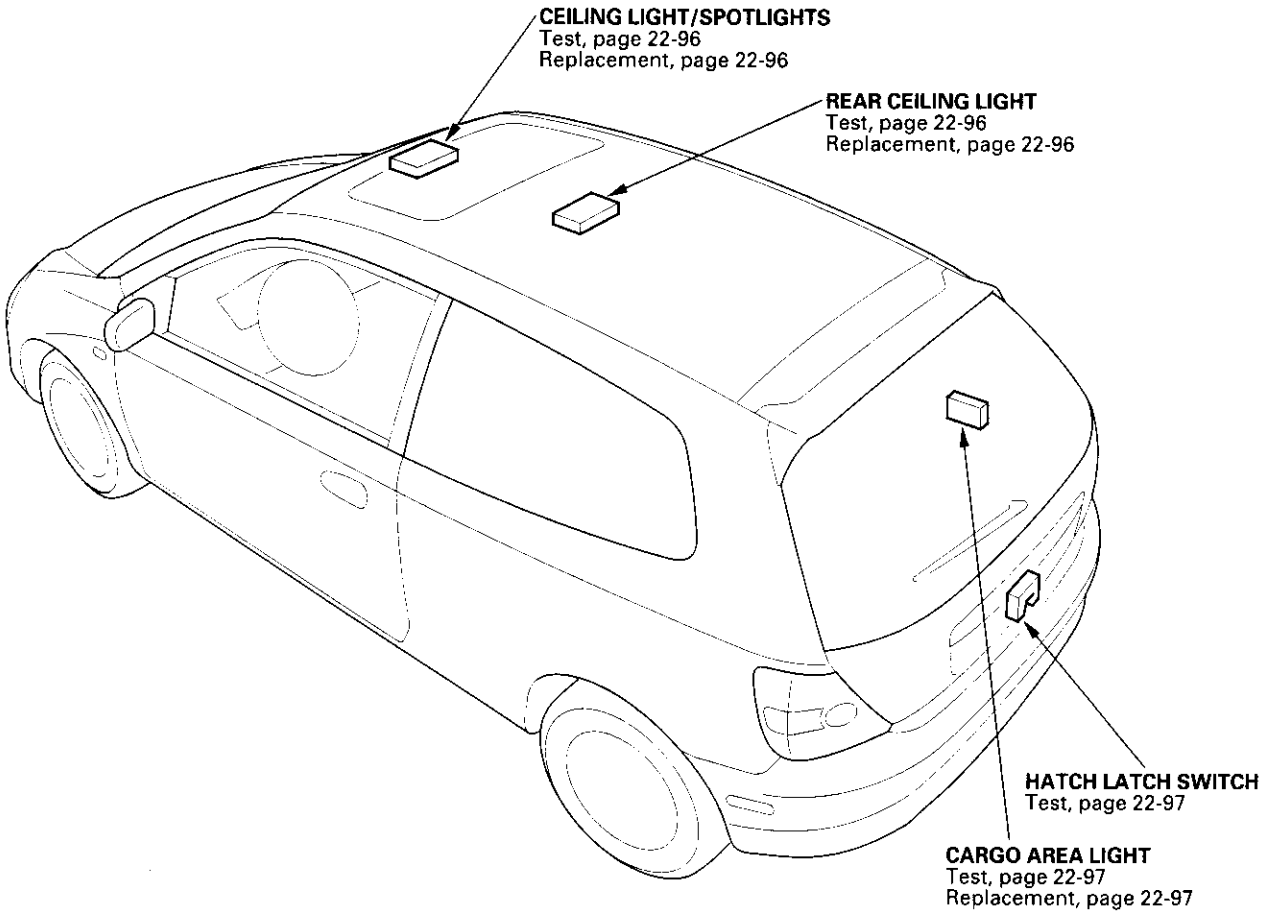
Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
K2	BLU/ORN	Under all conditions	Check for continuity between the K2 terminal and the keyless receiver unit 5P connector No. 2 terminal: There should be continuity.	• An open in the wire
O7	GRN/RED	Ceiling light switch in middle position.	Attach to ground: Ceiling light(s) should come on.	• Blown No. 3 (7.5A) fuse in the under-hood fuse/relay box • Blown bulb • Faulty ceiling light • An open in the wire
X8	WHT/BLK	Under all conditions	Attach to ground: Ignition key light should come on.	• Blown No. 3 (7.5A) fuse in the under-hood fuse/relay box • Faulty ignition key light (LED) • An open in the wire

6. Reconnect the connectors to the under-dash fuse/relay box, and make these input tests at the appropriate connectors on the under-dash fuse/relay box.

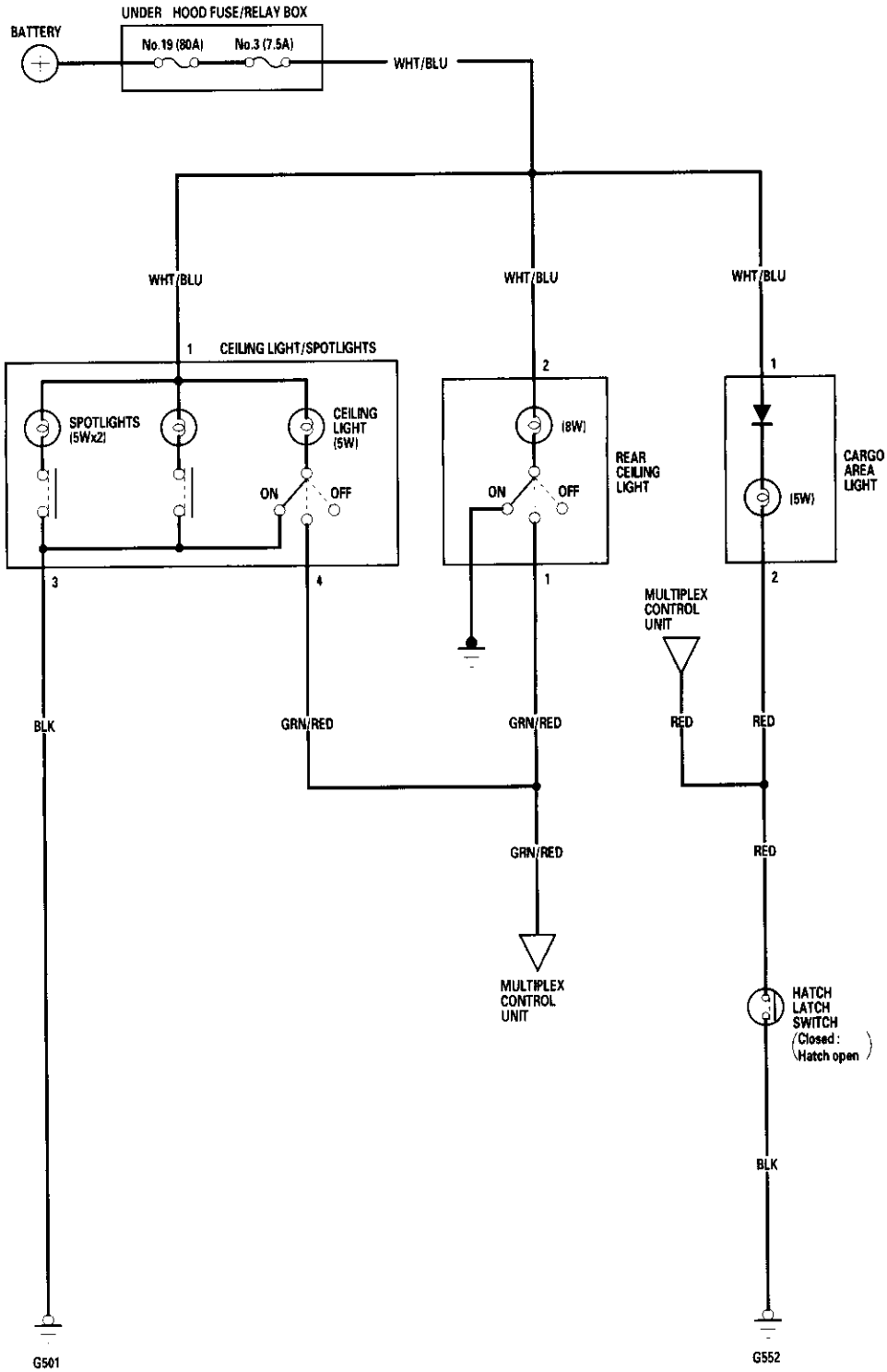
   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If all the input tests prove OK, the multiplex control unit must be faulty. Replace the under-dash fuse/relay box assembly.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
P18	RED	Hatch open	Check for voltage to ground: There should be 1 V or less.	• Poor ground (G552) • Faulty hatch latch switch • An open in the wire
		Hatch closed	Check for voltage to ground: There should be 5 V or more.	• Faulty hatch latch switch • Short to ground
Q3	GRN	Driver's door open	Check for voltage to ground: There should be 1 V or less.	• Faulty driver's door switch • An open in the wire
		Driver's door closed	Check for voltage to ground: There should be 5 V or more.	• Faulty driver's door switch • Short to ground
Q4	LT GRN/ RED	Passenger's door open	Check for voltage to ground: There should be 1 V or less.	• Faulty passenger's door switch • An open in the wire
		Passenger's door closed	Check for voltage to ground: There should be 5 V or more.	• Faulty passenger's door switch • Short to ground
X5	RED/WHT	Ignition key inserted into the ignition switch	Check for voltage to ground: There should be 1 V or less.	• Poor ground (G401) • Faulty ignition key switch • An open in the wire
		Ignition key removed from the ignition switch	Check for voltage to ground: There should be 5 V or more.	• Faulty ignition key switch • Short to ground
Y8	YEL/RED	Driver's door lock knob switch locked	Check for voltage to ground: There should be 1 V or less.	• Poor ground (G501) • Faulty driver's door lock knob switch • An open in the wire
		Driver's door lock knob switch unlocked	Check for voltage to ground: There should be 5 V or more.	• Faulty driver's door lock knob switch • Short to ground

Component Location Index



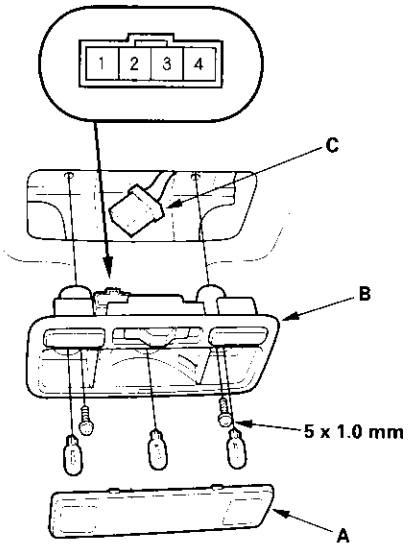
Circuit Diagram



Ceiling Light/Spotlights Test/ Replacement

1. Turn the ceiling light/spotlights switches OFF.
2. Carefully pry off the lens (A) with a small screwdriver.

Ceiling Light: 5 W
Spotlight: 5 W x 2



3. Remove the two screws and the housing (B).
4. Disconnect the 4P connector (C) from the housing.
5. Check for continuity between the terminals in each switch position according to the table.

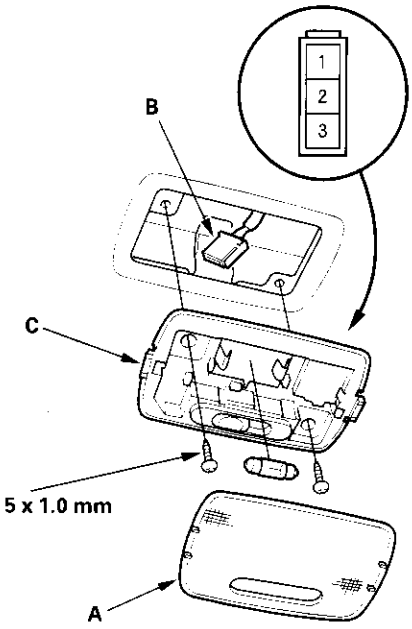
Position			Terminal 1	3	4
CEILING LIGHT (Spotlights OFF)		OFF			
		MIDDLE	○—⊙—		—○
		ON	○—⊙—	—○	
SPOTLIGHTS (Ceiling light OFF)	R	ON	○—⊙—	—○	
		OFF			
	L	ON	○—⊙—	—○	
		OFF			

6. If the continuity is not as specified, check the bulb. If the bulb is OK, replace the ceiling light/spotlights.

Rear Ceiling Light Test/ Replacement

1. Turn the light switch OFF.
2. Carefully pry off the lens (A) with a small screwdriver.

Ceiling Light: 8 W



3. Remove the two mounting screws.
4. Disconnect the 3P connector (B) from the housing (C).
5. Check for continuity between the terminals in each switch position according to the table.

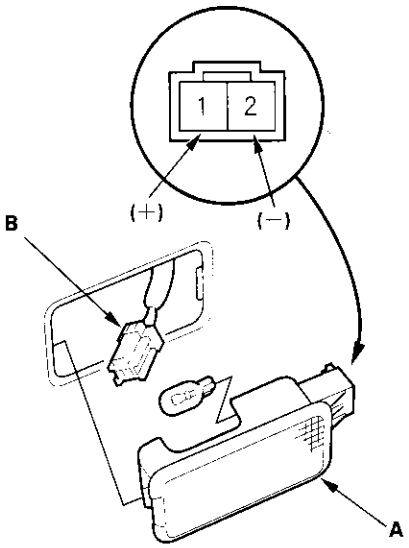
Position	Terminal 1	2	3
OFF			
MIDDLE	○—⊙—	—○	
ON		○—⊙—	—○

6. If the continuity is not as specified, check the bulb. If the bulb is OK, replace the rear ceiling light.

Cargo Area Light Test/Replacement

1. Open the hatch.
2. Carefully pry out the cargo area light (A).

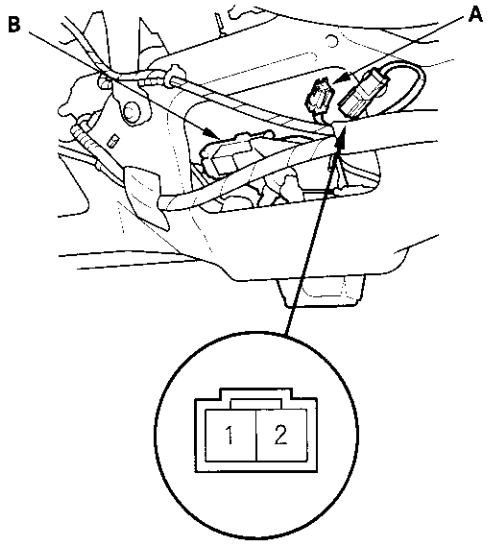
   Cargo Area Light: 5 W



3. Disconnect the 2P connector (B) from the light.
4. Check for continuity between the No. 1 (+) and No. 2 (−) terminals. There should be continuity. If there is no continuity, check the bulb. If the bulb is OK, replace the cargo area light.

Hatch Latch Switch Test

1. Open the hatch.
2. Remove the hatch lower trim panel (see page 20-53).
3. Disconnect the 2P connector (A) from the hatch latch (B).

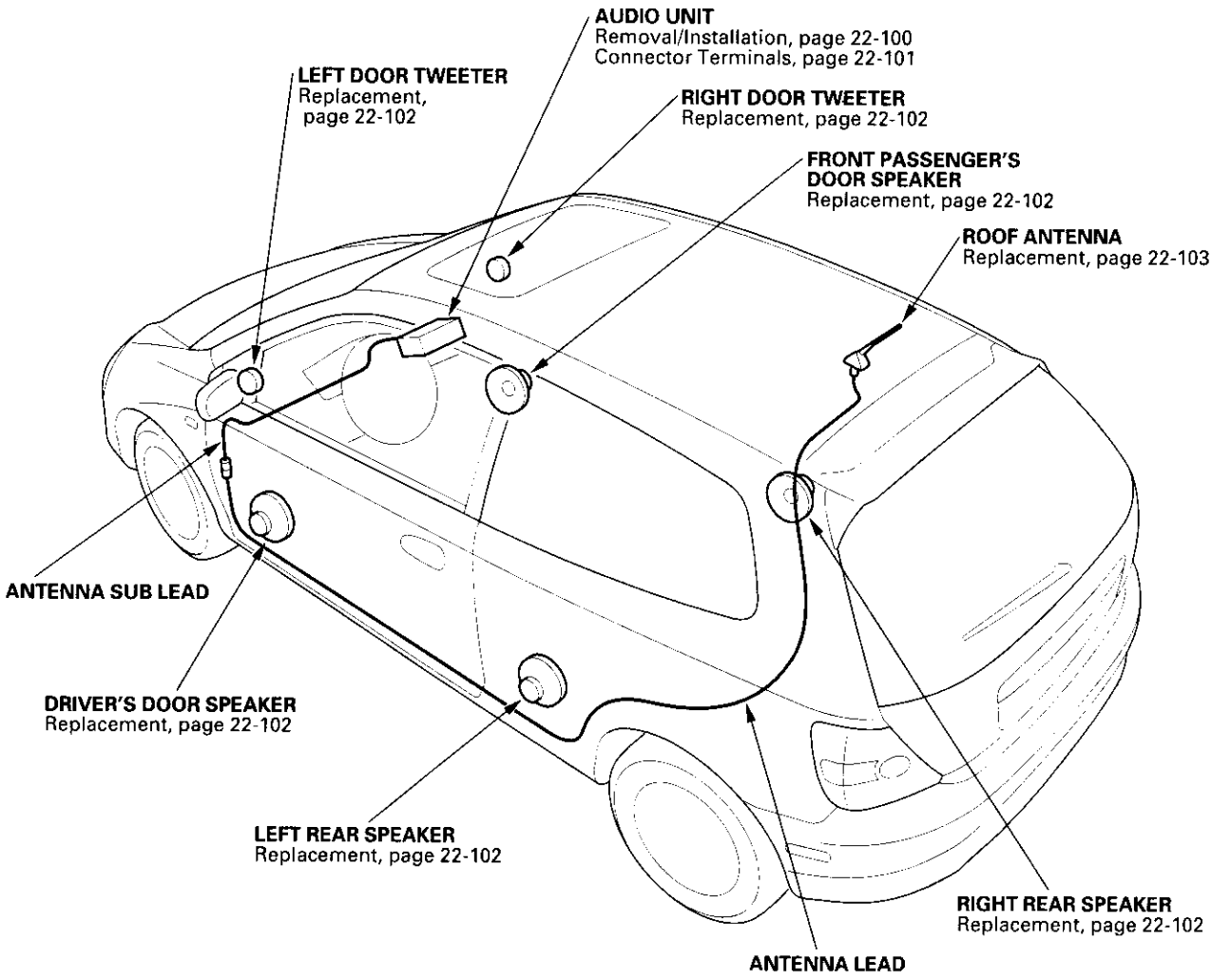


4. Check for continuity between the No. 1 and No. 2 terminals.

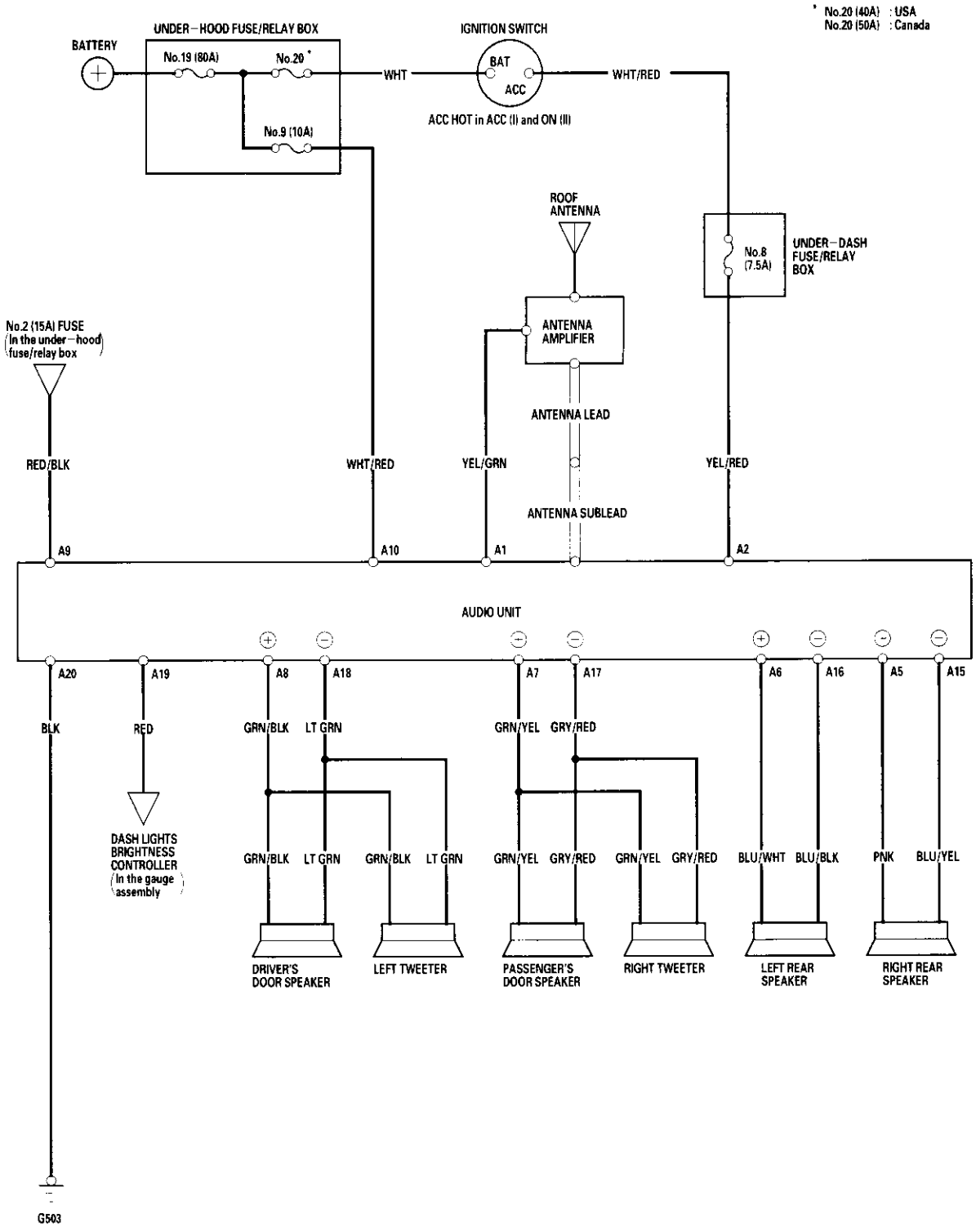
   - There should be continuity with the hatch open.
   - There should be no continuity with the hatch closed.

5. If the continuity is not as specified, replace the hatch latch.

Component Location Index



Circuit Diagram



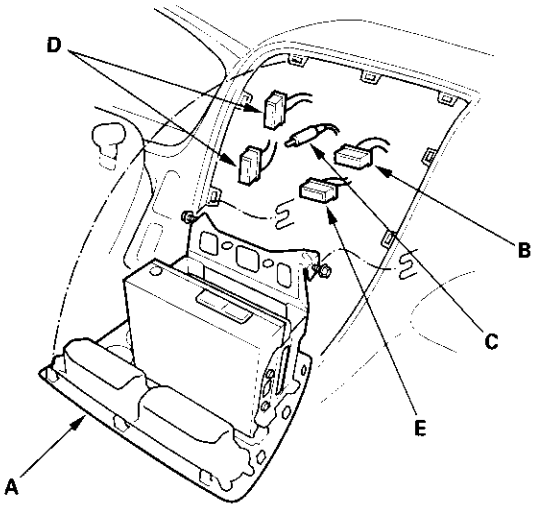
Audio Unit Removal/Installation

NOTE:
- Put on gloves to protect your hands.
- Take care not to scratch the dashboard and related parts.

1. Make sure you have the anti-theft code for the radio, then write down the frequencies for the radio's preset buttons.

2. Remove the driver's dashboard lower cover (see page 20-59).

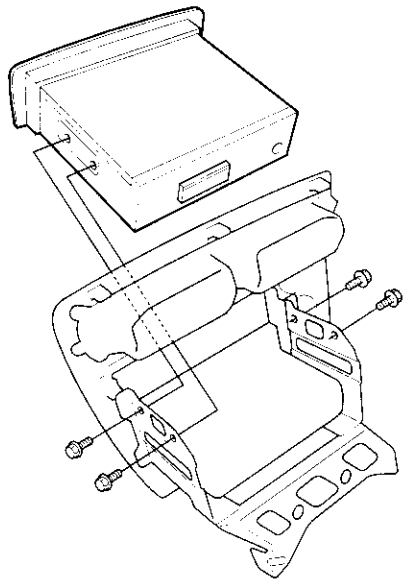
3. Remove the two mounting bolts, then pull out the center panel (A).



4. Disconnect the audio connector (B) and antenna lead (C), heater control panel connectors (D) and HAVC push switch assembly (E), then remove the center panel.

5. Remove the heater control panel (see page 21-38).

6. Remove the four mounting bolts and the audio unit from the radio brackets.



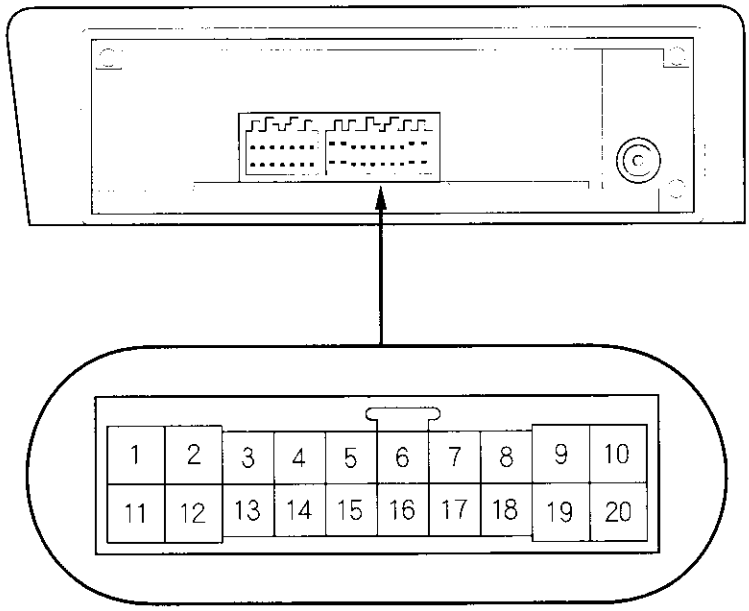
7. Install the audio unit in the reverse order of removal, and note these items:

   - Make sure the audio unit and A/C connectors are plugged in properly, and the antenna lead is connected properly.
   - Enter the anti-theft code for the radio, then enter the customer's radio station presets.

Audio Unit Connector Replacement

Cavity	Wire	Connects to
1	YEL/GRN	Roof antenna
2	YEL/RED	ACC (Power)
3	———	Not used
4	———	Not used
5	PNK	Right rear speaker (+)
6	BLU/WHT	Left rear speaker (+)
7	GRN/YEL	Front passenger's door speaker (+)/Right tweeter (+)
8	GRN/BLK	Driver's door speaker (+)/Left tweeter (+)
9	RED/BLK	Lights-on signal
10	WHT/RED	Constant power
11	———	Not used
12	———	Not used
13	———	Not used
14	———	Not used
15	BLU/YEL	Right rear speaker (−)
16	BLU/BLK	Left rear speaker (−)
17	GRY/RED	Front passenger's door speaker (−)/Right tweeter (−)
18	LT GRN	Driver's door speaker (−)/Left tweetr (−)
19	RED	Dash lights brightness controller
20	BLK	Ground (G503)

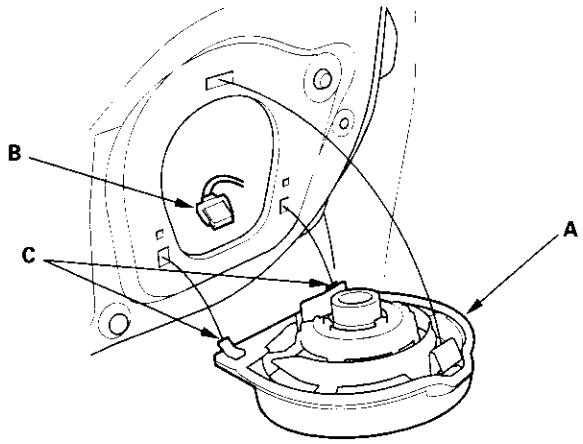
AUDIO UNIT 20P CONNECTOR



Speaker Replacement

Door Speaker:

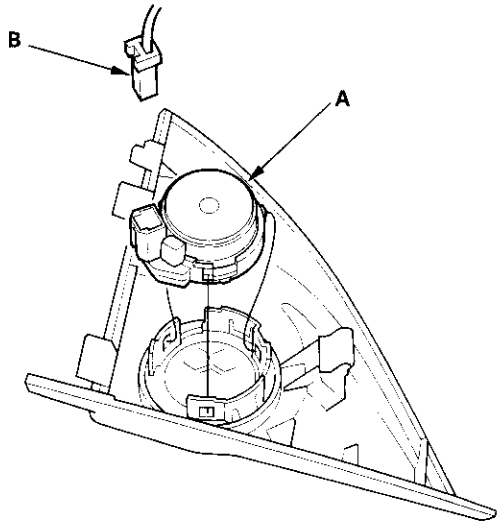
1. Remove the door panel (see page 20-4).
2. Pull the top of the speaker (A) straight out, just enough to release the upper clip. If you pull the speaker out too far, you will damage the lower clips (C). Then lift the speaker straight up to release the lower clips.



3. Disconnect the 2P connector (B), and remove the speaker.

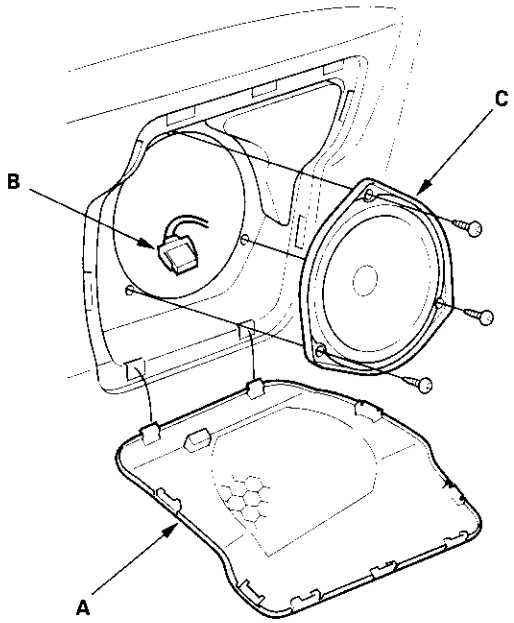
Tweeter:

Carefully pry the tweeter (A) out of the mirror mount cover, then disconnect the 2P connector (B) from the tweeter.



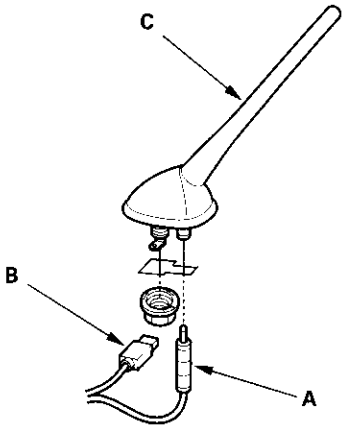
Rear:

1. Remove the speaker cover (A).
2. Remove the three screws, then disconnect the 2P connector (B) from the speaker (C).



Roof Antenna Replacement

1. Remove the rear part of headliner (see page 20-54).
2. Disconnect the antenna lead connector (A) and 1P connector (B) from the roof antenna (C).

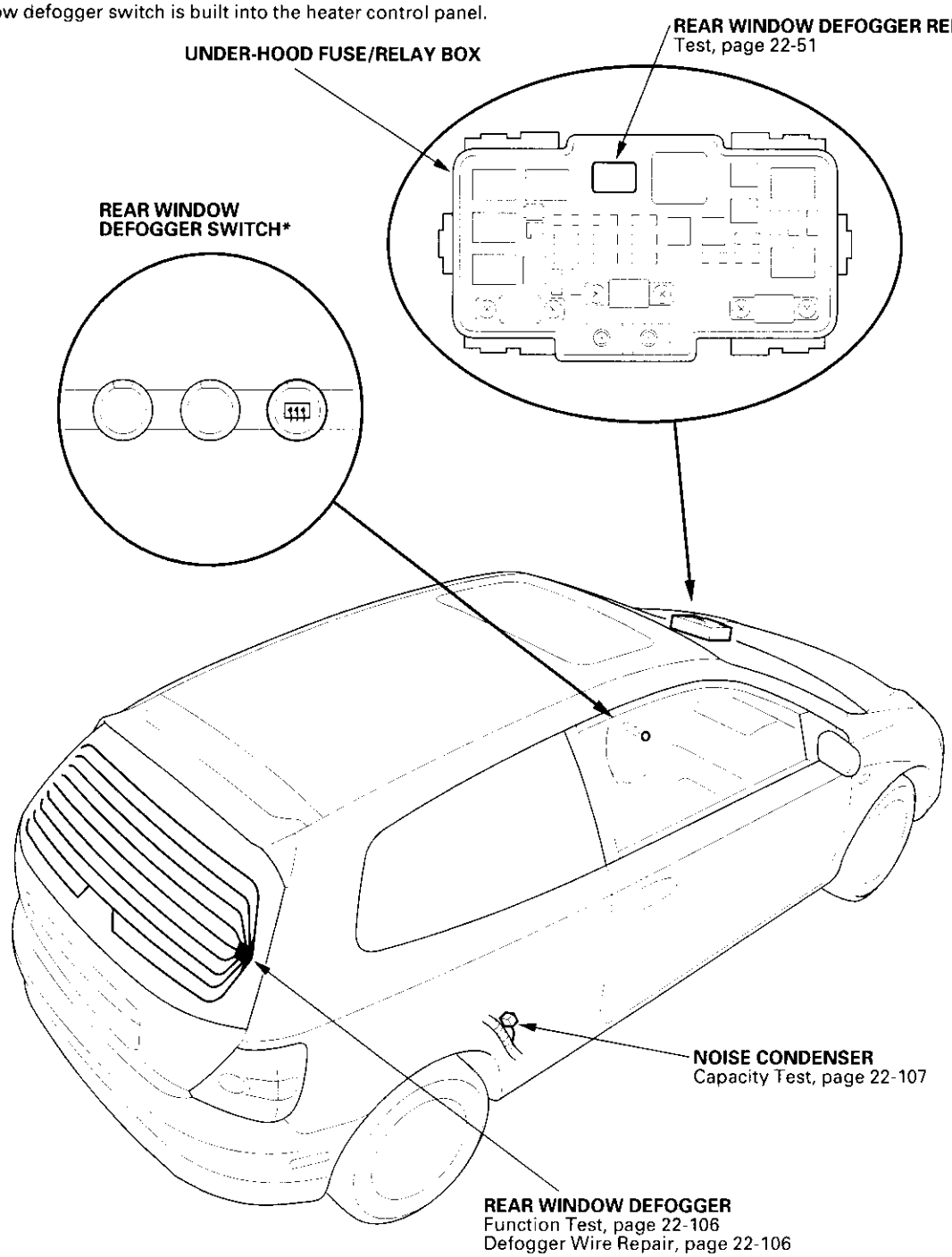


3. Remove the mounting nut and the antenna.

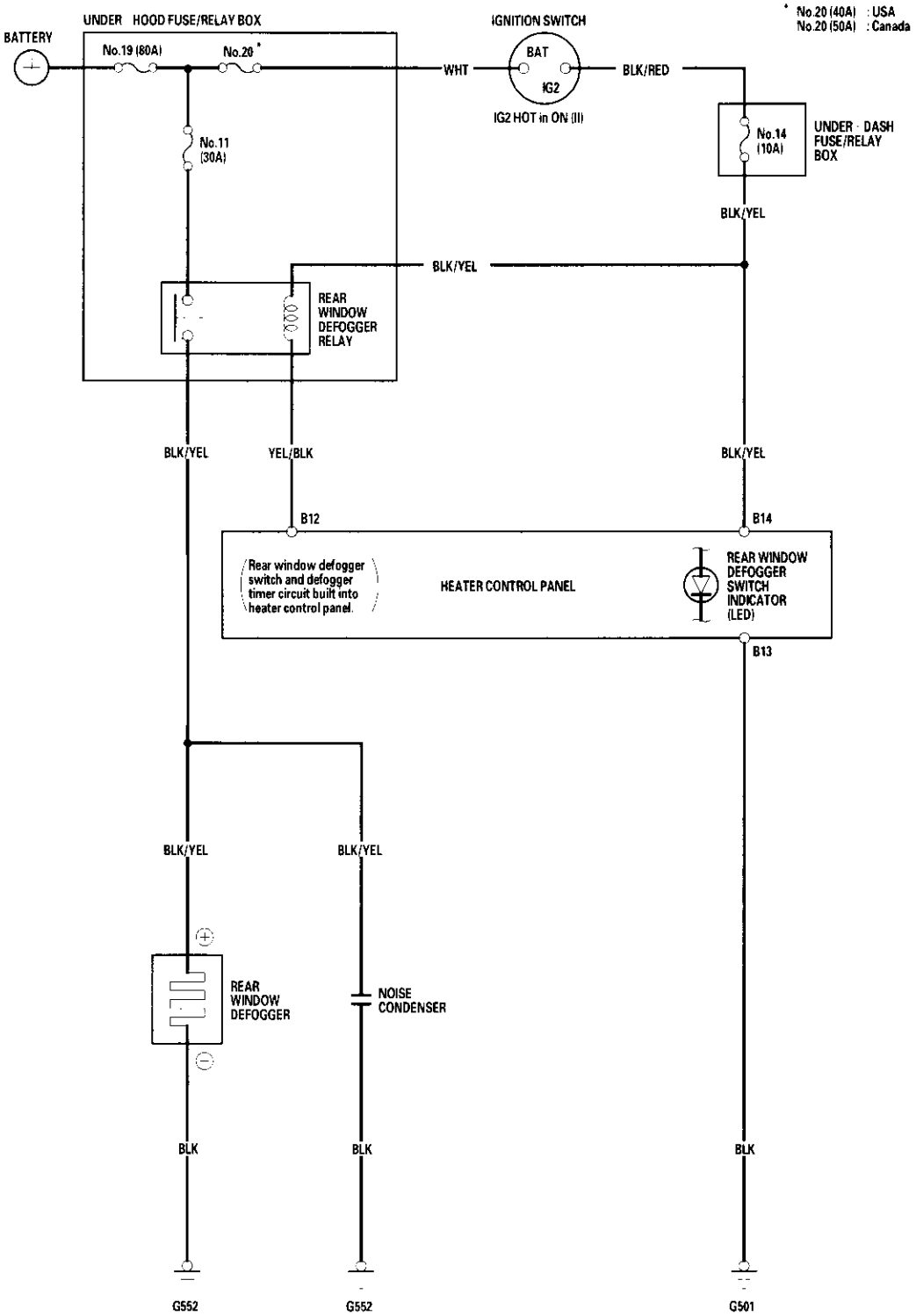
Rear Window Defogger

Component Location Index

*:Rear window defogger switch is built into the heater control panel.



Circuit Diagram



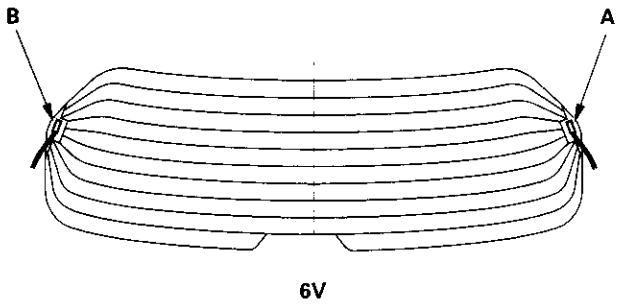
Rear Window Defogger

Function Test

NOTE:
- Be careful not to scratch or damage the defogger wires with the tester probe.
- Before testing, check the No. 11 (30A) fuse in the under-hood fuse/relay box and No. 14 (10A) fuse in the under-dash fuse/relay box.

1. Check for voltage between the vertical dividers and body ground with the ignition switch and defogger switch ON.
   There should be voltage as shown.

   - If there is no voltage, check for:
     - faulty defogger relay.
     - an open in the BLK, BLK/YEL, or YEL/BLK wire.
     - faulty heater control panel.
   - If there is battery voltage, go to step 2.



2. Check for continuity between the negative terminal (B) and body ground.
   If there is no continuity, check for:
   - an open in the BLK wire.
   - Poor body ground at the window antenna coil mounting bolt.

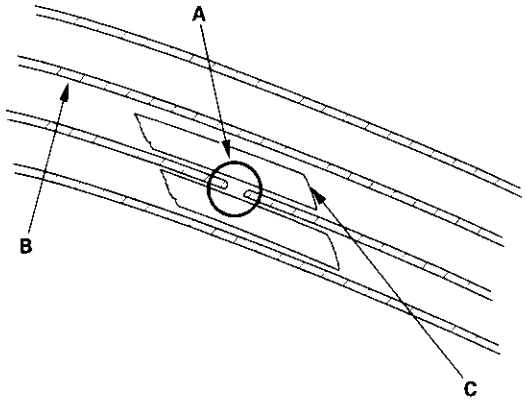
3. Touch the voltmeter positive probe to the halfway point of each defogger wire, and the negative probe to the negative terminal.
   There should be about 6 V with the ignition switch and the defogger switch ON.

   - If the voltage is as specified, the defogger wire is OK.
   - If the voltage is not as specified, repair the defogger wire.
     - If it is more than 6 V, there is a break in the negative half of the wire.
     - If it is less than 6 V, there is a break in the positive half of the wire.

Defogger Wire Repair

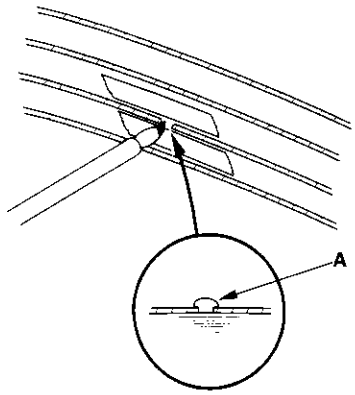
NOTE: To make an effective repair, the broken section must be no longer than one inch.

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 defogger wire (B) with transparent tape (C).

3. Mix the silver conductive paint thoroughly. Using a small brush, apply a heavy coat of paint extending about 1/8 inch on both sides of the break. Allow 30 minutes to dry.



4. Check for continuity in the repaired wire.

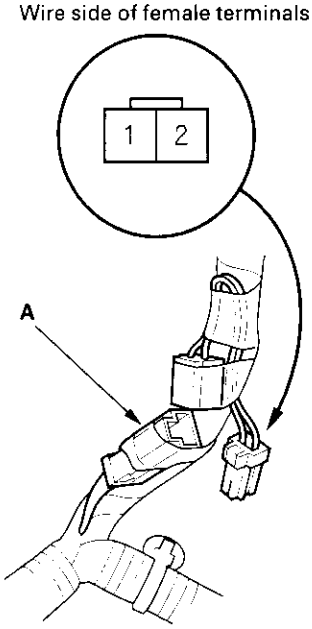
5. Apply a second coat of paint in the same way. Let it dry 3 hours before removing the tape.

Noise Condenser Capacity Test

1. Remove the right rear side trim panel (see page 20-66).

2. Disconnect the 2P connector (A) from the noise condenser.

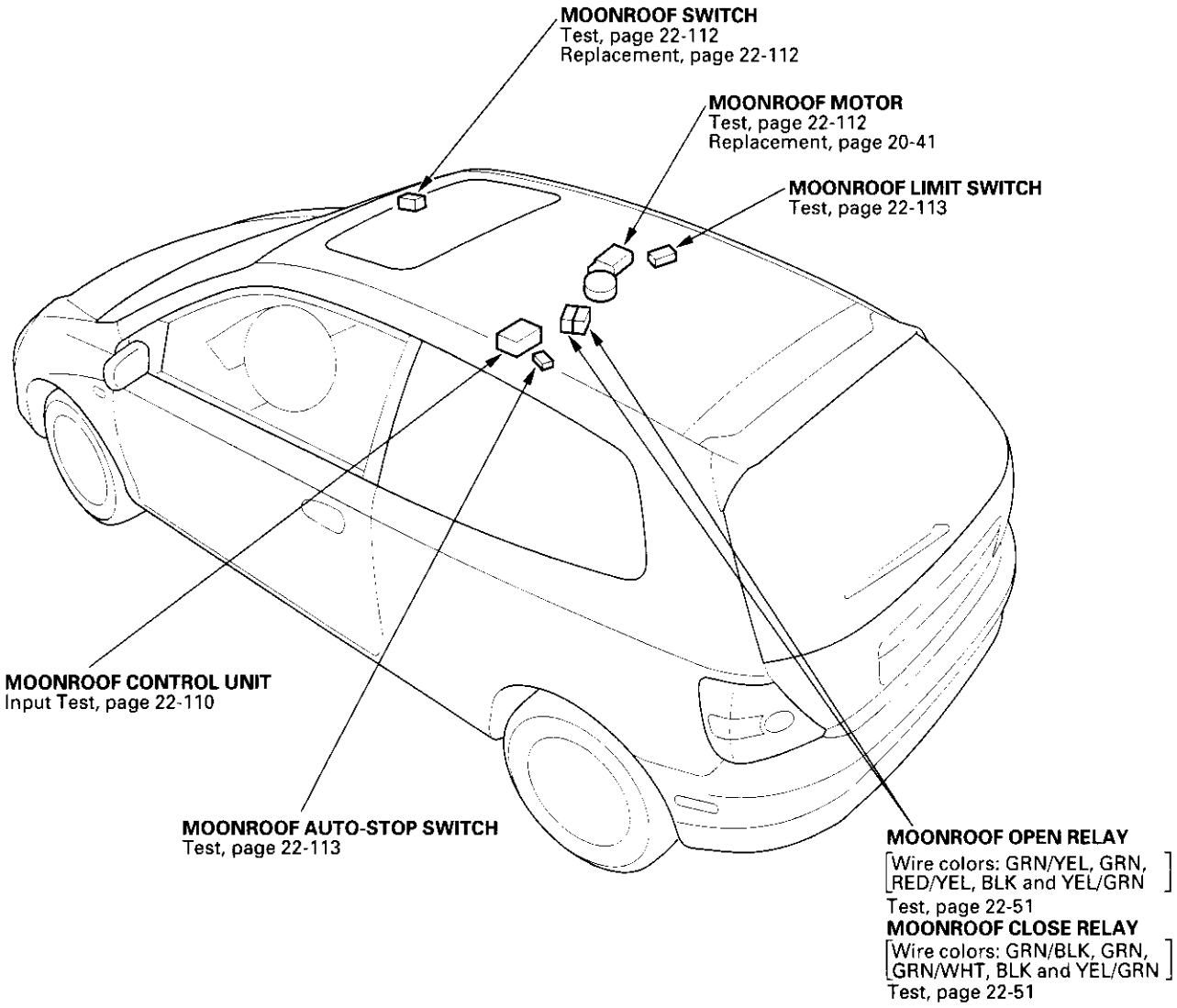
   Noise condenser capacity:
   0.47 ± 0.09 microfarads



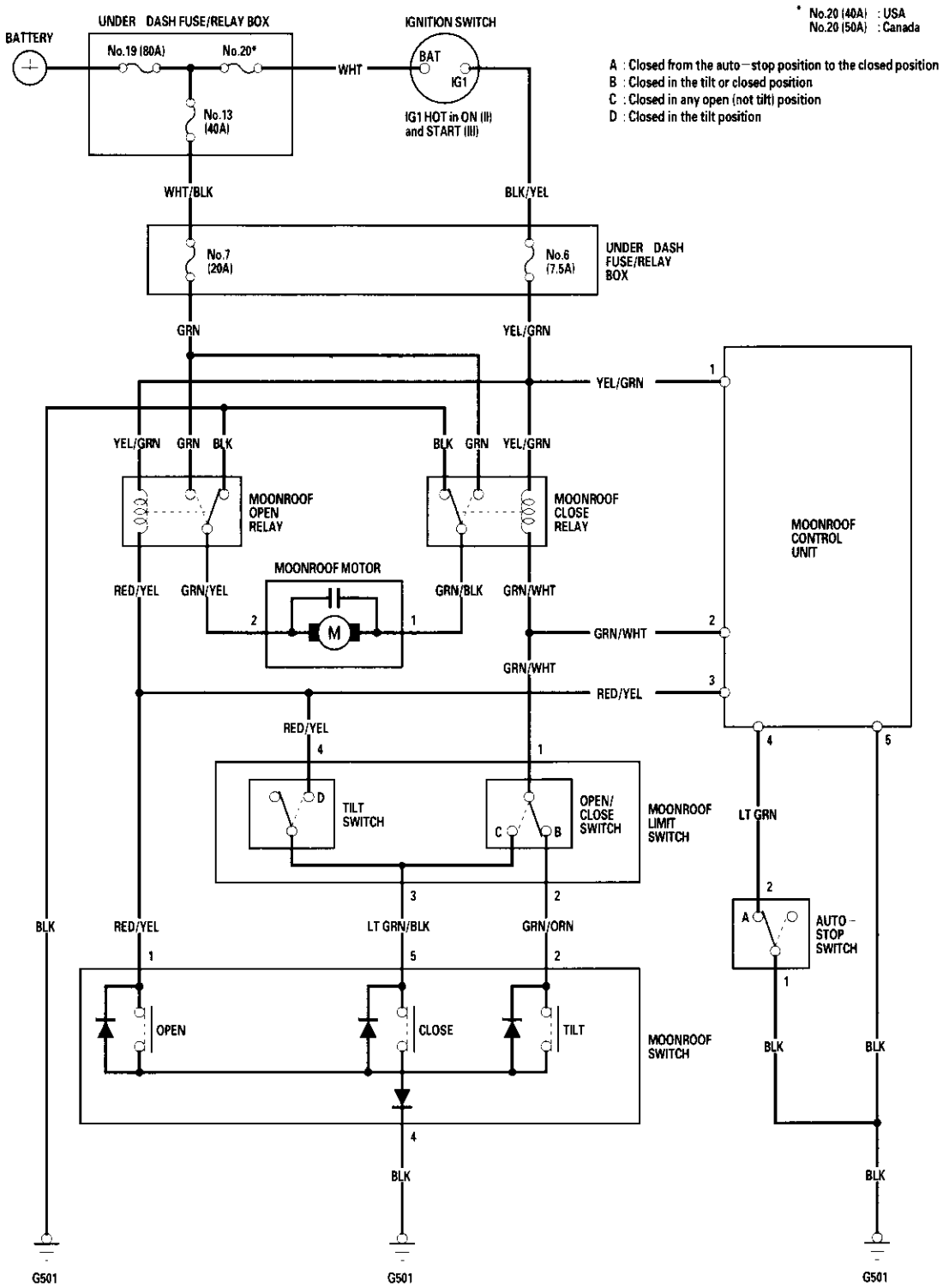
3. Use a commercially available condenser tester. Connect the condenser tester probes, and the measure condenser capacity.

4. If it is not within the specification, replace the noise condenser.

Component Location Index



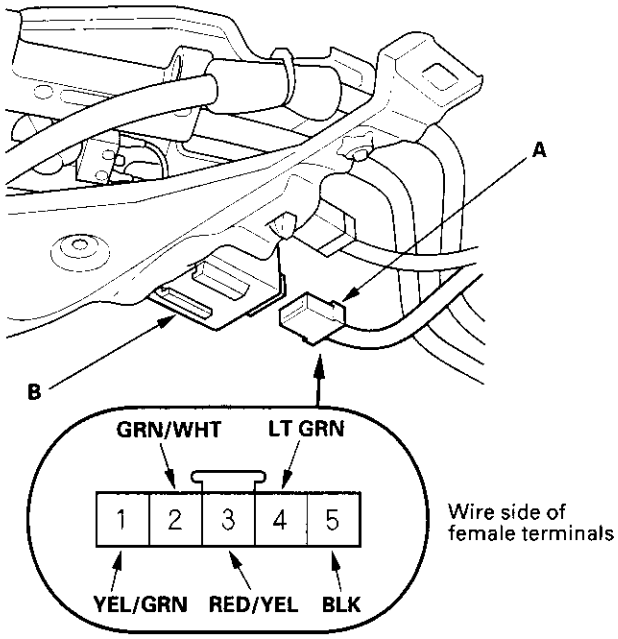
Circuit Diagram



Moonroof Control Unit Input Test

1. Remove the headliner (see page 20-54).

2. Disconnect the 5P connector (A) from the control unit (B).



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. Reconnect the moonroof control unit 5P 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 5.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
5	BLK	Under all conditions	Check for continuity to ground: There should be continuity.	• Poor ground (G501) • An open in the wire
1	YEL/GRN	Ignition switch ON (II)	Check for voltage to ground: There should be battery voltage.	• Blown No. 6 (7.5A) fuse in the under-dash fuse/relay box • An open in the wire
4	LT GRN	Ignition switch ON (II) Moonroof closed	Check for voltage to ground: There should be 1 V or less.	• Poor ground (G501) • Faulty moonroof auto-stop switch • An open in the wire
		Moonroof open	Check for voltage to ground: There should be battery voltage.	• Short to ground • Faulty moonroof auto-stop switch

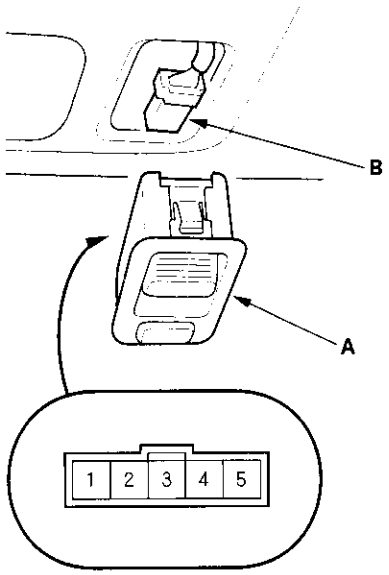
5. Disconnect the moonroof control unit 5P connector, and make these input tests at the connector.

   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If all the input tests prove OK, the control unit must be faulty. Replace it.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
3	RED/YEL	Ignition switch ON (II)	Connect a jumper wire between No. 3 and No. 5 terminals. Moonroof motor should run (opened).	• Poor ground (G501) • Blown No. 6 (7.5A) fuse in the under-dash fuse/relay box • Blown No. 7 (20A) fuse in the under-dash fuse/relay box • Faulty moonroof open relay • Faulty moonroof close relay • Faulty moonroof motor • An open in the wire
2	GRN/WHT	Ignition switch ON (II)	Connect a jumper wire between No. 2 and No. 5 terminals. Moonroof motor should run (closed).	• Poor ground (G501) • Blown No. 6 (7.5A) fuse in the under-dash fuse/relay box • Blown No. 7 (20A) fuse in the under-dash fuse/relay box • Faulty moonroof open relay • Faulty moonroof close relay • Faulty moonroof motor • An open in the wire

Switch Test/Replacement

1. Carefully pry the moonroof switch (A) out of the headliner.



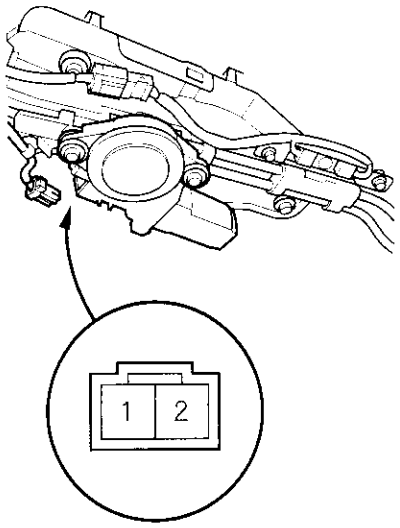
2. Disconnect the 5P connector (B) from the moonroof switch.
3. Check for continuity between the terminals in each switch position according to the table.

Position \ Terminal	1	2	3	4	5
CLOSE				○—◀—○	
TILT		○	—▶—	○	
OPEN	○	——	—▶—	○	

4. If the continuity is not as specified, replace the moonroof switch.

Motor Test

1. Remove the headliner (see page 20-54).
2. Disconnect the 2P connector from the moonroof motor.



3. Check the motor by connecting power and ground according to the table.

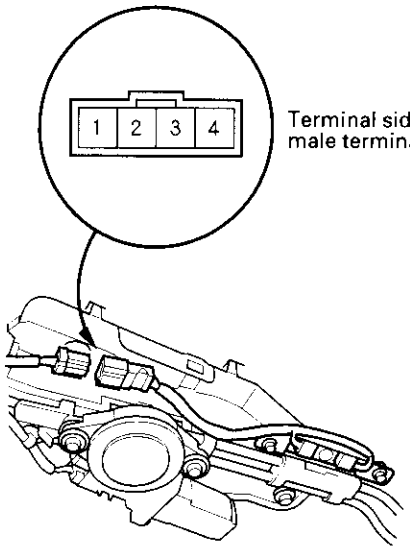
Position \ Terminal	1	2
OPEN	⊖	⊕
CLOSE	⊕	⊖

4. If the motor does not run, replace it.

   NOTE: See closing force check (see page 20-48) for motor clutch test.

Limit Switch Test

1. Remove the headliner (see page 20-54).
2. Disconnect the 4P connector from the moonroof limit switch.



3. Check for continuity between the terminals in each switch position according to the table.

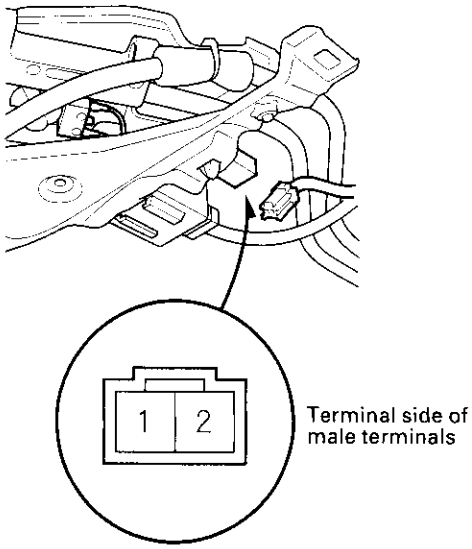
   NOTE: Turn the motor by hand with the wrench.

Terminal / Position	1	2	3	4
TILT	○—○		○—○	
OPEN	○—		—○	
CLOSE	○—○			

4. If the continuity is not as specified, replace the moonroof limit switch.

Auto-stop Switch Test

1. Remove the headliner (see page 20-54).
2. Disconnect the 2P connector from the moonroof auto-stop switch.



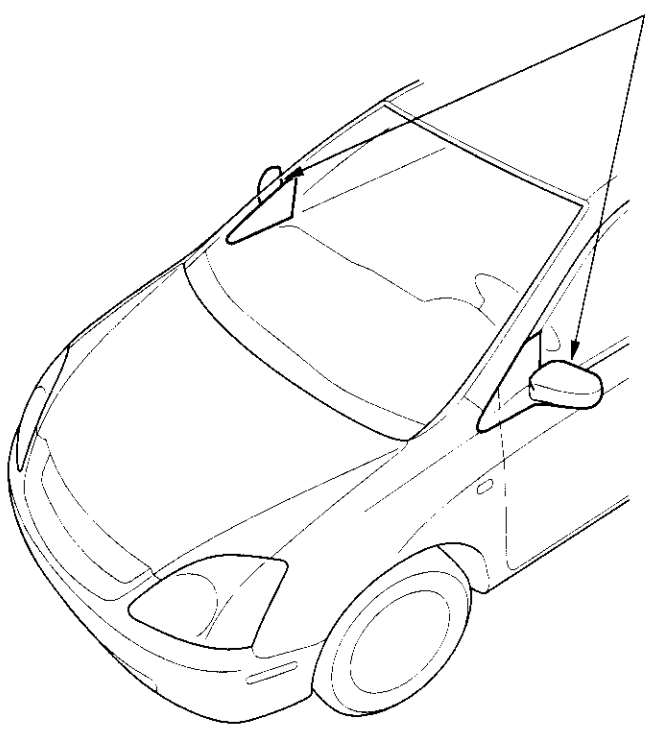
3. Check for continuity between the terminals in each switch position according to the table.

   NOTE:
   - Turn the motor by hand with the wrench.
   - The auto-stop position is about 145 mm (5.75 in.) from fully closed.

