ACURA

RSX

Service Manual 02-03

88hf , SPOONMAN, FFSLIDE

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.

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

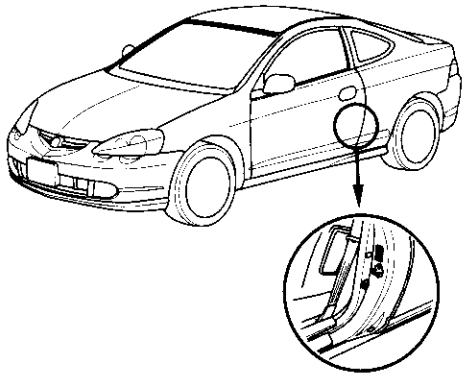
Chassis and Paint Codes - 2002 Model

Vehicle Identification Number

JH4 DC5 3 8 * 2 C 000001

a b c d e f g h

a. Manufacturer, Make and Type of Vehicle
JH4: HONDA MOTOR CO., LTD.
ACURA Passenger vehicle
b. Line, Body and Engine Type
DC5: ACURA RSX/K20A2, K20A3
c. Body Type and Transmission Type
3: 2-door Hatchback/5-speed Manual
2-door Hatchback/6-speed Manual
4: 2-door Hatchback/5-speed Automatic
d. Vehicle Grade (Series)
0: Type S
6: RSX (Canada only)
8: RSX
Premium (Canada only)
e. Check Digit
f. Model Year
2: 2002
g. Factory Code
C: Saitama Factory in Japan (Sayama)
h. Serial Number
U.S.: 000001–
Canada: 800001–



Vehicle Identification Number and Federal Motor Vehicle Safety Standard Certification.

Engine Number

K20A2 - 1400001

a b

a. Engine Type
K20A2: 2.0 ℓ DOHC VTEC Sequential Multiport Fuel-injected 200 HP engine
K20A3: 2.0 ℓ DOHC VTEC Sequential Multiport Fuel-injected 160 HP engine
b. Serial Number
K20A2: 1400001–
K20A3: 1100001–

Transmission Number

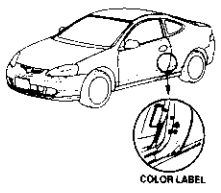
MRMA - 1000001

a b

a. Transmission Type
MRMA: 5-speed Automatic
W2M5: 5-speed Manual
X2M5: 6-speed Manual
b. Serial Number

Paint Code

Code	Color	U.S.	Canada
B-507P	Arctic Blue Pearl	○	○
B-92P	Nighthawk Black Pearl	○	○
B-96P	Eternal Blue Pearl	○	
NH-578	Taffeta White	○	
NH-623M	Satin Silver Metallic	○	○
NH-624P	Premium White Pearl	○	
NH-636P	Brilliant White Pearl		○
R-81	Milano Red		○
R-507P	Fire Pepper Red Pearl	○	
YR-534M	Desert Silver Metallic	○	○



Chassis and Paint Codes - 2003 Model

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ACURA Passenger vehicle

b. Line, Body and Engine Type
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c. Body Type and Transmission Type
3: 2-door Hatchback/5-speed Manual
2-door Hatchback/6-speed Manual
4: 2-door Hatchback/5-speed Automatic

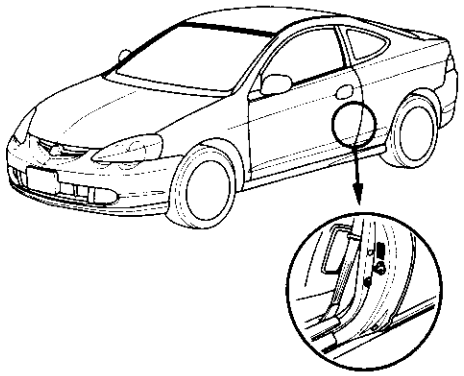
d. Vehicle Grade (Series)
0: Type S
6: RSX (Canada only)
8: RSX
Premium (Canada only)

e. Check Digit

f. Model Year
3: 2003

g. Factory Code
C: Saitama Factory in Japan (Sayama)

h. Serial Number
U.S.: 000001 –
Canada: 800001–



Vehicle Identification Number and Federal Motor Vehicle Safety Standard Certification.

Engine Number

K20A2 - 2400001

a b

a. Engine Type
K20A2: 2.0 ℓ DOHC VTEC Sequential Multiport Fuel-injected 200 HP engine
K20A3: 2.0 ℓ DOHC VTEC Sequential Multiport Fuel-injected 160 HP engine

b. Serial Number
K20A2: 2400001–
K20A3: 2100001–

Transmission Number

MRMA - 2000001

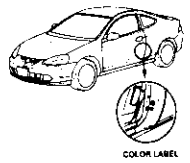
a b

a. Transmission Type
MRMA: 5-speed Automatic
W2M5: 5-speed Manual
X2M5: 6-speed Manual

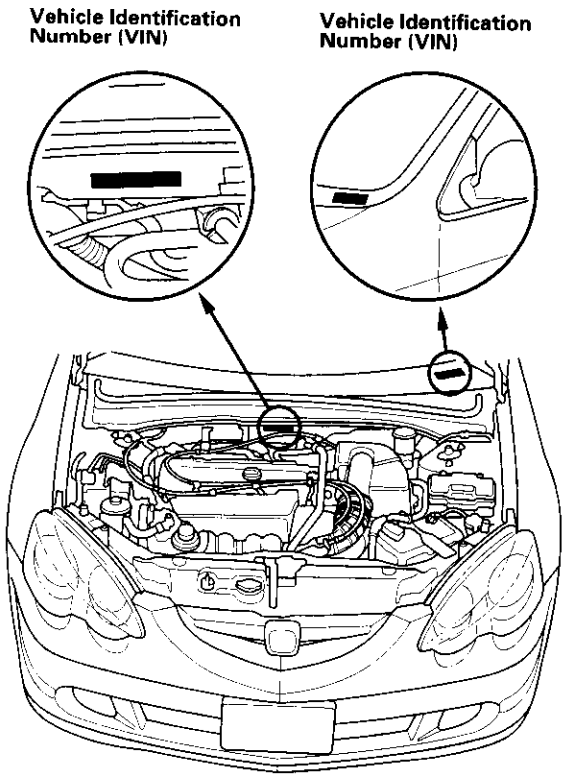
b. Serial Number

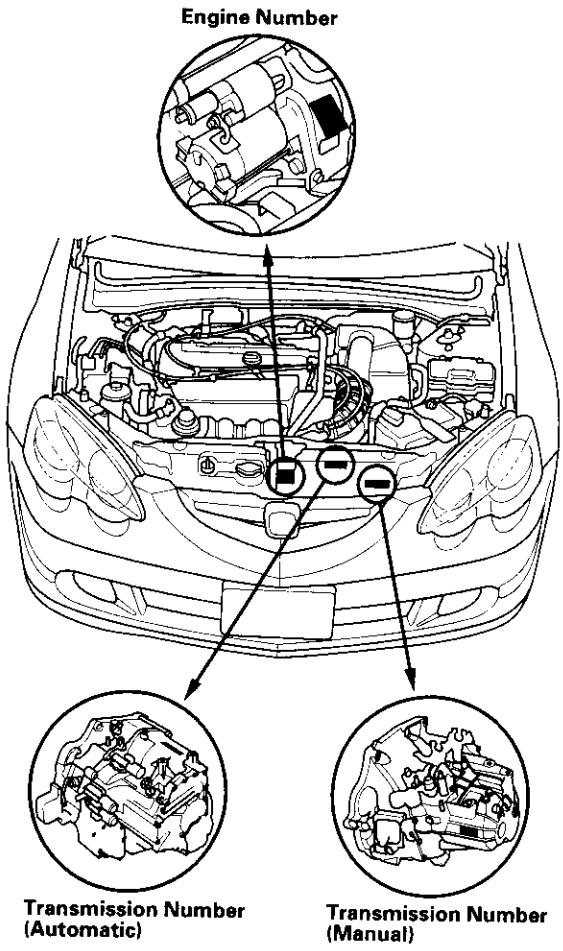
Paint Code

Code	Color	U.S.	Canada
B-507P	Arctic Blue Pearl	○	○
B-92P	Nighthawk Black Pearl	○	○
B-96P	Eternal Blue Pearl	○	
NH-578	Taffeta White	○	
NH-623M	Satin Silver Metallic	○	○
NH-624P	Premium White Pearl	○	○
NH-636P	Brilliant White Pearl		○
R-81	Milano Red		○
R-522	Redondo Red Pearl	○	
YR-534M	Desert Silver Metallic	○	○



Identification Number Locations

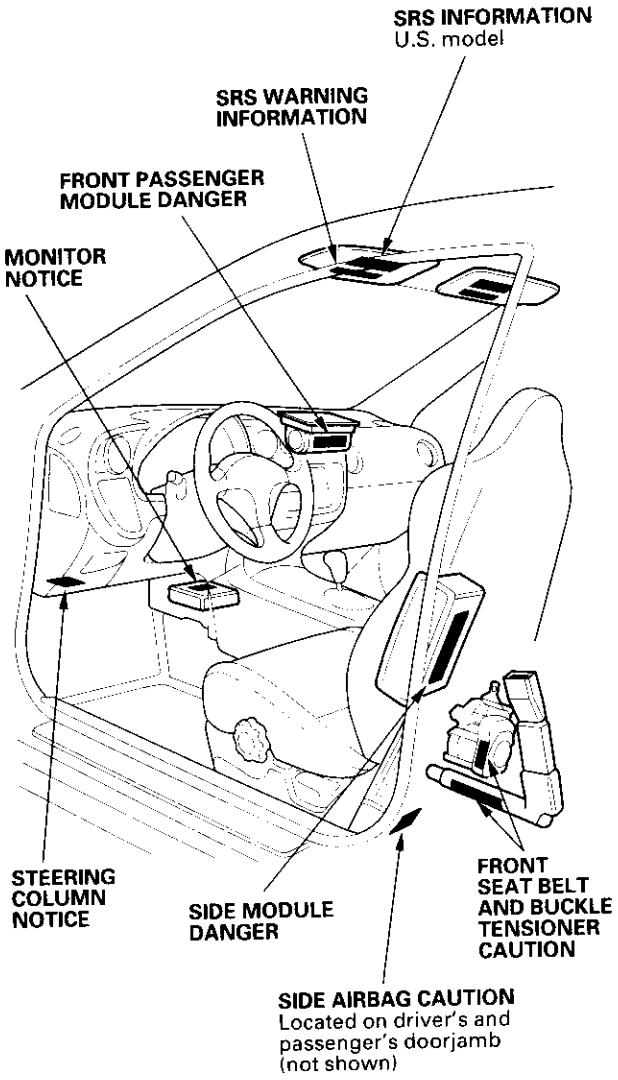




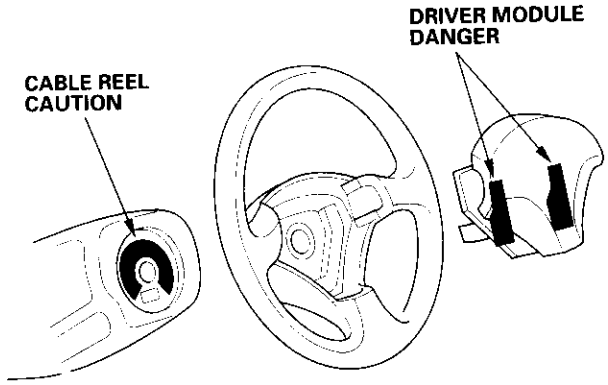
Warning/Caution Label Locations

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

Passenger's Compartment:



Steering Wheel:



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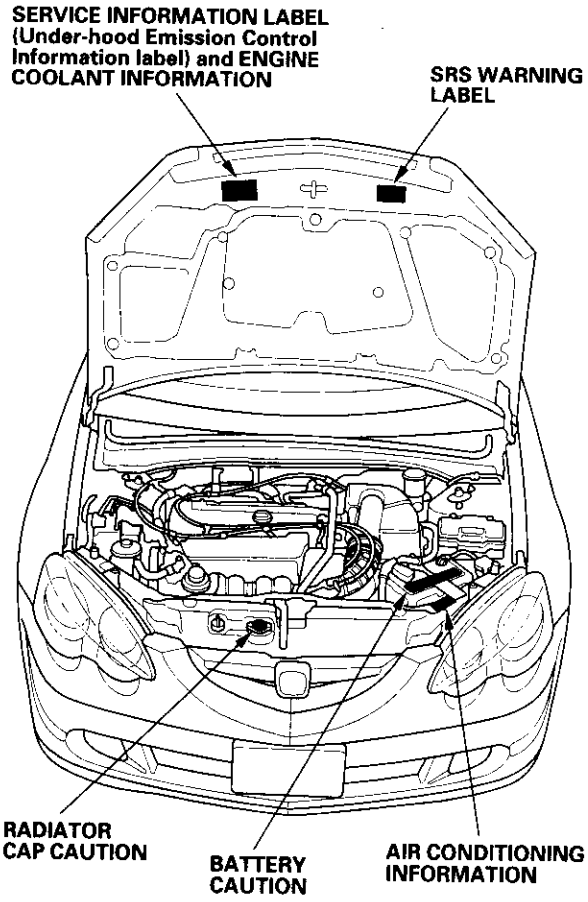
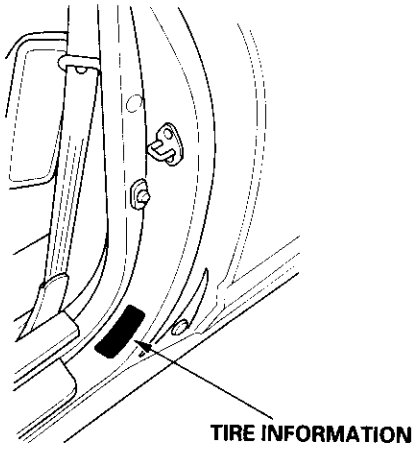
Warning/Caution Label Locations (cont'd)

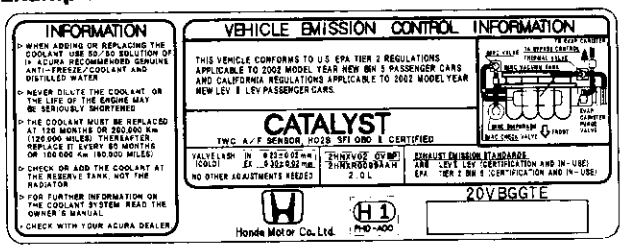




Under-hood Emission Control Label

Emission Group Identification

Example:

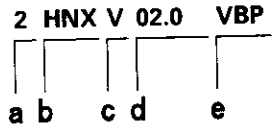


2002 model:
THIS VEHICLE CONFORMS TO U.S. EPA TIER 2 REGULATIONS APPLICABLE TO 2002 MODEL YEAR NEW BIN 5 PASSENGER CARS AND CALIFORNIA REGULATIONS APPLICABLE TO 2002 MODEL YEAR NEW LEV II LEV PASSENGER CARS.

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

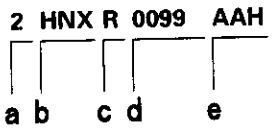
Engine and Evaporative Families:

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 (H1): 2002 model
  XKC (P5, P6), SKC-Type S (P7, P8): 2003 model

Evaporative Family:



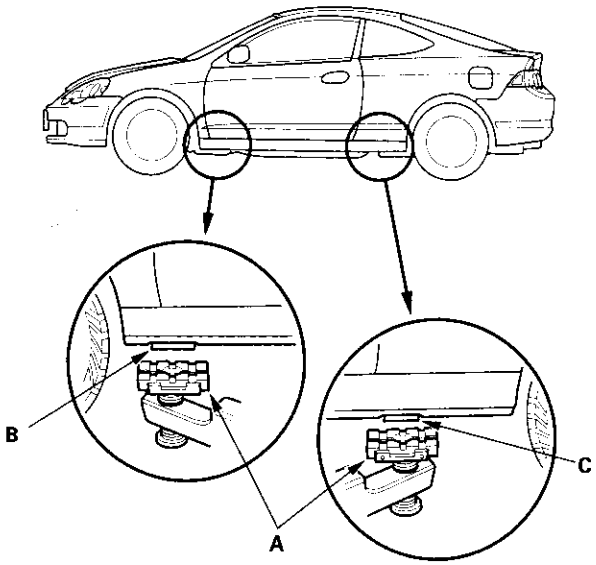
- **a. Model Year**
  2: 2002
  2: 2003
- **b. Manufacturer Subcode**
  HNX: HONDA
- **c. Family Type**
  R: EVAP/ORVR
- **d. Canister Work Capacity**
- **e. Sequence Characters**
  AAH: 2002 model
  AAA: 2003 model

Lift and Support Points

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



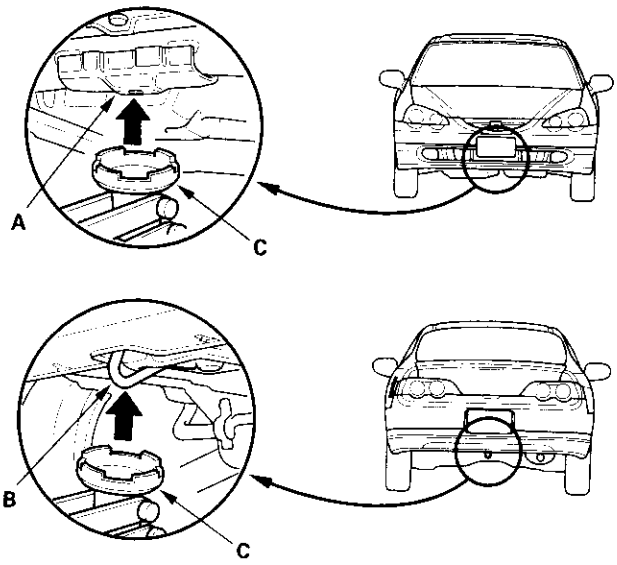
2. Raise the hoist a few inches, and rock the vehicle gently to be sure it is firmly supported.
3. Raise the hoist to full height, and inspect the lift points for solid contact with the lift blocks.

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, or the automatic transmission in [P] position.
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

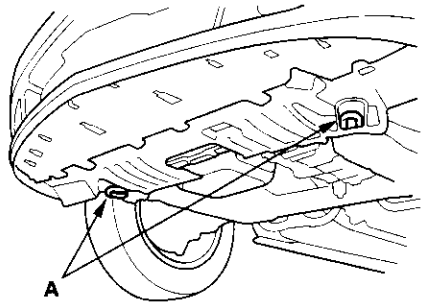
If the vehicle needs to be towed, call a professional towing service. Never tow the vehicle behind another vehicle with just a rope or chain. It is very dangerous.

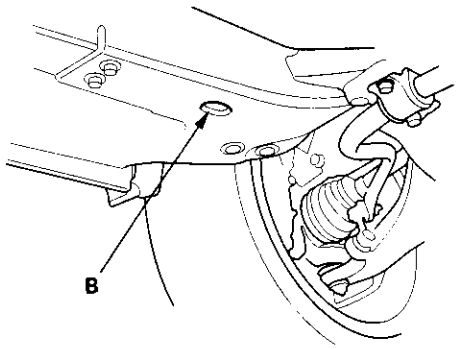
Emergency Towing
There are three popular methods of towing a vehicle.

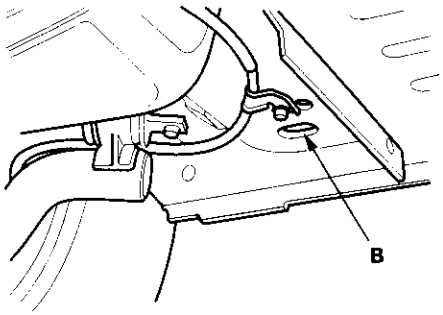
Flat-bed Equipment – The operator loads the vehicle on the back of a truck. This is the best way of transporting the vehicle.

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:

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

Automatic Transmission
- Release the parking brake.
- Start the engine.
- Shift to [D] position, then [N] position.
- Turn off the engine.

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 or start the engine (automatic transmission), the vehicle must be transported on a flat-bed.
- Trying to lift or tow the vehicle by the bumpers will cause serious damage. The bumpers are not designed to support the vehicle's weight.

Parts Marking

To deter vehicle theft, certain major components are marked with the vehicle identification number (VIN). Original parts have self-adhesive labels. Replacement body parts have generic self-adhesive labels. 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	K20A3 engine	NGK: IZFR6K11 DENSO: SKJ20DR-M11	
		K20A2 engine	NGK: IFR7G-11K, IFR7G-11KS DENSO: SK22PR-M11, SK22PR-M11S	
	Gap		1.0−1.1 mm (0.039−0.043 in.)	———
Ignition timing		At idle (check the *red* mark)	M/T (in neutral): 8±2° BTDC at 700±50 rpm (K20A2 engine), 650±50 rpm (K20A3 engine)	
			A/T (in [N] or [P]): 8±2° BTDC at 650±50 rpm	
Alternator (MITSUBISHI)	Output	At 13.5 V and normal engine temperature	90A	
	Coil (rotor) resistance	At 68 F° (20 C°)	1.84−2.10 Ω	
	Slip ring O.D.		22.7 mm (0.89 in.)	21.7 mm (0.85 in.)
	Brush length		19.0 mm (0.75 in.)	5.0 mm (0.20 in.)
	Brush spring tension		3.3−4.1 N (0.34−0.42 kgf, 0.7−0.9 lbs)	
Alternator (DENSO)	Output	At 13.5 V and normal engine temperature	95A	
	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 (MITSUBA)	Output		1.2 kW	
	Commutator mica depth		0.4−0.5 mm (0.016−0.020 in.)	0.15 mm (0.006 in.)
	Commutator runout		0.02 mm (0.001 in.) max.	0.05 mm (0.002 in.)
	Commutator O.D.		28.0−28.1 mm (1.102−1.106 in.)	27.5 mm (1.083 in.)
	Brush length		11.1−11.5 mm (0.44−0.45 in.)	4.3 mm (0.17 in.)
Starter (DENSO)	Output		1.1 kW	
	Commutator mica depth		0.50−0.80 mm (0.020−0.031 in.)	0.2 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.)
	Brush spring tension		13.7−17.7 N (1.40−1.80 kgf, 3.09−3.97 lbs)	

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 (K20A3 engine)	Intake, primary	33.925 mm (1.3356 in.)	——
		Intake, secondary	29.638 mm (1.1668 in.)	——
		Exhaust	34.092 mm (1.3422 in.)	——
	Cam lobe height (K20A2 engine)	Intake, primary	32.791 mm (1.2910 in.)	——
		Intake, mid	35.534 mm (1.3990 in.)	——
		Intake, secondary	32.678 mm (1.2865 in.)	——
		Exhaust, primary	32.772 mm (1.2902 in.)	——
		Exhaust, mid	34.768 mm (1.3688 in.)	——
		Exhaust, secondary	32.661 mm (1.2859 in.)	——
Valves	Clearance (cold)	Intake	0.21–0.25 mm (0.008–0.010 in.)	——
		Exhaust (K20A3 engine)	0.28–0.32 mm (0.011–0.013 in.)	——
		Exhaust (K20A2 engine)	0.25–0.29 mm (0.010–0.011 in.)	——
	Stem O.D.	Intake	5.475–5.485 mm (0.2156–0.2159 in.)	5.445 mm (0.214 in.)
		Exhaust	5.450–5.460 mm (0.2146–0.2150 in.)	5.42 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 (K20A3 engine)	Intake	47.61 mm (1.874 in.)	——
		Exhaust	49.64 mm (1.954 in.) 49.63 mm (1.954 in.)	——
	Free length (K20A2 engine)	Intake	49.77 mm (1.959 in.)	——
		Exhaust	50.39 mm (1.984 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 (K20A3 engine)	0.018–0.056 mm (0.0007–0.0022 in.)	0.08 mm (0.003 in.)
		Exhaust (K20A2 engine)	0.025–0.052 mm (0.0010–0.0020 in.)	0.08 mm (0.003 in.)

Standards and Service Limits

Engine Block

Item	Measurement	Qualification	Standard or New	Service Limit
Block	Warpage of deck		0.07 mm (0.003 in.) max.	0.10 mm (0.004 in.)
	Bore diameter	A or I	86.010–86.020 mm (3.3862–3.3866 in.)	86.070 mm (3.3886 in.)
		B or II	86.000–86.010 mm (3.3858–3.3862 in.)	86.070 mm (3.3886 in.)
	Bore taper		———	0.05 mm (0.002 in.)
	Reboring limit		———	0.25 mm (0.01 in.)
Piston	Skirt O.D. at 11 mm (0.4 in.) from bottom of skirt	No letter or A	85.980–85.990 mm (3.3850–3.3854 in.)	85.930 mm (3.3831 in.)
		Letter B	85.970–85.980 mm (3.3846–3.3850 in.)	85.920 mm (3.3827 in.)
	Clearance in cylinder		0.020–0.040 mm (0.0008–0.0016 in.)	0.05 mm (0.002 in.)
	Ring groove width	Top (K20A3 engine)	1.220–1.230 mm (0.0481–0.0484 in.)	1.25 mm (0.049 in.)
		Top (K20A2 engine)	1.235–1.245 mm (0.0486–0.0490 in.)	1.265 mm (0.0498 in.)
		Second (K20A3 engine)	1.220–1.230 mm (0.0481–0.0484 in.)	1.25 mm (0.049 in.)
		Second (K20A2 engine)	1.230–1.240 mm (0.0484–0.0488 in.)	1.260 mm (0.0496 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 (K20A3 engine)	0.035–0.060 mm (0.0014–0.0024 in.)	0.13 mm (0.005 in.)
		Top (K20A2 engine)	0.040–0.065 mm (0.0016–0.0026 in.)	0.13 mm (0.005 in.)
		Second (K20A3 engine)	0.030–0.055 mm (0.0012–0.0022 in.)	0.13 mm (0.005 in.)
		Second (K20A2 engine)	0.045–0.070 mm (0.0018–0.0028 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 (K20A3 engine)	0.40–0.55 mm (0.016–0.022 in.)	0.70 mm (0.028 in.)
		Second (K20A2 engine)	0.50–0.65 mm (0.020–0.026 in.)	0.75 mm (0.030 in.)
		Oil (K20A3 engine)	0.25–0.65 mm (0.010–0.026 in.)	0.75 mm (0.030 in.)
		Oil (K20A2 engine)	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 (0.0008 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	K20A3 engine	48.0 mm (1.89 in.)	———
		K20A2 engine	51.0 mm (2.01 in.)	———
	End play		0.15–0.30 mm (0.006–0.012 in.)	0.40 mm (0.016 in.)

Item	Measurement	Qualification	Standard or New	Service Limit
Crankshaft	Main journal diameter	No. 1 journal No. 2 journal No. 4 journal No. 5 journal (K20A3 engine)	54.984–55.008 mm (2.1648–2.1657 in.)	———
		No. 1 journal No. 2 journal No. 4 journal No. 5 journal (K20A2 engine)	54.980–55.004 mm (2.1646–2.1655 in.)	———
		No. 3 journal (K20A3 engine)	54.976–55.000 mm (2.1644–2.1654 in.)	———
		No. 3 journal (K20A2 engine)	54.974–54.996 mm (2.1644–2.1652 in.)	———
	Rod journal diameter	K20A3 engine	44.976–45.000 mm (1.7707–1.7717 in.)	———
		K20A2 engine	47.976–48.000 mm (1.8888–1.8898 in.)	———
	Rod/main journal taper		0.005 mm (0.0002 in.)	0.010 mm (0.0004 in.)
	Rod/main journal out-of-round		0.005 mm (0.0002 in.)	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	K20A3 engine	0.03 mm (0.0012 in.) max.	0.04 mm (0.0016 in.)
		K20A2 engine	0.02 mm (0.0008 in.) max.	0.03 mm (0.0012 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	K20A3 engine	0.021–0.049 mm (0.0008–0.0019 in.)	0.060 mm (0.0024 in.)
		K20A2 engine	0.033–0.061 mm (0.0013–0.0024 in.)	0.072 mm (0.0028 in.)

Engine Lubrication

Item	Measurement	Qualification	Standard or New	Service Limit
Engine oil	Capacity	K20A3 engine	5.3 ℓ (5.6 US qt) for engine overhaul 4.2 ℓ (4.4 US qt) for engine, including filter 4.0 ℓ (4.2 US qt) for oil change, without filter	
		K20A2 engine	5.8 ℓ (6.1 US qt) for engine overhaul 4.7 ℓ (5.0 US qt) for engine, including filter 4.5 ℓ (4.8 US qt) for oil change, without filter	
Oil pump	Inner-to-outer rotor clearance		0.02–0.15 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.)
	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.	

Standards and Service Limits

Cooling

Item	Measurement	Qualification	Standard or New	Service Limit
Radiator	Coolant capacity (Includes engine, heater, hoses, and reservoir)	M/T: engine overhaul	6.4 ℓ (6.8 US qt)	
		M/T: coolant change	5.1 ℓ (5.4 US qt)	
		A/T: engine overhaul	6.3 ℓ (6.7 US qt)	
		A/T: coolant change	5.0 ℓ (5.3 US qt)	
Reservoir	Coolant capacity		0.5 ℓ (0.5 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	Thermoswitch "ON" temperature		196 – 203°F (91 – 95°C)	
	Thermoswitch "OFF" temperature		Subtract 5 – 15°F (3 – 8°C) from actual "ON" temperature	

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	K20A2 engine in neutral	700 ± 50 rpm	
		K20A3 engine in neutral (M/T)	650 ± 50 rpm	
		K20A3 engine in [N] or [P] position (A/T)	650 ± 50 rpm	
	Fast idle	K20A2 engine in neutral	1,800 ± 200 rpm	
		K20A3 engine in neutral (M/T)	1,600 ± 200 rpm	
		K20A3 engine in [N] or [P] (A/T)	1,600 ± 200 rpm	

Clutch

Item	Measurement	Qualification	Standard or New	Service Limit
Clutch pedal	Height from the floor		197 mm (7.76 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.	———
Flyweel	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.) min.	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 if diaphragm spring fingers	Measured with special tool and feeler gauge	0.6 mm (0.02 in.) max.	0.8 mm (0.03 in.)

Standards and Service Limits

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 (0.981 – 0.944 in.)	23.80 mm (0.937 in.)
Mainshaft 6th gear	I.D.		40.009 – 40.025 mm (1.5752 – 1.5758 in.)	40.08 mm (1.578 in.)
	End play		0.06 – 0.16 mm (0.002 – 0.006 in.)	0.25 mm (0.010 in.)
	Thickness		23.92 – 23.97 mm (0.981 – 0.944 in.)	23.80 mm (0.937 in.)
Countershaft	Diameter of needle bearing contact area (clutch housing side)		40.000 – 40.015 mm (1.5748 – 1.5754 in.)	39.95 mm (1.573 in.)
	Diameter of distance collar contact area		39.937 – 39.950 mm (1.5723 – 1.5728 in.)	39.883 mm (1.5702 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.)
	Run out		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.)	— —

Manual Transmission and Differential

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 (5 speed model only)	I.D.		28.00 – 28.01 mm (1.102 – 1.103 in.)	28.02 mm (1.103 in.)
	Length		24.03 – 24.08 mm (0.946 – 0.947 in.)	— —
Mainshaft 6th gear distance collar (6 speed model only)	I.D.		28.00 – 28.01 mm (1.102 – 1.103 in.)	28.02 mm (1.103 in.)
	O.D.		34.989 – 35.000 mm (1.3775 – 1.3779 in.)	34.940 mm (1.3756 in.)
	Length		24.03 – 24.08 mm (0.946 – 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 (5 speed model only)	Ring-to-gear clearance	Ring pushed against gear	0.70 – 1.49 mm (0.028 – 0.059 in.)	0.4 mm (0.016 in.)
Double cone synchro (6 speed model only)	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.)
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.)	[illegible] (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

Standards and Service Limits

5-speed Automatic Transmission and A/T Differential

Item	Measurement	Qualification	Standard or New	Service Limit
ATF (Automatic Transmission Fluid)	Capacity Use Honda genuine ATF-Z1	Fluid change	2.7 ℓ (2.9 US qt)	
		Overhaul	6.5 ℓ (6.9 US qt)	
ATF pressure	Line pressure	At 2,000 rpm in P or N position	900–960 kPa (9.2–9.8 kgf/cm², 130–140 psi)	850 kPa (8.7 kgf/cm², 120 psi)
	1st clutch pressure	At 2,000 rpm in 1st gear in M position	890–970 kPa (9.1–9.9 kgf/cm², 130–140 psi)	840 kPa (8.6 kgf/cm², 120 psi)
	2nd clutch pressure	At 2,000 rpm in 2nd gear in M position	890–970 kPa (9.1–9.9 kgf/cm², 130–140 psi)	840 kPa (8.6 kgf/cm², 120 psi)
	3rd clutch pressure	At 2,000 rpm in 3rd gear in M position	890–970 kPa (9.1–9.9 kgf/cm², 130–140 psi)	840 kPa (8.6 kgf/cm², 120 psi)
	4th clutch pressure	At 2,000 rpm in 4th gear in M position	890–970 kPa (9.1–9.9 kgf/cm², 130–140 psi)	840 kPa (8.6 kgf/cm², 120 psi)
	5th clutch pressure	At 2,000 rpm in 5th gear in M position	890–970 kPa (9.1–9.9 kgf/cm², 130–140 psi)	840 kPa (8.6 kgf/cm², 120 psi)
Torque converter	Stall speed Check with vehicle on level ground		2,320 rpm	2,170–2,470 rpm
Clutch	Clutch end plate-to-top disc clearance	1st	——	1.23–1.43 mm (0.048–0.056 in.)
		2nd	——	0.75–0.95 mm (0.030–0.037 in.)
		3rd	——	0.83–1.03 mm (0.033–0.041 in.)
		4th and 5th	——	0.73–0.93 mm (0.029–0.037 in.)
	Clutch return spring free length	1st, 2nd, and 3rd	50.8 mm (2.00 in.)	48.8 mm (1.92 in.)
		4th and 5th	33.5 mm (1.32 in.)	31.5 mm (1.24 in.)
	Clutch disc thickness		1.94 mm (0.076 in.)	——
	Clutch plate thickness		2.00 mm (0.079 in.)	When discolored
	1st and 3rd clutch end plate thickness	Mark 1	2.3 mm (0.090 in.)	When discolored
		Mark 2	2.4 mm (0.094 in.)	When discolored
		Mark 3	2.5 mm (0.098 in.)	When discolored
		Mark 4	2.6 mm (0.102 in.)	When discolored
		Mark 5	2.7 mm (0.106 in.)	When discolored
		Mark 6	2.8 mm (0.110 in.)	When discolored
		Mark 7	2.9 mm (0.114 in.)	When discolored
		Mark 8	3.0 mm (0.118 in.)	When discolored
		Mark 9	3.1 mm (0.122 in.)	When discolored
		Mark 10	3.2 mm (0.126 in.)	When discolored
		Mark 11	3.3 mm (0.130 in.)	When discolored
		Mark 12	3.4 mm (0.134 in.)	When discolored
	2nd clutch end plate thickness	Mark 1	2.6 mm (0.102 in.)	When discolored
		Mark 2	2.7 mm (0.106 in.)	When discolored
		Mark 3	2.8 mm (0.110 in.)	When discolored
		Mark 4	2.9 mm (0.114 in.)	When discolored
		Mark 5	3.0 mm (0.118 in.)	When discolored
		Mark 6	3.1 mm (0.122 in.)	When discolored
		Mark 7	3.2 mm (0.126 in.)	When discolored
		Mark 8	3.3 mm (0.130 in.)	When discolored
		Mark 9	3.4 mm (0.134 in.)	When discolored

Item	Measurement	Qualification	Standard or New	Service Limit
Clutch	4th and 5th clutch end plate thickness	Mark 11	3.1 mm (0.122 in.)	When discolored
		Mark 12	3.2 mm (0.126 in.)	When discolored
		Mark 13	3.3 mm (0.130 in.)	When discolored
		Mark 14	3.4 mm (0.134 in.)	When discolored
		Mark 15	3.5 mm (0.138 in.)	When discolored
		Mark 16	3.6 mm (0.142 in.)	When discolored
		Mark 17	3.7 mm (0.146 in.)	When discolored
		Mark 18	3.8 mm (0.150 in.)	When discolored
		Mark 19	3.9 mm (0.154 in.)	When discolored
Mainshaft	Diameter of needle bearing contact area	At stator shaft	22.984 - 23.000 mm (0.905 - 0.906 in.)	When worn or damaged
		At 5th gear	51.975 – 51.991 mm (2.046 – 2.047 in.)	When worn or damaged
		At 4th gear collar	33.975 – 33.991 mm (1.3376 - 1.3382 in.)	When worn or damaged
	I.D. of gears	5th gear	57.000 – 57.019 mm (2.2441 – 2.2448 in.)	When worn or damaged
		4th gear	40.000 – 40.016 mm (1.5748 – 1.5754 in.)	When worn or damaged
	End play of gears	5th gear	0.03 – 0.31 mm (0.001 - 0.012 in.)	—
		4th gear	0.1 - 0.212 mm (0.004 – 0.008 in.)	—
	41 x 68 mm thrust washer thickness	No. 1	6.35 mm (0.250 in.)	When worn or damaged
		No. 2	6.40 mm (0.252 in.)	When worn or damaged
		No. 3	6.45 mm (0.254 in.)	When worn or damaged
		No. 4	6.50 mm (0.256 in.)	When worn or damaged
		No. 5	6.55 mm (0.258 in.)	When worn or damaged
		No. 6	6.60 mm (0.260 in.)	When worn or damaged
	4th gear collar length		66.3 – 66.4 mm (2.610 – 2.614 in.)	—
	Length of 4th gear collar flange from end		19.15 – 19.30 mm (0.754 – 0.760 in.)	When worn or damaged
	Sealing ring thickness		1.91 - 1.97 mm (0.0752 – 0.0776 in.)	1.86 (0.0732 in.)
	Width of sealing ring groove		2.025 – 2.060 mm (0.0797 - 0.0811 in.)	2.080 mm (0.0819 in.)
	Clutch feed pipe O.D.		7.97 - 7.98 mm (0.3138 – 0.3142 in.)	7.95 mm (0.313 in.)
	Clutch feed pipe bushing I.D.		8.000 – 8.015 mm (0.3150 - 0.3156 in.)	8.030 mm (0.3161 in.)
Countershaft	Diameter of needle bearing contact area	At torque converter housing	36.005 – 36.015 mm (1.4175 – 1.4179 in.)	When worn or damaged
		At 4th gear collar	37.980 - 37.994 mm (1.4953 - 1.4959 in.)	When worn or damaged
		At reverse gear collar	39.979 - 40.000 mm (1.5740 - 1.5748 in.)	When worn or damaged
	I.D. of gears	4th gear	43.000 - 43.016 mm (1.6929 – 1.6935 in.)	When worn or damaged
		Reverse gear	46.000 - 46.016 mm (1.8110 – 1.8116 in.)	When worn or damaged
	End play of gears	5th gear	0.10 – 0.42 mm (0.004 – 0.017 in.)	—
		4th gear	0.12 – 0.22 mm (0.004 – 0.008 in.)	—
		Reverse gear	0.10 – 0.25 mm (0.004 – 0.010 in.)	—
	Length of collars '02 model (# 1000001 – 1021247)	4th gear collar	24.00 - 24.05 mm (0.945 – 0.947 in.)	—
		Distance collar	74.25 - 74.30 mm (2.923 – 2.925 in.)	—
	Length of collars, and cotter thickness '02 model (# 1021248 -), and '03 model (# 2000001 –)	Collar 35 x 47 x 7.8 mm	7.2 – 7.3 mm (0.28 – 0.29 in.)	—
		Collar 37 x 41 x 57.8 mm	57.75 – 57.80 mm (2.274 – 2.276 in.)	—
		Cotter thickness	2.00 mm (0.078 in.)	—
	Reverse selector hub width		25.45 - 25.65 mm (1.002 – 1.010 in.)	—
	Reverse selector hub O.D.		55.87 - 55.90 mm (2.200 – 2.201 in.)	When worn or damaged

(cont'd)

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

Item	Measurement	Qualification	Standard or New	Service Limit
Secondary shaft	Diameter of needle bearing contact area	At 1st gear	39.986 – 39.999 mm (1.5742 – 1.5748 in.)	When worn or damaged
		At 2nd gear	39.986 – 39.999 mm (1.5742 – 1.5748 in.)	When worn or damaged
		At 3rd gear collar	36.975 – 36.991 mm (1.4557 – 1.4563 in.)	When worn or damaged
	I.D. of gears	1st gear	47.000 – 47.016 mm (1.8504 – 1.8510 in.)	When worn or damaged
		2nd gear	46.000 – 46.016 mm (1.8110 – 1.8116 in.)	When worn or damaged
		3rd gear	43.000 – 43.016 mm (1.6929 – 1.6935 in.)	When worn or damaged
	End play of gears	1st gear	0.04 – 0.12 mm (0.002 – 0.005 in.)	———
		2nd gear	0.04 – 0.12 mm (0.002 – 0.005 in.)	———
		3rd gear	0.10 – 0.22 mm (0.004 – 0.009 in.)	———
	37 x 58 mm thrust washer thickness	No. 1	3.90 mm (0.154 in.)	When worn or damaged
		No. 2	3.925 mm (0.155 in.)	When worn or damaged
		No. 3	3.95 mm (0.156 in.)	When worn or damaged
		No. 4	3.975 mm (0.156 in.)	When worn or damaged
		No. 5	4.00 mm (0.157 in.)	When worn or damaged
		No. 6	4.025 mm (0.158 in.)	When worn or damaged
		No. 7	4.05 mm (0.159 in.)	When worn or damaged
		No. 8	4.075 mm (0.160 in.)	When worn or damaged
		No. 9	4.10 mm (0.161 in.)	When worn or damaged
		No. 10	4.125 mm (0.162 in.)	When worn or damaged
		No. 11	4.15 mm (0.163 in.)	When worn or damaged
		No. 12	4.175 mm (0.164 in.)	When worn or damaged
		No. 13	4.20 mm (0.165 in.)	When worn or damaged
		No. 14	4.225 mm (0.166 in.)	When worn or damaged
		No. 15	4.25 mm (0.167 in.)	When worn or damaged
		No. 16	4.275 mm (0.168 in.)	When worn or damaged
		No. 17	4.30 mm (0.169 in.)	When worn or damaged
		No. 18	4.325 mm (0.170 in.)	When worn or damaged
		No. 19	4.35 mm (0.171 in.)	When worn or damaged
		No. 20	4.375 mm (0.172 in.)	When worn or damaged
	40 x 51.5 mm thrust washer thickness	No. 1	4.80 mm (0.189 in.)	When worn or damaged
		No. 2	4.85 mm (0.191 in.)	When worn or damaged
		No. 3	4.90 mm (0.193 in.)	When worn or damaged
		No. 4	4.95 mm (0.195 in.)	When worn or damaged
		No. 5	5.00 mm (0.197 in.)	When worn or damaged
		No. 6	5.05 mm (0.199 in.)	When worn or damaged
	3rd gear collar length		43.9 – 44.0 mm (1.728 – 1.732 in.)	———
	Length of 3rd gear collar flange from end		5.25 – 5.40 mm (0.207 – 0.213 in.)	When worn or damaged
	Sealing ring thickness		1.91 – 1.97 mm (0.0752 – 0.0776 in.)	1.86 (0.0732 in.)
	Width of sealing ring groove		2.025 – 2.060 mm (0.0797 – 0.0811 in.)	2.080 mm (0.0819 in.)
	Clutch feed pipe O.D.	3rd clutch feed pipe	11.47 – 11.48 mm (0.4516 – 0.4520 in.)	11.45 mm (0.4508 in.)
		1st clutch feed pipe	6.97 – 6.98 mm (0.2744 – 0.2748 in.)	6.95 mm (0.2736 in.)
	Clutch feed pipe bushing O.D.	3rd clutch feed pipe	11.500 – 11.518 mm (0.4528 – 0.4553 in.)	11.530 mm (0.4539 in.)
		1st clutch feed pipe	7.018 – 7.030 mm (0.2763 – 0.2768 in.)	7.045 mm (0.2774 in.)
	ATF guide of sealing ring contact I.D.		29.000 – 29.021 mm (1.1417 – 1.1426 in.)	29.05 mm (1.144 in.)

Item	Measurement	Qualification	Standard or New	Service Limit
Idler gear shaft	Diameter of needle bearing contact area	End cover side	32.003–32.013 mm (1.2600–1.2604 in.)	When worn or damaged
	Thickness of cotters		1.39–1.42 mm (0.0547–0.0559 in.)	—
Reverse idler gear	Reverse idler gear shaft diameter at needle bearing contact area		14.99–15.00 mm (0.5902–0.5906 in.)	When worn or damaged
	I.D.		20.007–20.020 mm (0.7877–0.7882 in.)	When worn or damaged
	I.D. of reverse idler gear shaft contact area on transmission housing		14.800–14.818 mm (0.5827–0.5834 in.)	—
	I.D. of reverse idler gear shaft holder		14.800–14.824 mm (0.5827–0.5836 in.)	When worn or damaged
ATF pump	ATF pump thrust clearance		0.03–0.05 mm (0.001–0.002 in.)	0.07 mm (0.003 in.)
	ATF pump gear-to-body clearance	Drive gear	0.210–0.265 mm (0.08–0.010 in.)	—
		Driven gear	0.070–0.125 mm (0.003–0.005 in.)	—
	ATF pump driven gear I.D.		14.016–14.034 mm (0.5518–0.5525 in.)	When worn or damaged
	ATF pump driven gear shaft O.D.		13.980–13.990 mm (0.5504–0.5508 in.)	When worn or damaged
Stator shaft	Needle bearing contact I.D.	Torque converter side	27.000–27.021 mm (1.063–1.064 in.)	When worn or damaged
		ATF pump side	29.000–29.021 mm (1.1417–1.1426 in.)	—
	Sealing ring contact area I.D.		29.000–29.021 mm (1.1417–1.1426 in.)	29.05 mm (1.144 in.)
Reverse shift fork	Fork finger thickness		5.90–6.00 mm (0.232–0.236 in.)	5.40 mm (0.213 in.)
Park gear and pawl			—	When worn or damaged
Servo body	Shift fork shaft bore I.D.		14.000–14.010 mm (0.5512–0.5516 in.)	—
	Shift fork shaft valve bore I.D.		37.000–37.039 mm (1.4567–1.4582 in.)	37.045 mm (1.4585 in.)
Regulator valve body	Sealing ring contact I.D.		29.000–29.021 mm (1.1417–1.1426 in.)	29.05 mm (1.144 in.)

Item	Measurement	Qualification	Standard or New			
			Wire Diameter	O.D.	Free Length	No. of Coil
Main valve body springs (see page 14-201)	Shift valve A spring		0.8 mm (0.031 in.)	5.6 mm (0.220 in.)	28.1 mm (1.106 in.)	15.9
	Shift valve B spring		0.8 mm (0.031 in.)	5.6 mm (0.220 in.)	28.1 mm (1.106 in.)	15.9
	Shift valve C spring		0.8 mm (0.031 in.)	5.6 mm (0.220 in.)	28.1 mm (1.106 in.)	15.9
	Relief valve spring		1.0 mm (0.039 in.)	9.6 mm (0.378 in.)	34.1 mm (1.343 in.)	10.2
	Lock-up control valve spring		0.65 mm (0.026 in.)	7.1 mm (0.280 in.)	23.1 mm (0.909 in.)	12.7
	Cooler check valve spring	'02 model (# 1000001–1006166)	0.6 mm (0.024 in.)	5.8 mm (0.228 in.)	14.5 mm (0.571 in.)	6.8
		'02 model (# 1006167–), and '03 model (# 2000001–)	0.9 mm (0.035 in.)	6.6 mm (0.260 in.)	26.5 mm (1.043 in.)	12.6
	Servo control valve spring		0.7 mm (0.028 in.)	6.6 mm (0.260 in.)	35.7 mm (1.406 in.)	17.2
	Shift valve E spring		0.8 mm (0.031 in.)	5.6 mm (0.220 in.)	28.1 mm (1.106 in.)	15.9

(cont'd)

Standards and Service Limits

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

Item	Measurement	Qualification	Standard or New			
			Wire Diameter	O.D.	Free Length	No. of Coil
Regulator valve body springs (see page 14-203)	Stator reaction spring		4.5 mm (0.177 in.)	35.4 mm (1.394 in.)	30.3 mm (1.193 in.)	1.92
	Regulator valve spring A		1.9 mm (0.075 in.)	14.7 mm (0.579 in.)	80.6 mm (3.173 in.)	16.1
	Regulator valve spring B		1.6 mm (0.063 in.)	9.2 mm (0.362 in.)	44.0 mm (1.732 in.)	12.5
	Torque converter check valve spring		1.2 mm (0.047 in.)	8.6 mm (0.339 in.)	33.8 mm (1.331 in.)	12.2
	Lock-up shift valve spring		1.0 mm (0.039 in.)	6.6 mm (0.260 in.)	35.5 mm (1.398 in.)	18.2
	3rd accumulator spring		2.5 mm (0.098 in.)	14.6 mm (0.575 in.)	29.9 mm (1.177 in.)	4.9
	1st accumulator spring A		2.4 mm (0.094 in.)	18.6 mm (0.732 in.)	49.0 mm (1.929 in.)	7.1
	1st accumulator spring B		2.3 mm (0.091 in.)	12.2 mm (0.480 in.)	31.5 mm (1.240 in.)	6.6
Servo body springs (see page 14-204)	Shift valve D spring		0.8 mm (0.031 in.)	5.6 mm (0.220 in.)	28.1 mm (1.106 in.)	15.9
	4th accumulator spring B		2.3 mm (0.091 in.)	12.2 mm (0.480 in.)	31.5 mm (1.240 in.)	6.6
	4th accumulator spring A		2.4 mm (0.094 in.)	18.6 mm (0.732 in.)	49.0 mm (1.929 in.)	7.1
	2nd accumulator spring B		2.0 mm (0.079 in.)	10.6 mm (0.417 in.)	34.0 mm (1.339 in.)	8.0
	2nd accumulator spring A		2.2 mm (0.087 in.)	16.6 mm (0.654 in.)	48.2 mm (1.898 in.)	8.5
	5th accumulator spring		2.5 mm (0.098 in.)	14.6 mm (0.575 in.)	29.9 mm (1.177 in.)	4.9

Item	Measurement	Qualification	Standard or New	Service Limit
A/T differential carrier	Pinion shaft contact area I.D.		18.000 – 18.025 mm (0.709 – 0.710 in.)	—
	Carrier-to-pinion shaft clearance		0.013 – 0.054 mm (0.001 – 0.002 in.)	0.1 mm (0.004 in.)
	Driveshaft contact area I.D.		28.015 – 28.045 mm (1.103 – 1.104 in.)	—
	Carrier-to-driveshaft clearance		0.035 – 0.086 mm (0.001 – 0.003 in.)	0.12 mm (0.005 in.)
	Intermediate shaft contact I.D.		28.015 – 28.045 mm (1.103 – 1.104 in.)	—
	Carrier-to-intermediate shaft clearance		0.065 – 0.111 mm (0.003 – 0.004 in.)	0.12 mm (0.005 in.)
	Carrier bearing starting torque (preload)	For new bearing	2.7 – 3.9 N·m (28 – 40 kgf·cm, 24 – 35 lbf·in)	Adjust
		For bearing reused	2.5 – 3.6 N·m (25 – 37 kgf·cm, 22 – 32 lbf·in)	Adjust
	Final driven gear backlash	(References)	0.087 – 0.146 mm (0.003 – 0.006 in.)	0.2 mm (0.008 in.)
A/T differential pinion gear	Backlash		0.05 – 0.15 mm (0.002 – 0.006 in.)	—
	I.D.		18.042 – 18.066 mm (0.7103 – 0.7113 in.)	—
	Pinion gear-to-pinion shaft clearance		0.055 – 0.095 mm (0.0022 – 0.0037 in.)	0.12 mm (0.005 in.)

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.)	
	Initial turning load measured at outside edge with engine running	K20A2 engine	38.2 N (3.9 kgf, 8.6 lbf)	
		K20A3 engine	37.2 N (3.8 kgf, 8.4 lbf)	
Gearbox	Angle of rack guide screw loosened from locked position		15° Max.	
Pump	Output pressure with shut-off valve closed	K20A2 engine	7,200−7,800 kPa (73−80 kgf/cm², 1,000−1,100 psi)	
		K20A3 engine	6,600−7,300 kPa (67−74 kgf/cm², 950−1,100 psi)	
Power steering fluid	Capacity Use Honda power steering fluid	Fluid change	0.2 ℓ (0.21 US qt)	
		System overhaul on M/T model	0.7 ℓ (0.74 US qt)	
		System overhaul on A/T model	0.8 ℓ (0.85 US qt)	
Drive belt			Auto adjust	

Suspension

Item	Measurement	Qualification	Standard or New	Service Limit
Wheel alignment	Camber	Front	0°00′±45′	
		Rear	−0°45′±45′	
	Caster	Front	1°30′±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	35°00′±2°	
		Outside wheel	28°00′ (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.)
	Steel wheel runout	Axial	0−1.0 mm (0−0.04 in.)	2.0 mm (0.08 in.)
		Radial	0−1.0 mm (0−0.04 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 – 9 clicks	
Brake pedal	Pedal height (carpet removed)	M/T	180 mm (7 1/16 in.)	
		A/T	183 mm (7 3/16 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 K20A2 engine	25.0 mm (0.98 in.)	23.0 mm (0.91 in.)
		Front K20A3 engine	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	7.5 mm (0.30 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		KEIHIN: SP-10 (P/N 38897-P13-A01AH or 38899-P13-A01)	
	Capacity of components	Condenser	25 mℓ (5/6 fl oz, 0.9 Imp oz)	
		Evaporator	45 mℓ (1 1/2 fl oz, 1.6 Imp oz)	
		Each line and hose	10 mℓ (1/3 fl oz, 0.4 Imp oz)	
		Compressor	130 – 150 mℓ (4 1/3 – 5 fl oz, 4.6 – 5.3 Imp 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		4,395 mm (173.0 in.)
	Overall width		1,725 mm (67.9 in.)
	Overall height		1,400 mm (55.1 in.)
	Wheelbase		2,570 mm (101.2 in.)
	Track	Front	1,482 mm (58.3 in.)
		Rear	1,481 mm (58.3 in.)
	Ground clearance	Type S	149 mm (5.87 in.)
		RSX, Premium	152 mm (5.98 in.)
	Seating capacity		four (4)
WEIGHT (U.S.A.)	Gross Vehicle Weight Rating (GVWR)	RSX	3,700 lbs
		Type S	3,690 lbs
WEIGHT (CANADA)	Gross Vehicle Weight Rating (GVWR)	RSX	1,670 kg
		Premium	1,675 kg
		Type S	1,670 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	K20A2 engine	11.0
		K20A3 engine	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 6,000 engine rpm	82 ℓ (87 US qt)/minute
	Fuel required	K20A2 engine	UNLEADED gasoline with 91 pump octane number or higher
		K20A3 engine	UNLEADED gasoline with 86 pump octane number or higher
STARTER	Type		Gear reduction
	Normal output	K20A2 engine	1.1 kW
		K20A3 engine	1.2 kW
	Nominal voltage		12 V
	Hour rating		30 seconds
	Direction of rotation		Clockwise as viewed from gear end
CLUTCH	Clutch type	M/T	Single plate dry, diaphragm spring
		A/T	3-element torque converter with lock-up clutch
	Clutch friction material surface area	M/T	174 cm^2 (26.97 sq in.)
W2M5 MANUAL TRANSMISSION	Type	W2M5	Synchronized, 5-speed forward, 1 reverse
	Primary reduction		Direct 1:1
	Gear ratio	1st	3.266
		2nd	1.880
		3rd	1.212
		4th	0.921
		5th	0.738
		Reverse	3.583
	Final reduction	Type	Single helical gear
		Gear ratio	4.388

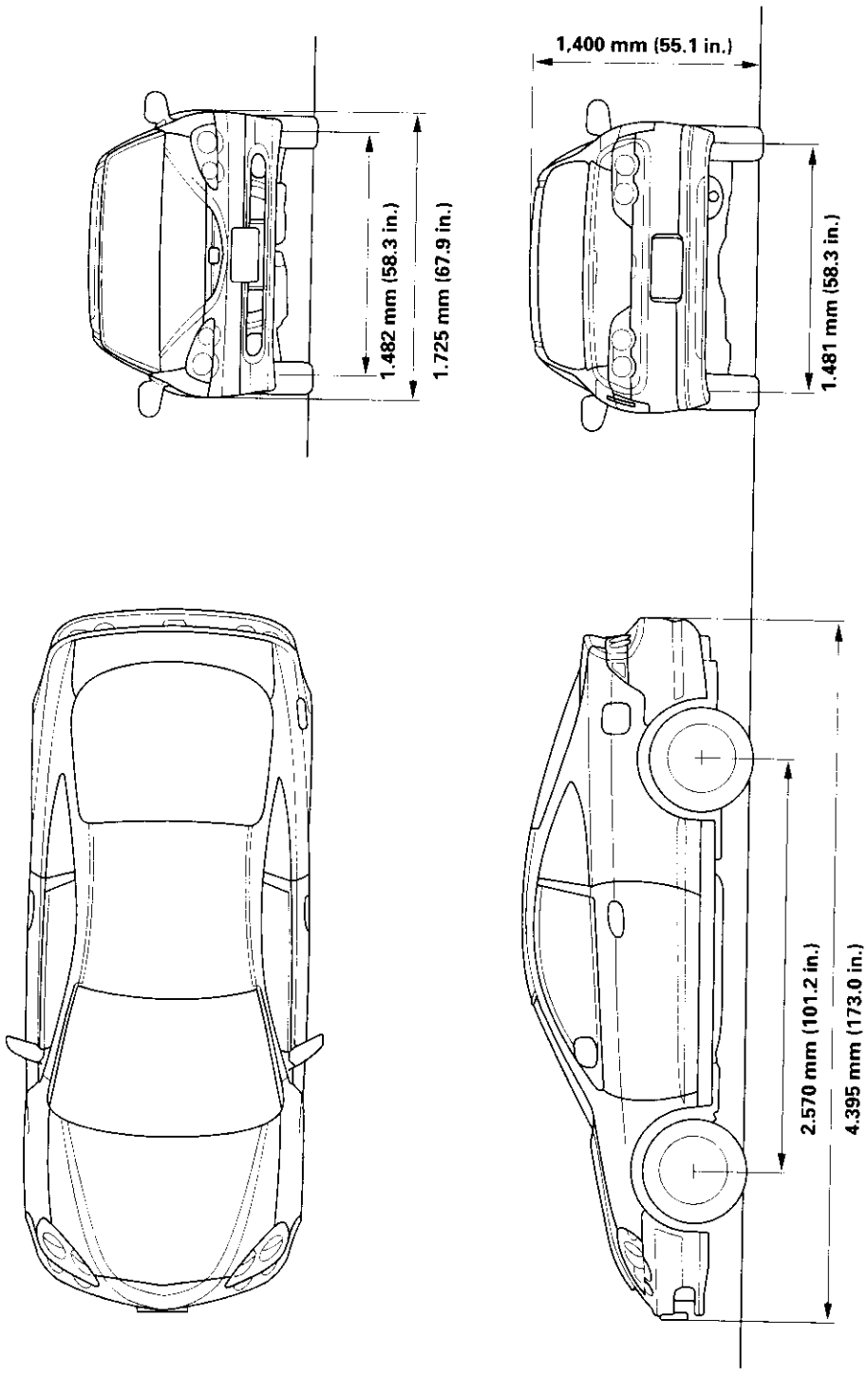
(cont'd)

Design Specifications

(cont'd)

Item	Measurement	Qualification	Specification
X2M5 MANUAL TRANSMISSION	Type	X2M5	Synchronized, 6-speed forward, 1 reverse
	Primary reduction		Direct 1:1
	Gear ratio	1st	3.266
		2nd	2.130
		3rd	1.517
		4th	1.147
		5th	0.921
		6th	0.738
		Reverse	3.583
	Final reduction	type	Single helical gear
		Gear ratio	4.388
AUTOMATIC TRANSMISSION	Type		Electronically controlled automatic, 5-speed forward, 1 reverse
	Primary reduction		Direct 1:1
	Gear ratio	1st	2.074
		2nd	1.159
		3rd	0.796
		4th	0.773
		5th	0.511
		Reverse	2.000
	Final reduction	Type	Single helical gear
		Gear ratio	4.563
STEERING	Type		Power-assisted rack and pinion
	Overall ratio		15.06
	Turns, lock-to-lock		2.64
	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°
		Rear	−0°45′
	Caster	Front	1°30′
	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	42 cm^2 (6.5 sq in.) x 2
		Rear	21 cm^2 (3.3 sq in.) x 2
	Shoe friction surface area	Rear	49.0 cm^2 (7.60 sq in.) x 2
TIRES (U.S. model)	Size of front and rear tires	RSX	P205/55 R16 89H
		Type S	P205/55 R16 89V
	Size of spare tire	RSX	T135/70 D15 99M
		Type S	T125/70 D16 96M
TIRES (Canada model)	Size of front and rear tires	RSX	P195/65 R15 89H
		Premium	P205/55 R16 89V
		Type S	P205/55 R16 89V
	Size of spare tire	RSX	T135/70 D15 99M
		Premium	T135/70 D15 99M
		Type S	T125/70 D16 96M

Item	Measurement	Qualification	Specification
AIR CONDITIONING	Compressor	Type	Scroll
		Number of cylinder	———
		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	Infinite variable
		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)
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	100A, 50A, 40A, 30A, 20A, 15A, 7.5A
		Under-dash fuse/ relay box	20A, 15A, 10A, 7.5A
	Light bulbs	Headlight high beam	12 V – 55 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
		Rear side marker lights	12 V – 5 W
		Brake/taillights	12 V – 21/5 W
		High mount brake light	12 V – 21 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 – 8 W
		Gauge lights	LED
		Indicator lights	LED


1,400 mm (55.1 in.)
1.482 mm (58.3 in.)
1.725 mm (67.9 in.)
1.481 mm (58.3 in.)
2.570 mm (101.2 in.)
4.395 mm (173.0 in.)

Maintenance

Lubricants and Fluids

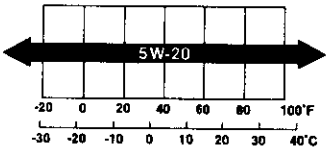
For details of lubrication points and type of lubricants to be applied, refer to the illustrated index and various work procedures (such as Assembly/Reassembly, Replacement, Overhaul, Installation, etc.) contained in each section.

NO.	LUBRICATION POINTS		LUBRICANT
1	Engine		Honda Motor Oil (P/N 08798-9023). Look for the API Certification seal shown below. Make sure it says "For Gasoline Engines."
2	Transmission	Manual	Honda MTF*1
		Automatic Transmission	Honda ATF-Z1 (ATF)*2
3	Brake system (includes ABS line)		Honda DOT 3 Brake Fluid*3
4	Clutch line		Honda DOT 3 Brake Fluid*3
5	Power steering gearbox		Steering grease P/N (08733-B070E)
6	Throttle cable end (throttle link)		Super High Temp Urea Grease (P/N 08798-9002)
7	Shift and select cable ends (manual transmission)		Silicone grease
8	Throttle cable end (dashboard lower panel hole)		
9	Release fork (manual transmission)		Multi-purpose grease
10	Brake booster clevis		
11	Clutch booster clevis		
12	Shift lever		
13	Pedal linkage		
14	Battery terminals		
15	Fuel fill door		
16	Hood hinges and hood latch		
17	Tailgate hinges		
18	Caliper piston boot, caliper pins and boots		Honda Caliper Grease (P/N 08C30-B0234M)
19	Power steering system		Honda Power Steering Fluid*4
20	Air conditioning compressor		Compressor oil: SANDEN: SP-10 (P/N 38897-P13-A01AH or 38899-P13-A01) For refrigerant: HFC-134 a (R-134 a)

API CERTIFICATION SEAL

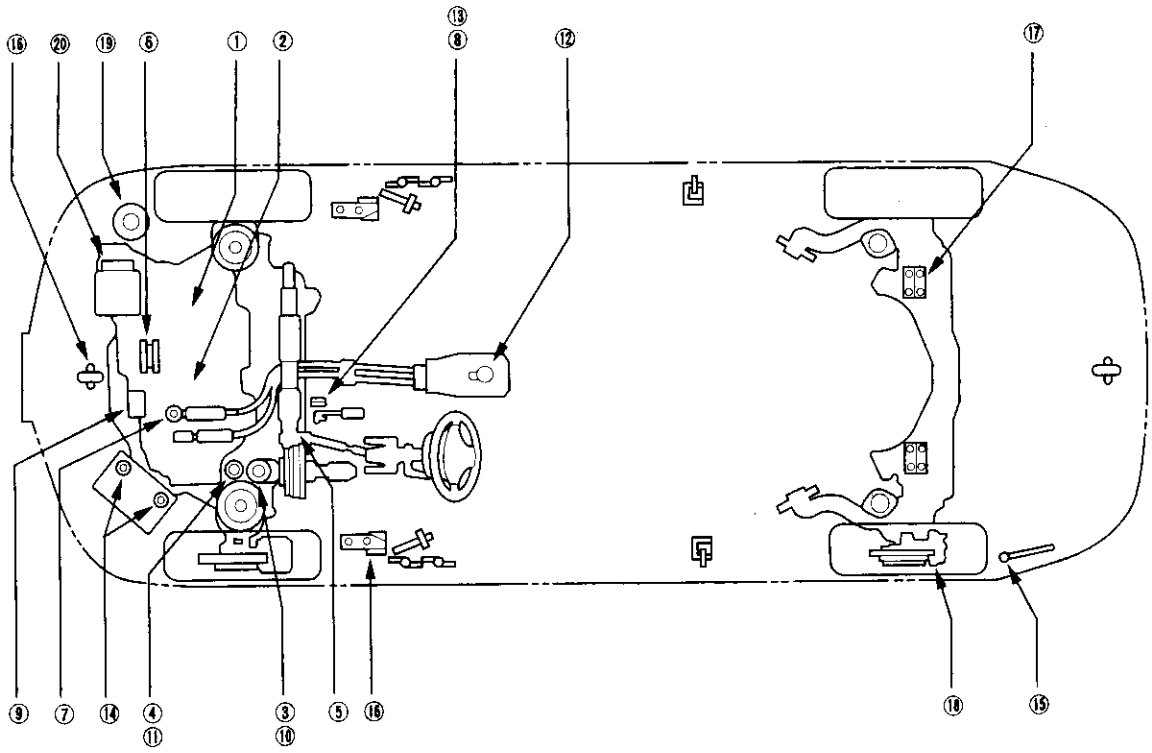
Recommended Engine Oil
Engine oil viscosity for ambient temperature ranges

For RSX and Premium models



For Type S model

*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 ATF-Z1 (ATF). Using a non-Honda ATF can affect shift quality.
*3: Always use Honda DOT 3 Brake Fluid. Using a non-Honda brake fluid can cause corrosion and decrease the life of the system.
*4: Always use Honda Power Steering Fluid. Using any other type of power steering fluid or automatic transmission fluid can cause increased wear and poor steering in cold weather.


⑯ ⑳ ⑲ ⑥ ① ② ⑬ ⑧ ⑫ ⑰
⑨ ⑦ ⑭ ④ ⑪ ③ ⑩ ⑤ ⑯ ⑱ ⑮

Maintenance Schedule

Listed by Distance/Time for Normal Conditions

Service at the indicated distance or time, whichever comes first. This two-page Maintenance Schedule outlines the minimum required maintenance. For Canada models, use the Maintenance Schedule for Severe conditions.

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, C, and 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, C, and D.
70,000 mi/ 112,000 km/ 4 years	☐ Do item 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, C, and 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 6-37), otherwise adjust only if noisy. K20A2 engine: Intake: 0.21 – 0.25 mm (0.008 – 0.010 in.) Exhaust: 0.25 – 0.29 mm (0.010 – 0.011 in.),K20A3 engine: 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) for K20A3 engine, and use IFR7G-11K, IFR7G-11KS (NGK) or SK22PR-M11, SK22PR-M11S (DENSO) for K20A2 engine.
  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.

110,000 mi/ 176,000 km/ 7 years

- ☐ Inspect idle speed.* Should be K20A2 engine 700 ± 50 rpm, K20A3 engine 650 ± 50 rpm in neutral (Automatic transmission [N] or [P] position) (see page 11-148).

120,000 mi/ 192,000 km/ 6 years

- ☐ Replace manual transmission fluid. Use Honda MTF (see page 13-4).
- ☐ Do items in A,B,C, and D.

120,000 mi/ 192,000 km/ 6 years, then every 90,000 mi/ 144,000 km/ 5 years

- ☐ Replace automatic transmission fluid. Use Honda ATF-Z1 (see page 14-139).

–/–/ 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). K20A2 engine 4.7 ℓ (5.0 US qt, 4.1 Imp qt), K20A3 engine 4.2 ℓ (4.5 US qt, 3.7 Imp 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 8-6). —Capacity without filter change: K20A2 engine 4.5 ℓ (4.8 US qt), K20A3 engine 4.0 ℓ (4.2 US qt)
- ☐ Rotate tires. Follow the pattern shown in the Owner's Manual —Check tire information and condition.

B
- ☐ Replace engine oil filter (see page 8-7). —Capacity with filter change: K20A2 engine 4.7ℓ (5.0 US qt), K20A3 engine 4.2ℓ (4.4 US qt)
- ☐ Inspect front and rear brakes (see page 19-4).
  - 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 17-8).
  - 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 ATF (see page 14-138) or MTF (see page 13-4), 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 for K20A2 engine (see page 9-14), and for K20A3 engine (see page 9-15).
- ☐ Inspect fuel lines and connections*. Check for loose connections, cracks and deterioration; retighten loose connections and replace damage parts (see page 11-157).

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 21-47).
  - Replace the dust and pollen whenever airflow from the climate control 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 perform 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
- 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 item in E.
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 item in E.
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 manual transmission fluid. Use Honda MTF (see page 13-4).

☐ Do items in A, B, C, and D.

60,000 mi/96,000 km/ 3 years, then every 30,000 mi/ 48,000 km/ 2 years

☐ Replace automatic transmission fluid. Use Honda ATF-Z1 (see page 14-139).

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 item in E.
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

☐ Replace automatic transmission fluid. Honda ATF-Z1 (ATF) (see page 14-139).

☐ Do items in A, B, D, and E.

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 and E.

110,000 mi/ 176,000 km/ –

☐ Inspect valve clearance. (cold) (see page 6-11), otherwise adjust only if noisy. K20A2 engine: Intake: 0.21 – 0.25 mm (0.008 – 0.010 in.) Exhaust: 0.25 – 0.29 mm (0.010 – 0.011 in.), K20A3 engine: 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) for K20A3 engine, and use IFR7G-11K, IFR7G-11KS (NGK) or SK22PR-M11, SK22PR-M11S (DENSO) for K20A2 engine.
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.
– / – / 6 years	☐ Do item in G.

110,000 mi/ 176,000 km/ 7 years

☐ Inspect idle speed. Should be 700 ± 50 rpm in neutral (Automatic transmission [N] or [P] position) (see page 11-148).

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 13-4) or Honda ATF-Z1 (ATF) (see page 14-139).

☐ Do items in A, B, C, D and E.

– / – /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: K20A2 engine: 4.7 ℓ (5.0 US qt), K20A3 engine: 4.2 ℓ (4.5 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 8-6). —Capacity without filter change: K20A2 engine 4.5 ℓ (4.8 US qt), K20A engine 4.0 ℓ (4.2 US qt)

B

☐ Replace engine oil filter (see page 8-7). —Capacity with filter change: K20A2 engine 4.7 ℓ (5.0 US qt), K20A3 engine 4.2 ℓ (4.4 US 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 17-8).
- 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 ATF (see page 14-138) or MTF (see page 13-4), 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 for K20A2 engine (see page 9-14), and for K20A3 engine (see page 9-15).
☐ Inspect fuel lines and connections*. Check for loose connections, cracks and deterioration; retighten loose connections and replace damage parts (see page 11-161).
☐ Check all lights. Check function of all interior and exterior lights, and the position of the headlights (see page 22-70).
☐ 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 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 anytime airflow is less than usual (see page 21-47).

E

☐ Clean air cleaner element every 15,000 miles (24,000 km) (independent of time) (see page 11-179).

F

☐ Replace air cleaner element every 30,000 miles (48,000 km) (independent of time) (see page 11-179).
- In dusty conditions, replace every 15,000 miles (24,000 km).

G

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

According to state and federal regulations, failure to perform 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.

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	M/T												●
	A/T	At 120,000 miles (192,000 km) or 6 years, then every 90,000 miles (144,000 km) or 5 years											

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 7 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 perform the maintenance items marked with an asterisk (*) will not void the customer's emissions warranties. However, Honda recommends that all maintenance service be done at the recommended intervals to ensure long-term reliability.

Listed by Maintenance Item for Severe Conditions

Use the 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.

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 95 °F (32 °C) conditions.
- Extensive idling, or long periods of stop-and-go-driving.
- 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	M/T						●						●
	A/T	At 60,000 miles (96,000 km) or 3 years, then every 30,000 miles (48,000 km) or 2 years											
Service the following items at the recommended intervals													
Clean and replace air cleaner element		Clean at 15,000 miles (24,000 km), replace every 30,000 miles (48,000 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 7 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 perform the maintenance items marked with an asterisk (*) will not void the 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 as often (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 vehicle.

Engine Electrical

Starting System

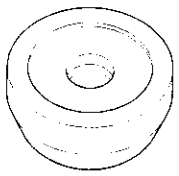
Ignition System

Charging System

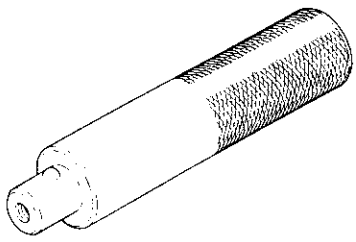
Cruise Control

Special Tools

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



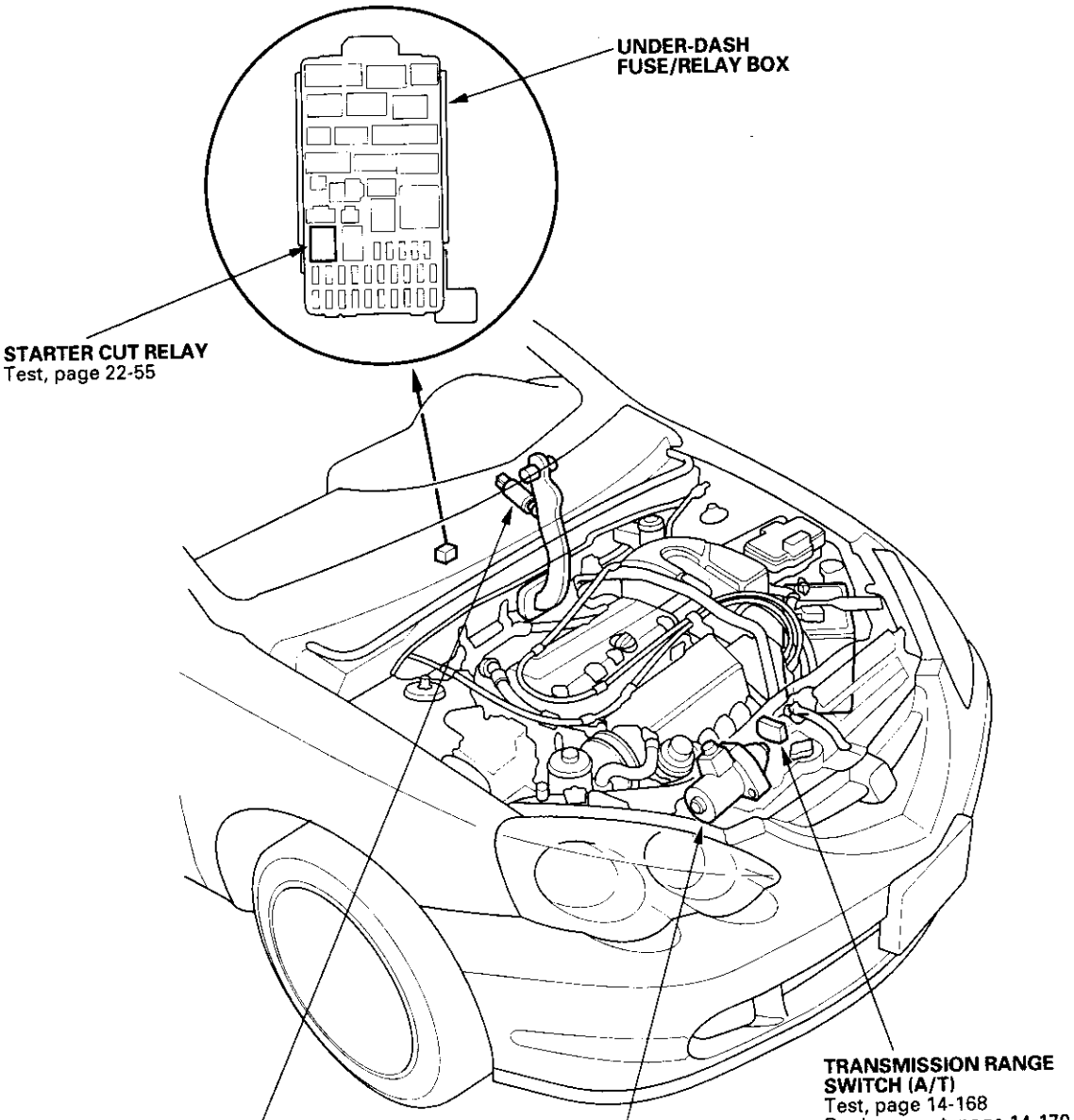
①



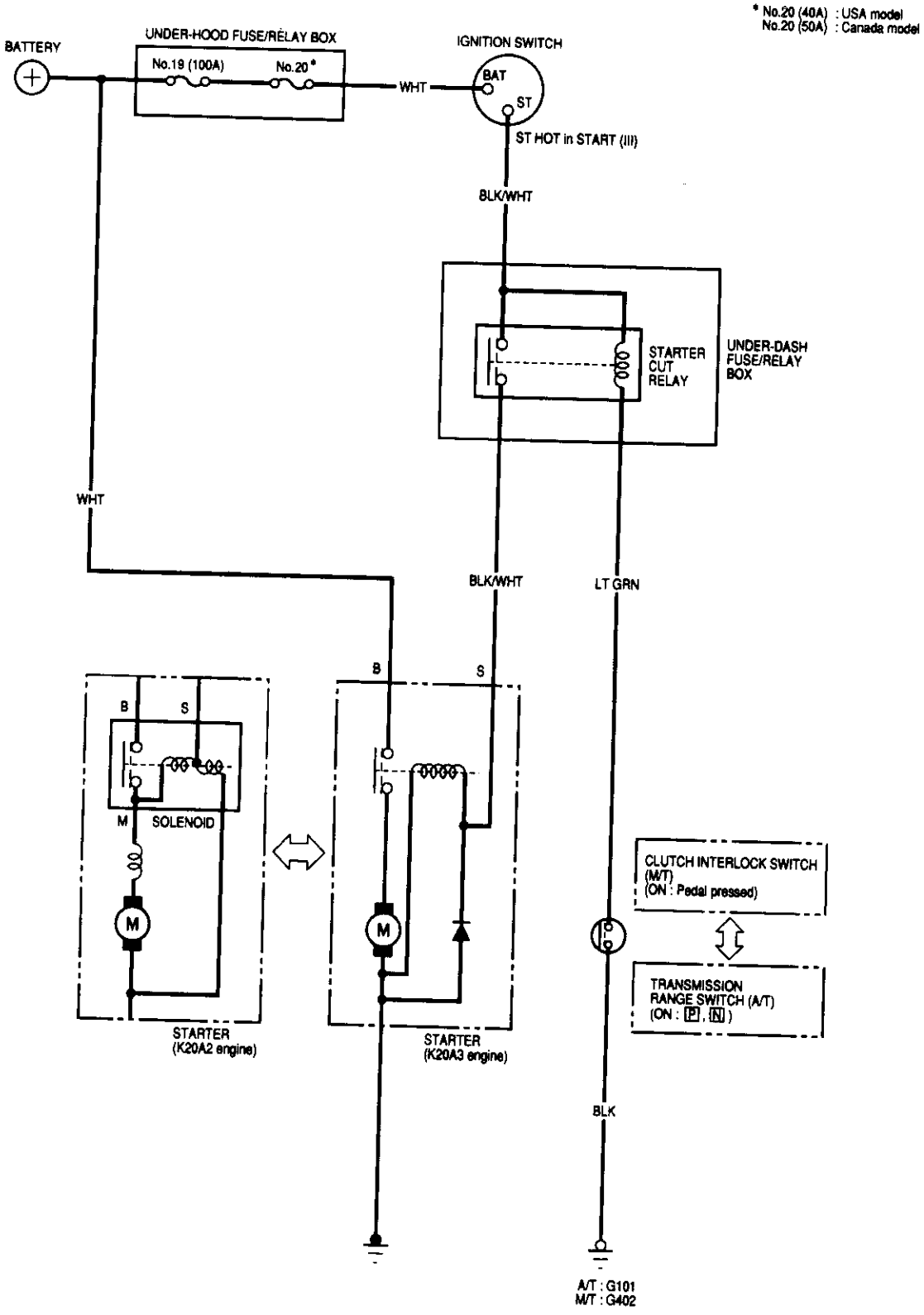
②

Starting System

Component Location Index



Circuit Diagram



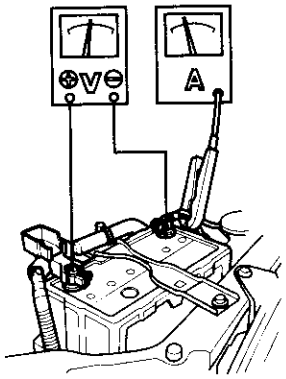
Starter Circuit Troubleshooting

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 Control Module (ECM)/Powertrain Control Module (PCM) 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/PCM idle learn procedure (see page 11-149).

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 shift lever in N or P (A/T) or clutch pedal pressed (M/T), 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?

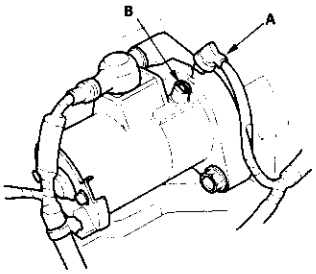
   YES – Repairing the loose connection fixed the problem. The starting system is now OK. ■

   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 or torque converter ring gear when you release the key, check for the following until you find the cause.

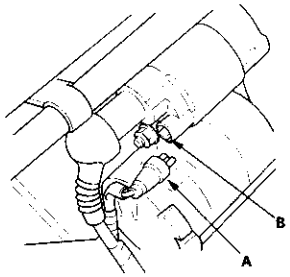
   - Solenoid plunger and switch malfunction
   - Dirty drive gear or damaged overrunning clutch

5. Make sure the transmission is in neutral, then disconnect the BLK/WHT wire (A) from the starter solenoid (B). Connect a jumper wire from the battery positive terminal to the solenoid terminal.

   K20A3 engine:



   K20A2 engine:



   Did the starter crank the engine?

   YES – Go to step 6.

   NO – 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 22-93).
   - Check the transmission range switch and connector (A/T) or the clutch interlock switch and connector (M/T).
   - Check the starter cut relay.
   - Check the BLK wire between the clutch interlock switch and G101(A/T) or G402(M/T).

7. Check the cranking voltage and current draw.

   Is cranking voltage greater than or equal to 8.5 V (K20A3 engine)/8.7 V (K20A2 engine) and current draw less than or equal to 350 A (K20A3 engine)/ 230 A (K20A2 engine)?

   YES – Go to step 8.

   NO – Replace the starter, or remove and disassemble it, and check for the following 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.

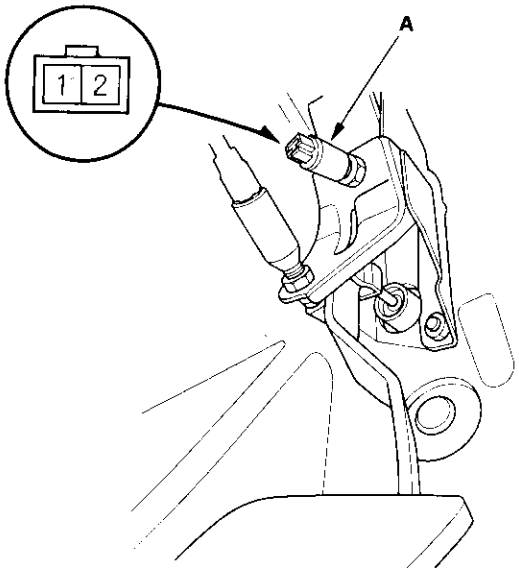
   NO – Replace the starter, or remove and disassemble it, and check for the following until you find the cause.

   - 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 or torque converter 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 clutch pedal height (see page 12-4).

Terminal / Clutch Interlock Switch	1	2
PRESSED	○	○
RELEASED		

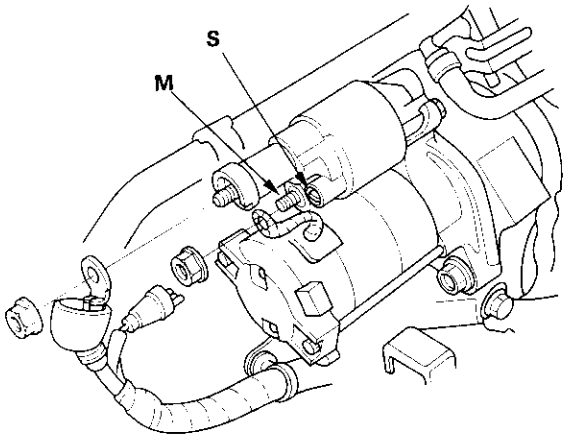
Starter Solenoid Test

K20A2 engine

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.



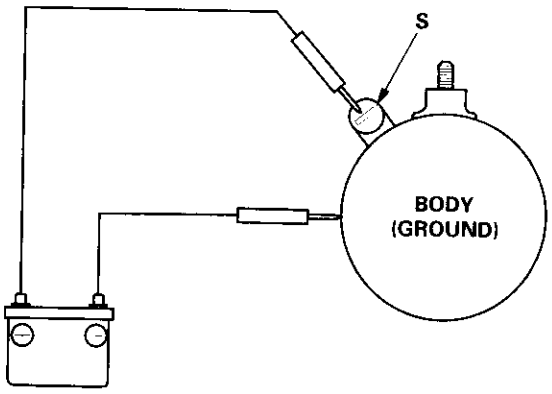
3. Check the pull-in coil for continuity between the S terminal and M terminal . There should be continuity.

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

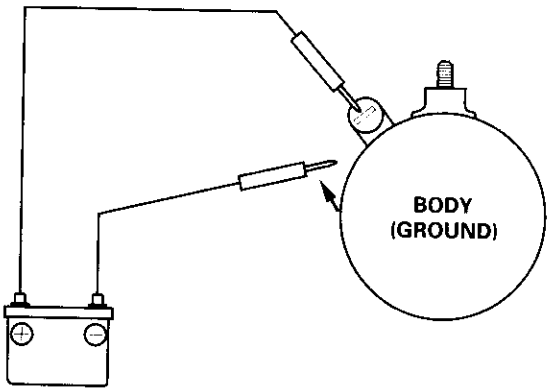
Starter Performance Test

K20A3 engine

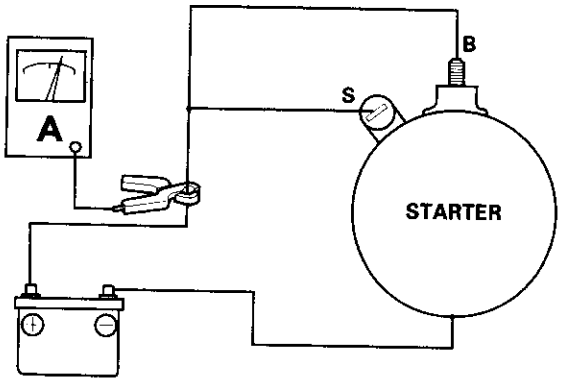
1. Disconnect the wire from the S terminal.
2. Make the connections as described below using as heavy a wire as possible (preferably equivalent to the wire used for the vehicle). To avoid damaging the starter, never leave the battery connected for more than 10 seconds.
3. Connect the battery as shown.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



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



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

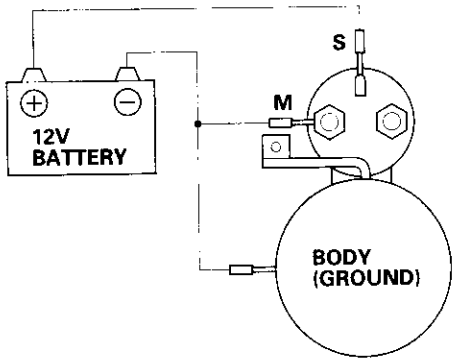


7. If the electric current and motor speed meet the specifications when the battery voltage is at 11.5 V, the starter is working properly.

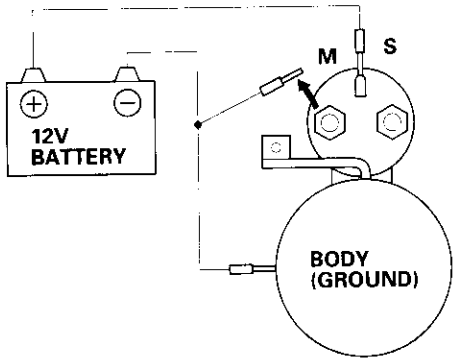
Specifications:
Electric current: 80 A or less
Motor speed: 2,600 rpm or more

K20A2 engine

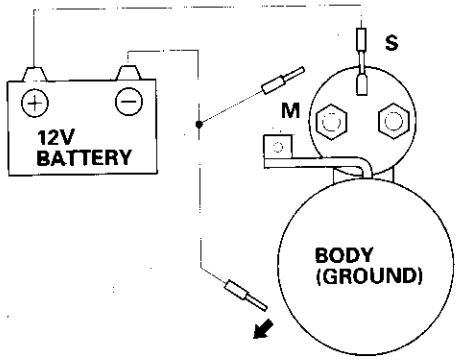
1. Disconnect the wires from the S terminal and the M terminal.
2. Make the connections as described below using as heavy a wire as possible (preferably equivalent to the wire used for the vehicle). To avoid damaging the starter, never leave the battery connected for more than 10 seconds.
3. Connect 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.



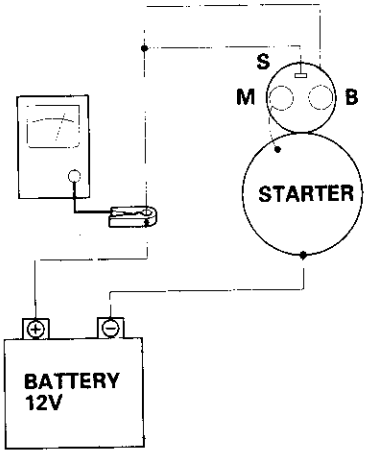
4. Disconnect the battery from the M terminal. If the pinion does not retract, the hold-in coil is working properly.



5. Disconnect the battery from the 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.

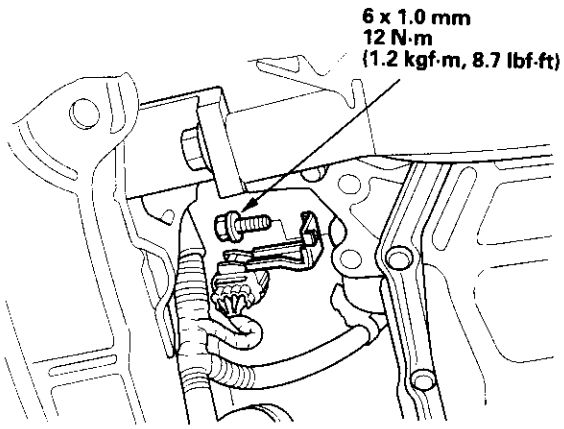


8. If the electric current and motor speed meet the specifications when the battery voltage is at 11.5 V, the starter is working properly.

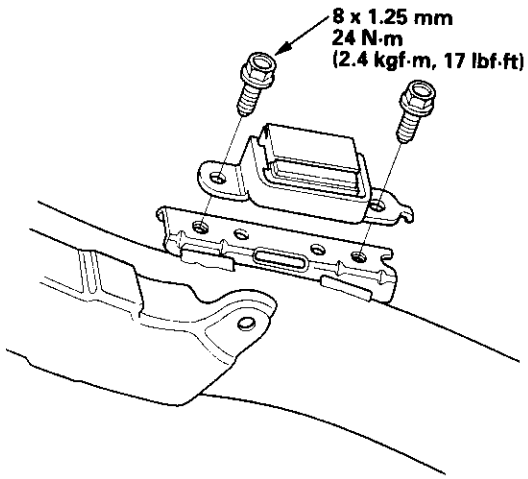
Specifications:
Electric current: 90 A or less
Motor speed: 3,000 rpm or more

Starter Replacement

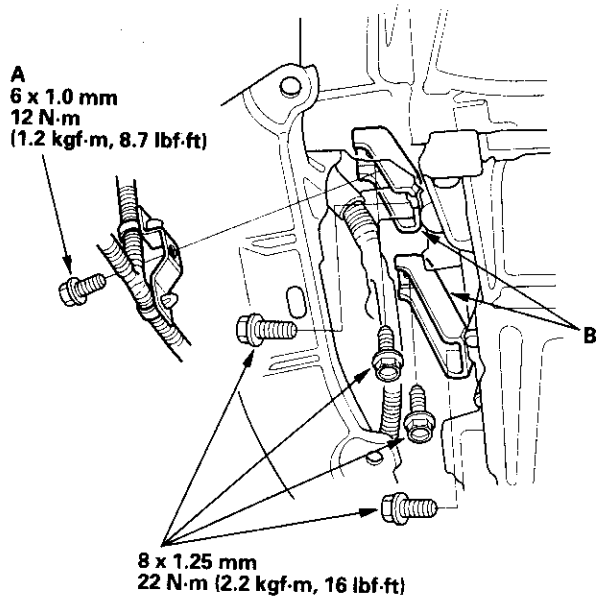
1. Make sure you have the anti-theft code for the radio, then write down the frequencies for the radio's preset buttons.
2. Disconnect the negative cable from the battery first, then disconnect the positive cable.
3. Disconnect the knock sensor connector.
4. Disconnect the bolt securing the harness bracket (K20A3 engine).



5. Remove the front subframe damper (K20A2 engine).

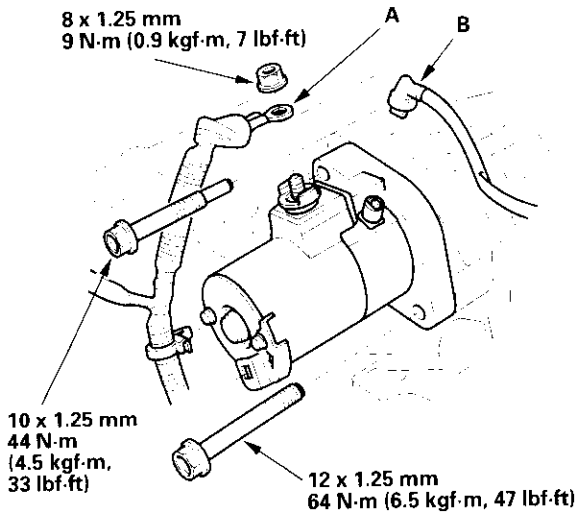


6. Remove the bolt (A) securing the harness bracket, then remove the intake manifold brackets (B) (K20A2 engine).

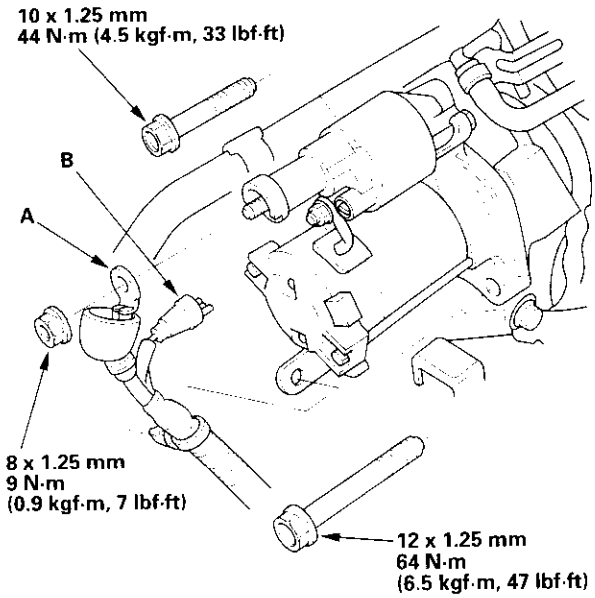


7. Disconnect the starter cable (A) from the B terminal on the solenoid, then disconnect the BLK/WHT wire (B) from the S terminal.

K20A3 engine:

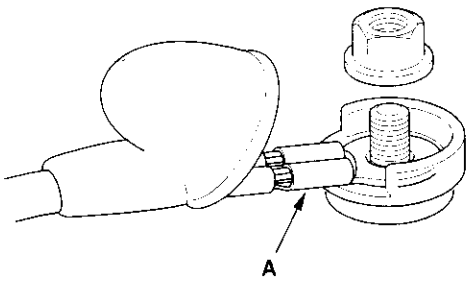


K20A2 engine:



8. Remove the two bolts holding the starter, then remove the starter.

9. Install the starter in the reverse order of removal. Make sure the crimped side of the ring terminal (A) is facing out.



10. Connect the positive cable and negative cable to the battery.

11. Start the engine to make sure the starter operates properly.

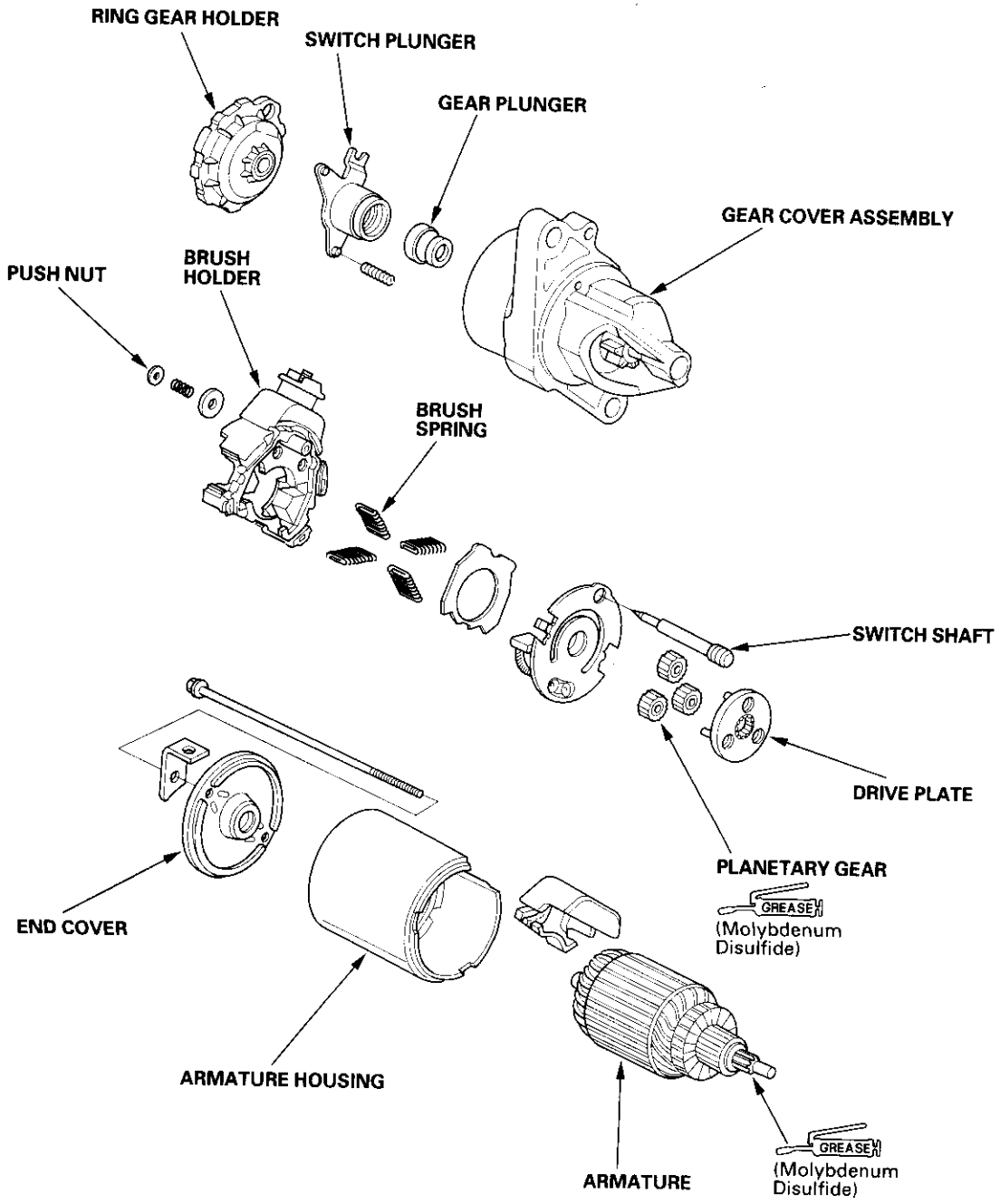
12. Enter the anti-theft code for the radio, then enter the customer's radio station presets.

13. Set the clock.

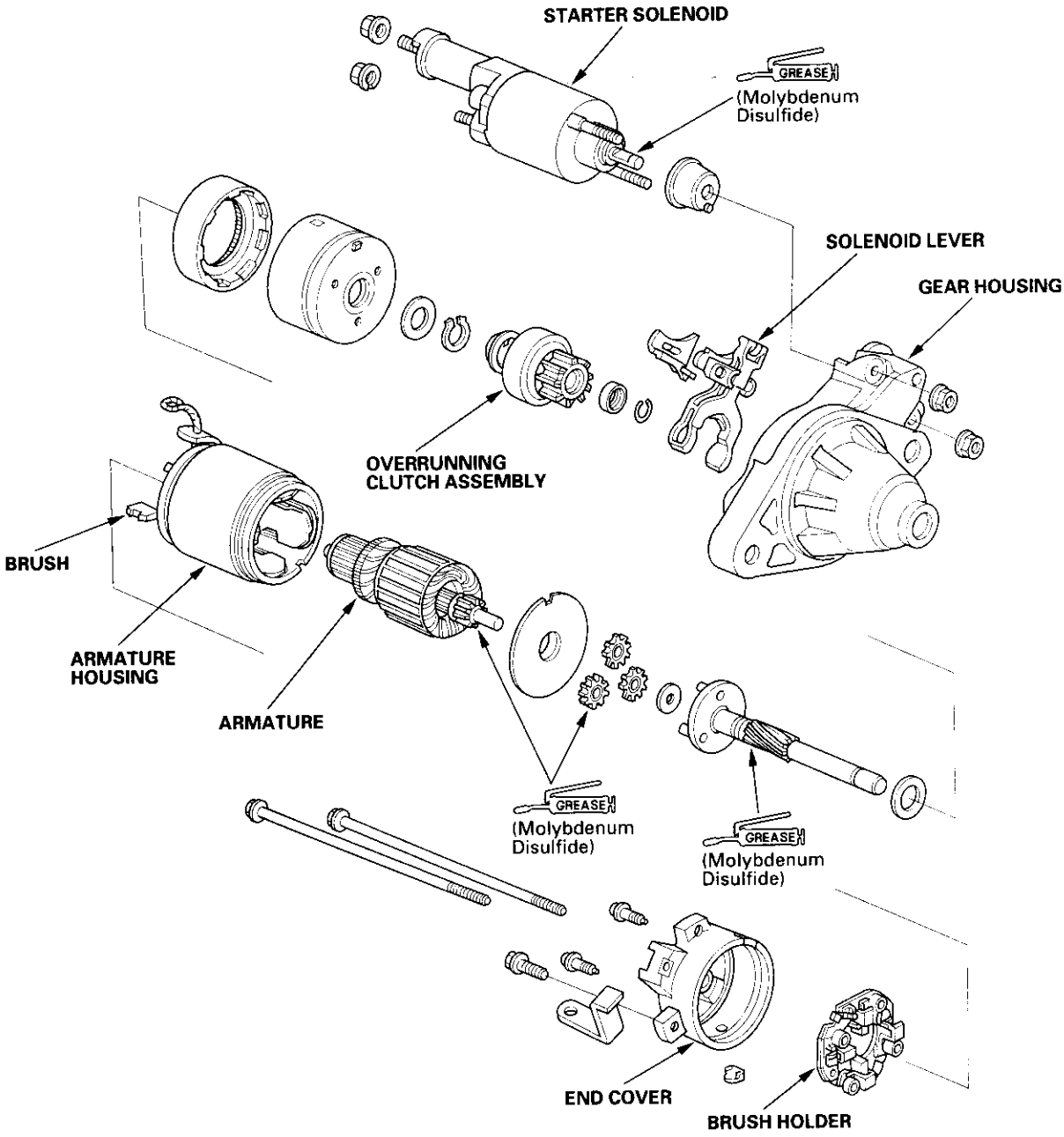
14. Perform the engine control module (ECM) / powertrain control module (PCM) idle learn procedure (see page 11-149), and power window control unit reset procedure (see page 22-139).

Starter Overhaul

Disassembly/Reassembly-K20A3 engine



Disassembly/Reassembly-K20A2 engine

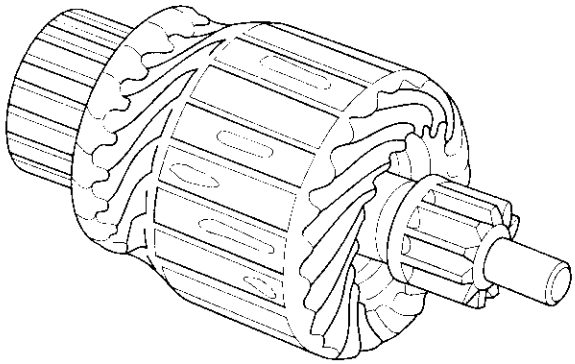


(cont'd)

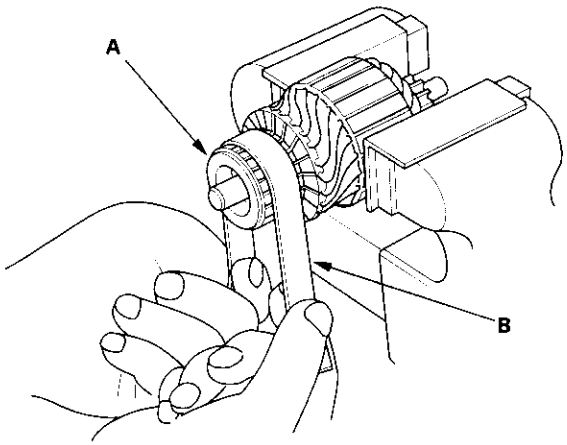
Starter Overhaul (cont'd)

Armature Inspection and Test

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

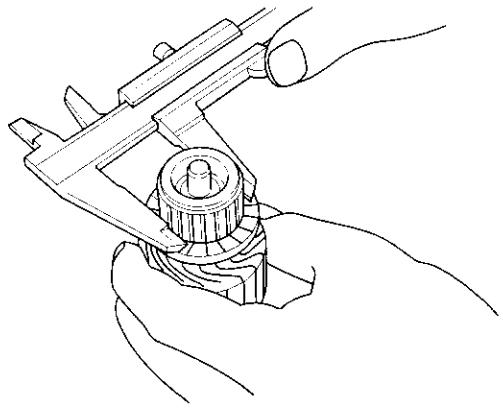


4. Check the commutator (A) surface. If the surface is dirty or burnt, resurface with emery cloth or a lathe within the following specifications, or recondition with # 500 or # 600 sandpaper (B).



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

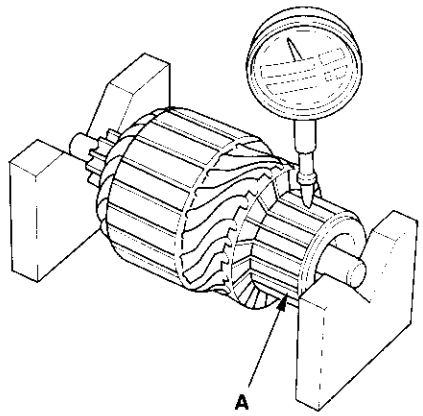
Commutator Diameter
K20A3 engine:
Standard (New): 28.0 – 28.1 mm (1.102 – 1.106 in.)
Service Limit: 27.5 mm (1.083 in.)
K20A2 engine:
Standard (New): 28.0 mm (1.10 in.)
Service Limit: 27.0 mm (1.06 in.)



6. Measure the commutator (A) runout.

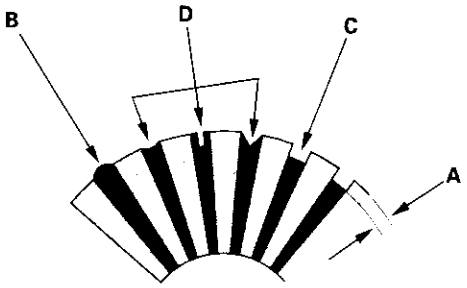
- If the commutator runout is within the service limit, check the commutator for carbon dust or brass chips between the segments.
- If the commutator runout is not within the service limit, replace the armature.

Commutator Runout
Standard (New): 0.02 mm (0.001 in.) max.
Service Limit: 0.05 mm (0.002 in.)

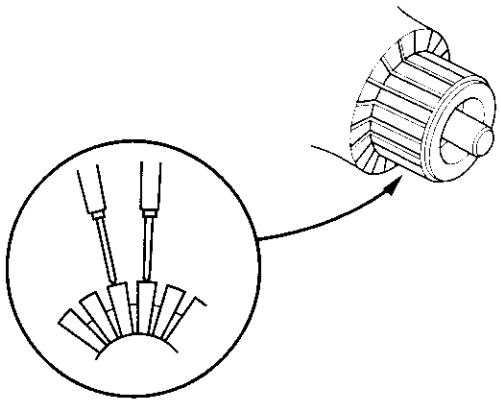


7. Check the mica depth (A). If the mica is too high (B), undercut the mica with a hacksaw blade to the proper depth. Cut away all the mica (C) between the commutator segments. The undercut should not be too shallow, too narrow, or V-shaped (D).

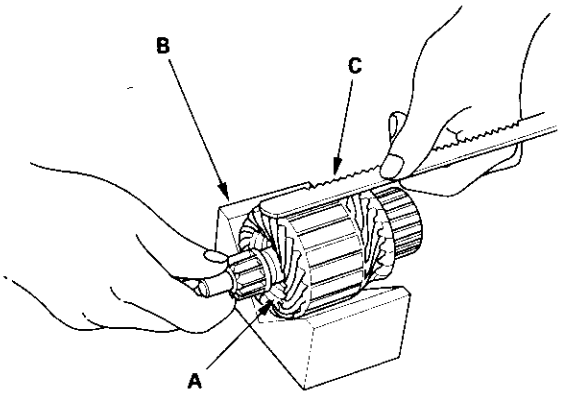
Commutator Mica Depth
K20A3 engine:
Standard (New): 0.40—0.50 mm (0.016—0.020 in.)
Service Limit: 0.15 mm (0.006 in.)
K20A2 engine:
Standard (New): 0.50—0.80 mm (0.020—0.031 in.)
Service Limit: 0.20 mm (0.008 in.)



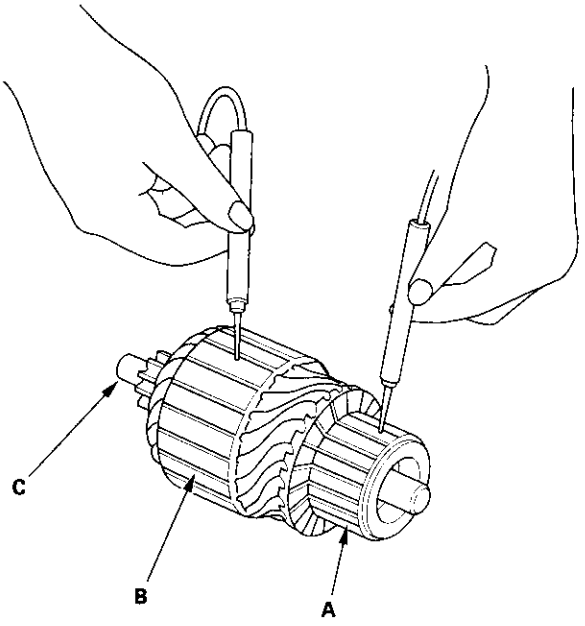
8. Check for continuity between the segments of the commutator. If an open circuit exists between any segments, replace the armature.



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.



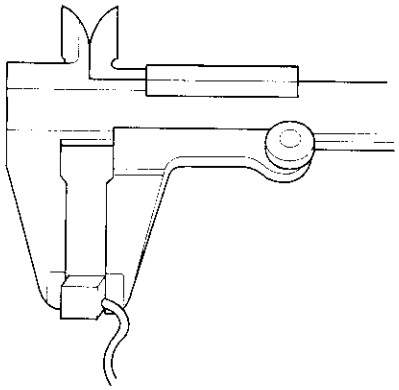
(cont'd)

Starter Overhaul (cont'd)

Starter Brush Inspection

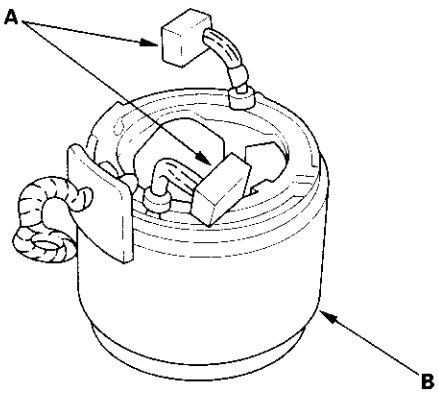
11. Measure the brush length. If it is not within the service limit, replace the brush holder assembly.

Brush Length
K20A3 engine:
Standard (New): 11.1 – 11.5 mm (0.44 – 0.45 in.)
Service Limit: 4.3 mm (0.17 in.)
K20A2 engine:
Standard (New): 14.0 – 14.5 mm (0.55 – 0.57 in.)
Service Limit: 9.0 mm (0.35 in.)



Starter Field Winding Test (K20A2 engine)

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

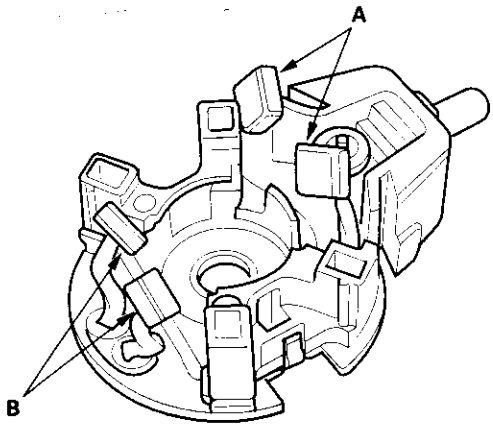


13. Check for continuity between each brush (A) and the armature housing (B). If there is continuity, replace the armature housing.

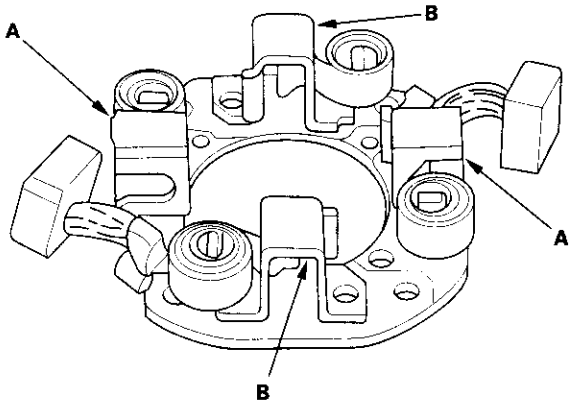
Starter Brush Holder Test

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.

K20A3 engine:



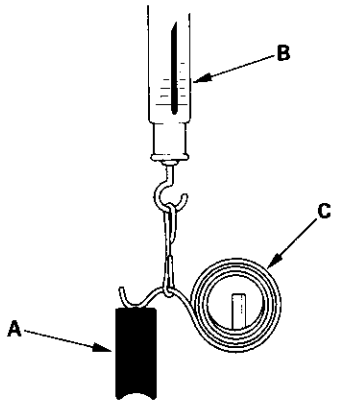
K20A2 engine:



Brush Spring Inspection (K20A2 engine)

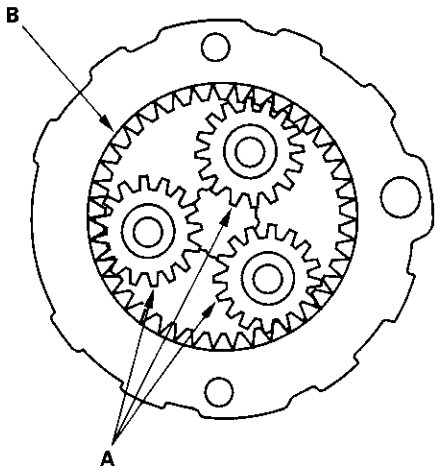
15. Insert the brush (A) into the brush holder, and bring the brush into contact with the commutator, then attach a spring scale (B) to the spring (C). Measure the spring tension at the moment the spring lifts off the brush. If the spring tension is not within specification, replace the spring.

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



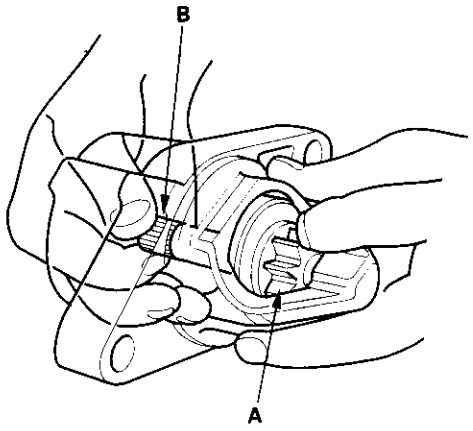
Planetary Gear Inspection

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



Overrunning Clutch Inspection (K20A3 engine)

17. Holding the drive gear (A), turn the gear shaft (B) clockwise. Check that the drive gear comes out to the other end. If the drive gear does not move smoothly, replace the gear cover assembly.



18. Holding the drive gear, turn the gear shaft counterclockwise. The gear shaft should rotate freely. If the gear shaft does not rotate smoothly, replace the gear cover assembly.

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

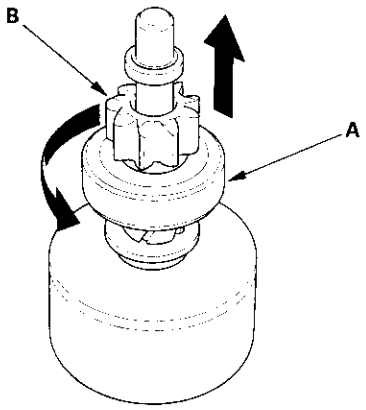
(cont'd)

Starter Overhaul (cont'd)

Overrunning Clutch Inspection (K20A2 engine)

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

21. 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.

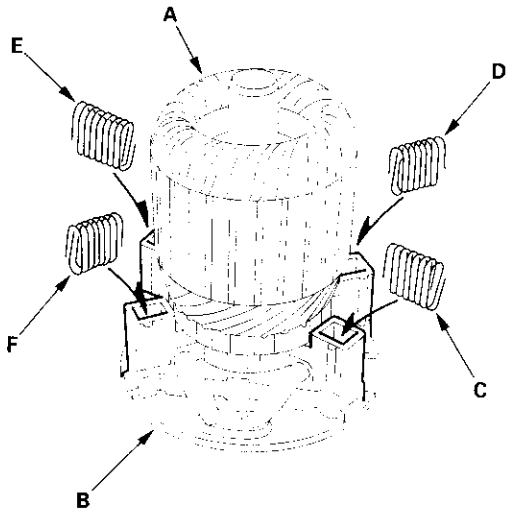


22. If the starter drive gear (B) is worn or damaged, replace the overrunning clutch assembly; the gear is not available separately.
Check the condition of the flywheel ring gear. Replace it if the starter drive gear teeth are damaged.

Starter Reassembly (K20A3 engine)

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

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



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

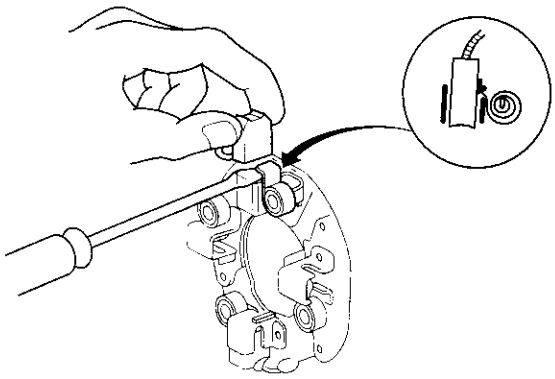
25. Install the armature and brush holder assembly into the housing.

NOTE: Make sure the armature stays in the holder.

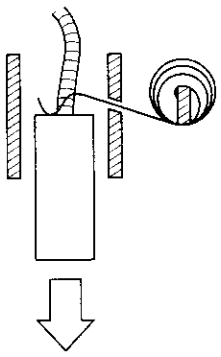
Starter Reassembly (K20A2 engine)

26. 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 up, 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.

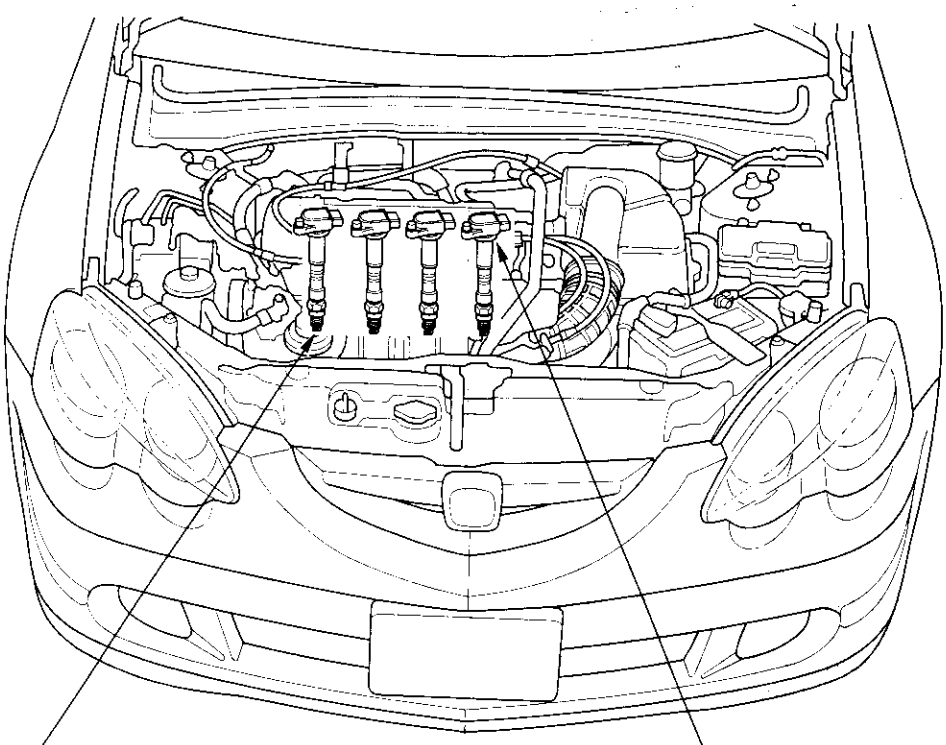


27. Install the armature in the housing, and install the brush holder. Next, pry back each brush spring again, and push the brush down until it seats against the commutator, then release the spring against the end of the brush.



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

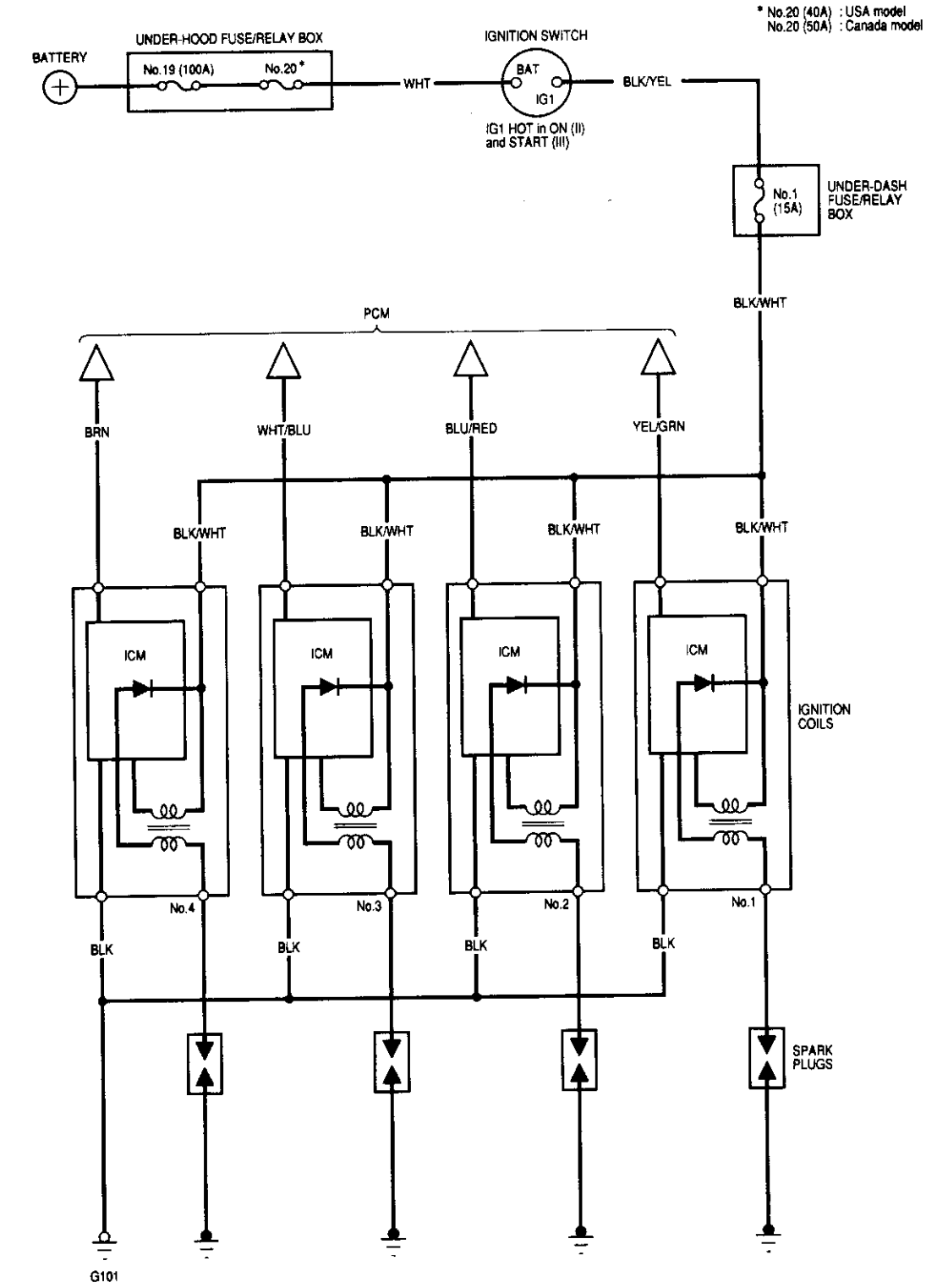
Component Location Index



SPARK PLUG
Inspection, page 4-24

IGNITION COIL
Ignition Timing Inspection, page 4-22
Removal/Installation, page 4-23

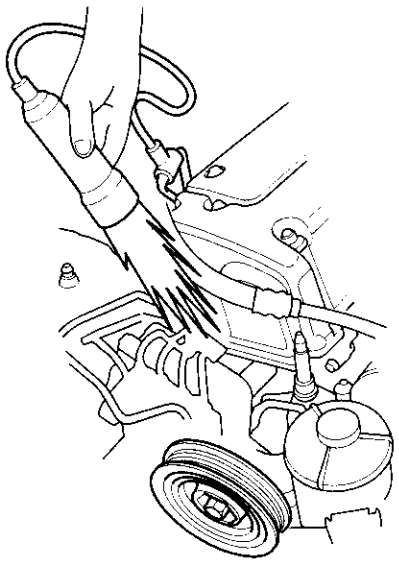
Circuit Diagram



ICM : Ignition Control Module

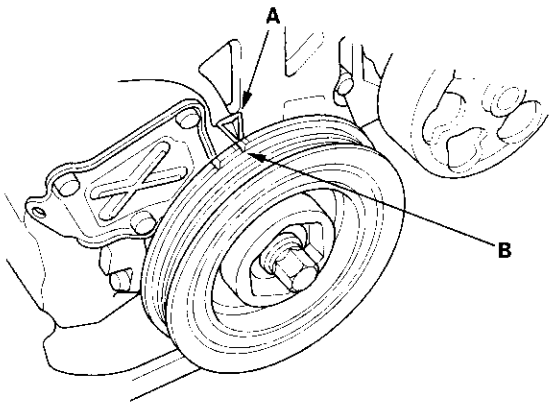
Ignition Timing Inspection

1. Connect the Honda PGM Tester to the data link connector (DLC), 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 Park or Neutral) until the radiator fan comes on, then let it idle.
3. Check the idle speed (see page 11-148).
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 pointers (A) on the timing belt cover. 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)/ powertrain control module (PCM) DTC's, replace the ECM/PCM (see page 11-4).

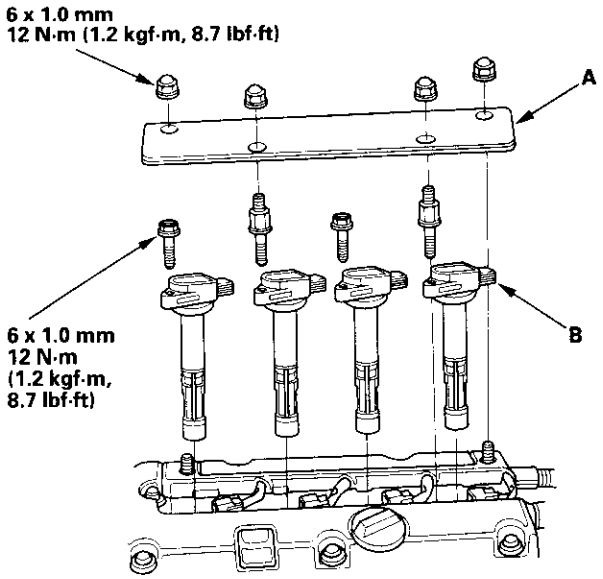
Ignition Timing:
M/T: 8° ±2° BTDC (RED mark (B)) during idling in neutral
A/T: 8° ±2° BTDC (RED mark (B)) during idling in [P] or [N]



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).



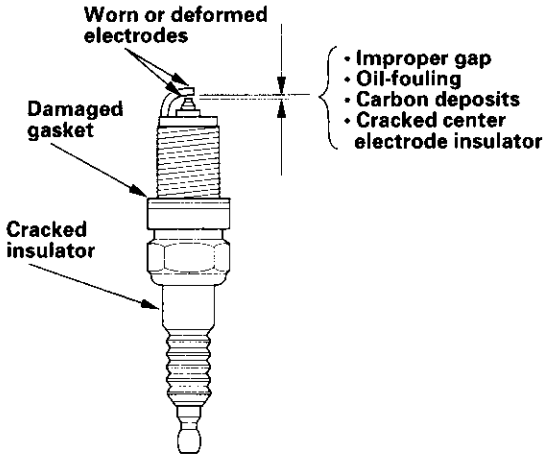
2. Install the ignition coils in the reverse order of removal.

Spark Plug Inspection

1. Inspect the electrodes and ceramic insulator.

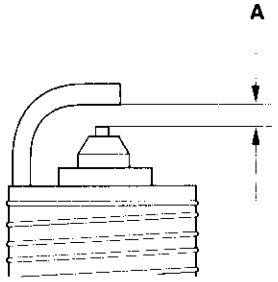
   Burned or worn electrodes may be caused by:
   - Advanced ignition timing
   - Loose spark plug
   - Plug heat range too hot
   - Insufficient cooling

   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



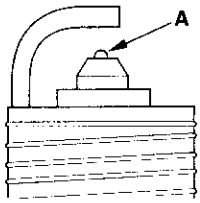
2. Do not adjust the gap of iridium tip plugs (A); replace the spark plug if the gap is out of specification.

   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.

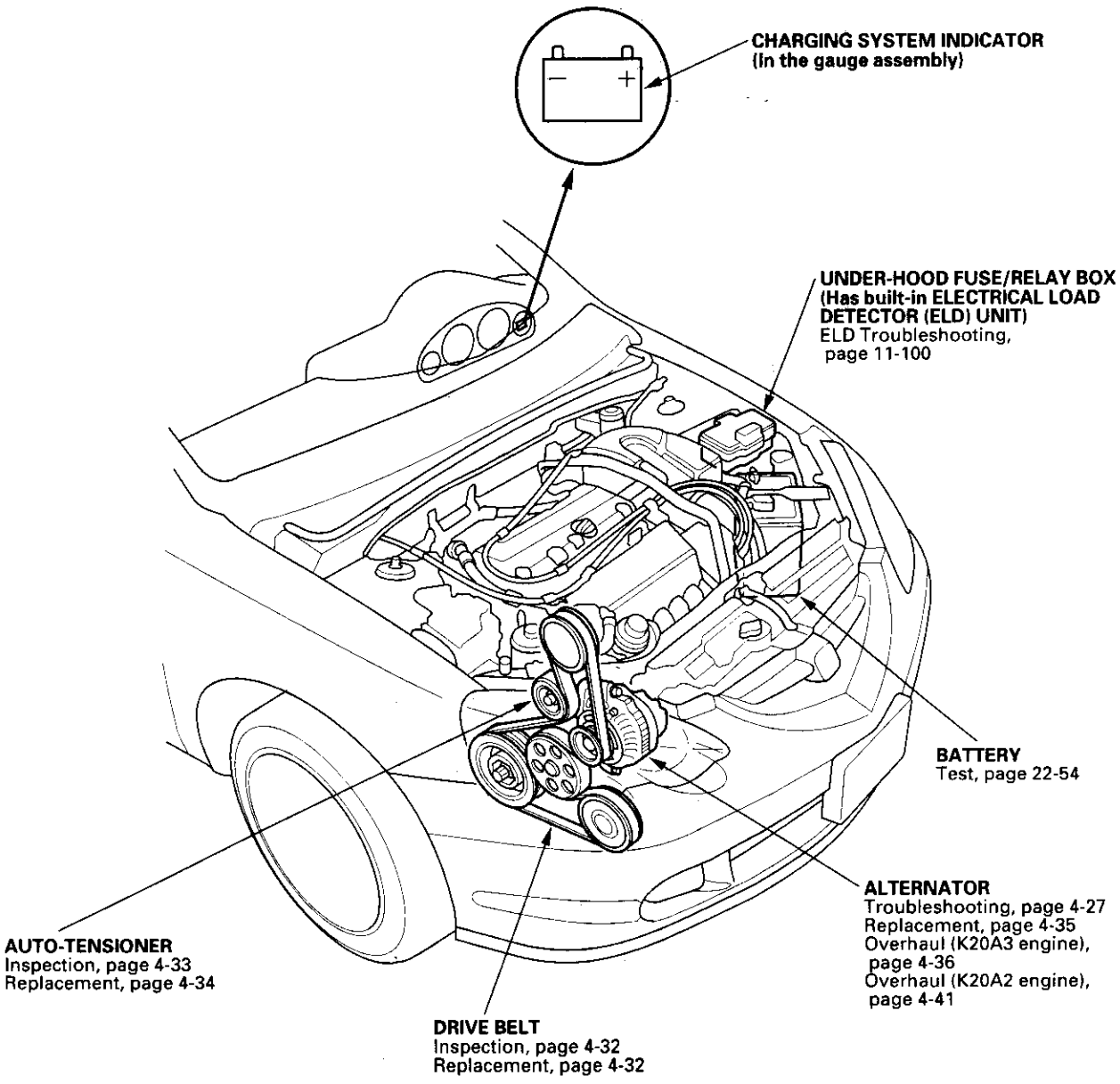
   Spark Plugs:
   K20A3 engine: IZFR6K11 (NGK)
   SKJ20DR-M11 (DENSO)
   K20A2 engine: IFR7G-11K (NGK)
   IFR7G-11KS (NGK)
   SK22PR-M11 (DENSO)
   SK22PR-M11S (DENSO)



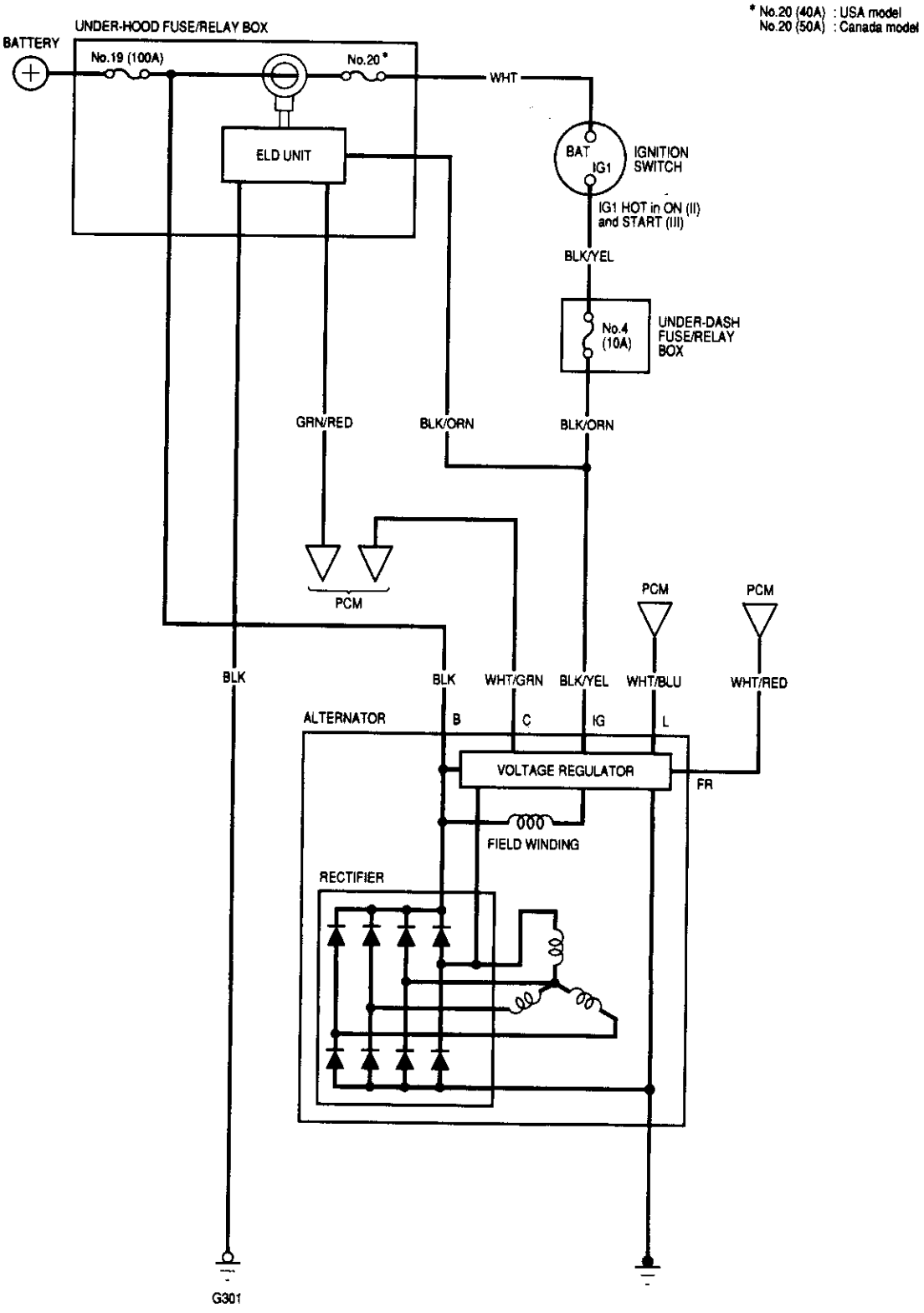
4. Apply a small quantity of anti-seize compound to the plug threads, and screw the plugs into the cylinder head finger-tight. Then torque them.

   Specified torque:
   IFR7G-11KS (NGK), SK22PR-M11S (DENSO):
   25N·m (25kgf·m, 18lbf·ft)
   Except IFR7G-11KS (NGK), SK22PR-M11S (DENSO):
   18N·m (1,8kgf·m, 1316lbf·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 the following items in the order listed below:

Battery (see page 22-54)
Charging system indicator
Alternator and regulator circuit
Alternator control system

Charging System Indicator Test (K20A3 engine)

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 22-175).

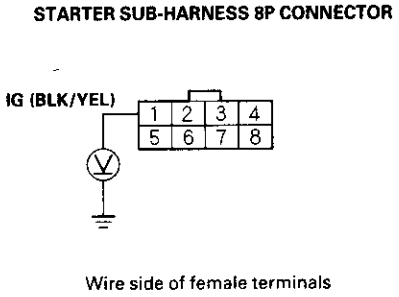
   Is the multiplex control system OK?

   YES – Go to step 5.

   NO – Check the multiplex control system as indicated by the DTC (see step 8 on page 22-175).■

5. Disconnect the starter subharness 8P connector.

6. Measure the voltage at the No. 1 terminal of the starter subharness 8P connector with the ignition switch ON (II).



   Is there battery voltage?

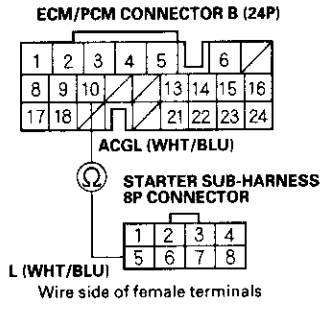
   YES – Go to step 7.

   NO – Check for a blown No.4 (10A) fuse in the under-dash fuse/relay box. If the fuse is OK, repair an 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)/ powertrain control module (PCM)/ connector B (24P).

9. Check continuity between the ECM/PCM connector terminal B10 and starter subharness 8P connector terminal No. 5.



   Is there continuity?

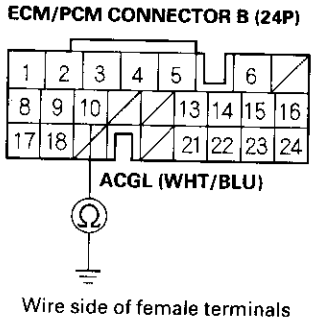
   YES – Go to step 10.

   NO – Repair an open in the wire between the alternator and the ECM/PCM.■

(cont'd)

Charging Circuit Troubleshooting (cont'd)

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



Is there continuity?

YES – Repair a short in the wire between the alternator and the ECM/PCM. ■

NO – Go to alternator and regulator test.

Charging System Indicator Test (K20A2 engine)

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. ■

   NO – Go to step 3.

3. Turn the ignition switch OFF.

4. Troubleshoot the multiplex control system (see page 22-175).

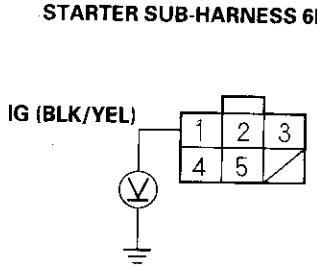
   Is the multiplex control system OK?

   YES – Go to step 5.

   NO – Check the multiplex control system as indicated by the DTC (see step 8 on page 22-175). ■

5. Disconnect the starter subharness 6P connector.

6. Measure the voltage at the No. 1 terminal of the starter subharness 6P connector with the ignition switch ON (II).



Is there battery voltage?

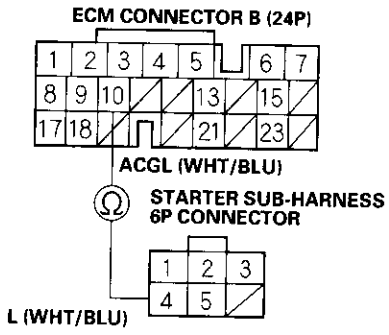
YES – Go to step 7.

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

7. Turn the ignition switch OFF.

8. Disconnect ECM connector B (24P).

9. Check continuity between the ECM connector terminal B10 and starter subharness 6P connector terminal No. 4.

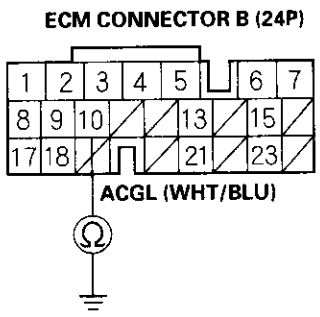


Is there continuity?

YES – Go to step 10.

NO – Repair an 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

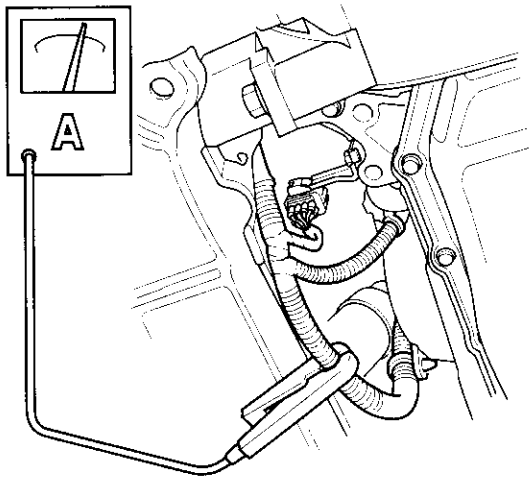
Is there continuity?

YES – Repair a short in the wire between the alternator and the ECM.■

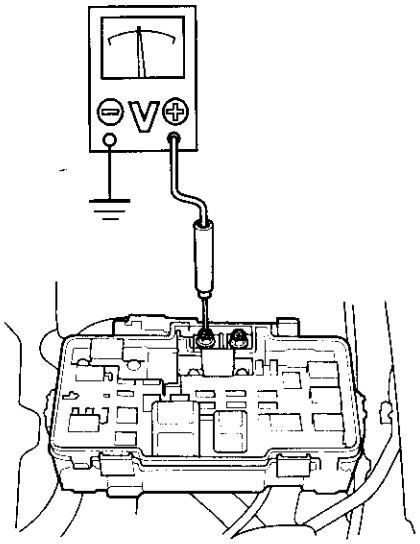
NO – Go to alternator and regulator test.

Alternator and Regulator Circuit Test

1. Be sure the battery is sufficiently charged (see page 22-54).
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.



6. Start the engine. Hold the engine at 3,000 rpm with no load (in Park or 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 the alternator components:
   - K20A3 engine (see page 4-36).■
   - K20A2 engine (see page 4-41).■

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.■

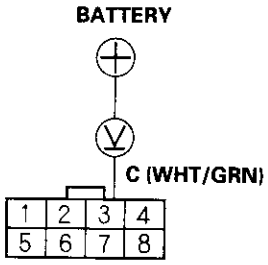
   NO – Repair the alternator components:
   - K20A3 engine (see page 4-36).■
   - K20A2 engine (see page 4-41).■

(cont'd)

Charging Circuit Troubleshooting (cont'd)

Alternator Control System Test (K20A3 engine)

1. Check for proper operation of the ELD by checking the MIL (see page 11-3).
2. Disconnect the starter subharness 8P connector.
3. Start the engine, and turn the headlights (high beam) ON.
4. Measure voltage between the starter subharness 8P connector terminal No. 3 and the positive terminal of the battery.



STARTER SUB-HARNESS 8P CONNECTOR

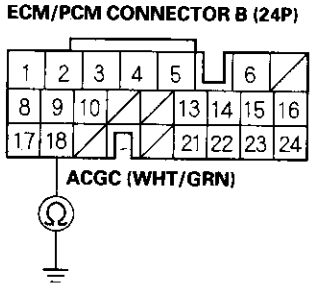
Wire side of female terminals

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/PCM connector B (24P).
7. Check for continuity between ECM/PCM connector terminal B18 and body ground.



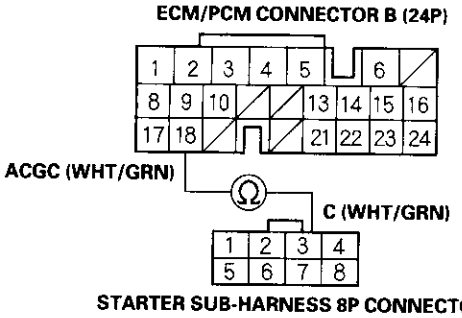
Wire side of female terminals

Is there continuity?

YES – Repair a short in the wire between the alternator and ECM/PCM. ■

NO – Substitute a known-good ECM/PCM, and recheck (see page 11-6).
If prescribed voltage is now available, replace the original ECM/PCM. ■

8. Turn the headlights and ignition switch OFF.
9. Disconnect ECM/PCM connector B (24P).
10. Check for continuity between ECM/PCM connector terminal B18 and starter subharness 8P connector terminal No. 3.



STARTER SUB-HARNESS 8P CONNECTOR

Wire side of female terminals

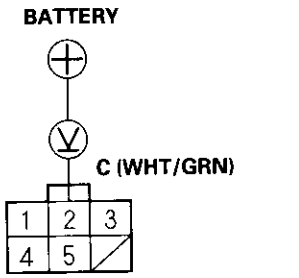
Is there continuity?

YES – Repair the alternator (see page 4-36). ■

NO – Repair an open in the wire between the alternator and ECM/PCM. ■

Alternator Control System Test (K20A2 engine)

1. Check for proper operation of the ELD by checking the MIL (see page 11-3).
2. Disconnect the starter subharness 6P connector.
3. Start the engine, and turn the headlights (high beam) ON.
4. Measure voltage between the starter subharness 6P connector terminal No. 2 and the positive terminal of the battery.

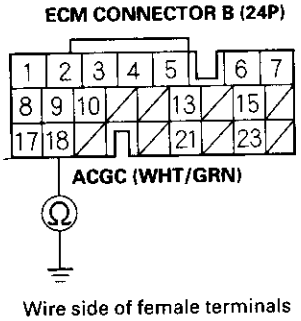


Is there 1 V or less?

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.

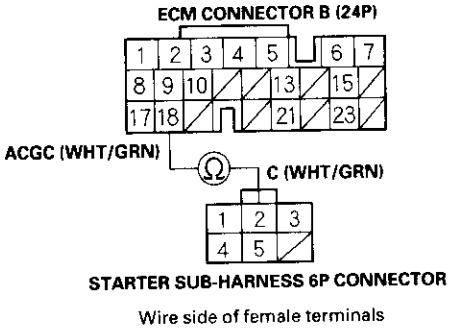


Is there continuity?

YES – Repair a short in the wire between the alternator and ECM. ■

NO – 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 starter subharness 6P connector terminal No. 2.



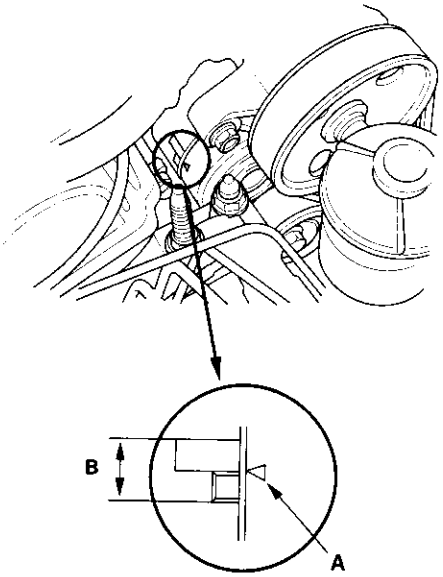
Is there continuity?

YES – Repair the alternator (see page 4-41). ■

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

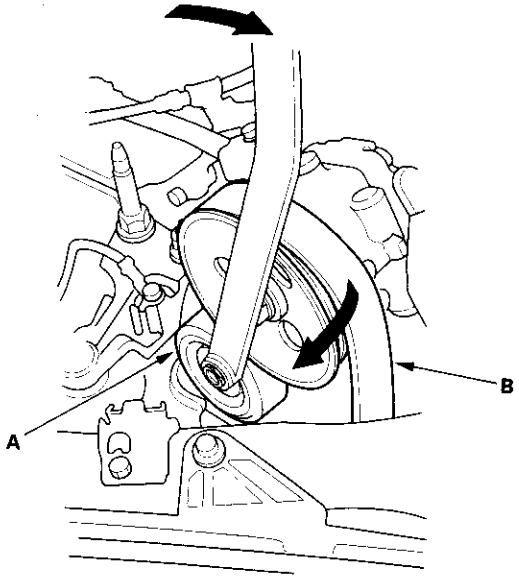
Drive Belt Inspection

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 4-32).



Drive Belt Replacement

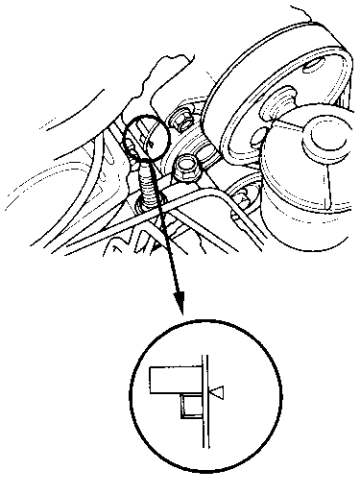
1. Unclip the power steering reservoir.
2. Move the auto-tensioner (A) to relieve tension from the drive belt (B), and remove the drive belt.



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

Drive Belt Auto-tensioner Inspection

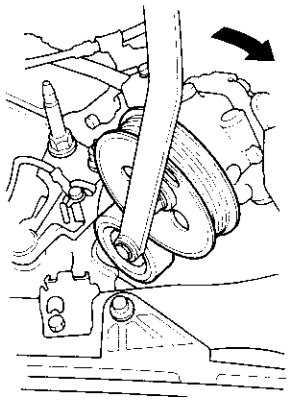
1. Check whether there is a change in the position of the auto-tensioner indicator before starting the engine and after starting the engine. If there is a change in the position, replace the auto-tensioner.



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 4-32).

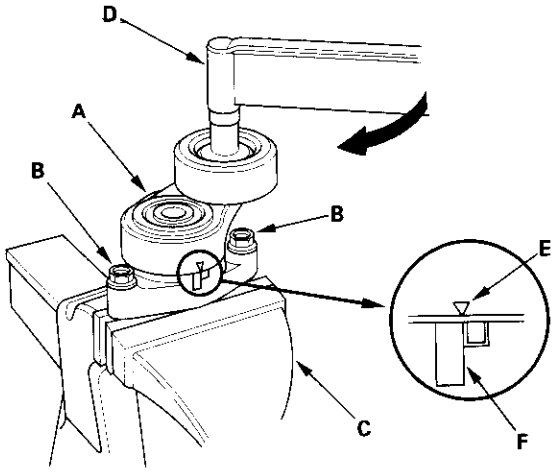
4. Move the auto-tensioner within its limit with the belt tension release tool in the direction shown. Check that the tensioner moves smoothly and without any abnormal noise. If the tensioner does not move smoothly or there is abnormal noise, replace the auto-tensioner.



5. Remove the auto-tensioner (see page 4-34).

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.

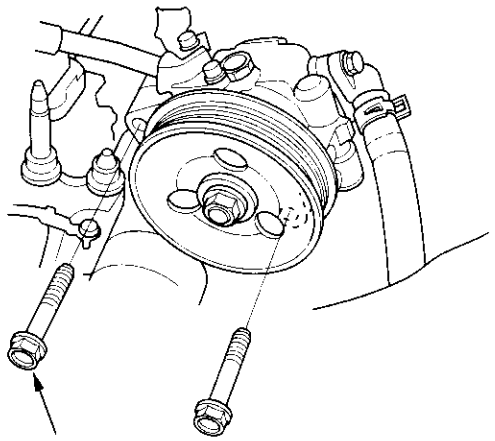
9. Align the indicator (E) on the tensioner arm with center mark (F) on the tensioner base by using the torque wrench, and measure the torque. If the torque value is out of specification, replace the auto-tensioner.

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

   26.5 – 36.3 N·m (2.7 – 3.7 kg·m, 19.5 – 26.8 lbf·ft)

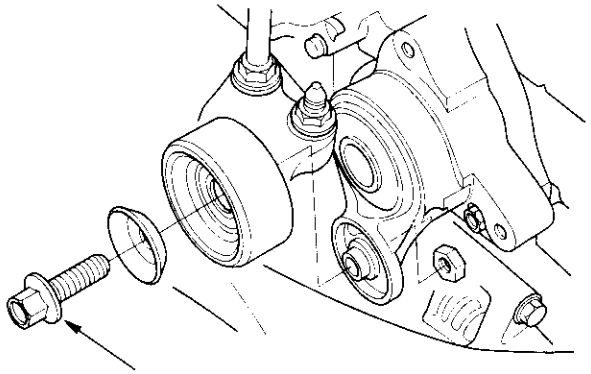
Drive Belt Auto-tensioner Replacement

1. Remove the drive belt (see page 4-32).
2. Remove the power steering (P/S) pump without disconnecting the P/S hoses.



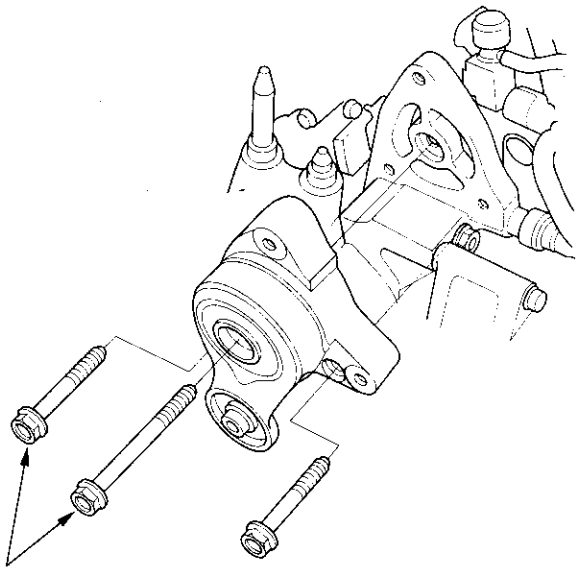
8 x 1.25 mm
22 N·m (2.2 kgf·m, 16 lbf·ft)

3. Remove the tensioner pulley.



55 N·m (5.6 kgf·m, 41 lbf·ft)

4. Remove the auto-tensioner.

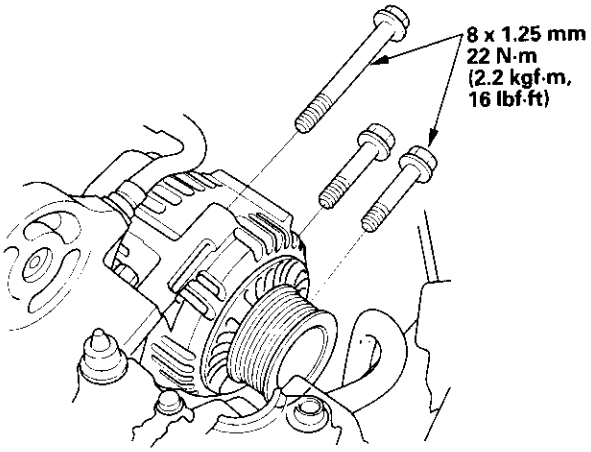


8 x 1.25 mm
22 N·m (2.2 kgf·m, 16 lbf·ft)

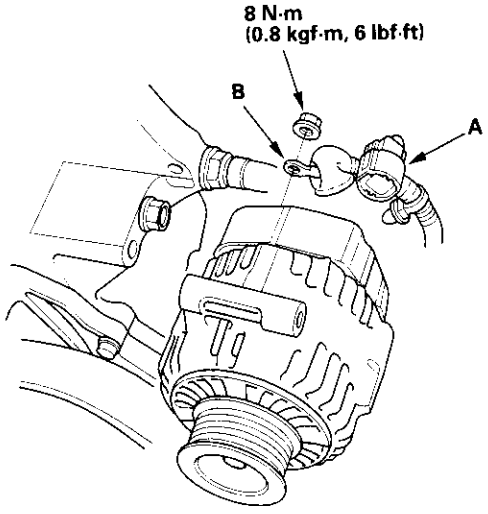
5. Install in the reverse order of removal.

Alternator Replacement

1. Make sure you have the anti-theft code the radio, then write down the frequencies for radio's preset buttons.
2. Disconnect the negative cable, from the battery first, disconnect the positive cable.
3. Remove the drive belt (see page 4-32).
4. Remove the auto-tensioner (see page 4-34).
5. Remove the three bolts securing the alternator.



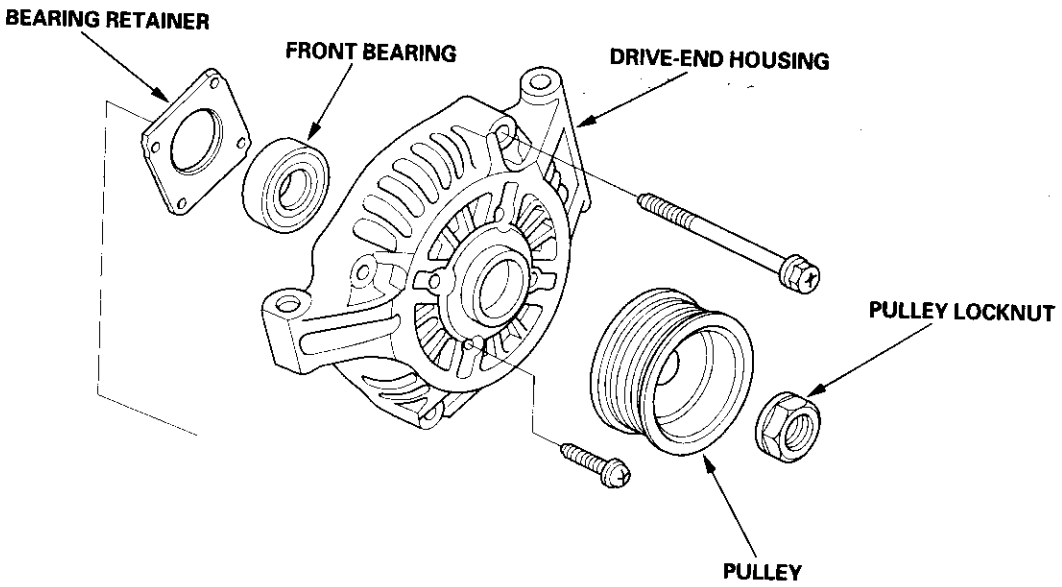
6. Disconnect the alternator connector (A) and BLK wire (B) from the alternator.

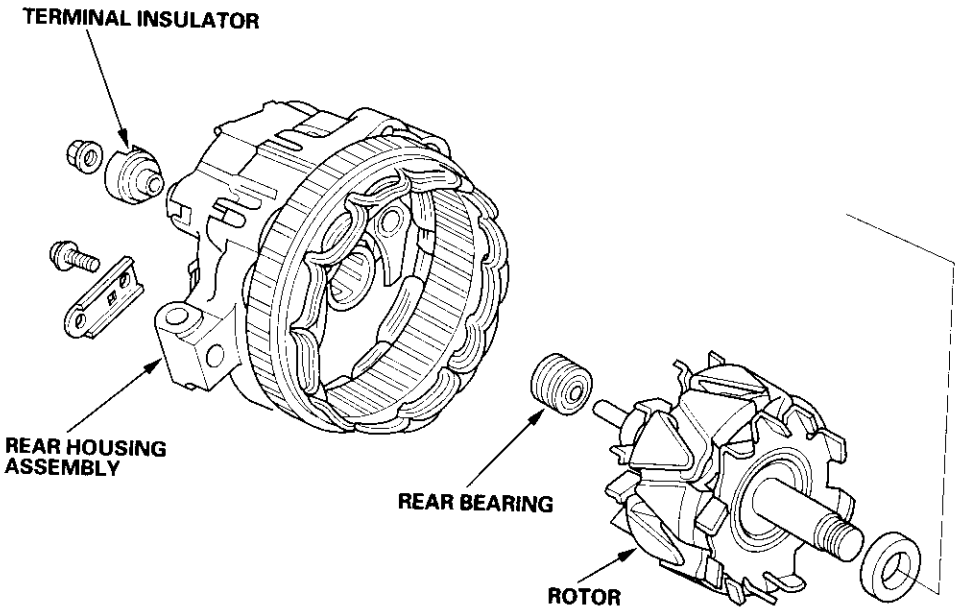


7. Remove the alternator.
8. Install the alternator and drive belt in the reverse order of removal.
9. Connect the positive cable and negative cable to the battery.
10. Enter the anti-theft code for the radio, then enter the customer's radio station presets.
11. Set the clock.
12. Perform the engine control module (ECM)/ powertrain control (PCM) idle learn procedure (see page 11-149), and the power window control unit reset procedure (see page 22-139).

Alternator Overhaul

K20A3 engine
Exploded View

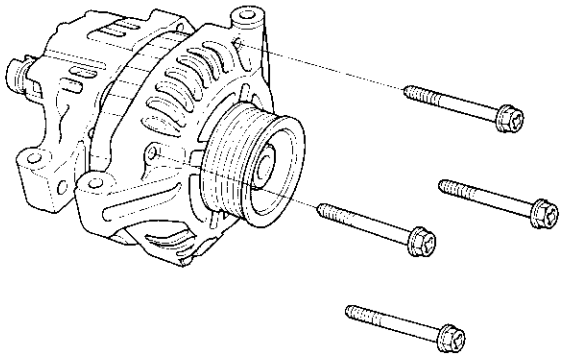




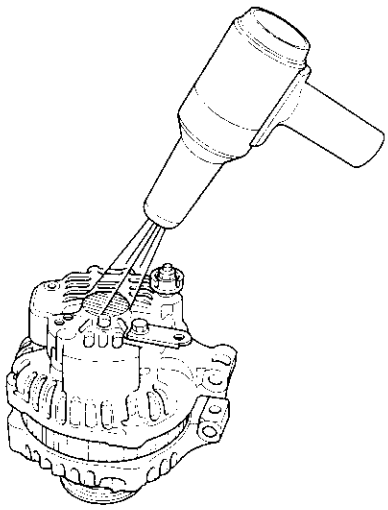
Special Tools Required
- Driver 07749-0010000
- Attachment, 52 x 55 mm 07746-0010400

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

1. Test the alternator and regulator before you remove them (see page 4-27).
2. Remove the alternator (see page 4-35).
3. Remove the four through bolts.

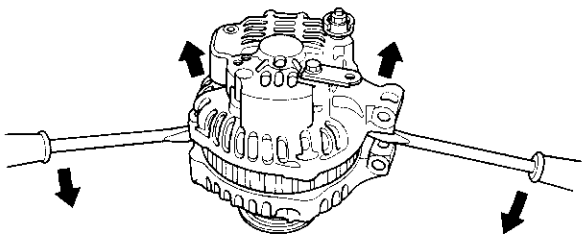


4. Heat the rear bearing seat with a 1,000 W hair drier for about 5 minutes (129 – 140°F, 50 – 60°C).

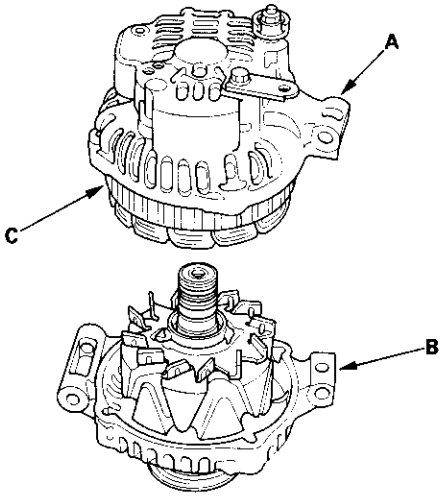


5. Separate the rear housing from the drive-end housing by inserting a flat tip screwdriver into the openings and prying them apart.

   NOTE: Be careful not to damage the stator with the tip of the screwdriver.



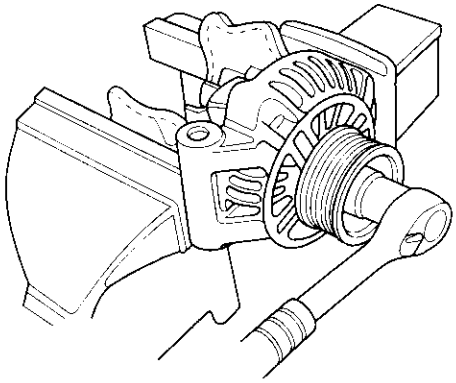
6. Separate the rear housing (A) and drive-end housing (B) with the stator (C) attached to the rear housing.



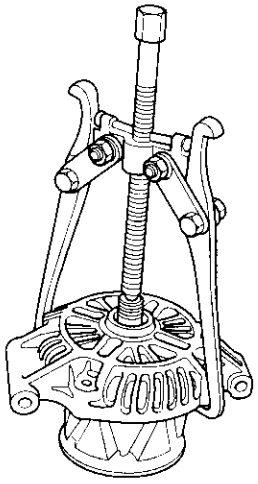
(cont'd)

Alternator Overhaul (cont'd)

7. If you are not replacing the front bearing and/or rear bearing, go to step 15. Clamp the rotor in a soft-jawed vise, then remove the pulley locknut.



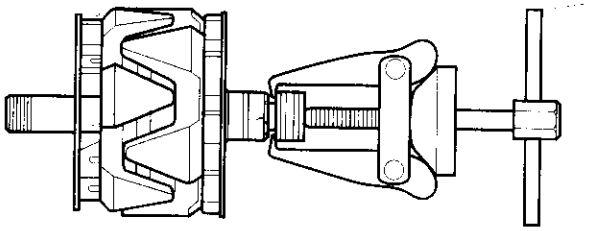
8. Remove the rotor using a puller as shown.



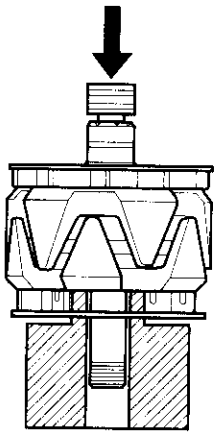
9. Inspect the rotor shaft for scoring, and inspect the bearing journal surface in the drive-end housing for seizure marks.

   - If either the rotor or drive-end housing is damaged, replace the alternator.
   - If both the rotor and the drive-end housing are OK, go to step 10.

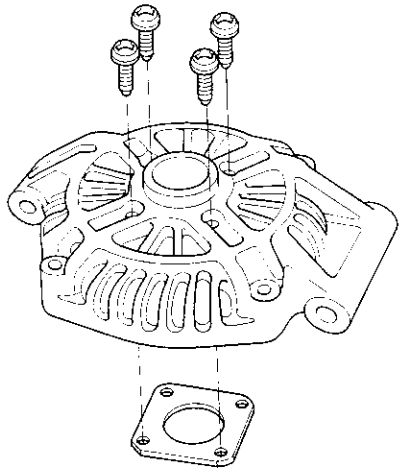
10. Remove the rear bearing using the puller as shown.



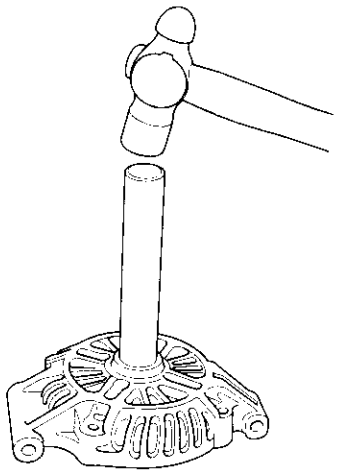
11. Use a hand press to install the new rear bearing. Apply pressure only on the inner race to avoid damaging the bearing.



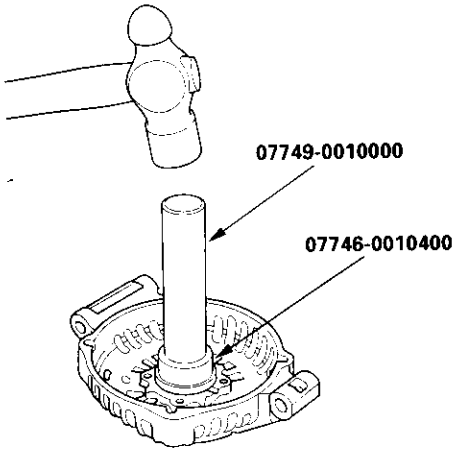
12. Remove the front bearing retainer plate.



13. Support the drive-end housing in a vise, and drive out the front bearing with a brass drift and hammer.



14. With a hammer and the special tools, install a new front bearing in the drive-end housing.

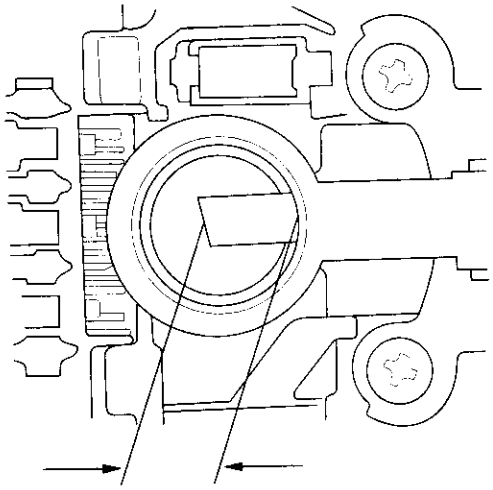


Alternator Brush Inspection

15. Measure the length of both brushes with a vernier caliper.

    - If either brush is shorter than the service limit, replace the rear housing assembly.
    - If brush length is OK, go to step 16.

Alternator Brush Length:
Standard (New): 19.0 mm (0.75 in.)
Service Limit: 5.0 mm (0.2 in.)



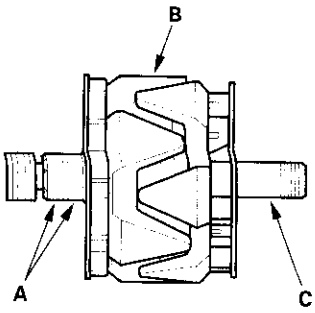
(cont'd)

Alternator Overhaul (cont'd)

Rotor Slip Ring Test

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

    - If there is continuity, go to step 17.
    - If there is no continuity, replace the rotor assembly.



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

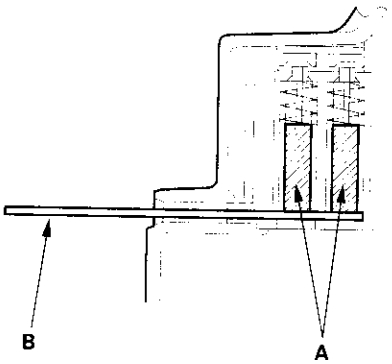
    - If there is no continuity, replace the rear housing assembly, go to step 18.
    - If there is continuity, replace the rotor assembly.

Alternator Reassembly

18. If you removed the pulley, put the rotor in the drive-end housing, then tighten its locknut to 111 N·m (11.3 kgf·m, 81.7 lbf·ft).

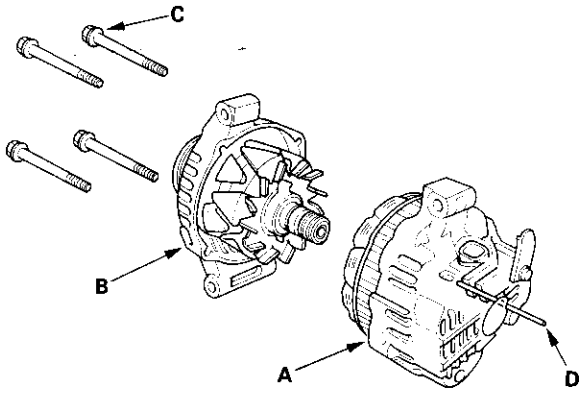
19. Remove any grease or any oil from the slip rings.

20. Push the brushes (A) in, then insert a pin or drill bit (B) (about 1.8 mm (0.77 in.) diameter) to hold them there.



21. Heat the rear bearing seat with a 1,000 W hair drier for about 5 minutes (129 – 140°F, 50 – 60°C).

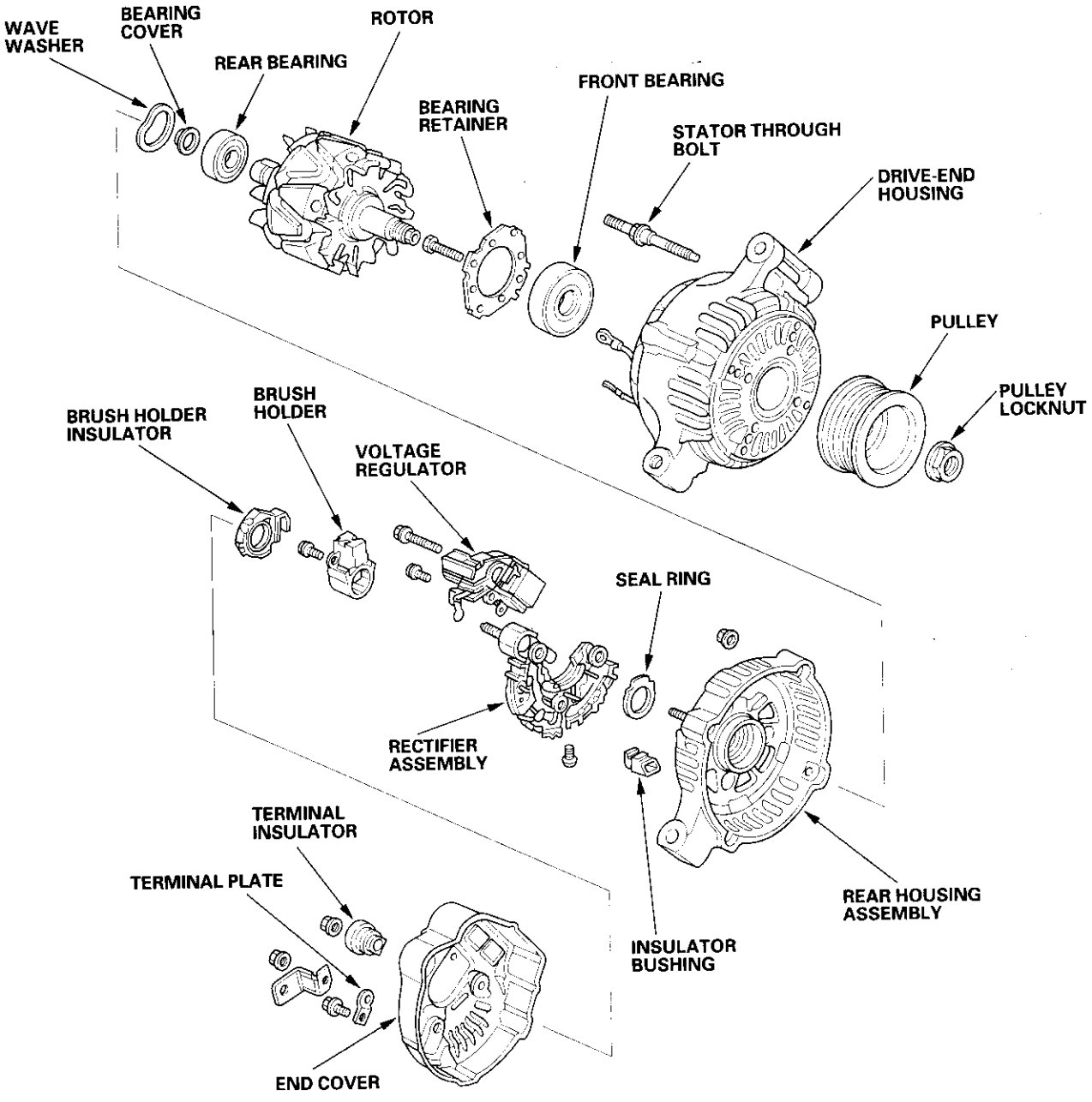
22. Put the rear housing assembly (A) and drive-end housing/rotor assembly (B) together, tighten the four through bolts (C) and pull out the pin (D).



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

24. Install the alternator and drive belt (see page 4-35).

K20A2 engine
Exploded View



(cont'd)

Alternator Overhaul (cont'd)

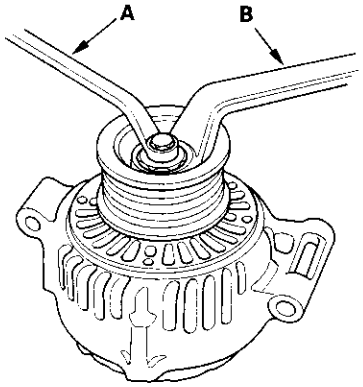
Special Tools Required
- Driver 07749-0010000
- Attachment, 52 x 55 mm 07746-0010400

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

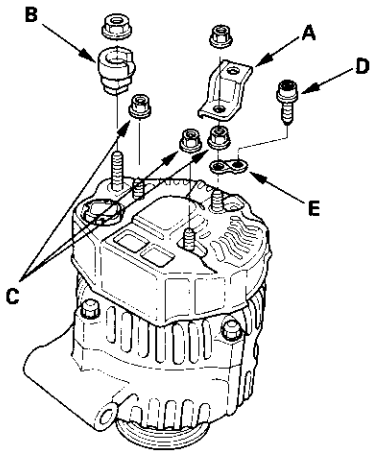
1. Test the alternator and regulator before you remove them (see step 1 on page 4-28).

2. Remove the alternator (see page 4-35).

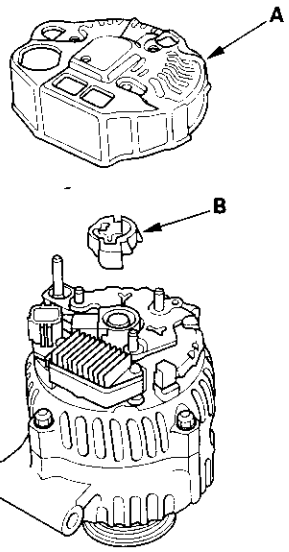
3. If the front bearing needs replacing, remove the pulley locknut with a 10 mm wrench (A) and a 22 mm wrench (B). If necessary, use an impact wrench.



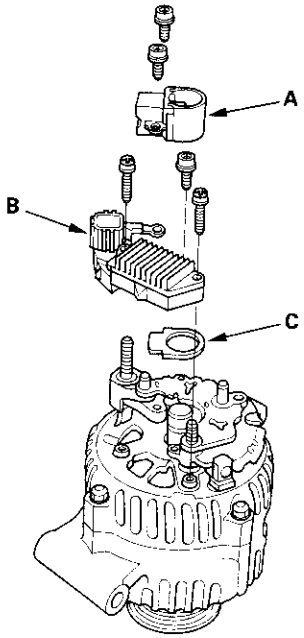
4. Remove the harness bracket (A), insulator (B), three flange nuts (C) and the screw (D), then remove the plate terminal (E).



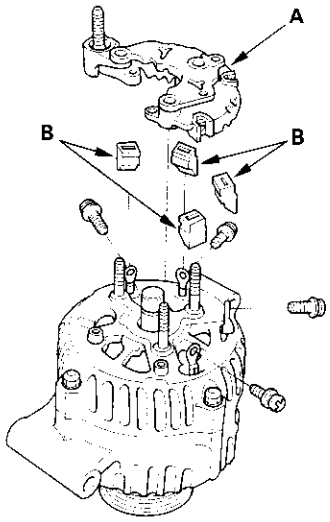
5. Remove the end cover (A) and dust seal (B).



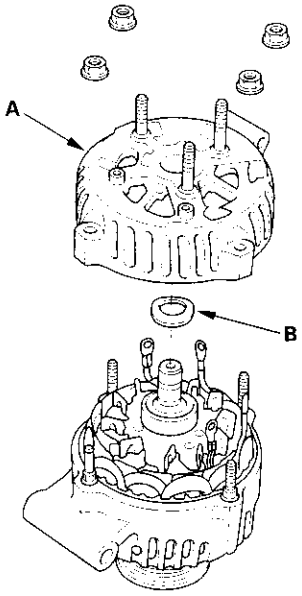
6. Remove the brush holder (A), voltage regulator (B) and the rubber seal(C).



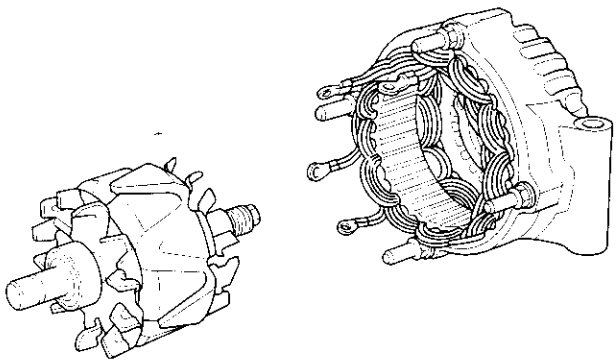
7. Remove the four screws, then remove the rectifier (A) and four insulators (B).



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



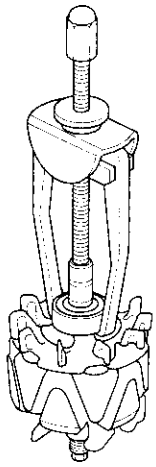
9. If you are not replacing the front bearing and/or rear bearing, go to step 16. Remove the rotor from the stator drive end housing.



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.

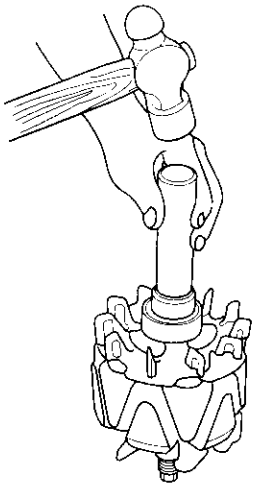
11. Remove the rear bearing using a puller as shown.



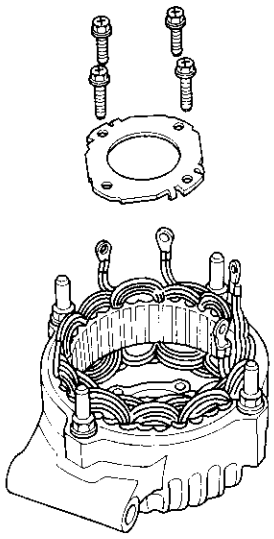
(cont'd)

Alternator Overhaul (cont'd)

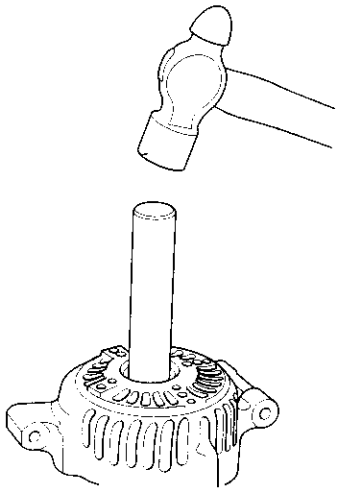
12. With a hammer and commercially available tools shown, install a new rear bearing on the rotor shaft.



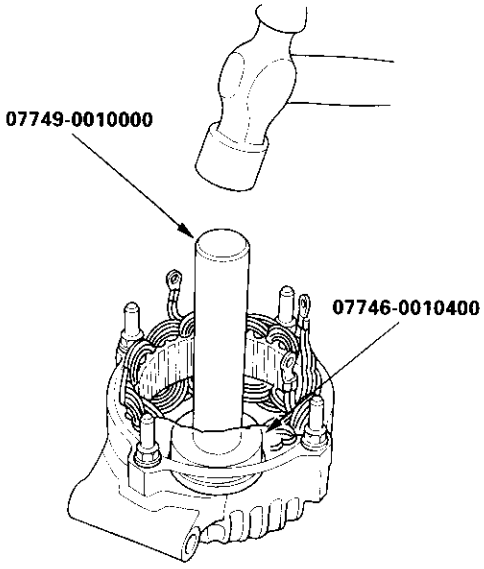
13. Remove the front bearing retainer plate.



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



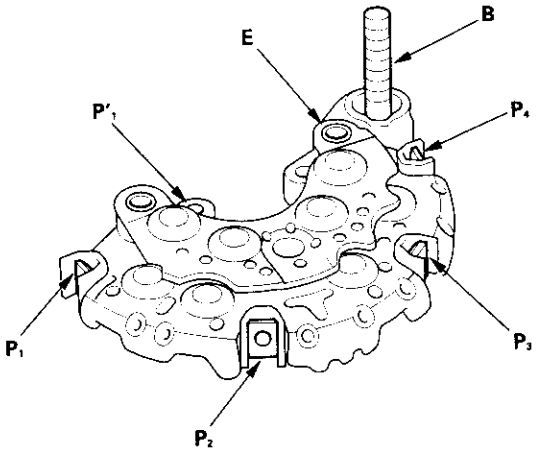
15. With a hammer and the special tools, install a new front bearing in the stator housing.

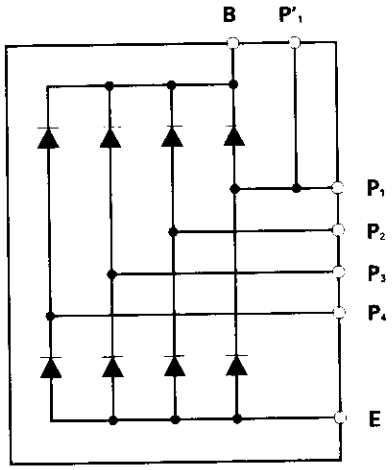


Rectifier Test

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.



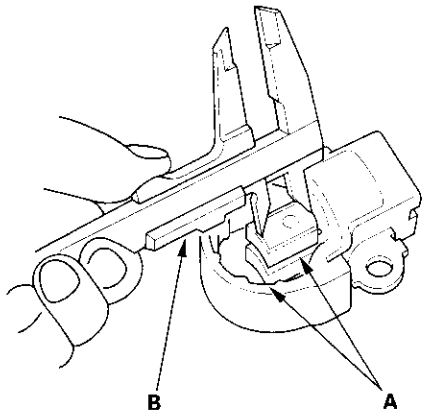


Alternator Brush Inspection

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.

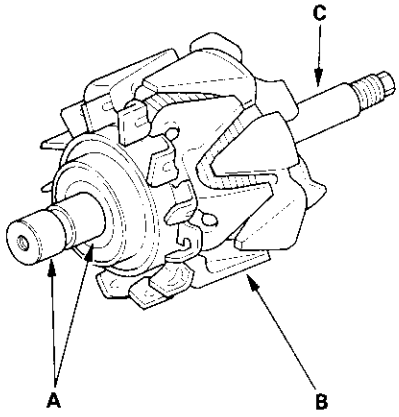
Alternator Brush Length:
Standard (New): 10.5 mm (0.41 in.)
Service Limit: 1.5 mm (0.06 in.)



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.

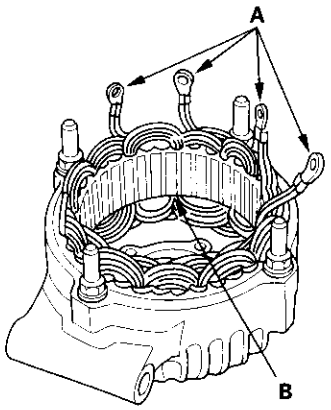
(cont'd)

Alternator Overhaul (cont'd)

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).

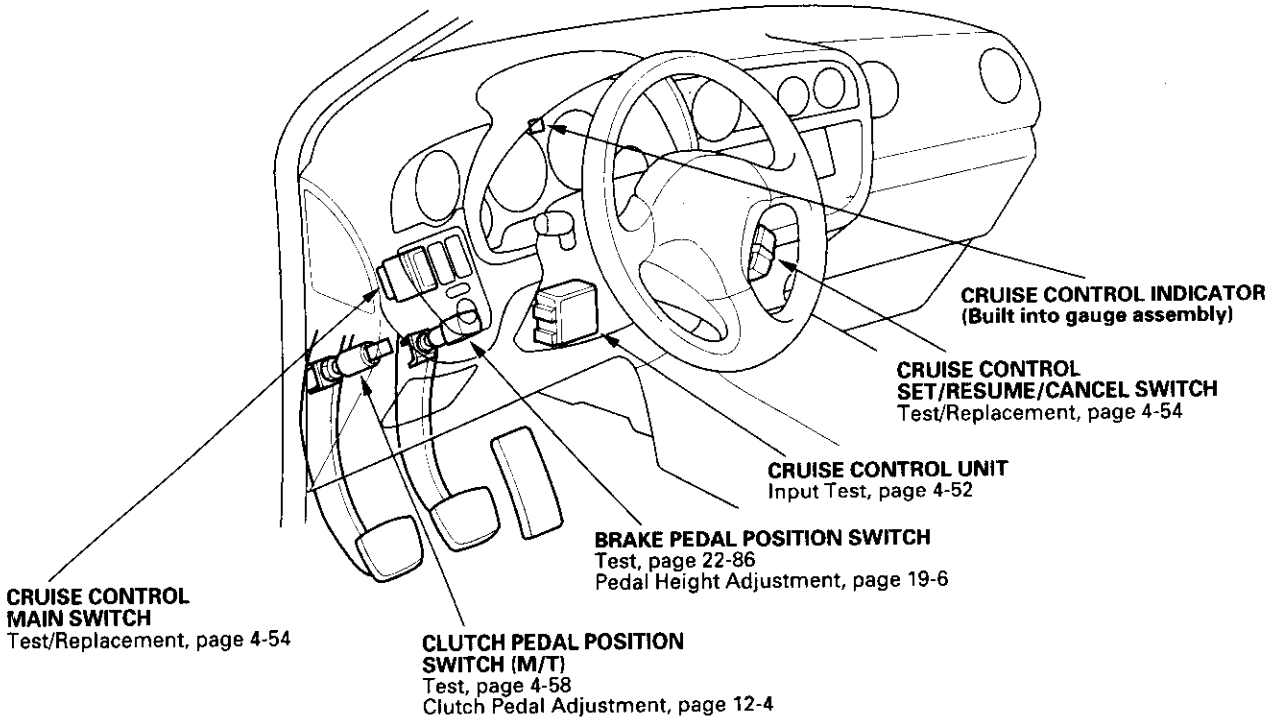
    - If there is no continuity, go to step 22.
    - If there is continuity, replace the alternator.

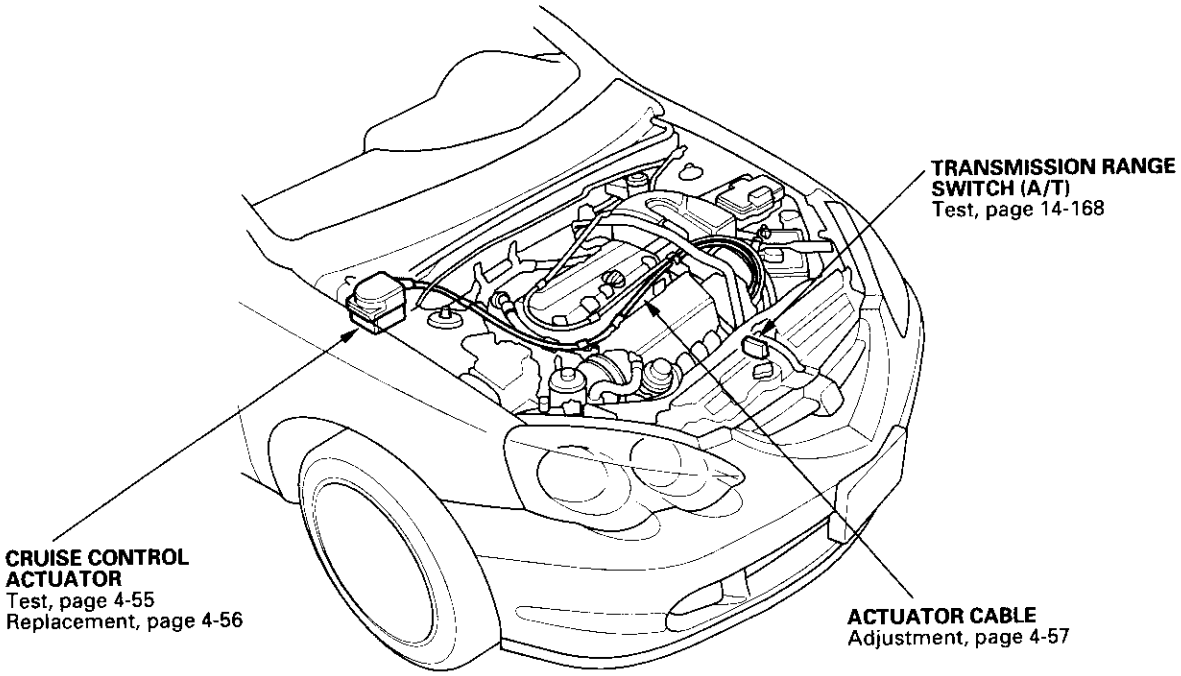
22. Assemble the alternator in the reverse order of disassembly, and note these items:

    - 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.

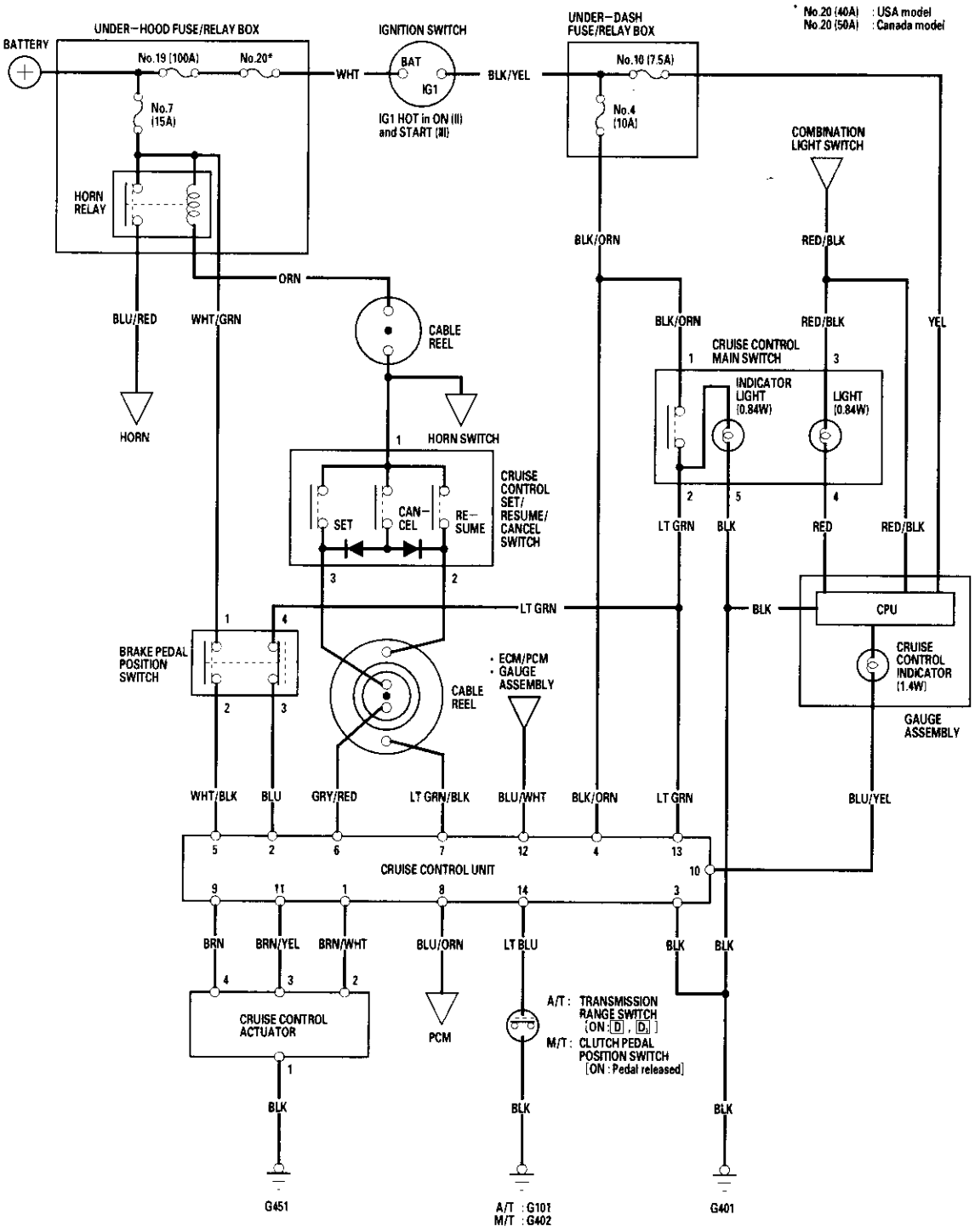
Cruise Control

Component Location Index





Circuit Diagram



Symptom Troubleshooting Index

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

Symptom	Diagnostic procedure	Also check for
Cruise control cannot be set	1. Check main switch (see page 4-54) 2. Check SET/RESUME/CANCEL switch (see page 4-54) 3. Test brake pedal position switch and check its adjustment (see page 19-6) 4. Test clutch pedal position switch (see page 4-58) and check its adjustment (M/T) (see page 12-4) 5. Check transmission range switch (A/T) (see page 14-168) 6. Check cruise control unit (see page 4-52)	• Poor ground: G101(A/T), G402(M/T), G401 • 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	Check cruise control unit (see page 4-52)	• Poor ground: G401 • 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 22-67) 2. Check cruise control actuator (see page 4-55) 3. Check cruise control unit (see page 4-52)	
Excessive overshooting or undershooting when trying to set speed	1. Check cruise control actuator (see page 4-55) 2. Check vehicle speed sensor (VSS) (see page 22-67) 3. Check cruise control unit (see page 4-52)	
Speed fluctuation on a flat road with cruise control set	1. Check vehicle speed sensor (VSS) (see page 22-67) 2. Check cruise control actuator (see page 4-55) 3. Check cruise control unit (see page 4-52)	
Vehicle does not decelerate or accelerate accordingly when SET/RESUME/CANCEL button is pushed	1. Check SET/RESUME/CANCEL switch (see page 4-54) 2. Check cruise control unit (see page 4-52)	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 (M/T)	1. Test clutch pedal position switch and check its adjustment (see page 4-58) 2. Check cruise control unit (see page 4-52)	Short to ground in the LT BLU wire
Set speed does not cancel when shift lever is moved to Neutral position (A/T)	1. Check transmission range switch (see page 14-168) 2. Check cruise control unit (see page 4-52)	Short to ground in the LT BLU wire
Set speed does not cancel when brake pedal is pushed	1. Test brake pedal position switch and check its adjustment (see page 19-6) 2. Test cruise control unit (see page 4-52)	Open circuit, loose or disconnected terminals: WHT/BLK

(cont'd)

Symptom Troubleshooting Index (cont'd)

Symptom	Diagnostic procedure	Also check for
Set speed does not cancel when main switch is pushed OFF	1. Check main switch (see page 4-54) 2. Check cruise control unit (see page 4-52)	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 4-54) 2. Check cruise control unit (see page 4-52)	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 4-54) 2. Check cruise control unit (see page 4-52)	Open circuit, loose or disconnected terminals: LT GRN/BLK
The transmission shifts down slower than normal when going up a hill with the cruise control on (A/T)	1. Troubleshoot the cruise control communication circuit (see page 4-51)	

Cruise Control Communication Circuit Troubleshooting (A/T)

1. Start the engine.

2. Turn on the cruise control main switch, then drive the vehicle to speeds over 25 mph (40 km/h) with the cruise control.

   Does the cruise control operate?

   YES – Go to step 3.

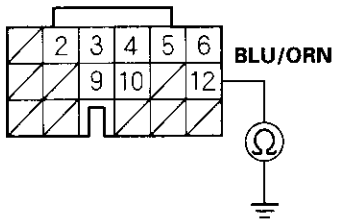
   NO – Check the cruise control unit (see page 4-52) or cruise control actuator. ■

3. Turn the ignition switch OFF.

4. Disconnect PCM connector D (17P) and cruise control unit 14P connector.

5. Check for continuity between PCM connector terminal D12 and body ground.

PCM CONNECTOR D (17P)



Wire side of female terminals

Is there continuity?

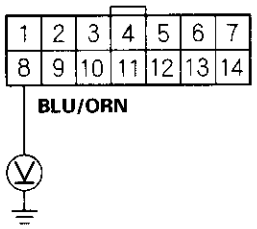
YES – Repair a short to ground in the wire between PCM connector terminal D12 and the cruise control unit 14P connector terminal No. 8. ■

NO – Go to step 6.

6. Reconnect PCM connector D (17P) and the cruise control unit 14P connector.

7. Connect a voltmeter between cruise control unit 14P connector terminal No. 8 and body ground. Test-drive the vehicle at speeds over 25 mph (40 km/h) with the cruise control set, and watch the voltmeter.

CRUISE CONTROL UNIT 14P CONNECTOR



Wire side of female terminals

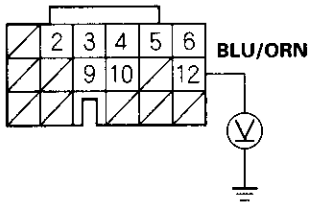
Is there about 1 V?

YES – Go to step 8.

NO – Replace the cruise control unit. ■

8. Connect a voltmeter between PCM connector terminal D12 and body ground. Drive the vehicle at speeds over 25 mph (40 km/h) with the cruise control set, and watch the voltmeter.

PCM CONNECTOR D (17P)



Wire side of female terminals

Is there about 1 V?

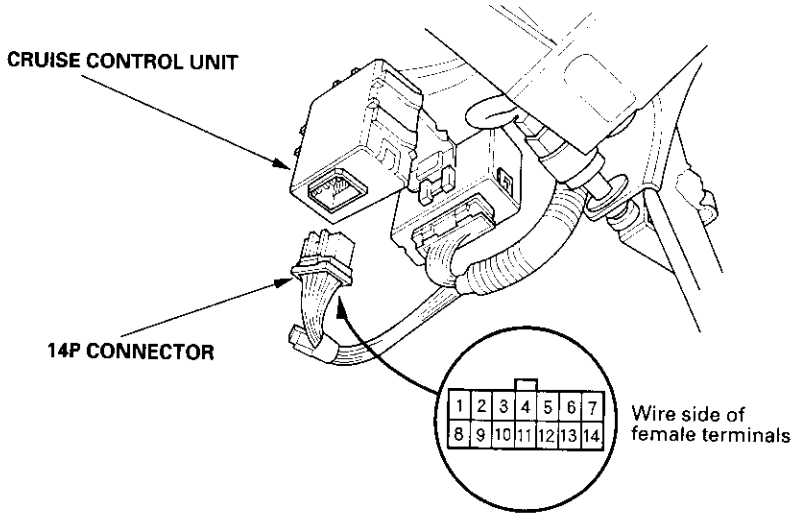
YES – Check for loose connectors. If necessary replace the PCM and recheck (see page 11-4). ■

NO – Repair an open in the wire between PCM connector terminal D12 and the control unit 14P connector terminal No. 8. ■

Cruise Control Unit Input Test

SRS components are located in this area. Review the SRS component locations (see page 23-11) and precautions and procedures (see page 23-11) in the SRS section before performing repairs or service.

1. Disconnect the 14P connector from the cruise 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.

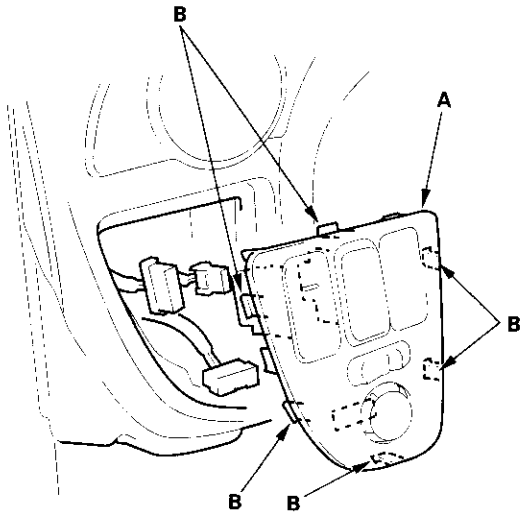
Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
1	BRN/WHT	Connect battery power	Check the operation of the magnetic clutch: Clutch should click and output link should be locked.	• Faulty actuator • Poor ground (G451) • An open in the wire
2	BLU	Ignition switch 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
3	BLK	Under all conditions	Check for continuity to ground: There should be continuity.	• Poor ground (G401) • 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
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 • 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 ECM/PCM • An open in the wire
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	A/T: Shift lever in D or D3 M/T: Clutch pedal released	Check for continuity to ground: There should be continuity. NOTE: There should be no continuity when the clutch pedal is pressed or when the shift lever is in other positions.	• Faulty transmission range switch • Faulty clutch pedal position switch • Poor ground (M/T: G402, A/T: G101) • An open in the wire
8	BLU/ORN	Reconnect the cruise control unit 14P connector, start the engine, turn the main switch ON and drive the vehicle to speeds over 25 mph (40 km/ h) with the cruise control set.	Check for voltage to ground: There should be about 1V	• Faulty cruise control unit • Short to ground

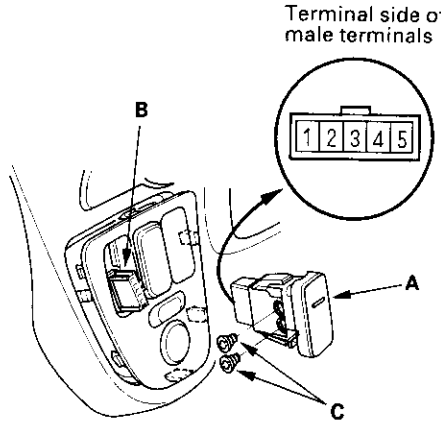
4. If any test indicates a problem, find and correct the cause, then recheck the system. If all the input tests prove OK, the cruise control unit must be faulty; replace it.

Main Switch Test/Replacement

1. Gently pry up on the driver's switch panel (A) to release the hooks (B), then pull out the panel.



2. Release the clips, and push the main switch (A) out of the panel, then disconnect the 5P connector (B) from the main switch.

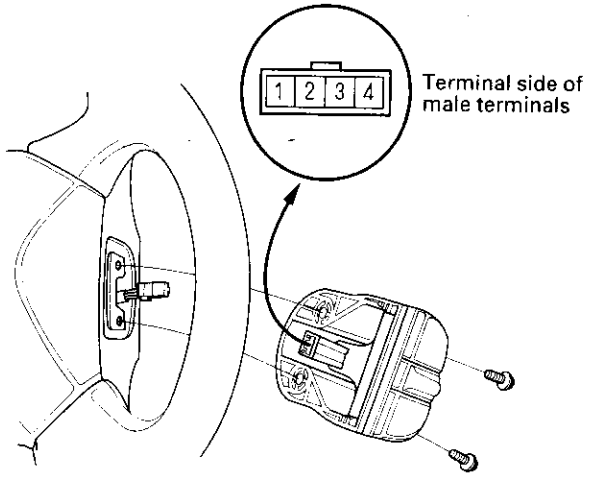


3. Check for continuity between the terminals in each switch position according to the table. If the continuity is not as specified, replace the illumination bulbs (C) or the switch.

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

Set/Resume/Cancel Switch Test/ Replacement

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



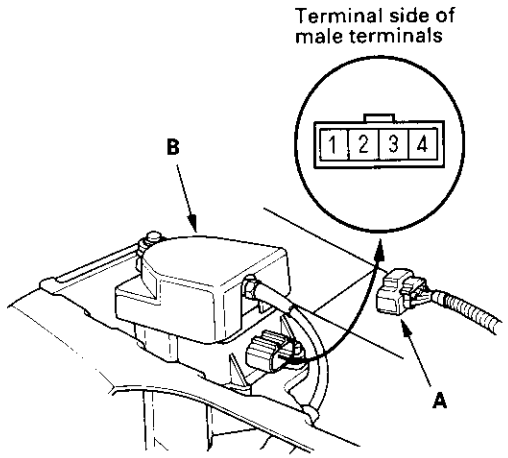
2. Check for continuity between the terminals in switch position according to the table.

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

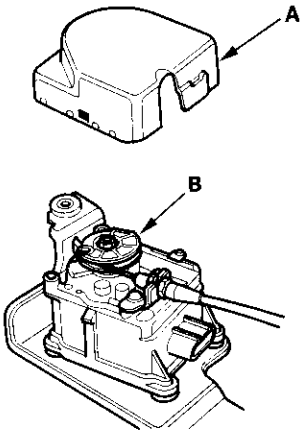
Position \ Terminal	1		2	3
SET (ON)	○			○
RESUME (ON)	○		○	
CANCEL (ON)	○	▸		○
		▸	○	

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.



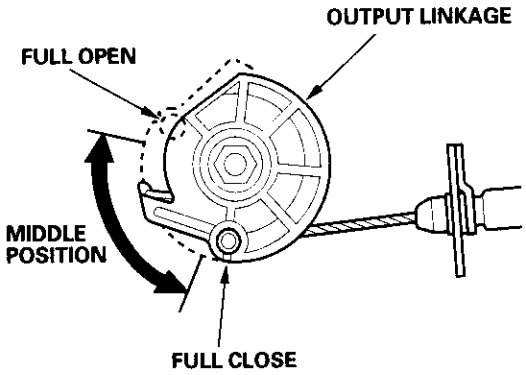
3. Connect the battery power to the No. 2 terminal and ground to the No. 1 terminal.

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.

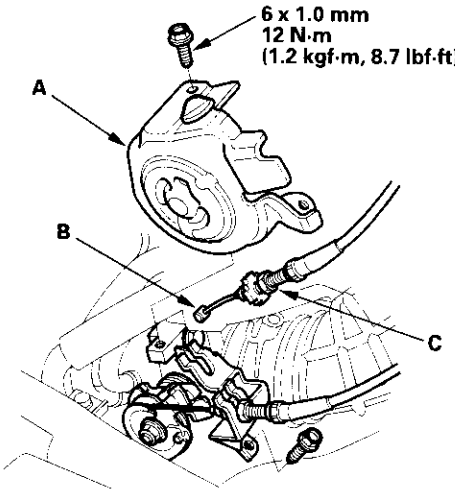
6. Check the operation of the actuator motor in each output linkage position according to the table. You should be able to hear the motor.

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.

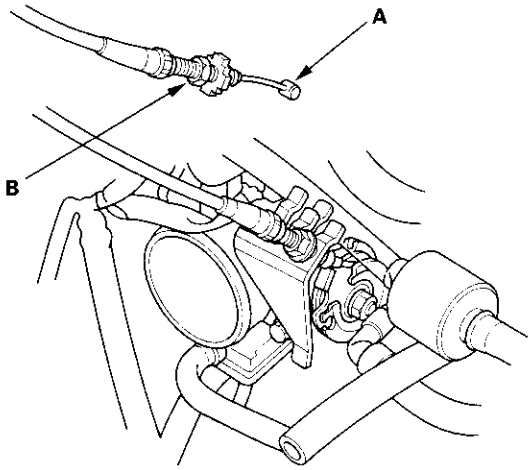


Cruise Control Actuator/Cable Replacement

1. K20A3 engine: Remove the throttle cover (A), fully open the cruise control link by hand, then remove the cruise control cable (B) from link. Loosen the locknut (C), and remove the cable from the bracket.

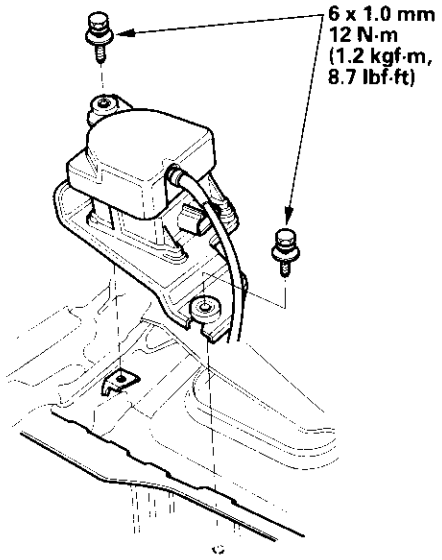


2. K20A2 engine: Fully open the cruise control link by hand, then remove the cruise control cable (A) from link. Loosen the locknut (B), and remove the cable from the bracket.

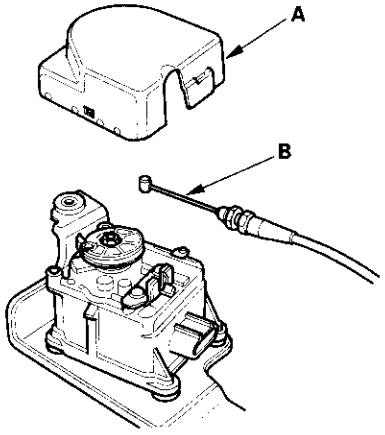


3. Remove the cowl cover (see page 20-98).

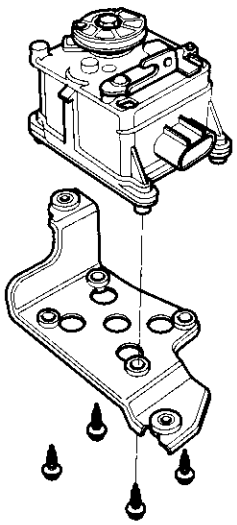
4. Disconnect the 4P connector, and remove the two bolts securing the cruise control actuator.



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



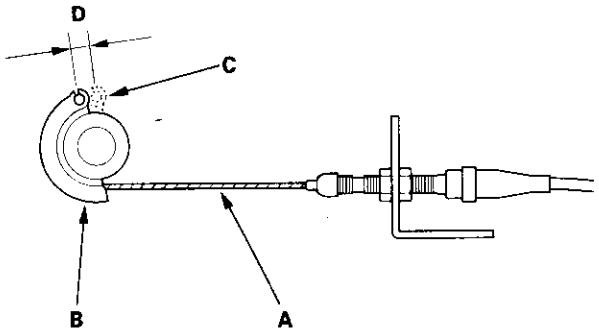
6. Remove the bracket from the cruise control actuator.



7. 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.



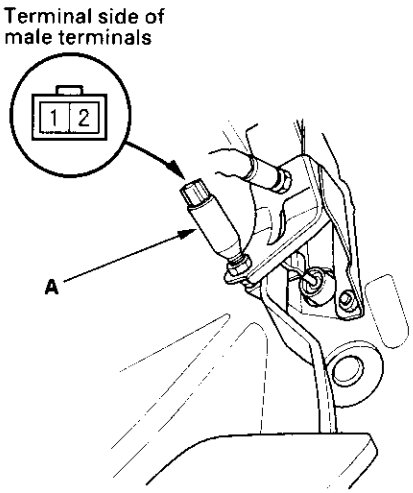
2. Measure the amount of movement of the output linkage (B) until the engine speed starts to increase. At first, the output linkage should be located at the fully closed position (C). The free play (D) should be 3.75 ± 0.5 mm (0.15 ± 0.02 in.).

3. If the free play is not within specs, loosen the locknut, and turn the adjusting nut 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).

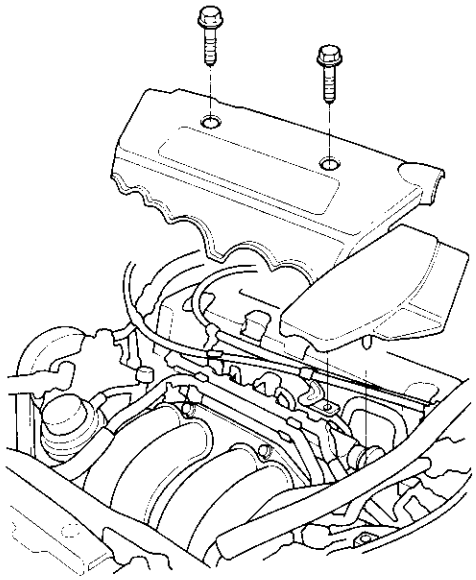
Terminal / Clutch Pedal Position Switch	1	2
PRESSED		
RELEASED	O	O

Engine Mechanical

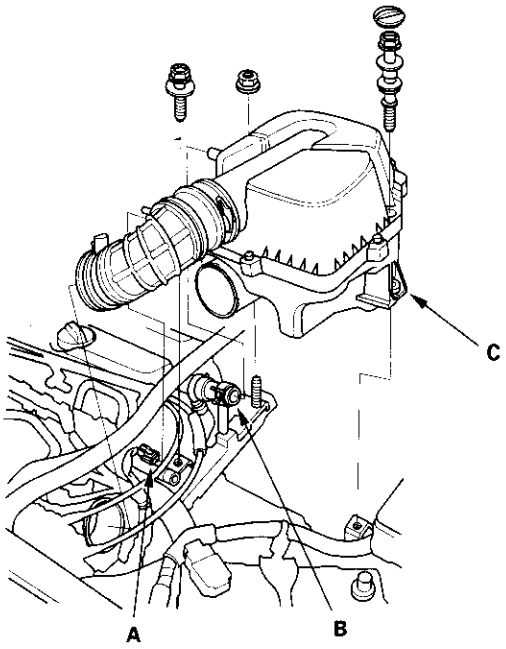
Engine Removal

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.

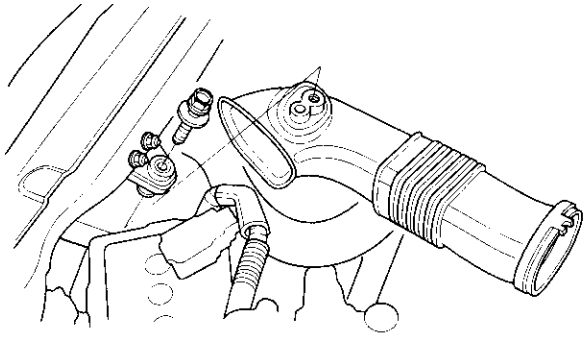
1. Secure the hood in the wide open position (support rod in the lower hole).
2. Make sure you have the anti-theft code for the radio, then write down the frequencies for the radio's preset buttons.
3. Disconnect the negative cable from the battery first, then disconnect the positive cable.
4. Remove the battery.
5. Remove the intake manifold cover.



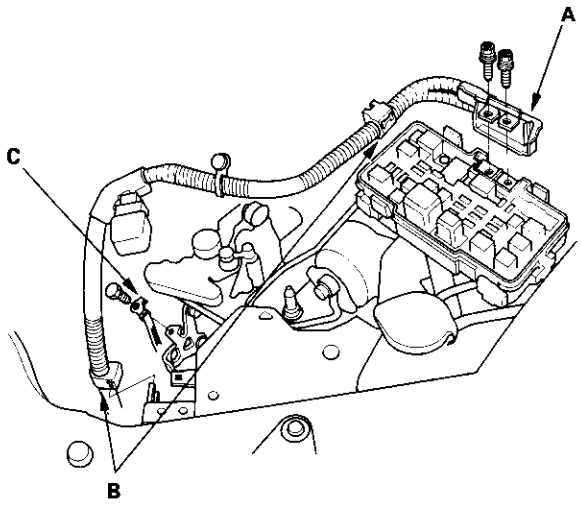
6. Disconnect the Intake air temperature (IAT) sensor connector (A), and remove the breather hose (B), then remove the air cleaner housing (C).



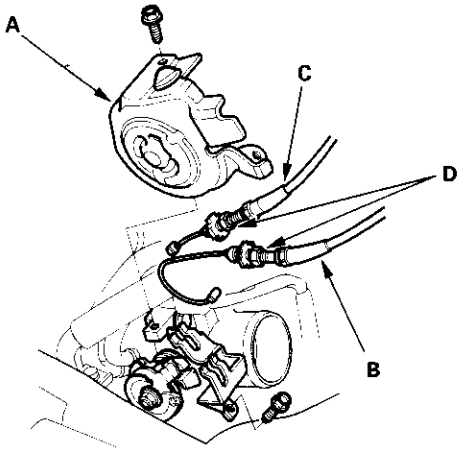
7. Remove the intake air duct.



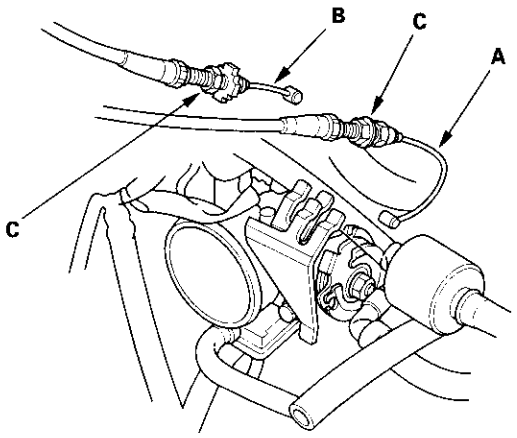
8. Remove the battery cable (A) from the under-hood fuse/relay box, then remove the harness clamps (B) and ground cable (C).



9. Remove the throttle cover (A). Fully open the throttle link and cruise control link by hand, then remove the throttle cable (B) and cruise control cable (C) from the links. Loosen the locknuts (D), and remove the cables from the bracket (K20A3 engine).



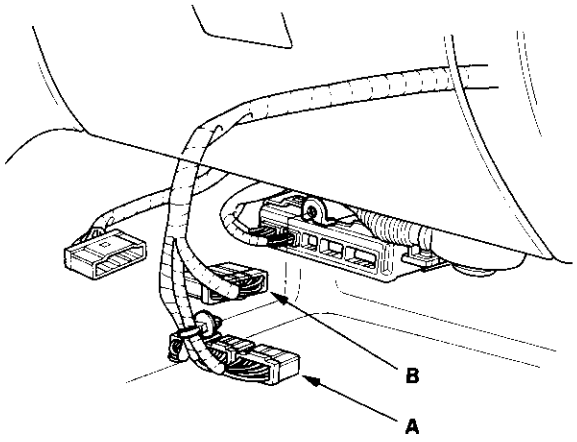
10. Fully open the throttle link and cruise control link by hand, then remove the throttle cable (A) and cruise control cable (B) from the links. Loosen the locknuts (C), and remove the cables from the bracket (K20A2 engine).



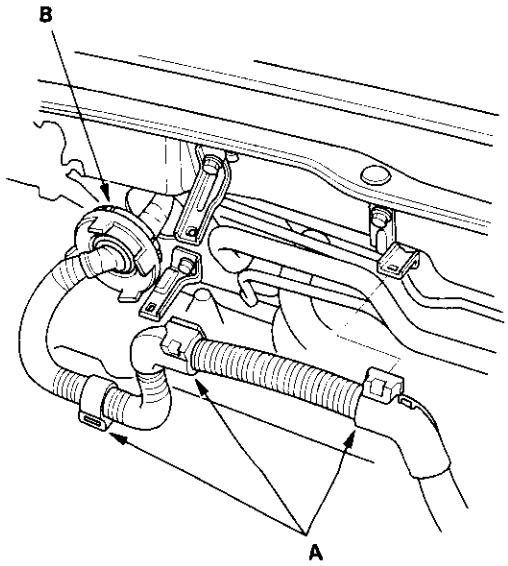
(cont'd)

Engine Removal (cont'd)

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



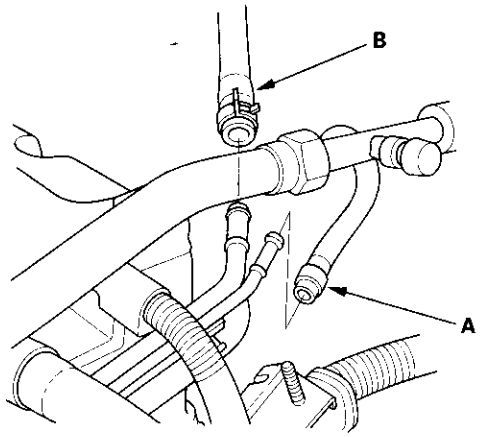
12. Remove the harness clamps (A) and grommet (B), then pull the engine wire harness through the bulkhead.



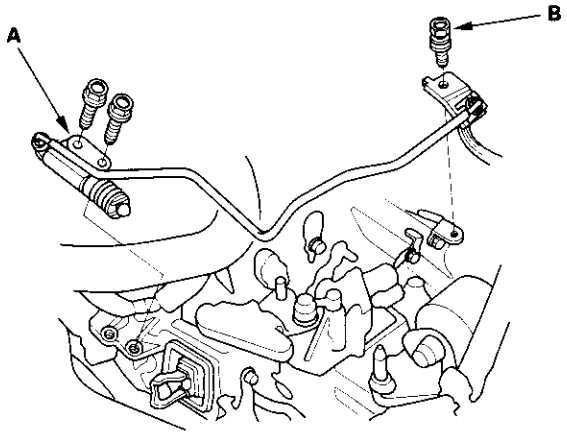
13. Relieve fuel pressure (see page 11-155).

14. Remove the fuel feed hose (see page 11-160).

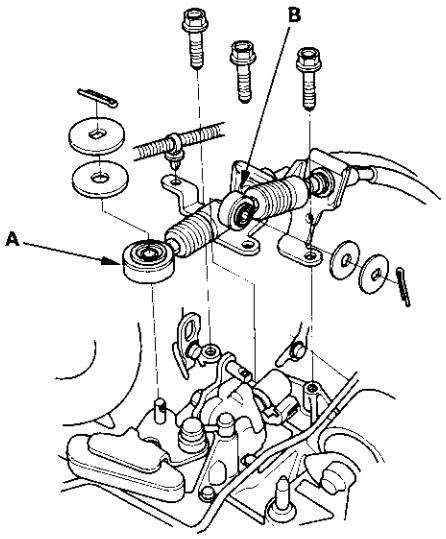
15. Remove the evaporative emission (EVAP) canister hose (A) and brake booster vacuum hose (B).



16. Remove the clutch slave cylinder (A) and clutch line bracket mounting bolt (B) (M/T).

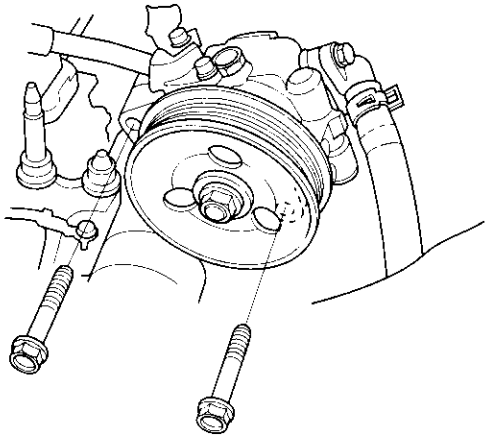


17. Remove the shift cable (A) and select cable (B) (M/T).

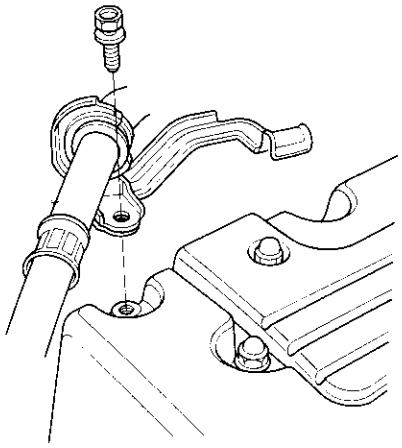


18. Remove the drive belt (see page 4-32).

19. Remove the power steering (P/S) pump without disconnecting the P/S hoses.



20. Remove the bolt securing the P/S hose bracket.

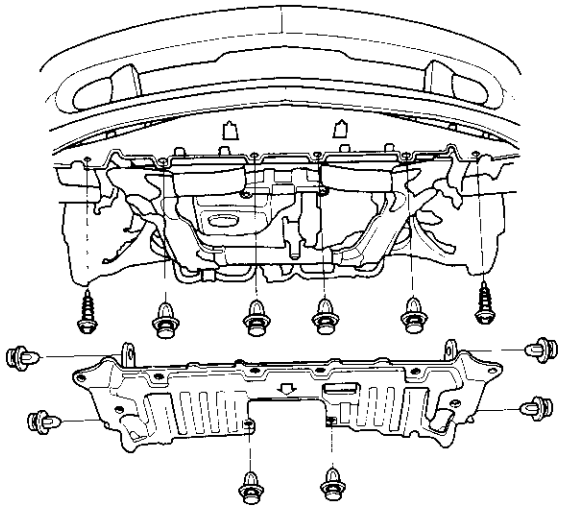


21. Remove the radiator cap.

22. Raise the hoist to full height.

23. Remove the front tires/wheels.

24. Remove the splash shield.



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

26. Drain the transmission fluid:

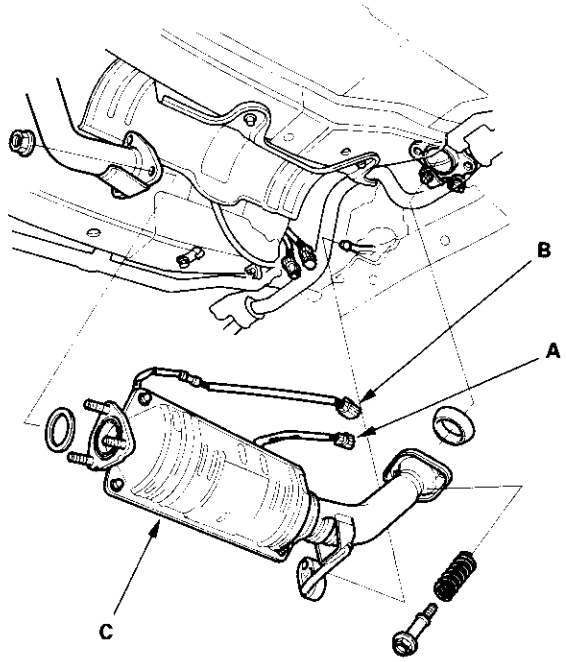
    - Manual transmission (see page 13-4).
    - Automatic transmission (see page 14-139).

27. Drain the engine oil (see page 8-6).

(cont'd)

Engine Removal (cont'd)

28. Disconnect the air fuel ratio (A/F) sensor connector (A) and secondary heated oxygen sensor (secondary HO2S) connector (B).

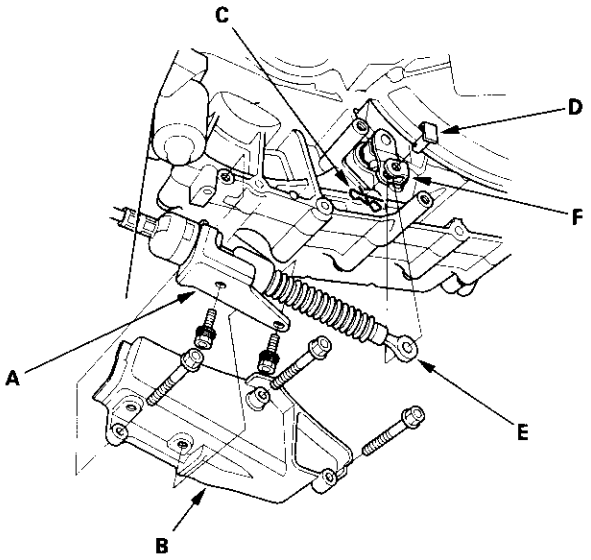


29. Remove the three way catalytic converter (TWC) assembly (C).

30. Disconnect the suspension lower arm ball joints (see page 18-10) and stabilizer links (see page 18-17).

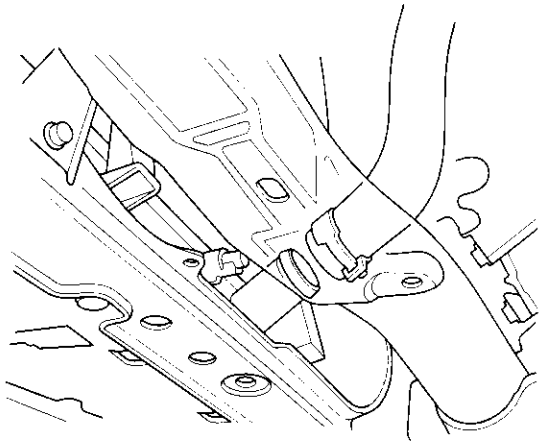
31. Remove the driveshafts (see page 16-3). Coat all precision finished surfaces with clean engine oil. Tie plastic bags over the driveshaft ends.

32. Remove the shift cable holder (A), then remove the shift cable cover (B). To prevent damage to the control lever joint, be sure to remove the bolts securing the shift cable cover (A/T).

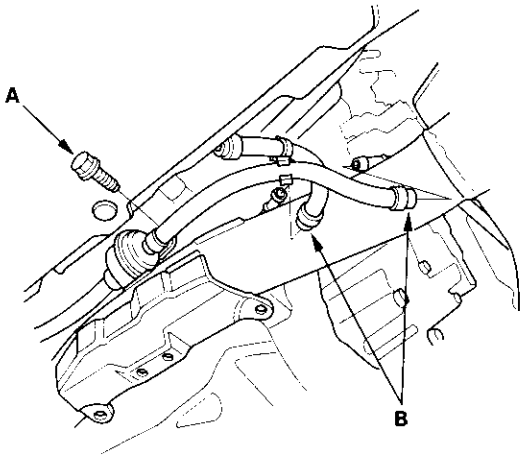


33. Remove the spring clip (C) and control pin (D), then separate the shift cable (E) from the control lever (F) (A/T).

34. Remove the lower hose.



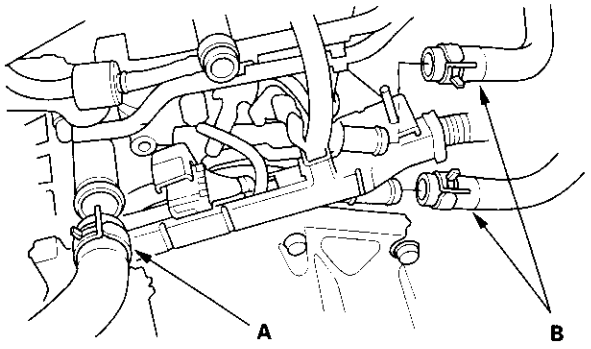
35. Remove the automatic transmission fluid (ATF) filter mounting bolt (A) (A/T).



36. Remove the ATF cooler hoses (B), then plug the ATF cooler hoses and lines (A/T).

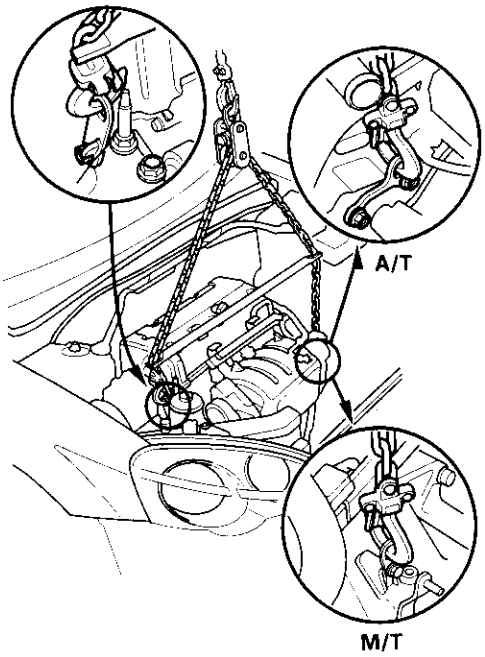
37. Lower the hoist.

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



39. Remove the radiator (see page 10-11).

40. Attach the engine tilt hanger set to the engine as shown.

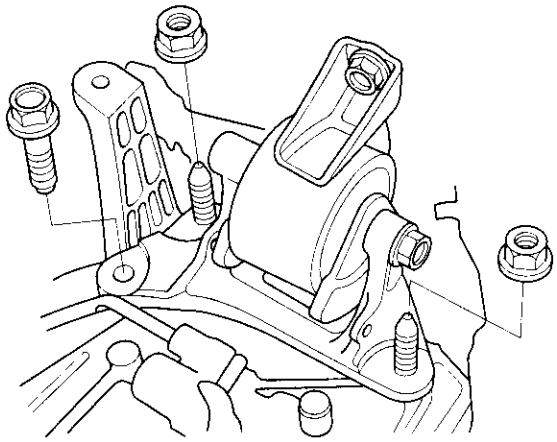


(cont'd)

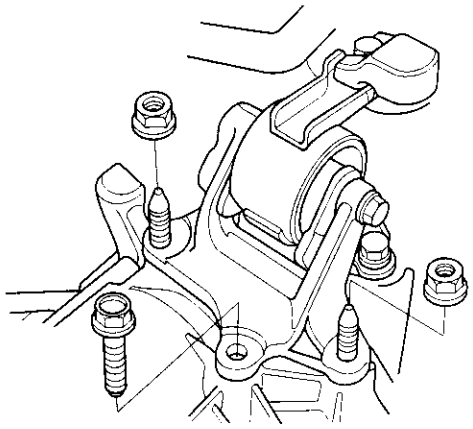
Engine Removal (cont'd)

41. Remove the transmission mount bracket support bolt/nuts.

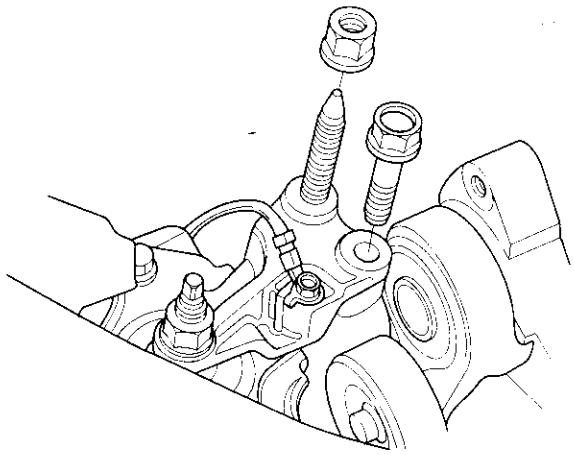
M/T:



A/T:

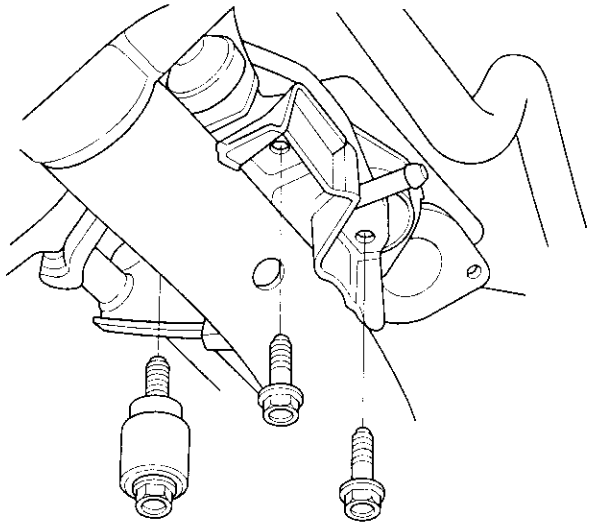


42. Remove the upper bracket mounting bolt and nut.

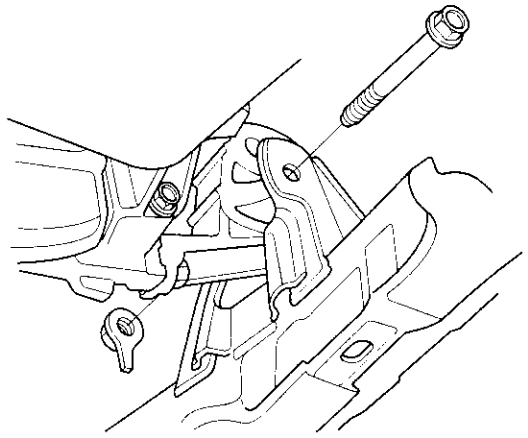


43. Make sure the hoist brackets are positioned properly. Raise the hoist to full height.

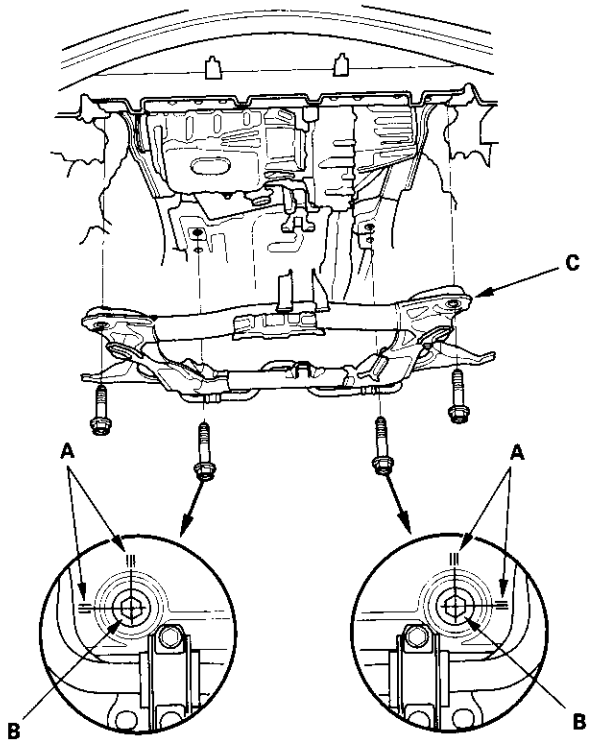
44. Remove the rear mount mounting bolts.



45. Remove the front mount bracket mounting bolt.

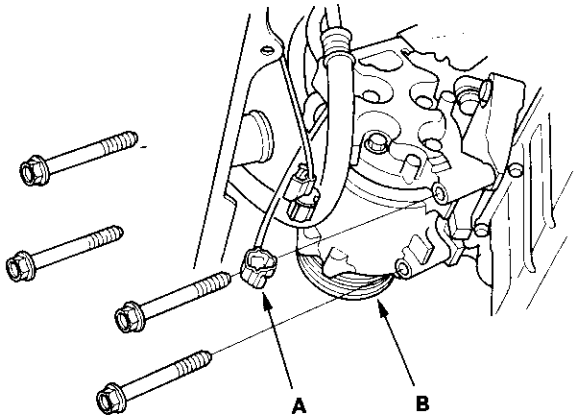


46. Use a marker to make alignment marks on the reference lines (A) that align with the centers of the rear subframe mounting bolts (B).



47. Remove the front subframe (C).

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



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

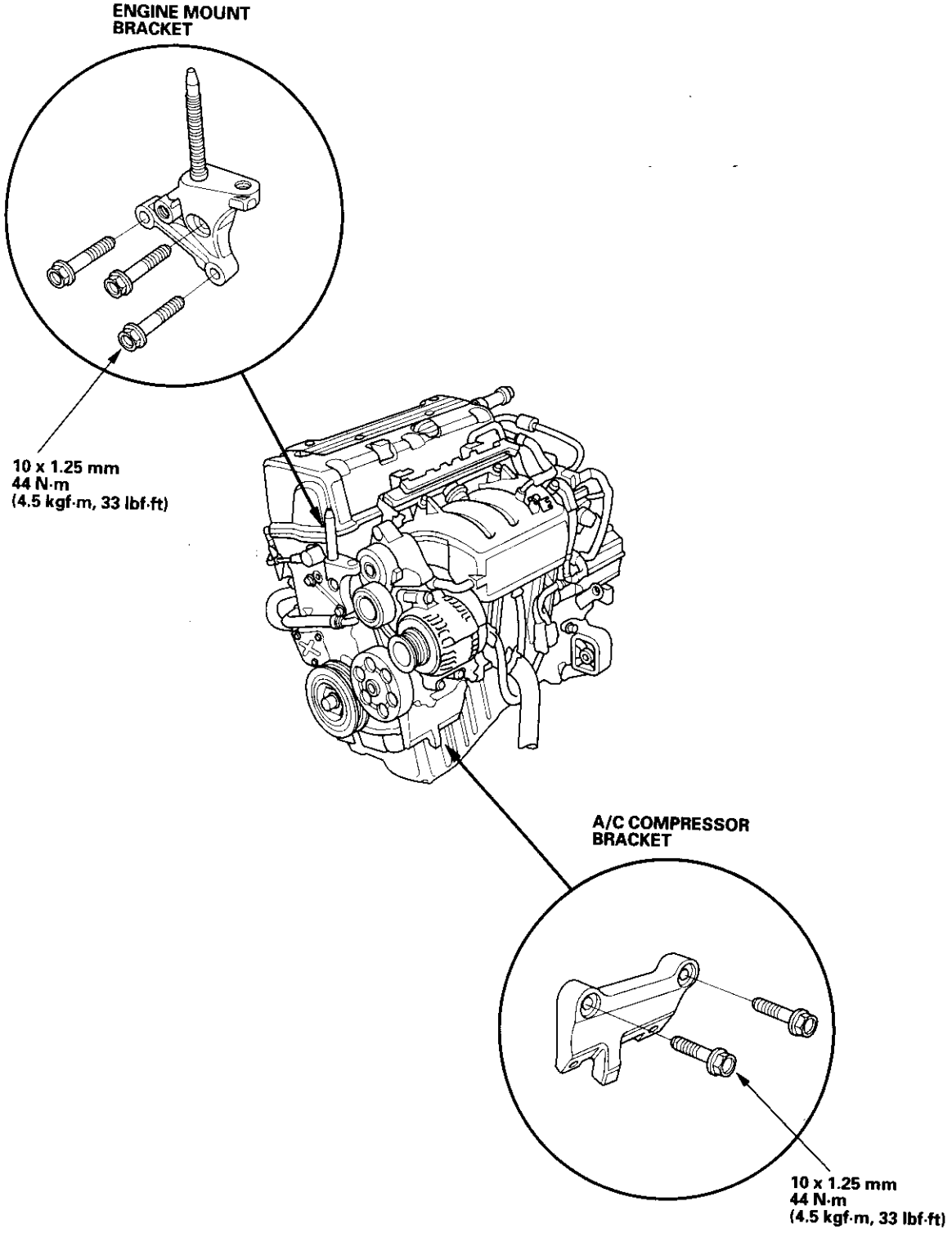
50. Slowly lower the engine about 150 mm (6 in.). Check once again that all hoses and wires are disconnected from the engine/transmission.

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

52. Remove the engine from under the vehicle.

Engine Installation

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

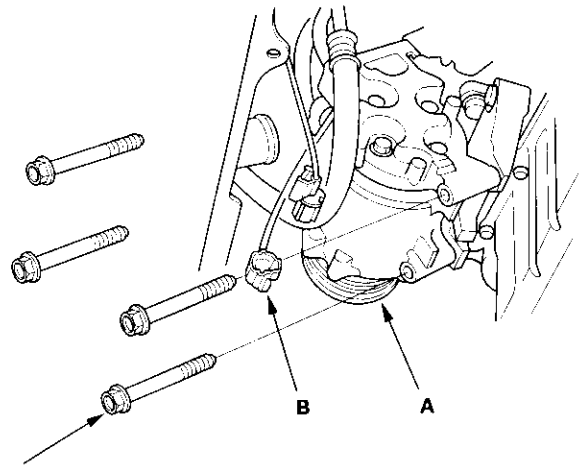


2. Position the engine under the vehicle. Attach the chain hoist to the engine, then lift the engine into position in the vehicle.

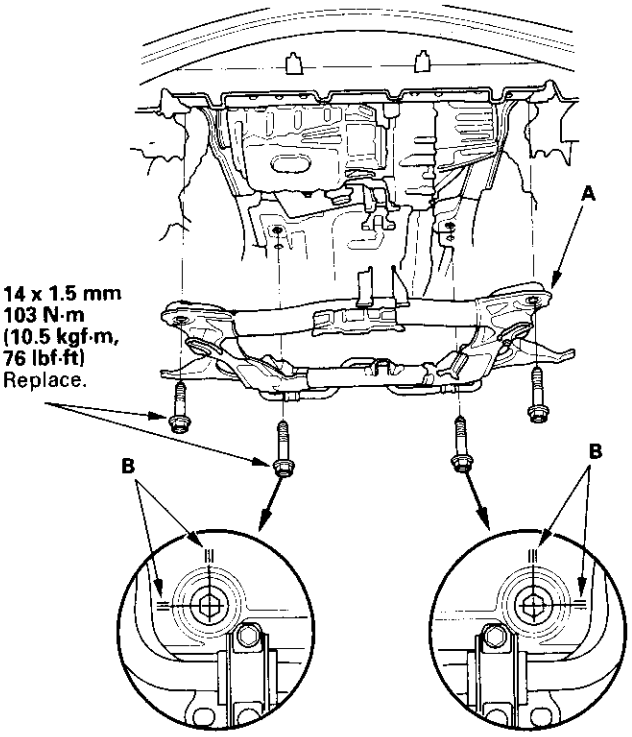
NOTICE

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.

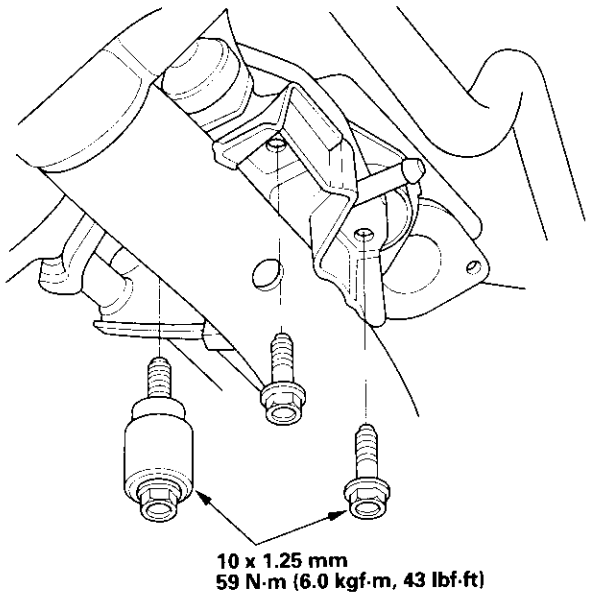
3. Install the A/C compressor (A), and connect the compressor clutch connector (B).



4. Install the subframe (A). Align the reference lines (B) on the subframe with the bolt head center, then tighten the bolts.



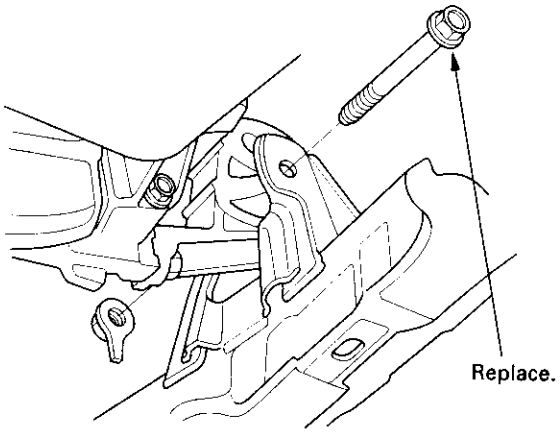
5. Tighten the rear mount mounting bolts.



(cont'd)

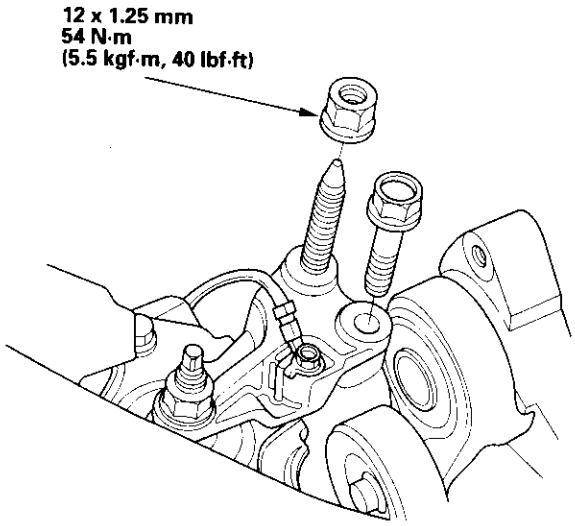
Engine Installation (cont'd)

6. Loosely tighten the front mount bracket mounting bolt.



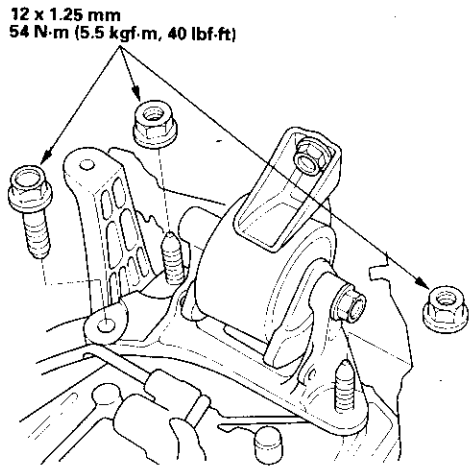
7. Lower the hoist.

8. Tighten the upper bracket mounting bolt and nut.

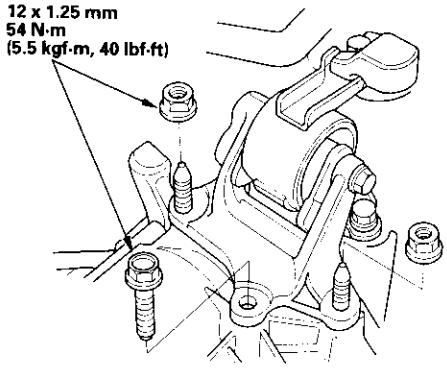


9. Tighten the support bolt/nuts.

M/T:

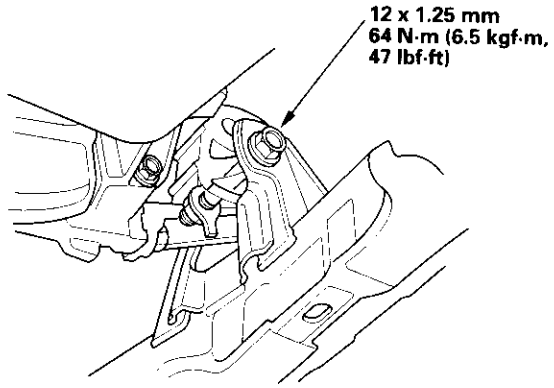


A/T:



10. Raise the hoist to full height.

11. Loosen the front engine mount bracket mounting bolt, then tighten the front engin mount bracket mounting bolt.



12. Lower the hoist.

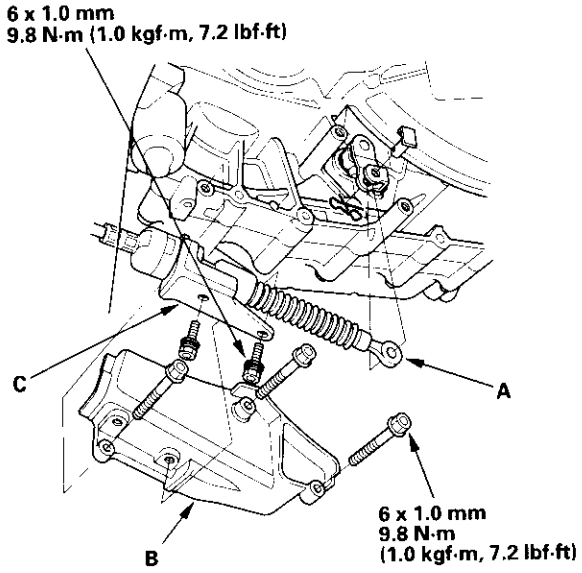
13. Remove the chain hoist from the engine.

14. Raise the hoist to full height.

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

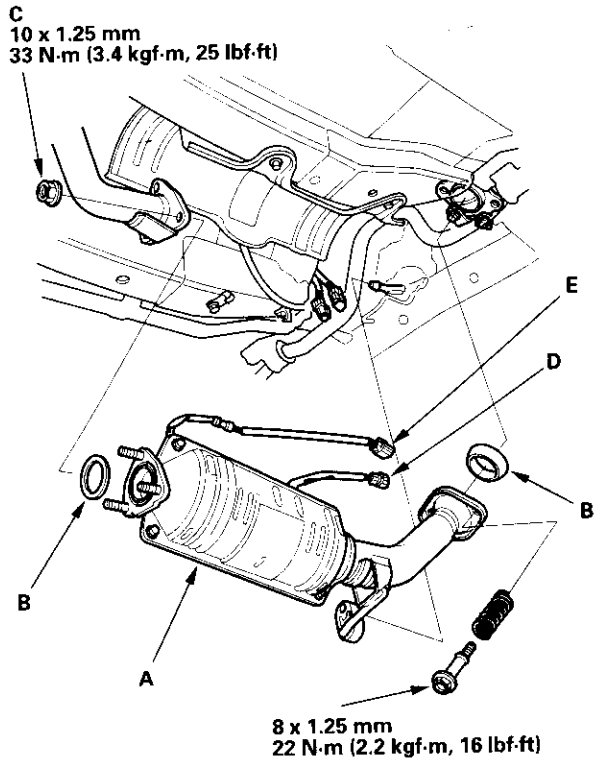
16. Connect the suspension lower arm ball joints and stabilizer links (see page 18-18).

17. Install the shift control cable (A) (A/T).



18. Install the shift cable cover (B), then install the shift control cable bracket (C) (A/T).

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



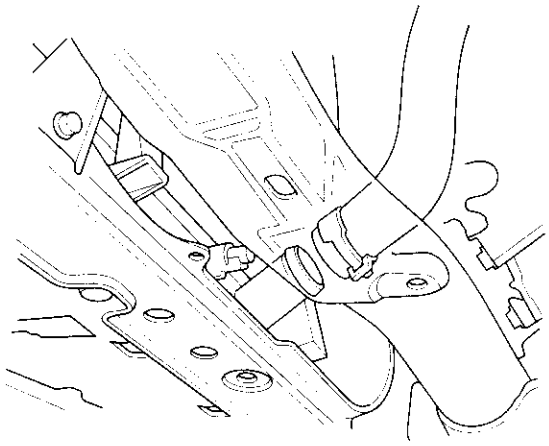
20. Connect the air fuel ratio (A/F) sensor connector (D) and secondary heated oxygen sensor (secondary HO2S) connector (E).

21. Install the radiator (see page 10-11).

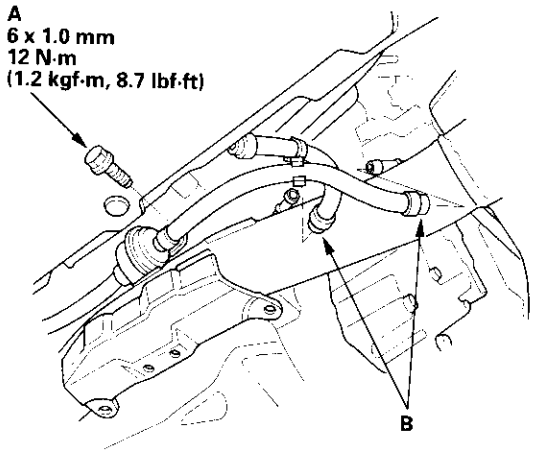
(cont'd)

Engine Installation (cont'd)

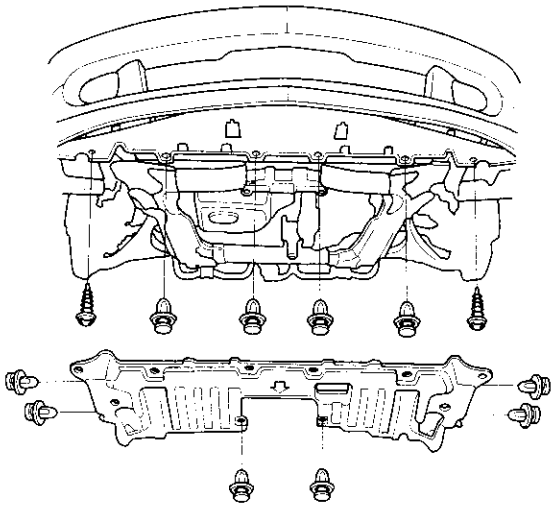
22. Install the lower radiator hose.



23. Tighten the automatic transmission fluid (ATF) filter mounting bolt (A), and install the ATF cooler hoses (B) (A/T).

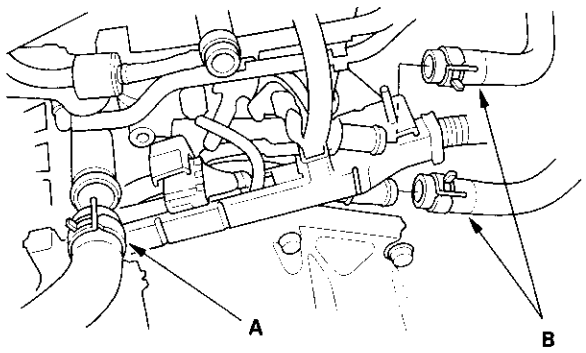


24. Install the splash shield.

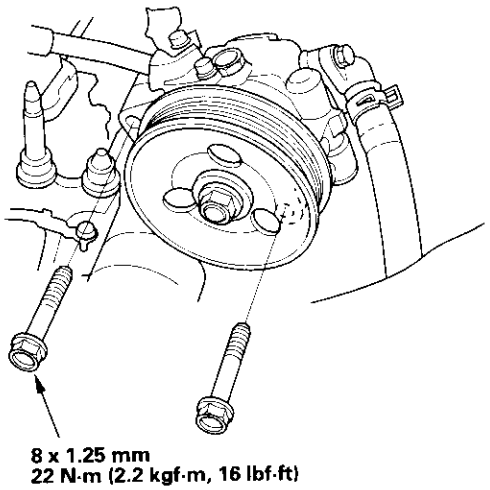


25. Lower the hoist.

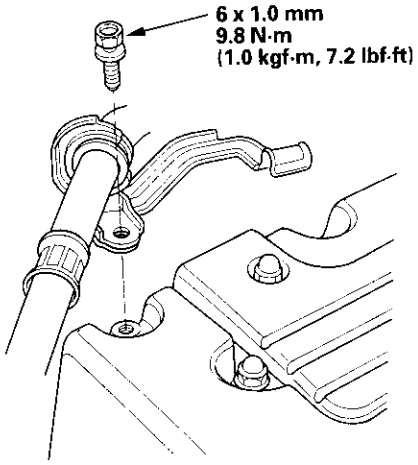
26. Install the upper radiator hose (A) and heater hoses (B).



27. Install the P/S pump.

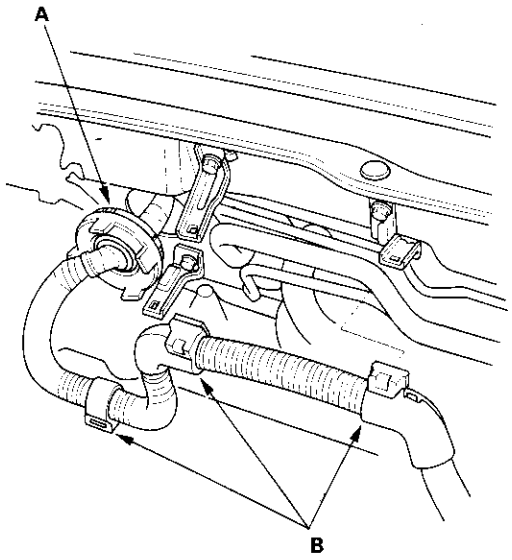


28. Install the bolt securing the power steering (P/S) hose bracket.



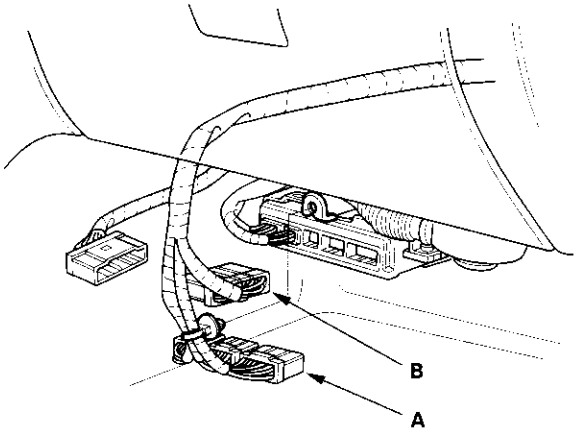
29. Install the drive belt.

30. Push the engine control module (ECM)/powertrain control module (PCM) connectors through the bulkhead, then install the grommet (A).



31. Install the harness clamps (B).

32. Connect the ECM/PCM connectors (A) and main wire harness connector (B).



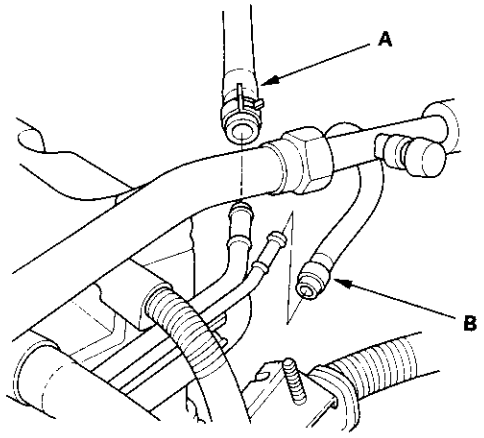
33. Install the throttle cable (see page 11-181), then adjust the cable (see page 11-180).

34. Install the cruise control cable, then adjust the cable (see page 4-57).

(cont'd)

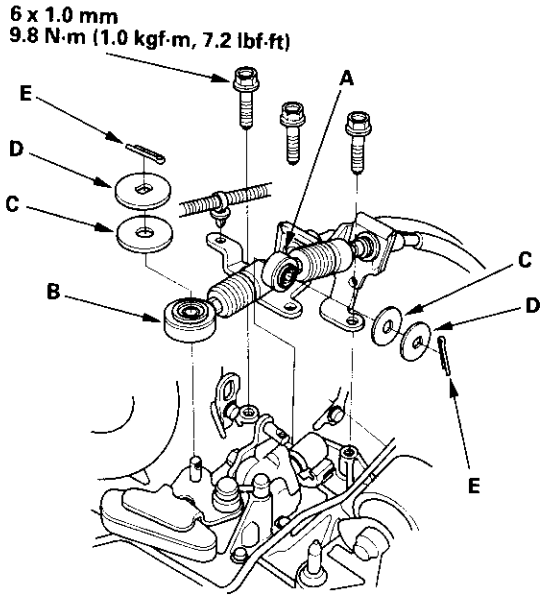
Engine Installation (cont'd)

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

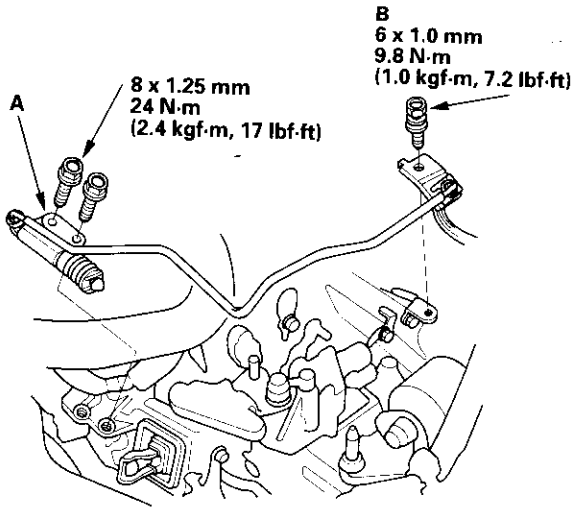


36. Install the fuel feed hose (see page 11-161).

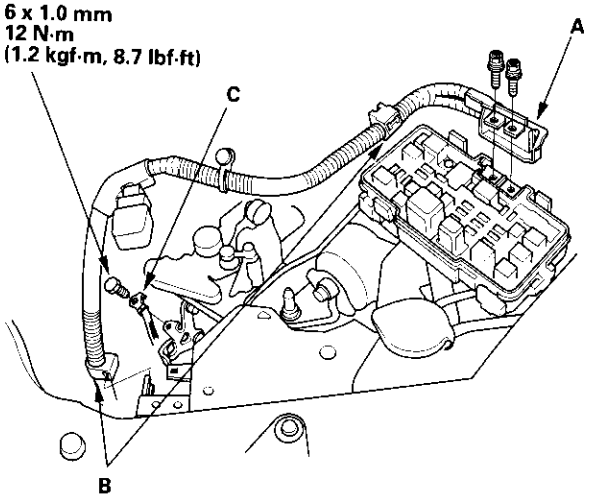
37. Install the select cable (A) and shift cable (B) using the plastic washers (C), washers (D), and new cotter pins (E) (M/T).



38. Install the clutch slave cylinder (A) and clutch line bracket mounting bolt (B) (M/T).

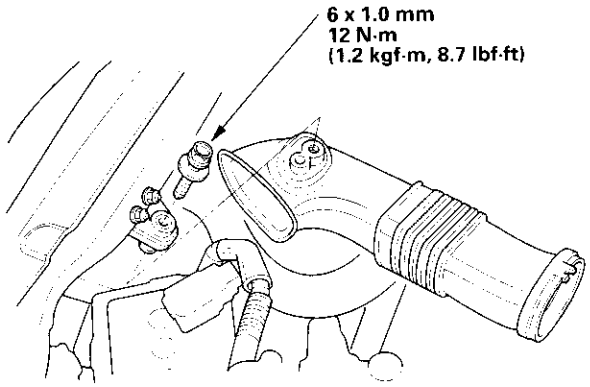


39. Install the battery cable (A) on the under-hood fuse/relay box, then install the harness clamps (B).

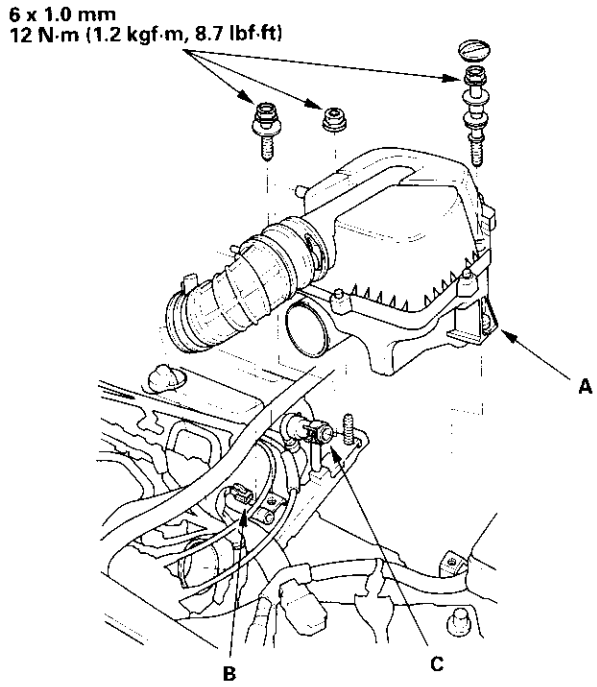


40. Install the ground cable (C).

41. Install the intake air duct.

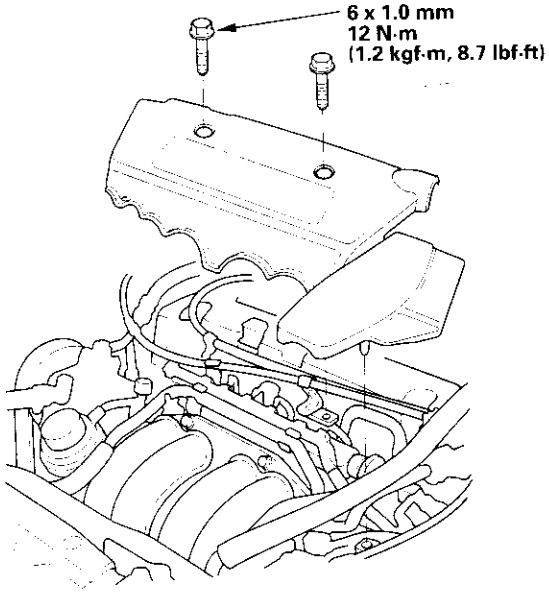


42. Install the air cleaner housing (A) and connect the IAT sensor connector (B).



43. Install the breather hose (C).

44. Install the intake manifold cover.



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

46. Move the shift lever to each gear, and verify that the A/T gear position indicator follows the transmission range switch (A/T).

47. Check that the transmission shifts into gear smoothly (M/T).

48. 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.

49. Refill the engine with engine oil (see page 8-6).

50. Refill the transmission with fluid:

    - Manual transmission (see page 13-4).
    - Automatic transmission (see page 14-139).

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

52. Perform the ECM/PCM idle learn procedure (see page 11-149), and power window control unit reset procedure (see page 22-139).

(cont'd)

Engine Installation (cont'd)

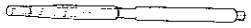
53. Inspect the idle speed (see page 11-148).
54. Inspect the ignition timing (see page 4-22).
55. Check the wheel alignment (see page 18-4).
56. Enter the anti-theft code for the radio, then enter the customer's radio station presets.
57. Set the clock.

Engine Mechanical

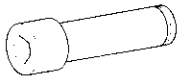
Cylinder Head

Special Tools

Ref. No.	Tool Number	Description	Qty
①	07HAH-PJ7010B	Valve Guide Reamer, 5.5 mm	1
②	07JAA-001020A	Socket, 19 mm	1
③	07JAB-001020A	Holder Handle	1
④	07NAB-001040A	Holder Attachment, 50 mm	1
⑤	07ZAJ-PNAA101	VTEC Air Adapter	2
⑥	07ZAJ-PNAA200	VTEC Air Stopper	1
⑦	07ZAJ-PNAA300	Air Joint Adapter	1
⑧	07AAJ-PNAA100	Air Pressure Regulator	1
⑨	07742-0010100	Valve Guide Driver, 5.5 mm	1
⑩	07746-0010400	Attachment, 52 x 55 mm	1
⑪	07749-0010000	Driver	1
⑫	07757-PJ1010A	Valve Spring Compressor Attachment	1



①



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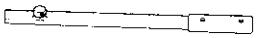

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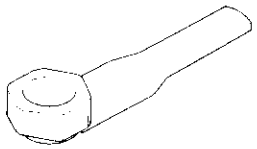

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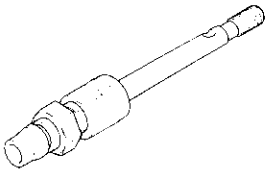
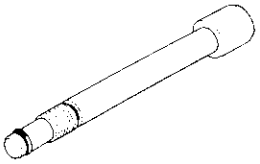
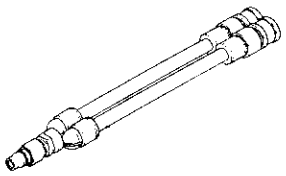


⑤



⑥



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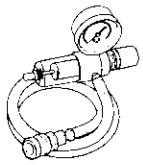

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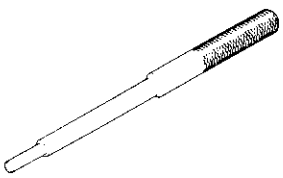

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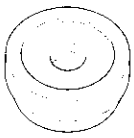
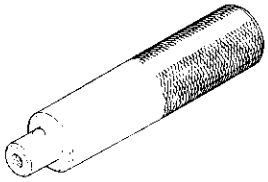
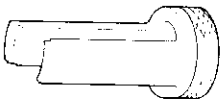


⑩

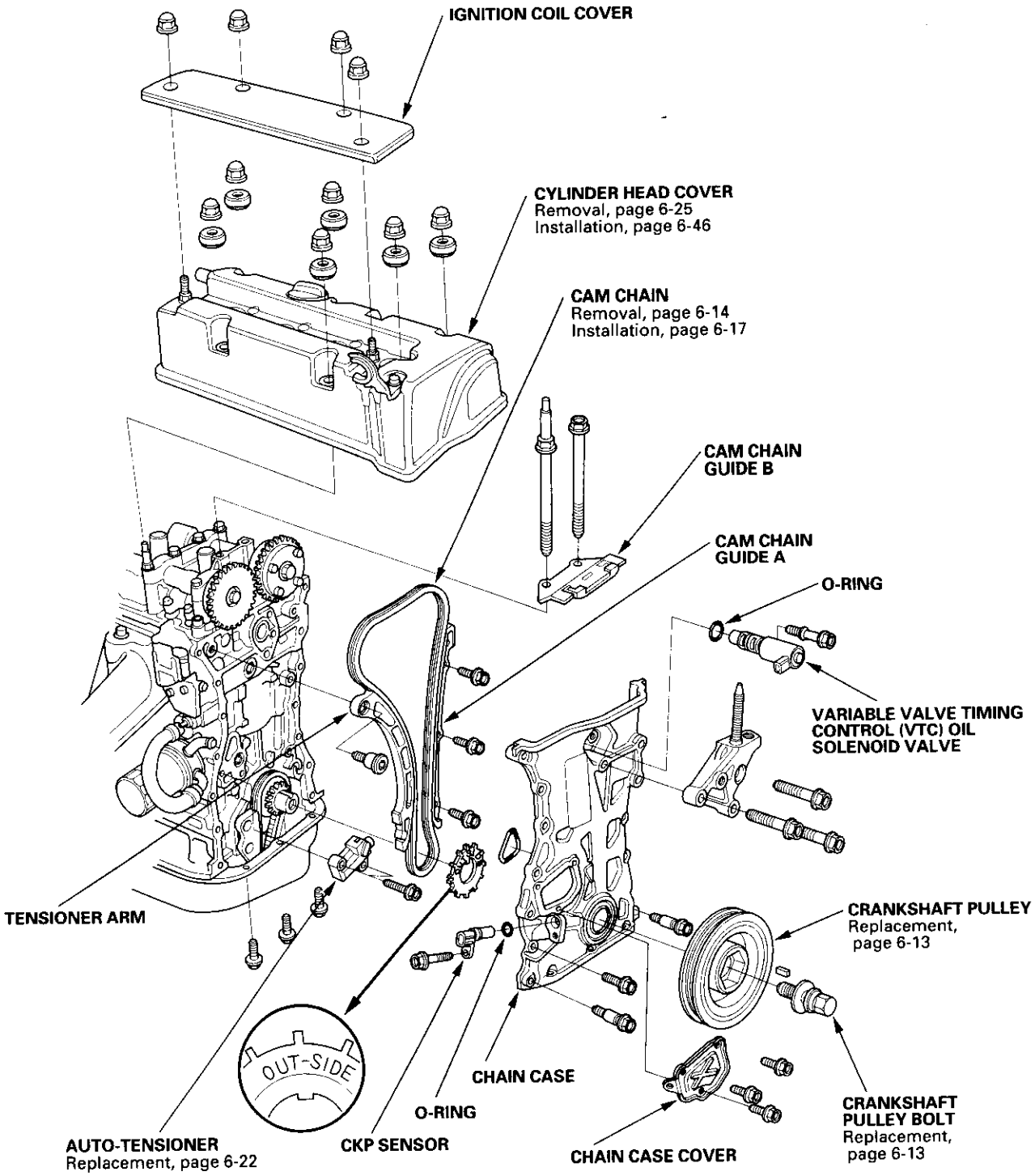


⑪



⑫

Component Location Index



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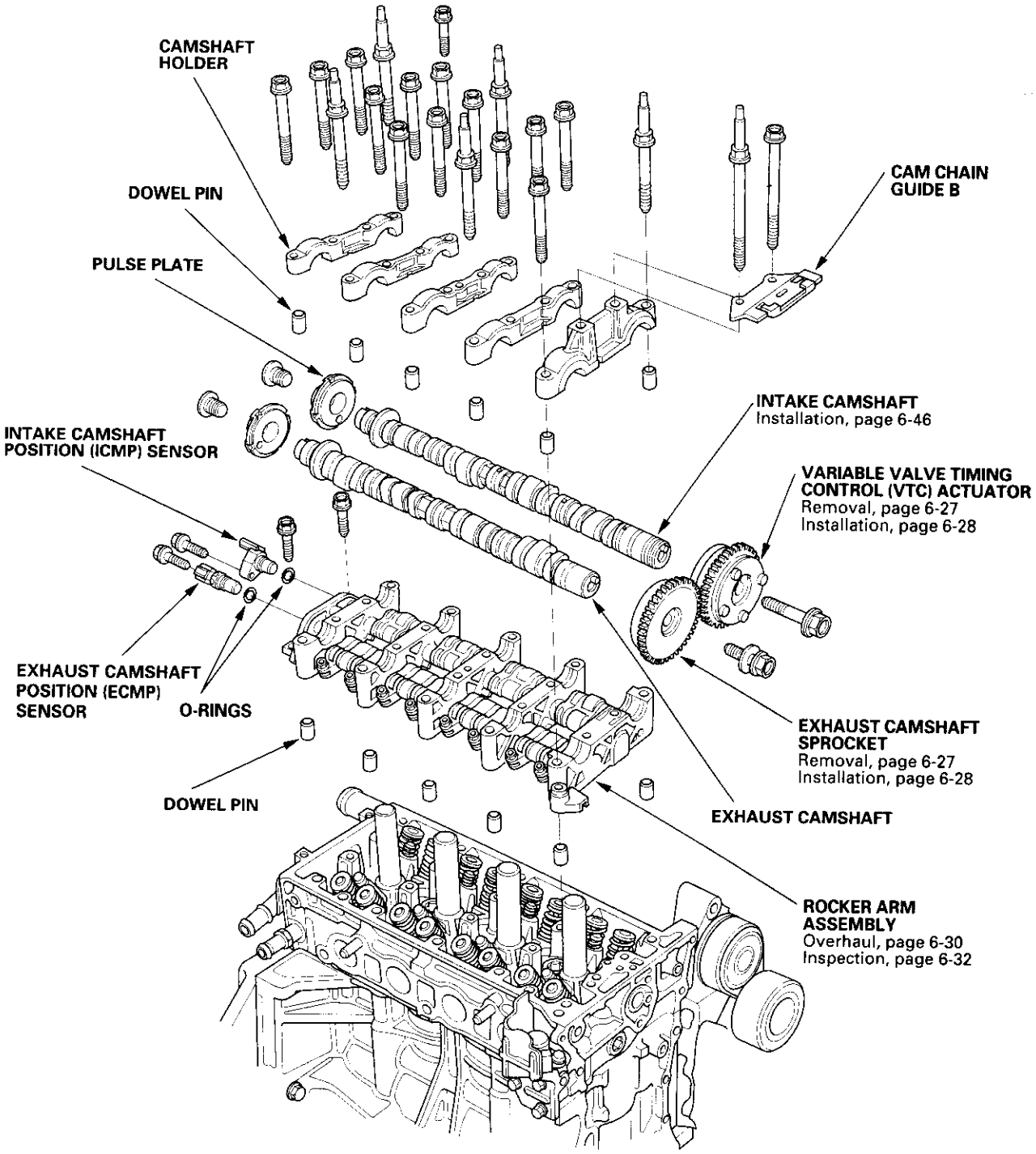
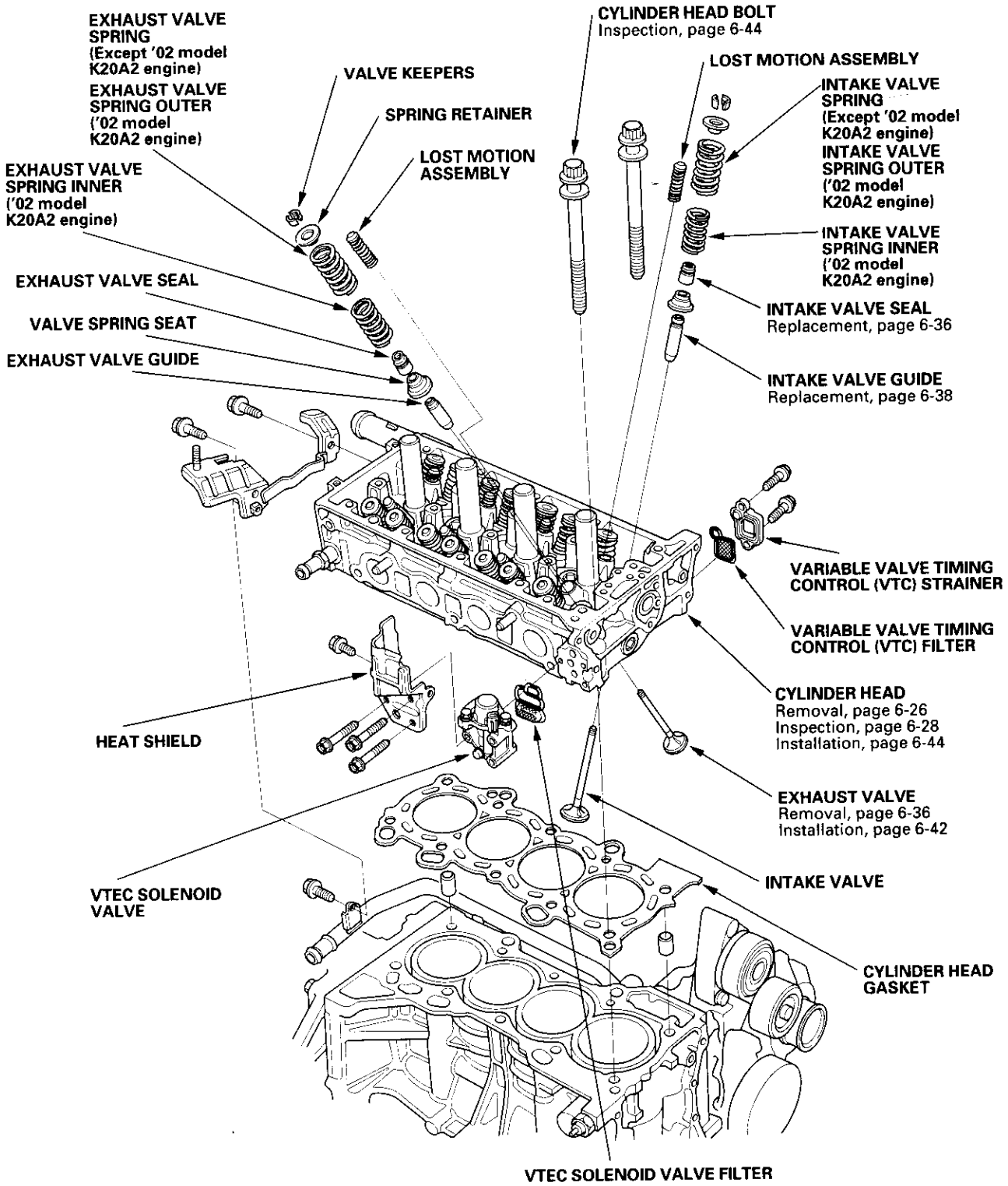
Component Location Index (cont'd)




EXHAUST VALVE SPRING (Except '02 model K20A2 engine)
EXHAUST VALVE SPRING OUTER ('02 model K20A2 engine)
EXHAUST VALVE SPRING INNER ('02 model K20A2 engine)
EXHAUST VALVE SEAL
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LOST MOTION ASSEMBLY
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VARIABLE VALVE TIMING CONTROL (VTC) STRAINER
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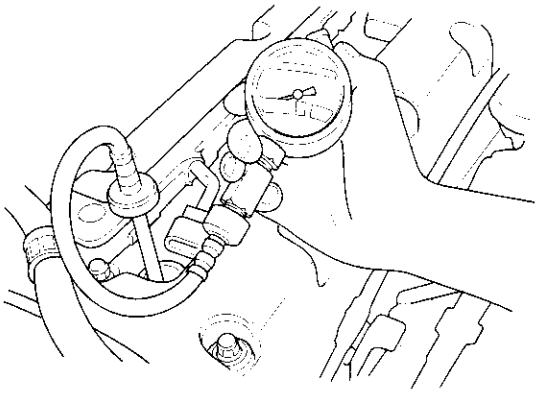
VTEC SOLENOID VALVE
CYLINDER HEAD GASKET
VTEC SOLENOID VALVE FILTER

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 6-25).
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 4-23).
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 the following items, then remeasure the compression.

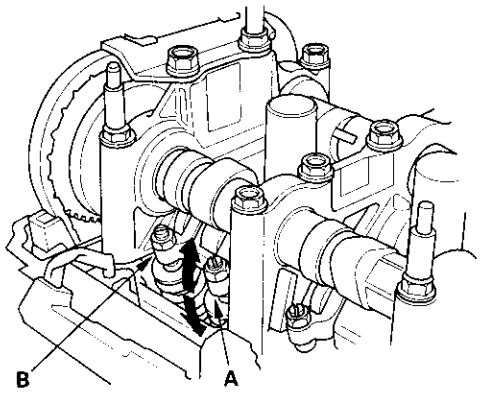
    - Damaged or worn valves and seats
    - Damaged cylinder head gasket
    - Damaged or worn piston rings
    - Damaged or worn piston and cylinder bore

VTEC Rocker Arms Test

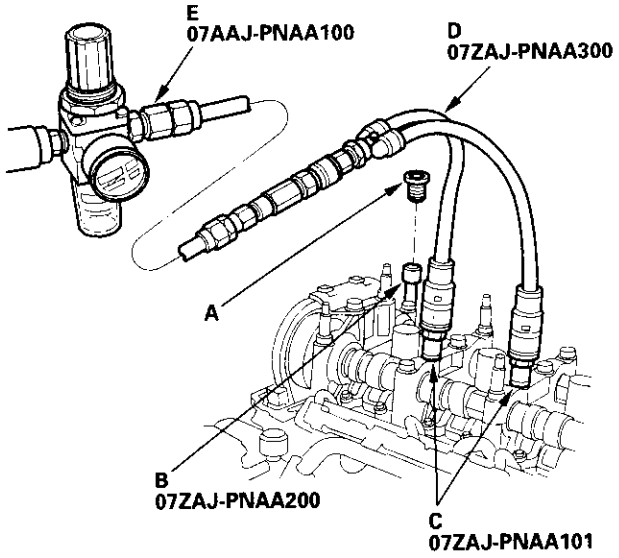
Special Tools Required
- VTEC air adapter 07ZAJ-PNAA101
- VTEC air stopper 07ZAJ-PNAA200
- Air joint adapter 07ZAJ-PNAA300
- Air pressure regulator 07AAJ-PNAA100

K20A3 engine:

1. Remove the cylinder head cover (see page 6-25).
2. Set the No. 1 piston at top dead center (TDC) (see step 1 on page 6-14).
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 6-11).
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)

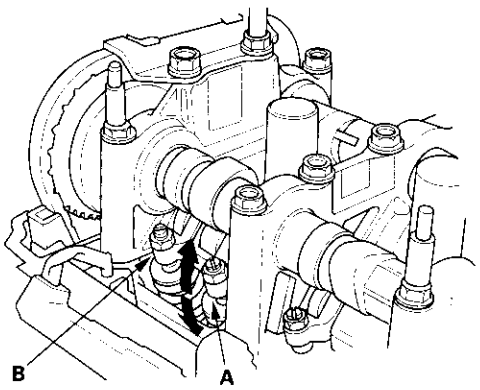
10. Loosen the valve on the regulator, and apply the specified air pressure.

    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 6-46).

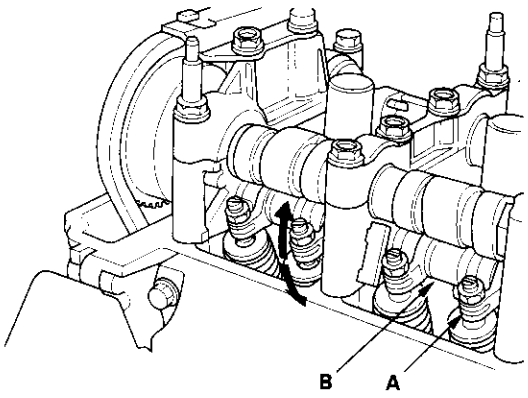
K20A2 engine:

1. Remove the cylinder head cover (see page 6-25).

2. Set the No. 1 piston at TDC (see step 1 on page 6-14).

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

   - If the secondary rocker arm does not move, remove the mid, primary, and secondary rocker arms as an assembly, and check that the pistons in the rocker arms move smoothly. If any rocker arm needs replacing, replace the mid, primary, and secondary rocker arms as an assembly, and test.
   - If the secondary rocker arm moves freely, go to step 4.

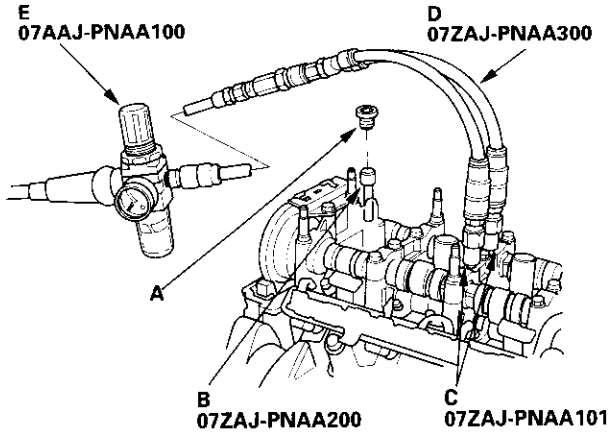


4. Repeat step 3 on the remaining secondary rocker arms with each piston at TDC. When all the secondary rocker arms pass the test, go to step 5.

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 6-11).

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



8. Remove the 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).

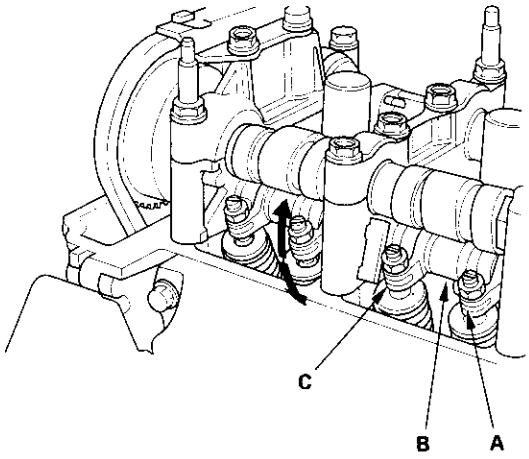
10. Loosen the valve on the regulator, and apply the specified air pressure.

    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 rocker arm up and down manually by rotating the crankshaft.

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

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



12. Remove the special tools.

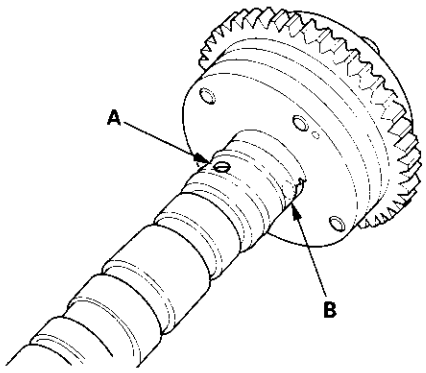
13. Tighten the camshaft holder mounting bolts to 22 N·m (2.2 kgf·m, 16 lbf·ft).

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

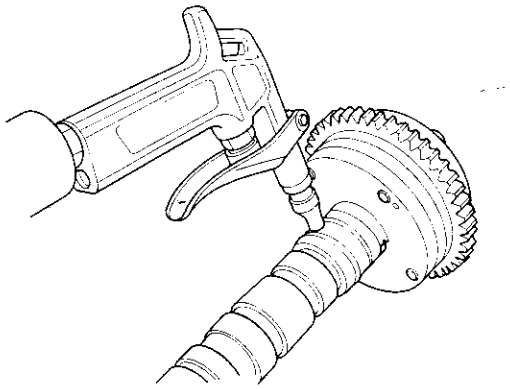
15. Install the cylinder head cover (see page 6-46).

VTC Actuator Inspection

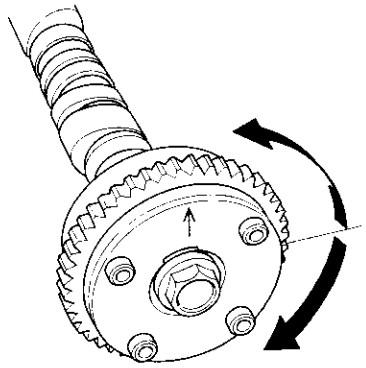
1. Remove the cylinder head cover (see page 6-25).
2. Remove the auto-tensioner (see page 6-22).
3. Loosen the rocker arm adjusting screws (see step 2 on page 6-29).
4. Remove the camshaft holder (see step 3 on page 6-29).
5. Remove the intake camshaft.
6. Check that the Variable Valve Timing Control (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 the tape.



8. Punch a hole in 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.

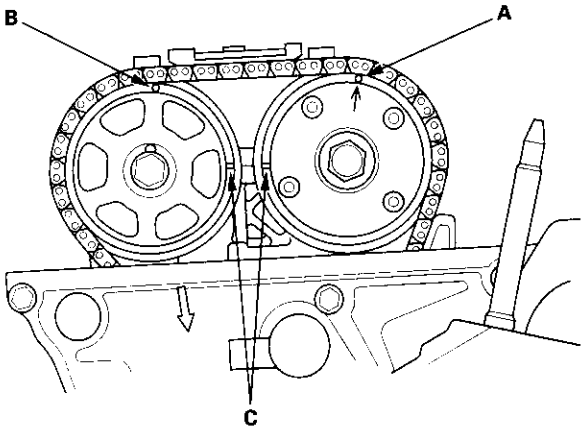


Valve Clearance Adjustment

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 6-25).

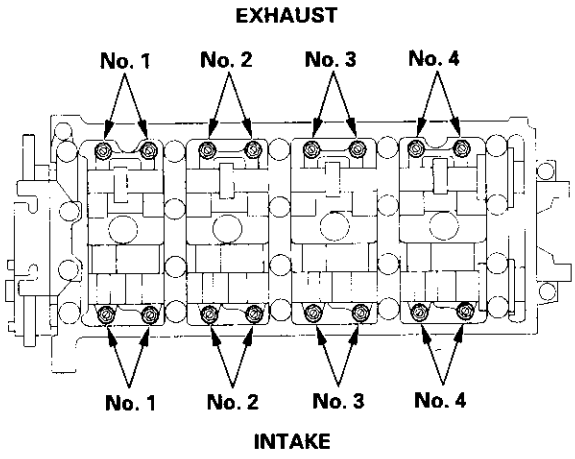
2. Set the No. 1 piston at TDC. The punch mark (A) marked with an arrow on the Variable Valve Timing Control (VTC) actuator and the punch mark (B) on the exhaust camshaft sprocket should be at the top. Align the TDC marks (C) on the VTC actuator and exhaust camshaft sprocket.



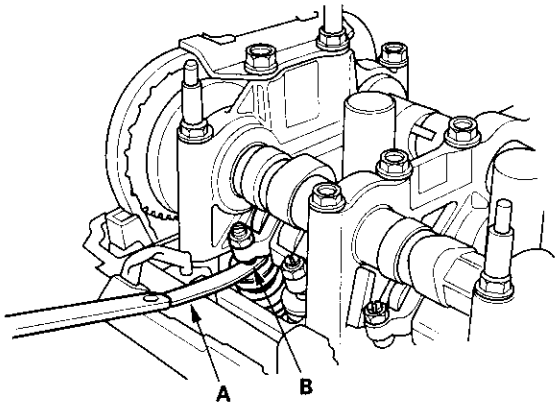
3. Select the correct thickness feeler gauge for the valves you're going to check.

K20A3 engine
Intake: 0.21–0.25 mm (0.008–0.010 in.)
Exhaust: 0.28–0.32 mm (0.011–0.013 in.)
K20A2 engine
Intake: 0.21–0.25 mm (0.008–0.010 in.)
Exhaust: 0.25–0.29 mm (0.010–0.011 in.)

Adjusting screw locations:



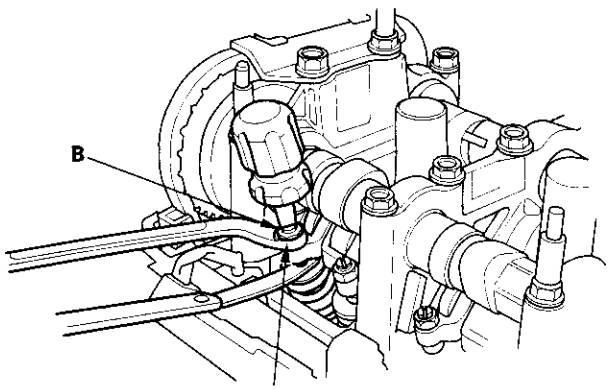
4. Insert the feeler gauge (A) between the adjusting screw (B) and the end of the valve stem and slide it back and forth; you should feel a slight amount of drag.



(cont'd)

Valve Clearance Adjustment (cont'd)

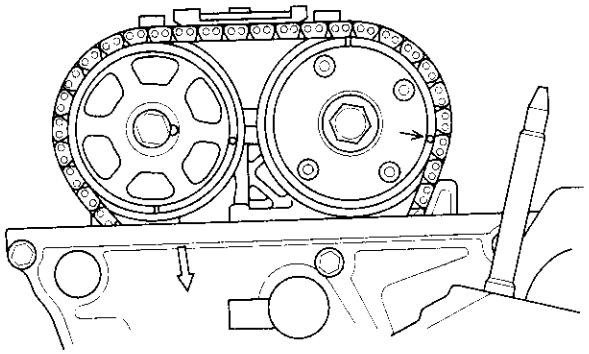
5. If you feel too much or too little drag, loosen the locknut (A), and turn the adjusting screw (B) until the drag on the feeler gauge is correct.



K20A3 engine (INTAKE) and K20A2 engine: 20 N·m (2.0 kgf·m, 14 lbf·ft)
K20A3 engine (EXHAUST): 14 N·m (1.4 kgf·m, 10 lbf·ft)

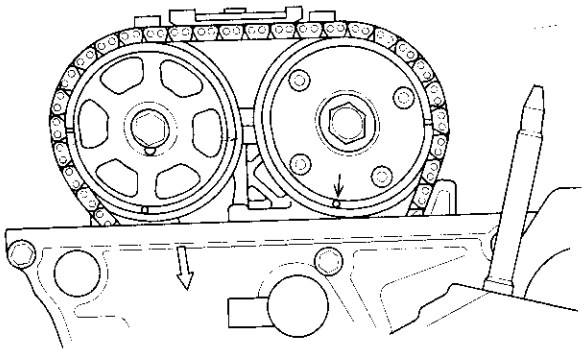
6. Tighten the locknut and recheck the clearance. Repeat the adjustment, if necessary.

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



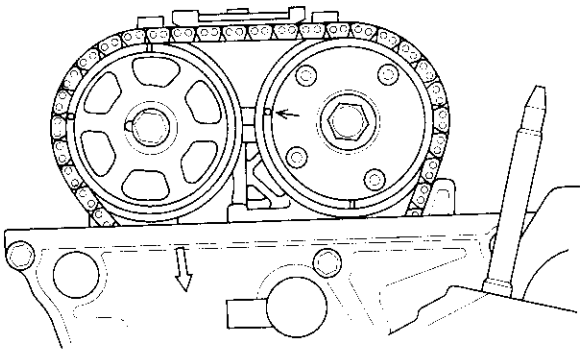
8. Check and, if necessary, adjust the valve clearance on No. 3 cylinder.

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.

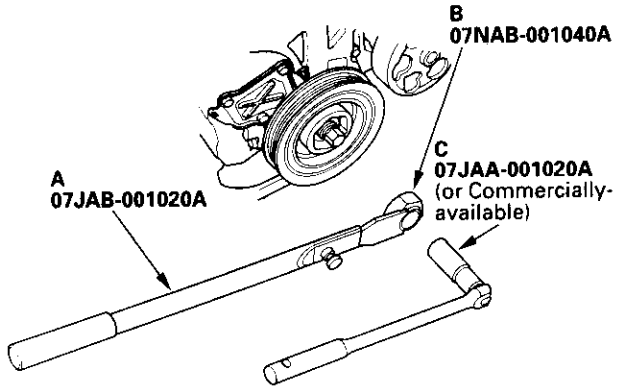
13. Install the cylinder head cover (see page 6-46).

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 24 on page 5-5).
3. Hold the pulley with holder handle (A) and holder attachment (B).

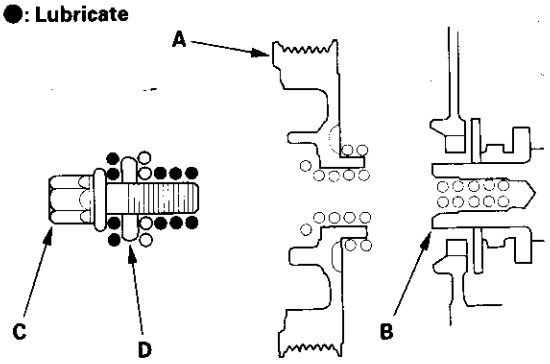


4. Remove the bolt with a 19 mm socket (C) and breaker bar.

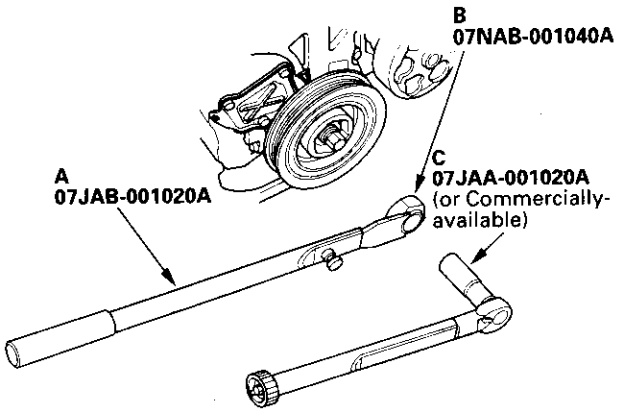
Installation

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).



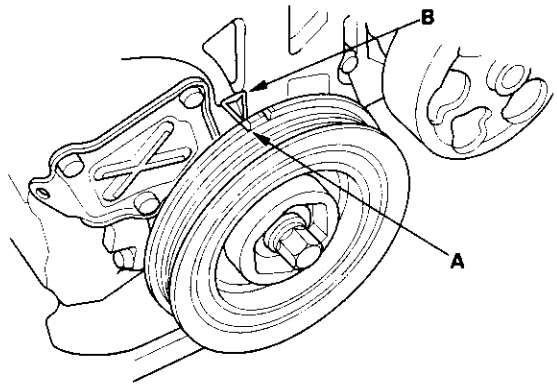
3. Tighten the bolt to 245 N·m (25.0 kgf·m, 181 lbf·ft) with a torque wrench and 19 mm socket (C). Do not use an impact wrench.
4. Install the splash shield (see step 21 on page 5-14).
5. Install front tires/wheels.

Cam Chain Removal

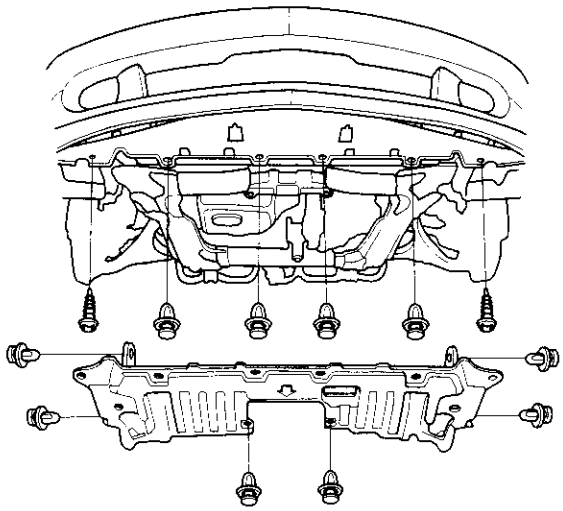
Special Tools Required
- Holder handle 07JAB-001020A
- Holder attachment, 50 mm 07NAB-001040A
- Socket, 19 mm 07JAA-001020A or a commercially-available

NOTE: Keep the cam chain away from magnetic fields.

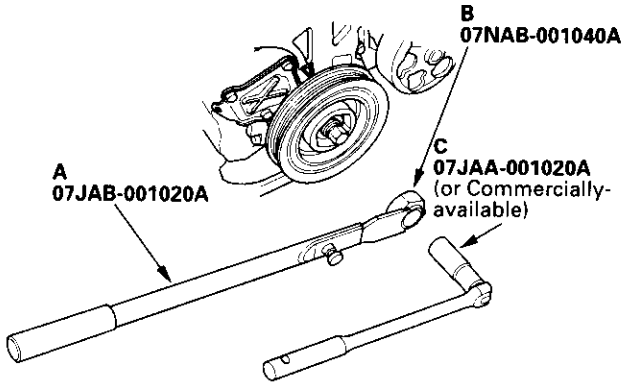
1. Turn the crankshaft pulley so its TDC mark (A) lines up with the pointer (B).



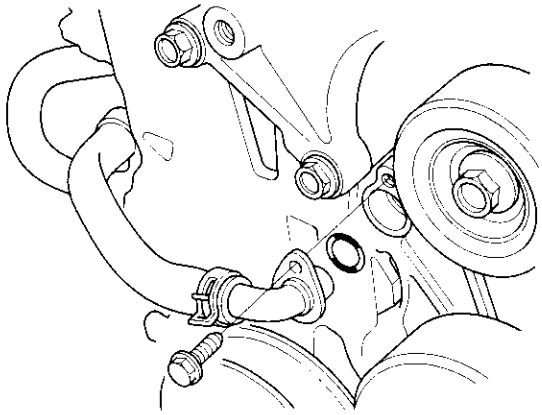
2. Remove the front tires/wheels.
3. Remove the splash shield.



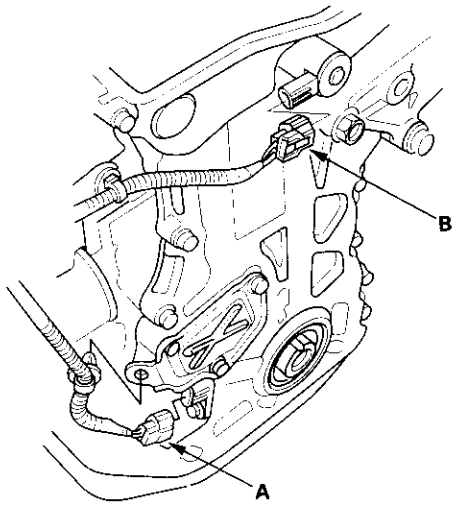
4. Remove the drive belt (see page 4-32).
5. Remove the cylinder head cover (see page 6-25).
6. Hold the pulley with holder handle (A) and holder attachment (B).



7. Remove the bolt with a 19 mm socket (C) and breaker bar.
8. Remove the oil cooler hose joint pipe from the water pump (K20A2 engine).



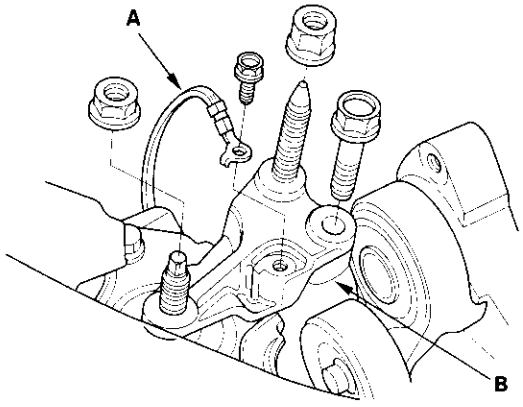
9. Disconnect the CKP sensor connector (A) and VTC oil control solenoid valve connector (B).



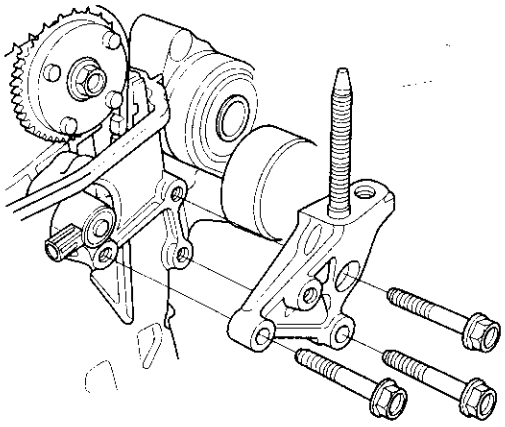
10. Remove the VTC oil control solenoid valve (see step 1 on page 11-135).

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

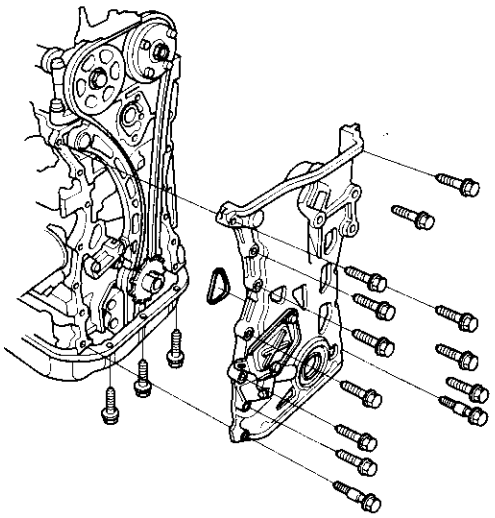
12. Remove the ground cable (A), and remove the upper bracket (B).



13. Remove the side engine mount bracket.



14. Remove the chain case.

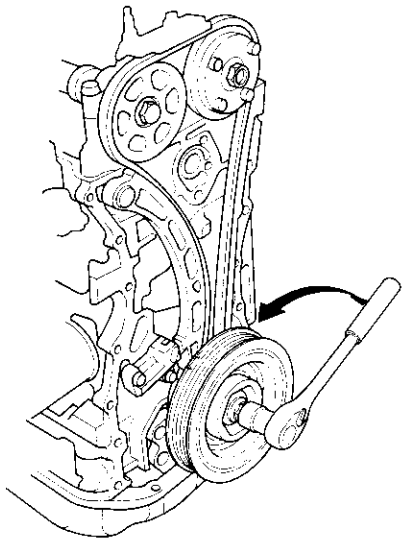


(cont'd)

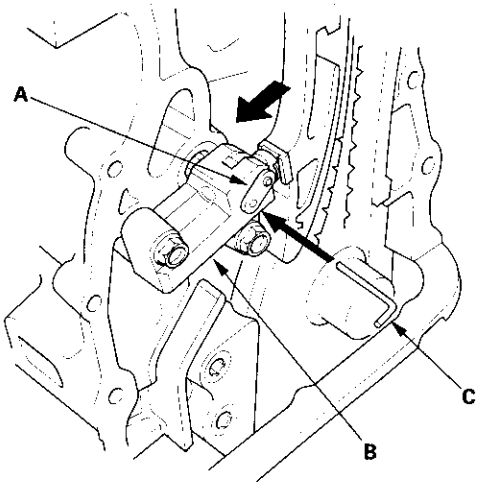
Cam Chain Removal (cont'd)

15. Loosely install the crankshaft pulley.

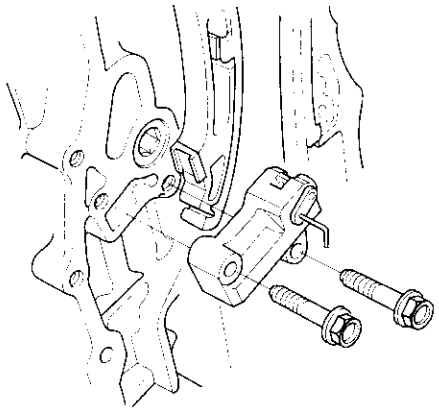
16. Turn the crankshaft counterclockwise to compress the auto-tensioner.



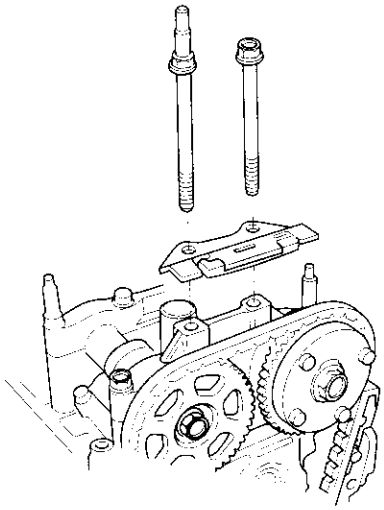
17. Align the holes on the lock (A) and the auto-tensioner (B), then insert a 1.5 mm (0.06 in.) diameter pin (C) into the holes. Turn the crankshaft clockwise to secure the pin.



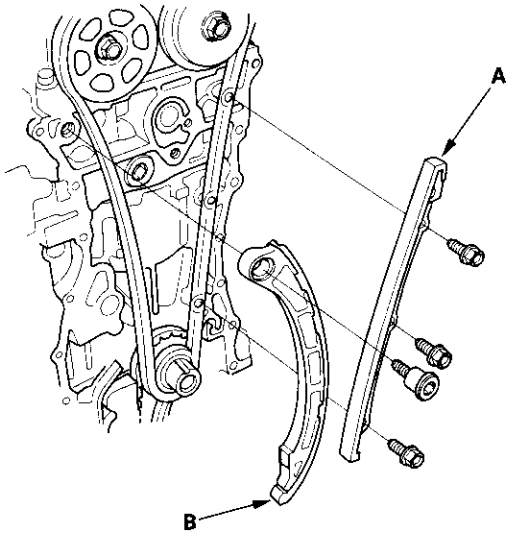
18. Remove the auto-tensioner.



19. Remove the cam chain guide B.



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



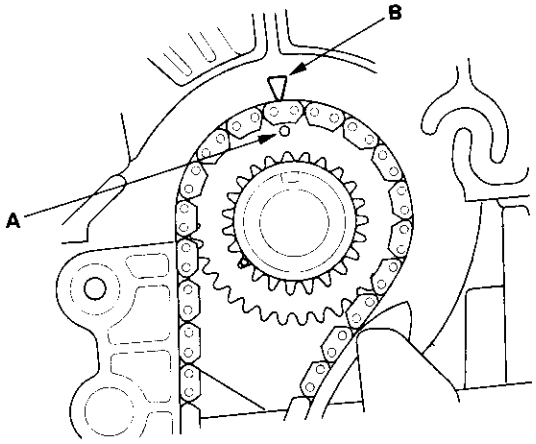
21. Remove the cam chain.

Cam Chain Installation

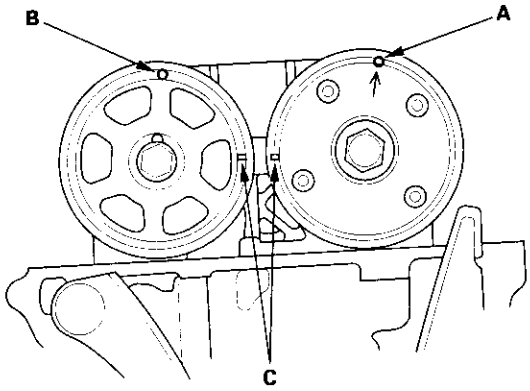
Special Tools Required
- Holder handle 07JAB-001020A
- Holder attachment, 50 mm 07NAB-001040A
- Socket, 19 mm 07JAA-001020A or a commercially-available

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.



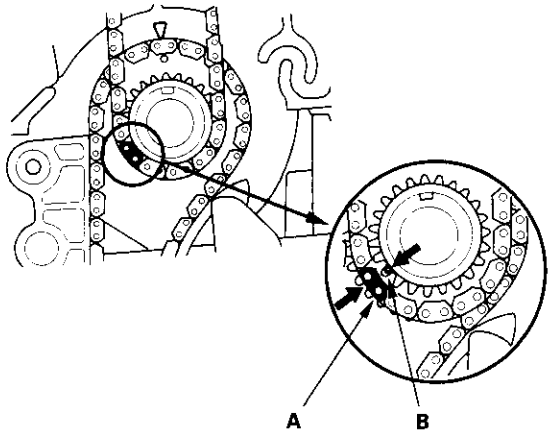
2. Set the camshafts to TDC. The punch mark (A) marked with an arrow on the Variable Valve Timing Control (VTC) actuator and the punch mark (B) on the exhaust camshaft sprocket should be at the top. Align the TDC marks (C) on the VTC actuator and exhaust camshaft sprocket.



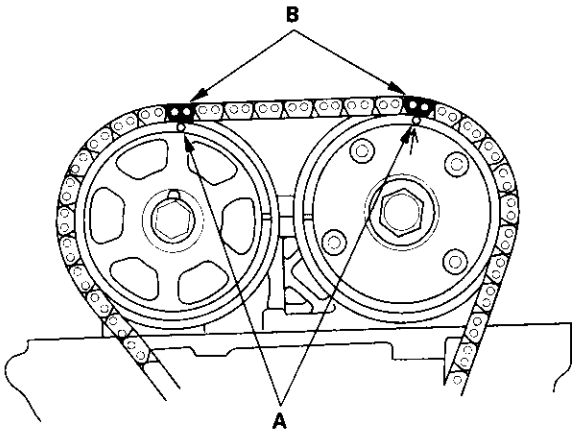
(cont'd)

Cam Chain Installation (cont'd)

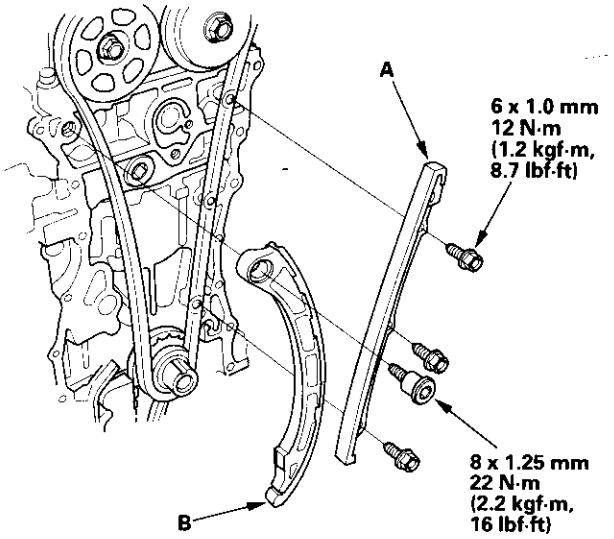
3. Install the cam chain on the crankshaft sprocket with the colored piece (A) aligned with the punch mark (B) on the crankshaft sprocket.



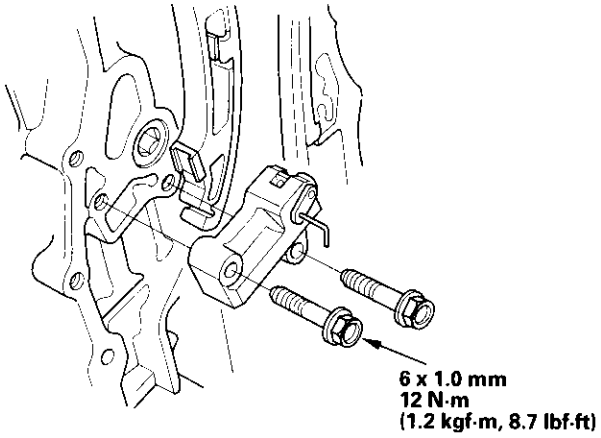
4. Install the cam chain on the VTC actuator and exhaust camshaft sprocket with the punch marks (A) aligned with the two colored pieces (B).



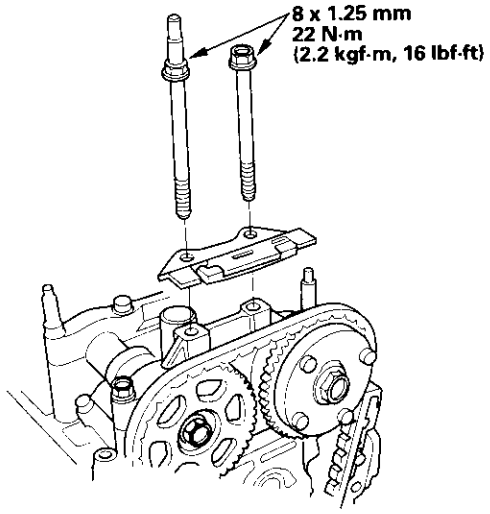
5. Install the cam chain guide A (A) and tensioner arm (B).



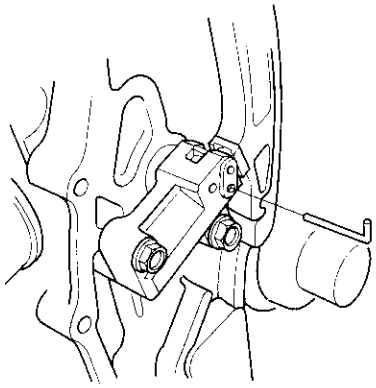
6. Install the auto-tensioner.



7. Install the cam chain guide B.



8. Remove the pin from the auto-tensioner.

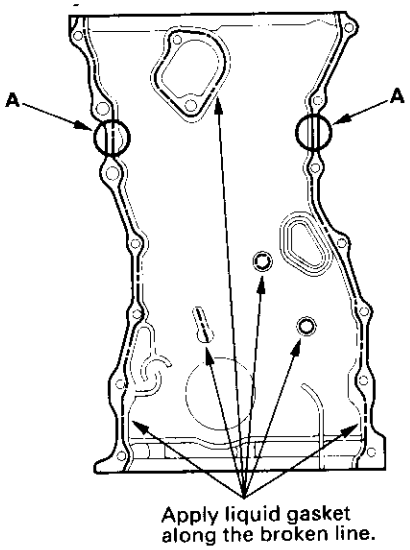


9. Check the chain case oil seal for damage. If the oil seal is damaged, replace the chain case oil seal (see page 6-24).

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

11. Clean and dry the chain case mating surfaces.

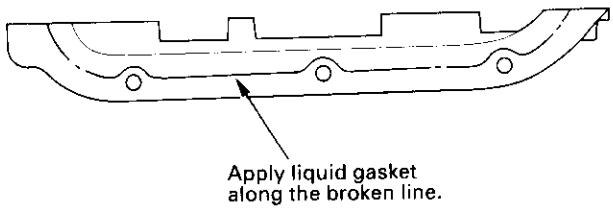
12. Apply liquid gasket, P/N 08718-0009, evenly to the cylinder block mating surface of the chain case and to the inner threads of the holes.



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 oil residue.

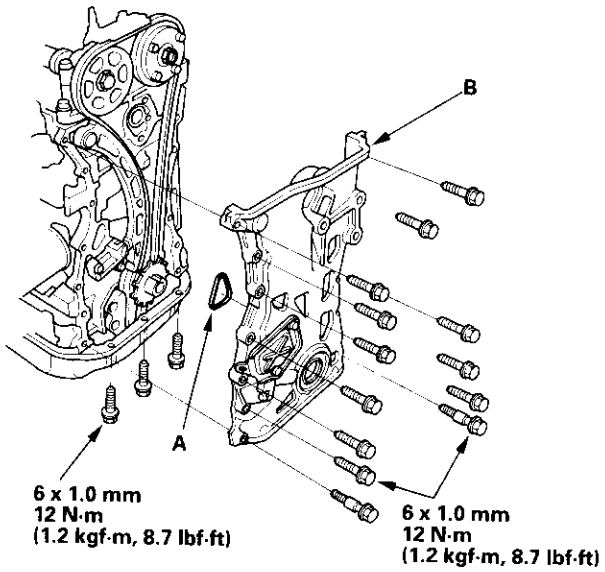


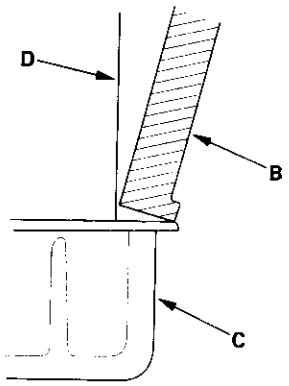
(cont'd)

Cam Chain Installation (cont'd)

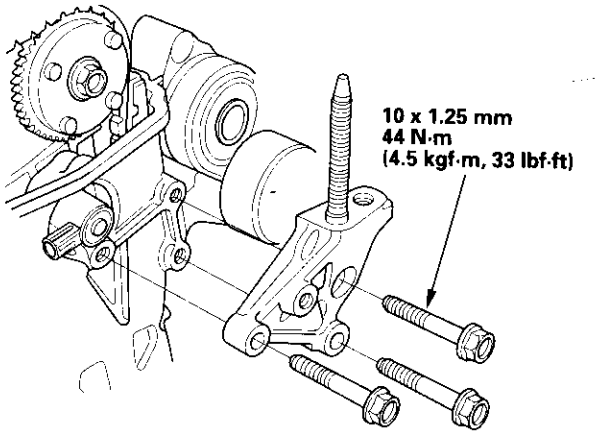
15. Install the new O-ring (A) on the chain case. Set the edge of the chain case (B) to the edge of the oil pan (C), then install the chain case on the cylinder block (D).

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

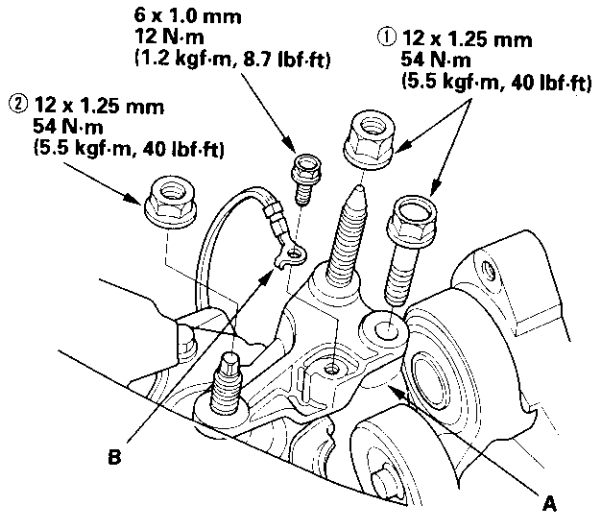




16. Install the side engine mount bracket.



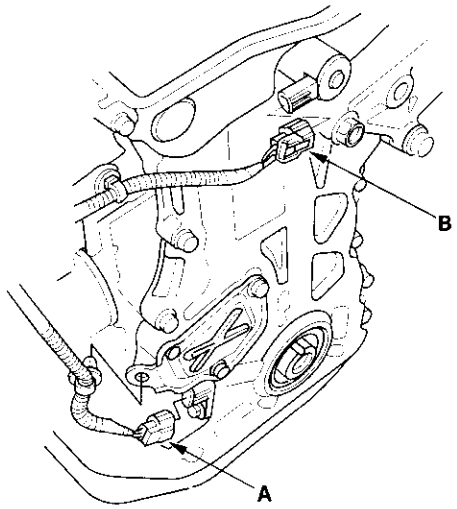
17. Install the upper bracket (A), then tighten the bolt/nuts in the numbered sequence shown.



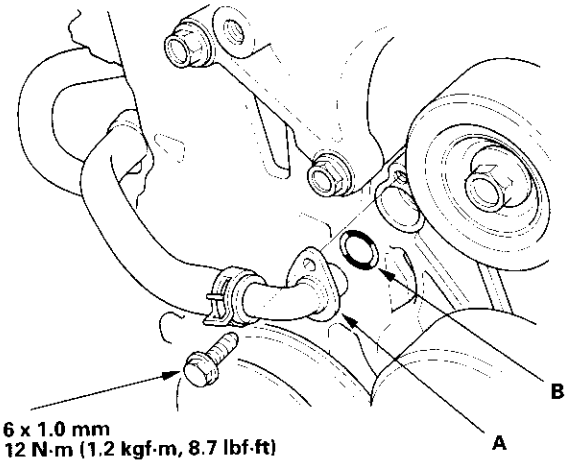
18. Install the ground cable (B).

19. Install the VTC oil control solenoid valve (see step 1 on page 11-135).

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

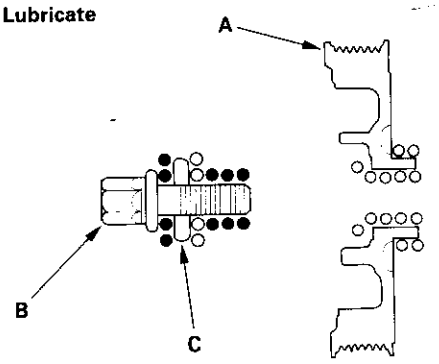


21. Install the oil cooler hose joint (A), using a new O-ring (B) (K20A2 engine).

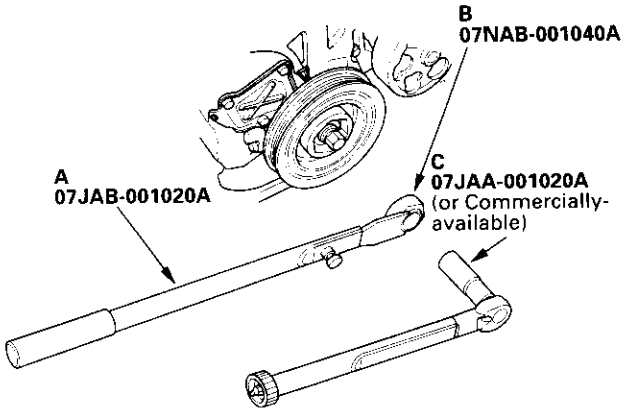


22. Clean the crankshaft pulley (A) and pulley bolt (B), and apply lubricant to the pulley bolt and washer (C).

○: **Clean**
●: **Lubricate**



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



24. 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.

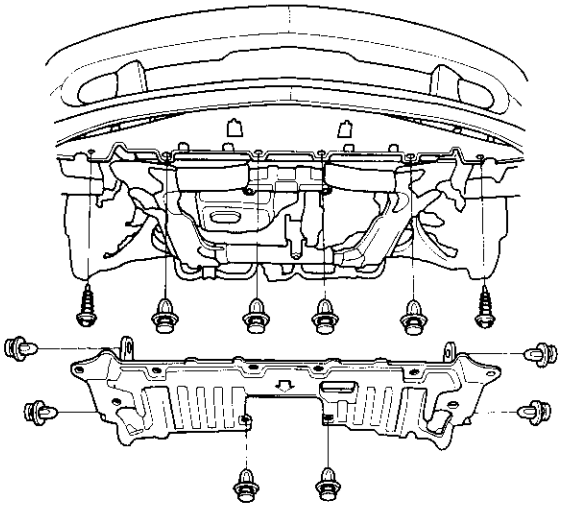
25. Install the cylinder head cover (see page 6-46).

26. Install the drive belt.

(cont'd)

Cam Chain Installation (cont'd)

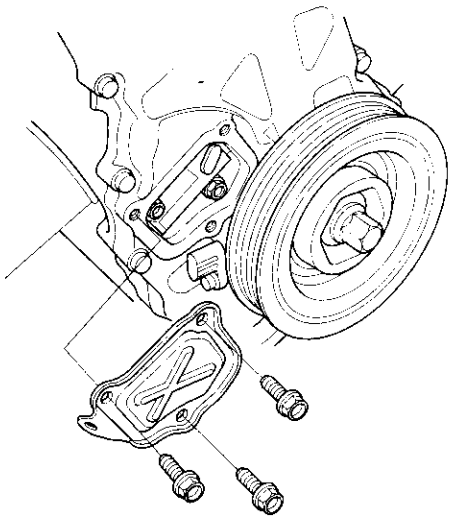
27. Install the splash shield.



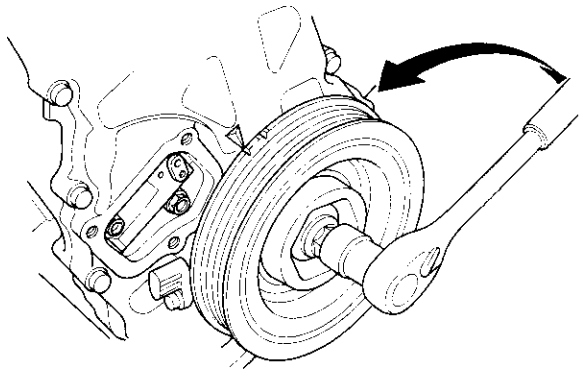
Auto-Tensioner Removal/ Installation

Removal:

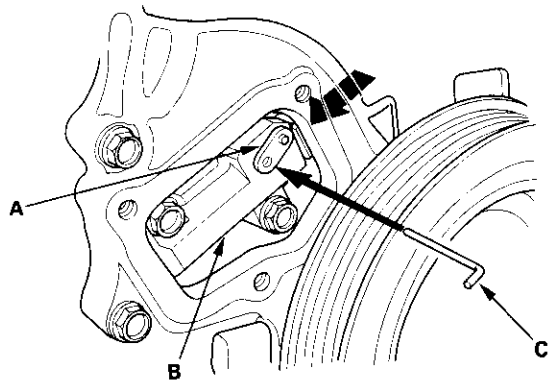
1. Remove the chain case cover.



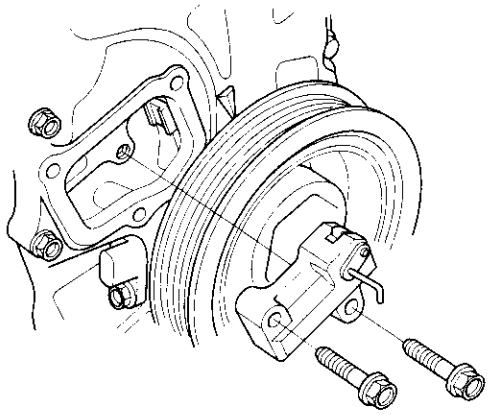
2. Turn the crankshaft counterclockwise to compress the auto-tensioner.



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.

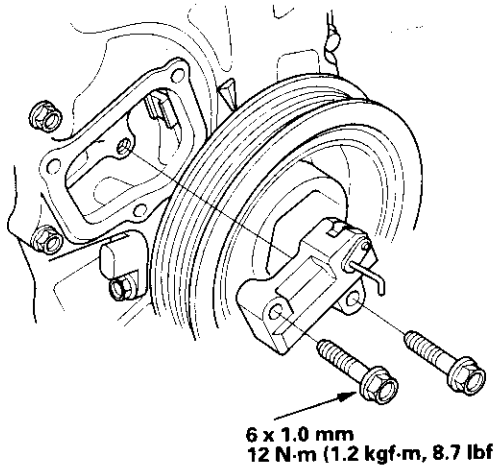


4. Remove the auto-tensioner.

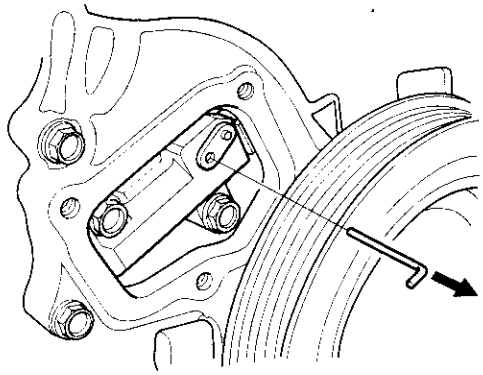


Installation:

1. Install the auto-tensioner.



2. Remove the pin from the auto-tensioner.

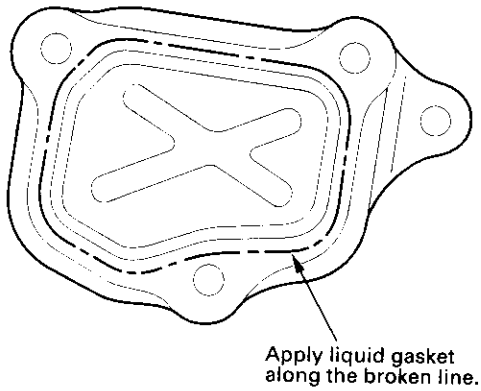


(cont'd)

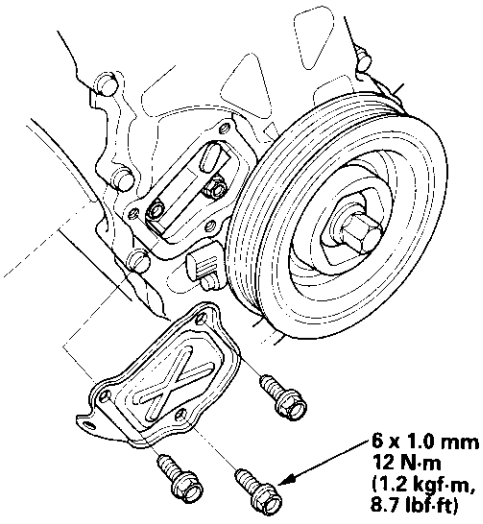
Auto-Tensioner Removal/ Installation (cont'd)

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 oil residue.



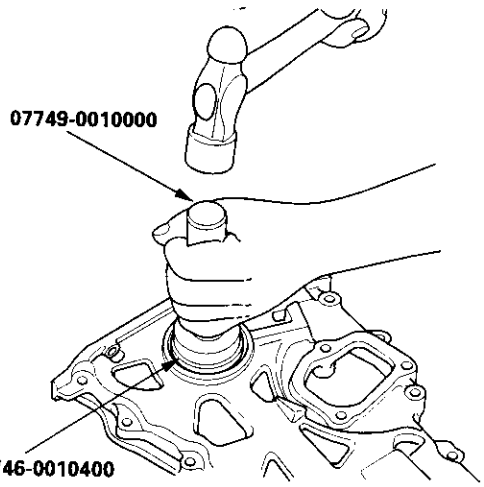
6. Install the chain case cover.



Chain Case Oil Seal Installation

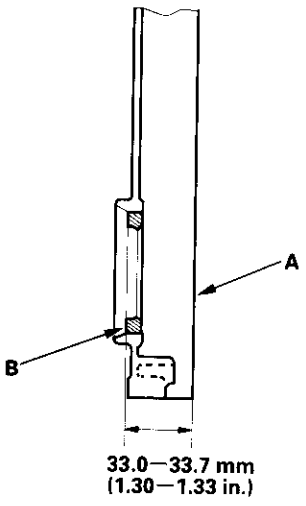
Special Tools Required
- Driver 07749-0010000
- Attachment, 52 x 55 mm 07746-0010400

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



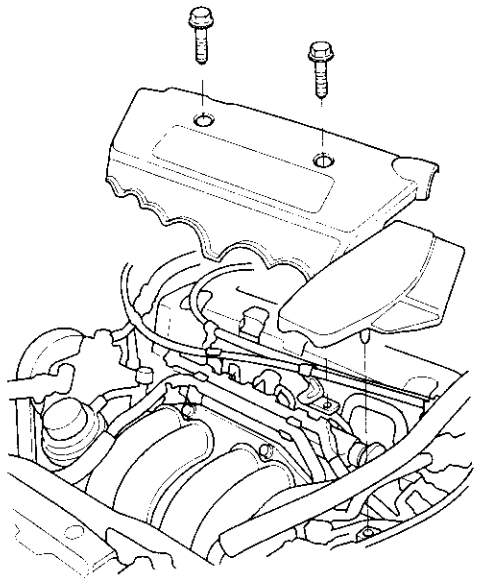
2. Measure the distance between the chain case surface (A) and oil seal (B).

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



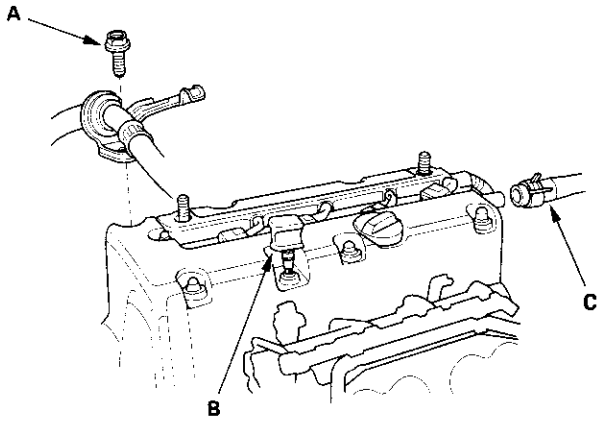
Cylinder Head Cover Removal

1. Remove the intake manifold cover.



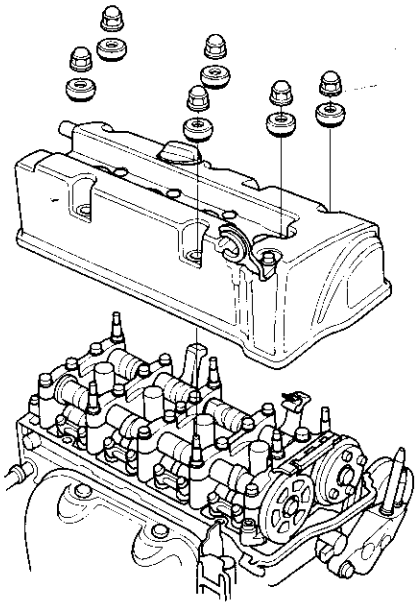
2. Remove the four ignition coils (see page 4-23).

3. Remove the bolt (A) securing the power steering hose bracket.



4. Remove the dipstick (B) and breather hose (C).

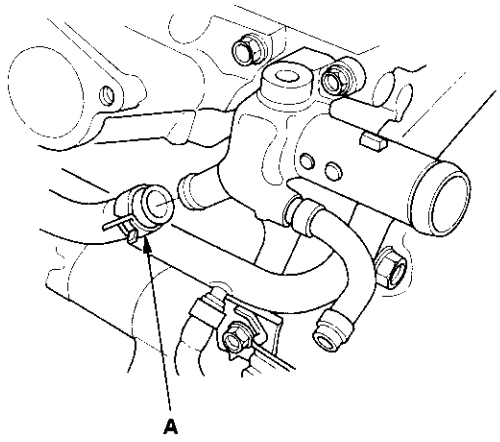
5. Remove the cylinder head cover.



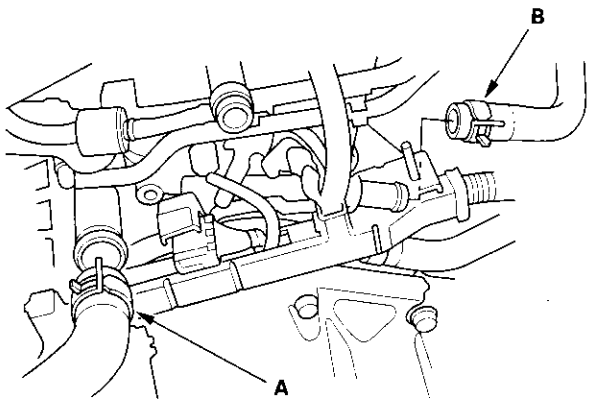
Cylinder Head Removal

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.

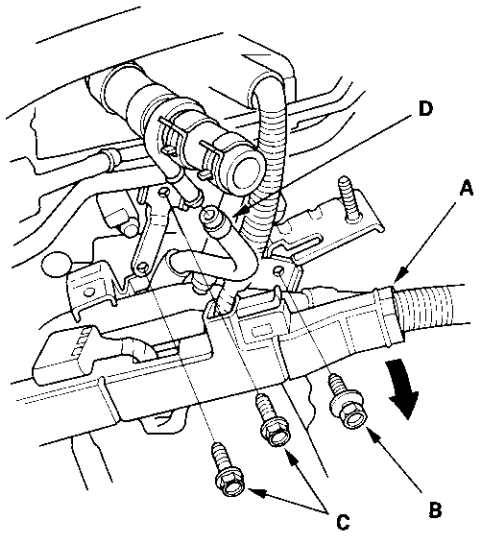
1. Drain the engine coolant (see page 10-6).
2. Relieve fuel pressure (K20A3 engine) (see page 11-155).
3. Remove the fuel feed hose (K20A3 engine) (see page 11-160).
4. Remove the drive belt (see page 4-32).
5. Remove the intake manifold (see page 9-2).
6. Remove the water bypass hose (A).



7. Remove the exhaust manifold (see page 9-14).
8. Remove the cam chain (see page 6-14).
9. Remove the engine wire harness connectors and wire harness clamps from the cylinder head.
   - Four injector connectors (K20A3 engine)
   - Engine coolant temperature (ECT) sensor connector
   - Exhaust camshaft position (CMP) sensor connector
   - Intake camshaft position (CMP) sensor connector
10. Remove the upper radiator hose (A) and heater hose (B).



11. Remove the harness holder (A) from the bracket, then remove the connecting pipe mounting bolt (B) and water bypass line mounting bolts (C).

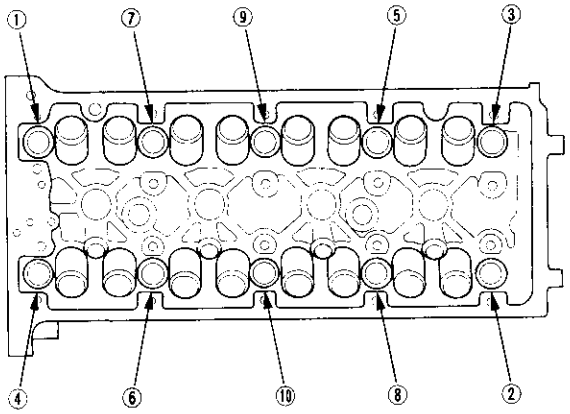


12. Remove the water bypass hose (D).

13. Remove the rocker arm assembly (see page 6-29).

14. 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:



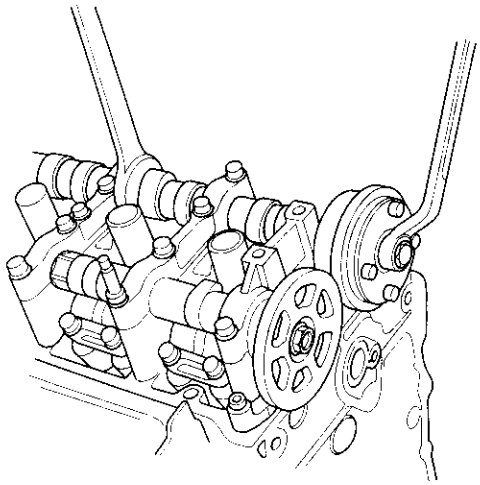
15. Remove the cylinder head.

VTC Actuator, Exhaust Camshaft Sprocket Replacement

Removal:

1. Remove the cam chain (see page 6-14).

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.

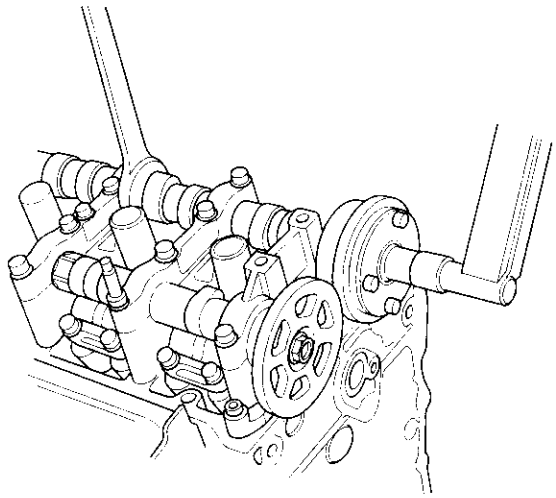
(cont'd)

VTC Actuator, Exhaust Camshaft Sprocket Replacement (cont'd)

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:
69 N·m (7.0 kgf·m, 51 lbf·ft)



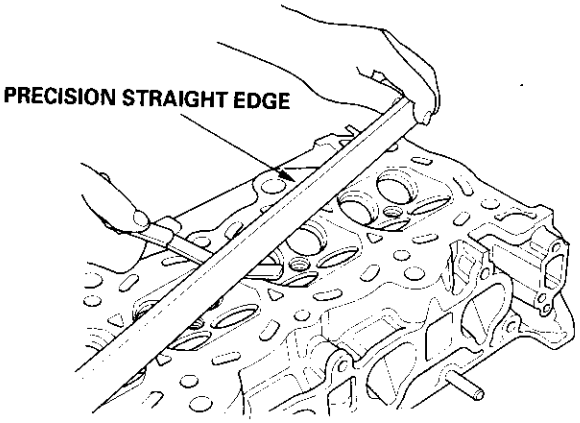
4. Install the cam chain (see page 6-17).

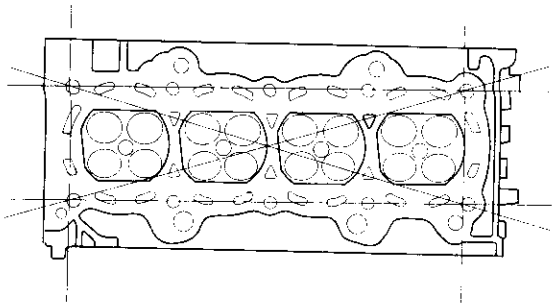
Cylinder Head Inspection for Warpage

1. Remove the cylinder head (see page 6-25).
2. Inspect the camshaft (see page 6-33).
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.)

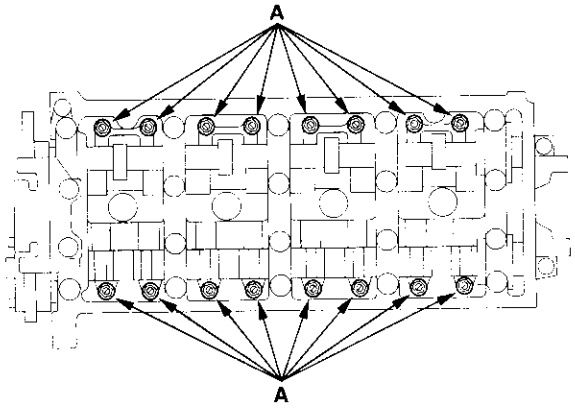




Rocker Arm Assembly Removal

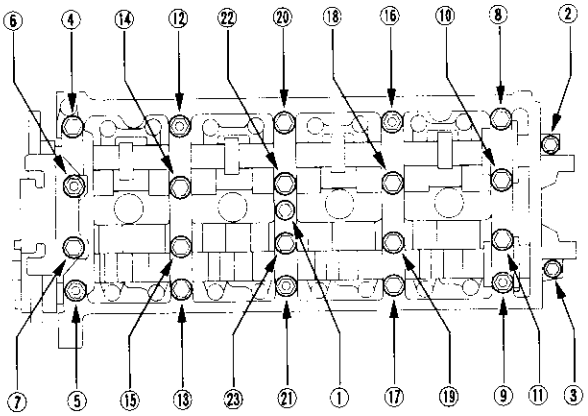
1. Remove the cam chain (see page 6-14).

2. Loosen the rocker arm adjusting screws (A).



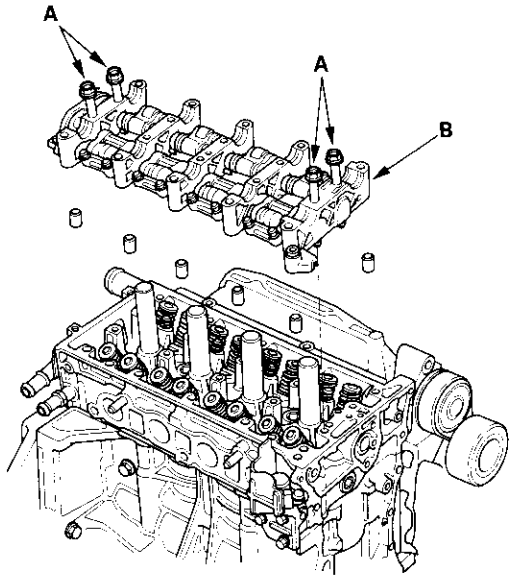
3. Remove the camshaft holder bolts. To prevent damaging the camshafts, unscrew the bolts two turns at a time, in a crisscross pattern.

Camshaft Holder Bolts Loosening Sequence:



4. Remove the cam chain guide B, camshaft holders, and camshafts.

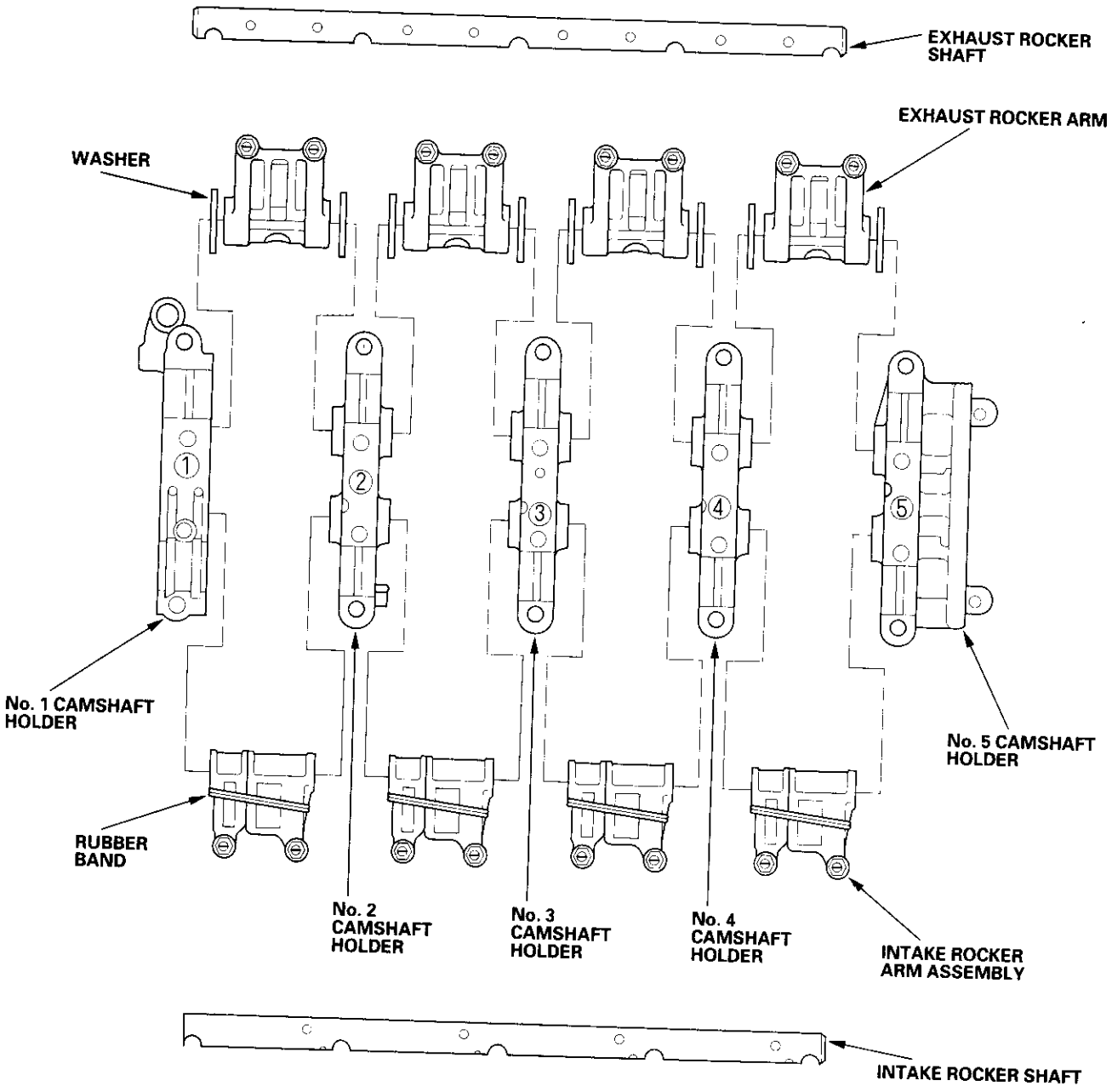
5. Insert the bolts (A) into the rocker shaft holder, then remove the rocker arm assembly (B).



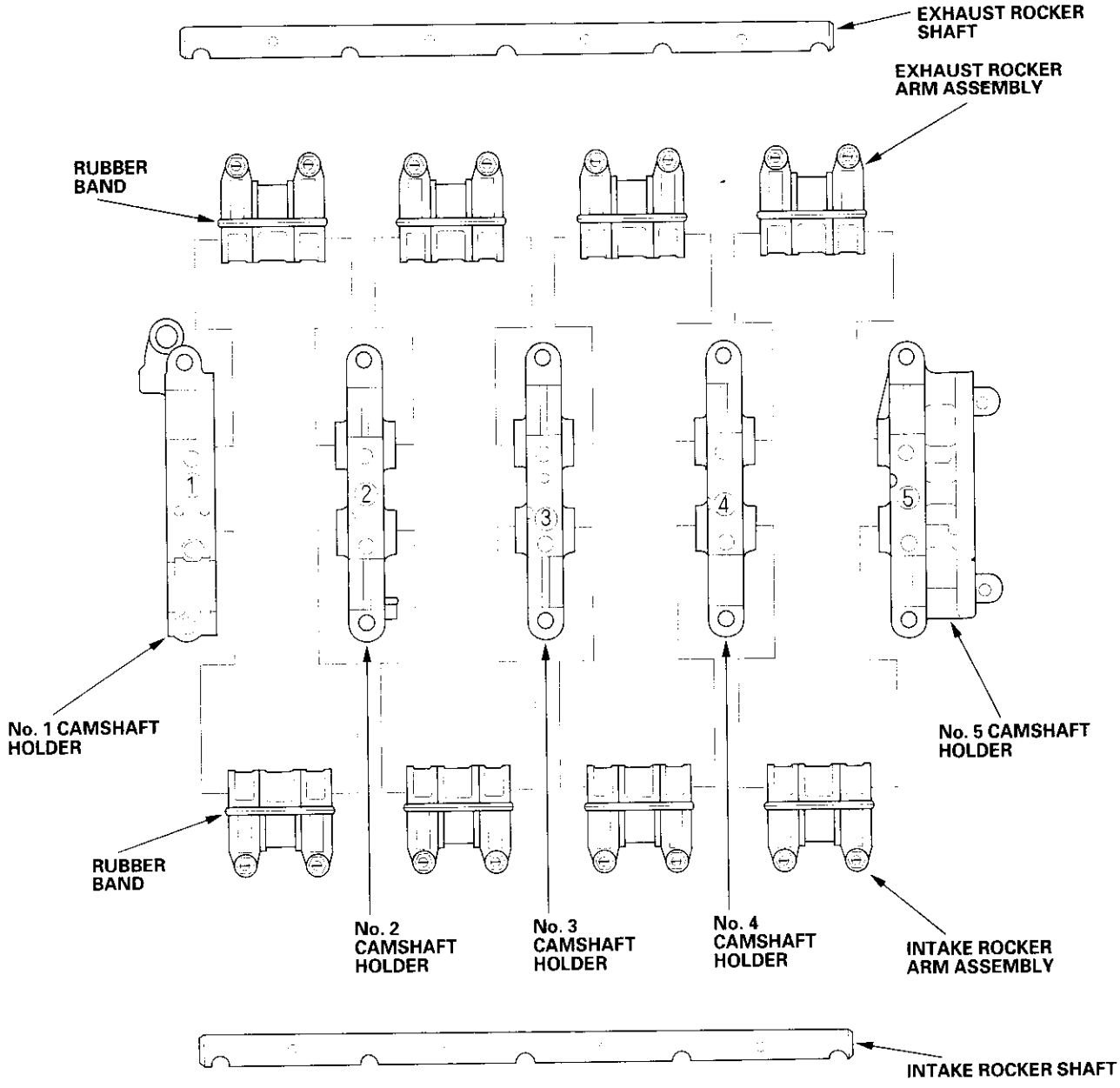
Rocker Arms and Shafts Disassembly/Reassembly

NOTE:
- Identify parts as they are removed to ensure reinstallation in original location.
- Inspect the rocker shafts and rocker arms (see page 6-32).
- 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.

K20A3 engine:

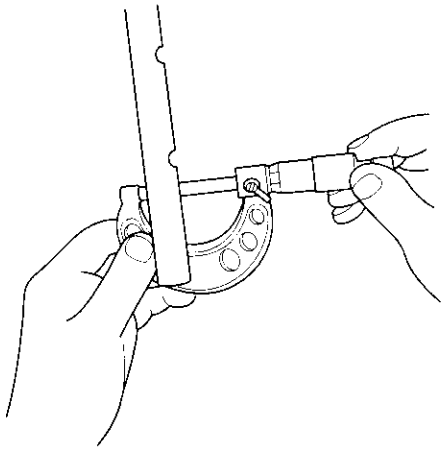


K20A2 engine:

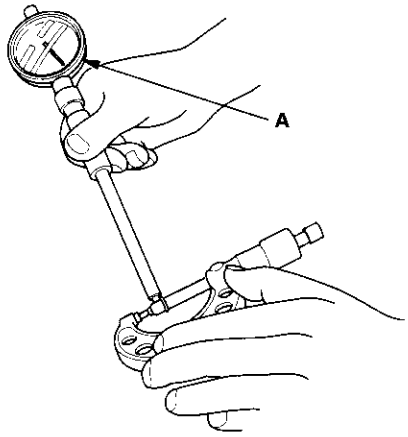


Rocker Arms and Shafts Inspection

1. Remove the rocker arm assembly (see page 6-29).
2. Measure the diameter of the shaft at the first rocker location.

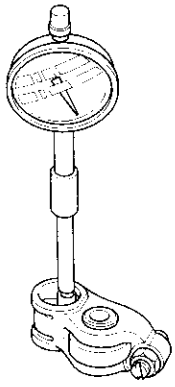


3. Zero the gauge (A) to the shaft diameter.



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

Rocker Arm-to-Shaft Clearance:
K20A3 engine:
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.)
K20A2 engine:
Standard (New): 0.025 – 0.052 mm (0.0010 – 0.0020 in.)
Service Limit: 0.08 mm (0.03 in.)

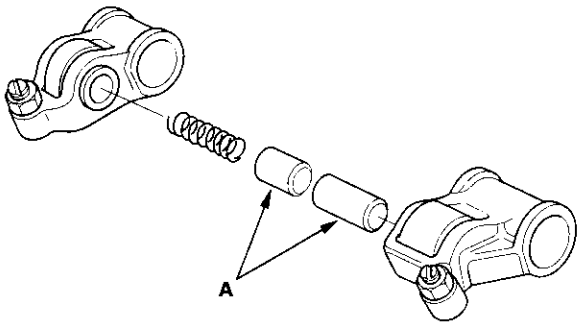


5. Repeat for all rocker arms and both shafts. If the clearance is over the limit, replace the rocker shaft and all overtolerance rocker arms. If any VTEC rocker arm needs replacement, replace rocker arms (primary and secondary, or primary, mid and secondary) as a set.

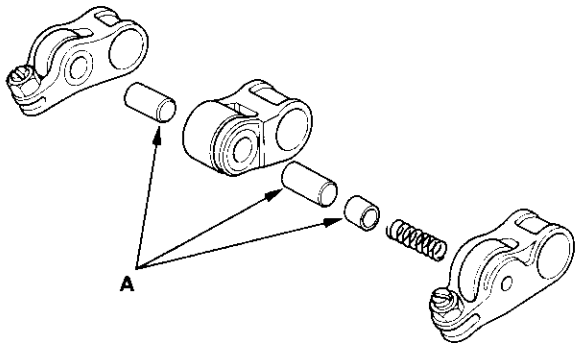
6. Inspect the rocker arm pistons (A). Push each piston manually. If it does not move smoothly, replace the rocker arm set.

   NOTE: Apply oil to the pistons when reassembling.

   K20A3 engine:



   K20A2 engine:



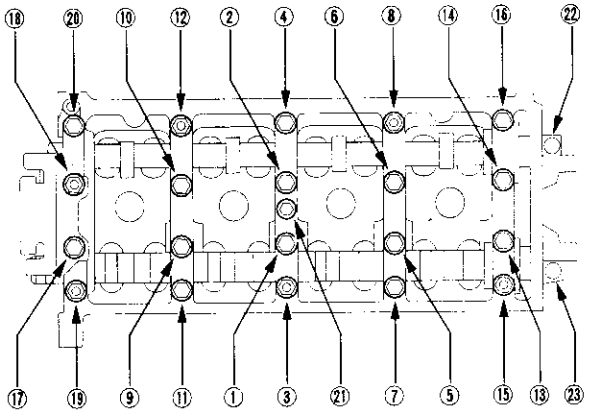
Camshaft Inspection

NOTE: Do not rotate the camshaft during inspection.

1. Remove the rocker arm assembly (see page 6-43).

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



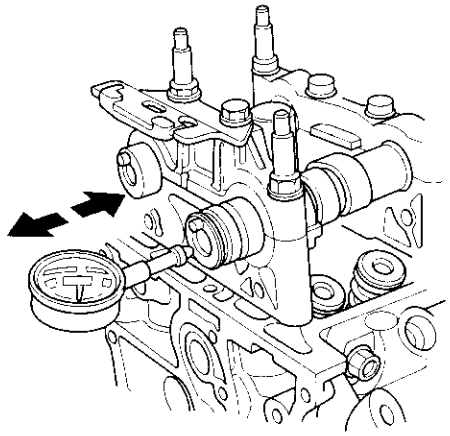
(cont'd)

Camshaft Inspection (cont'd)

3. Seat the camshaft by pushing it away from the camshaft pulley end of the cylinder head.

4. Zero the dial indicator against the end of the camshaft, then push the camshaft back and forth and read the end play. If the end play is beyond the service limit, replace the cylinder head and recheck. If it is still beyond the service limit, replace the camshaft.

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



5. 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.

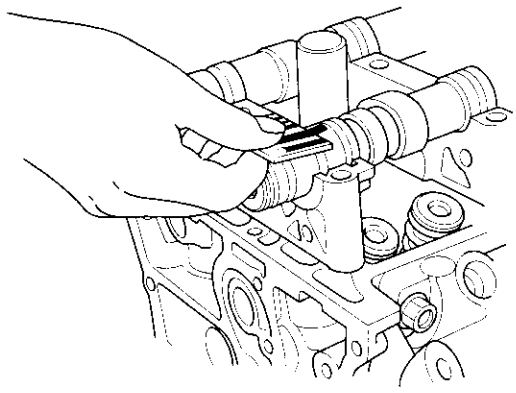
7. Clean the camshaft journal surfaces in the cylinder head, then set the camshafts back in place. Place a plastigage strip across each journal.

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.

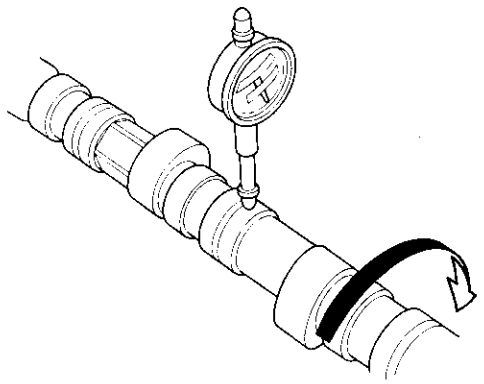
Camshaft-to-Holder Oil Clearance:
Standard (New):
No. 1 Journal: 0.030 – 0.069 mm (0.001 – 0.003 in.)
No. 2, 3, 4, 5 Journals: 0.060 – 0.099 mm (0.002 – 0.004 in.)
Service Limit: 0.15 mm (0.006 in.)



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.)



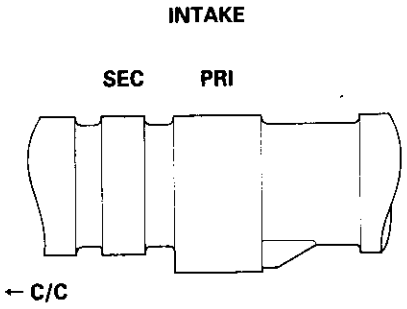
11. Measure cam lobe height.

Cam Lobe Height Standard (New):

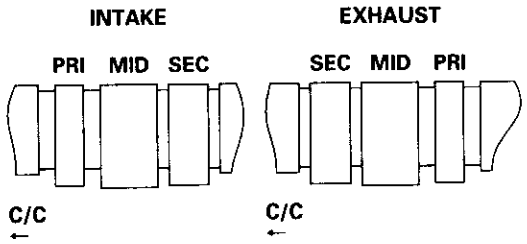
		INTAKE	EXHAUST
K20A3 engine	PRI	33.925 mm (1.3356 in.)	34.092 mm (1.3422 in.)
	SEC	29.638 mm (1.1668 in.)	
K20A2 engine	PRI	32.791 mm (1.2910 in.)	32.772 mm (1.2902 in.)
	MID	35.534 mm (1.3990 in.)	34.768 mm (1.3688 in.)
	SEC	32.678 mm (1.2865 in.)	32.661 mm (1.2859 in.)

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

K20A3 engine:



K20A2 engine:



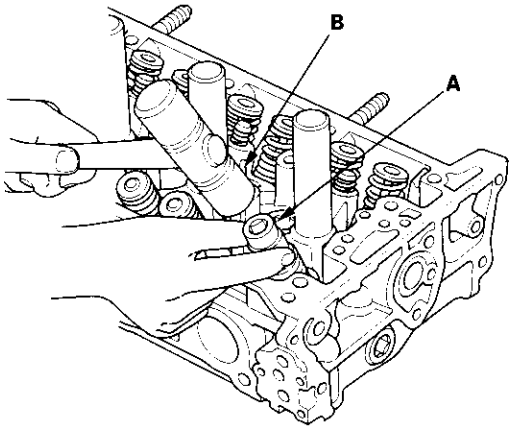
Valves, Springs, and Valve Seals Removal

Special Tools Required
• Valve spring compressor attachment 07757-PJ1010A

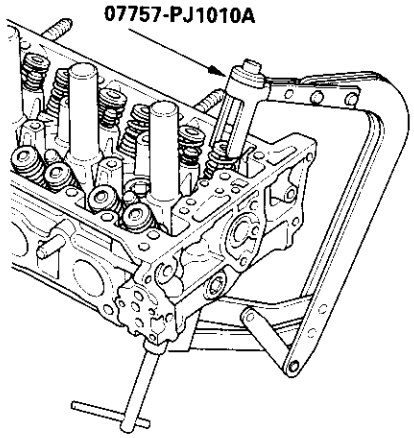
Identify the valves and valve springs as they are removed so that each item can be reinstalled in its original position.

1. Remove the cylinder head (see page 6-26).

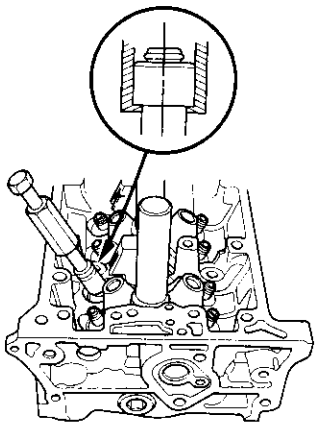
2. Using an appropriate-sized socket (A) and plastic mallet (B), lightly tap the valve retainer to loosen the valve keepers.



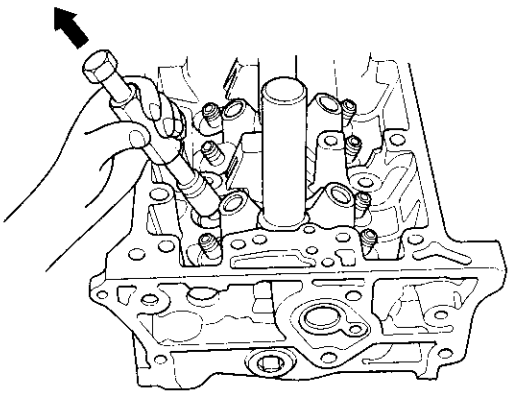
3. Install the spring compressor. Compress the spring, and remove the valve keepers.



4. Install the valve guide seal remover.



5. Remove the valve seal.



Valve Inspection

1. Remove the valves (see page 6-36).

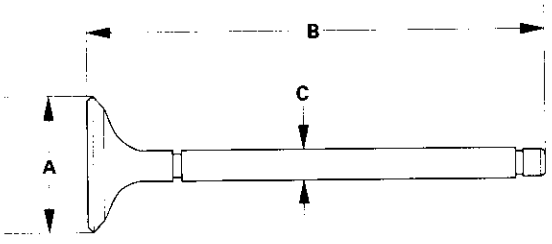
2. Measure the valve in these areas.

K20A3 engine:
Intake Valve Dimensions
A Standard (New): 34.85 – 35.15 mm (1.372 – 1.384 in.)
B Standard (New): 108.7 – 109.5 mm (4.280 – 4.311 in.)
C Standard (New): 5.475 – 5.485 mm (0.2156 – 0.2159 in.)
C Service Limit: 5.445 mm (0.214 in.)

Exhaust Valve Dimensions
A Standard (New): 29.85 – 30.15 mm (1.175 – 1.187 in.)
B Standard (New): 108.3 – 109.1 mm (4.264 – 4.295 in.)
C Standard (New): 5.450 – 5.460 mm (0.2146 – 0.2150 in.)
C Service Limit: 5.42 mm (0.213 in.)

K20A2 engine:
Intake Valve Dimensions
A Standard (New): 34.85 – 35.15 mm (1.372 – 1.384 in.)
B Standard (New): 108.8 – 109.4 mm (4.283 – 4.307 in.)
C Standard (New): 5.475 – 5.485 mm (0.2156 – 0.2159 in.)
C Service Limit: 5.445 mm (0.214 in.)

Exhaust Valve Dimensions
A Standard (New): 29.85 – 30.15 mm (1.175 – 1.187 in.)
B Standard (New): 108.4 – 109.0 mm (4.268 – 4.291 in.)
C Standard (New): 5.450 – 5.460 mm (0.2146 – 0.2150 in.)
C Service Limit: 5.42 mm (0.213 in.)

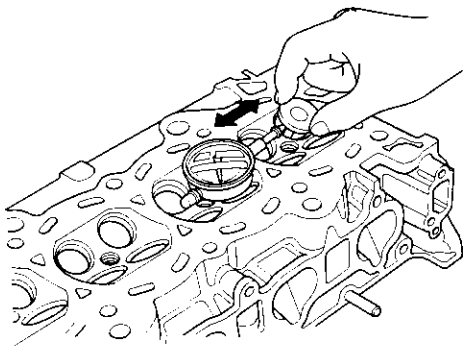


Valve Stem-to-Guide Clearance Inspection

1. Remove the valves (see page 6-36).
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.)

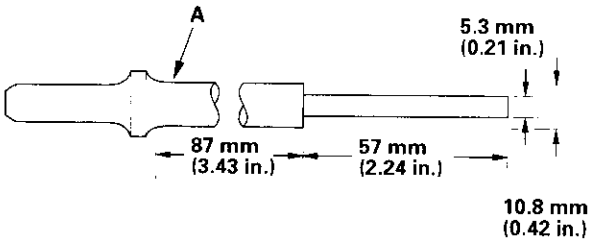
Exhaust Valve Stem-to-Guide Clearance:
Standard (New): 0.055 – 0.080 mm (0.0022 – 0.0031 in.)
Service Limit: 0.11 mm (0.004 in.)

Valve Guide Replacement

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

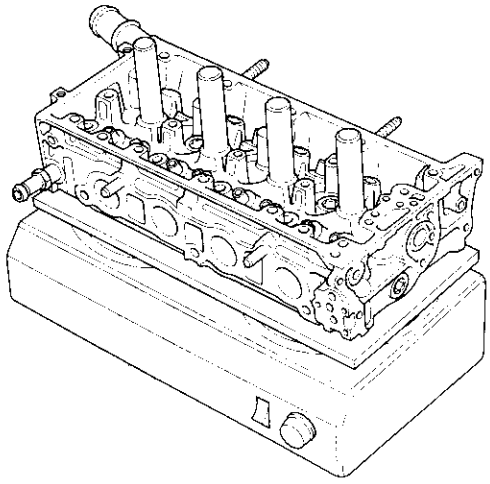
1. Inspect valve stem-to-guide clearance (see page 6-37).

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.



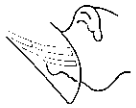
3. Select the proper replacement guides, and chill them in the freezer section of a refrigerator for about an hour.

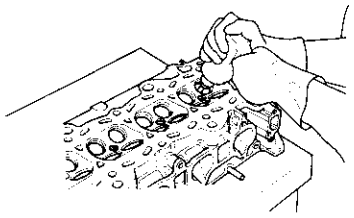
4. Use a hot plate or oven to evenly heat the cylinder head to 300°F (150°C). Monitor the temperature with a cooking thermometer. Do not get the head hotter than 300°F (150°C); excessive heat may loosen the valve seats.

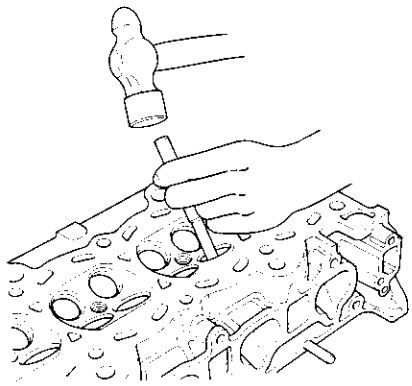


5. Working from the camshaft side, use the driver and an air hammer to drive the guide about 2 mm (0.1 in.) towards the combustion chamber. This will knock off some of the carbon and make removal easier. Hold the air hammer directly in line with the valve guide to prevent damaging the driver.

6. Turn the head over, and drive the guide out toward the camshaft side of the head.





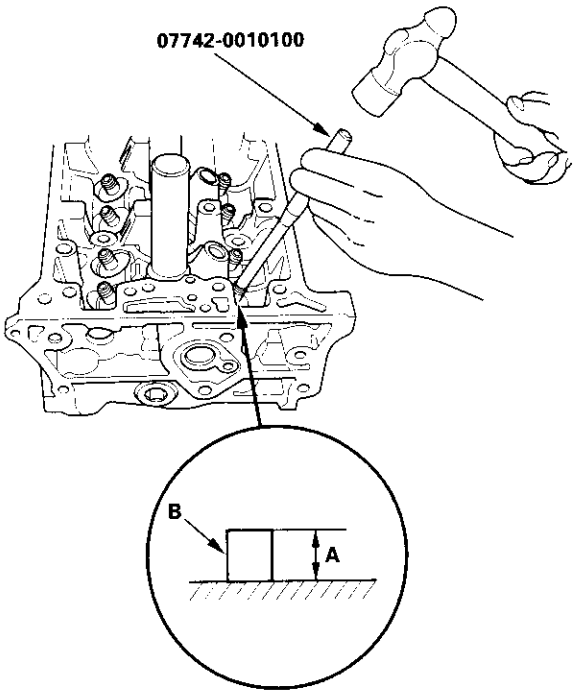


7. If a valve guide won't move, drill it out with a 8 mm (5/16 inch) bit, then try again. Drill guides only in extreme cases; you could damage the cylinder head if the guide breaks.

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

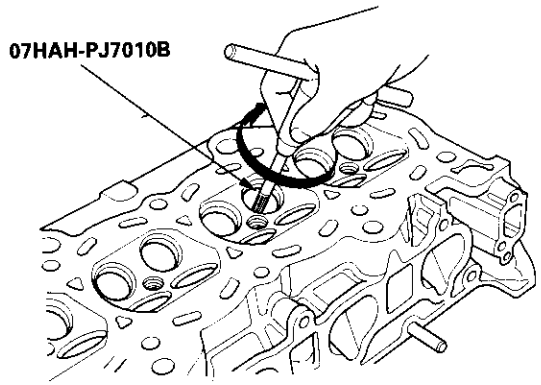
9. Apply a thin coat of clean engine oil to the outside of the new valve guide. Install the guide from the camshaft side of the head; use the special tool to drive the guide in to the specified installed height (A) of the guide (B). If you have all 16 guides to do, you may have to reheat the head.

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.

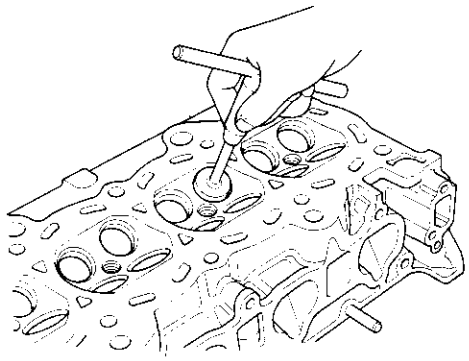
13. Thoroughly wash the guide in detergent and water to remove any cutting residue.

14. Check the clearances with a valve (see page 6-37). 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 6-37). If the valve guides are worn, replace them (see page 6-38) before cutting the valve seats.

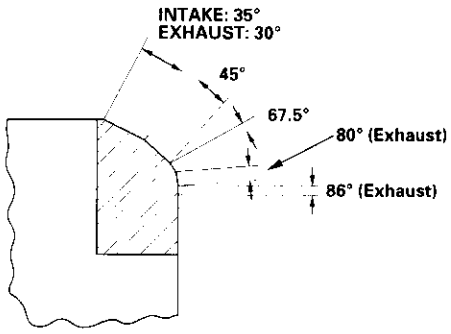
2. Renew the valve seats in the cylinder head using a valve seat cutter.



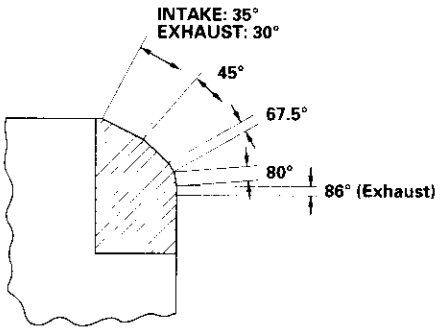
3. Carefully cut a 45° seat, removing only enough material to ensure a smooth and concentric seat.

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

K20A3 engine:



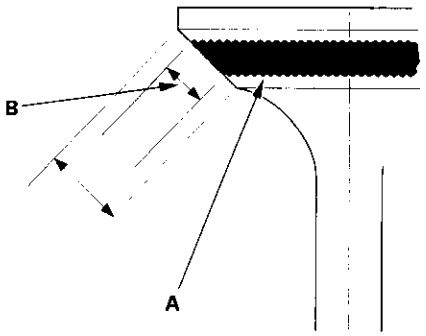
K20A2 engine:



5. Make one more very light pass with the 45° cutter to remove any possible burrs caused by the other cutters.

   Valve Seat Width:
   Standard (New): 1.25–1.55 mm (0.049–0.061 in.)
   Service Limit: 2.00 mm (0.079 in.)

6. After resurfacing the seat, inspect for even valve seating: Apply Prussian Blue compound (A) to the valve face. Insert the valve in its original location in the head, then lift it and snap it closed against the seat several times.



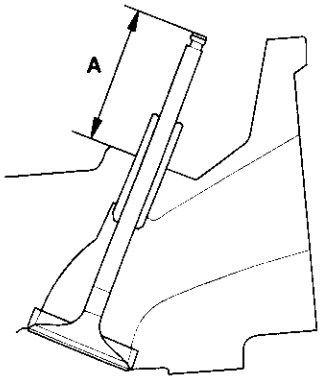
7. The actual valve seating surface (B), as shown by the blue compound, should be centered on the seat.
   - If it is too high (closer to the valve stem), you must make a second cut with the 67.5° cutter to move it down, then one more cut with the 45° cutter to restore seat width.
   - If it is too low (close to the valve edge), you must make a second cut with the 35° cutter (intake side) or the 30° cutter (exhaust side) to move it up, then make one more cut with the 45° cutter to restore seat width.

   NOTE: The final cut should always be made with the 45° cutter.

8. Insert the intake and exhaust valves in the head, and measure 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.)



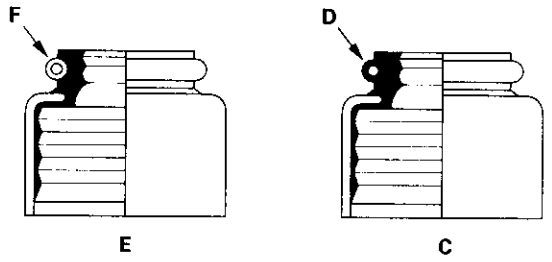
9. If valve stem installed height is over the standard, replace the valve and recheck. If it is still over the standard, replace the cylinder head; the valve seat in the head is too deep.

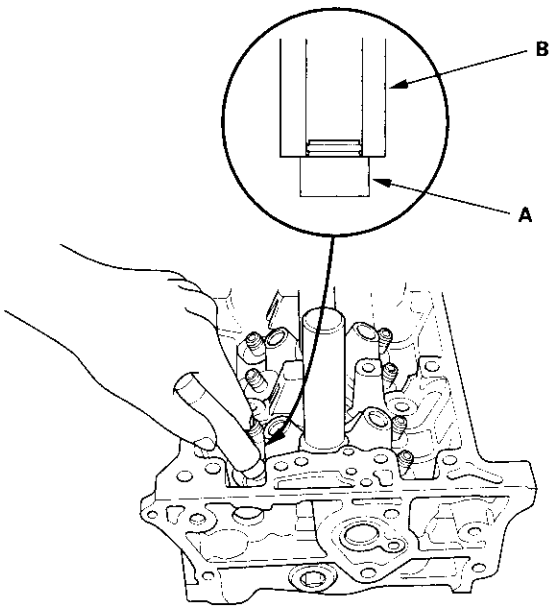
Valves, Springs, and Valve Seals Installation

Special Tools Required
- Valve spring compressor attachment 07757-PJ1010A

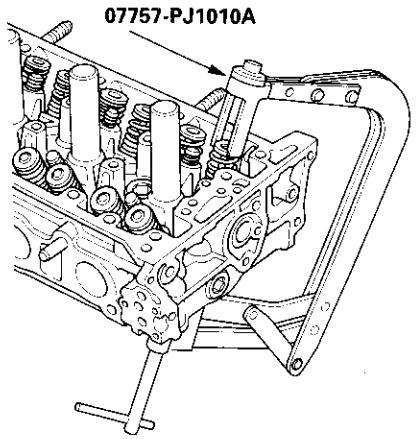
1. Coat the valve stems with engine oil. Install the valves in the valve guides.
2. Check that the valves move up and down smoothly.
3. Install the spring seats on the cylinder head.
4. Install the new valve seals (A) using the valve guide seal installer (B).

   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.

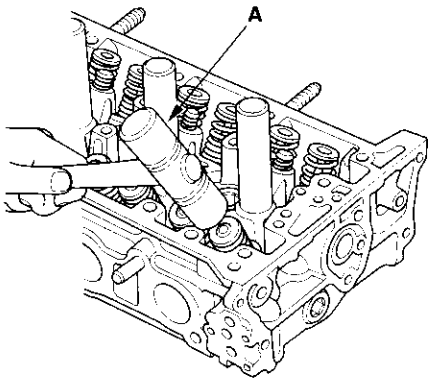




5. Install the valve spring(s). Place the end of the valve spring with closely wound coils toward the cylinder head.
6. Install the valve retainer.
7. Install the valve spring compressor. Compress the spring, and install the valve keepers.



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.

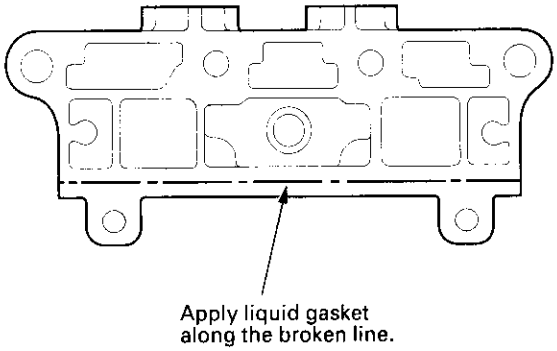


Rocker Arm Assembly Installation

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

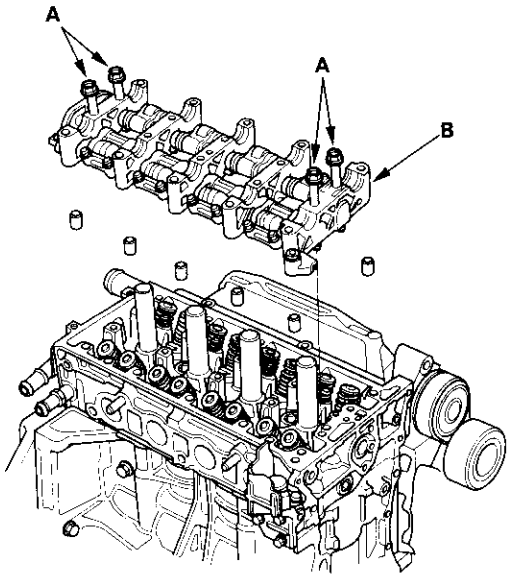
2. Apply liquid gasket, part No. 08718-0009 evenly to the cylinder head mating surface of the No. 5 rocker shaft holder.

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



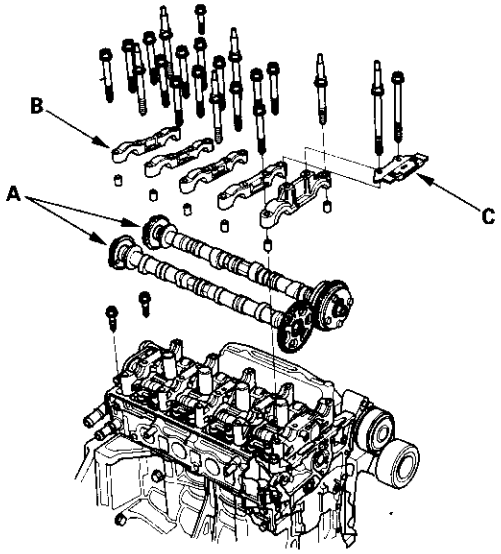
3. Reassemble the rocker arm assembly (see page 6-30).

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.

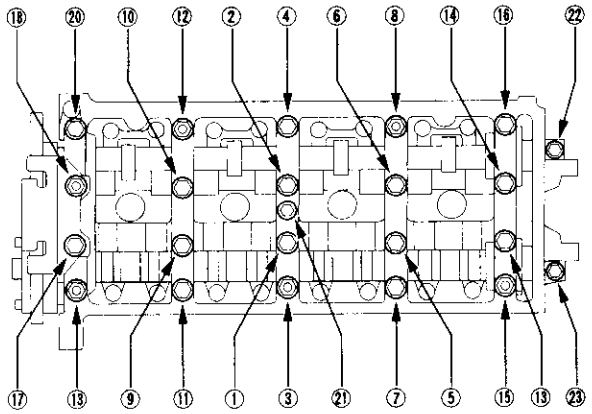
6. Punch marks on the VTC actuator and exhaust camshaft sprocket are facing up, then set the camshafts (A) in the holder.



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

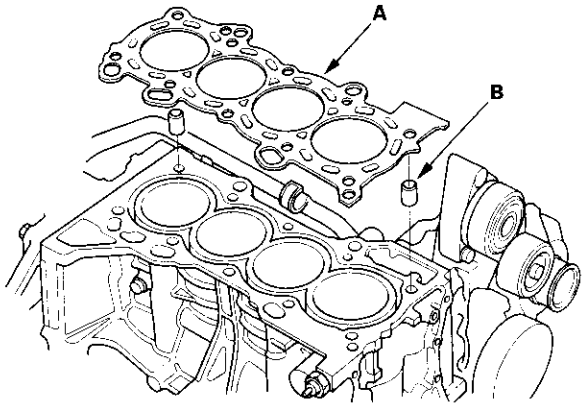


9. Install the cam chain (see page 6-17), and adjust the valve clearance (see page 6-11).

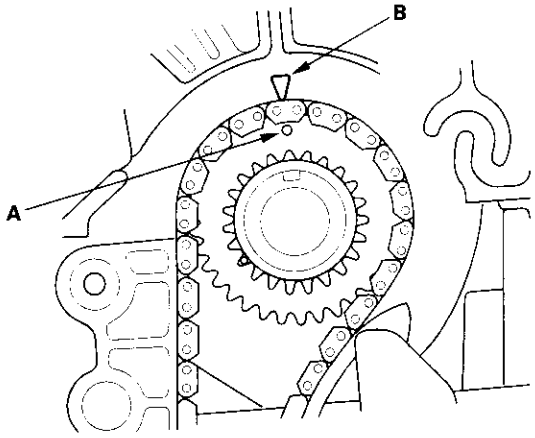
Cylinder Head Installation

Install the cylinder head in the reverse order of removal:

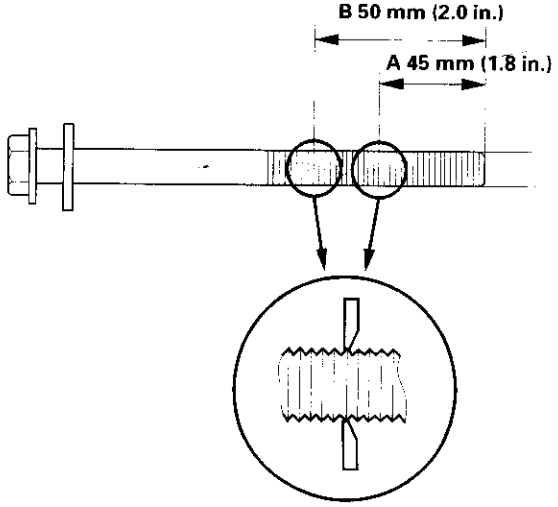
1. Clean the cylinder head and block surface.
2. Install the new cylinder head gasket (A) and dowel pins (B) on the cylinder block. Always use a new cylinder head gasket.



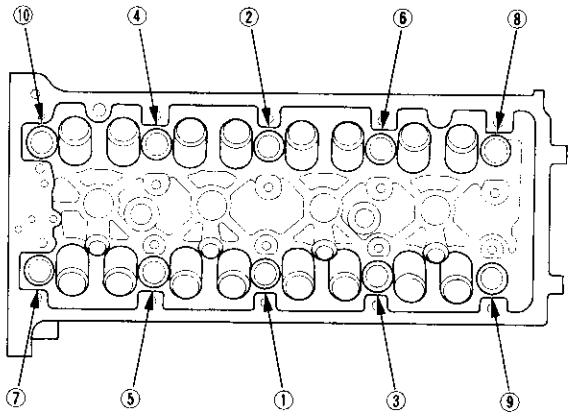
3. Set the crankshaft to top dead center (TDC). Align the TDC mark (A) on the crankshaft sprocket with the pointer (B) on the cylinder block.



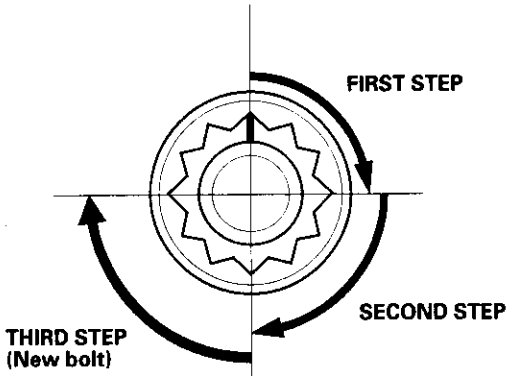
4. Install the cylinder head on the block.
5. Measure the diameter of each cylinder head bolt at point A and point B.



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

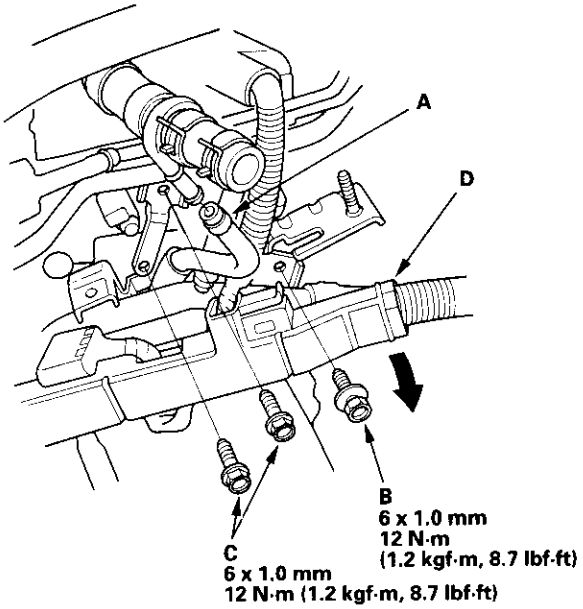


9. After torquing, tighten all cylinder head bolts in two steps (90° per step). If you are using a new cylinder head bolt, tighten the bolt an extra 90°.



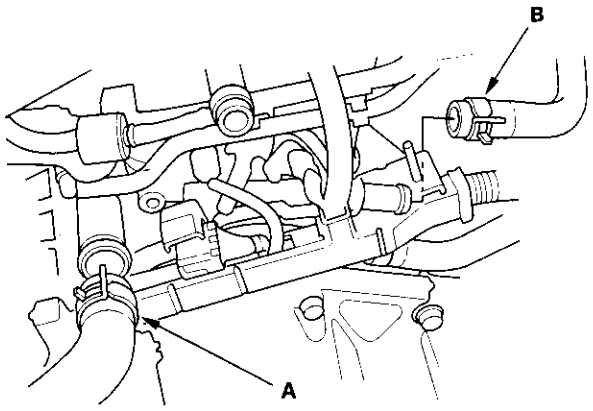
10. Install the rocker arm assembly (see page 6-43).

11. Install the water bypass hose (A).

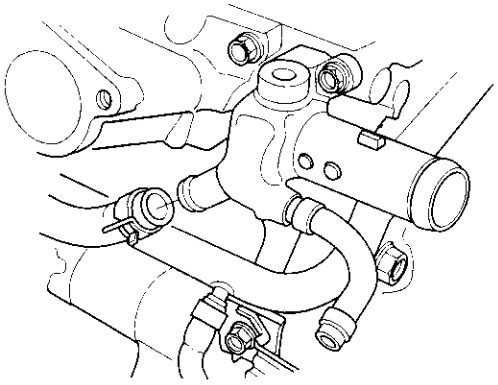


12. Tighten the connecting pipe mounting bolt (B) and water bypass line mounting bolts (C), then install the harness holder (D) on the bracket.

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



14. Install the water bypass hose.



15. Install the intake manifold (see page 9-2).

16. Install the exhaust manifold (see page 9-14).

17. Install the cam chain (see page 6-17).

18. Connect the fuel feed hose (K20A3 engine) (see page 11-161).

19. Adjust the valve clearance (see page 6-11).

20. Install the drive belt (see page 4-32).

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

(cont'd)

Cylinder Head Installation (cont'd)

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. Perform the engine control module (ECM)/ powertrain control module (PCM) idle learn procedure (see page 11-149), and power window control unit reset procedure (see page 22-139).

26. Inspect the idle speed (see page 11-148).

27. Inspect the ignition timing (see page 4-22).

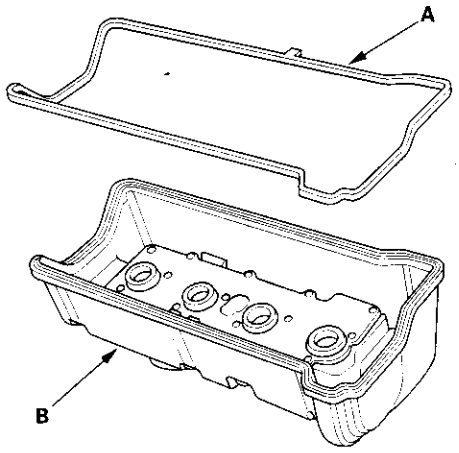
28. Enter the anti-theft code for the radio, then enter the customer's radio station presets.

29. Set the clock.

Cylinder Head Cover Installation

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

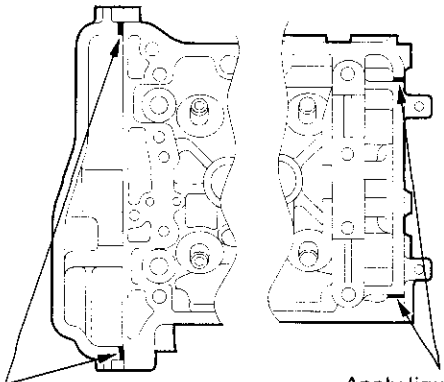
2. Install the head cover gasket (A) in the groove of the cylinder head cover (B).



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

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

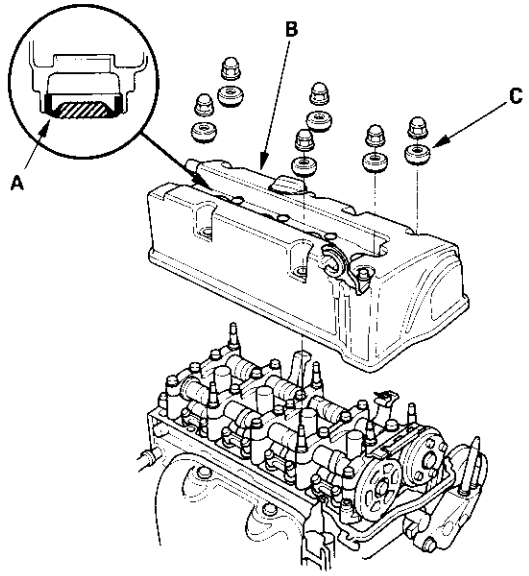
   NOTE: Do not install the parts if 5 minutes or more have elapsed since applying liquid gasket. Instead, reapply liquid gasket after removing oil residue.



Apply liquid gasket to these points.

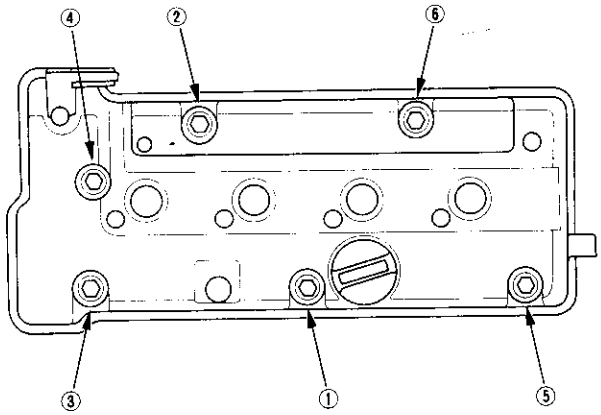
Apply liquid gasket to these points.

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.

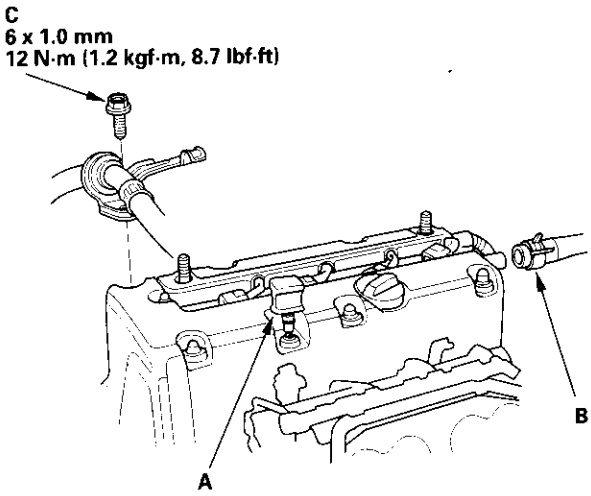


6. Inspect the cover washers (C). Replace any washer that is damaged or deteriorated.

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. Tighten the bolt (C) securing the power steering hose bracket.

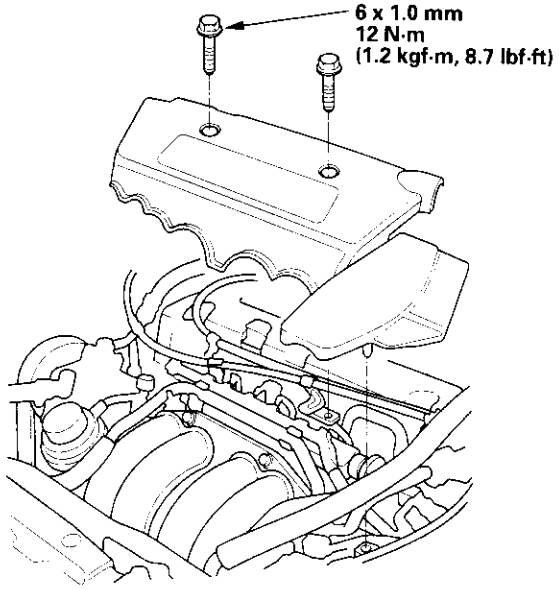
(cont'd)

Cylinder Head Cover Installation (cont'd)

10. Install the four ignition coils (see page 4-23).

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

12. Install the intake manifold cover.



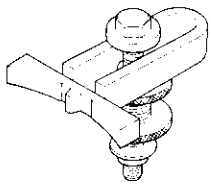
13. After assembly, wait at least 30 minutes before filling the engine with oil.

Engine Mechanical

Engine Block

Special Tools

Ref.No.	Tool Number	Description	Qty
①	07LAB-PV00100	Ring Gear Holder	1
②	07ZAD-PNAA100	Oil Seal Driver Attachment 96	1
③	07746-0010700	Attachment, 24 x 26 mm	1
④	07749-0010000	Driver	1



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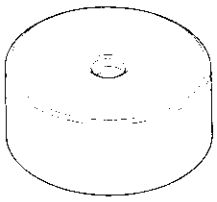

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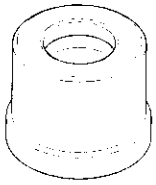

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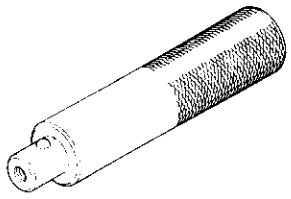
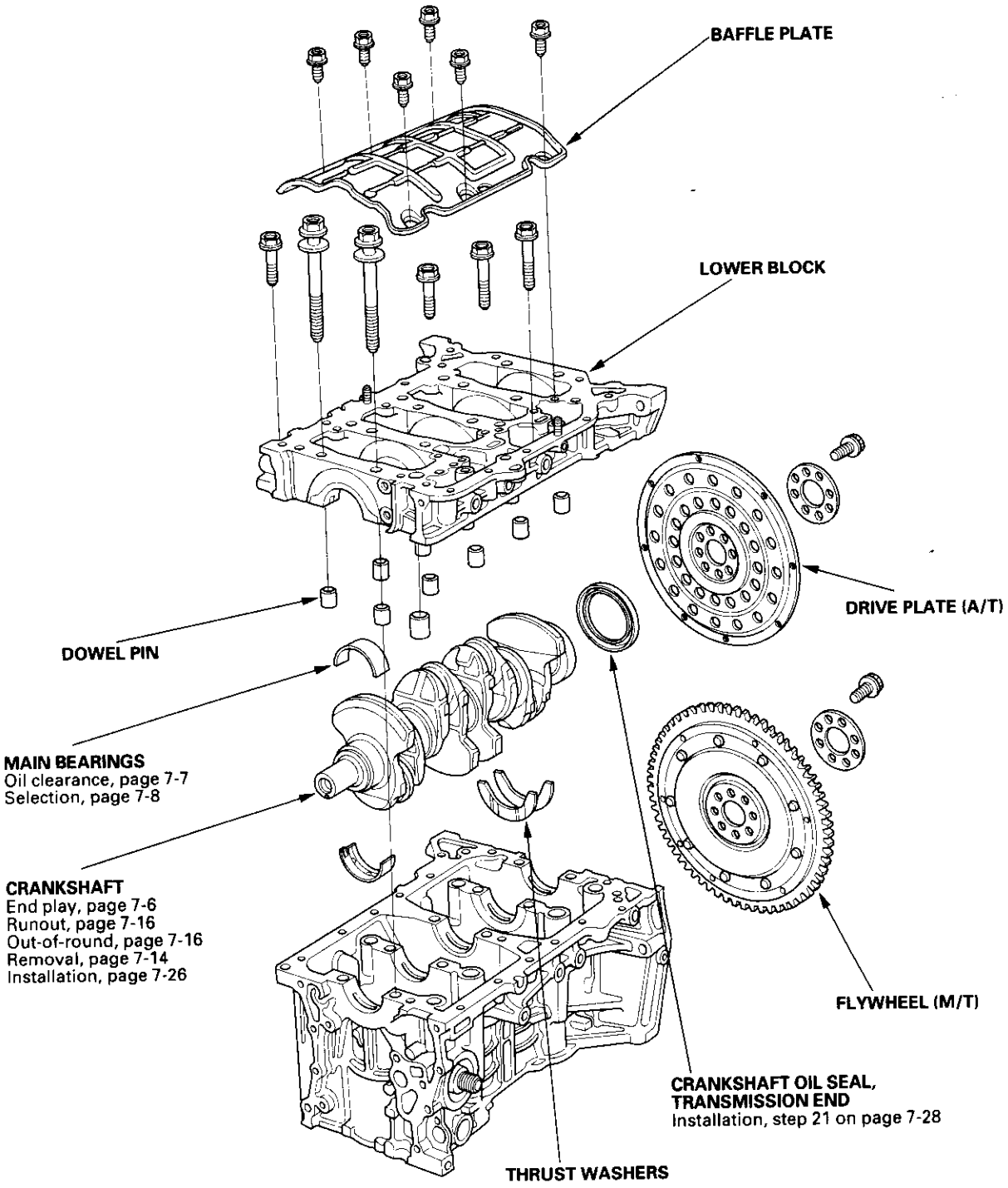


④

Component Location Index



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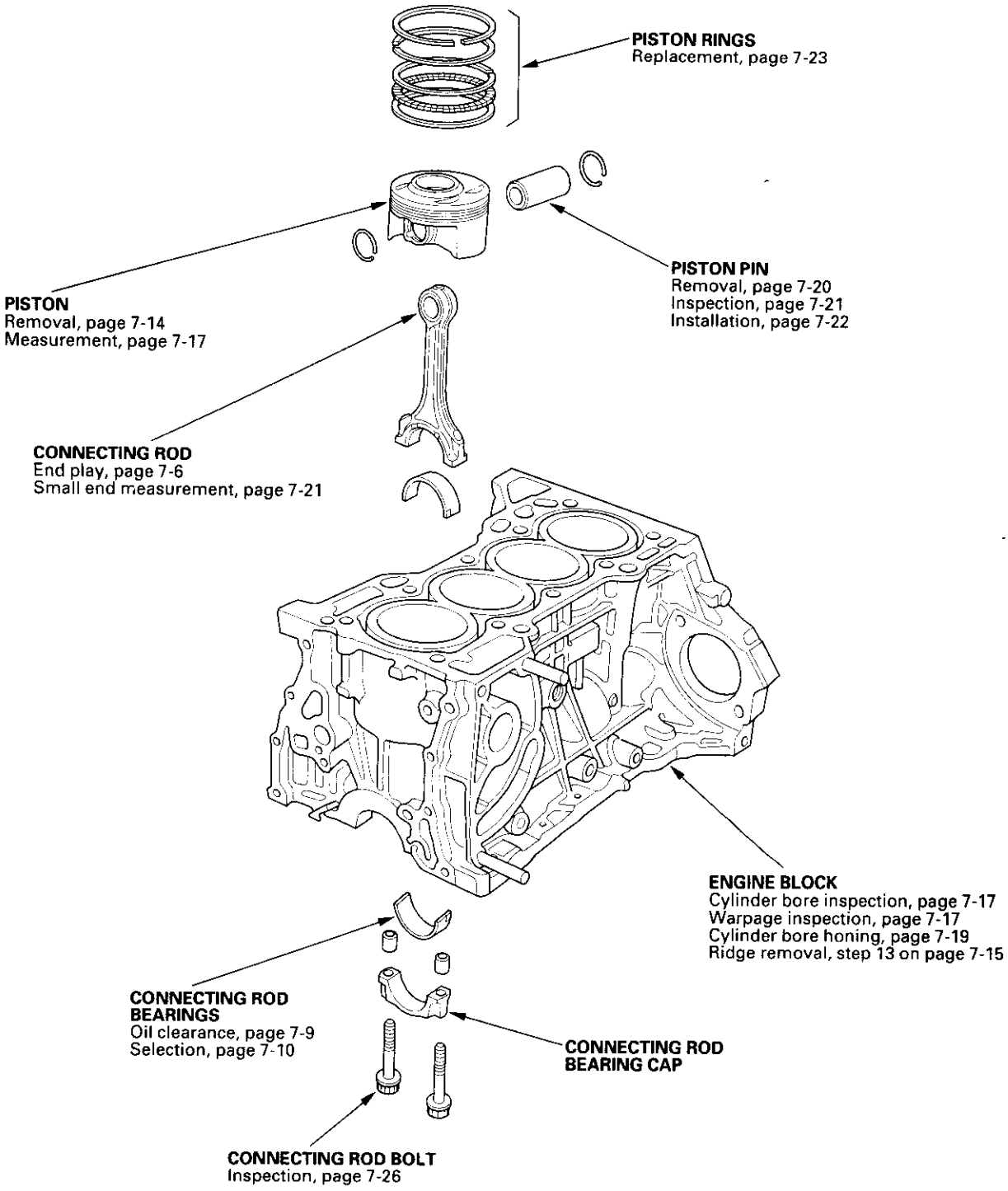
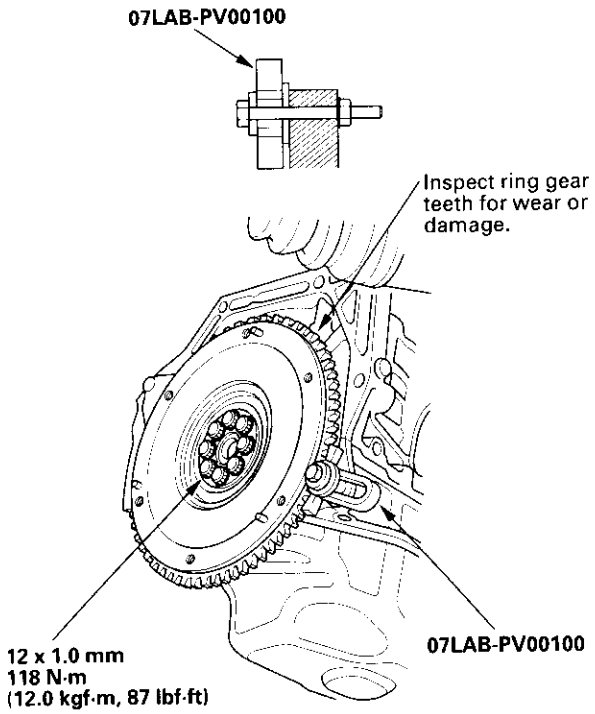
Component Location Index (cont'd)



Flywheel Removal and Installation

Special Tools Required
Ring gear holder 07LAB-PV00100

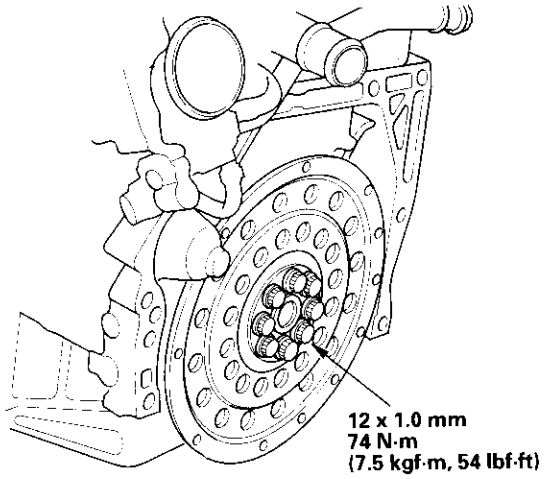
1. Remove the transmission (see page 13-5).
2. Remove the eight flywheel bolts, then separate the flywheel from the crankshaft flange. After installation, tighten the bolts in a crisscross pattern.



3. Install the transmission (see page 13-10).

Drive Plate Removal and Installation

1. Remove the transmission (see page 13-5).
2. Remove the eight drive plate bolts, then separate the drive plate from the crankshaft flange. After installation, tighten the bolts in a crisscross pattern.

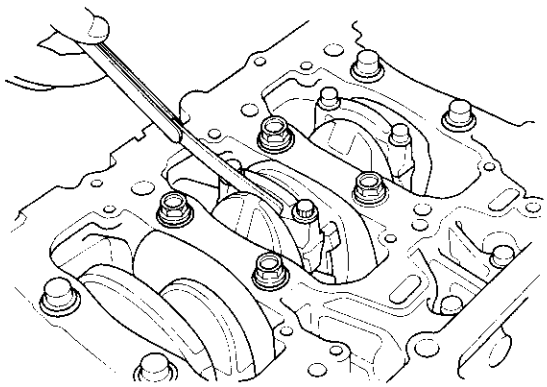


3. Install the transmission (see page 13-10).

Connecting Rod and Crankshaft End Play Inspection

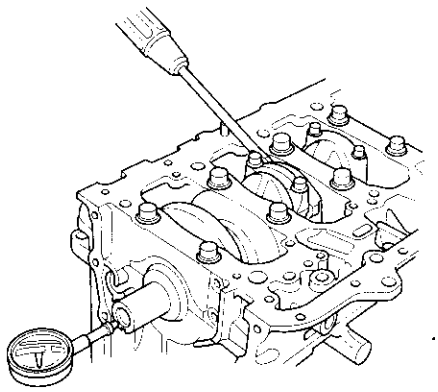
1. Remove the oil pump (see page 8-11).
2. Remove the baffle plate (see step 6 on page 7-14).
3. Measure the connecting rod end play with a feeler gauge between the connecting rod and crankshaft.

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 7-14).
5. Push the crankshaft firmly away from the dial indicator, and zero the dial against the end of the crankshaft. Then pull the crankshaft firmly back toward the indicator; the dial reading should not exceed the service limit.

Crankshaft End Play:
Standard (New): 0.10—0.35 mm (0.004—0.014 in.)
Service Limit: 0.45 mm (0.018 in.)



6. If the end play is 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 7-14).

2. Clean each main journal and bearing half with a clean shop towel.

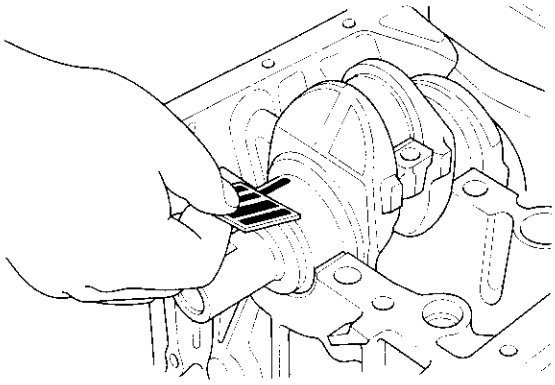
3. Place one strip of plastigage across each main journal.

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.

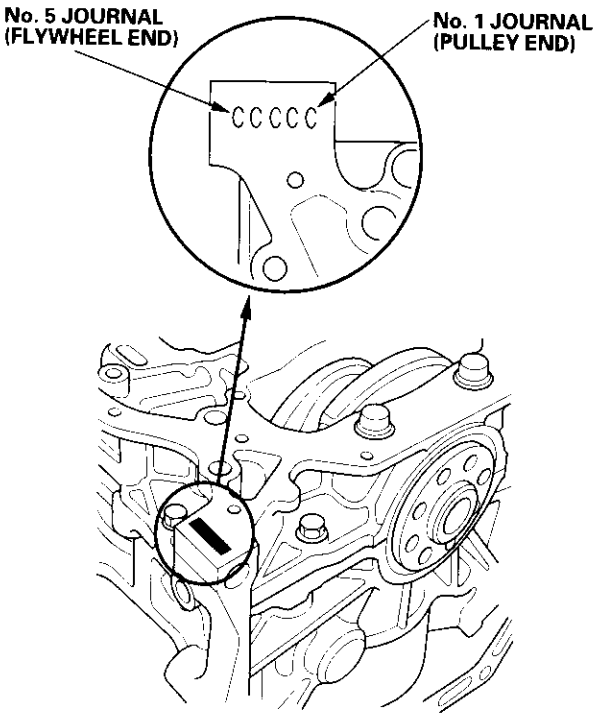
(cont'd)

Crankshaft Main Bearing Replacement (cont'd)

Main Bearing Selection

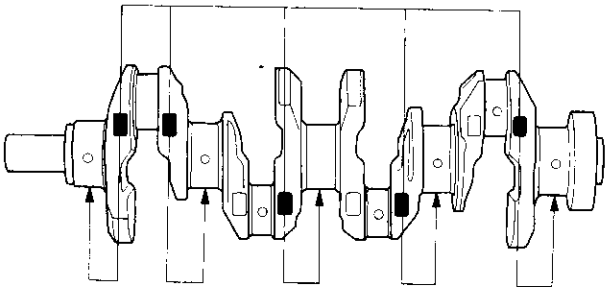
Crankshaft Bore Code Location

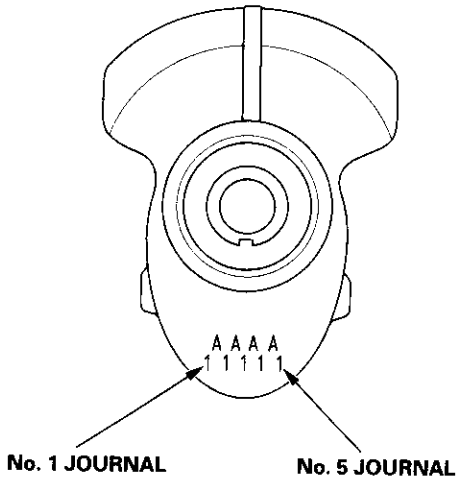
1. Numbers or letters or bars have been stamped on the end of the block as a code for the size of each of the five main journal bores. Write down the crank bore codes.
   If you can't read the codes because of accumulated dirt and dust, do not scrub them with a wire brush or scraper. Clean them only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



Main Journal Code Location

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





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.

Larger crank bore →

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
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 bearing (Thicker)

Smaller main journal ↓

Smaller bearing (Thicker) ↓

Connecting Rod Bearing Replacement

Rod Bearing Clearance Inspection

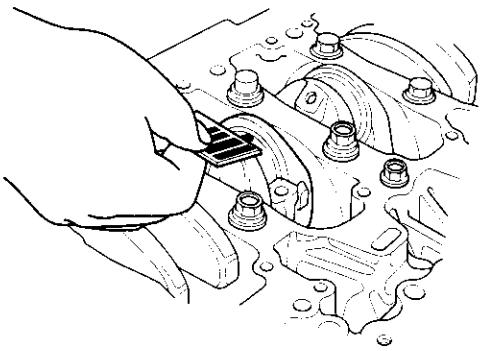
1. Remove the oil pump (see page 8-11).
2. Remove the baffle plate (see step 6 on page 7-14).
3. Remove the connecting rod cap and bearing half.
4. Clean the crankshaft rod journal and bearing half with a clean shop towel.
5. Place plastigage across the rod journal.
6. Reinstall the bearing half and cap, and torque the bolts.

Tightening torque:
K20A3 engine: **20 N·m (2.0 kgf·m, 14 lbf·ft) + 90 °**
K20A2 engine: **29 N·m (3.0 kgf·m, 22 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:
K20A3 engine:
Standard (New): **0.020–0.050 mm (0.0008–0.0020 in.)**
Service Limit: **0.060 mm (0.0024 in.)**
K20A2 engine:
Standard (New): **0.033–0.061 mm (0.0013–0.0024 in.)**
Service Limit: **0.072 mm (0.0028 in.)**



(cont'd)

Connecting Rod Bearing Replacement (cont'd)

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

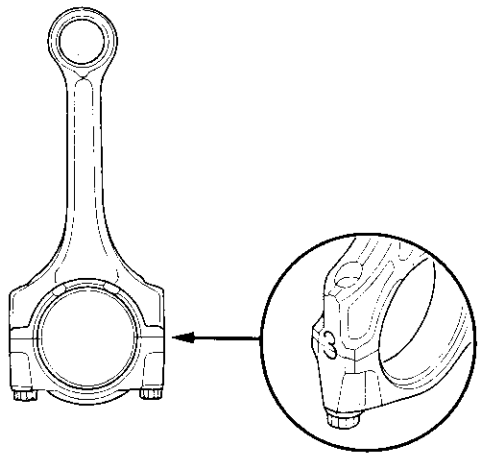
1. Inspect each connecting rod for cracks and heat damage.

Connecting Rod Big End Bore Code Locations

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

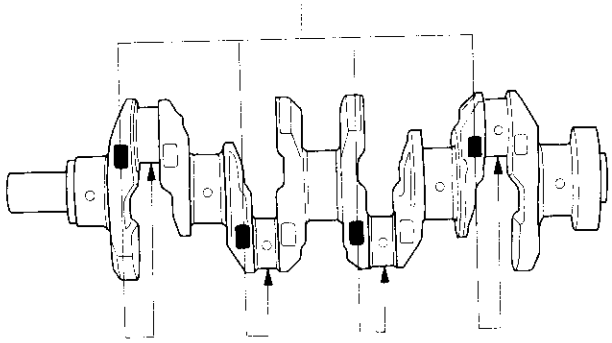
   Normal Bore Size:
   K20A3 engine: 48.0 mm (1.89 in.)
   K20A2 engine: 51.0 mm (2.01 in.)

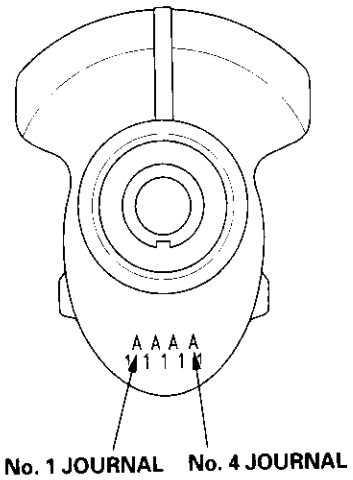


Connecting Rod Journal Code Location

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.

K20A3 engine:

Big end bore code → Larger big end bore

1 or I	2 or II	3 or III	4 or IIII

Rod journal code ↓ Smaller rod journal

→ 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

Smaller bearing (Thicker)

K20A2 engine:

Big end bore code → Larger big end bore

1 or I	2 or II	3 or III	4 or IIII

Rod journal code ↓ Smaller rod journal

→ Smaller bearing (Thicker)

A	Red	Pink	Yellow	Green
B	Pink	Yellow	Green	Brown
C	Yellow	Green	Brown	Black
D	Green	Brown	Black	Blue

Smaller bearing (Thicker)

Oil Pan Removal

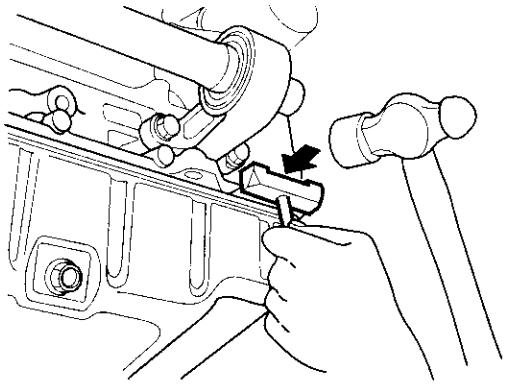
K20A3 engine:

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

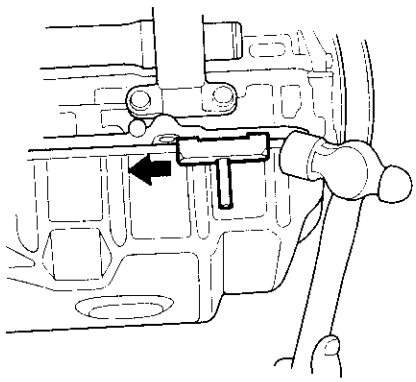
   -1 Drain the engine oil (see page 8-6).
   -2 Attach the chain hoist to the engine (see step 40 on page 5-7).
   -3 Disconnect the suspension lower arm ball joints (see step 10 on page 18-13).
   -4 Remove the rear mount mounting bolts (see step 44 on page 5-8).
   -5 Remove the front mount mounting bolt (see step 45 on page 5-9).
   -6 Remove the automatic transmission (ATF) filter mounting bolt (A/T) (see step 35 on page 5-7).
   -7 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 46 on page 5-9).

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

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



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



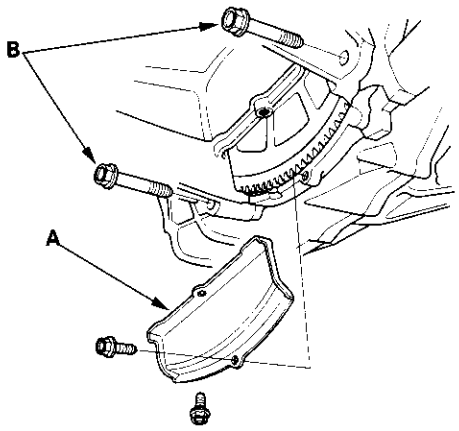
5. Remove the oil pan.

K20A2 engine:

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

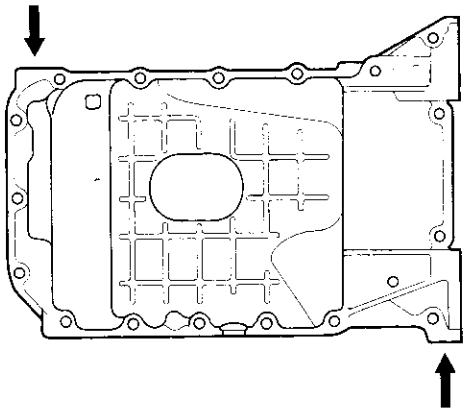
   -1 Drain the engine oil (see page 8-6).
   -2 Attach the chain hoist to the engine (see step 40 on page 5-7).
   -3 Disconnect the suspension lower arm ball joints (see step 10 on page 18-13).
   -4 Remove the rear mount mounting bolts (see step 44 on page 5-8).
   -5 Remove the front mount mounting bolt (see step 46 on page 5-9).
   -6 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 46 on page 5-9).

2. Remove the clutch cover (A), and remove the two bolts (B) securing the transmission.



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

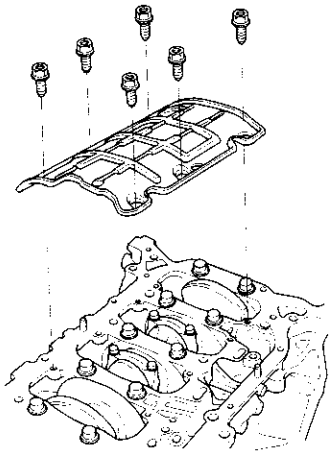
4. Insert a flat tip screwdriver where shown, and separate the oil pan from the block.



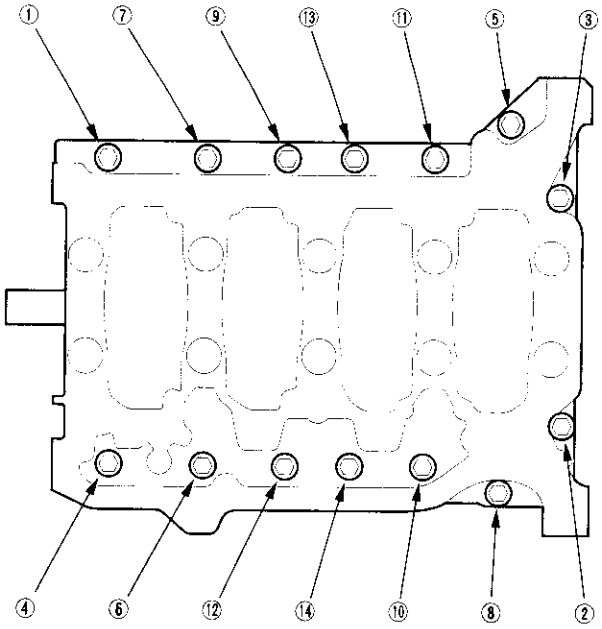
5. Remove the oil pan.

Crankshaft and Piston Removal

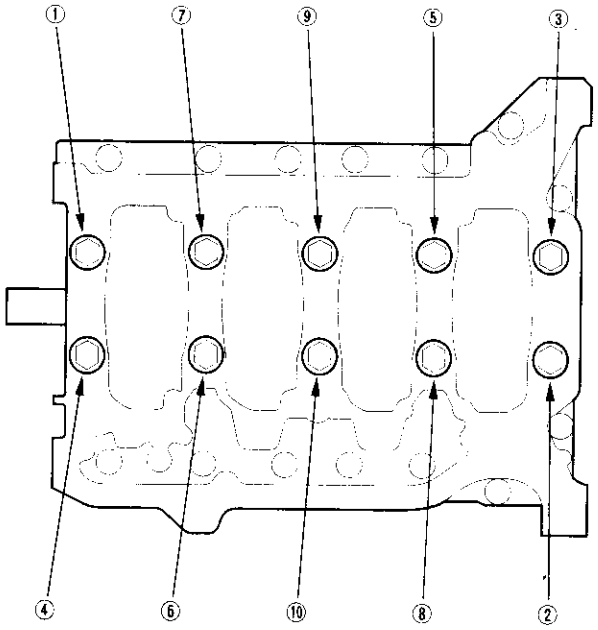
1. Remove the engine assembly (see page 5-2).
2. Remove the transmission:
   - Manual transmission (see page 13-5).
   - Automatic transmission (see page 14-140).
3. Remove the oil pan (see page 7-12).
4. Remove the oil pump (see page 8-11).
5. Remove the cylinder head (see page 6-26).
6. Remove the baffle plate.



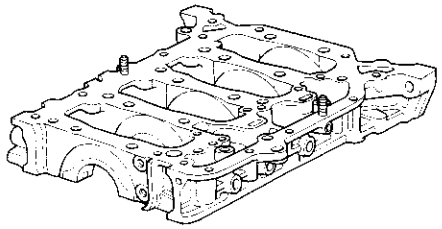
7. Remove the 8 mm bolts.

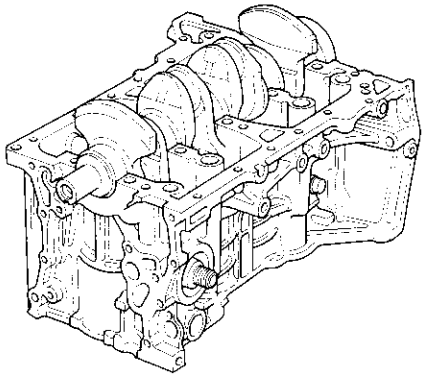


8. Remove the bearing cap bolts. To prevent warpage, unscrew the bolts in sequence 1/3 turn at a time: repeat the sequence until all bolts are loosened.



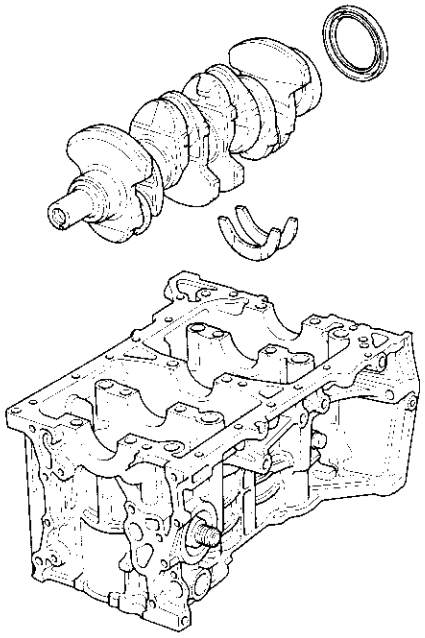
9. Remove the lower block and bearings. Keep all bearings in order.





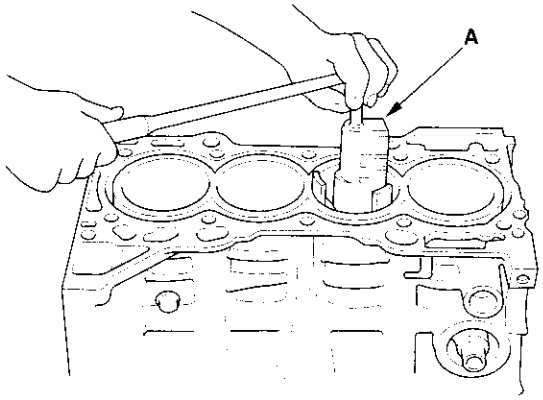
10. Remove the rod caps/bearings. Keep all caps/bearings in order.

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

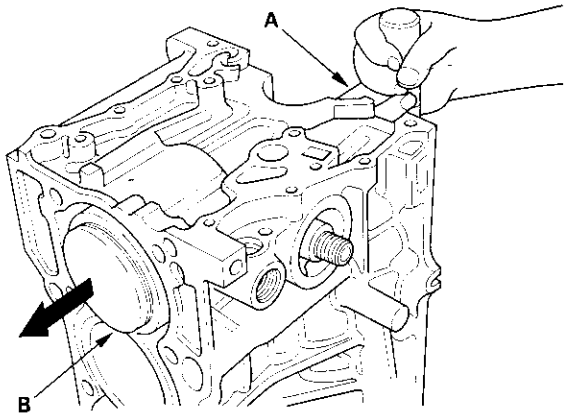


12. Remove the upper bearing halves from the connecting rods, and set them aside with their respective caps.

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.

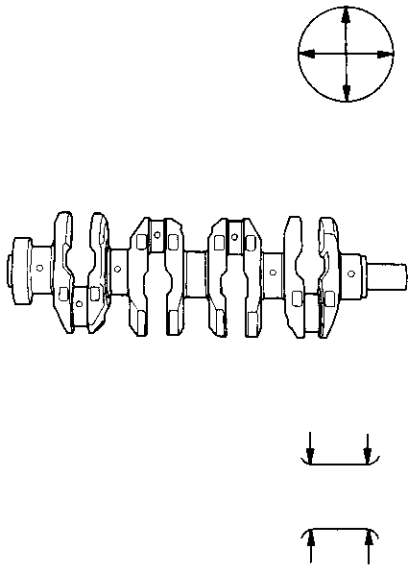
    NOTE: The existing number on the connecting rod does not indicate its position in the engine, it indicates the rod bore size.

Crankshaft Inspection

Out-of-Round and Taper

1. Remove the crankshaft from the cylinder block (see page 7-14).
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.)



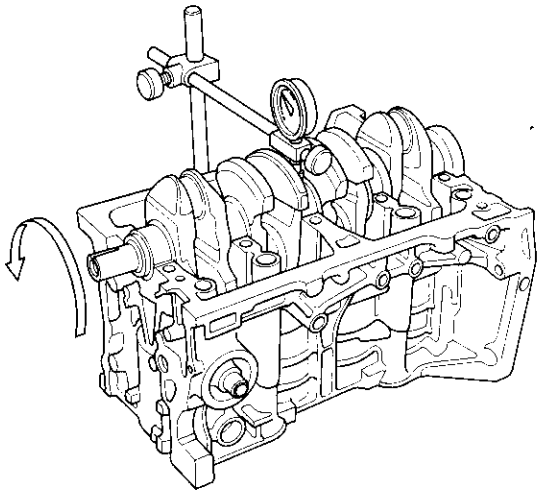
5. Measure taper at the edges of each rod and main journal. The difference between measurements on each journal must not be more than the service limit.

   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.)

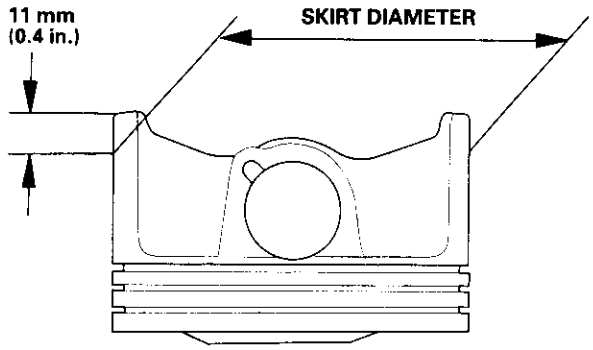


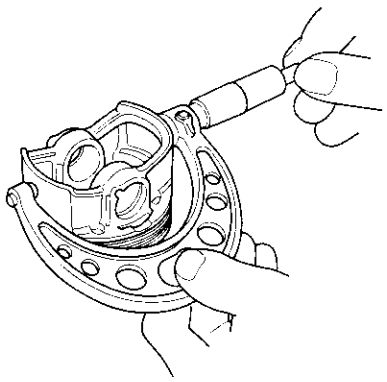
Block and Piston Inspection

1. Remove the crankshaft and pistons (see page 7-14).
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.)

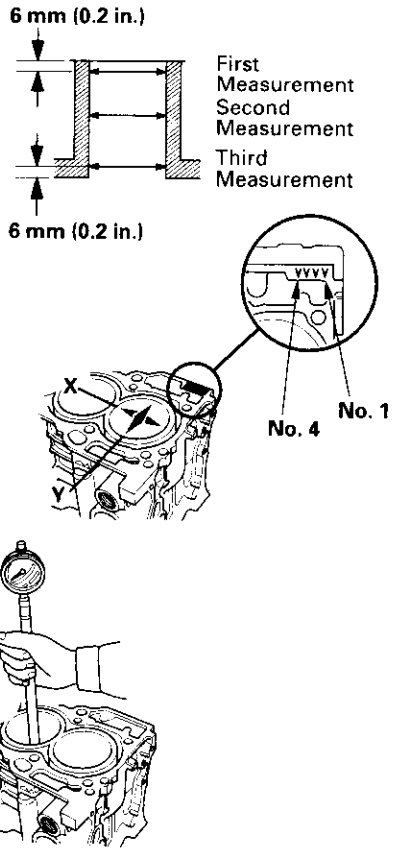
4. Measure wear and taper in direction X and Y at three levels in each cylinder as shown. If measurements in any cylinder are beyond the oversize bore service limit, replace the block. If the block is to be rebored, refer to step 7 after reboring.

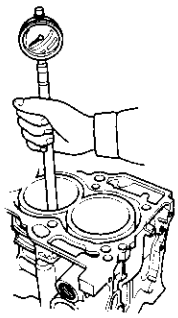
Cylinder Bore Size:
Standard (New):
A or I: 86.010–86.020 mm (3.3862–3.3866 in.)
B or II: 86.000–86.010 mm (3.3858–3.3862 in.)
Service Limit: 86.070 mm (3.3886 in.)

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.)





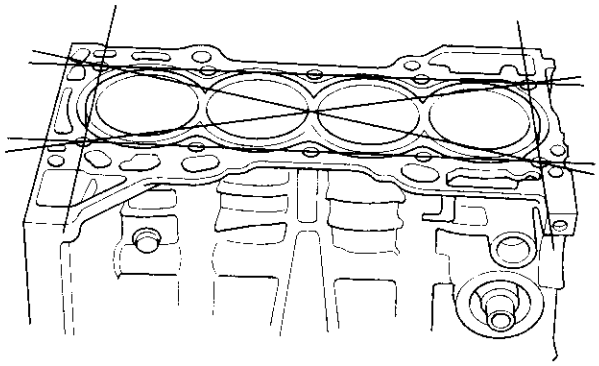
(cont'd)

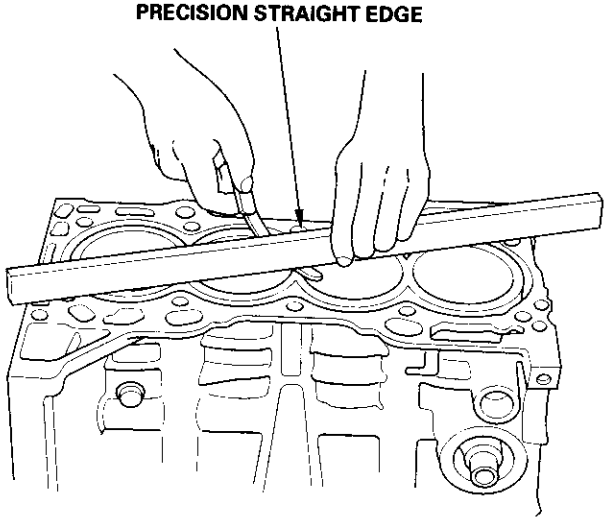
Block and Piston Inspection (cont'd)

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.

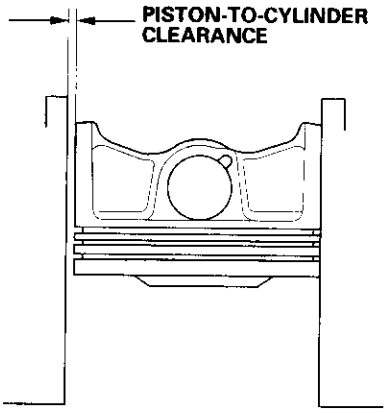
   Engine Block Warpage:
   Standard (New): 0.07 mm (0.003 in.) max.
   Service Limit: 0.10 mm (0.004 in.)





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.)

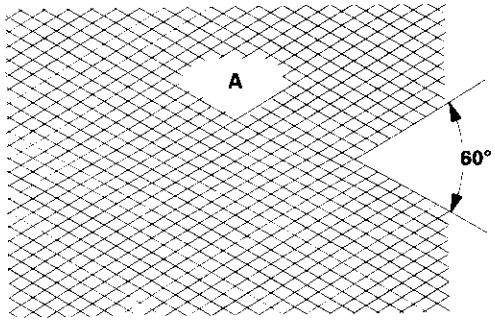


Cylinder Honing

Only a scored or scratched cylinder bore must be honed.

1. Measure the cylinder bores (see page 7-17). 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.

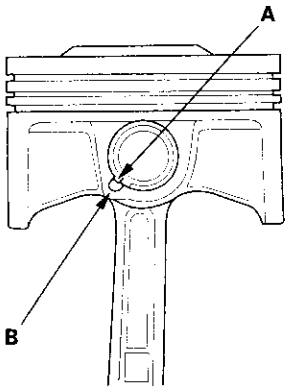
Piston, Pin, and Connecting Rod Replacement

Disassembly

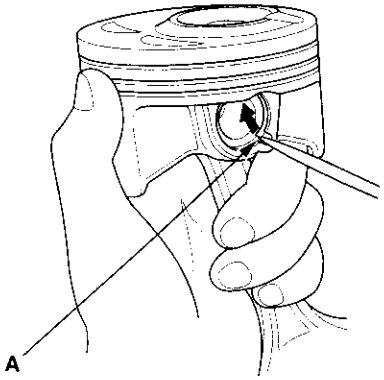
1. Remove the piston from the cylinder block (see page 7-14).

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).

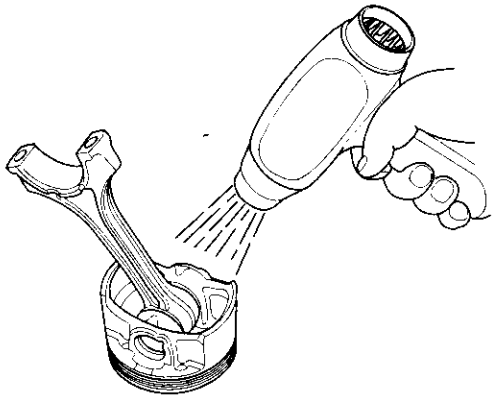
   NOTE: Take care not to damage the ring grooves.



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

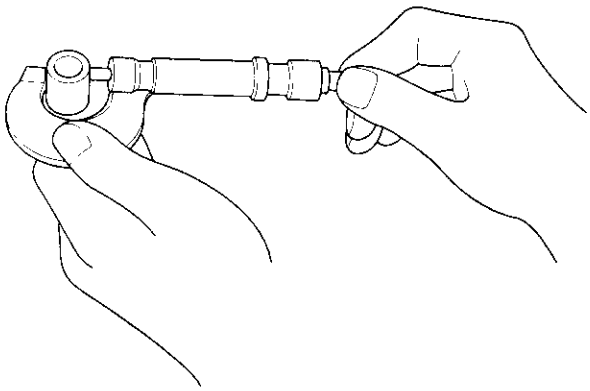


Inspection

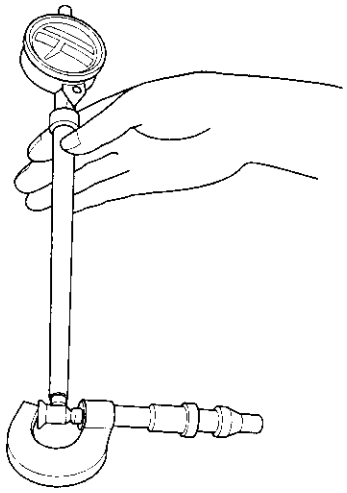
NOTE: Inspect the piston, piston pin, and connecting rod when they are at room temperature.

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.)

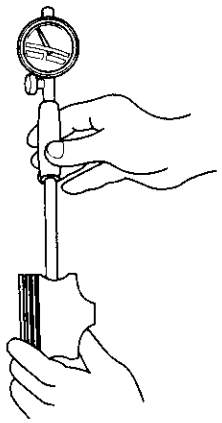


2. Zero the dial indicator to the piston pin diameter.



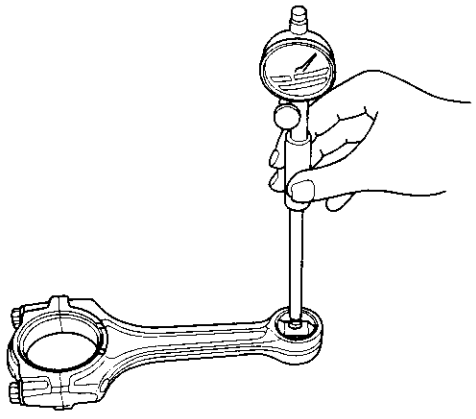
3. Check the difference between the piston pin diameter and piston pin hole diameter in the piston.

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.)

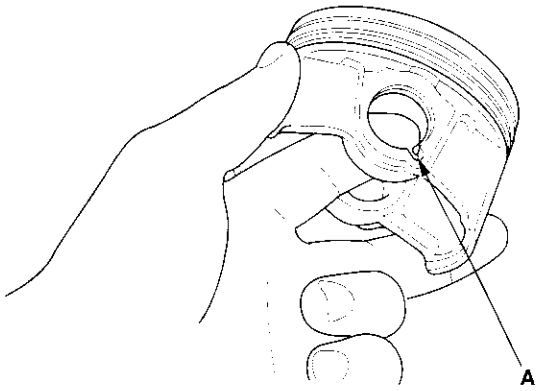


(cont'd)

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

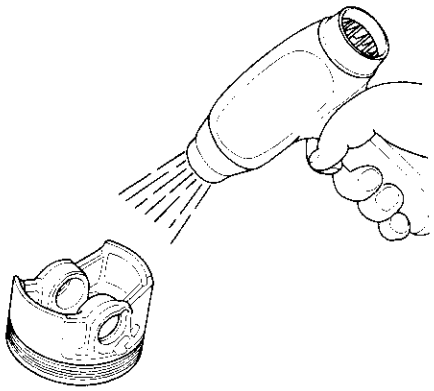
Reassembly

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

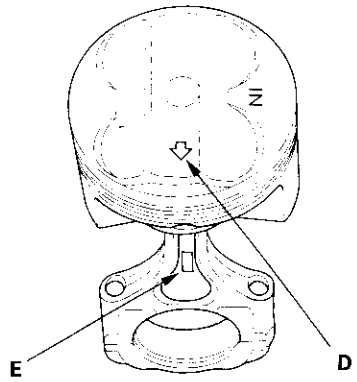


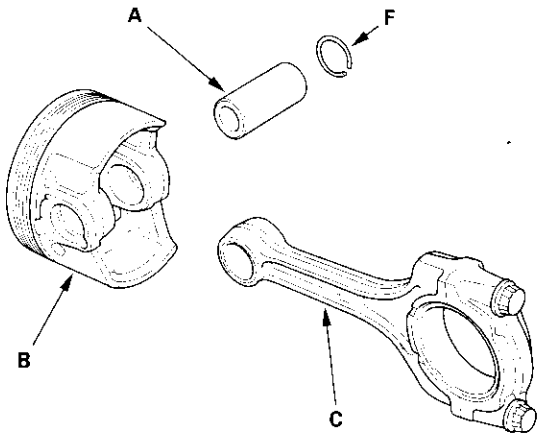
2. Coat the piston pin bore in the piston, the bore in the connecting rod, and the piston pin with engine oil.

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.





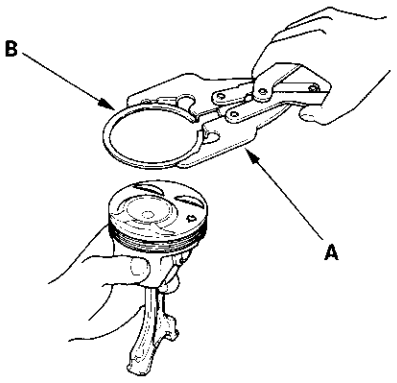
5. Install the remaining snap ring (F).

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 7-14).

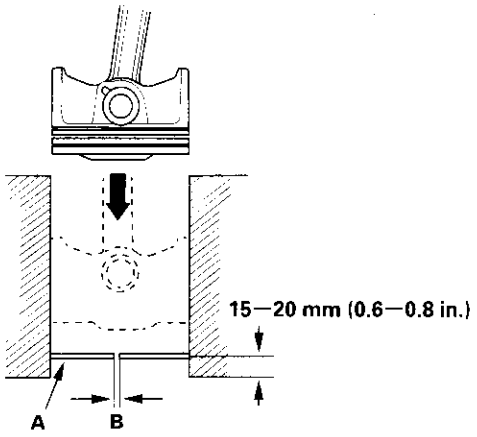
2. Using a ring expander (A), remove the old piston rings (B).



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 page 7-17). 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.)

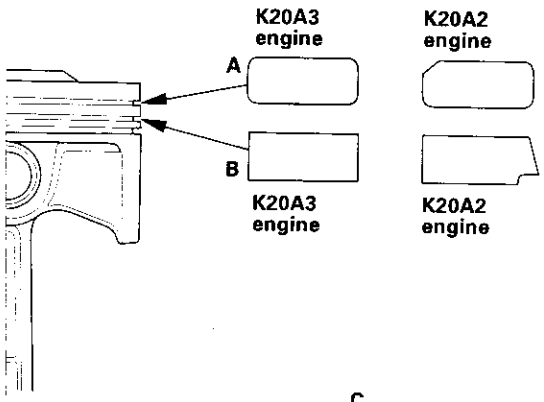
Second Ring
K20A3 engine
Standard (New): 0.40 – 0.55 mm (0.016 – 0.022 in.)
Service Limit: 0.70 mm (0.028 in.)
K20A2 engine
Standard (New): 0.50 – 0.65 mm (0.020 – 0.026 in.)
Service Limit: 0.75 mm (0.030 in.)

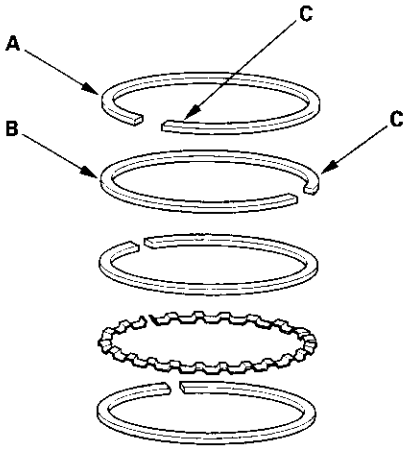
Oil Ring
K20A3 engine
Standard (New): 0.25 – 0.65 mm (0.010 – 0.026 in.)
Service Limit: 0.75 mm (0.030 in.)
K20A2 engine
Standard (New): 0.20 – 0.70 mm (0.008 – 0.028 in.)
Service Limit: 0.80 mm (0.031 in.)

(cont'd)

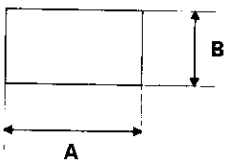
Piston Ring Replacement (cont'd)

6. Install the top ring and second ring as shown.The top ring (A) has a T1 or R1 mark and the second ring (B) has a T2 or R2 mark. The manufacturing marks (C) must be facing upward.





PISTON RING DIMENSIONS:



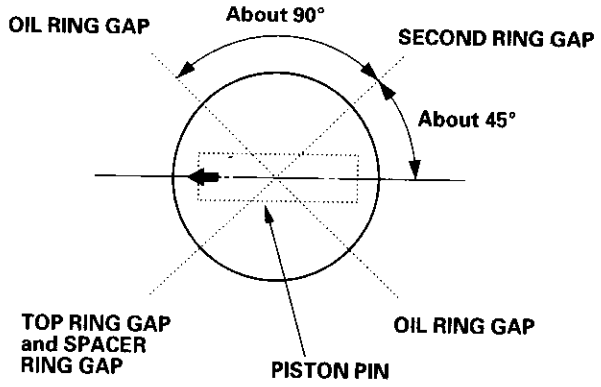
TOP RING (STANDARD):
A: 3.1 mm (0.12 in.)
B: 1.2 mm (0.05 in.)

SECOND RING (STANDARD):
K20A3 ENGINE
A: 2.8 mm (0.11 in.)
B: 1.2 mm (0.05 in.)

K20A2 ENGINE
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.

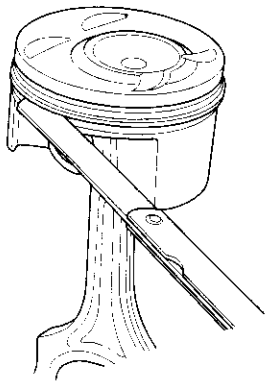
8. Position the ring end gaps as shown:



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

Top Ring Clearance
K20A3 engine
Standard (New): 0.035 – 0.060 mm (0.0014 – 0.0024 in.)
Service Limit: 0.13 mm (0.005 in.)
K20A2 engine
Standard (New): 0.040 – 0.065 mm (0.0016 – 0.0026 in.)
Service Limit: 0.13 mm (0.005 in.)

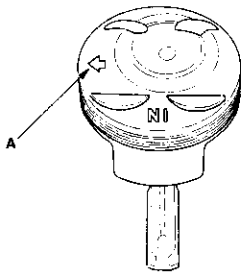
Second Ring Clearance
K20A3 engine
Standard (New): 0.030 – 0.055 mm (0.0012 – 0.0022 in.)
Service Limit: 0.13 mm (0.005 in.)
K20A2 engine
Standard (New): 0.045 – 0.070 mm (0.0018 – 0.0028 in.)
Service Limit: 0.13 mm (0.005 in.)



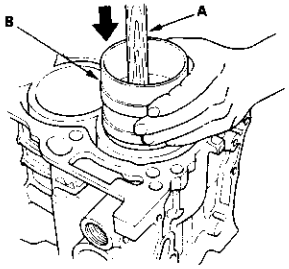
Piston Installation

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.



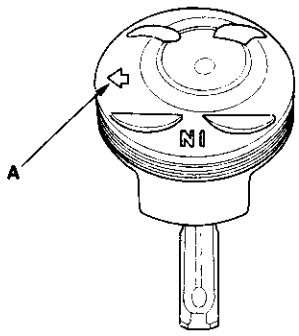
5. Stop after the ring compressor pops free, and check the connecting rod-to-crank journal alignment before pushing the piston into place.
6. Check the connecting rod bearing clearance with plastigage (see page 7-9).
7. Inspect the connecting rod bolts (see page 7-26).
8. Apply engine oil to the bolt threads, then install the rod caps with bearings. Tighten the connecting rod bolts.

   Tightening torque:
   K20A3 engine : 20 N·m (2.0 kgf·m, 14 lbf·ft)
   K20A2 engine : 20 N·m (3.0 kgf·m, 22 lbf·ft)

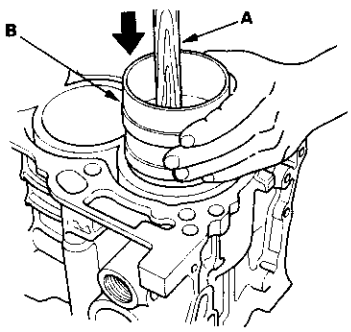
9. Tighten the connecting rod bolts an additional 90°.

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.



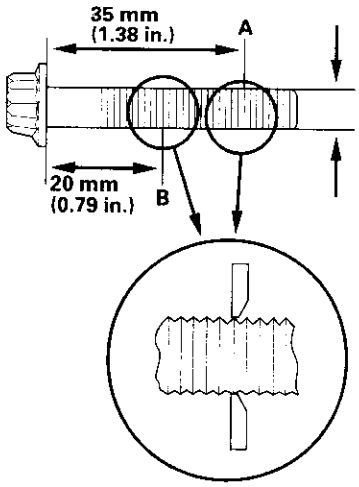
3. Position the piston in the cylinder, and tap it in using the wooden handle of a hammer (A). Maintain downward force on the ring compressor (B) to prevent the rings from expanding before entering the cylinder bore.



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

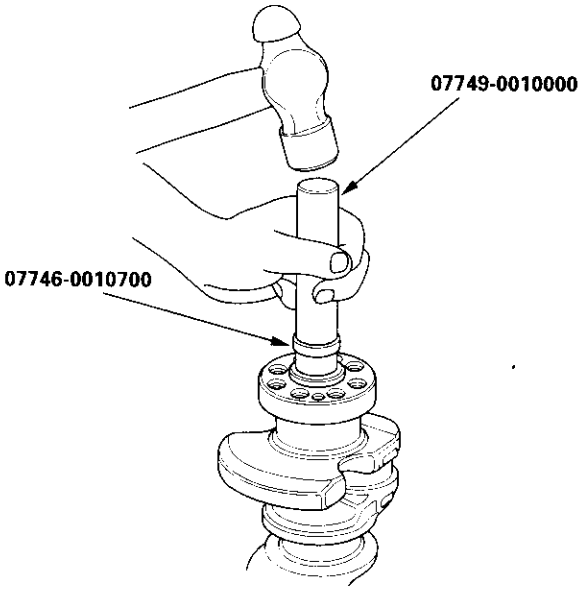
   Difference in Diameter:
   Specification: 0 – 0.1 mm (0 – 0.004 in.)

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. With a manual transmission, install the crankshaft end bushing when replacing the crankshaft. Using the special tools, 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 7-9).

3. Check the main bearing clearance with plastigage (see page 7-7).

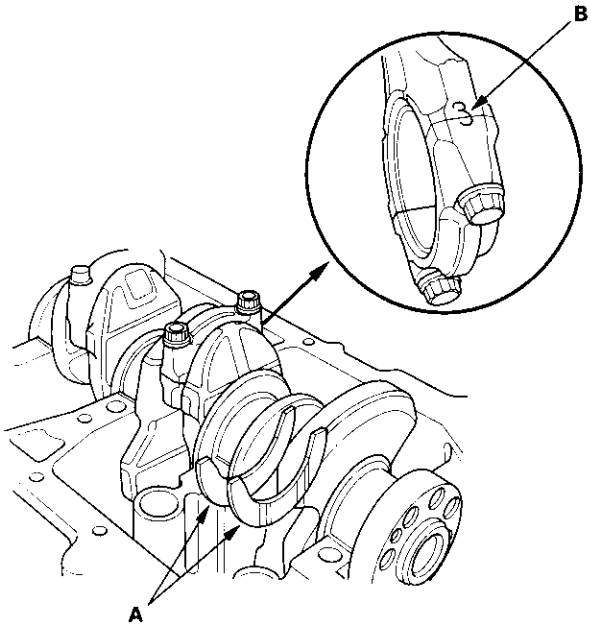
4. Inspect the connecting rod bolts (see page 7-26).

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.

Tightning torque:
K20A3 engine: 20 N·m (2.0 kgf·m, 14 lbf·ft)
K20A2 engine: 29 N·m (3.0 kgf·m, 22 lbf·ft)

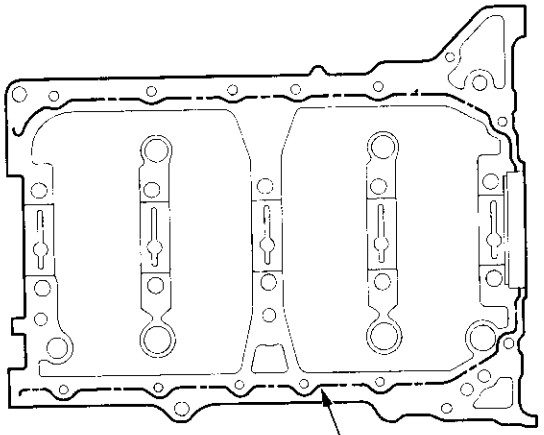
13. Tighten the connecting rod bolts an additional 90°.

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.



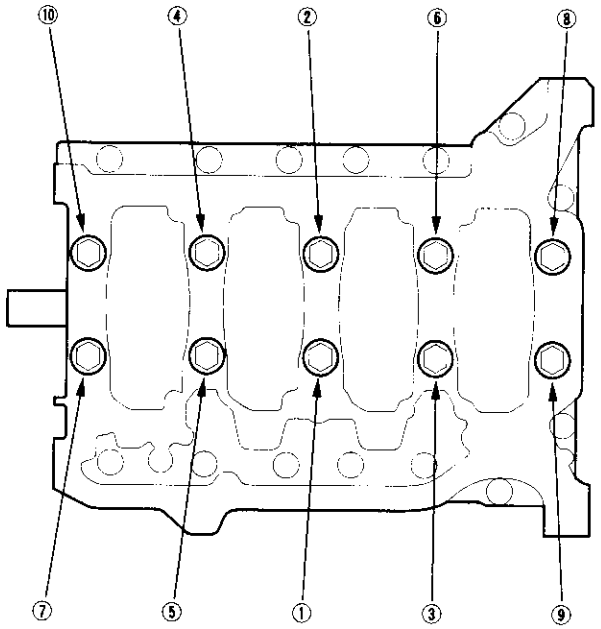
Apply liquid gaslet along the broken line.

(cont'd)

Crankshaft Installation (cont'd)

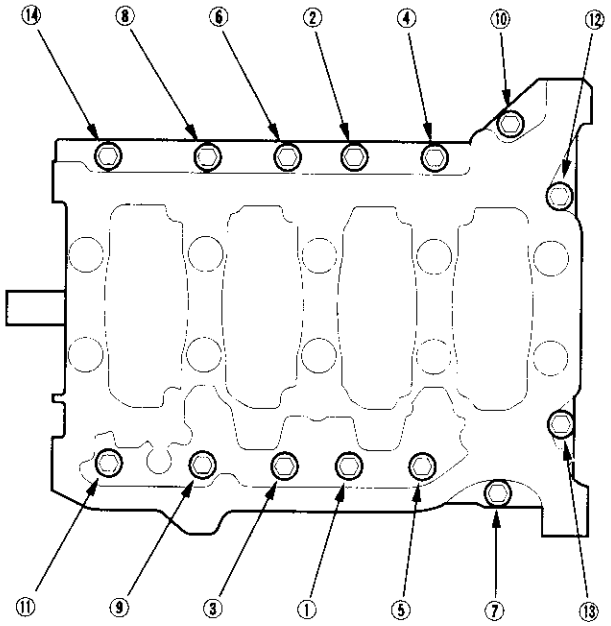
17. Put the lower block on the cylinder block.

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

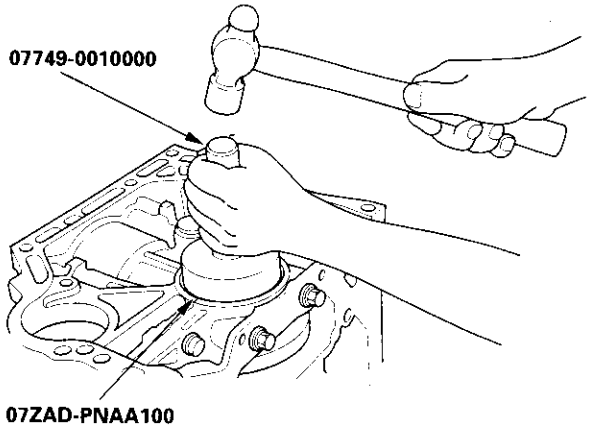


19. Tighten the bearing cap bolts an additional 56°.

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

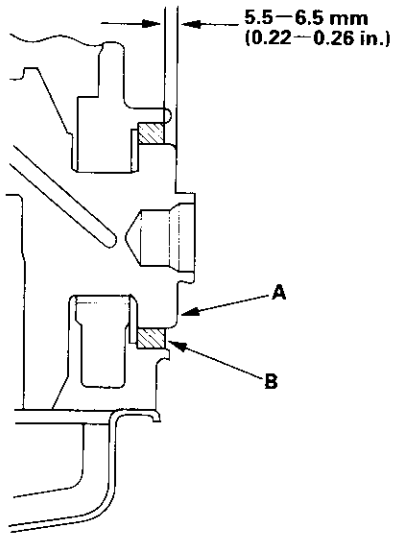


21. Use the special tools to drive a new oil seal squarely into the block to the specified installed height.

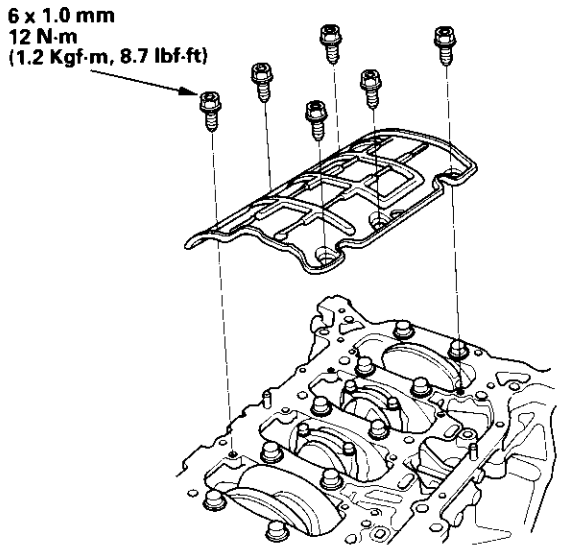


22. Measure the distance between the crankshaft (A) and oil seal (B).

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



23. Install the baffle plate.



24. Install the oil pump (see page 8-12).

25. Install the oil pan (see page 7-29).

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

27. Install the transmission:

    - Manual transmission (see page 13-10).
    - Automatic transmission (see page 14-148).

28. Install the engine assembly (see page 5-10).

Oil Pan Installation

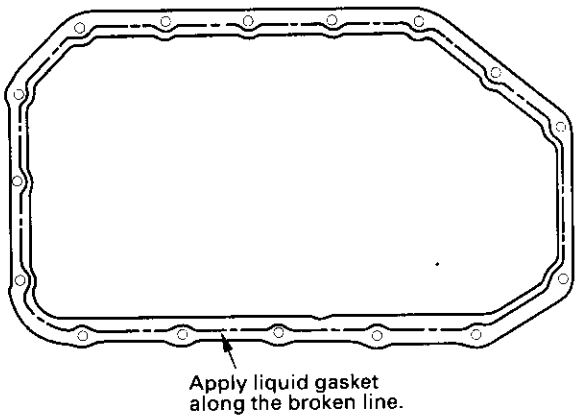
K20A3 engine:

1. Remove old liquid gasket from the oil pan mating surfaces, bolts, and bolt holes.

2. Clean and dry the oil pan mating surfaces.

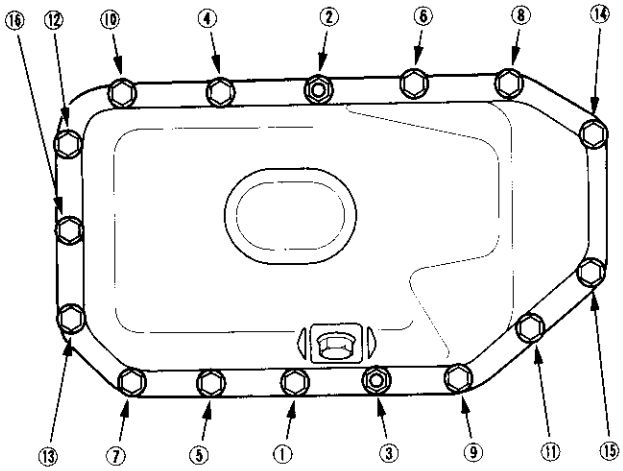
3. Apply liquid gasket, P/N 08718-0009, evenly to the cylinder block mating surface of the oil pan and to the inner threads of the bolt holes.

   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 4 on page 5-11).
   -2 Install the automatic transmission (ATF) filter mounting bolt (see step 20 on page 5-14).
   -3 Tighten the front mounting bolt (see step 5 on page 5-11).
   -4 Tighten the rear mount mounting bolts (see step 6 on page 5-12).
   -5 Connect the suspension lower arm ball joints (see step 10 on page 18-13).

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

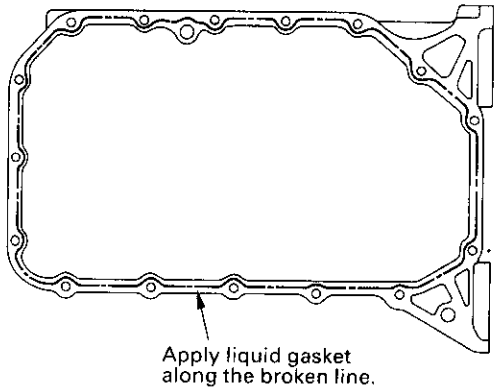
K20A2 engine:

1. Remove old liquid gasket from the oil pan mating surfaces, bolts, and bolt holes.

2. Clean and dry the oil pan mating surfaces.

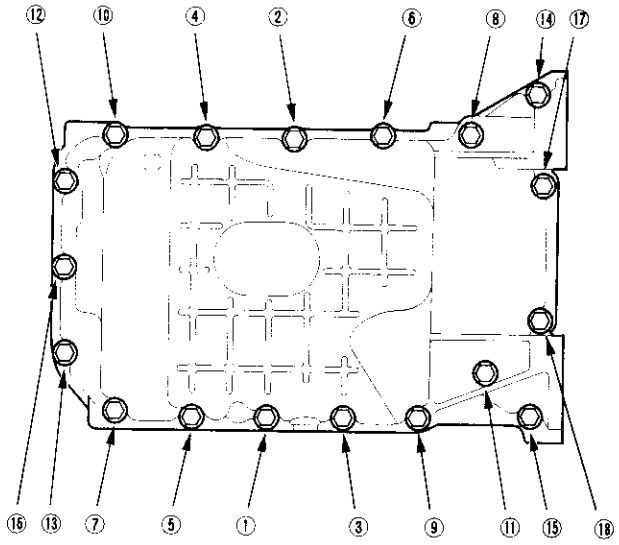
3. Apply liquid gasket, P/N 08718-0009, evenly to the cylinder block mating surface of the oil pan and to the inner threads of the bolt holes.

   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.

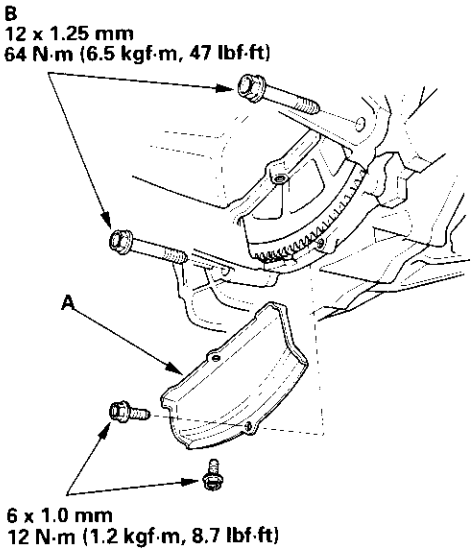


4. Install the oil pan.

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).



6. Install the clutch cover (A), and tighten the two bolts (B) securing the transmission.



7. 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 4 on page 5-11).
   - -2 Tighten the front mounting bolt (see step 5 on page 5-11).
   - -3 Tighten the rear mount mounting bolts (see step 6 on page 5-12).
   - -4 Connect the suspension lower arm ball joints (see step 10 on page 18-13).

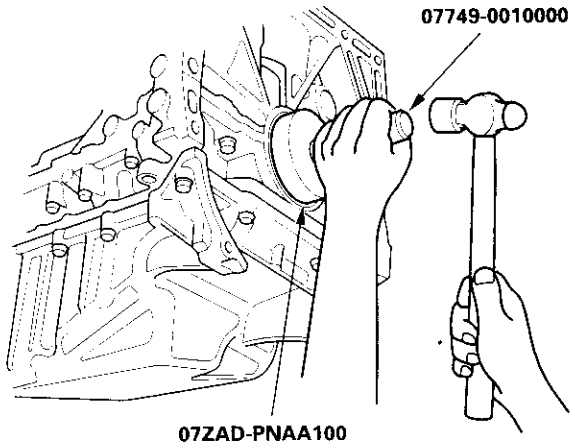
8. After assembly, wait at least 30 minutes before filling the engine with oil.

Transmission End Crankshaft Seal Installation - In Car

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

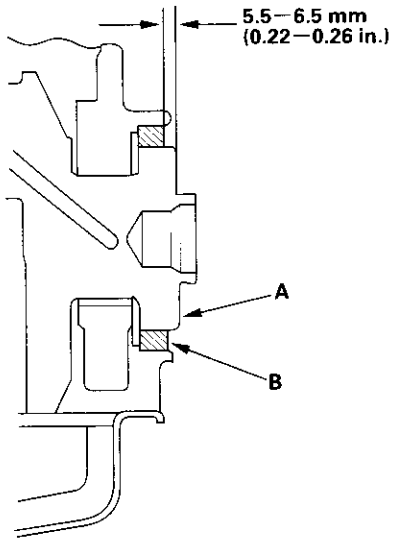
1. Dry the crankshaft oil seal housing.

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.)

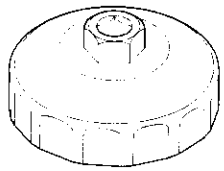


Engine Mechanical

Engine Lubrication

Special Tools

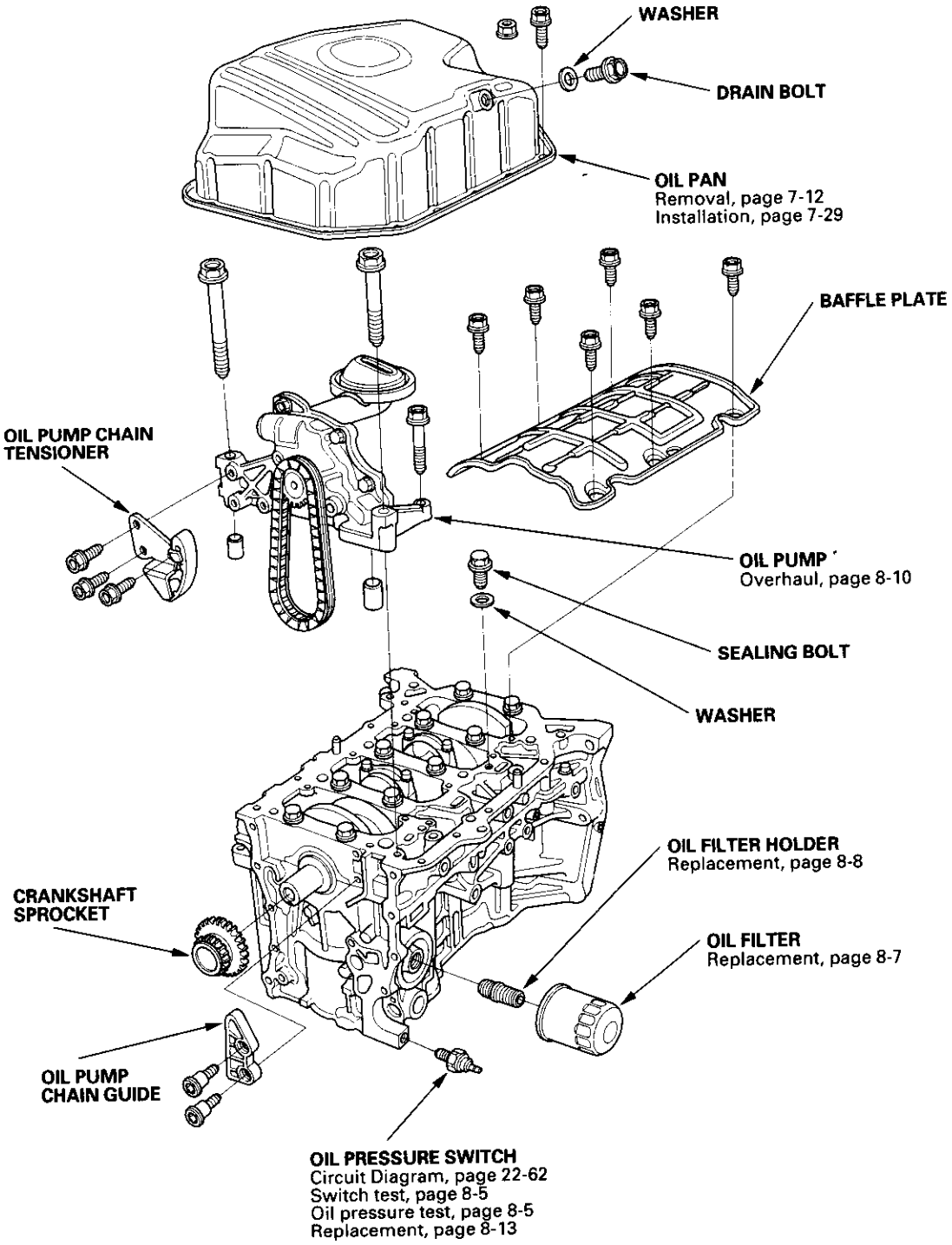
Ref. No.	Tool Number	Description	Qty
①	07HAA-PJ70100	Oil Filter Wrench	1



①

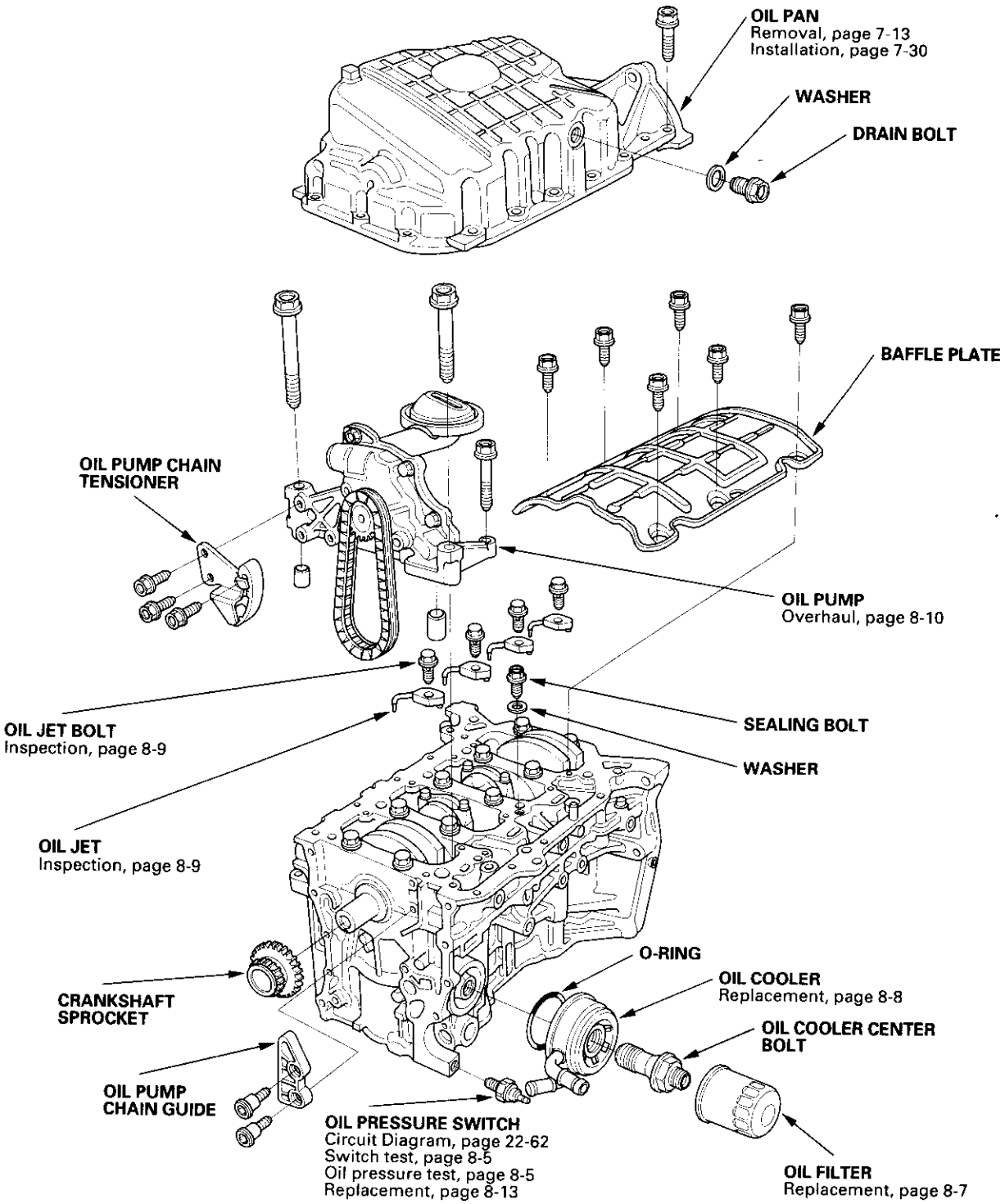
Component Location Index

K20A3 engine:



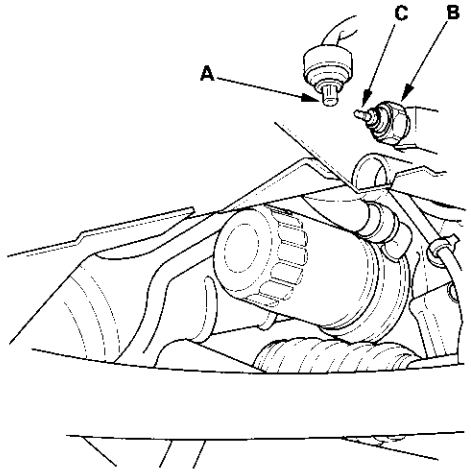
Component Location Index (cont'd)

K20A2 engine:



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.

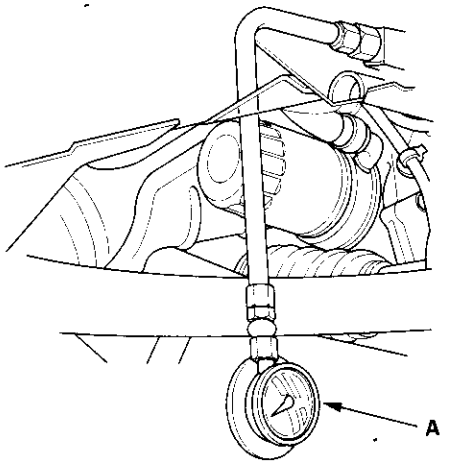
3. If the switch fails to operate, check the engine oil level. If the engine oil level is OK, check the engine oil pressure. If the oil pressure is OK, replace the oil pressure switch.

Oil Pressure Test

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

1. Connect a tachometer or a Honda PGM tester.

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:

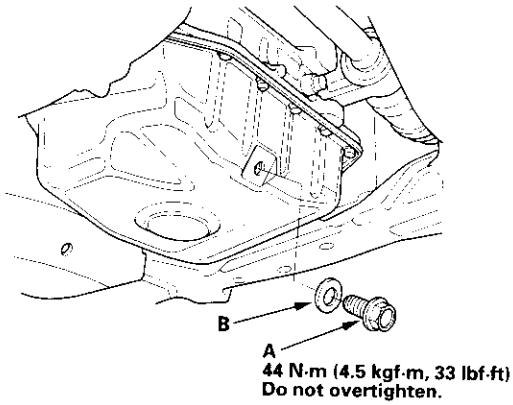
Engine Oil Temperature: 176°F (80°C)
Engine Oil Pressure:
At Idle: 70 kPa (0.7 kgf/cm², 10 psi) minimum
At 3,000 rpm: 300 kPa (3.1 kgf/cm², 44 psi) minimum

5. If the oil pressure is NOT within specification, inspect these items.
   - Check the oil strainer for clogging.
   - Check the oil pump (see page 8-10).

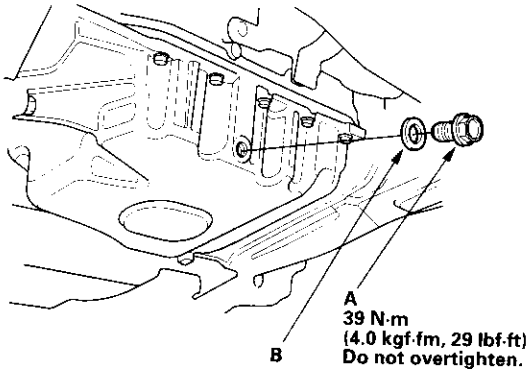
Engine Oil Replacement

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

K20A3 engine:



K20A2 engine:



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

Capacity
K20A3 engine:
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.

K20A2 engine:
4.5 ℓ (4.8 US qt,) at oil change.
4.7 ℓ (5.0 US qt,) at oil change including filter.
5.8 ℓ (6.1 US qt,) after engine overhaul.

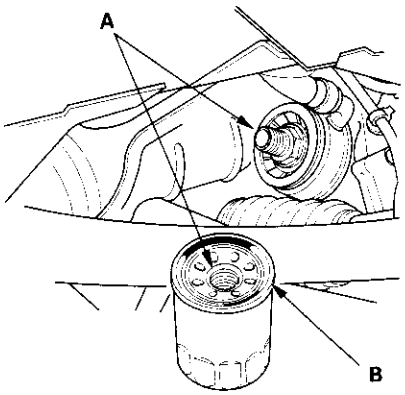
5. Run the engine for more than 3 minutes, then check for oil leakage.

Engine Oil Filter Replacement

Special Tools Required
Oil filter wrench 07HAA-PJ70100

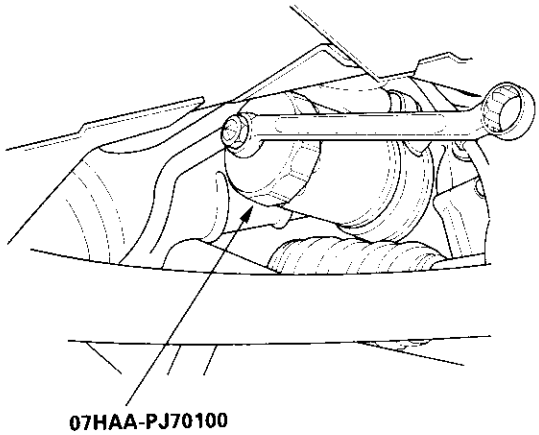
Engine Oil Filter Replacement (3/4-turn type)

1. Remove the oil filter with the special oil filter wrench.
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.

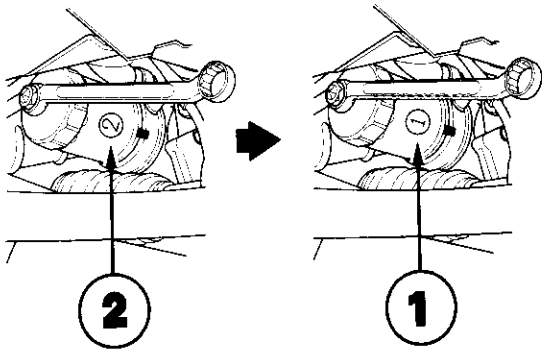


3. Install the oil filter by hand.
4. After the rubber seal seats, tighten the oil filter clockwise with the special tool.

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



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/oil cooler, 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.



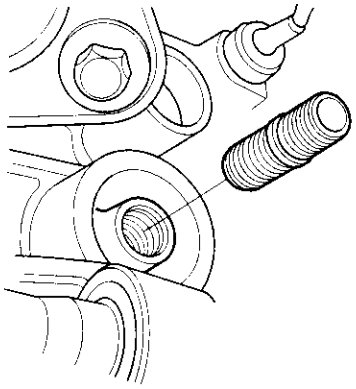
Number when rubber seal is seated. **Number after tightening.**

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 ▼▼▼

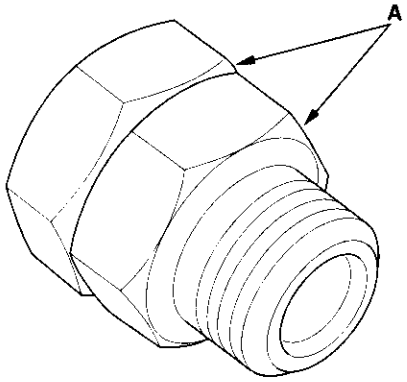
6. After installation, fill the engine with oil up to the specified level, run the engine for more than 3 minutes, then check for oil leakage.

Oil Filter Feed Pipe Replacement

1. Remove the oil filter (see page 8-7).
2. Remove the oil filter feed pipe.



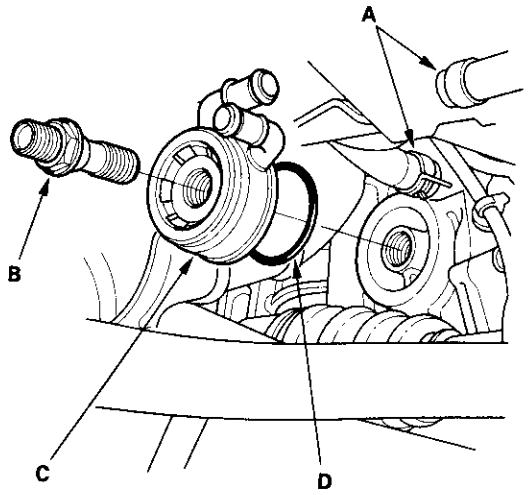
3. Install the two 20 x 1.5 mm nuts (A) onto the new oil filter feed pipe. Hold the nut with a wrench, then tighten the other nut.



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 Cooler Replacement

1. Remove the oil filter (see page 8-7).
2. Remove the oil cooler bypass hoses (A) and oil cooler center bolt (B), then remove the oil cooler (C).



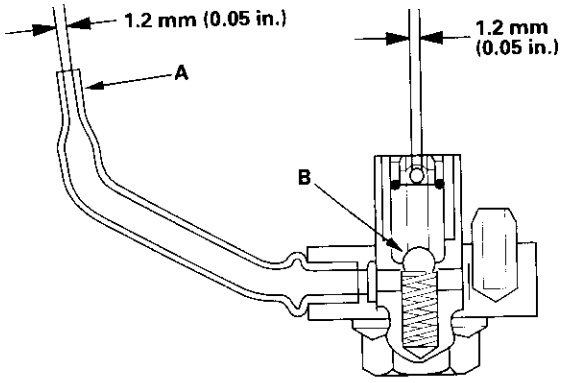
3. Install the oil cooler using a new O-ring (D). Tighten the oil cooler center bolt to 74 N·m (7.5 kgf·m, 54 lbf·ft).

Oil Jet Inspection

1. Remove the oil jet, and inspect it as follows.

   - Make sure that a 1.1 mm (0.04 in.) diameter drill will go through the nozzle hole (A) (1.2 mm (0.05 in.) diameter).
   - Insert the other end of a 1.1 mm (0.04 in.) drill into the oil intake (1.2 mm (0.05 in.) diameter). Make sure the check ball (B) moves smoothly and has a stroke of approximately 4.0 mm (0.16 in.).
   - Check the oil jet operation with an air nozzle. It should take at least 200 kPa (2.0 kgf/cm², 28 psi) to unseat the check ball.

   NOTE: Replace the oil jet assembly if the nozzle is damaged or bent.

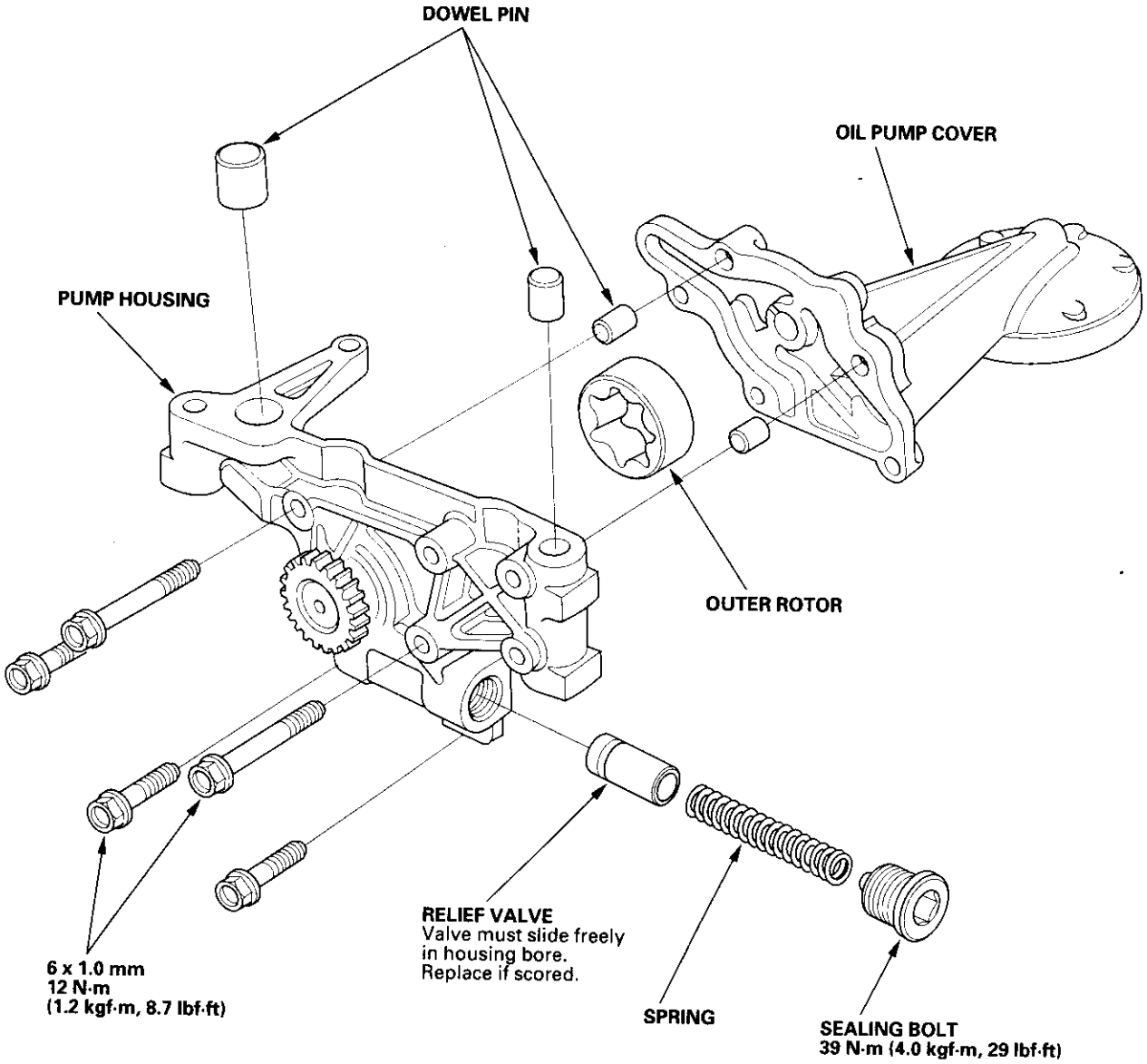


2. Carefully install the oil jet. The mounting torque is critical.

   Torque: 16 N·m (1.6 kgf·m, 12 lbf·ft)

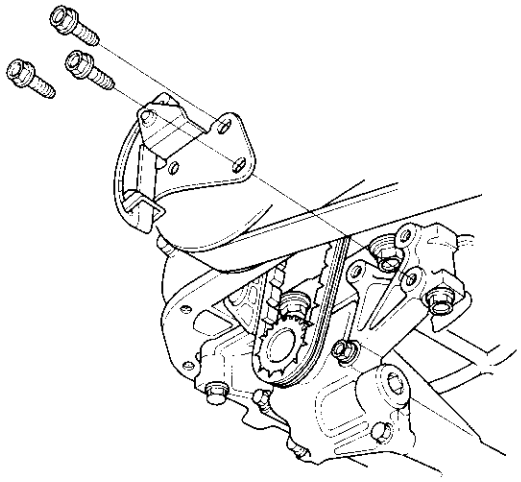
Oil Pump Overhaul

Exploded View

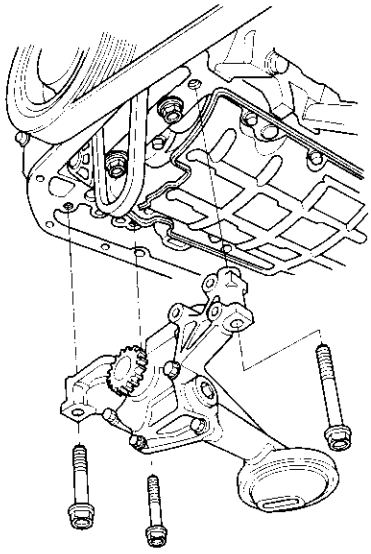


Oil Pump Removal

1. Remove the oil pan (see page 7-12).
2. Remove the oil pump chain tensioner.



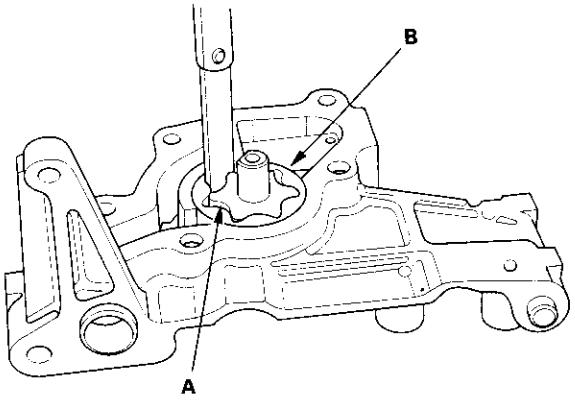
3. Remove the oil pump.



Oil Pump Inspection

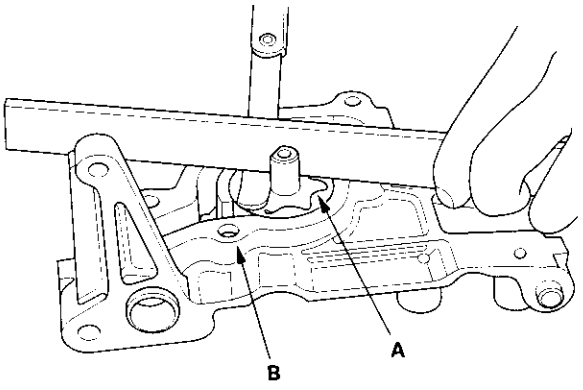
1. Remove the pump cover.
2. Check the inner-to-outer rotor radial clearance between the inner rotor (A) and outer rotor (B). If the inner-to-outer rotor radial clearance exceeds the service limit, replace the oil pump.

Inner Rotor-to-Outer Rotor Radial Clearance
Standard (New): 0.02–0.15 mm (0.001–0.006 in.)
Service Limit: 0.20 mm (0.08 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.)

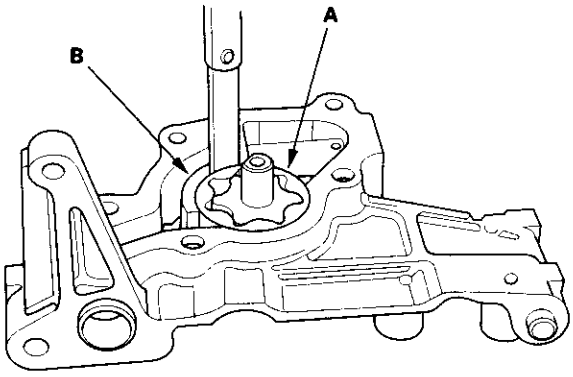


(cont'd)

Oil Pump Overhaul (cont'd)

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.)

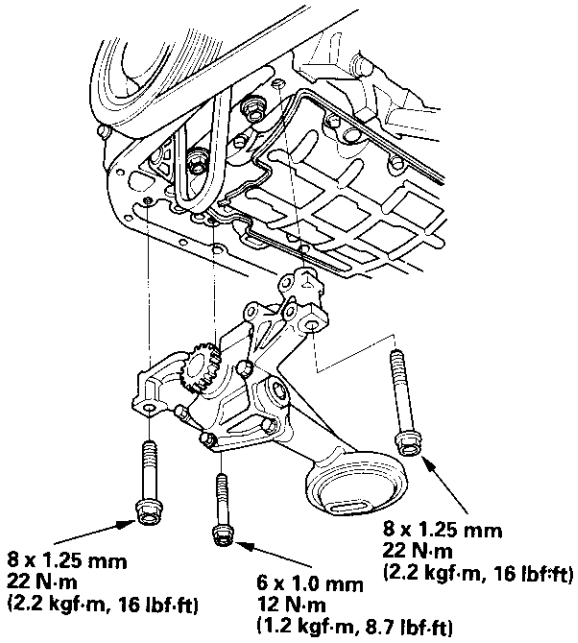


5. Inspect both rotors and the pump housing for scoring or other damage. Replace parts, if necessary.

6. Install the oil pump cover.

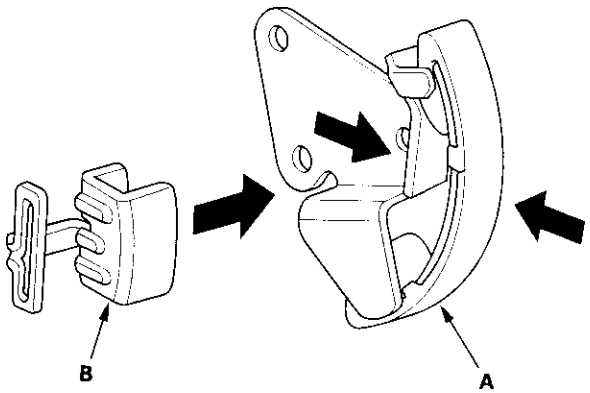
Oil Pump Installation

1. Install the oil pump.

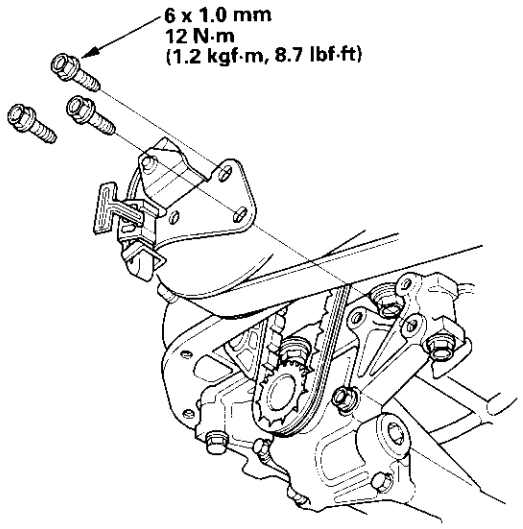


2. Squeeze the new oil pump chain tensioner (A), then install the set clip (B) on it as shown.

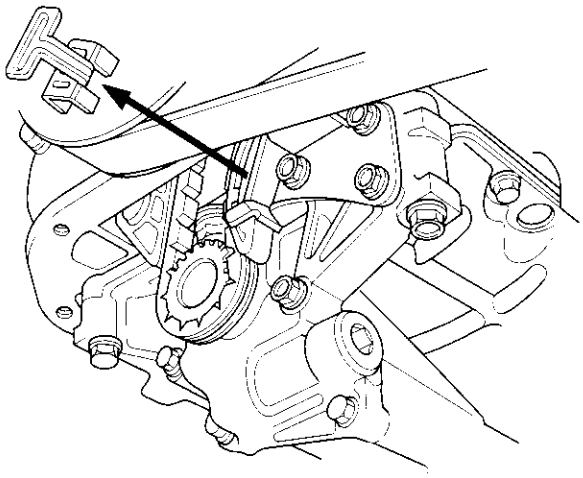
NOTE: The set clip is supplied with the oil pump chain tensioner.



3. Install the oil pump chain tensioner.



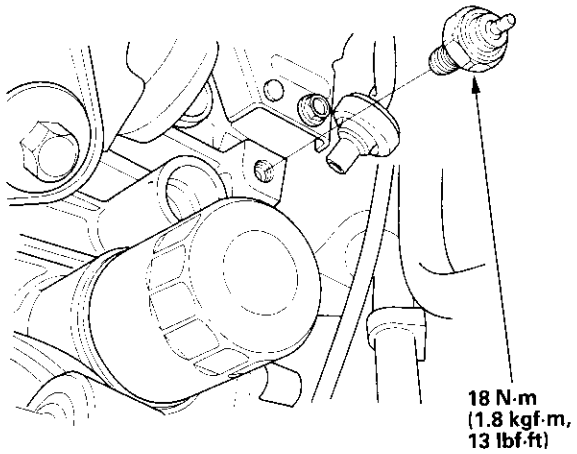
4. Remove the set clip from the oil pump chain tensioner.



5. Install the oil pan (see page 7-29).

Oil Pressure Switch Replacement

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



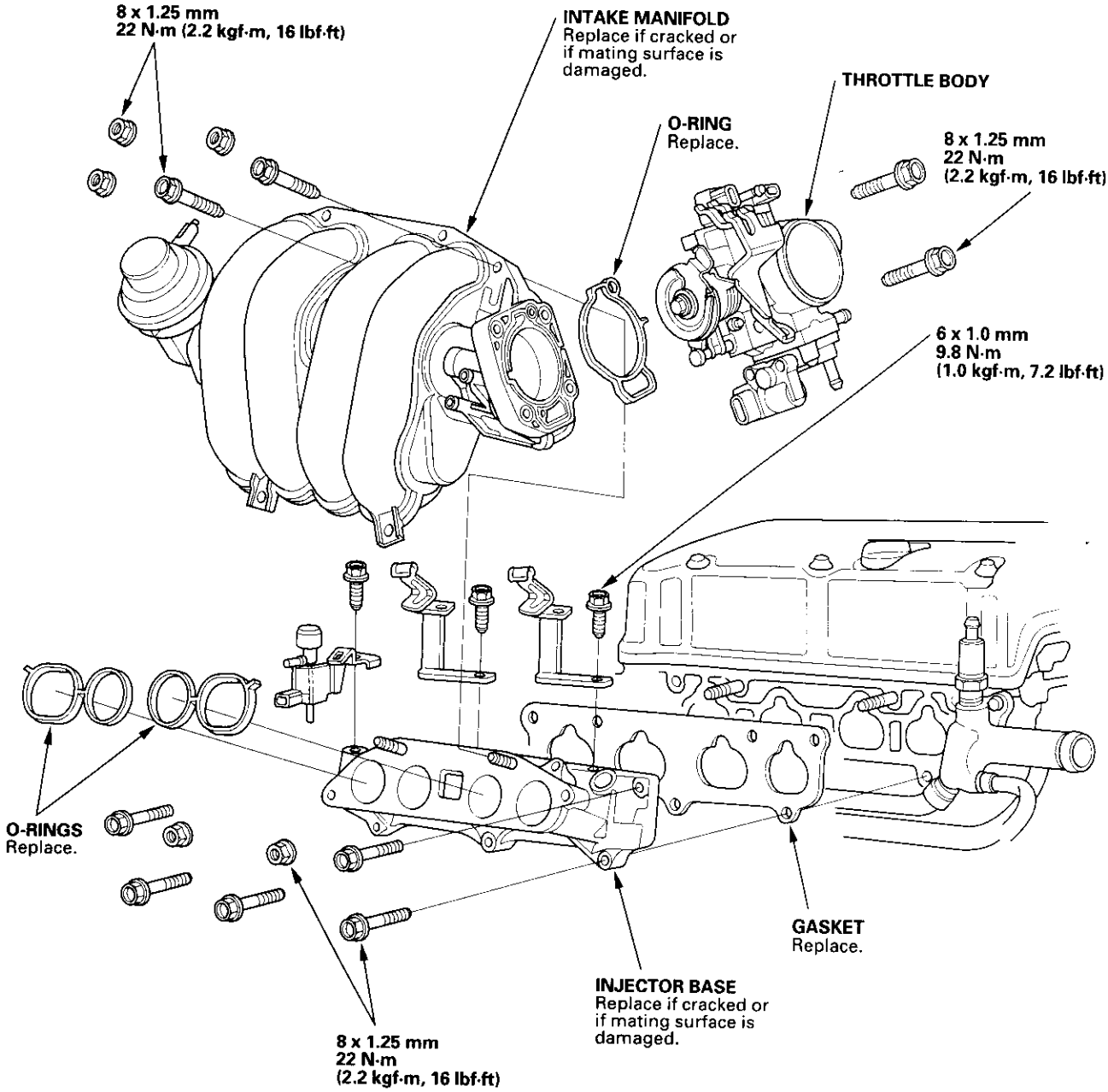
2. Apply liquid gasket, P/N 08718-0009, to the oil pressure switch threads, then install the oil pressure switch.

Engine Mechanical

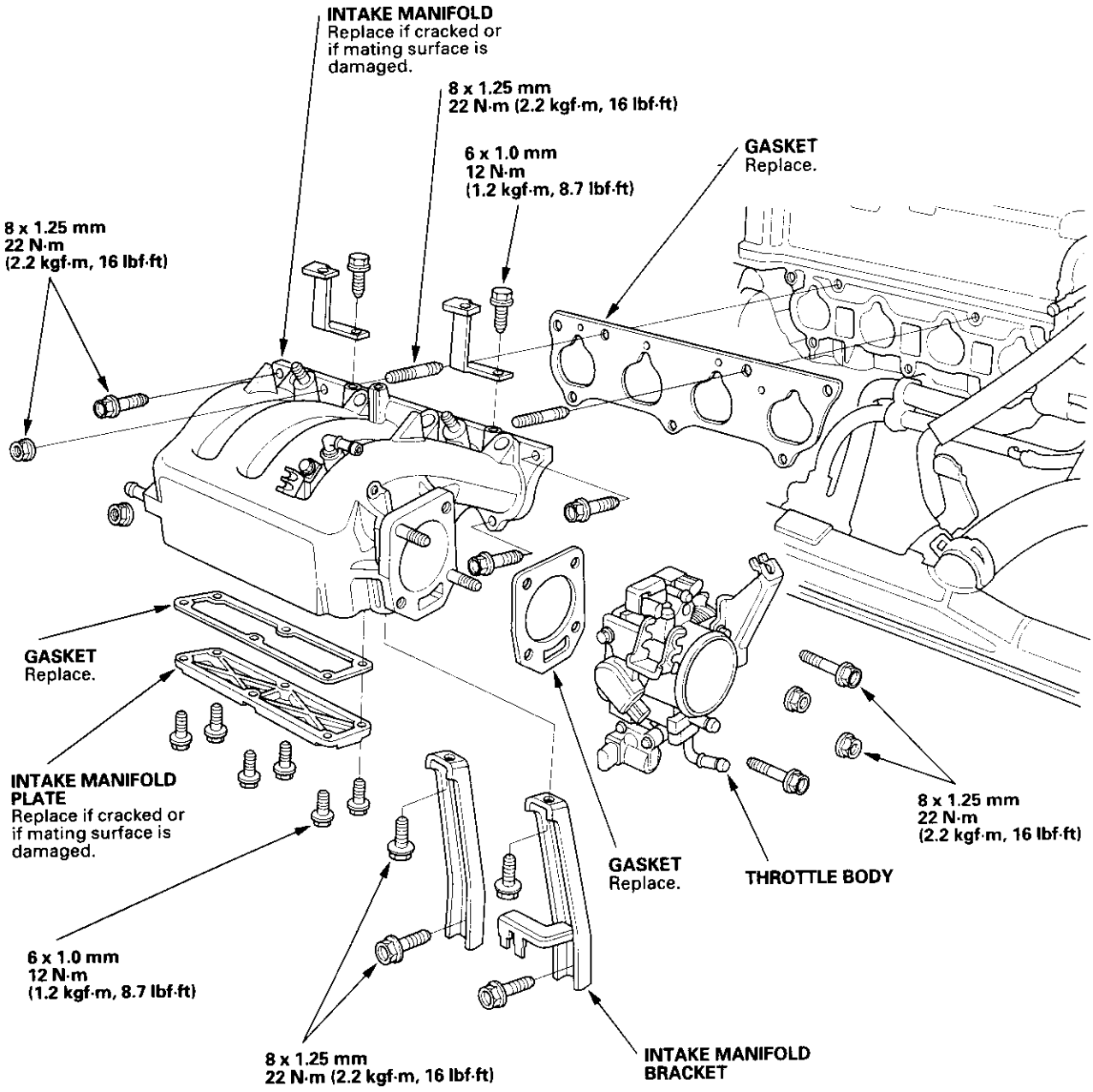
Intake Manifold and Exhaust System

Intake Manifold Removal and Installation

Exploded View-K20A3 engine:



Exploded View-K20A2 engine:



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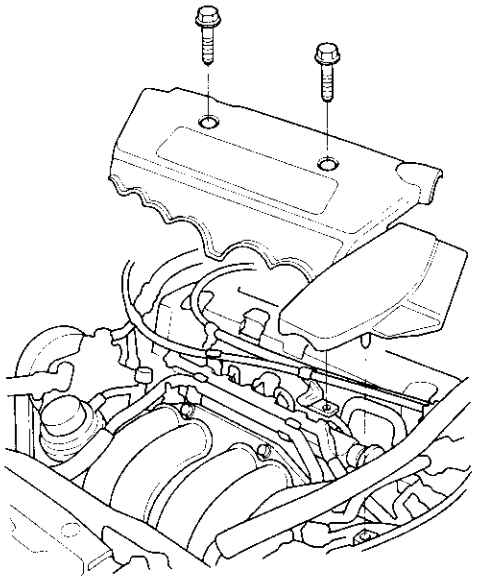
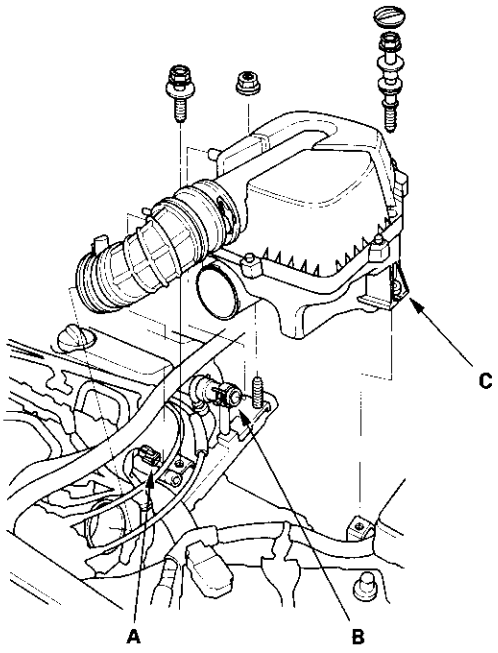
Intake Manifold Removal and Installation (cont'd)

Removal-K20A3 engine

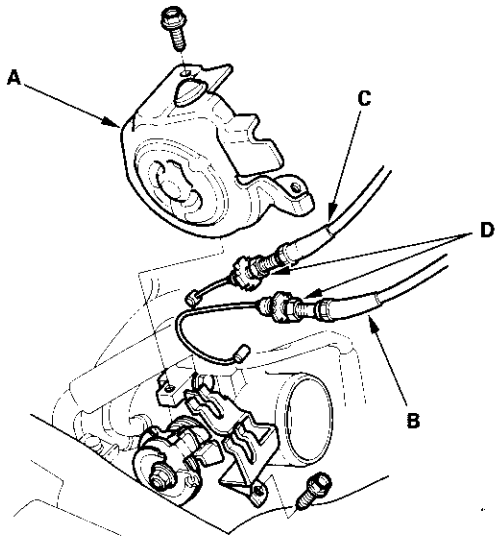
1. Remove the intake manifold cover.



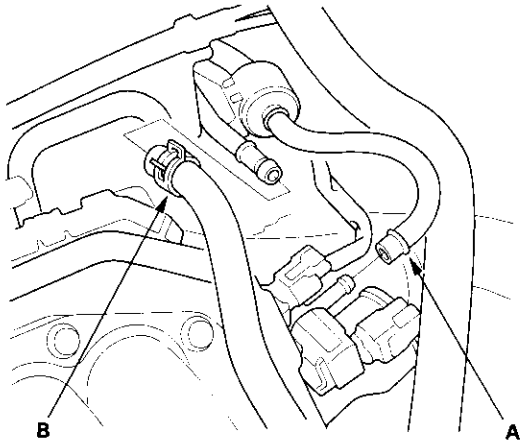
2. Disconnect the intake air temperature (IAT) sensor connector (A), and remove the breather hose (B), then remove the air cleaner housing (C).



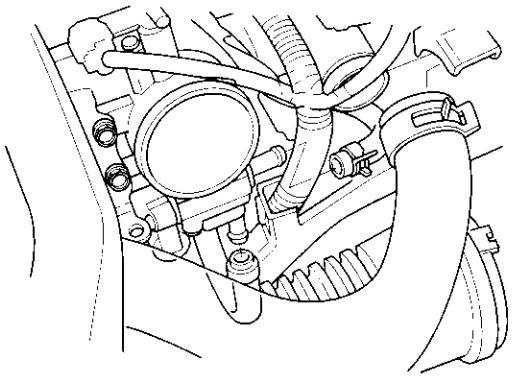
3. Remove the throttle cover (A). Fully open the throttle link and cruise control link by hand, then remove the throttle cable (B) and cruise control cable (C) from the links. Loosen the locknuts (D), and remove the cables from the bracket.



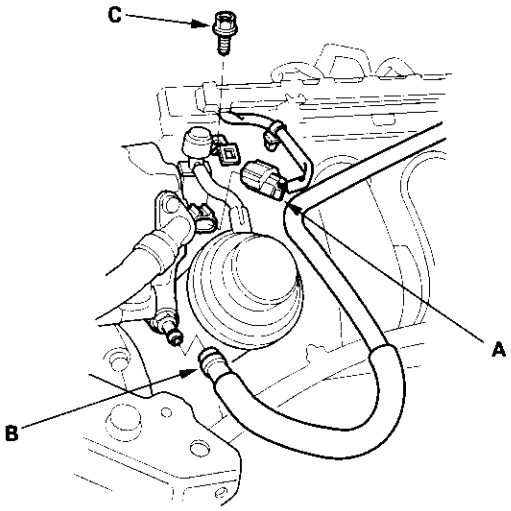
4. Remove the evaporative emission (EVAP) canister hose (A) and brake booster vacuum hose (B).



5. Remove the water bypass hoses, then plug the water bypass hoses.

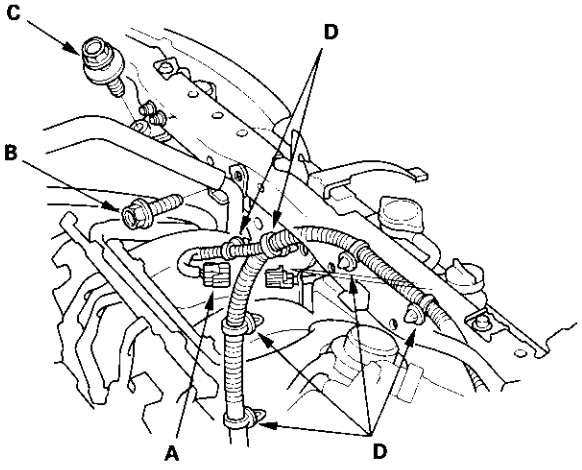


6. Disconnect the Intake manifold runner control (IMRC) valve actuator control solenoid valve connector (A), then remove the positive crankcase ventilation (PCV) hose (B) and IMRC valve control solenoid valve mounting bolt (C).

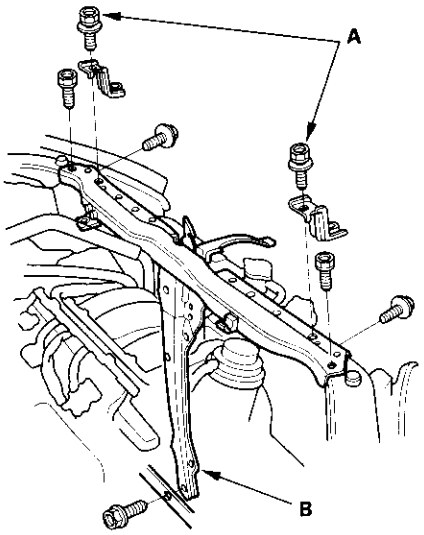


7. Remove the front bumper (see page 20-87).

8. Disconnect the hood switch connector (A), then remove the air conditioning (A/C) line bracket mounting bolt (B), intake airduct mounting bolt (C) and harness clamps (D).



9. Remove the upper bracket and cushion mounting bolts (A), then remove the bulkhead (B).



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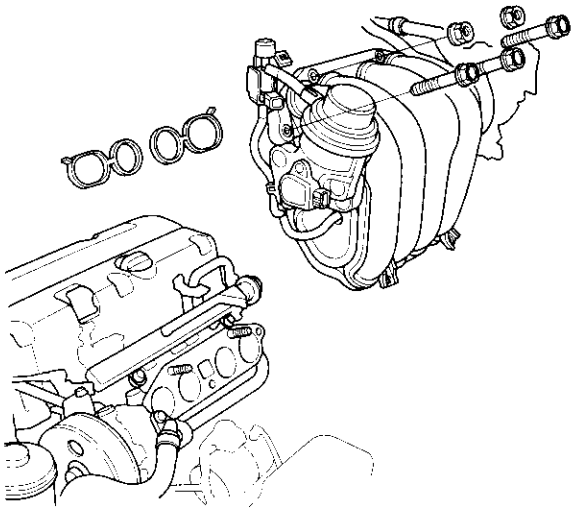
Intake Manifold Removal and Installation (cont'd)

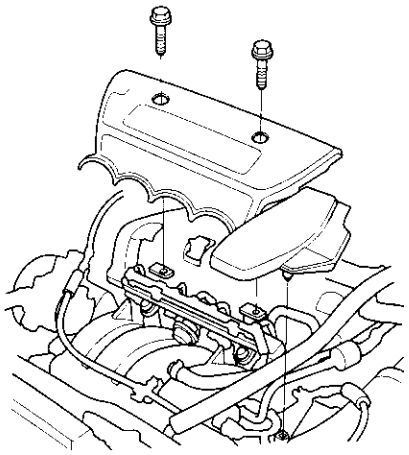
10. Remove the engine wire harness connectors and wire harness clamps from the intake manifold.
    - Idle air control (IAC) valve connector
    - Throttle position (TP) sensor connector
    - Manifold absolute pressure (MAP) sensor connector
    - Evaporative emission (EVAP) canister purge valve connector
    - Intake manifold runner control (IMRC) valve position sensor connector

11. Remove the intake manifold.

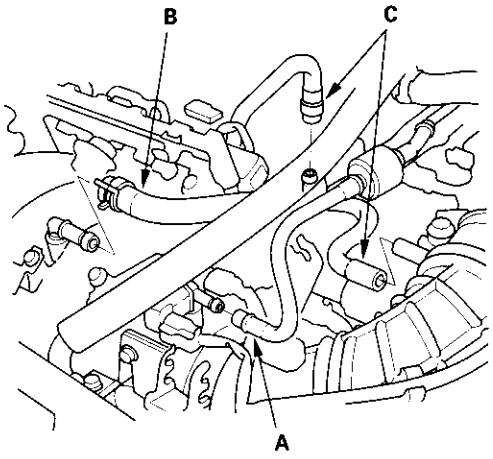


Removal-K20A2 engine:

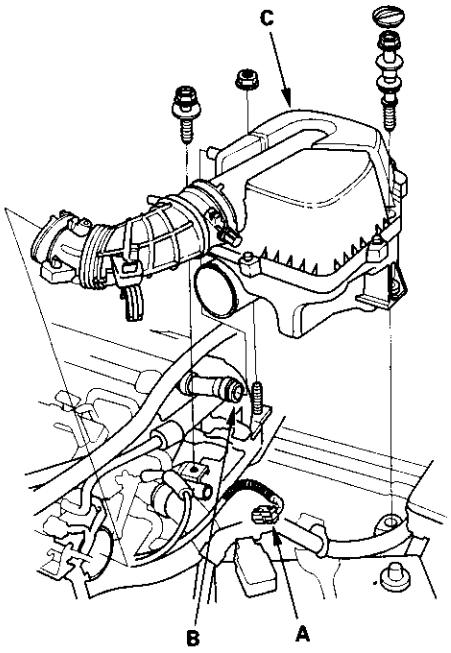
1. Remove the intake manifold cover.



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



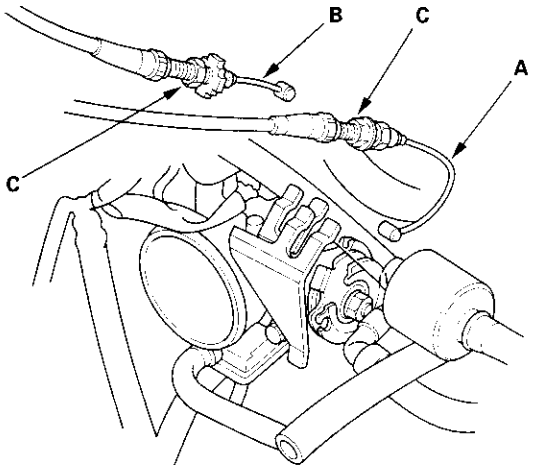
3. Disconnect the IAT sensor connector (A), and remove the breather hose (B), then remove the air cleaner housing (C).



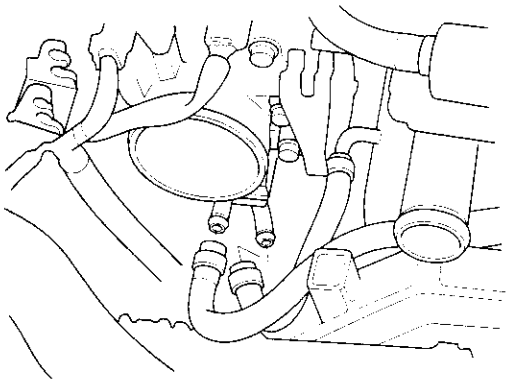
(cont'd)

Intake Manifold Removal and Installation (cont'd)

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.



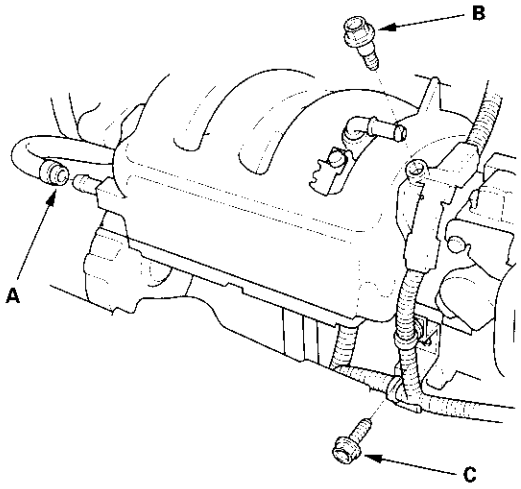
5. Remove the water bypass hoses, then plug the water bypass hoses.



6. Relieve fuel pressure (see page 11-155).

7. Remove the fuel feed hose (see page 11-160).

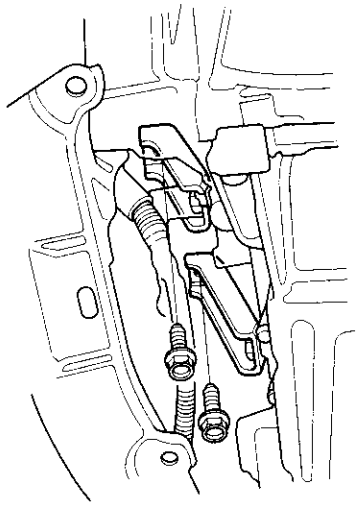
8. Remove the PCV hose (A), harness holder mounting bolt (B) and harness clamp mounting bolt (C).



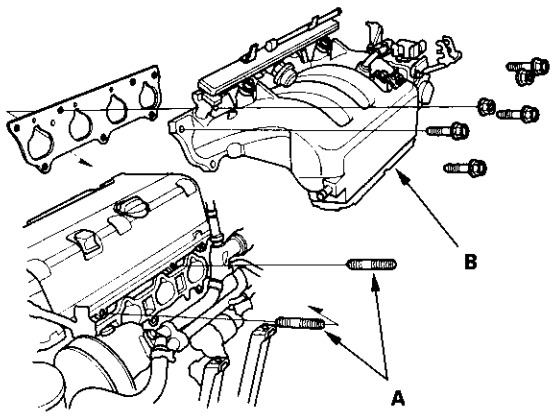
9. Remove the engine wire harness connectors and wire harness clamps from the intake manifold.

   - Four injector connectors
   - IAC valve connector
   - TP sensor connector
   - MAP sensor connector
   - EVAP canister purge valve connector

10. Remove the two bolts securing the intake manifold and brackets.



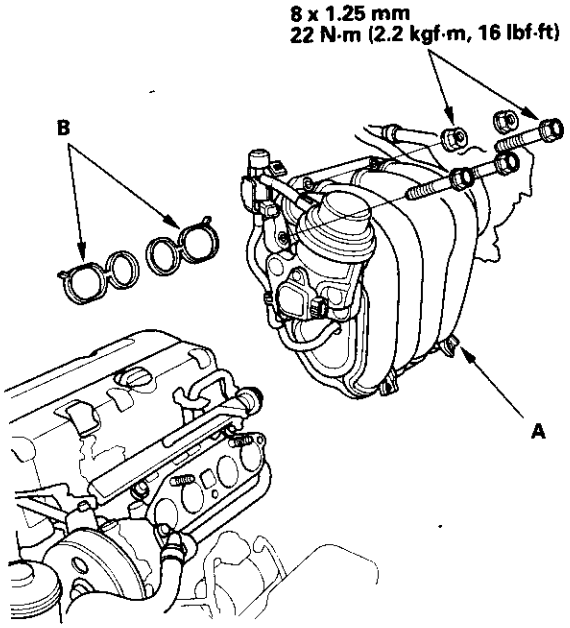
11. Remove all the intake manifold mounting bolts/ nuts.



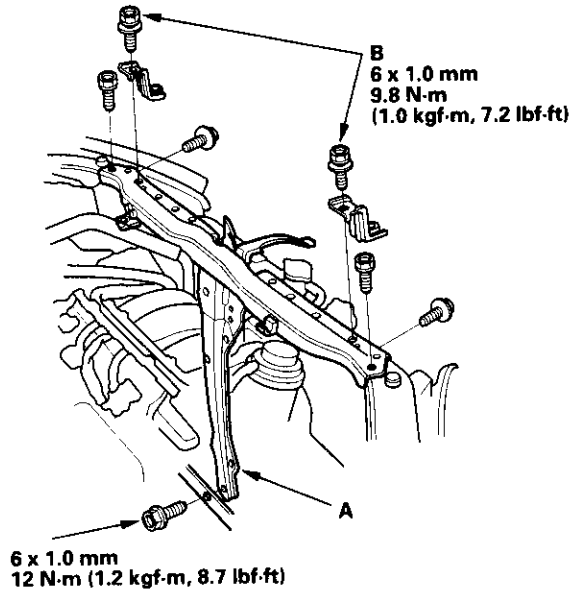
12. Remove the two stud bolts (A), then remove the intake manifold (B).

Installation-K20A3 engine:

1. Install the intake manifold (A) and tighten the bolts/ nuts in a crisscross pattern in two or three steps, beginning with the inner bolt. Use new O-rings (B).



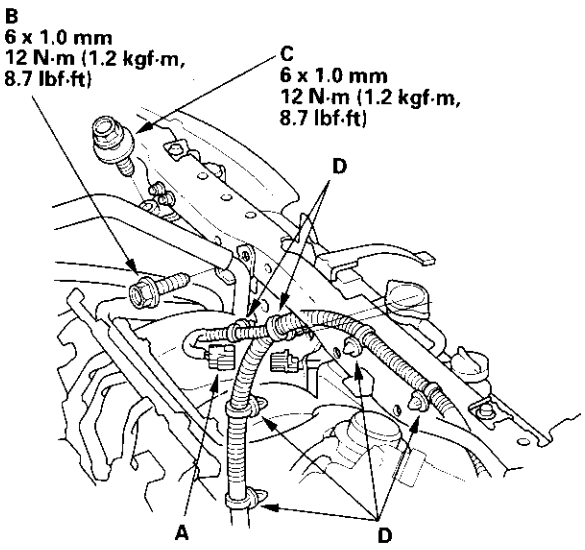
2. Install the bulkhead (A), then install the upper bracket and cushion mounting bolts (B).



(cont'd)

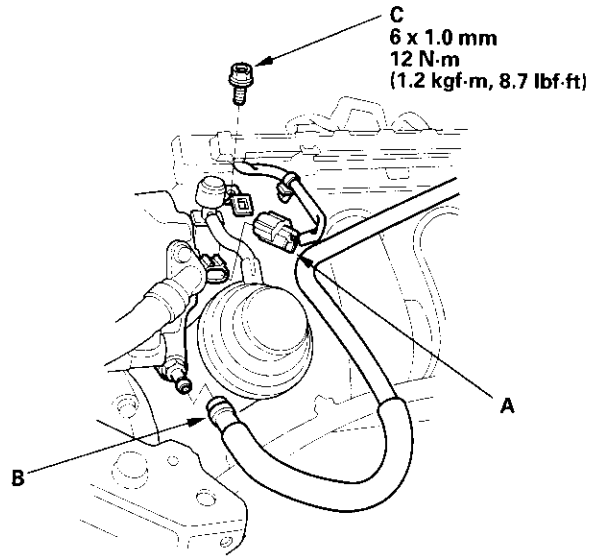
Intake Manifold Removal and Installation (cont'd)

3. Connect the hood switch connector (A), then install the A/C line bracket mounting bolt (B), intake airduct mounting bolt (C) and harness clamps (D).

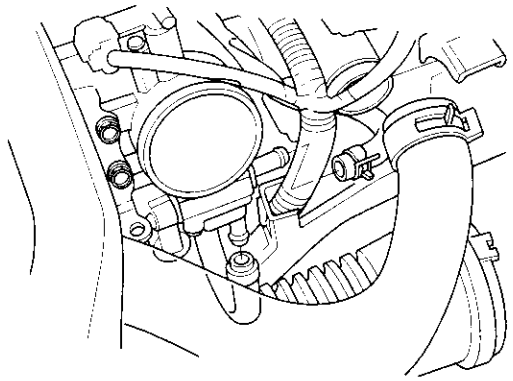


4. Install the front bumper (see page 20-87).

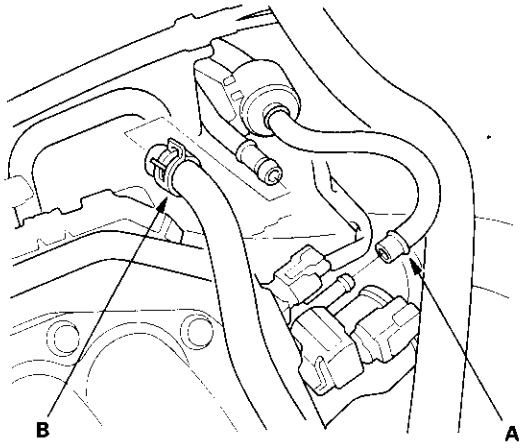
5. Connect the IMRC valve actuator control solenoid valve connector (A), then install the PCV hose (B) and IMRC valve actuator control solenoid valve mounting bolt (C).



6. Install the water bypass hoses.



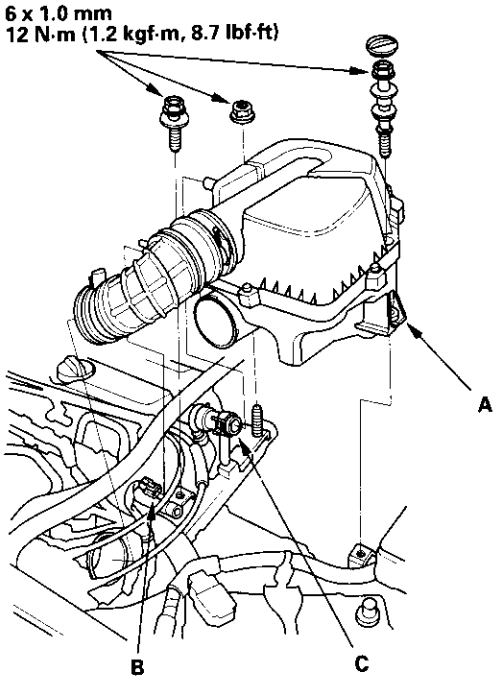
7. Install the EVAP canister hose (A) and brake booster vacuum hose (B).



8. Install the throttle cable (see page 11-181), then adjust the cable (see page 11-180).

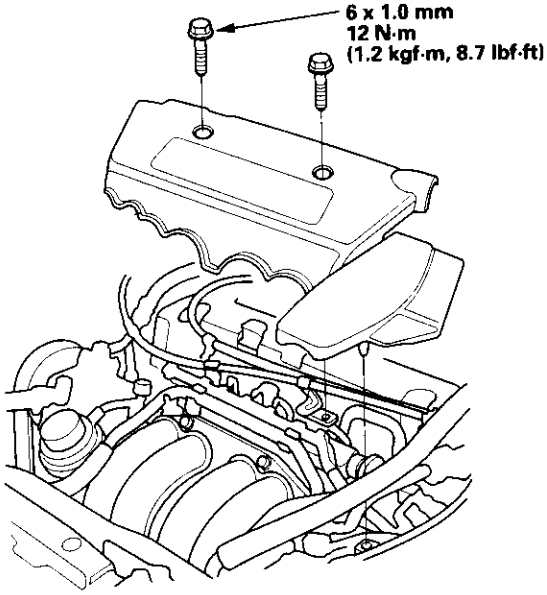
9. Install the cruise control cable, then adjust the cable (see page 4-57).

10. Install the air cleaner housing (A) and connect the IAT sensor connector (B).



11. Install the breather hose (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.

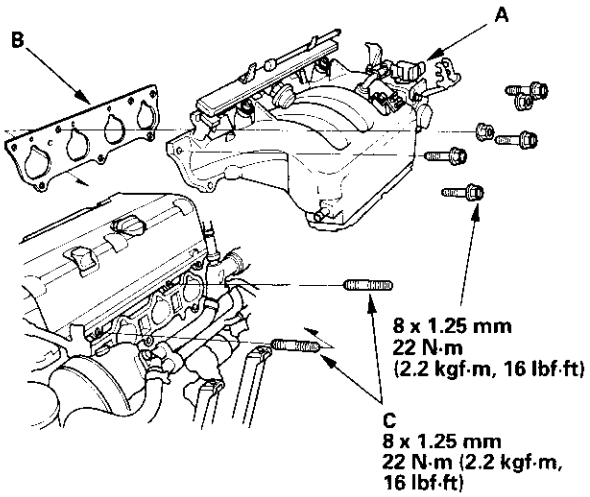
15. Refill the radiator with engine coolant, and bleed air from the cooling system with the heater valve open (see page 10-6).

(cont'd)

Intake Manifold Removal and Installation (cont'd)

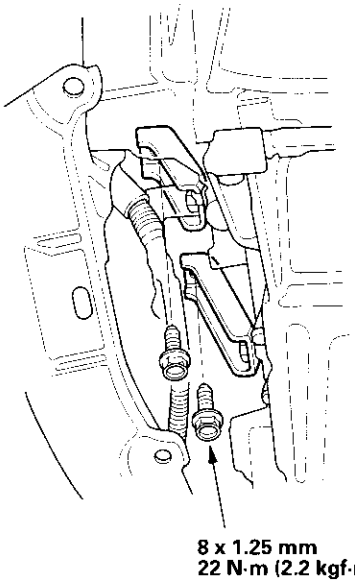
Installation-K20A2 engine:

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

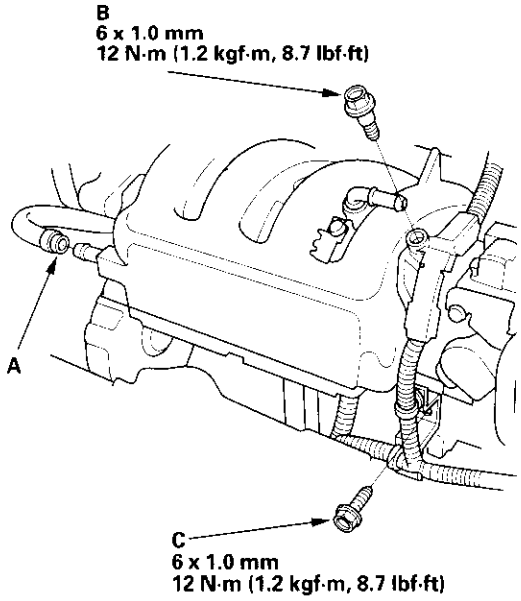


2. Tighten all intake manifold mounting bolts/nuts in a crisscross pattern in two or three steps, beginning with the inner bolt.

3. Tighten the two bolts securing the intake manifold and brackets.

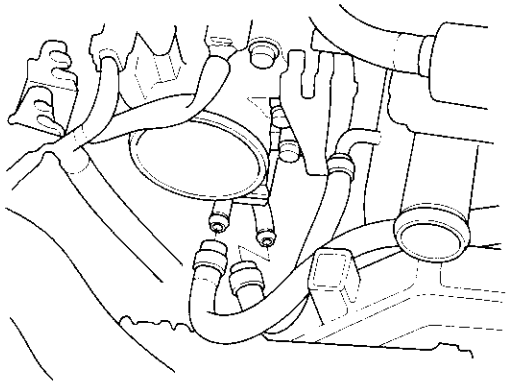


4. Install the PCV hose (A), harness holder mounting bolt (B), and harness clamp mounting bolt (C).



5. Install the fuel feed hose (see page 11-161).

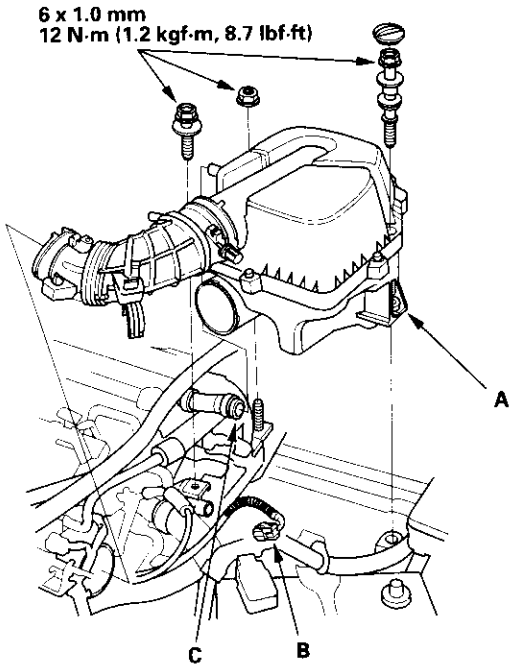
6. Install the water bypass hoses.



7. Install the throttle cable (see page 11-181), then adjust the cable (see page 11-180).

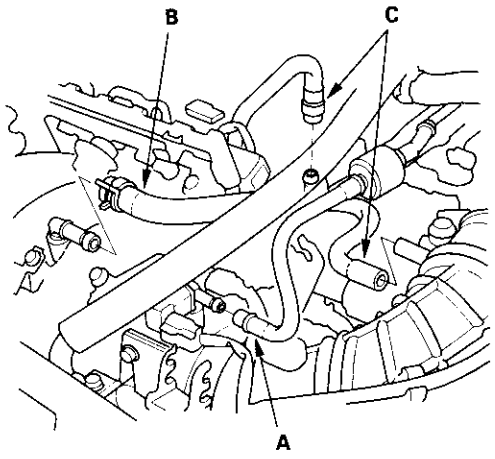
8. Install the cruise control cable, then adjust the cable (see page 4-57).

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

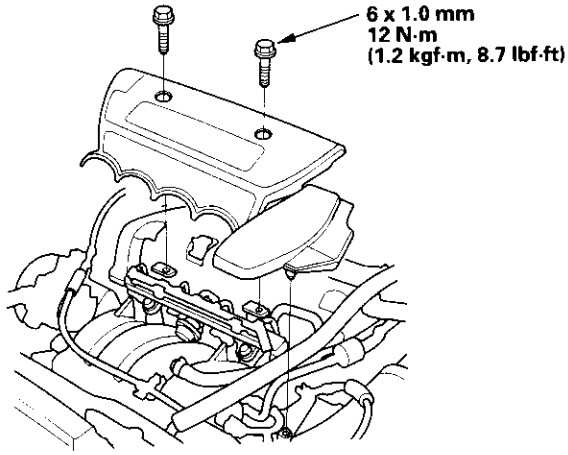


10. Install the breather hose (C).

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.

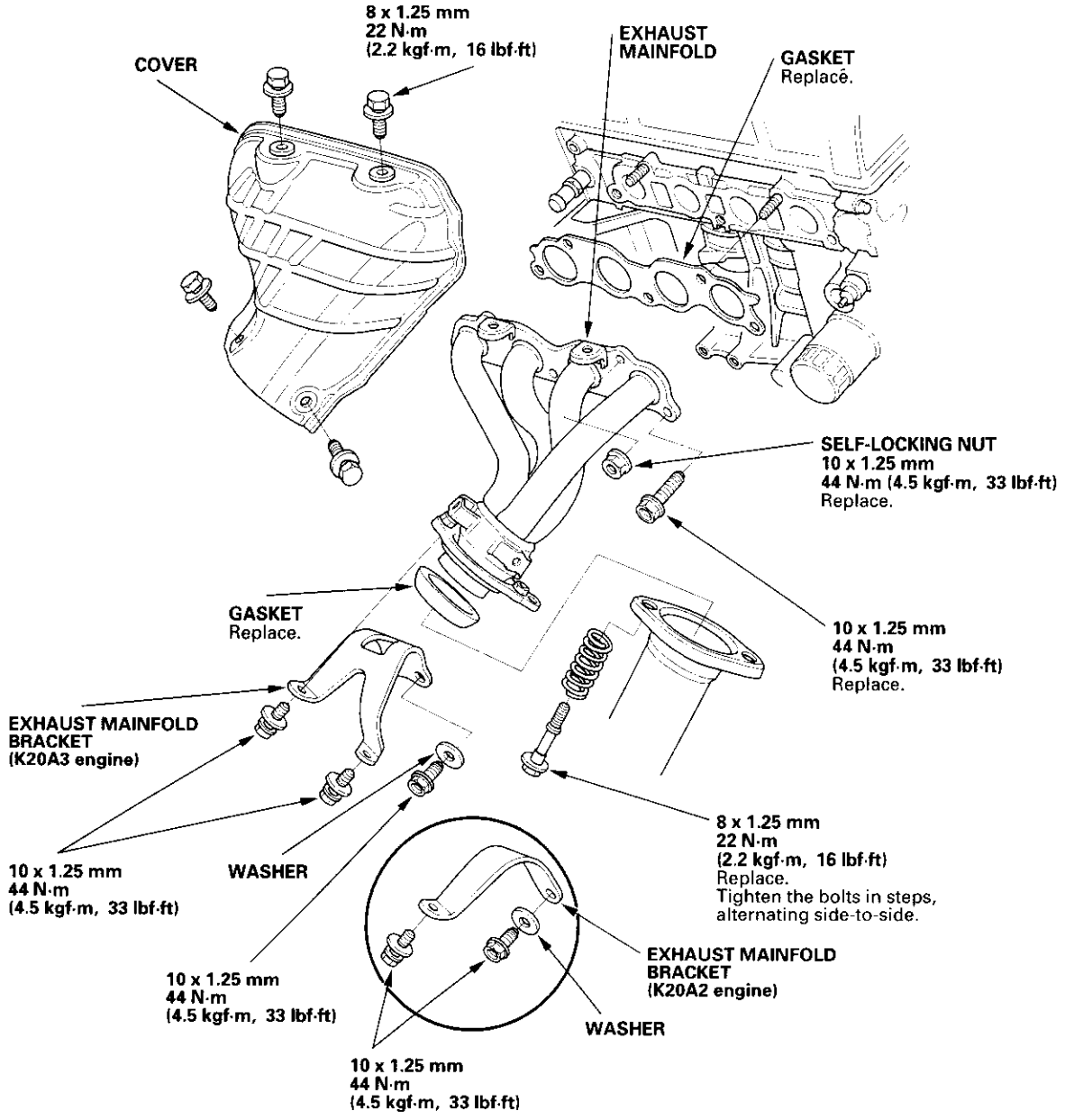
14. After installation, check that all tubes, hoses, and connectors are installed correctly.

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

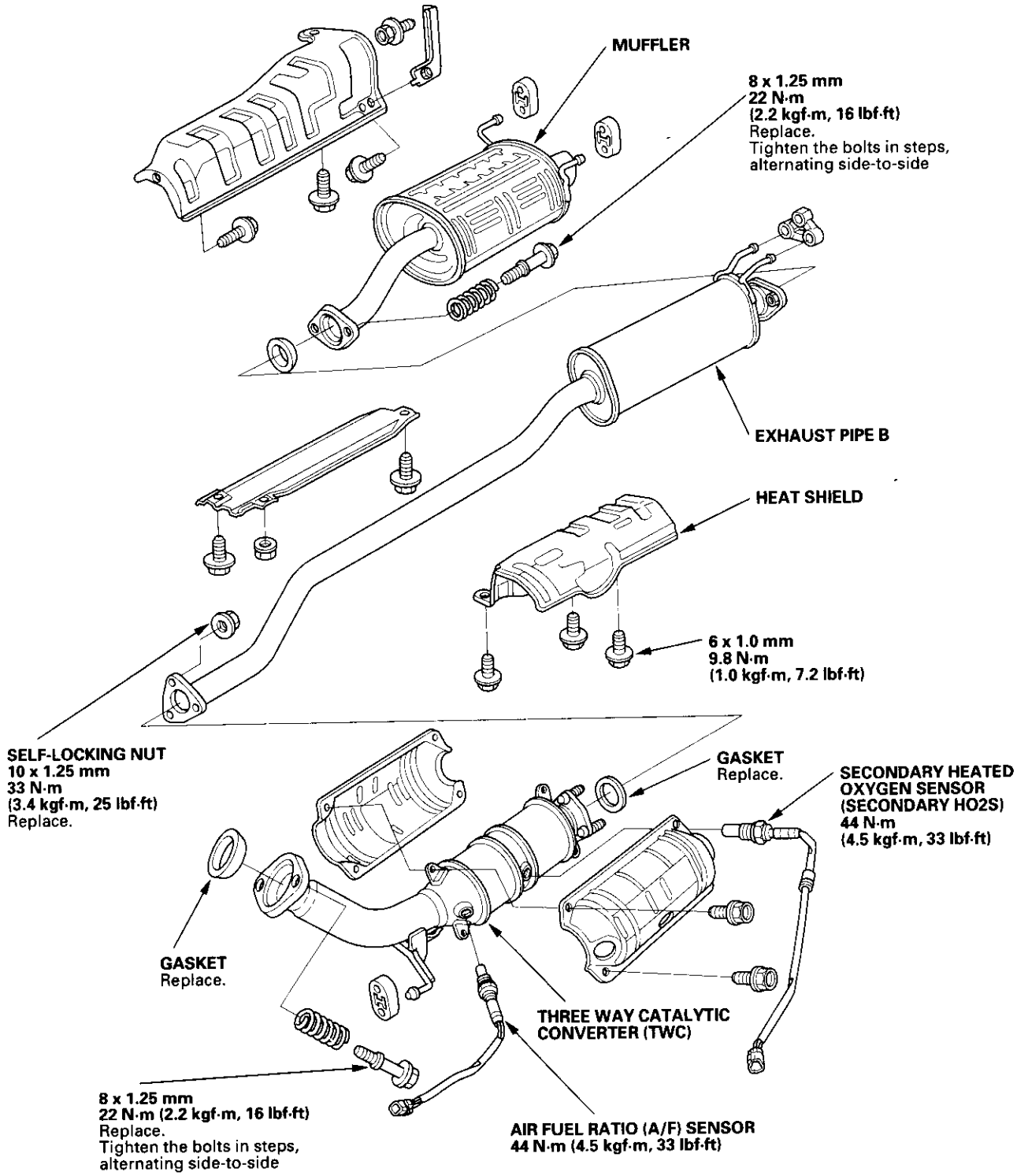
1. Remove the VTEC solenoid valve (see page 11-137).
2. Remove the intermediate shaft cover (see step 36 on page 14-145).
3. Remove the cover and exhaust manifold bracket, then remove the exhaust manifold.



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.

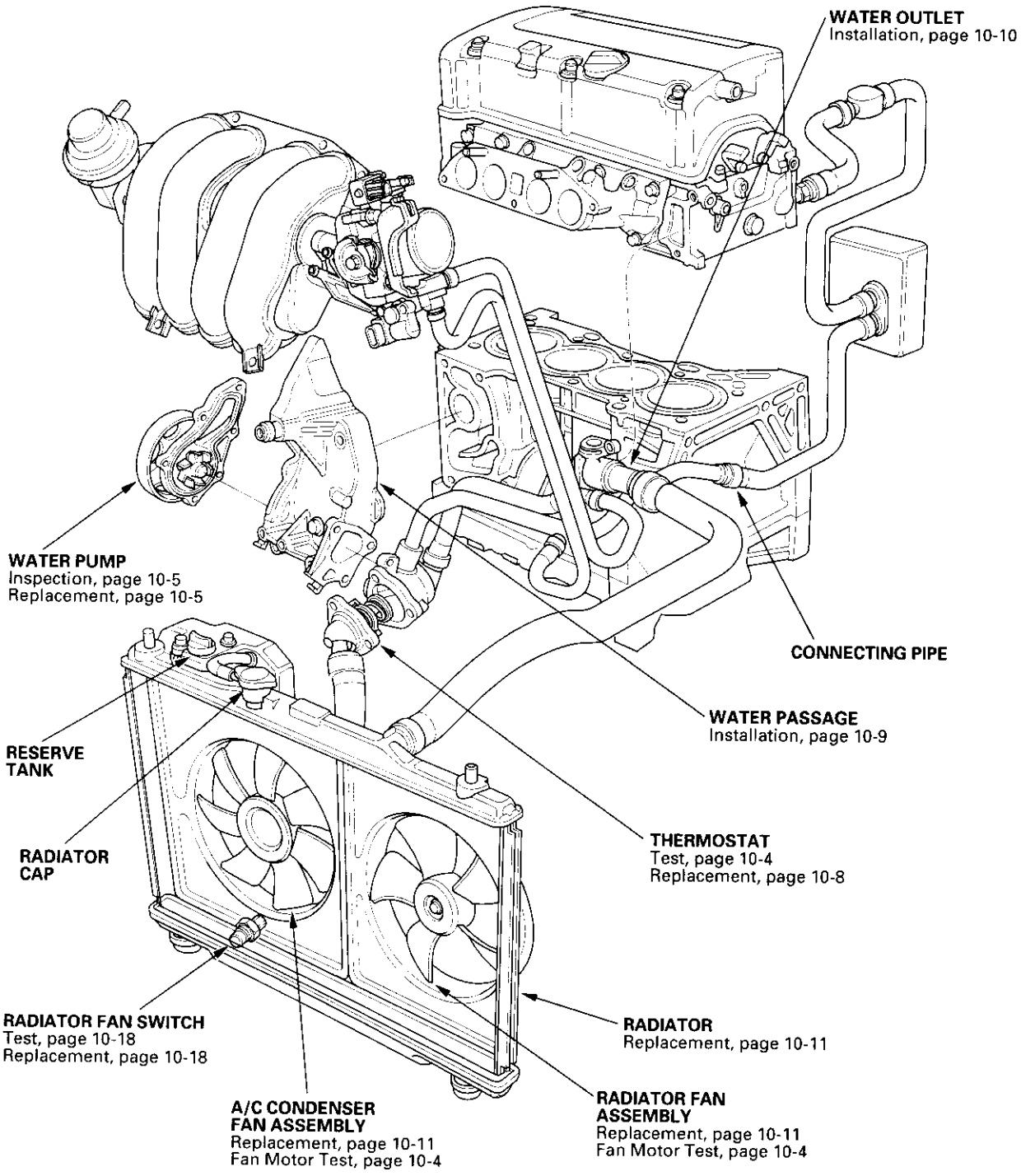


Engine Cooling

Cooling System

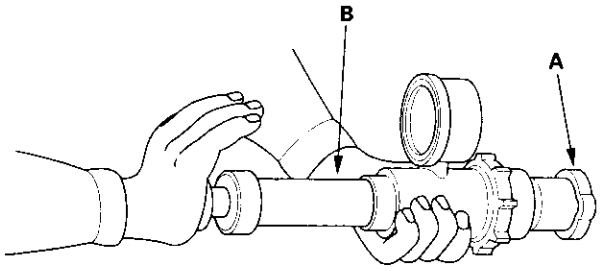
Fan Controls

Component Location Index



Radiator Cap Test

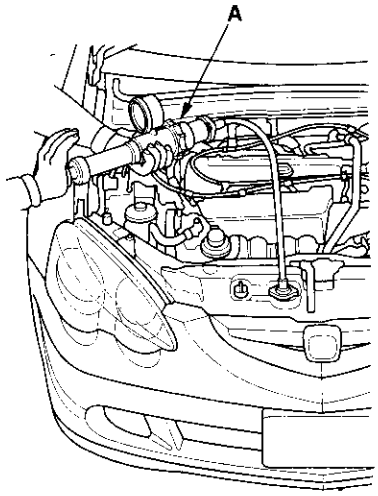
1. Remove the radiator cap (A), wet its seal with engine coolant, then install it on the pressure tester (B) (commercially available).



2. Apply a pressure of 93 – 123 kPa (0.95 – 1.25 kgf/cm², 14 – 18 psi).
3. Check for a drop in pressure.
4. If the pressure drops, replace the cap.

Radiator Test

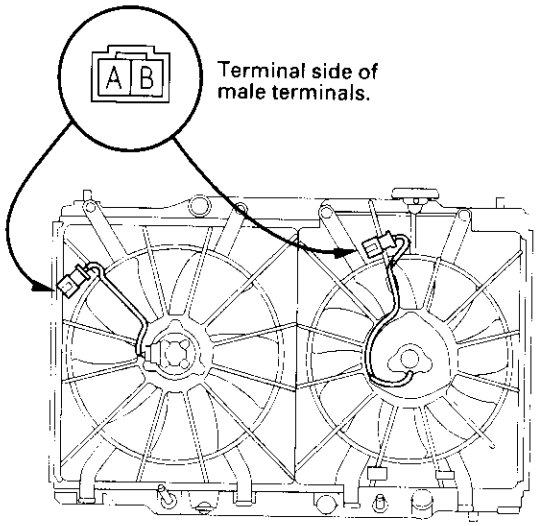
1. Wait until the engine is cool, then carefully remove the radiator cap and fill the radiator with engine coolant to the top of the filler neck.
2. Attach the pressure tester (A) (commercially available) to the radiator.



3. Apply a pressure of 93 – 123 kPa (0.95 – 1.25 kgf/cm², 14 – 18 psi).
4. Inspect for engine coolant leaks and a drop in pressure.
5. Remove the tester, and reinstall the radiator cap.
6. Check for engine oil in the coolant and/or coolant in the engine oil.

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.

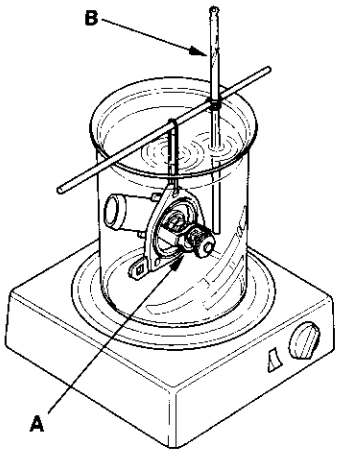
3. If the motor fails to run or does not run smoothly, replace it.

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.

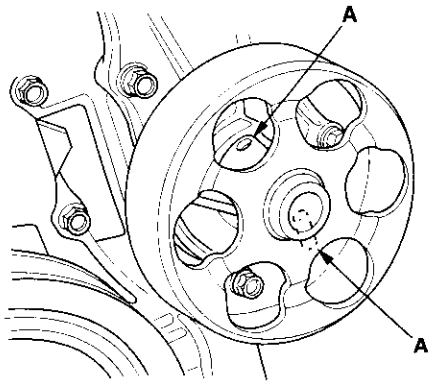
3. Measure the lift height of the thermostat when it is fully open.

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)**

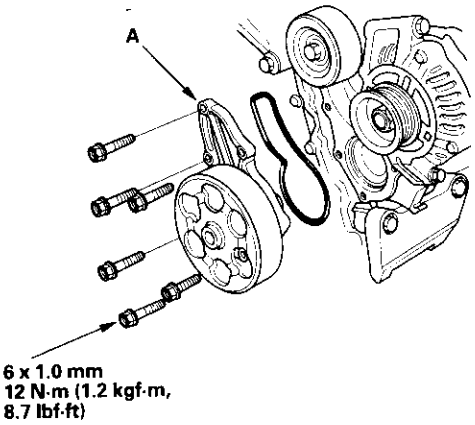
Water Pump Inspection

1. Remove the drive belt (see page 4-32).
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 hole (A) is normal.

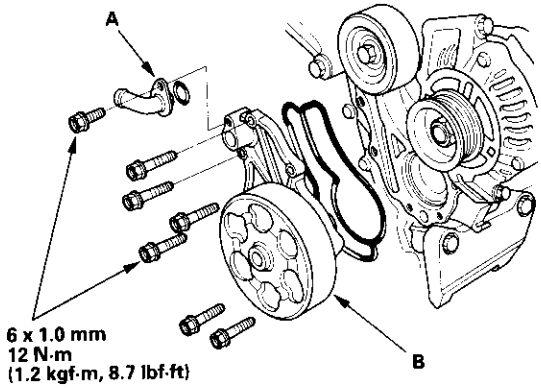


Water Pump Replacement

1. Remove the drive belt (see page 4-32).
2. Drain the engine coolant (see page 10-6).
3. Remove the crankshaft pulley (see page 6-13).
4. K20A3 engine: Remove the six bolts securing the water pump, then remove the water pump (A).



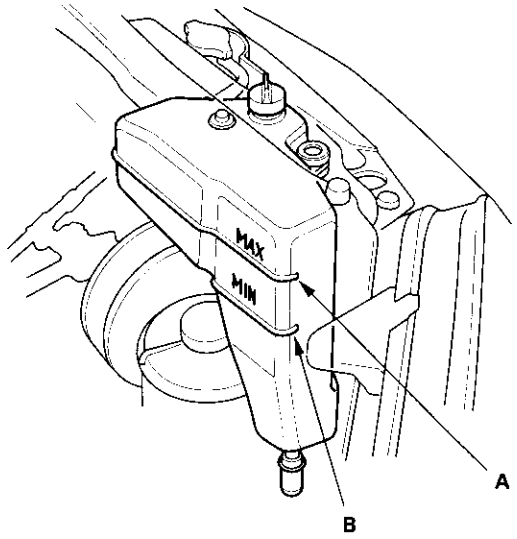
5. K20A2 engine: Remove the oil cooler joint pipe (A), then remove the seven bolts securing the water pump. Remove the water pump (B).



6. Inspect and clean the O-ring groove and mating surface with the water passage.
7. Install the water pump with new O-rings in the reverse order of removal.
8. Clean up any spilled engine coolant.
9. Install the crankshaft pulley (see page 6-13).
10. Refill the radiator with engine coolant, and bleed air from the cooling system with the heater valve open (see page 10-6).

Coolant Check

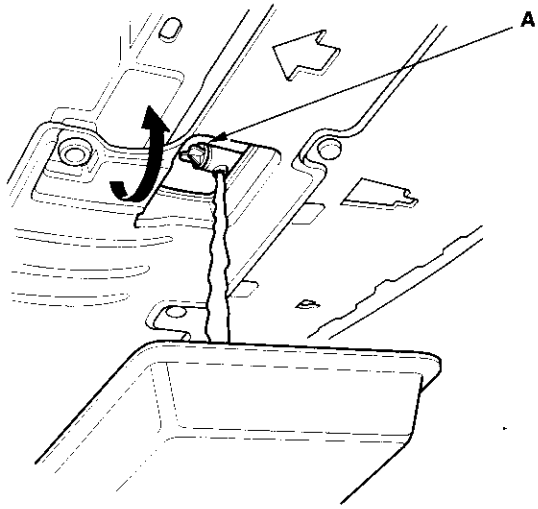
1. Look at the coolant level in the reserve tank. Make sure it is between the MAX mark (A) and MIN mark (B).



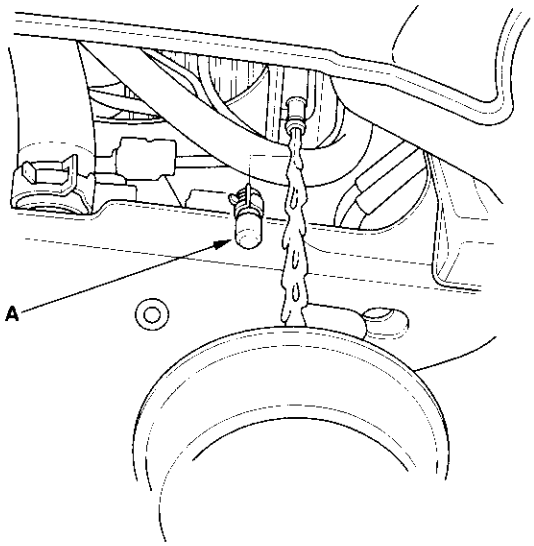
2. If the coolant level in the reserve tank is at or below the MIN mark, add coolant to bring it up to the MAX mark, and inspect the cooling system for leaks.

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. Loosen the drain plug (A), and drain the coolant.

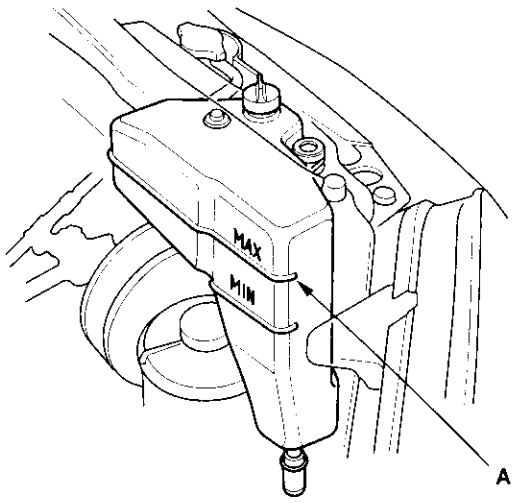


4. Remove the splash shield (see step 24 on page 5-5).
5. Remove the reserve tank drain cap (A), and drain the coolant.



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

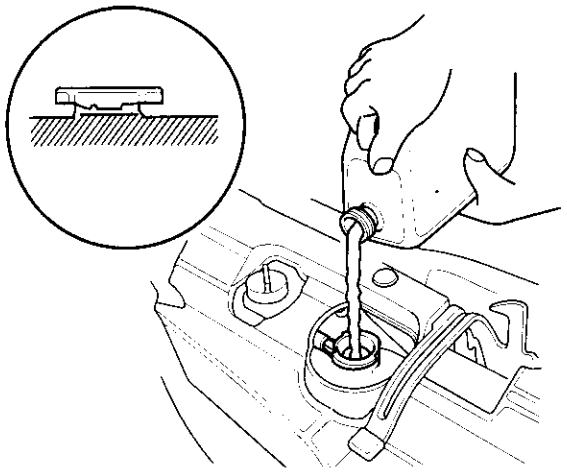
7. Fill the reserve tank to the MAX mark (A) with Honda All Season Antifreeze/Coolant Type 2 (P/N OL999-9001).



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 0.5 ℓ (0.5 US qt)] :
   M/T: 5.1 ℓ (5.4 US qt)
   A/T: 5.0 ℓ (5.3 US qt)



9. Install the radiator cap loosely.

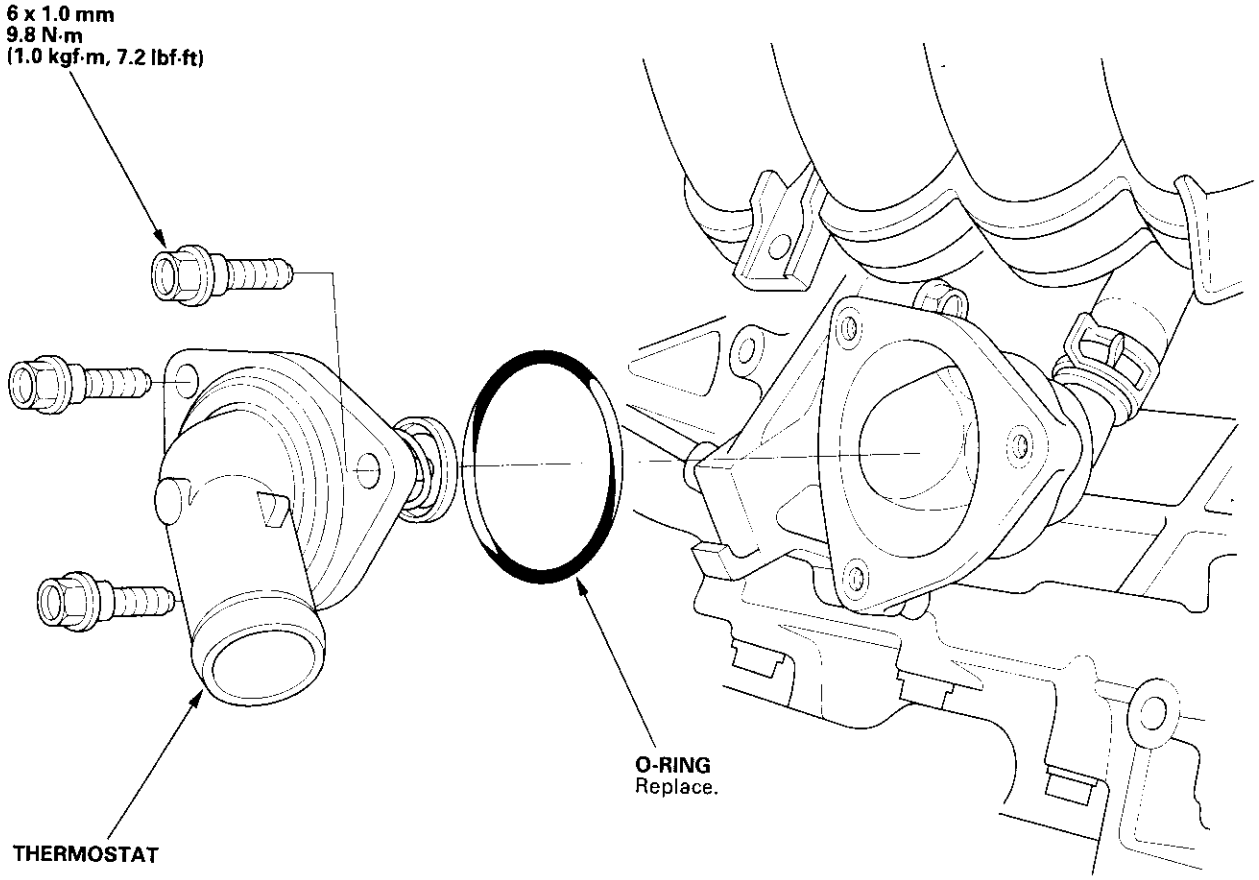
10. Start the engine, and let it run until it warms up (the radiator fan comes on at least twice).

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 21 on page 5-14).

Thermostat Replacement

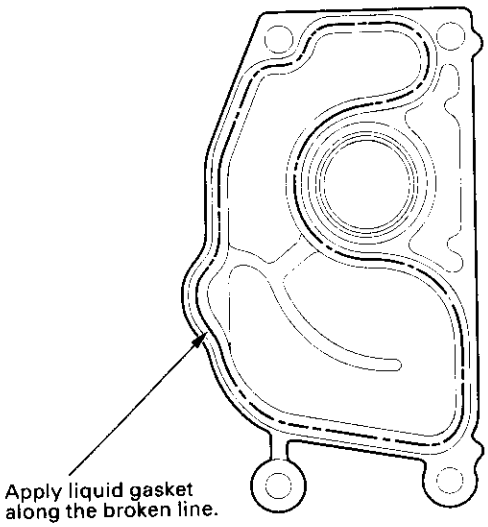


Water Passage Installation

1. Clean and dry the water passage mating surfaces.

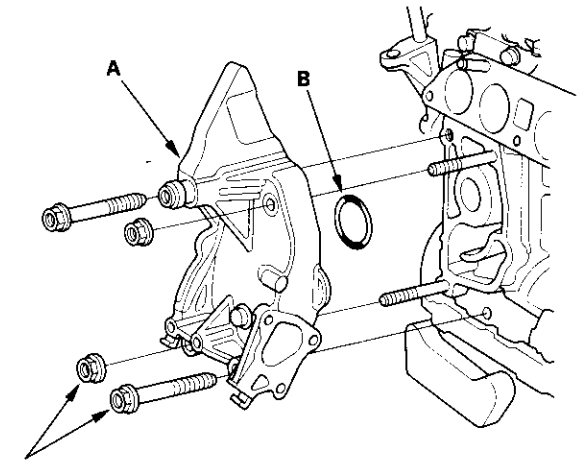
2. Apply liquid gasket, P/N 08718-0009, evenly to the cylinder block mating surface of the water passage and to the inner threads of the bolt holes.

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

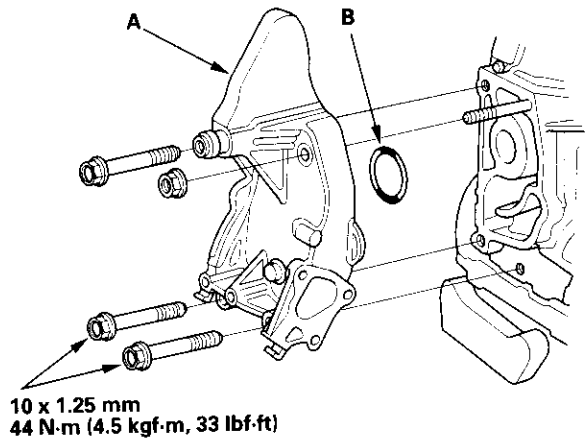


3. Install the water passage (A) with a new O-ring (B).

K20A3 engine:



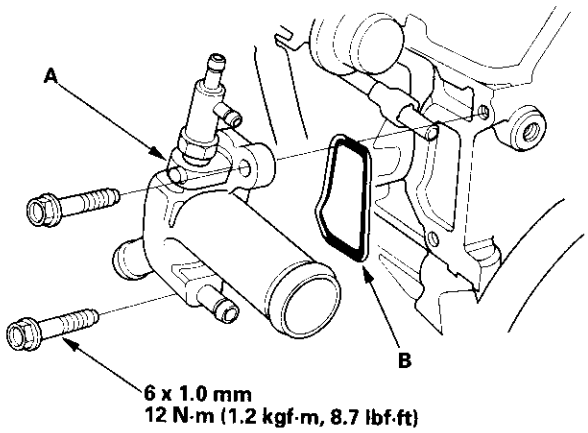
K20A2 engine:



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

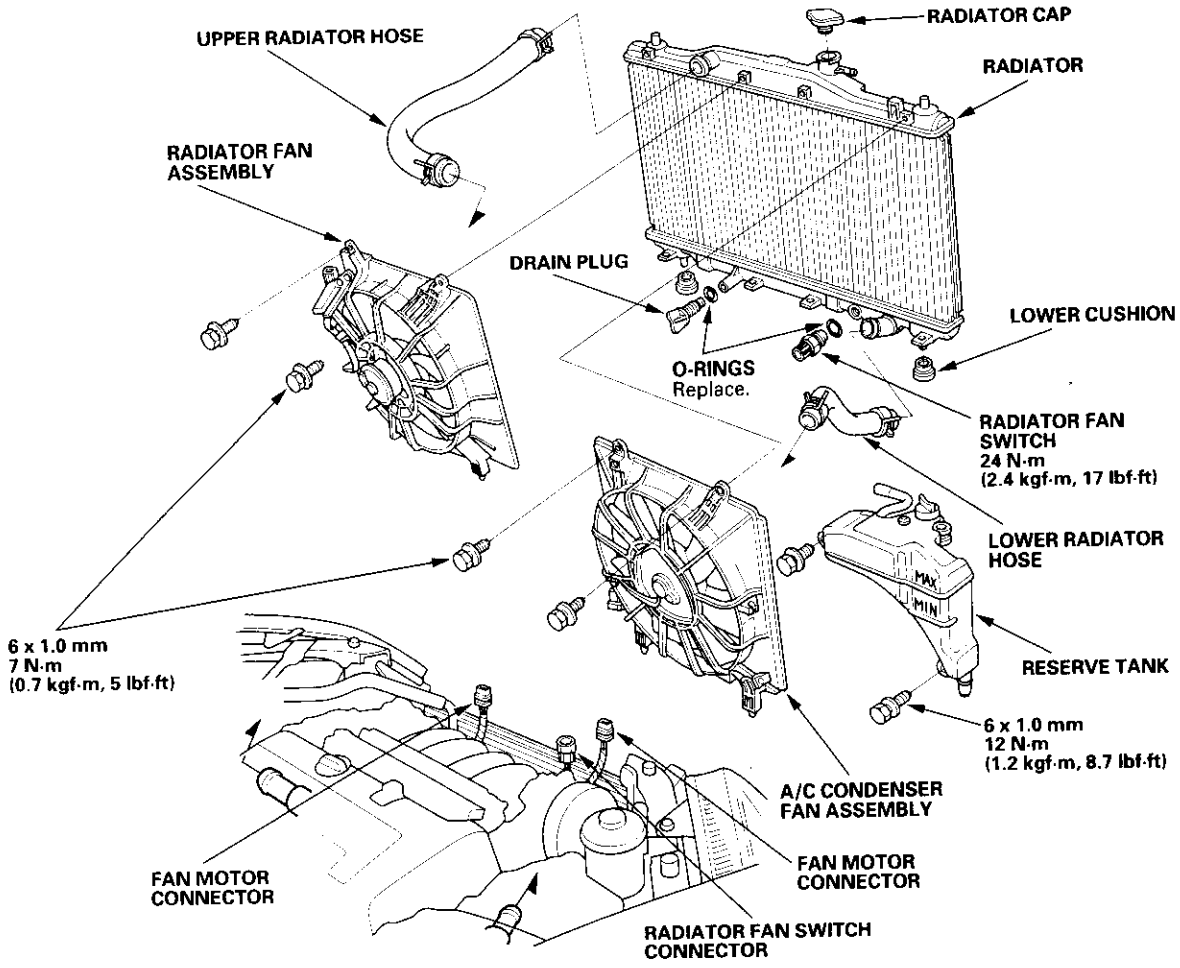
Water Outlet Installation

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



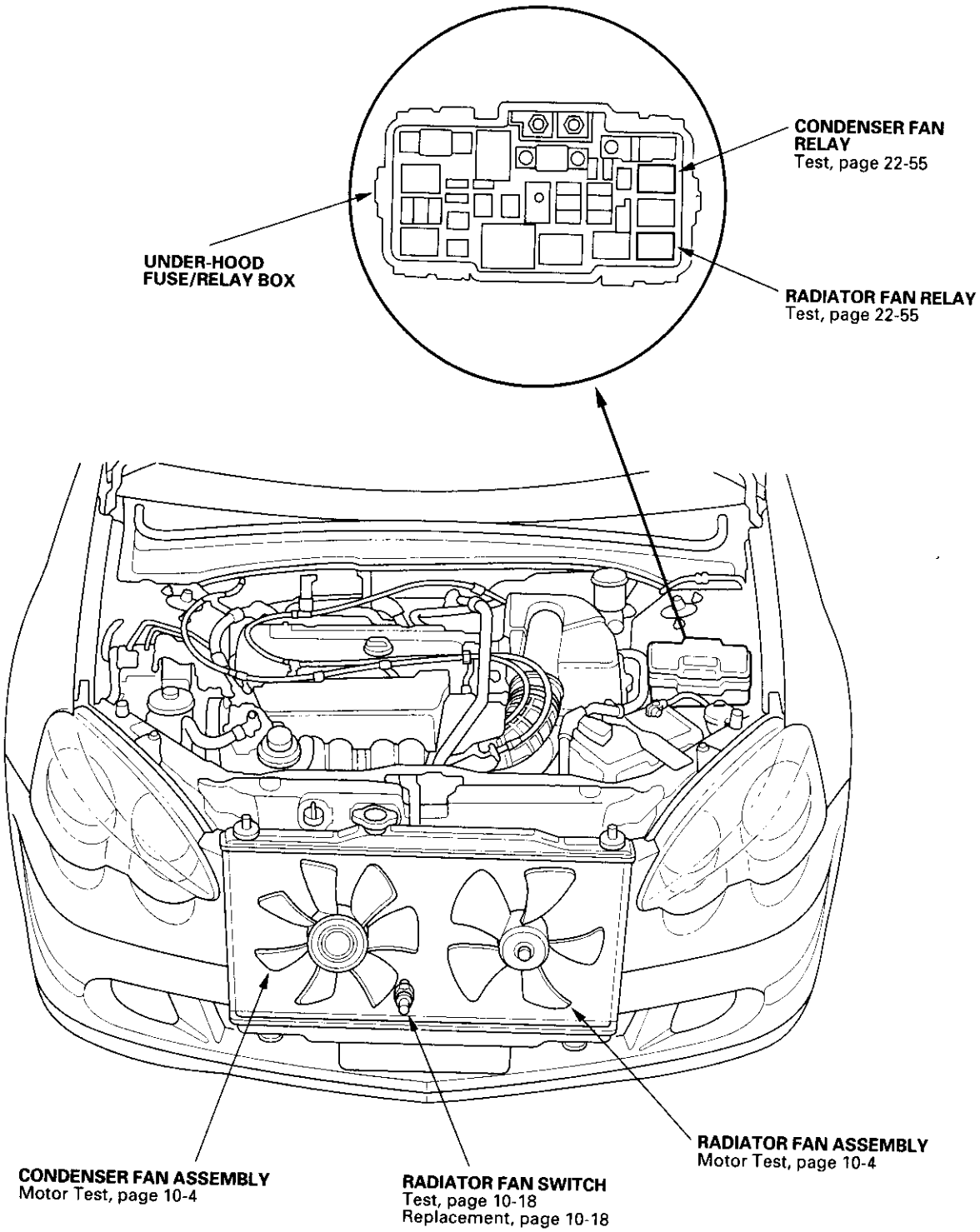
Radiator and Fans Replacement

1. Drain the engine coolant (see page 10-6).
2. Remove the front bumper (see page 20-87).
3. Disconnect the hood switch connector, then remove the A/C line bracket mounting bolt, intake air duct mounting bolt, and harness clamps (see step 8 on page 9-5).
4. Remove the upper bracket and cushion mounting bolts, then remove the bulkhead (see step 10 on page 9-6).
5. Remove the upper radiator hose and lower radiator hose.



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

Component Location Index



Symptom Troubleshooting Index

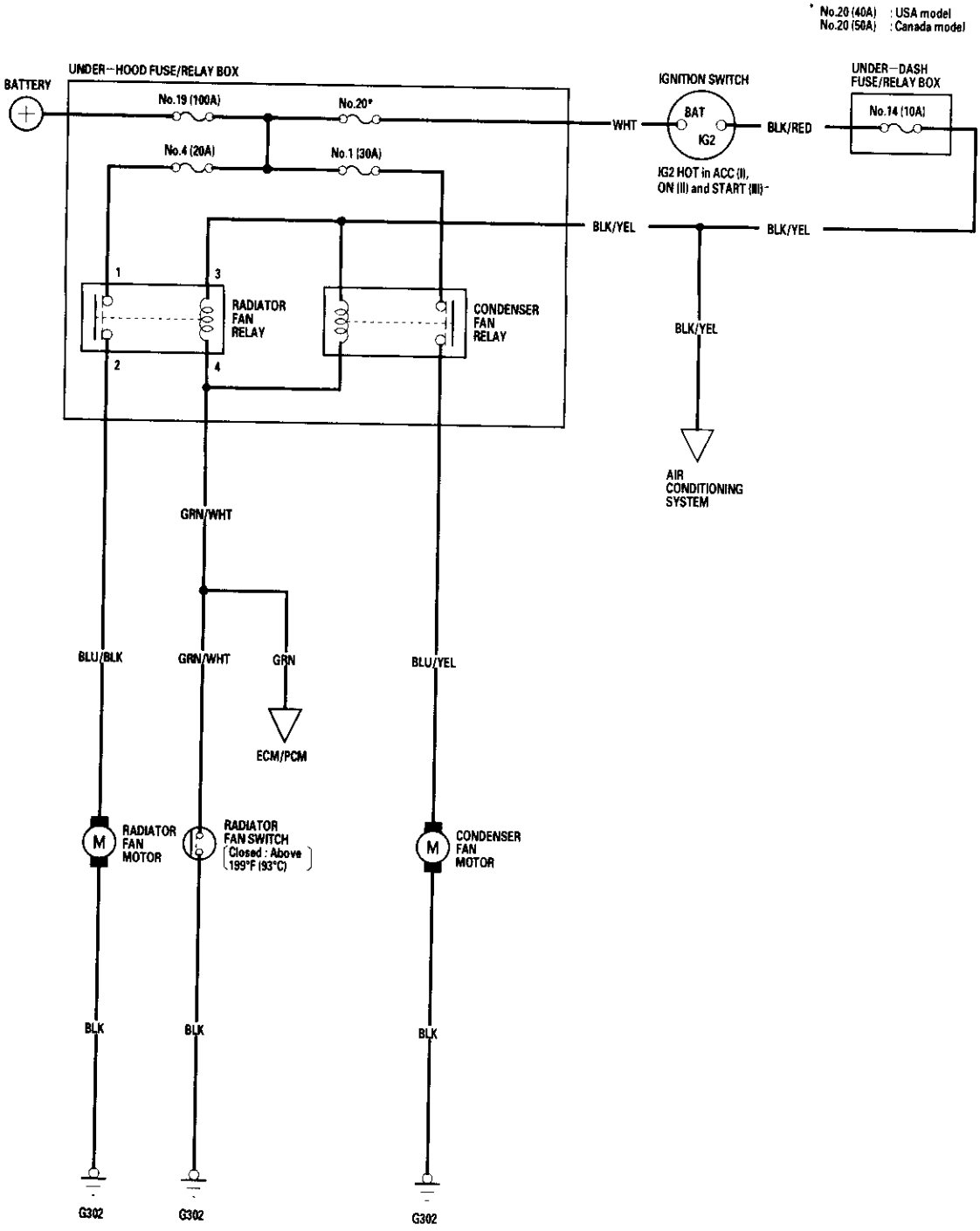
Before performing any troubleshooting procedures check:

- Fuses
- Grounds
- Cleanliness and tightness of all connectors

SYMPTOM	PROCEDURE
Radiator fan does not run at all	Radiator Fan Circuit Troubleshooting (see page 10-15).
Radiator fan does not run for engine cooling, but it runs with A/C ON	Radiator Fan Switch Circuit Troubleshooting (Open) (see page 10-17).
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 10-17).

Fan Controls

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 22-55).

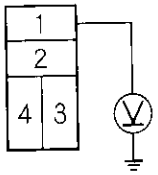
   Is the relay OK?

   YES – Go to step 3.

   NO – Replace the radiator fan relay. ■

3. Measure the voltage between the No. 1 terminal of the radiator fan relay 4P socket and body ground.

RADIATOR FAN RELAY 4P SOCKET



Terminal side of female terminals

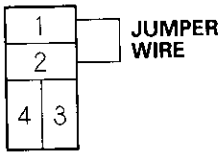
Is there battery voltage?

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

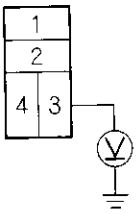
Does the radiator fan run?

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.

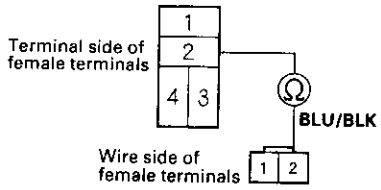
NO – Check for an open in the wire between the under-hood fuse/relay box and under-dash fuse/relay box. ■

(cont'd)

Radiator Fan Circuit Troubleshooting (cont'd)

6. Disconnect the radiator fan motor 2P connector.
7. Check for continuity between the No. 2 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

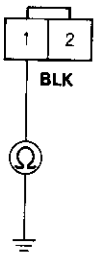
Is there continuity?

YES – Go to step 8.

NO – Repair an 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

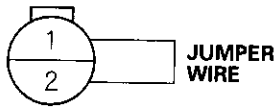
Is there continuity?

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 G302. ■

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 radiater fan switch 2P connector with a jumper wire.

RADIATOR FAN SWITCH 2P CONNECTOR



Wire side of female terminals

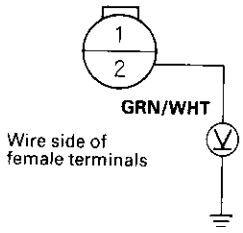
Does the radiator fan run?

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



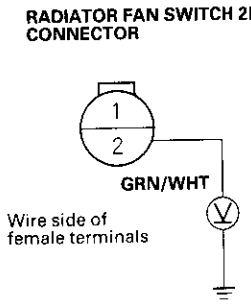
Is there battery voltage?

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 G302. ■

NO – Repair an 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.

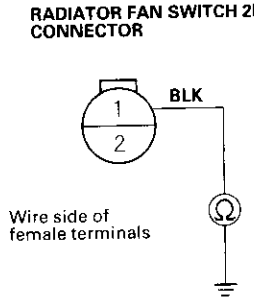


Is there battery voltage?

YES – Go to step 4.

NO – Repair an 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 G302. ■

Radiator Fan Switch Circuit Troubleshooting (Short)

1. Remove the radiator fan relay from the under-hood fuse/relay box, and test it (see page 22-55).

Is the relay OK?

YES – Go to step 2.

NO – Replace the radiator fan relay. ■

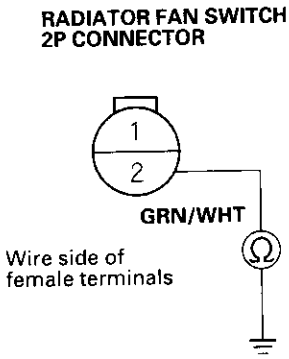
2. Remove the radiator fan switch, and test it (see page 10-18).

Is the radiator fan switch OK?

YES – Go to step 3.

NO – Replace the radiator fan switch. ■

3. Disconnect ECM/PCM connector B (24P) and the under-hood fuse relay box 14P connector.
4. Check for continuity between the No. 2 terminal of the radiator fan switch 2P connector and body ground.



Is there continuity?

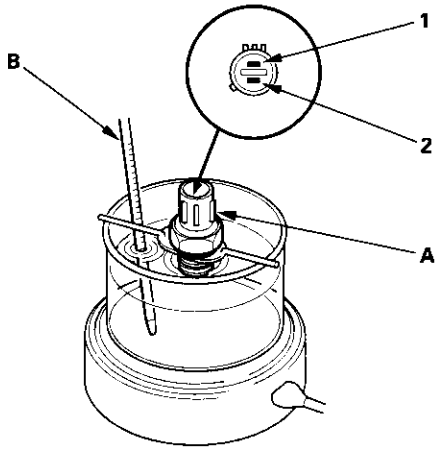
YES – Repair a short in the wire between the radiator fan switch 2P connector terminal No. 2 and under-hood fuse/relay box. ■

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 10-18).
2. Suspend the radiator fan switch (A) in a container of water as shown.

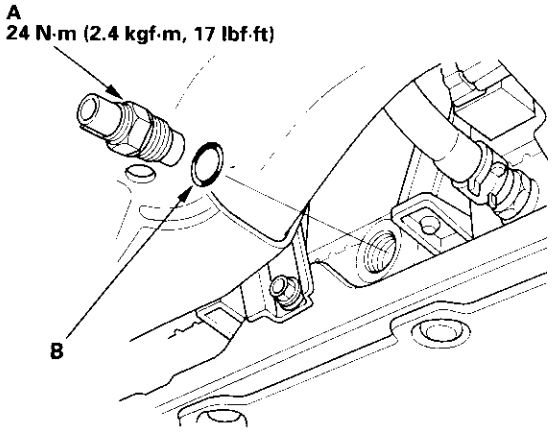


3. Heat the water, and check the temperature with a thermometer. Do not let the thermometer (B) touch the bottom of the hot container.
4. Measure the continuity between terminal No. 1 and terminal No. 2 according to the table.

Operation		Temperature	Terminal 1	Terminal 2
SWITCH	ON	91°—95°C (196°—203°F)	○—○	
	OFF	3°—8°C (5°—15°F) 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).

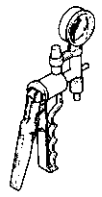


2. Install the radiator fan switch with a new O-ring (B).

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	07XAJ-001000A	Terminal Inspection Feeler Tool Set	1
⑧	07ZAJ-S5AA200	Hose, Oil Pressure	1
⑨-1	07406-0020201	A/T Pressure Hose	1
⑨-2	07406-0070300	A/T Low Pressure Gauge W/Panel	1
⑨-3	07MAJ-PY4011A	A/T Pressure Hose, 2,210 mm	1
⑨-4	07MAJ-PY40120	A/T Pressure Hose, Adapter	1
⑩	07406-004000A	Fuel Pressure Gauge	1



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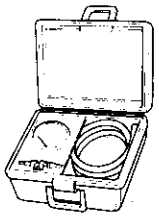

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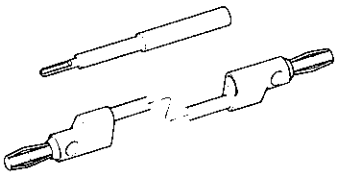

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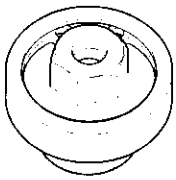

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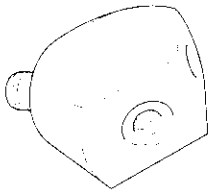

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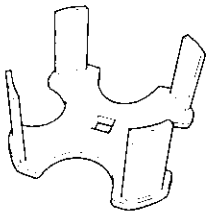

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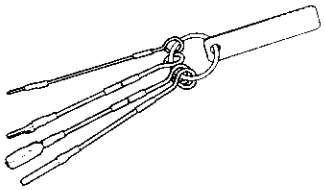

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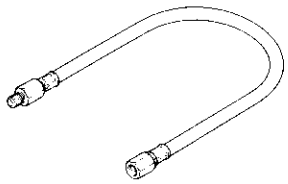

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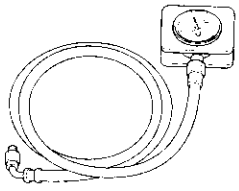


⑨-1, ⑨-2, ⑨-3, ⑨-4

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 wires at all connectors related to the circuit that you are troubleshooting.

Opens and Shorts

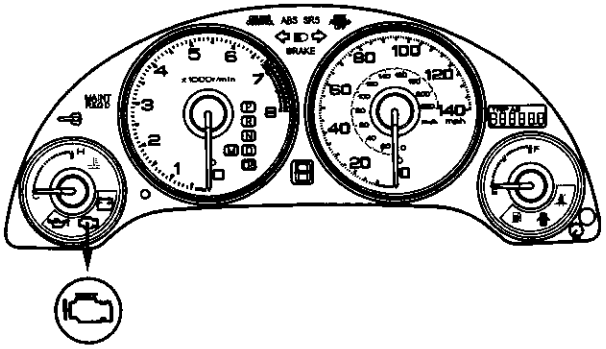
"Open" and "Short" are common electrical terms. An open is a break in a wire or at a connection. A short is an accidental connection of a wire to ground or to another wire. In simple electronics, this usually means something won't work at all. With complex electronics (such as ECMs and PCMs) this can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

How to Use the PGM Tester or a Scan Tool

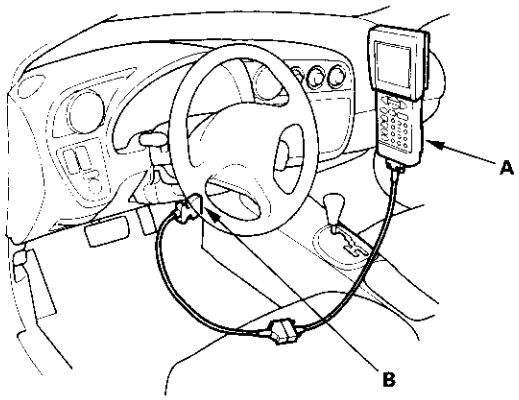
If the MIL (Malfunction Indicator Lamp) has come on

1. Start the engine and check the MIL.

   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 11-54).



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.

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)/Powertrain Control Module (PCM) 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 come on

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/PCM and try to duplicate the DTC. If the problem is intermittent and you can't duplicate the code, do not continue through the procedure. To do so will only result in confusion and, possibly, a needlessly replaced ECM/PCM.

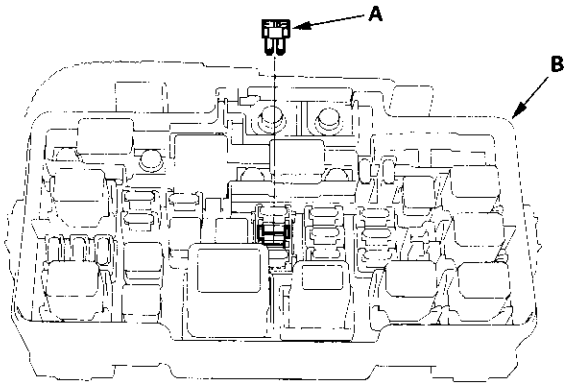
(cont'd)

General Troubleshooting Information (cont'd)

How to Reset the ECM/PCM

You can reset the ECM/PCM in either of two ways:

- Use the OBD II scan tool or Honda PGM Tester to clear the ECM/PCM 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/PCM) (15A) fuse (A) from the under-hood fuse/relay box (B) for 10 seconds.



How to End a Troubleshooting Session (required after any troubleshooting)

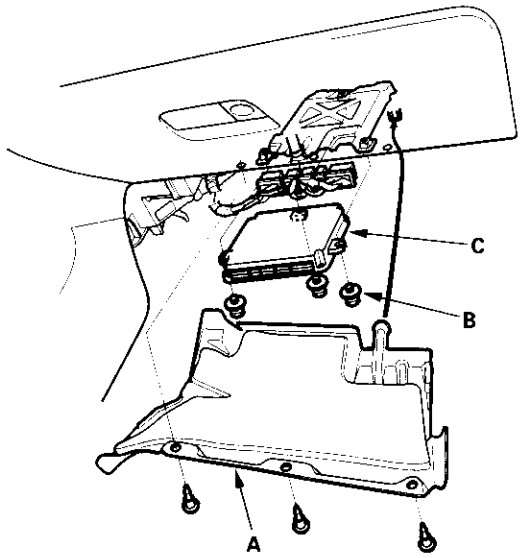
1. Reset the ECM/PCM as described above.
2. Turn the ignition switch OFF.
3. Disconnect the OBD II scan tool or Honda PGM Tester from the DLC.

   NOTE: The ECM/PCM is part of the immobilizer system. If you replace the ECM/PCM, it will have a different immobilizer code. In order for the engine to start, you must rewrite the immobilizer code with the Honda PGM Tester.

How to Remove the ECM/PCM for Testing

If the inspection for a trouble code requires voltage or resistance checks at the ECM/PCM connectors, remove the ECM/PCM and test it:

1. Remove the passenger's dashboard lower cover (A) (see page 20-64).
2. Remove the ECM/PCM mounting bolts (B) and the ECM/PCM (C).

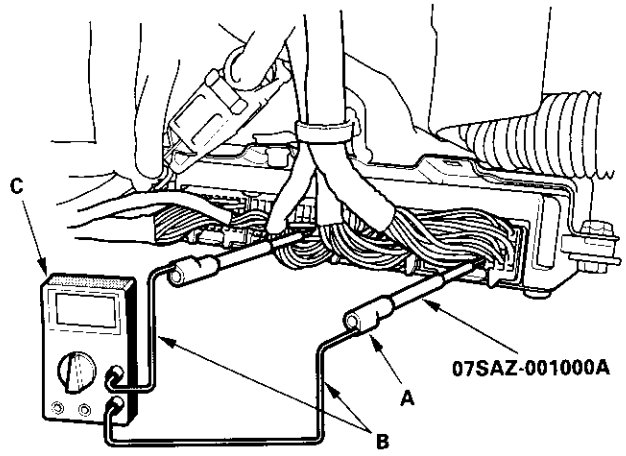


How to Troubleshoot Circuits at the ECM/PCM

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).

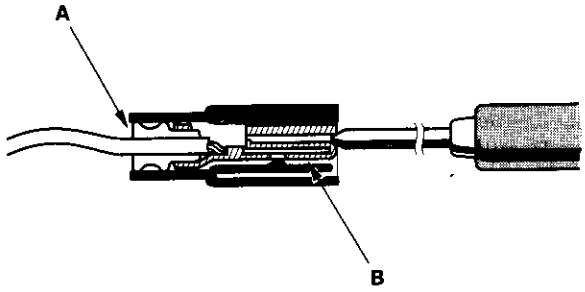


2. Using the wire insulation as a guide for the contoured tip of the backprobe adapter, gently slide the tip into the connector from the wire side until it touches the end of the wire terminal.

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.



(cont'd)

General Troubleshooting Information (cont'd)

ECM/PCM Updating and Substitution for Testing

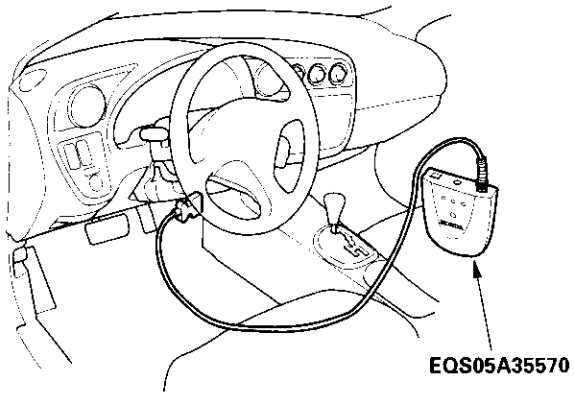
Special Tools Required
Honda Interface Module (HIM)
P/N EQS05A35570

Use this procedure when you have to substitute a known-good ECM/PCM in a troubleshooting procedure. Update the ECM/PCM only if the ECM/PCM does not already have the latest software loaded.

NOTE: Do not turn the ignition switch OFF while updating the ECM/PCM. If you turn the ignition switch OFF, the ECM/PCM can be damaged.

How to Update the ECM/PCM

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/PCM update procedure as described on the HIM label and in the ECM/PCM update system.

How to Substitute the ECM/PCM

1. Remove the ECM/PCM from the vehicle.
2. Install a known-good ECM/PCM in the vehicle.
3. Rewrite the immobilizer code with the ECM/PCM replacement procedure from the Honda PGM Tester. It allows you to start the engine.
4. After completing your tests, reinstall the original ECM/PCM and rewrite the immobilizer code with the PCM 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 11-126)
P0011 (56)	——	Variable Valve Timing Control (VTC) System Malfunction	(see page 11-127)
P0107 (3)	——	Manifold Absolute Pressure (MAP) Sensor Circuit Low Voltage	(see page 11-61)
P0108 (3)	——	Manifold Absolute Pressure (MAP) Sensor Circuit High Voltage	(see page 11-62)
P0112 (10)	——	Intake Air Temperature (IAT) Sensor Circuit Low Voltage	(see page 11-64)
P0113 (10)	——	Intake Air Temperature (IAT) Sensor Circuit High Voltage	(see page 11-65)
P0116 (86)	P0116	Engine Coolant Temperature (ECT) Sensor Range/ Performance Problem	(see page 11-66)
P0117 (6)	——	Engine Coolant Temperature (ECT) Sensor Circuit Low Voltage	(see page 11-66)
P0118 (6)	——	Engine Coolant Temperature (ECT) Sensor Circuit High Voltage	(see page 11-67)
P0122 (7)	——	Throttle Position (TP) Sensor Circuit Low Voltage	(see page 11-68)
P0123 (7)	——	Throttle Position (TP) Sensor Circuit High Voltage	(see page 11-71)
P0128 (87)	P0128	Cooling System Malfunction	(see page 11-73)
P0134 (41)	——	Air Fuel Ratio (A/F) Sensor (Sensor 1) Signal Stuck Lean	(see page 11-74)
P0137 (63)	P0137	Secondary Heated Oxygen Sensor (Secondary HO2S) (Sensor 2) Circuit Low Voltage	(see page 11-74)
P0138 (63)	P0138	Secondary Heated Oxygen Sensor (Secondary HO2S) (Sensor 2) Circuit High Voltage	(see page 11-75)
P0139 (63)	P0139	Secondary Heated Oxygen Sensor (Secondary HO2S) (Sensor 2) Slow Response	(see page 11-76)
P0141 (65)	——	Secondary Heated Oxygen Sensor (Secondary HO2S) (Sensor 2) Heater Circuit Malfunction	(see page 11-77)
P0171 (45)	P0171	Fuel System Too Lean	(see page 11-79)
P0172 (45)	P0172	Fuel System Too Rich	(see page 11-79)
P0300 and any of P0301 (71) P0302 (72) P0303 (73) P0304 (74)	P0300 and any of P0301 P0302 P0303 P0304	Random Misfire	(see page 11-80)
P0301 (71)	P0301	No. 1 Cylinder Misfire	(see page 11-81)
P0302 (72)	P0302	No. 2 Cylinder Misfire	(see page 11-81)
P0303 (73)	P0303	No. 3 Cylinder Misfire	(see page 11-81)
P0304 (74)	P0304	No. 4 Cylinder Misfire	(see page 11-81)

* : These DTCs are indicated by a blinking Malfunction Indicator Lamp (MIL) when the SCS service signal line is jumped with the Honda PGM Tester.

* * : The D indicator light and the MIL may come on simultaneously.

* 1: A/T

* 2: M/T

(cont'd)

DTC Troubleshooting Index (cont'd)

DTC (MIL indication*)	Temporary DTC	Detection Item	Note
P0325 (23)	———	Knock Sensor Circuit Malfunction	(see page 11-86)
P0335 (4)	———	Crankshaft Position (CKP) Sensor No Signal	(see page 11-87)
P0336 (4)	———	Crankshaft Position (CKP) Sensor Intermittent Interruption	(see page 11-87)
P0340 (57)	———	Camshaft Position (CMP) Sensor No Signal	(see page 11-129)
P0344 (57)	———	Camshaft Position (CMP) Sensor Intermittent Interruption	(see page 11-129)
P0341 (57)	———	Variable Valve Timing Control (VTC) Phase Gap	(see page 11-130)
P0420 (67)	P0420	Catalyst System Efficiency Below Threshold	(see page 11-186)
P0451 (91)	P0451	Fuel Tank Pressure (FTP) Sensor Range/Performance Problem	(see page 11-189)
P0452 (91)	P0452	Fuel Tank Pressure (FTP) Sensor Circuit Low Voltage	(see page 11-190)
P0453 (91)	P0453	Fuel Tank Pressure (FTP) Sensor Circuit High Voltage	(see page 11-191)
P0500 (17)*2	———	Vehicle Speed Sensor (VSS) Circuit Malfunction	(see page 11-89)
P0505 (14)	P0505	Idle Control System Malfunction	(see page 11-139)
P0563 (34)	———	Engine Control Module (ECM)/Powertrain Control Module (PCM) Power Source Circuit Unexpected Voltage	(see page 11-90)
P0600 (39)	———	Serial Communication Link Malfunction	Refer to the Multiplex Control system Troubleshooting (see page 22-175).
P0661 *3 (107)	———	Intake Manifold Runner Control (IMRC) Valve Position Sensor Circuit Low Voltage	(see page 11-170)
P0662 *3 (107)	———	Intake Manifold Runner Control (IMRC) Valve Position Sensor Circuit High Voltage	(see page 11-172)
P07xx *1, * * (70) P0700 * * *	———	Automatic Transaxle System Malfunction	Refer to the Automatic Transmission DTC Troubleshooting Index
P1077 *3 (106)	———	Intake Manifold Runner Control (IMRC) System Malfunction (Low rpm)	(see page 11-173)
P1078 *3 (106)	———	Intake Manifold Runner Control (IMRC) System Malfunction (High rpm)	(see page 11-175)

* : These DTCs are indicated by a blinking MIL when the SCS service signal line is jumped with the Honda PGM tester.

* * : The D indicator light and the MIL may come on simultaneously.

* * * : DTC P0700 indicates that the MIL came on because an automatic transmission DTC was set. Go to the A/T menu on the Honda PGM Tester or the OBDII scan tool to check the A/T DTC and freeze data.

* 1: A/T

* 2: M/T

* 3: K20A3 engine

DTC (MIL indication*)	Temporary DTC	Detection Item	Page
P1106 (13)	P1106	Barometric Pressure (BARO) Sensor Range/ Performance Problem	(see page 11-92)
P1107 (13)	——	Barometric Pressure (BARO) Sensor Circuit Low Voltage	(see page 11-92)
P1108 (13)	——	Barometric Pressure (BARO) Sensor Circuit High Voltage	(see page 11-92)
P1121 (7)	P1121	Throttle Position (TP) Sensor Signal Lower Than Expected	(see page 11-72)
P1122 (7)	P1122	Throttle Position (TP) Sensor Signal Higher Than Expected	(see page 11-72)
P1128 (5)	P1128	Manifold Absolute Pressure (MAP) Sensor Signal Lower Than Expected	(see page 11-63)
P1129 (5)	P1129	Manifold Absolute Pressure (MAP) Sensor Signal Higher Than Expected	(see page 11-63)
P1162 (48)	——	Air Fuel Ratio (A/F) Sensor (Sensor 1) Circuit Malfunction	(see page 11-93)
P1163 (61)	P1163	Air Fuel Ratio (A/F) Sensor (Sensor 1) Slow Response	(see page 11-94)
P1164 (61)	P1164	Air Fuel Ratio (A/F) Sensor (Sensor 1) Range/ Performance Problem	(see page 11-95)
P1166 (41)	——	Air Fuel Ratio (A/F) Sensor (Sensor 1) Heater Circuit Malfunction	(see page 11-96)
P1167*3 (41)	——	Air Fuel Ratio (A/F) Sensor (Sensor 1) Heater System Malfunction	(see page 11-99)
P1259 (22)	——	VTEC System Malfunction	(see page 11-131)
P1297 (20)	——	Electrical Load Detector (ELD) Circuit Low Voltage	(see page 11-100)
P1298 (20)	——	Electrical Load Detector (ELD) Circuit High Voltage	(see page 11-101)
P1361 (8)	——	Top Dead Center (TDC) Sensor Intermittent signal Interruption	(see page 11-103)
P1362 (8)	——	Top Dead Center (TDC) Sensor No Signal	(see page 11-103)
P1456 (90)	P1456	Evaporative Emission (EVAP) Control System Leakage (Fuel Tank System)	(see page 11-193)
P1457 (90)	P1457	Evaporative Emission (EVAP) Control System Leakage (EVAP Canister System)	(see page 11-196)
P1519 (14)	——	Idle Air Control (IAC) Valve Circuit Malfunction	(see page 11-140)
P1607 (—)	——	Engine Control Module (ECM)/Powertrain Control Module (PCM) Internal Circuit Malfunction	(see page 11-104)
P17xx *1, **(70)	(P17xx)	Automatic Transaxle System Malfunction	Refer to the Automatic Transmission DTC Troubleshooting Index

* : These DTCs are indicated by a blinking MIL when the SCS service signal line is jumped with the Honda PGM Tester.

* * : The D indicator light and the MIL may come on simultaneously.

* 1: A/T

* 2: M/T

* 3: '01—02 models

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 22-54). 2. Test the starter (see page 4-8). 3. Troubleshoot the fuel pump circuit (see page 11-152).	• 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 11-105).	
Engine will not start (immobilizer indicator light stays on or flashs)	Troubleshoot the immobilizer system (see page 22-169).	
Hard starting (MIL works OK, no DTCs set)	1. Test the battery (see page 22-54). 2. Check the fuel pressure (see page 11-156).	• Low compression • Intake air leaks • Contaminated fuel
Cold fast idle too low (MIL works OK, no DTCs set)	Check the idle speed (see page 11-148).	
Cold fast idle too high (MIL works OK, no DTCs set)	1. Check the idle speed (see page 11-148). 2. Inspect/adjust the throttle cable (see page 11-180). 3. Inspect and test the throttle body (see page 11-177).	
Idle speed fluctuates (MIL works OK, no DTCs set)	1. Check the idle speed (see page 11-148). 2. Inspect/adjust the throttle cable (see page 11-180). 3. Inspect and test the throttle body (see page 11-177)	Intake air leaks
After warming up, idle speed is below specifications with no load (MIL works OK, no DTCs set)	1. Troubleshoot the ALT FR signal circuit (see page 11-143). 2. Inspect and test the throttle body (see page 11-177).	Vacuum hose clogged/cracked/ poor connection
After warming up, idle speed is above specifications with no load (MIL works OK, no DTCs set)	Troubleshoot the ALT FR signal circuit (see page 11-143).	
Low power (MIL works OK, no DTCs set)	1. Check the fuel pressure (see page 11-156). 2. Inspect and test the throttle body (see page 11-177). 3. Inspect/adjust the throttle cable (see page 11-180).	• Low compression • Camshaft timing • Engine oil level
Engine stalls (MIL works OK, no DTCs set)	1. Check the fuel pressure (see page 11-156). 2. Check the idle speed (see page 11-148). 3. Troubleshoot the brake pedal position switch signal circuit (see page 11-146).	• 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 11-203). 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 11-205).	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) on vehicles with manual transmissions or the Powertrain Control Module (PCM) on vehicles with automatic transmissions.

Fail-safe Function
When an abnormality occurs in the signal from a sensor, the ECM/PCM 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/PCM, 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/PCM 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/PCM 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/PCM stores it in its memory. When the same abnormality recurs after the ignition switch is turned OFF and ON (II) again, the ECM/PCM turns on the MIL.

ECM/PCM Data

You can retrieve data from the ECM/PCM 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, A/T in Park or neutral, M/T in neutral position, and the A/C and all accessories turned off.

Data	Description	Operating Value	Freeze Data
Diagnostic Trouble Code (DTC)	If the ECM/PCM 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/PCM 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: 650 ± 50 rpm (700 ± 50 rpm)*1	YES
Vehicle Speed	The ECM/PCM converts pulse signals from 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/PCM. The sensor is a thermistor whose internal resistance changes with coolant temperature. The ECM/PCM 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/PCM. Based on these signals, the ECM/PCM 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 At idle speed: about 0.1 – 0.9 V	NO
Heated Oxygen Sensor (HO2S) (Secondary, Sensor2)	The HO2S detects the oxygen content in the exhaust gas and sends voltage signals to the ECM/PCM. Based on these signals, the ECM/PCM 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

* 1: K20A2 engine

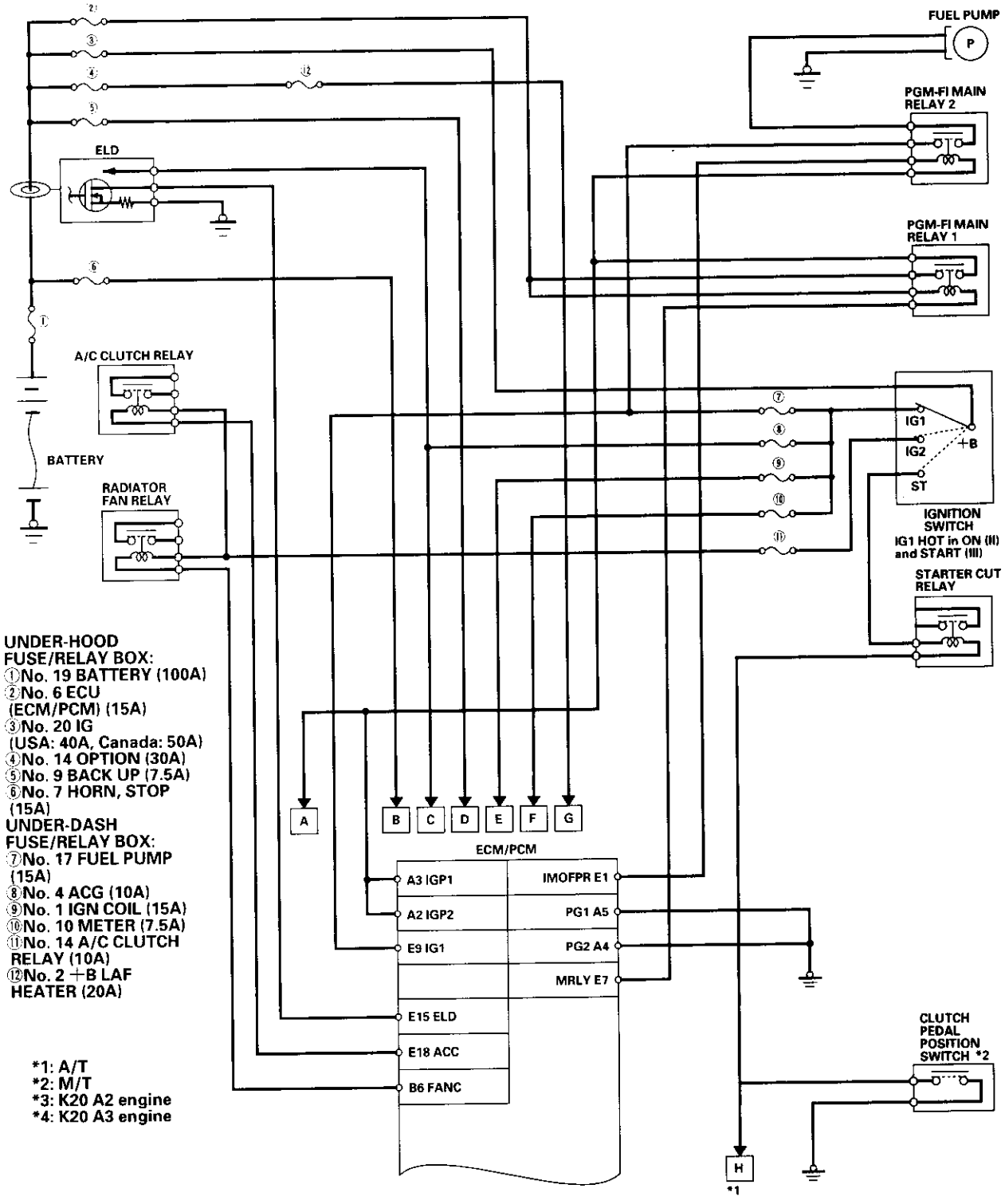
(cont'd)

System Descriptions (cont'd)

ECM/PCM 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/PCM determines the air/fuel ratio and controls the amount of injected fuel. Open: Ignoring A/F Sensor output, the ECM/PCM 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/PCM 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/PCM 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/PCM. 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/PCM. The ECM/PCM matches ignition timing to the 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 the MAP data.	At idle speed: 12 – 34% At 2,500 rpm with no load: 14 – 34%	YES

ECM/PCM Electrical Connections



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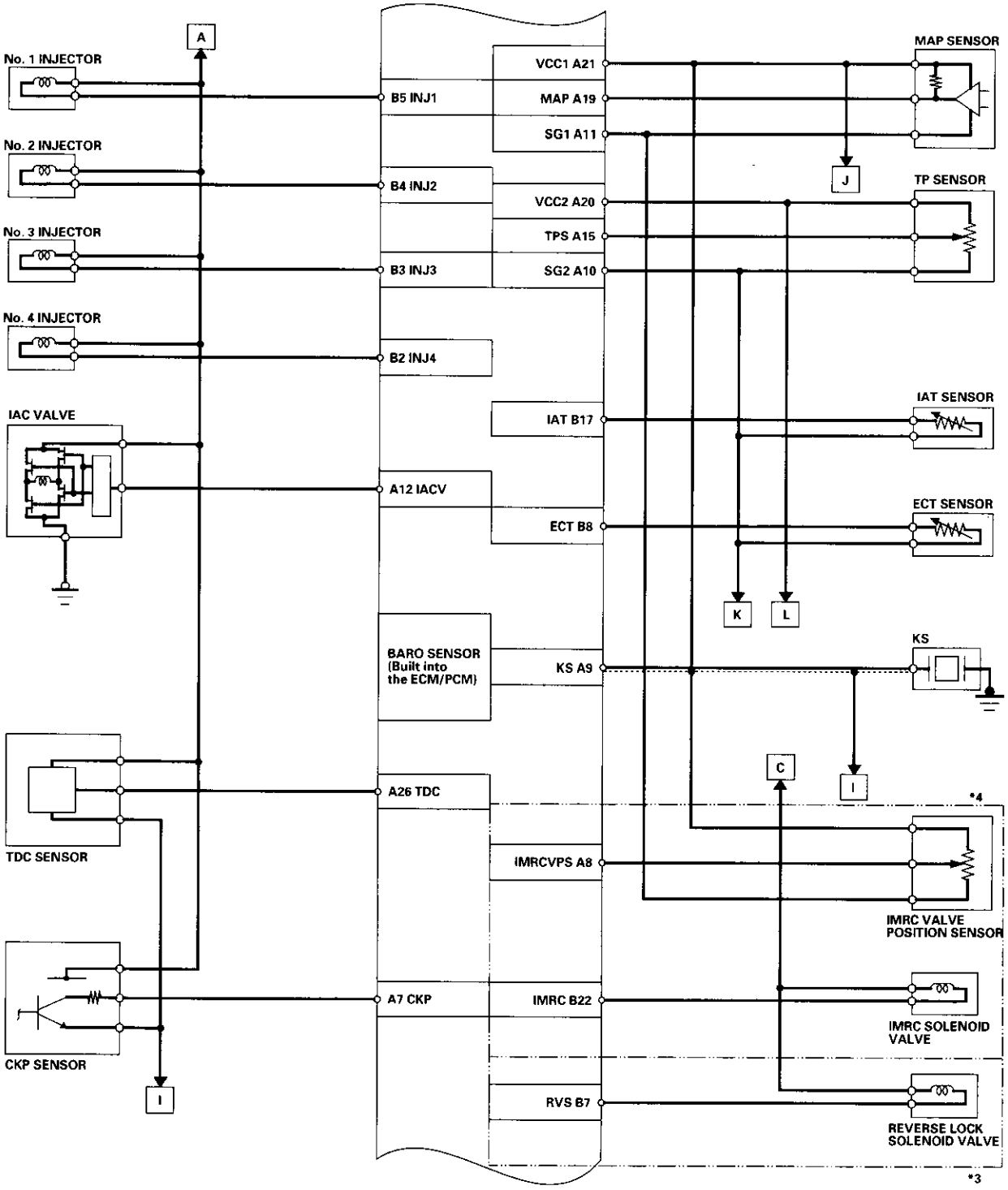
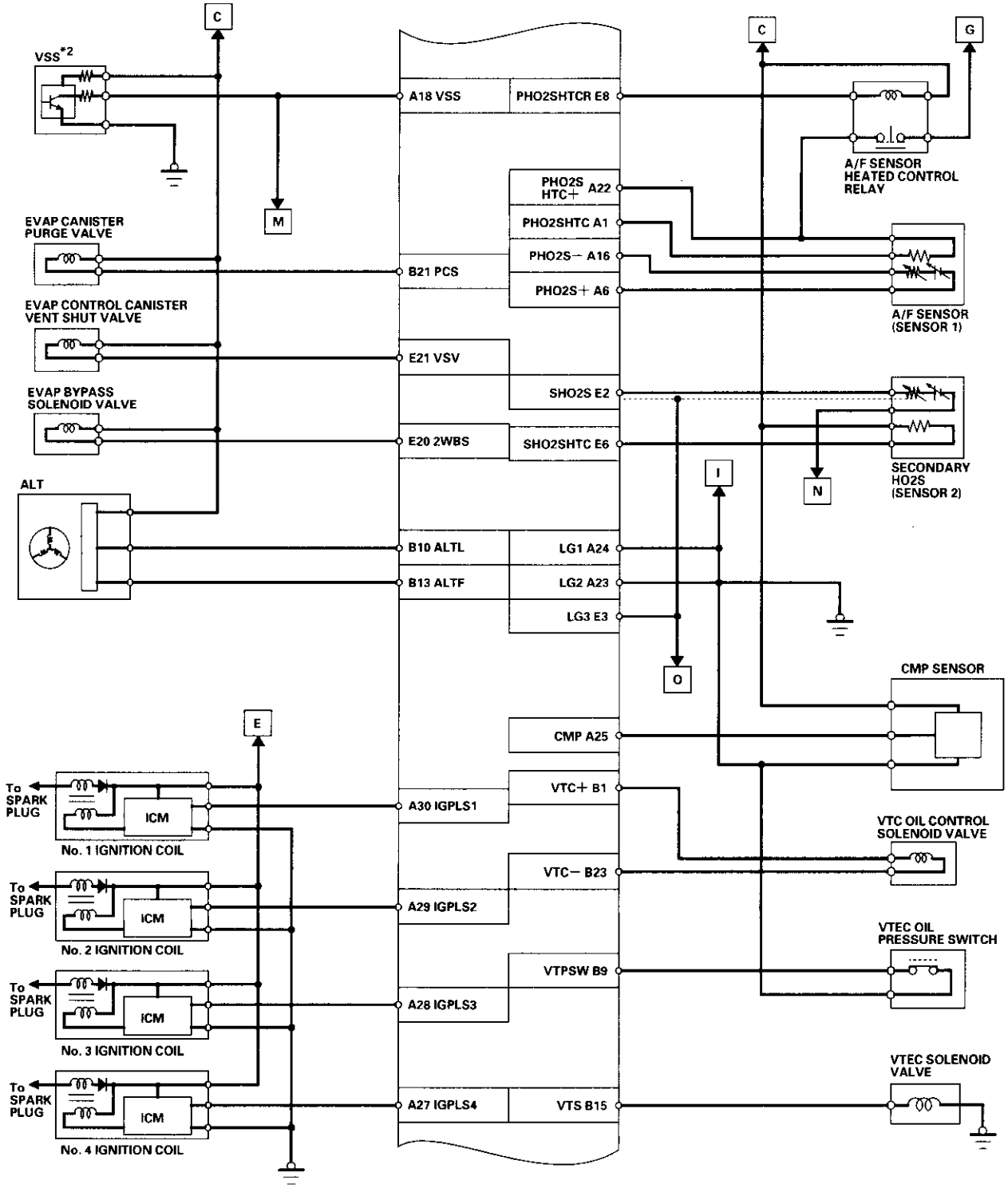
System Descriptions (cont'd)

ECM/PCM Electrical Connections




C
VSS*2
A18 VSS
PHO2SHTCR E8
C
G
A/F SENSOR HEATED CONTROL RELAY
PHO2S HTC+ A22
PHO2SHTC A1
PHO2S− A16
PHO2S+ A6
M
EVAP CANISTER PURGE VALVE
B21 PCS
A/F SENSOR (SENSOR 1)
EVAP CONTROL CANISTER VENT SHUT VALVE
E21 VSV
EVAP BYPASS SOLENOID VALVE
SHO2S E2
E20 2WBS
SHO2SHTC E6
SECONDARY HO2S (SENSOR 2)
I
N
ALT
B10 ALTL
LG1 A24
B13 ALTF
LG2 A23
LG3 E3
O
CMP SENSOR
E
CMP A25
VTC+ B1
To SPARK PLUG
ICM
A30 IGPLS1
No. 1 IGNITION COIL
VTC OIL CONTROL SOLENOID VALVE
VTC− B23
To SPARK PLUG
ICM
A29 IGPLS2
No. 2 IGNITION COIL
VTEC OIL PRESSURE SWITCH
VTPSW B9
To SPARK PLUG
ICM
A28 IGPLS3
No. 3 IGNITION COIL
VTEC SOLENOID VALVE
To SPARK PLUG
ICM
A27 IGPLS4
VTS B15
No. 4 IGNITION COIL

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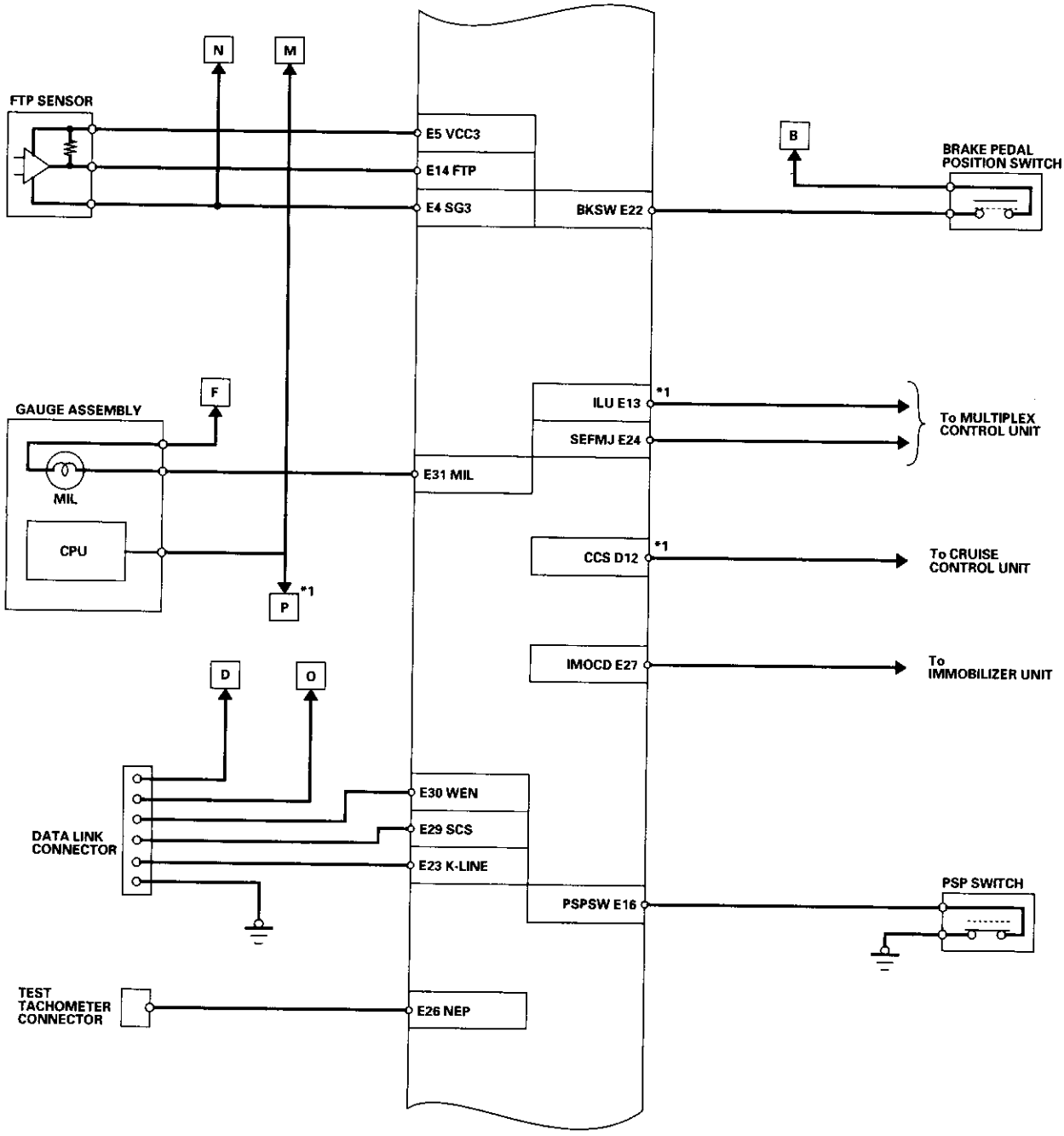
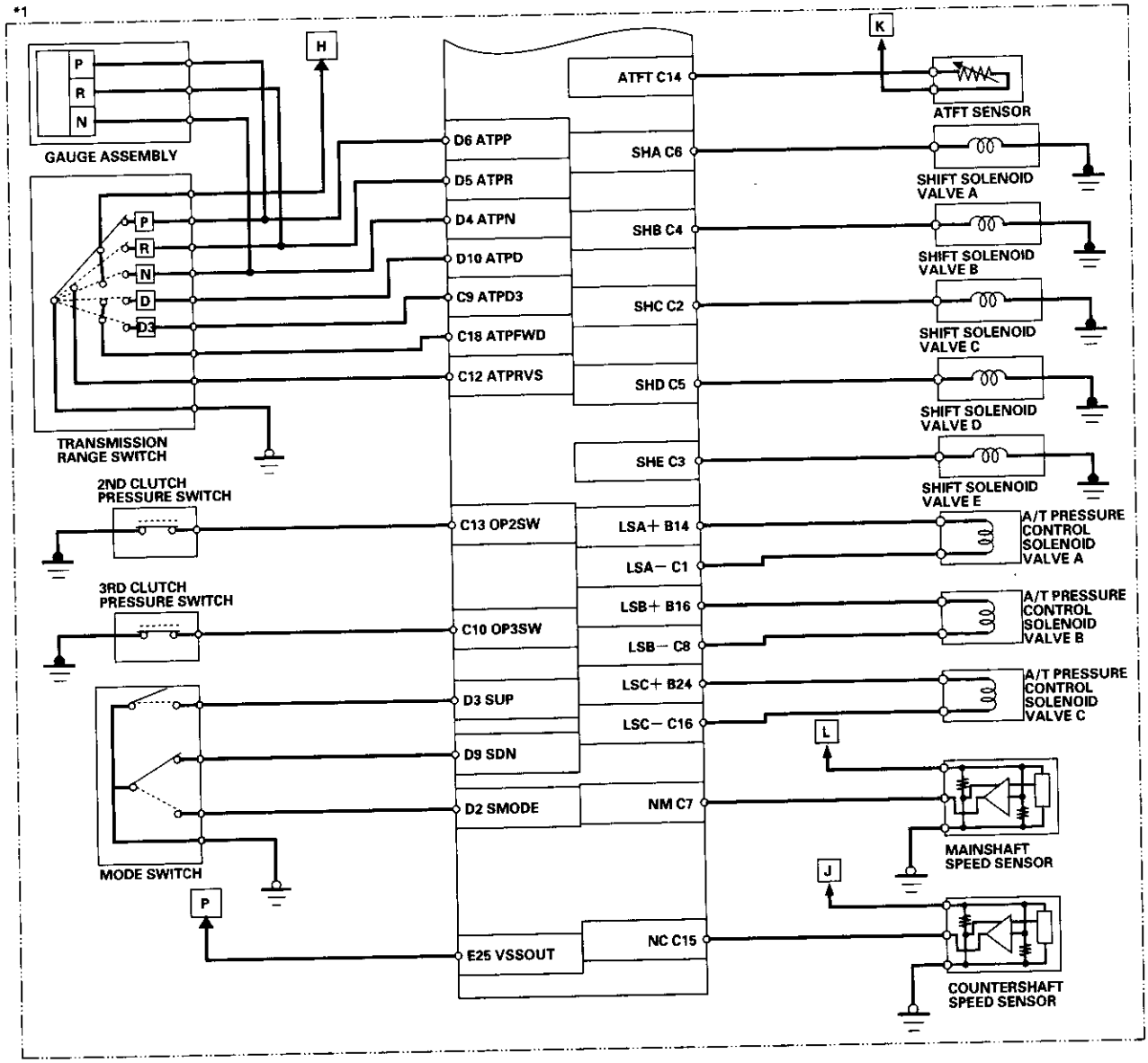
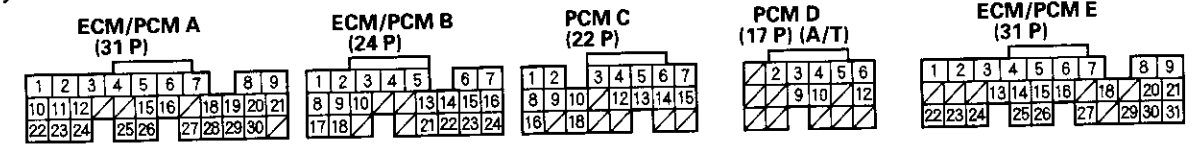
System Descriptions (cont'd)

ECM/PCM Electrical Connections







TERMINAL LOCATIONS

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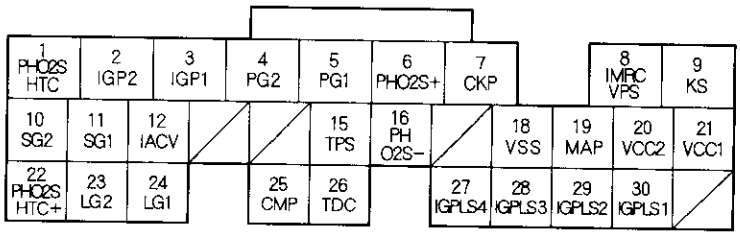
System Descriptions (cont'd)

ECM/PCM Inputs and Outputs at Connector A (31P)



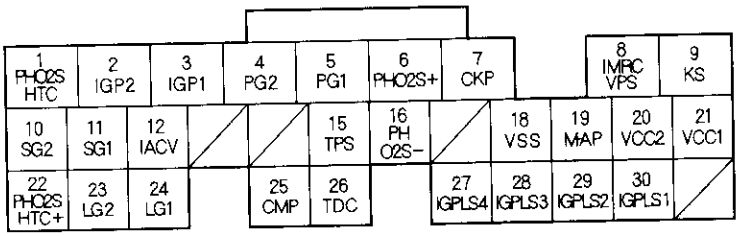
Wire side of female terminals

NOTE: Standard battery voltage is 12 V.

Terminal number	Wire color	Terminal name	Description	Signal
1	BLK/WHT	PHO2SHTC (AIR FUEL RATIO SENSOR HEATER CONTROL)	Drives air fuel ratio 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/PCM 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/PCM 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/PCM circuit	Less than 1.0 V at all times
5	BLK	PG1 (POWER GROUND)	Ground for the ECM/PCM circuit	Less than 1.0 V at all times
6	RED	PHO2S - (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
8*3	RED/YEL	IMRC VPS (INTAKE MANIFOLD RUNNER CONTROL VALVE POSITION SENSOR)	Detects IMRC position sensor signal	With engine speed below 4700 rpm: about 3.75 V With engine speed above 4700 rpm: about 1.25 V
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	PHO2S - (AIR FUEL RATIO (A/F) SENSOR, SENSOR 1 -SIDE)	Detects A/F sensor (sensor 1) signal	
18*2	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

* 2: M/T
* 3: K20A3 engine

ECM/PCM 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	PHO2SHTC + (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/PCM circuit	Less than 1.0 V at all times
24	BRN/YEL	LG1 (LOGIC GROUND)	Ground for the ECM/PCM circuit	Less than 1.0 V at all times
25	BLU/WHT	CMP (CAMSHAFT POSITION SENSOR)	Detects CMP sensor signal	With engine running: pulses
26	GRN	TDC (TOP DEAD CENTER SENSOR)	Detects 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	

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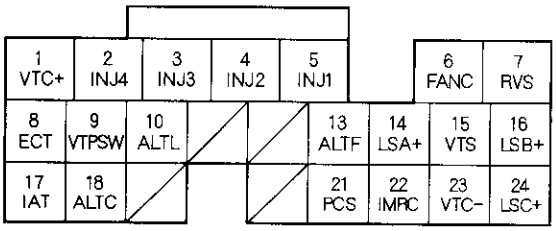
System Descriptions (cont'd)

ECM/PCM Inputs and Outputs at Connector B (24P)



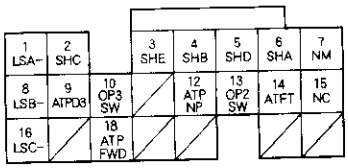
Wire side of female terminals

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*1	GRN/WHT	RVS (REVERSE LOCK SOLENOID VALVE)	Drives reverse lock solenoid valve	With vehicle speed blow 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)
14*1	RED/BLK	LSA+ (A/T PRESSURE CONTROL SOLENOID VALVE A +SIDE)	Drives A/T pressure control solenoid valve A	With the ignition switch ON (II): duty controlled
15	GRN/YEL	VTS (VTEC SOLENOID VALVE)	Drives VTEC solenoid valve	At idle: about 0 V
16*1	BRN/WHT	LSB+ (A/T PRESSURE CONTROL SOLENOID VALVE B +SIDE)	Drives A/T pressure control solenoid valve B	With the ignition switch ON (II): duty controlled
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
22	RED/BLU	IMRC (INTAKE MANIFOLD RUNNER CONTROL SOLENOID VALVE)	Drives IMRC solenoid valve	With engine speed below 4,700 rpm: battery voltage With engine speed above 4,700 rpm: 0 V
23	BLK/WHT	VTC− (VTC OIL CONTROL SOLENOID VALVE −SIDE)	Drives VTC oil control solenoid valve	With the ignition switch ON (II): 0 V
24*1	BLU/YEL	LSC+ (A/T PRESSURE CONTROL SOLENOID VALVE C +SIDE)	Drives A/T pressure control solenoid valve C	With the ignition switch ON (II): duty controlled

* 1: A/T

PCM Inputs and Outputs at Connector C (22P)*1



Wire side of female terminals

NOTE: Standard battery voltage is 12 V.

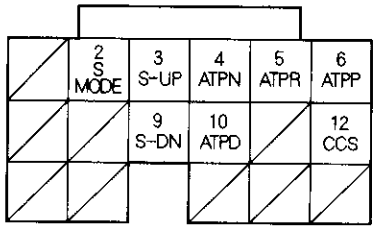
Terminal number	Wire color	Terminal name	Description	Signal
1	WHT/BLK	LSA− (A/T PRESSURE CONTROL SOLENOID VALVE A − SIDE)	Ground for A/T pressure control solenoid valve A	
2	GRN	SHC (SHIFT SOLENOID VALVE C)	Drives shift solenoid valve C	With engine running in Neutral position, or in D, M, or D3 position (in 1st, 3rd, 5th gears): battery voltage With engine running in Park, R position, or in D, M, or D3 position (in 2nd, 4th gears): about 0 V
3	YEL	SHE (SHIFT SOLENOID VALVE E)	Drives shift solenoid valve E	With engine running in Park, R position: battery voltage With engine running in Neutral position, or in D, M, or D3 position (in 1st, 2nd, 3rd, 4th, 5th gears): about 0 V
4	GRN/WHT	SHB (SHIFT SOLENOID VALVE B)	Drives shift solenoid valve B	With engine running in Park, R, Neutral position, or D, M, or D3 position (in 1st, 2nd gears): battery voltage With engine running in D, M, or D3 position (in 3rd, 4th, 5th gears): about 0 V
5	GRN/RED	SHD (SHIFT SOLENOID VALVE D)	Drives shift solenoid valve D	With engine running in D, M, or D3 position (in 2nd, 3rd gears): battery voltage With engine running in Park, R, Neutral position, or D, M, or D3 position (in 1st, 3rd, 4th gears): about 0 V
6	BLU/BLK	SHA (SHIFT SOLENOID VALVE A)	Drives shift solenoid valve A	With engine running in R position, or D, M, or D3 position (in 1st, 4th, 5th gears): battery voltage With engine running in Park, Neutral position, or D, M, or D3 position (in 2nd, 3rd gears): about 0V
7	WHT/RED	NM (MAINSHAFT SPEED SENSOR)	Detects mainshaft speed sensor signals	With engine running: pulses
8	BLK/RED	LSB− (A/T PRESSURE CONTROL SOLENOID VALVE B − SIDE)	Ground for A/T pressure control solenoid valve B	
9	RED	ATPD3 (TRANSMISSION RANGE SWITCH D3 POSITION)	Detects transmission range switch D3 position signal	In D3 position: about 0 V In any other position: about 5 V or battery voltage
10	BLU/WHT	OP3SW (3RD OIL PRESSURE SWITCH)	Detects 3rd oil pressure switch	With the ignition switch ON (II): about 5 V
12	RED/WHT	ATPRVS (TRANSMISSION RANGE SWITCH R POSITION)	Detects transmission range switch R position signal	In R position: about 0 V In any other position: about 5 V or battery voltage
13	BLU/RED	OP2SW (2ND OIL PRESSURE SWITCH)	Detects 2nd oil pressure switch	With the ignition switch ON (II): about 5 V
14	RED/YEL	ATFT (ATF TEMPERATURE SENSOR)	Detects ATF temperature sensor signal	With the ignition switch ON (II): about 0.1 V − 4.2 V (depending on ATF temperature)
15	BLU	NC (COUNTERSHAFT SPEED SENSOR)	Detects countershaft speed sensor signals	With ignition switch ON (II), and front wheels rotating: battery voltage
16	WHT/BLU	LSC− (A/T PRESSURE CONTROL SOLENOID VALVE C − SIDE)	Ground for A/T pressure control solenoid valve C	
18	BLU/YEL	ATPFWD (TRANSMISSION RANGE SWITCH D/D3 POSITION)	Detects transmission range switch D/D3 position signal	In D or D3 position: about 0 V In any other position: about 5 V or battery voltage

* 1: A/T

(cont'd)

System Descriptions (cont'd)

PCM Inputs and Outputs at Connector D (17P)*1



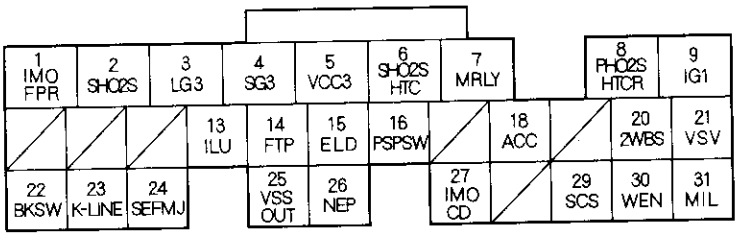
Wire side of female terminals

NOTE: Standard battery voltage is 12 V.

Terminal number	Wire color	Terminal name	Description	Signal
2	BRN	S-MODE (SEQUENTIAL SPORTSHIFT MODE)	Detects sequential sportshift mode switch signal	In sequential sportshift mode (shift lever is positioned in sequential sportshift mode): 0 V In other than sequential sportshift mode: about 5 V
3	WHT/BLU	S-UP (UP SHIFT SWITCH)	Detects upshift switch signal	In sequential sportshift mode and shift lever pushed toward upshift position (marked with +): 0 V In sequential sportshift mode and shift lever in neutral position: about 5 V
4	BLK/RED	ATPN (TRANSMISSION RANGE SWITCH NEUTRAL POSITION)	Detects transmission range switch Neutral position signal	In Neutral position: about 0 V In any other position: about 8.5 V
5	WHT	ATPR (TRANSMISSION RANGE SWITCH R POSITION)	Detects transmission range switch R position signal	In R position: about 0 V In any other position: battery voltage
6	BLU/BLK	ATPP (TRANSMISSION RANGE SWITCH PARK POSITION)	Detects transmission range switch Park position signal	In Park position: about 0V In any other position: about 8.5 V
9	BRN/WHT	S-DN (DOWN SHIFT SWITCH)	Detects downshift switch signal	In sequential sportshift mode and shift lever pushed toward downshift position (marked with −): 0 V In sequential sportshift mode and shift lever in neutral position: about 5 V
10	RED	ATPD (TRANSMISSION RANGE SWITCH D POSITION)	Detects transmission range switch D position signal	In D position: about 0 V In any other position: about 5 V or battery voltage
12	BLU/ORN	CCS (CRUISE CONTROL SIGNAL)	Detects cruise control signal	With ignition switch ON (II): pulses

* 1: A/T

ECM/PCM Inputs and Outputs at Connector E (31P)



Wire side of female terminals

NOTE: Standard battery voltage is 12 V.

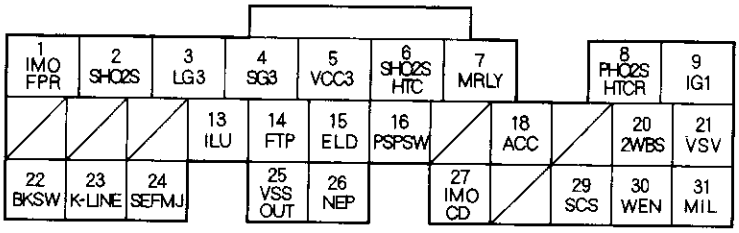
Terminal number	Wire color	Terminal name	Description	Signal
1	GRN/YEL	IMO FPR (IMMOBILIZER FUEL PUMP RELAY)	Drives PGM-FI main relay 2	0 V for 2 seconds after turning ignition switch ON (II), then battery voltage
2	WHT/RED	SHO2S (SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO2S), SENSOR 2)	Detects secondary 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	PO2SHTCR (AIR FUEL RATIO SENSOR HEATER CONTROL RELAY)	Drives air fuel ratio sensor heater relay	With ignition switch ON (II): 0 V
9	BLK/YEL	IG1 (IGNITION SIGNAL)	Detects ignition signal	With ignition switch ON (II): battery voltage With ignition switch OFF: about 0 V
13*1	WHT/BLU	ILU (INTERLOCK CONTROL UNIT)	Drives interlock control unit	With ignition switch ON (II) and brake pedal pressed: about 8.5 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	PSPSW (POWER STEERING PRESSURE SWITCH SIGNAL)	Detects PSP switch signal	At idle with steering wheel straight ahead: 0 V At idle with steering wheel at full lock: 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

* 1: A/T

(cont'd)

System Descriptions (cont'd)

ECM/PCM Inputs and Outputs at Connector E (31P)



Wire side of female terminals

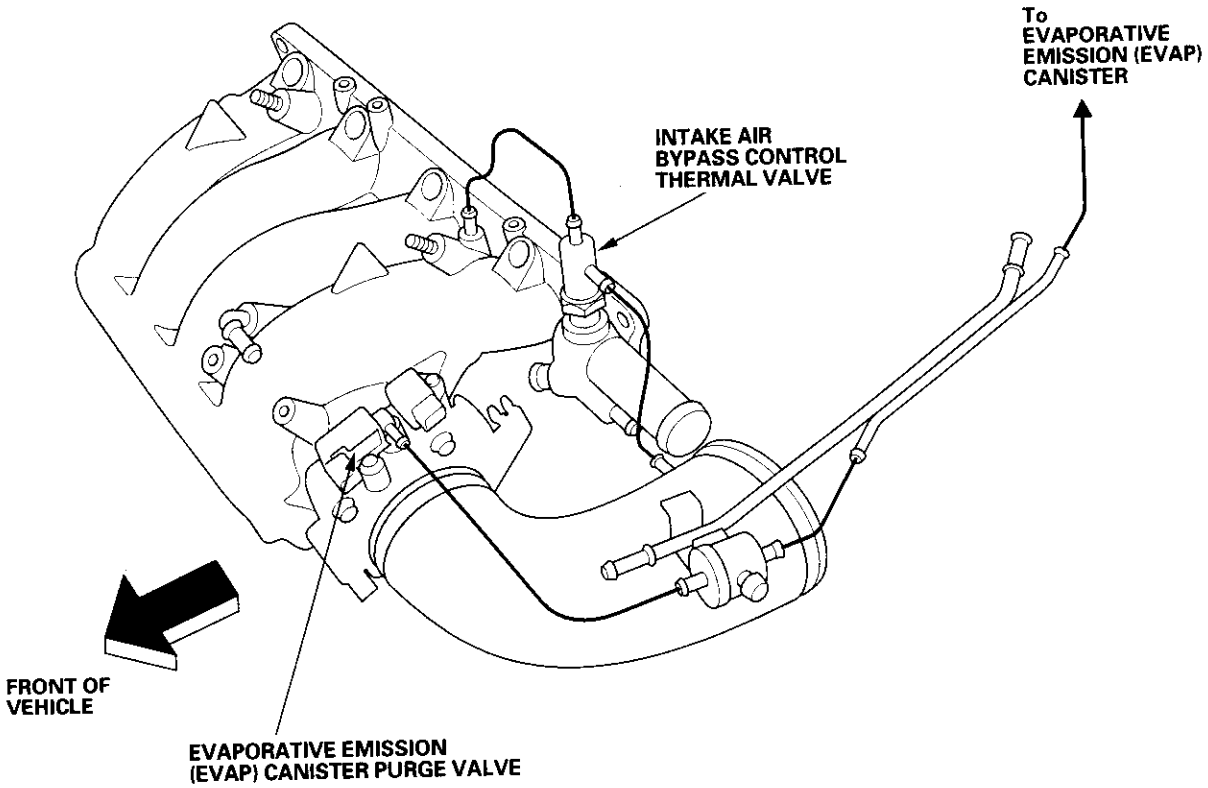
NOTE: Standard battery voltage is 12 V.

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
25*1	BLU/WHT	VSSOUT (VEHICLE SPEED SENSOR OUTPUT SIGNAL)	Sends vehicle speed sensor signal	Depending on vehicle speed: 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

* 1: A/T

Vacuum Hose Routing

K20A2 engine



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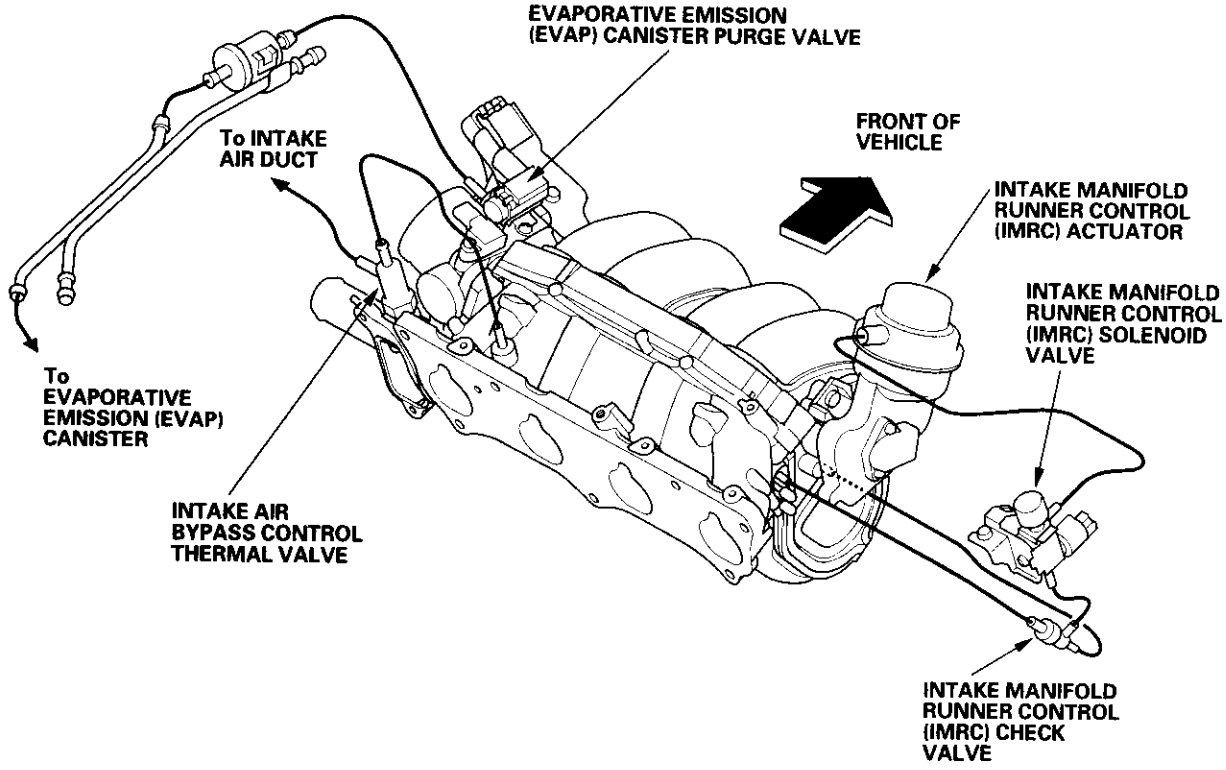
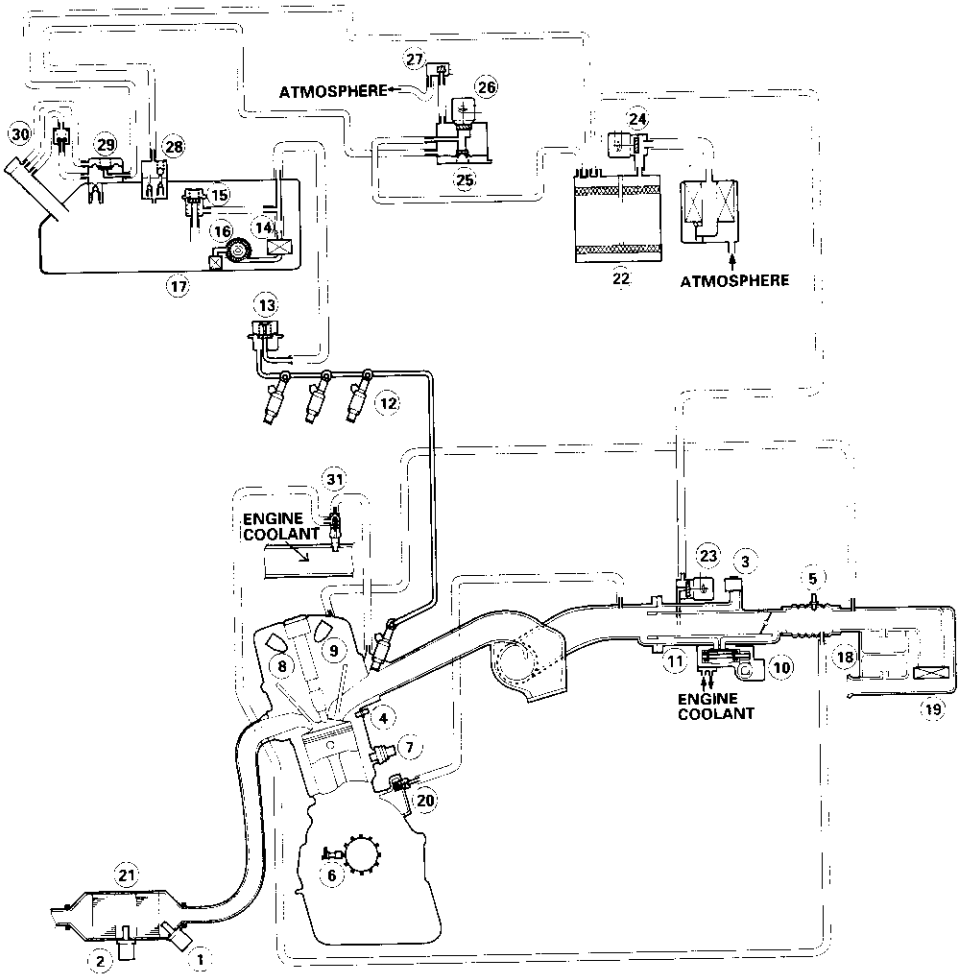
System Descriptions (cont'd)

Vacuum Hose Routing
K20A3 engine



Vacuum Distribution

K20A2 engine

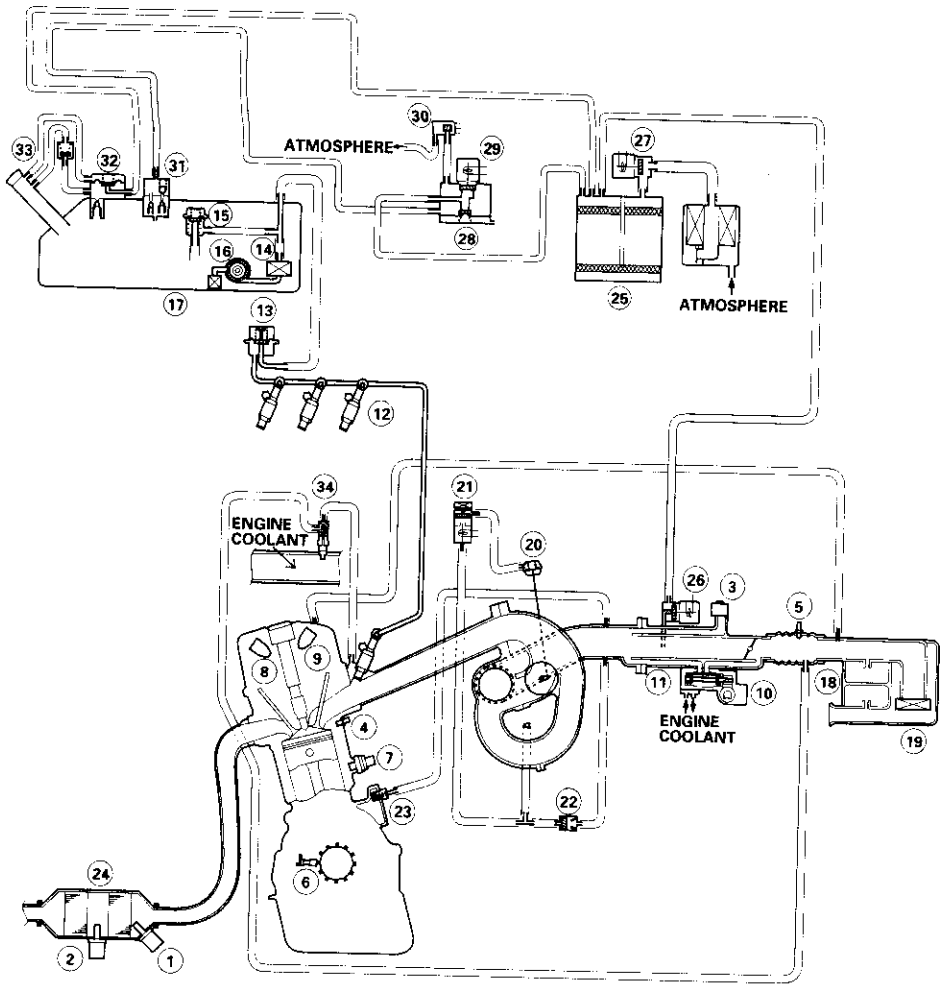


① AIR FUEL RATIO (A/F) SENSOR (SENSOR 1)
② SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO2S) (SENSOR 2)
③ MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR
④ ENGINE COOLANT TEMPERATURE (ECT) SENSOR
⑤ INTAKE AIR TEMPERATURE (IAT) SENSOR
⑥ CRANKSHAFT POSITION (CKP) SENSOR
⑦ KNOCK SENSOR
⑧ CAMSHAFT POSITION (CMP) SENSOR
⑨ TOP DEAD CENTER (TDC) SENSOR
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)

Vacuum Distribution
K20A3 engine



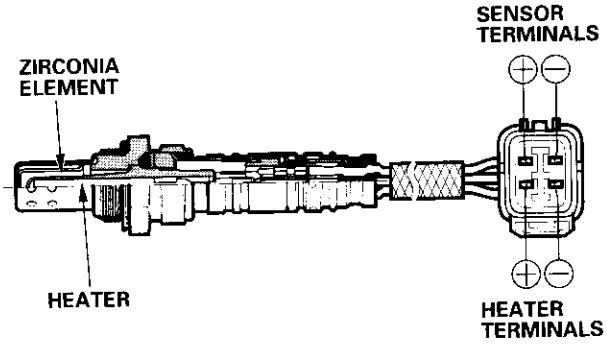
① AIR FUEL RATIO (A/F) SENSOR (SENSOR 1)
② SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO2S) (SENSOR 2)
③ MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR
④ ENGINE COOLANT TEMPERATURE (ECT) SENSOR
⑤ INTAKE AIR TEMPERATURE (IAT) SENSOR
⑥ CRANKSHAFT POSITION (CKP) SENSOR
⑦ KNOCK SENSOR
⑧ CAMSHAFT POSITION (CMP) SENSOR
⑨ TOP DEAD CENTER (TDC) SENSOR
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 INTAKE MANIFOLD RUNNER CONTROL (IMRC) ACTUATOR
㉑ INTAKE MANIFOLD RUNNER CONTROL (IMRC) SOLENOID VALVE
㉒ INTAKE MANIFOLD RUNNER CONTROL (IMRC) CHECK VALVE
㉓ POSITIVE CRANKCASE VENTILATION (PCV) VALVE
㉔ THREE WAY CATALYTIC CONVERTER
㉕ EVAPORATIVE EMISSION (EVAP) CANISTER
㉖ EVAPORATIVE EMISSION (EVAP) CANISTER PURGE VALVE
㉗ EVAPORATIVE EMISSION (EVAP) CANISTER VENT SHUT VALVE
㉘ EVAPORATIVE EMISSION (EVAP) TWO WAY VALVE
㉙ EVAPORATIVE EMISSION (EVAP) BYPASS SOLENOID VALVE
㉚ FUEL TANK PRESSURE (FTP) SENSOR
㉛ EVAPORATIVE EMISSION (EVAP) VALVE
㉜ FUEL TANK VAPOR CONTROL VALVE
㉝ FUEL TANK VAPOR RECIRCULATION VALVE
㉞ INTAKE AIR BYPASS CONTROL THERMAL VALVE

PGM-FI System

The Programmed Fuel Injection (PGM-FI) system is a sequential multiport fuel injection system.

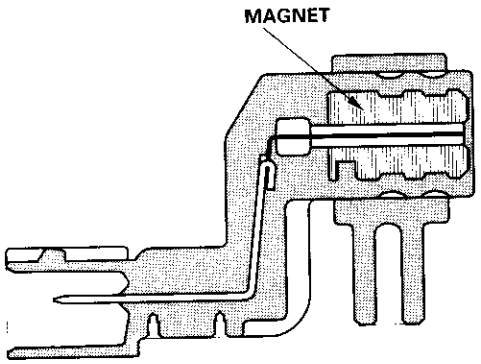
Air Conditioning (A/C) Compressor Clutch Relay
When the ECM/PCM receives a demand for cooling from the A/C system, it delays the compressor from being energized, and enriches the mixture to assure smooth transition to the A/C mode.

Air Fuel Ratio (A/F) Sensor
The A/F Sensor operates over a wide air/fuel range. The A/F Sensor is installed upstream of the TWC, and sends signals to the ECM/PCM which varies the duration of fuel injection accordingly.

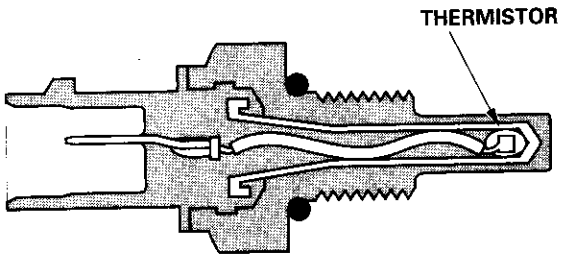


Barometric Pressure (BARO) Sensor
The BARO sensor is inside the ECM/PCM. It converts atmospheric pressure into a voltage signal that modifies the basic duration of the fuel injection discharge.

Crankshaft Position (CKP) Sensor
The CKP sensor detects engine speed and determines ignition timing and timing for fuel injection of each cylinder.



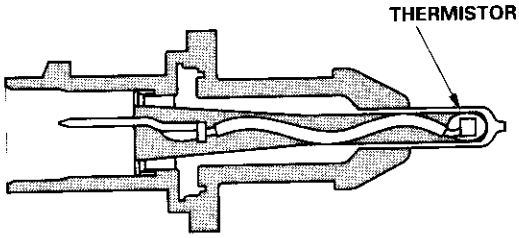
Engine Coolant Temperature (ECT) Sensor
The ECT sensor is a temperature dependent resistor (thermistor). The resistance of the thermistor decreases as the engine coolant temperature increases.



Ignition Timing Control
The ECM/PCM 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/PCM contains the memory for basic discharge duration at various engine speeds and manifold pressures. The basic discharge duration, after being read out from the memory, is further modified by signals sent from various sensors to obtain the final discharge duration.
By monitoring long term fuel trim, the ECM/PCM detects long term malfunctions in the fuel system and sets 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.



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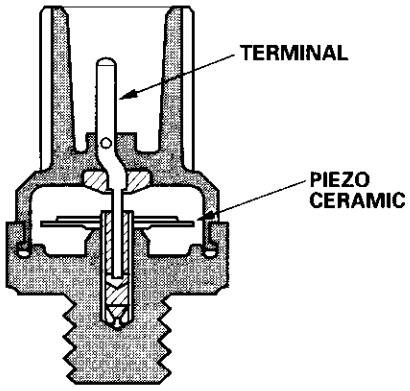
System Descriptions (cont'd)

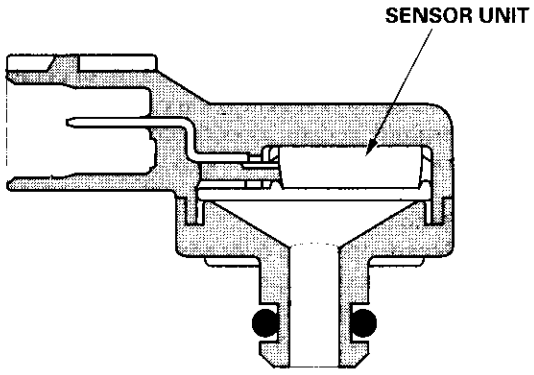
Knock Sensor
The knock control system adjusts the ignition timing to minimize knock.



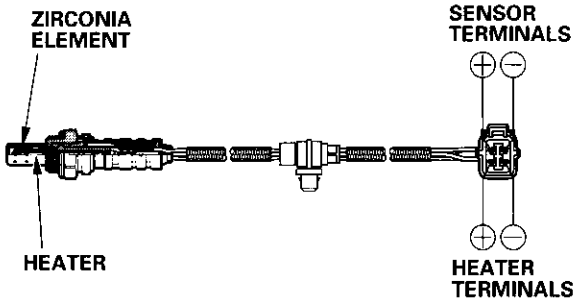
Malfunction Indicator Lamp (MIL) Indication (In relation to Readiness Codes)
The vehicle has certain "readiness codes" that are part of the on-board diagnostics for the emissions systems. If the vehicle's battery has been disconnected or gone dead, if the DTCs have been cleared, or if the ECM/PCM has been reset, these codes are reset. In some states, part of the emissions testing is to make sure these codes are complete. If all of them are not complete, 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 each code, drive the vehicle or run the engine as described in the procedures in this section (see page 11-54).

Manifold Absolute Pressure (MAP) Sensor
The MAP sensor converts manifold absolute pressure into electrical signals to the ECM/PCM.

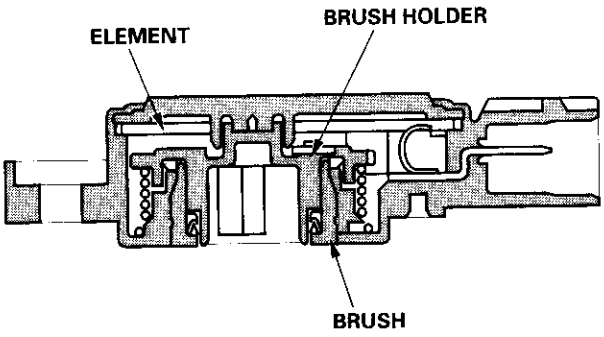


Secondary Heated Oxygen Sensor (Secondary HO2S)
The secondary HO2S detects the oxygen content in the exhaust gas downstream of the Three Way Catalytic Converter (TWC) and sends signals to the ECM/PCM which varies the duration of fuel injection accordingly. To stabilize its output, the sensor has an internal heater. The secondary HO2S is installed in the TWC.

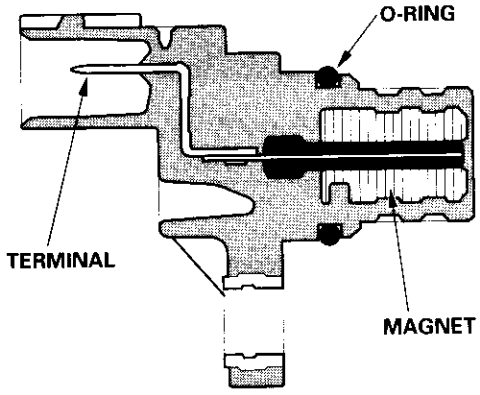


Starting Control
When the engine is started, the ECM/PCM provides a rich mixture by increasing injector duration.

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/PCM. The TP sensor is not replaceable apart from the throttle body.



Top Dead Center (TDC) Sensor
The TDC sensor detects the position of the No. 1 cylinder as a reference for sequential fuel injection to each cylinder.



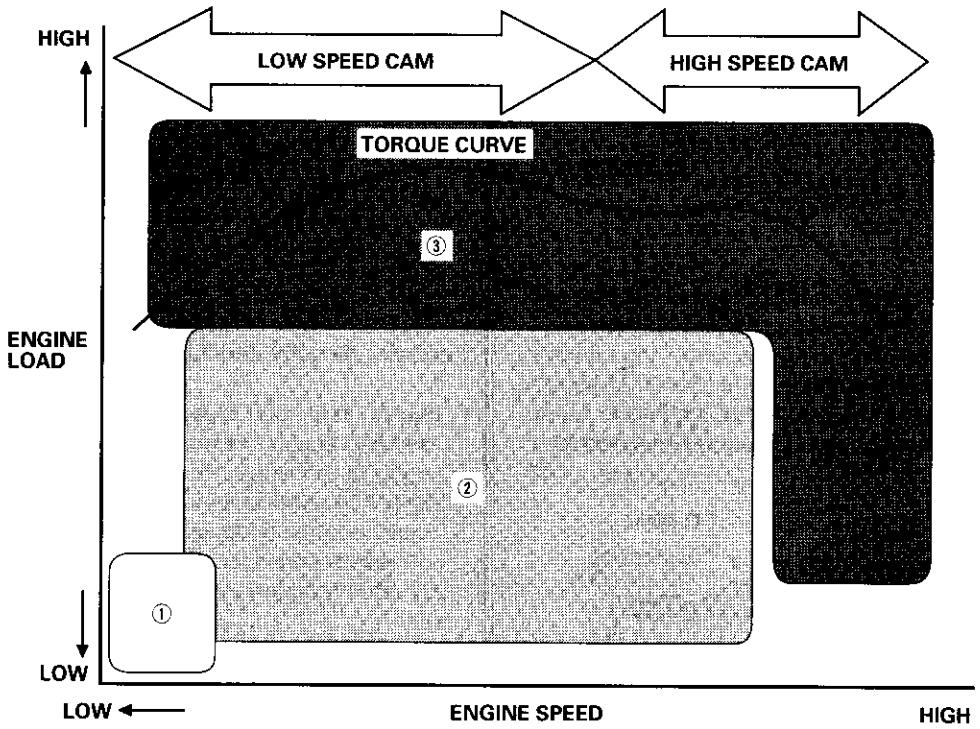
Vehicle Speed Sensor (VSS) (M/T)
The VSS is driven by the differential. It generates a pulsed signal from an input of 5 volts. The number of pulses per minute increases/decreases with the speed of the vehicle.

(cont'd)

System Descriptions (cont'd)

VTEC/VTC

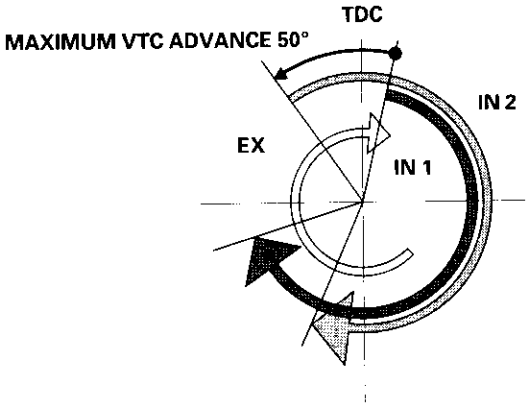
- The i-VTEC has a VTC (Variable Valve Timing Control) mechanism on the intake camshaft in addition to the usual VTEC.
  This mechanism improves fuel efficiency and reduces exhaust emissions at all levels of engine speed, vehicle speed, and engine load.
- The VTEC mechanism changes the valve lift and timing by using more than one cam profile.
- The VTC changes the phase of the intake camshaft via oil pressure, change the intake valve timing continuously.

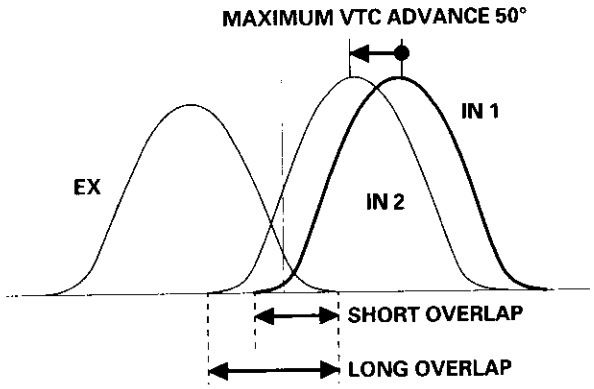


Driving Condition	VTC Control	Description
① At light-loaded running	Base Position	Cam angle is retarded to reduce the entry of exhaust gas into the intake port and to achieve stable fuel consumption during lean burn.
② At medium/high-loaded running	Advance Control	Cam angle is advanced for the EGR effect and to reduce the 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 At high speed running	Advance-Base Position	Cam phase angle is controlled for optimum valve timing and maximum engine power.

VTC system

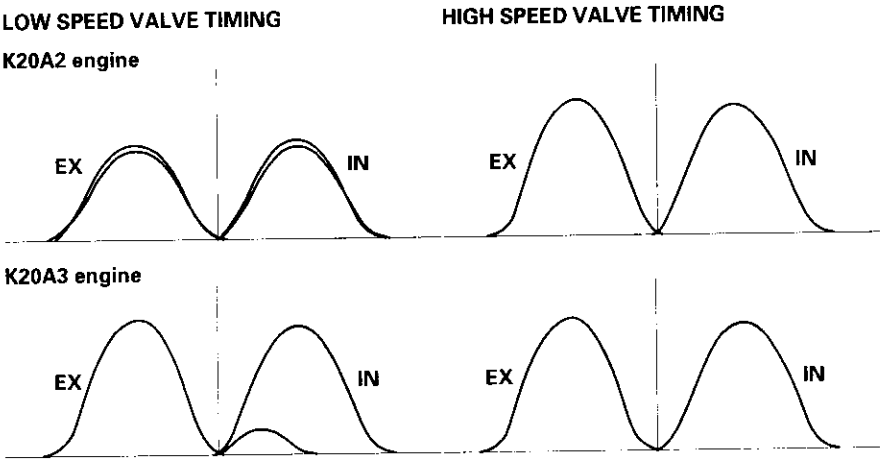
- The VTC system makes continuous intake valve timing changes corresponding to the operation conditions.
- It optimizes intake valve timing to allow the engine to produce maximum power.
- Cam angle is advanced to obtain the EGR effect and reduce the pumping loss. The intake valve is closed quickly to reduce the entry of the air/fuel mixture into the intake port and improve the charging effect.
- Reduces the cam advance at idle, stabilizes combustion, and reduces engine speed. If a malfunction occurs, VTC system control is disabled and the valve timing is fixed at the fully retarded position.





VTEC system

- The VTEC system changes the cam profile to correspond to the engine speed. It maximizes torque at low engine speeds 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.
- The K20A2 engine changes both the intake and exhaust camshaft. Only the intake camshaft side has a VTEC mechanism on the K20A3 engine.

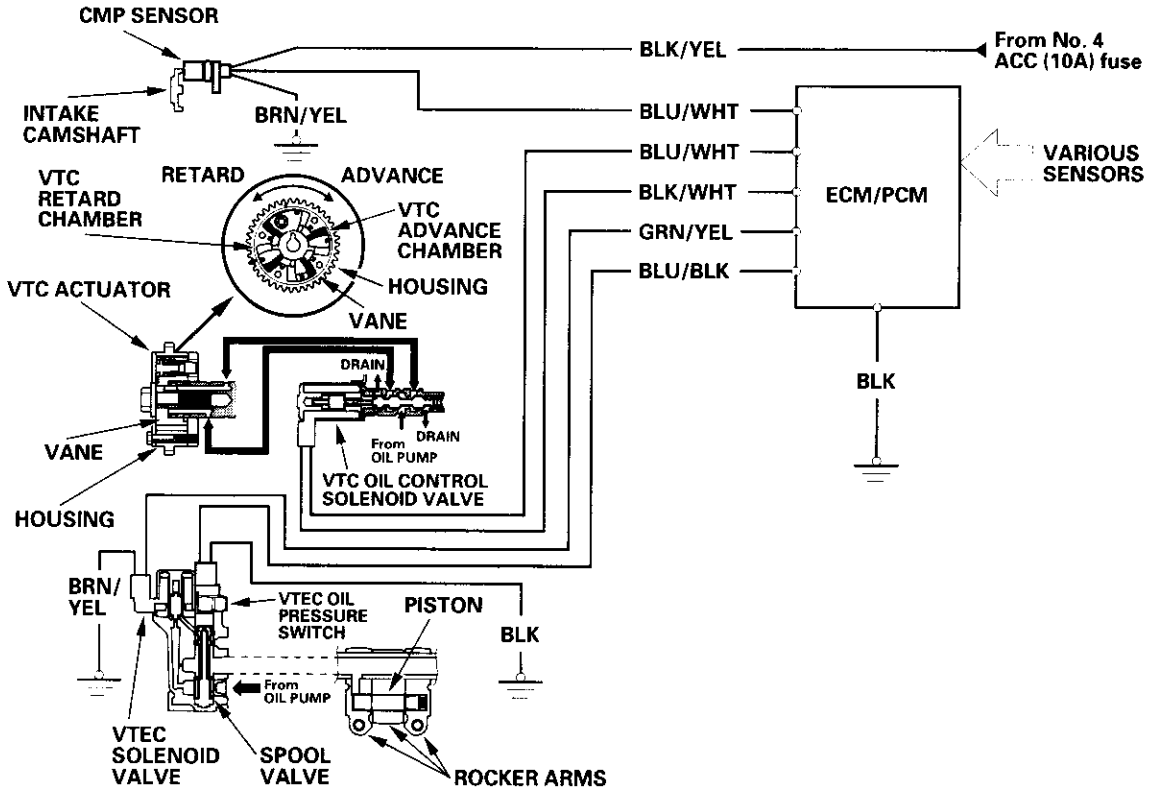


(cont'd)

System Descriptions (cont'd)

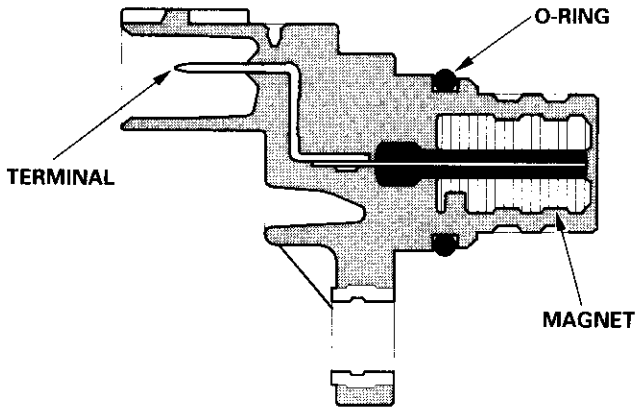
VTEC/VTC

System Diagram



Camshaft Position (CMP) Sensor

The CMP sensor detects camshaft angle position for VTC system.

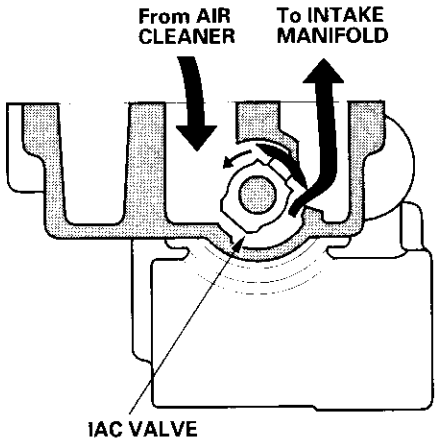


Idle Control System

When the engine is cold, the A/C compressor is on, the transmission is in gear, the brake pedal is pressed, the power steering load is high, or the alternator is charging, the ECM/PCM 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/PCM when the brake pedal is pressed.

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/PCM.



Power Steering Pressure (PSP) Switch
The PSP switch signals the ECM/PCM when the power steering load is high.

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 speeds over 930 rpm (1100 rpm)*[1]. Fuel cut-off action also occurs when engine speed exceeds 6,900 rpm (8100 rpm)*[1], regardless of the position of the throttle valve, to protect the engine from over-revving. When the vehicle is stopped, the PCM cuts the fuel at engine speeds over 5,500 rpm.
*1:K20A2 engine

Fuel Pump Control
When the ignition is turned on, the ECM/PCM 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/PCM 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/PCM 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 relay consists of two separate relays. The PGM-FI main relay 1 is energized whenever the ignition switch is ON (II) to supply battery voltage to the ECM/PCM, power to the injectors, and power for PGM-FI main relay 2. The PGM-FI main 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.

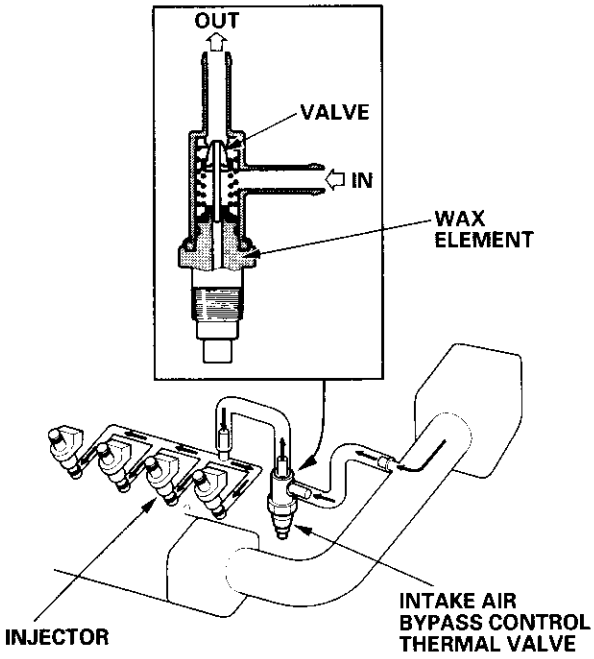
(cont'd)

System Descriptions (cont'd)

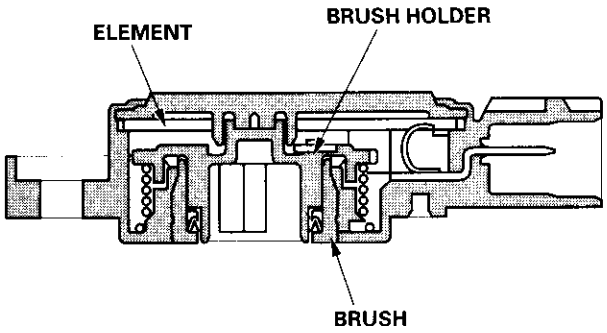
Intake Air System

Refer to the System Diagram to see the functional layout of the system.

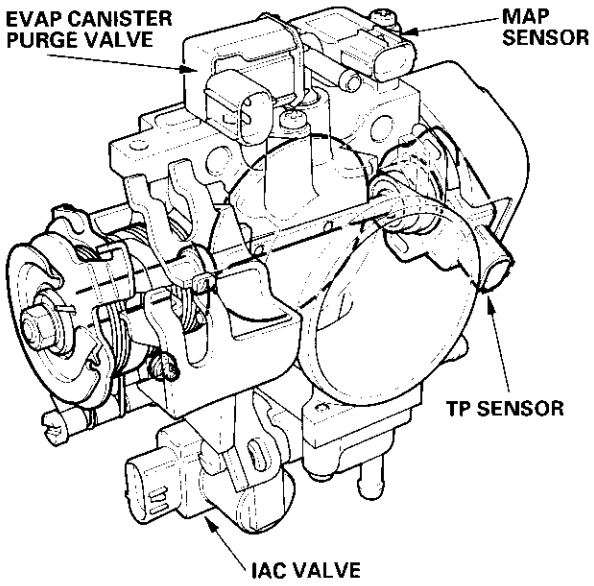
Intake Air Bypass Control Thermal Valve
When the engine is running, the intake air bypass control thermal valve sends air to the injector.



Intake Manifold Runner Control (IMRC) Valve Position Sensor (K20A3 engine)
The IMRC position sensor is a potentiometer connected to the IMRC valve shaft. As the IMRC valve position changes, the sensor varies the signal voltage to the EMC/PCM.

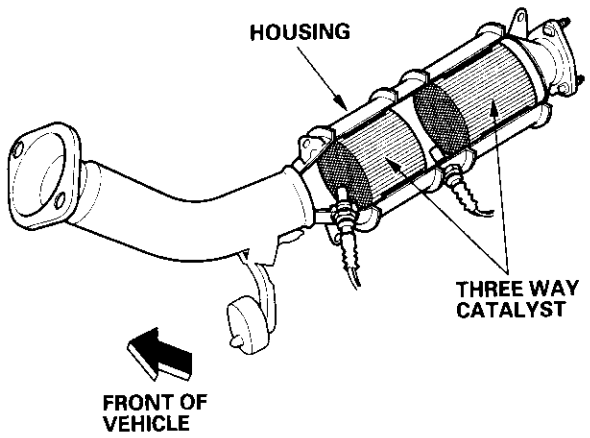


Throttle Body
The throttle body is a single-barrel side draft type. The lower portion of the IAC valve is heated by engine coolant from the cylinder head.



Catalytic Converter System

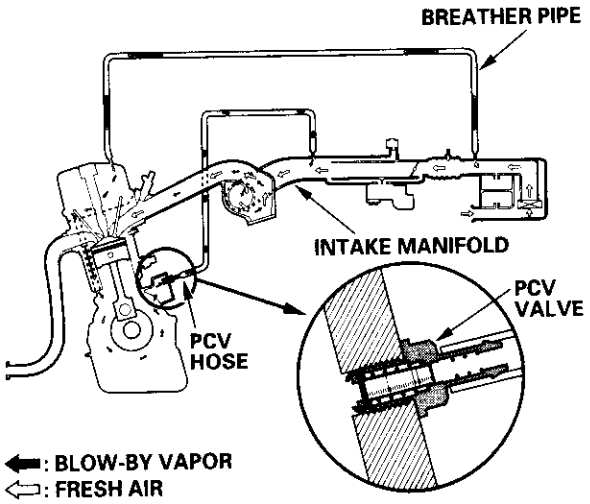
Three Way Catalytic Converter (TWC)
The TWC converts hydrocarbons (HC), carbon monoxide (CO), and oxides of nitrogen (NOx) in the exhaust gas to carbon dioxide (CO2), dinitrogen (N2), and water vapor.



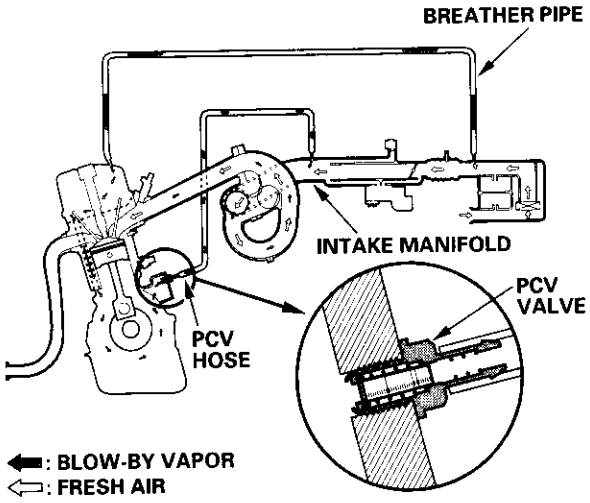
Positive Crankcase Ventilation (PCV) System

The PCV valve prevents blow-by gasses from escaping into the atmosphere by venting them into the intake manifold.

K20A2 engine



K20A3 engine



(cont'd)

System Descriptions (cont'd)

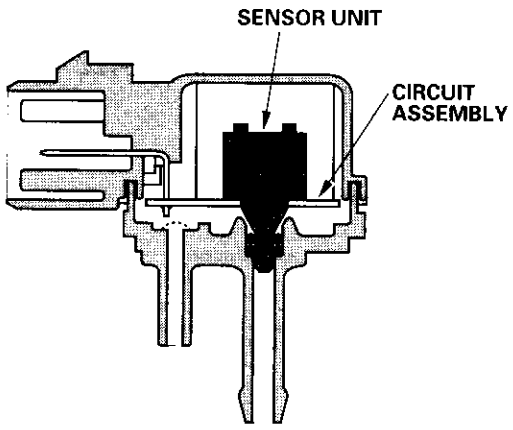
Evaporative Emission (EVAP) Control System

Refer to the System Diagram to see the functional layout of the system.

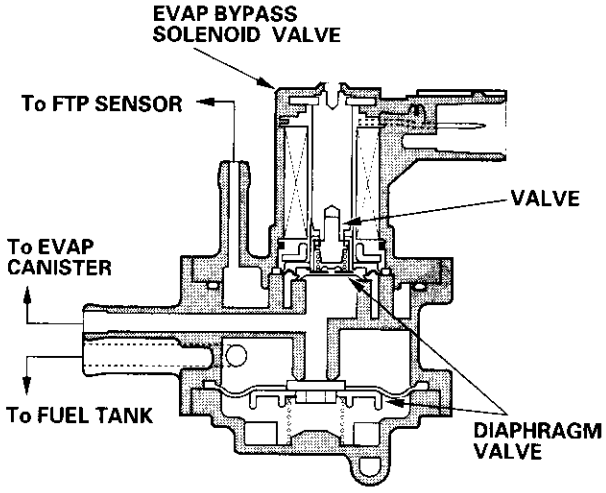
EVAP Canister
The EVAP canister temporarily stores fuel vapor from the fuel tank until it can be purged back into the engine and burned (refer to the System Diagram to see the functional layout of the system).

EVAP Canister Purge Valve
When the engine coolant temperature is below 149°F (65°C), the ECM/PCM turns off the EVAP canister purge valve which cuts vacuum to the EVAP canister.

Fuel Tank Pressure (FTP) Sensor
The FTP sensor converts fuel tank absolute pressure into an electrical input to the ECM/PCM.



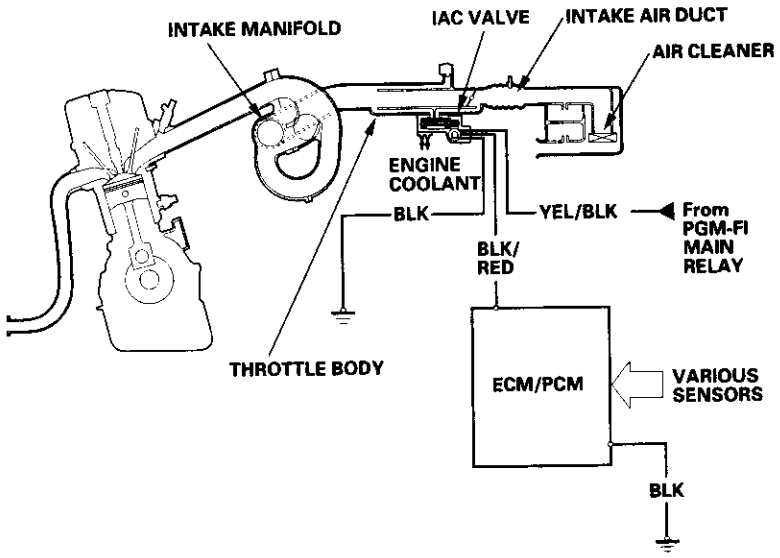
EVAP Two Way Valve and EVAP Bypass Solenoid Valve
The EVAP two valve is installed between the fuel tank and the EVAP canister line.
The EVAP two way valve sends fuel vapor the EVAP canister corresponding to the pressure inside the fuel tank and vacuum, and it is returned in the fuel tank.
The EVAP bypass solenoid valve opens to bypass the two way valve when doing at the EVAP leak check.



Idle Control System Diagram

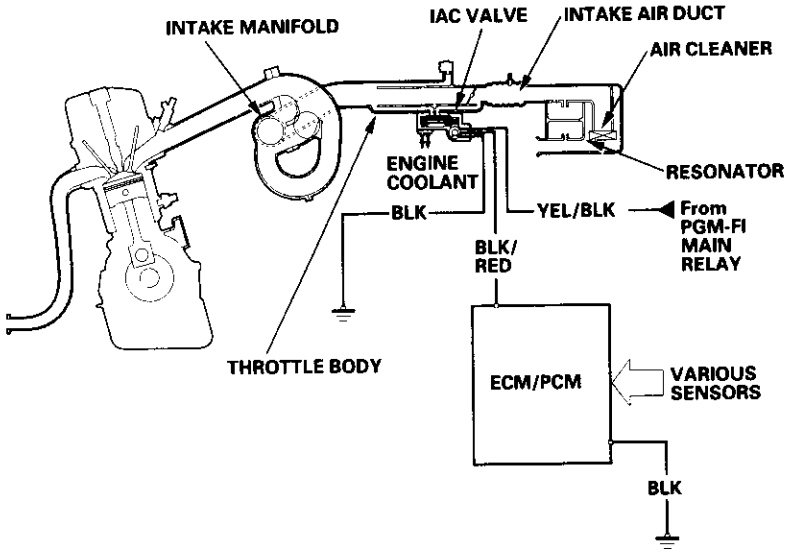
The idle speed of the engine is controlled by the Idle Air Control (IAC) valve:

- 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.

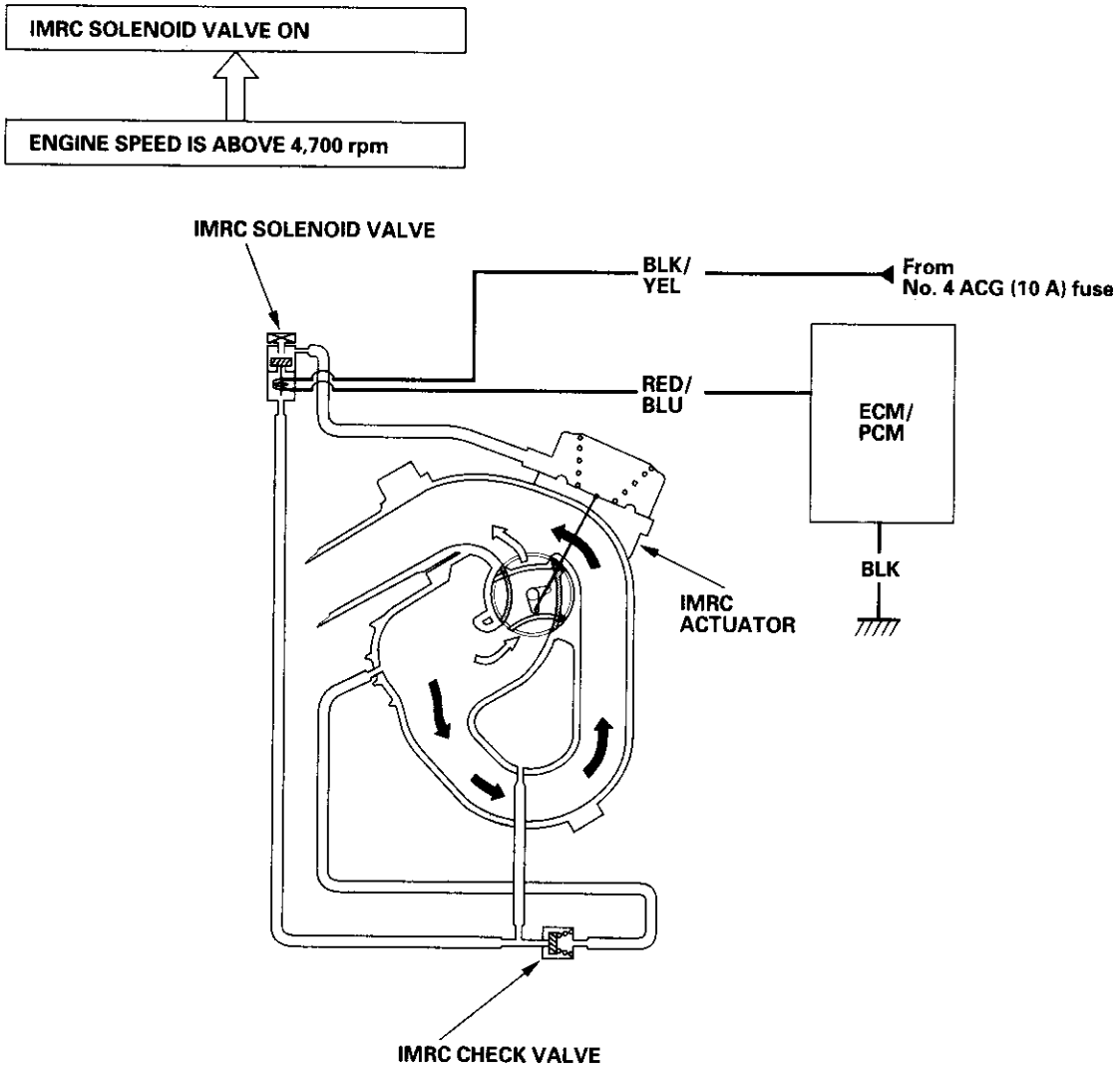


(cont'd)

System Descriptions (cont'd)

Intake Manifold Runner Control (IMRC) System (K20A3 engine)

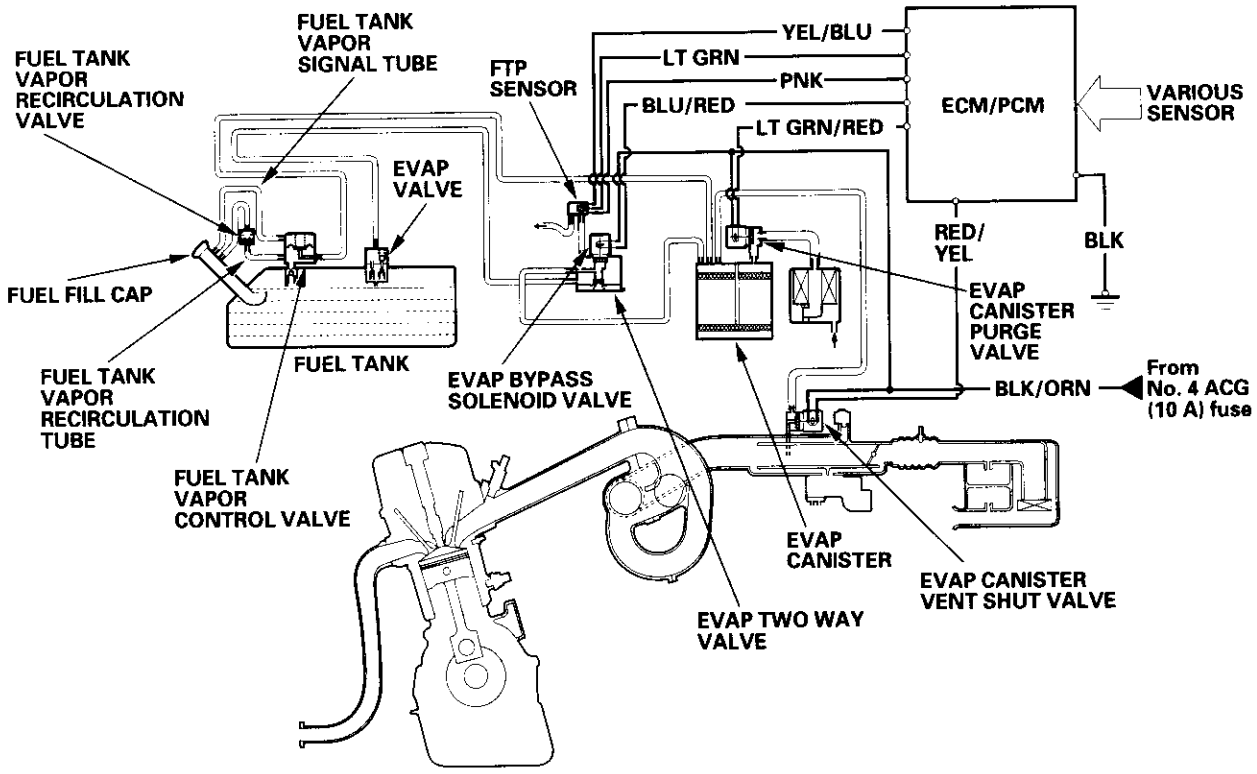
Engine power is achieved by closing and opening the Intake Manifold Runner Control (IMRC) valve. When the valve is closed, there is high torque at low engine speed. When the valve is open, there is high torque at high engine speed.



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.

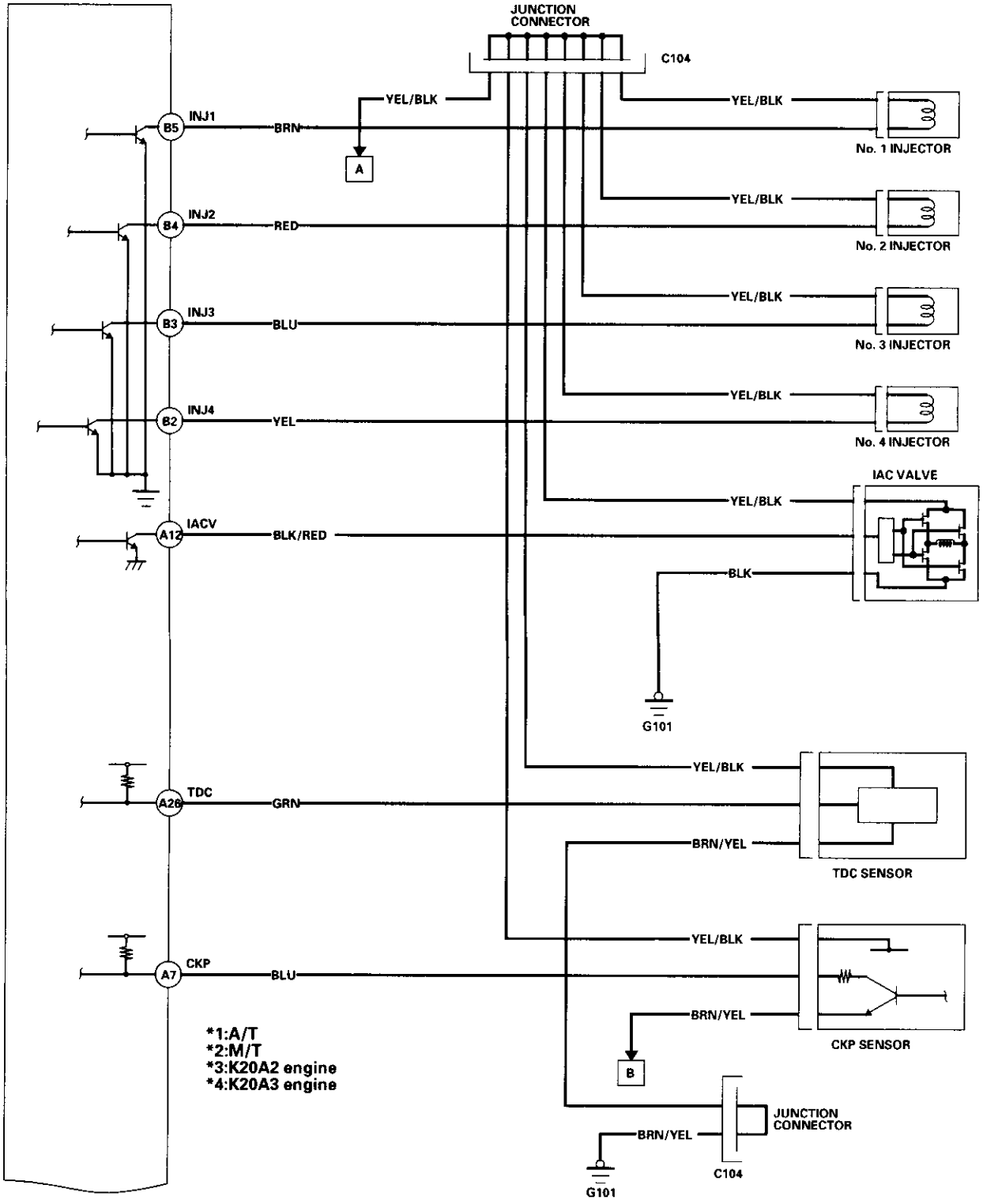
- The EVAP canister is purged by drawing fresh air through it and into a port on the intake manifold. The purging vacuum is controlled by the EVAP canister purge valve, which operates whenever engine coolant temperature is above 149°F (65°C).
- When vapor pressure in the fuel tank is higher than the 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.