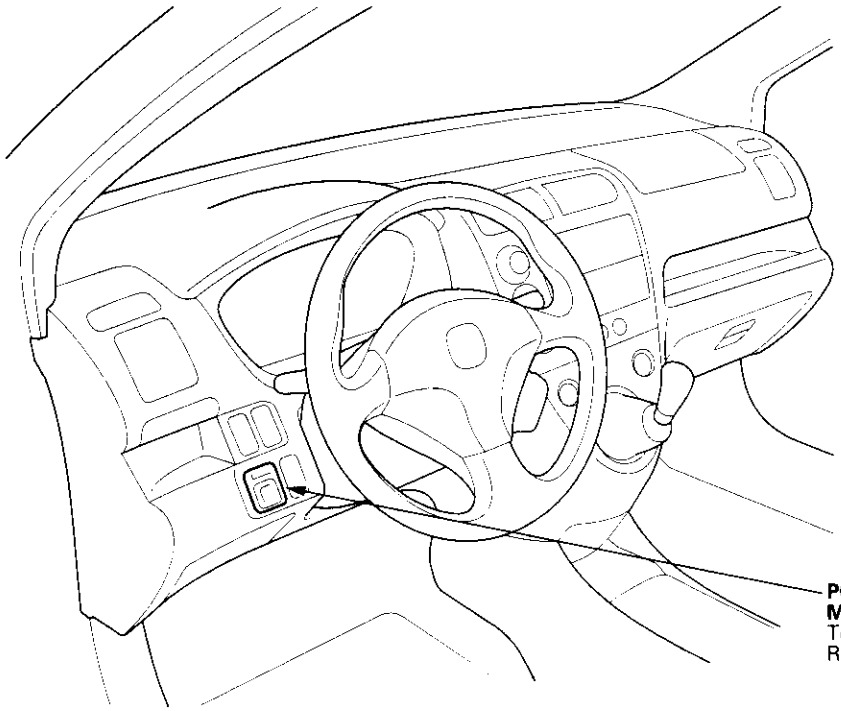
Terminal / Position	1	2
Between AUTO-STOP and CLOSE	○—○	
Between OPEN and AUTO-STOP		

4. If the continuity is not as specified, repair or replace the auto-stop switch.

Component Location Index

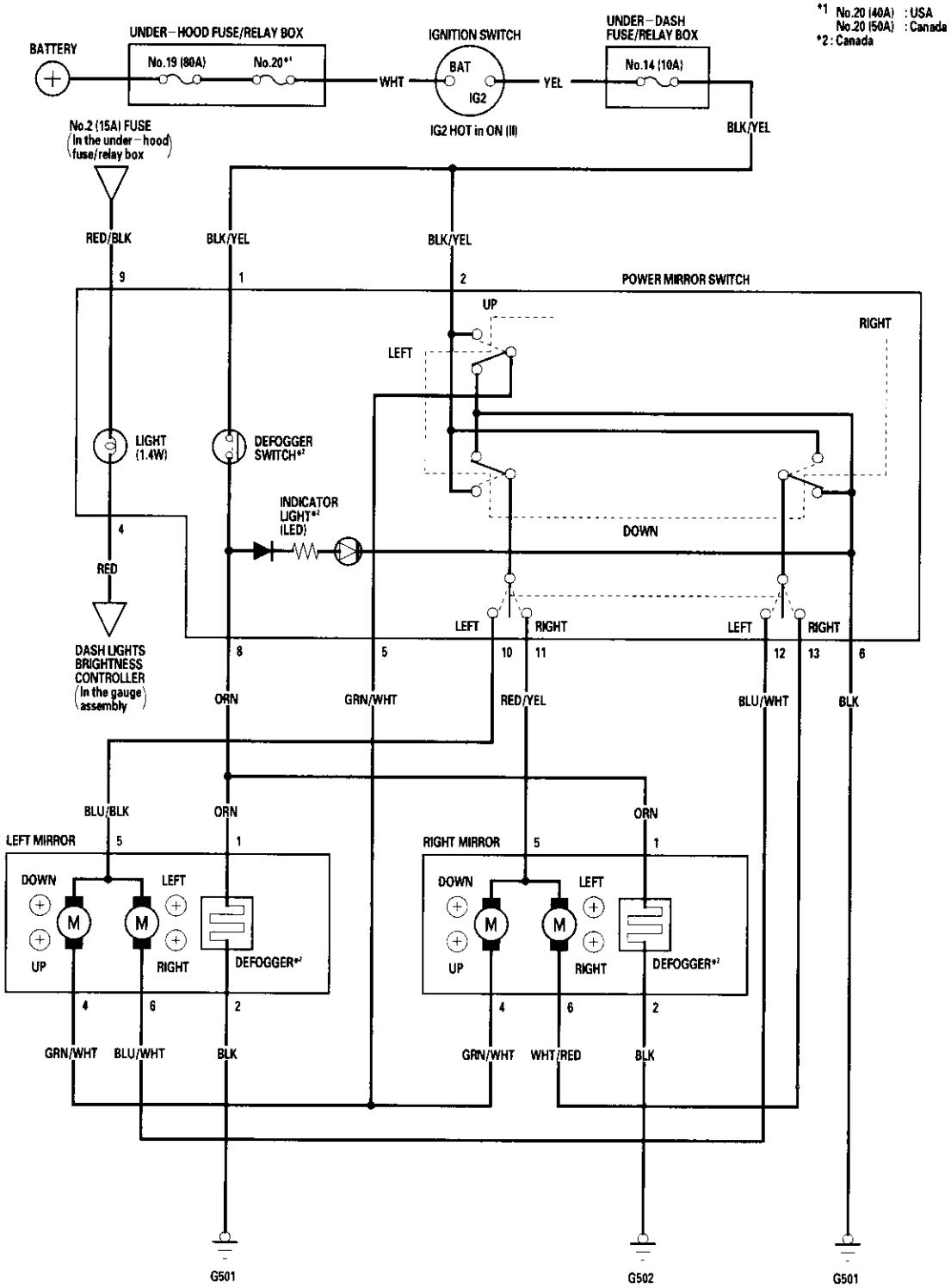


POWER MIRRORS
Function Test, page 22-116
Replacement, page 20-15
Actuator Test, page 22-117
Actuator Replacement, page 22-118



POWER MIRROR and MIRROR DEFOGGER SWITCH
Test, page 22-117
Replacement, page 22-117

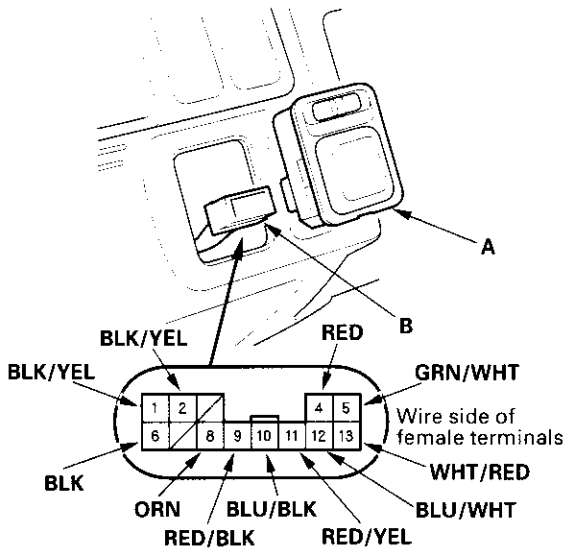
Circuit Diagram



Function Test

1. Remove the driver's pocket (see page 20-60).

2. Reach through the pocket opening, and push out the power mirror switch (A).



3. Disconnect the 13P connector (B) from the switch.

4. Choose the appropriate test based on the symptom:
   - Both mirrors don't work, go to step 5.
   - Left mirror doesn't work, go to step 7.
   - Right mirror doesn't work, go to step 8.
   - Defogger doesn't work (Canada), go to step 9.

Both mirrors

5. Check for voltage between the No. 2 terminal and body ground with the ignition switch ON (II).
   There should be battery voltage.
   - If there is no battery voltage, check for:
     - blown No. 14 (10A) fuse in the under-dash fuse/relay box.
     - an open in the BLK/YEL wire.
   - If there is battery voltage, go to step 6.

6. Check for continuity between the No. 6 terminal and body ground.
   There should be continuity.
   - If there is no continuity, check for:
     - an open in the BLK wire.
     - poor ground (G501).
   - If there is continuity, check both mirrors individually as described in the next column.

Left mirror

7. Connect the No. 2 terminal to the No. 10 terminal, and the No. 5 (or No. 12) terminal to the No. 6 terminal with jumper wires. The left mirror should tilt down (or swing left) with the ignition switch ON (II).
   - If the mirror does not tilt down (or does not swing left), check for an open in the GRN/WHT (or BLU/WHT) 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 BLU/BLK wire.
   - If the mirror works properly, check the mirror switch.

Right mirror

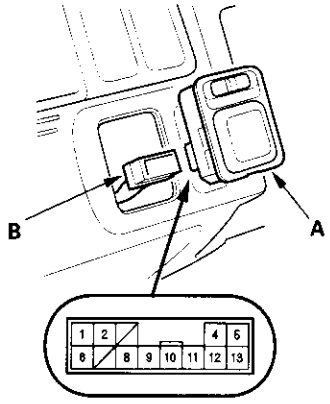
8. Connect the No. 2 terminal to the No. 11 terminal, and the No. 5 (or No. 13) terminal to the No. 6 terminal with jumper wires. The right mirror should tilt down (or swing left) with the ignition switch ON (II).
   - If the mirror does not tilt down (or does not swing left), check for an open in the GRN/WHT (or WHT/RED) 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 RED/YEL wire.
   - If the mirror works properly, check the mirror switch.

Defogger (Canada)

9. Connect the No. 1 and No. 8 terminals with a jumper wire, and check for voltage between the No. 2 terminal of the mirror connector and body ground. There should be battery voltage and both mirrors should warm up with the ignition switch ON (II).
   - If there is no voltage or neither warms up, check for:
     - an open in the BLK/YEL or ORN wire.
     - blown No. 14 (10A) fuse in the under-dash fuse/relay box.
   - If only one fails to warm up, check:
     - its defogger.
     - poor ground (G501, G502).
   - If both warm up, check the defogger switch.

Power Mirror Switch Test

1. Remove the driver's pocket (see page 20-60).
2. Reach through the pocket opening, and push out the power mirror switch (A).



3. Disconnect the 13P connector (B) from the switch.
4. Check for continuity between the terminals in each switch position according to the table.

Mirror Switch:

	Terminal / Position	2	5	6	10	11	12	13
L	UP	○	○		○			
	DOWN	○		○	○			
	LEFT	○		○			○	
	RIGHT	○			○		○	
R	UP	○	○			○		
	DOWN	○		○		○		
	LEFT	○			○			○
	RIGHT	○		○				○

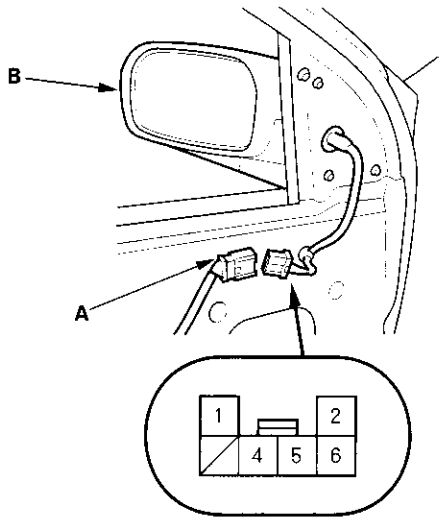
Defogger Switch (Canada):

Terminal / Position	1	8
ON	○	○
OFF		

5. If the continuity is not as specified, replace the power mirror switch.

Power Mirror Actuator Test

1. Remove the door panel (see page 20-4).
2. Disconnect the 6P connector (A) from the power mirror actuator (B).



3. Check actuator operation by connecting power and ground according to the table.

Terminal / Position	6	5	4
TILT UP		⊖	⊕
TILT DOWN		⊕	⊖
SWING LEFT	⊖	⊕	
SWING RIGHT	⊕	⊖	

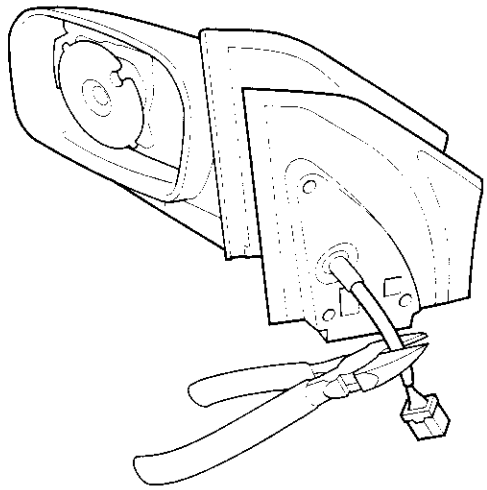
4. If the mirror fails to work properly, replace the mirror actuator.

Defogger Test (Canada):

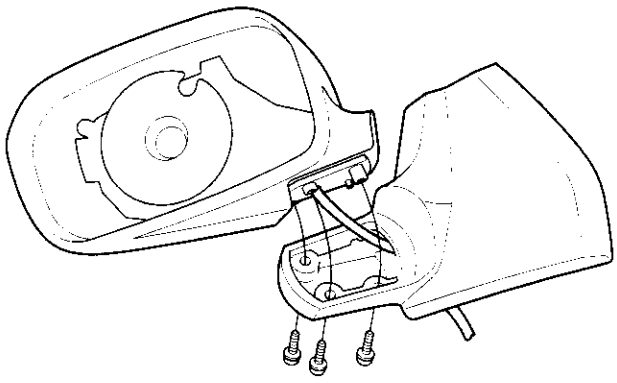
5. Check for continuity between the No. 1 and No. 2 terminals of the 6P connector. There should be continuity. If there is no continuity, check for an open circuit.

Power Mirror Actuator Replacement

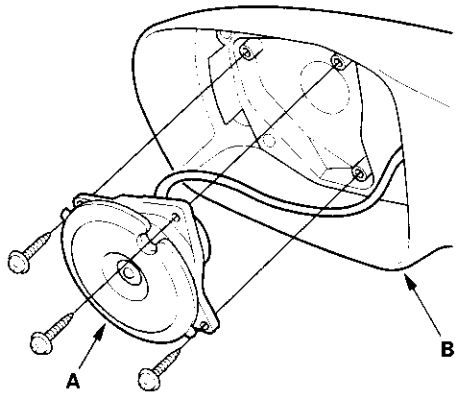
1. Remove the power mirror (see page 20-15).
2. Carefully remove the mirror holder from the mirror housing. Gently pull it out by hand (see page 20-15).
3. Disconnect the connector.
4. Remove the cover, then remove the two Torx screws from the mirror connector.
5. Record the terminal locations and wire colors.
6. Cut the wire harness with the wire cutter.



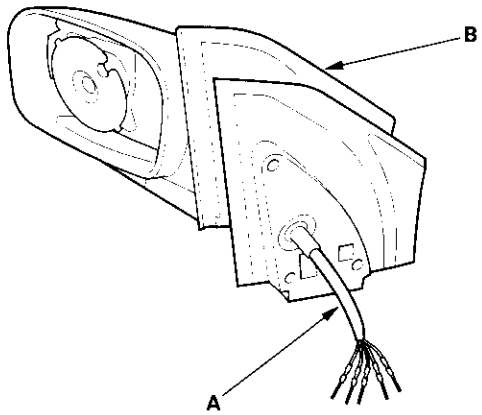
7. Remove the three screws, and separate the mirror housing from the mirror base.



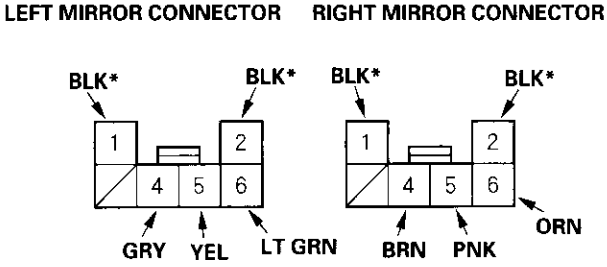
8. Remove the three Torx screws, and separate the actuator (A) from the mirror housing (B).



9. Route the wire harness (A) of the new actuator through the hole in the bracket (B).



10. Insert the terminals into the connector in the original arrangement as shown below.



Wire side of female terminals

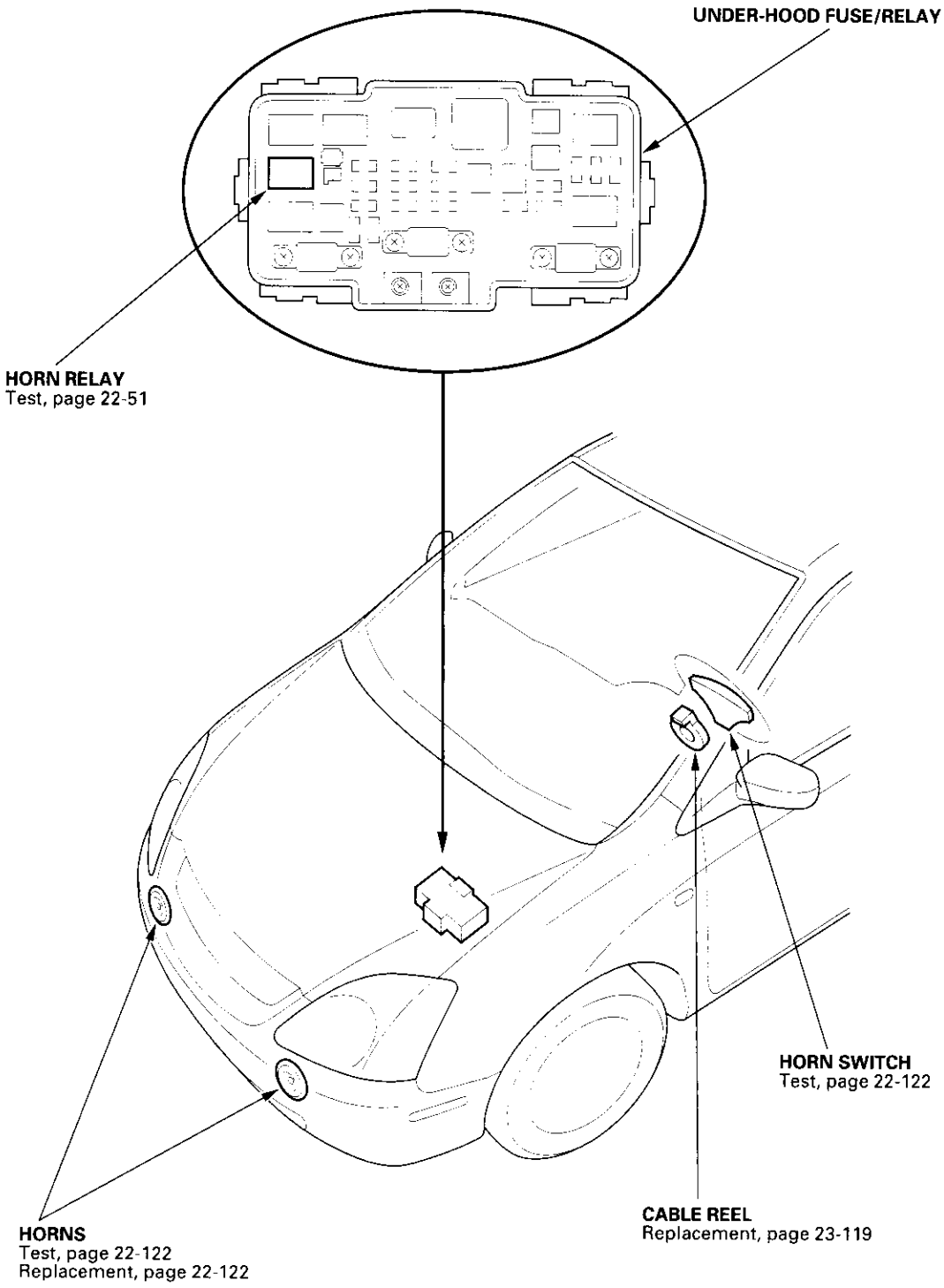
*:Canada

11. Reassemble in the reverse order of disassembly. Be careful not to break the mirror holder when reinstalling it to the actuator.

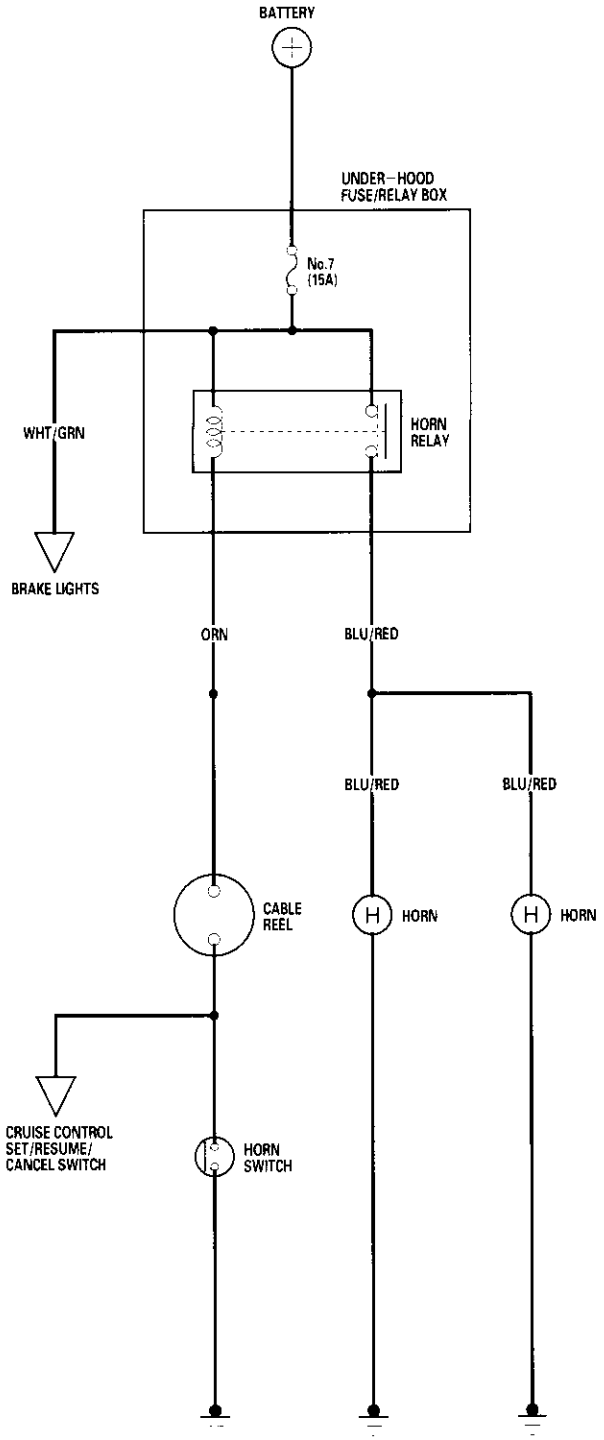
12. Reinstall the mirror assembly on the door.

13. Operate the power mirror to ensure smooth operation.

Component Location Index

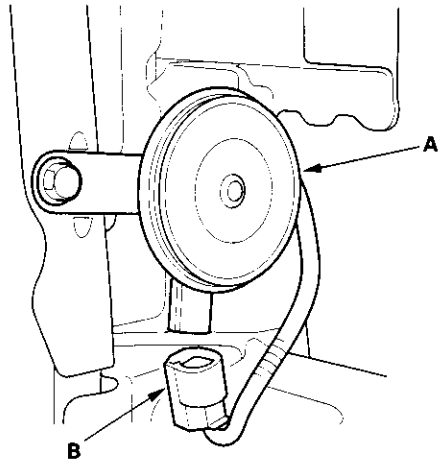


Circuit Diagram

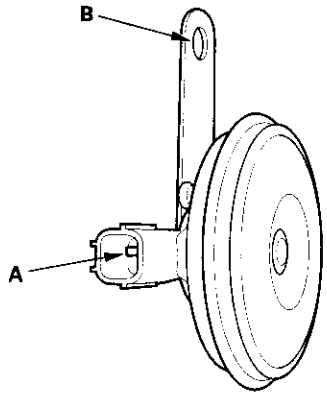


Horn Test/Replacement

1. Remove the front bumper (see page 20-85).
2. Disconnect the 1P connector (B), and remove the horn (A).



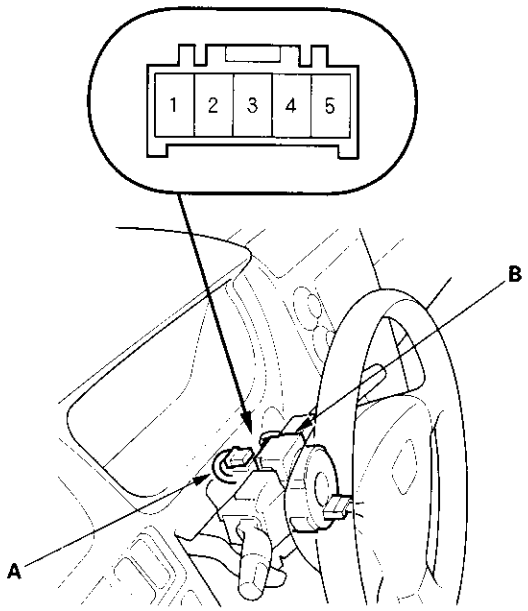
3. Test the horn by connecting battery power to the terminal (A) and ground to the bracket (B). The horn should sound.



4. If it fails to sound, replace it.

Horn Switch Test

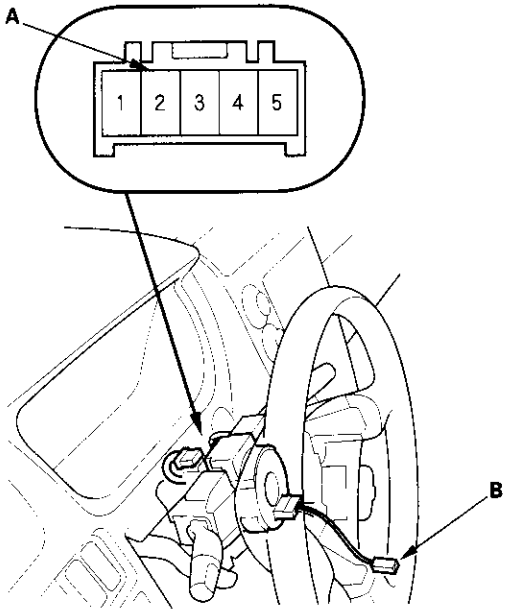
1. Remove the steering column covers (see page 17-9).
2. Disconnect the dashboard wire harness B 5P connector (A) from the cable reel (B).



3. Using a jumper wire , connect the dashboard wire harness B 5P connector (A) No. 2 terminal to body ground .

   - If the horns sound, go to step 4.
   - If the horns do not sound, check these items:
     - Horn relay
     - No. 7 (15A) fuse in the under-hood fuse/relay box
     - Horns (see page 22-122).
     - An open in the wire

4. Reconnect the dashboard wire harness B 5P connector (A), and disconnect the horn switch positive 1P connector (B).



5. Using a jumper wire, connect the horn switch positive 1P connector (B) to ground.

   - If the horns sound, go to step 6.
   - If the horns do not sound, replace the cable reel.

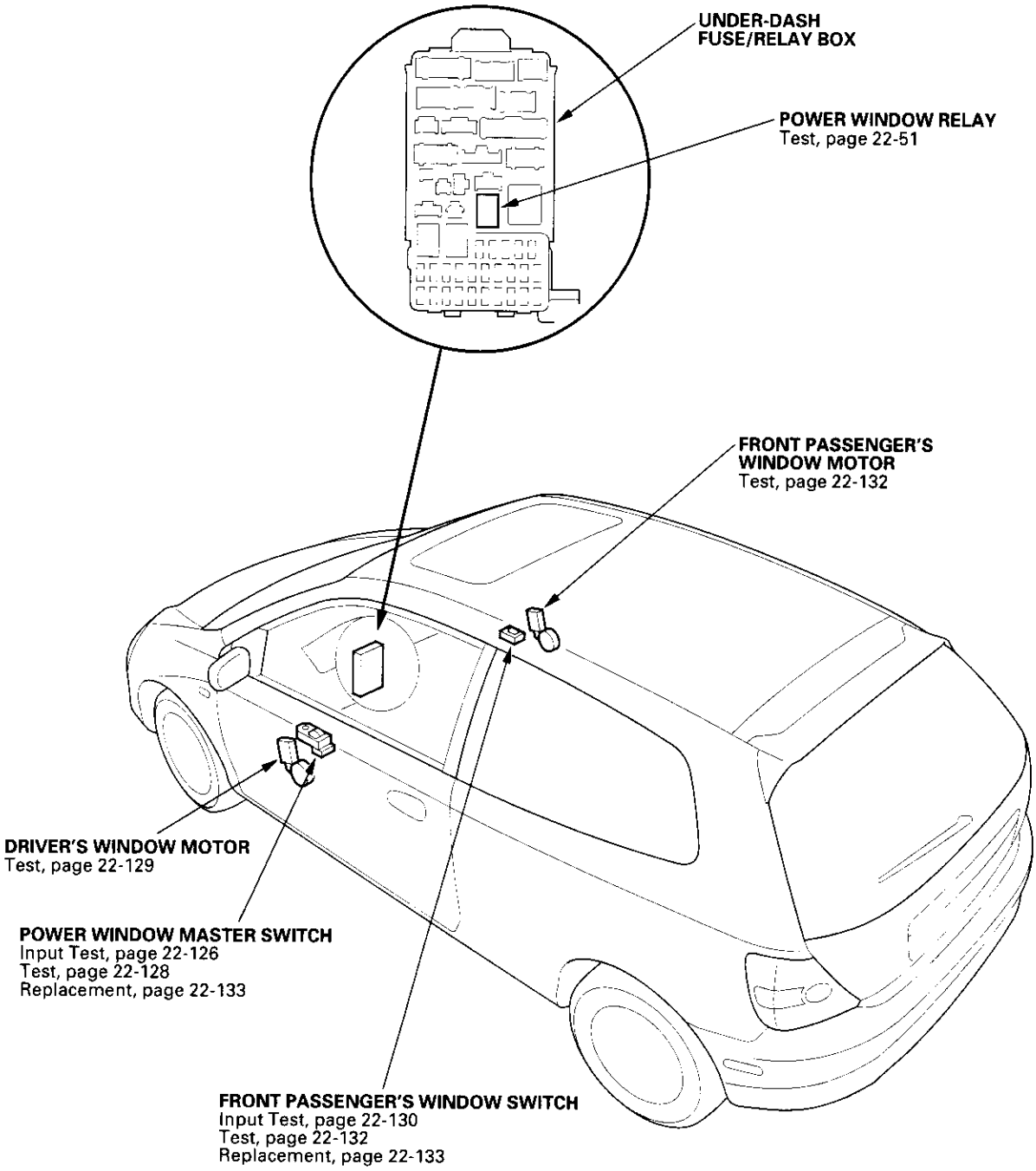
6. Reconnect the horn switch positive 1P conector (B).

7. Using a jumper wire, connent the steering wheel to body ground.

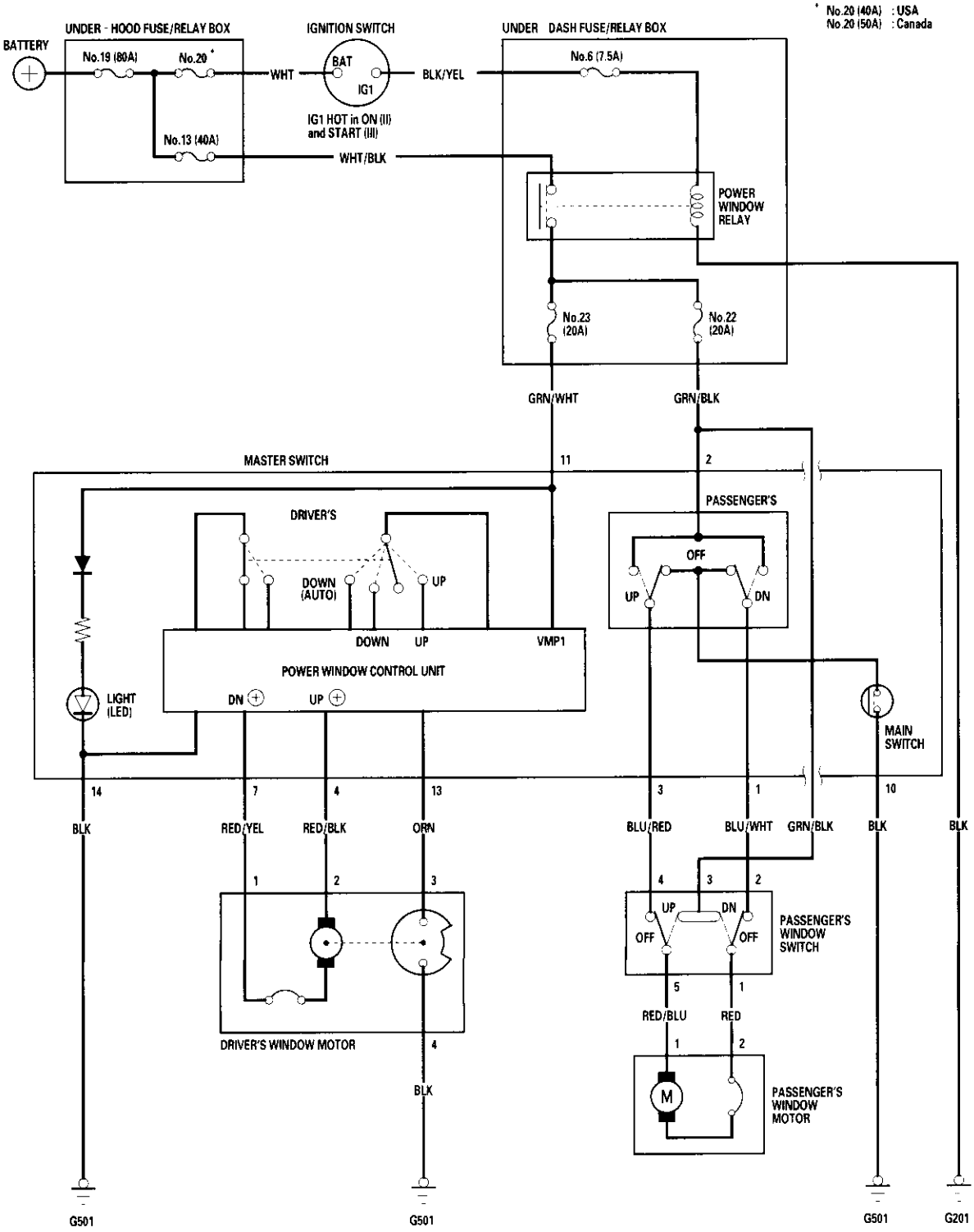
8. Close the contacts between the horn plate and the contact plate.

   - If the horns sound, replace the steering column.
   - If the horns do not sound, replace the horn and contact plate.

Component Location Index



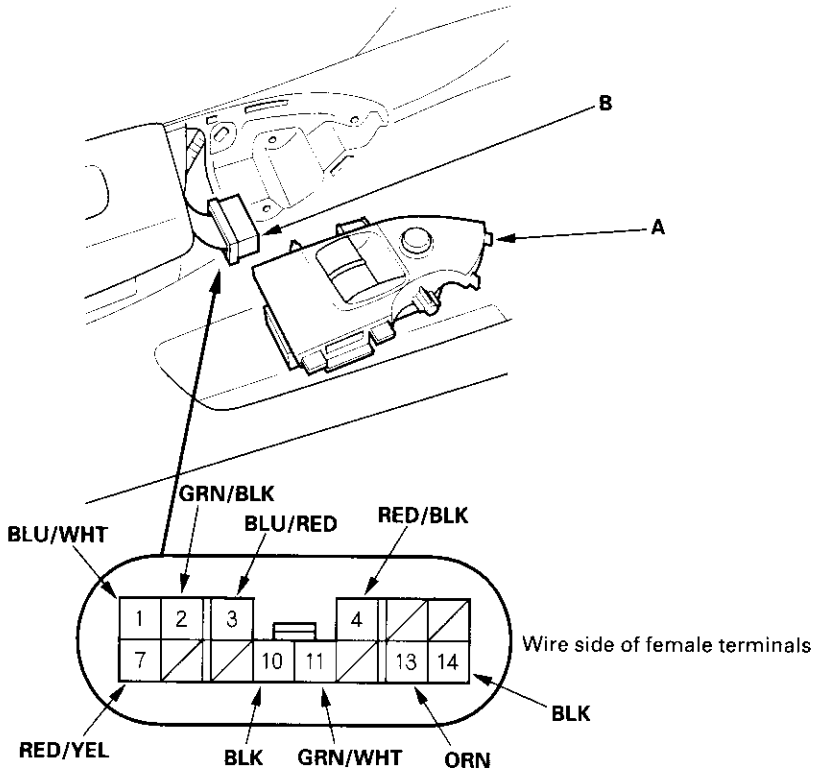
Circuit Diagram



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 window master switch (A) (see page 22-133).
2. Disconnect the 14P connector (B) from the 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 connector still disconnected, 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 5.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
10 14	BLK	Under all conditions	Check for continuity to ground: There should be continuity.	• Poor ground (G501) • An open in the wire
11 2	GRN/WHT GRN/BLK	Ignition switch ON (II)	Check for voltage to ground: There should be battery voltage.	• Blown No. 6 (7.5A) fuse in the under-dash fuse/relay box • Blown No. 22, 23 (20A) fuse in the under-dash fuse/relay box • Faulty power window relay • Poor ground (G201) • An open in the wire
7 4	RED/YEL RED/BLK	Connect the No. 11 and No. 7 terminals, and the No. 4 and No. 14 terminals, and turn the ignition switch ON (II).	Check for driver's window motor operation: It should run (the driver's window moves down).	• Faulty driver's window motor • An open in the wire
3 1	BLU/RED BLU/WHT	Connect the No. 2 and No. 1 terminals, and the No. 3 and No. 10 terminals, and turn the ignition switch ON (II).	Check for passenger's window motor operation: It should run (the passenger's window moves down).	• Faulty passenger's window motor • Faulty passenger's window switch • An open in the wire

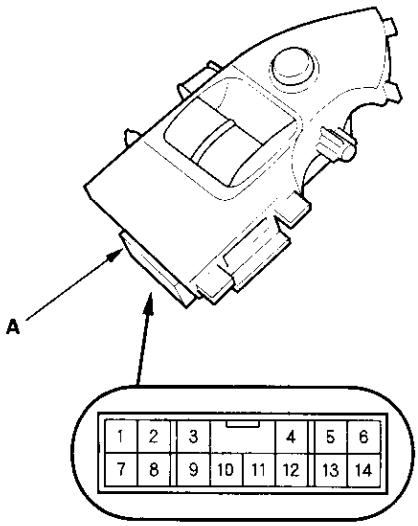
5. Reconnect the 14P connector to the switch, and perform the following input tests.

   - 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 result is not obtained
13	ORN	Connect the No. 11 and No. 7 terminals, and the No. 4 and No. 14 terminals, and turn the ignition switch ON (II).	Check for voltage between the No. 13 and No. 14 terminals: About 6 V should be indicated with the driver's window motor running.	• Faulty driver's window motor • An open in the wire

Master Switch Test

1. Remove the power window master switch (see page 22-133).
2. Disconnect the 14P connector from the switch (A).



3. Check for continuity between the terminals in each switch position according to the table.

Driver's Window Switch:

The driver's switch is combined with the control unit so you cannot isolate the switch to test it. Instead, run the master switch input test procedures on page 22-126. If the tests are normal, the driver's switch must be faulty.

Passenger's Window Switch:

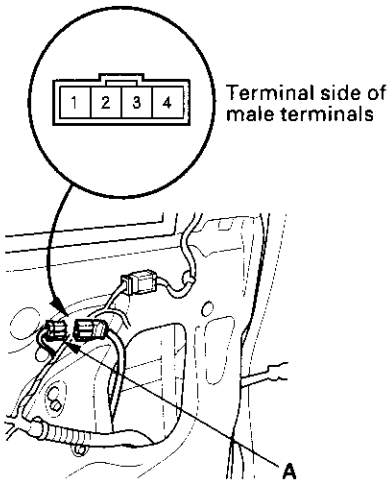
Position \ Terminal	Main Switch	1	2	3	10
OFF	ON	○		○	○
	OFF	○		○	
UP	ON	○	○	○	○
	OFF		○	○	
DOWN	ON	○	○		○
	OFF	○	○		

4. If the switch is faulty, replace the switch.

Driver's Window Motor Test

Motor Test:

1. Remove the door panel (see page 20-4).
2. Disconnect the 4P connector (A) from the driver's window motor.



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	2
UP	⊖	⊕
DOWN	⊕	⊖

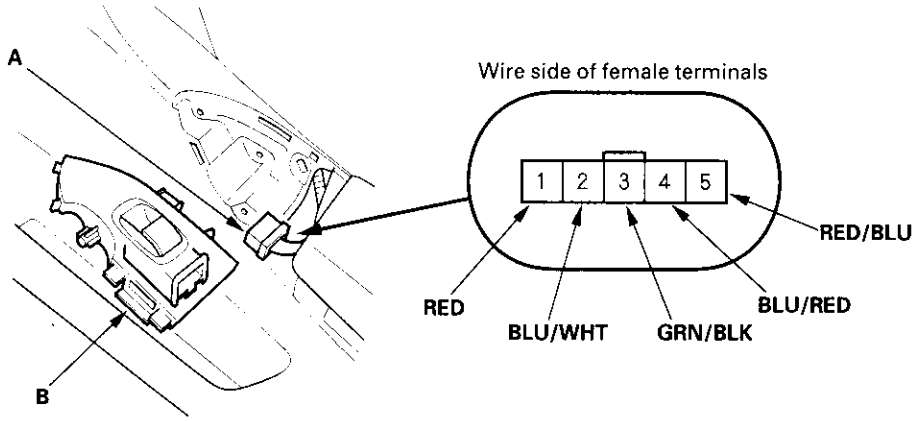
4. If the motor does not run or fails to run smoothly, replace it.

Pulser Test:

1. Reconnect the 4P connector to the driver's window motor, and reconnect the 20P connector to the power window master switch.
2. Connect the test leads of a voltmeter to the No. 3 and No. 4 terminals of the driver's window motor 4P connector.
3. Run the motor using the master switch. The voltmeter should read about 6 V.
4. If the voltage is not as specified, check for an open in the wires. If the wires are OK, replace the driver's window motor.

Passenger's Window Switch Input Test

1. Remove the switch panel (see page 20-4).
2. Disconnect the 5P connector (A) from the switch (B).



3. Input 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. Reconnect the connector, and using a back probe, make these input tests at the connector. If any test indicates a problem, find and correct the cause, then recheck the system.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
3	GRN/BLK	Ignition switch ON (II)	Check for voltage to ground: There should be battery voltage.	• Blown No. 6 (7.5A) fuse in the under-dash fuse/relay box • Blown No. 22 (20A) fuse in the under-dash fuse/relay box • Faulty power window relay • An open in the wire • Poor ground (G201)
2	BLD/WHT	Ignition switch ON (II) At the master window switch, press and hold down the passenger's switch	Check for voltage to ground: There should be battery voltage.	• Faulty master window switch • An open in the wire
4	BLU/RED	Ignition switch ON (II) At the master window switch, pull up and hold the passenger's switch	Check for voltage to ground: There should be battery voltage.	• Faulty master window switch • An open in the wire

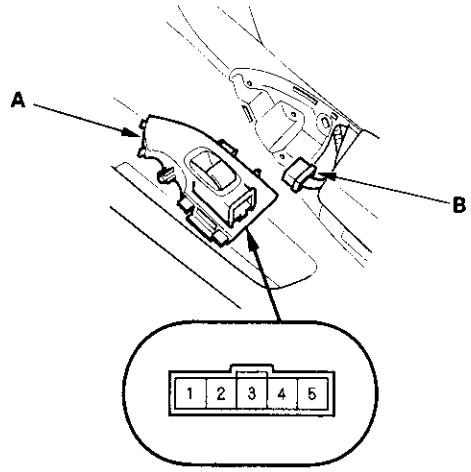
5. Disconnect the 5P connector, and make these input tests.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
1	RED	Connect the No. 2 terminal to the No. 1 terminal, and the No. 4 terminal to the No. 5 terminal, and turn the ignition switch ON (II), and press the down button on the power window master switch for the passenger's window.	Check for passenger's window motor operation: If should run (the passenger's window moves down). There should be battery voltage.	• Faulty master's window switch • An open in the wire • Faulty passenger's window motor.
5	RED/BLU			

6. If all the tests prove OK, the switch must be faulty. Replace it.

Passenger's Window Switch Test

1. Remove the switch panel (see page 20-4).
2. Remove the power window switch (A) from the door panel.
3. Disconnect the 5P connector (B) from the passenger's power window switch.



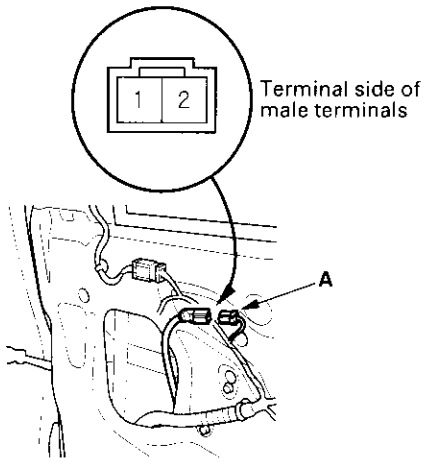
4. Check for continuity between the terminals in each switch position according to the table.

Terminal / Position	1	2	3	4	5
UP	○	○			○
OFF	○	○		○	○
DOWN	○		○	○	○

5. If the continuity is not as specified, replace the switch.

Passenger's Window Motor Test

1. Remove the passenger's door panel (see page 20-4).
2. Disconnect the 2P connector (A) from the passenger's power window motor.



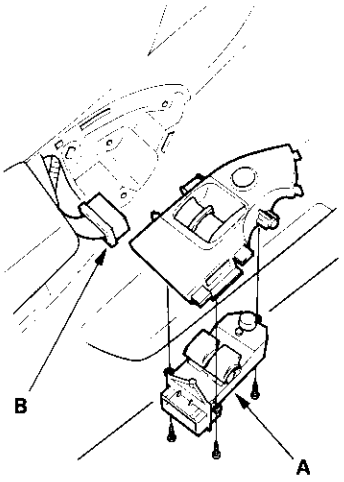
3. Test the motor in each direction by connecting battery power and ground according to the table. When the motor stops running, disconnect one lead immediately.

Terminal / Direction	1	2
UP	⊕	⊖
DOWN	⊖	⊕

4. If the motor does not run or fails to run smoothly, replace it.

Master Switch Replacement

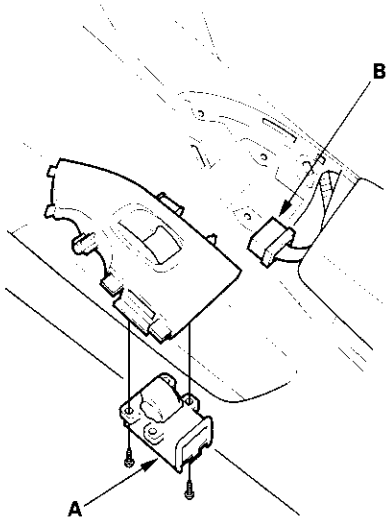
1. Remove the door grip (see page 20-4).
2. Remove the power window master switch (A) from the door panel.



3. Disconnect the 14P connector (B) from the switch.
4. Remove the three screws and the switch from the switch panel.

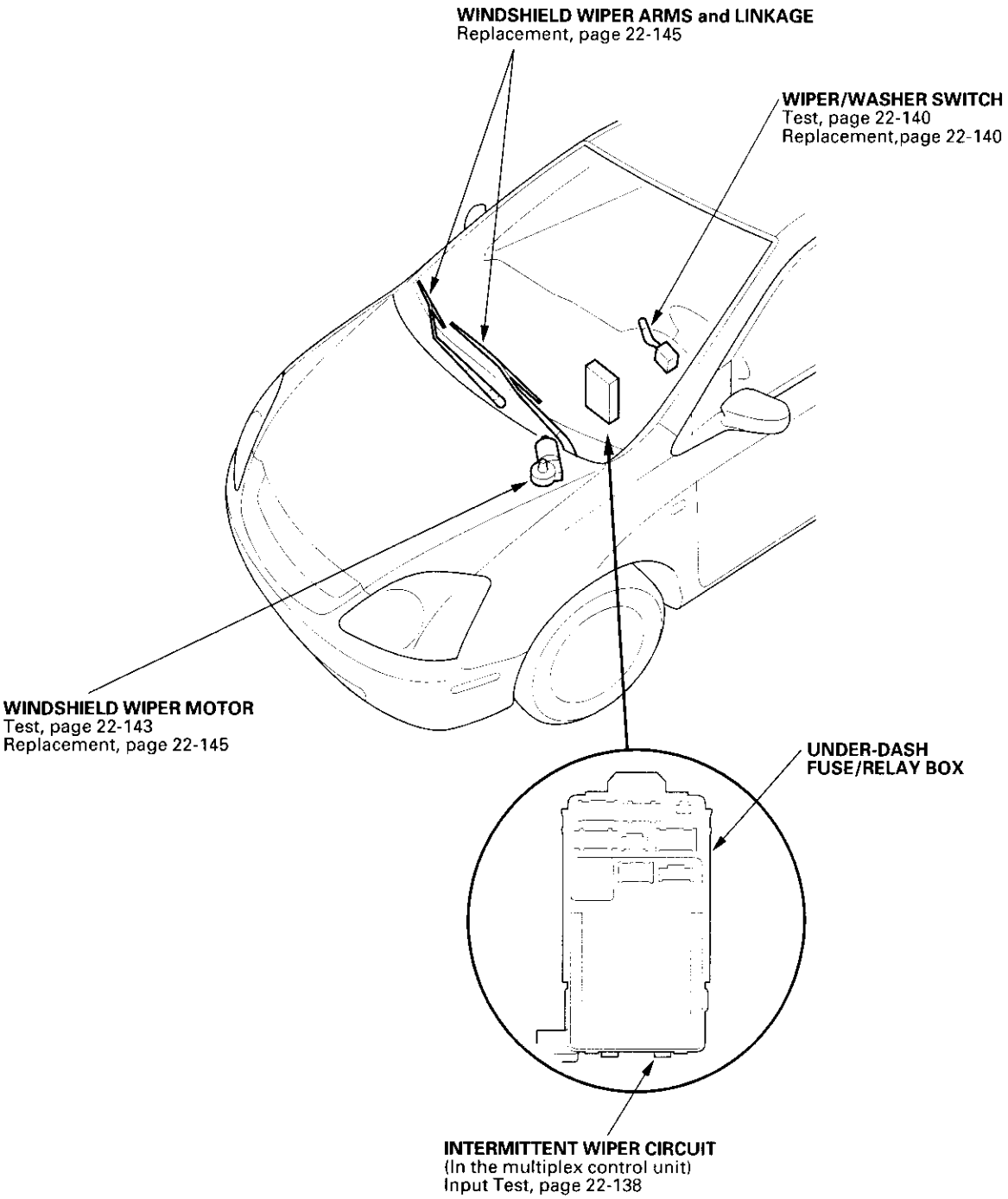
Passenger's Window Switch Replacement

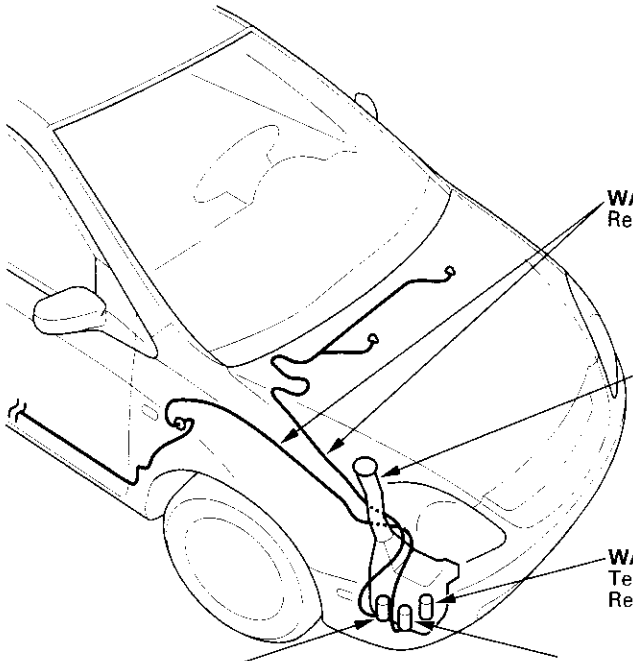
1. Remove the door grip (see page 20-4).
2. Remove the power window switch (A) from the door panel.



3. Disconnect the 5P connector (B) from the switch.
4. Remove the two screws and the switch from the switch panel.

Component Location Index





WASHER TUBES
Replacement, page 22-147

WASHER RESERVOIR
Replacement, page 22-146

WASHER FLUID LEVEL SWITCH (Canada)
Test, page 22-144
Replacement, page 22-144

REAR WINDOW WASHER MOTOR
Test, page 22-144
Replacement, page 22-146

WINDSHIELD WASHER MOTOR
Test, page 22-144
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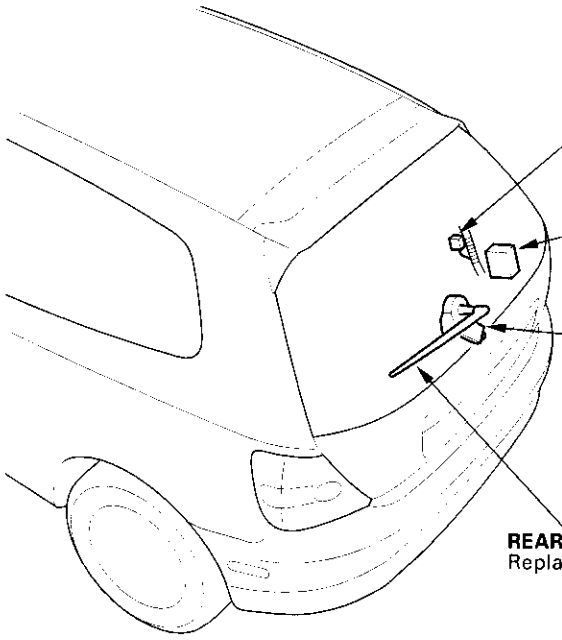

NOISE CONDENSER
Capacity Test, page 22-107

REAR WINDOW WIPER INTERMITTENT CONTROL UNIT
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REAR WINDOW WIPER MOTOR
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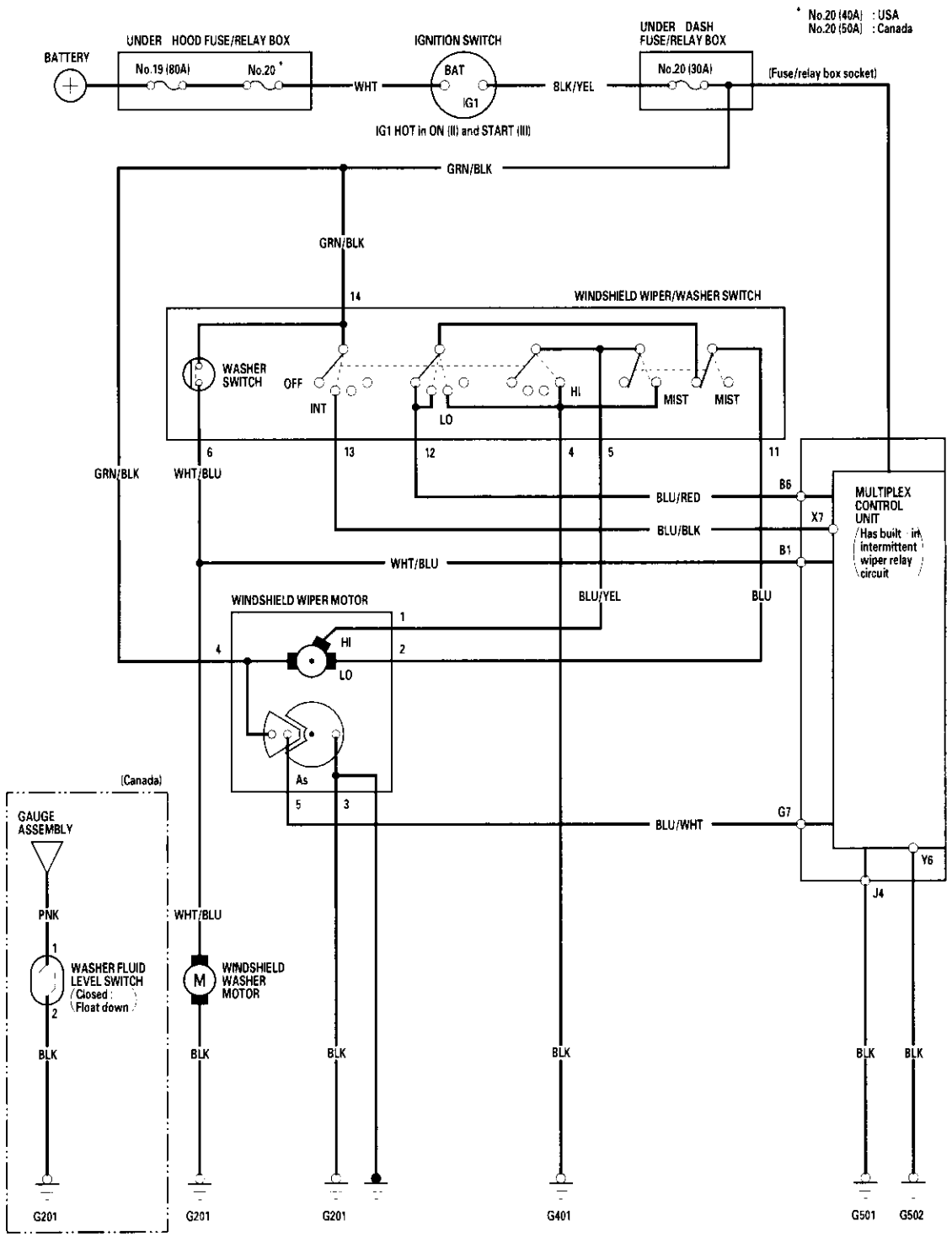
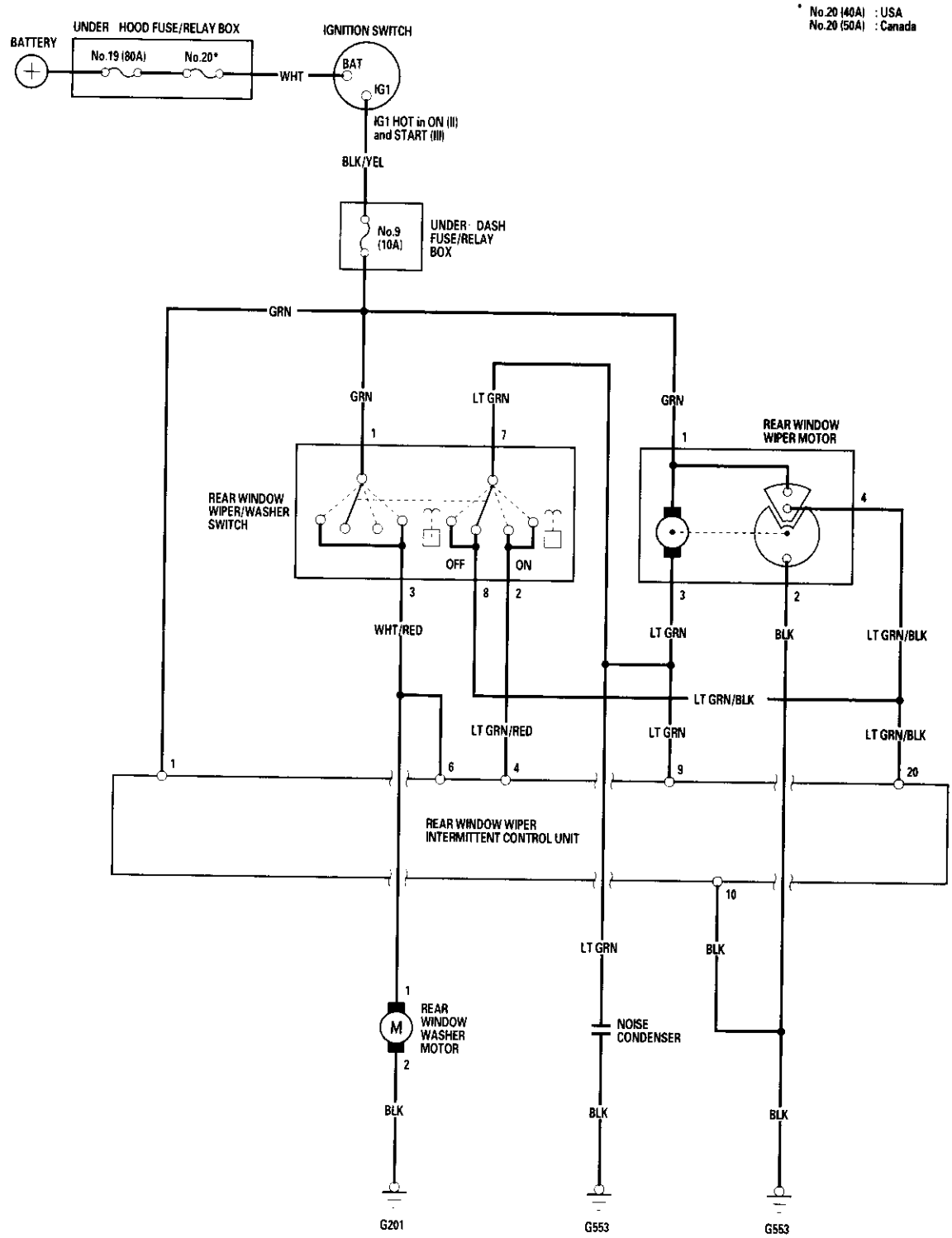
REAR WINDOW WIPER ARM
Replacement, page 22-146

Circuit Diagram - Windshield

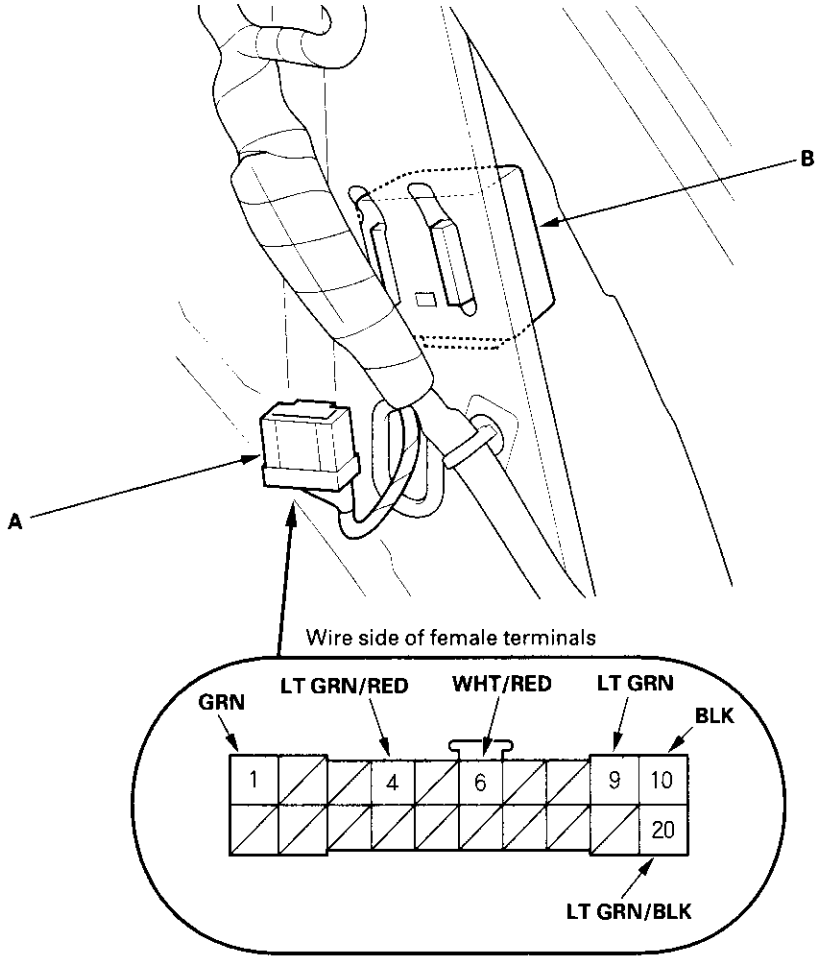


Circuit Diagram - Rear Window



Rear Window Wiper Intermittent Control Unit Input Test

1. Remove the right rear side trim panel (see page 20-51).
2. Disconnect the 20P connector (A) from the rear window wiper intermittent control unit (B).



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.

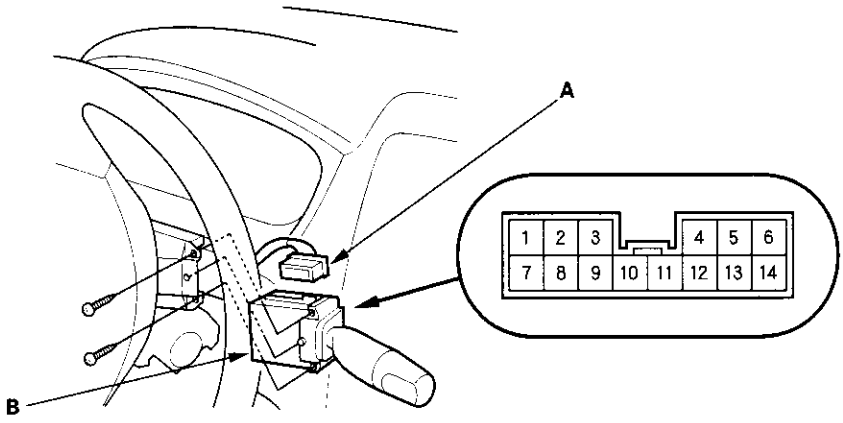
4. With the connector still disconnected, make these input tests at the connectors.

   - 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 it.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
1	GRN	Ignition switch ON (II)	Check for voltage to ground: There should be battery voltage.	• Blown No. 9 (10A) fuse in the under-dash fuse/relay box • An open in the wire
10	BLK	Under all conditions	Check for continuity to ground: There should be continuity.	• Poor ground (G553) • An open in the wire
6	WHT/RED	Ignition switch ON (II) and rear window washer switch ON	Check for voltage to ground: There should be battery voltage.	• Blown No. 9 (10A) fuse in the under-dash fuse/relay box • Faulty rear window wiper/ washer switch • An open in the wire
4	LT GRN/ RED	Ignition switch ON (II) and rear window wiper switch ON	Attach to ground: The rear window wiper motor should run.	
9	LT GRN	Ignition switch ON (II)	Attach to ground: The rear window wiper motor should run.	• Blown No. 9 (10A) fuse in the under-dash fuse/relay box • Faulty rear window wiper motor • An open in the wire
20	LT GRN/ BLK	Ignition switch ON (II)	Check for voltage to ground: There should be battery voltage.	• Blown No. 9 (10A) fuse in the under-dash fuse/relay box • Faulty rear window wiper motor • An open in the wire

Wiper/Washer Switch Test/Replacement

1. Remove the driver's dashboard lower cover (see page 20-60).
2. Remove the steering column covers (see page 17-9).
3. Disconnect the 14P connector (A) from the wiper/washer switch (B)



4. Remove the two screws, then pull out the wiper/washer 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.

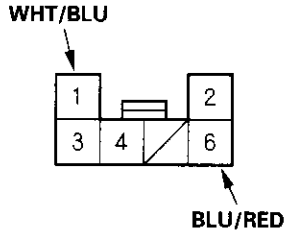
Terminal / Position	6	5	4	14	13	12	11
OFF						○—○	
INT				○—○		○—○	
LO			○				○
HI		○—○					
Mist switch ON		○—○					
Washer switch ON	○			○			

Control Unit Input Test

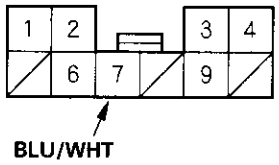
1. Before testing, troubleshoot the multiplex control system (see page 22-172).
2. Remove the dashboard lower cover.
3. Disconnect the under-dash fuse/relay box connectors B, G, J, X and Y.

   NOTE: All connectors are wire side of female terminals.

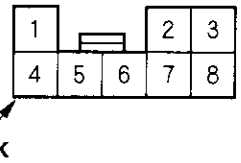
UNDER-DASH FUSE/RELAY BOX CONNECTOR B (6P)



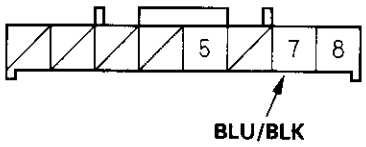
UNDER-DASH FUSE/RELAY BOX CONNECTOR G (10P)



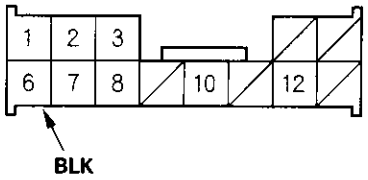
UNDER-DASH FUSE/RELAY BOX CONNECTOR J (8P)



UNDER-DASH FUSE/RELAY BOX CONNECTOR X (8P)



UNDER-DASH FUSE/RELAY BOX CONNECTOR Y (13P)



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 are OK, go to step 5.

(cont'd)

Control Unit Input Test (cont'd)

5. Reconnect the connectors, and make these input tests at the connector.

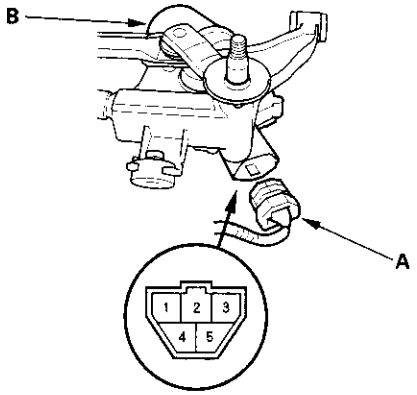
   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If all the input tests prove OK, the multiplex control unit must be faulty. Replace the under-dash fuse/relay box assembly.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
J4	BLK	Under all conditions	Check for voltage to ground: There should be 1 V or less.	• Poor ground (G501) • An open in the wire
Y6	BLK	Under all conditions	Check for voltage to ground: There should be 1 V or less.	• Poor ground (G502) • An open in the wire
B1	WHT/BLU	Ignition switch ON (II) and washer switch ON	Check for voltage to ground: There should be battery voltage.	• Blown No. 20 (20A) fuse in the under-dash fuse/relay box • Faulty wiper/washer switch • An open in the wire
B6	BLU/RED	Ignition switch ON (II) and wiper switch OFF (wiper motor stopped)	Check for voltage to ground: There should be battery voltage.	• Blown No. 20 (20A) fuse in the under-dash fuse/relay box • Faulty wiper/washer switch • Faulty windshield wiper motor • An open in the wire
G7	BLU/WHT	Ignition switch ON (II) and wipers in park position	Check for voltage to ground: There should be battery voltage.	• Blown No. 20 (20A) fuse in the under-dash fuse/relay box • Faulty windshield wiper motor • An open in the wire
X7	BLU/BLK	Ignition switch ON (II) and wiper switch in INT	Check for voltage to ground: There should be battery voltage.	• Blown No. 20 (20A) fuse in the under-dash fuse/relay box • Faulty wiper/washer switch • An open in the wire

Wiper Motor Test

Windshield:

1. Open the hood, and carefully remove the cap nuts and the wiper arms. Make sure they do not touch the hood.
2. Remove the hood seal and cowl cover.
3. Disconnect the 5P connector (A) from the motor (B).



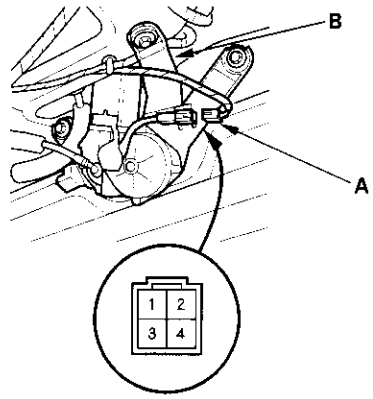
4. Test the motor by connecting battery power and ground according to the table. If the motor does not run or fails to run smoothly, replace it.

Terminal / Position	1	2	4
LOW SPEED		⊖	⊕
HIGH SPEED	⊖		⊕

5. Test the wiper motor park switch by connecting an analog voltmeter between the No. 5 (+) terminal and ground, and run the motor at low or high speed. The voltmeter should indicate 12 V and 4 V or less alternately. If it does not, replace the motor.

Rear Window:

1. Open the hatch, and remove the hatch trim panel (see page 20-53).
2. Disconnect the 4P connector (A) from the motor (B).



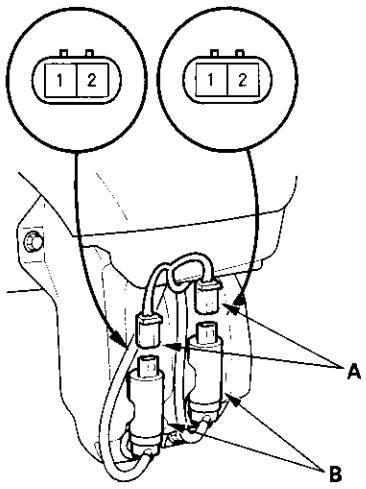
3. Test the motor by connecting battery power and ground according to the table. If the motor does not run or fails to run smoothly, replace it.

Terminal / Battery	1	3
Connected	⊕	⊖

4. Test the wiper motor park switch by connecting an analog voltmeter between the No. 4 (+) terminal and ground, and run the motor. The voltmeter should indicate 12 V and 4 V or less alternately. If it does not, replace the motor.

Washer Motor Test

1. Partially remove the right inner fender (see page 20-102).
2. Disconnect the 2P connectors (A) from the washer motors (B).



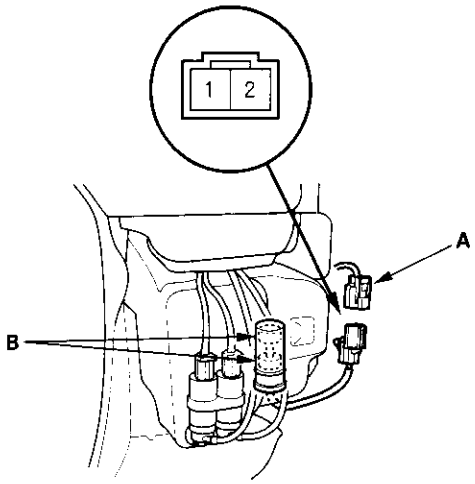
3. Test the washer motor by connecting battery power and ground according to the table.

Terminal / Battery	1	2
Connected	⊕	⊖

4. If the motor does not run, replace it.

Washer Fluid Level Switch Test/ Replacement - Canada

1. Partially remove the right inner fender (see page 20-102).
2. Disconnect the 2P connector (A) from the washer level switch.



3. Remove the washer fluid level switch from the reservoir.

   NOTE: Fluid may flow out the opening.

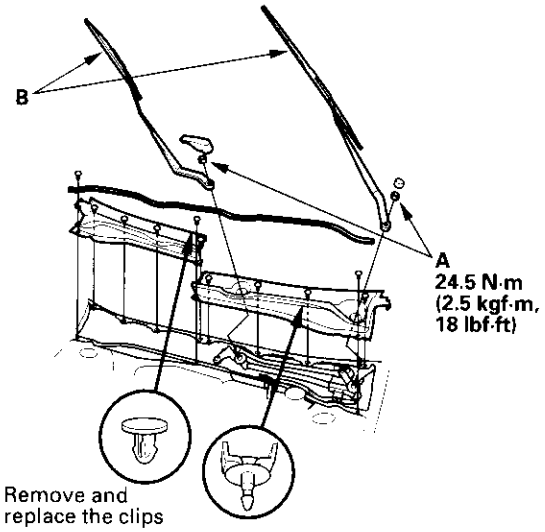
4. Check for continuity between the terminals in each float (B) position according to the table.

Terminal / Position	1	2
FLOAT UP		
FLOAT DOWN	○	○

5. If the continuity is not as specified, replace the switch.

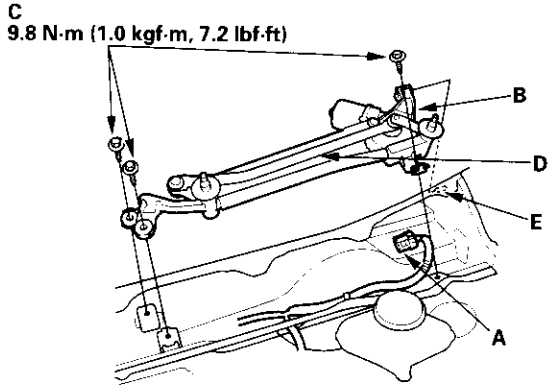
Windshield Wiper Motor Replacement

1. Open the hood. Remove the nuts (A) and the windshield wiper arms (B).



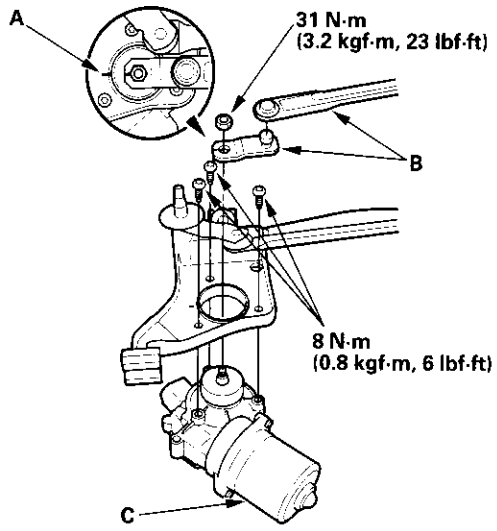
2. Remove the hood seal and cowl cover.

3. Disconnect the 5P connector (A) from the wiper motor (B).



4. Remove the bolts (C), move windshield wiper linkage assembly (D) toward the passenger's side of the vehicle until it slides off of the pin (E), then remove the assembly.

5. Scribe a line (A) across the link and windshield wiper linkage to show the original adjustment. Separate the windshield wiper linkage (B) from the wiper motor (C).

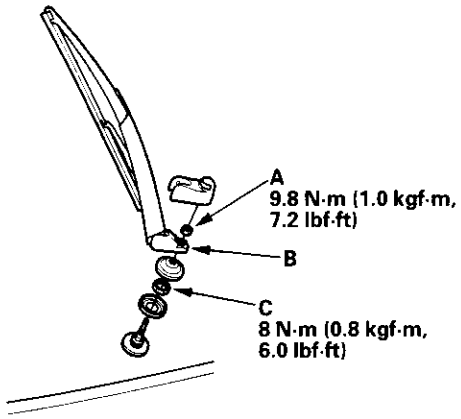


6. Install in the reverse order of removal, and note these items.

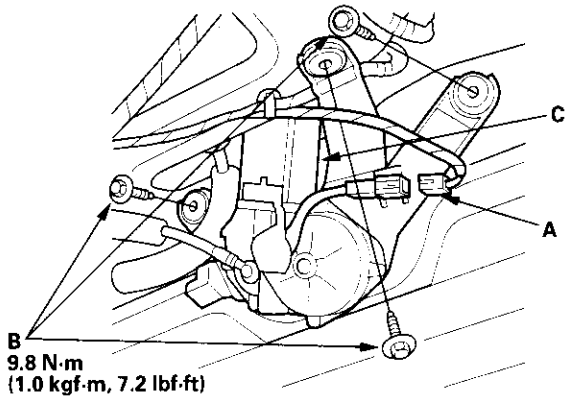
- Apply multipurpose grease to the moving parts.
- Before reinstalling the wiper arms, turn the wiper switch ON, then OFF to return the wiper shafts to the park position.
- If necessary, replace any damaged clips.
- Check the wiper motor operation.

Rear Window Wiper Motor Replacement

1. Open the hatch, and remove the hatch trim panel (see page 20-53).
2. Remove the mounting nut (A), the wiper arm (B) and the special nut (C).



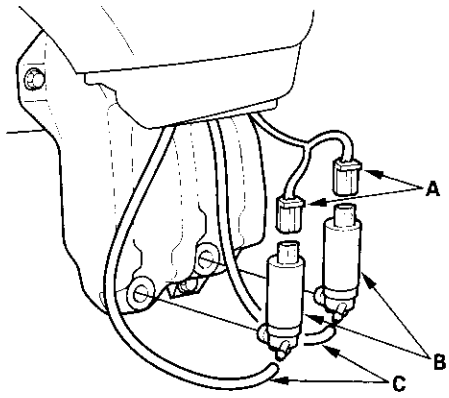
3. Disconnect the 4P connector (A), remove the three mounting bolts (B), then remove the rear window wiper motor (C).



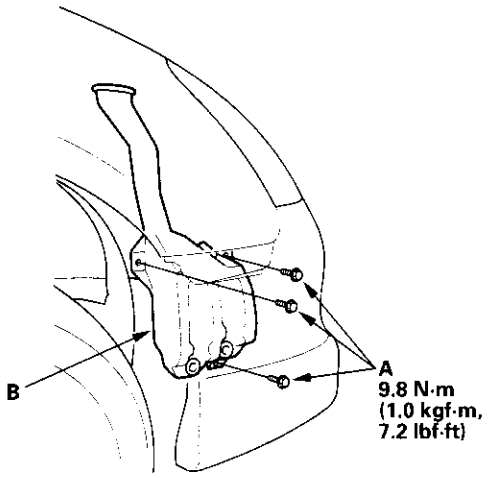
4. Install in the reverse order of removal, and note these items.
   - Apply multipurpose grease to the moving parts.
   - Before reinstalling the wiper arm, turn the wiper switch ON, then turn OFF to return the wiper shaft to the park positon.
   - If necessary, replace any damaged clips.
   - Check the wiper motor operation.

Washer Reservoir Replacement

1. Partially remove the right inner fender.
2. Disconnect the 2P connectors (A) from the washer motors (B) and level switch (Canada).

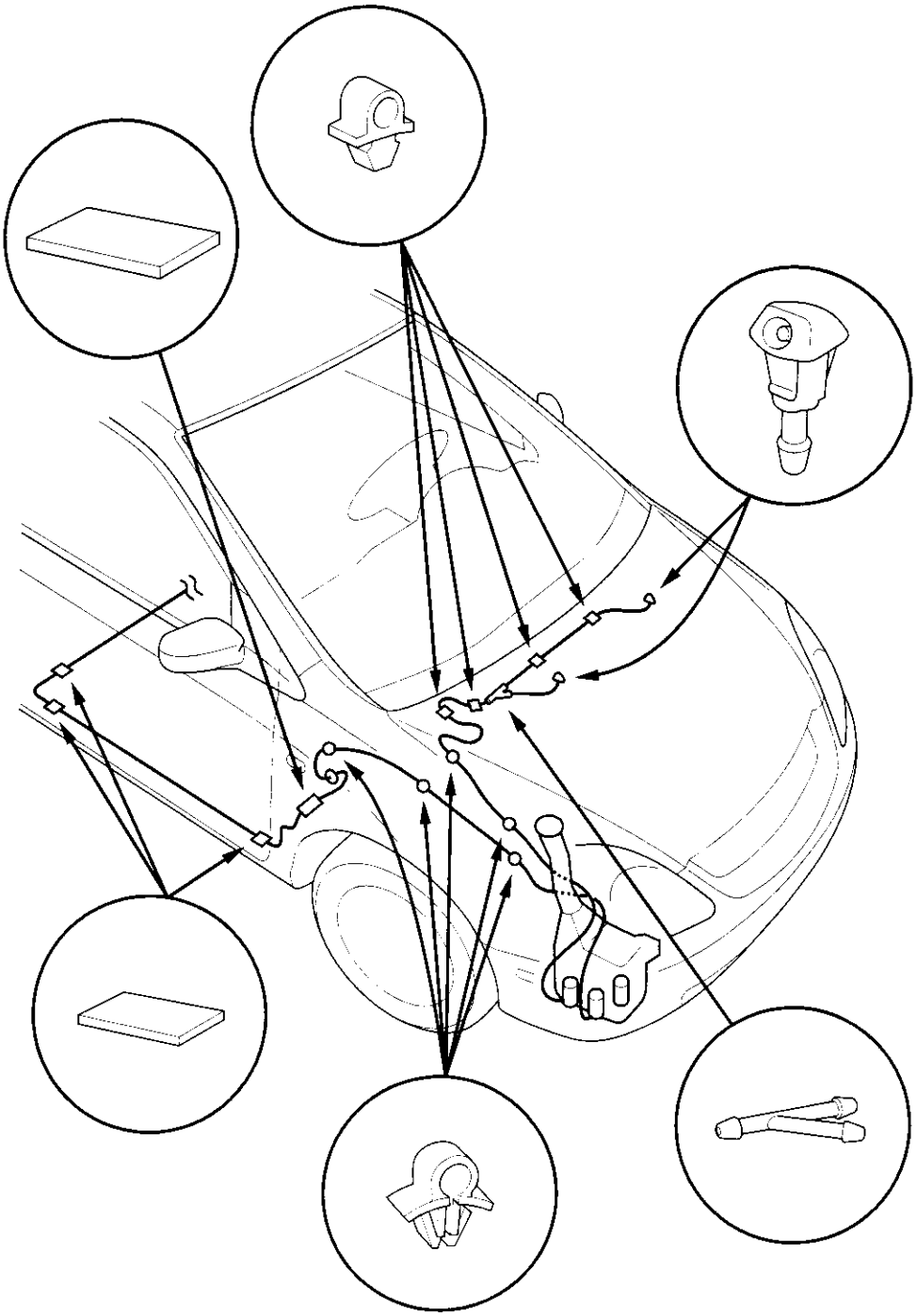


3. Disconnect the tubes (C) from the washer motors.
4. Remove the three bolts (A) and the washer reservoir (B).



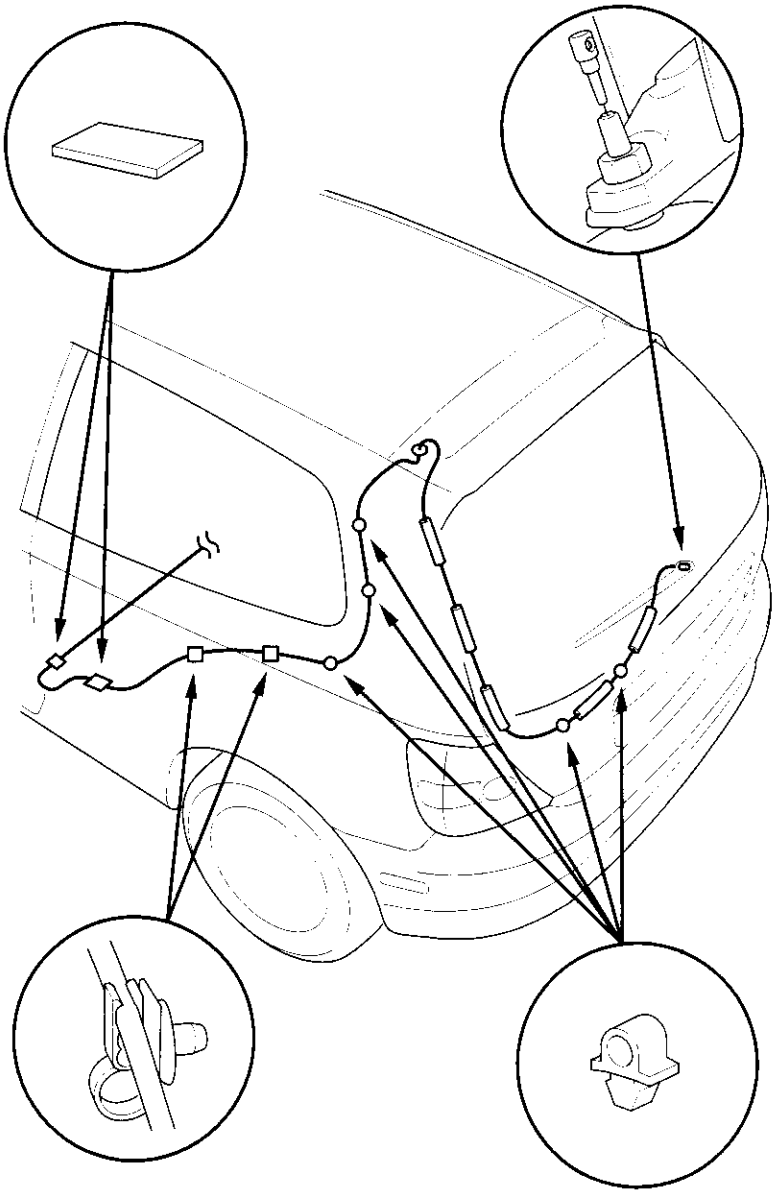
Washer Tubes Replacement

1. Remove the right inner fender (see page 20-102).
2. Remove the washer nozzles and clips, then remove the tubes.



(cont'd)

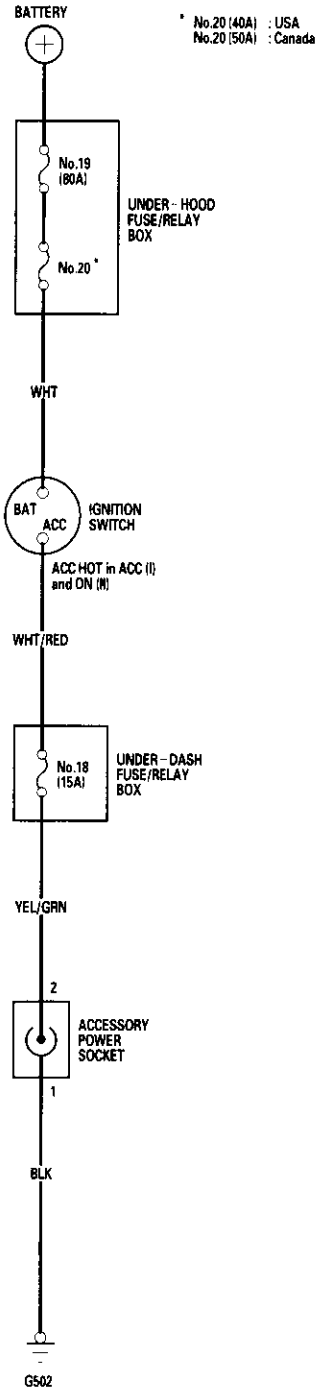
Washer Tubes Replacement (cont'd)



3. Install in the reverse order of removal. Take care not to pinch the washer tubes. Check the washer operation.

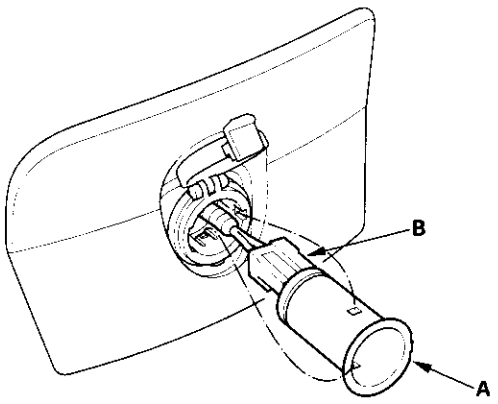
Accessory Power Socket

Circuit Diagram

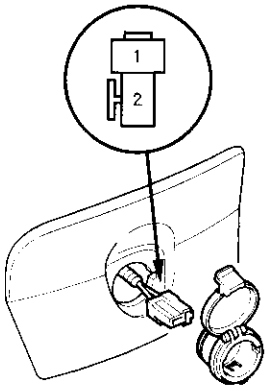


Accessory Power Socket Test/ Replacement

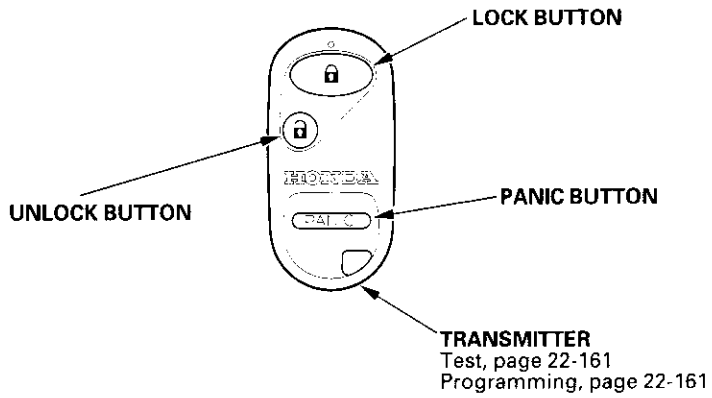
1. Carefully pry the accessory power socket (A) out from the center lower cover.
2. Disconnect the 2P connector (B) from the socket.

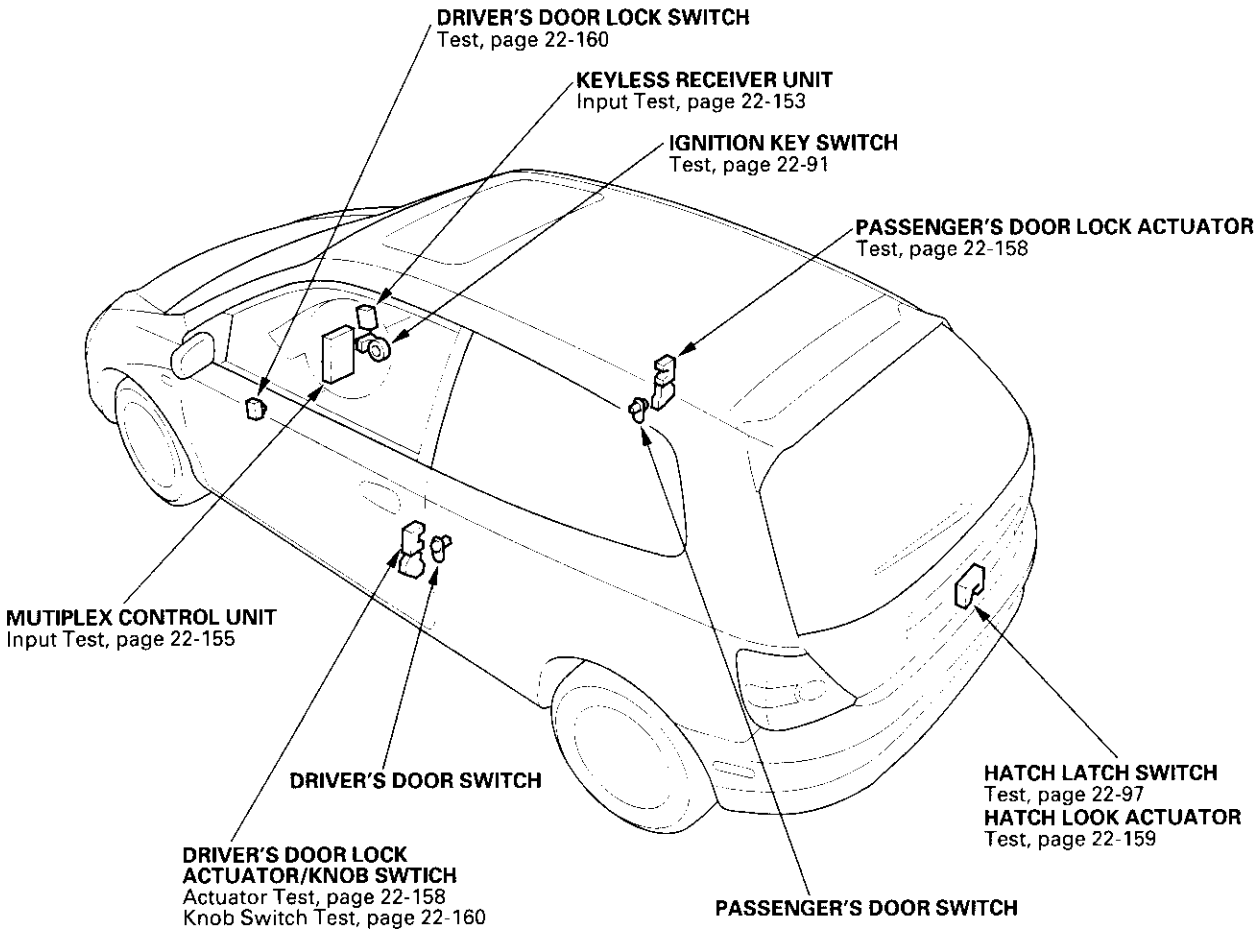


3. Inspect the connector terminals to be sure they are all making good contact.
   - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
   - If the terminals look OK, go to step 4.
4. Turn the ignition switch ACC (I), and check for voltage between the No. 1 and No. 2 terminals.
   - There should be battery voltage.
   - If there is no battery voltage, check for:
     - poor ground (G502).
     - an open in the wire.
     - blown No. 18 (15A) fuse in the under-dash fuse/relay box.

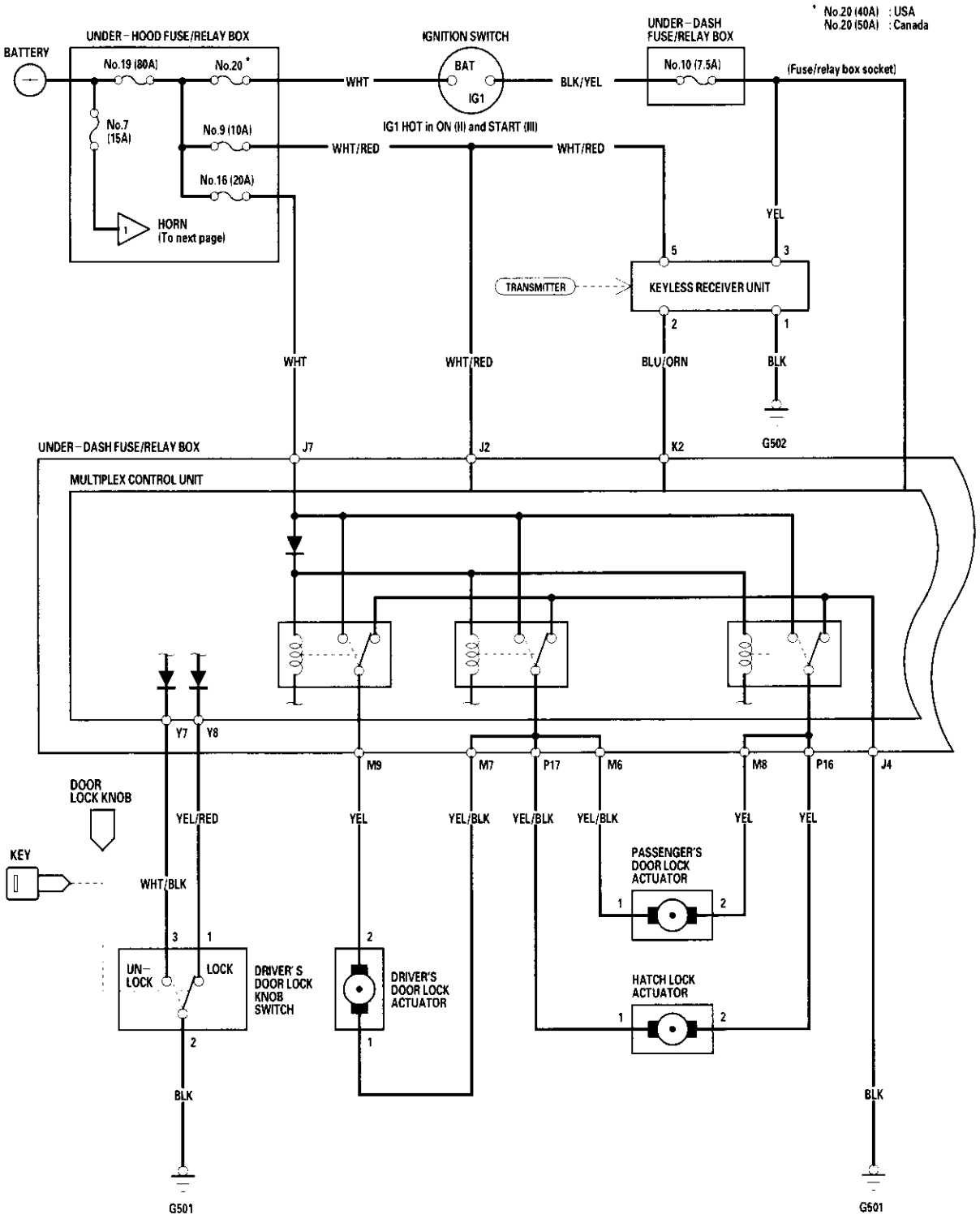


Component Location Index



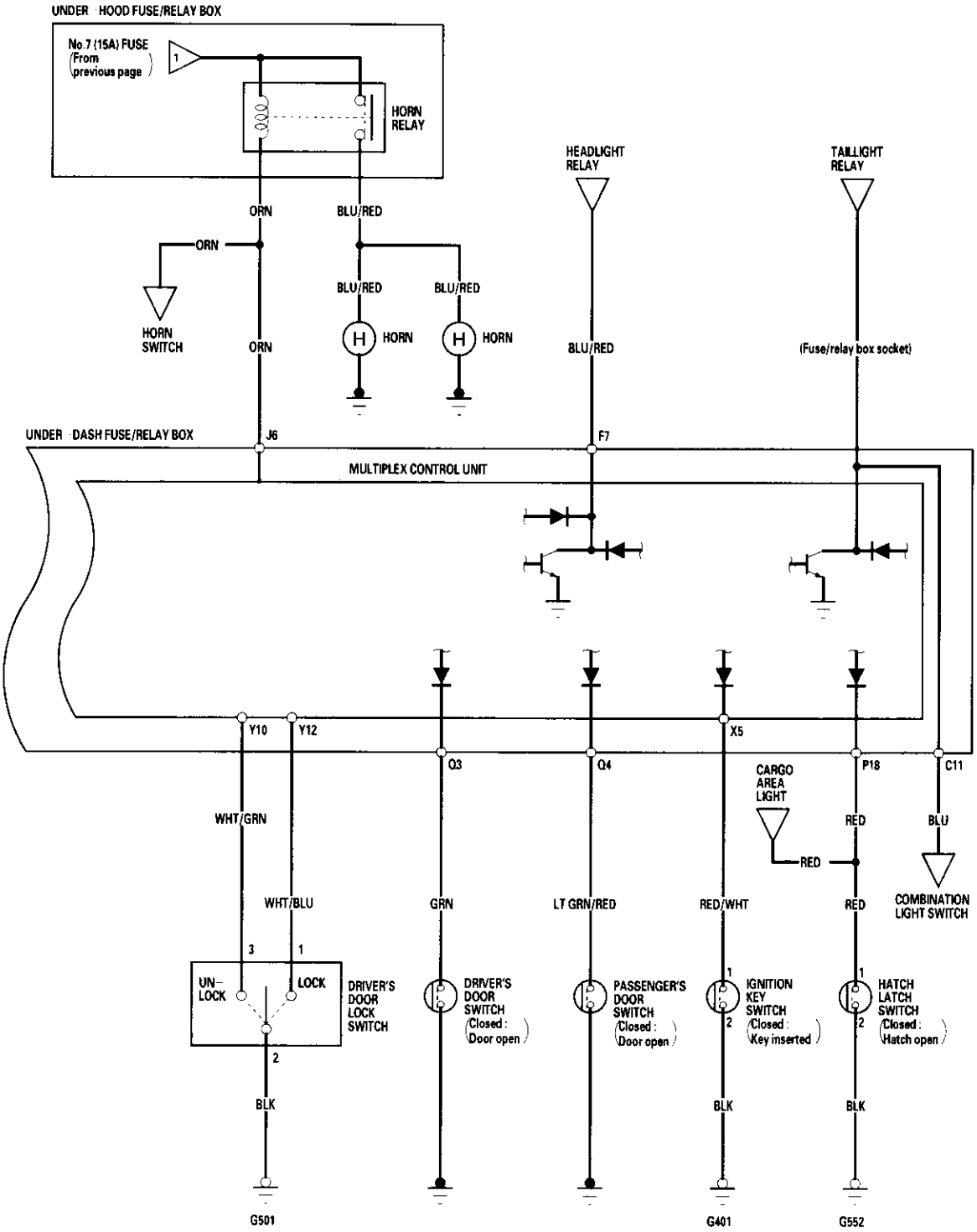


Circuit Diagram



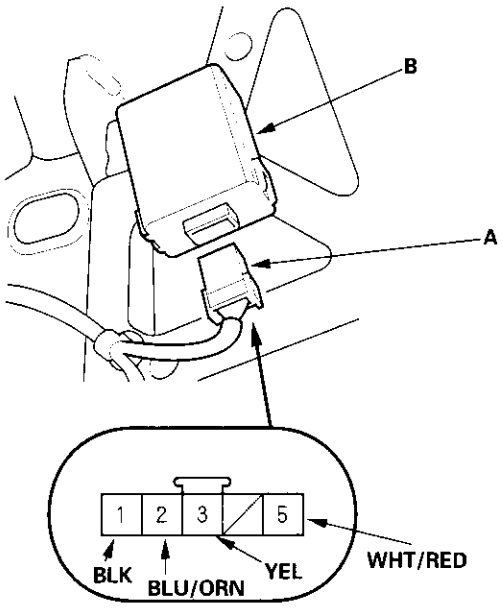
(cont'd)

Circuit Diagram (cont'd)



Keyless Receiver Unit Input Test

1. Remove the driver's dashboard lower cover (see page 20-59).
2. Remove the audio unit (see page 22-100).
3. Disconnect the 5P connector (A) from the keyless receiver 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 are OK, go to step 5.

(cont'd)

Keyless Receiver Unit Input Test (cont'd)

5. With the connector still disconnected, make the input test at the connector.

   - If test indicates a problem, find and correct the cause, then recheck the system.
   - If the input test proves OK, go to step 6.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
2	BLU/ORN	Under all conditions	Check for continuity between the No. 2 terminal and the No. 2 terminal of the under-dash fuse/relay box connector K (17P). There should be continuity.	An open in the wire

6. Reconnect the 5P 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, replace the keyless receiver unit.

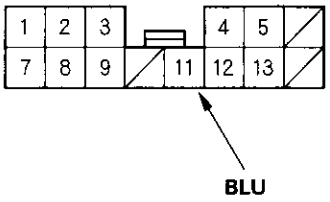
Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
1	BLK	Under all conditions	Check for voltage to ground: There should be 1 V or less.	• Poor ground (G502) • An open in the wire
3	YEL	Ignition switch ON (II)	Check for voltage to ground: There should be battery voltage.	• Blown No. 10 (7.5A) fuse in the under-dash fuse/relay box • An open in the wire
5	WHT/RED	Under all conditions	Check for voltage to ground: There should be battery voltage.	• Blown No. 9 (10A) fuse in the under-hood fuse/relay box • An open in the wire

Control Unit Input Test

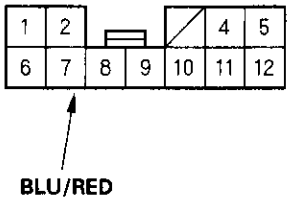
1. Before testing, troubleshoot the multiplex control system (see page 22-172).
2. Remove the dashboard lower cover.
3. Disconnect the under-dash fuse/relay box connectors.

   NOTE: All connectors are wire side of female terminals.

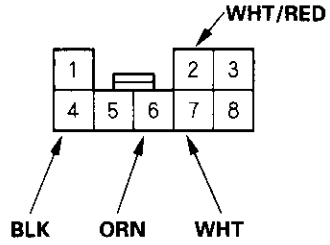
UNDER-DASH FUSE/RELAY BOX CONNECTOR C (14P)



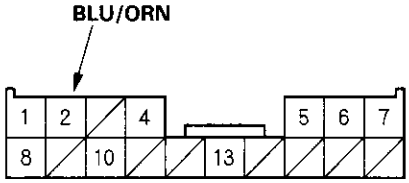
UNDER-DASH FUSE/RELAY BOX CONNECTOR F (12P)



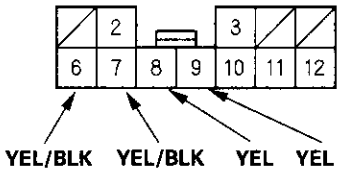
UNDER-DASH FUSE/RELAY BOX CONNECTOR J (8P)



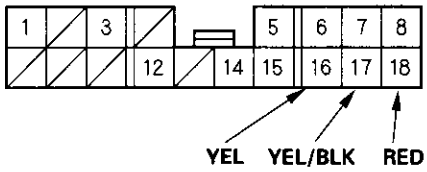
UNDER-DASH FUSE/RELAY BOX CONNECTOR K (17P)



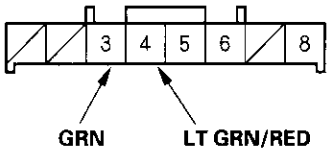
UNDER-DASH FUSE/RELAY BOX CONNECTOR M (12P)



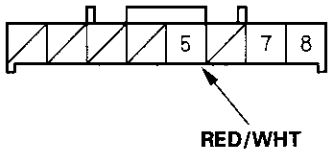
UNDER-DASH FUSE/RELAY BOX CONNECTOR P (18P)



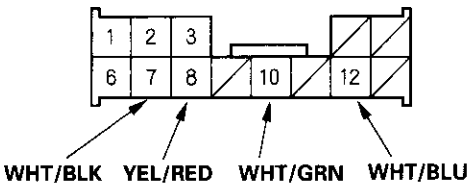
UNDER-DASH FUSE/RELAY BOX CONNECTOR Q (8P)



UNDER-DASH FUSE/RELAY BOX CONNECTOR X (8P)



UNDER-DASH FUSE/RELAY BOX CONNECTOR Y (13P)



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)

Control Unit Input Test (cont'd)

5. Reconnect all connections to the under-dash fuse/relay box, and make these input tests at the appropriate connectors on the under-dash fuse/relay box.

   - 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
C11	BLU	Under all conditions	Attach to ground: Parking, side marker, license plate lights, and taillights should come on.	• Blown No. 2 (15A) fuse in the under-hood fuse/relay box • Faulty taillight relay • Faulty under-dash fuse/relay box • An open in the wire
F7	BLU/RED	Under all conditions	Attach to ground: Headlights should come on.	• Blown No. 15 or 17 (15A) fuse in the under-hood fuse/relay box • Faulty headlight relay 1 or 2 • An open in the wire
J2	WHT/RED	Under all conditions	Check for voltage to ground: There should be battery voltage.	• Blown No. 9 (15A) fuse in the under-hood fuse/relay box • An open in the wire
J4	BLK	Under all conditions	Check for voltage to ground: There should be 1 V or less.	• Poor ground (G501) • An open in the wire
J6	ORN	Under all conditions	Attach to ground: The horns should sound.	• Blown No. 7 (15A) fuse in the under-hood fuse/relay box • Faulty horn relay • Faulty horns • An open in the wire
J7	WHT	Under all conditions	Check for voltage to ground: There should be battery voltage.	• Blown No. 16 (20A) fuse in the under-hood fuse/relay box • An open in the wire
P18	RED	Hatch open	Check for voltage to ground: There should be 1 V or less.	• Poor ground (G552) • Faulty hatch latch switch • An open in the wire
		Hatch closed	Check for voltage to ground: There should be 5 V or more.	• Faulty hatch latch switch • Short to ground
Q3	GRN	Driver's door open	Check for voltage to ground: There should be 1 V or less.	• Faulty driver's door switch • An open in the wire
		Driver's door closed	Check for voltage to ground: There should be 5 V or more.	• Faulty driver's door switch • Short to ground
Q4	LT GRN /RED	Passenger's door open	Check for voltage to ground: There should be 1 V or less.	• Faulty passenger's door switch • An open in the wire
		Passenger's door closed	Check for voltage to ground: There should be 5 V or more.	• Faulty passenger's door switch • Short to ground
X5	RED/WHT	Ignition key inserted into the ignition switch	Check for voltage to ground: There should be 1 V or less.	• Poor ground (G401) • Faulty ignition key switch • An open in the wire
		Ignition key removed from the ignition switch	Check for voltage to ground: There should be 5 V or more.	• Faulty ignition key switch • Short to ground
Y7	WHT/BLK	Driver's door lock knob switch unlocked	Check for voltage to ground: There should be 1 V or less.	• Poor ground (G501) • Faulty driver's door lock knob switch • An open in the wire
		Driver's door lock knob switch locked	Check for voltage to ground: There should be 5 V or more.	• Faulty driver's door lock knob switch • Short to ground
Y8	YEL/RED	Driver's door lock knob switch locked	Check for voltage to ground: There should be 1 V or less.	• Poor ground (G501) • Faulty driver's door lock knob switch • An open in the wire
		Driver's door lock knob switch unlocked	Check for voltage to ground: There should be 5 V or more.	• Faulty driver's door lock knob switch • Short to ground
Y10	WHT/GRN	Driver's door lock switch unlocked	Check for voltage to ground: There should be 1 V or less.	• Poor ground (G501) • Faulty driver's door lock switch • An open in the wire
		Driver's door lock switch in neutral	Check for voltage to ground: There should be 5 V or more.	• Faulty driver's door lock switch • Short to ground
Y12	WHT/BLU	Driver's door lock switch locked	Check for voltage to ground: There should be 1 V or less.	• Poor ground (G501) • Faulty driver's door lock switch • An open in the wire
		Driver's door lock switch in neutral	Check for voltage to ground: There should be 5 V or more.	• Faulty driver's door lock switch • Short to ground

6. Disconnect the M, P, K and J connectors from the under-dash fuse/relay box, and make these input tests at the connectors.

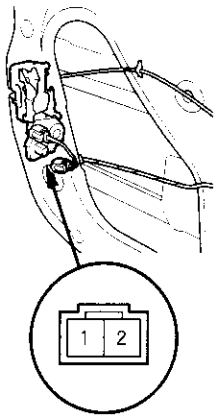
- If any test indicates a problem, find and correct the cause, then recheck the system.
- If all the input tests prove OK, the multiplex control unit must be faulty. Replace the under-dash fuse/relay box assembly.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
K2	BLU/ORN	Under all conditions	Check for continuity between the K2 terminal and the keyless receiver unit 5P connector disconnected: There should be continuity.	• An open in the wire
M7	YEL/BLK	Connect J7 terminal to M7 [M9] terminal, and M9 [M7] terminal to J4 terminal.	Check actuator operation: The driver's door lock actuator should lock [unlock].	• Faulty driver's door lock actuator • An open in the wire
M9	YEL			
M6	YEL/BLK	Connect J7 terminal to M6 [M8] terminal, and M8 [M6] terminal to J4 terminal.	Check actuator operation: The passenger's door lock actuator should lock [unlock].	• Faulty passenger's door lock actuator • An open in the wire
M8	YEL			
P16	YEL	Connect J7 terminal to P17 [P16] terminal, and P16 [P17] terminal to J4 terminal.	Check actuator operation: The hatch lock actuator should lock [unlock].	• Faulty hatch lock actuator • An open in the wire
P17	YEL/BLK			

Door Lock Actuator Test

Driver's door:

1. Remove the driver's door panel (see page 20-4).
2. Disconnect the 2P connector from the actuator.



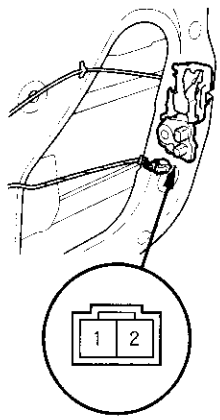
3. Check actuator operation by connecting power and ground according to the table. To prevent damage to the actuator, apply battery voltage only momentarily.

Terminal / Position	1	2
LOCK	⊖	⊖
UNLOCK	⊖	⊕

4. If the actuator does not operate as specified, replace it.

Passenger's door:

1. Remove the passenger's door panel (see page 20-4).
2. Disconnect the 2P connector from the actuator.



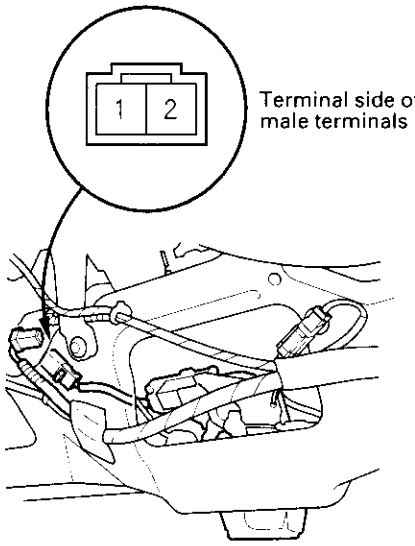
3. Check actuator operation by connecting power and ground according to the table. To prevent damage to the actuator, apply battery voltage only momentarily.

Terminal / Position	1	2
LOCK	⊕	⊖
UNLOCK	⊖	⊕

4. If the actuator does not operate as specified, replace it.

Hatch Lock Actuator Test

1. Open the hatch.
2. Remove the hatch lower trim panel (see page 20-53).
3. Disconnect the 2P connector from the hatch lock actuator.

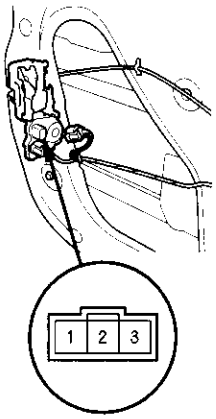


4. Check actuator operation by connecting power and ground according to the table. To prevent damage to the actuator, apply battery voltage only momentarily.

Terminal / Position	1	2
LOCK	⊖	⊕
UNLOCK	⊕	⊖

Door Lock Knob Switch Test

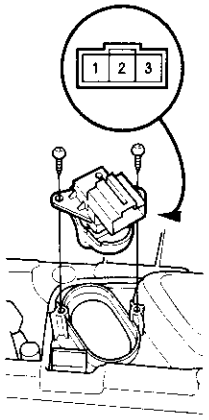
1. Remove the driver's door panel (see page 20-4).
2. Disconnect the 3P connector from the actuator.



3. Check for continuity between the No. 1 and No. 2 terminals.
   - There should be continuity when the door lock knob switch is in the LOCKED position.
   - There should be no continuity when the door lock knob switch is in the UNLOCKED position.
4. Check for continuity between the No. 2 and No. 3 terminals.
   - There should be continuity when the door lock knob switch is in the UNLOCKED position.
   - There should be no continuity when the door lock knob switch is in the LOCKED position.
5. If the continuity is not as specified, replace the door lock actuator.

Door Lock Switch Test

1. Remove the driver's door panel (see page 20-4).
2. Remove the two mounting screws and the door lock switch.

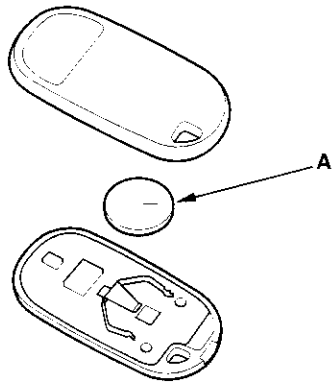


3. Check for continuity between the terminals.
   - There should be continuity between the No. 1 and No. 2 terminals when the door lock switch is in the LOCKED position.
   - There should be continuity between the No. 2 and No. 3 terminals when the door lock switch is in the UNLOCKED position.
4. If the continuity is not as specified, replace the door lock switch.

Transmitter Test

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 door 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.

1. 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 2.
2. 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 3.
3. 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 4.



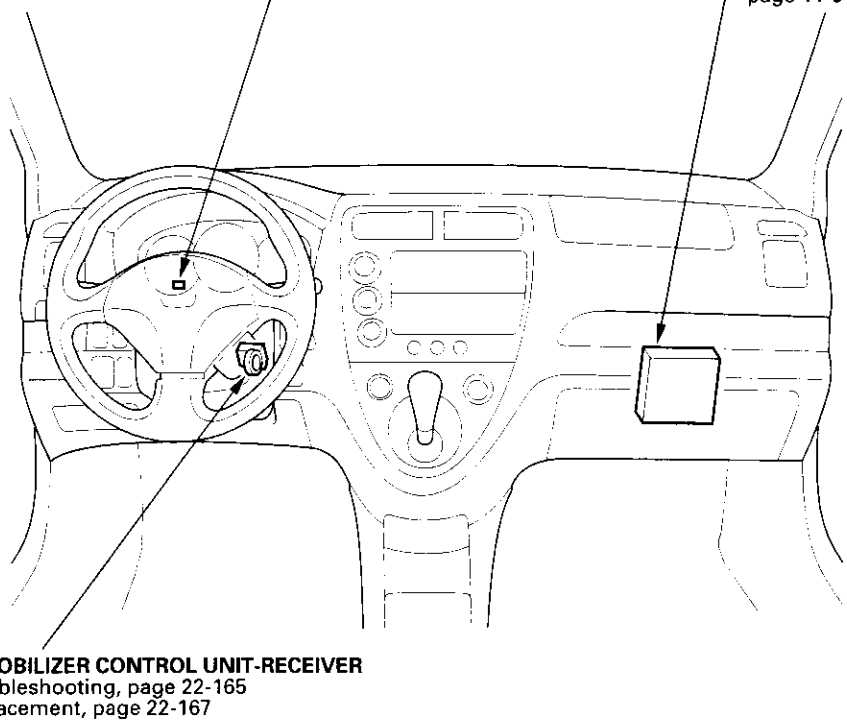
4. Reprogram the transmitter, then try to lock and unlock the doors.
   - If the doors lock and unlock, the transmitter is OK.
   - If the doors don't lock and unlock, replace the transmitter.

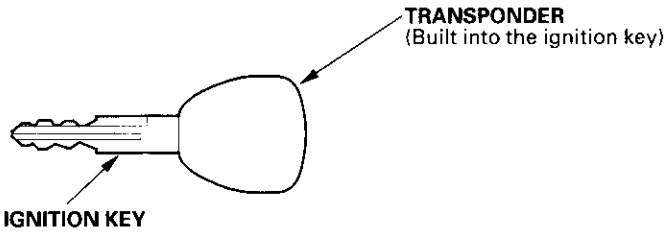
Transmitter Programming

Storing transmitter codes:
The codes of up to three transmitters can be stored in the keyless receiver unit memory. (If a fourth code is stored, the code which was input first will be erased.)
NOTE: It is important to maintain the time limits between the steps. Make sure the doors and the hatch are closed.

1. Turn the ignition switch ON (II).
2. Within 1 to 4 sec., push the transmitter lock or unlock button with the transmitter aimed at the receiver in the multiplex control unit behind the driver's side of the dash.
3. Within 1 to 4 sec., turn the ignition switch OFF.
4. Within 1 to 4 sec., turn the ignition switch ON (II).
5. Within 1 to 4 sec., push the transmitter lock or unlock button with the transmitter aimed at the receiver in the multiplex control unit behind the driver's side of the dash.
6. Within 1 to 4 sec., turn the ignition switch OFF.
7. Within 4 sec., turn the ignition switch ON (II).
8. Within 1 to 4 sec., push the transmitter lock or unlock button with the transmitter aimed at the receiver in the mupltiplex control unit behind the driver's side of the dash.
9. Within 1 to 4 sec., turn the ignition switch OFF.
10. Within 4 sec., turn the ignition switch ON (II).
11. Within 1 to 4 sec., push the transmitter lock or unlock button with the transmitter aimed at the receiver in the multiplex control unit behind the driver's side of the dash.
12. Confirm you can hear the sound of the door lock actuators. Within 1 to 4 sec., push the transmitter lock or unlock button again.
13. Within 10 sec., aim the transmitters (up to two additional ones) whose codes you want to store at the receiver, and press the transmitter lock or unlock buttons.
    Confirm that you can hear the sound of the door lock actuators after each transmitter code is stored.
14. Turn the ignition switch OFF, and pull out the key.
15. Confirm proper operation of the transmitter.

Component Location Index

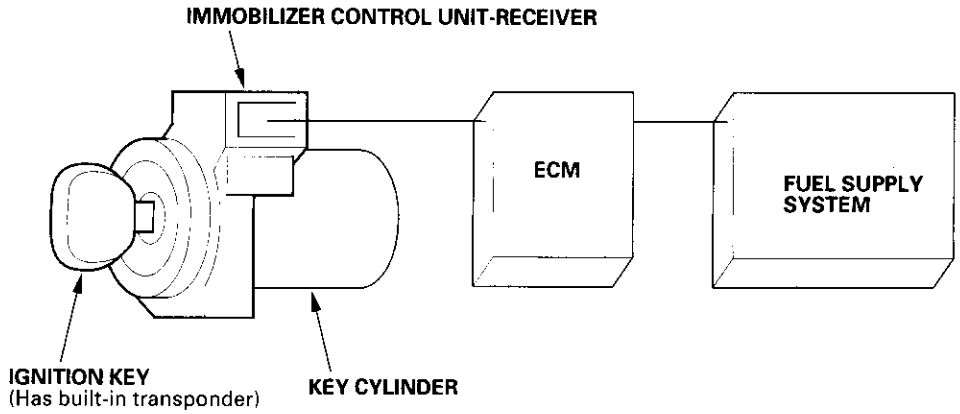




System Description

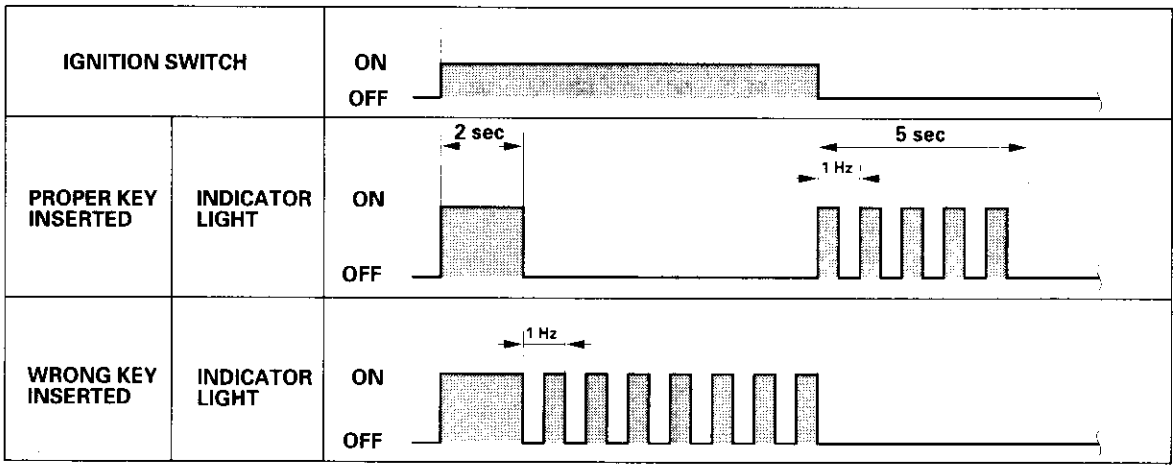
The vehicle is equipped with an immobilizer system that will disable the vehicle unless the proper ignition key is used. This system consists of a transponder located in the ignition key, an immobilizer control unit-receiver, an indicator light, and the ECM.

When the key is inserted in the ignition switch and turned to the ON (II) position, the immobilizer control unit-receiver sends power to the transponder in the ignition key. The transponder then sends a coded signal back to the immobilizer control unit-receiver which then sends a coded signal to the ECM.



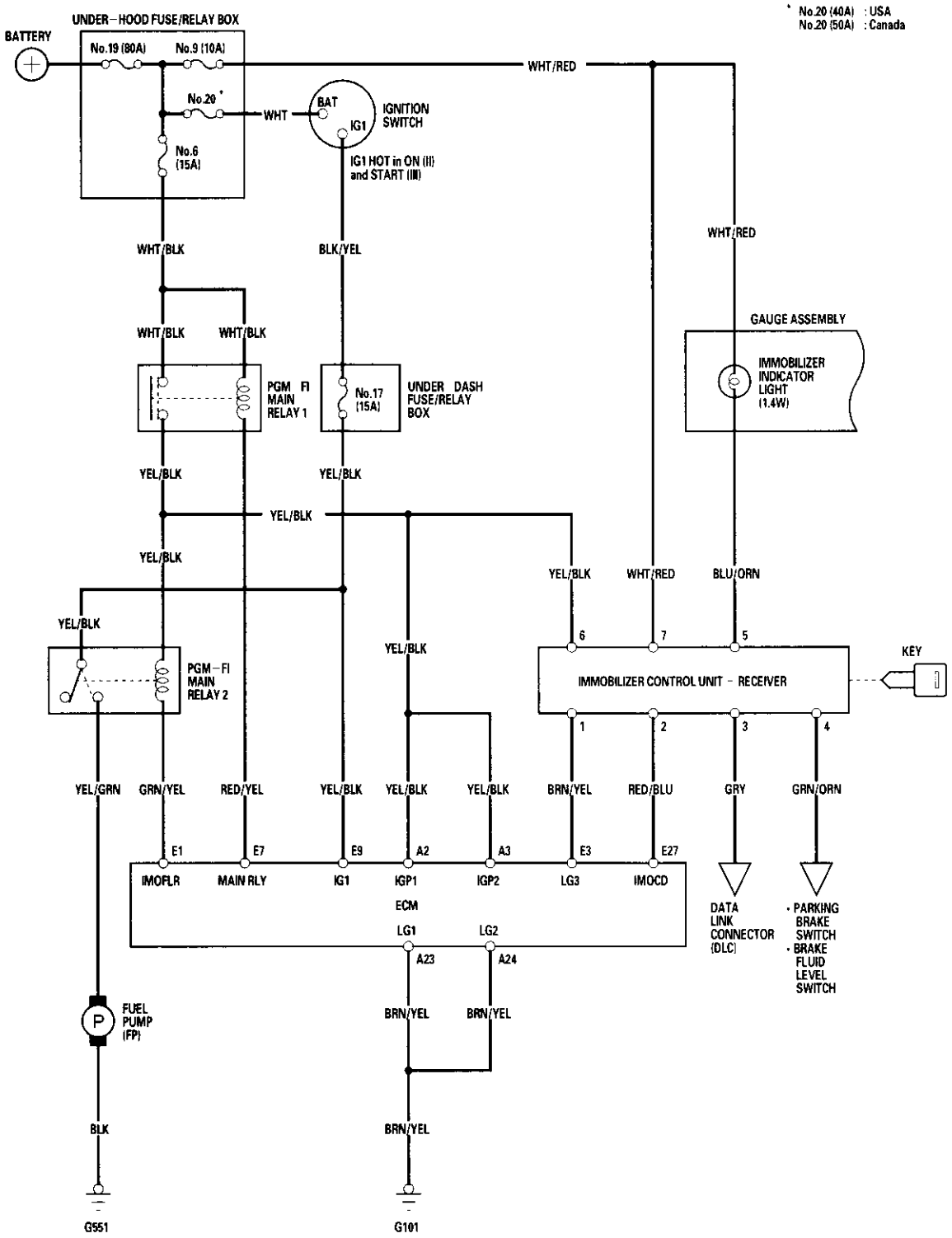
- If the proper key has been used, the immobilizer indicator light will come on for about 2 seconds, then go off.
- If the wrong key has been used or the code was not received or recognized by the unit, the indicator light will come on for about 2 seconds, then it will blink until the ignition switch is turned OFF.
- If the ignition switch is turned OFF, the indicator will blink for about 5 seconds to signal that the unit has reset correctly, then the indicator will go off.
- If the customer has lost his key, and cannot start the engine, contact Honda Customer Relations.