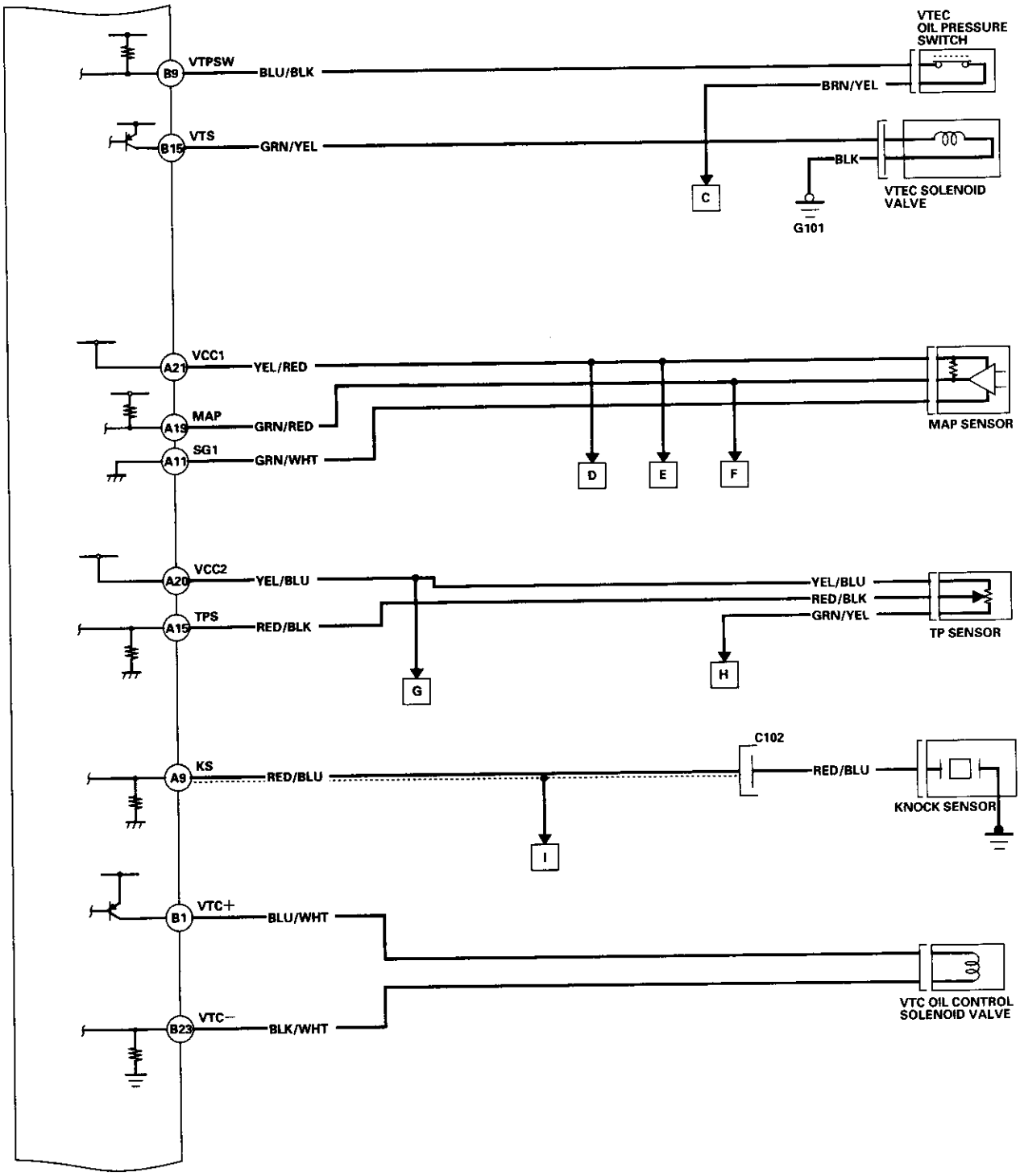


(cont'd)

System Descriptions (cont'd)

ECM/PCM Circuit Diagram

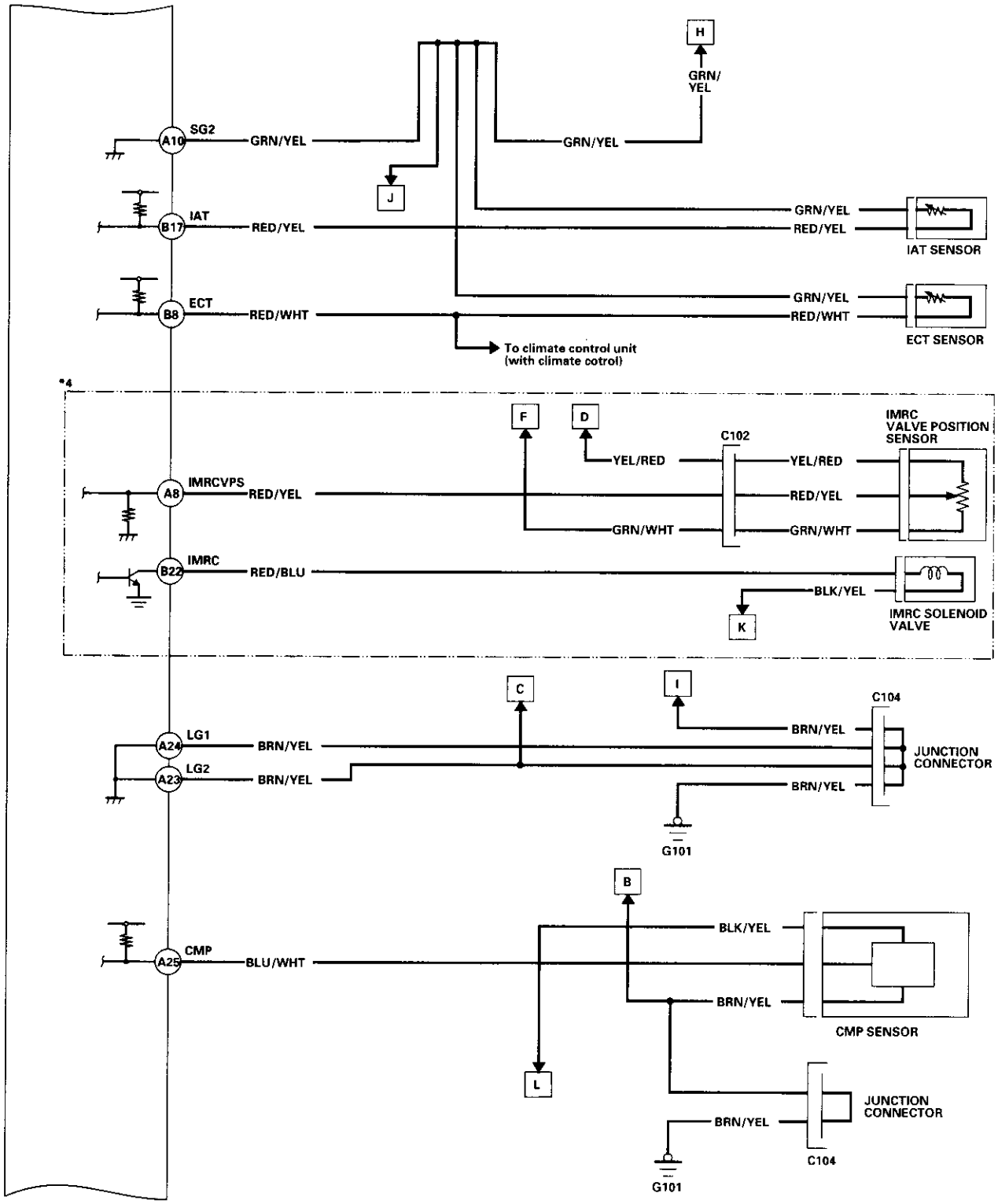


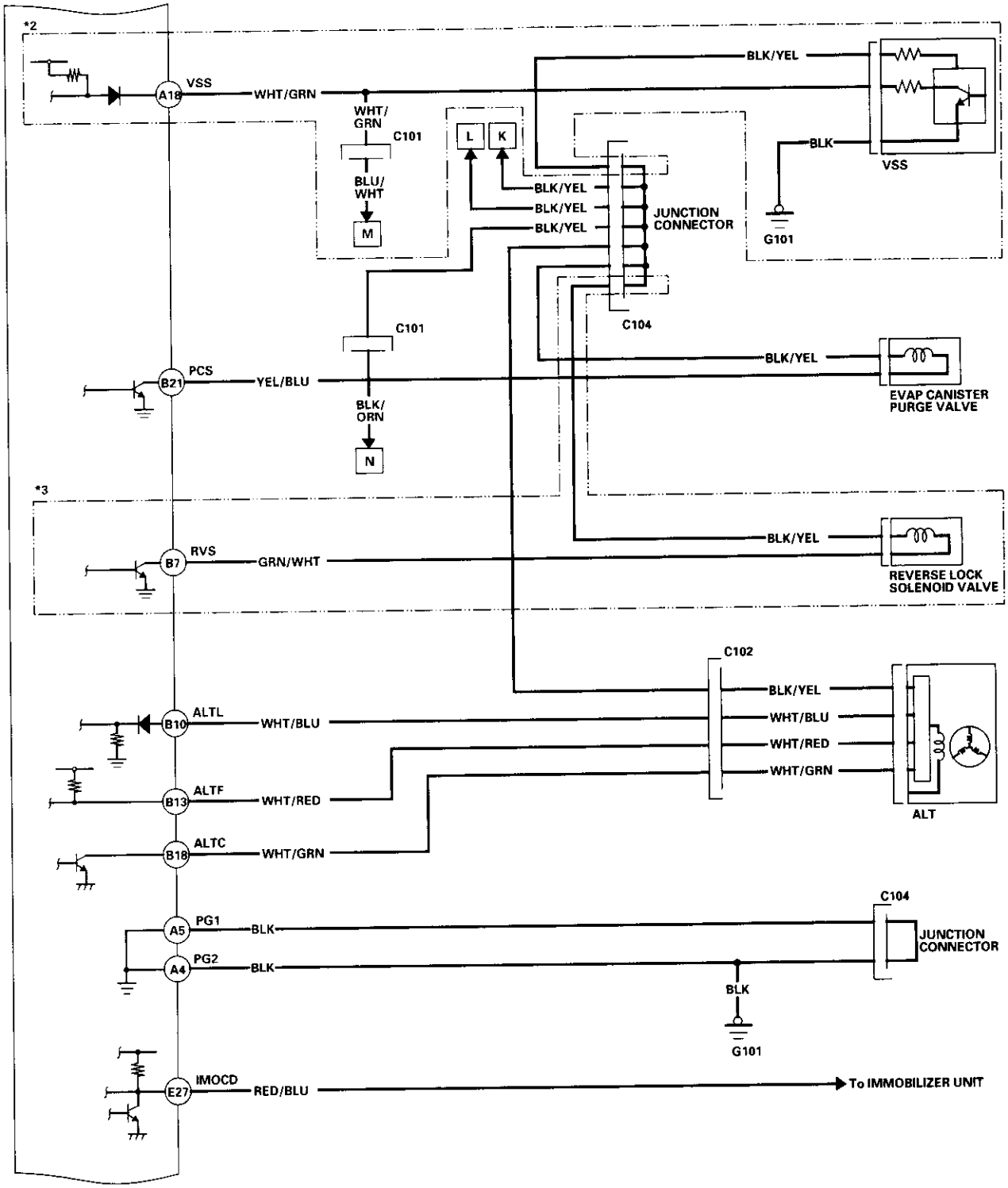

VTEC
OIL PRESSURE
SWITCH
B9
VTPSW
BLU/BLK
BRN/YEL
B15
VTS
GRN/YEL
BLK
C
G101
VTEC SOLENOID
VALVE
A21
VCC1
YEL/RED
A19
MAP
GRN/RED
A11
SG1
GRN/WHT
MAP SENSOR
D
E
F
A20
VCC2
YEL/BLU
A15
TPS
RED/BLK
YEL/BLU
RED/BLK
GRN/YEL
TP SENSOR
G
H
C102
A9
KS
RED/BLU
RED/BLU
KNOCK SENSOR
I
B1
VTC+
BLU/WHT
B23
VTC−
BLK/WHT
VTC OIL CONTROL
SOLENOID VALVE

(cont'd)

System Descriptions (cont'd)

ECM/PCM Circuit Diagram (cont'd)

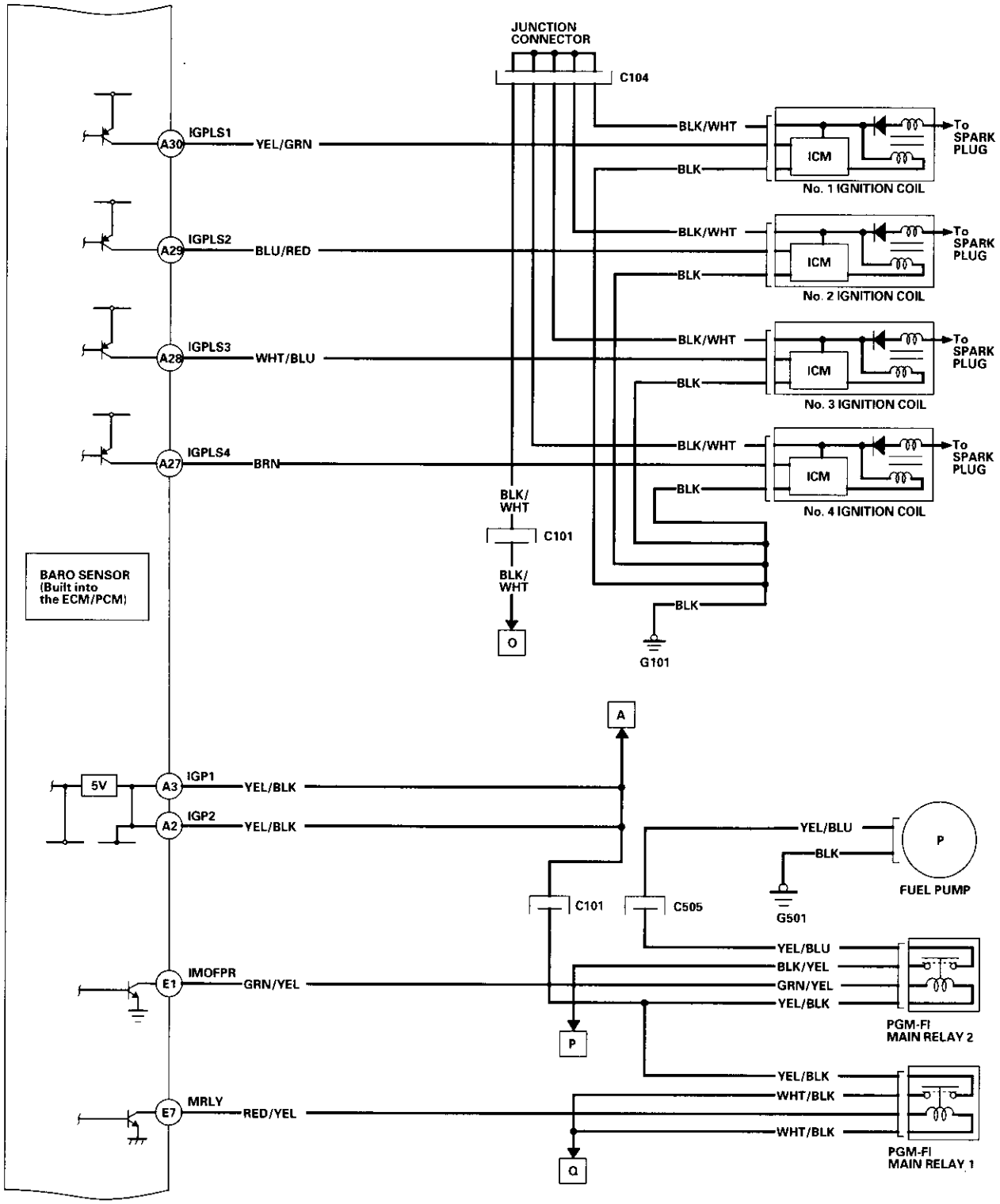


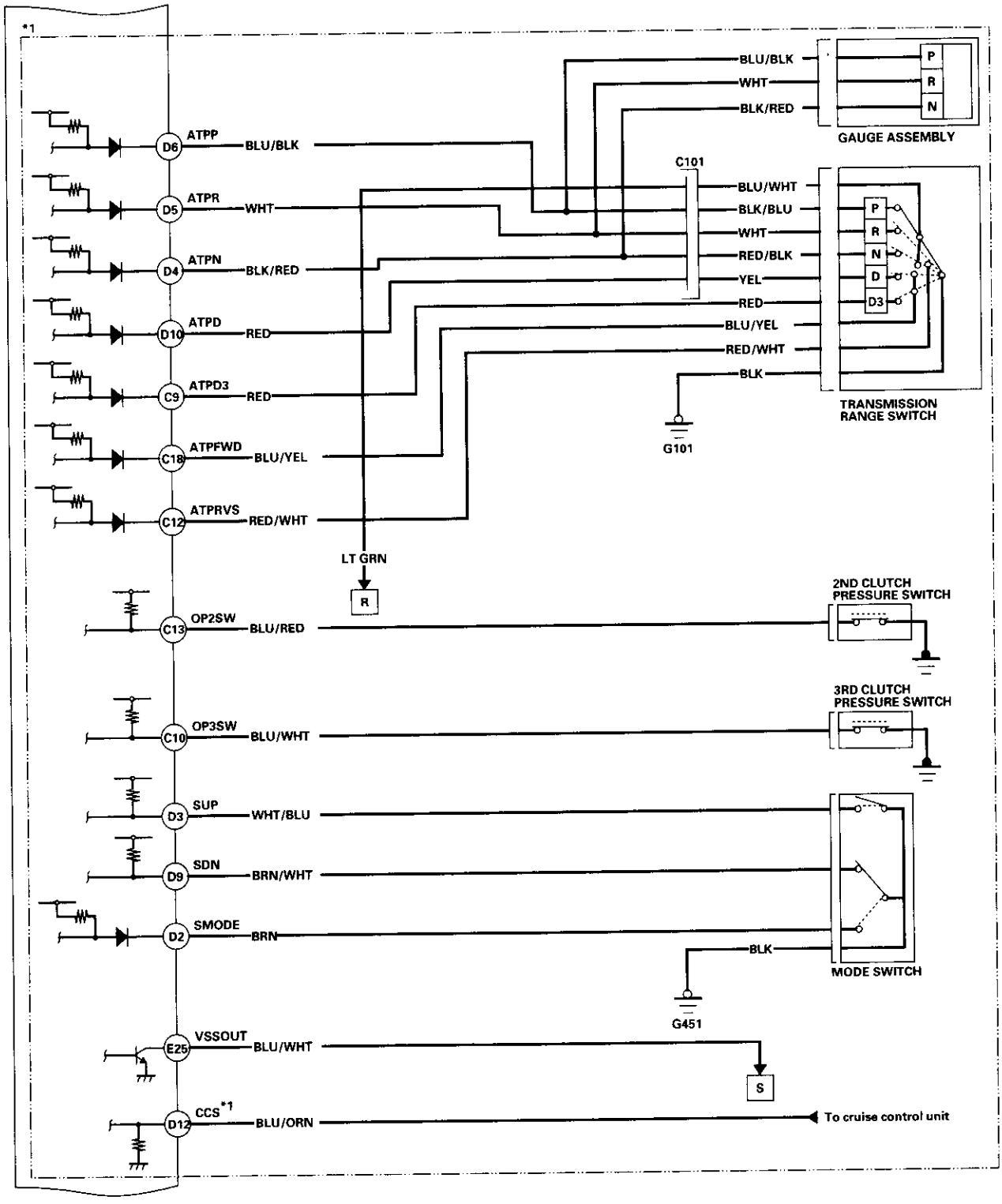

*2
A18
VSS
WHT/GRN
WHT/
GRN
C101
BLU/
WHT
M
L
K
BLK/YEL
BLK/YEL
BLK/YEL
JUNCTION
CONNECTOR
C104
BLK/YEL
BLK
VSS
G101
C101
B21
PCS
YEL/BLU
BLK/
ORN
N
BLK/YEL
EVAP CANISTER
PURGE VALVE
*3
B7
RVS
GRN/WHT
BLK/YEL
REVERSE LOCK
SOLENOID VALVE
C102
B10
ALTL
WHT/BLU
BLK/YEL
WHT/BLU
WHT/RED
WHT/GRN
B13
ALTF
WHT/RED
B18
ALTC
WHT/GRN
ALT
C104
A5
PG1
BLK
A4
PG2
BLK
JUNCTION
CONNECTOR
BLK
G101
E27
IMOCD
RED/BLU
To IMMOBILIZER UNIT

(cont'd)

System Descriptions (cont'd)

ECM/PCM Circuit Diagram (cont'd)

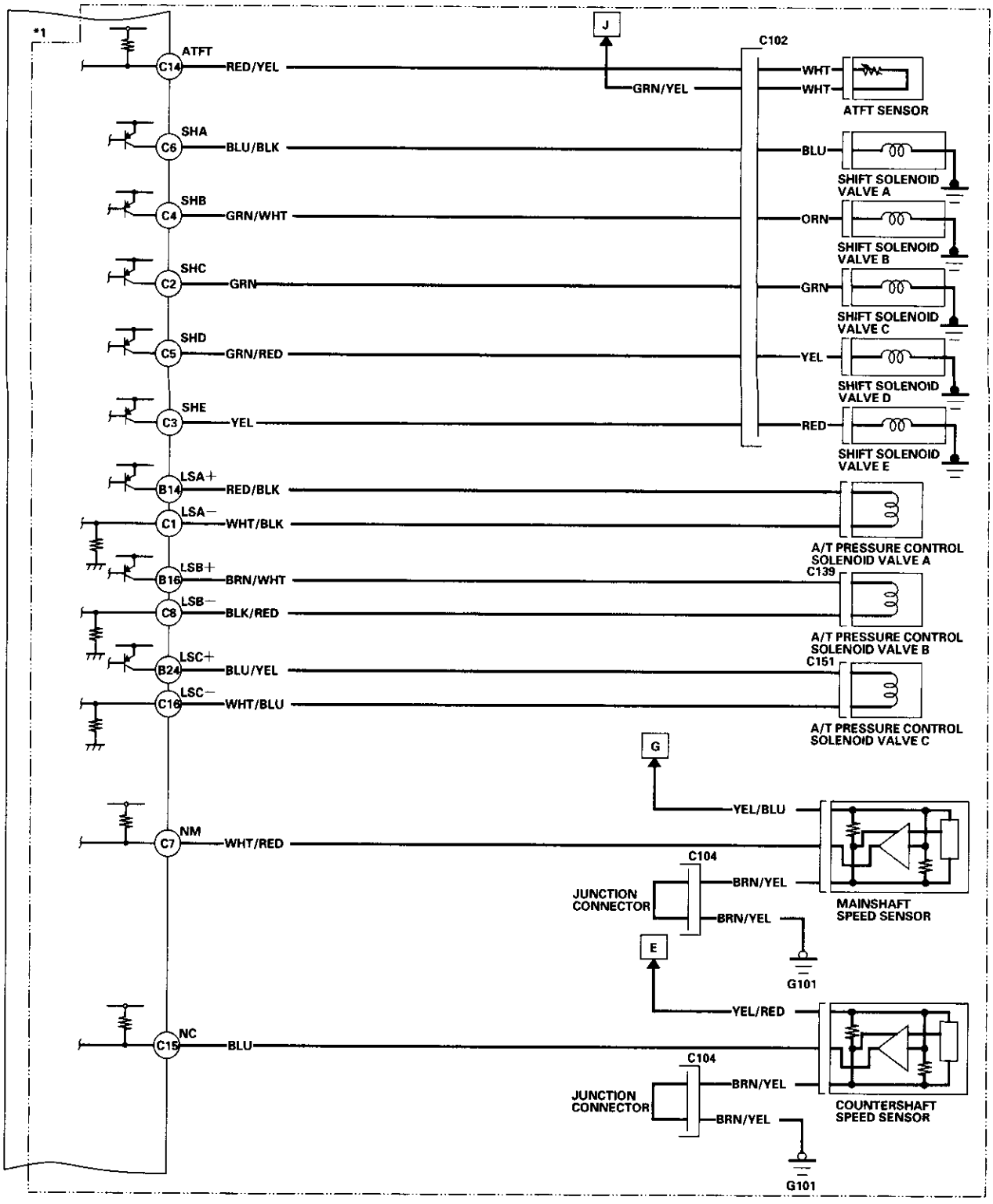


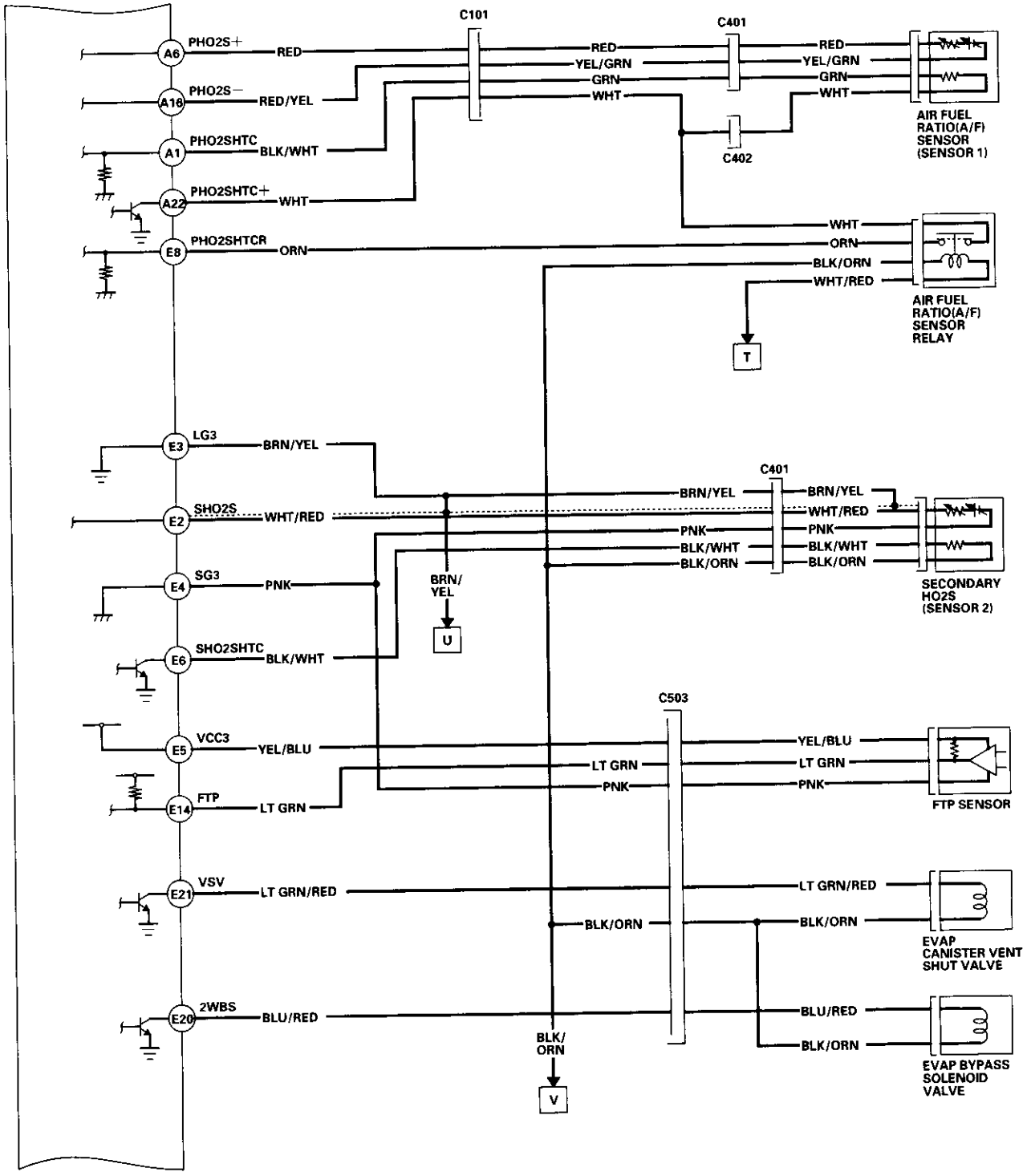

*1
ATPP
D6
BLU/BLK
ATPR
D5
WHT
ATPN
D4
BLK/RED
ATPD
D10
RED
ATPD3
C9
RED
ATPFWD
C18
BLU/YEL
ATPRVS
C12
RED/WHT
LT GRN
R
OP2SW
C13
BLU/RED
OP3SW
C10
BLU/WHT
SUP
D3
WHT/BLU
SDN
D9
BRN/WHT
SMODE
D2
BRN
VSSOUT
E25
BLU/WHT
CCS*1
D12
BLU/ORN
S
To cruise control unit
BLU/BLK
WHT
BLK/RED
P
R
N
GAUGE ASSEMBLY
C101
BLU/WHT
BLK/BLU
WHT
RED/BLK
YEL
RED
BLU/YEL
RED/WHT
BLK
P
R
N
D
D3
TRANSMISSION
RANGE SWITCH
G101
2ND CLUTCH
PRESSURE SWITCH
3RD CLUTCH
PRESSURE SWITCH
BLK
MODE SWITCH
G451

(cont'd)

System Descriptions (cont'd)

ECM/PCM Circuit Diagram (cont'd)

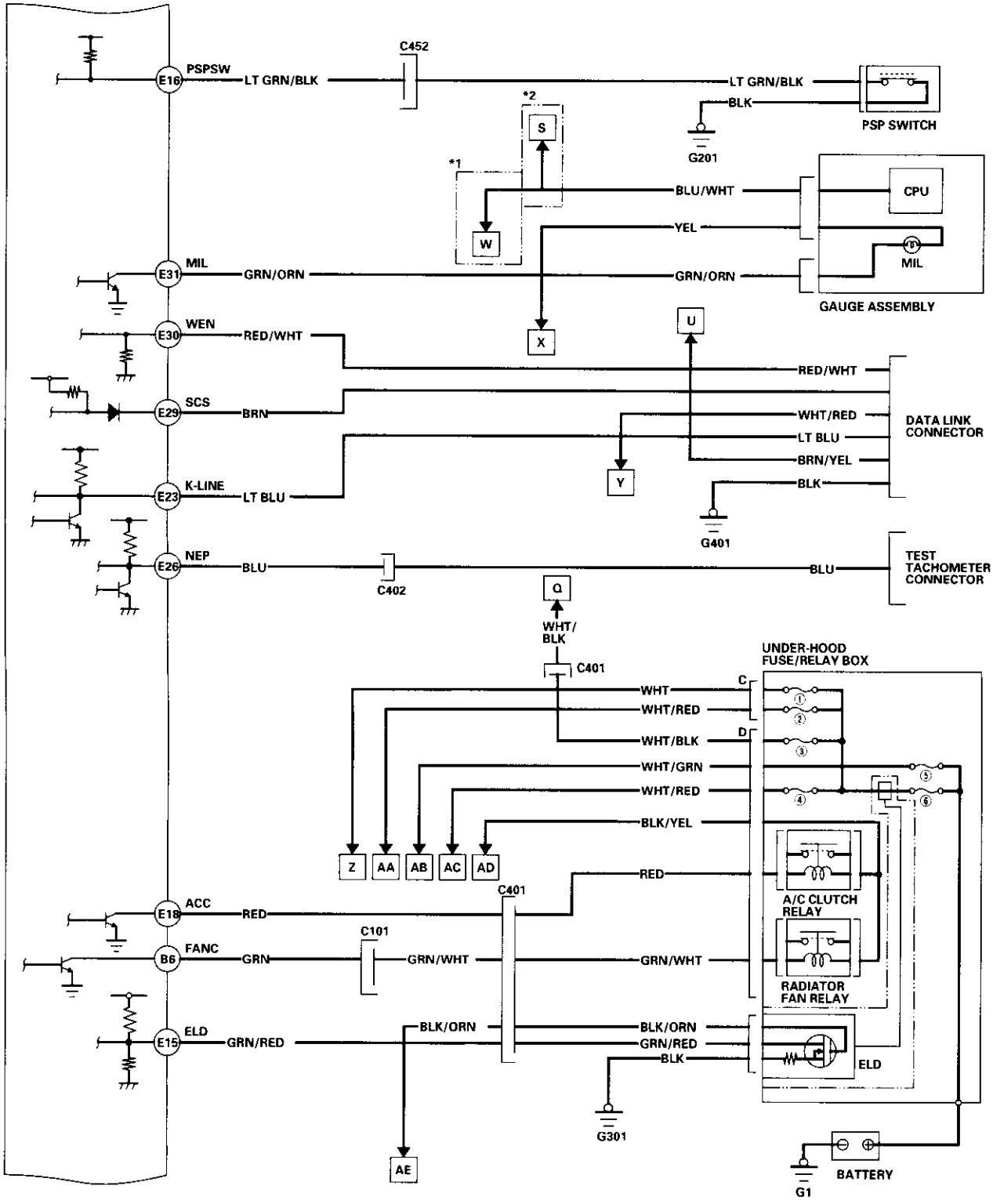


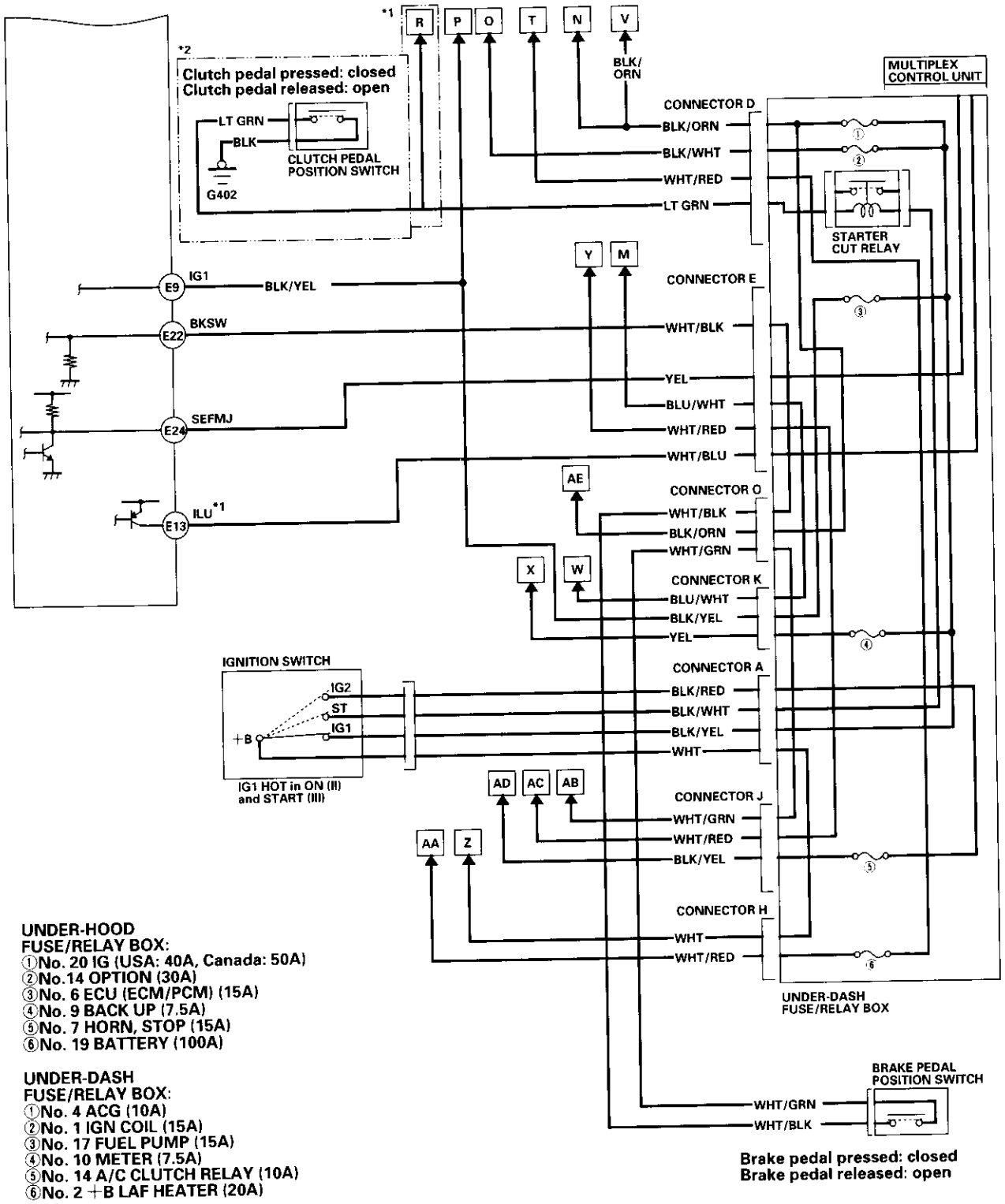

C101
C401
A6
PHO2S+
RED
A16
PHO2S−
RED/YEL
A1
PHO2SHTC
BLK/WHT
A22
PHO2SHTC+
WHT
E8
PHO2SHTCR
ORN
RED
YEL/GRN
GRN
WHT
C402
AIR FUEL RATIO(A/F) SENSOR (SENSOR 1)
WHT
ORN
BLK/ORN
WHT/RED
AIR FUEL RATIO(A/F) SENSOR RELAY
T
E3
LG3
BRN/YEL
E2
SHO2S
WHT/RED
E4
SG3
PNK
E6
SHO2SHTC
BLK/WHT
BRN/YEL
PNK
BLK/WHT
BLK/ORN
SECONDARY HO2S (SENSOR 2)
BRN/ YEL
U
C503
E5
VCC3
YEL/BLU
E14
FTP
LT GRN
YEL/BLU
LT GRN
PNK
FTP SENSOR
E21
VSV
LT GRN/RED
BLK/ORN
EVAP CANISTER VENT SHUT VALVE
E20
2WBS
BLU/RED
BLU/RED
BLK/ORN
EVAP BYPASS SOLENOID VALVE
BLK/ ORN
V

(cont'd)

System Descriptions (cont'd)

ECM/PCM Circuit Diagram (cont'd)





UNDER-HOOD FUSE/RELAY BOX:
① No. 20 IG (USA: 40A, Canada: 50A)
② No. 14 OPTION (30A)
③ No. 6 ECU (ECM/PCM) (15A)
④ No. 9 BACK UP (7.5A)
⑤ No. 7 HORN, STOP (15A)
⑥ No. 19 BATTERY (100A)

UNDER-DASH FUSE/RELAY BOX:
① No. 4 ACG (10A)
② No. 1 IGN COIL (15A)
③ No. 17 FUEL PUMP (15A)
④ No. 10 METER (7.5A)
⑤ No. 14 A/C CLUTCH RELAY (10A)
⑥ No. 2 +B LAF HEATER (20A)

How to Set Readiness Codes

Malfunction Indicator Lamp (MIL) Indication (In relation to Readiness Codes)

The vehicle has certain "readiness codes" that are part of the on-board diagnostics for the emissions systems. If the vehicle's battery has been disconnected or gone dead, if the DTCs have been cleared, or if the ECM/PCM has been reset, these codes are reset. In some states, part of the emissions testing is to make sure these codes are set to complete. If all of them are not set to complete, the vehicle may fail the 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/PCM 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 (40 km/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 (8 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/PCM 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 then 36°F (20°C) from its value at engine start up.

Enable Criteria
- At engine start up, ECT and IAT are higher then 32°F (0°C) , but lower then 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 (4.0 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/PCM 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 (5.6 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, 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/PCM 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.

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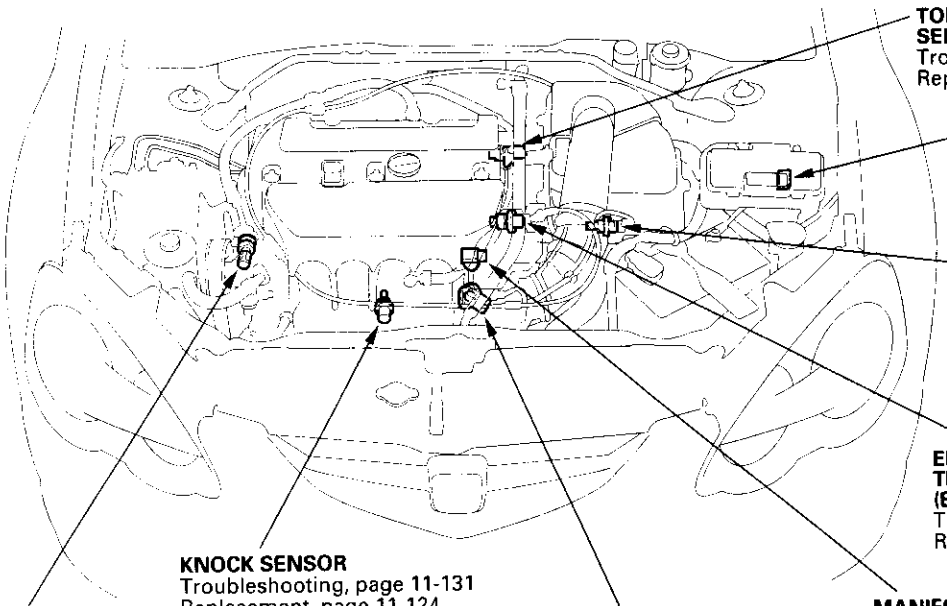
K20A2 engine



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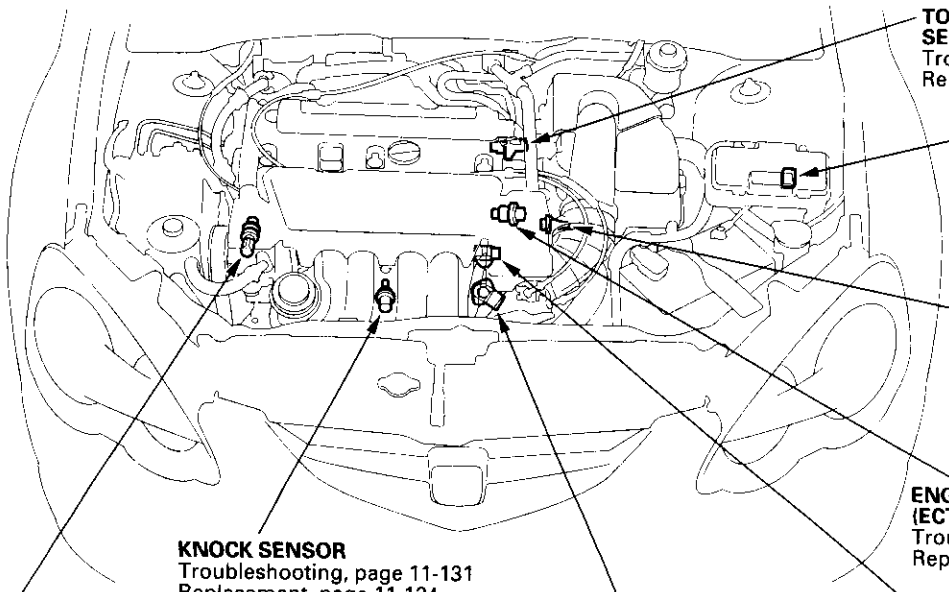
K20A3 engine



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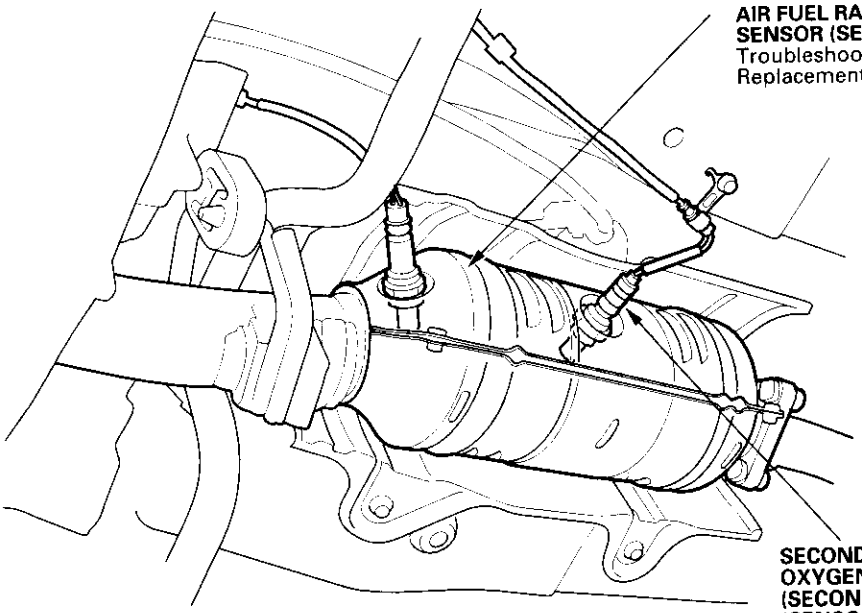

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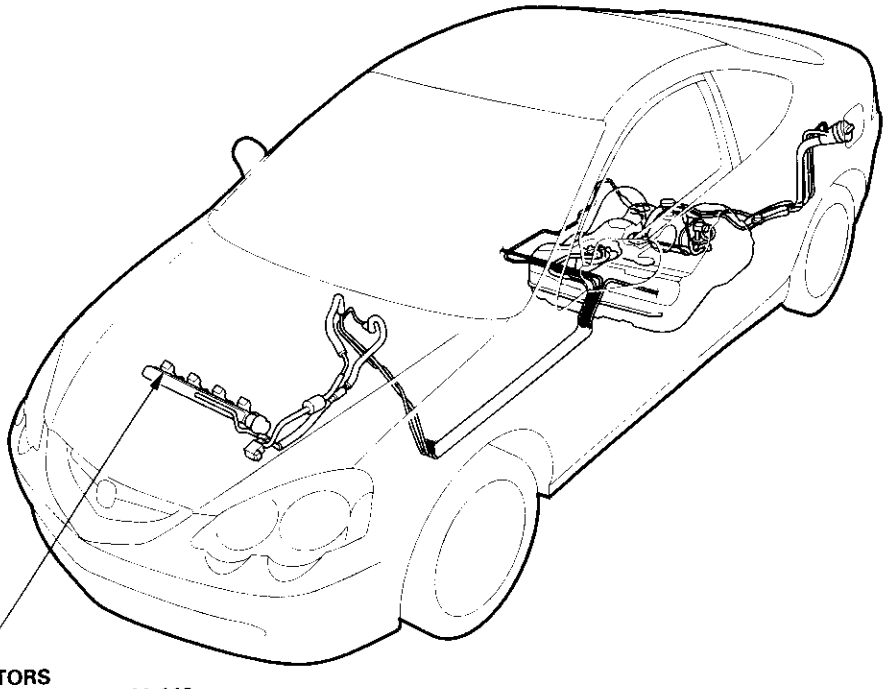

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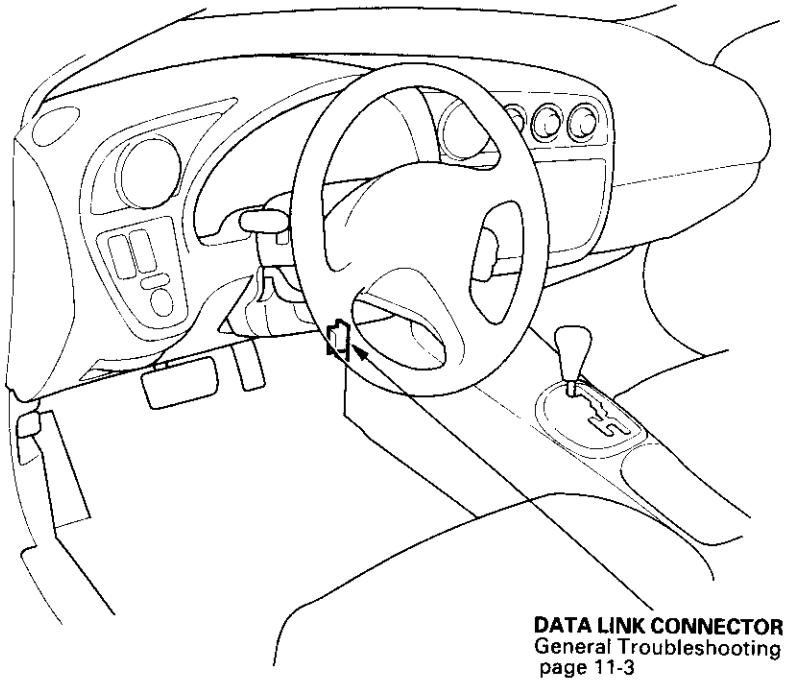

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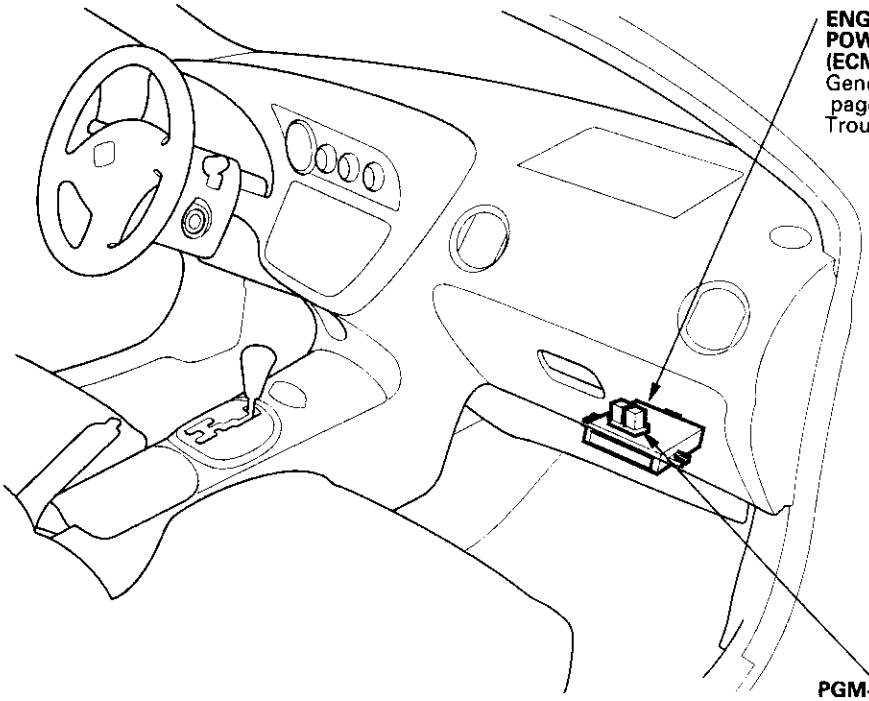

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DTC Troubleshooting

DTC P0107: MAP Sensor Circuit Low Voltage

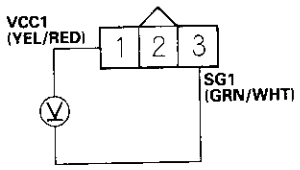
1. Turn the ignition switch ON (II).
2. Check the MAP with the scan tool.

   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 wires at the MAP sensor and at the ECM/PCM. ■

   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 the MAP sensor 3P connector terminals No. 1 and No. 3.

MAP SENSOR 3P CONNECTOR



Wire side of female terminals

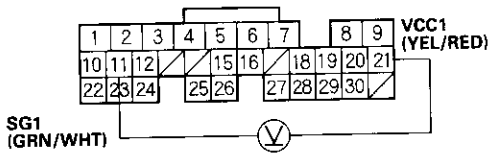
Is there about 5 V?

YES – Go to step 8.

NO – Go to step 7.

7. Measure voltage between ECM/PCM connector terminals A11 and A21.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there about 5 V?

YES – Repair open in the wire between the ECM/PCM (A21) and the MAP sensor. ■

NO – Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM. ■

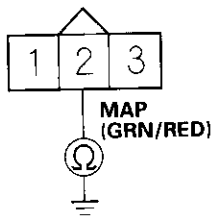
8. Check the MAP with the scan tool.

   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/PCM connector A (31P).
11. Check for continuity between the MAP sensor connector terminal No. 2 and body ground.

MAP SENSOR 3P CONNECTOR



Wire side of female terminals

Is there continuity?

YES – Repair short in the wire between the ECM/PCM (A19) and the MAP sensor. ■

NO – Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM. ■

DTC Troubleshooting (cont'd)

DTC P0108: MAP Sensor Circuit High Voltage

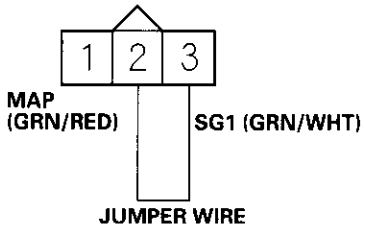
1. Start the engine. Hold the engine at 3,000 rpm with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
2. Check the MAP with the scan tool.

   Is more than 101 kPa (760 mmHg, 30 in.Hg), or more than 2.9 V indicated?

   YES – Go to step 3.

   NO – Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the MAP sensor and at the ECM/PCM. ■
3. Turn the ignition switch OFF.
4. Disconnect the MAP sensor 3P connector.
5. Connect the MAP sensor 3P connector terminals No. 2 and No. 3 with a jumper wire.

MAP SENSOR 3P CONNECTOR



Wire side of female terminals

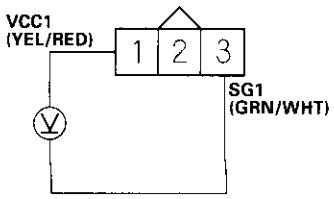
6. Turn the ignition switch ON (II).
7. Check the MAP with the scan tool.

   Is more than 101 kPa (760 mmHg, 30 in.Hg), or more than 2.9 V indicated?

   YES – Go to step 8.

   NO – Replace the MAP sensor. ■
8. Remove the jumper wire.
9. Measure voltage between the MAP sensor 3P connector terminals No. 1 and No. 3.

MAP SENSOR 3P CONNECTOR



Wire side of female terminals

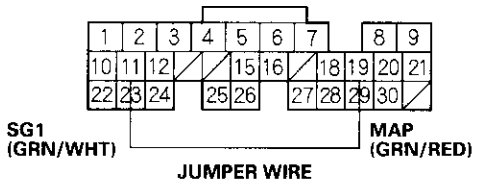
Is there about 5 V?

YES – Go to step 10.

NO – Repair open in the wire between the ECM/PCM (A11) and the MAP sensor. ■

10. Turn the ignition switch OFF.
11. Connect ECM/PCM connector terminals A11 and A19 with a jumper wire.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

12. Turn the ignition switch ON (II).
13. Check the MAP with the scan tool.

    Is more than 101 kPa (760 mmHg, 30 in.Hg), or more than 2.9 V indicated?

    YES – Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM. ■

    NO – Repair open in the wire between the ECM/PCM (A19) and the MAP sensor. ■

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 Park or 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 Troubleshooting (cont'd)

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.

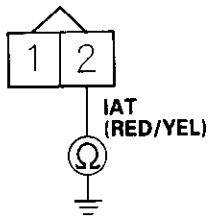
   NO – Go to step 8.
3. Disconnect the IAT sensor 2P connector.
4. Check the IAT with the scan tool.

   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/PCM connector B (24P).
7. Check for continuity between the 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/PCM (B17) and the IAT sensor. ■

NO – Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM. ■

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 wires at the IAT sensor and at the ECM/PCM. ■

   NO – Replace the IAT sensor (see page 11-123). ■

DTC P0113: IAT Sensor Circuit High Voltage

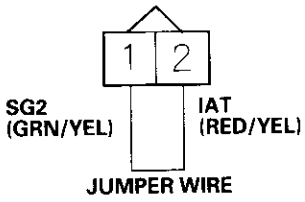
1. Turn the ignition switch ON (II).
2. Check the IAT with the scan tool.

   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 wires at the IAT sensor and at the ECM/PCM. ■
3. Turn the ignition switch OFF.
4. Disconnect the IAT sensor 2P connector.
5. Connect the IAT sensor 2P connector terminals No. 1 and No. 2 with a jumper wire.

IAT SENSOR 2P CONNECTOR



Wire side of female terminals

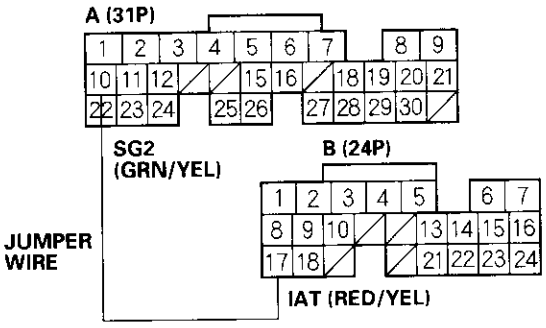
6. Turn the ignition switch ON (II).
7. Check the IAT with the scan tool.

   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 (see page 11-123). ■
8. Turn the ignition switch OFF.
9. Remove the jumper wire.
10. Connect ECM/PCM connector terminals A10 and B17 with a jumper wire.

ECM/PCM 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/PCM if it does not have the latest software, or substitute a known-good ECM/PCM then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM. ■

    NO - Repair open in the wire between the ECM/PCM (A10, B17) and the IAT sensor. ■

DTC Troubleshooting (cont'd)

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 Park or 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 P0117: ECT Sensor Circuit Low Voltage

1. Turn the ignition switch ON (II).
2. Check the ECT 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—Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the ECT sensor and at the ECM/PCM. ■
3. Disconnect the ECT sensor 2P connector.
4. Check the ECT with the scan tool.

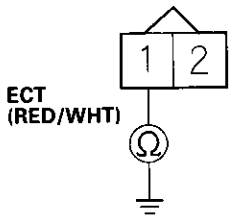
   Is 302°F (150°C) or higher (or H-Limit in Honda mode of PGM Tester), or 0 V indicated?

   YES—Go to step 5.

   NO—Replace the ECT sensor (see page 11-122). ■
5. Turn the ignition switch OFF.
6. Disconnect ECM/PCM 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/PCM (B8) and the ECT sensor.■

NO—Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM.■

DTC P0118: ECT Sensor Circuit High Voltage

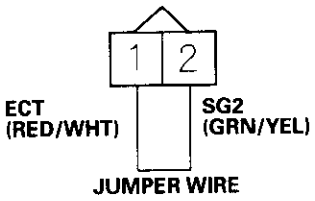
1. Turn the ignition switch ON (II).
2. Check the ECT with the scan tool.

   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—Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the ECT sensor and at the ECM/PCM.■
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).

(cont'd)

DTC Troubleshooting (cont'd)

7. Check the ECT with the scan tool.

   Is −4°F (−20°C) or less (or L-Limit in Honda mode of PGM Tester), or 5 V indicated?

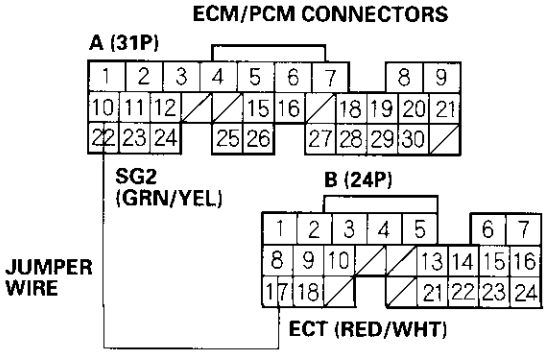
   YES − Go to step 8.

   NO − Replace the ECT sensor (see page 11-122).■

8. Turn the ignition switch OFF.

9. Remove the jumper wire.

10. Connect ECM/PCM connector terminals A10 and B8 with a jumper wire.



Wire side of female terminals

11. Turn the ignition switch ON (II).

12. Check the ECT 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/PCM if it does not have the latest software, or substitute a known-good ECM/PCM then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM.■

    NO − Repair open in the wire between the ECM/PCM (A10, B8) and the ECT sensor.■

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 wires at the TP sensor and at the ECM/PCM.■

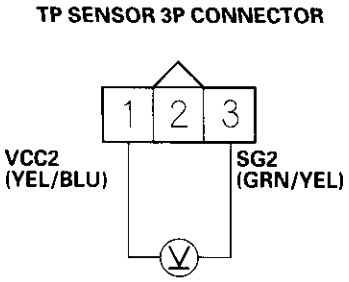
   NO − Go to step 3.

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?

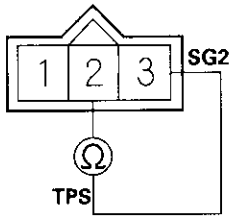
YES − Go to step 7.

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. 2 and No. 3 with the throttle fully closed.

TP SENSOR 3P CONNECTOR



Terminal side of male terminals

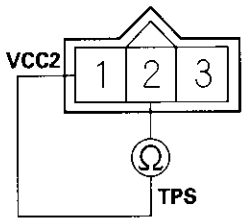
Is there about 0.5 – 0.9 kΩ ?

YES – Go to step 9.

NO – Replace the throttle body. ■

9. Measure resistance between the TP sensor 3P connector terminals No. 1 and No. 2 with the throttle fully closed.

TP SENSOR 3P CONNECTOR



Terminal side of male terminals

Is there about 4.5kΩ ?

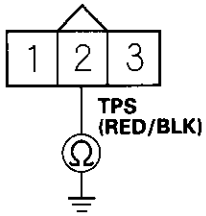
YES – Go to step 10.

NO – Replace the throttle body. ■

10. Disconnect ECM/PCM 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

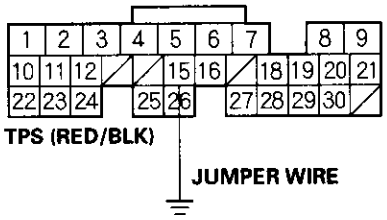
Is there continuity?

YES – Repair short in the wire between the ECM/PCM (A15) and the TP sensor. ■

NO – Go to step 12.

12. Connect ECM/PCM connector terminal A15 and body ground with a jumper wire.

ECM/PCM CONNECTOR A (31P)



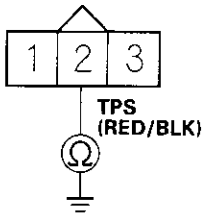
Wire side of female terminals

(cont'd)

DTC Troubleshooting (cont'd)

13. At the wire harness side, check for continuity between the TP sensor 3P connector terminals No. 2 and body ground.

TP SENSOR 3P CONNECTOR



Wire side of female terminals

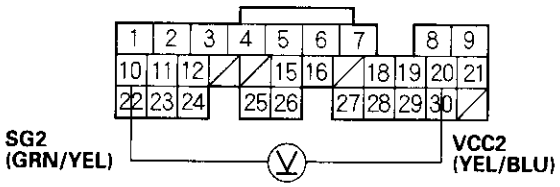
Is there continuity?

YES – Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM. ■

NO – Repair open in the wire between the ECM/PCM (A15) and the TP sensor. ■

14. Measure voltage between ECM/PCM connector terminals A10 and A20.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there about 5 V?

YES – Repair open in the wire between the ECM/PCM (A20) and the TP sensor. ■

NO – Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM. ■

DTC P0123: TP Sensor Circuit High Voltage

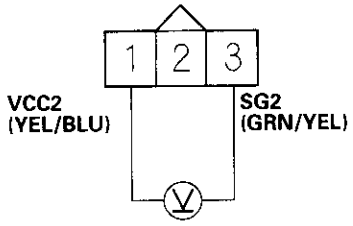
1. Turn the ignition switch ON (II).
2. Check the throttle position with the scan tool.

   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 wires at the TP sensor and at the ECM/PCM. ■

   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

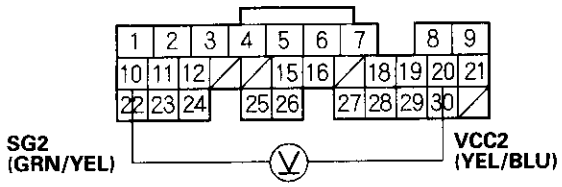
Is there about 5 V?

YES—Replace the throttle body. ■

NO—Go to step 7.

7. Measure voltage between ECM/PCM connector terminals A10 and A20.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there about 5 V?

YES—Repair open in the wire between the ECM/PCM (A10) and the TP sensor. ■

NO—Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM. ■

DTC Troubleshooting (cont'd)

DTC P1121:V TP Sensor Signal Lower Than Expected

NOTE: Inform marked with *1 applies to K20A3 engine; *2 applies to K20A2 engine.

1. Turn the ignition switch ON (II).
2. Check the throttle position with the scan tool.

   *Is 12.6 %, 0.6 V *1 (12.9 %, 0.6 V) *2, or higher indicated when the throttle is fully opened?*

   YES – Intermittent failure, system is OK at this time. ■

   NO – Replace the TP sensor. ■

DTC P1122: TP Sensor Signal Higher Than Expected

NOTE: Inform marked with *1 applies to K20A3 engine; *2 applies to K20A2 engine.

1. Turn the ignition switch ON (II).
2. Check the throttle position with the scan tool.

   *Is 12.6 %, 0.6 V *1 (12.9 %, 0.6 V) *2, or less indicated when the throttle is fully closed?*

   YES – Intermittent failure, system is OK at this time. ■

   NO – Replace the TP sensor. ■

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, P0501: 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 leak.■

   NO—Go to step 2.

2. Turn the ignition switch ON (II).

3. Check the radiator fan.

   Does the radiator fan run continuously?

   YES—Check the radiator fan circuit (see page 10-15), the radiator fan switch circuit (see page 10-17), and the radiator fan switch (see page 10-18). If they are OK, update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM.■

   NO—Replace the thermostat (see page 10-8).■

DTC Troubleshooting (cont'd)

DTC P0134: A/F Sensor (Sensor 1) Signal Stuck Lean

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 11-121).■

   NO – Go to step 2.

2. Reset the ECM/PCM (see page 11-4).

3. Start the engine. Hold the engine speed at 3,000rpm with no load (in Park or 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 11-121).■

   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/PCM.■

DTC P0137: Secondary HO2S (Sensor 2) Circuit Low Voltage

1. Reset the ECM/PCM (see page 11-4).

2. Start the engine. Hold the engine at 3,000 rpm with no load (in Park or neutral) until the radiator fan comes on.

3. Check the Secondary HO2S (Sensor 2) output voltage with the scan tool during acceleration using wide open throttle.

   Does the voltage stay at 0.6 V or more?

   YES – Intermittent failure, system is OK at this time. Check for poor connections or loose wires at C204 (located under the right side of the dash), C102 (located under the under-hood fuse/relay box), the Secondary HO2S (Sensor 2), and the ECM/PCM.■

   NO – Go to step 4.

4. Turn the ignition switch OFF.

5. Disconnect the Secondary HO2S (Sensor 2) 4P connector.

6. Start the engine.

7. Check the Secondary HO2S (Sensor 2) output voltage with the scan tool.

   Does the voltage stay at 0.3 V or less?

   YES – Go to step 8.

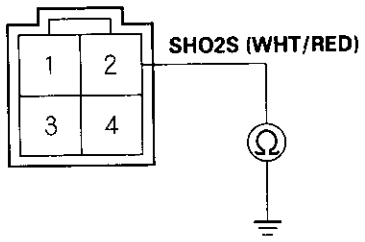
   NO – Replace the Secondary HO2S (Sensor 2).■

8. Turn the ignition switch OFF.

9. Disconnect ECM/PCM connector A (32P).

10. Check for continuity between Secondary HO2S (Sensor 2) 4P connector terminal No. 2 and body ground.

SECONDARY HO2S (SENSOR 2) 4P CONNECTOR



Terminal side of male terminals

Is there continuity?

YES – Repair short in the wire between the ECM/PCM (A23) and the Secondary HO2S (Sensor 2).■

NO – Substitute a known-good ECM/PCM and recheck (see page 11-6). If the symptom/indication goes away, replace the original ECM/PCM.■

DTC P0138: Secondary HO2S (Sensor 2) Circuit High Voltage

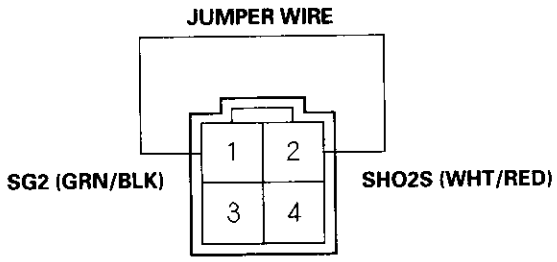
1. Reset the ECM/PCM (see page 11-4).
2. Start the engine. Hold the engine at 3,000 rpm with no load (in Park or neutral) until the radiator fan comes on.
3. Check the Secondary HO2S (Sensor 2) output voltage at 3,000 rpm with the scan tool.

   Does the voltage stay at 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 wires at the Secondary HO2S (Sensor 2), and the ECM/PCM.■
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).

(cont'd)

DTC Troubleshooting (cont'd)

8. Check the Secondary HO2S (Sensor 2) output voltage with the scan tool.

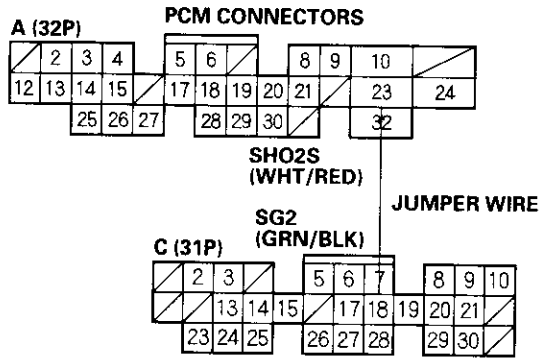
   Is there 0.9 V or more?

   YES – Go to step 10.

   NO – Replace the Secondary HO2S (Sensor 2). ■

9. Turn the ignition switch OFF.

10. Connect ECM/PCM connector terminals A23 and C18 with a jumper wire.



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 0.9 V or more?

    YES – Substitute a known-good ECM/PCM and recheck (see page 11-6). If the symptom/ndication goes away, replace the original ECM/PCM. ■

    NO – Repair open in the wire between the ECM/PCM (A23) and the Secondary HO2S (Sensor 2). ■

DTC P0139: Secondary HO2S (Sensor 2) Slow Response

1. Reset the ECM/PCM (see page 11-4).

2. Start the engine. Hold the engine at 3,000 rpm with no load (in Park or neutral) until the radiator fan comes on.

3. Check the secondary HO2S (Sensor 2) output voltage at 3,000 rpm with the scan tool.

   Does the voltage stay within 0.3 – 0.8 V for 2 minutes?

   YES – Replace the secondary HO2S (Sensor 2) (see page 11-121). ■

   NO – Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the secondary HO2S (Sensor 2), and at the ECM/PCM. ■

DTC P0141: Secondary HO2S (Sensor 2) Heater Circuit Malfunction

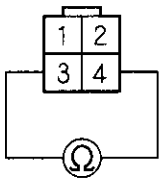
1. Reset the ECM/PCM (see page 11-4).
2. Start the engine.

   Is DTC P0141 indicated?

   YES – Go to step 3.

   NO – Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the secondary HO2S (Sensor 2) and at the ECM/PCM. ■
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 the HO2S 4P connector terminals No. 3 and No. 4.

SECONDARY HO2S (SENSOR 2) 4P CONNECTOR



Wire side of female terminals

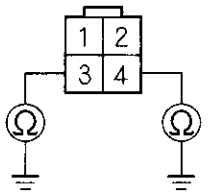
Is there 10 – 40 Ω ?

YES – Go to step 6.

NO – Replace the secondary HO2S (Sensor 2) (see page 11-121). ■

6. Check for continuity between body ground and the secondary HO2S (Sensor 2) 4P connector terminals No. 3 and No. 4 individually.

SECONDARY HO2S (SENSOR 2) 4P CONNECTOR



Wire side of female terminals

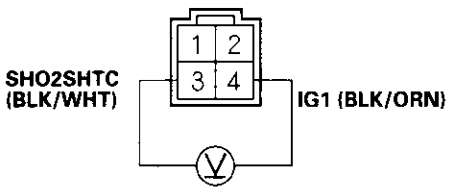
Is there continuity?

YES – Replace the secondary HO2S (Sensor 2) (see page 11-121). ■

NO – Go to step 7.

7. Turn the ignition switch ON (II).
8. Measure voltage between the 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.

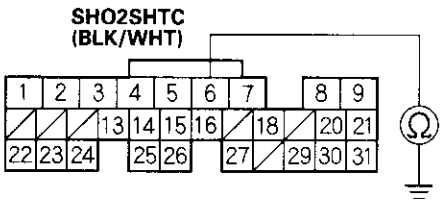
9. Turn the ignition switch OFF.
10. Disconnect ECM/PCM connector E (31P).

(cont'd)

DTC Troubleshooting (cont'd)

11. Check for continuity between ECM/PCM connector terminal E6 and body ground.

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

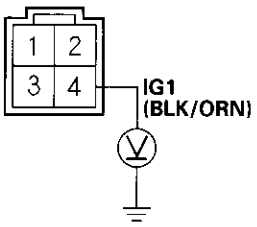
Is there continuity?

YES – Repair short in the wire between the ECM/PCM (E6) and the secondary HO2S (Sensor 2). ■

NO – Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM. ■

12. Measure voltage between the 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.

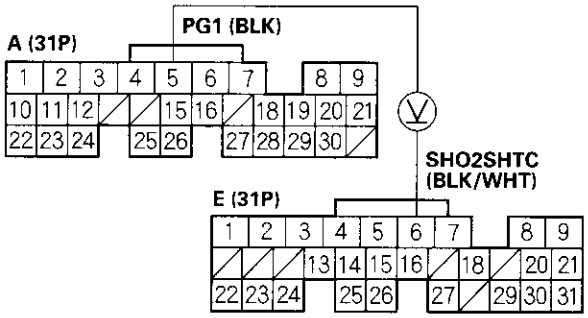
14. Reconnect the secondary HO2S (Sensor 2) 4P connector.

15. Disconnect ECM/PCM connector E (31P).

16. Turn the ignition switch ON (II).

17. Measure voltage between ECM/PCM connector terminal A5 and E6.

ECM/PCM CONNECTORS



Wire side of female terminals

Is there 0.1 V or less?

YES – Repair open in the wire between the ECM/PCM (E6) and the secondary HO2S (Sensor 2). ■

NO – Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM. ■

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
P1161, P1167: A/F Sensor (Sensor 1) heater
P0137, P0138: Secondary HO2S (Sensor 2)
P0141: Secondary HO2S (Sensor 2) heater
P0340, P0344: CMP Sensor
P1259: VTEC system

1. Check the fuel pressure (see page 11-156).

   Is the 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 11-163).■
   - If the pressure is too low, check the fuel pump, the fuel feed pipe, and the fuel filter, and replace the fuel pressure regulator (see page 11-163).■

2. Start the engine. Hold the engine at 3,000 rpm with no load (in Park or neutral) until the radiator fan comes on.

3. Check the A/F sensor (Sensor 1) output with the scan tool.

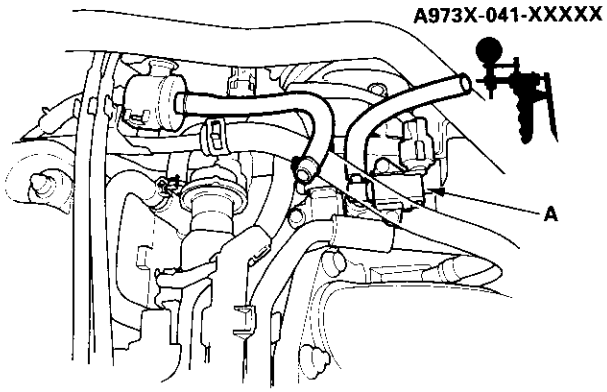
   Does it stay at less than 0.3 V or more than 0.6 V?

   YES – Replace the A/F sensor (Sensor 1) (see page 11-121).■

   NO – Go to step 4.

4. Turn the ignition switch OFF.

5. With a vacuum pump, apply vacuum to the evaporative emission (EVAP) canister purge valve (A) from the intake manifold side.



Does it hold vacuum?

YES – Check the valve clearances and adjust if necessary. If the valve clearances are OK, replace the injectors.■

NO – Replace the EVAP canister purge valve.■

DTC Troubleshooting (cont'd)

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
   P1259: VTEC system
   P1361, P1362: 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 and checks, 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 11-156).	• Low compression • Low quality fuel
Random misfire only during acceleration	Check fuel pressure (see page 11-156).	Malfunction in the VTEC system (see page 6-7)
Random misfire at high RPM, under load, or under random conditions	Check fuel pressure (see page 11-156).	Correct valve clearance (see page 6-11)

DTC P0301: No. 1 Cylinder Misfire

DTC P0302: No. 2 Cylinder Misfire

DTC P0303: No. 3 Cylinder Misfire

DTC P0304: No. 4 Cylinder Misfire

Special Tools Required
Terminal inspection feeler tool set 07XAJ-001000A

1. After checking and recording the freeze data, reset the ECM/PCM (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 at the injector of the problem cylinder.

   Does it click?

   YES – Go to step 3.

   NO – Go to step 30.

3. Turn the ignition switch OFF, and reset the ECM/PCM.

4. Exchange the ignition coil from the problem cylinder with one from another cylinder.

5. Test-drive the vehicle several times in the range of the freeze data or under various conditions if there was no freeze data.

6. Check the DTC or the 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 connector (no misfire at this time). Check the terminal fit at each coil connector with the terminal inspection feeler tool set, T/N 07XAJ-001000A. ■

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, and reset the ECM/PCM.

9. Exchange the spark plug from the problem cylinder with one from another cylinder.

10. Test-drive the vehicle several times in the range of the freeze data or under various conditions if there was no freeze data.

11. Check the DTC or the 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 (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, and reset the ECM/PCM.

14. Exchange the injector from the problem cylinder with one from the another cylinder.

15. Let the engine idle for 2 minutes.

(cont'd)

DTC Troubleshooting (cont'd)

16. Test-drive the vehicle several times in the range of the freeze data or under various conditions if there was no freeze data.

17. Check the DTC or the 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). Check the terminal fit at each injector with the terminal inspection feeler tool set, T/N 07XAJ-001000A. ■

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 (see page 11-119). ■

    NO – Go to step 19.

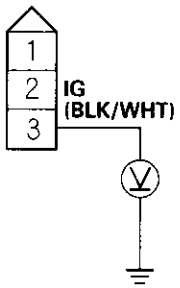
19. Turn the ignition switch OFF.

20. Disconnect the ignition coil 3P connector from the problem cylinder.

21. Turn the ignition switch ON (II).

22. Measure voltage between the ignition coil 3P connector terminal No. 3 and body ground.

IGNITION COIL 3P CONNECTOR



Wire side of female terminals

Is there battery voltage?

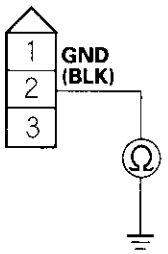
YES – Go to step 23.

NO – Repair open or short 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 the ignition coil 3P connector terminal No. 2 and body ground.

IGNITION COIL 3P CONNECTOR



Wire side of female terminals

Is there continuity?

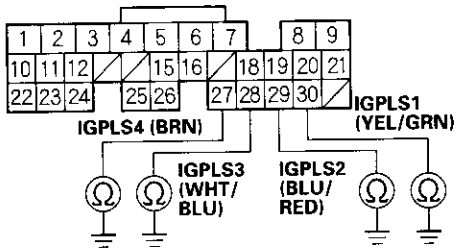
YES – Go to step 25.

NO – Repair open in the wire between the ignition coil and G101. ■

25. Disconnect ECM/PCM connector A (31P).

26. Check for continuity between body ground and the appropriate ECM/PCM connector terminal (see table).

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

PROBLEM CYLINDER	DTC	ECM/PCM 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

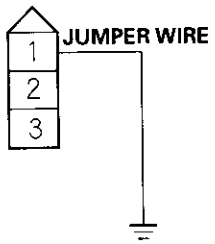
Is there continuity?

YES – Repair short in the wire between the ECM/PCM and the ignition coil.■

NO – Go to step 27.

27. Connect the appropriate ignition coil 3P connector terminal No. 1 and body ground with a jumper wire (see table).

IGNITION COIL 3P CONNECTOR

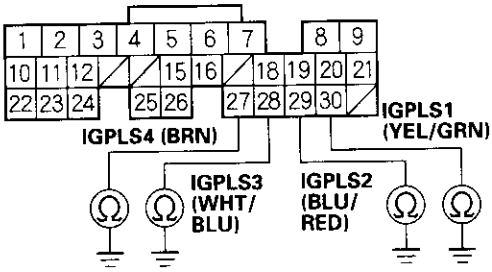


Wire side of female terminals

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 the appropriate ECM/PCM connector terminal (see table).

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

PROBLEM CYLINDER	DTC	ECM/PCM 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/PCM and the ignition coil.■

29. Do an engine compression and a cylinder leakdown test.

Did the engine pass both tests?

YES – Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM.■

NO – Repair the engine.■

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

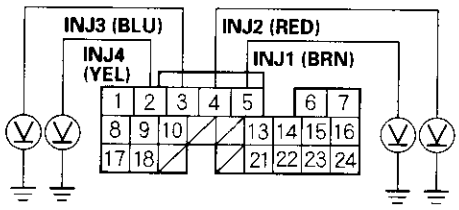
31. Turn the ignition switch ON (II).

(cont'd)

DTC Troubleshooting (cont'd)

32. Measure voltage between body ground and the appropriate ECM/PCM connector terminal (see table).

ECM/PCM CONNECTOR B (24P)



Wire side of female terminals

PROBLEM CYLINDER	DTC	ECM/PCM 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.

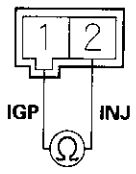
NO – Go to step 42.

33. Turn the ignition switch OFF.

34. Disconnect the injector 2P connector from the problem cylinder.

35. Measure the resistance between the 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 11-119). ■

36. Exchange the injector from the problem cylinder with one from another cylinder.

37. Reset the ECM/PCM.

38. Let the engine idle for 2 minutes.

39. Test-drive the vehicle several times in the range of the freeze data or under various conditions if there was no freeze data.

40. Check the DTC or the Temporary DTC with a scan tool.

Is DTC or Temporary DTC P0301, P0302, P0303, or P0304 indicated?

YES – Go to step 41.

NO – Intermittent misfire due to injector malfunction. Check the terminal fit at each injector with the terminal inspection feeler tool set, T/N 07XAJ-001000A. ■

41. 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/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM. ■

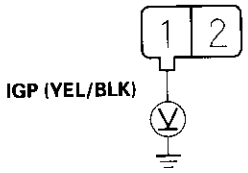
42. Turn the ignition switch OFF.

43. Disconnect the injector 2P connector from the problem cylinder.

44. Turn the ignition switch ON (II).

45. Measure voltage between the injector 2P connector terminal No. 1 and body ground.

INJECTOR 2P CONNECTOR



Wire side of female terminals

Is there battery voltage?

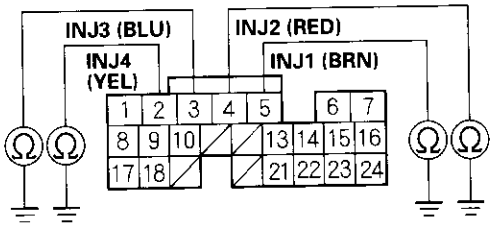
YES – Go to step 46.

NO – Repair open in the wire between the injector and the PGM-FI main relay. ■

46. Turn the ignition switch OFF.

47. Check for continuity between body ground and the appropriate ECM/PCM connector terminal (see table).

ECM/PCM CONNECTOR B (24P)



Wire side of female terminals

PROBLEM CYLINDER	DTC	ECM/PCM TERMINAL	WIRE COLOR
No. 1	P0301	B5	BRN
No. 2	P0302	B4	RED
No. 3	P0303	B3	BLU
No. 4	P0304	B2	YEL

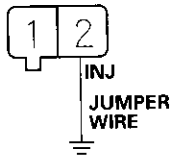
Is there continuity?

YES – Repair short in the wire between the ECM/PCM and the injector. ■

NO – Go to step 48.

48. Connect the appropriate injector 2P connector terminal No. 2 to body ground with a jumper wire (see table).

INJECTOR 2P CONNECTOR

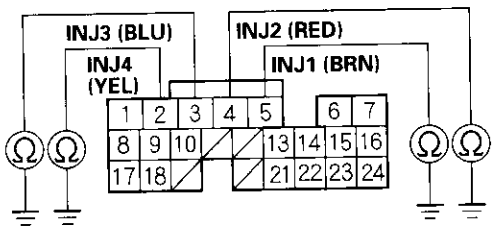


Wire side of female terminals

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 the appropriate ECM/PCM connector terminal (see table).

ECM/PCM CONNECTOR B (24P)



Wire side of female terminals

PROBLEM CYLINDER	DTC	ECM/PCM 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/PCM and the injector. ■

DTC Troubleshooting (cont'd)

DTC P0325: Knock Sensor Circuit Malfunction

NOTE: Information marked with *1 applies to K20A3 engine; *2 applies to K20A2 engine.

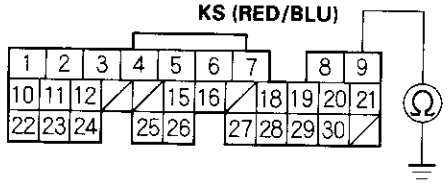
1. Reset the ECM/PCM (see page 11-4).
2. Start the engine. Hold the engine at 3,000 rpm with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
3. Hold the engine at 3,000 – 4,000 rpm for at least 60 seconds.

   Is DTC P0325 indicated?

   YES – Go to step 4.

   NO – Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the knock sensor and at the ECM/PCM.
4. Turn the ignition switch OFF.
5. Disconnect the starter sub-harness 8P*1 (6P)*2 connector.
6. Check for continuity between ECM/PCM connector terminal A9 and body ground.

ECM/PCM CONNECTOR A (31P)



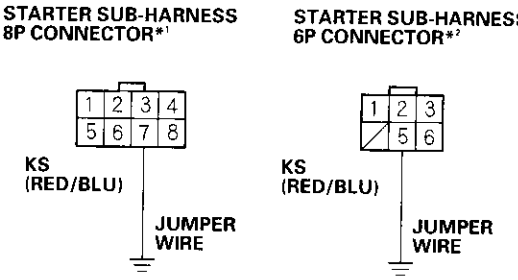
Wire side of female terminals

Is there continuity?

YES – Repair short in the wire between the ECM/PCM (A9) and the starter sub-harness 8P*1 (6P)*2 connector. ■

NO – Go to step 7.

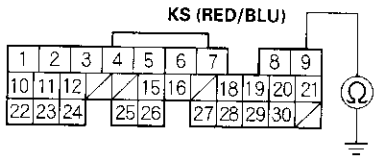
7. Connect the starter sub-harness 8P*1 (6P)*2 connector terminal No. 7*1 (No. 5)*2 to body ground with a jumper wire.



Wire side of female terminals

8. Check for continuity between body ground and ECM/PCM connector terminal A9.

ECM/PCM 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/PCM (A9) and the starter sub-harness 8P*1 (6P)*2 connector. ■

9. Check the starter sub-harness between 8P*1 (6P)*2 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/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM. ■

   NO – Replace the original knock sensor and/or starter sub-harness (see page 11-124). ■

DTC P0335: CKP Sensor No Signal

DTC P0336: CKP Sensor Intermittent Interruption

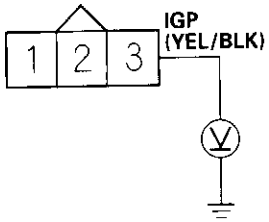
1. Reset the ECM/PCM (see page 11-4).
2. Start the engine.

   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 wires at the CKP sensor and at the ECM/PCM. ■
3. Turn the ignition switch OFF.
4. Disconnect the CKP sensor 3P connector.
5. Turn the ignition switch ON (II).
6. Measure voltage between the CKP sensor 3P connector terminal No. 3 and body ground.

CKP SENSOR 3P CONNECTOR



Wire side of female terminals

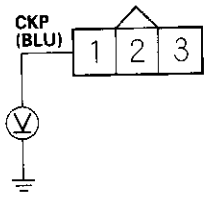
Is there battery voltage?

YES – Go to step 7.

NO – Repair open in the wire between the PGM-FI main relay 1 and the CKP sensor. ■

7. Measure voltage between the CKP sensor 3P connector terminal No. 1 and body ground.

CKP SENSOR 3P CONNECTOR



Wire side of female terminals

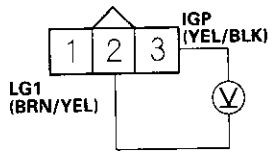
Is there about 5 V?

YES – Go to step 8.

NO – Go to step 10.

8. Measure voltage between the 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/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM. ■

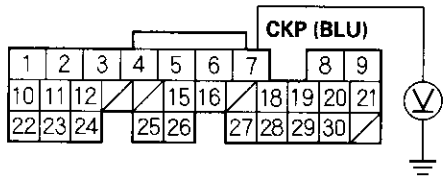
   NO – Replace the original CKP sensor (see page 11-122). ■

(cont'd)

DTC Troubleshooting (cont'd)

10. Measure voltage between ECM/PCM connector terminal A7 and body ground.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there about 5 V?

YES – Repair open in the wire between the ECM/PCM (A7) and the CKP sensor. ■

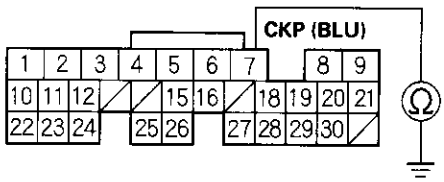
NO – Go to step 11.

11. Turn the ignition switch OFF.

12. Disconnect ECM/PCM connector A (31P).

13. Check for continuity between ECM/PCM connector terminal A7 and body ground.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there continuity?

YES – Repair short in the wire between the ECM/PCM (A7) and the CKP sensor. ■

NO – Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM. ■

DTC P0500: VSS Circuit Malfunction

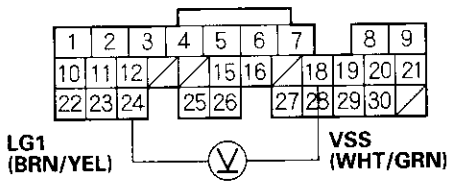
1. Test-drive the vehicle.
2. Check the vehicle speed with the scan tool.

   Is the correct speed indicated?

   YES – Intermittent failure, system is OK at this time. Check for poor connections or loose wires 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

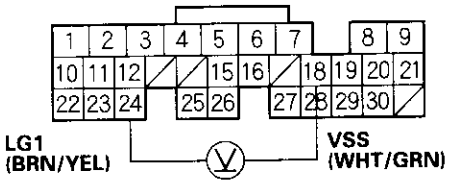
Does the voltage pulse between 0 V and 5 V or battery voltage?

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 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 for 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 22-67). ■

DTC Troubleshooting (cont'd)

DTC P0563: ECM/PCM Power Source Circuit Unexpected Voltage

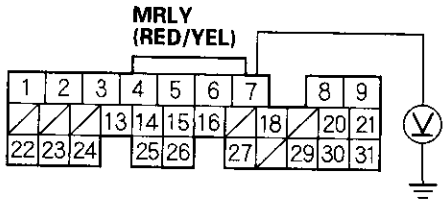
1. Reset the ECM/PCM (see page 11-4).
2. Turn the ignition switch OFF.
3. Wait 5 seconds.
4. Turn the ignition switch ON (II).

   Is DTC P0563 indicated?

   YES – Go to step 5.

   NO – Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the No. 6 ECU (ECM/PCM) (15 A) fuse in the under-hood fuse/relay box and at the ECM/PCM. ■
5. Turn the ignition switch OFF.
6. Disconnect ECM/PCM connector E (31P).
7. Measure voltage between ECM/PCM connector terminal E7 and body ground.

ECM/PCM CONNECTOR E (31P)



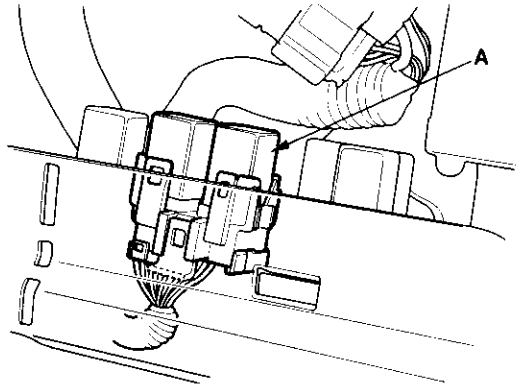
Wire side of female terminals

Is there battery voltage?

YES – Go to step 11.

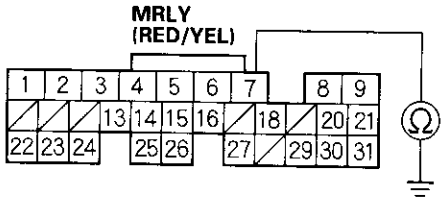
NO – Go to step 8.

8. Remove the glove box.
9. Remove PGM-FI main relay 1 (A).



10. Check for continuity between ECM/PCM connector terminal E7 and body ground.

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

Is there continuity?

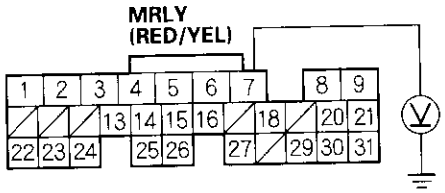
YES – Repair short in the wire between the ECM/PCM (E7) and PGM-FI main relay 1. ■

NO – Replace PGM-FI main relay 1.

11. Reconnect ECM/PCM connector E (31P).

12. Measure voltage between ECM/PCM connector terminal E7 and body ground.

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

Is there battery voltage?

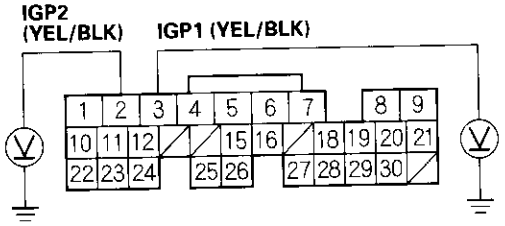
YES – Go to step 13.

NO – Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM. ■

13. Disconnect ECM/PCM connector A (31P).

14. Measure voltage between body ground and ECM/PCM connector terminals A3 and A2 individually.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

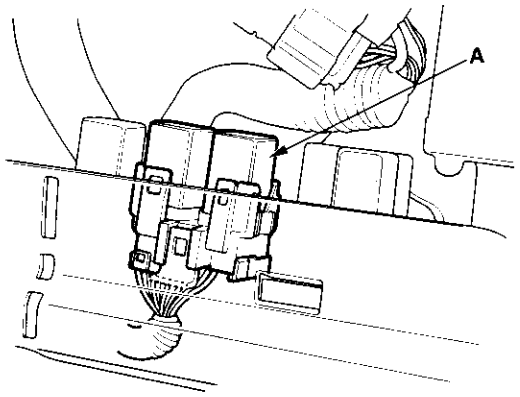
Is there battery voltage?

YES – Go to step 15.

NO – Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM. ■

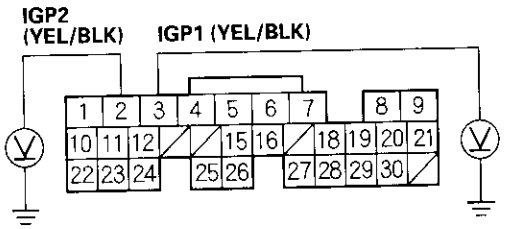
15. Remove the glove box.

16. Remove PGM-FI main relay 1 (A).



17. Measure voltage between body ground and ECM/PCM connector terminals A3 and A2 individually.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there battery voltage?

YES – Repair short to power in the wire between the ECM/PCM (A2, A3) and PGM-FI main relay 1. ■

NO – Replace PGM-FI main relay 1. ■

DTC Troubleshooting (cont'd)

DTC P1106: BARO Sensor Range/Perfomance Problem

1. Reset the ECM/PCM (see page 11-4).
2. Start the engine. Hold the engine at 3,000 rpm with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
3. Test-drive with the A/T in 2nd (2) position, or the M/T 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/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM.■

   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/PCM (see page 11-4).
2. Turn the ignition switch ON (II).

   Is DTC P1107 or P1108 indicated?

   YES—Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM.■

   NO—Intermittent failure, system is OK at this time.■

DTC P1162: A/F Sensor (Sensor 1) Circuit Malfunction

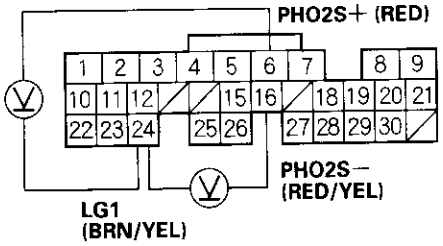
1. Reset the ECM/PCM (see page 11-4).
2. Start the engine, and wait at least 2 minutes.

   Is DTC P1162 indicated?

   YES – Go to step 3.

   NO – Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the AF Sensor (Sensor 1) and at the ECM/PCM. ■
3. Turn the ignition switch OFF.
4. Start the engine.
5. Measure voltage between ECM/PCM connector terminals A6 and A24 and between A16 and A24.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

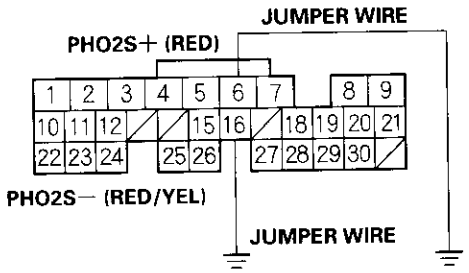
Is there 2.5 – 3.0 V?

YES – Go to step 6.

NO – Go to step 10.

6. Turn the ignition switch OFF.
7. Disconnect the AF Sensor 4P connector and ECM/PCM connector A (31P).
8. Connect ECM/PCM connector terminals A6, A16, and body ground with a jumper wire.

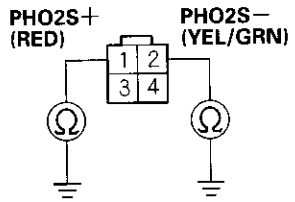
ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

9. Check for continuity between the A/F Sensor (Sensor 1) 4P connector terminal No. 1, No. 2, and body ground individually.

A/F SENSOR (SENSOR 1) 4P CONNECTOR



Wire side of female terminals

Is there continuity?

YES – Replace the A/F Sensor (Sensor 1) (see page 11-121). ■

NO – Repair open in the wire between the A/F Sensor (Sensor 1) and the ECM/PCM (A6 or A16). ■

(cont'd)

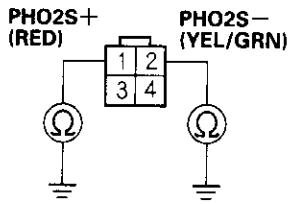
DTC Troubleshooting (cont'd)

10. Turn the ignition switch OFF.

11. Disconnect the AF Sensor 4P connector and ECM/PCM connector A (31P).

12. Check for continuity between body ground and the A/F Sensor (Sensor 1) 4P connector terminals No. 2 and No. 1.

A/F SENSOR (SENSOR 1) 4P CONNECTOR



Wire side of female terminals

Is there continuity?

YES – Repair short in the wire between the AF Sensor (Sensor 1) and the ECM/PCM (A6 or A16). ■

NO – Replace the A/F Sensor (Sensor 1) (see page 11-121). ■

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/PCM (see page 11-4).

2. Start the engine. Hold the engine at 3,000 rpm with no load (in Park or neutral) until the radiator fan comes on.

3. Test-drive under following conditions.

   - 55 mph (89 km/n) steady speed
   - A/T in D4 position (M/T in 5th gear)
   - Until readiness code or Temporary DTC P1163 and/or P1163 comes on

4. Check for a Temporary DTC with the scan tool.

   Is Temporary DTC P1163 and/or P1163 indicated?

   YES – Replace the A/F Sensor (Sensor 1) (see page 11-121). ■

   NO – Intermittent failure , system is OK at this time. Check for poor connections or loose wires at the A/F Sensor (Sensor 1) and the ECM/PCM. ■

DTC P1164: A/F Sensor (Sensor 1) Range/ Performance Problem

1. Reset the ECM/PCM (see page 11-4).
2. Start the engine. Hold the engine at 3,000 rpm with no load (in Park or neutral) until the radiator fan comes on.
3. Check for a Temporary DTC with the scan tool.

   Is Temporary DTC P1164 indicated?

   YES – Replace the A/F Sensor (Sensor 1) (see page 11-121).■

   NO – Go to step 4.

4. Test-drive in D3 position (M/T 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 readiness code or Temporary DTC P1164 comes on.

   Is Temporary DTC P1164 indicated?

   YES – Replace the A/F Sensor (Sensor 1) (see page 11-121).■

   NO – Intermittent failure, system is OK at this time. Check for poor connections or loose wires at C101 (located under the right side of the dash), C401 (located under the left side of the dash), the A/F Sensor relay, the A/F Sensor (Sensor 1) and the ECM/PCM.■

DTC Troubleshooting (cont'd)

DTC P1166: A/F Sensor (Sensor 1) Heater Circuit Malfunction

1. Reset the ECM/PCM (see page 11-4).
2. Start the engine.

   Is DTC P1166 indicated?

   YES – Go to step 3.

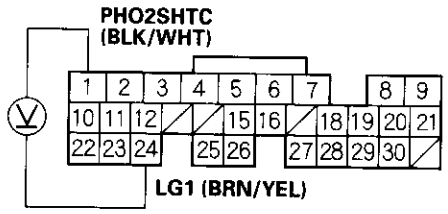
   NO – Intermittent failure, system is OK at this time. Check for poor connections or loose wires at C101 (located under the right side of the dash), C401 (located under the left side of the dash), C402 (located under under the left side of the dash) the A/F Sensor relay, the A/F Sensor (Sensor 1) and the ECM/PCM. ■
3. Check the following fuse:
   - No. 14 OPTION (30A) fuse in under-hood fuse/relay box.
   - No. 2 + B LAF 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/PCM connector terminals A1 and A24, 30 seconds after the ignition switch is turned ON (II).

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

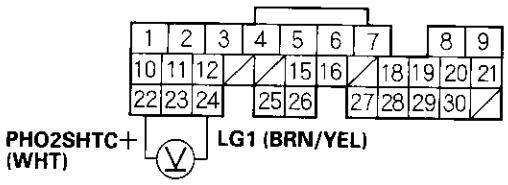
Is there battery voltage?

YES – Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM. ■

NO – Go to step 5.

5. Measure voltage between ECM/PCM connector terminals A22 and A24.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there battery voltage?

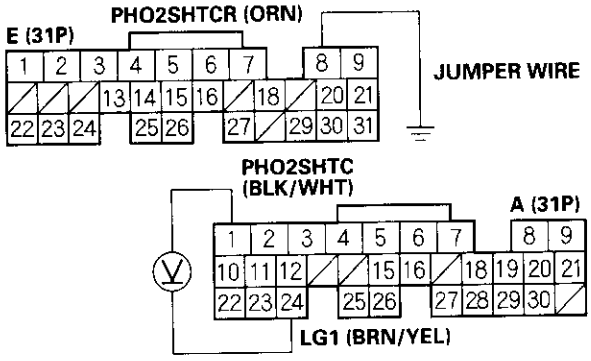
YES – Go to step 6.

NO – Go to step 10.

6. Turn the ignition switch OFF.
7. Disconnect ECM/PCM connector E (31P).
8. Turn the ignition switch ON (II).

9. Connect ECM/PCM connector terminal E8 to body ground with a jumper wire, then measure voltage between ECM/PCM connector terminals A1 and A24.

ECM/PCM CONNECTORS



Wire side of female terminals

Is there battery voltage?

YES – Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM. ■

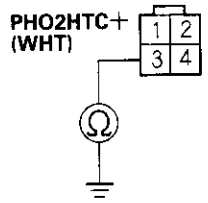
NO – Repair open or short in the wire between the A/F Sensor (Sensor 1) and ECM/PCM (A1). ■

10. Turn the ignition switch OFF.

11. Disconnect the ECM/PCM 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/PCM (A22). ■

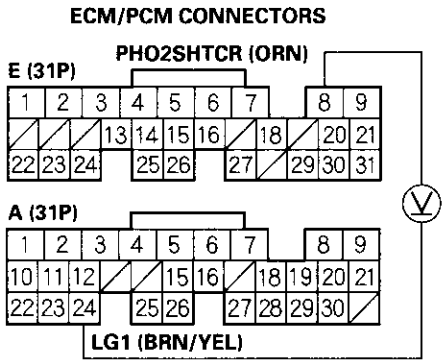
NO – Go to step 13.

(cont'd)

DTC Troubleshooting (cont'd)

13. Turn the ignition switch ON (II).

14. Measure voltage between ECM/PCM connector terminals E8 and A24.



Wire side of female terminals

Is there battery voltage?

YES – Repair open in the wire between the ECM/PCM (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 System Malfunction

NOTE: If DTC P1162 is stored the same time as DTC P1167, troubleshoot DTC P1162 first, then troubleshoot DTC P1167.

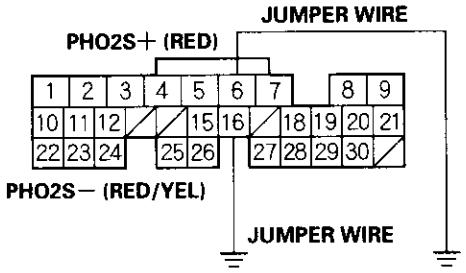
1. Reset the ECM/PCM (see page 11-4).
2. Start the engine. Wait for at least 80 seconds.

   Is DTC P01167 indicated?

   YES – Go to step 3.

   NO – Intermittent failure, system is OK at this time. Check for poor connections or loose wires at C101 (located under the right side of the dash), C401 (located under left side of the dash), C402 (located under left side of the dash) the A/F Sensor relay, the A/F Sensor (Sensor 1), and the ECM/PCM. ■
3. Disconnect the AF Sensor 4P connector and ECM/PCM connector A (31P).
4. Connect ECM/PCM connector terminals A6 and A16 to body ground with a jumper wire.

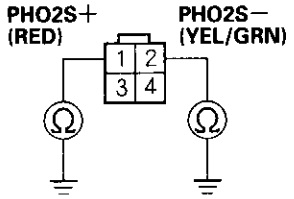
ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

5. Check for continuity between A/F Sensor (Sensor 1) 4P connector terminal No. 1 and No. 2 to body ground individually.

A/F SENSOR (SENSOR 1) 4P CONNECTOR



Wire side of female terminals

Is there continuity?

YES – Replace the A/F Sensor (Sensor 1) (see page 11-121). ■

NO – Repair open or short in the wire between the A/F Sensor (Sensor 1) and ECM/PCM (A6 or A16). ■

DTC Troubleshooting (cont'd)

DTC P1297: ELD Circuit Low Voltage

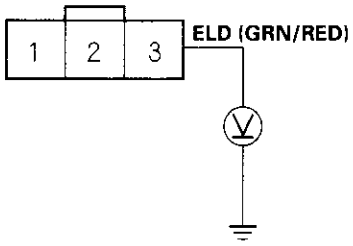
1. Reset the ECM/PCM (see page 11-4).
2. Start the engine.
3. Turn on the headlights.

   Is DTC P1297 indicated?

   YES – Go to step 4.

   NO – Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the ELD and at the ECM/PCM. ■
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

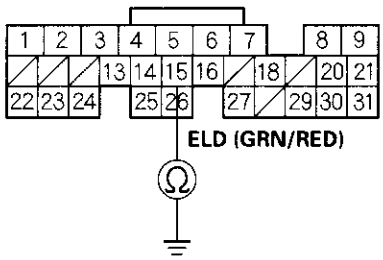
Is there about 5 V?

YES – Replace the ELD. ■

NO – Go to step 8.

8. Turn the ignition switch OFF.
9. Disconnect ECM/PCM connector E (31P).
10. Check for continuity between body ground and ECM/PCM connector terminal E15.

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

Is there continuity?

YES – Repair short in the wire between the ECM/PCM (E15) and the ELD. ■

NO – Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM. ■

DTC P1298: ELD Circuit High Voltage

1. Reset the ECM/PCM (see page 11-4).
2. Start the engine.
3. Turn on the headlights.

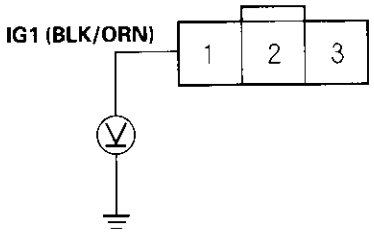
   Is DTC P1298 indicated?

   YES – Go to step 4.

   NO – Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the ELD and at the ECM/PCM.■

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

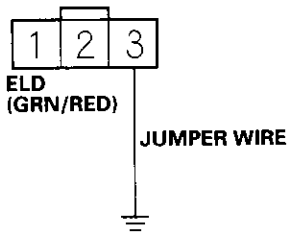
Is there battery voltage?

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 and body ground with a jumper wire.

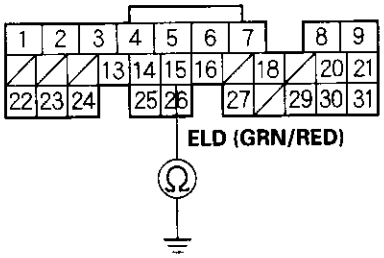
ELD 3P CONNECTOR



Wire side of female terminals

10. Disconnect ECM/PCM connector E (31P).
11. Check for continuity between body ground and ECM/PCM connector terminal E15.

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

Is there continuity?

YES – Go to step 12.

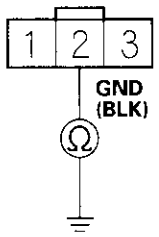
NO – Repair open in the wire between the ECM/PCM (E15) and the ELD.■

(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.

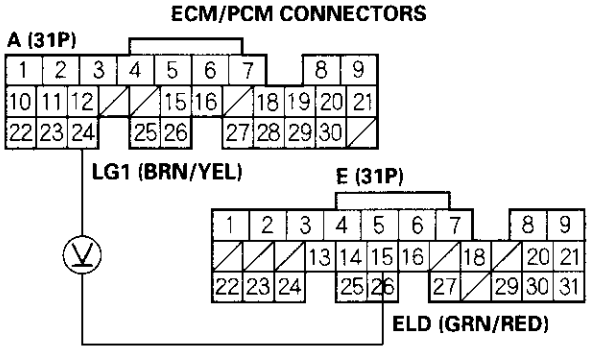
NO – Repair open in the wire between the ELD and G301. ■

13. Reconnect the ELD 3P connector and ECM/PCM connector E (31P).

14. Start the engine and let it idle.

15. While measuring voltage between ECM/PCM connector terminals A24 and E15, turn the headlights on (high).

ECM/PCM CONNECTORS



Wire side of female terminals

Does the voltage drop?

YES – Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM. ■

NO – Replace the ELD. ■

DTC P1361: TDC Sensor Intermittent Signal Interruption

DTC P1362: TDC Sensor No Signal

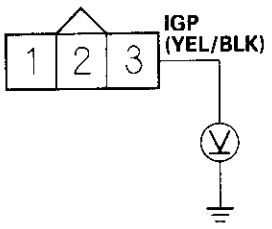
1. Reset the ECM/PCM (see page 11-4).
2. Start the engine.

   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 wires at the TDC sensor and at the ECM/PCM.■
3. Turn the ignition switch OFF.
4. Disconnect the TDC sensor 3P connector.
5. Turn the ignition switch ON (II).
6. Measure voltage between the TDC sensor 3P connector terminal No. 3 and body ground.

TDC SENSOR 3P CONNECTOR



Wire side of female terminals

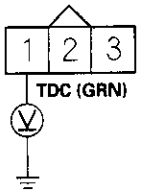
Is there battery voltage?

YES—Go to step 7.

NO—Repair open in the wire between PGM-FI main relay 1 and the TDC sensor.■

7. Measure voltage between TDC sensor 3P connector terminal No. 1 and body ground.

TDC SENSOR 3P CONNECTOR



Wire side of female terminals

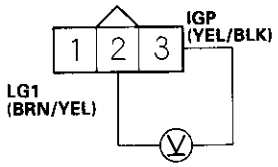
Is there about 5 V?

YES—Go to step 8.

NO—Go to step 10.

8. Measure voltage between TDC sensor 3P connector terminals No. 2 and No. 3.

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 TDC sensor and G101.■

9. Substitute a known-good TDC sensor and recheck.

   Is DTC P1361 and/or P1362 indicated?

   YES—Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM.■

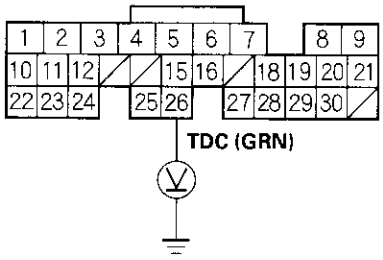
   NO—Replace the original TDC sensor (see page 11-123).■

(cont'd)

DTC Troubleshooting (cont'd)

10. Measure voltage between ECM/PCM connector terminal A26 and body ground.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there about 5 V?

YES Repair open in the wire between the ECM/PCM (A26) and TDC sensor.■

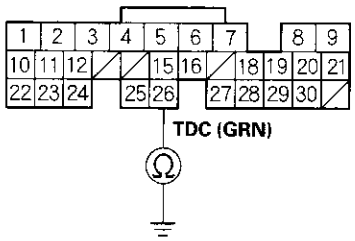
NO – Go to step 11.

11. Turn the ignition switch OFF.

12. Disconnect ECM/PCM connector A (31P).

13. Check for continuity between ECM/PCM connector terminal A26 and body ground.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the ECM/PCM (A26) and the TDC sensor.■

NO—Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM.■

DTC P1607: Malfunction in ECM/PCM Internal Circuit

1. Reset the ECM/PCM (see page 11-4).

2. Turn the ignition switch ON (II).

3. Wait 40 seconds.

Is DTC P1607 indicated?

YES – Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM.■

NO—Intermittent failure, system is OK at this time.■

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/PCM?

   YES – Go to step 3.

   NO – Go to troubleshooting "DLC Circuit Troubleshooting" (see page 11-117).

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 74. But if the MIL sometimes works normally, first check for these problems.

   - An intermittent short in the wire between the ECM/PCM (E29) and the Data Link Connector (DLC).
   - An intermittent short in the wire between the ECM/PCM (E31) and the gauge assembly.
   - The readiness codes are not set (see page 11-54). (This is indicated if the MIL brinks several times after you turn the ignition switch ON (II) and wait about 20 seconds.)

   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 (USA: 40A, Canada: 50A) fuse in the under-hood fuse/relay box.
   - A loose No. 6 ECU (ECM/PCM) (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/PCM terminal E31.
   - An intermittent open in the GRN/ORN wire between the ECM/PCM (E31) and the gauge assembly.
   - An intermittent short in the wire between the ECM/PCM (A21) and the manifold absolute pressure (MAP) sensor, intake manifold runner control (IMRC) valve position sensor, or countershaft speed sensor (A/T).
   - An intermittent short in the wire between the ECM/PCM (A20) and the throttle position (TP) sensor, mainshaft speed sensor (A/T).
   - An intermittent short in the wire between the ECM/PCM (E5) and the fuel tank pressure (FTP) sensor.

6. Check the low oil pressure light (with the ignition switch ON).

   Is the low oil pressure light on?

   YES – Go to step 9.

   NO – Go to step 7.

7. Inspect the No. 10 METER (7.5 A) fuse in the under-dash fuse/relay box.

   Is the fuse OK?

   YES – Go to step 8.

   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. ■

8. Inspect the No. 20 IG (USA: 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 (USA: 40A, Canada: 50A) fuse and the gauge assembly. If the wires are OK, test the ignition switch (see page 22-93).

   NO – Repair short in the wire between No. 20 IG (USA: 40A, Canada: 50A) fuse and the under-dash fuse/relay box. Also replace the No. 20 IG (USA: 40A, Canada: 50A) fuse. ■

(cont'd)

MIL Circuit Troubleshooting (cont'd)

9. Try to start the engine.

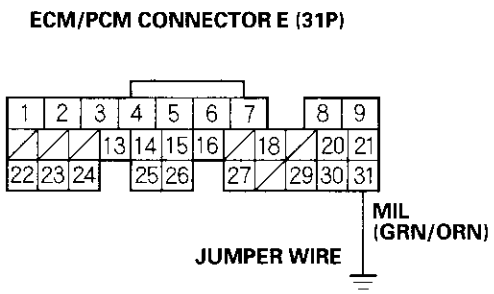
   Does the engine start?

   YES – Go to step 10.

   NO – Go to step 13.

10. Turn the ignition switch OFF.

11. Connect ECM/PCM connector terminal E31 and body ground with a jumper wire.



Wire side of female terminals

12. Turn the ignition switch ON (II).

    Is the MIL on?

    YES – Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM. ■

    NO – Check for an open in the wire between the ECM/PCM (E31) and the gauge assembly. Also check for a blown MIL bulb. If the wires and the bulb are OK, replace the gauge assembly. ■

13. Turn the ignition switch OFF.

14. Inspect the No. 6 ECU (ECM/PCM) (15A) fuse in the under-hood fuse/relay box.

    Is the fuse OK?

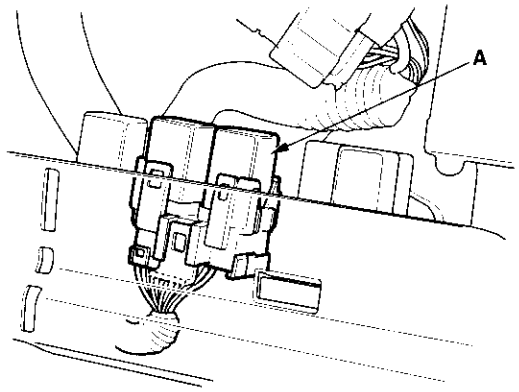
    YES – Go to step 22.

    NO – Go to step 15.

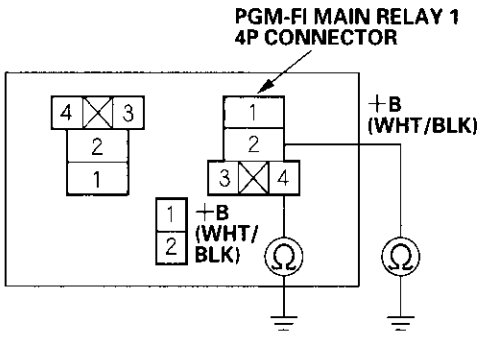
15. Remove the blown No. 6 ECU (ECM/PCM) (15A) fuse in the under-dash fuse/relay box.

16. Remove the glove box (see page 20-65).

17. Remove PGM-FI main relay 1 (A).



18. Check for continuity between body ground and the PGM-FI main relay 1 4P connector terminals No. 2 and No. 4 individually.



Wire side of female terminals

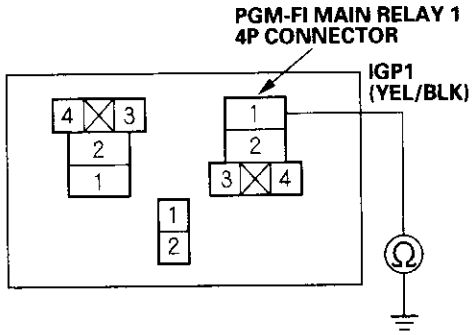
Is there continuity?

YES – Repair short in the wire between the No. 6 ECU (ECM/PCM) (15A) fuse and PGM-FI main relay 1. Also replace the No. 6 ECU (ECM/PCM) (15A) fuse. ■

NO – Go to step 19.

19. Disconnect each of the components or 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/PCM connector A (31P)
    - Each injector 2P connector
    - Idle air control (IAC) valve 3P connector
    - Top dead center (TDC) sensor 3P connector
    - Crankshaft position (CKP) sensor 3P connector



Wire side of female terminals

Is there continuity?

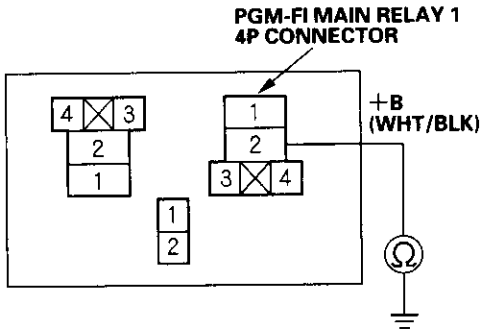
YES – Go to step 20.

NO – Replace the component that made the short to body ground go away when disconnected. If the item is the ECM/PCM, update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM.
Also replace the No. 6 ECU (ECM/PCM) (15 A) fuse.■

20. Disconnect the connectors of all these components.

    - PGM-FI main relay 2
    - ECM/PCM connector A (31P)
    - Injectors
    - Idle air control (IAC) valve
    - Top dead center (TDC) sensor
    - Crankshaft position (CKP) sensor

21. Check for continuity between PGM-FI main relay 1 4P connector terminal No. 2 and body ground.



Wire side of female terminals

Is there continuity?

YES – Repair short in the wire between PGM-FI main relay 1 and each item. Also replace the No. 6 ECU (ECM/PCM) (15A) fuse.■

NO – Replace PGM-FI main relay 1. Also replace the No. 6 ECU (ECM/PCM) (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 in the under-dash fuse/relay box.

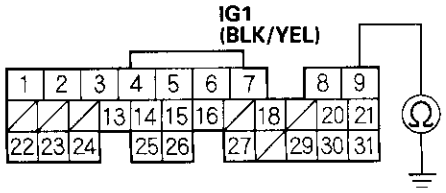
24. Disconnect ECM/PCM connector E (31P).

(cont'd)

MIL Circuit Troubleshooting (cont'd)

25. Check for continuity between ECM/PCM connector terminal E9 and body ground.

ECM/PCM CONNECTOR E (31P)



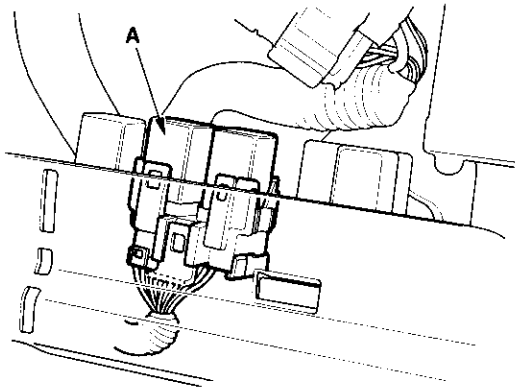
Wire side of female terminals

Is there continuity?

YES – Go to step 26.

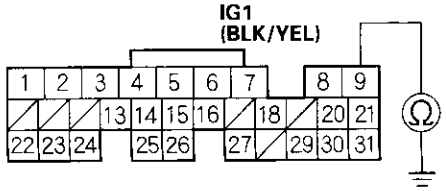
NO – Replace the No. 17 FUEL PUMP (15 A) fuse, and update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM. ■

26. Remove PGM-FI main relay 2 (A).



27. Check for continuity between ECM/PCM connector terminal E9 and body ground.

ECM/PCM 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/PCM (E9), or 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.

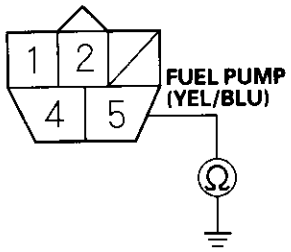
28. Remove the rear seat cushion (see page 20-82).

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



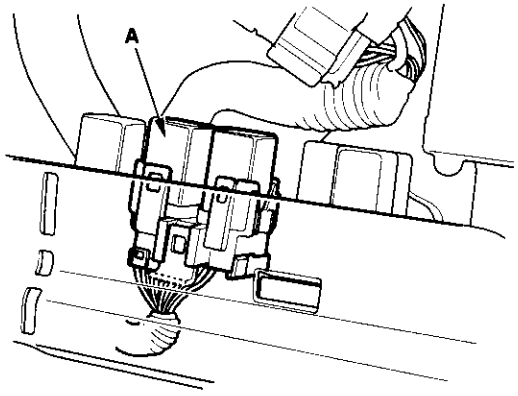
Wire side of female terminals

Is there continuity?

YES – Repair short in the wire between the fuel pump and PGM-FI main relay 2. Also replace the No. 17 FUEL PUMP (15A) fuse.■

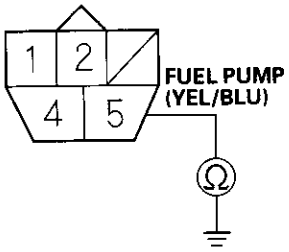
NO – Go to step 32.

32. Reinstall PGM-FI main relay 2 (A).



33. Check for continuity between the fuel pump 5P connector terminal No. 5 and body ground.

FUEL PUMP 5P CONNECTOR



Wire side of female terminals

Is there continuity?

YES – Replace PGM-FI main relay 2. Also replace the No. 17 FUEL PUMP (15A) fuse.■

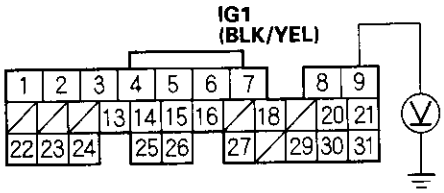
NO – Check the fuel pump, and replace it if necessary. Also replace the No. 17 FUEL PUMP (15A) fuse.■

34. Disconnect ECM/PCM connector E (31P).

35. Turn the ignition switch ON (II).

36. Measure voltage between ECM/PCM connector terminal E9 and body ground.

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

Is there battery voltage?

YES – Go to step 37.

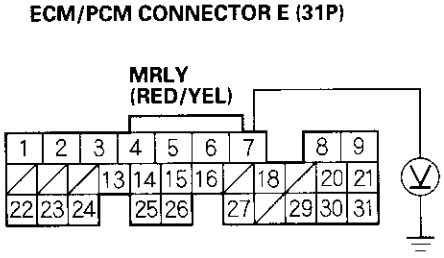
NO – Repair open in the wire between the No. 17 FUEL PUMP (15A) fuse and the ECM/PCM (E9).■

(cont'd)

MIL Circuit Troubleshooting (cont'd)

37. Turn the ignition switch OFF.

38. Measure voltage between ECM/PCM connector terminal E7 and body ground.



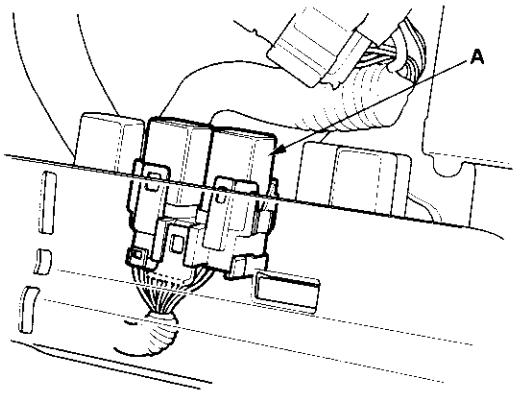
Wire side of female terminals

Is there battery voltage?

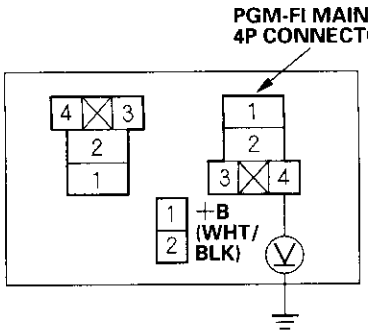
YES – Go to step 42.

NO – Go to step 39.

39. Remove PGM-FI main relay 1 (A).



40. Measure voltage between PGM-FI main relay 1 4P connector terminal No. 4 and body ground.



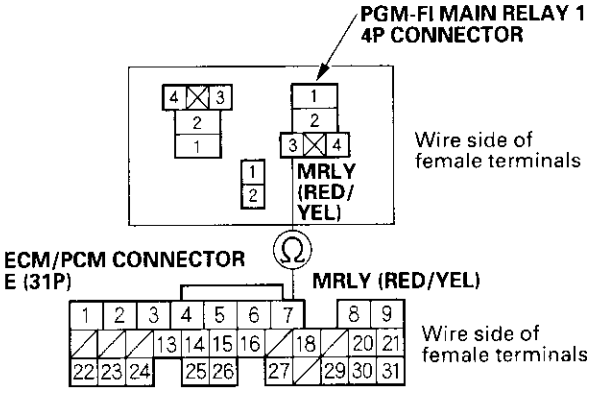
Wire side of female terminals

Is there battery voltage?

YES – Go to step 41.

NO – Repair open in the wire between the No. 6 ECU (ECM/PCM) (15A) fuse and PGM-FI main relay 1.■

41. Check for continuity between PGM-FI main relay 1 4P connector terminal No. 3 and ECM/PCM connector terminal E7.



Is there continuity?

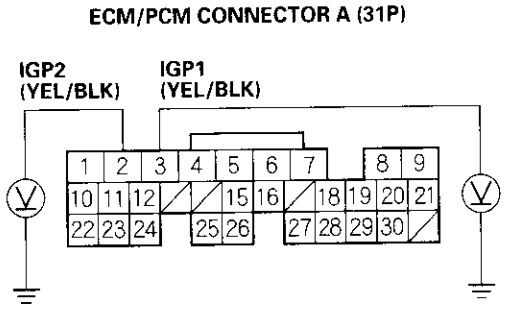
YES – Test PGM-FI main relay 1 (see page 22-55). If the relay is OK, update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM.■

NO – Repair open in the wire between PGM-FI main relay 1 and the ECM/PCM (E7).■

42. Reconnect ECM/PCM connector E (31P).

43. Turn the ignition switch ON (II).

44. Measure voltage between body ground and ECM/PCM connector terminals A2 and A3 individually.



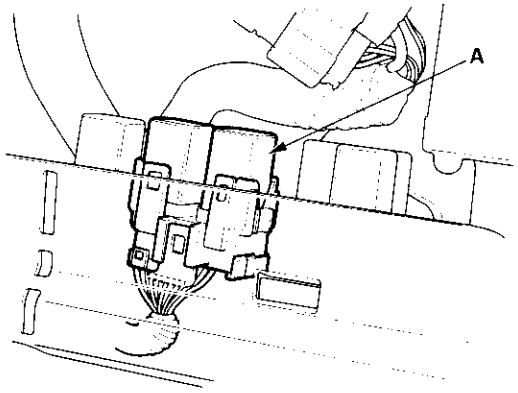
Is there battery voltage?

YES - Go to step 51.

NO - Go to step 45.

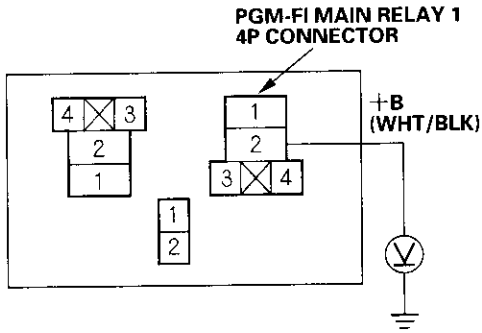
45. Turn the ignition switch OFF.

46. Remove 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.



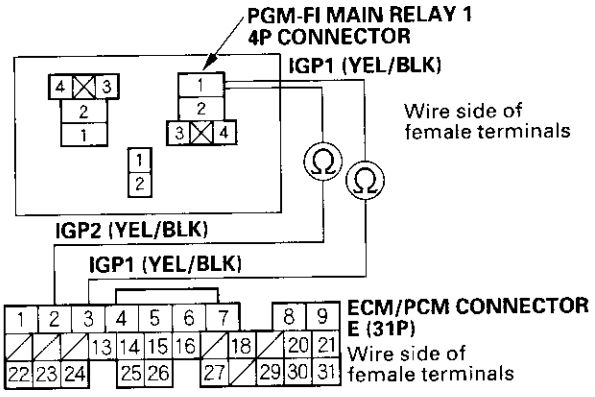
Is there battery voltage?

YES - Go to step 49.

NO - Repair open in the wire between the No. 6 ECU (ECM/PCM) (15A) fuse and 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/PCM connector terminals A2 and A3 individually.



Is there continuity?

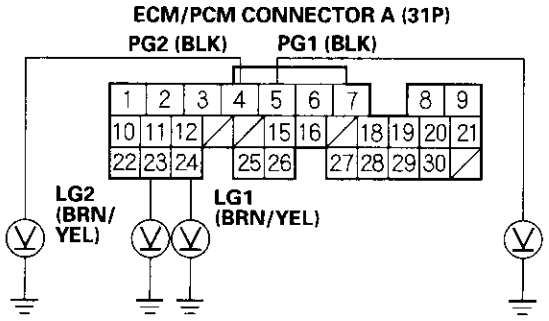
YES - Replace PGM-FI main relay 1.■

NO - Repair open in the wire between PGM-FI main relay 1 and the ECM/PCM (A2, A3).■

(cont'd)

MIL Circuit Troubleshooting (cont'd)

51. Measure voltage between body ground and ECM/PCM connector terminals A4, A5, A23, and A24 individually.



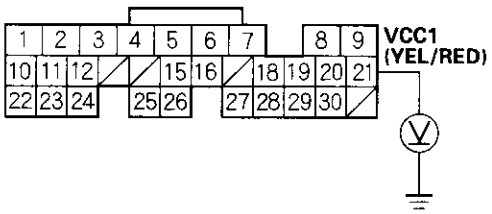
Wire side of female terminals

Is there more than 0.2 V?

YES – Repair open in the wire(s) that had more than 0.2 V between G101 and the ECM/PCM (A4, A5, A23, A24). ■

NO – Go to step 52.

52. Measure voltage between body ground and ECM/PCM connector terminal A21.



Wire side of female terminals

Is there about 5 V?

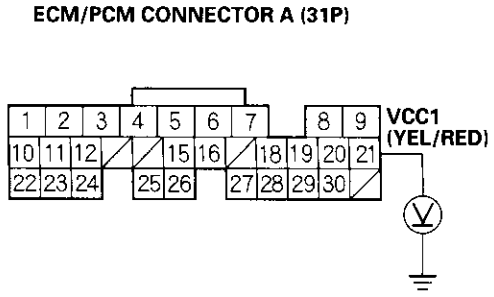
YES – Go to step 59.

NO – Go to step 53.

53. Turn the ignition switch OFF.

54. Disconnect the 3P connector from each of these sensors, one at a time, and measure voltage between body ground and ECM/PCM connector terminal A21 with the ignition switch ON (II).

- Manifold absolute pressure (MAP) sensor
- Intake manifold runner control (IMRC) valve position sensor (K20A3 engine)
- Countershaft speed sensor (A/T)



Wire side of female terminals

Is there about 5 V?

YES – Replace the sensor that restored 5 V when disconnected. ■

NO – Go to step 55.

55. Turn the ignition switch OFF.

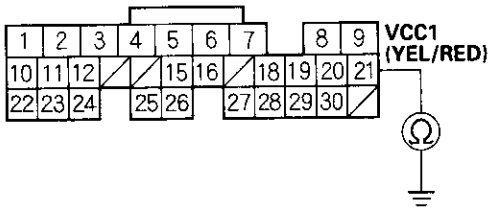
56. Disconnect the 3P connectors from the following sensors.

- Manifold absolute pressure (MAP) sensor
- Intake manifold runner control (IMRC) valve position sensor (K20A3 engine)
- Countershaft speed sensor (A/T)

57. Disconnect ECM/PCM connector A (31P).

58. Check for continuity between ECM/PCM connector terminal A21 and body ground.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

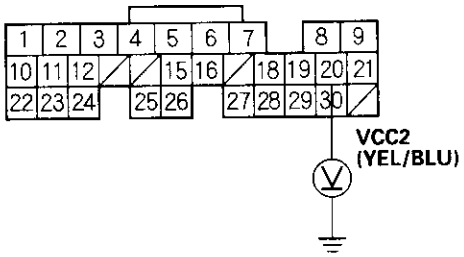
Is there continuity?

YES – Repair short in the wire between the ECM/PCM (A21) and the MAP sensor, the IMRC valve position sensor, or the countershaft speed sensor (A/T). ■

NO – Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM. ■

59. Measure voltage between body ground and ECM/PCM connector terminal A20.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there about 5 V?

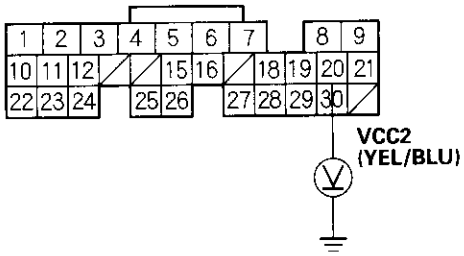
YES – Go to step 66.

NO – Go to step 60.

60. Turn the ignition switch OFF.

61. Disconnect the 3P connector from each of these sensors, one at a time, and measure voltage between body ground and ECM/PCM connector terminal A20 with the ignition switch ON (II).
    - Throttle position (TP) sensor
    - Mainshaft speed sensor (A/T)

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there about 5 V?

YES – Replace the sensor that restored 5 V when disconnected. ■

NO – Go to step 62.

62. Turn the ignition switch OFF.

63. Disconnect the 3P connectors from the following sensors.
    - Throttle position (TP) sensor
    - Mainshaft speed sensor (A/T)

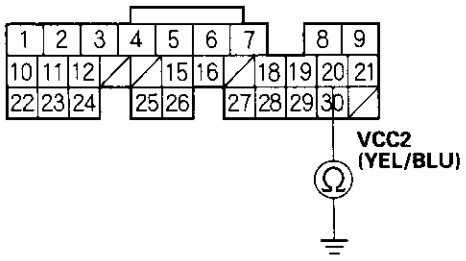
64. Disconnect ECM/PCM connector A (31P).

(cont'd)

MIL Circuit Troubleshooting (cont'd)

65. Check for continuity between ECM/PCM connector terminal A20 and body ground.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

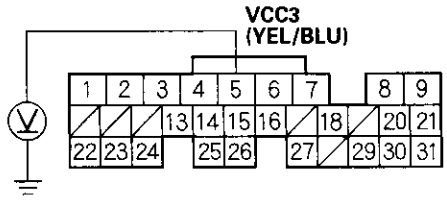
Is there continuity?

YES – Repair short in the wire between the ECM/PCM (A20) and the TP sensor or mainshaft speed sensor (A/T). ■

NO – Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM. ■

66. Measure voltage between body ground and ECM/PCM connector terminal E5.

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

Is there about 5 V?

YES – Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM. ■

NO – Go to step 67.

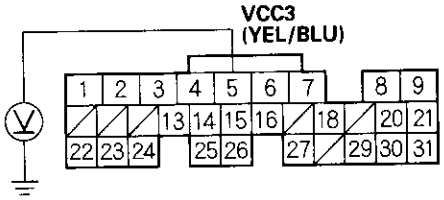
67. Turn the ignition switch OFF.

68. Disconnect the fuel tank pressure (FTP) sensor 3P connector.

69. Turn the ignition switch ON (II).

70. Measure voltage between body ground and ECM/PCM connector terminal E5.

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

Is there about 5 V?

YES – Replace the FTP sensor. ■

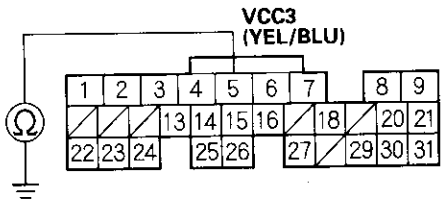
NO – Go to step 71.

71. Turn the ignition switch OFF.

72. Disconnect ECM/PCM connector E (31P).

73. Check for continuity between ECM/PCM connector terminal E5 and body ground.

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

Is there continuity?

YES – Repair short in the wire between the ECM/PCM (E5) and the FTP sensor. ■

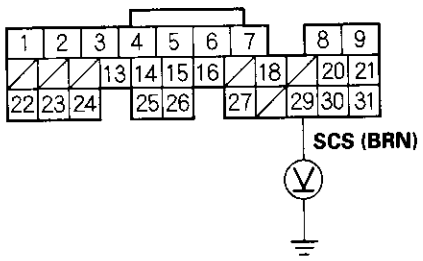
NO – Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM. ■

74. Turn the ignition switch OFF.

75. Turn the ignition switch ON (II).

76. Measure voltage between ECM/PCM connector terminal E29 and body ground.

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

Is there about 5 V (or battery voltage)?

YES – Go to step 80.

NO – Go to step 77.

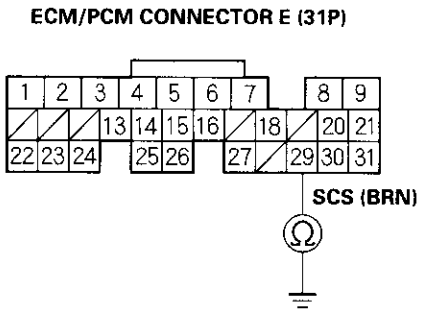
77. Turn the ignition switch OFF.

78. Disconnect ECM/PCM connector E (31P).

(cont'd)

MIL Circuit Troubleshooting (cont'd)

79. Check for continuity between ECM/PCM connector terminal E29 and body ground.



Wire side of female terminals

Is there continuity?

YES – Repair short in the wire between the DLC and the ECM/PCM (E29). ■

NO – Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM. ■

80. Turn the ignition switch OFF.

81. Disconnect ECM/PCM connector E (31P).

82. Turn the ignition switch ON (II).

Is the MIL on?

YES – Repair short in the wire between the gauge assembly and the ECM/PCM (E31). If the wires are OK, replace the gauge assembly. ■

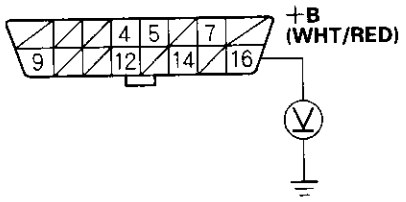
NO – Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM. ■

DLC Circuit Troubleshooting

If the ECM/PCM does not communicate with the OBDII 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

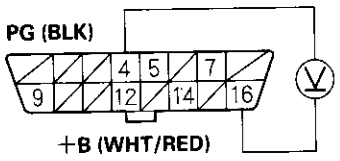
Is there battery voltage?

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

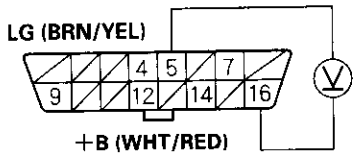
Is there battery voltage?

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?

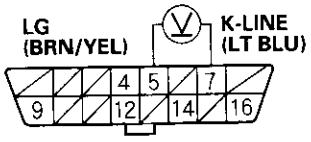
YES – Go to step 4.

NO – Repair open in the wire between DLC terminal No. 5 and body ground. ■

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.

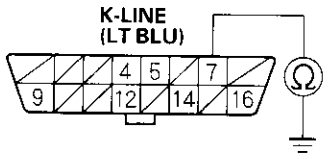
(cont'd)

DLC Circuit Troubleshooting (cont'd)

7. Disconnect ECM/PCM 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

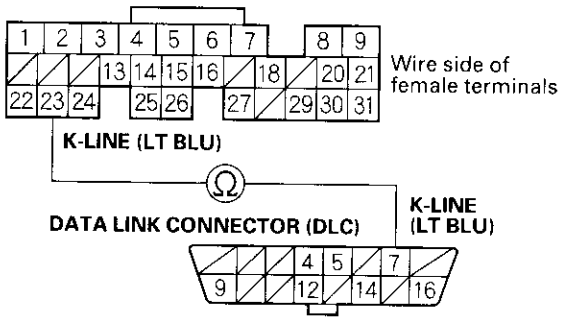
Is there continuity?

YES – Repair short to ground in the wire between DLC terminal No. 7 and the ECM/PCM (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/PCM terminal E23.

ECM/PCM CONNECTOR E (31P)



Terminal side of female terminals

Is there continuity?

YES – Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM. ■

NO – Repair open in the wire between DLC terminal No. 7 and the ECM/PCM (E23). After repairing the wire, check the DTC with the OBD II scan tool/Honda PGM Tester and go to the DTC Troubleshooting index. ■

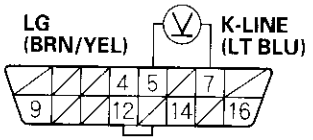
10. Turn the ignition switch OFF.

11. Disconnect ECM/PCM 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?

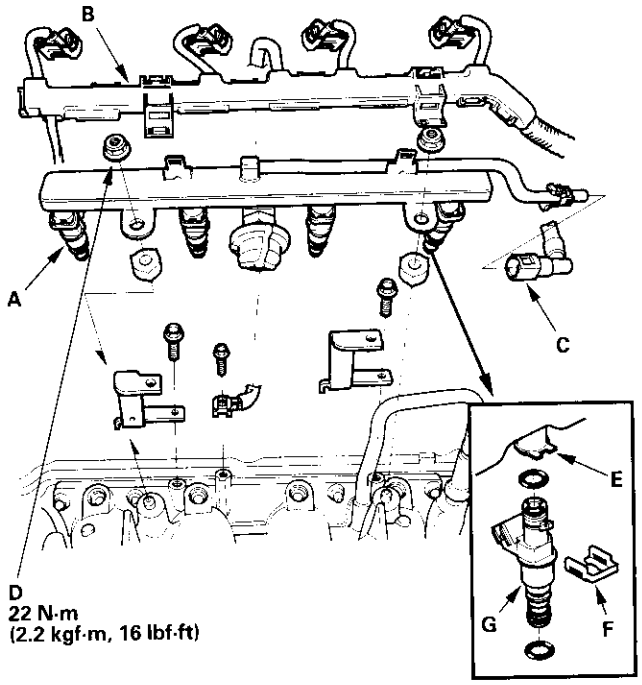
YES – Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM. ■

NO – Repair short to power in the wire between the DLC terminal No. 7 and the ECM/PCM (E23). After repairing the wire, check the DTC with the OBD II scan tool/Honda PGM Tester and go to the DTC Troubleshooting index. ■

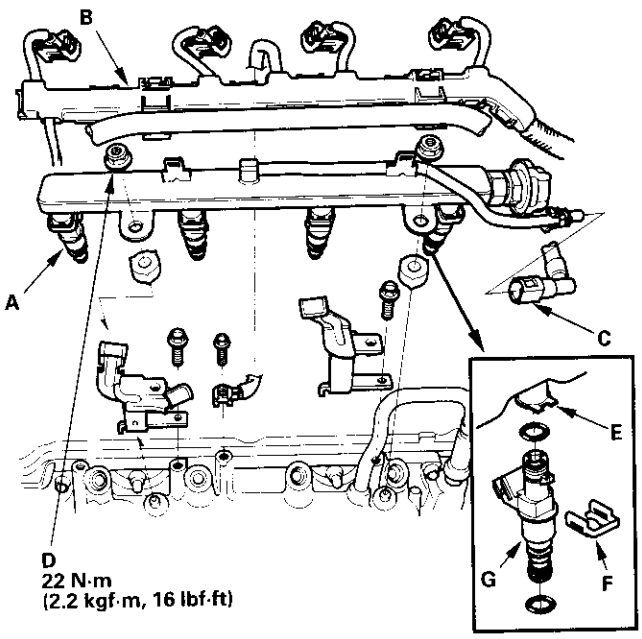
Injector Replacement

1. Relieve fuel pressure (see page 11-155).
2. Remove the engine cover.
3. Disconnect the connectors from the injectors (A), and remove the harness holder (B).

K20A2 engine



K20A3 engine



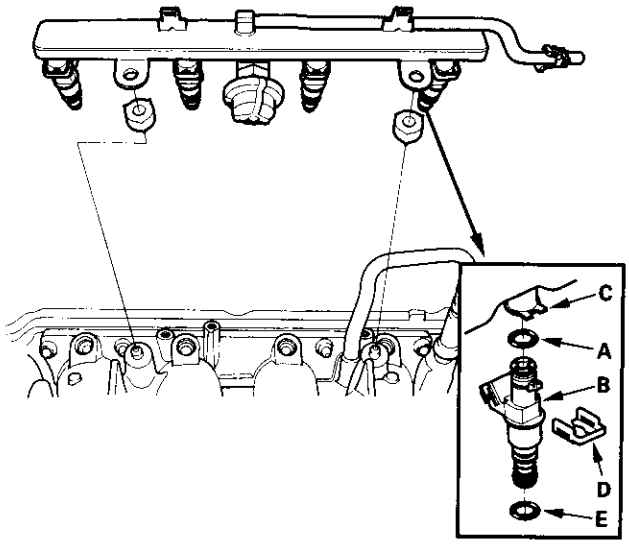
4. Disconnect the quick-connect fittings (C).
5. Remove the fuel rail mounting nuts (D) from the fuel rail (E).
6. Remove the injector clip (F) from the injector (G).
7. Remove the injector from the fuel rail.

(cont'd)

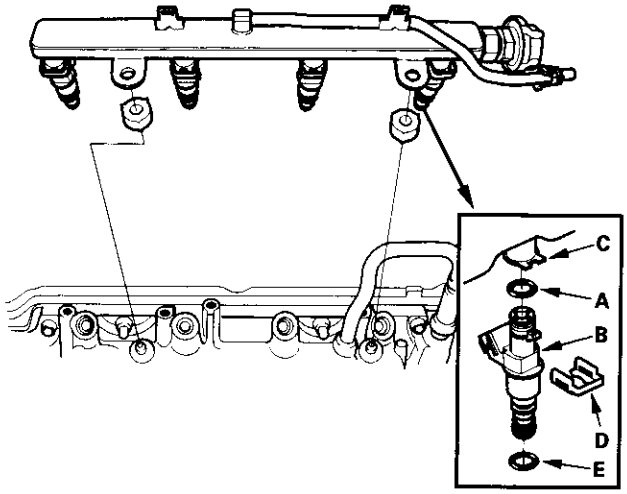
Injector Replacement (cont'd)

8. Coat the new O-rings (A) with clean engine oil, and insert the injectors (B) into the fuel rail (C).

K20A2 engine



K20A3 engine

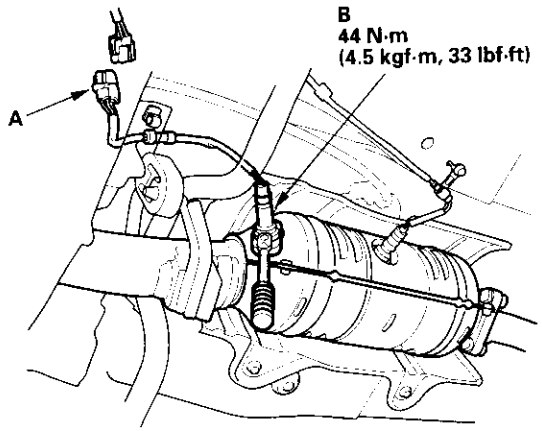


9. Install the injector clip (D).
10. Coat the injector O-ring (E) with clean engine oil.
11. To prevent damage to the O-ring, install the injectors in the fuel rail first, then install them in the injector base (F).
12. Install the fuel rail mounting nuts.
13. Connect the connectors on the injectors, and install the harness holder.
14. Connect the quick-connect fittings.
15. Install the engine cover.
16. Turn the ignition switch ON (II), but do not operate the starter. After the fuel pump runs for approximately 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).

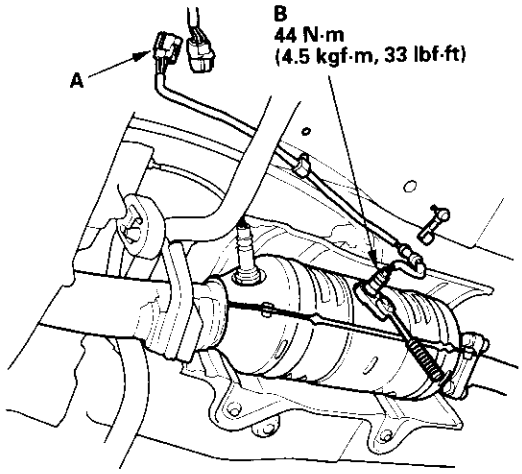


2. Install the A/F sensor in the reverse order of removal.

Secondary HO2S Replacement

Special Tools Required
O2 sensor wrench, Snap-on YA8875, SP Tools 93750, or equivalent, commercially available

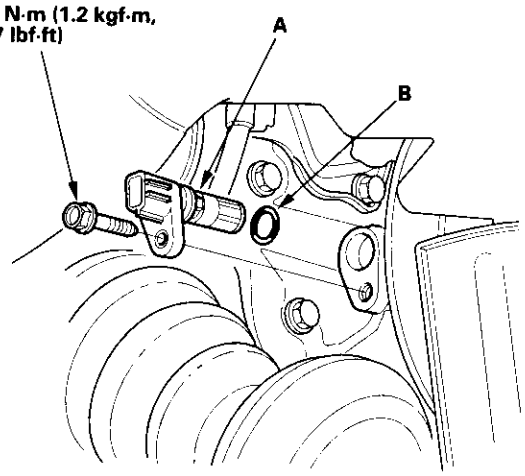
1. Disconnect the secondary HO2S 4P connector (A), then remove the secondary HO2S (B).



2. Install the secondary HO2S in the reverse order of removal.

CKP Sensor Replacement

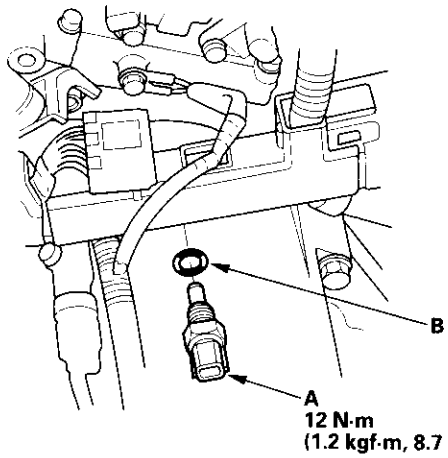
1. Disconnect the CKP 3P connector.
2. Remove the CKP sensor (A).



3. Install the sensor in the reverse order of removal with a new O-ring (B).

ECT Sensor Replacement

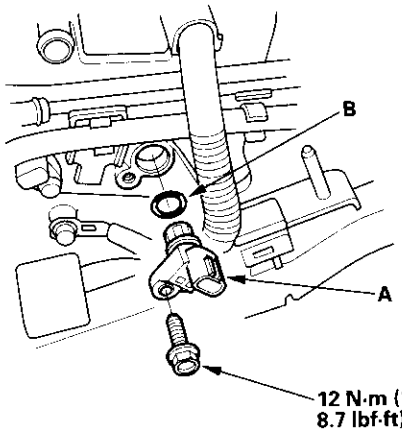
1. When the engine is cool, drain the coolant from the radiator (see page 10-6).
2. Remove the air cleaner (see page 11-179).
3. Disconnect the ECT sensor 2P connector.
4. Remove the ECT sensor (A).



5. Install the sensor in the reverse order of removal with a new O-ring (B).
6. Refill the cooling system (see page 10-6).

CMP Sensor B (TDC Sensor) Replacement

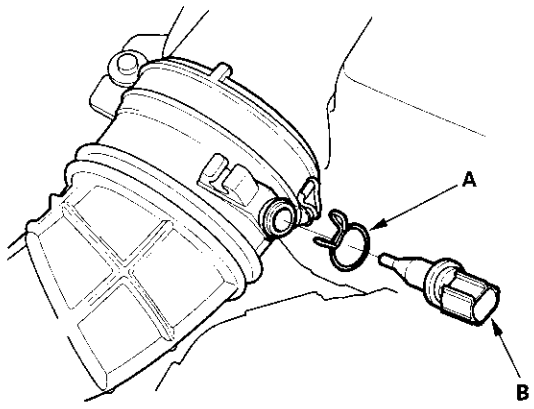
1. Remove the air cleaner (see page 11-179).
2. Disconnect the TDC sensor 3P connector.
3. Remove the TDC sensor (A).



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).

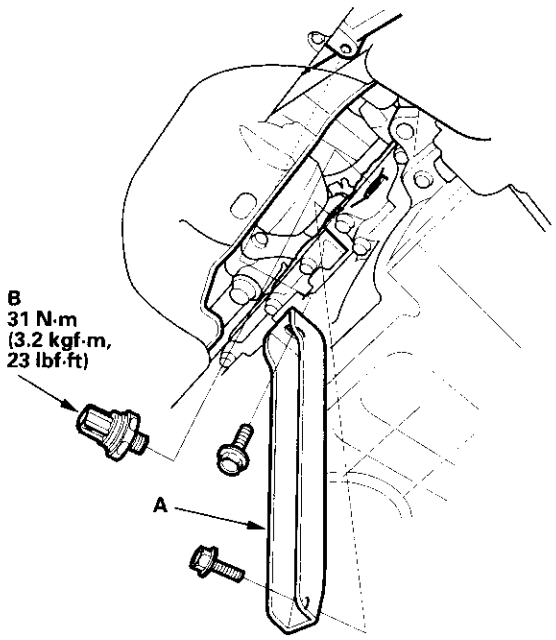


3. Install the sensor in the reverse order of removal.

Knock Sensor Replacement

K20A2 engine

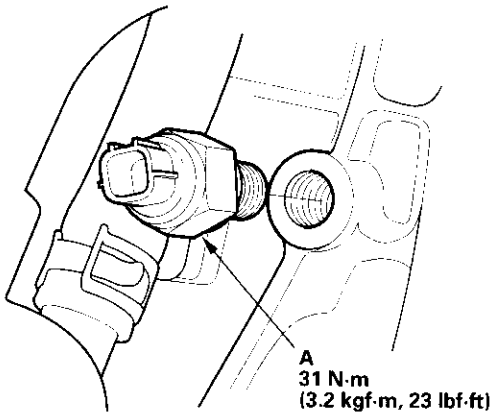
1. Remove the intake manifold bracket (A).
2. Disconnect the knock sensor 1P connector.
3. Remove the knock sensor (B).



4. Install the sensor in the reverse order of removal.

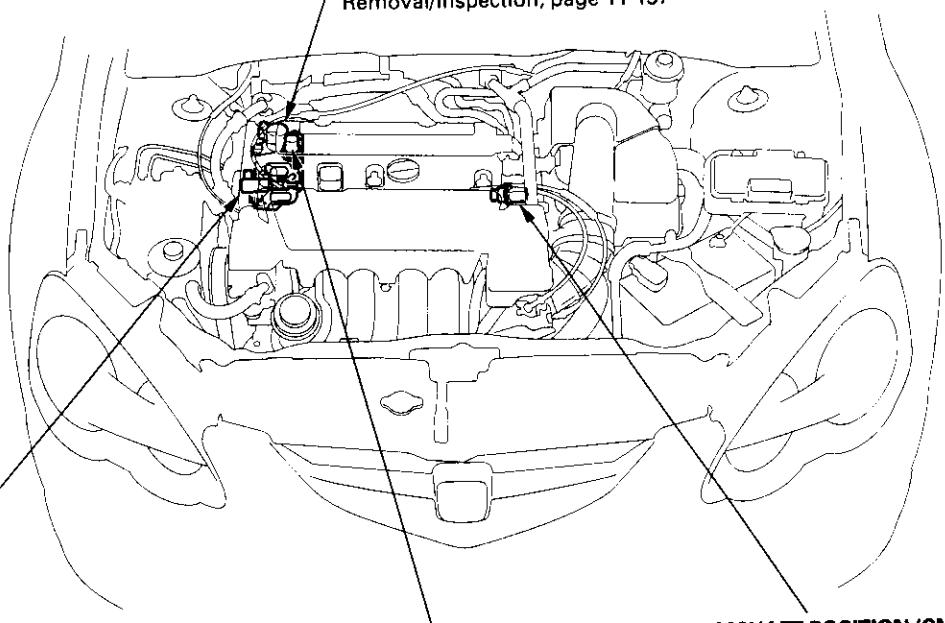
K20A3 engine

1. Remove the intake manifold (see page 9-2).
2. Disconnect the knock sensor 1P connector.
3. Remove the knock sensor (A).



4. Install the sensor in the reverse order of removal.

Component Location Index



*: The illustration shows the K20A3 engine; the K20A2 engine is similar.

DTC Troubleshooting

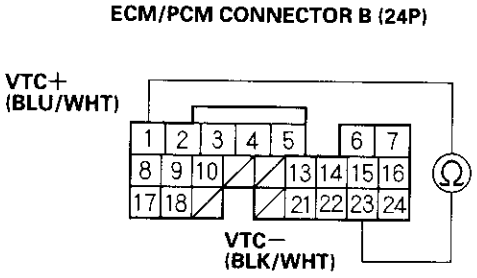
DTC P0010: VTC Oil Control Solenoid Valve Malfunction

1. Reset the ECM/PCM (see page 11-4).
2. Start the engine. Hold the engine at 3,000 rpm with no load (in park or neutral) until the radiator fan comes on, then let it idle.

   Is DTC P0010 indicated?

   YES – Go to step 3.

   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/PCM. ■
3. Turn the ignition switch OFF.
4. Disconnect the ECM/PCM connector B (24P).
5. Measure resistance between ECM/PCM connector terminal B1 and B23.



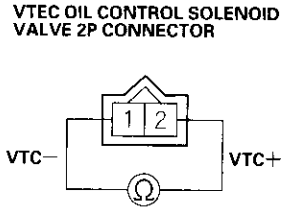
Wire side of female terminals

Is there 7.0– 10.2 Ω ?

YES – Go to step 10.

NO – Go to step 6.

6. Disconnect the VTC oil control solenoid valve 2P connector.
7. Measure resistance between VTC oil control solenoid valve 2P terminal No. 1 and No. 2.



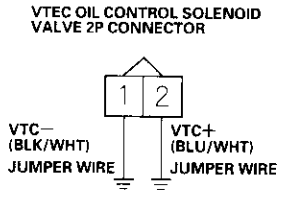
Terminal side of male terminals

Is there 7.0– 10.2 Ω ?

YES – Go to step 8.

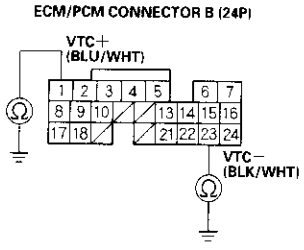
NO – Replace the VTC oil control solenoid valve (see page 11-135). ■

8. Connect VTC oil control solenoid valve 2P connector terminals No. 1, No. 2 and body ground with a jumper wire individually.



Wire side of female terminals

9. Check for continuity between ECM/PCM connector terminals B1, B23 and body ground.



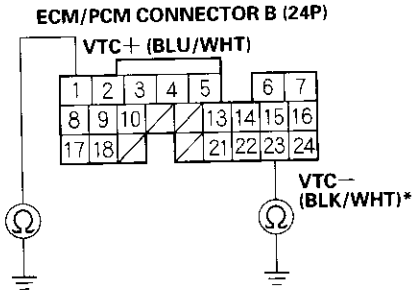
Wire side of female terminals

Is there continuity?

YES – Go to step 10.

NO – Repair open in the wire between the ECM/PCM (B1, B23) and the VTC oil control solenoid valve. ■

10. Check for continuity between ECM/PCM connector terminals B1 and B23 and body ground individually.



Wire side of female terminals

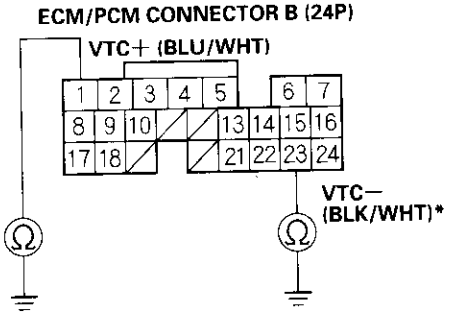
Is there continuity?

YES – Go to step 11.

NO – Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM. ■

11. Disconnect the VTC oil control solenoid valve 2P connector.

12. Check for continuity between ECM/PCM connector terminals B1 and B23 and body ground individually.



Wire side of female terminals

Is there continuity?

YES – Repair short in the wire between the ECM/PCM (B1, B23) and the VTC oil control solenoid valve. ■

NO – Replace the VTC oil control solenoid valve (see page 11-135). ■

DTC P0011: VTC System Malfunction

1. Reset the ECM/PCM (see page 11-4).

2. Start the engine. Hold the engine at 3,000 rpm with no load (in Park or 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/PCM. ■

5. Watch the low oil pressure light.

   Is the low oil pressure light on?

   YES – Check the oil pressure (see page 8-5). ■

   NO – Go to step 6.

(cont'd)

DTC Troubleshooting (cont'd)

6. Check the VTC oil control solenoid valve (see page 11-135).

   Is the VTC oil control solenoid valve OK?

   YES – Go to step 7.

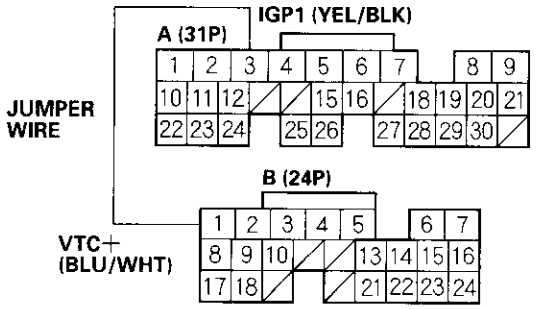
   NO – Clean the ports of the VTC oil control solenoid valve, or replace the VTC oil control solenoid valve (see page 11-135). ■

7. Install the VTC oil control solenoid valve.

8. Start the engine. Hold the engine at 700 – 1,000 rpm.

9. Connect ECM/PCM connector terminals A3 and B1 with a jumper wire.

ECM/PCM 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/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM. ■

NO – Go to step 10.

10. Check the VTC actuator (see page 6-10).

    Is the VTC actuator OK?

    YES – Remove the auto-tensioner (see page 4-34), and replace the VTC oil filter. Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM. ■

    NO – Replace the VTC actuator. ■

DTC P0340: CMP Sensor No Signal

DTC P0344: CMP Sensor Intermittent Interruption

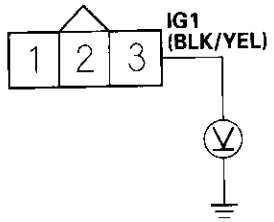
1. Reset the ECM/PCM (see page 11-4).
2. Start the engine.

   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 wires at the CMP sensor and at the ECM/PCM. ■
3. Turn the ignition switch OFF.
4. Disconnect the CMP sensor 3P connector.
5. Turn the ignition switch ON (II).
6. Measure voltage between CMP sensor 3P connector terminal No. 3 and body ground.

CMP SENSOR 3P CONNECTOR



Wire side of female terminals

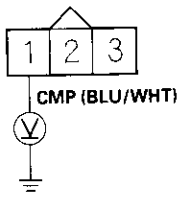
Is there battery voltage?

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 and No. 4 ACG (10A) fuse. ■

7. Measure voltage between CMP sensor 3P connector terminal No. 1 and body ground.

CMP SENSOR 3P CONNECTOR



Wire side of female terminals

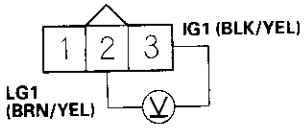
Is there about 5 V?

YES – Go to step 8.

NO – Go to step 10.

8. Measure voltage between CMP sensor 3P connector terminals No. 2 and No. 3.

CMP 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 and G101. ■

9. Substitute a known-good CMP sensor and recheck.

   Is DTC P0340 and/or P0344 indicated?

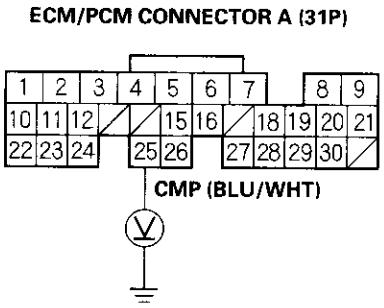
   YES – Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM. ■

   NO – Replace the original CMP sensor (see page 11-136). ■

(cont'd)

DTC Troubleshooting (cont'd)

10. Measure voltage between ECM/PCM connector terminal A25 and body ground.



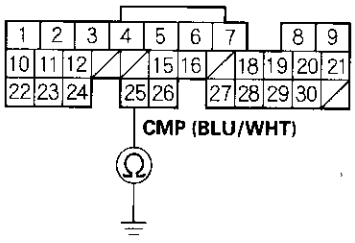
Wire side of female terminals

Is there about 5 V?

YES – Repair open in the wire between the ECM/PCM (A25) and CMP sensor. ■

NO – Go to step 11.

11. Turn the ignition switch OFF.
12. Disconnect ECM/PCM connector A (31P).
13. Check for continuity between ECM/PCM connector terminal A25 and body ground.



Wire side of female terminals

Is there continuity?

YES – Repair short in the wire between the ECM/PCM (A25) and the CMP sensor. ■

NO – Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM. ■

DTC P0341: VTC Phase Gap

1. Reset the ECM/PCM (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 wires at the CMP sensor and at the ECM/PCM. ■

3. Check the VTC oil control solenoid valve (see page 11-135).

   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 11-135). ■

4. Remove the head cover, and check the cam chain (see page 6-14).

   Is the cam chain OK?

   YES – Go to step 5.

   NO – Replace the cam chain (see page 6-14). ■

5. Check the VTC actuator (see page 6-10).

   Is the VTC actuator OK?

   YES – Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM. ■

   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 adaptor 07MAJ-PY40120
- Hose oil pressure 07ZAJ-S5A0200

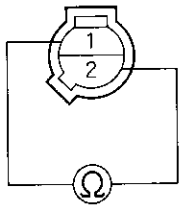
1. Reset the ECM/PCM (see page 11-4).
2. Check the engine oil level, and refill if necessary. Check for external damage to the oil pan (K20A3 engine).
3. Start the engine. Hold the engine at 3,000 rpm with no load (in Park or neutral) until the radiator fan comes on.
4. Road test the vehicle:
   Accelerate in 1st gear to an engine speed over 4,000 rpm. Hold that engine speed for at least 2 seconds. If DTC P1259 is not repeated during the first road test, repeat this 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 wires at the VTEC solenoid valve and at the ECM/PCM.■
5. Turn the ignition switch OFF.
6. Disconnect the VTEC oil pressure switch 2P connector.
7. Check the VTEC oil pressure switch 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

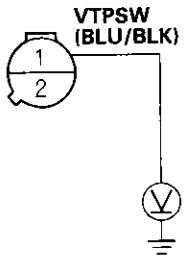
Is there continuity?

YES – Go to step 8.

NO – Replace the VTEC oil pressure switch (see page 11-137).■

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 HARNESS 2P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES – Go to step 14.

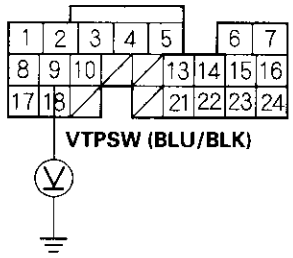
NO – Go to step 10.

(cont'd)

DTC Troubleshooting (cont'd)

10. Measure voltage between ECM/PCM connector terminal B9 and body ground.

ECM/PCM CONNECTOR B (24P)



Wire side of female terminals

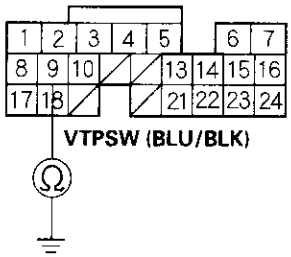
Is there battery voltage?

YES – Repair open in the wire between the VTEC oil pressure switch and the ECM/PCM (B9). ■

NO – Go to step 11.

11. Turn the ignition switch OFF.
12. Disconnect ECM/PCM connector B (24P).
13. Check for continuity between ECM/PCM connector terminal B9 and body ground.

ECM/PCM CONNECTOR B (24P)



Wire side of female terminals

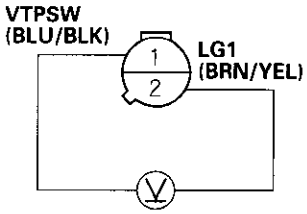
Is there continuity?

YES – Repair short in the wire between the VTEC oil pressure switch and the ECM/PCM (B9). ■

NO – Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM. ■

14. Measure voltage between VTEC oil pressure switch 2P connector terminals No. 1 and No. 2.

VTEC OIL PRESSURE SWITCH HARNESS 2P CONNECTOR



Wire side of female terminals

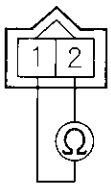
Is there battery voltage?

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 1P connector.
17. Check for resistance between VTEC solenoid valve 2P connector terminals No. 1 and No. 2.

VTEC SOLENOID VALVE 2P CONNECTOR



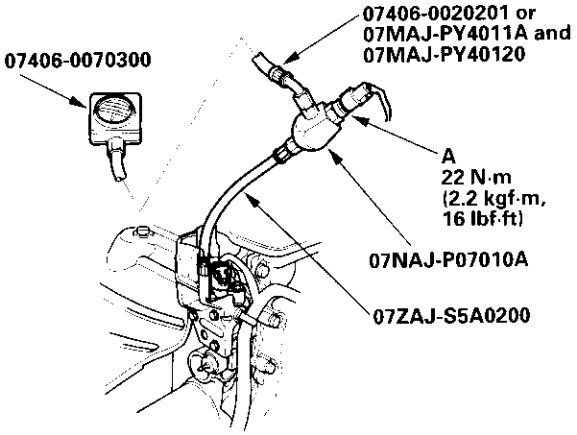
Terminal side of male terminals

Is there 14 – 30 Ω ?

YES – Go to step 18.

NO – Replace the VTEC solenoid valve (see page 11-137). ■

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 on the OBD II scan tool/ Honda PGM Tester.

21. Start the engine. Hold the engine at 3,000 rpm with no load (in Park or 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 11-137).■

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.

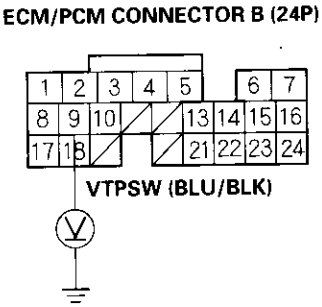
26. Start the engine, then connect the battery negative terminal to VTEC solenoid valve 2P connector terminal No. 1, and check the oil pressure at an engine speed of 3,000 rpm.

    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 11-137).■

27. With the battery terminals still connected to the VTEC solenoid valve connector, measure voltage between ECM/PCM connector terminal B9 and body ground.



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 11-137).■

28. Turn the ignition switch OFF.

29. Disconnect the battery terminals from the VTEC solenoid valve terminal connector.

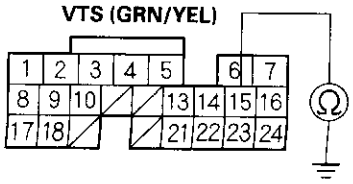
(cont'd)

DTC Troubleshooting (cont'd)

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

31. Check for continuity between ECM/PCM connector terminal B15 and body ground.

ECM/PCM CONNECTOR B (24P)



Wire side of female terminals

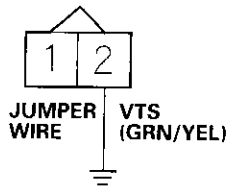
Is there continuity?

YES – Repair short in the wire between the VTEC solenoid valve and the ECM/PCM (B15). ■

NO – Go to step 32.

32. Connect the VTEC solenoid valve 2P connector terminal No. 2 and body ground with a jumper wire.

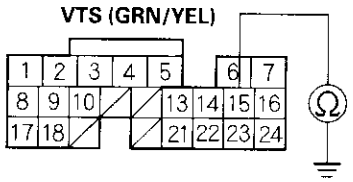
VTEC SOLENOID VALVE 2P CONNECTOR



Wire side of female terminals

33. Check for continuity between ECM/PCM connector terminal B15 and body ground.

ECM/PCM CONNECTOR B (24P)



Wire side of female terminals

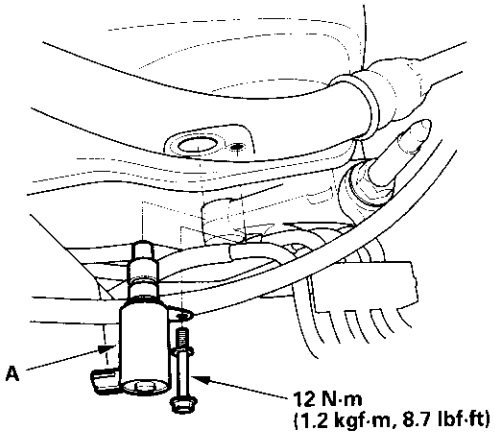
Is there continuity?

YES – Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM. ■

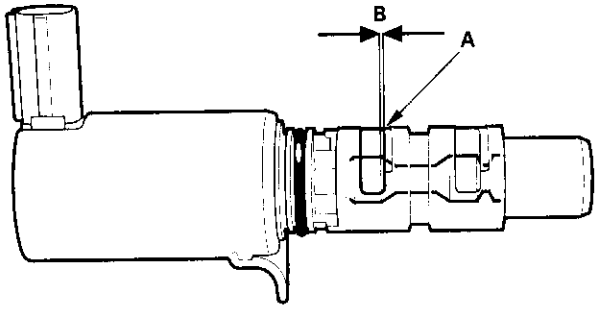
NO – Repair open in the wire between the VTEC solenoid valve and the ECM/PCM (B15). ■

VTC Oil Control Solenoid Valve Removal/Test

1. Remove the VTC oil control solenoid valve (A).

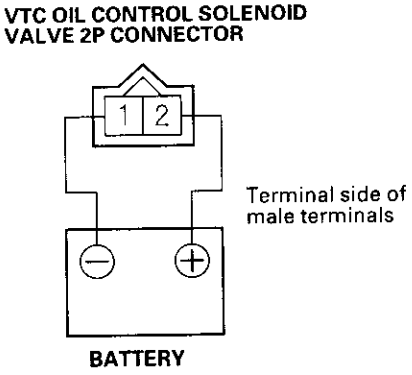


2. Check the port (A) of the VTC oil control solenoid valve for dirt.

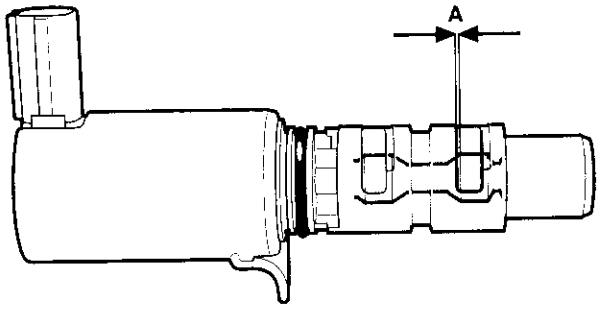


3. Check the clearance between the port (retard side) and the valve. The clearance (B) should be more than 1 mm (1/16 in.).

4. Connect the battery positive terminal to VTC oil control solenoid valve 2P connector terminal No. 2.

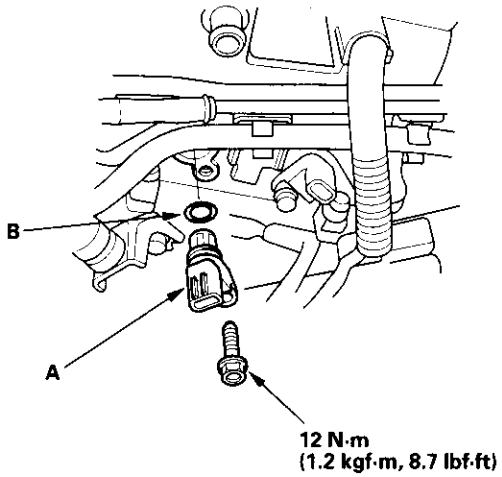


5. Connect the battery negative terminal to VTC oil control solenoid valve 2P connector terminal No. 1, then check the clearance between the port (advance side) and the valve. The clearance (A) should be more than 1 mm (1/16 in.).



CMP Sensor A Replacement

1. Remove the air cleaner (see page 11-179).
2. Disconnect the CMP sensor 3P connector.
3. Remove the CMP sensor (A).

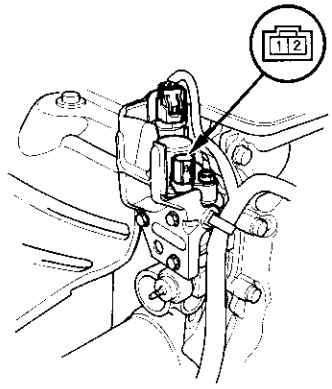


4. Install the sensor in the reverse order of removal with a new O-ring (B).

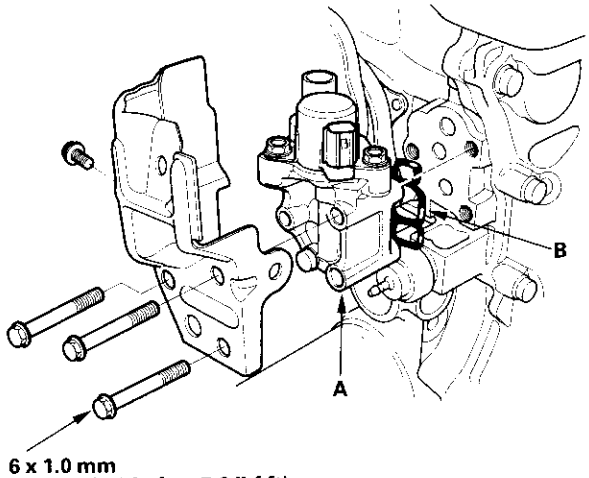
VTEC Solenoid Valve Removal/Inspection

1. Disconnect the VTEC solenoid valve 2P connector.
2. Measure resistance between VTEC solenoid valve connector terminals No. 1 and No. 2.

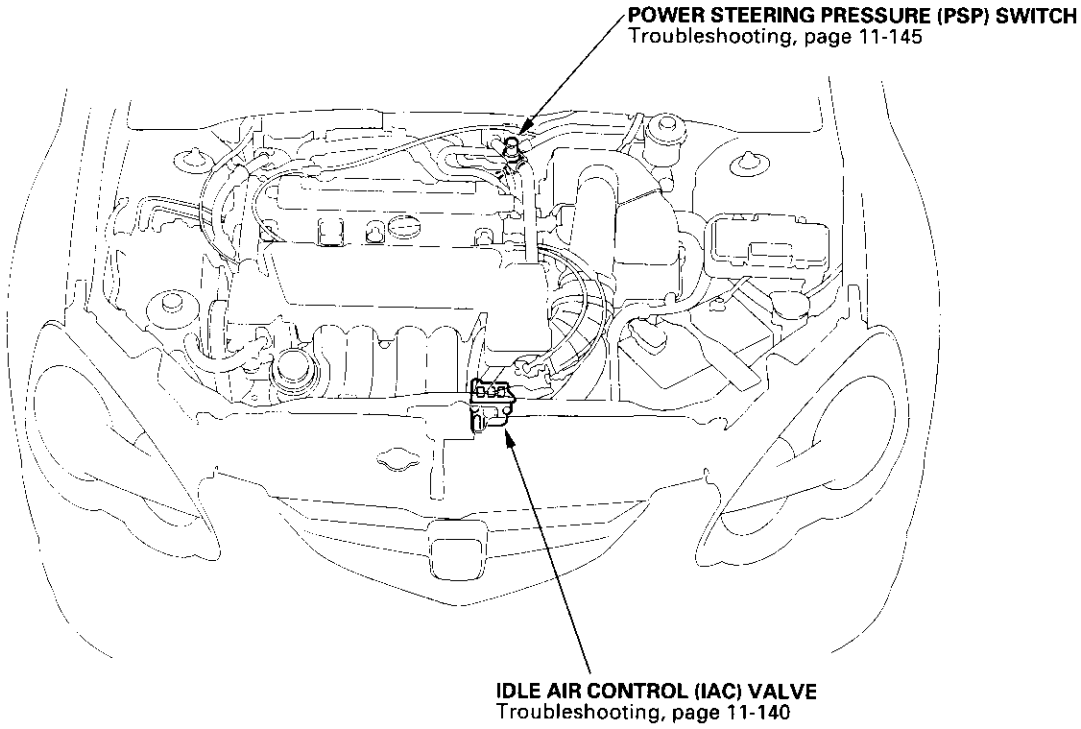
   Resistance: 14 – 30 Ω



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



*: The illustration shows the K20A3 engine; the K20A2 engine is similar.

DTC P0505: Idle Control System Malfunction

NOTE:
- Information marked with *1 applies to K20A3 engine; *2 applies to K20A2 engine.
- If DTC P1519 is stored at the same time as DTC P0505, troubleshooting DTC P1519 first, then recheck for DTC P0505.

1. Start the engine. Hold the engine at 3,000 rpm with no load (in Park or 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 650[1] *(700)*[2] *± 50 rpm?*

   YES – Intermittent failure, system is OK at this time.■

   NO – If the idle speed is less than 600*[1] (650)*[2] rpm, go to step 3; if it's 700*[1] (750)*[2] 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 11-148).■

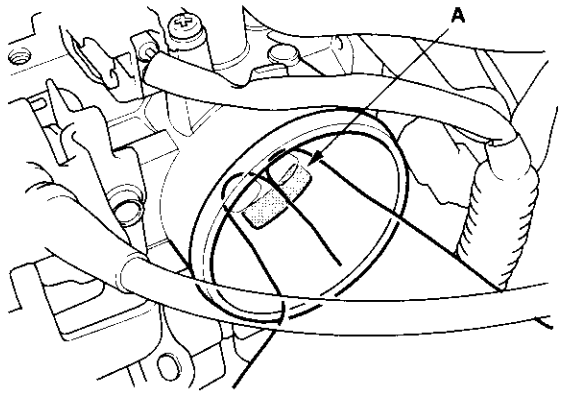
   NO – Replace the IAC valve.■

4. Turn the ignition switch OFF.

5. Remove the air cleaner from the throttle body (see page 11-179).

6. Start the engine, and let it idle.

7. Put your fingers on the lower port (A) in the throttle body.



   Does the engine speed drop below 700[1] *(750)*[2] *rpm?*

   YES – Check the idle speed (see page 11-148). If it's out of specification, replace the IAC valve.■

   NO – Check for vacuum leaks. Make sure the throttle valve is completely closed, and repair as necessary.■

DTC Troubleshooting (cont'd)

DTC P1519: IAC Valve Circuit Malfunction

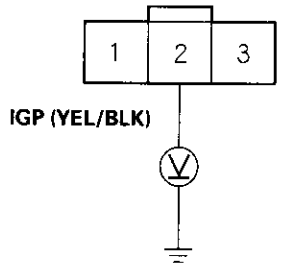
1. Reset the ECM/PCM (see page 11-4).
2. Turn the ignition switch ON (II).

   Is DTC P1519 indicated?

   YES – Go to step 3.

   NO – Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the IAC valve and at the ECM/PCM. ■
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

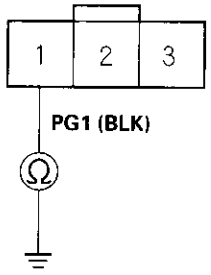
Is there battery voltage?

YES – Go to step 7.

NO – Repair open in the wire between the IAC valve and the PGM-FI main relay. ■

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

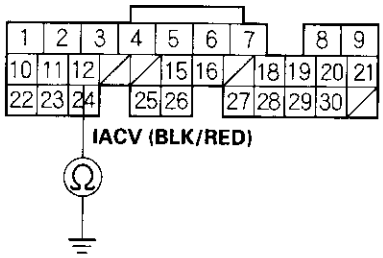
Is there continuity?

YES – Go to step 9.

NO – Repair open in the wire between the IAC valve and G101. ■

9. Disconnect ECM/PCM connector A (31P).
10. Check for continuity between body ground and ECM/PCM connector terminal A12.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

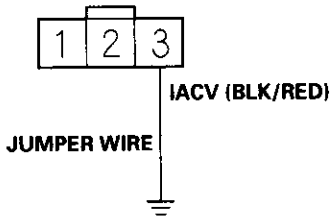
Is there continuity?

YES – Repair short in the wire between the IAC valve and the ECM/PCM (A12). ■

NO – Go to step 11.

11. Connect IAC valve 3P connector terminal No. 3 and body ground with a jumper wire.

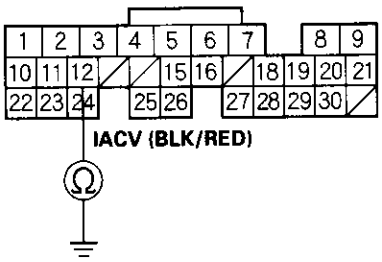
IAC VALVE 3P CONNECTOR



Wire side of female terminals

12. Check for continuity between ECM/PCM connector terminal A12 and body ground.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there continuity?

YES – Go to step 13.

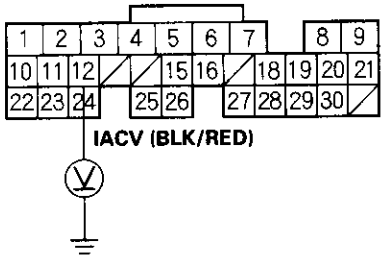
NO – Repair open in the wire between the IAC valve and the ECM/PCM (A12). ■

13. Reconnect the IAC valve 3P connector.

14. Turn the ignition switch ON (II).

15. Measure voltage between body ground and ECM/PCM connector terminal A12.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

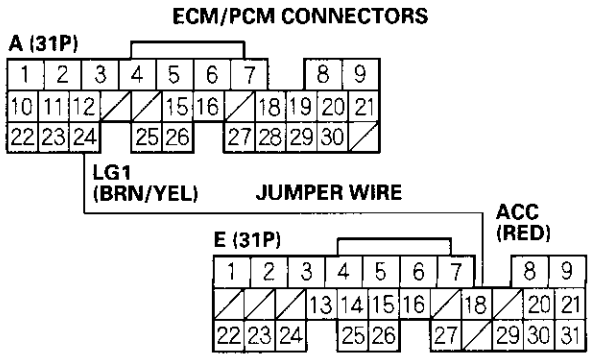
Is there battery voltage?

YES – Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM. ■

NO – Replace the IAC valve. ■

A/C Signal Circuit Troubleshooting

1. Turn the ignition switch ON (II).
2. Momentarily connect ECM/PCM connector terminals A24 and E18 with a jumper wire several times.



Wire side of female terminals

Is there a clicking noise from the A/C compressor clutch?

YES – Go to step 3.

NO – Go to step 6.

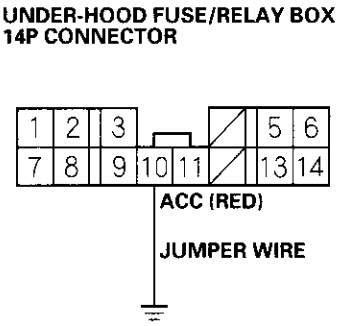
3. Start the engine.
4. Turn the blower switch ON.
5. Turn the A/C switch ON.

Does the A/C operate?

YES – The air conditioning signal is OK. ■

NO – Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM. ■

6. Momentarily connect under-hood fuse/relay box 14P connector terminal No. 10 and body ground with a jumper wire several times.



Wire side of female terminals

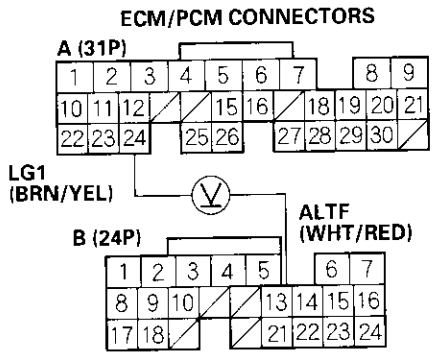
Is there clicking noise from the A/C compressor clutch?

YES – Repair open in the wire between the ECM/PCM (E18) and the A/C clutch relay. ■

NO – Check the A/C system for other symptoms. ■

Alternator FR Signal Circuit Troubleshooting

1. Disconnect the ALT 4P connector.
2. Turn the ignition switch ON (II).
3. Measure voltage between ECM/PCM connector terminals A24 and B13.



Wire side of female terminals

Is there about 5 V?

YES – Go to step 4.

NO – Go to step 14.

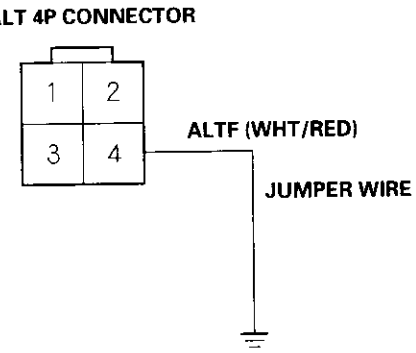
4. Turn the ignition switch OFF.
5. Reconnect the ALT 4P connector.
6. Start the engine. Hold the engine at 3,000 rpm with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
7. Measure voltage between ECM/PCM connector terminals A24 and B13.

Does the voltage decrease when the headlights and rear window defogger are turned on?

YES – The ALT FR signal is OK. ■

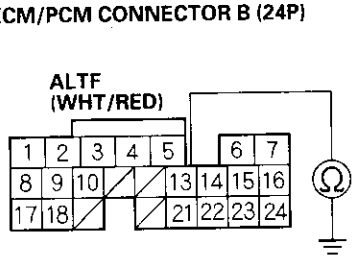
NO – Go to step 8.

8. Turn the ignition switch OFF.
9. Disconnect the negative cable from the battery.
10. Disconnect ECM/PCM connector B (24P).
11. Disconnect the ALT 4P connector.
12. Connect ALT 4P connector terminal No. 4 and body ground with a jumper wire.



Wire side of female terminals

13. Check for continuity between body ground and ECM/PCM connector terminal B13.



Wire side of female terminals

Is there continuity?

YES – Test the alternator (see step 1 on page 4-27). ■

NO – Repair open in the wire between the ECM/PCM (B13) and the alternator. ■

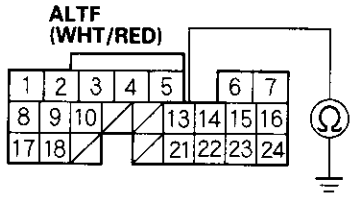
14. Turn the ignition switch OFF.
15. Disconnect the negative cable from the battery.
16. Disconnect ECM/PCM connector B (24P).

(cont'd)

Alternator FR Signal Circuit Troubleshooting (cont'd)

17. Check for continuity between body ground and ECM/PCM connector terminal B13.

ECM/PCM CONNECTOR B (24P)



Wire side of female terminals

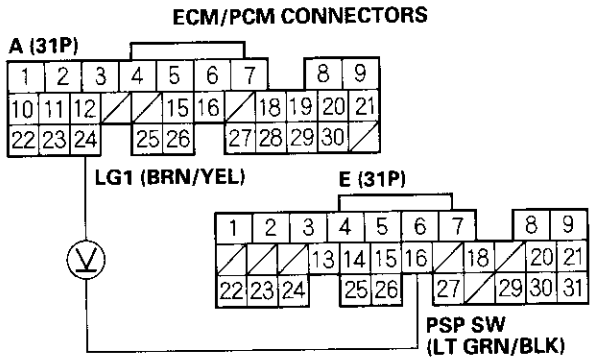
Is there continuity?

YES – Repair short in the wire between the ECM/PCM (B13) and the alternator. ■

NO – Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM. ■

PSP Switch Signal Circuit Troubleshooting

1. Turn the ignition switch ON (II).
2. Measure voltage between ECM/PCM connector terminals A24 and E16.



Wire side of female terminals

Is there less than 1.0 V?

YES – Go to step 3.

NO – Go to step 6.

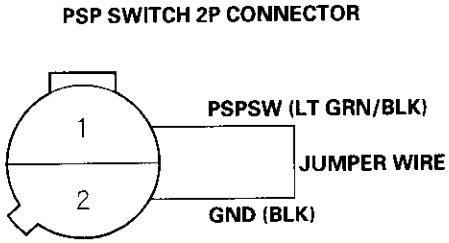
3. Start the engine.
4. Turn the steering wheel to the full lock position.
5. Measure voltage between ECM/PCM connector terminals A24 and E16.

Is there battery voltage?

YES – The PSP switch signal is OK. ■

NO – Go to step 11.

6. Turn the ignition switch OFF.
7. Disconnect the PSP switch 2P connector.
8. Turn the ignition switch ON (II).
9. At the harness side, connect PSP switch 2P connector terminals No. 1 and No. 2 with a jumper wire.



Wire side of female terminals

10. Measure voltage between ECM/PCM connector terminals A24 and E16.

Is there less than 1.0 V?

YES – Replace the PSP switch. ■

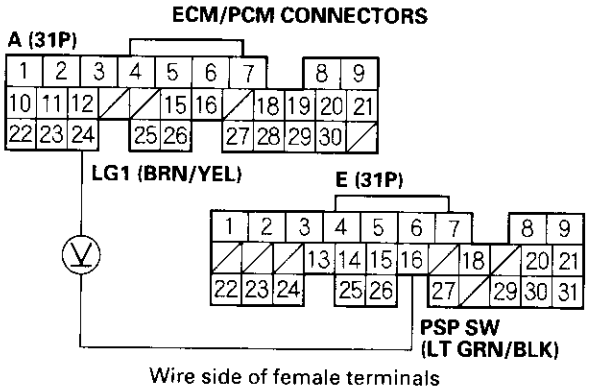
NO – Check for an open in the wire between the ECM/PCM (E16) and the PSP switch, or an open in wire between the PSP switch and G301. ■

11. Turn the ignition switch OFF.
12. Disconnect the PSP switch 2P connector.
13. Turn the ignition switch ON (II).

(cont'd)

PSP Switch Signal Circuit Troubleshooting (cont'd)

14. Measure voltage between ECM/PCM connector terminals A24 and E16.



Is there battery voltage?

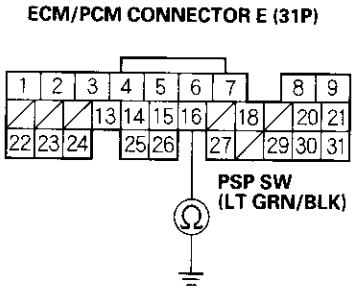
YES – Replace the PSP switch. ■

NO – Go to step 15.

15. Turn the ignition switch OFF.

16. Disconnect ECM/PCM connector E (31P).

17. Check for continuity between body ground and ECM/PCM connector terminal E16.



Is there continuity?

YES – Repair short in the wire between ECM/PCM (E16) and the PSP switch. ■

NO – Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM. ■

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.

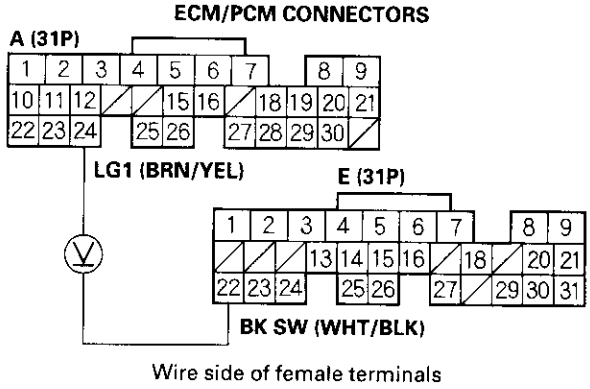
2. Press the brake pedal.

Do the brake lights come on?

YES – Go to step 3.

NO – Go to step 4.

3. Measure voltage between ECM/PCM connector terminals A24 and E22 with the brake pedal pressed.



Is there battery voltage?

YES – The brake pedal position switch signal is OK. ■

NO – Repair open in the wire between the ECM/PCM (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 19-6). ■

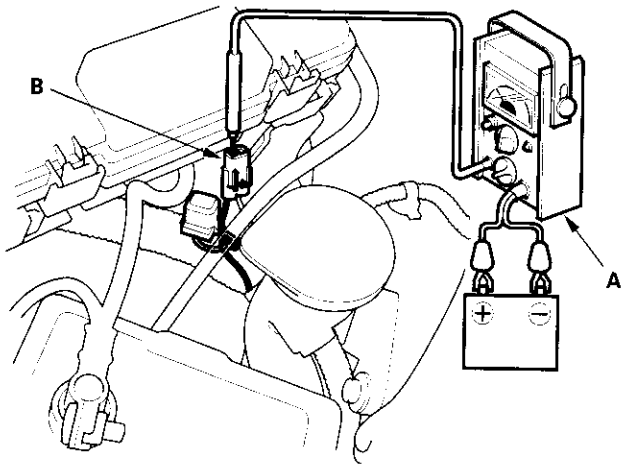
   NO – Repair short in the wire between the ECM/PCM (E22) and the No. 7 HORN/STOP (15A) fuse. Replace the No. 7 HORN/STOP (15A) fuse. ■

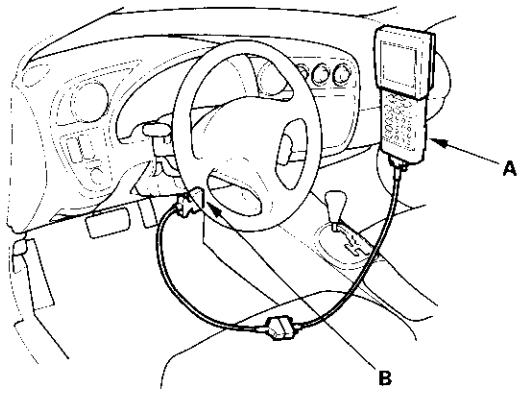
Idle Speed Inspection

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 (A) or an OBD II scan tool to the Data Link Connector (DLC) (B) located under the driver's side of the dashboard.





3. Start the engine. Hold the engine at 3,000 rpm with no load (in Park or 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:
K20A2 engine: 700±50 rpm
K20A3 engine:

M/T	650±50 rpm
A/T	650±50 rpm (in Park or neutral)

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:
K20A2 engine: 780±50 rpm
K20A3 engine:

M/T	720±50 rpm
A/T	720±50 rpm (in Park or neutral)

NOTE: If the idle speed is not within specification, see the Symptom Chart.

6. Reconnect the EVAP canister purge valve 2P connector.

ECM/PCM Idle Learn Procedure

The idle learn procedure must be done so the ECM/PCM can learn the engine idle characteristics.

Do the idle learn procedure whenver you do any of these actions:

- Disconnect the battery.
- Replace the ECM/PCM or disconnect its connector.
- Reset the ECM/PCM.
  NOTE: Erasing DTCs with the Honda PGM Tester does not require you to do the idle learn procedure.
- Remove the No. 6 ECU (ECM/PCM) (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/PCM wire harness.
- Disconnect the G2 terminal from the transmission housing.
- Disconnect the G1 terminal from the body.
- Disconnect the G101 terminal from the water passage.

Procedures:

To complete the idle learn procedure, do this:

1. Make sure all electrical items (A/C, audio, rear defogger, lights, etc.) are off.

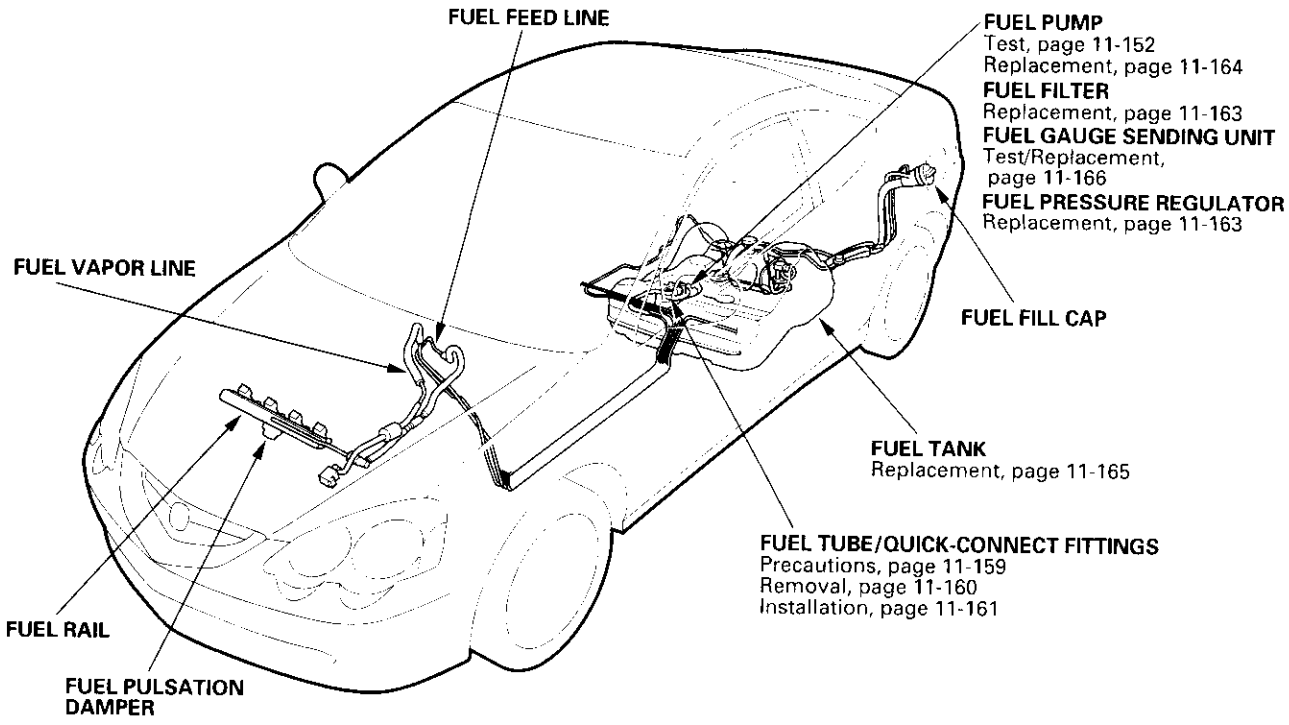
2. Start the engine, and hold it at 3,000 rpm with no load (in park or neutral) until the radiator fan comes on, or until the engine coolant temperature reaches 194°F (90°C).

3. Let the engine idle for about 5 minutes with the throttle fully closed.

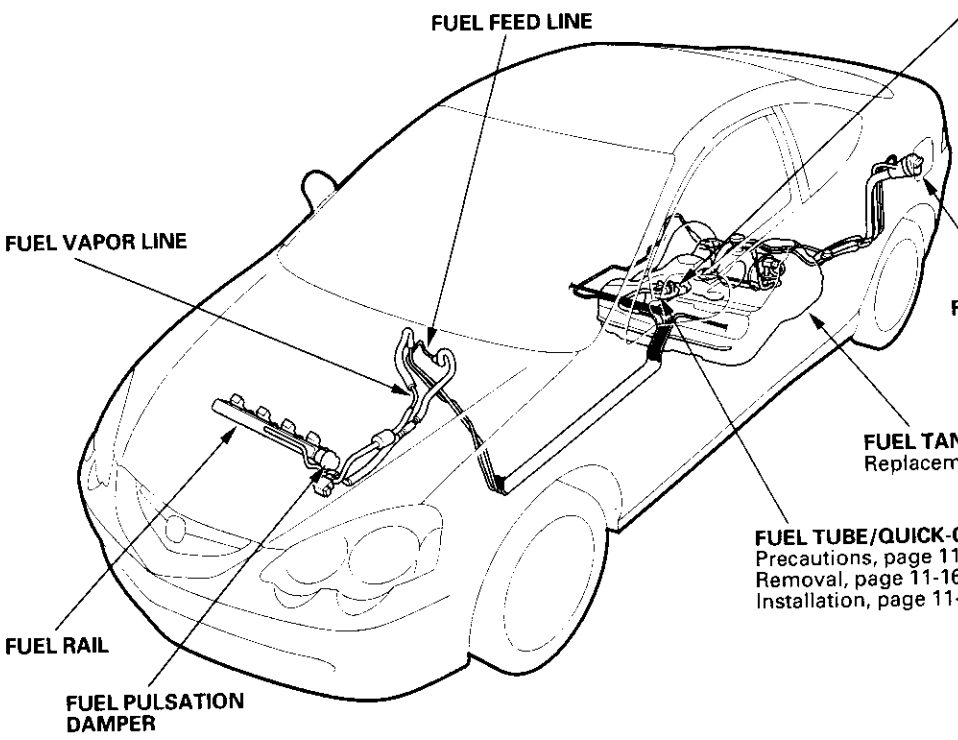
   NOTE: If the radiator fan comes on, do not include its running time in the 5 minutes.

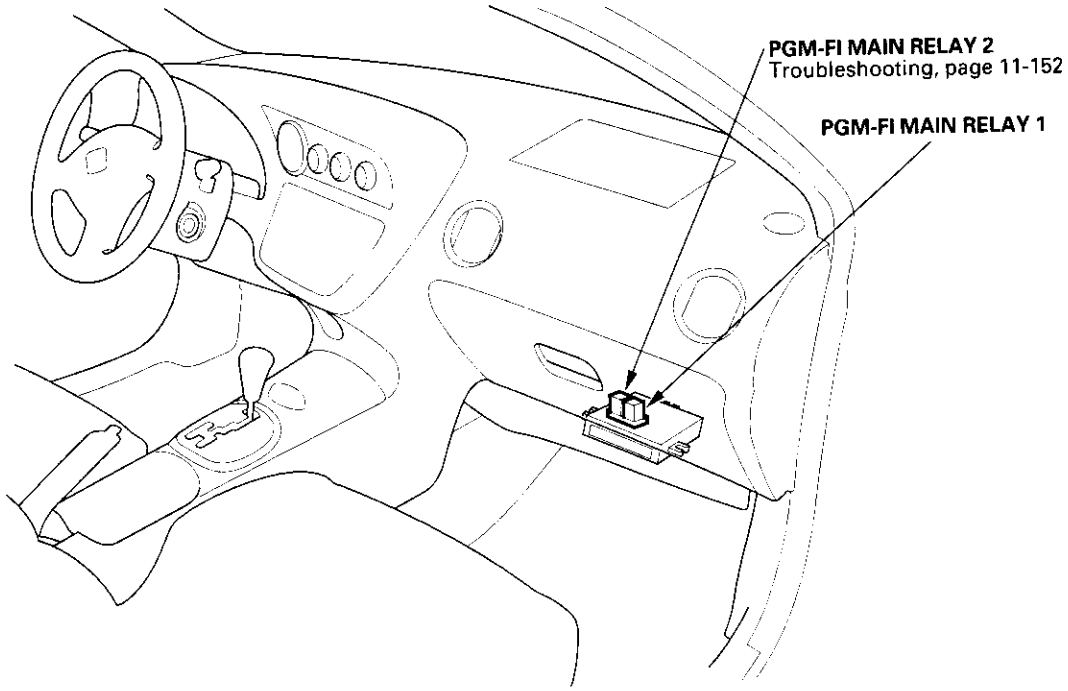
Component Location Index

K20A2 engine



K20A3 engine

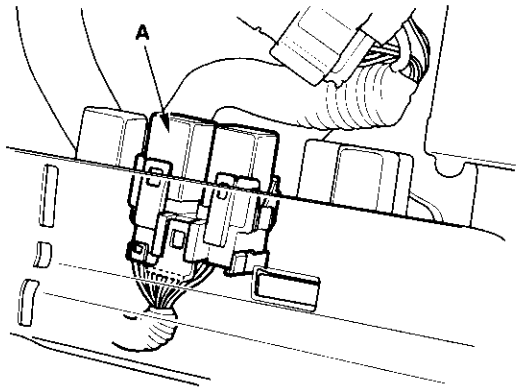




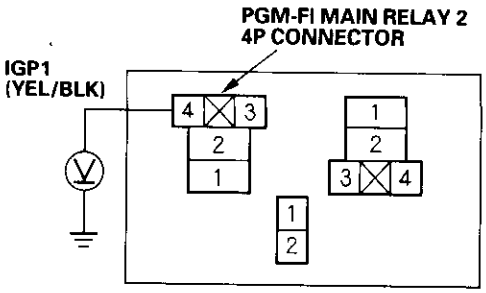
Fuel Pump Circuit Troubleshooting

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 20-65), 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 4P connector terminal No. 4 and body ground.



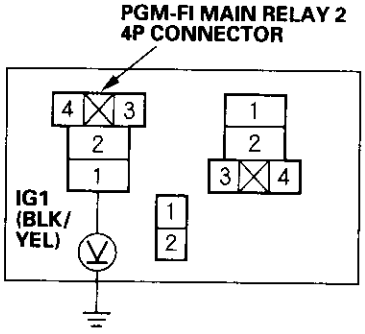
Wire side of female terminals

Is there battery voltage?

YES – Go to step 5.

NO – Repair open in the wire between PGM-FI main relay 1 and PGM-FI main relay 2. ■

5. Measure voltage between PGM-FI main relay 2 4P connector terminal No. 1 and body ground.



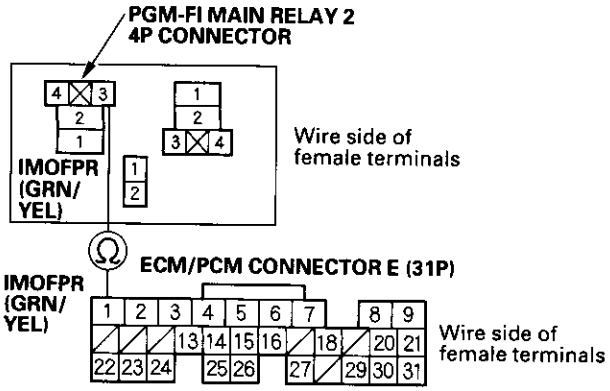
Wire side of female terminals

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/PCM connector E (31P).
8. Check for continuity between PGM-FI main relay 2 4P connector terminal No. 3 and ECM/PCM connector terminal E1.



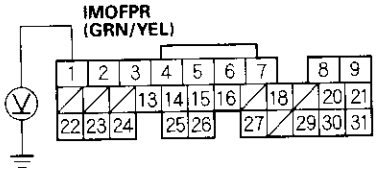
Is there continuity?

YES – Go to step 9.

NO – Repair open in the wire between PGM-FI main relay 2 and the ECM/PCM (E1). ■

9. Reinstall 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/PCM CONNECTOR E (31P)



Wire side of female terminals

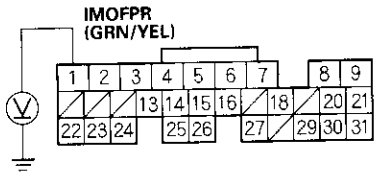
Is there battery voltage?

YES – Go to step 12.

NO – Replace PGM-FI main relay 2. ■

12. Turn the ignition switch OFF.
13. Reconnect ECM/PCM connector E (31P).
14. Turn the ignition switch ON (II), and measure voltage between ECM/PCM connector terminal E1 and body ground within the first 2 seconds after the ignition switch was turned on.

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

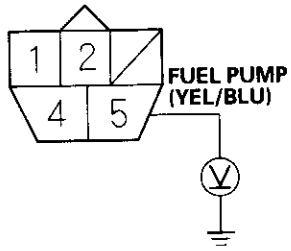
Is there battery voltage?

YES – Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM. ■

NO – Go to step 15.

15. Turn the ignition switch OFF.
16. Remove the rear seat cushion (see page 20-82).
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.

FUEL PUMP 5P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES – Go to step 24.

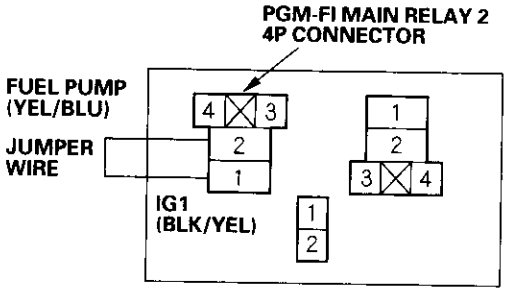
NO – Go to step 19.

19. Turn the ignition switch OFF.
20. Remove PGM-FI main relay 2.

(cont'd)

Fuel Pump Circuit Troubleshooting (cont'd)

21. Connect the PGM-FI main relay 2 4P connector terminals No. 1 and No. 2 with a jumper wire.

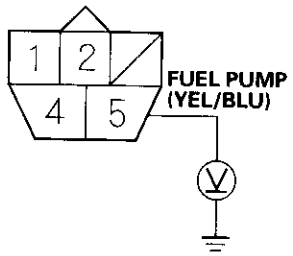


Wire side of female terminals

22. Turn the ignition switch ON (II).

23. Measure voltage between fuel pump 5P connector terminal No. 5 and body ground within the first 2 seconds after the ignition switch was turned on.

FUEL PUMP 5P CONNECTOR



Wire side of female terminals

Is there battery voltage?

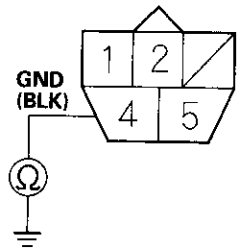
YES – Replace PGM-FI main relay 2. ■

NO – Repair open in the wire between 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. ■

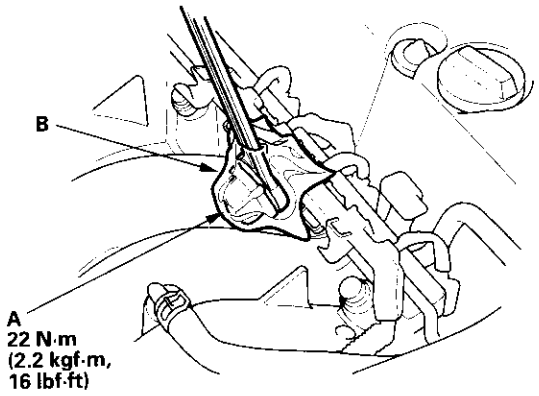
NO – Repair open in the wire between the fuel pump 5P connector and G501. ■

Fuel Pressure Relieving

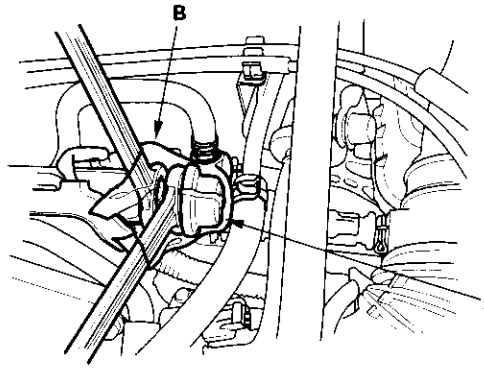
Before disconnecting fuel pipes or hoses, release pressure form the system by loosening the fuel pulsation damper on top of the fuel rail.

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. Remove the fuel fill cap.
4. Place a wrench(s) on the fuel pulsation damper (A) at the fuel rail.

K20A2 engine

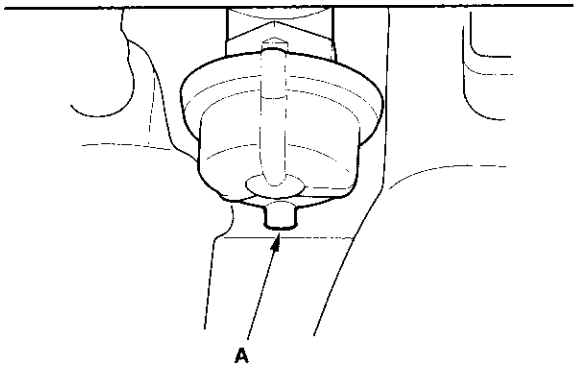


K20A3 engine



5. Place a rag or shop towel (B) over the fuel pulsation damper.
6. Slowly loosen the fuel pulsation damper one complete turn.

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 (K20A2 engine), reinstall it as shown.



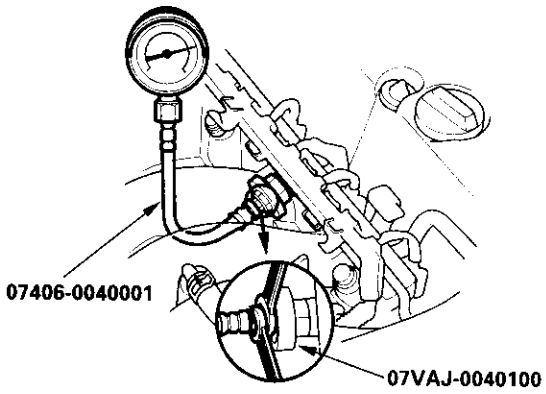
Fuel Pressure Test

Special Tools Required
- Fuel pressure gauge 07406-004000A
- Fuel pressure gauge set 07ZAJ-S5A0100

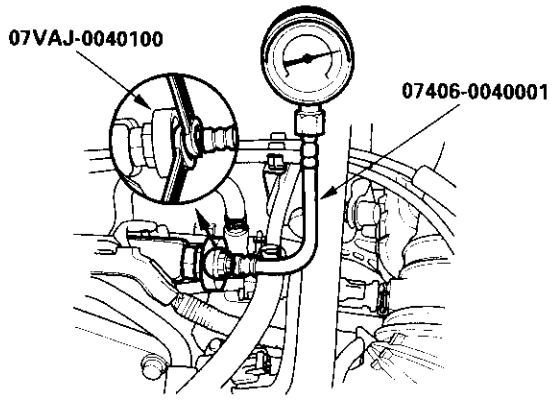
1. Relieve the fuel pressure (see page 11-155).

2. Remove the fuel pulsation damper from its fitting, and attach the fuel pressure gauge attachment and the fuel pressure gauge.

K20A2 engine



K20A3 engine



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: remove the fuel fill cap and listen to fuel fill port while an assistant turns the ignition switch ON (II). You should hear the pump, run for about 2 seconds when the ignition is turned on.

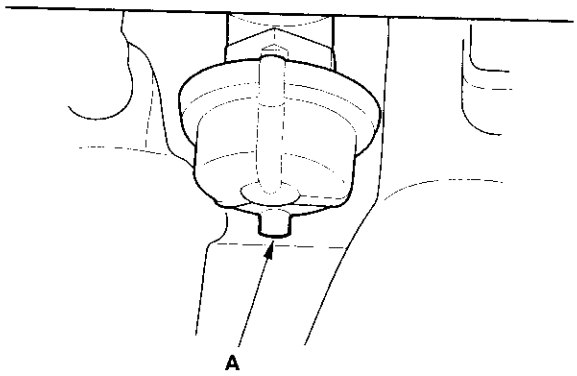
   - If the pump runs, step 5.
   - If the pump does not run, test it (see page 11-152).

5. Read the pressure gauge. The pressure should be 320 – 370 kpa (3.3 – 3.8 kgf/cm², 47 – 54 psi)

   - If the pressure is OK, the test is complete.
   - If the pressure is out of specification, replace the fuel pressure regulator, and fuel filter (see page 11-163), and recheck fuel pressure.

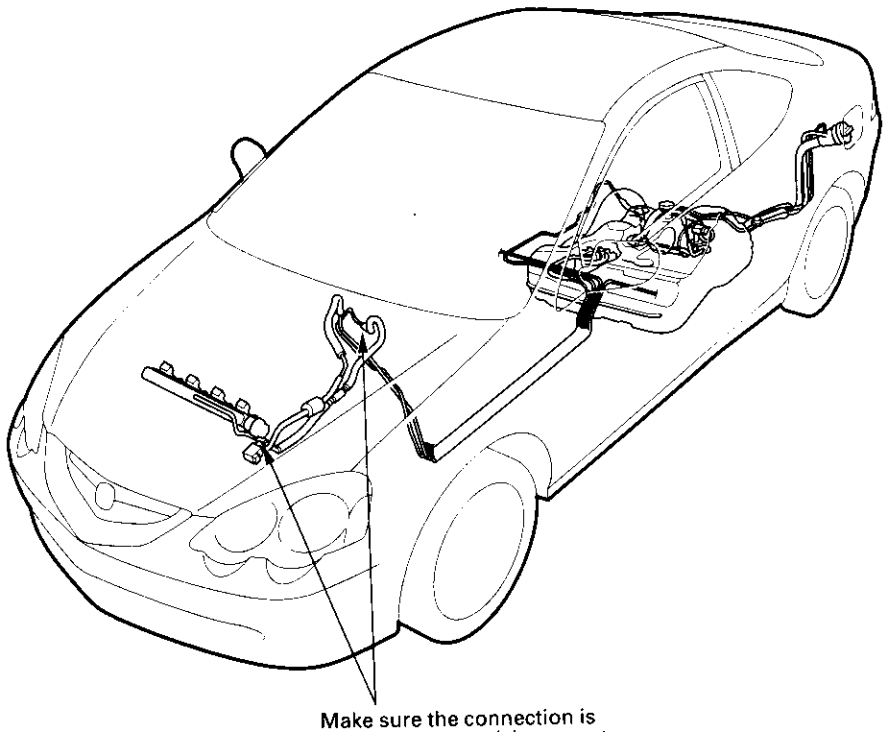
6. Remove the pressure gauge, and reinstall the fuel pulsation damper with a new washer. Tighten the fuel pulsation damper to 22 N·m (2.2 kgf·m, 16 lbf·ft).

   NOTE:
   - Disassemble and clean the fuel pressure gauge attachment thoroughly after use.
   - If the drain hole (A) of the fuel pulsation damper cover does not face bottom (K20A2 engine), reinstall it as shown.



Fuel Line Inspection

Check the fuel system lines, hoses, and fuel filter for damage, leaks, or deterioration. Replace any damaged parts.

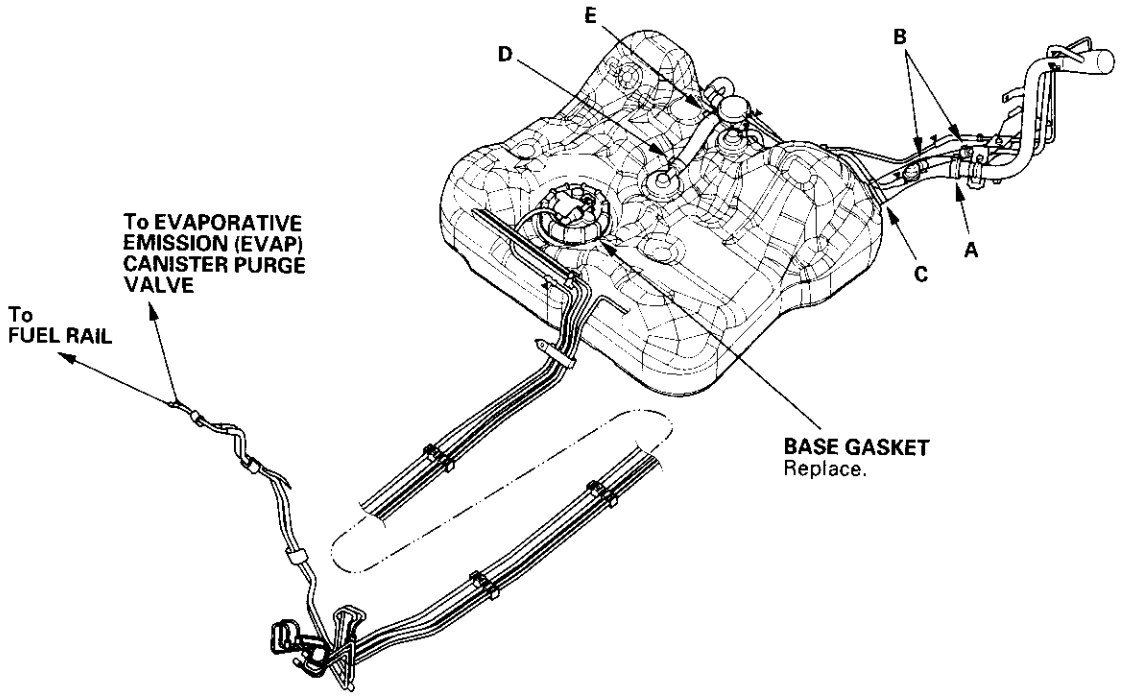


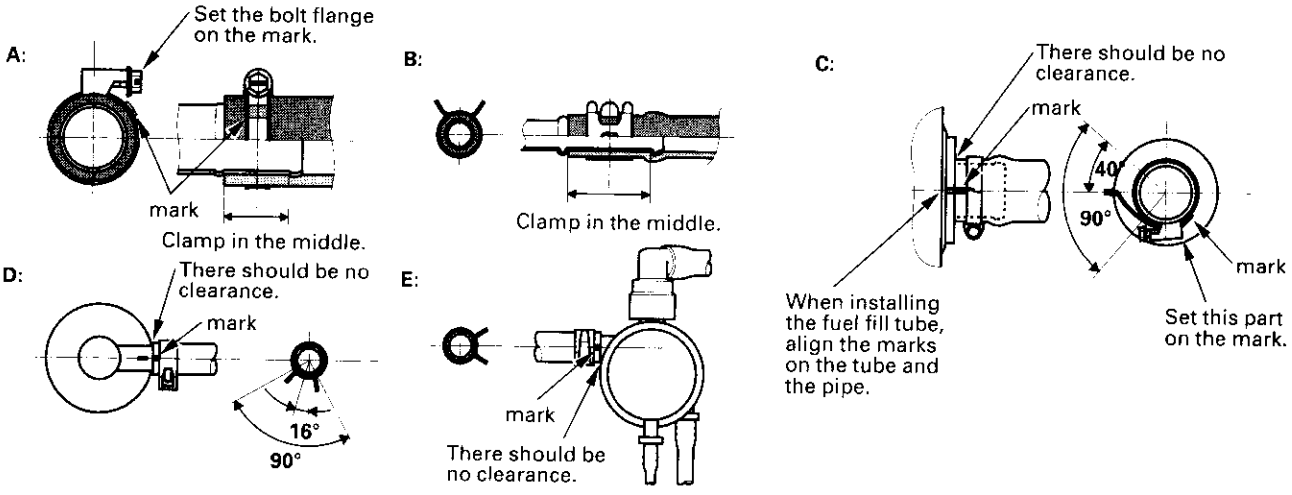
Make sure the connection is secure and the quick-connect fitting cover is firmly locked into place.

(cont'd)

Fuel Line Inspection (cont'd)

Check all clamps and retighten if necessary.
▲: Do not disconnect the hose from the pipe at these joints.

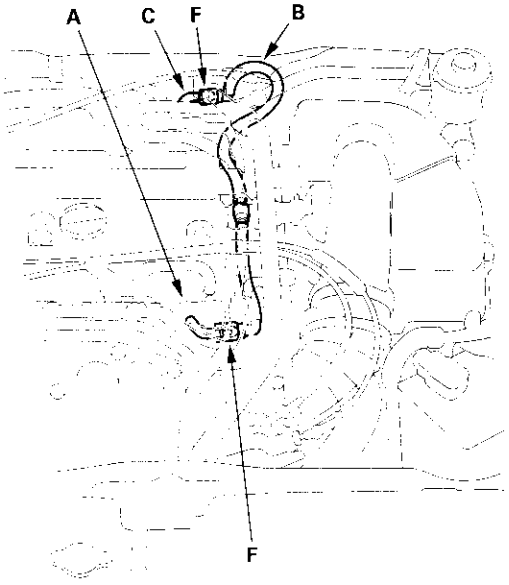


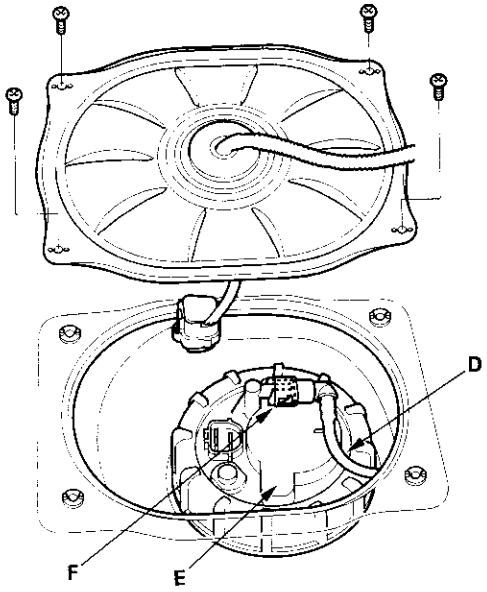


Fuel Line/Quick-Connect Fittings Precaution

The fuel tube/quick-connect fittings connect the fuel rail (A) to fuel feed hose (B), the fuel feed hose (B) to the fuel pipe (C), and the fuel tube (D) to the fuel tank unit (E). When removing or installing the fuel feed hose, fuel tank unit 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 that 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 if 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	TOKAI	GREEN
FUEL TANK UNIT	SANOH	WHITE

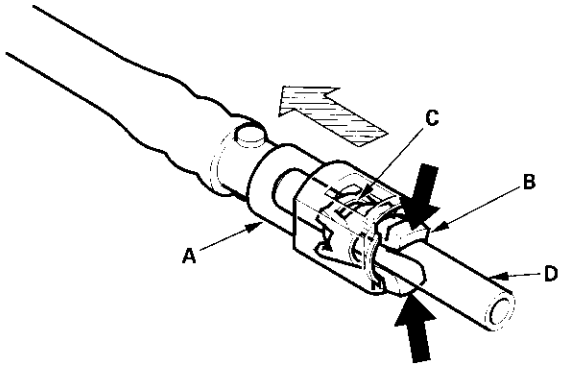
Fuel Line/Quick-Connect Fittings Removal

1. Relieve fuel pressure (see page 11-155).

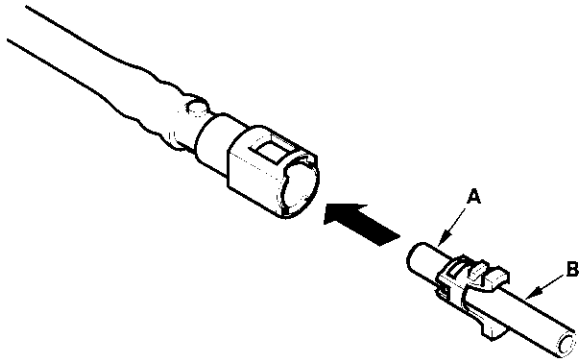
2. Check the fuel quick-connect fittings for dirt, and clean it if necessary.

3. Hold the connector (A) with one hand and squeeze the retainer tabs (B) with the other hand to release them from the locking pawls (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.

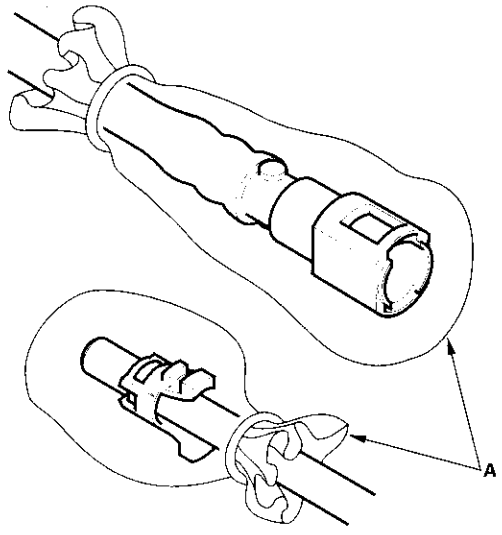


4. Check the contact area (A) of the line (B) for dirt or damage.
   - If the surface is dirty, clean it.
   - If the surface is rusty or damaged, replace the fuel pump, fuel filter, and fuel feed line.



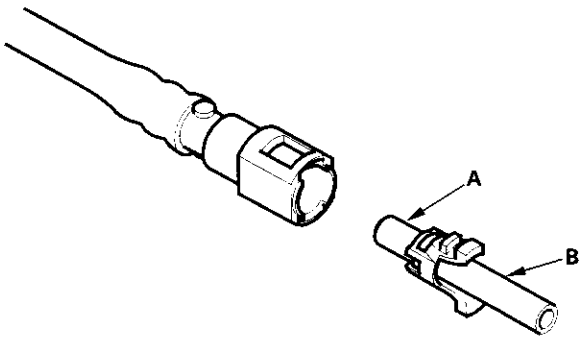
5. To prevent damage and keep foreign matter out, cover the disconnected connector and line end with plastic bags (A).

   NOTE:
   - The retainer cannot be reused once it has been removed from the line.
     Replace the retainer when
     - replacing the fuel rail.
     - replacing the fuel feed line.
     - replacing the fuel pump.
     - replacing the fuel filter.
     - replacing the fuel gauge sending unit.
     - it has been removed from the line.
     - it is damaged.

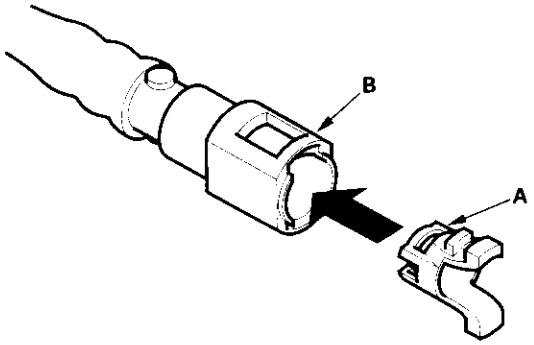


Fuel Line/Quick-Connect Fittings Installation

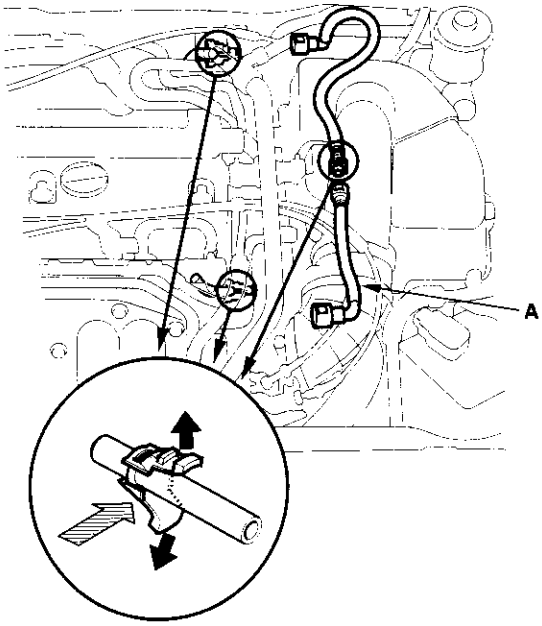
1. Check the contact area (A) of the line (B) for dirt or damage, and clean it if necessary.

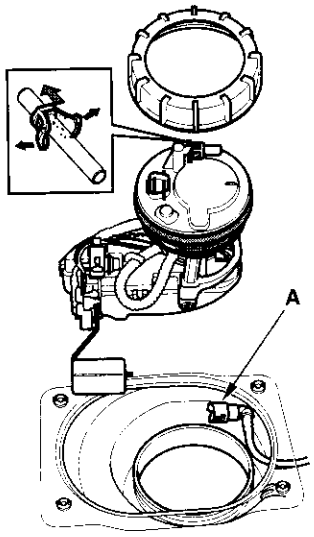


2. Insert a new retainer (A) into the connector (B) if the retainer is damaged, or after
   - replacing the fuel rail.
   - replacing the fuel feed line.
   - replacing the fuel pump.
   - replacing the fuel filter.
   - replacing the fuel gauge sending unit
   - removing the retainer from the line.



3. Before connecting a new fuel tube/quick-connect fitting assembly (A), remove the old retainer from the mating line.





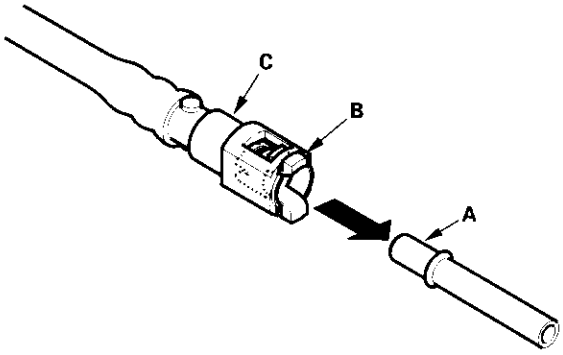
(cont'd)

Fuel Line/Quick-Connect Fittings Installation (cont'd)

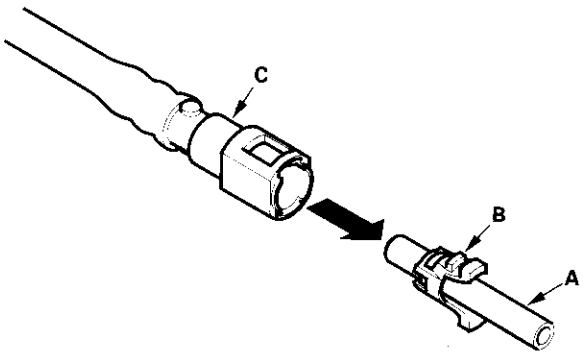
4. Align the quick-connect fittings with the line (A), and align the retainer (B) locking pawls with the connector (C) grooves. Then press the quick-connect fittings onto the line until both retainer pawls lock with a clicking sound.

   NOTE: If it is hard to connect, put a small amount of new engine oil on the line end.

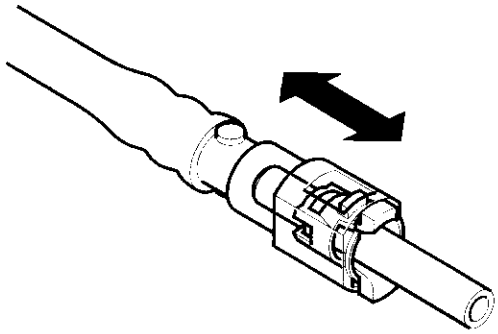
   Connection with new retainer:



   Reconnection to existing retainer:



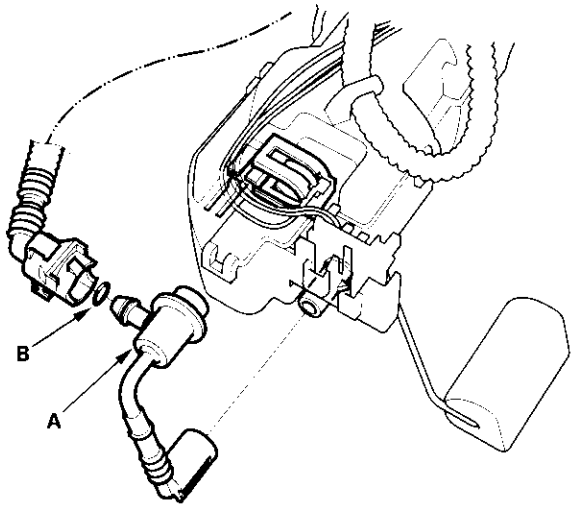
5. Make sure the connection is secure and that the pawls are firmly locked into place; check visually and by pulling the connector.



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 two or three times, and check that there is no leakage in the fuel supply system.

Fuel Pressure Regulator Replacement

1. Remove the fuel pump (see page 11-164).
2. Remove the fuel pressure regulator (A).

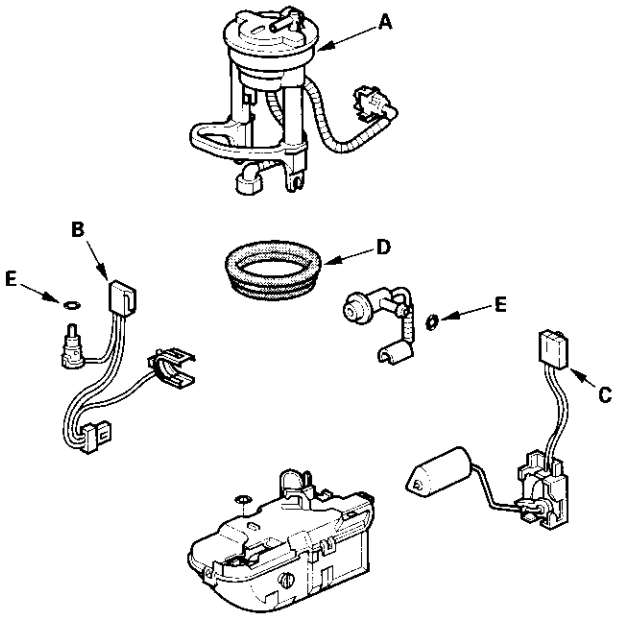


3. Install the regulator in the reverse order of removal with a new O-ring (B).

Fuel Filter Replacement

The fuel filter should be replaced whenever the fuel pressure drops below the specified value (320—370 kPa, 3.3—3.8 kgf/cm², 47—54 psi) after making sure that the fuel pump and the fuel pressure regulator are OK.

1. Remove the fuel pump (see page 11-164).
2. Remove the fuel filter set (A).

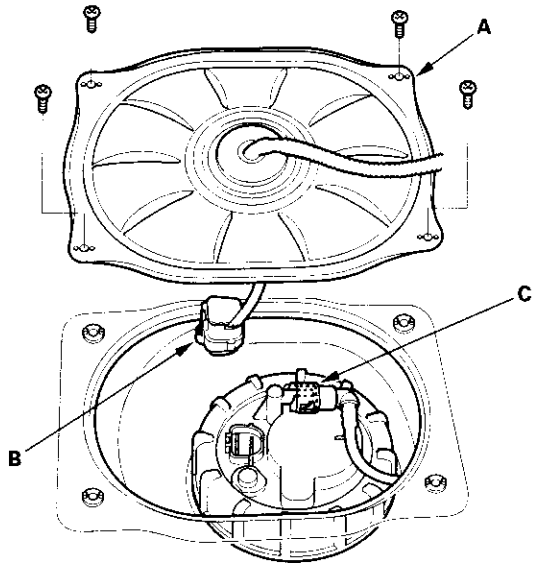


3. Install the filter in the reverse order of removal with a new base gasket (D) and new O-rings (E), then check these items:
   - When connecting the wire harness, make sure the connection is secure and the terminal (B) is firmly locked into place.
   - When installing the fuel gauge sending unit (C), make sure the connection is secure and the connector is firmly locked into place. Be careful not to bend or twist it excessively.

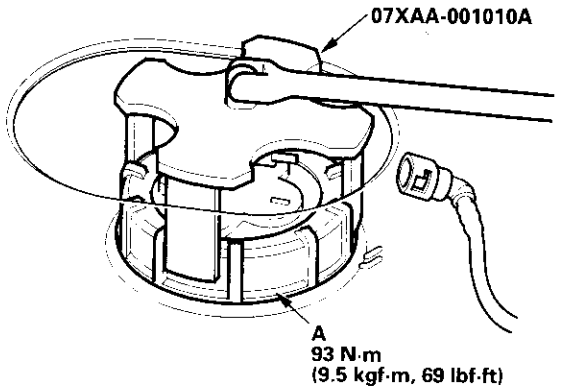
Fuel Pump/Fuel Gauge Sending Unit Replacement

Special Tools Required
Fuel sender ring wrench 07XAA-001010A

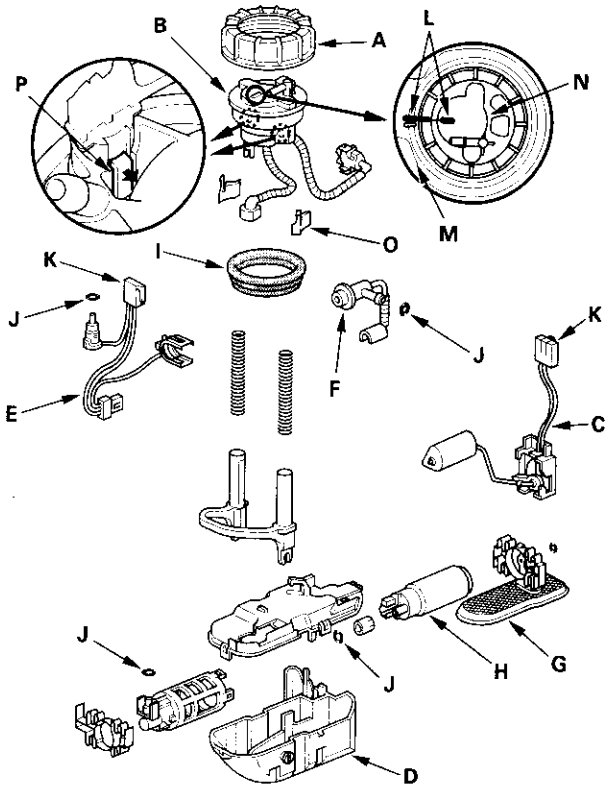
1. Relieve the fuel pressure (see page 11-155).
2. Remove the fuel fill cap.
3. Remove the rear seat cushion (see page 20-82).
4. Remove the access panel (A) from the floor.



5. Disconnect the fuel pump 5P connector (B).
6. Disconnect the quick-connect fitting (C) from the fuel tank unit.
7. Using the tool, loosen the fuel tank unit locknut (A).



8. Remove the locknut (A) and the fuel tank unit.

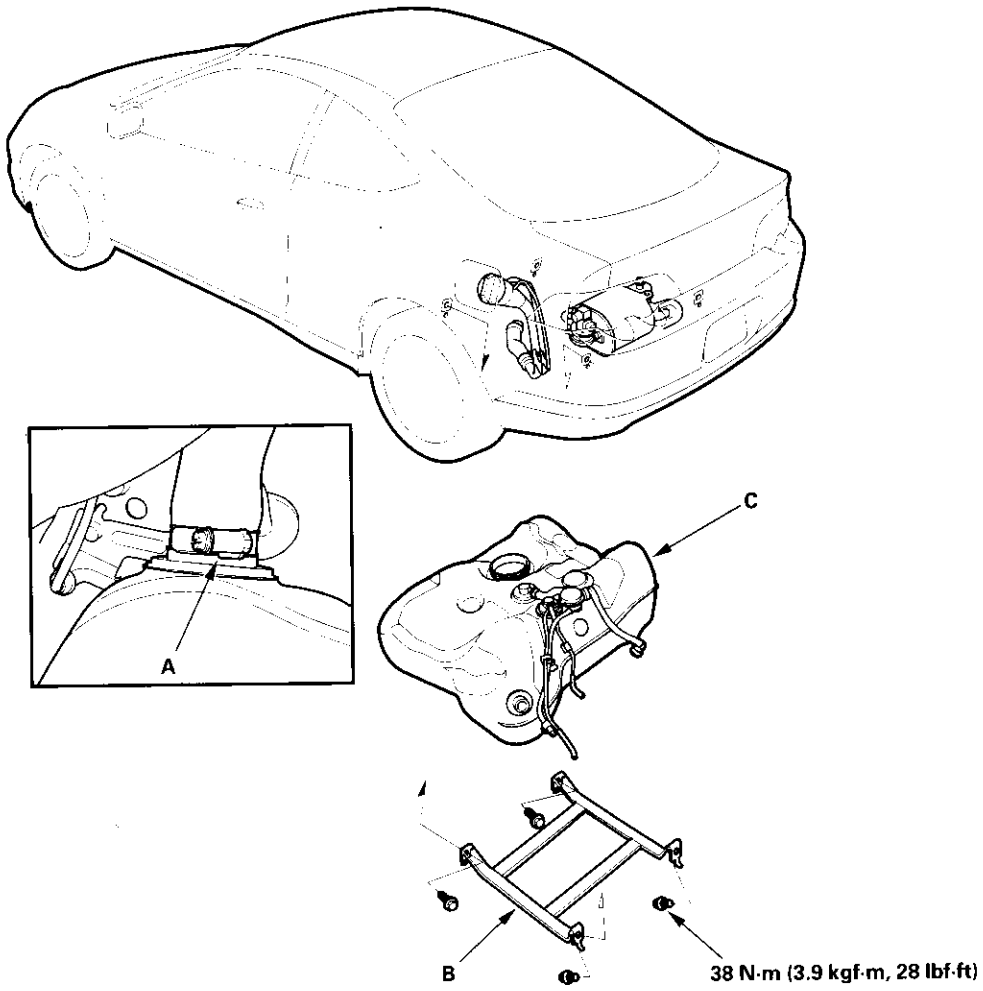


9. Remove the stop (O). Release the hook (P) and remove the fuel filter (B), the fuel gauge sending unit (C), the case (D), the wire harness (E), and the fuel pressure regulator (F).
10. When connecting the fuel tank unit, make sure the connection is secure and the suction filter (G) is firmly connected 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 it excessively.
    - When installing the fuel tank unit, align the marks (L) on the fuel tank (M) and the fuel tank unit (N).

Fuel Tank Replacement

1. Relieve the fuel pressure (see page 11-155).
2. Drain the fuel tank: Remove the fuel pump (see page 11-164). 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 jackstands.
4. Disconnect the fuel vapor hose and quick-connect fittings.
   Disconnect the hoses. Loosen the clamp (A). Slide back the clamps, then twist the hoses as you pull to avoid damaging them.



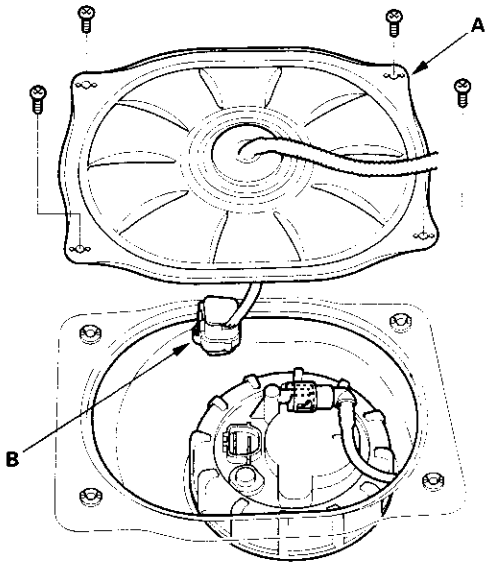
5. Place a jack, or other support, under the tank.
6. Remove the strap bolts, and let the strap (B) fall free.
7. Remove the fuel tank (C). If it sticks to the undercoat on its mount, carefully pry it off the mount.
8. Install the parts in the reverse order of removal.

Fuel Gauge Sending Unit Test

Special Tools Required
Fuel sender wrench 07XAA-001010A

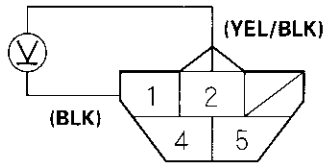
NOTE: For the fuel gauge system circuit diagram, refer to the Gauges Circuit Diagram (see page 22-62).

1. Check the No. 10 METER (75A) fuse in the under-dash fuse/relay box before testing.
2. Do the gauge drive circuit check (see page 22-60).
   - If the fuel gauge needle sweeps from the 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 the minimum to maximum position position and then returns to the minimum position, replace the gauge assembly and retest.
3. Turn the ignition switch OFF.
4. Remove the rear seat cushion (see page 20-82).
5. Remove the access panel (A) from the floor.



6. Disconnect the fuel pump 5P connector (B).
7. Measure voltage between the 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 (G552).

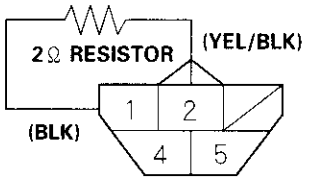
FUEL PUMP 5P CONNECTOR



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, and reinstall it.
9. Install a 2Ω resistor between the 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 of the fuel gauge does not indicate "F", replace the gauge.
    - If the gauge is OK, inspect the fuel gauge sending unit.

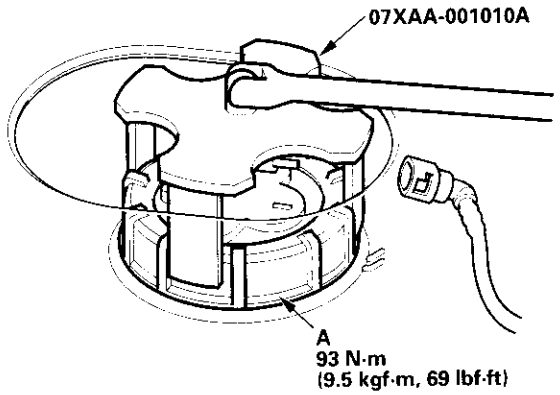
    NOTE: The pointer of the fuel gauge returns to the bottom of the gauge dial when the ignition switch is OFF, regardless of the fuel level.

11. Relieve the fuel pressure (see page 11-155).

12. Remove the fuel fill cap.

13. Disconnect the quick-connect fittings from the fuel pump.

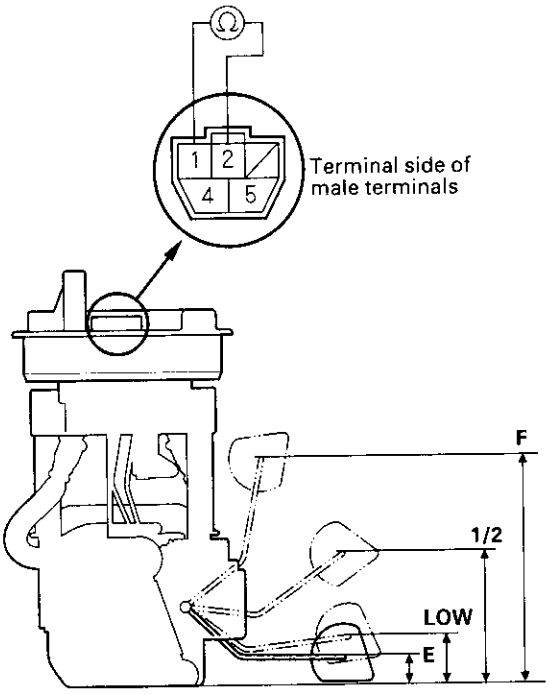
14. Using the tool, loosen the fuel tank unit locknut (A).



15. Measure the 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 11-164).

Float Position	F	1/2	LOW	E
Resistance (Ω)	11 – 13	68.5 – 74.5	114.4 – 126.6	130 – 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 11-166).

   - If the system is OK, go to step 2.
   - If the system has any malfunction, repair it.

2. Turn the ignition switch ON (II) with the float at the E (EMPTY) position.

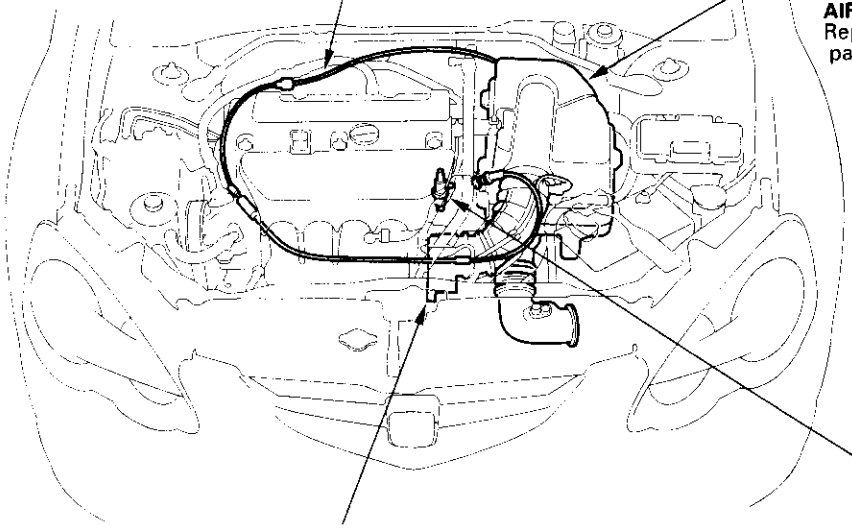
   - If the low fuel indicator light is on, go to step 3.
   - If the low fuel indicator light is not on, refer to the low fuel indicator Circuit Diagram (see page 22-62) and check the circuit.

3. Lift the float above the LOW position.

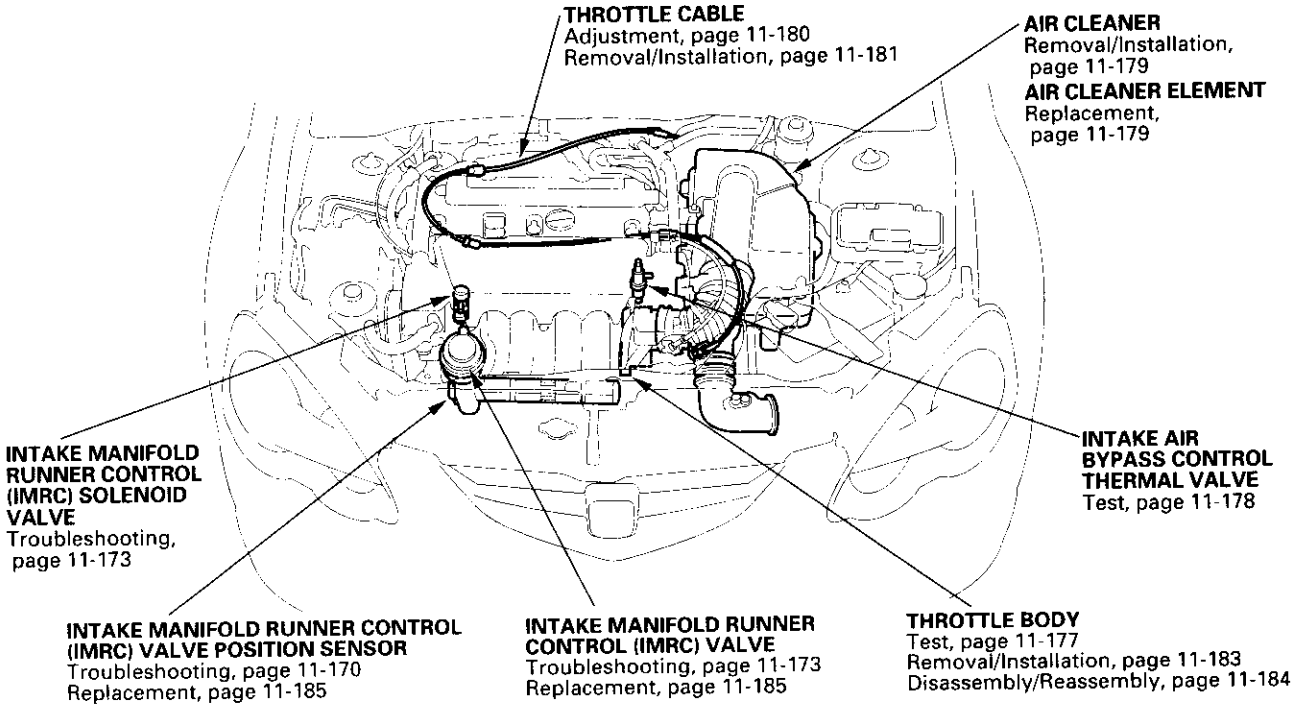
   - If the low fuel indicator light goes off, the system is OK.
   - If the low fuel indicator light is still on, refer to the low fuel indicator Circuit Diagram (see page 22-62) and check the circuit.

Component Location Index

K20A2 engine



K20A3 engine



DTC Troubleshooting

DTC P0661: IMRC Valve Position Sensor Circuit Low Voltage

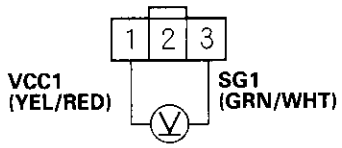
1. Reset the ECM/PCM (see page 11-4).
2. Turn the ignition switch ON (II).

   Is DTC P0661 indicated?

   YES – Go to step 3.

   NO – Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the IMRC valve position sensor and at the ECM/PCM. ■
3. Turn the ignition switch OFF.
4. Disconnect the IMRC valve position sensor 3P connector.
5. Turn the ignition switch ON (II).
6. Measure voltage between IMRC valve position sensor 3P connector terminals No. 1 and No. 3.

   IMRC VALVE POSITION SENSOR 3P CONNECTOR



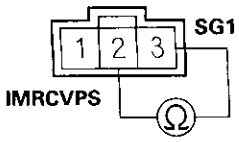
   Wire side of female terminals

   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 IMRC valve position sensor 3P connector terminals No. 2 and No. 3.

   IMRC VALVE POSITION SENSOR 3P CONNECTOR



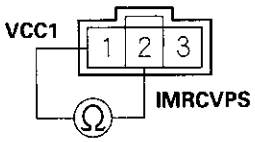
   Terminal side of male terminals

   Is there about 3.2 kΩ ?

   YES – Go to step 9.

   NO – Replace the IMRC valve position sensor (see page 11-185). ■
9. Measure resistance between IMRC valve position sensor (see page 11-185) 3P connector terminals No. 1 and No. 2.

   IMRC VALVE POSITION SENSOR 3P CONNECTOR



   Terminal side of male terminals

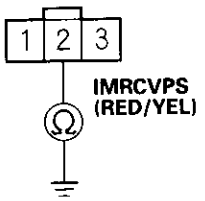
   Is there about 9.5 kΩ ?

   YES – Go to step 10.

   NO – Replace the IMRC valve position sensor (see page 11-185). ■
10. Disconnect ECM/PCM connector A (31P).

11. At the wire harness side, check for continuity between IMRC valve position sensor 3P connector terminal No. 2 and body ground.

IMRC VALVE POSITION SENSOR 3P CONNECTOR



Wire side of female terminals

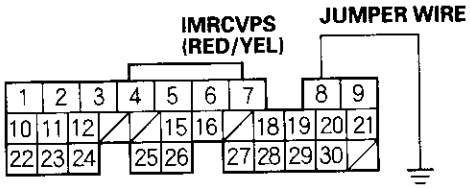
Is there continuity?

YES – Repair short in the wire between the ECM/PCM (A8) and the IMRC valve position sensor. ■

NO – Go to step 12.

12. Connect ECM/PCM connector terminal A8 to body ground with a jumper wire.

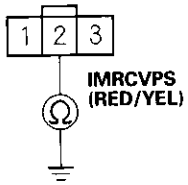
ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

13. At the wire harness side, check for continuity between IMRC valve position sensor 3P connector terminals No. 2 and body ground.

IMRC VALVE POSITION SENSOR 3P CONNECTOR



Wire side of female terminals

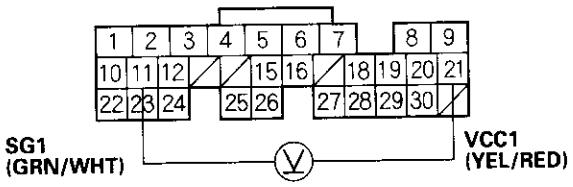
Is there continuity?

YES – Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM. ■

NO – Repair open in the wire between the ECM/PCM (A8) and the IMRC valve position sensor. ■

14. Measure voltage between ECM/PCM connector terminals A11 and A21.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there about 5 V?

YES – Repair open in the wire between the ECM/PCM (A21) and the IMRC valve position sensor. ■

NO – Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM. ■

DTC Troubleshooting (cont'd)

DTC P0662: IMRC Valve Position Sensor Circuit High Voltage

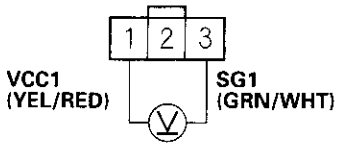
1. Reset the ECM/PCM (see page 11-4).
2. Turn the ignition switch ON (II).

   Is DTC P0662 indicated?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the IMRC valve position sensor and at the ECM/PCM. ■
3. Turn the ignition switch OFF.
4. Disconnect the IMRC valve position sensor 3P connector.
5. Turn the ignition switch ON (II).
6. At the wire harness side, measure voltage between IMRC valve position sensor 3P connector terminals No. 1 and No. 3.

IMRC VALVE POSITION SENSOR 3P CONNECTOR



Wire side of female terminals

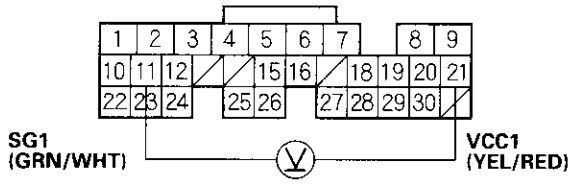
Is there about 5 V?

YES—Replace the IMRC valve position sensor (see page 11-185). ■

NO—Go to step 7.

7. Measure voltage between ECM/PCM connector terminals A11 and A21.

ECM/PCM CONNECTOR A (31P)



Wire side of female terminals

Is there about 5 V Ω ?

YES—Repair open in the wire between the ECM/PCM (A11) and the IMRC valve position sensor. ■

NO—Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM. ■

DTC P1077: IMRC System Malfunction (Low rpm)

1. Reset the ECM/PCM (see page 11-4).

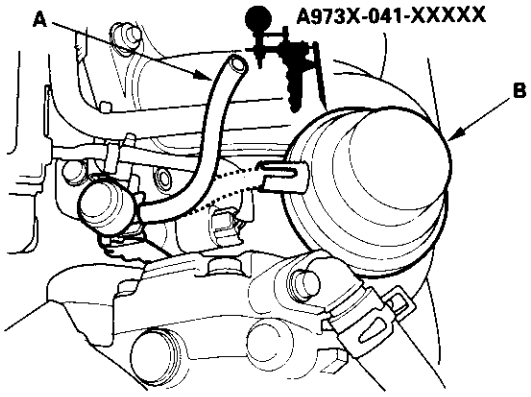
2. Start the engine and hold it at 3,000 rpm with no load (in Park or neutral) until the radiator fan comes on.

   Is DTC P1077 indicated?

   YES – Go to step 3.

   NO – Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the Intake Manifold Runner Control (IMRC) solenoid Valve and at the ECM/PCM. ■

3. Disconnect the vacuum hose (A) from the Intake Manifold Runner Control (IMRC) actuator (B), and connect a vacuum pump to the hose.



   Is there vacuum?

   YES – Go to step 11.

   NO – Go to step 4.

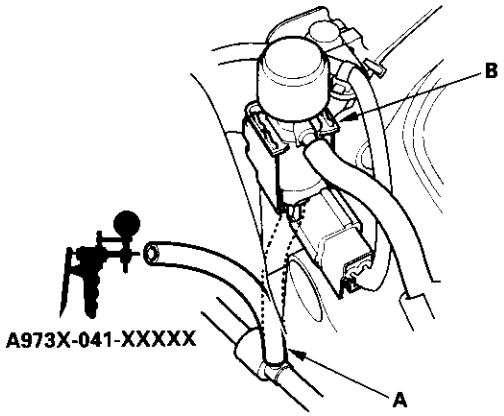
4. Check the vacuum hose between IMRC actuator and IMRC solenoid valve.

   Is the vacuum hose OK?

   YES – Go to step 5.

   NO – Repair the blockage or vacuum leak between the IMRC actuator and IMRC solenoid valve. ■

5. Disconnect the lower vacuum hose (A) from the IMRC solenoid valve (B), and connect a vacuum pump to the hose.



   Is there vacuum?

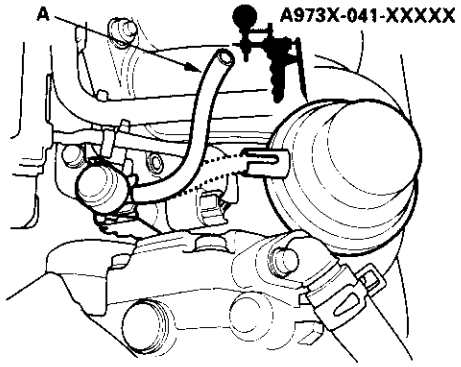
   YES – Go to step 6.

   NO – Repair the blockage or vacuum leak between the intake manifold and IMRC solenoid valve. ■

(cont'd)

DTC Troubleshooting (cont'd)

6. Reconnect the lower vacuum hose to the IMRC solenoid valve, and connect the vacuum pump to the vacuum hose (A).
7. Disconnect the IMRC solenoid valve 2P connector.



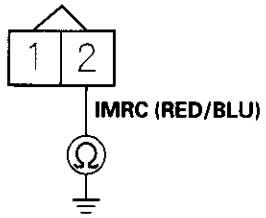
Is there vacuum?

YES – Go to step 8.

NO – Replace the IMRC solenoid valve. ■

8. Turn the ignition switch OFF.
9. Disconnect ECM/PCM connector B (24P).
10. Check for continuity between IMRC solenoid valve 2P connector terminal No. 2 and body ground.

IMRC SOLENOID VALVE 2P CONNECTOR



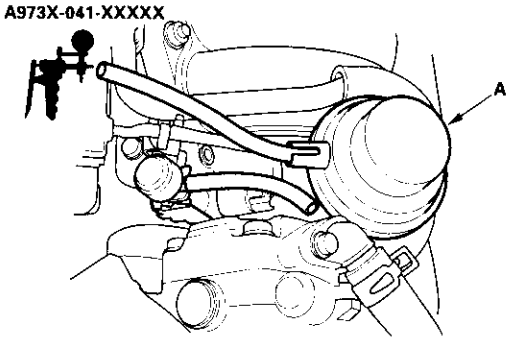
Wire side of female terminals

Is there continuity?

YES – Repair short in the wire between the ECM/PCM (B22) and the IMRC solenoid valve. ■

NO – Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM. ■

11. Turn the ignition switch OFF.
12. Connect the vacuum pump to the IMRC actuator (A), then apply vacuum.



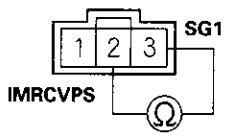
Does the IMRC actuator hold vacuum?

YES – Go to step 13.

NO – Replace the IMRC valve assembly (see page 11-185). ■

13. Disconnect the IMRC valve position sensor 3P connector.
14. At the sensor side, measure resistance between IMRC valve position sensor 3P connector terminals No. 2 and No. 3 while applying vacuum to the IMRC actuator.

IMRC VALVE POSITION SENSOR 3P CONNECTOR



Terminal side of male terminals

Is there about 9.5 kΩ ?

YES – Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM. ■

NO – Replace the IMRC valve assembly (see page 11-185). ■

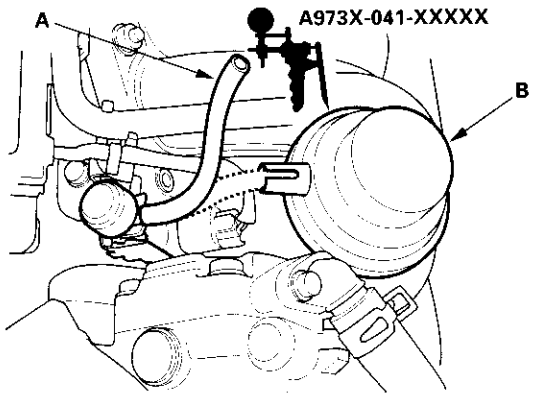
DTC P1078: IMRC System Malfunction (High rpm)

1. Reset the ECM/PCM (see page 11-4).
2. Start the engine, and hold it at 3,000 rpm with no load (in Park or neutral) until the radiator fan comes on.
3. Raise the engine speed to 5,000 rpm.

   Is DTC P1078 indicated?

   YES – Go to step 4.

   NO – Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the Intake Manifold Runner Control (IMRC) solenoid valve and at the ECM/PCM. ■
4. Disconnect the vacuum hose (A) from the Intake Manifold Runner Control (IMRC) actuator (B), and connect a vacuum pump to the hose.
5. Raise the engine speed to 5,000 rpm.

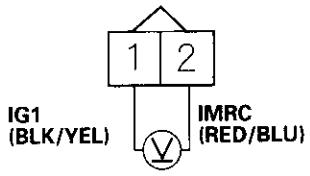


   Is there vacuum?

   YES – Go to step 6.

   NO – Go to step 15.
6. Turn the ignition switch OFF.
7. Disconnect the IMRC solenoid valve 2P connector.
8. Start the engine.
9. Raise the engine speed to 5,000 rpm, then measure voltage between IMRC solenoid valve 2P connector terminal No. 1 and No. 2.

IMRC SOLENOID VALVE 2P CONNECTOR



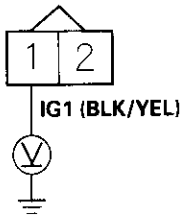
Wire side of female terminals

   Is there battery voltage?

   YES – Replace the IMRC solenoid valve. ■

   NO – Go to step 10.
10. Measure voltage between IMRC solenoid valve 2P connector terminal No.1 and body ground.

IMRC SOLENOID VALVE 2P CONNECTOR



Wire side of female terminals

   Is there battery voltage?

   YES – Go to step 11.

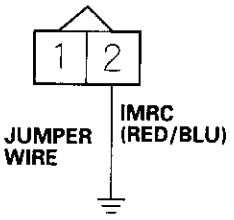
   NO – Check the No. 4 ACG (10A) fuse in the under-dash fuse/relay box. If the fuse OK, repair open in the wire between the IMRC solenoid valve and No. 4 ACG (10A) fuse. ■

(cont'd)

DTC Troubleshooting (cont'd)

11. Turn the ignition switch OFF.
12. Disconnect ECM/PCM connector B (24P).
13. Connect IMRC solenoid valve 2P connector terminal No. 2 to body ground with a jumper wire.

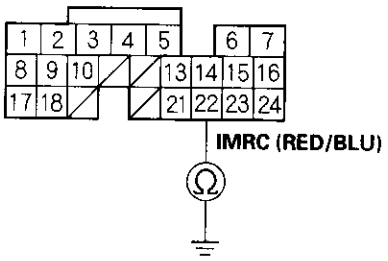
IMRC SOLENOID VALVE 2P CONNECTOR



Wire side of female terminals

14. Check for continuity between ECM/PCM connector terminal B22 and body ground.

ECM/PCM CONNECTOR B (24P)



Wire side of female terminals

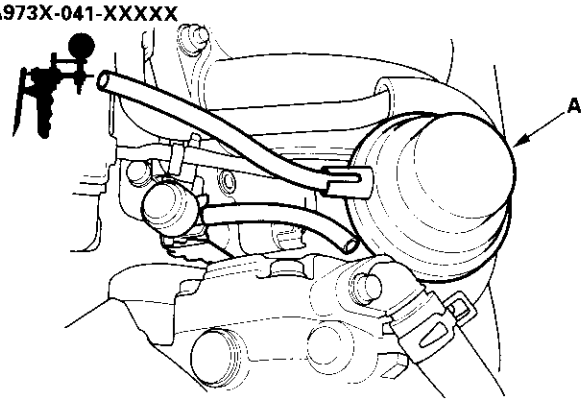
Is there continuity?

YES – Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM. ■

NO – Repair open in the wire between the ECM/PCM (B22) and the IMRC solenoid valve. ■

15. Turn the ignition switch OFF.
16. Connect the vacuum pump to the IMRC actuator (A), then apply vacuum.

A973X-041-XXXXX



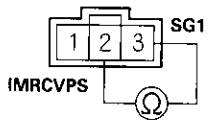
Does the IMRC actuator hold vacuum?

YES – Go to step 17.

NO – Replace the IMRC valve assembly (see page 11-185). ■

17. Disconnect the IMRC valve position sensor 3P connector.
18. At the sensor side, measure resistance between the IMRC valve position sensor 3P connector terminals No. 2 and No. 3 while applying vacuum to the IMRC actuator.

IMRC VALVE POSITION SENSOR 3P CONNECTOR



Terminal side of male terminals

Is there about 9.5 kΩ ?

YES – Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM. ■

NO – Replace the IMRC valve assembly (see page 11-185). ■

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 (DTCs) (see page 11-3).

1. With the engine off, check the throttle cable operation. The cable should move without binding or sticking.

   - If the cable operates OK, go to step 2.
   - If the cable binds or sticks, check it and its routing. If it's faulty, reroute it or replace it and adjust it (see page 11-180), then go to step 2.

2. Operate 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 Data Link Connector (DLC).

4. Turn the ignition switch ON (II).

5. Check the throttle position with the scan tool. There 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.

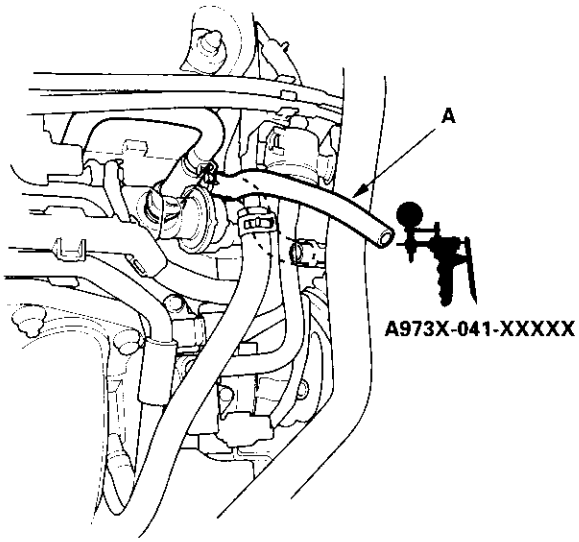
Intake Air Bypass Control Thermal Valve Test

Special Tools Required
Vacuum Pump/Gauge, 0 - 30 in. Hg A973X-041-XXXXX

1. Start the engine, and let it idle.

   NOTE: 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 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 damage intake air bypass control thermal valve.

4. Hold the engine at 3,000 rpm with no load (in Park or neutral) until the radiator fan comes on, then let it idle.

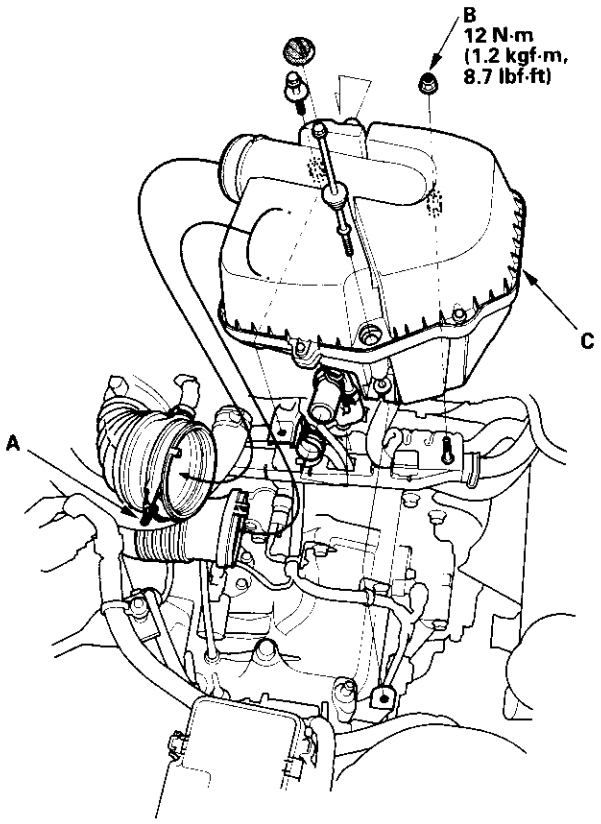
5. Raise and lower the engine speed, and make sure the vacuum gauge reading does not change as the rpm changes.

   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 Removal/Installation

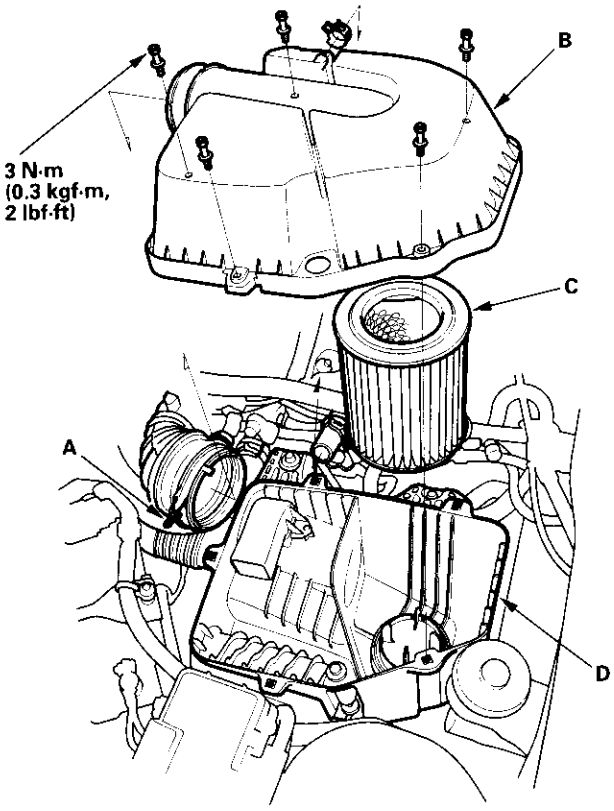
1. Remove the clamp (A) and the nuts (B).



2. Remove the air cleaner (C).
3. Install the parts in the reverse order of removal.

Air Cleaner Element Replacement

1. Remove the clamp (A) and, open the air cleaner housing cover (B).

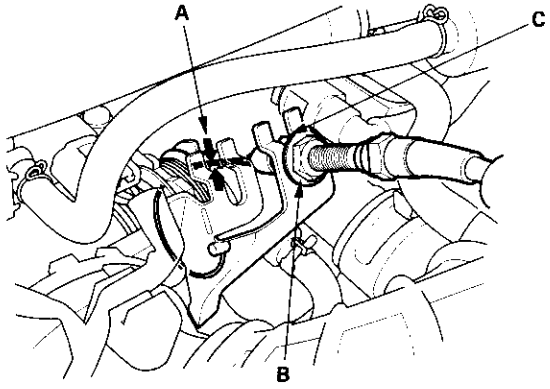


2. Remove the air cleaner (C) from the air cleaner housing (D).
3. Install the parts in the reverse order of removal.

Throttle Cable Adjustment

K20A2 engine

1. Check cable free play at the throttle linkage. Cable deflection (A) should be 10 — 12 mm (3/8 — 1/2 in.).



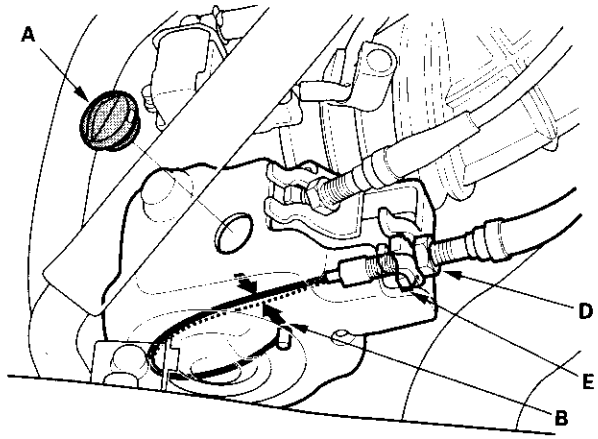
2. If deflection (A) is not within spec (10 — 12 mm, 3/8 — 1/2 in.) loosen the locknut (B), turn the adjusting nut (C) until the deflection (A) is as specified, then retighten the locknut (B).

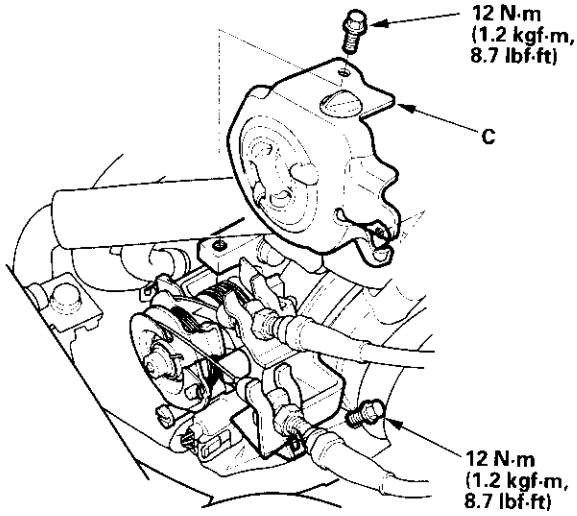
3. With the cable properly adjusted, check the throttle valve to be sure it opens fully when you push the accelerator pedal to the floor. Also check the throttle valve to be sure it returns to the idle position whenever you release the accelerator pedal.

K20A3 engine

1. Remove the inspection hole plug (A).

2. Check cable free play at the throttle linkage. Cable deflection (B) should be 10 — 12 mm (3/8 — 1/2 in.).



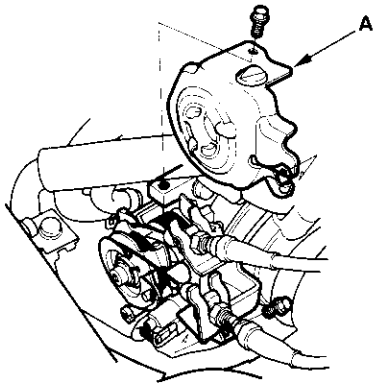


3. If deflection (B) is not within spec (10 — 12 mm, 3/8 — 1/2 in.), remove the throttle linkage cover (C), loosen the locknut (D), turn the adjusting nut (E) until the deflection (B) is as specified, then retighten the locknut (D).

4. 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.

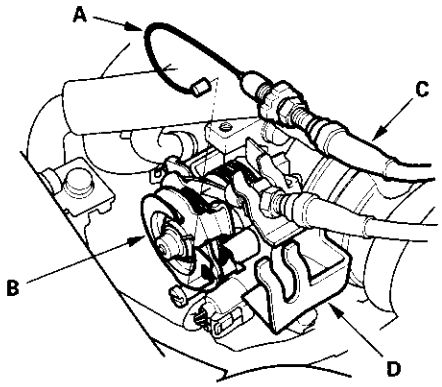
Throttle Cable Removal/Installation

1. Remove the throttle linkage cover (A) (K20A3 engine only).

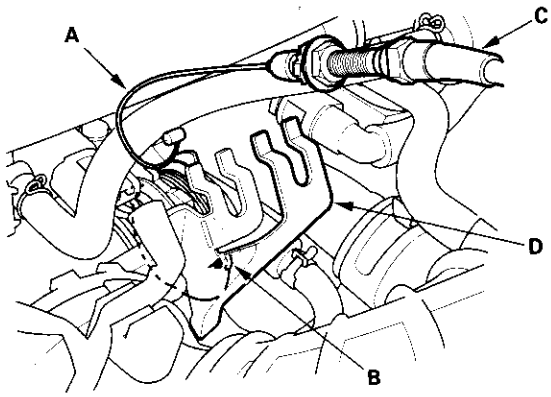


2. Fully open the throttle valve, then remove the throttle cable (A) from the throttle link (B).

K20A2 engine

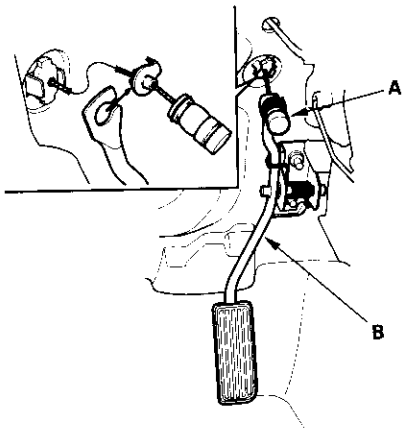


K20A3 engine



3. Remove the cable housing (C) from the cable bracket (D).

4. Remove the throttle cable (A) from the accelerator pedal (B).

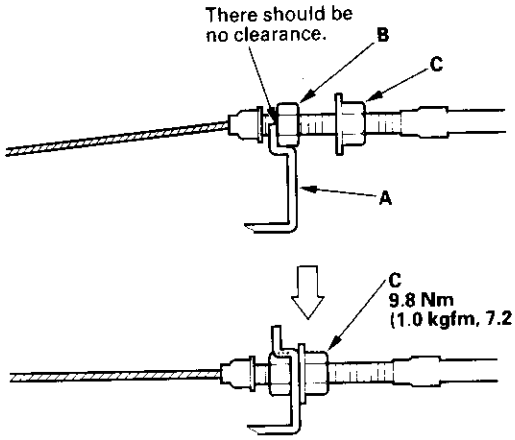


5. Install in the reverse order of removal.

6. After installing, start the engine. Hold the engine at 3,000 rpm with no load (in Park or neutral) until the radiator fan comes on, then let it idle.

7. Hold the cable, removing all slack from it.

8. Set the locknut on the cable bracket (A). Turn the adjusting nut (B) so that its free play is 0 mm.



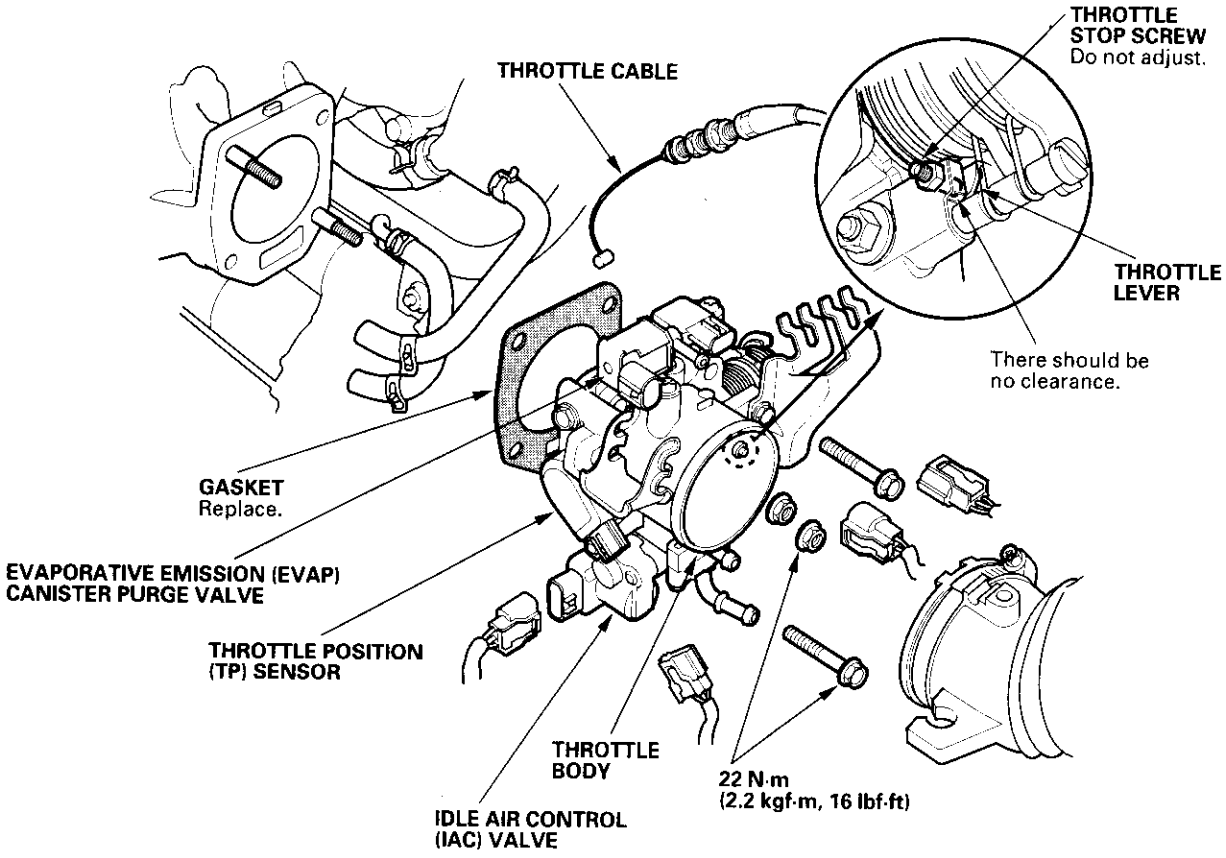
9. Remove the cable from the throttle bracket (A). Reset the adjusting nut (B), and tighten the locknut (C).

10. 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.

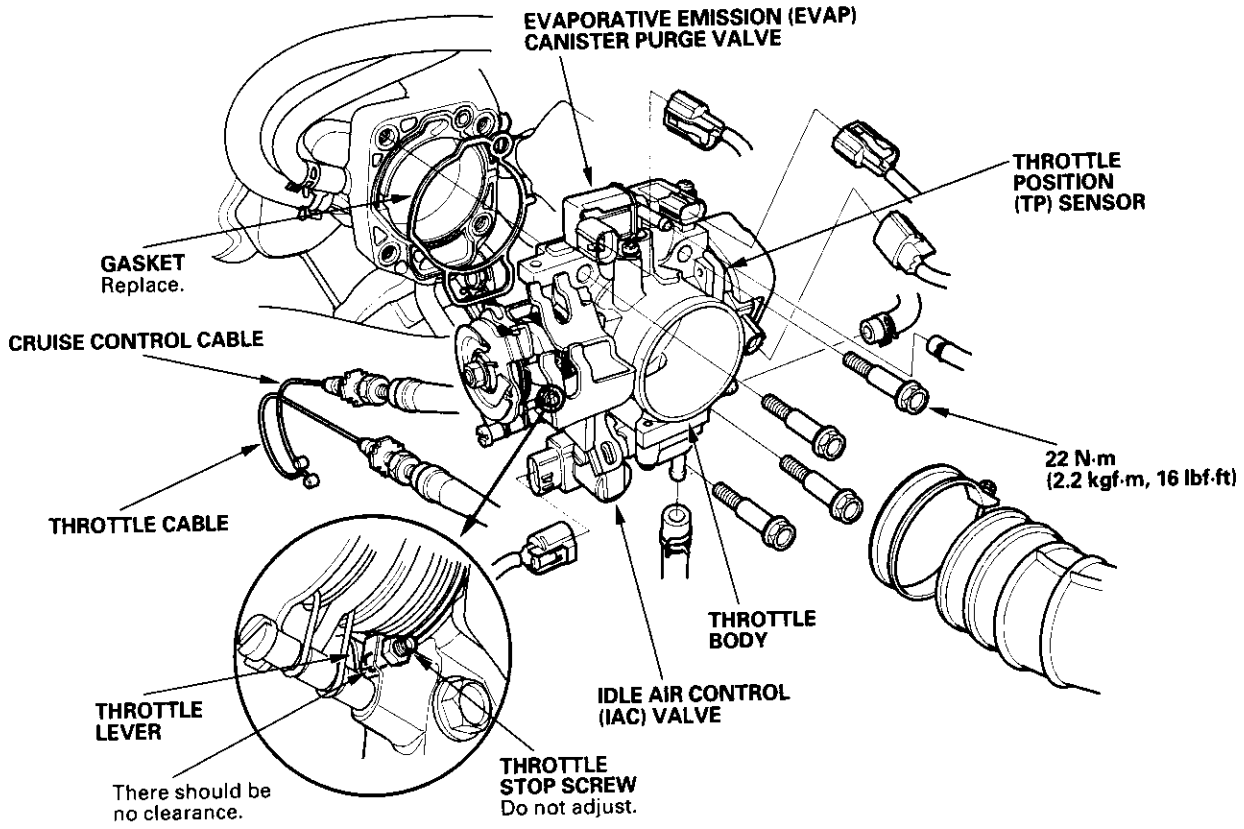
Throttle Body Removal/Installation

NOTE:
- Do not adjust the throttle stop screw.
- After reassembly, adjust the cruise control cable (see page 4-57) and the throttle cable (see page 11-181).
- The Throttle Position (TP) sensor is not removable.

K20A2 engine

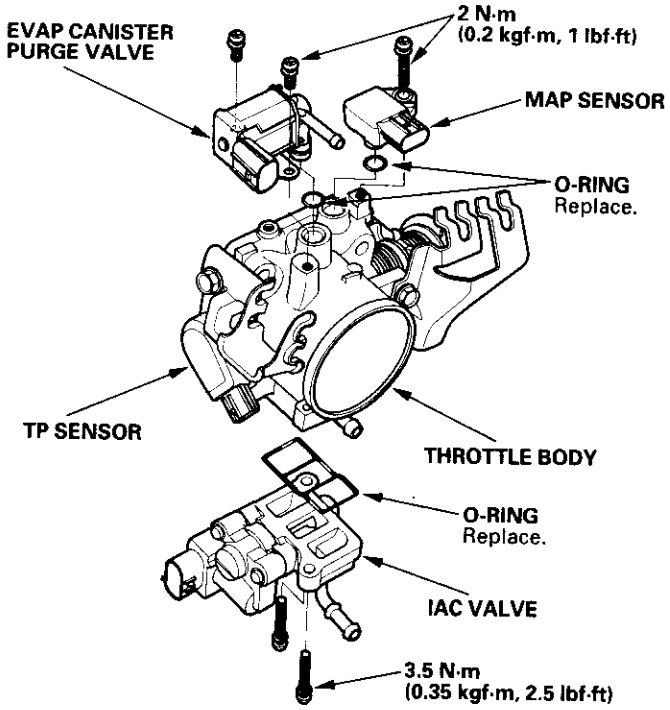


K20A3 engine

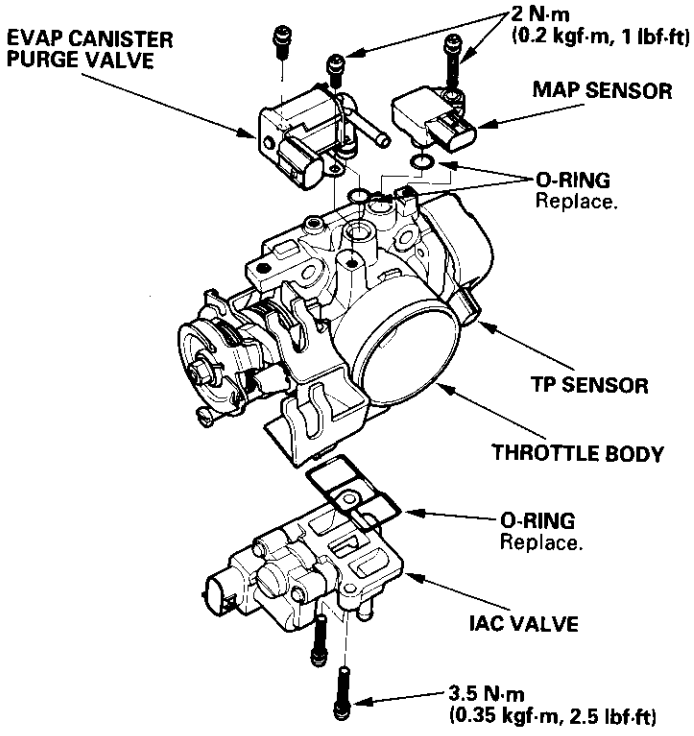


Throttle Body Disassembly/Reassembly

K20A2 engine

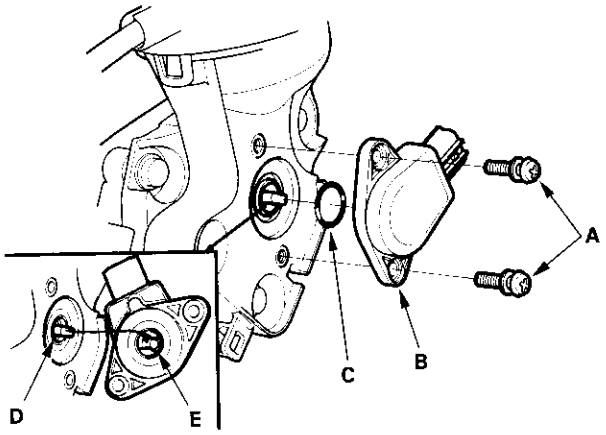


K20A3 engine



IMRC Valve Position Sensor Replacement

1. Remove the two screws (A) and the IMRC position sensor (B).

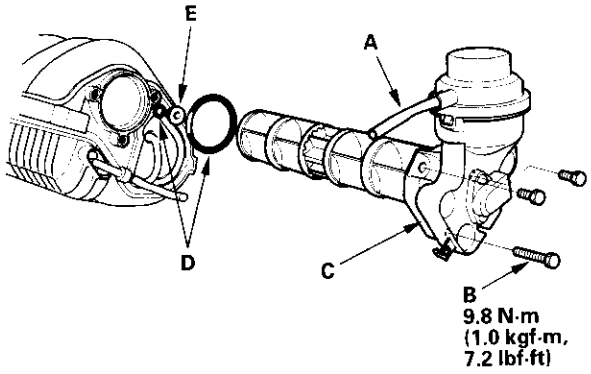


2. Install the sensor with a new O-ring (C), and make sure the projection (D) inside the IMRC valve matches up with the groove (E) in the sensor.

IMRC Valve Replacement

1. Remove the intake manifold (see page 9-2).

2. Disconnect the vacuum hose (A), then remove the bolts (B), and remove the IMRC valve assembly (C).



3. Install the parts in the reverse order of removal with a new O-ring (D).

   NOTE: Make sure the bearing (E) is secured into place.

DTC Troubleshooting

DTC P0420: Catalyst 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 HO2S (Sensor 2)
P0141: Secondary HO2S (Sensor 2) Heater

1. Reset the ECM/PCM (see page 11-4).
2. Start the engine. Hold the engine at 3,000 rpm with no load (in Park or neutral) until the radiator fan comes on.
3. Test-drive at 50–55 mph (80–88 km/h) for approx. 2 minutes. Then decelerate for at least 4 seconds with the throttle completely closed. Then accelerate to 55 mph (88 km/h), and try to hold it until the scan tool indicates FAIL or PASS as the TWC test result.

   Is the test result FAIL?

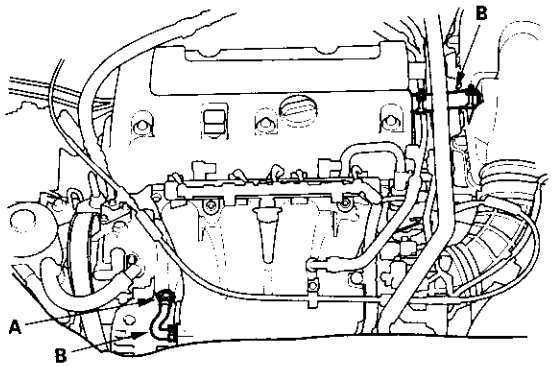
   YES—Check the three way catalytic converter (TWC). If necessary, replace the TWC.■

   NO—Intermittent failure, system is OK at this time.■

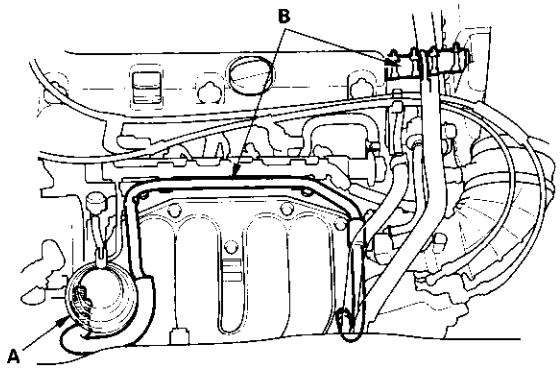
PCV Valve Inspection and Test

1. Check the PCV valve (A), hoses (B) and connections for leaks or restrictions.

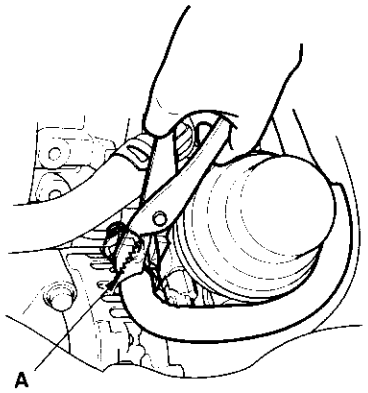
K20A2 engine



K20A3 engine

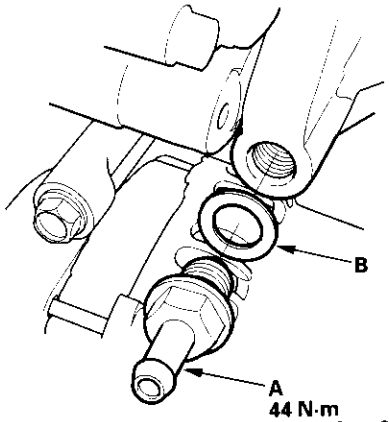


2. At idle, make sure there is a clicking sound from the PCV valve when the hose between the PCV valve and intake manifold is lightly pinched (A) with your fingers or pliers.
   If there is no clicking sound, check the PCV valve grommet for cracks or damage. If the grommet is OK, replace the PCV valve and recheck.



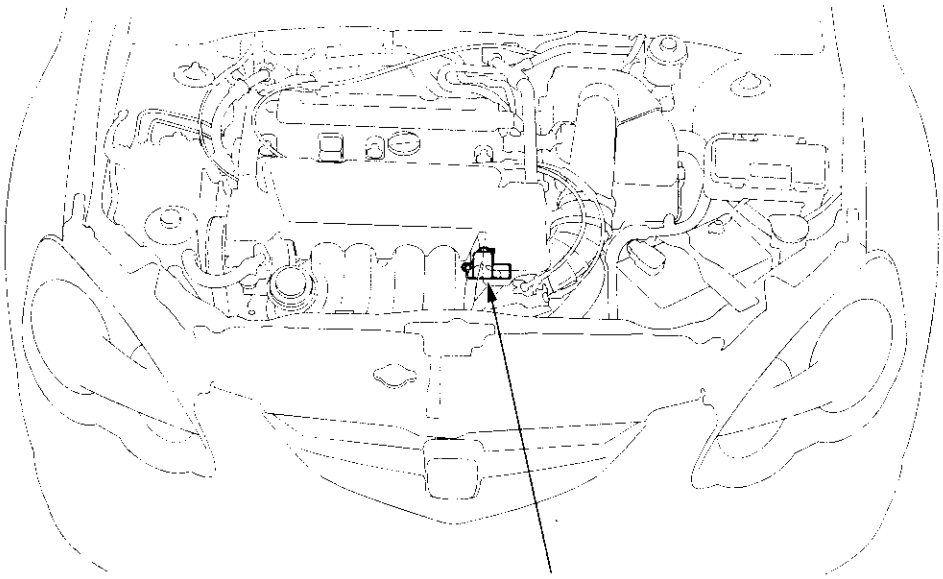
PCV Valve Replacement

1. Unscrew the PCV valve (A) and, remove it.

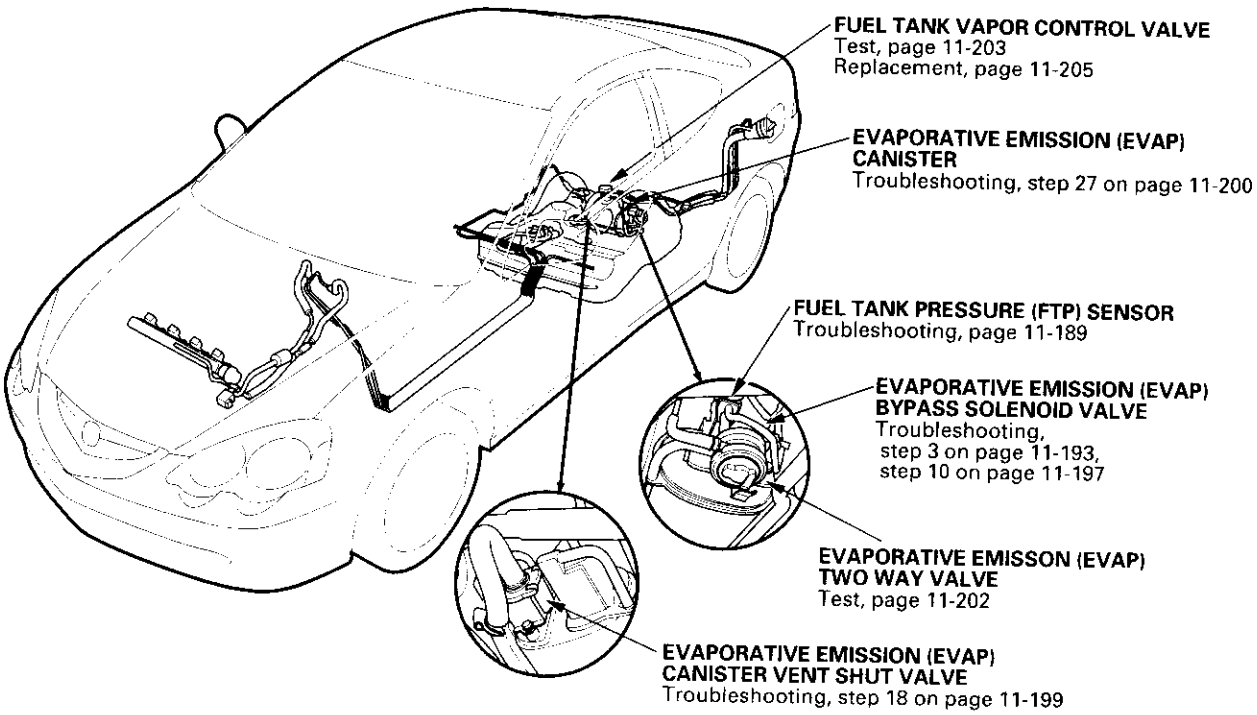


2. Install the valve in the reverse order of removal with a new washer (B).

Component Location Index



EVAPORATIVE EMISSION (EVAP) CANISTER PURGE VALVE
Troubleshooting, step 1 on page 11-196



FUEL TANK VAPOR CONTROL VALVE
Test, page 11-203
Replacement, page 11-205

EVAPORATIVE EMISSION (EVAP) CANISTER
Troubleshooting, step 27 on page 11-200

FUEL TANK PRESSURE (FTP) SENSOR
Troubleshooting, page 11-189

EVAPORATIVE EMISSION (EVAP) BYPASS SOLENOID VALVE
Troubleshooting,
step 3 on page 11-193,
step 10 on page 11-197

EVAPORATIVE EMISSON (EVAP) TWO WAY VALVE
Test, page 11-202

EVAPORATIVE EMISSION (EVAP) CANISTER VENT SHUT VALVE
Troubleshooting, step 18 on page 11-199

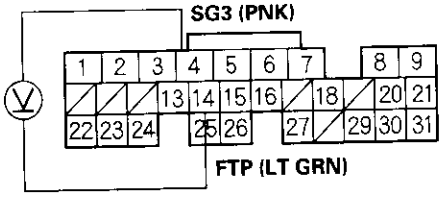
*: The illustration shows the K20A3 engine; the K20A2 engine is similar.

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 the fuel tank pressure (FTP) sensor voltage with the Honda PGM Tester, or measure voltage between ECM/PCM connector terminals E4 and E14.

ECM/PCM CONNECTOR E (31P)



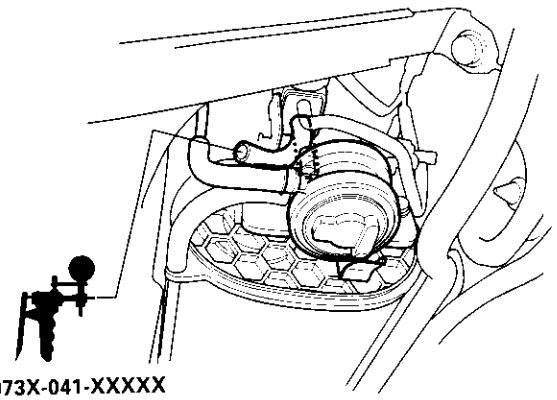
Wire side of female terminals

Is there about 2.5V?

YES—Go to step 4.

NO—Replace the FTP sensor. ■

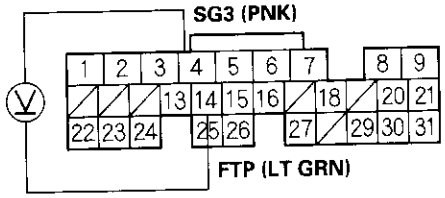
4. Turn the ignition switch OFF.
5. Disconnect the hose between the EVAP two way valve and the FTP sensor at the EVAP two way valve end.
6. Connect a vacuum pump to the open end of that hose.



A973X-041-XXXXX

7. Turn the ignition switch ON (II).
8. Monitor the FTP sensor voltage with the Honda PGM Tester, or measure voltage between ECM/PCM connector terminals E4 and E14, and slowly squeeze the vacuum pump.

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

9. The voltage should drop smoothly from about 2.5 V down 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—Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM. ■

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.

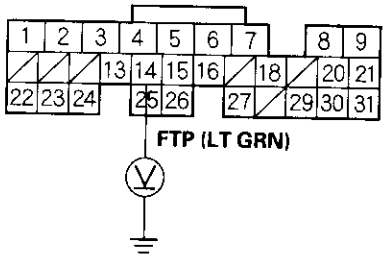
   Are the vacuum lines OK?

   YES – Go to step 2.

   NO – Repair or replace vacuum lines as necessary. ■

2. Reset the ECM/PCM (see page 11-4).
3. Remove the fuel fill cap.
4. Turn the ignition switch ON (II).
5. Monitor the FTP sensor voltage with the Honda PGM Tester, or measure voltage between body ground and ECM/PCM connector terminal E14.

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

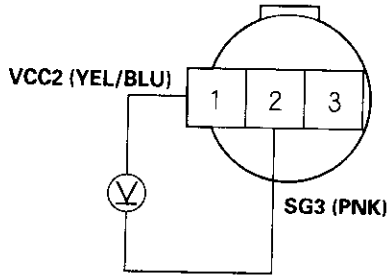
Is there about 2.5 V?

YES – Intermittent failure, system is OK at this time. Check for poor connections or loose wires at the FTP sensor and at the ECM/PCM. ■

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

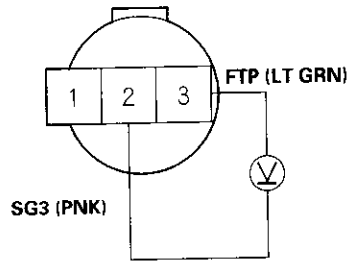
Is there about 5 V?

YES – Go to step 11.

NO – Repair open in the wire between the FTP sensor and the ECM/PCM (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. ■

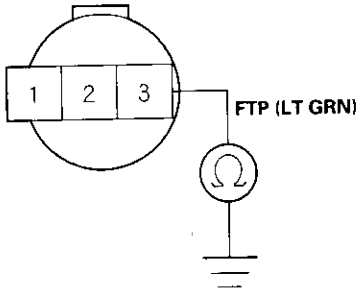
NO – Go to step 12.

12. Turn the ignition switch OFF.

13. Disconnect ECM/PCM connector E (31P).

14. Check for continuity between FTP 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/PCM (E14). ■

NO – Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM. ■

DTC P0453: FTP Sensor Circuit High Voltage

1. Check the vacuum lines of 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. ■

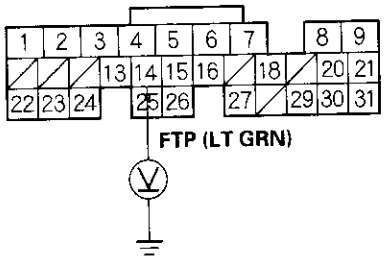
2. Reset the ECM/PCM (see page 11-3).

3. Remove the fuel fill cap.

4. Turn the ignition switch ON (II).

5. Monitor the FTP sensor voltage with the Honda PGM Tester, or measure voltage between body ground and ECM/PCM connector terminal E14.

ECM/PCM 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 wires at the FTP sensor and at the ECM/PCM. ■

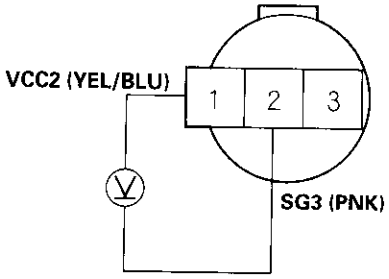
NO – Go to step 6.

(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 3P connector terminals No. 1 and No. 2.

FTP SENSOR 3P CONNECTOR



Wire side of female terminals

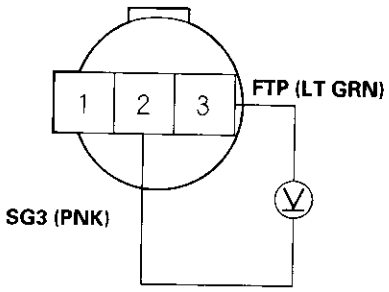
Is there about 5 V?

YES – Go to step 11.

NO – Repair open in the wire between the FTP sensor and the ECM/PCM (E4). ■

11. Measure voltage between FTP sensor 3P connector terminals No. 2 and No. 3.

FTP SENSOR 3P CONNECTOR



Wire side of female terminals

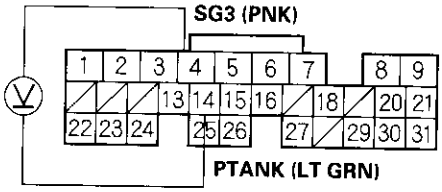
Is there about 5 V?

YES – Replace the FTP sensor. ■

NO – Go to step 12.

12. Measure voltage between ECM/PCM connector terminals E4 and E14.

ECM/PCM 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/PCM (E14). ■

NO – Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM. ■

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/PCM will complete the system checks. Additional test drives may still not meet the specific conditions needed to reproduce the code. If necessary, use the test drive procedures for setting the readiness code (see page 11-54).

Therefore, follow these troubleshooting procedures carefully to ensure the integrity of the system and to comfirm the cause of the problem or code.

NOTE: Fresh fuel has a higher volatility that will create greater pressure/vacuum. The optimum condition for testing is fresh fuel, and must be less than a full tank of fuel. If possible, to assist in leak detection, add 1 gallon of fresh fuel to the tank (as long as it will not fill the tank), just before starting these procedures.

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 correct 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.

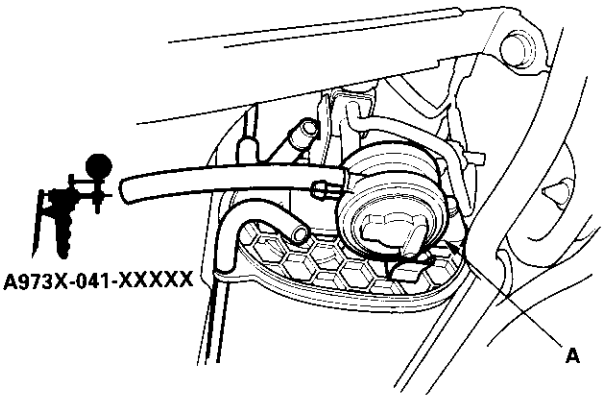
   Is the fuel fill cap seal missing or damaged?

   YES – Replace the fuel fill cap (the cap must say "If not tightened 3 clicks"). ■

   NO – The fuel fill cap is OK. Go to step 3.

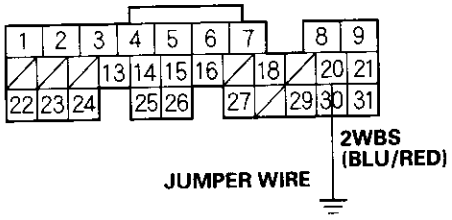
EVAP Bypass Solenoid Valve Test

3. 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.



4. Turn the EVAP bypass solenoid valve ON with the Honda PGM Tester, or connect ECM/PCM connecter terminal E20 to body ground with a jumper wire.

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

5. Turn the ignition switch ON (II).

6. Apply vacuum to the hose.

   Does the valve hold vacuum?

   YES – Go to step 7.

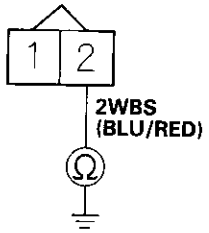
   NO – Go to step 12.

(cont'd)

DTC Troubleshooting (cont'd)

7. Turn the ignition switch OFF.
8. Disconnect the EVAP bypass solenoid valve 2P connector.
9. 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

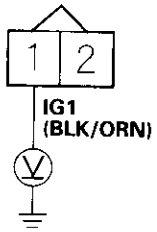
Is there continuity?

YES – Go to step 10.

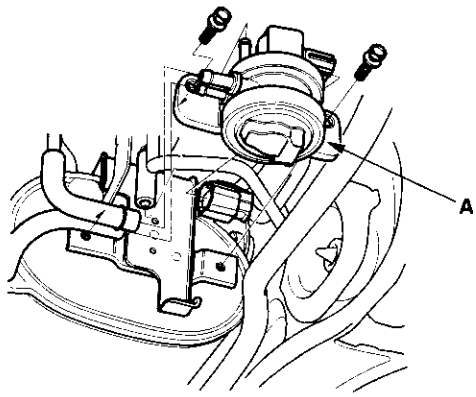
NO – Repair open in the wire between the EVAP bypass solenoid valve and the ECM/PCM (E20). ■

10. Turn the ignition switch ON (II).
11. 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

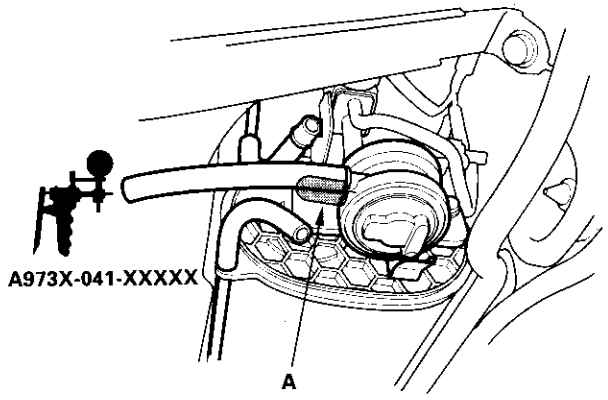


Is there battery voltage?

YES – Replace the EVAP two way/bypass solenoid valves (A). ■

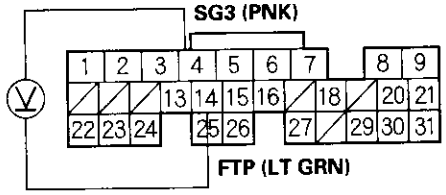
NO – Repair open in the wire between the EVAP bypass solenoid valve and the No. 4 ACG (10A) fuse. ■

12. Plug the fuel tank port (A) of the EVAP two way valve.



13. While monitoring FTP sensor voltage with the Honda PGM Tester, or measuring voltage between ECM/PCM connector terminals E4 and E14, slowly pump the vacuum pump until the voltage drops to about 1.5 volts.

ECM/PCM 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 14.

NO – Repair the leakage from the EVAP bypass solenoid valve, EVAP two way valve, or FTP sensor.■

Vacuum Hoses and Connections Test

14. Perform the fuel tank vapor control valve test (see page 11-203).

Is the fuel tank vapor control valve OK?

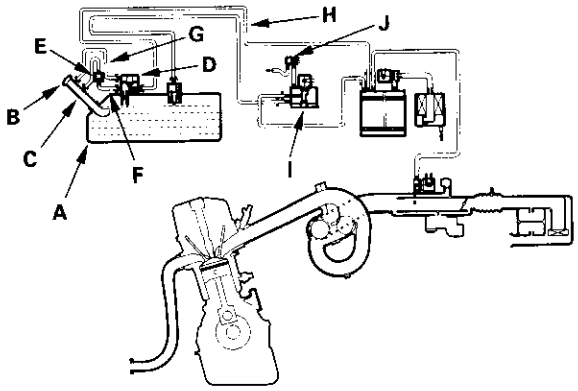
YES – Go to step 15.

NO – Replace the fuel tank vapor control valve.■

15. Tighten the fuel cap 3 "clicks", then monitor the FTP readings with the Honda PGM Tester.

16. Start the engine, and let it idle for 5 minutes.

17. Check the FTP sensor readings.



Is the reading above 0.5 kpa (4 mm Hg, 0.16 in. Hg, 2.8 V) pressure?

YES – Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM.■

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)
  - If necessary, repair or replace the 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 failure.

Special Tools Required

Vacuum pump/gauge, 0 – 30 in.Hg A973X-041-XXXXX

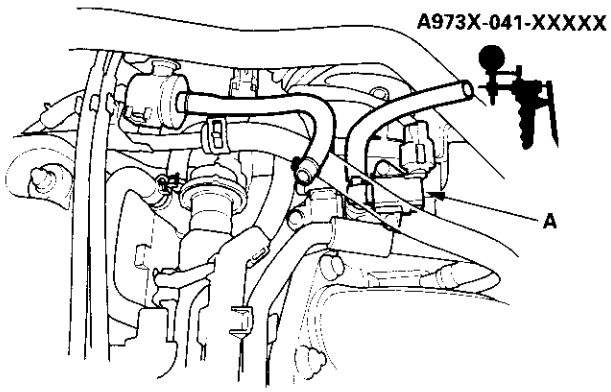
This is a two-trip code; once cleared, it cannot be reproduced in one trip. Also, certain specific driving and ambient conditions must occur before the ECM/PCM will complete the system checks. Additional test drives may still not meet the specific conditions needed to reproduce the code. If necessary, use the test drive procedures for setting the readiness code (see page 11-54).

Therefore, follow these troubleshooting procedures carefully to ensure the integrity of the system and to comfirm the cause of the problem or code.

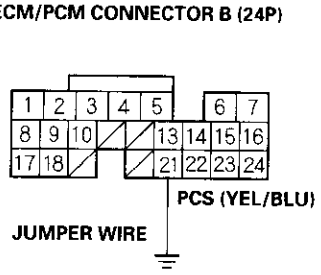
NOTE: Fresh fuel has a higher volatility that will create greater pressure/vacuum. The optimum condition for testing is fresh fuel, and must be less than a full tank of fuel. If possible, to assist in leak detection, add 1 gallon of fresh fuel to the tank (as long as it will not fill the tank), just before starting these procedures.

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.



2. Turn the EVAP canister purge valve on with the Honda PGM Tester, or connect ECM/PCM connector terminal B21 to body ground with a jumper wire.



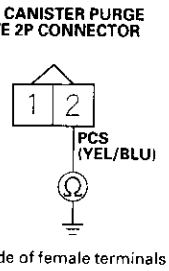
3. Turn the ignition switch ON (II).
4. Apply vacuum to the hose.

   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.



   Is there continuity?

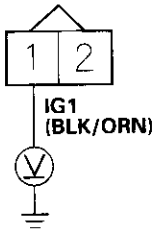
   YES – Go to step 8.

   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

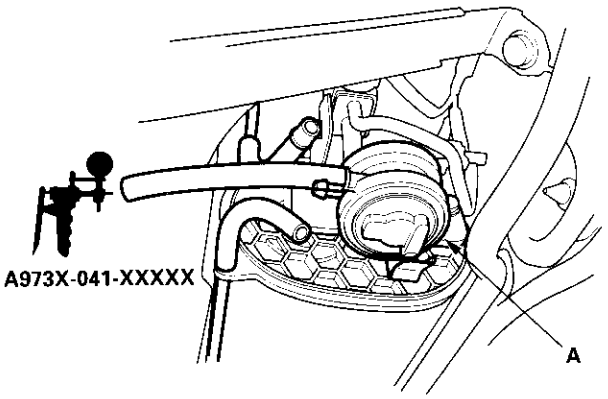
Is there battery voltage?

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.

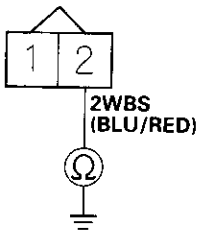
14. Disconnect the EVAP bypass solenoid valve 2P connector.

(cont'd)

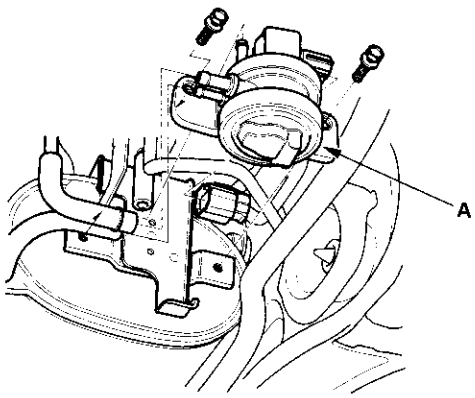
DTC Troubleshooting (cont'd)

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



Is there continuity?

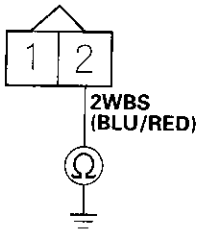
YES – Go to step 16.

NO – Replace the EVAP two way/bypass solenoid valve (A). ■

16. Disconnect ECM/PCM 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

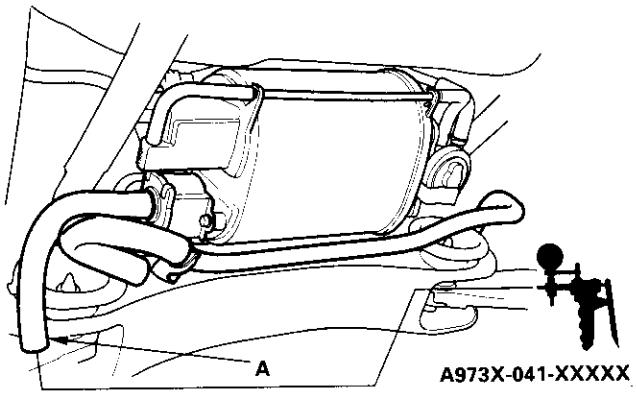
Is there continuity?

YES – Repair the short in the wire between the EVAP bypass solenoid valve and the ECM/PCM (E20). ■

NO – Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM. ■

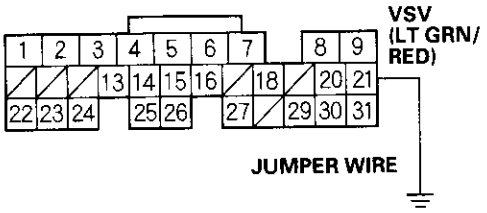
EVAP Canister Vent Shut Valve Test

18. Disconnect the vacuum hose from the EVAP canister vent filter line (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/PCM connector terminal E21 to body ground with a jumper wire.

ECM/PCM 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.

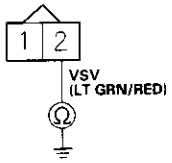
NO – Go to step 22.

22. Turn the ignition switch OFF.

23. Disconnect the EVAP canister vent shut valve 2P connector.

24. Check for continuity between the EVAP canister vent shut valve 2P connector terminal No. 2 and body ground. If using the Honda PGM Tester to turn the EVAP canister vent shut valve ON, turn the ignition switch ON.

EVAP CANISTER VENT SHUT VALVE 2P CONNECTOR



Wire side of female terminals

Is there continuity?

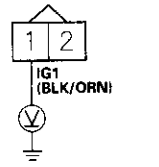
YES – Go to step 25.

NO – Repair open in the wire between the EVAP canister vent shut valve and the ECM/PCM (E21). ■

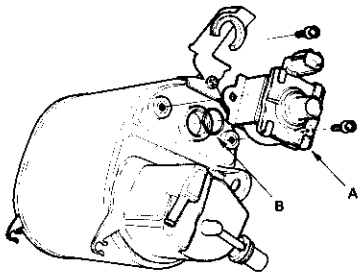
25. Turn the ignition switch ON (II).

26. Measure voltage between EVAP canister vent shut valve 2P connector terminal No. 1 and body ground.

EVAP CANISTER VENT SHUT VALVE 2P CONNECTOR



Wire side of female terminals



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. ■

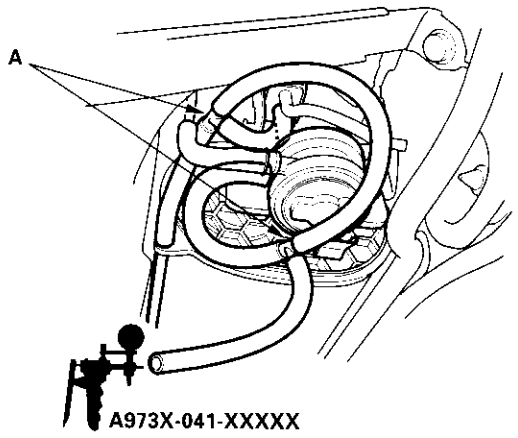
(cont'd)

DTC Troubleshooting (cont'd)

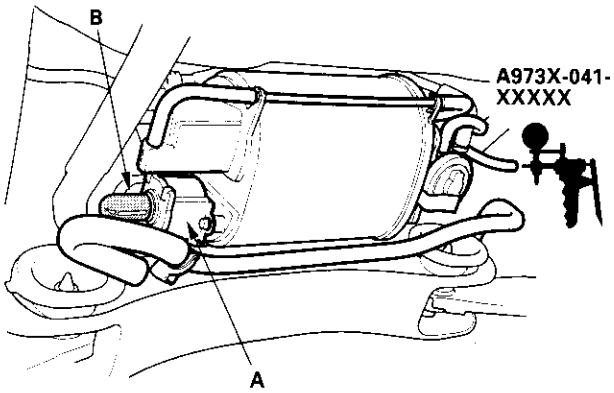
Canister System Leak Test

27. Turn the ignition switch OFF.

28. Connect 2 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.



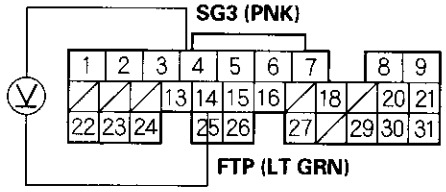
29. Remove the vent hose from the EVAP canister vent shut valve (A), and cap the port (B) to seal the fresh air vent for the EVAP canister.



30. Turn the ignition switch ON (II).

31. While monitoring FTP sensor voltage with the Honda PGM Tester, or measuring voltage between ECM/PCM connector terminals E4 and E14, slowly pump the vacuum pump.

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

32. Continue to pump until the voltage drops to about 1.5 V. Make sure your vacuum pump has no leak.

33. Monitor the voltage for 20 seconds.

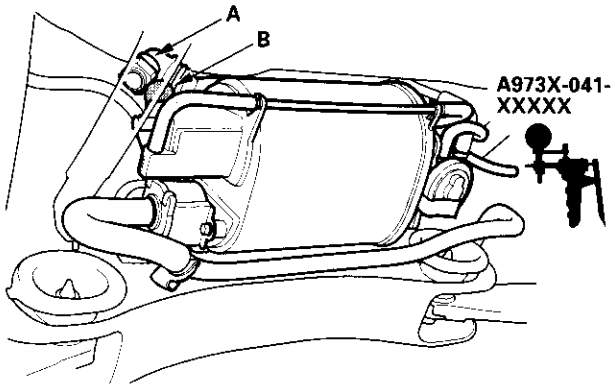
Does the voltage drop to 1.5V and hold for at least 20 seconds?

YES – Inspect the EVAP canister vent shut valve line and connections. ■

NO – Go to step 34.

34. Turn the ignition switch OFF.

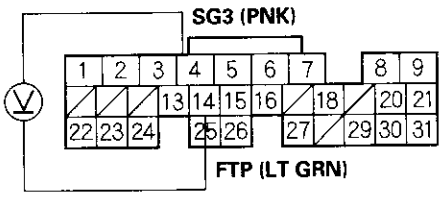
35. Disconnect the quick-connect fitting (A) from the EVAP canister, and plug the canister port (B).



36. Turn the ignition switch ON (II).

37. While monitoring FTP sensor voltage with the Honda PGM Tester, or measuring voltage between ECM/PCM connector terminals E4 and E14, slowly pump the vacuum pump.

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

38. Continue to pump 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.

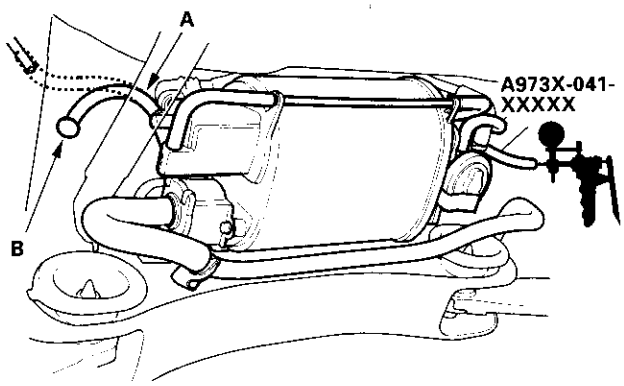
Does the voltage drop to 1.5V and hold for at least 20 seconds?

YES – Inspect the fuel tank vapor control line and connections. ■

NO – Go to step 40.

40. Turn the ignition switch OFF.

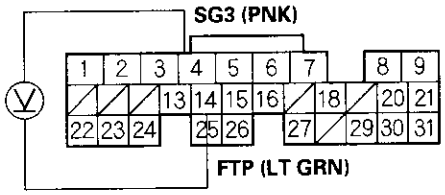
41. Disconnect the purge line hose (A) from the canister at the metal line, and plug the hose (B).



42. Turn the ignition switch ON (II).

43. While monitoring FTP sensor voltage with the Honda PGM Tester, or measuring voltage between ECM/PCM connector terminals E4 and E14, slowly pump the vacuum pump.

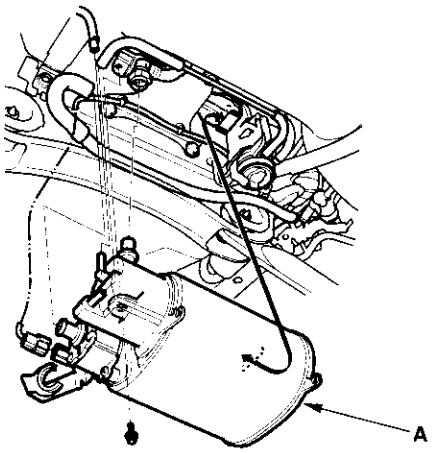
ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

44. Continue to pump 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 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, do the EVAP two way valve test (see page 11-202) and the fuel tank vapor control valve test (see page 11-203). ■

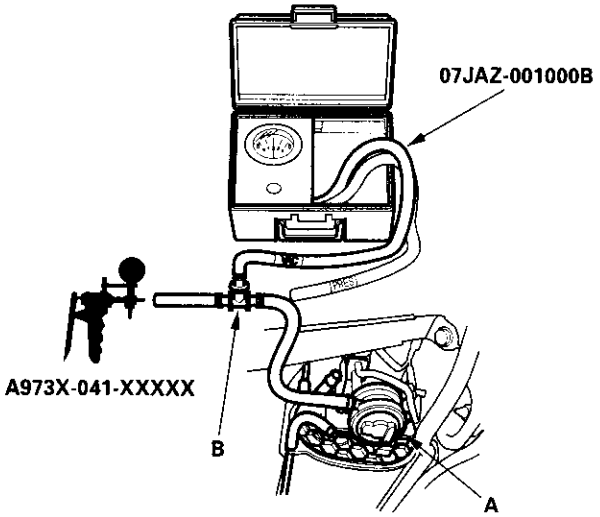
NO – Replace the EVAP canister (A). ■

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

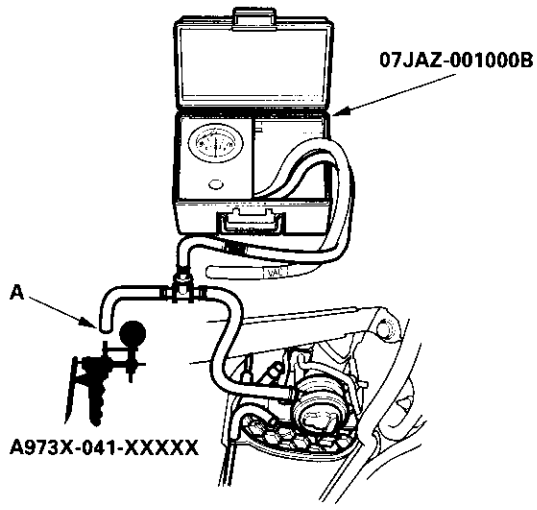
1. Remove the fuel fill cap.

2. Disconnect the vapor line from the EVAP two way valve (A). Connect the line 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).

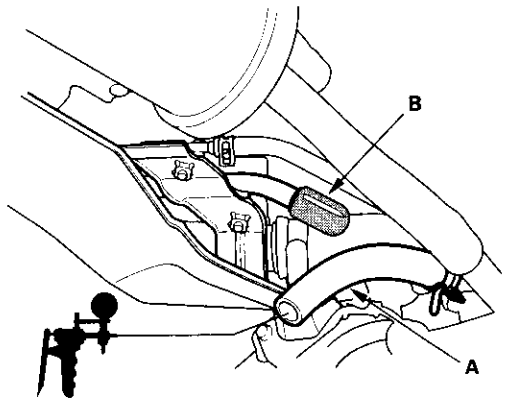
   - If the pressure momentarily stabilizes (valve opens) above 1.0 kPa (8 mmHg, 0.3 in.Hg), the valve is OK.
   - If the pressure stabilizes below 1.0 kPa (8 mmHg, 0.3 in.Hg), install a new valve and retest.

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 the vapor recirculation tube.

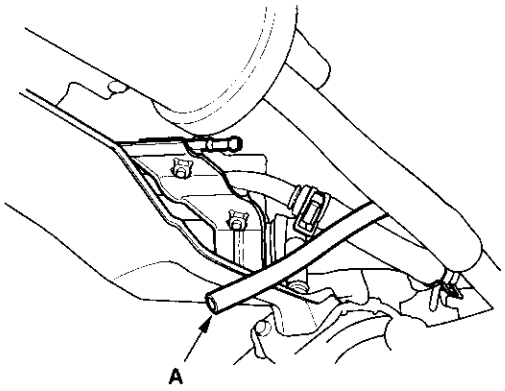


A973X-041-XXXXX

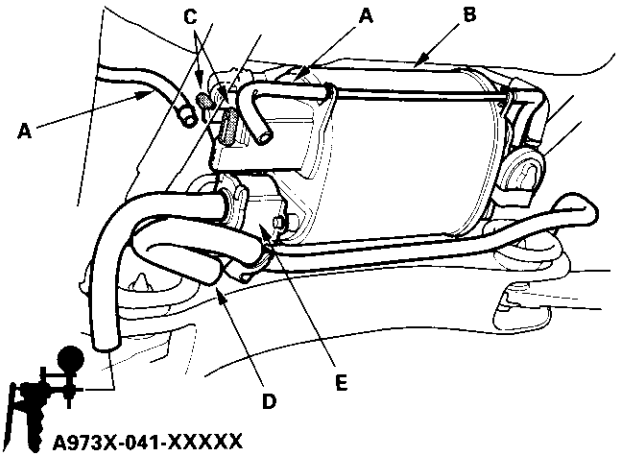
4. Plug the line (B).
5. Apply vacuum to the fuel tank vapor recirculation tube.
   - If the vacuum holds, replace the fuel tank vapor control valve (see page 11-205).
   - If the vacuum does not hold, the float is OK. Do the valve test.

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).



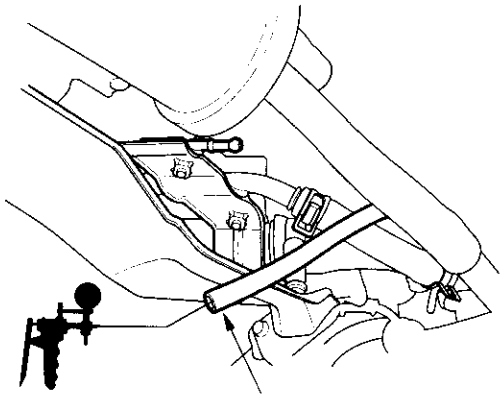
A973X-041-XXXXX

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

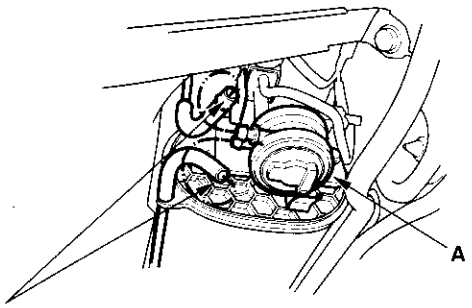
8. Apply vacuum (1 pump) to the fuel tank vapor signal tube (A), then check the vacuum on the pump in step 6.

   - If the vacuum holds, replace the fuel tank vapor control valve (see page 11-205).
   - If the vacuum is released, go to step 9.

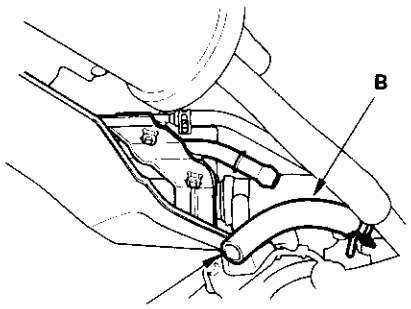
9. Fill the fuel tank with fuel, then check for fuel in the EVAP two way valve (A), and fuel tank vapor recirculation hose (B).

   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 at either location, the fuel tank vapor system is OK.



Check for fuel running out.



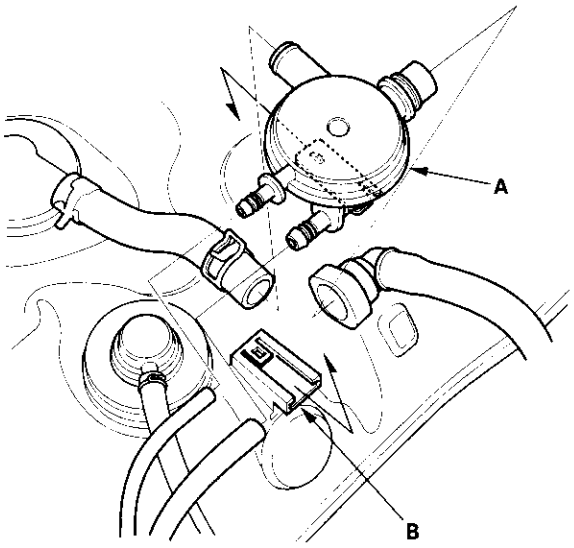
Check for fuel running out.

10. Disconnect the fuel tank vapor vent tube 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 11-205).
    - 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.

Fuel Tank Vapor Control Valve Replacement

1. Remove the fuel tank (see page 11-165).
2. Remove the fuel tank vapor control valve (A) from the fuel tank (B).



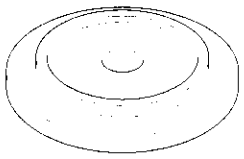
3. Install the fuel tank vapor control valve.
4. Install the fuel tank (see page 11-165).

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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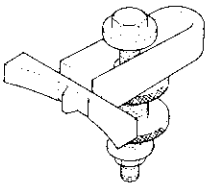

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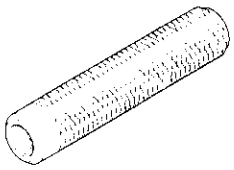
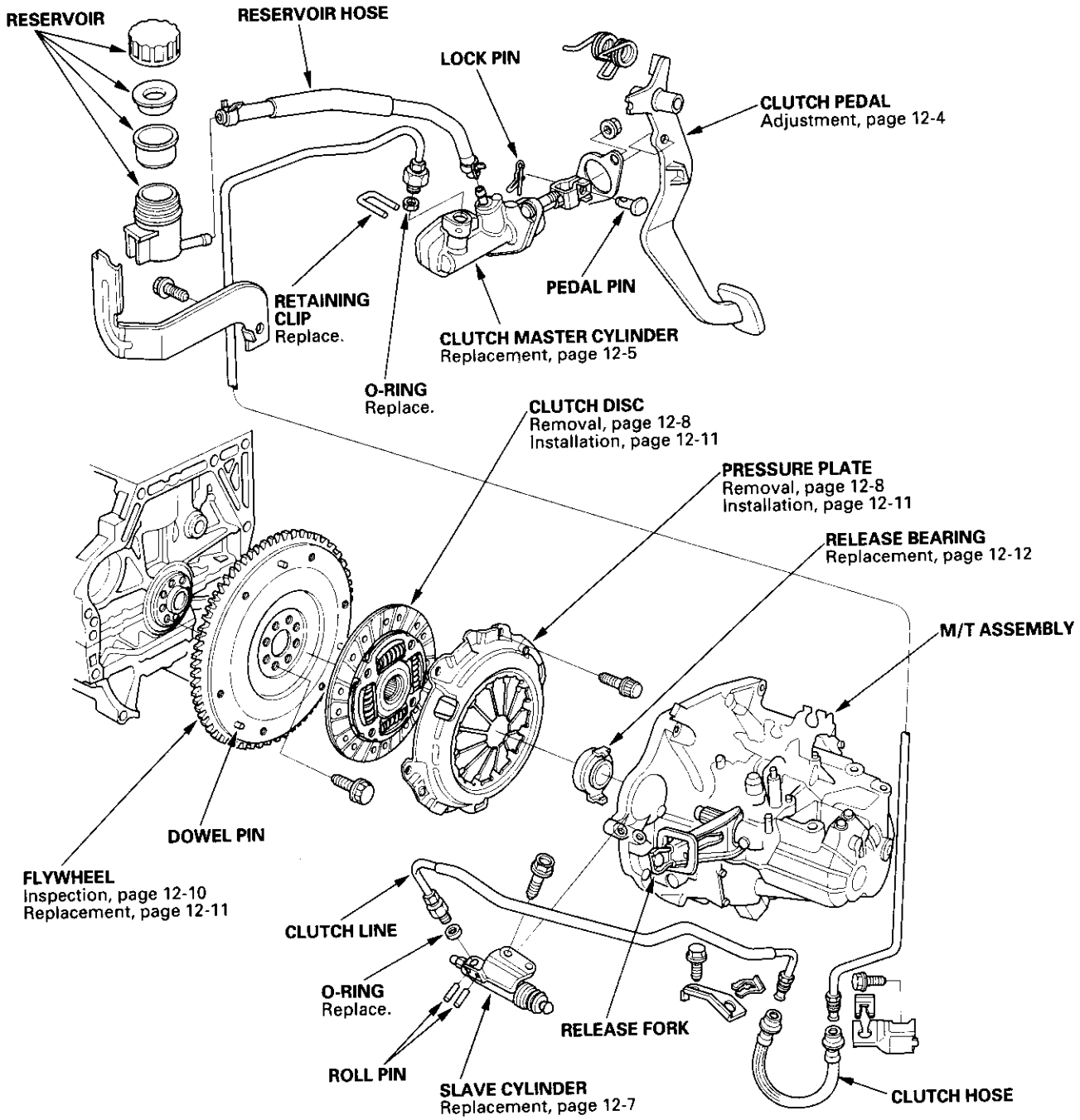
③



④

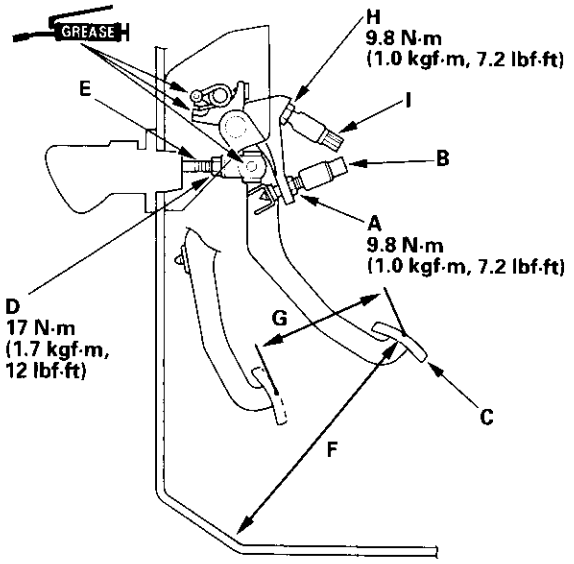
Component Location Index



Clutch Pedal, Clutch Pedal Position Switch, and Clutch Interlock Switch Adjustment

NOTE:
- To check the clutch pedal position switch (see page 4-6).
- 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)(or adjusting bolt) 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) and stroke (G) at the clutch pedal.

   Clutch Pedal Stroke: 130 - 140 mm (5.1 - 5.5 in.)
   Clutch Pedal Height: 197 mm (7.76 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 the clutch interlock switch locknut (H) and the clutch interlock switch (I).

8. Press the clutch pedal to the floor.

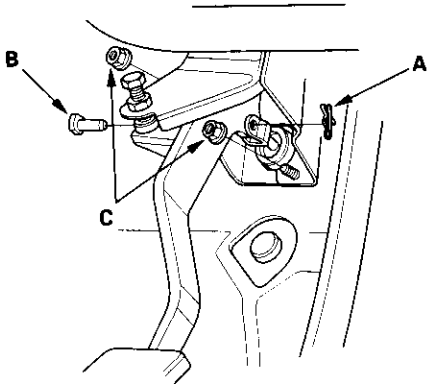
9. Release the clutch pedal 10 - 16 mm (0.39 - 0.63 in.) from the fully depressed position, and hold it there. Adjust the position of the clutch interlock switch (I) so that the engine will start with the clutch pedal in this position.

10. Tighten the clutch interlock switch locknut (H).

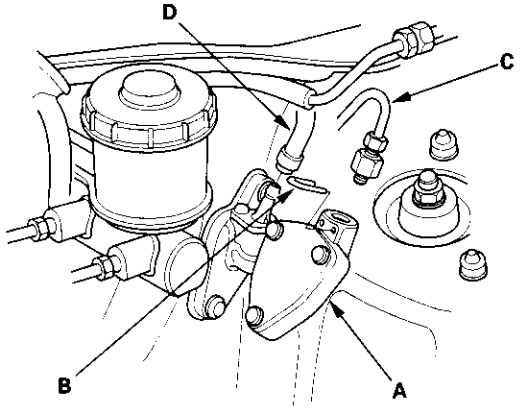
Clutch Master Cylinder Replacement

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).

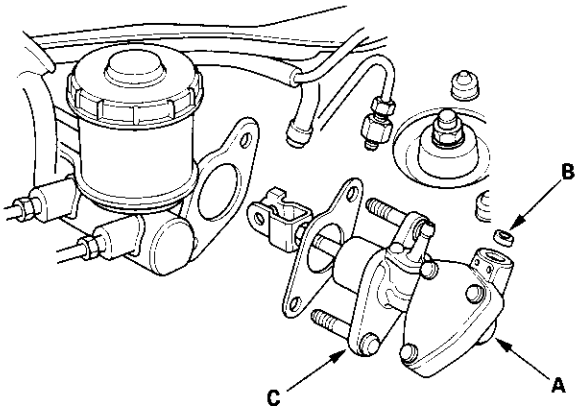


2. Remove the clutch master cylinder (A), and pull it toward the middle of the engine compartment. Remove the retaining clip (B). Disconnect the clutch line (C). Plug the end of the clutch line with a shop towel to prevent brake fluid from coming out.



3. Disconnect 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.

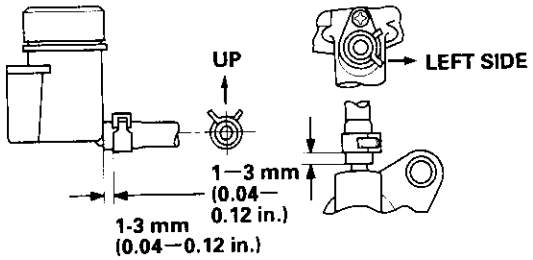
4. Remove the clutch master cylinder (A).



5. Remove the O-ring (B) and the clutch master cylinder seal (C) from the master cylinder.

6. Install the clutch master cylinder in the reverse order of removal. Install a new O-ring. Tighten the master cylinder mounting nuts to 13 N·m (1.3 kgf·m, 9.4 lbf·ft). Make sure the tabs on the master cylinder hose clamps are pointed in the directions shown.

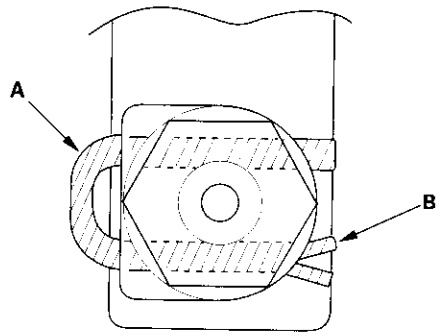
   NOTE: When attaching the reservoir hose to the reservoir, be sure to align the yellow mark on the hose with the rib on the reservoir.



(cont'd)

Clutch Master Cylinder Replacement (cont'd)

7. To prevent the retaining clip (A) from coming off, pry open the tip of the retaining clip (B) with a screwdriver.



8. Tighten the master cylinder mounting nuts to 13 N·m (1.3 kgf·m, 9.4 lbf· ft).

9. Bleed the clutch master hydraulic system (see step 11 on page 12-8).

   NOTE: The reservoir filling is covered in the bleeding procedure.

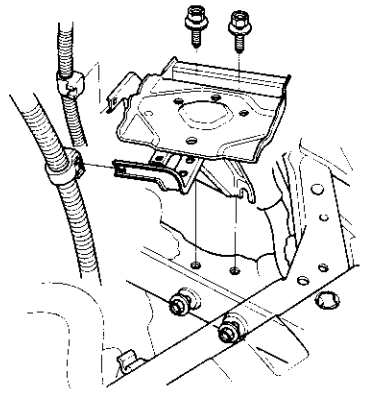
10. Install the air cleaner housing (see step 42 on page 5-17).

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.

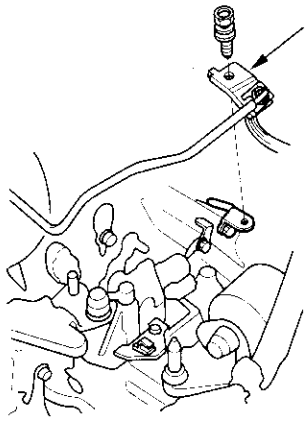
2. Remove the battery tray.



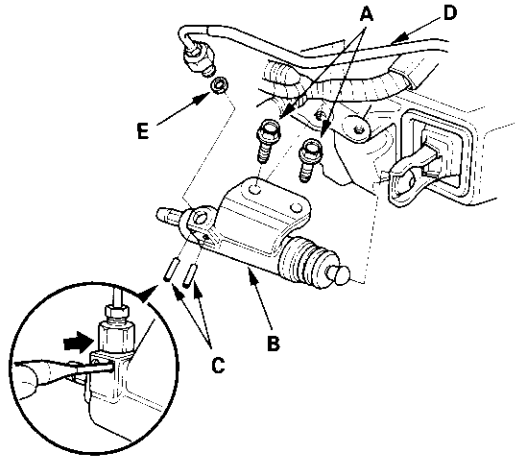
3. Remove the air cleaner housing (see step 6 on page 5-2).

4. Remove the intake air duct (see step 7 on page 5-2) .

5. Remove the clutch line bracket (A).

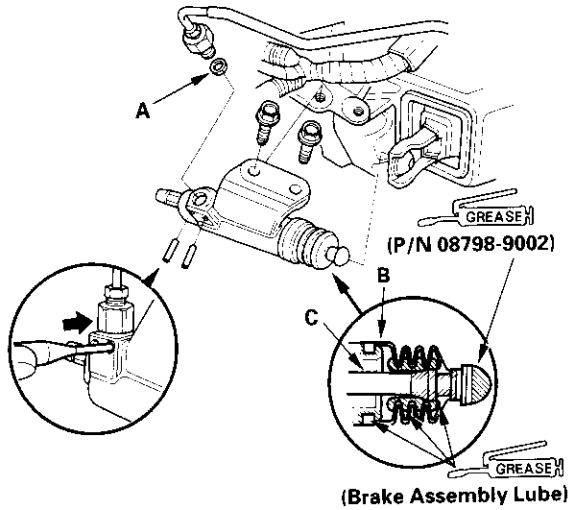


6. Remove the mounting bolts (A) and the slave cylinder (B).



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.

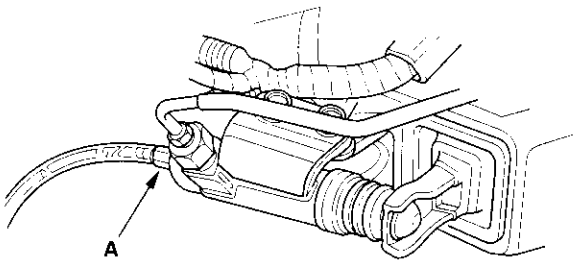
10. Apply super high temp urea grease (P/N 08798-9002) to the push rod of the slave cylinder. Tighten the slave cylinder mounting bolts to 22 N· m (2.2 kgf·m, 16 lbf·ft).

(cont'd)

Slave Cylinder Replacement (cont'd)

11. Bleed the clutch hydraulic system.

    - Attach a hose to the bleeder screw (A), and suspended the hose in a container of brake fluid.
    - Make sure there is an adequate supply of fluid at the clutch master cylinder, then slowly pump the clutch pedal until no more bubbles appear at the bleeder hose.
    - 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.



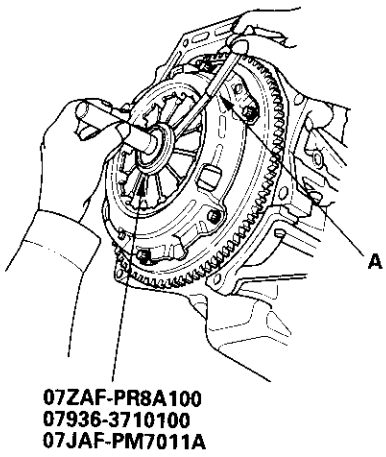
Clutch Replacement

Special Tools Required
- Clutch alignment shaft 07ZAF-PR8A100
- Clutch alignment disc 07JAF-PM7011A
- Remover handle 07936-3710100
- Ring gear holder 07LAB-PV00100 or 07924-PD20003

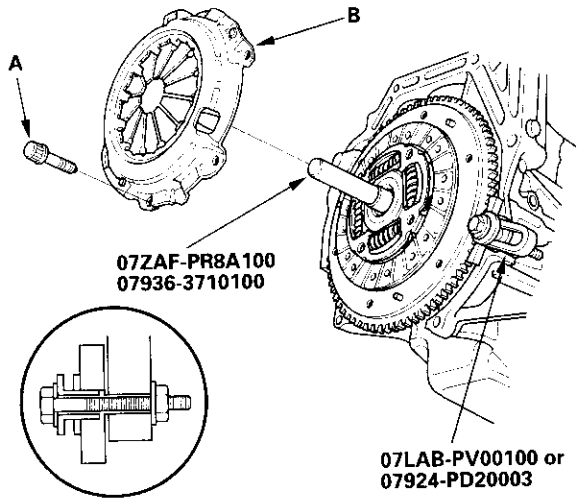
Pressure Plate and Clutch Disc Removal

1. Check the diaphragm spring fingers height using the special tools and a feeler gauge (A). 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.)**

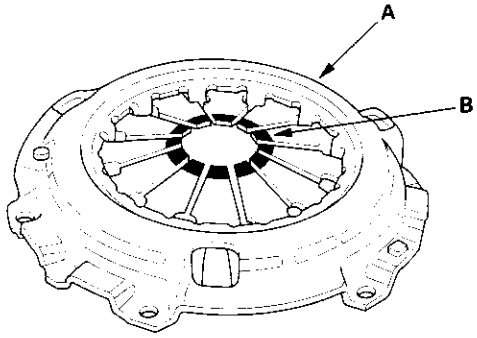


2. Install the special tools.



3. To prevent warping, unscrew the pressure plate mounting bolts (A) in a crisscross pattern in several steps, then remove the pressure plate (B).

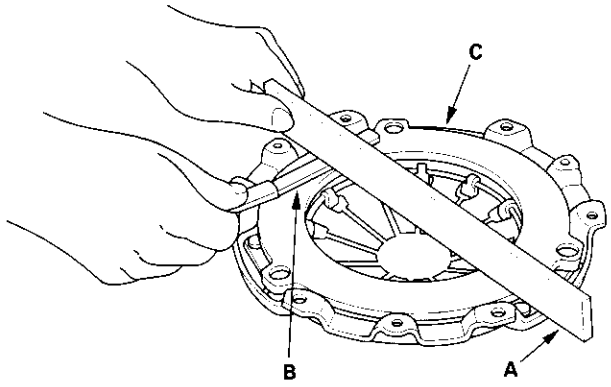
4. Inspect the pressure plate (A) surface for wear, cracks, and burning.