IMMOBILIZER INDICATOR LIGHT BLINKING PATTERN:



Immobilizer System

Circuit Diagram



Troubleshooting

Before troubleshooting the immobilizer system, troubleshoot any ECM Diagnostic Trouble Codes (DTCs) (see page 11-3), and make sure the ECM has no malfunction.

Note these items before troubleshooting:

- Due to the action of the immobilizer system, the engine takes slightly more time to start than on a vehicle without an immobilizer system.
- When the system is normal, and the proper key is inserted, the indicator light comes on for 2 seconds, then it will go off.
- If the indicator starts to blink after 2 seconds, or if the engine does not start, remove any other immobilizer keys or large key fobs on the key ring, then repeat the starting procedure.
  If the engine still does not start, continue with this procedure.

1. Turn the ignition switch ON (II) with proper key.

2. Check to see if the immobilizer indicator light comes on.

   Does the indicator light blink?

   YES—Disconnect the 7P connector from the immobilizer control unit-receiver, then go to step 9.

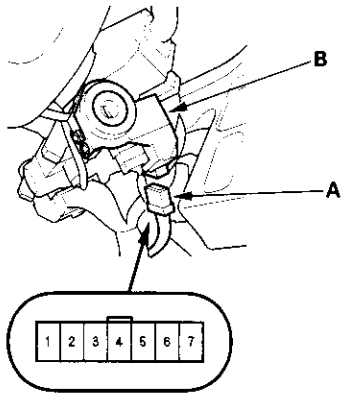
   NO—Check for these problems, then go to step 3.

   - Blown No. 9 (10A) fuse in the under-hood fuse/relay box.■
   - An open in the wire between the gauge assembly and the immobilizer control unit-receiver.■
   - A faulty immobilizer indicator light.■
   - An open in the wire between the gauge assembly and the under-hood fuse/relay box.■

3. Remove the driver's dashboard lower cover (see page 20-59).

4. Remove the steering column lower cover (see page 17-9).

5. Disconnect the 7P connector (A) from the immobilizer control unit-receiver (B).



6. Check for voltage between the immobilizer control unit-receiver 7P connector No. 7 terminal and body ground.

   Is there battery voltage?

   YES—Go to step 7.

   NO—Check for these problems:

   - Blown No. 9 (10A) fuse in the under-hood fuse/relay box.■
   - An open in the WHT/RED wire.■

7. Check for voltage between the immobilizer control unit-receiver 7P connector No. 6 terminal and body ground with the ignition switch ON (II).

   Is there battery voltage?

   YES—Go to step 8.

   NO—Check for these problems:

   - Blown No. 6 (15A) fuse in the under-hood fuse/relay box.■
   - Faulty PGM-FI main relay 1.■
   - An open in the YEL/BLK wire.■

(cont'd)

Troubleshooting (cont'd)

8. Check for voltage between the immobilizer control unit-receiver 7P connector No. 6 terminal and No. 1 terminal.

   Is there battery voltage?

   YES—Go to step 12.

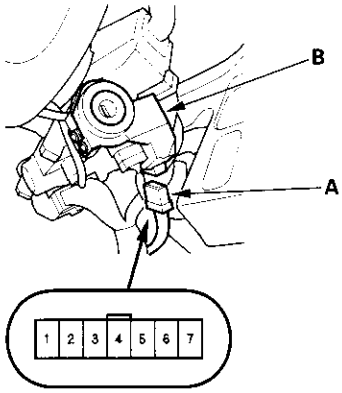
   NO—Check for these problems:

   - Open on the BRN/YEL wire. ■
   - Faulty ECM. ■

9. Remove the driver's dashboard lower cover (see page 20-59).

10. Remove the steering column lower cover (see page 17-9).

11. Disconnect the 7P connector (A) from the immobilizer control unit-receiver (B).



12. Check for continuity between the immobilizer control unit-receiver 7P connector No. 2 terminal and ECM terminal E27.

    Is there continuity?

    YES—Go to step 13.

    NO—Repair the open in the RED/BLU wire. ■

13. Reconnect the 7P connector to the immobilizer control unit-receiver.

14. Check for voltage between the immobilizer control unit-receiver 7P connector No. 4 terminal and body ground with the parking brake lever pulled, then released.

    Is there 1 V or less, then 5 V or more?

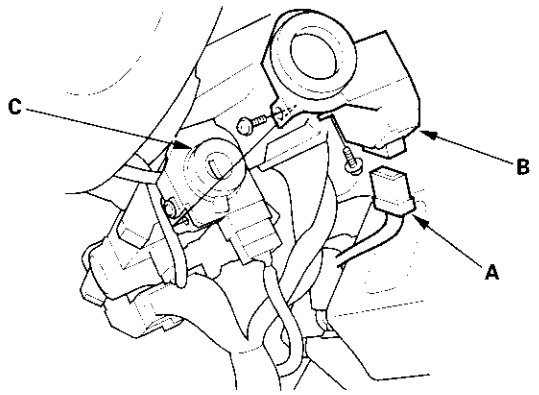
    YES—Replace the immobilizer control unit-receiver. After replacing the immobilizer control unit-receiver, rewrite the unit with a Honda PGM Tester. ■

    NO—Check for these problems:

    - Faulty parking brake switch or a poor body ground of the parking brake switch. ■
    - Repair short or open in the GRN/ORN wire. ■

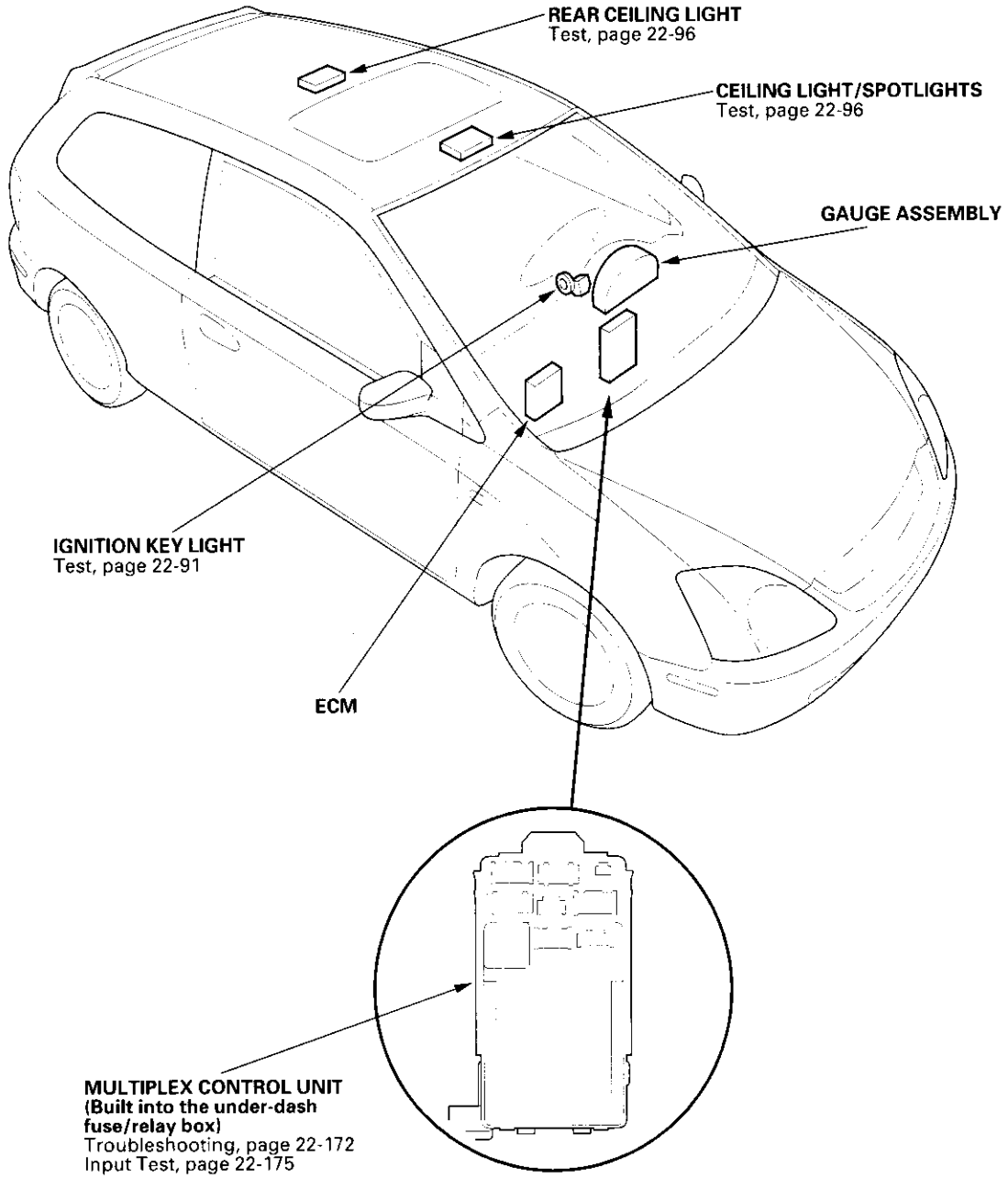
Immobilizer Control Unit-Receiver Replacement

1. Remove the driver's dashboard lower cover (see page 20-59).
2. Remove the steering column covers (see page 17-9).
3. Disconnect the 7P connector (A) from the immobilizer control unit-receiver (B).

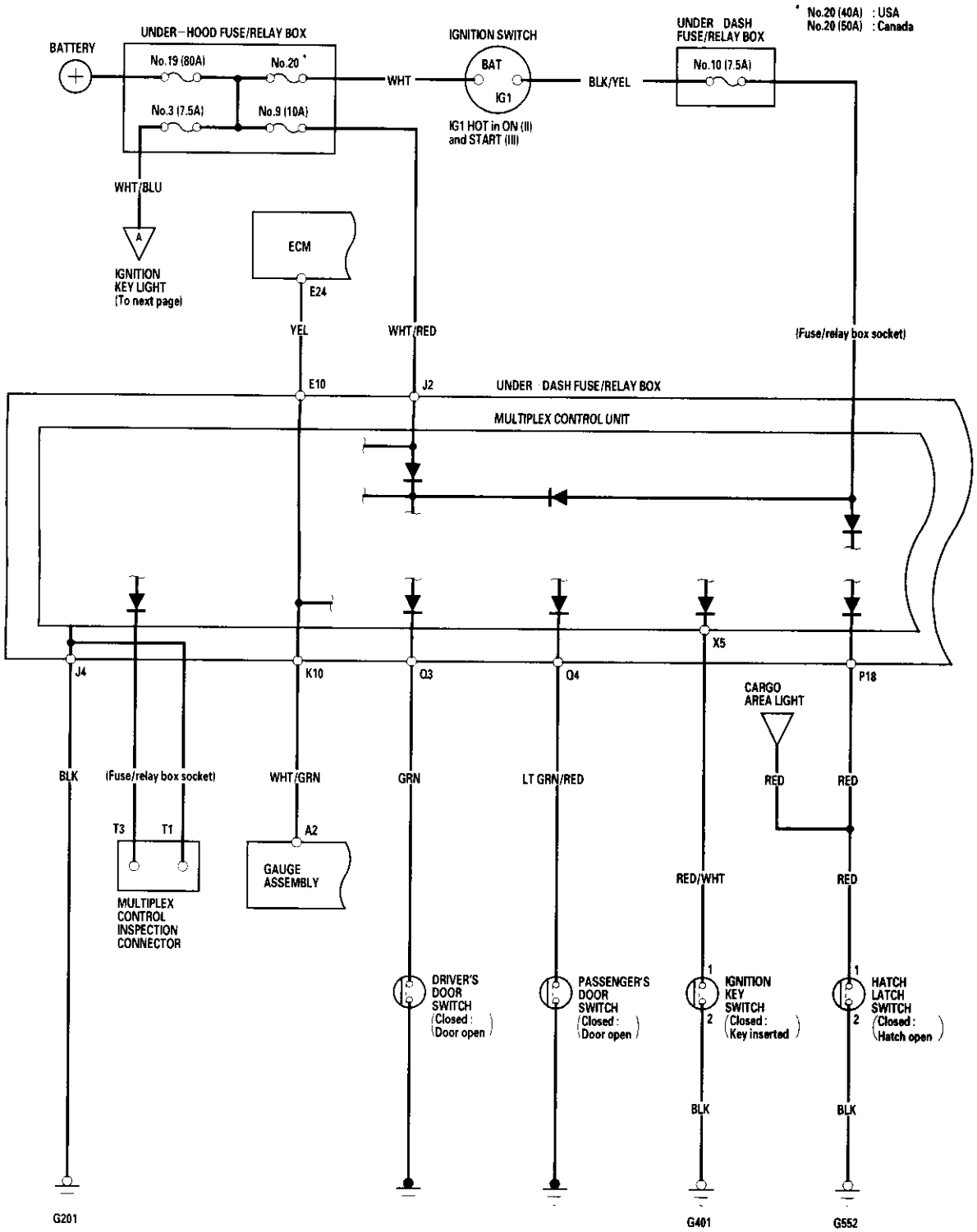


4. Remove the two screws and the immobilizer control unit-receiver from the ignition key cylinder (C).
5. Install the immobilizer control unit-receiver in the reverse order of removal.
6. After replacement, rewrite the unit with a Honda PGM Tester, then check the immobilizer system.

Component Location Index

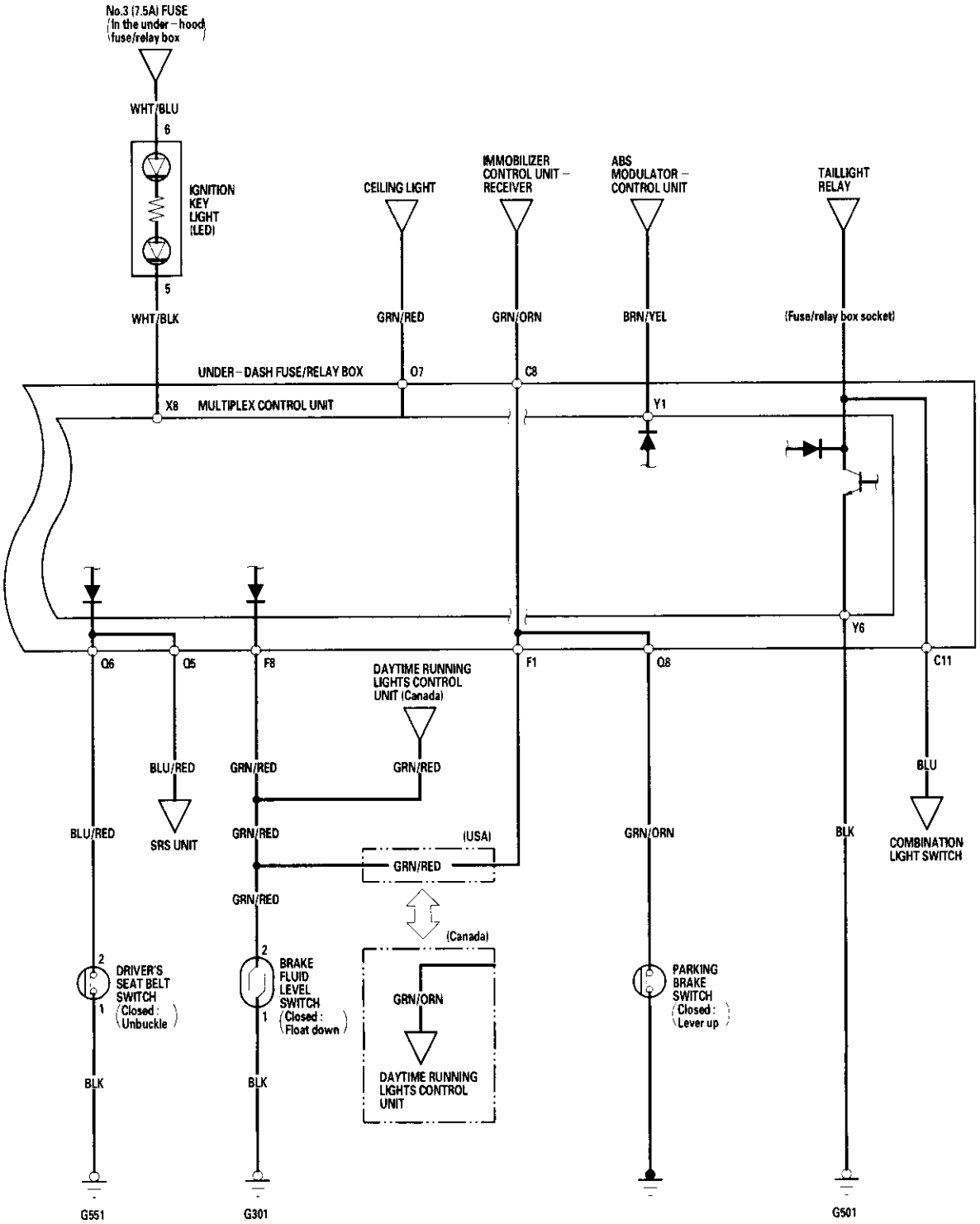


Circuit Diagram



(cont'd)

Circuit Diagram (cont'd)



System Descriptions

The Multiplex Control System has four internal functions:
- Multiplexing (send multiple signals over shared wires)
- Wake up/sleep (runs at full power only on demand to reduce battery draw)
- Fail-safe (fixes or ignores faulty signals)
- Self-diagnosis (Mode 1 for the system, Mode 2 for input lines)

The system controls the function of these circuits:
- Entry light control (ignition key light and ceiling light)
- Wiper/washer intermittent wipe and park functions
- Keyless/power door lock
- Meter assembly, temperature gauge, and indicator lights
- HVAC (compressor and fan control)
- Key-in reminder
- Headlight reminder
- Seatbelt reminder

Multiplex Communication

To reduce the number of wire harnesses, digital signals are sent via shared multiplex communication lines rather than sending normal electrical signals through individual wires.
- The input signals from each switch are converted to digital signals at the central processing unit (CPU).
- The digital signals are sent from the transmitting unit to the receiving unit as serial signals.
- The transmitted signal is converted to a switch signal at the receiving unit, and it operates the related component or monitors a switch.
- There are exclusive communication lines between the ECM, the gauge assembly, and the under-dash fuse/relay box.

Wake-up and Sleep

The multiplex control system has "wake-up" and "sleep" functions to decrease parasitic draw on the battery when the ignition switch is OFF.
- In the sleep mode, the multiplex control unit 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 OFF, and the driver's or front passenger's door is opened, then closed, there is about a 10 second delay before the control unit goes from the wake-up mode to the sleep mode.
- If any door is open, the sleep mode will not function.
- If a key is in the ignition switch, the sleep mode will not function.
- When in sleep mode, the draw is reduced from 70—80 mA to less than 10 mA.

Fail-safe

To prevent improper operation, the multiplex control system 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 any CPU malfunction, and a software fail-safe function that ignores the signal from the malfunctioning control unit and allows the system to operate normally.

Troubleshooting

Mode 1 Tset

1. Remove the driver's dashboard lower cover (see page 20-59).

2. Check the No. 9 (10A) fuse in the under-hood fuse/relay box and the No. 10 (7.5A) 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.■

3. Turn the ignition switch ON (II).If the driver's seatbelt is unbuckled the seat belt reminder will chime 6 times.

4. Set the ceiling light to the center position and close all the doors.

5. Connect the special tool to the multiplex inspection connector.

6. After about 5 seconds the spotlight and ceiling light should come on for 2 seconds, go out, then blink on for 0.2 second to show the system is now in mode 1.

   Did the spotlight and ceiling light indicate mode 1?

   YES—Go to step 8.

   NO—Go to step 7.

7. Check for continuity between terminal 4 of the under-dash fuse/relay box connector J and body ground.

   Is there continuity?

   YES—Replace the under-dash fuse/relay box.■

   NO—Repair the open in the wire.If the wire is ok, repair G301.■

8. If ther are any DTCs present, the spotlight and ceiling light will blink to indicate the DTC(s). If more than one DTC is present, the DTCs will be displayed in ascending order, If there are no DTCs the spotlight and ceiling light will not blink again after the mode 1 indication.

   Are there any DTCs?

   YES—Go to step 9.

   NO—Go to the Mode 2 test.

9. Troubleshoot the DTC(s) in the order indicated using the following charts.

   If a faulty control unit is suspected, substitute it with a known food part and recheck for DTCs,

   - If the DTC(s) is still present, go to the next step listed for the DTC.
   - If the DTC(s) is no longer present replace the original part.

Individual DTCs

Multiplex DTC	Probable Cause
1	The multiplex control unit cannot receive signals from the gauge assembly.
	1. Faulty power or ground to the gauge assembly
	2. Faulty gauge assembly
	3. Faulty under-dash fuse/relay box
2	The multiplex control unit cannot receive signals from the ECM
	1. Faulty power or ground to the ECM
	2. Faulty ECM
	3. Faulty under-dash fuse/relay box
3	Internal failure of the multiplex control unit
	1. Faulty under-dash fuse/relay box
5	The gauge assembly cannot receive signals from the multiplex control unit and the ECM
	1. Faulty power or ground to the gauge assembly
	2. Faulty gauge assembly
6	The ECM cannot receive signals from multiplex control unit and the gauge assembly
	1. Faulty power or ground to the ECM
	2. Faulty ECM*

*Before replacing a Faulty ECM/PCM make sure it has the latest software revision. Update if necessary before swapping or replacing.

Multiplex DTCs

Multiplex DTC	Probable Cause
1, 2 and 3 & ECM DTC P0600 Simultaneously	Short to ground on one of the communication wires.
	1. Short to ground on the YEL wire between the PCM terminal E24 and the under-dash fuse/relay box terminal E10
	2. Short to ground on the WHT/GRN wire between the Gauge assembly terminal A2 and under-dash fuse/relay box terminal K10
1 and 6 Simultaneously	Open in the communication wire
	1. Open in WHT/GRN wire between the under-dash fuse/relay box terminal K10 and the Gauge assembly terminal A2
2 and 5 Simultaneously	Open in the communication wire
	1. Open in the YEL wire between the under-dash fuse/relay box terminal E10 and ECM terminal E24

(cont'd)

Troubleshooting (cont'd)

Made 2 Test

1. From Mode 1, disconnect the special tool from the multiplex inspection connector for 5 to 10 seconds, and then reconnect it.

2. The spotlight and ceiling light should come on for 2 seconds, go out, then blink twice, 0.2 seconds each time. The system is now in mode 2.

3. Operate the switches listed below: If the circuit is ok, the spotlight and ceiling light will blink once. If the circuit is faulty, the lights will not blink.
   Tip: Operate the switches most closely related to the problem you are diagnosing is a quick way of testing the circuits integrity.

switch	lights blinks when:
Windshield washer switch	washer switch pulled
Windshield wiper switch	Switch in the INT pos.
Driver's door switch	As door is opened
passenger's door switch	As door is opened
Hatch latch switch	As hatch is 0pened
Parking brake switch	As parking brake applied
Driver's door lock switch	Pushed to lock and unlock
Driver's lock knob switch	Knob in unlock or lock position
A/C switch	A/C switch ON and blower switch ON
Headlight switch	switched to the PARK position
Brake pedal position switch	Brake pedal pressed

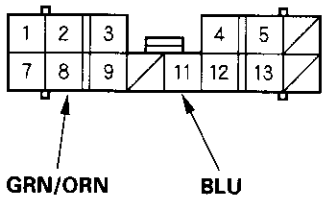
4. If all inputs were confirmed, or multiple circuits failed at the same time in mode 2, go to the multiplex sleep mode test. If a single switch fails in mode 2, troubleshoot its circuit.

Multiplex Control Unit Input Test

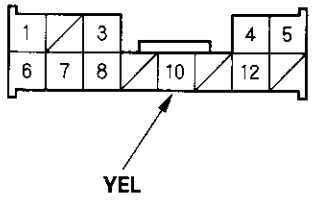
1. Remove the driver's dashboard lower cover (see page 20-59).
2. Disconnect the under-dash fuse/relay box connectors C, E, F, J, K, O, P, Q, X and Y.

NOTE: All connectors are wire side of female terminals.

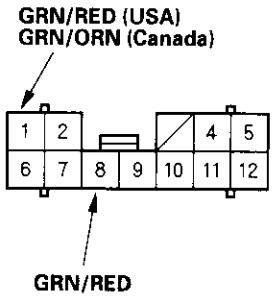
CONNECTOR C (14P)



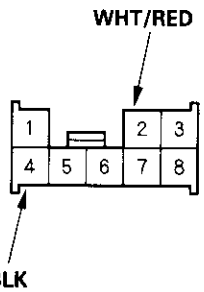
CONNECTOR E (13P)



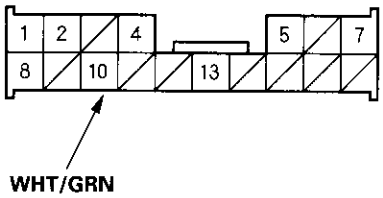
CONNECTOR F (12P)



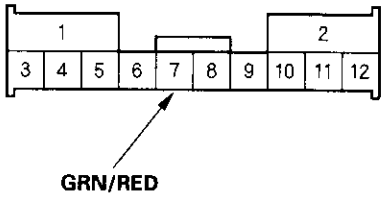
CONNECTOR J (8P)



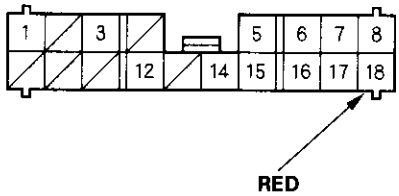
CONNECTOR K (17P)



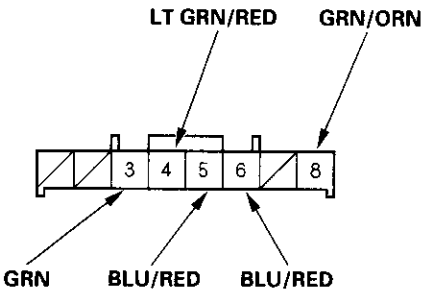
CONNECTOR O (12P)



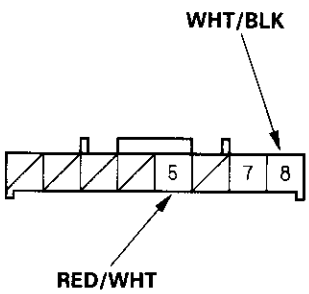
CONNECTOR P (18P)



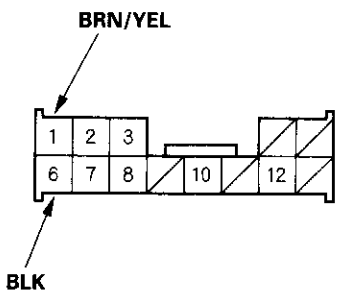
CONNECTOR Q (8P)



CONNECTOR X (8P)



CONNECTOR Y (13P)



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Multiplex Control Unit Input Test (cont'd)

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.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
J4	BLK	Under all conditions	Check for voltage to ground: There should be 1V or less.	• Poor ground (G201) • An open in the wire
Y6	BLK	Under all conditions	Check for voltage to ground: There should be 1 V or less.	• Poor ground (G501) • An open in the wire
Y1	BRN/YEL	Parking brake lever down, turn the ignition switch ON (II)	Check for voltage to ground: There should be battery voltage while the Brake system indicator is on for the buld check.	• An open in the wire • Short to ground • Faulty ABS modulator-control unit
			Check for voltage to ground: There should be 1 V or less when the Brake system.	
J2	WHT/RED	Under all conditions	Check for voltage to ground: There should be battery voltage.	• Blown No. 9 (10A) fuse in the under-hood fuse/relay box • An open in the wire

4. Reconnect the connectors to the under-dash fuse/relay box, and make sure these input tests at the appropriate connectors on the under-dash fuse/relay box.

   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If all the input tests prove OK, the multiplex control unit must be faulty. Replace the under-dash fuse/relay box assembly.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
Q3	GRN	Driver's door open	Check for voltage to ground: There should be 1 V or less.	• Faulty driver's door switch • An open in the wire
		Driver's door closed	Check for voltage to ground: There should be 5 V or more.	• Faulty driver's door switch • Short to ground
Q4	LT GRN/RED	Passenger's door open	Check for voltage to ground: There should be 1 V or less.	• Faulty passenger's door switch • An open in the wire
		Passenger's door closed	Check for voltage to ground: There should be 5 V or more.	• Faulty passenger's door switch • Short to ground
Q8	GRN/ORN	Parking brake lever up	Check for voltage to ground: There should be 1 V or less.	• Faulty parking brake switch • An open in the wire
C8 F1 F8	GRN/ORN GRN/RED (USA) GRN/ORN (Canada) GRN/RED	Parking brake lever down	Check for voltage to ground: There should be 5 V or more.	• Faulty parking brake switch • Short to ground
Q5	BLU/RED	Ignition switch ON (II), driver's seat belt is unbuckled.	Check for voltage to ground: There should be 1 V or less.	• Faulty driver's seat belt switch • Poor ground (G551) • An open in the wire
Q6	BLU/RED	Ignition switch ON (II), driver's seat belt is buckled.	Check for voltage to ground: There should be 6 V or more.	• Faulty driver's seat belt switch • Short to ground
P18	RED	Hatch open	Check for voltage to ground: There should be 1 V or less.	• Faulty hatch latch switch • Poor ground (G552) • An open in the wire
		Hatch closed	Check for voltage to ground: There should be 5 V or more.	• Faulty hatch latch switch • Short to ground
X5	RED/WHT	Ignition key in the ignition switch	Check for voltage to ground: There should be 1 V or less.	• Faulty ignition key switch • Poor ground (G401) • An open in the wire
		Ignition key out of the ignition switch	Check for voltage to ground: There should be 5 V or more.	• Faulty ignition key switch • Short to ground

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
X8	WHT/BLK	Under all conditions	Attach to ground: The ignition key light should come on.	• Blown No. 3 (7.5A) fuse in the under-hood fuse/relay box • Blown LED • An open in the wire
O7	GRN/RED	Ceiling light switch in the middle position, all doors closed	Attach to ground: The ceiling light, spotlights should come on.	• Blown No. 3 (7.5A) fuse in the under-hood fuse/relay box • Faulty ceiling light • An open in the wire
C11	BLU	Under all conditions	Attach to ground: Dash lights should come on.	• Blown No. 2 (15A) fuse in the under-hood fuse/relay box • Faulty taillight relay • An open in the wire
F8	GRN/RED	Brake fluid reservoir float in down position (brake fluid removed)	Check for voltage to ground: There should be less than 1 V.	• Faulty brake fluid level switch • An open in the wire
		Brake fluid reservoir float in up position (brake fluid at full level)	Check for voltage to ground: There should be 5 V or more.	• Faulty brake fluid level switch • Short to ground
E10	YEL	Under all conditions	Check for voltage to ground: There should be battery voltage in the sleep mode and 3—7 volts when awake.	• An open or short in the wire
K10	WHT/GRN	Under all conditions	Check for voltage to ground: There should be battery voltage in the sleep mode and 3—7 volts when awake.	• An open or short in the wire

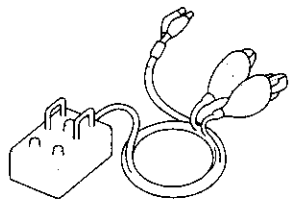
Restraints

Special Tools

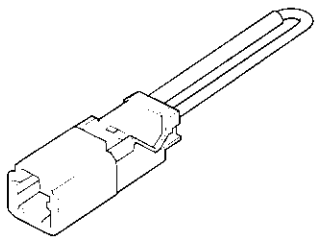
Ref.No.	Tool Number	Description	Qty
①*1	07HAZ-SG00500	Deployment Tool	1
②	07PAZ-0010100	SCS Service Connector	1
③	07SAZ-TB4011A	SRS Inflator Simulator	1
④	07TAZ-SZ5011A	SRS Simulator Lead C	1
⑤*2	07TAZ-001020A	Backprobe Adapter, 17 mm	2
⑥	07XAZ-S1A0200	SRS Simulator Lead E	1
⑦	07XAZ-SZ30100	SRS Simulator Lead F	1
⑧	07YAZ-S3AA100	SRS Simulator Lead H	1

*1: Included in SRS Tool Set 07MAZ-SM5000B

*2: Use with the stacking patch cords from T/N 07SAZ-001000A, Backprobe Set.



①



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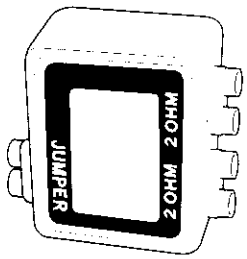

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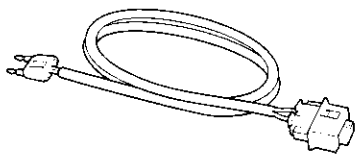

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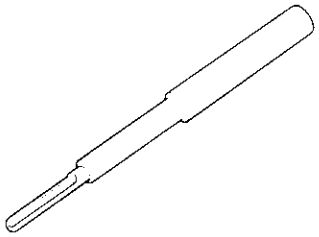

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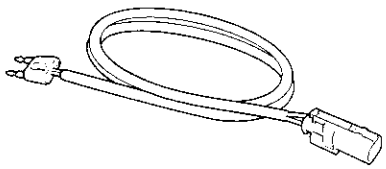

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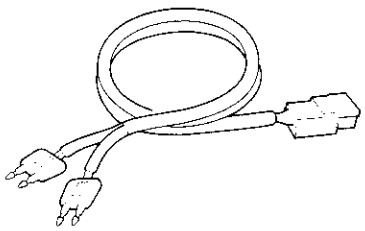
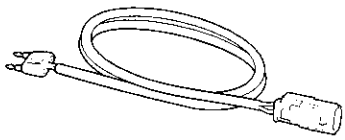
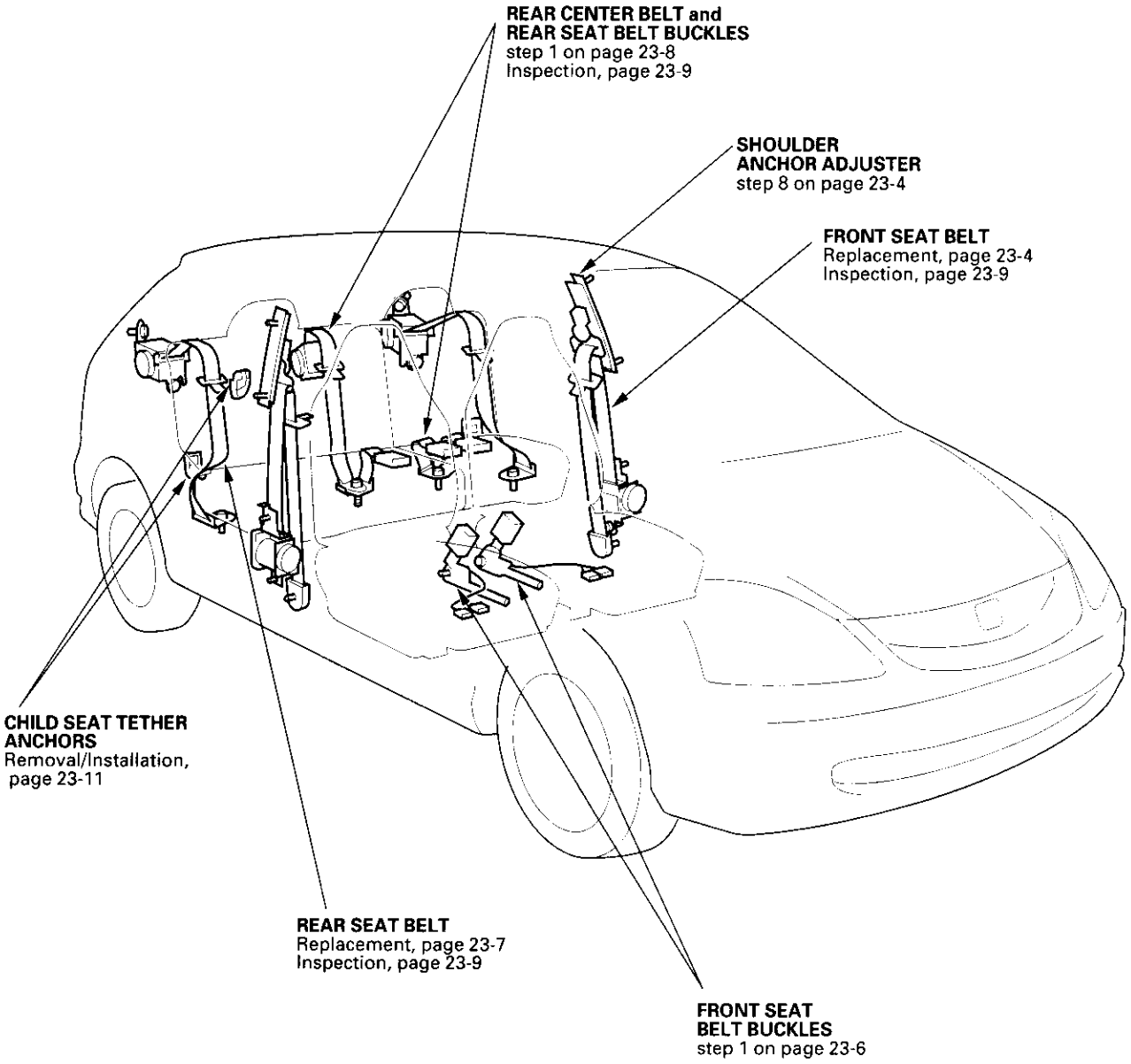


⑦



⑧

Component Location Index



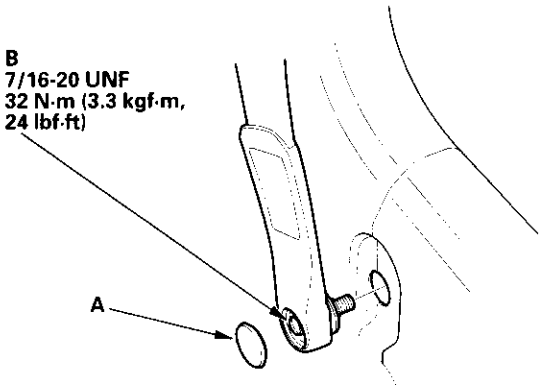
Front Seat Belt Replacement

SRS components are located in this area. Review the SRS component locations (see page 23-13) and the precautions and procedures (see page 23-14) in the SRS section before performing repairs or service.

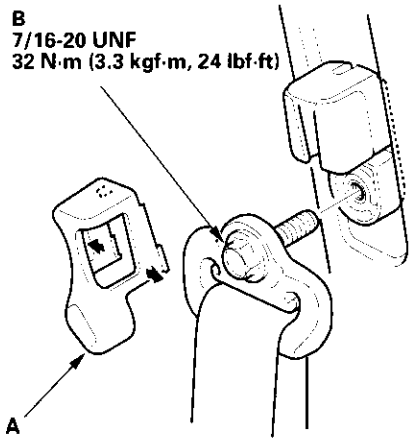
NOTE: Check the front seat belts for damage, and replace them if necessary. Be careful not to damage them during removal and installation.

Front Seat Belt

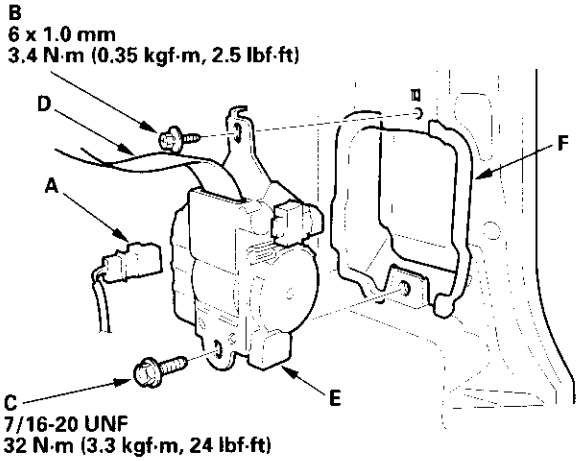
1. Make sure you have the anti-theft code for the radio, then write down the frequencies for the preset buttons.
2. Disconnect the negative cable from the battery, and wait at least 3 minutes before beginning work.
3. Slide the front seat forward fully.
4. Remove the lower anchor cap (A), and remove the lower anchor bolt (B).



5. Remove the rear side trim panel (see page 20-51).
6. Remove the upper anchor cover (A), and remove the upper anchor bolt (B).



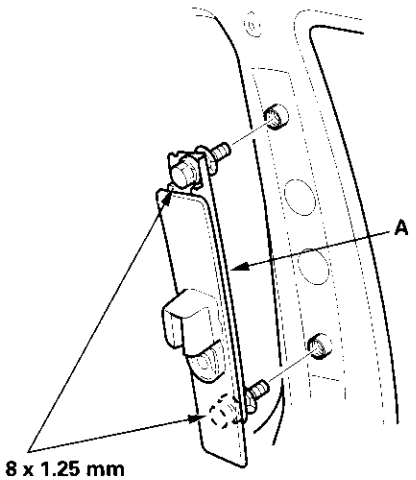
7. Disconnect the seat belt tensioner connector (A). Remove the retractor mounting self-tapping ET screw (B), and the retractor bolt (C), then remove the front seat belt (D) and retractor (E).



8. If necessary, remove the front seat belt protector (F).

9. Remove the B-pillar upper trim (see page 20-50)

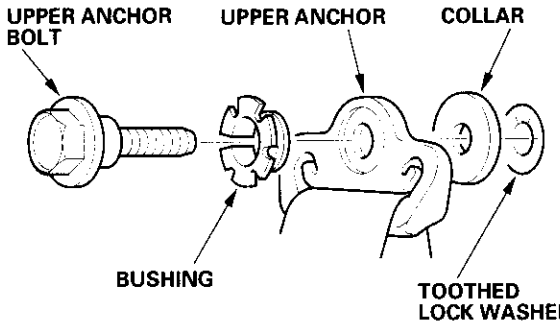
10. Remove the shoulder anchor adjuster(A).



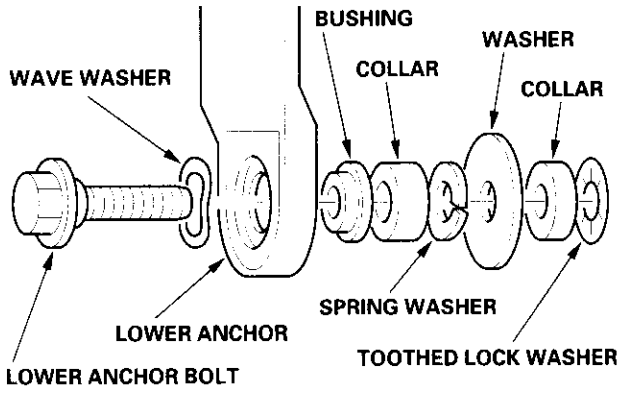
11. Install the seat belt in the reverse order of removal, and note these items:

- If the threads on the retractor mounting self-tapping ET screw are worn out, use an oversized self-tapping ET screw (P/N 90133-SZ4-0030) made specifically for this application.
- Check that the retractor locking mechanism functions (see page 23-9).
- Assemble the washers, collars, and bushing on the upper and lower anchor bolts as shown.
- If the seat belt tensioner has been deployed replace the front seat belt protector with a new one.
- Apply liquid thread lock to the anchor bolts before reinstallation.
- Before installing the anchor bolts, make sure there are no twists or kinks in the front seat belt.
- Make sure the seat belt tensioner connector is plugged in properly.
- Reconnect the negative cable to the battery.
- Enter the anti-theft code for the radio, then enter the customer's radio station presets.
- Reset the clock.
- Do the ECM/PCM idle learn procedure (see page 11-139).

Upper anchor bolt construction:



Lower anchor bolt construction:

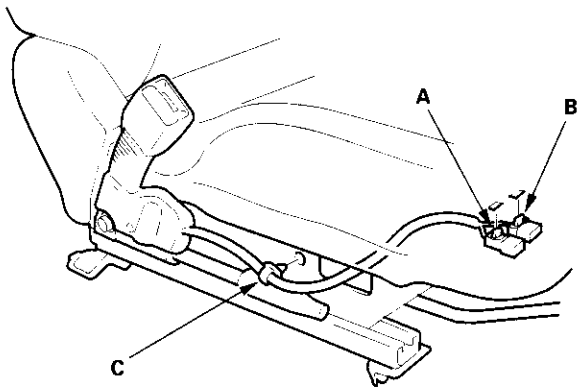


(cont'd)

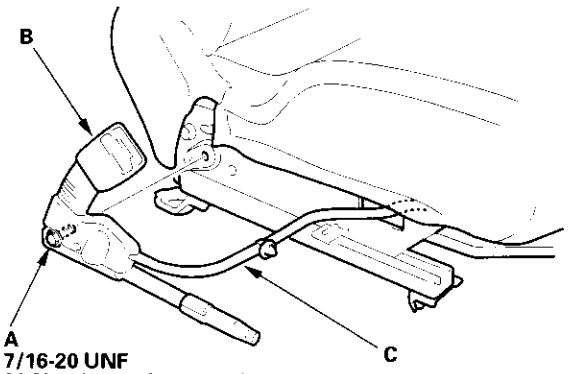
Front Seat Belt Replacement (cont'd)

Seat Belt Buckle

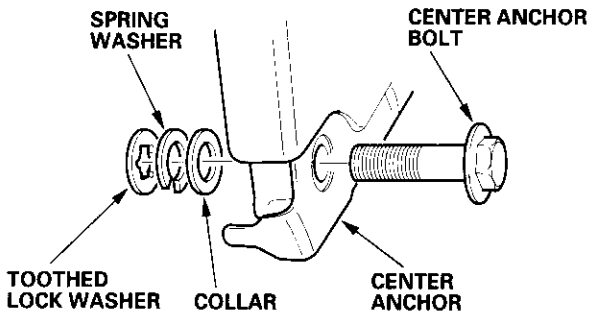
1. Make sure you have the anti-theft code for the radio, then write down the frequencies for the preset buttons.
2. Disconnect the negative cable from the battery , and wait at least 3 minutes before beginning work.
3. Remove the front seat (see page 20-71).
4. Detach the seat belt switch connector clip (A), seat belt buckle tensioner connector clip (B), and harness clip (C).



5. Remove the center anchor bolt (A), and remove the seat belt buckle (B).



6. Pull the seat belt switch/tensioner harness (C) out through the hole on the seat track.
7. Install the buckle in the reverse order of removal, and note these items:
   - Assemble the washers on the center anchor bolt as shown.
   - Apply liquid thread lock to the center anchor bolt before reinstallation.
   - If the seat belt tensioner has been deployed, replace the front seat belt protector with a new one.
   - Apply liquid thread lock to the seat mounting bolts before reinstallation
   - Reconnect the negative cable to the battery.
   - Enter the anti-theft code for the radio, then enter the customer's radio station presets.
   - Reset the clock.
   - Do the ECM/PCM idle learn procedure (see page 11-139).

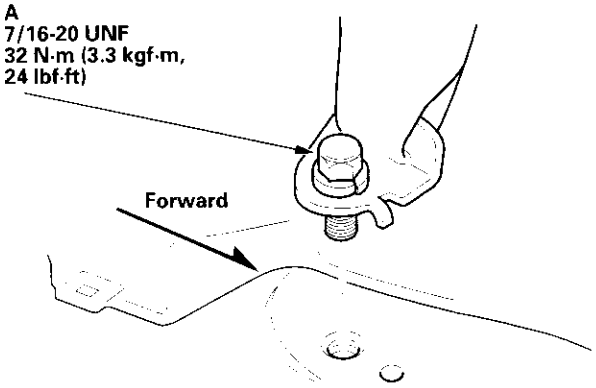


Rear Seat Belt Replacement

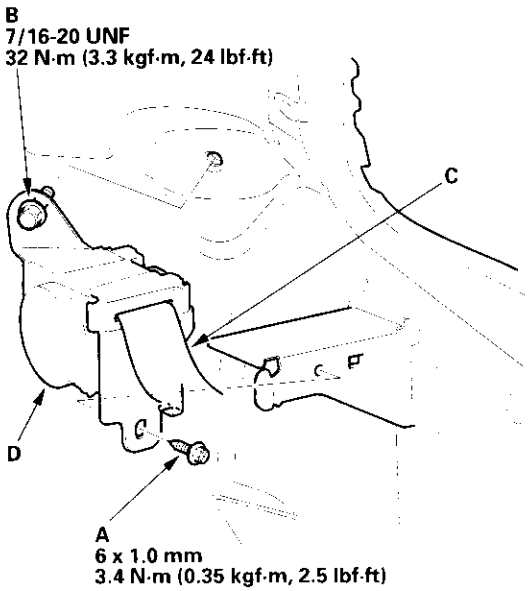
NOTE: Check the rear seat belts for damage, and replace them if necessary. Be careful not to damage them during removal and installation.

Rear Seat Belt

1. Remove the rear seat cushion (see page 20-80).
2. Remove the lower anchor bolt (A).



3. Remove the rear side trim panel (see page 20-51).
4. Remove the retractor mounting self-tapping ET screw (A), and the retractor bolt (B), then remove the rear seat belt (C) and retractor (D).



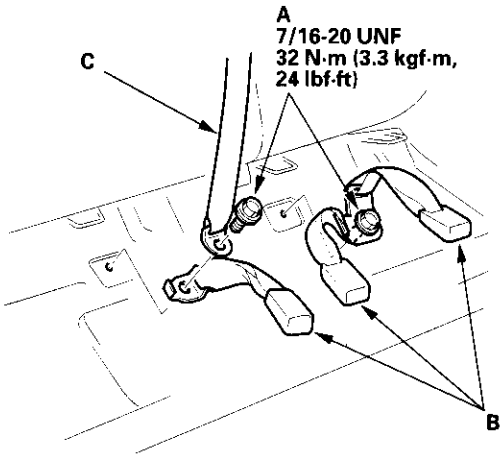
5. Install the seat belt in the reverse order of removal, and note these items:
   - If the threads on the retractor mounting self-tapping ET screw are worn out, use an oversized self-tapping ET screw (P/N 90133-SZ4-0030) made specifically for this application.
   - Apply liquid thread lock to the anchor bolt before reinstallation.
   - Check that the retractor locking mechanism functions (see page 23-9).
   - Before installing the anchor bolt, make sure there are no twists or kinks in the rear seat belt.

(cont'd)

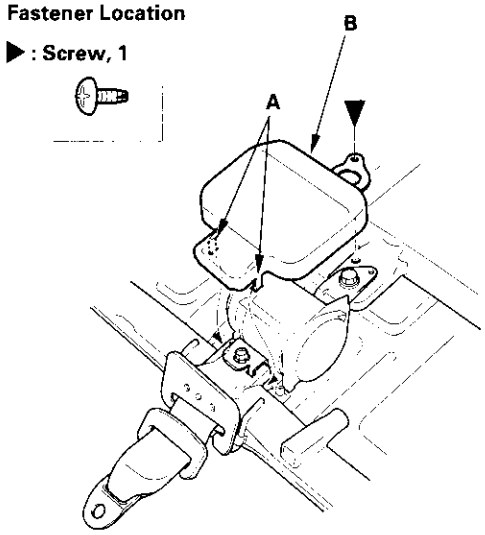
Rear Seat Belt Replacement (cont'd)

Center Belt and Seat Belt Buckles

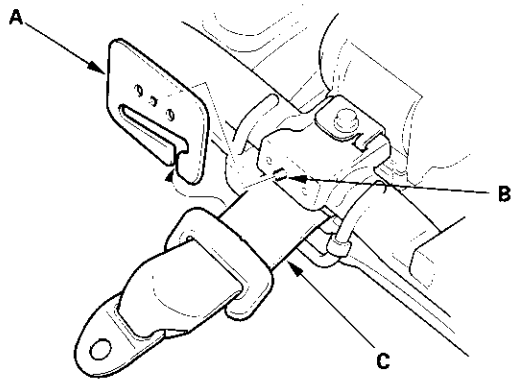
1. Remove the seat cushion (see page 20-80).
2. Remove the center anchor bolts (A), and remove the seat belt buckles (B) and center belt (C).



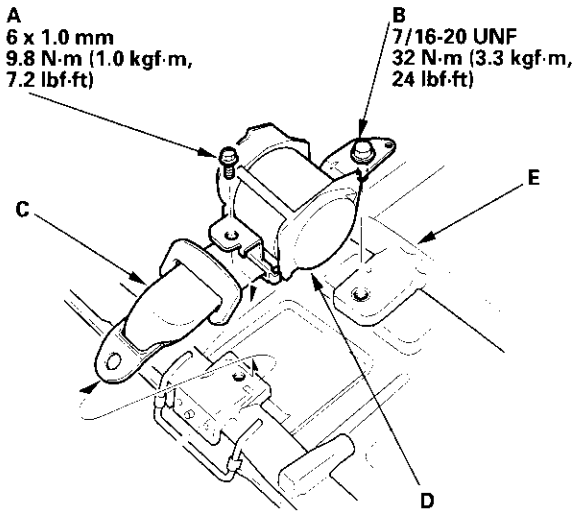
3. Remove the right seat-back (see page 20-80).
4. Remove the seat-back cover (see page 20-82).
5. Remove the seat-back pad from the seat-back frame (see step 3 on page 20-81).
6. Remove the screw, and release the hooks (A), then remove the retractor cover (B).



7. Remove the seat belt guide (A) from the pin (B), and release the center belt (C) from the seat belt guide.



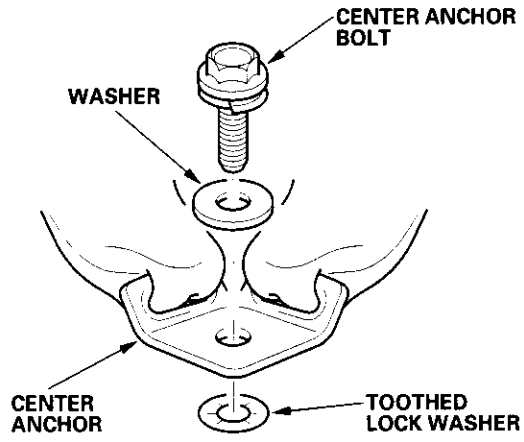
8. Remove the retractor mounting bolt (A), and the retractor bolt (B), then remove the center belt (C) and retractor (D) from the seat-back frame (E).



9. Install the seat belt and buckles in the reverse order of removal, and note these items:

   - Check that the retractor locking mechanism functions (see step 1 on page 23-10).
   - Assemble the washers on the center anchor bolt as shown (except center shoulder belt).
   - Apply liquid thread lock to the anchor bolts before reinstallation.
   - Before installing the center anchor bolt, make sure there are no twists or kinks in the center belt.

Center anchor bolt construction:



Inspection

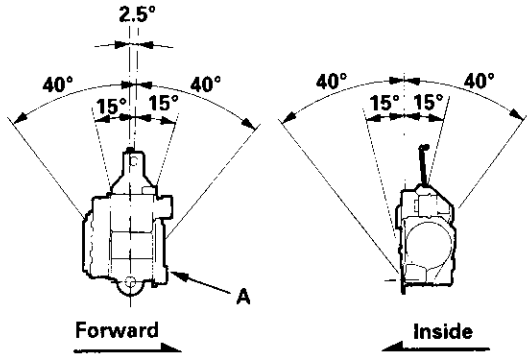
For front seat belt retractors with seat belt tensioners, review the SRS component locations (see page 23-13) and the precautions and procedures (see page 23-14) in the SRS section before performing repairs or service.

Retractor, Front and Rear

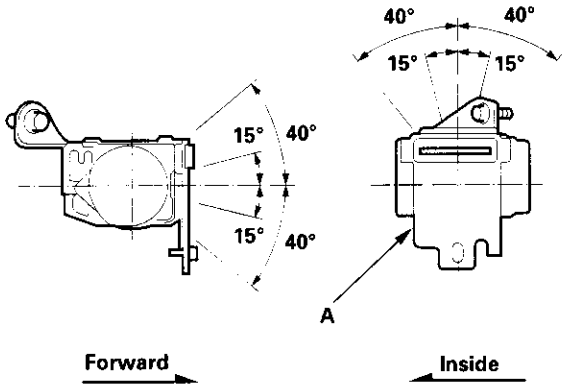
1. Before installing the retractor, check that the seat belt can be pulled out freely.

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:



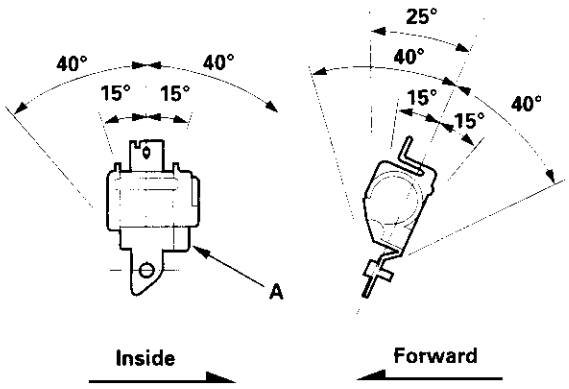
3. Replace the seat belt with a new assembly if there is any abnormality. Do not disassemble any part of the seat belt for any reason.

(cont'd)

Inspection (cont'd)

Retractor, Rear Center

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.



3. Lean the retractor over 40°, and make sure that the seat belt does not lock when pulled out over 900 mm (35.4 in.). Do not attempt to disassemble the retractor.
4. 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.

   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. For rear center shoulder belt, check that the seat belt locks when pulled out over 400 mm (15.7 in.) with the seat-back folded down.
6. Make sure that the seat belt will retract automatically when released.
7. For each passenger's seat belt, check the seat belt retractor locking mechanism ALR (automatic locking retractor). This function is for securing child seats.

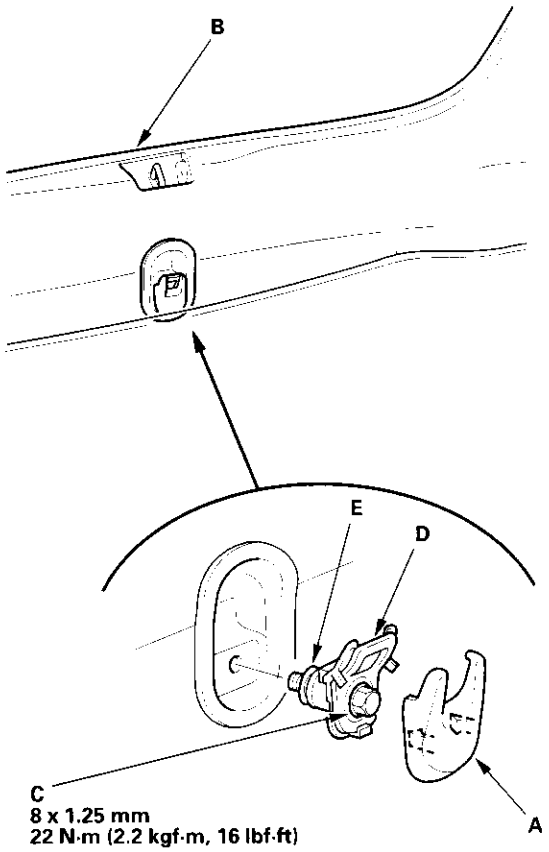
   -1 Pull the seat belt all the way out to engage the ALR. The seat belt should retract with a ratcheting sound, but not extend. This is normal.

   -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.
8. 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.

Child Seat Tether Anchor Removal/Installation

Middle

1. Remove the child seat tether anchor cover (A) in the rear trim panel (B).



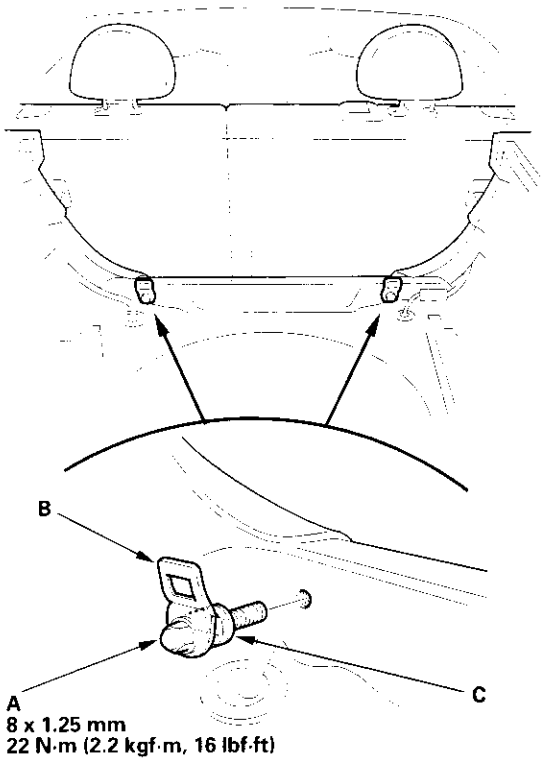
2. Remove the anchor bolt (C), then remove the child seat tether anchor (D). Do not remove the toothed washer (E) from the tether anchor.

3. Install the anchor in the reverse order of removal.

Side

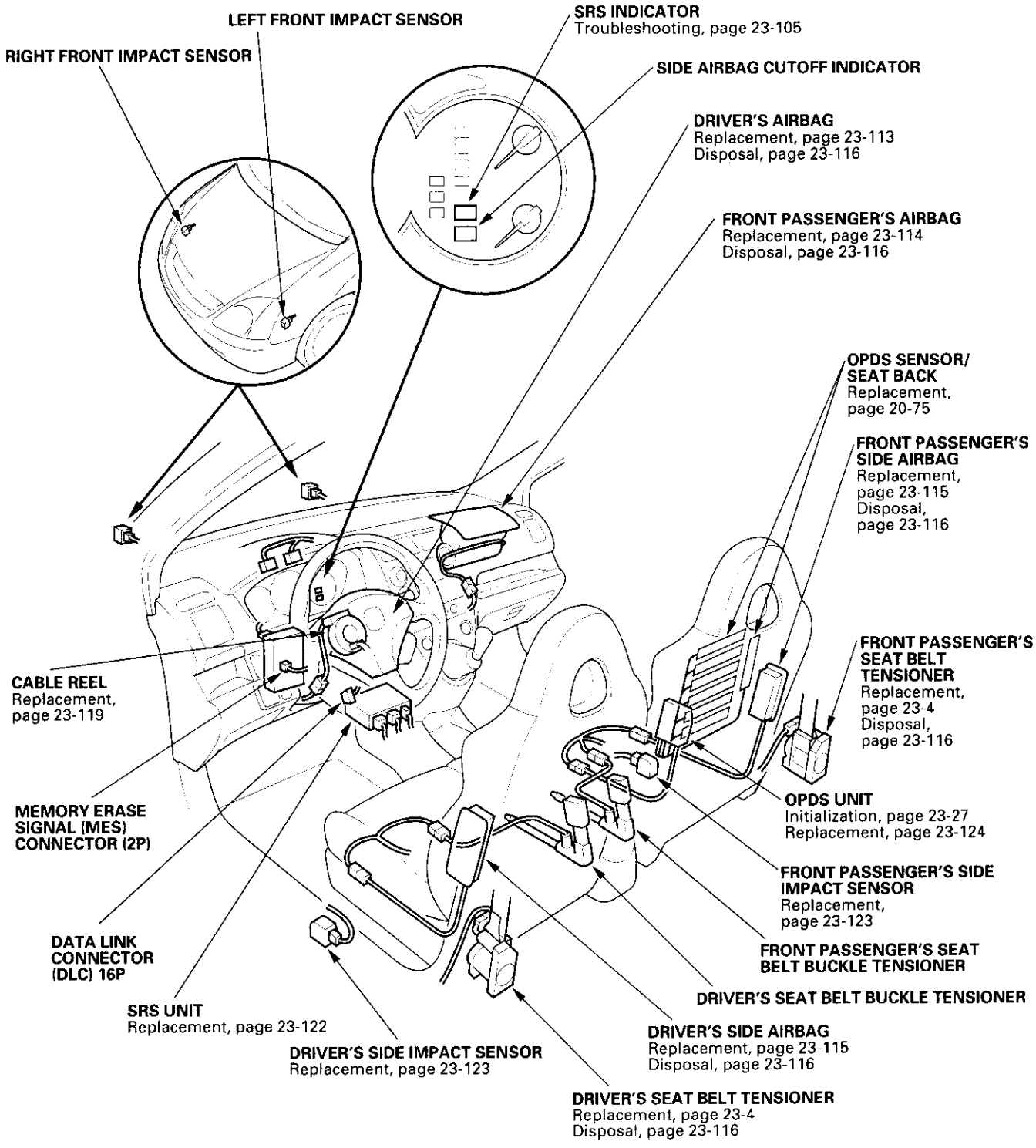
1. Remove the rear bulkhead covers from both sides (see page 20-51).

2. Remove the anchor bolt (A), then remove the child seat tether anchor (B) from behind the seat-back on each side of the cargo compartment. Do not remove the toothed washer (C) from the tether anchor.



3. Install the anchors in the reverse order of removal.

Component Location Index

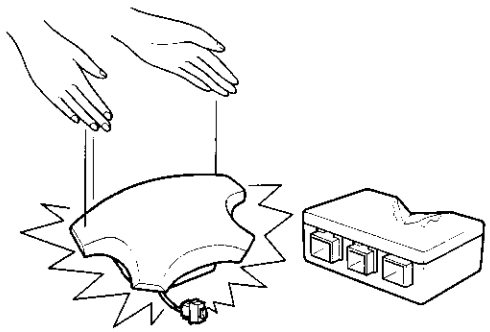


Precautions and Procedures

General Precautions

Please read the following precautions carefully before performing airbag system service. Observe the instructions described in this manual, or the airbags could accidentally deploy and cause damage or injuries.

- Except when performing electrical inspections, always turn the ignition switch OFF, disconnect the negative cable from the battery, and wait at least 3 minutes before beginning work.
  NOTE: The memory is not erased even if the ignition switch is turned OFF 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 from another vehicle. 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 removing any SRS parts (including the disconnection of connectors), always disconnect the SRS connector.
- Use only a digital multimeter to check the system. If it is not a Honda multimeter, make sure its output is 10 mA (0.01A) 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 radio has a coded theft protection circuit. Be sure to get the customer's radio code and write down the frequencies for the radio's preset stations before disconnecting the battery cable.
- Before returning the vehicle to the customer, enter the radio code, then enter the customer's radio station presets, and set the clock. Do the engine control module (ECM) idle learn procedure (see page 11-139).

Steering-related Precautions

Cable Reel Alignment

- Misalignment of the cable reel could cause an open in the wiring, making the SRS system and the horns inoperative. Center the cable reel whenever the following is performed (see step 6 on page 23-121).

  - Installation of the steering wheel
  - Installation of the cable reel
  - Installation of the steering column
  - Other steering-related adjustment or installation

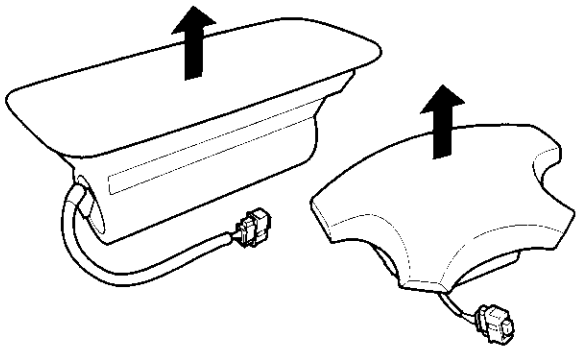
- Do not disassemble the cable reel.
- Do not apply grease to the cable reel.
- If the cable reel shows any signs of damage or contamination, replace it with a new one. For example, it does not rotate smoothly.

Airbag Handling and Storage

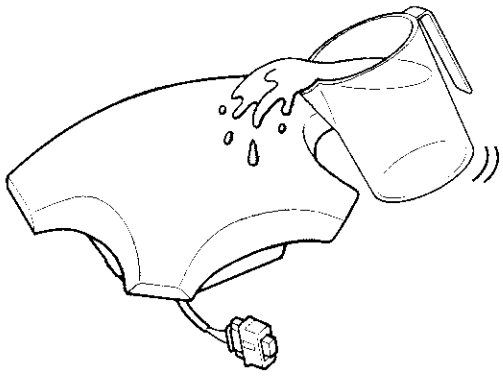
Do not disassemble an airbag. It has no serviceable parts. Once an airbag has been deployed, it cannot be repaired or reused.

For temporary storage of an airbag during service, observe the following precautions.

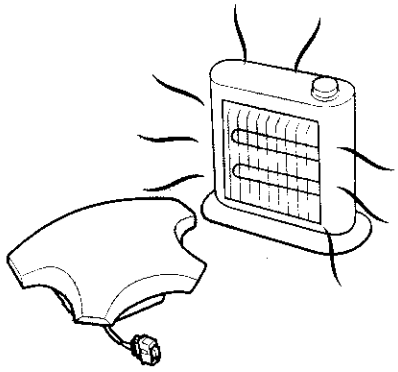
- Store the removed airbag with the pad surface up. Never put anything on the airbag.



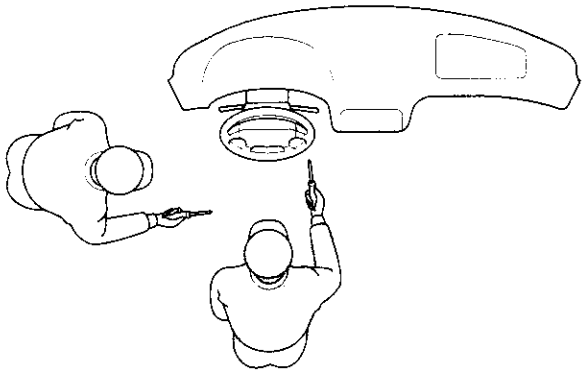
- To prevent damage to the airbag, keep it free from any oil, grease, detergent, or water.



- Store the removed airbag on a secure, flat surface away from any high heat source (exceeding 200°F/ 93°C).



- 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.



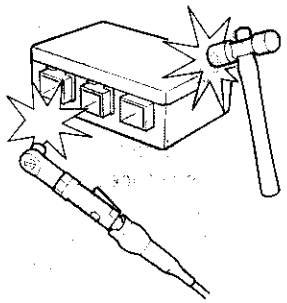
- Refer to the scrapping procedures for disposal of a damaged airbag.

(cont'd)

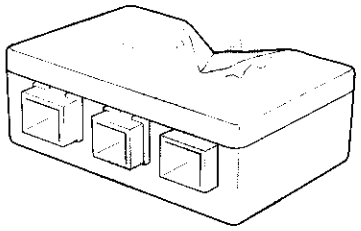
Precautions and Procedures (cont'd)

SRS Unit, Front Impact Sensors, and Side Impact Sensors

- Be careful not to bump or impact the SRS unit, front impact sensors, or side impact sensors whenever the ignition switch is ON (II), or for at least 3 minutes after the ignition switch is turned OFF.
- During installation or replacement, be careful not to bump (by impact wrench, hammer, etc.) the area around the SRS unit, front impact sensors, and side impact sensor. The airbags could accidentally deploy and cause damage or injury.



- After a collision in which any airbags or seat belt tensioners were deployed, replace the SRS unit, front impact sensors, and other related components (see page 23-112). After a collision in which a side airbag was deployed, replace the side impact sensor on the deployed side and the SRS unit. After a collision in which the airbags or the side airbags did not deploy, inspect for any damage or any deformation on the SRS unit, front impact sensors, and the side impact sensors. If there is any damage, replace the SRS unit and/or the sensors.

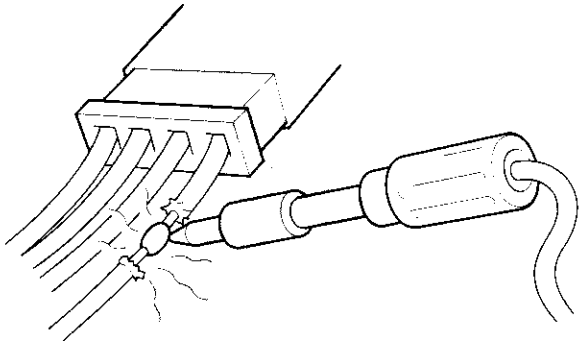


- Do not disassemble the SRS unit, front impact sensors, or side impact sensors.
- Turn the ignition switch OFF, disconnect the battery negative cable, and wait at least 3 minutes before beginning installation or replacement of the SRS unit, or disconnecting the connectors from the SRS unit.
- Be sure the SRS unit, front impact sensors, and side impact sensors are installed securely, with the mounting 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, front impact sensors, or the side impact sensors, and keep them away from dust.
- Store the SRS unit, front impact sensors and side impact sensors in a cool (less than 104°F/40°C) and dry (less than 80 % relative humidity, no moisture) area.

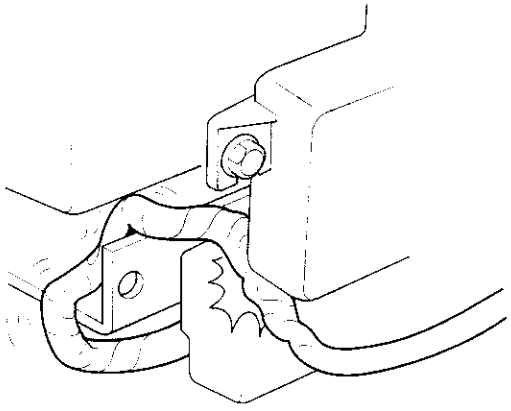
Wiring Precautions

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 instructions described in this section.

- Never attempt to modify, splice, or repair SRS wiring. If there is an open or damage in SRS wiring, replace the harness.



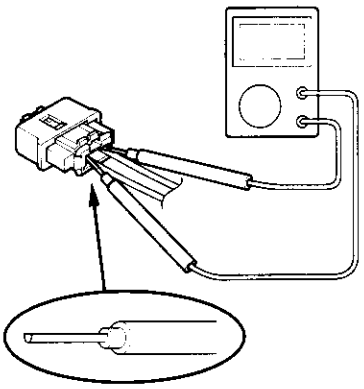
- Be sure to install the harness wires so they do not get pinched or interfere with other parts.



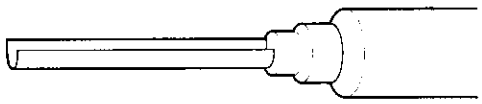
- Make sure all SRS ground locations are clean, and grounds are securely fastened for optimum metal-to-metal contact. Poor grounding can cause intermittent problems that are difficult to diagnose.

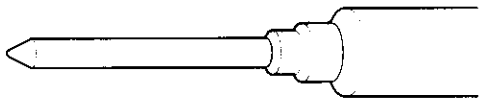
Precautions for Electrical Inspections

- 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 a U-shaped probe. Do not insert the probe forcibly.





- Use specified service connectors in troubleshooting. Using improper tools could cause an error in inspection due to poor metal-to-metal contact.

(cont'd)

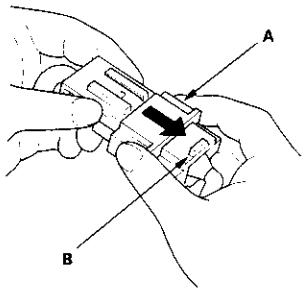
Precautions and Procedures (cont'd)

Spring-loaded Lock Connector

Some SRS system connectors have a spring-loaded lock.

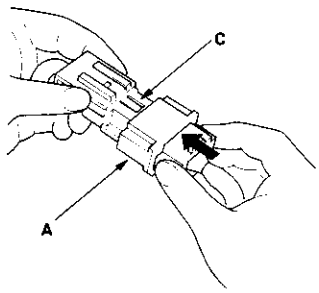
Front Airbag Connectors:

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.

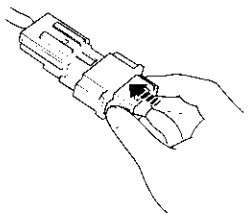


Connecting

1. 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 (C). Do not touch the sleeve.

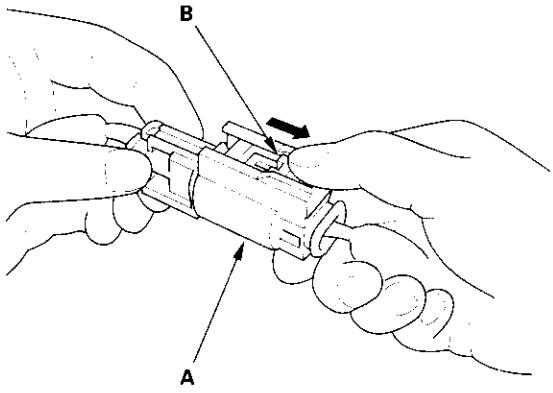


2. When the connector halves are completely connected, the pawl is released, and the spring-loaded sleeve locks the connector.

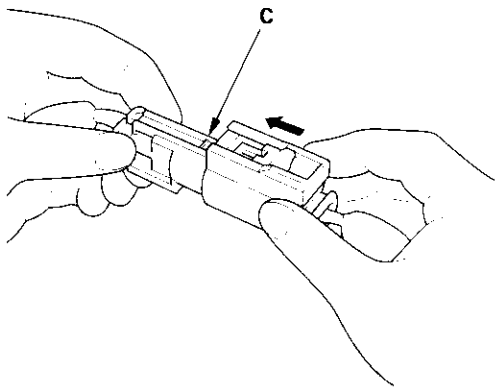


Side Airbag Connector:

Disconnecting
To release the lock, pull the spring-loaded sleeve (A) and the slider (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.



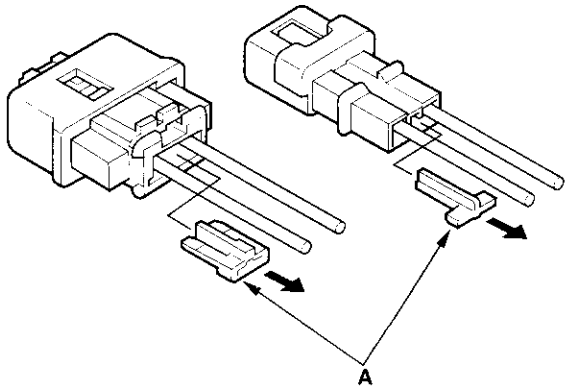
Connecting
Hold both connector halves, and press them firmly together until the projection (C) of the sleeve-side connector clicks.



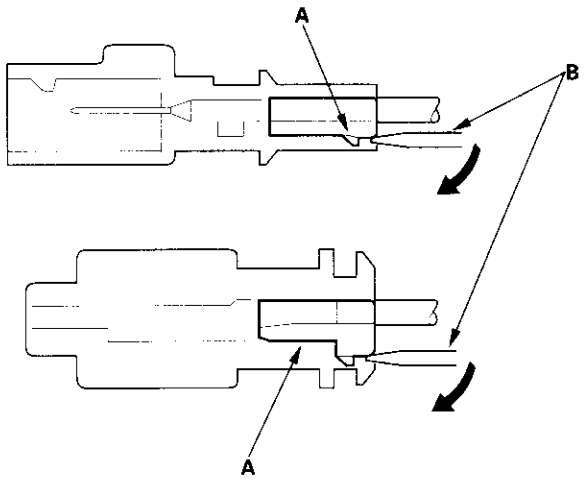
Backprobing Spring-loaded Lock Connectors

When checking voltage or resistance on this type of connector the first time, you must remove the retainer to insert the tester probe from the wire side.

NOTE: It is not necessary to reinstall the removed retainer; the terminals will stay locked in the connector housing.

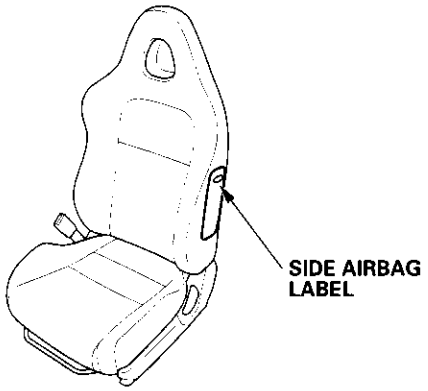


To remove the retainer (A), insert a flat-tip screwdriver (B) between the connector body and the retainer, then carefully pry out the retainer. Take care not to break the connector.



Seats with Side Airbags

Seats with side airbags have a "SIDE AIRBAG" label on the seat-back. Because the component parts (seat-back cover, cushion, etc.) of seats with and without airbags are different, make sure you install only the correct replacement parts.



- When cleaning, do not saturate the seat with liquid, and do not spray steam on the seat.
- Do not repair a torn or frayed seat-back cover. Replace the seat-back cover.
- After a collision in which the side airbag was deployed, replace the side airbag with new parts. If the seat-back cushion is split, it must be replaced. If the seat-back frame is deformed, it must be replaced.
- Never put aftermarket accessories on the seat (covers, pads, seat heaters, lights, etc.).

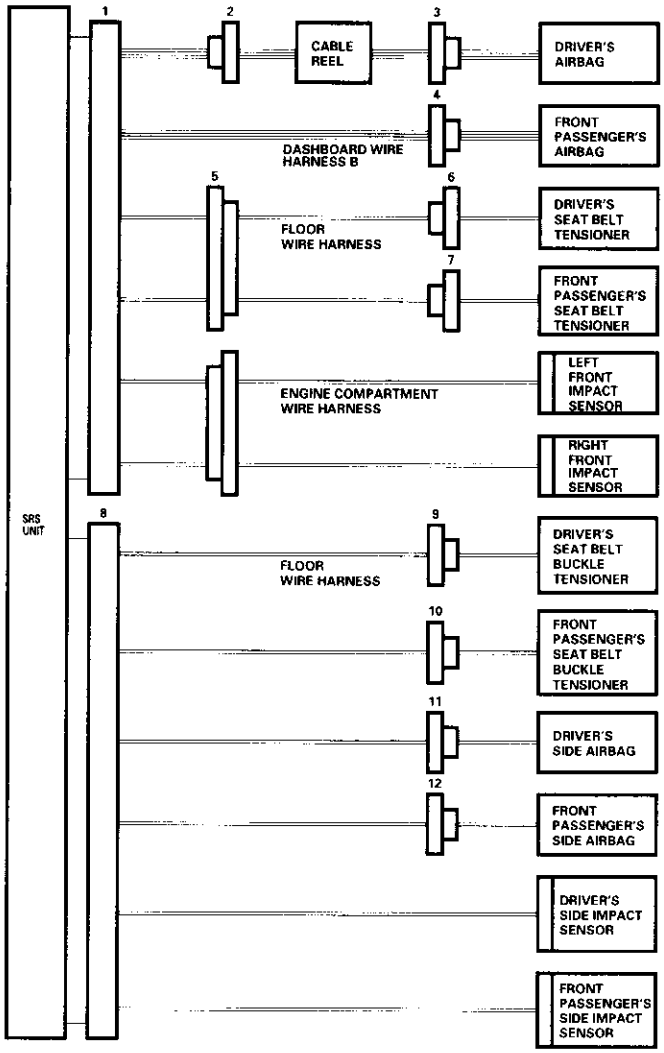
(cont'd)

Precautions and Procedures (cont'd)

Disconnecting System Connectors

Before removing a front airbag, side airbag, or other SRS related devices (the SRS unit, the cable reel, the front impact sensors, the side impact sensors, the seat belt buckle tensioners, and the seat belt tensioner connector), disconnecting connectors from related devices, or removing the dashboard or the steering column, disconnect the airbag connectors or the side airbag connectors to prevent accidental deployment.
Turn the ignition switch OFF, disconnect the negative cable from the battery, and wait at least 3 minutes before beginning the following procedures.

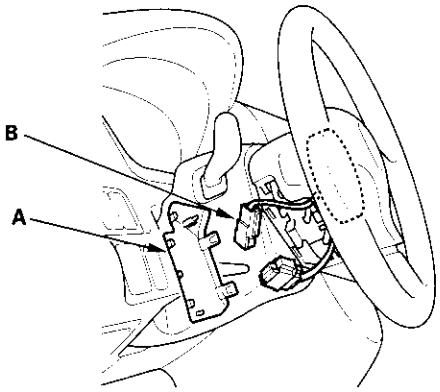
- Before disconnecting SRS unit connector A (1) from the SRS unit, disconnect the driver's airbag 4P connector (3), the front passenger's airbag 4P connector (4), the driver's seat belt tensioner 2P connector (6), and the front passenger's seat belt tensioner 2P connector (7).
- Before disconnecting SRS unit connector B (8) from the SRS unit, disconnect both side airbag 2P connectors (11, 12), and both seat belt buckle tensioner 4P connectors (9, 10).
- Before disconnecting the cable reel 4P connector (2), disconnect the driver's airbag 4P connector (3).
- Before disconnecting the floor wire harness 4P connector (5), disconnect both seat belt tensioner 2P connectors (6, 7).



1. Disconnect the battery negative cable, and wait at least 3 minutes.

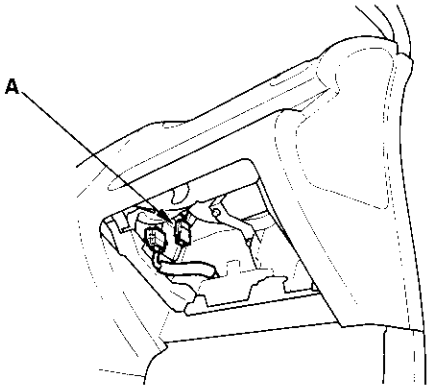
Driver's Airbag

2. Remove the access panel (A) from the steering wheel, then disconnect the driver's airbag 4P connector (B) from the cable reel.



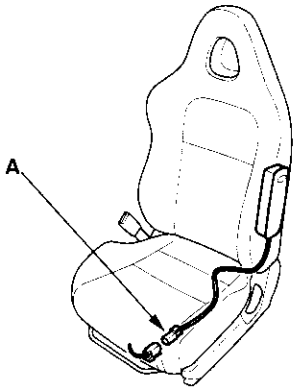
Front Passenger's Airbag

3. Disconnect the front passenger's airbag 4P connector (A) from dashboard wire harness B.



Side Airbag

4. Disconnect both side airbag 2P connectors (A) from the floor wire harness.



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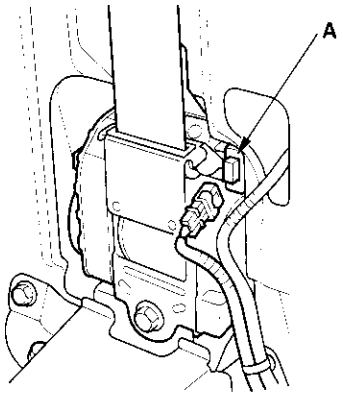
Precautions and Procedures (cont'd)

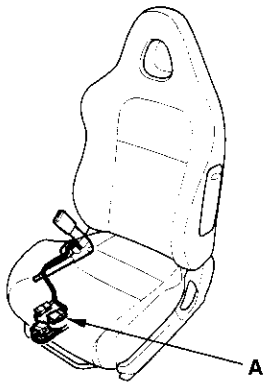
Seat Belt Tensioner

5. Disconnect both seat belt tensioner 2P connectors (A) from the floor wire harness.



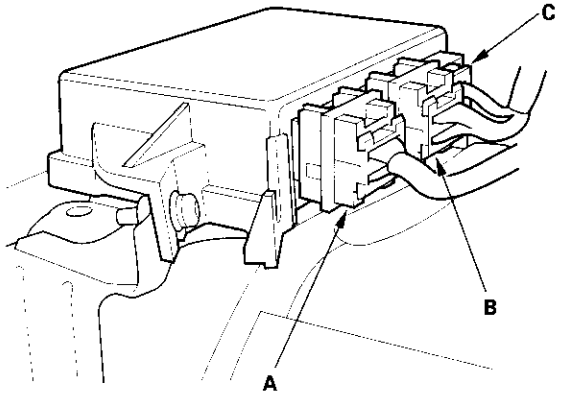
Seat Belt Buckle Tensioner

6. Disconnect both seat belt buckle tensioner 4P connectors (A).



SRS Unit

7. Disconnect SRS unit connector A, SRS unit connector B, and/or SRS unit connector C 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 then store this information in memory. For easier troubleshooting, this data can be retrieved via a data link circuit.

- When you turn the ignition switch ON (II), the SRS indicator will come on. If it goes off after 6 seconds, the system is normal.
- If there is an abnormality, the system locates and defines the problem, stores this information in memory, and turns the SRS indicator on. The data will remain in the memory even when the ignition switch is turned off or if the battery is disconnected.
- When you connect the Honda PGM Tester to the 16P data link connector (DLC) to short the SCS terminal, and turn the ignition switch ON (II), the SRS indicator will indicate the diagnostic trouble code (DTC) by the number of blinks.
- When you connect the Honda PGM Tester to the 16P data link Connector (DLC), you can retrieve the DTC in the Honda Systems "SRS" menu.
- After reading and recording the DTC, proceed with the troubleshooting procedure for this code.

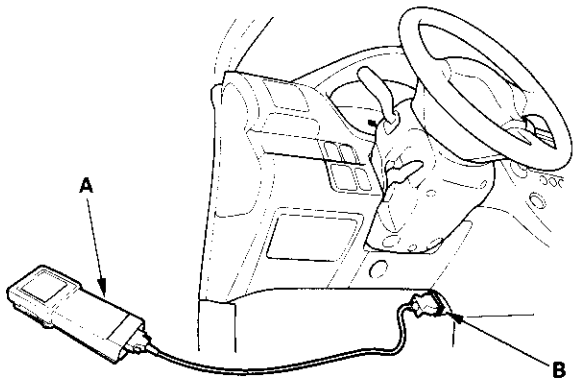
Precautions

- Use only a digital multimeter to check the system. If it's not a Honda multimeter, make sure its output is 10 mA (0.01A) 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 ON (II), or has been turned OFF for less than 3 minutes, be careful not to bump the SRS unit; the airbags could accidentally deploy and cause damage or injuries.
- Before you remove the SRS harness, disconnect the driver's airbag connector, the front passenger's airbag connector, both side airbag connectors, both seat belt buckle tensioner connectors, and both seat belt tensioner connectors.
- Make sure the battery is sufficiently charged. If the battery is dead or low, measuring values won't be correct.
- Do not touch a tester probe to the terminals in the SRS unit or harness connectors, and do not connect the terminals with a jumper wire. Use only the backprobe set and the Honda PGM Tester. Backprobe spring-loaded lock type connectors correctly.

Reading the DTC

When the SRS indicator is on, read the DTC using either of the following methods:

PGM Tester "SRS" Menu Method:
Connect the Honda PGM Tester (A) to the 16P data link connector (DLC)(B), and follow the Tester's prompts in the "SRS" menu.
If the Tester indicates no DTC, no communication, DTC 3-6 to 3-10, DTC 4-6 to 4-10, DTC 9-1, or DTC 9-2, double-check by using the "SCS" menu method.



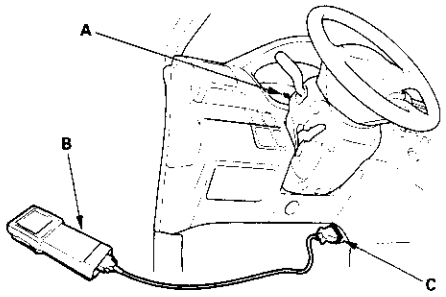
(cont'd)

General Troubleshooting Information (cont'd)

PGM Tester "SCS" Menu Method (retrieving the flash codes):

The SRS indicator (A) indicates the DTC by the number of blinks when the Honda PGM Tester (B) is connected to the DLC (data link connector) (16P) (1).

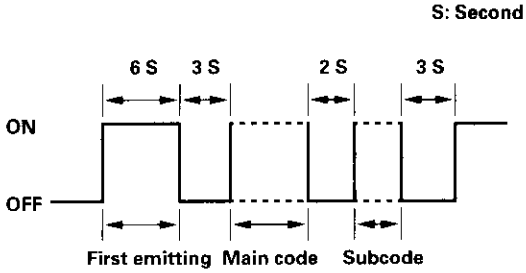
1. Make sure the ignition switch is OFF.
2. Connect the Honda PGM Tester (B) to the DLC (C), and follow the Tester's prompts in the "SCS" menu to ground the SCS line (see the Honda PGM Tester Operator's Manual).



3. Make sure the SCS line is grounded, then turn the ignition switch ON (II). The SRS indicator comes on for about 6 seconds, and then goes off. Then it will blink to indicate the DTC (see the table below).
4. Read the DTC.
5. Turn the ignition switch OFF, and wait for 10 seconds.
6. Disconnect the Honda PGM Tester from the DLC.
7. Do the troubleshooting procedure for the DTC.

Patterns of DTC Indications:

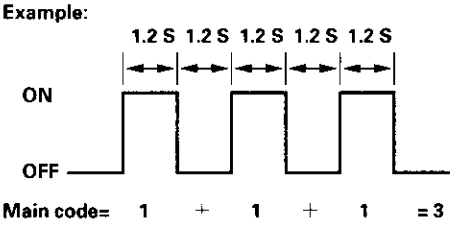
The DTC consists of a main code and subcode.



Reading the main code:

In case of 1~10
Count the number of blinks.

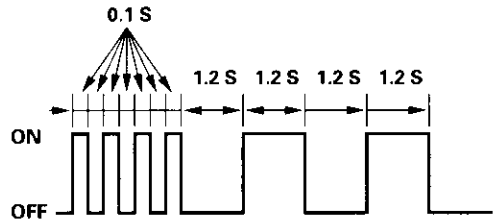
Example:



Main code= 1 + 1 + 1 = 3

In case of 11~15
Four fast blinks count as 10.
Add any further blinks together as shown.

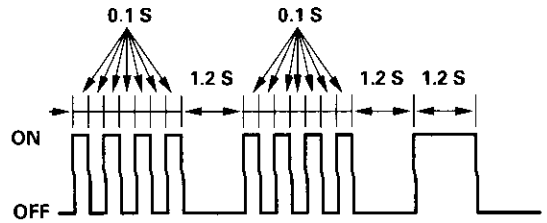
Example:



Main code= 10 + 1 + 1 = 12

In case of 20 or more
Two sets of four fast blinks count as 20.
Add any further blinks together as shown.

Example:

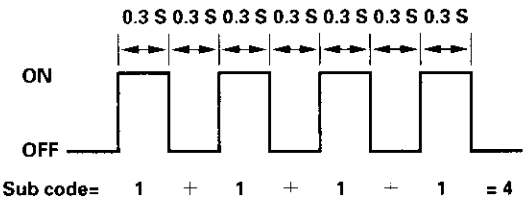


Main code= 10 + 10 + 1 = 21

Reading the subcode:

Count the number of blinks.

Example:

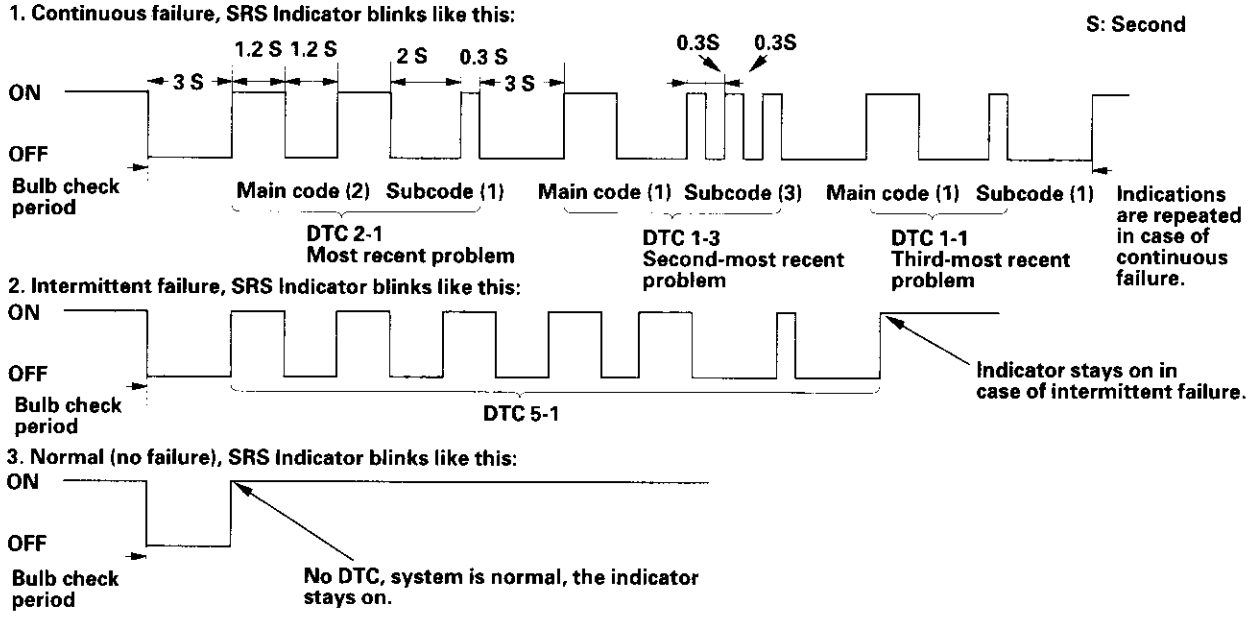


Sub code= 1 + 1 + 1 + 1 = 4

If the main code is '3', and the subcode is '4', record a DTC 3-4.

- Including the most recent problem, up to three different DTCs can be indicated (see example 1 below).
- In case of a continuous failure, the DTC will be indicated repeatedly (see example 1 below).
- In case of an intermittent failure, the SRS indicator will indicate the DTCs one time, then it will stay on (see example 2 below).
- If both a continuous and an intermittent failure occur, both DTCs will be indicated as continuous failures.
- When the system is normal (no DTCs), the SRS indicator will stay on (see example 3).
- If the SRS indicator comes on continuously without a DTC, there may be a problem with the system.
- If the SRS indicator does not come on as indicated above, always check for an open or a short to ground in the SCS circuit before troubleshooting the system.

Example of DTC Indications:



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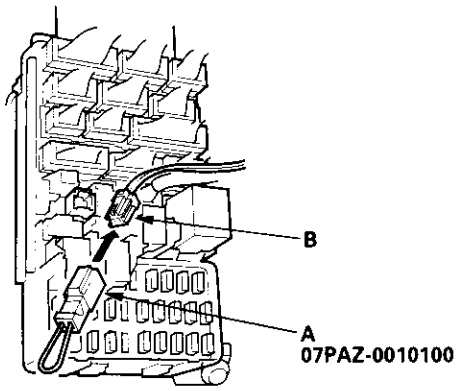
General Troubleshooting Information (cont'd)

Erasing the DTC Memory

Special Tool Required
SCS service connector 07PAZ-0010100

To erase the DTC(s) from the SRS unit, use a Honda PGM Tester (see the Honda PGM Tester SRS Vehicle System Supplement) or the following procedure.

1. Make sure the ignition switch is OFF.
2. Connect the SCS service connector (A) to the MES 2P connector (B). Do not use a jumper wire.



3. Turn the ignition switch 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 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 within 4 seconds after the indicator comes on.
6. When the SRS indicator goes off, remove the SCS service connector from the MES connector within 4 seconds.
7. The SRS indicator will blink two times indicating that the memory has been erased.
8. Turn the ignition switch OFF, and wait for 10 seconds.
9. Turn the ignition switch ON (II) again. The SRS is OK if the SRS indicator comes on for 6 seconds and then goes off.

Troubleshooting Intermittent Failures

If there was a malfunction, but it doesn't recur, it will be stored in the memory as an intermittent failure, and the SRS indicator will come on.

After checking the DTC, troubleshoot as follows:

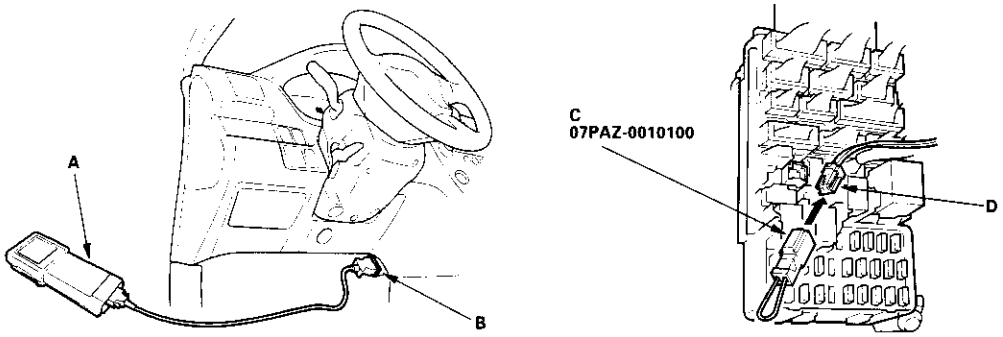
1. Read the DTC (see "Reading the DTC").
2. Erase the DTC memory (see "Erasing the DTC Memory").
3. With the shift lever in neutral, start the engine, and let it idle.
4. The SRS indicator will come on for about 6 seconds and then go off.
5. Shake the wire harness and the connectors, take a test drive (quick acceleration, quick braking, 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.
6. If you can't duplicate the intermittent failure, the system is OK at this time.

Initializing the OPDS (Occupant Position Detection System) Unit

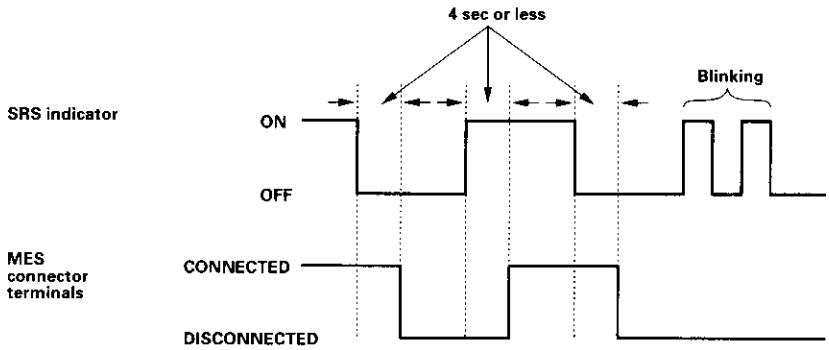
Special Tool Required
SCS service connector 07PAZ-0010100

When a seat-back cover, seat-back cushion, and/or OPDS unit is replaced, initialize the OPDS by following the procedure below.
NOTE: Make sure the front passenger's seat is dry. Set the seat-back in the normal position, and make sure there is nothing on the seat.

1. Make sure the ignition switch is OFF.
2. Connect the Honda PGM Tester (A) to the DLC (16P) (B), and follow the Tester's prompts in the "SCS" menu to ground the SCS line (see the Honda PGM Tester Operator's Manual).
3. Connect the SCS service connector (C) to the MES 2P connector (D). Do not use a jumper wire.



4. Turn the ignition switch ON (II).
5. The SRS indicator comes on for about 6 seconds and goes off. Remove the SCS service connector from the MES connector within 4 seconds after the SRS indicator went off.
6. The SRS indicator comes on again. Reconnect the SCS service connector to the MES connector within 4 seconds after the SRS indicator comes on.
7. The SRS indicator goes off. Remove the SCS service connector from the MES connector within 4 seconds.
8. Watch the SRS indicator.
   - If the indicator blinks two times and then stays on, the OPDS is initialized, but the DTCs need to be erased. Go to step 9, then erase the DTCs.
   - If the indicator blinks two times and then goes off, the OPDS unit is initialized. Go to step 9.
   - If the indicator stays on without first blinking, the OPDS is not initialized. Read the DTC. If DTC 15-1 is indicated, repeat the initialization procedure. If another DTC is indicated, go to the appropriate page in the DTC Troubleshooting Index.
9. Turn the ignition switch off, and disconnect the PGM Tester.



DTC Troubleshooting Index

DTC	Detection Item	Notes
1-1	Open in driver's airbag inflator	(see page 23-36)
1-2	Increased resistance in driver's airbag inflator	(see page 23-36)
1-3	Short to another wire or decreased resistance in driver's airbag inflator	(see page 23-37)
1-4	Short to power in driver's airbag inflator	(see page 23-39)
1-5	Short to ground in driver's airbag inflator	(see page 23-40)
2-1	Open in front passenger's airbag inflator	(see page 23-42)
2-2	Increased resistance in front passenger's airbag inflator	(see page 23-42)
2-3	Short to another wire or decreased resistance in front passenger's airbag inflator	(see page 23-43)
2-4	Short to power in front passenger's airbag inflator	(see page 23-45)
2-5	Short to ground in front passenger's airbag inflator	(see page 23-46)
3-1	Open in driver's seat belt tensioner	(see page 23-48)
3-2	Increased resistance in driver's seat belt tensioner	(see page 23-48)
3-3	Short to another wire or decreased resistance in driver's seat belt tensioner	(see page 23-49)
3-4	Short to power in driver's seat belt tensioner	(see page 23-51)
3-5	Short to ground in driver's seat belt tensioner	(see page 23-52)
21-1	Open or increased resistance in driver's seat belt buckle tensioner	(see page 23-54)
21-3	Short to another wire or decreased resistance in driver's seat belt buckle tensioner	(see page 23-55)
21-4	Short to power in driver's seat belt buckle tensioner	(see page 23-56)
21-5	Short to ground in driver's seat belt buckle tensioner	(see page 23-57)
4-1	Open in front passenger's seat belt tensioner	(see page 23-58)
4-2	Increased resistance in front passenger's seat belt tensioner	(see page 23-58)
4-3	Short to another wire or decreased resistance in front passenger's seat belt tensioner	(see page 23-60)
4-4	Short to power in front passenger's seat belt tensioner	(see page 23-61)
4-5	Short to ground in front passenger's seat belt tensioner	(see page 23-63)
22-1	Open or increased resistance in front passenger's seat belt buckle tensioner	(see page 23-64)
22-3	Short to another wire or decreased resistance in front passenger's seat belt buckle tensioner	(see page 23-65)
22-4	Short to power in front passenger's seat belt buckle tensioner	(see page 23-66)
22-5	Short to ground in front passenger's seat belt buckle tensioner	(see page 23-68)
5-1	Internal failure of SRS unit NOTE: Before troubleshooting DTCs 5-1 through 8-6, check battery/system voltage. If the voltage is low, repair the charging system before troubleshooting the SRS.	(see page 23-69)
5-2		
5-4		
5-8		
6-3		
6-4		
6-7		
6-8		
7-1		
7-2		
7-3		
8-1		
8-2		
8-3		
8-4		
8-5		
8-6		

DTC	Detection Item	Notes
9-1	Internal failure of the SRS unit. If intermittent, it could mean internal failure of the unit or a faulty indicator circuit. Refer to Troubleshooting Intermittent Failures (see page 23-26). NOTE: Before troubleshooting DTC 9-1 or 9-2, check battery/system voltage. If the voltage is low, repair the charging system before troubleshooting the SRS.	(see page 23-69)
9-2	Internal failure of the SRS unit. If intermittent, it could mean internal failure of the power supply (VB line). Refer to Troubleshooting Intermittent Failures (see page 23-26). NOTE: Before troubleshooting DTC 9-1 or 9-2, check battery/system voltage. If the voltage is low, repair the charging system or replace the battery before troubleshooting the SRS.	
9-3	Faulty driver's seat belt buckle switch	(see page 23-71)
9-4	Faulty front passenger's seat belt buckle switch	(see page 23-74)
9-6	Faulty left front impact sensor	(see page 23-77)
9-7	Faulty right front impact sensor	(see page 23-79)
10-1	Seat belt and seat belt buckle tensioners (and airbag(s)) deployed	(see page 23-69)
10-2	Driver's side airbag deployed	
10-3	Seat belt and seat belt buckle tensioners (and airbag(s)) and driver's side airbag deployed	
10-4	Front passenger's side airbag deployed	
10-5	Seat belt and seat belt buckle tensioners (and airbag(s)) and front passenger's side airbag deployed	
10-6	Driver's and front passenger's side airbags deployed	
10-7	Seat belt and seat belt buckle tensioners (and airbag(s)) and driver's and front passenger's side airbags deployed	
11-1	Open or increased resistance in driver's side airbag inflator	(see page 23-81)
11-3	Short to another wire or decreased resistance in driver's side airbag inflator	(see page 23-82)
11-4	Short to power in driver's side airbag inflator	(see page 23-83)
11-5	Short to ground in driver's side airbag inflator	(see page 23-85)
12-1	Open or increased resistance in front passenger's side airbag inflator	(see page 23-86)
12-3	Short to another wire or decreased resistance in front passenger's side airbag inflator	(see page 23-87)
12-4	Short to power in front passenger's side airbag inflator	(see page 23-88)
12-5	Short to ground in front passenger's side airbag inflator	(see page 23-90)
13-1	Internal failure of the driver's side impact sensor	(see page 23-70)
13-2		
13-3	No signal from the driver's side impact sensor	(see page 23-91)
13-4	Faulty power supply to the driver's side impact sensor	(see page 23-92)
14-1	Internal failure of the front passenger's side impact sensor	(see page 23-70)
14-2		
14-3	No signal from the front passenger's side impact sensor	(see page 23-94)
14-4	Faulty power supply to the front passenger's side impact sensor	(see page 23-95)
15-1	Faulty OPDS unit or OPDS not initialized	(see page 23-96)
15-2	Faulty side airbag cutoff indicator circuit	(see page 23-99)
15-3	Faulty OPDS sensor	(see page 23-104)

Symptom Troubleshooting Index

Symptom	Diagnostic procedure	Also check for
SRS indicator doesn't come on	SRS Indicator Troubleshooting (see page 23-105)	
SRS indicator stays on when in "SCS" menu method	SRS Indicator Troubleshooting (see step 1 on page 23-107)	Inability to retrieve DTCs with the PGM Tester. Retrieve the flash codes using the SCS menu method (see page 23-24).
• Side airbag cutoff indicator stays on after bulb check (If the indicator stays on, it does not set a DTC). Side airbag cutoff indicator is flashing	• Make sure nothing is on the front passenger's seat. • If the side airbag cutoff indicator stays on after the ignition switch is turned ON (II), initialize the OPDS unit (see page 23-27). – If the side airbag cutoff indicator operates normally, the system is OK. – If the side airbag cutoff indicator stays on, replace the OPDS sensor (see section 20). The sensor is part of the seat-back pad.	DTC 15-2 troubleshooting

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), seat belt tensioners (I), seat belt buckle tensioners (J), and front impact sensors (K).

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 the severity of a collision is at the margin, or threshold, that determines whether or not the airbags will deploy. In such cases, the seat belt will provide sufficient protection, and the supplemental protection offered by the airbag would be mininal.

Side Airbags

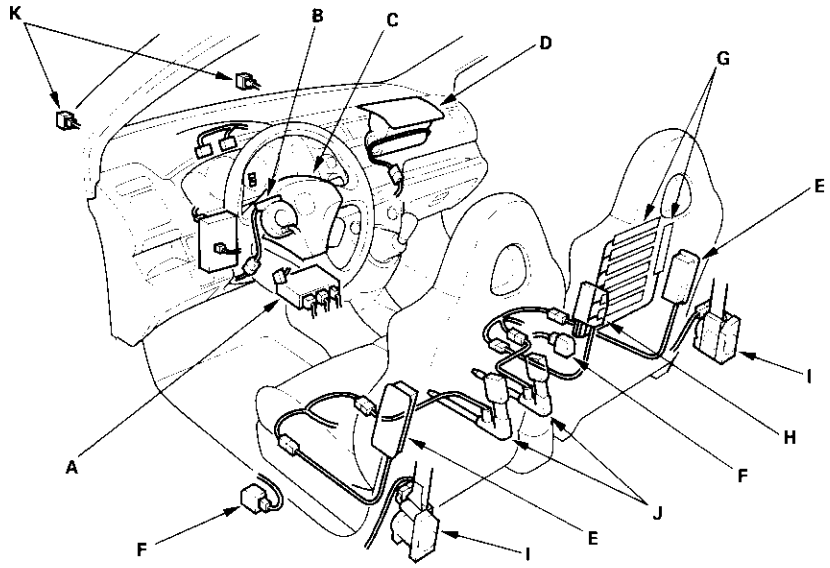
The side airbags (E) are in each front seat-back. They help protect the upper torso of the driver or front seat passenger during a moderate to severe side impact. Side impact sensors (F) in each door sill and in the SRS unit detect such an impact and instantly inflate the driver's or the passenger's side airbag. Only one side airbag will deploy during a side impact. If the impact is on the passenger's side, the passenger's side airbag will deploy even if there is no passenger.

Seat Belt and Seat Belt Buckle Tensioners

The seat belt and seat belt buckle tensioners are linked with the SRS airbags to further increase the effectiveness of the seat belt. In a front-end collision, the tensioners instantly retract the belt and buckle firmly to secure the occupants in their seats.

OPDS

The side airbag system also includes an occupant position detection system (OPDS). This system consists of sensors (G) and an OPDS unit (H) in the front passenger's seat-back. The OPDS unit sends occupant height and position data to the SRS unit. If the OPDS unit determines that the front passenger is of small stature (for example, a child) and the front passenger is leaning into the side airbag deployment path, the SRS unit will automatically disable the passenger's side airbag. The SRS unit will also disable the airbag when the OPDS detects certain objects on the seat. When the side airbag is disabled, the side airbag cutoff indicator on the instrument panel alerts the driver that the passenger's side airbag will not deploy in a side impact. When the object is removed, or the passenger sits upright, the side airbag cutoff indicator will go off after a few seconds, alerting the driver that the passenger's side airbag will deploy in a side impact.



(cont'd)

System Description (cont'd)

SRS Operation

The main circuit in the SRS unit senses and judges 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, respectively, will keep voltage at a constant level.

For the SRS to operate:

Seat Belt Tensioners and Seat Belt Buckle Tensioners

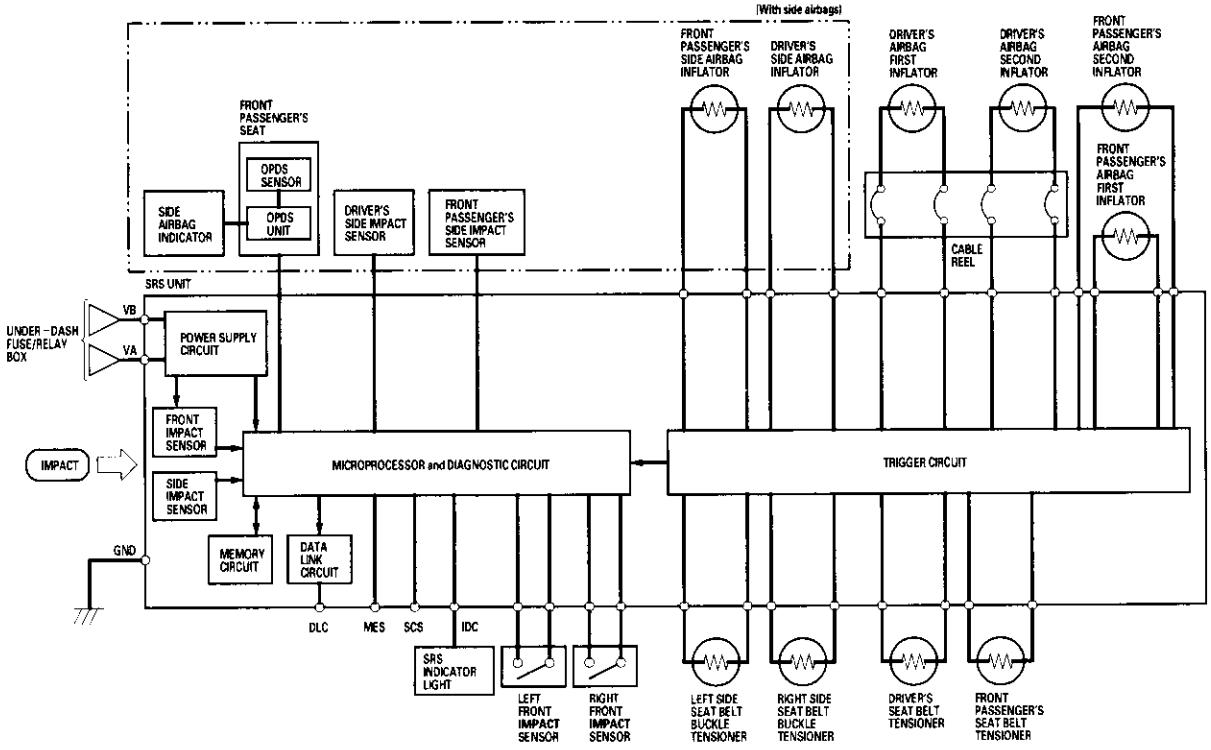
(1) A front impact sensor must activate and send electric signals to the microprocessor.
(2) The microprocessor must compute the signals and send them to the tensioners.
(3) The charges must ignite and deploy the tensioners.

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 depending on the severity of the collision and whether the seat belt buckle switch is ON or OFF, it sends the appropriate signals to the airbag inflator(s).
(3) The inflators that received signals 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 send them to the side airbag inflator(s). However, the microprocessor cuts off the signals to the front passenger's side airbag if the OPDS unit determines that the front passenger's head is in the deployment path of the side airbag.
(3) The inflator that received the signal must ignite and deploy the side airbag.



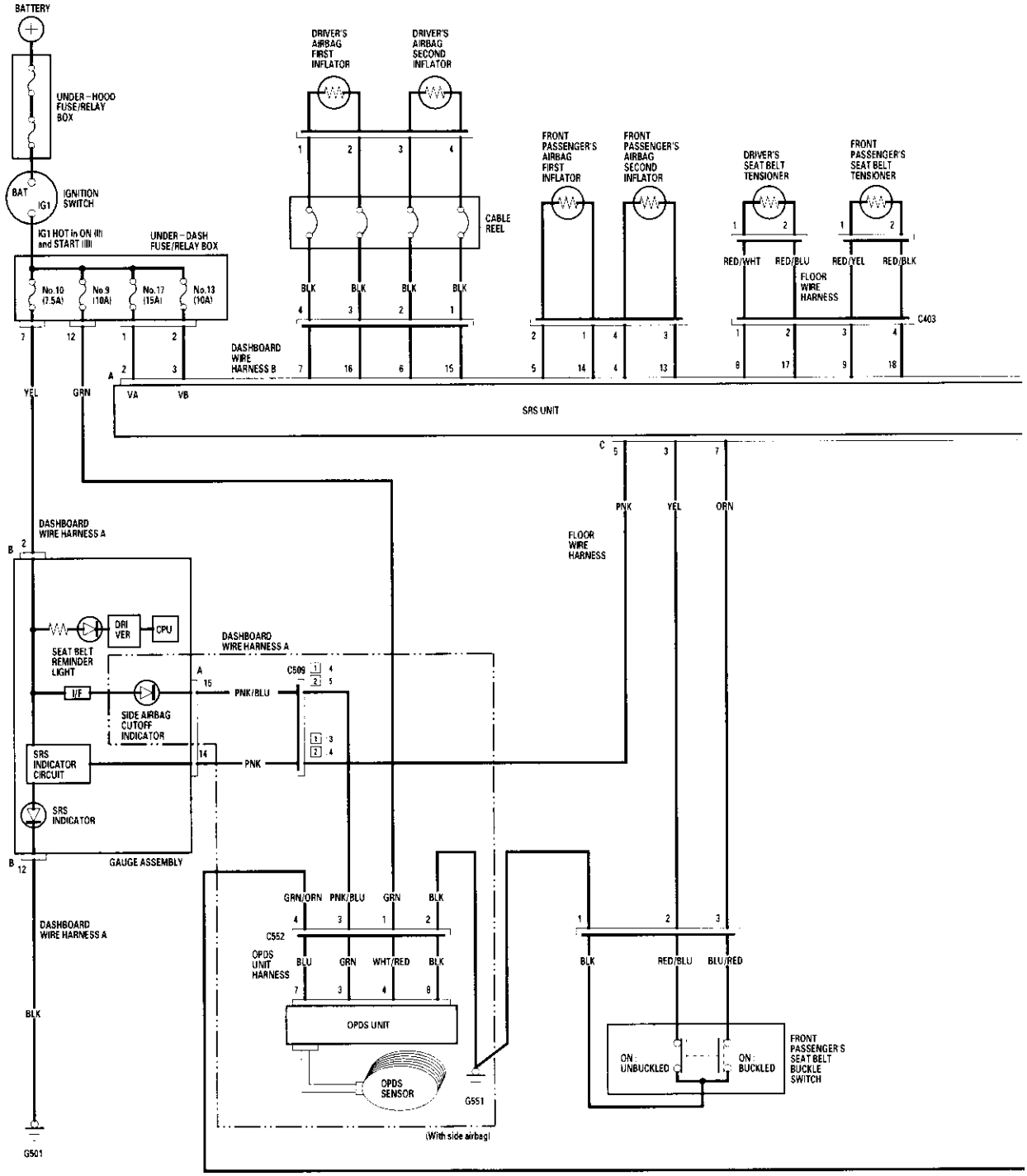
Self-diagnosis System

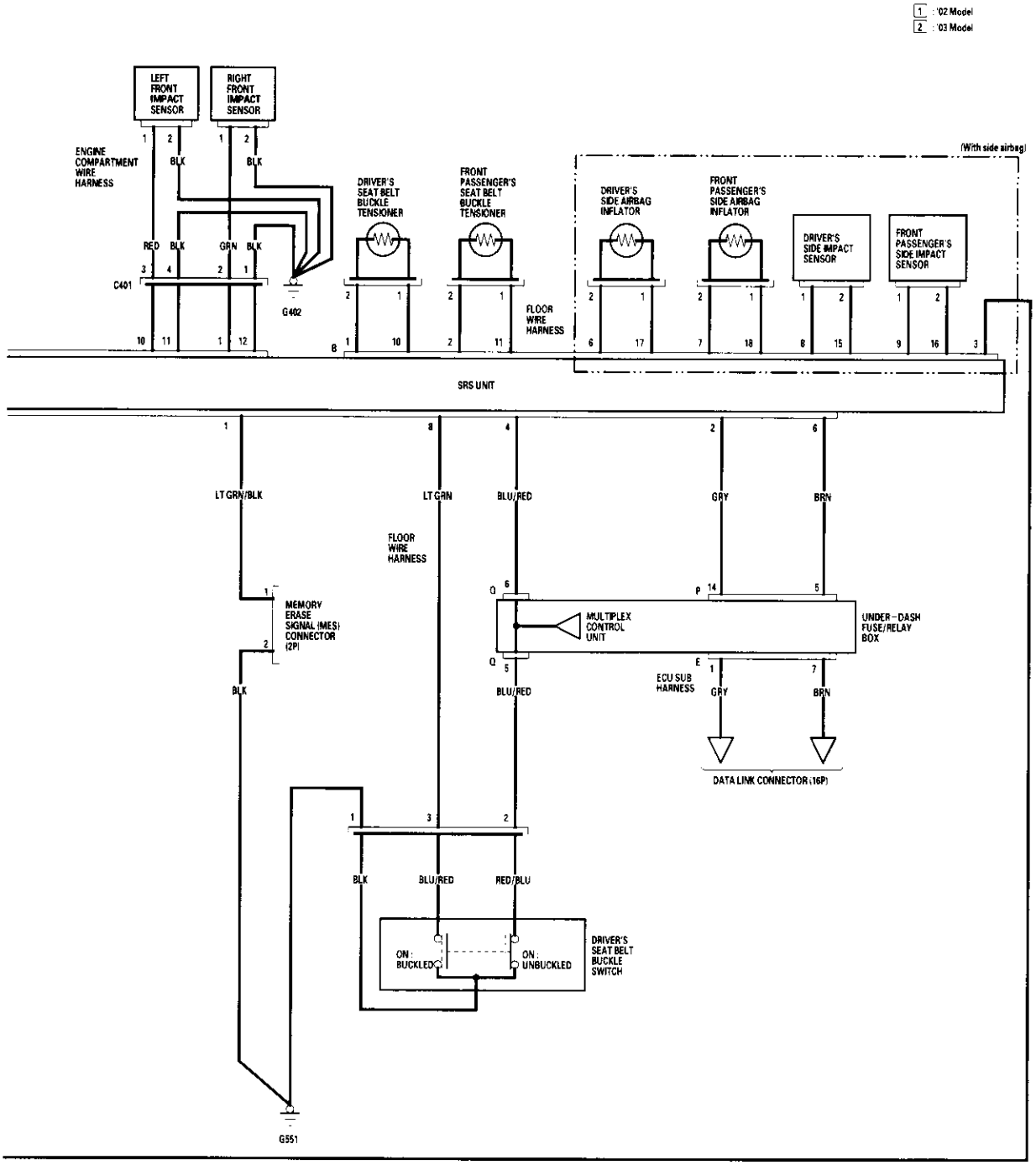
A self-diagnosis circuit is built into the SRS unit; when the ignition switch is turned ON (II), the SRS indicator comes on and goes off after about 6 seconds if the SRS is operating normally.

If the indicator does not come on, or does not go off after 6 seconds, or if it comes on while driving, it indicates an abnormality in the SRS. The SRS must be inspected and repaired as soon as possible.

For better serviceability, the SRS unit memory stores a DTC that relates to the cause of the malfunction, and the unit is connected to the data link circuit. This information can be read with the Honda PGM Tester when it is connected to the data link connector (DLC) (see page 23-23).

Circuit Diagram




1 : '02 Model
2 : '03 Model
LEFT FRONT IMPACT SENSOR
RIGHT FRONT IMPACT SENSOR
ENGINE COMPARTMENT WIRE HARNESS
BLK
RED
GRN
C401
G402
DRIVER'S SEAT BELT BUCKLE TENSIONER
FRONT PASSENGER'S SEAT BELT BUCKLE TENSIONER
FLOOR WIRE HARNESS
(With side airbag)
DRIVER'S SIDE AIRBAG INFLATOR
FRONT PASSENGER'S SIDE AIRBAG INFLATOR
DRIVER'S SIDE IMPACT SENSOR
FRONT PASSENGER'S SIDE IMPACT SENSOR
SRS UNIT
LT GRN/BLK
LT GRN
BLU/RED
GRY
BRN
MEMORY ERASE SIGNAL (MES) CONNECTOR (2P)
MULTIPLEX CONTROL UNIT
UNDER-DASH FUSE/RELAY BOX
ECU SUB HARNESS
DATA LINK CONNECTOR (16P)
RED/BLU
ON : BUCKLED
ON : UNBUCKLED
DRIVER'S SEAT BELT BUCKLE SWITCH
G551

DTC Troubleshooting

DTC 1-1: Open in Driver's Airbag Inflator
DTC 1-2: Increased Resistance in Driver's Airbag Inflator

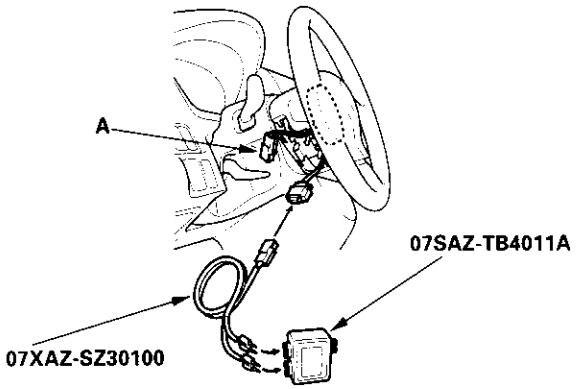
Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead F 07XAZ-SZ30100

1. Erase the DTC memory (see page 23-26).
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?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-26).
3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 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 the simulator lead F to the cable reel.
6. Reconnect the battery negative cable.
7. Erase the DTC memory.
8. Read the DTC.