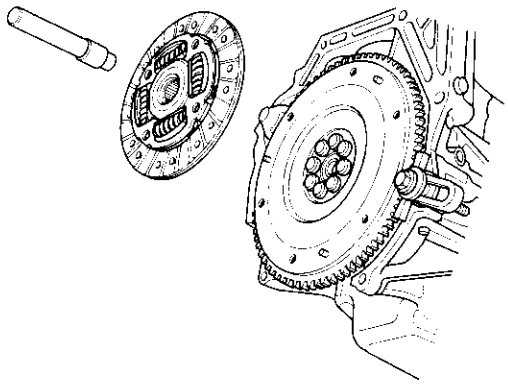
5. Inspect the fingers of the diaphragm spring (B) for wear at the release bearing contact area.

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.



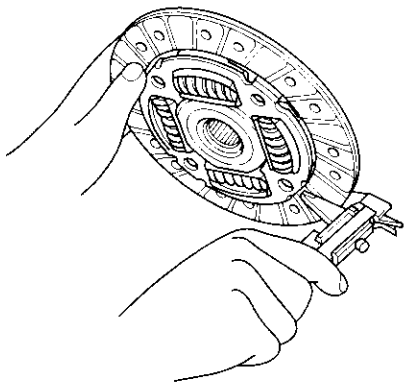
8. Inspect the lining of the clutch disc for signs of slipping or oil. If the clutch disc is burned black or oil soaked, replace it.

(cont'd)

Clutch Replacement (cont'd)

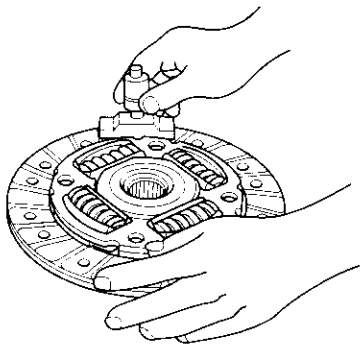
9. Measure the clutch disc thickness. If the thickness is less than the service limit, replace the clutch disc.

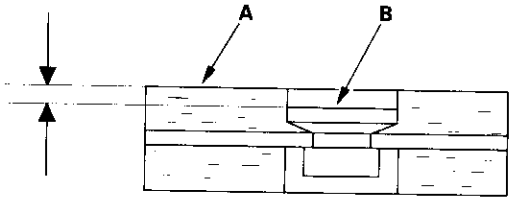
Standard (New): 8.3–8.9 mm (0.33–0.35 in.) max.
Service Limit: 6.0 mm (0.24 in.)



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.) max.
Service Limit: 0.7 mm (0.03 in.)

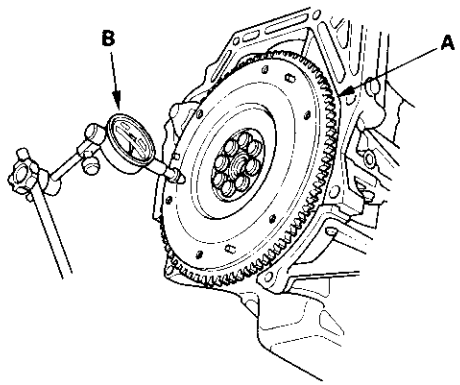




Flywheel Inspection

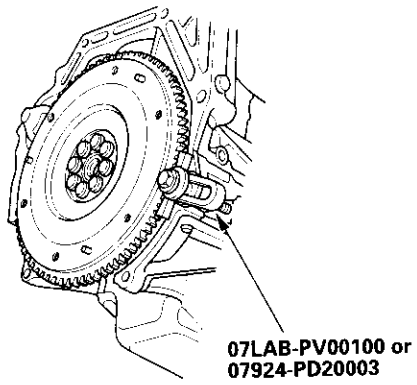
1. Inspect the ring gear teeth for wear and damage.
2. Inspect the clutch disc mating surface on the flywheel for wear, cracks and burning.
3. Measure the flywheel (A) runout using a dial indicator (B) through at least two full turns with the engine installed. Push against the flywheel each time you 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.)

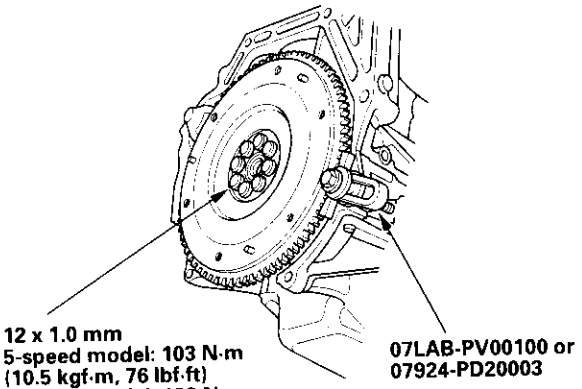


Flywheel Replacement

1. Install the special tool.

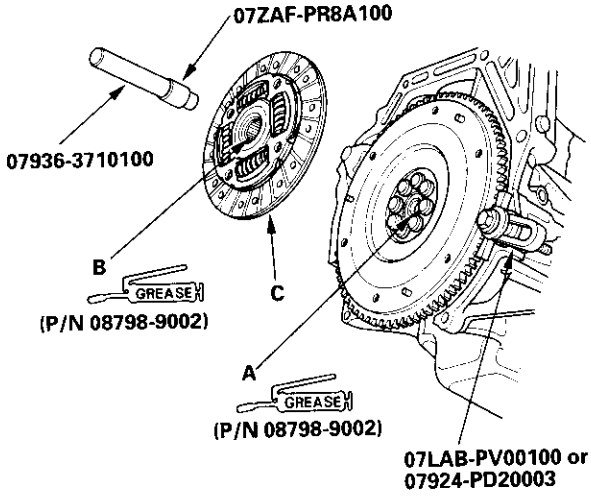


2. Remove the flywheel mounting bolts in a crisscross pattern in several steps, then remove the flywheel.
3. Install the flywheel on the crankshaft, and install the mounting bolts finger-tight.
4. Install the special tool, then torque the flywheel mounting bolts in a crisscross pattern in several steps.

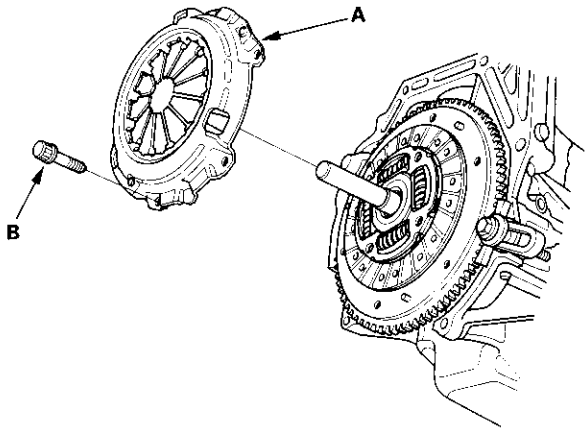


Clutch Disc and Pressure Plate Installation

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 a light coat of super high temp urea grease (P/N 08798-9002) to the crankshaft pilot bushing (A).
4. 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.
5. Install the pressure plate (A) and the mounting bolts (B) finger-tight.

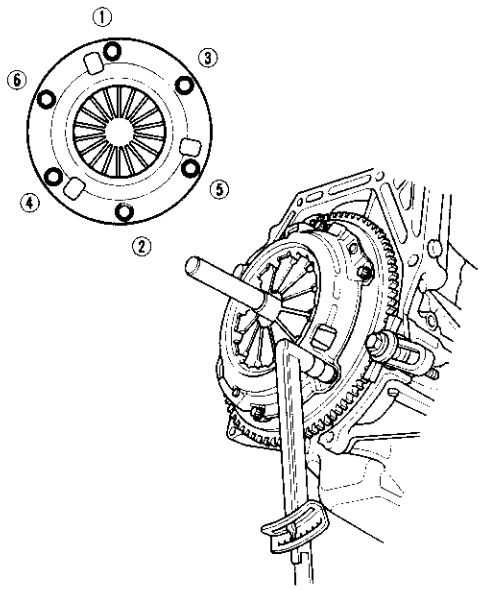


(cont'd)

Clutch Replacement (cont'd)

6. 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)

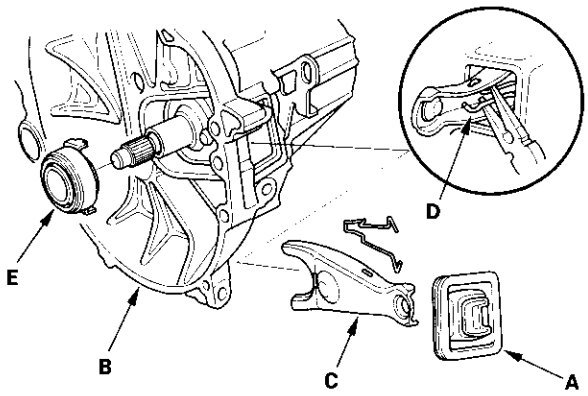


7. Remove the special tools.

8. Make sure the diaphragm spring fingers are all the same height.

Release Bearing Replacement

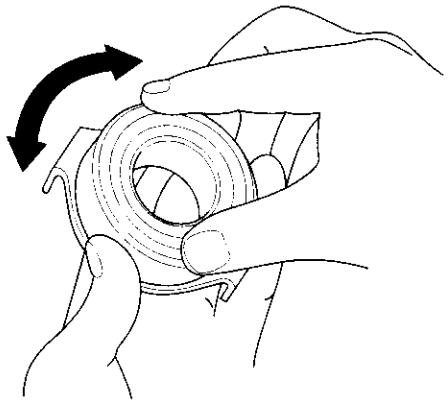
1. Remove the release fork boot (A) from the clutch housing (B).



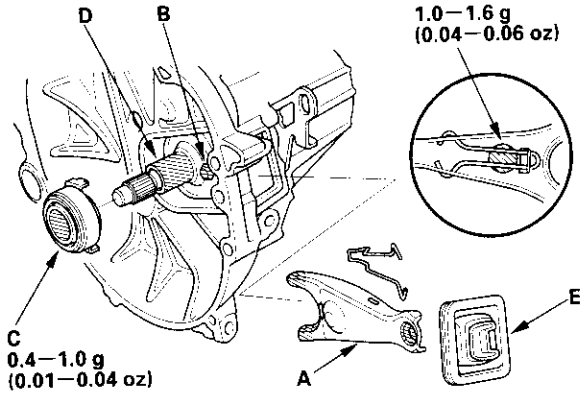
2. Remove the release fork (C) from the clutch housing (B) by squeezing the release fork set spring (D) with pliers. Remove the release bearing (E).

3. Check the release bearing for play by spinning it by hand. If there is excessive play, 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.

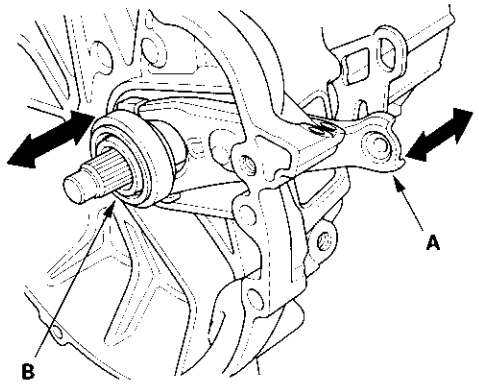


5. With the release fork slid between the release bearing pawls, install the release bearing on the mainshaft while inserting the release fork through the hole in the clutch housing.

6. Align the detent of the release fork with the release fork bolt, then press the release fork over the release fork bolt squarely.

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

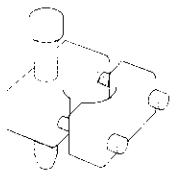
Reverse Lockout System

M/T Differential

Special Tools

Ref.No.	Tool Number	Description	Qty
*①	07GAJ-PG20110	Mainshaft Holder	1
*②	07GAJ-PG20130	Mainshaft Base	1
③	07JAD-PL90100	Oil Seal Driver	1
④	07NAD-P20A100	Oil Seal Driver Attachment	1
⑤	07SAZ-001000A	Backprobe Set	2
**⑥	07736-A01000B	Adjustable Bearing Puller, 20-40 mm	1
⑦	07746-0010300	Attachment, 42 x 47 mm	1
⑧	07746-0030100	Driver, 40 mm I.D.	1
⑨	07746-0030300	Driver, 30 mm I.D.	1
⑩	07749-0010000	Driver	1

* Part of Mainshaft Inspection Tool Set, 07GAJ-PG20102.
**Must be used with commercially available 3/8"-16 Slide Hammer.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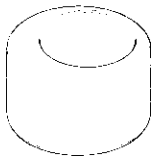
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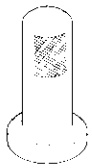
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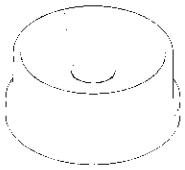
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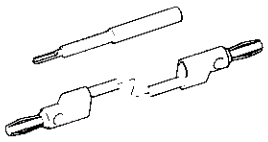
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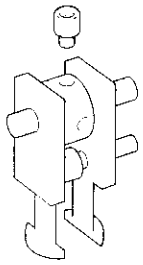
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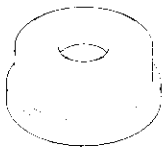
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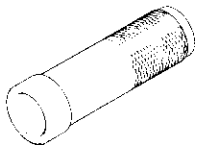
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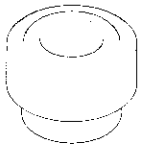
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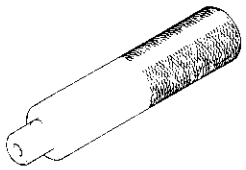

⑩

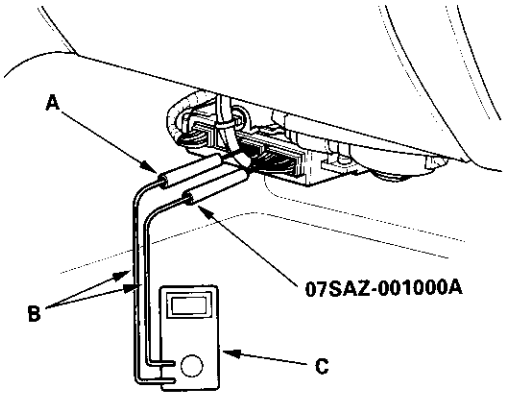
General Troubleshooting Information

How to Troubleshoot Circuits at the ECM

Special Tools Required
Backprobe set 07SAZ-0010000A (2 required)

1. Remove the passenger's dashboard lower cover (see page 20-64).

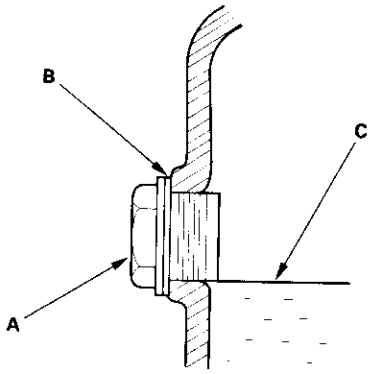
2. Connect the backprobe adapters (A) to the stacking patch cords (B), and connect the cords to a digital multimeter (C).



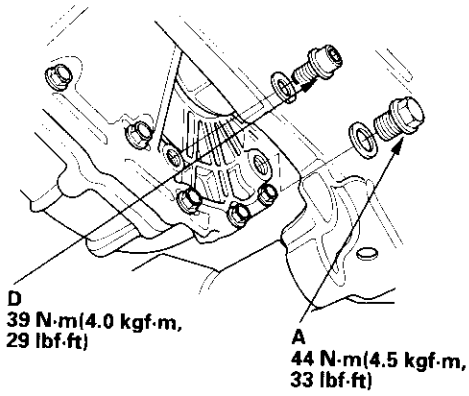
3. Using the wire insulation as a guide for the contoured tip of the backprobe adapter, gently slide the tip into the connector from the wire side until it touches the end of the wire terminal.

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.

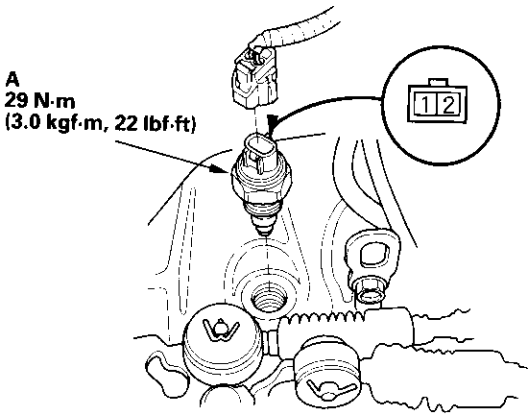
   Oil Capacity
   1.5 ℓ (1.6 US qt) at fluid change
   1.7 ℓ (1.8 US qt) at overhaul

   Always use Honda Manual Transmission Fluid (MTF). Using motor oil can cause stiffer shifting 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.

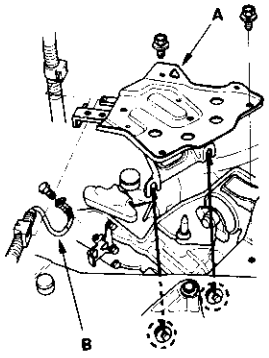
Transmission Removal

Special Tools Required
- Engine hanger adapter EQS00BRSX0 *
- Engine support hanger, A & Reds AAR-T-12566 *
- Subframe adapter EQS02C000011 *

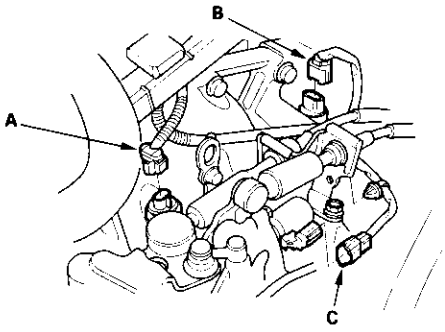
* Available through the Honda Tool Equipment Program 888-424-6857.

NOTE: Use fender covers to avoid damaging painted surfaces.

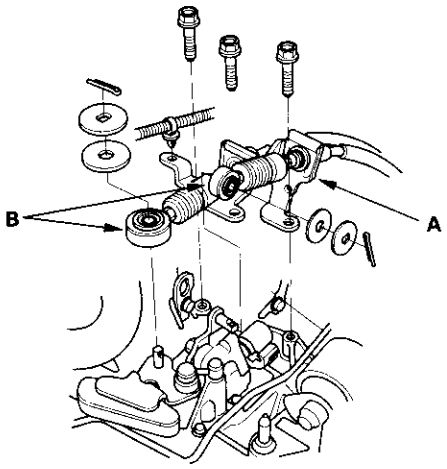
1. Write down the frequencies for the radio's preset buttons. Disconnect the negative (−) cable first, then the positive (+) cable from the battery. Remove the battery.
2. Remove the intake manifold cover (see step 5 on page 5-2).
3. Remove the air cleaner housing (see step 6 on page 5-2).
4. Remove the intake air duct (see step 7 on page 5-2).
5. Remove the battery tray (A).



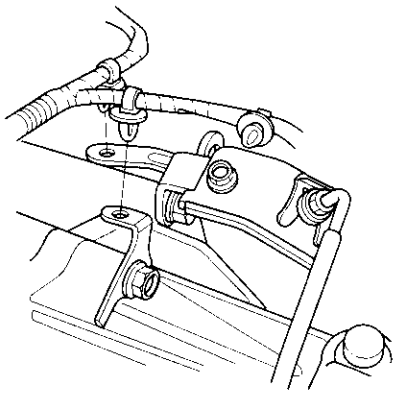
6. Disconnect the transmission ground cable (B).
7. Disconnect the back-up light switch connector (A), the vehicle speed sensor (VSS) connector (B), and the reverse lockout solenoid connector (C).



8. First 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.



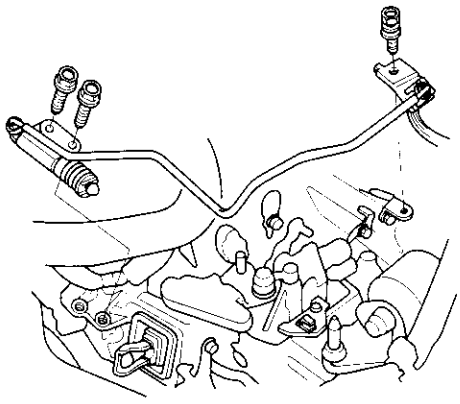
9. Remove the harness clips.



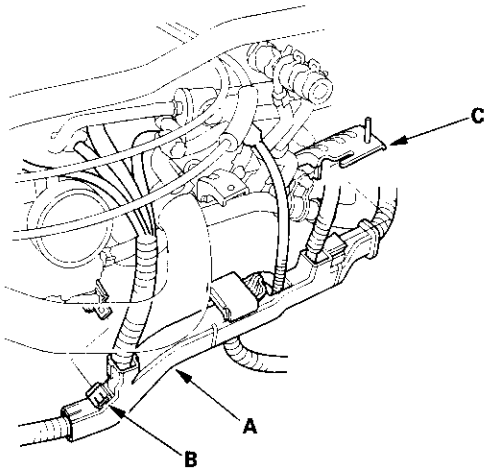
(cont'd)

Transmission Removal (cont'd)

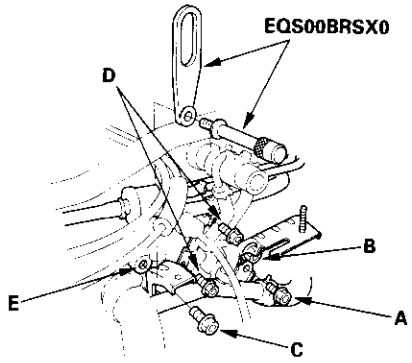
10. Carefully remove the slave cylinder so as not to bend the clutch line. Do not operate the clutch pedal once the slave cylinder has been removed.



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).

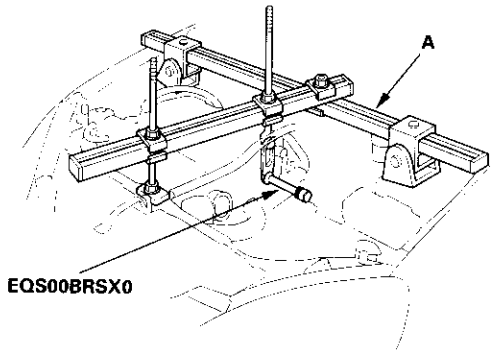


12. Remove the water pipe mounting bolt (A) and lower the water pipe slighty. Loosen air cleaner housing bracket mounting bolt (B), and remove mounting bolt (C).

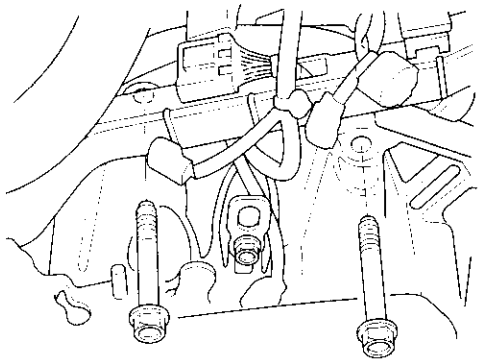


13. Remove the brake booster and EVAP line bracket mounting bolts (D), and attach the special tool to the threaded hole (E) in the cylinder head.

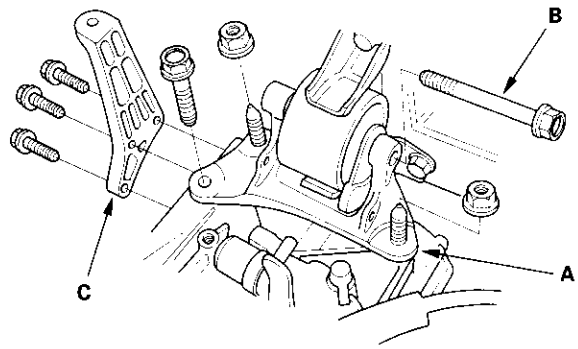
14. Install the engine support hanger (A) to the vehicle and attach the hook to the special tool.



15. Remove the two upper transmission mounting bolts.



16. Remove the transmission mount bracket (A) and transmission mounting bolt (B).

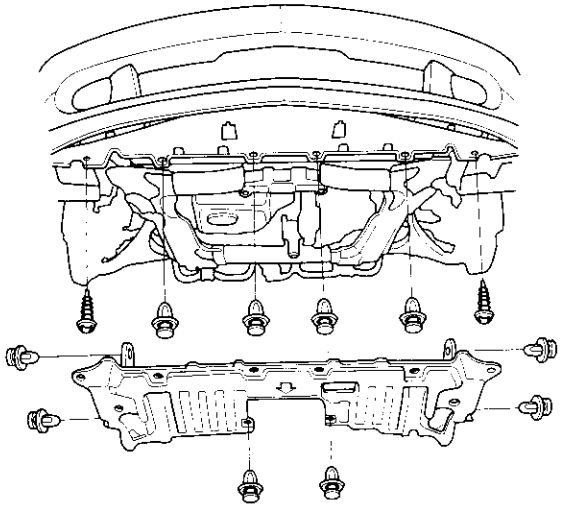


17. Remove the air cleaner bracket (C).

18. Raise the vehicle, and make sure it is securely supported.

19. Drain the transmission fluid. Reinstall the drain bolt with a new washer (see page 13-4).

20. Remove the splash shield.

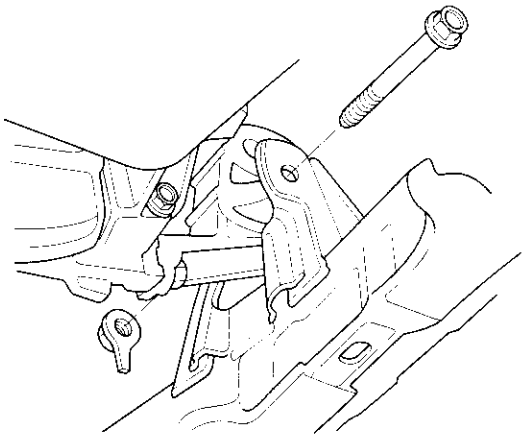


21. Remove the three way catalytic converter (TWC) assembly (see step 28 on page 5-6).

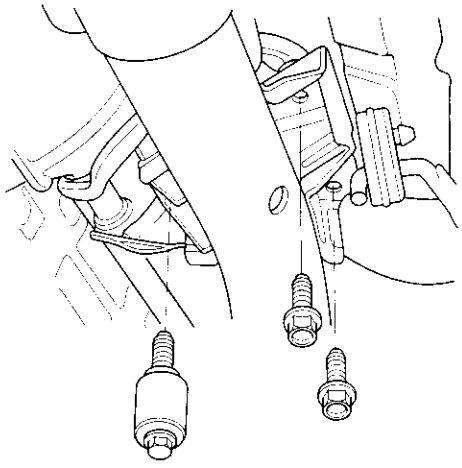
22. Remove the driveshafts (see page 16-3).

23. Remove the intermediate shaft (see page 16-18).

24. Remove the front engine mount bracket mounting bolt.



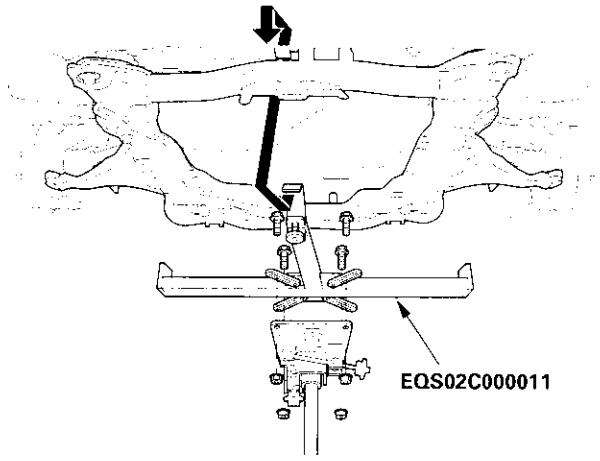
25. Remove the three bolts securing the transmission rear mount.



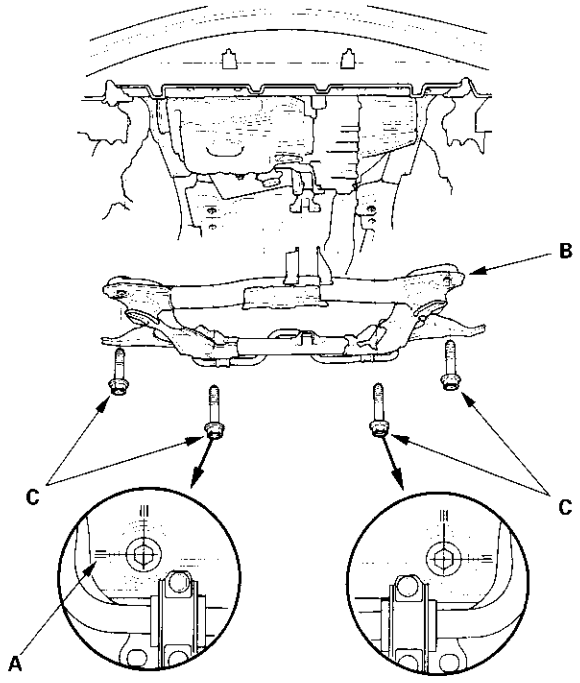
(cont'd)

Transmission Removal (cont'd)

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

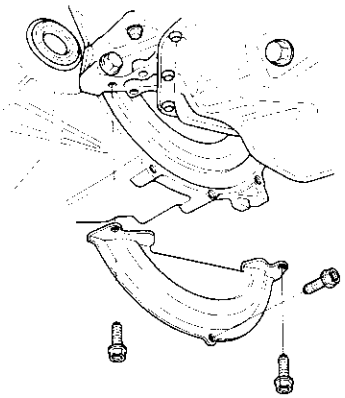


27. Make reference marks (A) front suspension sub frame (B) and mounting bolts (C), then remove the front suspension sub frame.

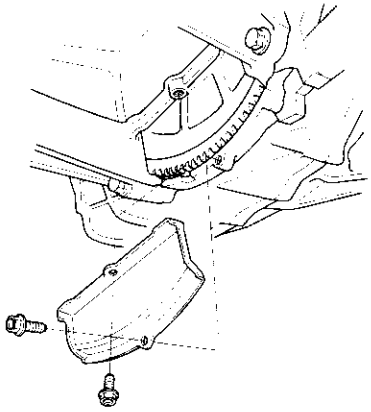


28. Remove the clutch cover.

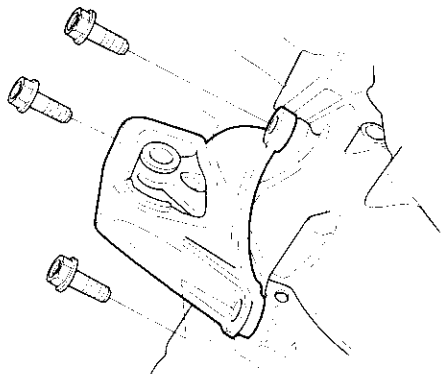
5-speed model:



6-speed model:

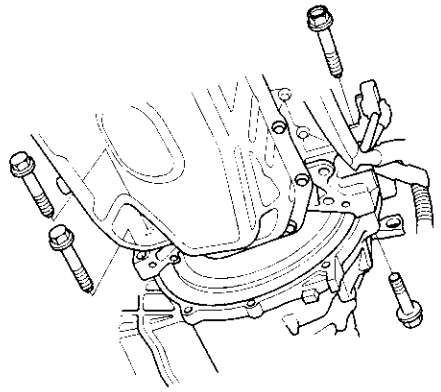


29. Remove the front engine mount.

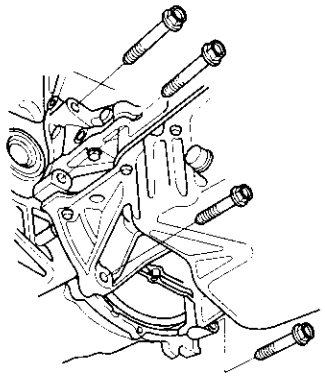


30. Place the transmission jack under the transmission, and remove the transmission mounting bolts.

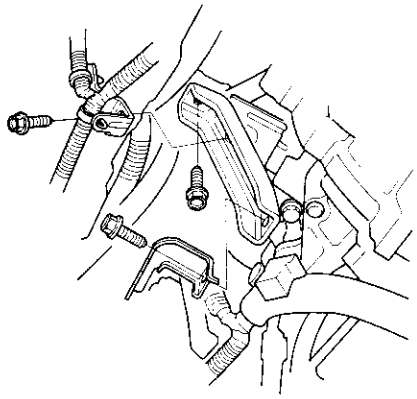
5-speed model: Four lower bolts



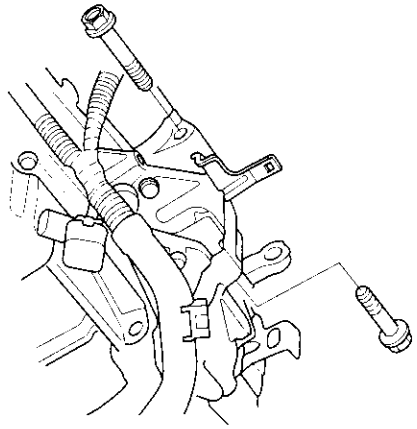
6-speed model: Two rear and two lower bolts



31. Remove the harness bracket (A), then remove the intake manifold bracket (B) (6-speed model only).



32. Remove the two front transmission mounting bolts (6-speed model only).

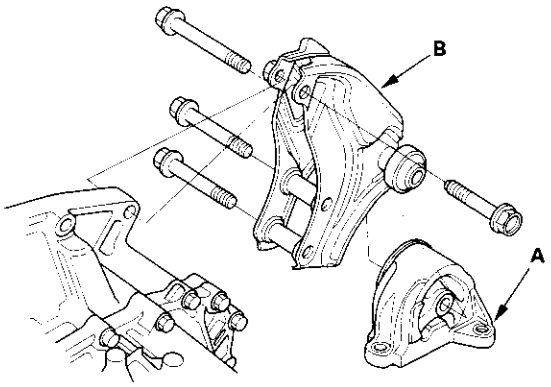


33. Pull the transmission away from the engine until the transmission mainshaft clears the clutch pressure plate, then lower transmission on the transmission jack.

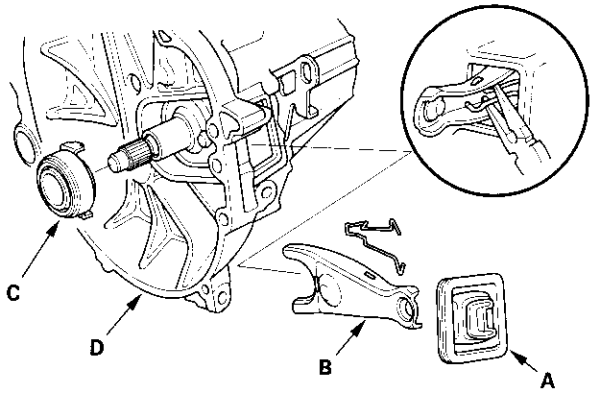
(cont'd)

Transmission Removal (cont'd)

34. Remove the transmission rear mount (A) and the transmission rear mount bracket (B).



35. Remove the boot (A), the release fork (B), and the release bearing (C) from the transmission (D).



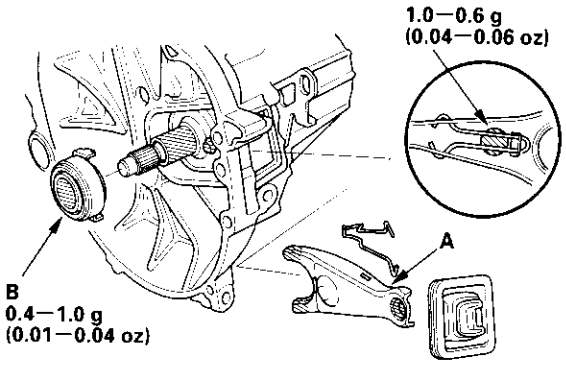
Transmission Installation

Special Tools Required
- Engine hanger adapter EQS00BRSX0 *
- Engine support hanger, A & Reds AAR-T-12566 *
- Subframe adapter EQS02C000011 *

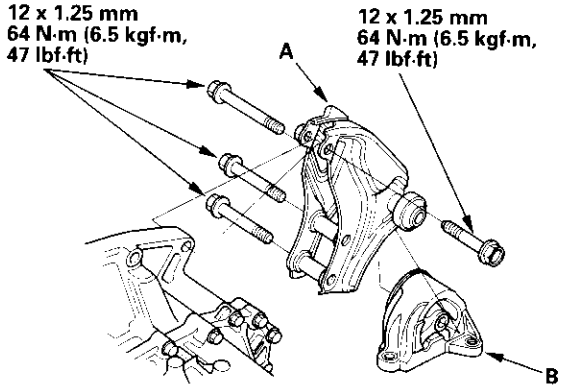
* Available through the Honda Tool and Equipment Program 888-424-6857.

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.

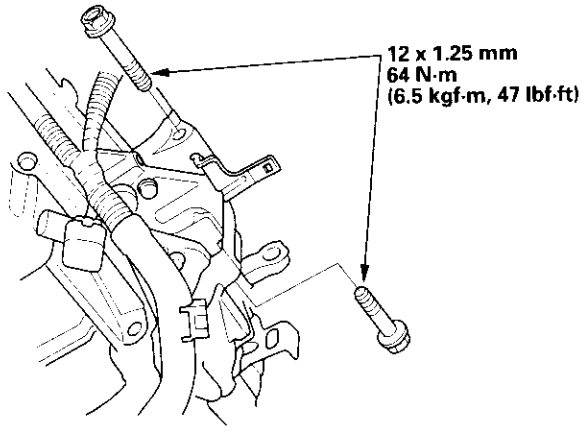


3. Install the transmission rear mount bracket (A) and the transmission rear mount (B).

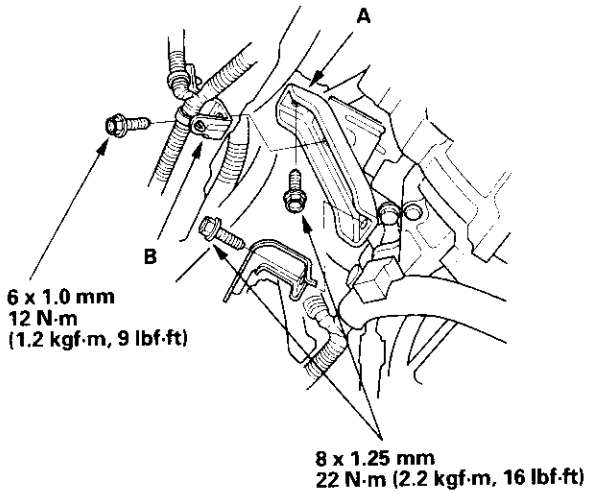


4. Place the transmission on the transmission jack, and raise it to the engine level.

5. Install the two front transmission mounting bolts (6-speed model only).

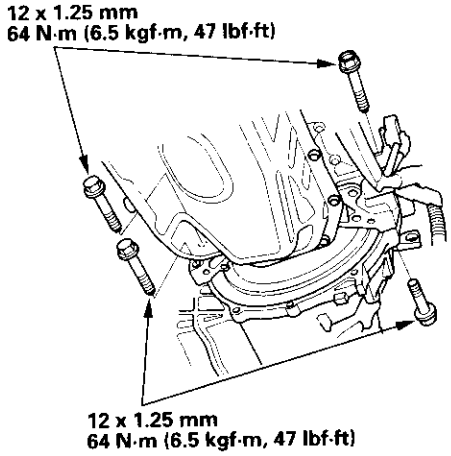


6. Install the intake manifold bracket (A), then install the harness bracket (B) (6-speed model only).

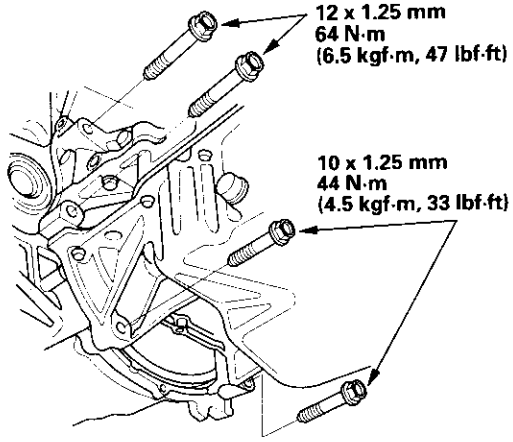


7. Install the transmission mounting bolts.

5-speed model: Four lower bolts



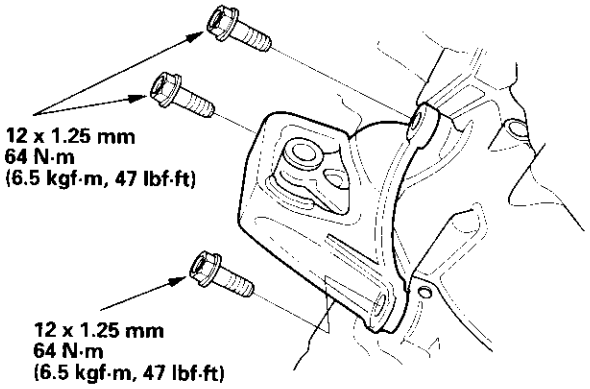
6-speed model: Two rear and two lower bolts



(cont'd)

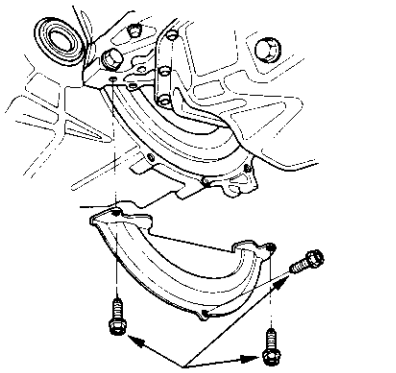
Transmission Installation (cont'd)

8. Install the front engine mount.

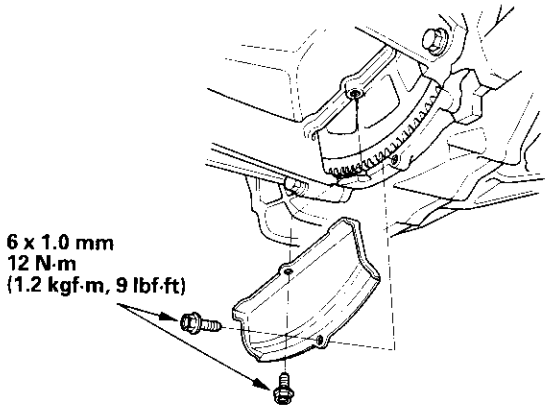


9. Install the clutch cover.

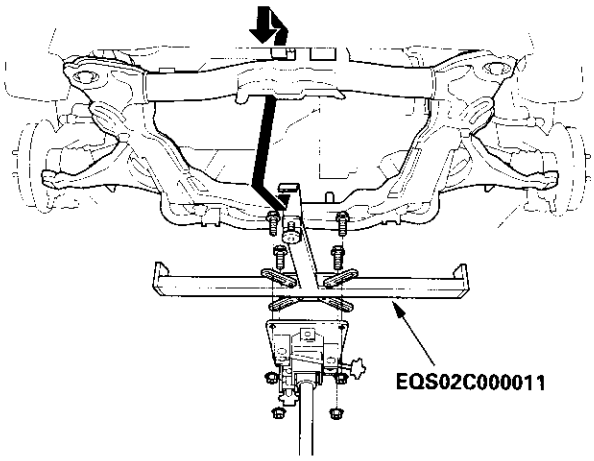
5-speed model:



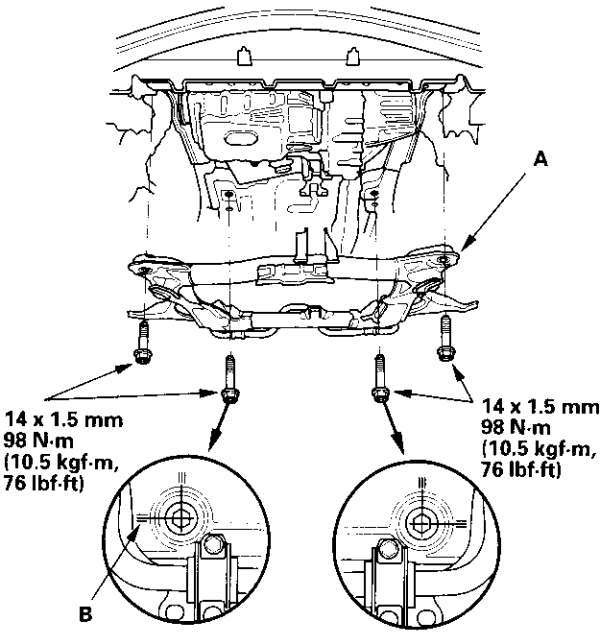
6-speed model:



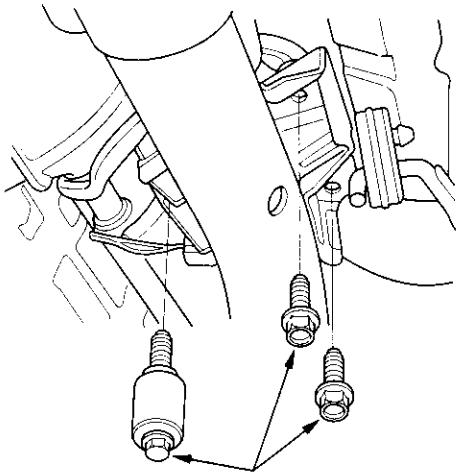
10. Support the sub-frame with the subframe adapter and a jack.



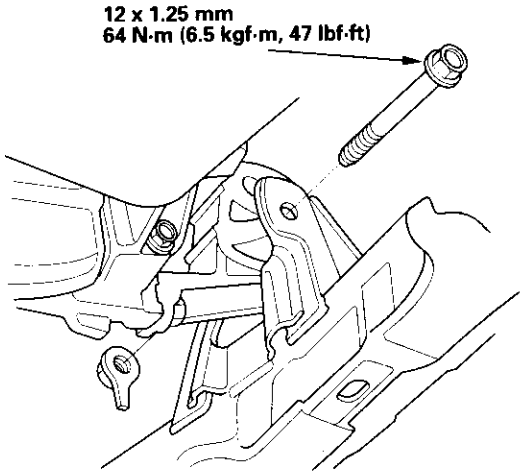
11. Install the front suspension sub-frame (A) in its original position by aligning the marks (B) you made in the removal procedure.



12. Install the three rear mounting bolts for the transmission rear mount.



13. Install the front engine mount bracket mounting bolt.

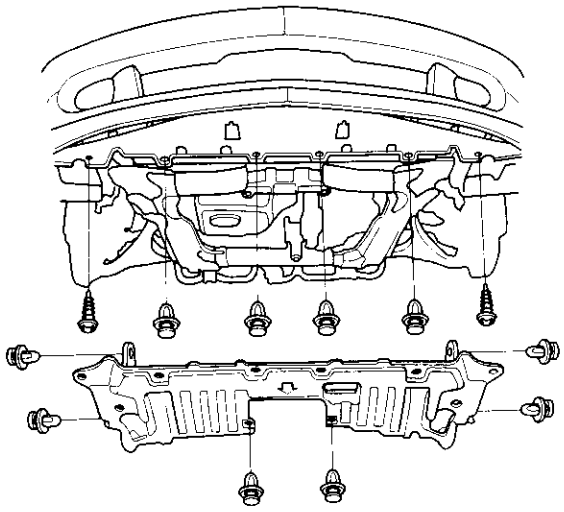


14. Install the intermediate shaft (see page 16-23).

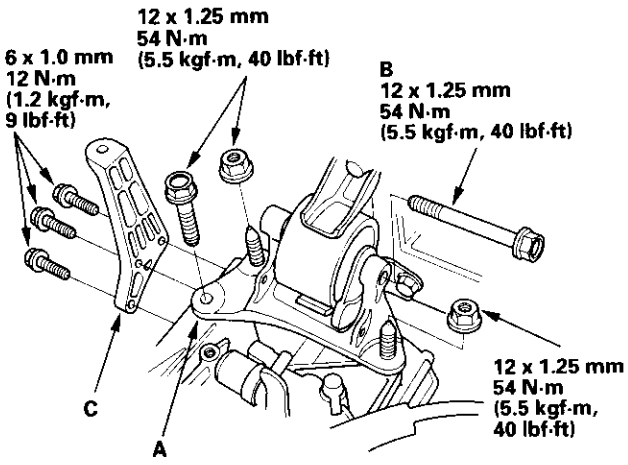
15. Install the driveshafts (see page 16-16).

16. Install the three way catalytic converter (TWC) assembly (see step 16 on page 5-13).

17. Install the splash shield.



18. Install the transmission mount bracket (A) and the transmission mounting bolt (B).

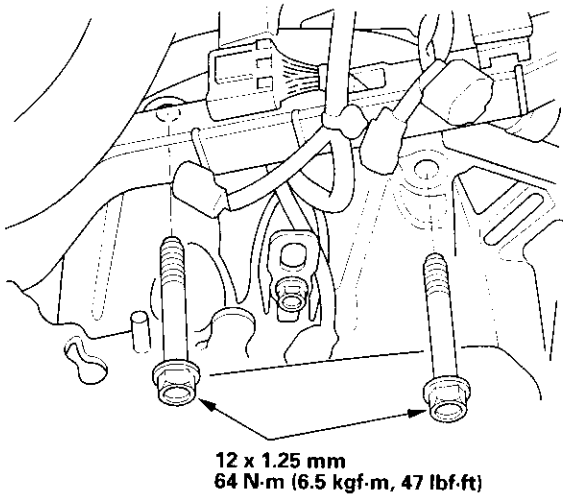


19. Install the air cleaner bracket (C).

(cont'd)

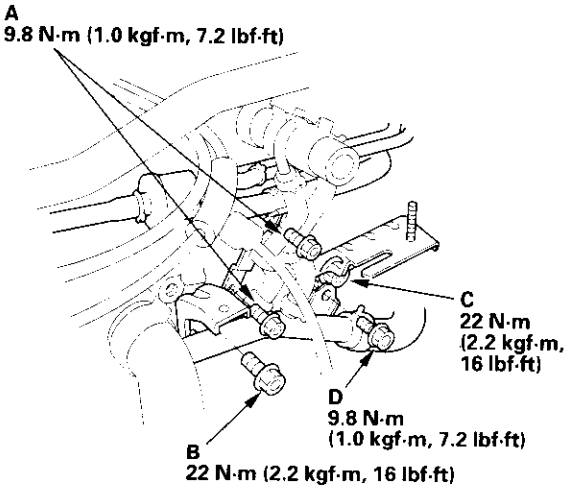
Transmission Installation (cont'd)

20. Install the two upper transmission mounting bolts.

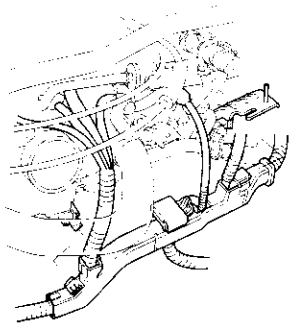


21. Remove the engine hanger and special tool from engine.

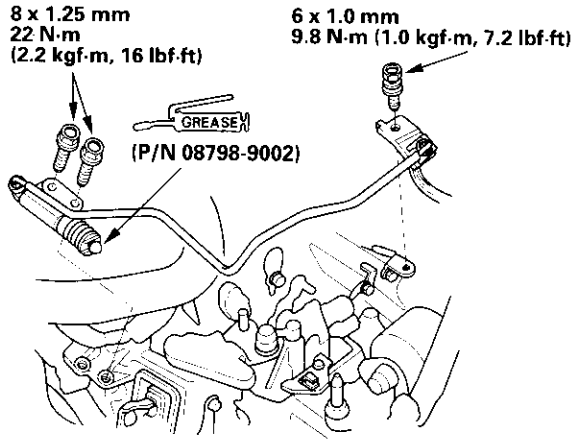
22. Install the brake booster and EVAP line bracket mounting bolts (A), and air cleaner housing bracket mounting bolt (B). Tighten air cleaner housing bracket mounting bolt (C), and install the water pipe mounting bolt (D).



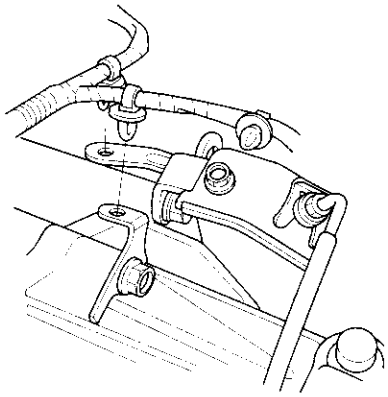
23. Install the engine harness cover.



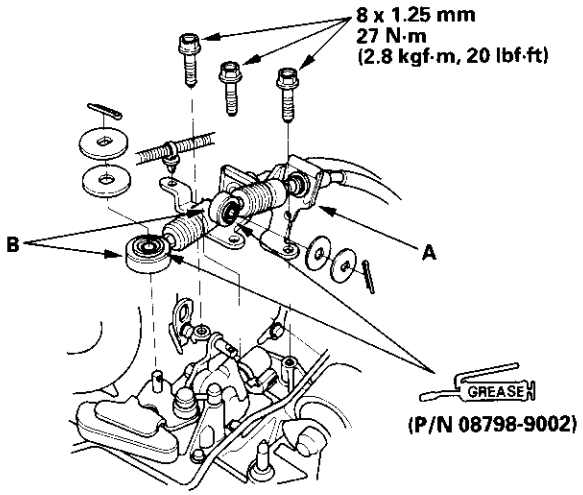
24. Apply super high temp urea grease (P/N 08798-9002) to the end of the slave cylinder rod. Install the slave cylinder. Take care not to bend the clutch line.



25. Install the harness clip.

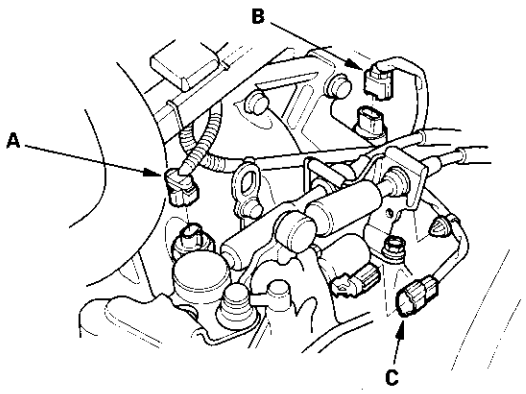


26. Install the cable bracket (A) and cables (B).

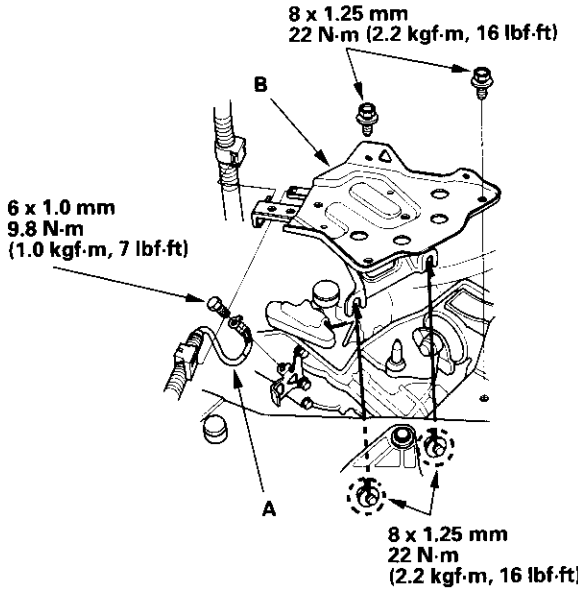


27. Apply a light coat of super high temp urea grease (P/N 08798-9002) to the cable ends.

28. Connect the back-up light switch connector (A), the vehicle speed sensor (VSS) connector (B), and the reverse lockout solenoid connector (C).



29. Connect the transmission ground cable (A).



30. Install the battery tray (B).

31. Install the intake air duct (see step 38 on page 5-17).

32. Install the air cleaner housing (see step 39 on page 5-17).

33. Install the intake manifold cover (see step 41 on page 5-17).

34. Install the battery. Connect the positive (+) cable first, then the negative (−) cable to the battery.

35. Refill the transmission fluid (see page 13-4).

36. Test-drive the vehicle.

37. Check the clutch operation.

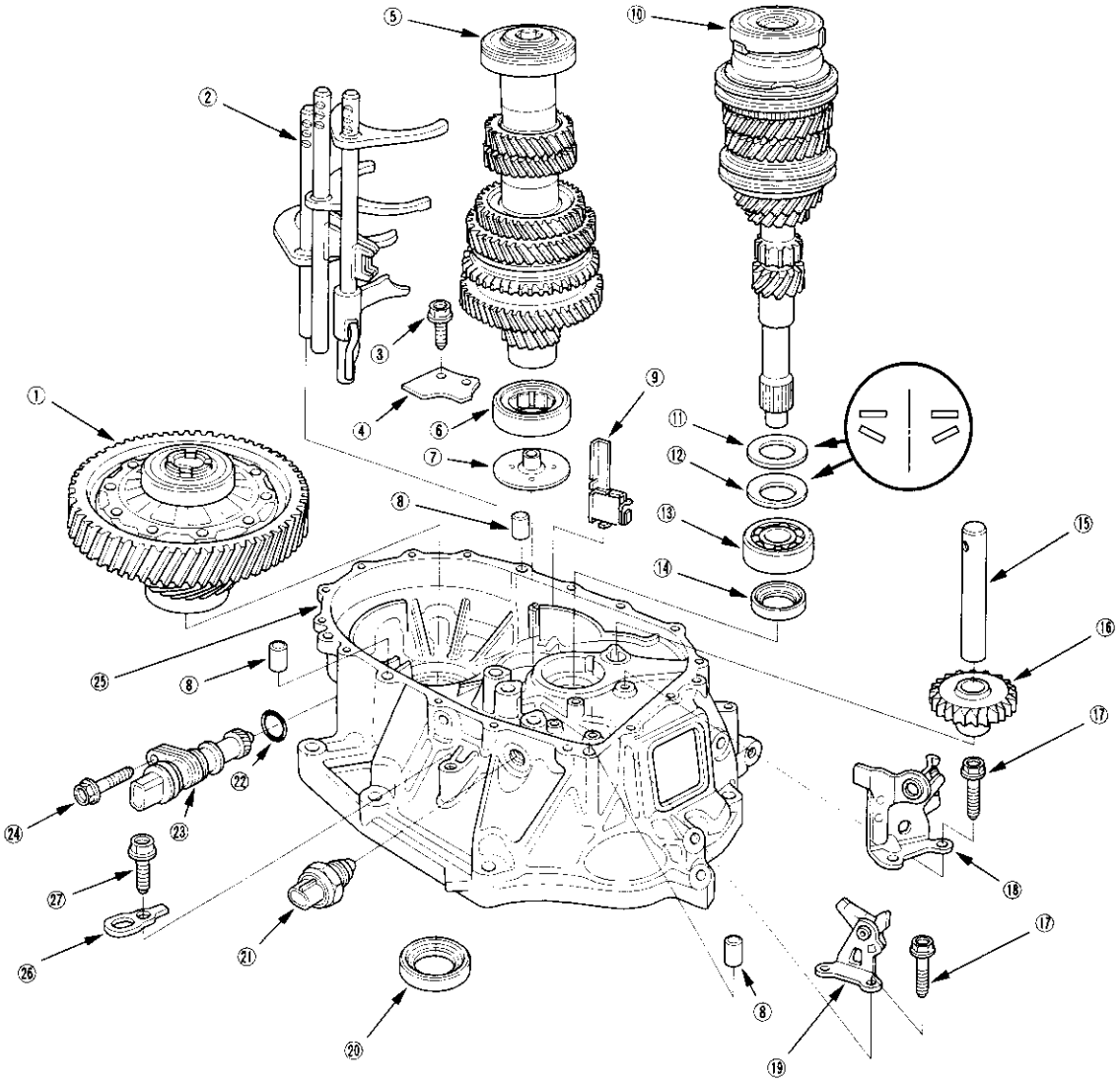
38. Check the front wheel alignment (see page 18-4).

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

Transmission Disassembly

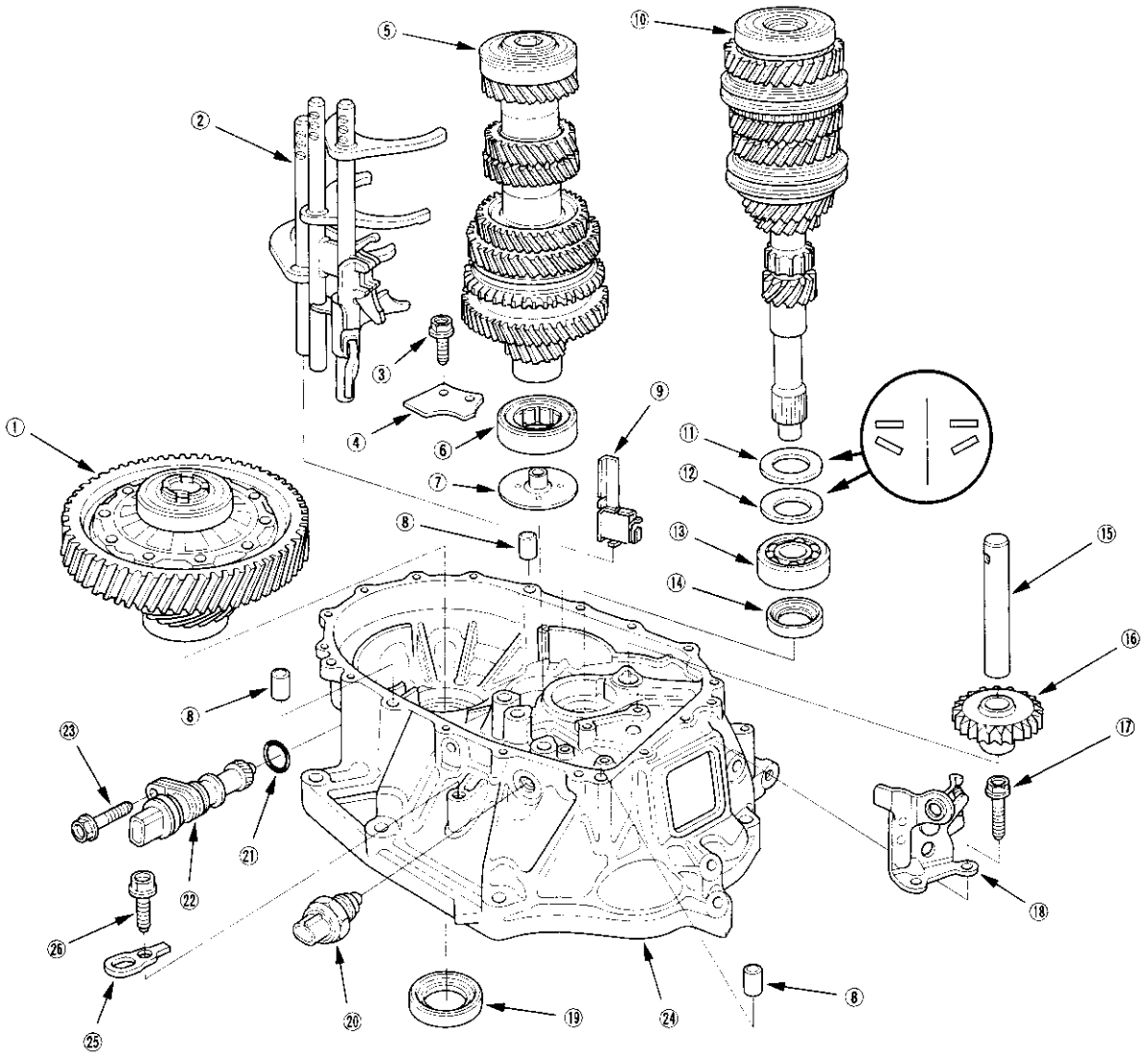
Exploded View-Clutch Housing

5-speed model:



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)

6-speed model:



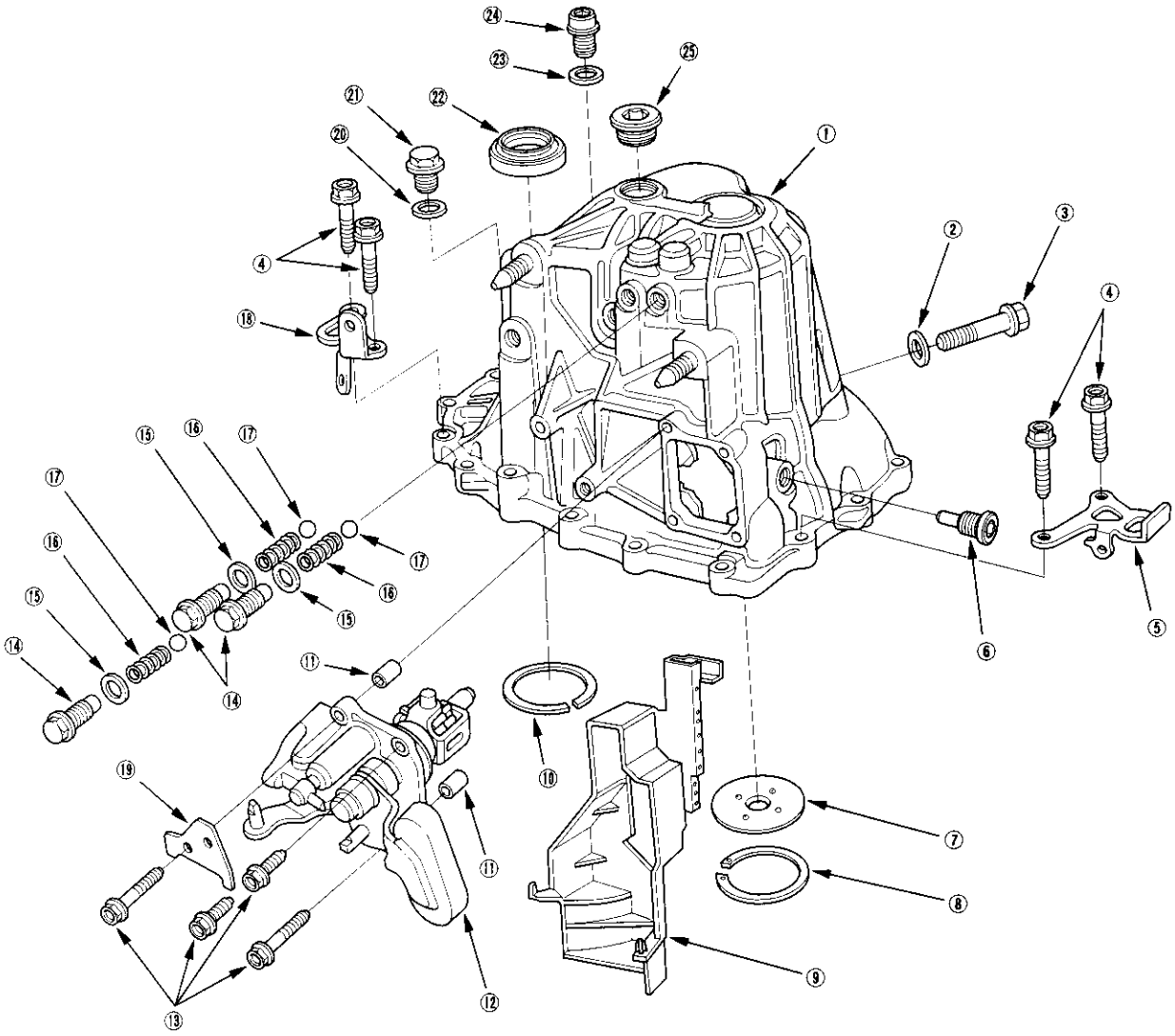
① DIFFERENTIAL ASSEMBLY
② SHIFT FORK ASSEMBLY
③ 6 mm FLANGE BOLT
12 N·m (1.2 kgf·m, 9 lbf·ft)
④ BEARING SET PLATE
⑤ COUNTERSHAFT ASSEMBLY
⑥ NEEDLE BEARING
⑦ OIL GUIDE PLATE C
⑧ 14 x 20 mm DOWEL PIN
⑨ MAGNET
⑩ MAINSHAFT ASSEMBLY
⑪ 28 mm WASHER
⑫ 28 mm SPRING WASHER
⑬ BALL BEARING
⑭ 28 x 43 x 7 mm OIL 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 35 x 58 x 8 mm OIL SEAL
Replace.
⑳ BACK-UP LIGHT SWITCH
29 N·m (3.0 kgf·m, 22 lbf·ft)
㉑ O-RING
Replace.
㉒ VEHICLE SPEED SENSOR (VSS)
㉓ 8 mm FLANGE BOLT
22 N·m (2.2 kgf·m, 16 lbf·ft)
㉔ CLUTCH HOUSING
㉕ TRANSMISSION HANGER
㉖ 10 mm FLANGE BOLT
44 N·m (4.5 kgf·m, 33 lbf·ft)

(cont'd)

Transmission Disassembly (cont'd)

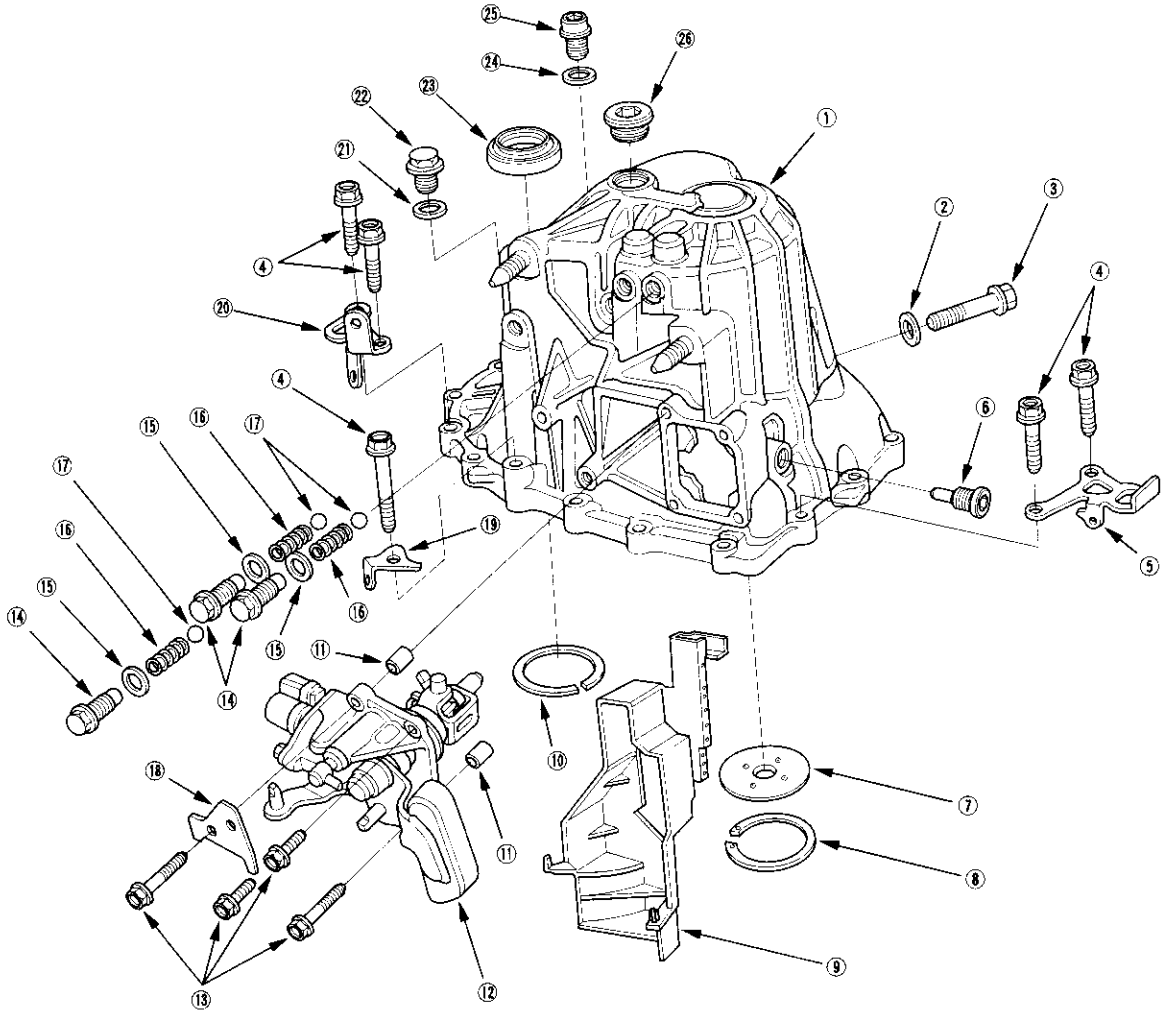
Exploded View-Transmission Housing

5-speed model:



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)

6-speed model:



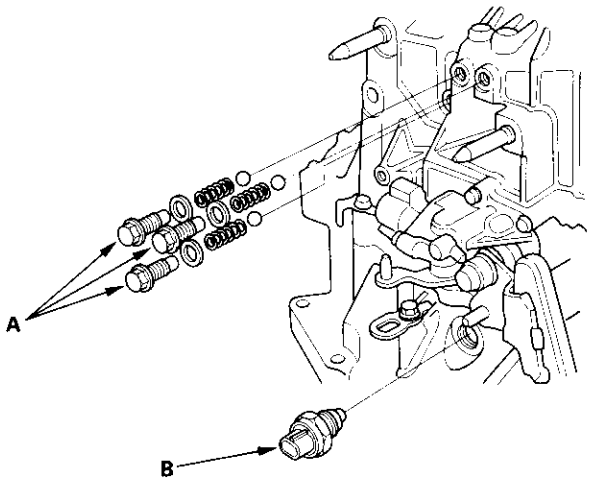
① TRANSMISSION HOUSING
② 10 mm WASHER
Replace.
③ 10 mm FLANGE BOLT
44 N·m (4.5 kgf·m, 33 lbf·ft)
④ 8 mm FLANGE BOLT
27 N·m (2.8 kgf·m, 20 lbf·ft)
⑤ TRANSMISSION HANGER A
⑥ INTERLOCK BOLT
39 N·m (4.0 kgf·m, 29 lbf·ft)
⑦ OIL GUIDE PLATE M
⑧ 72 mm SHIM
⑨ OIL GUTTER PLATE
⑩ 80 mm SHIM
⑪ 8 x 14 mm DOWEL PIN
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 CLUTCH LINE CLIP BRACKET
⑲ HARNESS STAY
⑳ TRANSMISSION HANGER B
㉑ 20 mm WASHER
Replace.
㉒ FILLER PLUG
44 N·m (4.5 kgf·m, 33 lbf·ft)
㉓ 40 x 56 x 8 mm OIL SEAL
Replace.
㉔ 14 mm WASHER
Replace.
㉕ DRAIN PLUG
39 N·m (4.0 kgf·m, 29 lbf·ft)
㉖ 32 mm SEALING CAP
34 N·m (3.5 kgf·m, 25 lbf·ft)

(cont'd)

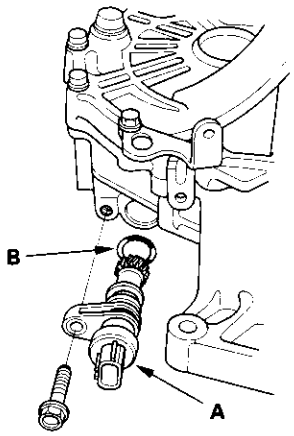
Transmission Disassembly (cont'd)

NOTE:
- Place the clutch housing on two pieces of wood thick enough to keep the mainshaft from hitting the workbench.
- 6-speed model is shown, 5-speed model is similar.

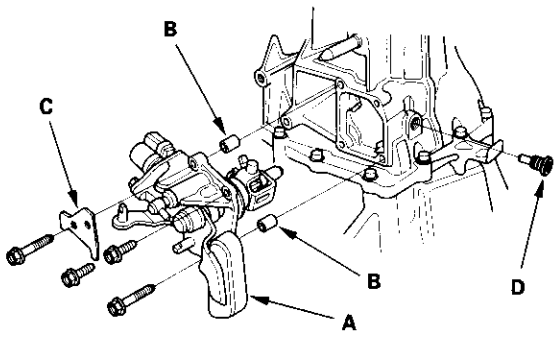
1. Remove the detent bolts (A), springs, steel balls and back-up light switch (B).



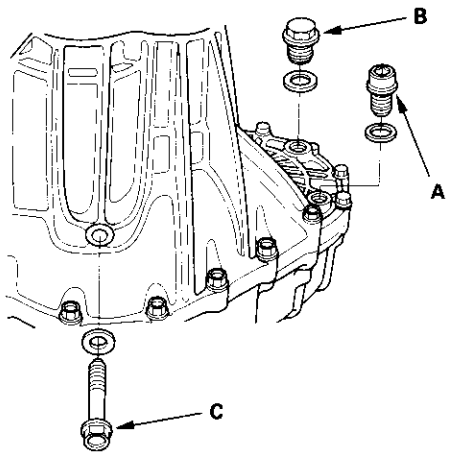
2. Remove the vehicle speed sensor (VSS) (A) and O-ring (B).



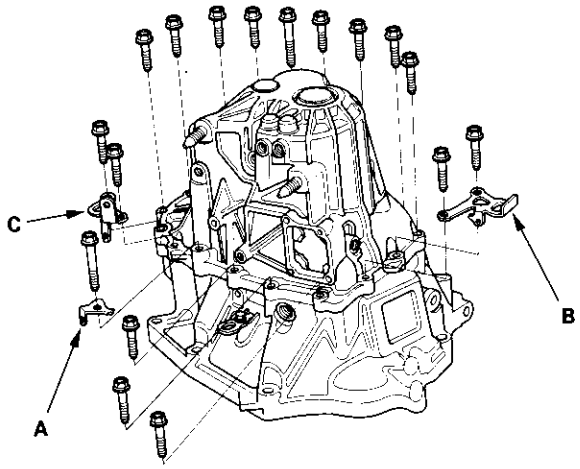
3. Remove the change lever assembly (A), 8 x 14 mm dowel pins (B), clutch line clip bracket (C), and interlock bolt (D).



4. Remove the drain plug (A), filler plug (B), and 10 mm flange bolt (C).

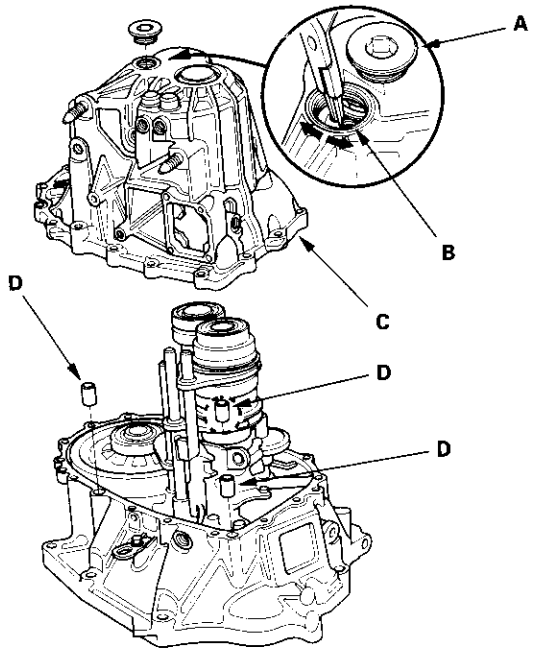


5. Remove the 8 mm flange bolts in a crisscross pattern in several steps.



6. Remove the harness bracket (A) (6-speed model only), the transmission hanger A (B), and the transmission hanger B (C).

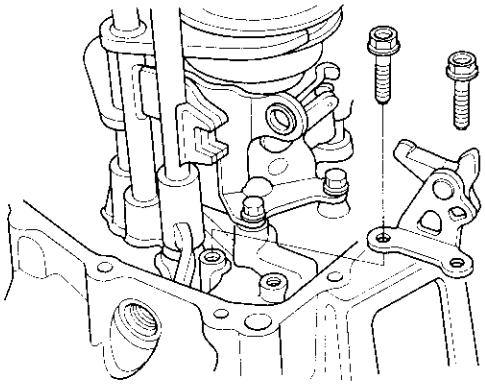
7. Remove the 32 mm sealing cap (A).



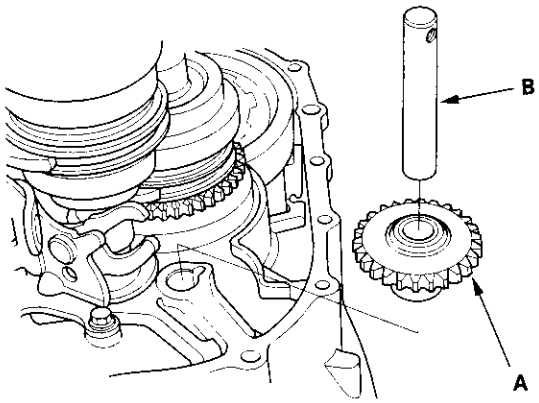
8. Expand the 72 mm snap ring (B) on the countershaft ball bearing, and remove it from the groove using a pair of snap ring pliers.

9. Remove the transmission housing (C) and 14 x 20 mm dowel pins (D).

10. Remove the reverse lock cam (5-speed model only).



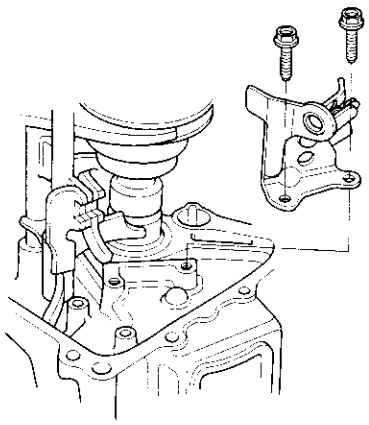
11. Remove the reverse idler gear (A) and reverse gear shaft (B).



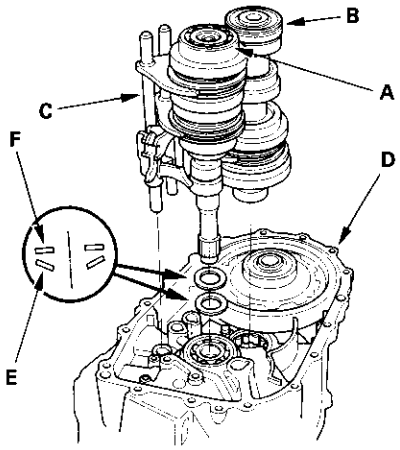
(cont'd)

Transmission Disassembly (cont'd)

12. Remove the reverse shift fork.

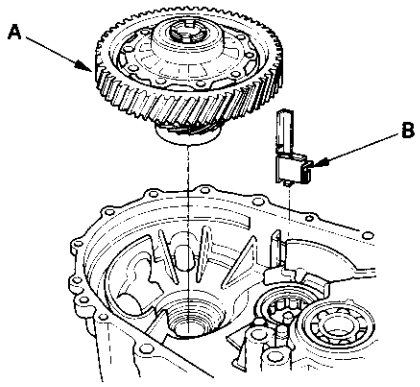


13. Apply vinyl tape to the mainshaft splines to protect the seal, then remove the mainshaft assembly (A) and countershaft assembly (B) with the shift forks (C) from the clutch housing (D).

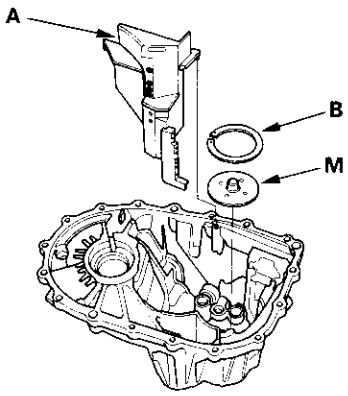


14. Remove the 28 mm spring washer (E) and 28 mm washer (F).

15. Remove the differential assembly (A) and magnet (B).



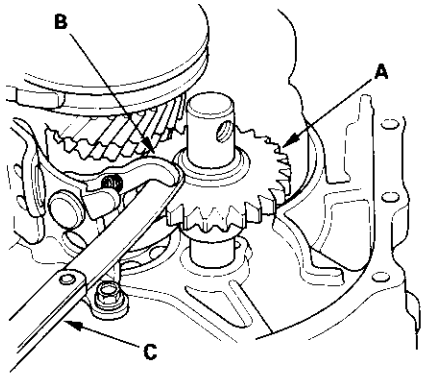
16. Remove the oil gutter plate (A), oil guide plate M, and 72 mm shim (B).



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.

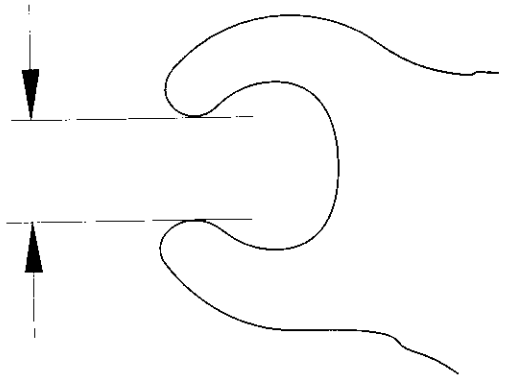
Standard: 0.20–0.59 mm (0.007–0.024 in.)
Service Limit: 1.3 mm (0.051 in.)



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.

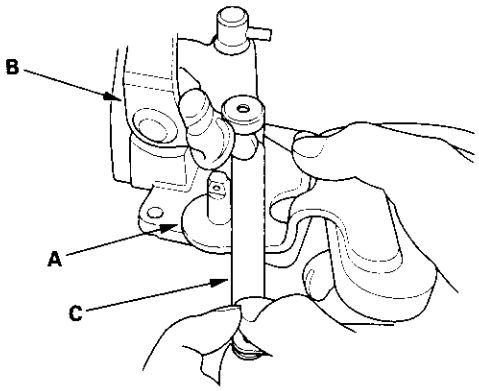
Standard: 13.4–13.7 mm (0.527–0.539 in.)



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.

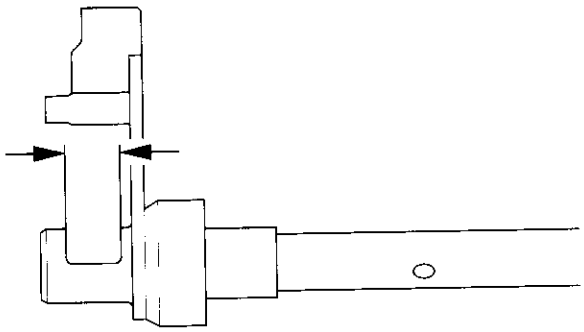
Standard: 0.05–0.25 mm (0.002–0.010 in.)
Service Limit: 0.50 mm (0.020 in.)



2. Measure the groove of the change lever.

- If distance is not within the standard, replace the shift lever with a new one.
- If distance is within the standard, replace the select lever with a new one.

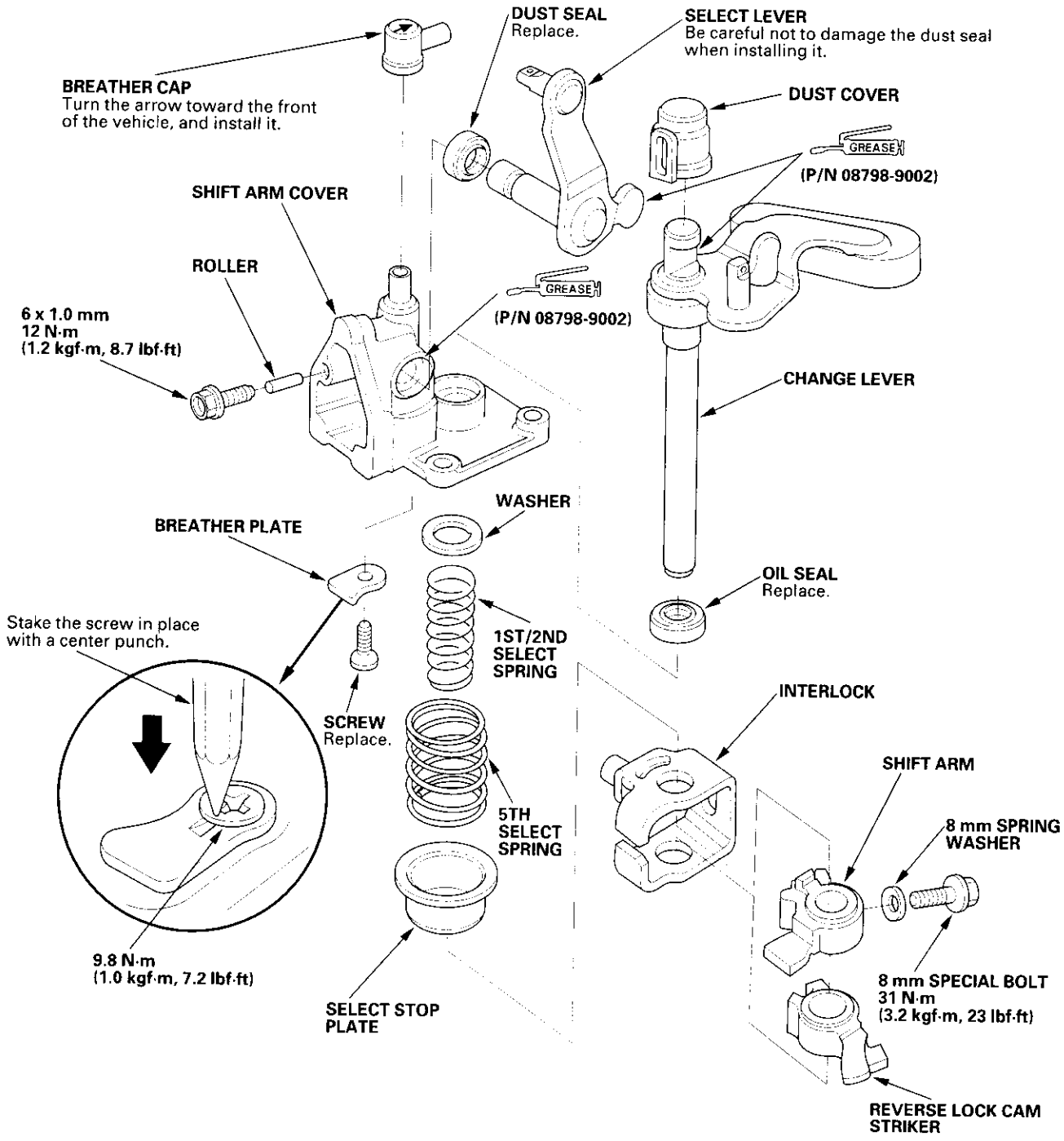
Standard: 15.00–15.10 mm (0.591–0.594 in.)



Change Lever Assembly Disassembly/Reassembly

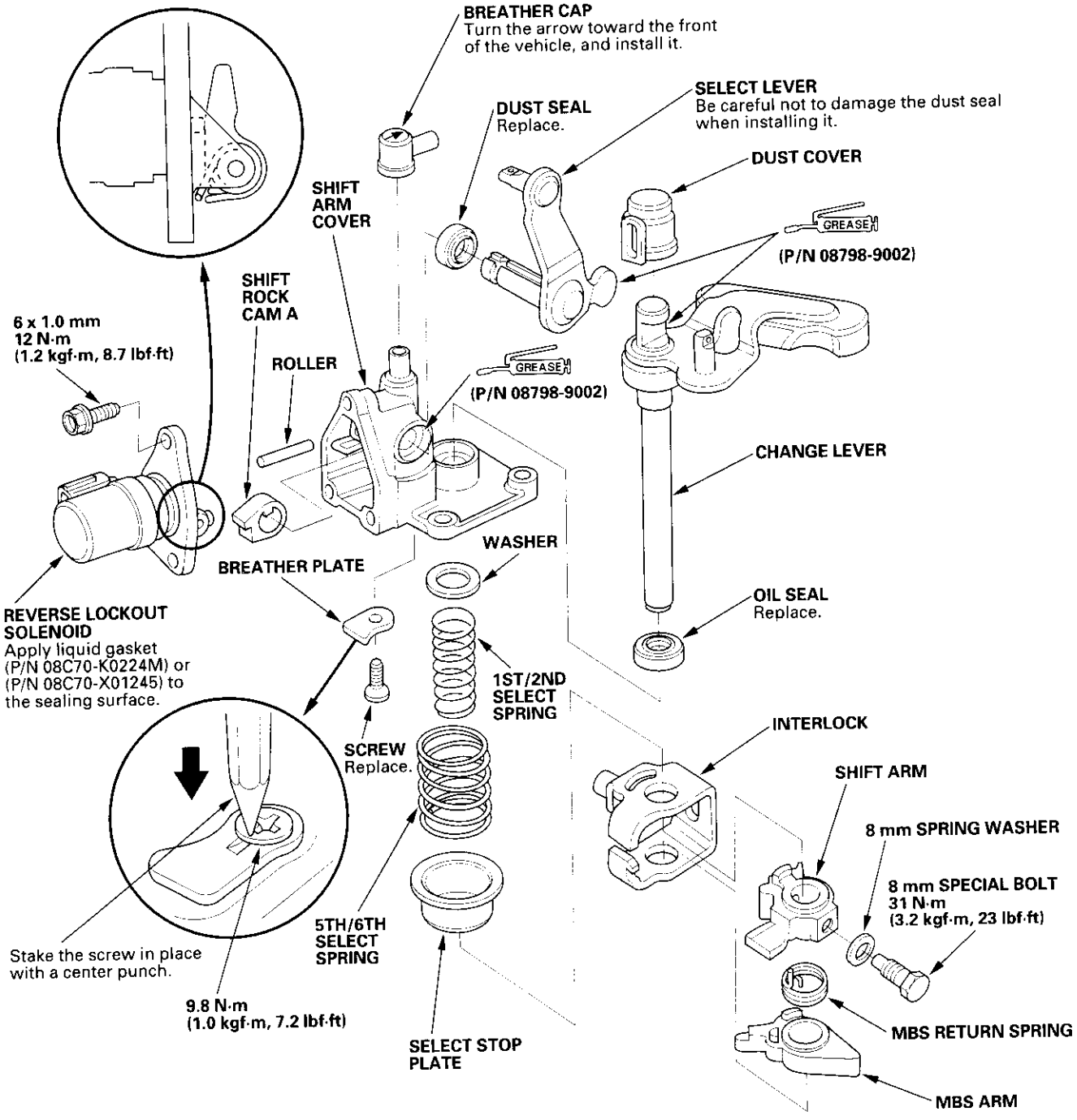
Prior to reassembling, clean all the parts in solvent, dry them, and apply lubricant to any contact surface.

5-speed model:



6-speed model:

NOTE: If 5 minutes have passed after applying liquid gasket, reapply it and assemble the shift arm cover.

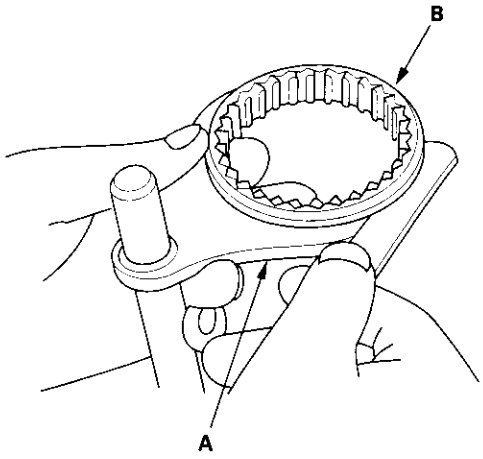


Shift Forks Clearance Inspection

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.

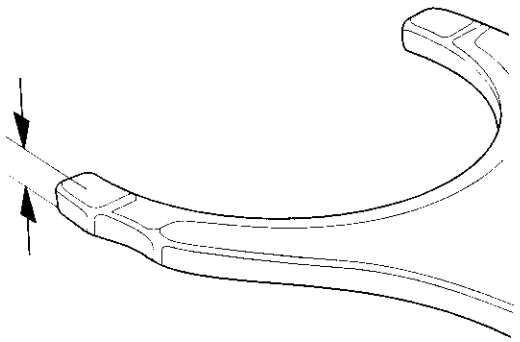
Standard: 0.35–0.65 mm (0.014–0.026 in.)
Service Limit: 1.0 mm (0.039 in.)



2. Measure the thickness of the shift fork fingers.

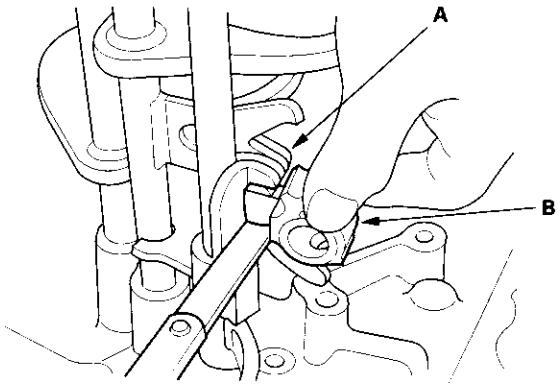
- If the thickness of the shift fork finger is not within the standard, replace the shift fork with a new one.
- If the thickness of the shift fork finger is within the standard, replace the synchro sleeve with a new one.

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.)

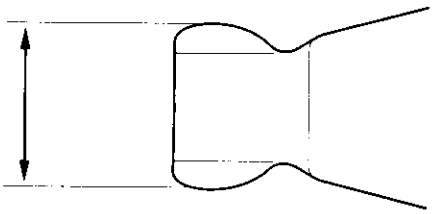


NOTE: 6-speed model is shown.

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 or shift piece with a new one.

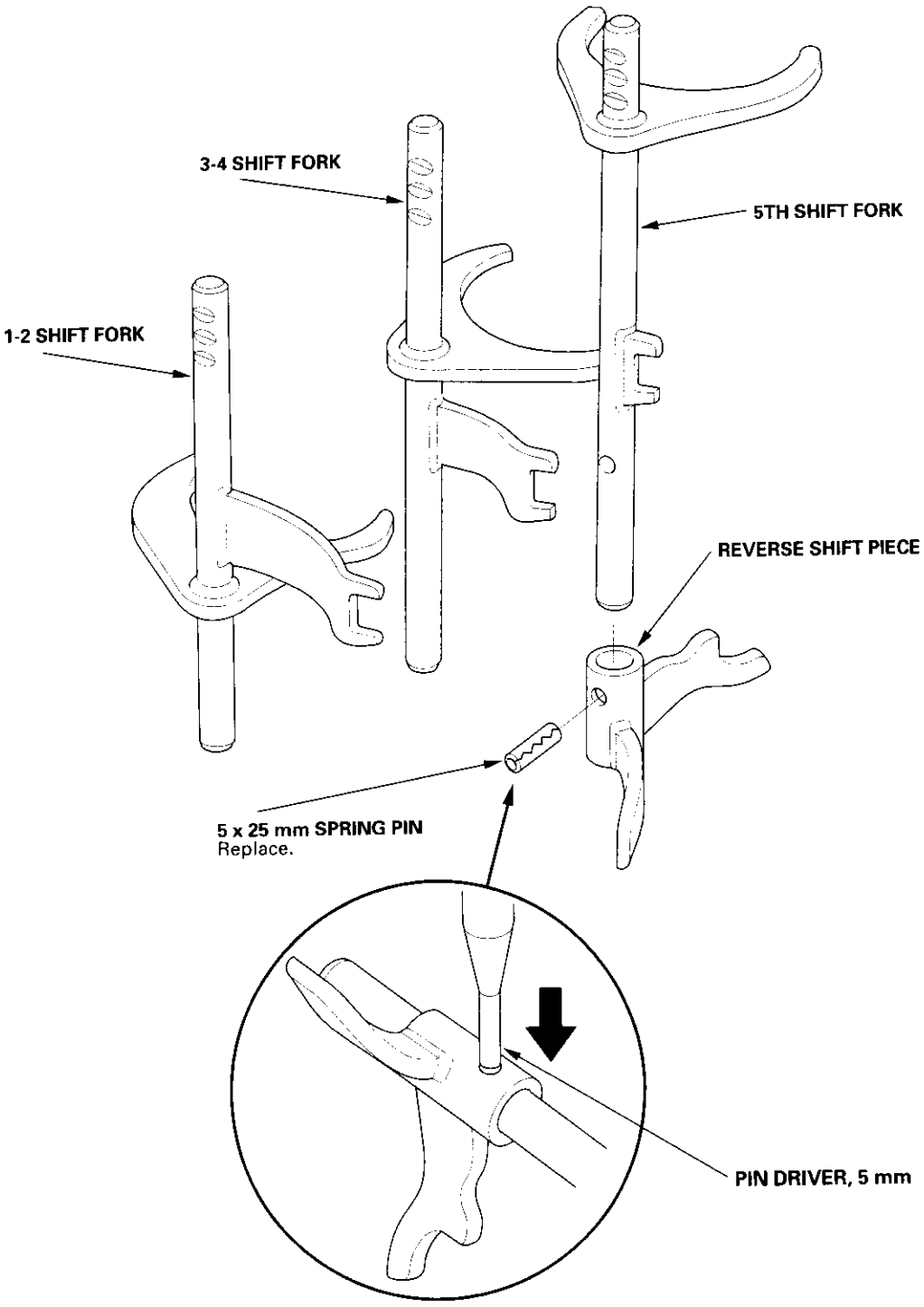
Standard: 16.9–17.0 mm (0.665–0.669 in.)



Shift Forks Disassembly/Reassembly

Prior to reassembling, clean all the parts in solvent, dry them, and apply lubricant to any contact parts.

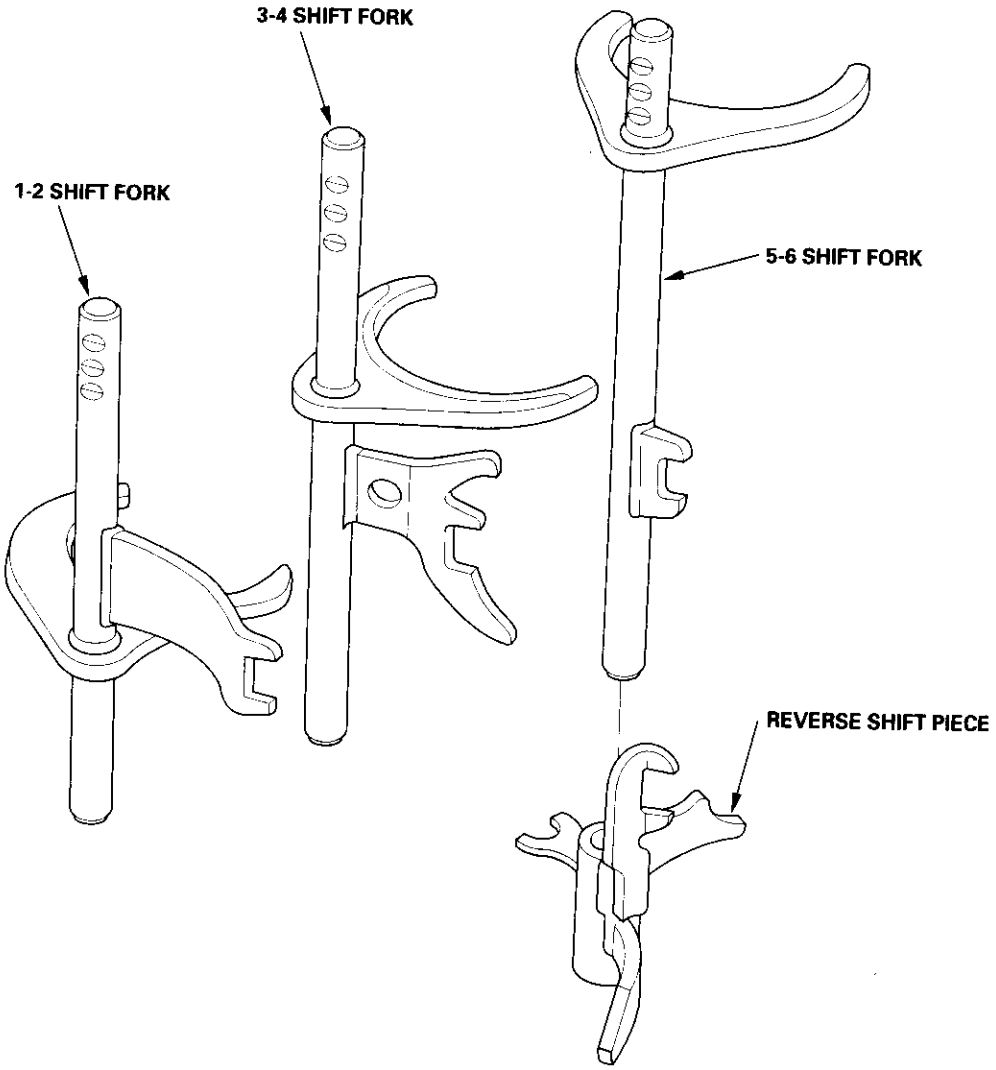
5-speed model:



(cont'd)

Shift Forks Disassembly/Reassembly (cont'd)

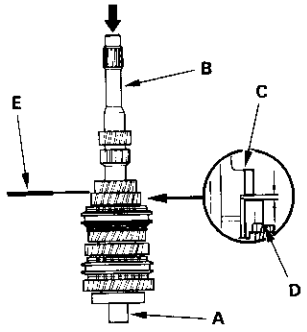
6-speed model:



Mainshaft Assembly Clearance Inspection

NOTE:
- If replacement is required, always replace the synchro sleeve and hub as a set.
- 6-speed model is shown, 5-speed model is similar.

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).

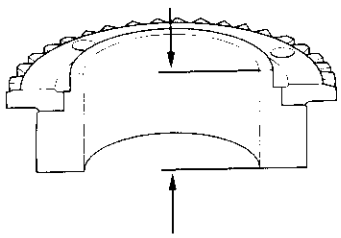
   - If the clearance is more than the service limit, go to step 3.
   - If the clearance is within the service limit, go to step 4.

   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.

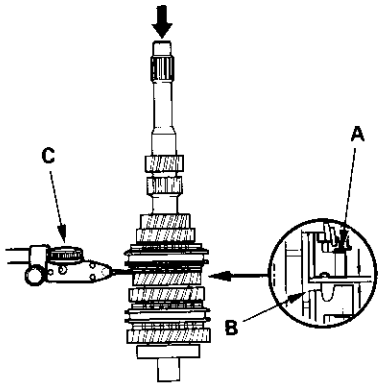
   - If the thickness of 3rd gear is less than the service limit, replace 3rd gear with a new one.
   - If the thickness of 3rd gear is within the service limit, replace the 3rd/4th synchro hub with a new one.

   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.

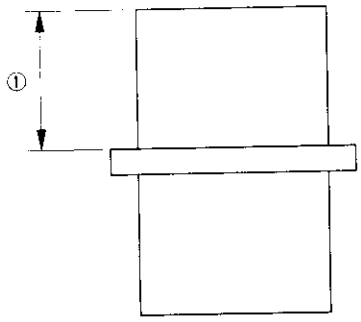
   Standard: **0.06–0.16 mm (0.002–0.006 in.)**
   Service Limit: **0.25 mm (0.010 in.)**



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.)**



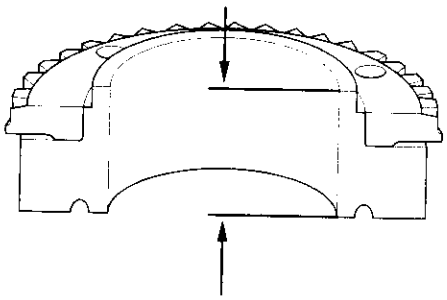
(cont'd)

Mainshaft Assembly Clearance Inspection (cont'd)

6. Measure the thickness of 4th gear.

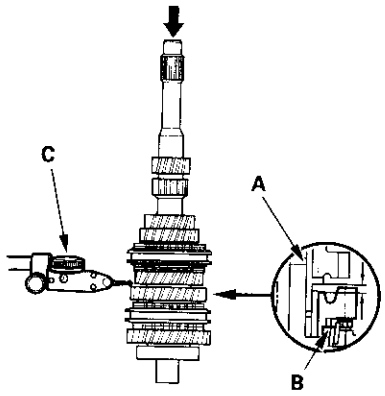
   - If the thickness of 4th gear is less than the service limit, replace 4th gear with a new one.
   - If the thickness of 4th gear is within the service limit, replace the 3rd/4th synchro hub with a new one.

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.

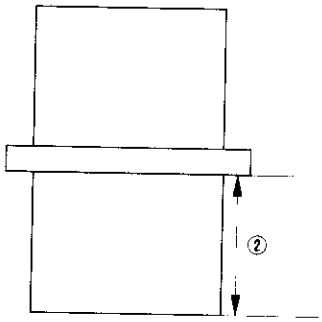
Standard: 0.06 – 0.16 mm (0.002 – 0.006 in.)
Service Limit: 0.25 mm (0.010 in.)



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.

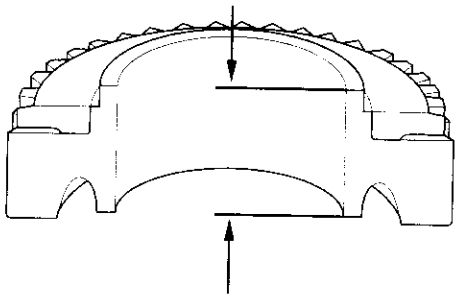
Standard: 24.03 – 24.08 mm (0.946 – 0.947 in.)



9. Measure the thickness of 5th gear.

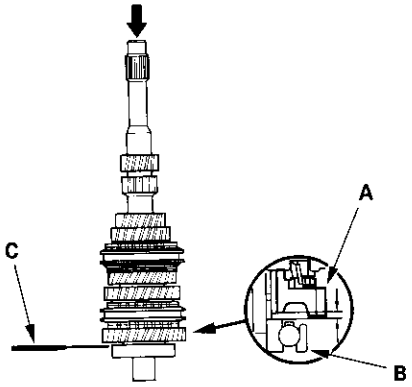
   - If the thickness of 5th gear is less than the service limit, replace 5th gear with a new one.
   - If the thickness of 5th gear is within the service limit, replace the 5th synchro hub with a new one.

Standard: 23.92 – 23.97 mm (0.941 – 0.944 in.)
Service Limit: 23.80 mm (0.937 in.)



10. Measure the clearance between the 6th gear (A) and angular ball bearing (B) with a feeler gauge (C). If the clearance is more than the service limit, go to step 11.

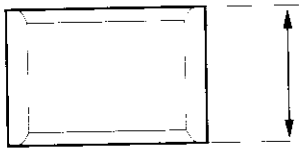
Standard: **0.06–0.16 mm (0.002–0.006 in.)**
Service Limit: **0.25 mm (0.010 in.)**



11. Measure the thickness of the distance collar.

- If the thickness of distance collar is less than the standard, replace the distance collar with a new one.
- If the thickness of distance collar is within the standard, go to step step 12.

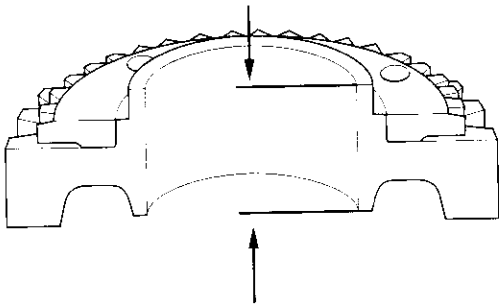
Standard: **24.03–24.08 mm (0.946–0.947 in.)**



12. Measure the thickness of 6th gear.

- If the thickness of 6th gear is less than the service limit, replace 6th gear with a new one.
- If the thickness of 6th gear is within the service limit, replace the 5th/6th synchro hub with a new one.

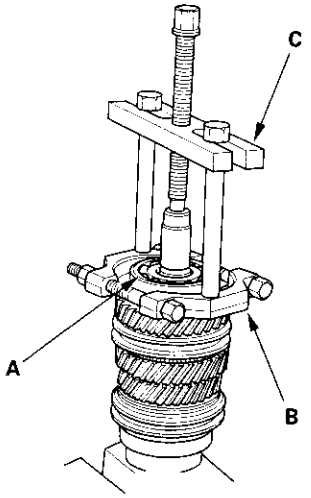
Standard: **23.92–23.97 mm (0.941–0.944 in.)**
Service Limit: **23.80 mm (0.937 in.)**



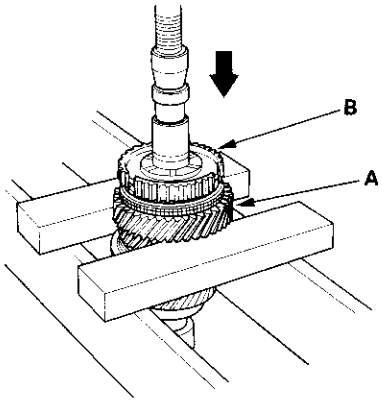
Mainshaft Disassembly

NOTE: 6-speed model is shown, 5-speed model is similar.

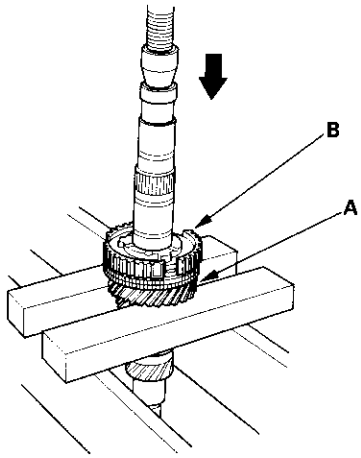
1. Remove the angular ball bearing (A) and the tapered cone ring using a commercially available bearing separator (B) and a commercially available bearing puller (C). Be sure the bearing separator is under the tapered cone ring. (5-speed model).



2. Support 5th gear (A) on steel blocks, and press the mainshaft out of the 5th/6th synchro hub (B). Use of a jaw-type puller can damage the gear teeth.



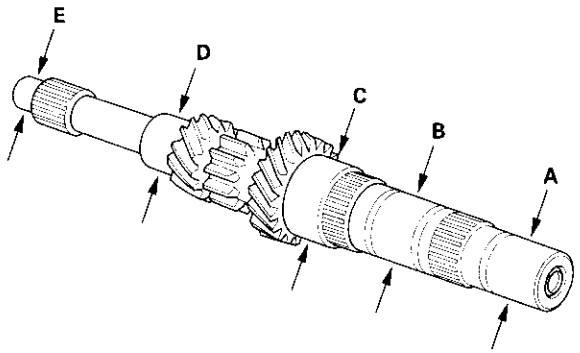
3. Support the 3rd gear (A) on steel blocks, and press the mainshaft out of the 3rd/4th synchro hub (B). Use of a jaw-type puller can damage the gear teeth.



Mainshaft Inspection

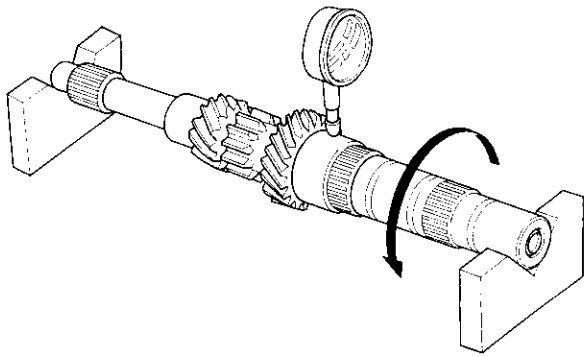
1. Inspect the gear surface and bearing surface for wear and damage, then measure the mainshaft at points A, B, C, D, and E. If any part of the mainshaft is less than the service limit, replace it with a new one.

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.

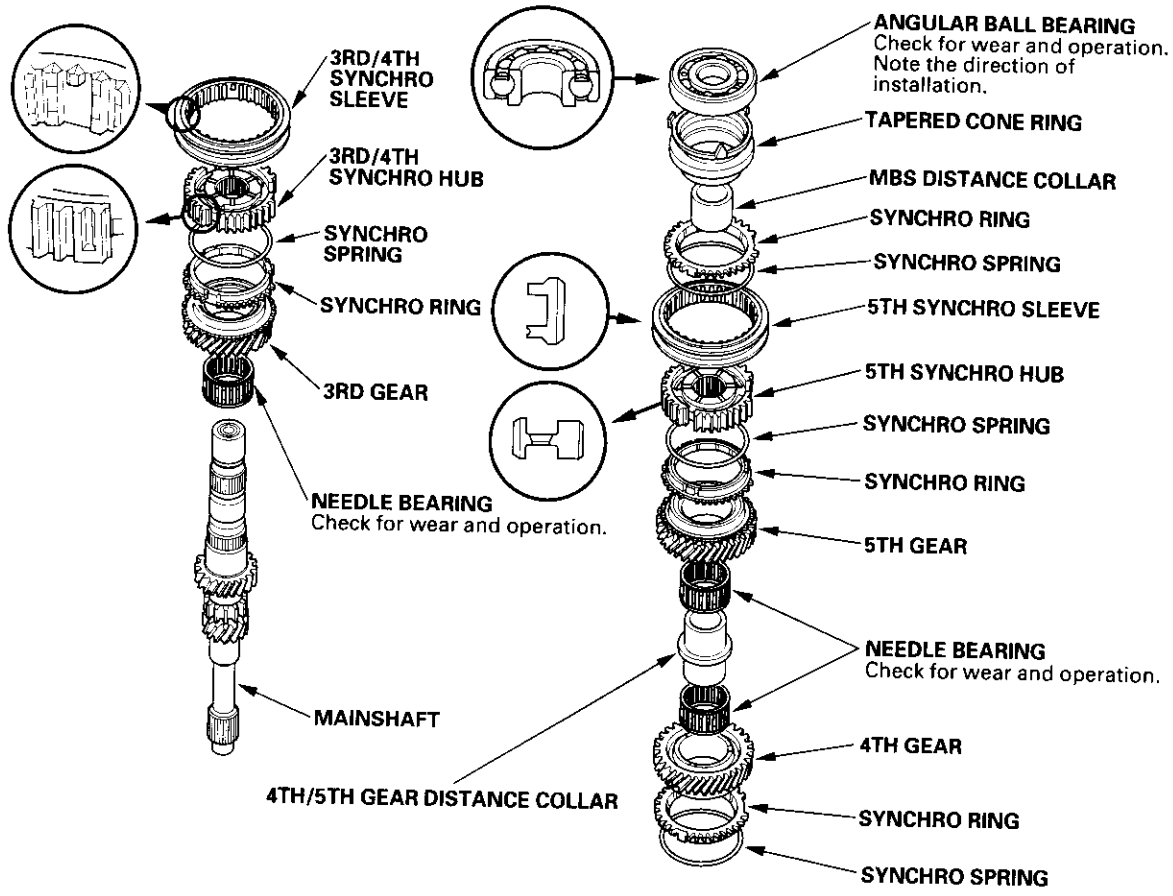
Standard: 0.02 mm (0.001 in.) max.
Service Limit: 0.05 mm (0.002 in.)



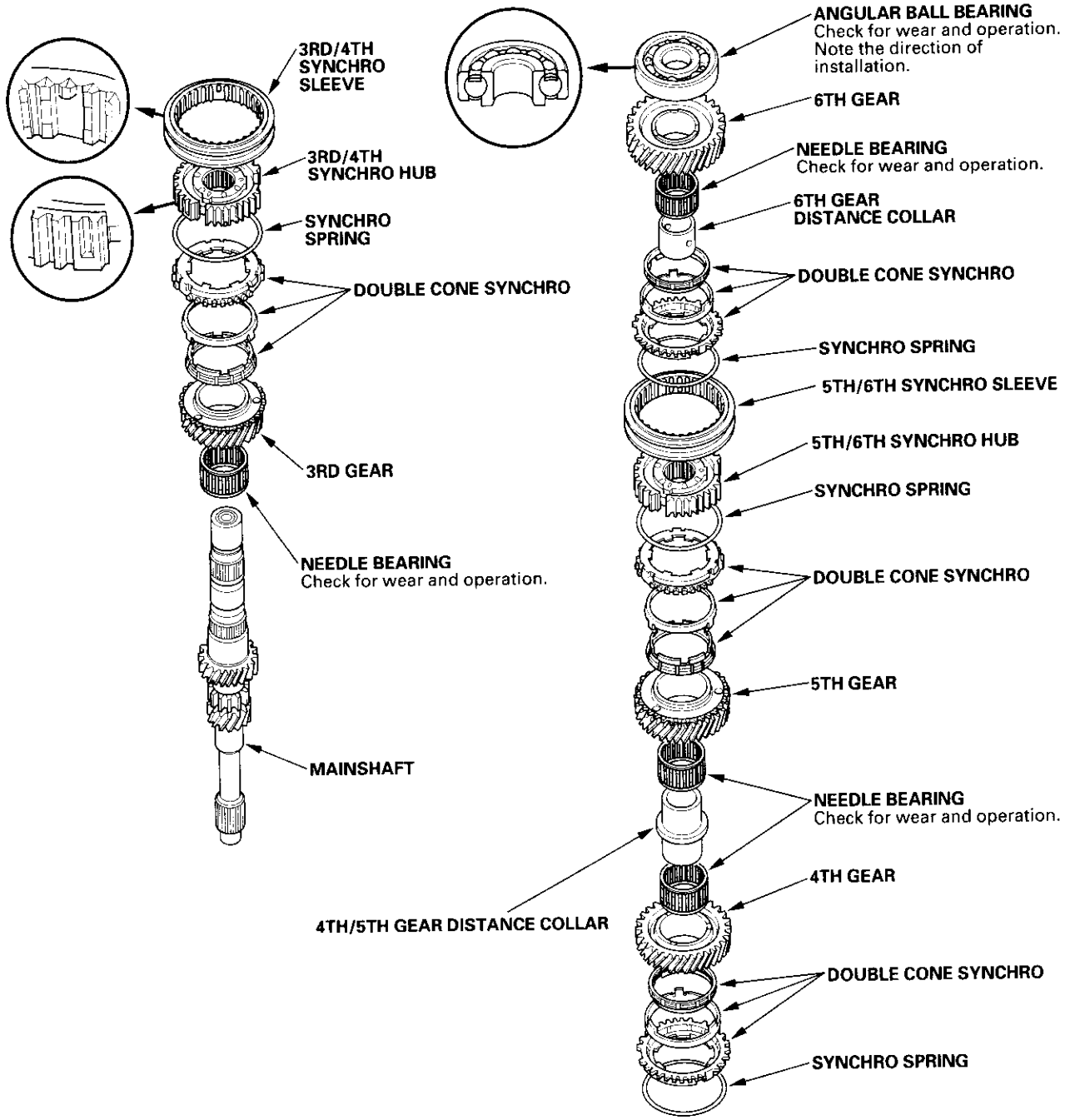
Mainshaft Reassembly

Exploded View

5-speed model:



6-speed model:



(cont'd)

Mainshaft Reassembly (cont'd)

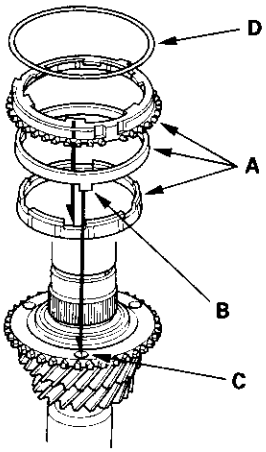
Special Tools Required
- Driver, 40 mm I.D. 07746-0030100
- Attachment, 30 mm I.D. 07746-0030300

NOTE:
- Refer to the Exploded View as needed during this procedure.
- 6-speed model is shown, 5-speed model is similar.

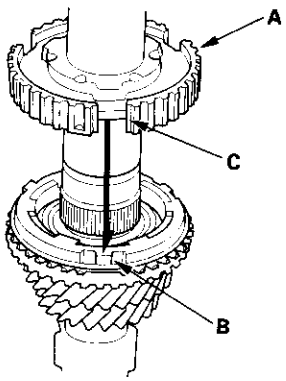
1. Clean all the parts in solvent, dry them, and apply lubricant to all contact surfaces except the 3rd/4th and 5th/6th synchro hubs.

2. Install the needle bearing on the mainshaft.

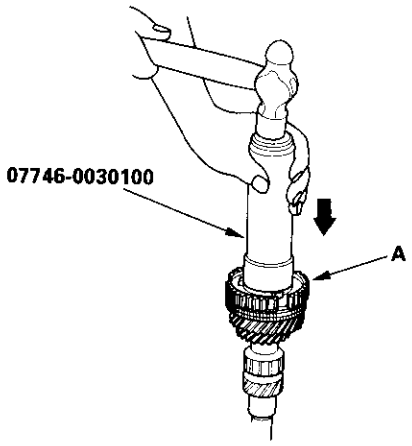
3. Install the double cone synchro assembly (A) by aligning the synchro cone fingers (B) with the holes in 3rd gear (C), then install the synchro spring (D).



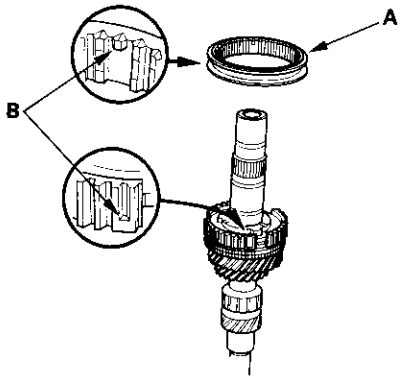
4. Install the 3rd/4th synchro hub (A) by aligning the synchro cone fingers (B) with the grooves in 3rd/4th synchro hub (C).



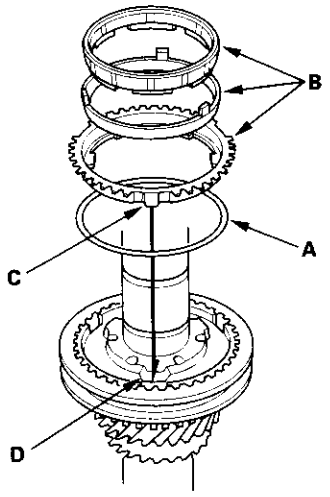
5. Install the 3rd/4th synchro hub (A) using the special tool.



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.

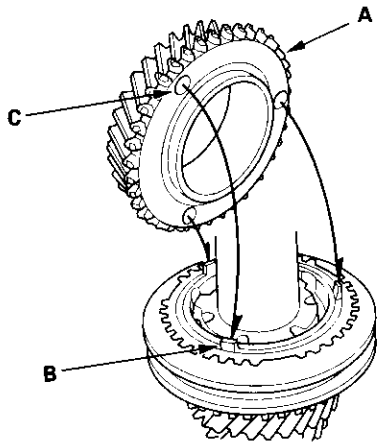


7. Install the synchro spring (A).



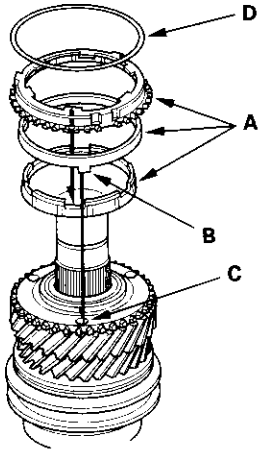
8. Install the double cone synchro assembly (B) by aligning the synchro cone fingers (C) with the grooves in 3rd/4th synchro hub (D).

9. Install the 4th gear (A) by aligning the synchro cone fingers (B) with holes in 4th gear (C).

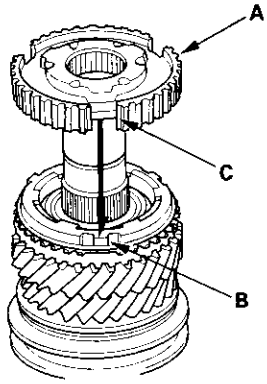


10. Install the needle bearings, distance collar, and 5th gear.

11. Install the double cone synchro assembly (A) by aligning the synchro cone fingers (B) with the holes in 5th gear (C), then install the synchro spring (D).



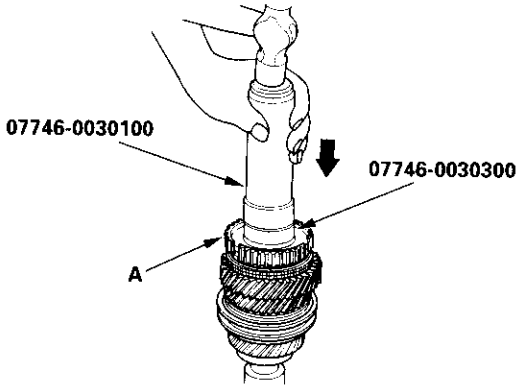
12. Install the 5th/6th synchro hub (A) by aligning the synchro cone fingers (B) with the grooves in 5th/6th synchro hub (C).



(cont'd)

Mainshaft Reassembly (cont'd)

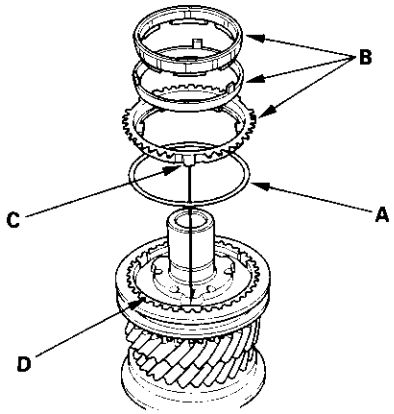
13. Install the 5th/6th synchro hub (A) using the special tools.



14. Install the 5th/6th synchro sleeve.

15. Install the distance collar and the taper cone ring (5-speed model).

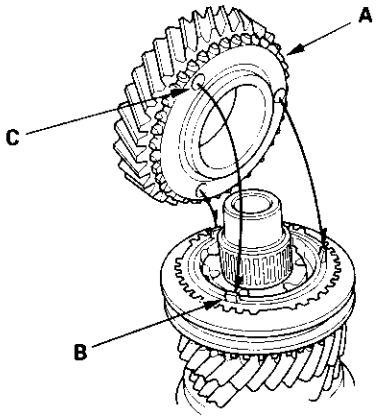
16. Install the synchro spring (A).



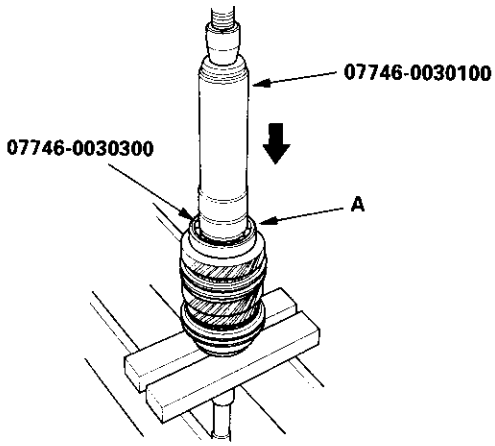
17. Install the double cone synchro assembly (B) by aligning the synchro cone fingers (C) with the grooves in 5th/6th synchro hub (D).

18. Install the distance collar and the needle bearing.

19. Install the 6th gear (A) by aligning the synchro cone fingers (B) with the holes in 6th gear (C).



20. Install the new ball bearing (A) using the special tools and a press (B).

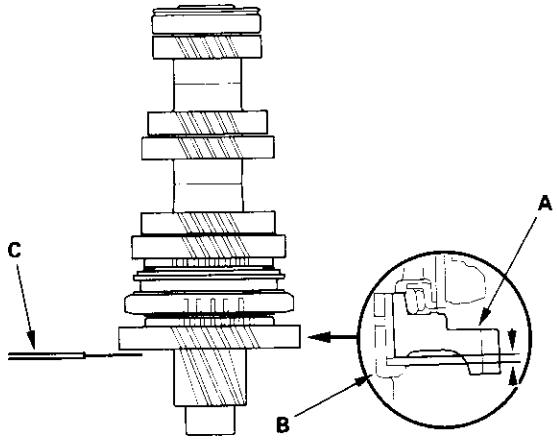


Countershaft Assembly Clearance Inspection

NOTE: 6-speed model is shown, 5-speed model is similar.

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.

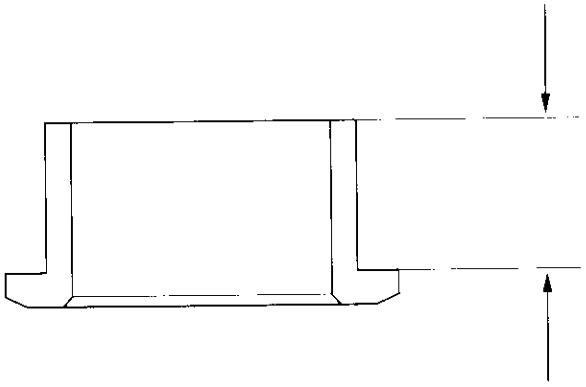
Standard: 0.06—0.16 mm (0.002—0.006 in.)
Service Limit: 0.25 mm (0.010 in.)



2. Measure the thickness of the distance collar.

- If the thickness is less than the standard, replace the distance collar with a new one.
- If the thickness is within the standard, go to step 3.

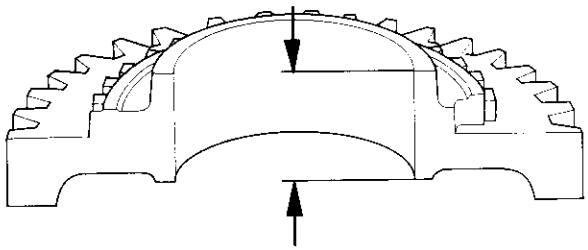
Standard: 23.03—23.08 mm (0.907—0.909 in.)



3. Measure the thickness of the 1st gear.

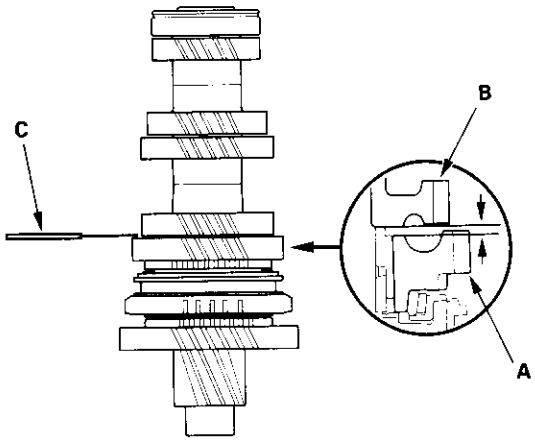
- If the thickness of 1st gear is less than the service limit, replace 1st gear with a new one.
- If the thickness of 1st gear is within the service limit, replace the 1st/2nd synchro hub with a new one.

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.)



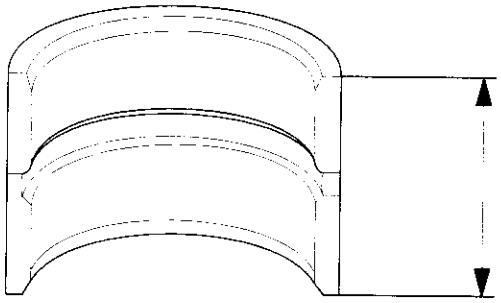
(cont'd)

Countershaft Assembly Clearance Inspection (cont'd)

5. Measure the thickness of the distance collar.

   - If the thickness is less than the standard, replace the distance collar with a new one.
   - If the thickness is within the standard, go to step 6.

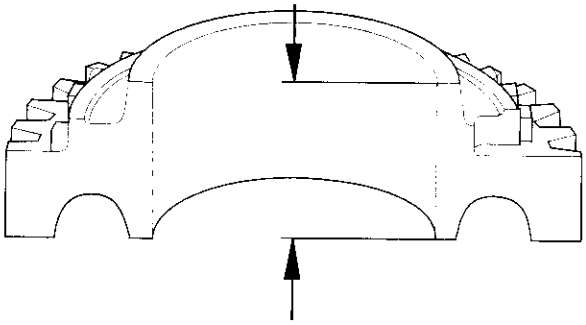
Standard: 28.03 – 28.08 mm (1.104 – 1.106 in.)



6. Measure the thickness of the 2nd gear.

   - If the thickness of 2nd gear is less than the service limit, replace 2nd gear with new one.
   - If the thickness of 1st gear is within the service limit, replace the 1st/2nd synchro hub with a new one.

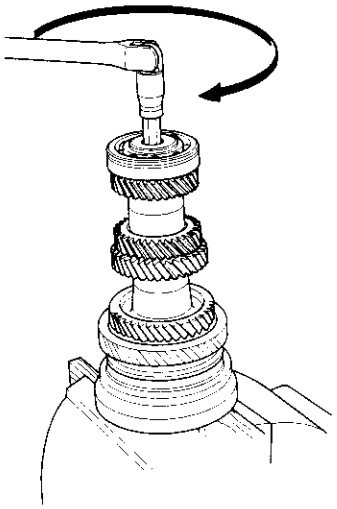
Standard: 27.92 – 27.97 mm (1.099 – 1.101 in.)
Service Limit: 27.87 mm (1.097 in.)



Countershaft Disassembly

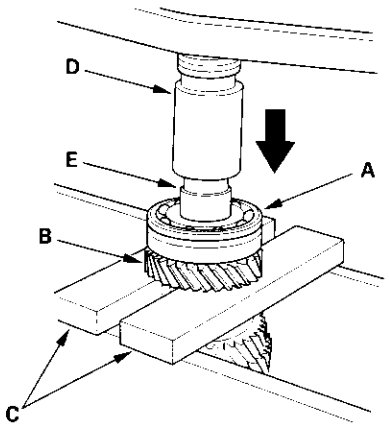
NOTE: 6-speed model is shown, 5-speed model is similar.

1. Securely clamp the countershaft assembly in a bench vise with wood blocks.



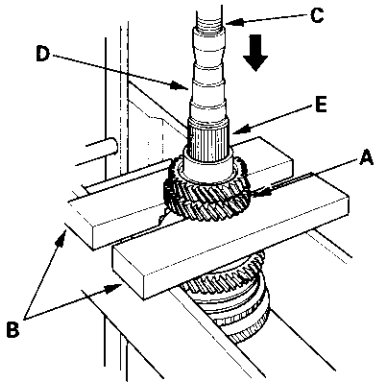
2. Remove the special bolt (left-hand threads).

3. Support ball bearing (A) (5-speed model) or 6th gear (B) (6-speed model) on steel blocks (C), then use a press (D) and an attachment (E) to press the countershaft out of the ball bearing.

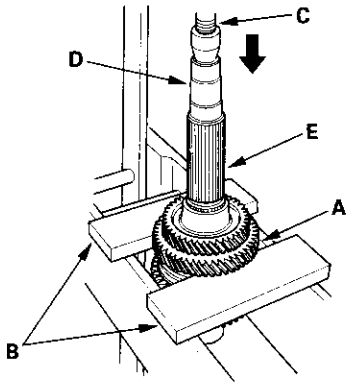


4. Remove the 35 mm shim and distance collar (5-speed model).

5. Support 4th gear (A) on steel blocks (B), then use a press (C) and an attachment (D) to press the countershaft (E) out of the 5th gear.



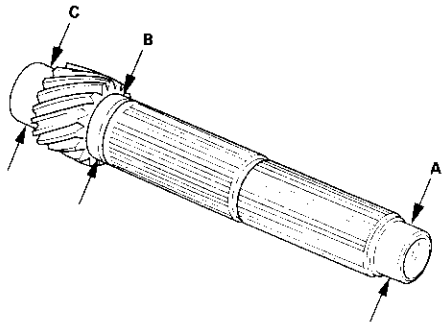
6. Support 2nd gear (A) on steel blocks (B), then use a press (C) and an attachment (D) to press the countershaft (E) out of the 3rd gear.



Countershaft Inspection

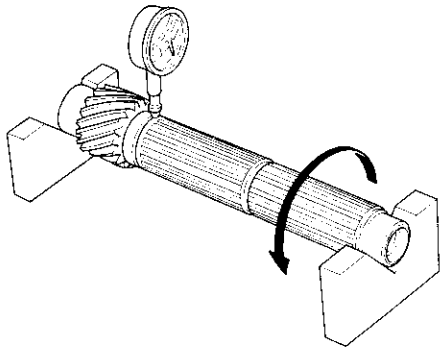
1. Inspect the gear surface and bearing surface for wear and damage, then measure the countershaft at points A, B, and C. If any part of the countershaft is less than the service limit, replace it with a new one.

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):
40.000-40.015 mm (1.5748-1.5754 in.)
Service Limit:
A: 29.97 mm (1.180 in.)
B: 39.883 mm (1.5702 in.)
C: 39.95 mm (1.5723 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.

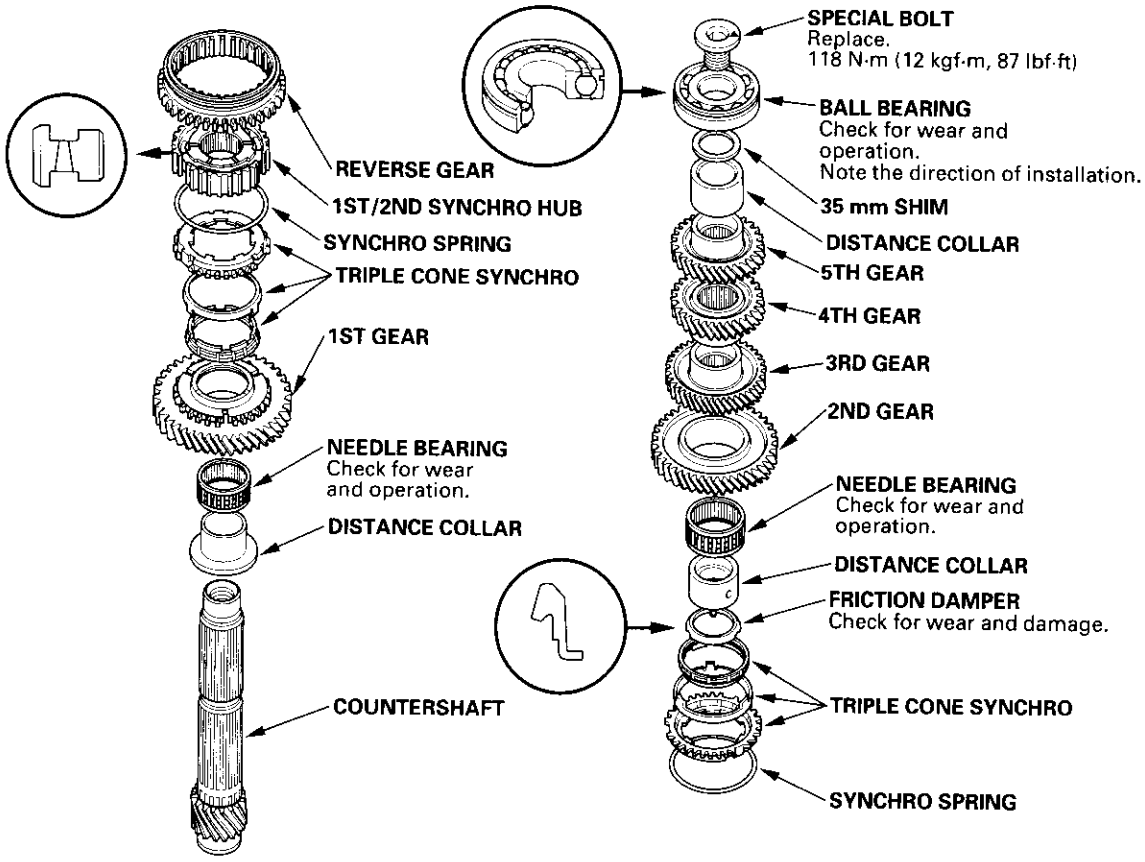
Standard: **0.02 mm (0.001 in.) max.**
Service Limit: **0.05 mm (0.002 in.)**



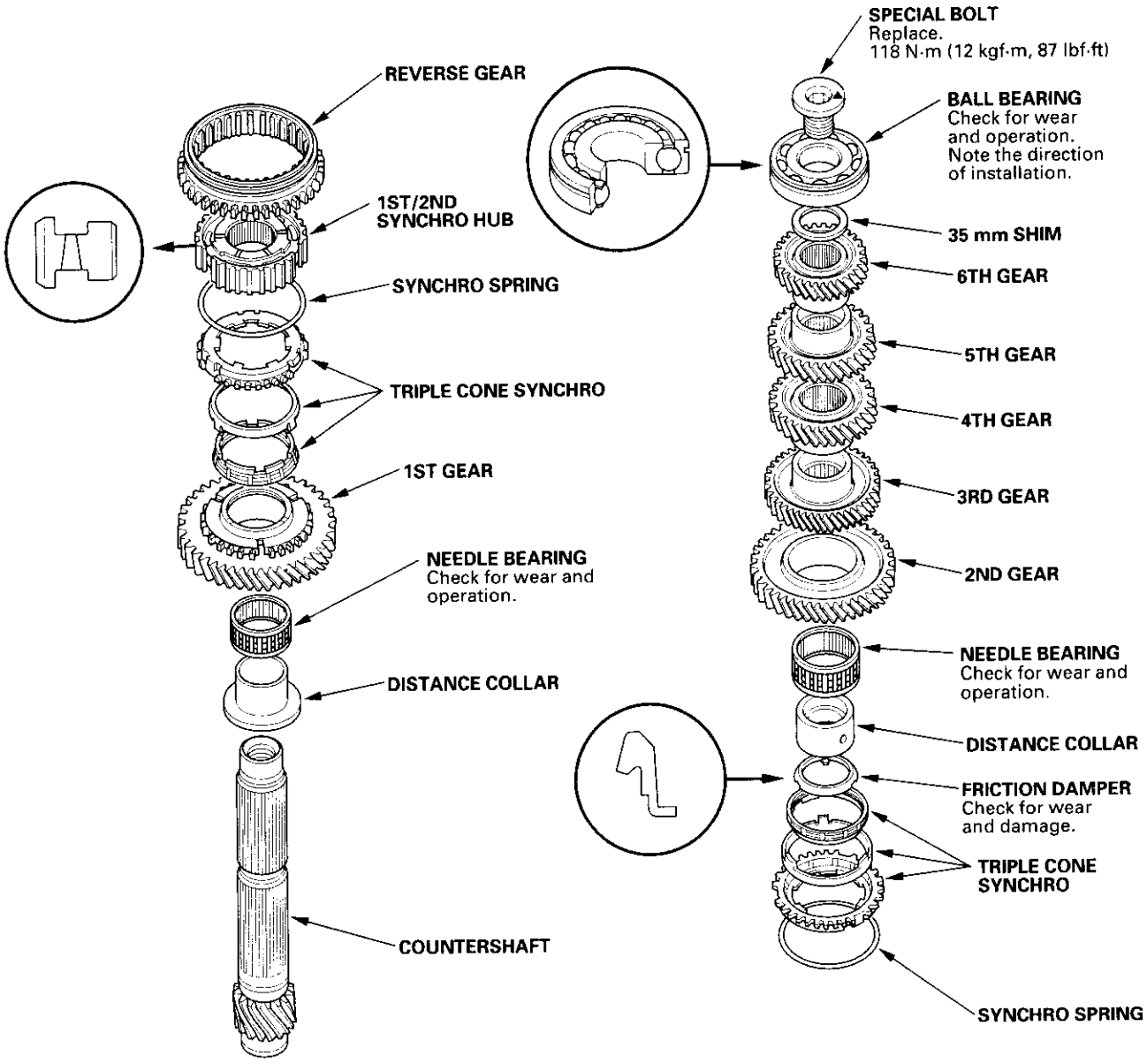
Countershaft Reassembly

Exploded View

5-speed model:



6-speed model:



(cont'd)

Countershaft Reassembly (cont'd)

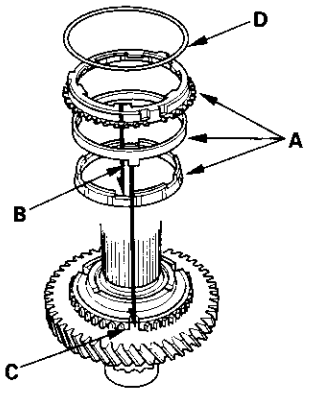
Special Tools Required
- Driver, 40 mm I.D. 07746-0030100
- Attachment, 30 mm 07746-0030300

NOTE:
- Refer to the Exploded View as needed during this procedure.
- 6-speed model is shown, 5-speed model is similar.

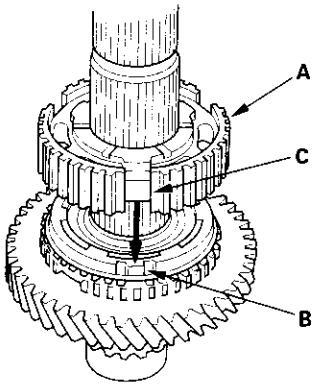
1. Clean all parts in solvent, dry them, and apply lubricant to all contact surfaces.

2. Install the distance collar and needle bearing onto the countershaft.

3. Install the triple cone synchro assembly (A) by aligning the synchro cone fingers (B) with the grooves in 1st gear (C), then install the synchro spring (D).

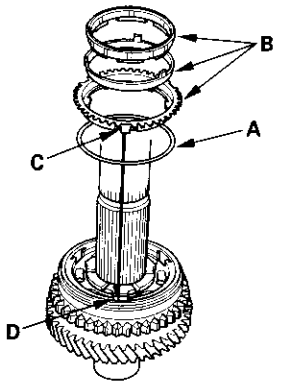


4. Install the 1st/2nd synchro hub (A) by aligning the synchro cone fingers (B) with the grooves in 1st/2nd synchro hub (C).



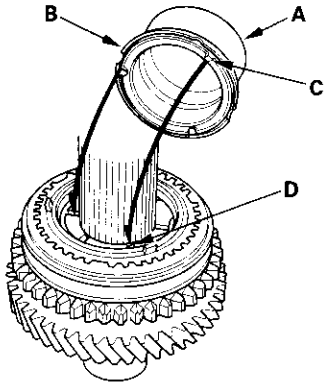
5. Install the reverse gear.

6. Install the synchro spring (A).



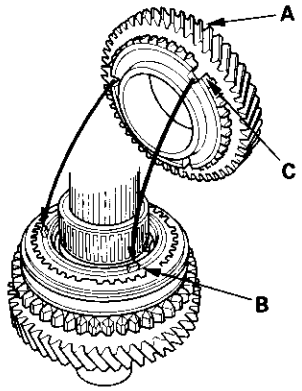
7. Install the triple cone synchro assembly (B) by aligning the synchro cone fingers (C) with the grooves in 1st/2nd synchro hub (D).

8. Install the distance collar (A) and friction damper (B) by aligning the friction damper fingers (C) with the grooves in 1st/2nd synchro hub (D).

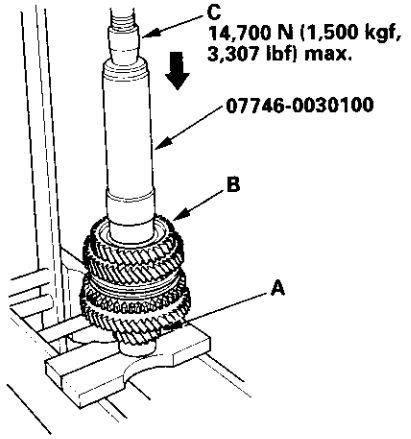


9. Install the needle bearing.

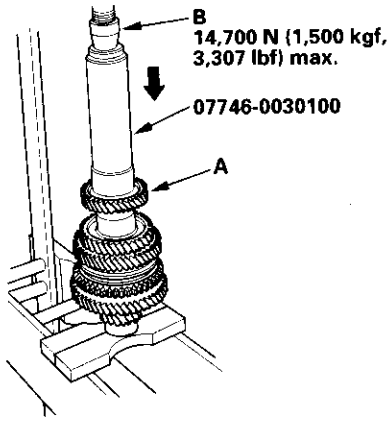
10. Install the 2nd gear (A) by aligning the synchro cone fingers (B) with the grooves in 2nd gear (C).



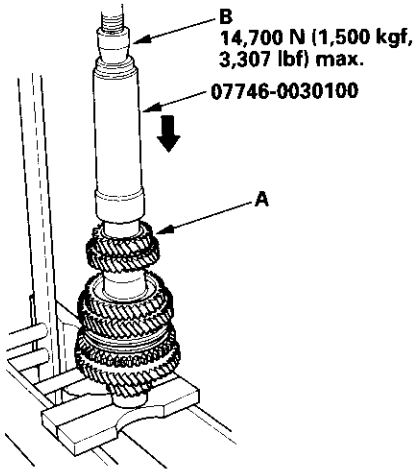
11. Support the countershaft (A) on the steel blocks, then install the 3rd gear (B) using the special tool and a press (C). Do not exceed the maximum pressure.



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.

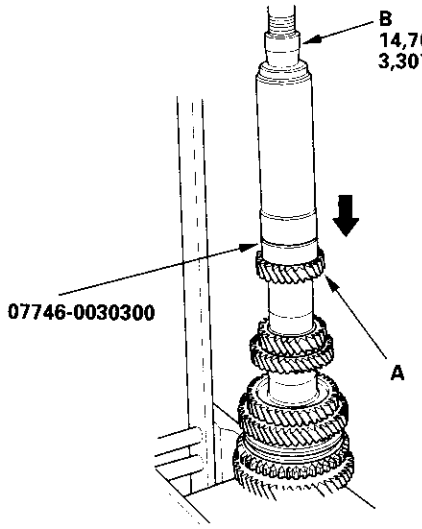


(cont'd)

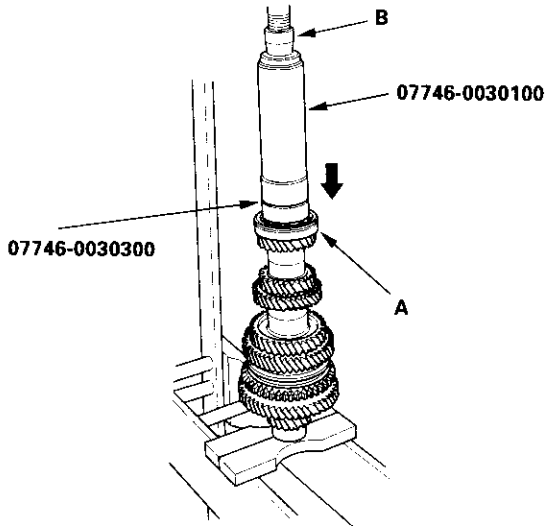
Countershaft Reassembly (cont'd)

14. Install the distance collar (5-speed model).

15. Install 6th gear (A) using a special tools and a press (B). Do not exceed the maximum pressure.

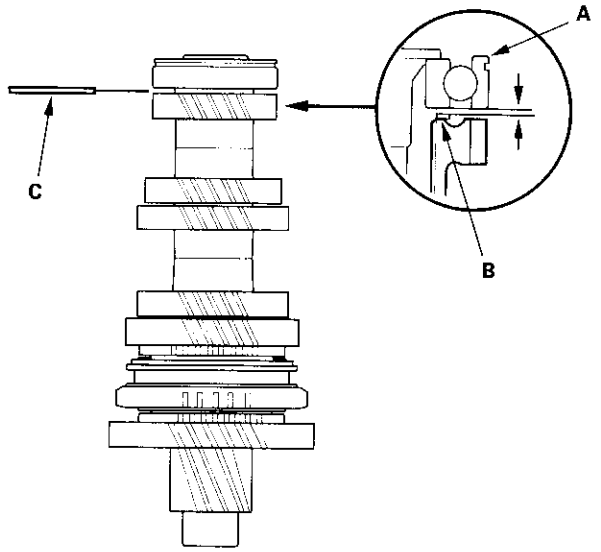


16. Install the 35 mm shim and the old ball bearing (A) using a special tools and a press (B).



17. Measure the clearance between the old bearing (A) and the 35 mm shim (B) with a feeler gauge (C).

Standard: 0.04 – 0.10 mm (0.0016 – 0.0039 in.)

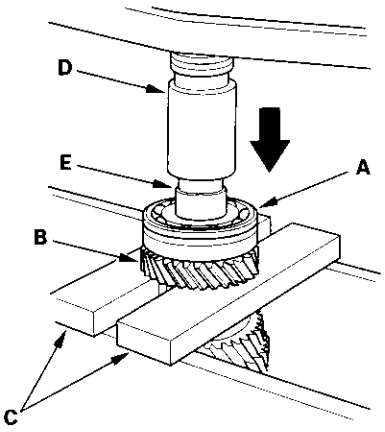


18. If the clearance is more than the standard, select a new shim from the following table. If the clearance measured in step 17 is within the standard, install the new ball bearing.

35 mm Shim

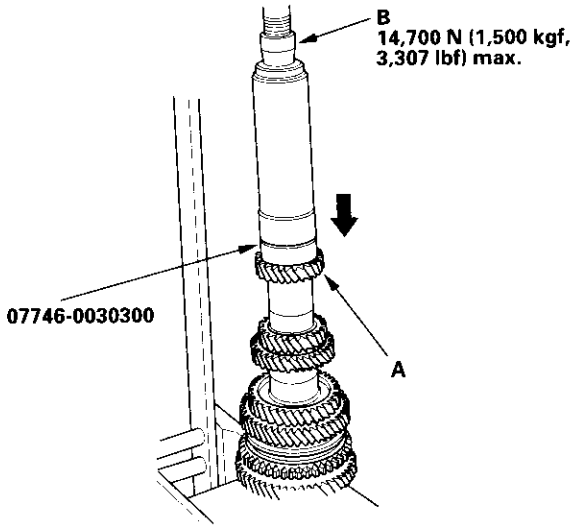
	Part Number	Thickness
A	23981-PPP-000	0.87 mm (0.0343 in.)
AA	23981-PPP-900	0.91 mm (0.0358 in.)
B	23982-PPP-000	0.95 mm (0.0374 in.)
AB	23982-PPP-900	0.99 mm (0.0390 in.)
C	23983-PPP-000	1.03 mm (0.0406 in.)
AC	23983-PPP-900	1.07 mm (0.0421 in.)
D	23984-PPP-000	1.11 mm (0.0437 in.)
AD	23984-PPP-900	1.15 mm (0.0453 in.)
E	23985-PPP-000	1.19 mm (0.0469 in.)
AE	23985-PPP-900	1.23 mm (0.0484 in.)
F	23986-PPP-000	1.27 mm (0.0500 in.)
AF	23986-PPP-900	1.31 mm (0.0516 in.)
G	23987-PPP-000	1.35 mm (0.0531 in.)
AG	23987-PPP-900	1.39 mm (0.0547 in.)
H	23988-PPP-000	1.43 mm (0.0563 in.)
AH	23988-PPP-900	1.47 mm (0.0579 in.)
J	23989-PPP-000	1.51 mm (0.0594 in.)
AJ	23989-PPP-900	1.55 mm (0.0610 in.)
K	23990-PPP-000	1.59 mm (0.0626 in.)
AK	23990-PPP-900	1.63 mm (0.0642 in.)
L	23991-PPP-000	1.67 mm (0.0657 in.)
AL	23991-PPP-900	1.71 mm (0.0673 in.)
M	23992-PPP-000	1.75 mm (0.0689 in.)
AM	23992-PPP-900	1.79 mm (0.0705 in.)
N	23993-PPP-000	1.83 mm (0.0720 in.)
AN	23993-PPP-900	1.87 mm (0.0736 in.)
P	23994-PPP-000	1.91 mm (0.0752 in.)
AP	23994-PPP-900	1.95 mm (0.0768 in.)
Q	23995-PPP-000	1.99 mm (0.0783 in.)

19. Support ball bearing (A) (5-speed model) or 6th gear (B) (6-speed model) on steel blocks (C), then use a press (D) and an attachment (E) to press the countershaft out of the ball bearing.



20. Replace the 35 mm shim selected in step 18, then recheck the clearance.

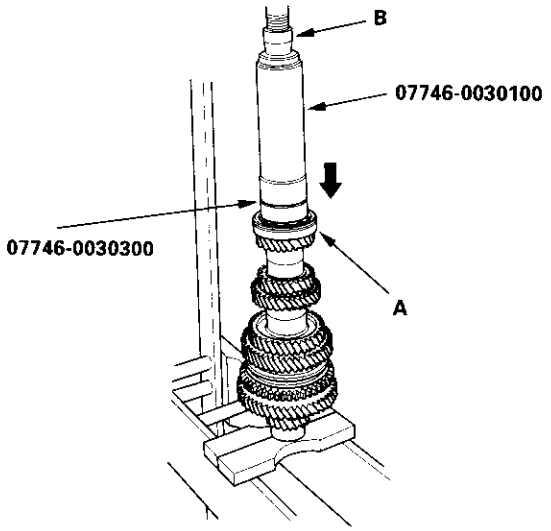
21. Install 6th gear (A) using a special tools and a press (B). Do not exceed the maximum pressure.



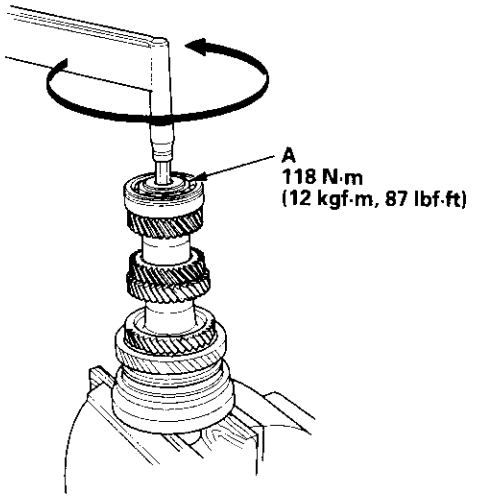
(cont'd)

Countershaft Reassembly (cont'd)

22. Install the new ball bearing (A) using a special tools and a press (B).



23. Tighten the new special bolt (A) (left-hand threads).

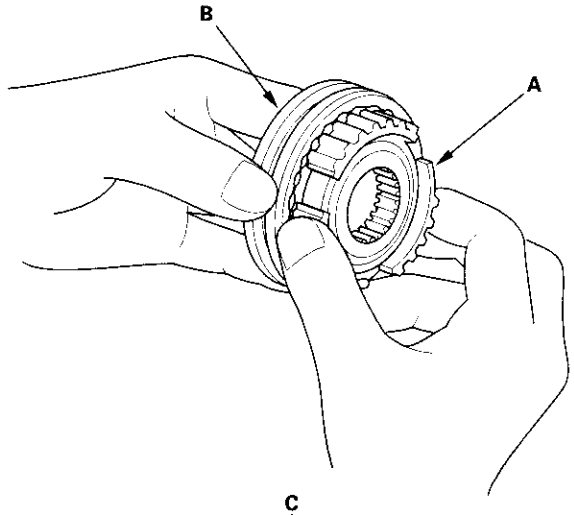


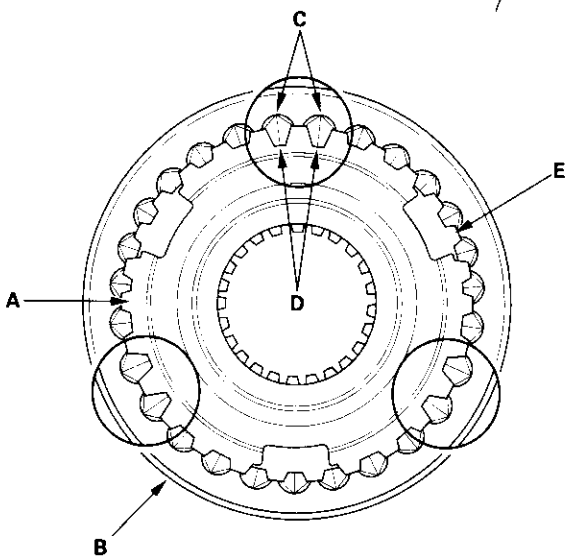
Synchro Sleeve and Hub Inspection and Reassembly

1. Inspect 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.

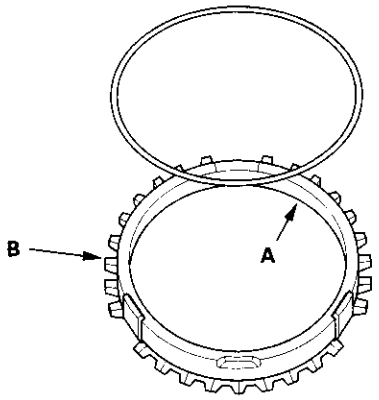
   NOTE: If replacement is required, always replace the synchro sleeve and synchro hub as a set.





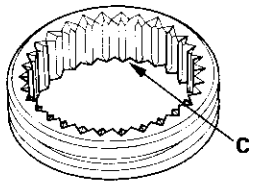
Synchro Ring and Gear Inspection

1. Inspect the inside of each synchro ring (A) for wear. Inspect the teeth (B) on each synchro ring for wear (rounded off).

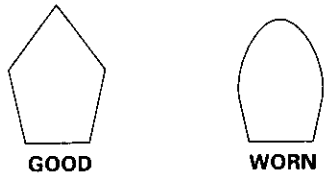


Example of synchro ring teeth

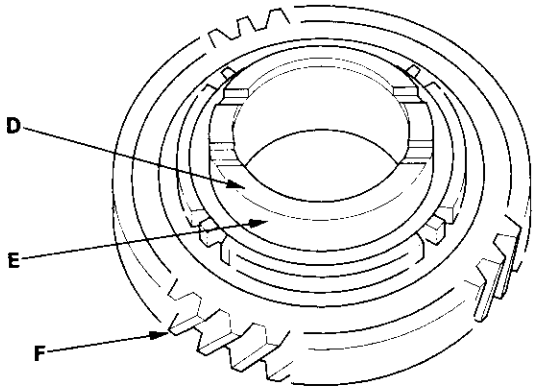
2. Inspect the teeth (C) on each synchro sleeve and matching teeth on each gear for wear (rounded off).



Example of synchro sleeve teeth and gear teeth



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.

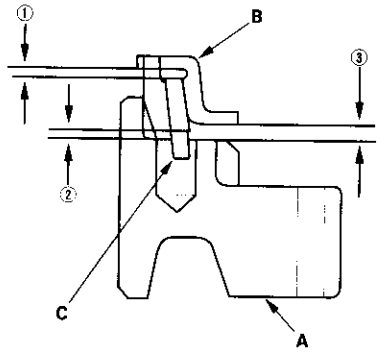
(cont'd)

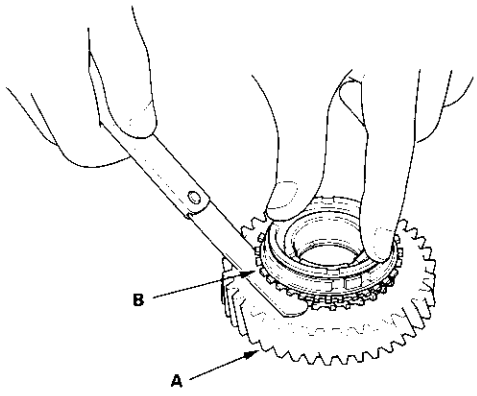
Synchro Ring and Gear Inspection (cont'd)

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 (5-speed model only)
Standard: 0.70 – 1.49 mm (0.028 – 0.059 in.)
Service Limit: 0.4 mm (0.016 in.)

Double Cone Synchro (6-speed model only) and Triple Cone Synchro-to-Gear Clearance
Standard:
①: Outer Synchro Ring (B) to Synchro Cone (C) 0.70 – 1.19 mm (0.028 – 0.047 in.)
②: Synchro Cone (C) to Gear (A) 0.50 – 1.04 mm (0.020 – 0.041 in.)
③: Outer Synchro Ring (B) to Gear (A) 0.95 – 1.68 mm (0.037 – 0.066 in.)
Service Limit:
①: 0.3 mm (0.012 in.)
②: 0.3 mm (0.012 in.)
③: 0.6 mm (0.024 in.)



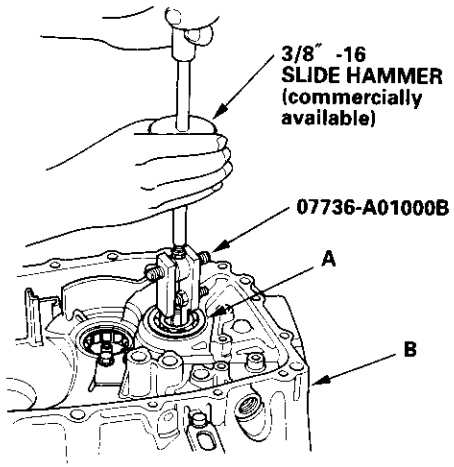


Mainshaft Bearing and Oil Seal Replacement

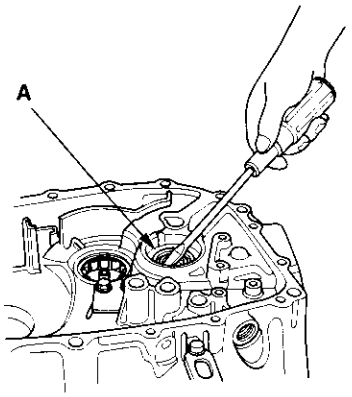
Special Tools Required
- Oil seal driver 07JAD-PL90100
- Adjustable bearing puller, 20 – 40 mm 07736-A01000B
- Attachment, 42 x 47 mm 07746-0010300
- Driver 07749-0010000

1. Remove the differencial assembly.

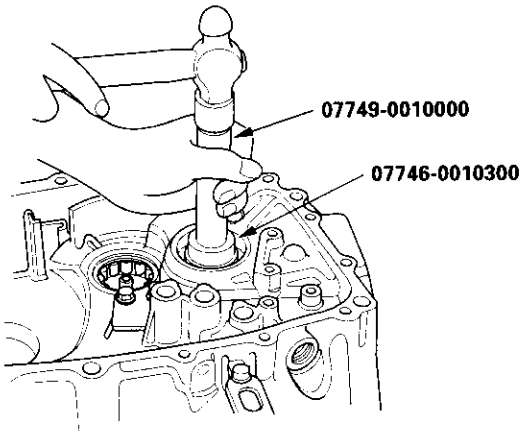
2. Remove the ball bearing (A) from the clutch housing (B) using the special tools.



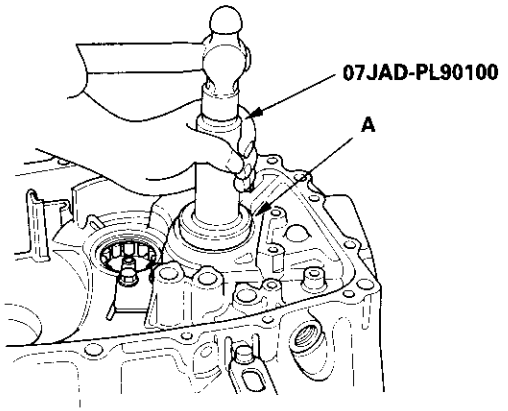
3. Remove the oil seal (A) from the clutch side. Be careful when removing the seal so the clutch housing is not dameged.



4. Drive the new oil seal in from the transmission side using the special tools.



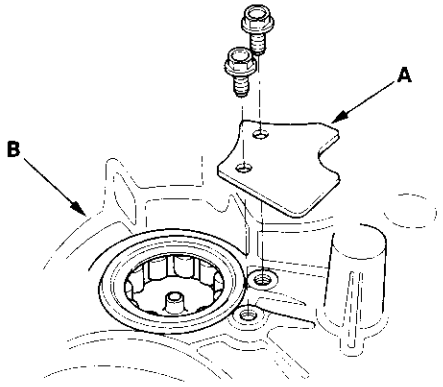
5. Drive the new ball bearing (A) in from the transmission side using the special tools.



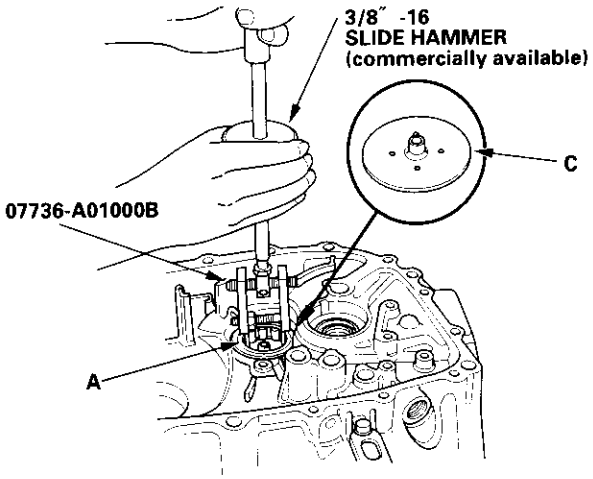
Countershaft Bearing Replacement

Special Tools Required
- Oil seal driver 07JAD-PL90100
- Adjustable bearing puller, 20 – 40 mm 07736-A01000B

1. Remove the bearing set plate (A) from the clutch housing (B).



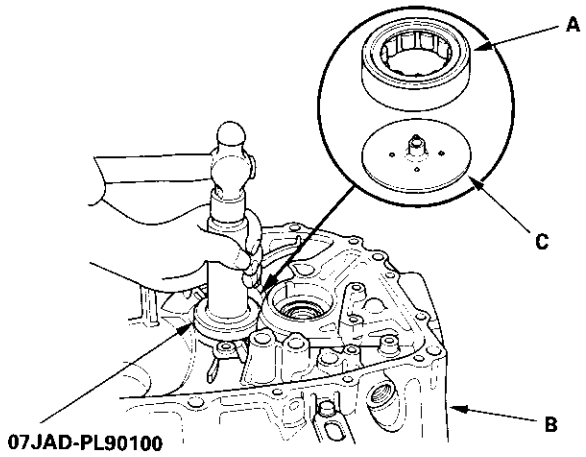
2. Remove the needle bearing (A) using the special tools, then remove the oil guide plate C.



(cont'd)

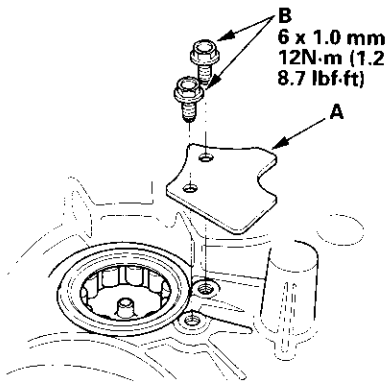
Countershaft Bearing Replacement (cont'd)

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 tools.

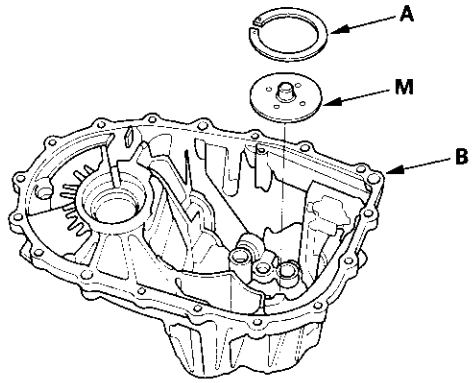
5. Install the bearing set plate (A) with bolts (B).



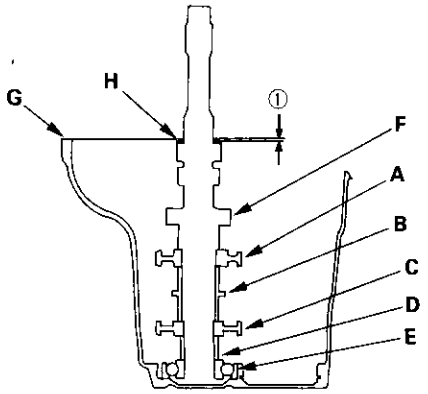
Mainshaft Thrust Clearance Adjustment

Special Tools Required
- Mainshaft holder 07GAJ-PG20110
- Mainshaft base 07GAJ-PG20130

1. Remove the 72 mm shim (A) and oil guide plate M from the transmission housing (B).



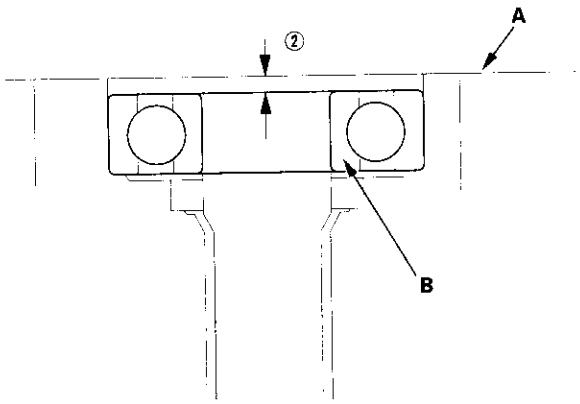
2. Install the 3rd/4th synchro hub (A), the distance collar (B), the 5th synchro hub (C), distance collar (D), and ball bearing (E) on the mainshaft (F), then install the assembled mainshaft in the transmission housing (G).



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 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 (0.0602 in.) shim.

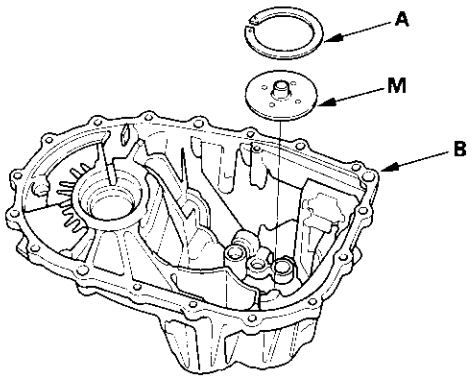
72 mm Shim

	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.)

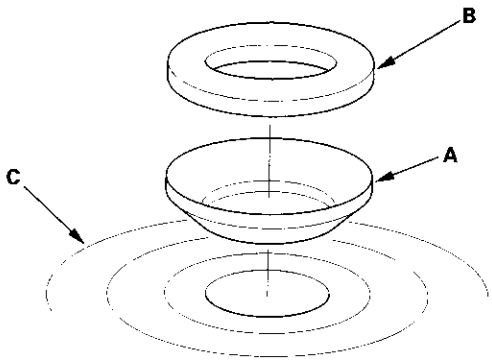
(cont'd)

Mainshaft Thrust Clearance Adjustment (cont'd)

7. Install the 72 mm shim (A) selected and oil guide plate M in the transmission housing (B).



8. Throughly clean the spring washer (A) and washer (B) before installing them on the 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.

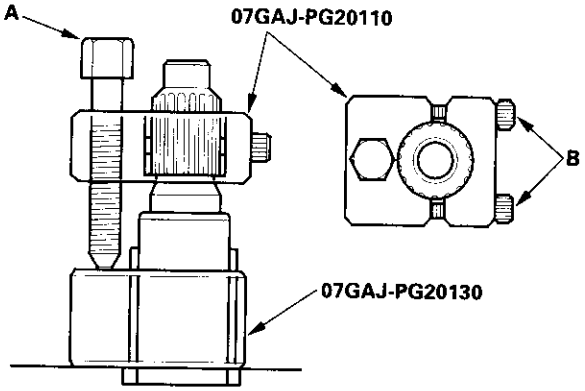
11. Tighten the clutch and transmission housings with several 8 mm bolts.

    NOTE: It is not necessary to use sealing agent between the housings.

12. Lightly tap on the mainshaft with a plastic hammer.

13. Attach the special tool to the mainshaft as follows:

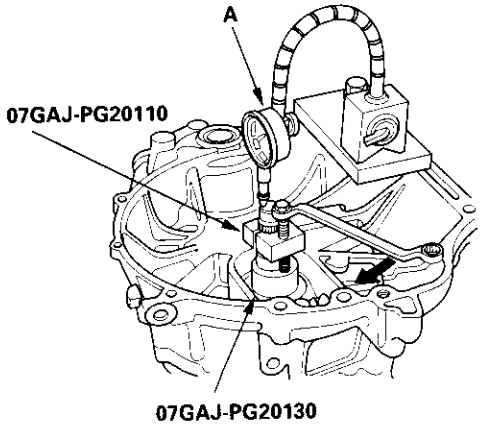
    - Back-out the mainshaft holder bolt (A) and loosen the two hex bolts (B).
    - Fit the holder over the mainshaft so its lip is towards the transmission.
    - Align the mainshaft holder's lip around the groove at the inside of the mainshaft splines, then tighten the hex bolts.



14. Seat the mainshaft fully by tapping on 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.

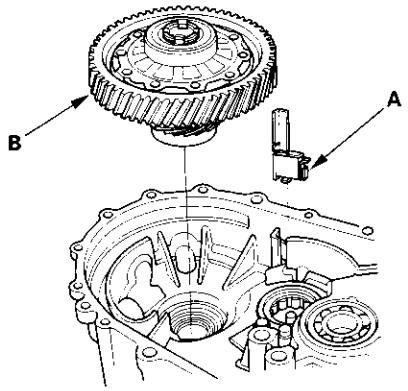
    NOTE: Do not turn the mainshaft holder bolt more than 60 degrees after the needle of the dial gauge stops moving. Appling more pressure with the mainshaft holder bolt this may damage the transmission.

18. If the reading is within the standard, the clearance is correct. If the reading is not within the standard, recheck the shim thickness.

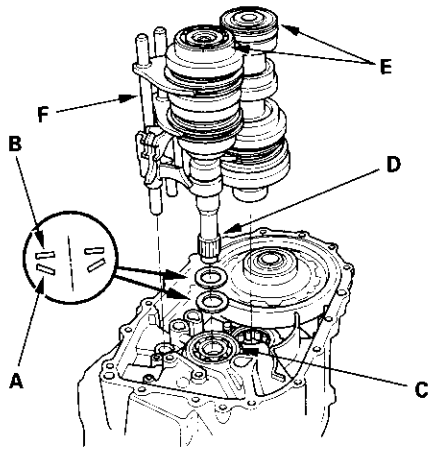
    Standard: 0.11—0.17 mm (0.004—0.007 in.)

NOTE:
- Prior to reassembling, clean all the parts in solvent, dry them, and apply lubricant to any contact surfaces.
- 6-speed model is shown, 5-speed model is similar.

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).

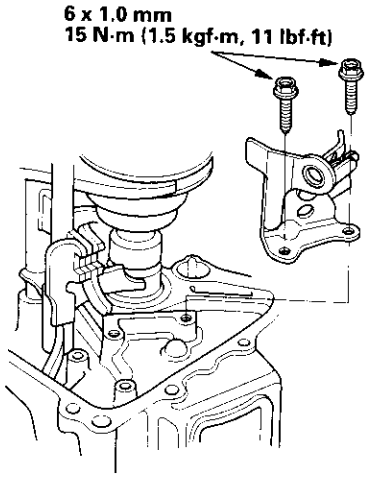


3. Apply vinyl tape the mainshaft splines (D) to protect the seal. Install the mainshaft and countershaft (E) into the shift forks (F), and install them as an assembly.

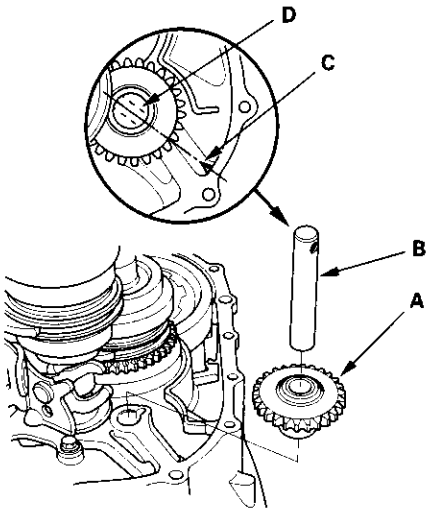
(cont'd)

Transmission Reassembly (cont'd)

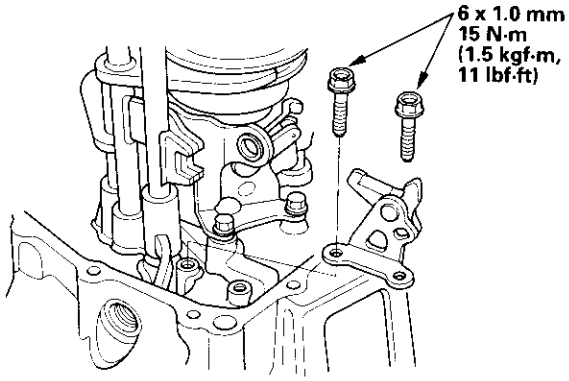
4. Install the reverse shift fork.



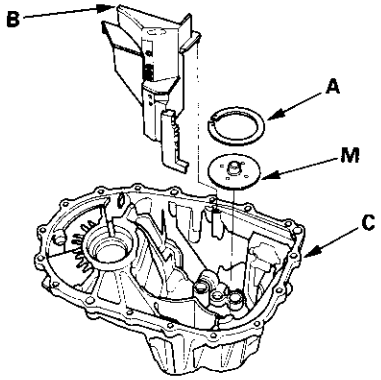
5. Install the reverse idler gear (A) and reverse gear shaft (B) by aligning the mark (C) with reverse gear shaft hole (D).



6. Install the reverse lock cam (5-speed model).

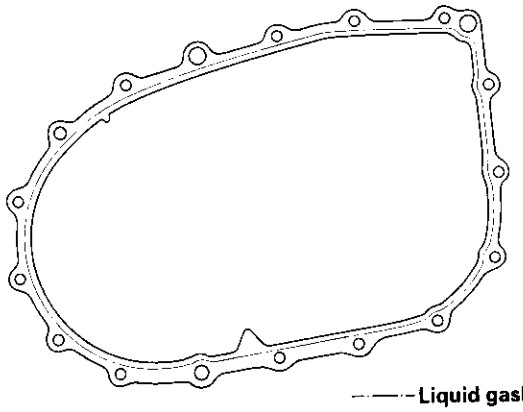


7. Select the proper size 72 mm shim (A) according to the measurements made during the Mainshaft Thrust Clearance Adjustment (see page 13-52). Install the oil gutter plate (B), oil guide plate M, and 72 mm shim into the transmission housing (C).



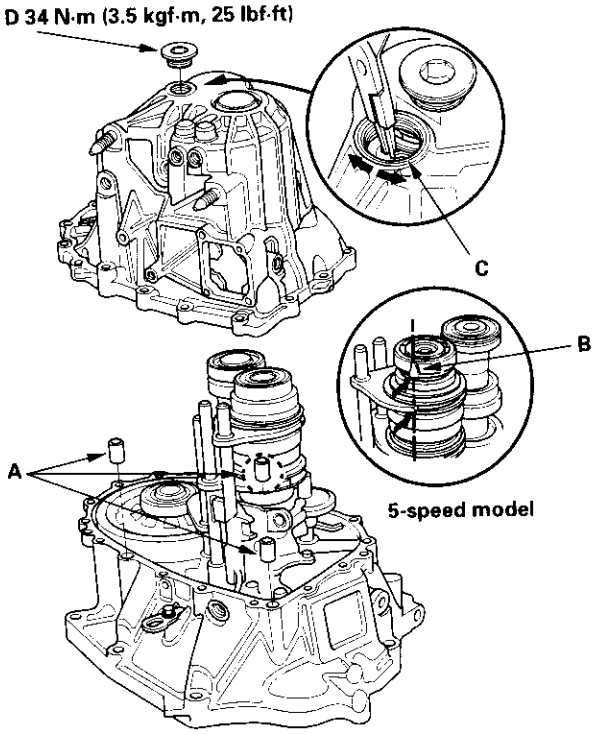
8. Remove the dirt and oil from the tramsmission housing sealing surface. Apply liquid gasket (P/N 08718-0001) to the sealing surface. Be sure to seal the entire circumference of the bolt holes to prevent oil leakage.

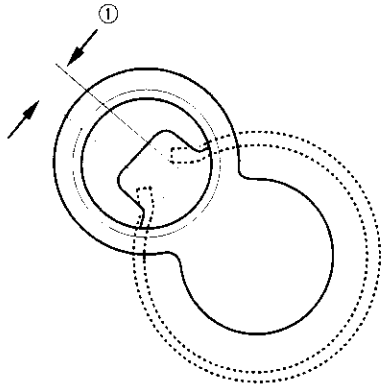
   NOTE: If 5 minutes have passed after applying liquid gasket, reapply it and assemble the housings. Allow it to cure at least 20 minutes after assembly before filling the transmission with oil.



——— Liquid gasket

9. Install the 14 x 20 mm dowel pins (A).





10. Set the tapered cone ring (B) (5-speed model) as shown. Place the transmission housing over the clutch housing, being careful to line up the shafts.

(cont'd)

Transmission Reassembly (cont'd)

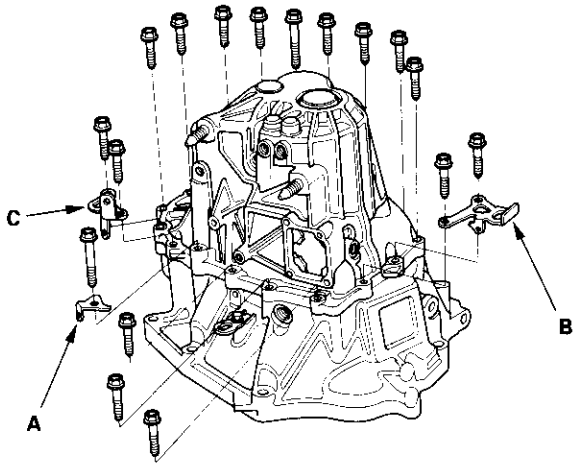
11. Lower the transmission housing the rest of the way as you expand the 72 mm snap ring (C). Release the snap ring so it seats in the groove of the countershaft bearing.

12. Check that the 72 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.)

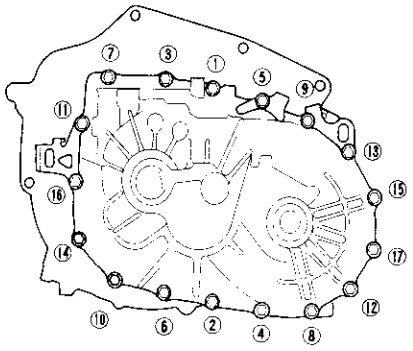
13. Apply liquid gasket (P/N 08718-0001) to the threads of the 32 mm sealing cap (D), and install it on the transmission housing.

14. Install the harness bracket (A) (6-speed model only), the transmission hanger A (B), the transmission hanger B (C), and the 8 mm flange bolts finger-tight.



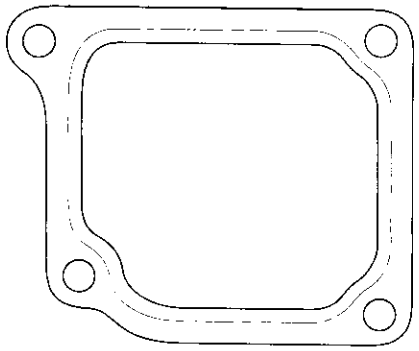
15. Tighten the 8 mm flange bolts in a crisscross pattern in several steps.

    8 x 1.25 mm
    27N·m (2.8kg·m, 20lbf·ft)



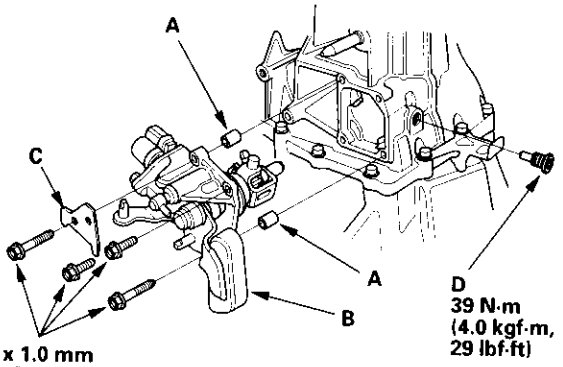
16. Remove the dirt and oil from the shift lever cover sealing surface. Apply liquid gasket (P/N 08718-0001) to the sealing surface.

    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.



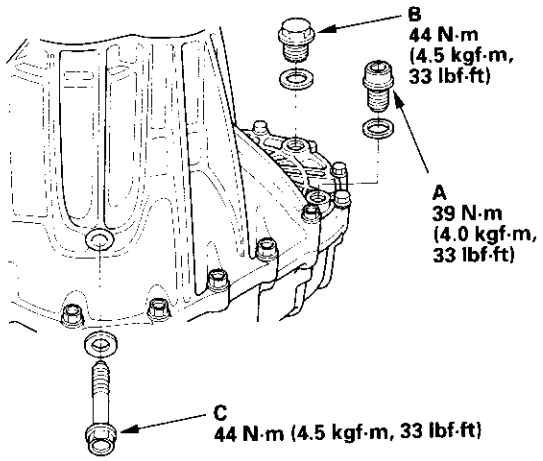
Liquid gasket

17. Install the 8 x 14 mm dowel pins (A), change lever assembly (B), and the clutch line clip (C).

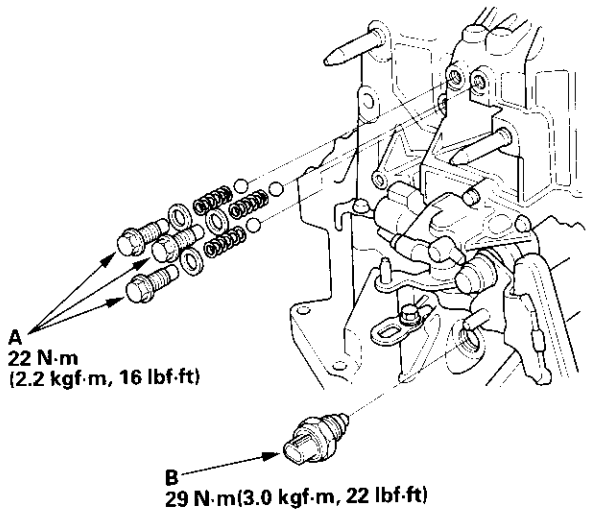


18. Apply liquid gasket (P/N 08718-0001) to the threads of the interlock bolt (D), and install it on the transmission housing.

19. Install the drain plug (A), filler plug (B), and 10 mm flange bolt (C) with new washers.

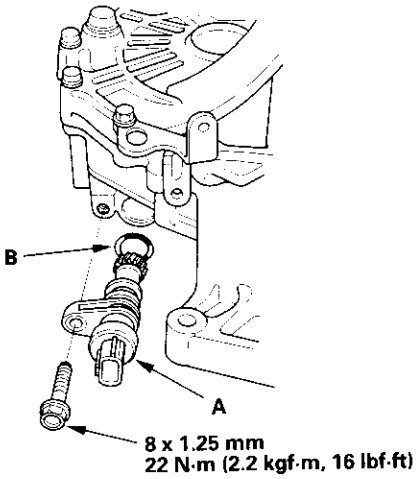


20. Install the detent bolts (A), springs, and steel balls with new washers.

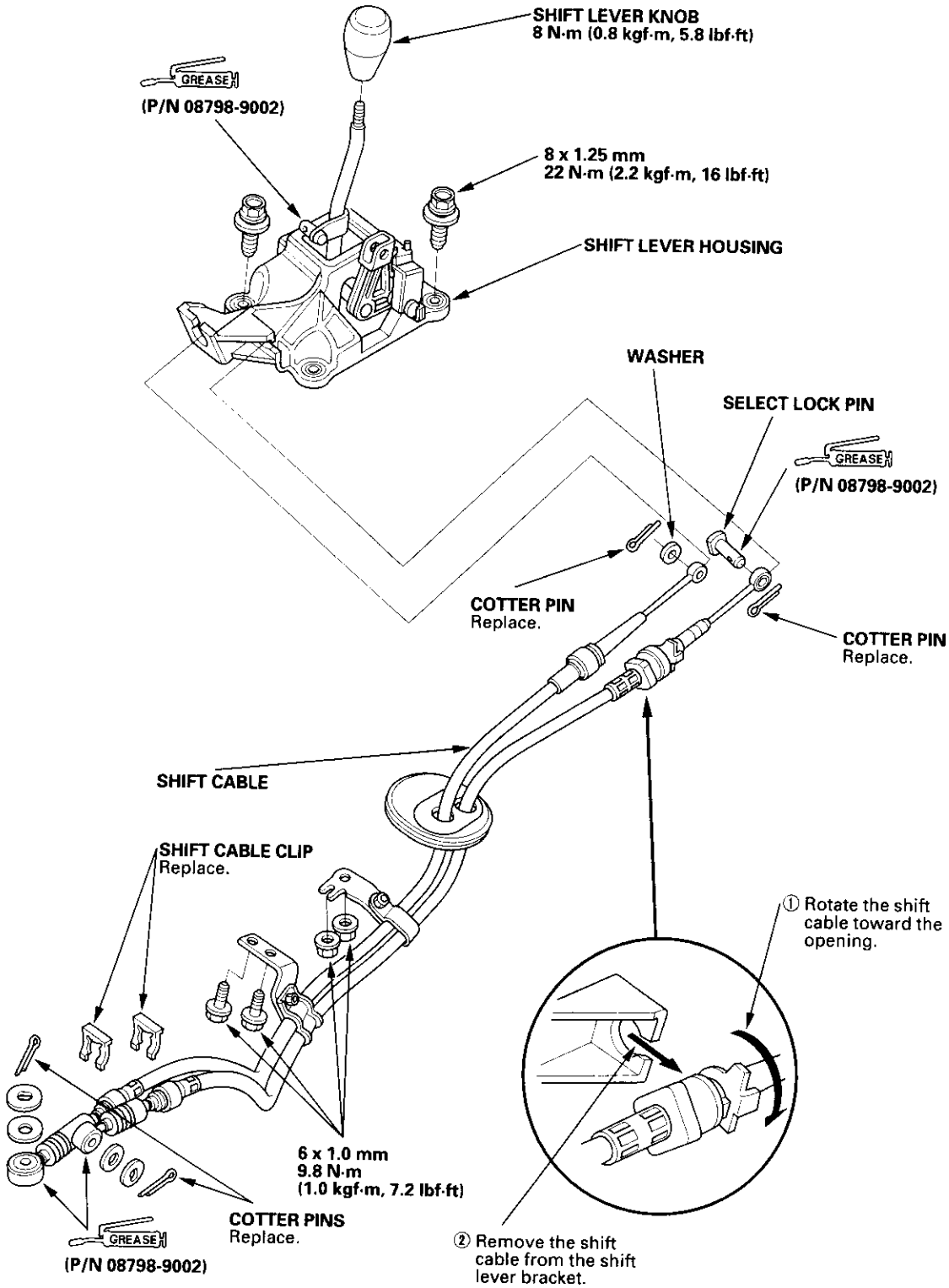


21. Apply liquid gasket (P/N 08718-0001) to the threads of the back-up light switch (B), and install it on the transmission housing.

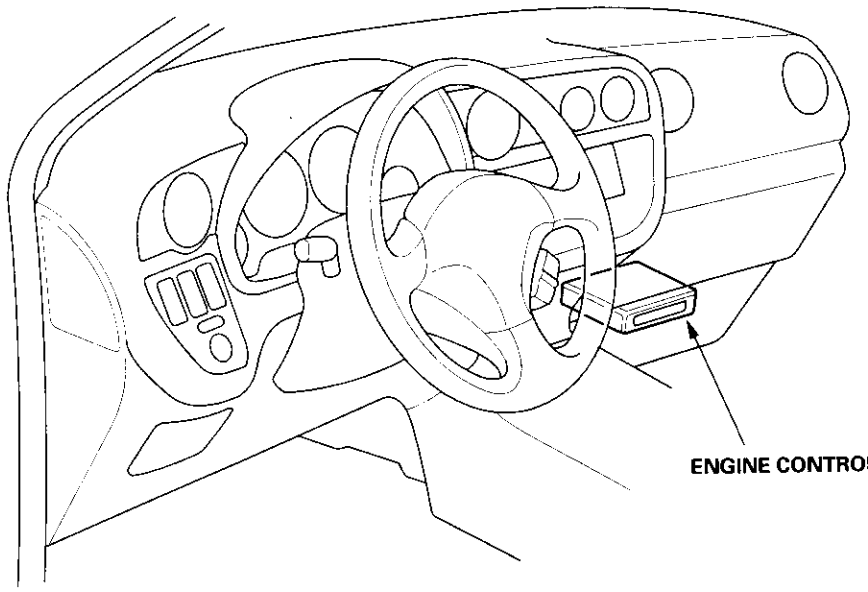
22. Install the vehicle speed sensor (VSS) (A) and O-ring (B).

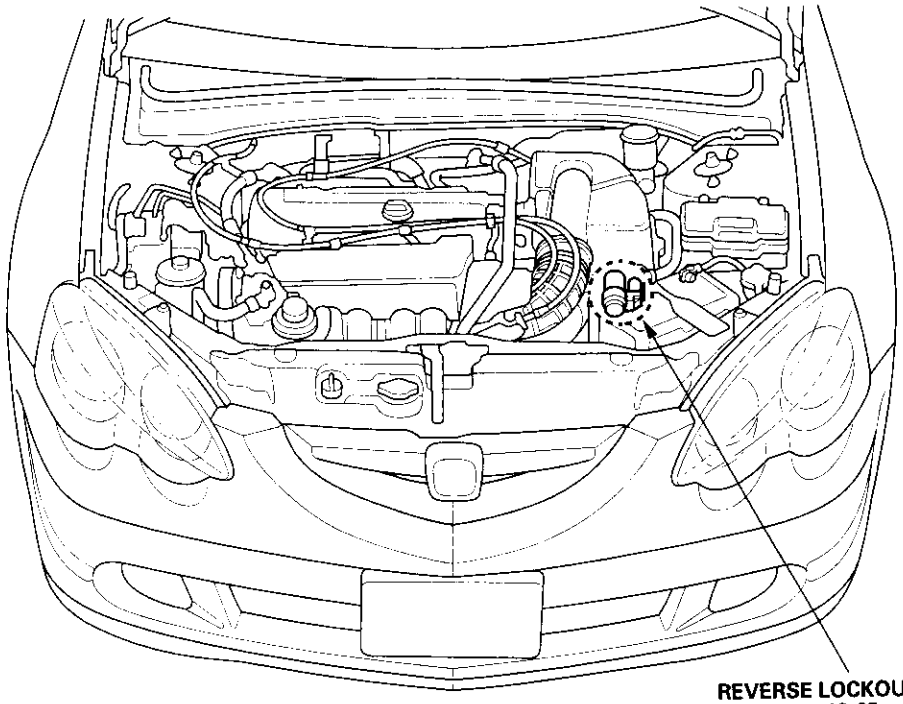


Gearshift Mechanism Replacement



Component Location Index



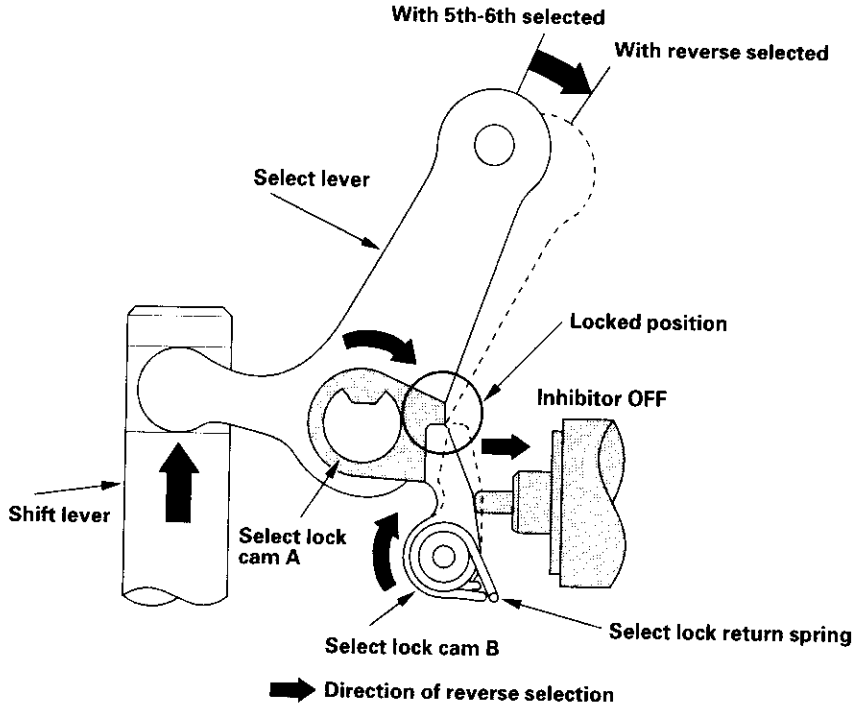


Reverse Lockout System

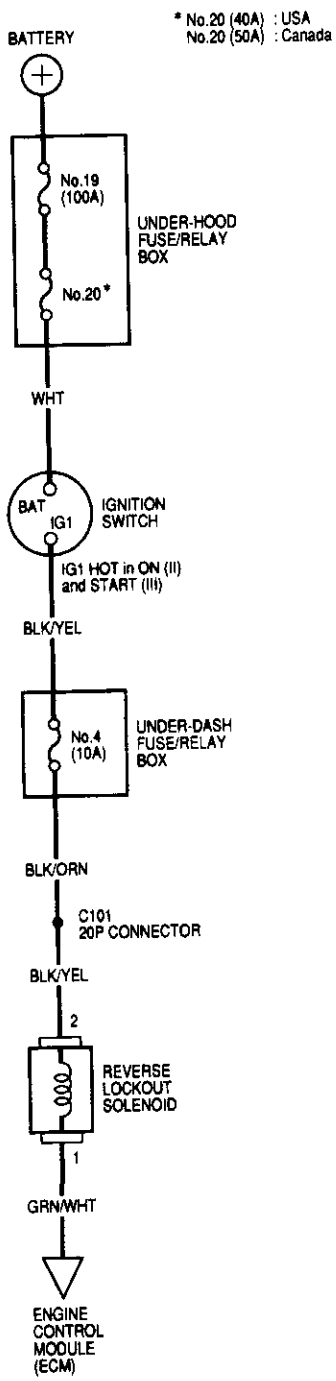
System Description

At a vehicle speed of 12 mph (20 km/h) or more, a signal from the vehicle speed sensor (VSS) activates the reverse lockout solenoid, which pushes the select lock cam B into the locked position. As a result, the select lever cannot rotate to the reverse select position, making it impossible to engage reverse gear. At a vehicle speed of 9 mph (15 km/h) or less, the signal from the VSS is interrupted which turns off the reverse lockout solenoid. The select lock return spring pulls the select lock cam B back, enabling the select lever to move freely so that the reverse gear can be selected.

Vehicle speed	Inhibitor	Reverse selection
Above 12 mph (20 km/h)	ON	Not allowed
Under 9 mph (15 km/h)	OFF	OK
IG-S/W OFF	OFF	OK



Circuit Diagram



Circuit Troubleshooting

1. Check the No. 4 (10 A) fuse in the under-dash fuse/relay box.

   Is the fuse OK?

   YES – Go to step 2.

   NO – Replace the fuse, and recheck. ■

2. Start the engine and check the Malfunction Indicator Lamp (MIL).

   Does the MIL come on?

   YES – Troubleshoot the DTC (see page 11-3), and recheck. ■

   NO – Go to step 3.

3. Turn the ignition switch OFF.

4. Shift to reverse gear.

   Can the transmission be shifted into reverse gear?

   YES – Go to step 5.

   NO – Repair the transmission and recheck. ■

5. Turn the ignition switch ON (II). With the vehicle moving slowly (vehicle speed below 9 mph (15 km/h), shift the transmission into reverse gear.

   Can the transmission be shifted into reverse gear?

   YES – Go to step 6.

   NO – Go to step 7.

6. Raise the front wheels and block the rear wheels, run the vehicle to a speed above 12 mph (20 km/h).

   Can the transmission be shifted into reverse gear?

   YES – Go to step 8.

   NO – Intermittent failure, system is OK at this time. ■

(cont'd)

Circuit Troubleshooting (cont'd)

7. Check the VSS input in the PGM-FI data list with the PGM tester.

   Is the vehicle speed input below 9 mph (15 km/h)?

   YES – Check for a short to body ground in the GRN/WHT wire between the reverse lockout solenoid and the ECM (B7). If the wire is OK, substitute a known-good ECM and recheck. ■

   NO – Repair the VSS circuit. ■

8. With the vehicle still running above 12 mph (20 km/h), check the VSS input in the PGM-FI data list with the PGM tester.

   Is the vehicle speed input above 12 mph (20 km/h)?

   YES – Go to step 9.

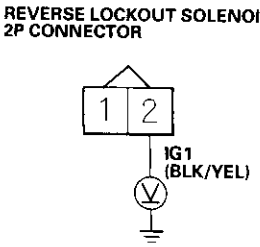
   NO – Repair the VSS circuit. ■

9. Turn the ignition switch OFF.

10. Disconnect the reverse lockout solenoid 2P connector.

11. Turn the ignition switch ON (II).

12. Measure the voltage between the reverse lockout solenoid 2P connector terminal No. 2 and body ground.



Wire side of female terminals

Is there battery voltage?

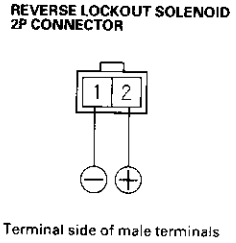
YES – Go to step 13.

NO – Check for loose or poor connections at C101 (20P) connector. If the connections are OK, repair open in the wire between No. 4 (10 A) fuse in the under-dash fuse/relay box and the reverse lockout solenoid. ■

13. Turn the ignition switch OFF.

14. Remove the reverse lockout solenoid (see page 13-24).

15. Connect the No. 2 terminal of the reverse lockout solenoid to the battery positive terminal, and connect the No. 1 to the battery negative terminal. Check that the reverse lockout solenoid operates.



Terminal side of male terminals

Does the reverse lockout solenoid operate properly?

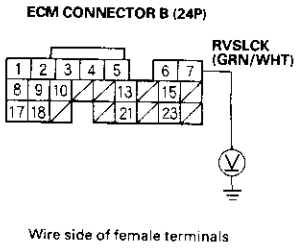
YES – Go to step 16.

NO – Replace the reverse lockout solenoid. ■

16. Reinstall the reverse lockout solenoid and reconnect the solenoid 2P connector.

17. Turn the ignition switch ON (II).

18. Measure the voltage between ECM connector B7 and body ground.



Wire side of female terminals

Is there battery voltage?

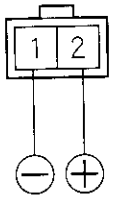
YES – Check for loose connectors at ECM connector B (24P). If necessary, update the ECM if it does not have the latest software, or substitute a known-good ECM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM, replace the original ECM. ■

NO – Repair open in the wire between reverse lockout solenoid and ECM (B7). ■

Reverse Lockout Solenoid Test

1. Remove the reverse lockout solenoid (see page 13-25).
2. Connect battery positive terminal to the No. 2 terminal of the reverse lockout solenoid 2P connector, and connect the battery negative terminal to the No. 1 terminal.

REVERSE LOCKOUT SOLENOID 2P CONNECTOR

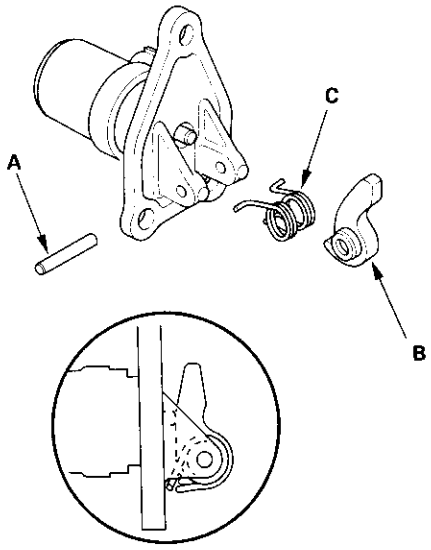


Terminal side of male terminals

3. Check that the reverse lockout solenoid operates.
4. If the reverse lockout solenoid does not work, replace it.

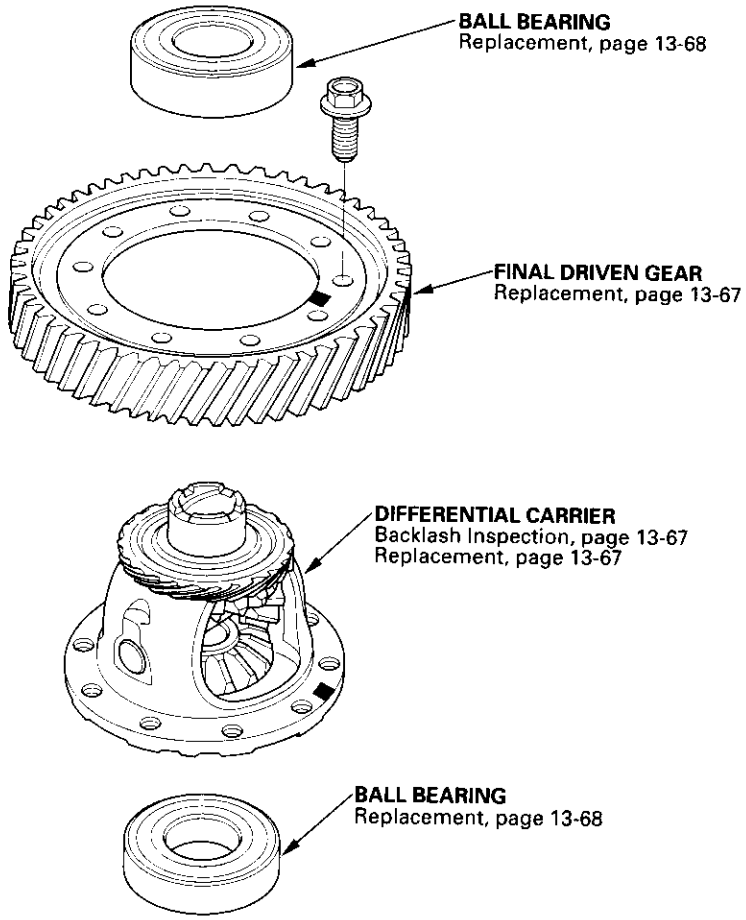
Reverse Lockout Solenoid Disassembly/Reassembly

1. Remove the reverse lockout solenoid (see page 13-25).
2. Remove the roller (A), the select lock return spring (C), and the select lock cam B.



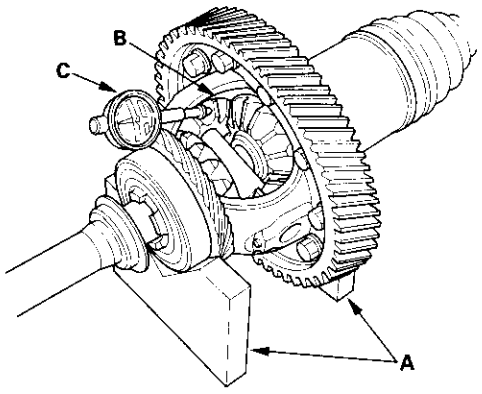
3. Install in the reverse order of removal.

Component Location Index



Backlash Inspection

1. Place the differential assembly on V-blocks (A), and install both axles.

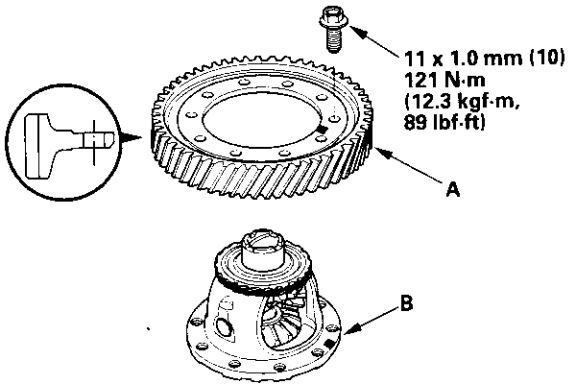


2. Measure the backlash of both pinion gears (B) with a dial indicator (C). If the backlash is not within the standard, replace the differential carrier.

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).



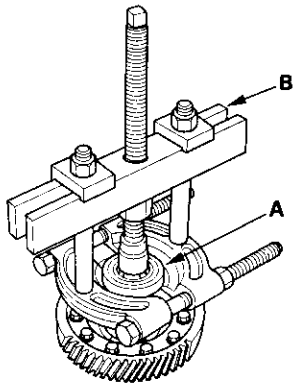
2. Install the final driven gear with the chamfer on the inside diameter facing the carrier. Tighten the bolts in a crisscross pattern in several steps.

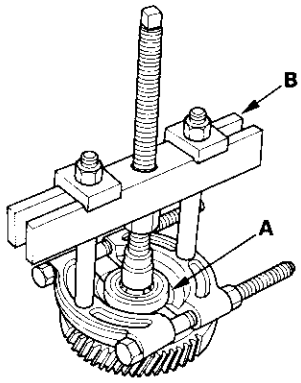
Carrier Bearings Replacement

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 beaings are OK.

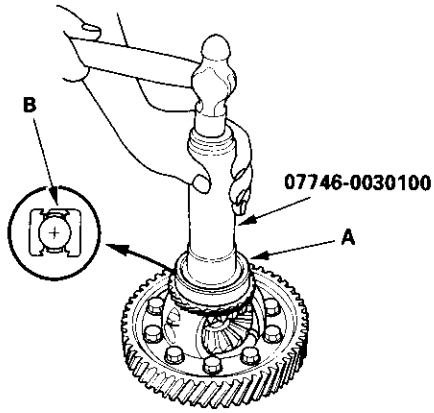
2. Remove the carrier bearing (A) with a commercially-available bearing puller (B).

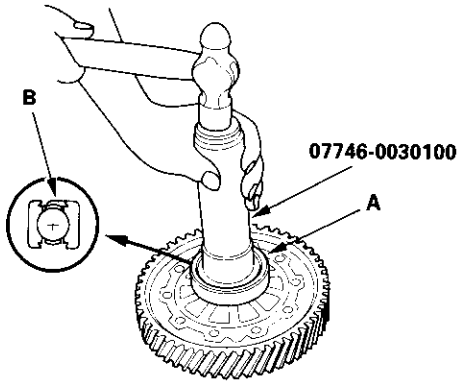




3. Install the new bearings (A) with the special tool and a press. Press each bearing on until it bottoms. There should be no clearance between the bearings and the carrier.

   NOTE: Turn the seal (B) part of the bearing to the outside of differential, and install it.

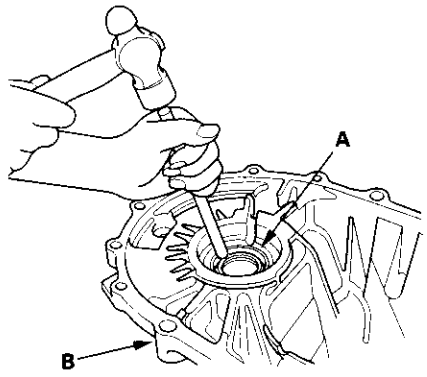




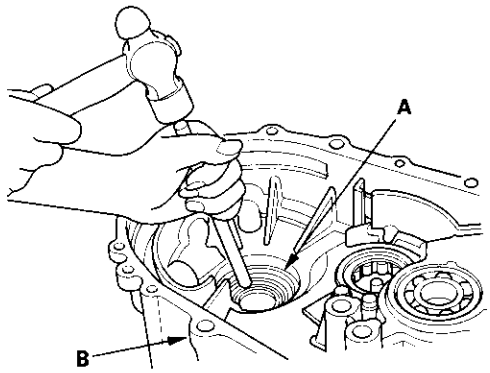
Oil Seal Replacement

Special Tools Required
- Driver 07749-0010000
- Oil seal driver attachment 07NAD-P20A100

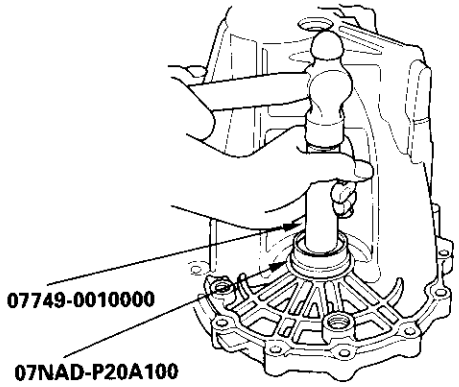
1. Remove the differential assembly.
2. Remove the oil seal (A) from the transmission housing (B).



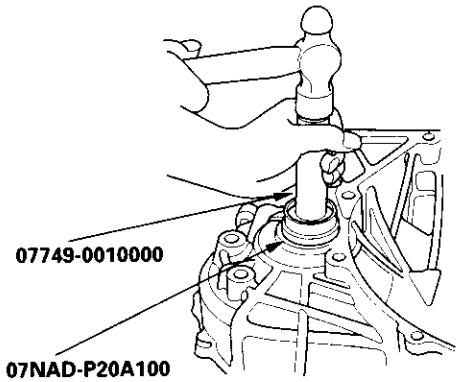
3. Remove the oil seal (A) from the clutch housing (B).



4. Install the new oil seal in the transmission housing with the special tools.



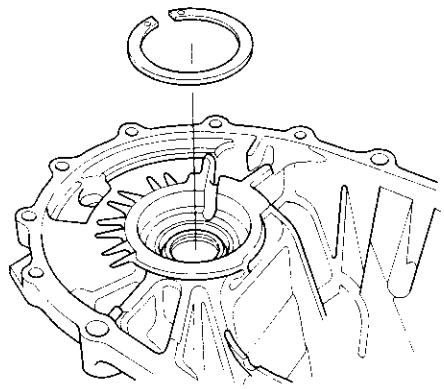
5. Install the new oil seal in the clutch housing with the special tools.



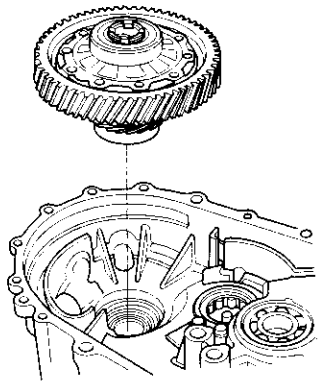
Differential Thrust Clearance Adjustment

Special Tool Required
Driver, 40 mm I.D. 07746-0030100

1. Install the 80 mm shim that's the same size as the one you removed.



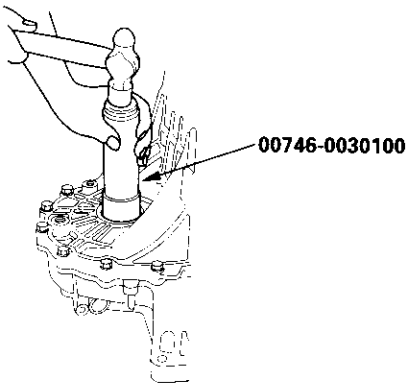
2. Install the differential assembly into the clutch housing.



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 13-58).

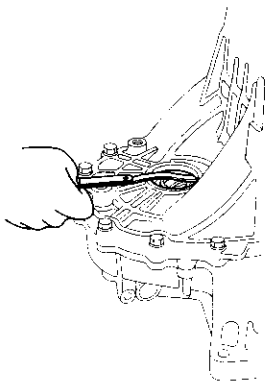
   8 x 1.25 mm
   27 N·m (2.8 kgf·m, 20 lbf·ft)

4. Use the special tool to bottom the differential assembly in the clutch housing.



5. Measure clearance between 80 mm shim and bearing outer race in 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-B00	1.0 mm (0.0394 in.)
B	41442-PL3-B00	1.1 mm (0.0433 in.)
C	41443-PL3-B00	1.2 mm (0.0472 in.)
D	41444-PL3-B00	1.3 mm (0.0512 in.)
E	41445-PL3-B00	1.4 mm (0.0551 in.)
F	41446-PL3-B00	1.5 mm (0.0591 in.)
G	41447-PL3-B00	1.6 mm (0.0630 in.)
H	41448-PL3-B00	1.7 mm (0.0669 in.)
J	41449-PL3-B00	1.8 mm (0.0709 in.)
K	41450-PL3-B00	1.05 mm (0.0413 in.)
L	41451-PL3-B00	1.15 mm (0.0453 in.)
M	41452-PL3-B00	1.25 mm (0.0492 in.)
N	41453-PL3-B00	1.35 mm (0.0531 in.)
P	41454-PL3-B00	1.45 mm (0.0571 in.)
Q	41455-PL3-B00	1.55 mm (0.0610 in.)
R	41456-PL3-B00	1.65 mm (0.0650 in.)
S	41457-PL3-B00	1.75 mm (0.0689 in.)

7. Remove the bolts and transmission housing.

8. Replace the thrust shim selected in step 6, then recheck the clearance.

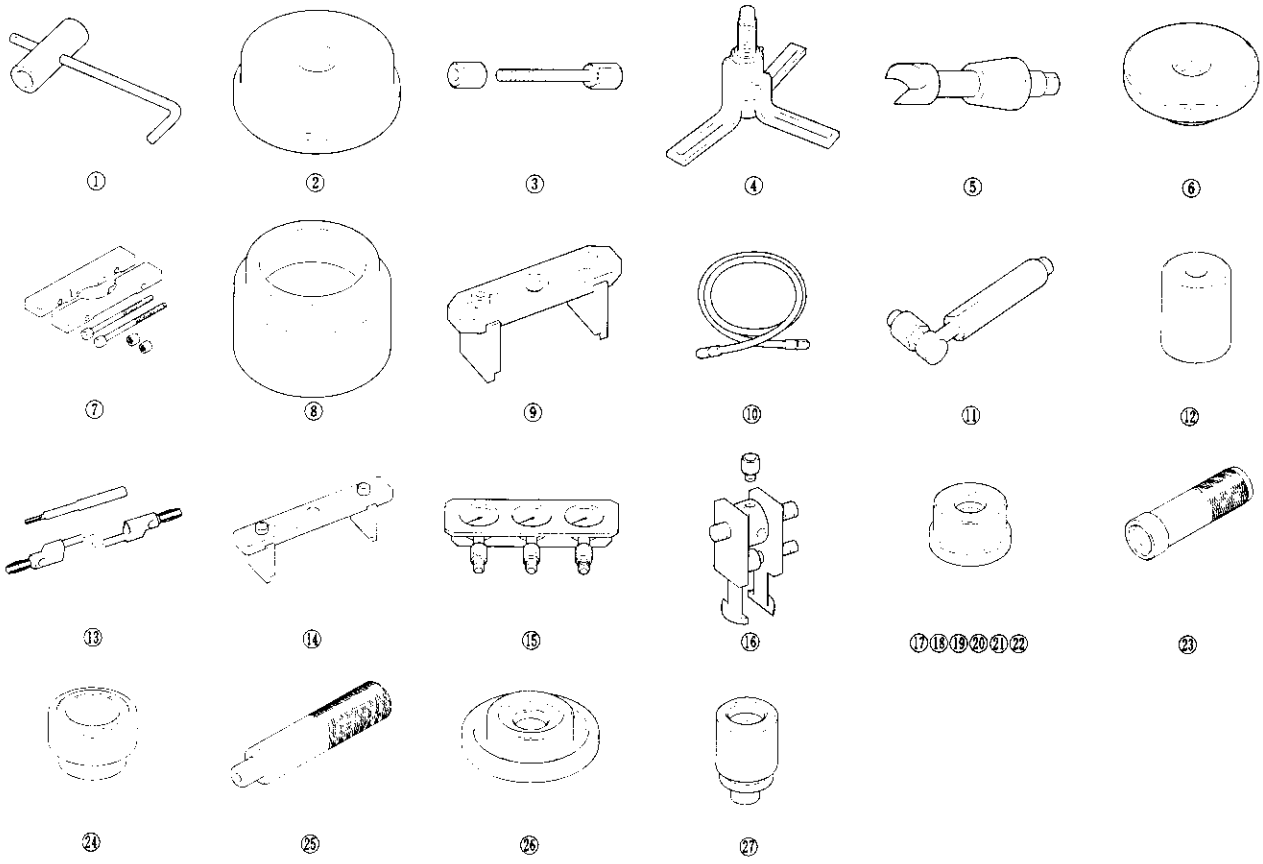
9. Reinstall the transmission.

Automatic Transmission

Special Tools

Ref.No.	Tool Number	Description	Qty
①	07GAB-PF50101 or 07GAB-PF50100	Mainshaft Holder	1
②	07GAD-SD40101	Attachment, 78 × 90 mm	1
③	07GAE-PG40200 or 07GAE-PG4020A	Clutch Spring Compressor Bolt Assembly	1
④	07HAC-PK40102	Housing Puller	1
⑤	07HAJ-PK40201	Preload Inspection Tool	1
⑥	07JAD-PH80101	Oil Seal Driver Attachment	1
⑦	07KAF-PS30200	Bearing Separator	1
⑧	07LAD-PW50601	Attachment, 40 × 50 mm	1
⑨	07LAE-PX40100	Clutch Spring Compressor Attachment	2
⑩	07MAJ-PY4011A	A/T Pressure Hose, 2210 mm	4
⑪	07MAJ-PY40120	A/T Pressure Hose Adapter	4
⑫	07QAD-P0A0100	Attachment, 42 mm I.D.	1
⑬	07SAZ-001000A	Backprobe Set	2
⑭	07ZAE-PRP0100	Clutch Compressor Attachment	1
⑮	07406-0020400 or 07406-0020401	A/T Oil Pressure Gauge Set w/Panel	1
⑯	07736-A01000B or 07736-A01000A	Adjustable Bearing Puller, 25—40 mm	1
⑰	07746-0010100	Attachment, 32 × 35 mm	1
⑱	07746-0010300	Attachment, 42 × 47 mm	1
⑲	07746-0010400	Attachment, 52 × 55 mm	1
⑳	07746-0010500	Attachment, 62 × 68 mm	1
㉑	07746-0010600	Attachment, 72 × 75 mm	1
㉒	07746-0010800	Attachment, 22 × 24 mm	1
㉓	07746-0030100	Driver 40 mm I.D.	1
㉔	07746-0030400	Attachment, 35 mm I.D.	1
㉕	07749-0010000	Driver	1
㉖	07947-SD90101	Oil Seal Driver Attachment	1
㉗	07947-ZV00100	Oil Seal Driver Attachment	1

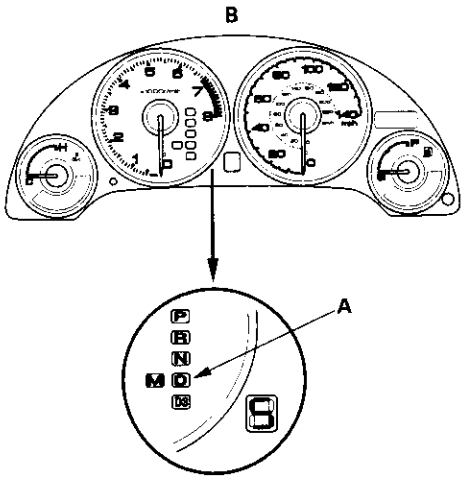
④: If the top arm is too short, replace it with 07SAC-P0Z01001.
⑨: 07HAE-PL50101 may be used to substitute one of these tools.
⑯: Must be used with commercially available 3/8"-16 slide hammer.



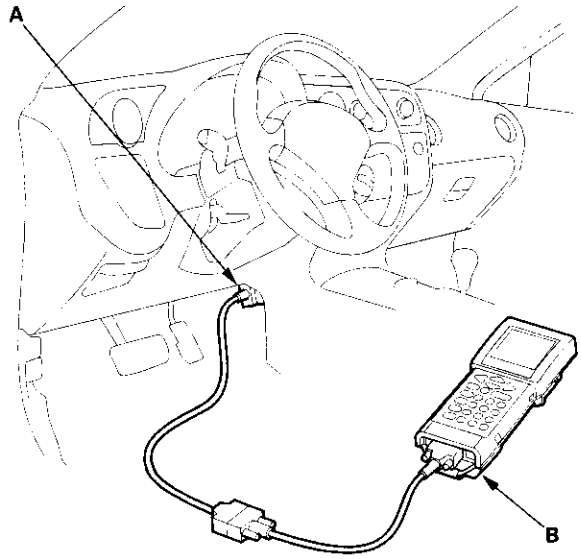
General Troubleshooting Information

How to Check for DTCs with the Honda PGM Tester/Scan Tool

When the powertrain control module (PCM) senses an abnormality in the input or output systems, the [D] indicator (A) in the gauge assembly (B) will usually blink.



When the data link connector (DLC) (A) (located under the dash behind the center console) is connected to the OBD II Scan Tool or Honda PGM Tester (B), it will indicate the diagnostic trouble code (DTC) when the ignition switch is turned ON (II).



If the [D] indicator or malfunction indicator lamp (MIL) has been reported on, or if a driveability problem is suspected, follow this procedure:

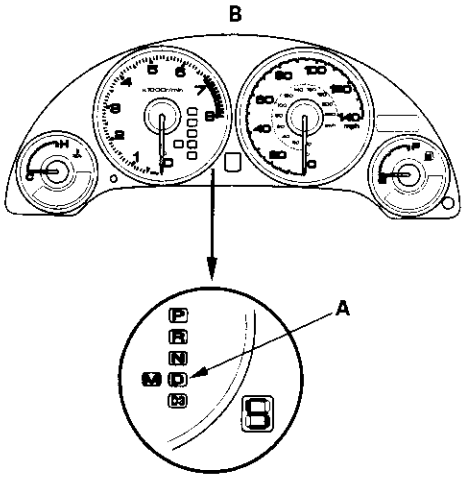
1. Connect the OBD II Scan Tool (conforming to SAE J1978) or Honda PGM Tester to the DLC. (See the OBD II Scan Tool or Honda PGM Tester user's manual for specific instructions. If you are using the Honda PGM Tester, make sure it is set to the SAE DTC type.)
2. Turn the ignition switch ON (II), and observe the DTC on the screen.
3. Record all fuel and emissions DTCs, A/T DTCs, and freeze data.
4. If there is a fuel and emissions DTC, first check the fuel and emissions system as indicated by the DTC (except for DTC P0700, DTC P0700 means there is one or more A/T DTCs, and no problems were detected in the fuel and emissions circuit of the PCM).
5. Get the customer's radio anti-theft code, and write down the radio station presets.
6. Reset the memory with the Honda PGM Tester, OBD II Scan Tool or by removing the No. 6 ECU fuse in the under-hood fuse/relay box for more than 10 seconds.
7. Drive the vehicle for several minutes under the same conditions as those indicated by the freeze data, and then recheck for a DTC. If the A/T DTC returns, go to the DTC troubleshooting Index. If the DTC does not return, there was an intermittent problem within the circuit. Make sure all pins and terminals in the circuit are tight, and then go to step 8.
8. Enter the radio code, reset the preset stations, and set the clock.

(cont'd)

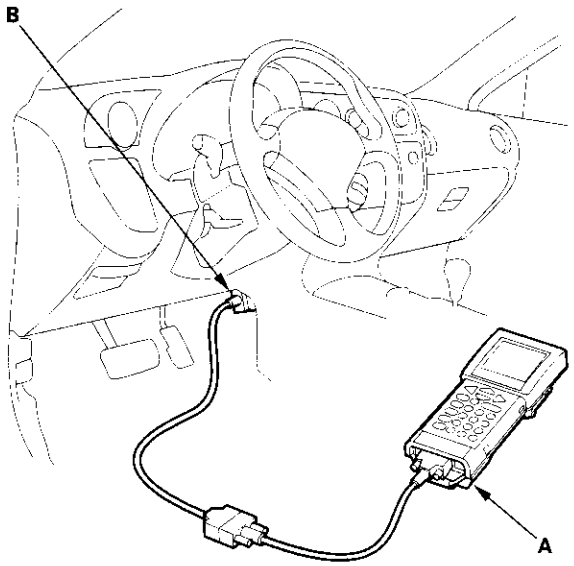
General Troubleshooting Information (cont'd)

How to Check for DTCs with the SCS Mode (retrieving the flash codes)

When the PCM senses an abnormality in the input or output system, the D indicator (A) in the gauge assembly (B) will usually blink.



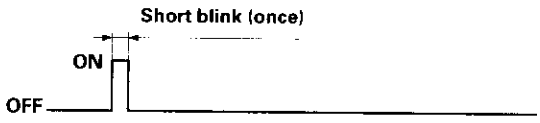
When the D indicator has been reported on, connect the Honda PGM Tester (A) to the DLC (B) (located under the dash behind the center console). Turn the ignition switch ON (II), select Honda System, and SCS mode, then the D indicator will indicate the DTC.



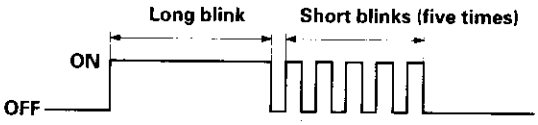
If the D indicator and the MIL come on at the same time, or if a driveability problem is suspected, follow this procedure:

1. Connect the Honda PGM Tester to the DLC. (See the Honda PGM Tester user's manual for specific instructions.)
2. Turn the ignition switch ON (II), select Honda System, and then SCS mode, then observe the D indicator in the gauge assembly.
   Code 1 through 9 are indicated by individual short blinks. Code 10 and above are indicated by a series of long and short blinks. One long blink equals 10 short blinks. Add the long and short blinks together to determine the code.

Example: DTC 1



Example: DTC 15

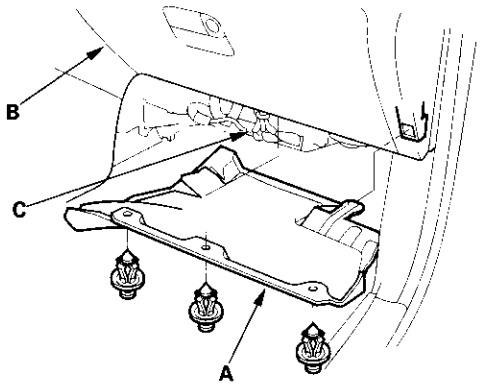


3. Record all fuel and emissions DTCs and A/T DTCs.
4. If there is a fuel and emissions DTC, first check the fuel and emissions system as indicated by the DTC (except DTC 70, DTC 70 means there is one or more A/T DTCs, and no problems were detected in the fuel and emissions circuit of the PCM).
5. Get the customer's radio anti-theft code, and write down the radio station presets.
6. Reset the memory with the Honda PGM Tester or by removing the No. 6 ECU fuse in the under-hood fuse/relay box for more than 10 seconds.
7. Drive the vehicle for several minutes at speeds over 30 mph (50 km/h), and then recheck for DTC. If the A/T DTC returns, go to the DTC Troubleshooting Index. If the DTC does not return, there was an intermittent problem within the circuit. Make sure all pins and terminals in the circuit are tight, and then go to step 8.
8. Enter the radio code, reset the preset stations, and set the clock.

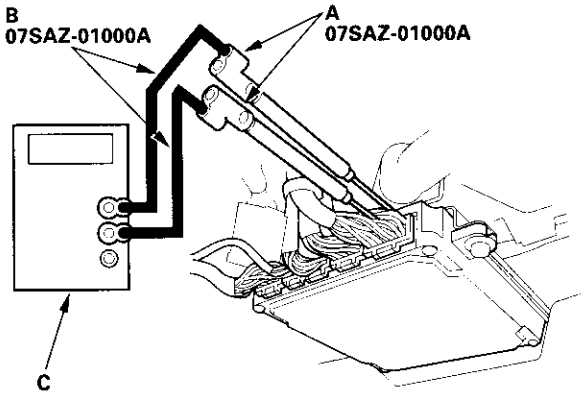
How to Troubleshoot Circuits at the PCM

Special Tools Required
Backprobe set 07SAZ-001000A (two required)

1. Remove the dashboard lower cover (A) under the glove box (B), then you can see the PCM connectors (C).



2. Connect the backprobe adapters (A) to the stacking patch cords (B), and connect the cords to a multimeter (C).



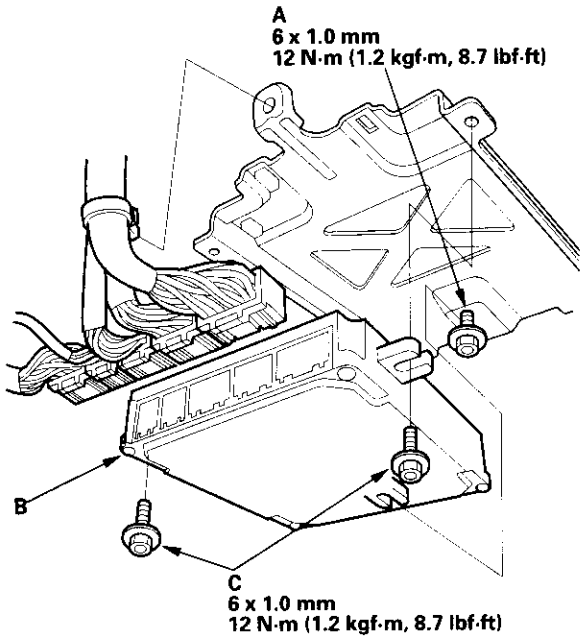
3. Using the wire insulation as a guide for the contoured tip of the backprobe adapter, gently slide the tip into the connector from the wire side until it touches the end of the wire terminal.

4. If you cannot get to the wire side of the connector or the wire side is sealed, disconnect the connector and use the tester probe to probe the connectors from the terminal side. Do not force the probe into the connector.

How to Remove and Install the PCM

1. Remove the dashboard lower cover under the glove box.

2. Disconnect PCM connectors.



3. Loosen the bolt (A) on the back of the PCM (B), and remove the two bolts (C) and PCM.

4. Install the PCM in the reverse order of the removal.

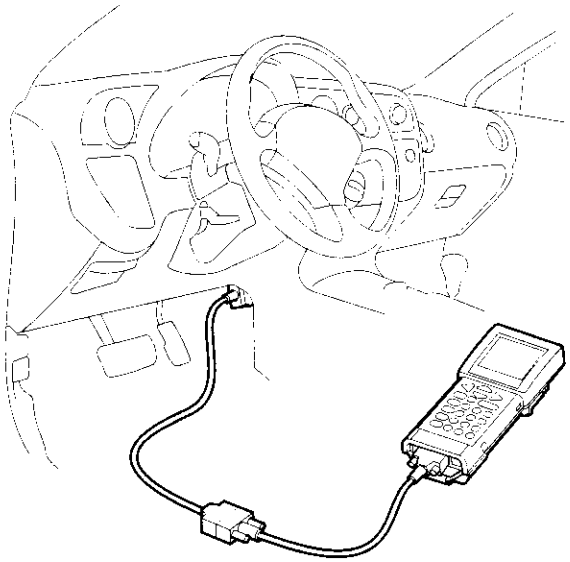
(cont'd)

General Troubleshooting Information (cont'd)

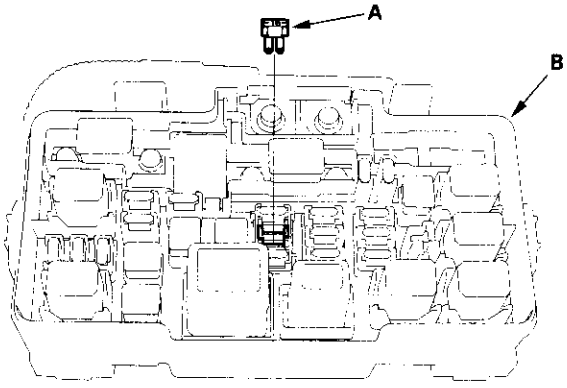
PCM Reset Procedures

1. Make sure you have the anti-theft code for the radio, then write down the radio station presets.
2. Turn the ignition switch OFF.
3. Use one of these methods to reset the PCM memory.

- Use the OBD II Scan Tool or the Honda PGM Tester.



- Remove the No. 6 ECU fuse (A) in the under-hood fuse/relay box (B) for more than 10 seconds.



How to End a Troubleshooting Session

This procedure must be done after any troubleshooting.

1. Turn the ignition switch OFF.
2. Reset the PCM using one of these methods:
   - Use the OBD II Scan Tool or the Honda PGM Tester (A), then disconnect the scan tool or PGM tester from the DLC.
   - Disconnect the OBD II Scan Tool or the Honda PGM Tester from the DLC, then reset the PCM by removing the No. 6 ECU fuse in the under-hood relay/fuse box for more than 10 seconds.
3. Turn the ignition switch ON (II).
4. Enter the radio code, reset the preset stations, and set the clock.
5. To verify that the problem is repaired, test-drive the vehicle for several minutes at speeds over 30 mph (50 km/h) or in freeze data range.

PCM Updating and Substitution for Testing

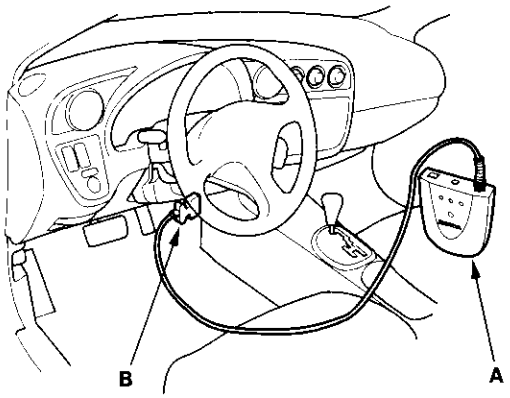
Special Tool Required
Honda Interface Module 07

Use this procedure when you have to substitute a known-good PCM in a troubleshooting procedure. Update the PCM only if the PCM does not already have the latest software loaded.

NOTE: Do not turn the ignition switch OFF while reprogramming the PCM. If you turn the ignition switch OFF, the PCM can be damaged.

How to Update the PCM

1. Turn the ignition switch ON (II). Do not start the engine.
2. Connect the Honda Interface Module (HIM) (A) to the Data Link Connector (DLC) (B) located under the driver's side of dashboard.



3. Do the PCM update procedure as described on the HIM label and in the PCM update system. If the software in the PCM is the latest version, substiture the PCM.

How to Substitute the PCM

1. Remove the PCM from the vehicle.
2. Install a known-good PCM in the vehicle.
3. Rewrite the immobilizer code with the PCM replacement procedure on the Honda PGM Tester. It allows you to start the engine.
4. After completing your tests, reinstall the original PCM and rewrite the immobilizer code with the PCM replacement procedure on the Honda PGM Tester again.

DTC Troubleshooting Index

NOTE: Record all freeze data and review General Troubleshooting Information (see page 14-3) before you troubleshoot.

DTC *(1)	[D] Indicator Light	MIL	Detection Item	Page
P0710 (28) *(2)	Blinks	OFF	ATF temperature sensor	(see page 14-72)
P0715 (15)	Blinks	ON	Mainshaft speed sensor	(see page 14-74)
P0720 (9)	Blinks	ON	Countershaft speed sensor	(see page 14-78)
P0730 (41)	OFF	ON	Shift control system	(see page 14-82)
P0740 (40)	OFF	ON	Lock-up control system	(see page 14-83)
P0745 (76)	Blinks	ON	Mechanical problem in hydraulic system	(see page 14-84)
P0748 (16) *(2)	Blinks	ON	A/T clutch pressure control solenoid valve A	(see page 14-85)
P0750 (70)	Blinks	ON	Mechanical problem in hydraulic system	(see page 14-87)
P0753 (7) *(2)	Blinks	ON	Shift solenoid valve A	(see page 14-88)
P0758 (8) *(2)	Blinks	ON	Shift solenoid valve B	(see page 14-90)
P0763 (22) *(2)	Blinks	ON	Shift solenoid valve C	(see page 14-92)
P0768 (60) *(2)	Blinks	ON	Shift solenoid valve D	(see page 14-94)
P0773 (61) *(2)	Blinks	ON	Shift solenoid valve E	(see page 14-96)
P0775 (77)	Blinks	ON	Mechanical problem in hydraulic system	(see page 14-98)
P0778 (23) *(2)	Blinks	ON	A/T clutch pressure control solenoid valve B	(see page 14-99)
P0780 (45) *(2)	Blinks	ON	Mechanical problem in hydraulic system	(see page 14-101)
P0795 (78)	Blinks	ON	Mechanical problem in hydraulic system	(see page 14-102)
P0798 (29) *(2)	Blinks	ON	A/T clutch pressure control solenoid valve C	(see page 14-103)
P0840 (25)	Blinks	OFF	2nd clutch transmission fluid pressure switch	(see page 14-105)
P0845 (26)	Blinks	OFF	3rd clutch transmission fluid pressure switch	(see page 14-107)
P1705 (5) *(2)	Blinks	ON	Transmission range switch (short circuit)	(see page 14-109)
P1706 (6) *(2)	OFF	ON	Transmission range switch (open)	(see page 14-113)
P1709 (24) *(2)	Blinks	ON	Transmission gear selection switch	(see page 14-115)
P1717 (62) *(2)	Blinks	OFF	Transmission range switch ([R] position circuit)	(see page 14-118)

* (1): The DTC in parentheses is the flash code the [D] indicator indicates when the DLC is connected to the Honda PGM Tester, and the tester in the SCS mode.
* (2): This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

Symptom Troubleshooting Index

These symptoms DO NOT trigger diagnostic trouble codes (DTCs) or cause the [D] indicator to blink. If the malfunction indicator lamp (MIL) was reported ON or the [D] indicator has been blinking, check for DTCs. If the vehicle has one of the symptoms in the following chart, check the probable cause(s) for it, in the sequence listed, until you find the problem.

Symptom	Probable cause(s)	Notes
When you turn the ignition switch ON (II), the D indicator comes on and stays on or never comes on at all	Communication line between multiplex control unit and gauge assembly defective	Check if the MIL indicates the code for the communication line between the multiplex control unit and gauge assembly (see page 22-175).
D3 or M indicator does not indicate while the shift lever is in that position		
Shift lever cannot be moved from P position while you're pushing on the brake pedal	A problem in the shift lock system (interlock system)	Check the interlock system-shift lock system circuit (see page 14-174).
Shift lever cannot pass through R position from N position	A problem in the reverse lock system of interlock system	Check the interlock system-reverse lock system circuit (see page 14-178).
Ignition switch cannot be moved from ACC (I) position to LOCK (0) position (Key is pushed in, shift lever in [P] position)	A problem in the key interlock system (interlock system)	Check the interlock system-key interlock system circuit (see page 14-180).

(cont'd)

Symptom Troubleshooting Index (cont'd)

Symptom	Probable cause(s)	Notes
Engine runs, but vehicle does not move in any gear	1. Low ATF level 2. Shift cable broken or out of adjustment 3. Joint in shift cable and transmission or body worn 4. ATF pump worn or binding 5. Regulator valve stuck or spring worn 6. ATF strainer clogged 7. Mainshaft worn or damaged 8. Final gears worn or damaged 9. Transmission-to-engine assembly error 10. Axle disengaged	• Check the ATF level and check the ATF cooler lines for leakage and loose connections. If necessary, flush the ATF cooler lines. • Check for a loose shift cable at the shift lever and the transmission control shaft. • Improper alignment of ATF pump and torque converter housing may cause ATF pump seizure. The symptoms are mostly an rpm-related ticking noise or a high pitched squeak. • Check the line pressure. • Be careful not to damage the torque converter housing when replacing the main ball bearing. You may also damage the ATF pump when you torque down the main valve body. This will result in ATF pump seizure if not detected. Use the proper tools. • Install the main seal flush with the torque converter housing. If you push it into the torque converter housing until it bottoms out, it will block the fluid return passage and result in damage. • Check the ATF strainer for debris. If the ATF strainer is clogged with particles of steel or aluminum, inspect the ATF pump. If the ATF pump is OK, find the damaged components that caused debris. If no cause for contamination is found, replace the torque converter. • Inspect the differential pinion shaft for wear under the pinion gears. If the differential pinion shaft is worn, overhaul the differential assembly, replace the ATF strainer, thoroughly clean the transmission, and flush the torque converter, cooler, and lines.
Vehicle moves in the R, but not in the D or D3 position, or the M position in 1st gear	1. 1st accumulator defective 2. 1st gears worn or damaged 3. 1st clutch defective	• Check the 1st clutch pressure. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer and retainer seal for wear and damage. Inspect the clutch end-plate-to-top-disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs are worn or damaged, replace the discs as a set. Inspect the clutch waved-plate height. If the height is out of tolerance, replace the waved-plate. If the discs and plates are OK, adjust the clearance with the clutch and plate. • Inspect the 1st clutch feed pipe. If the 1st clutch feed pipe is scored, replace the end cover. • Replace the secondary shaft if the bushing for the 1st clutch feed pipe is loose or damaged.

Symptom	Probable cause(s)	Notes
Vehicle moves in the D, D3, R, but not in the M position in 2nd gear	1. 2nd accumulator defective 2. 2nd gears worn or damaged 3. 2nd clutch defective	• Check the 2nd clutch pressure. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer and retainer seal for wear and damage. Inspect the clutch end-plate-to-top-disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs are worn or damaged, replace the discs as a set. Inspect the clutch waved-plate height. If the height is out of tolerance, replace the waved-plate. If the discs and plates are OK, adjust the clearance with the clutch end plate.
Vehicle moves in the D, D3, M, but not in the R position	1. Shift solenoid valve E defective 2. Shift fork shaft stuck 3. Shift valve E defective 4. 4th/reverse accumulator defective 5. 4th clutch defective 6. Reverse gears worn or damaged	• Check the D indicator and check for loose connectors. Inspect the shift solenoid valve E for seizure, and O-rings for wear and damage. • Check for a missing shift fork bolt on the shift fork shaft. • Check the 4th clutch pressure. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer and retainer seal for wear and damage. Inspect the clutch end-plate-to-top-disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs are worn or damaged, replace the discs as a set. Inspect the clutch waved-plate height. If the height is out of tolerance, replace the waved-plate. If the discs and plates are OK, adjust the clearance with the clutch end plate. • Inspect the reverse selector gear teeth chamfers, and inspect engagement teeth chamfers of the countershaft 4th gear and reverse gear. Replace the reverse gears and the reverse selector if they are worn or damaged. If the transmission makes a clicking, grinding, or whirring noise, also replace the mainshaft 4th gear, reverse idler gear, and countershaft 4th gear.
Poor acceleration; flares on starting off in D, D3, R, and M positions: Stall speed high in D and D3 positions, and in M position in 1st and 2nd gears	1. Low ATF level 2. Shift cable broken or out of adjustment 3. ATF pump worn or binding 4. Regulator valve stuck or spring worn 5. ATF strainer clogged 6. Torque converter check valve defective	• Check the ATF level and check the ATF cooler lines for leakage and loose connections. If necessary, flush the ATF cooler lines. • Check for a loose shift cable at the shift lever and the transmission control shaft. • Improper alignment of ATF pump and torque converter housing may cause ATF pump seizure. The symptoms are mostly an rpm-related ticking noise or a high pitched squeak. • Check the ATF strainer for clogging. If the ATF strainer is clogged with particles of steel or aluminum, inspect the ATF pump. If the ATF pump is OK, find the damaged components that caused debris, and no cause for contamination is found, replace the torque converter.

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Symptom Troubleshooting Index (cont'd)

Symptom	Probable cause(s)	Notes
Poor acceleration; flares on starting off in the D, D3, R, and M positions: Stall speed high when starting off in the M position in 2nd gear	2nd clutch defective	• Check the 2nd clutch pressure. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer and retainer seal for wear and damage. Inspect the clutch end-plate-to-top-disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs are worn or damaged, replace the discs as a set. Inspect the clutch waved-plate height. If the height is out of tolerance, replace the waved-plate. If the discs and plates are OK, adjust the clearance with the clutch end plate.
Poor acceleration; flares on starting off in the D, D3, R, and M positions: Stall speed high in the R position	1. Shift cable broken or out of adjustment 2. 4th clutch defective	• Check for a loose shift cable at the shift lever and the transmission control shaft. • Check the 4th clutch pressure in the D and R positions. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer and retainer seal for wear and damage. Inspect the clutch end-plate-to-top-disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs are worn or damaged, replace the discs as a set. Inspect the clutch waved-plate height. If the height is out of tolerance, replace the waved-plate. If the discs and plates are OK, adjust the clearance with the clutch end plate.
Poor acceleration; flares on starting off in the D, D3, R, and M positions: Stall speed low in the D and D3 positions, and in the M position in 1 st and 2nd gears	1. Shift solenoid valve E defective 2. Torque converter one-way clutch defective 3. Engine output low 4. Torque converter clutch piston defective 5. Lock-up shift valve defective	• Check the D indicator, and check for loose connectors. Inspect the shift solenoid valve E for seizure, and O-ring for wear and damage. • Replace the torque converter.
Poor acceleration; flares on starting off in the D, D3, R, and M positions: Stall speed low in the R position	1. Torque converter one-way clutch defective 2. Engine output low 3. Torque converter clutch piston defective 4. Lock-up shift valve defective	Replace the torque converter.

Symptom	Probable cause(s)	Notes
Engine idle vibration	1. Low ATF level 2. Shift solenoid valve E defective 3. Drive plate defective or transmission misassembled 4. Engine output low 5. Torque converter clutch piston defective 6. ATF pump worn or binding 7. Lock-up shift valve defective 8. Misadjusted engine and transmission mounts	• Check the ATF level and check the ATF cooler lines for leakage and loose connections. If necessary, flush the ATF cooler lines. • Improper alignment of ATF pump and torque converter housing may cause ATF pump seizure. The symptoms are mostly an rpm-related ticking noise or a high pitched squeak. • Inspect the ATF strainer for clogged with particles of steel or aluminum. If the ATF strainer is clogged, replace it, and flush the torque converter, cooler, and lines. • Check the D indicator, and check for loose connectors. Inspect the shift solenoid valve E for seizure, and O-rings for wear and damage. • Check for a misinstalled/damaged drive plate. • Set idle rpm in gear to the specified idle speed. If still no good, adjust the engine and transmission mounts as outlined in the engine section of this service manual. • Replace the torque converter.
Vehicle moves in the N position	1. Excessive ATF 2. Foreign material in separator plate orifice 3. Relief valve defective 4. 1st clutch defective 5. 2nd clutch defective 6. 3rd clutch defective 7. 4th clutch defective 8. 5th clutch defective 9. Clutch end-plate-to-top-disc clearance incorrect 10. Needle bearing seized, worn, or damaged 11. Thrust washer seized up, worn, or damaged	• Check the ATF level, and drain the ATF if it is an excess. • Check if the ATF strainer is clogged. If the ATF strainer is clogged with particles of steel or aluminum, inspect the ATF pump. If the ATF pump is OK, find the damaged components that caused debris, and no cause for contamination is found, replace the torque converter. • Check the 1st, 2nd, 3rd, 4th and 5th clutch pressures. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer and retainer seal for wear and damage. Inspect the clutch end-plate-to-top-disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs are worn or damaged, replace the discs as a set. Inspect the clutch waved-plate height. If the height is out of tolerance, replace the waved-plate. If the discs and plates are OK, adjust the clearance with the clutch end plate. • Inspect the 1st clutch feed pipe. If the 1st clutch feed pipe is scored, replace the end cover. • Inspect the 3rd clutch feed pipe. If the 3rd clutch feed pipe is scored, replace it and O-ring under the feed pipe guide. • Replace the secondary shaft if the bushing for the 1st or 3rd clutch feed pipe is loose or damaged. • Inspect the 5th clutch feed pipe. If the 5th clutch feed pipe is scored, replace it and O-ring under the feed pipe guide. • Replace the mainshaft if the bushing for the 5th clutch feed pipe is loose or damaged.

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Symptom Troubleshooting Index (cont'd)

Symptom	Probable cause(s)	Notes
Late shift from the N position to the D and D3 positions	1. Shift solenoid valve E defective 2. A/T clutch pressure control solenoid valve A defective 3. A/T clutch pressure control solenoid valve B defective 4. A/T clutch pressure control solenoid valve C defective 5. Shift cable broken or out of adjustment 6. Joint in shift cable and transmission or body worn 7. Mainshaft speed sensor defective 8. Countershaft speed sensor defective 9. ATF temperature sensor defective 10. Foreign material in separator plate orifice 11. Servo control valve defective 12. 1st accumulator defective 13. 1st check ball stuck 14. Lock-up shift valve defective 15. 1st clutch defective	• Check the D indicator, and check for loose connectors. Inspect the solenoid valve filter/gasket and O-rings for wear and damage, and inspect the solenoid valves for seizure. • Check the mainshaft speed sensor and countershaft speed sensor installation. • Check for a loose shift cable at the shift lever and the transmission control shaft. • Check the 1st clutch pressure. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer and retainer seal for wear and damage. Inspect the clutch end-plate-to-top-disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs are worn or damaged, replace the discs as a set. Inspect the clutch waved-plate height. If the height is out of tolerance, replace the waved-plate. If the discs and plates are OK, adjust the clearance with the clutch end plate. • Inspect the 1st clutch feed pipe. If the 1st clutch feed pipe is scored, replace the end cover.
Late shift from the N position to the R position	1. Shift solenoid valve E defective 2. A/T clutch pressure control solenoid valve A defective 3. Shift cable broken or out of adjustment 4. Joint in shift cable and transmission or body worn 5. Mainshaft speed sensor defective 6. Countershaft speed sensor defective 7. ATF temperature sensor defective 8. Shift fork shaft stuck 9. Foreign material in separator plate orifice 10. Shift valve E defective 11. 4th/reverse accumulator defective 12. Lock-up shift valve defective 13. 4th clutch defective	• Check the D indicator, and check for loose connectors. Inspect the solenoid valve filter/gasket and O-rings for wear and damage, and inspect the solenoid valves for seizure. • Check the mainshaft speed sensor and countershaft speed sensor installation. • Check for a loose shift cable at the shift lever and the transmission control shaft. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer and retainer seal for wear and damage. Inspect the clutch end-plate-to-top-disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs are worn or damaged, replace the discs as a set. Inspect the clutch waved-plate height. If the height is out of tolerance, replace the waved-plate. If the discs and plates are OK, adjust the clearance with the clutch end plate. • Check for a missing shift fork bolt on the shift fork shaft. • Check the 4th clutch pressure. • Inspect the servo valve and O-ring.

Symptom	Probable cause(s)	Notes
No shift	1. Mainshaft speed sensor defective 2. Countershaft speed sensor defective	Check the D indicator, and check for loose connectors. Check the mainshaft and countershaft speed sensor installation.
Excessive shock or flares on all upshifts and downshifts	1. A/T clutch pressure control solenoid valve B defective 2. A/T clutch pressure control solenoid valve C defective 3. Mainshaft speed sensor defective 4. Countershaft speed sensor defective 5. ATF temperature sensor defective 6. Foreign material in separator plate orifice	• Check the D indicator, and check for loose connectors. Inspect the solenoid valve filter/gasket and O-rings for wear and damage, and inspect the solenoid valves for seizure. • Check the mainshaft speed sensor and countershaft speed sensor installation.
Excessive shock or flares on 1-2 upshift or 2-1 downshift	1. Shift solenoid valve E defective 2. A/T clutch pressure control solenoid valve A defective 3. A/T clutch pressure control solenoid valve B defective 4. A/T clutch pressure control solenoid valve C defective 5. 2nd clutch transmission fluid pressure switch defective 6. Foreign material in separator plate orifice 7. 1st accumulator defective 8. 2nd accumulator defective 9. 1st check ball stuck 10. 2nd check ball stuck 11. Lock-up shift valve defective 12. 1st clutch defective 13. 2nd clutch defective	• Check the D indicator, and check for loose connectors. Inspect the solenoid valve filter/gasket and O-rings for wear and damage, and inspect the solenoid valves for seizure. • Check the 1st and 2nd clutch pressures. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer and retainer seal for wear and damage. Inspect the clutch end-plate-to-top-disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs are worn or damaged, replace the discs as a set. Inspect the clutch waved-plate height. If the height is out of tolerance, replace the waved-plate. If the discs and plates are OK, adjust the clearance with the clutch end plate. • Inspect the 1st clutch feed pipe. If the 1st clutch feed pipe is scored, replace the end cover. • Replace the secondary shaft if the bushing for the 3rd clutch feed pipe is loose or damaged.

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Symptom Troubleshooting Index (cont'd)

Symptom	Probable cause(s)	Notes
Excessive shock or flares on 2-3 upshift or 3-2 downshift	1. A/T clutch pressure control solenoid valve B defective 2. A/T clutch pressure control solenoid valve C defective 3. 3rd clutch transmission fluid pressure switch defective 4. Foreign material in separator plate orifice 5. 2nd accumulator defective 6. 3rd accumulator defective 7. 2nd check ball stuck 8. 2nd clutch defective 9. 3rd clutch defective	• Check the D indicator, and check for loose connectors. Inspect the solenoid valve filter/gasket for wear and damage, and inspect the solenoid valves for seizure. • Check the 2nd and 3rd clutch pressures. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer and retainer seal for wear and damage. Inspect the clutch end-plate-to-top-disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs are worn or damaged, replace the discs as a set. Inspect the clutch waved-plate height. If the height is out of tolerance, replace the waved-plate. If the discs and plates are OK, adjust the clearance with the clutch end plate. • Inspect the 3rd clutch feed pipe. If the 3rd clutch feed pipe is scored, replace it and O-ring under the feed pipe guide. • Replace the secondary shaft if the bushing for the 3rd clutch feed pipe is loose or damaged.
Excessive shock or flares on 3-4 upshift or 4-3 downshift	1. A/T clutch pressure control solenoid valve B defective 2. A/T clutch pressure control solenoid valve C defective 3. Foreign material in separator plate orifice 4. 3rd accumulator defective 5. 4th accumulator defective 6. 3rd clutch defective 7. 4th clutch defective	• Check the D indicator, and check for loose connectors. Inspect the solenoid valve filter/gasket and O-rings for wear and damage, and inspect the solenoid valves for seizure. • Check the 3rd and 4th clutch pressures. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer and retainer seal for wear and damage. Inspect the clutch end-plate-to-top-disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs are worn or damaged, replace the discs as a set. Inspect the clutch waved-plate height. If the height is out of tolerance, replace the waved-plate. If the discs and plates are OK, adjust the clearance with the clutch end plate. • Inspect the 3rd clutch feed pipe. If the 3rd clutch feed pipe is scored, replace it and O-ring under the feed pipe guide. • Replace the secondary shaft if the bushing for the 3rd clutch feed pipe is loose or damaged.

Symptom	Probable cause(s)	Notes
Excessive shock or flares on 4-5 upshift or 5-4 downshift	1. A/T clutch pressure control solenoid valve B defective 2. A/T clutch pressure control solenoid valve C defective 3. Foreign material in separator plate orifice 4. 4th accumulator defective 5. 5th accumulator defective 6. 4th clutch defective 7. 5th clutch defective	• Check the D indicator, and check for loose connectors. Inspect the solenoid valve filter/gasket for wear and damage, and inspect the solenoid valves for seizure. • Check the 4th and 5th clutch pressures. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer and retainer seal for wear and damage. Inspect the clutch end-plate-to-top-disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs are worn or damaged, replace the discs as a set. Inspect the clutch waved-plate height. If the height is out of tolerance, replace the waved-plate. If the discs and plates are OK, adjust the clearance with the clutch end plate. • Inspect the 5th clutch feed pipe. If the 5th clutch feed pipe is scored, replace it and O-ring under the feed pipe guide. • Replace the mainshaft if the bushing for the 5th clutch feed pipe is loose or damaged.
Noise from transmission in all shift lever positions	1. ATF pump worn or binding 2. Mainshaft bearing, countershaft bearing or secondary shaft bearing defective	• Improper alignment of ATF pump and torque converter housing may cause ATF pump seizure. The symptoms are mostly an rpm-related ticking noise or a high pitched squeak. • Be careful not to damage the torque converter housing when replacing the main ball bearing. You may also damage the ATF pump when you torque down the main valve body. This will result in ATF pump seizure if not detected. Use the proper tools. • Install the main seal flush with the torque converter housing. If you push it into the torque converter housing until it bottoms out, it will block the fluid return passage and result in damage. • Inspect if the ATF strainer is clogged with particles of steel or aluminum. If clogged, replace it, and flush the torque converter, cooler, and lines. • Inspect the mainshaft and countershaft for wear or damage.
Vehicle does not accelerate more than 31 mph (50 km/h)	Torque converter one-way clutch defective	Replace the torque converter.
Vibration in all shift lever positions	Drive plate defective or transmission misassembled	• Check for a misinstalled/damaged drive plate. • Set idle rpm in gear to the specified idle speed. If still no good, adjust the engine and transmission mounts as outlined in the engine section of this service manual.

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Symptom Troubleshooting Index (cont'd)

Symptom	Probable cause(s)	Notes
Shift lever does not operate smoothly	1. Transmission range switch defective or out of adjustment 2. Shift cable broken or out of adjustment 3. Joint in shift cable and transmission or body worn	• Check the D indicator, and check for loose connectors. Inspect the transmission range switch for operation. • Check for a loose shift cable at the shift lever and the transmission control shaft.
Transmission does not shift into P position	1. Shift cable broken or out of adjustment 2. Joint in shift cable and transmission or body worn 3. Park mechanism defective	• Check for a loose shift cable at the shift lever and the transmission control shaft. • Check the park pawl spring installation and the park lever spring installation. If installation is incorrect, install the spring correctly. Make sure that the park lever stop is not installed upside down. Check the distance between the park pawl shaft and park lever roller pin. If the distance is out of tolerance, adjust the distance with the park lever stop.
Lock-up clutch does not disengage	1. Shift solenoid valve E defective 2. A/T clutch pressure control solenoid valve A defective 3. Torque converter clutch piston defective 4. Lock-up shift valve defective 5. Lock-up control valve defective	• Check the D indicator, and check for loose connectors. Inspect the solenoid valve filter/gasket for wear and damage, and inspect the solenoid valves for seizure. • Replace the torque converter.
Unstable lock-up clutch operation	1. Shift solenoid valve E defective 2. A/T clutch pressure control solenoid valve A defective 3. Torque converter clutch piston defective 4. Torque converter check valve defective 5. Lock-up shift valve defective 6. Lock-up control valve defective	• Check the D indicator, and check for loose connectors. Inspect the solenoid valve filter/gasket for wear and damage, and inspect the solenoid valves for seizure. • Replace the torque converter.

Symptom	Probable cause(s)	Notes
Lock-up clutch does not engage	1. Shift solenoid valve E defective 2. A/T clutch pressure control solenoid valve A defective 3. Mainshaft speed sensor defective 4. Countershaft speed sensor defective 5. Torque converter clutch piston defective 6. Torque converter check valve defective 7. Lock-up shift valve defective 8. Lock-up control valve defective	• Check the D indicator, and check for loose connectors. Inspect the solenoid valve filter/gasket for wear and damage, and inspect the solenoid valves for seizure. • Replace the torque converter. • Check the mainshaft speed sensor and countershaft speed sensor installation.
A/T gear position indicator does not indicate shift lever positions	1. Transmission range switch defective or out of adjustment 2. Shift cable broken or out of adjustment 3. Joint in shift cable and transmission or body worn	• Check the D indicator, and check for loose connectors. Inspect the transmission range switch operation. • Check for a loose shift cable at the shift lever and the transmission control shaft.
Speedometer and odometer do not operate	Countershaft speed sensor defective	• Check the D indicator, and check for loose connectors. Inspect the transmission range switch operation. • Check the countershaft speed sensor installation.
Transmission shifts up during low-rev engine speed condition; engine cannot rev up to high speed	VTEC rocker arms defective	Check the engine rocker arms as described in the engine section of this service manual.

System Description

General Operation

The automatic transmission is a combination of a 3-element torque converter and triple-shaft electronically controlled unit which provides 5 speeds forward and 1 reverse. The entire unit is positioned in line with the engine.

Torque Converter, Gears, and Clutches

The torque converter consists of a pump, turbine, and stator assembly in a single unit. The converter housing (pump) is connected to the engine crankshaft and turn as the engine turns. Around the outside of the torque converter is a ring gear which meshes with the starter pinion when the engine is being started. The entire torque converter assembly serves as a flywheel while transmitting power to the transmission mainshaft, the transmission has three parallel shafts; the mainshaft, the countershaft and the secondary shaft. The mainshaft is in line with the engine crankshaft, and includes the 4th and 5th clutches, and gears for 5th, 4th, reverse, and idler. The mainshaft reverse gear is integral with the mainshaft 4th gear. The countershaft includes the gears for 1st, 2nd, 3rd, 4th, 5th, reverse, park, and the final drive. The final drive gear is integral with the countershaft. The countershaft 4th gear and the countershaft reverse gear can be locked to the countershaft providing the 4th or reverse gear, depending on which way the selector is moved. The secondary shaft includes the 1st, 2nd, and 3rd clutches, and gears for 1st, 2nd, 3rd, and idler. The idler shaft is located between the mainshaft and secondary shaft, and the idler gear transmits power between the mainshaft and the secondary shaft. The gears on the mainshaft and the secondary shaft are in constant mesh with those on the countershaft. When certain combinations of gears in the transmission are engaged by the clutches, power is transmitted through the mainshaft, then to the secondary shaft to the countershaft provide drive.

Electronic Control

The electronic control system consists of the powertrain control module (PCM), sensors, and solenoid valves. Shifting and lock-up are electronically controlled for comfortable driving under all conditions. The PCM is located below the dashboard, under the glove box.

Hydraulic Control

The valve bodies include the main valve body, the regulator valve body, and the servo body. They are bolted to the torque converter housing. The main valve body contains the manual valve, the shift valves A, B, C, and E, the relief valve, the lock-up control valve, the cooler check valve, the servo control valve, and the ATF pump gears. The regulator valve body contains the regulator valve, the torque converter check valve, lock-up shift valve, and the 1st and 3rd accumulators. The servo body contains the servo valve, the shift valve D, accumulators for 2nd, 4th, and 5th, and shift solenoid valves for A, B, C, D, and E. Fluid from the regulator passes through the manual valve to the various control valves. The 1st, 3rd, 5th clutches receive fluid from their respective feed pipes, and the 2nd and the 4th clutches receive fluid from the internal hydraulic circuit.

Shift Control Mechanism

The PCM controls to shift gears the shift solenoid valves A, B, C, D, and E, and the A/T clutch pressure control solenoid valves A, B, and C, while receiving input signals from various sensors and switches located throughout the vehicle. The shift solenoid valves shift the positions of the shift valves to switch the port leading hydraulic pressure to the clutch. The A/T clutch pressure control solenoid valves A, B, and C regulate their respective pressure, and pressurize to the clutches to engage it and its corresponding gear. The pressures of the A/T clutch pressure control solenoid valves also apply to the shift valves to switch the port.

Lock-up Mechanism

The lock-up mechanism operates in D position (2nd, 3rd, 4th and 5th), in D3 position (2nd and 3rd), and M (sequential sportshift mode) position (3rd, 4th and 5th). The pressurized fluid is drained from the back of the torque converter through a fluid passage, causing the torque converter clutch piston to be held against the torque converter cover. As this takes place, the mainshaft rotates at the same speed as the engine crankshaft. Together with the hydraulic control, the PCM optimizes the timing and volume of the lock-up mechanism. When the shift solenoid valve E is turned on by the PCM, shift solenoid valve E pressure switches the lock-up shift valve lock-up on and off. The A/T clutch pressure control solenoid valve A and the lock-up control valve control the volume of the lock-up conditions.

Gear Selection
The shift lever has five positions: Ⓟ PARK, Ⓡ REVERSE, Ⓝ NEUTRAL, Ⓓ DRIVE 1st through 5th gear range with automatic shift and sequential sportshift in Ⓜ (sequential sportshift mode) position, and Ⓓ₃ DRIVE 1st through 3rd gear range with automatic shift.

Position		Description
Ⓟ PARK		Front wheels locked; park pawl engaged with park gear on countershaft. All clutches are released.
Ⓡ REVERSE		Reverse; reverse selector engaged with countershaft reverse gear and 4th clutch engaged.
Ⓝ NEUTRAL		All clutches are released.
Ⓓ DRIVE (1st through 5th)	Automatic shift	General driving; starts off in 1st, shifts automatically to 2nd, 3rd, 4th, then 5th, depending on vehicle speed and throttle position. Downshifts through 4th, 3rd, 2nd, and 1st on deceleration to stop. The lock-up mechanism operates in 2nd, 3rd, 4th and 5th gears.
	Ⓜ position Sequential sportshift mode	Manual gear shift driving; vehicle can starts off in 1st and 2nd gears, and does not upshift automatically. The lock-up mechanism operates in 3rd, 4th and 5th gears.
Ⓓ₃ DRIVE (1st through 3rd)		For rapid acceleration at highway speeds and general driving, up-hill and down-hill driving; starts off in 1st, shifts automatically to 2nd, then 3rd, depending on vehicle speed and throttle position. Downshifts through 2nd to 1st on deceleration to stop. The lock-up mechanism operates in 2nd and 3rd gears.

Starting is possible only in the Ⓟ and Ⓝ positions because of a slide-type neutral-safety switch.

Automatic Transaxle (A/T) Gear Position Indicator
The A/T gear position indicator in the instrument panel shows which shift lever position has been selected without having to look down at the shift lever. With the shift lever in the Ⓜ (sequential sportshift mode) position, the shift indicator above the Ⓜ indicator in the instrument panel will display the gear selected.

(cont'd)

System Description (cont'd)

Clutches and Gears

The 5-speed automatic transmission uses hydraulically-actuated clutches to engage or disengage the transmission gears. When hydraulic pressure is introduced into the clutch drum, the clutch piston moves. This presses the friction discs and steel plates together, locking them so they don't slip. Power is then transmitted through the engaged clutch pack to its hub-mounted gear. Likewise, when the hydraulic pressure is bled from the clutch pack, the piston releases the friction discs and steel plates, and they are free to slide past each other. This allows the gear to spin independently on its shaft, transmitting no power.

1st Clutch
The 1st clutch engages/disengages 1st gear, and is located at the middle of the secondary shaft. The 1st clutch is joined back-to-back to the 3rd clutch. The 1st clutch is supplied hydraulic pressure by its ATF feed pipe within the secondary shaft.

2nd Clutch
The 2nd clutch engages/disengages 2nd gear, and is located at the end of the secondary shaft, opposite the end cover. The 2nd clutch is supplied hydraulic pressure by a circuit connected to the internal hydraulic circuit.

3rd Clutch
The 3rd clutch engages/disengages 3rd gear, and is located at the middle of the secondary shaft. The 3rd clutch is joined back-to-back to the 1st clutch. The 3rd clutch is supplied hydraulic pressure by its ATF feed pipe within the secondary shaft.

4th Clutch
The 4th clutch engages/disengages 4th gear, as well as reverse gear, and is located at the middle of the mainshaft. The 4th clutch is joined back-to-back to the 5th clutch. The 4th clutch is supplied hydraulic pressure by its ATF feed pipe with in the mainshaft.

5th Clutch
The 5th clutch engages/disengages 5th gear, and is located at the middle of the mainshaft. The 5th clutch is joined back-to-back to the 4th clutch. The 5th clutch is supplied hydraulic pressure by its ATF feed pipe within the mainshaft.

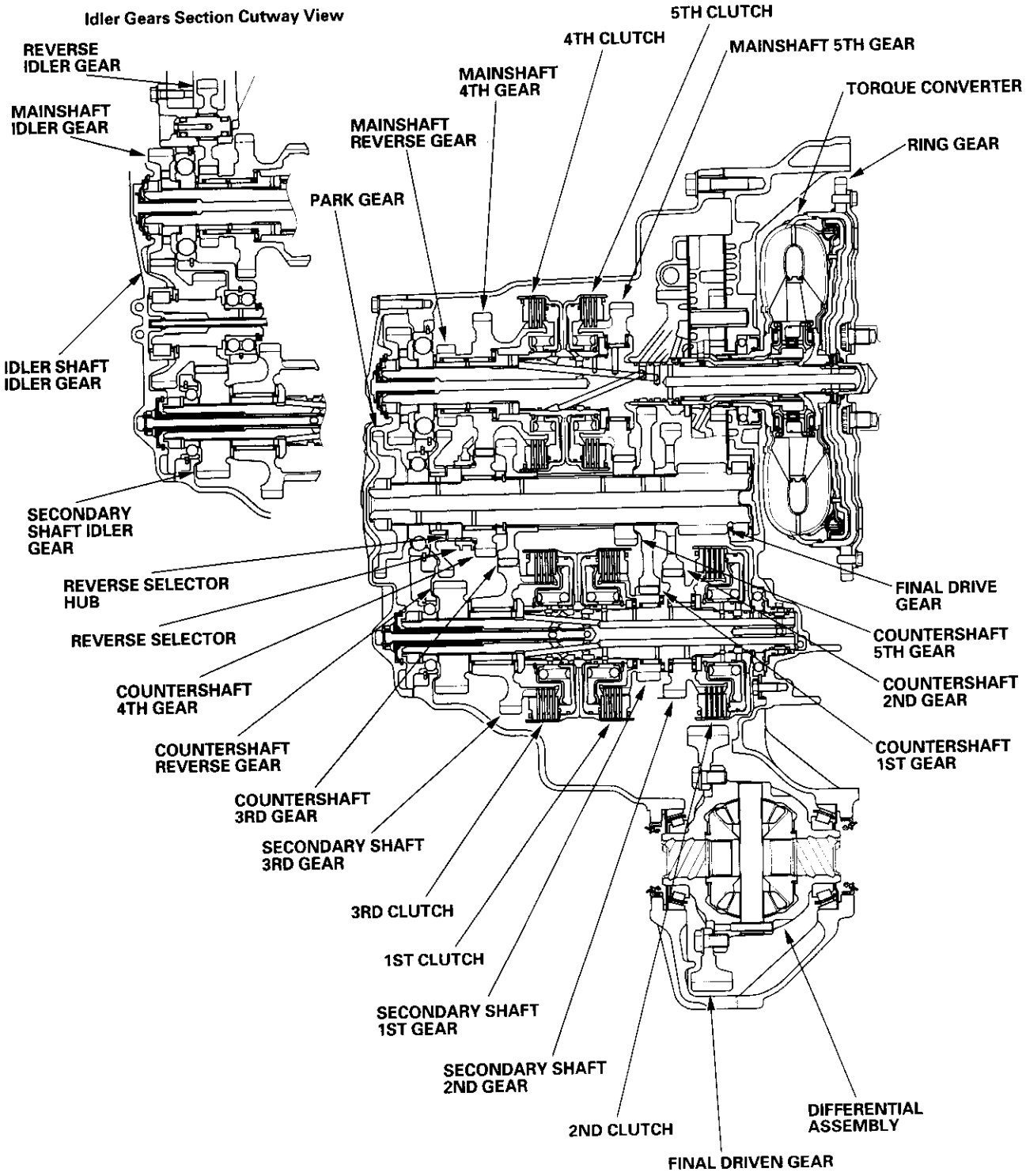
Gear operation
Gears on the mainshaft:
- 4th gear engages/disengages with the mainshaft by the 4th clutch.
- 5th gear engages/disengages with the mainshaft by the 5th clutch.
- Reverse gear engages/disengages with the mainshaft by the 4th clutch.
- Idler gear is splined with the mainshaft, and rotates with the mainshaft.

Gears on the countershaft:
- Final drive gear is integral with the countershaft.
- 1st, 2nd, 3rd, 5th, and park gears are splined with the countershaft, and rotate with the countershaft.
- 4th gear and reverse gear rotate freely from the countershaft. The reverse selector engages 4th gear and reverse gear with the reverse selector hub. The reverse selector hub is splined to the countershaft so that the 4th gear and reverse gear engage with the countershaft.

Gears on the secondary shaft:
- 1st gear engages/disengages with the secondary shaft by the 1st clutch.
- 2nd gear engages/disengages with the secondary shaft by the 2nd clutch.
- 3rd gear engages/disengages with the secondary shaft by the 3rd clutch.
- Idler gear is splined with the secondary shaft, and rotates with the secondary shaft.

The idler gear on the idler shaft transmits power between the mainshaft and the secondary shaft.
The reverse idler gear transmits power from the mainshaft reverse gear to the countershaft reverse gear, and changes rotation direction of the countershaft to reverse.

Transmission Cutaway View



(cont'd)

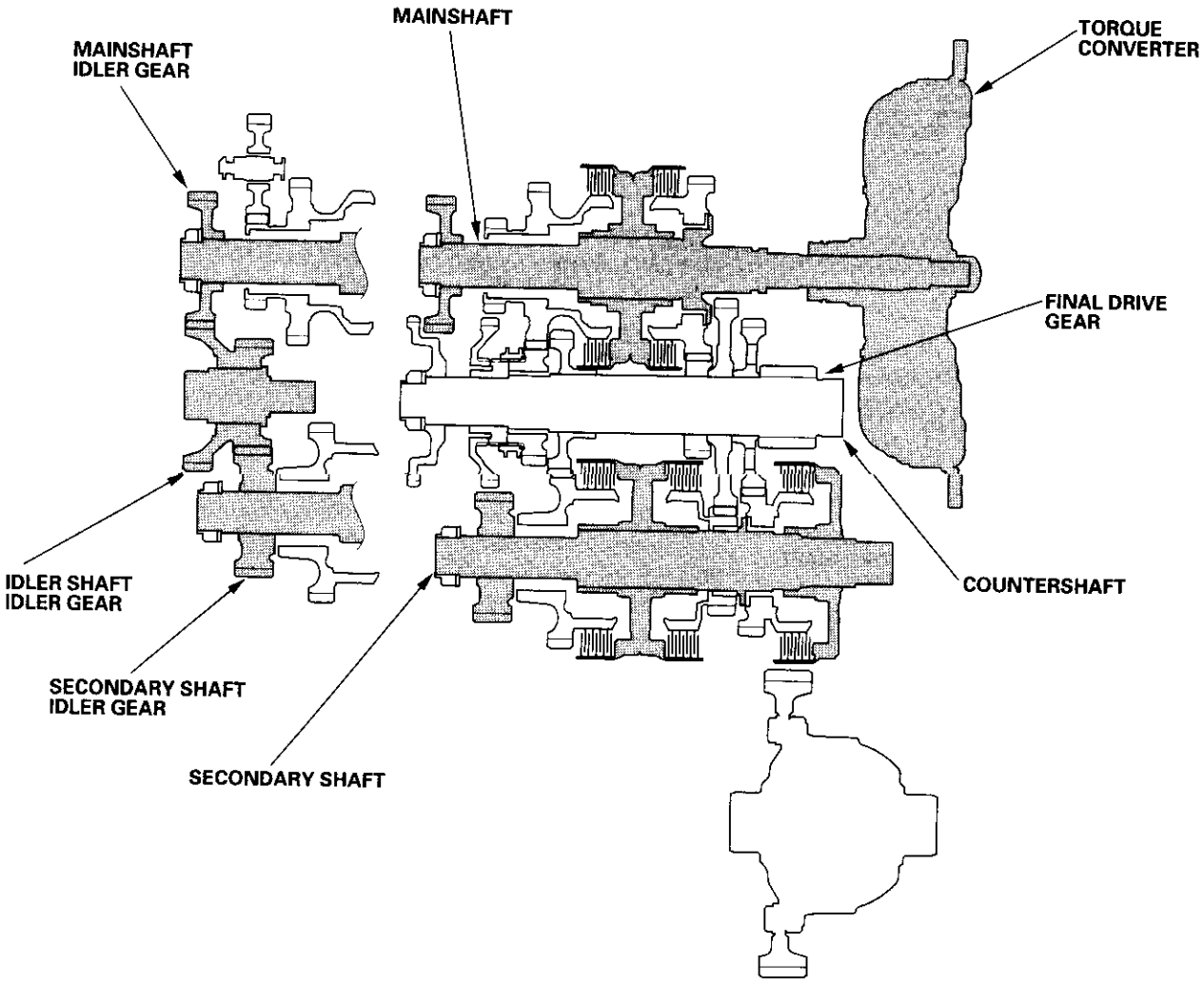
System Description (cont'd)

Power Flow (cont'd)

[P] Position
Hydraulic pressure is not applied to the clutches. Power is not transmitted to the countershaft. The countershaft is locked by the park pawl, interlocking the park gear.

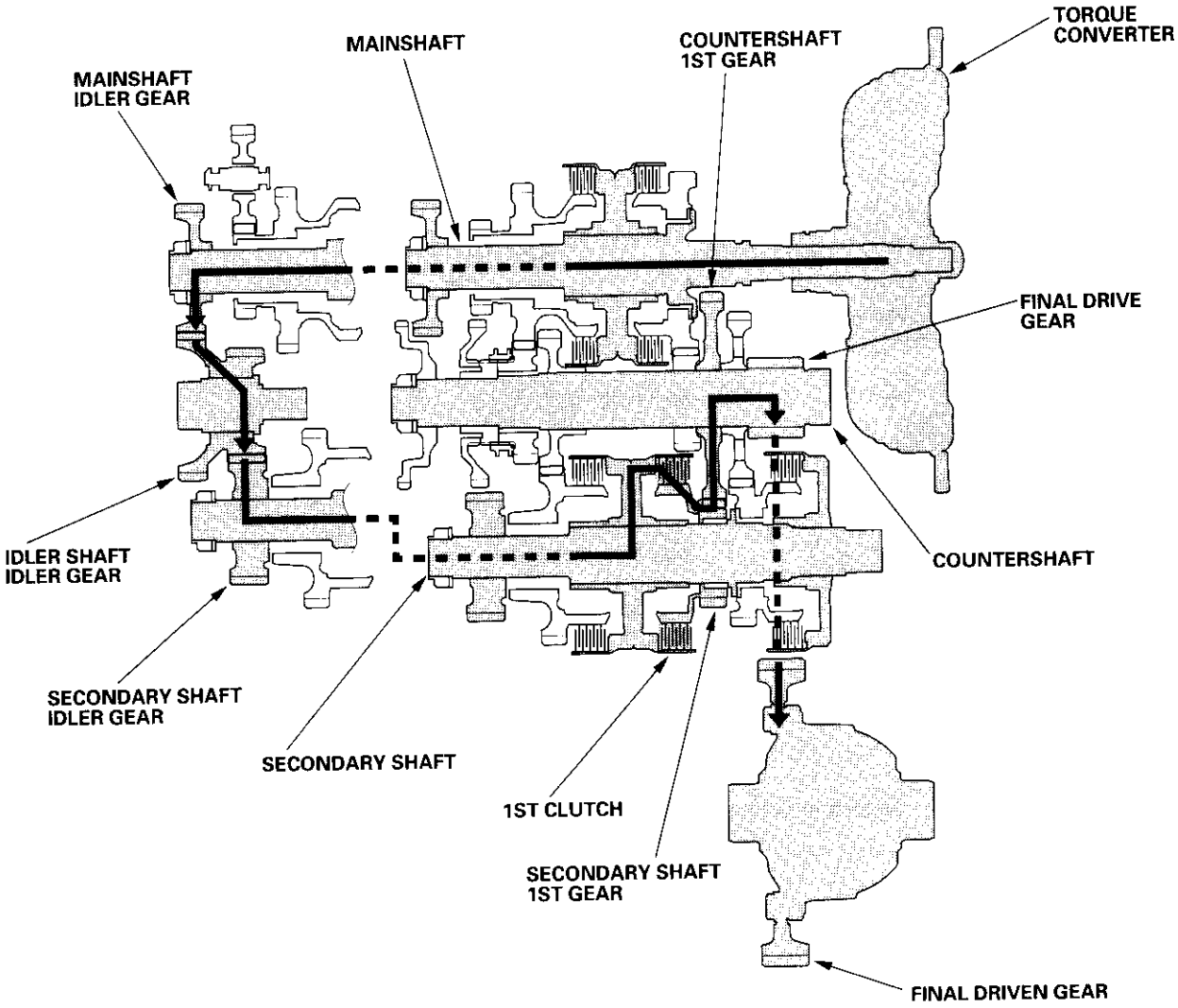
[N] Position
Engine power transmitted from the torque converter drives the mainshaft idler gear, the idler shaft idler gear, and the secondary idler gear, but hydraulic pressure is not applied to the clutches. Power is not transmitted to the countershaft. In this position, the position of the reverse selector differs according to whether the shift lever shifted from [D] or [R] position:

- When shifted from [D] position, the reverse selector engages with the countershaft 4th gear and the reverse selector hub, and the 4th gear engages with the countershaft.
- When shifted from [R] position, the reverse selector engages with the countershaft reverse gear and the reverse selector hub, and the reverse gear engages with the countershaft.



1st Gear

- Hydraulic pressure is applied to the 1st clutch, then the 1st clutch engages the secondary shaft 1st gear with the secondary shaft.
- The mainshaft idler gear drives the secondary shaft via the idler shaft idler gear and the secondary shaft idler gear.
- The secondary shaft 1st gear drives the countershaft 1st gear and the countershaft.
- Power is transmitted to the final drive gear, which in turn drives the final driven gear.



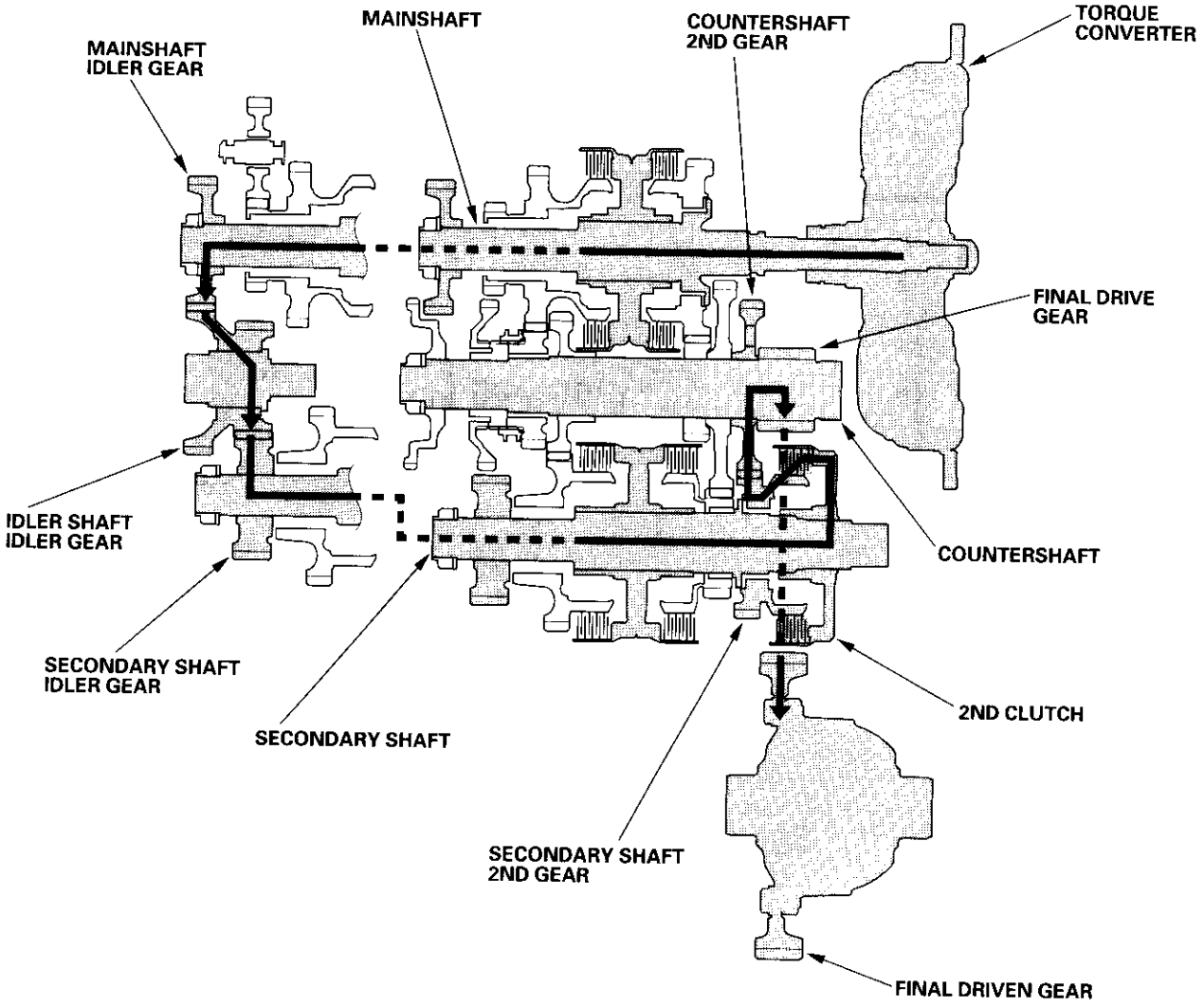
(cont'd)

System Description (cont'd)

Power Flow (cont'd)

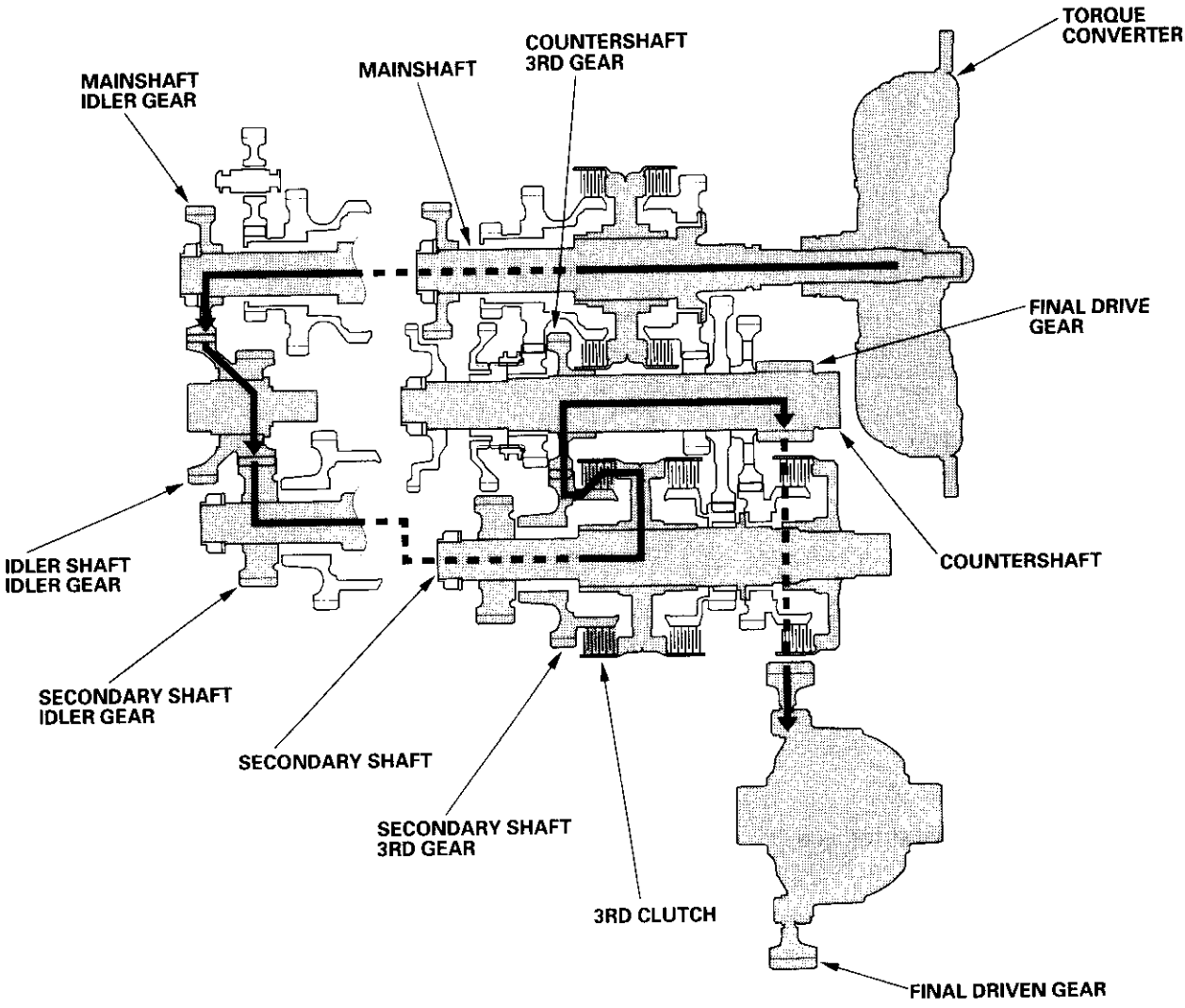
2nd Gear

- Hydraulic pressure is applied to the 2nd clutch, then the 2nd clutch engages the secondary shaft 2nd gear with the secondary shaft.
- The mainshaft idler gear drives the secondary shaft via the idler shaft idler gear and the secondary shaft idler gear.
- The secondary shaft 2nd gear drives the countershaft 2nd gear and the countershaft.
- Power is transmitted to the final drive gear, which in turn drives the final driven gear.



3rd gear

- Hydraulic pressure is applied to the 3rd clutch, then the 3rd clutch engages the secondary shaft 3rd gear with the secondary shaft.
- The mainshaft idler gear drives the secondary shaft via the idler shaft idler gear and secondary shaft idler gear.
- The secondary shaft 3rd gear drives the countershaft 3rd gear and the countershaft.
- Power is transmitted to the final drive gear, which in turn drives the final driven gear.



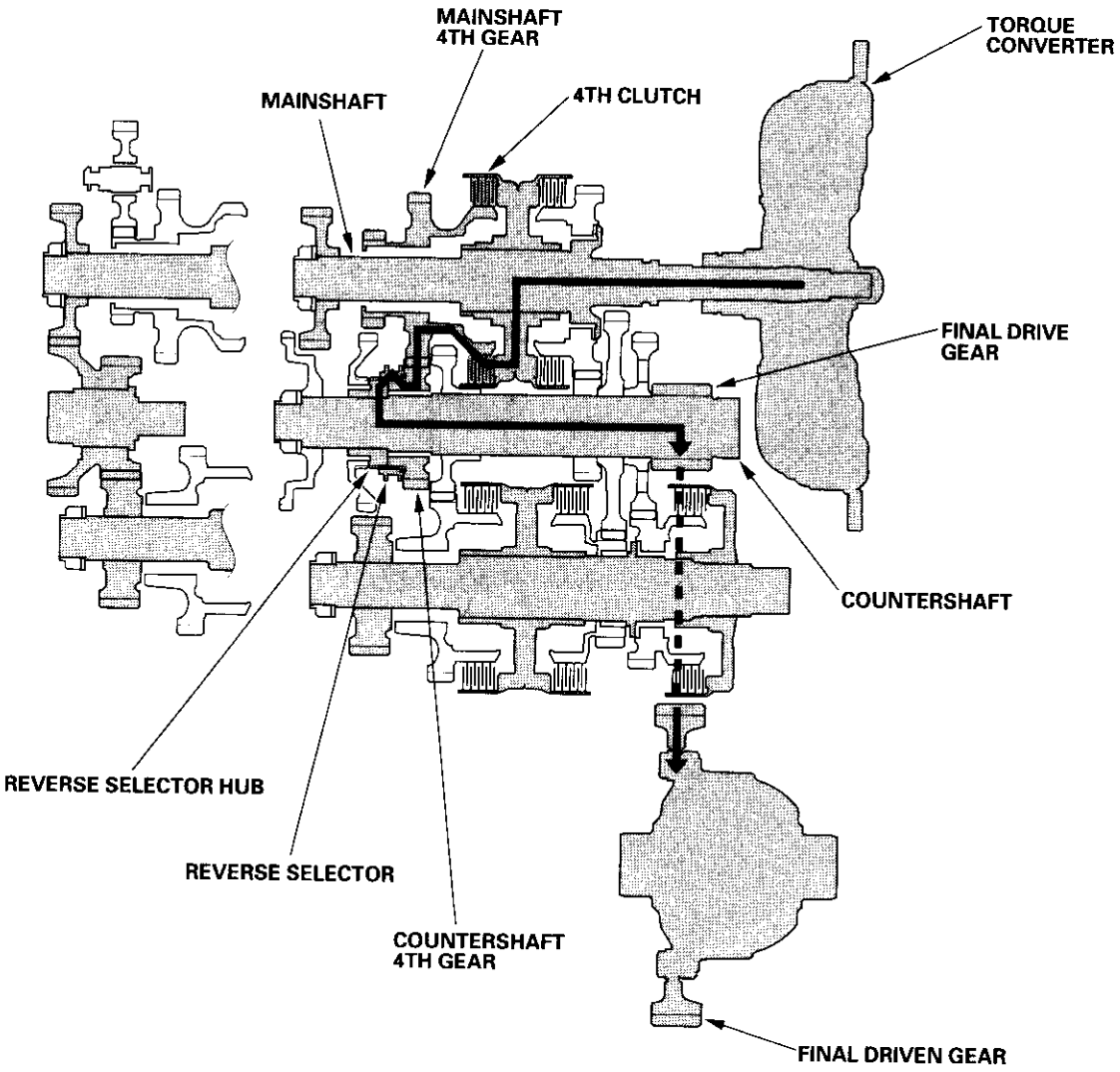
(cont'd)

System Description (cont'd)

Power Flow (cont'd)

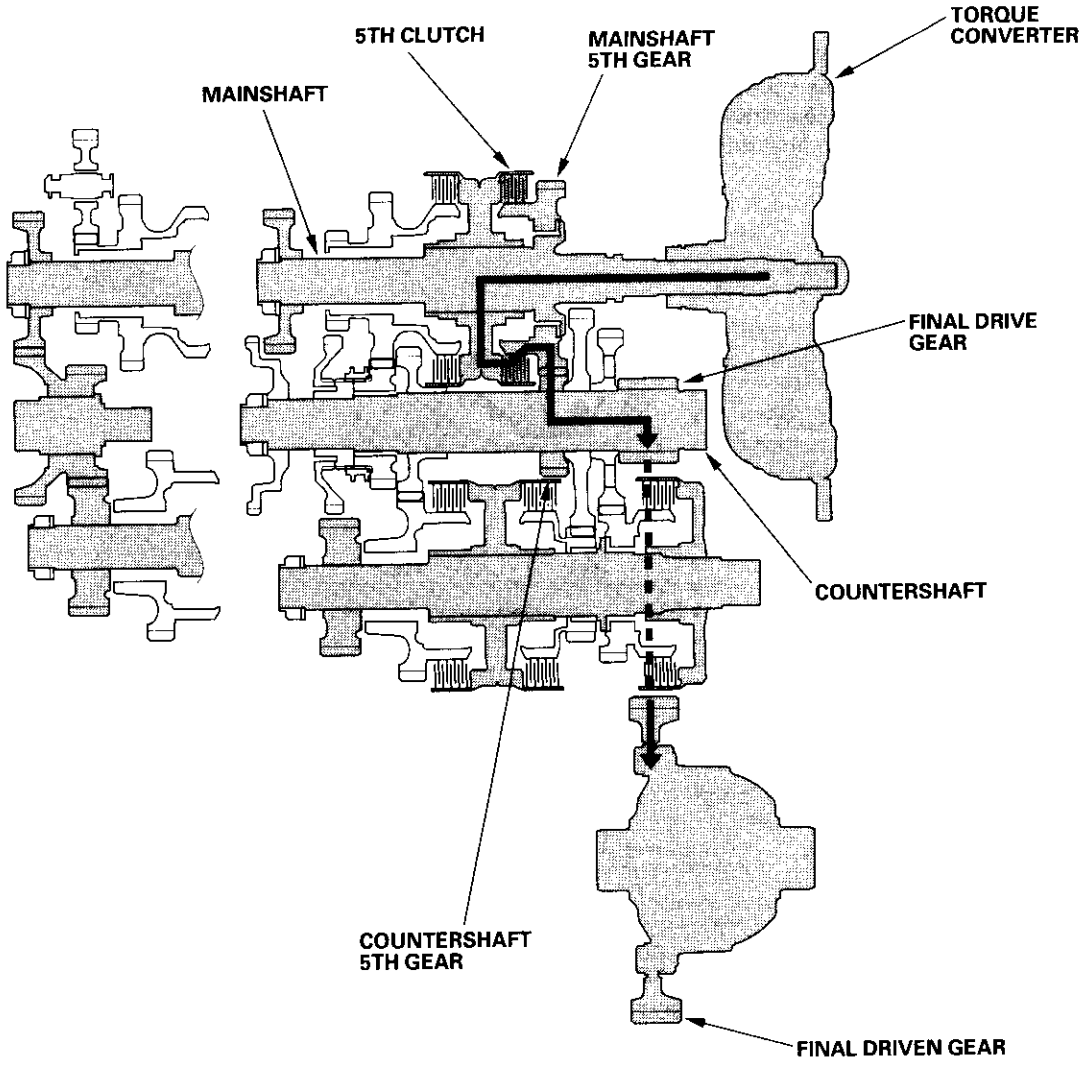
4th gear

- Hydraulic pressure is applied to the servo valve to engage the reverse selector with the countershaft 4th gear and reverse selector hub while the shift lever is in the [D], [D3], [M] position (forward range).
- Hydraulic pressure is also applied to the 4th clutch, then the 4th clutch engages the mainshaft 4th gear with the mainshaft.
- The mainshaft 4th gear drives the countershaft 4th gear and the countershaft.
- Power is transmitted to the final drive gear, which in turn drives the final driven gear.



5th gear

- Hydraulic pressure is applied to the 5th clutch, then the 5th clutch engages the mainshaft 5th gear with the mainshaft.
- The mainshaft 5th gear drives the countershaft 5th gear and the countershaft.
- Power is transmitted to the final drive gear, which in turn drives the final driven gear.



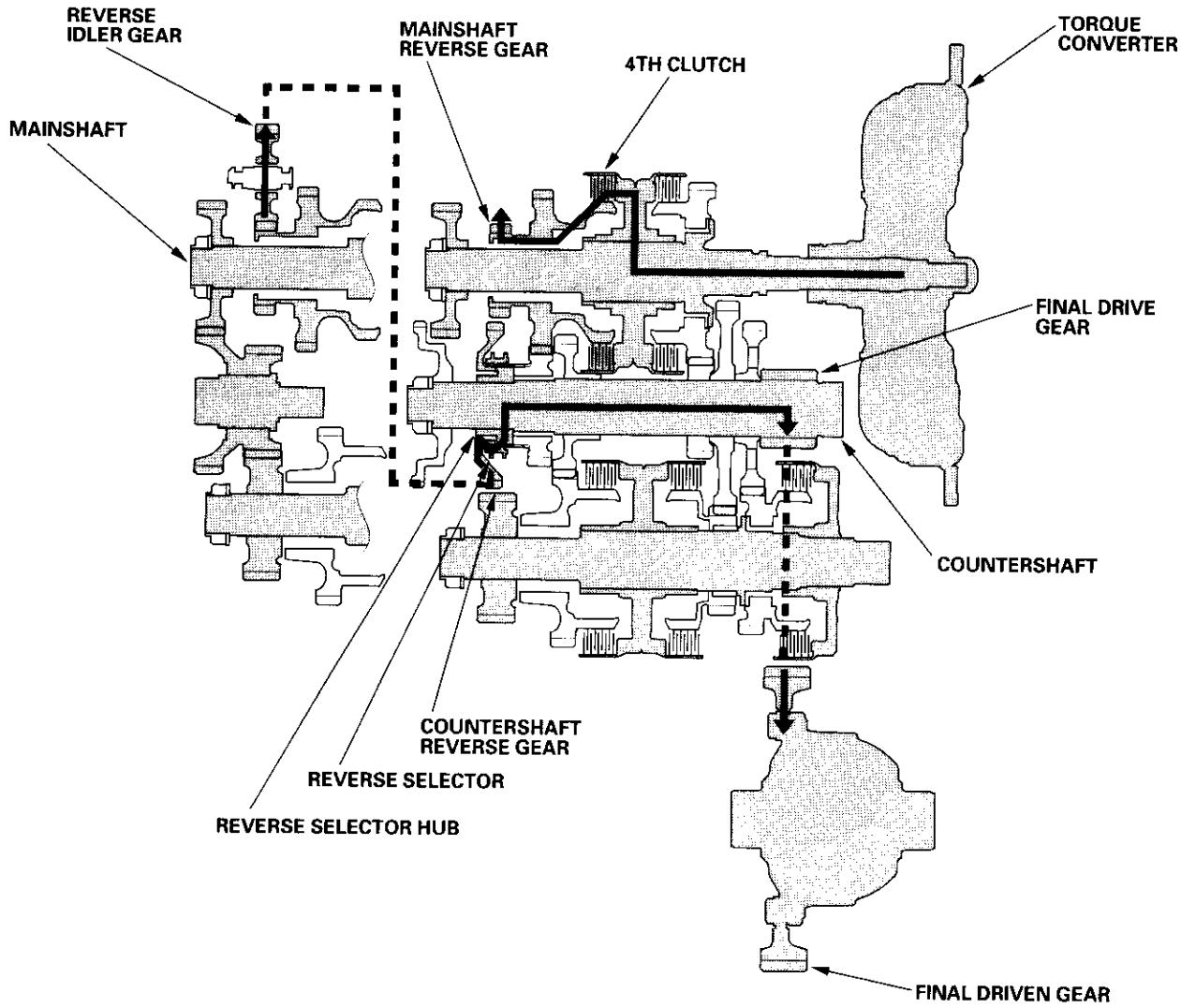
(cont'd)

System Description (cont'd)

Power Flow (cont'd)

[R] Position

- Hydraulic pressure is applied to the servo valve to engage the reverse selector with the countershaft reverse gear and reverse selector hub while the shift lever is in the [R] position.
- Hydraulic pressure is also applied to the 4th clutch, then the 4th clutch engages the mainshaft reverse gear with the mainshaft.
- The mainshaft reverse gear drives the countershaft reverse gear via the reverse idler gear.
- The rotation direction of the countershaft reverse gear is changed by the reverse idler gear.
- The countershaft reverse gear drives the countershaft via the reverse selector, which drives the reverse selector hub.
- Power is transmitted to the final drive gear, which in turn drives the final driven gear.

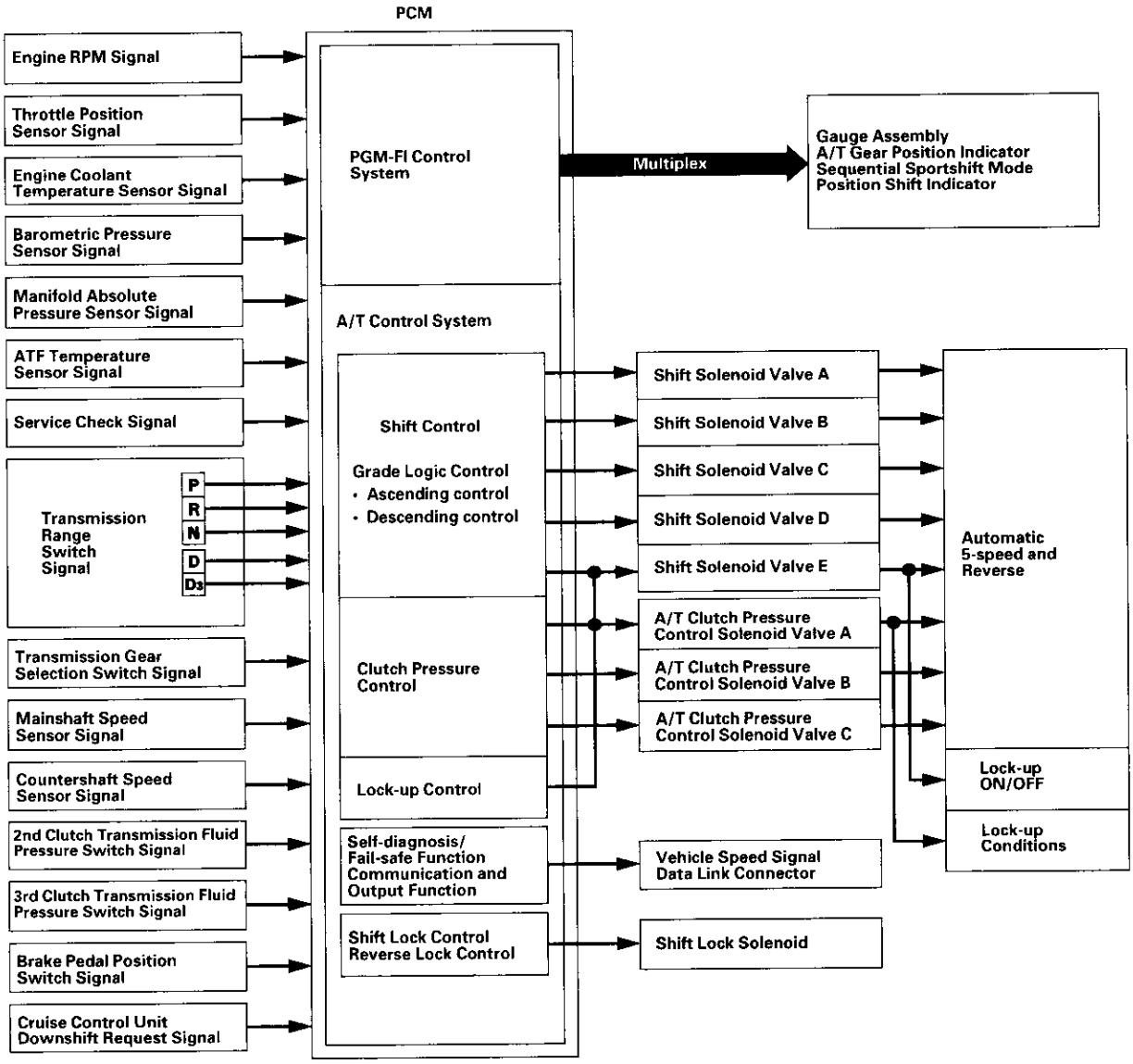


Electronic Control System

Functional Diagram

The electronic control system consists of the powertrain control module (PCM), sensors, and solenoid valves. Shifting and lock-up are electronically controlled for comfortable driving under all conditions.

The PCM recieves input signals from the sensors, switches, and other control units, perform processing data, and outputs signals for the engine control system and A/T control system. The A/T control system includes shift control, grade logic control, clutch pressure control, and lock-up control is stored in the PCM.
The PCM switches the shift solenoid valves and the A/T clutch pressure control solenoid valves to control shifting transmission gears and lock-up torque converter clutch.

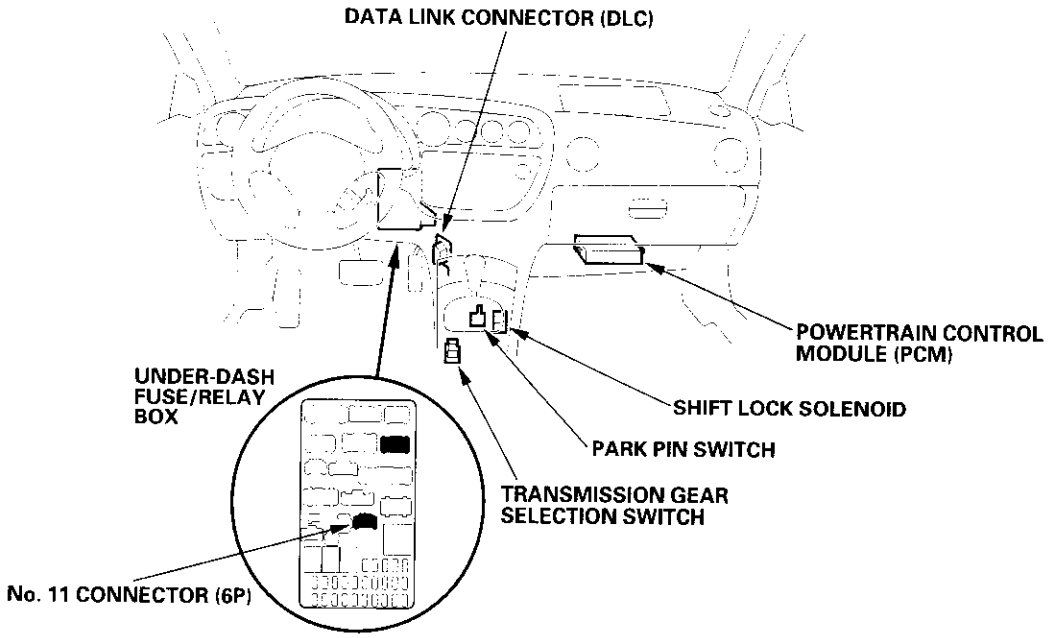


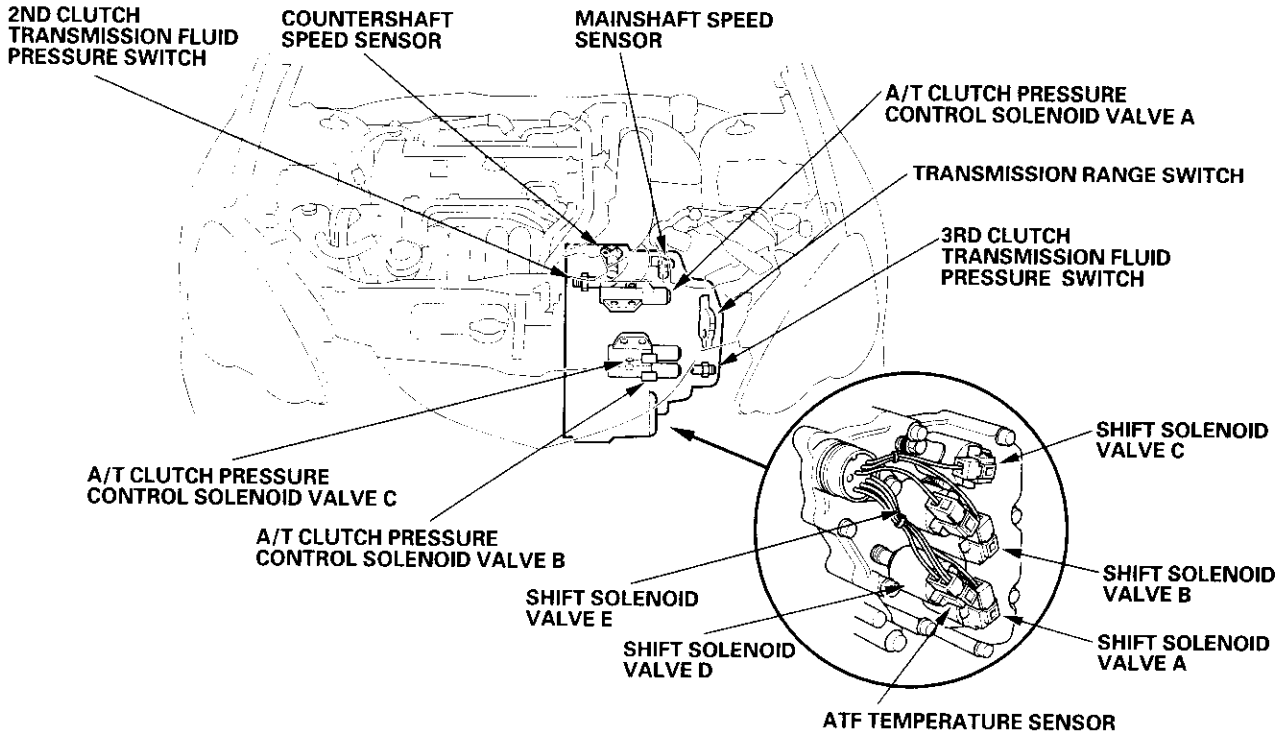
(cont'd)

System Description (cont'd)

Electronic Control System (cont'd)

Electronic Controls Location

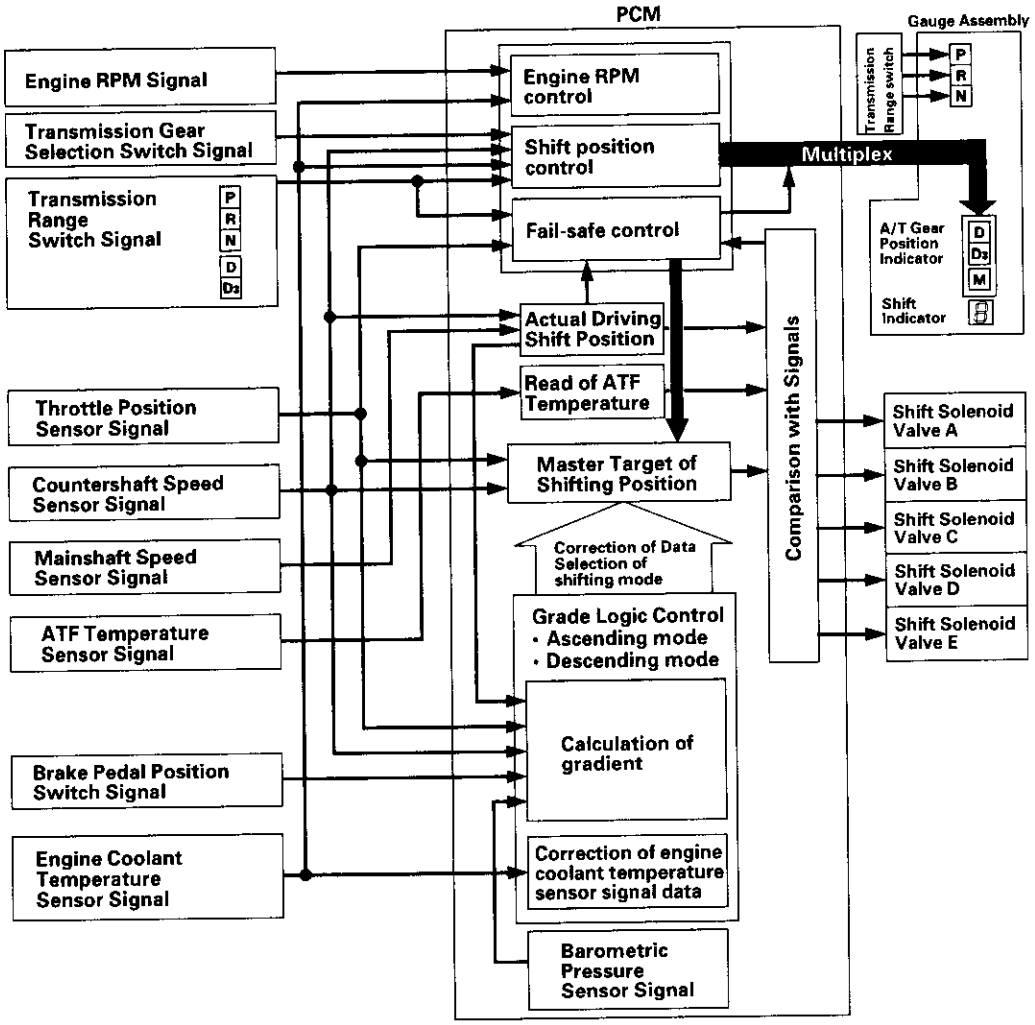




Shift Control

The PCM instantly determines which gear should be selected by various signals sent from sensors and switches, and it actuates the shift solenoid valves A, B, C, D, and E to control shifting.

Also, a grade logic control system has been adopted to control shifting in D and D3 positions. The PCM compares actual driving conditions with memorized driving conditions, based on the input from the throttle position sensor, the engine coolant temperature sensor, the barometric pressure sensor, the brake pedal position switch signal, and the shift lever position signal, to control shifting while the vehicle is ascending or descending a slope.



(cont'd)

System Description (cont'd)

Electronic Control System (cont'd)

The PCM turns the shift solenoid valves A, B, C, D, and E ON and OFF to control shifting transmission gear. The combination of driving signals to shift solenoid valves A, B, C, D, and E are shown in table below.

Position	Gear position	Shift solenoid valves				
		A	B	C	D	E
D, D_3, M	Shifting from N position	OFF	ON	ON	OFF	OFF
	Stays in 1st	ON	ON	ON	OFF	OFF
	Shifting gears between 1st and 2nd	OFF	ON	ON	OFF	OFF
	Stays in 2nd	OFF	ON	OFF	ON	OFF
	Shifting gears between 2nd and 3rd	OFF	ON	ON	ON	OFF
	Stays in 3rd	OFF	OFF	ON	OFF	OFF
D, M	Shifting gears between 3rd and 4th	OFF	OFF	OFF	OFF	OFF
	Stays in 4th	ON	OFF	OFF	OFF	OFF
	Shifting gears between 4th and 5th	ON	OFF	OFF	ON	OFF
	Stays in 5th	ON	OFF	ON	ON	OFF
R	Shifting from P and N position	OFF	ON	OFF	OFF	ON
	Stays in reverse	ON	ON	OFF	OFF	ON
	Reverse inhibit	ON	ON	OFF	OFF	OFF
P	Park	OFF	ON	OFF	OFF	ON
N	Neutral	OFF	ON	ON	OFF	OFF

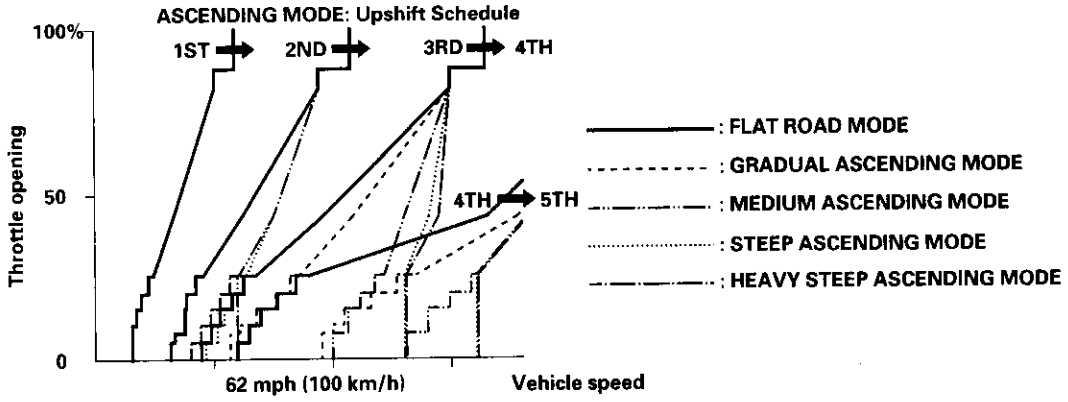
NOTE: For a description of the reverse inhibit mode, refer to page 14-60.

Grade Logic Control

Ascending Control

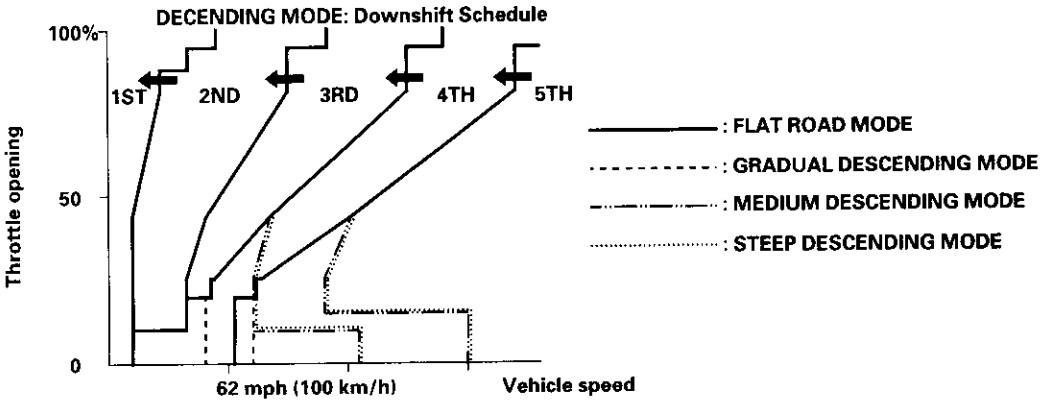
When the PCM determines that the vehicle is climbing a hill in [D] and [D3] positions, the system extends the engagement area of 2nd, 3rd, and 4th gears to prevent the transmission from frequently shifting between 2nd and 3rd gears, between 3rd and 4th gears, and between 4th and 5th gears, so the vehicle can run smooth and have more power when needed.

Shift schedules stored in the PCM between 2nd and 3rd gears, between 3rd and 4th gears, and between 4th and 5th gears, enable it to automatically select the most suitable gear according to the magnitude of a gradient.



Descending Control

When the PCM determines that the vehicle is going down a hill in [D] and [D3] positions, the shift-up speed from 4th to 5th gear, from 3rd to 4th gear, and from 2nd to 3rd gear (when the throttle is closed) becomes faster than the set speed for flat road driving to widen the 4th gear, 3rd gear, and 2nd gear driving area. This, in combination with engine braking from the deceleration lock-up, achieves smooth driving when the vehicle is descending. There are three descending modes with different 4th gear driving areas, 3rd gear driving areas, and 2nd gear driving areas according to the magnitude of a gradient stored in the PCM. When the vehicle is in 5th gear or 4th gear, and you are decelerating when you are applying the brakes on a steep hill, the transmission will downshift to lower gear. When you accelerate, the transmission will then return to a higher gear.



(cont'd)

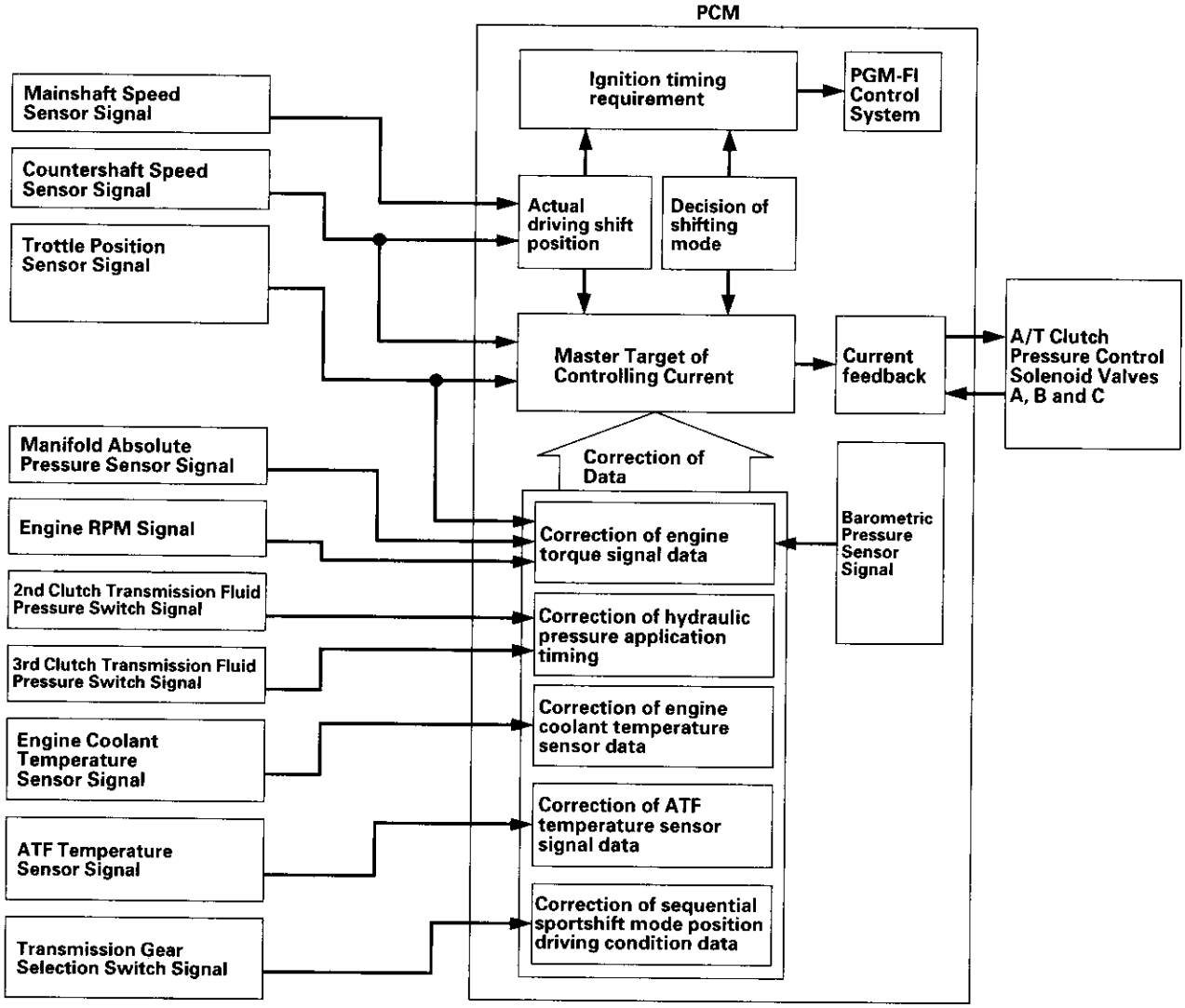
System Description (cont'd)

Electronic Control System (cont'd)

Clutch Pressure Control

The PCM actuates the A/T clutch pressure control solenoid valves A, B and C to control the clutch pressure. When shifting between lower and higher gears, the clutch pressure regulated by the A/T clutch pressure control solenoid valves A, B, and C engages and disengages the clutch smoothly.

The PCM recieves input signals from the various sensors and switches, performs processing data, and outputs a current to the A/T clutch pressure control solenoid valves A, B, and C.

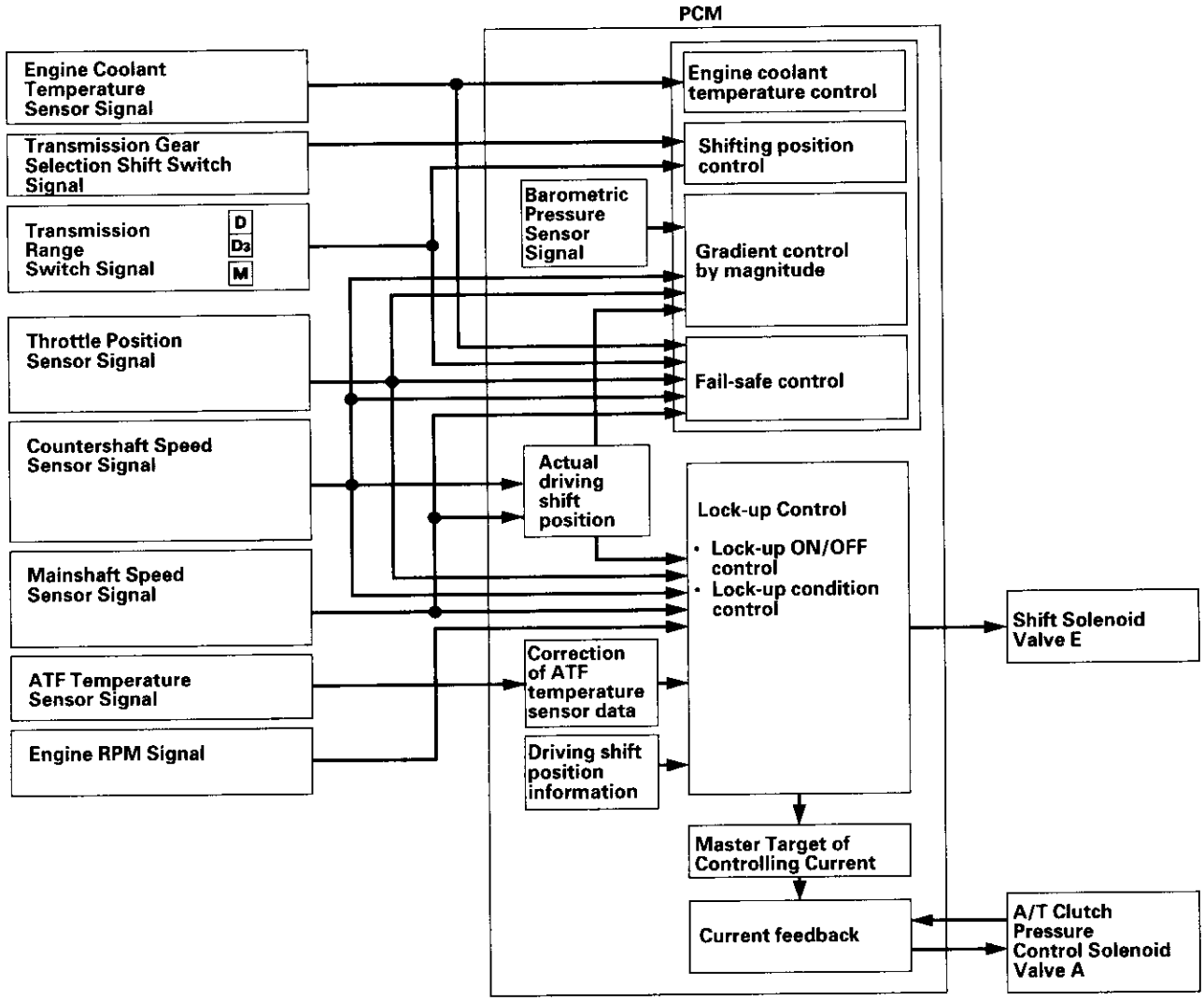


Lock-up Control

The shift solenoid valve E controls the hydraulic pressure to switch the lock-up shift valve and lock-up ON and OFF. The PCM actuates the shift solenoid valve E and the A/T clutch pressure control solenoid valve A to control the torque converter clutch lock-up. When the shift solenoid valve E is turned ON, the condition of the lock-up starts.

The A/T clutch pressure control solenoid valve A regulates and applies the hydraulic pressure to the lock-up control valve to control the amount of the lock-up.

The lock-up mechanism operates in 2nd, 3rd, 4th, and 5th gears in [D] position, 2nd and 3rd gears in [D3] position, and 3rd, 4th, and 5th gears in [M] position.



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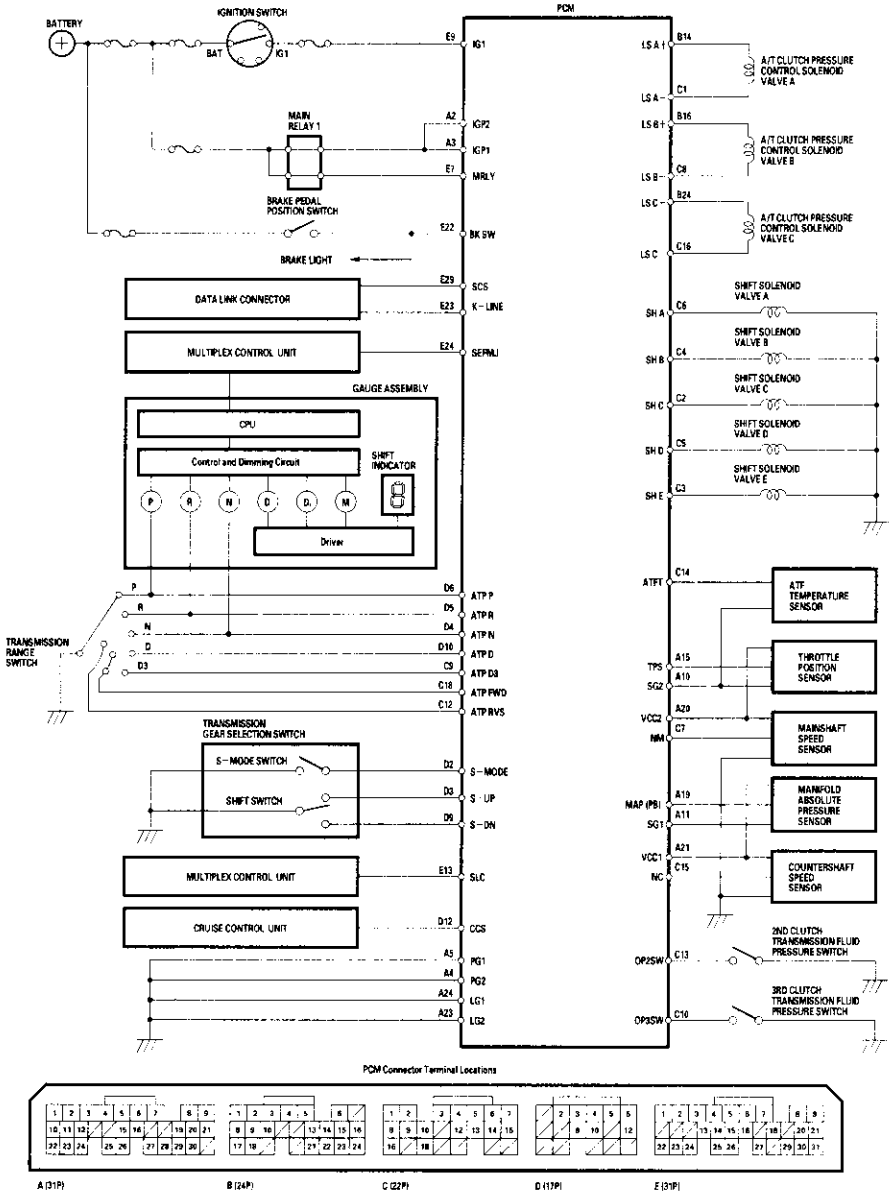
System Description (cont'd)

Electronic Control System (cont'd)

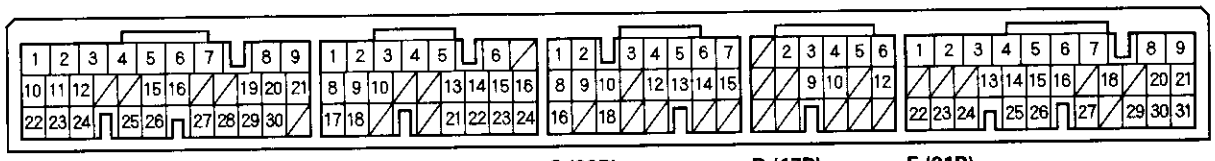
PCM Electrical Connections



PCM Inputs and Outputs

The PCM terminal voltage and measuring conditions are shown for the connector terminals that are related to the A/T control system. The other PCM terminal voltage and measuring conditions are described in section 11.

PCM Connector Terminal Locations



PCM CONNECTOR A (31P)

Terminal Number	Wire Color	Signal	Description	Measuring Conditions/Terminal Voltage
A2	YEL/BLK	IGP2	Power supply circuit from main relay	With ignition switch ON (II): Battery voltage With ignition switch OFF: 0 V
A3	YEL/BLK	IGP1	Power supply circuit from main relay	With ignition switch ON (II): Battery voltage With ignition switch OFF: 0 V
A4	BLK	PG2	Ground	
A5	BLK	PG1	Ground	
A10	GRN/YEL	SG2	Sensor ground	
A11	GRN/WHT	SG1	Sensor ground	
A20	YEL/BLU	VCC2	Power supply circuit for sensors	With ignition switch ON (II): About 5 V With ignition switch OFF: 0 V
A21	YEL/RED	VCC1	Power supply circuit for sensors	With ignition switch ON (II): About 5 V With ignition switch OFF: 0 V
A23	BRN/YEL	LG2	Ground	
A24	BRN/YEL	LG1	Ground	

PCM CONNECTOR B (24P)

Terminal Number	Wire Color	Signal	Description	Measuring Condition/Terminal Voltage
B14	RED/BLK	LS A+	A/T clutch pressure control solenoid valve A power supply positive electrode	With ignition switch ON (II): Pulsing signal
B16	BRN/WHT	LS B+	A/T clutch pressure control solenoid valve B power supply positive electrode	With ignition switch ON (II): Pulsing signal
B24	BLU/YEL	LS C+	A/T clutch pressure control solenoid valve C power supply positive electrode	With ignition switch ON (II): Pulsing signal

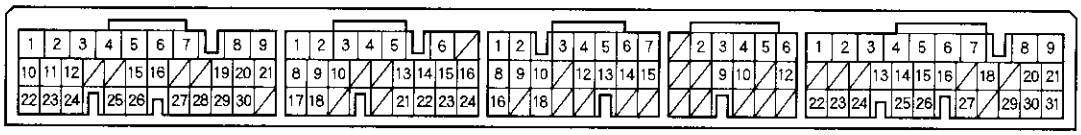
(cont'd)

System Description (cont'd)

Electronic Control System (cont'd)

PCM Inputs and Outputs (cont'd)

PCM Connector Terminal Locations



PCM CONNECTOR C (22P)

Terminal Number	Wire Color	Signal	Description	Measuring Condition/Terminal Voltage
C1	WHT/BLK	LS A−	A/T clutch pressure control solenoid valve A power supply negative electrode	With ignition switch ON (II): 0 V
C2	GRN	SH C	Shift solenoid valve C control	Battery voltage in these positions: • [N] • 1st, 3rd, and 5th gears in [D], [D3], and [M] 0 V in these positions: • [P] and [R] • 2nd and 4th gears in [D], [D3], and [M]
C3	YEL	SH E	Shift solenoid valve E control	Battery voltage in these positions: • [P] and [R] 0 V in these positions: • [N], [D], [D3], and [M]
C4	GRN/WHT	SH B	Shift solenoid valve B control	Battery voltage in these positions: • [P], [R], and [N] • 1st and 2nd gears in [D], [D3], and [M] 0 V in these positions: • 3rd, 4th, and 5th gears in [D], [D3], and [M]
C5	GRN/RED	SH D	Shift solenoid valve D control	Battery voltage in these positions: • 2nd and 5th gears in [D], [D3], and [M] 0 V in these positions: • [P], [R], and [N] • 1st, 3rd, and 4th gears in [D], [D3], and [M]
C6	BLU/BLK	SH A	Shift solenoid valve A control	Battery voltage in these positions: • [R] • 1st, 4th, and 5th gears in [D], [D3], and [M] 0 V in these positions: • [P] and [N] • 2nd and 3rd gears in [D], [D3], and [M]
C7	WHT/RED	NM	Mainshaft speed sensor signal input	With ignition switch ON (II): 0 V or about 5 V With engine at idle in the [N] position: About 2.5 V

PCM CONNECTOR C (22P)

Terminal Number	Wire Color	Signal	Description	Measuring Condition/Terminal Voltage
C8	BLK/RED	LS B−	A/T clutch pressure control solenoid valve B power supply negative electrode	With ignition switch ON (II): 0 V
C9	RED	ATP D3	Transmission range switch D3 position signal input	In the D3 position: 0 V In other than the D3 position: About 5 V
C10	BLU/WHT	OP3SW	3rd clutch transmission fluid pressure switch signal input	With ignition switch ON (II): About 5 V (No 3rd clutch pressure)
C12	RED/WHT	ATP RVS	A/T gear position switch RVS (R position) signal input	In the R position: 0 V In other the R position: About 5 V
C13	BLU/RED	OP2SW	2nd clutch transmission fluid pressure switch signal input	With ignition switch ON (II): About 5 V (No 2nd clutch pressure)
C14	RED/YEL	TATF	ATF temperature sensor signal input	With ignition switch ON (II): 0.2 V − 4.8 V With ignition switch OFF: 0 V
C15	BLU	NC	Countershaft speed sensor signal input	With ignition switch ON (II): 0 V or about 5 V With driving: About 2.5 V
C16	WHT/BLU	LS C−	A/T clutch pressure control solenoid valve C power supply negative electrode	With ignition switch ON (II): 0 V
C18	BLU/YEL	ATP FWD	Transmission range switch D and D3 position signals input	In the D and D3 position: 0 V In other than the D and D3 position: Battery voltage

PCM CONNECTOR D (17P)

Terminal Number	Wire Color	Signal	Description	Measuring Condition/Terminal Voltage
D2	BRN	S-MODE	Transmission gear selection switch signal input	In the M position: 0 V In other than the M position: About 5 V
D3	WHT/BLU	S-UP	Transmission gear selection switch upshift switch signal input	In the M position: • Shift lever pushed toward upshift position (marked with +): 0 V • Shift lever released in neutral position: About 5 V
D4	BLK/RED	ATP N	Transmission range switch N position signal input	In the N position: 0 V In other than the N position: Battery voltage
D5	WHT	ATP R	Transmission range switch R position signal input	In the R position: 0 V In other than the R position: Battery voltage
D6	BLU/BLK	ATP P	Transmission range switch P position signal input	In the P position: 0 V In other than the P position: About 5 V
D9	BRN/WHT	S-DN	Transmission gear selection switch downshift switch signal input	In the M position: • Shift lever pushed toward downshift position (marked with −): 0 V • Shift lever released in neutral position: About 5 V
D10	RED	ATP D	Transmission range switch D position signal input	In the D position: 0 V In other than the D position: About 5 V
D12	BLU/ORN	CCS	Downshift signal input from cruise control unit	When cruise control is used: Pulsing signal

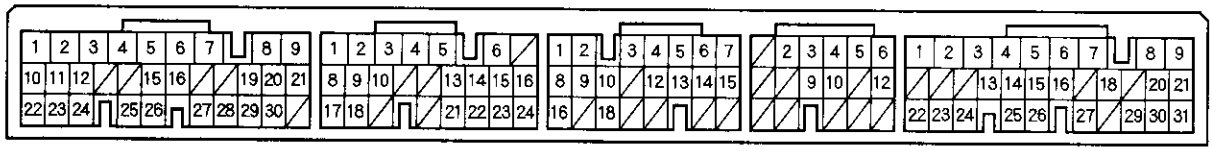
(cont'd)

System Description (cont'd)

Electronic Control System (cont'd)

PCM Inputs and Outputs (cont'd)

PCM Connector Terminal Locations

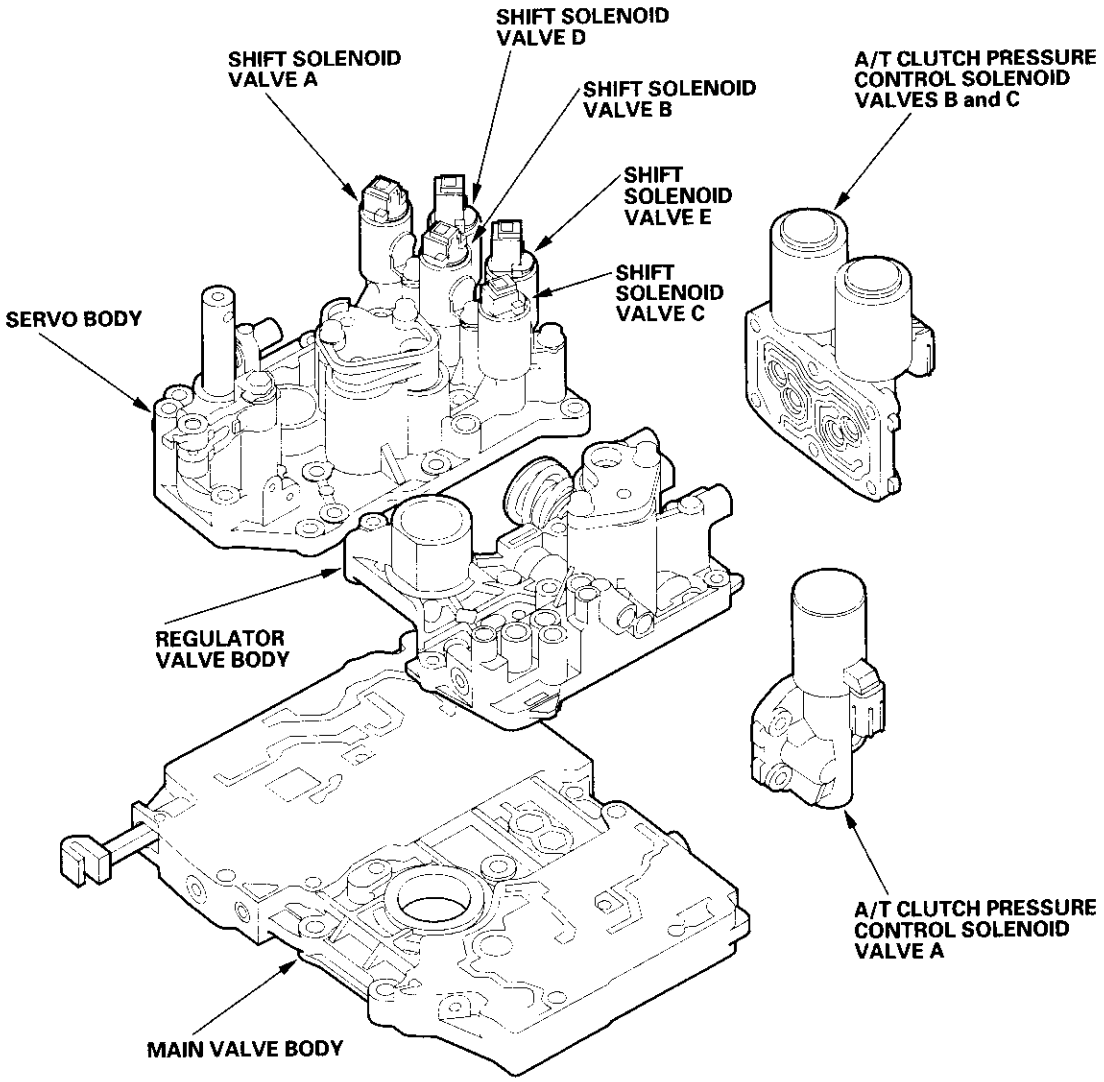


PCM CONNECTOR E (20P)

Terminal Number	Wire Color	Signal	Description	Measuring Conditions/Terminal Voltage
E7	RED/YEL	MRLY	Power supply circuit from main relay 1	With ignition switch ON (II): 0 V With ignition switch OFF: Battery voltage
E9	BLK/YEL	IG1	Power supply circuit for solenoid valves	With ignition switch ON (II): Battery voltage With ignition switch OFF: 0 V
E13	WHT/BLU	SLC	Shift lock control	With ignition switch ON (II), brake pedal pressed, and accelerator pedal released: About 5 V
E22	WHT/BLK	BK SW	Brake pedal position switch signal input	Brake pedal pressed: Battery voltage Brake pedal released: 0 V
E23	LT BLU	K-LINE	Communication line PCM-to-DLC	With ignition switch ON (II): Battery voltage
E24	YEL	SEFMJ	Multiplex line PCM-to-gauge assembly	With ignition switch ON (II): About 5 V
E29	BRN	SCS	SCS terminal signal input	With ignition switch ON (II) • SCS terminal on the DLC open: About 5 V or battery voltage • SCS terminal on the DLC short-circuited to ground: 0 V

Hydraulic Controls

The valve body includes the main valve body, the regulator valve body, and the servo body. The ATF pump is driven by splines on the left end of the torque converter which is attached to the engine. Fluid flows through the regulator valve to maintain specified pressure through the main valve body to the manual valve, directing pressure to the shift valves and to each of the clutches via the solenoid valves. The shift solenoid valves A, B, C, D, and E are bolted on the servo body. The A/T clutch pressure control solenoid valves A, B, and C are mounted on the outside of the transmission housing.



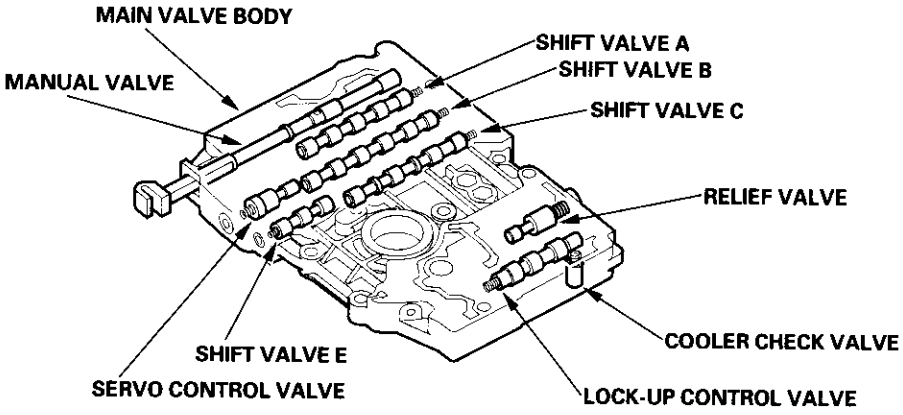
(cont'd)

System Description (cont'd)

Hydraulic Controls (cont'd)

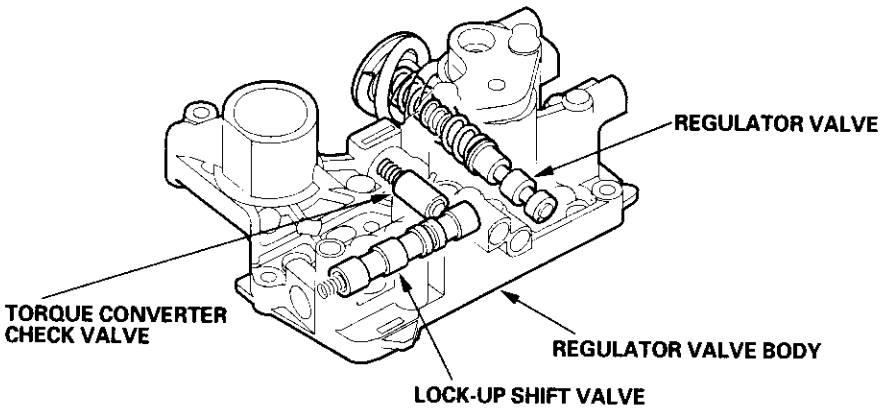
Main Valve Body

The main valve body contains the manual valve, the shift valves A, B, C, and E, the relief valve, the lock-up control valve, the cooler check valve, the servo control valve, and the ATF pump gears. The primary function of the main valve body is to switch fluid pressure on and off and to control hydraulic pressure going to the hydraulic control system.



Regulator Valve Body

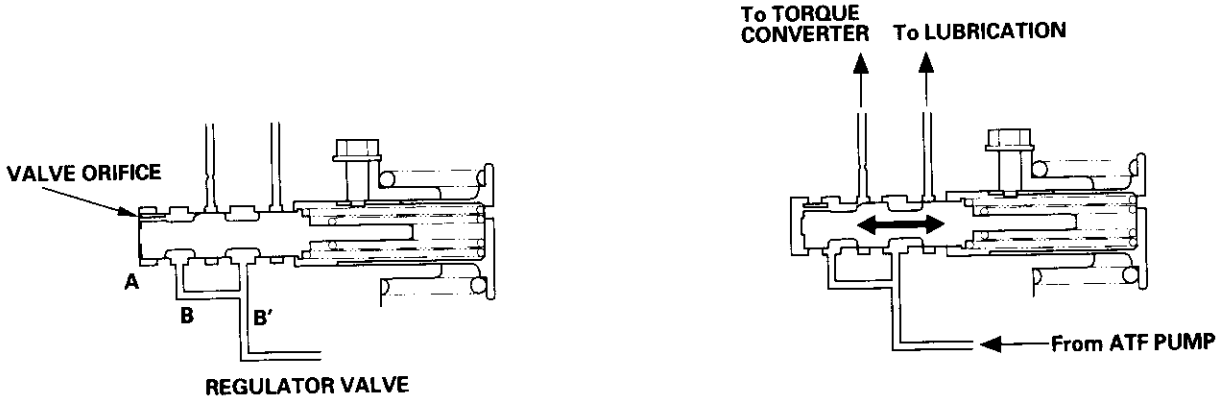
The regulator valve body contains the regulator valve, the torque converter check valve, lock-up shift valve, and the 1st and 3rd accumulators.