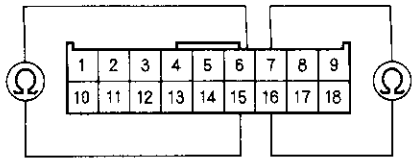
   Is DTC 1-1 or DTC 1-2 indicated?

   YES—Go to step 9.

   NO—Open or increased resistance in the driver's airbag inflator; replace the driver's airbag (see page 23-113).■
9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
10. Disconnect the front passenger's airbag 4P connector from dashboard wire harness B (see step 3 on page 23-21).
11. Disconnect both seat belt tensioners 2P connectors from the floor wire harness (see step 5 on page 23-22).
12. Disconnect SRS unit connector A (18P) from the SRS unit (see step 7 on page 23-22). Do not disconnect the special tool from the cable reel.

13. Check resistance between the No. 7 and the No. 16 terminals and between the No. 6 and the No. 15 terminals of SRS unit connector A (18P). There should be 2.0—3.0 Ω.

SRS UNIT CONNECTOR A (18P)



Wire side of female terminals

Is the resistance as specified?

YES—Faulty SRS unit or poor contact at SRS unit connector A (18P) 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 23-122). ■

NO—Open or increased resistance in dashboard wire harness B or the cable reel; replace the cable reel. If the problem still present, replace dashboard wire harness B.

DTC 1-3: Short to Another Wire or Decreased Resistance in Driver's Airbag Inflator

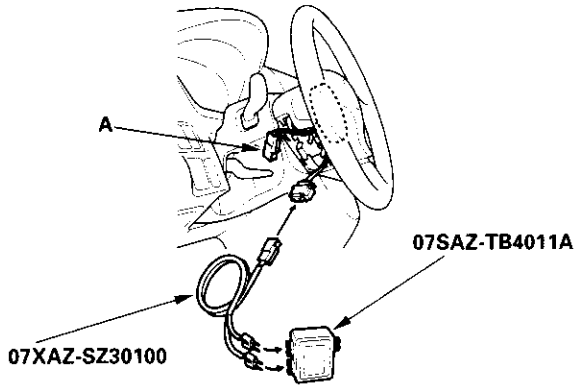
Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead F 07XAZ-SZ30100

1. Erase the DTC memory (see page 23-26).
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?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-26).
3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 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 the simulator lead F to the cable reel.
6. Reconnect the battery negative cable.
7. Erase the DTC memory.

(cont'd)

DTC Troubleshooting (cont'd)

8. Read the DTC.

   Is DTC 1-3 indicated?

   YES—Go to step 9.

   NO—Short in the driver's airbag; replace the driver's airbag (see page 23-113).■

9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.

10. Disconnect the front passenger's airbag 4P connector from dashboard wire harness B (see step 3 on page 23-21).

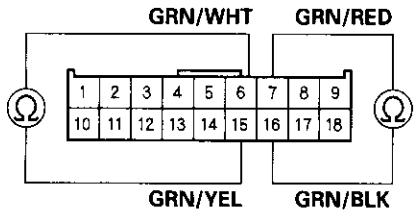
11. Disconnect both seat belt tensioner 2P connectors from the floor wire harness (see step 5 on page 23-22).

12. Disconnect SRS unit connector A (18P) from the SRS unit (see step 7 on page 23-22).

13. Disconnect the special tool from the cable reel.

14. Check resistance between the No. 7 and the No. 16 terminals and between the No. 6 and the No. 15 terminals of SRS unit connector A (18P). There should be an open circuit, or at least 1 MΩ.

SRS UNIT CONNECTOR A (18P)



Wire side of female terminals

Is the resistance as specified?

YES—Faulty SRS unit; replace the SRS unit (see page 23-122).■

NO—Go to step 15.

15. Disconnect the cable reel from dashboard wire harness B. Check resistance between the No. 7 and the No. 16 terminals and between the No. 6 and the No. 15 terminals of SRS unit connector A (18P). There should be an open circuit, or at least 1 MΩ.

    Is the resistance as specified?

    YES—Replace the cable reel.■

    NO—Replace dashboard wire harness B.■

DTC 1-4: Short to Power in Driver's Airbag Inflator

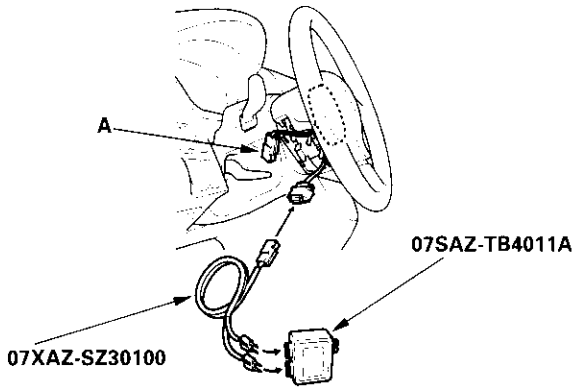
Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead F 07XAZ-SZ30100

1. Erase the DTC memory (see page 23-26).
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?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-26).
3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 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 the simulator lead F to the cable reel.
6. Reconnect the battery negative cable.
7. Erase the DTC memory.
8. Read the DTC.

   Is DTC 1-4 indicated?

   YES—Go to step 9.

   NO—Short to power in the driver's airbag; replace the driver's airbag (see page 23-113).■
9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
10. Disconnect the front passenger's airbag 4P connector from dashboard wire harness B (see step 3 on page 23-21).
11. Disconnect both seat belt tensioner 2P connectors from the floor wire harness (see step 5 on page 23-22).
12. Disconnect SRS unit connector A (18P) from the SRS unit (see step 7 on page 23-22).
13. Disconnect the special tool from the cable reel.
14. Reconnect the battery negative cable.

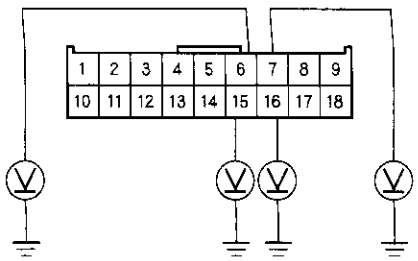
(cont'd)

DTC Troubleshooting (cont'd)

15. Turn the ignition switch ON (II).

16. Check for voltage between the No. 7 terminal of SRS unit connector A (18P) and body ground, the No. 16 terminal and body ground, the No. 6 terminal and body ground, and the No. 15 terminal and body ground. There should be 0.5 V or less.

SRS UNIT CONNECTOR A (18P)



Wire side of female terminals

Is the voltage as specified?

YES—Faulty SRS unit; replace the SRS unit (see page 23-122).■

NO—Go to step 17.

17. Turn the ignition switch OFF.

18. Disconnect the cable reel from dashboard wire harness B.

19. Turn the ignition switch ON (II).

20. Check for voltage between the No. 7 terminal of SRS unit connector A (18P) and body ground, the No. 16 terminal and body ground, the No. 6 terminal and body ground, and the No. 15 terminal and body ground. There should be 0.5 V or less.

Is the voltage as specified?

YES—Replace the cable reel.■

NO—Replace dashboard wire harness B.■

DTC 1-5: Short to Ground in Driver's Airbag Inflator

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead F 07XAZ-SZ30100

1. Erase the DTC memory (see page 23-26).

2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

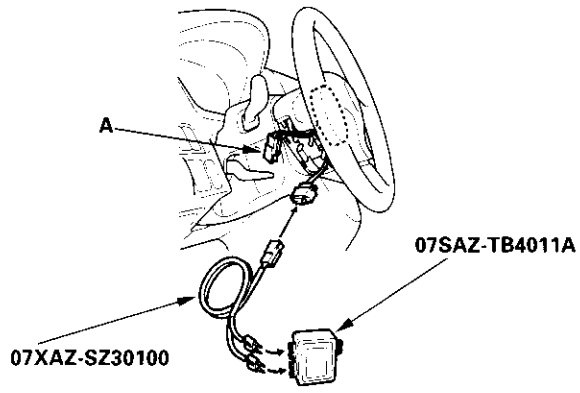
Does the SRS indicator stay on?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-26).

3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 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 the simulator lead F to the cable reel.

6. Reconnect the battery negative cable.

7. Erase the DTC memory.

8. Read the DTC.

   Is DTC 1-5 indicated?

   YES—Go to step 9.

   NO—Short to ground in the driver's airbag inflator; replace the driver's airbag (see page 23-113).■

9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.

10. Disconnect the front passenger's airbag 4P connector from dashboard wire harness B (see step 2 on page 23-21).

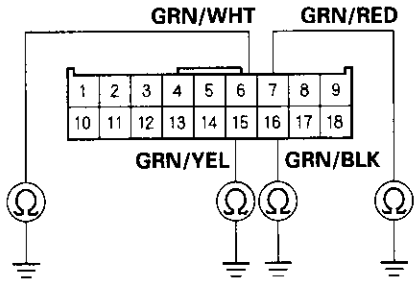
11. Disconnect both seat belt tensioner 2P connectors from the floor wire harness (see step 5 on page 23-22).

12. Disconnect SRS unit connector A (18P) from the SRS unit (see step 7 on page 23-22).

13. Disconnect the special tool from the cable reel.

14. Check resistance between the No. 7 terminal of SRS unit connector A (18P) and body ground, the No. 16 terminal and body ground, the No. 6 terminal and body ground, and the No. 15 terminal and body ground. There should be an open circuit, or at least 1 MΩ.

SRS UNIT CONNECTOR A (18P)



Wire side of female terminals

Is the resistance as specified?

YES—Faulty SRS unit; replace the SRS unit (see page 23-122).■

NO—Go to step 15.

15. Disconnect the cable reel from dashboard wire harness B.

16. Check resistance between the No. 7 terminal of SRS unit connector A (18P) and body ground, the No. 16 terminal and body ground, the No. 6 terminal and body ground, and the No. 15 terminal and body ground. There should be an open circuit, or at least 1 MΩ.

    Is the resistance as specified?

    YES—Replace the cable reel.■

    NO—Replace dashboard wire harness B.■

DTC Troubleshooting (cont'd)

DTC 2-1: Open in Front Passenger's Airbag Inflator
DTC 2-2: Increased Resistance in Front Passenger's Airbag Inflator

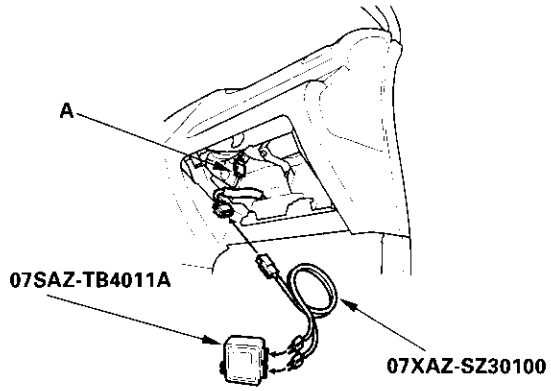
Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead F 07XAZ-SZ30100

1. Erase the DTC memory (see page 23-26).
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?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-26).
3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
4. Disconnect the front passenger's airbag 4P connector (A) from dashboard wire harness B.



5. Connect the SRS inflator simulator (2 Ω connectors) and the simulator lead F to dashboard wire harness B.
6. Reconnect the battery negative cable.
7. Erase the DTC memory.
8. Read the DTC.

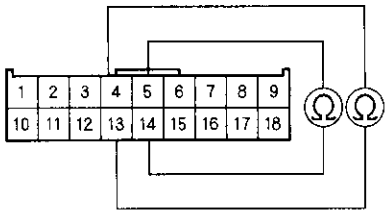
   Is DTC 2-1 or DTC 2-2 indicated?

   YES—Go to step 9.

   NO—Open or increased resistance in the front passenger's airbag inflator; replace the front passenger's airbag (see page 23-114).■
9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
10. Disconnect the driver's airbag 4P connector from the cable reel (see step 2 on page 23-21).
11. Disconnect both seat belt tensioner 2P connectors from the floor wire harness (see step 5 on page 23-22).
12. Disconnect SRS unit connector A (18P) from the SRS unit (see step 7 on page 23-22). Do not disconnect the special tool from dashboard wire harness B.

13. Check resistance between the No. 4 and No. 13 terminals and between the No. 5 and No. 14 terminals of SRS unit connector A (18P). There should be 2.0—3.0 Ω.

SRS UNIT CONNECTOR A (18P)



Wire side of female terminals

Is the resistance as specified?

YES—Faulty SRS unit or poor contact at SRS unit connector A (18P). Check the connection; if the connection is OK, replace the SRS unit (see page 23-122).■

NO—Open or increased resistance in dashboard wire harness B; replace dashboard wire harness B.■

DTC 2-3: Short to Another Wire or Decreased Resistance in Front Passenger's Airbag Inflator

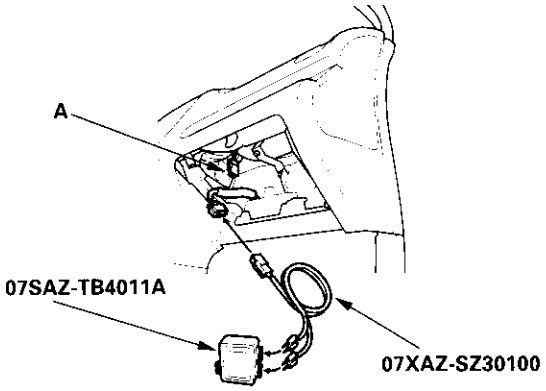
Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead F 07XAZ-SZ30100

1. Erase the DTC memory (see page 23-26).
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?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-26).
3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
4. Disconnect the front passenger's airbag 4P connector (A) from dashboard wire harness B.



5. Connect the SRS inflator simulator (2 Ω connectors) and the simulator lead F to dashboard wire harness B.
6. Reconnect the battery negative cable.
7. Erase the DTC memory.

(cont'd)

DTC Troubleshooting (cont'd)

8. Read the DTC.

   Is DTC 2-3 indicated?

   YES—Go to step 9.

   NO—Short in the front passenger's airbag inflator; replace the front passenger's airbag (see page 23-114).■

9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.

10. Disconnect the driver's airbag 4P connector from the cable reel (see step 2 on page 23-21).

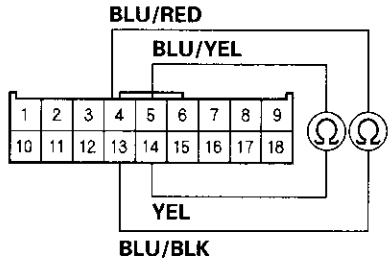
11. Disconnect both seat belt tensioner 2P connectors from the floor wire harness (see step 5 on page 23-22).

12. Disconnect SRS unit connector A (18P) from the SRS unit (see step 7 on page 23-22).

13. Disconnect the special tool from dashboard wire harness B.

14. Check resistance between the No. 4 and No. 13 terminals and between the No. 5 and No. 14 terminals of SRS unit connector A (18P). There should be an open circuit, or at least 1 MΩ.

SRS UNIT CONNECTOR A (18P)



Wire side of female terminals

Is the resistance as specified?

YES—Faulty SRS unit; replace the SRS unit (see page 23-122).■

NO—Short in dashboard wire harness B; replace dashboard wire harness B.■

DTC 2-4: Short to Power in Front Passenger's Airbag Inflator

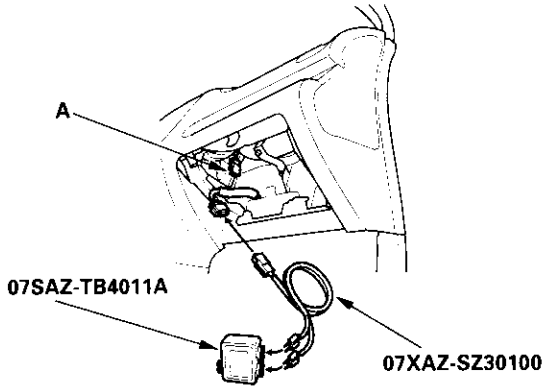
Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead F 07XAZ-SZ30100

1. Erase the DTC memory (see page 23-26).
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?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-26).
3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
4. Disconnect the front passenger's airbag 4P connector (A) from dashboard wire harness B.



5. Connect the SRS inflator simulator (2 Ω connectors) and the simulator lead F to dashboard wire harness B.
6. Reconnect the battery negative cable.
7. Erase the DTC memory.
8. Read the DTC.

   Is DTC 2-4 indicated?

   YES—Go to step 9.

   NO—Short to power in the front passenger's airbag inflator; replace the front passenger's airbag (see page 23-114).■
9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
10. Disconnect the driver's airbag 4P connector from the cable reel (see step 2 on page 23-21).
11. Disconnect both seat belt tensioner 2P connectors from the floor wire harness (see step 5 on page 23-22).

(cont'd)

DTC Troubleshooting (cont'd)

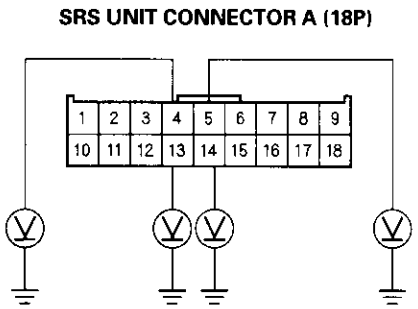
12. Disconnect SRS unit connector A (18P) from the SRS unit (see step 7 on page 23-22).

13. Disconnect the special tool from dashboard wire harness B.

14. Reconnect the battery negative cable.

15. Turn the ignition switch ON (II).

16. Check for voltage between the No. 4 terminal of SRS unit connector A (18P) and body ground, the No. 13 terminal and body ground, the No. 5 terminal and body ground, and the No. 14 terminal and body ground. There should be 0.5 V or less.



Wire side of female terminals

Is the voltage as specified?

YES—Faulty SRS unit; replace the SRS unit (see page 23-122).■

NO—Short to power in dashboard wire harness B; replace dashboard wire harness B.■

DTC 2-5: Short to Ground in Front Passenger's Airbag Inflator

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead F 07XAZ-SZ30100

1. Erase the DTC memory (see page 23-26).

2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

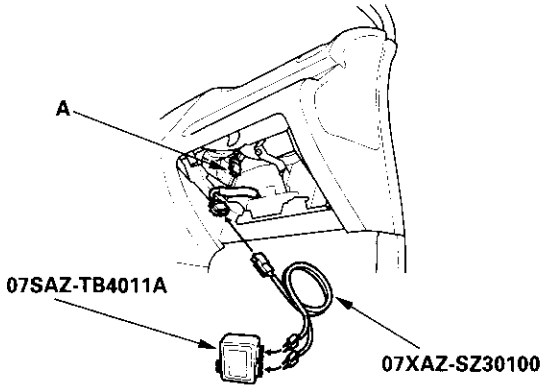
   Does the SRS indicator stay on?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-26).

3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.

4. Disconnect the front passenger's airbag 4P connector (A) from dashboard wire harness B.



5. Connect the SRS inflator simulator (2 Ω connectors) and the simulator lead F to dashboard wire harness B.

6. Reconnect the battery negative cable.

7. Erase the DTC memory.

8. Read the DTC.

   Is DTC 2-5 indicated?

   YES—Go to step 9.

   NO—Short to ground in the front passenger's airbag inflator; replace the front passenger's airbag (see page 23-114).■

9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.

10. Disconnect the driver's airbag 4P connector from the cable reel (see step 2 on page 23-21).

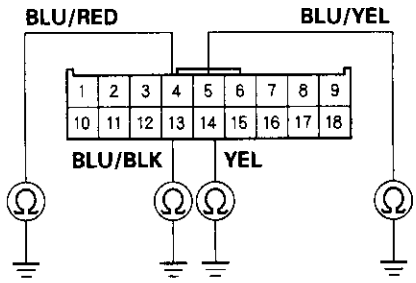
11. Disconnect both seat belt tensioner 2P connectors from the floor wire harness (see step 5 on page 23-22).

12. Disconnect SRS unit connector A (18P) from the SRS unit (see step 7 on page 23-22).

13. Disconnect the special tool from dashboard wire harness B.

14. Check resistance between the No. 4 terminal of SRS unit connector A (18P) and body ground, the No. 13 terminal and body ground, the No. 5 terminal and body ground, and the No. 14 terminal and body ground. There should be an open circuit, or at least 1 MΩ.

SRS UNIT CONNECTOR A (18P)



Wire side of female terminals

Is the resistance as specified?

YES—Faulty SRS unit; replace the SRS unit (see page 23-122).■

NO—Short to ground in dashboard wire harness B; replace dashboard wire harness B.■

DTC Troubleshooting (cont'd)

DTC 3-1: Open in Driver's Seat Belt Tensioner
DTC 3-2: Increased Resistance in Driver's Seat Belt Tensioner

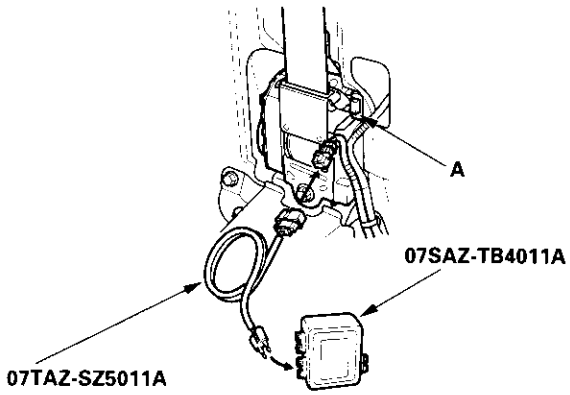
Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead C 07TAZ-SZ5011A
- SRS simulator lead F 07XAZ-SZ30100

1. Erase the DTC memory (see page 23-26).
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?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-26).
3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
4. Disconnect the driver's seat belt tensioner 2P connector (A) from the floor wire harness.

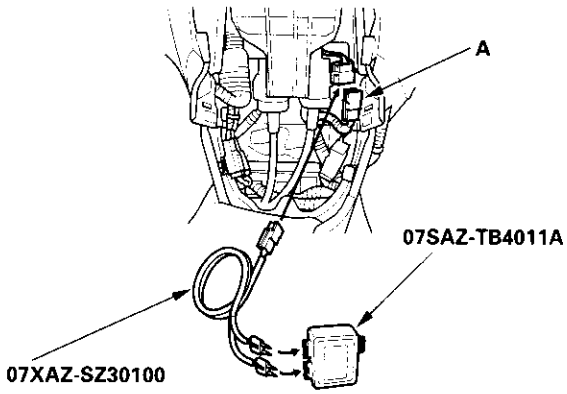


5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead C to the floor wire harness.
6. Reconnect the battery negative cable.
7. Erase the DTC memory.
8. Read the DTC.

   Is DTC 3-1 or DTC 3-2 indicated?

   YES—Go to step 9.

   NO—Open or increased resistance in the driver's seat belt tensioner; replace the driver's seat belt (see page 23-4).■
9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
10. Disconnect the floor wire harness 4P connector C403 (A) from dashboard wire harness B.



11. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead F to dashboard wire harness B.
12. Reconnect the battery negative cable.
13. Erase the DTC memory.
14. Read the DTC.

    Is DTC 3-1 or DTC 3-2 indicated?

    YES—Go to step 15.

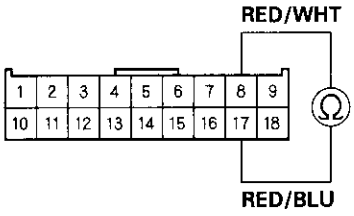
    NO—Open or increased resistance in the floor wire harness; replace the floor wire harness.■
15. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.

16. Disconnect the driver's airbag connector (see step 2 on page 23-21), front passenger's airbag connector (see step 3 on page 23-21), and front passenger's seat belt tensioner connector (see step 5 on page 23-22).

17. Disconnect SRS unit connector A (18P) from the SRS unit (see step 7 on page 23-22). Do not disconnect the special tool from dashboard wire harness B.

18. Check resistance between the No. 8 terminal and the No. 17 terminal of SRS unit connector A (18P). There should be 2.0—3.0 Ω.

SRS UNIT CONNECTOR A (18P)



Wire side of female terminals

Is the resistance as specified?

YES—Faulty SRS unit or poor contact at SRS unit connector A (18P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 23-122).■

NO—Open or increased resistance in dashboard wire harness B; replace dashboard wire harness B.■

DTC 3-3: Short to Another Wire or Decreased Resistance in Driver's Seat Belt Tensioner

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead C 07TAZ-SZ5011A
- SRS simulator lead F 07XAZ-SZ30100

1. Erase the DTC memory (see page 23-26).

2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

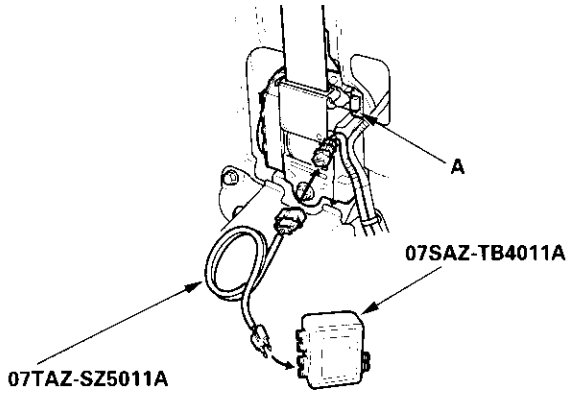
   Does the SRS indicator stay on?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-26).

3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.

4. Disconnect the driver's seat belt tensioner 2P connector (A) from the floor wire harness.



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead C to the floor wire harness.

(cont'd)

DTC Troubleshooting (cont'd)

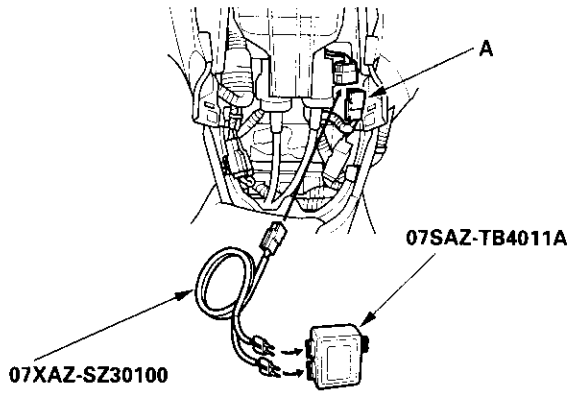
6. Reconnect the battery negative cable.
7. Erase the DTC memory.
8. Read the DTC.

   Is DTC 3-3 indicated?

   YES—Go to step 9.

   NO—Short in the driver's seat belt tensioner; replace the driver's seat belt (see page 23-4).■

9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
10. Disconnect floor wire harness 4P connector C403 (A) from dashboard wire harness B.



11. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead F to dashboard wire harness B.
12. Reconnect the battery negative cable.
13. Erase the DTC memory.
14. Read the DTC.

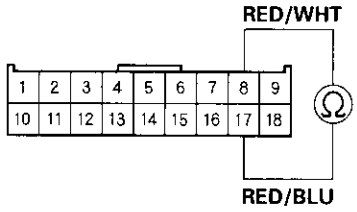
    Is DTC 3-3 indicated?

    YES—Go to step 15.

    NO—Short in the floor wire harness; replace the floor wire harness.■

15. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
16. Disconnect the driver's airbag connector (see step 2 on page 23-21), front passenger's airbag connector (see step 3 on page 23-21), and front passenger's seat belt tensioner connector (see step 5 on page 23-22).
17. Disconnect SRS unit connector A (18P) from the SRS unit (see step 7 on page 23-22).
18. Disconnect the special tool from dashboard wire harness B.
19. Check resistance between the No. 8 terminal and the No. 17 terminal of SRS unit connector A (18P). There should be an open circuit, or at least 1 MΩ.

SRS UNIT CONNECTOR A (18P)



Wire side of female terminals

Is the resistance as specified?

YES—Faulty SRS unit; replace the SRS unit (see page 23-122).■

NO—Short in dashboard wire harness B; replace dashboard wire harness B.■

DTC 3-4: Short to Power in Driver's Seat Belt Tensioner

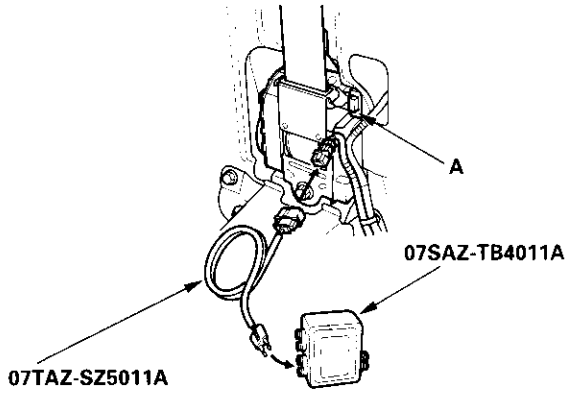
Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead C 07TAZ-SZ5011A
- SRS simulator lead F 07XAZ-SZ30100

1. Erase the DTC memory (see page 23-26).
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?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-26).
3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
4. Disconnect the driver's seat belt tensioner 2P connector (A) from the floor wire harness.

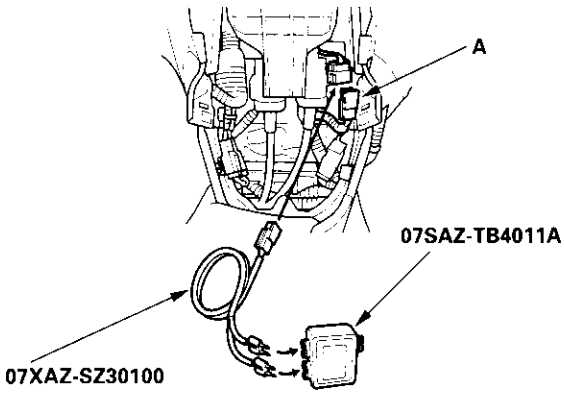


5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead C to the floor wire harness.
6. Reconnect the battery negative cable.
7. Erase the DTC memory.
8. Read the DTC.

   Is DTC 3-4 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 23-4).■
9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
10. Disconnect floor wire harness 4P connector C403 (A) from dashboard wire harness B.



11. Connect the SRS inflator simulator (2 Ω connectors) and simlator lead F to dashboard wire harness B.
12. Reconnect the battery negative cable.
13. Erase the DTC memory.
14. Read the DTC.

    Is DTC 3-4 indicated?

    YES—Go to step 15.

    NO—Short to power in the floor wire harness; replace the floor wire harness.■
15. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.

(cont'd)

DTC Troubleshooting (cont'd)

16. Disconnect the driver's airbag connector (see step 2 on page 23-21), front passenger's airbag connector (see step 3 on page 23-21), and front passenger's seat belt tensioner connector (see step 5 on page 23-22).

17. Disconnect SRS unit connector A (18P) from the SRS unit (see step 7 on page 23-22).

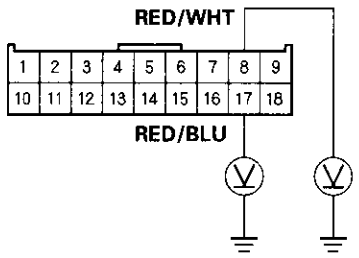
18. Disconnect the special tool from dashboard wire harness B.

19. Reconnect the battery negative cable.

20. Turn the ignition switch ON (II).

21. Check for voltage between the No. 8 terminal of SRS unit connector A (18P) and body ground, and the No. 17 terminal and body ground. There should be 0.5 V or less.

SRS UNIT CONNECTOR A (18P)



Wire side of female terminals

Is the voltage as specified?

YES—Faulty SRS unit; replace the SRS unit (see page 23-122).■

NO—Short to power in dashboard wire harness B; replace dashboard wire harness B.■

DTC 3-5: Short to Ground in Driver's Seat Belt Tensioner

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead C 07TAZ-SZ5011A
- SRS simulator lead F 07XAZ-SZ30100

1. Erase the DTC memory (see page 23-26).

2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

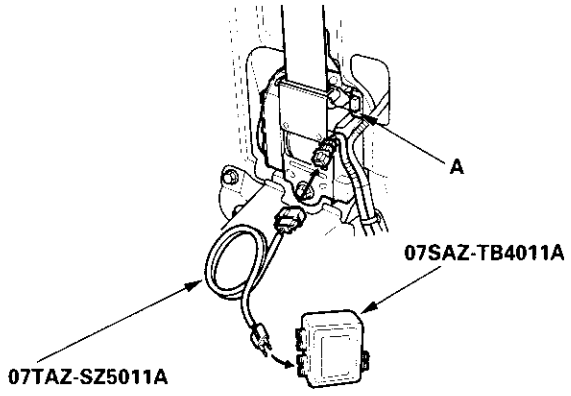
   Does the SRS indicator stay on?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-26).

3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.

4. Disconnect the driver's seat belt tensioner 2P connector (A) from the floor wire harness.



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead C to the floor wire harness.

6. Reconnect the battery negative cable.

7. Erase the DTC memory.

8. Read the DTC.

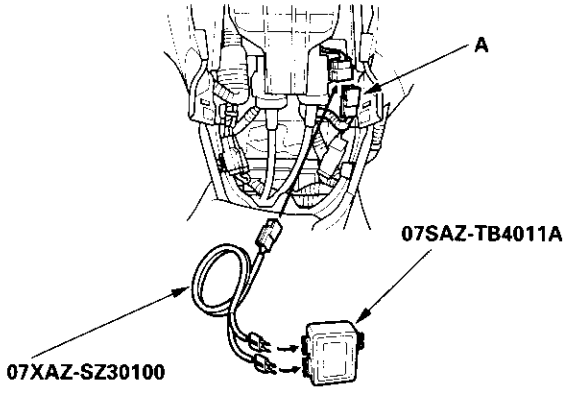
   Is DTC 3-5 indicated?

   YES—Go to step 9.

   NO—Short to ground in the driver's seat belt tensioner; replace the driver's seat belt (see page 23-4).■

9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.

10. Disconnect floor wire harness 4P connector C403 (A) from dashboard wire harness B.



11. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead F to dashboard wire harness B.

12. Reconnect the battery negative cable.

13. Erase the DTC memory.

14. Read the DTC.

    Is DTC 3-5 indicated?

    YES—Go to step 15.

    NO—Short to ground in the floor wire harness; replace the floor wire harness.■

15. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.

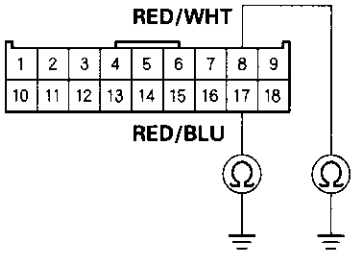
16. Disconnect the driver's airbag connector (see step 2 on page 23-21), front passenger's airbag connector (see step 3 on page 23-21), and front passenger's seat belt tensioner connector (see step 5 on page 23-22).

17. Disconnect SRS unit connector A (18P) from the SRS unit (see step 7 on page 23-22).

18. Disconnect the special tool from dashboard wire harness B.

19. Check resistance between the No. 8 terminal of SRS unit connector A (18P) and body ground, and the No. 17 terminal and body ground. There should be an open circuit, or at least 1 MΩ.

SRS UNIT CONNECTOR A (18P)



Wire side of female terminals

Is the resistance as specified?

YES—Faulty SRS unit; replace the SRS unit (see page 23-122).■

NO—Short to ground in dashboard wire harness B; replace dashboard wire harness B.■

DTC Troubleshooting (cont'd)

DTC 21-1: Open or Increased Resistance in Driver's Seat Belt Buckle Tensioner

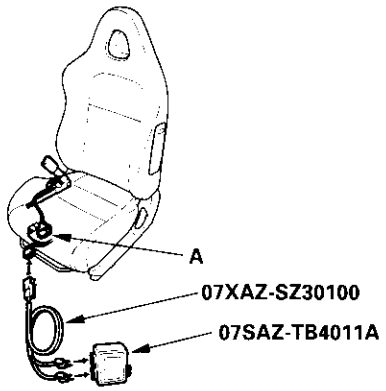
Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead F 07XAZ-SZ30100

1. Erase the DTC memory (see page 23-26).
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?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-26).
3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
4. Disconnect the driver's seat belt buckle tensioner 4P connector (A) from the floor wire harness.



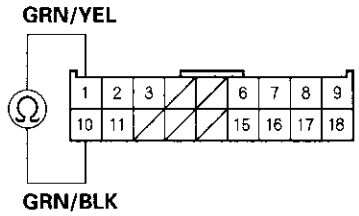
5. Connect theSRS inflator simulator (2 Ω connectors) and simulator lead F to the floor wire harness.
6. Reconnect the battery negative cable.
7. Erase the DTC memory.
8. Read the DTC.

   Is DTC 21-1 indicated?

   YES—Go to step 9.

   NO—Open or increased resistance in the driver's seat belt buckle tensioner; replace the driver's seat belt buckle.■
9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
10. Disconnect both side airbag 2P connectors (see step 4 on page 23-21) and the front passenger's seat belt buckle tensioner 4P connector (see step 6 on page 23-22).
11. Disconnect SRS unit connector B (18P) from the SRS unit (see step 7 on page 23-22). Do not disconnect the special tool from the floor wire harness.
12. Check resistance between the No. 1 and No. 10 terminals of SRS unit connector B (18P). There should be 2.0—3.0 Ω.

SRS UNIT CONNECTOR B (18P)



Wire side of female terminals

Is the resistance as specified?

YES—Faulty SRS unit or poor contact at SRS unit connector B (18P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 23-122).■

NO—Open or increased resistance in the floor wire harness; replace the floor wire harness.■

DTC 21-3: Short to Another Wire or Decreased Resistance in Driver's Seat Belt Buckle Tensioner

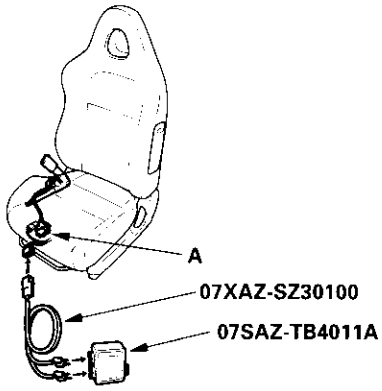
Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead F 07XAZ-SZ30100

1. Erase the DTC memory (see page 23-26).
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?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-26).
3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
4. Disconnect the driver's seat belt buckle tensioner 4P connector (A) from the floor wire harness.



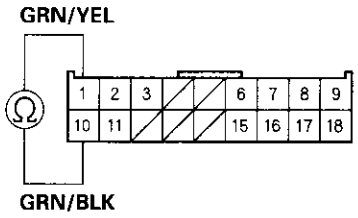
5. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead F to the floor wire harness.
6. Reconnect the battery negative cable.
7. Erase the DTC memory.
8. Read the DTC.

   Is DTC 21-3 indicated?

   YES—Go to step 9.

   NO—Short in the driver's seat belt buckle tensioner; replace the driver's seat belt buckle. ■
9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
10. Disconnect both side airbag 2P connectors (see step 4 on page 23-21) and the front passenger's seat belt buckle tensioner 4P connector (see step 6 on page 23-22).
11. Disconnect SRS unit connector B (18P) from the SRS unit (see step 7 on page 23-22).
12. Disconnect the special tool from the floor wire harness.
13. Check resistance between the No. 1 and No. 10 terminals of SRS unit connector B (18P). There should be an open circuit, or at least 1 MΩ.

SRS UNIT CONNECTOR B (18P)



Wire side of female terminals

Is the resistance as specified?

YES—Faulty SRS unit; replace the SRS unit (see page 23-122). ■

NO—Short in the floor wire harness; replace the floor wire harness. ■

DTC Troubleshooting (cont'd)

DTC 21-4: Short to Power in Driver's Seat Belt Buckle Tensioner

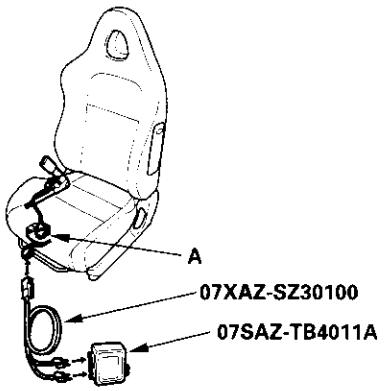
Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead F 07XAZ-SZ30100

1. Erase the DTC memory (see page 23-26).
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?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-26).
3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
4. Disconnect the driver's seat belt buckle tensioner 4P connector (A) from the floor wire harness.



5. Connect the SRS inflator simulator (2 Ω connectors) and the simulator lead F to the floor wire harness.
6. Reconnect the battery negative cable.
7. Erase the DTC memory.
8. Read the DTC.

   Is DTC 21-4 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.■
9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
10. Disconnect both side airbag 2P connectors (see step 4 on page 23-21) and the front passenger's seat belt buckle tensioner 4P connector (see step 6 on page 23-22).

11. Disconnect SRS unit connector B (18P) from the SRS unit (see step 7 on page 23-22).

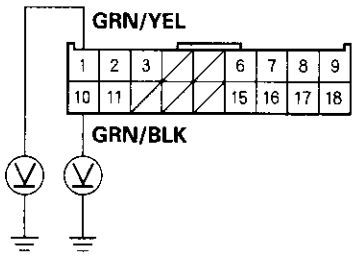
12. Disconnect the special tool from the floor wire harness.

13. Reconnect the battery negative cable.

14. Turn the ignition switch ON (II).

15. Check for voltage between the No. 1 terminal of SRS unit connector B (18P) and body ground, and the No. 10 terminal and body ground. There should be 0.5 V or less.

SRS UNIT CONNECTOR B (18P)



Wire side of female terminals

Is the voltage as specified?

YES—Faulty SRS unit; replace the SRS unit (see page 23-122).■

NO—Short to power in the floor wire harness; replace the floor wire harness.■

DTC 21-5: Short to Ground in Driver's Seat Belt Buckle Tensioner

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead F 07XAZ-SZ30100

1. Erase the DTC memory (see page 23-26).

2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

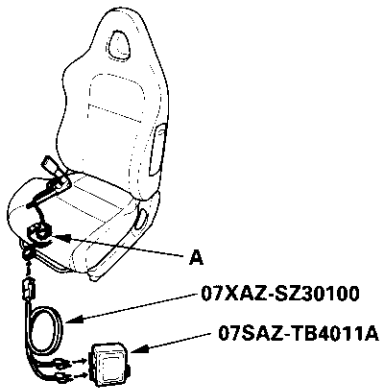
   Does the SRS indicator stay on?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-26).

3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.

4. Disconnect the driver's seat belt buckle tensioner 4P connector (A) from the floor wire harness.



5. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead F to the floor wire harness.

6. Reconnect the battery negative cable.

7. Erase the DTC memory.

(cont'd)

DTC Troubleshooting (cont'd)

8. Read the DTC.

   Is DTC 21-5 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. ■

9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.

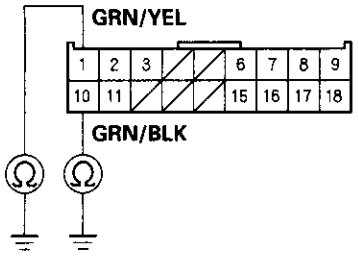
10. Disconnect both side airbag 2P connectors (see step 4 on page 23-21) and the front passenger's seat belt buckle tensioner 4P connector (see step 6 on page 23-22).

11. Disconnect SRS unit connector B (18P) from the SRS unit (see step 7 on page 23-22).

12. Disconnect the special tool from the floor wire harness.

13. Check resistance between the No. 1 terminal of SRS unit connector B (18P) and body ground, and the No. 10 terminal and body ground. There should be an open circuit, or at least 1 MΩ.

SRS UNIT CONNECTOR B (18P)



Wire side of female terminals

Is the resistance as specified?

YES—Faulty SRS unit; replace the SRS unit (see page 23-122). ■

NO—Short to ground in the floor wire harness; replace the floor wire harness. ■

DTC 4-1: Open in Front Passenger's Seat Belt Tensioner
DTC 4-2: Increased Resistance in Front Passenger's Seat Belt Tensioner

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead C 07TAZ-SZ5011A
- SRS simulator lead F 07XAZ-SZ30100

1. Erase the DTC memory (see page 23-26).

2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

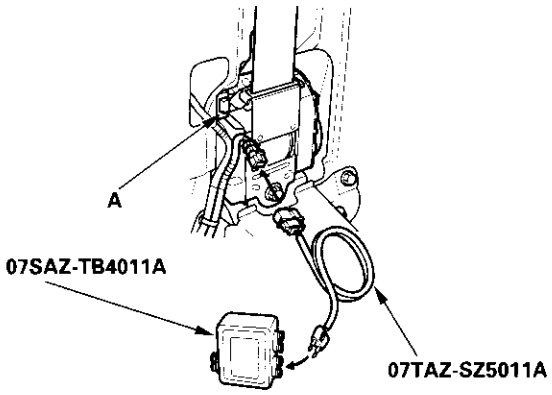
   Does the SRS indicator stay on?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-26).

3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.

4. Disconnect the front passenger's seat belt tensioner 2P connector (A) from the floor wire harness.



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead C to the floor wire harness.

6. Reconnect the battery negative cable.

7. Erase the DTC memory.

8. Read the DTC.

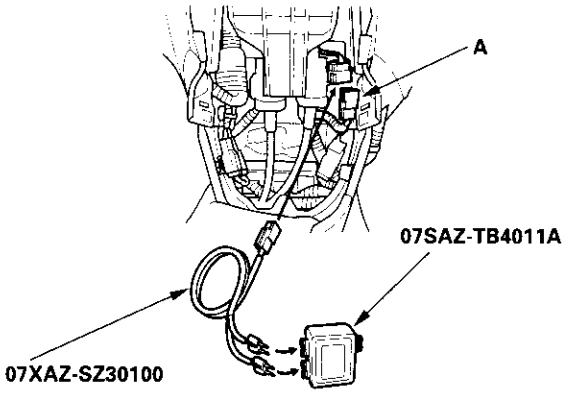
   Is DTC 4-1 or DTC 4-2 indicated?

   YES—Go to step 9.

   NO—Open or increased resistance in the front passenger's seat belt tensioner; replace the front passenger's seat belt (see page 23-4).■

9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.

10. Disconnect the floor wire harness 4P connector C403 (A) from dashboard wire harness B.



11. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead F to dashboard wire harness B.

12. Reconnect the battery negative cable.

13. Erase the DTC memory.

14. Read the DTC.

    Is DTC 4-1 or DTC 4-2 indicated?

    YES—Go to step 15.

    NO—Open or increased resistance in the floor wire harness; replace the floor wire harness.■

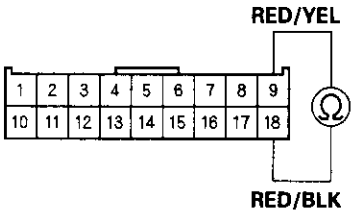
15. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.

16. Disconnect the driver's airbag connector (see step 2 on page 23-21), front passenger's airbag connector (see step 3 on page 23-21), and driver's seat belt tensioner connector (see step 5 on page 23-22).

17. Disconnect SRS unit connector A (18P) from the SRS unit (see step 7 on page 23-22). Do not disconnect the special tool from dashboard wire harness B.

18. Check resistance between the No. 9 terminal and the No. 18 terminal of SRS unit connector A (18P). There should be 2.0—3.0 Ω.

SRS UNIT CONNECTOR A (18P)



Wire side of female terminals

Is the resistance as specified?

YES—Faulty SRS unit or poor contact at SRS unit connector A (18P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 23-122).■

NO—Open or increased resistance in dashboard wire harness B; replace dashboard wire harness B.■

DTC Troubleshooting (cont'd)

DTC 4-3: Short to Another Wire or Decreased Resistance in Front Passenger's Seat Belt Tensioner

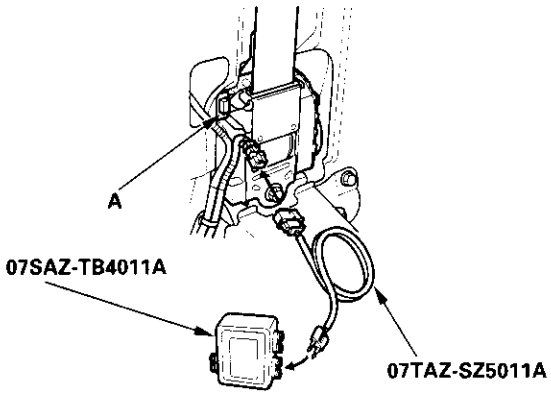
Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead C 07TAZ-SZ5011A
- SRS simulator lead F 07XAZ-SZ30100

1. Erase the DTC memory (see page 23-26).
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?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-26).
3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
4. Disconnect the front passenger's seat belt tensioner 2P connector (A) from the floor wire harness.

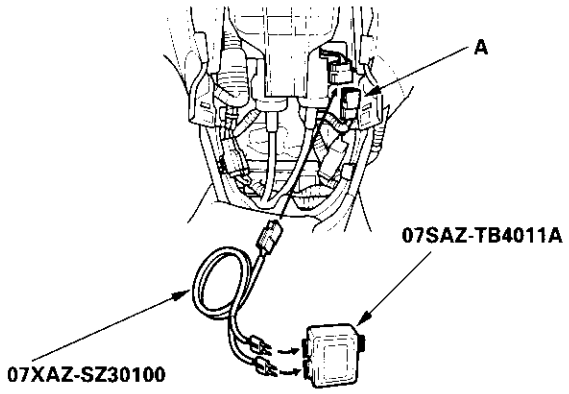


5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead C to the floor wire harness.
6. Reconnect the battery negative cable.
7. Erase the DTC memory.
8. Read the DTC.

   Is DTC 4-3 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 23-4).■
9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
10. Disconnect the floor wire harness 4P connector C403 (A) from dashboard wire harness B.



11. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead F to dashboard wire harness B.
12. Reconnect the battery negative cable.
13. Erase the DTC memory.
14. Read the DTC.

    Is DTC 4-3 indicated?

    YES—Go to step 15.

    NO—Short in the floor wire harness; replace the floor wire harness.■
15. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.

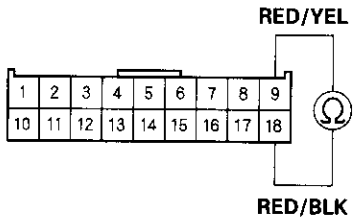
16. Disconnect the driver's airbag connector (see step 2 on page 23-21), front passenger's airbag connector (see step 3 on page 23-21), and driver's seat belt tensioner connector (see step 5 on page 23-22).

17. Disconnect SRS unit connector A (18P) from the SRS unit (see step 7 on page 23-22).

18. Disconnect the special tool from dashboard wire harness B.

19. Check resistance between the No. 9 terminal and the No. 18 terminal of SRS unit connector A (18P). There should be an open circuit, or at least 1 MΩ.

SRS UNIT CONNECTOR A (18P)



Wire side of female terminals

Is the resistance as specified?

YES—Faulty SRS unit; replace the SRS unit (see page 23-122).■

NO—Short in dashboard wire harness B; replace dashboard wire harness B.■

DTC 4-4: Short to Power in Front Passenger's Seat Belt Tensioner

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead C 07TAZ-SZ5011A
- SRS simulator lead F 07XAZ-SZ30100

1. Erase the DTC memory (see page 23-26).

2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

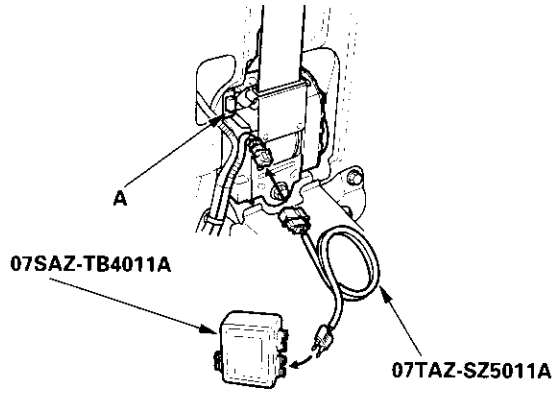
   Does the SRS indicator stay on?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-26).

3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.

4. Disconnect the front passenger's seat belt tensioner 2P connector (A) from the floor wire harness.



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead C to the floor wire harness.

(cont'd)

DTC Troubleshooting (cont'd)

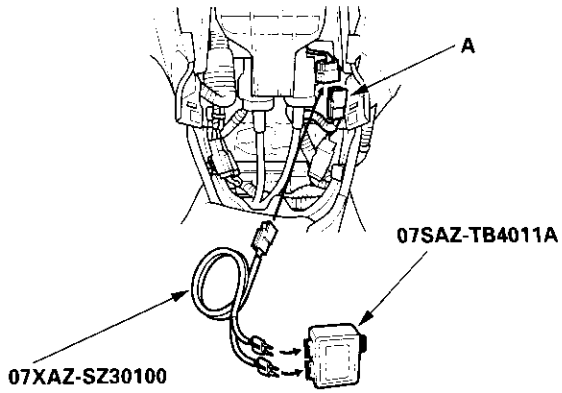
6. Reconnect the battery negative cable.
7. Erase the DTC memory.
8. Read the DTC.

   Is DTC 4-4 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 23-4).■

9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
10. Disconnect floor wire harness 4P connector C403 (A) from dashboard wire harness B.



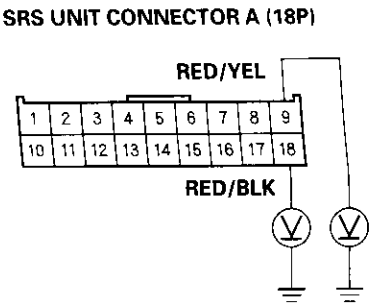
11. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead F to dashboard wire harness B.
12. Reconnect the battery negative cable.
13. Erase the DTC memory.
14. Read the DTC.

    Is DTC 4-4 indicated?

    YES—Go to step 15.

    NO—Short to power in the floor wire harness; replace the floor wire harness.■

15. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
16. Disconnect the driver's airbag connector (see step 2 on page 23-21), front passenger's airbag connector (see step 3 on page 23-21), and driver's seat belt tensioner connector (see step 5 on page 23-22).
17. Disconnect SRS unit connector A (18P) from the SRS unit (see step 7 on page 23-22).
18. Disconnect the special tool from dashboard wire harness B.
19. Reconnect the battery negative cable.
20. Turn the ignition switch ON (II).
21. Check for voltage between the No. 9 terminal of SRS unit connector A (18P) and body ground, and the No. 18 terminal and body ground. There should be 0.5 V or less.



Wire side of female terminals

Is the voltage as specified?

YES—Faulty SRS unit; replace the SRS unit (see page 23-122).■

NO—Short to power in dashboard wire harness B; replace dashboard wire harness B.■

DTC 4-5: Short to Ground in Front Passenger's Seat Belt Tensioner

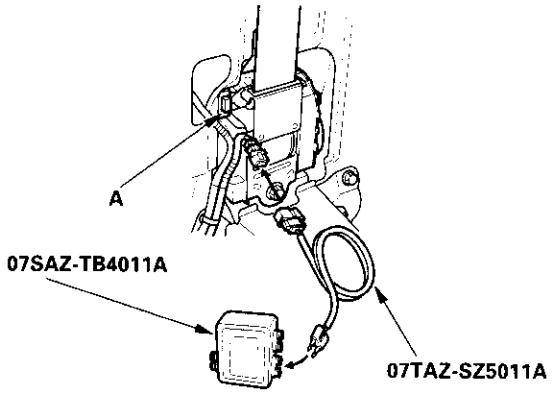
Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead C 07TAZ-SZ5011A
- SRS simulator lead F 07XAZ-SZ30100

1. Erase the DTC memory (see page 23-26).
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?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-26).
3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
4. Disconnect the front passenger's seat belt tensioner 2P connector (A) from the floor wire harness.

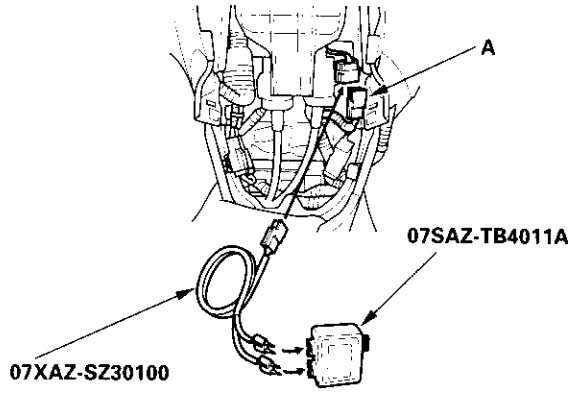


5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead C to the floor wire harness.
6. Reconnect the battery negative cable.
7. Erase the DTC memory.
8. Read the DTC.

   Is DTC 4-5 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 23-4).■
9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
10. Disconnect the floor wire harness 4P connector C403 (A) from dashboard wire harness B.



11. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead F to dashboard wire harness B.
12. Reconnect the battery negative cable.
13. Erase the DTC memory.
14. Read the DTC.

    Is DTC 4-5 indicated?

    YES—Go to step 15.

    NO—Short to ground in the floor wire harness; replace the floor wire harness.■
15. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.

(cont'd)

DTC Troubleshooting (cont'd)

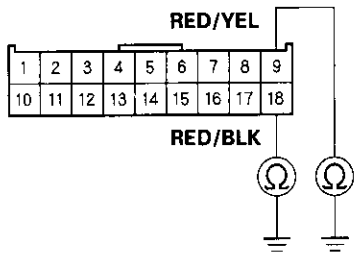
16. Disconnect the driver's airbag connector (see step 2 on page 23-21), front passenger's airbag connector (see step 3 on page 23-21), and driver's seat belt tensioner connector (see step 5 on page 23-22).

17. Disconnect SRS unit connector A (18P) from the SRS unit (see step 7 on page 23-22).

18. Disconnect the special tool from dashboard wire harness B.

19. Check resistance between the No. 9 terminal of SRS unit connector A (18P) and body ground, and the No. 18 terminal and body ground. There should be an open circuit, or at least 1 MΩ.

SRS UNIT CONNECTOR A (18P)



Wire side of female terminals

Is the resistance as specified?

YES—Faulty SRS unit; replace the SRS unit (see page 23-122).■

NO—Short to ground in dashboard wire harness B; replace dashboard wire harness B.■

DTC 22-1: Open or Increased Resistance in Front Passenger's Seat Belt Buckle Tensioner

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead F 07XAZ-SZ30100

1. Erase the DTC memory (see page 23-26).

2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

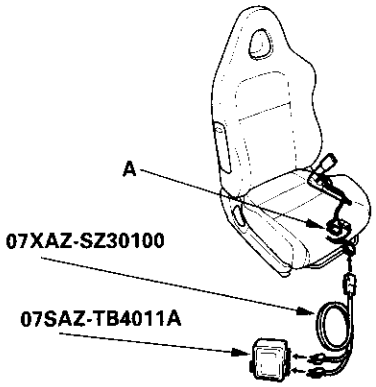
   Does the SRS indicator stay on?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-26).

3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.

4. Disconnect the front passenger's seat belt buckle tensioner 4P connector (A) from the floor wire harness.



5. Connect the SRS inflator simulator (2 Ω connectors) and the simulator lead F to the floor wire harness.

6. Reconnect the battery negative cable.

7. Erase the DTC memory.

8. Read the DTC.

   Is DTC 22-1 indicated?

   YES—Go to step 9.

   NO—Open or increased resistance in the front passenger's seat belt buckle tensioner; replace the front passenger's seat belt buckle. ■

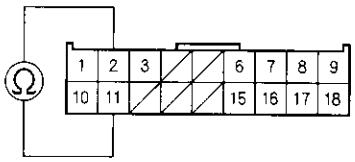
9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.

10. Disconnect both side airbag 2P connectors (see step 4 on page 23-21) and the driver's seat belt buckle tensioner 4P connector (see step 6 on page 23-22).

11. Disconnect SRS unit connector B (18P) from the SRS unit (see step 7 on page 23-22). Do not disconnect the special tool from the floor wire harness.

12. Check resistance between the No. 2 and No. 11 terminals of SRS unit connector B (18P). There should be 2.0—3.0 Ω.

SRS UNIT CONNECTOR B (18P)



Wire side of female terminals

Is the resistance as specified?

YES—Faulty SRS unit or poor contact at SRS unit connector B (18P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 23-122). ■

NO—Open or increased resistance in the floor wire harness; replace the floor wire harness. ■

DTC 22-3: Short to Another Wire or Decreased Resistance in Front Passenger's Seat Belt Buckle Tensioner

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead F 07XAZ-SZ30100

1. Erase the DTC memory (see page 23-26).

2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

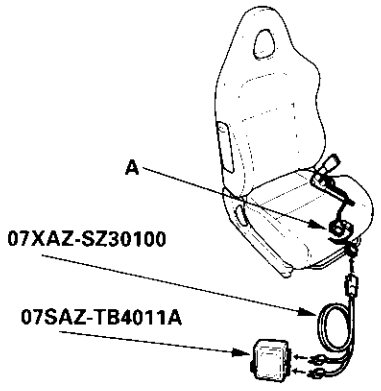
   Does the SRS indicator stay on?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-26).

3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.

4. Disconnect the front passenger's seat belt buckle tensioner 4P connector (A) from the floor wire harness.



5. Connect the SRS inflator simulator (2 Ω connectors) and the simulator lead F to the floor wire harness.

6. Reconnect the battery negative cable.

7. Erase the DTC memory.

(cont'd)

DTC Troubleshooting (cont'd)

8. Read the DTC.

   Is DTC 22-3 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.■

9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.

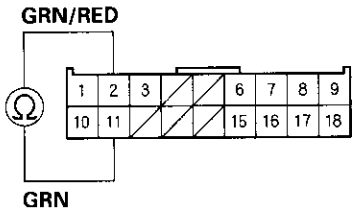
10. Disconnect both side airbag 2P connectors (see step 4 on page 23-21) and the driver's seat belt buckle tensioner 4P connector (see step 6 on page 23-22).

11. Disconnect SRS unit connector B (18P) from the SRS unit (see step 7 on page 23-22).

12. Disconnect the special tool from the floor wire harness.

13. Check resistance between the No. 2 and No. 11 terminals of SRS unit connector B (18P). There should be an open circuit, or at least 1 MΩ.

SRS UNIT CONNECTOR B (18P)



Wire side of female terminals

Is the resistance as specified?

YES—Faulty SRS unit; replace the SRS unit (see page 23-122).■

NO—Short in the floor wire harness; replace the floor wire harness.■

DTC 22-4: Short to Power in Front Passenger's Seat Belt Buckle Tensioner

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead F 07XAZ-SZ30100

1. Erase the DTC memory (see page 23-26).

2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

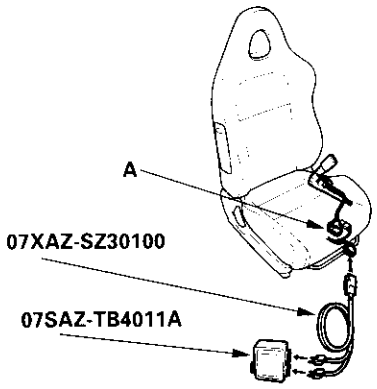
   Does the SRS indicator stay on?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-26).

3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.

4. Disconnect the front passenger's seat belt buckle tensioner 4P connector (A) from the floor wire harness.



5. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead F to the floor wire harness.

6. Reconnect the battery negative cable.

7. Erase the DTC memory.

8. Read the DTC.

   Is DTC 22-4 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.■

9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.

10. Disconnect both side airbag 2P connectors (see step 4 on page 23-21) and the driver's seat belt buckle tensioner 4P connector (see step 6 on page 23-22).

11. Disconnect SRS unit connector B (18P) from the SRS unit (see step 7 on page 23-22).

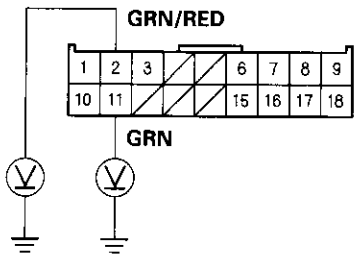
12. Disconnect the special tool from the floor wire harness.

13. Reconnect the battery negative cable.

14. Turn the ignition switch ON (II).

15. Check for voltage between the No. 2 terminal of SRS unit connector B (18P) and body ground, and the No. 11 terminal and body ground. There should be 0.5 V or less.

SRS UNIT CONNECTOR B (18P)



Wire side of female terminals

Is the voltage as specified?

YES—Faulty SRS unit; replace the SRS unit (see page 23-122).■

NO—Short to power in the floor wire harness; replace the floor wire harness.■

DTC Troubleshooting (cont'd)

DTC 22-5: Short to Ground in Front Passenger's Seat Belt Buckle Tensioner

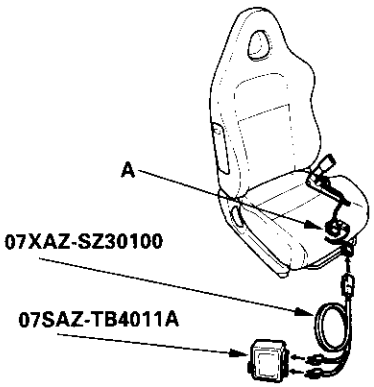
Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead F 07XAZ-SZ30100

1. Erase the DTC memory (see page 23-26).
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?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-26).
3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
4. Disconnect the front passenger's seat belt buckle tensioner 4P connector (A) from the floor wire harness.

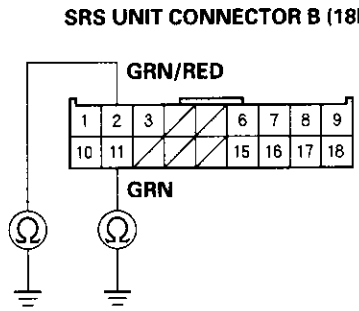


5. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead F to the floor wire harness.
6. Reconnect the battery negative cable.
7. Erase the DTC memory.
8. Read the DTC.

   Is DTC 22-5 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. ■
9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
10. Disconnect both side airbag 2P connectors (see step 4 on page 23-21) and the driver's seat belt buckle tensioner 4P connector (see step 6 on page 23-22).
11. Disconnect SRS unit connector B (18P) from the SRS unit (see step 7 on page 23-22).
12. Disconnect the special tool from the floor wire harness.
13. Check resistance between the No. 2 terminal of SRS unit connector B (18P) and body ground, and the No. 11 terminal and body ground. There should be an open circuit, or at least 1 MΩ.



Wire side of female terminals

Is the resistance as specified?

YES—Faulty SRS unit; replace the SRS unit (see page 23-122). ■

NO—Short to ground in the floor wire harness; replace the floor wire harness. ■

DTC 5-1, 5-2, 5-4, 5-8, 6-3, 6-4, 6-7, 6-8, 7-1, 7-2, 7-3, 8-1, 8-2, 8-3, 8-4, 8-5, 8-6, 9-1, 9-2: Internal Failure of the SRS Unit

NOTE: Before troubleshooting any of these DTCs, check the battery/system voltage. 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 customer if the battery ever went dead.

1. Erase the DTC memory (see page 23-26).
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?

   YES—Replace the SRS unit (see page 23-122). ■

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-26).

DTC 10-1, 10-2, 10-3, 10-4, 10-5, 10-6, 10-7: Airbags, Side Airbags, and/or Seat Belt and Seat Belt Buckle Tensioners Deployed

The SRS unit must be replaced after any airbags and/or tensioners have deployed (see page 23-122). ■

DTC Troubleshooting (cont'd)

DTC 13-1, 13-2: Internal Failure of the Driver's Side Impact Sensor

1. Erase the DTC memory (see page 23-26).
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?

   YES—Replace the driver's side impact sensor (see page 23-123). ■

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-26).

DTC 14-1, 14-2: Internal Failure of the Front Passenger's Side Impact Sensor

1. Erase the DTC memory (see page 23-26).
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?

   YES—Replace the front passenger's side impact sensor (see page 23-123). ■

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-26).

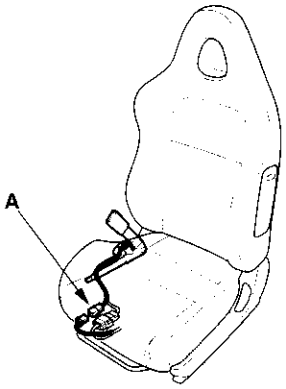
DTC 9-3: Faulty Driver's Seat Belt Buckle Switch

1. Erase the DTC memory (see page 23-26).
2. Turn the ignition switch ON (II), then buckle and unbuckle the driver's seat belt several times.
3. Read the DTC.

   Is DTC 9-3 indicated?

   YES—Go to step 4.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-26).
4. Turn the ignition switch OFF.
5. Disconnect the driver's seat belt buckle switch 3P connector (A) from the floor wire harness.

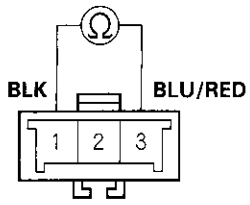


6. Buckle the driver's seat belt.

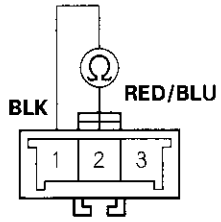
   Check resistance between the No. 1 and No. 3 terminals of the driver's seat belt buckle switch 3P connector. There should be 0—1 Ω.

   Check resistance between the No. 1 and No. 2 terminals of the same connector. There should be an open circuit, or at least 1 MΩ.

DRIVER'S SEAT BELT BUCKLE SWITCH 3P CONNECTOR



Terminal side of male terminals



Terminal side of male terminals

Are the resistance readings as specified?

YES—Go to step 7.

NO—Replace the driver's seat belt buckle assembly, then clear the DTC.■

(cont'd)

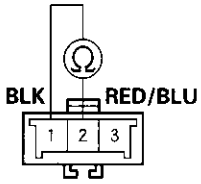
DTC Troubleshooting (cont'd)

7. Unbuckle the driver's seat belt.

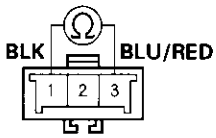
   Check resistance between the No. 1 and No. 2 terminals of the driver's seat belt buckle switch 3P connector. There should be 0—1 Ω.

   Check resistance between the No. 1 and No. 3 terminals of the same connector. There should be an open circuit, or at least 1 MΩ.

DRIVER'S SEAT BELT BUCKLE SWITCH 3P CONNECTOR



Terminal side of male terminals



Terminal side of male terminals

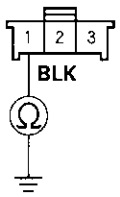
Is the resistance as specified?

YES—Go to step 8.

NO—Replace the driver's seat belt buckle assembly, then clear the DTC.■

8. Check resistance between the No. 1 terminal of the floor wire harness 3P connector and body ground. There should be 0—1 Ω.

FLOOR WIRE HARNESS 3P CONNECTOR



Wire side of female terminals

Is the resistance as specified?

YES—Go to step 9.

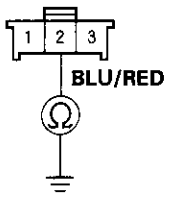
NO—Open in the floor wire harness or poor ground connection at G551. If G551 is OK, replace the floor wire harness.■

9. Disconnect the negative cable from the battery.

10. Disconnect SRS unit connector C (8P) from the SRS unit (see step 7 on page 23-22).

11. Check resistance between the No. 2 terminal of the floor wire harness 3P connector and body ground. There should be an open circuit, or at least 1 MΩ.

FLOOR WIRE HARNESS 3P CONNECTOR



Wire side of female terminals

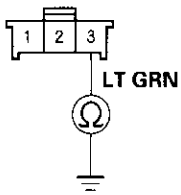
Is the resistance as specified?

YES—Go to step 12.

NO—Short to ground in the floor wire harness or multiplex control unit. Replace the faulty harness or part.■

12. Check resistance between the No. 3 terminal of the floor wire harness 3P connector and body ground. There should be an open circuit, or at least 1 MΩ.

FLOOR WIRE HARNESS 3P CONNECTOR



Wire side of female terminals

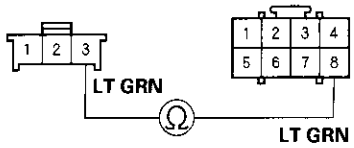
Is the resistance as specified?

YES—Go to step 13.

NO—Short to ground in the floor wire harness; replace the floor wire harness.■

13. Check resistance between the No. 8 terminal of SRS unit connector C (8P) and the No. 3 terminal of the floor wire harness 3P connector. There should be 0—1 Ω.

FLOOR WIRE HARNESS 3P CONNECTOR **SRS UNIT CONNECTOR C (8P)**



Wire side of female terminals

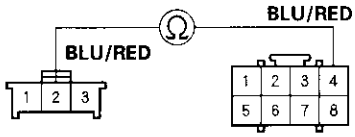
Is the resistance as specified?

YES—Go to step 14.

NO—Open in the floor wire harness; replace the floor wire harness.■

14. Check resistance between the No. 4 terminal of SRS unit connector C (8P) and the No. 2 terminal of the floor wire harness 3P connector. There should be 0—1 Ω.

FLOOR WIRE HARNESS 3P CONNECTOR **SRS UNIT CONNECTOR C (8P)**



Wire side of female terminals

Is the resistance as specified?

YES—Replace the SRS unit (see page 23-122).■

NO—Open in the floor wire harness or multiplex control unit, or poor connection at the floor wire harness, the under-dash fuse/relay box, and the multiplex control unit. Check the connection at the floor wire harness, the under-dash fuse/relay box, and the multiplex control unit. If the connection is OK, replace the faulty harness or part.■

DTC Troubleshooting (cont'd)

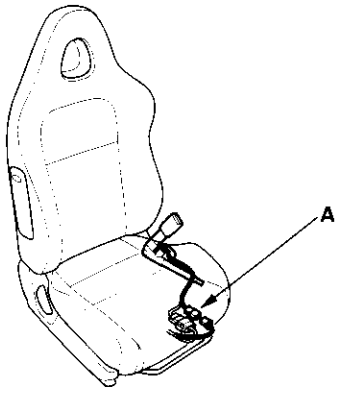
DTC 9-4: Faulty Front Passenger's Seat Belt Buckle Switch

1. Erase the DTC memory (see page 23-26).
2. Turn the ignition switch ON (II), then buckle and unbuckle the front passenger's seat belt several times.
3. Read the DTC.

   Is DTC 9-4 indicated?

   YES—Go to step 4.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-26).
4. Turn the ignition switch OFF.
5. Disconnect the front passenger's seat belt buckle switch 3P connector (A) from the floor wire harness.

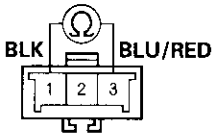


6. Buckle the front passenger's seat belt.

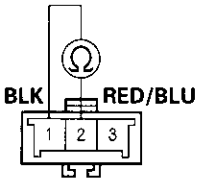
   Check resistance between the No. 1 and No. 3 terminals of the front passenger's seat belt buckle switch 3P connector. There should be 0—1 Ω.

   Check resistance between the No. 1 and No. 2 terminals of the same connector. There should be an open circuit, or at least 1 MΩ.

FRONT PASSENGER'S SEAT BELT BUCKLE SWITCH 3P CONNECTOR



Terminal side of male terminals



Terminal side of male terminals

Is the resistance as specified?

YES—Go to step 7.

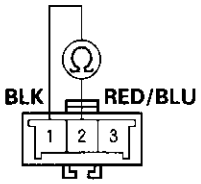
NO—Replace the front passenger's seat belt buckle assembly, then clear the DTC.■

7. Unbuckle the front passenger's seat belt.

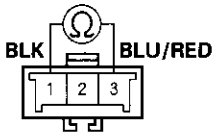
   Check resistance between the No. 1 and No. 2 terminals of the front passenger's seat belt buckle switch 3P connector. There should be 0—1 Ω.

   Check resistance between the No. 1 and No. 3 terminals of the same connector. There should be an open circuit, or at least 1 MΩ.

FRONT PASSENGER'S SEAT BELT BUCKLE SWITCH 3P CONNECTOR



Terminal side of male terminals



Terminal side of male terminals

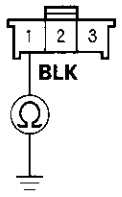
Is the resistance as specified?

YES—Go to step 8.

NO—Replace the front passenger's seat belt buckle assembly, then clear the DTC.■

8. Check resistance between the No. 1 terminal of the floor wire harness 3P connector and body ground. There should be 0—1 Ω.

FLOOR WIRE HARNESS 3P CONNECTOR



Wire side of female terminals

Is the resistance as specified?

YES—Go to step 9.

NO—Open in the floor wire harness or poor ground connection at G551. If G551 is OK, replace the floor wire harness.■

9. Disconnect the negative cable from the battery.

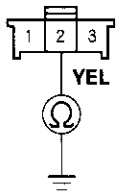
10. Disconnect SRS unit connector C (8P) from the SRS unit (see step 7 on page 23-22).

(cont'd)

DTC Troubleshooting (cont'd)

11. Check resistance between the No. 2 terminal of the floor wire harness 3P connector and body ground. There should be an open circuit, or at least 1 MΩ.

FLOOR WIRE HARNESS 3P CONNECTOR



Wire side of female terminals

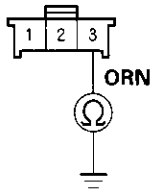
Is the resistance as specified?

YES—Go to step 12.

NO—Short to ground in the floor wire harness; replace the floor wire harness.■

12. Check resistance between the No. 3 terminal of the floor wire harness 3P connector and body ground. There should be an open circuit, or at least 1 MΩ.

FLOOR WIRE HARNESS 3P CONNECTOR



Wire side of female terminals

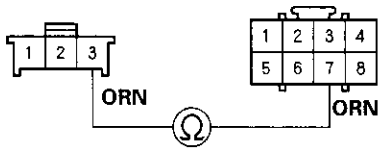
Is the resistance as specified?

YES—Go to step 13.

NO—Short to ground in the floor wire harness; replace the floor wire harness.■

13. Check resistance between the No. 7 terminal of SRS unit connector C (8P) and the No. 3 terminal of the floor wire harness 3P connector. There should be 0—1 Ω.

FLOOR WIRE HARNESS 3P CONNECTOR **SRS UNIT CONNECTOR C (8P)**



Wire side of female terminals

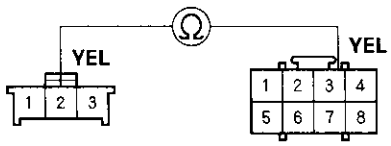
Is the resistance as specified?

YES—Go to step 14.

NO—Open in the floor wire harness; replace the floor wire harness.■

14. Check resistance between the No. 3 terminal of SRS unit connector C (8P) and the No. 2 terminal of the floor wire harness 3P connector. There should be 0—1 Ω.

FLOOR WIRE HARNESS 3P CONNECTOR **SRS UNIT CONNECTOR C (8P)**



Wire side of female terminals

Is the resistance as specified?

YES—Replace the SRS unit (see page 23-122).■

NO—Open in the floor wire harness; replace the floor wire harness.■

DTC 9-6: Faulty Left Front Impact Sensor

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead H 07YAZ-S3AA100

1. Erase the DTC memory (see page 23-26).

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?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-26).

3. Turn the ignition switch OFF. Check the connections between SRS unit connector A (18P) and the SRS unit, between the engine compartment wire harness 2P connector and the left front impact sensor (see page 23-13), and at connector C401.

   Are the connections OK?

   YES—Go to step 4.

   NO—Repair the poor connections and retest. If DTC 9-6 is still present, go to step 4.

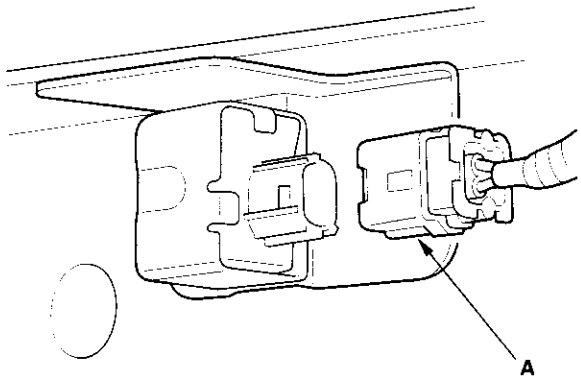
4. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.

5. Disconnect the driver's airbag 4P connector from the cable reel (see step 2 on page 23-21).

6. Disconnect the front passenger's airbag 4P connector from dashboard wire harness B (see step 3 on page 23-21).

7. Disconnect both seat belt tensioner 2P connectors from the floor wire harness (see step 5 on page 23-22).

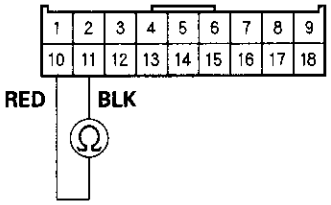
8. Disconnect the engine compartment wire harness 2P connector (A) from the left front impact sensor.



9. Disconnect SRS unit connector A (18P) from the SRS unit (see step 7 on page 23-22).

10. Check resistance between the No. 10 and No. 11 terminals of SRS unit connector A (18P). There should be an open circuit, or at least 1 MΩ.

SRS UNIT CONNECTOR A (18P)



Wire side of female terminals

Is the resistance as specified?

YES—Go to step 11.

NO—Short in the engine compartment wire harness or dashboard wire harness B; replace the faulty harness.■

11. Reconnect the battery negative cable.

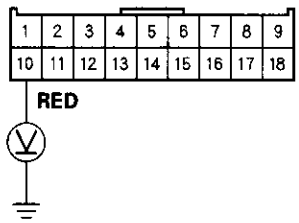
12. Turn the ignition switch ON (II).

(cont'd)

DTC Troubleshooting (cont'd)

13. Check voltage between the No. 10 terminal of SRS unit connector A (18P) and body ground. There should be 1 V or less.

SRS UNIT CONNECTOR A (18P)



Wire side of female terminals

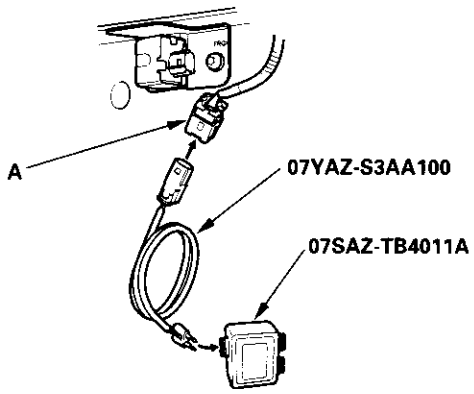
Is the voltage as specified?

YES—Go to step 14.

NO—Short to power in the engine compartment wire harness or dashboard wire harness B; replace the faulty harness. ■

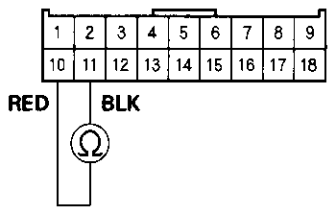
14. Turn the ignition switch OFF.

15. Connect the SRS inflator simulator (jumper connector) and simulator lead H to the engine compartment wire harness 2P connector (A).



16. Check resistance between the No. 10 and No. 11 terminals of SRS unit connector A (18P). There should be 1 Ω or less.

SRS UNIT CONNECTOR A (18P)



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 23-125). If the problem is still present, replace the SRS unit (see page 23-122). ■

NO—Poor connection at C401, faulty engine compartment wire harness, or faulty dashboard wire harness B. Inspect C401. If it is OK, replace the faulty harness. ■

DTC 9-7: Faulty Right Front Impact Sensor

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead H 07YAZ-S3AA100

1. Erase the DTC memory (see page 23-26).

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?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-26).

3. Turn the ignition switch OFF. Check the connections between SRS unit connector A (18P) and the SRS unit, between the engine compartment wire harness 2P connector and the right front impact sensor (see page 23-13), and at connector C401.

   Are the connections OK?

   YES—Go to step 4.

   NO—Repair the poor connections and retest. If DTC 9-7 is still present, go to step 4.

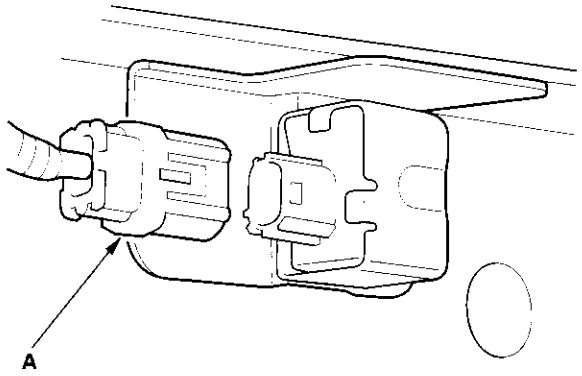
4. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.

5. Disconnect the driver's airbag 4P connector from the cable reel (see step 2 on page 23-21).

6. Disconnect the front passenger's airbag 4P connector from the dashboard wire harness (see step 3 on page 23-21).

7. Disconnect both seat belt tensioner 2P connectors from the floor wire harness (see step 5 on page 23-22).

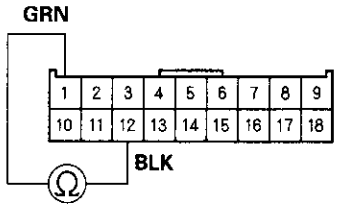
8. Disconnect the engine compartment wire harness 2P connector (A) from the right front impact sensor.



9. Disconnect SRS unit connector A (18P) from the SRS unit (see step 7 on page 23-22).

10. Check resistance between the No. 1 and No. 12 terminals of SRS unit connector A (18P). There should be an open circuit, or at least 1 MΩ.

SRS UNIT CONNECTOR A (18P)



Wire side of female terminals

Is the resistance as specified?

YES—Go to step 11.

NO—Short in the engine compartment wire harness or dashboard wire harness B; replace the faulty harness.■

11. Reconnect the battery negative cable.

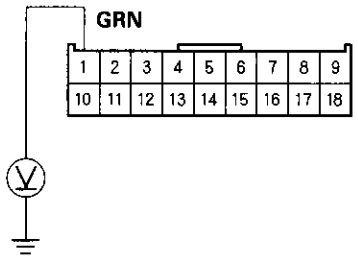
12. Turn the ignition switch ON (II).

(cont'd)

DTC Troubleshooting (cont'd)

13. Check voltage between the No. 1 terminal of SRS unit connector A (18P) and body ground. There should be 1 V or less.

SRS UNIT CONNECTOR A (18P)



Wire side of female terminals

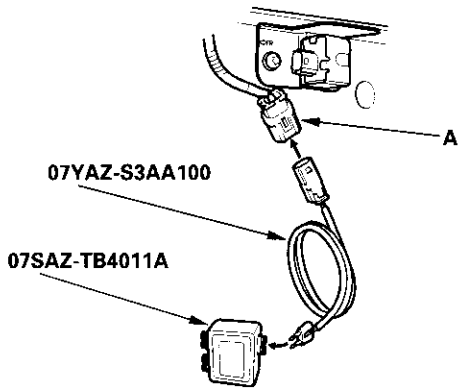
Is the voltage as specified?

YES—Go to step 14.

NO—Short to power in the engine compartment wire harness or dashboard wire harness B; replace the faulty harness. ■

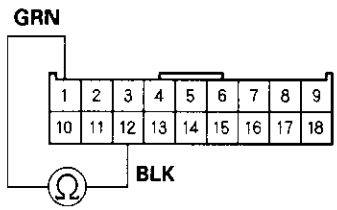
14. Turn the ignition switch OFF.

15. Connect the SRS inflator simulator (jumper connector) and simulator lead H to the engine compartment wire harness 2P connector (A).



16. Check resistance between the No. 1 and No. 12 terminals of SRS unit connector A (18P). There should be 1 Ω or less.

SRS UNIT CONNECTOR A (18P)



Wire side of female terminals

Is the resistance as specified?

YES—Faulty right front impact sensor or SRS unit; replace the right front sensor (see page 23-125). If the problem is still present, replace the SRS unit (see page 23-122). ■

NO—Poor connection at C401, faulty engine compartment wire harness, or faulty dashboard wire harness B. Inspect C401. If it is OK, replace the faulty harness. ■

DTC 11-1: Open or Increased Resistance in Driver's Side Airbag Inflator

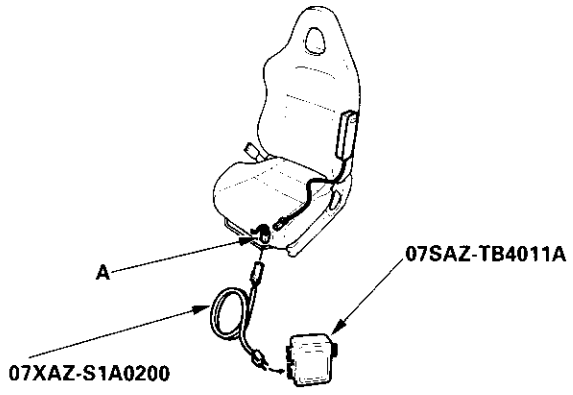
Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead E 07XAZ-S1A0200

1. Erase the DTC memory (see page 23-26).
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?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-26).
3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
4. Disconnect the floor wire harness 2P connector (A) from the driver's side airbag.



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead E to the floor wire harness.
6. Reconnect the battery negative cable.
7. Erase the DTC memory.
8. Read the DTC.

   Is DTC 11-1 indicated?

   YES—Go to step 9.

   NO—Open or increased resistance in the driver's side airbag inflator; replace the driver's side airbag (see page 23-115). ■
9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
10. Disconnect the front passenger's side airbag 2P connector (see step 4 on page 23-21) and both seat belt buckle tensioner 4P connectors (see step 6 on page 23-22).

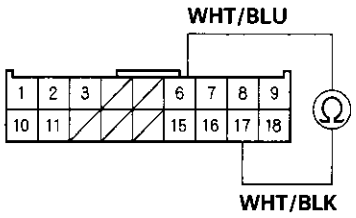
(cont'd)

DTC Troubleshooting (cont'd)

11. Disconnect SRS unit connector B (18P) from the SRS unit (see step 7 on page 23-22). Do not disconnect the special tool from the floor wire harness 2P connector.

12. Check resistance between the No. 6 and No. 17 terminals of SRS unit connector B (18P). There should be 2.0—3.0 Ω.

SRS UNIT CONNECTOR B (18P)



Wire side of female terminals

Is the resistance as specified?

YES—Faulty SRS unit or poor contact at SRS unit connector B (18P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 23-122).■

NO—Open or increased resistance in the floor wire harness; replace the floor wire harness.■

DTC 11-3: Short to Another Wire or Decreased Resistance in Driver's Side Airbag Inflator

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead E 07XAZ-S1A0200

1. Erase the DTC memory (see page 23-26).

2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

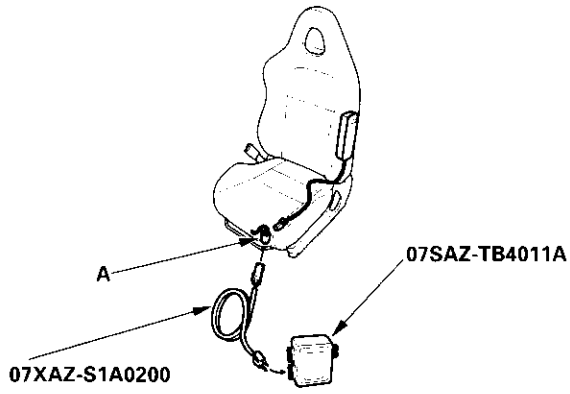
   Does the SRS indicator stay on?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-26).

3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.

4. Disconnect the floor wire harness 2P connector (A) from the driver's side airbag.



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead E to the floor wire harness.

6. Reconnect the battery negative cable.

7. Erase the DTC memory.

8. Read the DTC.

   Is DTC 11-3 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 23-115).■

9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.

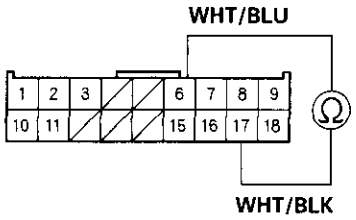
10. Disconnect the front passenger's side airbag 2P connector (see step 4 on page 23-21) and both seat belt buckle tensioner 4P connectors (see step 6 on page 23-22).

11. Disconnect the special tool from the floor wire harness 2P connector.

12. Disconnect SRS unit connector B (18P) from the SRS unit (see step 7 on page 23-22).

13. Check resistance between the No. 6 and No. 17 terminals of SRS unit connector B (18P). There should be an open circuit, or at least 1 MΩ.

SRS UNIT CONNECTOR B (18P)



Wire side of female terminals

Is the resistance as specified?

YES—Faulty SRS unit; replace the SRS unit (see page 23-122).■

NO—Short to another wire in the floor wire harness; replace the floor wire harness.■

DTC 11-4: Short to Power in Driver's Side Airbag Inflator

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead E 07XAZ-S1A0200

1. Erase the DTC memory (see page 23-26).

2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

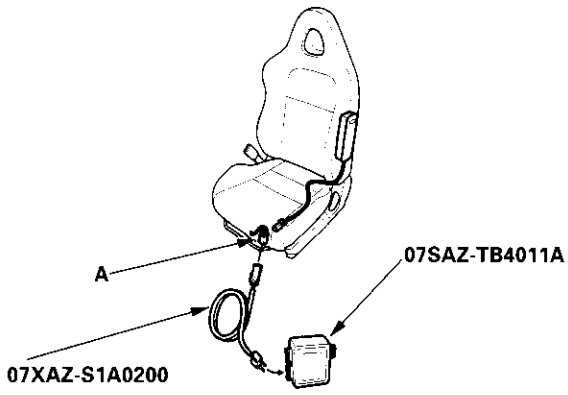
   Does the SRS indicator stay on?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-26).

3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.

4. Disconnect the floor wire harness 2P connector (A) from the driver's side airbag.



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead E to the floor wire harness.

(cont'd)

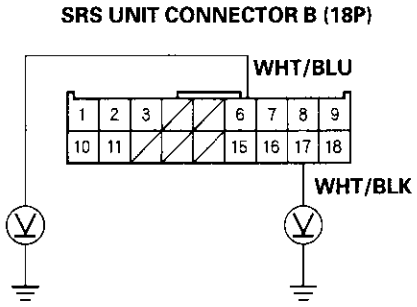
DTC Troubleshooting (cont'd)

6. Reconnect the battery negative cable.
7. Erase the DTC memory.
8. Read the DTC.

   Is DTC 11-4 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 23-115).■
9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
10. Disconnect the front passenger's side airbag 2P connector (see step 4 on page 23-21) and both seat belt buckle tensioner 4P connectors (see step 6 on page 23-22).
11. Disconnect SRS unit connector B (18P) from the SRS unit (see step 7 on page 23-22).
12. Turn the ignition switch ON (II).
13. Check for voltage between the No. 6 terminal of SRS unit connector B (18P) and body ground, and between the No. 17 terminal and body ground. There should be 0.5 V or less.



Wire side of female terminals

Is the voltage as specified?

YES—Faulty SRS unit; replace the SRS unit (see page 23-122).■

NO—Short to power in the floor wire harness; replace the floor wire harness.■

DTC 11-5: Short to Ground in Driver's Side Airbag Inflator

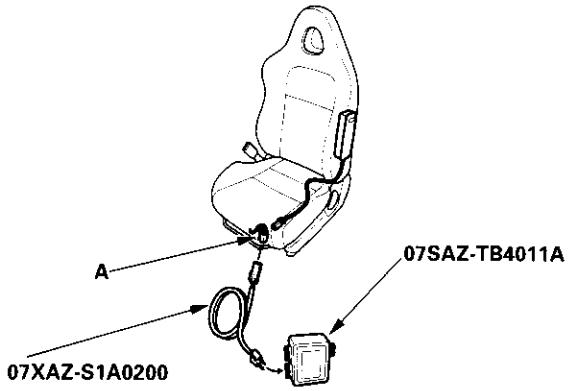
Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead E 07XAZ-S1A0200

1. Erase the DTC memory (see page 23-26).
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?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-26).
3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
4. Disconnect the floor wire harness 2P connector (A) from the driver's side airbag.

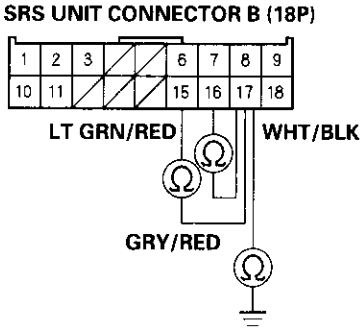


5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead E to the floor wire harness.
6. Reconnect the battery negative cable.
7. Erase the DTC memory.
8. Read the DTC.

   Is DTC 11-5 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 23-115).■
9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
10. Disconnect the front passenger's side airbag 2P connector (see step 4 on page 23-21) and both seat belt buckle tensioner 4P connectors (see step 6 on page 23-22).
11. Disconnect SRS unit connector B (18P) from the SRS unit (see step 7 on page 23-22).
12. Check resistance between the No. 17 and No. 15 terminals of SRS unit connector B (18P), and between the No. 17 and No. 16 terminals. Then check resistance between the No. 17 terminal and body ground. There should be an open circuit, or at least 1 MΩ.



Wire side of female terminals

Is the resistance as specified?

YES—Faulty SRS unit; replace the SRS unit (see page 23-122).■

NO—Short to ground in the floor wire harness; replace the floor wire harness.■

DTC Troubleshooting (cont'd)

DTC 12-1: Open or Increased Resistance in Front Passenger's Side Airbag Inflator

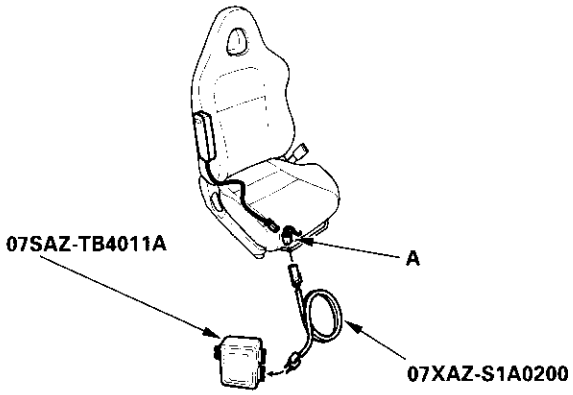
Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead E 07XAZ-S1A0200

1. Erase the DTC memory (see page 23-26).
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?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-26).
3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
4. Disconnect the floor wire harness 2P connector (A) from the front passenger's side airbag.



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead E to the floor wire harness.
6. Reconnect the battery negative cable.
7. Erase the DTC memory.
8. Read the DTC.

   Is DTC 12-1 indicated?

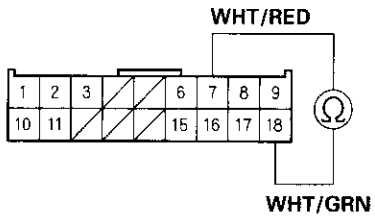
   YES—Go to step 9.

   NO—Open or increased resistance in the front passenger's side airbag inflator; replace the front passenger's side airbag (see page 23-115).■
9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
10. Disconnect the driver's side airbag 2P connector (see step 4 on page 23-21) and both seat belt buckle tensioner 4P connectors (see step 6 on page 23-22).

11. Disconnect SRS unit connector B (18P) from the SRS unit (see step 7 on page 23-22). Do not disconnect the special tool from the floor wire harness 2P connector.

12. Check resistance between the No. 7 and No. 18 terminals of SRS unit connector B (18P). There should be 2.0—3.0 Ω.

SRS UNIT CONNECTOR B (18P)



Wire side of female terminals

Is the resistance as specified?

YES—Faulty SRS unit or poor contact at SRS unit connector B (18P) and the SRS unit. Check the connection; If the connection is OK, replace the SRS unit (see page 23-122).■

NO—Open or increased resistance in the floor wire harness; replace the floor wire harness.■

DTC 12-3: Short to Another Wire or Decreased Resistance in Front Passenger's Side Airbag Inflator

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead E 07XAZ-S1A0200

1. Erase the DTC memory (see page 23-26).

2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

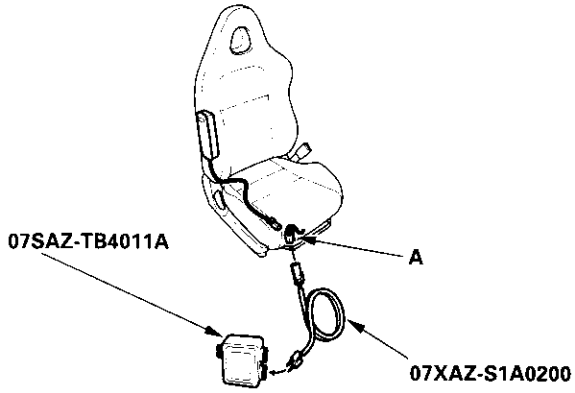
   Does the SRS indicator stay on?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-26).

3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.

4. Disconnect the floor wire harness 2P connector (A) from the front passenger's side airbag.



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead E to the floor wire harness.

(cont'd)

DTC Troubleshooting (cont'd)

6. Reconnect the battery negative cable.
7. Erase the DTC memory.
8. Read the DTC.

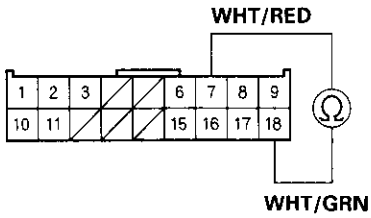
   Is DTC 12-3 indicated?

   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 23-115).■

9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
10. Disconnect the driver's side airbag 2P connector (see step 4 on page 23-21) and both seat belt buckle tensioner 4P connectors (see step 6 on page 23-22).
11. Disconnect the special tool from the floor wire harness 2P connector.
12. Disconnect SRS unit connector B (18P) from the SRS unit (see step 7 on page 23-22).
13. Check resistance between the No. 7 and No. 18 terminals of SRS unit connector B (18P). There should be an open circuit, or at least 1 MΩ.

SRS UNIT CONNECTOR B (18P)



Wire side of female terminals

Is the resistance as specified?

YES—Faulty SRS unit; replace the SRS unit (see page 23-122).■

NO—Short to another wire in the floor wire harness; replace the floor wire harness.■

DTC 12-4: Short to Power in Front Passenger's Side Airbag Inflator

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead E 07XAZ-S1A0200

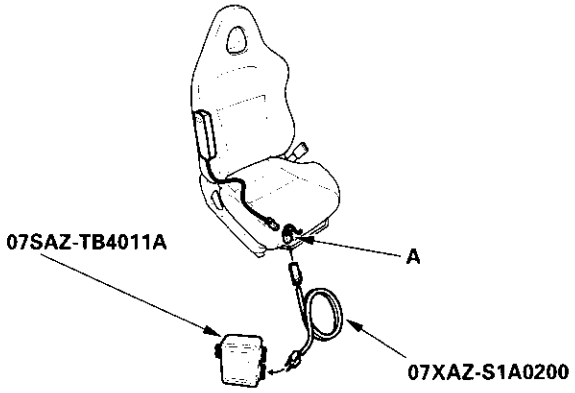
1. Erase the DTC memory (see page 23-26).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-26).

3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
4. Disconnect the floor wire harness 2P connector (A) from the front passenger's side airbag.



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead E to the floor wire harness.

6. Reconnect the battery negative cable.

7. Erase the DTC memory.

8. Read the DTC.

   Is DTC 12-4 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 23-115).■

9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.

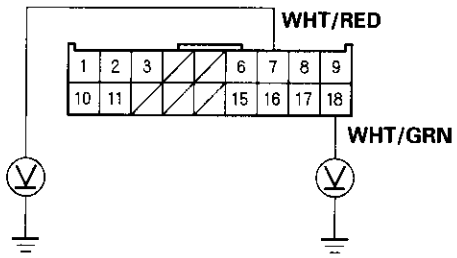
10. Disconnect the driver's side airbag 2P connector (see step 4 on page 23-21) and both seat belt buckle tensioner 4P connectors (see step 6 on page 23-22).

11. Disconnect SRS unit connector B (18P) from the SRS unit (see step 7 on page 23-22).

12. Turn the ignition switch ON (II).

13. Check for voltage between the No. 7 terminal of SRS unit connector B (18P) and body ground, and between the No. 18 terminal and body ground. There should be 0.5 V or less.

SRS UNIT CONNECTOR B (18P)



Wire side of female terminals

Is the voltage as specified?

YES—Faulty SRS unit; replace the SRS unit (see page 23-122).■

NO—Short to power in the floor wire harness; replace the floor wire harness.■

DTC Troubleshooting (cont'd)

DTC 12-5: Short to Ground in Front Passenger's Side Airbag Inflator

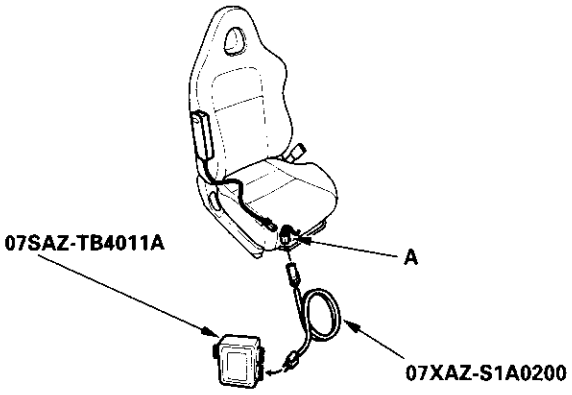
Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead E 07XAZ-S1A0200

1. Erase the DTC memory (see page 23-26).
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?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-26).
3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
4. Disconnect the floor wire harness 2P connector (A) from the front passenger's side airbag.

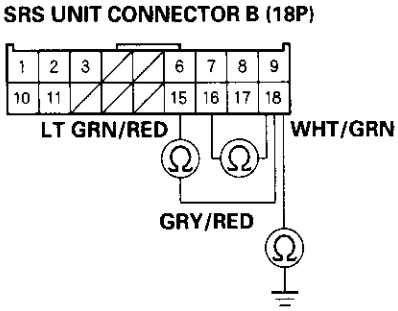


5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead E to the floor wire harness.
6. Reconnect the battery negative cable.
7. Erase the DTC memory.
8. Read the DTC.

   Is DTC 12-5 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 23-115).■
9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
10. Disconnect the driver's side airbag 2P connector (see step 4 on page 23-21) and both seat belt buckle tensioner 4P connectors (see step 6 on page 23-22).
11. Disconnect SRS unit connector B (18P) from the SRS unit (see step 7 on page 23-22).
12. Check resistance between the No. 15 and No. 18 terminals of SRS unit connector B (18P) and between the No. 16 and No. 18 terminals. Then check resistance between the No. 18 terminal and body ground. There should be an open circuit, or at least 1 MΩ.



Wire side of female terminals

Is the resistance as specified?

YES—Faulty SRS unit; replace the SRS unit (see page 23-122).■

NO—Short to ground in the floor wire harness; replace the floor wire harness.■

DTC 13-3: No Signal from the Driver's Side Impact Sensor

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead H 07YAZ-S3AA100

1. Erase the DTC memory (see page 23-26).

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?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-26).

3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.

4. Check the connection between the floor wire harness 2P connector and the driver's side impact sensor.

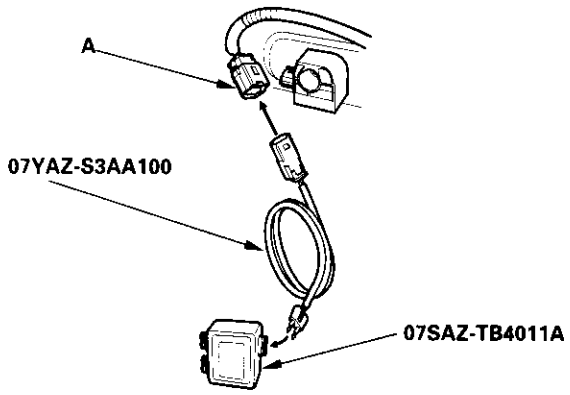
   Is the connection OK?

   YES—Go to step 5.

   NO—Replace the driver's side impact sensor and/or the floor harness, as needed. ■

5. Disconnect the driver's side airbag and front passenger's side airbag 2P connectors (see step 4 on page 23-21). Also disconnect both seat belt buckle tensioner 4P connectors (see step 6 on page 23-22).

6. Disconnect the floor wire harness 2P connector (A) from the driver's side impact sensor.



7. Connect the SRS inflator simulator (2 Ω connector) and simulator lead H to the floor wire harness.

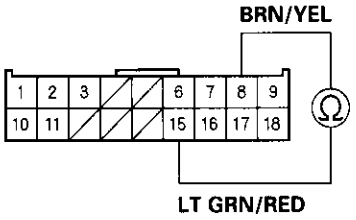
(cont'd)

DTC Troubleshooting (cont'd)

8. Disconnect SRS unit connector B (18P) from the SRS unit (see step 7 on page 23-22).

9. Check resistance between the No. 8 and No. 15 terminals of SRS unit connector B (18P). There should be 0—1.0 Ω.

SRS UNIT CONNECTOR B (18P)



Wire side of female terminals

Is the resistance as specified?

YES—Faulty driver's side impact sensor or SRS unit; replace the driver's side impact sensor (see page 23-123). If the problem is still present, replace the SRS unit (see page 23-122).■

NO—Open in the floor wire harness; replace the floor wire harness.■

DTC 13-4: Faulty Power Supply to the Driver's Side Impact Sensor

1. Erase the DTC memory (see page 23-26).

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?

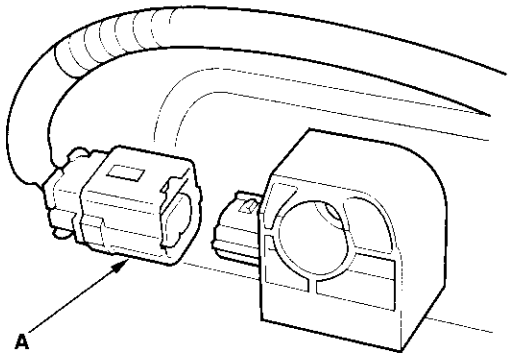
   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-26).

3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.

4. Disconnect the driver's side airbag and front passenger's side airbag 2P connectors (see step 4 on page 23-21). Also disconnect both seat belt buckle tensioner 4P connectors (see step 6 on page 23-22).

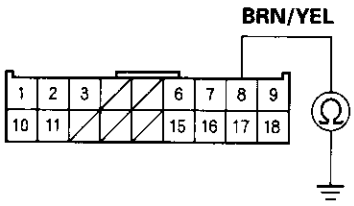
5. Disconnect the floor wire harness 2P connector (A) from the driver's side impact sensor.



6. Disconnect SRS unit connector B (18P) from the SRS unit (see step 7 on page 23-22).

7. Check resistance between the No. 8 terminal of SRS unit connector B (18P) and body ground. There should be an open circuit, or at least 1 MΩ.

SRS UNIT CONNECTOR B (18P)



Wire side of female terminals

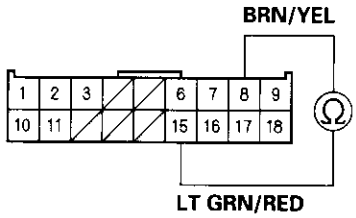
Is the resistance as specified?

YES—Go to step 8.

NO—Short to ground in the floor wire harness; replace the floor wire harness.■

8. Check resistance between the No. 8 and No. 15 terminals of SRS unit connector B (18P). There should be an open circuit, or at least 1 MΩ.

SRS UNIT CONNECTOR B (18P)



Wire side of female terminals

Is the resistance as specified?

YES—Faulty driver's side impact sensor or SRS unit; replace the driver's side impact sensor (see page 23-125). If the problem is still present, replace the SRS unit (see page 23-122).■

NO—Short in the floor wire harness; replace the floor wire harness.■

DTC Troubleshooting (cont'd)

DTC 14-3: No Signal from the Front Passenger's Side Impact Sensor

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead H 07YAZ-S3AA100

1. Erase the DTC memory (see page 23-26).

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?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-26).

3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.

4. Check the connection between the floor wire harness 2P connector and the front passenger's side impact sensor.

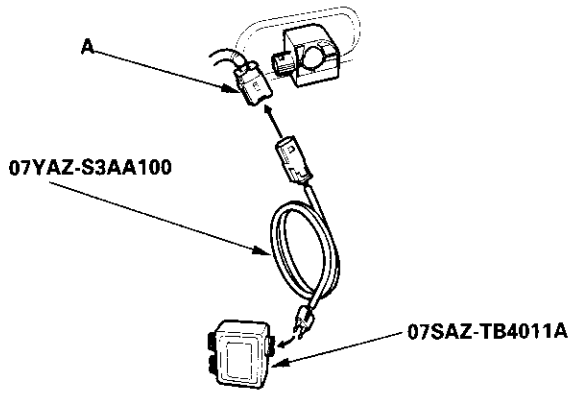
   Is the connection OK?

   YES—Go to step 5.

   NO—Poor contact between the floor wire harness 2P connector and the front passenger's side impact sensor; replace the front passenger's side impact sensor and/or the floor harness, as needed.

5. Disconnect the driver's side airbag and front passenger's side airbag 2P connectors (see step 4 on page 23-21). Also disconnect both seat belt buckle tensioner 4P connectors (see step 6 on page 23-22).

6. Disconnect the floor wire harness 2P connector (A) from the front passenger's side impact sensor.

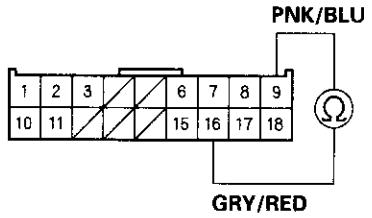


7. Connect the SRS inflator simulator (2 Ω connector) and the simulator lead H to the floor wire harness.

8. Disconnect SRS unit connector B (18P) from the SRS unit (see step 7 on page 23-22).

9. Check resistance between the No. 9 and No. 16 terminals of SRS unit connector B (18P). There should be 0—1.0 Ω.

SRS UNIT CONNECTOR B (18P)



Wire side of female terminals

Is the resistance as specified?

YES—Faulty front passenger's side impact sensor or SRS unit; replace the front passenger's side impact sensor (see page 23-125). If the problem is still present, replace the SRS unit (see page 23-122). ■

NO—Open in the floor wire harness; replace the floor wire harness. ■

DTC 14-4: Faulty Power Supply to the Front Passenger's Side Impact Sensor

1. Erase the DTC memory (see page 23-26).

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?

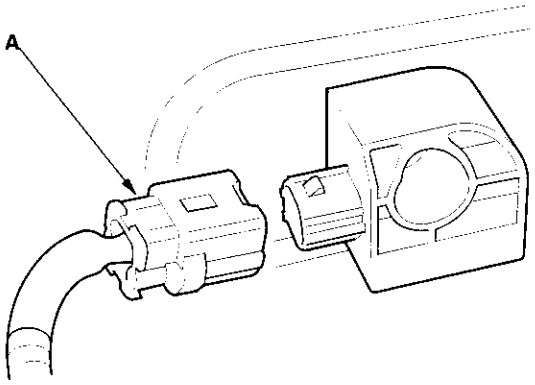
   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-26).

3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.

4. Disconnect the driver's side airbag and front passenger's side airbag 2P connectors (see step 4 on page 23-21). Also disconnect both seat belt buckle tensioner 4P connectors (see step 6 on page 23-22).

5. Disconnect the floor wire harness 2P connector (A) from the front passenger's side impact sensor.

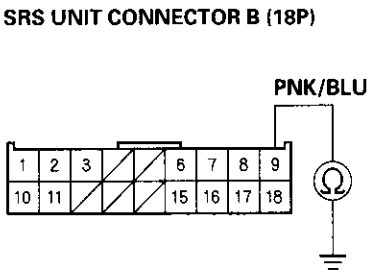


6. Disconnect SRS unit connector B (18P) from the SRS unit (see step 7 on page 23-22).

(cont'd)

DTC Troubleshooting (cont'd)

7. Check resistance between the No. 9 terminal of SRS unit connector B (18P) and body ground. There should be an open circuit, or at least 1 MΩ.



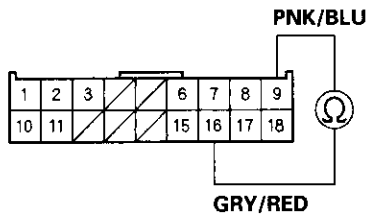
Wire side of female terminals

Is the resistance as specified?

YES—Go to step 8.

NO—Short to ground in the floor wire harness; replace the floor wire harness.■

8. Check resistance between the No. 9 and No. 16 terminals of SRS unit connector B (18P). There should be an open circuit, or at least 1 MΩ.



Wire side of female terminals

Is the resistance as specified?

YES—Faulty front passenger's side impact sensor or SRS unit; replace the front passenger's side impact sensor (see page 23-125). If the problem is still present, replace the SRS unit (see page 23-122). ■

NO—Short in the floor wire harness; replace the floor wire harness.■

DTC 15-1: Faulty OPDS Unit

NOTE:
- An incorrect OPDS unit can cause DTC 15-1.
- A new (uninitialized) OPDS unit installed with a faulty OPDS sensor can cause DTC 15-1.
- If you install a new OPDS unit and a new SRS unit at the same time, initialize the OPDS manually (see page 23-27), do not use the Honda PGM Tester.

1. Make sure nothing is on the front passenger's seat.
2. Initialize the OPDS unit (see page 23-27).
3. Erase the DTC memory (see page 23-26).
4. Read the DTC.

   Is DTC 15-1 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-26).

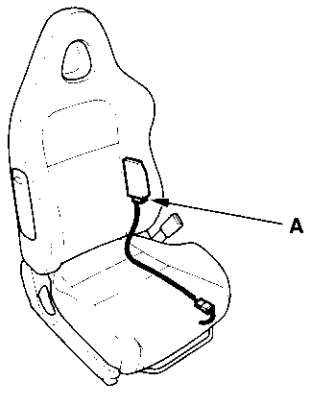
5. Check the No. 9 (10A) fuse in the under-dash fuse/relay box.

   Is the fuse OK?

   YES—Go to step 6.

   NO—Go to step 9.

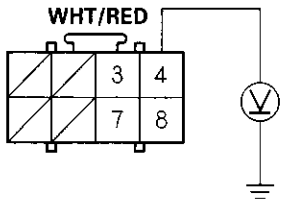
6. Disconnect OPDS unit harness 8P connector (A) from the OPDS unit (A) (see page 23-124).



7. Turn the ignition switch ON (II).

8. Check for voltage between the No. 4 terminal of OPDS unit harness 8P connector and body ground. There should be battery voltage.

OPDS UNIT HARNESS 8P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Go to step 16.

NO—Open in the floor wire harness or OPDS unit harness; replace the faulty harness. ■

9. Replace the No. 9 (10A) fuse in the under-dash fuse/relay box.

10. Turn the ignition switch ON (II) for 30 seconds, then turn it off.

11. Check the No. 9 (10A) fuse.

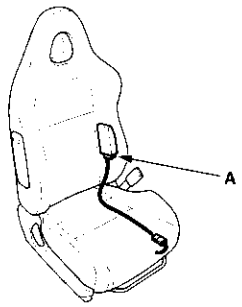
Is the fuse OK?

YES—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-26).

NO—Go to step 12.

12. Replace the No. 9 (10A) fuse.

13. Disconnect OPDS unit harness 8P connector (A) from the OPDS unit.



14. Turn the ignition switch ON (II) for 30 seconds, then turn it off.

15. Check the No. 9 (10A) fuse.

Is the fuse OK?

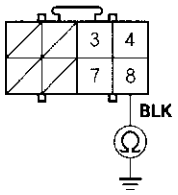
YES—Short to ground in the OPDS unit; replace the OPDS unit (see page 23-124). ■

NO—Short to ground in the No. 9 (10A) fuse circuit (floor harness, or OPDS harness); replace the affected harness. ■

16. Turn the ignition switch OFF.

17. Check resistance between the No. 8 terminal of OPDS unit harness 8P connector and body ground. There should be 0—1.0 Ω.

OPDS UNIT HARNESS 8P CONNECTOR



Wire side of female terminals

Is the resistance as specified?

YES—Go to step 18.

NO—Open in the floor wire harness or OPDS unit harness, or poor ground (G551). If G551 is OK, replace the faulty harness. ■

(cont'd)

DTC Troubleshooting (cont'd)

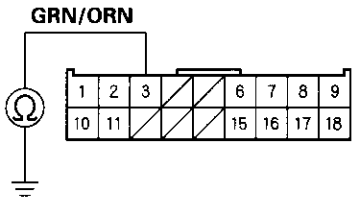
18. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.

19. Disconnect both side airbag connectors (see step 4 on page 23-21) and both seat belt buckle tensioner 4P connectors (see step 6 on page 23-22).

20. Disconnect SRS unit connector B (18P) from the SRS unit (see step 7 on page 23-22).

21. Check resistance between the No. 3 terminal of SRS unit connector B (18P) and body ground. There should be an open circuit, or at least 1 MΩ .

SRS UNIT CONNECTOR B (18P)



Wire side of female terminals

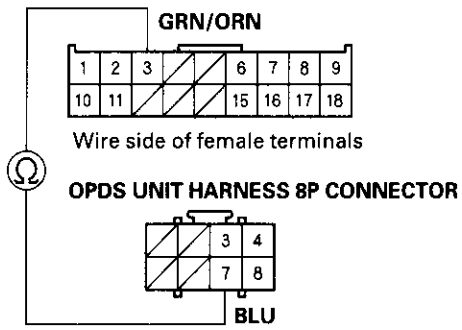
Is the resistance as specified?

YES— Go to step 22.

NO— Short to ground in the floor wire harness or OPDS unit harness; replace the faulty harness.■

22. Check resistance between the No. 3 terminal of SRS unit connector B (18P) and the No. 7 terminal of OPDS unit harness 8P connector. There should be 0— 1.0 Ω .

SRS UNIT CONNECTOR B (18P)



Is the resistance as specified?

YES— Go to step 23.

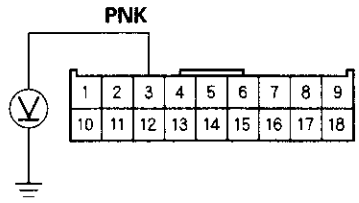
NO— Open in the floor wire harness or in the OPDS unit harness; replace the faulty harness.■

23. Reconnect the battery negative cable.

24. Turn the ignition switch ON (II).

25. Check for voltage between the No. 3 terminal of SRS unit connector B (18P) and body ground. There should be 0.5 V or less.

SRS UNIT CONNECTOR B (18P)



Wire side of female terminals

Is the voltage as specified?

YES—Go to step 26.

NO—Short to power in the floor wire harness or in the OPDS unit harness; replace the faulty harness.■

26. Replace the OPDS unit (see page 23-124), then initialize the system (see page 23-27).

27. Erase the DTC memory, then check for DTC 15-1.

Is DTC 15-1 indicated?

YES—Replace the SRS unit (see page 23-122).■

NO—The system is OK.■

DTC 15-2: Faulty Side Airbag Cutoff Indicator Circuit

1. Make sure nothing is on the front passenger's seat.

2. Erase the DTC memory (see page 23-26).

3. 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?

YES—Turn the ignition switch OFF, and go to step 4.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-26).

NOTE: This DTC may have been caused by turning the ignition switch ON (II) with the gauge assembly disconnected.

4. Turn the ignition switch ON (II), and check that the side airbag cutoff indicator comes on.

Does the side airbag cutoff indicator come on?

YES—Go to step 5.

NO—Go to step 6.

5. Make sure the side airbag cutoff indicator goes off after 5 seconds.

Does the side airbag cutoff indicator go off after 5 seconds?

YES—Faulty OPDS unit or SRS unit; replace the OPDS unit (see page 23-124). If the problem is still present, replace the SRS unit (see page 23-122).■

NO—Go to step 32.

6. Turn the ignition switch OFF.

(cont'd)

DTC Troubleshooting (cont'd)

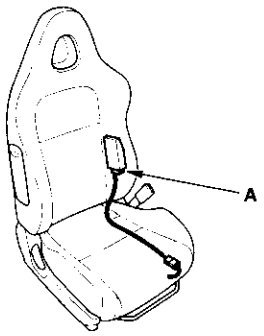
7. Check the No. 10 (7.5A) fuse in the under-dash fuse/relay box.

   Is the fuse OK?

   YES—Go to step 8.

   NO—Replace the fuse, then turn the ignition switch ON (II). If the fuse blows again, check for a short in the No. 10 (7.5A) fuse circuit (ECM wire harness, floor harness, or OPDS harness).■

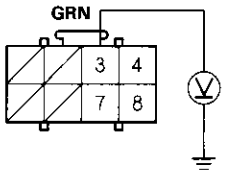
8. Disconnect the OPDS unit harness 8P connector (A) from the OPDS unit (see page 23-124).



9. Turn the ignition switch ON (II).

10. Check for voltage between the No. 3 terminal of the OPDS unit harness 8P connector and body ground. There should be battery voltage.

OPDS UNIT HARNESS 8P CONNECTOR



Wire side of female terminals

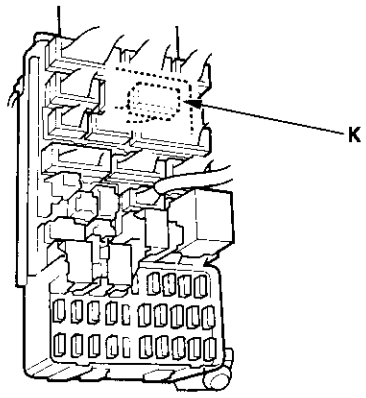
Is there battery voltage?

YES—Go to step 11.

NO—Go to step 23.

11. Turn the ignition switch OFF.

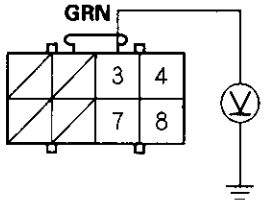
12. Disconnect the dashboard wire harness 17P connector K from the under-dash fuse/relay box.



13. Turn the ignition switch ON (II).

14. Check for voltage between the No. 3 terminal of the OPDS unit harness 8P connector and body ground. There should be 0.5 V or less.

OPDS UNIT HARNESS 8P CONNECTOR



Wire side of female terminals

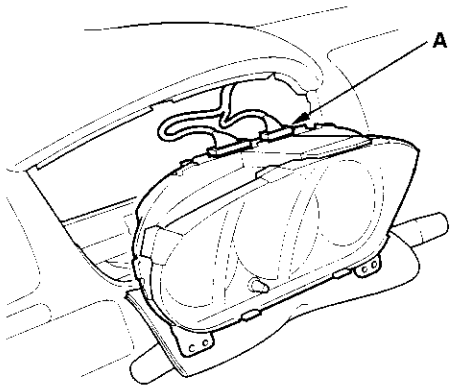
Is the voltage as specified?

YES—Faulty OPDS unit; replace the OPDS unit (see page 23-124).■

NO—Go to step 15.