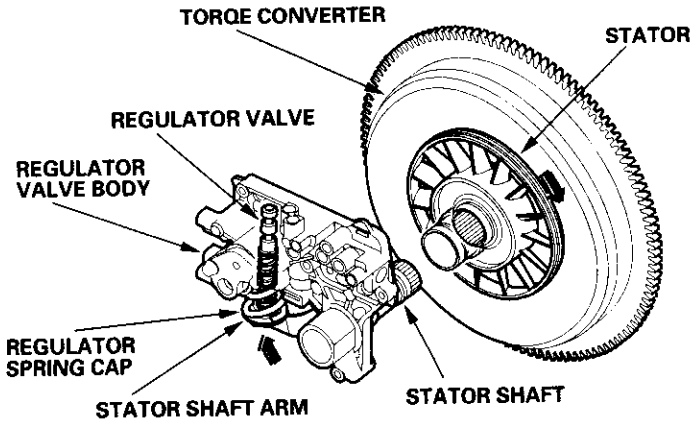
Regulator Valve

The regulator valve maintains a constant hydraulic pressure from the ATF pump to the hydraulic control system, while also furnishing fluid to the lubrication system and torque converter. The fluid from the ATF pump flows through B and B'. Fluid entering from B flows through the valve orifice to the A cavity. This pressure of the A cavity pushes the regulator valve to the right side, and this movement of the regulator valve uncovers the fluid port to the torque converter and the relief valve. The fluid flows out to the torque converter and the relief valve, and the regulator valve moves to the left side. According to the level of the hydraulic pressure through B, the position of the regulator valve changes, and the amount of fluid from B' through torque converter also changes. This operation is continued, maintaining the line pressure.

NOTE: When used, "left" or "right" indicates direction on the illustration below.



Increases in hydraulic pressure according to torque are performed by the regulator valve using stator torque reaction. The stator shaft is splined with the stator in the torque converter, and its arm end contacts the regulator spring cap. When the vehicle is accelerating or climbing (Torque Converter Range), stator torque reaction acts on the stator shaft, and the stator arm pushes the regulator spring cap in the direction of the arrow in proportion to the reaction. The stator reaction spring compresses, and the regulator valve moves to increase the line pressure which is regulated by the regulator valve. The line pressure reaches its maximum when the stator torque reaction reaches its maximum.

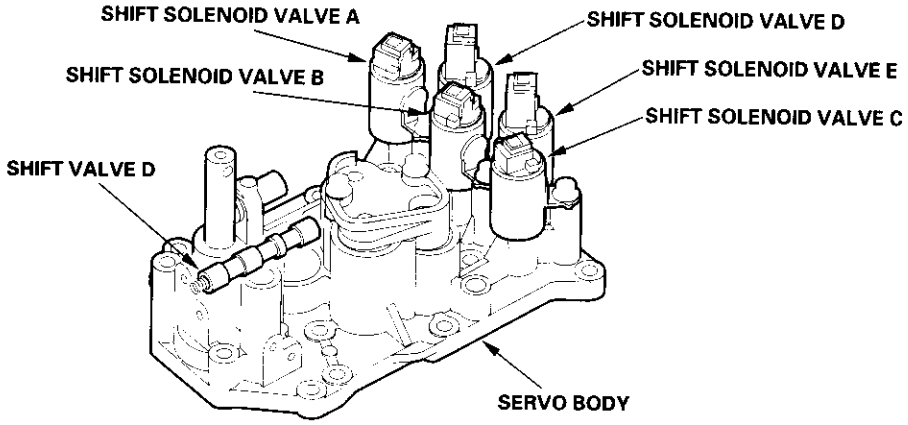


(cont'd)

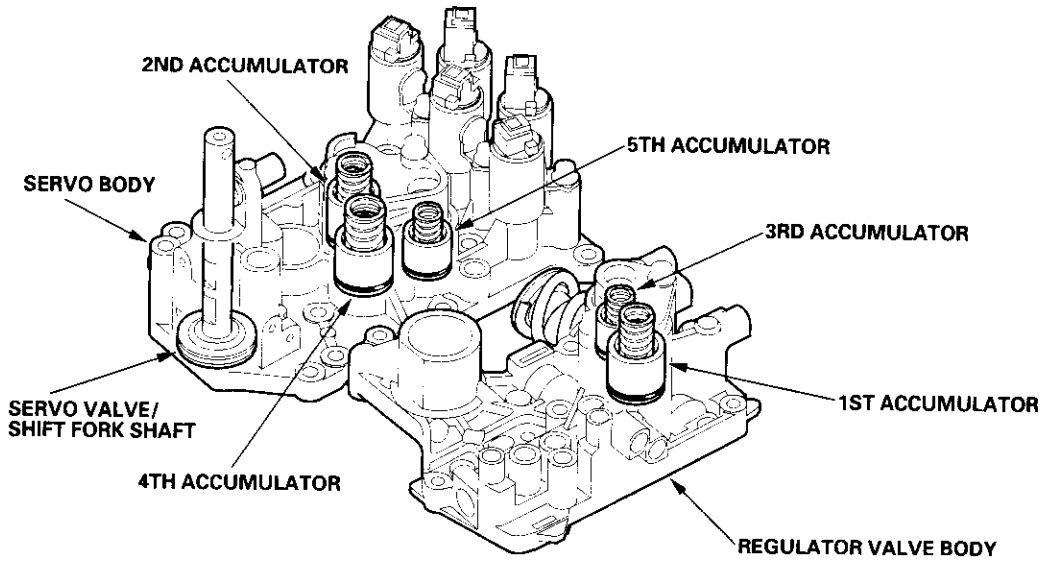
System Description (cont'd)

Hydraulic Controls (cont'd)

Servo Body
The servo body contains the servo valve, the shift valve D, accumulators for 2nd, 4th, and 5th, and shift solenoid valves for A, B, C, D, and E.



Accumulator
The accumulators are located in the regulator valve body and the servo body. The regulator valve body contains the 1st and 3rd accumulators, and the servo body contains the 2nd, 4th, and 5th accumulators.



Hydraulic Flow

Distribution of Hydraulic Pressure

As the engine turns, the ATF pump starts to operate. Automatic transmission fluid (ATF) is drawn through the ATF strainer (filter) and discharged into the hydraulic circuit. Then, ATF flowing from the ATF pump becomes line pressure that's regulated by the regulator valve. Torque converter pressure from the regulator valve enters the torque converter through the lock-up shift valve, and it is discharged from the torque converter. The torque converter check valve prevents torque converter pressure from rising.

The PCM controls the shift solenoid valves ON and OFF. The shift valve intercepts line pressure from the ATF pump via the manual valve when the shift solenoid valve is OFF. When the shift solenoid valve is turned ON, line pressure changes to shift solenoid valve pressure at the shift solenoid valve, then the solenoid valve pressure flows to the shift valve. Applying shift solenoid pressure to the shift valves moves the position of the shift valve, and switches the port of the hydraulic circuit. The PCM also controls A/T clutch pressure control solenoid valves A, B, and C. The A/T clutch pressure control solenoid valves regulate hydraulic pressure, and apply the pressure to the clutches for engaging smoothly. The clutches are received optimum clutch pressure which is regulated by the A/T clutch pressure control solenoid valves for comfortable driving and shifting under all conditions.

Hydraulic pressure at the port is as follows:

PORT NO.	DESCRIPTION OF PRESSURE	PORT NO.	DESCRIPTION OF PRESSURE
1	LINE	SB	SHIFT SOLENOID VALVE B
3	LINE	SC	SHIFT SOLENOID VALVE C
3'	LINE	SD	SHIFT SOLENOID VALVE D
4	LINE	SE	SHIFT SOLENOID VALVE E
4'	LINE	10	1ST CLUTCH
4''	LINE	20	2ND CLUTCH
7	LINE	30	3RD CLUTCH
1A	LINE or A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A	40	4TH CLUTCH
1B	LINE	50	5TH CLUTCH
3A	LINE	55	A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A
3B	LINE	55'	A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A
3C	LINE	56	A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B
5A	LINE	57	A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C
5B	LINE	90	TORQUE CONVERTER
5C	LINE	91	TORQUE CONVERTER
5D	LINE	92	TORQUE CONVERTER
5E	LINE or A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B	93	ATF COOLER
5F	LINE or A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A or B	94	TORQUE CONVERTER
5G	A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B	95	LUBRICATION
5H	A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C	96	TORQUE CONVERTER
5J	A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C	97	TORQUE CONVERTER
5K	A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C	99	SUCTION
5L	A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C	X	DRAIN
5N	A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C	HX	HIGH POSITION DRAIN
SA	SHIFT SOLENOID VALVE A	AX	AIR DRAIN

(cont'd)

System Description (cont'd)

Hydraulic Flow (cont'd)

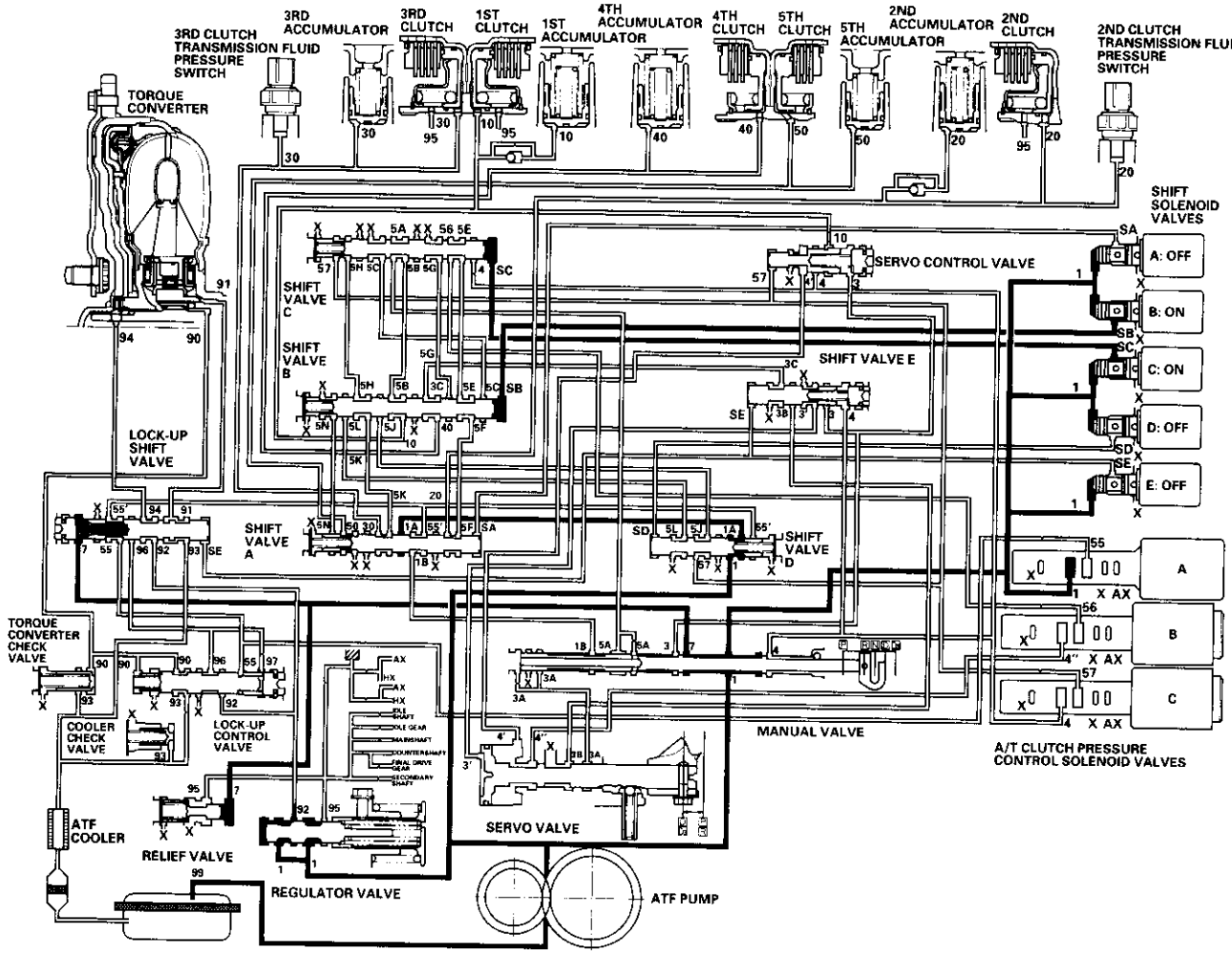
[N] Position

The PCM controls the shift solenoid valves. The conditions of the shift solenoid valves and positions of the shift valves are as follows:

- Shift solenoid valve A: OFF Shift valve A keeps in right side
- Shift solenoid valve B: ON Shift valve B moves to left side
- Shift solenoid valve C: ON Shift valve C moves to left side
- Shift solenoid valve D: OFF Shift valve D keeps in left side
- Shift solenoid valve E: OFF Shift valve E keeps in left side

Line pressure (1) flows to the shift solenoid valves and the A/T clutch pressure control solenoid valve A, and changes to A/T clutch pressure control solenoid valve A pressure (55) at the A/T clutch pressure control solenoid valve A. A/T clutch pressure control solenoid valve A pressure (55) becomes line pressure (1B) at the shift valve A, and stops at the manual valve. Under this condition, hydraulic pressure is not applied to the clutches.

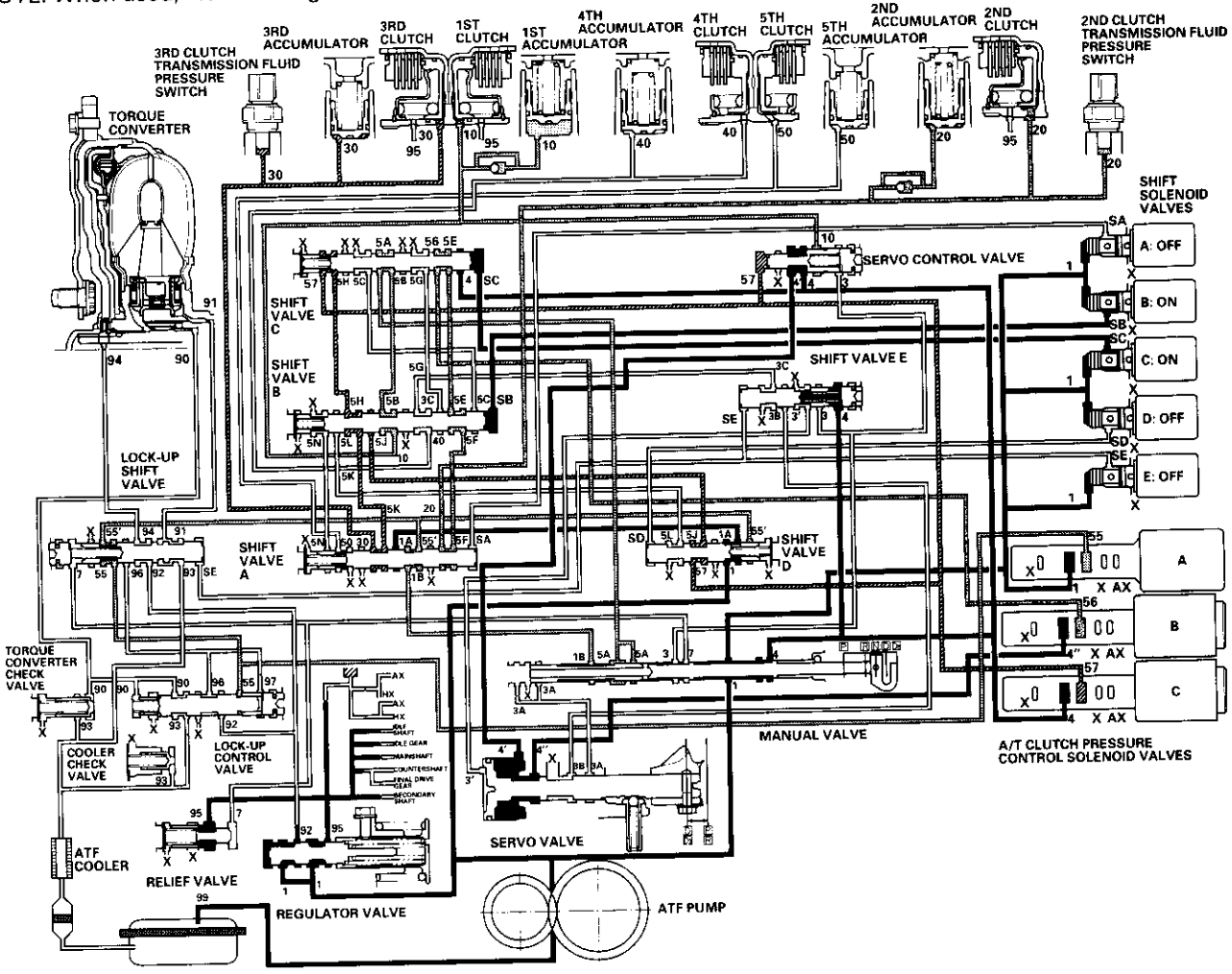
NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.



[D] Position: 1st gear shifting from [N] position

Shift solenoid valves remain the same as in the [N] position, when shifting to the [D] position from [N]. The manual valve is moved to the [D] position, and switches the port of line pressure (4) leading to the A/T clutch pressure control solenoid valves. Hydraulic pressure line to the 1st clutch from the A/T clutch pressure control solenoid valve A is created as shift solenoid valve A is OFF, B and C keep ON. A/T clutch pressure control solenoid valve A pressure (55) changes to 1st clutch pressure (10) at the shift valve B, and flows to the 1st clutch. The 1st clutch is engaged gently when shifting to the [D] position from [N].

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.



(cont'd)

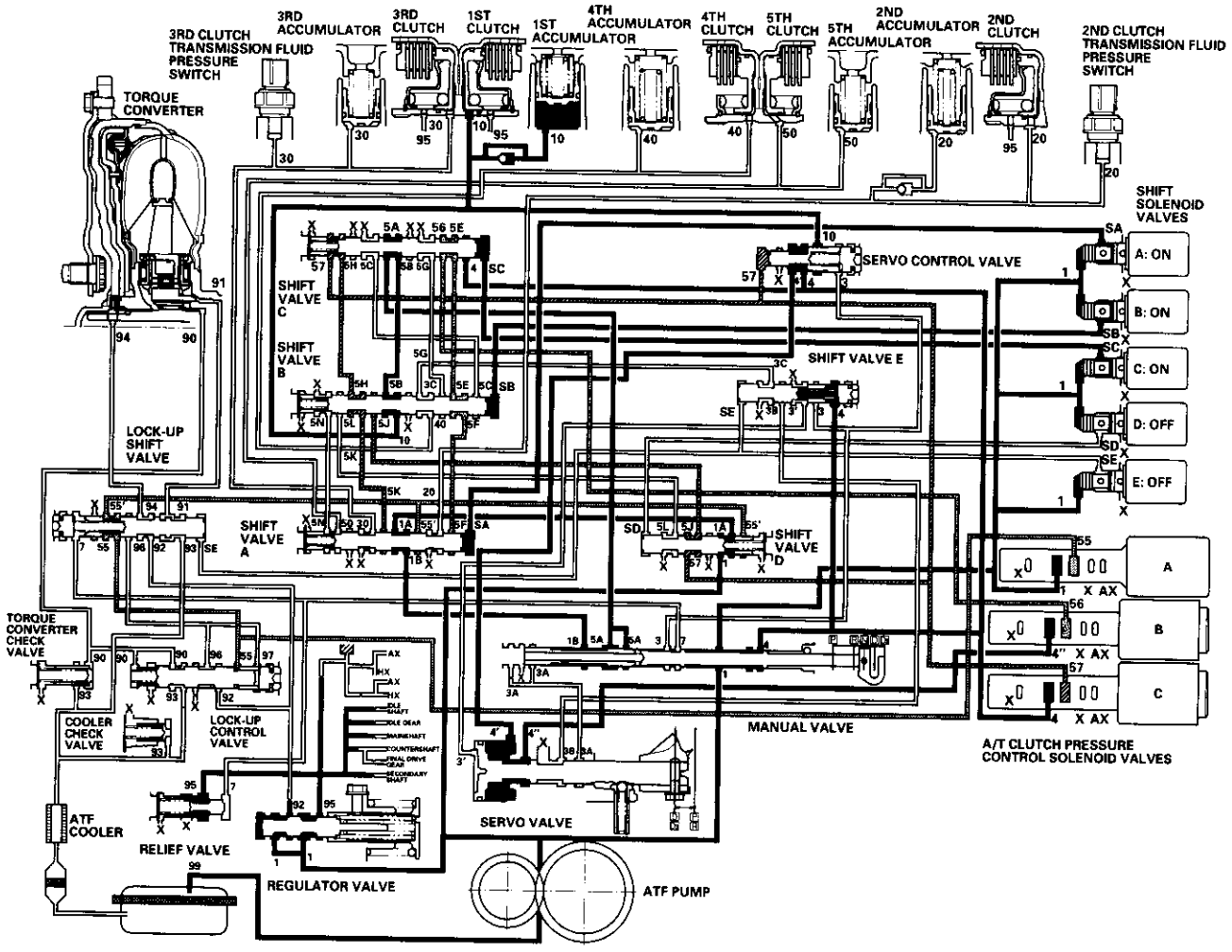
System Description (cont'd)

Hydraulic Flow (cont'd)

[D] Position: Driving in 1st gear
The PCM turns shift solenoid valves A ON, and keeps B and C ON,and D and E OFF. Shift solenoid valve A pressure (SA) is applied to the right side of the shift valve A. The shift valve A is moved to the left side to uncover the port of line pressure leading to the 1st clutch, and to cover the ports of A/T clutch pressure control solenoid valve pressures.

Fluid flows to the 1st clutch by way of:
Line pressure (1) → Shift valve D—Line pressure (1A) → Shift valve A—Line pressure (1B) → Manual valve—Line pressure (5A) → Shift valve C—Line pressure (5B) → Shift valve B—1st clutch pressure (10) → 1st clutch
The 1st clutch pressure (10) is applied to the 1st clutch, and the 1st clutch is engaged securely.

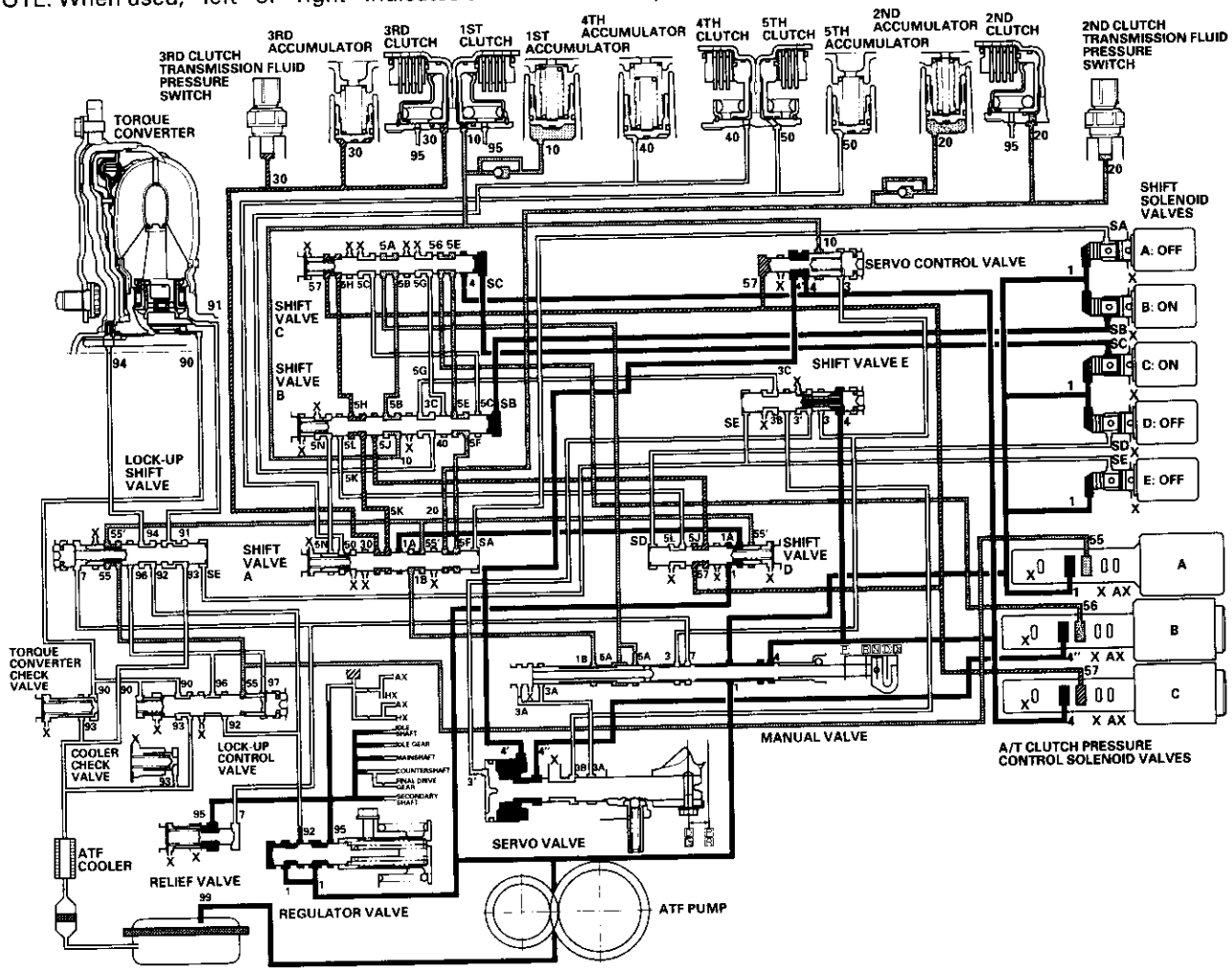
NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.



[D] Position: Shifting between 1st gear and 2nd gear

As the speed of the vehicle reaches the prescribed value, the PCM turns shift solenoid valve A OFF, and keeps B and C ON, and D and E OFF. Shift solenoid valve A pressure (SA) in the right side of the shift valve A is released. The shift valve A is moved to the right side to uncover the ports of A/T clutch pressure control solenoid valves pressures leading to the 1st and 2nd clutches. The PCM controls the A/T clutch pressure control solenoid valves to regulate hydraulic pressure. A/T clutch pressure control solenoid valve A pressure (55) changes to 1st clutch pressure (10) at the shift valve B, and A/T clutch pressure control solenoid valve B pressure (56) changes to 2nd clutch pressure (20) at the shift valve A. The 1st and 2nd clutches are engaged gently.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.



(cont'd)

System Description (cont'd)

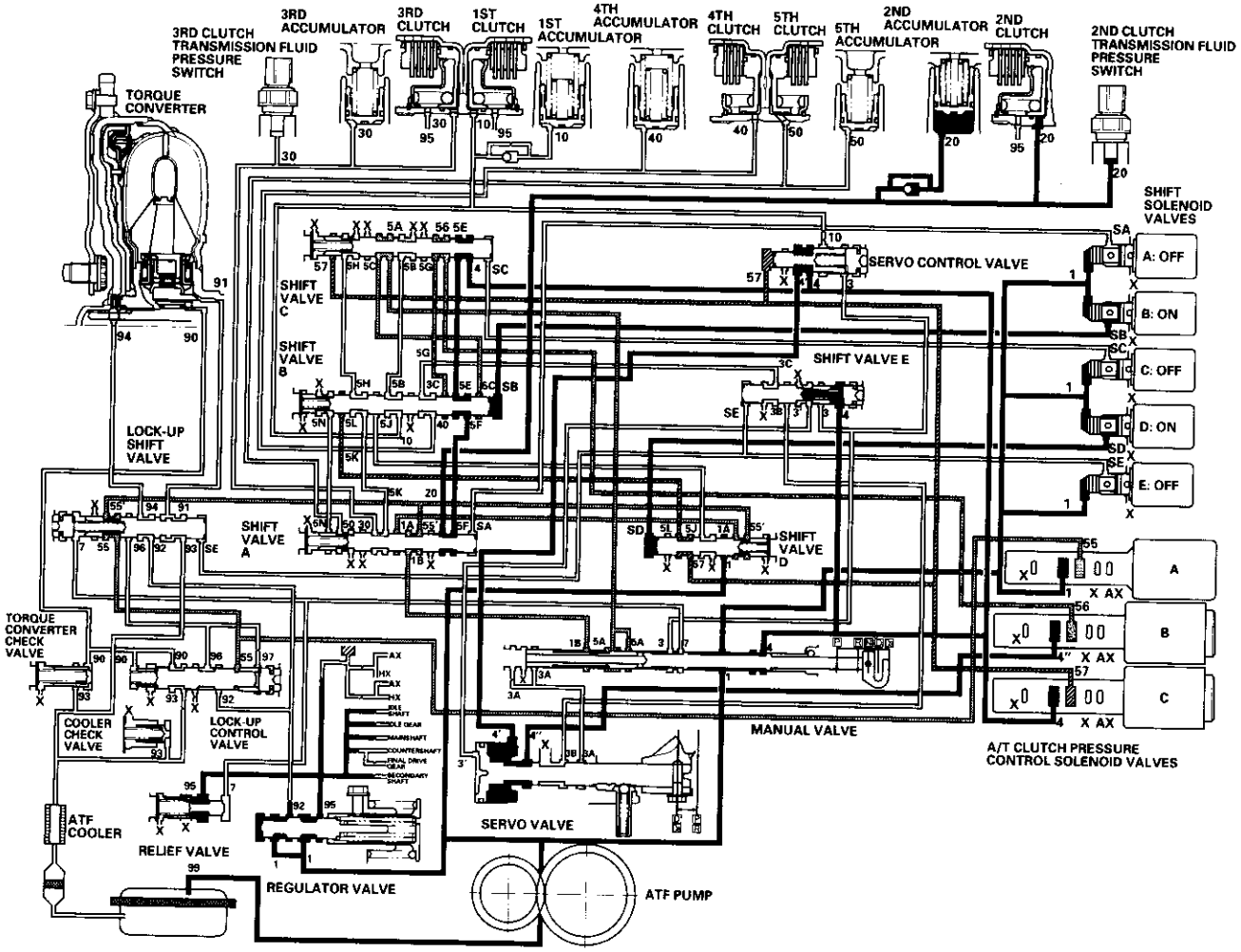
Hydraulic Flow (cont'd)

[D] Position: Driving in 2nd gear

The PCM turns shift solenoid valves C OFF, D ON, and keeps A and E OFF, and B ON. Shift solenoid valve C pressure (SC) in the right side of the shift valve C is released. The shift valve C is moved to the right side to switch the ports. This movement covers A/T clutch pressure control solenoid valves pressures to stop at the shift valves C and A, and uncover the port of line pressure leading to the 2nd clutch.

Fluid flows to 2nd clutch by way of:
Line pressure (1) → Manual valve – Line pressure (4) → Shift valve C – Line pressure (5E) → Shift valve B – Line pressure (5F) → Shift valve A – 2nd clutch pressure (20) → 2nd clutch
The 2nd clutch pressure (20) is applied to the 2nd clutch, and the 2nd clutch is engaged securely.

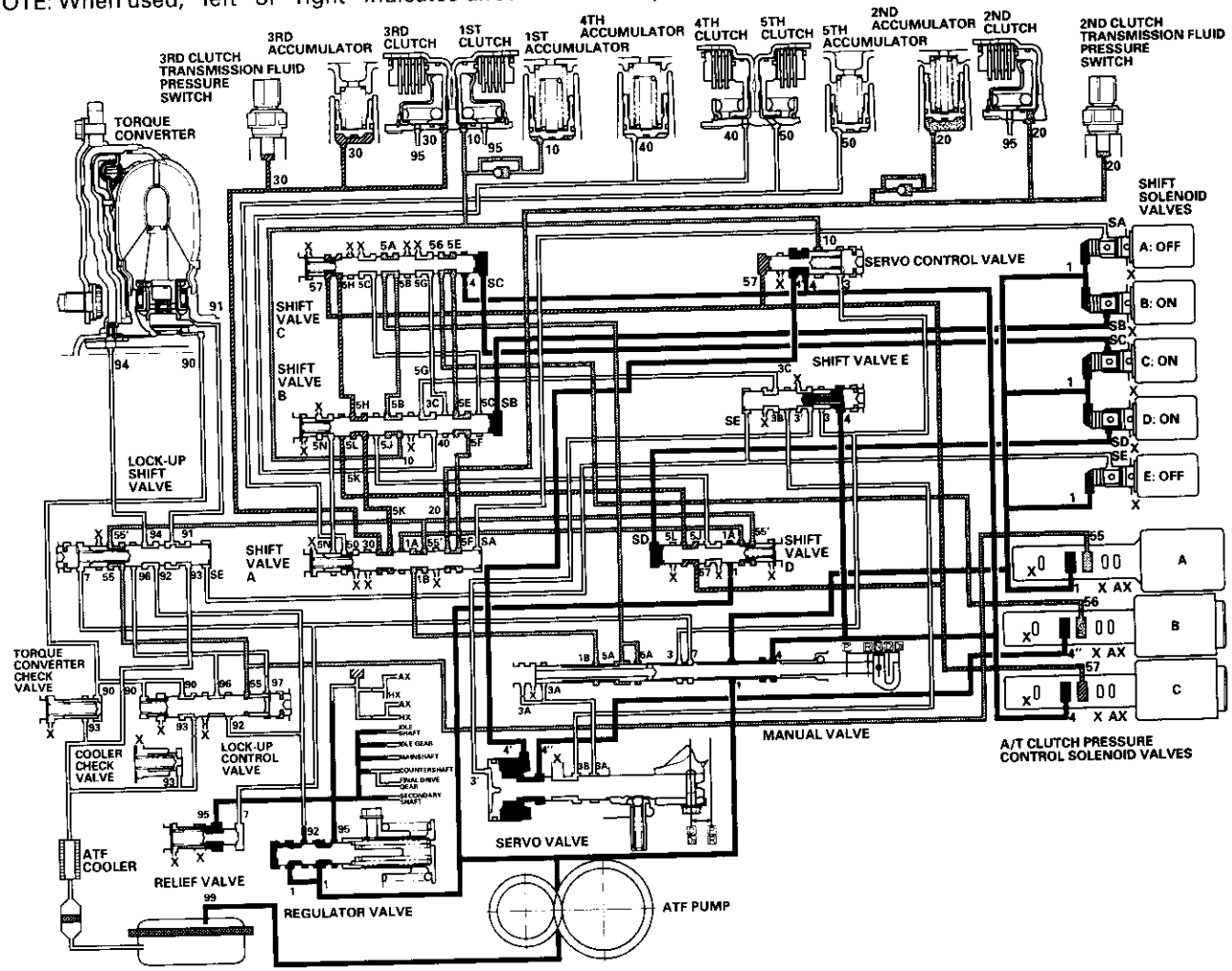
NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.



D Position: Shifting between 2nd gear and 3rd gear

As the speed of the vehicle reaches the prescribed value, the PCM turns shift solenoid valves C ON, and keeps A and E OFF, and B and D ON. Shift solenoid valve C pressure (SC) is applied to the right side of the shift valve C. The shift valve C is moved to the left side to uncover the ports of A/T clutch pressure control solenoid valves pressures leading to the 2nd and 3rd clutches. The PCM controls the A/T clutch pressure control solenoid valves to regulate hydraulic pressure. A/T clutch pressure control solenoid valve B pressure (56) changes to 2nd clutch pressure (20) at the shift valve A, and A/T clutch pressure control solenoid valve C pressure (57) changes to 3rd clutch pressure (30) at the shift valve A. The 2nd and 3rd clutches are engaged gently.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.



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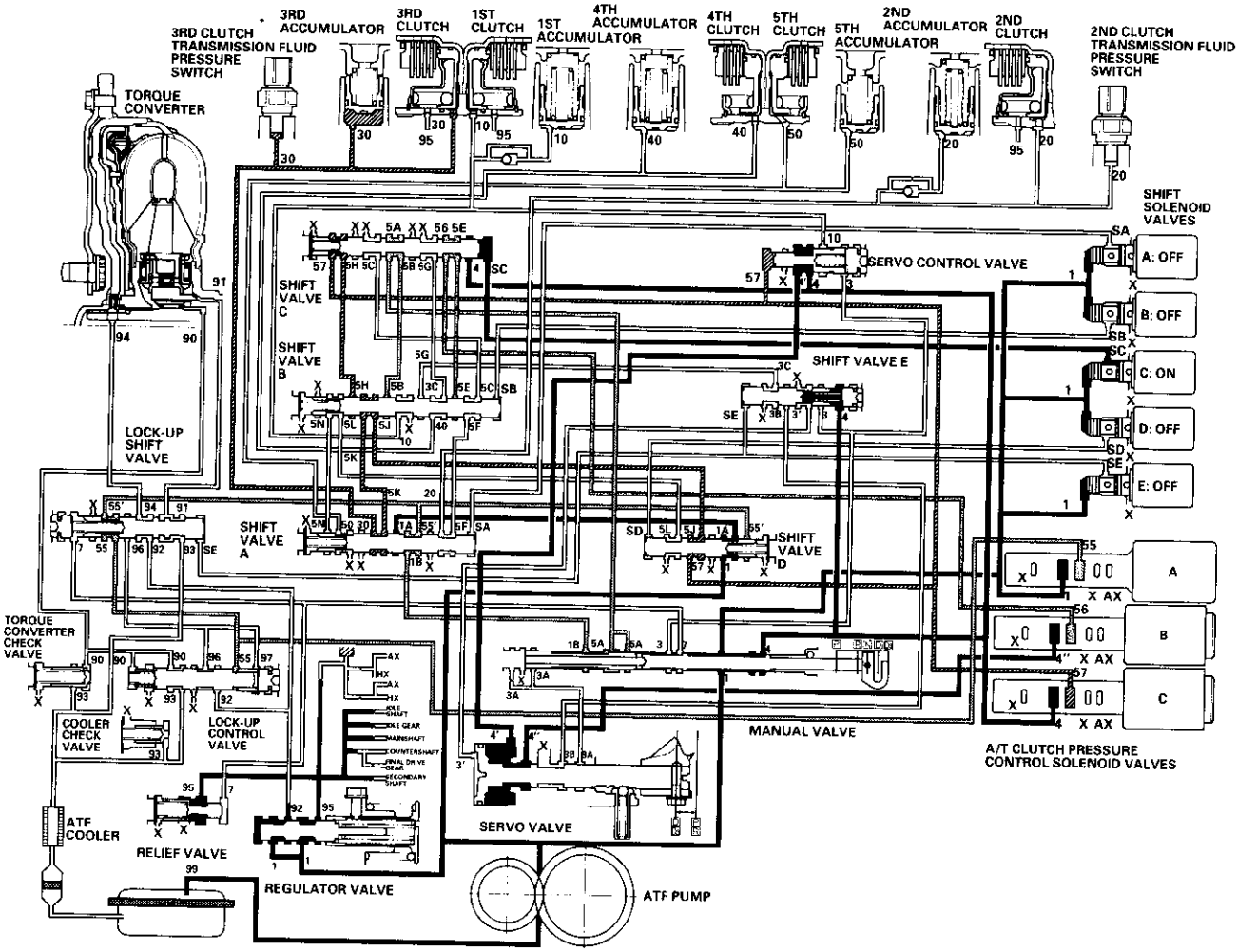
System Description (cont'd)

Hydraulic Flow (cont'd)

[D] Position: Driving in 3rd gear

The PCM turns shift solenoid valves B, D, A, and E OFF, and C ON. Shift solenoid valve B pressure (SB) in the right side of the shift valve B is released, and the shift valve B is moved to the right side. Shift solenoid valve D pressure (SD) in the left side of the shift valve D is released, and the shift valve D is moved to the left side. These valves movement switches the port of A/T clutch pressure control solenoid valve C pressure leading to the 3rd clutch.
A/T clutch pressure control solenoid valve C pressure (57) changes to (5J) at the shift solenoid valve D and to (5K) at the shift valve B, and becomes 3rd clutch pressure (30) at the shift valve A. The 3rd clutch pressure (30) is applied to the 3rd clutch, and the 3rd clutch is engaged securely.

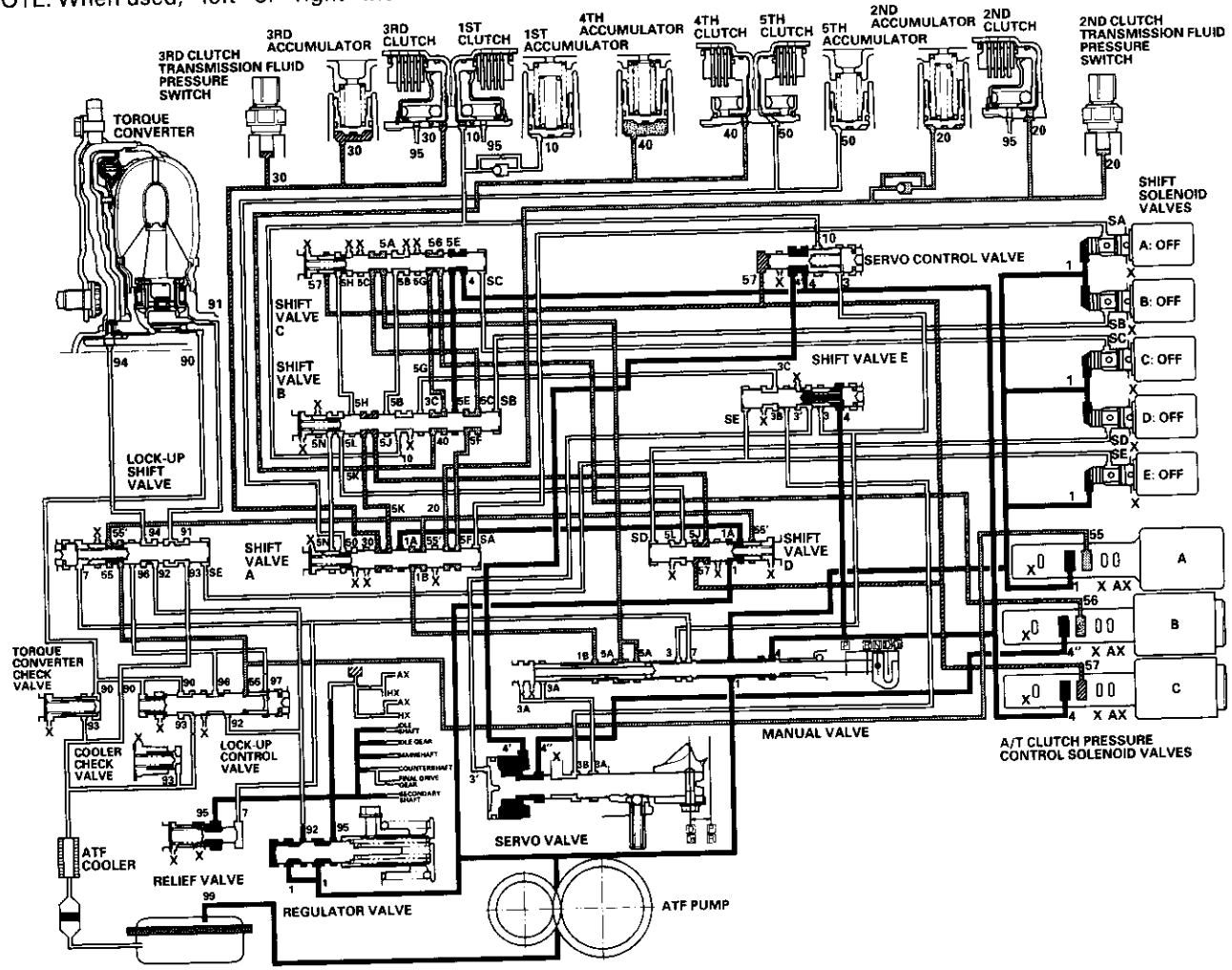
NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.



D Position: Shifting between 3rd gear and 4th gear

As the speed of the vehicle reaches the prescribed value, the PCM turns shift solenoid valves C OFF, and keeps A, B, D and E OFF. Shift solenoid valve C pressure (SC) in the right side of the shift valve C is released. The shift valve C is moved to the right side to uncover the ports of A/T clutch pressure control solenoid valves B and C pressures leading to the 3rd and 4th clutches. The PCM controls the A/T clutch pressure control solenoid valves to regulate hydraulic pressure. A/T clutch pressure control solenoid valve B pressure changes to 3rd clutch pressure (30) at the shift valve A, and A/T clutch pressure control solenoid valve B pressure (56) changes to 4th clutch pressure (40) at the shift valve B. The 3rd and 4th clutches are engaged gently.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.



(cont'd)

System Description (cont'd)

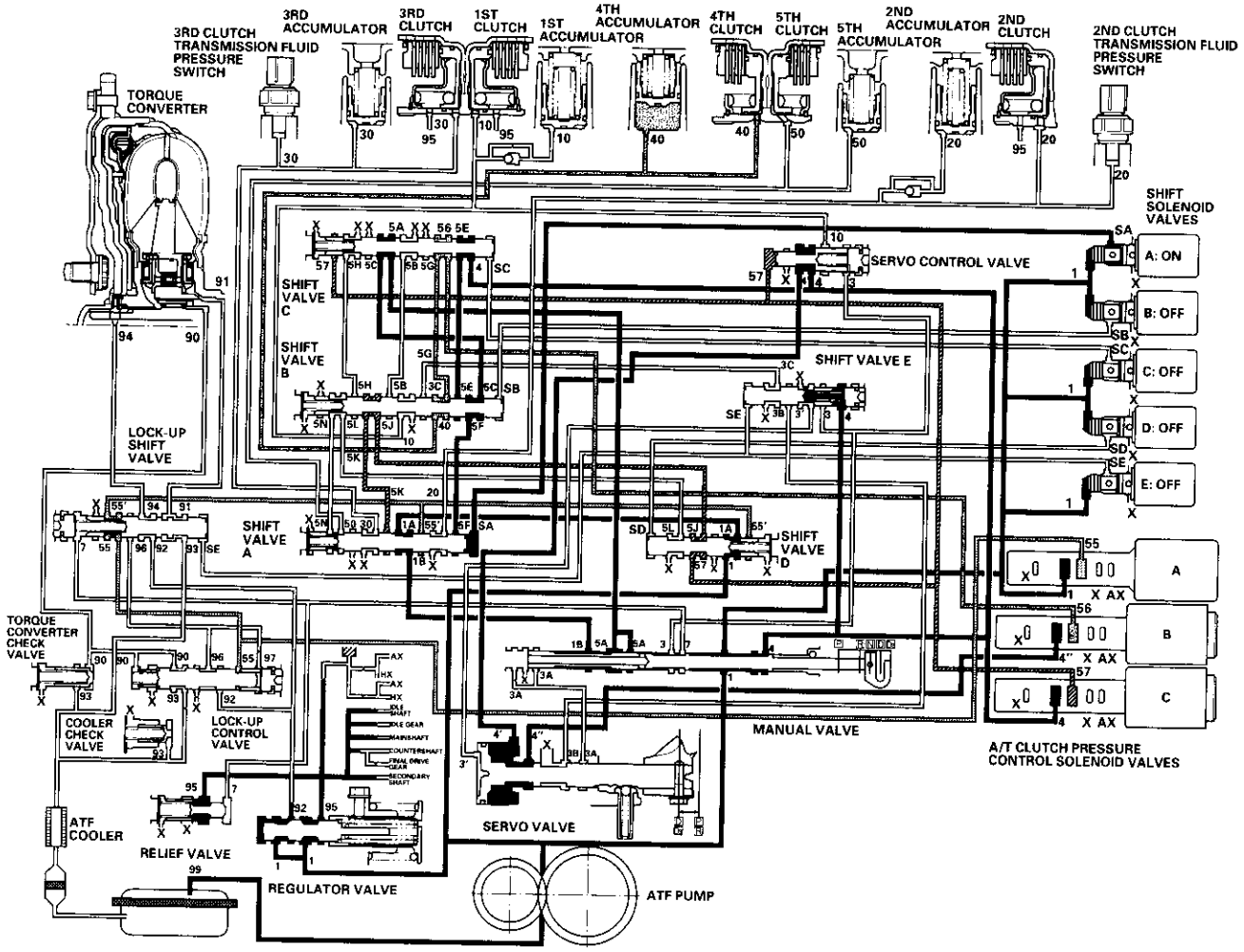
Hydraulic Flow (cont'd)

[D] Position: Driving in 4th gear

The PCM turns shift solenoid valves A ON, and keeps B, C, D and E OFF. Shift solenoid valve A pressure (SA) is applied to the right side of the shift valve A. The shift valve A is moved to the left side to cover the ports of A/T clutch pressure control solenoid valves A and C pressure leading to the 2nd and 3rd clutches.

A/T clutch pressure control solenoid valve B pressure (56) changes to (5G) at the shift solenoid valve C, and becomes 4th clutch pressure (40) at the shift valve B. The 4th clutch pressure (40) is regulated to high by the A/T clutch pressure control solenoid valve B, and the 4th clutch is engaged securely.

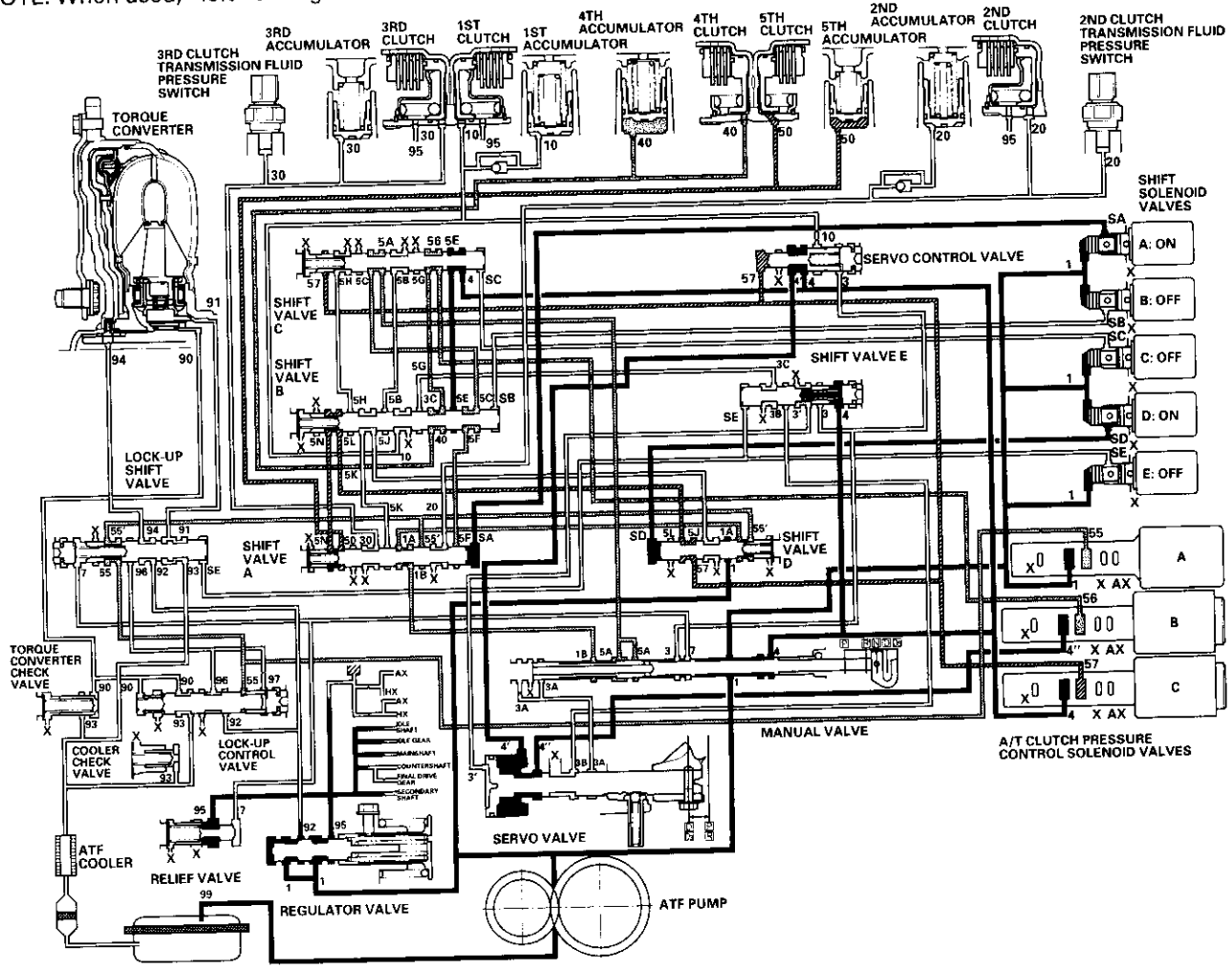
NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.



[D] Position: Shifting between 4th gear and 5th gear

As the speed of the vehicle reaches the prescribed value, the PCM turns shift solenoid valves D ON, and keeps A ON, and B, C and E OFF. Shift solenoid valve D pressure (SD) in applied to the left side of the shift valve D. The shift valve D is moved to the right side to uncover the port of A/T clutch pressure control solenoid valve C pressure to the 5th clutch. A/T A/T clutch pressure control solenoid valve B pressure (56) changes to 4th clutch pressure (40) at the shift valve B. A/T clutch pressure control solenoid valve C pressure (57) changes to (5L) at the shift valve D and to (5N) at the shift valve B, and becomes 5th clutch pressure (50) at the shift valve A. The 4th and 5th clutches are engaged gently.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.



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System Description (cont'd)

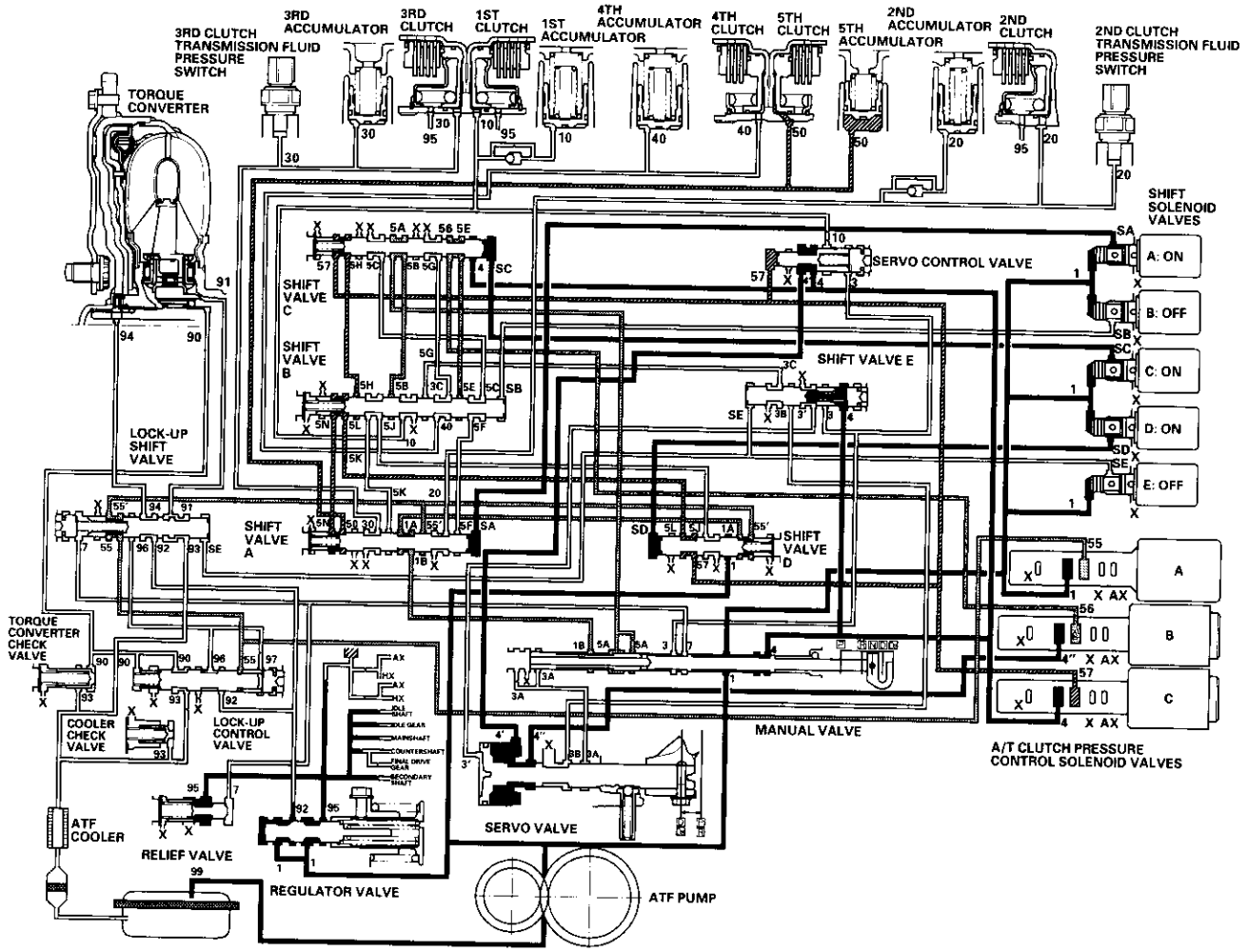
Hydraulic Flow (cont'd)

[D] Position: Driving in 5th gear

The PCM turns shift solenoid valves C ON, and keeps A and D ON, and B and E OFF. Shift solenoid valve C pressure (SC) is applied to the right side of the shift valve C. The shift valve C is moved to the left side to switch the port of A/T clutch pressure control solenoid valve B pressure leading to the 4th clutch.

The 5th clutch pressure (50) is regulated to high by the A/T clutch pressure control solenoid valve C, and the 5th clutch is engaged securely.

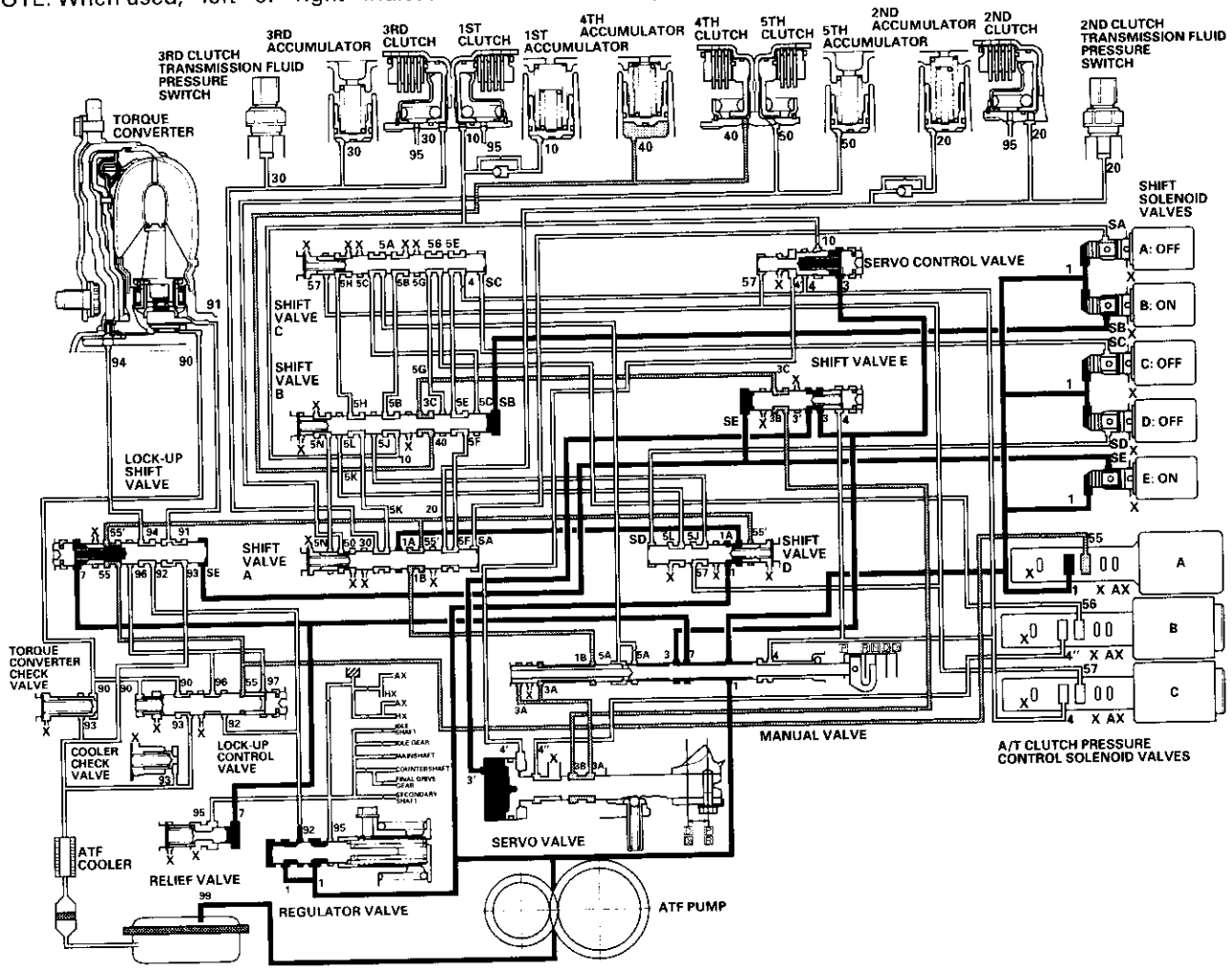
NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.



[R] Position: Shifting to [R] position from [P] or [N] position

When shifting in the [R] position, the PCM turns shift solenoid valves B and E ON, and A, C, and D OFF. Shift solenoid valve B pressure (SB) is applied to the right side of the shift valve B, and the shift valve B is moved to left side. Shift solenoid valve E pressure (SE) is applied to the left side of the shift valve E, and the shift valve E is moved to the right side. Line pressure (1) changes to (3) at the manual valve, and flows to the servo valve via the shift valve E. The servo valve is moved to reverse range position. Movement of the shift valves B and E, and servo valve creates 4th clutch pressure line between the 4th clutch and the A/T clutch pressure control solenoid valve A. The 4th clutch pressure (40) is applied to the 4th clutch, and the 4th clutch is engaged gently.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.



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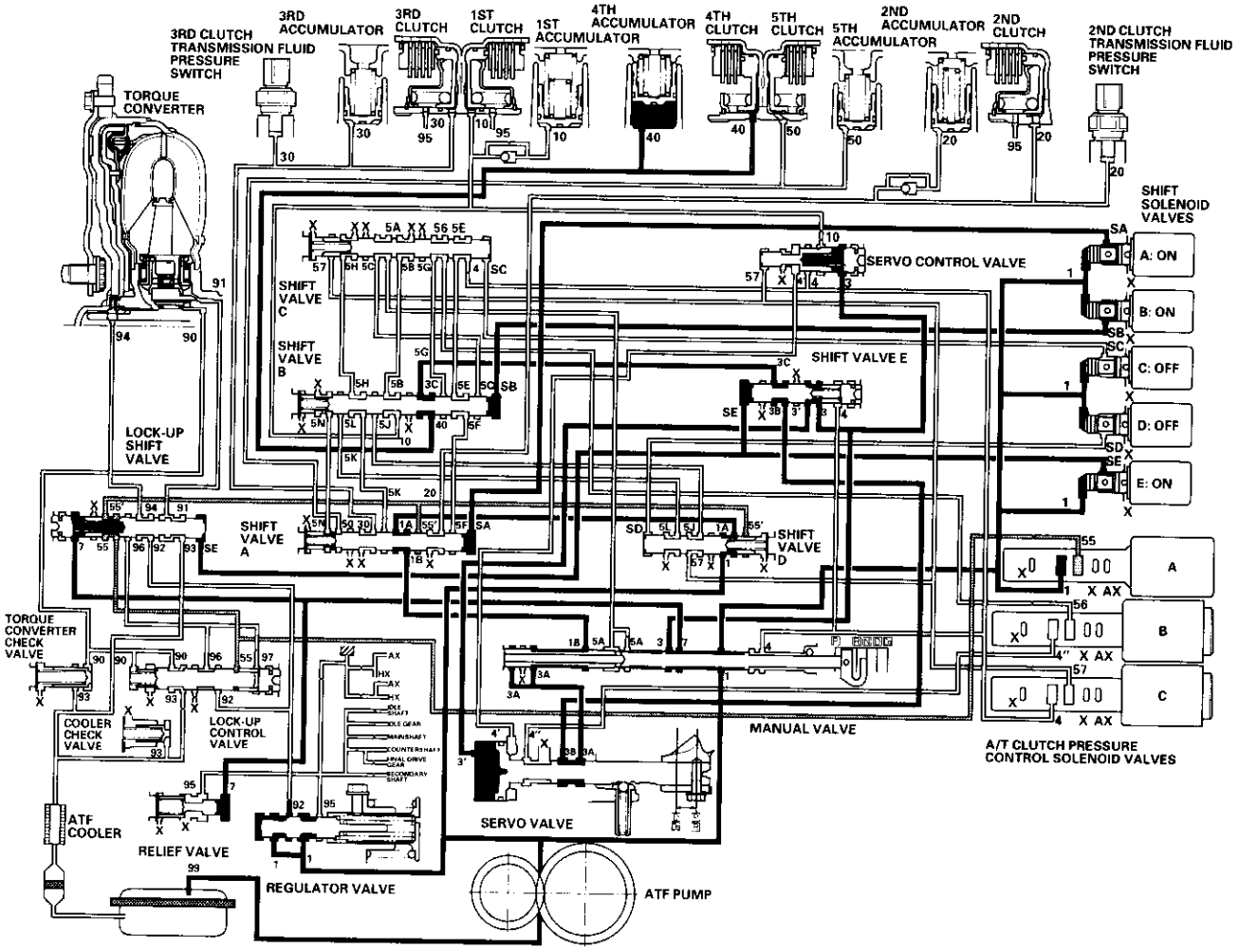
System Description (cont'd)

Hydraulic Flow (cont'd)

[R] Position: Driving in reverse gear
After starting off in reverse gear, the PCM turns shift solenoid valves A ON, and keeps B and E ON, and C and D OFF. Shift solenoid valve A pressure (SA) is applied to the right side of the shift valve A to cover the port of A/T clutch pressure control solenoid valve A pressure, and to uncover the port of line pressure leading to the 4th clutch creating full line pressure. The 4th clutch is engaged securely with line pressure.

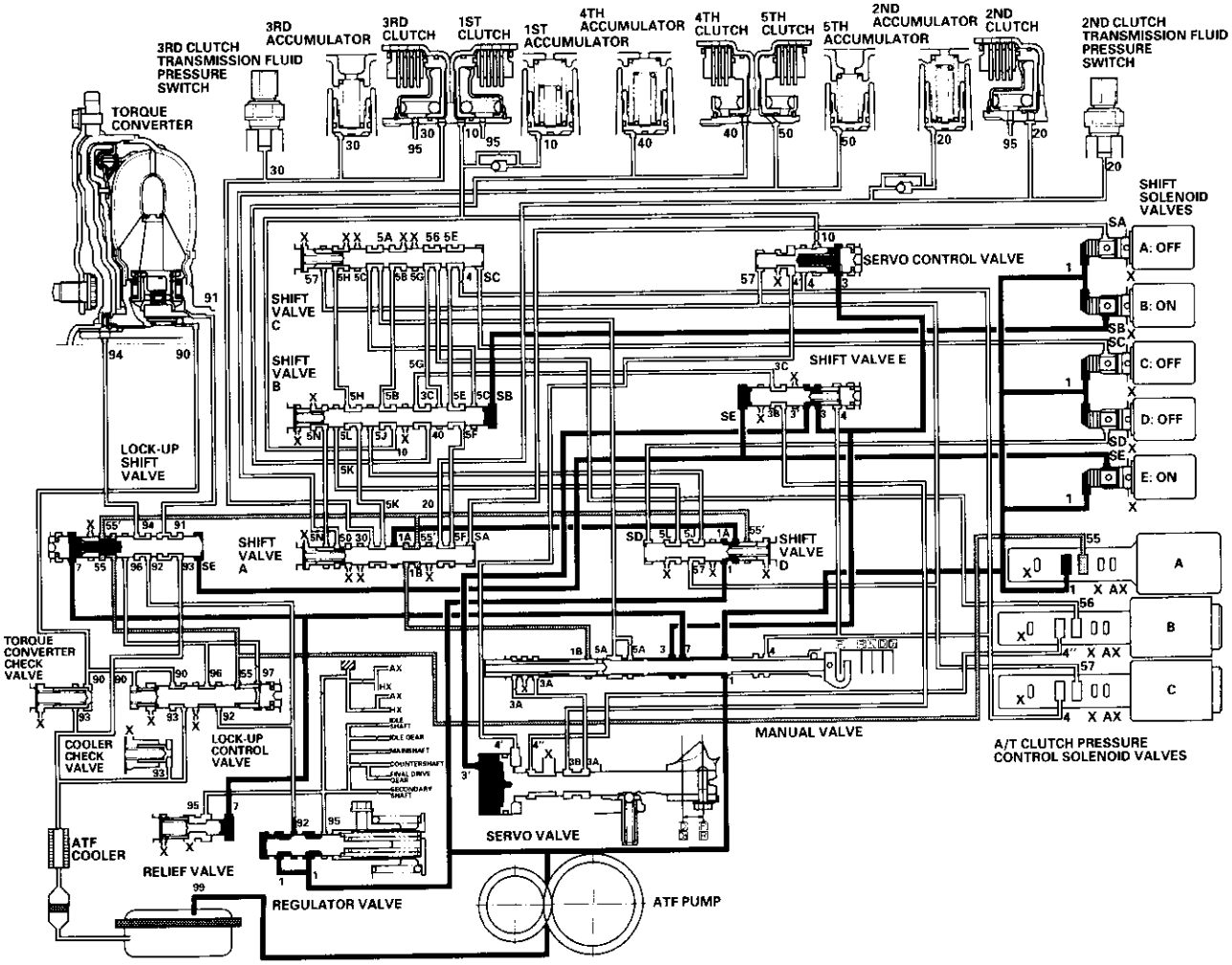
Reverse Inhibitor Control
While the vehicle is moving forward, the PCM keeps shift solenoid valve E OFF. The shift valve E covers the port of line pressure (3') leading to the servo valve reverse position. The servo valve cannot be shifted to reverse position, and hydraulic pressure is not applied to the 4th clutch from servo valve for reverse; as a result, power is not transmitted to the reverse direction.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.



P Position

Shift solenoid valves B and E are turned ON, and A, C, and D OFF by the PCM. Line pressure (1) flows to the shift solenoid valves and the A/T clutch pressure control solenoid valve A. Line pressure (3) changes to (3') at the shift valve E, and flows to the servo valve. The servo valve is moved to reverse/park position. Hydraulic pressure is not applied to the clutches.



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System Description (cont'd)

Lock-up System

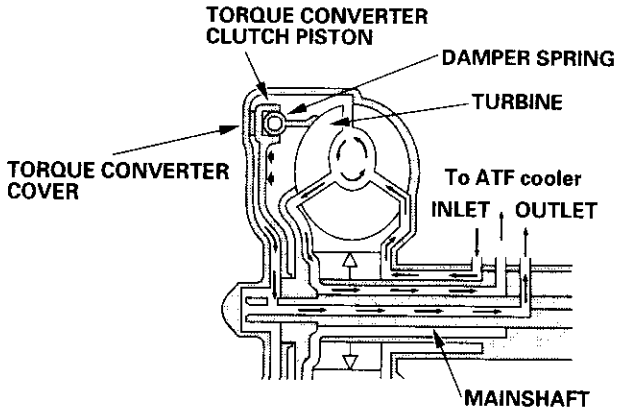
The lock-up mechanism of the torque converter clutch operates in [D] position (2nd, 3rd, 4th and 5th), in [D3] position (2nd and 3rd), and [M] (manual mode) position (3rd, 4th and 5th). The pressurized fluid is drained from the back of the torque converter through a fluid passage, causing the torque converter clutch piston to be held against the torque converter cover. As this takes place, the mainshaft rotates at the same speed as the engine crankshaft. Together with the hydraulic control, the PCM optimizes the timing and volume of the lock-up mechanism. When the shift solenoid valve E is turned on by the PCM, shift solenoid valve E pressure switches the lock-up shift valve lock-up on and off. The A/T clutch pressure control solenoid valve A and the lock-up control valve control the amount of the lock-up conditions.

Torque Converter Clutch Lock-up ON (Engaging Torque Converter Clutch)
Fluid in the chamber between the torque converter cover and the torque converter clutch piston is drained off, and fluid entered from the chamber between the pump and stator exerts pressure through the torque converter clutch piston against the torque converter cover. The torque converter clutch piston engages with the torque converter cover; the torque converter clutch lock-up is ON, and the mainshaft rotates at the same speed as the engine.

Power flow

The power flows by way of:

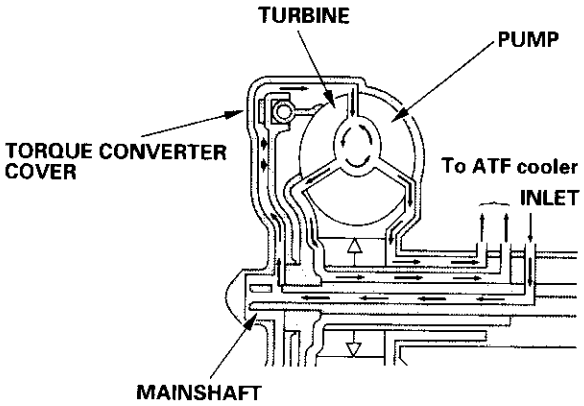
Engine
↓
Drive plate
↓
Torque converter cover
↓
Torque converter clutch piston
↓
Damper spring
↓
Turbine
↓
Mainshaft



Torque Converter Clutch Lock-up OFF (Disengaging Torque Converter Clutch)
Fluid entering from the chamber between the torque converter cover and the torque converter clutch piston passes through the torque converter and goes out from the chambers between the turbine and the stator, and between the pump and the stator. As a result, the torque converter clutch piston moves away from the torque converter, and the torque converter clutch lock-up is released; torque converter clutch lock-up is OFF.

Power flow

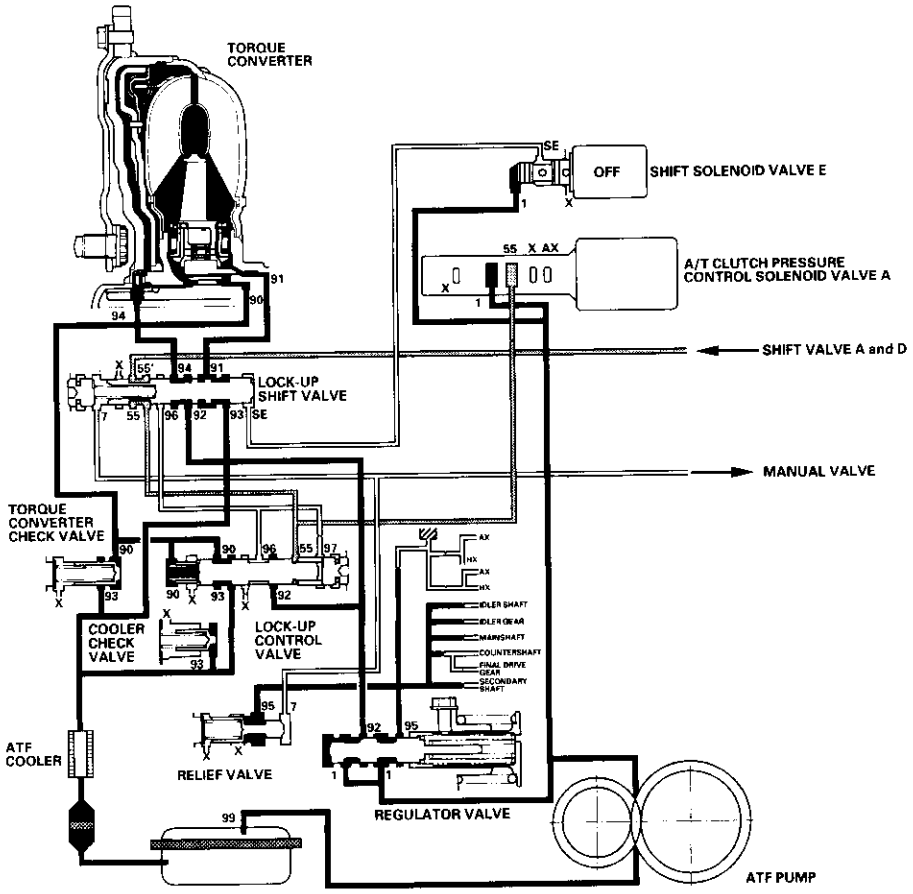
Engine
↓
Drive plate
↓
Torque converter cover
↓
Pump
↓
Turbine
↓
Mainshaft



No Lock-up

Shift solenoid valve E is turned OFF by the PCM, and shift solenoid valve E pressure (SE) is not applied to the lock-up shift valve. The lock-up shift valve stays to the right to uncover the torque converter pressure ports leading to the left side of the torque converter and releasing pressure from the right side of the torque converter. Torque converter pressure (92) changes to (94) at the lock-up shift valve, and enters into the left side of the torque converter to disengage the torque converter clutch. The torque converter clutch piston keeps away from the torque converter cover, the torque converter clutch lock-up is OFF.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.



(cont'd)

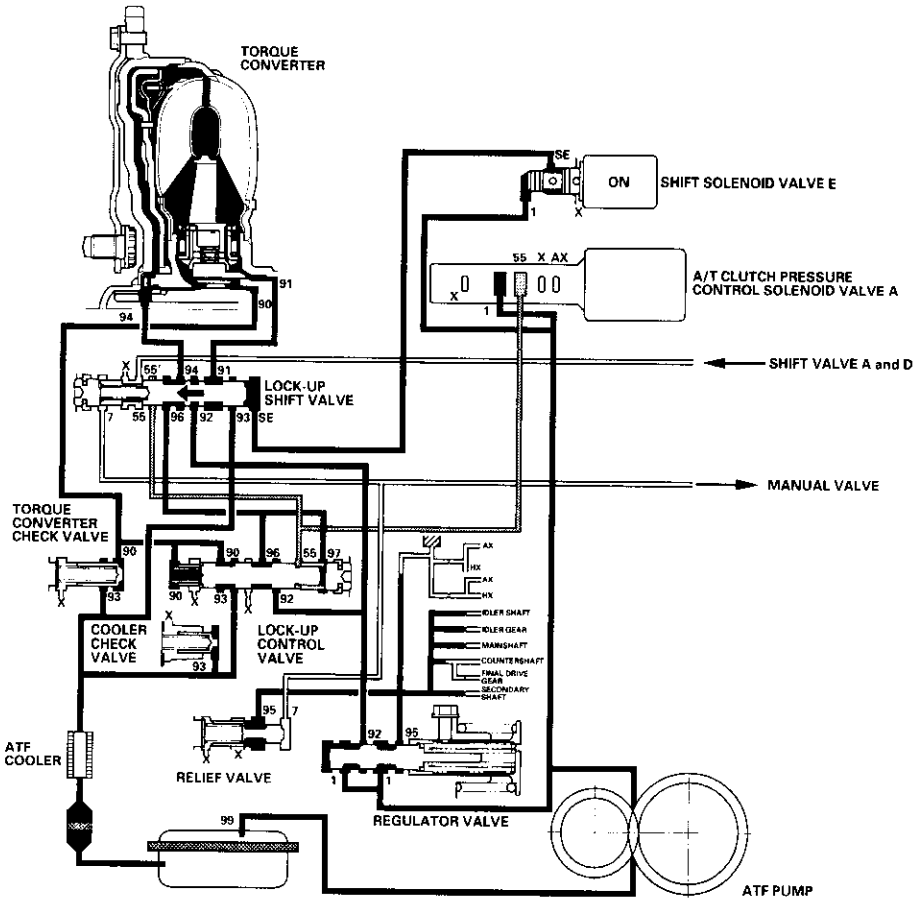
System Description (cont'd)

Lock-up System (cont'd)

Partial Lock-up

As the speed of the vehicle reaches the prescribed value, shift solenoid valve E is turned ON by the PCM, and shift solenoid valve E pressure (SE) is applied to the right side of the lock-up shift valve. The lock-up shift valve is moved to the left side to switch the torque converter pressure (91) port which goes to the right side of the torque converter, and the port of torque converter pressure (94) releasing from the left side of the torque converter. Torque converter pressure (91) flows to the right side of the torque converter to engage the torque converter clutch. The PCM also controls the A/T clutch pressure control solenoid valve A to regulate A/T clutch pressure control solenoid valve A pressure (55) applies to the lock-up shift valve and lock-up control valve. The position of the lock-up control valve depends on A/T clutch pressure control solenoid valve A pressure (55) and torque converter pressure released from the torque converter. The lock-up control valve controls the amount of the torque converter clutch lock-up until fluid between the clutch piston and torque converter cover is released fully; the torque converter clutch is in partial lock-up condition.

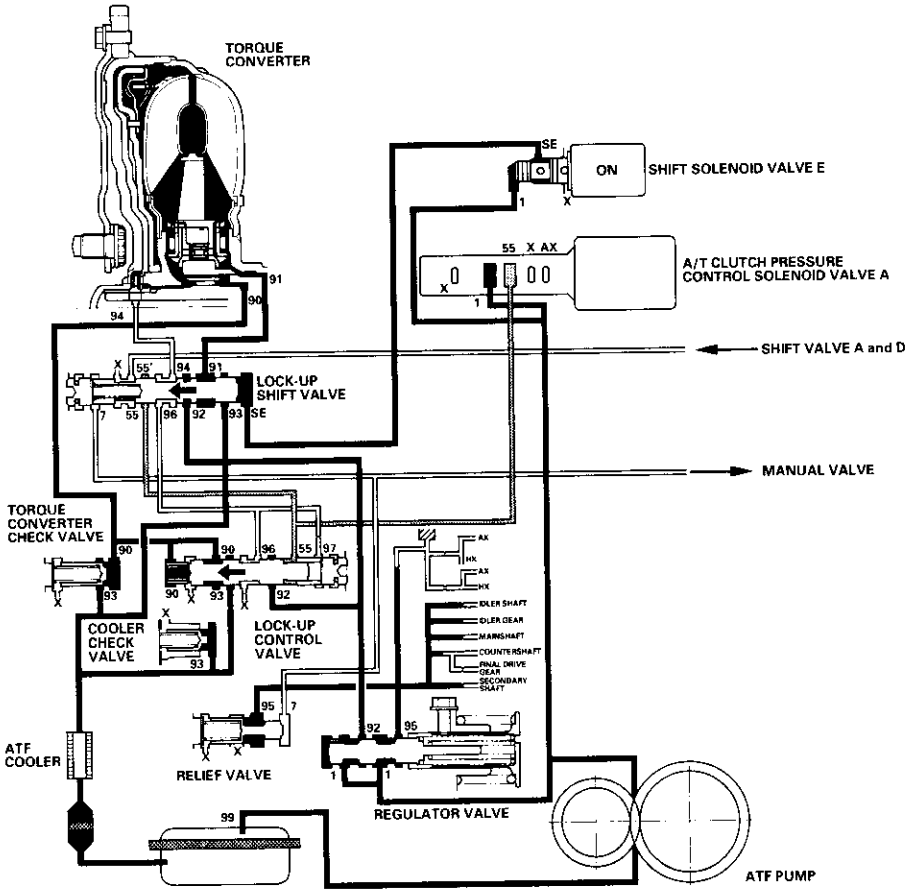
NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.



Full Lock-up

When the vehicle speed increases, the PCM sends a signal to A/T clutch pressure control solenoid valve A to increase A/T clutch pressure control solenoid valve A pressure (55), and the lock-up control valve is moved to the left by the increased pressure. Then torque increased converter pressure (94) from the left side of the torque converter is completely released at the lock-up control valve, and torque converter pressure (91) engages the torque converter clutch securely; the torque converter clutch is in full lock-up condition.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.

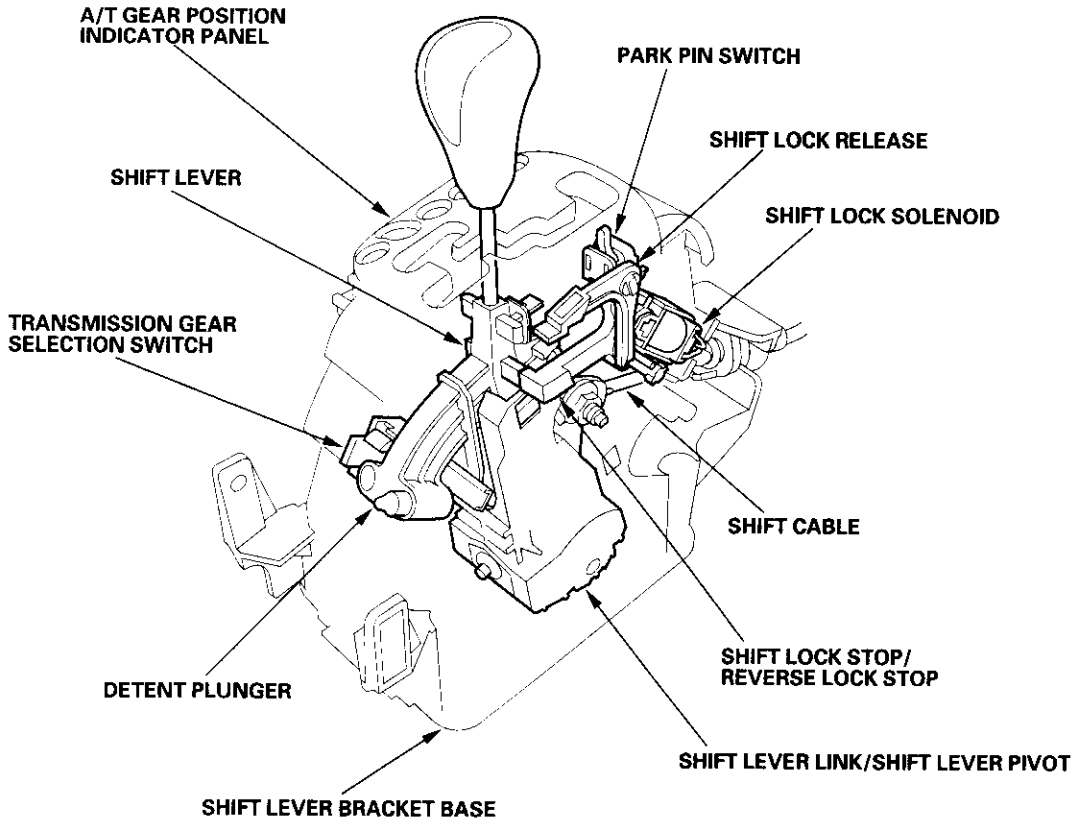


(cont'd)

System Description (cont'd)

Shift Lever Mechanism
The shift lever has five positions; the [P], [R], [N], [D], and [D3] positions. The [D] position has two modes; automatic shift mode and sequential sportshift mode with the shift lever moved to the [M] position. The shift lever shifts along with the A/T gear position indicator panel. The shift lever can be shifted out of the [P] position and into the [R] position without pressing the shift lever. The shift lock/reverse lock mechanism is an additional shift lever lockout mechanism.
The shift lever is engaged with the shift lever link in the [P], [R], [N], [D], and [D3] positions. This unit shifts the transmission using the shift cable connected between the shift cable link and the transmission control shaft.

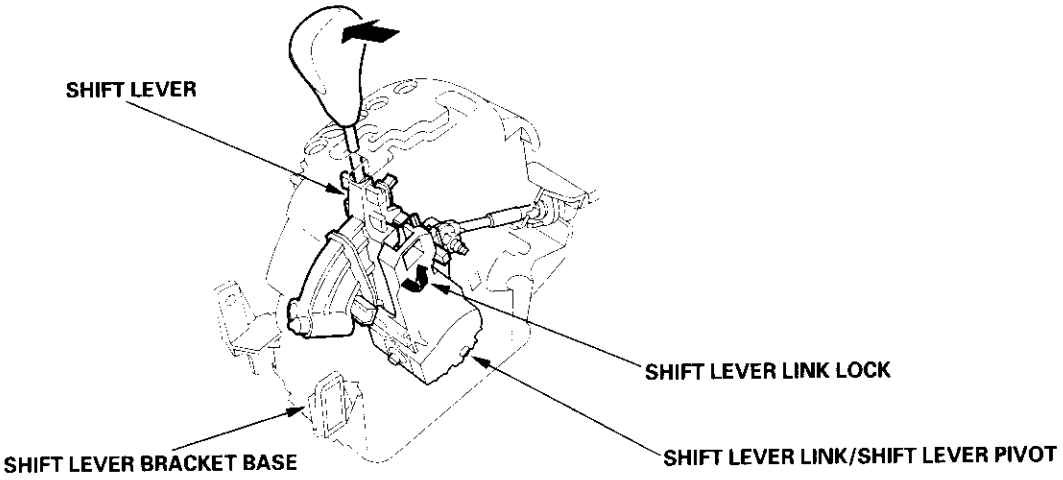
In the [M] position, the shift lever is disengaged from the shift lever link, and the shift lever can be used to shift gears manually between 1st through 5th, much like a manual transmission.



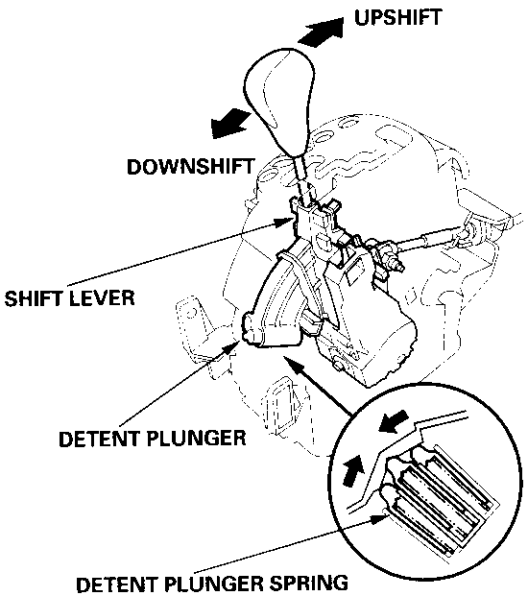
Shift Lever Mechanism in [M] Position

When the shift lever shifts to the [M] position, the shift lever is disengaged from the shift lever link/shift lever pivot, and the shift lever link lock pops up to engage with the shift lever bracket base; the shift lever link/shift lever pivot and shifting position in the transmission are held in the [D] position.

The shift lever link lock is spring loaded, it pops up in the [M] position, and does not engage the shift lever link/shift lever pivot in any position except [M].



The shift lever fits into the [M] position by using a detent plunger with a spring. When shifting to upshift and downshift positions, the detent plunger is depressed by the detent bracket inner wall, and the detent plunger spring puts the shift lever back into the neutral position. The detent plunger also works in the [P] position.

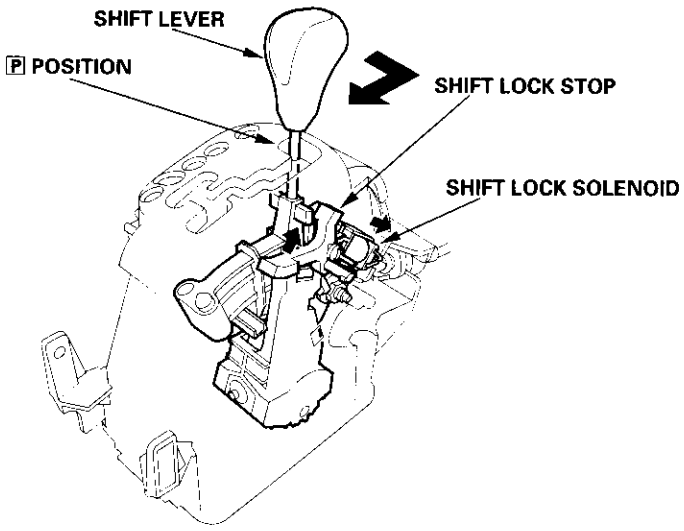


(cont'd)

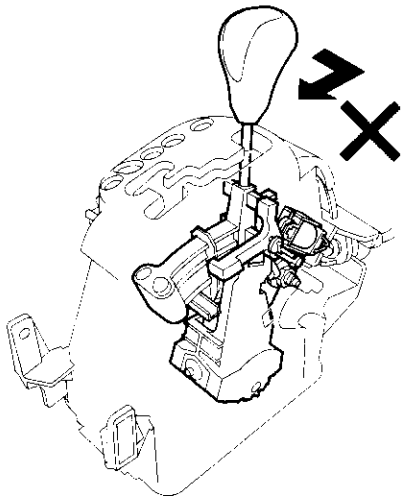
System Description (cont'd)

Shift Lock/Reverse Lock Mechanism
The shift lock system reduces the risk of the unintentional engine starting. Starting the engine is possible only in the [P] and [N] positions. The shift lock mechanism consists of the shift lock solenoid, shift lock stop, shift lock release, and related parts. The reverse lock mechanism shares the shift lock mechanism .The shift lock solenoid is electronically controlled by the shift lock/reverse lock control system signals. If the shift lock solenoid does not operate, the shift lock/reverse lock mechanism can be released by pressing the shift lock release.

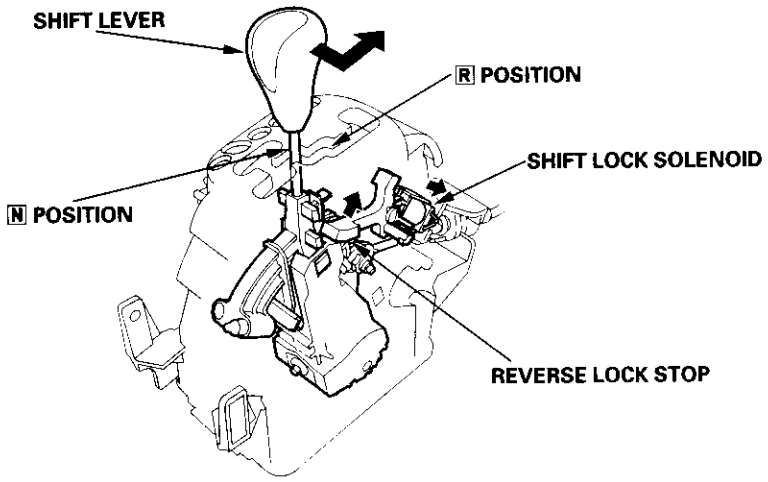
In the [P] position while pressing the brake pedal, the shift lock solenoid is turned ON, and the shift lock solenoid plunger is retracted, releasing the shift lock stop. This allows the shift lever to be moved.



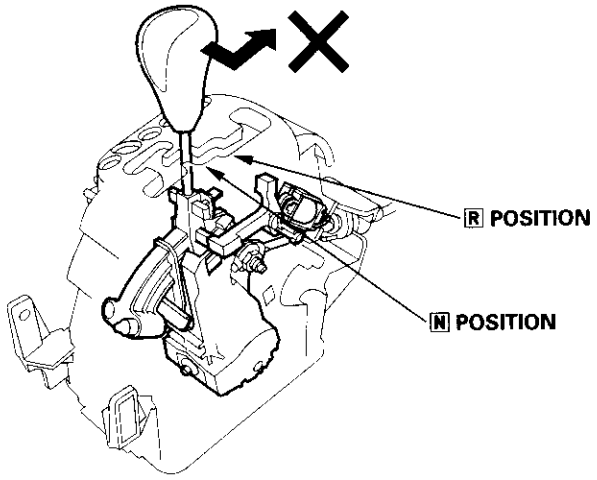
When the brake pedal is released, the shift lock solenoid stays OFF, and the shift lock stop locks the shift lever in the [P] position.



When the shift lever is shifted to the [R] position from [N], the shift lock solenoid is turned ON, and the shift lock solenoid plunger is retracted to release the reverse lock stop. This allows the shift lever to be moved to [R] position.



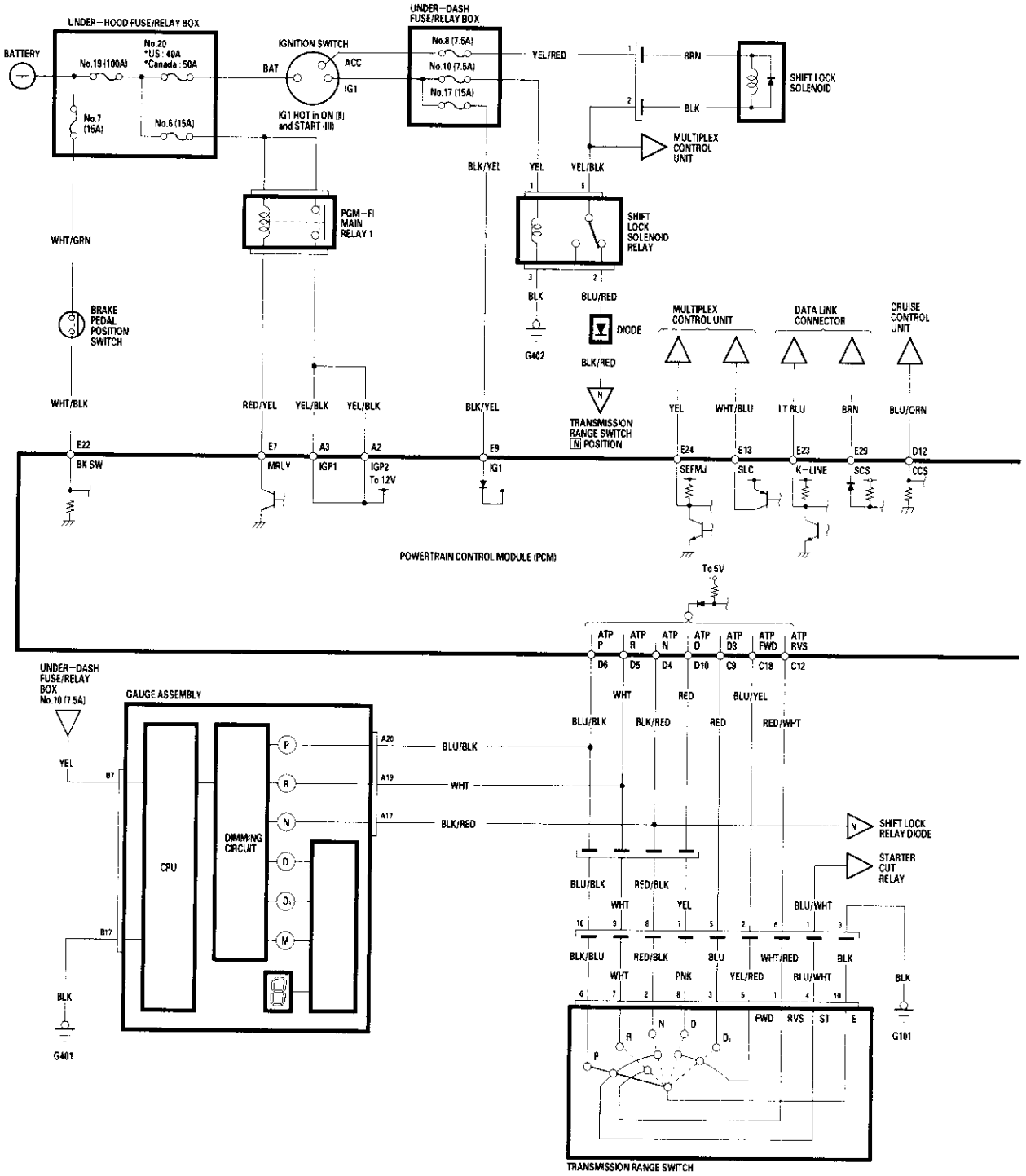
If the allowable conditions (acceleration at 6 mph (10 km/h) or less, and deceleration at 5 mph (8 km/h) or less in the [D] position) for turning ON the solenoid are not met, the shift lock solenoid stays OFF, and the reverse lock stop locks the shift lever in the [N] position.

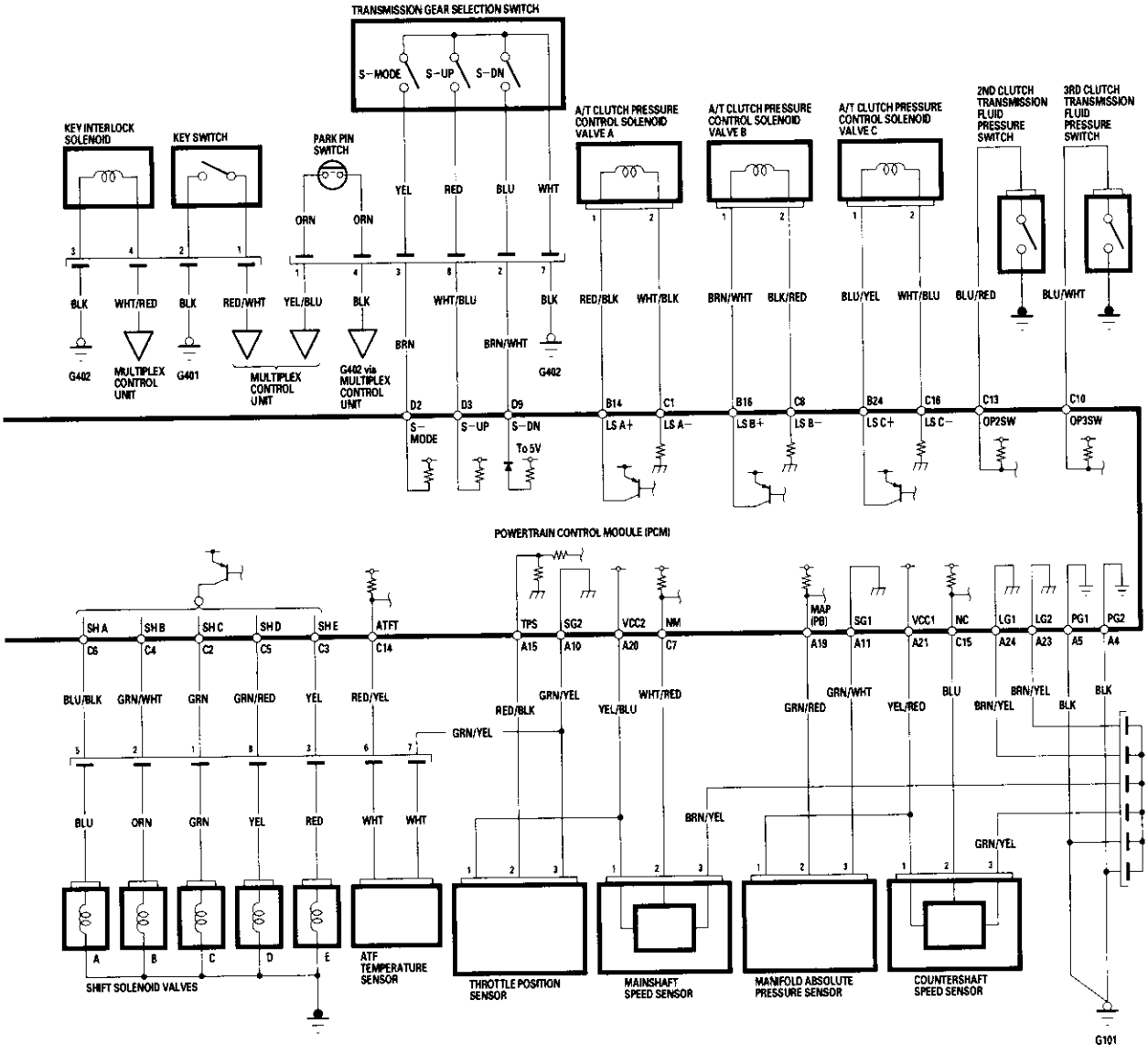


(cont'd)

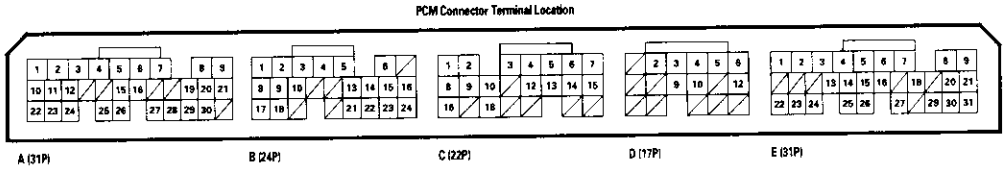
System Description (cont'd)

Circuit Diagram — PCM A/T Control System





PCM Connector Terminal Location



A (31P) B (24P) C (22P) D (17P) E (31P)

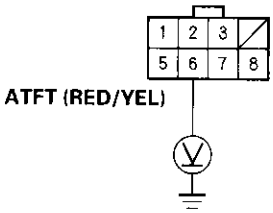
DTC Troubleshooting

DTC P0710: Problem in ATF Temperature Sensor Circuit

NOTE:
- Record all freeze data and review General Troubleshooting Information (see page 14-3) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch OFF.
2. Disconnect the shift solenoid harness connector.
3. Turn the ignition switch ON (II).
4. Measure the voltage between the No. 6 terminal of the shift solenoid harness connector and body ground.

SHIFT SOLENOID HARNESS CONNECTOR



Wire side of female terminals

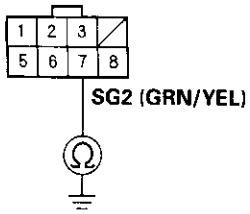
Is there about 5 V?

YES – Go to step 5.

NO – Go to step 13.

5. Turn the ignition switch OFF.
6. Disconnect PCM connector A (31P).
7. Check for continuity between the No. 7 terminal of the shift solenoid harness connector and body ground.

SHIFT SOLENOID HARNESS CONNECTOR



Wire side of female terminals

Is there continuity?

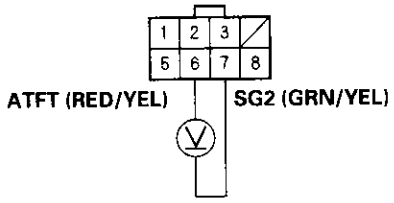
YES – Repair short in the wire between PCM connector terminal A10 and the shift solenoid harness connector. ■

NO – Go to step 8.

8. Connect PCM connector A (31P).
9. Turn the ignition switch ON (II).

10. Measure the voltage between the No. 6 and No. 7 terminals of the shift solenoid harness connector.

SHIFT SOLENOID HARNESS CONNECTOR



Wire side of female terminals

Is there about 5 V?

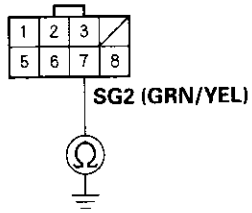
YES – Check the ATF temperature sensor and shift solenoid harness in the transmission housing (see page 14-135). ■

NO – Go to step 11.

11. Turn the ignition switch OFF.

12. Check for continuity between the No. 7 terminal of the shift solenoid harness connector and body ground.

SHIFT SOLENOID HARNESS CONNECTOR



Wire side of female terminals

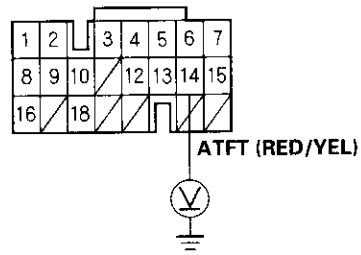
Is there continuity?

YES – Repair open in the wires between PCM connector terminals A23 and ground (G101), between A24 and ground (G101), and repair poor ground (G101). If the wire is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM, then recheck (see page 14-7). If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

NO – Repair open in the wire between PCM connector terminal A10 and the shift solenoid harness connector. ■

13. Measure the voltage between PCM connector terminal C14 and body ground.

PCM CONNECTOR C (22P)



Wire side of female terminals

Is there about 5 V?

YES – Repair open in the wire between PCM connector terminal C14 and the shift solenoid harness connector. ■

NO – Check for a short in the wire between PCM connector terminal C14 and the shift solenoid harness connector. If the wire is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM, then recheck (see page 14-7). If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

DTC Troubleshooting (cont'd)

DTC P0715: A Problem in Mainshaft Speed Sensor Circuit

NOTE: Record all freeze data and review General Troubleshooting Information (see page 14-3) before you troubleshoot.

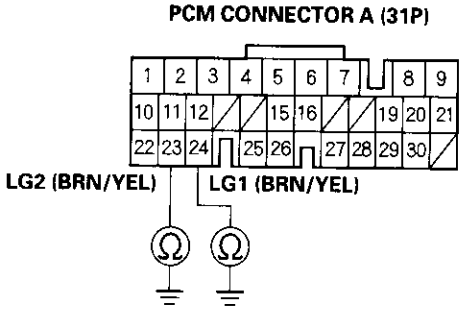
Code P0715 (15) doesn't always mean there's an electrical problem in the mainshaft or countershaft speed sensor circuit; code P0715 (15) may also indicate a mechanical problem in the transmission. Any problem causing irregular countershaft-to-mainshaft speed difference can cause this code.

1. Turn the ignition switch ON (II).
2. Check whether the OBD II scan tool indicates the code for the throttle position (TP) sensor.

   Does the OBD II scan tool indicate the code for the TP sensor?

   YES – Perform the Troubleshooting Flowchart for the TP sensor (see page 11-68). Recheck for code P0715 after troubleshooting. ■

   NO – Go to step 3.
3. Turn the ignition switch OFF.
4. Disconnect PCM connector A (31P).
5. Check for continuity between PCM connector terminals A23 and body ground, and between A24 and body ground.



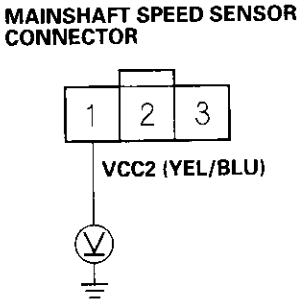
Wire side of female terminals

   Is there continuity?

   YES – Go to step 6.

   NO – Repair open in the wires between PCM connector terminals A23 and ground (G101), between A24 and ground (G101), and repair poor ground (G101). ■
6. Connect PCM connector A (31P).
7. Disconnect the mainshaft speed sensor connector.
8. Turn the ignition switch ON (II).

9. Measure the voltage between the No. 1 terminal of the mainshaft speed sensor connector and body ground.



Wire side of female terminals

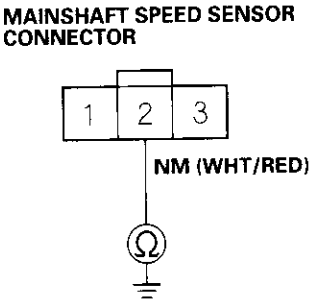
Is there about 5 V?

YES – Go to step 10.

NO – Go to step 19.

10. Turn the ignition switch OFF.

11. Check for continuity between the No. 2 terminal of the mainshaft speed sensor connector and body ground.



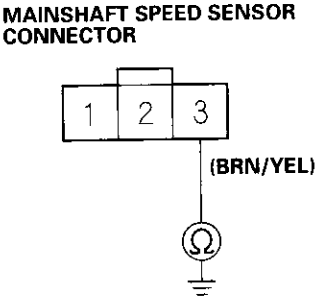
Wire side of female terminals

Is there continuity?

YES – Repair short to ground in the wire between PCM connector terminal C7 and mainshaft speed sensor connector. ■

NO – Go to step 12.

12. Check for continuity between the No. 3 terminal of the mainshaft speed sensor connector and body ground.



Wire side of female terminals

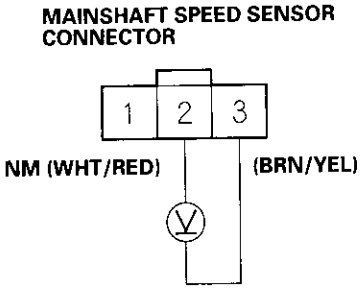
Is there continuity?

YES – Go to step 13.

NO – Repair open in the wire between the mainshaft speed sensor connector and ground (G101). ■

13. Turn the ignition switch ON (II).

14. Measure the voltage between the No. 2 and No. 3 terminals of the mainshaft speed sensor connector.



Wire side of female terminals

Is there 5 V?

YES – Go to step 15.

NO – Go to step 23.

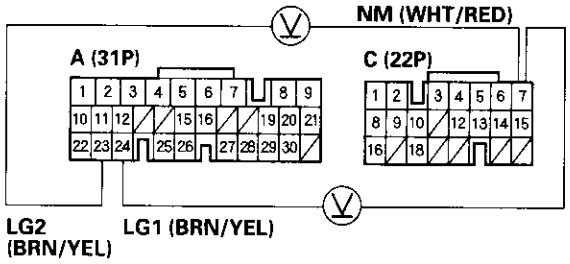
(cont'd)

DTC Troubleshooting (cont'd)

15. Connect the mainshaft speed sensor connector.

16. Measure the voltage between PCM connector terminals C7 and A23 or A24.

PCM CONNECTORS



Wire side of female terminals

Is the voltage 0 V or about 5 V?

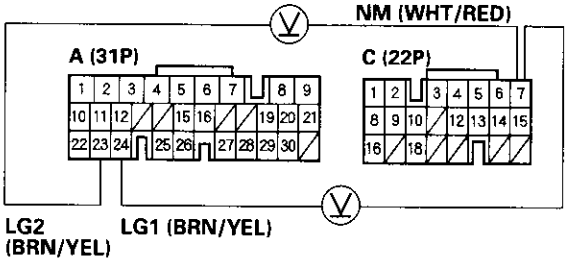
YES – Go to step 17.

NO – Replace the mainshaft speed sensor. ■

17. Shift to [P] position. Start the engine, and let it idle.

18. With engine idling, measure the voltage between PCM connector terminals C7 and A23 or A24.

PCM CONNECTORS



Wire side of female terminals

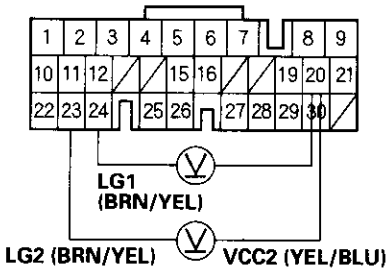
Is there 1.5 V – 3.5 V?

YES – Update the PCM if it does not have the latest software or substitute a known-good PCM, then recheck (see page 14-7). If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

NO – Replace the mainshaft speed sensor. ■

19. Measure the voltage between PCM connector terminal A20 and A23 or A24.

PCM CONNECTOR A (31P)



Wire side of female terminals

Is there 4.75 V – 5.25 V?

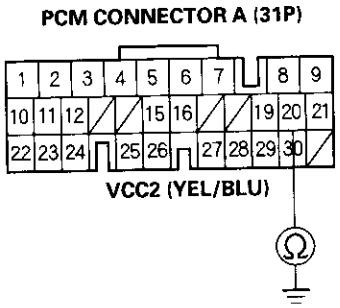
YES – Repair open in the wire between PCM connector terminal A20 and the mainshaft speed sensor connector. ■

NO – Go to step 20.

20. Turn the ignition switch OFF.

21. Disconnect PCM connector A (31P).

22. Check for continuity between PCM connector A20 and body ground.



Wire side of female terminals

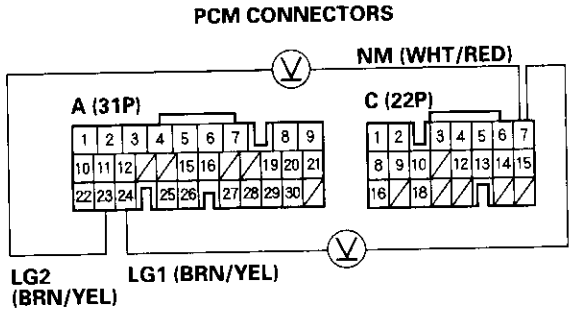
Is there continuity?

YES – Repair short to ground in the wire between PCM connector terminal A20 and the mainshaft speed sensor connector. ■

NOTE: A short to ground on this circuit will damage the PCM.

NO – Update the PCM if it does not have the latest software or substitute a known-good PCM, then recheck (see page 14-7). If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

23. Measure the voltage between PCM connector terminal C7 and A23 or A24.



Wire side of female terminals

Is there about 5 V?

YES – Repair open in the wire between PCM connector C7 and the mainshaft speed sensor connector. ■

NO – Update the PCM if it does not have the latest software or substitute a known-good PCM, then recheck (see page 14-7). If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

DTC Troubleshooting (cont'd)

DTC P0720: Problem in Countershaft Speed Sensor Circuit

NOTE: Record all freeze data and review General Troubleshooting Information (see page 14-3) before you troubleshoot.

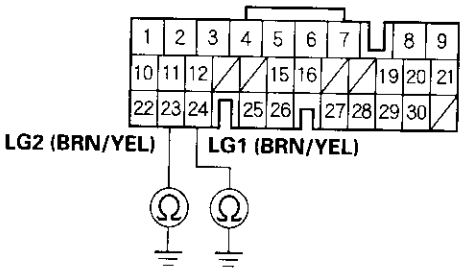
1. Turn the ignition switch ON (II).
2. Check whether the OBD II scan tool indicates the code for the manifold absolute pressure (MAP) sensor.

   Does the OBD II scan tool indicate the code for the MAP sensor?

   YES—Perform the troubleshooting flowchart for the indicated MAP sensor (see page 11-63). Recheck for code P0720 after troubleshooting. ■

   NO—Go to step 3.
3. Turn the ignition switch OFF.
4. Disconnect PCM connector A (31P).
5. Check for continuity between PCM connector terminals A23 and body ground, and between A24 and body ground.

PCM CONNECTOR A (31P)



Wire side of female terminals

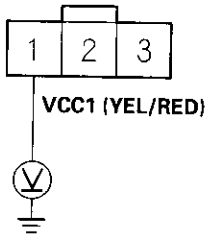
Is there continuity?

YES—Go to step 6.

NO—Repair open in the wires between PCM connector terminals A23 and ground (G101), between A24 and ground (G101), and repair poor ground (G101). ■

6. Connect PCM connector A (31P).
7. Disconnect the countershaft speed sensor connector.
8. Turn the ignition switch ON (II).
9. Measure the voltage between the No. 1 terminal of the countershaft speed sensor connector.

COUNTERSHAFT SPEED SENSOR CONNECTOR



Wire side of female terminals

Is there about 5 V?

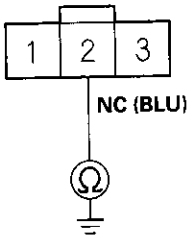
YES—Go to step 10.

NO—Go to step 20.

10. Turn the ignition switch OFF.

11. Check for continuity between the No. 2 terminal of the countershaft speed sensor connector and body ground.

COUNTERSHAFT SPEED SENSOR CONNECTOR



Wire side of female terminals

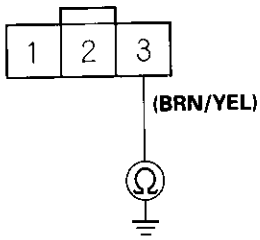
Is there continuity?

YES – Repair short to ground in the wire between PCM connector terminal C15 and the countershaft speed sensor connector. ■

NO – Go to step 12.

12. Check for continuity between the No. 3 terminal of the countershaft speed sensor connector and body ground.

COUNTERSHAFT SPEED SENSOR CONNECTOR



Wire side of female terminals

Is there continuity?

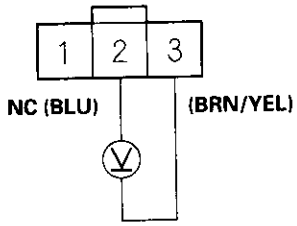
YES – Go to step 13.

NO – Repair open in the wire between the countershaft speed sensor connector and ground (G101). ■

13. Turn the ignition switch ON (II).

14. Measure the voltage between the No. 2 and No. 3 terminals of the countershaft speed sensor connector.

COUNTERSHAFT SPEED SENSOR CONNECTOR



Wire side of female terminals

Is there about 5 V?

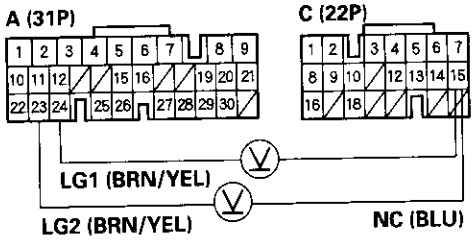
YES – Go to step 15.

NO – Go to step 24.

15. Connect the countershaft speed sensor connector.

16. Measure the voltage between PCM connector terminals C15 and A23 or A24.

PCM CONNECTORS



Wire side of female terminals

Is the voltage 0 V or about 5 V?

YES – Go to step 17.

NO – Replace the countershaft speed sensor. ■

(cont'd)

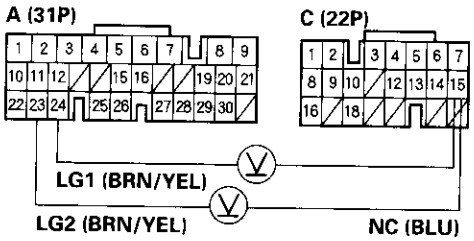
DTC Troubleshooting (cont'd)

17. Raise the front of the vehicle, make sure it is securely supported, and allow the front wheels to rotate freely.

18. Start the engine, then shift to [D] position and let the wheels rotate.

19. Measure the voltage between PCM connector terminals C15 and A23 or A24.

PCM CONNECTORS



Wire side of female terminals

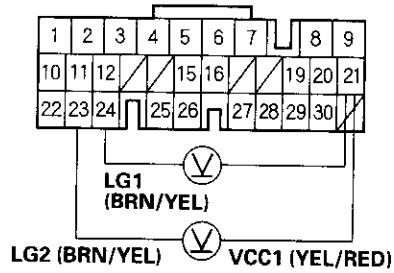
Is there 1.5 V – 3.5 V?

YES – Update the PCM if it does not have the latest software, or substitute a known-good PCM, then recheck (see page 14-7). If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

NO – Replace the countershaft speed sensor. ■

20. Measure the voltage between PCM connector terminals A21 and A23 or A24.

PCM CONNECTOR A (31P)



Wire side of female terminals

Is there 4.75 V – 5.25 V?

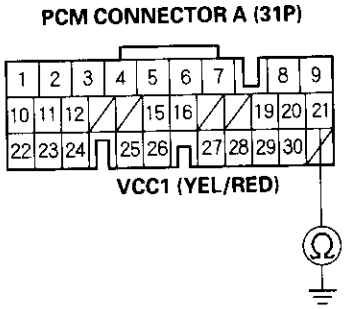
YES – Repair open in the wire between PCM connector terminal A21 and the countershaft speed sensor connector. ■

NO – Go to step 21.

21. Turn the ignition switch OFF.

22. Disconnect PCM connector A (31P).

23. Check for continuity between PCM connector terminal A21 and body ground.



Wire side of female terminals

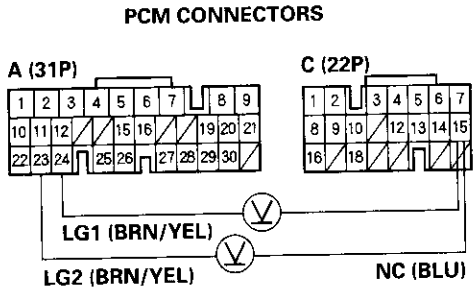
Is there continuity?

YES – Repair short to ground in the wire between PCM connector terminal A21 and the countershaft speed sensor connector. ■

NOTE: A short to ground on this circuit damages the PCM.

NO – Update the PCM if it does not have the latest software, or substitute a known-good PCM, then recheck (see page 14-7). If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

24. Measure the voltage between PCM connector terminals C15 and A23 or A24.



Wire side of female terminals

Is there about 5 V?

YES – Repair open in the wire between PCM connector terminal C15 and the countershaft speed sensor connector. ■

NO – Update the PCM if it does not have the latest software, or substitute a known-good PCM, then recheck (see page 14-7). If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

DTC Troubleshooting (cont'd)

DTC P0730: Problem in Shift Control System

NOTE:
- Record all freeze data and review General Troubleshooting Information (see page 14-3) before you troubleshoot.
- Keep replacement solenoid valves on hand;
  - A/T clutch pressure control solenoid valves B and C
  - Shift solenoid valves A, B, C, D, and E

1. Check whether the OBD II scan tool indicates another code.

   Does the OBD II scan tool indicate another code?

   YES – Perform the troubleshooting flowchart for the indicated Code(s). Recheck for code P0730 after troubleshooting. ■

   NO – Go to step 2.

   NOTE: Do not continue with this troubleshooting until the causes of any other DTCs have been corrected.

2. Measure the 1st, 2nd, 3rd, 4th, and 5th clutch pressure (see page 14-123).

   Is each clutch pressure within the service limit?

   YES – Go to step 3.

   NO – Repair the hydraulic system as necessary. ■

3. Replace the shift solenoid valves A, B, C, D, and E (see page 14-127).

4. Replace the A/T clutch pressure control solenoid valves B and C (see page 14-132).

5. Turn the ignition switch OFF, and reset the PCM memory by removing the No. 6 ECU (15A) fuse in the under-hood fuse/relay box for more than 10 seconds.

6. Using the scan tool, check to be sure that the engine coolant temperature is 176°F (80°C) or above. If the coolant temperature is low, warm up the engine to normal operating temperature (the radiator fan comes on).

7. Drive the vehicle at speeds over 12 mph (20 km/h) in 1st, 2nd, 3rd, 4th, and 5th gears in [D] position for more than 30 seconds.

8. Recheck for code P0730.

   Does the OBD II scan tool indicate code P0730?

   YES – Replace the transmission. ■

   NO – The system is OK at this time. ■

DTC P0740: Problem in Lock-up Control System

NOTE:
- Record all freeze data and review General Troubleshooting Information (see page 14-3) before you troubleshoot.
- Keep replacement solenoid valves on hand;
  - A/T clutch pressure control solenoid valves A
  - Shift solenoid valves E

1. Check whether the OBD II scan tool indicates another code.

   Does the OBD II scan tool indicate another code?

   YES -- Perform the Troubleshooting Flowchart for the indicated Code(s). Recheck for code P0740 after troubleshooting. ■

   NO -- Go to step 2.

   NOTE: Do not continue with this troubleshooting until the causes of any other DTCs have been corrected.

2. Measure the line pressure (see page 14-123).

   Is the line pressure within the service limit?

   YES – Go to step 3.

   NO – Repair the hydraulic system as necessary. ■

3. Replace the shift solenoid valve E (see page 14-127).

4. Replace the A/T clutch pressure control solenoid valve A (see page 14-130).

5. Turn the ignition switch OFF, and reset the PCM memory by removing the No. 6 ECU (15A) fuse in the under-hood fuse/relay box for more than 10 seconds.

6. Using the scan tool, check to be sure that the engine coolant temperature is 176°F (80°C) or above. If the coolant temperature is low, warm up the engine to normal operating temperature (the radiator fan comes on).

7. Drive the vehicle at the freeze data speed or at 55 mph (88 km/h) in 5th gear for more than 1 minute.

8. Recheck for code P0740.

   Does the OBD II scan tool indicate code P0740?

   YES – Replace the transmission and torque converter. ■

   NO – The system is OK at this time. ■

DTC Troubleshooting (cont'd)

DTC P0745: Problem in Hydraulic Control System of A/T Clutch Pressure Control Solenoid Valve A Circuit

NOTE: Record all freeze data and review General Troubleshooting Information (see page 14-3) before you troubleshoot.

1. Check whether the OBD II scan tool indicates another code.

   Does the OBD II scan tool indicate another code?

   YES – Perform the troubleshooting flowchart for the indicated code(s). Turn the ignition switch OFF, and go to step 4 after troubleshooting.

   NO – Go to step 2.

2. Turn the ignition switch OFF.

3. Replace the A/T clutch pressure control solenoid valve A (see page 14-130).

4. Reset the PCM memory by removing the No. 6 ECU fuse (15A) in the under-hood fuse/relay box for more than 10 seconds.

5. Start the engine, and shift to Ⓜ position. Start the vehicle off in 1st, drive at 19 mph (30 km/h) for 10 seconds, shift to 2nd gear, drive at 19 mph (30 km/h) for 10 seconds, then decelerate to a stop.

6. Repeat step 5.

7. Recheck for DTC P0745.

   Does the OBD II scan tool indicate code P0745?

   YES – Replace the transmission assembly. ■

   NO – The problem has been corrected. ■

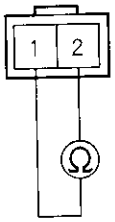
DTC P0748: Problem in A/T Clutch Pressure Control Solenoid Valve A Circuit

NOTE:
- Record all freeze data and review General Troubleshooting Information (see page 14-3) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Disconnect the A/T clutch pressure control solenoid valve A connector.

2. Measure A/T clutch pressure control solenoid valve A resistance at the solenoid valve connector terminals.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A CONNECTOR



Terminal side of male terminals

Is there 3 – 10 Ω ?

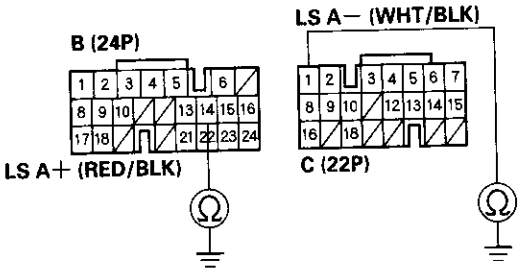
YES – Go to step 3.

NO – Replace the A/T clutch pressure control solenoid valve A. ■

3. Disconnect PCM connectors B (24P) and C (22P).

4. Check for continuity between PCM connector terminals B14 and body ground, and between C1 and body ground.

PCM CONNECTORS



Wire side of female terminals

Is there continuity?

YES – Repair short to ground in the wires between PCM connector terminals B14 and the A/T clutch pressure control solenoid valve A, and between C1 and the solenoid valve A. ■

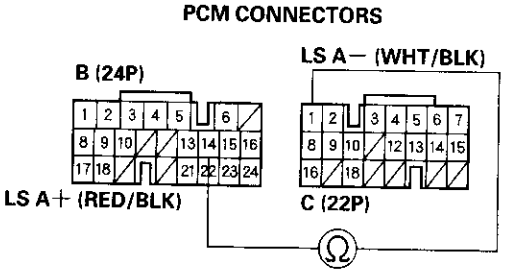
NO – Go to step 5.

(cont'd)

DTC Troubleshooting (cont'd)

5. Connect the A/T clutch pressure control solenoid valve A connector.

6. Measure the resistance between the PCM connector terminals B14 and C1.



Wire side of female terminals

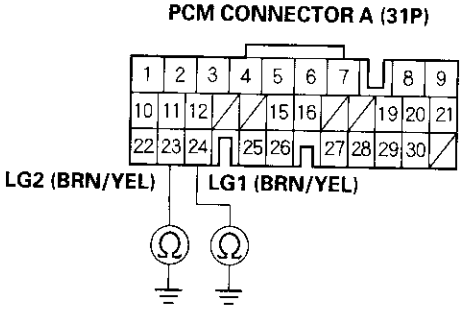
Is there 3− 10 Ω ?

YES− Go to step 7.

NO− Repair loose terminal or open in the wires between PCM connector terminals B14 and the A/T clutch pressure control solenoid valve A, and between C1 and the solenoid valve A. ■

7. Disconnect PCM connector A (31P).

8. Check for continuity between PCM connector terminals A23 and body ground, and between A24 and body ground.



Wire side of female terminals

Is there continuity?

YES - Update the PCM if it does not have the latest software, or substitute a known-good PCM, then recheck (see page 14-7). If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

NO− Repair open in the wires between PCM connector terminals A23 and ground (G101), and between A24 and ground (G101), and repair poor ground (G101). ■

DTC P0750: Problem in Hydraulic Control System of Shift Solenoid Valve A Circuit

NOTE: Record all freeze data and review General Troubleshooting Information (see page 14-3) before you troubleshoot.

1. Check whether the OBD II scan tool indicates another code.

   Does the OBD II scan tool indicate another code?

   YES – Perform the troubleshooting flowchart for the indicated code(s). Turn the ignition switch OFF, and go to step 4 after troubleshooting.

   NO – Go to step 2.

2. Turn the ignition switch OFF.

3. Replace the shift solenoid valve A (see page 14-127).

4. Reset the PCM memory by removing the No. 6 ECU fuse (15A) in the under-hood fuse/relay box for more than 10 seconds.

5. Start the engine, and shift to Ⓜ position. Start the vehicle off in 1st, drive at 25 mph (40 km/h) for 10 seconds, shift to 2nd gear, drive at 25 mph (40 km/h) for 10 seconds, then downshift to 1st gear, and drive at 25 mph (40 km/h) for 10 seconds.

6. Recheck for DTC P0750.

   Does the scan tool indicate code P0750?

   YES – Go to step 7.

   NO – The problem has been corrected. ■

7. Check for warranty coverage.

   Is the vehicle under warranty?

   YES – Replace the transmission assembly. ■

   NO – Go to step 8.

8. Turn the ignition switch OFF.

9. Remove the transmission, and overhaul transmission hydraulic control system and the 2nd clutch line.

10. Install the transmission on the vehicle.

11. Reset the PCM memory by removing the No. 6 ECU fuse (15A) in the under-hood fuse/relay box for more than 10 seconds, if necessary.

12. Start the engine, and shift to Ⓜ position. Start the vehicle off in 1st, drive at 25 mph (40 km/h) for 10 seconds, shift to 2nd gear, drive at 25 mph (40 km/h) for 10 seconds, then downshift to 1st gear, and drive at 25 mph (40 km/h) for 10 seconds.

13. Recheck for DTC P0750.

    Does the OBD II scan tool indicate code P0750?

    YES – Replace the transmission assembly. ■

    NO – The problem has been corrected. ■

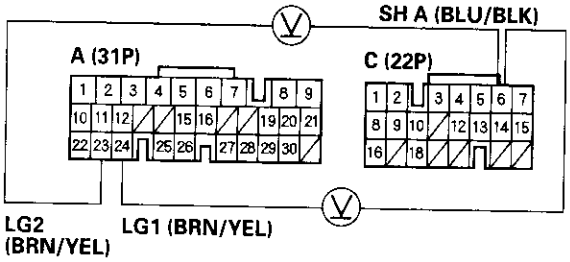
DTC Troubleshooting (cont'd)

DTC P0753: Problem in Shift Solenoid Valve A Circuit

NOTE:
- Record all freeze data and review General Troubleshooting Information (see page 14-3) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch OFF.
2. Disconnect PCM connectors A (31P) and C (22P).
3. Turn the ignition switch ON (II).
4. Measure the voltage between PCM connector terminals C6 and A23 or A24.

PCM CONNECTORS



Wire side of female terminals

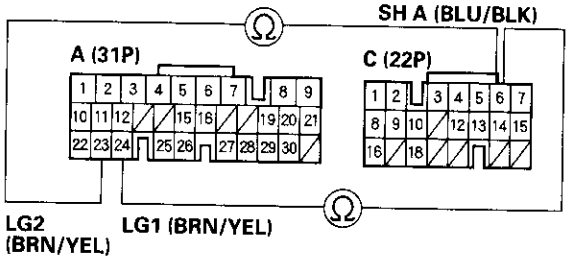
Is there voltage?

YES – Repair short to power in the wire between PCM connector terminal C6 and the shift solenoid valve A. ■

NO – Go to step 5.

5. Turn the ignition switch OFF.
6. Disconnect the shift solenoid harness connector at the transmission housing.
7. Check for continuity between PCM connector terminals C6 and A23 or A24.

PCM CONNECTORS



Wire side of female terminals

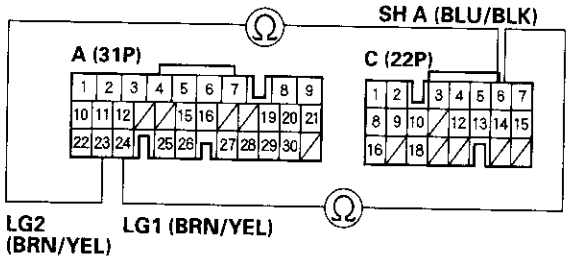
Is there continuity?

YES – Repair short to ground in the wire between PCM connector terminal C6 and the shift solenoid harness connector. ■

NO – Go to step 8.

8. Connect the shift solenoid harness connector.
9. Measure the resistance between PCM connector terminals C6 and A23 or A24.

PCM CONNECTORS



Wire side of female terminals

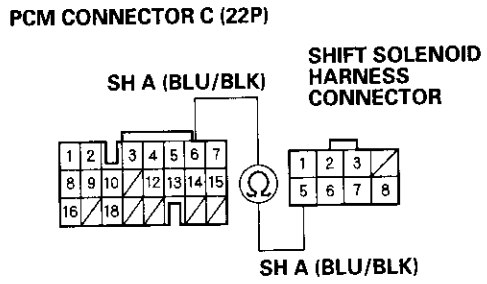
Is there 12 – 25 Ω ?

YES – Update the PCM if it does not have the latest software, or substitute a known-good PCM, then recheck (see page 14-7). If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

NO – Go to step 10.

10. Disconnect the shift solenoid harness connector.

11. Check for continuity between PCM connector terminal C6 and the No. 5 terminal of the shift solenoid harness connector.



Wire side of female terminals

Is there continuity?

YES—Check the shift solenoid valve A, and check for an open in the shift solenoid harness in the transmission (see page 14-125). ■

NO—Repair open in the wire between PCM connector terminal C6 and the shift solenoid harness connector. ■

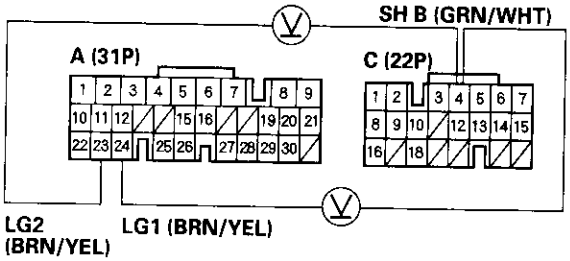
DTC Troubleshooting (cont'd)

DTC P0758: Problem in Shift Solenoid Valve B Circuit

NOTE:
- Record all freeze data and review General Troubleshooting Information (see page 14-3) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch OFF.
2. Disconnect PCM connectors A (31P) and C (22P).
3. Turn the ignition switch ON (II).
4. Measure the voltage between PCM connector terminals C4 and A23 or A24.

PCM CONNECTORS



Wire side of female terminals

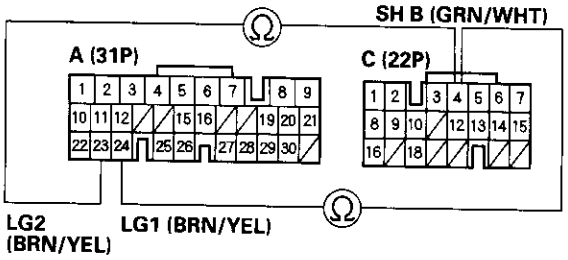
Is there voltage?

YES – Repair short to power in the wire between PCM connector terminal C4 and the shift solenoid valve B. ■

NO – Go to step 5.

5. Turn the ignition switch OFF.
6. Disconnect the shift solenoid harness connector at the transmission housing.
7. Check for continuity between PCM connector terminals C4 and A23 or A24.

PCM CONNECTORS



Wire side of female terminals

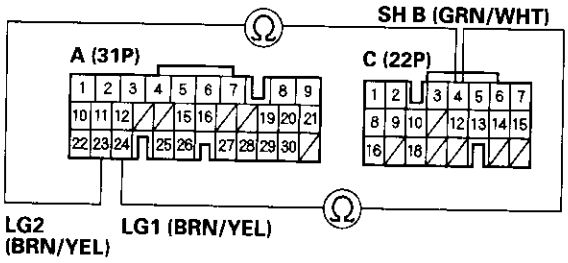
Is there continuity?

YES – Repair short to ground in the wire between PCM connector terminal C4 and the shift solenoid harness connector. ■

NO – Go to step 8.

8. Connect the shift solenoid harness connector.
9. Measure the resistance between PCM connector terminals C4 and A23 or A24.

PCM CONNECTORS



Wire side of female terminals

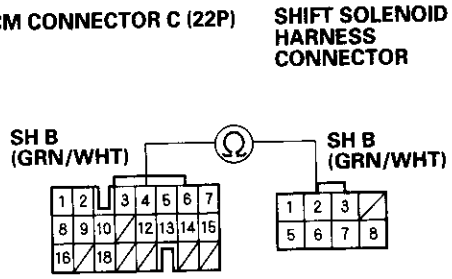
Is there 12 – 25 Ω ?

YES – Update the PCM if it does not have the latest software, or substitute a known-good PCM, then recheck (see page 14-7). If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

NO – Go to step 10.

10. Disconnect the shift solenoid harness connector.

11. Check for continuity between PCM connector terminal C4 and No. 2 terminal of the shift solenoid harness connector.



Wire side of female terminals

Is there continuity?

YES – Check shift solenoid valve B, and check for an open in the shift solenoid harness in the transmission (see page 14-125). ■

NO – Repair open in the wire between PCM connector terminal C4 and the shift solenoid harness connector. ■

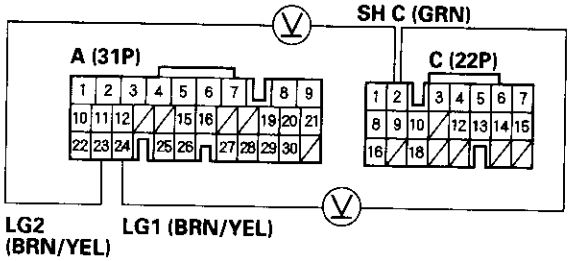
DTC Troubleshooting (cont'd)

DTC P0763: Problem in Shift Solenoid Valve C Circuit

NOTE:
- Record all freeze data and review General Troubleshooting Information (see page 14-3) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch OFF.
2. Disconnect PCM connectors A (31P) and C (22P).
3. Turn the ignition switch ON (II).
4. Measure the voltage between PCM connector terminals C2 and A23 or A24.

PCM CONNECTORS



Wire side of female terminals

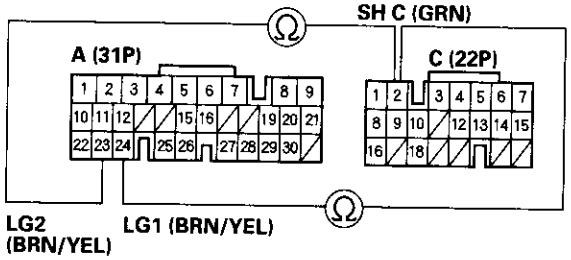
Is there voltage?

YES—Repair short to power in the wire between PCM connector terminal C2 and the shift solenoid valve C. ■

NO—Go to step 5.

5. Turn the ignition switch OFF.
6. Disconnect the shift solenoid harness connector at the transmission housing.
7. Check for continuity between PCM connector terminals C2 and A23 or A24.

PCM CONNECTORS



Wire side of female terminals

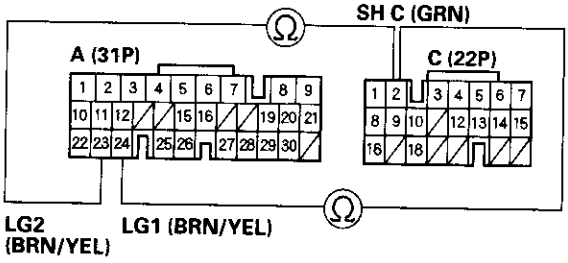
Is there continuity?

YES—Repair short to ground in the wire between PCM connector terminal C2 and the shift solenoid harness connector. ■

NO—Go to step 8.

8. Connect the shift solenoid harness connector.
9. Measure the resistance between PCM connector terminals C2 and A23 or A24.

PCM CONNECTORS



Wire side of female terminals

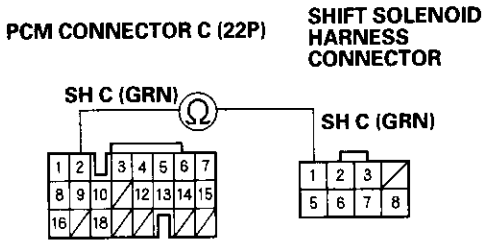
Is there 12–25 Ω ?

YES—Update the PCM if it does not have the latest software, or substitute a known-good PCM, then recheck (see page 14-7). If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

NO—Go to step 10.

10. Disconnect the shift solenoid harness connector.

11. Check for continuity between PCM connector terminal C2 and the No. 1 terminal of the shift solenoid harness connector.



Wire side of female terminals

Is there continuity?

YES — Check the shift solenoid valve C, and check for an open in the shift solenoid harness in the transmission (see page 14-125). ■

NO — Repair open in the wire between PCM connector terminal C2 and the shift solenoid harness connector. ■

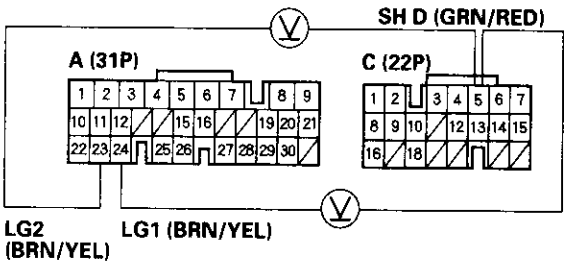
DTC Troubleshooting (cont'd)

DTC P0768: Problem in Shift Solenoid Valve D Circuit

NOTE:
- Record all freeze data and review General Troubleshooting Information (see page 14-3) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch OFF.
2. Disconnect PCM connectors A (31P) and C (22P).
3. Turn the ignition switch ON (II).
4. Measure the voltage between PCM connector terminals C5 and A23 or A24.

PCM CONNECTORS



Wire side of female terminals

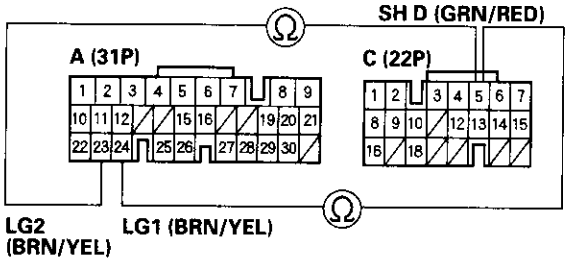
Is there voltage?

YES – Repair short to power in the wire between PCM connector terminal C5 and the shift solenoid valve D. ■

NO – Go to step 5.

5. Turn the ignition switch OFF.
6. Disconnect the shift solenoid harness connector at the transmission housing.
7. Check for continuity between PCM connector terminals C5 and A23 or A24.

PCM CONNECTORS



Wire side of female terminals

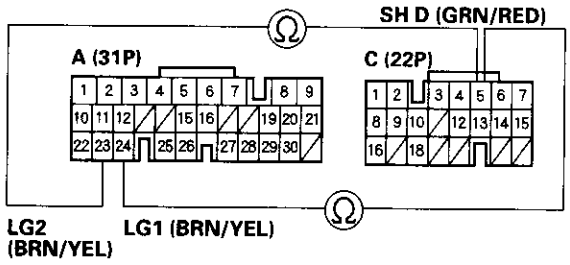
Is there continuity?

YES – Repair short to ground in the wire between PCM connector terminal C5 and the shift solenoid harness connector. ■

NO – Go to step 8.

8. Connect the shift solenoid harness connector.
9. Measure the resistance between PCM connector terminals C5 and A23 or A24.

PCM CONNECTORS



Wire side of female terminals

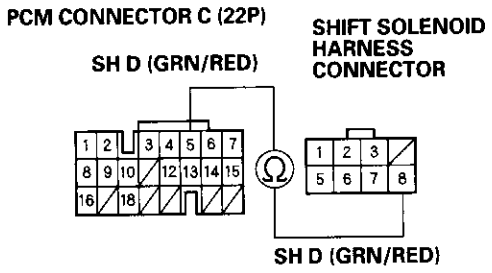
Is there 12 – 25 Ω ?

YES – Update the PCM if it does not have the latest software, or substitute a known-good PCM, then recheck (see page 14-7). If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

NO – Go to step 10.

10. Disconnect the shift solenoid harness connector.

11. Check for continuity between PCM connector terminal C5 and the No. 8 terminal of the shift solenoid harness connector.



Wire side of female terminals

Is there continuity?

YES – Check the shift solenoid valve D, and check for an open in the shift solenoid harness in the transmission (see page 14-125). ■

NO – Repair open in the wire between PCM connector terminal C5 and the shift solenoid harness connector. ■

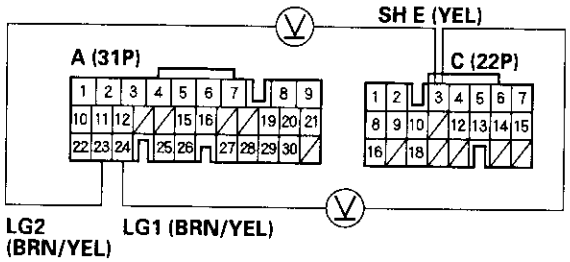
DTC Troubleshooting (cont'd)

DTC P0773: Problem in Shift Solenoid Valve E Circuit

NOTE:
- Record all freeze data and review General Troubleshooting Information (see page 14-3) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch OFF.
2. Disconnect PCM connectors A (31P) and C (22P).
3. Turn the ignition switch ON (II).
4. Measure the voltage between PCM connector terminals C3 and A23 or A24.

PCM CONNECTORS



Wire side of female terminals

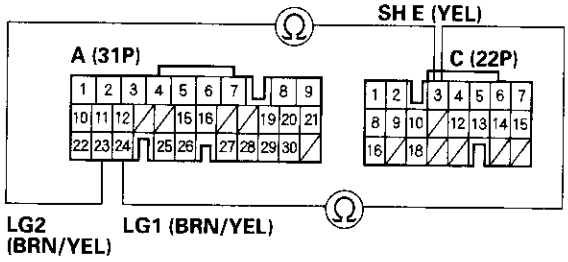
Is there voltage?

YES – Repair short to power in the wire between PCM connector terminal C3 and the shift solenoid valve E. ■

NO – Go to step 5.

5. Turn the ignition switch OFF.
6. Disconnect the shift solenoid harness connector at the transmission housing.
7. Check for continuity between PCM connector terminals C3 and A23 or A24.

PCM CONNECTORS



Wire side of female terminals

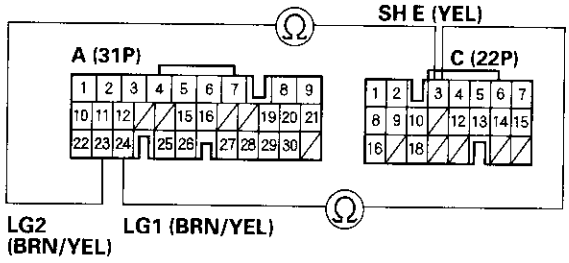
Is there continuity?

YES – Repair short to ground in the wire between PCM connector terminal C3 and the shift solenoid harness connector. ■

NO – Go to step 8.

8. Connect the shift solenoid harness connector.
9. Measure the resistance between PCM connector terminals C3 and A23 or A24.

PCM CONNECTORS



Wire side of female terminals

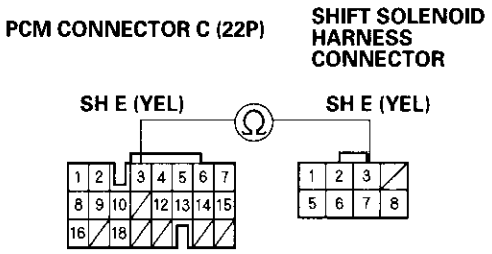
Is there 12 – 25 Ω ?

YES – Update the PCM if it does not have the latest software, or substitute a known-good PCM, then recheck (see page 14-7). If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

NO – Go to step 10.

10. Disconnect the shift solenoid harness connector.

11. Check for continuity between PCM connector terminal C3 and the No. 3 terminal of the shift solenoid harness connector.



Wire side of female terminals

Is there continuity?

YES – Check the shift solenoid valve E, and check for an open in the shift solenoid harness in the transmission (see page 14-125). ■

NO – Repair open in the wire between PCM connector terminal C3 and the shift solenoid harness connector. ■

DTC Troubleshooting (cont'd)

DTC P0775: Problem in the Hydraulic Control System of A/T Clutch Pressure Control Solenoid Valve B Circuit

NOTE:Record all freeze data and review General Troubleshooting Information (see page 14-3) before you troubleshoot.

1. Check whether the OBD II scan tool indicates another code.

   Does the OBD II scan tool indicate another code?

   YES—Perform the troubleshooting flowchart for the indicated code(s). Turn the ignition switch OFF, and go to step 4 after troubleshooting.

   NO—Go to step 2.

2. Turn the ignition switch OFF.

3. Replace the A/T clutch pressure control solenoid valve B (with C as a set) (see page 14-132).

4. Reset the PCM memory by removing the No. 6 ECU (15A) fuse in the under-hood fuse/relay box for more than 10 seconds.

5. Start the engine, and shift to the M position. Test-drive the vehicle in 2nd gear at 25 mph (40 km/h) for 10 seconds, shift to 3rd gear, drive at 25 mph (40 km/h) for 10 seconds, then decelerate to a stop. Do not stop the engine. Start off in 1st gear in the M position, and drive in 1st gear at 19 mph (30 km/h) for 10 seconds.

6. Repeat step 5 to test-drive the vehicle.

7. Recheck for DTC P0775.

   Does the OBD II scan tool indicate code P0775?

   YES—Replace the transmission assembly.■

   NO—The problem has been corrected.■

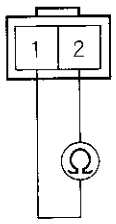
DTC P0778: Problem in A/T Clutch Pressure Control Solenoid Valve B Circuit

NOTE:
- Record all freeze data and review General Troubleshooting Information (see page 14-3) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Disconnect the A/T clutch pressure control solenoid valve B connector.

2. Measure A/T clutch pressure control solenoid valve B resistance at the solenoid valve connector terminals.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B CONNECTOR



Terminal side of male terminals

Is there 3— 10 Ω ?

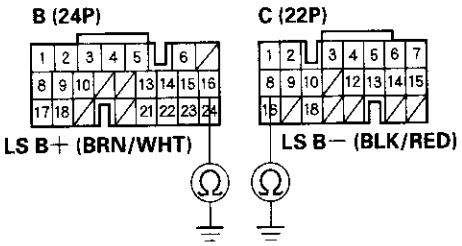
YES — Go to step 3.

NO — Replace the A/T clutch pressure control solenoid valve B.■

3. Disconnect PCM connectors B (24P) and C (22P).

4. Check for continuity between PCM connector terminals B16 and body ground, and between C8 and body ground.

PCM CONNECTORS



Wire side of female terminals

Is there continuity?

YES — Repair short to ground in the wires between PCM connector terminals B16 and the A/T clutch pressure control solenoid valve B, and between C8 and the solenoid valve B.■

NO — Go to step 5.

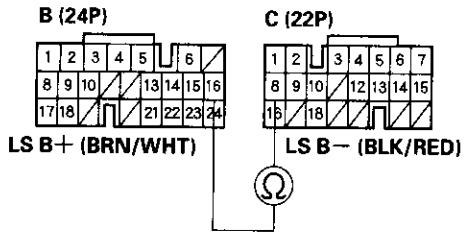
(cont'd)

DTC Troubleshooting (cont'd)

5. Connect the A/T clutch pressure control solenoid valve B connector.

6. Measure the resistance between PCM connector terminals B16 and C8.

PCM CONNECTORS



Wire side of female terminals

Is there 3 – 10 Ω ?

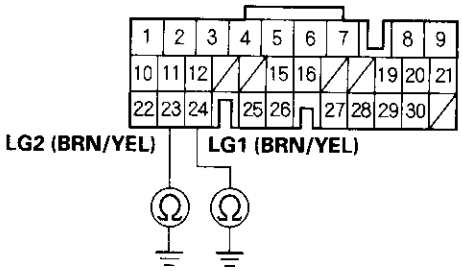
YES – Go to step 7.

NO – Repair loose terminal or open in the wires between PCM connector terminals B16 and the A/T clutch pressure control solenoid valve B, and between C8 and the solenoid valve B.■

7. Disconnect PCM connector A (31P).

8. Check for continuity between PCM connector terminals A23 and body ground, and between A24 and body ground.

PCM CONNECTOR A (31P)



Wire side of female terminals

Is there continuity?

YES – Update the PCM if it does not have the latest software, or substitute a known-good PCM, then recheck (see page 14-7). If the symptom/indication goes away with a known-good PCM, replace the original PCM.■

NO – Repair open in the wires between PCM connector terminals A23 and ground (G101), and between A24 and ground (G101), and repair poor ground (G101).■

DTC P0780: Mechanical Problem in Hydraulic Control System

NOTE:
- Record all freeze data and review General Troubleshooting Information (see page 14-3) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.
- Keep replacement solenoid valves on hand;
  - A/T clutch pressure control solenoid valves A, B and C
  - Shift solenoid valves A, B, C, D, and E

1. Check whether the OBD II scan tool indicates another code.

   Does the OBD II scan tool indicate another code?

   YES – Perform the troubleshooting flowchart for the indicated code(s). Check for DTC P0780 after troubleshooting. ■

   NO – Go to step 2.

2. Turn the ignition switch OFF.
3. Replace the A/T clutch pressure control solenoid valve A (see page 14-130).
4. Replace the A/T clutch pressure control solenoid valves B and C (see page 14-132).
5. Reset the PCM memory by removing the No. 6 ECU (15A) fuse in the under-hood fuse/relay box for more than 10 seconds.
6. Drive the vehicle for several minutes in 1st, 2nd, 3rd, 4th, and 5th gears in [D] position, and stop the vehicle. Do not stop the engine.
7. Repeat step 6 five times.
8. Recheck for DTC P0780.

   Does the OBD II scan tool indicate code P0780?

   YES – Go to step 9.

   NO – The problem has been corrected. ■

9. Turn the ignition switch OFF.
10. Replace the shift solenoid valves A, B, C, D and E (see page 14-127).
11. Reset the PCM memory by removing the No. 6 ECU (15A) fuse in the under-hood fuse/relay box for more than 10 seconds.
12. Drive the vehicle for several minutes in 1st, 2nd, 3rd, 4th, and 5th gears in [D] position, and stop the vehicle. Do not stop the engine.
13. Repeat step 12 five times.
14. Recheck for DTC P0780.

    Does the OBD II scan tool indicate code P0780?

    YES – Go to step 16.

    NO – The problem has been corrected. ■

15. Check for warranty coverage.

    Is the vehicle under warranty?

    YES – Replace the transmission assembly. ■

    NO – Go to step 16.

16. Turn the ignition switch OFF.
17. Remove the transmission, and overhaul transmission hydraulic control system.
18. Install the transmission on the vehicle.
19. Reset the PCM memory by removing the No. 6 ECU (15A) fuse in the under-hood fuse/relay box for more than 10 seconds.
20. Drive the vehicle for several minutes in 1st, 2nd, 3rd, 4th, and 5th gears in [D] position, and stop the vehicle. Do not stop the engine.
21. Repeat step 20 five times.
22. Recheck for DTC P0780.

    Does the OBD II scan tool indicate code P0780?

    YES – Replace the transmission assembly. ■

    NO – The problem has been corrected. ■

DTC Troubleshooting (cont'd)

DTC P0795: Problem in Hydraulic Control System of A/T Clutch Pressure Control Solenoid Valve C Circuit

NOTE: Record all freeze data and review General Troubleshooting Information (see page 14-3) before you troubleshoot.

1. Check whether the OBD II scan tool indicates another code.

   Does the OBD II scan tool indicate another code?

   YES – Perform the troubleshooting flowchart for the indicated code(s). Turn the ignition switch OFF, and go to step 4 after troubleshooting.

   NO – Go to step 2.

2. Turn the ignition switch OFF.
3. Replace the A/T clutch pressure control solenoid valve C (with B as a set) (see page 14-132).
4. Reset the PCM memory by removing the No. 6 ECU (15A) fuse in the under-hood fuse/relay box for more than 10 seconds.
5. Drive the vehicle in M position, and drive in 5th gear at 25 mph (40 km/h) for 10 seconds, then downshift to 3rd gear. Drive in 3rd gear at 25 mph (40 km/h) for 10 seconds, and decelerate to a stop.
6. Recheck for DTC P0795.

   Does the scan tool indicate code P0795?

   YES – Go to step 7.

   NO – The problem has been corrected. ■

7. Check for warranty coverage.

   Is the vehicle under warranty?

   YES – Replace the transmission assembly. ■

   NO – Go to step 8.

8. Turn the ignition switch OFF.
9. Remove the transmission, and overhaul transmission hydraulic control system and the 3rd and 5th clutch lines.
10. Install the transmission on the vehicle.
11. Reset the PCM memory by removing the No. 6 ECU (15A) fuse in the under-hood fuse/relay box for more than 10 seconds.
12. Drive the vehicle in M position, and drive in 5th gear at 25 mph (40 km/h) for 10 seconds, then downshift to 3rd gear. Drive in 3rd gear at 25 mph (40 km/h) for 10 seconds, and decelerate to a stop.
13. Recheck for DTC P0795.

    Does the scan tool indicate code P0795?

    YES – Replace the transmission assembly. ■

    NO – The problem has been corrected. ■

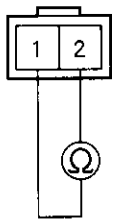
DTC P0798: Problem in A/T Clutch Pressure Control Solenoid Valve C Circuit

NOTE:
- Record all freeze data and review General Troubleshooting Information (see page 14-3) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Disconnect the A/T clutch pressure control solenoid valve C connector.

2. Measure A/T clutch pressure control solenoid valve C resistance at the solenoid valve connector terminals.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C CONNECTOR



Terminal side of male terminals

Is there 3– 10 Ω ?

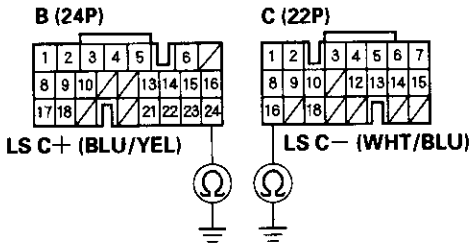
YES – Go to step 3.

NO – Replace the A/T clutch pressure control solenoid valve C. ■

3. Disconnect PCM connectors B (24P) and C (22P).

4. Check for continuity between PCM connector terminals B24 and body ground, and between C16 and body ground.

PCM CONNECTORS



Wire side of female terminals

Is there continuity?

YES – Repair short to ground in the wires between PCM connector terminals B24 and the A/T clutch pressure control solenoid valve C, and between C16 and the solenoid valve C. ■

NO – Go to step 5.

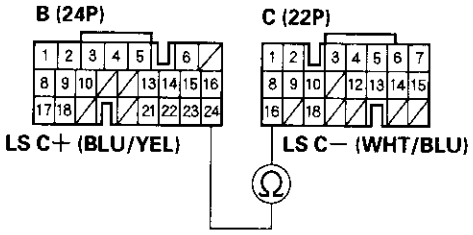
(cont'd)

DTC Troubleshooting (cont'd)

5. Connect the A/T clutch pressure control solenoid valve C connector.

6. Measure the resistance between PCM connector terminals B24 and C16.

PCM CONNECTORS



Wire side of female terminals

Is there 3— 10 Ω ?

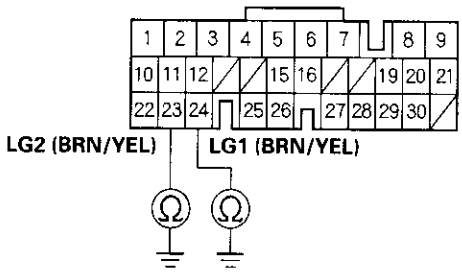
YES—Go to step 7.

NO—Repair loose terminal or open in the wires between PCM connector terminals B24 and the A/T clutch pressure control solenoid valve C, and between C16 and the solenoid valve C.■

7. Disconnect PCM connector A (31P).

8. Check for continuity between PCM connector terminals A23 and body ground, and between A24 and body ground.

PCM CONNECTOR A (31P)



Wire side of female terminals

Is there continuity?

YES—Update the PCM if it does not have the latest software, or substitute a known-good PCM, then recheck (see page 14-7). If the symptom/indication goes away with a known-good PCM, replace the original PCM.■

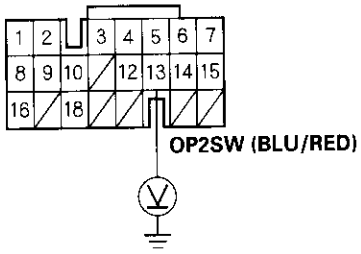
NO—Repair open in the wires between PCM connector terminals A23 and ground (G101), and between A24 and ground (G101), and repair poor ground (G101).■

DTC P0840: Problem in 2nd Clutch Transmission Fluid Pressure Switch Circuit

NOTE: Record all freeze data and review General Troubleshooting Information (see page 14-3) before you troubleshoot.

1. Disconnect the 2nd clutch transmission fluid pressure switch.
2. Turn the ignition switch ON (II).
3. Measure the voltage between PCM connector terminal C13 and body ground.

PCM CONNECTOR C (22P)



Wire side of female terminals

Is there about 5 V?

YES – Go to step 4.

NO – Check for short to ground in the wire between PCM connector terminal C13 and the 2nd clutch transmission fluid pressure switch. If wire is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM, then recheck (see page 14-7). If the symptom/indication goes away with a known-good PCM, replace the original PCM.■

4. Measure the voltage between the 2nd clutch transmission fluid pressure switch connector terminal and body ground.

2ND CLUTCH TRANSMISSION FLUID PRESSURE SWITCH CONNECTORS

Wire side of female terminal

Is there about 5 V?

YES – Go to step 5.

NO – Repair open in the wire between PCM connector terminal C13 and the 2nd clutch transmission fluid pressure switch.■

5. Turn the ignition switch OFF.
6. Measure the resistance between the 2nd clutch transmission fluid pressure switch connector terminal and body ground.

2ND CLUTCH TRANSMISSION FLUID PRESSURE SWITCH CONNECTOR

Terminal side of male terminals

Is there 40 MΩ or more?

NOTE: An open circuit is greater than 40 MΩ

YES – Go to step 7.

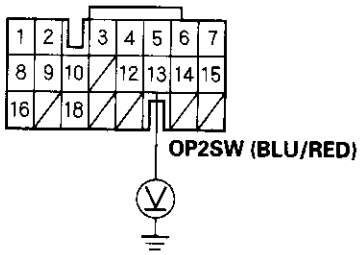
NO – Replace the 2nd clutch transmission fluid pressure switch.■

(cont'd)

DTC Troubleshooting (cont'd)

7. Connect the 2nd clutch transmission fluid pressure switch connector.
8. Raise the front of the vehicle, make sure it is securely supported, and allow the front wheels to rotate freely.
9. Start the engine, and shift into M position.
10. Drive the vehicle in 2nd gear for more than five seconds.
11. While driving in 2nd gear, measure the voltage between PCM connector terminal C13 and body ground.

PCM CONNECTOR C (22P)



Wire side of female terminals

Is there 0 V?

YES -- Update the PCM if it does not have the latest software, or substitute a known-good PCM, then recheck (see page 14-7). If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

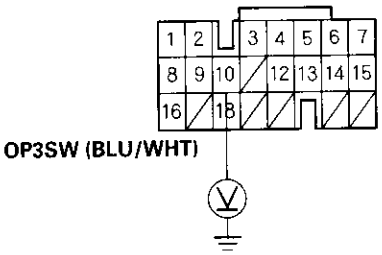
NO – Check 2nd clutch pressure. If pressure is in specification, replace the 2nd clutch transmission fluid pressure switch. ■

DTC P0845: Problem in 3rd Clutch Transmission Fluid Pressure Switch Circuit

NOTE: Record all freeze data and review General Troubleshooting Information (see page 14-3) before you troubleshoot.

1. Disconnect the 3rd clutch transmission fluid pressure switch.
2. Turn the ignition switch ON (II).
3. Measure the voltage between PCM connector terminal C10 and body ground.

PCM CONNECTOR C (22P)



Wire side of female terminals

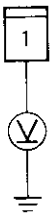
Is there 5 V?

YES – Go to step 4.

NO – Check for short to ground in the wire between PCM connector terminal C10 and the 3rd clutch transmission fluid pressure switch. If wire is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM, then recheck (see page 14-7). If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

4. Measure the voltage between the 3rd clutch transmission fluid pressure switch connector terminal and body ground.

3RD CLUTCH TRANSMISSION FLUID PRESSURE SWITCH CONNECTOR



Wire side of female terminals

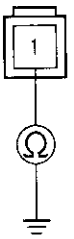
Is there 5 V?

YES – Go to step 5.

NO – Repair open in the wire between PCM connector terminal C10 and the 3rd clutch transmission fluid pressure switch. ■

5. Turn the ignition switch OFF.
6. Measure the resistance between the 3rd clutch transmission fluid pressure switch connector terminal and body ground.

3RD CLUTCH TRANSMISSION FLUID PRESSURE SWITCH CONNECTOR



Terminal side of male terminals

Is there 40 MΩ or more?

NOTE: An open circuit is greater than 40 MΩ.

YES – Go to step 7.

NO – Replace the 3rd clutch transmission fluid pressure switch. ■

(cont'd)

DTC Troubleshooting (cont'd)

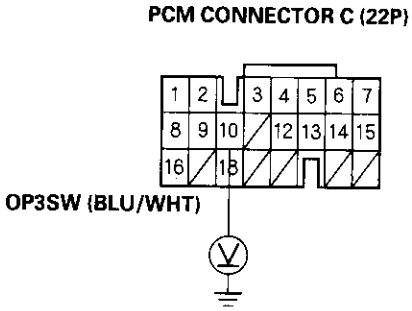
7. Connect the 3rd clutch transmission fluid pressure switch connector.

8. Raise the front of the vehicle, make sure it is securely supported, and allow the front wheels to rotate freely.

9. Start the engine, and shift into M position.

10. Accelerate slowly, and drive the vehicle in 3rd gear for more than 5 seconds.

11. While driving in 3rd gear, measure the voltage between PCM connector terminal C10 and body ground.



Wire side of female terminals

Is there 0 V?

YES – Update the PCM if it does not have the latest software, or substitute a known-good PCM, then recheck (see page 14-7). If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

NO – Check 3rd clutch pressure. If pressure is in specification, replace the 3rd clutch transmission fluid pressure switch. ■

DTC P1705: Short in Transmission Range Switch Circuit (More than one range position is on at the same time.)

NOTE:
- Record all freeze data and review General Troubleshooting Information (see page 14-3) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch ON (II).
2. Observe the A/T gear position indicator while shifting to each position.

   Do any indicators stay on when the shift lever is not in that position?

   YES – Go to step 3.

   NO – Turn the ignition switch OFF, then go to step 4.
3. Disconnect the transmission range switch connector, and watch the A/T gear position indicator.

   Do all gear position indicators go out?

   YES – Replace the transmission range switch. ■

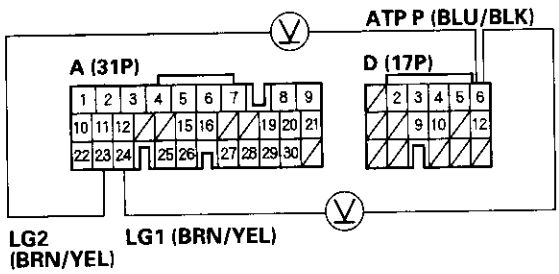
   NO – Turn the ignition switch OFF, then go to step 5.
4. Inspect the transmission range switch (see page 14-168).

   Is the switch OK?

   YES – Go to step 5.

   NO – Replace the transmission range switch. ■
5. Connect the transmission range switch connector.
6. Turn the ignition switch ON (II).
7. Shift to all positions other than [P].
8. Measure the voltage between PCM connector terminals D6 and A23 or A24.

PCM CONNECTORS



Wire side of female terminals

Is there battery voltage?

YES – Go to step 9.

NO – Check for a short in the wire between PCM connector terminal D6 and the transmission range switch or A/T gear position indicator, and check for an open in the wires between ground G101 and PCM connector terminals A23 and A24. If the wires are OK, update the PCM if it does not have the latest software, or substitute a known-good PCM, then recheck (see page 14-7). If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

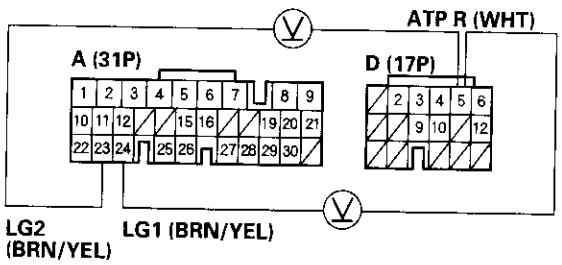
(cont'd)

DTC Troubleshooting (cont'd)

9. Shift to all positions other than R.

10. Measure the voltage between PCM connector terminals D5 and A23 or A24.

PCM CONNECTORS



Wire side of female terminals

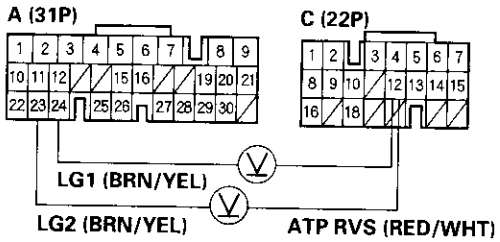
Is there battery voltage?

YES – Go to step 11.

NO – Check for a short in the wire between PCM connector terminal D5 and the transmission range switch or A/T gear position indicator. If the wire is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM, then recheck (see page 14-7). If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

11. Measure the voltage between PCM connector terminals C12 and A23 or A24.

PCM CONNECTORS



Wire side of female terminals

Is there about 5 V?

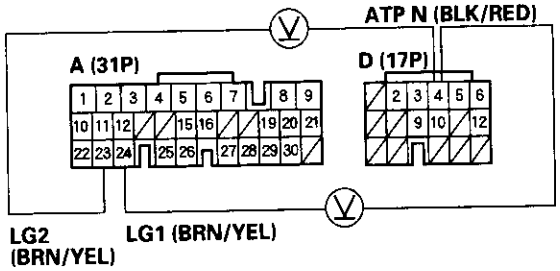
YES – Go to step 12.

NO – Check for a short in the wire between PCM connector terminal C12 and the transmission range switch. If the wire is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM, then recheck (see page 14-7). If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

12. Shift to all positions other than [N].

13. Measure the voltage between PCM connector terminals D4 and A23 or A24.

PCM CONNECTORS



Wire side of female terminals

Is there battery voltage?

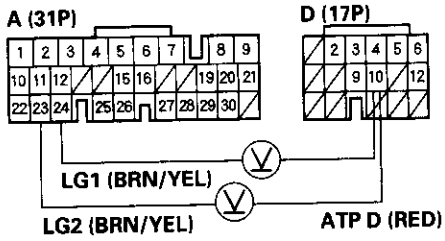
YES – Go to step 14.

NO – Check for a short in the wire between PCM connector terminal D4 and the transmission range switch or A/T gear position indicator. If the wire is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM, then recheck (see page 14-7). If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

14. Shift to all positions other than [D].

15. Measure the voltage between PCM connector terminals D10 and A23 or A24.

PCM CONNECTORS



Wire side of female terminals

Is there about 5 V?

YES – Go to step 16.

NO – Check for a short in the wire between PCM connector terminal D10 and the transmission range switch. If the wire is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM, then recheck (see page 14-7). If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

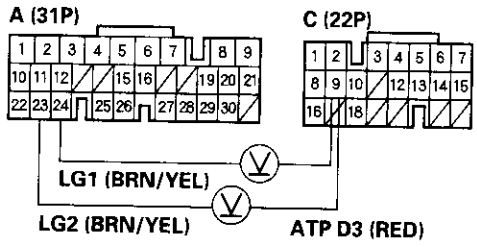
(cont'd)

DTC Troubleshooting (cont'd)

16. Shift to all positions other than D3.

17. Measure the voltage between PCM connector terminals C9 and A23 or A24.

PCM CONNECTORS



Wire side of female terminals

Is there about 5 V?

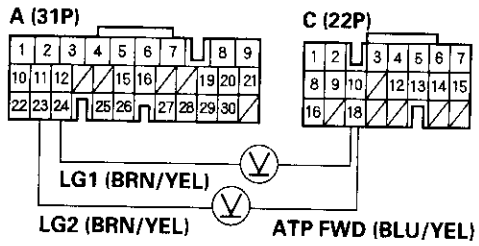
YES - Go to step 18.

NO - Check for a short in the wire between PCM connector terminal C9 and the transmission range switch. If the wire is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM, then recheck (see page 14-7). If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

18. Shift to any positions other than D and D3.

19. Measure the voltage between PCM connector terminals C18 and A23 or A24.

PCM CONNECTORS



Wire side of female terminals

Is there about 5 V?

YES - The PCM has failed; replace it. ■

NO - Check for a short in the wire between PCM connector terminal C18 and the transmission range switch. If the wire is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM, then recheck (see page 14-7). If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

DTC P1706: Open in Transmission Range Switch Circuit (No range position shown)

NOTE:
- Record all freeze data and review General Troubleshooting Information (see page 14-3) before you troubleshoot.
- This code is caused y an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Check whether DTC P1705 is indicated.

   Does the OBD II scan tool indicate code P1705?

   YES – Perform the troubleshooting flowchart for DTC P1705, then go to step 2.

   NO – Go to step 8.

2. Turn the ignition switch OFF.

3. Reset the PCM memory by removing the No. 6 ECU (15A) fuse in the under-hood fuse/relay box for more than 10 seconds.

4. Drive the vehicle in [D] position until vehicle speed reaches 37 mph (60 km/h), then slow down and stop.

5. Turn the ignition switch OFF, and turn it ON (II).

6. Test-drive the vehicle as in step 4.

7. Recheck for DTC P1706.

   Does the OBD II scan tool indicate code P1706?

   YES – Go to step 8.

   NO – The problem has been corrected. ■

8. Inspect the transmission range switch (see page 14-168).

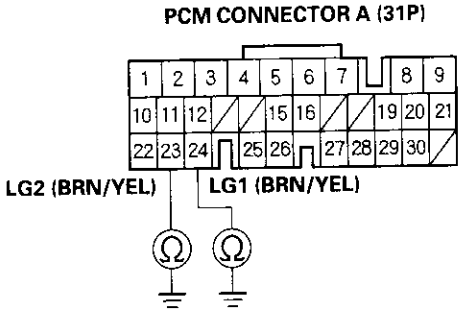
   Is the switch OK?

   YES – Go to step 9.

   NO – Replace the transmission range switch. ■

9. Connect the transmission range switch connector.

10. Check for continuity between PCM connector terminals A23 and body ground, and between A24 and body ground.



Wire side of female terminals

Is there continuity?

YES – Go to step 11.

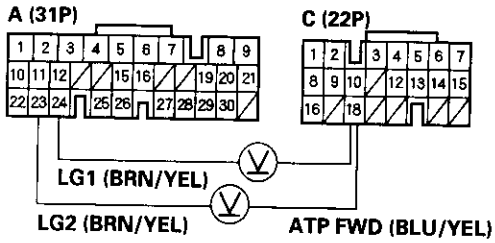
NO – Repair open in the wire between PCM connector terminals A23 and ground (G101), and between A24 and ground (G101), and repair poor ground (G101). ■

(cont'd)

DTC Troubleshooting (cont'd)

11. Turn the ignition switch ON (II).
12. Shift to the D position.
13. Measure the voltage between PCM connector terminals C18 and A23 or A24.

PCM CONNECTORS



Wire side of female terminals

Is there voltage?

YES – Repair open in the wire between PCM connector terminal C18 and the transmission range switch. ■

NO – Update the PCM if it does not have the latest software, or substitute a known-good PCM, then recheck (see page 14-7). If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

DTC P1709: Problem in Transmission Gear Selection Switch Circuit

NOTE:
- Record all freeze data and review General Troubleshooting Information (see page 14-3) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Check whether DTC P1706 is indicated.

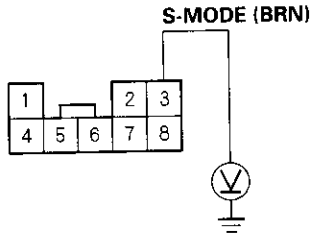
   Does the OBD II scan tool indicate code P1706?

   YES – Perform the Troubleshooting Flowchart for code P1706. Recheck for code P1709 after troubleshooting.

   NO – Go to step 2.

2. Turn the ignition switch OFF.
3. Remove the shift lever console panel.
4. Disconnect the 8P connector.
5. Turn the ignition switch ON (II).
6. Measure the voltage between the No. 3 terminal of the transmission gear selection switch/park pin switch connector (8P) and body ground.

TRANSMISSION GEAR SELECTION SWITCH/PARK PIN SWITCH CONNECTOR (8P)



Wire side of female terminals

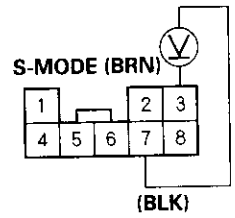
Is there about 5 V?

YES – Go to step 7.

NO – Repair open or short in the wire between PCM connector terminal D2 and the transmission gear selection switch/park pin switch connector (8P). ■

7. Measure the voltage between the No. 3 and No. 7 terminals of the transmission gear selection switch/park pin switch connector (8P).

TRANSMISSION GEAR SELECTION SWITCH/PARK PIN SWITCH CONNECTOR (8P)



Wire side of female terminals

Is there about 5 V?

YES – Go to step 8.

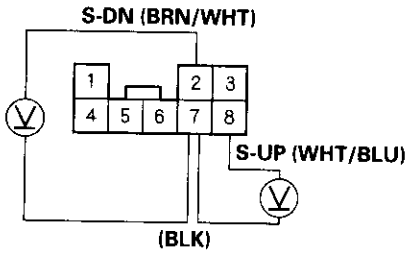
NO – Repair open in the wire between the No. 7 terminal of the transmission gear selection switch/park pin switch connector (8P) and ground (G402), or repair poor ground (G402). ■

(cont'd)

DTC Troubleshooting (cont'd)

8. Measure the voltage between the No. 2 and No. 7 terminals of the transmission gear selection switch/park pin switch connector (8P), and between the No. 8 and No. 7.

TRANSMISSION GEAR SELECTION SWITCH/PARK PIN SWITCH CONNECTOR (8P)



Wire side of female terminals

Are there about 5 V?

YES – Go to step 12.

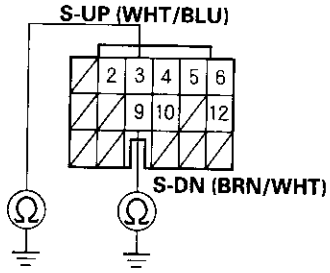
NO – Go to step 9.

9. Turn the ignition switch OFF.

10. Disconnect PCM connector D (17P).

11. Check for continuity between PCM connector terminals D3 and body ground, and between D9 and body ground.

PCM CONNECTOR D (17P)



Wire side of female terminals

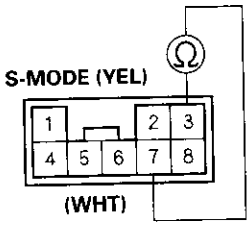
Is there continuity?

YES – Repair short to ground in the wire between PCM connector terminals D3 or D9 and the transmission gear selection switch/park pin switch connector (8P). ■

NO – Go to step 12.

12. Check for continuity between the No. 3 and No. 7 terminal at the transmission gear selection switch/park pin switch connector (8P) when the shift lever is shifted into the [M] position, and when the shift lever is shifted back to [D].

TRANSMISSION GEAR SELECTION SWITCH/PARK PIN SWITCH CONNECTOR (8P)



Terminal side of male terminals

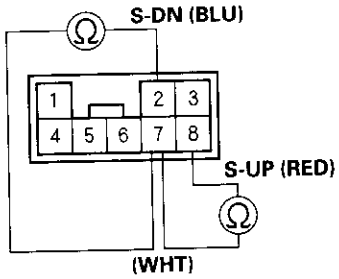
Is there continuity when the shift lever in the [M] position, and no continuity when the shift lever in [D]?

YES—Go to step 13.

NO—Replace the transmission gear selection switch.■

13. Check for continuity between the No. 8 and No. 7 terminals of the transmission gear selection switch/park pin switch connector (8P) while shifting the shift lever to shift-up position (marked with +), and between the No. 2 and No. 7 terminals while shifting to shift-down position (marked with −), and also check for continuity between these terminals when the shift lever is shifted back to neutral position.

TRANSMISSION GEAR SELECTION SWITCH/PARK PIN SWITCH CONNECTOR (8P)



Terminal side of male terminals

Is there continuity when the shift lever is shifted to shift-up and shift-down positions, and no continuity when the shift lever is shifted back to neutral position?

YES—Update the PCM if it does not have the latest software, or substitute a known-good PCM, then recheck (see page 14-7). If the symptom/indication goes away with a known-good PCM, replace the original PCM.■

NO—Replace the transmission gear selection switch.■

DTC Troubleshooting (cont'd)

DTC P1717: Problem in ATP RVS Signal Circuit of Transmission Range Switch

NOTE:
- Record all freeze data and review General Troubleshooting Information (see page 14-3) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by mechanical problem in the transmission.

1. Check whether DTC P1705 or P1706 is indicated.

   Does the OBD II scan tool indicate code P1705 or P1706?

   YES – Perform the troubleshooting flowchart for the indicated code(s), then go to step 2.

   NO – Go to step 6.

2. Shift the shift lever into [P] position, and shift to [R], [N], [D], then shift back to [N], [R], and into [P]. The shift lever should stop for more than 2 seconds at each position.

3. Turn the ignition switch OFF, then turn it ON (II).

4. Shift the shift lever to the [R] position for more than 2 seconds, then shift into [N].

5. Check for DTC P1717.

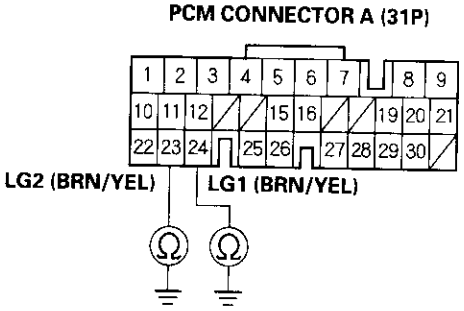
   Does the OBD II scan tool indicate code P1717?

   YES – Go to step 6.

   NO – The problem has been corrected. ■

6. Turn the ignition switch OFF.

7. Check for continuity between PCM connector terminals A23 and body ground, and between A24 and body ground.



Wire side of female terminals

Is there continuity?

YES – Go to step 8.

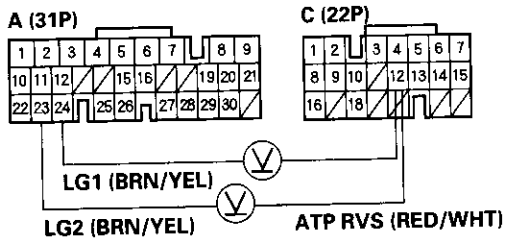
NO – Repair open in the wires between PCM connector terminals A23 and ground (G101), and between A24 and ground (G101), and repair poor ground (G101). ■

8. Turn the ignition switch ON (II).

9. Shift to [R] position.

10. Measure the voltage between PCM connector terminals C12 and A23 or A24.

PCM CONNECTORS



Wire side of female terminals

Is there voltage?

YES – Go to step 11.

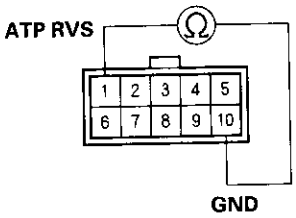
NO – Update the PCM if it does not have the latest software, or substitute a known-good PCM, then recheck (see page 14-7). If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

11. Turn the ignition switch OFF.

12. Disconnect the transmission range switch connector.

13. Check for continuity between the No. 1 and No. 10 terminals of the transmission range switch connector. The shift position must be [R].

TRANSMISSION RANGE SWITCH CONNECTOR



Terminal side of male terminals

Is there continuity?

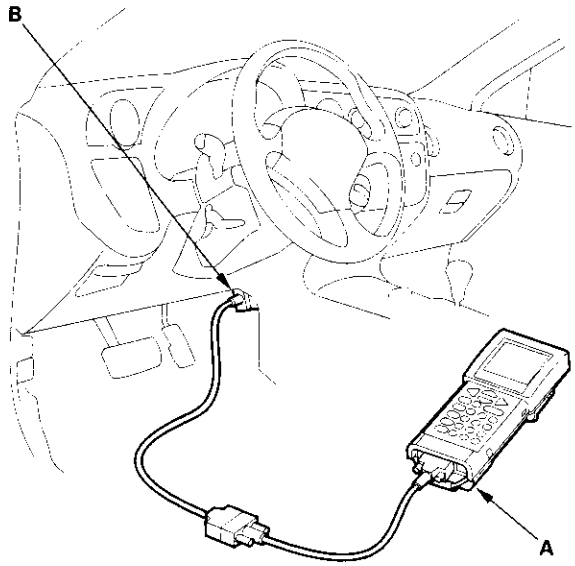
YES – Repair open in the wire between PCM connector terminal C12 and the transmission range switch. ■

NO – Replace the transmission range switch. ■

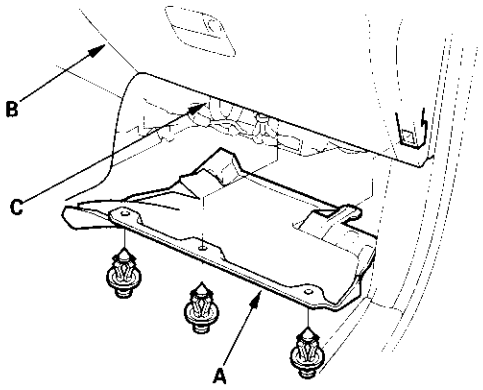
Road Test

Special Tool Required
Backprobe set 07SAZ-001000A (Two required)

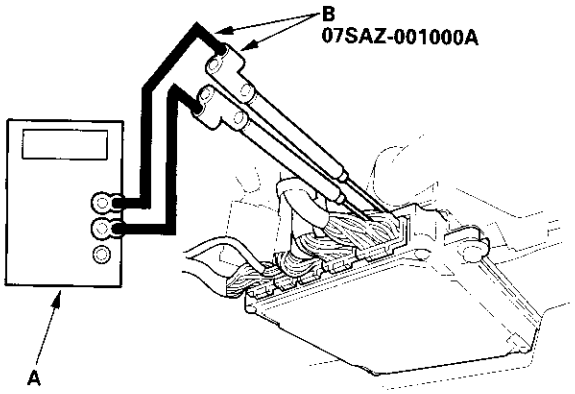
1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Apply the parking brake, and block both rear wheels. Start the engine, then shift to the D position while pressing the brake pedal. Press the accelerator pedal, and release it suddenly. The engine should not stall.
3. Repeat the same test in the D3 position.
4. Connect the Honda PGM Tester (A) to the DLC (B), and go to the PGM-FI Data List; then go to step 7. If you don't have a PGM Tester, go to step 5.



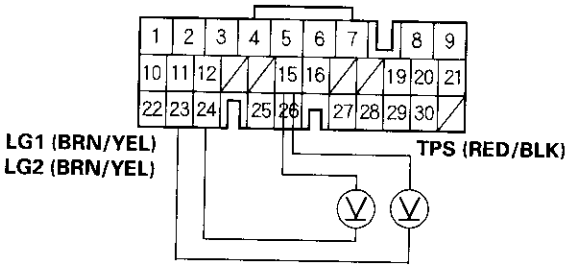
5. Remove the dashboard lower cover (A) under the glove box (B) to expose the PCM connectors (C).



6. Connect a digital multimeter (A) and the special tools (B) to check voltage between PCM connector terminals A15 (+) and A23 (−) or A24 (−).



PCM CONNECTOR A (31P)



Wire side of female terminals

7. Test-drive the vehicle on a flat road in the [D] position, and check for abnormal noise and clutch slippage. While driving, check that the shift points occur at the proper speeds by monitoring the throttle position sensor voltage and comparing your shift point speeds and voltage to those in the table. (The throttle position sensor voltage represents the throttle opening.)

[D] position

Upshift

Throttle Opening	Unit of Speed	1st → 2nd	2nd → 3rd	3rd → 4th	4th → 5th
Throttle position sensor voltage: 0.8 V	mph	9 – 12	20 – 23	29 – 33	39 – 44
	km/h	15 – 19	32 – 37	46 – 53	62 – 71
Throttle position sensor voltage: 2.25 V	mph	20 – 24	37 – 42	58 – 64	103 – 113
	km/h	32 – 38	60 – 68	94 – 103	165 – 182
Fully-opened throttle, throttle position sensor voltage: 4.5 V	mph	34 – 39	64 – 72	100 – 111	———
	km/h	55 – 63	103 – 116	161 – 178	———

Downshift

Throttle Opening	Unit of Speed	5th → 4th	4th → 3rd	3rd → 2nd	2nd → 1st
Throttle position sensor voltage: 0.8 V	mph	30 – 35	19 – 22	5 – 8 (3rd → 1st)	
	km/h	49 – 57	30 – 35	8 – 13 (3rd → 1st)	
Fully-opened throttle, throttle position sensor voltage: 4.5 V	mph	116 – 128	85 – 95	54 – 61	28 – 33
	km/h	187 – 206	137 – 153	87 – 98	44 – 52

Lock-up ON and OFF

(Schedule of shift solenoid valve E turned ON and OFF)

Throttle Opening	Unit of Speed	Lock-up ON	Lock-up OFF
Throttle position sensor voltage: 0.8 V	mph	48 – 55	47 – 53
	km/h	78 – 88	76 – 86
Throttle position sensor voltage: 2.25 V	mph	108 – 119	66 – 75
	km/h	174 – 191	107 – 120
Fully-opened throttle, throttle position sensor voltage: 4.5 V	mph	———	108 – 118
	km/h	———	173 – 190

8. Accelerate to about 35 mph (57 km/h) so the transmission is in 4th gear, then shift into 2nd gear. The vehicle should immediately begin slowing down from engine braking.

9. Accelerate from a stop at full throttle in the [R] position. Check that there is no abnormal noise or slippage.

10. Test in the [P] (Parking) Position.
Park the vehicle on a slope (about 16°), apply the parking brake, and shift into the [P] position. Release the brake; the vehicle should not move.

Stall Speed Test

1. Set the parking brake, and block the front wheels.
2. Connect a tachometer to the engine, and start the engine.
3. Make sure the A/C switch is OFF.
4. After the engine has warmed up to normal operating temperature (the radiator fan comes on), shift to the [D] position.
5. Fully press the brake pedal and accelerator for 6 to 8 seconds, and note engine speed. Do not move the shift lever while raising engine speed.
6. Allow 2 minutes for cooling, then repeat the test in the [R] position.

   NOTE:
   - Do not test stall speed for more than 10 seconds at a time.
   - Stall speed tests should be used for diagnostic purposes only.
   - Stall speed should be the same in the [D] and [R] positions.
   - Do not do the stall speed test with the A/T pressure gauges installed.

   Stall Speed rpm:
   Specification: 2,320 rpm
   Service Limit: 2,170–2,470 rpm

7. If the measurements are out of the service limit, problems and probable causes are listed in the table below:

Problem	Probable causes
Stall speed rpm high in the [D] and [R] positions	• Low fluid level • ATF pump output low • ATF pump defective • Clogged ATF strainer • Pressure regulator valve stuck closed
Stall speed high in the [R] position	Slippage of 4th clutch
Stall speed low in the [D] and [R] positions	• Engine output low • Engine throttle valve closed • Torque converter one-way clutch slipping

Pressure Tests

Special Tools Required
- A/T oil pressure gauge set 07406-0020400 or 07406-0020401
- A/T pressure hose, 2210 mm 07MAJ-PY4011A
- A/T pressure hose adapter 07MAJ-PY40120

1. Before testing, be sure the transmission is filled to the proper level.

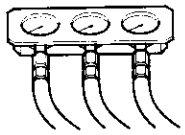
2. Raise the front of the vehicle, and make sure it is securely supported. Set the parking brake, and block rear wheels securely.
   Or lift up the vehicle.

3. Allow the front wheels to rotate freely.

4. Warm up the engine (the radiator fan comes on), then turn the engine off, and connect the tachometer.

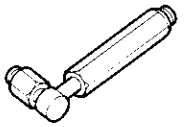
5. Connect the oil pressure gauge to the line pressure inspection hole (A) and 4th clutch pressure inspection hole (B). Do not allow dust or other foreign particles to enter the holes while connecting the gages.

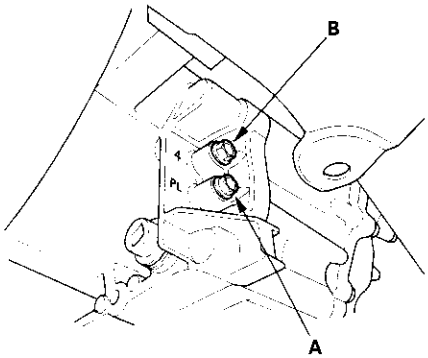
A/T OIL PRESSURE GAUGE SET W/PANEL 07406-0020400 or 07406-0020401



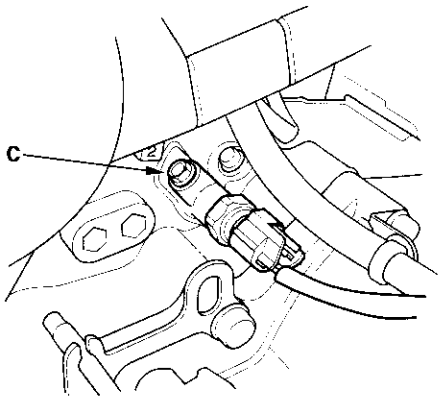
A/T PRESSURE HOSE, 2210 mm 07MAJ-PY4011A (4 Required)

A/T PRESSURE HOSE ADAPTER 07MAJ-PY40120 (4 Required)

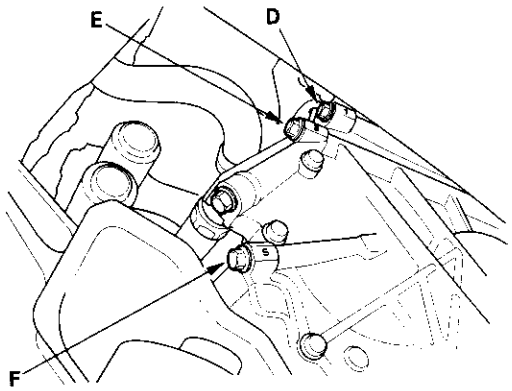




6. Remove the air cleaner housing, and connect the oil pressure gauge to the 2nd clutch pressure inspection hole (C). Then temporarily reinstall the air cleaner housing.



7. Connect the oil pressure gauges to the 1st clutch pressure inspection hole (D), 3rd clutch pressure inspection hole (E), and 5th clutch pressure inspection hole (F).



(cont'd)

Pressure Tests (cont'd)

8. Start the engine, and run it at 2,000 rpm.

9. Shift to the [N] or [P] position, and measure line pressure at the line pressure inspection hole (A).

   NOTE: Higher pressure may be indicated if measurements are made in shift lever position other than [N] or [P].

PRESSURE	FLUID PRESSURE	
	Standard	Service Limit
Line (A)	900 – 960 kPa (9.2 – 9.8 kgf/cm², 130 – 140 psi)	850 kPa (8.7 kgf/cm², 120 psi)

10. Shift to the [M] position.

11. Shift to 1st gear, and measure 1st clutch pressure at the 1st clutch pressure inspection hole (D) while holding engine speed at 2,000 rpm.

12. Shift up to 2nd gear, and measure 2nd clutch pressure at the 2nd clutch pressure inspection hole (C) while holding engine speed at 2,000 rpm.

13. Shift up to 3rd gear, and measure 3rd clutch pressure at the 3rd clutch pressure inspection hole (E) while holding engine speed at 2,000 rpm.

14. Shift up to 4th gear, and measure 4th clutch pressure at the 4th clutch pressure inspection hole (B) while holding engine speed at 2,000 rpm.

15. Shift up to 5th gear, and measure 5th clutch pressure at the 5th clutch pressure inspection hole (F) while holding engine speed at 2,000 rpm.

16. Shift to the [R] position, and measure 4th clutch pressure at the 4th clutch pressure inspection hole (B) while holding engine speed at 2,000 rpm.

PRESSURE	FLUID PRESSURE	
	Standard	Service Limit
1st clutch (D) 2nd clutch (C) 3rd clutch (E) 4th clutch (B) 5th clutch (F)	890 – 970 kPa (9.1 – 9.9 kgf/cm², 130 – 140 psi)	840 kPa (8.6 kgf/cm², 120 psi)

17. If the measurements are out of service limit, problems and probable causes are listed in the table below:

Problem	Probable causes
No or low line pressure	• Torque converter • Regulator valve • Torque converter check valve • ATF pump • Low fluid level • Clogged ATF strainer
No or low 1st clutch pressure	• 1st clutch • O-rings
No or low 2nd clutch pressure	• 2nd clutch • O-rings
No or low 3rd clutch pressure	• 3rd clutch • O-rings
No or low 4th clutch pressure in the [M] position	• 4th clutch • O-rings
No or low 5th clutch pressure	• 5th clutch • O-rings
No or low 4th clutch pressure in the [R] position	• Servo valve • 4th clutch • O-rings

18. Install the sealing bolt with a new sealing washer, and tighten the bolts to the specified torque.

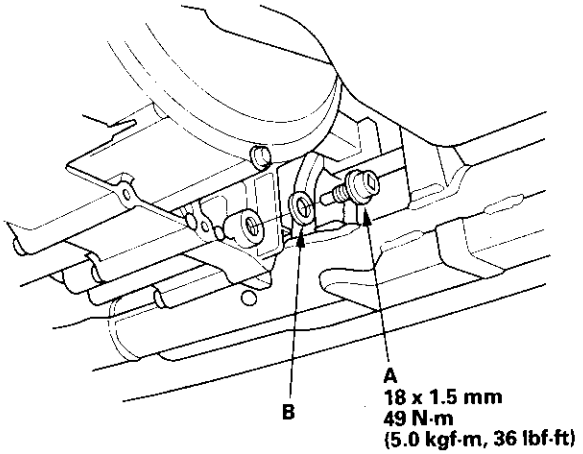
    TORQUE: 18 N·m (1.8 kgf·m,13 lbf·ft)

    NOTE: Do not reuse old sealing washers.

19. Install the air cleaner housing.

Shift Solenoid Valves Test

1. Remove the drain plug (A), and drain the automatic transmission fluid (ATF).

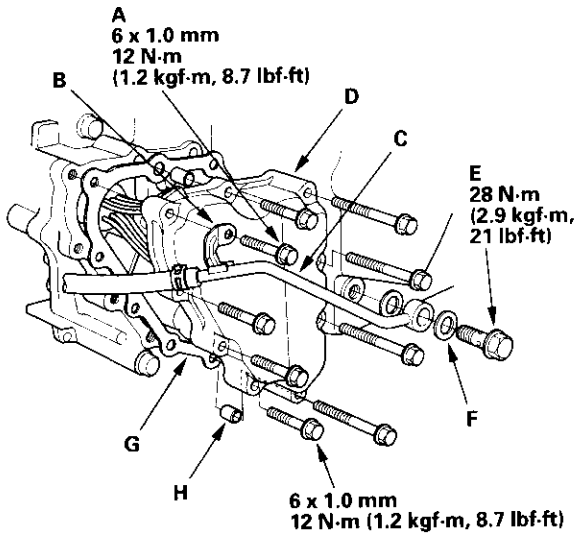


2. Reinstall the drain plug with a new sealing washer (B).

3. Place the transmission jack under the transmission, and lift it up to create clearance between the transmission and front subframe.

4. Disconnect the shift solenoid harness connector.

5. Remove the bolt (A) securing the bracket (B) of the ATF cooler inlet line (C) on the shift solenoid valve cover (D), and remove the line bolt (E) with sealing washers (F).

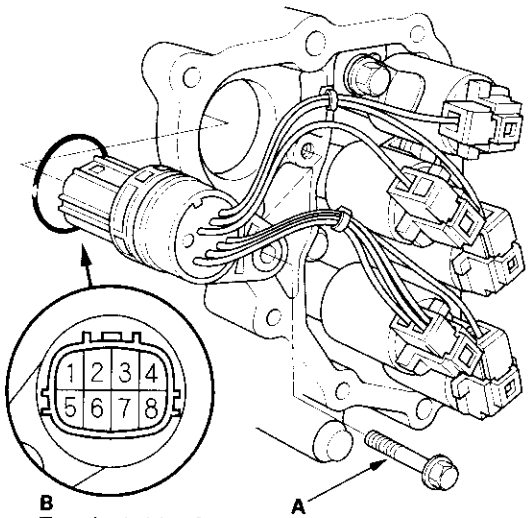


6. Remove the shift solenoid valve cover, gasket (G), and dowel pins (H).

(cont'd)

Shift Solenoid Valves Test (cont'd)

7. Remove the bolt (A), and remove the shift solenoid harness connector (B).



8. Measure shift solenoid valves resistance between the shift solenoid harness connector terminals No. 1, No. 2, No. 3, No. 5, No. 8 and body ground.
   Shift solenoid valve A: No. 5 terminal (BLU)
   Shift solenoid valve B: No. 2 terminal (ORN)
   Shift solenoid valve C: No. 1 terminal (GRN)
   Shift solenoid valve D: No. 8 terminal (YEL)
   Shift solenoid valve E: No. 3 terminal (RED)

   STANDARD: 12 – 25 Ω

9. If the resistance is out of standard, disconnect the shift solenoid valve connector, and measure its resistance at the solenoid valve connector. Replace the shift solenoid valve if the resistance is out of standard.

10. Connect the battery positive terminal to the shift solenoid harness connector terminals, and connect the battery negative terminal to body ground individually. A clicking sound should be heard.

11. If no sound is heard, connect the battery positive terminal to the shift solenoid valve connector terminal, and check for a clicking sound. Replace the shift solenoid valve if no clicking sound is heard.

12. Replace the solenoid harness if the tests results are OK.

13. Install the new O-ring on the shift solenoid harness connector, and install the connector in the transmission housing.

14. Install the shift solenoid valve cover with a new gasket and dowel pins.

15. Install the ATF cooler inlet line with the line bolt and new sealing washers. Create clearance with the jack between the transmission and the front subframe to tighten the line bolt.

16. Install the bracket of the ATF cooler inlet line on the shift solenoid valve cover with the bolt.

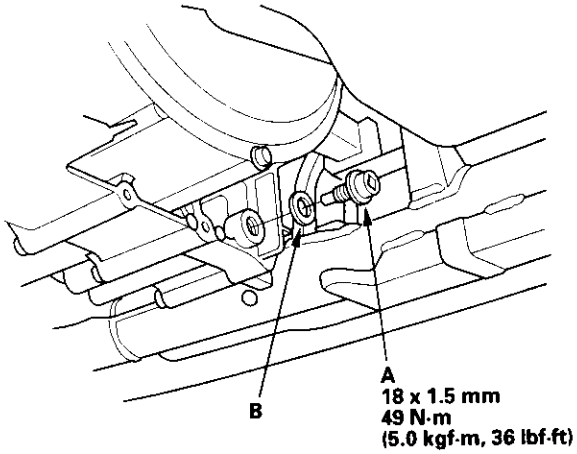
17. Check the connector for rust, dirt, or oil, then connect the connector securely.

18. Remove the transmission jack.

19. Refill the transmission with the recommended fluid (see page 14-139).

Shift Solenoid Valves Replacement

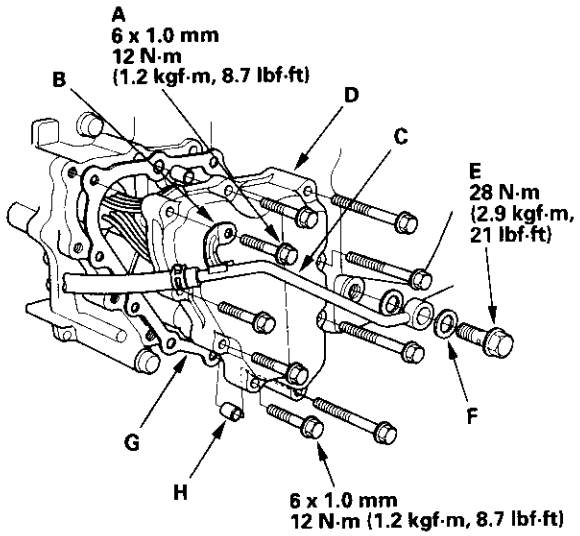
1. Remove the drain plug (A), and drain the automatic transmission fluid (ATF).



2. Reinstall the drain plug with a new sealing washer (B).

3. Place the transmission jack under the transmission, and lift it up to create clearance between the transmission and front subframe.

4. Remove the bolt (A) securing the bracket (B) of the ATF cooler inlet line (C) on the shift solenoid valve cover (D), and remove the line bolt (E) with sealing washers (F).

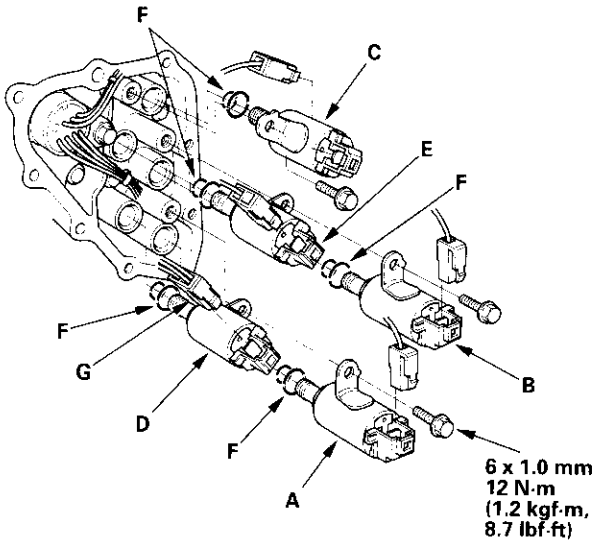


5. Remove the shift solenoid valve cover, gasket (G), and dowel pins (H).

(cont'd)

Shift Solenoid Valves Replacement (cont'd)

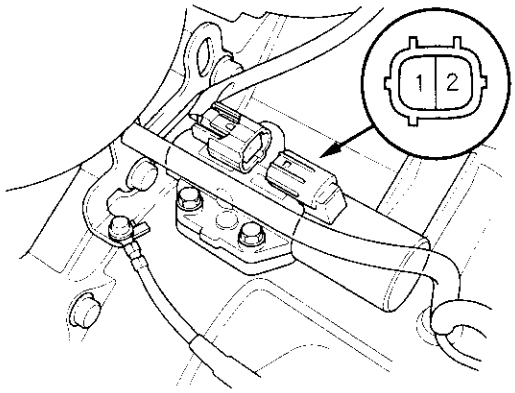
6. Disconnect the shift solenoid valve connectors.
7. Remove the bolts, and hold the shift solenoid valve body, then remove them. Do not hold the connector to remove.
8. Install the new O-rings (two per solenoid valve) (F) on the replacement solenoid valve.



9. Install shift solenoid valve C, D, and E. While holding the shift solenoid valve body, be sure to install the solenoid valves until their mounting bolt brackets contact the servo body.
10. Install shift solenoid valve A and B. While holding the shift solenoid valve body, be sure to install the solenoid valves until their mounting bolt brackets contact the bracket of installed solenoid. Do not install the shift solenoid valve A and B before installing the shift solenoid valve D and E. If solenoid valve A and B are installed before solenoid valves D and E, it may damage the hydraulic control system.
11. Connect the shift solenoid valve D connector (G) with the ATF temperature sensor.
12. Connect the solenoid valve A connector (BLU wire), solenoid valve B connector (ORN wire), solenoid valve C connector (GRN wire), and solenoid valve E connector (RED wire).
13. Install the shift solenoid valve cover with a new gasket and dowel pins.
14. Install the ATF cooler inlet line with the line bolt and new sealing washers. Create clearance with the transmission jack between the transmission and the front subframe to tighten the line bolt with the torque wrench.
15. Install the bracket of the ATF cooler inlet line on the shift solenoid valve cover with the bolt.
16. Remove the transmission jack.
17. Refill the transmission with the recommended fluid (see page 14-139).

A/T Clutch Pressure Control Solenoid Valve A Test

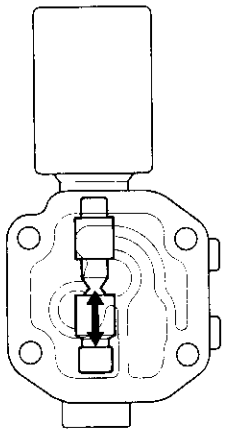
1. Remove the air cleaner housing.
2. Disconnect the A/T clutch pressure control solenoid valve A connector.



3. Measure A/T clutch pressure control solenoid valve A resistance at the solenoid valve A connector.

   STANDARD: 3 – 10 Ω

4. If the resistance is out of standard, replace the A/T clutch pressure control solenoid valve A.
5. Connect the battery positive terminal to the No. 1 terminal of the A/T clutch pressure control solenoid valve A connector, and connect the battery negative terminal to the No. 2 terminal. A clicking sound should be heard.
6. If no sound is heard, remove the A/T clutch pressure control solenoid valve A.
7. Check the fluid passage of the A/T clutch pressure control solenoid valve for dust or dirt.
8. Connect the No. 1 terminal of the A/T clutch pressure control solenoid valve A connector to the battery positive terminal, and connect the No. 2 terminal to the battery negative terminal. Make sure the A/T clutch pressure control solenoid valve moves.



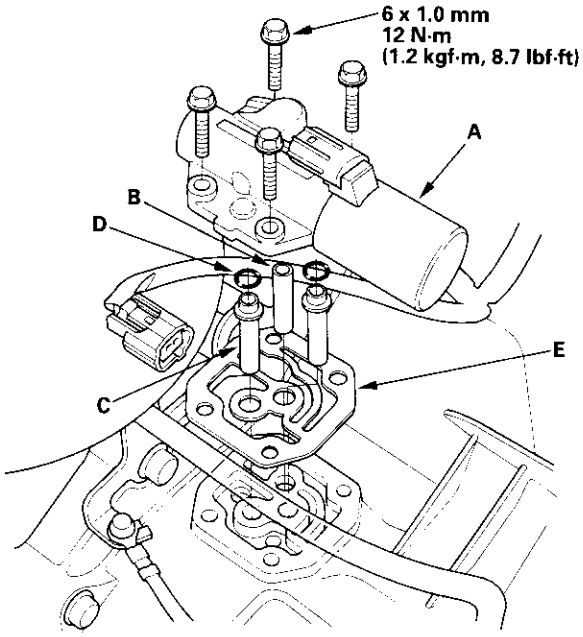
9. Disconnect one of the battery terminals and check for valve movement.

   NOTE: You can see valve movement through the fluid passage in the mounting surface of the A/T clutch pressure control solenoid valve A body.

10. If the valve binds or moves sluggishly, or if the solenoid valve does not operate, replace the A/T clutch pressure control solenoid valve A.

A/T Clutch Pressure Control Solenoid Valve A Replacement

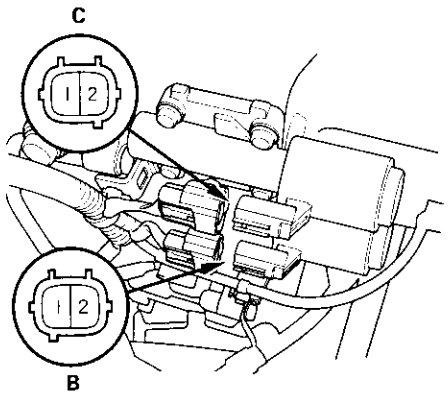
1. Remove the air cleaner housing.
2. Disconnect the A/T clutch pressure control solenoid valve A connector.
3. Remove the mounting bolts and the A/T clutch pressure control solenoid valve A.



4. Remove the ATF pipe (B), ATF joint pipes (C), O-rings (D), and gasket (E).
5. Clean the mounting surface and fluid passage of the A/T clutch pressure control solenoid valve A and transmission housing.
6. Clean the filter of the ATF joint pipes.
7. Install the new gasket on the transmission housing, and install the ATF pipe and ATF joint pipes.
8. Install the new O-rings over the ATF joint pipes.
9. Install the new A/T clutch pressure control solenoid valve A.
10. Check the A/T clutch pressure control solenoid valve A connector for rust, dirt, or oil, then connect it securely.
11. Install the air cleaner housing.

A/T Clutch Pressure Control Solenoid Valves B and C Test

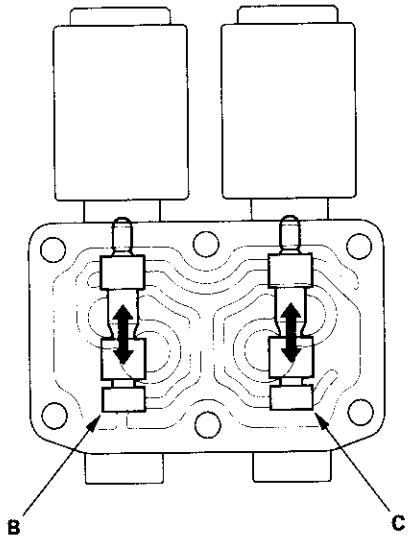
1. Remove the air cleaner housing.
2. Disconnect the A/T clutch pressure control solenoid valves B and C connectors.



3. Measure A/T clutch pressure control solenoid valve B resistance at the solenoid valve B connector, and measure A/T clutch pressure control solenoid valve C resistance at the solenoid valve C connector.

   STANDARD: 3 – 10 Ω

4. If the resistance of either A/T clutch pressure control solenoid valve is out of standard, replace the A/T clutch pressure control solenoid valves B and C.
5. Connect the battery positive terminal to the No. 1 terminal of the A/T clutch pressure control solenoid valves B and C connectors, and connect the battery negative terminal to the No. 2 terminal. A clicking sound should be heard.
6. If no sound is heard, remove the A/T clutch pressure control solenoid valves B and C.
7. Check the fluid passage of the A/T clutch pressure control solenoid valve for dust or dirt.
8. Connect the No. 1 terminal of the A/T clutch pressure control solenoid valves B and C connectors to the battery positive terminal, and connect the No. 2 terminal to the battery negative terminal. Make sure the A/T clutch pressure control solenoid valves B and C move.



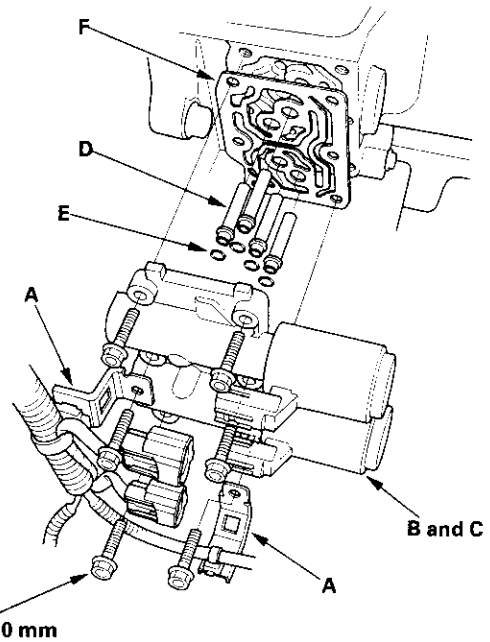
9. Disconnect one of the battery terminals, and check valve movement.

   NOTE: You can see valve movement through the fluid passage in the mounting surface of the A/T clutch pressure control solenoid valves B and C body.

10. If either valve binds or moves sluggishly, or if the solenoid valve does not operate, replace the A/T clutch pressure control solenoid valves B and C.

A/T Clutch Pressure Control Solenoid Valves B and C Replacement

1. Remove the air cleaner housing.
2. Disconnect the A/T clutch pressure control solenoid valves B and C connectors.
3. Remove the mounting bolts, harness clamp brackets (A), and the A/T clutch pressure control solenoid valves B and C.

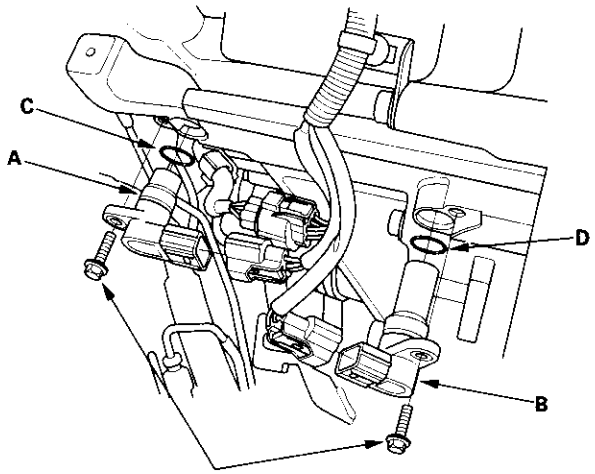


6 x 1.0 mm
12 N·m (1.2 kgf·m, 8.7 lbf·ft)

4. Remove the ATF joint pipes (D), O-rings (E), and gasket (F).
5. Clean the mounting surface and fluid passages of the A/T clutch pressure control solenoid valves B and C and transmission housing.
6. Clean the filter of the ATF joint pipes.
7. Install the new gasket on the transmission housing, and install the ATF joint pipes.
8. Install the new O-rings over the ATF joint pipes.
9. Install the new A/T clutch pressure control solenoid valves B and C, and harness clamp brackets.
10. Check the A/T clutch pressure control solenoid valves B and C connectors for rust, dirt, or oil, then connect them securely.
11. Install the air cleaner housing.

Mainshaft and Countershaft Speed Sensors Replacement

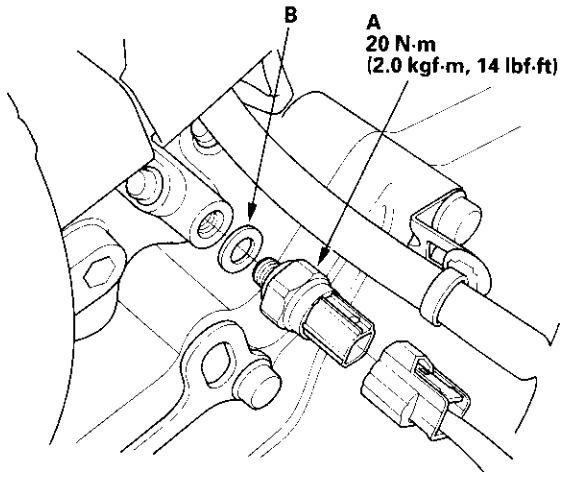
1. Disconnect the mainshaft speed sensor connector and countershaft speed sensor connector.
2. Remove the mainshaft speed sensor (A) and countershaft speed sensor (B).



3. Install the new O-ring (C) on the mainshaft speed sensor, and install the mainshaft speed sensor in the transmission housing.
4. Install the new O-ring (D) on the countershaft speed sensor, and install the countershaft speed sensor in the transmission housing.
5. Check the connectors for rust, dirt, or oil, then connect the connectors securely.

2nd Clutch Transmission Fluid Pressure Switch Replacement

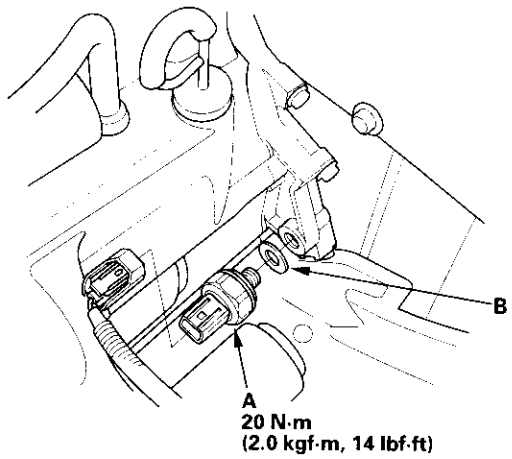
1. Remove the air cleaner housing.
2. Disconnect the connector from the 2nd clutch transmission fluid pressure switch (A).



3. Remove the 2nd clutch transmission fluid pressure switch, then install a new one with a new sealing washer (B). Tighten the switch to the specified torque.
4. Reconnect the connector, making sure there is no water, oil, dust, or foreign particles inside it.
5. Install the air cleaner housing.

3rd Clutch Transmission Fluid Pressure Switch Replacement

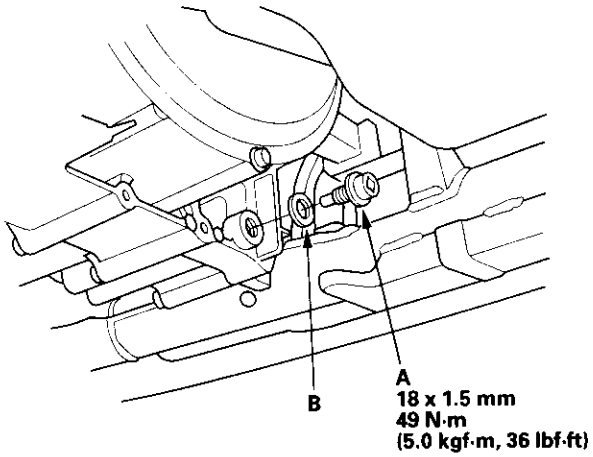
1. Disconnect the connector from the 3rd clutch transmission fluid pressure switch (A).



2. Remove the 3rd clutch transmission fluid pressure switch, then install a new one with a new sealing washer (B). Tighten the switch to the specified torque.
3. Reconnect the connector, making sure there is no water, oil, dust, or foreign particles inside it.

ATF Temperature Sensor Test/Replacement

1. Remove the drain plug (A), and drain the automatic transmission fluid (ATF).

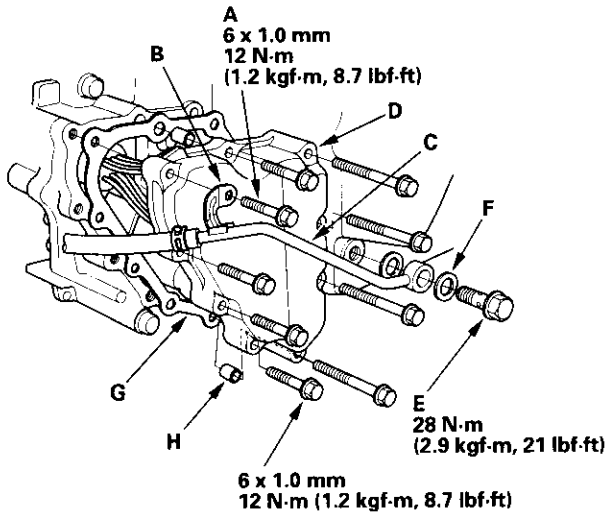


2. Reinstall the drain plug with a new sealing washer (B).

3. Place the transmission jack under the transmission, and lift it up to create clearance between the transmission and front subframe.

4. Disconnect the shift solenoid harness connector.

5. Remove the bolt (A) securing the bracket (B) of the ATF cooler inlet line (C) on the shift solenoid valve cover (D), and remove the line bolt (E) with sealing washers (F).



6. Remove the shift solenoid valve cover, gasket (G), and dowel pins (H).

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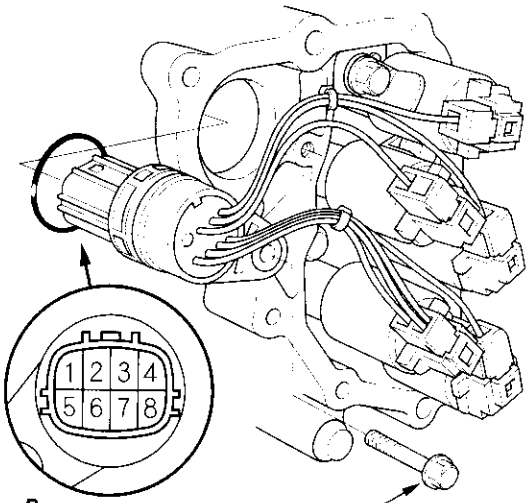
ATF Temperature Sensor Test/Replacement (cont'd)

7. Remove the bolt (A), and remove the shift solenoid harness connector (B).



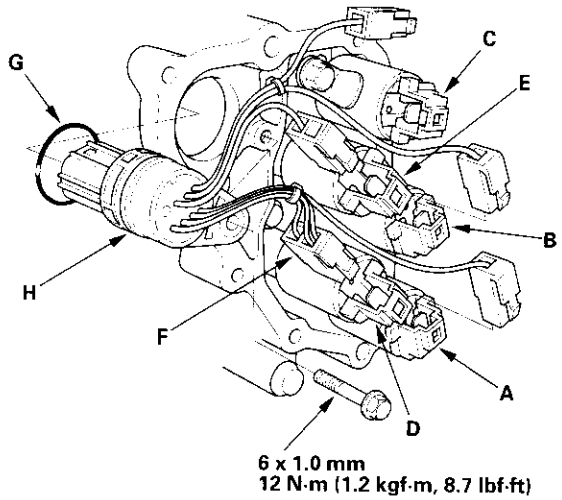
8. Measure ATF temperature sensor resistance between the No. 6 and No. 7 terminals of the shift solenoid harness connector.

   STANDARD: 50 Ω – 25 kΩ

9. If the resistance is out of standard, replace the ATF temperature sensor with the solenoid harness. The ATF temperature sensor is not available separately.

10. Disconnect the connectors from the shift solenoid valves.

11. Connect the shift solenoid valve D connector with the ATF temperature sensor (F) on the new solenoid harness.



12. Connect the solenoid valve A connector (BLU wire), solenoid valve B connector (ORN wire), solenoid valve C connector (GRN wire), and solenoid valve E connector (RED wire).

13. Install the new O-ring (G) on the shift solenoid harness connector (H), and install the connector in the transmission housing.

14. Install the shift solenoid valve cover with the new gasket and dowel pins.

15. Install the ATF cooler inlet line with the line bolt and the new sealing washers. Create clearance with the jack between the transmission and the front subframe to tighten the line bolt with the torque wrench.

16. Install the bracket of the ATF cooler inlet line on the shift solenoid valve cover with the bolt.

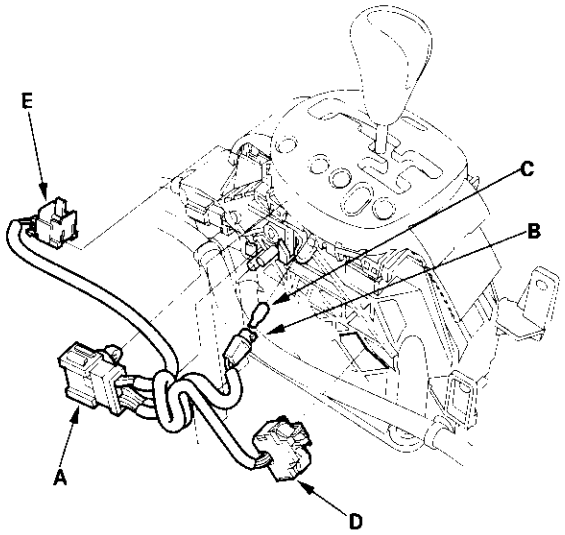
17. Check the connector for rust, dirt, or oil, then connect the connector securely.

18. Remove the transmission jack.

19. Refill the transmission with the recommended fluid (see page 14-139).

Transmission Gear Selection Switch Replacement

1. Remove the center console (see page 20-58).
2. Disconnect transmission gear selection switch/park pin switch connector (A), then remove it from the shift lever bracket base.

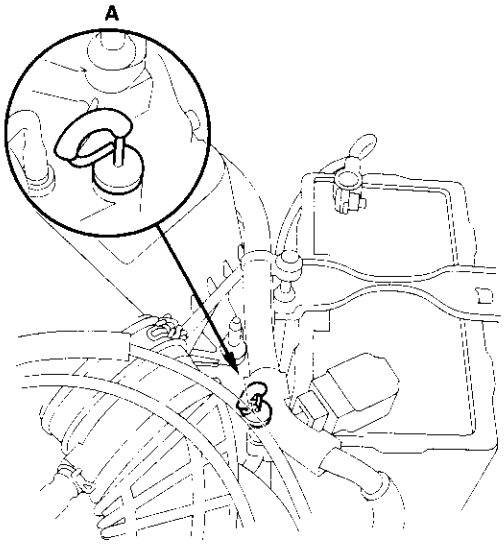


3. Remove the A/T gear position indicator panel light socket (B), then remove the indicator light bulb (C) from the socket.
4. Remove the transmission gear selection switch (D) and park pin switch (E), and install the new switches and connector.
5. Install the A/T gear position indicator panel light bulb in the bulb socket, then install the socket in the A/T gear position indicator panel.
6. Connect transmission gear selection switch/park pin switch connector.
7. Reinstall the center console (see page 20-58).

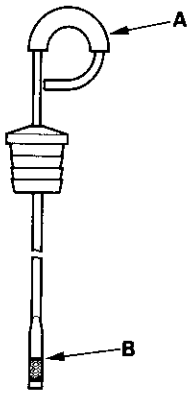
ATF Level Check

NOTE: Keep all foreign particles out of the transmission.

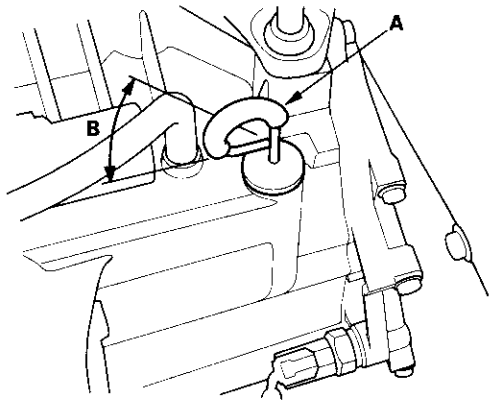
1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Park the vehicle on level ground, and turn the engine off.
3. Remove the dipstick (yellow loop) (A) from the transmission, and wipe it with a clean cloth.



4. Insert the dipstick back into the transmission.
5. Remove the dipstick (A) and check the fluid level. It should be at upper mark (B).



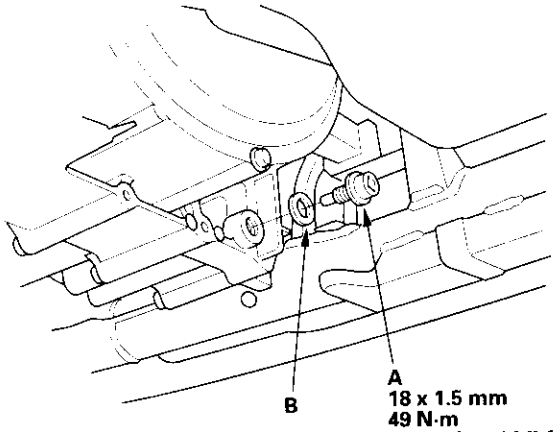
6. If the level is below the upper mark, check for fluid leaks at the transmission, hose and line joints, and cooler lines.
7. Pour the recommended fluid amount into the dipstick hole to bring it to the upper mark. Always use Honda ATF-Z1 Automatic Transmission Fluid (ATF). Using a non-Honda ATF can affect shift quality.
8. Insert the dipstick (A) back into the transmission in the direction (B) shown.



ATF Replacement

NOTE: Keep all foreign particles out of the transmission.

1. Bring the transmission up to normal operating temperature (the radiator fan comes on) by driving the vehicle.
2. Park the vehicle on level ground, and turn the engine off.
3. Remove the drain plug (A), and drain the automatic transmission fluid (ATF).



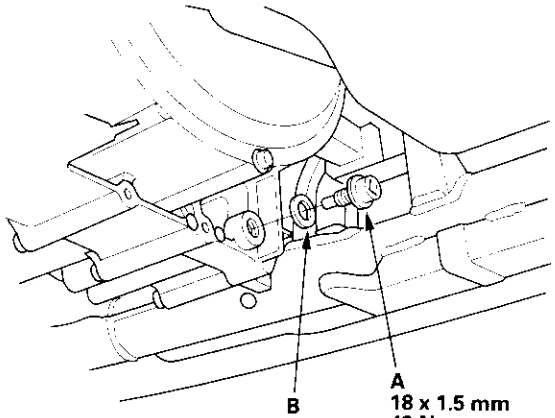
4. Reinstall the drain plug with a new sealing washer (B).
5. Refill transmission with the recommended fluid amount through the dipstick hole until the lever reaches the upper mark on the dipstick. Always use Honda ATF-Z1 Automatic Transmission Fluid (ATF). Using a non-Honda ATF can affect shift quality.

   Automatic Transmission Fluid Capacity:
   2.9 ℓ (3.1 US qt) at change
   6.5 ℓ (6.9 US qt) at overhaul

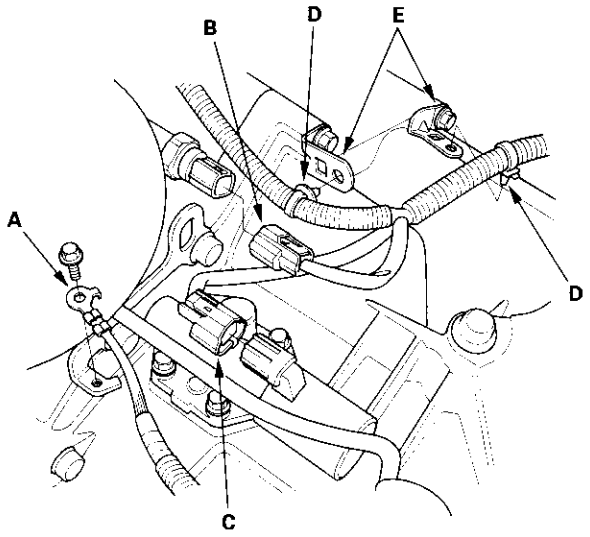
Transmission Removal

Special Tools Required
- Engine hanger adapter EQS00BRSX0
- Engine support hanger, A and Reds AAR-T-12566 (Available through the Honda Tool and Equipment Program 888-424-6857)
- Front subframe adapter EQS02C000011

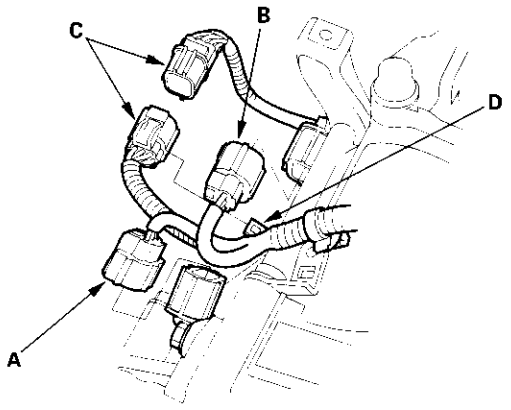
1. Before disconnecting the battery, make sure you have the anti-theft code for the radio, then write down the frequencies for the radio's preset stations.
2. Raise the vehicle, and make sure it is securely supported.
3. Remove the splash shield.
4. Remove the drain plug (A), and drain the automatic transmission fluid (ATF). Reinstall the drain plug with a new sealing washer (B).



5. Disconnect the battery negative terminal, then disconnect the battery positive terminal.
6. Remove the air cleaner housing and the intake air duct.
7. Remove the battery hold-down bracket, then remove the battery and battery tray.
8. Remove the harness clamp from the battery base, then remove the battery base.
9. Remove the transmission ground terminal (A).

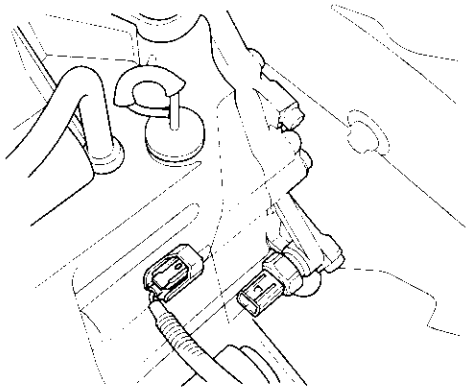


10. Disconnect the 2nd clutch transmission fluid pressure switch connector (B) and A/T clutch pressure control solenoid valve A connector (C), and remove the harness clamps (D) from the clamp brackets (E).
11. Disconnect the countershaft speed sensor connector (A) and mainshaft speed sensor (B).

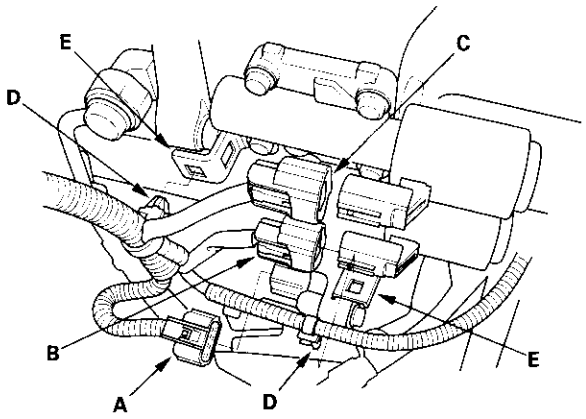


12. Remove the transmission range switch connector (C) from its bracket (D), then disconnect it.

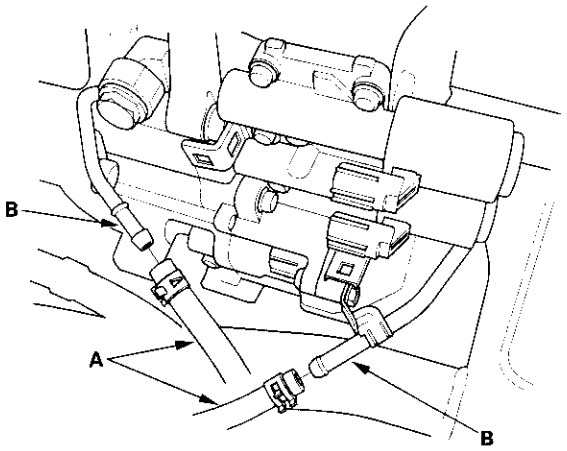
13. Disconnect the 3rd clutch transmission fluid pressure switch connector.



14. Disconnect the shift solenoid harness connector (A), A/T clutch pressure control solenoid valve B connector, and solenoid valve C connector, then remove the harness clamps (D) from the clamp brackets (E).

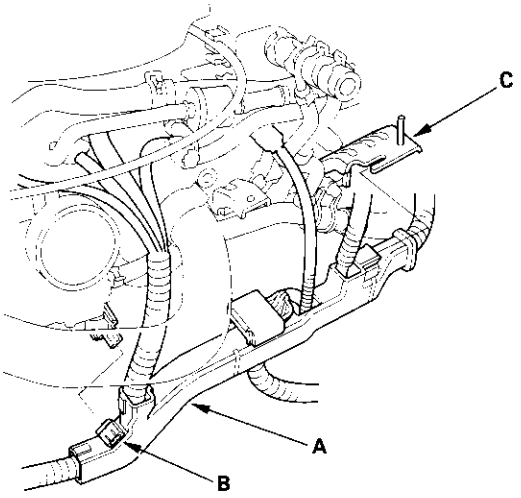


15. Remove the ATF cooler hoses (A) from the ATF cooler lines (B). Turn the ends of the ATF cooler hoses up to prevent ATF from flowing out, then plug the ATF cooler hoses and lines.



16. Check for any signs of leakage at the hose joints.

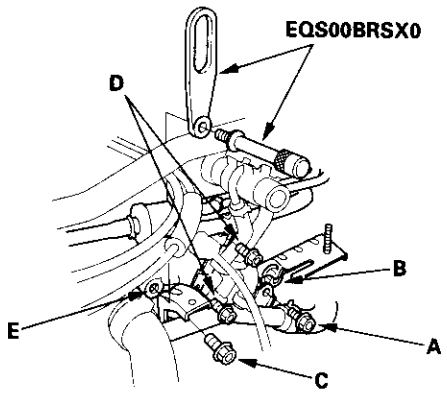
17. Remove the engine wire harness cover (A) by lifting up on the lock tab (B), then slide the harness forward off the air cleaner housing mounting bracket (C).



(cont'd)

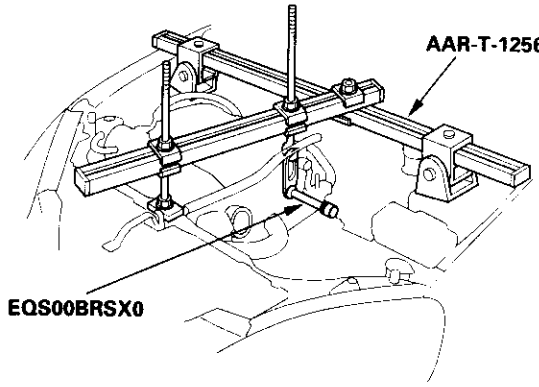
Transmission Removal (cont'd)

18. Remove the water pipe mounting bolt (A) and lower the water pipe slightly. Loosen air cleaner housing bracket mounting bolt (B), and remove mounting bolt (C).

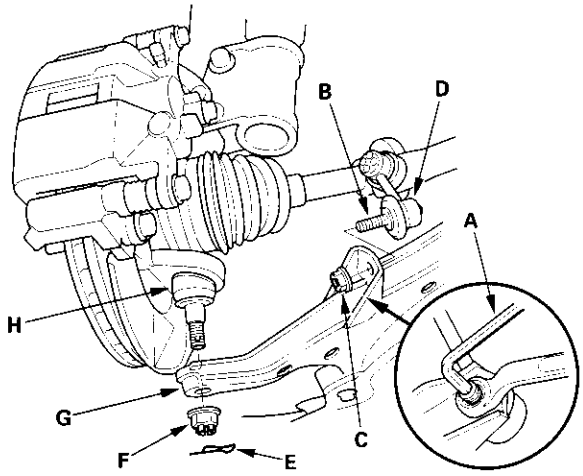


19. Remove the brake booster and EVAP line bracket mounting bolts (D),and attach the special tool to the threaded hole (E) in the cylinder head.

20. Install the engine support hanger (AAR-T-12566) to the vehicle and attach the hook to the special tool.

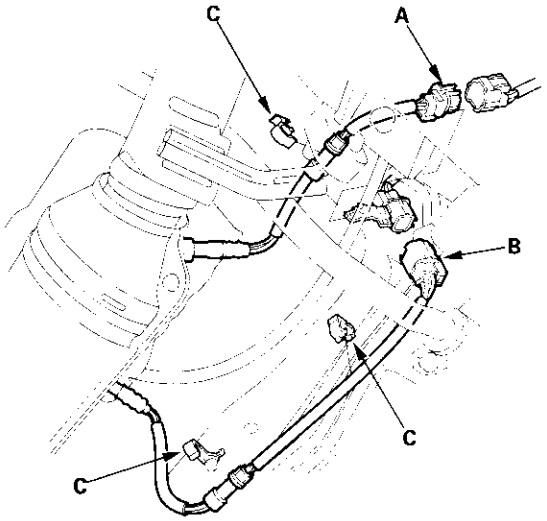


21. Insert a 5 mm Allen wrench (A) in the top of the ball joint pin (B), and remove the nut (C), then separate the stabilizer link (D) from the lower arm.

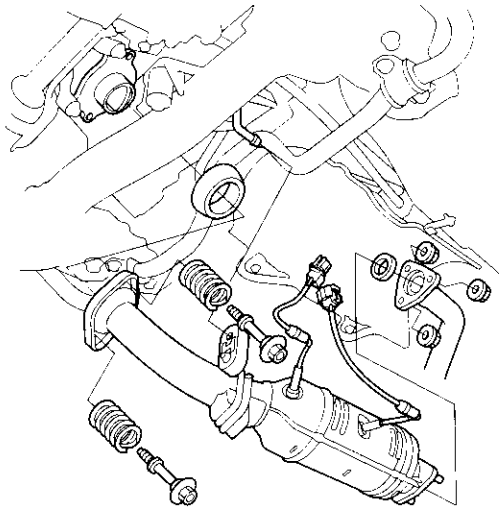


22. Remove the spring clips (E) and castle nuts (F), and separate the lower arms (G) from the knuckles (H) (see page 16-3).

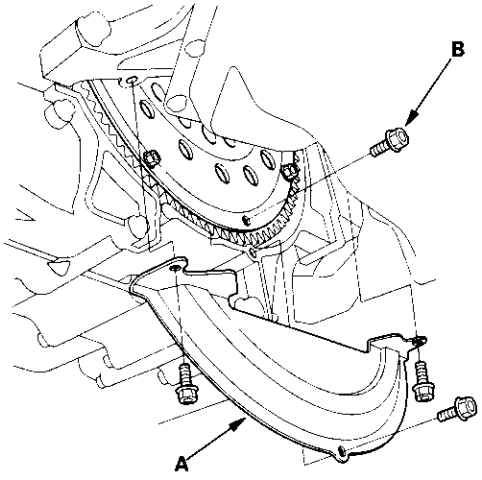
23. Disconnect the A/F sensor connector (A) and secondary HO2S connector (B), then remove the harness from the clamps (C).



24. Remove the exhaust pipe A/catalytic converter.

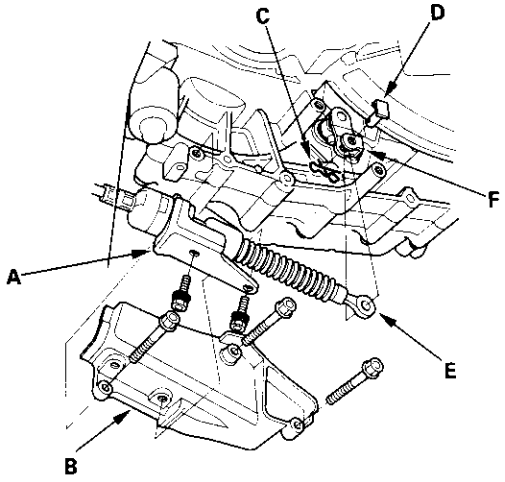


25. Remove the torque converter cover (A), and remove the eight drive plate bolts (B) while rotating the crankshaft pulley.



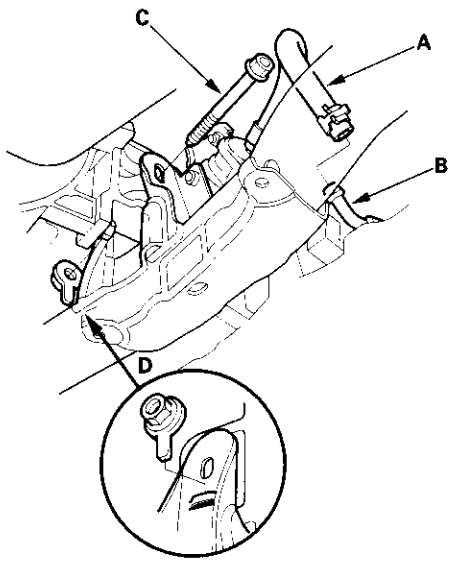
26. Remove the bolts securing the shift cable holder (A), then remove the shift cable cover (B).

NOTE: To prevent damage to the control lever joint, remove the bolts securing the shift cable holder before removing the bolts securing the shift cable cover.



27. Remove the spring clip (C) and control pin (D), then separate the shift cable (E) from the control lever (F). Do not bend the shift cable excessively.

28. Disconnect the ATF cooler hose (A) from the ATF cooler line (B), then plug the end of the hose.

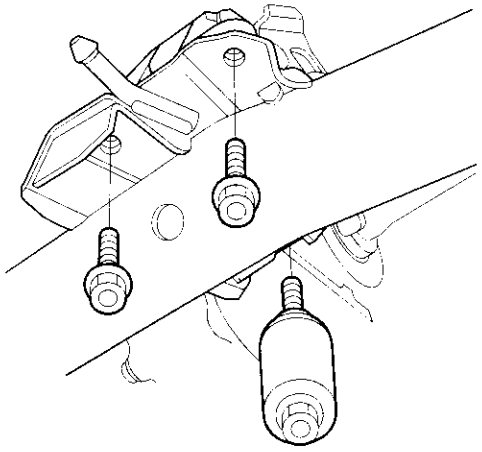


29. Remove the front mount bolt (C) and nut (D).

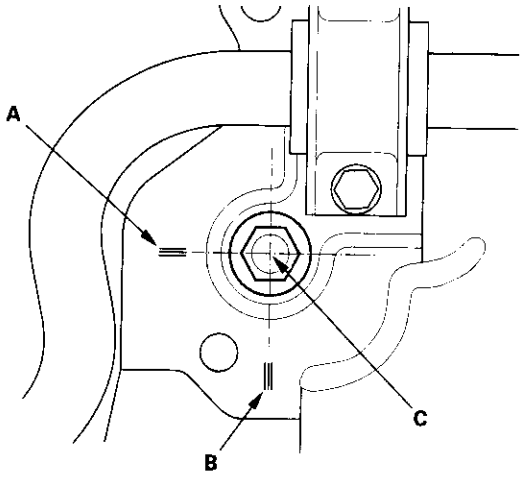
(cont'd)

Transmission Removal (cont'd)

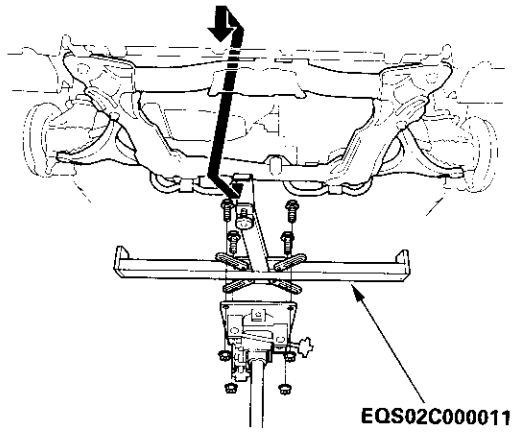
30. Remove the rear mount bracket bolts.



31. Make the appropriate reference lines at positions A and B that line up with the center of the subframe mounting bolts (C).

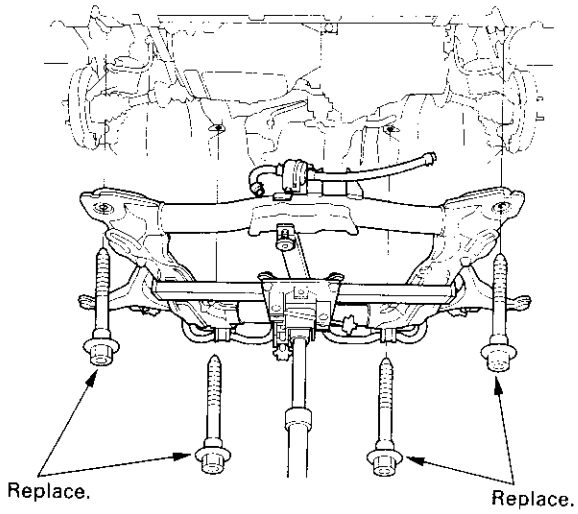


32. Attach the special tool to the subframe with hanging the hook of the special tool over the front of the subframe, then tighten the special tool screw.

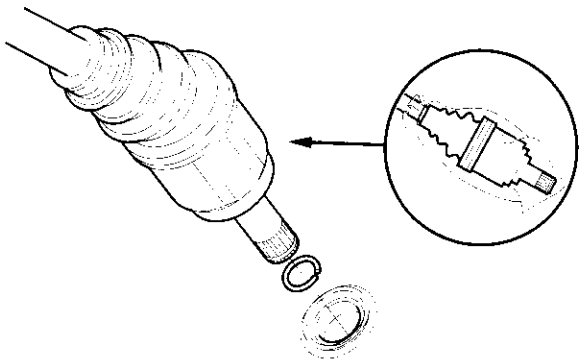


33. Raise the jack and line up the slots in the arms with the bolt holes on the corner of the jack base, then attach them with the bolts securely.

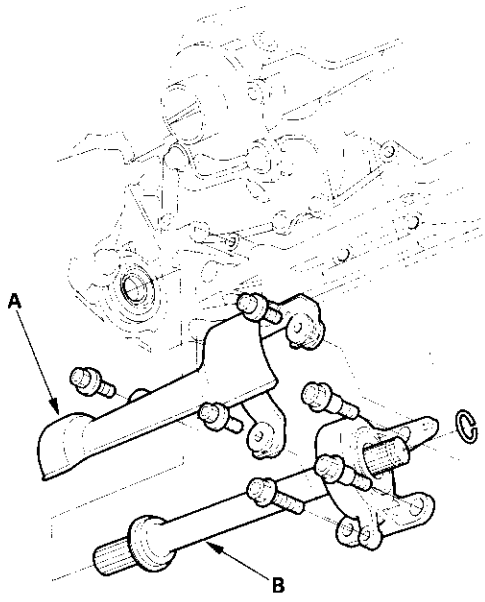
34. Remove the four subframe mounting bolts, then lower the subframe.



35. Pry the driveshafts, and remove them from the differential and intermediate shaft.



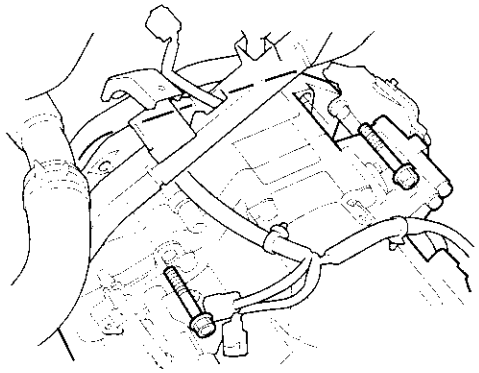
36. Remove the intermediate shaft cover (A).



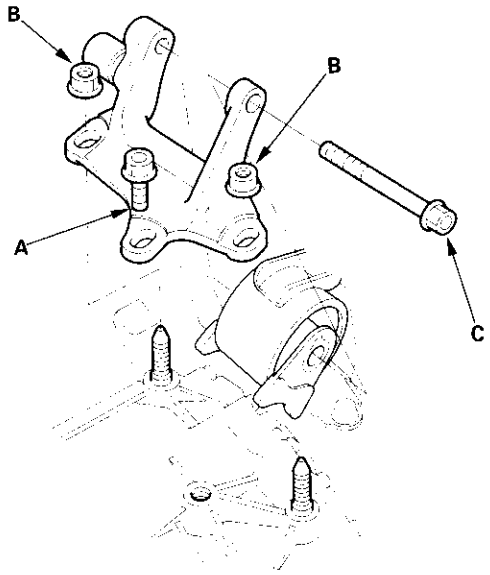
37. Remove the intermediate shaft (B). Coat all precision finished surfaces with clean engine oil, then tie plastic bags over the driveshaft and intermediate shaft ends.

38. Place a jack under the transmission.

39. Remove the transmission housing mounting bolts.



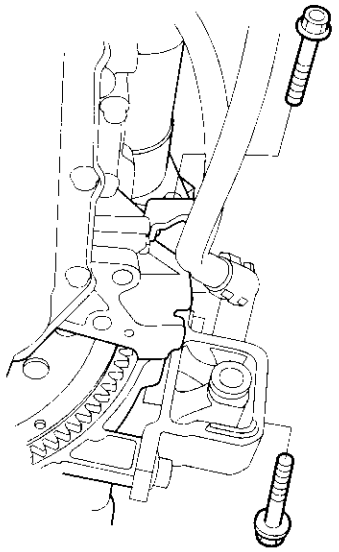
40. Remove the transmission mount bracket bolt (A) and nuts (B), then remove the transmission mount bolt (C).



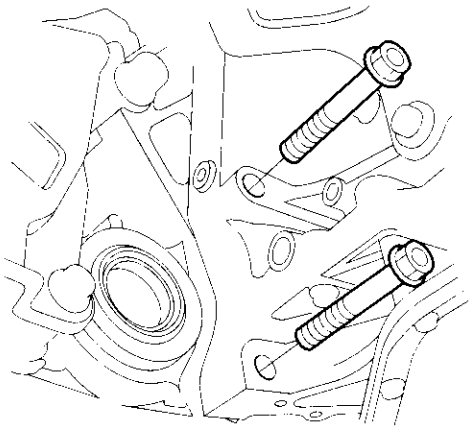
(cont'd)

Transmission Removal (cont'd)

41. Remove the transmission housing mounting bolts located on the front lower of the transmission.

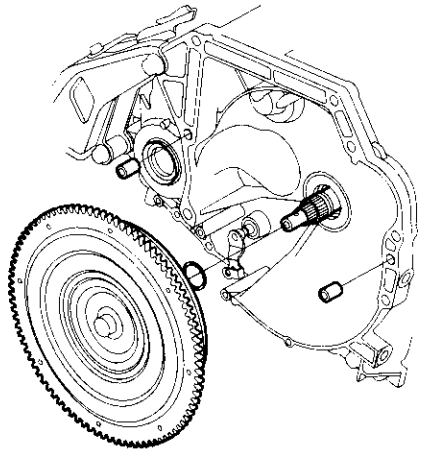


42. Remove the transmission housing mounting bolts located on the rear lower of the transmission.

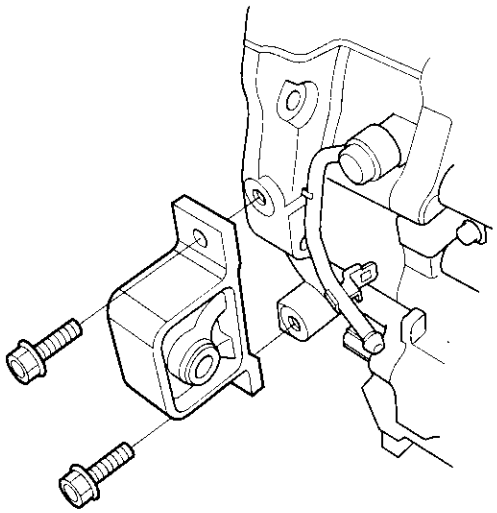


43. Slide the transmission away from the engine to remove it from the vehicle.

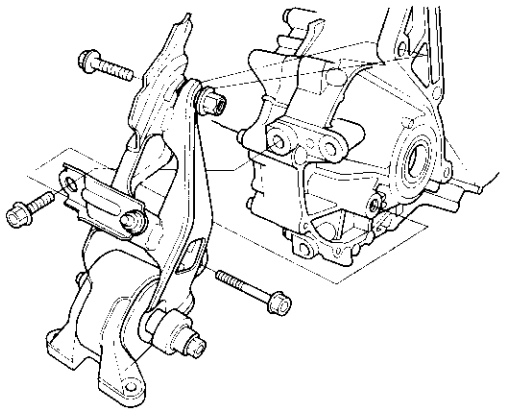
44. Remove the torque converter assembly.



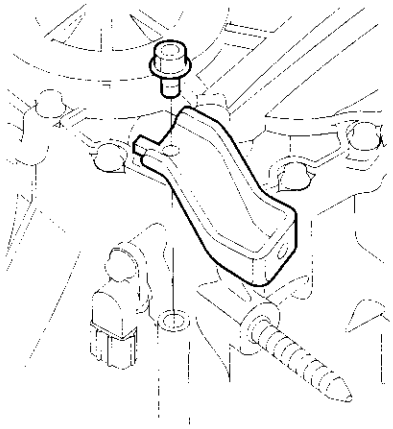
45. Remove the front mount.



46. Remove the rear mount/bracket.



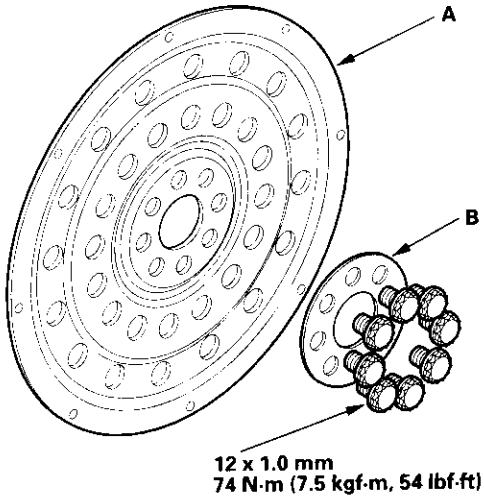
47. Remove the air cleaner housing mounting bracket.



48. Inspect the drive plate, and replace it if it's damaged.

Drive Plate Removal and Installation

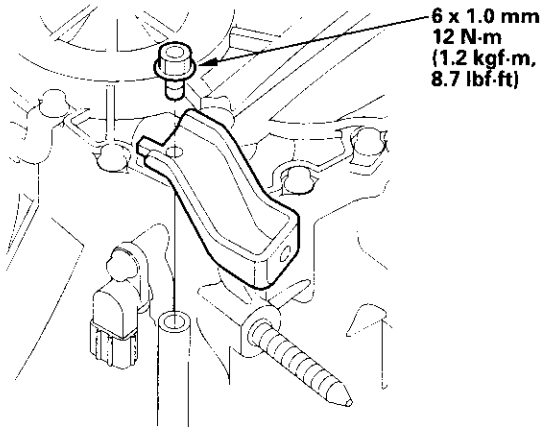
1. Remove the drive plate (A) and washer (B) from the crankshaft.



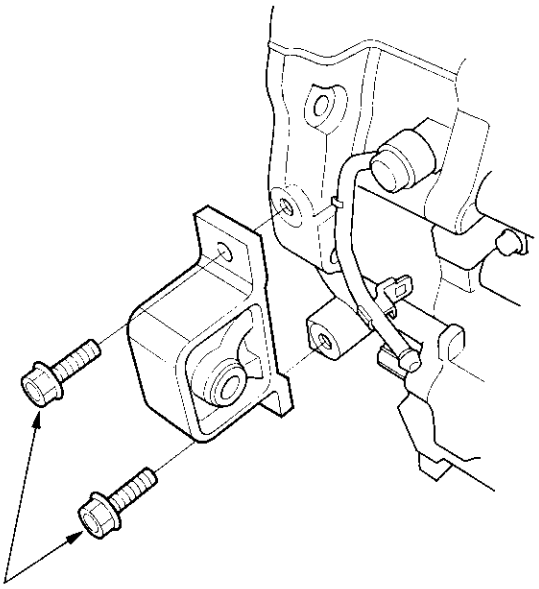
2. Install the drive plate and washer on the engine crankshaft, and tighten the eight bolts in a crisscross pattern in two or more steps.

Transmission Installation

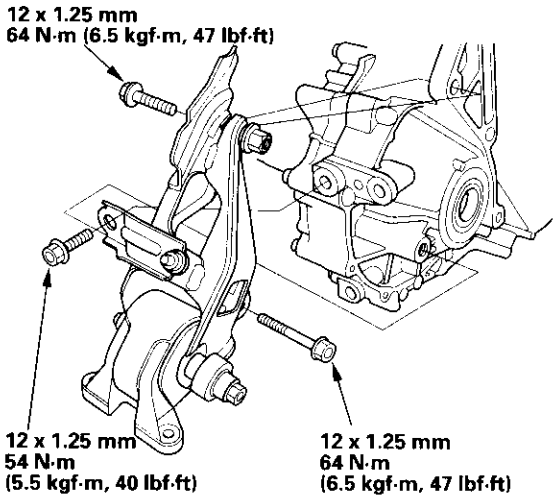
1. Flush the ATF cooler (see page 14-156).
2. Install the air cleaner housing mounting bracket.



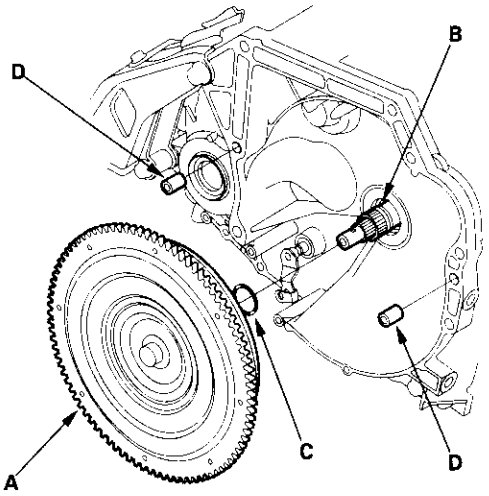
3. Install the front mount.



4. Install the rear mount/bracket.



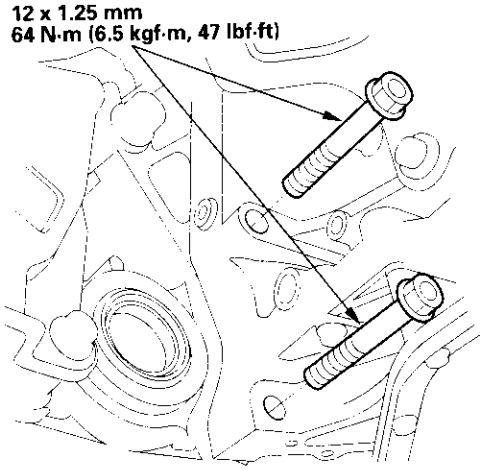
5. Install the torque converter assembly (A) on the mainshaft (B) with the new O-ring (C).



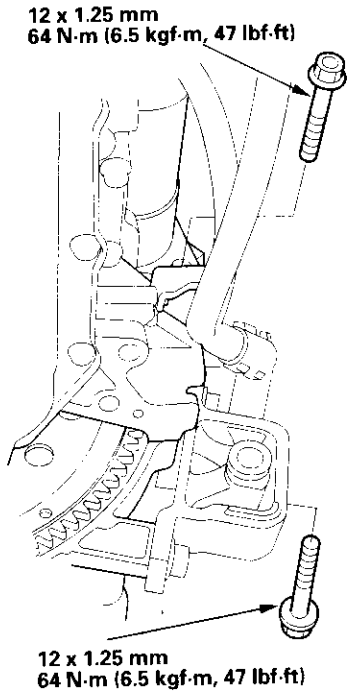
6. Install the 14 x 20 mm dowel pins (D) in the torque converter housing.

7. Place the transmission on a jack, and raise the transmission to engine level.

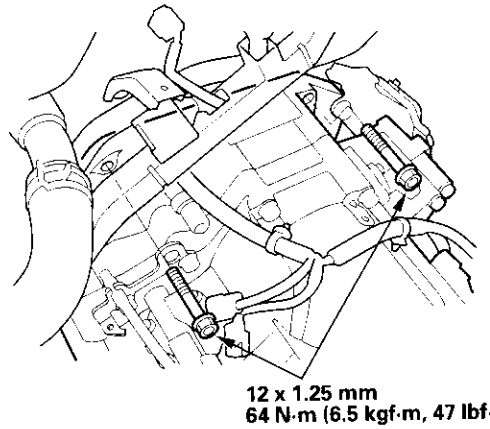
8. Attach the transmission to the engine, then install the transmission housing mounting bolts.



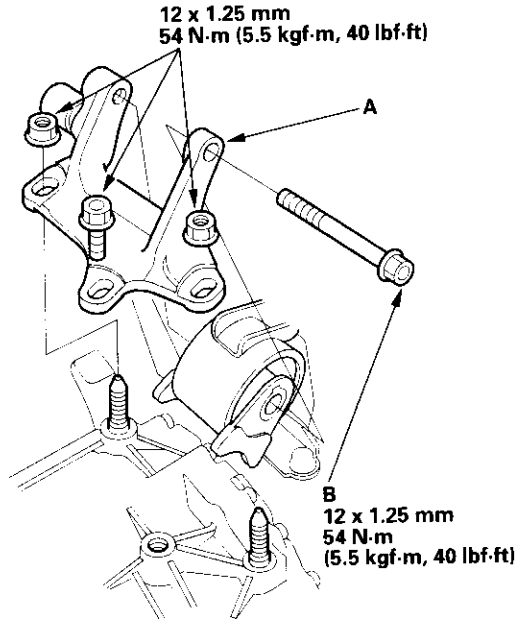
9. Install the transmission housing mounting bolts.



10. Install the transmission housing mounting bolts.



11. Install the transmission mount bracket (A). Tighten the mount bolt (B) loosely, and tighten the transmission mount bracket bolt and nuts to the specified torque, then tighten the mount bolt to the specified torque.



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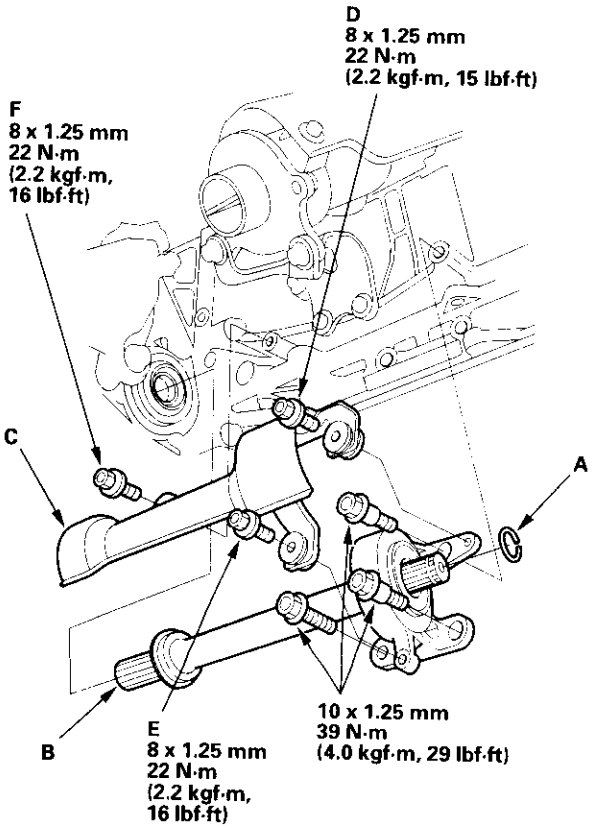
Transmission Installation (cont'd)

12. Install the new set ring (A) on the intermediate shaft (B).

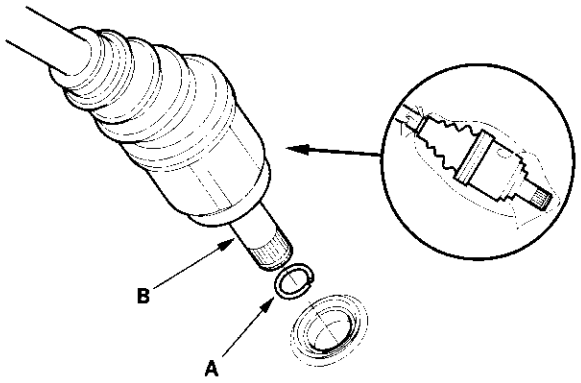


13. Clean the areas where the intermediate shaft contacts the transmission (differential) with solvent or carburetor cleaner, and dry with compressed air. Then install the intermediate shaft in the differential. While installing the intermediate shaft, be sure not to allow dust or other foreign particles to enter the transmission.

14. Install the intermediate shaft cover (C) with installing the mounting bolts loosely.

15. First tighten the right upper bolt (D) on the cover, then right lower bolt (E), and lastly the left bolt (F).

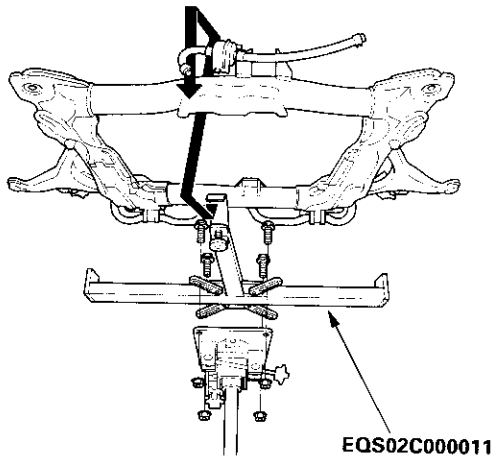
16. Install the new set ring (A) on the left driveshaft (B).



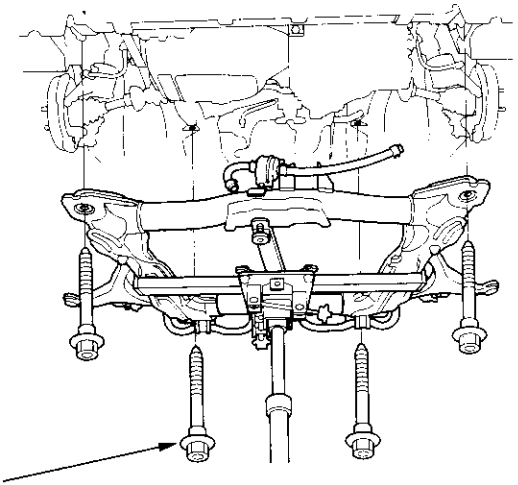
17. Install the right and left driveshaft (see page 16-16). While installing the left driveshaft in the differential, be sure not to allow dust or other foreign particles to enter the transmission.

NOTE:
- Clean the areas where the left driveshaft contacts the transmission (differential) with solvent or carburetor cleaner, and dry with compressed air.
- Turn the right and left steering knuckle fully outward, and slide the left driveshaft into the differential until you feel its set ring engages the side gear. Slide the right driveshaft over the intermediate shaft splines until you feel the driveshaft engages the intermediate shaft set ring.

18. Support the subframe with the special tool and a jack, and lift it up to body.

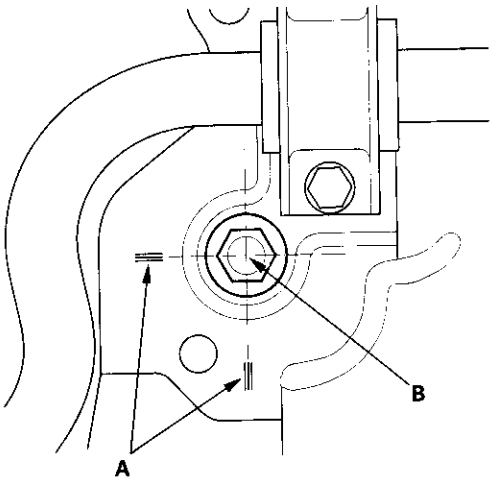


19. Loosely install the four subframe mounting bolts.

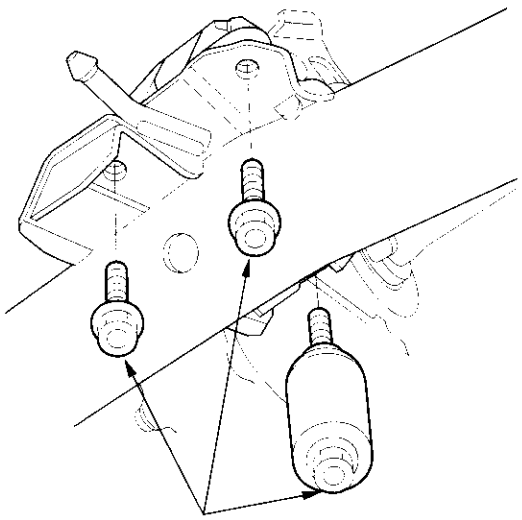


14 x 1.5 mm
103 N·m (10.5 kgf·m, 75.9 lbf·ft)

20. Align the reference marks (A) with the center of the subframe mounting bolt heads (B), then tighten the bolts to the specified torque.



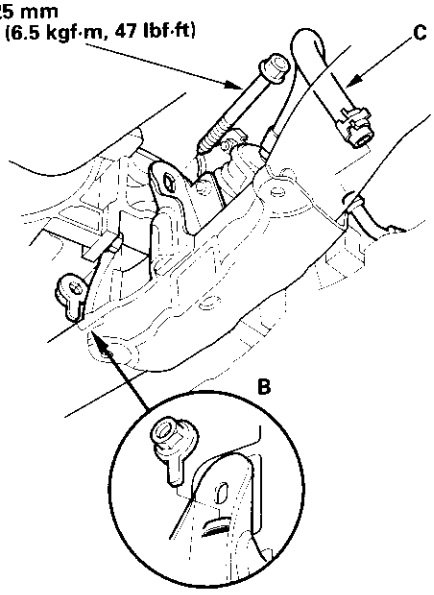
21. Install the rear mount bracket bolts.



10 x 1.25 mm
59 N·m (6.0 kgf·m, 43 lbf·ft)

22. Install the front mount bolt (A) and nut (B), connect the ATF cooler hose (C) to the ATF cooler pipe.

A
12 x 1.25 mm
64 N·m (6.5 kgf·m, 47 lbf·ft)

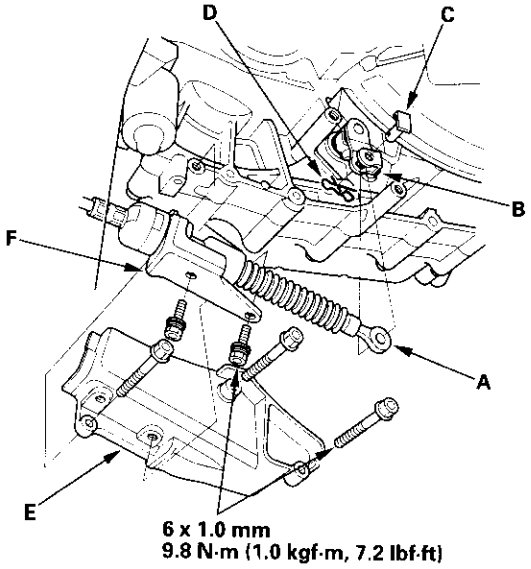


23. Remove the jack from the transmission.

(cont'd)

Transmission Installation (cont'd)

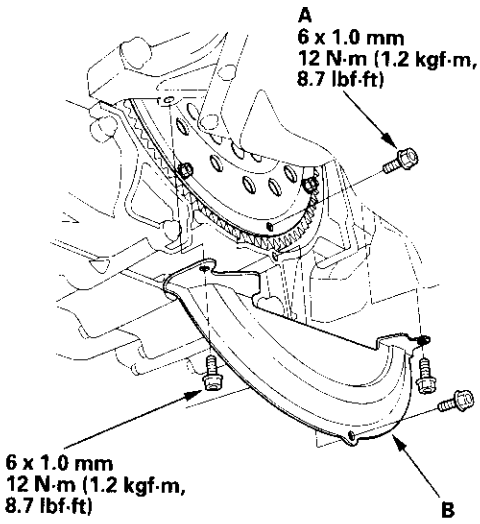
24. Attach the shift cable end (A) to the control lever (B), then insert the control pin (C) into the control lever hole through the shift cable end, and secure the control pin with the spring clip (D). Do not bend the shift cable excessively.



25. Install the shift cable cover (E), then secure the shift cable holder (F) to the shift cable cover with the bolts.

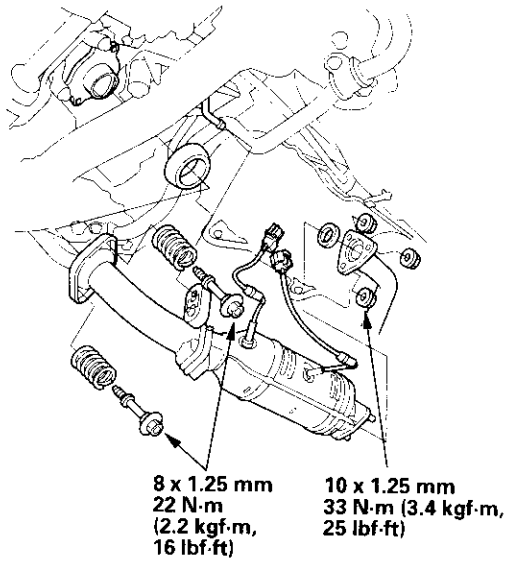
    NOTE: To prevent damage to the shift cable end at the control lever joint, be sure to secure the shift cable holder to the shift cable cover after installing the shift cable cover to the torque converter housing.

26. Attach the torque converter to the drive plate with eight bolts (A). Rotate the crankshaft pulley as necessary to tighten the bolts to 1/2 of the specified torque, then to the final torque, in a crisscross pattern. After tightening the last bolt, check that the crankshaft rotates freely.

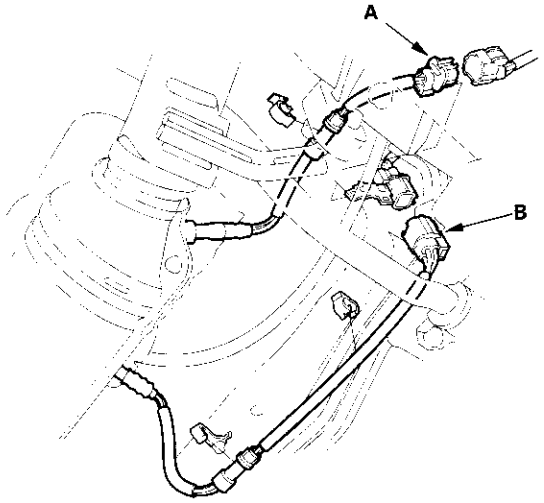


27. Install the torque converter cover (B).

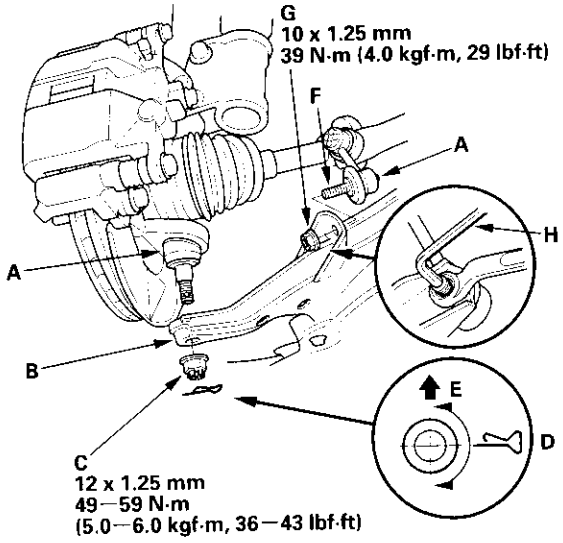
28. Install the exhaust pipe/catalytic converter with the new gaskets.



29. Connect the A/F sensor connector (A) and secondary HO2S connector (B), and clamp the harnesses.



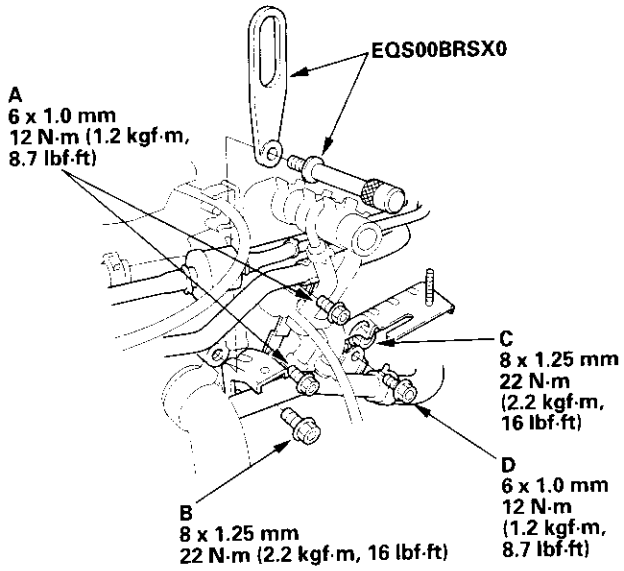
30. Connect the ball joints (A) to the lower arms (B), and install the castle nuts (C) and spring clips (D). Insert the spring clips from inside of the vehicle, and its hooked side facing the front (E) of the vehicle in the range of the insertion direction shown.



31. Connect the ball joints (F) to the lower arms, and install the nuts (G). Insert a 5 mm Allen wrench (H) in the top of the ball joint pins, and tighten the nuts.

32. Remove the engine support hanger.

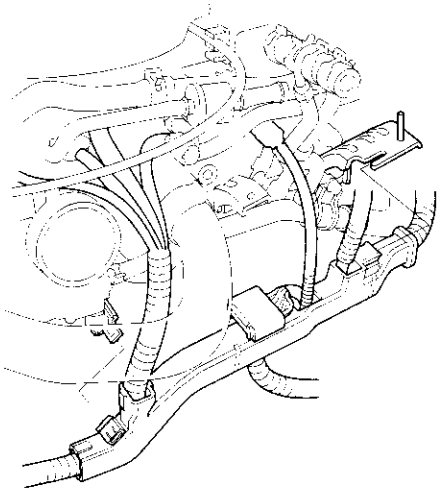
33. Remove the special tool from the engine cylinder head.



34. Install the brake booster and EVAP line bracket mounting bolts (A) and air cleaner housing bracket mounting bolt (B).

35. Tighten air cleaner housing bracket mounting bolt (C), and install the water pipe mounting bolt (D).

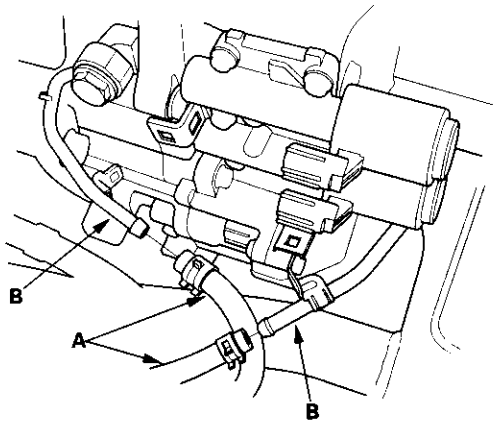
36. Install the engine harness cover.



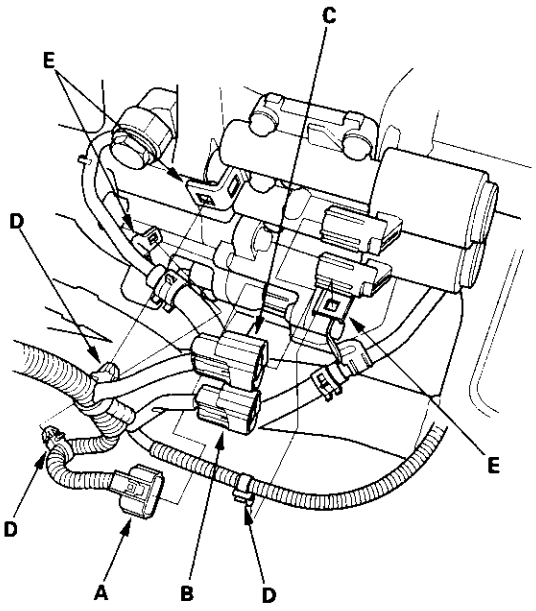
(cont'd)

Transmission Installation (cont'd)

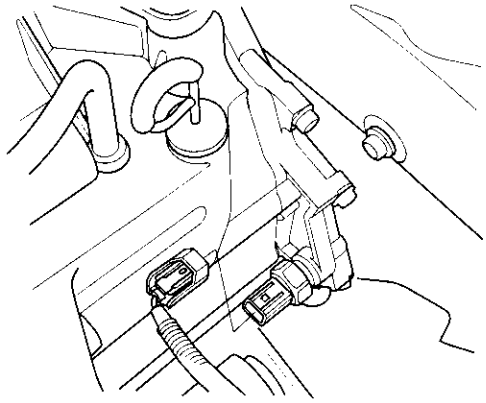
37. Connect the ATF cooler hoses (A) to the ATF cooler lines (B) (see page 14-157).



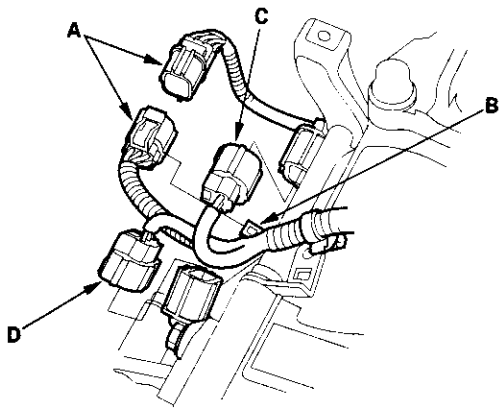
38. Connect the shift solenoid harness connector (A), A/T clutch pressure control solenoid valve B connector, and solenoid valve C connector. Install the harness clamps (D) on the clamp brackets. (E).



39. Connect the 3rd clutch transmission fluid pressure switch connector.

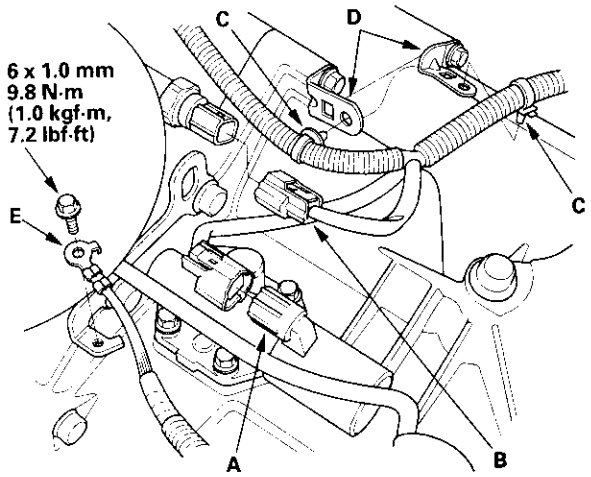


40. Connect the transmission range switch connector (A), and install it on its bracket (B).



41. Connect the connectors to the mainshaft speed sensor (C) and countershaft speed sensor (D).

42. Connect the A/T clutch pressure control solenoid valve A connector and 2nd clutch transmission fluid pressure switch connector (B), and install the harness clamps (C) on the clamp brackets (D).



43. Install the transmission ground terminal (E).

44. Install the splash shield.

45. Install the battery base, then install the harness clamp on the clamp bracket on the base.

46. Refill the transmission with ATF (see page 14-139).

47. Install the intake air duct and air cleaner housing.

48. Install the battery tray and battery, then secure the battery with its hold-down bracket.

49. Connect the battery positive terminal, then connect the negative terminal.

50. Set the parking brake. Start the engine, and shift the transmission through all gears three times.

51. Check the shift lever operation, A/T gear position indicator operation, and shift cable adjustment.

52. Check and adjust the front wheel alignment (see page 18-4).

53. Start the engine and let it idle until it reaches normal operating temperature (the radiator fan comes on) with the transmission in the [P] or [N] position, then turn it off and check the ATF level (see page 14-138).

54. Do the PCM idle learn procedure (see page 11-149).

55. Do the power window control unit reset procedure (see page 22-139).

56. Perform the road test (see page 14-120).

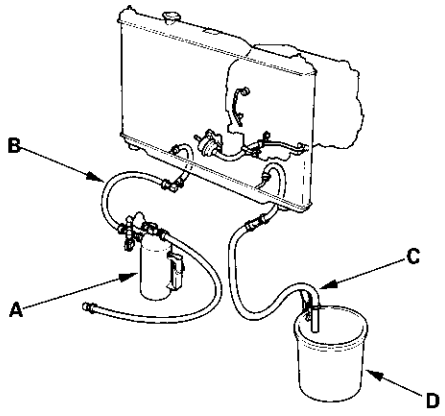
57. Enter the radio station presets, and set the clock.

ATF Cooler Flushing

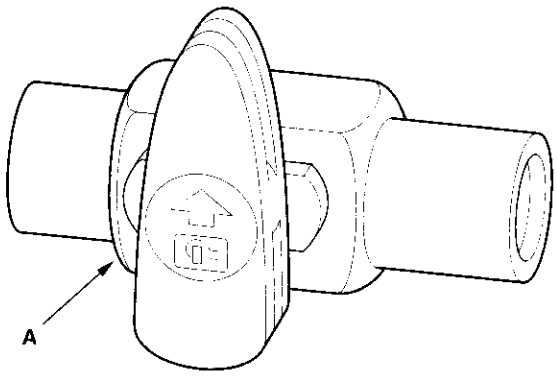
Special Tool Required
Commercially Available Transmission Cooler Flusher
Kent-Moore J38405-A or equivalent

This procedure should be performed before reinstalling the transmission.

1. Check equipment for wear and cracks before using. Replace any worn or cracked components.
2. Using the measuring cup, fill the flusher (A) with 21 ounces (approximately 2/3 full) of biodegradable flushing fluid (J35944-20). Do not substitute with any other fluid. Follow the handling procedure on the fluid container.



3. Secure the flusher filler cap, and pressurize the flusher with compressed air to 550 – 829 kpa (5.6 – 8.45 kgf/cm², 80 – 120 psi). The air line should be equipped with a water trap to ensure a dry air system.
4. Hang the flusher under the vehicle.
5. Attach the flusher discharge hose (B) to the return line of the ATF cooler using a clamp.
6. Connect the drain hose (C) to the inlet line on the ATF cooler using a clamp. Securely clamp the opposite end of the drain hose to a bucket (D) or floor drain.
7. With the water and air valves (A) off, attach the water and air supplies to the flusher. (Hot water if available.)



8. Turn on the water valve for 10 seconds. If water does not flow through the cooler, it is completely plugged, it cannot be flushed, and must be replaced.
9. Depress the trigger to mix the flushing fluid into the water flow. Use the wire clip to hold the trigger down.
10. While flushing with the water and flushing fluid for 2 minutes, turn the air valve on for 5 seconds every 15 – 20 seconds to create a surging action.

    AIR PRESSURE: MAX 845 kPa (8.45 kgf/cm², 120 psi)

11. Turn the water valve off. Release the trigger, then reverse the hoses to the cooler so you can flush in the opposite direction. Repeat steps 8 through 10.
12. Release the trigger, and rinse the cooler with water for 1 minute.
13. Turn the water valve off and the water supply off.
14. Turn the air valve on for 2 minutes, or until no moisture is visible leaving the drain hose. Residual moisture in the cooler or lines can damage the transmission.
15. Remove the flusher from the cooler line. Attach the drain hose to an ATF container.
16. Install the transmission, and leave the drain hose attached to the cooler line.

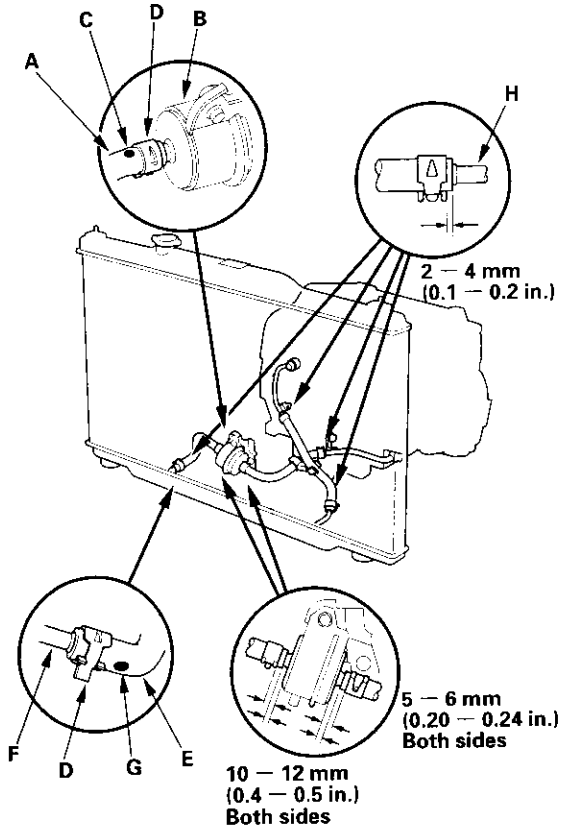
17. Make sure the transmission is in the [P] position. Fill the transmission with ATF, and run the engine for 30 seconds or until approximately 0.95ℓ (1.0 US qt.) is discharged.

18. Remove the drain hose, and reconnect the cooler return hose to the transmission.

19. Refill the transmission with ATF to the proper level (see page 14-139).

ATF Cooler Hose Replacement

1. Connect the ATF cooler hoses (A) to the ATF filter (B), with the dot (C) facing up, and secure the hose ends with the clips (D).

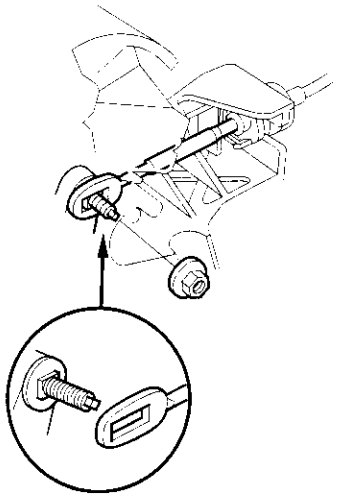


2. Connect the ATF cooler hose (E) to the ATF cooler (F) with the dot (G) facing down, and to the ATF cooler lines (H) on the transmission, and secure the hoses with the clips.

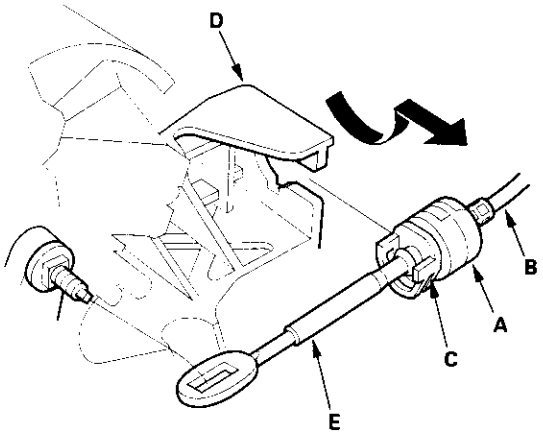
3. Install the clamp on the hoses.

Shift Lever Removal

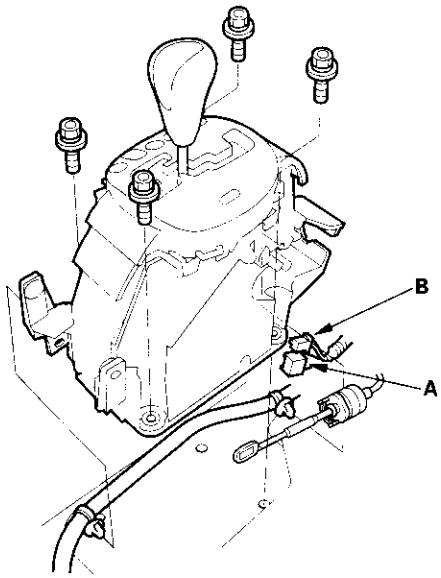
1. Remove the center console (see page 20-58).
2. Shift the transmission into the [N] position.
3. Remove the nut securing the shift cable end, then separate the cable end from the shift lever.



4. Rotate the socket holder (A) on the shift cable (B) a quarter turn; the tab (C) on the socket holder will be in the opening of the shift lever bracket base (D). Then slide the holder to remove the shift cable from the shift lever bracket base (D). Do not remove the shift cable by twisting the shift cable guide (E).



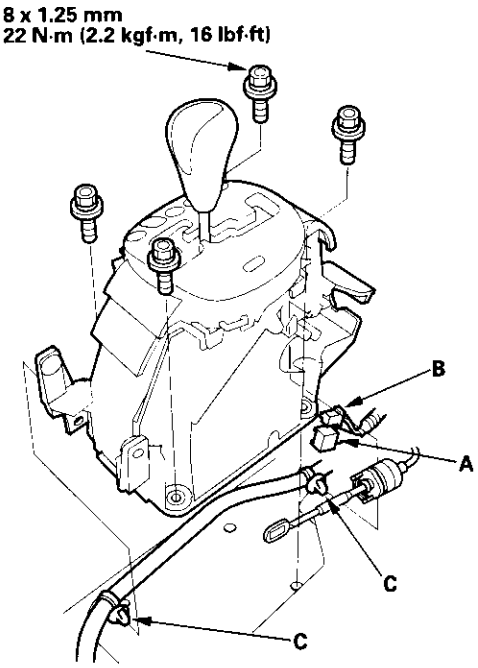
5. Disconnect transmission gear selection switch/park pin switch connector (A) and shift lock solenoid connector (B).



6. Remove the shift lever assembly.

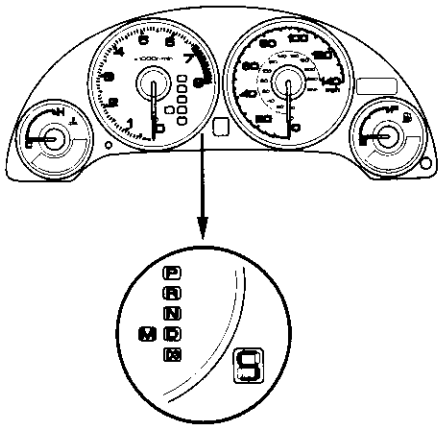
Shift Lever Installation

1. Install the shift lever assembly.



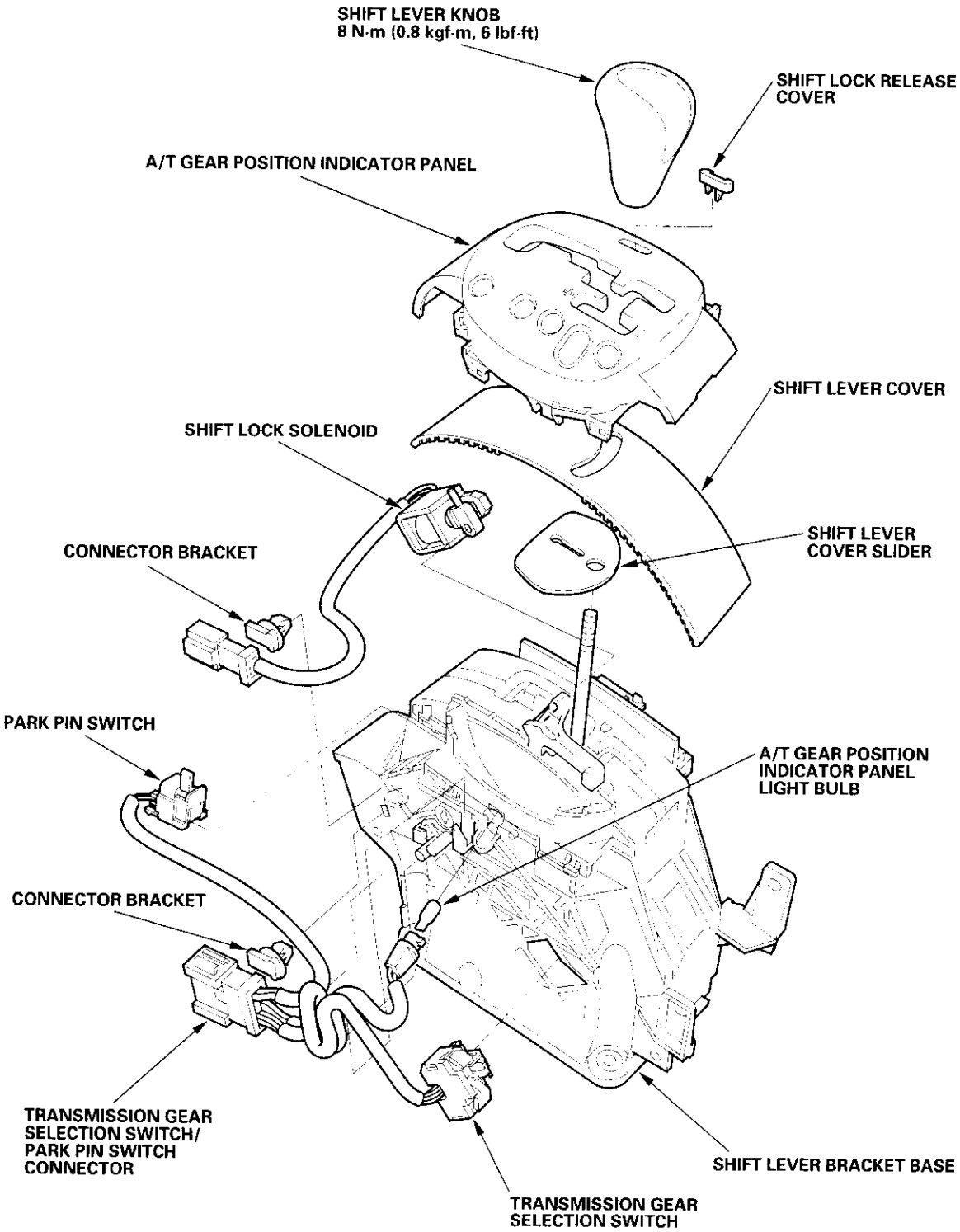
2. Connect transmission gear selection switch/park pin switch connector (A) and shift lock solenoid connector (B), and install the harness clamps (C) on the shift lever bracket base.

3. Turn the ignition switch ON (II), and verify that the [N] position indicator comes on.



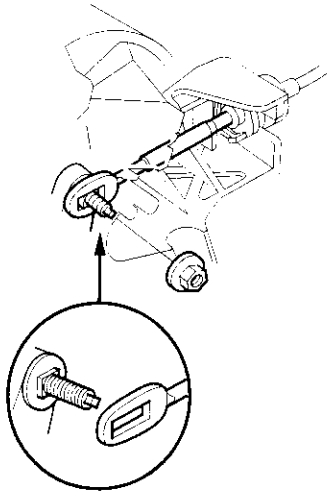
4. Install the shift cable to the shift lever (see step 5 on page 14-163). If necessary, adjust the shift cable.

Shift Lever Disassembly/Reassembly

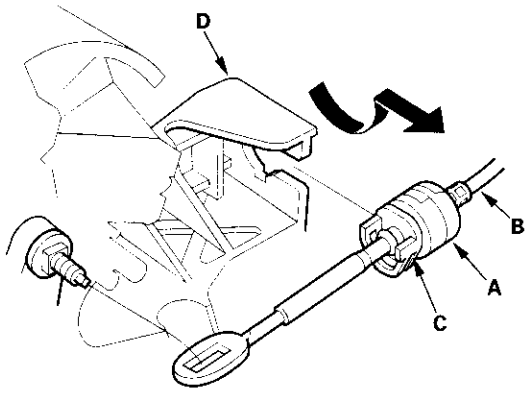


Shift Cable Replacement

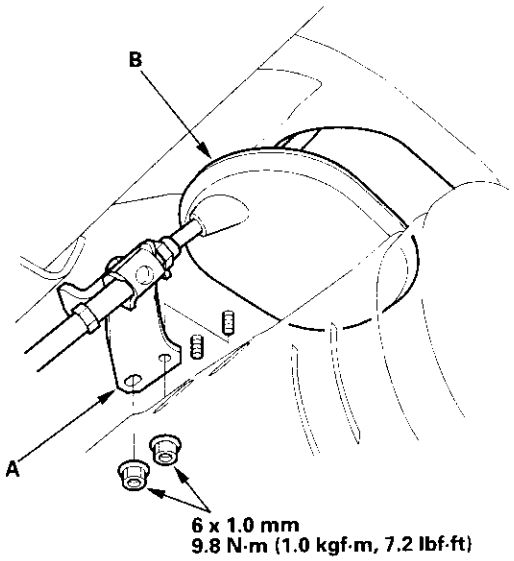
1. Raise the vehicle, and make sure it is securely supported.
2. Remove the center console (see page 20-58).
3. Shift the transmission into the [N] position.
4. Remove the nut securing the shift cable end, then separate the cable end from the shift lever.



5. Rotate the socket holder (A) on the shift cable (B) a quarter turn; the tab (C) on the socket holder will be in the opening of the shift lever bracket base (D). Then slide the holder to remove the shift cable from the shift lever bracket base (D).



6. Remove the heat shield.
7. Remove the shift cable bracket (A) and grommet (B).



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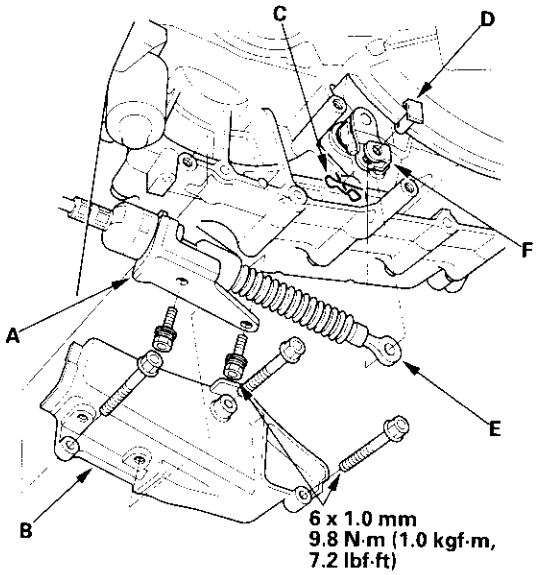
Shift Cable Replacement (cont'd)

8. Remove the bolts securing the shift cable holder (A), then remove the shift cable cover (B).



9. Remove the spring clip (C) and control pin (D), then separate the shift cable (E) from the control lever (F).

10. Insert the new shift cable through the grommet hole. Do not bend the shift cable excessively.

11. Install the shift cable bracket on the body, then install the grommet.

12. Verify that the transmission is in the [N] position on the control lever.

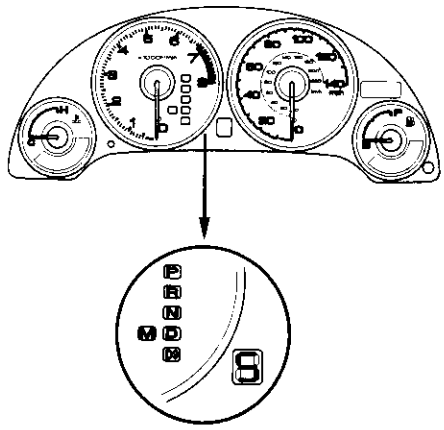
13. Attach the shift cable end to the control lever, then insert the control pin into the control lever through the shift cable end, and secure the control pin with the spring clip.

14. Install the shift cable cover, then secure the shift cable holder to the shift cable cover with the bolts.

    NOTE: To prevent damage to the control lever joint, remove the bolts securing the shift cable holder before removing the bolts securing the shift cable cover.

15. Install the heat shield.

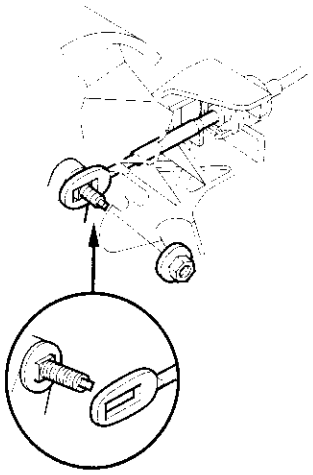
16. Turn the ignition switch ON (II); and verify that the [N] position indicator comes on.



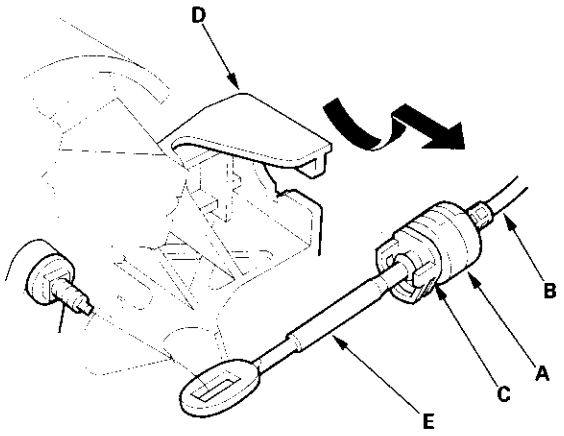
17. Install the shift cable to the shift lever (see step 5 on page 14-163). If necessary, adjust the shift cable.

Shift Cable Adjustment

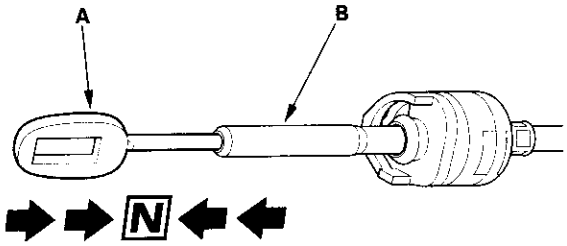
1. Remove the center console (see page 20-58).
2. Shift the transmission into [N] position.
3. Remove the nut securing the shift cable end, then separate the cable end from the shift lever.



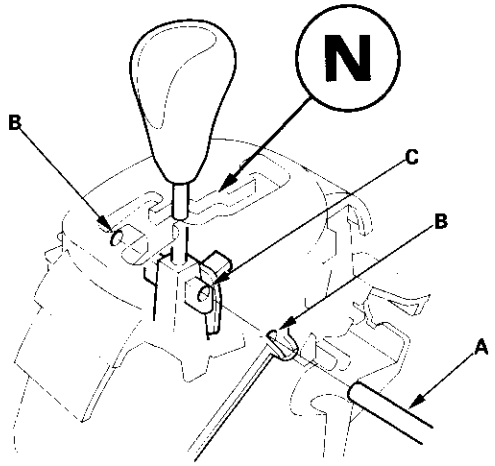
4. Rotate the socket holder (A) on the shift cable (B) a quarter turn; the tab (C) on the socket holder will be in the opening of the shift lever bracket base (D). Then slide the holder to remove the shift cable from the shift lever bracket base (D). Do not remove the shift cable by twisting the shift cable guide (E).



5. Push the shift cable (A) until it stops, then release it. Pull the shift cable back two steps so that the shift position is in [N]. Do not push and pull the shift cable by holding the shift cable guide (B).



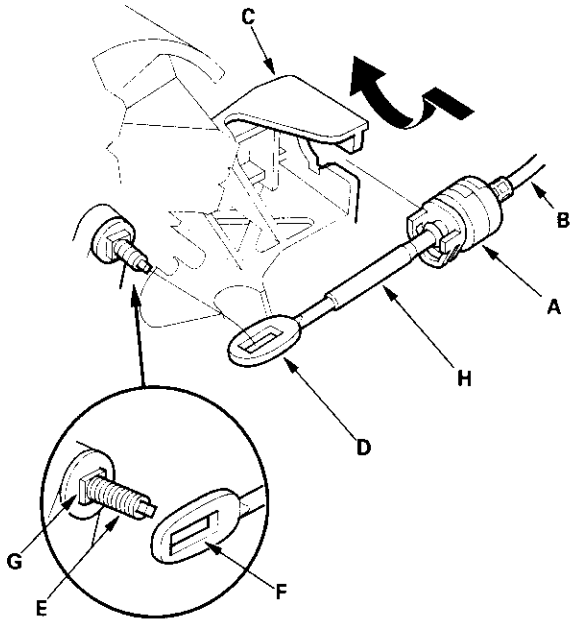
6. Turn the ignition switch ON (II), and verify that the [N] position indicator comes on.
7. Turn the ignition switch OFF.
8. Insert a 6.0 mm (0.24 in.) pin (A) through the positioning hole (B) on the shift lever bracket base and into the positioning hole (C) on the shift lever. The shift lever is secured in the [N] position.



(cont'd)

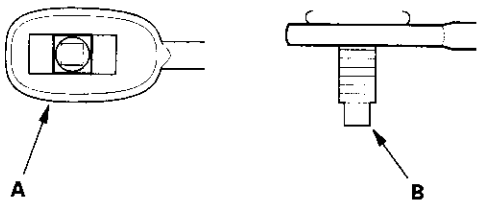
Shift Cable Adjustment (cont'd)

9. Align the socket holder (A) on the shift cable (B) with the slot in the bracket base (C), then slide the holder into the base. Install the shift cable end (D) over the mounting stud (E) by aligning its square hole (F) with the square fitting (G) at the bottom of the stud. Rotate the holder a quarter turn to secure the shift cable. Do not install the shift cable by twisting the shift cable guide (H).

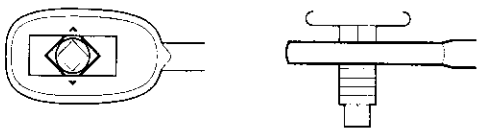


10. Verify that the shift cable end (A) is properly installed on the mounting stud (B).

Properly Installed:



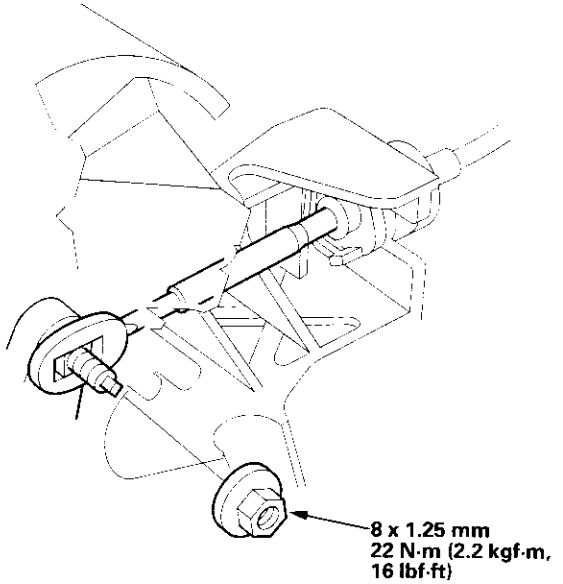
Improperly Installed:



Cable end rides on the bottom of the mounting stud.

11. If improperly installed, remove the shift cable from the shift lever bracket base, and reinstall the shift cable. Do not install the shift cable end on the mounting stud while the shift cable is on the shift lever bracket base.

12. Install and tighten the nut.



13. Remove the 6.0 mm (0.24 in.) pin that was installed to hold the shift lever.

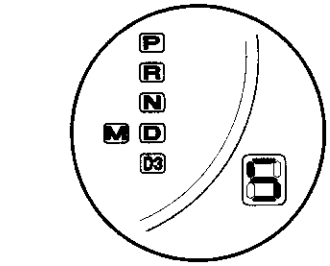
14. Move the shift lever to each position, and verify that the A/T gear position indicator follows the transmission range switch.

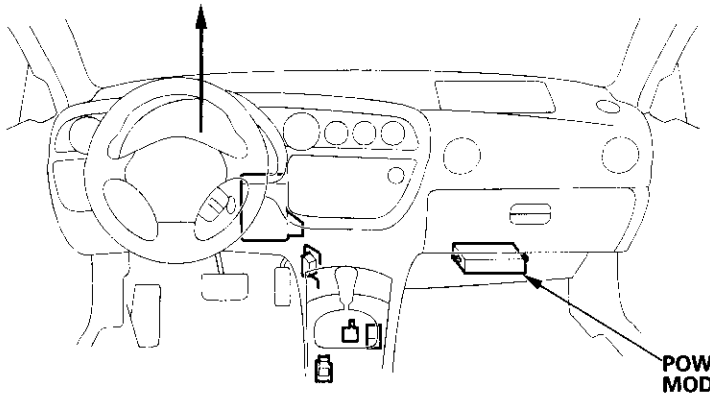
15. Push the shift lock release, and verify that the shift lever releases.

16. Reinstall the center console (see page 20-58).

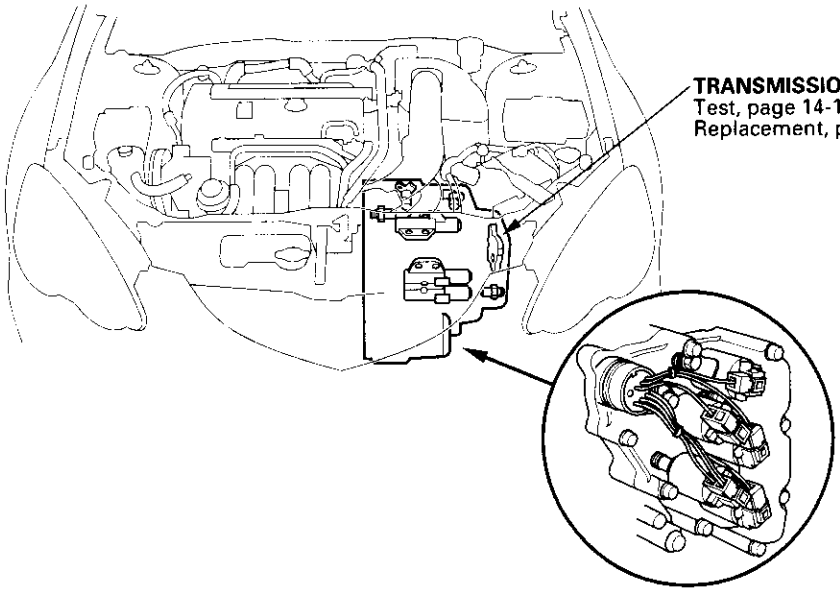
Component Location Index

A/T GEAR POSITION INDICATOR
Indicator Input Test, page 14-167





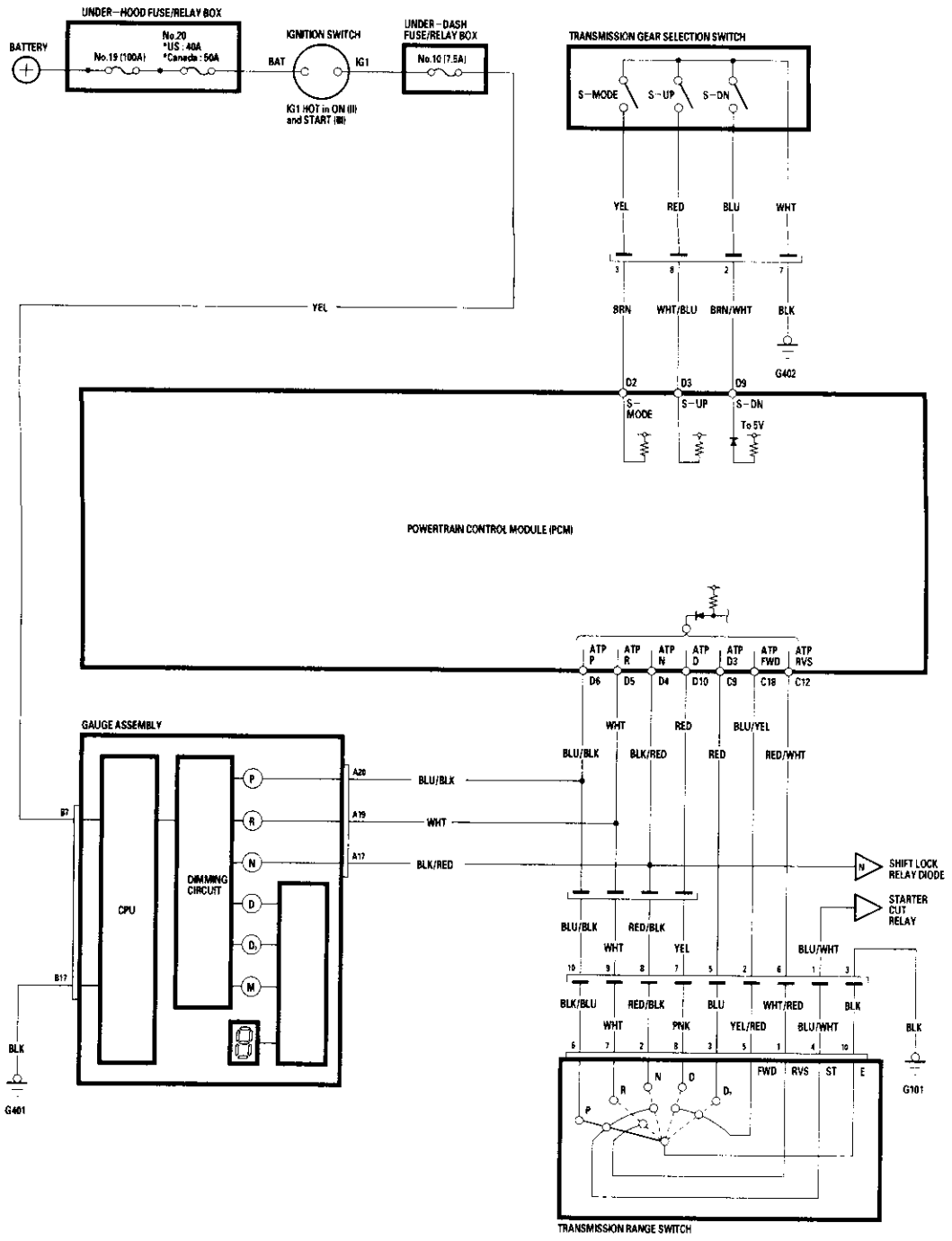
POWERTRAIN CONTROL MODULE (PCM)



TRANSMISSION RANGE SWITCH
Test, page 14-168
Replacement, page 14-170

A/T Gear Position Indicator

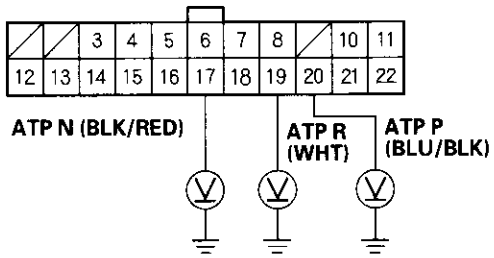
Circuit Diagram



Indicator Input Test

1. If the MIL has been reported on, check for a DTC, and repair the system as indicated by DTC.
2. If the MIL does not come on, and A/T gear position indicator [P], [R], or [N] does not come on, remove the gauge assembly from the dashboard, then disconnect the gauge assembly connector A (22P) and B (18P).
3. Inspect the connectors and connector terminals to be sure they are making good contact.
4. If the terminals are bent, loose, or corroded, repair them as necessary, and recheck the system.
5. Turn the ignition switch ON (II).
6. Shift to the [P] position, and check the voltage between A20 terminal (BLU/BLK) and ground. There should be 0 V in the [P] position and battery voltage in any other shift lever position. If the test results are different, check for faulty transmission range switch or an open in the wire.

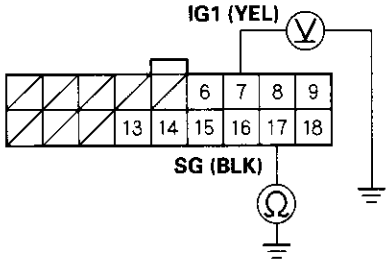
GAUGE ASSEMBLY CONNECTOR A (22P)



Wire side of female terminals

7. Shift to the [R] position, and check the voltage between A19 terminal (WHT) and ground. There should be 0 V in the [R] position and battery voltage in any other shift lever position. If the test results are different, check for faulty transmission range switch or an open in the wire.
8. Shift to the [N] position, and check the voltage between A17 terminal (BLK/RED) and ground. There should be 0 V in the [N] position and battery voltage in any other shift lever position. If the test results are different, check for faulty transmission range switch or an open in the wire.
9. Check the voltage between B7 terminal (YEL) and ground. There should be battery voltage. If the test result is different, check for a blown No. 10 (7.5 A) fuse in the under-dash fuse/relay box or an open in the wire.

GAUGE ASSEMBLY CONNECTOR B (18P)

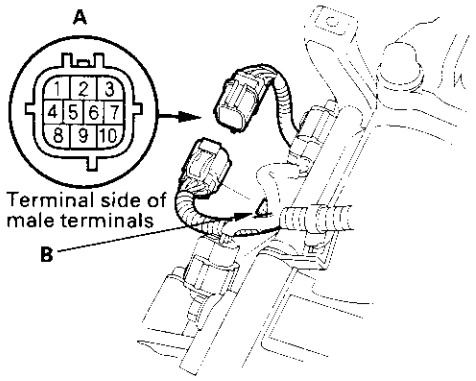


Wire side of female terminals

10. Turn the ignition switch OFF, and check for continuity between B17 terminal and ground. There should be continuity under all conditions. If the test result is different, check for a poor ground (G401) or open in the wire.
11. If all input tests prove OK, but the indicator is faulty, replace the printed circuit board.

Transmission Range Switch Test

1. Remove the transmission range switch harness connector (A) from the connector bracket (B), then disconnect the connector.



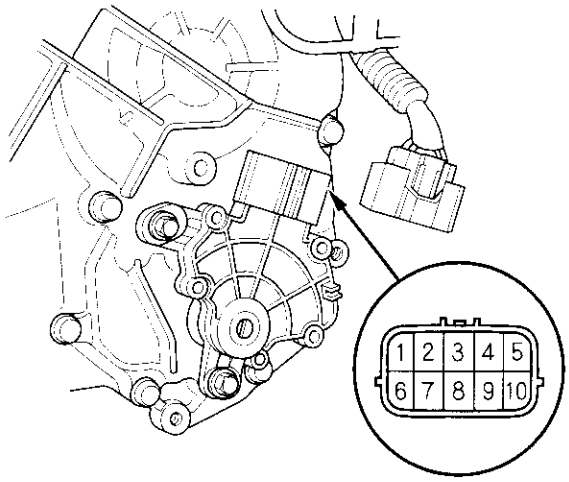
Connector Terminal Specification

Terminal	Signal	Terminal	Signal
1	ATP NP (ST)	6	ATP RVS
2	ATP FWD	7	D
3	Ground (E)	8	N
4	—	9	R
5	D_3	10	P

2. Check for continuity between terminals at the harness connector. There should be continuity between the terminals in the following table for each switch position.

Position	Connector Terminal									
	1	2	3	4	5	6	7	8	9	10
P	○		○							○
R			○			○				○
N	○		○					○		
D		○	○				○			
D_3		○	○		○					

3. If there is no continuity between any terminals, remove the transmission range switch cover, and disconnect the connector at the switch.



Connector Terminal Specification

Terminal	Signal	Terminal	Signal
1	ATP RVS	6	P
2	N	7	R
3	D_3	8	D
4	ATP NP (ST)	9	—
5	ATP FWD	10	Ground (E)

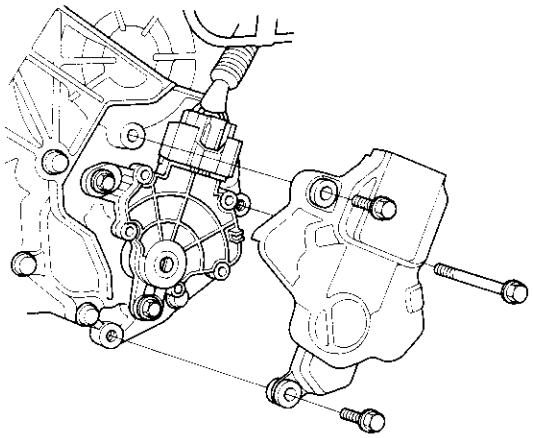
4. Check for continuity between terminals at the harness connector. There should be continuity between the terminals in the following table for each switch position.

Position	Connector Terminal									
	1	2	3	4	5	6	7	8	9	10
P				○		○				○
R	○						○			○
N		○		○						○
D					○			○		○
D_3			○		○					○

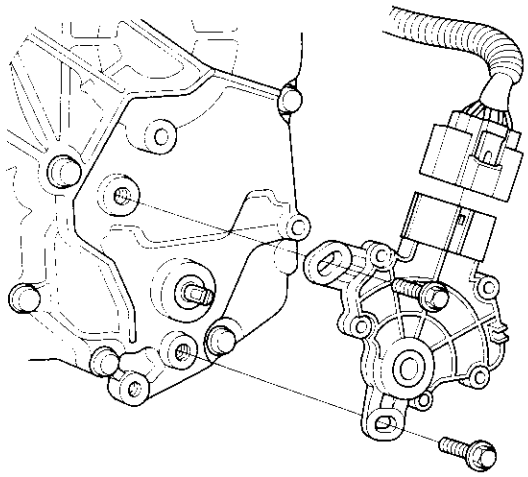
5. If there is no continuity between any terminals, check the transmission range switch installation. If the transmission range switch installation is OK, replace the switch.
   If the transmission range switch continuity check was OK, replace the faulty transmission range switch harness.

Transmission Range Switch Replacement

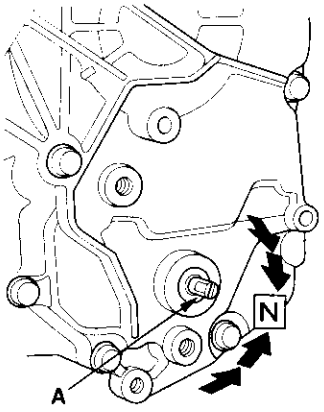
1. Raise the vehicle, and make sure it is securely supported.
2. Shift to [N] position.
3. Remove the transmission range switch cover.



4. Disconnect the transmission range switch connector.

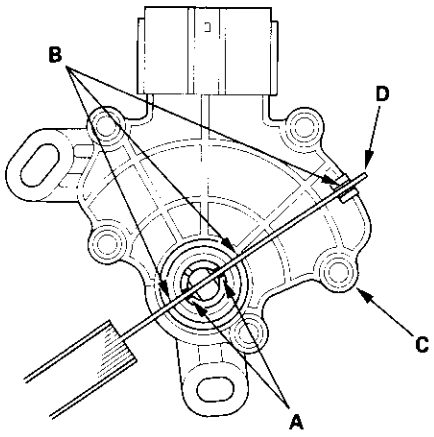


5. Remove the old transmission range switch, and install the new switch.
6. Make sure that the control shaft is in [N] position. If necessary, move the shift lever to [N] position.

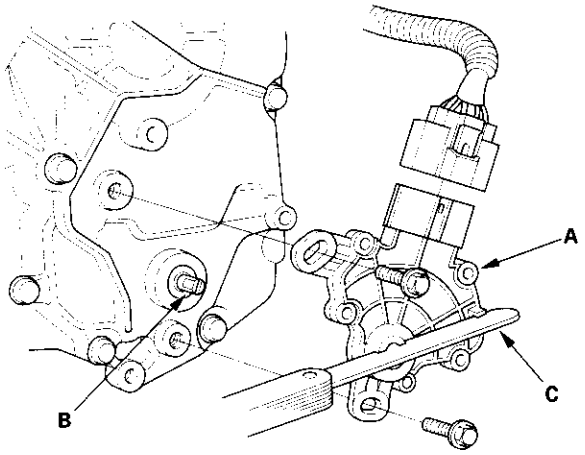


7. Align the cutout (A) on the rotary-frame with the neutral positioning cutouts (B) on the transmission range switch (C), then put a 2.0 mm (0.08 in.) feeler gauge blade (D) in the cutouts to hold it in the [N] position.

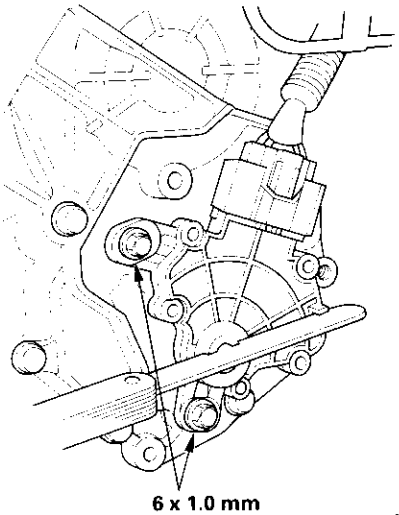
   NOTE: Be sure to use a 2.0 mm (0.08 in.) blade or equivalent to hold the switch in the [N] position.



8. Install the transmission range switch (A) gently on the control shaft (B) with holding the [N] position with the 2.0 mm (0.08 in.) blade (C).

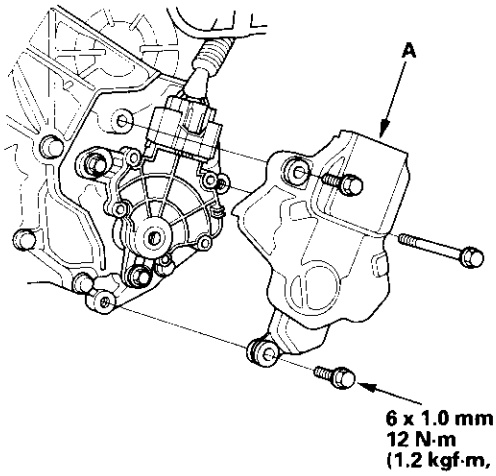


9. Tighten the bolts on the transmission range switch while you continue to hold the [N] position. Do not move the transmission range switch when tightening the bolts. Remove the feeler gauge.



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

10. Connect the connector securely, then install the transmission range switch cover (A).



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

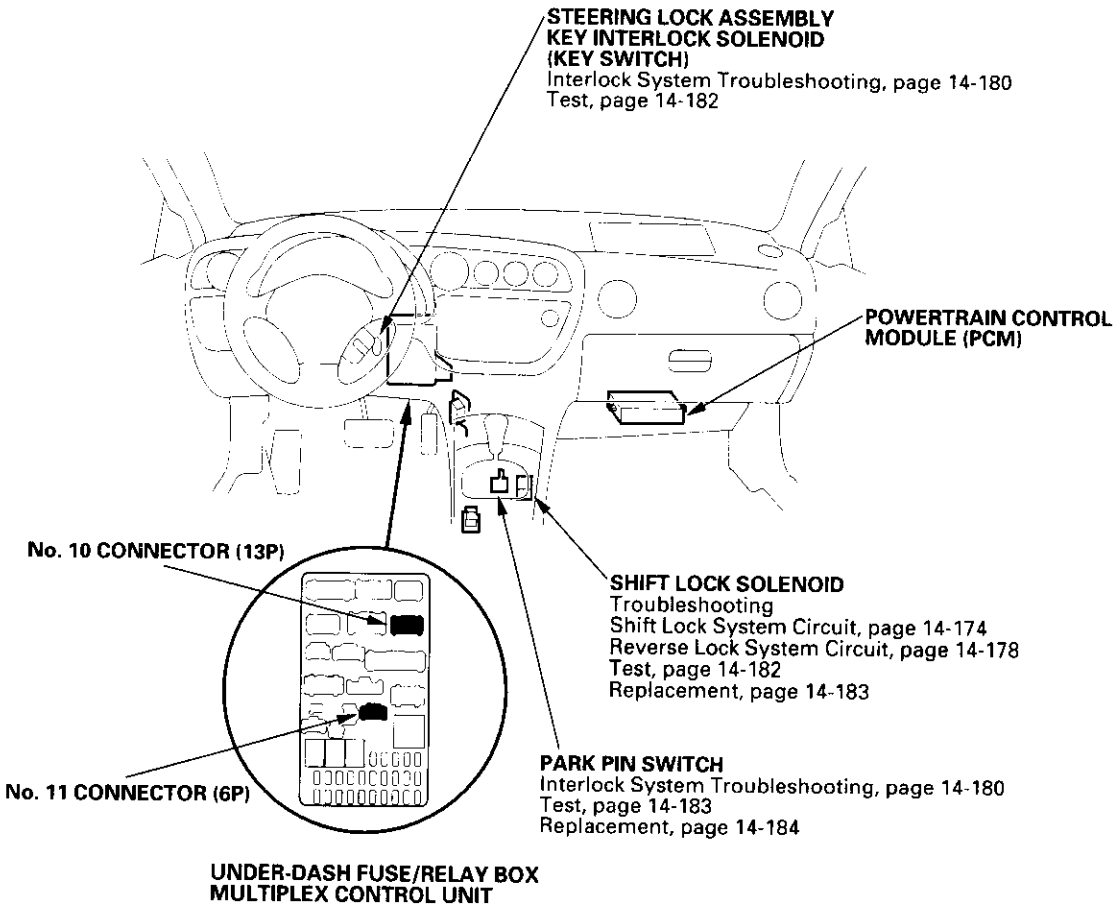
11. Turn the ignition switch ON (II). Move the shift lever through all gear positions, and check the transmission range switch synchronization with the A/T gear position indicator.

12. Check that the engine can start in [P] and [N] positions, and cannot start in any other shift lever position.

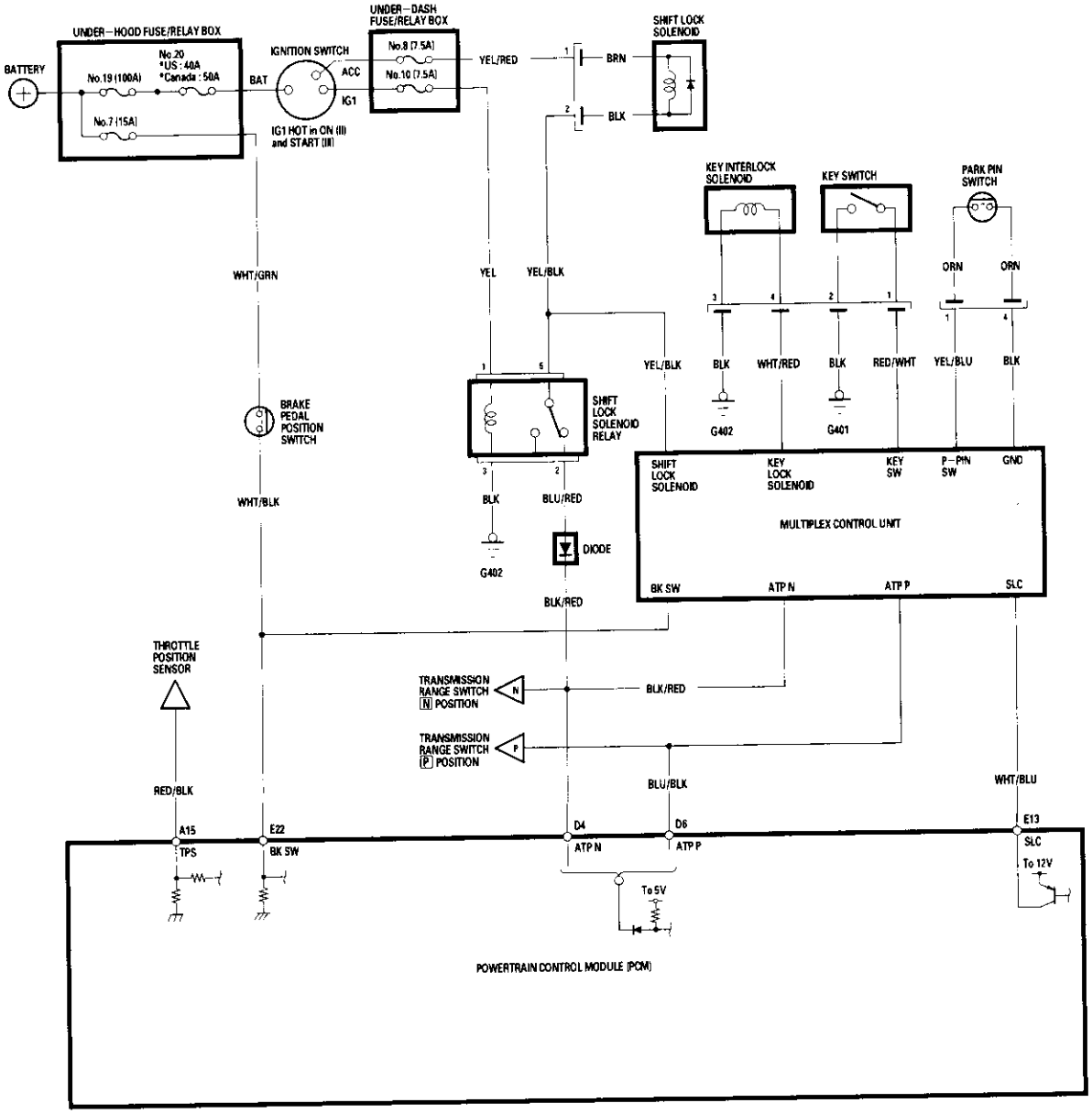
13. Check that the back-up lights come on when the shift lever is in [R] position.

14. Allow the wheels to rotate freely, then start the engine, and check the shift lever operation.

Component Location Index



Circuit Diagram



Shift Lock System Circuit Troubleshooting

1. Press the brake pedal.

   Are the brake lights ON?

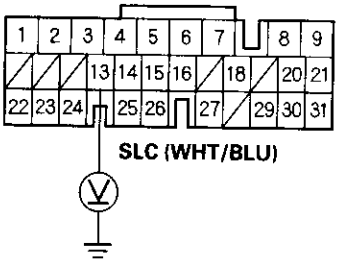
   YES – Go to step 2.

   NO – Repair faulty brake light circuit. ■

2. Turn the ignition switch ON (II), and shift to the [P] position.

3. Press the brake pedal, release the accelerator pedal, and measure the voltage between PCM connector terminal E13 and body ground.

PCM CONNECTOR E (31P)



Wire side of female terminals

Is there battery voltage?

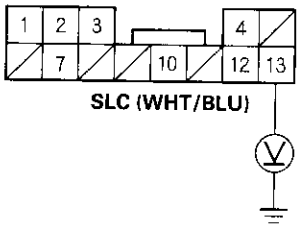
YES – Go to step 4.

NO – Go to step 8.

4. Remove the under-dash fuse/relay box from the dash.

5. Measure the voltage between No. 6 terminal of the No. 10 connector (13P) and body ground with the accelerator pedal released and brake pedal pressed.

No. 10 CONNECTOR (13P)



Wire side of female terminals

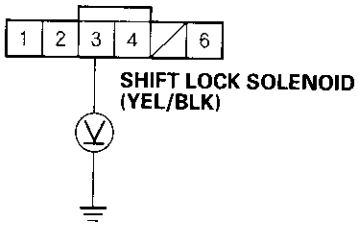
Is there battery voltage?

YES – Go to step 6.

NO – Repair open in the wire between PCM connector terminal E13 and the multiplex control unit (via the No. 10 connector (13P) of the under-dash fuse/relay box). ■

6. Measure the voltage between the No. 3 terminal of the No. 11 connector (6P) of the under-dash fuse/relay box and body ground.

No. 11 CONNECTOR (6P)



Wire side of female terminals

Is there battery voltage?

YES – Go to step 7.

NO – Repair open in the wire between the shift lock solenoid connector and multiplex control unit (via the No. 11 connector (6P) of the under-dash fuse/relay box). ■

7. Turn the ignition switch OFF, move the shift lever to the [P] position, and turn the ignition switch ON (II).

   Does the [P] indicator in the gauge assembly illuminate?

   YES – Check for loose terminal fit in the under-dash fuse/relay box connectors. If necessary, substitute a known-good multiplex control unit and recheck. ■

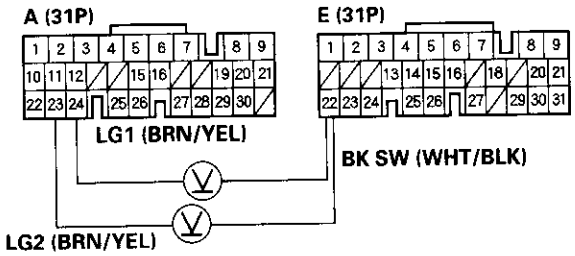
   NO – Repair open in the [P] position wire between the multiplex control unit and the transmission range switch. ■

8. Turn the ignition switch OFF.

9. Disconnect PCM connectors A (31P) and E (31P).

10. Press the brake pedal, and measure the voltage between PCM connector terminal E22 and A23 or A24.

PCM CONNECTORS



Wire side of female terminals

   Is there battery voltage?

   YES – Release the brake pedal, and go to step 11.

   NO – Repair open in the wire between PCM connector terminal E22 and the brake pedal position switch. ■

11. Reconnect PCM connectors A (31P) and E (31P).

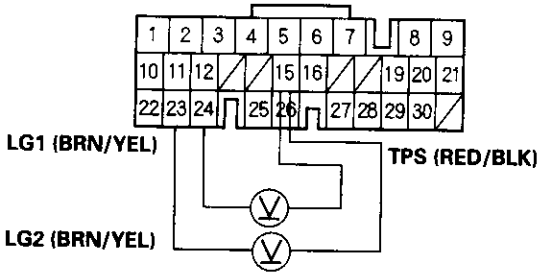
12. Turn the ignition switch ON (II).

(cont'd)

Shift Lock System Circuit Troubleshooting (cont'd)

13. Measure the voltage between PCM connector terminal A15 and A23 or A24.

PCM CONNECTOR A (31P)



Wire side of female terminals

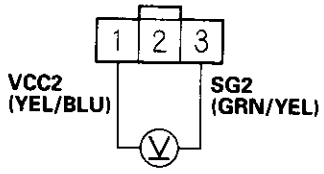
Is there about 0.5 V?

YES – Go to step 18.

NO – Go to step 14.

14. Turn the ignition switch OFF.
15. Disconnect the throttle position sensor (TPS) connector.
16. Turn the ignition switch ON (II).
17. Measure the voltage between TPS connector terminals No. 1 and No. 3.

TPS CONNECTOR



Wire side of female terminals

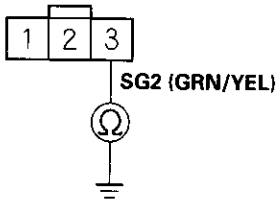
Is there about 5 V?

YES – Check for an open or a short in the wire between PCM connector terminal A15 and TPS. If the wire is OK, replace the TPS. ■

NO – Go to step 18.

18. Turn the ignition switch OFF.
19. Disconnect PCM connector A (31P).
20. Check for continuity between TPS connector terminal No. 3 and body ground.

TPS CONNECTOR



Wire side of female terminals

Is there continuity?

YES – Check for a short to ground in the wire between TPS connector terminal No. 3 and PCM. If the wire is OK, replace the PCM. ■

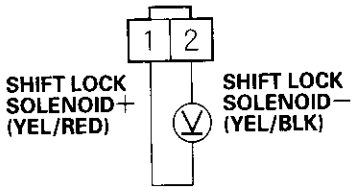
NO – Go to step 21.

21. Disconnect shift lock solenoid connector.

22. Turn the ignition switch ON (II).

23. Measure the voltage between shift lock solenoid connector terminals.

SHIFT LOCK SOLENOID CONNECTOR



Wire side of female terminals

Is there battery voltage?

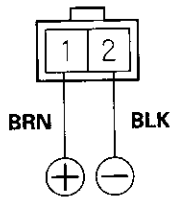
YES—Go to step 24.

NO—Check for blown No. 8 fuse in the under-dash fuse/relay box. If the fuse is OK, repair open or short in the wire between the shift lock solenoid connector and the under-dash fuse/relay box. ■

24. Connect the battery positive terminal to shift lock solenoid connector terminal No. 1, and connect the battery negative terminal to terminal No. 2, then check that the shift lock solenoid operates.

NOTE: Do not connect the battery positive terminal to terminal No. 2 or you will damage the diode inside the shift lock solenoid.

SHIFT LOCK SOLENOID CONNECTOR



Terminal side of male terminals

Does the shift lock solenoid operate properly?

YES—Check for an open in the wire between the shift lock solenoid connector and the multiplex control unit. If the wire is OK, check for a loose terminal fit in the multiplex control unit connectors. If necessary, substitute a known-good multiplex control unit and recheck. ■

NO—Replace the shift lock solenoid. ■

Reverse Lock System Circuit Troubleshooting

1. Check whether the DTC P1705 or P1706 is indicated.

   Does the OBD II scan tool indicate code P1705 or P1706?

   YES – Perform the Troubleshooting Flowchart for the indicated Code(s). ■

   NO – Go to step 2.

2. Turn the ignition switch OFF.

3. Shift the shift lever to the [P] position while pushing the shift lock release.

4. Turn the ignition switch ON (II).

5. Press the brake pedal and release the accelerator pedal, shift the shift lever out of the [P] position, and check that the shift lock solenoid operates.

   Does the shift lever move out of the [P] position?

   YES – Go to step 6.

   NO – Perform the Shift Lock System Circuit Troubleshooting (see page 14-174).

6. Shift to the [N] position.

7. Turn the ignition switch to the ACC (I) position.

8. Check that the shift lever shifts into the [R] position.

   Does the shift lever shift into the [R] position?

   YES – Check for loose terminal fit in the PCM and multiplex control unit connectors. If necessary, substitute a known-good PCM and multiplex control unit, and recheck. ■

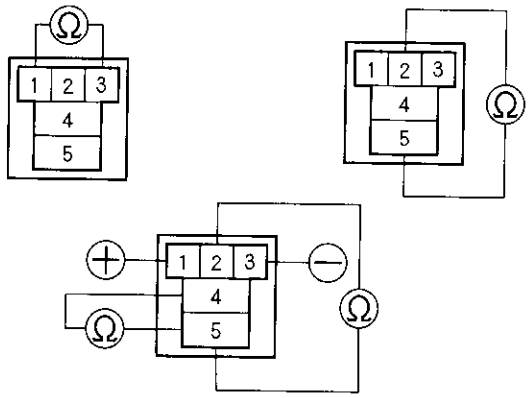
   NO – Go to step 9.

9. Turn the ignition switch OFF.

10. Remove the shift lock relay, and check for continuity between these terminals:

    - No. 1 and No. 3
    - No. 2 and No. 5
    - No. 4 and No. 5 while connecting battery voltage to terminals No. 1 and No. 3, and also check for no continuity between terminals No. 2 and No. 5.

SHIFT LOCK RELAY



Terminal side of male terminals

Does the shift lock relay test OK?

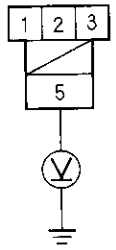
YES – Go to step 11.

NO – Replace the shift lock relay. ■

11. Turn the ignition switch to the ACC (I) position.

12. Measure the voltage between the No. 5 terminal of the shift lock relay connector and body ground.

SHIFT LOCK RELAY CONNECTOR



Wire side of female terminals

Is there voltage?

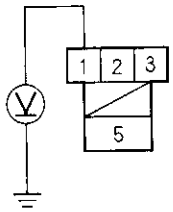
YES – Go to step 13.

NO – Check for blown No. 8 fuse in the under-dash fuse/relay box. If the fuse is OK, repair open in the wire between the No. 5 terminal of the shift lock relay connector and the shift lock solenoid connector. ■

13. Turn the ignition switch ON (II).

14. Measure the voltage between the No. 1 terminal of the shift lock relay connector and body ground.

SHIFT LOCK RELAY CONNECTOR



Wire side of female terminals

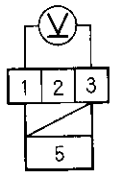
Is there battery voltage?

YES – Go to step 15.

NO – Check for blown No. 10 (7.5A) fuse in the under-dash fuse/relay box. If the fuse is OK, repair open in the wire between the No. 1 terminal of the shift lock relay connector and the under-dash fuse/relay box. ■

15. Measure the voltage between the No. 1 and No. 3 terminals of the shift lock relay connector.

SHIFT LOCK RELAY CONNECTOR



Wire side of female terminals

Is there battery voltage?

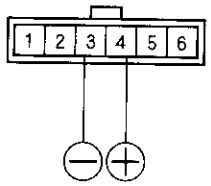
YES – Repair open in the wire between the No. 2 terminal of the shift lock relay connector and the transmission range switch. ■

NO – Repair open in the wire between the No. 3 terminal of the shift lock relay connector and ground (G402), or repair poor ground (G402). ■

Key Interlock System Circuit Troubleshooting

1. Disconnect steering lock assembly connector (6P).
2. Turn the ignition key to ACC (I) or ON (II).
3. Connect the No. 4 terminal of steering lock assembly connector (6P) to the battery positive terminal, and connect the No. 3 terminal to the battery negative terminal.

STEERING LOCK ASSEMBLY CONNECTOR (6P)



Terminal side of male terminals

4. Check the key interlock solenoid operation. A clicking sound should be heard while the ignition key is in ACC (I) and ON (II), and you should not be able to turn it to OFF (0) position.

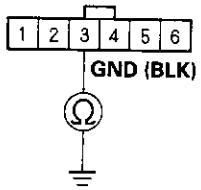
Does the key interlock solenoid operate properly?

YES—Go to step 5.

NO—Faulty key interlock solenoid/switch. Replace the ignition key cylinder/steering lock assembly.■

5. Check for continuity between terminal No. 3 of the steering lock assembly connector (6P) and ground.

STEERING LOCK ASSEMBLY CONNECTOR (6P)



Wire side of female terminals

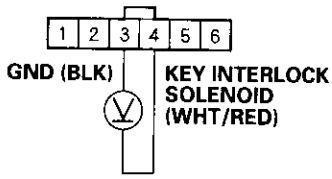
Is there continuity?

YES—Go to step 6.

NO—Repair open in the wire between the No. 3 terminal of the steering lock assembly connector (6P) and ground (G402), or repair poor ground (G402).■

6. Turn the ignition switch ON (II), and measure the voltage between the No. 3 and No. 4 terminals of the steering lock assembly connector (6P).

STEERING LOCK ASSEMBLY CONNECTOR (6P)



Wire side of female terminals

Is there voltage?

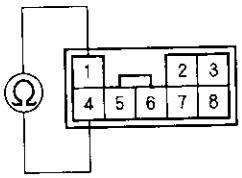
YES—Go to step 7.

NO—Check for open or short in the wire between the No. 4 terminal of steering lock assembly connector and the multiplex control unit. If the wire is OK, check for loose terminal fit in the multiplex control unit connectors. If necessary, substitute a known-good multiplex control unit and recheck.■

7. Disconnect the transmission gear selection switch/park pin switch connector.

8. Check for continuity between the No. 1 and No. 4 terminals of the transmission gear selection switch/park pin switch connector while you move the shift lever in and out of the [P] position.

TRANSMISSION GEAR SELECTION SWITCH/PARK PIN SWITCH CONNECTOR



Terminal side of male terminals

Is there no continuity with the shift lever in the [P] position, and continuity with the shift lever in any position other than [P]?

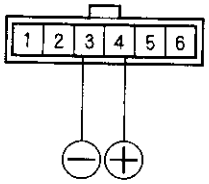
YES—Repair open or short in the wires between the transmission gear selection switch/park pin switch connector and the multiplex control unit. If wires are OK, check for loose terminal fit in the multiplex control unit connectors. If necessary, substitute a known-good multiplex control unit and recheck.■

NO—Inspect the park pin linkage. If the linkage is OK, replace the park pin switch.■

Key Interlock Solenoid Test

1. Remove the driver's dashboard lower cover.
2. Remove the lower steering column cover.
3. Disconnect the steering lock assembly connector (6P). Insert the ignition key in the key cylinder, then turn the ignition key to ACC (I).
4. Connect the No. 4 terminal of the steering lock assembly connector (6P) to the battery positive terminal, and connect the No. 3 terminal to the battery negative terminal. Try to turn the ignition key to LOCK (0) and then remove from the key cylinder.
5. If the ignition key cannot be turned and removed from the cylinder, replace the ignition key cylinder/ steering lock assembly.