15. Turn the ignition switch OFF.

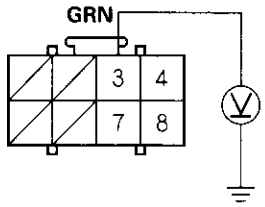
16. Remove the gauge assembly (see page 22-64). Then disconnect gauge assembly connector A from the gauge assembly.



17. Turn the ignition switch ON (II).

18. Check for voltage between the No. 3 terminal of the OPDS unit harness 8P connector and body ground. There should be 0.5 V or less.

OPDS UNIT HARNESS 8P CONNECTOR



Wire side of female terminals

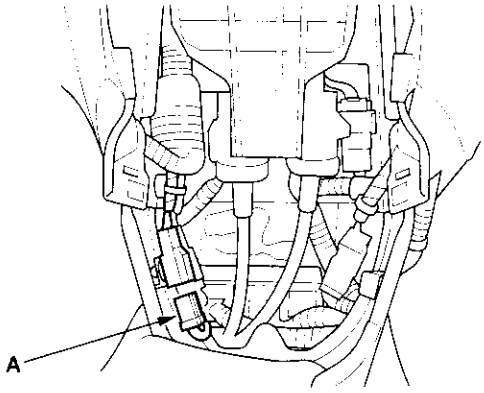
Is the voltage as specified?

YES—Short to power in the gauge assembly; replace the gauge assembly.■

NO—Go to step 19.

19. Turn the ignition switch OFF.

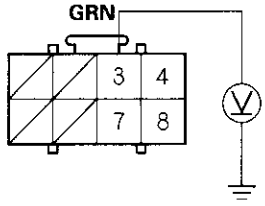
20. Disconnect floor wire harness 6P connector C509 (A) from the dashboard wire harness.



21. Turn the ignition switch ON (II).

22. Check for voltage between the No. 3 terminal of the OPDS unit harness 8P connector and body ground. There should be 0.5 V or less.

OPDS UNIT HARNESS 8P CONNECTOR



Wire side of female terminals

Is the voltage as specified?

YES—Short to power in dashboard wire harness A; replace dashboard wire harness A.■

NO—Short to power in the floor wire harness or in the OPDS unit harness; if the OPDS unit harness is OK, replace the floor wire harness.■

(cont'd)

DTC Troubleshooting (cont'd)

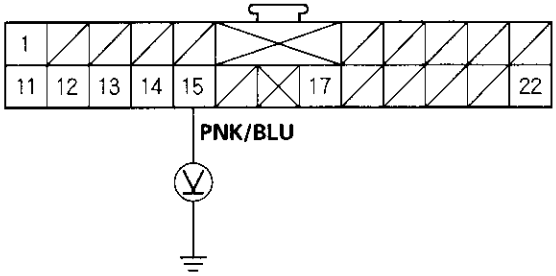
23. Turn the ignition switch OFF.

24. Remove the gauge assembly (see page 22-64). With the connectors still connected to the gauge assembly, backprobe the No. 15 terminal of gauge assembly connector A (22P).

25. Turn the ignition switch ON (II).

26. Check for voltage between the No. 15 terminal of gauge assembly connector A (22P) and body ground. There should be battery voltage.

GAUGE ASSEMBLY CONNECTOR A (22P)



Wire side of female terminals

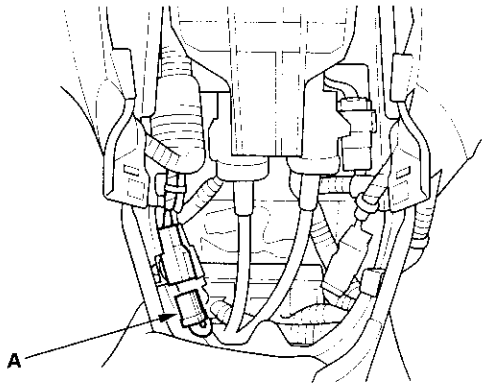
Is there battery voltage?

YES—Go to step 27.

NO—Go to step 31.

27. Turn the ignition switch OFF.

28. Disconnect floor wire harness 6P connector C509 (A) from dashboard wire harness.

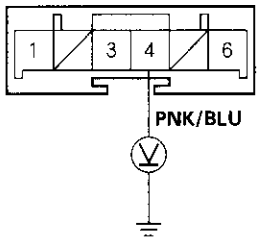


29. Turn the ignition switch ON (II).

30. '02 model: Check for voltage between the No. 4 terminal of dashboard wire harness A 6P connector C509 and body ground. There should be battery voltage.
'03 model: Check for voltage between the No. 5 terminal of dashboard wire harness A 8P connector C509 and body ground. There should be battery voltage.

'02 Model:

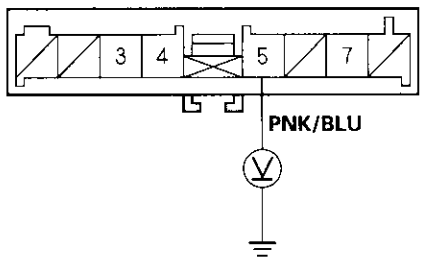
DASHBOARD WIRE HARNESS A 6P CONNECTOR



Terminal side of male terminals

'03 Model:

DASHBOARD WIRE HARNESS A 8P CONNECTOR



Terminal side of male terminals

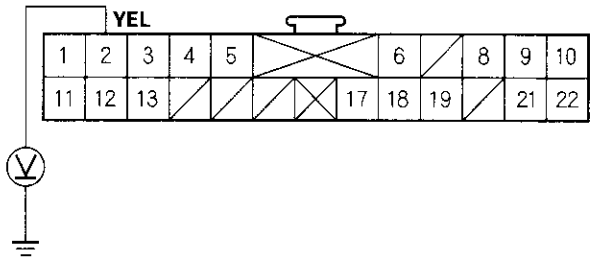
Is there battery voltage?

YES—Poor contact at the dashboard wire harness A 6P or 8P connector and floor wire harness, an open in the floor wire harness, or an open in the OPDS unit harness. Check the connection; if the connection is OK, replace the faulty harness. ■

NO—Poor contact at gauge assembly connector A (22P) or an open in dashboard wire harness A. Check gauge assembly connector A (22P); if the connections are OK, replace dashboard wire harness A. ■

31. Check for voltage between the No. 2 terminal of gauge assembly connector B (22P) and body ground. There should be battery voltage.

GAUGE ASSEMBLY CONNECTOR B (22P)



Wire side of female terminals

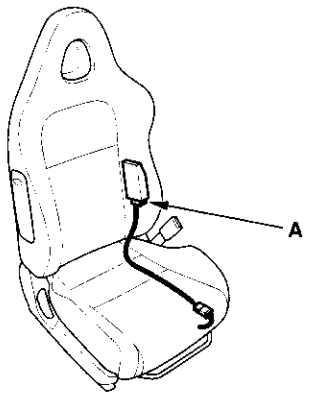
Is there battery voltage?

YES—Faulty side airbag cutoff indicator circuit; replace the gauge assembly. ■

NO—Open in dashboard wire harness A; replace dashboard wire harness A. ■

32. Turn the ignition switch OFF.

33. Disconnect the OPDS unit harness 8P connector (A) from the OPDS unit (see page 23-124).



34. Turn the ignition switch ON (II).

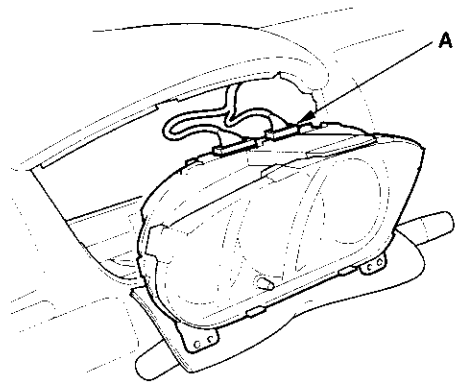
Does the side airbag cutoff indicator come on?

YES—Go to step 35.

NO—Faulty OPDS unit; replace the OPDS unit. ■

35. Turn the ignition switch OFF.

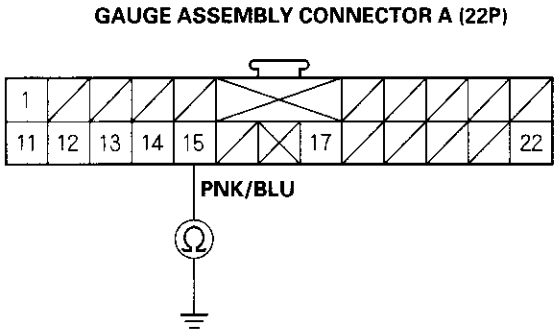
36. Remove the gauge assembly (see page 22-64). Then disconnect gauge assembly connector A from the gauge assembly.



(cont'd)

DTC Troubleshooting (cont'd)

37. Check resistance between the No. 15 terminal of gauge assembly connector A (22P) and body ground. There should be an open circuit, or at least 1 MΩ.



Wire side of female terminals

Is the resistance as specified?

YES—Short to ground in the side airbag cutoff indicator circuit; replace the gauge assembly. ■

NO—Short to ground in the dashboard wire harness A, floor wire harness, or OPDS unit harness; replace the faulty harness. ■

DTC 15-3: Faulty OPDS Sensor

1. Erase the DTC memory (see page 23-26).
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?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-26).

   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 15-3. If one of these devices was used, erase the DTC, operate the device near the seat-back, and recheck for DTCs. If DTC 15-3 is reset, erase it, and do not use the device near the seat-back.
3. Check the connection at the OPDS sensor harness connector and the OPDS unit connector.

   Are the connections OK?

   YES—Go to step 4.

   NO—Reconnect the OPDS sensor harness connector, and clear the DTC. ■
4. Replace the OPDS sensor/seat-back foam (see page 20-74), and initialize the OPDS (see page 23-27).
5. Erase the DTC memory, then check for DTC 15-3.

   Is DTC 15-3 indicated?

   YES—Replace the OPDS unit (see page 23-124). ■

   NO—The system is OK. ■

SRS Indicator Circuit Troubleshooting

The SRS Indicator Doesn't Come On

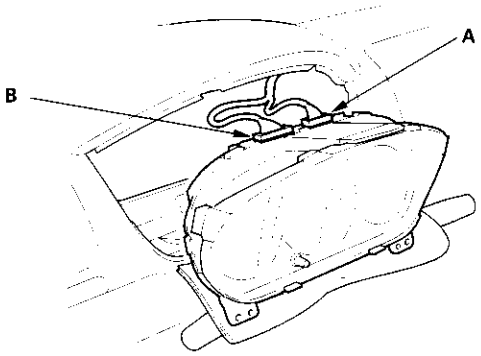
1. Turn the ignition switch ON (II), and see if the other indicators come on (brake system, etc).

   Do the other indicators come on?

   YES—Go to step 2.

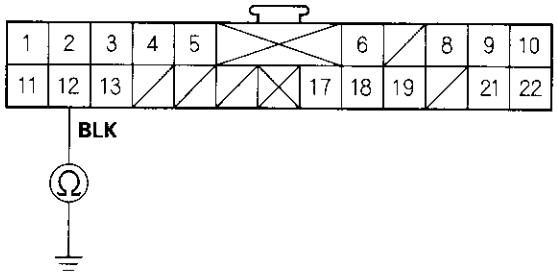
   NO—Go to step 8.

2. Turn the ignition switch OFF, then remove the gauge assembly (see page 22-64). Disconnect gauge assembly connector A and B from the gauge assembly.



3. Check resistance between the No. 12 terminal of gauge assembly connector B (22P) and body ground. There should be 0—1.0 Ω.

GAUGE ASSEMBLY CONNECTOR B (22P)



Wire side of female terminals

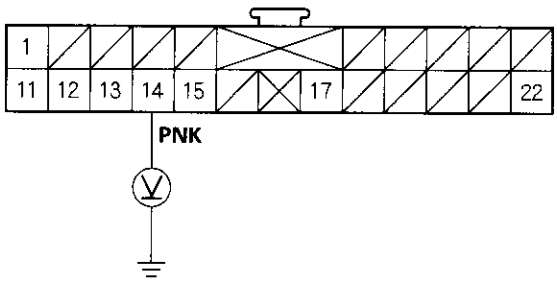
Is the resistance as specified?

YES—Go to step 4.

NO—Open in the BLK wire of dashboard wire harness A or faulty body ground terminal (G501). If the body ground terminal is OK, replace dashboard wire harness A.■

4. Check for voltage between the No. 14 terminal of gauge assembly connector A (22P) and body ground within the first 6 seconds after turning the ignition switch ON (II). There should be 8.5 V or less.

GAUGE ASSEMBLY CONNECTOR A (22P)



Wire side of female terminals

Is the voltage as specified?

YES—Faulty SRS indicator circuit in the gauge assembly; replace the gauge assembly.■

NO—Go to step 5.

5. Turn the ignition switch OFF.

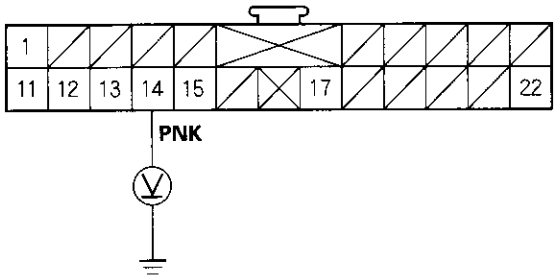
(cont'd)

SRS Indicator Circuit Troubleshooting (cont'd)

6. Disconnect SRS unit connector C (8P) from the SRS unit (see step 7 on page 23-22).

7. Disconnect gauge assembly connector A (22P). Connect a voltmeter between the No. 14 terminal of gauge assembly connector A (22P) and body ground. Turn the ignition switch ON (II), and measure voltage. There should be 0.5 V or less.

GAUGE ASSEMBLY CONNECTOR A (22P)



Wire side of female terminals

Is the voltage as specified?

YES—Faulty SRS unit; replace the SRS unit (see page 23-122).■

NO—Short to power in the PNK wire of dashboard wire harness A or in the floor wire harness; replace the faulty harness.■

8. Turn the ignition switch OFF. Check the No. 10 (7.5A) fuse in the under-dash fuse/relay box.

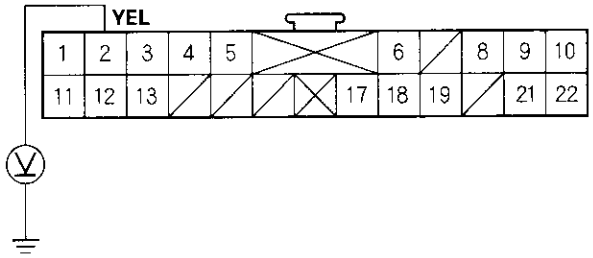
Is the fuse blown?

YES—Go to step 10.

NO—Go to step 9.

9. Connect a voltmeter between the No. 2 terminal of gauge assembly connector B (22P) and body ground. Turn the ignition switch ON (II), and measure the voltage. There should be battery voltage.

GAUGE ASSEMBLY CONNECTOR B (22P)



Wire side of female terminals

Is there battery voltage?

YES—Faulty SRS indicator circuit in the gauge assembly or poor contact at gauge assembly connector B (22P) and the gauge assembly; if the connection is OK, replace the gauge assembly.■

NO—Open in the under-dash fuse/relay box No. 10 (7.5A) fuse circuit, or open in the YEL wire of dashboard wire harness A. If the under-dash fuse/relay box is OK, replace the faulty harness.■

10. Replace the No. 10 (7.5A) fuse, then check to see if the indicators comes on.

Do the indicators come on?

YES—The system is OK at this time.■

NO—Repair the short to ground in the under-dash fuse/relay box No. 10 (7.5A) fuse circuit.■

The SRS Indicator Stays On When In "SCS" Menu Method

NOTE:
- If you cannot retrieve DTCs with the PGM Tester using the SRS menu method, retrieve the flash codes with the Tester in SCS mode (see page 23-24).
- A new SRS unit must sense the entire system is OK before completing its initial self-test. The most common cause of an incomplete self-test is the failure to replace all deployed parts after a collision, in particular, seat belt tensioners and seat belt buckle tensioners.
- An incomplete self-test prevents the PGM Tester from retrieving DTCs, although flash codes are available in the Tester's SCS mode.

1. Erase the DTC memory using the MES connector (see page 23-26).

   Does the SRS indicator go off while you are erasing the DTC memory?

   YES—Go to step 42.

   NO—Go to step 2.

2. Check the No. 13 (10A) fuse in the under-dash fuse/relay box.

   Is the fuse OK?

   YES—Go to step 19.

   NO—Go to step 3.

3. Replace the No. 13 (10A) fuse.

4. Turn the ignition switch ON (II), and wait for 30 seconds. Then turn the ignition switch OFF.

5. Check the No. 13 (10A) fuse.

   Is the fuse OK?

   YES—The system is OK at this time.■

   NO—Go to step 6.

6. Replace the No. 13 (10A) fuse.

7. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.

8. Disconnect the driver's airbag 4P connector (see step 2 on page 23-21).

9. Disconnect the front passenger's airbag 4P connector (see step 3 on page 23-21).

10. Disconnect both seat belt tensioner 2P connectors (see step 5 on page 23-22).

11. Disconnect SRS unit connector A (18P) from the SRS unit (see step 7 on page 23-22).

12. Reconnect the battery negative cable.

13. Turn the ignition switch ON (II), and wait for 30 seconds. Then turn the ignition switch OFF.

14. Check the No. 13 (10A) fuse.

    Is the fuse OK?

    YES—Short to ground in the SRS unit; replace the SRS unit (see page 23-122).■

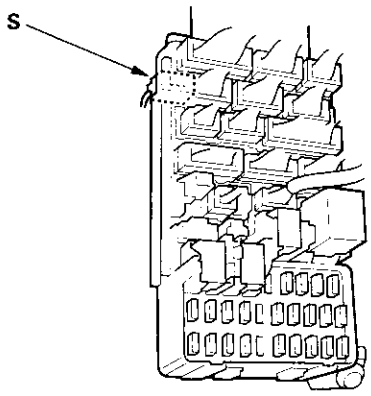
    NO—Go to step 15.

15. Replace the No. 13 (10A) fuse.

(cont'd)

SRS Indicator Circuit Troubleshooting (cont'd)

16. Disconnect dashboard wire harness B connector S from the under-dash fuse/relay box.



17. Turn the ignition switch ON (II), and wait for 30 seconds. Then turn the ignition switch OFF.

18. Check the No. 13 (10A) fuse.

    Is the fuse OK?

    YES—Short to ground in dashboard wire harness B; replace dashboard wire harness B.■

    NO—Short to ground in the under-dash fuse/relay box; replace the under-dash fuse/relay box.■

19. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.

20. Disconnect the driver's airbag 4P connector (see step 2 on page 23-21).

21. Disconnect the front passenger's airbag 4P connector (see step 3 on page 23-21).

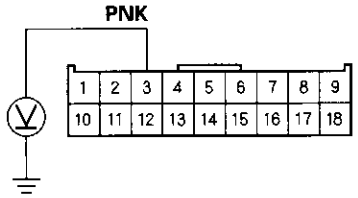
22. Disconnect both seat belt tensioner 2P connectors (see step 5 on page 23-22).

23. Disconnect SRS unit connector A (18P) from the SRS unit (see step 7 on page 23-22).

24. Reconnect the battery negative cable.

25. Connect a voltmeter between the No. 3 terminal of SRS unit connector A (18P) and body ground. Turn the ignition switch ON (II), and measure the voltage. There should be battery voltage.

SRS UNIT CONNECTOR A (18P)



Wire side of female terminals

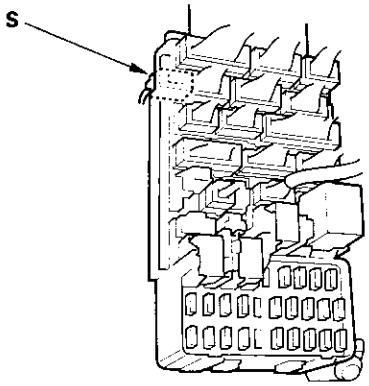
Is there battery voltage?

YES—Go to step 29.

NO—Go to step 26.

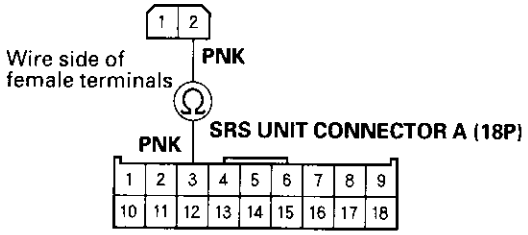
26. Turn the ignition switch OFF.

27. Disconnect dashboard wire harness B connector S from the under-dash fuse/relay box.



28. Check resistance between the No. 3 terminal of SRS unit connector A (18P) and the No. 2 terminal of dashboard wire harness B connector S. There should be 0—1.0 Ω.

DASHBOARD WIRE HARNESS B CONNECTOR S



Wire side of female terminals

Is the resistance as specified?

YES—Open in the under-dash fuse/relay box or poor contact at dashboard wire harness B connectors; check the connection. If the connection is OK, replace the under-dash fuse/relay box. ■

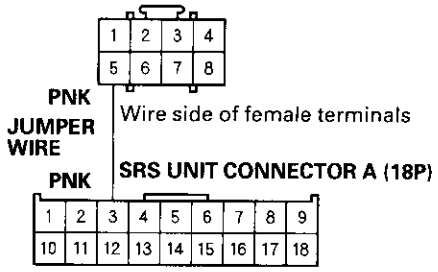
NO—Open in dashboard wire harness B; replace dashboard wire harness B. ■

29. Turn the ignition switch OFF.

30. Disconnect SRS unit connector C (8P) from the SRS unit (see step 7 on page 23-22).

31. Connect the No. 3 terminal of SRS unit connector A (18P) and the No. 5 terminal of SRS unit connector C (8P) with a jumper wire.

SRS UNIT CONNECTOR C (8P)



Wire side of female terminals

32. Turn the ignition switch ON (II).

33. Check the SRS indicator.

Did the SRS indicator go off?

YES—Faulty SRS unit; replace the SRS unit (see page 23-122). ■

NO—Go to step 34.

34. Turn the ignition switch OFF.

35. Disconnect the jumper wire between the No. 3 terminal of SRS unit connector A (18P) and the No. 5 terminal of SRS unit connector C (8P).

36. Check the No. 13 (10A) fuse in the under-dash fuse/relay box.

Is the fuse OK?

YES—Go to step 40.

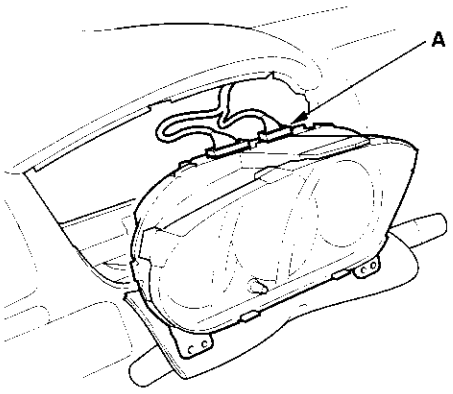
NO—Go to step 37.

37. Replace the No. 13 (10A) fuse.

(cont'd)

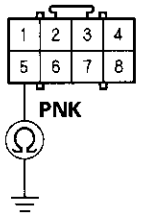
SRS Indicator Circuit Troubleshooting (cont'd)

38. Remove the gauge assembly (see page 22-64), then disconnect gauge assembly connector A from the gauge assembly.



39. Check resistance between the No. 5 terminal of SRS unit connector C (8P) and body ground. There should be an open circuit, or at least 1 MΩ.

SRS UNIT CONNECTOR C (8P)



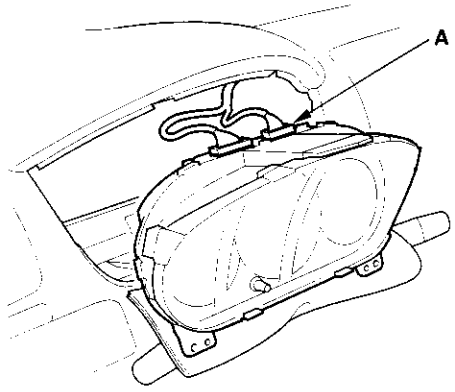
Wire side of female terminals

Is the resistance as specified?

YES—Faulty SRS indicator circuit in the gauge assembly; replace the gauge assembly.■

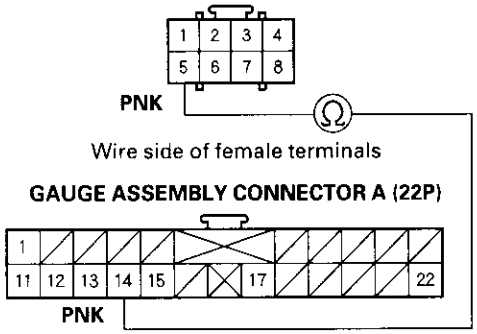
NO—Short to ground in the floor wire harness or in dashboard wire harness A; replace the faulty harness.■

40. Remove the gauge assembly (see page 22-64), then disconnect gauge assembly connector A from the gauge assembly.



41. Check resistance between the No. 14 terminal of gauge assembly connector A (22P) and the No. 5 terminal of SRS unit connector C (8P). There should be 1 Ω or less.

SRS UNIT CONNECTOR C (8P)



Is the resistance as specified?

YES—Faulty SRS indicator circuit in the gauge assembly or poor contact at gauge assembly connector A (22P); check the connection. If the connection is OK, replace the gauge assembly.■

NO—Open in the floor wire harness or in dashboard wire harness A; replace the faulty harness.■

42. Turn the ignition switch OFF.

43. If necessary, remove the SCS service connector from the MES connector.

44. Turn the ignition switch ON (II).

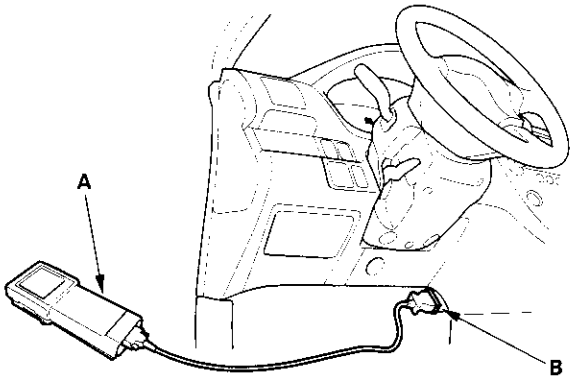
    Does the SRS indicator come on for about 6 seconds and then go off?

    YES—The system is OK at this time. ■

    NO—Go to step 45.

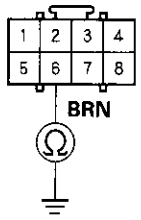
45. Disconnect SRS unit connector C (8P) from the SRS unit (see step 7 on page 23-22).

46. Connect the Honda PGM Tester (A) to the Data Link Connector (B), and follow the Tester's prompts in the "SCS" menu (see the Tester's operating manual).



47. Check resistance between the No. 6 terminal of SRS unit connector C (8P) and body ground. There should be 0—1.0 Ω.

SRS UNIT CONNECTOR C (8P)



Wire side of female terminals

Is the resistance as specified?

YES—Faulty SRS unit or poor contact at SRS unit connector C (8P); check the connection. If the connection is OK, replace the SRS unit (see page 23-122). ■

NO—Open in the SCS line between the No. 6 terminal of SRS unit connector C (8P) and the No. 9 terminal (BRN wire) of the data link connector (DLC), or open between the No. 4 terminal of the DLC and body ground. Repair the open wire(s). ■

Component Replacement/Inspection After Deployment

NOTE: Before doing any SRS repairs, use the PGM Tester SRS menu method to check for DTCs; refer to the DTC Troubleshooting Index for the less obvious deployed parts (seat belt tensioners, front sensors, side airbag sensors, etc.)

After a collision where the seat belt tensioners deployed, replace these items:
- Seat belt tensioners
- Seat belt buckle tensioners
- SRS unit
- 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
- Deployed side airbag(s)
- Side impact sensor(s) for the side(s) that deployed

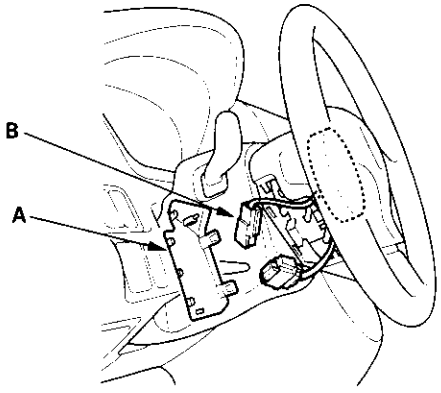
During the repair process, inspect these areas:
- Inspect all the SRS wire harnesses. Replace, don't repair, any damaged harnesses.
- Inspect the cable reel for heat damage. If there is any damage, replace the cable reel.

After the vehicle is completely repaired, turn the ignition switch ON (II). If the SRS indicator comes on for about 6 seconds and then goes off, the SRS airbag system is OK. If the indicator does not function properly, use the PGM Tester SRS Menu Method to read the DTC (see page 23-23). If this doesn't retrieve any codes, use the Tester's SCS menu method (see page 23-24). If you still cannot retrieve a code, go to SRS Indicator Circuit Troubleshooting.

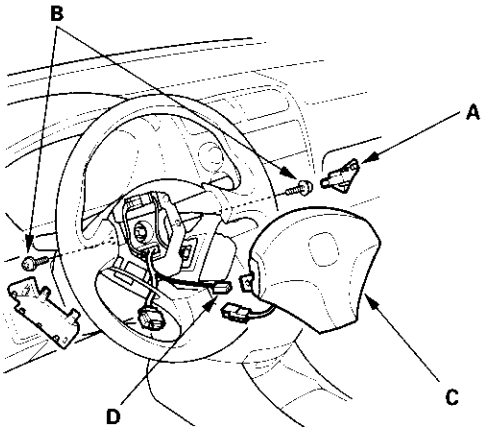
Driver's Airbag Replacement

Removal

1. Disconnect the battery negative cable, and wait at least 3 minutes before beginning work.
2. Remove the access panel (A) from the steering wheel, then disconnect the driver's airbag 4P connector (B) from the cable reel.



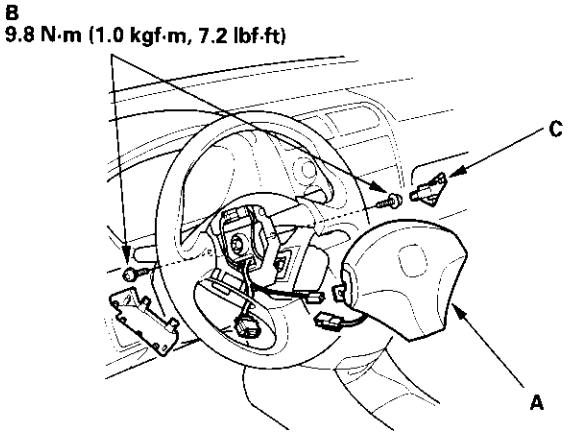
3. Remove the maintenance cover (A), then remove the two Torx bolts (B) using a Torx T30 bit.



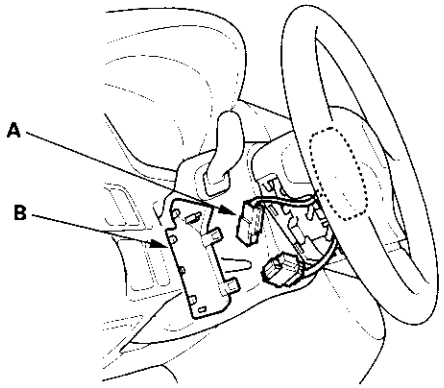
4. Disconnect the horn switch connector (1P) (D).
5. Remove the driver's airbag (C).

Installation

1. Connect the horn switch connector (1P) to the driver's airbag.
2. Place the new driver's airbag (A) in the steering wheel, and secure it with new Torx bolts (B), and install the maintenance cover (C).



3. Connect the cable reel to the driver's airbag 4P connector (A), then install the access panel (B) on the steering wheel.

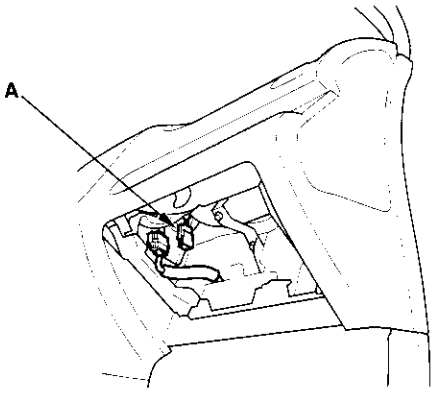


4. Connect the battery negative cable.
5. After installing the airbag, confirm proper system operation:
   - Turn the ignition switch ON (II); the SRS indicator should come on for about 6 seconds and then go off.
   - Make sure the horn works.

Front Passenger's Airbag Replacement

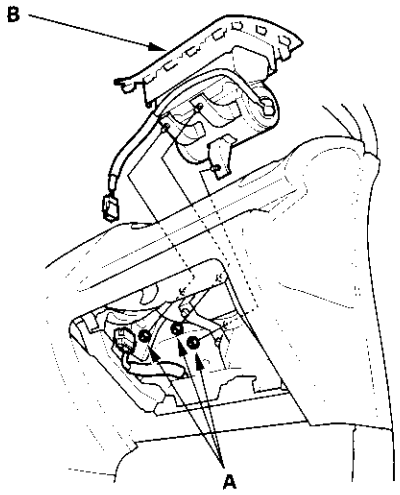
Removal

1. Disconnect the battery negative cable, and wait at least 3 minutes before beginning work.
2. Remove the glove box stops, and lower the glove box.
3. Disconnect the front passenger's airbag 4P connector (A) from dashboard wire harness B.



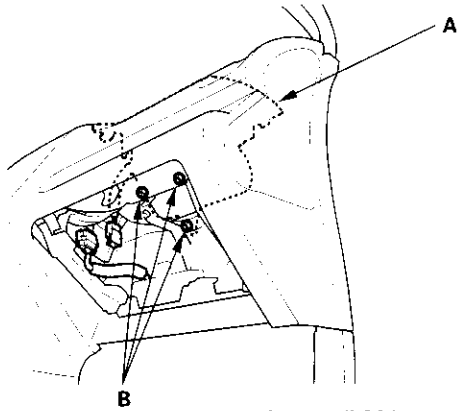
4. Remove the three mounting nuts (A) from the bracket. Cover the lid and dashboard with a cloth, and pry carefully with a screwdriver to lift the front passenger's airbag (B) out of the dashboard.

   NOTE: The airbag lid has pawls on its side which attach it to the dashboard.



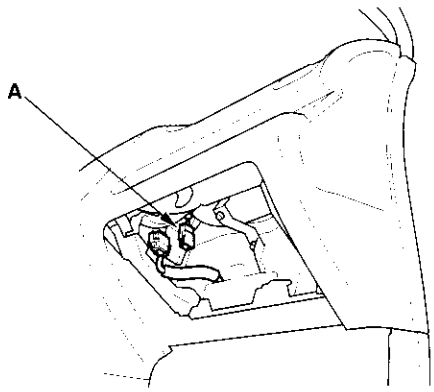
Installation

1. Place the new front passenger's airbag (A) into the dashboard. Tighten the front passenger's airbag mounting nuts (B).



9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)

2. Connect the front passenger's airbag 4P connector (A) to dashboard wire harness B.



3. Raise the glove box, and reinstall the stops.
4. Reconnect the battery negative cable.
5. After installing the airbag, confirm proper system operation: Turn the ignition switch ON (II); the SRS indicator should come on for about 6 seconds and then go off.

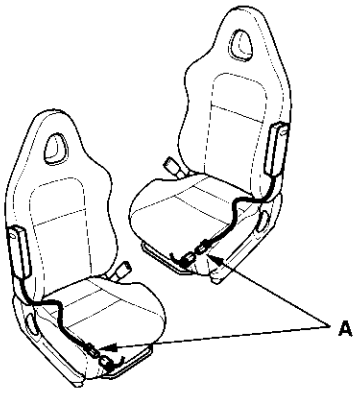
Side Airbag Replacement

NOTE: Review the seat replacement procedure in the Body section before performing repairs or service.

Removal

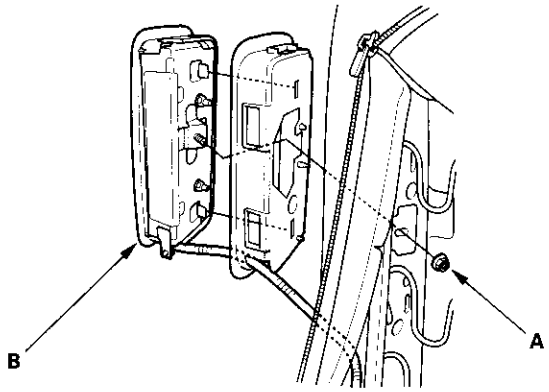
1. Disconnect the battery negative cable, and wait at least 3 minutes before beginning work.

2. Disconnect the side airbag harness 2P connector (A).



3. Remove the seat assembly (see page 20-71) and seat-back cover (see page 20-75).

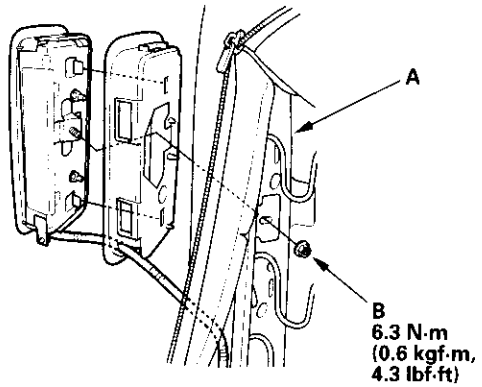
4. Remove the mounting nut (A) and the side airbag (B).



Installation

NOTE:
- If the side airbag lid is secured by a tape, remove the tape.
- Do not open the lid of the side airbag cover.
- Use new mounting nuts tightened to the specified torque.
- 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 new side airbag on the seat-back frame (A). Tighten the side airbag mounting nuts (B).



2. Install the seat-back cover (see page 20-75).

3. Install the seat assembly (see page 20-71), then connect the side airbag harness 2P connector.

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. Reconnect the battery negative cable.

6. After installing the side airbag, confirm proper system operation: Turn the ignition switch ON (II); the SRS indicator should come on for about 6 seconds and then go off.

Airbag Disposal

Special Tool Required
Deployment tool 07HAZ-SG00500

Before scrapping any airbags, side airbags, seat belt tensioners, or seat belt buckle tensioners (including those in a whole vehicle to be scrapped), the airbags, side airbags, seat belt tensioners, or seat belt buckle tensioners must be deployed. If the vehicle is still within the warranty period, the Honda District Service Manager must give approval and/or special instruction before deploying the airbags, side airbags, seat belt tensioners, or seat belt buckle tensioners. Only after the airbags, side airbags, seat belt tensioners, or seat belt buckle tensioners have been deployed (as the result of vehicle collision, for example), can they be scrapped.

If the airbags, side airbags, seat belt tensioners, and seat belt buckle tensioners 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, seat belt tensioners, and seat belt buckle tensioners should be deployed while still in the vehicle. The airbags, side airbags, seat belt tensioners, and seat belt buckle tensioners should not be considered as salvageable parts and should never be installed in another vehicle.

1. Turn the ignition switch OFF, then disconnect the battery negative cable, and wait at least 3 minutes.
2. Confirm that each airbag, side airbag, or seat belt tensioner is securely mounted.
3. Confirm that the special tool is functioning properly by following the check procedure on the tool label.

Driver's Airbag:

4. Remove the access panel from the steering wheel, then disconnect the driver's airbag 4P connector from the cable reel (see step 2 on page 23-21).

Front Passenger's Airbag:

5. Lower the glove box, then disconnect the front passenger's airbag 4P connector from dashboard wire harness B (see step 3 on page 23-21).

Side Airbag:

6. Disconnect the side airbag 2P connectors from the floor wire harness (see step 4 on page 23-21).

Seat belt tensioner:

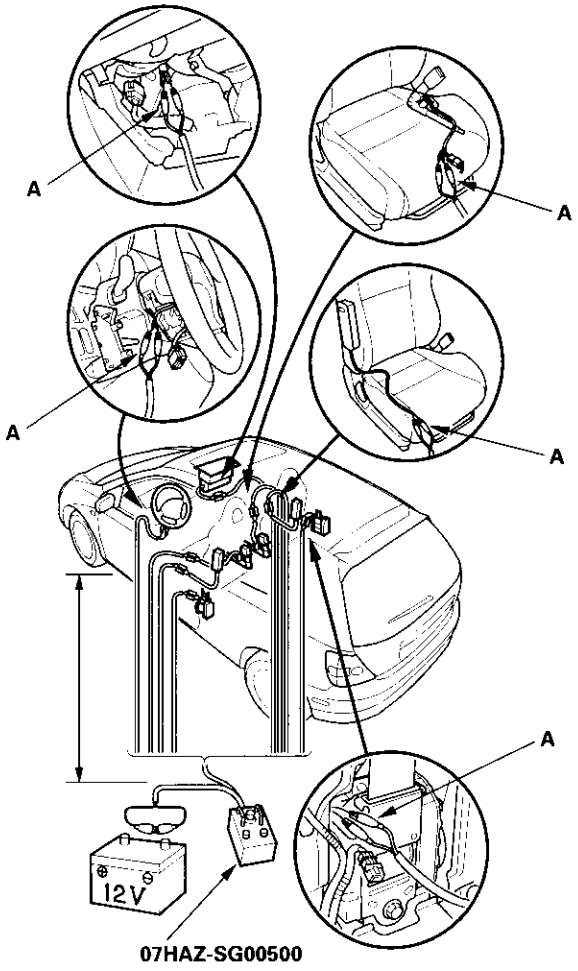
7. Disconnect the seat belt tensioner 2P connectors from the floor wire harness (see step 5 on page 23-22). Pull the seat belt out all the way, and cut it off.

Seat belt buckle tensioner:

8. Disconnect the seat belt buckle tensioner 4P connectors from the floor wire harness (see step 6 on page 23-22).

9. Cut off each connector, strip the ends of the wires, and connect the deployment tool alligator clips (A) to the wires. Place the deployment tool at least 30 feet (10 meters) away from the vehicle.

   NOTE: The driver's airbag and the front passenger's airbag each have four wires, two yellow and two red. Twist each pair of unlike colored wires together, and connect an alligator clip to each pair.



07HAZ-SG00500

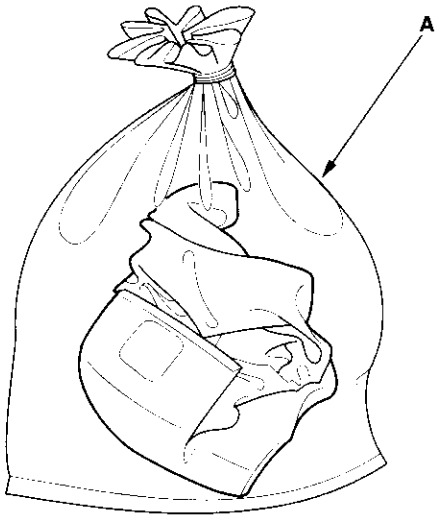
10. Connect a 12 volt battery to the tool.

    - 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.

11. 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 doesn't deploy, yet 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 30 minutes after deployment before touching the airbags.

12. Dispose of the complete airbag. No part of it can be reused. Place it in a sturdy plastic bag (A), and seal it securely.

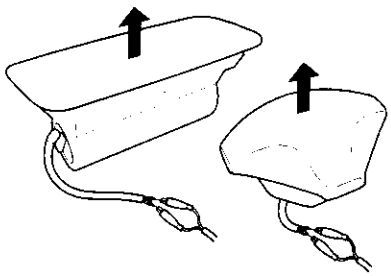


(cont'd)

Airbag Disposal (cont'd)

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 special tool is functioning properly by following the check procedure on this page or on the tool label.
2. Position the airbag face up, outdoors, on flat ground, at least 30 feet (10 meters) from any obstacles or people.
3. Follow steps 9 through 11 of the in-vehicle deployment procedure.

Disposal of Damaged Components

1. If installed in a vehicle, follow the removal procedure for the driver's airbag (see page 23-113), front passenger's airbag (see page 23-114), side airbag (see page 23-115), seat belt tensioner (see page 23-4), and seat belt buckle tensioner.
2. In all cases, make a short circuit by cutting, stripping, and twisting together the two inflator wires.

   NOTE: The driver's and passenger's airbag each have four wires: twist each pair of like-colored wires together
3. Package the component in 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 SEAT BELT TENSIONER NOT DEPLOYED" or "DAMAGED SEAT BELT BUCKLE TENSIONER NOT DEPLOYED" so it does not get confused with your parts stock.
5. Contact your Honda District Service Manager for how and where to return it for disposal.

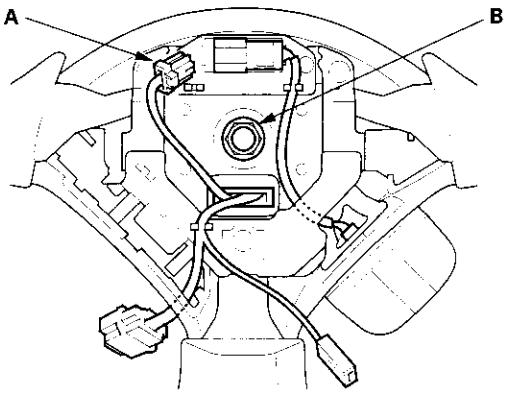
Deployment Tool Check

1. Connect the yellow clips to both switch protector handles on the tool; connect the tool to a battery.
2. Push the operation switch: green means the tool is OK; red means the tool is faulty.
3. Disconnect the battery and the yellow clips.

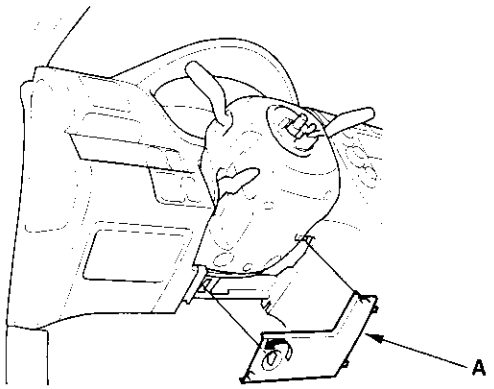
Cable Reel Replacement

Removal

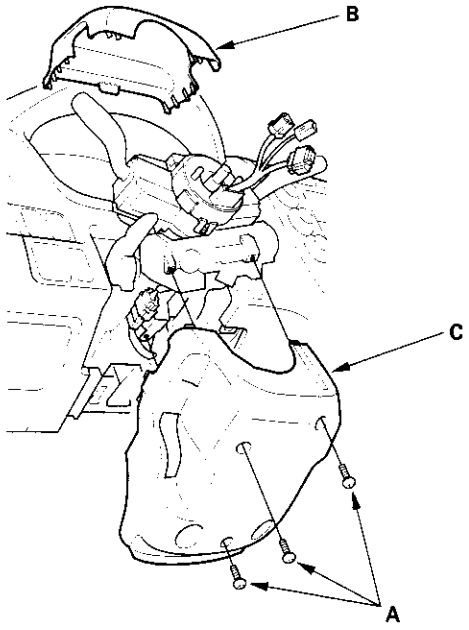
1. Make sure the front wheels are aligned straight ahead.
2. Disconnect the battery negative cable, and wait at least 3 minutes.
3. Remove the driver's airbag (see page 23-113).
4. Disconnect the connector (A) from the cruise control set/resume switch, then remove the steering wheel bolt (B).



5. Align the front wheels straight ahead, then remove the steering wheel with a steering wheel puller (see step 3 on page 17-6).
   Do not tap on the steering wheel or steering column shaft when removing the steering wheel.
6. Remove the dashboard lower cover (A).



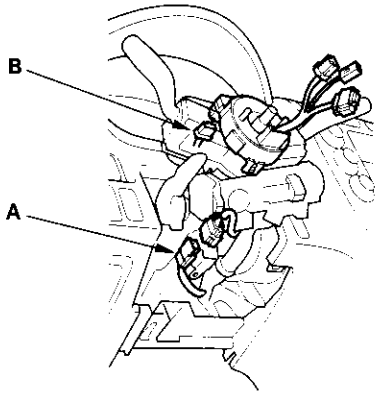
7. Remove the column cover screws (A), then remove the column covers (B, C).



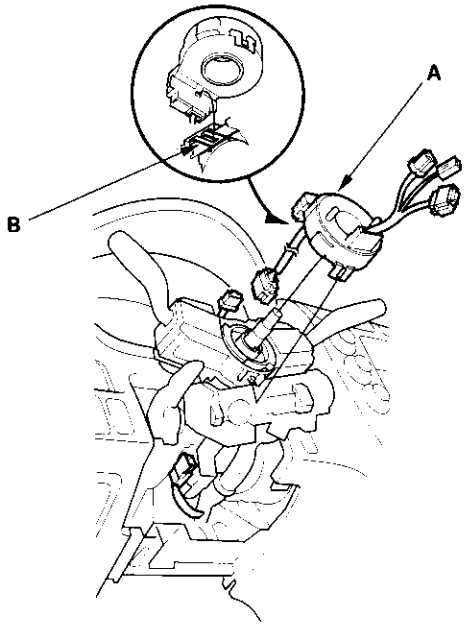
(cont'd)

Cable Reel Replacement (cont'd)

8. Disconnect the dashboard wire harness 4P connector (A) from the cable reel, then disconnect the dashboard wire harness 5P connector (B) from the cable reel.

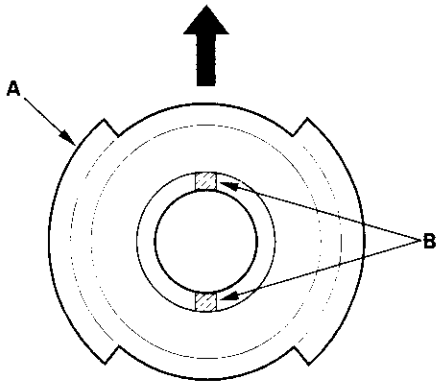


9. Release the tab (B), then pull off the cable reel (A).

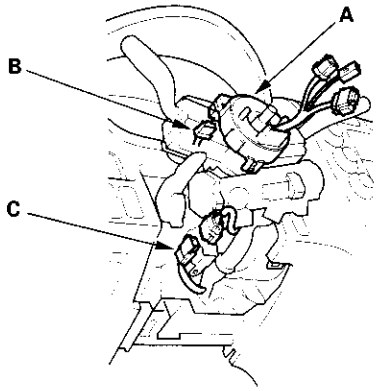


Installation

1. Before installing the steering wheel, align the front wheels straight ahead.
2. If not already done, disconnect the battery negative cable, and wait at least 3 minutes.
3. Set the cancel sleeve (A) so the projections (B) are aligned vertically.

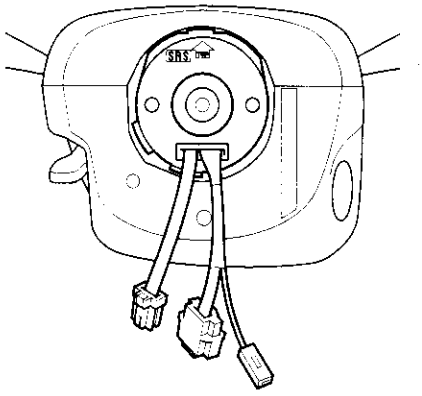


4. Carefully install the cable reel (A) on the steering column shaft. Then connect the 5P connector (B) and the 4P connector (C).

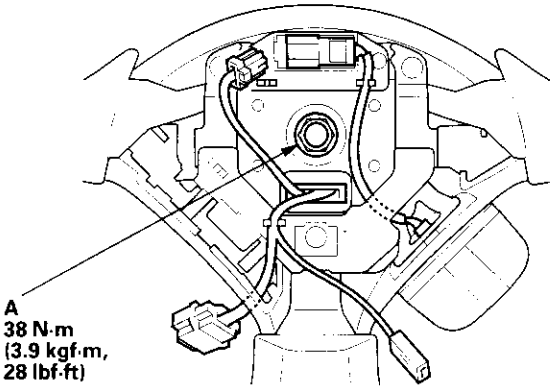


5. Install the steering column covers.

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 2 1/2 turns) until the arrow mark on the cable reel label points straight up.



7. Align the projections on the cable reel with the holes on the steering wheel, and install the steering wheel with a new steering wheel bolt (A).



8. Install the driver's airbag (see page 23-113).

9. Reconnect the battery negative cable.

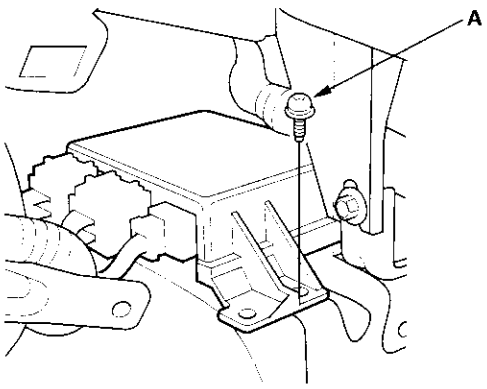
10. After installing the cable reel, confirm proper system operation:

    - Turn the ignition switch 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 works.
    - Make sure the cruise control works.

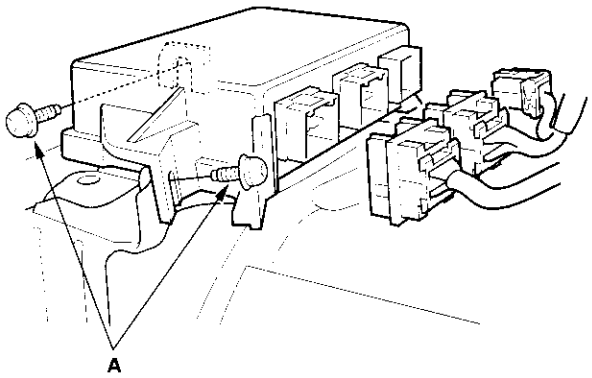
SRS Unit Replacement

Removal

1. Disconnect the battery negative cable, and wait at least 3 minutes before beginning work.
2. Disconnect the driver's and front passenger's airbag connectors (see page 23-21).
3. Disconnect the side airbag connectors (see page 23-21).
4. Disconnect both seat belt tensioner connectors (see page 23-22) and both seat belt buckle tensioner connectors (see page 23-22).
5. Remove the dashboard center lower cover (see step 2 on page 20-57).
6. Pull down the console carpet on the passenger's side, then remove the Torx bolt (A) from the SRS unit.



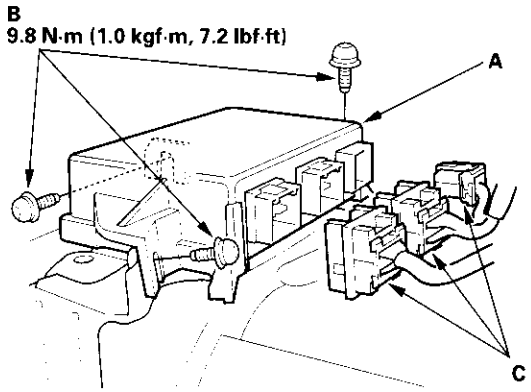
7. Pull down the console carpet on the driver's side, then disconnect the connectors. Remove the Torx bolts (A), then pull out the SRS unit.



Installation

1. Install the new SRS unit (A) with Torx bolts (B), then connect the connectors (C) to the SRS unit; push them into position until they clicks.

   NOTE: When tightening the Torx bolts to the specified torque, be careful to turn them in so that their heads rest squarely on the brackets.

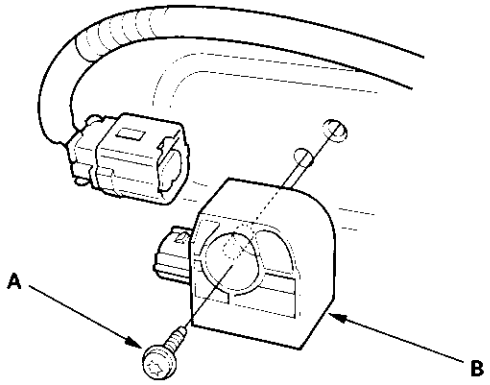


2. Reinstall the dashboard center lower cover (see step 2 on page 20-57).
3. Reconnect the driver's and front passenger's airbag connectors (see page 23-21).
4. Reconnect the side airbag connectors (see page 23-21).
5. Reconnect both seat belt tensioner connectors (see page 23-22) and both seat belt buckle tensioner connectors (see page 23-22).
6. Reconnect the battery negative cable.
7. Initialize the OPDS unit (see page 23-27).
8. After installing the SRS unit, confirm proper system operation: Turn the ignition switch ON (II); the SRS indicator should come on for about 6 seconds and then go off.

Side Impact Sensor Replacement

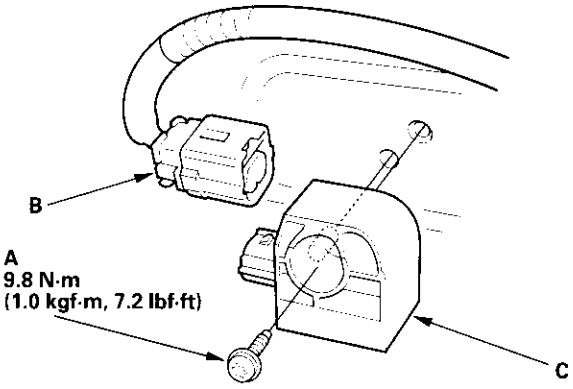
Removal

1. Disconnect the battery negative cable, and wait at least 3 minutes before beginning work.
2. Disconnect the appropriate side airbag 2P connector (see step 4 on page 23-21).
3. Remove the seat assembly (see page 20-71).
4. Remove the front door sill trim and the B-pillar lower trim panel (see page 20-50).
5. Disconnect the floor wire harness 2P connector from the side impact sensor.
6. Remove the Torx bolt (A) using a Torx T30 bit, then remove the side impact sensor (B).



Installation

1. Install the new side impact sensor with a new Torx bolt (A), then connect the floor wire harness 2P connector (B) to the side impact sensor (C).



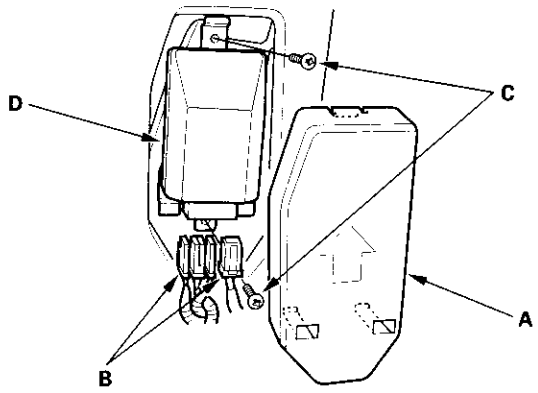
2. Reconnect the negative battery cable.
3. After installing the side impact sensor, confirm proper system operation: Turn the ignition switch ON (II); the SRS indicator should come on for about 6 seconds and then go off.
4. Install all removed parts.

OPDS Unit Replacement

NOTE: Review the seat replacement procedures in the body section before performing repairs or service.

Removal

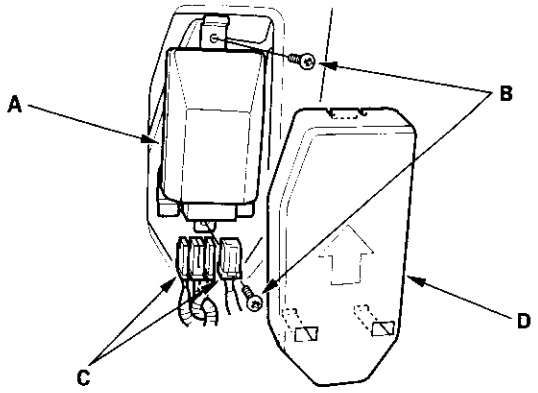
1. Disconnect the battery negative cable, and wait at least 3 minutes before beginning work.
2. Disconnect the passenger's side airbag harness 2P connector (see step 4 on page 23-21).
3. Remove the front passenger's seat assembly (see page 20-71) and seat-back cover (see page 20-75).
4. Remove the cover (A), then disconnect the OPDS unit harness 8P and sensor connectors (B) from the OPDS unit.



5. Remove the two screws (C) and the OPDS unit (D).

Installation

1. Place the new OPDS unit (A) on the seat-back frame. Tighten the two screws (B), and connect the OPDS unit harness 8P and sensor connectors (C) to the OPDS unit. Reinstall the cover (D).

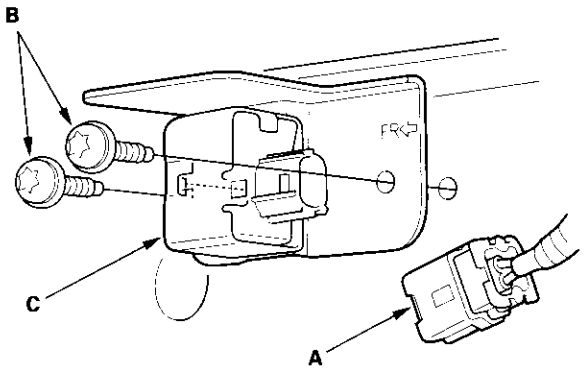


2. Install the seat-back cover (see page 20-75).
3. Install the seat assembly (see page 20-71), then connect the side airbag harness 2P connector.
4. Reconnect the battery negative cable.
5. Set the seat-back in the normal position, and make sure there is nothing on the front passenger's seat.
6. Initialize the OPDS unit (see page 23-27).
7. After installing the OPDS unit, confirm proper system operation: Turn the ignition switch ON (II); the SRS indicator should come on for about 6 seconds and then go off.

Front Impact Sensor Replacement

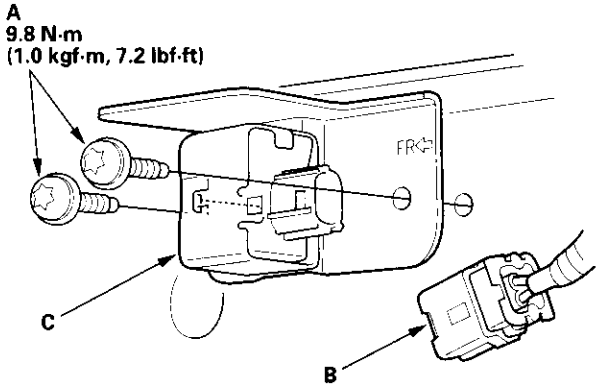
Removal

1. Disconnect the battery negative cable, and wait at least 3 minutes before beginning work.
2. Disconnect the driver's airbag 4P connector (see step 2 on page 23-21), the front passenger's airbag 4P connector (see step 3 on page 23-21), both seat belt tensioner 2P connectors (see step 5 on page 23-22), and both seat belt buckle 4P connectors (see step 6 on page 23-22).
3. Remove the front inner fender (see page 20-102).
4. Disconnect the engine compartment wire harness 2P connector (A), and remove the two Torx bolts (B) using a Torx T30 bit, then remove the front impact sensor (C).



Installation

1. Install the new front impact sensor with new Torx bolts (A), then connect the engine compartment wire harness 2P connector (B) to the front impact sensor (C).



2. Reconnect the battery negative cable.
3. After installing the front impact sensor, confirm proper system operation: Turn the ignition switch ON (II); the SRS indicator should come on for about 6 seconds and then go off.

Service Manual Index

NOTE: Refer to the following list to look up DTCs, symptoms, fuses, connectors, wire harnesses, specifications, maintenance schedules, and general service information:

A

B

(cont'd)

Service Manual Index

(cont'd)

C

D

E

F

(cont'd)

Service Manual Index

(cont'd)

M

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O

P

(cont'd)

Service Manual Index

(cont'd)

T

U

V

W