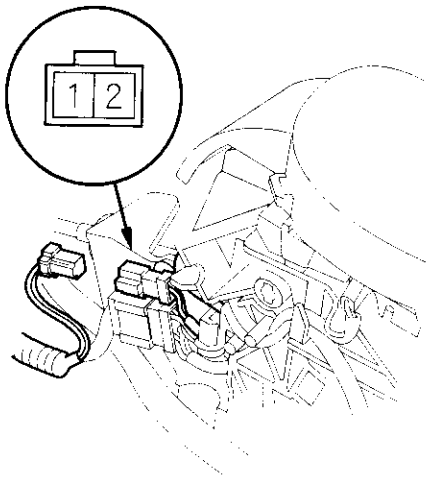
STEERING LOCK ASSEMBLY CONNECTOR (6P)



Terminal side of male terminals

Shift Lock Solenoid Test

1. Remove the shift lever console panel.
2. Disconnect shift lock solenoid connector.

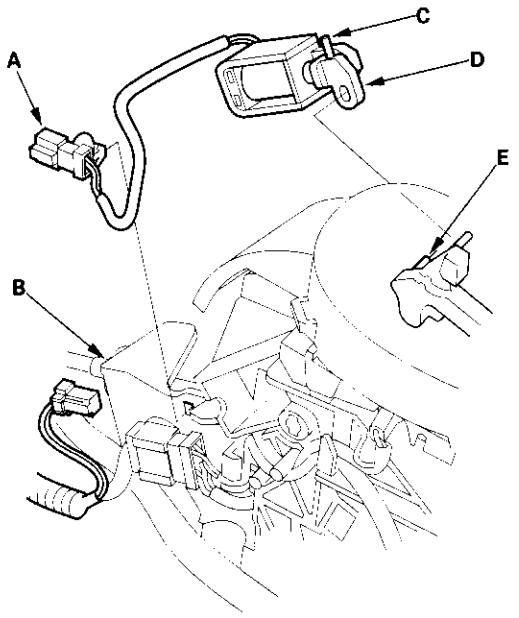


3. Connect the battery positive terminal to shift solenoid connector terminal No. 1, and connect the battery negative terminal to terminal No. 2.
4. Check that the shift lever can be moved from the [P] position. Release the battery terminals from the shift lock solenoid connector. Move the shift lever back to the [P] position, and make sure it locks.

   NOTE: Do not connect power to terminal No. 2 or you will damage the diode inside the solenoid.
5. Check that the shift lock releases when the shift lock release is pushed, and check that it locks when the shift lock release is released.
6. If the shift lock solenoid does not work properly, replace it.

Shift Lock Solenoid Replacement

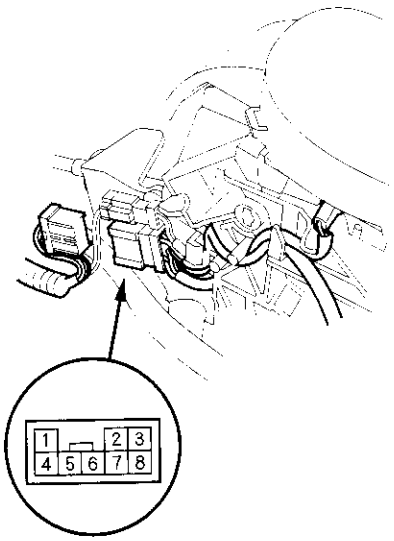
1. Remove the center console (see page 20-58).
2. Disconnect shift lock solenoid connector (A), and remove it from the shift lever bracket base (B).



3. Remove the shift lock solenoid with needle-nose pliers.
4. Install the new shift lock solenoid (C) by aligning the joint of the shift lock solenoid plunger (D) with the tip of the shift lock stop (E).
5. Install the shift lock solenoid connector on the shift lever bracket base, then connect the connector.
6. Install the shift lever console panel.

Park Pin Switch Test

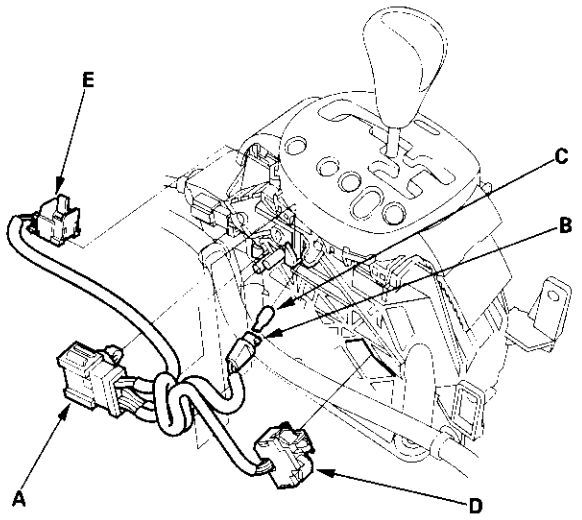
1. Remove the shift lever console panel.
2. Disconnect transmission gear selection switch/park pin switch connector.



3. Shift to the [P] position, then check for continuity between connector terminals No. 1 and No. 4. There should be no continuity.
4. Shift out of the [P] position, and check for continuity between terminals No. 1 and No. 4. There should be continuity.
5. If the park pin switch is faulty, replace it.

Park Pin Switch Replacement

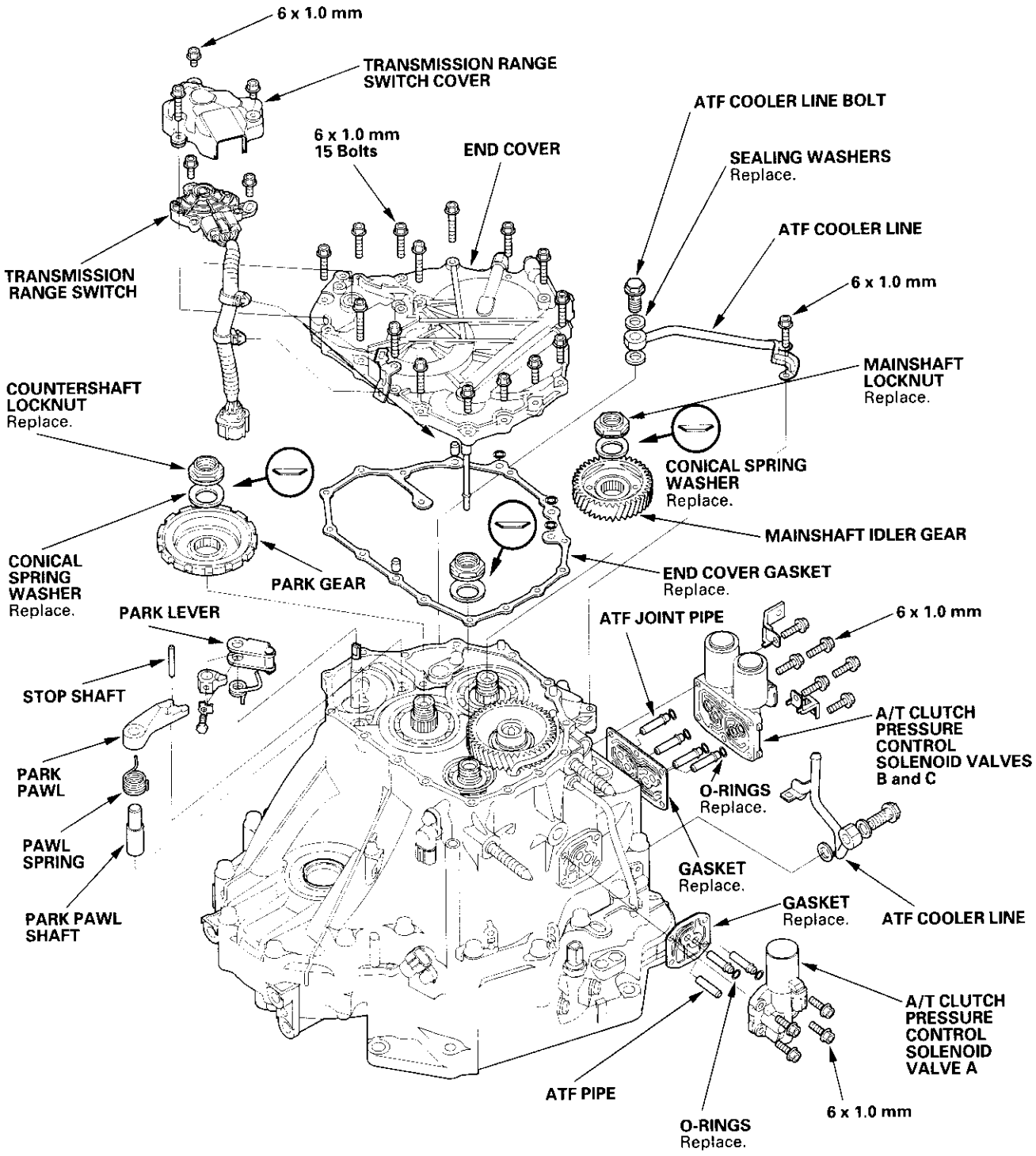
1. Remove the center console (see page 20-58).
2. Disconnect the transmission gear selection switch/ park pin switch connector (A), then remove it from the shift lever bracket base.



3. Remove the A/T gear position indicator panel light socket (B), then remove the indicator light bulb (C) from the socket.
4. Remove the transmission gear selection switch (D) and park pin switch (E), and install the new switches and connector.
5. Install the A/T gear position indicator panel light bulb in the bulb socket, then install the socket in the A/T gear position indicator panel.
6. Connect the transmission gear selection switch/ park pin switch connector.
7. Install the center console (see page 20-58).

End Cover Removal

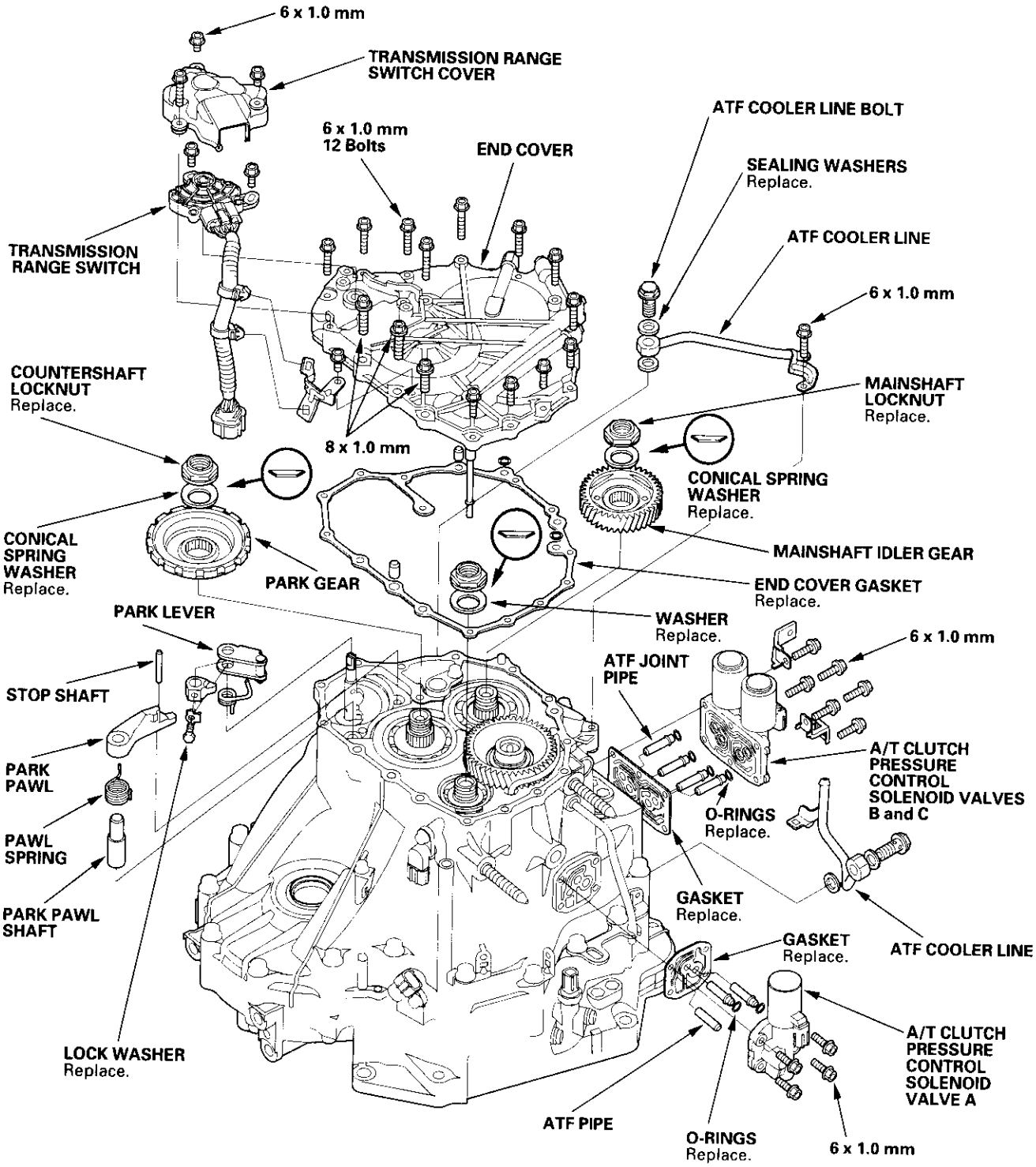
Exploded View — 02' model: MRMA Transmission Number: 1000001-1002922



(cont'd)

End Cover Removal (cont'd)

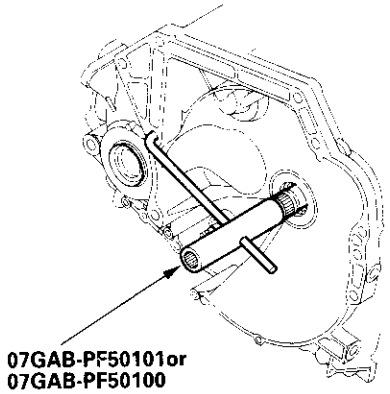
Exploded View — '02 model: MRMA Transmission Number: 1002923 or later, and '03 model



Special Tool Required
Mainshaft holder 07GAB-PF50101 or 07GAB-PF50100

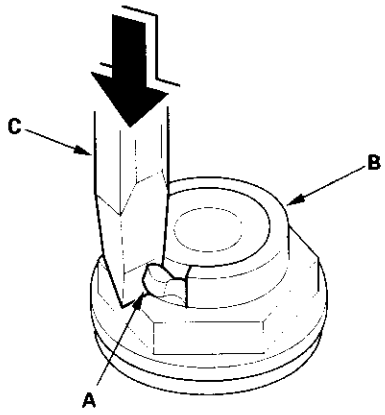
NOTE: Refer to the Exploded View as needed during the following procedure.

1. Remove the ATF cooler lines.
2. Remove the A/T clutch pressure control solenoid valve A, then remove the ATF pipe, ATF joint pipes, and gasket.
3. Remove the A/T clutch pressure control solenoid valves B and C, then remove the ATF joint pipes and gasket.
4. Remove the transmission range switch cover.
5. Remove the transmission range switch harness clamps from the clamp brackets, then remove the transmission range switch.
6. Remove the end cover.
7. Slip the special tool onto the mainshaft.



8. Engage the park pawl with the park gear.
9. Cut the lock tab (A) of the each shaft locknut (B) using a chisel (C). Then remove the locknuts and conical spring washers from each shaft.

   NOTE:
   - Countershaft and secondary shaft locknuts have left-hand threads.
   - Keep all of the chiseled particles out of the transmission.
   - Clean the old mainshaft and countershaft locknuts; they are used to install the press fit idler gear onto the mainshaft, and park gear onto the countershaft.

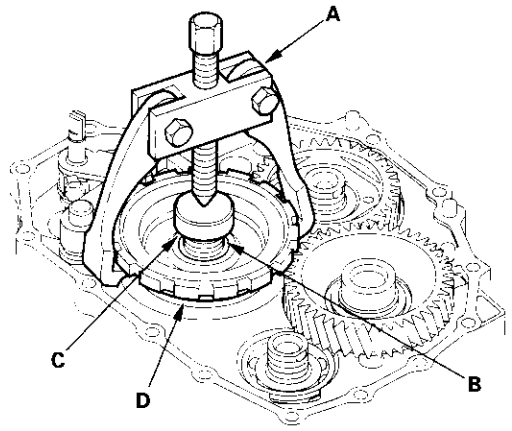


10. Remove the special tool from the mainshaft.

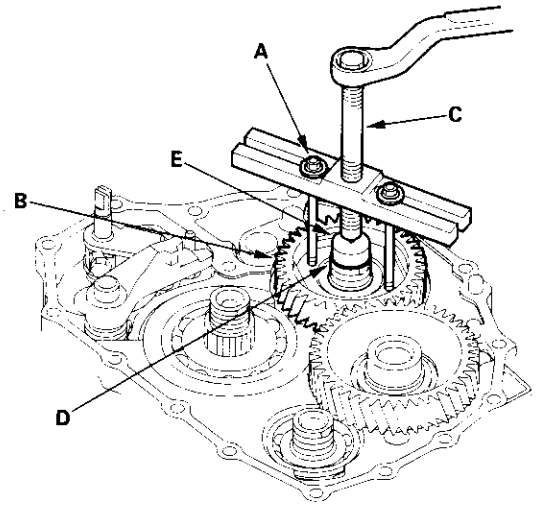
(cont'd)

End Cover Removal (cont'd)

11. Set a two-jaw (or three-jaw) puller (A) on the countershaft (B) with a collar (C) between the puller and countershaft, then remove the park gear (D).



12. Install 6 x 1.0 mm bolts (A) on the mainshaft idler gear (B). Set a puller (C) on the mainshaft (D) while putting a collar (E) between the puller and mainshaft, then remove the mainshaft idler gear.



13. Remove the park pawl, park pawl spring, park pawl shaft, and stop shaft.

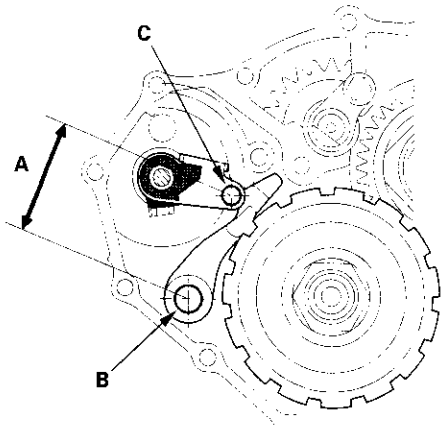
14. Remove the park lever from the control shaft.

Park Lever Stop Inspection and Adjustment

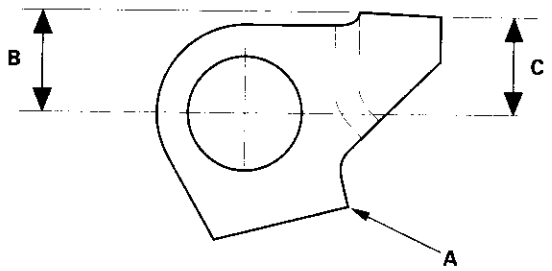
1. Set the park lever in the [P] position.

2. Measure the distance (A) between the park pawl shaft (B) and the park lever roller pin (C).

STANDARD:
57.7 – 58.7 mm (2.27 – 2.31 in.)



3. If the measurement is out of standard, select and install the appropriate park lever stop (A) from the table below.



PARK LEVER STOP

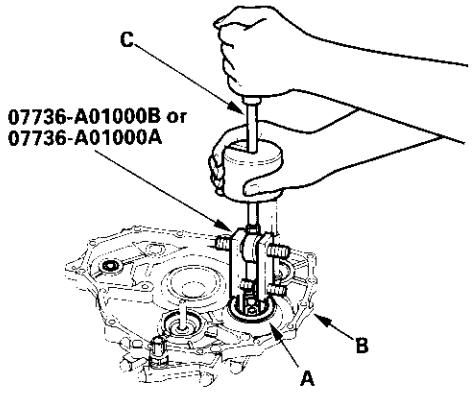
Mark	Part Number	B	C
1	24537-PA9-003	11.00 mm (0.433 in.)	11.00 mm (0.433 in.)
2	24538-PA9-003	10.80 mm (0.425 in.)	10.65 mm (0.419 in.)
3	24539-PA9-003	10.60 mm (0.417 in.)	10.30 mm (0.406 in.)

4. After replacing the park lever stop, make sure the distance is within tolerance.

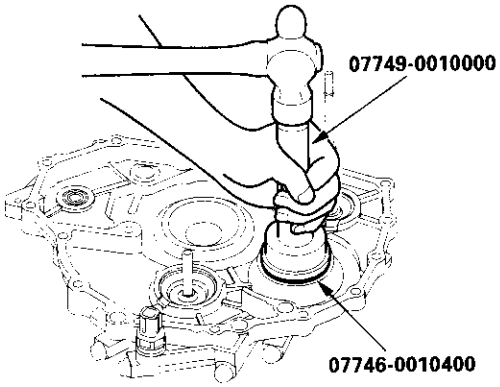
Idler Gear Shaft Bearing Replacement

Special Tools Required
- Adjustable bearing puller, 25 – 40 mm 07736-A01000B or 07736-A01000A
- Driver 07749-0010000
- Attachment, 52 x 55 mm 07746-0010400

1. Remove the idler gear shaft bearing (A) from the end cover (B) with the special tool and a commercially available 3/8-16" slide hammer (C).



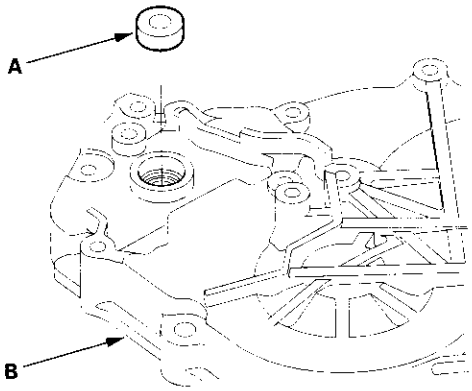
2. Install the new bearing in the end cover with the special tools.



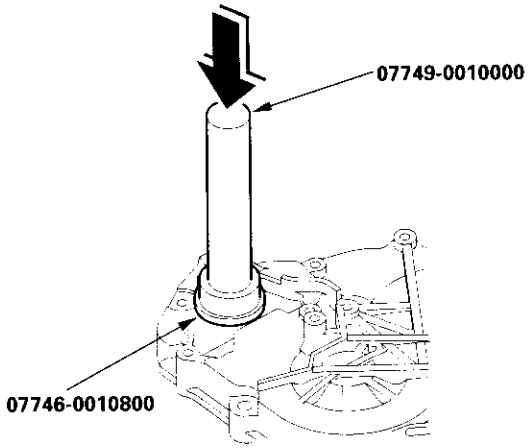
Control Shaft Oil Seal Replacement

Special Tools Required
- Driver 07749-0010000
- Attachment, 22 x 24 mm 07746-0010800

1. Remove the oil seal (A) from the end cover (B).



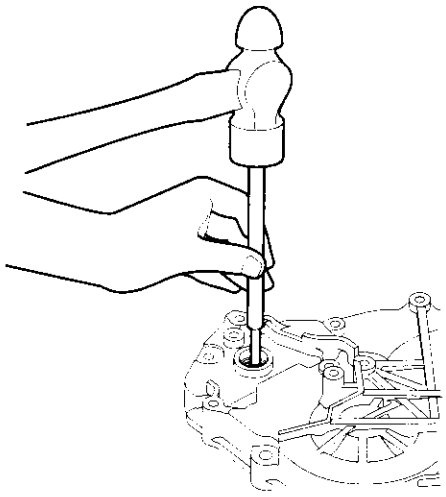
2. Install the new oil seal flush to the end cover with the special tools.



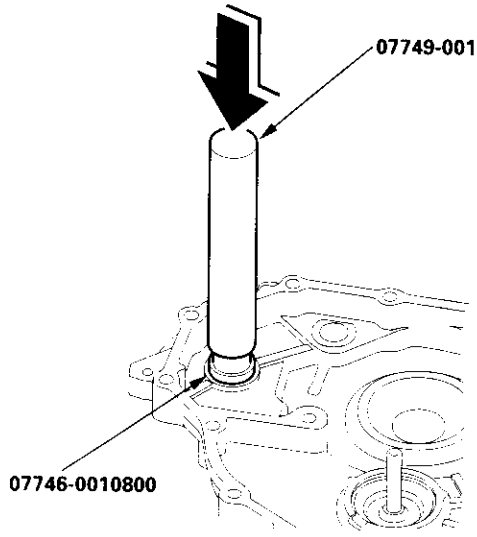
Control Shaft Bearing Replacement

Special Tools Required
- Driver 07749-0010000
- Attachment, 22 x 24 mm 07746-0010800

1. Remove the oil seal from the end cover, then remove the bearing.



2. Install the new bearing flush to the end cover with the special tools.

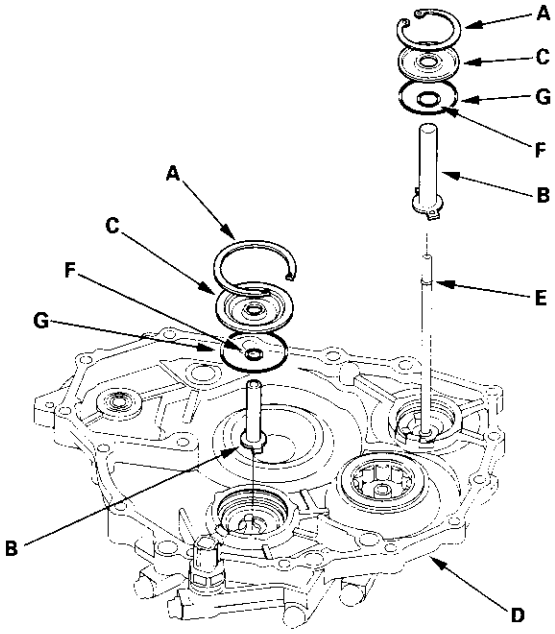


3. Install the new oil seal (see page 14-189).

ATF Feed Pipe Replacement

1. Remove the snap rings (A), ATF feed pipes (B), and feed pipe flanges (C) from the end cover (D).

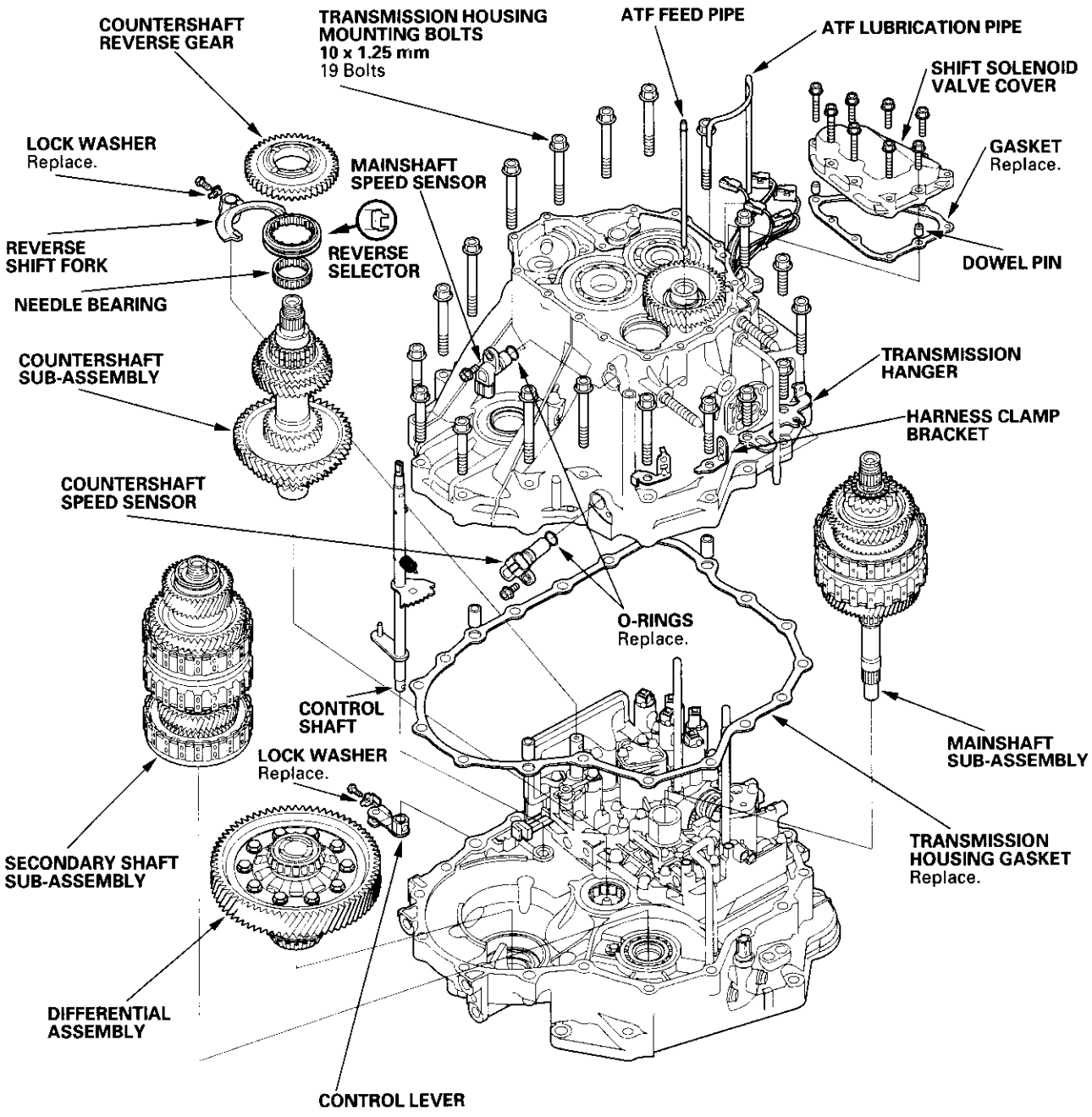
   NOTE: Replace the end cover, if the 1st clutch ATF feed pipe (E) replacement is required.



2. Install the new O-rings (F) over the ATF feed pipes.
3. Install the ATF feed pipes in the end cover by aligning the feed pipe tabs with the indentations in the end cover.
4. Install the new O-rings (G) in the end cover, then install the feed pipe flanges over the ATF feed pipes.
5. Secure the ATF feed pipes and feed pipe flanges with the snap rings.

Housing and Shaft Assemblies Removal

Exploded View



(cont'd)

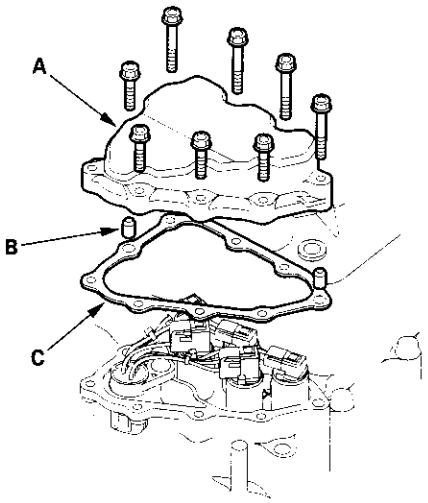
Housing and Shaft Assemblies Removal (cont'd)

Special Tool Required
Housing puller 07HAC-PK40102

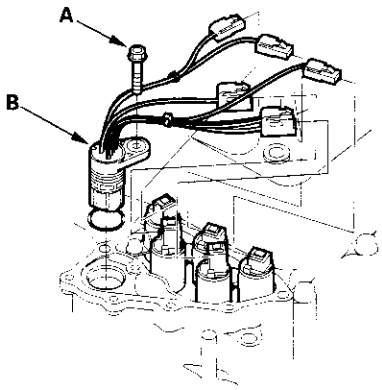
NOTE: Refer to the Exploded View as needed during the following procedure.

1. Remove the ATF pipe from the idler gear shaft, and the ATF lubrication pipe from the transmission housing.

2. Remove the shift solenoid valve cover (A), dowel pins (B), and gasket (C).



3. Remove the bolt (A) securing the solenoid harness connector (B), and remove the connector.



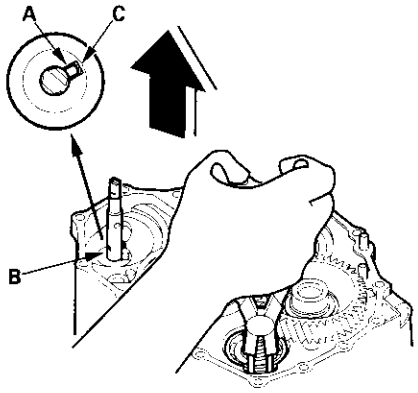
4. Disconnect the connectors from the shift solenoid valves.

5. Remove the mainshaft and countershaft speed sensors.

6. Remove the transmission housing mounting bolts, hanger, and harness clamp brackets.

7. Align the spring pin (A) on the control shaft (B) with the transmission housing groove (C) by turning the control shaft.

   NOTE: Do not squeeze the end of the control shaft tips together when turning the shaft. If the tips are squeezed together it will cause a faulty signal or position due to the play between the control shaft and the switch.



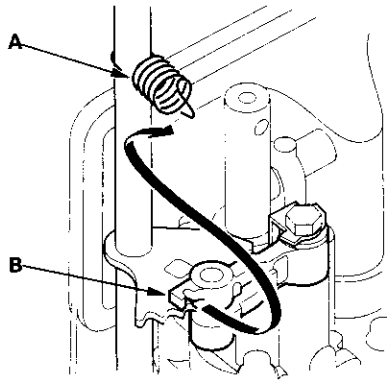
8. While expanding the snap ring of the secondary shaft bearing using the snap ring pliers, lift the transmission housing. Release the snap ring pliers, and remove the transmission housing.

9. Remove the countershaft reverse gear and needle bearing.

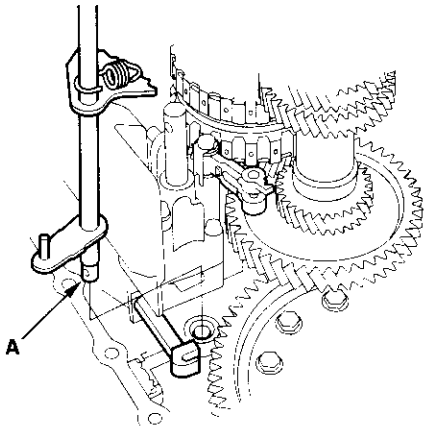
10. Remove the lock bolt securing the shift fork, then remove the shift fork with the reverse selector together.

11. Remove the control lever from the control shaft.

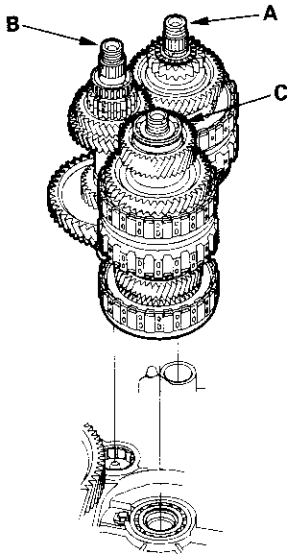
12. Unhook the detent spring (A) from the detent arm (B).



13. Remove the control shaft (A).



14. Remove the mainshaft sub-assembly (A), countershaft sub-assembly (B), and secondary shaft sub-assembly (C) together.



15. Remove the differential assembly.

Bearing Removal

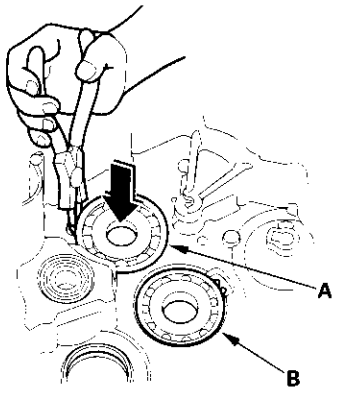
Special Tools Required
- Attachment, 78 x 90 mm 07GAD-SD40101
- Driver 07749-0010000
- Attachment, 42 x 47 mm 07746-0010300

1. Remove the idler gear shaft when removing the mainshaft bearing and idler gear shaft bearing.

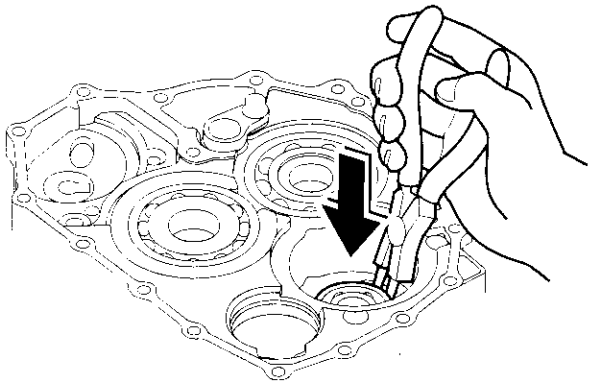
   NOTE: If you are only removing the countershaft bearing, idler gear shaft removal is not needed.

2. To remove the mainshaft bearing (A) and countershaft bearing (B) from the transmission housing, expand each snap ring with the snap ring pliers, then push the bearing out.

   NOTE: Do not remove the snap ring unless it's necessary to clean the grooves in the housing.



3. Expand the snap ring of the idler gear shaft bearing with the snap ring pliers, then push the bearing out.

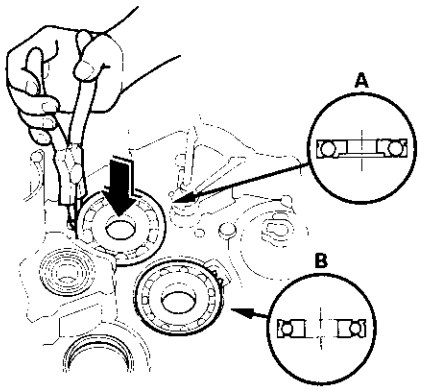


Bearing Installation

Special Tools Required
- Attachment, 78 x 90 mm 07GAD-SD40101
- Driver 07749-0010000
- Attachment, 42 x 47 mm 07746-0010300

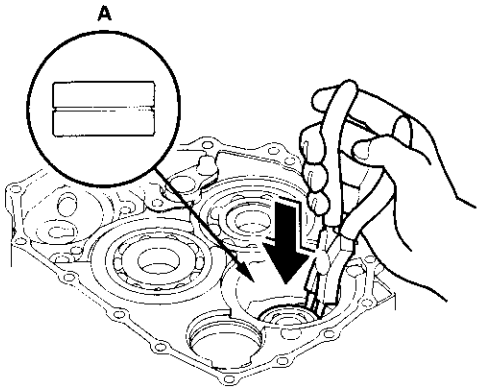
1. Install the bearings in the direction shown.

2. Expand each snap ring with the snap ring pliers, and install the mainshaft bearing (A) and countershaft bearing (B) part-way into the housing.



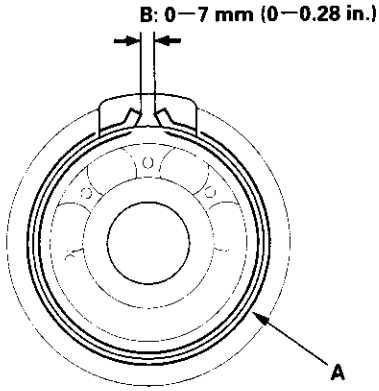
3. Release the pliers, then push the bearing down into the housing until the snap ring snaps in place around it.

4. Expand the snap ring of the idler gear shaft (A) with the snap ring pliers, and install the bearing part-way into the housing.



5. Release the pliers, then push the bearing down into the housing until the snap ring snaps in place around it.

6. After installing the bearings verify that the snap rings (A) are seated in the bearing and housing grooves, and that the ring end gaps (B) are correct.

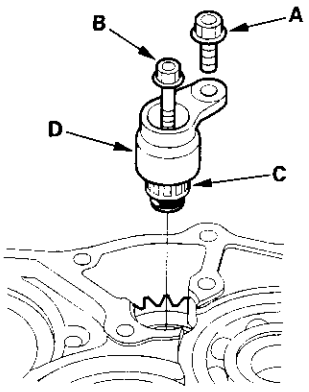


7. Install the idler shaft.

Reverse Idler Gear Removal and Installation

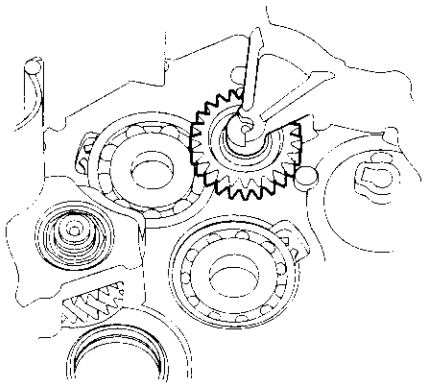
Removal

1. Remove the bolt (A) securing the reverse idler gear shaft holder.



2. Install a 5 x 0.8 mm bolt (B) in the reverse idler gear shaft, and pull it to remove the reverse idler gear shaft (C) and gear shaft holder (D) together.

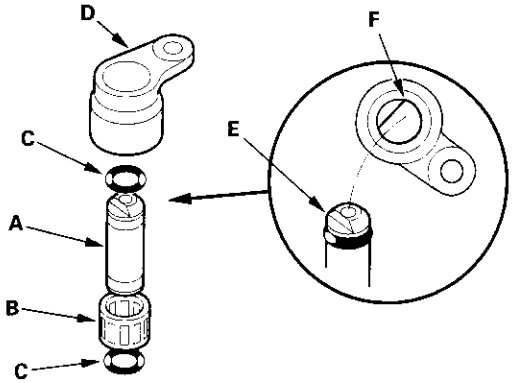
3. Remove the reverse idler gear.



Installation

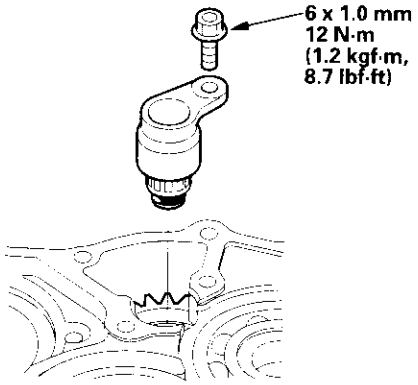
1. Install the reverse idler gear in the transmission housing.

2. Coat the reverse idler gear shaft (A), needle bearing (B), and new O-rings (C) with lithium grease lightly.



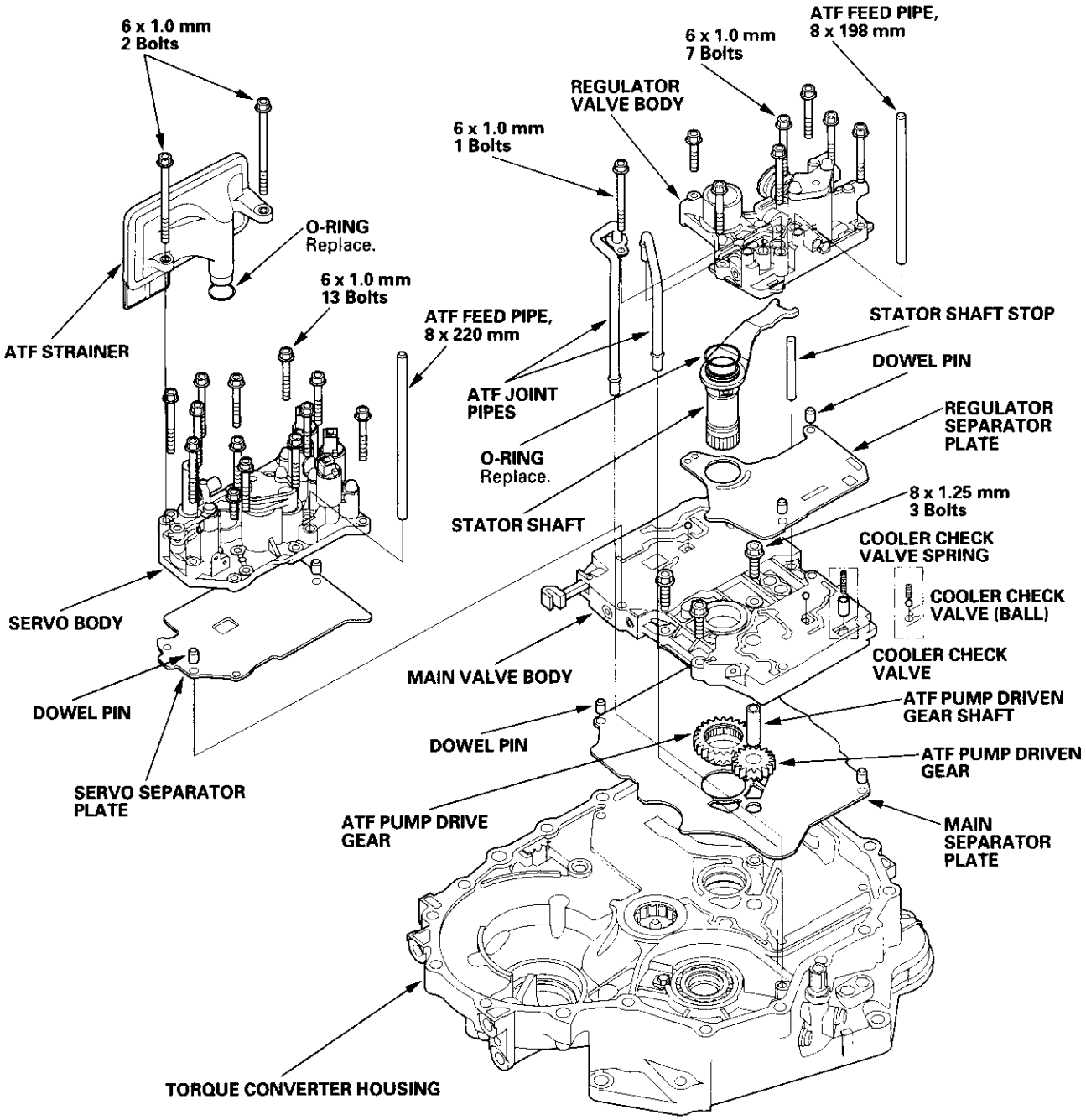
3. Assemble the new O-rings and needle bearing on the reverse idler gear shaft, then install the reverse idler gear shaft in the reverse idler gear shaft holder (D). Align the D-shaped cut out (E) of the shaft with the D-shaped area (F) of the holder.

4. Install the reverse idler gear shaft/holder assembly on the transmission housing.



Valve Bodies and ATF Strainer Removal

Exploded View

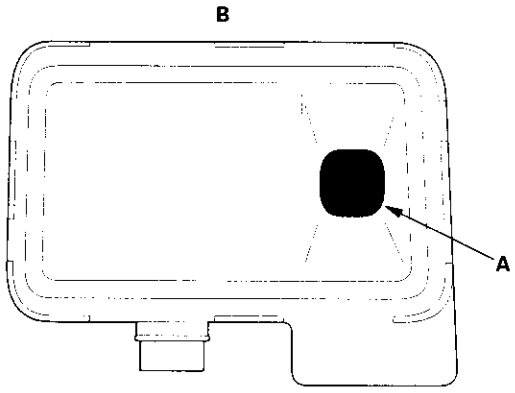


(cont'd)

Valve Bodies and ATF Strainer Removal (cont'd)

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

1. Remove the ATF feed pipes from the regulator valve body, and servo body.
2. Remove the ATF strainer (two bolts).
3. Remove the servo body (13 bolts), then remove the separator plate and dowel pins (two).
4. Remove the ATF joint pipes (one bolt) from the regulator valve body.
5. Remove the regulator valve body (seven bolts).
6. Remove the stator shaft and stator shaft stop.
7. Remove the regulator separator plate and dowel pins (two).
8. Remove the cooler check valve spring:
   - '02 model (transmission number 1000001–1006166): Remove the cooler check valve spring from the main valve body, then remove the main valve body (three bolts). Do not let the check balls and cooler check valve (ball) fall out.
   - '02 model (transmission number 1006167 or leter), and '03 model: Remove the cooler check valve spring and cooler check valve from the main valve body, then remove the main valve body (three bolts). Do not let the check balls fall out.
9. Remove the ATF pump driven gear shaft, then remove the ATF pump gears.
10. Remove the main separator plate and dowel pins (two).
11. Clean the inlet opening (A) of the ATF strainer (B) thoroughly with compressed air, then check that it is in good condition and that the inlet opening is not clogged.



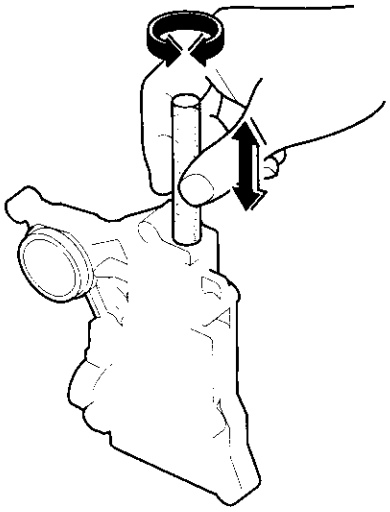
12. Test the ATF strainer by pouring clean ATF through the inlet opening, and replace it if it is clogged or damaged.

Valve Body Repair

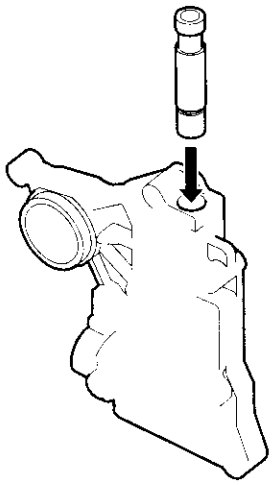
NOTE: This repair is only necessary if one or more of the valves in a valve body do not slide smoothly in their bores. Use this procedure to free the valves.

1. Soak a sheet of # 600 abrasive paper in ATF for about 30 minutes.
2. Carefully tap the valve body so the sticking valve drops out of its bore. It may be necessary to use a small screwdriver to pry the valve free. Be careful not to scratch the bore with the screwdriver.
3. Inspect the valve for any scuff marks. Use the ATF-soaked # 600 paper to polish off any burrs that are on the valve, then wash the valve in solvent and dry it with compressed air.
4. Roll up half a sheet of ATF-soaked # 600 paper and insert it in the valve bore of the sticking valve. Twist the paper slightly, so that it unrolls and fits the bore tightly, then polish the bore by twisting the paper as you push it in and out.

   NOTE: The valve body is aluminum and doesn't require much polishing to remove any burrs.



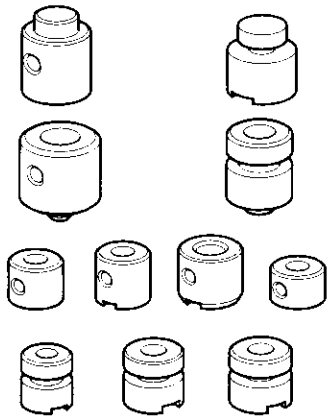
5. Remove the # 600 paper. Thoroughly wash the entire valve body in solvent, then dry it with compressed air.
6. Coat the valve with ATF, then drop it into its bore. It should drop to the bottom of the bore under its own weight. If not, repeat step 4, then retest. If the valve still sticks, replace the valve body.



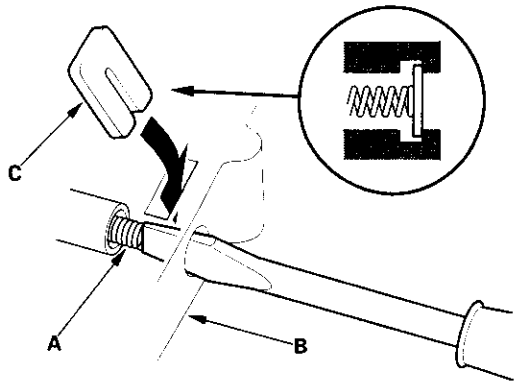
7. Remove the valve, and thoroughly clean it and the valve body with solvent. Dry all parts with compressed air, then reassemble using ATF as a lubricant.

Valve Body Valve Installation

1. Coat all parts with ATF before assembly.
2. Install the valves and springs in the sequence shown for the main valve body (see page 14-201), regulator valve body (see page 14-203), and servo body (see page 14-204). Refer to the following valve cap illustrations, and install each valve cap so the end shown facing up will be facing the outside of the valve body.



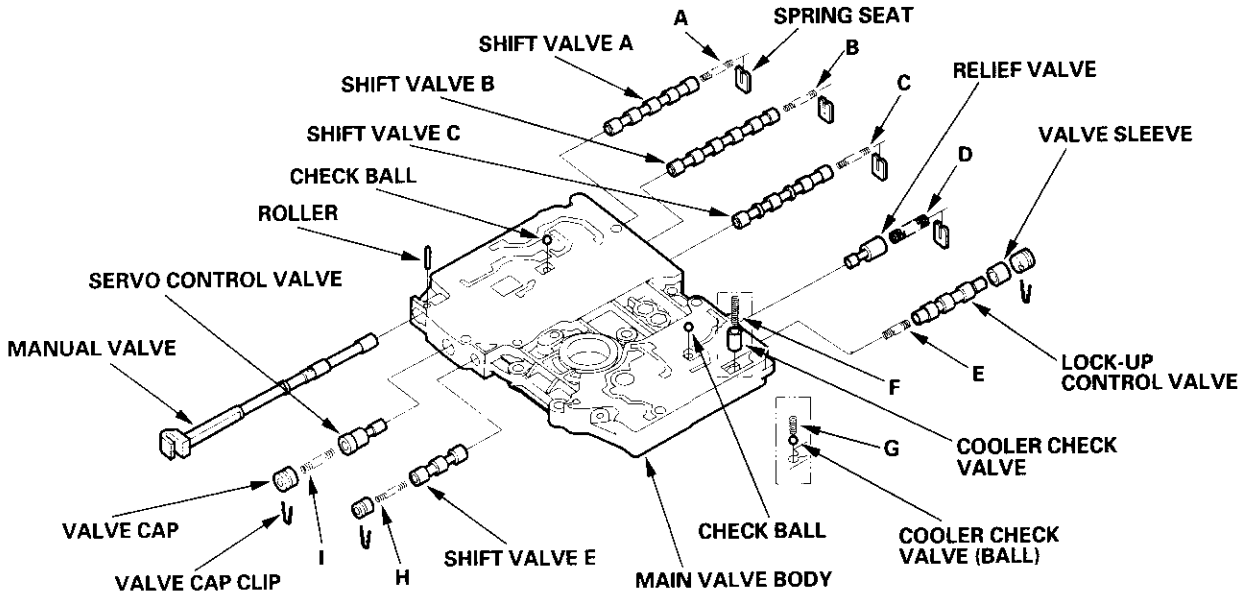
3. Install all the springs and seats. Insert the spring (A) in the valve, then install the valve in the valve body (B). Push the spring in with a screwdriver, then install the spring seat (C).



Main Valve Body Disassembly, Inspection, and Reassembly

1. Clean all parts thoroughly in solvent or carburetor cleaner, and dry them with compressed air. Blow out all passages.
2. Do not use a magnet to remove the check balls, it may magnetize the balls.
3. Inspect the valve body for scoring and damage.
4. Check all valves for free movement. If any fail to slide freely, refer to valve body repair (see page 14-199).
5. Coat all parts with ATF during assembly.

NOTE:
- Cooler check valve (ball) and spring (G) apply to '02 model; transmission number 100000 – 1006166.
- Cooler check valve and spring (F) apply to '02 model; transmission number 1006167 or later, and '03 model.

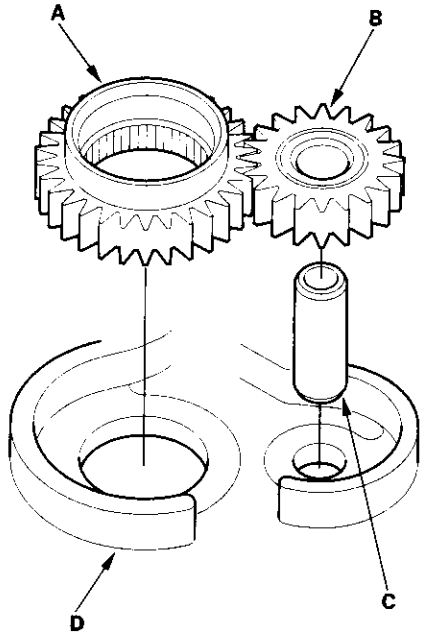


SPRING SPECIFICATIONS

Springs		Standard (New)-Unit: mm (in.)			
		Wire Diameter	O.D.	Free Length	No. of Coils
A	Shift valve A spring	0.8 (0.031)	5.6 (0.220)	28.1 (1.106)	15.9
B	Shift valve B spring	0.8 (0.031)	5.6 (0.220)	28.1 (1.106)	15.9
C	Shift valve C spring	0.8 (0.031)	5.6 (0.220)	28.1 (1.106)	15.9
D	Relief valve spring	1.0 (0.039)	9.6 (0.378)	34.1 (1.343)	10.2
E	Lock-up control valve spring	0.65 (0.026)	7.1 (0.280)	23.1 (0.909)	12.7
F	Cooler check valve spring	0.9 (0.035)	6.6 (0.260)	26.5 (1.043)	12.6
G	Cooler check valve (ball) spring	0.55 (0.022)	5.8 (0.228)	19.0 (0.748)	9.6
H	Shift valve E spring	0.8 (0.031)	5.6 (0.220)	28.1 (1.106)	15.9
I	Servo control valve spring	0.7 (0.028)	6.6 (0.260)	35.7 (1.406)	17.2

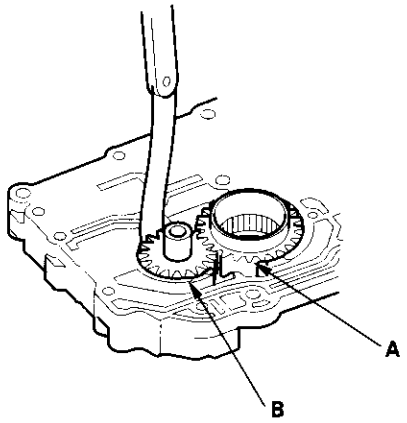
ATF Pump Inspection

1. Install the ATF pump drive gear (A), driven gear (B), and ATF pump driven gear shaft (C) in the main valve body (D). Lubricate all parts with ATF, and install the ATF pump driven gear with its grooved and chamfered side facing up.



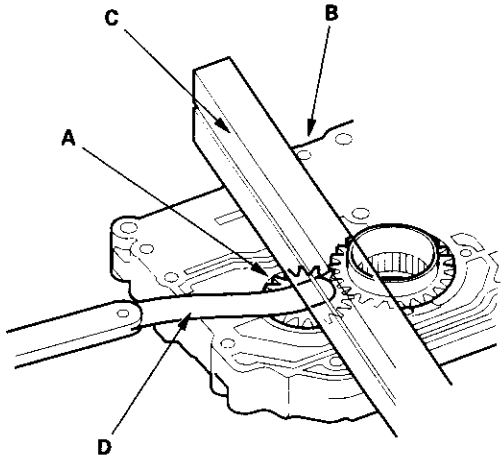
2. Measure the side clearance of the ATF pump drive gear (A) and driven gear (B).

ATF Pump Gears Side (Radial) Clearance:
Standard (New):
ATF Pump Drive Gear
0.210 – 0.265 mm (0.0083 – 0.0104 in.)
ATF Pump Driven Gear
0.070 – 0.125 mm (0.0028 – 0.0049 in.)



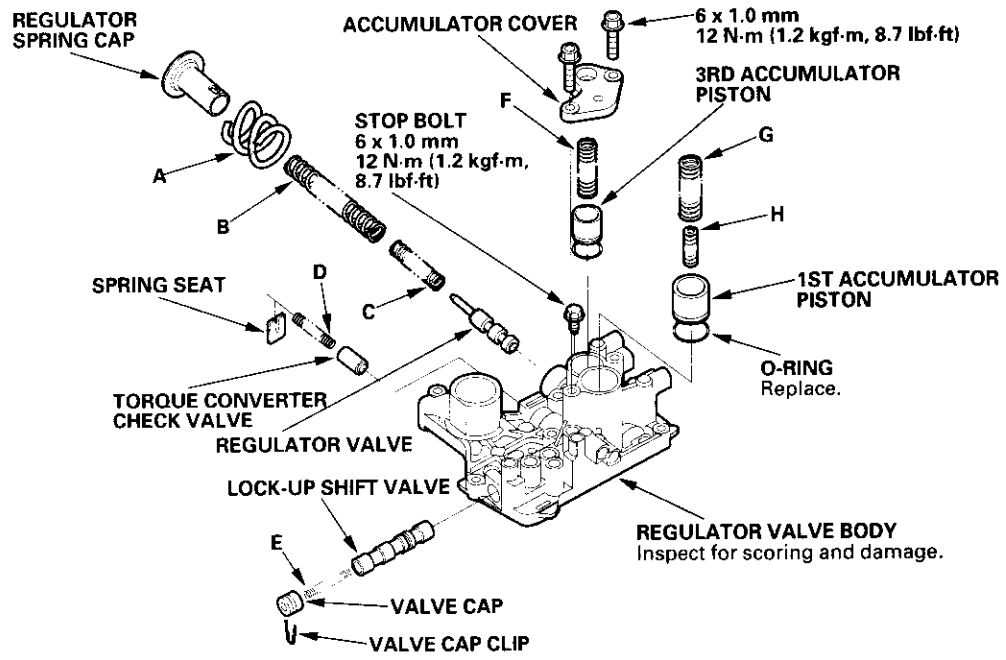
3. Remove the ATF pump driven gear shaft. Measure the thrust clearance between the ATF pump driven gear (A) and the valve body (B) with a straight edge (C) and a feeler gauge (D).

ATF Pump Drive/Driven Gear Thrust (Axial) Clearance:
Standard (New):
0.03 – 0.05 mm (0.001 – 0.002 in.)
Service Limit:
0.07 mm (0.003 in.)



Regulator Valve Body Disassembly, Inspection, and Reassembly

1. Clean all parts thoroughly in solvent or carburetor cleaner, and dry them with compressed air. Blow out all passages.
2. Check all valves for free movement. If any fail to slide freely, refer to valve body repair (see page 14-199).
3. Hold the regulator spring cap in place while removing the stop bolt. The regulator spring cap is spring loaded. Once the stop bolt is removed, release the spring cap slowly so it does not pop out.
4. Coat all parts with ATF during assembly.
5. When reassembling the valve body, align the hole in the regulator spring cap with the hole in the valve body, then press the spring cap into the valve body, and tighten the stop bolt.

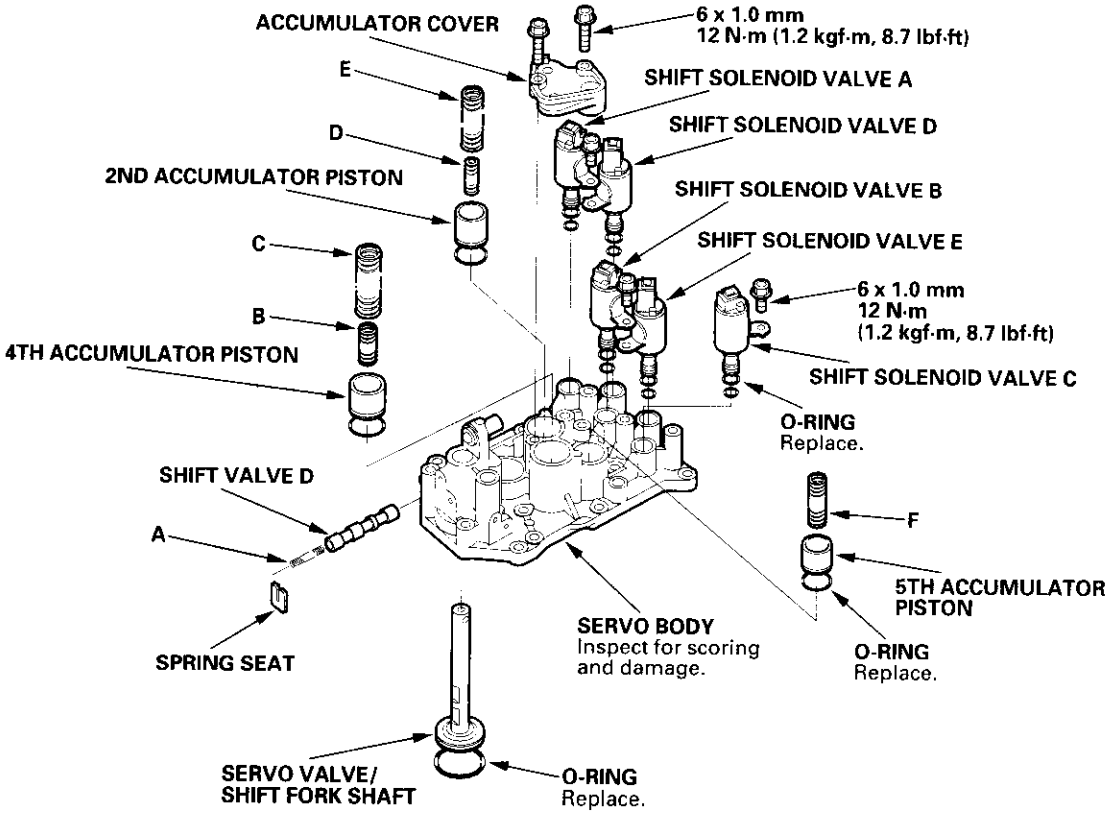


SPRING SPECIFICATIONS

Spring		Standard (New)-Unit: mm (in.)			
		Wire Diameter	O.D.	Free Length	No. of Coils
A	Stator reaction spring	4.5 (0.177)	35.4 (1.394)	30.3 (1.193)	1.92
B	Regulator valve spring A	1.9 (0.075)	14.7 (0.579)	80.6 (3.173)	16.1
C	Regulator valve spring B	1.6 (0.063)	9.2 (0.362)	44.0 (1.732)	12.5
D	Torque converter check valve spring	1.2 (0.047)	8.6 (0.339)	33.8 (1.331)	12.2
E	Lock-up shift valve spring	1.0 (0.039)	6.6 (0.260)	35.5 (1.398)	18.2
F	3rd accumulator spring	2.5 (0.098)	14.6 (0.575)	29.9 (1.177)	4.9
G	1st accumulator spring A	2.4 (0.094)	18.6 (0.732)	49.0 (1.929)	7.1
H	1st accumulator spring B	2.3 (0.091)	12.2 (0.480)	31.5 (1.240)	6.6

Servo Body Disassembly, Inspection, and Reassembly

1. Clean all parts thoroughly in solvent or carburetor cleaner, and dry them with compressed air. Blow out all passages.
2. Check shift valve D for free movement. If any fail to slide freely, refer to valve body repair (see page 14-199).
3. Do not hold the shift solenoid valve connector to remove and install it. Be sure to hold the shift solenoid valve body. When installing the shift solenoid valves, refer to Shift Solenoid Valves Installation (see page 14-205).
4. Coat all parts with ATF during assembly.
5. Replace the O-rings with new ones.



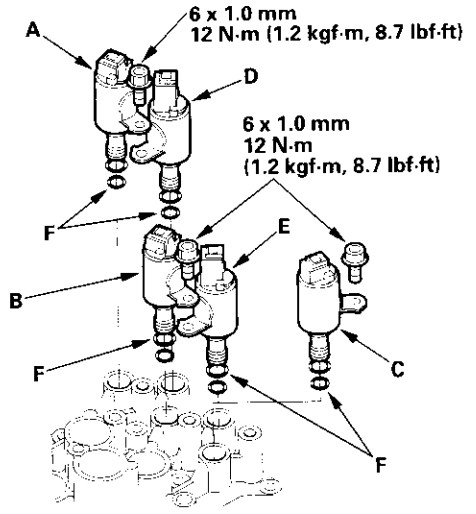
SPRING SPECIFICATIONS

Springs		Standard (New)-Unit: mm (in.)			
		Wire Diameter	O.D.	Free Length	No. of Coils
A	Shift valve D spring	0.8 (0.031)	5.6 (0.220)	28.1 (1.106)	15.9
B	4th accumulator spring B	2.3 (0.091)	12.2 (0.480)	31.5 (1.240)	6.6
C	4th accumulator spring A	2.4 (0.094)	18.6 (0.732)	49.0 (1.929)	7.1
D	2nd accumulator spring B	2.0 (0.079)	10.6 (0.417)	34.0 (1.339)	8.0
E	2nd accumulator spring A	2.2 (0.087)	16.6 (0.654)	48.2 (1.898)	8.5
F	5th accumulator spring	2.5 (0.098)	14.6 (0.575)	29.9 (1.177)	4.9

Shift Solenoid Valves Installation

NOTE:
- Do not install the shift solenoid valve A and B before installing the shift solenoid valve D and E. If solenoid valve A and B are installed before solenoid valves D and E, it may damage the hydraulic control system.
- Do not hold the shift solenoid valve connector to install it. Hold the shift solenoid valve body.

1. Install the new O-rings (F) on each shift solenoid valves.



2. Install shift solenoid valve D while holding the shift solenoid valve body. Install the valve until its mounting bolt bracket contacts the servo body.

3. Install shift solenoid valve A while holding the shift solenoid valve body. Install the valve until its mounting bolt bracket contacts the bracket of shift solenoid valve D.

4. Install shift solenoid valve E while holding the shift solenoid valve body. Install the valve until its mounting bolt bracket contacts the servo body.

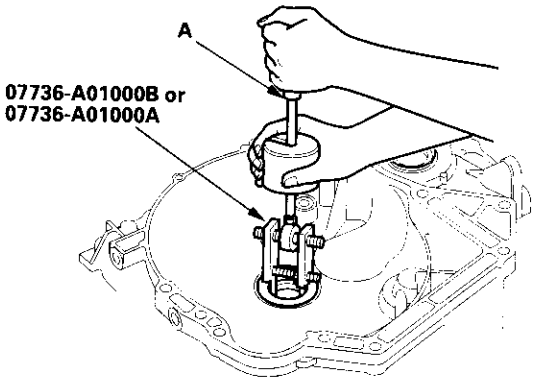
5. Install shift solenoid valve B while holding the shift solenoid valve body. Install the valve until its mounting bolt bracket contacts the bracket of shift solenoid valve E.

6. Install shift solenoid valve C while holding the shift solenoid valve body. Install the valve until its mounting bolt bracket contacts the servo body.

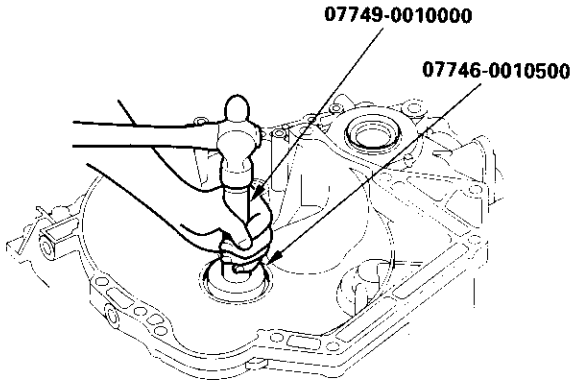
Mainshaft Bearing and Oil Seal Replacement

Special Tools Required
- Adjustable bearing puller, 25—40 mm 07736-A01000B or 07736-A01000A
- Driver 07749-0010000
- Attachment, 62 x 68 mm 07746-0010500
- Attachment, 72 x 75 mm 07746-0010600

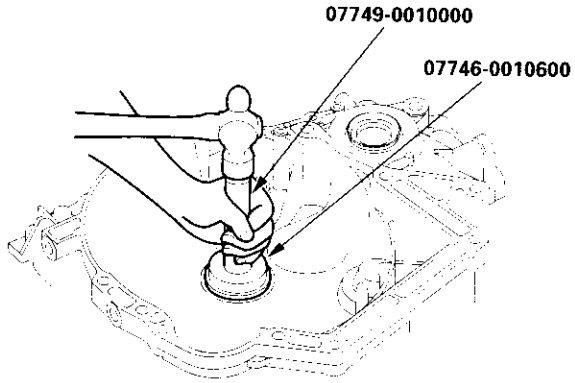
1. Remove the mainshaft bearing and oil seal with the special tool and a commercially available 3/8-16" slide hammer (A).



2. Install the new mainshaft bearing until it bottoms in the housing with the special tools.



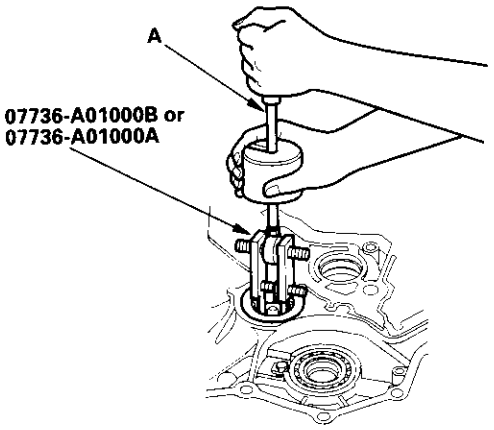
3. Install the new oil seal flush with the housing with the special tools.



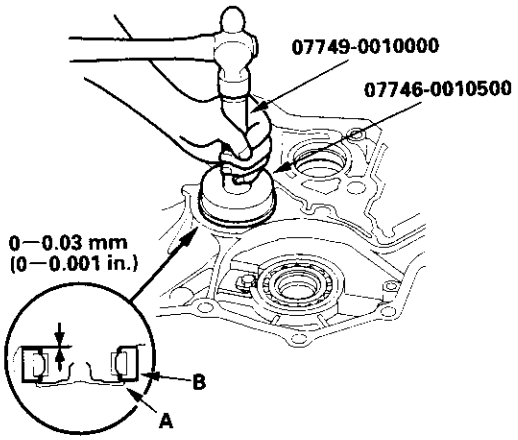
Countershaft Bearing Replacement

Special Tools Required
- Adjustable bearing puller, 25-40 mm 07736-A01000B or 07736-A01000A
- Driver 07749-0010000
- Attachment, 62 x 68 mm 07746-0010500

1. Remove the countershaft bearing with the special tool and a commercially available 3/8-16" slide hammer (A).



2. Install the ATF guide plate (A).

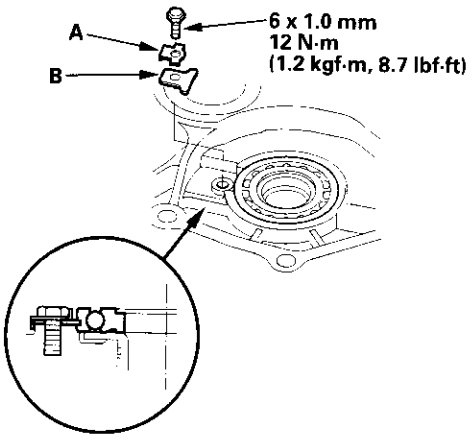


3. Install the new countershaft bearing (B) in the housing with the special tools.

Secondary Shaft Bearing Replacement

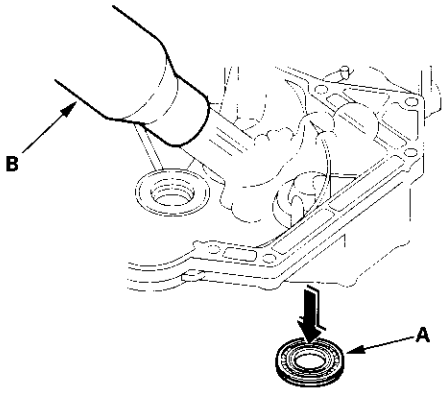
Special Tools Required
- Driver 07749-0010000
- Attachment, 62 x 68 mm 07746-0010500

1. Remove the bolt, then remove the lock washer (A) and bearing set plate (B).

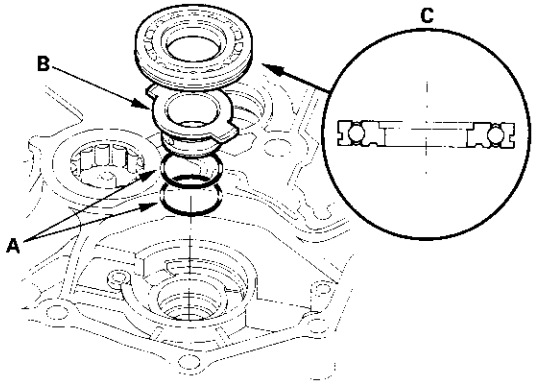


2. Remove the secondary shaft bearing (A) by heating the housing to about 212 °F (100 °C) with a heat gun (B). Do not heat the housing in excess of 212 °F (100 °C).

   NOTE: Let the housing cool to normal temperature before installing the bearing.

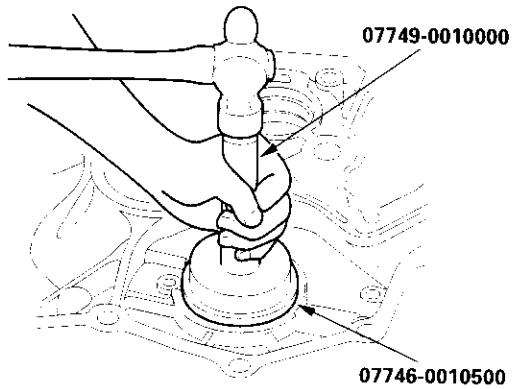


3. Install the new O-rings (A) on the ATF guide collar (B), then install the ATF guide collar in the housing.



4. Install the new secondary shaft bearing (C) in the direction shown.

5. Drive the secondary shaft bearing with the special tools, and install it securely in the housing.



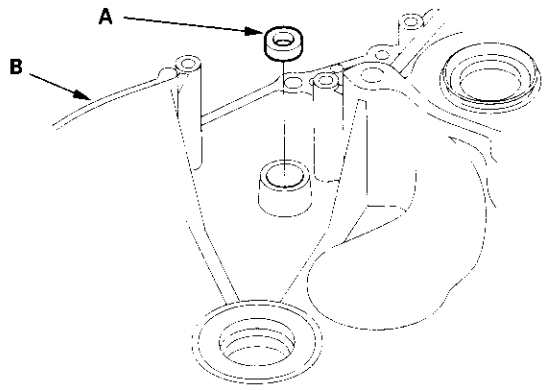
6. Check that the bearing groove aligns with the housing surface, then install the bearing set plate while aligning the bearing groove.

7. Install the new lock washer and bolt, then bend the lock tab of the lock washer against the bolt head.

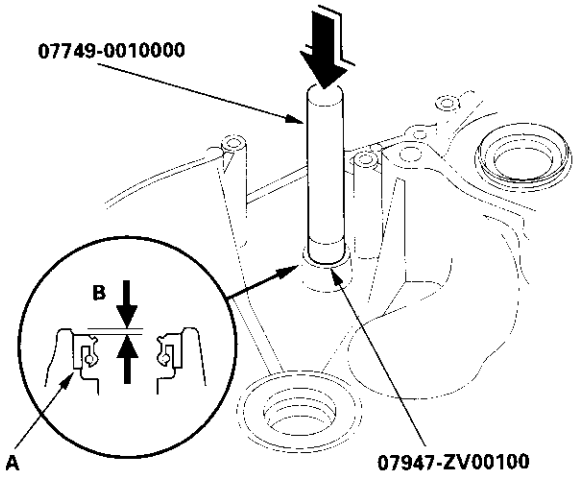
Control Shaft Oil Seal Replacement

Special Tools Required
- Driver 07749-0010000
- Oil seal driver attachment 07947-ZV00100

1. Remove the oil seal (A) from the torque converter housing (B).

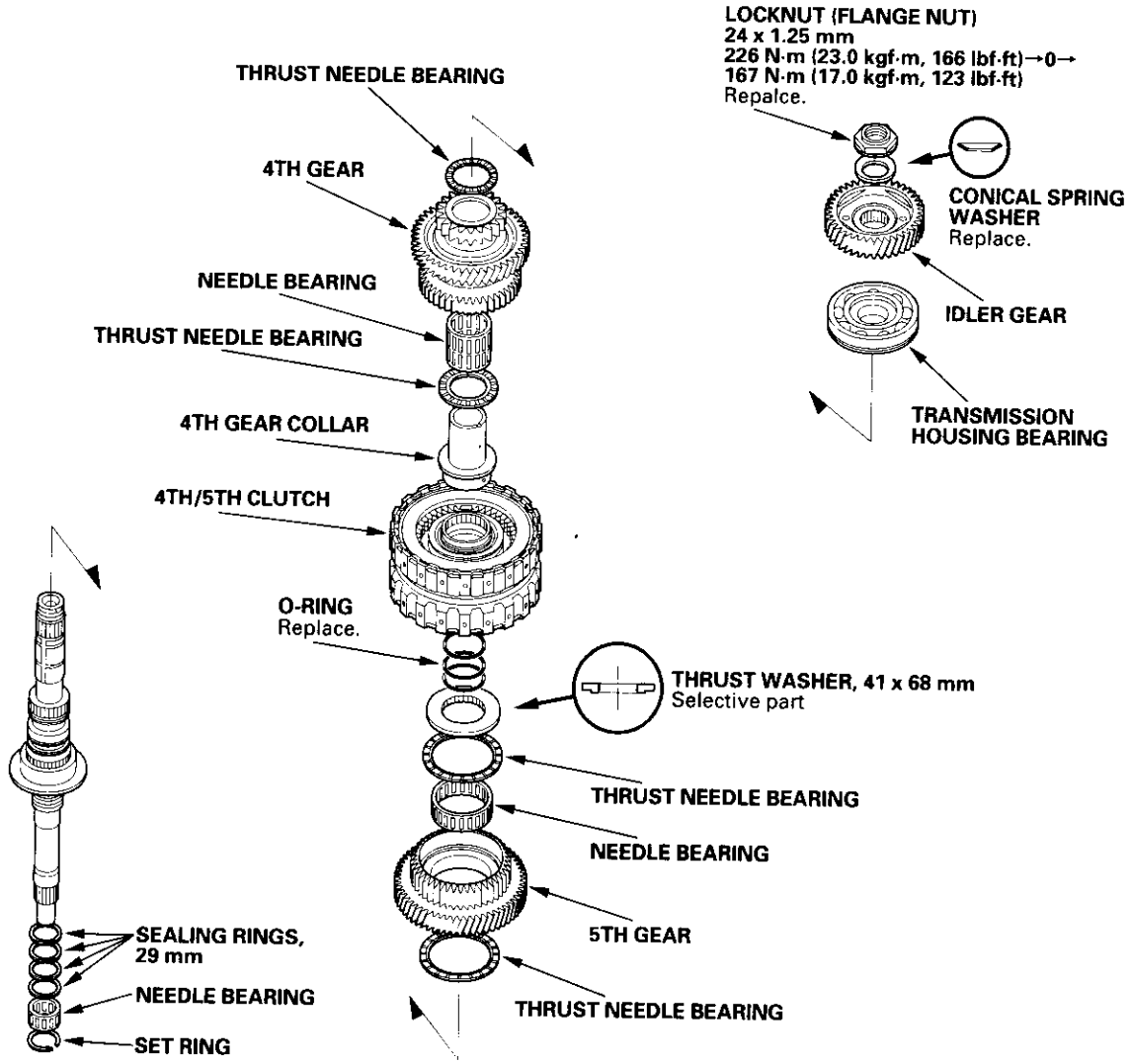


2. Install the new oil seal (A) in the torque converter housing in depth (B) of 0.5 – 1.5 mm (0,02 – 0.06 in.) below the housing surface with the special tools.



Mainshaft Disassembly, Inspection, and Reassembly

1. Inspect the thrust needle bearing and the needle bearing for galling and rough movement.

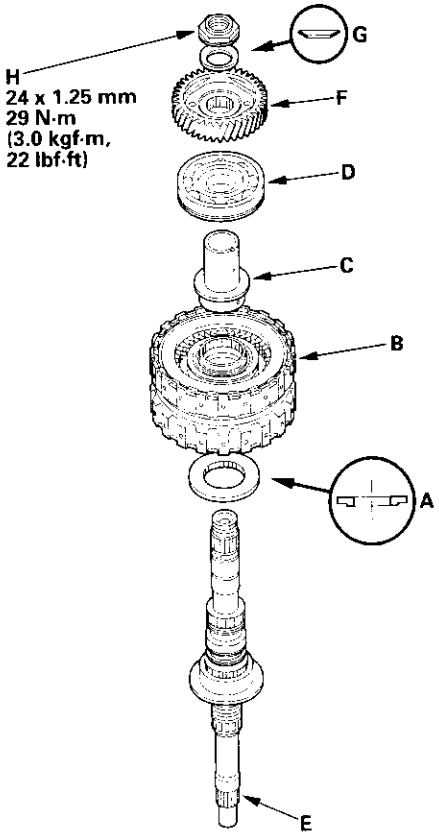


2. Inspect the splines for excessive wear and damage.
3. Check shaft bearing surface for scoring and excessive wear.
4. Before installing the O-rings, wrap the shaft splines with tape to prevent O-ring damage.
5. Lubricate all parts with ATF during assembly.
6. Install the conical spring washer, 41 x 68 mm thrust washer in the direction shown.
7. Replace the locknut and conical spring washer with new ones when assembling the transmission.
8. Check the clearance of the 5th gear (see page 14-211).

Mainshaft 5th Gear Clearance Inspection

1. Remove the mainshaft transmission housing bearing (see page 14-194).

2. Assemble 41 x 68 mm thrust washer (A), 4th/5th clutch (B), 4th gear collar (C), and transmission housing bearing (D) on the mainshaft (E). Do not install the O-rings during inspection.

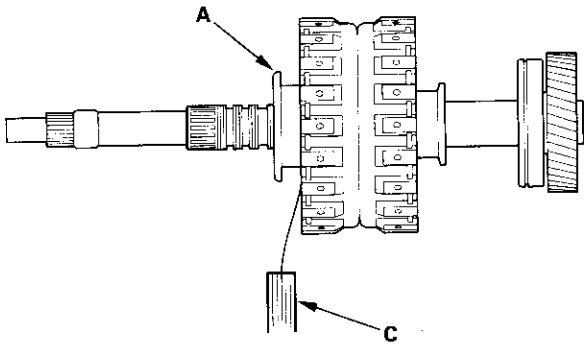


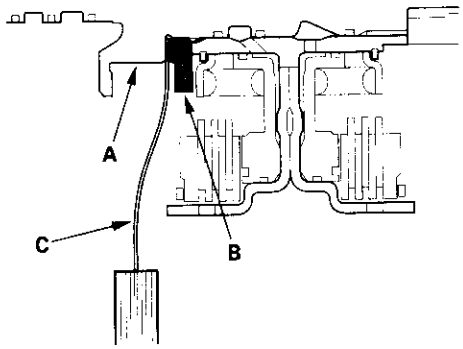
3. Install the idler gear (F) on the mainshaft by a press, then install the conical spring washer (G) and locknut (H).

4. Tighten the locknut to 29 N·m (3.0 kgf·m, 22 lbf·ft).

5. Measure the clearance between the mainshaft flange (A) and 41 x 68 mm thrust washer (B) with a feeler gauge (C), in at least three places. Use the average as the actual clearance.

STANDARD: 0.03—0.11 mm (0.001—0.004 in.)

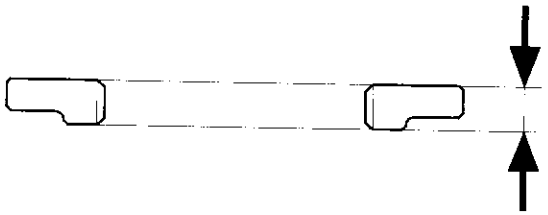




(cont'd)

Mainshaft 5th Gear Clearance Inspection (cont'd)

6. If the clearance is out of standard, remove the 41 x 68 mm thrust washer and measure its thickness.



7. Select and install a new thrust washer, then recheck.

THRUST WASHER, 41 x 68 mm

No.	Part Number	Thickness
1	90414-PRP-010	6.35 mm (0.250 in.)
2	90415-PRP-010	6.40 mm (0.252 in.)
3	90416-PRP-010	6.45 mm (0.254 in.)
4	90417-PRP-010	6.50 mm (0.256 in.)
5	90418-PRP-010	6.55 mm (0.258 in.)
6	90419-PRP-010	6.60 mm (0.260 in.)

8. After replacing the thrust washer, make sure the clearance is within standard.

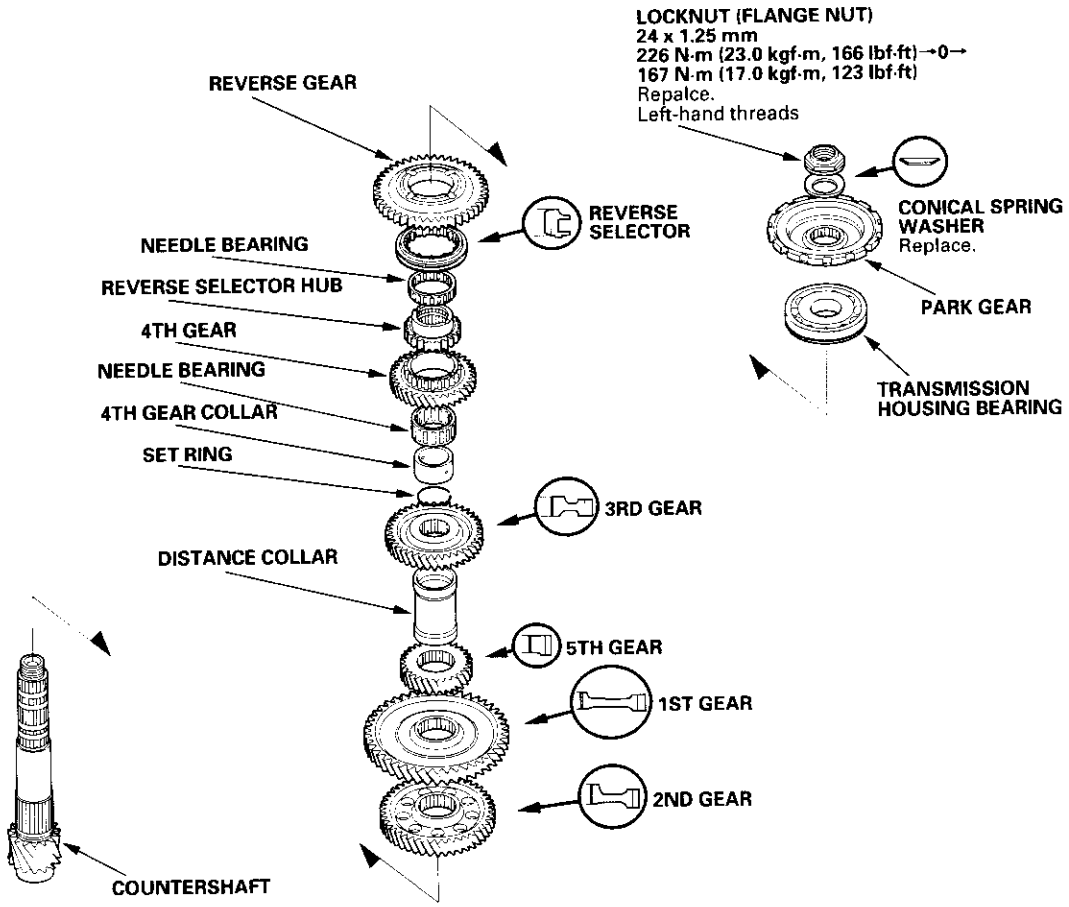
9. Disassemble the shaft and gears.

10. Reinstall the bearing in the transmission housing (see page 14-195).

Countershaft Disassembly, Inspection, and Reassembly

'02 model: MRMA Transmission Number 1000001 – 1021247

1. Inspect the thrust needle bearing and the needle bearing for galling and rough movement.



2. Inspect the splines for excessive wear and damage.
3. Check shaft bearing surface for scoring and excessive wear.
4. Lubricate all parts with ATF during assembly.
5. Install the conical spring washer, reverse selector, 3rd gear, 5th gear, 1st gear, and 2nd gear in the direction shown.
6. Countershaft locknut has left-hand threads.
7. Replace the locknut and conical spring washer with new ones when assembling the transmission.
8. Some reverse selector hubs, 4th gear collars, and 3rd gears are press-fitted to the countershaft; special tools are needed to remove them (see page 14-214) and install them (see page 14-215).

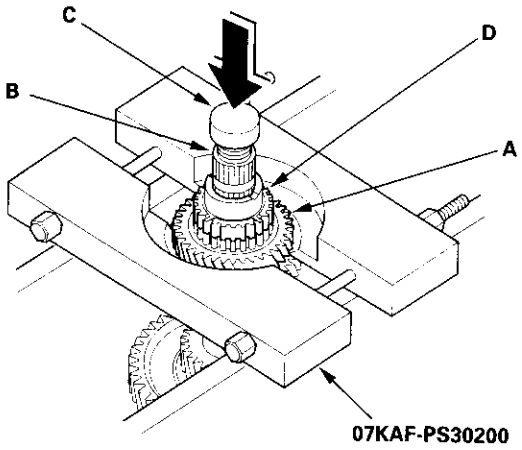
Reverse Selector Hub, 4th Gear Collar, and 3rd Gear Removal

Special Tool Required
Bearing separator 07KAF-PS30200

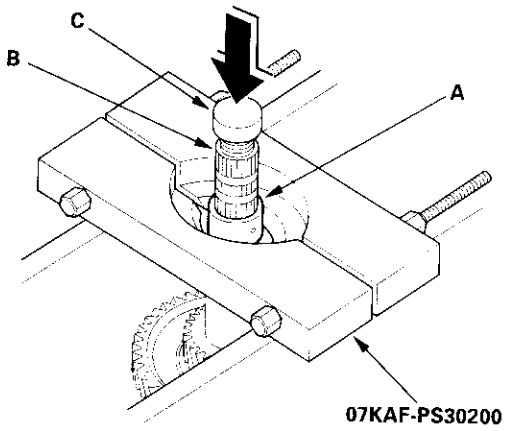
'02 Model: MRMA Transmission Number 1000001 – 1021247

NOTE:
- Some reverse selector hubs, 4th gear collars, and 3rd gears are not press-fitted, and can be removed without using the special tool and a press.
- Place a shaft protector between the countershaft and a press to prevent damaging the countershaft.

1. Install the special tool on the 4th gear (A). Set a press on the countershaft (B) with putting a spacer (C) between the press and countershaft, and remove the reverse selector hub (D).



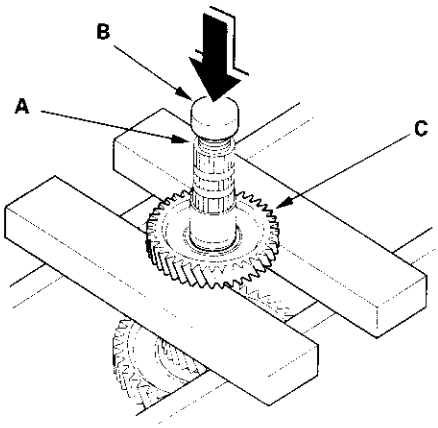
2. Remove the needle bearing, then install the special tool by inserting it into the opening between the 3 rd gear and 4th gear coller (A).



3. Set the press on the countershaft (B) with putting a spacer between the press and countershaft, and remove the collar.

4. Remove the set ring.

5. Set the press on the countershaft (A) with putting a spacer (B) between the press and countershaft, and remove the 3rd gear (C).



6. Remove the distance collar, 5th gear, 1st gear, and 2nd gear.

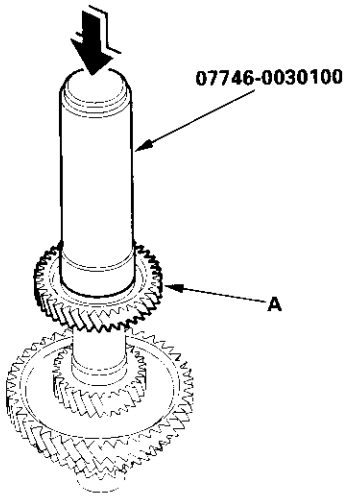
Reverse Selector Hub, 4th Gear Collar, and 3rd Gear Installation

Special Tools Required
- Driver 40 mm I.D. 07746-0030100
- Attachment, 35 mm I.D. 07746-0030400

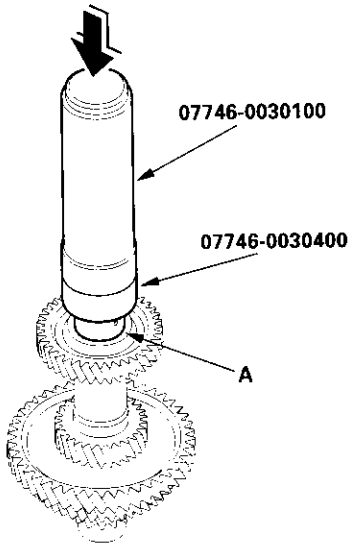
'02 model: MRTA Transmission Number 1000001 – 1021247

NOTE: Some reverse selector hubs, 4th gear collars, and 3rd gears are not press-fitted, and can be installed without using the special tool and a press.

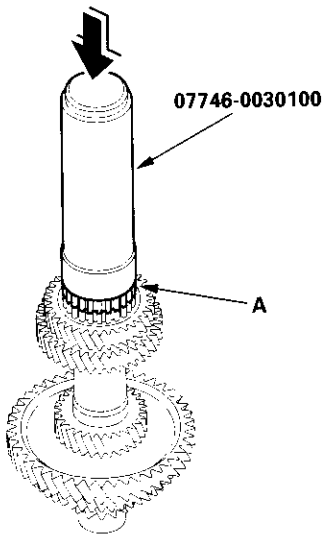
1. Assemble the 2nd gear, 1st gear, 5th gear, and distance collar on the countershaft.
2. Slide the 3rd gear (A) over the countershaft, and press it in place with the special tool and a press.



3. Install the set ring.
4. Install the 4th gear collar (A) with the special tools and a press.



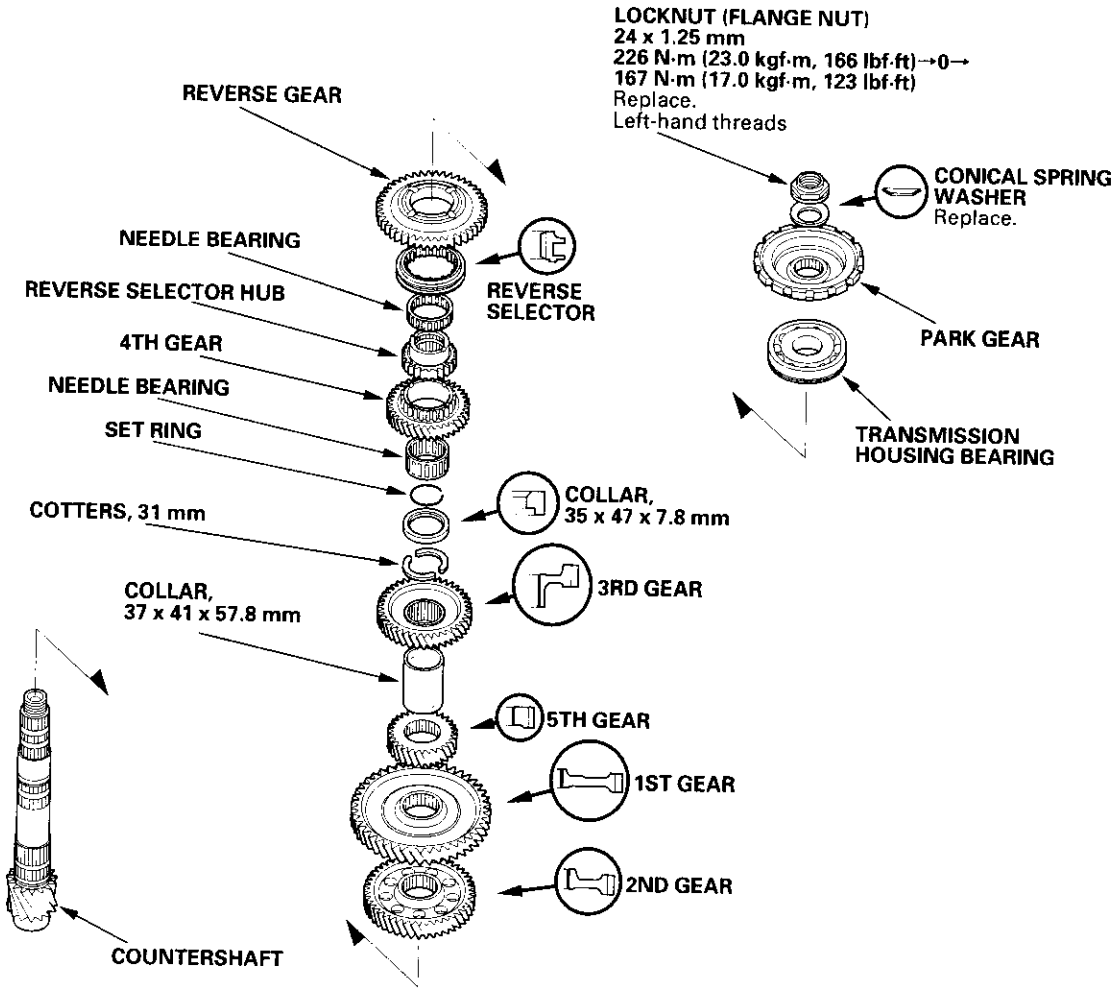
5. Install the needle bearing and 4th gear.
6. Install the reverse selector hub (A) with the special tool and a press.



Countershaft Disassembly, Inspection, and Reassembly

'02 model: MRMA Transmission Number 1021248 or later '03 model

1. Inspect the thrust needle bearing and the needle bearing for galling and rough movement.



2. Inspect the splines for excessive wear and damage.
3. Check shaft bearing surface for scoring and excessive wear.
4. Lubricate all parts with ATF during assembly.
5. Install the conical spring washer, reverse selector, 35 x 47 x 7.8 mm collar, and all gears in the direction shown.
6. Replace the locknut and conical spring washer with new ones when assembling the transmission. The countershaft locknut has left-hand threads.
7. Some reverse selector hubs, and the 3rd gear are press-fitted to the countershaft; special tools are needed to remove them (see page 14-217) and to install them (see page 14-218).

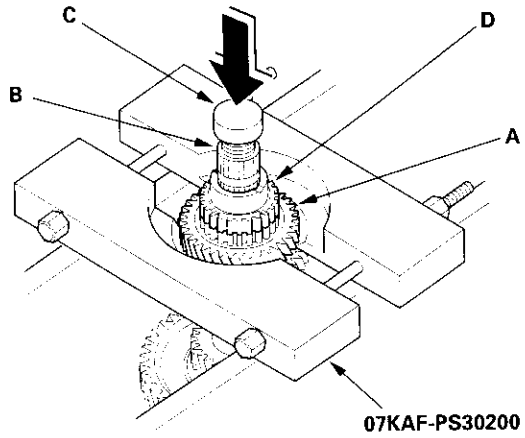
Reverse Selector Hub and 3rd Gear Removal

Special Tool Required
Bearing separator 07KAF-PS30200

'02 model: MRMA Transmission Number 1021248 or later '03 model

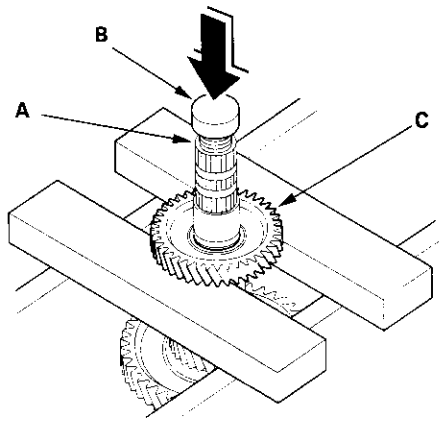
1. Install the special tool on the 4th gear (A). SET a press on the countershaft (B) with putting a spacer (C) between the press and countershaft, and remove the reverse selector hub (B).

   NOTE: Some reverse selector hubs are not press-fitted, and can be removed without using the special tool and a press.



2. Remove the needle bearing, set ring, 35 x 47 x 7.8 mm collar, and cotters.

3. Set the press on the countershaft (A) with putting a spacer (B) between the press and countershaft, and remove the 3rd gear (C).



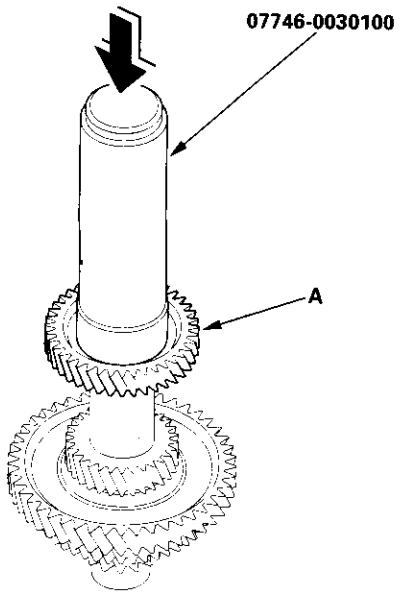
4. Remove the 37 x 41 x 57.8 mm coolar, 5th gear, 1st gear, and 2nd gear.

Reverse Selector Hub and 3rd Gear Installation

Special Tool Required
Driver 40 mm I.D. 07746-0030100

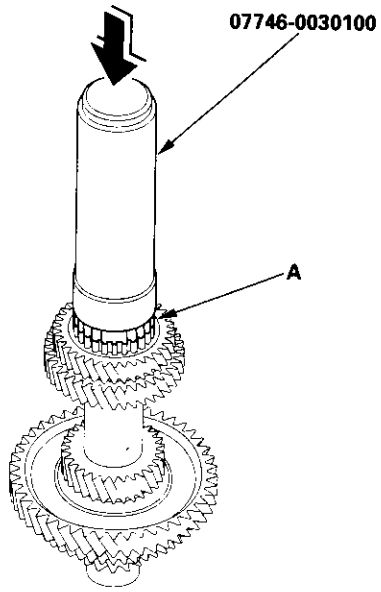
'02 model: MRMA Transmission Number 1021248 or later '03 model

1. Install the 2nd gear, 1st gear, and 37 x 41 x 57.8 mm collar on the countershaft.
2. Slide the 3rd gear (A) over the countershaft, and press it in place with the special tool and a press.



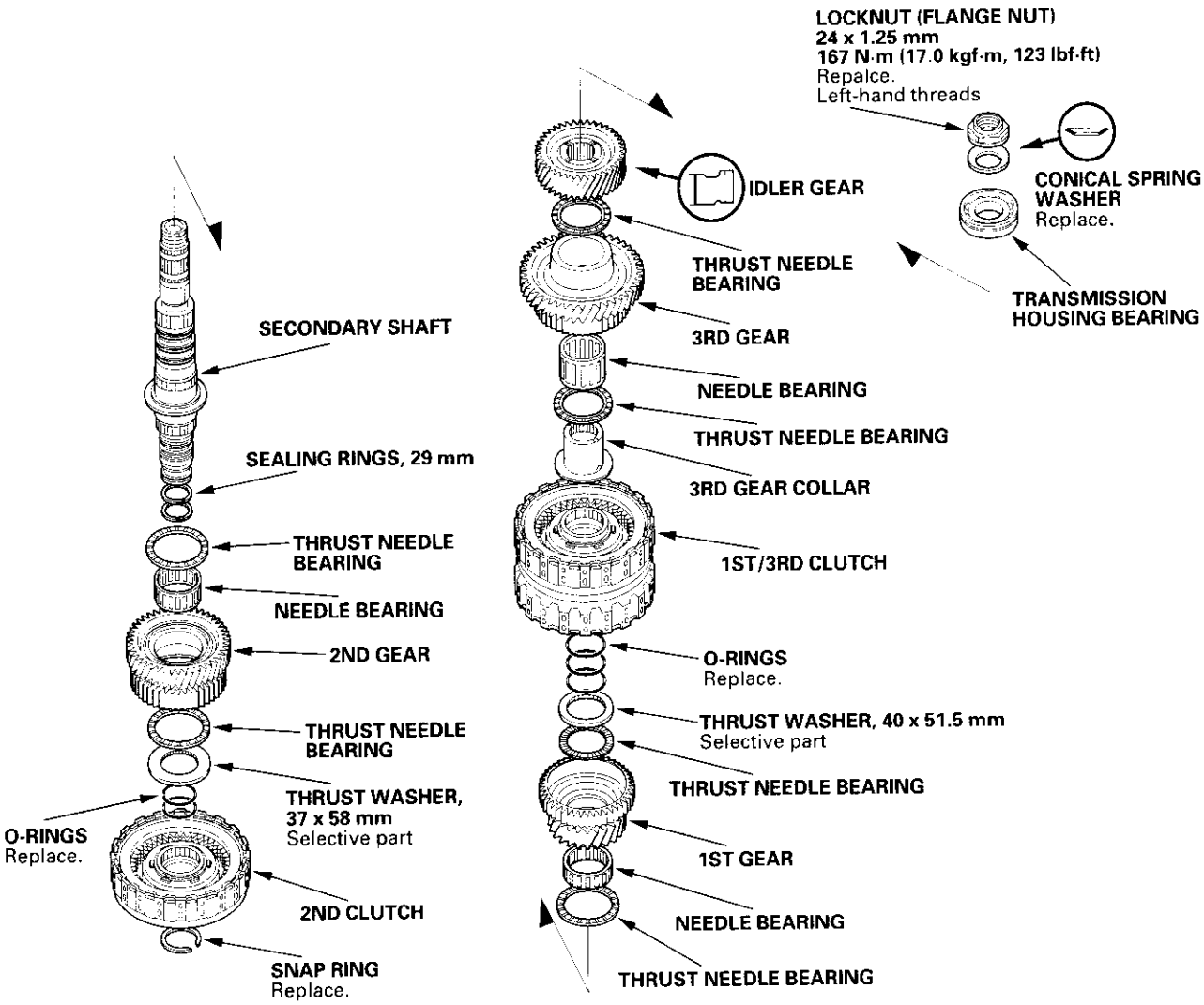
3. Install the cotters, 35 x 47 x 7.8 mm collar, set ring, needle bearing, and 4th gear.
4. Slide the reverse selector hub (A) over the countershaft, then press it in place with the special tool and a press.

   NOTE: Some reverse selector hubs are not press-fitted and can be installed without usng the special tool and a press.



Secondary Shaft Disassembly, Inspection, and Reassembly

1. Inspect the thrust needle bearing and the needle bearing for galling and rough movement.



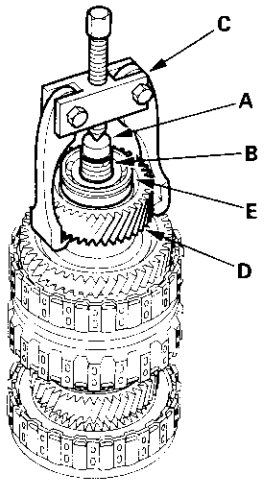
2. Inspect the splines for excessive wear and damage.
3. Check shaft bearing surface for scoring and excessive wear.
4. Before installing the O-rings, wrap the shaft splines with tape to prevent O-ring damage.
5. Lubricate all parts with ATF during assembly.
6. Install the conical spring washer, idler gear in the direction shown.
7. The secondary shaft locknut has left-hand threads.
8. Replace the locknut and conical spring washer with new ones when assembling the transmission.
9. Check the clearance of 2nd gear (see page 14-221) and 1st gear (see page 14-223).

Secondary Shaft Ball Bearing, Idler Gear Removal and Installation

Special Tool Required
Attachment, 42 mm I.D. 07QAD-P0A0100

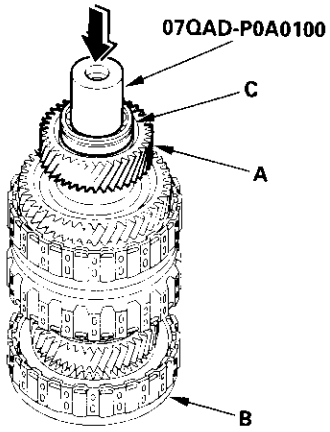
Removal

Place a shaft protector (A) on the secondary shaft (B), and set the puller (C) under the idler gear (D), then remove the idler gear and ball bearing (E).



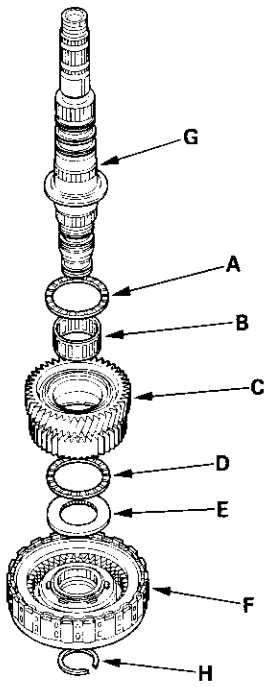
Installation

Install the idler gear (A) on the secondary shaft (B), and install the ball bearing (C) over the idler gear with the special tool and a press.



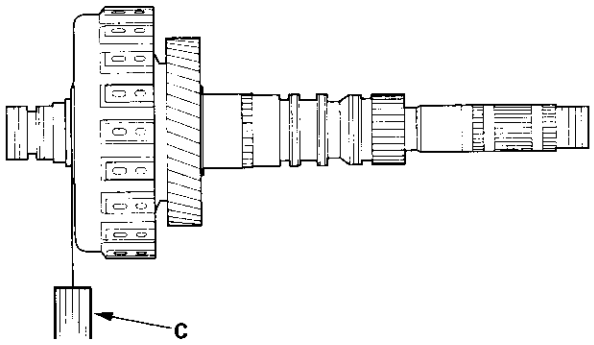
Secondary Shaft 2nd Gear Clearance Inspection

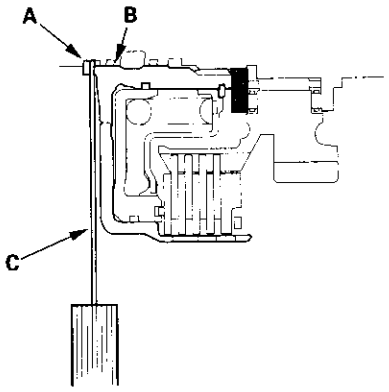
1. Install the thrust needle bearing (A), needle bearing (B), 2nd gear (C), thrust needle bearing (D), 37 x 58 mm thrust washer (E), and 2nd clutch (F) on the secondary shaft (G), then secure them with the snap ring (H).



2. Measure the clearance between the snap ring (A) and the 2nd clutch guide (B) with a feeler gauge (C), in at least three places. Use the average as the actual clearance.

STANDARD: 0.04 – 0.12 mm (0.002 – 0.005 in.)





(cont'd)

Secondary Shaft 2nd Gear Clearance Inspection (cont'd)

3. If the clearance is out of standard, remove the 37 x 58 mm thrust washer and measure its thickness.

4. Select and install a new thrust washer, then recheck.

THRUST WASHER, 37 x 58 mm

No.	Part Number	Thickness
1	90511-PRP-010	3.900 mm (0.154 in.)
2	90512-PRP-010	3.925 mm (0.155 in.)
3	90513-PRP-010	3.950 mm (0.156 in.)
4	90514-PRP-010	3.975 mm (0.156 in.)
5	90515-PRP-010	4.000 mm (0.157 in.)
6	90516-PRP-010	4.025 mm (0.158 in.)
7	90517-PRP-010	4.050 mm (0.159 in.)
8	90518-PRP-010	4.075 mm (0.160 in.)
9	90519-PRP-010	4.100 mm (0.161 in.)
10	90520-PRP-010	4.125 mm (0.162 in.)
11	90521-PRP-010	4.150 mm (0.163 in.)
12	90522-PRP-010	4.175 mm (0.164 in.)
13	90523-PRP-000	4.200 mm (0.165 in.)
14	90524-PRP-000	4.225 mm (0.166 in.)
15	90525-PRP-000	4.250 mm (0.167 in.)
16	90526-PRP-000	4.275 mm (0.168 in.)
17	90527-PRP-000	4.300 mm (0.169 in.)
18	90528-PRP-000	4.325 mm (0.170 in.)
19	90529-PRP-000	4.350 mm (0.171 in.)
20	90530-PRP-000	4.375 mm (0.172 in.)

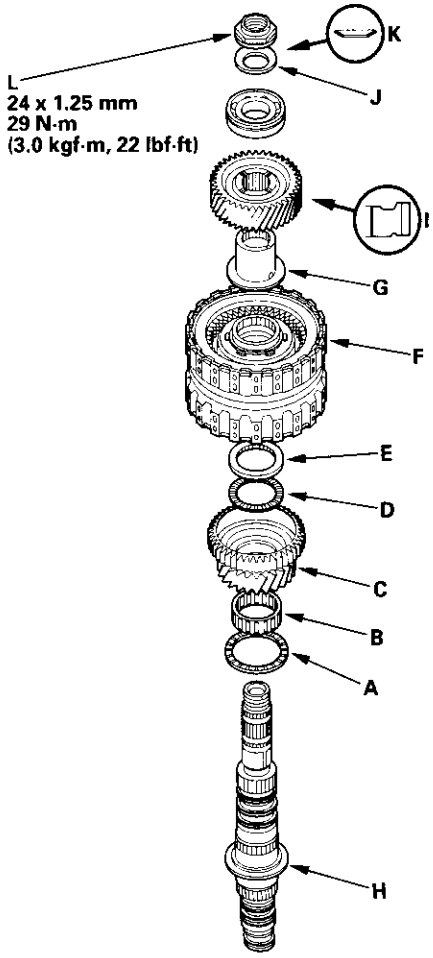
5. After replacing the thrust washer, make sure the clearance is within standard.

6. Disassemble the shaft and gears.

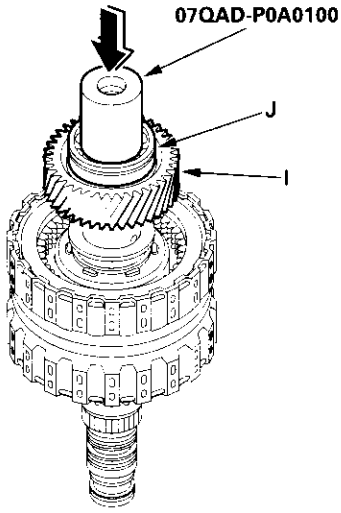
Secondary Shaft 1st Gear Clearance Inspection

Special Tool Required
Attachment, 42 mm I.D. 07QAD-P0A0100

1. Install the thrust needle bearing (A), needle bearing (B), 1st gear (C), thrust needle bearing (D), 40 x 51.5 mm thrust washer (E), 1st/3rd clutch (F), and 3rd gear collar (G) on the secondary shaft (H).

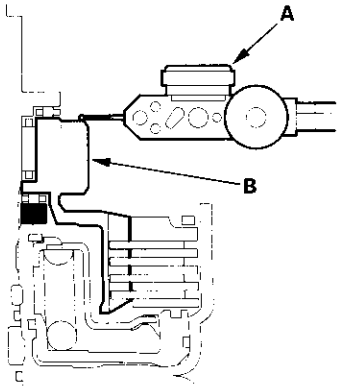


2. Install the idler gear (I), then install the ball bearing (J) on the idler gear with the special tool and a press.



3. Install the conical spring washer (K) and locknut (L), then tighten the locknut to 29 N·m (3.0 kgf·m, 22 lbf·ft).

4. Turn the secondary shaft assembly upside down, and set the dial indicator (A) on the 1st gear (B).

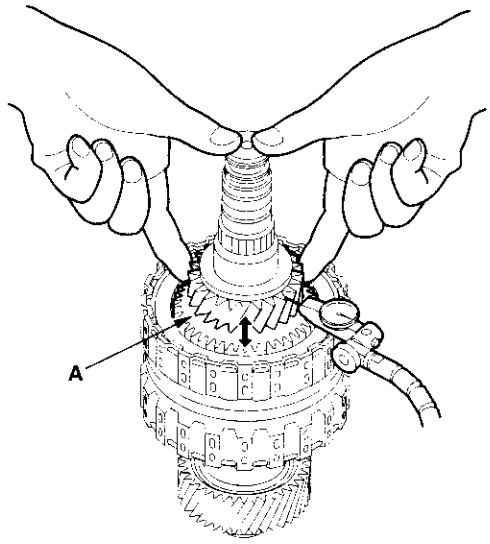


(cont'd)

Secondary Shaft 1st Gear Clearance Inspection (cont'd)

5. Hold the secondary shaft, and measure the 1st gear axial clearance in at least three places while moving the 1st gear (A). Use the average as the actual clearance.

STANDARD: 0.04 – 0.12 mm (0.002 – 0.005 in.)



6. If the clearance is out of standard, remove the 40 x 51.5 mm thrust washer and measure its thickness.

7. Select and install a new thrust washer, then recheck.

THRUST WASHER, 40 x 51.5 mm

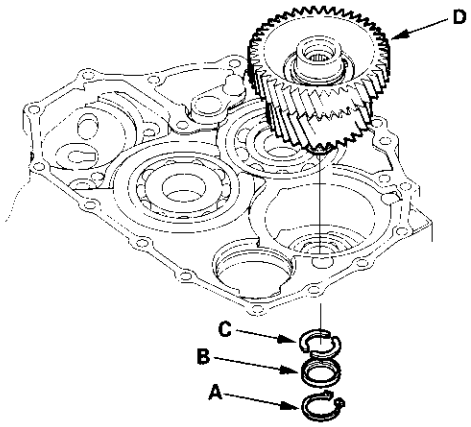
No.	Part Number	Thickness
1	90503-PRP-000	4.80 mm (0.189 in.)
2	90504-PRP-000	4.85 mm (0.191 in.)
3	90505-PRP-000	4.90 mm (0.193 in.)
4	90506-PRP-000	4.95 mm (0.195 in.)
5	90507-PRP-000	5.00 mm (0.197 in.)
6	90508-PRP-000	5.05 mm (0.199 in.)

8. After replacing the thrust washer, make sure the clearance is within standard.

9. Disassemble the shaft and gears.

Idler Gear Shaft Removal and Installation

1. Remove the snap ring (A), cotter retainer (B), and cotter keys (C). Do not distort the snap ring.



2. Remove the idler gear shaft/idler gear assembly (D) from the transmission housing.

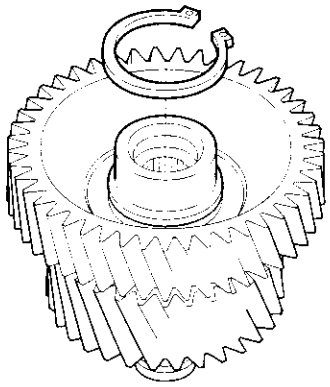
3. Check the snap rings and cotter retainer for wear and damage. Replace them if they are worn, distorted, or damaged.

4. Install the idler gear and shaft in the reverse order of removal.

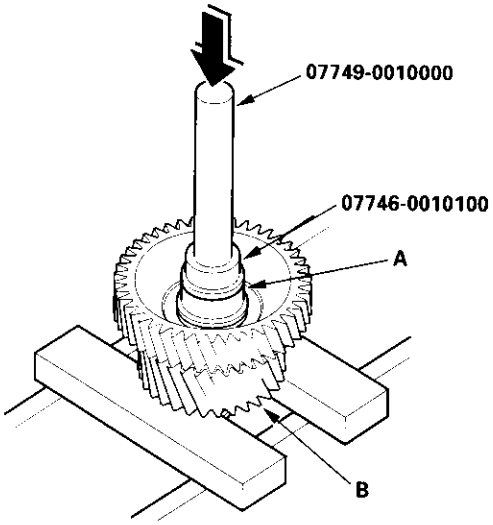
Idler Gear/Idler Gear Shaft Replacement

Special Tools Required
- Driver 07749-0010000
- Attachment, 32 x 35 mm 07746-0010100

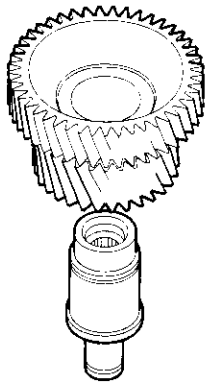
1. Remove the snap ring from the idler gear/idler shaft assembly.



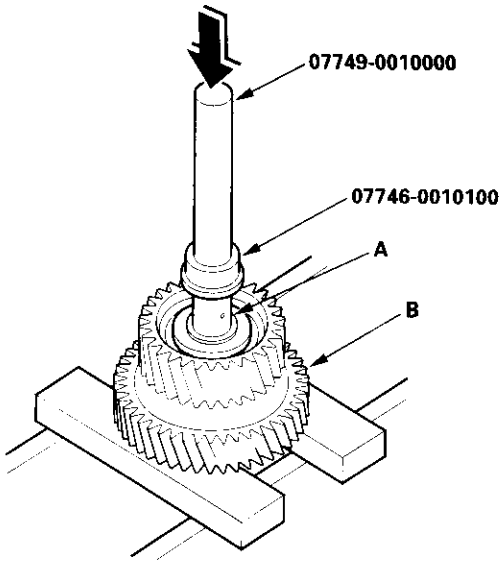
2. Remove the idler gear shaft (A) from the idler gear (B) with the special tools and a press.



3. Replace the idler gear or idler gear shaft, and attach the idler gear shaft to the idler gear.



4. Install the idler gear shaft (A) in the idler gear (B) with the special tools and a press.

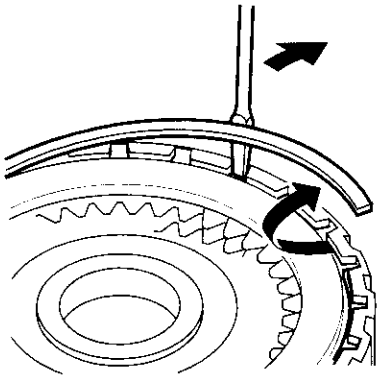


5. Install the snap ring.

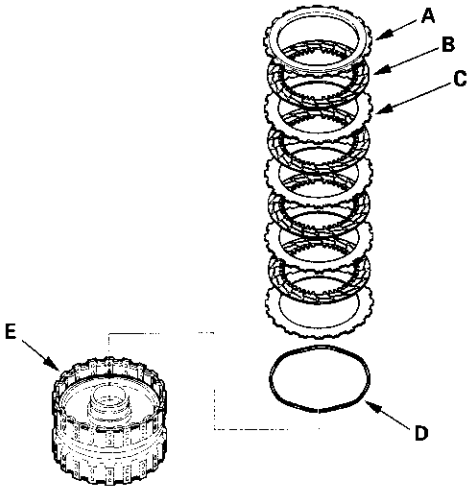
Clutch Disassembly

Special Tools Required
- Clutch spring compressor attachment 07LAE-PX40100
- Clutch spring compressor attachment 07HAE-PL50101
- Clutch spring compressor bolt assembly 07GAE-PG40200

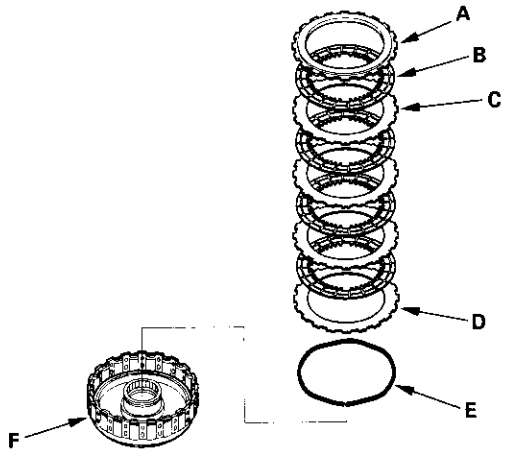
1. Remove the snap ring with a screwdriver.



2. Remove the clutch end plate (A), clutch discs (4) (B), clutch waved-plates (4) (C), and waved spring (D) from the 1st clutch drum (E).

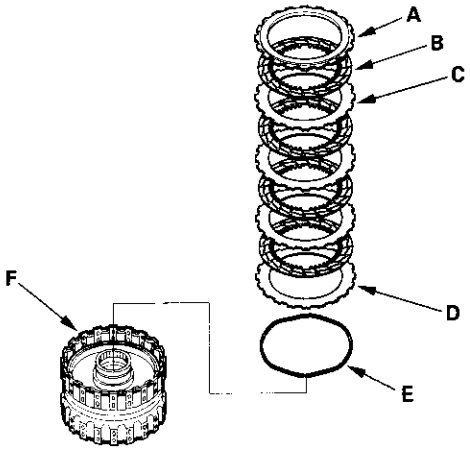


3. Remove the clutch end plate (A), clutch discs (4) (B), clutch waved-plates (3) (C), clutch flat-plate (D), and waved spring (E) from the 2nd clutch drum (F).



4. Make a reference mark on the clutch flat plate (D).

5. Remove the clutch end plate (A), clutch discs (4) (B), clutch waved-plates (3) (C), clutch flat-plate (D), and waved spring (E) from the 3rd clutch drum (F).

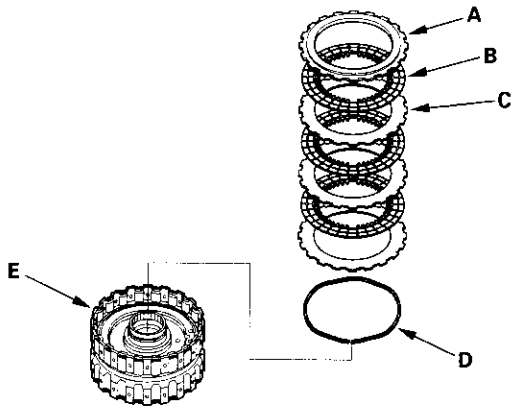


6. Make a reference mark on the clutch flat plate (D).

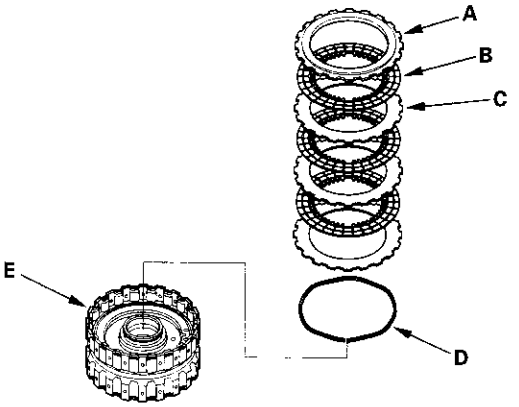
(cont'd)

Clutch Disassembly (cont'd)

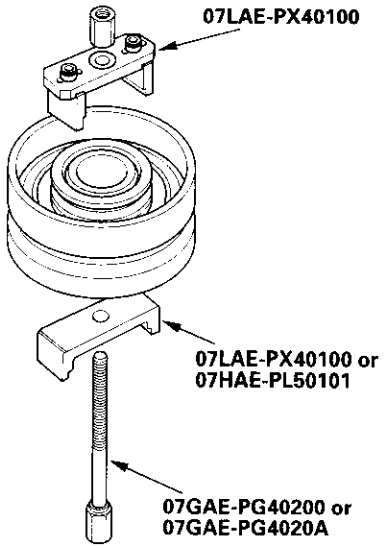
7. Remove the clutch end plate (A), clutch discs (3) (B), clutch waved-plates (3) (C), and waved spring (D) from the 4th clutch drum (E).



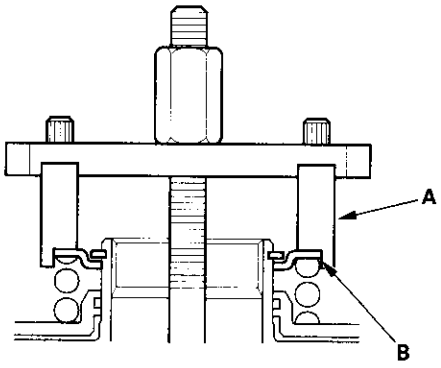
8. Remove the clutch end plate (A), clutch discs (3) (B), clutch waved-plates (3) (C), and waved spring (D) from the 5th clutch drum (E).



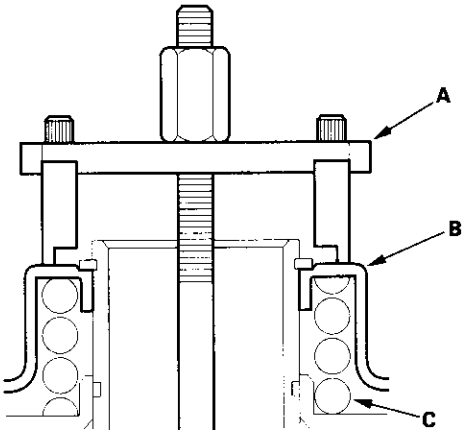
9. Install the special tools.



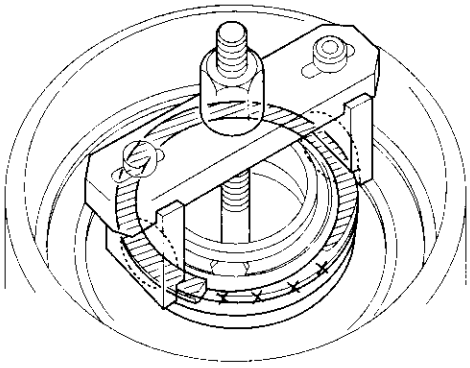
10. Be sure the special tool (A) is adjusted to have full contact with the spring retainer (B) on the 4th and 5th clutches.



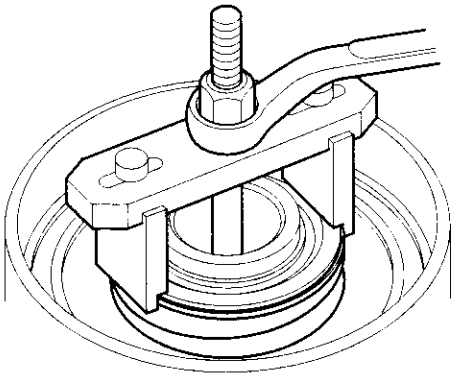
11. Set the special tool (A) on the spring retainer (B) of the 1st, 2nd, and 3rd clutches in such a way that the special tool works on the clutch return spring (C).



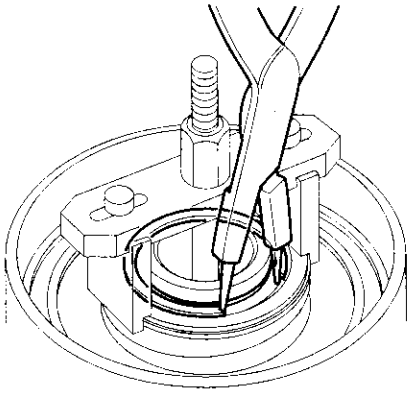
12. If either end of the special tool is set over an area of the spring retainer which is unsupported by the return spring, the retainer may be damaged.



13. Compress the return spring until the snap ring can be removed.



14. Remove the snap ring with snap ring pliers.

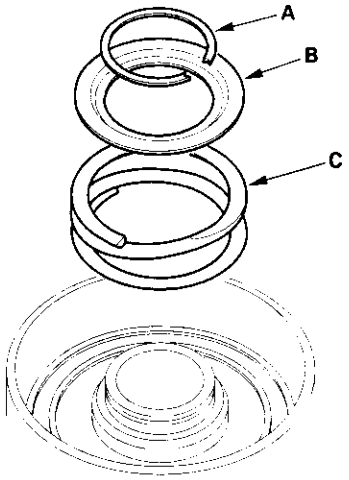


15. Remove the special tools.

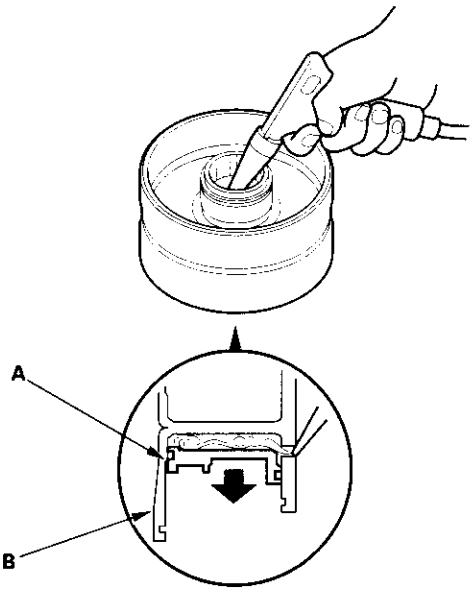
(cont'd)

Clutch Disassembly (cont'd)

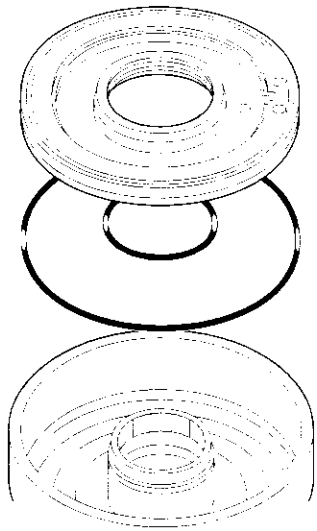
16. Remove the snap ring (A), spring retainer (B), and return spring (C).



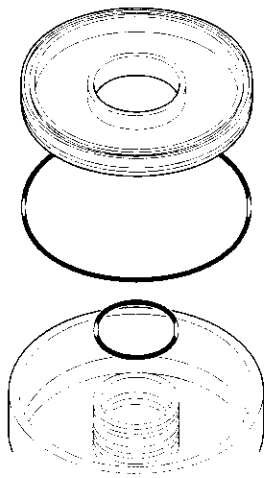
17. Wrap a shop rag around the clutch drum (A), and apply air pressure to the fluid passage to remove the piston (B). Place a finger tip on the other passage while applying air pressure.



18. Remove the piston, then remove the O-rings from the 4th and 5th clutch pistons.

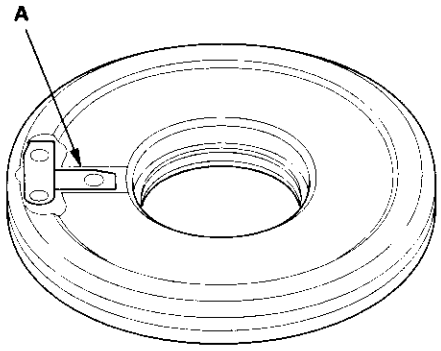


19. Remove the piston, then remove the O-ring from the 1st, 2nd, and 3rd clutch drum, and remove the O-ring from each clutch piston.

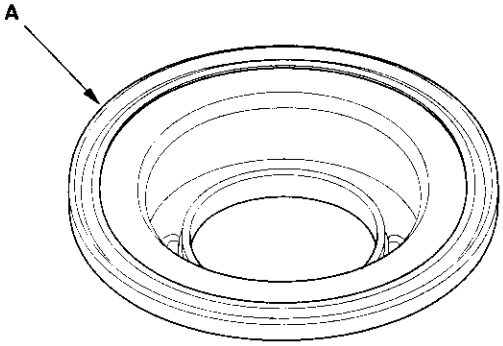


Clutch Inspection

1. Inspect the 4th and 5th clutch pistons and clutch piston check valves.



2. If the clutch piston check valve is loose or damaged, replace the clutch piston.
3. Check the spring retainer for wear and damage.
4. Check the oil seal on the spring retainer of the 1st, 2nd, and 3rd clutches for wear, damage, and peeling.



5. If the oil seal is worn, damaged, or peeling, replace the spring retainer.
6. Inspect the clutch discs, clutch-plates, and clutch end plate for wear, damage, and discoloration.

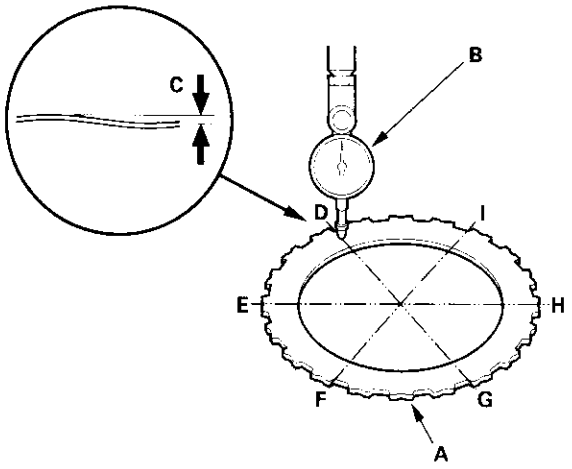
Standard Thickness

Clutch Discs:	**1.94 mm (0.076 in.)**
Clutch Plates:	**2.00 mm (0.079 in.)**

7. If the clutch discs are worn or damaged, replace them as a set. If the clutch discs are replaced, inspect the clutch end plate-to-top disc clearance.
8. If any plate is worn, damaged, or discolored, replace the damaged plate with the new plate, and inspect the other waved-plates for a phase difference. If the clutch plate is replaced, inspect the clutch end plate-to-top disc clearance.
9. If the clutch end plate is worn, damaged, or discolored, inspect the clutch end plate-to-top disc clearance, then replace the clutch end plate.

Clutch Waved-plate Phase Difference Inspection

1. Place the clutch waved-plate (A) on a surface plate, and set a dial indicator (B) on the waved-plate.



2. Find the bottom (D) of a phase difference of the waved-plate, zero the dial indicator and make a reference mark on the bottom of the waved-plate.

3. Rotate the waved-plate about 72-degrees apart from the bottom while holding the waved-plate by its circumference. The dial indicator should be at the top (E) of a phase difference. Do not rotate the waved-plate while holding its surface, always rotate it with holding its circumference.

4. Read the dial indicator. The dial indicator reads the phase difference (C) of the waved-plate between bottom and top.

   Standard: 0.05 mm (0.002 in.) minimum

5. Rotate the waved-plate about 54-degrees. The dial indicator should be at the bottom of a phase difference (F and H), and zero the dial indicator.

6. Measure the phase difference at the other two tops (G and I) of the waved-plate by following steps 3 thru 5.

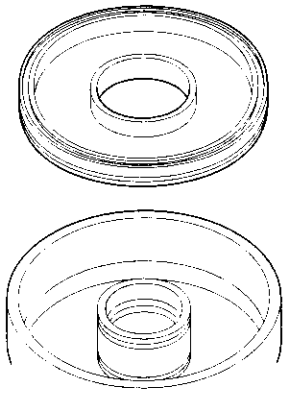
7. If the two values of the three measurements are within the standard, the waved-plate is OK. If the two values of the three measurements are out of the standard, replace the waved-plate.

Clutch Clearance Inspection

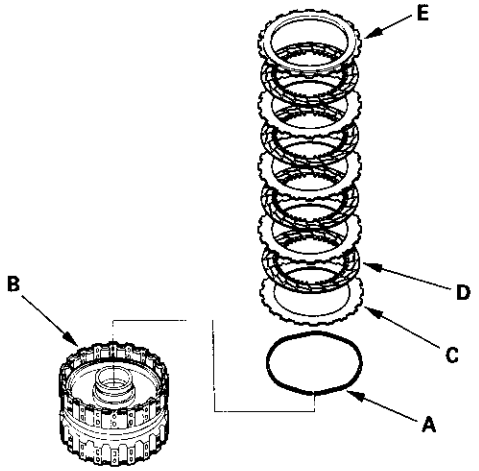
Special Tool Required
Clutch compressor attachment 07ZAE-PRP0100

1. Inspect the clutch piston, discs, plates, and end plate for wear and damage (see page 14-231), and inspect clutch waved-plate phase difference (see page 14-232), if necessary.

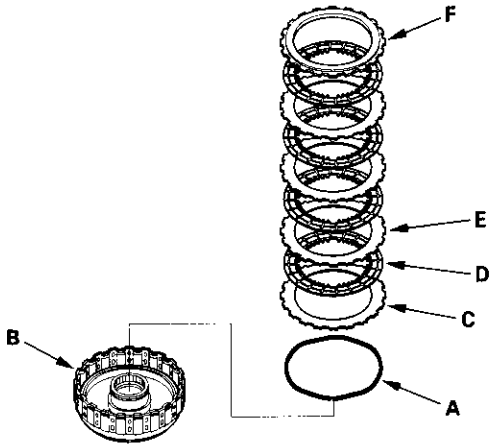
2. Install the clutch piston in the clutch drum. Do not install the O-rings during inspection.



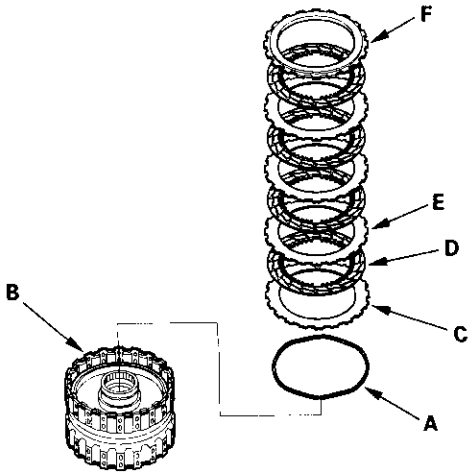
3. Install the waved spring (A) in the 1st clutch drum (B). Starting with the clutch waved-plate, alternately install the clutch plate (4) (C) and discs (4) (D), then install the clutch end plate (E) with the flat side toward the disc.



4. Install the waved spring (A) in the 2nd clutch drum (B). Install the clutch flat-plate (C), then starting with the clutch disc, alternately install the clutch disc (4) (D) and waved-plates (3) (E), then install the clutch end plate (F) with the flat side toward the disc.



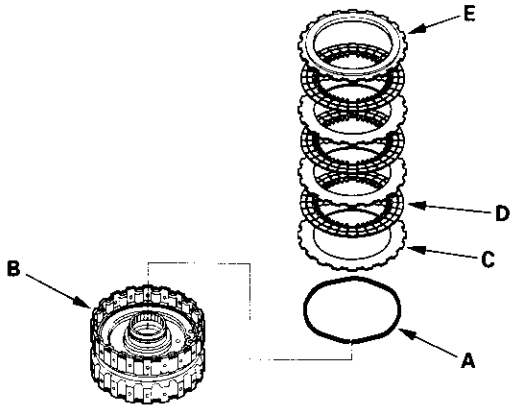
5. Install the waved spring (A) in the 3rd clutch drum (B). Install the clutch flat-plate (C), then starting with the clutch disc, alternately install the clutch disc (4) (D) and waved-plates (3) (E), then install the clutch end plate (F) with the flat side toward the disc.



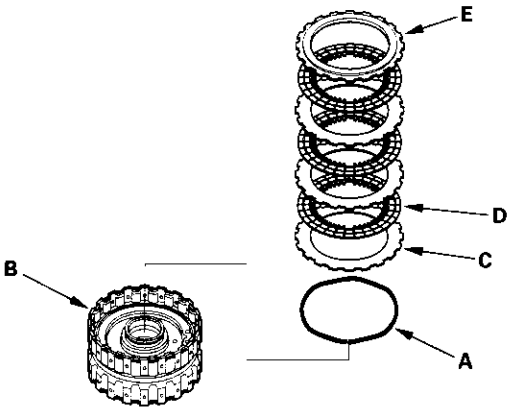
(cont'd)

Clutch Clearance Inspection (cont'd)

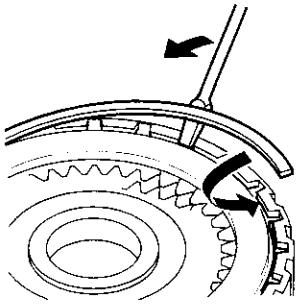
6. Install the waved spring (A) in the 4th clutch drum (B). Starting with the clutch waved-plate, alternately install the clutch plate (3) (C) and discs (3) (D), then install the clutch end plate (E) with the flat side toward the disc.



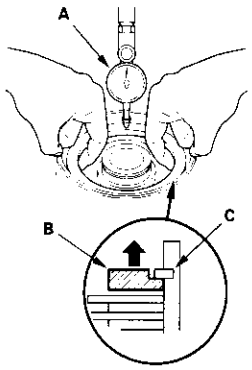
7. Install the waved spring (A) in the 5th clutch drum (B). Starting with the clutch waved-plate, alternately install the clutch plate (3) (C) and discs (3) (D), then install the clutch end plate (E) with the flat side toward the disc.



8. Install the snap ring with a screwdriver.

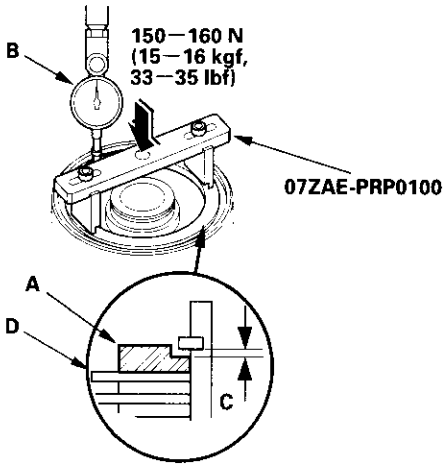


9. Set a dial indicator (A) on the clutch end plate (B).



10. Zero the dial indicator with the clutch end plate lifted up to the snap ring (C).

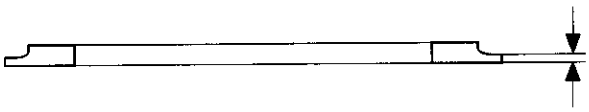
11. Release the clutch end plate to lower the clutch end plate, then put the special tool on the end plate (A).



12. Press the special tool down with 150 160 N (15 16 kgf, 33 35 lbf) using a force gauge, and read the dial indicator (B). The dial indicator reads the clearance (C) between the clutch end plate and top disc (D). Take measurements in at least three places, and use the average as the actual clearance.

Clutch End Plate-to-Top Disc Clearance:
Service Limit:
1st Clutch: 1.23 1.43 mm (0.048 0.056 in.)
2nd Clutch: 0.75 0.95 mm (0.030-0.037 in.)
3rd Clutch: 0.83 1.03 mm (0.033-0.041 in.)
4th Clutch: 0.73 0.93 mm (0.029 0.037 in.)
5th Clutch: 0.73 0.93 mm (0.029 0.037 in.)

13. If the clearance is out of the service limit, select a new clutch end plate from the following table.



1ST and 3RD CLUTCH END PLATES

Mark	Part Number	Thickness
1	22551-PRP-003	2.3 mm (0.091 in.)
2	22552-PRP-003	2.4 mm (0.094 in.)
3	22553-PRP-003	2.5 mm (0.098 in.)
4	22554-PRP-003	2.6 mm (0.102 in.)
5	22555-PRP-003	2.7 mm (0.106 in.)
6	22556-PRP-003	2.8 mm (0.110 in.)
7	22557-PRP-003	2.9 mm (0.114 in.)
8	22558-PRP-003	3.0 mm (0.118 in.)
9	22559-PRP-003	3.1 mm (0.122 in.)
10	22560-PRP-003	3.2 mm (0.126 in.)
11	22561-PRP-003	3.3 mm (0.130 in.)
12	22562-PRP-003	3.4 mm (0.134 in.)

2ND CLUTCH END PLATES

Mark	Part Number	Thickness
1	22571-PRP-003	2.6 mm (0.102 in.)
2	22572-PRP-003	2.7 mm (0.106 in.)
3	22573-PRP-003	2.8 mm (0.110 in.)
4	22574-PRP-003	2.9 mm (0.114 in.)
5	22575-PRP-003	3.0 mm (0.118 in.)
6	22576-PRP-003	3.1 mm (0.122 in.)
7	22577-PRP-003	3.2 mm (0.126 in.)
8	22578-PRP-003	3.3 mm (0.130 in.)
9	22579-PRP-003	3.4 mm (0.134 in.)

4TH and 5TH CLUTCH END PLATES

'02 Model: MRMA transmission number 1000001 1021247

Mark	Part Number	Thickness
11	22581-PRP-003	3.1 mm (0.122 in.)
12	22582-PRP-003	3.2 mm (0.126 in.)
13	22583-PRP-003	3.3 mm (0.130 in.)
14	22584-PRP-003	3.4 mm (0.134 in.)
15	22585-PRP-003	3.5 mm (0.138 in.)
16	22586-PRP-003	3.6 mm (0.142 in.)
17	22587-PRP-003	3.7 mm (0.146 in.)
18	22588-PRP-003	3.8 mm (0.150 in.)
19	22589-PRP-003	3.9 mm (0.154 in.)

4TH and 5TH CLUTCH END PLATES

'02 Model: MRMA transmission number 1021248 or later '03 Model

Mark	Part Number	Thickness
1	22581-PRP-901	3.0 mm (0.118 in.)
2	22582-PRP-901	3.1 mm (0.122 in.)
3	22583-PRP-901	3.2 mm (0.126 in.)
4	22584-PRP-901	3.3 mm (0.130 in.)
5	22585-PRP-901	3.4 mm (0.134 in.)
6	22586-PRP-901	3.5 mm (0.138 in.)
7	22587-PRP-901	3.6 mm (0.142 in.)
8	22588-PRP-901	3.7 mm (0.146 in.)
9	22589-PRP-901	3.8 mm (0.150 in.)

14. Install the new clutch end plate, then recheck the clearance.

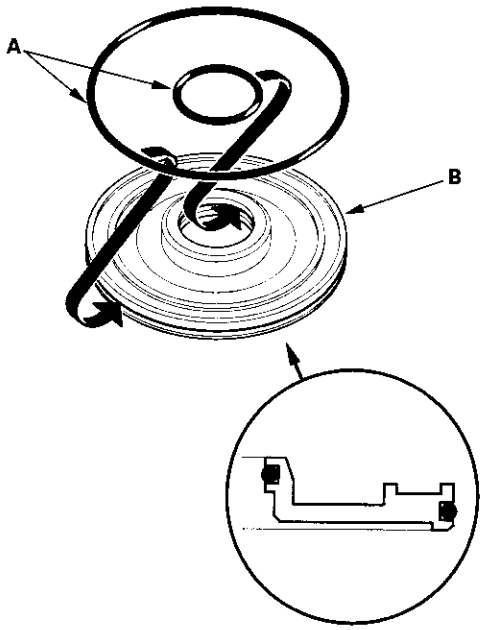
NOTE: If the thickest clutch end plate is installed, but the clearance is still over the service limit, replace the clutch discs and plates.

Clutch Reassembly

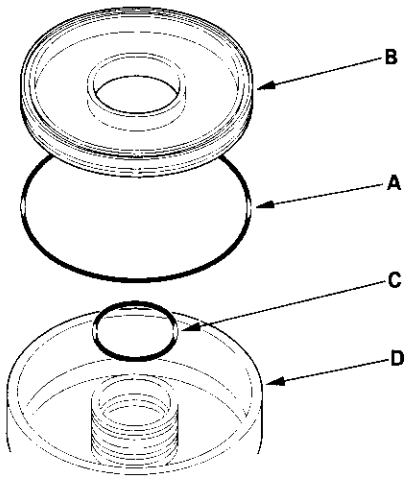
Special Tools Required
- Clutch spring compressor attachment 07LAE-PX40100
- Clutch spring compressor attachment 07HAE-PL50101
- Clutch spring compressor bolt assembly 07GAE-PG40200 or 07GAE-PG4020A

1. Soak the clutch discs thoroughly in ATF for a minimum of 30 minutes.

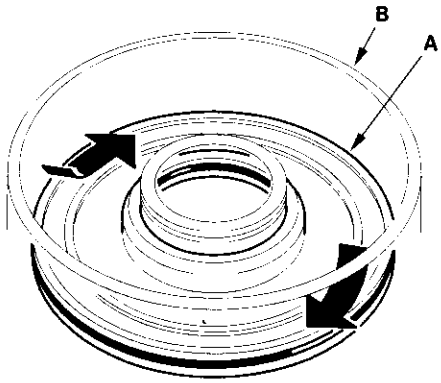
2. Install the new O-rings (A) on the 4th and 5th clutch pistons (B).



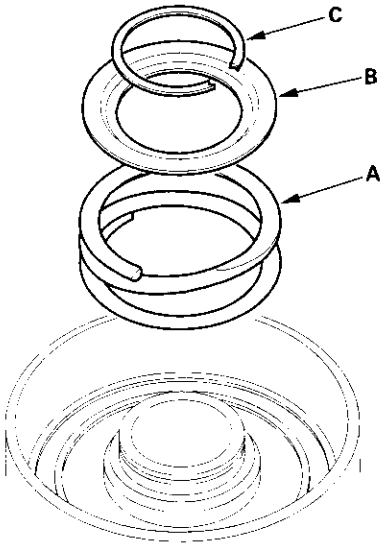
3. Install the new O-ring (A) in the 1st, 2nd, and 3rd clutch pistons (B), and install the new O-ring (C) on the clutch drums (D).



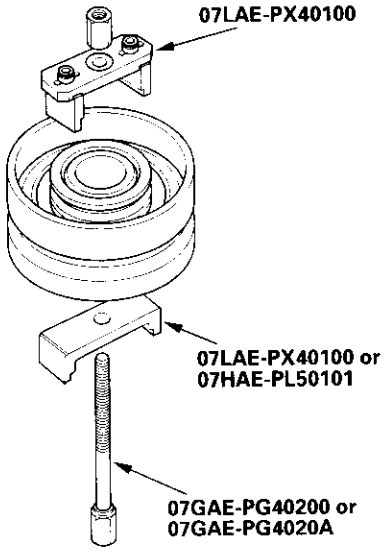
4. Install the clutch piston (A) in the clutch drum (B). Apply pressure and rotate it to ensure proper seating. Lubricate the piston O-ring with ATF before installing. Do not pinch the O-ring by installing the piston with to much force.



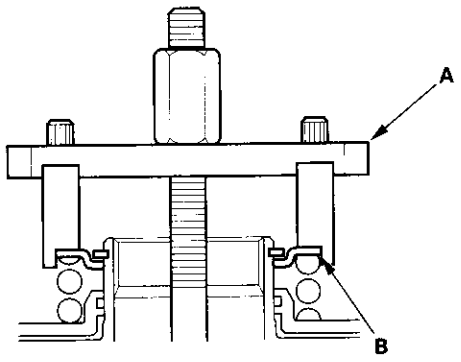
5. Install the return spring (A) and spring retainer (B), and position the snap ring (C) on the retainer.



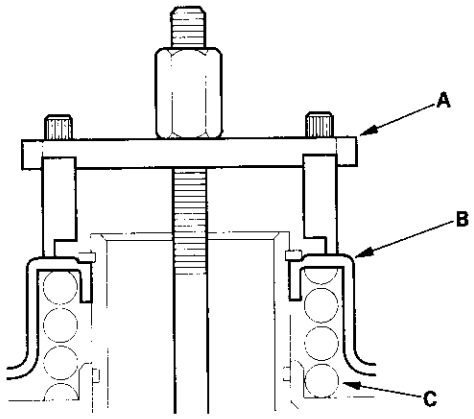
6. Install the special tools.



7. Be sure the special tool (A) is adjusted to have full contact with the spring retainer (B) on the 4th and 5th clutches.



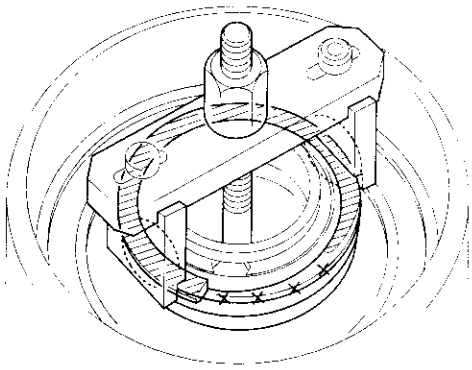
8. Set the special tool (A) on the spring retainer (B) of the 1st, 2nd, and 3rd clutches in such a way that the special tool works on the clutch return spring (C).



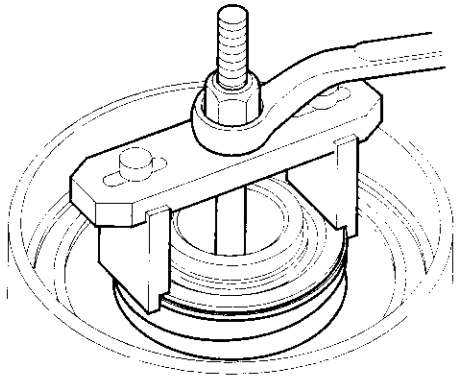
(cont'd)

Clutch Reassembly (cont'd)

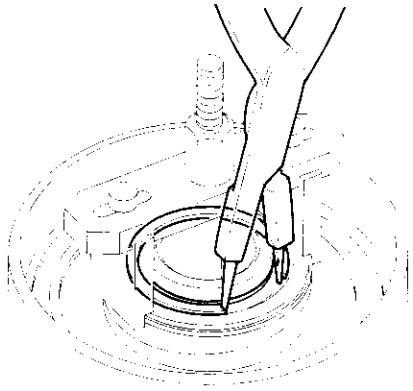
9. If either end of the special tool is set over an area of the spring retainer which is unsupported by the return spring, the retainer may be damaged.



10. Compress the return spring.

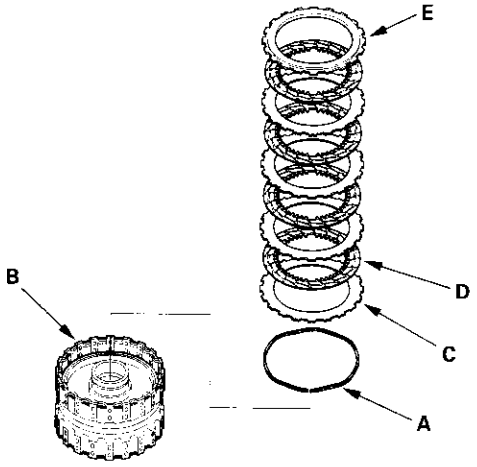


11. Install the snap ring with snap ring pliers.

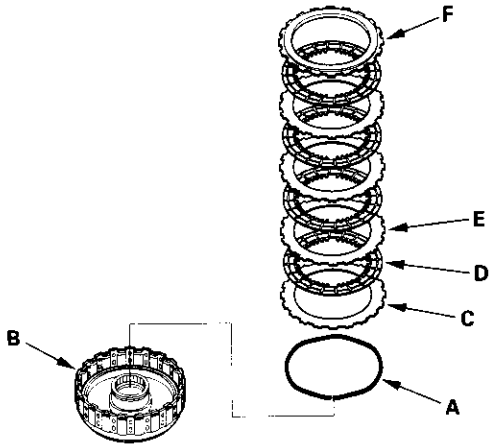


12. Remove the special tools.

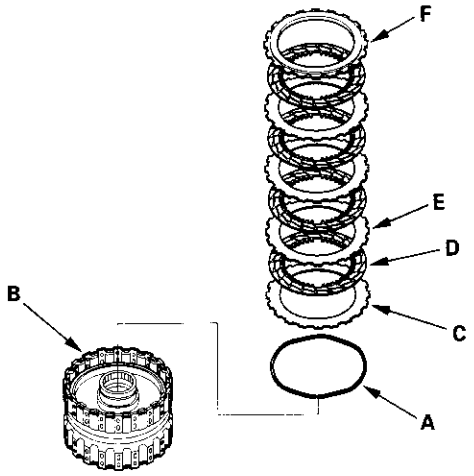
13. Install the waved spring (A) in the 1st clutch drum (B). Starting with the clutch waved-plate, alternately install the clutch plate (4) (C) and discs (4) (D), then install the clutch end plate (E) with the flat side toward the disc.



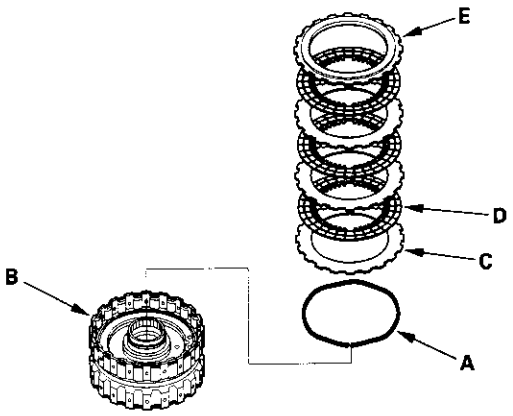
14. Install the waved spring (A) in the 2nd clutch drum (B). Install the clutch flat-plate (C), then starting with the clutch disc, alternately install the clutch disc (4) (D) and waved-plates (3) (E), then install the clutch end plate (F) with the flat side toward the disc.



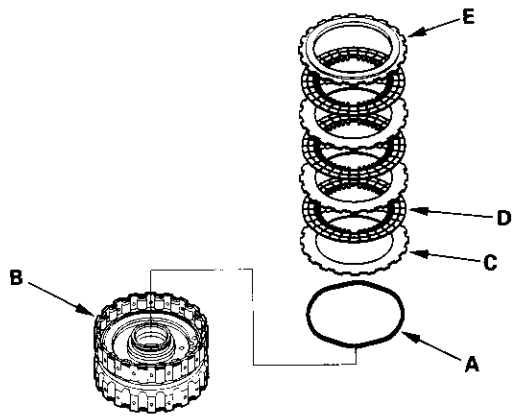
15. Install the waved spring (A) in the 3rd clutch drum (B). Install the clutch flat-plate (C), then starting with the clutch disc, alternately install the clutch disc (4) (D) and waved-plates (3) (E), then install the clutch end plate (F) with the flat side toward the disc.



16. Install the waved spring (A) in the 4th clutch drum (B). Starting with the clutch waved-plate, alternately install the clutch plate (3) (C) and discs (3) (D), then install the clutch end plate (E) with the flat side toward the disc.



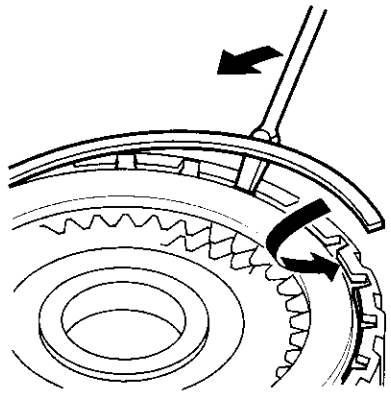
17. Install the waved spring (A) in the 5th clutch drum (B). Starting with the clutch waved-plate, alternately install the clutch plate (3) (C) and discs (3) (D), then install the clutch end plate (E) with the flat side toward the disc.



(cont'd)

Clutch Reassembly (cont'd)

18. Install the snap ring with a screwdriver.

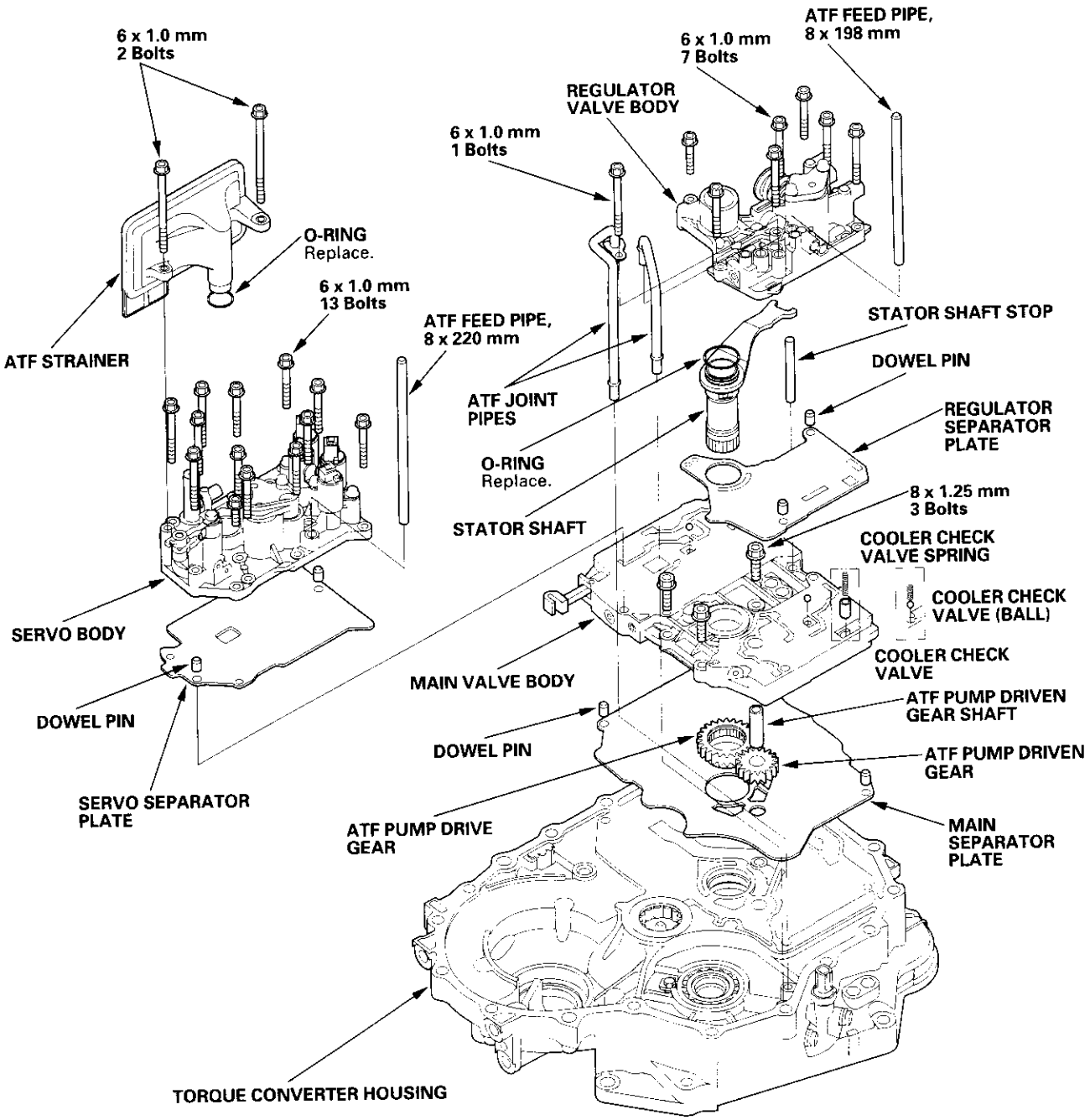


19. Check that the clutch piston moves by applying air pressure into fluid passage.

Valve Bodies and ATF Strainer Installation

Exploded View

Torque Specifications:
6 x 1.0 mm: 12 N·m (1.2 kgf·m, 8.7 lbf·ft)
8 x 1.25 mm: 18 N·m (1.8 kgf·m, 13 lbf·ft)

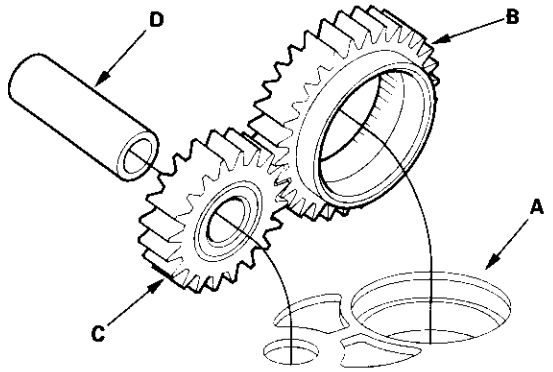


(cont'd)

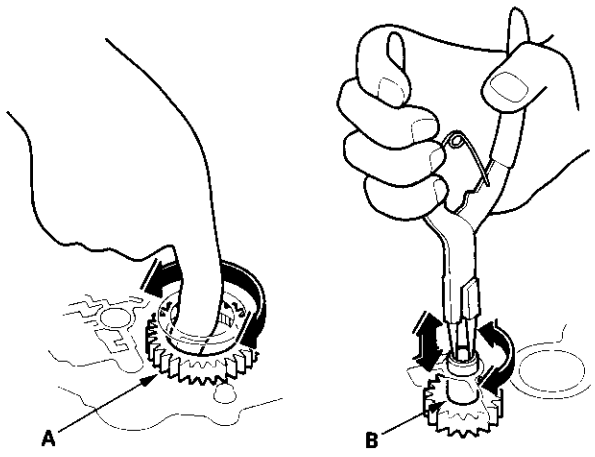
Valve Bodies and ATF Strainer Installation (cont'd)

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

1. Install the main separator plate (A) and two dowel pins on the torque converter housing. Then install the ATF pump drive gear (B), driven gear (C), and ATF pump driven gear shaft (D). Install the ATF pump driven gear with its grooved and chamfered side facing down.



2. Install the main valve body.
3. Make sure the ATF pump drive gear (A) rotates smoothly in the normal operating direction, and the ATF pump driven gear shaft (B) moves smoothly in the axial and normal operating direction.



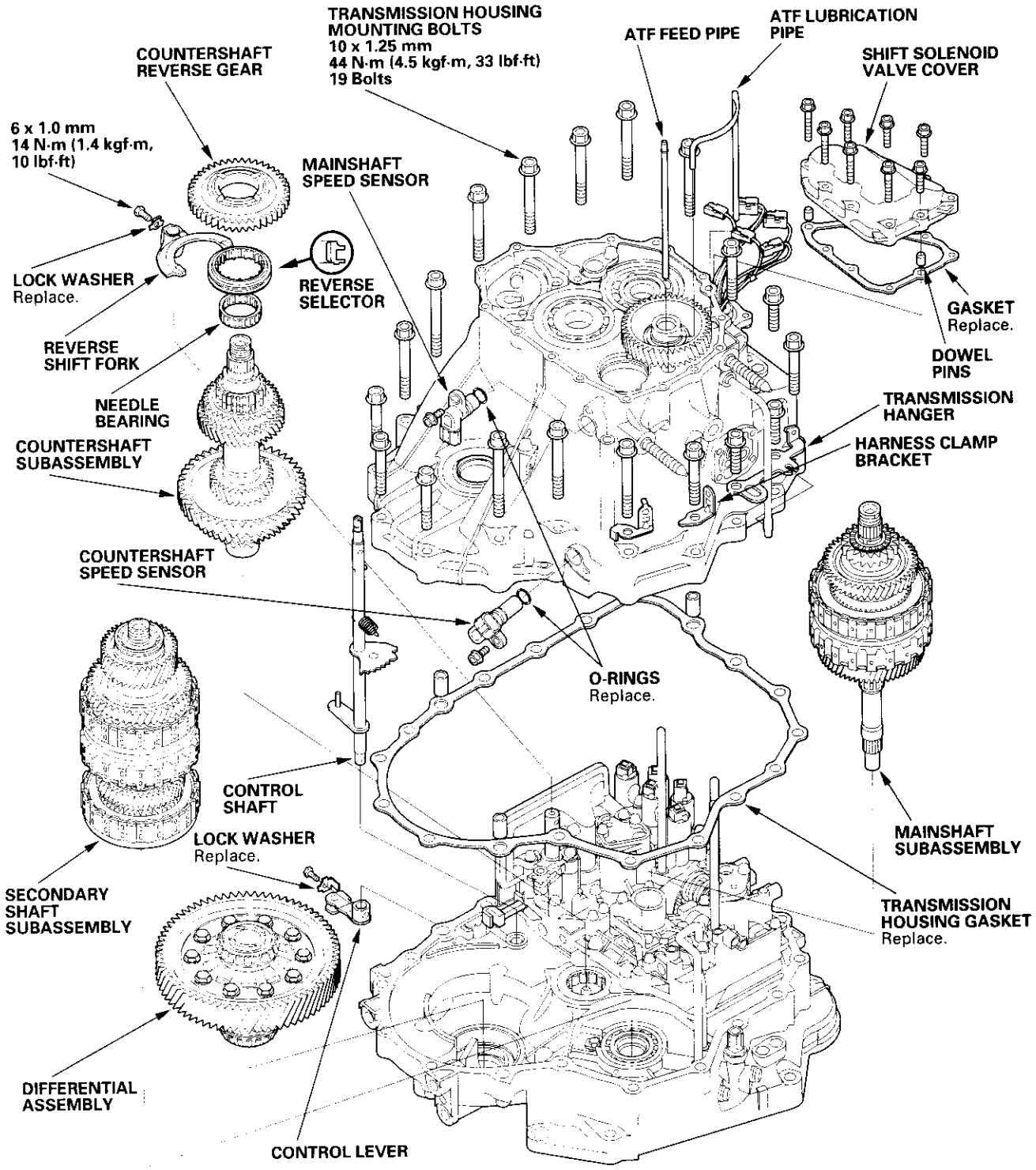
4. If the ATF pump drive gear and ATF pump driven gear shaft do not move smoothly, loosen the main valve body bolts. Realign the ATF pump driven gear shaft, and retighten the bolts to the specified torque, then recheck. Failure to align the ATF pump driven gear shaft correctly will result in a seized ATF pump drive gear or ATF pump driven gear shaft.
5. Make sure that the check balls (two) are in the main valve body, and install the cooler check valve and the cooler check valve spring.

   NOTE:
   - Cooler check valve (ball) applies to the '02 model; transmission number 1000001—1006166.
   - Cooler check valve applies to the '02 model; transmission number 1006167 or later, and '03 model.

6. Install the regulator separator plate and dowel pins (two) on the main valve body.
7. Install the stator shaft and stator shaft stop.
8. Install the regulator valve body (seven bolts).
9. Install the servo separator plate and dowel pins (two) on the main valve body.
10. Install the servo body (13 bolts).
11. Install the ATF strainer (two bolts).
12. Install the ATF joint pipes (one bolt).
13. Install the ATF feed pipes in the regulator valve body and servo body.

Shaft Assemblies and Housing Installation

Exploded View

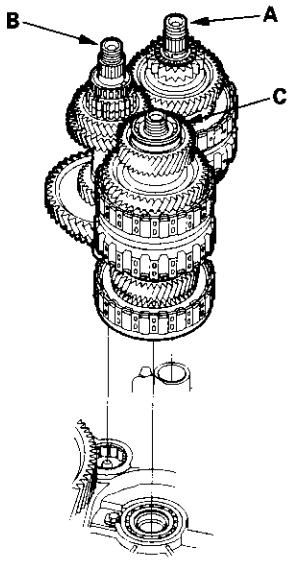


(cont'd)

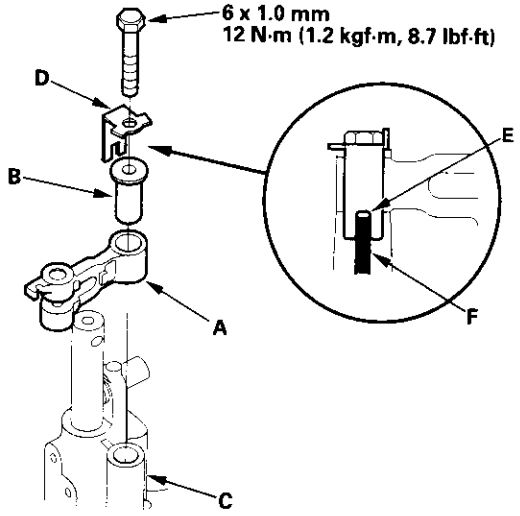
Shaft Assemblies and Housing Installation (cont'd)

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

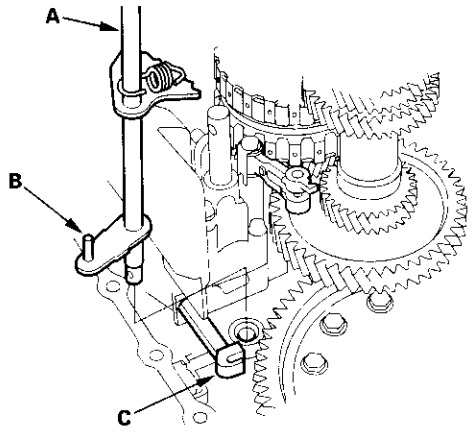
1. Install the differential assembly in the torque converter housing.
2. Assemble the mainshaft, countershaft, and secondary shaft.
3. Join the mainshaft subassembly (A), countershaft subassembly (B), and secondary shaft subassembly (C) together, and install them in the torque converter housing.



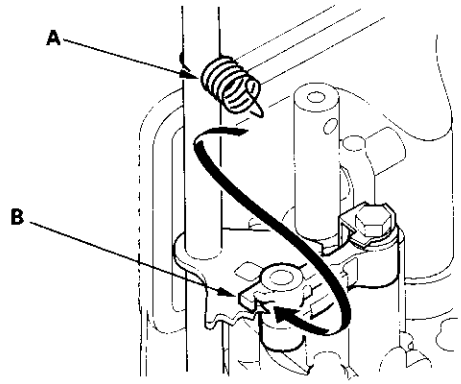
4. If the detent arm was removed, install the detent arm (A) with arm collar (B) on the servo body (C), and install the new lock washer (D) by aligning its cutout (E) with the projection (F) of the servo body. Install and tighten the bolt, then bend the lock tab of the lock washer against the bolt head.



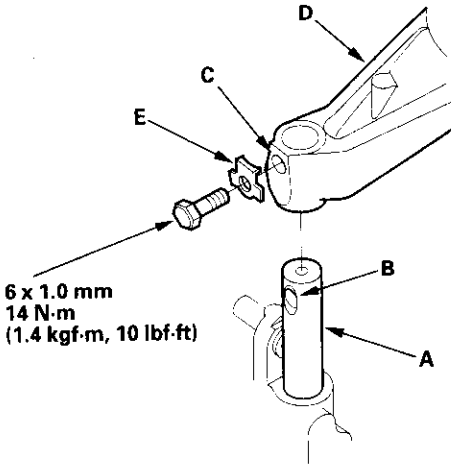
5. Install the control shaft (A) in the torque converter housing aligning the manual valve lever pin (B) on the control shaft with the guide of the manual valve (C). Pull the manual valve gently when aligning the manual valve with the control shaft.



6. Hook the detent arm spring (A) to the detent arm (B).



7. Turn the shift fork shaft (A) so the large chamfered hole (B) is facing the fork bolt hole (C) of the shift fork (D).



8. Install the shift fork and reverse selector together on the shift fork shaft and countershaft. Secure the shift fork to the shift fork shaft with the lock bolt and a new lock washer (E), then bend the lock tab of the lock washer against the bolt head.

9. Install the needle bearing and countershaft reverse gear on the countershaft.

10. Install the reverse idler gear in the transmission housing (see page 14-196).

11. Install the idler gear shaft (see page 14-225), if it was removed.

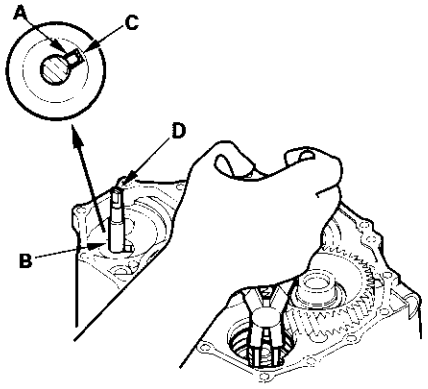
12. Install the three dowel pins and a new gasket on the torque converter housing.

(cont'd)

Shaft Assemblies and Housing Installation (cont'd)

13. Align the spring pin (A) on the control shaft (B) with the transmission housing groove (C) by turning the control shaft.

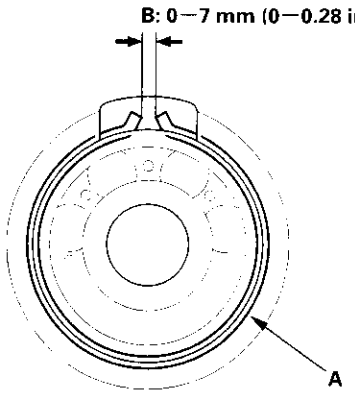
    NOTE: Do not squeeze the end (D) of the control shaft tips together when turning the shaft. If the tips are squeezed together, it will cause a faulty signal or position due to the play between he control shaft and the switch.



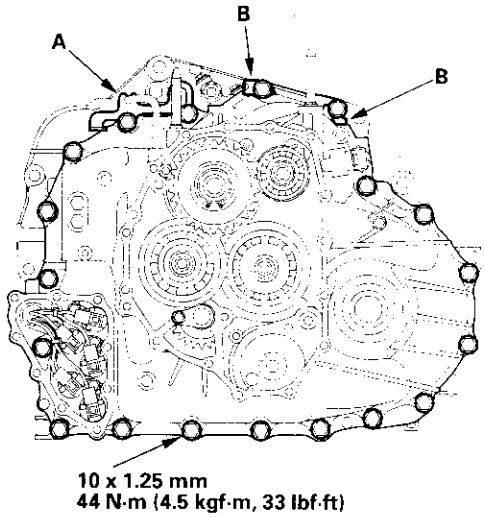
14. Place the transmission housing on the torque converter housing. Do not install the mainshaft and countershaft speed sensors before installing the transmission housing on the torque converter housing.

15. While expanding the snap ring of the secondary shaft bearing using the snap ring pliers, install the transmission housing as the bearing part-way into the housing. Then release the pliers, and push down the housing until it bottoms and until the snap ring snaps in place around the transmission housing snap ring groove.

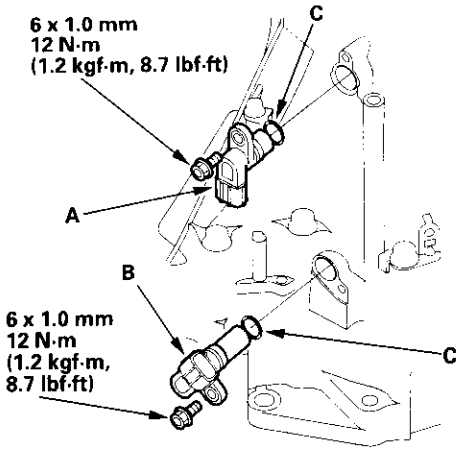
16. Verify that the secondary shaft bearing snap ring (A) is seated in the bearing and housing groove, and that the ring end gap (B) is correct.



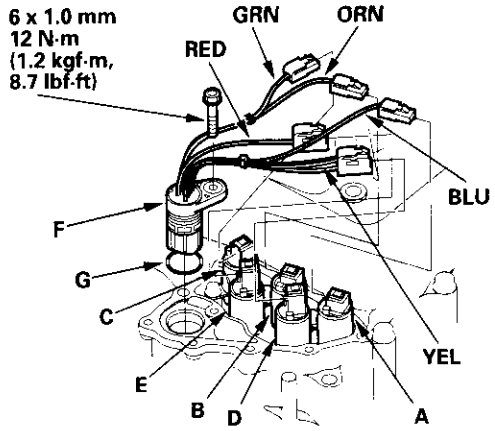
17. Install the transmission housing mounting bolts along with the transmission hanger (A) and harness clamp brackets (B), tighten the 19 bolts in two or three steps in a criss-cross pattern.



18. Install the mainshaft speed sensor (A) and countershaft speed sensor (B) with new O-rings (C).



19. Install the shift solenoid harness connector (F) in the transmission housing with the new O-ring (G).

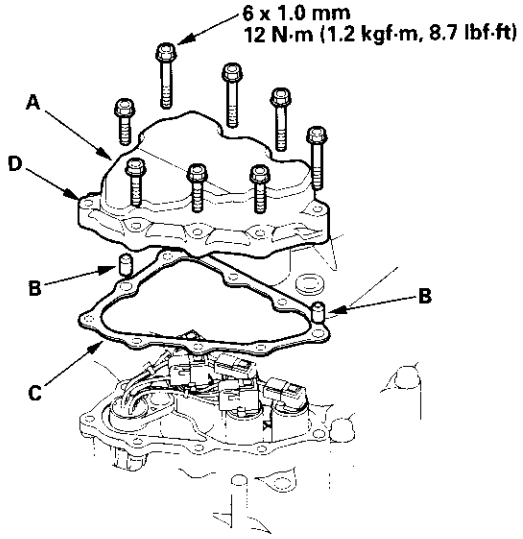


20. Connect the connector (YEL, WHT, and WHT wires) to the shift solenoid valve D.

21. Connect the connectors to respective solenoid valves:

- BLU wire to shift solenoid valve A.
- ORN wire to shift solenoid valve B.
- GRN wire to shift solenoid valve C.
- RED wire to shift solenoid valve E.

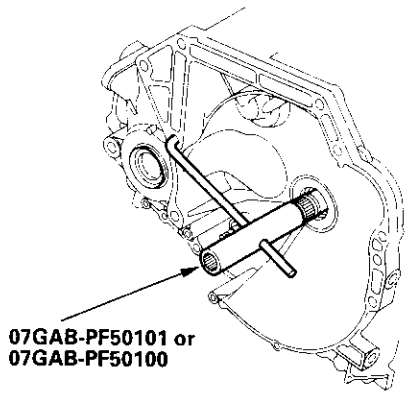
22. Install the shift solenoid valve cover (A) with the two dowel pins (B) and the new gasket (C), and tighten the bolts (eight). Install the one bolt with the bracket for the ATF cooler line in the bolt hole (D) in step 33 in End Cover Installation (see step 34 on page 14-253).



End Cover Installation

Special Tool Required
Mainshaft holder 07GAB-PF50101 or 07GAB-PF50100

1. Install the special tool onto the mainshaft.

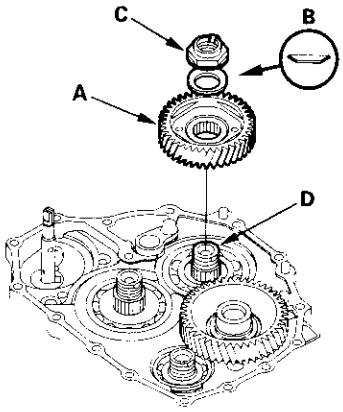


2. Lubricate the following parts with ATF:

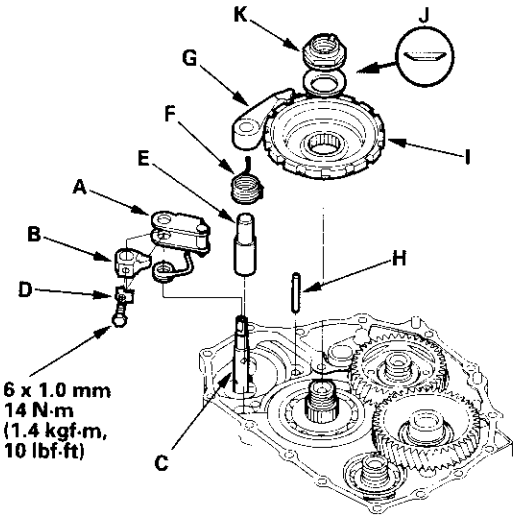
   - Splines and threads of the mainshaft.
   - Splines of the mainshaft idler gear.
   - Old conical spring washer and old locknut.

3. Install the mainshaft idler gear (A), old conical spring washer (B), and old locknut (C) on the mainshaft (D), and tighten the locknut to 226 N·m (23.0 kgf·m, 166 lbf·ft).

   NOTE:
   - Do not tap the idler gear to install.
   - Use a torque wrench to tighten the locknut. Do not use an impact wrench.



4. Install the park lever (A) and park lever stop (B) on the control shaft (C), then install the lock bolt with the new lock washer (D). Do not bend the lock tab of the lock washer until step 18.



5. Install the park pawl shaft (E), park pawl spring (F), park pawl (G), and stop shaft (H) on the transmission housing.

6. Lubricate the following parts with ATF:

   - Threads and splines of the countershaft.
   - Old conical spring washer and old locknut.
   - Areas where the park gear contacts the conical spring washer.

7. Install the park gear (I), old conical spring washer (J), and old locknut (K) on the countershaft.

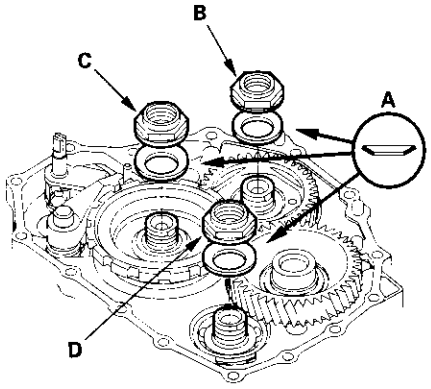
8. Lift the park pawl up, and engage it with the park gear, then tighten the locknut to 226 N·m (23.0 kgf·m, 166 lbf·ft).

   NOTE:
   - Do not tap the park gear to install.
   - Use a torque wrench to tighten the locknut. Do not use an impact wrench.
   - Countershaft locknut has left-hand threads.

9. Remove the locknuts and conical spring washers from the mainshaft and countershaft.

10. Lubricate the threads of the shafts, the new locknuts, and the new conical spring washers with ATF.

11. Install the new conical spring washers (A) with facing stamped mark side up in the direction shown, and install the new mainshaft locknut (B), the new countershaft locknut (C), and the new secondary shaft locknut (D).

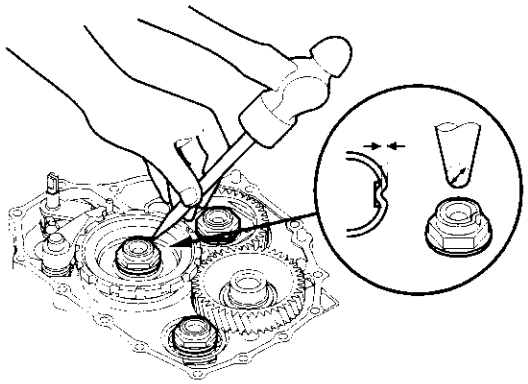


12. Tighten the locknuts to 167 N·m (17.0 kgf·m, 123 lbf·ft).

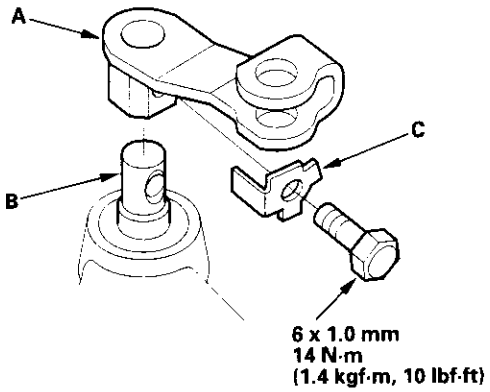
NOTE:
- Be sure to install the conical spring washers in the direction shown.
- Use a torque wrench to tighten the locknut. Do not use an impact wrench.
- Countershaft and secondary shaft locknuts have left-hand threads.

13. Remove the special tool from the mainshaft.

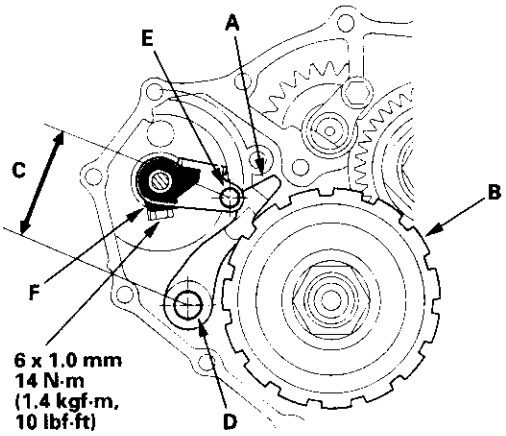
14. Stake the locknuts into the shafts with a punch.



15. Install the control level (A) on the control shaft (B), and install the bolt with the new lock washer (C), then bend the lock tab of the lock washer against the bolt head.



16. Set the park lever in the [P] position, then verify that the park pawl (A) engages the park gear (B).



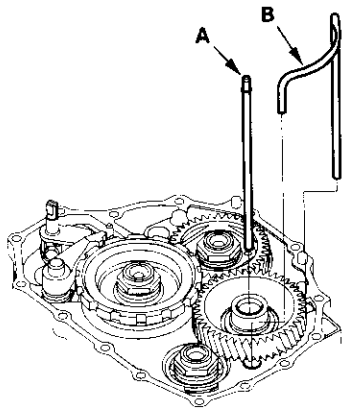
17. If the park pawl does not engage fully, check the distance (C) between the pawl shaft (D) and the park lever roller pin (E) (see page 14-188).

18. Tighten the lock bolt, and bend the lock tab of the lock washer (F) against the bolt head.

(cont'd)

End Cover Installation (cont'd)

19. Install the ATF feed pipe (A) into the idler gear shaft, and install the ATF lubrication pipe (B) into the transmission housing.

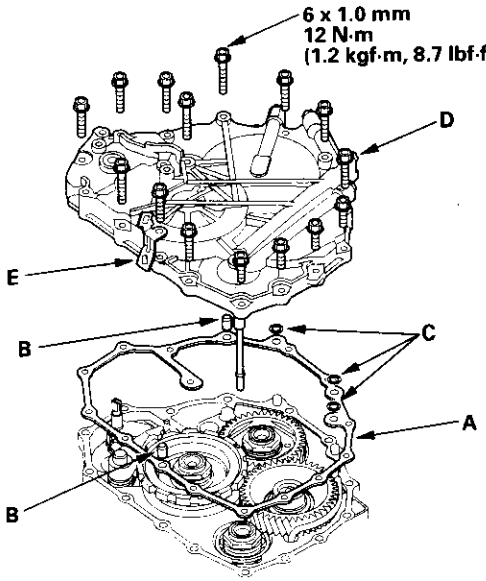


20. Install the end cover:

- '02 model (transmission number 1000001–1006166)

–1 Install the new gasket (A) on the transmission housing, and install the two dowel pins (B) and new O-rings (C) over the top of the ATF feed pipes.

–2 Install the end cover (D) with the 6 x 1.0 mm bolts (15 bolts) and harness clamp bracket (E).



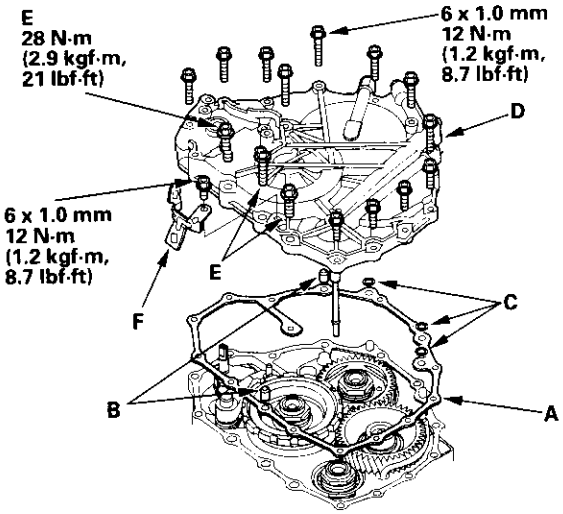
21. Install the end cover:

- '02 model (transmission number 1006167 or later), and '03 model

–1 Install the new gasket (A) on the transmission housing, and install the two dowel pins (B) and new O–rings (C) over the top of the ATF feed pipes.

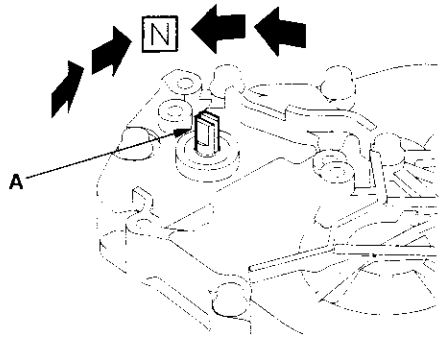
–2 Install the end cover (D), and tighten the three special bolts (E) and the 6 x 1.0 mm bolts (12 bolts).

–3 Install the harness clamp bracket (F) on the end cover.



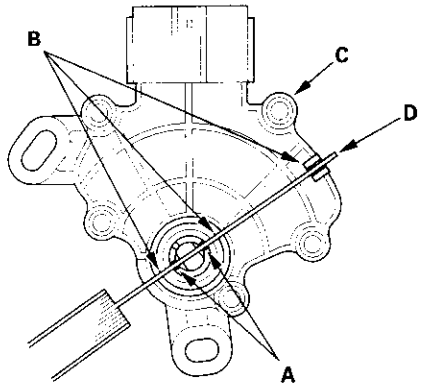
22. Set the control shaft (A) to the [N] position by turning the control lever on the torque converter side.

    NOTE: Do not squeeze the end of the control shaft tips together when turning the shaft. If the tips are squeezed together it will cause a faulty signal or position due to the play between the control shaft and the switch.

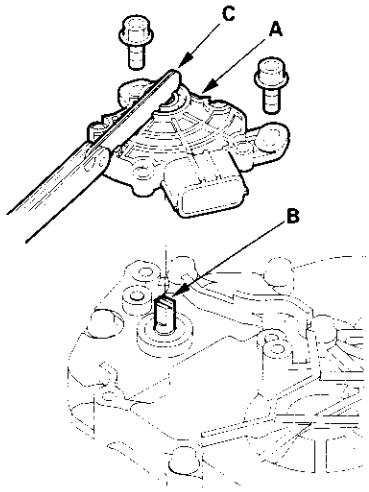


23. Align the cutouts (A) on the rotary-frame with the neutral positioning cutouts (B) on the transmission range switch (C), then put a 2.0 mm (0.08 in.) feeler gauge blade (D) in the cutouts to hold the switch in the [N] position.

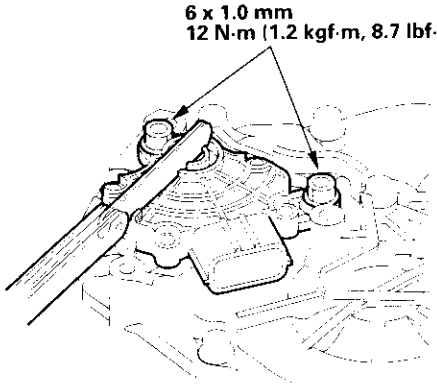
    NOTE: Be sure to use a 2.0 mm (0.08 in.) blade or equivalent to hold the switch in the [N] position.



24. Install the transmission range switch (A) gently on the control shaft (B) with holding it in the [N] position with the 2.0 mm (0.08 in.) blade (C).



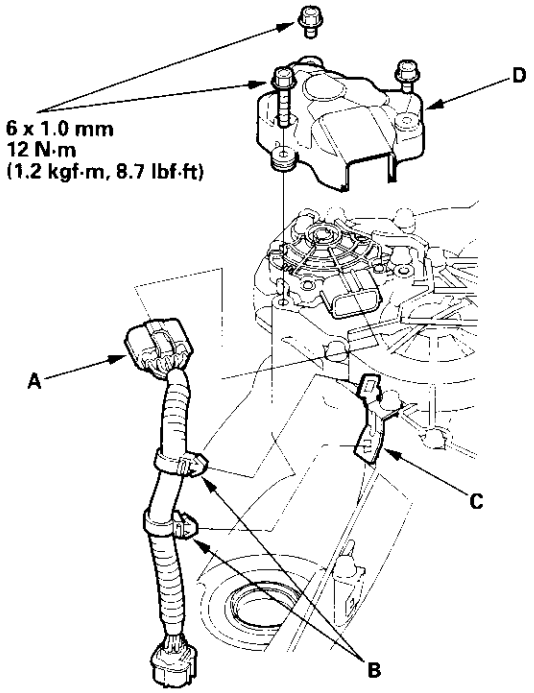
25. Tighten the bolts on the transmission range switch while you continue to hold it in the [N] position. Do not move the transmission range switch when tightening the bolts. Remove the feeler gauge.



(cont'd)

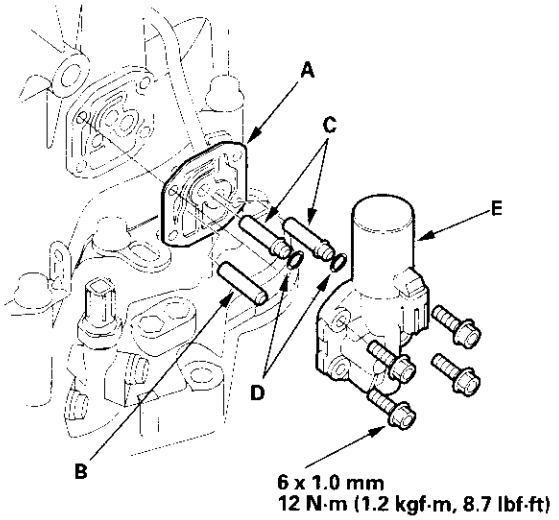
End Cover Installation (cont'd)

26. Connect the transmission range switch connector (A) securely, then install the harness clamps (B) on the clamp bracket (C).



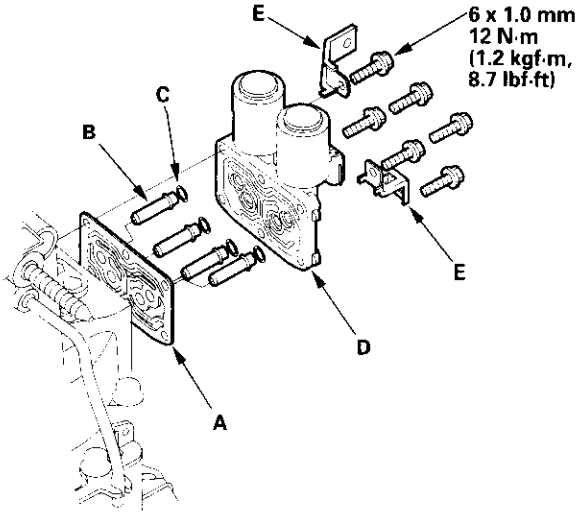
27. Install the transmission range switch cover (D).

28. Install the new gasket (A) on the transmission housing, and install the ATF pipe (B) and ATF joint pipes (C).



29. Install the new O-rings (D) over the ATF joint pipes.

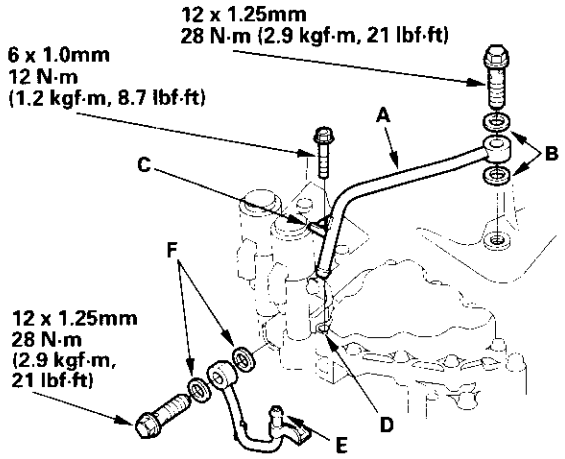
30. Install the A/T clutch pressure control solenoid valve A (E).
31. Install the new gasket (A) on the transmission housing, and install the ATF joint pipes (B).



32. Install the new O-rings (C) over the ATF joint pipes.

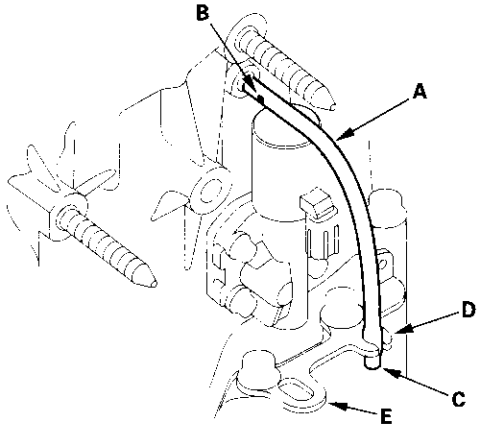
33. Install the A/T clutch pressure control solenoid valves B and C (D), and harness clamp brackets (E).

34. Install the ATF cooler inlet line (A) with the new sealing washers (B), and install the bracket (C) of the ATF cooler inlet line on the shift solenoid valve cover hole (D) (described in step 22 in Shaft Assemblies and ATF Strainer Installation).



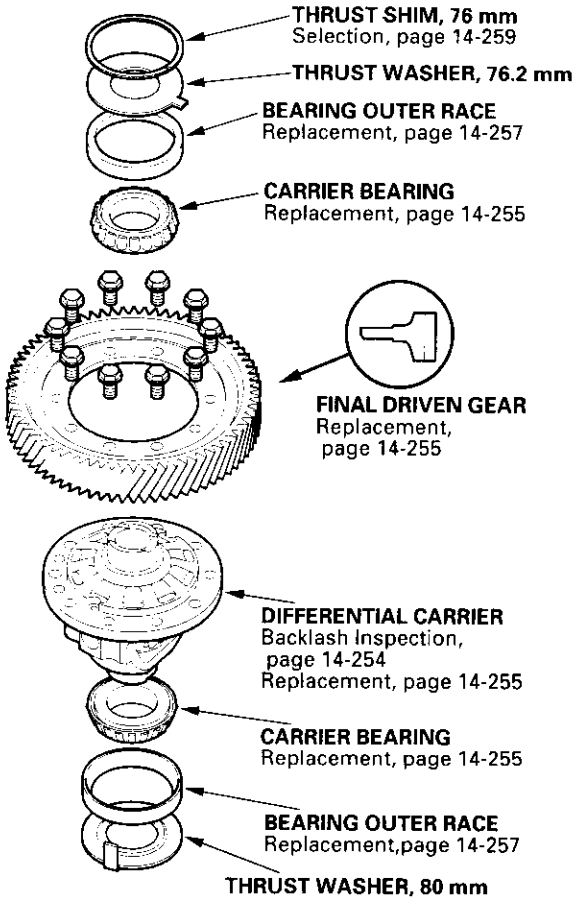
35. Install the ATF cooler outlet line (E) with the new sealing washers (F).

36. Install the breather tube (A) with facing the dot (B) on the tube in a rearward position (differential side), then install the other end (C) in the slot (D) of the transmission hanger (E).



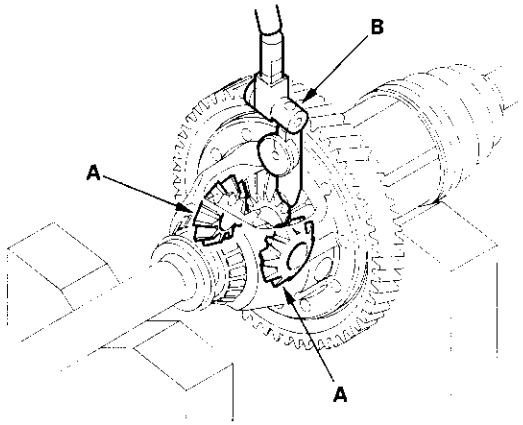
37. Install the ATF dipstick.

Component Location Index



Backlash Inspection

1. Install the driveshaft and intermediate shaft on the differential, then place the axles on V-blocks.



2. Check the backlash of the pinion gears (A) with a dial indicator (B).

   STANDARD: 0.05 – 0.15 mm (0.002 – 0.006 in.)

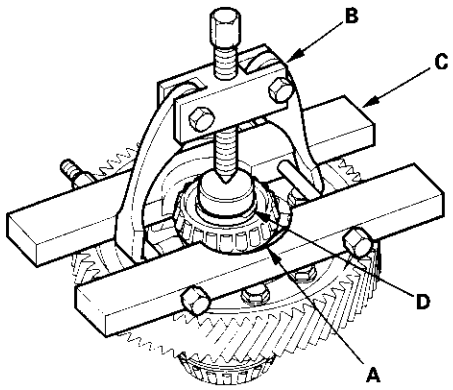
3. If the backlash is out of standard, replace the differential carrier.

Carrier Bearing Replacement

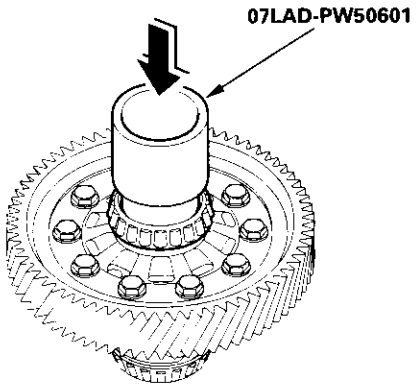
Special Tool Required
Attachment, 40 x 50 mm 07LAD-PW50601

NOTE:
- The bearing and bearing outer race should be replaced as a set.
- Inspect and adjust the carrier bearing preload whenever bearing is replaced.
- Check the bearing for wear and rough rotation. If the bearing is OK, removal is not necessary.

1. Remove the carrier bearing (A) with a commercially available puller (B), bearing separator (C), and stepper adapter (D).



2. Install the new bearings with the special tool using the small end and a press until it bottoms. Press the bearing on securely so there is no clearance between the bearing and the differential carrier.

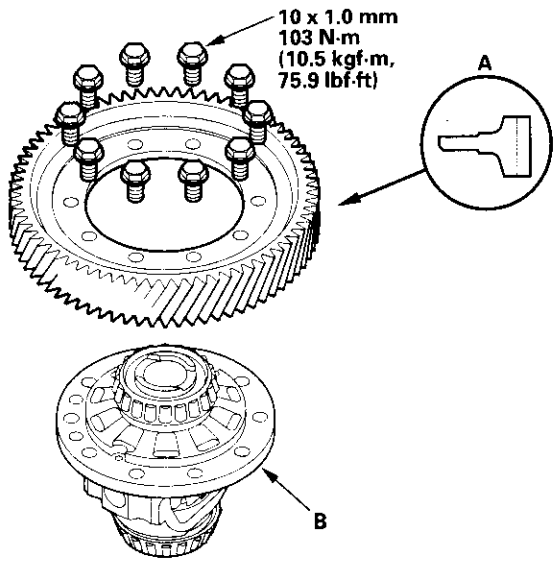


Differential Carrier, Final Driven Gear Replacement

1. Remove the final driven gear from the differential carrier, and replace the differential carrier or final driven gear.

2. Install the final driven gear (A) in the direction shown on the differential carrier (B).

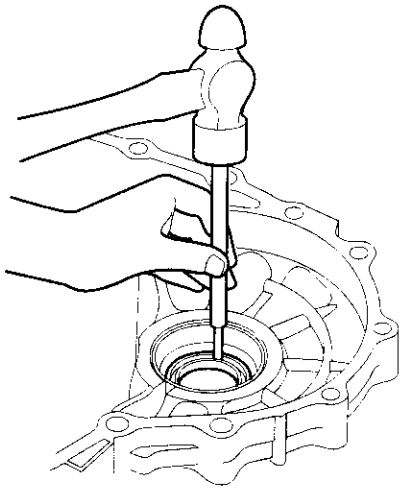
   NOTE: Differential carrier bolts have left-hand threads.



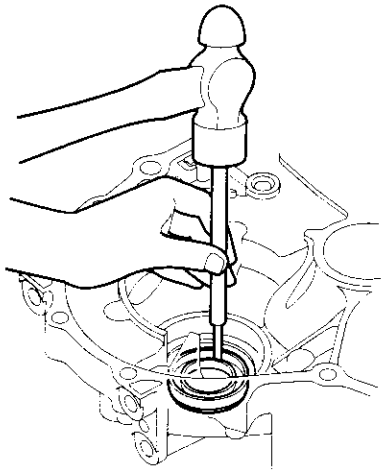
Oil Seal Replacement

Special Tools Required
- Driver 07749-0010000
- Oil seal driver attachment 07947-SD90101
- Oil seal driver attachment 07JAD-PH80101

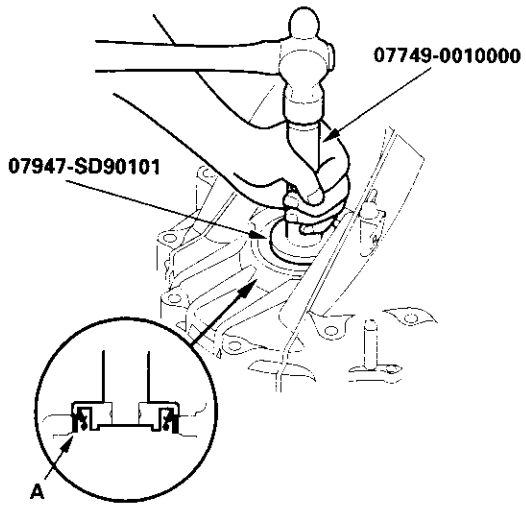
1. Remove the oil seal from the transmission housing.



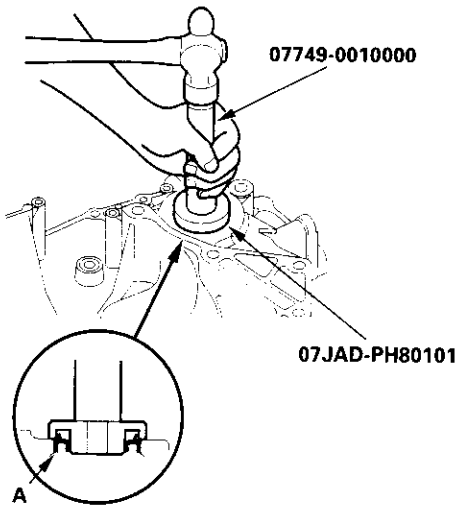
2. Remove the oil seal from the torque converter housing.



3. Install the new oil seal (A) in the transmission housing with the special tools.



4. Install the new oil seal (A) in the torque converter housing with the special tools.



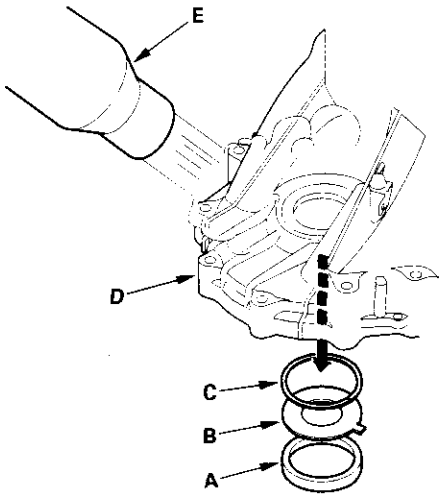
Carrier Bearing Outer Race Replacement

Special Tools Required
- Driver 07749-0010000
- Attachment, 78 x 90 mm 07GAD-SD40101
- Attachment, 72 x 75 mm 07746-0010600

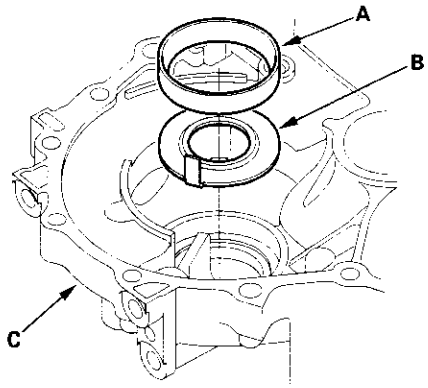
NOTE:
- The bearing and bearing outer race should be replaced as a set.
- Replace the bearing with a new one whenever the outer race is replaced.
- Do not use the thrust shim on the torque converter housing.
- Adjust bearing preload after replacing the bearing and outer race.
- Cost all parts with ATF during installation.

1. Remove the bearing outer race (A), 76.2 mm thrust washer (B), and 76 mm thrust shim (C) from the transmission housing (D) by heating the housing to about 212°F (100°C) with heat gun (E). Do not heat the housing in excess of 212°F (100°C).

   NOTE: Let the transmission housing cool to room temperature before installing the bearing outer race.

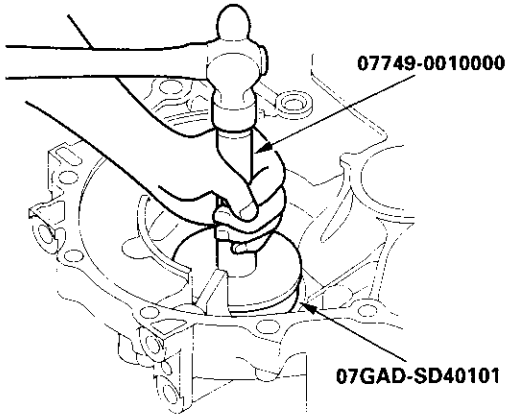


2. Remove the bearing outer race (A) and 80 mm thrust washer (B) from the torque converter housing (C).



3. Install the 80 mm thrust washer and the new bearing outer race in the torque converter housing.

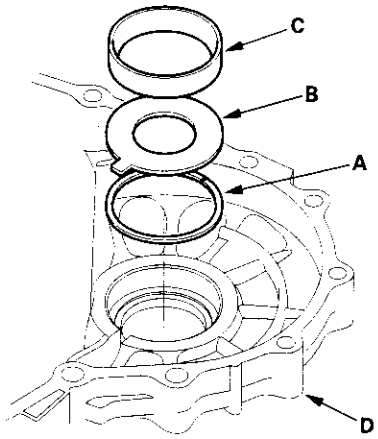
4. Drive the bearing outer race to install securely in the housing with the special tools.



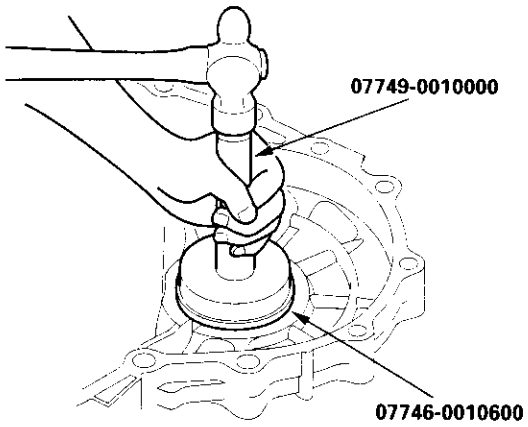
(cont'd)

Carrier Bearing Outer Race Replacement (cont'd)

5. Install the 76 mm thrust shim (A), 76.2 mm thrust washer (B), and the new bearing outer race (C) in the transmission housing (D).



6. Drive the bearing outer race in securely so there is no clearance between the outer race, thrust washer, shim, and housing with the special tools.



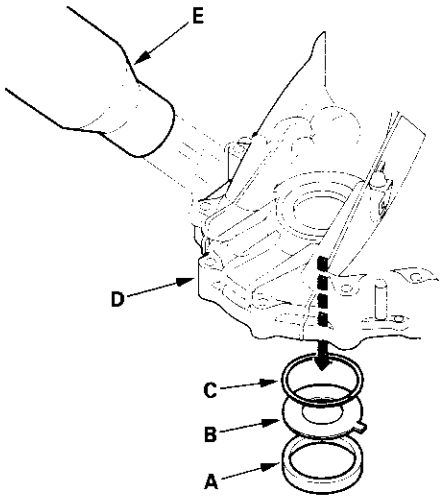
Carrier Bearing Preload Inspection

Special Tools Required
- Driver 07749-0010000
- Attachment, 72 x 75 mm 07746-0010600
- Preload inspection tool 07HAJ-PK40201

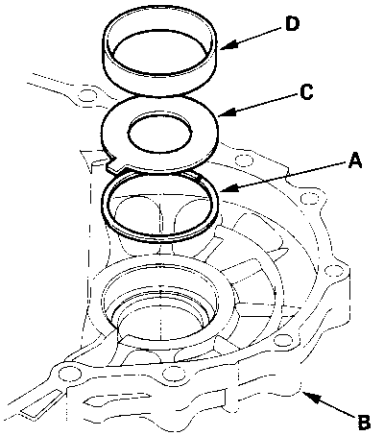
NOTE:
- If the transmission housing, torque converter housing, differential carrier, carrier bearing and outer race, or thrust shim were replaced, the bearing preload must be adjusted.
- Coat all parts with ATF during installation.
- Do not use the thrust shim in the torque converter housing.

1. Remove the bearing outer race (A), 76.2 mm thrust washer (B), and 76 mm thrust shim (C) from the transmission housing (D) by heating the housing to about 212°F (100°C) with heat gun (E). Do not heat the housing in excess of 212°F (100°C).

   NOTE: Let the transmission housing cool to room temperature before adjusting the bearing preload.

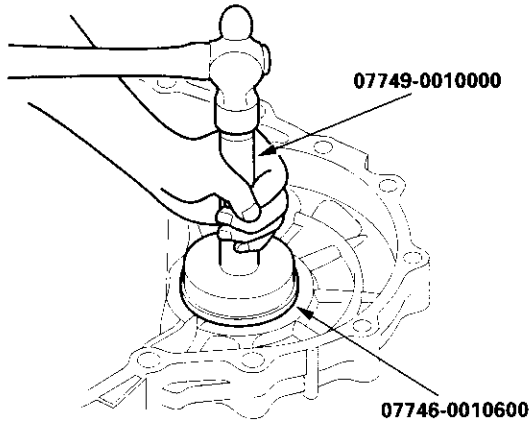


2. Install the 76 mm thrust shim of 2.6 mm (0.102 in.) in thickness (P/N 41449-PK4-000) (A) in the transmission housing (B).



3. Install the 76.2 mm thrust washer (C) and the bearing outer race (D) in the transmission housing.

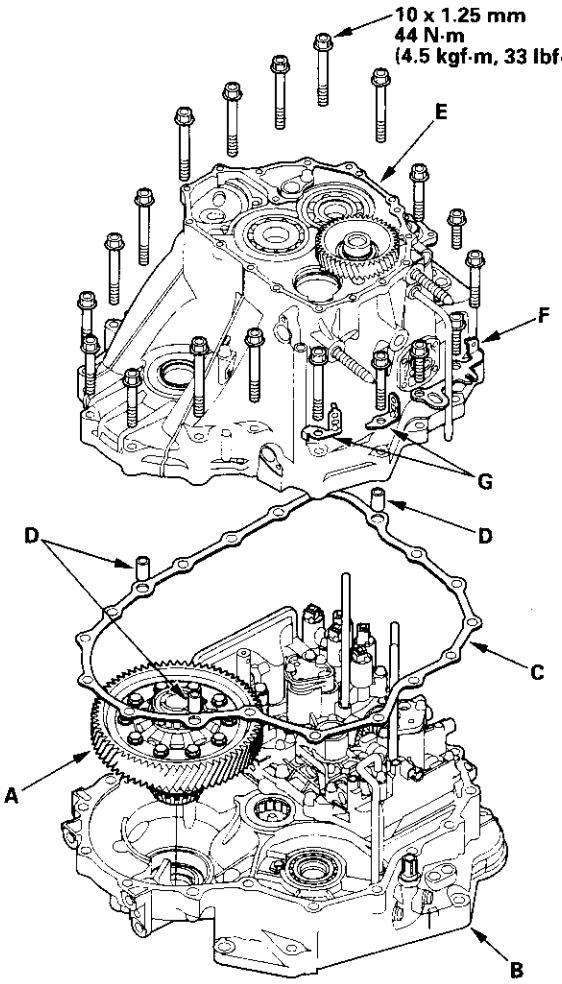
4. Drive the bearing outer race in securely so there is no clearance between the outer race, thrust washer, shim, and housing with the special tools.



(cont'd)

Carrier Bearing Preload Inspection (cont'd)

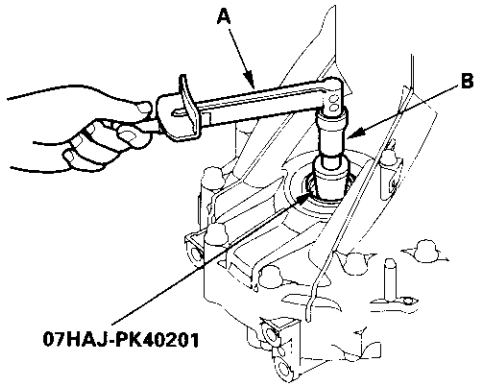
5. Install the differential assembly (A) in the torque converter housing (B), and install the gasket (C) and dowel pins (D) on the housing.



6. Install the transmission housing (E) with the transmission hanger (F) and harness clamp brackets (G), then tighten the bolts.

7. Rotate the differential assembly in both directions to seat the bearings.

8. Measure the starting torque of the differential assembly with the special tool, a torque wrench (A), and socket (B). Measure the starting torque at normal room temperature in both directions.



9. If the measurement is out of standard, remove the thrust shim and select the thrust shim from the table below. Install the new thrust shim and recheck. To increase the starting torque, increase the thickness of the thrust shim. To decrease the starting torque, decrease the thickness of the shim. Changing the shim to the next size will increase or decrease starting torque about 0.3 – 0.4 N·m (3 – 4 kgf·cm, 3 – 3 lbf·in).

THRUST SHIM, 76 mm

No.	Part Number	Thickness
S	41438-PX4-700	2.05 mm (0.081 in.)
T	41439-PX4-700	2.10 mm (0.083 in.)
U	41440-PX4-700	2.15 mm (0.085 in.)
A	41441-PK4-000	2.20 mm (0.087 in.)
B	41442-PK4-000	2.25 mm (0.089 in.)
C	41443-PK4-000	2.30 mm (0.091 in.)
D	41444-PK4-000	2.35 mm (0.093 in.)
E	41445-PK4-000	2.40 mm (0.094 in.)
F	41446-PK4-000	2.45 mm (0.096 in.)
G	41447-PK4-000	2.50 mm (0.098 in.)
H	41448-PK4-000	2.55 mm (0.100 in.)
I	41449-PK4-000	2.60 mm (0.102 in.)
J	41450-PK4-000	2.65 mm (0.104 in.)
K	41451-PK4-000	2.70 mm (0.106 in.)
L	41452-PK4-000	2.75 mm (0.108 in.)
M	41453-PK4-000	2.80 mm (0.110 in.)
N	41454-PK4-000	2.85 mm (0.112 in.)
O	41455-PK4-000	2.90 mm (0.114 in.)
P	41456-PK4-000	2.95 mm (0.116 in.)
Q	41457-PK4-000	3.00 mm (0.118 in.)
R	41458-PK4-000	3.05 mm (0.120 in.)
0A	41428-PRP-000	1.55 mm (0.061 in.)
0B	41429-PRP-000	1.60 mm (0.063 in.)
0C	41430-PRP-000	1.65 mm (0.065 in.)
0D	41431-PRP-000	1.70 mm (0.067 in.)
0E	41432-PRP-000	1.75 mm (0.069 in.)
0F	41433-PRP-000	1.80 mm (0.071 in.)
0G	41434-PRP-000	1.85 mm (0.073 in.)
0H	41435-PRP-000	1.90 mm (0.075 in.)
0I	41436-PRP-000	1.95 mm (0.077 in.)
0J	41437-PRP-000	2.00 mm (0.079 in.)

(cont'd)

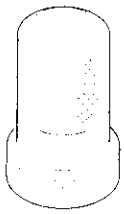
THRUST SHIM, 76 mm (cont'd)

No.	Part Number	Thickness
A	41428-PAX-000	1.575 mm (0.062 in.)
B	41429-PAX-000	1.625 mm (0.064 in.)
C	41430-PAX-000	1.675 mm (0.066 in.)
D	41431-PAX-000	1.725 mm (0.068 in.)
E	41432-PAX-000	1.775 mm (0.070 in.)
F	41433-PAX-000	1.825 mm (0.072 in.)
G	41434-PAX-000	1.875 mm (0.074 in.)
H	41435-PAX-000	1.925 mm (0.076 in.)
I	41436-PAX-000	1.975 mm (0.078 in.)
J	41437-PAX-000	2.025 mm (0.080 in.)
K	41438-PAX-000	2.075 mm (0.082 in.)
L	41439-PAX-000	2.125 mm (0.084 in.)
M	41440-PAX-000	2.175 mm (0.086 in.)
N	41441-PAX-000	2.225 mm (0.088 in.)
O	41442-PAX-000	2.275 mm (0.090 in.)
P	41443-PAX-000	2.325 mm (0.092 in.)
Q	41444-PAX-000	2.375 mm (0.094 in.)
R	41445-PAX-000	2.425 mm (0.095 in.)
S	41446-PAX-000	2.475 mm (0.097 in.)
T	41447-PAX-000	2.525 mm (0.099 in.)
U	41448-PAX-000	2.575 mm (0.101 in.)
V	41449-PAX-000	2.625 mm (0.103 in.)
W	41450-PAX-000	2.675 mm (0.105 in.)
X	41451-PAX-000	2.725 mm (0.107 in.)
Y	41452-PAX-000	2.775 mm (0.109 in.)
Z	41453-PAX-000	2.825 mm (0.111 in.)
0A	41454-PAX-000	2.875 mm (0.113 in.)
0B	41455-PAX-000	2.925 mm (0.115 in.)
0C	41456-PAX-000	2.975 mm (0.117 in.)
0D	41457-PAX-000	3.025 mm (0.119 in.)

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	07XAC-001020A	Threaded Adapter, 24 x 1.5 mm	1
⑥	07746-0010400	Attachment, 52 x 55 mm	1
⑦	07746-0030400	Driver, 35 mm I.D.	1
⑧	07749-0010000	Driver	1
⑨	07947-SB00100	Oil Seal Driver	1



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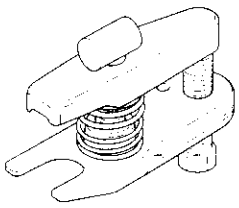

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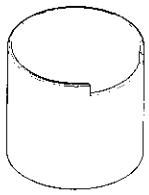

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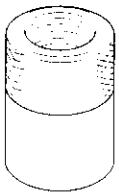
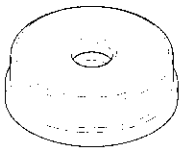
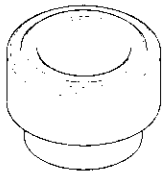


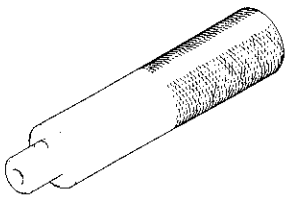
④ ⑤



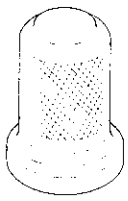
⑥



⑦



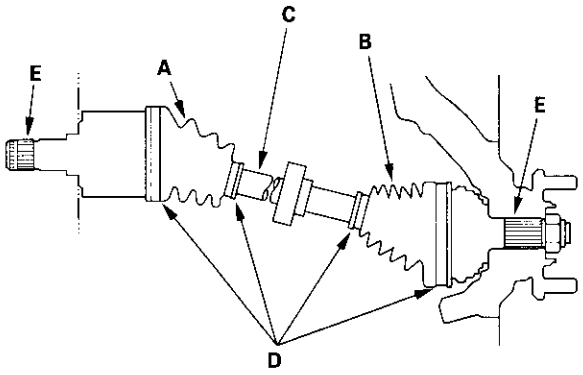
⑧



⑨

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.

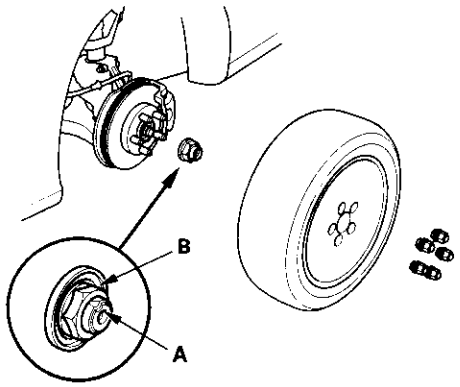
Driveshafts Removal

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).

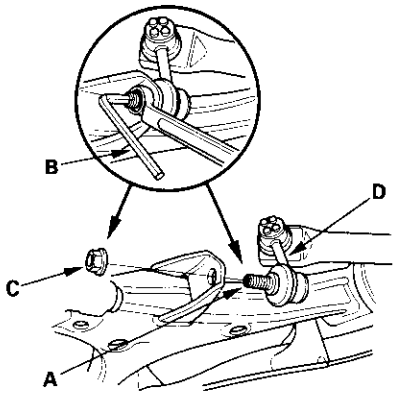
3. Remove the wheel nuts and front wheels.



4. Lift up the locking tab (A) on the spindle nut (B), then remove the nut.

5. If the driveshaft is removed, drain the transmission fluid. Reinstall the drain plug using a new washer:
   - Manual transmission (see page 13-4)
   - Automatic transmission (see page 14-139)

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.

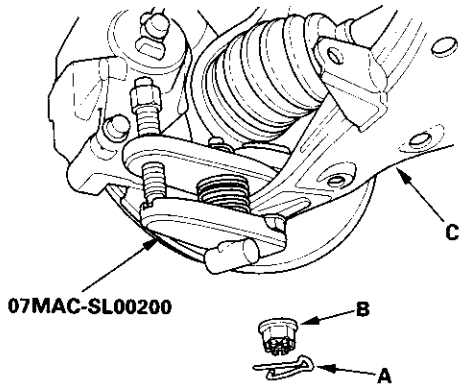


(cont'd)

Driveshafts Removal (cont'd)

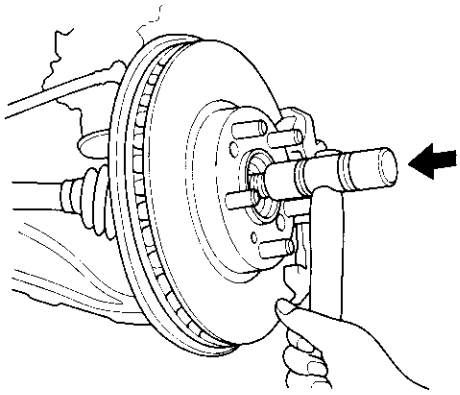
7. Remove the lock pin (A) from the lower arm ball joint castle nut (B), and remove the nut.

   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.



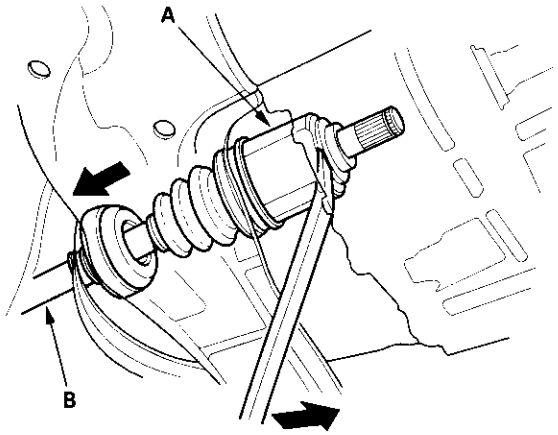
8. Separate the ball joint from the lower arm (C) with the special tool (see page 18-10). Be careful not to dislodge the lower ball joint from the knuckle.

9. Pull the knuckle outward, and remove the driveshaft outboard joint from the front wheel hub using a plastic hammer.

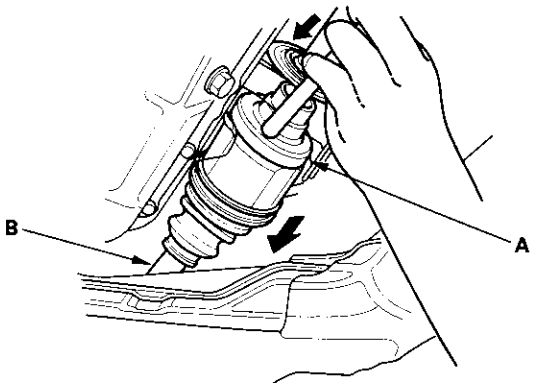


10. Pry/tap the inboard joint (A) with a prybar, and remove the driveshaft from the differential case or bearing support as an assembly. Do not pull on the driveshaft (B) because the inboard joint may come apart. Draw the driveshaft straight out to avoid damaging the differential oil seal.

Left driveshaft:



Right driveshaft:

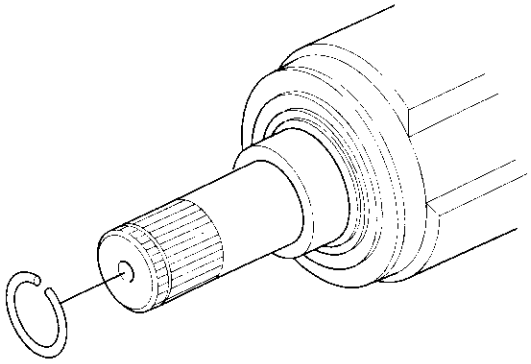


Driveshafts Disassembly

Special Tools Required
- Threaded adapter, 22 x 1.5 mm 07XAC-001010A
- Threaded adapter, 24 x 1.5 mm 07XAC-001020A
- Boot band pincers, commercially available
- Slide hammer, commercially available

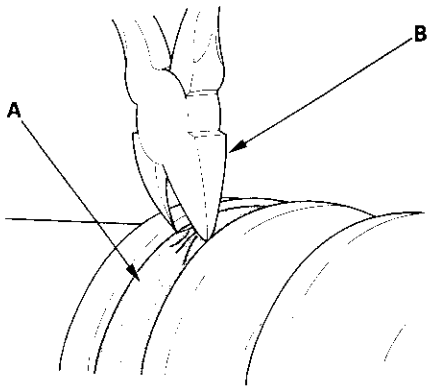
Inboard Joint Side:

1. Remove the set ring from the inboard joint.

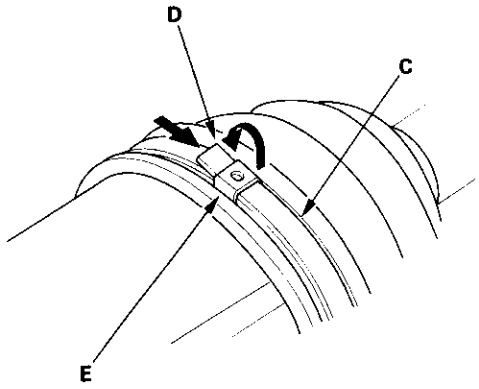


2. Remove the boot bands. Be careful not to damage the boot and dynamic damper.
   - If the boot band is a welded type (A), cut the boot band (B).
   - If the boot band is a double loop type (C), lift up the band bend (D), and push it into the clip (E).
   - If the boot band is a low profile type (F), pinch the boot band using a commercially available boot band pincers (G).

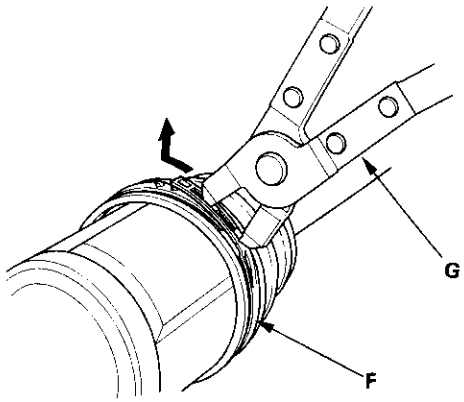
Welded Type



Double Loop Type



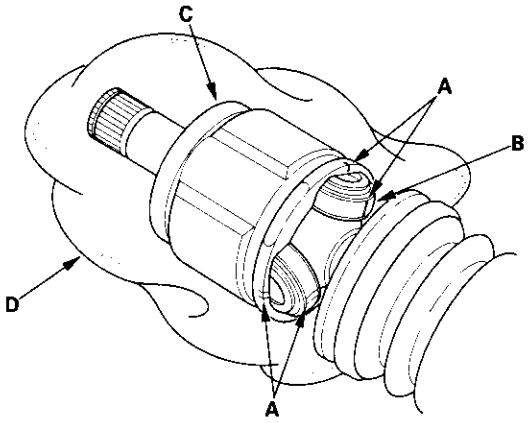
Low Profile Type



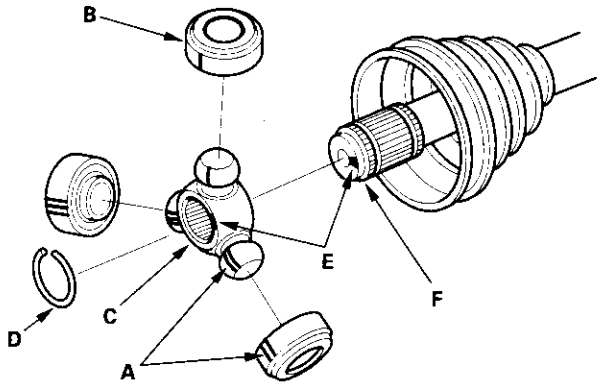
(cont'd)

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.

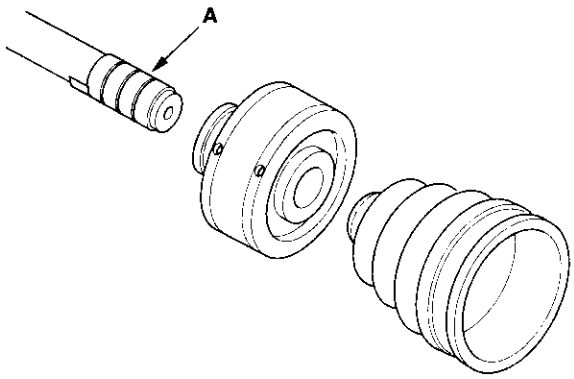


5. Remove the circlip (D).

6. Make a mark (E) on the spider (C) and driveshaft (F) 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 and dynamic damper.



9. Remove the inboard boot and dynamic damper. Be careful not to damage the boot and dynamic damper.

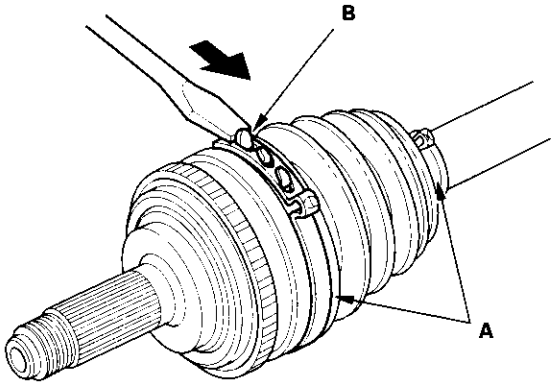
10. Remove the vinyl tape.

Outboard Joint Side:

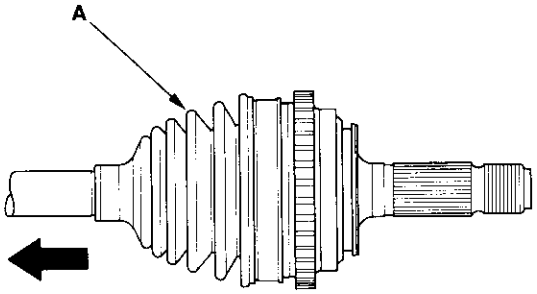
1. Remove the boot bands. Be careful not to damage the boot and dynamic damper.

   • If the boot band is an ear clamp type (A), lift up the three tabs (B) with a screwdriver.

Ear Clamp Type

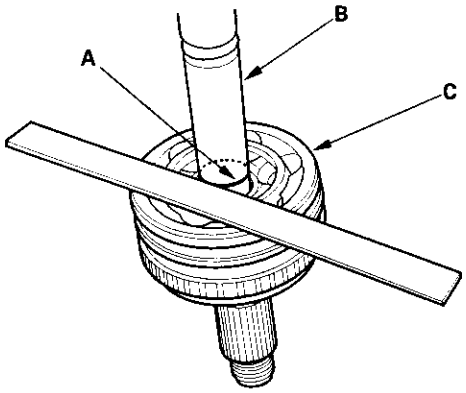


2. Slide the outboard boot (A) to the inboard joint side. Be careful not to damage the boot.



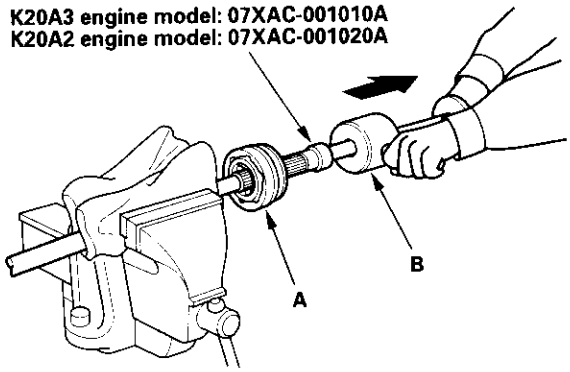
3. Wipe off the grease to expose the driveshaft and the outboard joint inner race.

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.

K20A3 engine model: 07XAC-001010A
K20A2 engine model: 07XAC-001020A



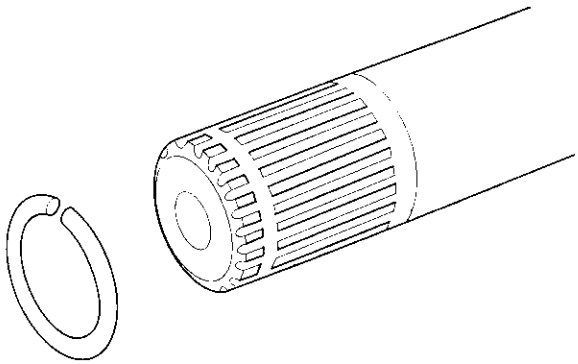
6. Remove the outboard joint (A) using the special tool and a commercially available 5/8″ × 18 slide hammer (B).

7. Remove the driveshaft from the vise.

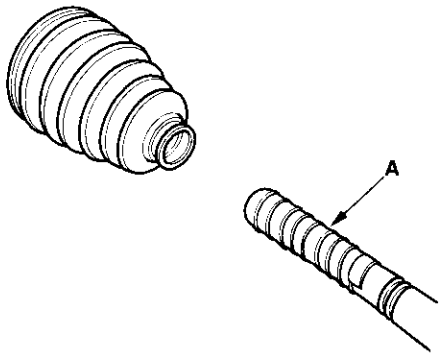
(cont'd)

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.

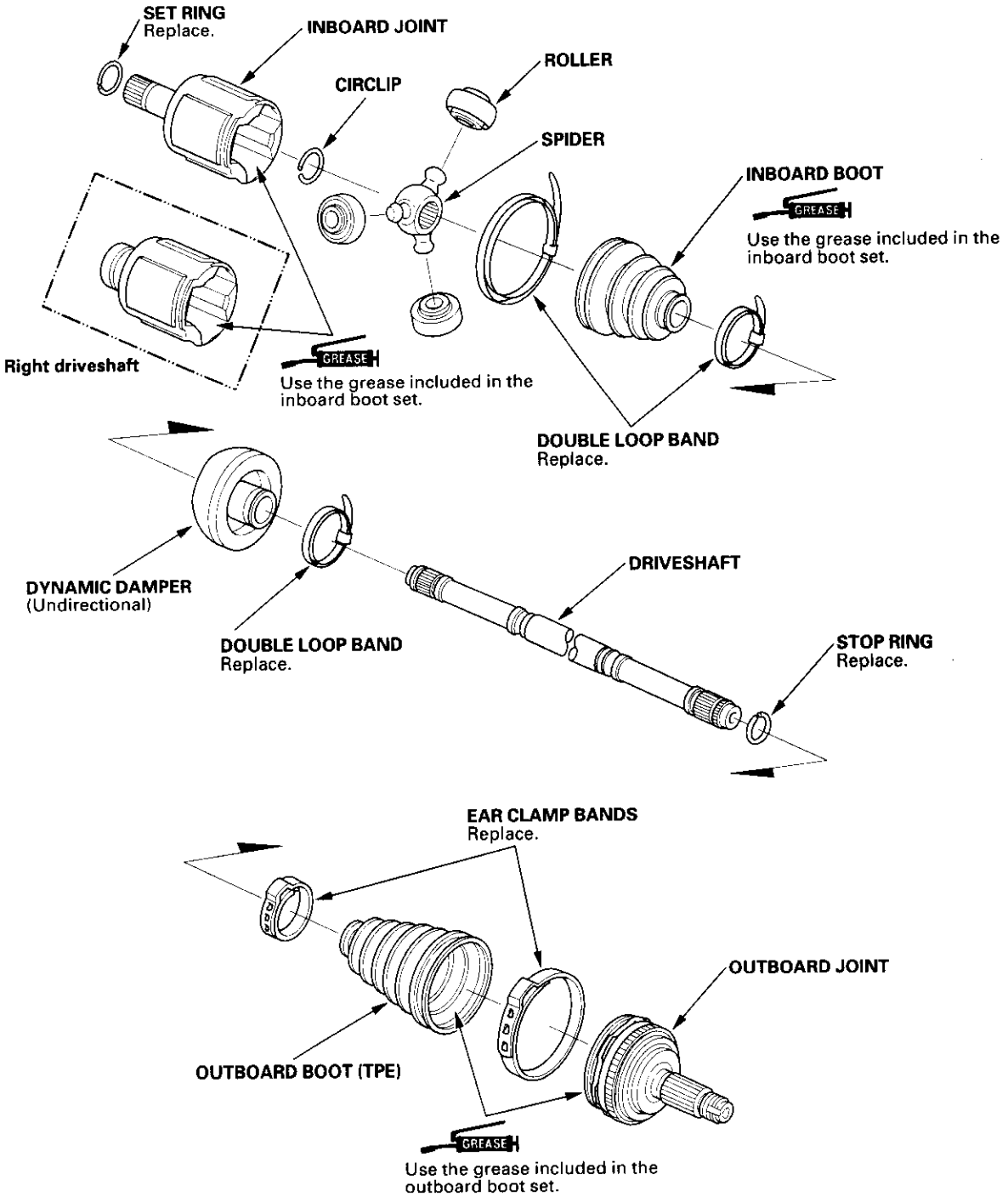


10. Remove the outboard boot. Be careful not to damage the boot.

11. Remove the vinyl tape.

Driveshafts Reassembly

Exploded View



(cont'd)

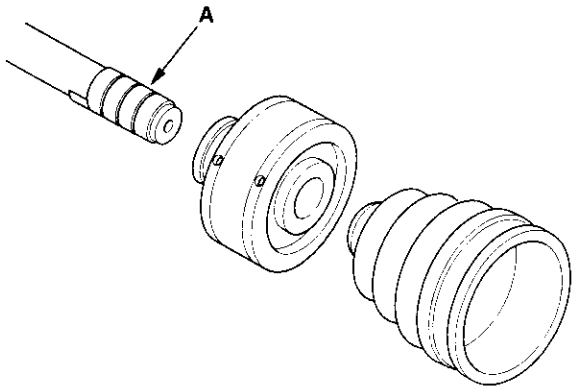
Driveshafts Reassembly (cont'd)

Special Tools Required
- Boot band tool, KD-3191 or equivalent commercially available
- Boot band pincers, KENT-MOORE J-35910 or equivalent commercially available

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

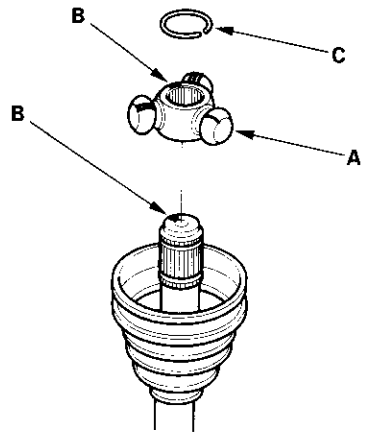
Inboard Joint Side:

1. Wrap the splines with vinyl tape (A) to prevent damage to the inboard boot and dynamic damper.



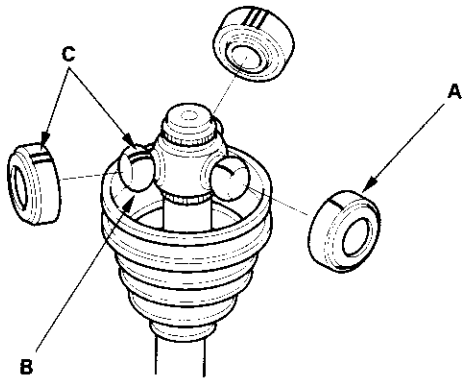
2. Install the dynamic damper and inboard boot onto the driveshaft, then remove the vinyl tape. Be careful not to damage the inboard boot and dynamic damper.

3. Install the spider (A) onto the driveshaft by aligning the marks (B) on the spider and the end of the driveshaft.



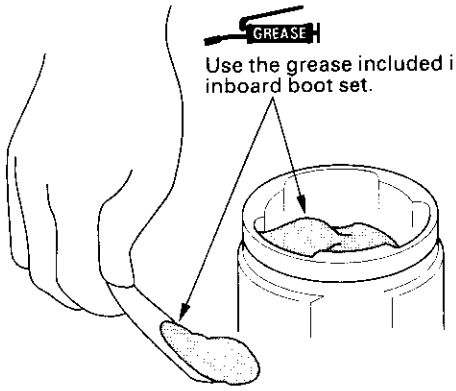
4. Fit the circlip (C) into the driveshaft groove. Always rotate the circlip in its groove to make sure it is fully seated.

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.



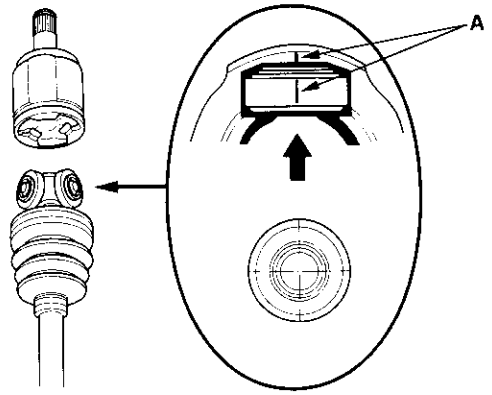
6. Pack the inboard joint with the joint grease included in the new driveshaft set.

Grease quantity
Inboard joint:
K20A2 engine model: 150 – 160 g (5.3 – 5.6 oz)
K20A3 engine model: 130 – 140 g (4.6 – 4.9 oz)



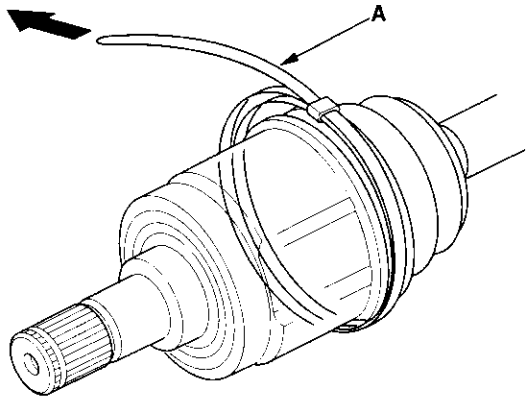
7. Fit the inboard joint onto the driveshaft, and note these items:

   - 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.



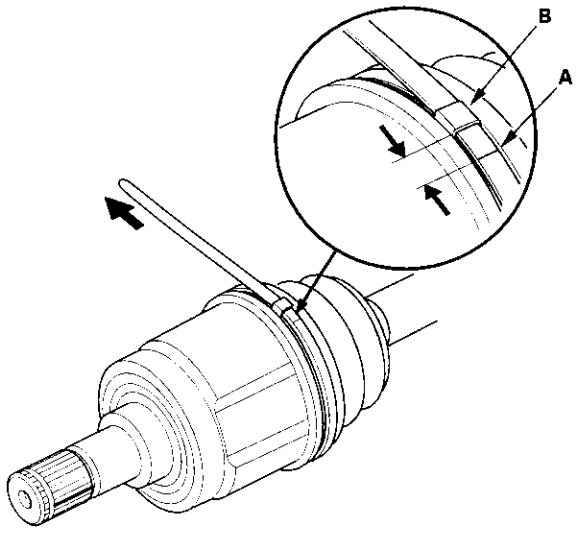
8. Adjust the inboard joint until the rollers are in the middle of the joint.

9. Fit the boot ends onto the driveshaft and the inboard joint, then install the new double loop band (A) onto the boot.



10. Pull up the slack in the band by hand.

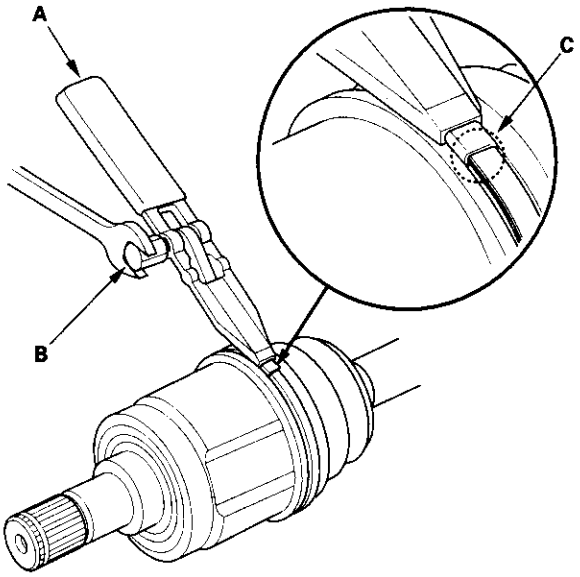
11. Mark a position (A) on the band 10 – 14 mm (0.4 – 0.6 in.) from the clip (B).



(cont'd)

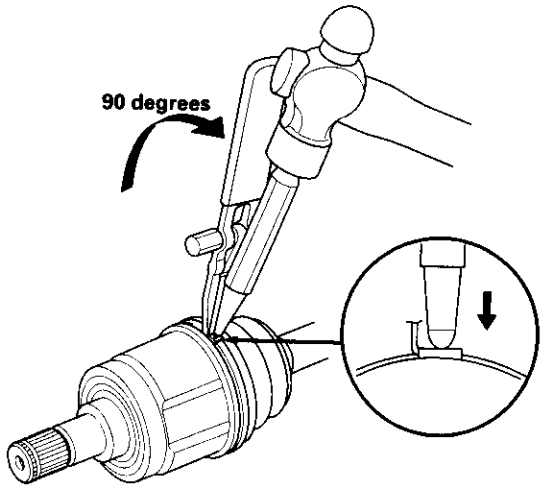
Driveshafts Reassembly (cont'd)

12. Thread the free end of the band through the nose section of the commercially available boot band tool KD-3191 or equvialent (A), and into the slot on the winding mandrel (B).

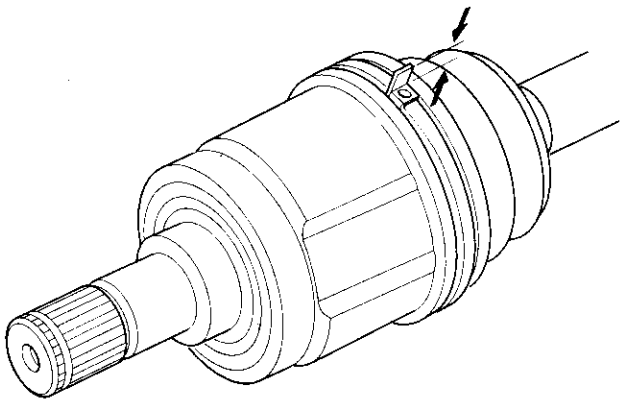


13. Place a wrench on the winding mandrel of the boot band tool, and tighten the band until the marked spot (C) on the band meets the edge of the clip.

14. 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.

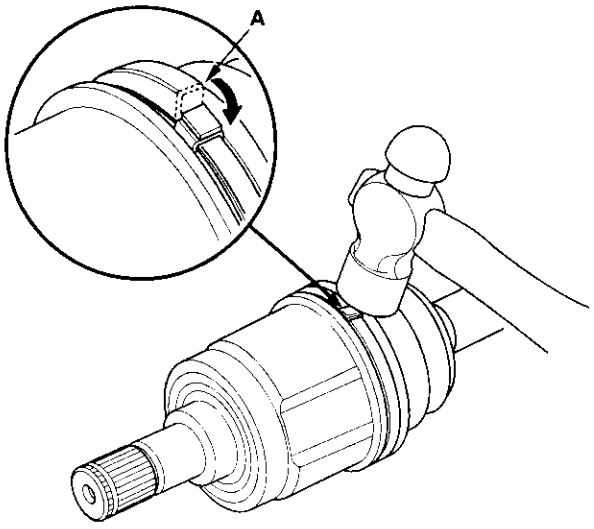


15. Unwind the boot band tool, and cut off the excess free end of the band to leave a 5 – 10 mm (0.2 – 0.4 in.) tail protruding from the clip.



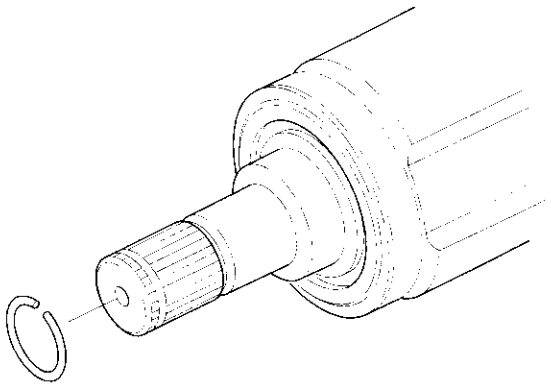
16. Bend the band end (A) by tapping it down with a hammer.

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



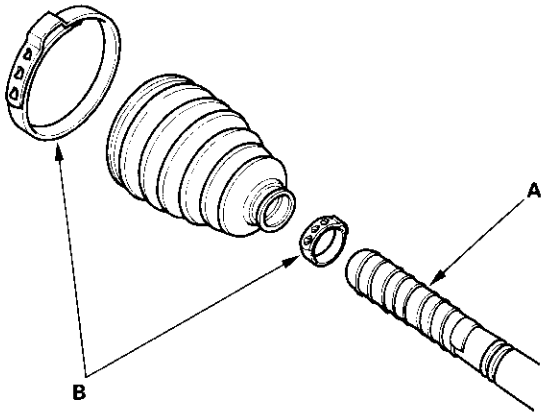
17. Repeat steps 9 through 16 for the band on the other end of the boot.

18. Install the new set ring.



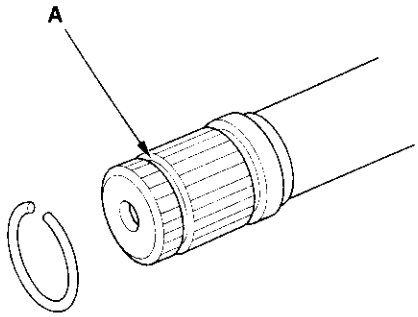
Outboard Joint Side:

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).



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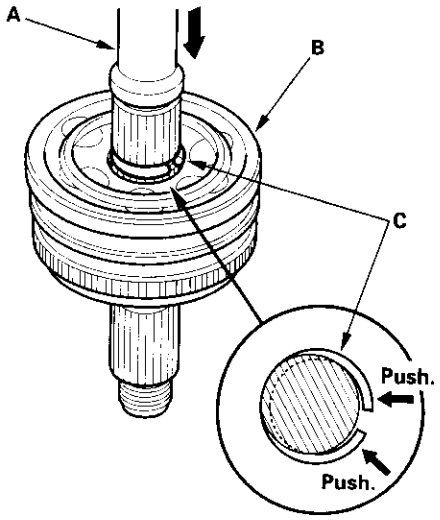
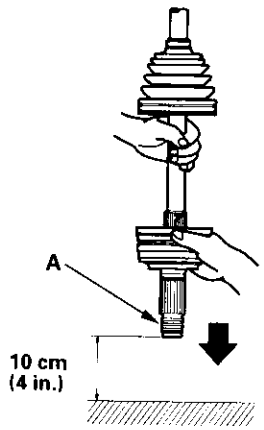
Driveshafts Reassembly (cont'd)

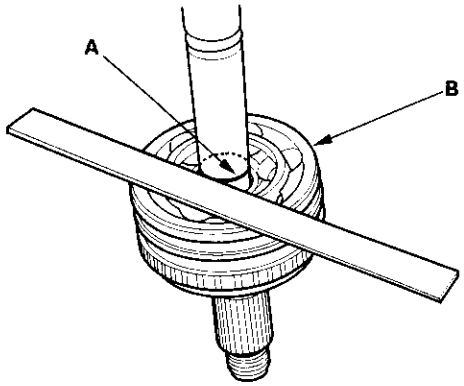
4. Insert the driveshaft (A) into the outboard joint (B) until the stop ring (C) is close to the joint.



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.

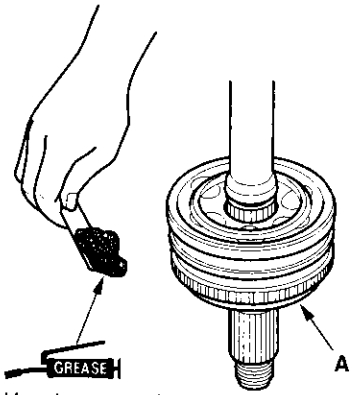


6. Check the alignment of the paint mark (A) with the outboard joint end (B).



7. Pack the outboard joint (A) with the joint grease included in the new joint boot set.

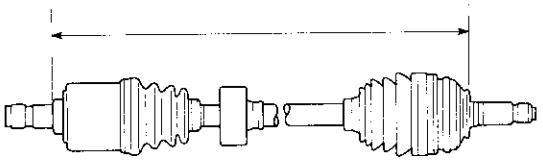
Grease quantity
Outboard joint:
K20A2 engine model: 140 – 150 g (4.9 – 5.3 oz)
K20A3 engine model: 105 – 115 g (3.7 – 4.1 oz)



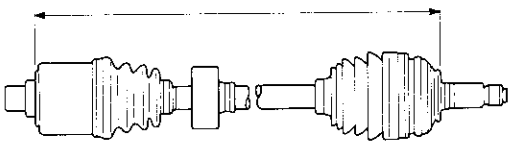
Use the grease included in the outboard boot set.

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:
K20A2 engine model:
502 – 507 mm (19.8 – 20.0 in.)
K20A3 engine model:
503 – 508 mm (19.8 – 20.0 in.)

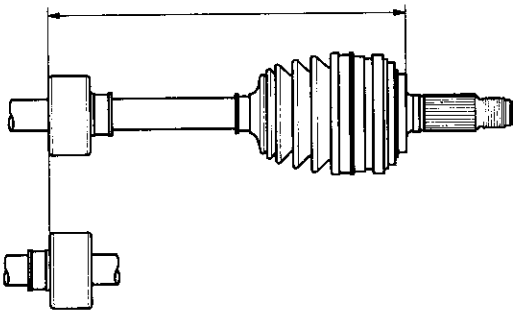


Right driveshaft:
K20A2 engine model:
481 – 486 mm (18.9 – 19.1 in.)
K20A3 engine model:
485 – 490 mm (19.1 – 19.3 in.)

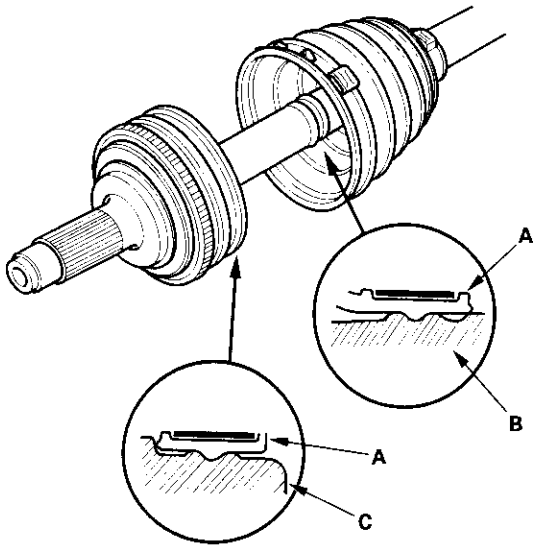


9. Position the dynamic damper as shown below.

Left driveshaft:
K20A2 engine model:
287 – 291 mm (11.3 – 11.5 in.)
K20A3 engine model:
271 – 275 mm (10.7 – 10.8 in.)
Right driveshaft:
271 – 275 mm (10.7 – 10.8 in.)



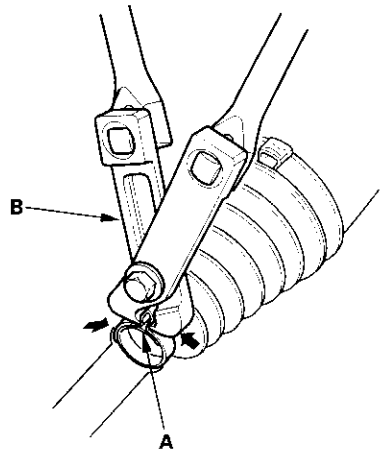
10. Fit the boot (A) ends onto the driveshaft (B) and outboard joint (C).



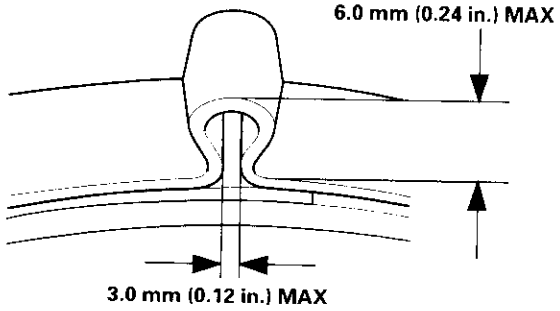
(cont'd)

Driveshafts Reassembly (cont'd)

11. Close the ear portion (A) of the band with a commercially available boot band pincers Kent-Moore J-35910 or equivalent (B).

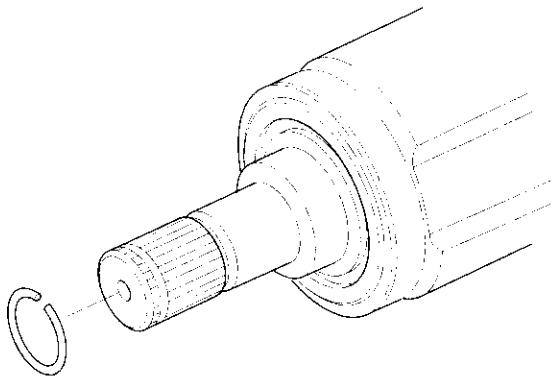


12. Check the clearance between the closed ear portion of the bands. If the clearance is not within the standard, close the ear portion of the bands farther.

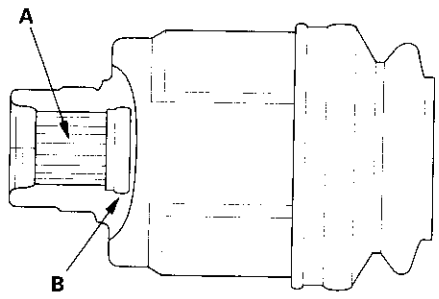


Driveshafts Installation

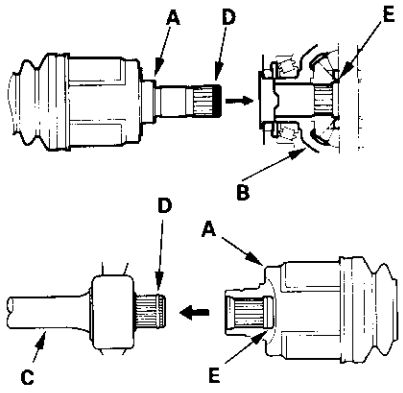
1. Install a new set ring onto the set ring groove of the driveshaft (left driveshaft).



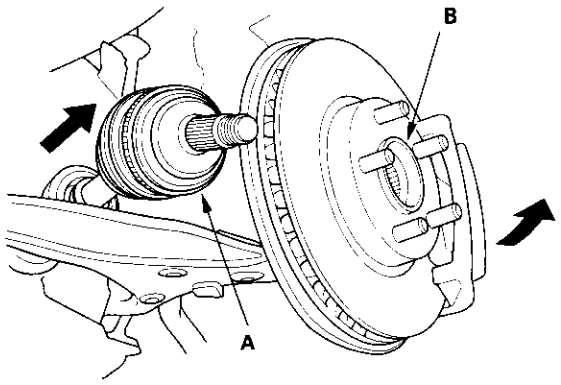
2. Apply 0.5 – 1.0 g (0.02 - 0.04 oz) of grease to the whole splined surface (A) of the right driveshaft. After applying grease, remove the grease from the splined grooves at intervals of 2 – 3 splines and from the set ring groove (B) so that air can bleed from the intermediate shaft.



3. Clean the areas where the driveshaft contacts the differential thoroughly with solvent or brake cleaner, 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).

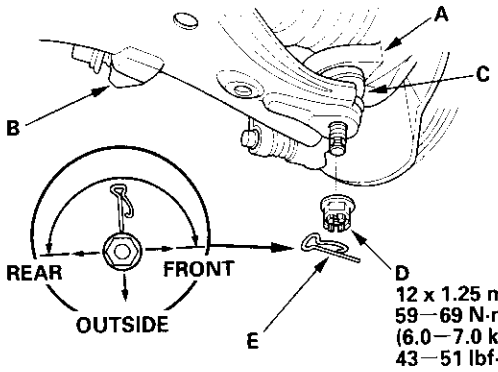


4. Install the outboard joint (A) into the front hub (B).



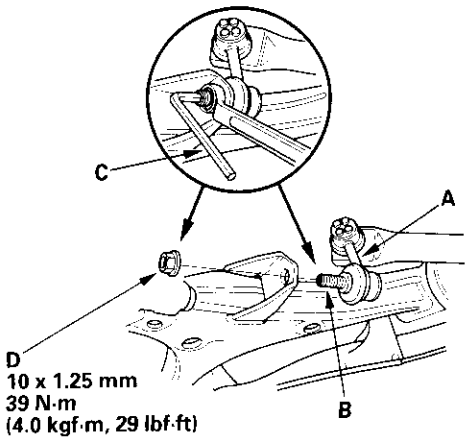
5. Install the knuckle (A) onto the lower arm (B). Be careful not to damage the ball joint boot (C). Wipe off the grease before tightening the nut at the ball joint. Torque the castle nut (D) to the lower torque specification, then tighten it only far enough to align the slot with the ball joint pin 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 (E) into the pin hole from the inside of the vehicle.

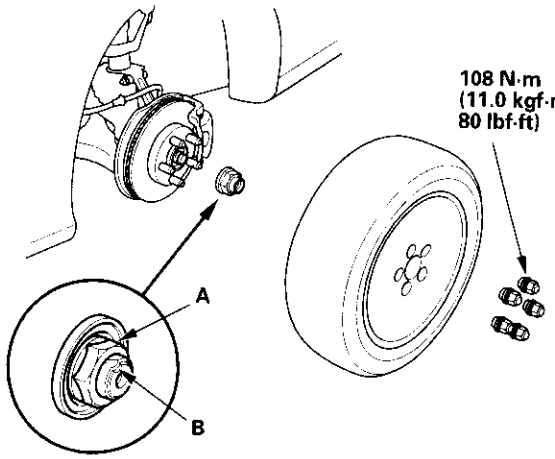
7. Connect the front stabilizer link (A) to the lower arm. Hold the stabilizer link ball joint pin (B) with a hex wrench (C), and tighten the new flange nut (D).



(cont'd)

Driveshafts Installation (cont'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.



K20A2 engine model: 245 N·m (25.0 kgf·m, 181 lbf·ft)
K20A3 engine model: 181 N·m (18.5 kgf·m, 134 lbf·ft)

9. Clean the mating surfaces of the brake disc and the front wheel, then install the front wheel with the wheel nuts.

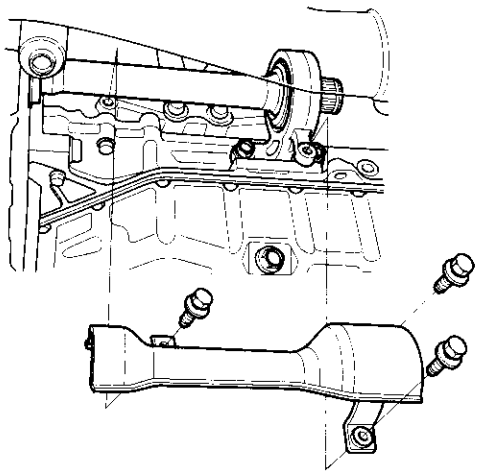
10. Refill the transmission with recommended transmission fluid:
    - Manual transmission (see page 13-4)
    - Automatic transmission (see page 14-139)

11. Check the front wheel alignment, and adjust it if necessary (see page 18-4).

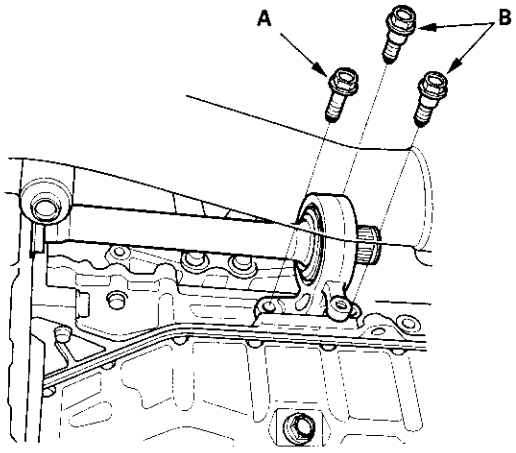
Intermediate Shaft Removal

1. Remove the right driveshaft (see page 16-3).

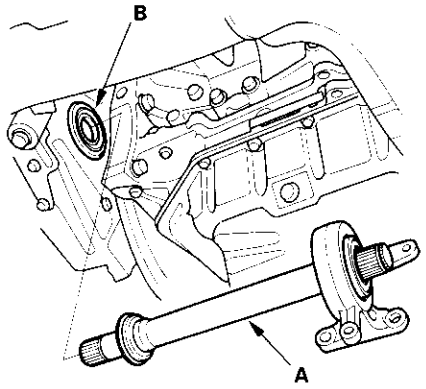
2. Remove the heat cover.



3. Remove the flange bolt (A) and two dowel bolts (B).



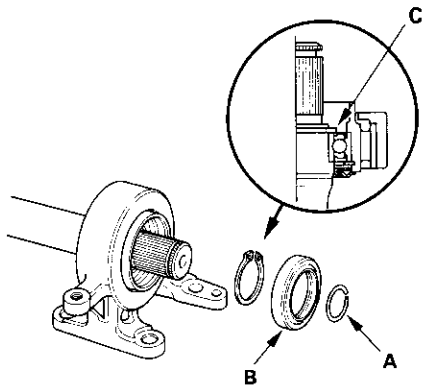
4. Remove the intermediate shaft (A) from the differential. Hold the intermediate shaft horizontal until it is clear of the differential to prevent damage to the differential oil seal (B).



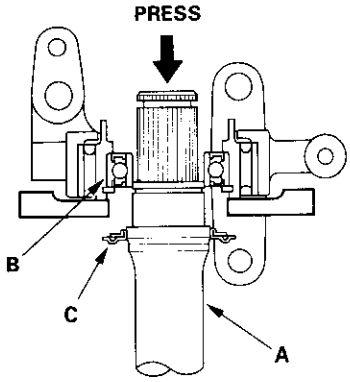
Intermediate Shaft Disassembly

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).



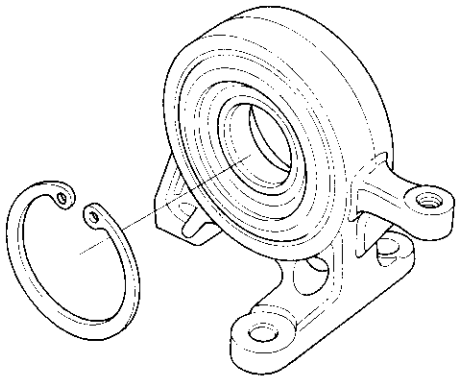
2. Press the intermediate shaft (A) out of the intermediate shaft bearing (B) using a press. Be careful not to damage the metal rings (C) on the intermediate shaft during disassembly.



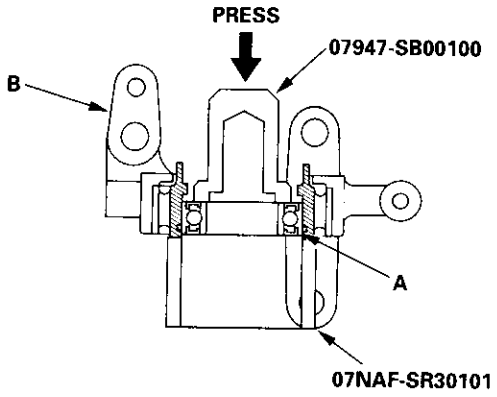
(cont'd)

Intermediate Shaft Disassembly (cont'd)

3. Remove the internal snap ring.

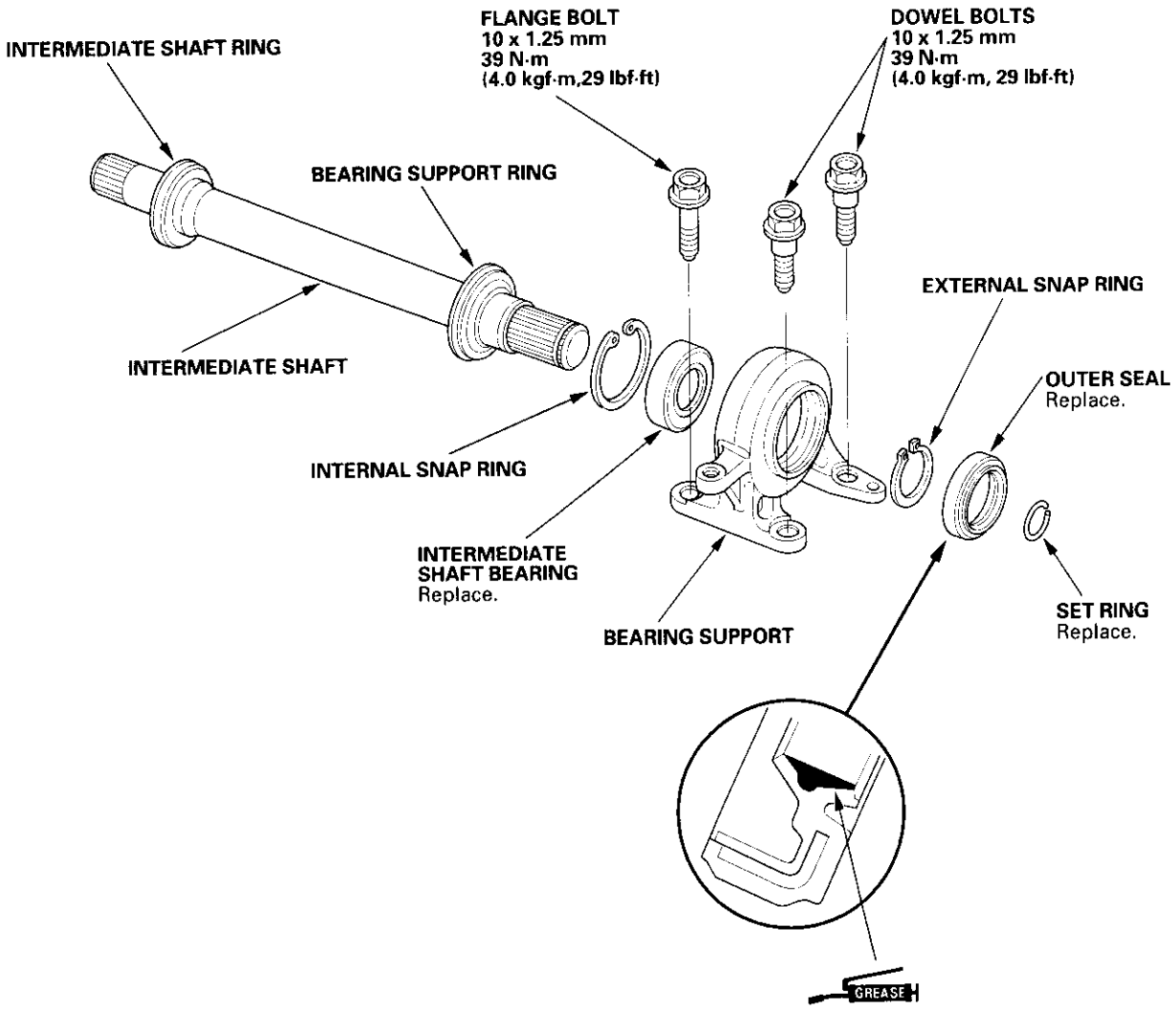


4. Press the intermediate shaft bearing (A) out of the bearing support (B) using the special tools and a press.



Intermediate Shaft Reassembly

Exploded View



Pack the interior of the outer seal.

(cont'd)

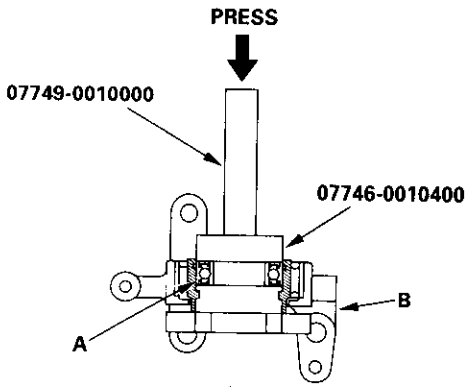
Intermediate Shaft Reassembly (cont'd)

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

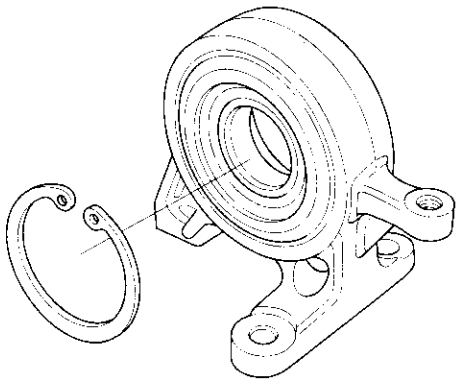
NOTE: Refer to the Exploded View as needed during this procedure.

1. Clean the disassembled parts with solvent, and dry them with compressed air. Do not wash the rubber parts with solvent.

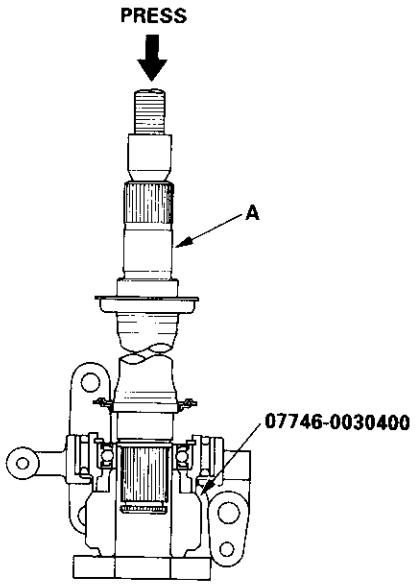
2. Press the intermediate shaft bearing (A) into the bearing support (B) using the special tools and a press.



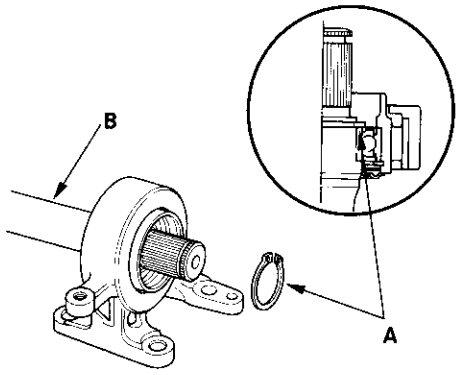
3. Install, then seat the internal snap ring into the groove of the bearing support.



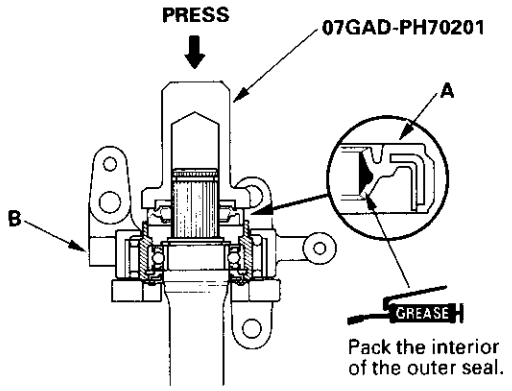
4. Press the intermediate shaft (A) into the shaft bearing using the special tool and a press.



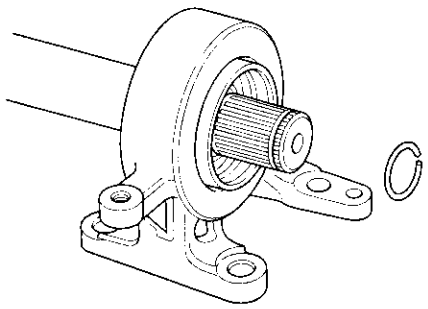
5. Install, then seat the external snap ring (A) into the groove of the intermediate shaft (B).



6. Install the outer seal (A) into the bearing support (B) using the special tool and a press.

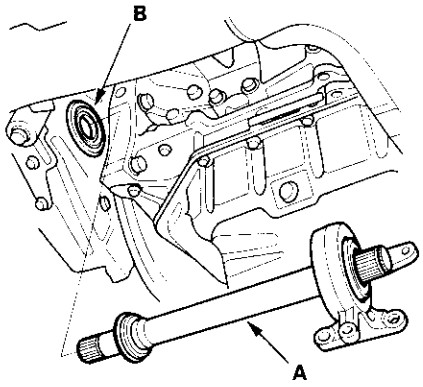


7. Install the set ring.

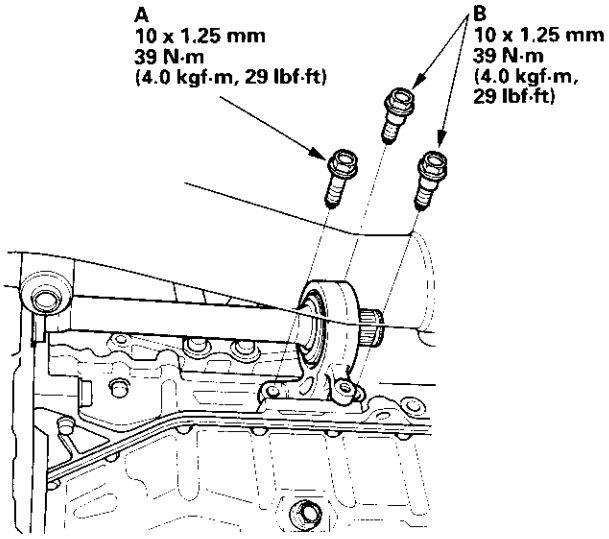


Intermediate Shaft Installation

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).



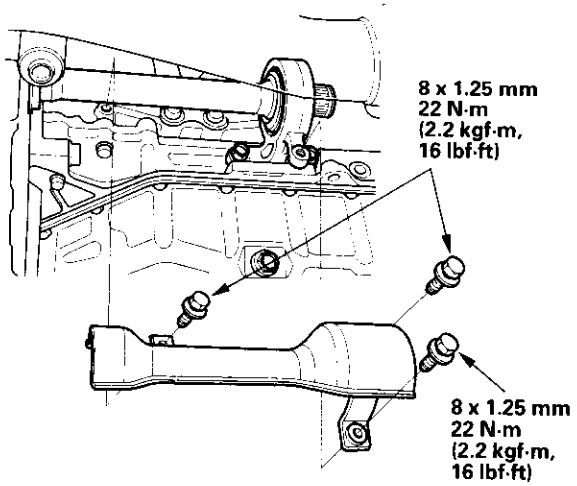
2. Install the flange bolt (A) and two dowel bolts (B).



(cont'd)

Intermediate Shaft Installation (cont'd)

3. Install the heat cover, and tighten the three bolts.



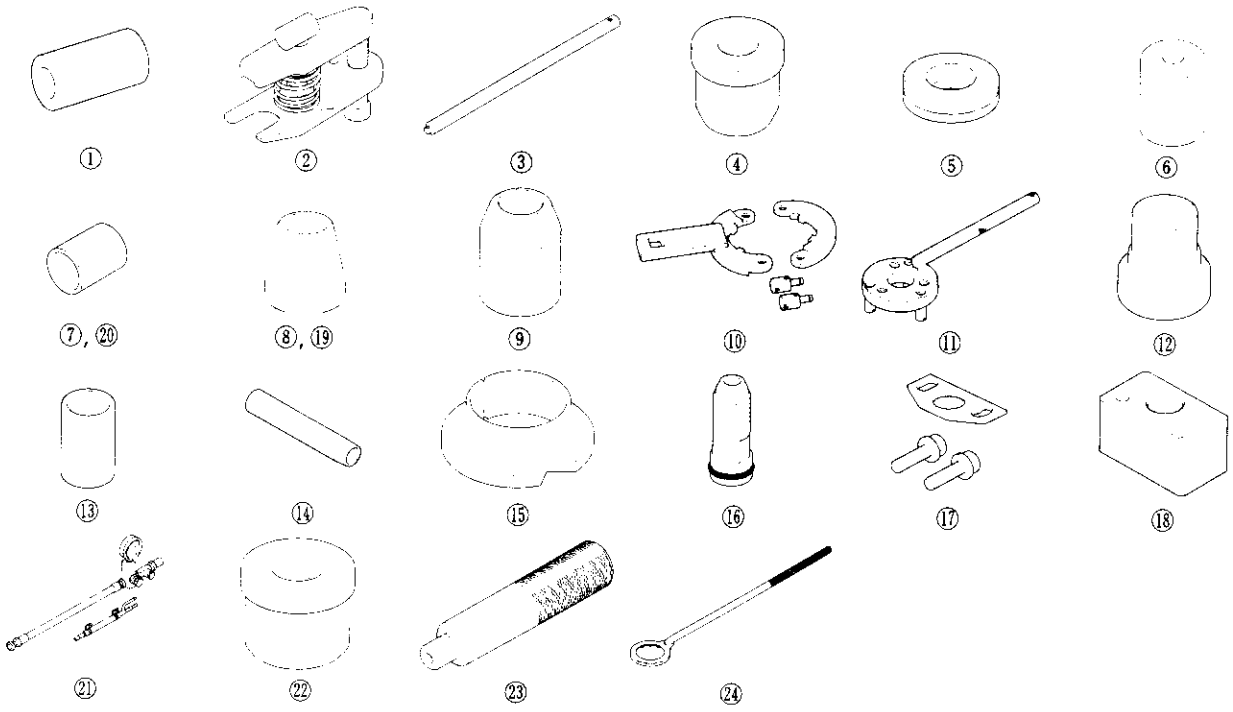
4. Install the right driveshaft (see page 16-16).

Steering

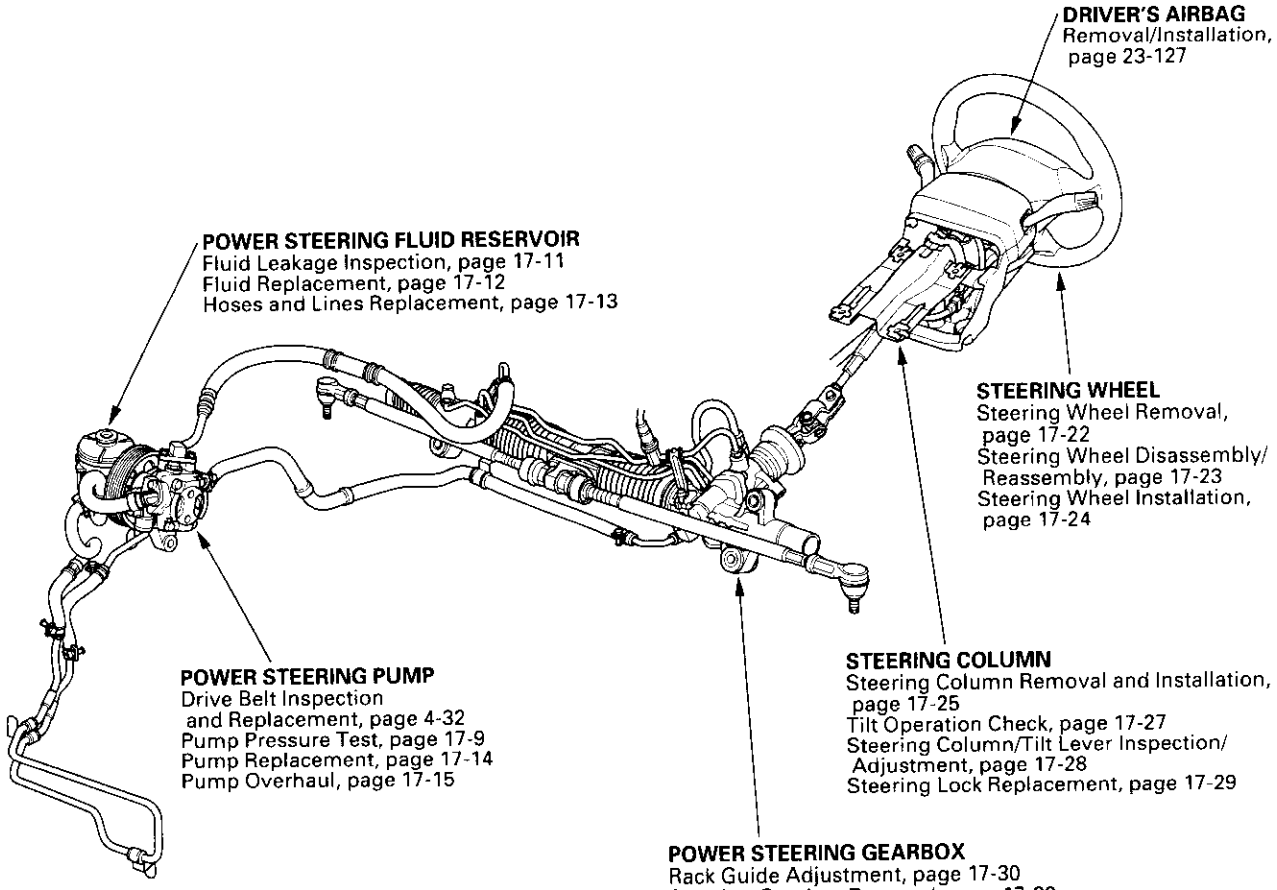
Power Steering

Special Tools

Ref.No.	Tool Number	Description	Qty
①	07GAF-PH70100	Pilot Collar	1
②	07MAC-SL00200	Ball Joint Remover, 28 mm	1
③	07NAD-SR30101	Driver Handle	1
④	07NAD-SR30200 or 07NAD-SR3020A	Cylinder End Seal Remover Attachment	1
⑤	07NAG-SR30900 or 07NAG-SR3090A	Valve Seal Ring Sizing Tool	1
⑥	07QAD-P0A0100	Attachment, 42 mm	1
⑦	07XAG-S0KA100	Piston Seal Ring Sizing Tool, 44 mm	1
⑧	07XAG-S0KA200	Piston Seal Ring Guide, 44 mm	1
⑨	07YAG-S2X0100	Sleeve Seal Ring Guide	1
⑩	07ZAA-S5A0100	Locknut Wrench	1
⑪	07ZAB-S5A0100	Pulley Holder	1
⑫	07ZAF-S5A0100	Driver, 27 mm	1
⑬	07ZAG-S5A0100	Sleeve Seal Ring Sizing Tool, 36 mm	1
⑭	07ZAG-S5A0200	Valve Seal Ring Guide	1
⑮	07974-6890801 or 07974-689080A	Cylinder End Seal Slider	1
⑯	07VAK-P8A011A	P/S Joint Adaptor (Pump)	1
⑰	07ZAK-S7CA100	P/S Joint Adaptor Plate (Pump)	1
⑱	07ZAK-S7CA200	P/S Joint Adaptor (Hose)	1
⑲	07ZAG-S7A0100	Piston Seal Ring Guide, 42 mm	1
⑳	07ZAG-S7A0200	Piston Seal Ring Sizing Tool, 42 mm	1
㉑	07406-0010001 or 07406-001000A	P/S Pressure Gauge	1
㉒	07746-0010100	Attachment, 32 x 35 mm	1
㉓	07749-0010000	Driver	1
㉔	07916-SA50001	Locknut Wrench, 40 mm	1



Component Location Index



Symptom Troubleshooting Index

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:
Hard steering	Troubleshoot the system (see page 17-6).	• Modified suspension • Tire sizes, tire varieties, and air pressure
Assist (excessively light steering at high speed)	Check the rack guide adjustment (see page 17-30).	Front wheel alignment (see page 18-4).
Shock or vibration when the wheel is turned to full lock	1. Check the rack guide adjustment (see page 17-30). 2. Check the drive belt for slippage (see page 4-33). 3. Overhaul the steering gearbox (see page 17-36).	
Steering wheel will not return smoothly	1. Check cylinder lines for deformation. 2. Check wheel alignment (see page 18-4). 3. Overhaul the steering gearbox (see page 17-36).	
Uneven or rough steering	1. Check the rack guide adjustment (see page 17-30). 2. Check the drive belt (see page 4-32). 3. Check low or erratic engine idle speed (see page 11-148). 4. Check for air in the power steering system due to low fluid level or an air leak at the pump inlet hose. 5. Check for low fluid level in the power steering reservoir due to possible leaks in system. 6. Overhaul the steering gearbox (see page 17-36).	
Steering wheel kicks back during wide turns	1. Check the drive belt (see page 4-32). 2. Check the power steering pump fluid pressure with T/N 07406-0010001 (see page 17-9) or T/N 07406-001000A (see page 17-10).	
Humming	1. Check when the noise occurs • If the noise is heard 2 to 3 minutes after starting the engine in cold weather, this is normal. • If the noise is heard when the wheel is turn with the vehicle stopped, this is normal due to the fluid pulsation. 2. Check for the high-pressure hose touching the subframe or body. 3. Check for automatic transmission converter noise.	Pump pressure

Rattle or chattering (Rack rattle)	1. Check for loose steering components (tie-rod and ball joints). Tighten or replace as necessary. 2. Check the steering column shaft for wobbling. If the steering column wobbles, replace the steering column assembly (see page 17-25). 3. Check the rack guide adjustment (see page 17-30). 4. Check the power steering pump pulley. • If the pulley is loose, tighten it (see step 47 on page 17-21). • If the pump shaft is loose, replace the pump (see page 17-14).	
Hissing	• Check the fluid level. If low, fill the reservoir to the proper level and check for leaks. • Check the reservoir for leaks. • Check for a crushed inlet hose or loose hose clamp allowing air into the suction side of the system. • Check the power steering pump shaft oil seal for leaks.	
Pump noise	• Compare the pump noise at normal operating temperature to another like vehicle (pump noise up to 2 – 3 minutes after starting the engine in cold weather is normal). • Remove and inspect the pump for wear and damage (see page 17-15).	
Squeaking	Check the drive belt (see page 4-32).	
Fluid leaks from the steering gearbox	• Fluid leaks from the top of the valve body unit: Overhaul the valve body unit (see step 24 on page 17-41). • Fluid leaks from the boot A: Replace the valve oil seal on the pinion shaft. • Replace the cylinder end seal on the gearbox side. • Fluid leaks from the boot B: Replace the left cylinder end seal. • Fluid leaks from pinion shaft near the lower steering joint bolt: Overhaul the valve body unit.	
Fluid leaks from line	• Fluid leaks from the cylinder line connections (flare nuts): Tighten the connection and retest. • Fluid leaks from a damaged cylinder lines: Replace the cylinder line. • Fluid leaks from the pump outlet hose or return line fitting on the valve body unit (flair nuts): Tighten the fitting and retest. If it still leaks, replace the hose, the line, or valve body unit as necessary.	
Fluid leaks from pump	• Fluid leaks from the front oil seal: Replace the front oil seal. • Fluid leaks from the power steering pump housing: Replace the leaking O-rings or seals (see page 17-15), and if necessary, replace the power steering pump (see page 17-14).	
Fluid leaks from reservoir	• Fluid leaks from around the reservoir cap: Fluid level is too high: drain the reservoir to the proper level. Aerated fluid: check for an air leak on the inlet side of pump. • Fluid leaks from reservoir: Check for the reservoir for cracks and replace as necessary.	
Fluid leaks from pump outlet hose (high-pressure)	• Check the fitting for loose bolts. If the bolts are tight, replace the fitting O-ring. • Fluid leaks at the swagged joint: Replace the outlet hose.	
Fluid leaks from pump inlet hose (low-pressure)	Check the hose for damage, deterioration, or improper assembly. Replace or repair as necessary.	

Symptom Troubleshooting

Hard Steering

1. Check the power assist (see page 17-7).

   K20A3 Engine model:
   Is the starting load more than 37.2 N (3.8 kgf, 8.4 lbf)?
   K20A2 Engine model:
   Is the starting load more than 38.2 N (3.9 kgf, 8.6 lbf)?

   YES – Go to step 2.

   NO – Power assist is OK. ■

2. Measure steady-state fluid pressure from the pump at idle with T/N 07406-0010001 (see page 17-9), or T/N 07406-001000A (see page 17-10).

   Is the pressure 1,500 kPa (15 kgf/cm², 213 psi) or less?

   YES – Go to step 3.

   NO – Go to step 7.

3. Measure the pump relief pressure at idle with T/N 07406-0010001 (see page 17-9), or T/N 07406-001000A (see page 17-10).

   K20A3 Engine model:
   Is the pressure 6,570 – 7,260 kPa(67 – 74 kgf/cm², 950 – 1,050 psi) or less?
   K20A2 Engine model:
   Is the pressure 7,160 – 7,850 kPa(73 – 80 kgf/cm², 1,040 – 1,140 psi) or less?

   YES – Go to step 4.

   NO – Faulty pump assembly. ■

4. With a spring scale, measure the power assist in both directions, to the left and to the right.

   Are the two measurements within 2.9 N (0.3 kgf, 0.66 lbf) of each other?

   YES – Go to step 5.

   NO – Go to step 8.

5. Measure the fluid pressure with both pressure gauge valves open (if so equipped), while turning the steering wheel fully to the left and fully to the right.

   K20A3 Engine model:
   Is the pressure 6,570 – 7,260 kPa(67 – 74 kgf/cm², 950 – 1,050 psi) or less?
   K20A2 Engine model:
   Is the pressure 7,160 – 7,850 kPa(73 – 80 kgf/cm², 1,040 – 1,140 psi) or less?

   YES – Go to step 6.

   NO – Faulty gearbox. ■

6. Adjust the rack guide (see page 17-30) and retest.

   Is the steering OK?

   YES – Repair is completed. ■

   NO – Faulty gearbox. ■

7. Check the feed and return lines between the pump and the gearbox for clogging and deformation.

   Are the lines clogged or deformed?

   YES – Repair or replace the lines. ■

   NO – Faulty valve body unit or pump. ■

8. Check the cylinder lines for deformation (see page 17-11).

   Are the lines deformed?

   YES – Replace the lines. ■

   NO – Go to step 9.

9. Check for a bent rack shaft or misadjusted rack guide (too tight).

   Is the rack shaft bent or the rack guide adjusted too tight?

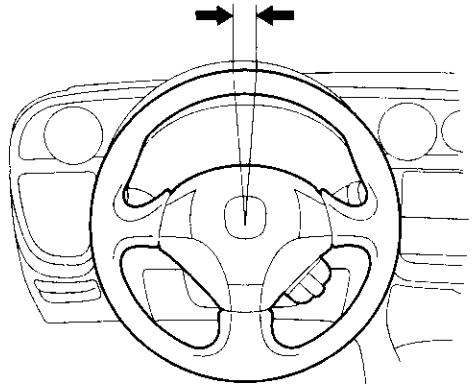
   YES – Replace the rack shaft or readjust the rack guide. ■

   NO – Faulty valve body unit. ■

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 light without moving the front wheels.
   - If the play is within the limit, the gearbox and linkages are OK.
   - If the play exceeds the limit, adjust the rack guide (see page 17-30). If the play is still excessive after rack guide adjustment, inspect the steering linkage and gearbox (see page 17-8).

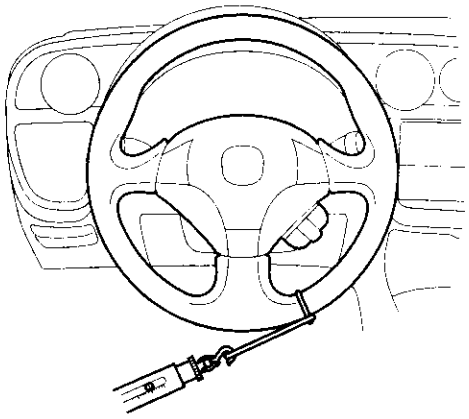
ROTATIONAL PLAY: 0—10 mm (0—0.39 in.)



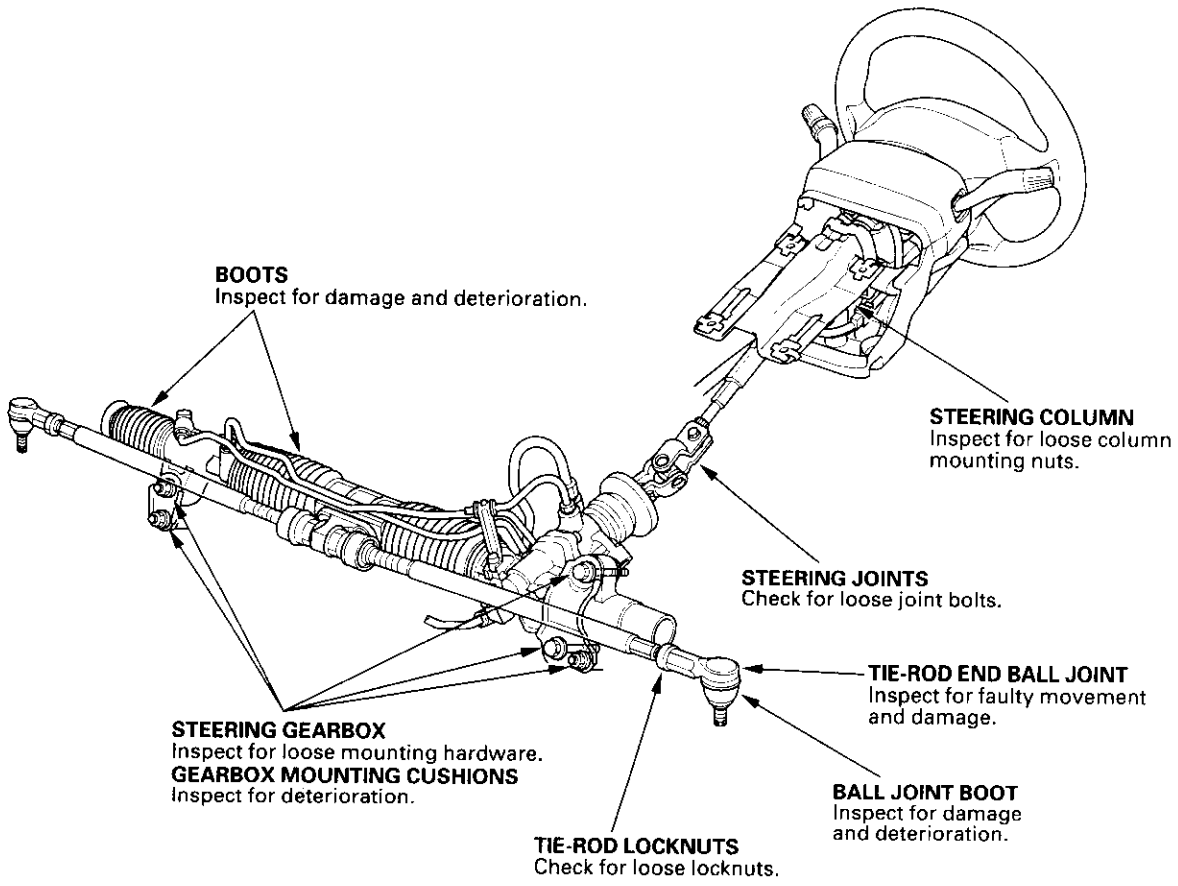
Power Assist Check

1. Check the power steering fluid level (see page 17-12).
2. Start the engine, let it idle, and turn the steering wheel from lock-to-lock several times to warm up the fluid.
3. 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.
   - If the scale reads no more than specifications, the gearbox and pump are OK.
   - If the scale reads more than specifications, troubleshoot the steering system (see page 17-6).

INITAL TURNING LOAD:
K20A3 Engine models: 37.2 N (3.8 kgf, 8.4 lbf)
K20A2 Engine models: 38.2 N (3.9 kgf, 8.6 lbf)



Steering Linkage and Gearbox Inspection



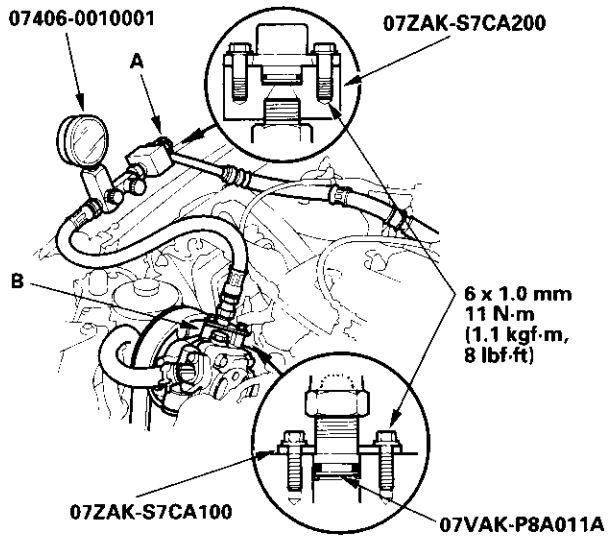
Pump Pressure Test with T/N 07406-0010001

Special Tools Required
- P/S joint adapter (pump) 07VAK-P8A011A
- P/S joint adapter plate (pump) 07ZAK-S7CA100
- P/S joint adapter (hose) 07ZAK-S7CA200
- P/S pressure gauge 07406-0010001

Check the fluid pressure as follows to determine whether the trouble is in the pump or gearbox.

1. Check the power steering fluid level (see page 17-12).

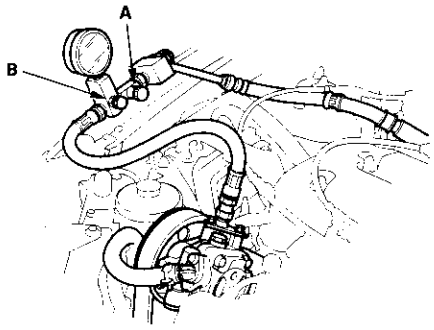
2. Disconnect the pump outlet hose (A) from the pump outlet with care so as not to spill the power steering fluid on the frame and other parts. Install the P/S joint adapter (pump) on the pump outlet (B).



3. Connect the P/S joint adapter (hose) to the P/S pressure gauge, then connect the pump outlet hose (A) to the P/S joint adapter (hose).

4. Install the P/S pressure gauge to the P/S joint adapter (pump).

5. Fully open the shut-off valve (A).



6. Fully open the pressure control valve (B).

7. Start the engine and let it idle.

8. Turn the steering wheel from lock-to-lock several times to warm the fluid to operating temperature at 158°F (70°).

9. Measure steady-state fluid pressure while the engine is idling. If the pump is in good condition, the pressure should be no more than 1,500 kPa (15 kgf/cm², 214 psi). If the pressure is too high, check the outlet hose or valve body unit (see Steering System Troubleshooting) (see page 17-6).
Raise the engine speed to 3,000 rpm, and measure the fluid pressure. If the pump is in good condition, the pressure should be at least 1,500 kPa (15 kgf/cm², 214 psi). If the pressure is too low, repair or replace the pump.

10. Lower the engine speed and let it idle. Close the shut-off valve, then close the pressure control valve gradually until the pressure gauge needle is stable. Read the pressure.

NOTICE
Do not keep the shut-off valve closed more than 5 seconds or the pump could be damaged by overheating.

11. Immediately open the pressure control valve fully. If the pump is in good condition, the gauge should read at least this specification:
K20A3 Engine model:
6,570 – 7,260 kPa (67 – 74 kgf/cm², 950 – 1,050 psi)
K20A2 Engine model:
7,160 – 7,850 kPa (73 – 80 kgf/cm², 1,040 – 1,140 psi)

A low reading means pump output is too low for full assist. Repair or replace the pump.

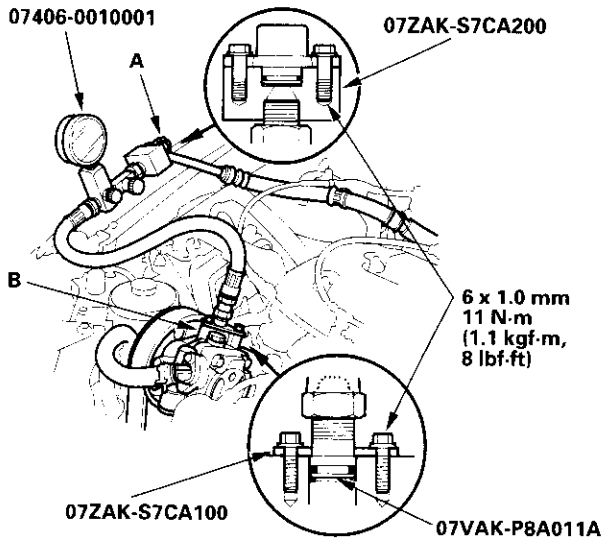
Pump Pressure Test with T/N 07406-001000A

Special Tools Required
- P/S joint adapter (pump) 07VAK-P8A011A
- P/S joint adapter plate (pump) 07ZAK-S7CA100
- P/S joint adapter (hose) 07ZAK-S7CA200
- P/S pressure gauge 07406-001000A

Check the fluid pressure as follows to determine whether the trouble is in the pump or gearbox.

1. Check the power steering fluid level (see page 17-12).

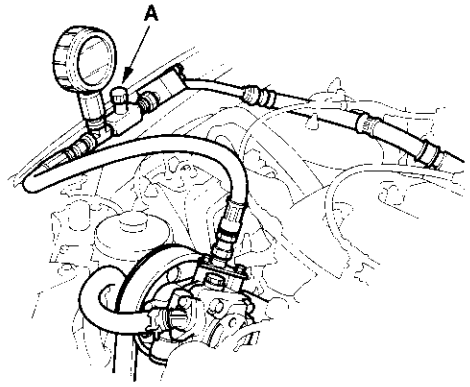
2. Disconnect the pump outlet hose (A) from the pump outlet with care so as not to spill the power steering fluid on the frame and other parts. Install the P/S joint adapter (pump) on the pump outlet (B).



3. Connect the P/S joint adapter (hose) to the P/S pressure gauge, then connect the pump outlet hose (A) to the P/S joint adapter (hose).

4. Install the P/S pressure gauge to the P/S joint adapter (pump).

5. Open the pressure control valve (A) fully.



6. Start the engine and let it idle.

7. Turn the steering wheel from lock-to-lock several times to warm the fluid to operating temperature at 158°F (70°C).

8. Measure steady-state fluid pressure while the engine is idling. If the pump is in good condition, the pressure should be no more than 1,500 kPa (15 kgf/cm², 214 psi). If the pressure is too high, check the outlet hose or valve body unit (see Steering System Troubleshooting) (see page 17-6).
Raise the engine speed to 3,000 rpm, and measure the fluid pressure. If the pump is in good condition, the pressure should be at least 1,500 kPa (15 kgf/cm², 214 psi). If the pressure is too low, repair or replace the pump.

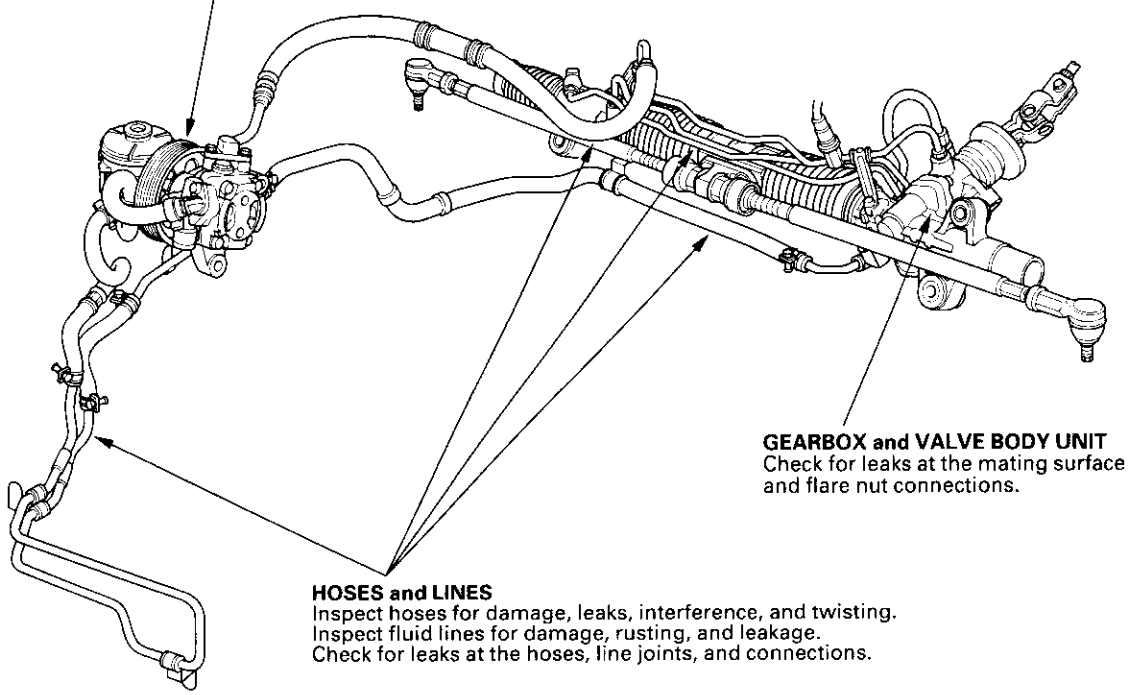
9. Lower the engine speed and let it idle. Close the pressure control valve gradually until the pressure gauge needle is stable. Read the pressure.

NOTICE
Do not keep the pressure control valve closed more than 5 seconds or the pump could be damaged by overheating.

10. Immediately open the pressure control valve fully. If the pump is in good condition, the gauge should read at least this specification:
K20A3 Engine model:
6,570 – 7,260 kPa (67 – 74 kgf/cm², 950 – 1,050 psi)
K20A2 Engine model:
7,160 – 7,850 kPa (73 – 80 kgf/cm², 1,040 – 1,140 psi)

A low reading means pump output is too low for full assist. Repair or replace the pump.

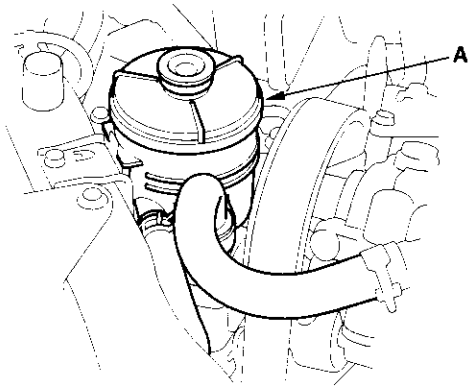
Fluid Leakage Inspection



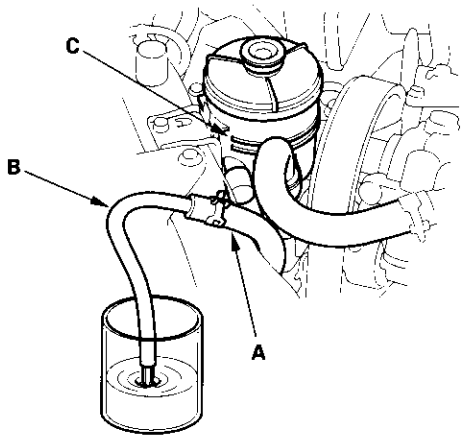
Fluid Replacement

Check the reservoir (A) at regular intervals, and add the recommended fluid as necessary. Always use Honda Power Steering Fluid. Using any other type of power steering fluid or automatic transmission fluid can cause increased wear and poor steering in cold weather.

SYSTEM CAPACITY:
K20A3 Engine/A/T model (with oil cooler):
0.8 ℓ (0.85 US. qt) at disassembly
M/T model:
0.7 ℓ (0.73 US. qt) at disassembly
RESERVOIR CAPACITY:
0.2 ℓ (0.21 US. qt)



1. Raise the reservoir, then disconnect the return hose (A) to drain the reservoir. Take care not to spill the fluid on the body and parts. Wipe off any spilled fluid at once.

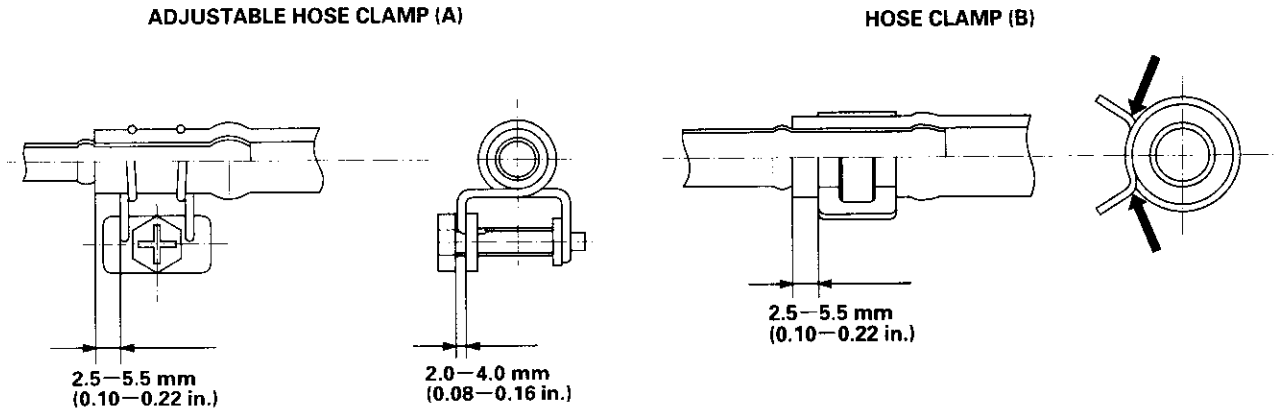


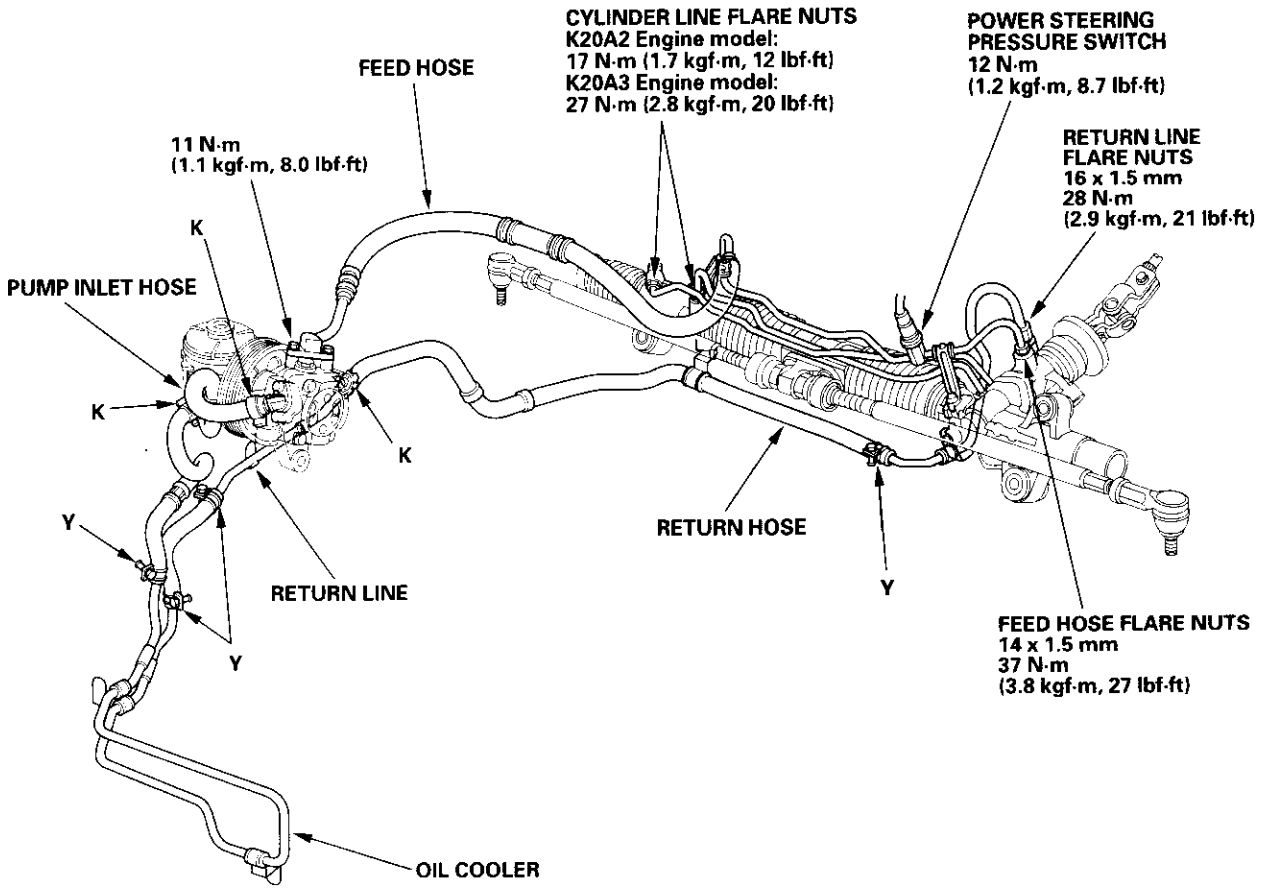
2. Connect a hose (B) of suitable diameter to the disconnected return hose, and put the hose end in a suitable container.
3. Start the engine, let it run at idle, and turn the steering wheel from lock-to-lock several times. When fluid stops running out of the hose, shut off the engine. Discard the fluid.
4. Reinstall the return hose on the reservoir.
5. Fill the reservoir to the upper level line (C).
6. Start the engine and run it at fast idle, then turn the steering from lock-to-lock several times to bleed air from the system.
7. Recheck the fluid level and add more if necessary. Do not fill the reservoir beyond the upper level line.

Power Steering Hoses, Lines, and Pressure Switch Replacement

Note these items during installation:

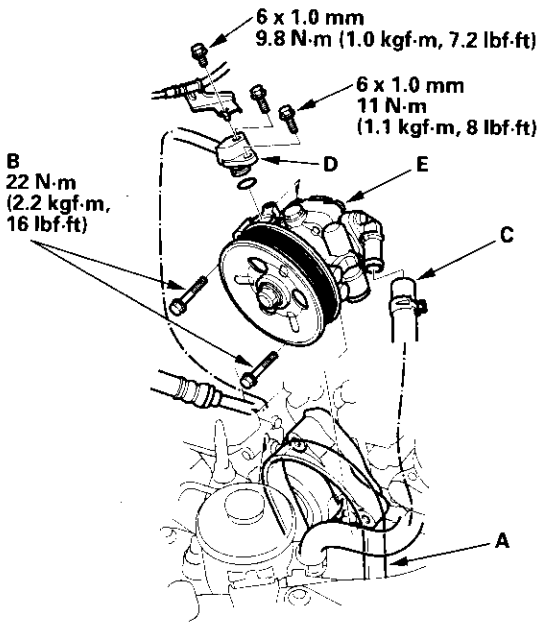
- Connect each hose to the corresponding line securely until it contacts the stop on the line. Install the clamp or adjustable clamp at the specified distance from the hose end as shown.
- Check all clamps for deterioration or deformation; replace with the clamps new ones, if necessary.
- Add the recommended power steering fluid to the specified level on the reservoir and check for leaks.





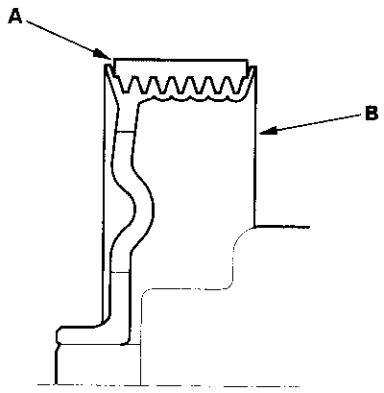
Pump Replacement

1. Place a suitable container under the vehicle.
2. Drain the power steering fluid from the reservoir.
3. Remove the drive belt (A) from the pump pulley (see page 4-32).



4. Remove the pump mounting bolts (B).
5. Cover the auto-tensioner, alternator and A/C compressor with several shop towels to protect it from spilled power steering fluid. Disconnect the pump inlet hose (C) and pump outlet hose (D) from the pump (E), and plug them. Take care not to spill the fluid on the body or parts. Wipe off any spilled fluid at once. Do not turn the steering wheel with the pump removed.
6. Cover the opening of the pump with a piece of tape to prevent foreign material from entering the pump.
7. Connect the pump inlet hose and pump outlet hose.
8. Loosely install the pump in the pump bracket with the mounting bolts, then tighten the pump fittings securely.
9. Install the drive belt (A).

   Note these item during belt installation:
   - Make sure that the belt is properly positioned on the pulleys (B).
   - Do not get power steering fluid or grease on the auto-tensioner, alternator, A/C compressor and drive belt or, pulley faces. Clean off any fluid or grease before installation.

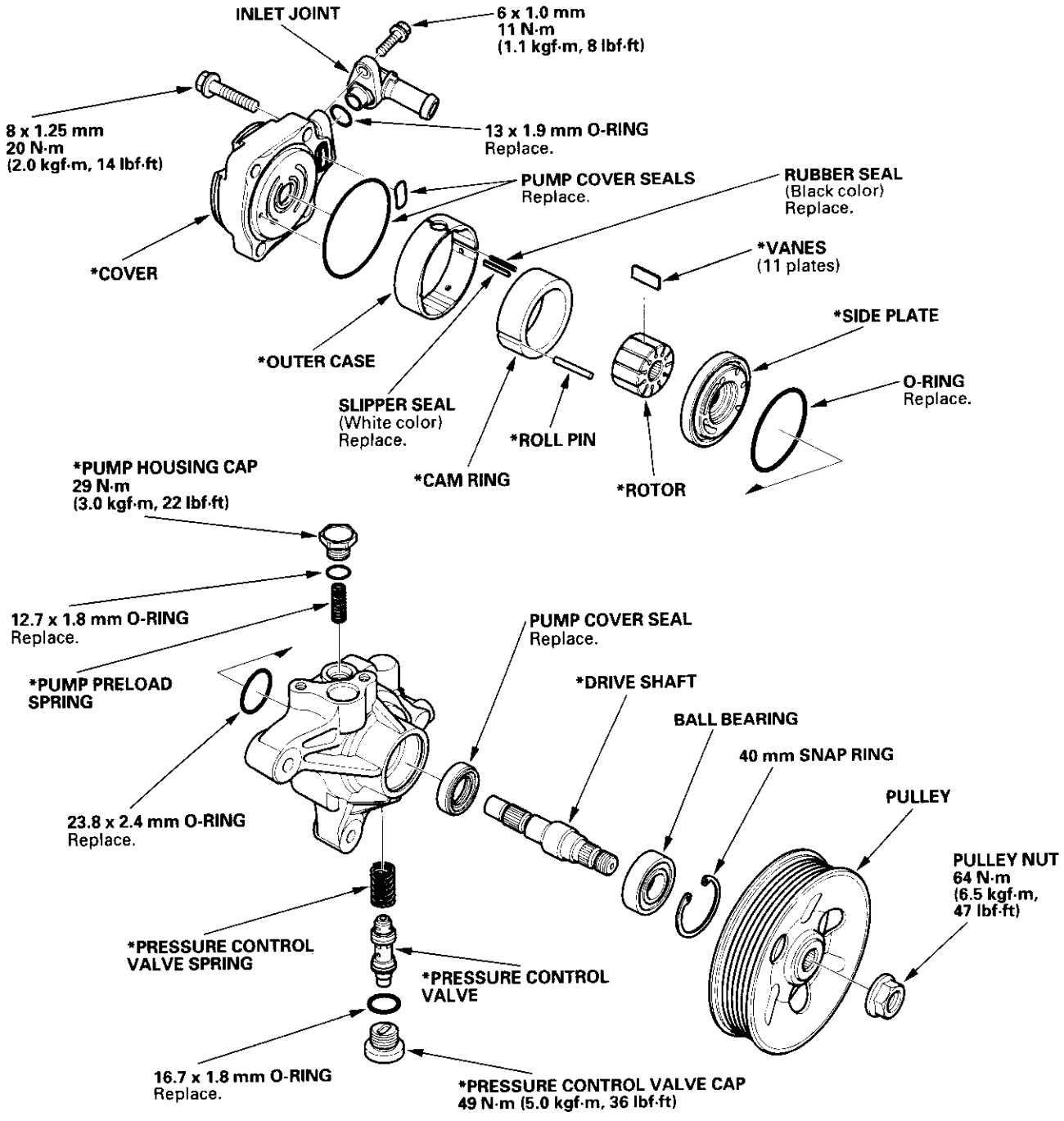


10. Fill the reservoir to the upper level line (see page 17-12).

Pump Overhaul

Exploded View

Replace the pump as an assembly if the parts indicated with asterisk (*) are worn or damaged.



(cont'd)

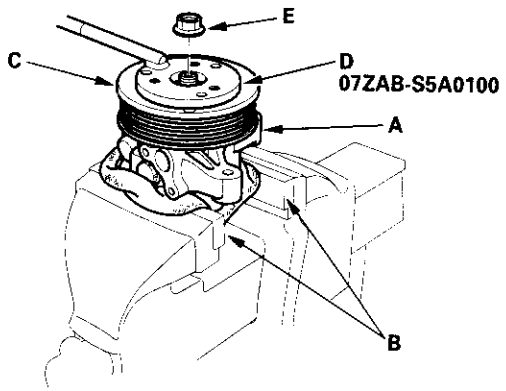
Pump Overhaul (cont'd)

Special Tools Required
- Attachment, 32 x 35 mm 07746-0010100
- Driver 07749-0010000
- Pulley holder 07ZAB-S5A0100

Disassembly

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

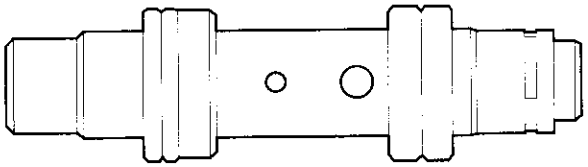
1. Remove the power steering pump (see page 17-14).
2. Drain the fluid from the pump.
3. Hold the steering pump (A) a vise with soft jaws (B), hold the pulley (C) with the special tool (D), and remove the pulley nut (E) and pulley. Be careful not to damage the pump housing with the jaws of the vise.



4. Remove the inlet joint and O-ring.
5. Remove the flow control valve cap, O-ring, valve spring, and pressure control valve.
6. Remove the pump housing cap, O-ring, and pump preload spring.
7. Remove the pump cover and pump cover seals.
8. Pull out the roll pin.
9. Remove the outer case, cam ring, rotor, vanes, and side plate.
10. Remove the rubber seal and slipper seal from the outer case.
11. Remove the O-rings from the bottom of the housing.
12. Remove the snap ring, then remove the drive shaft by tapping the shaft end with the plastic hammer.
13. Remove the seal from the pump housing.

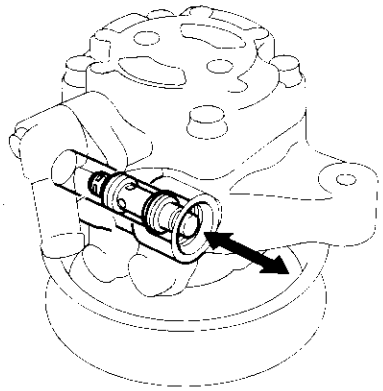
Inspection

14. Check the pressure control valve for wear, burrs, and other damage to the edges of the grooves in the valve.



15. Inspect the bore of the pressure control valve on the pump housing for scratches and wear.

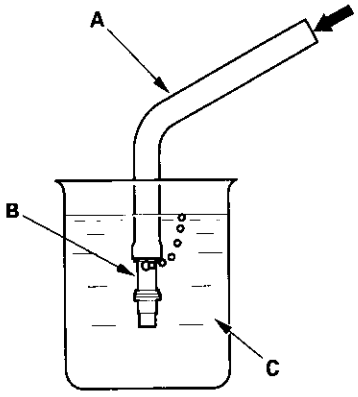
16. Slip the pressure control valve back in the pump housing, and check that it moves in and out smoothly. If OK, go to step 17; if not, replace the pump as an assembly. The pressure control valve is not available separately.



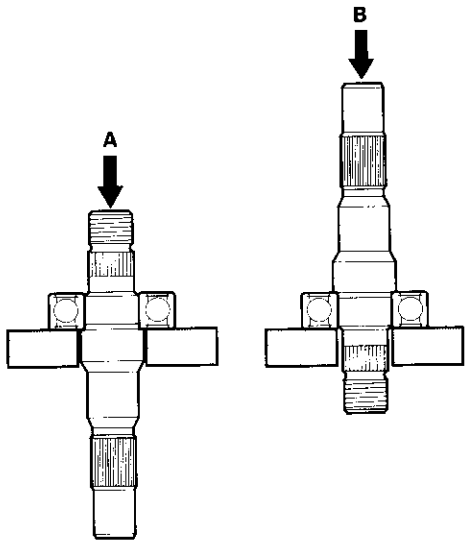
17. Attach a hose (A) to the end of the pressure control valve (B) as shown. Then submerge the pressure control valve in a container of power steering fluid or solvent (C), and blow in the hose.

    - If air bubbles leak through the valve at less than 98 kPa (1.0 kgf/cm^2, 14.2 psi), replace the pump as an assembly. The pressure control valve is not available separately.

    - If the pressure control valve is OK, set it aside for reassembly later.



18. *Inspect the ball bearing by rotating the outer race* slowly. If you feel any play (axial or radial) or roughness, remove the faulty ball bearing (A), and install a new one (B).



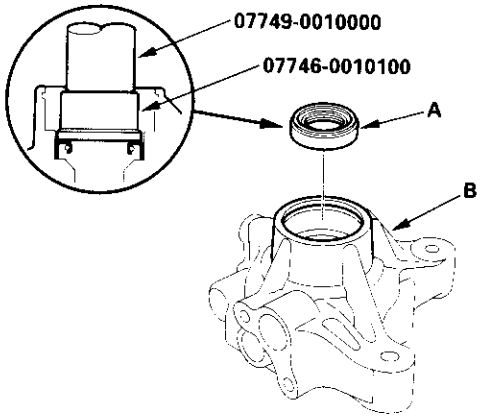
19. Inspect each part shown with an asterisk in the Exploded View; if any of them are worn or damaged, replace the pump as an assembly.

(cont'd)

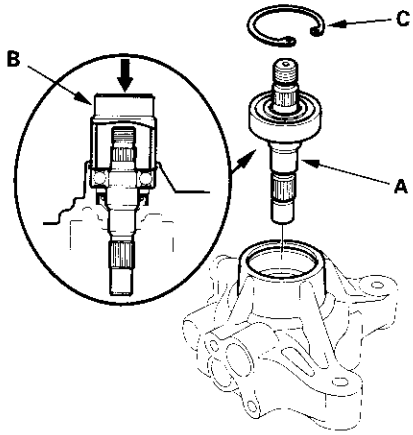
Pump Overhaul (cont'd)

Reassembly

20. Install the new pump seal (A) (with its grooved side facing in) into the pump housing (B) by hand first, then drive it in using the special tools with until there is no step at the top of the pump seal, and the seal is fully seated in the pump housing.

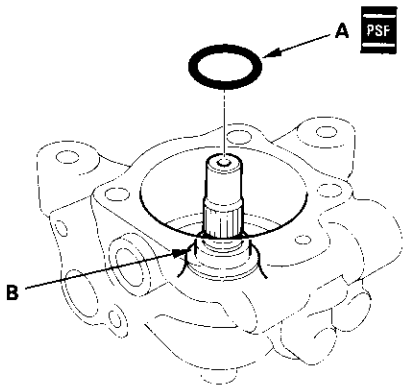


21. Position the pump drive shaft (A) in the pump housing, then press it in with the appropriate size socket wrench (B) as shown. Do not apply more than 1,370 N (140 kgf, 308 lbf) of pressure.

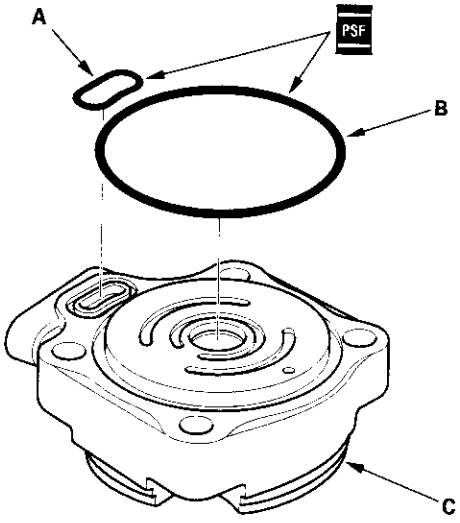


22. Install the 40 mm snap ring (C) with its radiused side facing out.

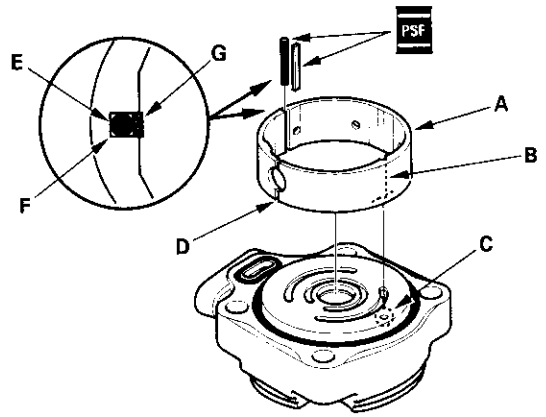
23. Coat the new 23.8 mm O-ring (A) with the power steering fluid, then position it on the bottom (B) of the pump housing.



24. Coat the new cover seals (A) and (B) with the power steering fluid, then position them into the grooves on the cover (C).



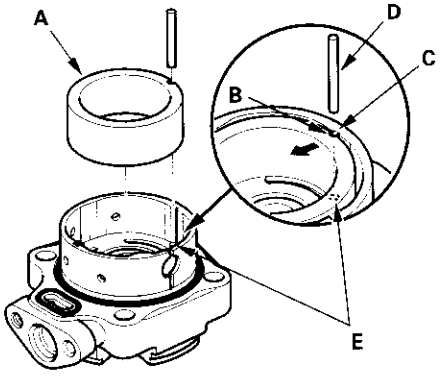
25. Install the outer case (A) by aligning the slot (B) inside the outer case with the cover roll pin hole (C). Be sure that the slit (D) on the outer case is to direction shown.



26. Apply the power steering fluid to the rubber seal (E) (black), and install it in the slot (F) of the outer case.

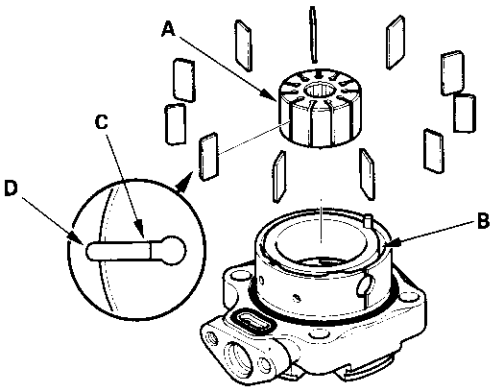
27. Apply power steering fluid to the slipper seal (G) (white), and install it on top of the rubber seal you just installed.

28. Install the cam ring (A) by aligning the slot (B) with the slot (C) in the outer case.



29. Insert the roll pin (D) into the slots between the cam ring and outer case, then push roll pin into the set hole (E).

30. Install the rotor (A) in the cam ring (B).

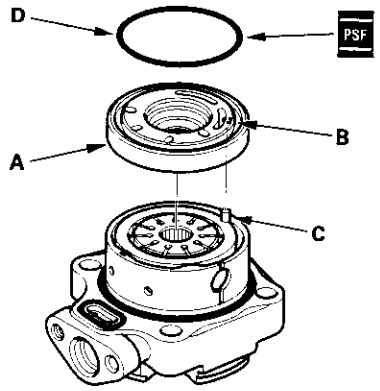


31. Set the 11 vanes (C) in the grooves in the rotor. Make sure that the round ends (D) of the vanes are in contact with the sliding surface of the cam ring.

(cont'd)

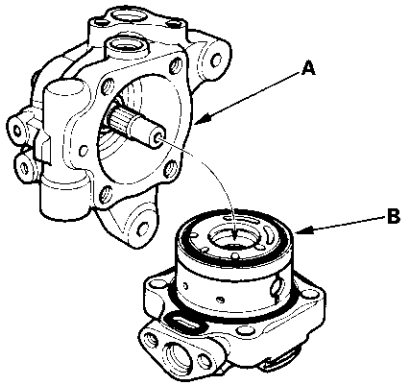
Pump Overhaul (cont'd)

32. Place the side plate (A) on the cam ring, and align the roll pin set hole (B) in the side plate with the roll pin end (C).

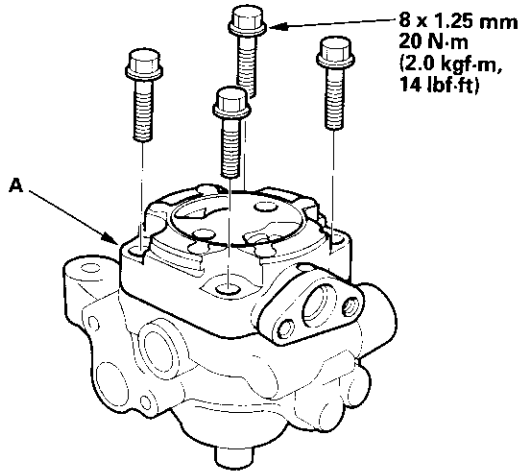


33. Coat the new O-ring (D) with the power steering fluid, then position it into the groove on the side plate.

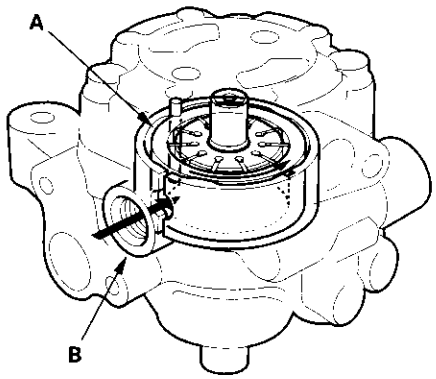
34. Install the pump housing (A) over the cover assembly (B).



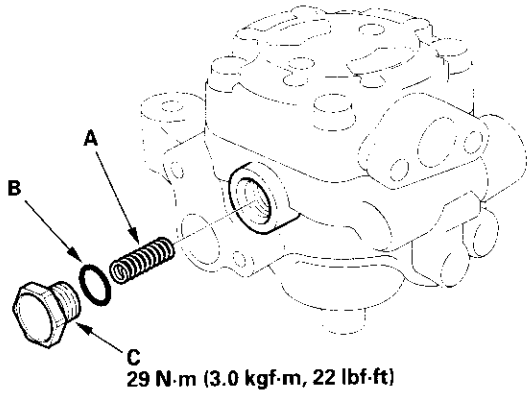
35. Align the bolt holes in the cover (A) with the threaded holes in the pump housing. Install the flange bolts loosely first, then torque the flange bolts in a criss cross pattern in two or more steps.



36. Push in the cam ring (A) from the pump housing cap hole (B) with a flat blade screwdriver, to make sure the cam ring is fully seated against the outer case.



37. Install the pump preload spring (A) in the pump housing.

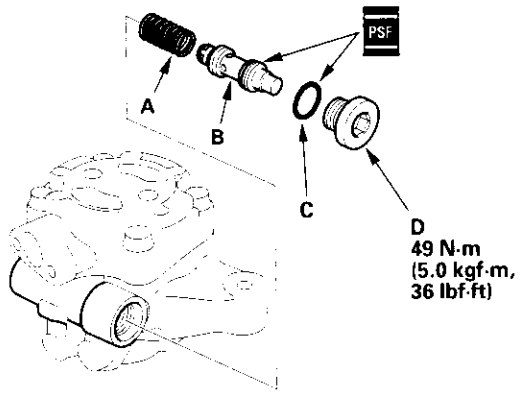


38. Coat the new 12.7 mm O-ring (B) with power steering fluid, and install it on the pump housing cap (C).

39. Install the pump housing cap on the pump housing, and tighten it to the specified torque.

40. Install the pressure control valve spring (A) in the pump housing.

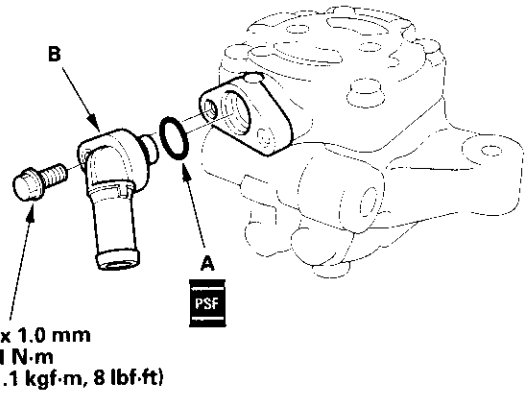
41. Coat the pressure control valve (B) with power steering fluid, and install it on the pump housing.



42. Coat the new 16.7 mm O-ring (C) with power steering fluid, and install it on the flow control valve cap (D).

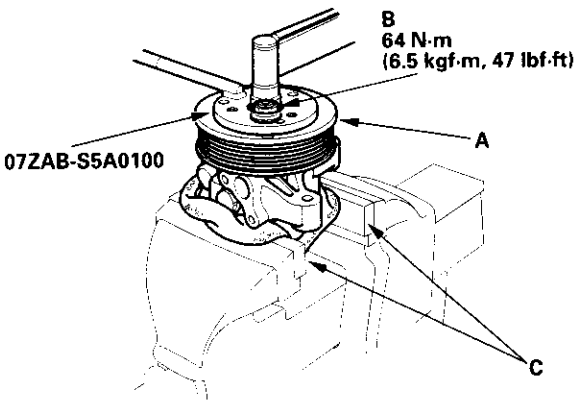
43. Install the flow control valve cap on the pump housing, and tighten it to the specified torque.

44. Coat the new O-ring (A) with power steering fluid, and install it on the inlet joint (B).



45. Install the inlet joint on the pump housing.

46. Install the pulley (A), then loosely install the pulley nut (B). Hold the steering pump in a vise with soft jaws (C). Be careful not to damage the pump housing with the jaws of the vise.



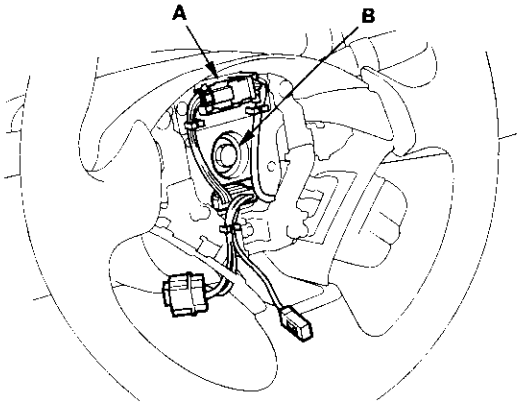
47. Hold the pulley with the special tool, and tighten the pulley nut.

48. Check that the pump turns smoothly by turning the pulley. If it turns hard, loosen the four flange bolts on the cover, then try retightening them try again in the same manner as in the step 35.

Steering Wheel Removal

SRS components are located in this area. Review the SRS component locations (see page 23-10) and precautions and procedures (see page 23-11) in the SRS section before performing repairs or service.

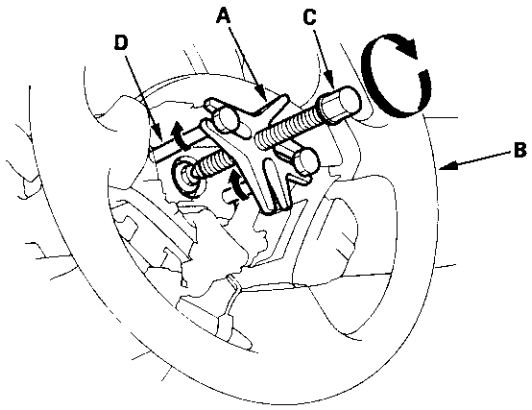
1. Make sure you have the anti-theft code for the radio, then write down the radio station presets.
2. Disconnect the negative cable from the battery.
3. Align the front wheels straight ahead, then remove the driver's airbag from the steering wheel (see page 23-127).
4. Disconnect the cruise control set/resume switch connector (A), and loosen the steering wheel bolt (B).



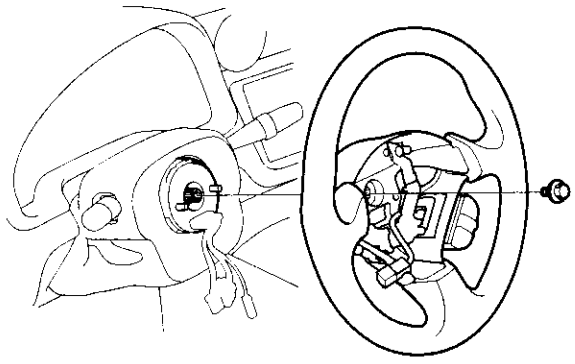
5. Install a commercially available steering wheel puller (A) on the steering wheel (B). Free the steering wheel from the steering column shaft by turning the pressure bolt (C) of the puller.

Note these items when removing the steering wheel:

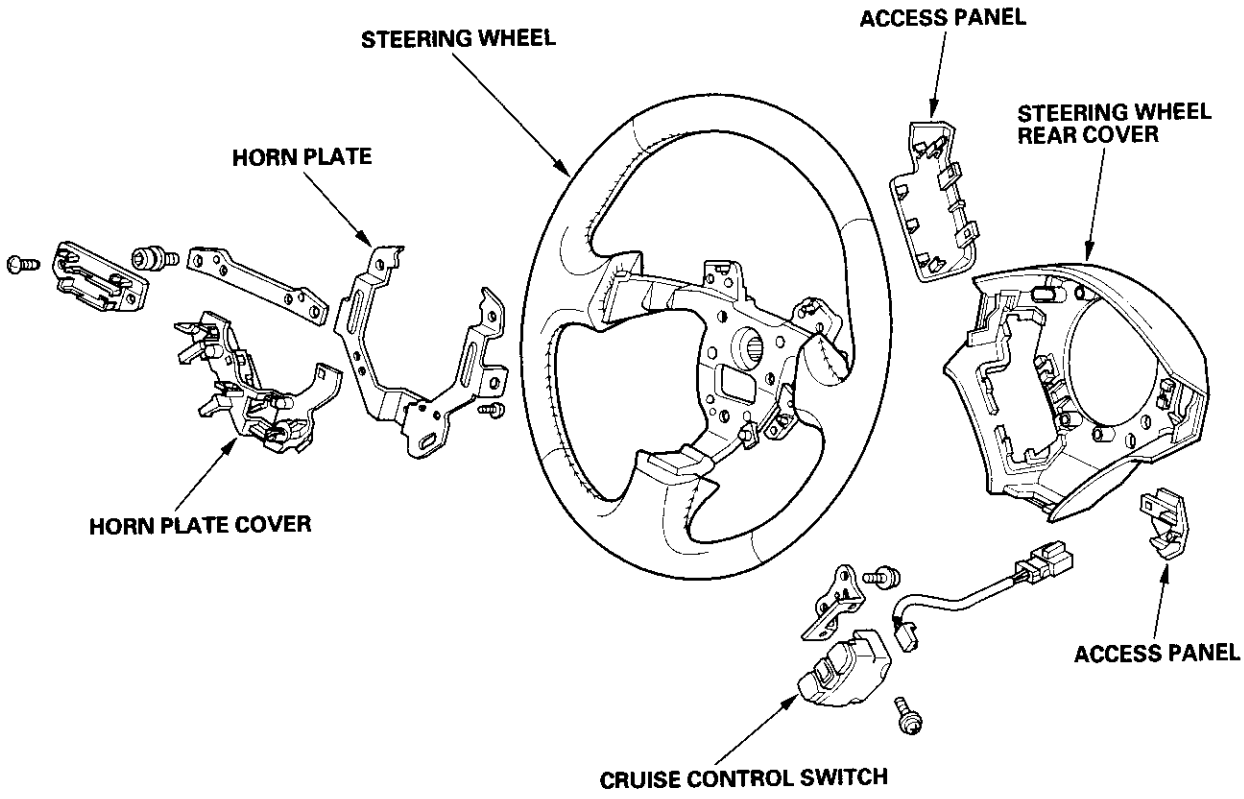
- Do not tap on the steering wheel or the steering column shaft when removing the steering wheel.
- If you thread the puller bolts (D) into the wheel hub more than five threads, the bolts will hit the cable reel and damage it. To prevent this, install a pair of jam nuts five threads up on each puller bolt.



6. Remove the steering wheel puller, then remove the steering wheel bolt and steering wheel from the steering column.

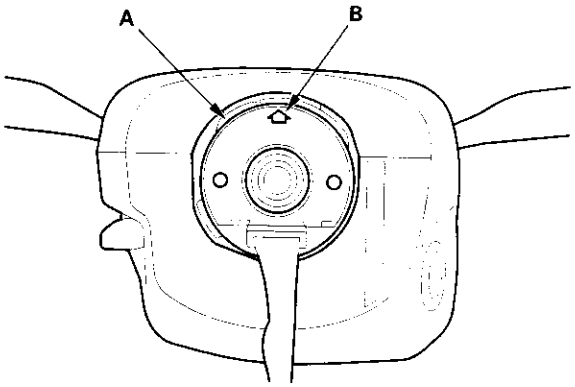


Steering Wheel Disassembly/Reassembly

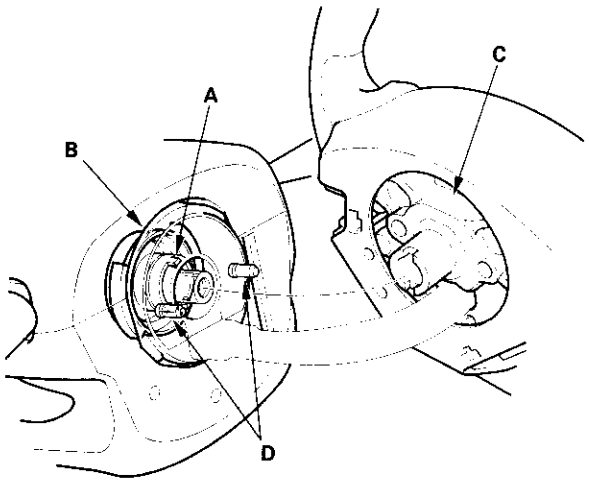


Steering Wheel Installation

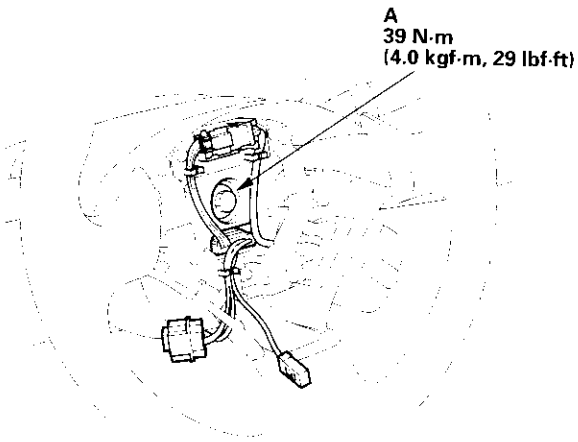
1. Before installing the steering wheel, make sure the front wheels are aligned straight ahead, then center the cable reel (A). Do this by first rotating the cable reel clockwise until it stops. Then rotate it counterclockwise about two and a half turns. The arrow mark (B) on the cable reel label point should point straight up.



2. Position the two tabs (A) of the turn signal cancelling sleeve (B) as shown, and install the steering wheel on to the steering column shaft, making sure the steering wheel hub (C) engages the pins (D) of the cable reel and tabs of the canceling sleeve. Do not tap on the steering wheel or steering column shaft when installing the steering wheel.



3. Install the steering wheel bolt (A) and tighten it.



4. Connect the cruise control set/resume switch connector.

5. Install the driver's airbag, and confirm that the system is operating properly (see page 23-128).

6. Check the horn and turn signal cancelling for proper operation.

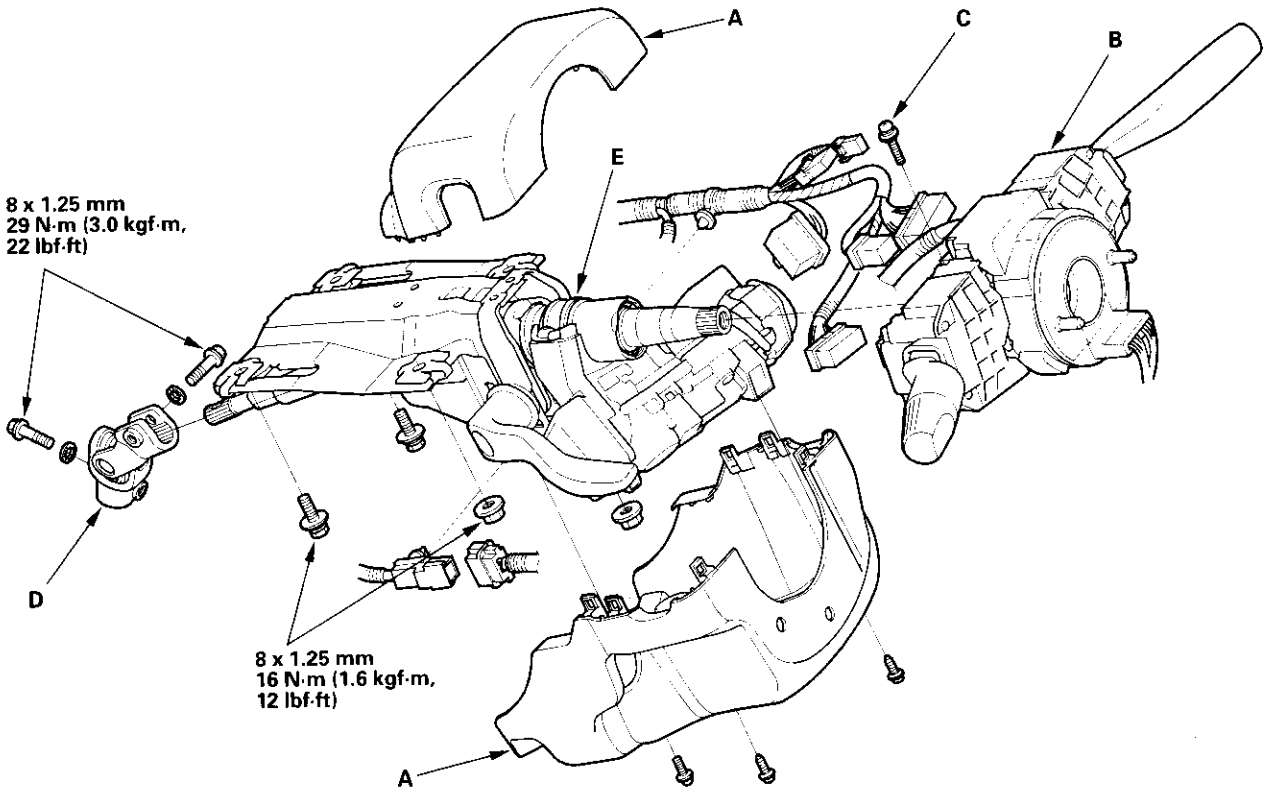
7. Reconnect the battery and do the following:
   - Power window control unit resetting procedure (see page 22-139).
   - PCM idle learn procedure (see page 11-149).
   - Enter the anti-theft code for the radio, then enter the costomer's radio station presets.
   - Set the clock.

Steering Column Removal and Installation

SRS components are located in this area. Review the SRS component locations (see page 23-10) and precautions and procedures (see page 23-11) 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 and the steering wheel (see page 17-22).
3. Remove the driver's dashboard lower covers (see page 20-61).
4. Remove the column covers (A).



5. Remove the combination switch assembly (B) from the steering column shaft by removing the screw (C) on the top of the combination switch. Disconnect the 5P, 14P, and 16P connectors from the switch.
6. Disconnect the 6P and two 7P connectors from the ignition switch. Disconnect the harness clips from the steering column.
7. Disconnect the steering joint (D), and remove it from the column shaft.
8. Remove the steering column (E) by removing the attaching nuts and bolts.

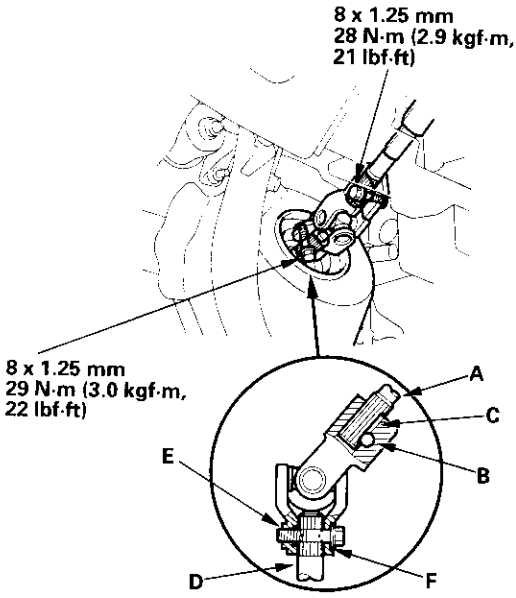
(cont'd)

Steering Column Removal and Installation (cont'd)

Installation

1. Install the steering column in the reverse order of removal, and note these items:
   - Take care not to let the sliding capsules fall out of the position during column installation.
   - 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 (E) 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.

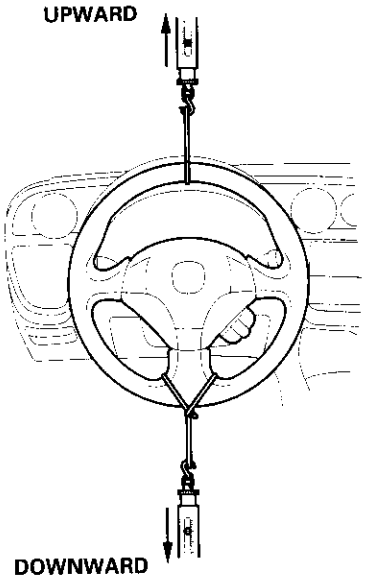
4. Pull on the steering joint to make sure that the steering joint is fully seated. Then install the upper joint bolt and tighten both bolts to the specified torque .

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 17-24).
   - Reconnect the battery.
   - Do the PCM idle learn procedure (see page 11-149).
   - Do the power window control unit reset procedure (see page 22-139).
   - Enter the anti-theft code for the radio, then enter the customer's radio station presets.
   - Set the clock.
   - Verify horn and turn signal switch operation.
   - Check wheel alignment, if necessary (see page 18-4).

Steering Column Tilt Operation Check

1. Set the steering wheel in the straight driving position, and loosen the tilt lever fully.
2. Attach the spring scale to the highest point of the steering wheel, and set the tilting position at the lowest.
3. Pull the spring scale straight up, and read the operation load during tilting.
4. Attach the spring scale to the lowest point of the steering wheel.
5. Pull the spring scale straight down, and read the operation load during tilting.

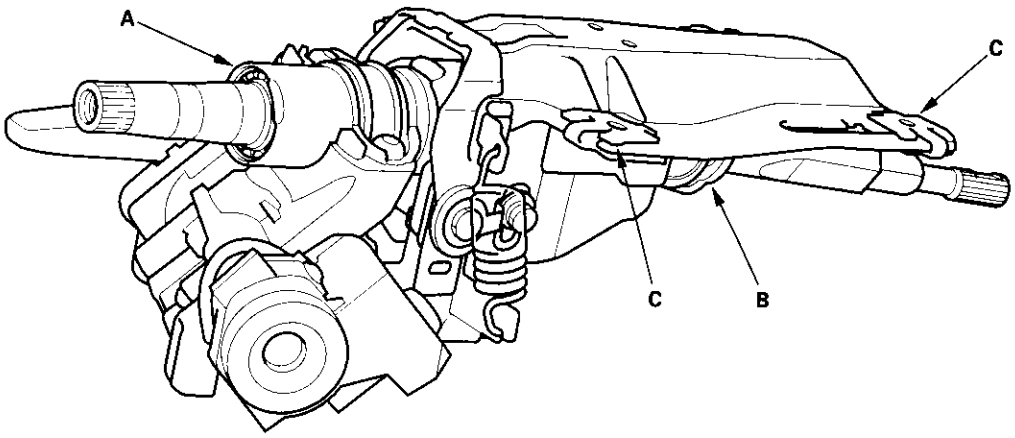
Tilting Load (Upward/Downward):
Standard: 68 N (7.0 kgf, 15 lbf) or below



6. If the measurement is more than the specification, adjust the tilt lever preload (see page 17-29).

Steering Column/Tilt Lever Inspection/Adjustment

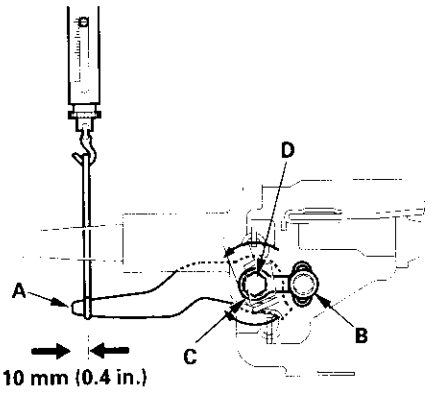
- Check the steering column ball bearing (A) and the steering joint bearings (B) for play and proper movement. If any bearing is noisy or has excessive play, replace the steering column as an assembly.
- Check the sliding capsules (C) for distortion and breakage. If there is distortion or breakage, replace the steering column as an assembly.



Tilt Lever Preload Inspection

1. Move the tilt lever (A) from the loose position to the lock position three to five times; then measure the tilt lever preload 10 mm (0.4 in.) from the end of the tilt lever.

Preload: 70 – 90 N (7 – 9 kgf, 15 – 20 lbf)



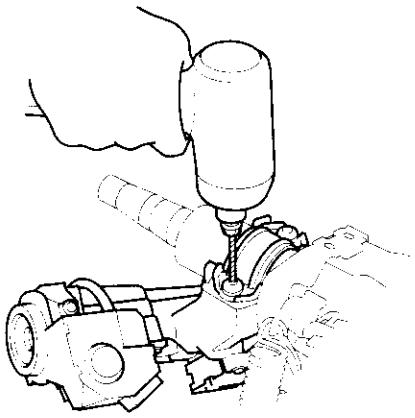
2. If the measurement is out of the specification, adjust the preload using the following procedures.

   - Loosen the tilt lever, and set the steering column in the neutral position.
   - Remove the 6 mm lock bolt (B), and remove the stop (C). Be careful not to loosen the tilt lever when installing the stop or tightening the 6 mm lock bolt.
   - Adjust the preload by turning the tilt lock bolt (D) left bolt.
   - Pull up the tilt lever to the uppermost position, and install the stop. Check the preload again. If the measurement is still out of specification, repeat the above procedures to adjust.

Steering Lock Replacement

1. Remove the steering column (see page 17-25).

2. Center punch each of the two shear bolts, 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.



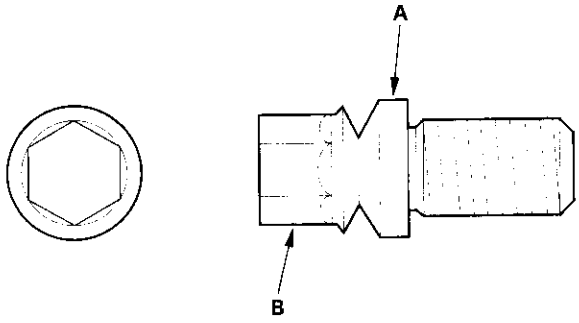
3. Remove the shear bolts from the switch body.

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.

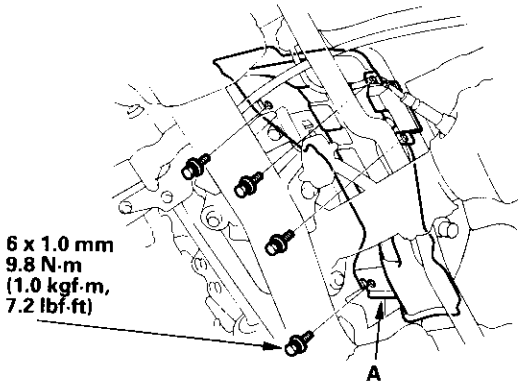
7. Tighten the shear bolts (A) until the hex heads (B) twist off.



Rack Guide Adjustment

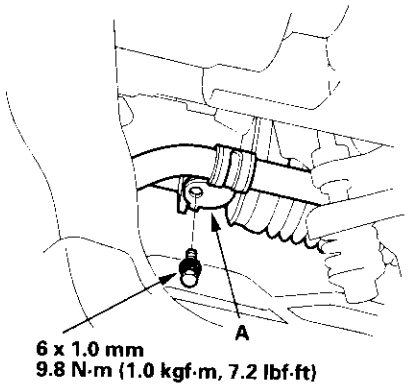
Special Tools Required
Locknut wrench, 40 mm 07916-SA50001

1. Set the wheels in the straight ahead position.
2. Remove the air cleaner.
3. Remove the heat shield (A).

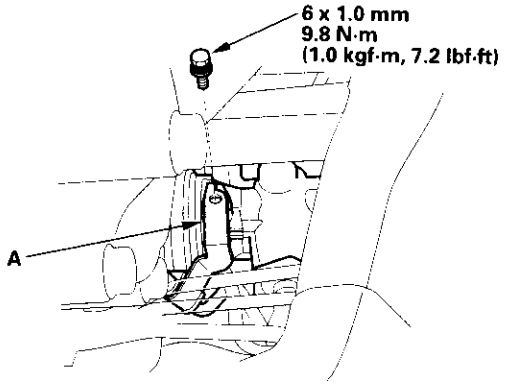


4. Vehicles with A/T only: Remove the transmission mount bracket (see step 41 on page 5-8).
5. Under the steering gearbox, remove the return hose clamps (A).

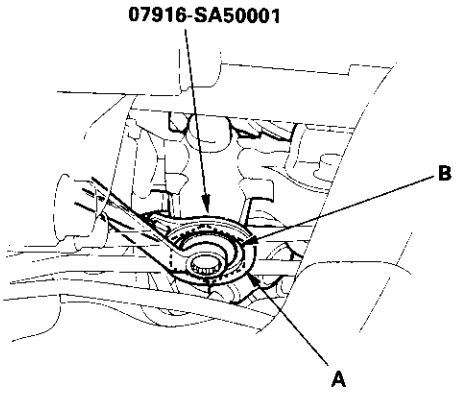
RIGHT SIDE:



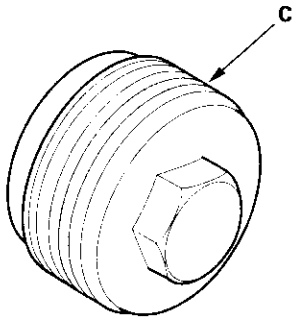
LEFT SIDE:



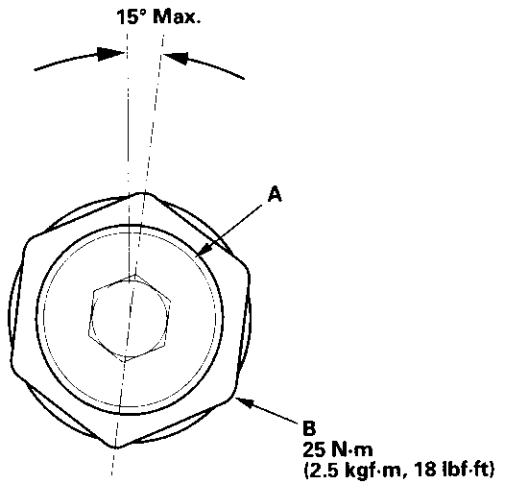
6. Loosen the rack guide screw locknut (A) with the special tool, then remove the rack guide screw (B).



7. Remove the old sealant from rack guide screw, and apply new sealant to the middle of the threads (C). Loosely install the rack guide screw on the steering gearbox.



8. Tighten the rack guide screw (A) to 25 N·m (2.5 kgf·m, 18 lbf·ft), then loosen it.



9. Retighten the rack guide screw to 8 N·m (0.8 kgf·m, 6 lbf·ft), then back it off to specified angle.

   Specified Return Angle: 15° Max.

10. Hold the rack guide screw stationary with a wrench, and tighten the locknut by hand until it is fully seated.

11. 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.

12. Install the transmission mount bracket (see step 9 on page 5-12).

13. Reinstall the return hose clamps and heat shield.

14. Check for unusual steering effort through the complete turning travel.

15. Check the steering wheel rotation play and the power assist (see page 17-7).

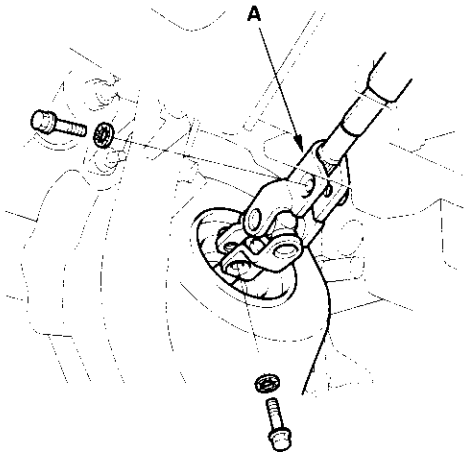
Steering Gearbox Removal

Special Tools Required
Ball joint remover, 28 mm 07MAC-SL00200

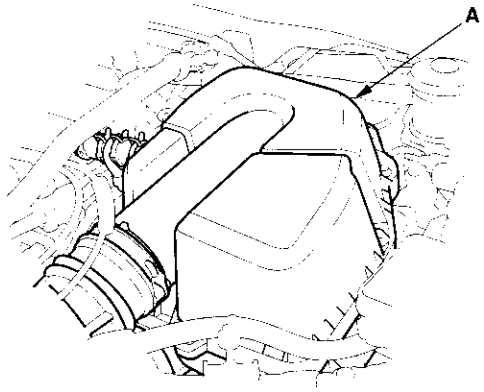
Note these items during removal:

- Using solvent and a brush, wash any oil and dirt off the valve body unit, its lines, and the end of the gearbox. Blow dry with compressed air.
- Be sure to remove the steering wheel before disconnecting the steering joint. Damage to the cable reel can occur.

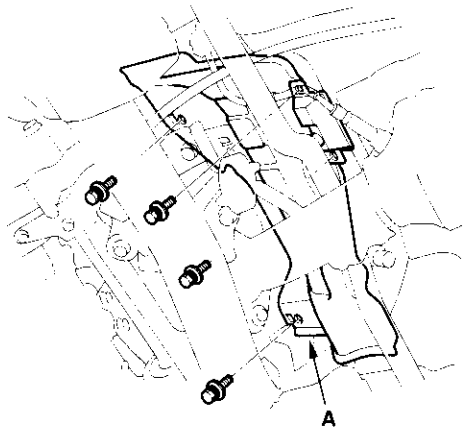
1. Make sure you have the anti-theft code for the radio, then write down the radio station presets.
2. Disconnect the negative cable from the battery.
3. Raise the front of vehicle, and support it with safety stands in the proper location (see page 1-8).
4. Remove the front wheels.
5. Remove the driver's airbag and the steering wheel (see page 17-22).
6. Remove the driver's dashboard lower covers.
7. Remove the steering joint bolts, and disconnect the steering joint by moving the steering joint (A) toward the column.



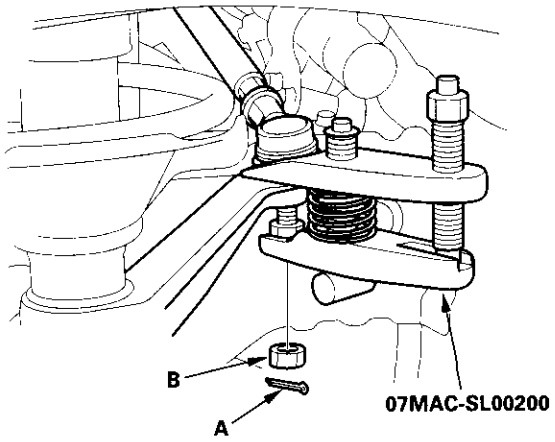
8. Remove the air cleaner (A).



9. Remove the heat shield (A).

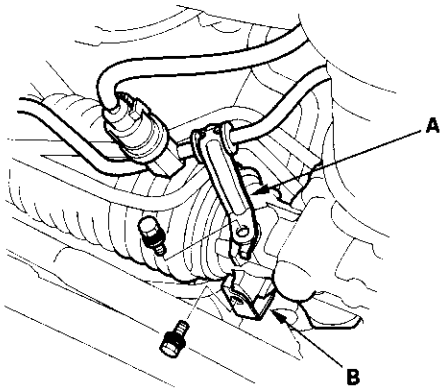


10. Remove the cotter pin (A) from the tie-rod ball joint nut (B), and loosen the nut.

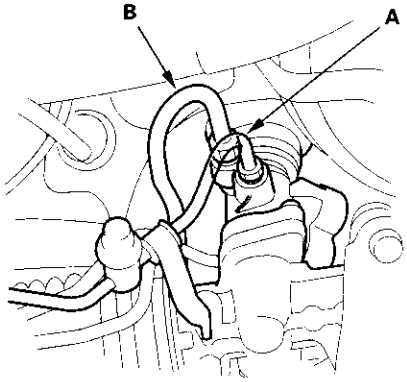


11. Separate the tie-rod ball joint and damper steering arm using the special tool (see page 18-10).

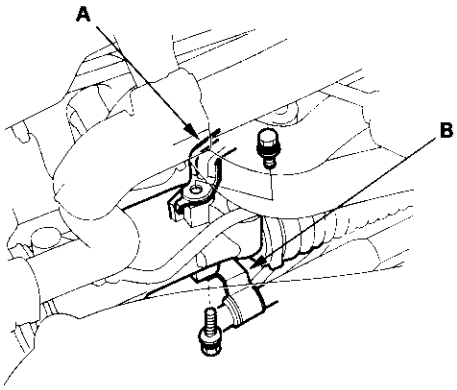
12. Remove the feed line clamp (A) and return hose clamp (B) from the left side of the gearbox.



13. Disconnect the feed line (A) and return line (B) from the valve body unit.



14. Remove the feed line clamp (A) and return hose clamp (B) from the right side of the gearbox.



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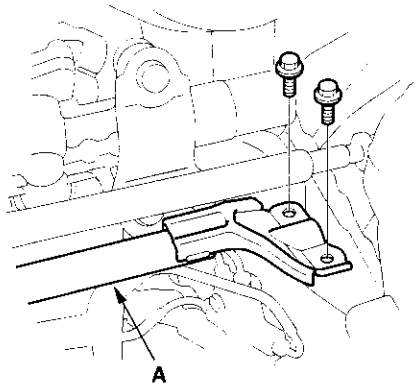
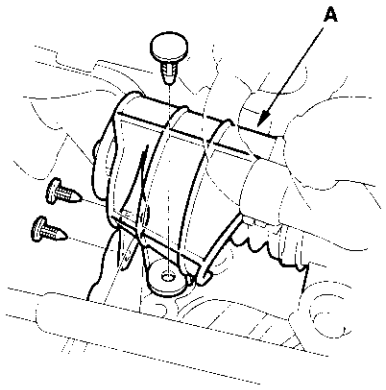
Steering Gearbox Removal (cont'd)

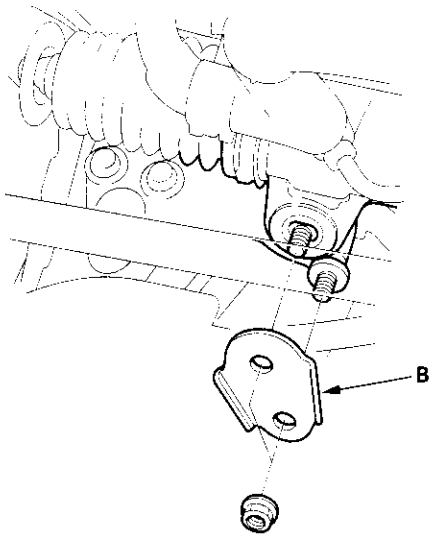
15. Remove the body stiffener (A).



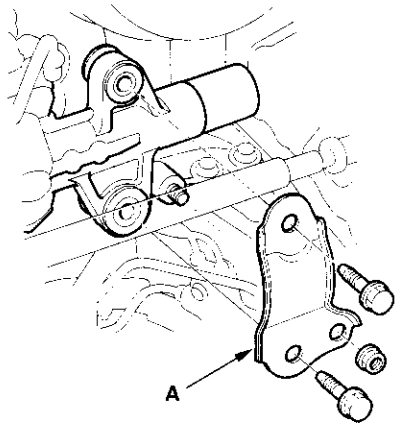
16. Remove the steering rack guard (A) by removing the three clips.



17. Remove steering stiffener B.

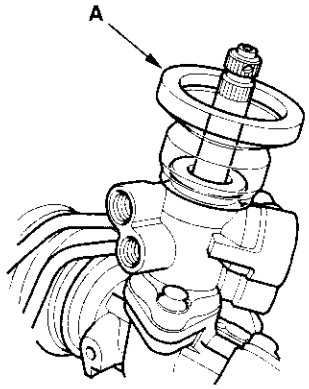


18. Remove steering stiffener A.

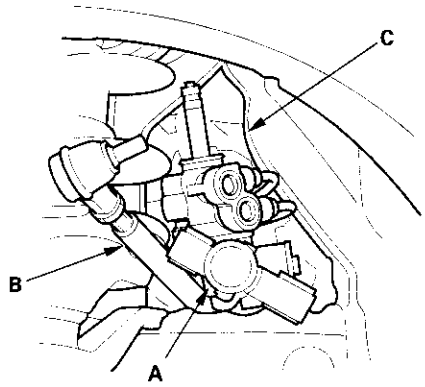


19. Lower the steering gearbox, and rotate it so the pinion shaft points upward.

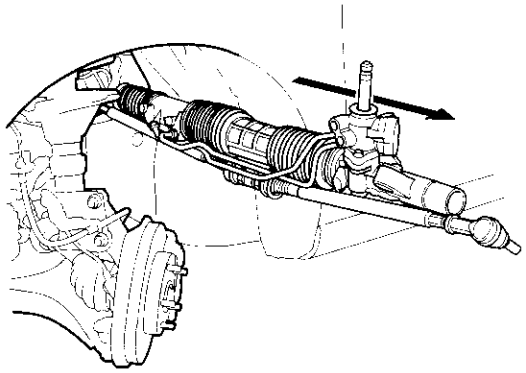
20. Remove the pinion shaft grommet (A) from the top of the valve body unit.



21. Carefully move the steering gearbox (A) and tie-rods (B) as an assembly toward the driver's side until the pinion shaft clears the wheelwell opening (C) on the frame.

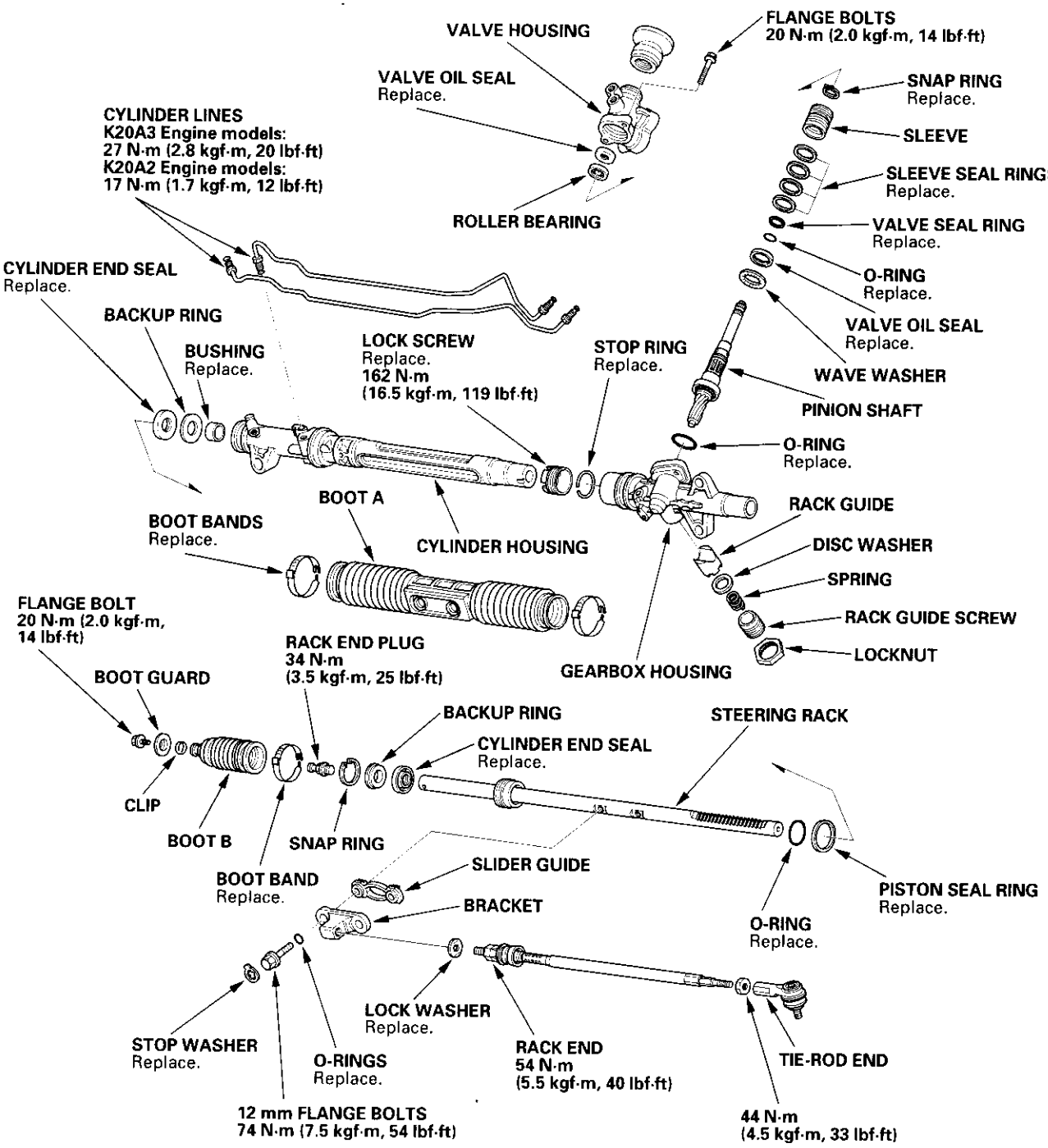


22. Remove the steering gearbox through the wheelwell opening on the driver's side.



Steering Gearbox Overhaul

Exploded View



Special Tools Required

- Cylinder end seal remover attachment 07NAD-SR30200 or 07NAD-SR3020A
- Driver, 27 mm 07ZAF-S5A0100
- Valve seal ring sizing tool 07NAG-SR30900 or 07NAG-SR3090A
- Sleeve seal ring guide 07YAG-S2X0100
- Sleeve seal ring sizing tool 07ZAG-S5A0100
- Attachment, 32 x 35 mm 07746-0010100
- Driver 07749-0010000
- Piston seal ring guide, 42 mm 07ZAG-S7A0100
- Piston seal ring sizing tool, 42 mm 07ZAG-S7A0200
- Piston seal ring guide, 44 mm 07XAG-S0KA200
- Piston seal ring sizing tool, 44 mm 07XAG-S0KA100
- Pilot collar 07GAF-PH70100
- Locknut wrench 07ZAA-S5A0100
- Driver handle 07NAD-SR30101
- Seal slider 07974-6890801 or 07974-689080A
- Valve seal ring guide 07ZAG-S5A0200
- Pincers, Oetiker 1098 or equivalent, commercially available.

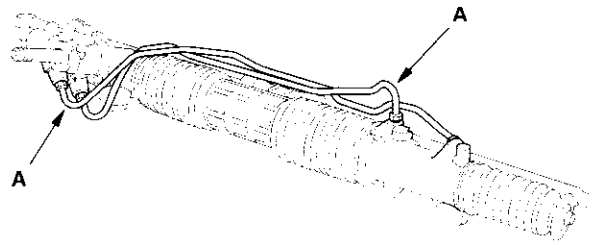
NOTE: Refer to the Exploded View as needed during this procedure.

Removal

1. Remove the steering gearbox (see page 17-32).

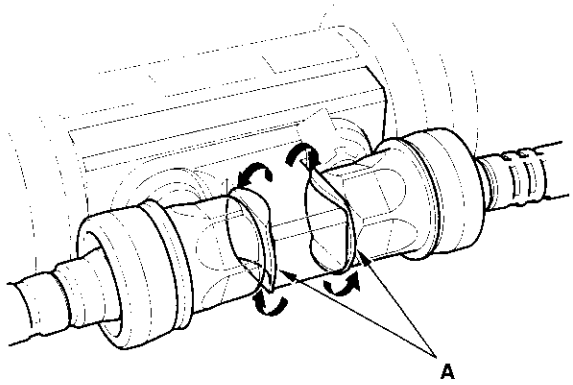
Disassembly

2. Remove cylinder lines (A) from the gearbox.

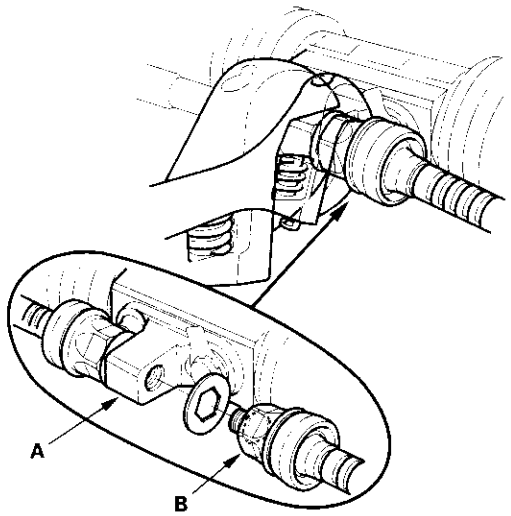


3. Drain the fluid from the cylinder fittings by slowly moving the steering rack back and forth.

4. Unbend the lock washer (A).



5. Hold the bracket (A) with one wrench, and unscrew both rack ends (B) with another wrench. Remove the lock washers.



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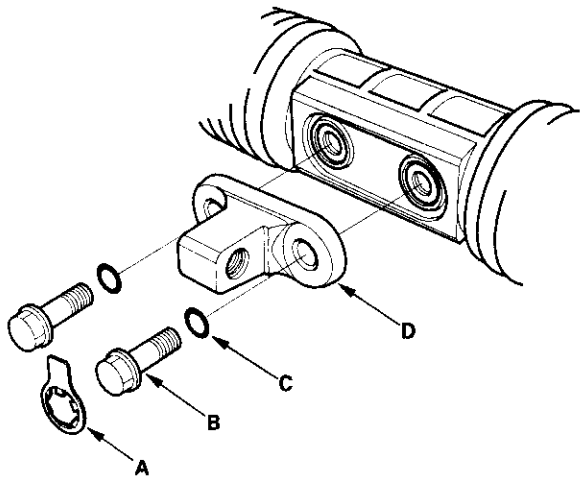
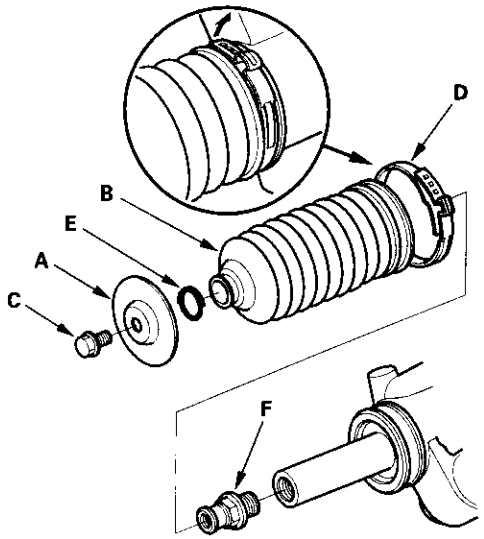
Steering Gearbox Overhaul (cont'd)

6. Remove the stop washer (A), the 12 mm flange bolts (B), O-rings (C), and bracket (D) from the steering gearbox.

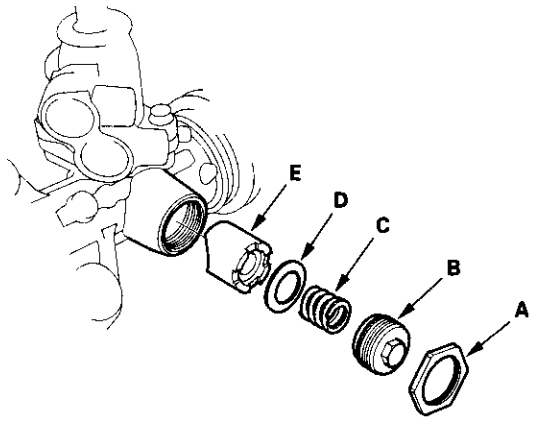


7. Remove the boot guard (A) by removing the 8 mm flange bolt (C) on the rack end.

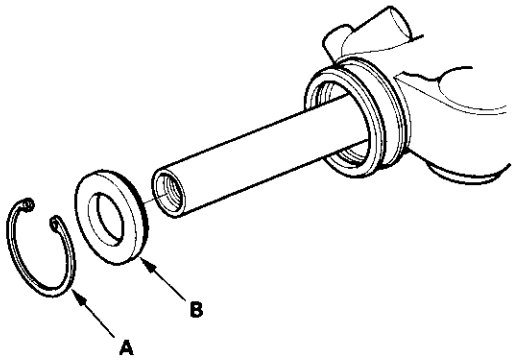


8. Remove the boot band (D) and clip (E). Pull boot (B) away from the end of the steering gearbox. Remove the rack end plug (F).

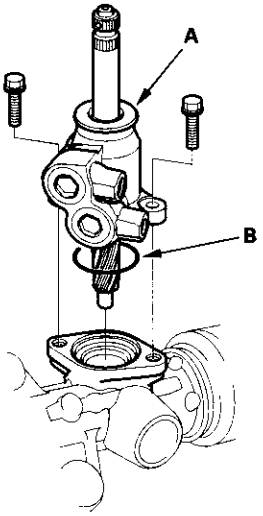
9. Loosen the locknut (A), then remove the rack guide screw (B), spring (C), disc washer (D), and rack guide (E) from the steering gearbox.



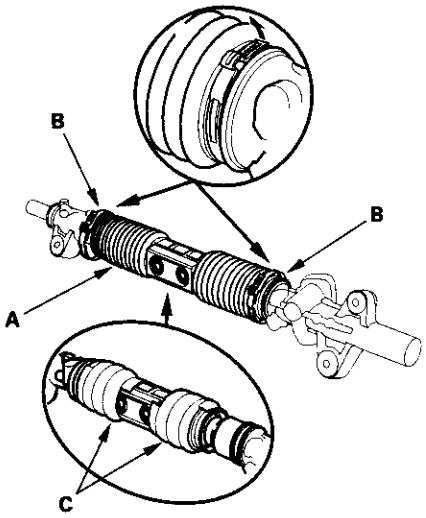
10. Remove the snap ring (A) and backup ring (B) from the cylinder housing.



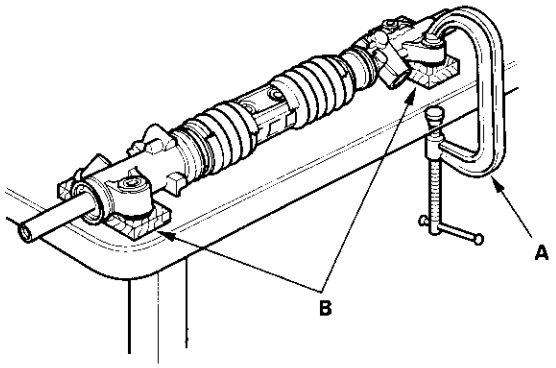
11. Remove the valve body unit (A) from the steering gearbox. Remove the O-ring (B) and discard it.



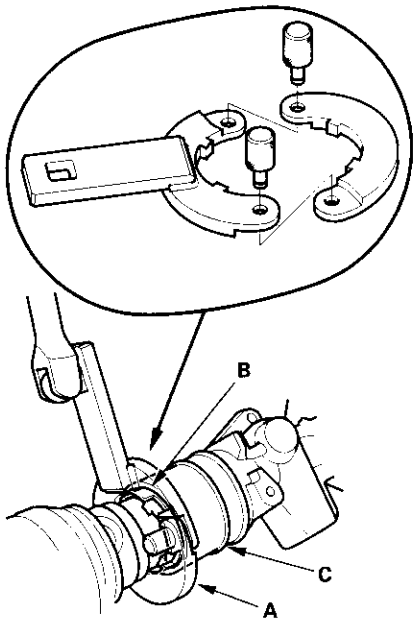
12. Remove the two boot bands (B) from boot A. Compress boot A by hand, and apply vinyl tape (C) so the boots stay collapsed and pulled back.



13. Hold the gearbox housing using a C-clamp (commercially available) (A) and the wooden blocks (B) as shown. Do not clamp the cylinder housing or gearbox housing in the vise.



14. Install the special tool (A) on the lock screw (B), then loosen and remove the lock screw from inside of the gearbox housing (C).



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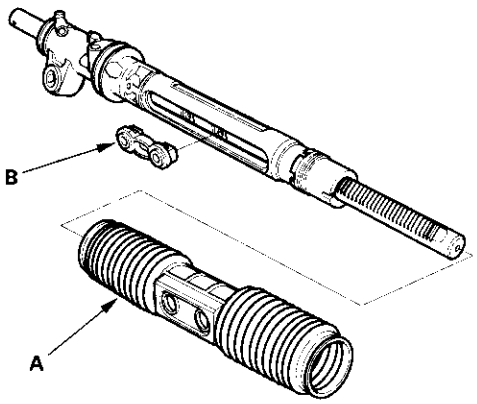
(cont'd)

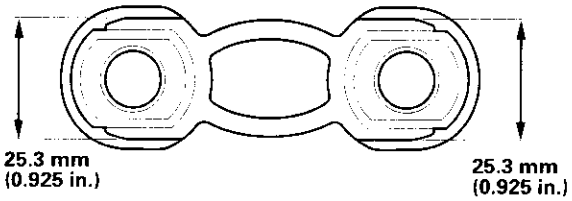
Steering Gearbox Overhaul (cont'd)

15. Remove the special tool.

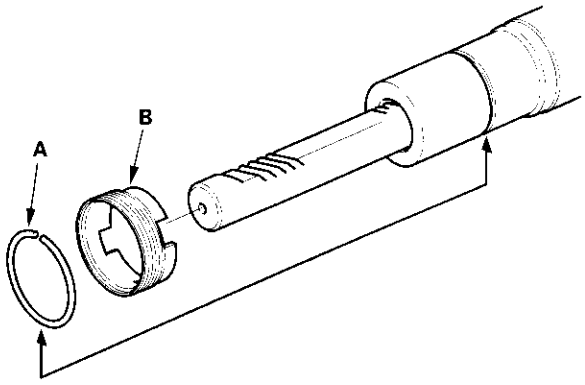
16. Pull on the cylinder to remove it from the gearbox housing. Remove boot A and the slider guide (B) from the cylinder.



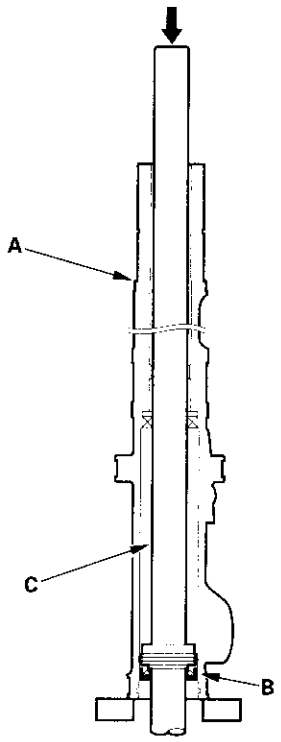
17. Check the slider guide for damage and cracks. Use vernier calipers to measure the thickness of the slider guide. If the thickness is less than the service limit, replace the slider guide.



18. Remove and discard the stop ring (A) on the cylinder by expanding it with snap ring pliers. Remove and discard the lock screw (B).

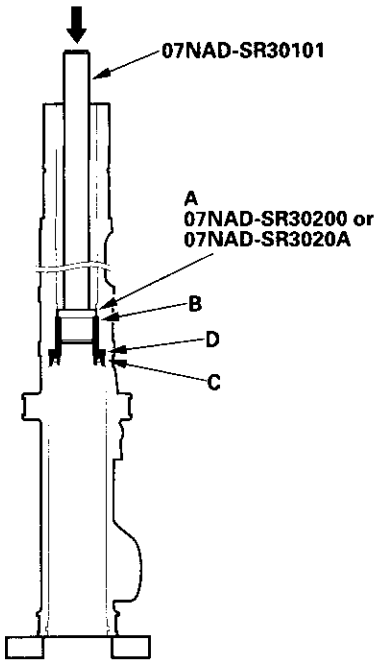


19. Set the cylinder housing (A) in a press so the cylinder side points downward, then press the cylinder end seal (B) and steering rack (C) out of the cylinder. Hold the rack to keep it from falling when pressed clear.



20. Remove the cylinder end seal from the steering rack.

21. Insert the special tools into the cylinder. Make sure the attachment (A) of the special tools is securely positioned on the bushing edges (B).

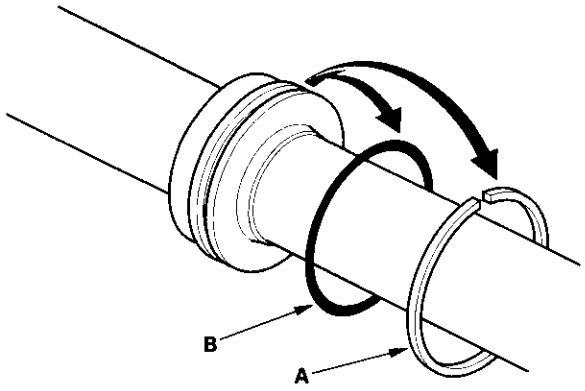


22. Place the cylinder in a press, then remove the cylinder end seal (C), backup ring (D), and bushing (B) from the cylinder by pressing on the special tool end.

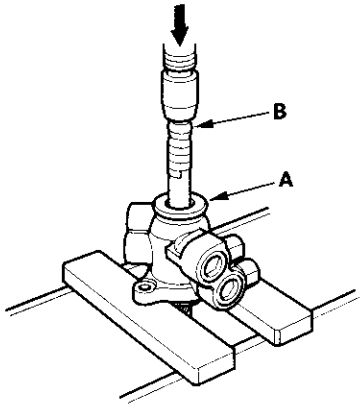
    Note the items when pressing the cylinder end seal:

    - Keep tool straight to avoid damaging the cylinder wall. Check the tool angle, and correct it if necessary, when removing the cylinder end seal.
    - Use a press to remove the cylinder end seal. Do not try to remove the seal by striking the tool; striking the tool would break the cylinder end seal, and the seal would remain in the cylinder.

23. Carefully pry the piston seal ring (A) and O-ring (B) off the rack piston. Be careful not to damage the inside of the seal ring groove and piston edges when removing the seal ring.



24. Before removing the valve housing (A), apply vinyl tape (B) to the splines on the pinion shaft.



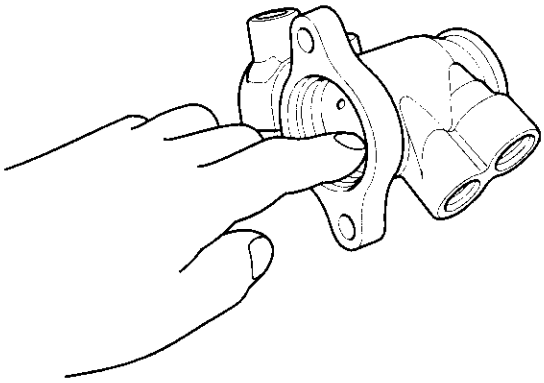
25. Separate the valve housing from the pinion shaft/ valve using a press.

(cont'd)

Steering Gearbox Overhaul (cont'd)

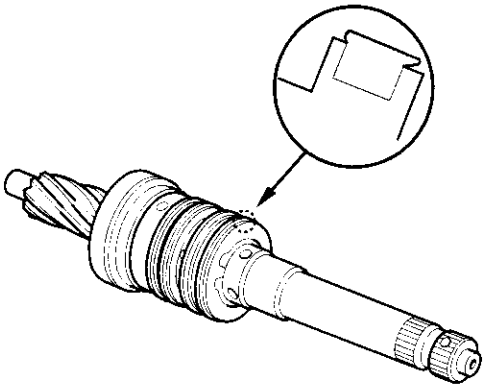
26. With your finger, check the inner wall of the valve housing where the seal ring slides. If there is a step in the wall, the housing is worn. Replace it.

    NOTE: There may be sliding marks from the seal ring on the wall of the valve housing. Replace the valve housing only if the wall is stepped.

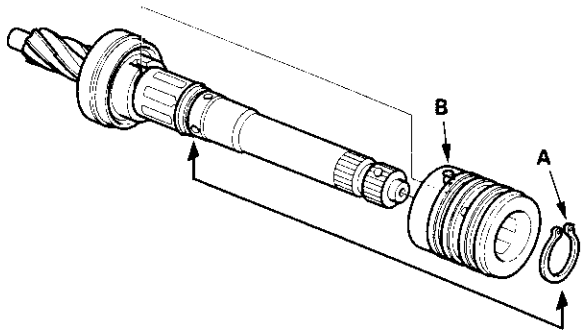


27. Check for wear, burrs, and other damage to the edges of the grooves in the sleeve.

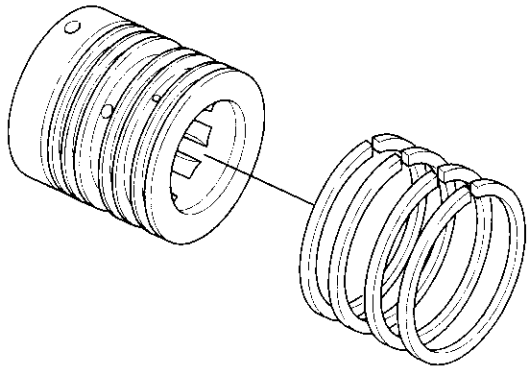
    NOTE: The pinion shaft and sleeve are a precision matched set. If either the pinion shaft or sleeve must be replaced, replace both parts as a set.



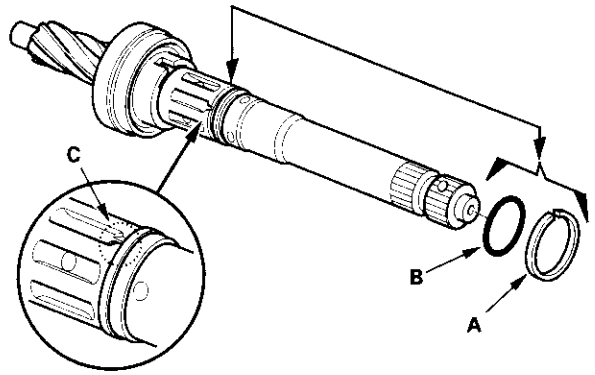
28. Remove the snap ring (A) and sleeve (B) from the pinion shaft.



29. Using a cutter, or an equivalent tool, cut and remove the four seal rings from the sleeve. Be careful not to damage the edges of the sleeve grooves and the outer surface when removing the seal rings.



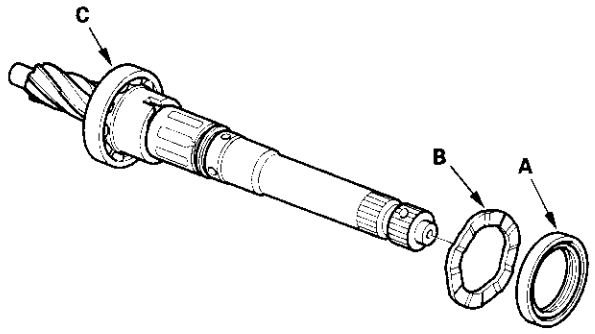
30. Using a cutter or an equivalent tool, cut the valve seal ring (A) and O-ring (B) at the groove (C) in the pinion shaft. Remove the valve seal ring and O-ring. Be careful not to damage the edges of the pinion shaft groove and outer surface when removing the valve seal ring and O-ring.



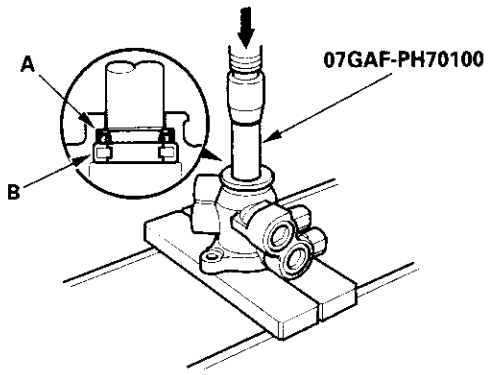
31. Remove the valve oil seal (A) and wave washer (B) from the pinion shaft.

Note these items during disassembly:

- Inspect the ball bearing (C) by rotating the outer race slowly. If there is any excessive play, replace the pinion shaft and sleeve as an assembly.
- The pinion shaft and sleeve are a precise fit; do not intermix old and new pinion shafts and sleeves.

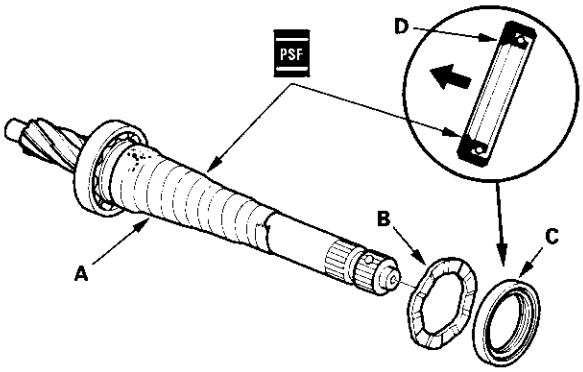


32. Press the valve oil seal (A) and roller bearing (B) out of the valve housing using a hydraulic press and special tool.



Reassembly

33. Apply vinyl tape (A) to the stepped portion of the pinion shaft, and coat the surface of the vinyl tape with the power steering fluid.

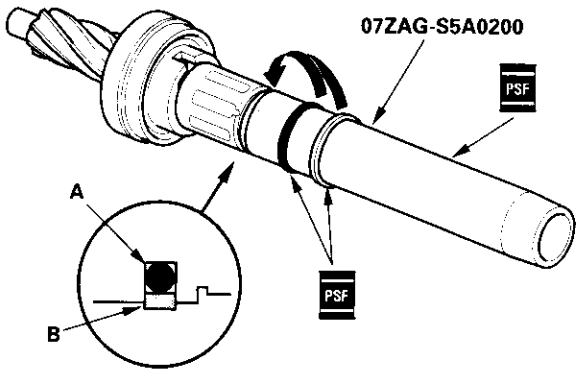


34. Install the wave washer (B). Coat the inside surface of the new valve oil seal (C) with power steering fluid, and install the seal with its grooved side facing opposite the bearing, then slide it over the pinion shaft, being careful not to damage its sealing lip (D). Remove the vinyl tape.

(cont'd)

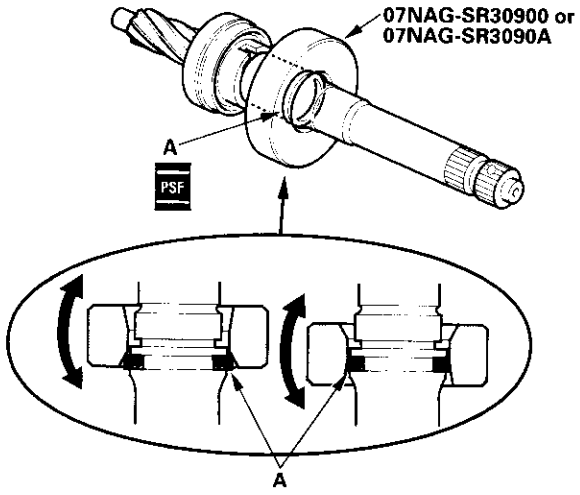
Steering Gearbox Overhaul (cont'd)

35. Install the special tool over the pinion, and coat the surface of the tool with the power steering fluid. Slip the new O-ring (A) and new valve seal ring (B) over the special tool, and expand them.



36. Fit the O-ring and in the groove of the pinion shaft. Then slide the valve seal ring over the shaft and in the groove on the pinion shaft.

37. Remove the special tool, and apply power steering fluid to the surface of the valve seal ring (A).

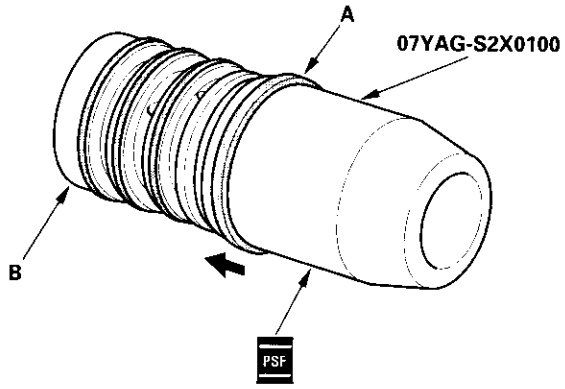


38. Apply power steering fluid to the inside of the special tool. Set the larger diameter end of the special tool over the valve seal ring, and move the special tool up and down several times to make the valve seal ring fit in the pinion shaft groove.

39. Remove the special tool, turn it over, slide the smaller diameter end over the valve seal ring. Move it up and down several times to make the valve seal ring fit snugly in the pinion shaft groove.

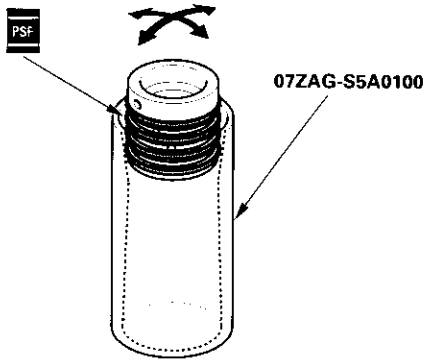
40. Apply power steering fluid to the surface of the special tool. Slip two new seal rings (A) over the special tool from the smaller diameter end, and expand them. Install only two rings at a time from each end of the pinion shaft sleeve (B).

    Note these items when installing the seal ring:
    - Do not over-expand the seal ring. Install the resin seal rings with care so as not to damage them. After installation, be sure to contract the seal rings using the special tool (sizing tool).
    - There are two types of sleeve seal rings: black and brown. Do not mix the different types of rings as they are not compatible.



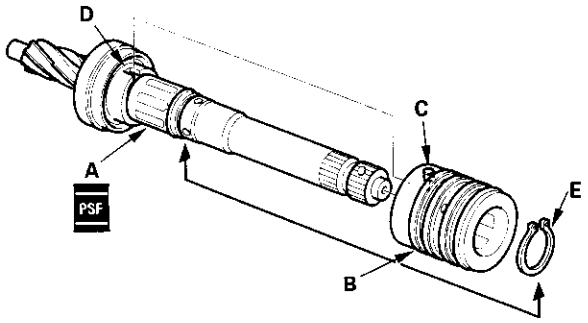
41. Align the special tool with each groove in the sleeve, and slide a sleeve seal ring into each groove. After installation, compress the seal rings with your fingers temporarily.

42. Apply power steering fluid to the seal rings on the sleeve, and to the entire inside surface of the special tool, then slowly insert the sleeve into the special tool.

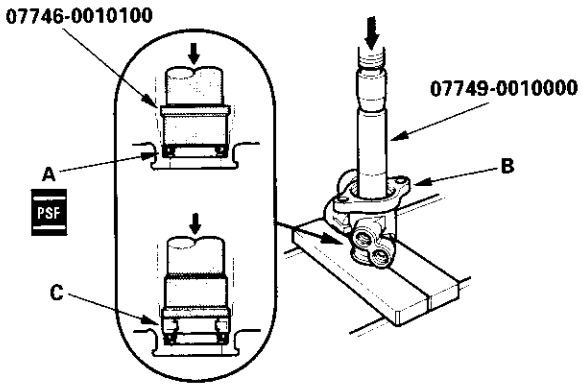


43. Move the sleeve back and forth several times to make the seal rings snugly fit in the sleeve. Be sure that the seal rings are not twisted.

44. Apply power steering fluid to the surface of the pinion shaft (A). Slide the sleeve (B) onto the pinion shaft by aligning the locating pin (C) on the inside of the sleeve with the cutout (D) in the shaft. Then install the new snap ring (E) securely in the pinion shaft groove. Be careful not to damage the valve seal ring when inserting the sleeve.

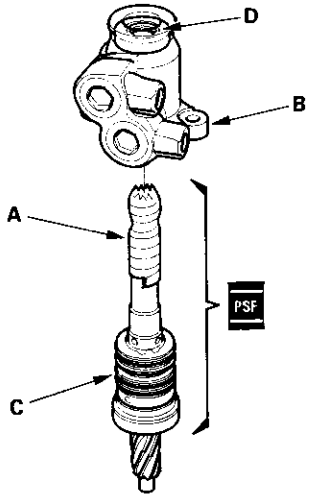


45. Apply power steering fluid to the seal ring lip of the new valve oil seal (A), then install the seal in the valve housing (B) using a hydraulic press and special tools. Install the seal with its grooved side facing the tool.



46. Press the roller bearing (C) into the valve housing with a hydraulic press and special tool.

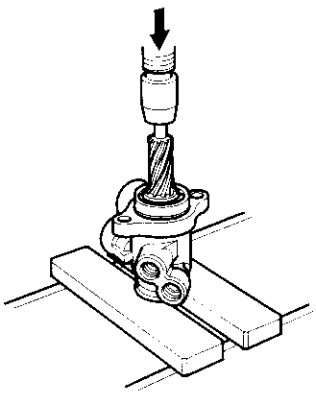
47. Apply vinyl tape (A) to the pinion shaft, then coat the vinyl tape with power steering fluid.



48. Insert the pinion shaft into the valve housing (B). Be careful not to damage the valve seal rings (C) and valve oil seal sealing lip (D).

49. Remove the vinyl tape from the pinion shaft, then remove any residue from the tape adhesive.

50. Press the pinion shaft/sleeve into the valve housing with a hydraulic press. Check that the pinion shaft/sleeve turns smoothly by hand after installing it.



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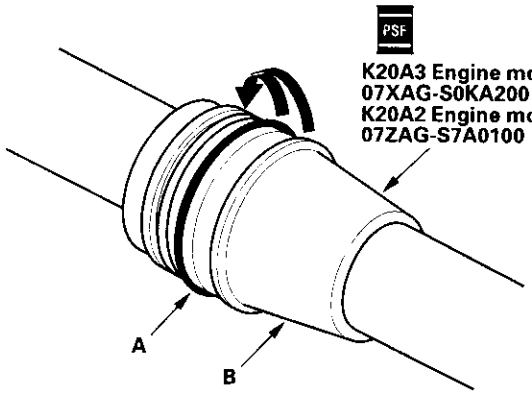
Steering Gearbox Overhaul (cont'd)

51. Coat the special tool with power steering fluid, then slide it onto the rack, big end first.

52. Position the new O-ring (A) and new piston seal ring (B) on the special tool, then slide them down toward the big end of the tool.

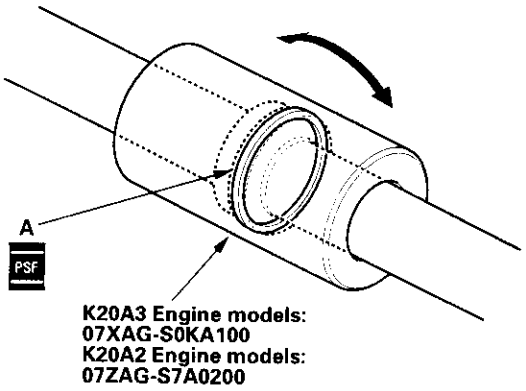
Note these items during reassembly:
- Do not over expand the resin seal rings. Install the resin seal rings with care so as not to damage them. After installation, be sure to contract the seal ring using the special tool (sizing tool).
- Replace piston's O-ring and seal ring as a set.



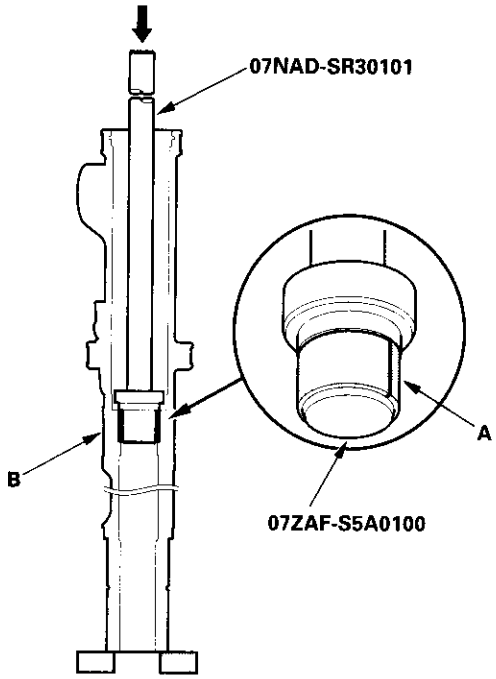
53. Pull the O-ring off into the piston groove, then pull the piston seal ring off into the piston groove on top of the O-ring.

54. Coat the piston seal ring (A) and the inside of the special tool with power steering fluid, then carefully slide the tool onto the rack and over the piston seal ring.

55. Move the special tool back and forth several times to make the piston seal ring fit snugly in the piston.

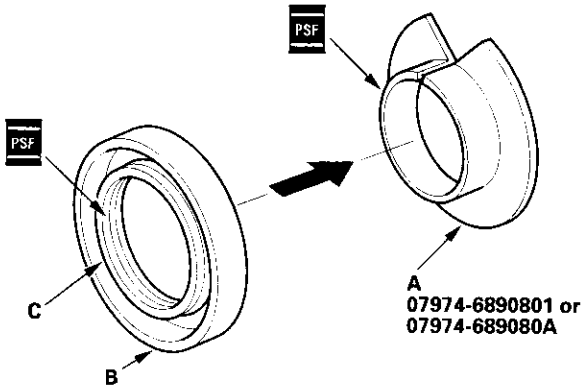


56. Set the new bushing (A) on the special tool, and insert the special tools into the cylinder housing (B).



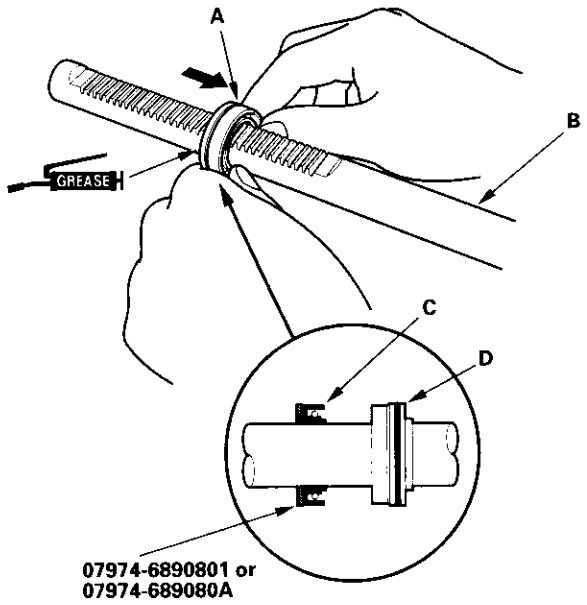
57. Set the cylinder in a press, and install the bushing (A) into the bottom of the cylinder by pressing on the tool with press. Do not push on the tool with excessive force as it may damage the new bushing.

58. Coat the sliding surface of the special tool (A) and new cylinder end seal (B) with power steering fluid. Place the seal on the special tool with its grooved side (C) facing opposite the special tool.

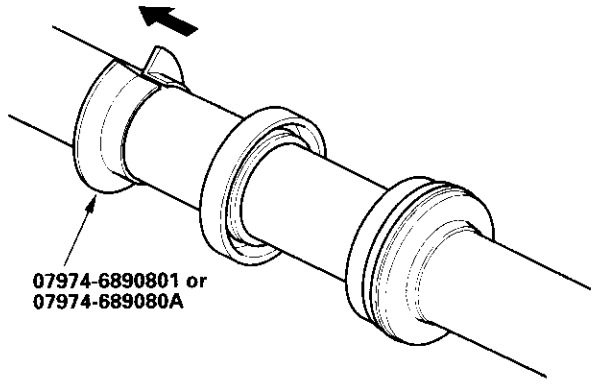


59. Apply a thin coat of multipurpose grease to the inside of the special tool.

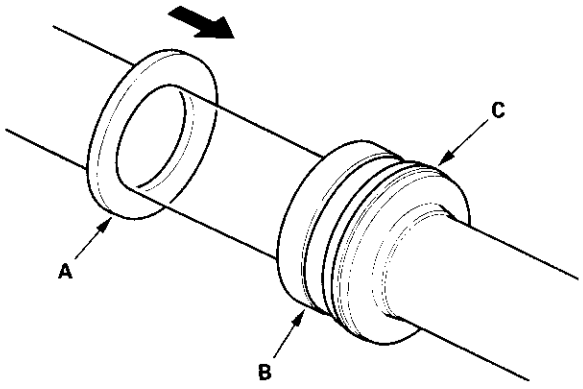
60. Install the cylinder end seal (A) onto the steering rack (B) with its grooved side (C) toward the piston (D). Make sure the gap is special tool is opposite of rack teeth.



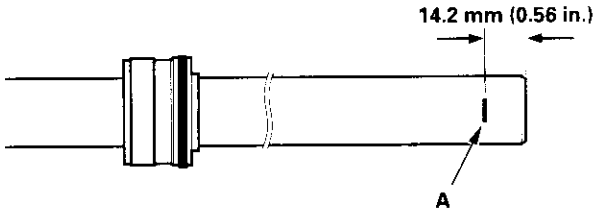
61. Separate the cylinder end seal from the special tool, then remove the special tool.



62. Install the new backup ring (A) on the steering rack, then place the backup ring and cylinder end seal (B) against the piston (C).



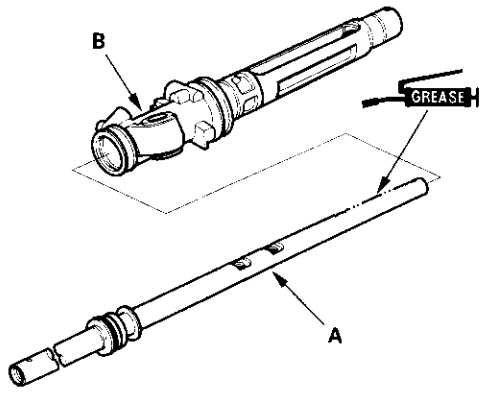
63. Mark (A) a position on the steering rack surface with a felt-tip marker, 14.5 mm (0.57 in.) from the rack end edges.



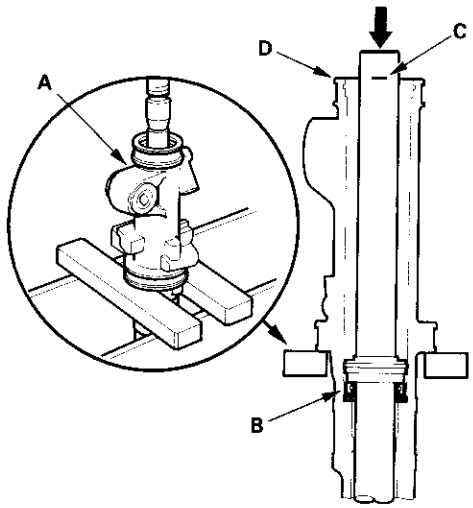
(cont'd)

Steering Gearbox Overhaul (cont'd)

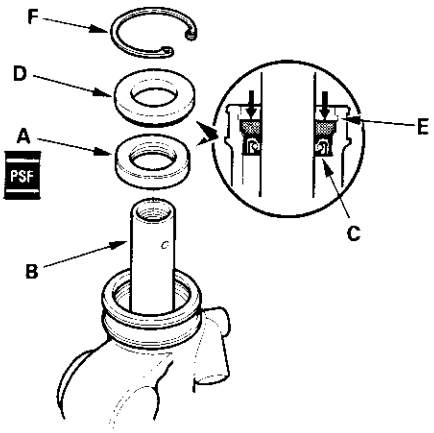
64. Apply multipurpose grease to the steering rack teeth, then insert the steering rack (A) into the cylinder (B). Be careful not to damage to inner surface of the cylinder wall and bushing with the rack edges.



65. Set the cylinder (A) in a press, then press the cylinder end seal (B) into the bottom of the cylinder until the mark (C) on the rack meets the edges (D) of the cylinder.



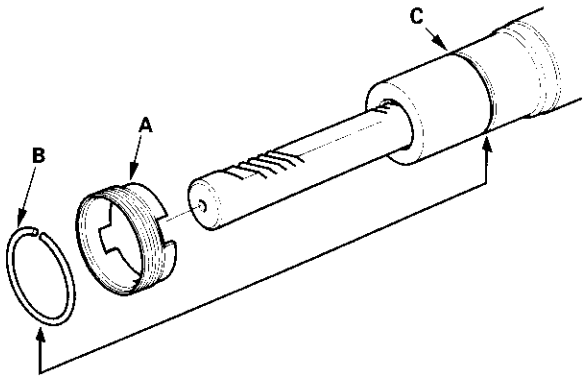
66. Coat the inside and outside surfaces of the new cylinder end seal (A) with power steering fluid.



67. Install the cylinder end seal onto the steering rack (B) with its grooved side (C) toward the piston. Push in the cylinder end seal with your finger.

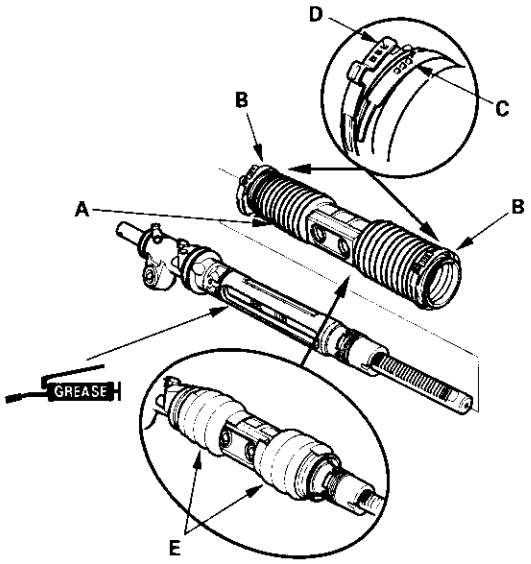
68. Place the backup ring (D) on the cylinder end seal with its flat side facing upward. Then drive the backup ring in with the appropriate size socket wrench until the its surface is below the snap ring groove (E). Install the snap ring (F) in the groove.

69. Install the new lock screw (A) on the cylinder.



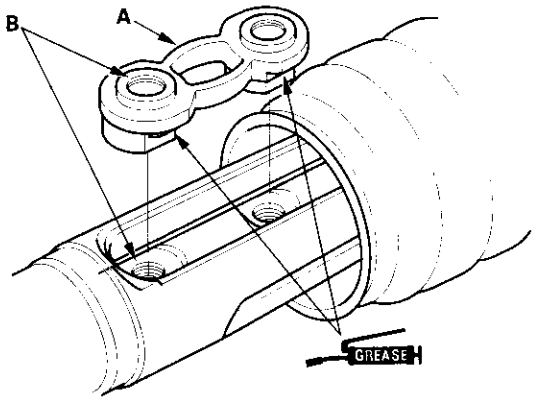
70. Install the new stop ring (B) in the groove (C) on the cylinder by expanding it with snap ring pliers. Be careful not to scratch or damage on the cylinder surface with the stop ring edges.

71. Set the new boot bands (B) on the band installation grooves of boot (A) by aligning the tabs (C) with the holes (D) of the band. Do not close the ear portion of the boot band yet. Coat the housing surface with multipurpose grease in the shaded area shown.

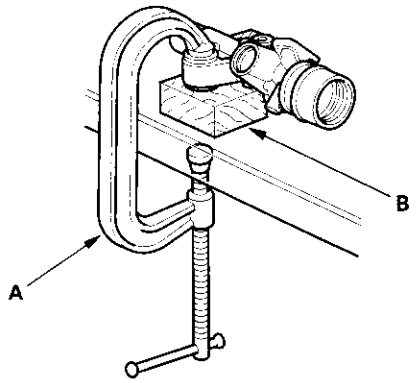


72. Compress boot (A) by hand, and apply vinyl tape (E) to the bellows so the boots stay collapsed and pulled back. Pass boot A over the cylinder so the smaller diameter end of the boot faces the gearbox housing.

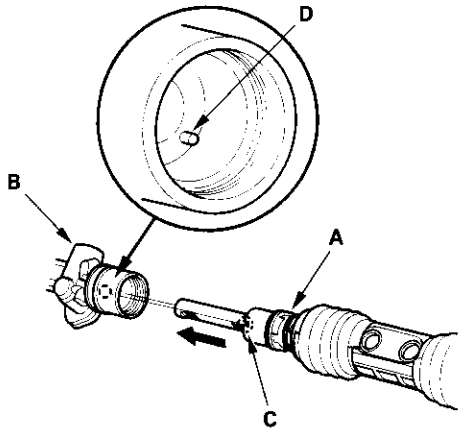
73. Apply multipurpose grease to the sliding surface of the slider guide (A). Keep grease off of the rack-to-slider guide matching surfaces and the boot-to-slider guide matching surfaces. Slide the steering rack all the way to left, and place the slider guide on the steering rack by aligning the bolt holes (B).



74. Hold the gearbox housing using a C-clamp (A) and the wooden block (B) as shown.



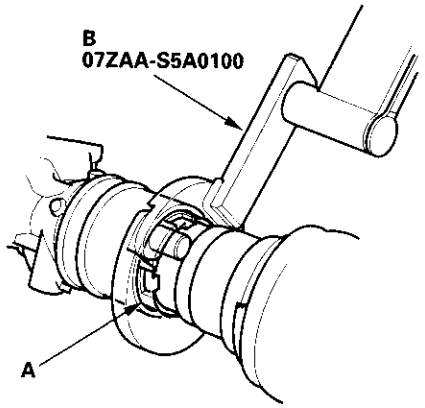
75. Push the cylinder (A) into the gearbox housing (B) so the notch (C) is aligned with the pin (D) inside of the gearbox housing.



(cont'd)

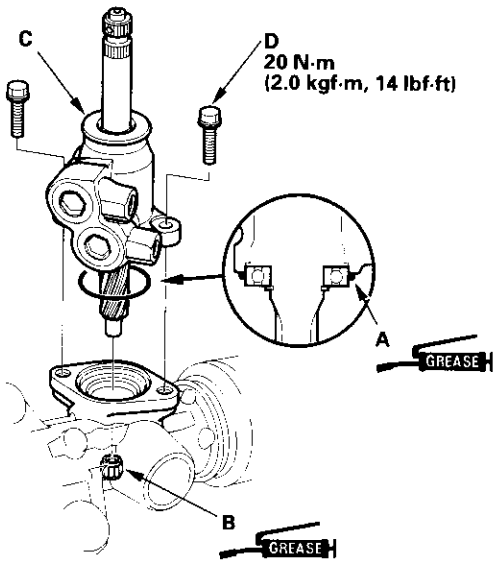
Steering Gearbox Overhaul (cont'd)

76. 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 specified torque yet.



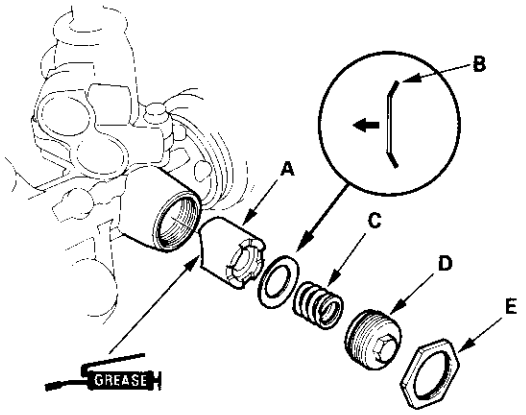
77. Remove the special tool.

78. Coat the new O-ring (A) with multipurpose grease, and carefully fit it on the valve housing.



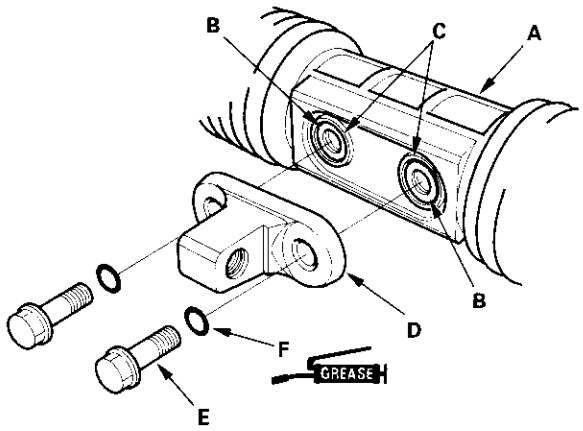
79. Apply multipurpose grease to the needle bearing (B) in the gearbox housing, then install the valve body unit (C) by engaging the gears. Note the valve body unit installation position (direction of the line connections). Tighten the flange bolts (D) to the specified torque.

80. Grease the sliding surface and circumference of the rack guide (A) with multipurpose grease, and install it onto the gearbox housing. Wipe the grease off the threaded section of the housing.



81. 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).

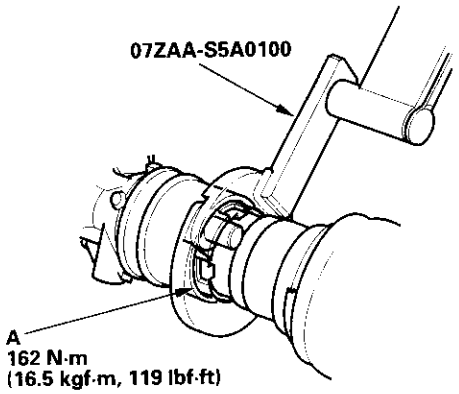
82. Center the steering rack within its stroke, and align the slider guide (B) with the holes (C) in boot A. Fit the slider guide to boot A by pressing around the edges of the holes securely.



83. Before installing the bracket (D), clean the mating surface of the 12 mm flange bolts (E) and bracket. Coat the new O-rings (F) with multipurpose grease, and install them on the 12 mm flange bolts.

84. 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).

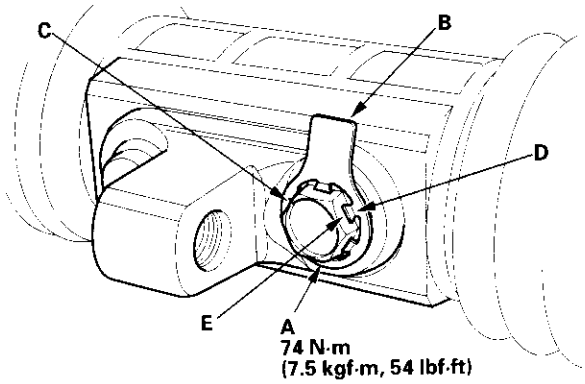
85. Hold the gearbox housing using a C-clamp, then install the special tool on the lock screw (A). Retighten the lock screw to specified torque values.



86. Remove the special tool.

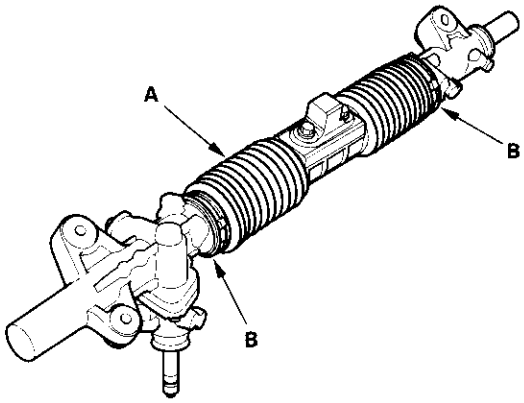
87. Retighten the 12 mm flange bolts (A) to specified torque values.

88. After tightening the 12 mm flange bolts, install a new stop washer (B) over one of bolt the heads (C). Be sure the tabs (D) of the stop washer are aligned with the flat surfaces (E) of the bolt head.



89. Clean off any grease or contamination from the boot installation grooves around on the housing.

90. Expand boot (A) by removing the vinyl tape, and fit the boot ends (B) in the installation grooves on the cylinder housing.



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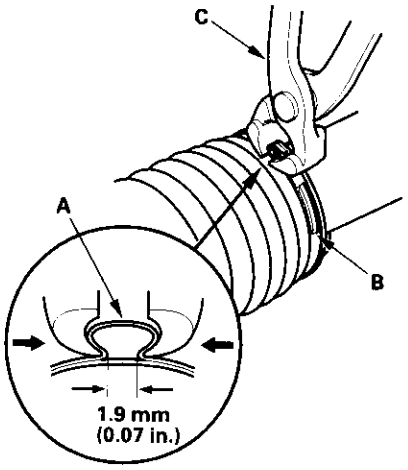
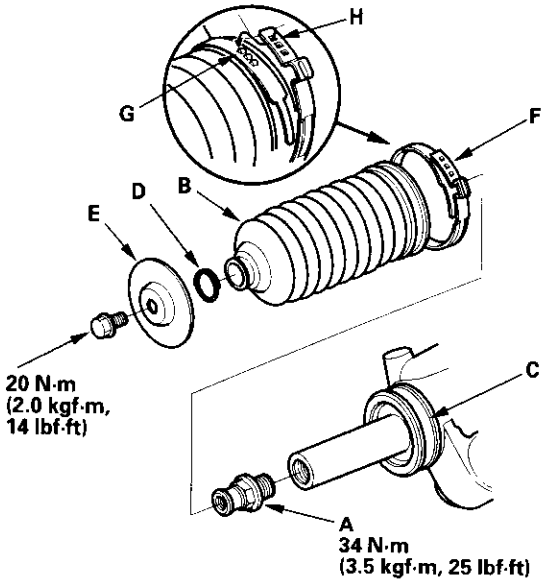
Steering Gearbox Overhaul (cont'd)

91. Close the ear portion (A) of the bands (B) with a commercially available pincers, Oetiker 1098 or equivalent (C).



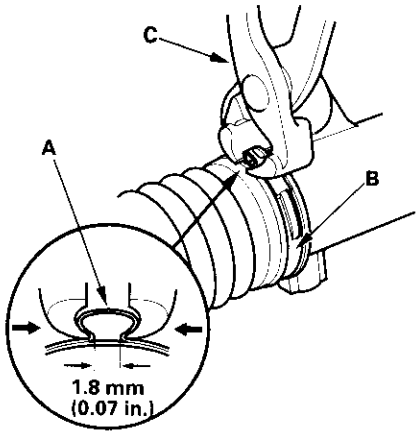
92. Install the rack end plug (A).



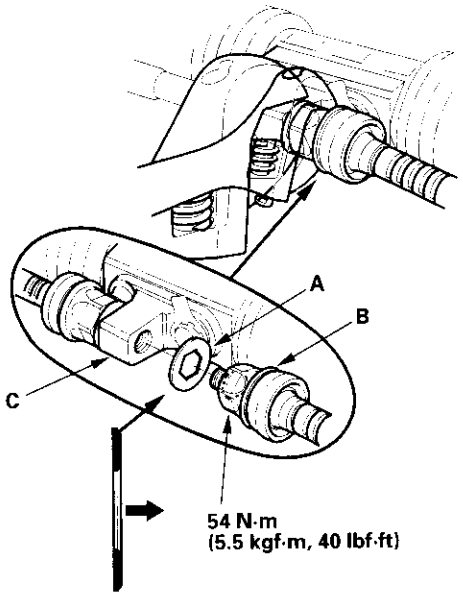
93. Clean off any grease or contamination from the boot installation grooves (C) around on the housing.

94. Install boot (B), and set the boot end in the installation grooves in the cylinder housing and rack end plug properly. Install the clip (D) and boot guard (E). Install the new boot band (F) in the band grooves of boot (B) by aligning the tabs (G) with the holes (H) in the band.

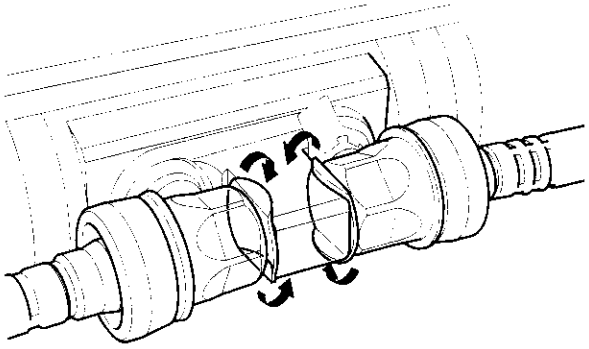
95. Close the ear poriton (A) of the band (B) with a commercially available pincers, Oetiker 1098 or equivalent (C). Slide the rack right and left to be certain that the boots are not deformed or twisted.



96. Install a new lock washer (A) on the tie-rod (B) with the radiused side of the washer toward the tie-rod, and screw the tie-rod on the bracket (C). Repeat this step for the other tie-rod. Hold the bracket with one wrench, and tighten both tie-rods to the specified torque with another wrench.

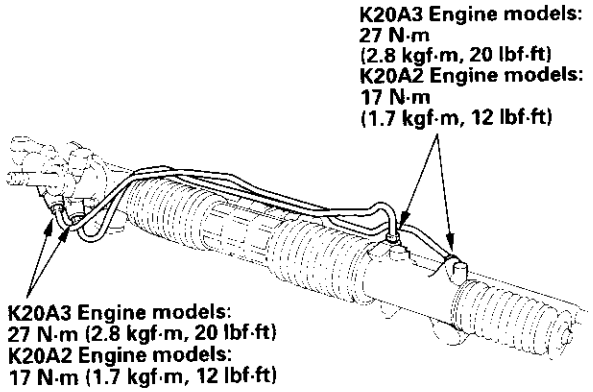


97. Bend the lock washer against the flat spots on the bracket with a large pair of pliers.



98. Install the cylinder lines.

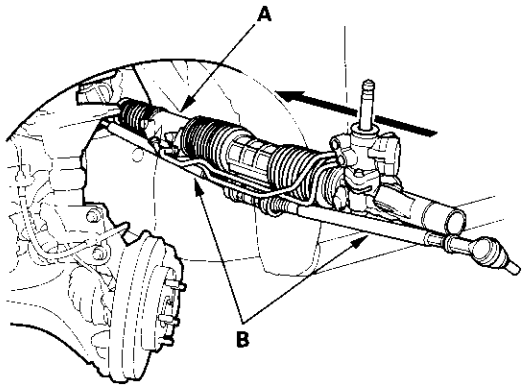
Note these items during reassembly:
- Thoroughly clean the joints of the cylinder lines. The joints must be free of foreign material.
- Install the cylinder lines by tightening the flare nuts by hand first, then tighten them to the specified torque.



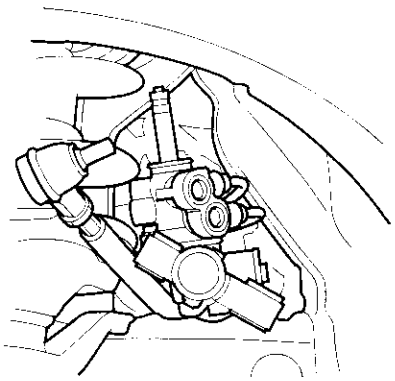
99. Adjust the rack guide screw (see page 17-30). After adjusting, check that the rack moves smoothly by sliding it right and left.

Steering Gearbox Installation

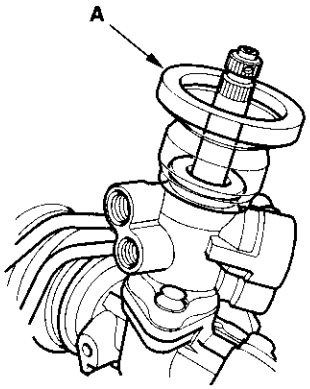
1. Pass the cylinder of the steering gearbox (A) together with the tie-rods (B) through the wheelwell opening on the driver's side.



2. Carefully, move the steering gearbox toward the passenger's side until the pinion shaft clears the wheelwell opening on the frame. Continue moving the gearbox toward the passenger's side until the steering gearbox is in position.

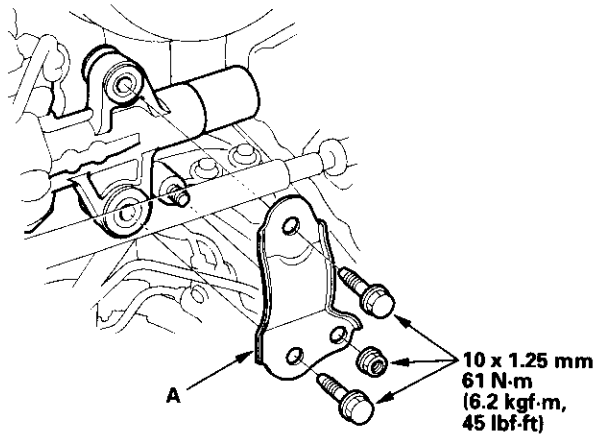


3. Install the pinion shaft grommet (A).

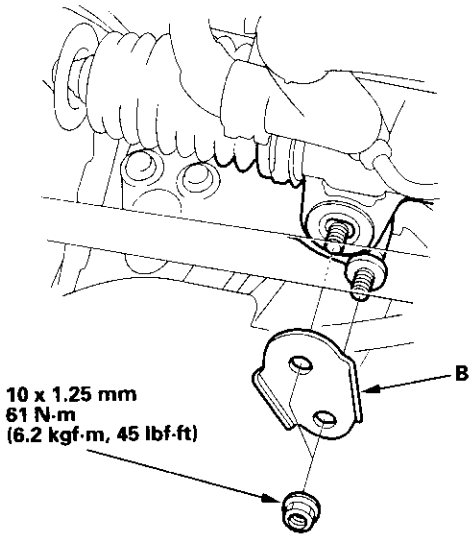


4. Insert the pinion shaft up through the bulkhead, and place the steering gearbox on the gearbox mounting brackets.

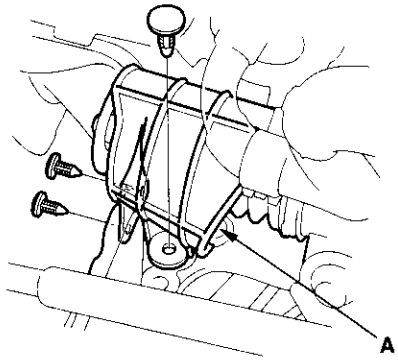
5. Install steering stiffener A, and lightly tighten the gearbox attaching nut and bolts.



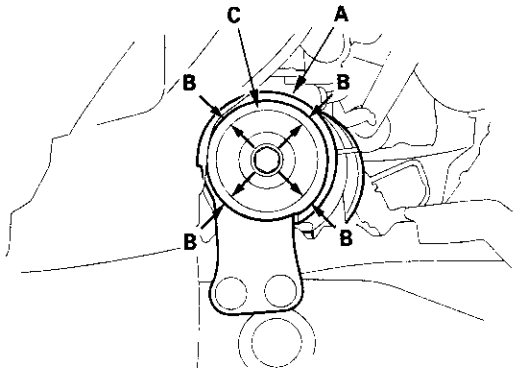
6. Install steering stiffener B with the gearbox attaching nuts. Then tighten the gearbox attaching nuts and bolts at steering stiffener A to the specified torque values.



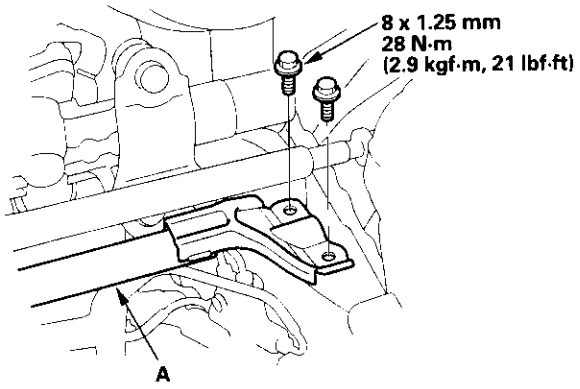
7. Install the steering rack guard (A).



8. On the passenger's side of the gearbox, check for a clearance (B) of 3 mm (0.12 in.) or more between the steering rack guard (A) and boot guard (C). If the steering rack guard is in contact with the boot guard, or if the clearance is less than 3 mm (0.12 in.), adjust the steering rack guard to the correct position.



9. Install the body stiffener (A).



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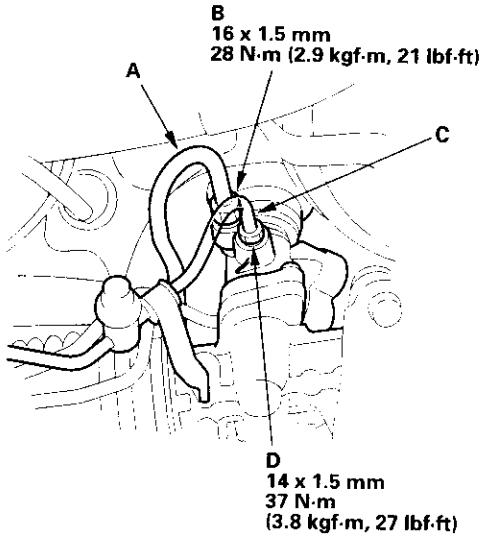
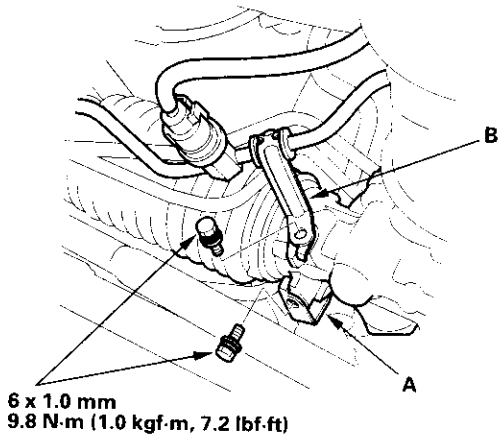
Steering Gearbox Installation (cont'd)

10. Connect the return line (A) securely, and tighten the 16 mm flare nut (B).

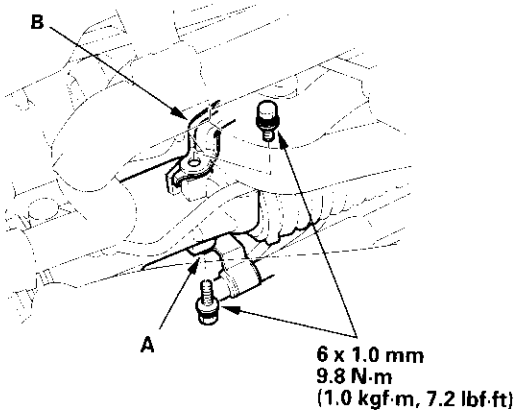


11. Connect the feed line (C) securely, and tighten the 14 mm flare nut (D).

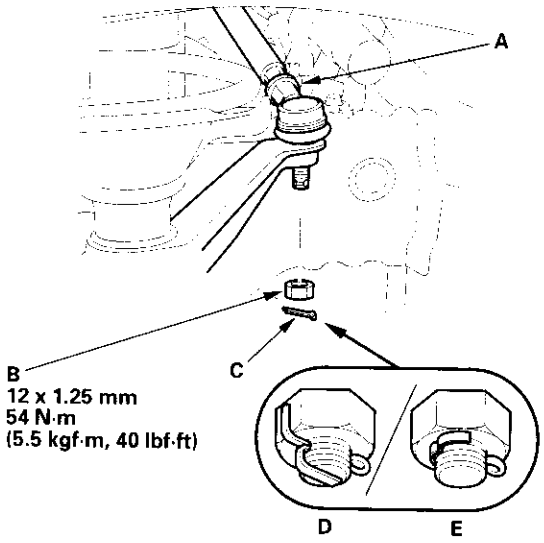
12. Install the return hose clamp (A) and feed line clamp (B) on the left side of the gearbox.



13. Install the return hose clamp (A) and feed line clamp (B) on the right side of the gearbox.

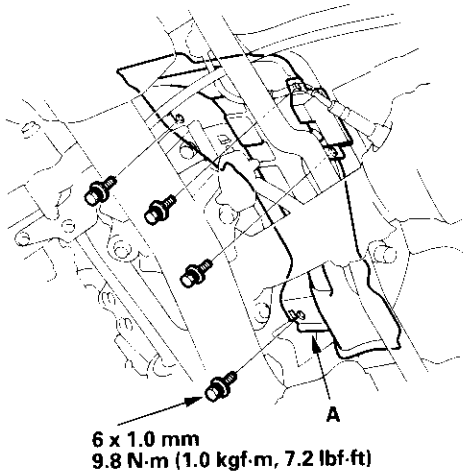


14. Wipe off any grease contamination from the ball joint tapered section and threads. Then reconnect the tie-rod end (A) to the damper steering arms. Install the 12 mm nut (B) and tighten it.

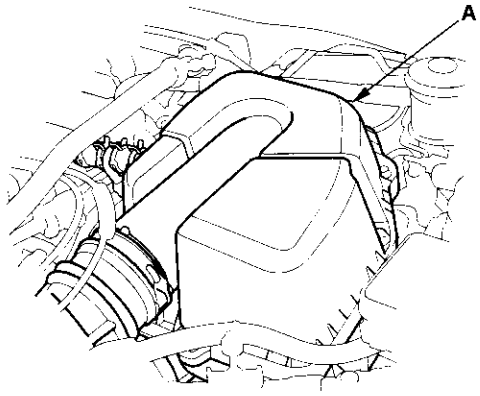


15. Install a new cotter pin (C), and bend it as shown (D) or (E).

16. Install the heat shield (A).

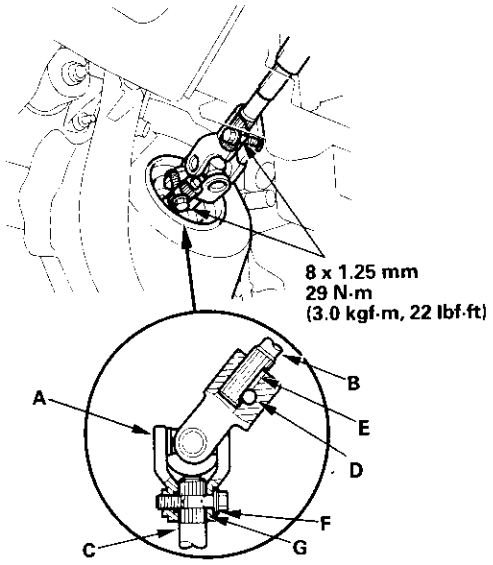


17. Install the air cleaner (A).



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 (F) with the groove (G) 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.



19. Install the driver's dashboard lower covers.

(cont'd)

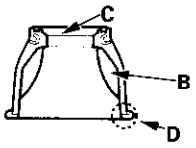
Steering Gearbox Installation (cont'd)

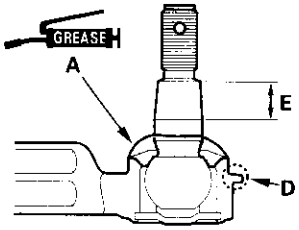
20. Center the cable reel by first rotating it clockwise until it stops. Then rotate it counterclockwise (about two and half turns) until the arrow mark on the label points straight up. Reinstall the steering wheel (see page 17-24).
21. Install the front wheels.
22. Connect the negative cable to the battery.
23. Fill the system with power steering fluid, and bleed air from the system (see page 17-12).
24. After installation, perform the following:
    - Start the engine, allow it to idle, and turn the steering wheel from lock-to-lock several times to warm up the fluid. Check the gearbox for leaks (see page 17-11).
    - Perform the front toe inspection (see page 18-7).
    - Check the steering wheel spoke angle. Adjust by turning the right and left tie-rods equally, if necessary.
    - Do the PCM idle learn procedure (see page 11-149).
    - Do the power window control unit reset procedure (see page 22-139).
    - Enter the anti-theft code for the radio, then enter the customer's radio station presets.
    - Set the clock.

Tie-rod Ball Joint Boot Replacement

Special Tools 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.



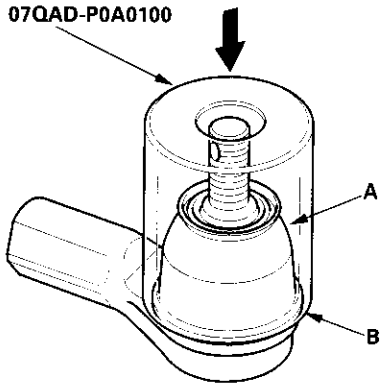


3. Pack the interior of the new boot (B) and lip (C) with fresh multipurpose grease.

   Note these items when installing new grease:

   - Keep grease off the boot mounting area (D) and the tapered section (E) of the ball pin.
   - Do not allow dust, dirt, or other foreign materials to enter the boot.

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

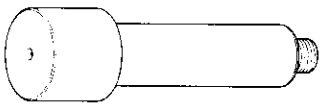
Front and Rear Suspension

Front Suspension

Rear Suspension

Special Tools

Ref.No.	Tool Number	Description	Qty
①	07GAF-SD40100	Hub Dis/Assembly Tool	1
②	07MAC-SL00200	Ball Joint Remover, 28 mm	1
③	07965-SA50500	Front Hub Dis/Assembly Tool	1
④	07746-0010500	Attachment, 62 x 68 mm	1
⑤	07749-0010000	Driver	1
⑥	07965-SD90100	Support Base	1



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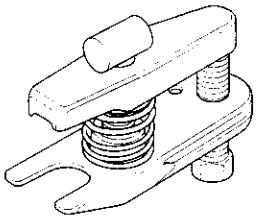

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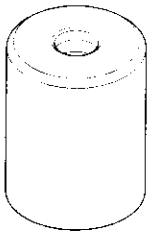

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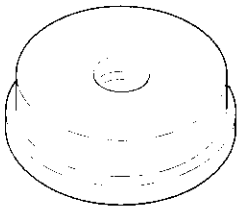

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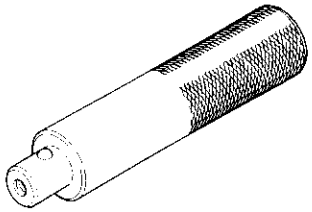
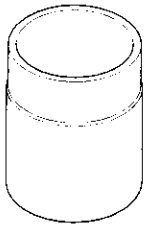


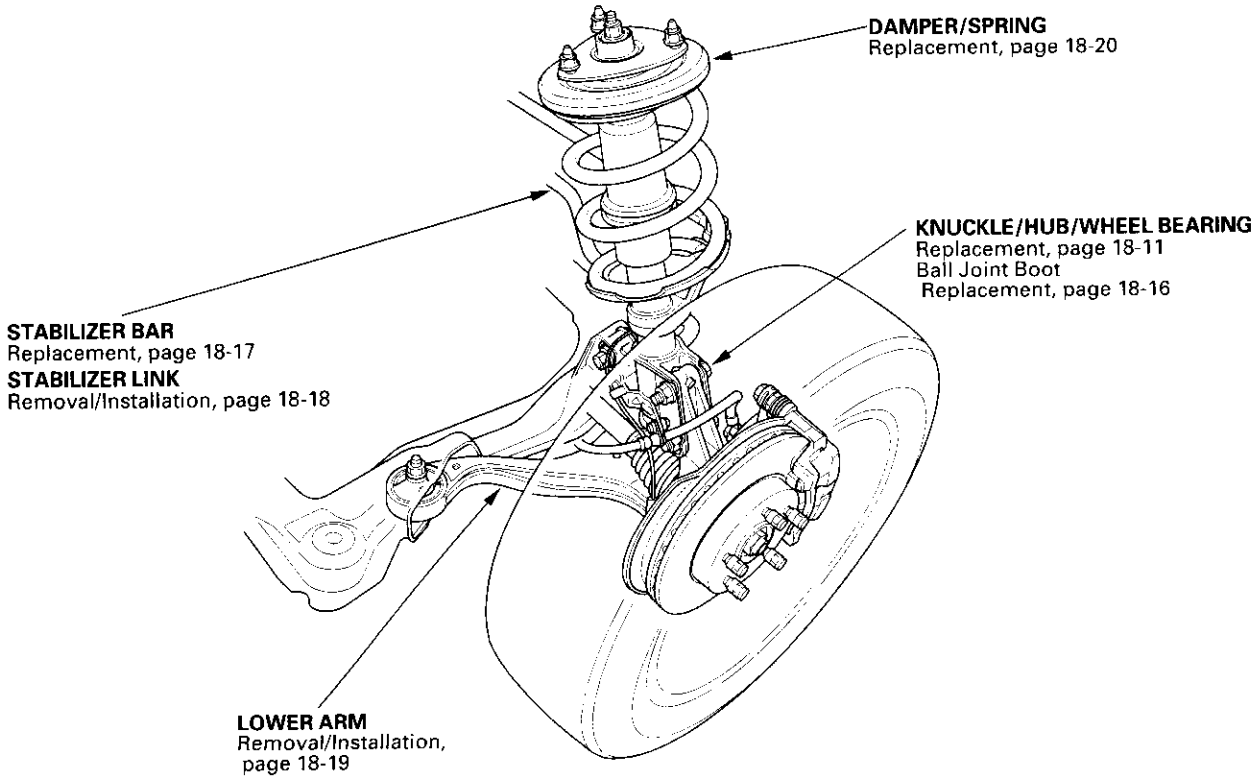
⑤



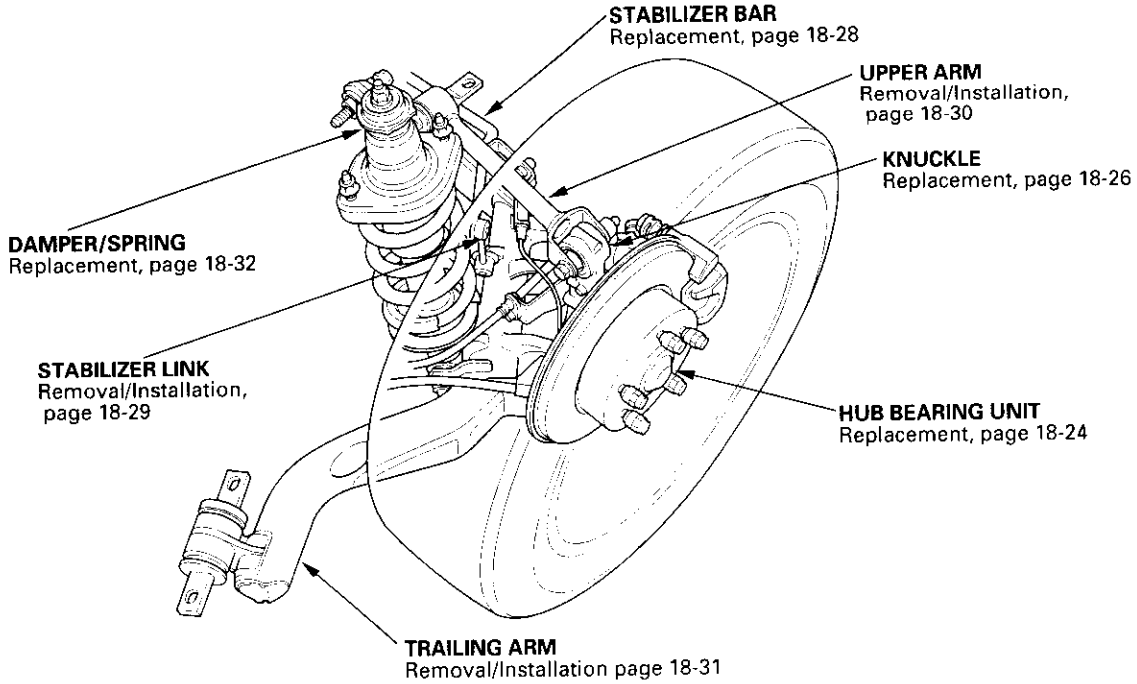
⑥

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 toe, the camber changes. Therefore, you must adjust the front wheel alignment whenever you adjust camber or toe.

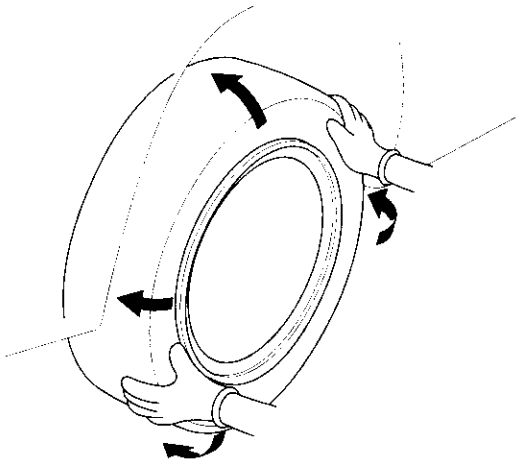
Pre-Alignment Checks

For proper inspection and adjustment of the wheel alignment, do these checks:

1. Release the parking brake to avoid an incorrect measurement.
2. Make sure the suspension is not modified.
3. Check the tire size and tire pressure.

   Tire size:
   Front/rear:
   Canadian RSX model: 195/65R15 91V
   All other models: 205/55R16 91V

   Tire pressure:
   Front: 230 kPa (2.3 kgf/cm², 33 psi)
   Rear: 220 kPa (2.2 kgf/cm², 31 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°30′ ± 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.

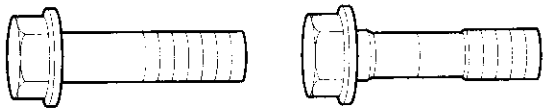
Front camber angle: 0°00′ ± 45′

Front Camber Adjustment

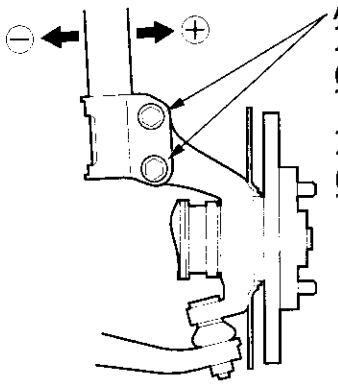
The front camber can be adjusted by exchanging one or both of the damper pinch bolts with the smaller diameter adjusting bolt(s). The difference between the adjusting bolt diameter and the pinch bolt hole diameter allows a small range of adjustment.

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.

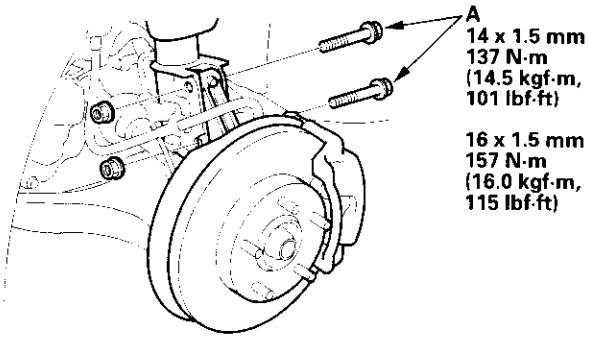
(cont'd)

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°45' ± 45'

NOTICE

Do not loosen the special bolts on the trailing arm.

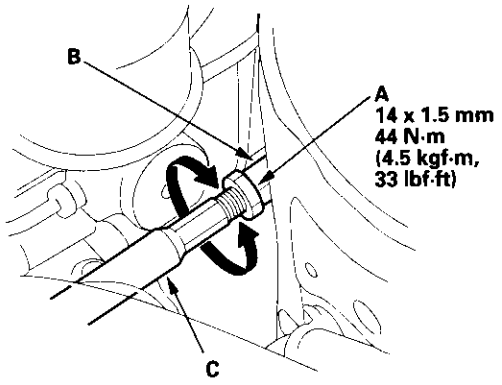
Front Toe Inspection/Adjustment

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 arm (B).



4. Turn the tie-rod end (C) until the toe is correct.

   NOTE: Adjust both the right and left wheels at the same time by the same amount in opposite directions to obtain the correct toe and to keep the steering wheel straight.

5. After adjusting, tighten the locknut while holding the tie-rod arm. Make sure the toe setting does not change.

Rear Toe Inspection/Adjustment

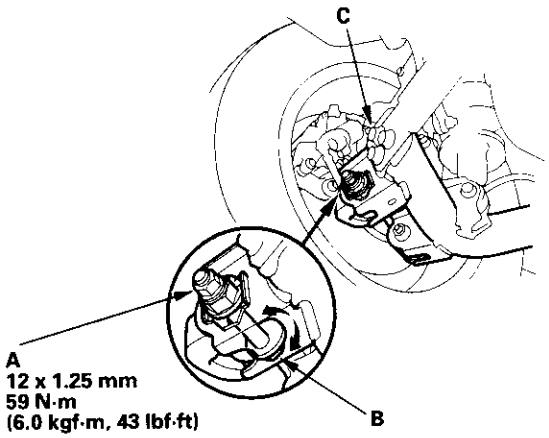
Use commercially-available computerized four wheel alignment equipment to measure wheel alignment (caster, camber, toe, and turning angle). Follow the equipment manufacturer's instructions.

1. Release the parking brake.
2. Check the toe. If it is not within the specification, go to step 3.

   Rear toe-in: 2^{+2}_{-1} mm ($0.08^{+0.08}_{-0.04}$ in.)

3. Loosen the self-locking nut (A) while holding the adjusting bolt (B).

   NOTICE
   Do not loosen the special bolts (C) on the trailing arm.



4. Replace the self-locking nut with a new one, and lightly tighten it.

   NOTE: Always use a new self-locking nut whenever it has been loosened.

5. Turn the adjusting bolt until the toe is correct.
6. Tighten the self-locking nut to the specified torque while holding the adjusting bolt.

(cont'd)

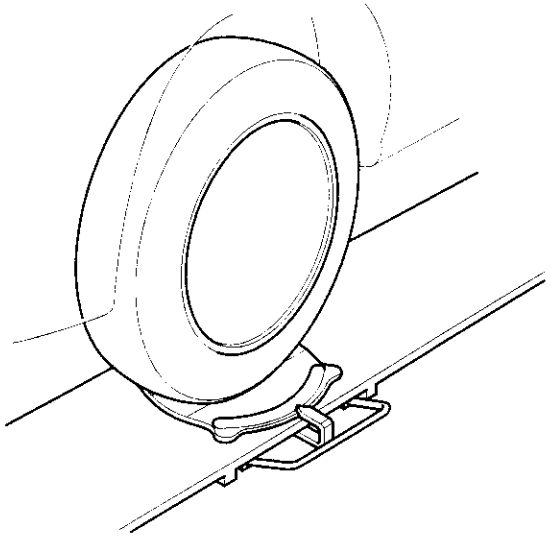
Wheel Alignment (cont'd)

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: 35°00'
   Outward: 28°00' (reference)



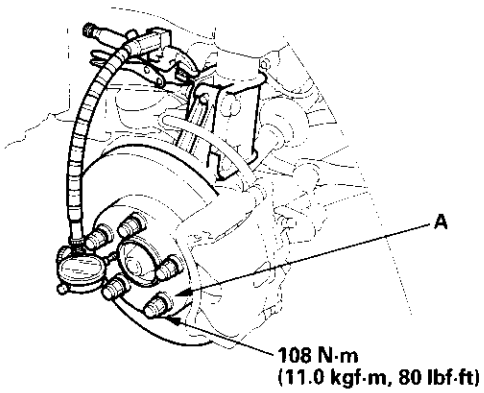
2. Check the toe. If it is correct, but the turning angle is not within the specification, check for bent or damaged suspension components.

Wheel Bearing End Play Inspection

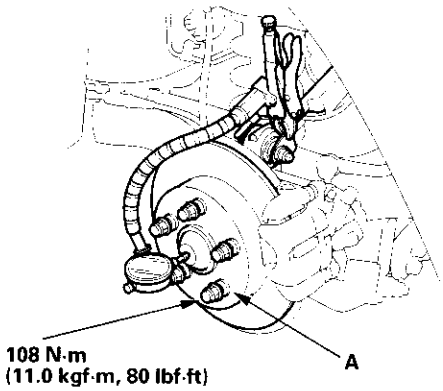
1. Raise the vehicle, and support it with safety stands in the proper location (see page 1-8). Remove the wheels.

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 by 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

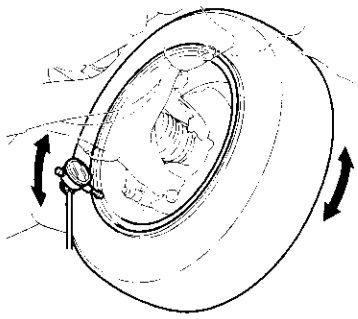
1. Raise the vehicle, and support it with safety stands in the proper location (see page 1-8).

2. Check for a bent or deformed wheel.

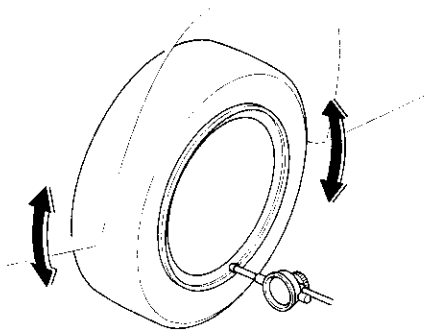
3. Set up the dial gauge as shown, and measure the axial runout by turning the wheel.

Front and rear wheel axial runout:
Standard:
Aluminum wheel: 0—0.7 mm (0—0.03 in.)
Steel wheel: 0—1.0 mm (0—0.04 in.)
Service limit: 2.0 mm (0.08 in.)

Aluminum wheel:



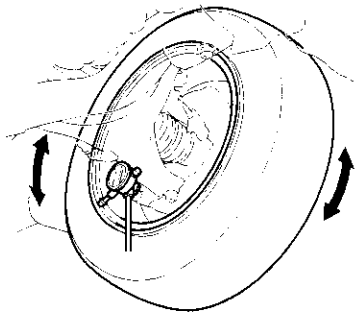
Steel wheel:



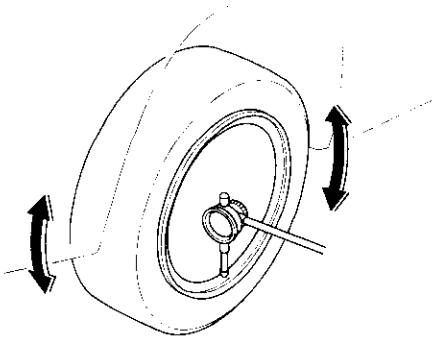
4. Reset the dial gauge to the position shown, and measure the radial runout.

Front and rear wheel radial runout:
Standard:
Aluminum wheel: 0—0.7 mm (0—0.03 in.)
Steel wheel: 0—1.0 mm (0—0.04 in.)
Service limit: 1.5 mm (0.06 in.)

Aluminum wheel:



Steel wheel:



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.

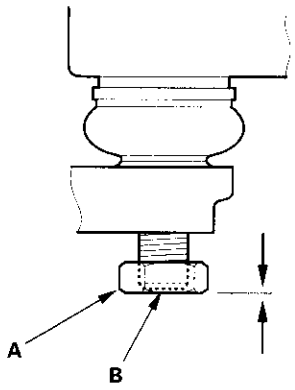
6. If the bearing end play is within the specification but the wheel runout is more than the service limit, replace the wheel.

Ball Joint Removal

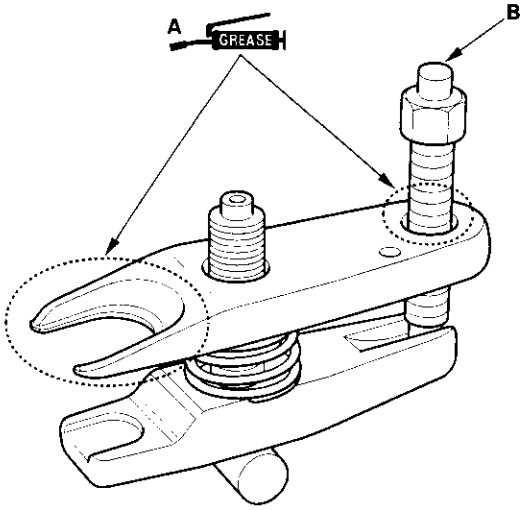
Special Tools Required
Ball joint remover, 28 mm 07MAC-SL00200

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.

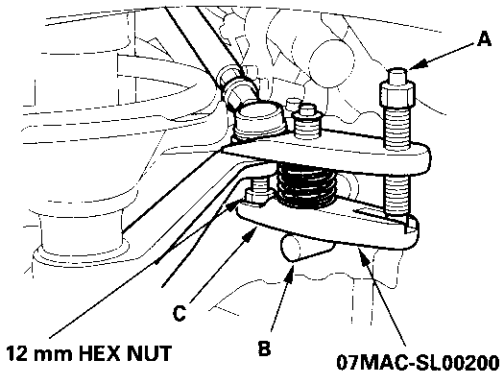
1. Install a hex nut (A) onto the threads of the ball joint (B). Make sure the nut is flush with the ball joint pin end to prevent damage to the thread end of the ball joint pin.



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. 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 pressure bolt (A).



4. After adjusting the adjusting bolt, make sure the head of the adjusting bolt (B) is in the position shown to allow the jaw (C) to pivot.

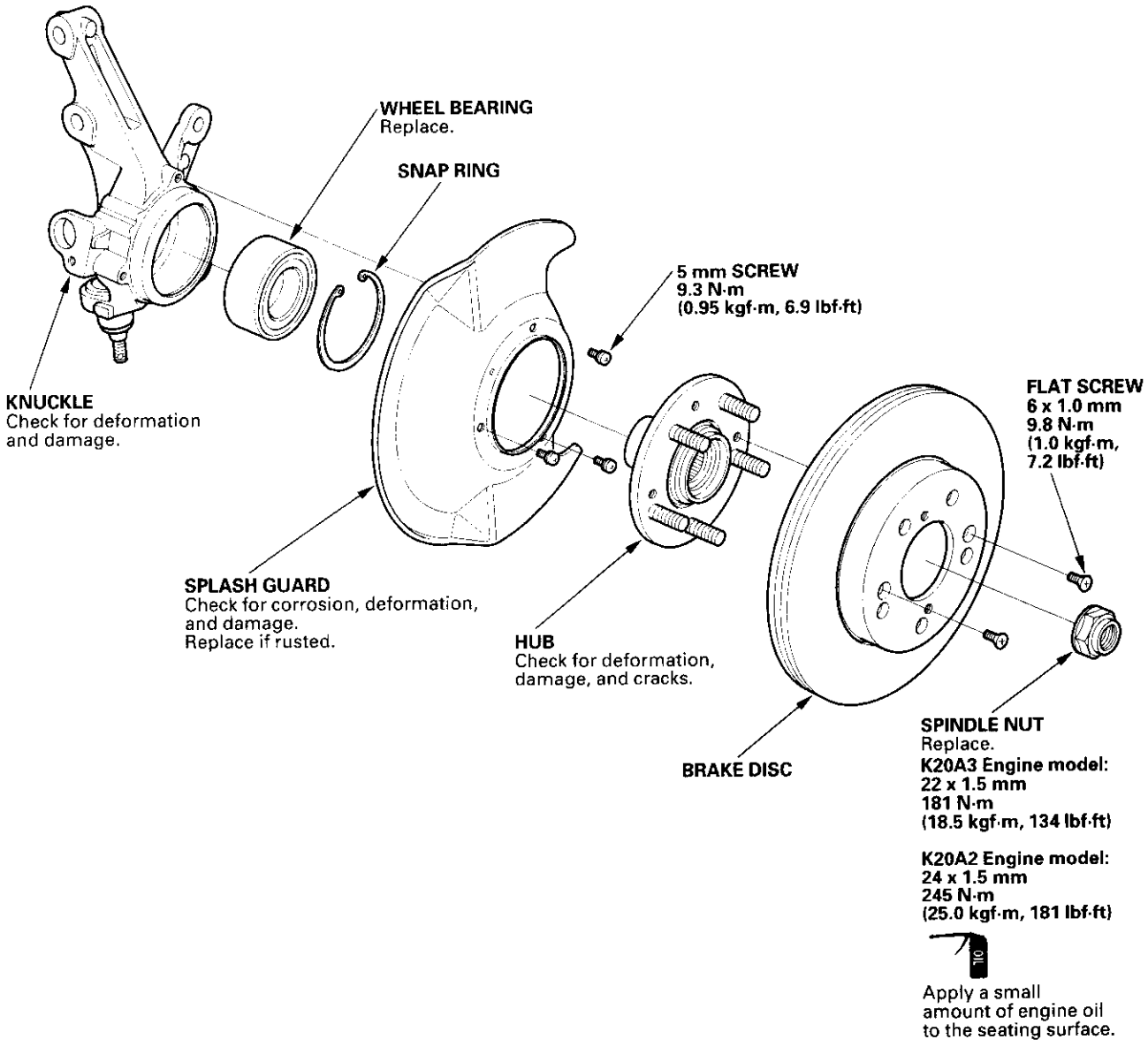
5. With a wrench, tighten the pressure bolt until the ball joint pin pops loose from the steering arm or knuckle. If necessary, apply penetrating type lubricant to loosen the ball joint pin.

   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



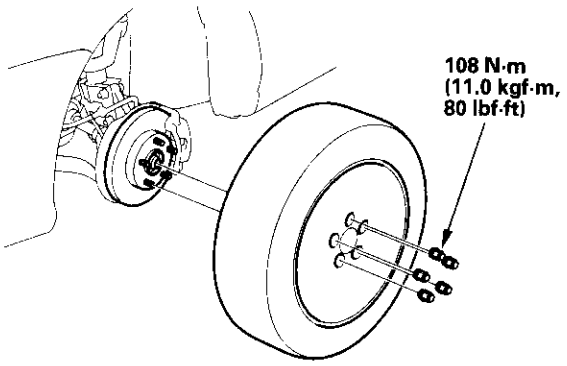
(cont'd)

Knuckle/Hub/Wheel Bearing Replacement (cont'd)

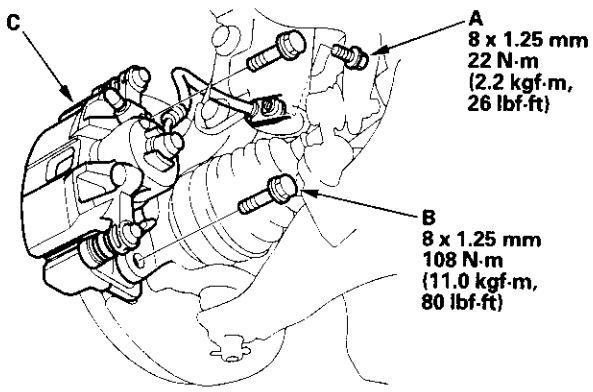
Special Tools Required
- Hub dis/assembly tool 07GAF-SD40100
- Ball joint remover, 28 mm 07MAC-SL00200
- Attachment 62 x 68 mm 07746-0010500
- Driver 07749-0010000
- Support base 07965-SD90100

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.

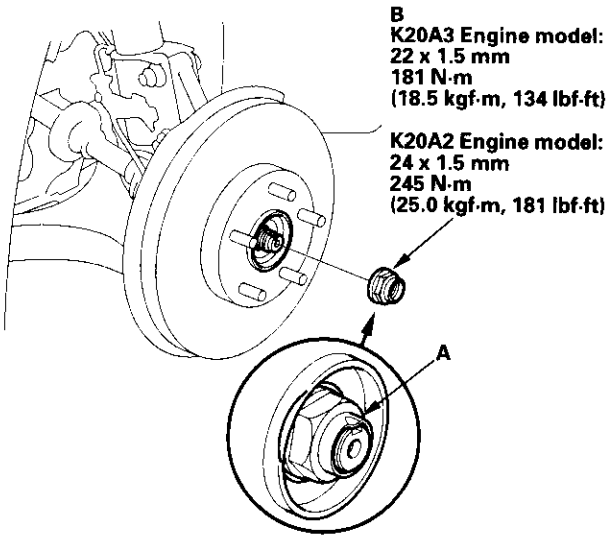


3. Remove the brake hose bracket mounting bolt (A).

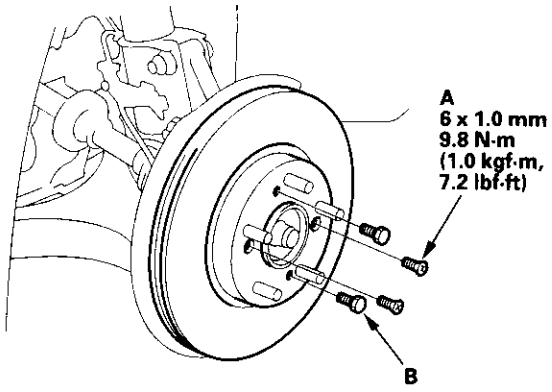


4. Remove the caliper bracket mounting bolts (B), and remove the caliper assembly (C) from the knuckle. To prevent damage to the caliper assembly or brake hose, use a short piece of wire to hang the caliper assembly from the undercarriage. Do not twist the brake hose with force.

5. Raise the stake (A), and remove the spindle nut (B) then remove and discard the nut.

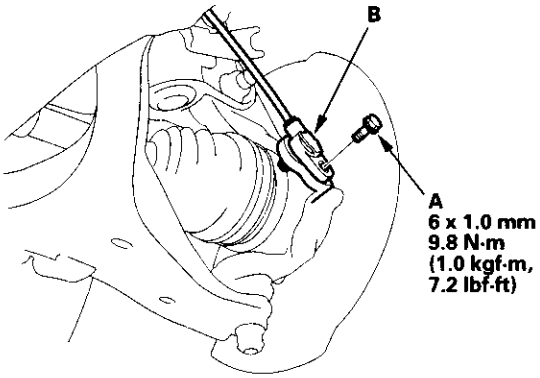


6. Remove the brake disc retaining flat screws (A).

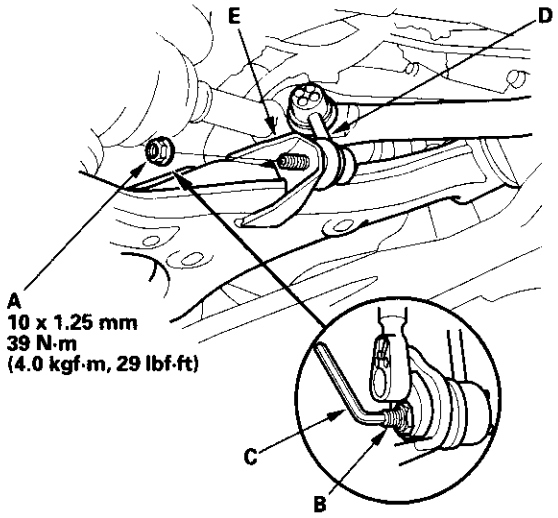


7. Screw two 8 x 1.25 mm bolts (B) into the disc to push it away from the hub. Turn each bolt two turns at a time to prevent cocking the disc excessively.

8. Remove the flange bolt (A) and wheel sensor (B) from the knuckle. Do not disconnect the wheel sensor connector.

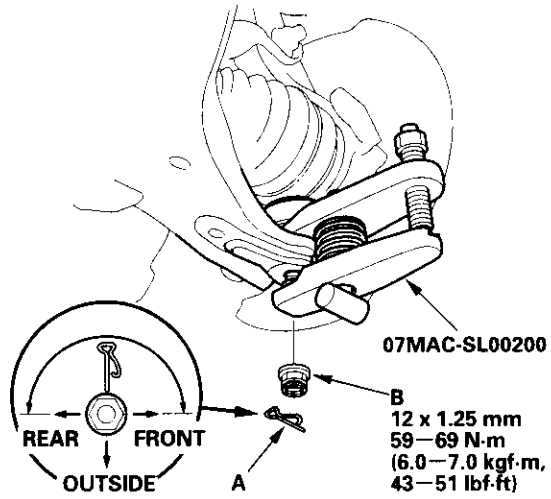


9. Remove the flange nut (A) while holding the joint pin (B) with a hex wrench (C), and disconnect the stabilizer link (D) from the lower arm (E).



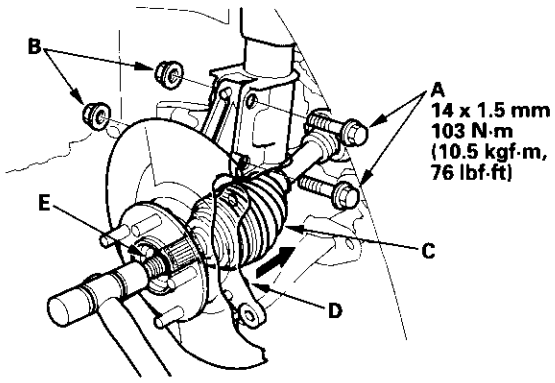
10. Remove the lock pin (A) from the lower arm ball joint, and remove the castle nut (B).

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.



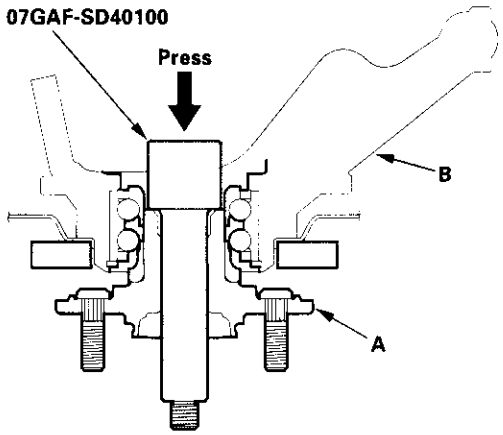
13. Remove the driveshaft outboard joint (C) from the knuckle (D) by tapping the driveshaft end (E) with a plastic hammer while drawing the knuckle outward, then remove the knuckle.

NOTE: Do not pull the driveshaft end outward. The driveshaft joint may come off.

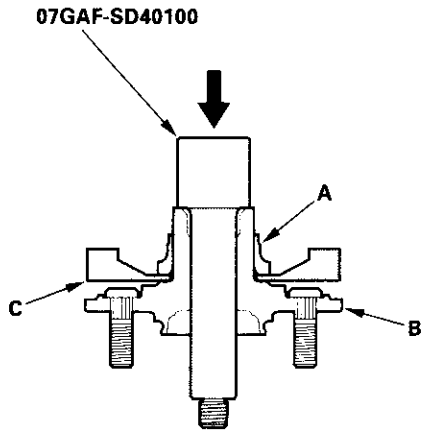
(cont'd)

Knuckle/Hub/Wheel Bearing Replacement (cont'd)

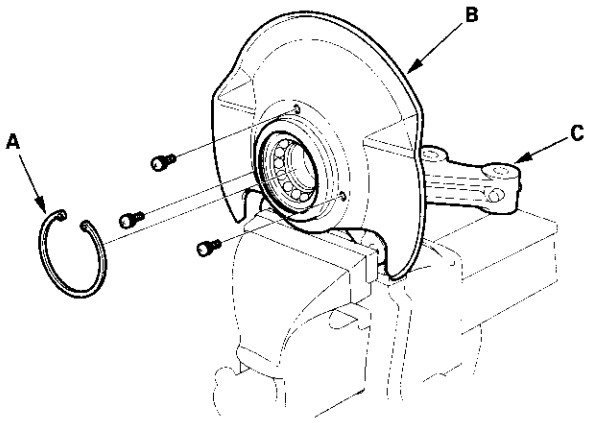
14. Separate the hub (A) from the knuckle (B) using the special tool and a hydraulic press. Be careful not to deform the splash guard. Hold onto the hub to keep it from falling when pressed clear.



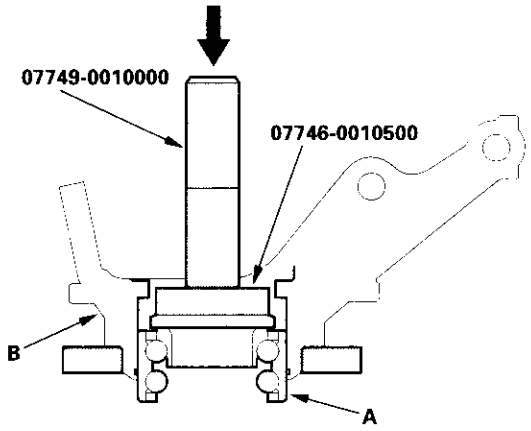
15. Press the wheel bearing inner race (A) off of the hub (B) using the special tool, a commercially available bearing separator (C), and a press.



16. Remove the snap ring (A) and the splash guard (B) from the knuckle (C).

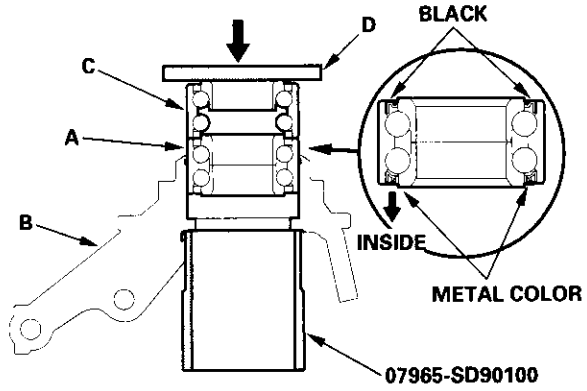


17. Press the wheel bearing (A) out of the knuckle (B) using the special tool and a press.

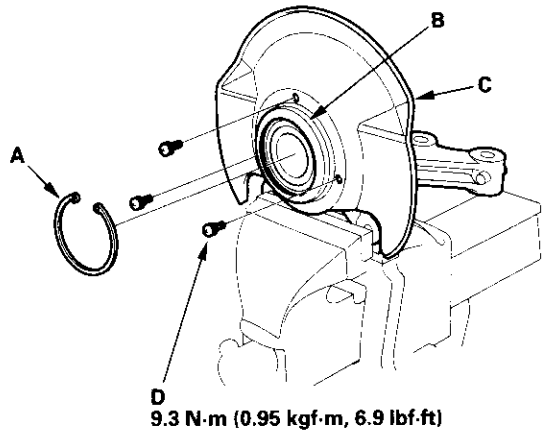


18. Wash the knuckle and hub thoroughly in high flash point solvent before reassembly.

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.



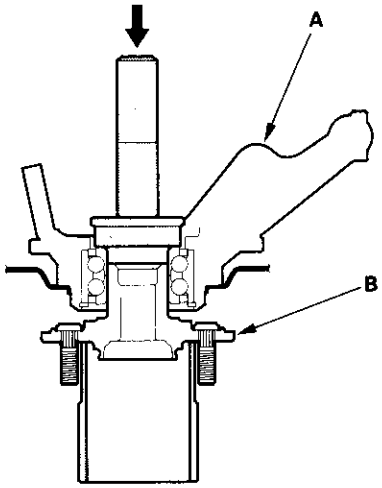
20. Install the snap ring (A) securely in the knuckle (B).



9.3 N·m (0.95 kgf·m, 6.9 lbf·ft)

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.



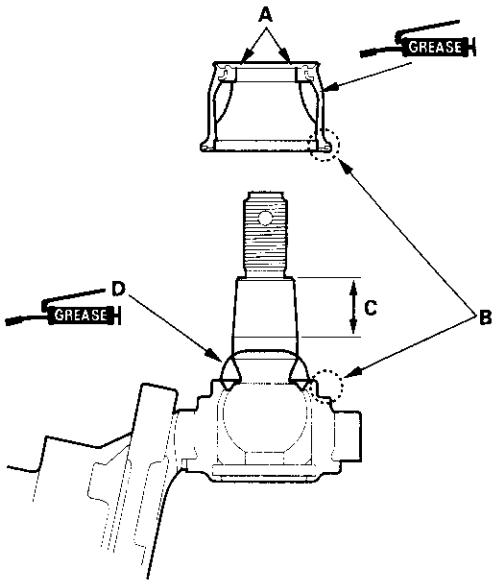
23. Install the knuckle/hub/hub bearing unit in the reverse order of removal, and note these items:

- 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 lock pin on the castle nut after torquing.
- Use a new spindle nut on reassembly.
- Before installing the new 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).

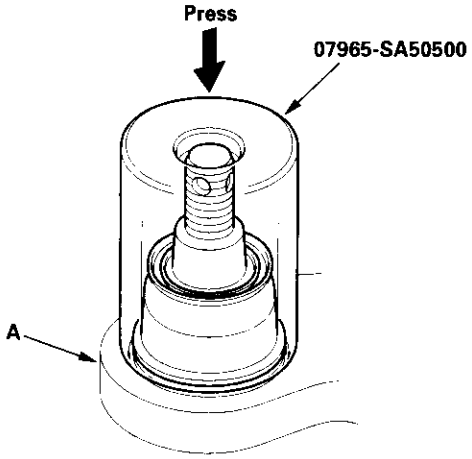
Ball Joint Boot Replacement

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.

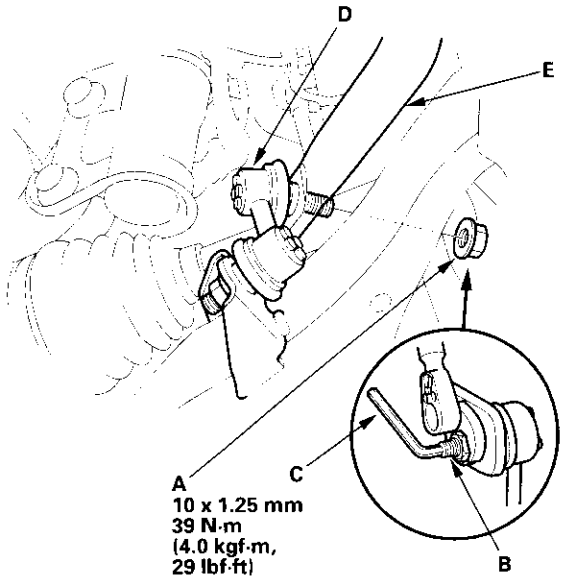


6. After installing a boot, wipe any grease off the exposed portion of the ball joint pin.

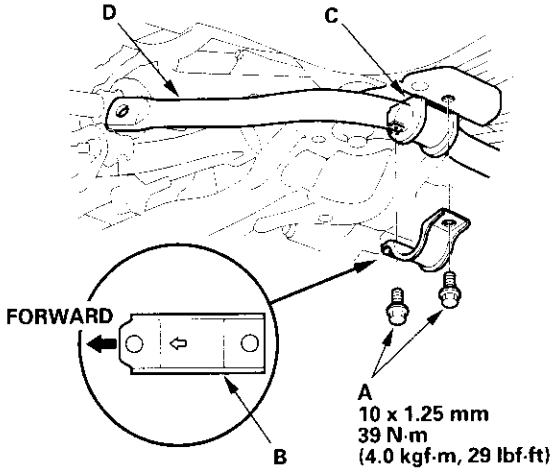
Stabilizer Bar Replacement

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.

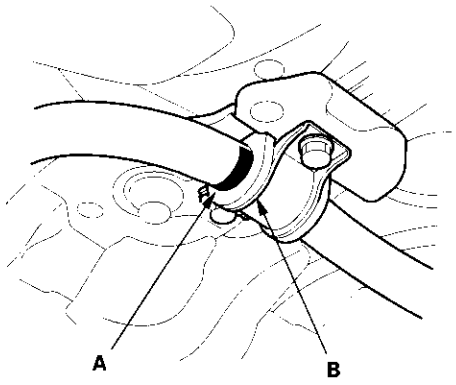


3. Remove the flange bolts (A) and bushing holders (B), then remove the bushings (C) and the stabilizer bar (D).



4. Install the stabilizer bar in the reverse order of removal, and note these items:

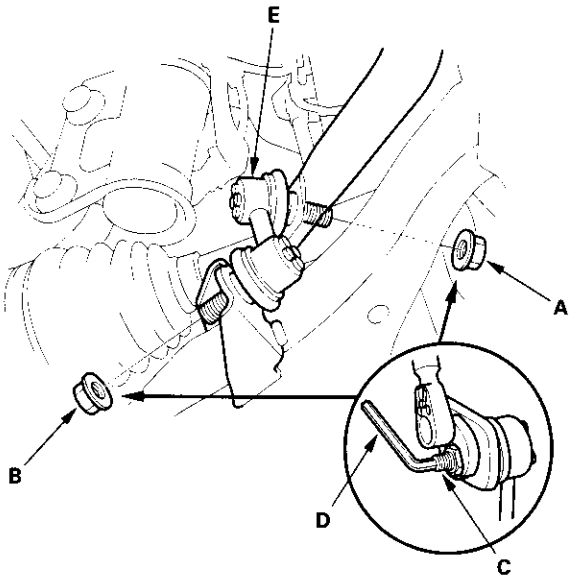
   - Use new self-locking nuts on reassembly.
   - Note the right and left direction of the stabilizer bar.
   - Align the ends of the paint marks (A) on the stabilizer bar with each end of the bushings (B).
   - Note the fore/aft direction of the bushing holders.
   - Refer to Stabilizer Link Replacement to connect the stabilizer bar to the links (see page 18-18).



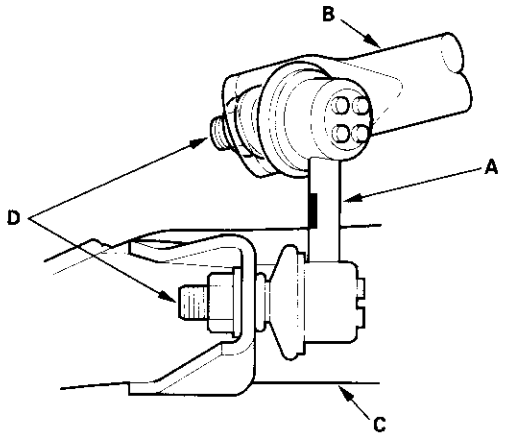
Stabilizer Link Removal/Installation

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 each moving range.



4. Install the self-locking nut and flange nut, and lightly tighten them.

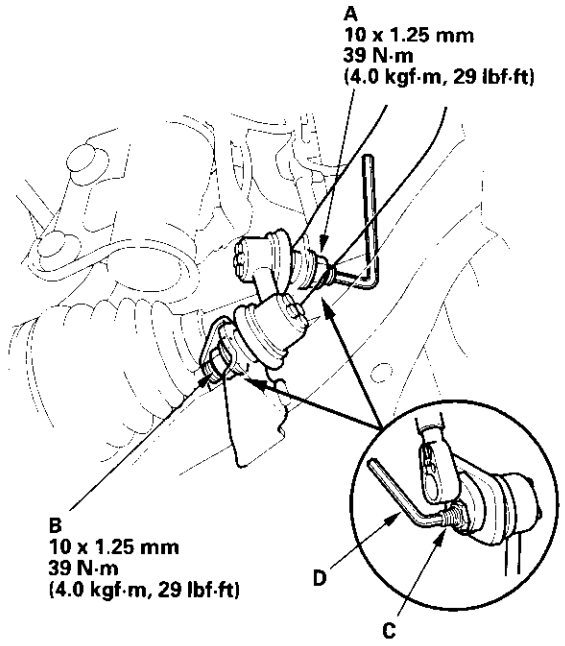
   NOTE: Use a new self-locking nut on reassembly.

5. Place 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 flat section of the lower arm. Lifting the arm in this area might bend it.

6. Tighten the new 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).



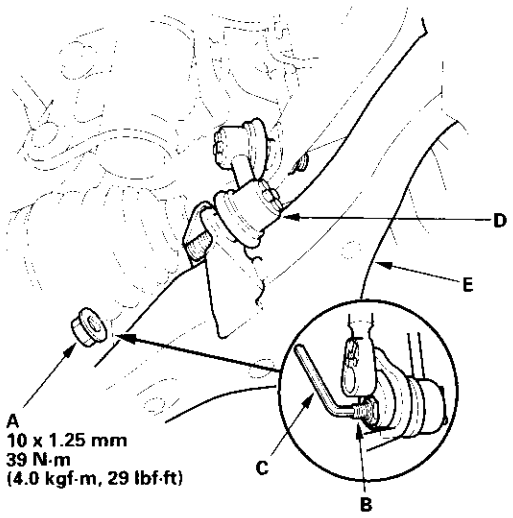
7. After 5 minutes of driving, re-tighten the self-locking nut again to the specified torque.

Lower Arm Removal/Installation

Special Tools Required
Ball joint remover, 28 mm 07MAC-SL00200

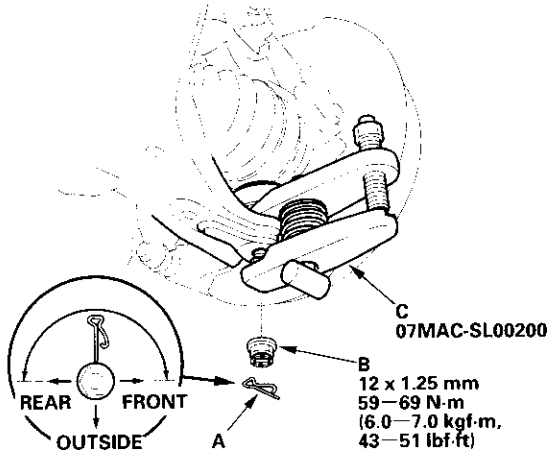
1. Raise the front of the vehicle, and support it with safety stands in the proper location (see page 1-8). Remove the front wheels.

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).



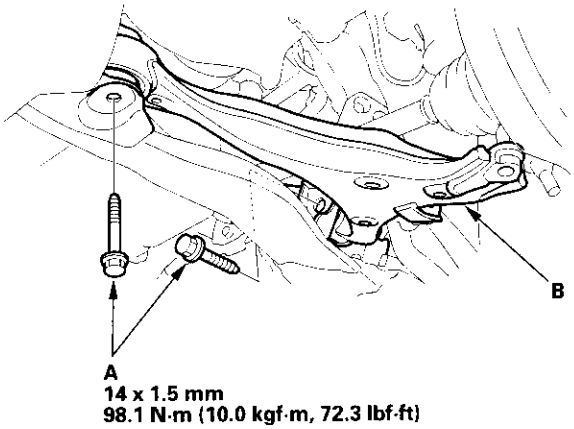
3. Remove the lock pin (A) from the lower arm ball joint, and remove the castle nut (B).

   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).

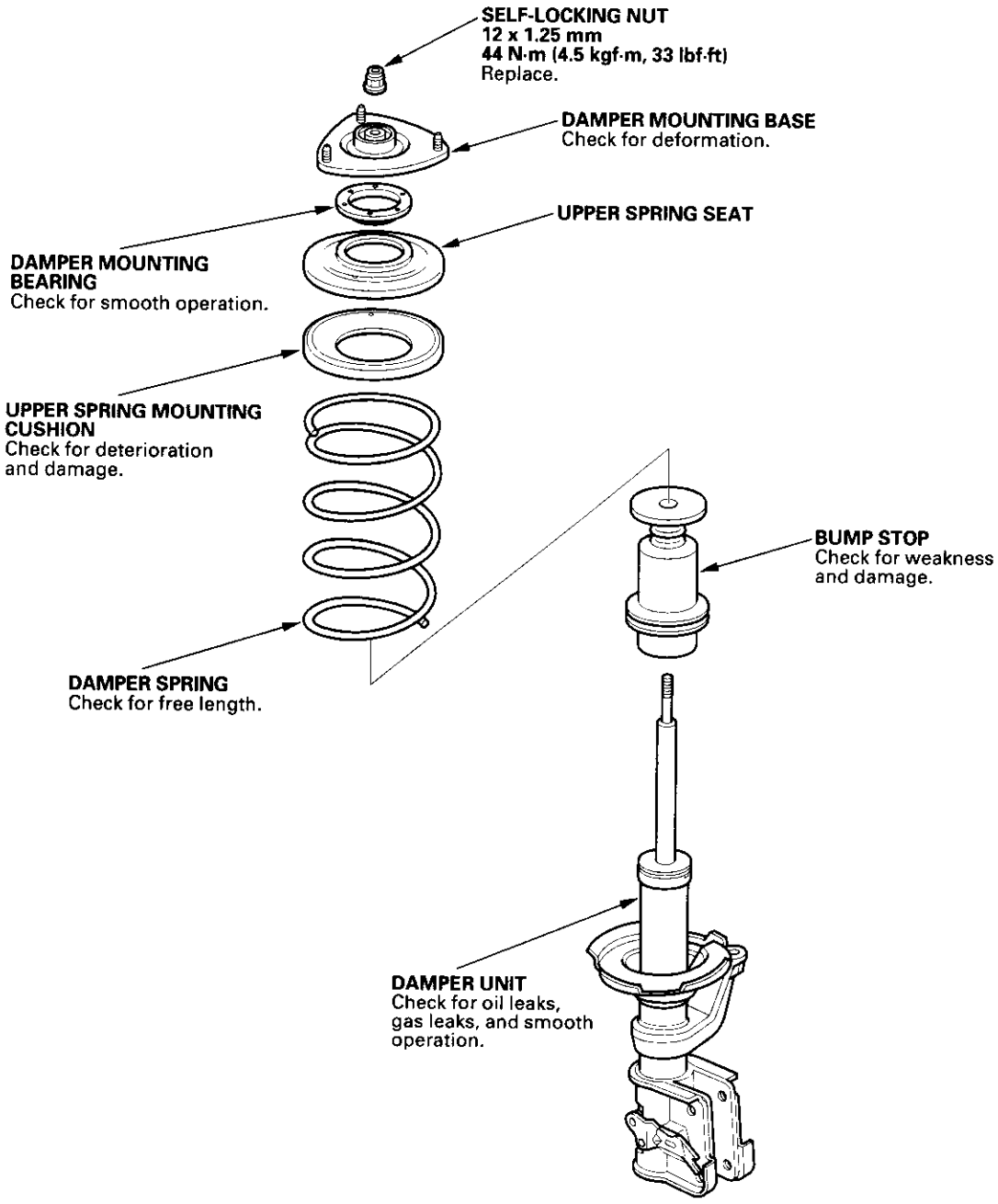


6. Install the lower arm in the reverse order of removal, and note these items:

   - 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

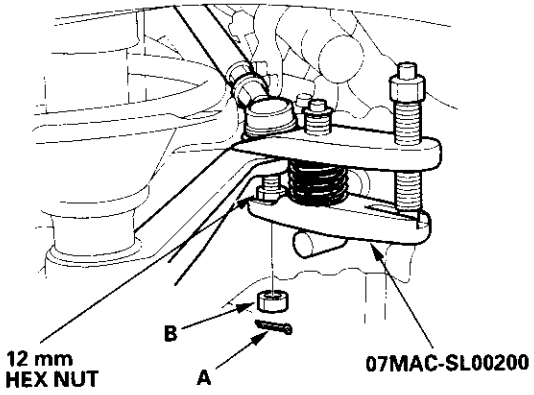


Special Tools Required
Ball joint remover, 28 mm 07MAC-SL00200

Removal

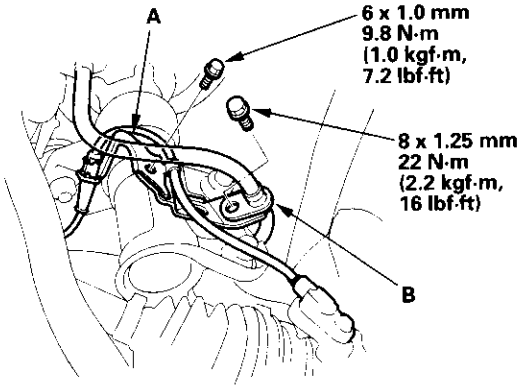
1. Raise the front of the vehicle, and support it with safety stands in the proper location (see page 1-8). Remove the front wheels.

2. Remove the cotter pin (A) from the tie-rod end ball joint, and remove the nut (B).

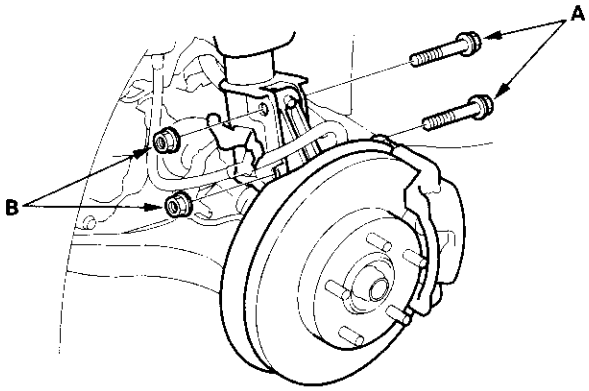


3. Disconnect the tie-rod end from the steering arm on the damper using the special tool (see page 18-10).

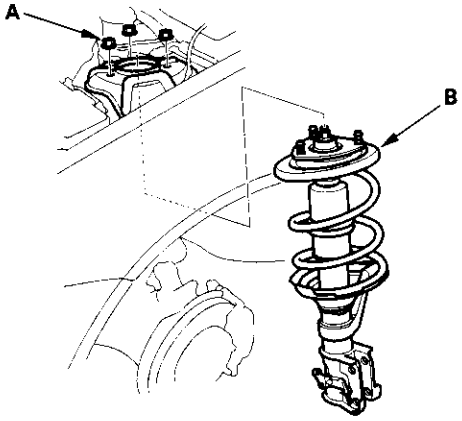
4. Remove the bolts, and remove the wheel sensor harness bracket (A) and brake hose bracket (B) from the damper. Do not disconnect the wheel sensor connector.



5. Remove the damper pinch bolts (A) while holding the nuts (B).



6. Remove the flange nuts (A) from the top of the damper.



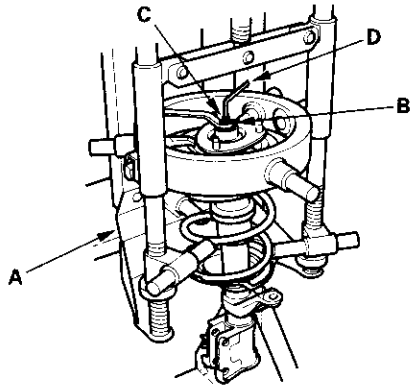
7. Lower the lower arm, and remove the damper assembly (B).

(cont'd)

Damper/Spring Replacement (cont'd)

Disassembly/Inspection

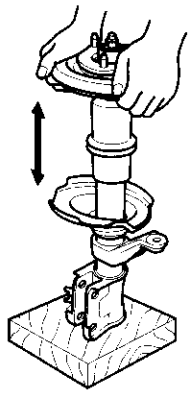
1. Compress the damper spring with a commercially available strut compressor (A) according to the manufacturer's instructions, then remove the self-locking nut (B) while holding the damper shaft (C) with a hex wrench (D). Do not compress the spring more than necessary to remove the nut.



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.

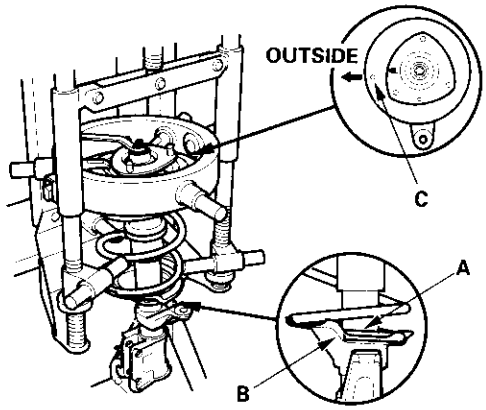
4. Compress the damper assembly by hand, and check for smooth operation through a full stroke, both compression and extension. The damper should extend smoothly and constantly when compression is released. If it does not, the gas is leaking and the damper should be replaced.



5. Check for oil leaks, abnormal noises, and binding during these tests.

Reassembly

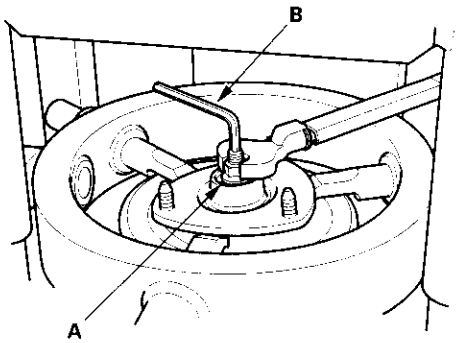
1. Install all the parts except the self-locking nut onto the damper unit by referring to the Exploded View. Align the bottom of the spring (A) and the stepped part of the lower spring seat (B) as illustrated. Align the upper spring seat so that the small hole (C) in it is on the out side when it is installed in the body.



2. Install the damper assembly on a commercially available strut spring compressor (C).

3. Compress the damper spring with the spring compressor.

4. Install a new self-locking nut (A) on the damper shaft.

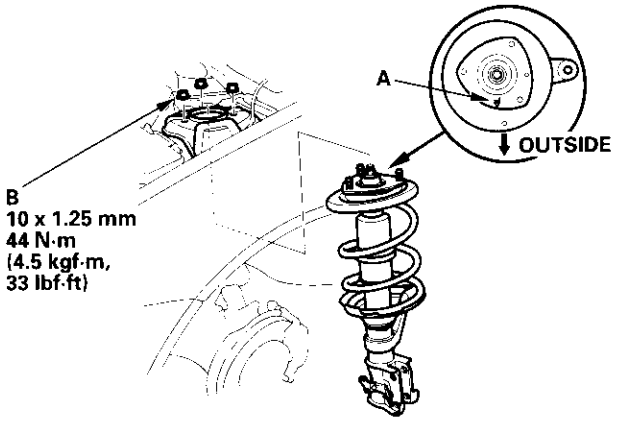


12 x 1.25 mm
44 N·m (4.5 kgf·fm, 33 lbf·ft)

5. Hold the damper shaft with a hex wrench (B), and tighten the self-locking nut to the specified torque.

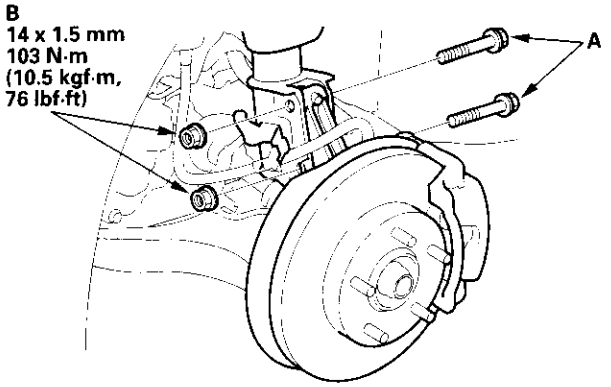
Installation

1. Lower the lower arm, and position the damper assembly in the body. Turn the damper mounting base so that the "△L" mark (A) faces toward the outside of the vehicle.



2. Loosely install the flange nuts (B) onto the top of the damper.

3. Position the damper bottom on the knuckle, and install the 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.

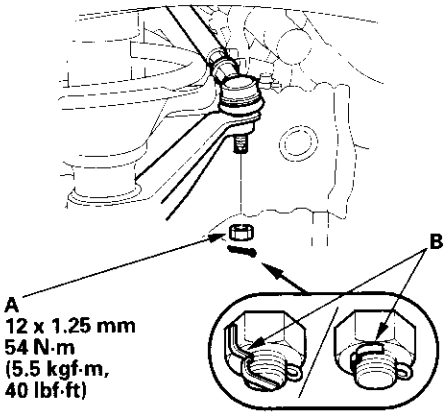
NOTICE

Do not place the jack against the flat section of the lower arm. Lifting the arm in this area might bend it.

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. 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.



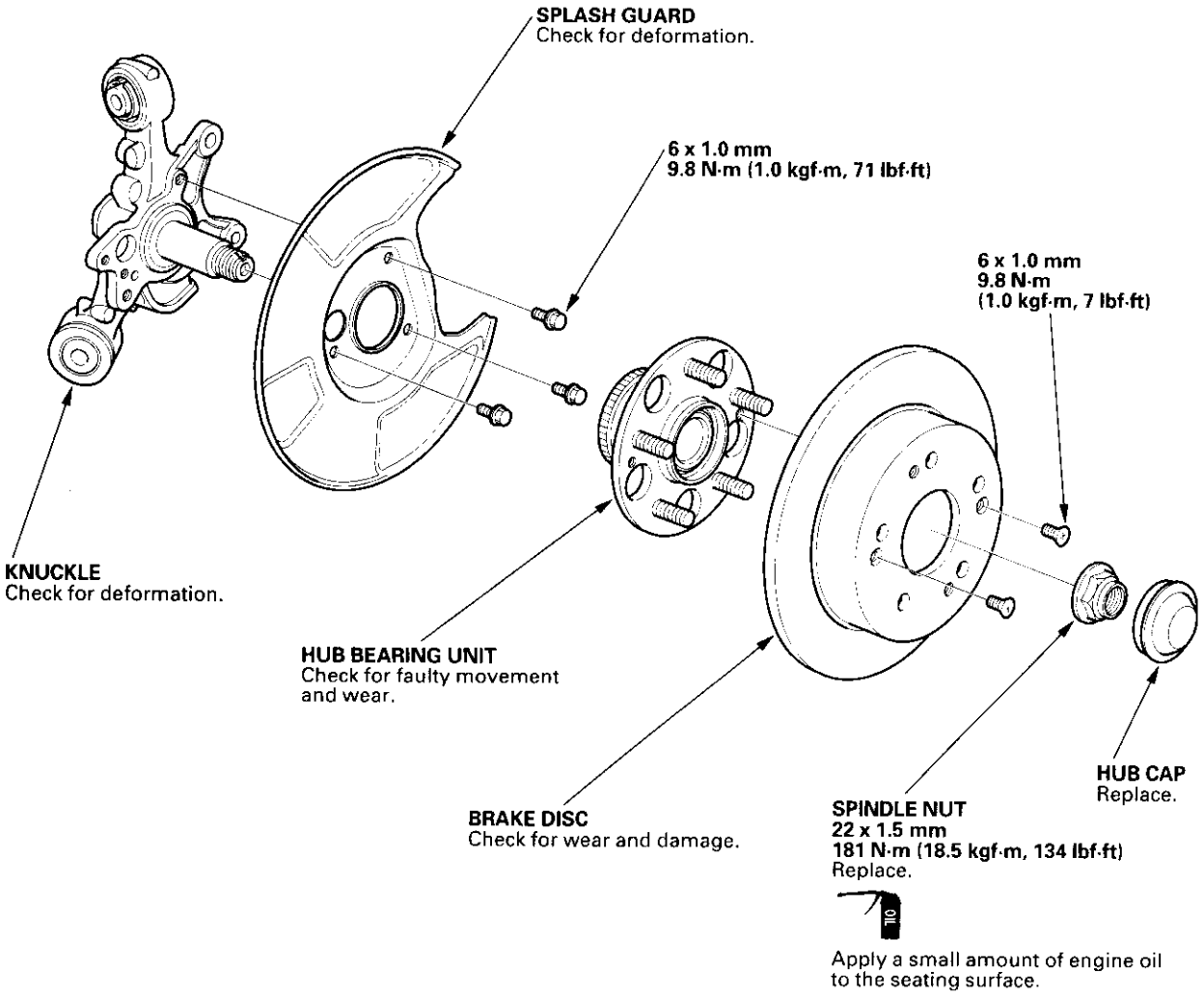
8. Install the brake hose bracket and the flange bolt onto the damper, and tighten the bolt to the specified torque.

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).

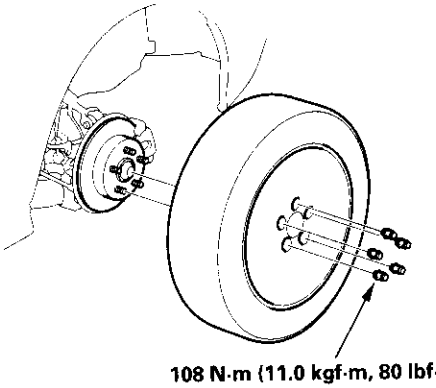
Hub Bearing Unit Replacement

Exploded View



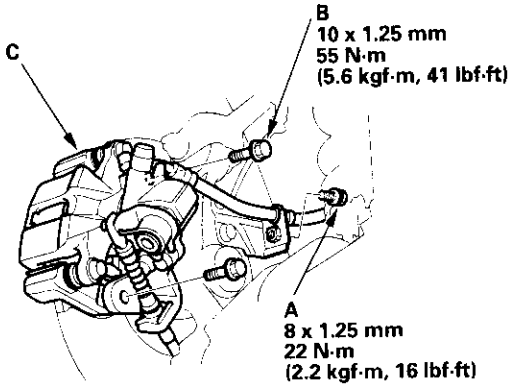
1. Raise the rear of the vehicle, and support it with safety stands in the proper location (see page 1-8).

2. Remove the wheel cap, wheel nuts, and rear wheel.



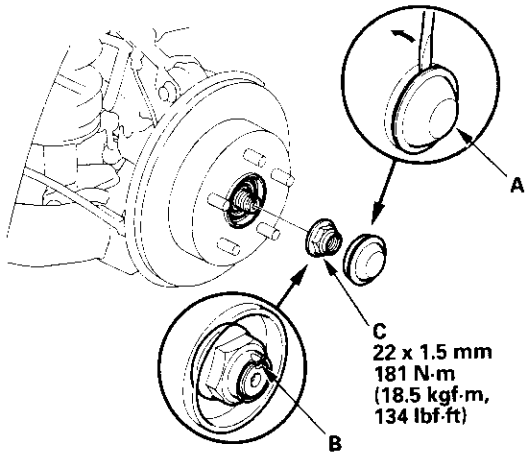
3. Release the parking brake lever.

4. Remove the brake hose mounting bolt (A).

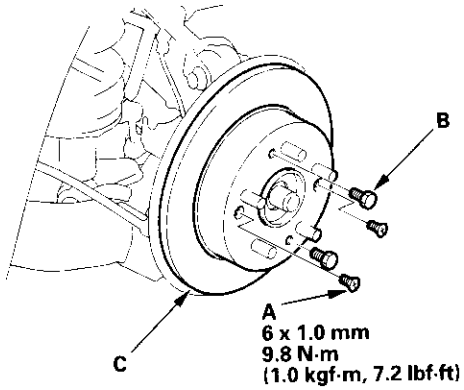


5. Remove the caliper bracket mounting bolts (B), and hang the caliper (C) to one side. To prevent damage to the caliper or brake hose, use a short piece of wire to hang the caliper from the undercarriage.

6. Remove the hub cap (A), raise the stake (B), and remove the spindle nut (C).



7. Remove the brake disc retaining screws (A).

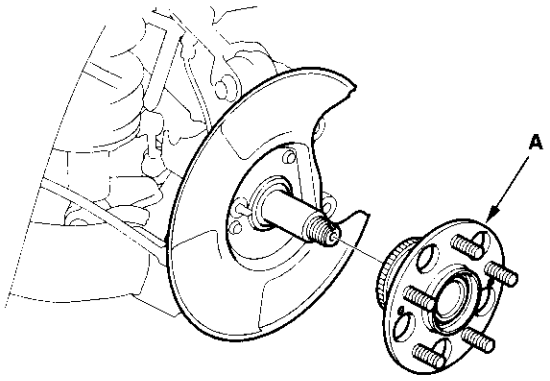


8. Screw two 8 x 1.25 mm bolts (B) into the disc (C) to push it away from the hub. Turn each bolt two turns at a time to prevent cocking the disc excessively. Remove the brake disc.

(cont'd)

Hub Bearing Unit Replacement (cont'd)

9. Remove the hub bearing unit (A) from the spindle.

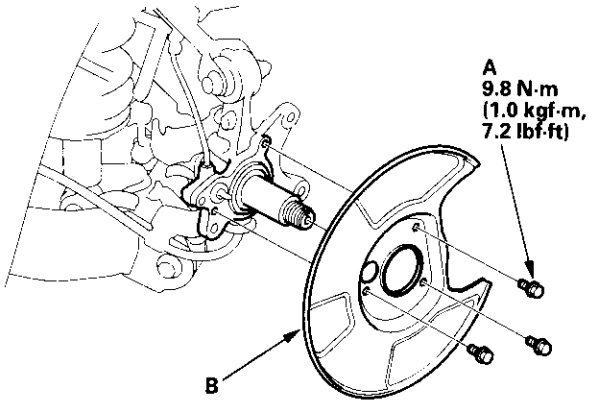


10. Install the hub bearing unit in the reverse order of removal, and note these items:

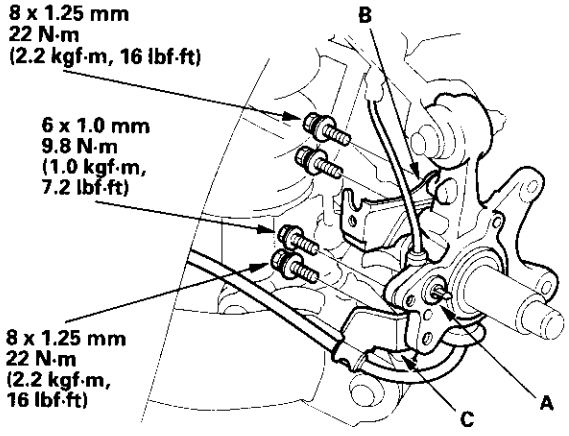
- Tighten all mounting hardware to the specified torque values.
- Before installing the brake disc, clean the mating surface of the hub and the inside of the brake disc.
- Use a new spindle nut on reassembly.
- After tightening, use a drift to stake the spindle nut shoulder against the spindle.
- Use 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 18-25).
3. Remove the flange bolts (A) and splash guard (B) from the knuckle.



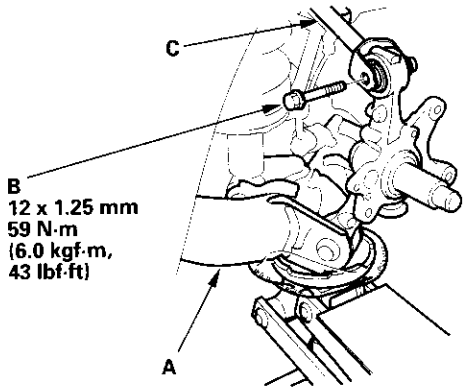
4. Remove the wheel sensor (A), brake hose mounting bracket (B), and parking cable mounting bracket (C) from the knuckle. Do not disconnect the wheel sensor connector.



5. Place the floor jack under the trailing arm (A) to support it.

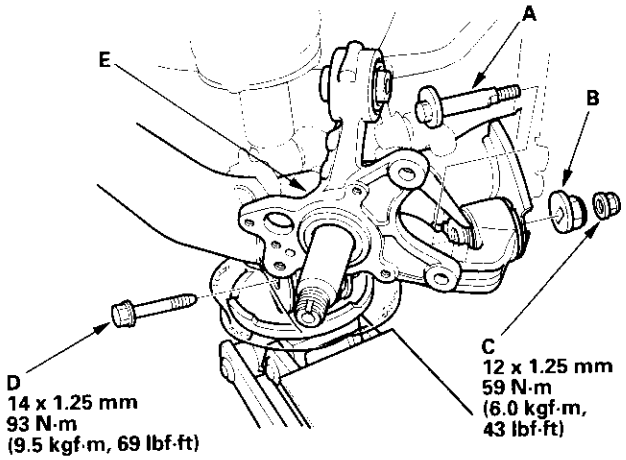
NOTICE

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).

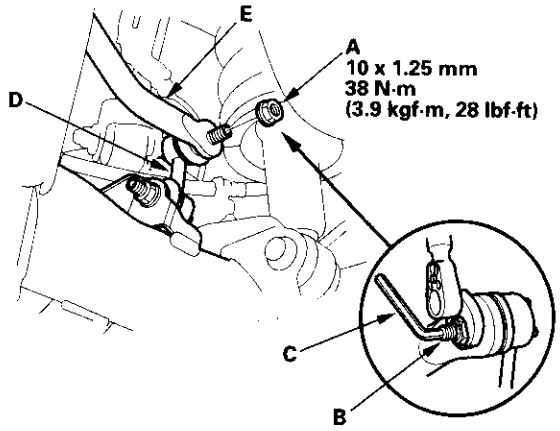
9. Install the knuckle in the reverse order of removal, and note these items:

- 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).

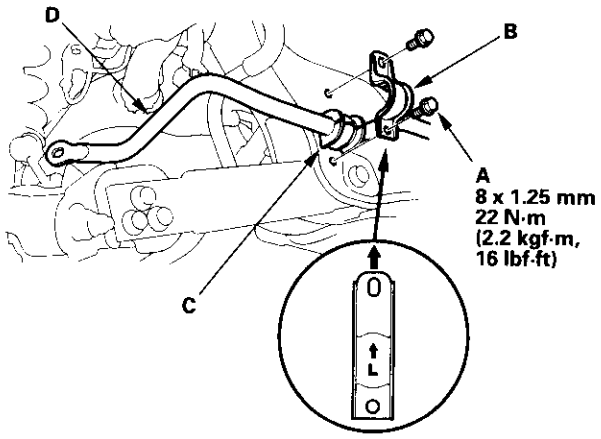
Stabilizer Bar Replacement

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.

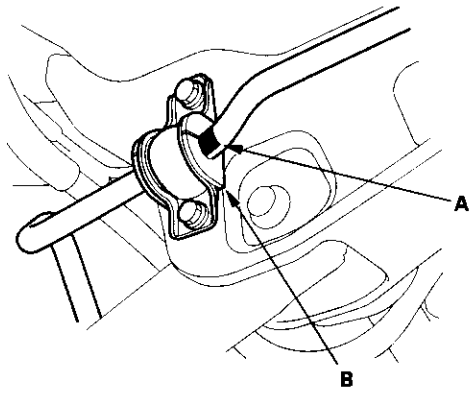


3. Remove the flange bolts (A) and bushing holders (B), then remove the bushings (C) and the stabilizer bar (D).



4. Install the stabilizer bar in the reverse order of removal, and note these items:

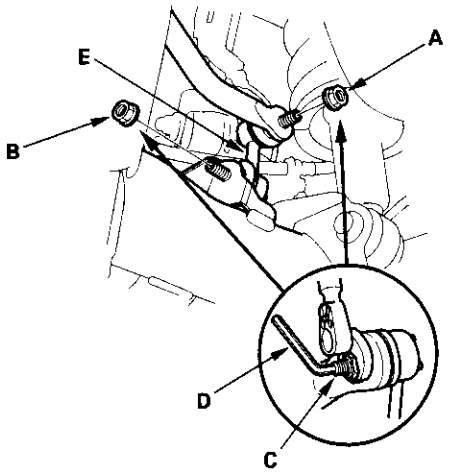
   - Use new self-locking nuts on reassembly.
   - Make sure the right and left ends of the stabilizer bar are installed on their respective sides of the vehicle.
   - Align the ends of the paint marks (A) on the stabilizer bar with the bushings (B).
   - Refer to Stabilizer Link Replacement (see page 18-29) to connect the stabilizer bar to the links.



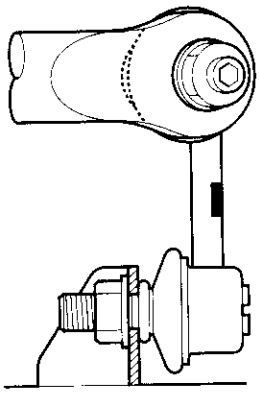
Stabilizer Link Removal/Installation

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 on the stabilizer bar and trailing arm with the joint pins set at the center of each moving range.

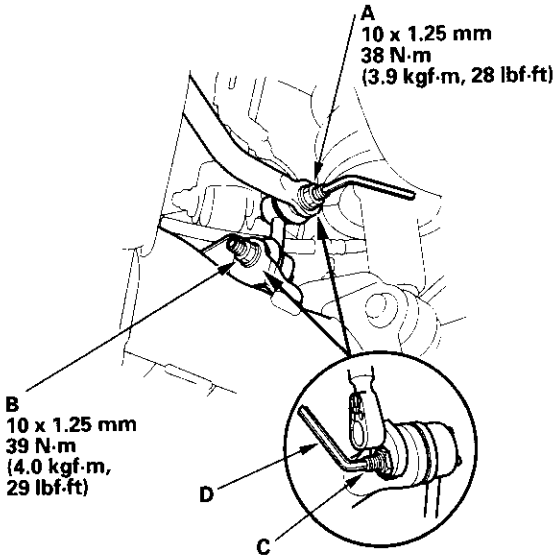


4. Install the self-locking nut and flange nut, and lightly tighten them.

   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.

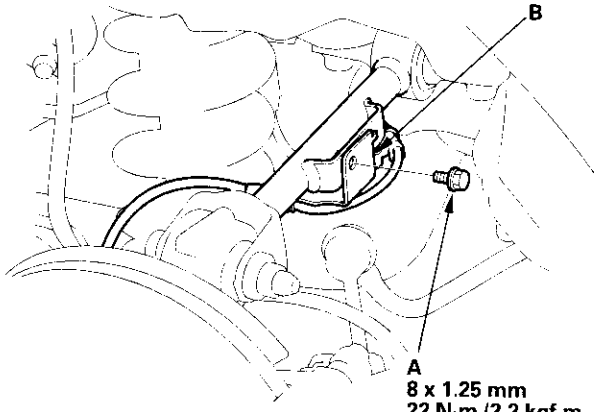
6. Tighten the new self-locking nut (A) and flange nut (B) to the specified torque values while holding the respective joint pins (C) with a hex wrench (D).



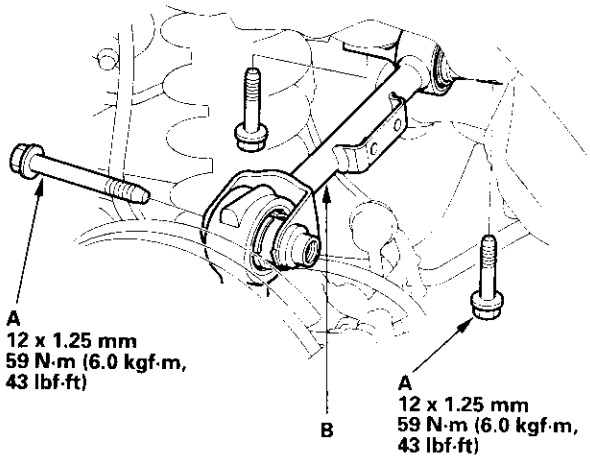
7. After 5 minutes of driving, re-tighten the self-locking nut again to the specified torque.

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).



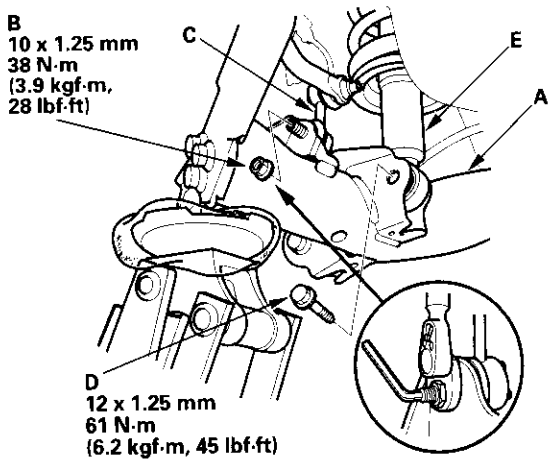
5. Install the upper arm in the reverse order of removal, and note these items:
   - First install all the suspension components and lightly tighten the bolts and nuts, then place a jack under the trailing arm, and raise the suspension to load it with the vehicle's weight before fully tightening the 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 18-26).

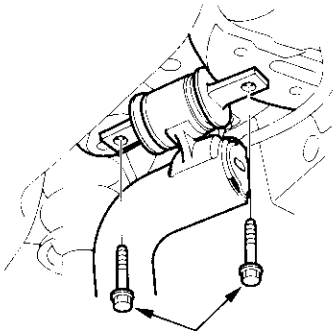
3. Place the floor jack under the trailing arm (A) to support it.



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.

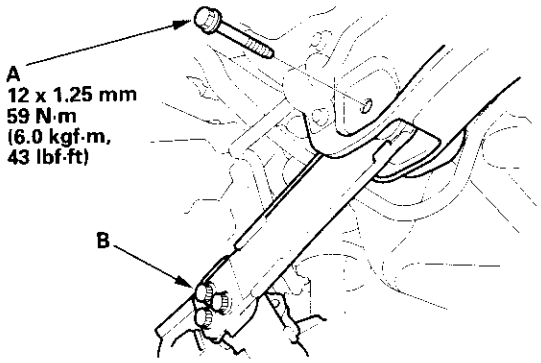
6. Remove the trailing arm front mounting bolts (A).



7. Remove the trailing arm rear mounting bolt (A).

NOTICE

Do not loosen the special bolts (B) on the trailing arm.



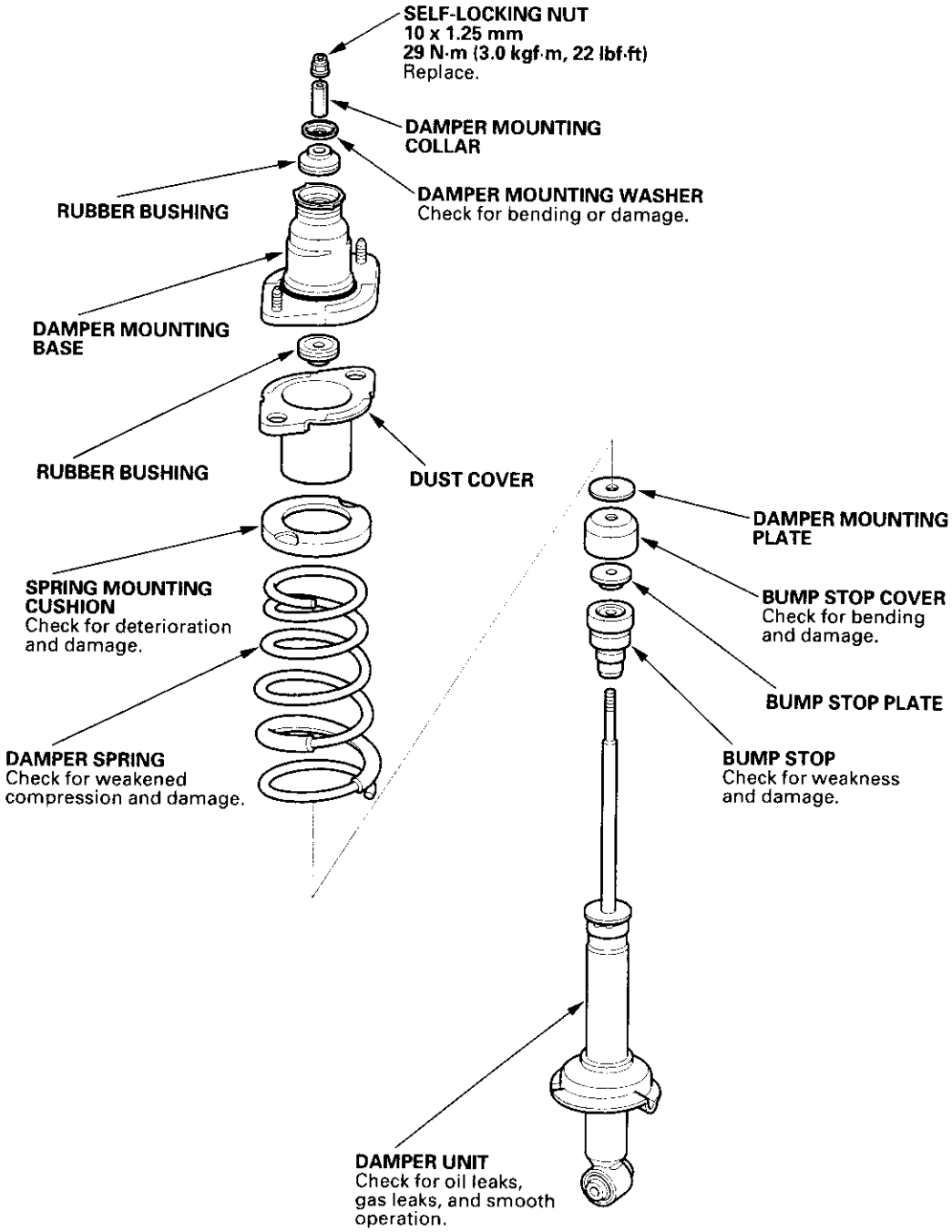
8. Lower the jack, and remove the trailing arm.

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

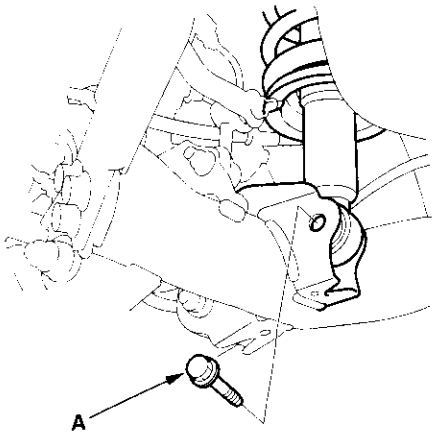
Exploded View



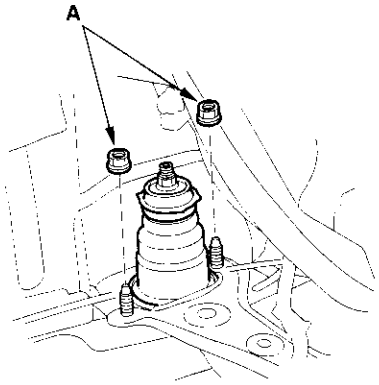
Removal

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.

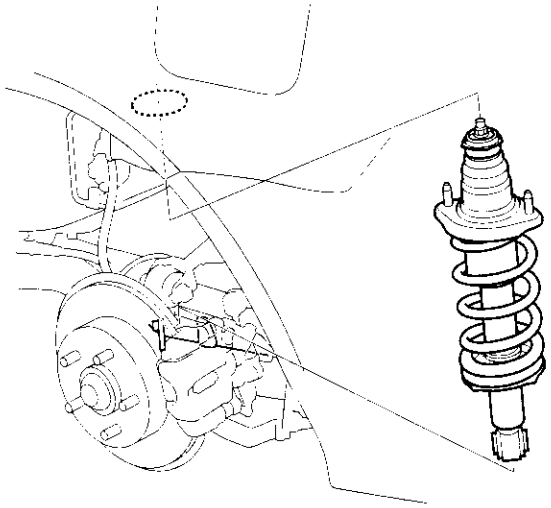
2. Remove the flange bolt (A) from the bottom of the damper.



3. Remove the flange nuts (A) from the top of the damper in the trunk.



4. Remove the damper assembly from the body.

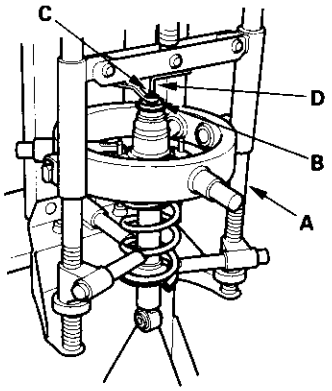


(cont'd)

Damper/Spring Replacement (cont'd)

Disassembly/Inspection

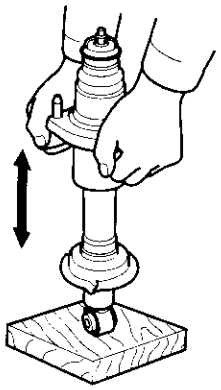
1. Compress the damper spring with a commercially available strut compressor (A) according to the manufacturer's instructions, then remove the self-locking nut (B) while holding the damper shaft (C) with a hex wrench (D). Do not compress the spring more than necessary to remove the nut.



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.

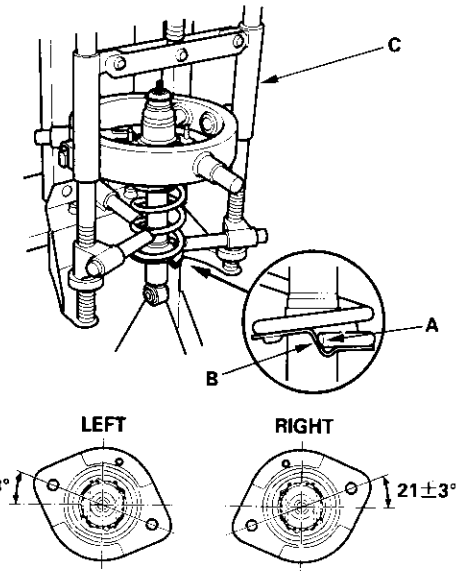
4. Compress the damper assembly by hand, and check for smooth operation through a full stroke, both compression and extension. The damper should extend smoothly and constantly when compression is released. If it does not, the gas is leaking and the damper should be replaced.



5. Check for oil leaks, abnormal noises, or binding during these tests.

Reassembly

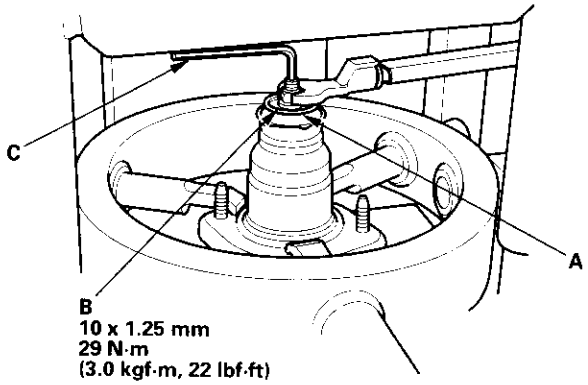
1. Install all the parts except the damper mounting washer and self-locking nut onto the damper unit by referring to the Exploded View. Align the bottom of the spring (A) and the stepped part of the lower spring seat (B), and align the damper mounting base as shown.



2. Install the damper assembly on a commercially available strut spring compressor (C).

3. Compress the damper spring with the spring compressor.

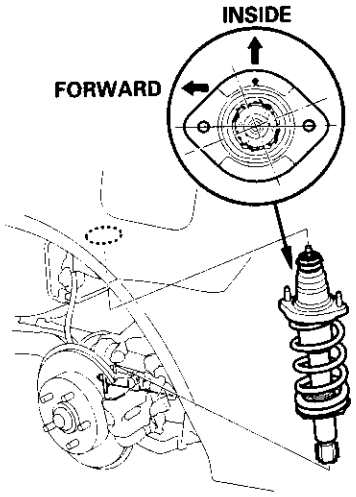
4. Install the washer (A) and a new self-locking nut (B) on the damper shaft.



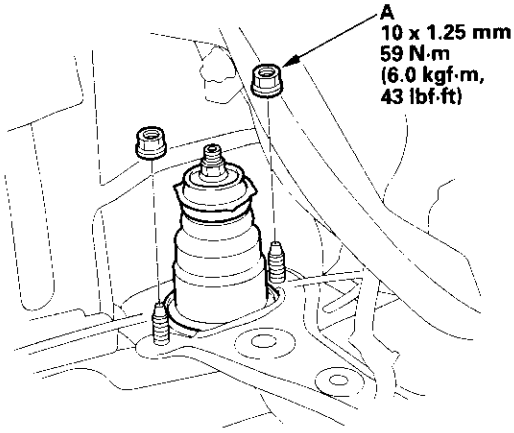
5. Hold the damper shaft with a hex wrench (C), and tighten the self-locking nut to the specified torque.

Installation

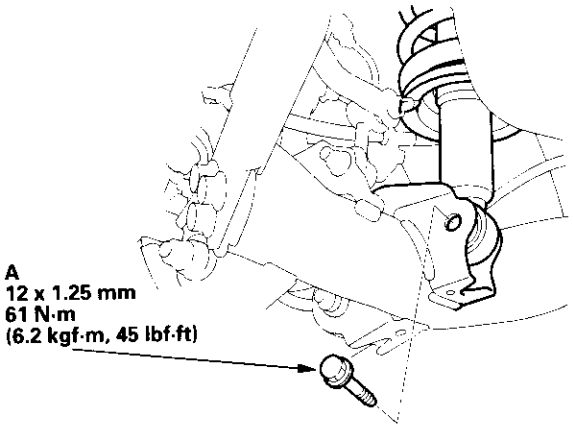
1. Position the damper assembly in the body. Note the direction of the damper mounting base so that the small hole dot on it is toward the front and inside of the vehicle.



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.

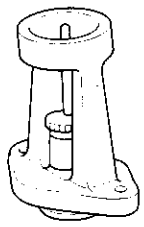
6. Check the wheel alignment, and adjust it if necessary (see page 18-4).

Brakes

Conventional Brake Components

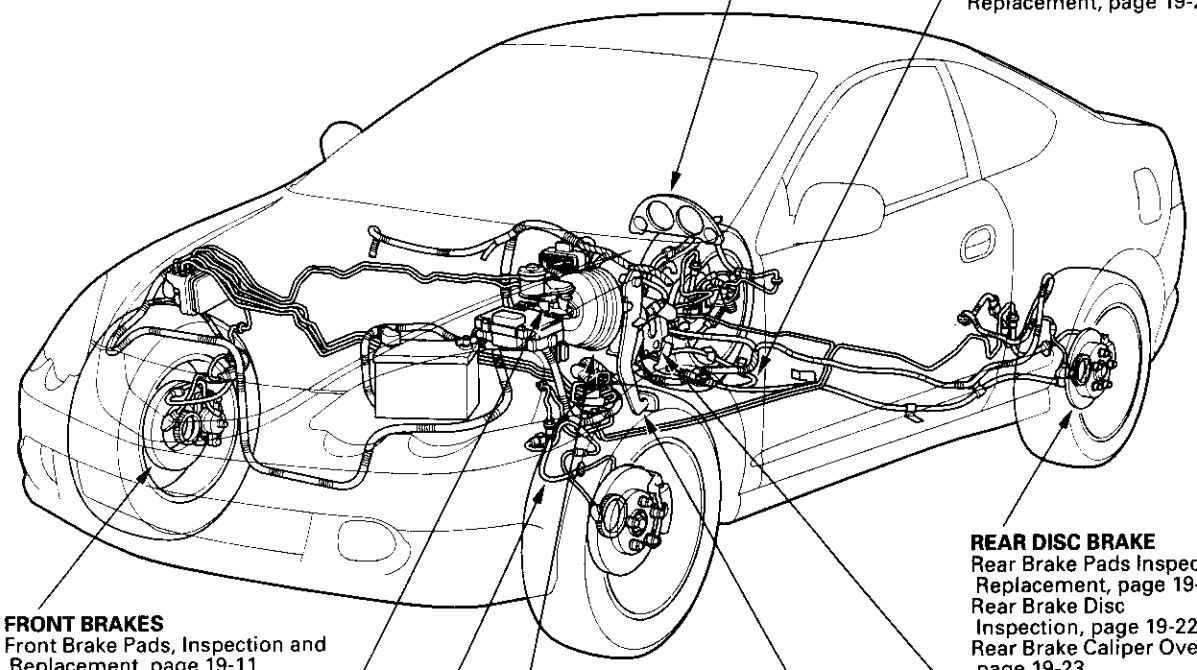
Special Tools

Ref.No.	Tool Number	Description	Qty
①	07JAG-SD40100	Pushrod Adjustment Gauge	1



①

Component Location Index



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Parking Brake Cable 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	Bulging seal at reservoir cap. This is a sign of fluid contamination.
Brake Hoses	Look for damage or signs of fluid leakage at: • Line joints and banjo bolt connections • Hoses and lines, also inspect for twisting or damage	Bulging, twisted, or bent lines.
Caliper	Look for damage or signs of fluid leakage at: • Piston seal • Banjo bolt connections • 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 (about the same pressure needed to keep an A/T-equipped car from creeping), 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 – Look for and replace any damaged brake lines. If all brake lines are OK, replace the ABS modulator. ■

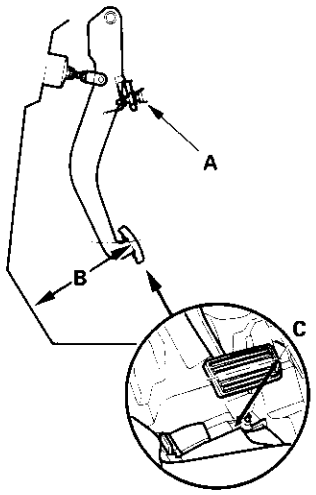
Brake Pedal and Brake Pedal Position Switch Adjustment

Pedal Height

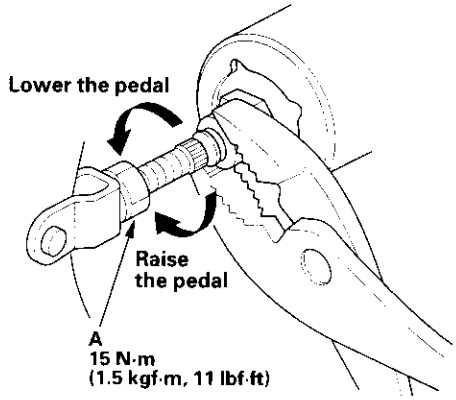
1. Disconnect the brake pedal position switch connector, turn the brake pedal position switch (A) counterclockwise, and pull it back until it is no longer touching the brake pedal.

2. Lift up the carpet. At the insulator cutout, measure the pedal height (B) from the middle of the right side of the pedal pad (C).

   Standard Pedal Height (with carpet removed):
   M/T: 180 mm (7 1/16 in.)
   A/T: 183 mm (7 3/16 in.)



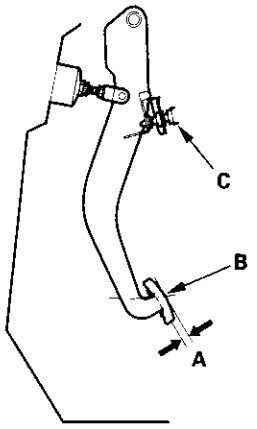
3. Loosen the pushrod locknut (A), and screw the pushrod in or out with pliers until the standard pedal height from the floor is reached. After adjustment, tighten the locknut firmly. Do not adjust the pedal height with the pushrod pressed.



Pedal Free Play

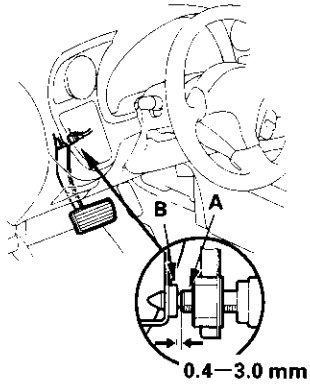
4. With the engine off, inspect the play (A) on the pedal pad (B) by pushing the pedal by hand.

   Free Play: 1–5 mm (1/16–3/16 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.



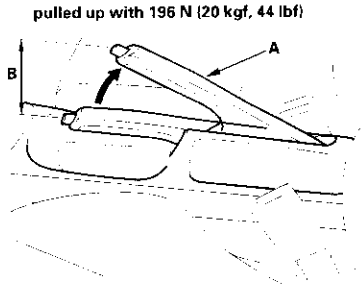
7. Check the brake pedal free play as described below.

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).

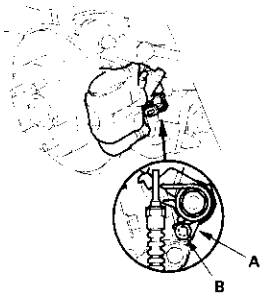
   Lever locked clicks: 7 - 9



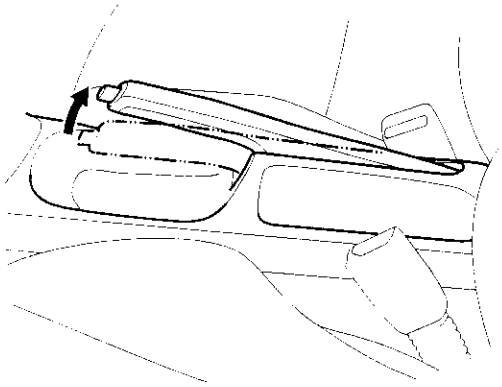
2. Adjust the parking brake if the lever clicks are not within the specification.

Adjustment

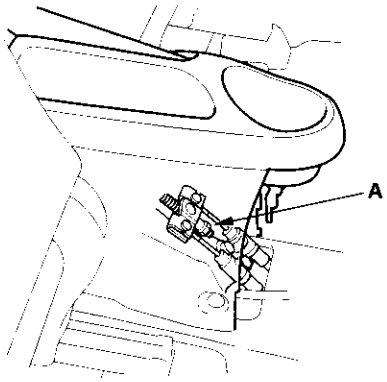
1. Release the parking brake lever fully.
2. Loosen the parking brake adjusting nut, start the engine, and press the brake pedal several times to set the self-adjusting brake before adjusting the parking brake.
3. Block the front wheels, then raise the rear of the vehicle, and make sure it is securely supported.
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 console cover (see page 20-58).
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.

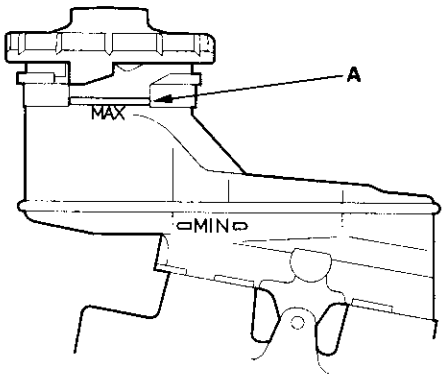


8. Release the parking brake lever fully, and check that the parking brakes do not drag when the rear wheels are turned. Readjust if necessary.
9. Make sure the parking brakes are fully applied when the parking brake lever is pulled up fully.
10. Reinstall the console cover.

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).



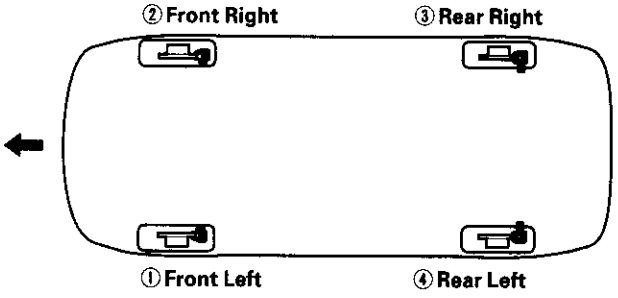
2. Slide a piece of clear plastic hose over the first bleed screw, and submerge the other end in a container of new brake fluid.

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.

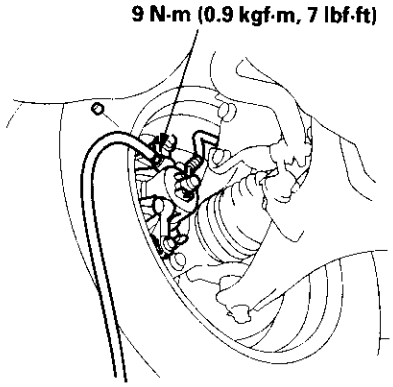
5. Repeat the procedure for each wheel in the sequence shown below until air bubbles no longer appear in the fluid.

BLEEDING SEQUENCE:

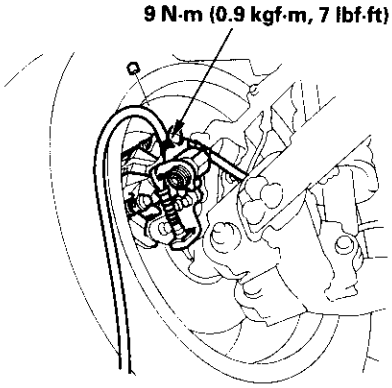


6. Refill the master cylinder reservoir to the MAX (upper) level line.

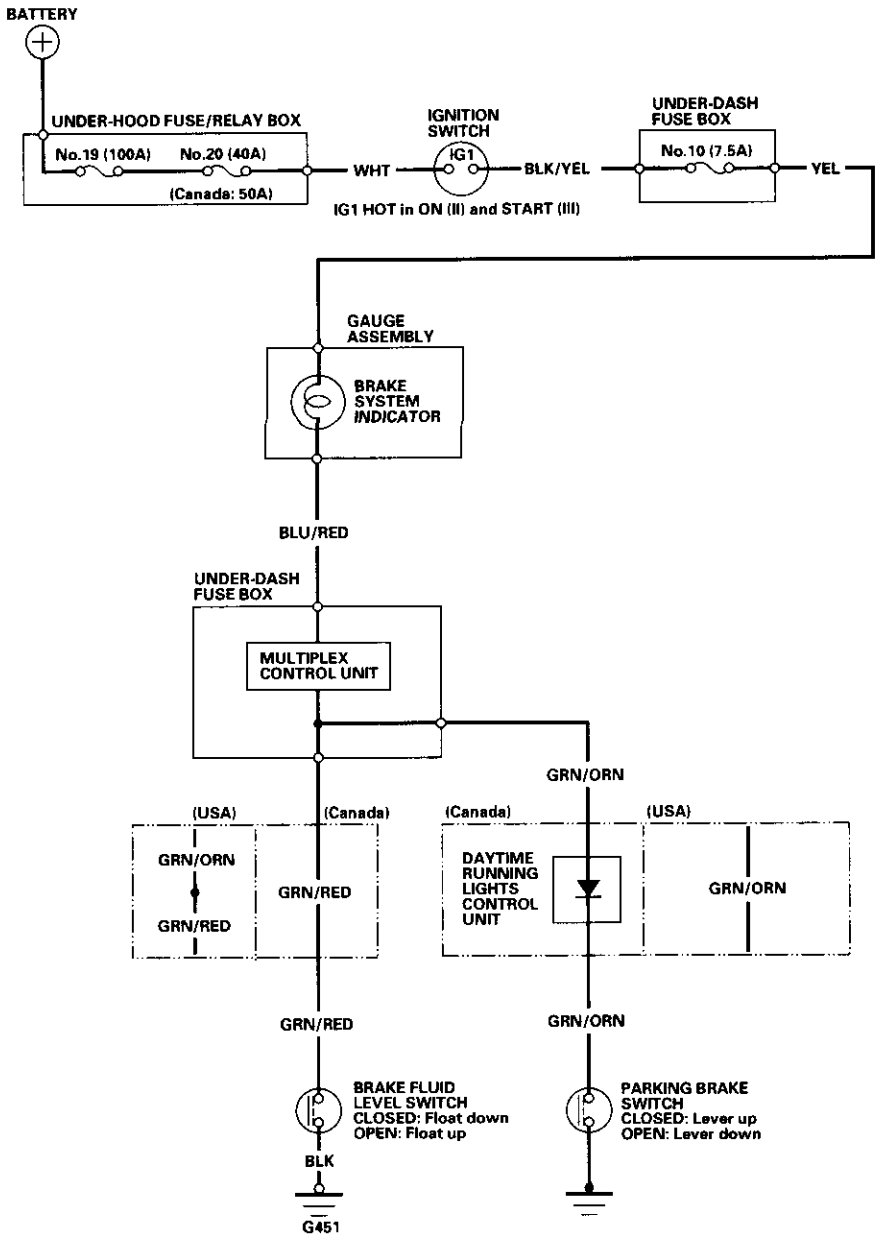
FRONT BRAKE:



REAR BRAKE:

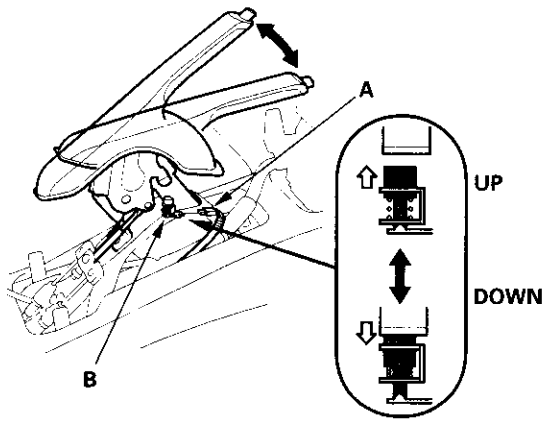


Brake System Indicator Circuit Diagram



Parking Brake Switch Test

1. Remove the console, and disconnect the connector (A) from the switch (B).



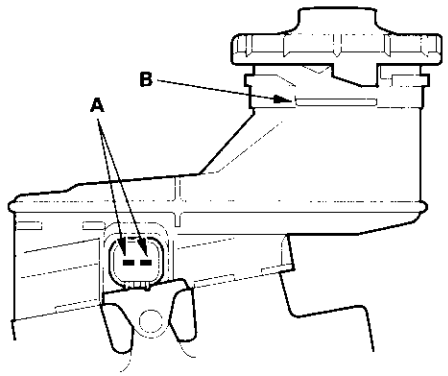
2. Check for continuity between the positive terminal and body ground:

   - 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.

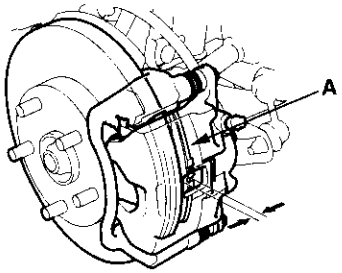
Inspection

1. Raise the front of the vehicle, and support it with safety stands in the proper location (see page 1-8).

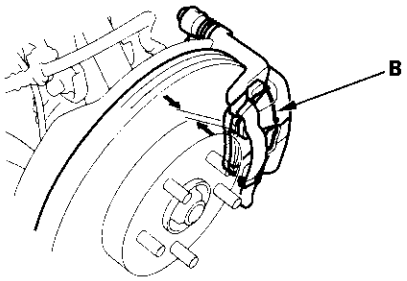
2. Check the thickness of the inner pad (A) and outer pad (B). Do not include the thickness of the backing plate.

   Brake pad thickness:
   Standard: 9.5 – 10.5 mm (0.37 – 0.41 in.)
   Service limit: 1.6 mm (0.06 in.)

   Inner pad:



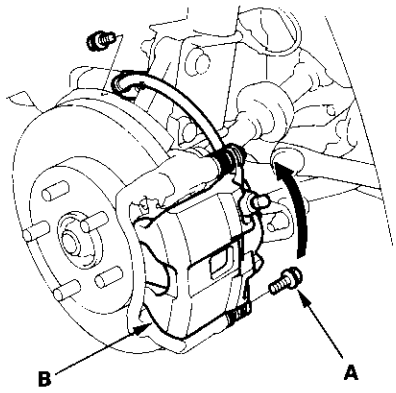
   Outer pad:



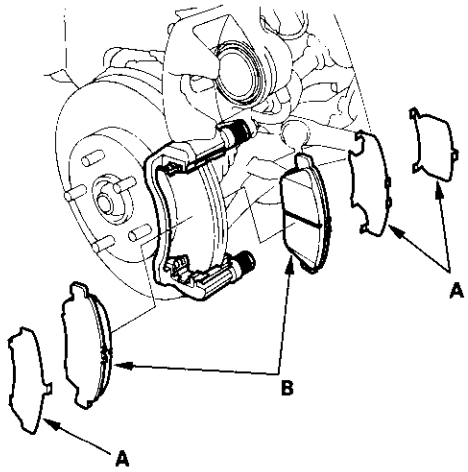
3. If the brake pad thickness is less than the service limit, replace all the pads as a set.

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.



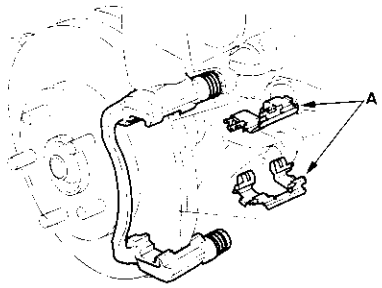
2. Remove the pad shims (A) and pads (B).



(cont'd)

Front Brake Pads Inspection and Replacement (cont'd)

3. Remove the pad retainers (A).



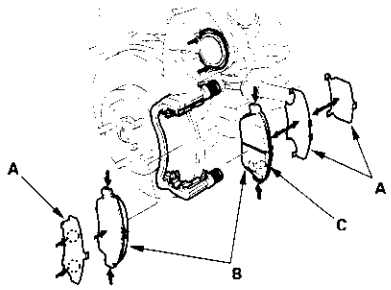
4. Clean the caliper thoroughly; remove any rust, and check for grooves and cracks.

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.

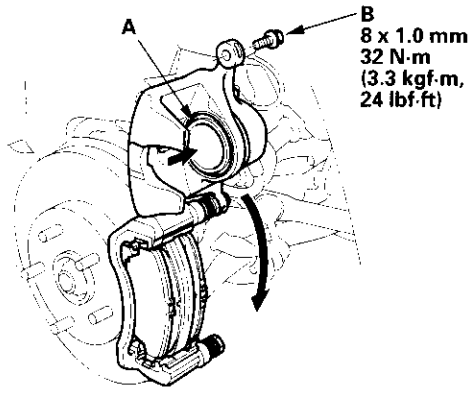
7. Install the pad retainers. Wipe excess grease off the retainers. Contaminated brake discs and pads reduce stopping ability. Keep grease off the discs and pads.

8. Apply Dow Corning Molykote M77 or Daikalub 528D 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. 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.

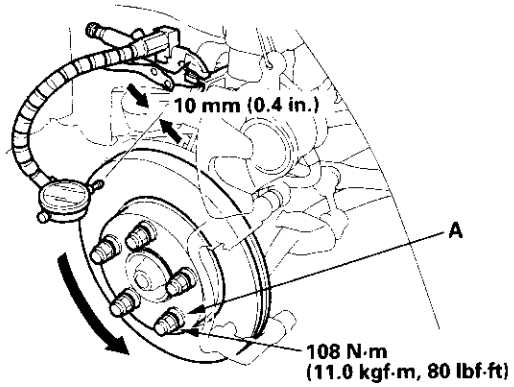
    NOTE: Engagement of the brake may require a greater pedal stroke immediately after the brake pads have been replaced as a set. Several applications of the brake pedal will restore the normal pedal stroke.

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:
K20A3 Engine models: 19 mm (0.75 in.)
K20A2 Engine models: 23 mm (0.91 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.).

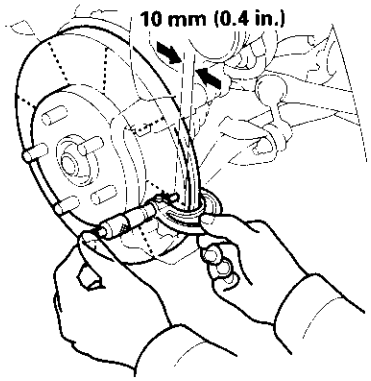
Thickness and Parallelism

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. Replace the brake disc if the smallest measurement is less than the max. refinishing limit.

Brake Disc Thickness:
Standard:
K20A3 Engine models: 20.9—21.1 mm (0.82—0.83 in.)
K20A2 Engine models: 24.9—25.1 mm (0.98—0.99 in.)
Max. Refinishing Limit:
K20A3 Engine models: 19 mm (0.75 in.)
K20A2 Engine models: 23 mm (0.91 in.)

Brake Disc Parallelism: 0.015 mm (0.0006 in.) max.

NOTE: This is the maximum allowable difference between the thickness measurements.



4. 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.

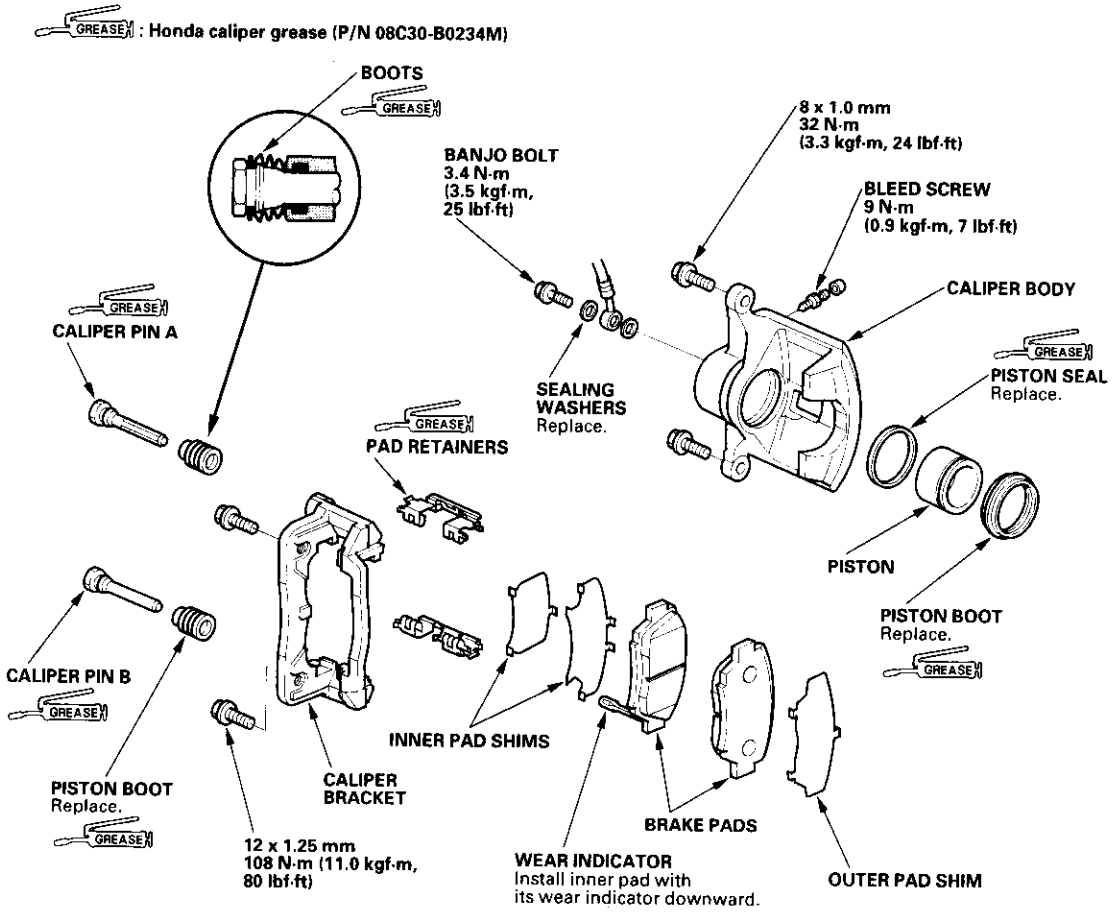
NOTE: If the brake disc is beyond the service limit for refinishing, replace it (see page 18-11).

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.

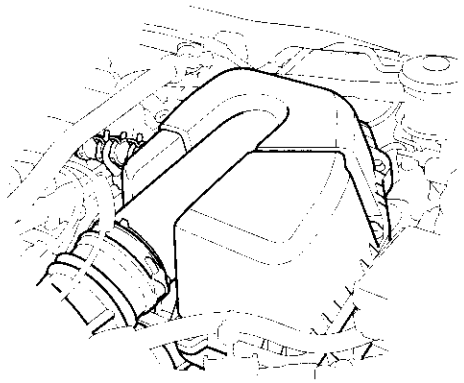
Remove, disassemble, inspect, reassemble, and install the caliper, and note these items:
- Do not spill brake fluid on the vehicle; it may damage the paint; if brake fluid gets on the paint, wash it off immediately with water.
- To prevent dripping, cover disconnected hose joints with rags or shop towels.
- 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.



Master Cylinder Replacement

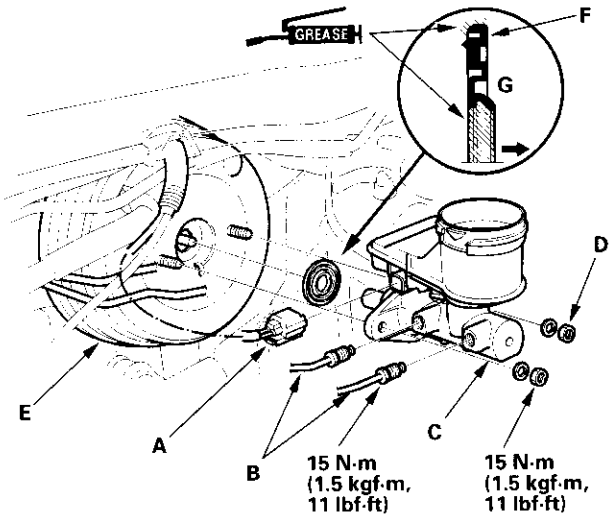
NOTE: Do not spill brake fluid on the vehicle; it may damage the paint; if brake fluid does contact the paint, wash it off immediately with water.

1. Remove the air cleaner.



2. Remove the reservoir cap and brake fluid from the master cylinder reservoir.

3. Remove the brake fluid level sensor connector (A).



4. Disconnect the brake lines (B) from the master cylinder (C). To prevent spills, cover the hose joints with rags or shop towels.

5. Remove the master cylinder mounting nuts (D) and washers.

6. Remove the master cylinder from the brake booster (E). Be careful not to bend or damage the brake lines when removing the master cylinder.

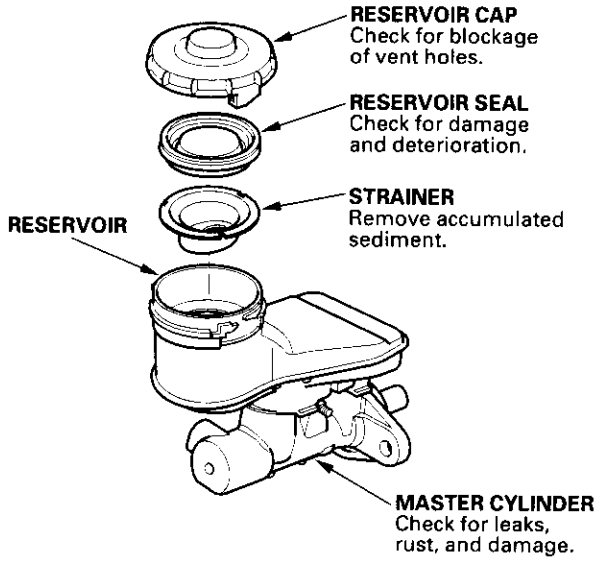
7. Remove the rod seal (F) from the master cylinder.

8. 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 with the recommended seal grease in the master cylinder set.
   - Install the rod seal onto the master cylinder with its grooved side (G) 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.

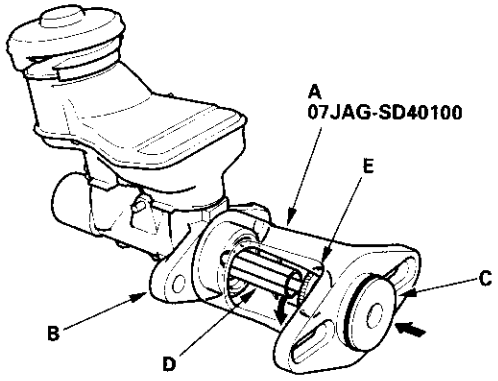


Brake Booster Pushrod Clearance Adjustment

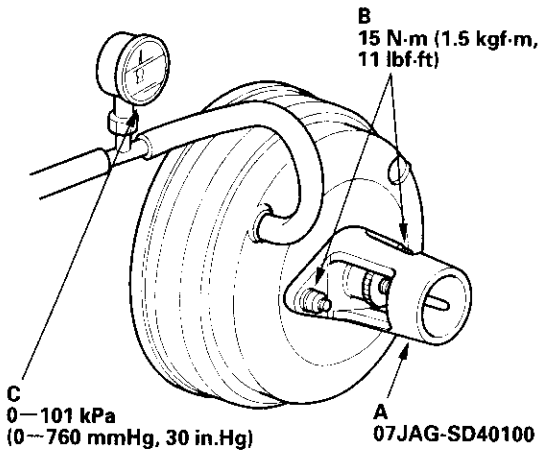
Special Tools Required
Pushrod adjustment gauge 07JAG-SD40100

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.

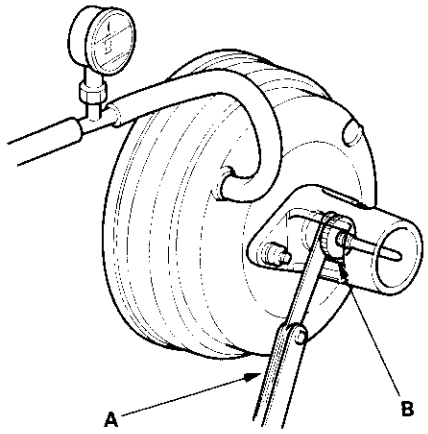


3. Install the master cylinder nuts (B), and tighten them to the specified torque.

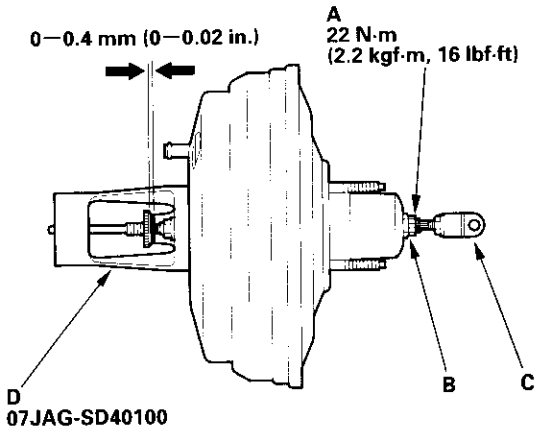
4. Connect the booster in-line with a vacuum gauge (C) 0—101 kPa (0—760 mmHg, 30 in.Hg) to the booster's engine vacuum supply, and maintain an engine speed that will deliver 66 kPa (500 mmHg, 20 in.Hg) vacuum.

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.)



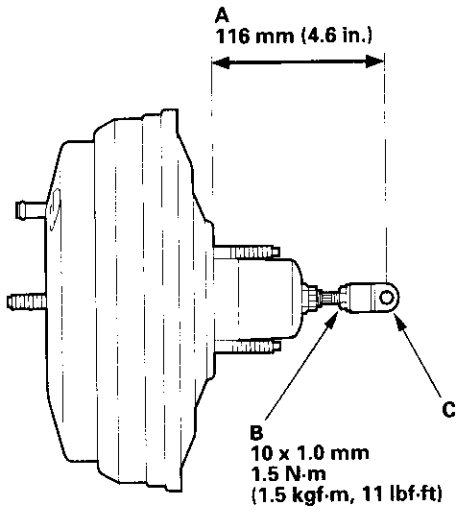
6. If the clearance is incorrect, loosen the star locknut (A), and turn the adjuster (B) in or out to adjust.
   - Adjust the clearance while the specified vacuum is applied to the booster.
   - Hold the clevis (C) while adjusting.



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, proportioning control valve, or calipers) is leaking.

2. Start the engine with the brake pedal pressed. If the pedal sinks slightly, the vacuum booster is operating normally. If the pedal height does not vary, the booster or check valve is faulty.

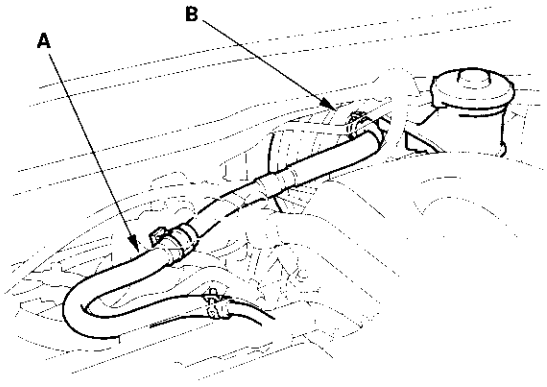
3. With the engine running, press the brake pedal lightly and shift the transmission to the [D] position. If the brake pedal sinks more than 10 mm (3/8 in.) in 3 minutes, the master cylinder is faulty. A slight change in pedal height when the A/C compressor cycles on and off is normal. (The A/C compressor 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. Turn the engine 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, check the booster check valve.

3. Disconnect the brake booster vacuum hose (check valve built-in) (A) at the booster (B) 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. Start the engine, and then pinch the brake booster vacuum hose between the check valve and the booster.

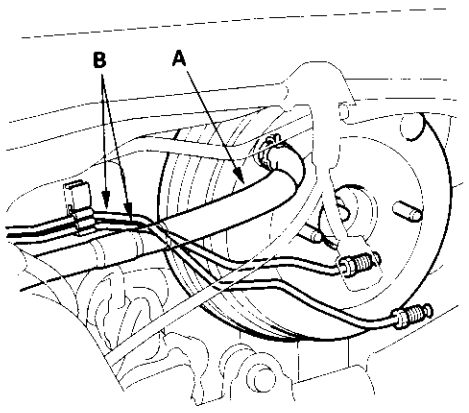
6. Turn the engine off, and wait 30 seconds. Press the brake pedal several times using normal pressure. When the pedal is first pressed, it should be low. On consecutive applications, the pedal height should gradually rise.

   - If the pedal position varies, replace the brake booster vacuumhose/check valve assembly.
   - If the pedal position does not vary, replace the brake booster.

Brake Booster Replacement

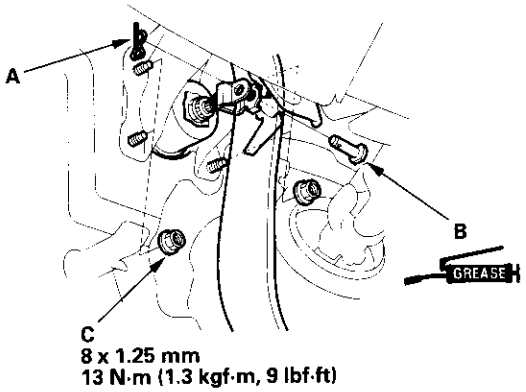
1. Remove the master cylinder (see page 19-15).

2. Disconnect the vacuum hose (A) from the brake booster.



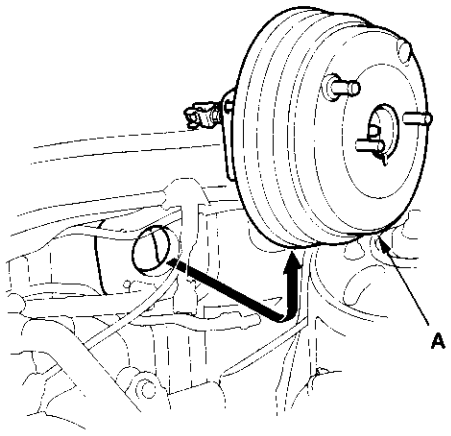
3. Remove the master cylinder brake lines (B) from the brake line holder.

4. Remove the clip (A) and the joint pin (B), and disconnect the yoke from the brake pedal.



5. Remove the brake booster mounting flange nuts (C).

6. Remove the brake booster (A) from the engine compartment.



7. 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

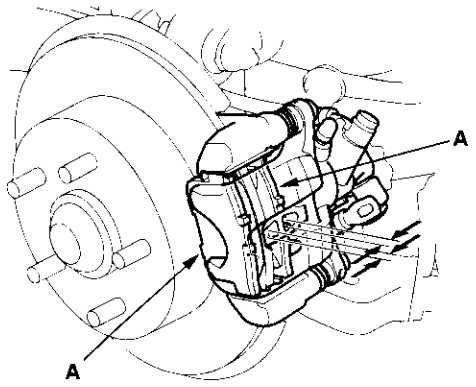
Frequent inhalation of brake pad dust, regardless of material composition, could be hazardous to your health.
- Avoid breathing dust particles.
- Never use an air hose or brush to clean brake assemblies. Use an OSHA-approved vacuum cleaner.

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 and outer pads (A). Do not include the thickness of the backing plate.

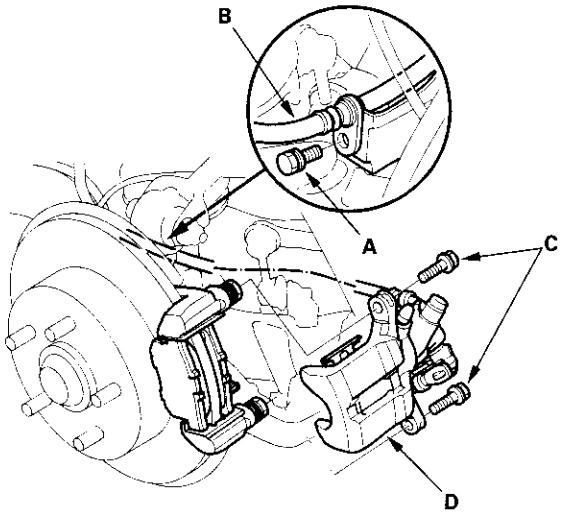
   Brake pad thickness:
   Standard: 8.5–9.5 mm (0.33–0.37 in.)
   Service limit: 1.6 mm (0.06 in.)



3. If the brake pad thickness is less than the service limit, replace all the pads as a set.

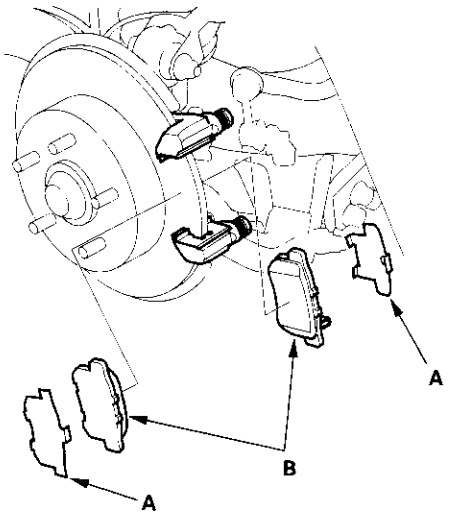
Replacement

1. Remove the bolt (A) and brake hose (B) from the mounting bracket.

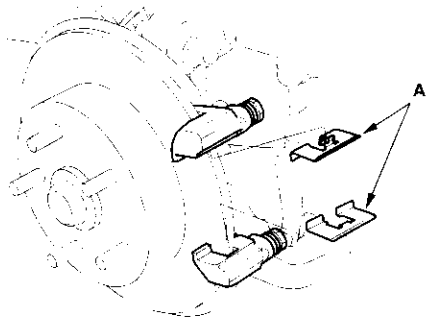


2. Remove the caliper bolts (C), and remove the caliper (D) from the caliper bracket.

3. Remove the pad shims (A) and pads (B).



4. Remove the pad retainers (A).



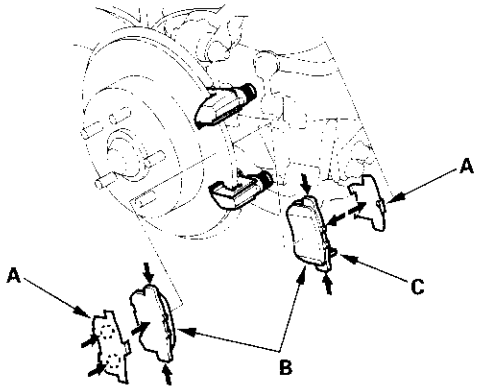
5. Clean the caliper thoroughly; remove any rust, and check for grooves and cracks.

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.

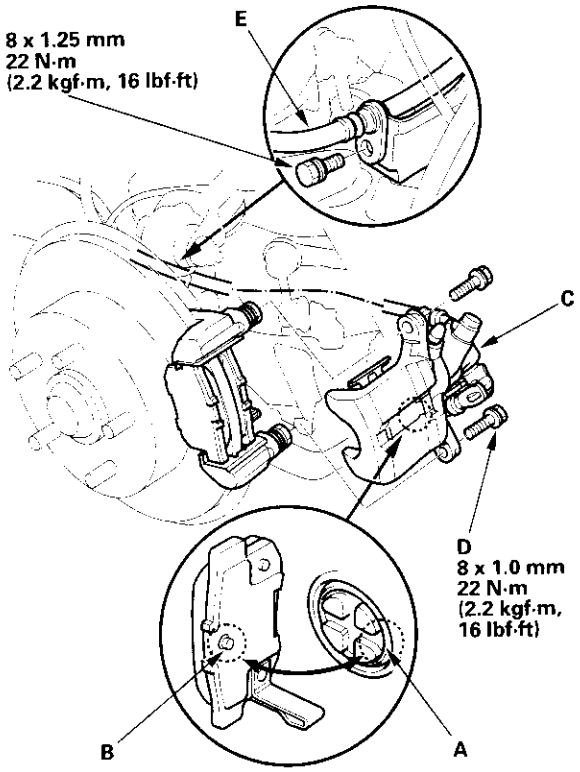
8. Install the pad retainers. Wipe excess grease off the retainers. Contaminated brake discs and pads reduce stopping ability. Keep grease off the discs and pads.

9. Apply Dow Corning Molykote M77 or Daikalub 528D 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.

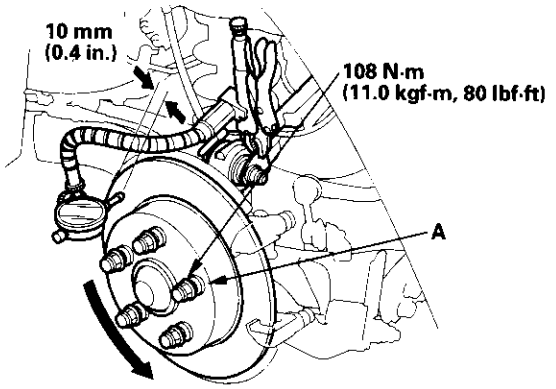
    NOTE: Engagement of the brake may require a greeter pedal stroke immediately after the brake pads have been replaced as a set. Several applications of the brake pedal will restore the normal pedal stroke.

15. 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: 8.0 mm (0.31 in.)

   NOTE:
   - If the brake disc is beyond the service limit for refinishing, replace it (see page 18-24).
   - A new disc should be refinished if its runout is greater than 0.10 mm (0.004 in.).

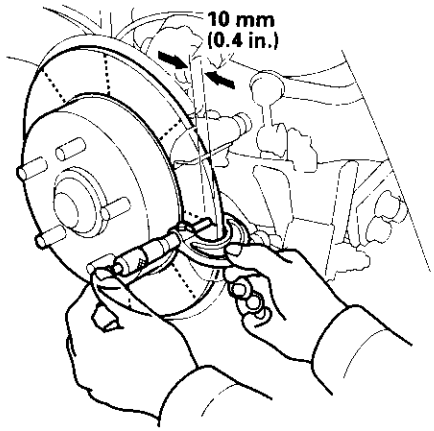
Thickness and Parallelism

1. Raise the rear of the vehicle, and support 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. 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. Replace the brake disc if the smallest measurement is less than the max. refinishing limit.

   Brake Disc Thickness:
   Standard: 8.9–9.1 mm (0.350–0.358 in.)
   Max. Refinishing Limit: 8.0 mm (0.31 in.)

   Brake Disc Parallelism: 0.015 mm (0.0006 in.) max.

   NOTE: This is the maximum allowable difference between the thickness measurements.



4. If the disc is beyond the service limit for parallelism, refinish the brake disc with an on-car brake lathe.

   NOTE: If the brake disc is beyond the service limit for refinishing, replace it (see page 18-24).

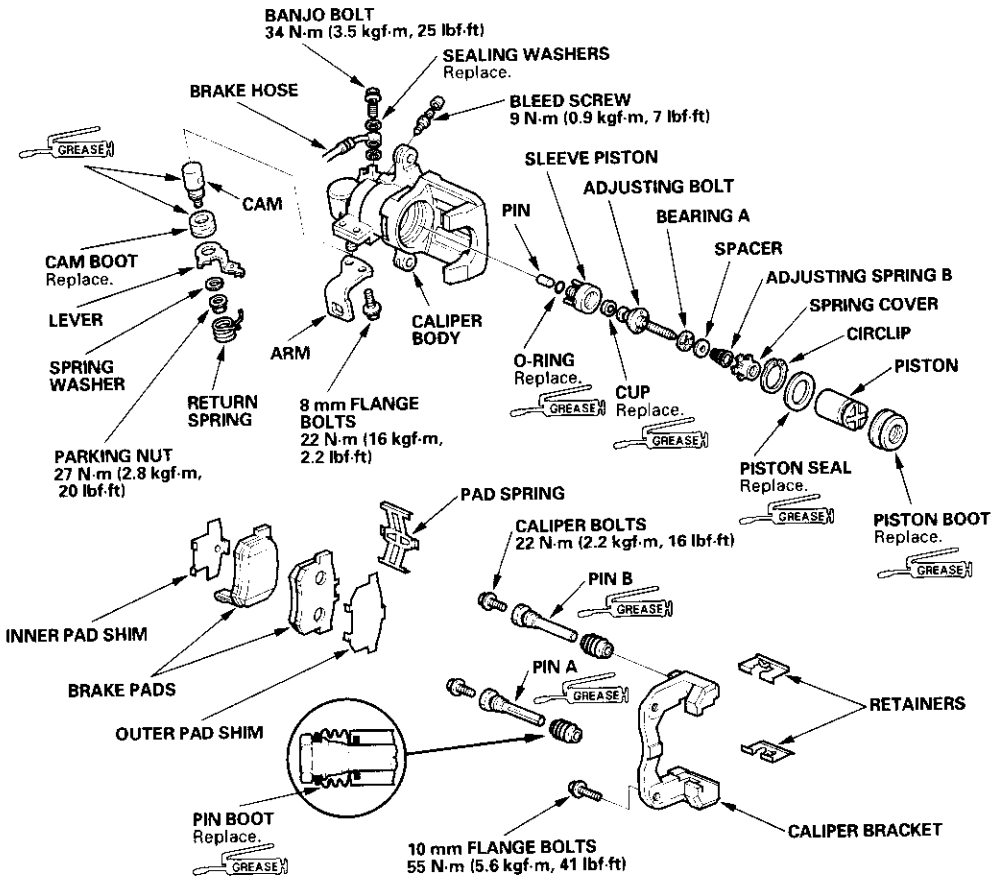
Rear Brake Caliper Overhaul

⚠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.

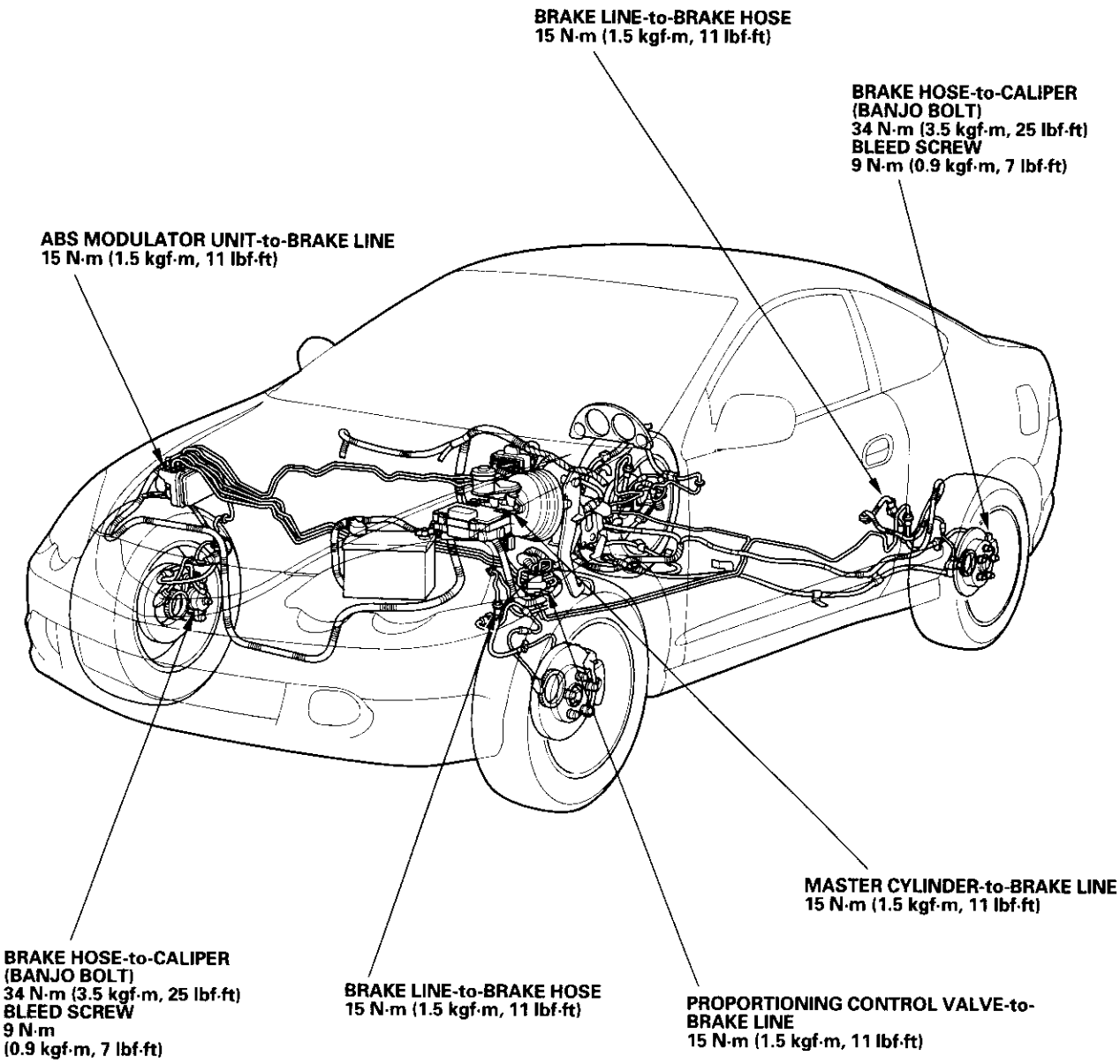
GREASE : Honda caliper grease (P/N 08C30-B0234M)



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 (if equipped) for damage and leakage.

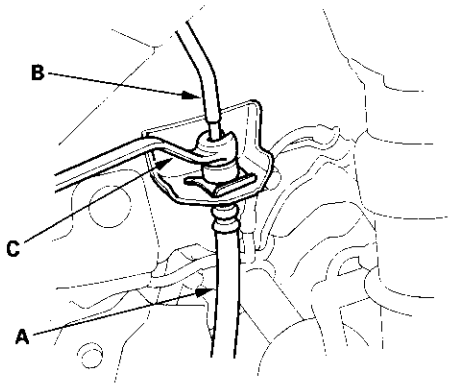
NOTE: Replace the brake hose clip whenever the brake hose is serviced.



Brake Hose Replacement

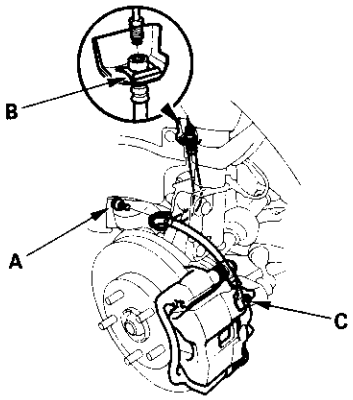
NOTE:
- Do not spill brake fluid on the vehicle; it may damage the paint; if brake fluid gets on the paint, wash it off immediately with water.
- To prevent dripping, cover disconnected line joints with rags or shop towels.
- Before reassembling, check that all parts are free of dust and other foreign 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).

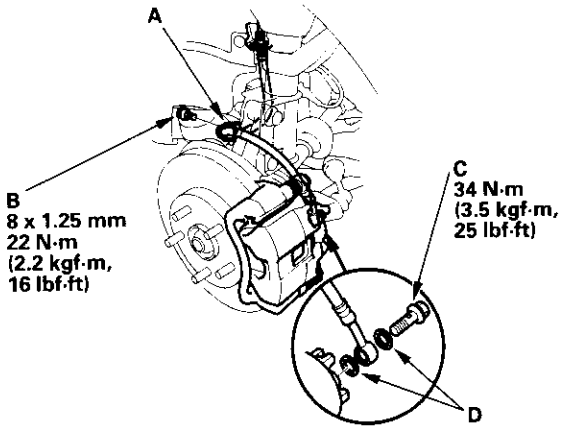
3. Remove the flange bolt (A), and remove the brake hose brackets from the damper.



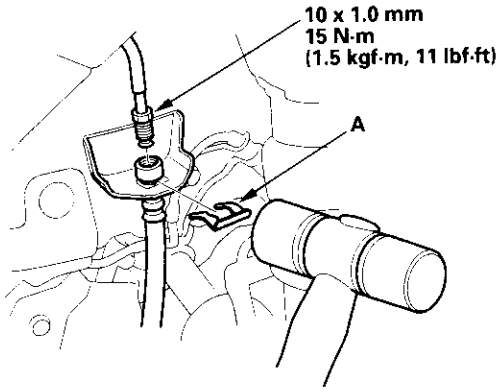
4. Remove and discard the hose clip (B).

5. Remove the banjo bolt (C), and remove the brake hose from the caliper.

6. Install the brake hose bracket (A) on the damper with the flange bolt (B) first, then connect the brake hose to the caliper with the banjo bolt (C) and new sealing washers (D).



7. Install the hose onto the hose bracket on the body with a new hose clip (A).



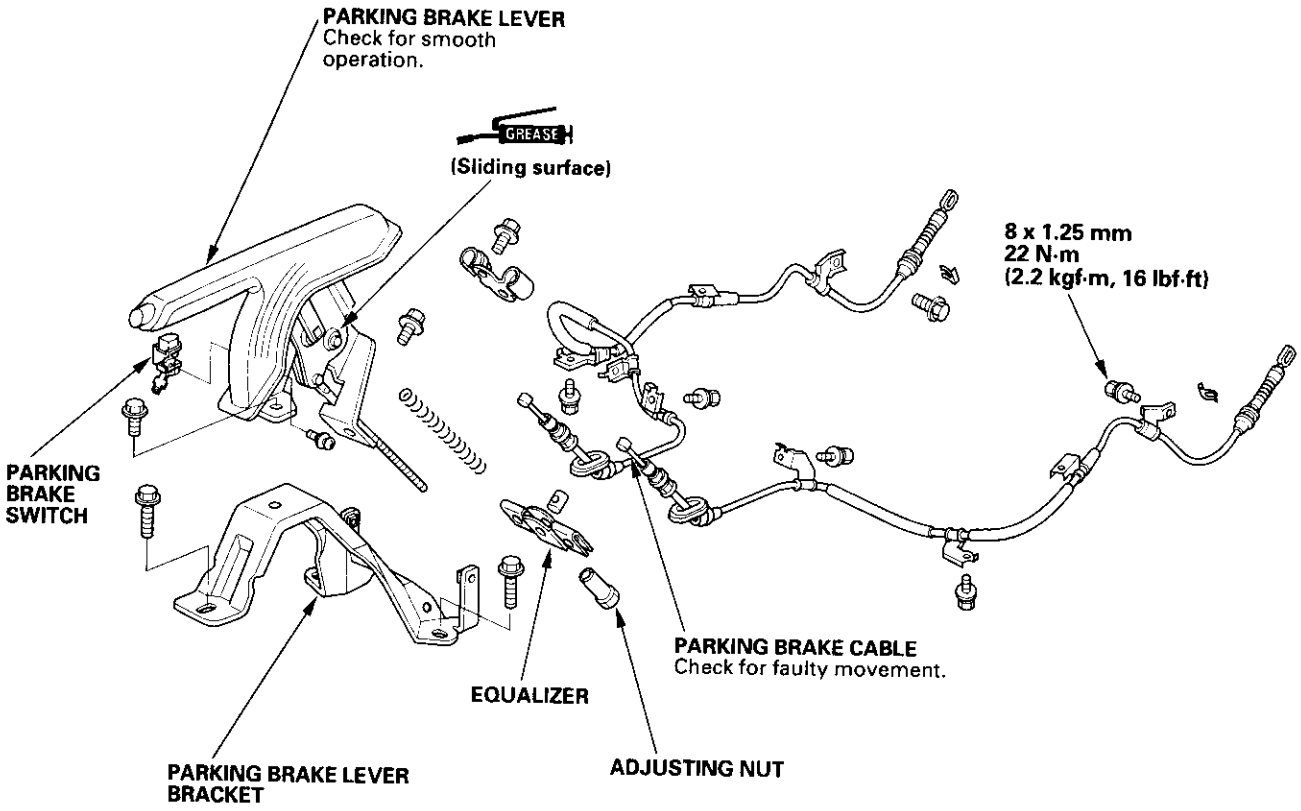
8. Connect the brake line to the brake hose.

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.

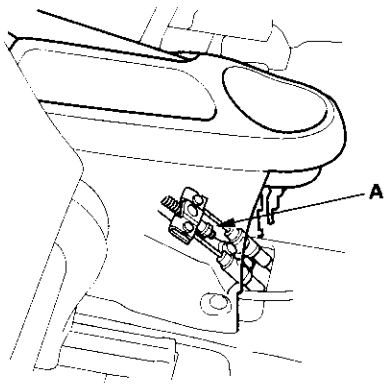
Parking Brake Cable Replacement

Exploded View

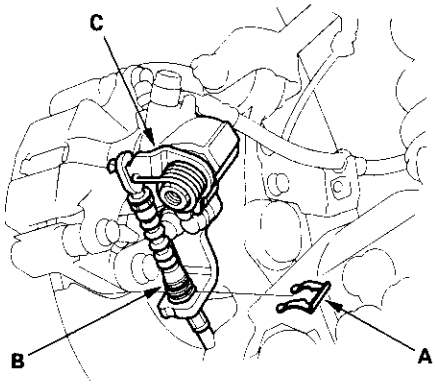


NOTE:
- The parking brake cables must not be bent or distorted. This will lead to stiff operation and premature failure.
- Refer to the Exploded View as needed during this procedure.

1. Release the parking brake lever fully.
2. Remove the console cover (see page 20-58).
3. Loosen the parking brake cable adjusting nut (A).



4. Remove the parking brake cable clip (A) from the brake cable (B).

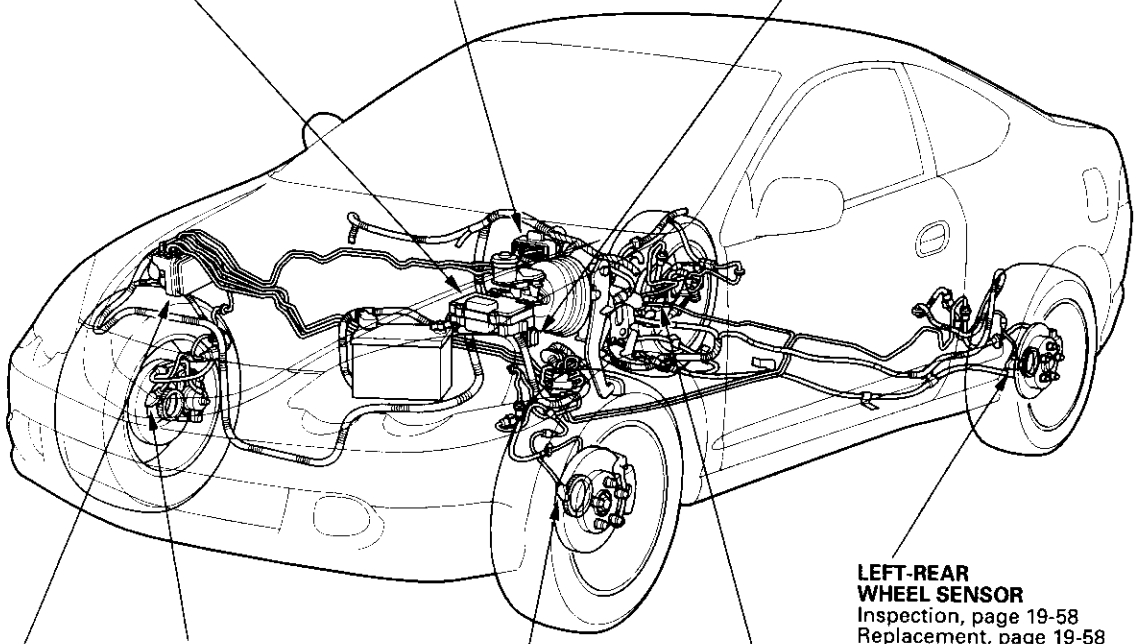


5. Disconnect the parking brake cable from the lever (C).
6. Remove the parking brake cable mounting hardware, then remove the cable.
7. Install the new cable in reverse order of removal, and note these items:
   - Be careful not to bend or distort the cable.
   - Make sure the parking brake cable clip 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 or 62: 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, 71, 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, 22, 23, 24, 41, 42, 43, 44, 51, 52, or 53: The ABS indicator goes off after the ignition switch is turned OFF and then back ON (II), the vehicle is driven, and the system is OK.

Diagnostic Trouble Code (DTC)

- The memory can hold any number of DTCs. However, when the same DTC is detected more than once, the more recent DTC is written over the earlier one. Therefore, when the same problem is detected repeatedly, it is memorized as a single DTC.
- The DTCs are indicated in the order they 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 ignition switch is turned ON (II) 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:
  - Turn 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 driven 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.

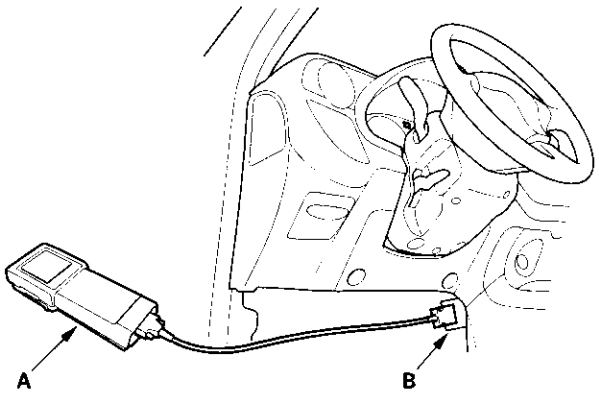
2. When the ABS indicator does not come on during the test-drive, but troubleshooting is done based on the DTC, check for loose connectors, poor terminal contact, etc., before you start troubleshooting.

3. After troubleshooting, clear the DTC, 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 next to the accelerator pedal.

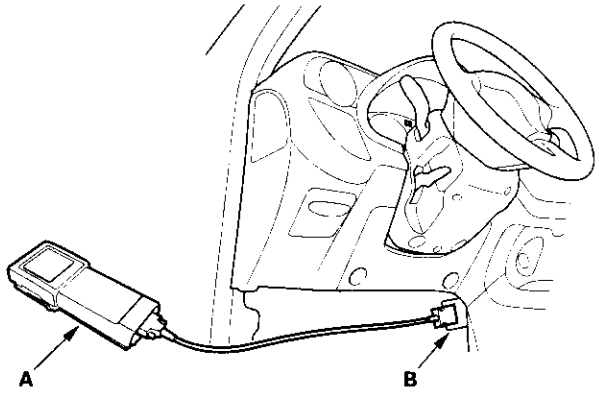


2. Turn the ignition switch ON (II), and follow the prompts on the PGM Tester to display the DTC(s) on the screen. After determining the DTC, refer to the DTC Troubleshooting Index.

   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 next to the accelerator pedal.



2. Short the SCS circuit to body ground using the Honda PGM Tester.

3. Turn the ignition switch ON (II) without the brake pedal pressed.

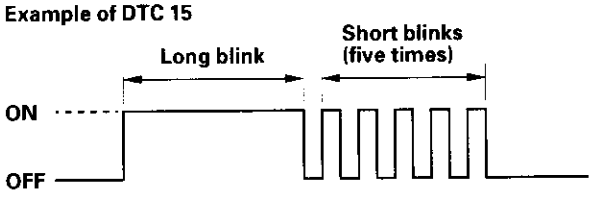
   NOTE: If the brake pedal is pressed when turning the ignition switch ON (II), the system shifts to the DTC clearing mode.

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.

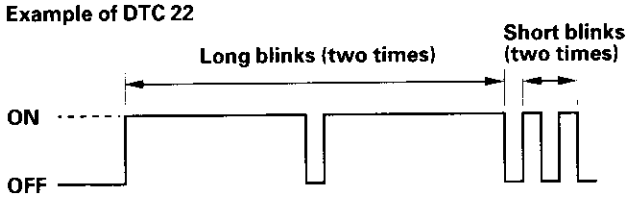
   NOTE:
   - If the DTC is not memorized, the ABS indicator will go off for 3.6 seconds, and then come back on.
   - If the ABS indicator stays on, troubleshoot for "ABS indicator does not go off" (see step 1 on page 19-55).

   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



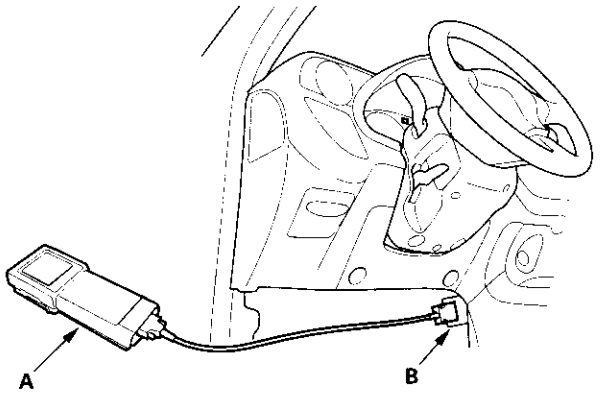
5. Turn the ignition switch OFF.

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 next to the accelerator pedal.

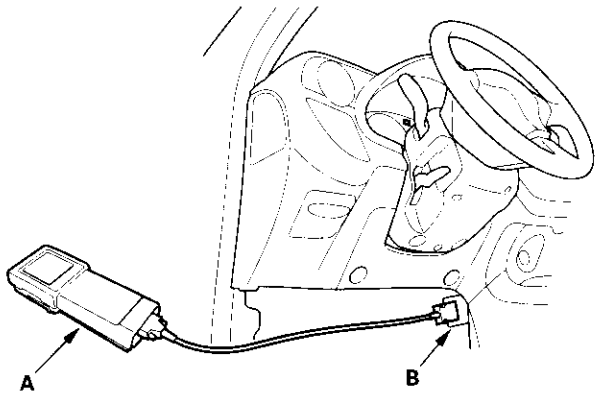


2. Turn the ignition switch ON (II), and clear the DTC(s) by following the screen prompts on the PGM Tester.

   NOTE: See the Honda PGM Tester user's manual for specific instructions.

Service Check Signal (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 next to the accelerator pedal.



2. Short the SCS circuit to body ground using the Honda PGM Tester.

3. Press the brake pedal.

(cont'd)

General Troubleshooting Information (cont'd)

4. Turn the ignition switch ON (II) while continuing to press the brake pedal.
5. After the ABS indicator goes off, release the brake pedal.
6. After the ABS indicator comes on, press the brake pedal again.
7. After the ABS indicator goes off, release the brake pedal.

   You cannot clear the DTC unless these conditions are met:
   - The vehicle speed is 6 mph (10 km/h) or less.
   - The SCS circuit is shorted to body ground before the ignition switch is turned ON (II).
   - The brake pedal is pressed before the ignition switch is turned ON (II).
8. After a few seconds, the ABS indicator blinks twice and the DTC is cleared. If the indicator does not blink twice, repeat steps 1 thru 7. If the ABS indicator stays on after it blinks twice, check the DTC, because a problem was detected during initial diagnosis before shifting to DTC clearing mode.
9. Turn the ignition switch OFF.
10. Disconnect the Honda PGM Tester from the DLC.

DTC Troubleshooting Index

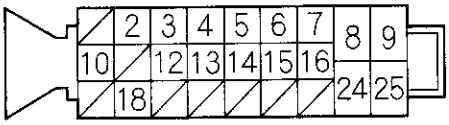
DTC	Detection Item	Note
DTC:11	Right-front wheel sensor (open/short to body ground/short to power)	(see page 19-46)
DTC:12	Right-front wheel sensor (electrical noise/intermittent interruption)	(see page 19-47)
DTC:13	Left-front wheel sensor (open/short to body ground/short to power)	(see page 19-46)
DTC:14	Left-front wheel sensor (electrical noise/intermittent interruption)	(see page 19-47)
DTC:15	Right-rear wheel sensor (open/short to body ground/short to power)	(see page 19-46)
DTC:16	Right-rear wheel sensor (electrical noise/intermittent interruption)	(see page 19-47)
DTC:17	Left-rear wheel sensor (open/short to body ground/short to power)	(see page 19-46)
DTC:18	Left-rear wheel sensor (electrical noise/intermittent interruption)	(see page 19-47)
DTC:21	Right-front pulser	(see page 19-49)
DTC:22	Left-front pulser	(see page 19-49)
DTC:23	Right-rear pulser	(see page 19-49)
DTC:24	Left-rear pulser	(see page 19-49)
DTC:31	Solenoid	(see page 19-49)
DTC:32	Solenoid	(see page 19-49)
DTC:33	Solenoid	(see page 19-49)
DTC:34	Solenoid	(see page 19-49)
DTC:35	Solenoid	(see page 19-49)
DTC:36	Solenoid	(see page 19-49)
DTC:37	Solenoid	(see page 19-49)
DTC:38	Solenoid	(see page 19-49)
DTC:41	Right-front wheel lock	(see page 19-50)
DTC:42	Left-front wheel lock	(see page 19-50)
DTC:43	Right-rear wheel lock	(see page 19-50)
DTC:44	Left-rear wheel lock	(see page 19-50)
DTC:51	Motor lock	(see page 19-50)
DTC:52	Motor stuck OFF	(see page 19-51)
DTC:53	Motor stuck ON	(see page 19-51)
DTC:54	ABS fail-safe relay	(see page 19-52)
DTC:61	Low FSR +B voltage	(see page 19-52)
DTC:62	High FSR +B voltage	(see page 19-52)
DTC:71	Different diameter tire	(see page 19-53)
DTC:81	Central Processing Unit (CPU) diagnosis, and ROM/RAM diagnosis	(see page 19-53)

Symptom Troubleshooting Index

Symptom	Diagnostic procedure	Also check for
ABS indicator does not come on	ABS Indicator Circuit Troubleshooting (see page 19-54)	
ABS indicator does not go off and no DTC is stored	ABS Indicator Circuit Troubleshooting (see step 1 on page 19-55)	

System Description

ABS Control Unit Inputs and Outputs for 25P Connector



Wire side of female terminals

Terminal number	Wire color	Terminal sign (Terminal name)	Description	Measurement (Disconnect the ABS control unit connector)			
				Terminals	Conditions		Voltage
2	BLU	FRS (−) (Front-right sensor negative)	Detects right-front wheel sensor signal	2 − 18	Wheel	Spin wheel at 1 turn/second	AC: 0.053 V or above Reference Oscilloscope 0.15 V peak-to-peak or above
3	BLU/ ORN	FLS (+) (Front-left sensor positive)	Detects left-front wheel sensor signal	3 − 12			
4	WHT/ BLK	STOP	Detects brake switch signal	4 − GND	Brake pedal	Pressed	Battery Voltage
						Released	Below 0.3 V
5	YEL/ RED	RLS (+) (Rear-left sensor positive)	Detects left-rear wheel sensor signal	5 − 14	Wheel	Spin wheel at 1 turn/second	AC: 0.053 V or above Reference Oscilloscope 0.15 V peak-to-peak or above
6	BLU/ YEL	RRS (−) (Rear-right sensor negative)	Detects right-rear wheel sensor signal	6 − 15			
7	BLU/ RED	WALP (Warning lamp)	Drives ABS indicator	7 − GND	ABS indicator (Ignition switch ON (II))	ON	About 6 V
						OFF	Below 0.3 V
8	WHT/ GRN	FSR +B (ABS fail-safe relay battery)	Power source for the ABS fail-safe relay	8 − GND	Every time		Battery Voltage
9	WHT/ RED	MR +B (Motor relay battery)	Power source for the motor relay	9 − GND	Every time		Battery Voltage
10	GRY	DLC (Data link connector)	Communicates with the Honda PGM Tester	—	—		—

(cont'd)

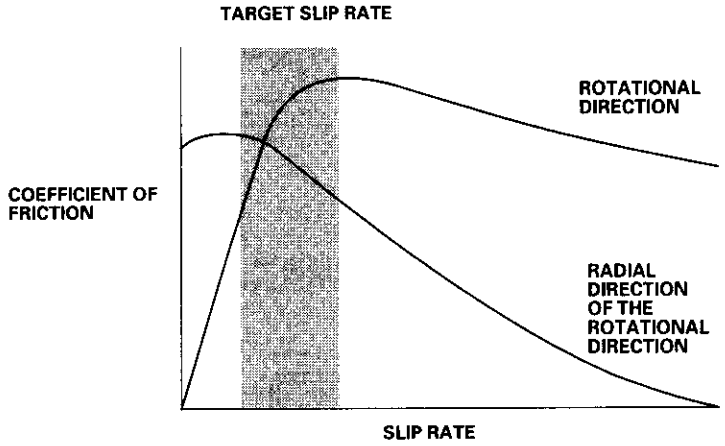
System Description (cont'd)

Terminal number	Wire color	Terminal sign (Terminal name)	Description	Measurement (Disconnect the ABS control unit connector)			
				Terminals	Conditions		Voltage
12	BRN/WHT	FLS (−) (Front-left sensor negative)	Detects left-front wheel sensor signal	12−3	Wheel	Spin wheel at 1 turn/second	AC: 0.053 V or above Reference Oscilloscope 0.15 V peak-to-peak or above
13	BRN	SCS (Service check signal)	Detects service check connector signal (DTC indication or DTC clearing)	———	———		———
14	GRY/RED	RLS (−) (Rear-left sensor negative)	Detects left-rear wheel sensor signal	14−5	Wheel	Spin wheel at 1 turn/second	AC: 0.053 V or above Reference Oscilloscope 0.15 V peak-to-peak or above
15	GRN/YEL	RRS (+) (Rear-right sensor positive)	Detects right-rear wheel sensor signal	15−6			
16	BLK/ORN	IG2 (Ignition 2)	Power source for activating the system	16−GND	Ignition switch ON (II)		Battery Voltage
18	GRN/BLK	FRS (+) (Front-right sensor positive)	Detects right-front wheel sensor signal	18−2	Wheel	Spin wheel at 1 turn/second	AC: 0.053 V or above Reference Oscilloscope 0.15 V peak-to-peak or above
24	BLK	GND1 (Ground 1)	Ground	———	———		———
25	BLK	GND2 (Ground 2)	Ground	———	———		———

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

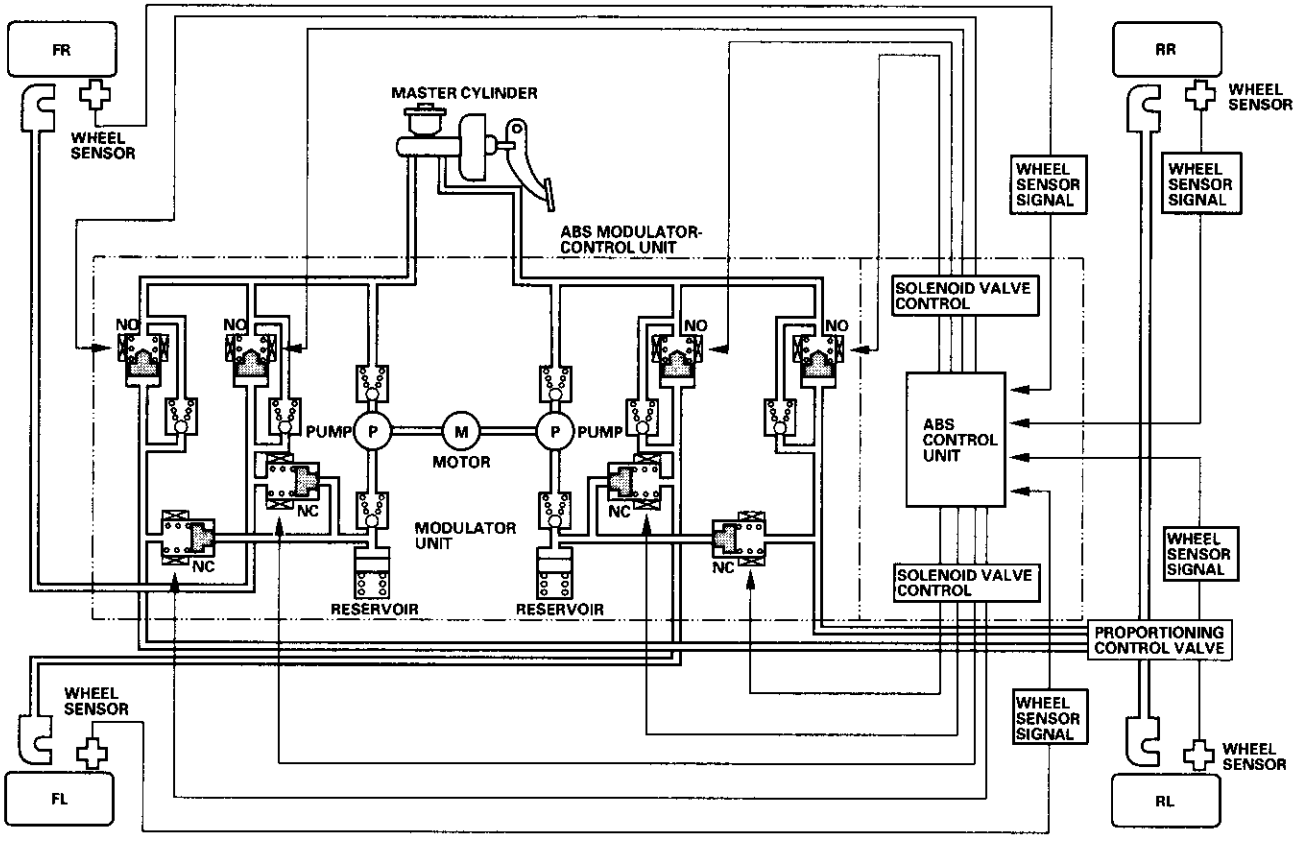


(cont'd)

ABS Components

System Description (cont'd)

COMPONENTS		MAIN FUNCTION
Wheel sensor		The wheel sensor outputs the speed signal to the ABS control unit according to the pulser's rotation speed.
Modulator-control unit	ABS control unit	The ABS control unit processes the signal from the wheel sensor, then outputs the ABS control signal to the modulator unit.
	Modulator unit	The modulator unit receives the control signal, then controls brake fluid pressure for each wheel.
Motor relay (inside of the ABS control unit)		The motor relay drives the ABS pump motor.
ABS fail-safe relay (inside of the ABS control unit)		The ABS fail-safe relay cuts the power to the solenoid valve when the problem is detected.



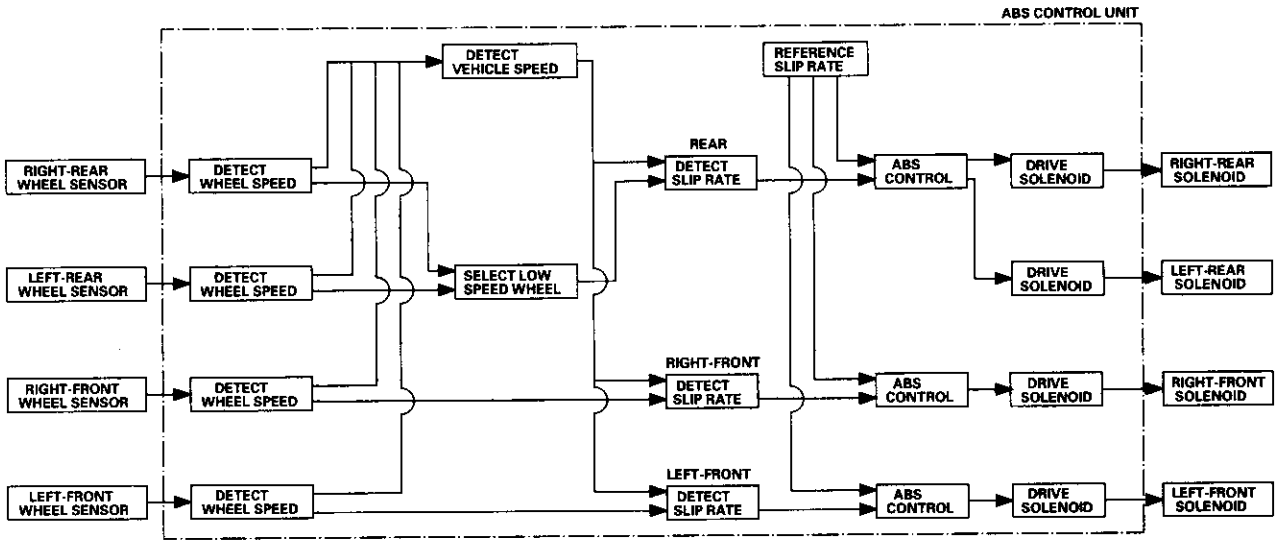
ABS Control Unit

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 hydraulic 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 system circuits.
3. The ABS control unit turns on the ABS indicator when the unit detects a problem, and the unit stops ABS operation.
4. The self-diagnosis can be classified into these two categories:
   - Initial diagnosis
   - Regular diagnosis

On-board Diagnosis Function

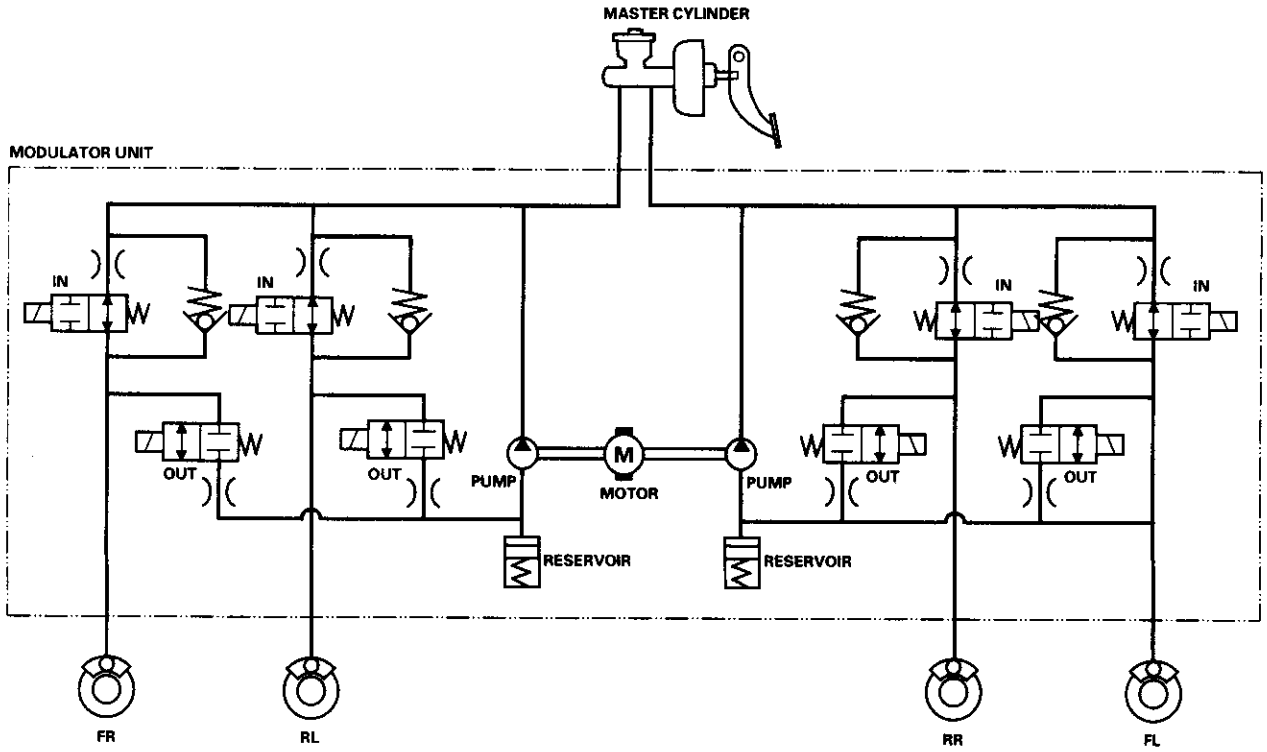
The ABS can be diagnosed with the Honda PGM Tester.
The ALB Checker cannot be used with this system. For air bleeding, and checking wheel sensor signals, use the Honda PGM Tester. See the Honda PGM Tester user's manuals for specific operating instructions.

(cont'd)

System Description (cont'd)

ABS Modulator

The ABS modulator consists of the inlet solenoid valve, outlet solenoid valve, reservoir, pump, and the pump motor. 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.

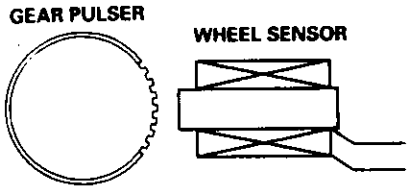
Pressure retaining mode: Inlet valve closed, outlet valve closed
Caliper fluid is retained by the inlet valve and outlet valve.

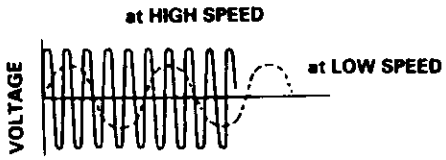
Pressure reducing mode: Inlet valve closed, outlet valve open
Caliper fluid flows through the outlet valve to the reservoir.

Motor operation mode: When starting the pressure reducing mode, the pump motor is ON.
When stopping ABS operation, the pump motor is OFF.
The reservoir fluid is pumped out by the pump, through the damping chamber, to the master cylinder.

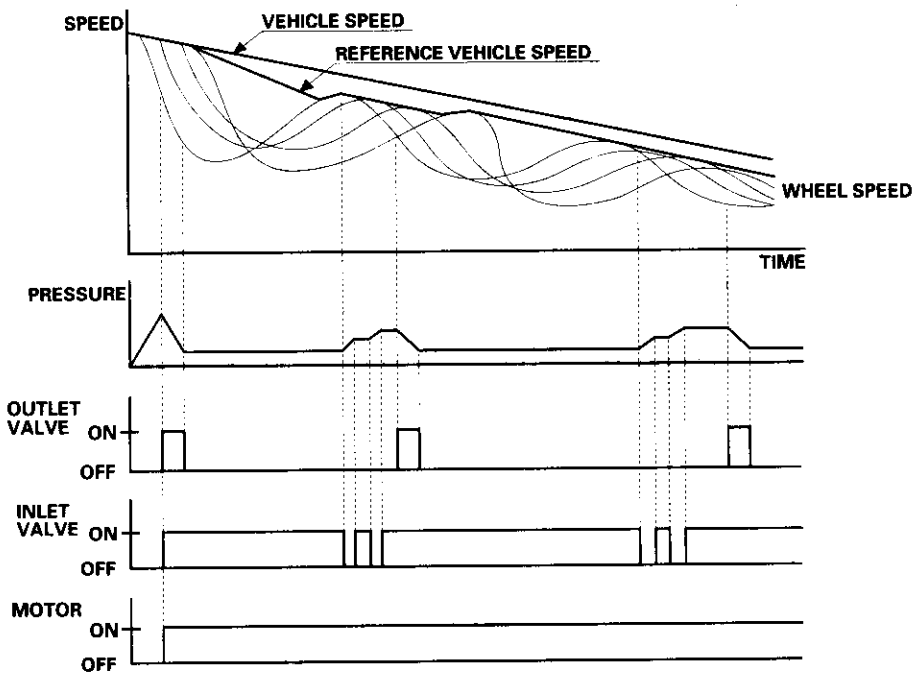
Wheel Sensors

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.





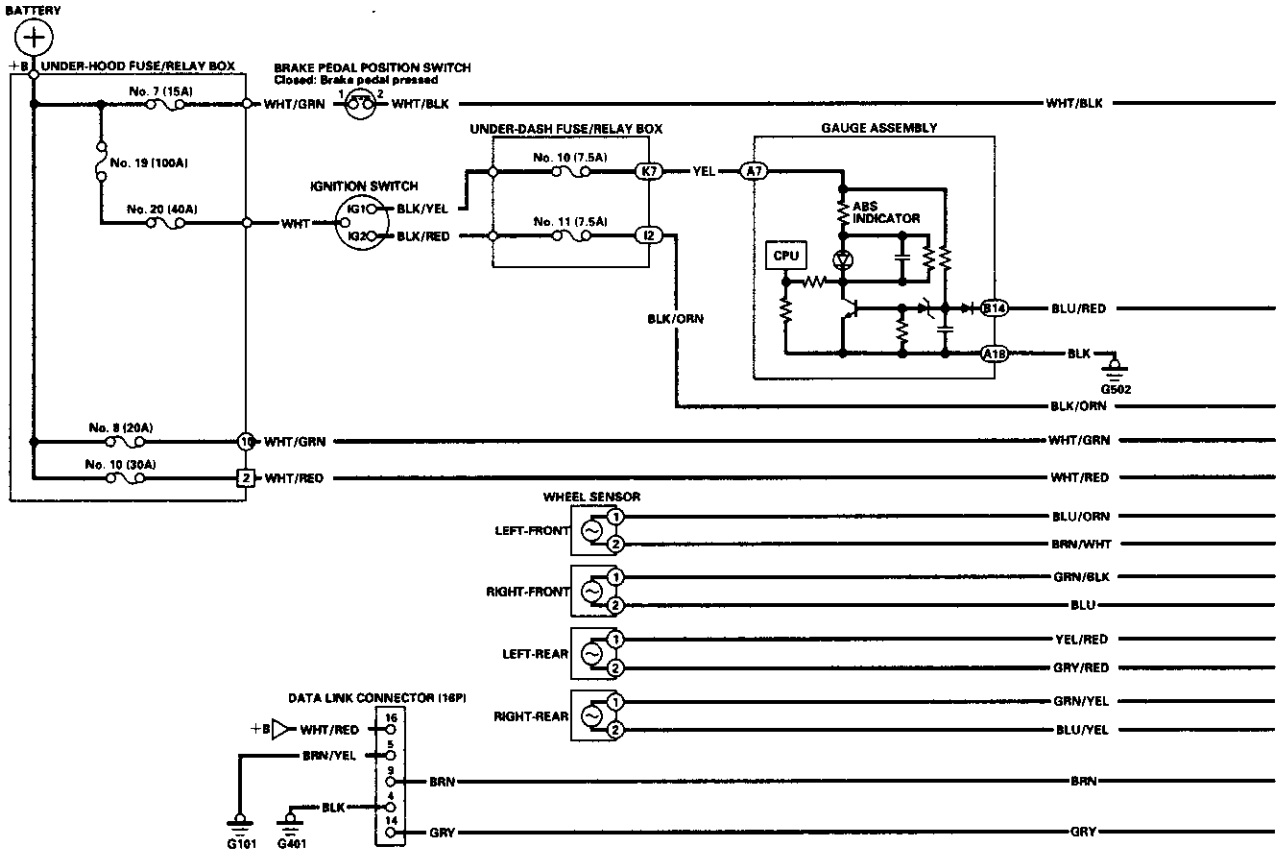
Wheel Speed and Modulator Control



When the wheel speed drops sharply below the vehicle speed, the outlet valve opens momentarily to reduce the caliper fluid pressure. The pump motor starts at this time. As the wheel speed is restored, the inlet valve opens momentarily to increase the caliper fluid pressure.

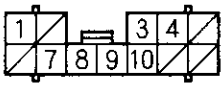
ABS Components

Circuit Diagram



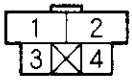
UNDER-HOOD FUSE/RELAY BOX CONNECTORS

12P CONNECTOR (○number)

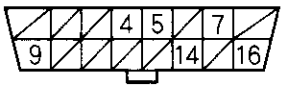


2PCONNECTOR (□number)

BRAKE PEDAL POSITION SWITCH 4P CONNECTOR



DATA LINK CONNECTOR (16P)

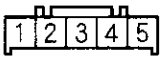


Terminal side of female terminals

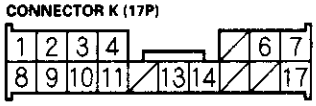
WHEEL SENSOR 2P CONNECTOR FRONT/LEFT-REAR

UNDER-DASH FUSE/RELAY BOX CONNECTORS

CONNECTOR I (5P)



CONNECTOR K (17P)

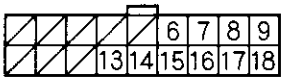


RIGHT-REAR

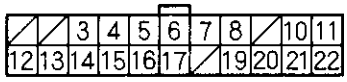
Terminal side of male terminals

GAUGE ASSEMBLY CONNECTORS

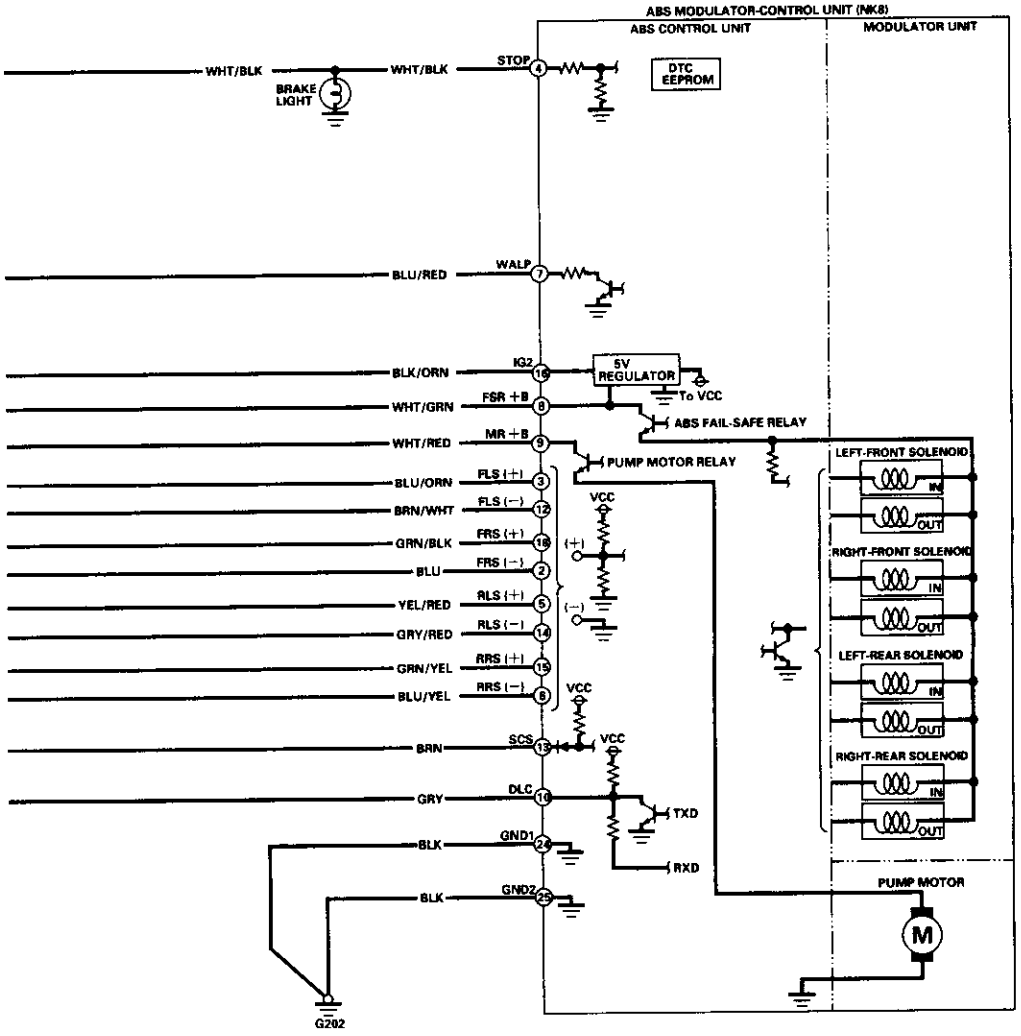
CONNECTOR A (18P)



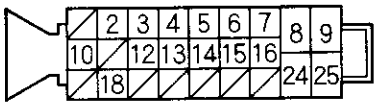
CONNECTOR B (22P)



Wire side of female terminals



ABS CONTROL UNIT 25P CONNECTOR



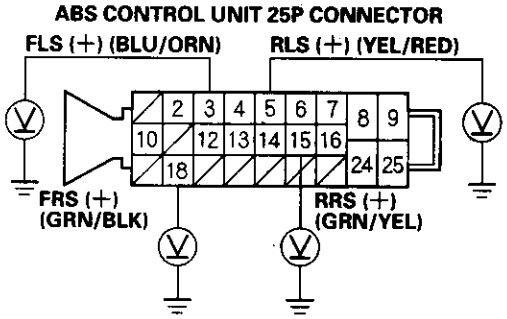
Wire side of female terminals

DTC Troubleshooting

DTC 11, 13, 15, 17: Wheel Sensor (Open/Short to Body Ground/Short to Power)

1. Disconnect the ABS control unit 25P connector.
2. Start the engine.
3. Measure the voltage between the appropriate wheel sensor (+) circuit terminal of the ABS control unit 25P connector and body ground (see table).

DTC	Appropriate Terminal
11 (Right-front)	No. 18: FRS (+)
13 (Left-front)	No. 3: FLS (+)
15 (Right-rear)	No. 15: RRS (+)
17 (Left-rear)	No. 5: RLS (+)



Wire side of female terminals

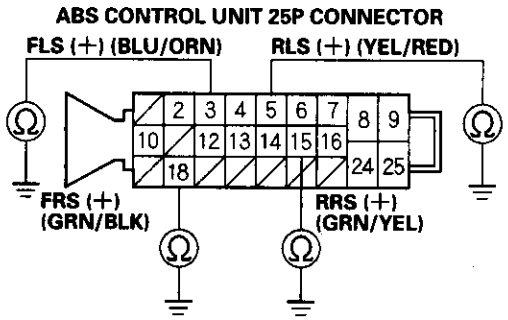
Is there battery voltage?

YES – Repair short to power in the circuit wires 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. 18: FRS (+)
13 (Left-front)	No. 3: FLS (+)
15 (Right-rear)	No. 15: RRS (+)
17 (Left-rear)	No. 5: RLS (+)



Wire side of female terminals

Is there continuity?

YES – Go to step 6.

NO – Go to step 7.

6. Disconnect the wire harness 2P connector from the appropriate wheel sensor, then check for continuity between the (+) and (–) terminals of the wire harness and body ground.

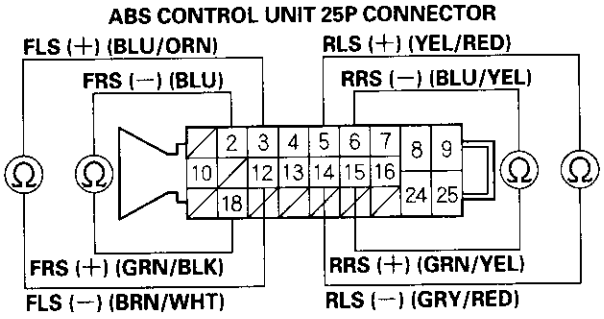
Is there continuity?

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. ■

7. Check the resistance between the appropriate wheel sensor (+) and (−) circuit terminals (see table).

DTC	Appropriate Terminal	
	(+) Side	(−) Side
11 (Right-front)	No. 18: FRS (+)	No. 2: FRS (−)
13 (Left-front)	No. 3: FLS (+)	No. 12: FLS (−)
15 (Right-rear)	No. 15: RRS (+)	No. 6: RRS (−)
17 (Left-rear)	No. 5: RLS (+)	No. 14: RLS (−)



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 wire 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 (Electrical Noise/Intermittent Interruption)

NOTE: If the ABS indicator comes on because of electrical noise, the indicator goes off when you test-drive the vehicle at 19 mph (30 km/h).

1. Visually check for appropriate wheel sensor and pulser installation (see table). Measure pulser-to-sensor clearance. Inspect the pulsers for chipped or damage teeth (see page 19-58).

DTC	Appropriate Wheel Sensor
12	Right-front
14	Left-front
16	Right-rear
18	Left-rear

Are they installed correctly?

YES—Go to step 2.

NO—Reinstall or replace the appropriate wheel sensor or pulser.■

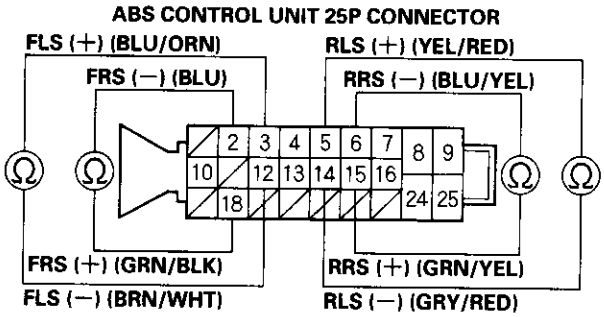
2. Disconnect the ABS control unit 25P connector.

(cont'd)

DTC Troubleshooting (cont'd)

3. Measure the resistance between the appropriate wheel sensor (+) and (−) circuit terminals (see table).

DTC	Appropriate Terminal	
	(+) Side	(−) Side
12 (Right-front)	No. 18: FRS (+)	No. 2: FRS (−)
14 (Left-front)	No. 3: FLS (+)	No. 12: FLS (−)
16 (Right-rear)	No. 15: RRS (+)	No. 6: RRS (−)
18 (Left-rear)	No. 5: RLS (+)	No. 14: RLS (−)



Wire side of female terminals

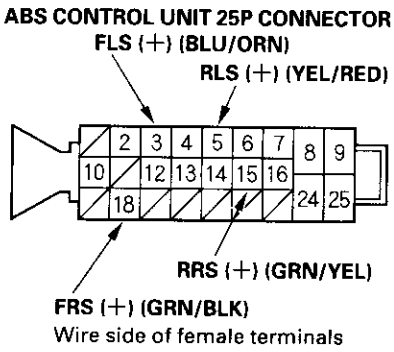
Is there less than 450 Ω ?

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 Terminals		
12	No. 18: FRS (+)	No. 3	No. 15	No. 5
14	No. 3: FLS (+)	No. 18	No. 15	No. 5
16	No. 15: RRS (+)	No. 18	No. 3	No. 5
18	No. 5: RLS (+)	No. 18	No. 3	No. 15



Wire side of female terminals

Is there continuity?

YES − Repair short in the wire between the appropriate wheel sensor and the other wheel sensor. ■

NO − Clear the DTC, 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, 22, 23, 24: Pulser

1. Clear the DTC (see step 1 on page 19-33).
2. Test-drive the vehicle at 19 mph (30 km/h) or more.

   Does the ABS indicator come on, and are DTCs 21, 22, 23, 24 indicated?

   YES – Go to step 3.

   NO – The system is OK at this time. ■
3. Check the appropriate pulser gear for a chipped or damaged tooth (see table).

DTC	Appropriate Pulser
21	Right-front
22	Left-front
23	Right-rear
24	Left-rear

   Are the pulser gears OK?

   YES – Check for loose terminals in the ABS control unit 25P connector. If necessary, substitute a known-good ABS modulator-control unit, and recheck. ■

   NO – Replace the driveshaft or hub unit with the chipped pulser gear. ■

DTC 31, 32, 33, 34, 35, 36, 37, 38: Solenoid

1. Clear the DTC (see step 1 on page 19-33).
2. Turn the ignition switch ON (II).
3. Verify the DTC.

   Does the ABS indicator come on, and are DTCs 31, 32, 33, 34, 35, 36, 37, 38 indicated?

   YES – Check for loose terminals in the ABS control unit 25P connector. If necessary, substitute a known-good ABS modulator-control unit, and recheck. ■

   NO – The system is OK at this time. ■

DTC Troubleshooting (cont'd)

DTC 41, 42, 43, 44: Wheel Lock

1. Check for brake drag.

   Do the brakes drag?

   YES – Repair the brake drag. ■

   NO – Go to step 2.

2. Check the installation of the appropriate wheel sensor (see table).

DTC	Appropriate Pulser
41	Right-front
42	Left-front
43	Right-rear
44	Left-rear

   Is it correct?

   YES – The probable cause was the vehicle spun during cornering. ■

   NO – Reinstall the wheel sensor correctly. ■

DTC 51: Motor Lock

1. Check the No. 10 (30A) fuse in the under-hood fuse/relay box, and reinstall the fuse if it is OK.

   Is the fuse OK?

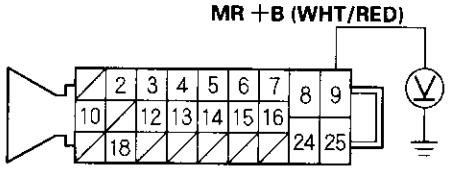
   YES – Go to step 2.

   NO – Replace the fuse, and recheck. ■

2. Disconnect the ABS control unit 25P connector.

3. Measure the voltage between the ABS control unit 25P connector terminal No. 9 and body ground.

ABS CONTROL UNIT 25P 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 (30A) fuse and the ABS control unit. ■

4. Connect the ABS control unit 25P connector.

5. Clear the DTC (see step 1 on page 19-33).

6. 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 (30A) fuse in the under-hood fuse/relay box, and reinstall the fuse if it is OK.

   Is the fuse OK?

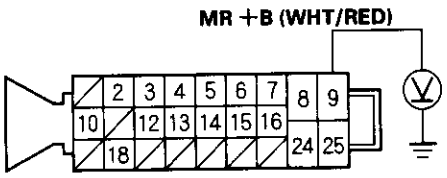
   YES—Go to step 2.

   NO—Replace the fuse, and recheck. ■

2. Disconnect the ABS control unit 25P connector.

3. Measure the voltage between the ABS control unit 25P connector terminal No. 9 and body ground.

ABS CONTROL UNIT 25P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Check for loose terminals in the ABS control unit 25P connector. If necessary, substitute a known-good ABS modulator-control unit, and recheck. ■

NO—Repair open in the wire between the No. 10 (30A) fuse and the ABS control unit. ■

DTC 53: Motor Stuck ON

1. Clear the DTC (see step 1 on page 19-33).

2. Test-drive the vehicle.

   Does the ABS indicator come on, and is DTC 53 indicated?

   YES—Replace the ABS modulator-control unit. ■

   NO—The system is OK at this time. ■

DTC Troubleshooting (cont'd)

DTC 54: ABS Fail-safe Relay

1. Clear the DTC (see step 1 on page 19-33).
2. Test-drive the vehicle.

   Does the ABS indicator come on, and is DTC 54 indicated?

   YES – Replace the ABS modulator-control unit. ■

   NO – Intermittent failure; the vehicle is OK at this time. ■

DTC 61, 62: FSR +B Voltage

1. Clear the DTC (see step 1 on page 19-33).
2. Test-drive the vehicle at 6 mph (10 km/h) or more.

   Does the ABS indicator come on?

   YES – Go to step 3.

   NO – The system is OK at this time. ■

3. Verify the DTC.

   Is DTC 61 or 62 indicated?

   YES – Check the charging system. ■

   NO – Do the appropriate troubleshooting for the DTC. ■

DTC 71: Different Diameter Tire

1. Clear the DTC (see step 1 on page 19-33).
2. Test-drive the vehicle.

   Does the ABS indicator come on, and is DTC 71 indicated?

   YES – Make sure all four tires are the specified size and are inflated to proper specification. ■

   NO – Intermittent failure; the vehicle is OK at this time. ■

DTC 81: Central Processing Unit (CPU) Diagnosis, and ROM/RAM Diagnosis

1. Check for other DTCs.

   Is another DTC present?

   YES – Do the appropriate troubleshooting for the DTC. ■

   NO – Go to step 2

2. Clear the DTC (see step 1 on page 19-33).
3. Test-drive the vehicle.

   Does the ABS indicator come on, and is DTC 81 indicated?

   YES – Replace the ABS modulator-control unit. ■

   NO – Intermittent failure; the vehicle 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 for 2 seconds and then go off?

   YES – The system is OK at this time. ■

   NO – Go to step 2.

2. Turn the ignition switch OFF then ON (II) again.

   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 the circuit inside the fuse box.

3. Turn the ignition switch OFF.

4. Disconnect the ABS control unit 25P connector.

5. Turn the ignition switch ON (II).

   Does the ABS indicator come on?

   YES – Check for loose terminals in the ABS control unit 25P connector. If necessary, substitute a known-good ABS modulator-control unit, and recheck. ■

   NO – Go to step 6.

6. Check the ABS indicator bulb in the gauge assembly.

   Is the bulb OK?

   YES – Go to step 7.

   NO – Replace the ABS indicator bulb. ■

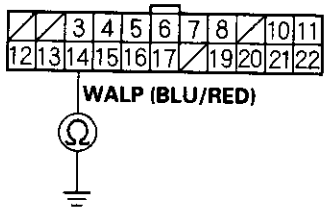
7. Turn the ignition switch OFF.

8. Remove the gauge assembly (see page 22-66).

9. Disconnect the gauge assembly connector B (22P).

10. Check for continuity between the gauge assembly connector A (22P) terminal No. 14 and body ground.

GAUGE ASSEMBLY CONNECTOR A (22P)



Wire side of female terminals

Is there continuity?

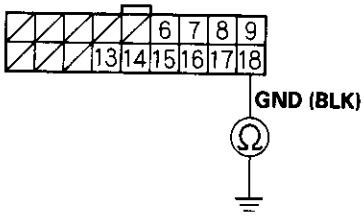
YES – Repair short to body ground in the wire between the gauge assembly and the ABS control unit. ■

NO – Go to step 11.

11. Connect the gauge assembly connector A (22P), and disconnect the gauge assembly connector B (18P).

12. Check for continuity between the gauge assembly connector B (18P) terminal No. 18 and body ground.

GAUGE ASSEMBLY CONNECTOR B (18P)



Wire side of female terminals

Is there continuity?

YES – Check for loose terminals in the gauge assembly connectors. If the connector is OK, replace the gauge assembly. ■

NO – Repair open in the wire between the gauge assembly and body ground (G502). ■

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?

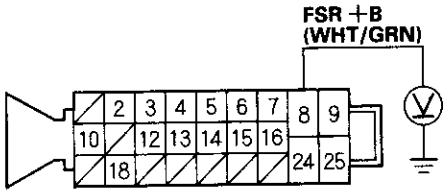
   YES – Go to step 3.

   NO – Replace the fuse, and recheck. If the fuse is blown, check for a short to body ground in this fuse circuit. ■

3. Disconnect the ABS control unit 25P connector.

4. Measure the voltage between the ABS control unit 25P connector terminal No. 8 and body ground.

ABS CONTROL UNIT 25P CONNECTOR



Wire side of female terminals

Is there battery voltage?

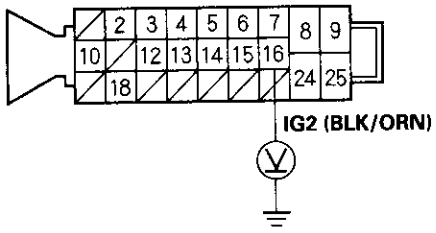
YES – Go to step 5.

NO – Repair open in the wire between the No. 8 (20A) fuse and the ABS control unit. ■

5. Turn the ignition switch ON (II).

6. Measure the voltage between the ABS control unit 25P connector terminal No. 16 and body ground.

ABS CONTROL UNIT 25P CONNECTOR



Wire side of female terminals

Is there battery voltage?

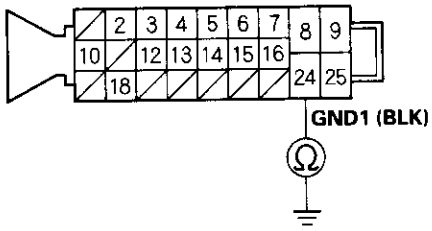
YES – Go to step 7.

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 25P connector terminal No. 24 and body ground.

ABS CONTROL UNIT 25P CONNECTOR



Wire side of female terminals

Is there continuity?

YES – Go to step 9.

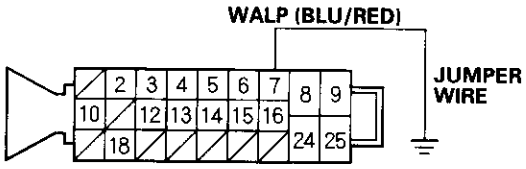
NO – Repair open in the wire between the ABS control unit and body ground (G202). ■

(cont'd)

ABS Indicator Circuit Troubleshooting (cont'd)

9. Turn the ignition switch ON (II).
10. Connect the ABS control unit 25P connector terminal No. 7 and body ground with a jumper wire.

ABS CONTROL UNIT 25P CONNECTOR



Wire side of female terminals

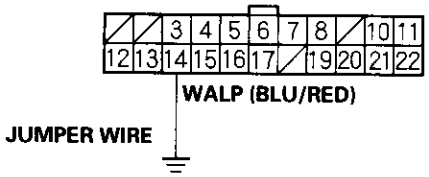
Does the ABS indicator go off?

YES – Check for loose terminals in the ABS control unit 25P connector. If necessary, substitute a known-good ABS modulator-control unit, and recheck. ■

NO – Go to step 11.

11. Connect the gauge assembly connector A (22P) terminal No. 14 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. ■

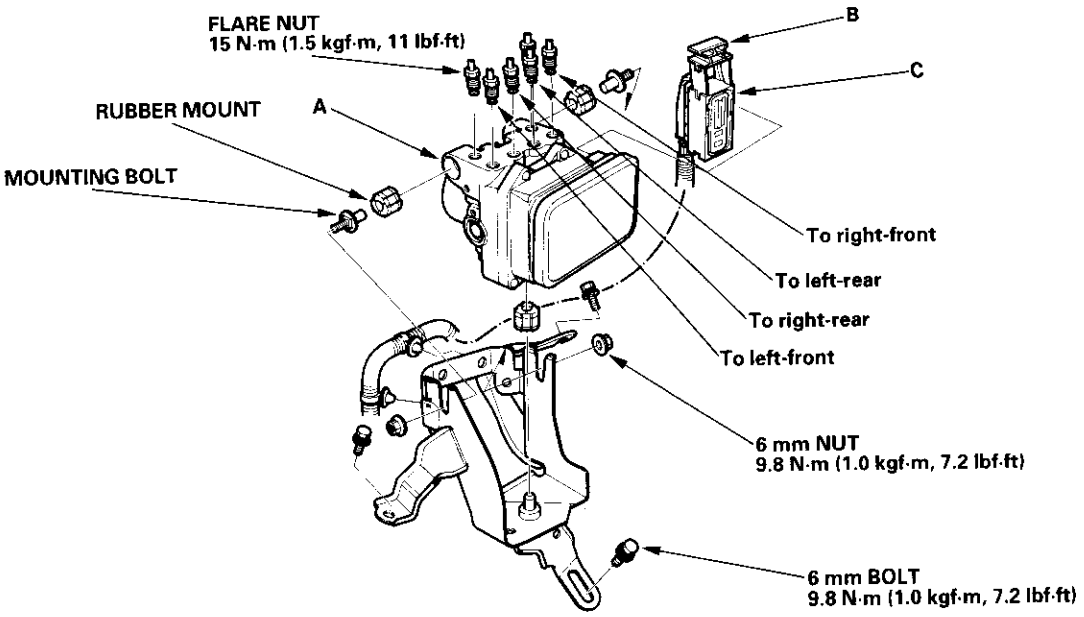
NO – Check for loose gauge assembly connectors. If the connector is OK, replace the gauge assembly. ■

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.
- Take care 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. Pull up the lock (B) of the ABS control unit 25P connector (C), and the connector disconnects itself.



2. Disconnect the six brake lines.
3. Remove the two 6 mm nuts.
4. Remove the ABS modulator-control unit (A).

Installation

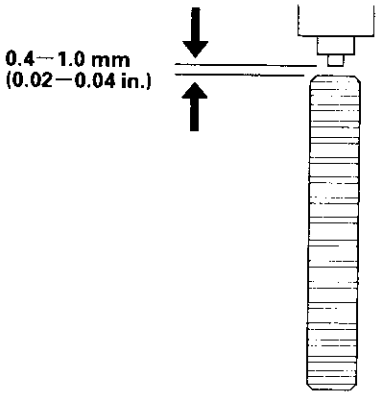
1. Install the ABS modulator-control unit, then tighten the two 6 mm nuts.
2. Reconnect the six brake lines, then tighten the nuts.
3. Align the connecting surface of the ABS control unit 25P connector.
4. Push in the lock of the ABS control unit 25P connector until you hear it click into place, then connect the connector.
5. Bleed the brake system, starting with the front wheels (see page 19-8).
6. Start the engine, and check that the ABS indicator goes off.
7. Test-drive the vehicle, and check that the ABS indicator does 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 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/Rear: 0.4 – 1.0 mm (0.02 – 0.04 in.)

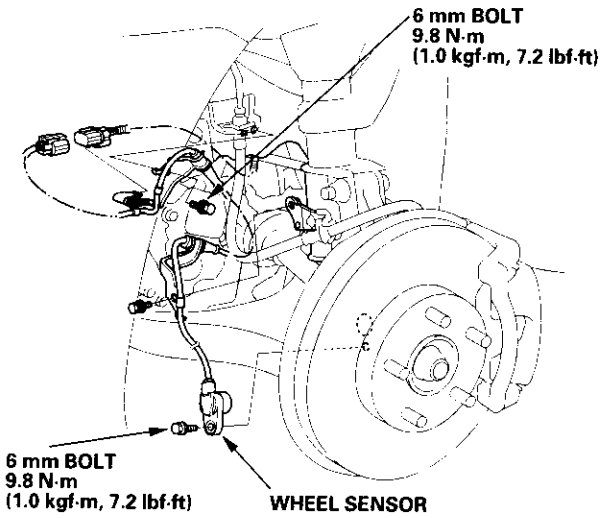
Front/Rear



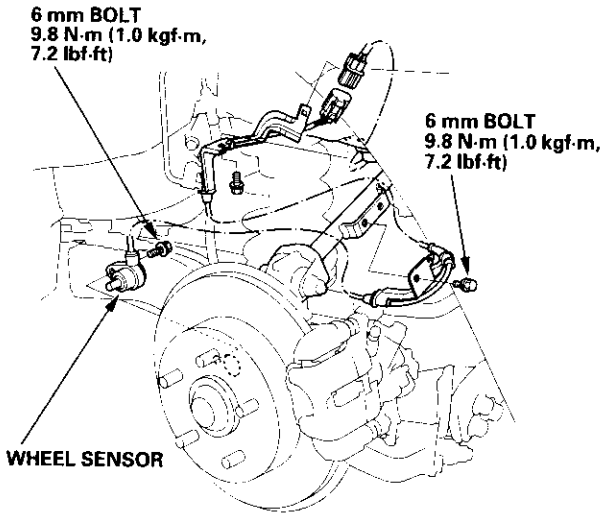
Wheel Sensor Replacement

NOTE: Install the sensors carefully to avoid twisting the wires.

Front:

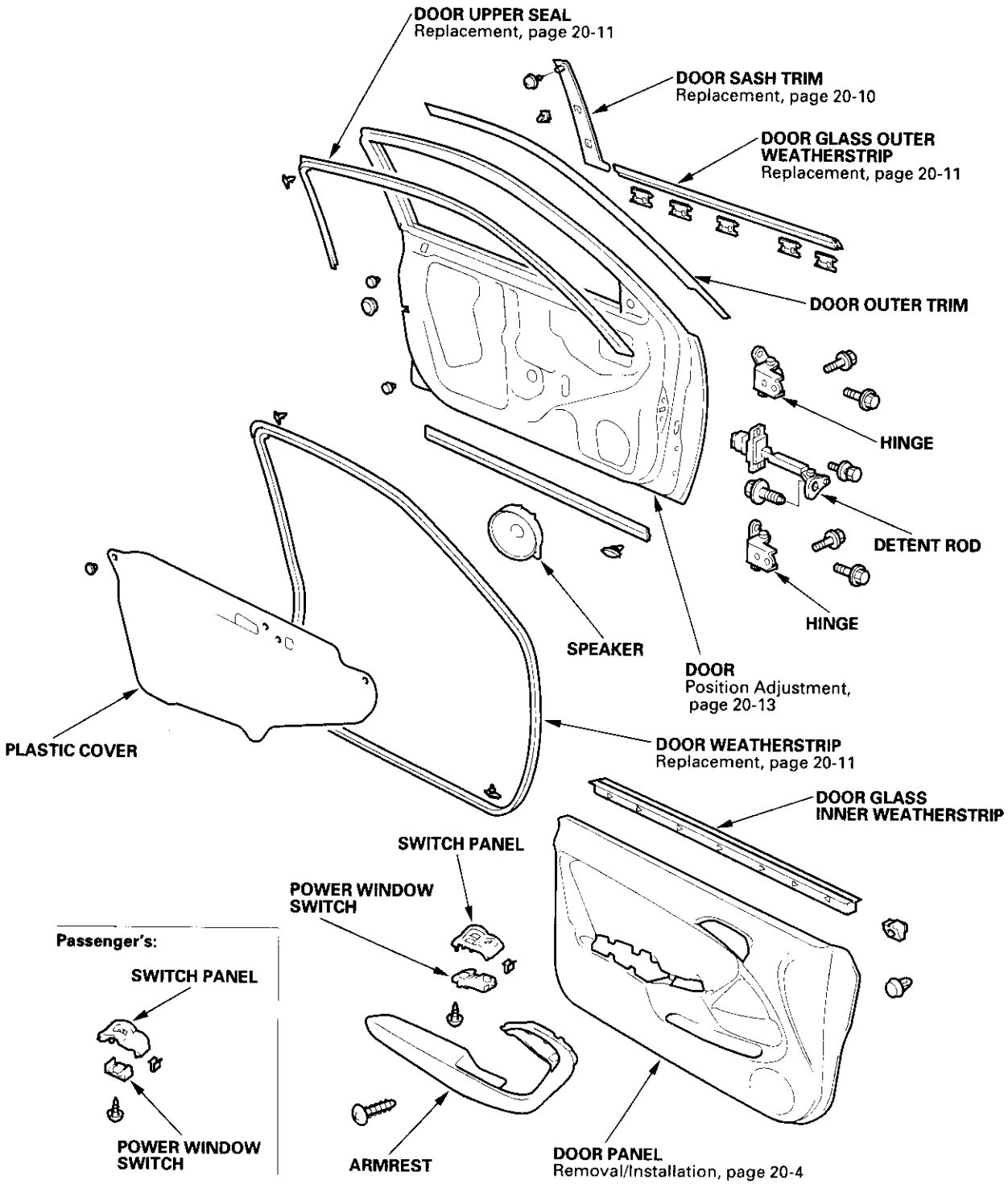


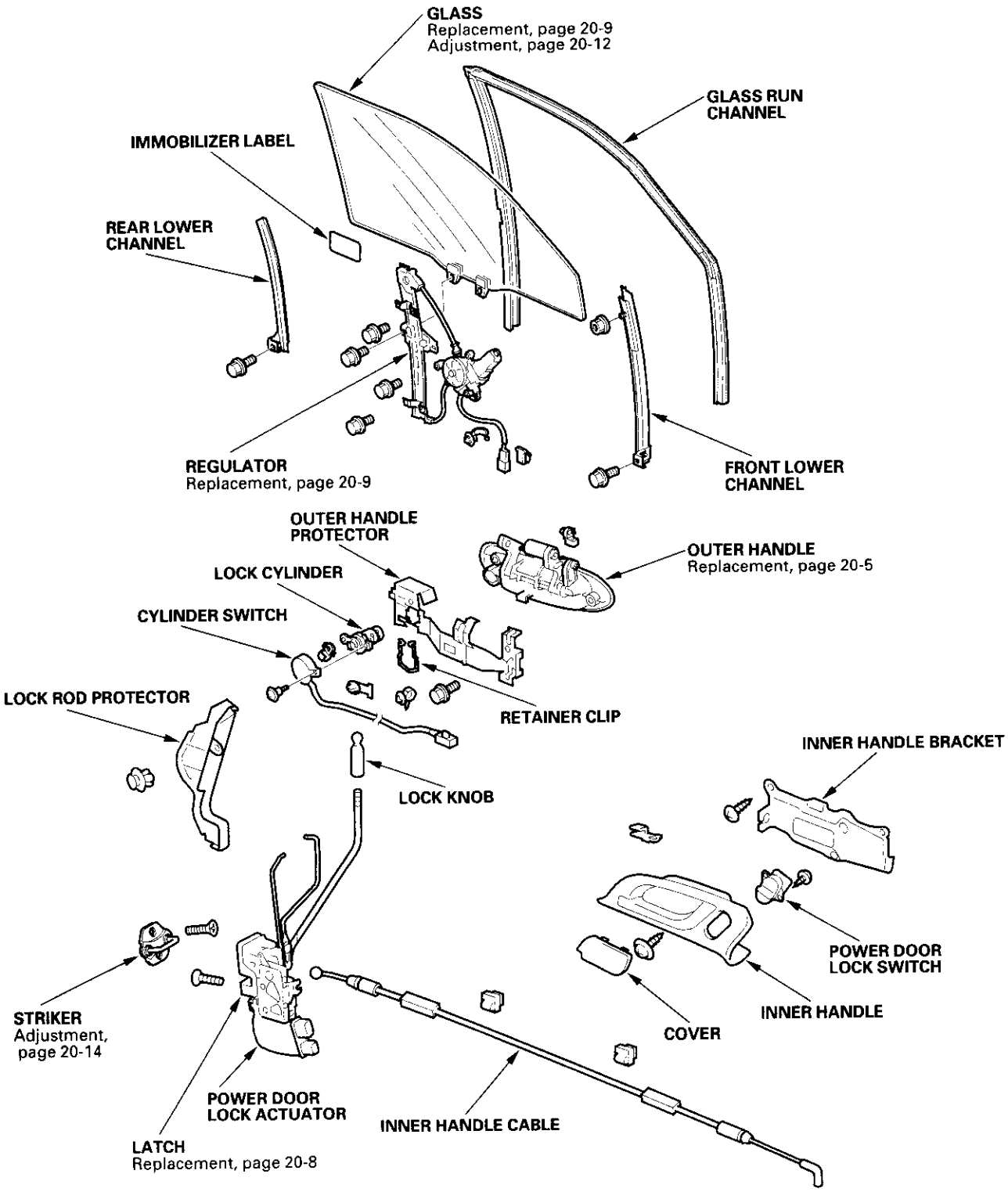
Rear:



Body

Component Location Index




GLASS
Replacement, page 20-9
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GLASS RUN CHANNEL
IMMOBILIZER LABEL
REAR LOWER CHANNEL
REGULATOR
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FRONT LOWER CHANNEL
OUTER HANDLE PROTECTOR
OUTER HANDLE
Replacement, page 20-5
LOCK CYLINDER
CYLINDER SWITCH
LOCK ROD PROTECTOR
RETAINER CLIP
INNER HANDLE BRACKET
LOCK KNOB
POWER DOOR LOCK SWITCH
INNER HANDLE
COVER
STRIKER
Adjustment, page 20-14
POWER DOOR LOCK ACTUATOR
INNER HANDLE CABLE
LATCH
Replacement, page 20-8

Door Panel Removal/Installation

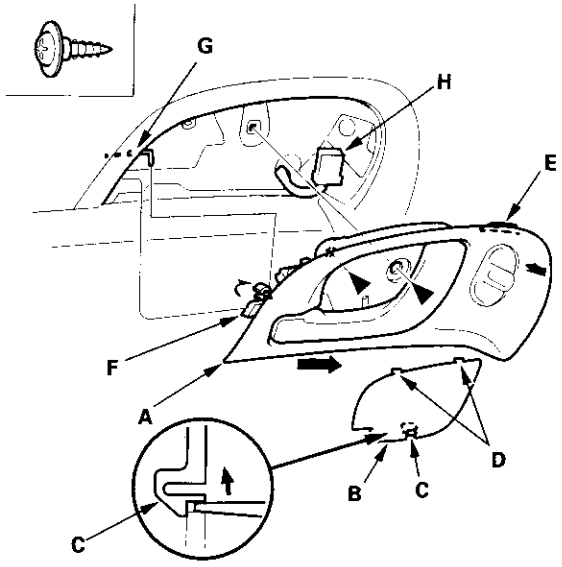
Special Tools Required
Trim pad remover, Snap-on A 177A, or equivalent, commercially available.

1. Remove the inner handle (A). Take care not to scratch the door panel.

   -1 Pry out on the bottom portion of the cover (B) to release the clip (C) and tabs (D), then remove the cover.
   -2 Remove the screws.
   -3 Pull the inner handle out to release the hook (E).
   -4 Pull the inner handle forward and out half-way to release the hook (F).
   -5 Disconnect the inner handle cable (G) and power door lock switch connector (H).

Fastener Locations

▶ : Screw, 2

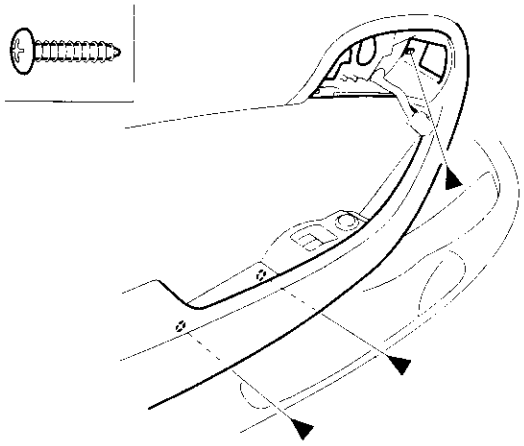


2. Lower the glass fully.

3. Remove the screws from the armrest portion and inner handle opening.

Fastener Locations

▶ : Screw, 3

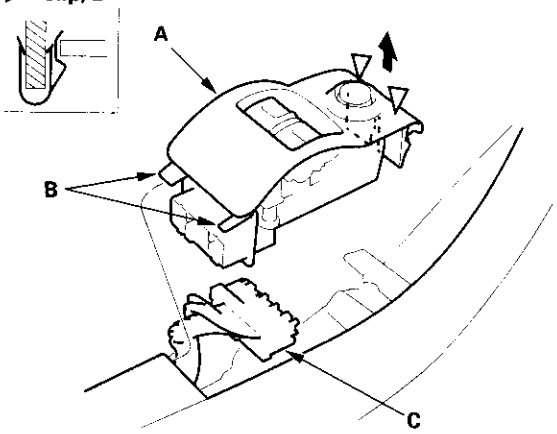


4. Remove the switch panel (A). Take care not to scratch the door panel.

   -1 Pry out the front portion of the panel to release the clips.
   -2 Release the hooks (B) by pulling the panel forward.
   -3 Disconnect the power window switch connector (C).

Fastener Locations

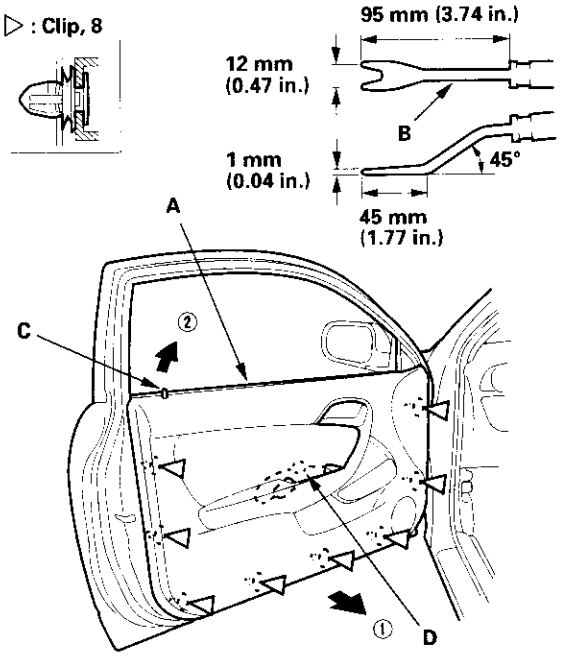
▷ : Clip, 2



5. Remove the mirror mount cover (see step 2 on page 20-16).

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 to release it from the lock knob (C) and door. Remove the door panel with as little bending as possible to avoid creasing or breaking it. Detach the harness clip (D) from the door panel.

Fastener Locations



7. Install the door panel in the reverse order of removal, and note these items:

   - Replace any damaged clips.
   - Make sure the connectors are plugged in properly, and the cable is connected properly.
   - Check the window and power door lock operations.

Door Outer Handle Replacement

NOTE: Put on gloves to protect your hands.

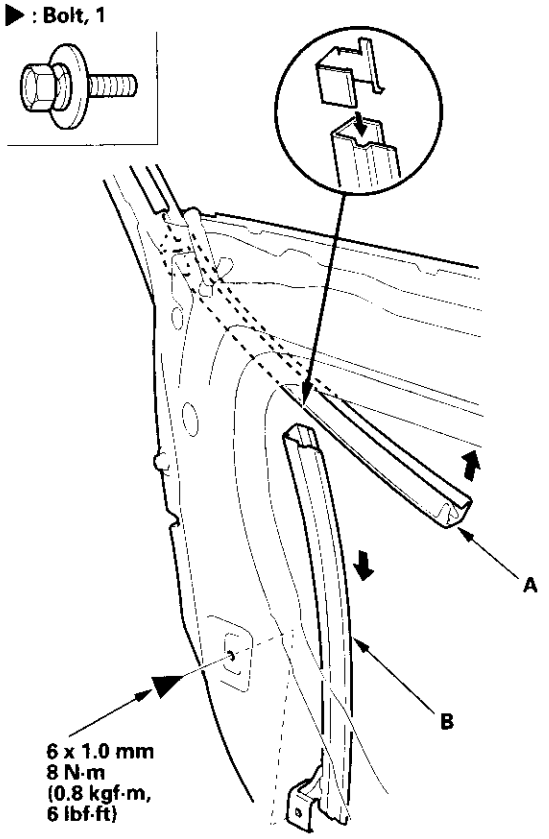
1. Raise the glass fully.

2. Remove these items:

   - Door panel (see page 20-4)
   - Plastic cover, as necessary (see page 20-2)

3. Pull the glass run channel (A) away as necessary, and remove the bolt, then remove the rear lower channel (B) by pulling it downward.

Fastener Location



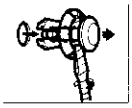
(cont'd)

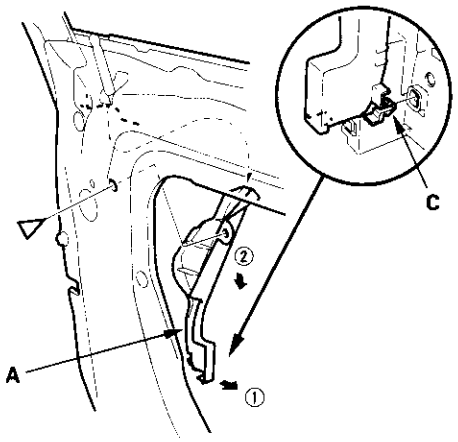
Door Outer Handle Replacement (cont'd)

4. Remove the clip, and release the lock rod protector (A) from the latch by detaching the clip (C). Lower the protector to release its top portion from the door, then remove it.

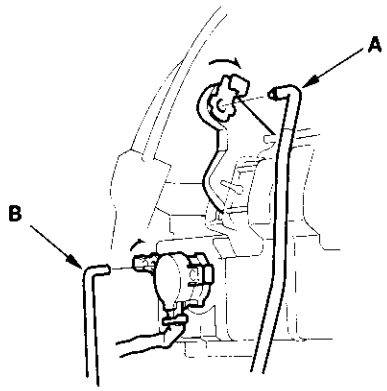
Fastener Location

▷ : **Clip, 1**

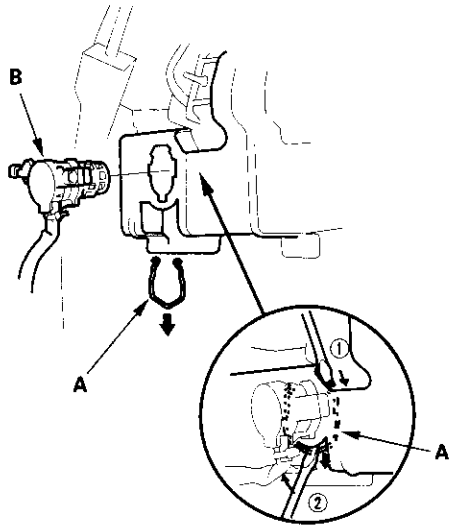




5. Disconnect the outer handle rod (A) and cylinder rod (B).



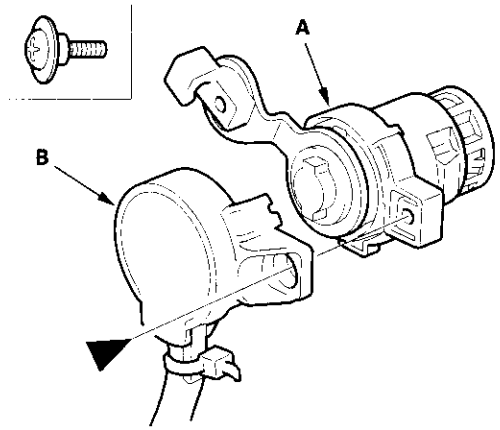
6. Release the retainer clip (A), then remove the lock cylinder (B).



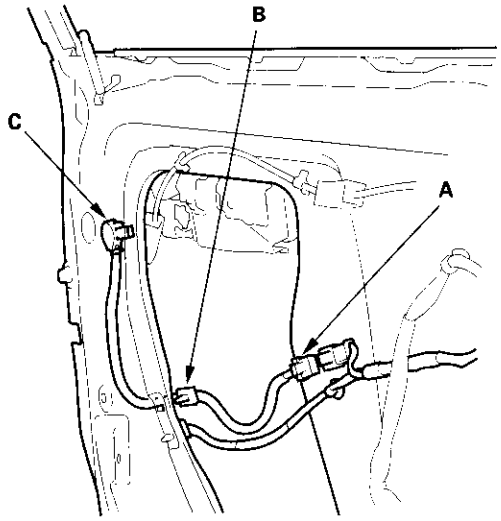
7. Remove the screw, then separate the lock cylinder (A) and cylinder switch (B).

Fastener Location

▶ : **Screw, 1**



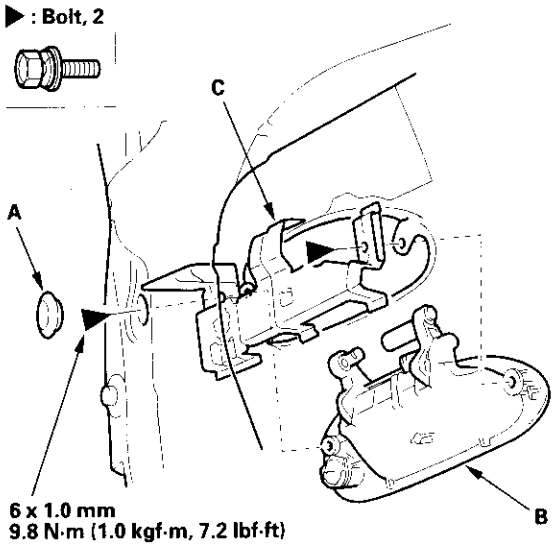
8. Disconnect the cylinder switch connector (A), and detach the harness clip (B), then remove the cylinder switch (C).



9. Remove the access cap (A). While holding the outer handle (B) from the outside of the door, remove the bolts, then remove the outer handle and outer handle protector (C).

Fastener Locations

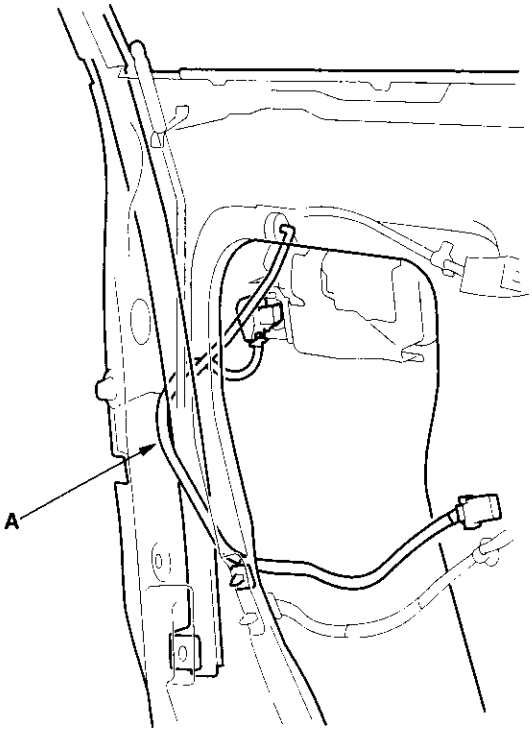
▶ : Bolt, 2



6 x 1.0 mm
9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)

10. Install the handle in the reverse order of removal, and note these items:

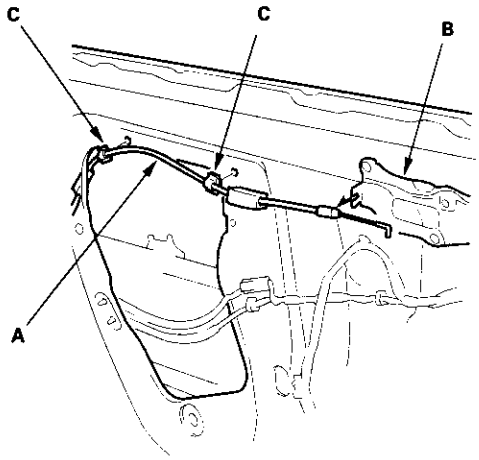
- Make sure the cylinder switch harness (A) is routed properly.
- Make sure the cylinder switch connector is plugged in properly, and each rod is connected securely.
- Make sure the door locks and opens properly.
- When installing the lock cylinder, leave the outer door handle bolts loose so the inner 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 sealed around its perimeter.



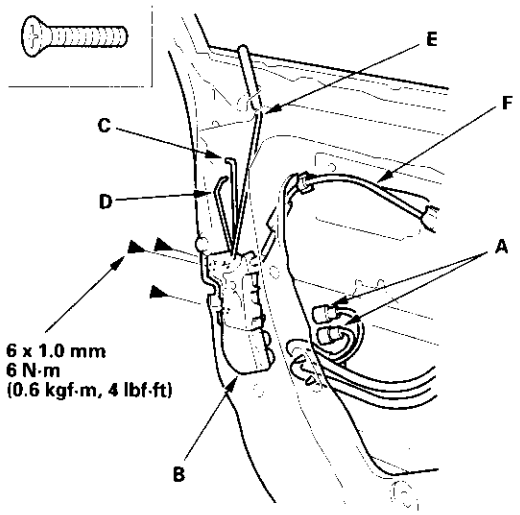
Door Latch Replacement

NOTE: Put on gloves to protect your hands.

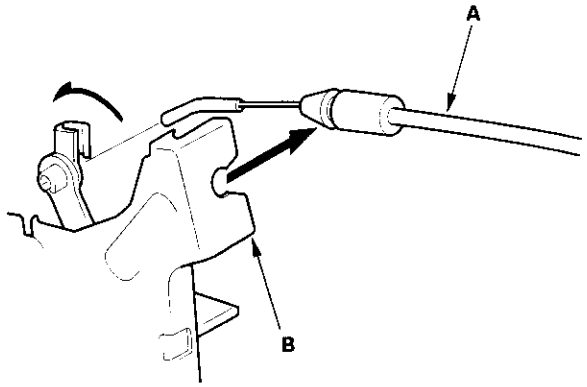
1. Raise the glass fully.
2. Remove these items:
   - Door panel (see page 20-4)
   - Plastic cover, as necessary (see page 20-2)
   - Rear lower channel (see step 3 on page 20-5)
   - Lock rod protector (see step 4 on page 20-6)
3. Disconnect the cylinder rod from the lock cylinder, and disconnect the outer handle rod from the outer handle (see step 5 on page 20-6).
4. Release the inner handle cable (A) from the inner handle bracket (B), and using a clip remover, detach the cable clips (C) from the door.



5. Disconnect the actuator connectors (A), and remove the screws, then remove the latch (B) through the hole in the door. Take care not to bend the outer handle rod (C), cylinder rod (D), lock rod (E), and inner handle cable (F).



6. If necessary, disconnect the inner handle cable (A) from the latch (B).



7. Install the latch in the reverse order of removal, and note these items:
   - Make sure the actuator connectors are plugged in properly, and each rod and cable are connected securely.
   - Make sure the door locks and opens properly.
   - When reinstalling the door panel, make sure the plastic cover is installed properly and sealed around its perimeter.

Door Glass and Regulator Replacement

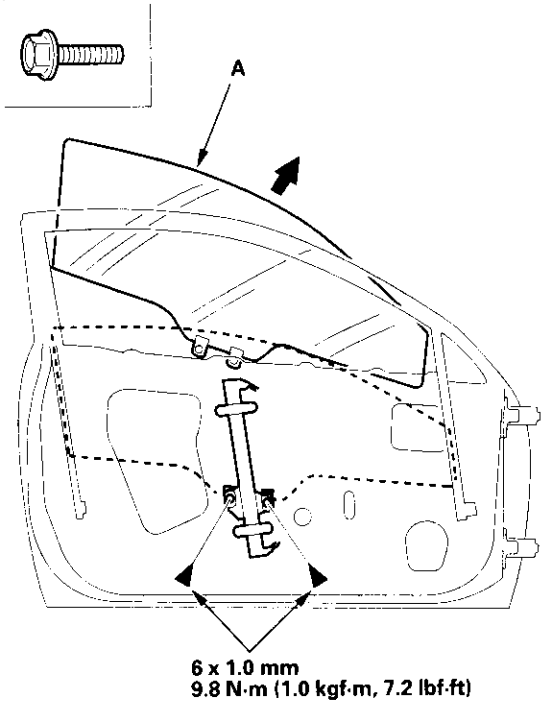
NOTE: Put on gloves to protect your hands.

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

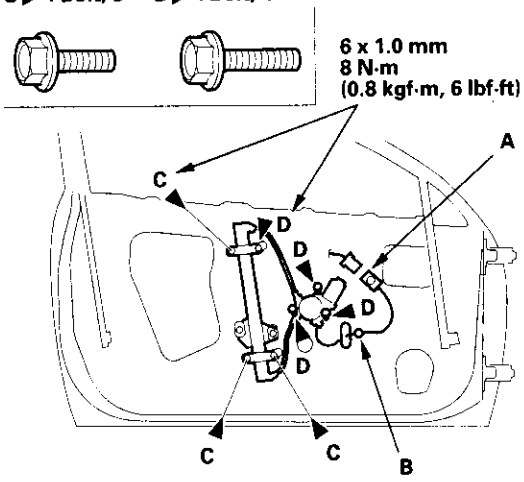
▶ : Bolt, 2



3. Disconnect and detach the connector (A) and harness clip (B) from the door.

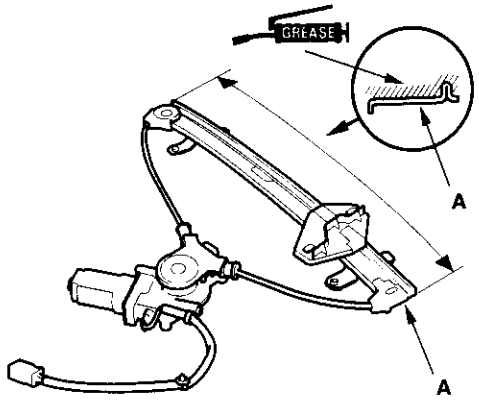
Fastener Locations

C▶ : Bolt, 3 D▶ : Bolt, 4



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.



(cont'd)

Door Glass and Regulator Replacement (cont'd)

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 20-12).
   - Check for water leaks (see step 7 on page 20-13).
   - 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.

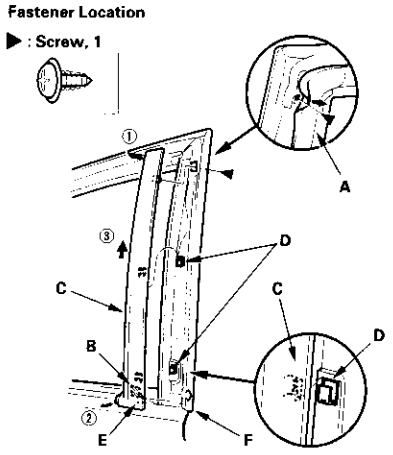
Door Sash Trim Replacement

NOTE: Take care not to scratch the door.

1. Remove the power mirror, as necessary (see page 20-16), and slide the door glass outer weatherstrip forward, as necessary (see page 20-11).

2. Pull back the door weatherstrip (A) at the rear upper corner, and remove the screw.

Adhesive tape: 3M 4211, or equivalent
Thickness 1.2 mm (0.047 in.)



3. Using a utility knife, carefully cut the double-faced adhesive tape (B) at the bottom of the door sash trim (C).

4. Pull up the trim to release it from the clips (D), then remove the trim.

5. Install the trim in the reverse order of removal, and note these items :

   - Replace any damaged clips.
   - If the old trim is to be reinstalled, scrape off the remaining double-faced adhesive tape from the trim, then clean trim surface with a sponge dampened in alcohol where adhesive tape will be applied. Glue the double-faced adhesive tape (3M 4211, or equivalent) to the trim.
   - Before installing the trim, clean the door bonding surface with a sponge damaged in alcohol.
   - Before installing the trim, peel the adhesive backing from the double-faced adhesive tape. After installing the trim, push the trim into place securely.
   - Make sure the bottom pin (E) of the trim is installed in the hole of the upper seal (F) securely.

Door Glass Outer Weatherstrip Replacement

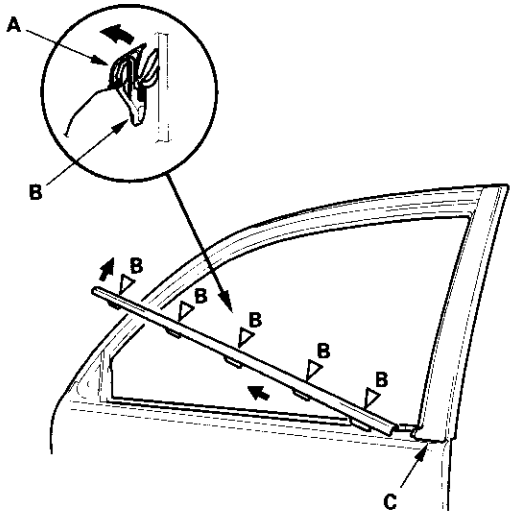
NOTE:
- Put on gloves to protect your hands.
- Take care not to scratch the door.

1. Remove the power mirror, as necessary (see page 20-16).

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.

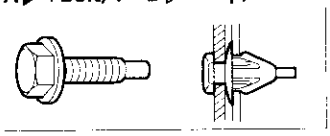
Door Weatherstrip Replacement

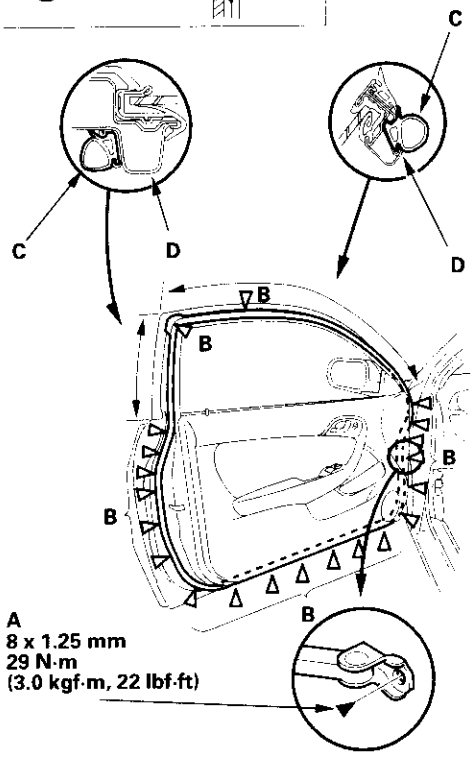
NOTE:
- Take care not to scratch the door.
- Use a clip remover to remove the clips.

1. At the A-pillar, remove the door stop mounting bolt (A).

Fastener Locations

A▶: Bolt, 1 B▷: Clip, 22





2. Detach the clips (B), then remove the door weatherstrip (C).

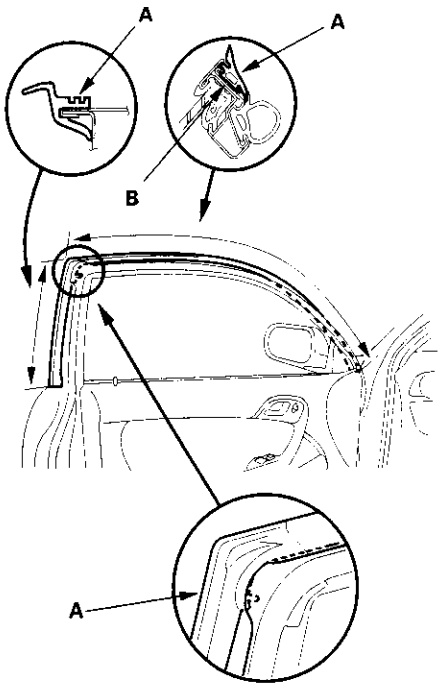
3. Install the weatherstrip in the reverse order of removal and note these items:

- Replace any damaged clips.
- Make sure the weatherstrip is installed in the holder (D) securely.
- Apply liquid thread lock to door stop mounting bolt before installation.
- Check for water leaks (see step 7 on page 20-13).
- Test-drive and check for wind noise.

Door Upper Seal Replacement

NOTE:
- Take care not to scratch the door.
- Use a clip remover to remove the clips.

1. Remove these items:
   - Power mirror, as necessary (see page 20-16)
   - Door sash trim (see page 20-10)
2. Remove the door upper seal (A).

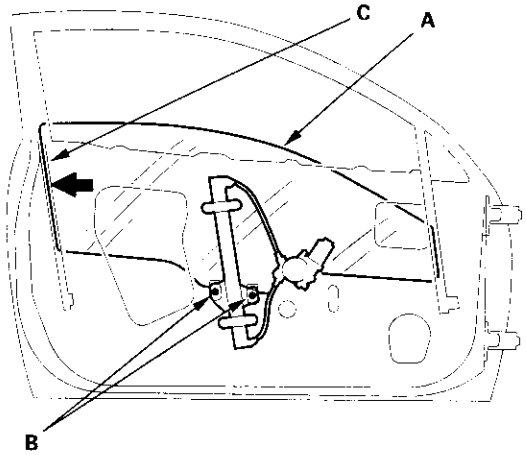


3. Install the seal in the reverse order of removal, and note these items:
   - Make sure the upper seal is installed in the holder (B) securely.
   - Check for water leaks (see step 7 on page 20-13).

Door Glass Adjustment

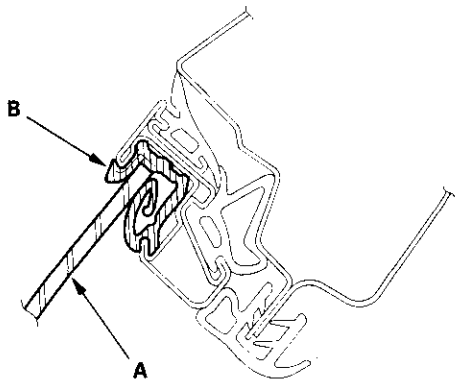
NOTE:
- Check the weatherstrips and glass run channel for damage or deterioration, and replace them if necessary.
- Wipe the run channel clean with a shop towel.
- Lubricate the run channel with Shin-Etsu grease P/N 98798 -- 9013.

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.



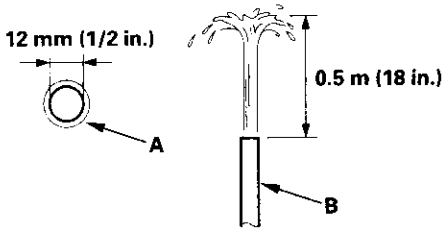
4. Push the glass against the channel (C), then tighten the glass mounting bolts.
5. Check that the glass moves smoothly.

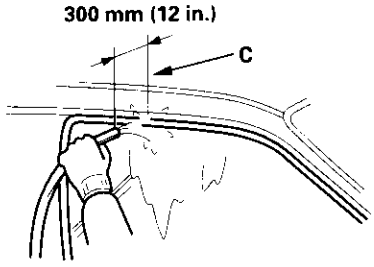
6. Raise the glass fully, and check for gaps. Check that the glass (A) contacts the glass run channel (B) evenly.



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.

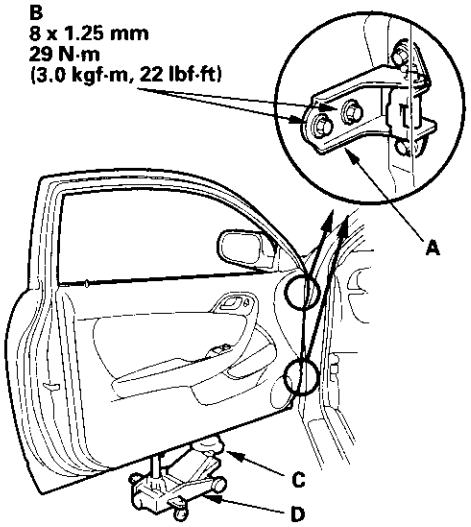
Door Position Adjustment

NOTE: Check for a flush fit with the body, then check for equal gaps between the front, rear, and bottom door edges and the body. Check that the door and body edges are parallel.

1. Place the vehicle on a firm, level surface when adjusting the door.

2. Adjust at the hinges (A):

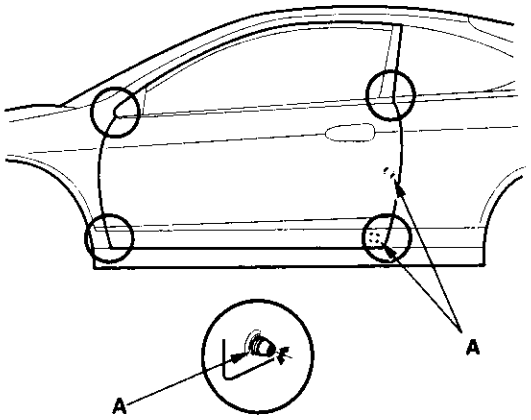
   - Remove the front inner fender (see page 20-102) and front fender fairing (see page 20-103). Loosen the hinge mounting bolts (B) slightly, and move the door backward or forward, up or down as necessary to equalize the gaps.
   - Place a shop towel (C) on the jack (D) to prevent damage to the door when adjusting the door.



(cont'd)

Door Position Adjustment (cont'd)

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.

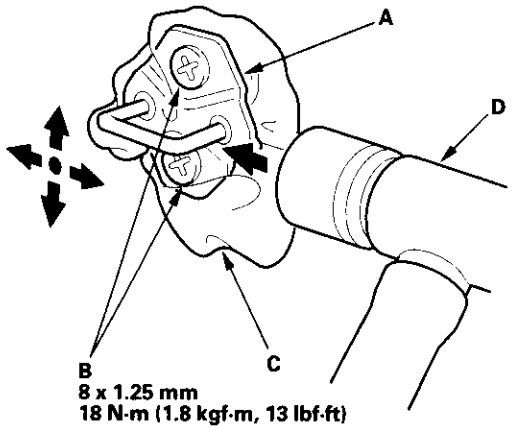
5. Check for water leaks (see step 7 on page 20-13).

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.

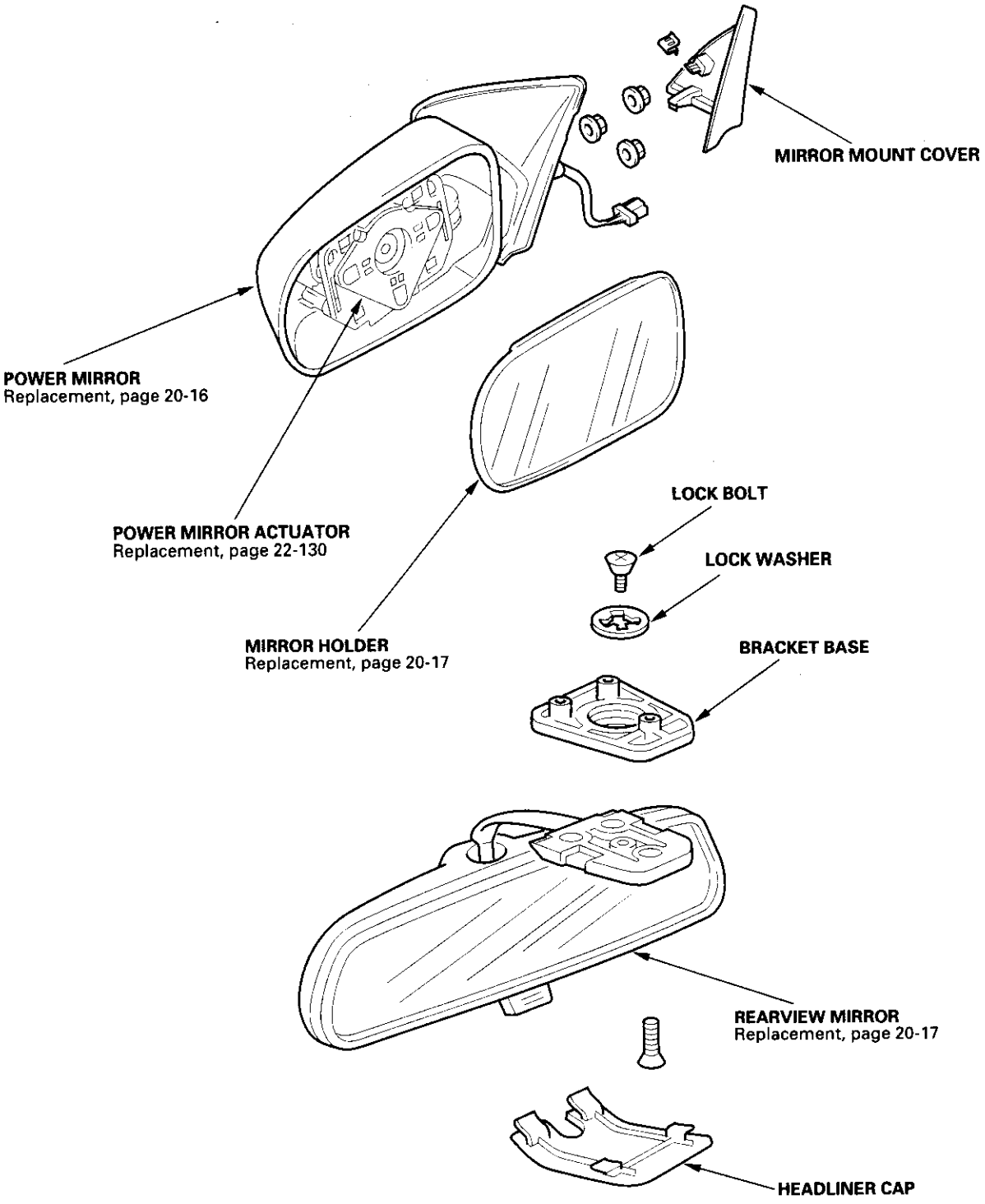
3. Wrap the striker with a shop towel, then adjust the striker by tapping it with a plastic hammer (D). Do not tap the striker too hard.

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

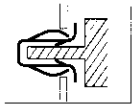


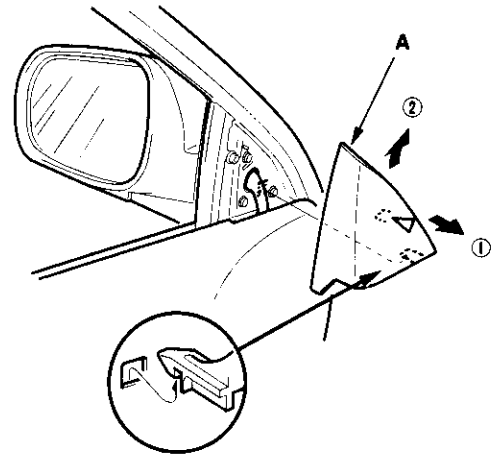
Power Mirror Replacement

1. Lower the door glass fully.
2. Carefully pry out the mirror mount cover (A) by hand in the sequence shown.

Fastener Location

▷ : Clip, 1

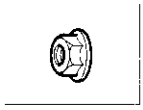


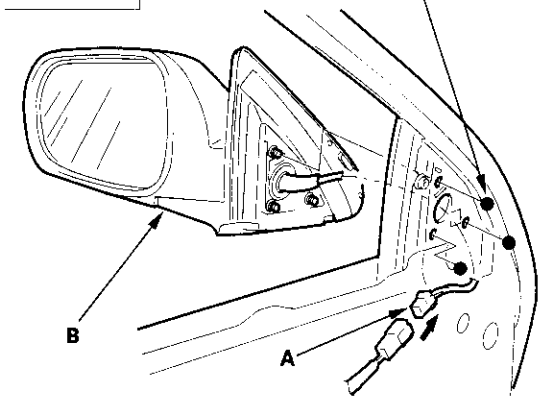


3. Remove the door panel (see page 20-4).
4. Disconnect the connector (A). While holding the mirror (B), remove the nuts, then remove the mirror. Take care not to scratch the door.

Fastener Locations

● : Nut, 3

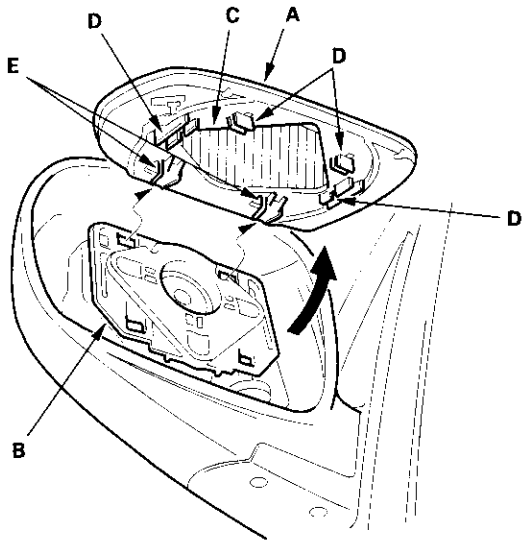




5. Install the mirror in the reverse order of removal, and make sure the connector is plugged in properly.

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 removing the adhesive (C), detaching the clips (D), and releasing the hooks (E). If equipped, disconnect the mirror defogger connectors from the heater pad terminals.

3. If equipped, reconnect the mirror defogger connectors.

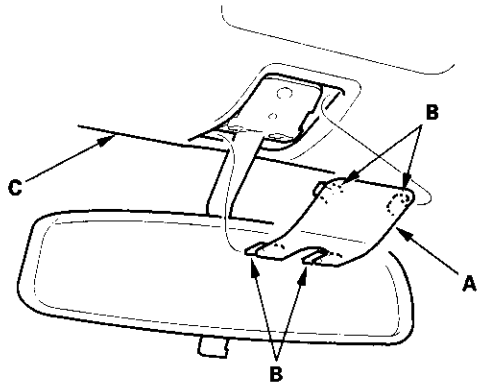
4. Reattach the hooks of the mirror holder to the actuator, then position the mirror holder on the actuator. Carefully push on the clip portions of the mirror holder until the mirror holder locks into place.

5. Check the operation of the actuator.

Rearview Mirror Replacement

NOTE: When prying with a flat-tip screwdriver, wrap it with protective tape to prevent damage.

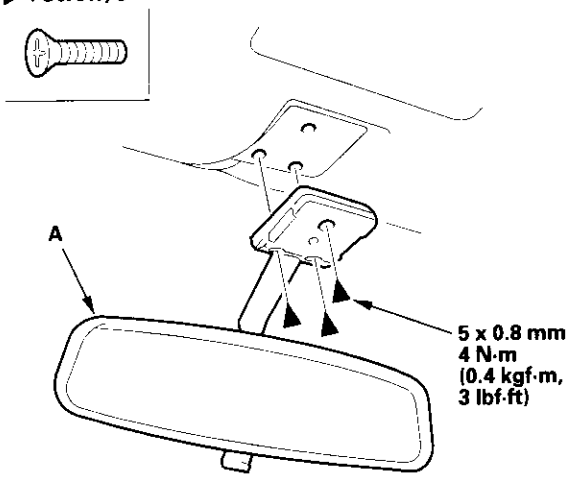
1. Using a flat-tip screwdriver, carefully remove the headliner cap (A) by releasing the hooks (B). Take care not to scratch the cap and headliner (C).



2. Remove the screws, then remove the rearview mirror (A).

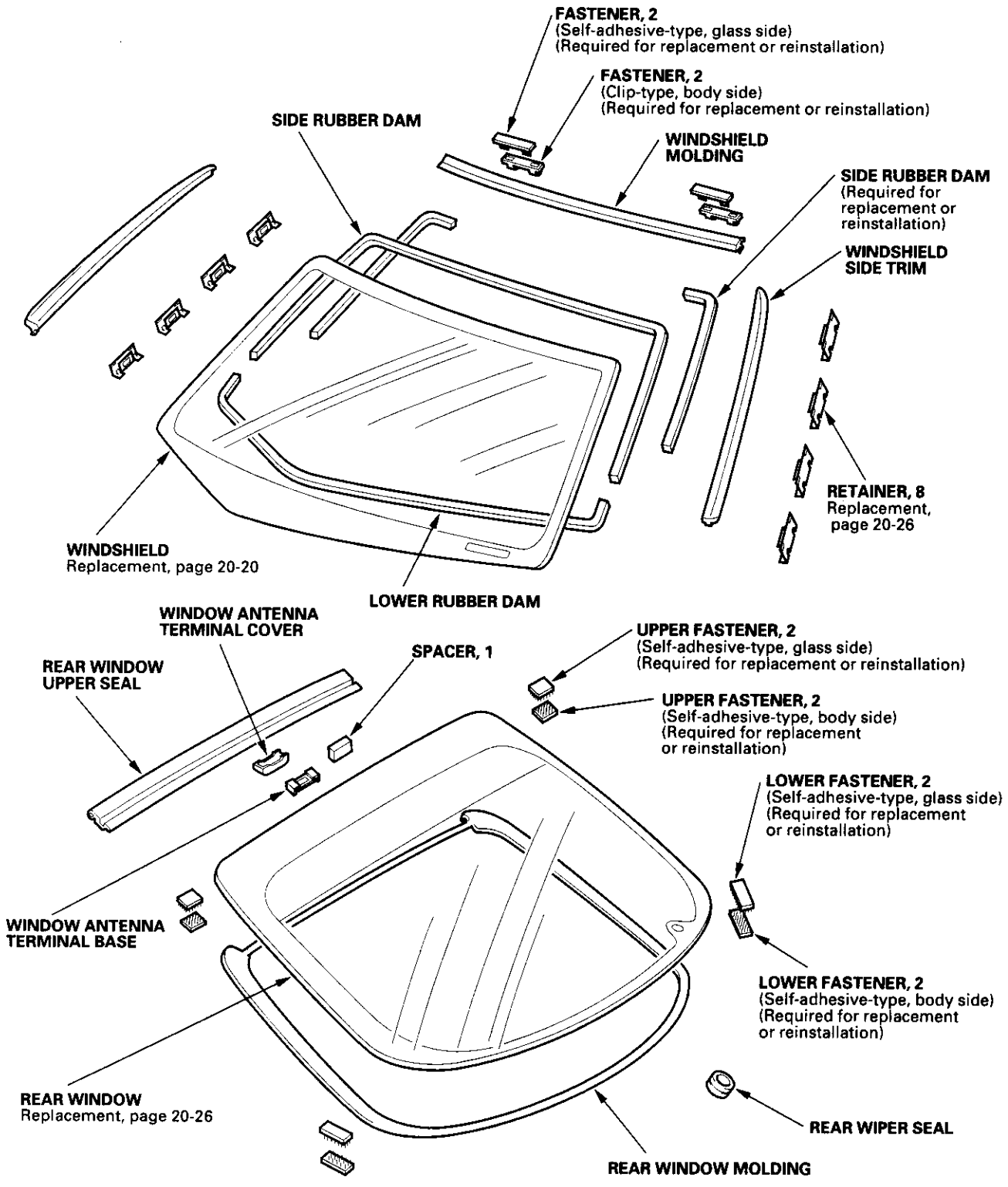
Fastener Locations

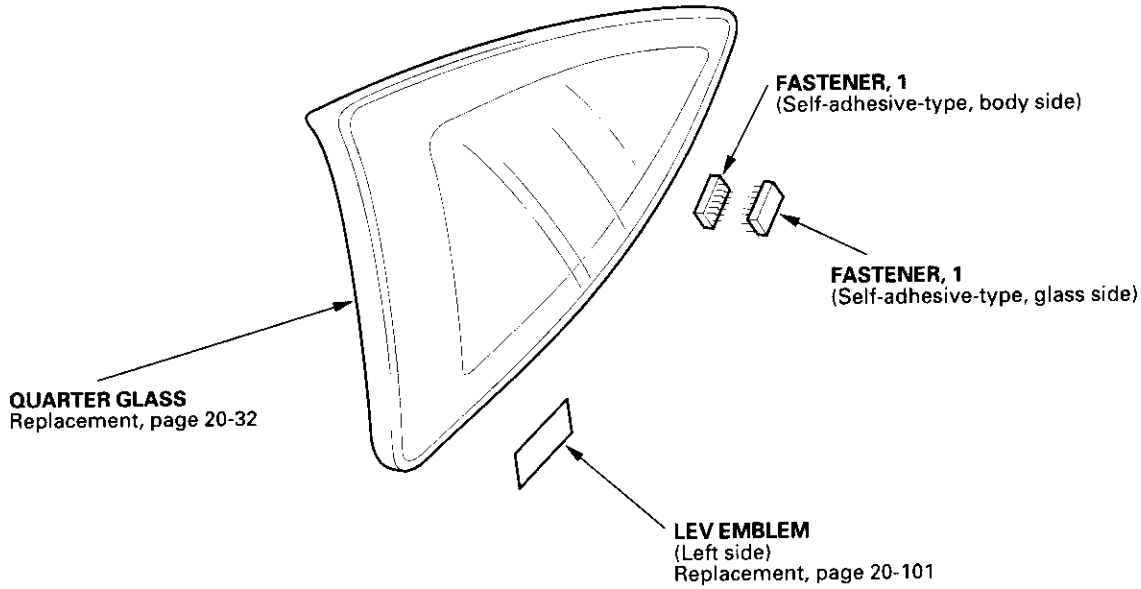
▶ : Screw, 3



3. Install the mirror in the reverse order of removal.

Component Location Index

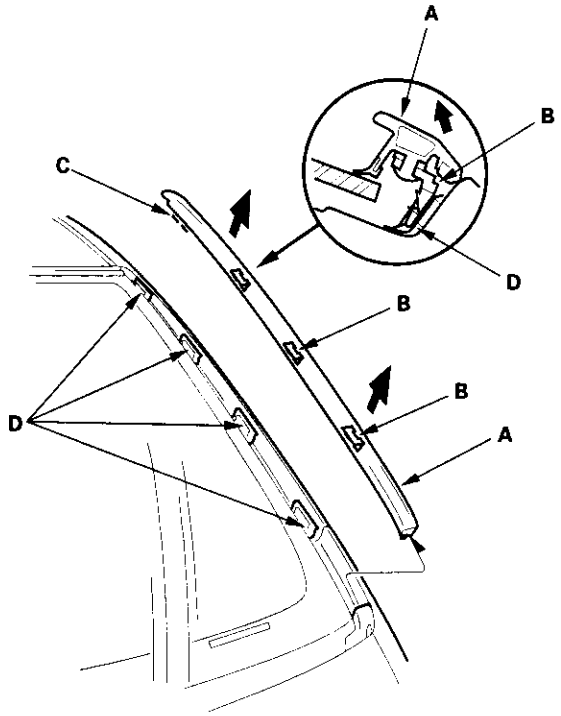



FASTENER, 1
(Self-adhesive-type, body side)
FASTENER, 1
(Self-adhesive-type, glass side)
QUARTER GLASS
Replacement, page 20-32
LEV EMBLEM
(Left side)
Replacement, page 20-101

Windshield Replacement

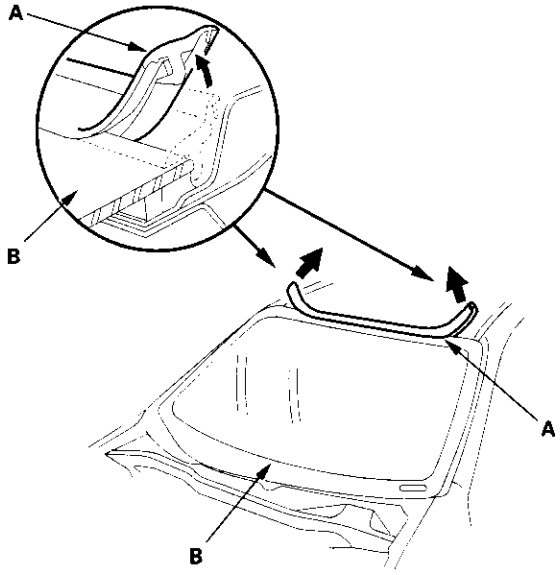
NOTE:
- Put on gloves to protect your hands.
- Wear eye protection when removing the glass with piano wire.
- Use seat covers to avoid damaging the seats.

1. Pull up the side trim (A) to release the clips (B, C) from the retainers (D), then remove the trim from each side of the windshield.



2. Remove these items:
   - Windshield wiper arms (see page 22-150).
   - Cowl covers (see page 20-98).

3. Remove the molding (A) from the upper edge of the windshield (B). If necessary, cut the molding with a utility knife.

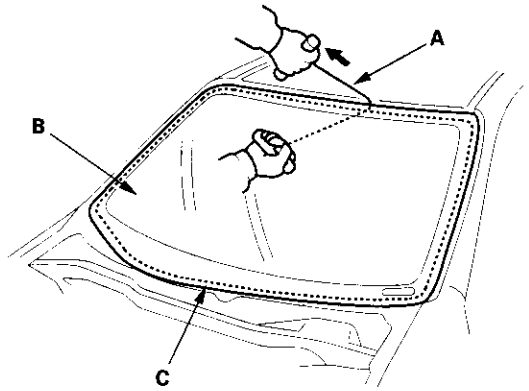


4. If the old windshield is to be reinstalled, make alignment marks across the glass and body with a grease pencil.

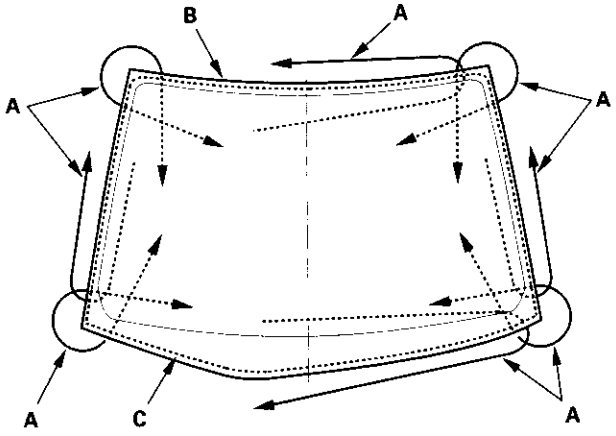
5. Pull down the front portion of the headliner (see page 20-54). Take care not to bend the headliner excessively, or you may crease or break it.

6. Apply protective tape along the edge of the dashboard and body. Using an awl, make a hole through the rubber dam and adhesive 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.

7. With a helper on the outside, pull the piano wire (A) back and forth in a sawing motion. Hold the piano wire as close to the 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:



8. Carefully remove the windshield.

9. 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, clips, and fasteners from the body.

10. Clean the body bonding surface with a sponge dampened in alcohol. After cleaning, keep oil, grease, and water from getting on the clean surface.

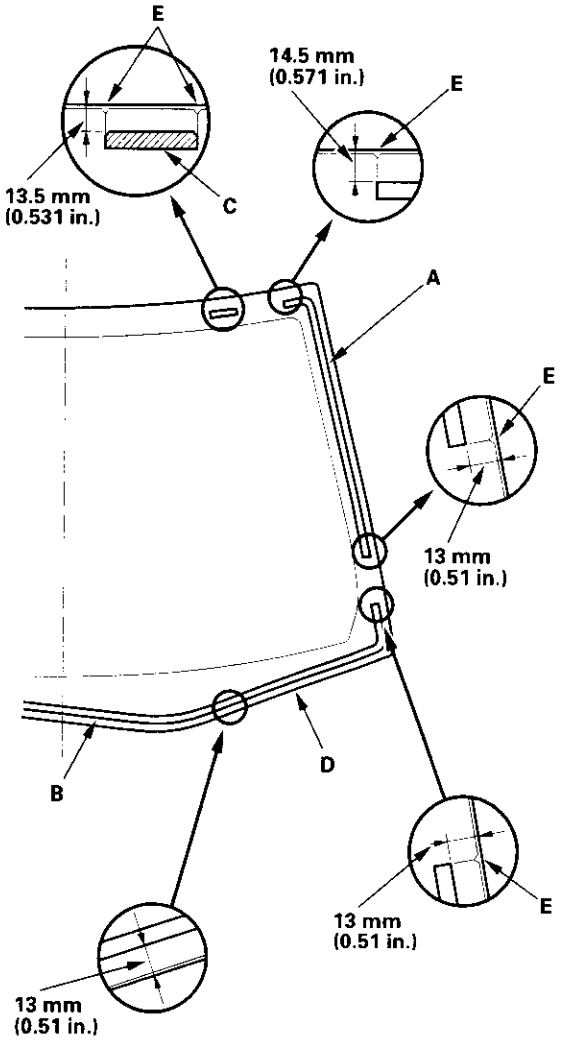
11. If the old windshield is to be reinstalled, use a putty knife to scrape off all of the old adhesive, the fasteners, the clips, and the rubber dam from the windshield. Clean the inside face and the edge of the windshield with alcohol where new adhesive is to be applied. Make sure the bonding surface is kept free of water, oil, and grease.

(cont'd)

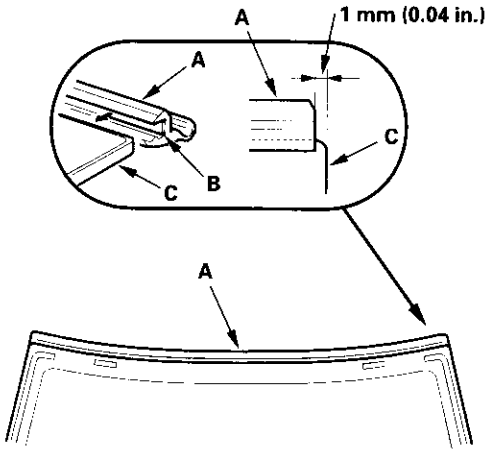
Windshield Replacement (cont'd)

12. Glue the side rubber dams (A) and lower rubber dam (B) with adhesive tape (NITTO 501, 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.



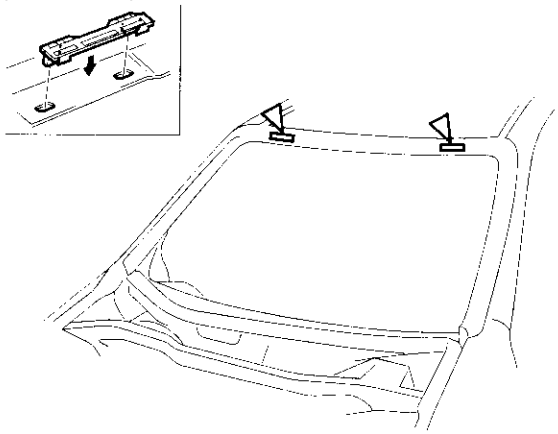
13. Glue the molding (A) with adhesive tape (B) (3M 4212, or equivalent) to the corner edge of the windshield (C). Be careful not to touch the windshield where adhesive will be applied.



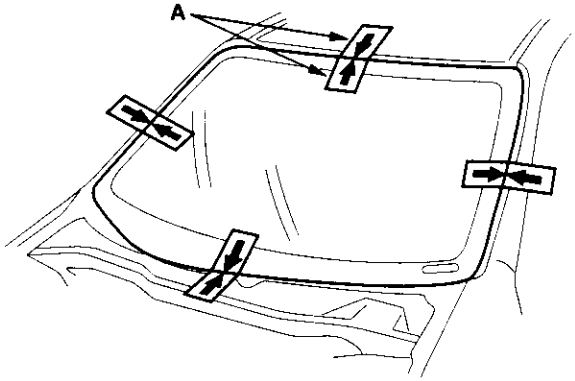
14. Install the fasteners to the body.

Fastener Locations

▷: **Fastener, 2**



15. 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.

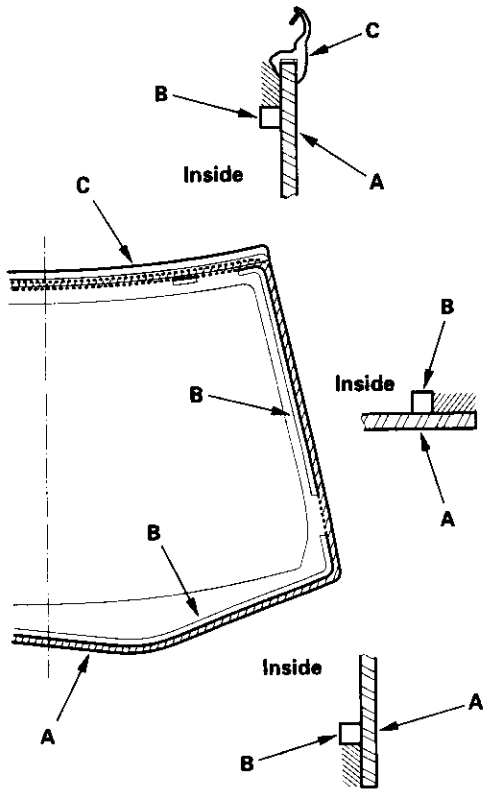


16. Remove the windshield.

17. 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.**

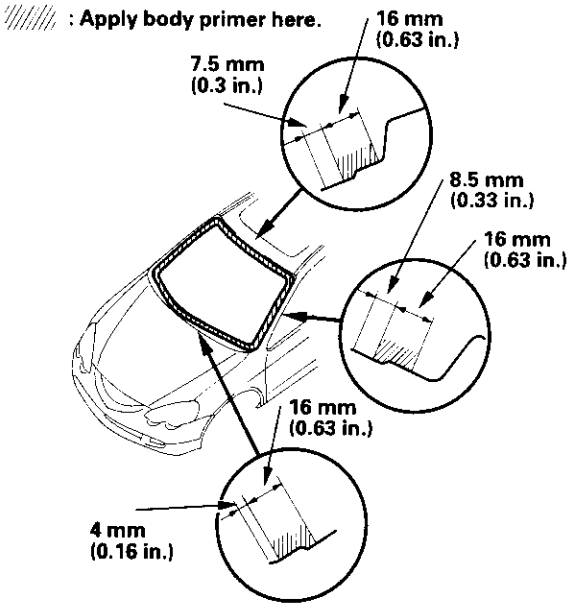


(cont'd)

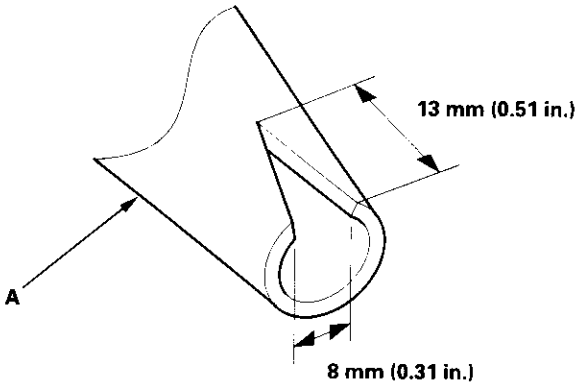
Windshield Replacement (cont'd)

18. 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:

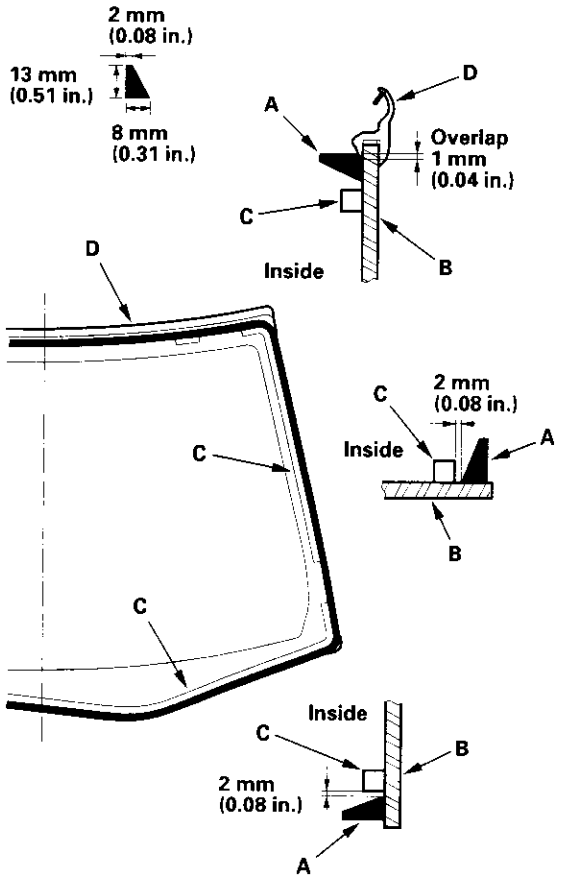
    - Do not apply glass primer to the body, and be careful not to mix up glass and body primer sponges.
    - Never touch the primed surfaces with your hands.
    - Mask off the dashboard before painting the flange.



19. Before filling a cartridge, cut a "V" in the end of the nozzle (A) as shown.



20. 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.



21. Use suction cups to hold the windshield over the opening, align it with the alignment marks made in step 15, and set it down on the adhesive. Lightly push on the windshield until its edges are fully seated on the adhesive all the way around. Do not open or close the doors until the adhesive is dry.

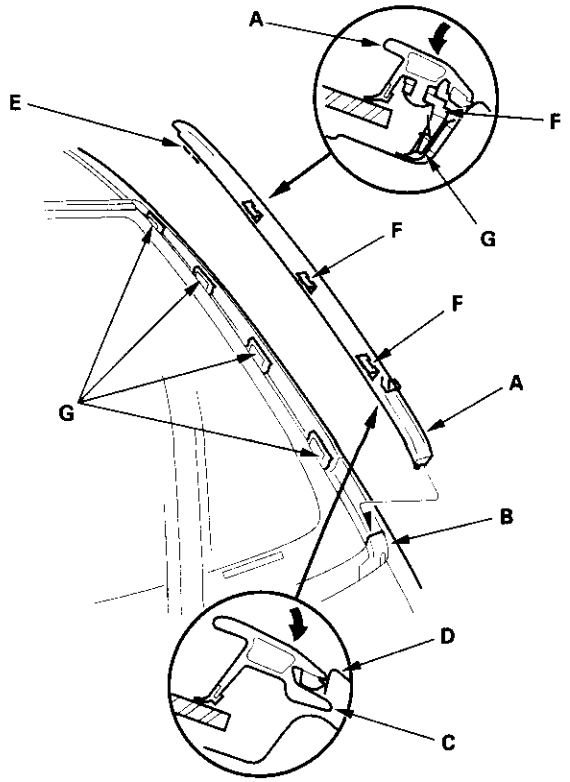
22. Scrape or wipe the excess adhesive off with a putty knife or towel. To remove adhesive from a painted surface or the windshield, wipe with a soft shop towel dampened with alcohol.

23. 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.

24. Reinstall the cowl covers.

25. On both sides of the windshield, set the bottom edge of the side molding (A) under the cowl cover (B), and set the hook (C) under the front fender (D), then align the clips (E, F) with the retainers (G). Push on the clip portions of the molding until the molding is fully seated on the windshield.



26. Reinstall all remaining removed parts.

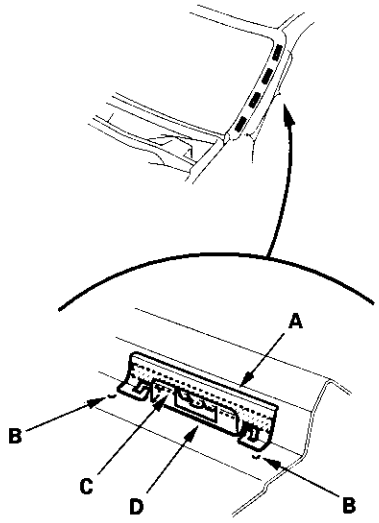
    NOTE: Advise the customer not to do the following things for 2 to 3 days:

    - 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).

Windshield Side Trim Retainer Replacement

NOTE:
- Take care not to scratch the body.
- When heating the body with a dryer, be careful not to get it too hot. Heat it gradually to prevent damage to the paint.
- Remove the plastic parts, and/or protect them from the hot with aluminum foil.

1. While heating the retainer to 212—248°F (100—120°C) with a dryer, gently pull it away from the body with pliers.
2. With a putty knife, scape the remaining adhesive tape from the bonding surface while heating it with a dryer.
3. Clean the bonding surface with a sponge damaged in alcohol. Make sure the bonding surface is kept free or water, oil and grease.
4. Peel the adhesive backing away from the double-faced adhesive tape on new retainer.
5. Line up the retainers (A) with the alignment marks (B) on the body, and glue the retainers with adhesive tape (C).

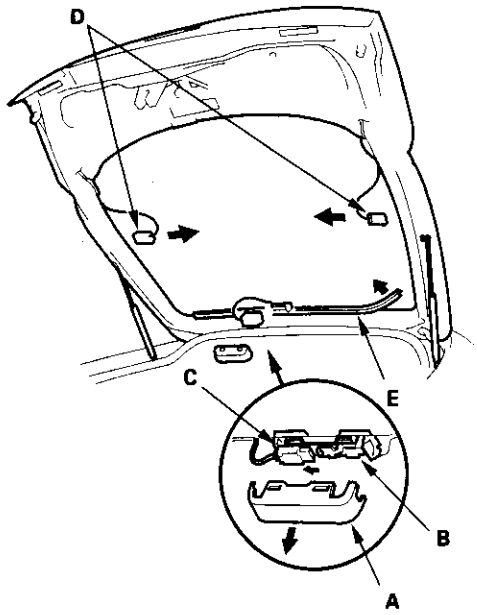


6. Apply two-part epoxy adhesive (D) around the edge of the retainers as shown.

Rear Window Replacement

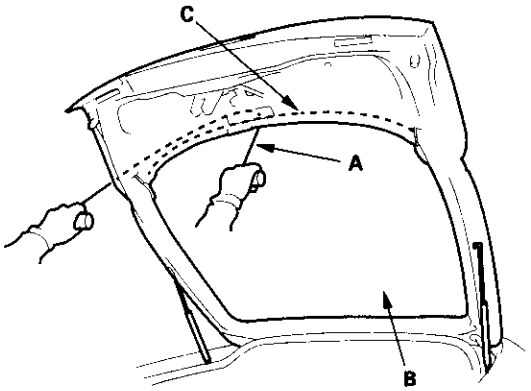
NOTE:
- Put on gloves to protect your hands.
- Wear eye protection when removing the glass with piano wire.
- Use seat covers to avoid damaging any surfaces.
- Do not damage the rear window defogger grid lines, window antenna grid lines, and terminals.

1. Remove these items:
   - Hatch trim panel (see page 20-53)
   - Rear window wiper motor (see page 22-151)
2. Remove the window antenna terminal cover (A) from the window antenna terminal base (B), and disconnect the window antenna connector (C). Disconnect the rear window defogger connectors (D).

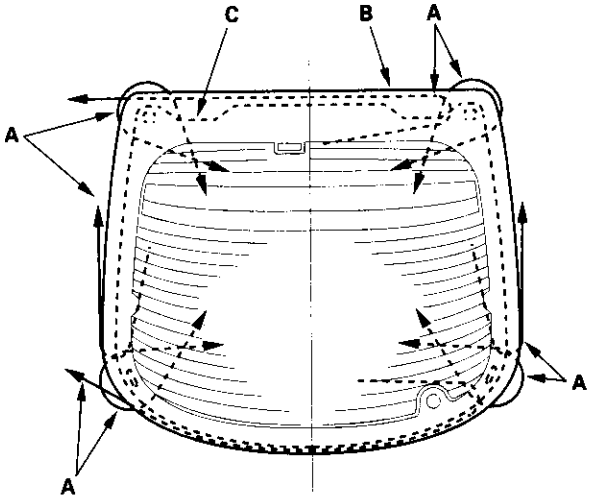


3. Remove the rear window trim (E).
4. If the old rear window is to be reinstalled, make alignment marks across the glass and body with a grease pencil.
5. Apply protective tape along the inside and outside edges of the hatch. Using an awl, make a hole through the adhesive from inside the vehicle at 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.

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 hatch.

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.

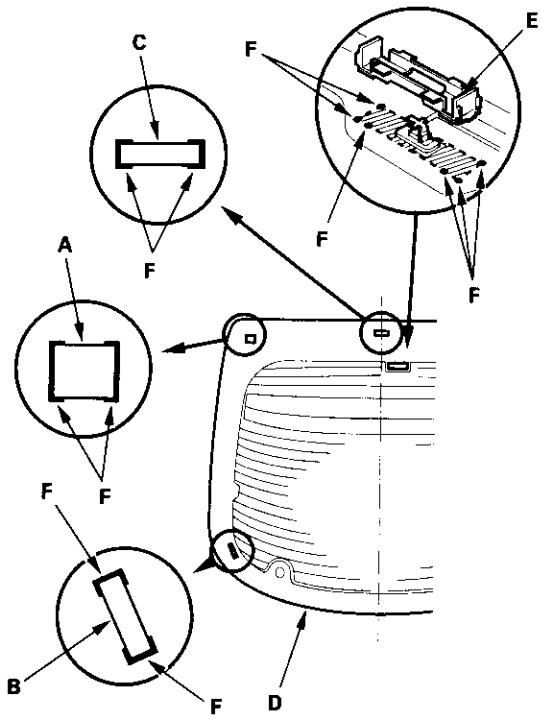
(cont'd)

Rear Window Replacement (cont'd)

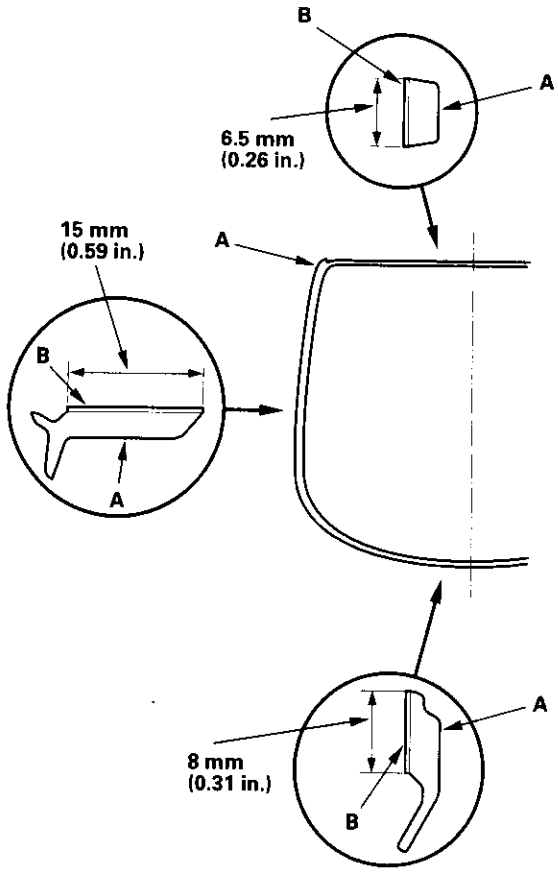
11. Glue the upper fasteners (A) and lower fasteners (B) with adhesive tape (3M 5312; or eguiralent). Glue the spacer (C) with adhesive tape (NITTO 501M, or equivalent) to the inside face of the rear window (D) as shown. If necessary, apply primer (3M N-200, or equivalent) to the areas where the window antenna terminal base (E) will be glued, then glue the base on with adhesive tape (3M 4211, or equivalent):

    - Be sure the fasteners and spacer (and window antenna terminal base) line up with the alignment marks (F).
    - Be careful not to touch the rear window where adhesive will be applied.

    ////// : **Apply primer here.**



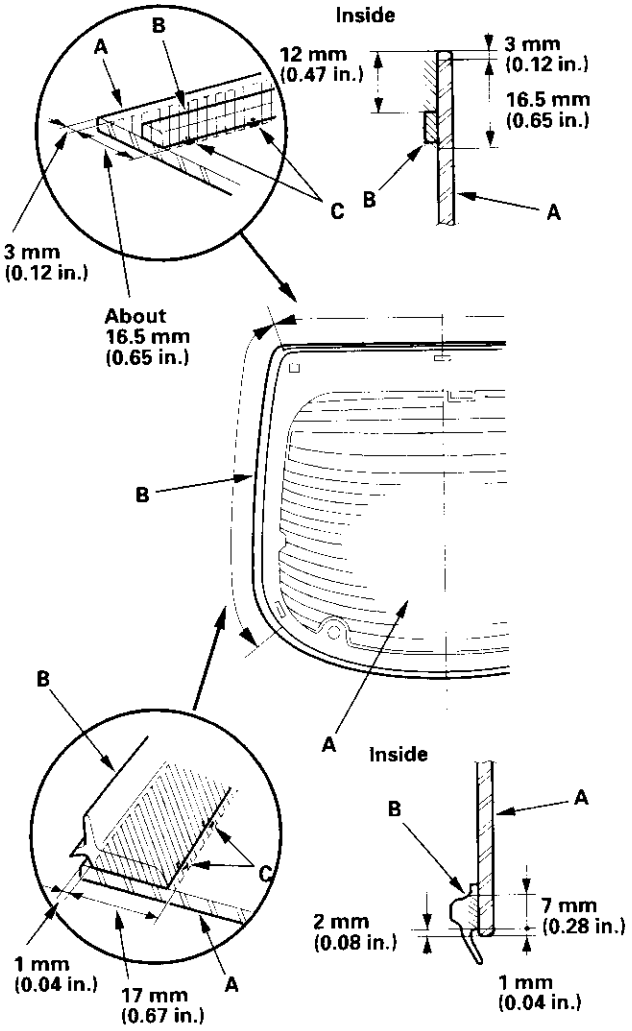
12. Apply primer (3M C-100, or equivalent) to the inside face around the entire molding (A), and apply the double-faced adhesive tape (B) (3M 4216, or equivalent). Do not peel off the adhesive backing.



13. Apply primer (3M N-200, or equivalent) to the inside face of the rear window (A), and glue the molding (B):

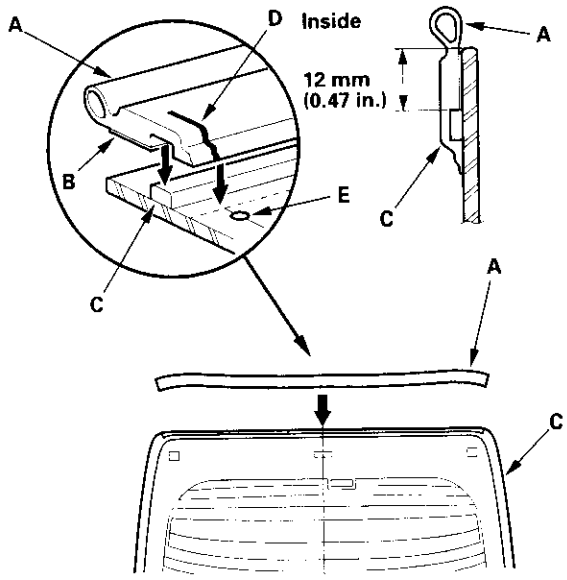
- With the printed dots (C) on the upper and side portions of the rear window as a guide, glue the molding around the edge of the rear window.
- Before installing the molding, fold the edge of the adhesive backing on the double-faced adhesive tape. After installing the molding, pull the adhesive backing away, then glue the molding into place.
- Be careful not to touch the rear window where adhesive will be applied.

: **Apply primer here.**



14. Glue the upper seal (A) with adhesive tape (B) (3M 4215, or equivalent) onto the upper portion of the molding (C):

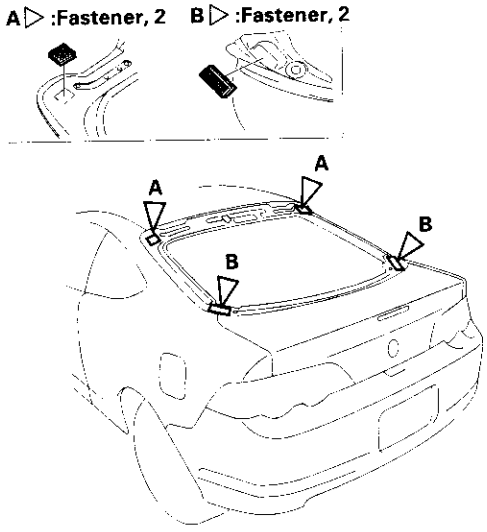
- Be sure the alignment mark (D) of the seal lines up with the alignment mark (E) of the windshield.
- Be careful not to touch the window where adhesive will be applied.



15. Glue the upper fasteners (A) and lower fasteners (B) with adhesive tape (3M 5312, or equivalent) to the hatch as shown.

Fastener Locations

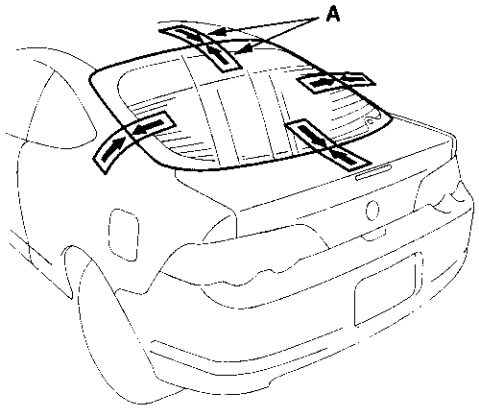
A▷ :Fastener, 2 B▷ :Fastener, 2



(cont'd)

Rear Window Replacement (cont'd)

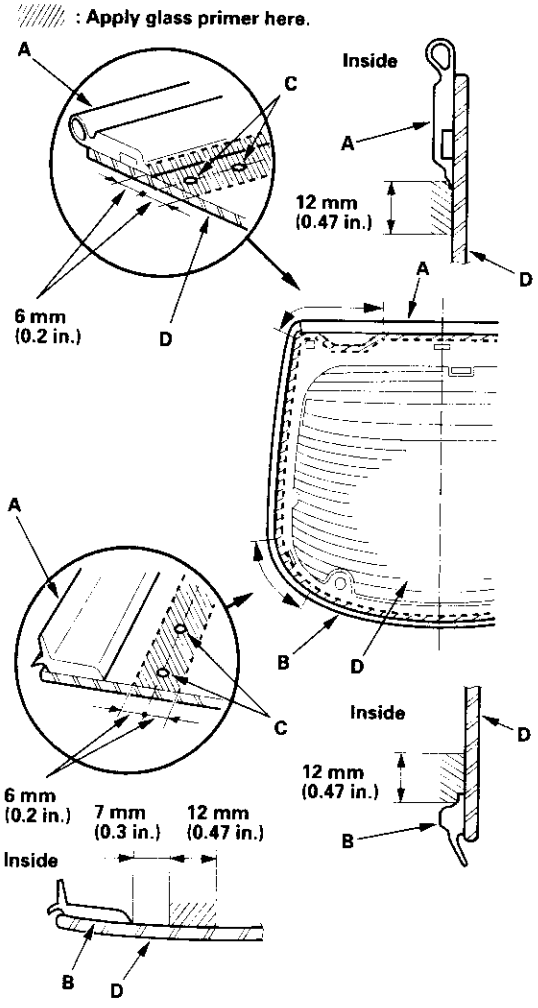
16. Set the rear window in the opening, and center it. Make alignment marks (A) across the rear window, hatch, and body with a grease pencil at the four points shown. Be careful not to touch the rear window where adhesive will be applied.



17. Remove the rear window.

18. With a sponge, apply a light coat of glass primer along the edge of the upper molding (A) and rear window molding (B) as shown, then lightly wipe it off with gauze or cheesecloth:

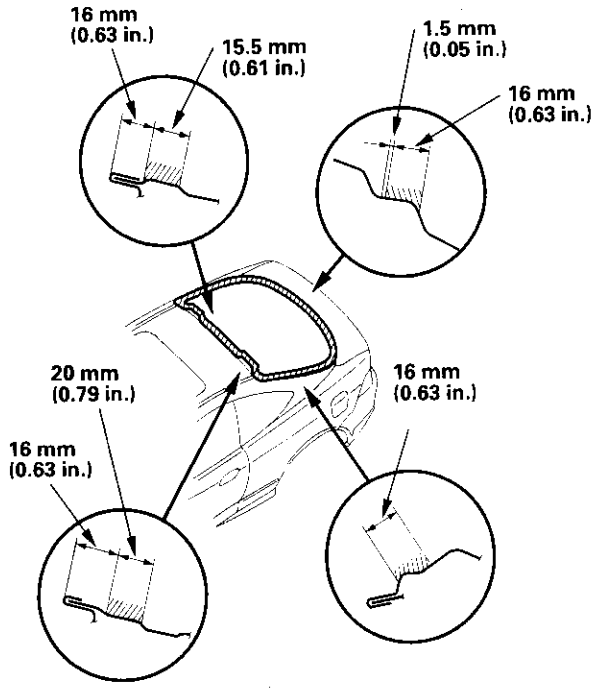
- With the printed dots (C) on the rear window (D) as a guide, apply the glass primer to both side portions of the rear window.
- Do not apply body primer to the rear window, and do not get the hatch and glass primer sponges mixed up.
- Never touch the primed surfaces with your hands. If you do, the 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.



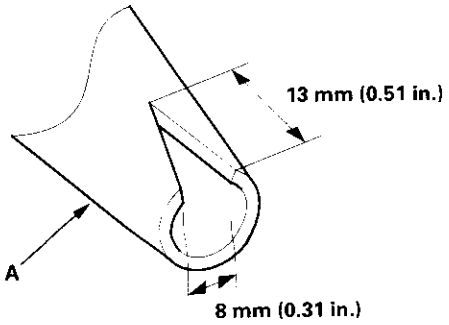
19. With a sponge, apply a light coat of body primer to the original adhesive remaining around the rear window opening flange. Let the body primer dry for at least 10 minutes:

- Do not apply glass primer to the body, and be careful not to mix up the glass and body primer sponges.
- *Never touch the primed surfaces with your hands.*

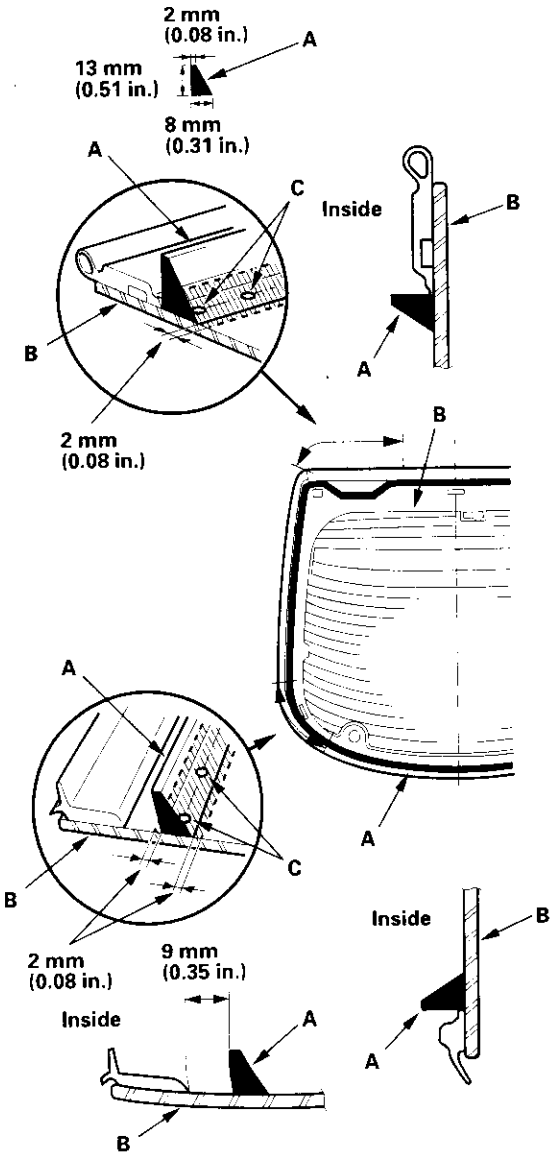
: **Apply body primer here.**



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 rear window (B) as shown. With the printed dots (C) on the rear window as a guide, apply the adhesive to both side portions of the rear window.
Apply the adhesive within 30 minutes after applying the glass primer. Make a slightly thicker bead at each corner.



(cont'd)

Rear Window Replacement (cont'd)

22. Use suction cups to hold the rear window over the opening, align it with the alignment marks you made in step 16, 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.

23. 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.

24. 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.

25. Reinstall all remaining removed parts.

    NOTE: Advise the customer not to do the following things for 2 to 3 days:

    - Slam the doors with all the windows rolled up.
    - Twist the body excessively (such as when going in and out of driveways at an angle or driving over rough, uneven roads).

Quarter Glass Replacement

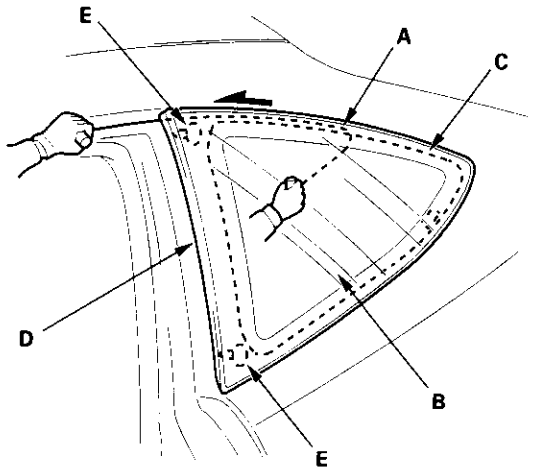
NOTE:
- Put on gloves to protect your hands.
- Use seat covers to avoid damaging any surface.

1. Remove the quarter pillar trim (see page 20-51).

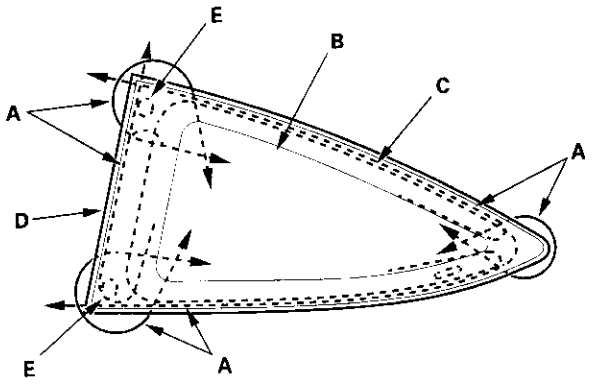
2. Apply protective tape along the inside and outside edges of the body, and along the edge of the headliner. Using an awl, make a hole through the adhesive from inside the vehicle. Push a piece of piece of piano wire through the hole, and wrap each end around a piece of wood.

3. 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:

    - If the quarter glass is to be reinstalled, take care not to damage the molding (D).
    - If the molding is damaged, replace the quarter glass, molding, and clips (E) as an assembly.
    - If any of the clips are broken, the quarter glass can be reinstalled using butyl tape (refer to step 8).



Cutting position:



4. Carefully remove the quarter glass.

5. 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:

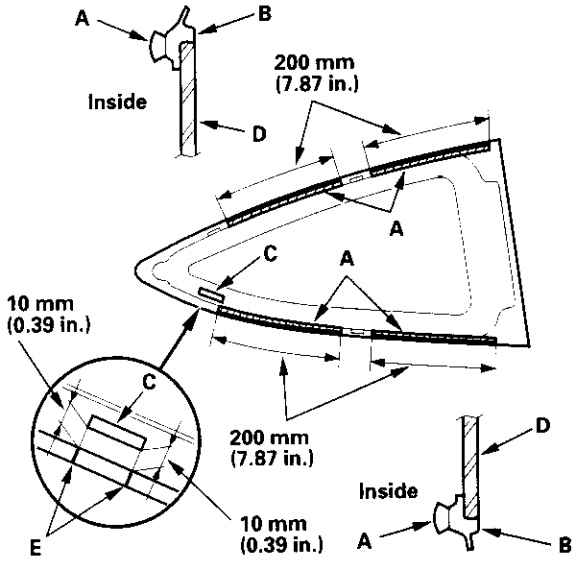
   - Do not scrape down to the painted surface of the body; damaged paint will interfere with proper bonding.
   - Remove the clips and fastener from the body.

6. Clean the body bonding surface with a sponge damaged in alcohol. After cleaning, keep oil, grease, and water from getting on the surface.

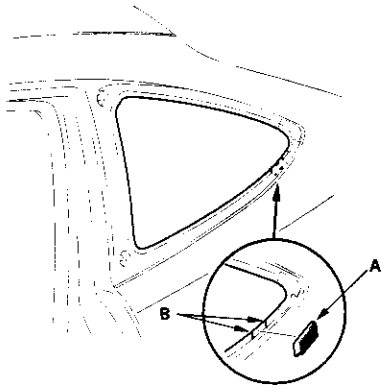
7. If the old quarter glass is to be reinstalled, use a putty knife to scrape off all of the old adhesive, any broken clips, and the fastener from the glass. Clean the inside face and the edge of the glass with alcohol where new adhesive is to be applied. Make sure the bonding surface is kept free of water, oil, and grease.

8. If the old quarter glass is to be reinstalled (and either clip is broken off the molding), apply a light coat of primer (C-100, or equivalent), then apply butyl tape (A) to the molding (B) as shown. Glue the fastener (C) to the inside face of the quarter glass (D):

   - Be sure the fastener lines up with the alignment marks (E).
   - Be careful not to touch the quarter glass where adhesive will be applied.
   - Do not peel the separator off the butyl tape.



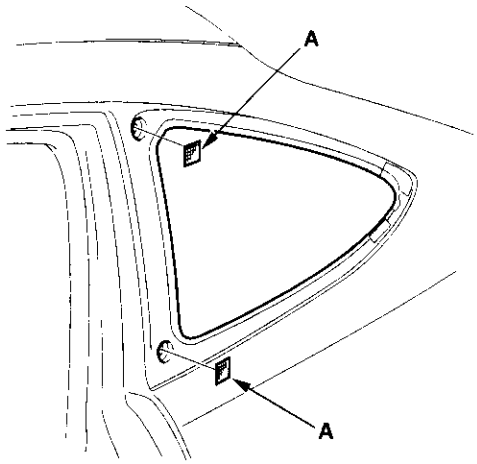
9. If the new quarter glass is to be installed, glue the fastener (A) with adhesive tape (3M 5312, or equivalent) to the body. Be sure the fastener lines up with the alignment marks (B).

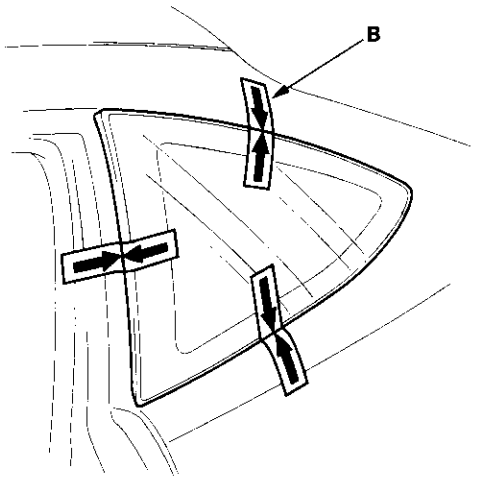


(cont'd)

Quarter Glass Replacement (cont'd)

10. If the old quarter glass is to be reinstalled (and either clip is broken off the molding), seal the body holes with pieces of urethane tape (A). Then set the quarter glass upright in the opening, and make alignment marks (B) across the quarter glass and body with a grease pencil at the three points shown. Be careful not to touch the quarter glass where adhesive will be applied.



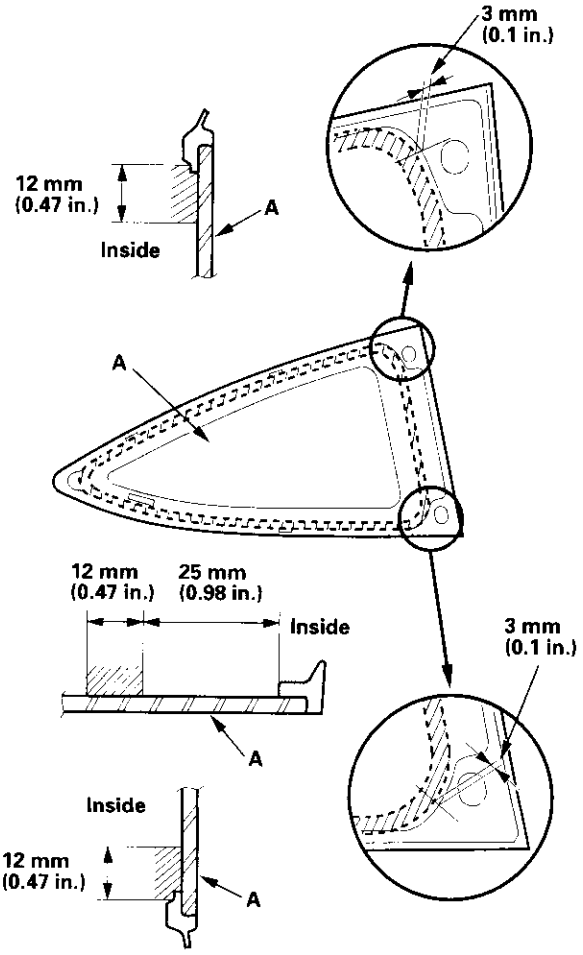


11. Remove the quarter glass.

12. With a sponge, apply a light coat of glass primer to the inside face of the quarter glass (A) as shown, then lightly wipe it off with gauze or cheesecloth:

    - Do not apply body primer to the quarter glass, and do not get the 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.

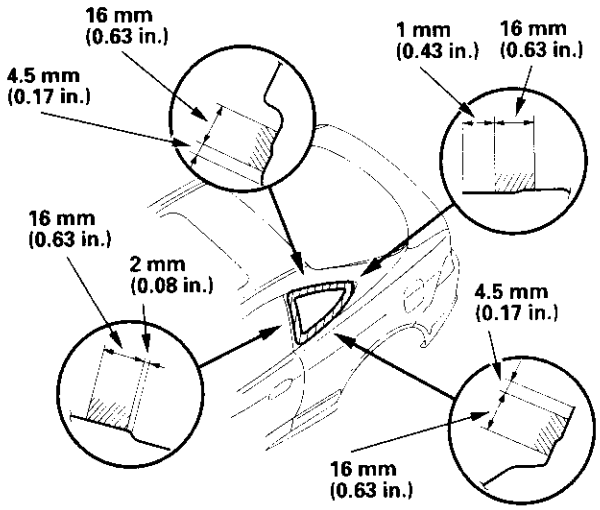
: **Apply glass primer here.**



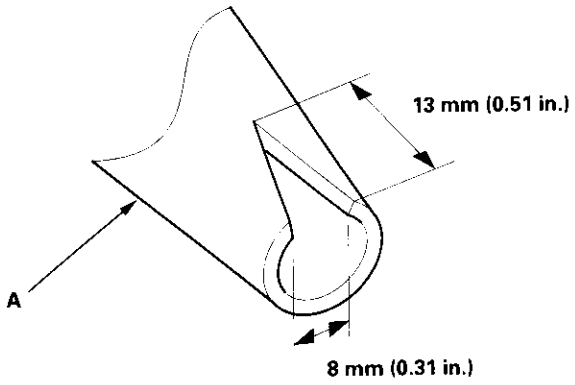
13. With a sponge, apply a light coat of body primer to the original adhesive remaining around the quarter glass opening flange. Let the body primer dry for at least 10 minutes:

    - Do not apply glass primer to the body, and be careful not to mix up the glass and body primer sponges.
    - Never touch the primed surfaces with your hands.
    - Mask off the dashboard before painting the flange.

    : **Apply body primer here.**

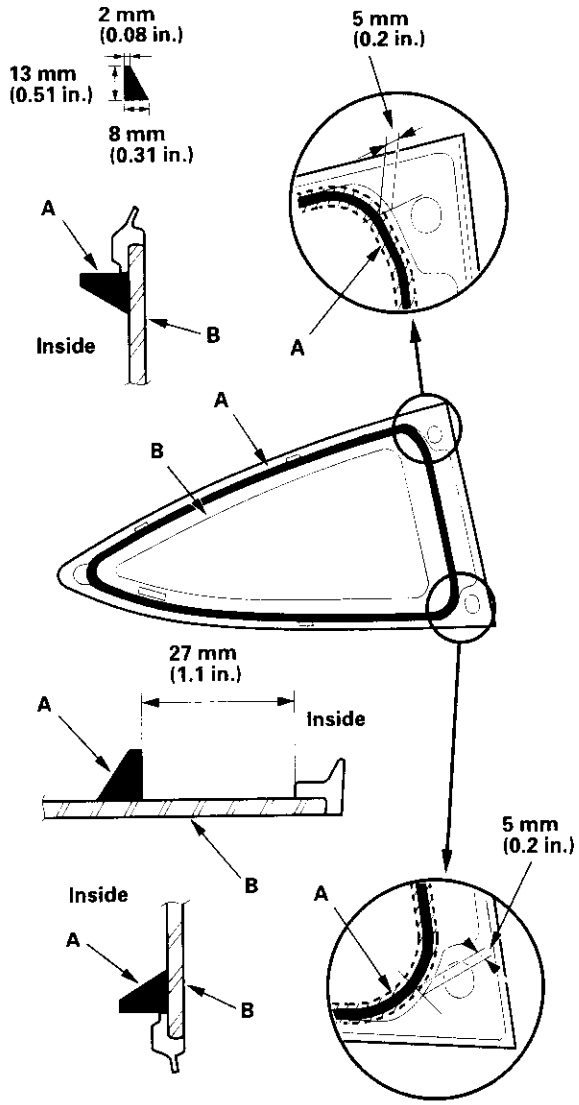


14. Before filling a cartridge, cut a "V" in the end of the nozzle (A) as shown.



15. Park 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 quarter glass (B) as shown:

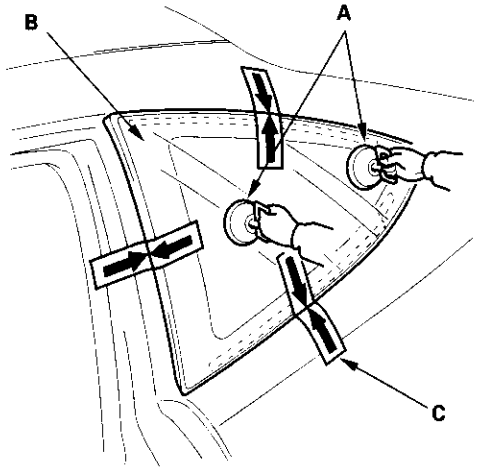
    - After applying the adhesive, peel the separator off the butyl tape.
    - Apply the adhesive within 30 minutes after applying the glass primer. Make slightly thicker bead at each corner.



(cont'd)

Quarter Glass Replacement (cont'd)

16. Use suction cups (A) to hold the quarter glass (B) over the opening, align the clips or the alignment marks (C) made in step 10, 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 adheasive is dry.



17. Scrape or wipe the excess adhesive off with a putty knife or towel. To remove adhesive from a painted surface or the quarter glass, wipe with a soft shop towel damaged with alcohol.

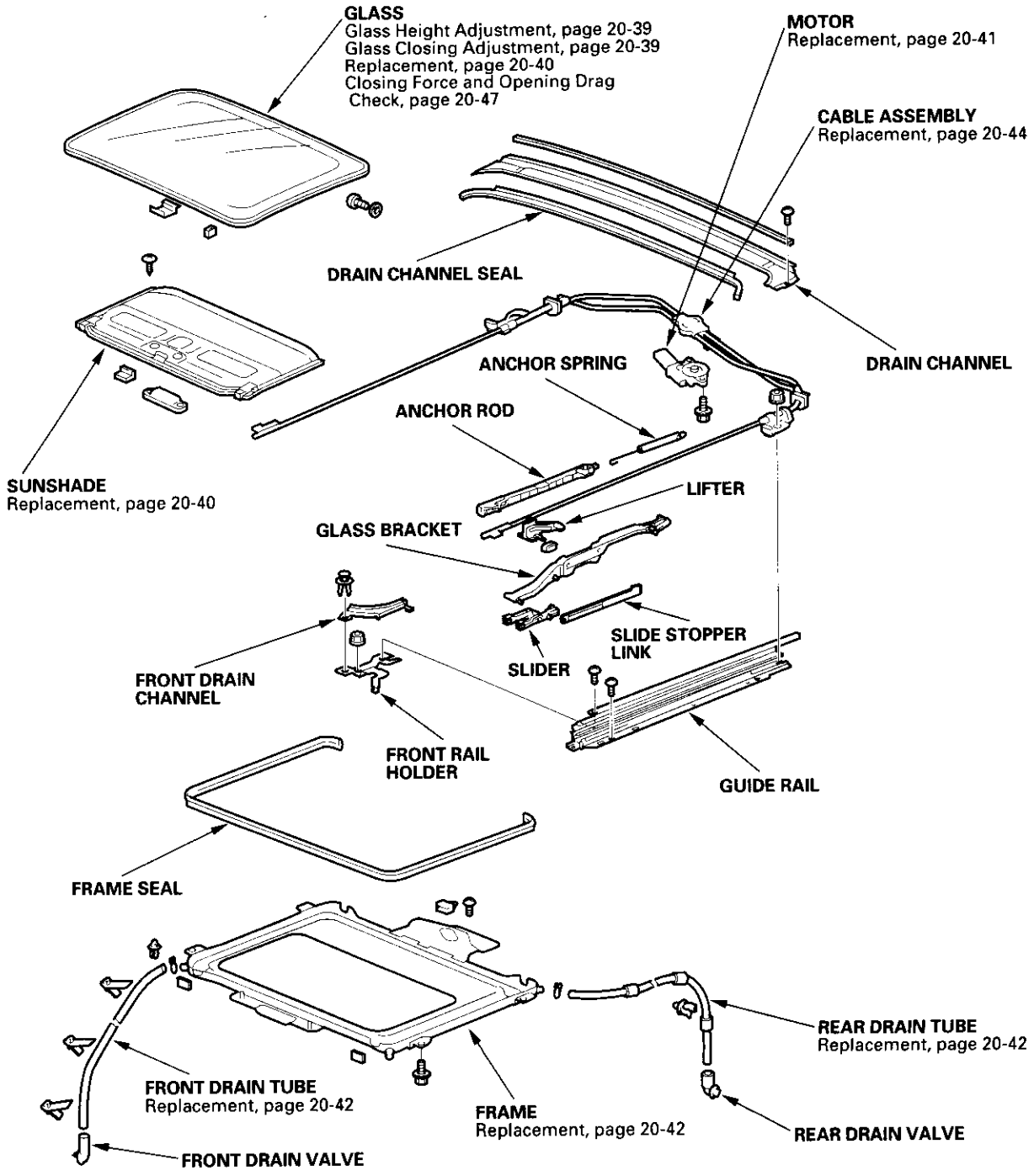
18. Let the adhesive dry for at least 1 hour, then spray water over the quarter glass and check for leaks. Mark the leaking areas and let the quarter glass dry, then seal with sealant. Let the vehicle stand for at least 4 hours after quarter glass installation. If the vehicle has to be used within the first 4 hours, it must be deriven slowy.

19. 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

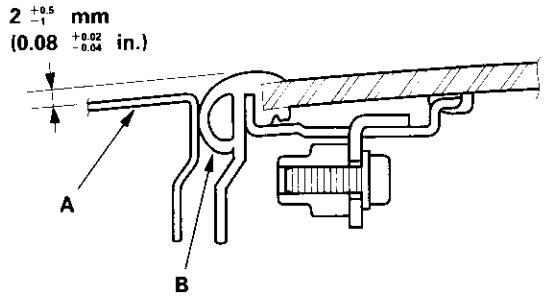


Symptom Troubleshooting Index

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.	
Wind noise	1. Check for excessive clearance between the glass weatherstrip and the roof panel.	
Motor noise	1. Check for a loose motor. 2. Check for a worn gear or bearing. 3. Check for a deformed cable assembly.	
Glass does not move, but motor turns	1. Check for a defective gear or inner cable. 2. Check for foreign material 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 for a run down battery. 4. Check for a defective motor. 5. Check for a faulty relay.	

Glass Height Adjustment

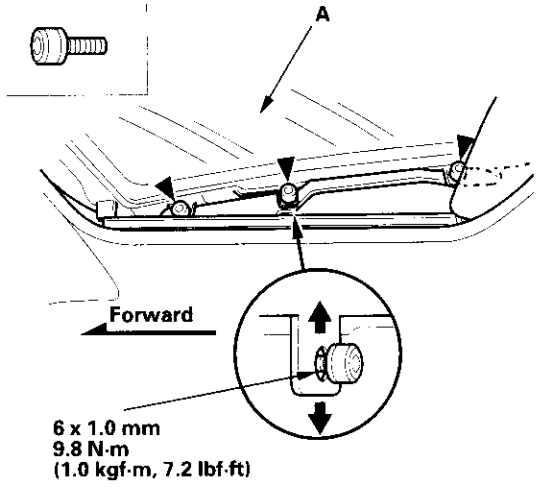
The roof panel (A) should be even with the glass weatherstrip (B), to within 2+0.5/−1 mm (0.08+0.02/−0.04 in.) all the way around. If not, make the following adjustment:



1. Tilt-up the glass.
2. Loosen the bolts on each side, and adjust the glass (A).

Fastener Locations

▶: Bolt, 6

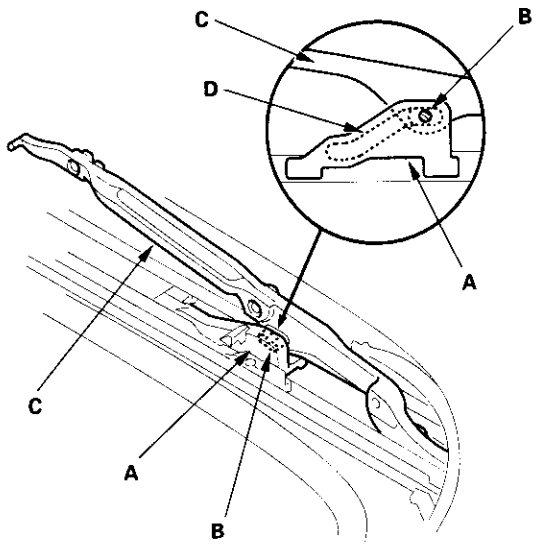


3. If necessary, repeat on opposite side.
4. The side-to-side fit of the glass weatherstrip can be adjusted by loosening the frame mounting bolts and moving the frame right or left and forward or backward by hand (see page 20-42).

Glass Closing Adjustment

Open the glass about a foot, then close it to check where rear edge begins to rise. If it rises too soon and seats too tightly against the roof panel, or too late and does not seat tightly enough, make the following alignment.

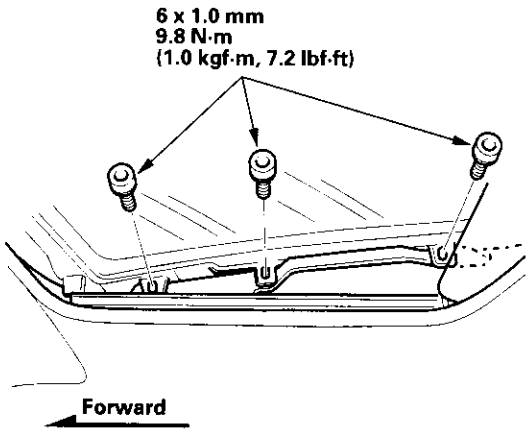
1. Remove these items:
   - Headliner (see page 20-54)
   - Glass (see page 20-40)
   - Motor (see page 20-41)
2. Align the tilt-up position of the lifter (A) on each side. Be sure the bushing (B) on the glass bracket (C) contacts the top end of the groove (D) in the lifter.



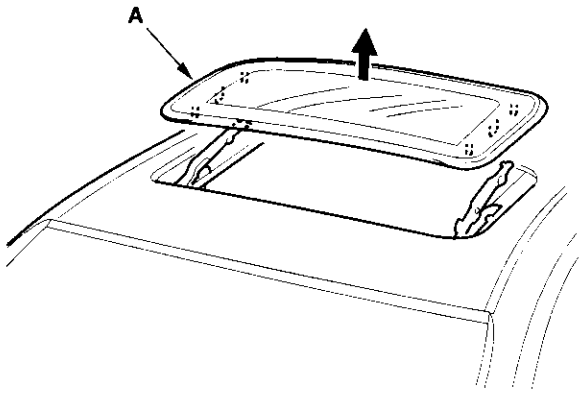
3. Reinstall all removed parts except the headliner.
4. Operate the glass, and check the alignment on the left and right.
5. Check for water leaks. Use free-flowing water from a hose without a nozzle. Do not use high-pressure water.
6. Reinstall the headliner.

Glass Replacement

1. Tilt-up the glass.
2. Remove the bolts from both sides.



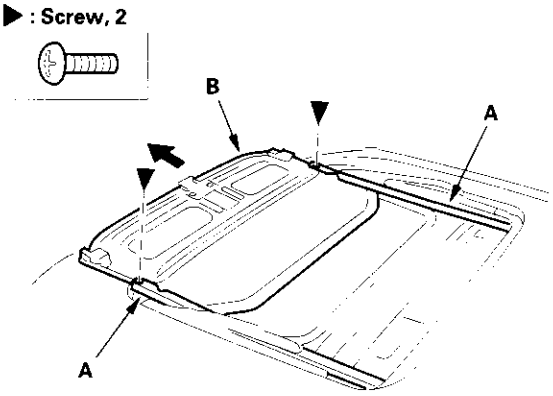
3. Remove the glass (A) by lifting it up. Do not damage the roof panel.



4. Install the glass in the reverse order of removal, and adjust the glass height (see page 20-39).
5. Check for water leaks. Use free-flowing water from a hose without a nozzle. Do not use a high-pressure water.

Sunshade Replacement

1. Remove the glass.
2. Remove the screws from the front edges of both sunshade rails (A).



3. Carefully slide the sunshade (B) forward, then remove it.
4. Install the sunshade in the reverse order of removal, and adjust the glass height (see page 20-39).
5. Check for water leaks. Use free-flowing water from a hose without a nozzle. Do not use a high-pressure water.

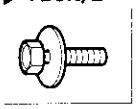
Motor Replacement

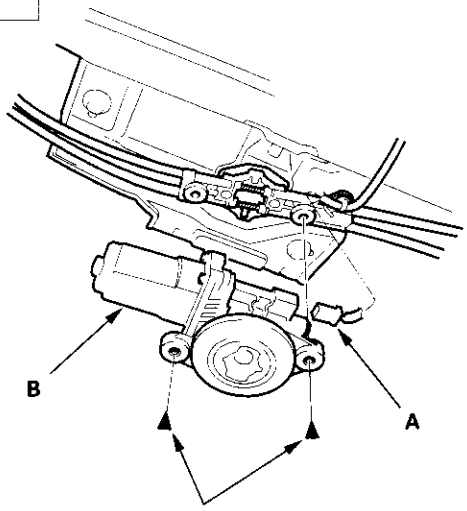
1. Remove the headliner (see page 20-54).

2. Put on gloves to protect your hands. Disconnect the connector (A), and remove the bolts, then remove the motor.

Fastener Locations

▶ : Bolt, 2





6 x 1.0 mm
9.8 N·m
(1.0 kgf·m, 7.2 lbf·ft)

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.

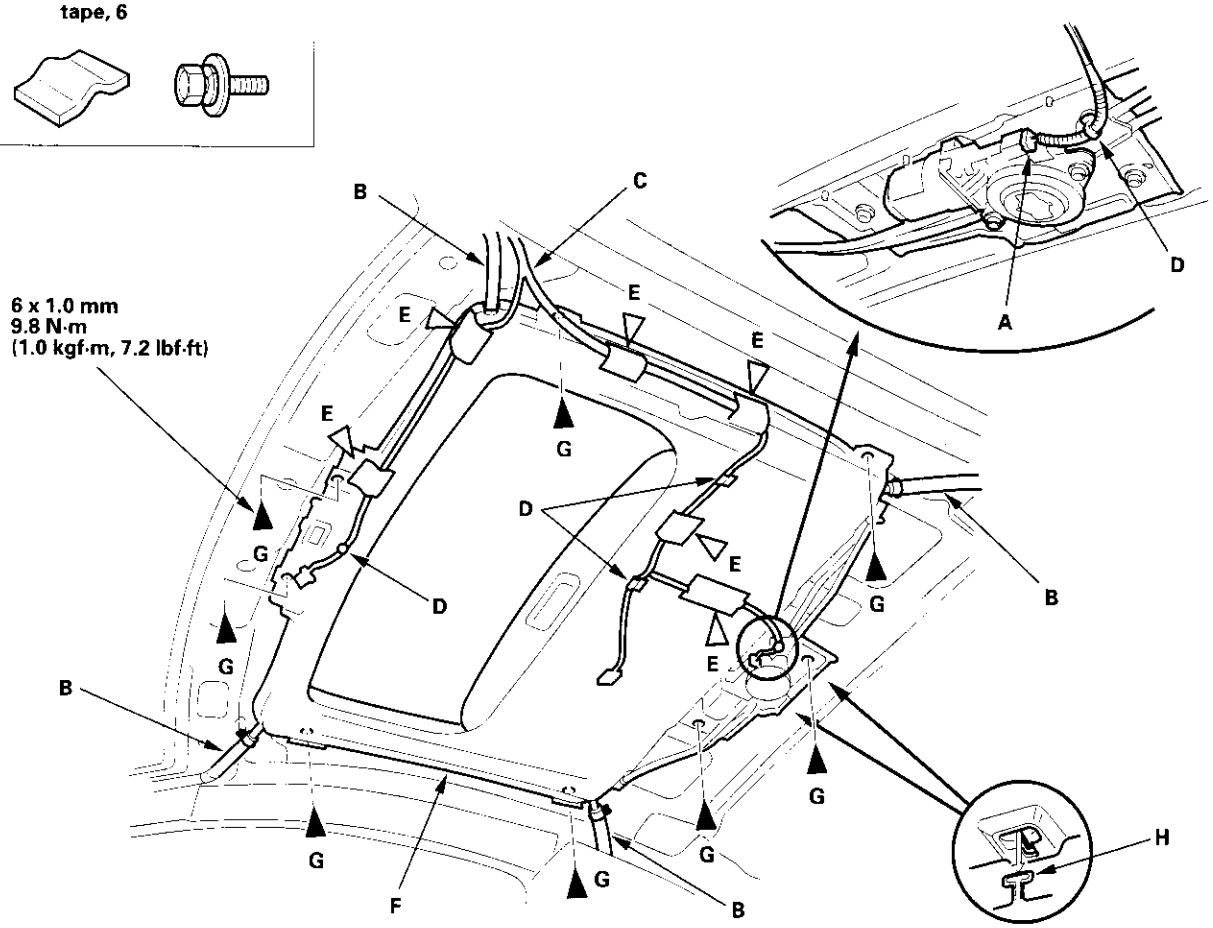
Frame and Drain Tube Replacement

1. Remove these items:
   - Headliner (see page 20-54)
   - Moonroof glass (see page 20-40)

2. Put on gloves to protect your hands. Disconnect the motor connector (A) and drain tubes (B), and remove the interior harness (C) by detaching the harness clips (D) and removing the cushion tape (E).

Fastener Locations

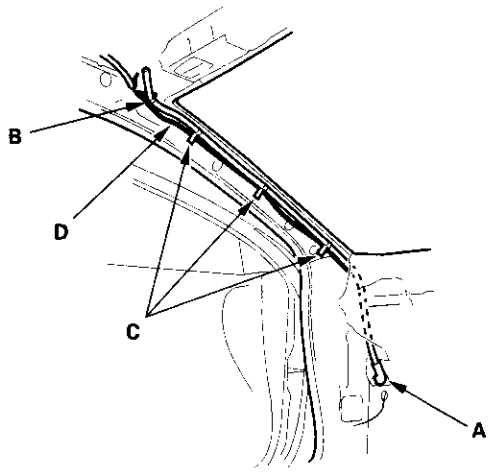
E ▷: Cushion tape, 6 **G ▶: Bolt, 8**



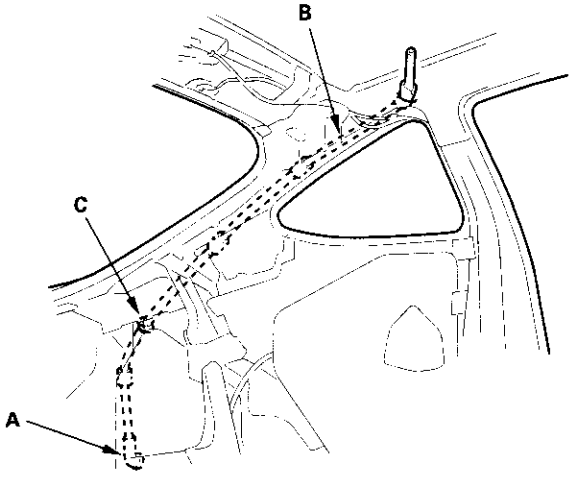
3. With an assistant holding the frame (F), remove the bolts (G), starting at the rear. Release the rear hooks (H) by moving the frame forward, then remove the frame.

4. With the help of an assistant, carefully remove the frame through the door opening. Take care not to scratch the interior trim and body, or tear the seat covers.

5. To remove a front drain valve (A) from the body, remove the kick panel, left or right (see page 20-49). Detach the clips (B, C), and on the left A-pillar, release the interior harness (D) from the clips (C).

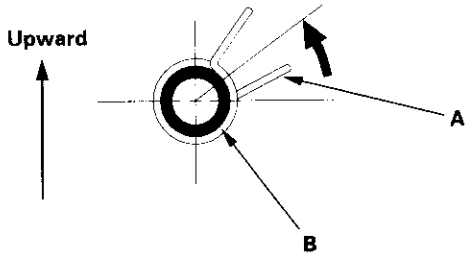


6. To remove a rear drain valve (A) from the cargo area, remove the cargo area side trim panel, left or right (see page 20-52). Release the rear drain tube (B) from the clip (C), and tie a string to the end of the drain tube, then pull the drain tube down out of the C-pillar.



7. 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 connector is plugged in properly.
   - When connecting the drain tube, slide it over the frame nozzle at least 10mm (0.39 in.).
   - Install the tube clip (A) on the drain tube (B) as shown.



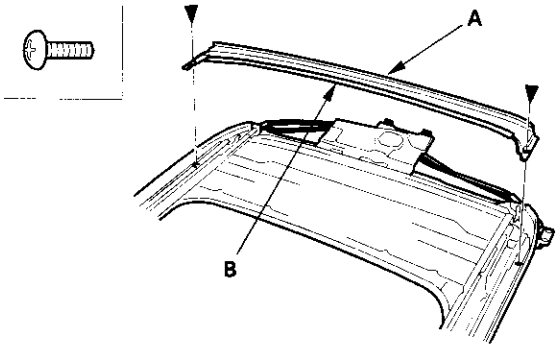
8. Check for water leaks. Use free-flowing water from a hose without a nozzle. Do not use a high-pressure water.

Cable Assembly Replacement

1. Remove the frame (see page 20-42).
2. Remove these items from the frame:
   - Sunshade (see page 20-40)
   - Motor (see page 20-41)
3. Remove the screws, then remove the drain channel (A). Take care not to twist or lift the drain channel seal (B).

Fastener Locations

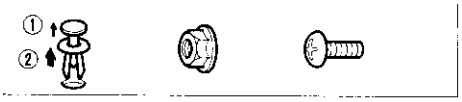
▶: Screw, 2

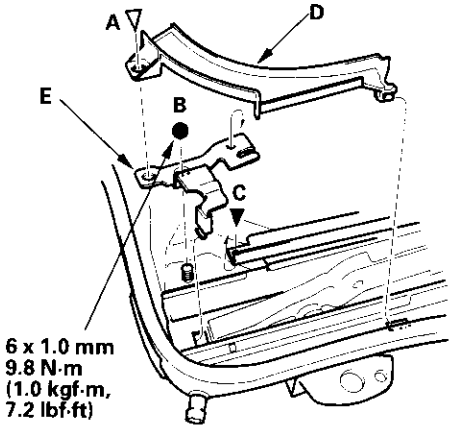


4. From both sides, remove the clips (A), nuts (B), and screws (C), then remove the front drain channels (D) and front rail holders (E).

Fastener Locations

A▷: Clip, 2 B●: Nut, 2 C▶: Screw, 1

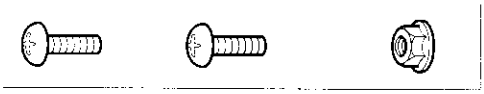


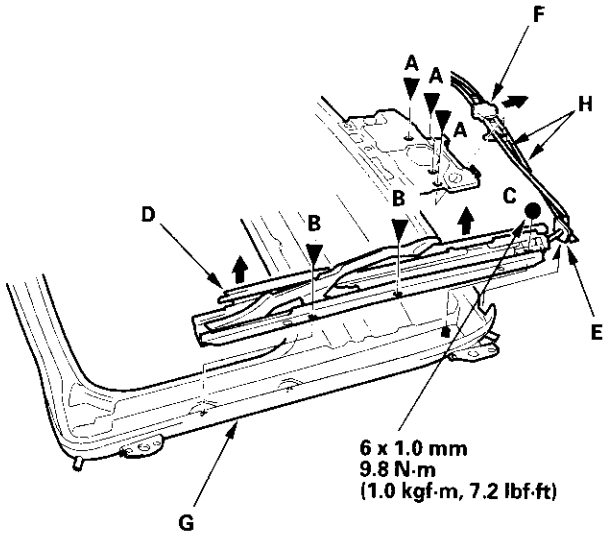


5. Put on gloves to protect your hands. From the motor bracket portion and both guide rail portions, remove the screws (A, B) and nuts (C), then remove the guide rails (D), grommets (E), and cable assembly (F) from the frame (G). Take care not to bend the cable tubes (H).

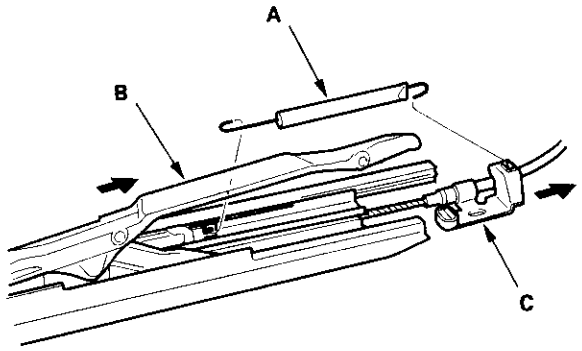
Fastener Locations

A▶: Screw, 3 (Gold) B▶: Screw, 4 C●: Nut, 2

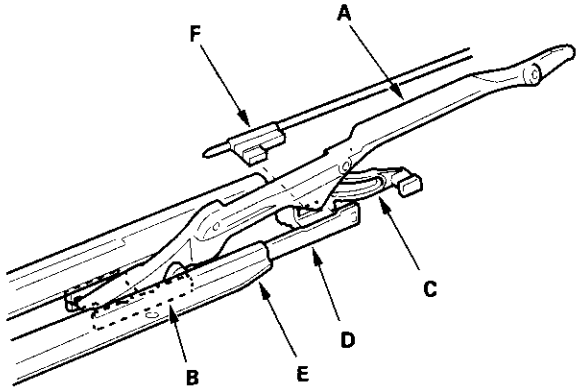




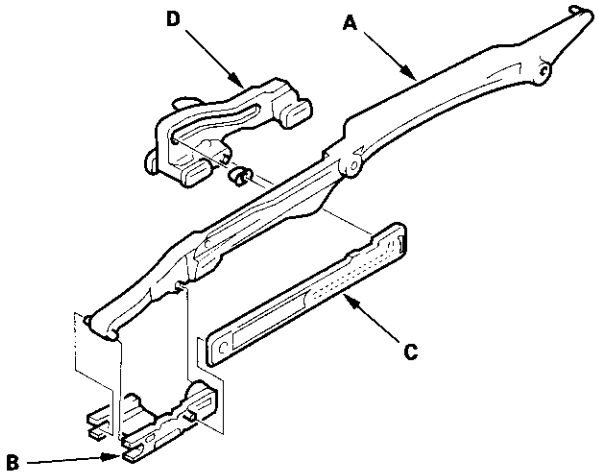
6. From both sides, remove the anchor springs (A) and glass bracket (B), and slide cable assembly (C) rearward.



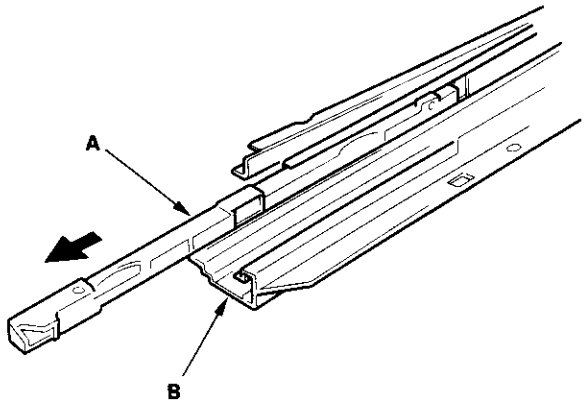
7. Remove the glass bracket (A), slider (B), lifter (C), and slide stop link (D) from both guide rail (E), and remove the inner cable end (F) from the lifter.



8. Separate the glass bracket (A), slider (B), slide stop link (C), and lifter (D).



9. Pull the anchor rod (A) out from the guide rail (B).



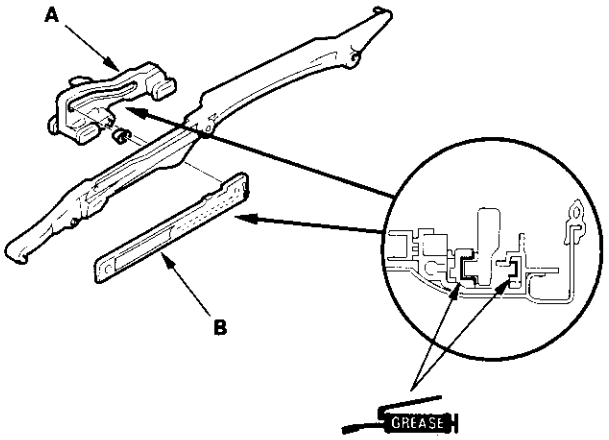
(cont'd)

Cable Assembly Replacement (cont'd)

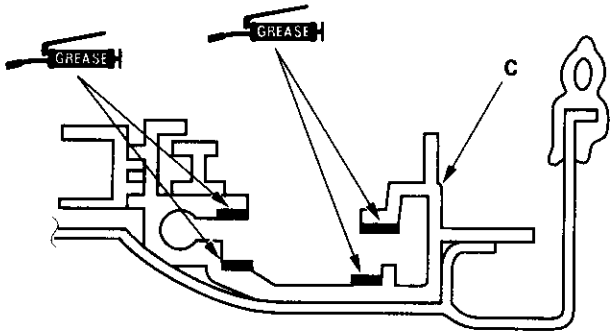
10. Install the cable assembly in the reverse order of removal, and note these items:

- Damaged parts should be replaced.
- Apply multipurpose grease to the groove portions of the lifter (A) and slide stop link (B) and to the sliding portions of the guide rail (C) indicated by the arrows.
- After reinstalling the cable assembly (D) on the frame (E), fill the groove in both grommets (F) with sealant (G).
- Check the frame seal.
- When reinstalling the anchor rod (H), insert it into the guide rail (I) by turning the stop (J) 90°.
- Take care not to twist or lift the drain channel seal.
- Before reinstalling the motor, make sure both lifters are parallel, and in the tilt-up position (see page 20-39).
- Before reinstalling the motor, install the frame and glass, then check the opening drag (see page 20-47).

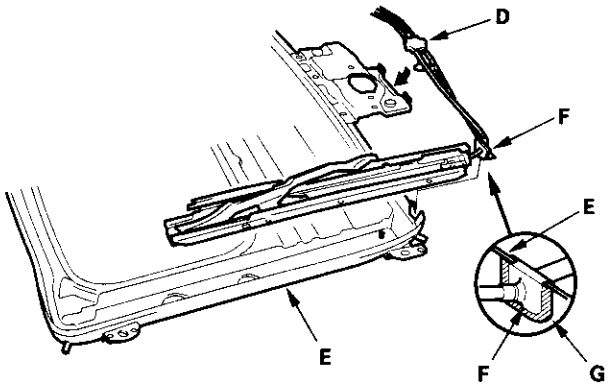
Grease applications:



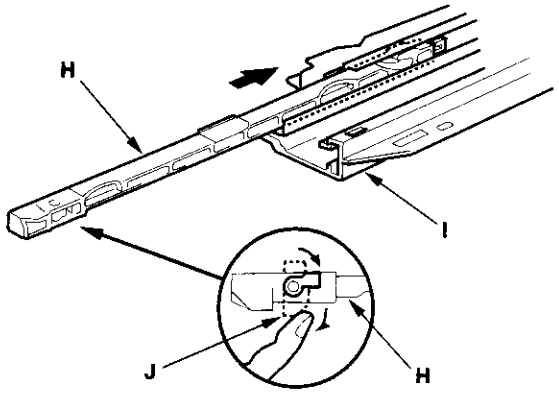
Grease applications:



Sealant applications:



Anchor rod installation:



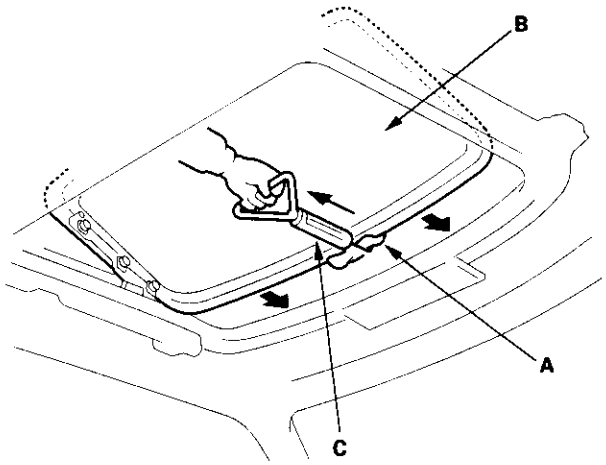
Closing Force and Opening Drag Check

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.

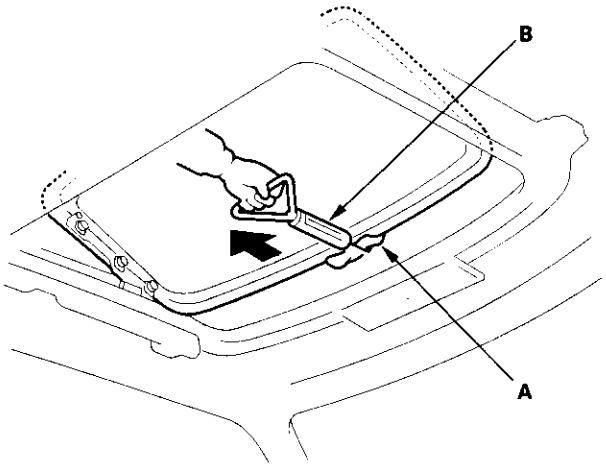
   Closing Force: 200 – 290 N (20 – 30 kgf, 44 – 66 lbf)



3. If the force in not within specification, remove the moonroof motor (see page 20-41), then check these items:

   - The gear position 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 22-122). If the motor fails to run or doesn't turn smoothly, replace it.
   - The opening drag. Go to step 4.

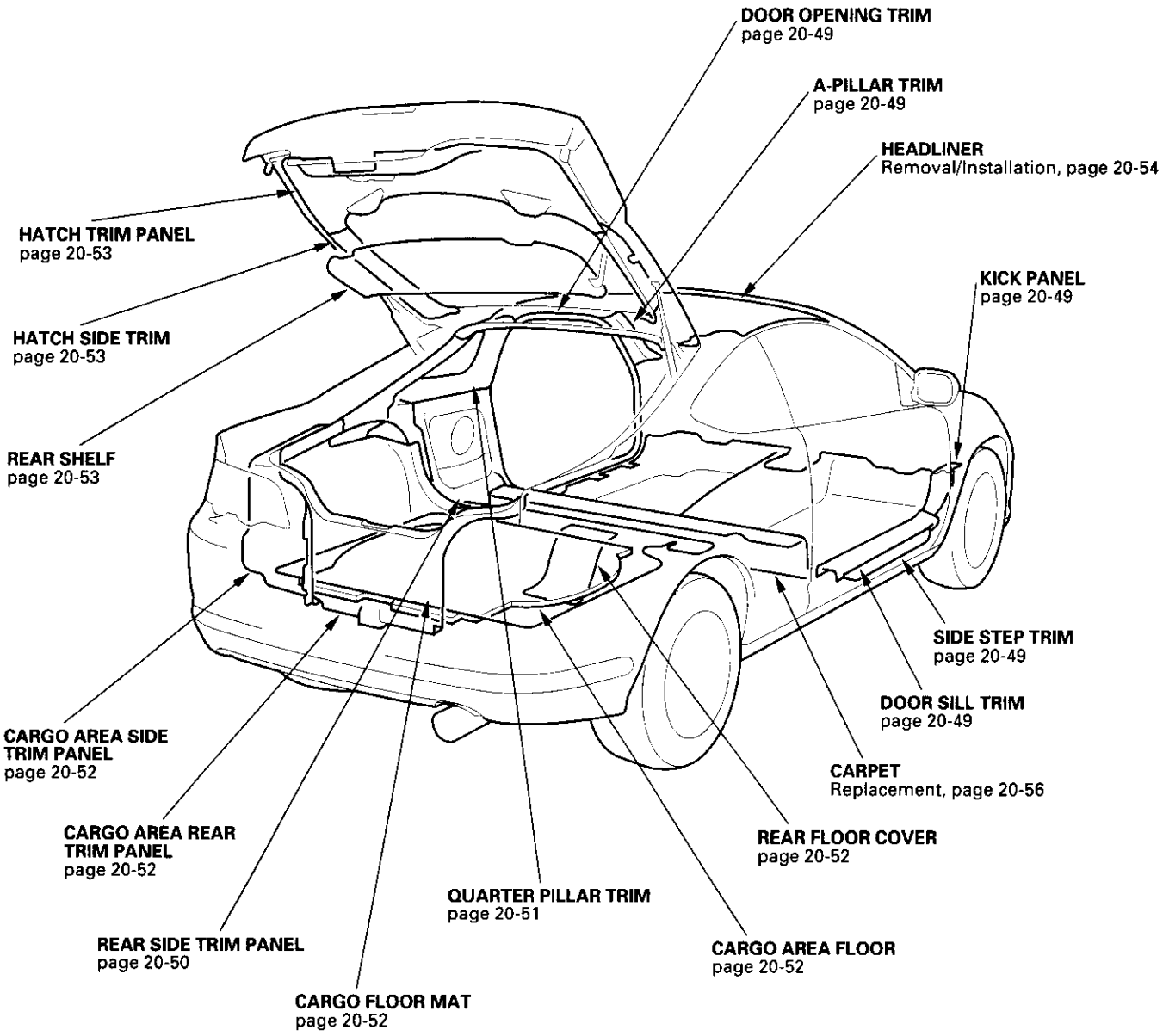
4. Opening drag check: Protect the leading edge of the glass with a shop towel (A). Measure the effort required to open the glass using a spring scale (B) as shown.



5. If the load is over 40 N (4 kgf, 9 lbf), check these items:

   - The side clearance and glass height adjustment (see page 20-39).
   - 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.

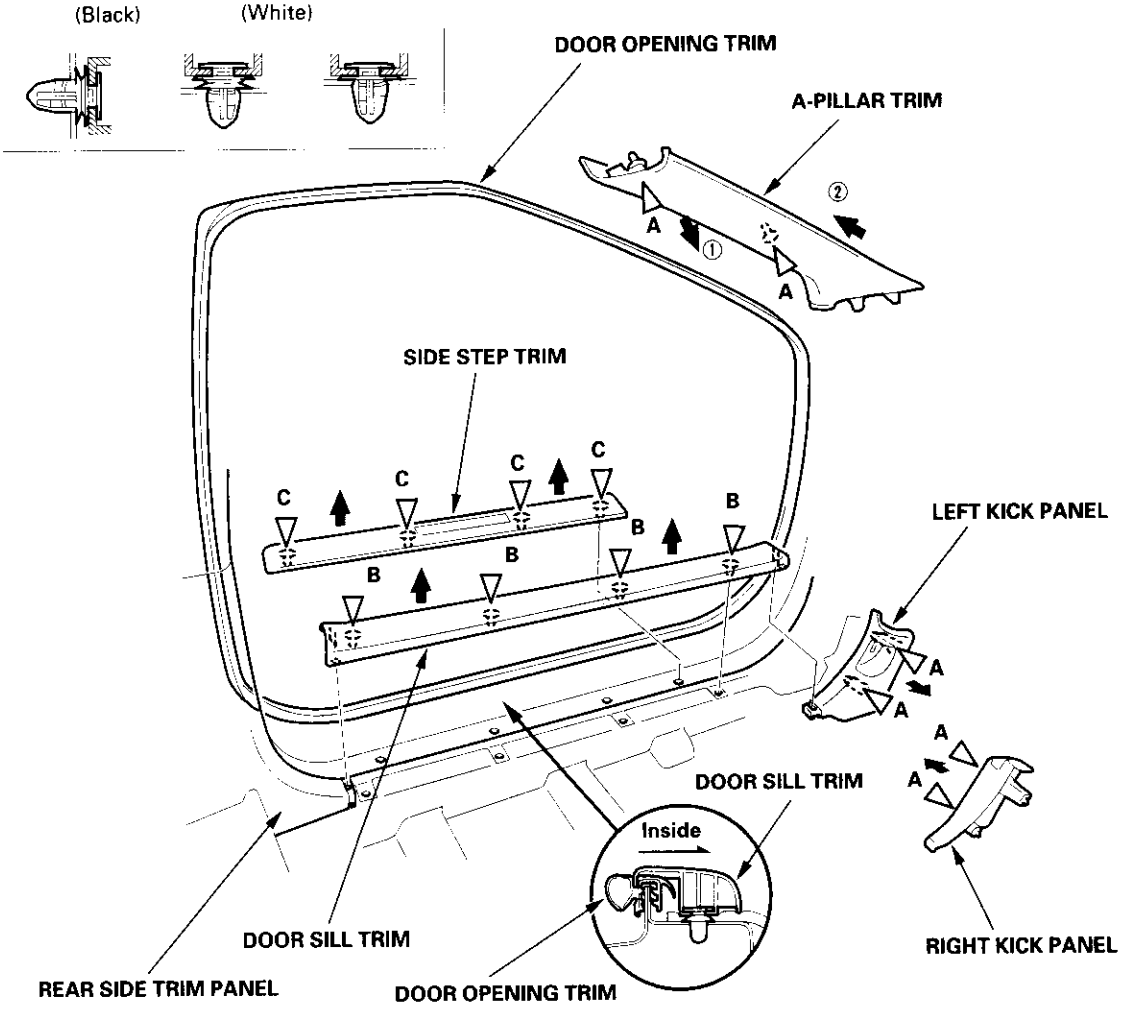
1. Remove the trim as shown.

2. Install the trim in the reverse order of removal, and note these items:

   - Replace any damaged clips.
   - When reinstalling the door opening trim, first align the rear upper corner portion of the trim on the rear upper corner of the door opening flange.

Fastener Locations

A ▷: Clip, 6 (Black) **B ▷: Clip, 4** (White) **C ▷: Clip, 4**



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.

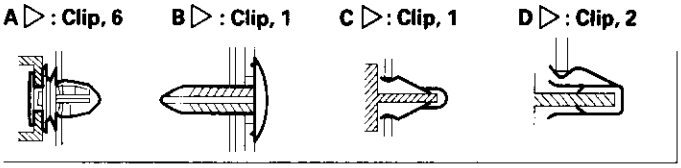
1. Remove these items, and remove the trim as shown:

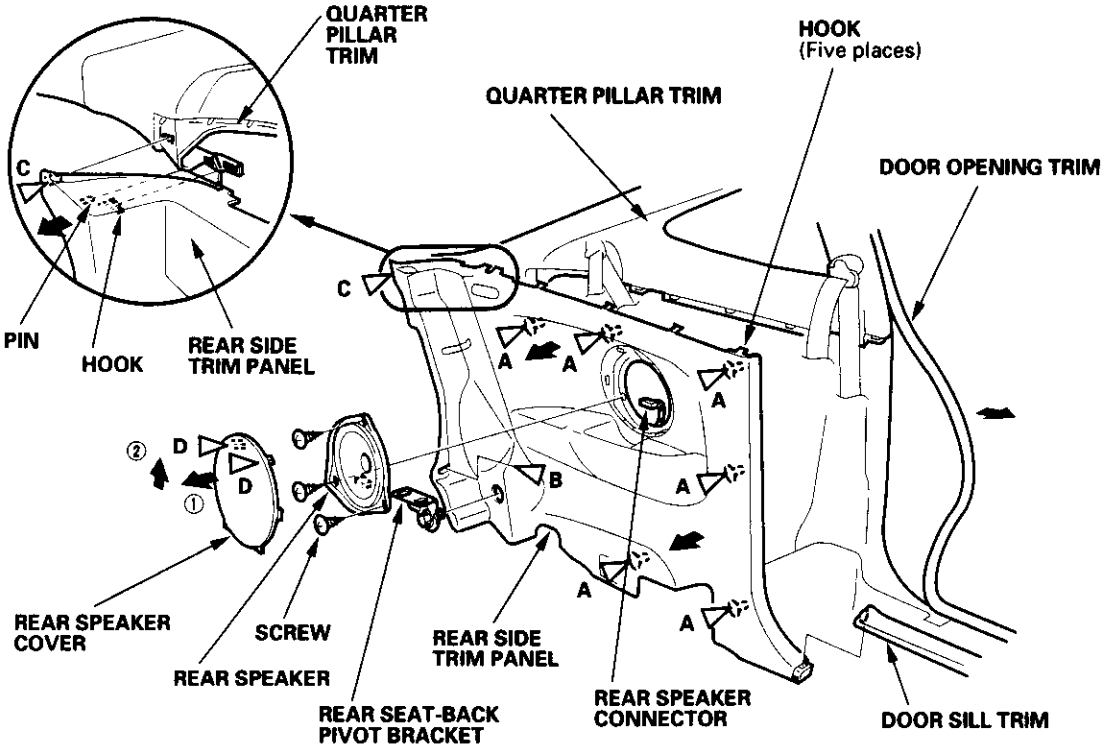
   - Rear seat-back and seat cushion (see page 20-82).
   - Rear seat-back pivot bracket (see page 20-83).
   - Door sill trim (see page 20-49).

2. Install the trim in the reverse order of removal, and note these items:

   - Replace any damaged clips.
   - Make sure the connectors are plugged in properly.
   - When installing the rear side trim panel, make sure there are no pinches in the belt.
   - Apply liquid thread lock to the rear seat-back pivot bolt before installation.

Fastener Locations





Trim Removal/Installation - Quarter Pillar 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.

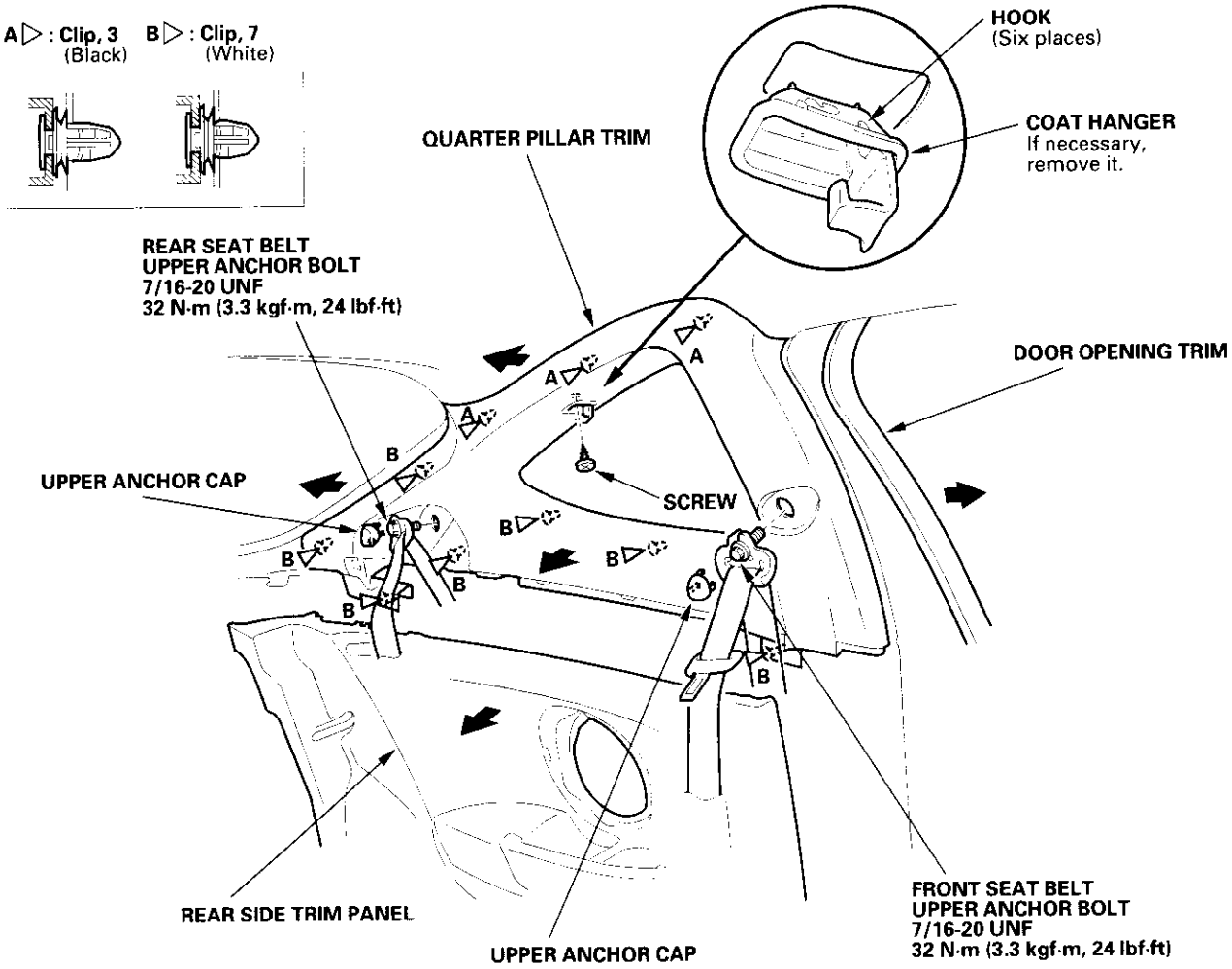
1. Remove the trim as shown.

   - To remove the quarter pillar trim, remove the upper portion of the rear side trim panel as necessary (see page 22-50).
   - To remove the right quarter pillar trim, disconnect the cargo area light connector.

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 installation.
   - When installing the rear side trim panel, make sure there are no pinches in the belt.
   - Before installing the anchor bolts, make sure there are no twists or kinks in the belts.

Fastener Locations



Trim Removal/Installation - Cargo 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.

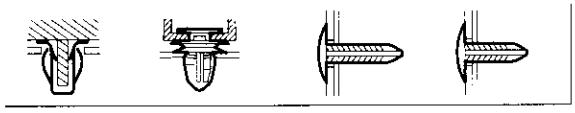
1. Remove the trim as shown:

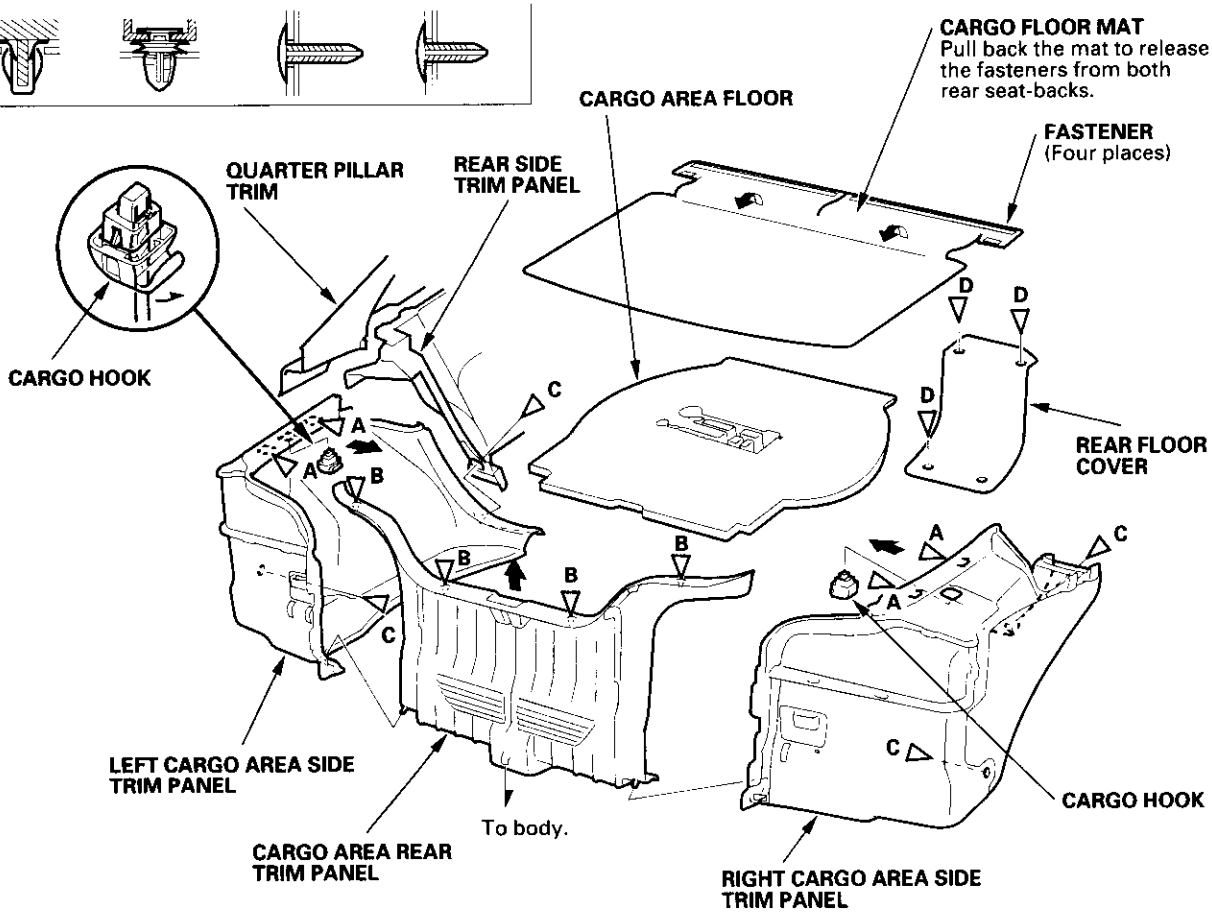
   - To remove the trunk side trim panel, remove the rear side trim panel as necessary (see page 20-50) and quarter pillar trim as necessary (see page 20-51).

2. Install the trim in the reverse order of removal, and replace any damaged clips.

Fastener Locations

A▷: Clip, 4 B▷: Clip, 4 C▷: Clip, 4 D▷: Clip, 3





Trim Removal/Installation - Hatch Area

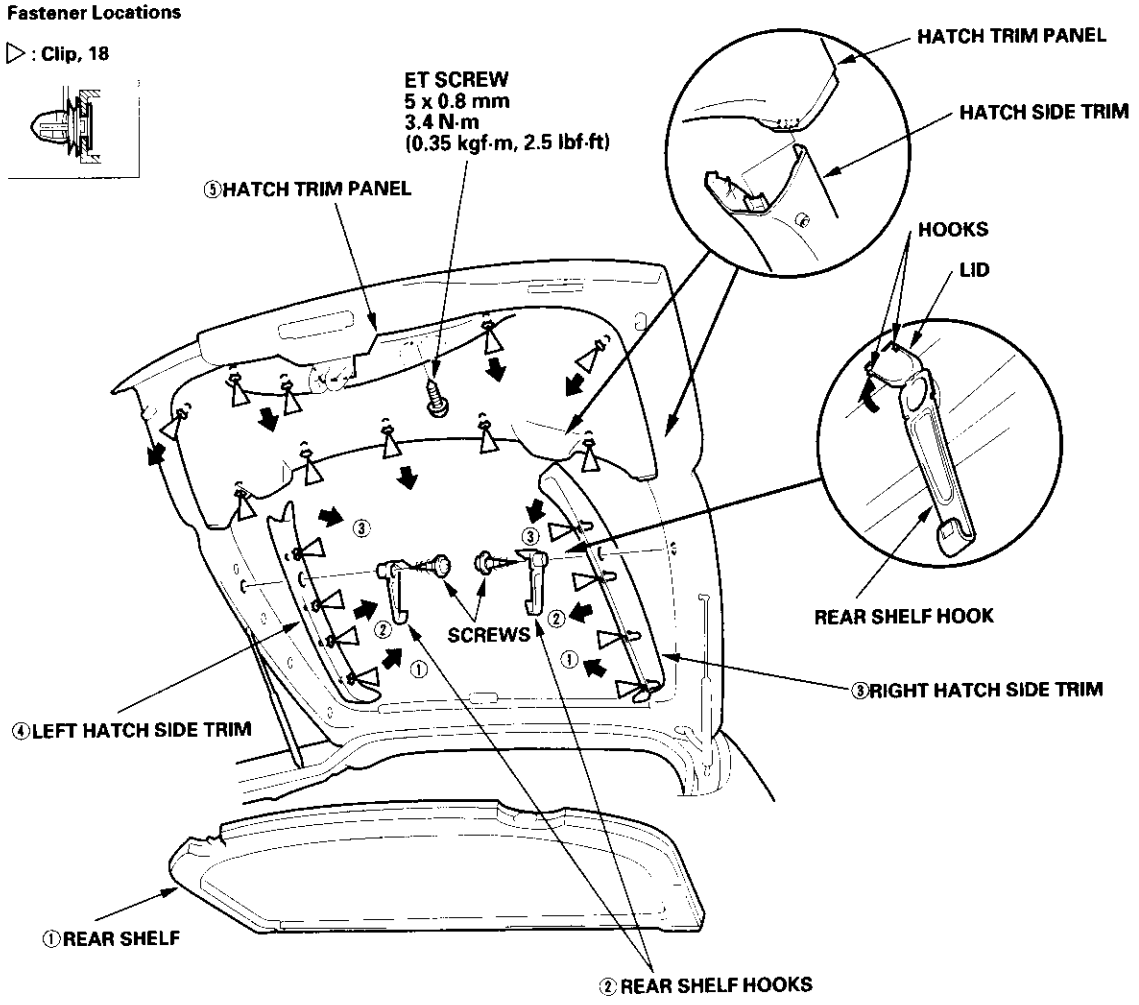
NOTE:
- Put on gloves to protect your hands.
- When prying with a flat-tip screwdriver, wrap it with protective tape to prevent damage.
- Take care not to bend or scratch the trim and panels.

1. Remove the trim in the sequence shown.

   - Rear shelf
   - Rear shelf hooks
   - Right hatch side trim
   - Left hatch side trim
   - Hatch trim panel

2. Install the trim in the reverse order of removal, and note these items:

   - Replace any damaged clips.
   - If the threads on a pull pocket screw are worn out, use an oversized self-tapping ET screw (P/N 90137-S2G-0030) made specifically for this application.



Headliner Removal/Installation

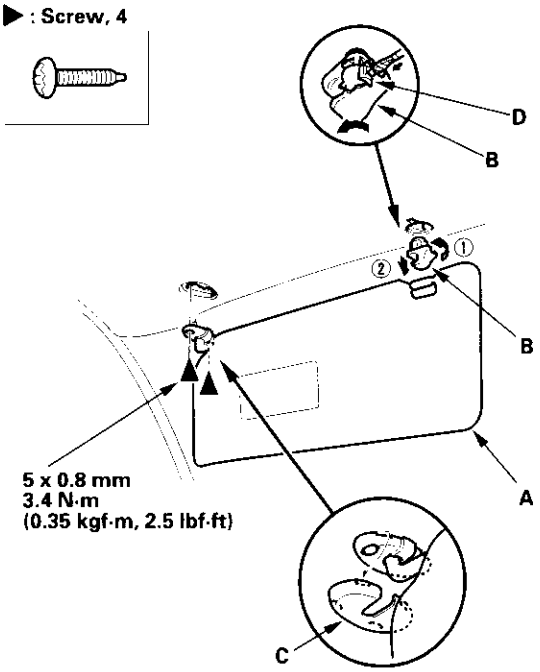
NOTE:
- When prying with a flat-tip screwdriver, wrap it with protective tape to prevent damage.
- Take care not to bend and scratch the headliner.
- Be careful not to damage the dashboard and other interior trim.

1. Remove these items:
   - A-pillar trim, both sides (see page 20-49)
   - Front seat belt upper anchor, both sides (see step 6 on page 23-4)
   - Rearview mirror (see page 20-17)
   - Spotlights with moonroof (see page 22-98)
   - Ceiling light (see page 22-98)

2. Remove the sunvisor (A) and holder (B) from both sides.
   -1 Remove the caps (C).
   -2 Remove the self-tapping ET 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

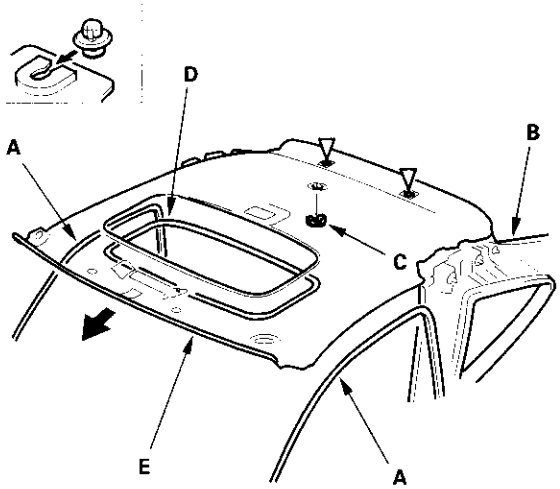
▶ : **Screw, 4**



3. With the help of an assistant, remove the remaining door opening trim (A) from both roof portions, and remove the upper portion of the quarter pillar trim (B) from both sides (see page 20-51).

Fastener Locations

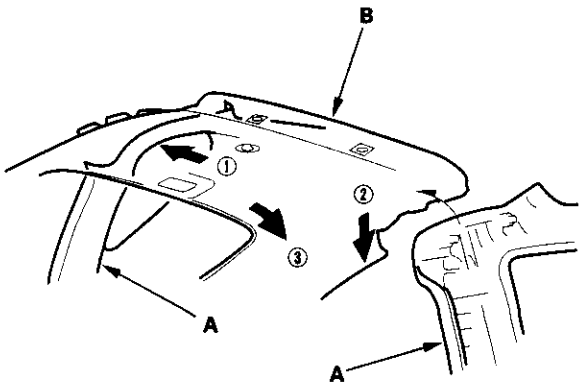
▷ : **Clip, 2**



4. With moonroof: Remove the socket plug (C) and roof trim (D).

5. With the help of an assistant, release the headliner (E) from the clips by sliding it forward.

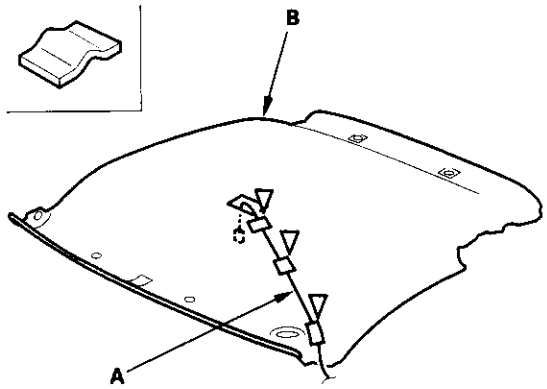
6. With the help of an assistant, while lowering both quarter pillar trim (A), lower the headliner (B) in the sequence shown to release headliner from both quarter pillar trim.



7. Without moonroof: Remove the cushion tapes, then remove the interior harness (A) from the headliner (B).

Fastener Locations

▷ : Cushion tape, 3

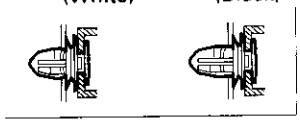


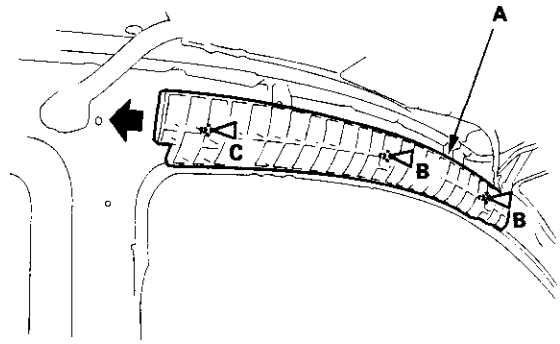
8. Remove the headliner through the hatch opening.

9. Release the roof side pad (A) from the clips (B, C) by sliding it rearward, then remove it.

Fastener Locations

B▷ : Clip, 2 (White) **C▷ : Clip, 1** (Black)



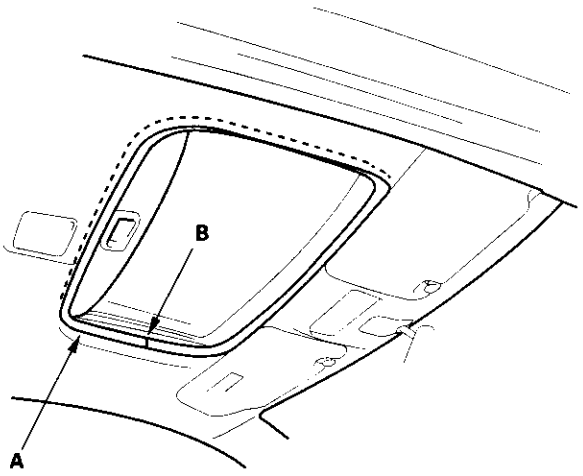


(cont'd)

Headliner Removal/Installation (cont'd)

10. Install the headliner in the reverse order of removal, and note these items:

    - When reinstalling the headliner through the hatch opening, be careful not to fold or bend it. Also, be careful not to scratch the body.
    - Using a clip remover, detach the remaining clips from the body, and replace any damaged clips. Before reinstalling the roof side pad and headliner, install the clips on the pad and headliner, and fit the clips into the holes in the body, then push on the pad or headliner until the clips snap into the place.
    - If the threads on a visor screws are worn out, use an oversized self-tapping ET screw (P/N 90137-S30-0030) made specifically for this application.
    - Check that both sides of the headliner are securely attached to the trim.
    - With moonroof: When reinstalling the roof trim (A), install the joint (B) as shown.



Carpet Replacement

SRS components are located in this area. Review the SRS component locations (see page 23-10) and the precautions and procedures (see page 23-11) 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.

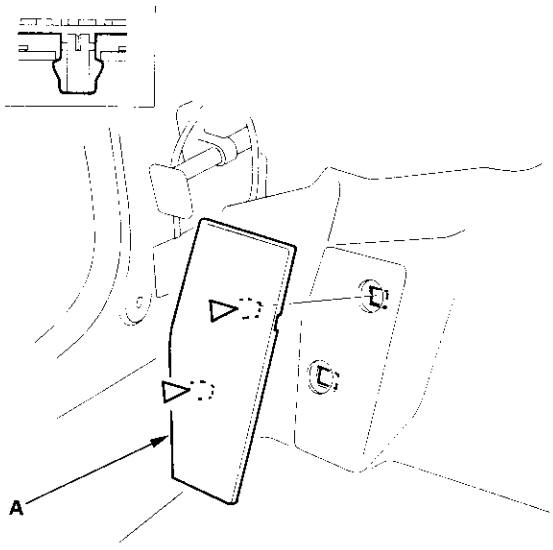
1. Remove these items:

    - Front seats, both sides (see page 20-72)
    - Rear seat cushion (see page 20-82)
    - Center consol (see page 20-58)
    - Door sill trim, both sides (see page 20-49)
    - Kick panel, both sides (see page 20-49)
    - Door opening trim, both sides (see page 20-49)
    - Front seat belt lower anchor, both sides (see step 5 on page 23-4)

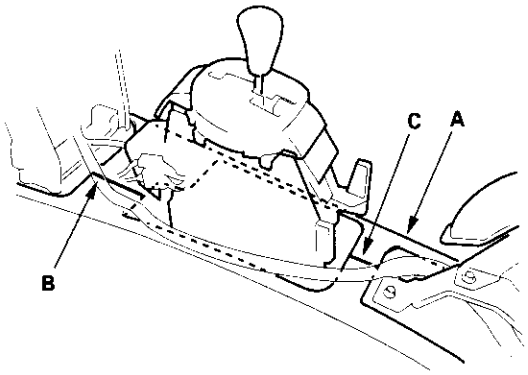
2. Detach the clips, then remove the footrest (A).

Fastener Locations

▷ : **Clip, 2**



3. Using a utility knife, cut the carpet (A) at the shift lever area (B) and parking brake lever area (C) as shown.

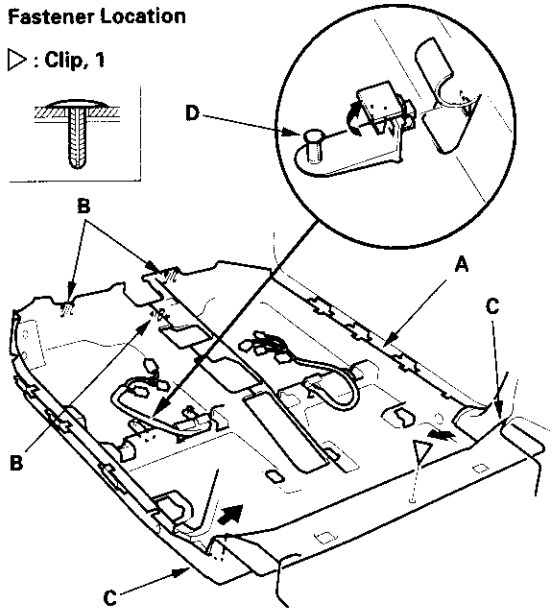


4. Remove the carpet (A).

   –1 Remove the clip.
   –2 Release the fasteners (B), then pull back the carpet from under the dashboard.
   –3 Remove the front lower portions of both rear side trim panels (C) as necessary.
   –4 Pull the carpet out from both rear side trim panels.
   –5 If necessary, remove the floor mat holders (D).

Fastener Location

▷ : 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 at the shift lever and parking brake lever with wire ties.
   - When installing new carpet, cut the carpet at the shift lever and parking brake lever. After installing the new carpet, reattach the cut areas with wire ties.

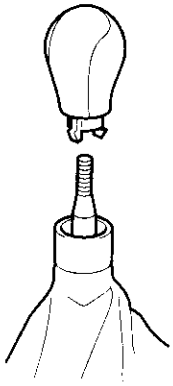
Center Console Removal/Installation

SRS components are located in this area. Review the SRS component locations (see page 23-10) and the precautions and procedures (see page 23-11) in the SRS section before performing repairs or service.

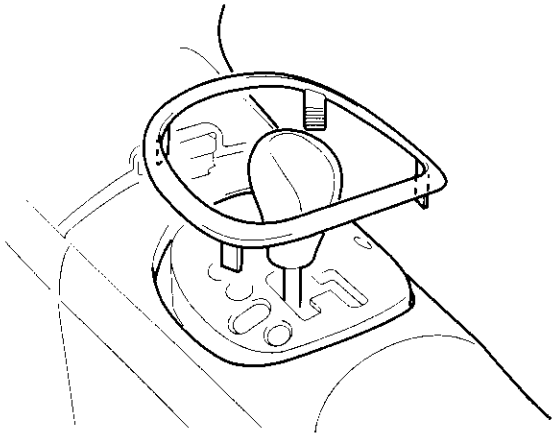
NOTE:
- When prying with a flat-tip screwdriver, wrap it with protective tape to prevent damage.
- Take care not to scratch the front seat, dashboard, and related parts.

1. Remove the dashboard center lower cover (see page 20-63).

2. M/T model: Remove the shift knob.



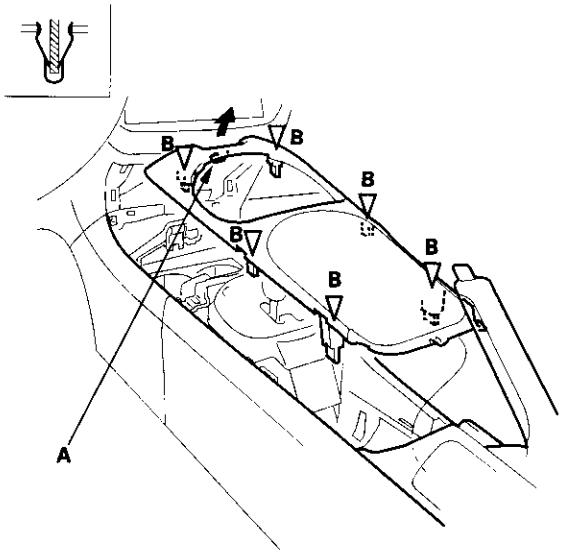
3. A/T model: Remove the shift indicator trim ring.



4. Detach the clips, and release the hook (A) by pulling the center console trim (B) up, then remove it. A/T model is shown, M/T model is similar.

Fastener Locations

▷ : **Clip, 6**

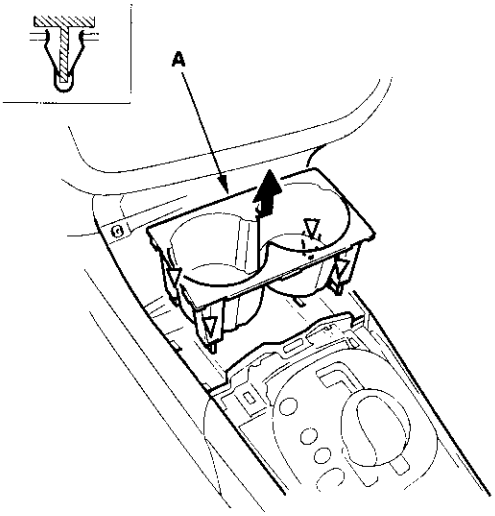


5. Open the console box lid.

6. Detach the clips by pulling the console beverage holder (A) up by hand, then remove it.

Fastener Locations

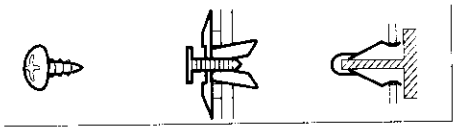
▷ : **Clip, 4**

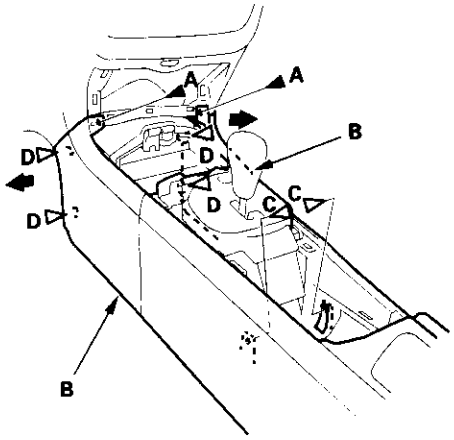


7. Remove the screws (A) from both console side trim (B), and remove the clips (C) from inside of the console. Then detach the front clips (D) by pulling the trim outward.

Fastener Locations

A▶ : Screw, 2 C▷ : Clip, 2 D▷ : Clip, 4

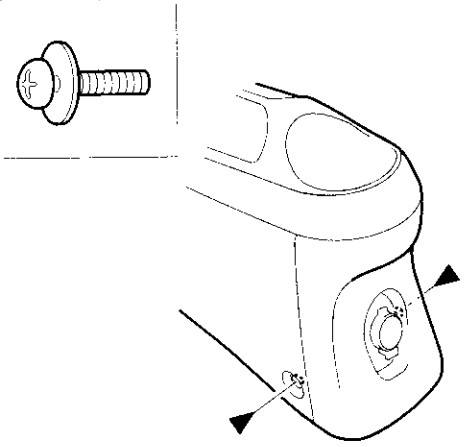




8. Remove the screws from rear end of the console.

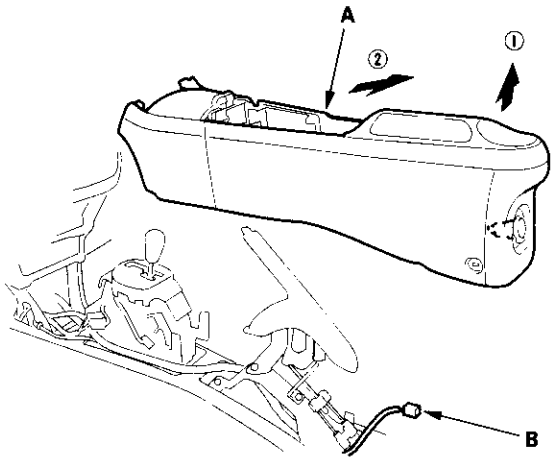
Fastener Locations

▶ : Screw, 2



9. Remove the center console (A).

–1 Close the console lid.
–2 Lift up the rear of the console.
–3 Disconnect the accessory power socket connector (B) (for some models).
–4 Pull the console backward to remove it.



10. 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 clip portions into place securely.

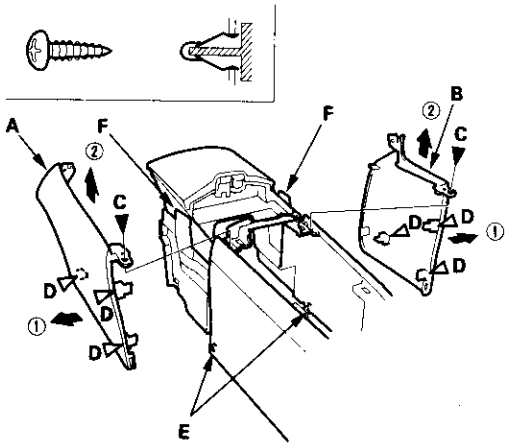
Center Console Box Replacement

NOTE: Take care not to scratch the center console.

1. Remove the center console (see page 20-58).
2. Remove the driver's console side trim (A) and passenger's console side trim (B).
   -1 Remove the screw (C).
   -2 Detach the clips (D) and release the tabs (E).
   -3 Open the console box lid. Pull both trim up to release them from the hooks (F).

Fastener Locations

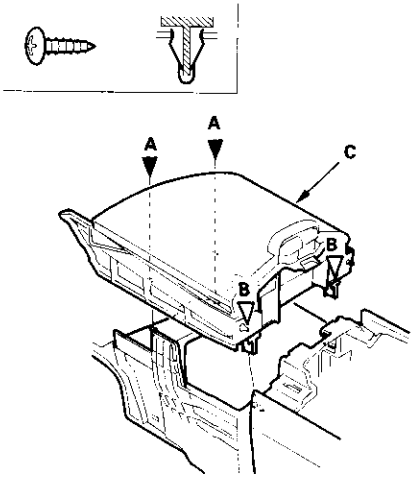
C▶ : Screw, 2 D▷ : Clip, 6



3. Remove the screws (A), and detach the clips (B) by pulling the center console box (C) up, then remove it.

Fastener Locations

A▶ : Screw, 2 B▷ : Clip, 2



4. Install the box in the reverse order of removal, and push the clip portions into place securely.

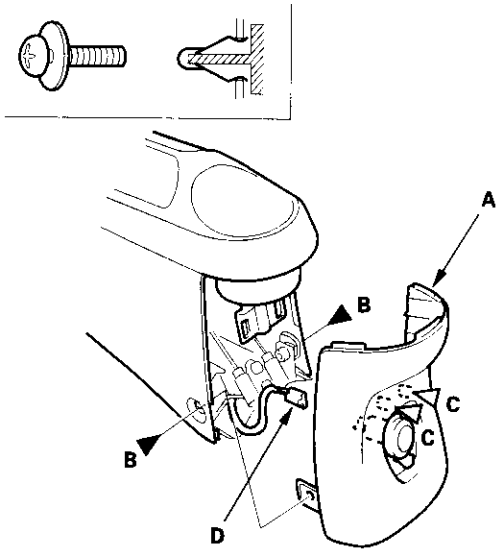
Center Console Rear Cover Replacement

NOTE: Take care not to scratch the center console

1. Remove the center console rear cover (A).
   -1 Remove the screws (B) from both side.
   -2 Detach the clips (C) by pulling the center console rear cover back.
   -3 Disconnect the accessory power socket connector (D) (for some models).

Fastener Locations

B▶ : Screw, 2 C▷ : Clip, 2

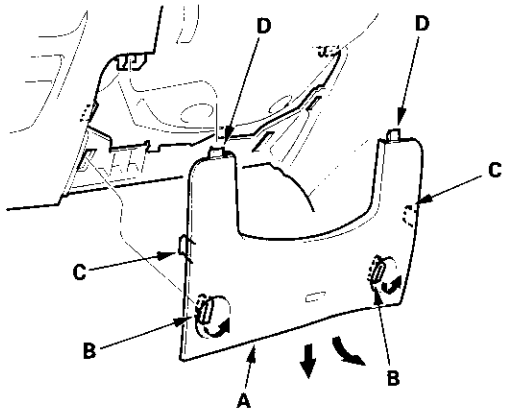


2. Install the cover in the reverse order of removal, and note these items:
   - Replace any damaged clips.
   - Make sure the accessory power socket connecter is plugged properly.
   - Push the clip portions into place securely.

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 Adjust the steering column upward.
   - -2 Turn both lock knobs (B) 90°.
   - -3 Gently pull out the bottom to release the hooks (C).
   - -4 Pull down the panel to release the hooks (D).



2. Install the cover in the reverse order of removal, and push the hook portions into placce securely.

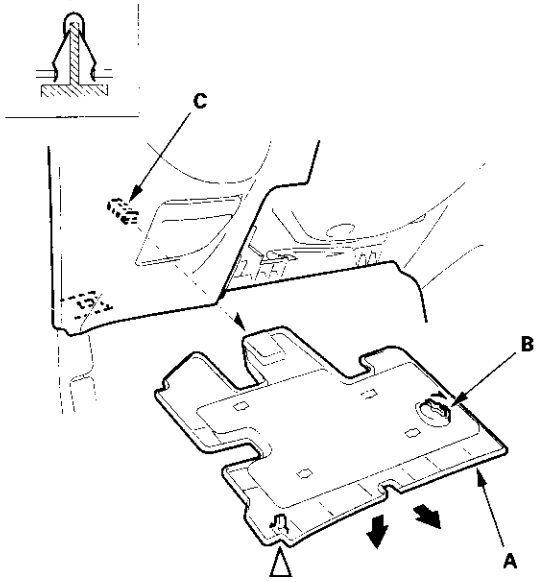
Driver's Dashboard Under Cover Removal/Installation

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.
   - -3 Pull the cover away to release it from the clip (C).

Fastener Location

▷ : **Clip, 1**

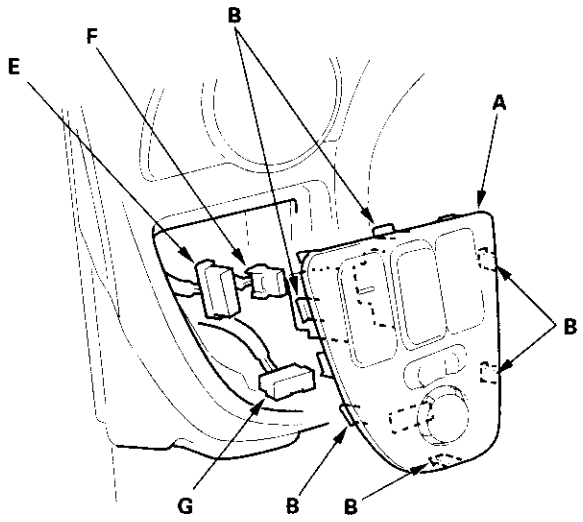


2. Install the cover in the reverse order of removal, and push the clip portions into place securely.

Driver's Switch 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. Gently pry up on the driver's switch panel (A) to release the hooks (B), then pull out the panel.



2. If equipped, disconnect the cruise control main switch connector (E), moonroof switch connector (F), and power mirror switch connector (G), then remove the panel.

3. Install the panel in the reverse order of removal, and note these items:

   - Make sure each connector is plugged in properly.
   - Push the hook portions into place securely.

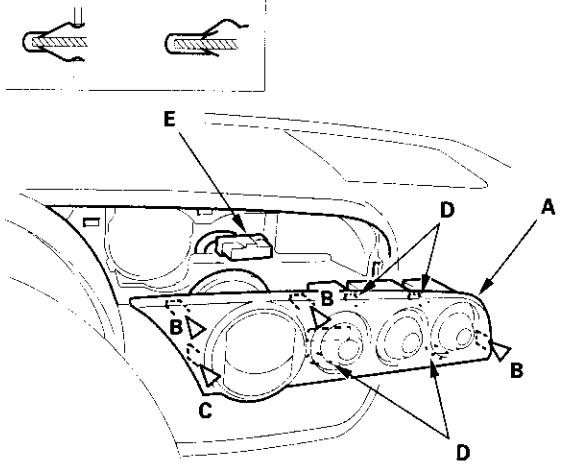
Heater Control Panel Removal/ Installation

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. Gently pry up on the heater control panel (A) to detach the clips (B, C) and to release the hooks (D), then pull out the panel.

Fastener Locations

B▷: Clip, 3 C▷: Clip, 1

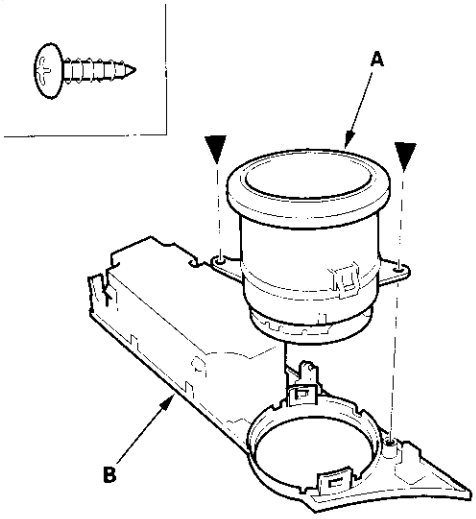


2. Disconnect the climate control unit connector (E), then remove the panel.

3. If necessary, remove the screws securing the driver's center vent (A), then separate it from the heater control panel (B).

Fastener Locations

▶ : Screw, 2



4. Install the panel in the reverse order of removal, and note these items:

   - Make sure the climate control unit connector is plugged in properly.
   - Push the clip and hooks portions into place securely.

Dashboard Center Lower Cover Removal/Installation

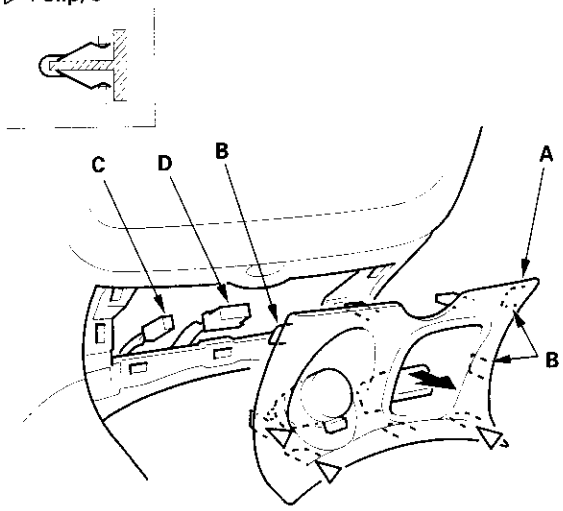
NOTE:
- When prying with a flat-tip screwdriver, wrap it with protective tape, and apply protective tape around the related parts, to prevent damage.
- Take care not to scratch the dashboard and related parts.

1. Remove the dashboard center lower cover (A).

   -1 Gently pull out the cover to release the clips and hooks (B).
   -2 If equipped, disconnect the accessory power socket connector (C) and seat heater switch connector (D).

Fastener Locations

▷ : Clip, 3



2. Install the cover in the reverse order of removal, and note these items:

   - If equipped, make sure the accessory power socket connector and seat heater switch connector are plugged in properly.
   - Push the clip and hook portions into place securely.

Center 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. Remove the dashboard center lower cover (see page 20-63).

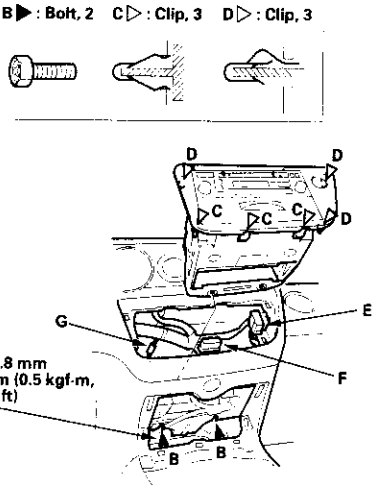
2. Make sure you have the anti-theft code for the radio, then write down the frequencies for the preset buttons.

3. Remove the center panel (A).

   -1 Remove the bolts (B) from the dashboard center lower cover opening.
   -2 Gently pull out along the bottom to release the lower clips (C, D), then along both sides and top to release the remaining clips (C).
   -3 Disconnect the hazard warning switch connector (E), audio unit connector (F), and antenna lead (G).

Fastener Locations

B▶: Bolt, 2 C▷: Clip, 3 D▷: Clip, 3



4. 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.
   - Enter the anti-theft code for the radio, then enter the customer's radio station presets.
   - Push the clip portions into place securely
   - Reset the clock
   - Do the ECM idle learn procedure (see page 11-149).

Passenger's Dashboard Lower Cover Removal/Installation

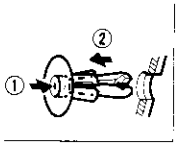
NOTE: Take care not to scratch the dashboard and related parts.

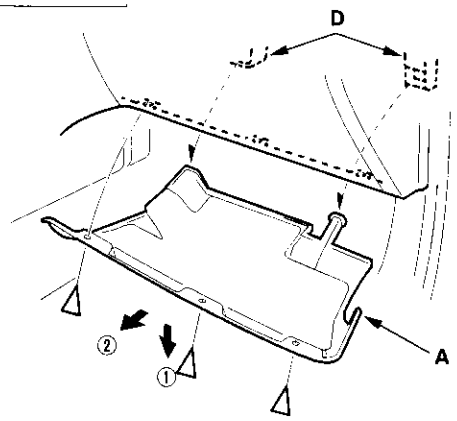
1. Remove the passenger's dashboard lower cover (A).

   -1 Remove the clips.
   -2 Pull down the edge nearest the glove box.
   -3 Pull the cover away to release it from the holders.

Fastener Locations

▷: Clip, 3





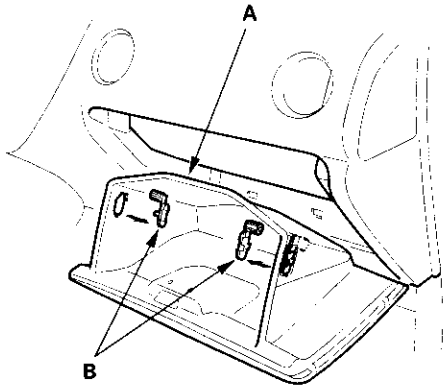
2. Install the cover in the reverse order of removal, and replace any damaged clips.

Glove Box Removal/Installation

SRS components are located in this area. Review the SRS component locations (see page 23-10) and the precautions and procedures (see page 23-11) in the SRS section before performing repairs or service.

NOTE: Take care not to scratch the dashboard and related parts.

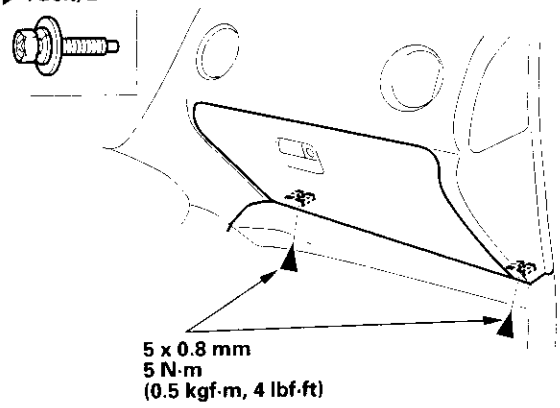
1. Remove the passenger's dashboard lower cover.
2. While holding the glove box (A), remove the glove box stop (B) on each side.



3. Remove the bolts, then remove the glove box.

Fastener Locations

▶: Bolt, 2



4. Install the glove box in the reverse order of removal.

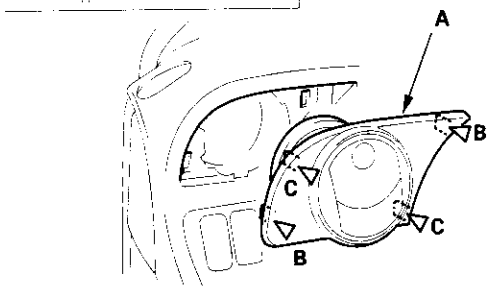
Driver's Side Vent Panel Removal/ Installation

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. Gently pry up on the driver's side vent panel (A) to detach the clips (B, C), then pull out and remove it.

Fastener Locations

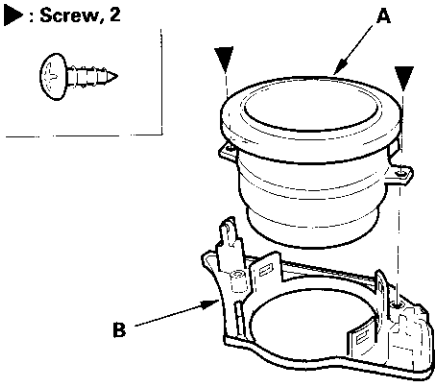
B▷: Clip, 2 **C▷: Clip, 2**



2. If necessary, remove the screws securing the driver's side vent (A), then separate it from the panel (B).

Fastener Locations

▶: Screw, 2



3. Install the panel in the reverse order of removal, and push the clip portions into place securely.

Passenger's Side Vent Removal/ Installation

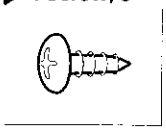
NOTE:
- Put on gloves to protect your hands.
- Take care not to scratch the dashboard and related parts.

1. Remove the glove box (see page 20-65).

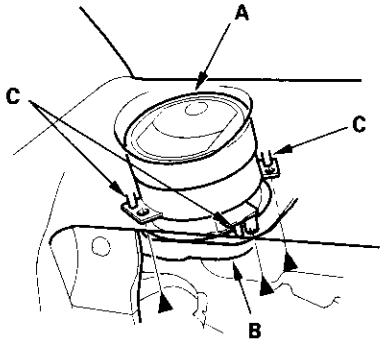
2. Remove the screw securing the passenger's vent (A) and the air conditioner duct (B), and the screws securing the passenger's vent to the dashboard.

Fastener Locations

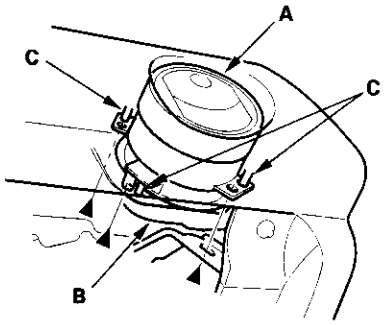
▶ : Screw, 3



Center:



Side:



3. Install the vent in the reverse order of removal, and note these items:

- When installing the vent, wrap its panel surface with tape to prevent damage
- Align the holes in the vent with the pins (C) on the dashboard.

Dashboard Removal/Installation

SRS components are located in this area. Review the SRS component locations (see page 23-10) and the precautions and procedures (see page 23-11) 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 3 minutes before beginning work.

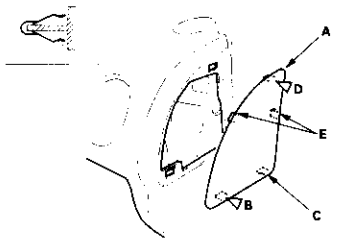
3. Remove these items:

- Center console (see page 20-58)
- Driver's dashboard lower cover (see page 20-61)
- Driver's dashboard under cover (see page 20-61)
- Passenger's dashboard lower cover (see page 20-64)
- Glove box (see page 20-65)
- Kick panels, both sides (see page 20-49)
- A-pillar trim, both sides (see page 20-49)
- Steering column (see page 17-25)

4. From outside of the passenger's door, gently pry up on the bottom of the dashboard side cover (A) to release the lower clip (B) and hook (C), then release the remaining clips (D) and hooks (E) to remove the cover.

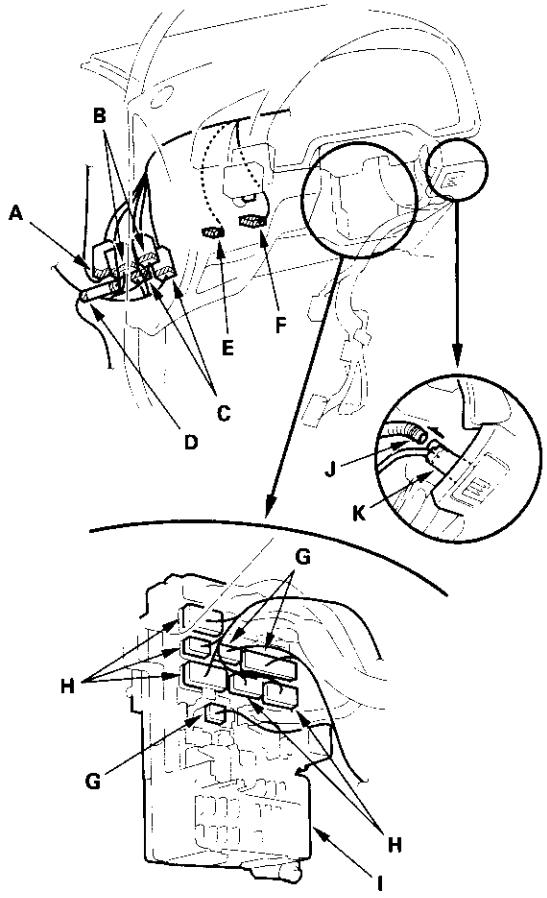
Fastener Locations

B, D▶ : Clip, 2



Driver's side:

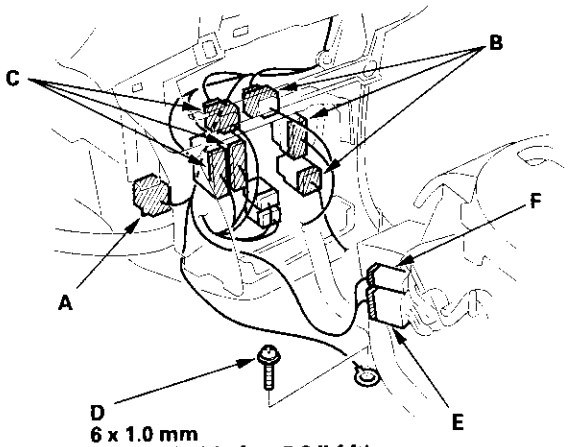
5. From under the dash, disconnect the interior wire harness connector (A), driver's door wire harness connectors (B), wiper sub wire harness connectors (C), antenna lead (D), clutch pedal position switch connector (E) (on M/T model), and brake pedal position switch connector (F), and disconnect the floor wire harness connectors (G) and engine compartment wire harness connectors (H) from the under-dash fuse/relay box (I).



6. Disconnect the air hose (J) from the in-car temperature sensor (K).

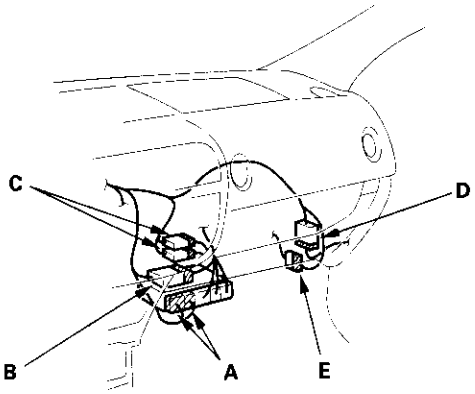
Middle portion:

7. From the driver's side, disconnect the SRS control unit connector (A), floor wire harness connector (B), and engine compartment wire harness connector (C), and using a Torx T30 bit, remove the ground bolt (D). On the A/T model, disconnect the parking pin shift connector (E) and shift lock solenoid connector (F).



Passenger's side:

8. From under the dash, disconnect the ECM/PCM connectors (A), engine wire harness connector (B), A/C sub harness connector (C), passenger's door wire harness connectors (D), and front sensor wire harness connector (E).



9. Detach all of the harness and connector clips.

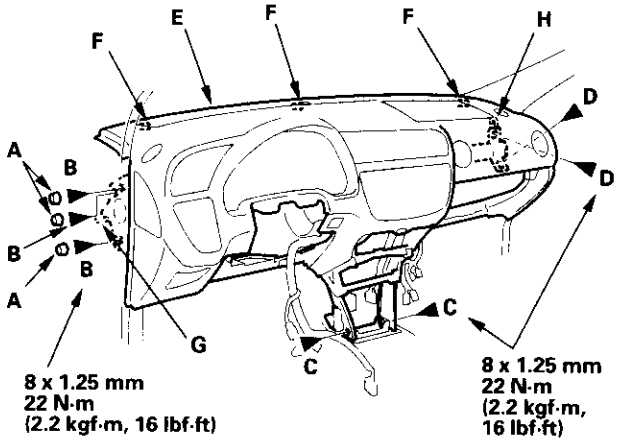
(cont'd)

Dashboard Removal/Installation (cont'd)

10. 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) and hook (H).

Fastener Locations

B ▶ : Bolt, 3 C ▶ : Bolt, 2 D ▶ : Bolt, 2



11. Carefully remove the dashboard through the door opening.

12. 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 the each wire harness is 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 idle learn procedure (see page 11-149).

Steering Hanger Beam Replacement

NOTE: Put on gloves to protect your hands.

1. Remove the dashboard (see page 20-66).

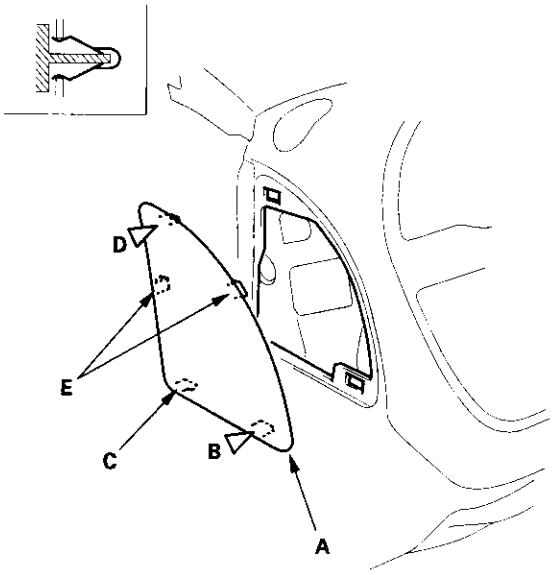
2. Remove the these items from the dashboard:

- Driver's switch panel (see page 20-62)
- Center panel (see page 20-64)
- Heater control panel (see page 20-62)
- Gauge assembly (see page 22-66)
- Passenger's airbag (see page 23-129)
- Sunlight sensor (see page 21-41)

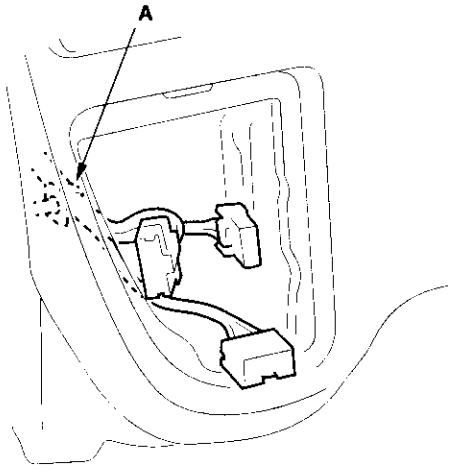
3. From outside of the driver's side, gently pull out on the bottom of the dashboard side cover (A) to release the lower clip (B) and hook (C), then release the remaining clip (D) and hooks (E) to remove the cover.

Fastener Locations

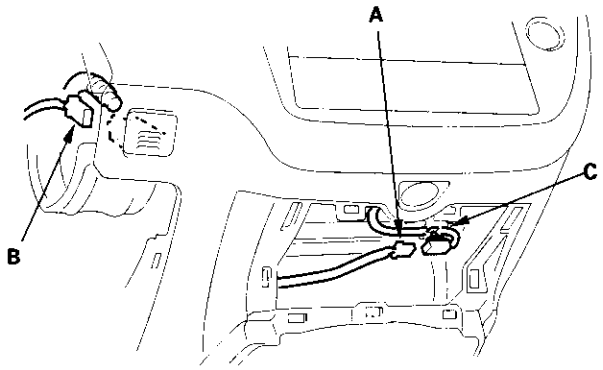
B, D ▷ : Clip, 2



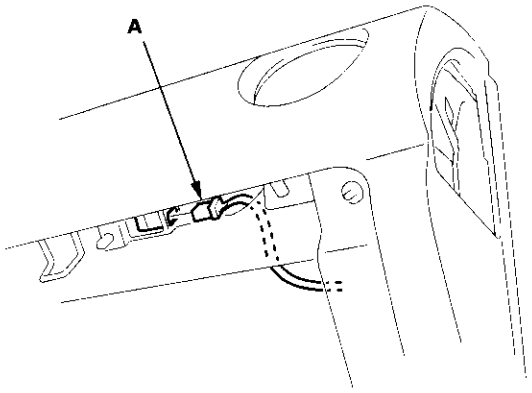
4. Detach the harness holder (A) from the back of the driver's switch panel area.



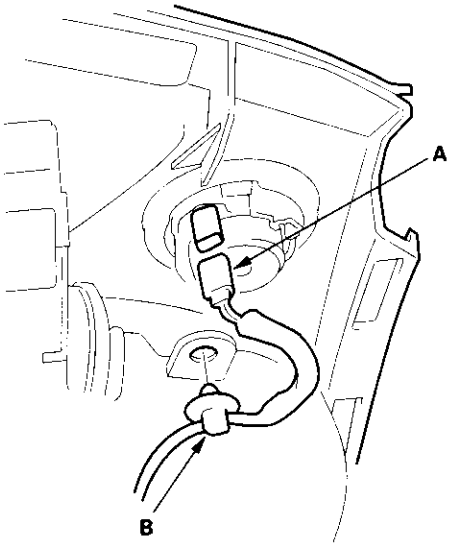
5. Disconnect and detach the center console light connector (A) and in-car temperature sensor connector (B). Unclip the wire harness (C).



6. If equipped, disconnect the glove box light connector (A) and unclip the harness.



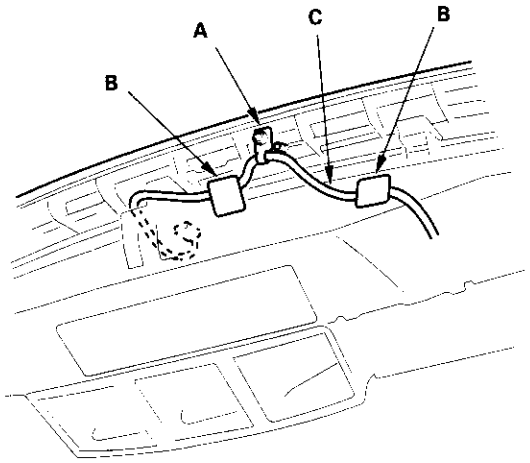
7. If equipped, disconnect the tweeter connector (A), and detach the harness clip (B) from both sides.



(cont'd)

Steering Hanger Beam Replacement (cont'd)

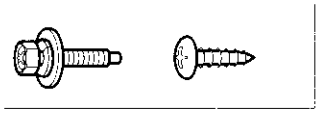
8. Detach the harness holder (A), and remove the cushion tape (B) for the sunlight sensor harness (C).

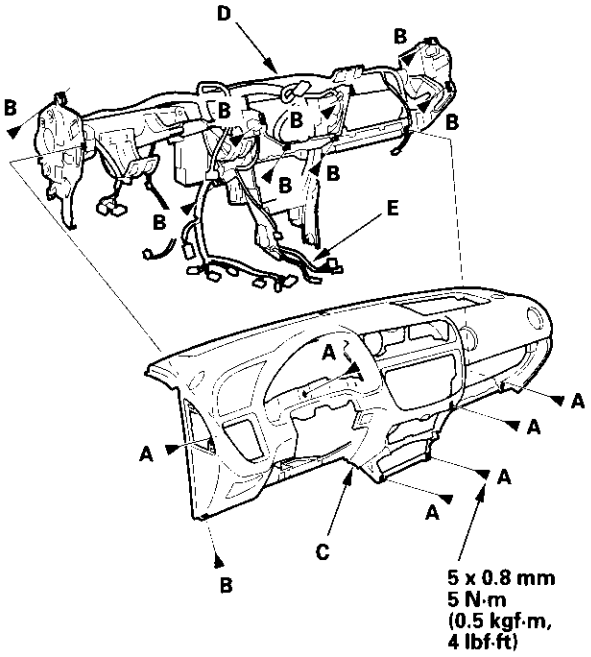


9. Remove the bolts (A) and screws (B) securing the dashboard (C) and steering hanger beam (D), and separate the dashboard and steering hanger beam.

Fastener Locations

A ▶ : Bolt, 6 **B ▶ : Screw, 9**

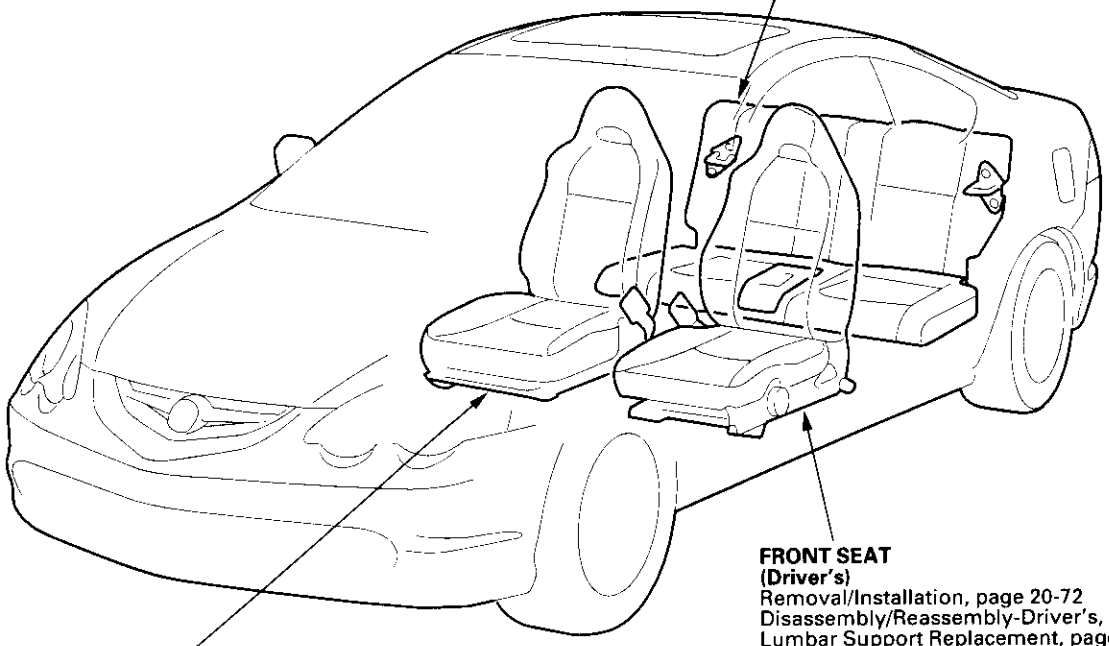




10. Install the beam in the reverse order of removal, and note these items:

- Make sure the dashboard wire harness (E) is not pinched.
- Make sure the connectors are plugged in properly.

Component Location Index



REAR SEAT
Removal/Installation, page 20-82
Seat-back Pivot Bracket Replacement, page 20-83
Seat-back Striker Replacement, page 20-83
Seat-back Latch Replacement, page 20-84
Seat-back Cover Replacement, page 20-84
Seat Cushion Cover Replacement, page 20-86

FRONT SEAT
(Driver's)
Removal/Installation, page 20-72
Disassembly/Reassembly-Driver's, page 20-74
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FRONT SEAT
(Passenger's)
Removal/Installation, page 20-72
Disassembly/Reassembly-Passenger's, page 20-75
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Front Seat Removal/Installation

SRS components are located in this area. Review the SRS component locations (see page 23-10) and the precautions and procedures (see page 23-11) in the SRS section before performing repairs or service.

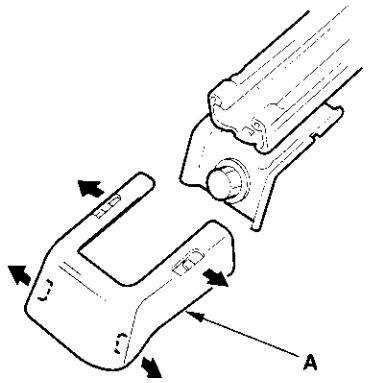
NOTE
- When prying with a flat-tip screwdriver, wrap it with protective tape to prevent damage.
- Take care not to scratch the body or tear the seat covers.
- Put on gloves to protect your hands.

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

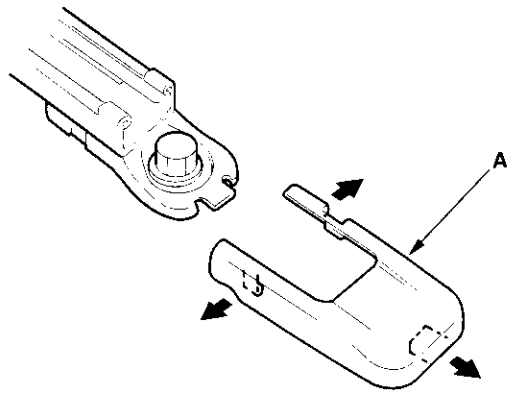
2. Disconnect the negative cable from the battery, and wait at least 3 minutes before beginning work.

3. Remove the seat track end covers (A) from the back of both seat tracks.

Outer:



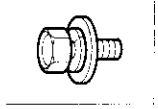
Inner:

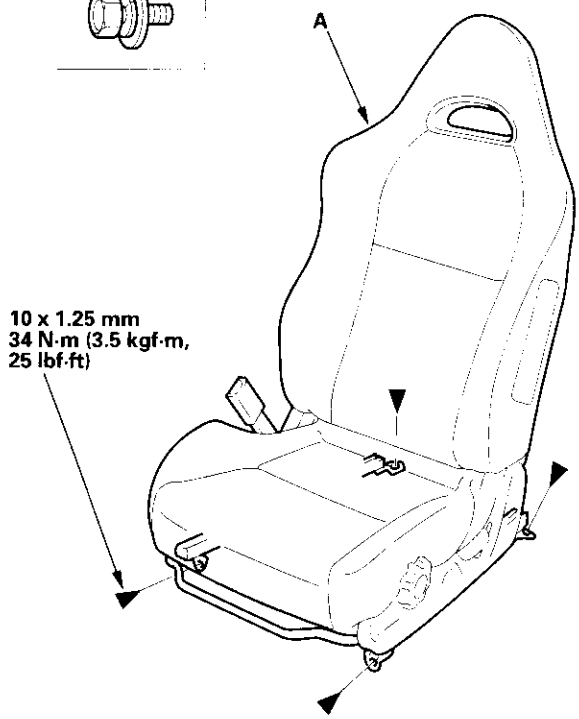


4. Remove the bolts securing the front seat (A).

Fastener Locations

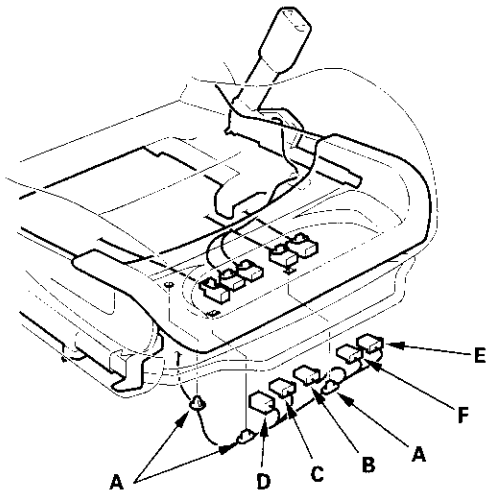
▶ : Bolt, 4



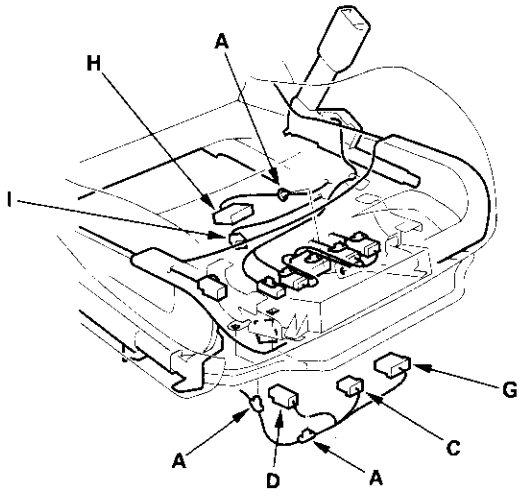


5. Lift up the front seat, then detach the harness clips (A), and disconnect the seat belt switch connector (B), seat belt buckle tensioner connector (C), and side airbag connector (D), and on the passenger's seat, disconnect the OPDS unit connector (E). If equipped, disconnect the seat heater connector (F). If equipped with BOSE sound system, disconnect the sub-harness connector (G), seat belt buckle tensioner connector (C), side airbag connector (D), front stereo amplifier connector (H), and rear stereo amplifier relay (I). The passenger's seat is shown, the driver's seat is similar except it has no OPDS unit connector.

Passenger's seat:



Passenger's seat with BOSE sound system:



6. With the help of an assistant, carefully remove the front seat through the door opening.

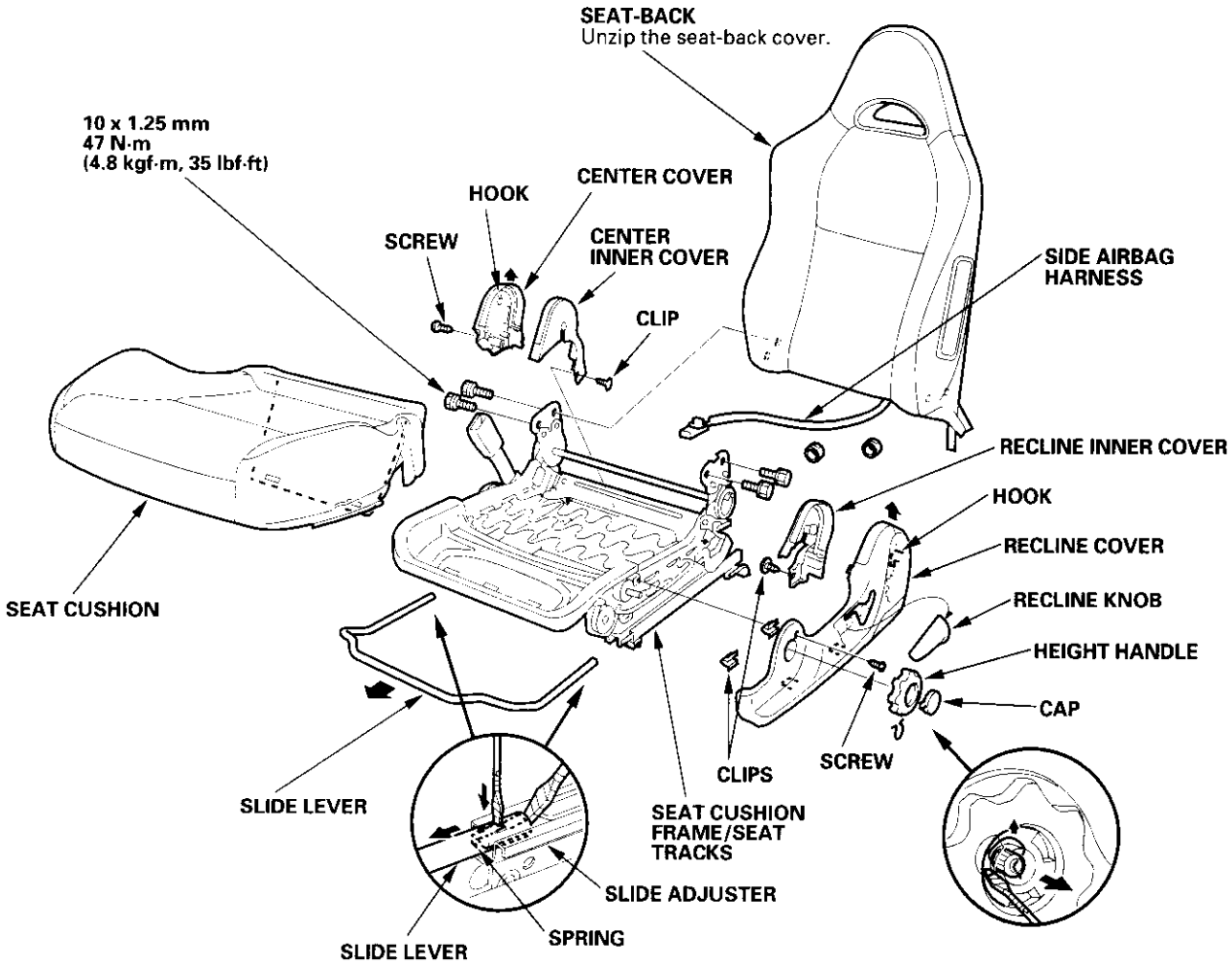
7. Install the seat in the reverse order of removal, and note these items:

   - 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 idle learn procedure (see page 11-149).

Front Seat Disassembly/Reassembly - Driver's

SRS components are located in this area. Review the SRS component locations (see page 23-10) and the precautions and procedures (see page 23-11) in the SRS section before performing repairs or service.

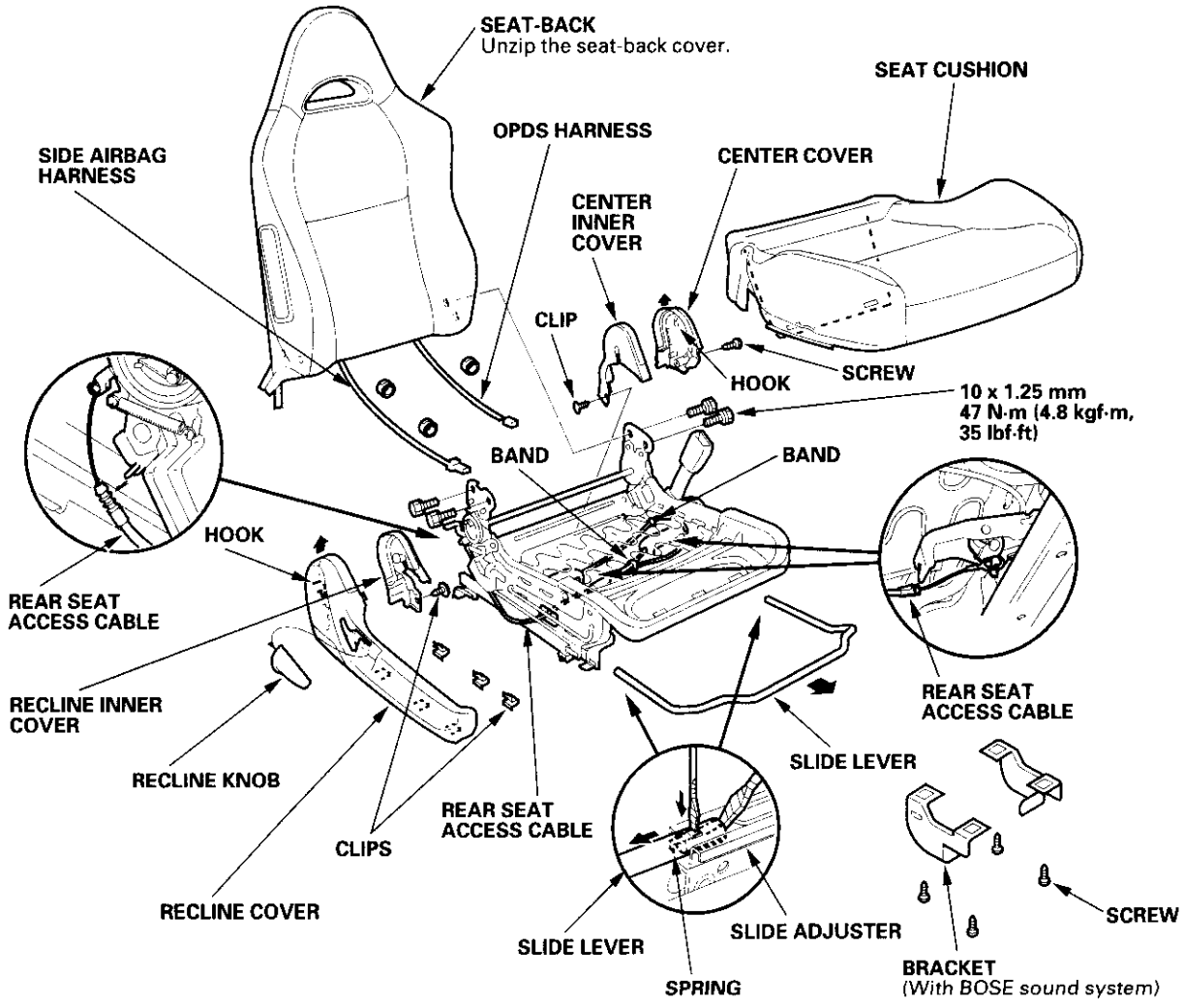
NOTE:
- Take care not to tear the seams or damage the seat covers.
- Put on gloves to protect your hands.
- When prying with a flat-tip screwdriver, wrap it with protective tape to prevent damage.
- To remove the recline cover on the driver's seat without manual height adjustment, refer to Front Seat Disassembly/Reassembly-Passenger's (see page 20-75).
- For seat cushion removal and installation procedures, refer to Front Seat Cover Replacement (see step 2 on page 20-76).
- 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

SRS components are located in this area. Review the SRS component locations (see page 23-10) and the precautions and procedures (see page 23-11) 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.
- For seat cushion removal and installation procedures refer to Front Seat Cover Replacement (see step 2 on page 20-76).
- 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.
- Adjust the rear seat access cable.
- Make sure the rear seat access cable is connected properly on each portion.
- Replace any damaged clips.



Front Seat Cover Replacement

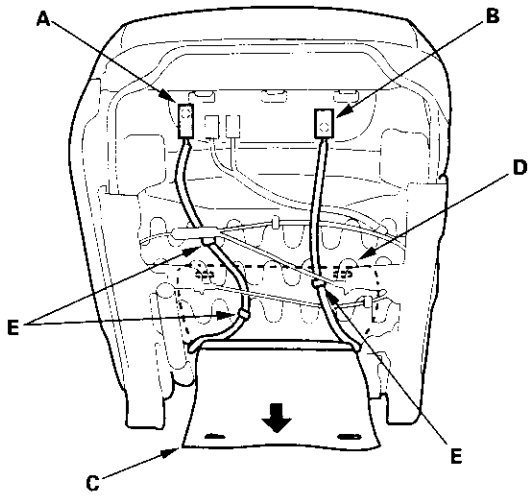
SRS components are located in this area. Review the SRS component locations (see page 23-10) and the precautions and procedures (see page 23-11) in the SRS section before performing repairs or service.

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

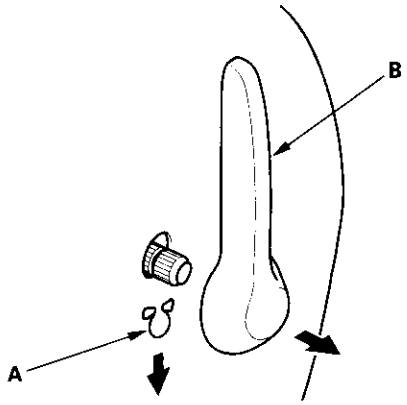
1. Remove the front seat (see page 20-72).

2. 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 seat cushion cover (C) from the seat cushion frame spring (D), then pull the cover back, and remove the harness bands (E). The passenger's seat is shown, the driver's seat is symmetrical except it has no OPDS unit connector.

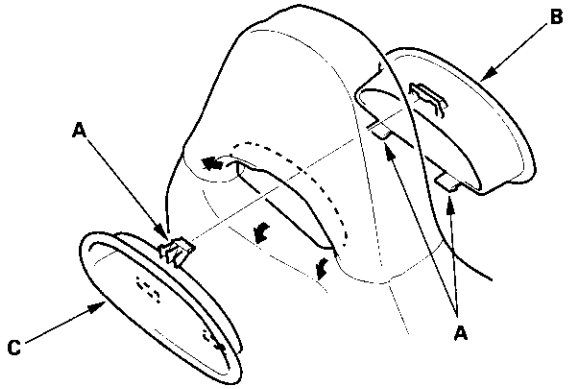


3. Fold the seat-back forward.

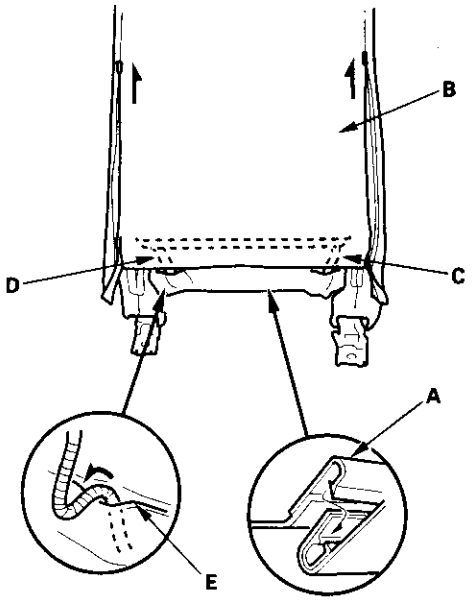
4. If equipped with a lumber support, remove the clip (A), then remove the lumber support handle (B).



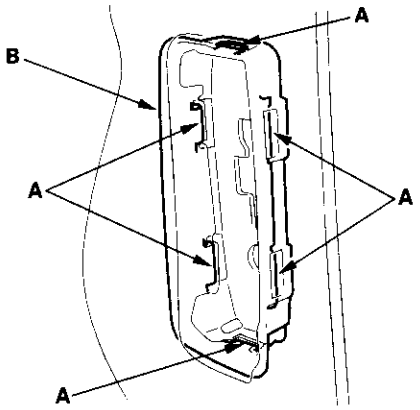
5. Detach the hooks (A), then remove the front headrest trim (B) and rear headrest trim (C). Pull back the seat-back cover (D).



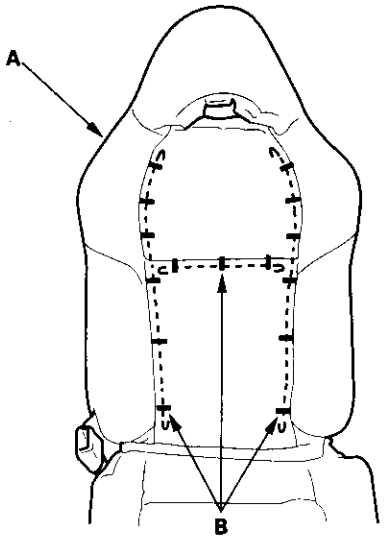
6. Release the hook (A), and unzip the seat-back cover (B). Pull the side airbag harness (C) and the OPDS harness (D) (passenger's seat) out through the holes (E) in the seat cushion cover. The passenger's seat is shown, the driver's seat is symmetrical except it has no OPDS harness.



7. Remove the side airbag (see page 23-131), and release the hooks (A) from the airbag module holder (B).



8. Pull back the edge of the seat-back cover (A) all the way around, and release the clips (B), then remove the seat-back cover.



(cont'd)

Front Seat Cover Replacement (cont'd)

9. 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.
   - Make sure the side airbag harness and OPDS harness (passenger's seat) are routed properly.
   - Replace any clips you removed with new ones. Install them with commercially available upholstery ring pliers.
   - If necessary, reinitialize the OPDS control unit (see page 23-24).
   - Always use the proper replacement cover; never install an aftermarket cover.

Seat Cushion Cover

1. Remove the front seat (see page 20-72).

2. Remove these items from the front seat:

   - Recline cover, driver's seat (see page 20-74) passenger's seat (see page 20-75)
   - Front seat belt buckle (see step 4 on page 23-5)

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 seat cushion cover from the seat cushion frame spring, then pull the cover back, and remove the harness bands.

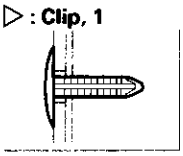
4. Release the hook, and unzip the seat-back cover. Pull the side airbag harness and the OPDS harness (passenger's seat) out through the holes in the seat cushion cover.

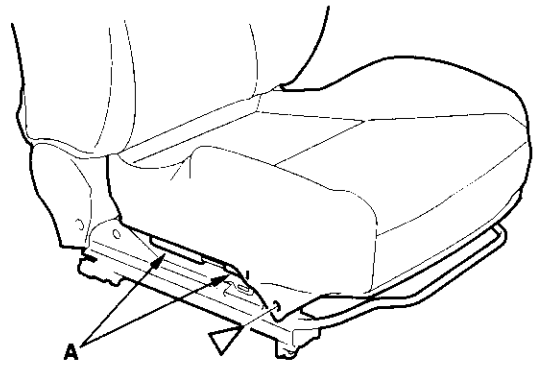
5. Remove the clip, and release the hooks (A).

Inside:

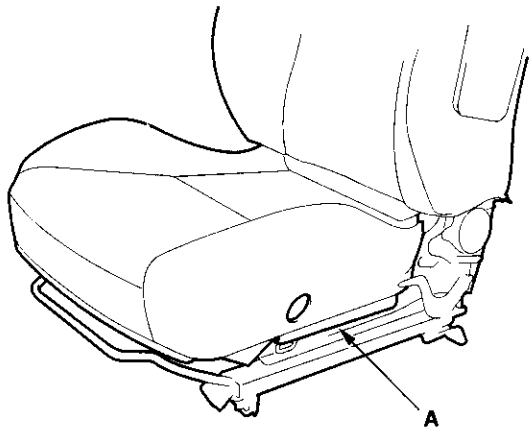
Fastener Location

▷: Clip, 1

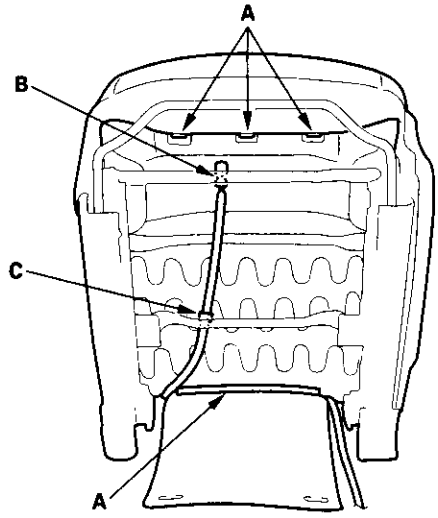




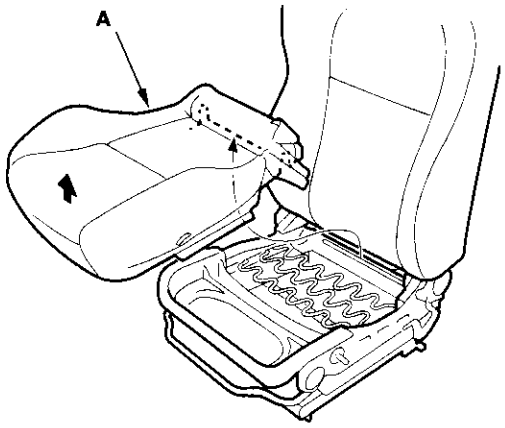
Outside:



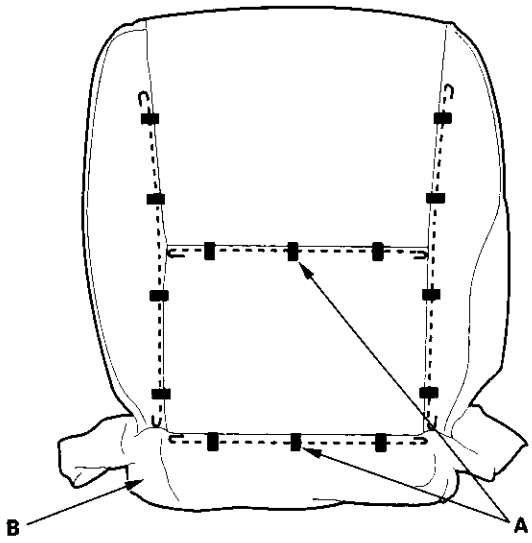
6. From under the seat cushion, release the hooks (A). If equipped with a seat heater, detach the seat cushion heater connector clip (B), and remove the harness band (C).



7. Remove the seat cushion cover (A) with the seat cushion pad from the seat cushion frame.



8. 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).

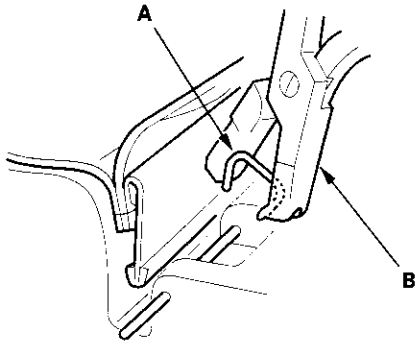


(cont'd)

Front Seat Cover Replacement (cont'd)

9. 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).



Front Seat Lumbar Support Replacement

For Some Models (Driver's seat)

SRS components are located in this area. Review the SRS component locations (see page 23-10) and the precautions and procedures (see page 23-11) 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.

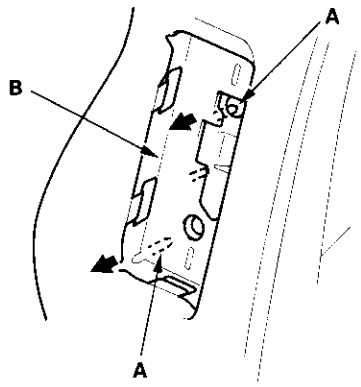
1. Remove the front seat (see page 20-72).

2. From under the seat cushion, detach the side airbag connector clip. Release the seat cushion cover from the seat cushion frame spring, then pull the cover back, and remove the harness bands (see page 20-76).

3. Release the hook, and unzip the seat-back cover. Pull the side airbag harness out through the hole in the seat cushion cover (see page 20-76).

4. Remove the side airbag (see page 23-131).

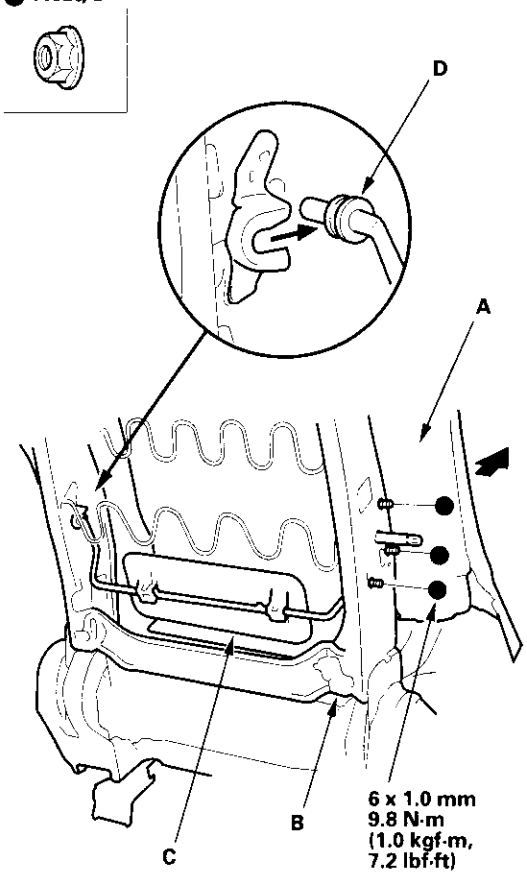
5. Detach the clips (A) of the airbag module holder (B) from the seat-back frame.



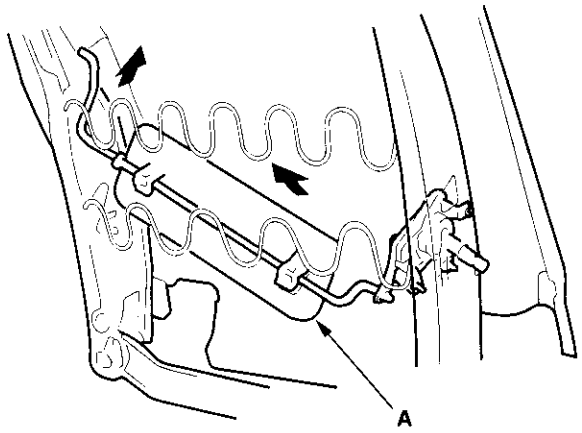
6. Pull away the bottom portion of the seat-back pad (A) from the seat-back frame (B), and remove the nuts securing the lumber support (C). Remove the bushing (D) and pivot arm from the seat-back frame.

Fastener Locations

● : Nut, 3



7. Remove the lumber support (A) as shown.



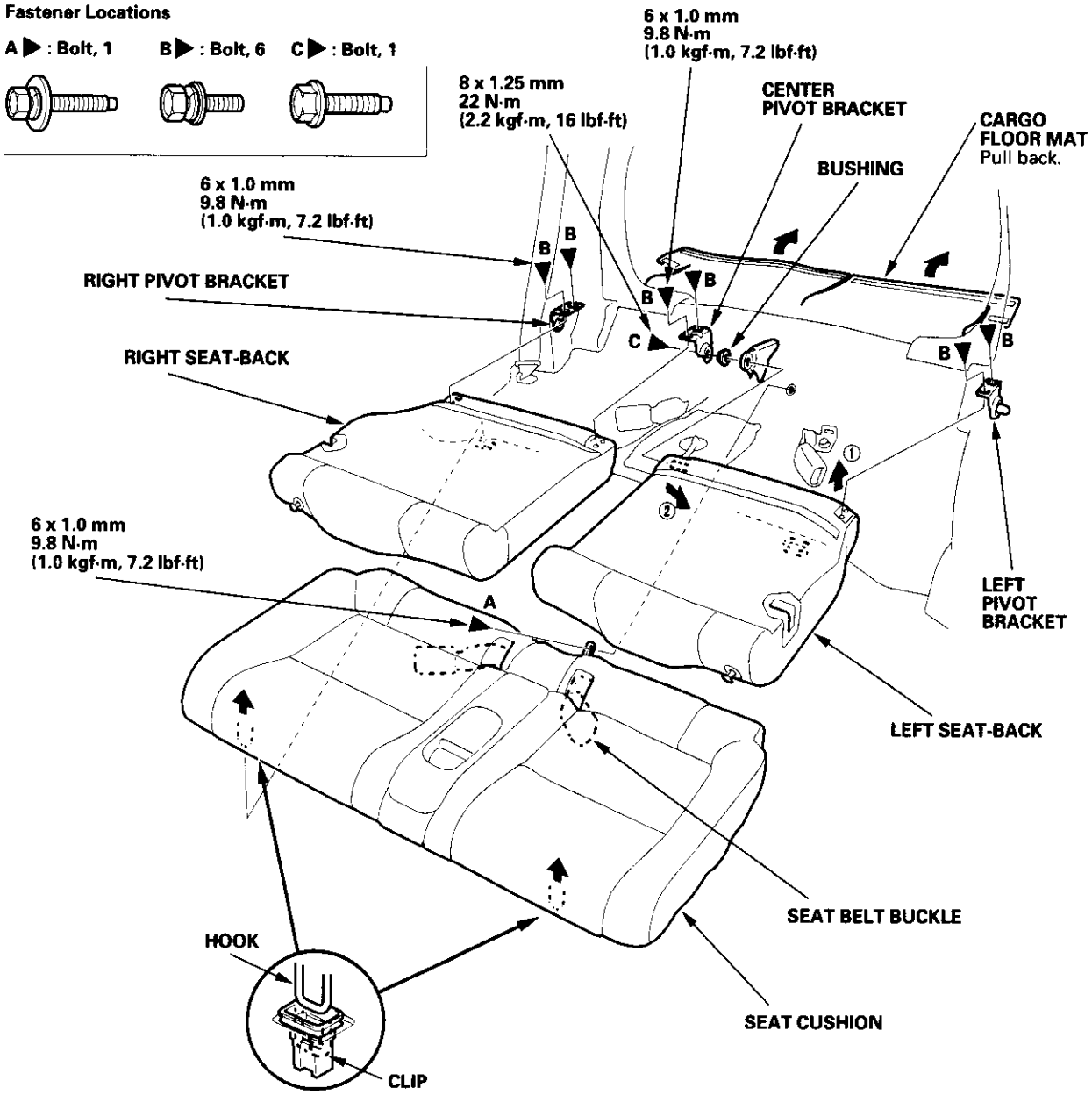
8. Install the lumber support in the reverse order of removal, and note these items:

- Replace the bushing if it's damaged.
- To prevent wrinkles when installing a seat-back cover, make sure the material is stretched evenly over the pad before securing the hook.
- Make sure the side airbag harness is routed properly.

Rear Seat Removal/Installation

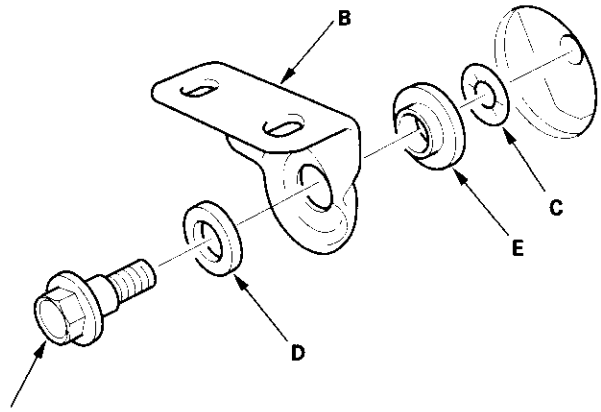
NOTE: Take care not to scratch the body or tear the seat covers.

1. Remove the rear seat as shown.
2. Install the seat in the reverse order of removal, and note these items:
   - Before attaching the seat cushion, make sure there are no twists or kinks in the seat belt buckles straps.
   - When installing the seat cushion, slip the seat belt buckles through the holes in the seat cushion.
   - Make sure the seat-back locks securely.



Rear Seat-back Pivot Bracket Replacement

1. Remove the rear seat-back (see page 20-82).
2. Remove the pivot bolt (A), then remove the seat-back pivot bracket (B). If necessary, remove the toothed lock washer (C), then separate the pivot bolt, washer (D), bracket, and bushing (E).



3. Install the pivot bracket in the reverse order of removal, and note these items:
   - Apply multipurpose grease to the pivot portion of the washer and bushing.
   - Apply liquid thread lock to the pivot bolt before reinstallation.

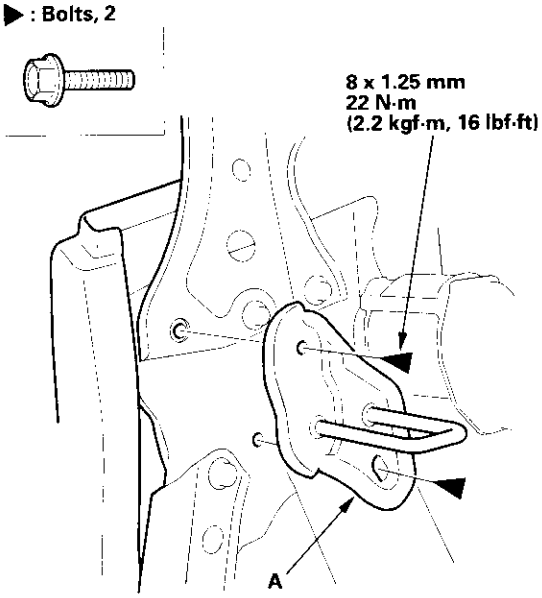
Rear Seat-back Striker Replacement

NOTE: Take care not to scratch the interior trim.

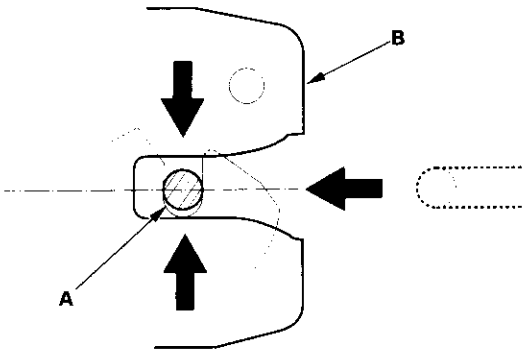
1. Remove the rear side trim panel (see page 20-50).
2. Remove the bolts, then remove the seat-back striker (A).

Fastener Locations

▶ : Bolts, 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).

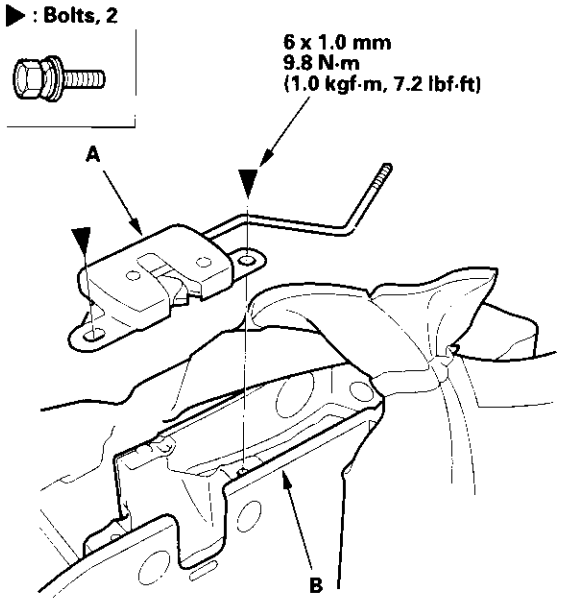


Rear Seat-back Latch Replacement

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 20-82).
2. Remove the latch cover, and pull back the seat-back cover (see page 20-84).
3. Remove the latch knob.
4. Remove the bolts, then remove the seat-back latch (A) from the seat-back frame (B).

Fastener Locations



5. Install the latch in the reverse order of removal, and make sure the seat-back locks and unlocks properly.

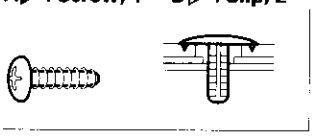
Rear Seat-back Cover Replacement

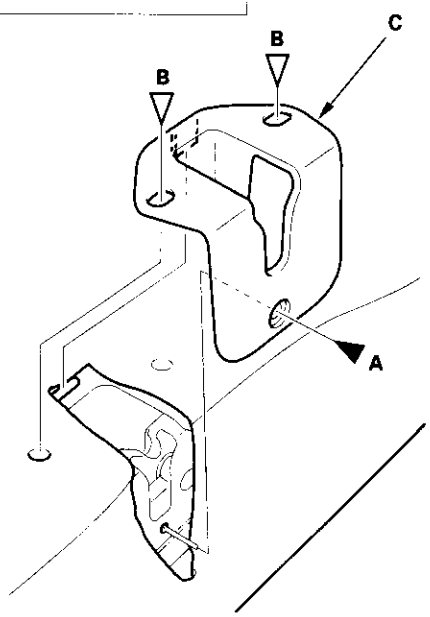
NOTE:
- Take care not to tear the seams or damage the seat covers.
- Put on gloves to protect your hands.

1. Remove the seat-back (see page 20-82).
2. Remove the screw (A) and clips (B), then remove the latch cover (C).

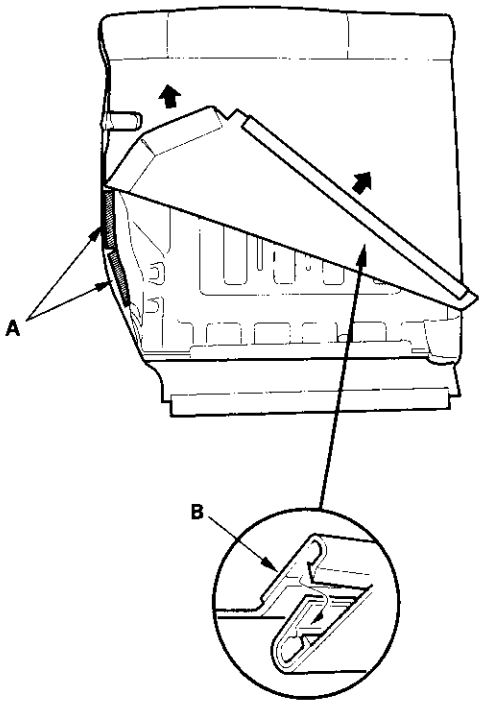
Fastener Locations

A▶ : Screw, 1 B▷ : Clip, 2

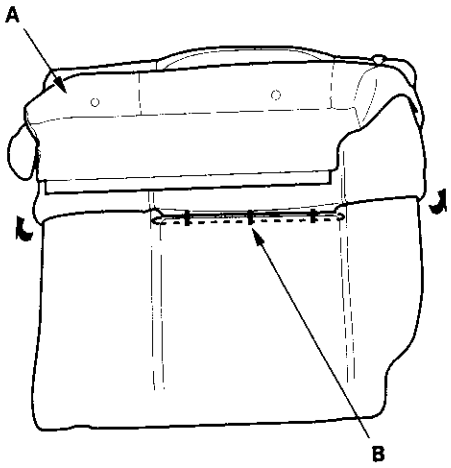




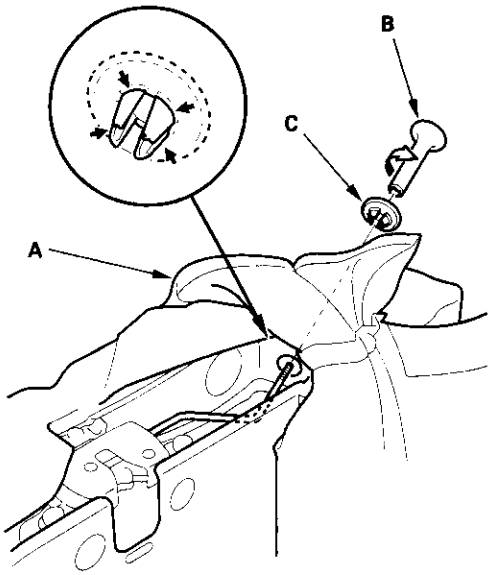
3. Release the fasteners (A) and hook (B).



4. Pull back the seat-back cover (A), and remove the clips (B).



5. Pull back the seat-back cover (A) all the way around. Remove the latch knob (B), and remove the latch collar (C) by pinching the end and pulling it out.



6. Remove the seat-back cover.

7. 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 hook and clips.
   - Replace any clips you removed with new ones. Install them with commercially available upholstery ring pliers.

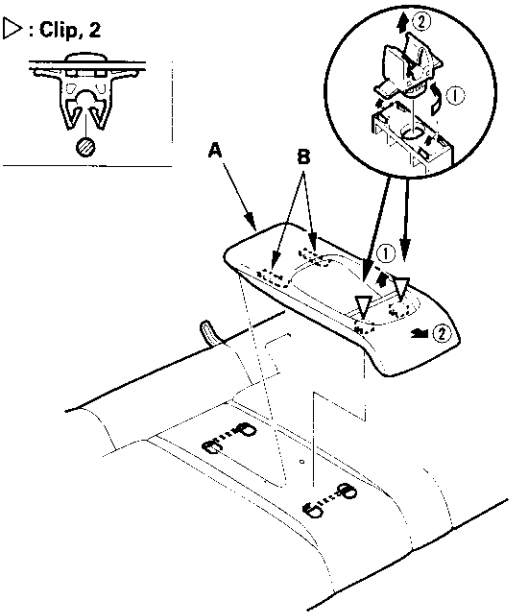
Rear Seat Cushion Cover Replacement

1. Remove the rear seat-cushion (see page 20-82).

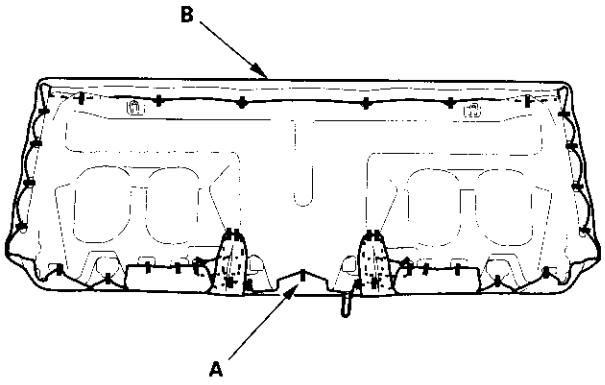
2. Pull up the front edge of the seat cushion center tray (A) to release the clips, and release the hooks (B), then remove the tray. If necessary, remove the clips from the tray.

Fastener Locations

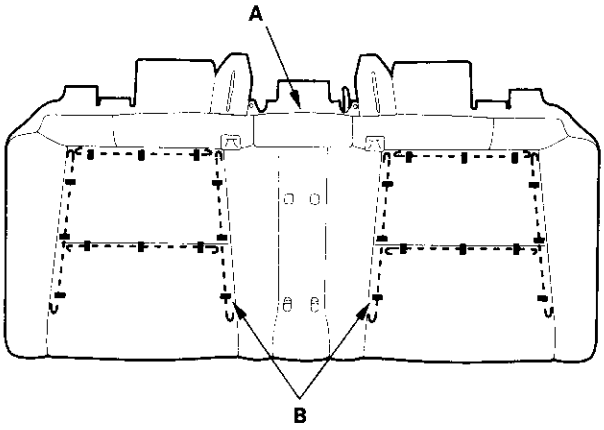
▷: Clip, 2



3. Release all the clips (A) from under the seat cushion, and fold back the seat cushion cover (B).

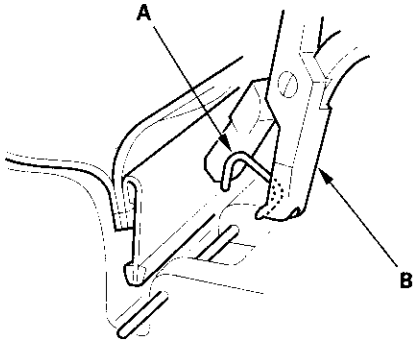


4. Pull back the edge of the seat cushion cover (A) all the way around, and release the clips (B), then remove the seat cushion cover.



5. 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.

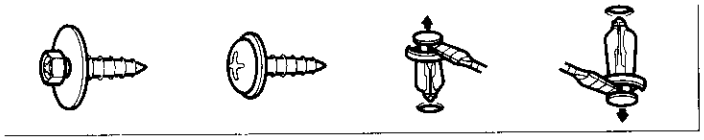
1. Remove the front bumper as shown.

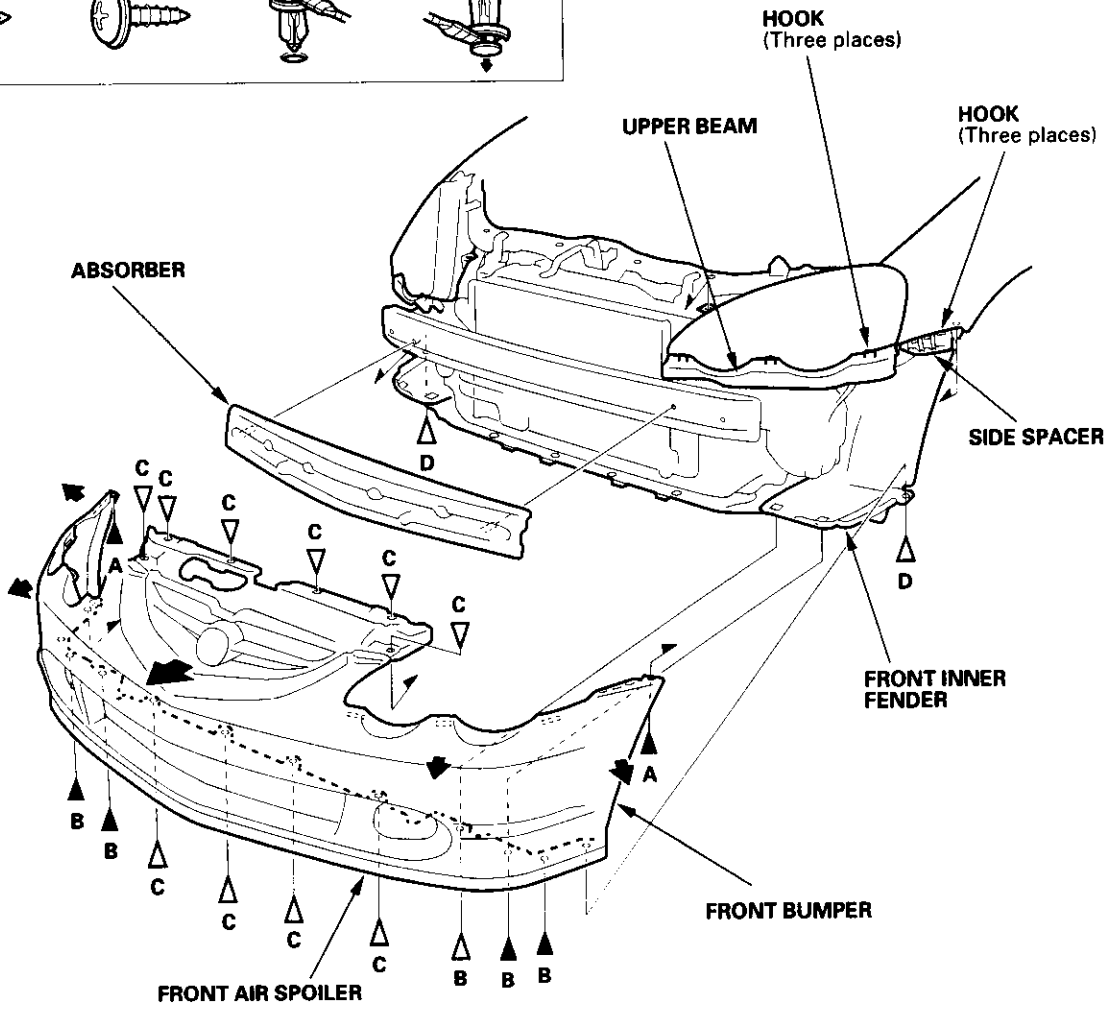
2. Install the bumper in the reverse order of removal, and note these items:

   - Make sure 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, 4 C ▷ : Clip, 10 D ▷ : Clip, 2





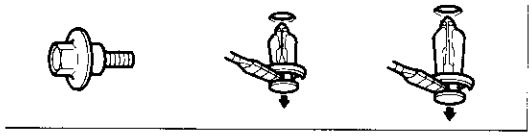
Front Bumper Spoiler Replacement

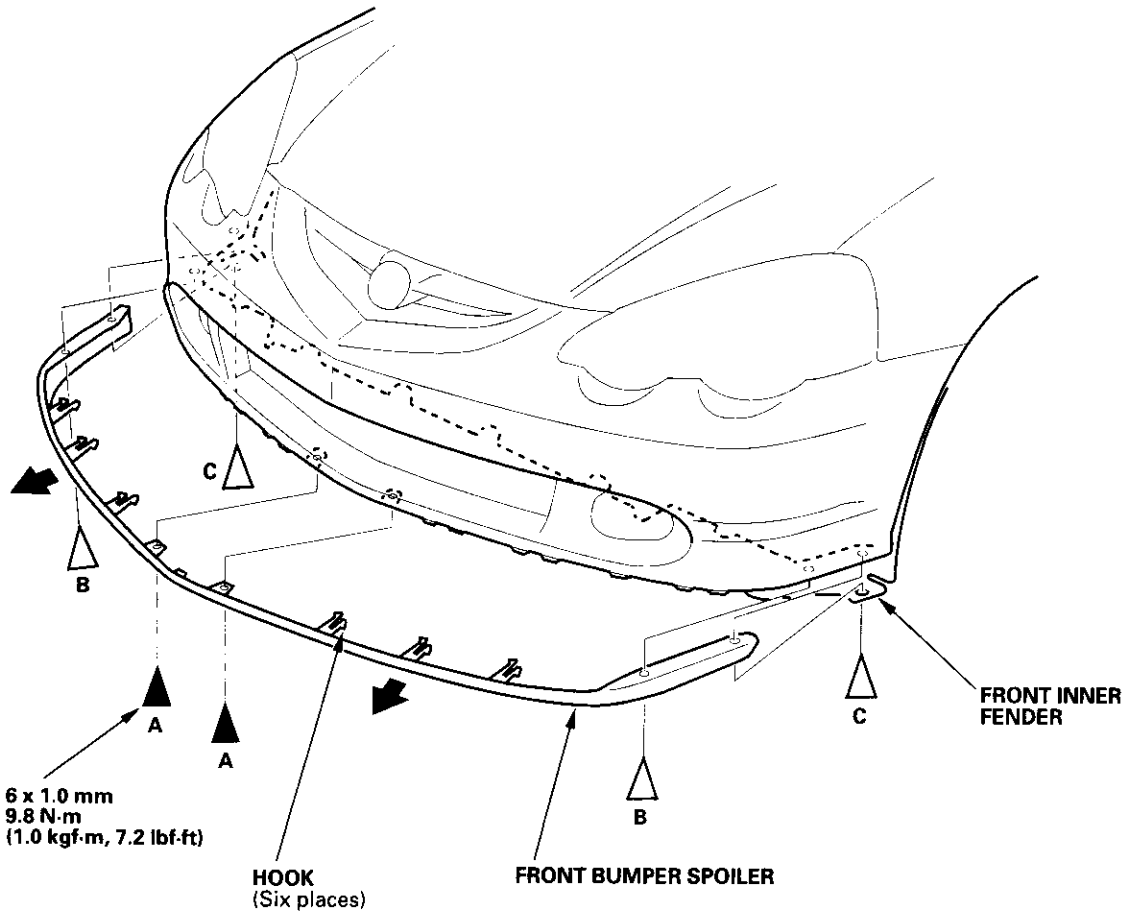
NOTE: Take care not to scratch the front bumper.

1. Remove the front bumper spoiler as shown.
2. Install the spoiler in the reverse order of removal, and replace any damaged clips.

Fastener Locations

A ▶ : Bolts, 2 **B ▷ : Clip, 2** **C ▷ : 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.
- Put on gloves to protect your hands.

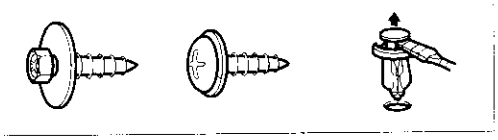
1. Remove the rear bumper as shown.

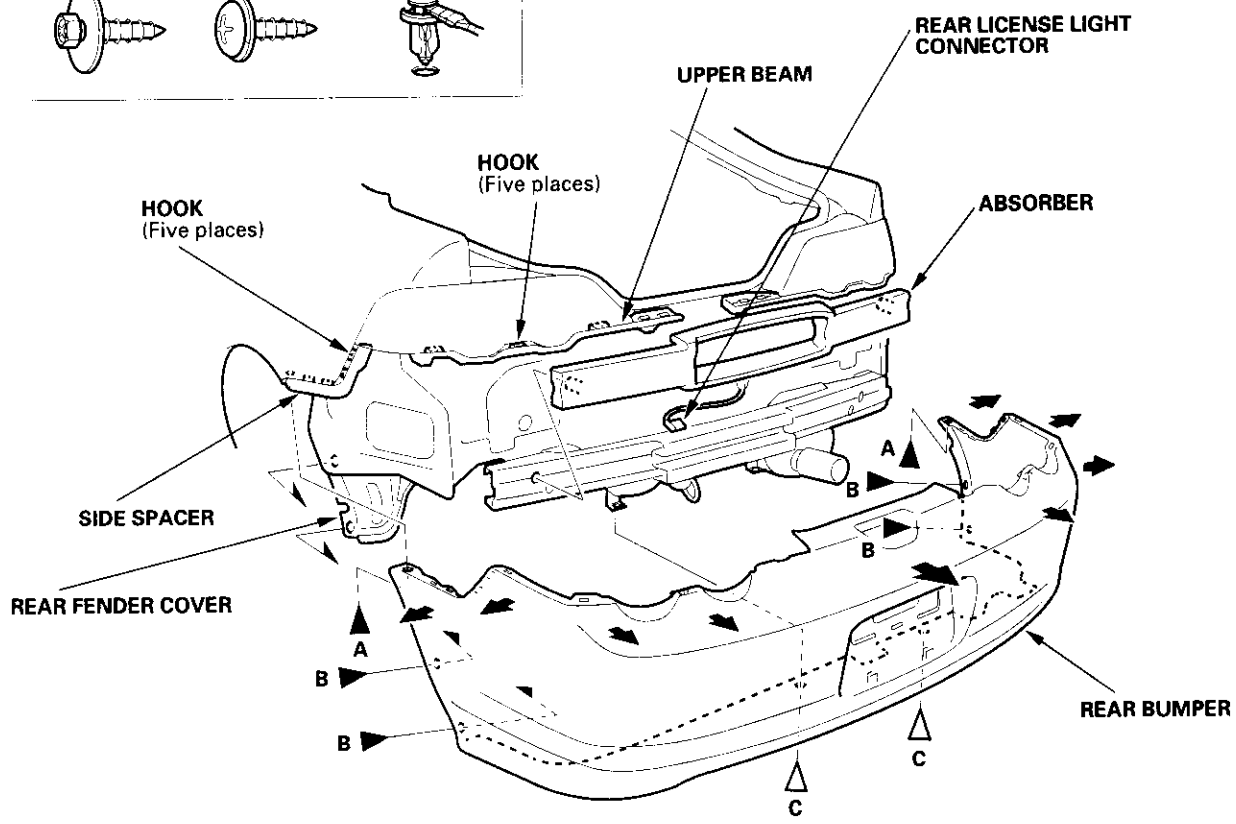
2. Install the bumper in the reverse order of removal, and note these items:

   - Make sure the rear license light connector is plugged in properly.
   - Make sure the rear bumper engages the hooks of the side spacers and upper beams on both sides securely.
   - Replace any damaged clips.

Fastener Locations

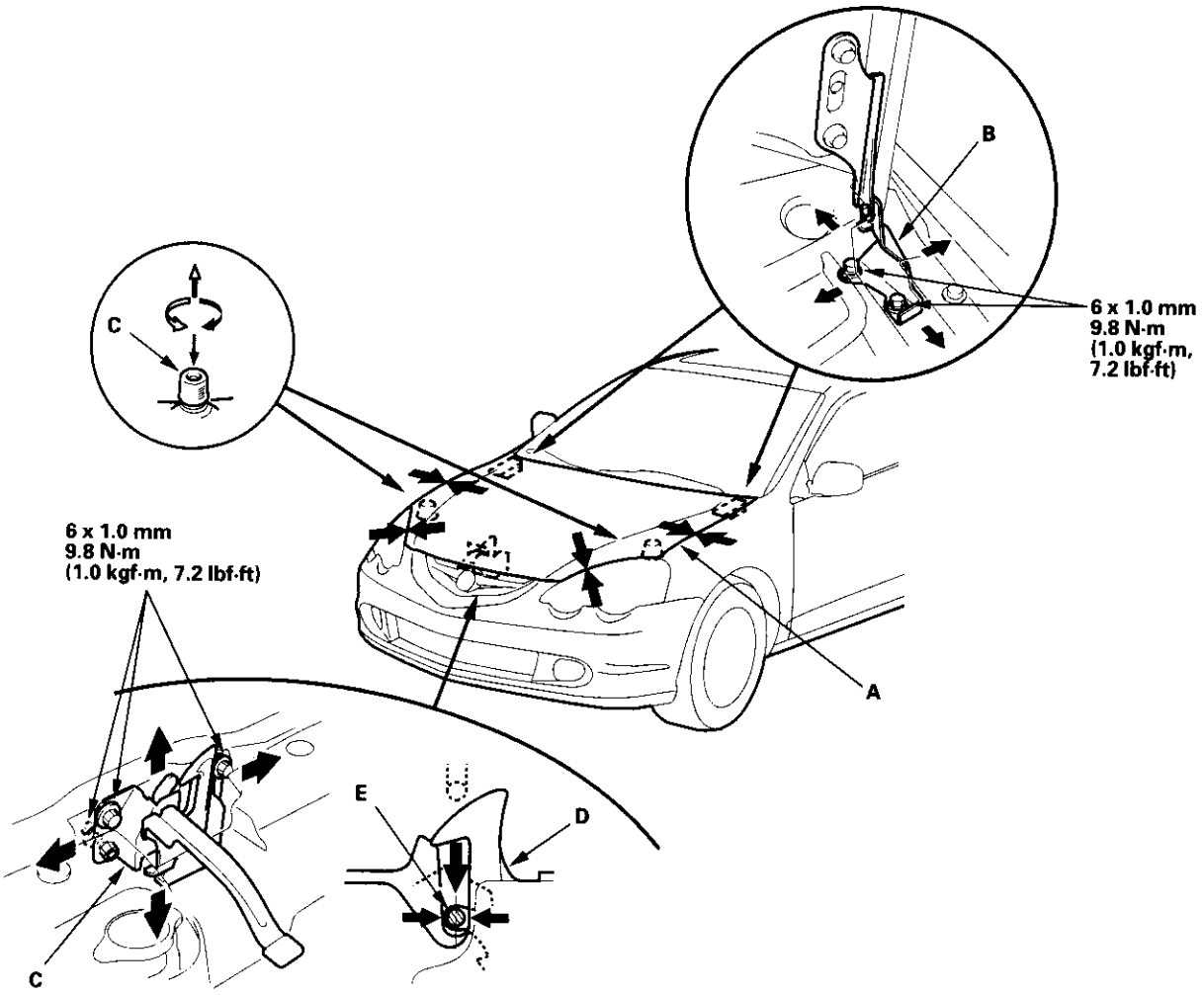
A ▶ : Screw, 2 B ▶ : Screw, 4 C ▷ : Clip, 2





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.

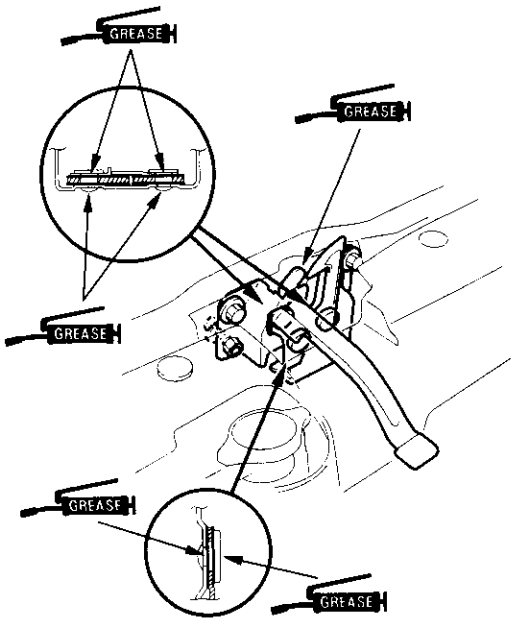


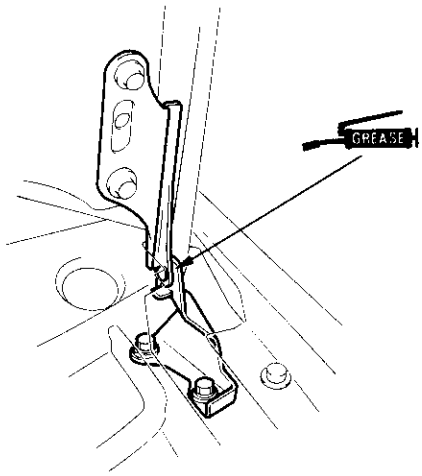
3. Adjust the hood latch (D) to obtain the proper height at the forward edge, and move the hood latch right or left until the striker (E) is centered in the hood latch.
4. Tighten each bolt securely.

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.



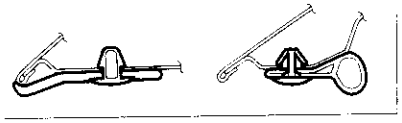


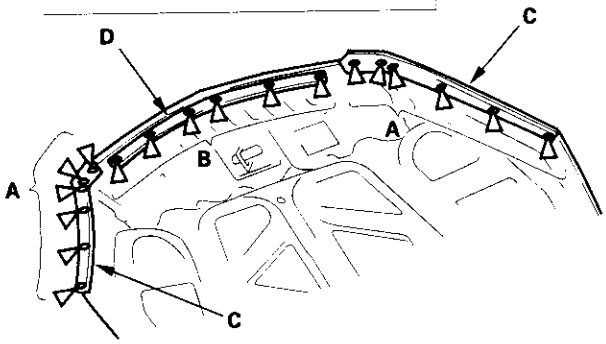
Hood Seal Replacement

1. Using a clip remover, detach the clips (A, B), then remove the hood seals (C) and center hood seal (D). Take care not to scratch the hood.

Fastener Locations

A ▷: Clip, 12 **B ▷: Clip, 6**





2. Install the seals in the reverse order of removal, and note these items:

- Replace any damaged clips.
- Push the clips into place securely.

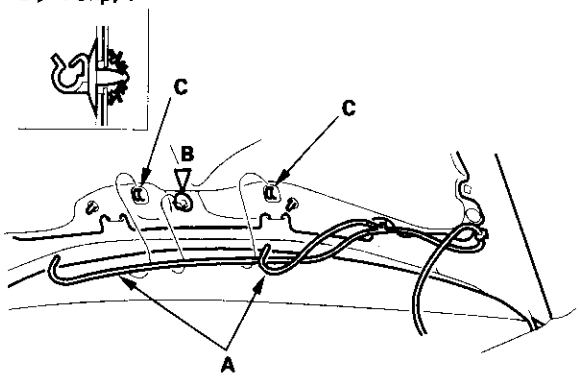
Hood Insulator Replacement

For Some Models

1. Disconnect the windshield washer tubes (A), and release the tube from the clip (B) and the hooks (C).

Fastener Location

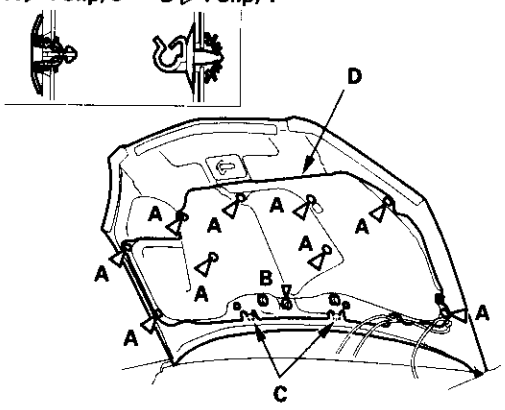
B ▷ : Clip, 1



2. Using a clip remover, detach the clips (A, B). Release the hooks (C), then remove the hood insulator (D). Take care not to scratch the hood.

Fastener Locations

A ▷ : Clip, 9 **B ▷ : Clip, 1**

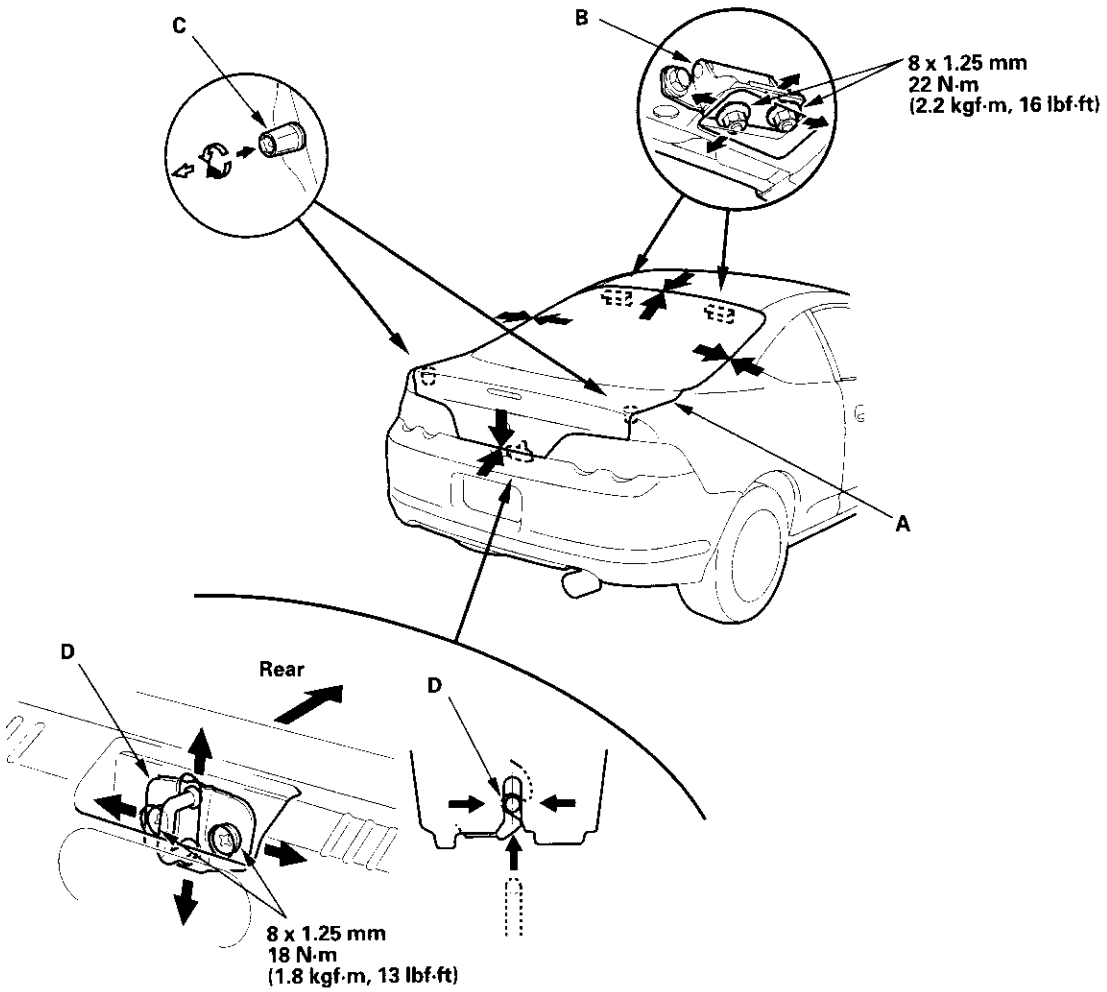


3. Install the insulator in the reverse order of removal, and note these items:

- Replace any damaged clips.
- Push the clips into place securely.
- Make sure the windshield washer tubes are connected properly.

Adjustment

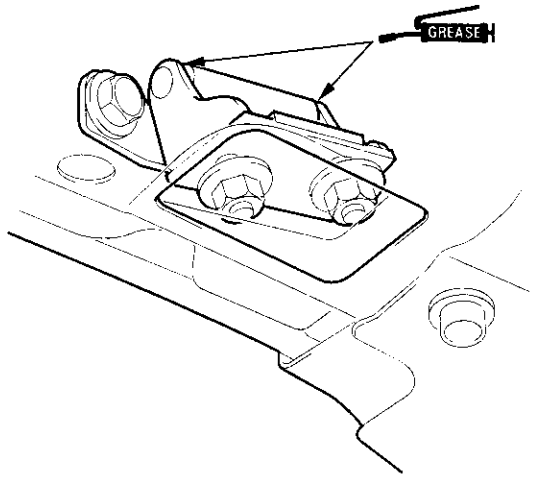
1. Remove the support strut from each side (see page 20-94).
2. Remove the headliner (see page 20-54).
3. Slightly loosen each screw and nut.
4. Adjust the hatch (A) alignment in the following sequence.
   - Adjust the hatch hinges (B) right and left, as well as forward and rearward, using the elongated holes.
   - Turn the hatch edge cushions (C) in or out, as necessary, to make the hatch fit flush with the body at the side edges.
   - Adjust the fit between the hatch and hatch opening by moving the striker (D).



(cont'd)

Adjustment (cont'd)

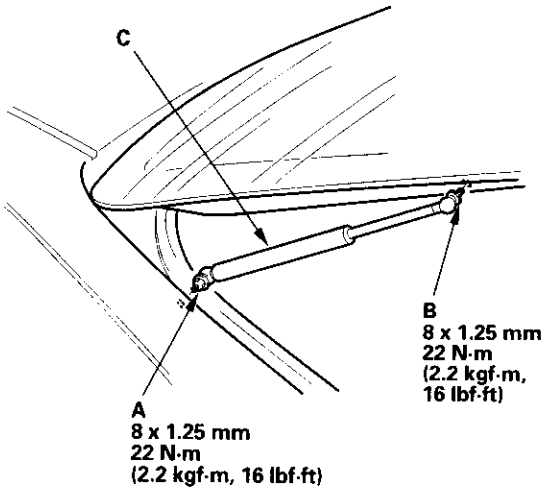
5. Tighten each screw and nut securely.
6. Check that the hatch opens properly and locks securely.
7. Reinstall the support struts securely.
8. Reinstall all remaining removed parts.
9. Apply multipurpose grease to the pivot portion of the hatch hinges as indicated by the arrows.



Hatch Support Strut Replacement

NOTE:
- Have an assistant help you when removing and installing the support strut.
- Take care not to scratch the body and hatch.

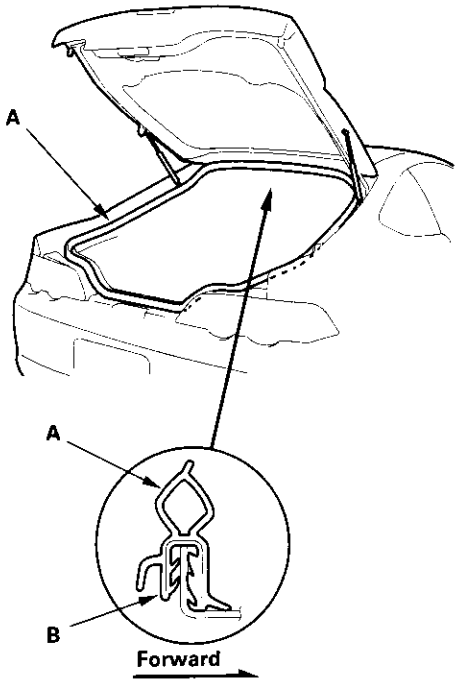
1. Remove the pivot bolt (A) from the body.



2. Remove the pivot bolt (B) from the hatch, then remove the support strut (C).
3. Install the support strut in the reverse order of removal.

Hatch Weatherstrip Replacement

1. Remove the hatch weatherstrip (A) by pulling out on it.

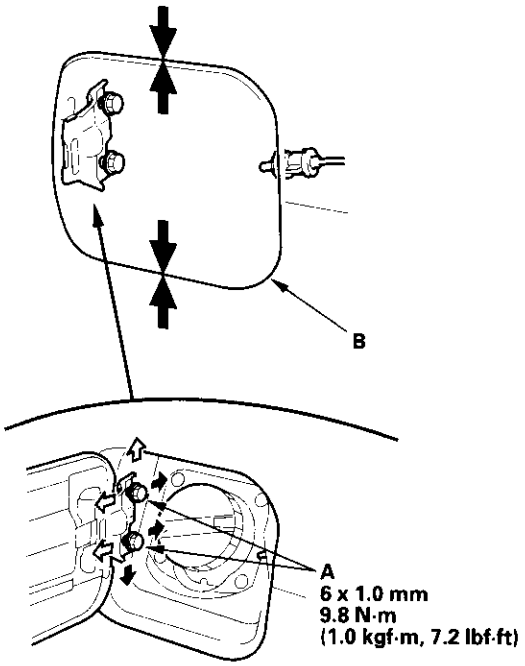


2. Locate the painted alignment mark (B) on the hatch weatherstrip. Align the painted mark with the alignment tab in the the center of the hatch opening, and install the hatch weatherstrip all the way around in the direction shown. Make sure there are no wrinkles in the weatherstrip.

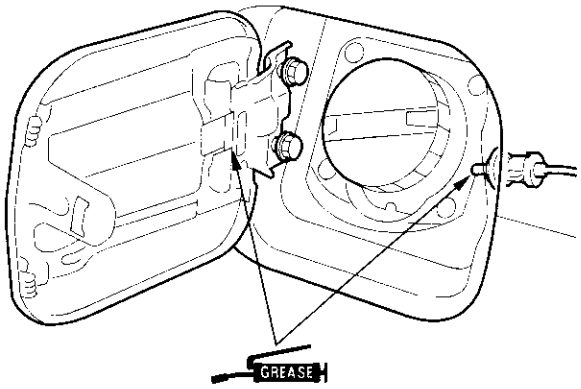
3. Check for water leaks.

Adjustment

1. Slightly loosen the hinge mounting bolts (A).



2. Adjust the fuel fill door (B) in or out until it's flush with the body, and up or down as necessary to equalize the gaps.
3. Tighten the hinge mounting bolts.
4. Check that the fuel fill door opens properly and locks securely, and check that the rear of the door is flush with the body.
5. Apply multipurpose grease to each location indicated by the arrows.



6. Apply body paint to the hinge mounting bolts and around the hinges.

Front Grille Replacement

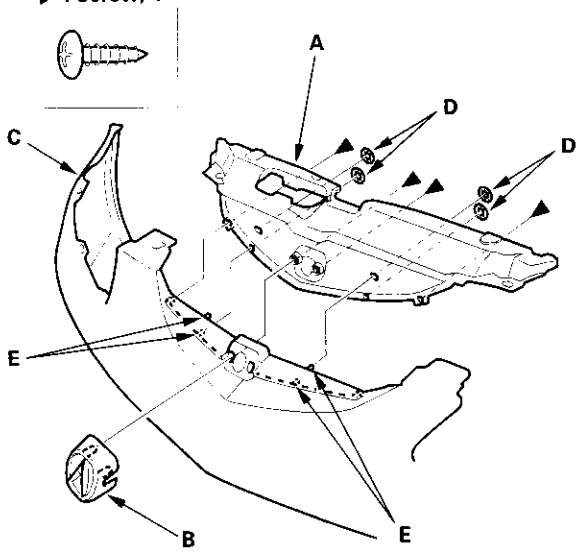
1. Remove the front bumper (see page 20-87).

2. Remove the front grille cover (A) and front emblem base (B). Take care not to scratch the front bumper (C).

   –1 Remove the screws and push nuts (D).
   –2 Remove the front emblem base from the front bumper.
   –3 Pull the front grill cover away to release the pins (E) of the front bumper.

Fastener Locations

▶: Screw, 4



3. Install the grille cover and emblem base in the reverse order of removal.

4. Reinstall the front bumper.

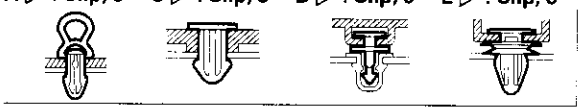
Cowl Covers Replacement

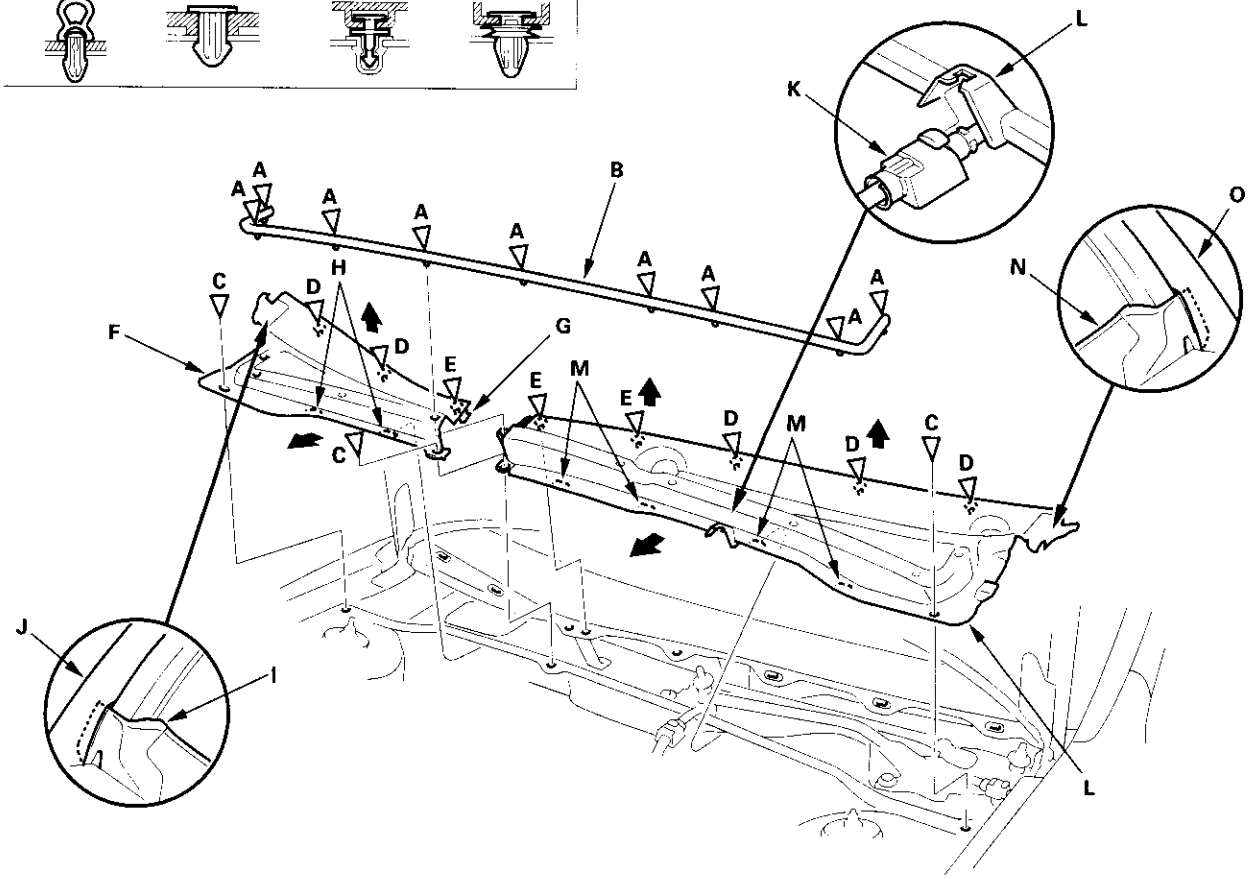
1. Remove the windshield wiper arms (see page 22-150).

2. Using a clip remover, detach the clips (A), then remove the hood rear seal (B), and detach the clips (C) from the cowl covers. Take care not to scratch the cowl covers.

Fastener Locations

A ▷ : Clip, 9 C ▷ : Clip, 3 D ▷ : Clip, 5 E ▷ : Clip, 3





3. Detach the clips (D, E) and release the hook (G) by carefully pulling the passenger's cowl cover (F) upward. Pull the cover forward to release the hooks (H), and pull the hinge cover (I) out from the front fender (J), then remove the cover. Take care not to scratch the body.

4. Remove the windshield wiper sub-harness grommet (K) from the driver's cowl cover (L).

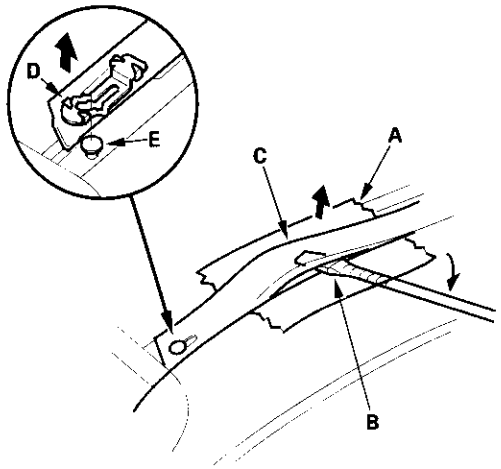
5. Detach the clips (D, E) by carefully pulling the driver's cowl cover upward, and pull the cover forward to release the hooks (M). Pull the hinge cover (N) out from the front fender (O), then remove the cover. Take care not to scratch the body.

6. Install the cover in the reverse order of removal, and note these items:

   - Replace any damaged clips.
   - Push the clip portions into place securely.

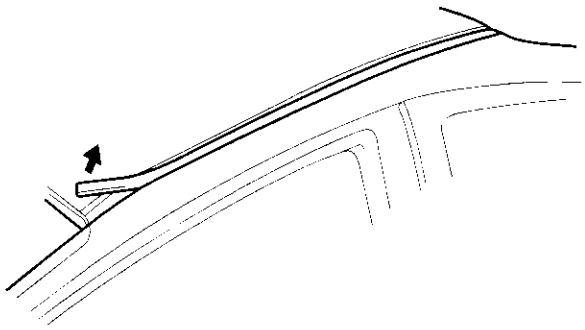
Roof Molding Replacement

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.

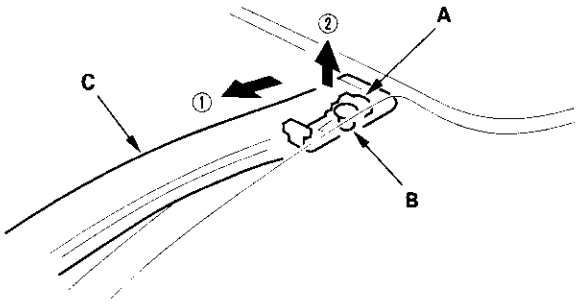


2. Pull up and slide the roof molding to release the front bracket (D) from the pin (E).

3. Pull up the front portion of roof molding.

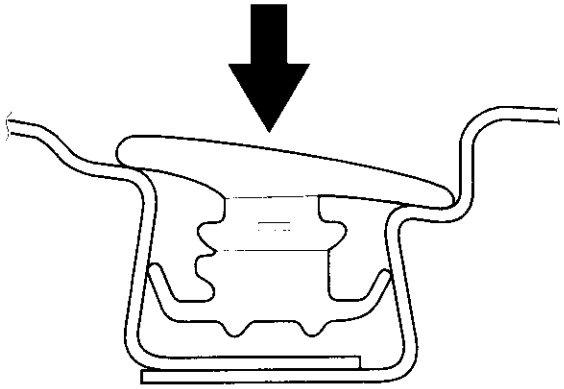


4. Pull up and release the rear bracket (A) from the pin (B), then remove the roof molding (C).



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.



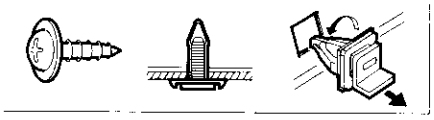
Side Sill Panel Replacement

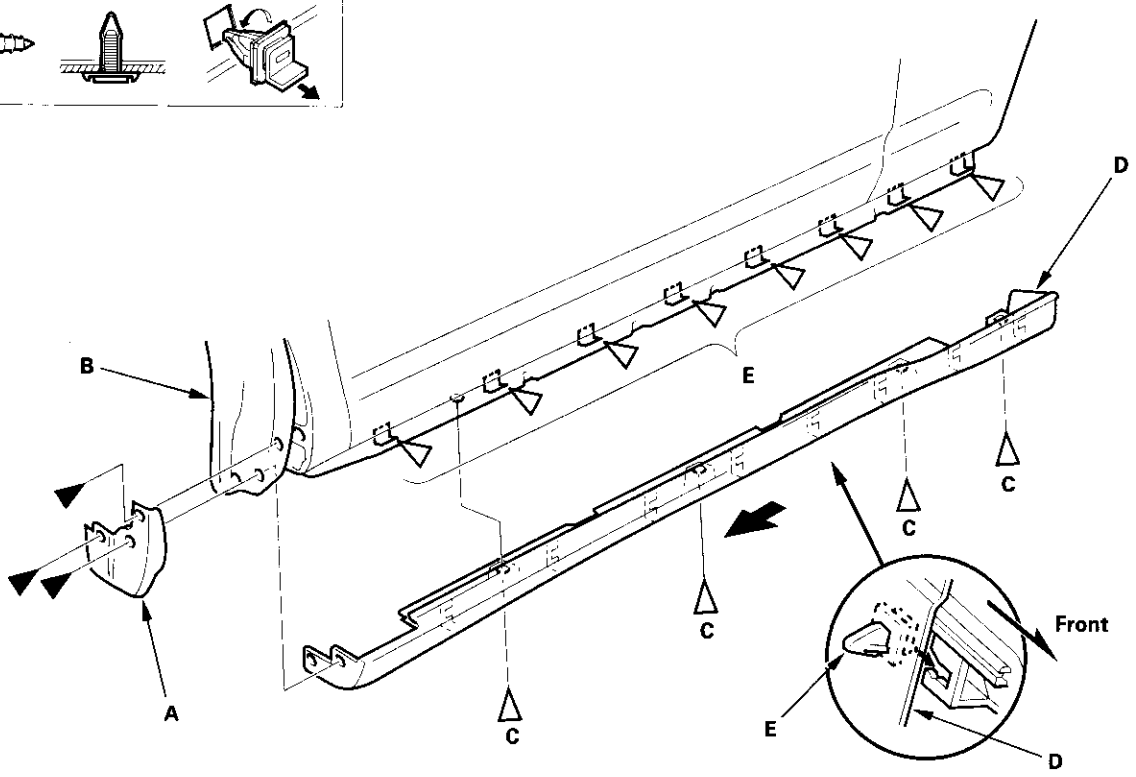
1. Remove the side sill panel.

   -1 If equipped, remove the splash guard (A).
   -2 Pull the inner fender (B) back as necessary, and remove the expansion clip (C).
   -3 Slide the side sill panel (D) forward, and remove it. The side clips (E) will stay in the body.
   -4 Remove the side clips from the body.

Fastener Locations

▶: Screw, 4 C▷: Clip, 4 E▷: Clip, 8



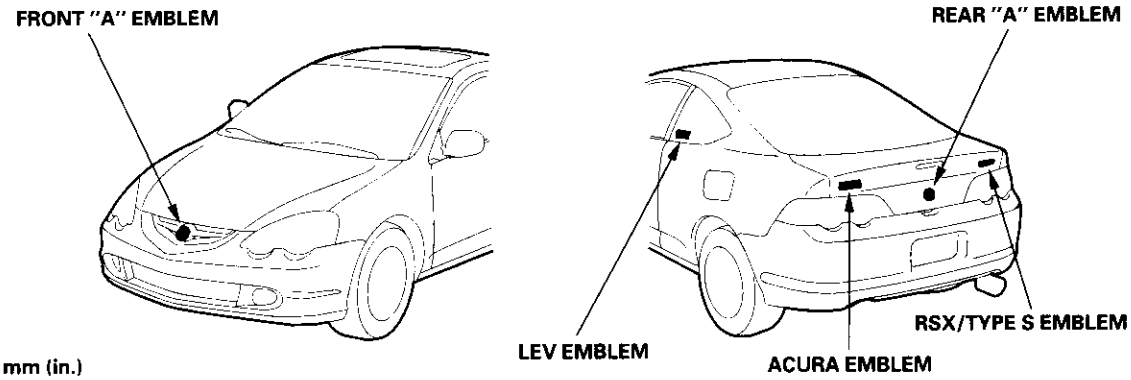


2. Replace any damaged clips.
3. Install the side clips on the side sill panel.
4. Hold the panel up, and fit all the side clips into the holes in the body, then push on the panel until the clips snap into place.
5. Install all the expansion clips.
6. Reinstall the inner fender and splash guard (if equipped).

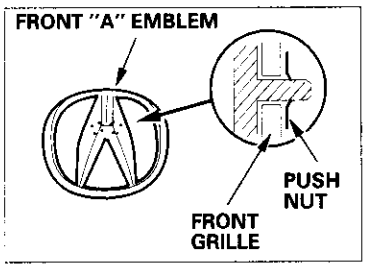
Emblem Replacement

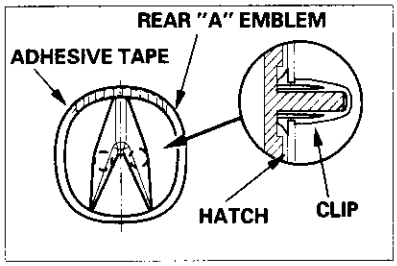
NOTE: When removing the emblems, take care not to scratch the body.

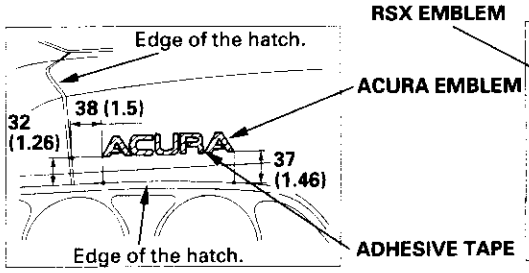
1. To remove the front "A" emblem, remove the front emblem base (see page 20-97).
2. Clean the body surface with a sponge dampened in alcohol. After cleaning, keep oil, grease and water from getting on the surface.
3. Apply the emblem where shown. When installing the LEV emblem on the quarter glass, align the application tape with the edge of the quarter glass, then press the emblem into place, and remove the application tape.

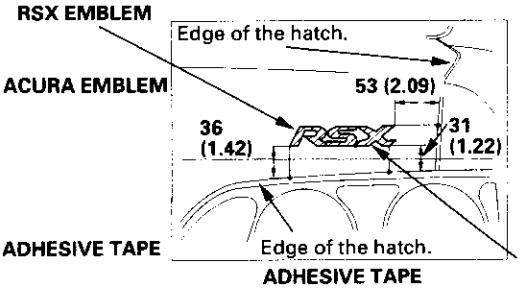


Unit: mm (in.)
Adhesive type: 3M 4213E,or equivalent Thickness 0.8 mm (0.03 in.)





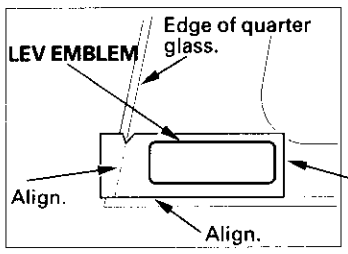




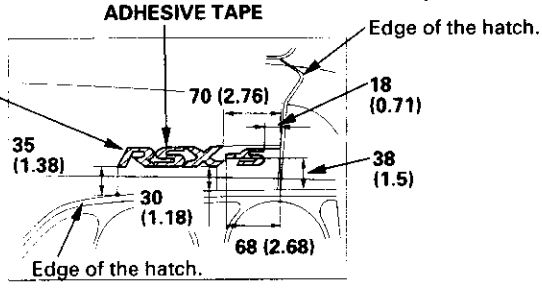
ACURA EMBLEM

ADHESIVE TAPE

ADHESIVE TAPE



APPLICATION TAPE



4. After installing the front "A" emblem, reinstall the front emblem base (see page 20-97).

Front Inner Fender Replacement

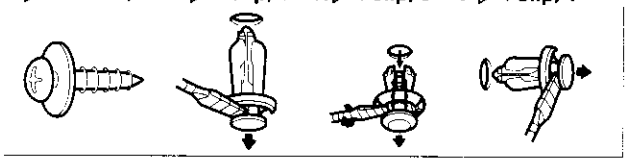
NOTE: Take care not to scratch the body.

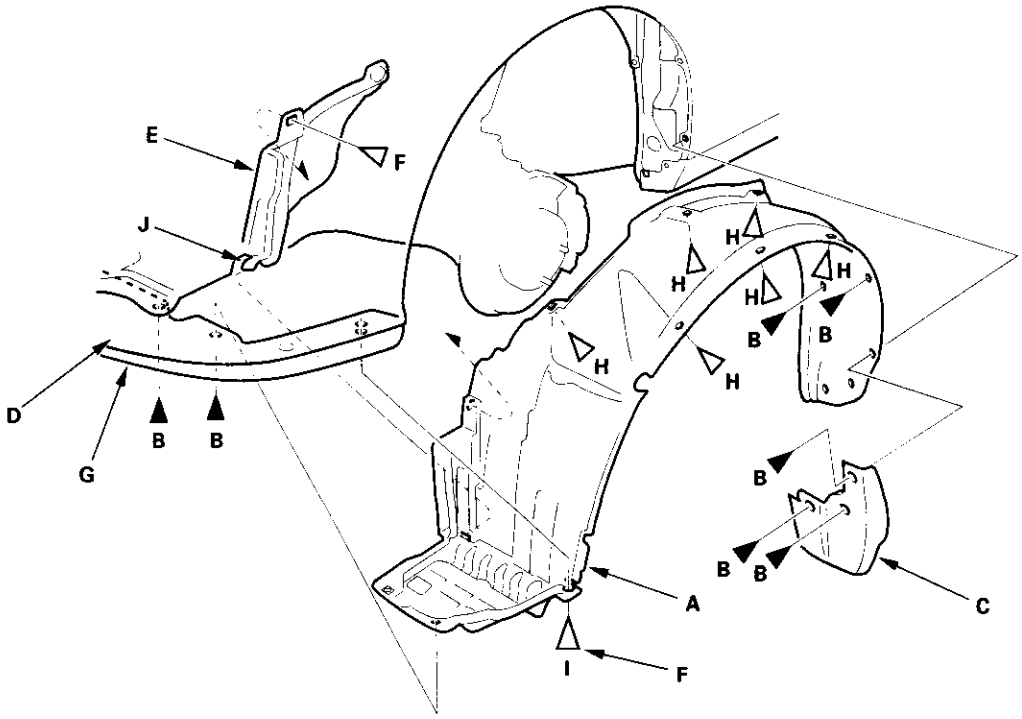
1. Remove the front inner fender (A).

   -1 On the back of the wheel arch, remove the screws (B). If equipped, remove the front splash guard (C).
   -2 From under the front bumper (D), remove the screws (B) securing the front bumper, splash shield (E), and front inner fender, and remove the clip (F) securing the front bumper, front air spoiler (G), and front inner fender.
   -3 From the wheel arch, remove the clips (H, I) securing the front inner fender (and splash shield) on the body.
   -4 Release the hook (J) of the splash shield, then remove the front inner fender.

Fastener Locations

B▶ : Screw, 7 F▷ : Clip, 1 H▷ : Clip, 6 I ▷ : Clip, 1





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.

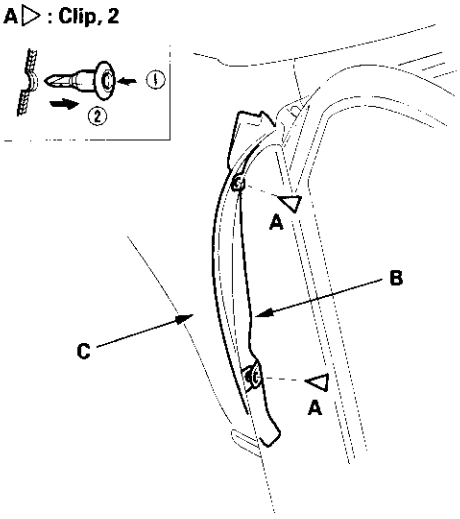
Front Fender Fairing Replacement

1. Remove the front inner fender as necessary (see page 20-102).

2. Open the front door. From inside the door, remove the upper and lower clips (A) securing the front fender fairing (B) and front fender (C).

Fastener Locations

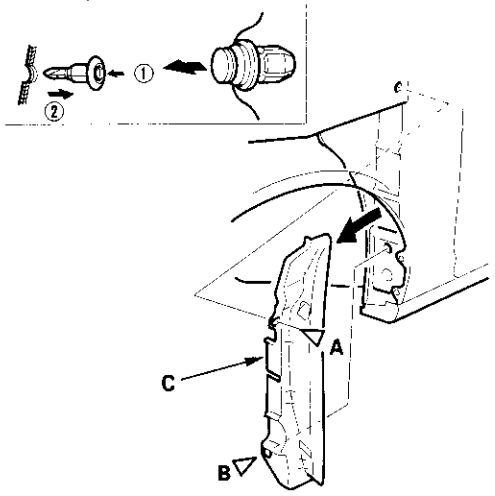
A▷ : Clip, 2



3. From the wheel arch, remove the clip (A), and release the clip (B), then remove the front fender fairing (C).

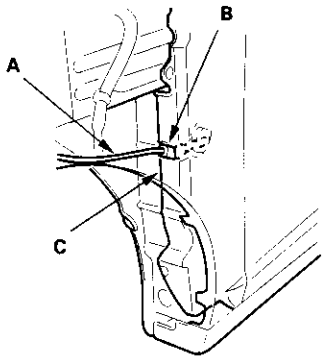
Fastener Locations

A▷ : Clip, 1 **B▷ : Clip, 1**

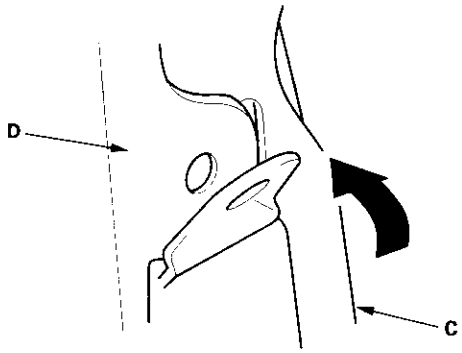


4. Install the fender fairing in the reverse order of removal, and note these items:

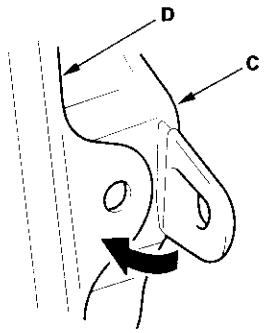
- Replace any damaged clips.
- On the left side of the vehicle, route the rear window washer tube (A) through the slit (B) in the front fender fairing (C).
- Before installing the clips in the doorjamb area, install the front fender fairing (C) on the front fender (D) properly as shown.
- Push the clips into place securely.



Upper portion:



Lower portion:



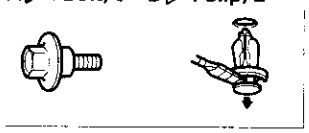
Rear Strake Replacement

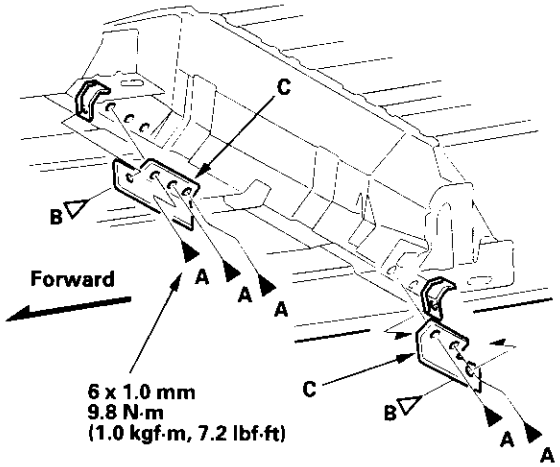
For Some Models

1. Remove the bolts (A) and clips (B), then remove the rear strake (C) on each side. Take care not to scratch the body.

Fastener Locations

A▶ : Bolt, 5 B▷ : Clip, 2





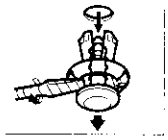
2. Install the strake in the reverse order of removal, and replace any damaged clips.

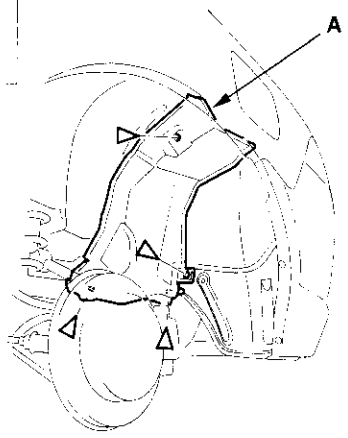
Fuel Pipe Protector Replacement

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:

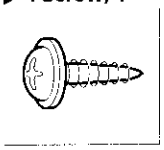
- Replace any damaged clips.
- Push the clips into place securely.

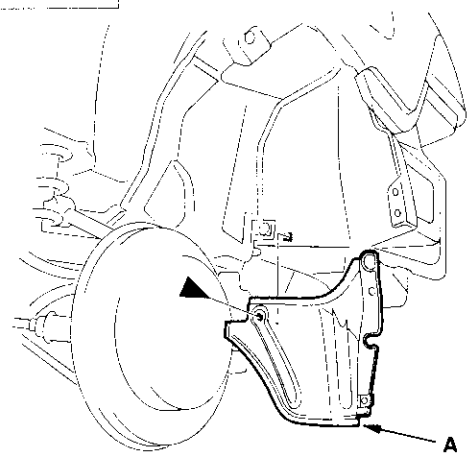
Rear Inner Fender Replacement

1. Remove the wheel arch portion of the rear bumper, as necessary (see page 20-89).
2. Remove the screw, then remove the rear inner fender (A). Take care not to scratch the body.

Fastener Location

▶ : Screw, 1

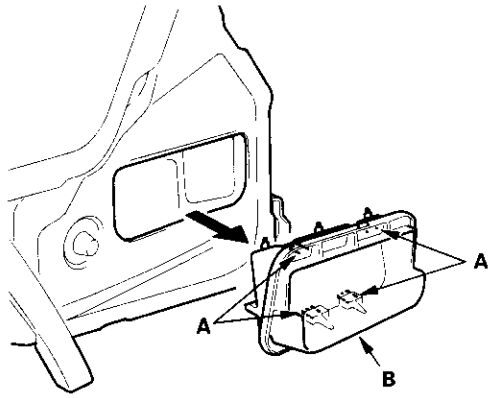




3. Install the inner fender in the reverse order of removal.

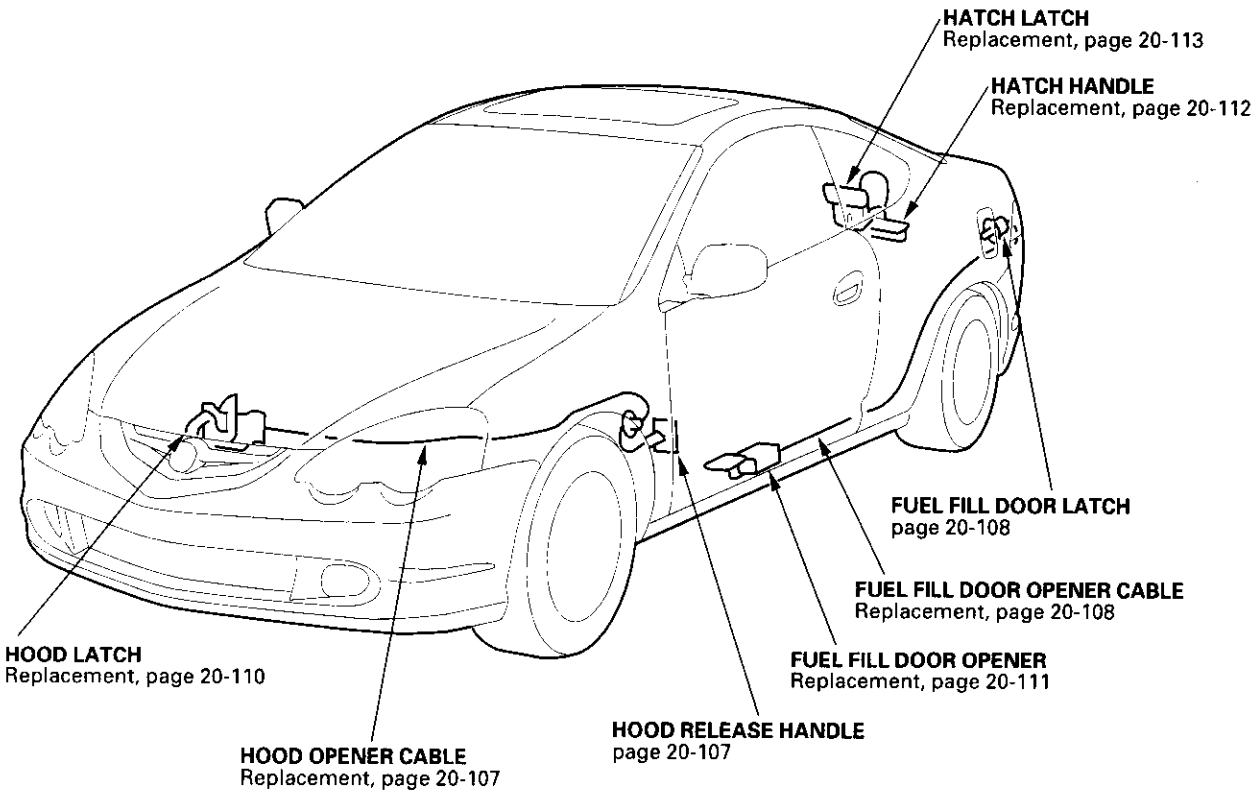
Rear Air Outlet Replacement

1. Remove the rear bumper (see page 20-89).
2. Detach the hooks (A), then remove the rear air outlet (B). Take care not to scratch the body.



3. Install the air outlet by pushing on the hook portions until the hooks snap into place.

Component Location Index



Hood Opener Cable Replacement

NOTE:
- Put on gloves to protect your hands.
- Take care not to scratch the body and related parts.

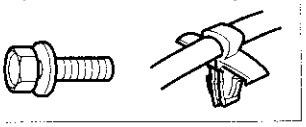
1. Remove these items from the left side of the vehicle:

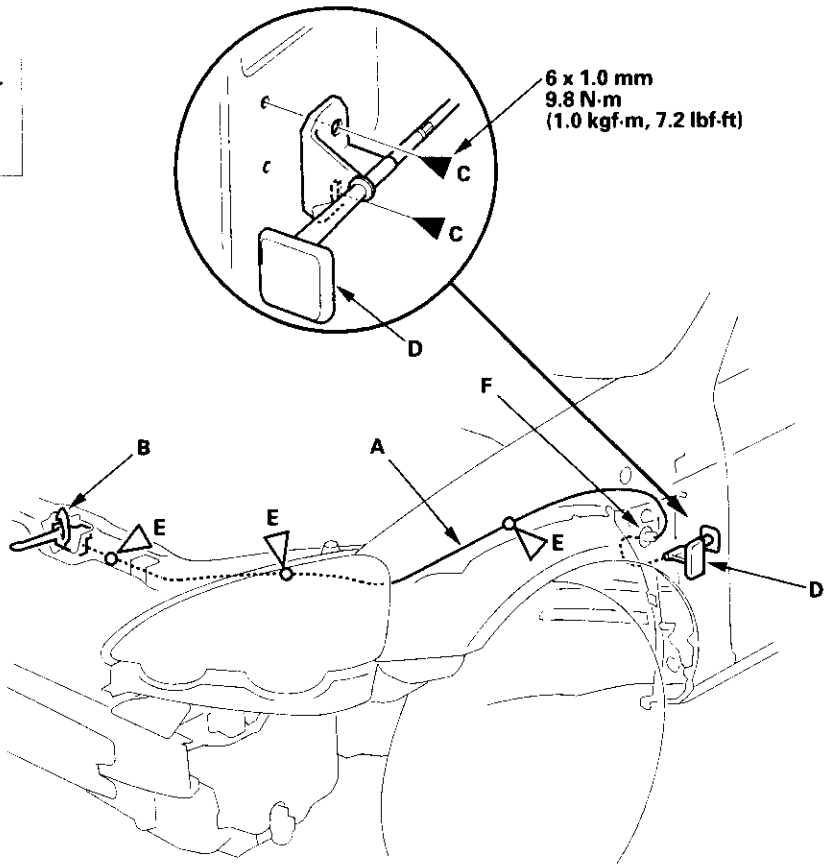
   - Inner fender (see page 20-102)
   - Kick panel (see page 20-49)

2. Disconnect the hood opener cable (A) from the hood latch (B) (see page 20-110), 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.

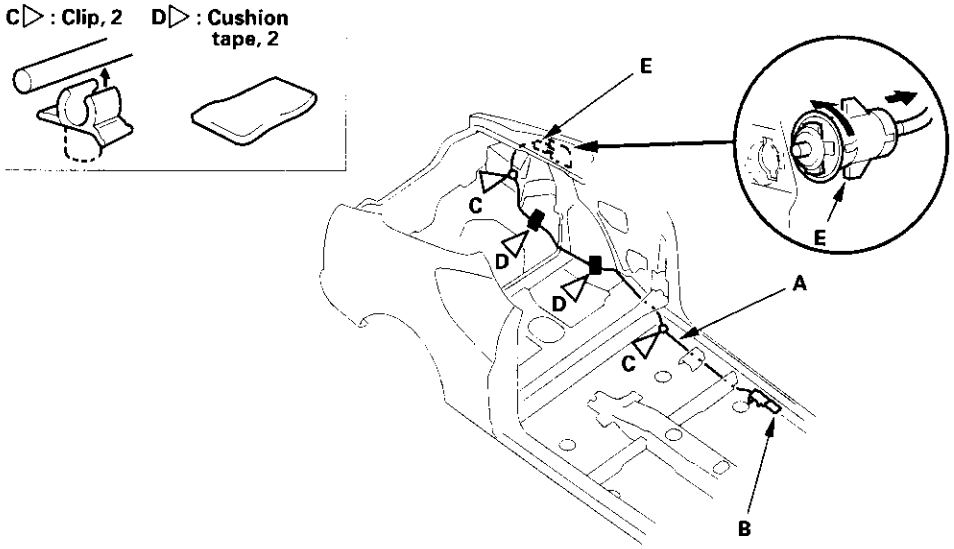
Fuel Fill Door Opener Cable Replacement

SRS components are located in this area. Review the SRS component locations (see page 23-10) and the precautions and procedures (see page 23-11) 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 left side of the vehicle:
   - Rear side trim panel (see page 20-50)
   - Cargo area side trim panel (see page 20-52)
2. Pull the carpet back as necessary (see page 20-56).
3. Disconnect the fuel fill door opener cable (A) from the opener (B) (see step 4 on page 20-111).

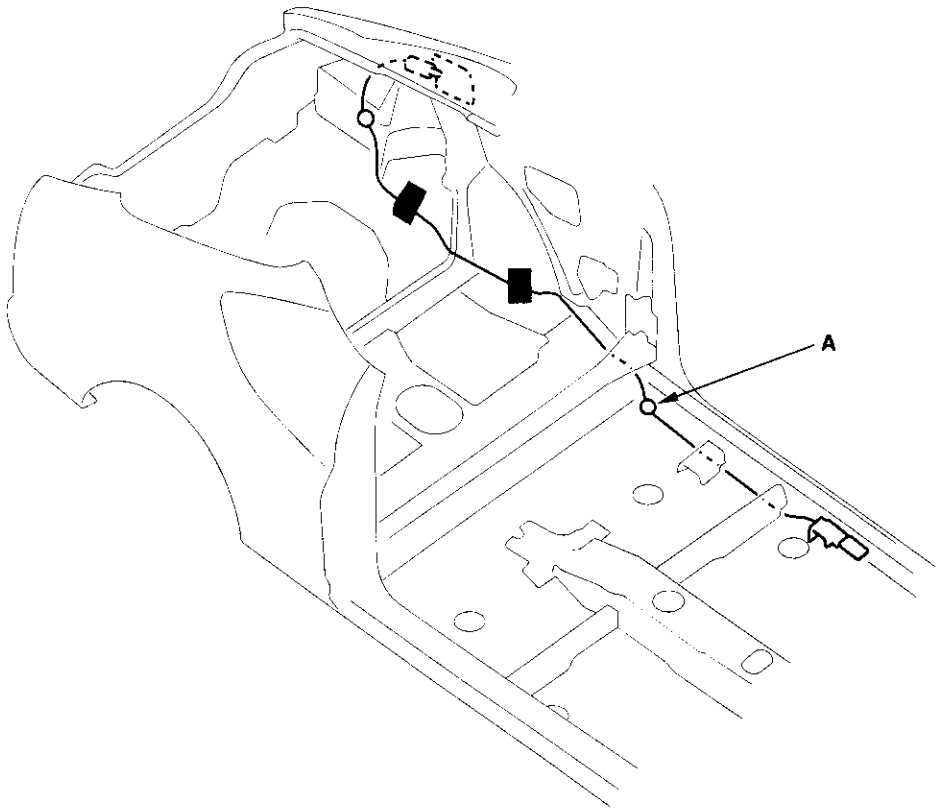
Fastener Locations



4. Remove the opener cable from the clips (C). Remove the cushion tape (D).
5. Remove the fuel fill door latch (E) from the body by turning it 90°.
6. Remove the opener cable from the vehicle. Take care not to bend the cable.

7. Install the opener cable in the reverse order of removal, and note these items:

   - Replace the cushion tape and any damaged clips.
   - Align the mark (A) on the opener cable with the clip.
   - Make sure the fuel fill door opens properly and locks securely.



Hood Latch Replacement

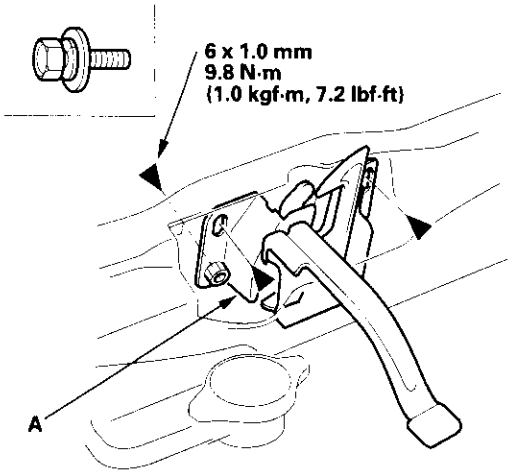
NOTE:
- Put on gloves to protect your hands.
- Take care not to scratch the body.

1. Remove the front bumper (see page 20-87).

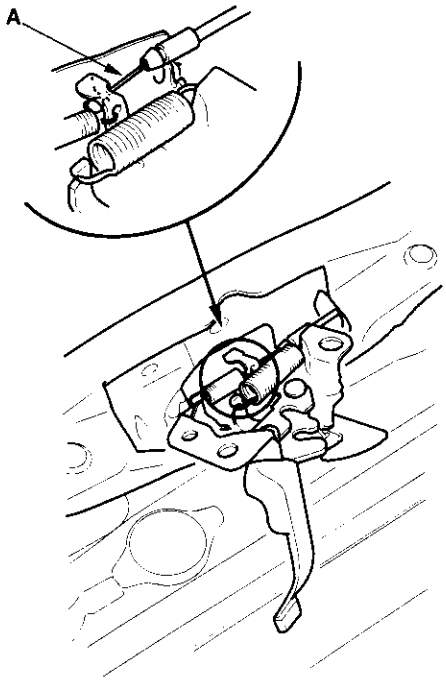
2. Remove the bolts, then remove the hood latch (A) from the body.

Fastener Locations

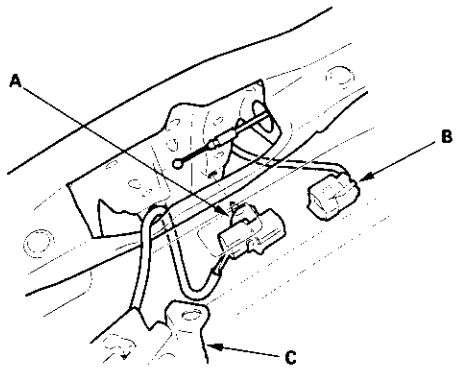
▶ : Bolt, 3



3. Disconnect the hood opener cable (A) from the hood latch. Take care not to bend the cable.

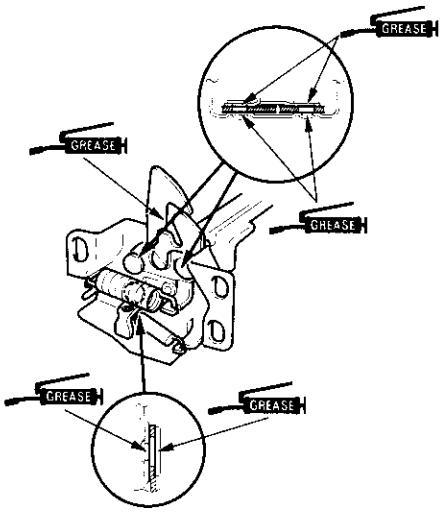


4. Detach the hood latch switch connector clip (A) from the body, and disconnect the hood latch switch connector (B), then remove the hood latch (C).



5. Install the latch in the reverse order of removal, and note these items:

- Apply multipurpose grease to each location of the hood latch indicated by the arrows.
- Make sure the hood latch switch connector is plugged in properly and 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 20-90).
- Make sure the hood opens properly and locks securely.



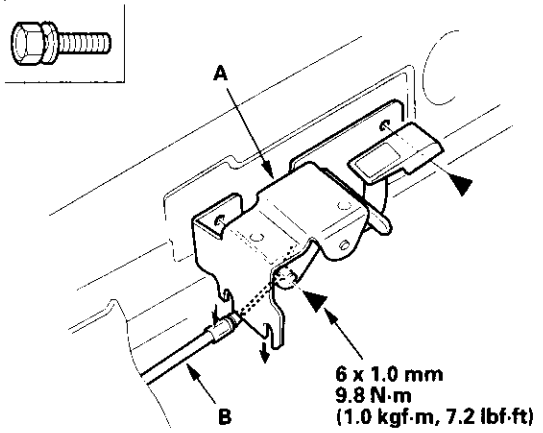
Fuel Fill Door Opener Replacement

NOTE: Put on gloves to protect your hands.

1. Slide the driver's front seat rearward fully.
2. Remove these items from the left side of the vehicle (see page 20-49):
   - Door sill trim
   - Kick panel
3. Pull the carpet back as necessary (see page 20-56).
4. Remove the bolts, then remove the fuel fill door opener (A) from the body.

Fastener Locations

▶ : Bolt, 2



5. Disconnect the fuel fill door opener cable (B) from the opener, then remove the opener. Take care not to bend the cable.
6. 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.

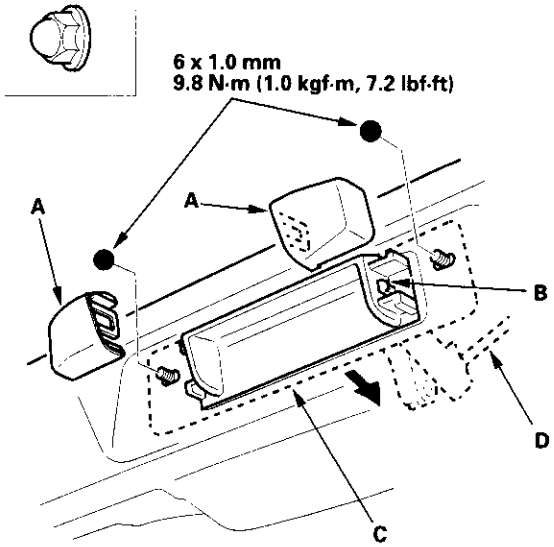
Hatch Handle Replacement

NOTE: Put on gloves to protect your hands.

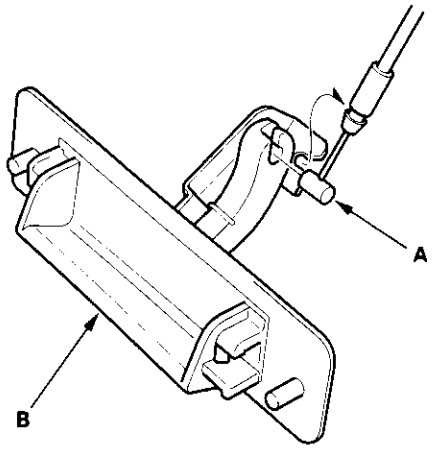
1. Remove the hatch trim panel (see page 20-53).
2. Using a flat-tip screwdriver wrapped with protective tape, gently pry out the hatch handle cover (A) to detach the hook (B) from each side.

Fastener Locations

● : Nut, 2



3. Remove the nuts, and pull the hatch handle (C) out through the hole of the hatch. Take care not to bend the hatch opener cable (D).
4. Disconnect the hatch opener cable (A) from the hatch handle (B), then remove the handle.



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

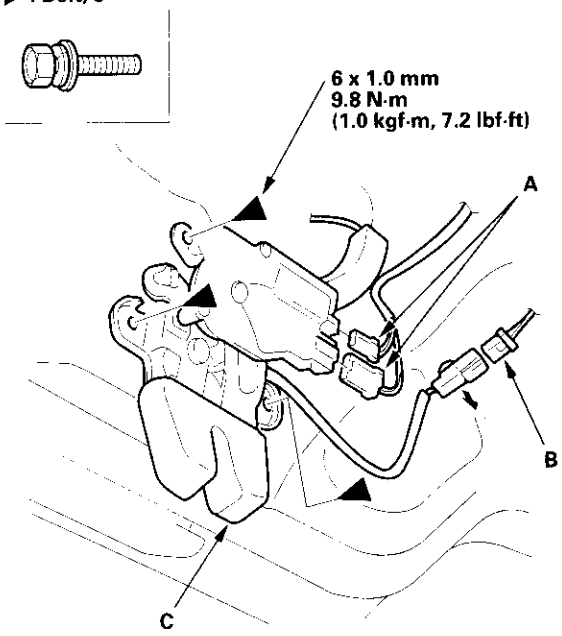
NOTE: Put on gloves to protect your hands.

1. Remove the hatch trim panel (see page 20-53).

2. Disconnect the hatch latch actuator connectors (A) and hatch latch switch connector (B), and detach the hatch latch switch connector from the hatch.

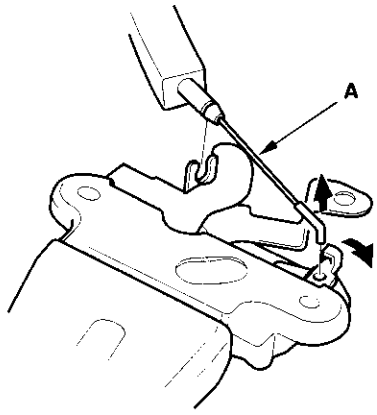
Fastener Locations

▶ : Bolt, 3



3. While holding the hatch latch (C), remove the bolts, then remove the latch from the hatch.

4. Disconnect the hatch opener cable (A) from the latch.



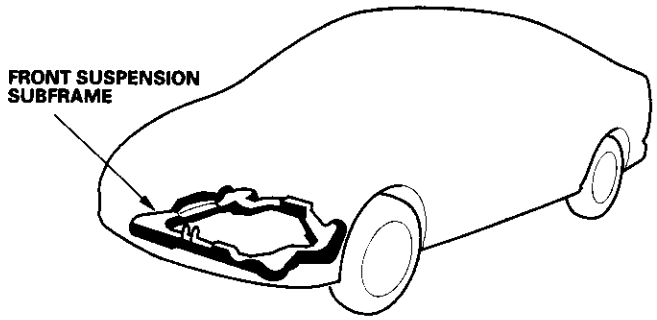
5. Install the latch in the reverse order of removal, and note these items:

- Make sure each connector is plugged in properly, and the cable is connected properly.
- Make sure the cable actuates the latch before you close the hatch.
- Make sure the hatch opens properly and locks securely.

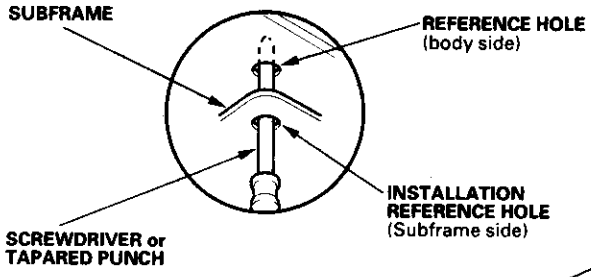
Subframe Replacement

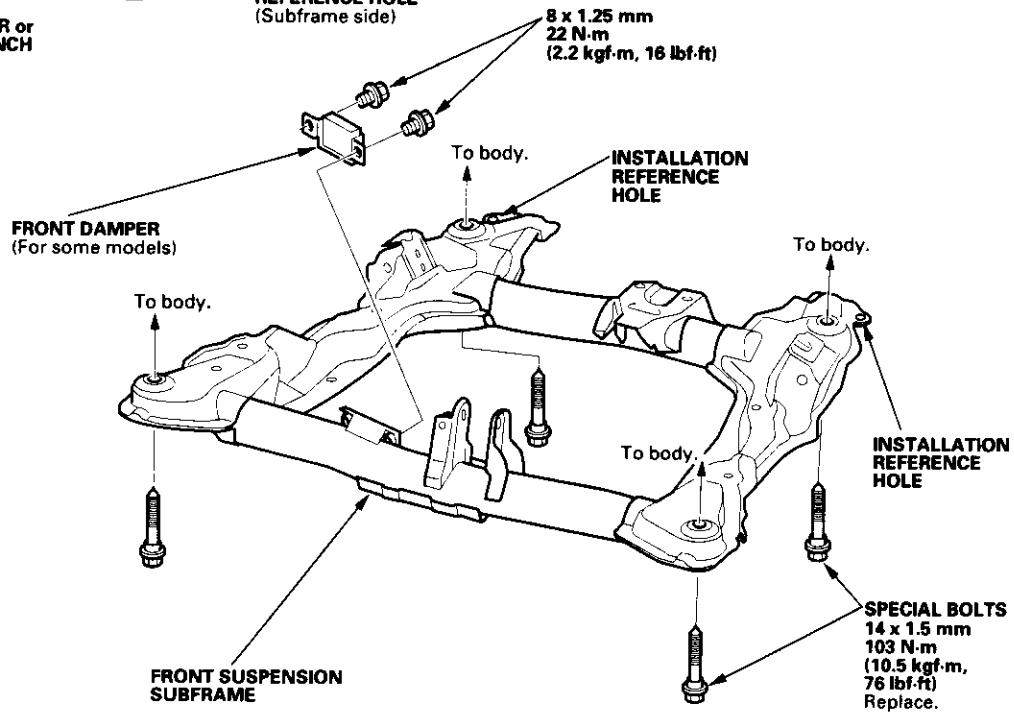
Subframe Torque:

After loosening the subframe mounting bolts, be sure to replace them with new ones.



Reference holes alignment:



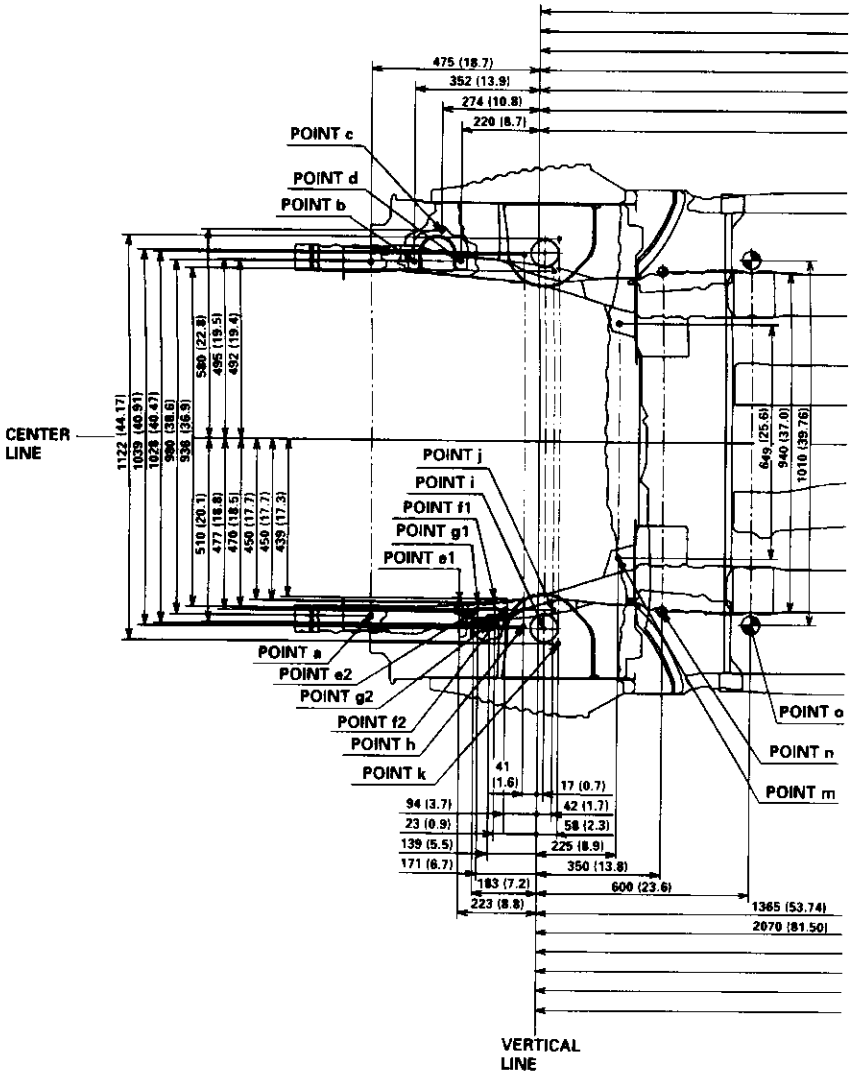


Frame Repair Chart

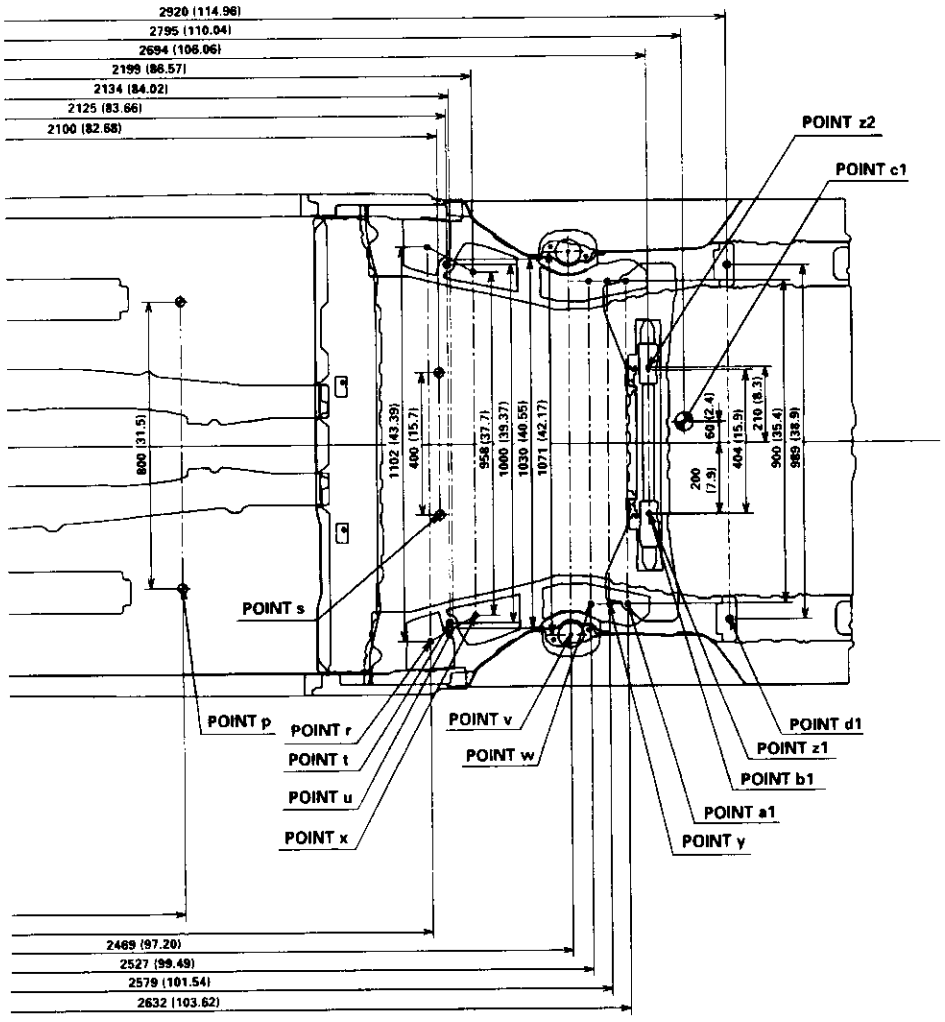
Top view:

Unit: mm (in.)
ø: Inner diameter

a	For subframe ø15 (0.59)	g1	For M/T transmission mount ø13 (0.51)
b	For engine mount ø13 (0.51)	g2	For A/T transmission mount ø13 (0.51)
c	For engine mount ø13 (0.51)	h	For damper mount ø11.5 (0.45)
d	For engine mount ø13 (0.51)	i	For damper center ø78 (3.07)
e1	For M/T transmission mount ø13 (0.51)	j	For damper mount ø11.5 (0.45)
e2	For A/T transmission mount ø13 (0.51)	k	For damper mount ø11.5 (0.45)
f1	For M/T transmission mount ø13 (0.51)	m	For subframe ø15 (0.59)
f2	For A/T transmission mount ø13 (0.51)	n	Locating hole ø25 (0.98)



o	Locating hole ø50 (1.97)	x	For trailing arm ø13 (0.51)
p	Locating hole ø25 (0.98)	y	For upper arm bracket center ø15 (0.59)
r	For trailing arm ø13 (0.51)	z1, z2	Locating hole ø13 (0.51)
s	Locating hole ø25 (0.98)	a1	For upper arm ø13 (0.51)
t	Locating hole ø20 (0.79)	b1	For rear lower arm center
u	Trailing arm center	c1	Locating hole ø50 (1.97)
v	Rear damper center	d1	Locating hole ø20 (0.79)
w	For upper arm ø13 (0.51)		



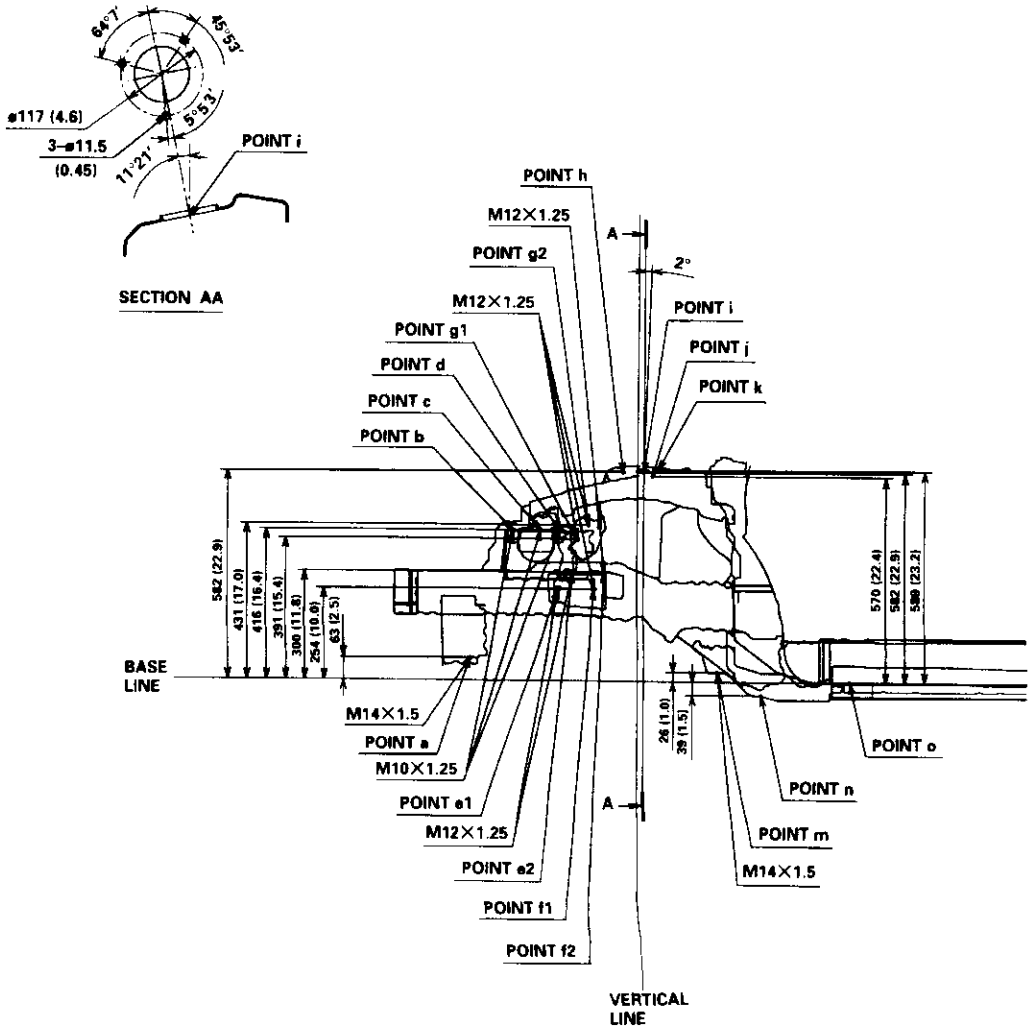
(cont'd)

Frame Repair Chart (cont'd)

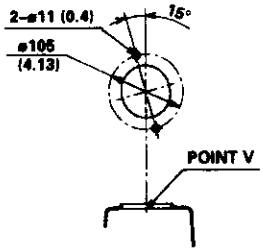
Side view:

Unit: mm (in.)
ø: Inner diameter

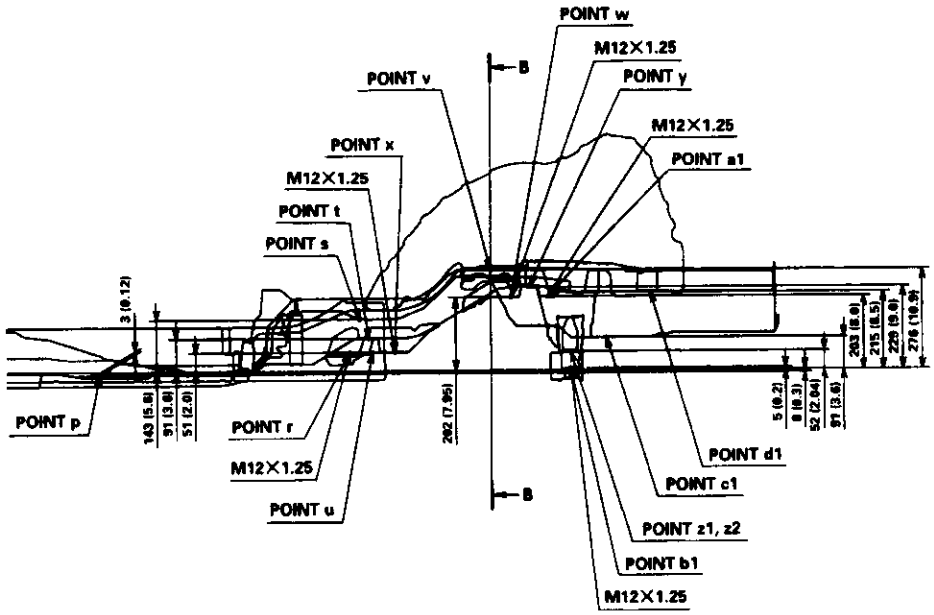
a	For subframe ø15 (0.59)	g1	For M/T transmission mount ø13 (0.51)
b	For engine mount ø13 (0.51)	g2	For A/T transmission mount ø13 (0.51)
c	For engine mount ø13 (0.51)	h	For damper mount ø11.5 (0.45)
d	For engine mount ø13 (0.51)	i	For damper center ø78 (3.07)
e1	For M/T transmission mount ø13 (0.51)	j	For damper mount ø11.5 (0.45)
e2	For A/T transmission mount ø13 (0.51)	k	For damper mount ø11.5 (0.45)
f1	For M/T transmission mount ø13 (0.51)	m	For subframe ø15 (0.59)
f2	For A/T transmission mount ø13 (0.51)	n	Locating hole ø25 (0.98)



o	Locating hole ø50 (1.97)	x	For trailing arm ø13 (0.51)
p	Locating hole ø25 (0.98)	y	For upper arm bracket center ø15 (0.59)
r	For trailing arm ø13 (0.51)	z1, z2	Locating hole ø13 (0.51)
s	Locating hole ø25 (0.98)	a1	For upper arm ø13 (0.51)
t	Locating hole ø20 (0.79)	b1	For rear lower arm center
u	Trailing arm center	c1	Locating hole ø50 (1.97)
v	Rear damper center	d1	Locating hole ø20 (0.79)
w	For upper arm ø13 (0.51)		

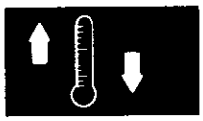


SECTION BB



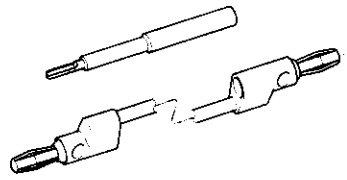
HVAC (Heating, Ventilation, and Air Conditioning)

Climate Control



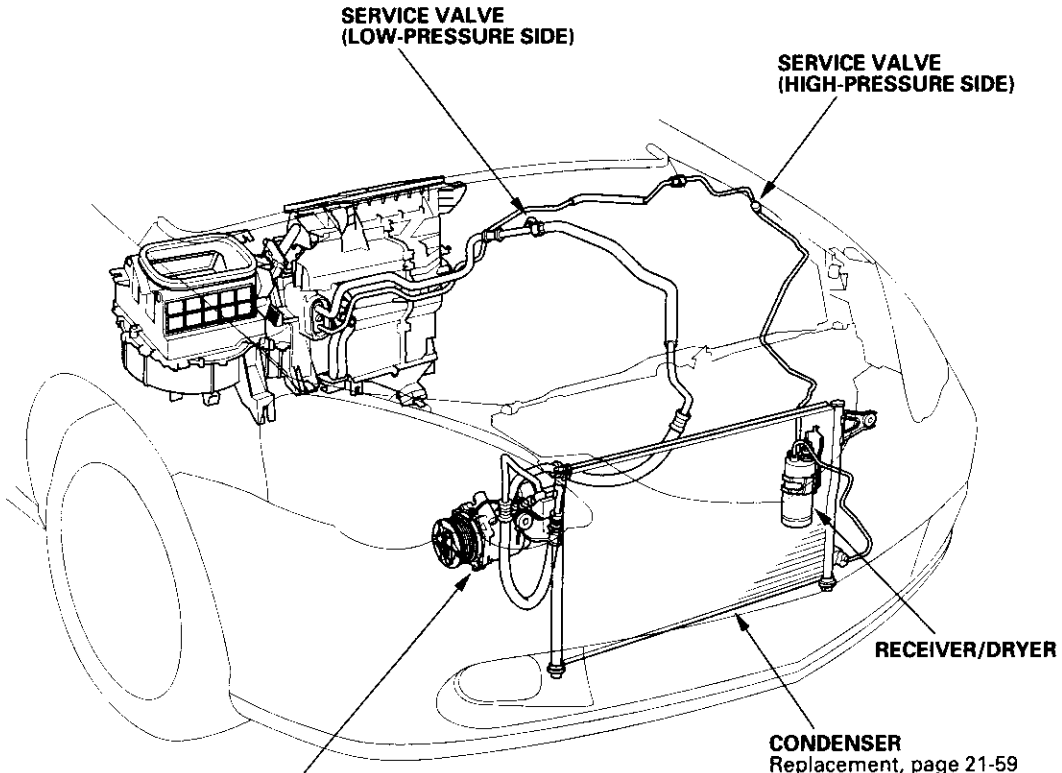
Special Tools

Ref.No.	Tool Number	Description	Qty
①	07SAZ-001000A	Backprobe Set	2



①

Component Location Index



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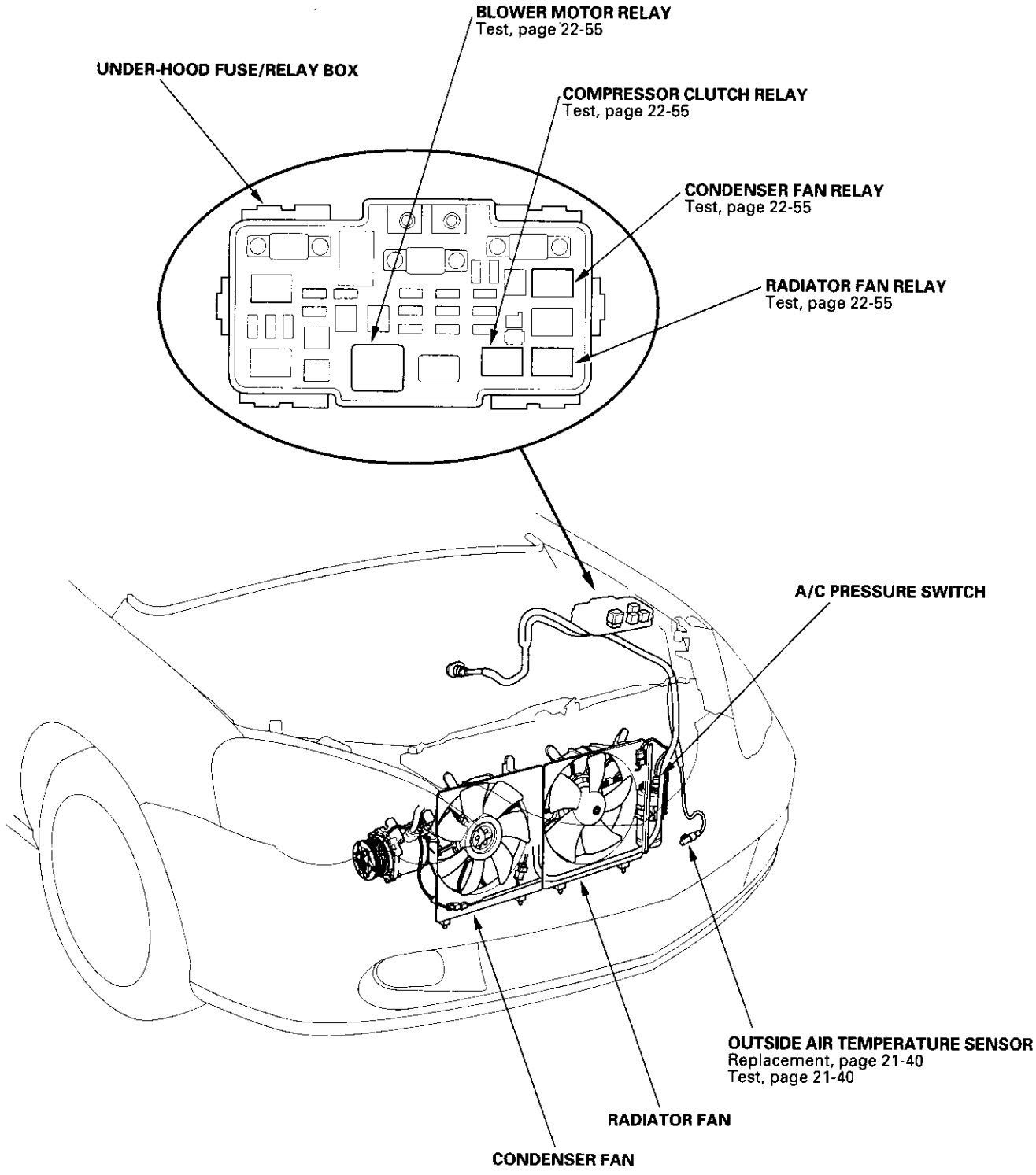
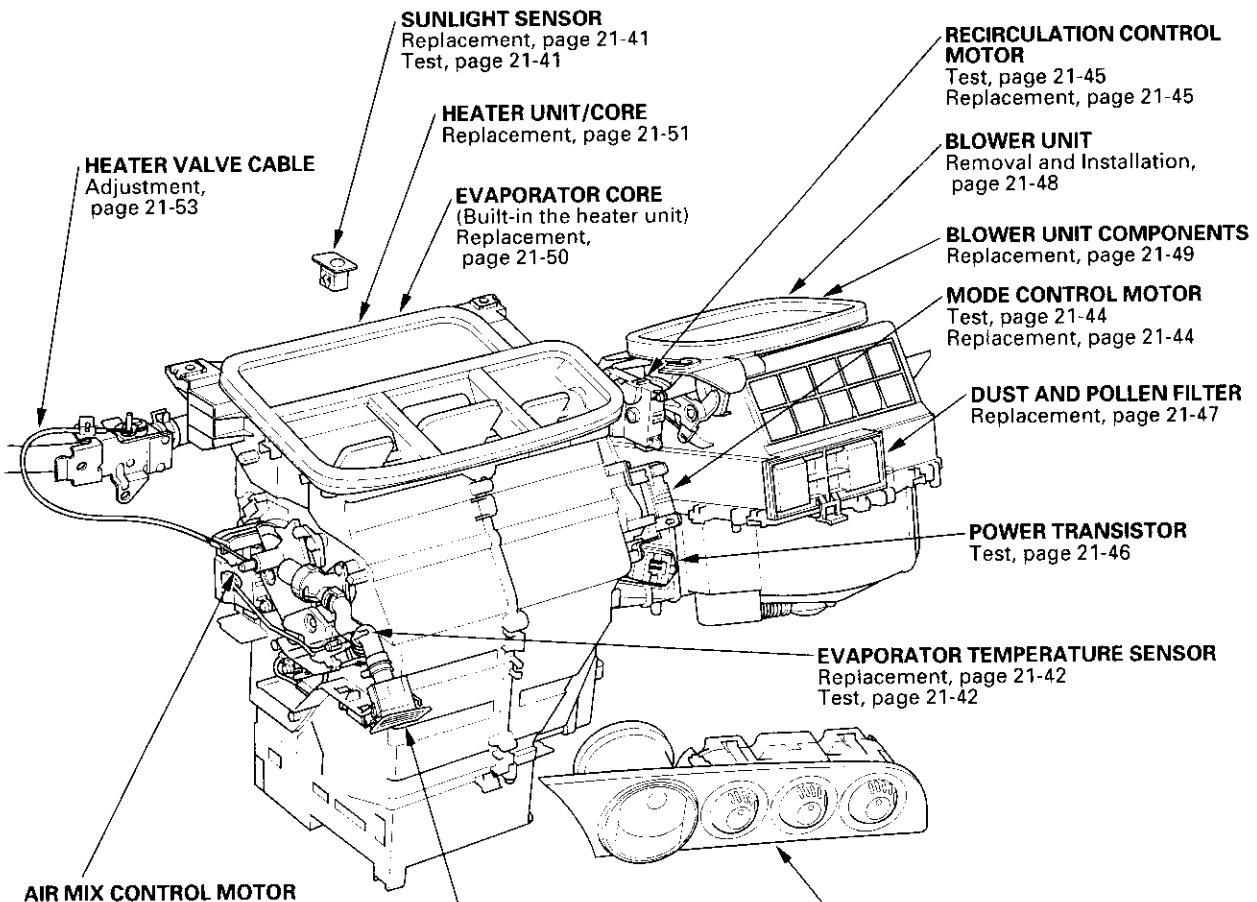
Component Location Index (cont'd)




SUNLIGHT SENSOR
Replacement, page 21-41
Test, page 21-41
HEATER UNIT/CORE
Replacement, page 21-51
HEATER VALVE CABLE
Adjustment,
page 21-53
EVAPORATOR CORE
(Built-in the heater unit)
Replacement,
page 21-50
RECIRCULATION CONTROL MOTOR
Test, page 21-45
Replacement, page 21-45
BLOWER UNIT
Removal and Installation,
page 21-48
BLOWER UNIT COMPONENTS
Replacement, page 21-49
MODE CONTROL MOTOR
Test, page 21-44
Replacement, page 21-44
DUST AND POLLEN FILTER
Replacement, page 21-47
POWER TRANSISTOR
Test, page 21-46
EVAPORATOR TEMPERATURE SENSOR
Replacement, page 21-42
Test, page 21-42
AIR MIX CONTROL MOTOR
Test, page 21-43
Replacement, page 21-43
IN-CAR TEMPERATURE SENSOR
Replacement, page 21-39
Test, page 21-39
CLIMATE CONTROL UNIT
Removal and Installation, page 21-46
Bulb Replacement, page 21-47

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-134 a 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 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:

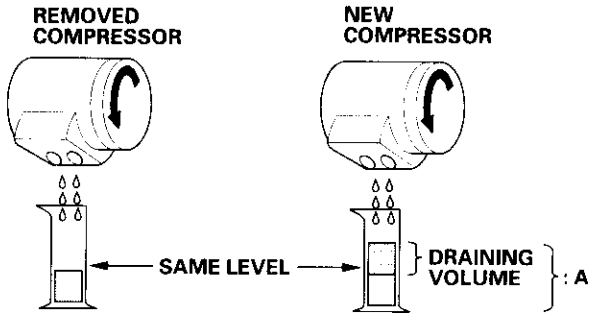
- P/N 38897-P13-A01AH: 120 mℓ (4 fl·oz)
- P/N 38899-P13-A01: 40 mℓ (1 1/3 fl·oz)

Add the recommended refrigerant oil in the amount listed if you replace any of the following parts.

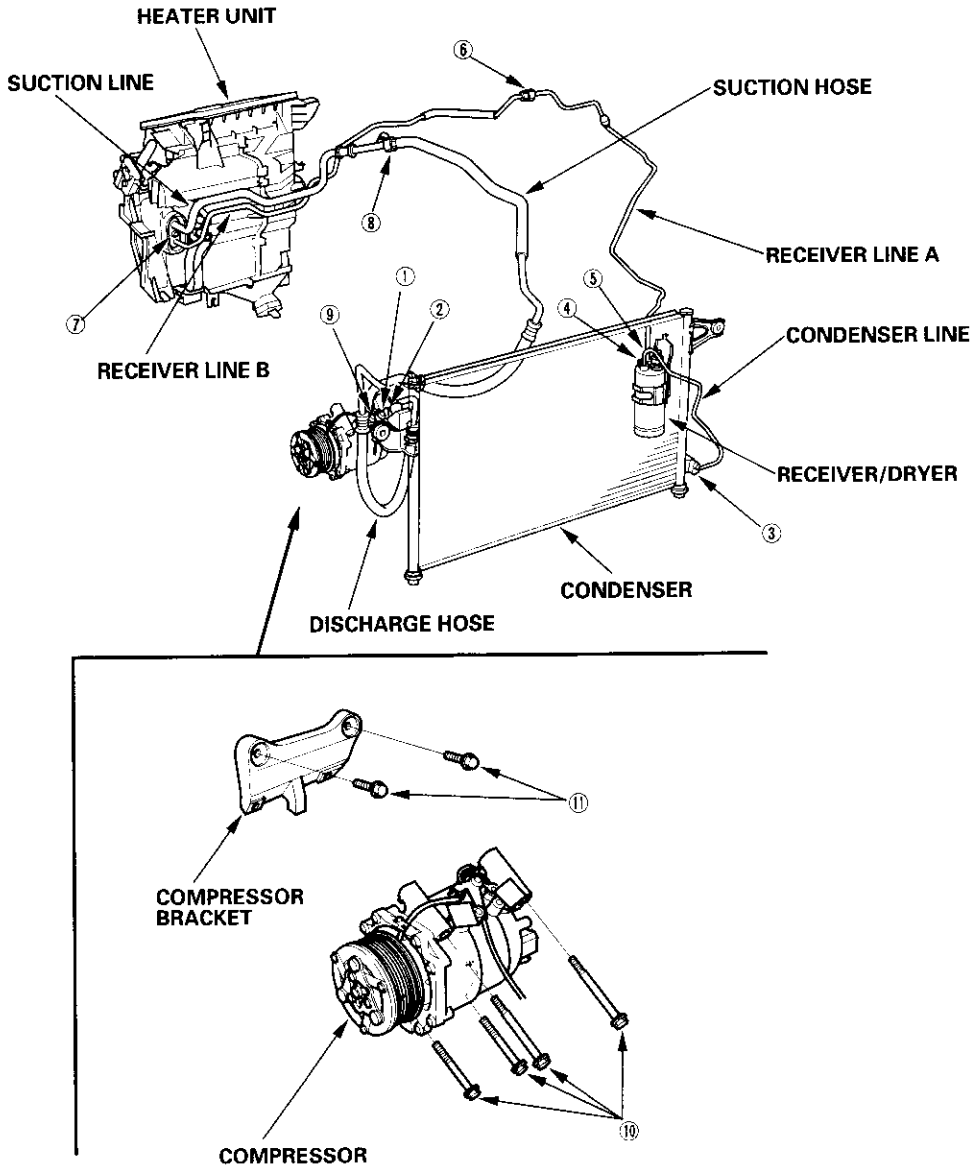
- To avoid contamination, do not return the oil to the container once dispensed, and never mix it with other refrigerant oils.
- Immediately after using the oil, reinstall the cap on the container, and seal it to avoid moisture absorption.
- Do not spill the refrigerant oil on the vehicle; it may damage 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 1/2 fl·oz, 1.6 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)

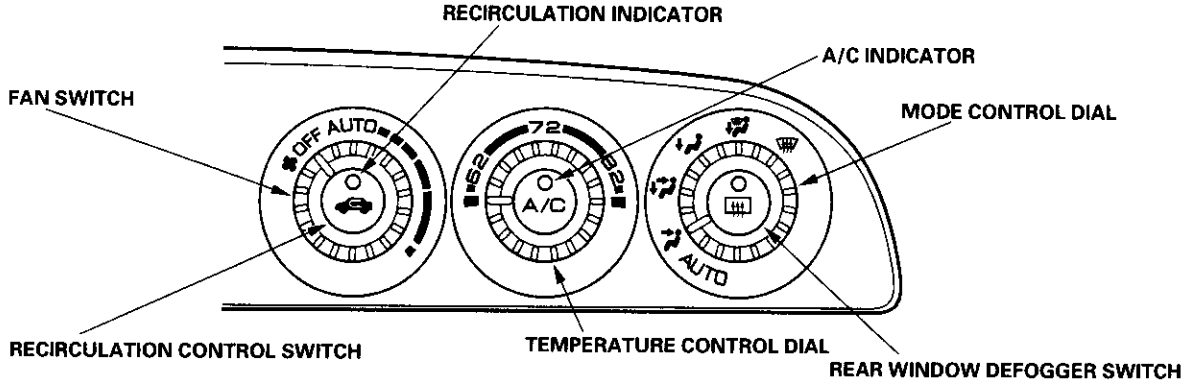
General Troubleshooting Information

How to Retrieve a DTC

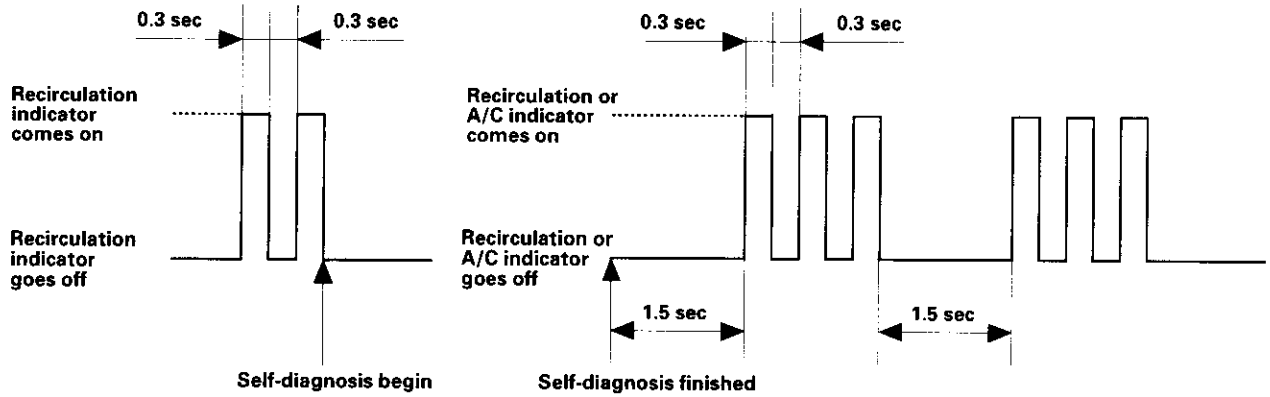
The Climate Control Unit has a self-diagnosis function. To run the self-diagnosis function, do the following:

1. Turn the ignition switch OFF.

2. Turn the fan switch OFF, the temperature control dial to Max Cool (60°F or 18°C), and the mode control dial to Vent.
3. Turn the ignition switch ON (II), then press and hold the recirculation control switch. Within 10 seconds while holding the switch down, press the rear window defogger switch five times. The recirculation indicator blinks two times and the A/C indicator comes on, then the self-diagnosis will begin. About 15 seconds later, the self-diagnosis will finish and the A/C indicator goes off. If there is any problem in the system after finished self-diagnosis, the recirculation indicator will blink the Diagnostic Trouble Code (DTC) 1 through 13. When problems in the evaporator temperature sensor circuit are detected (codes 14 and 15), the A/C indicator will blink the DTC. If no DTCs are found, the indicator will not blink.



Example of DTC indication Pattern (DTC 3)



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
1	An open in the in-car temperature sensor circuit	(see page 21-16)
2	A short in the in-car temperature sensor circuit	(see page 21-17)
3	An open in the outside air temperature sensor circuit	(see page 21-17)
4	A short in the outside air temperature sensor circuit	(see page 21-19)
5	An open in the sunlight sensor circuit	(see page 21-19)
6	A short in the sunlight sensor circuit	(see page 21-20)
7	An open in the air mix control motor circuit	(see page 21-21)
8	A short in the air mix control motor circuit	(see page 21-21)
9	A problem in the air mix control linkage, door, or motor	(see page 21-22)
10	An open or short in the mode control motor circuit	(see page 21-23)
11	A problem in the mode control linkage, doors, or motor	(see page 21-24)
12	A problem in the blower motor circuit	(see page 21-25)
13	A problem in the EEPROM in the climate control unit; the control unit must be replaced	(see page 21-46)

DTC (A/C Indication Blinks)	Detection Item	Page
14	An open in the evaporator temperature sensor circuit	(see page 21-28)
15	A short in the evaporator temperature sensor circuit	(see page 21-29)

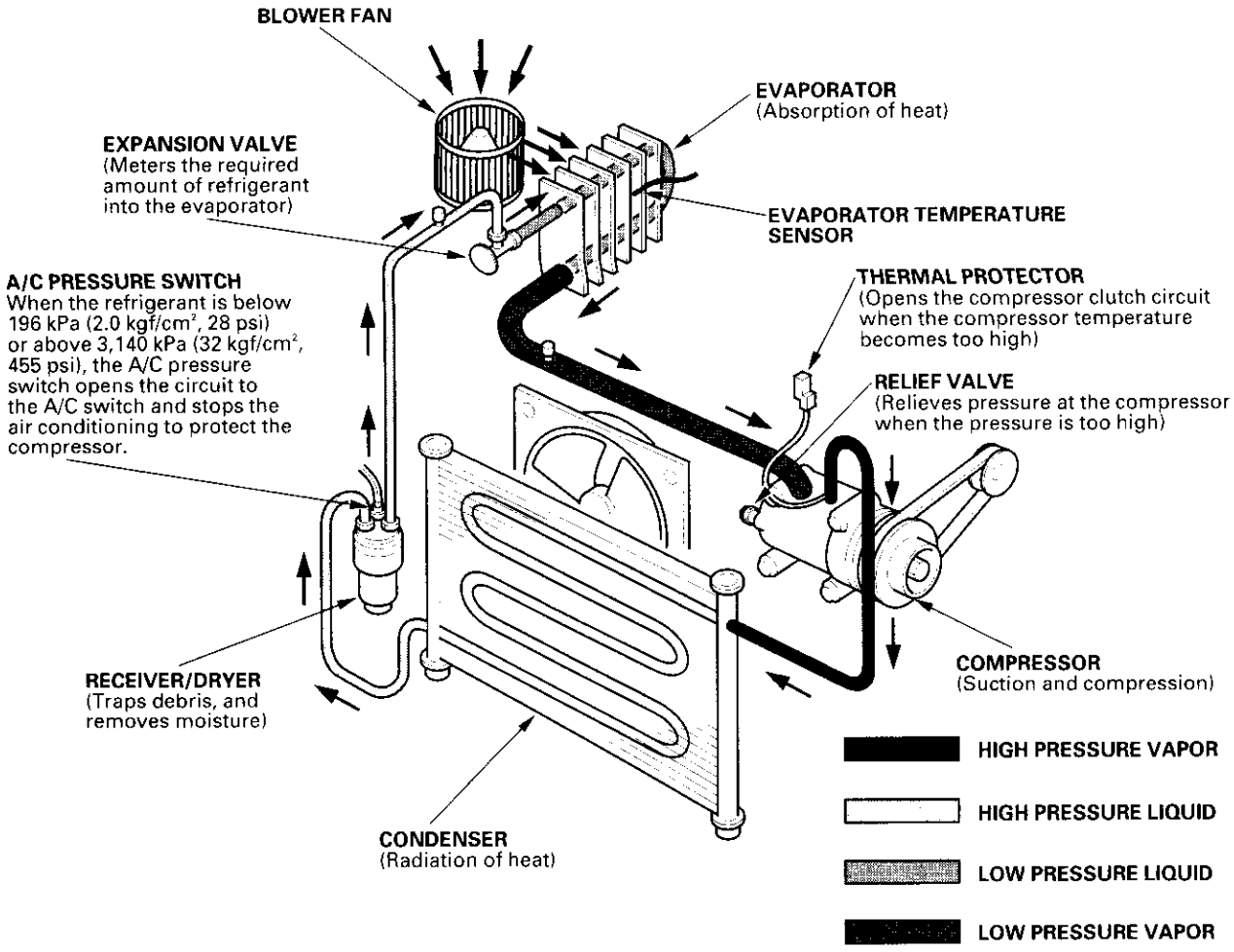
- In case of multiple problems, the recirculation or A/C indicator lights will indicate only the DTC with the least number of blinks.
- In case of an intermittent failure, the climate control unit will store the DTC untill the ignition is turned off.

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 21-30)	• Blown fuse No. 14 (10A) in the under-dash fuse/relay box • Cleanliness and tightness of all connectors
The blower motor does not run immediately even through the engine is fully warmed up NOTE: The temperature control dial must be set between 58°F (18°C) and 86°F (32°C)	ECT Sensor Circuit Troubleshooting (see page 21-31)	Cleanliness and tightness of all connectors
Both heater and A/C do not work	Climate Control Power and Ground Circuits Troubleshooting (see page 21-32)	• Blown fuse No. 14 (10A) in the under-dash fuse/relay box • Poor ground at G402 • 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 21-33)	• Blown fuse No. 1 (30A) in the under-hood fuse/relay box, and No. 14 (10A) in the under-dash fuse/relay box • Poor ground at G302 • 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 21-34)	• Blown fuse No. 1 (30A) and No. 4 (20A) in the under-hood fuse/relay box, and No. 14 (10A) in the under-dash fuse/relay box • Poor ground at G302 • Cleanliness and tightness of all connectors
Compressor clutch does not engage	Compressor Clutch Circuit Troubleshooting (see page 21-35)	• Blown fuse No. 1 (30A) in the under-hood fuse/relay box, and No. 14 (10A) in the under-dash fuse/relay box • 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 21-37)	Cleanliness and tightness of all connectors

System Description

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:

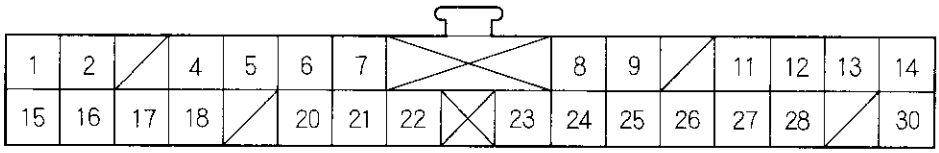
- Do not mix refrigerants CFC-12 (R-12) and HFC-134a (R-134a). They are not compatible.
- Use only the recommended polyalkyleneglycol (PAG) refrigerant oil (KEIHIN SP-10) designed for the R-134a compressor. Intermixing the recommended (PAG) refrigerant oil with any other refrigerant oil will result in 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.

(cont'd)

System Description (cont'd)

Climate Control Unit Inputs and Outputs

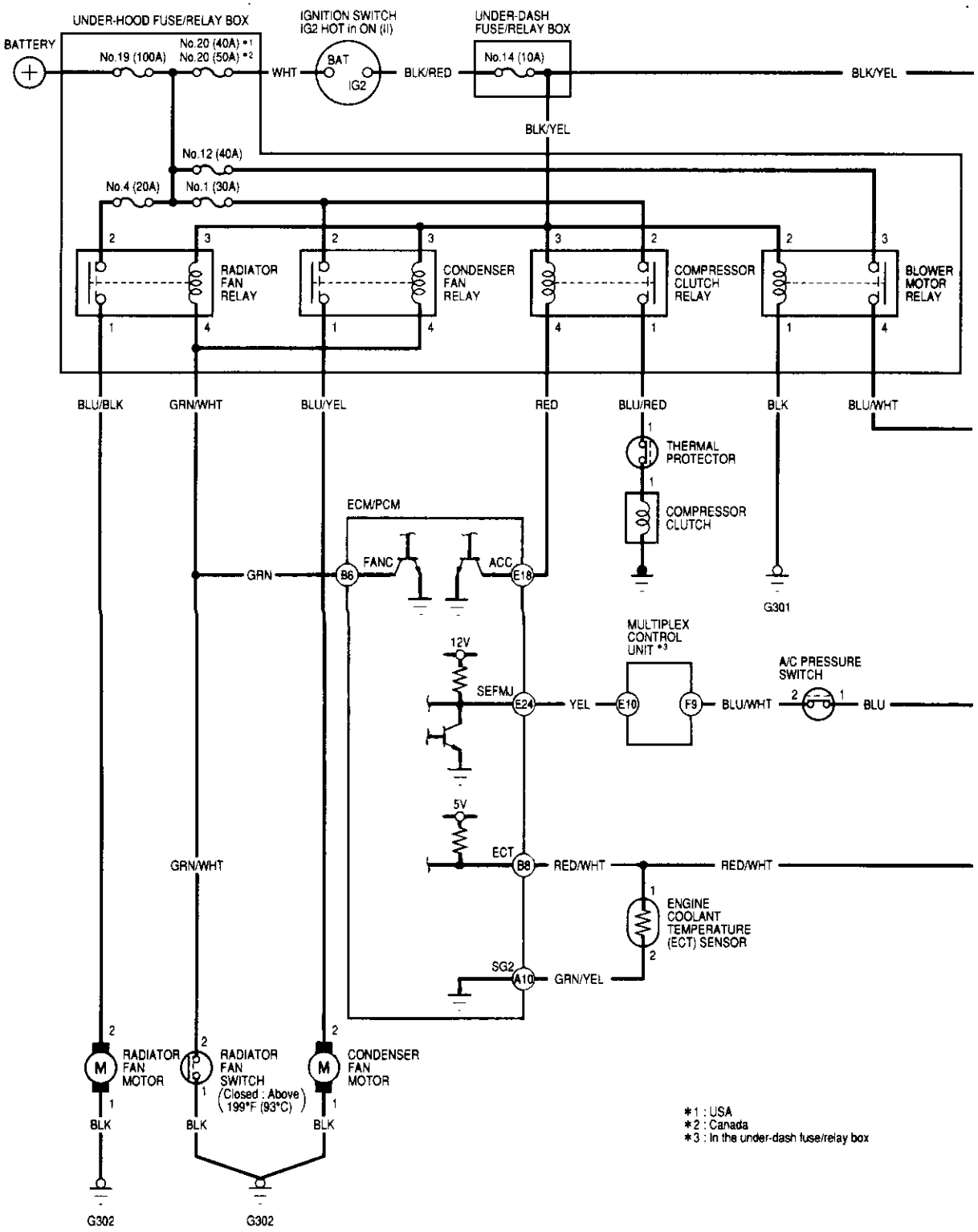
CLIMATE CONTROL UNIT 30P CONNECTOR

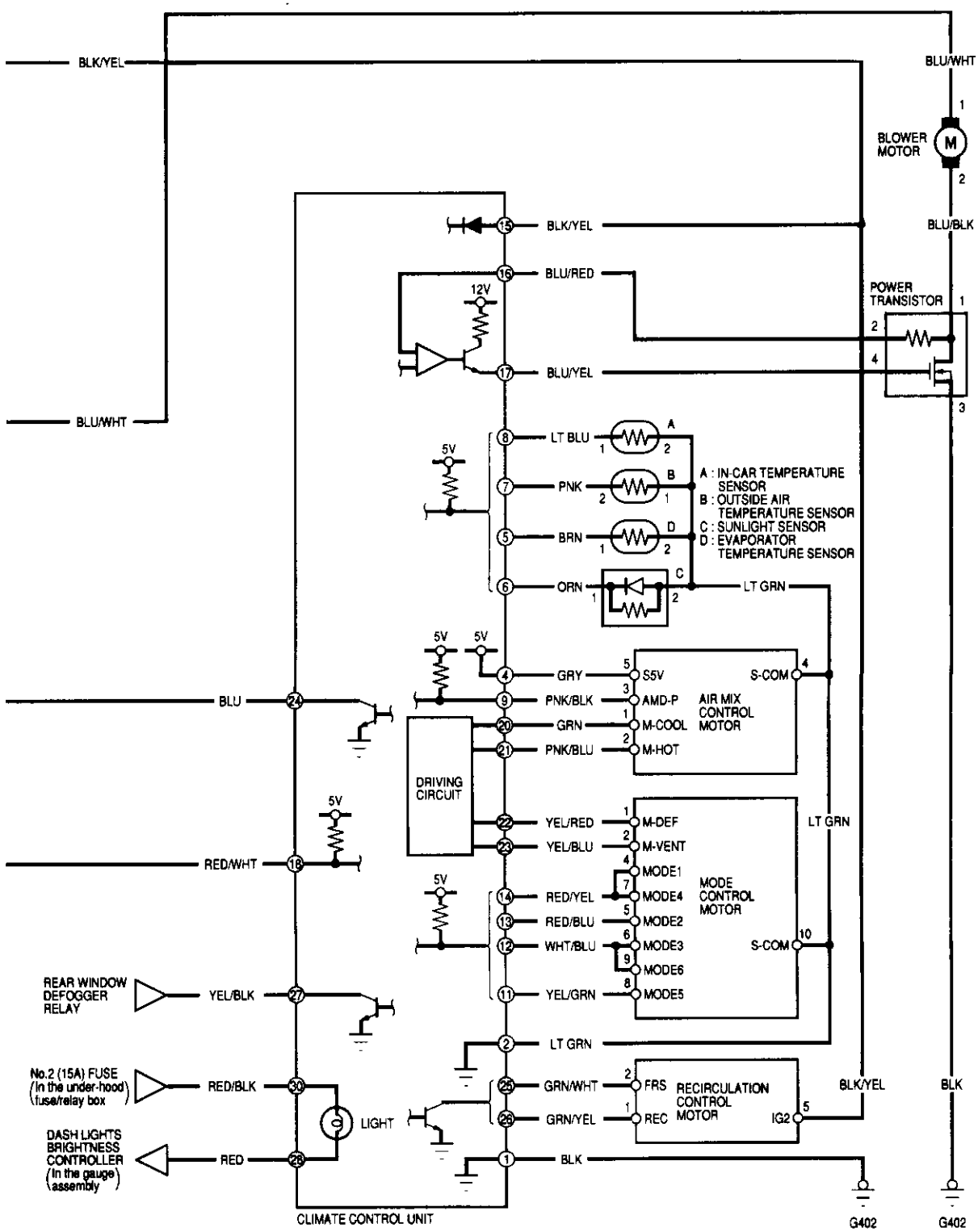


Wire side of female terminals

Cavity	Wire color	Signal	
1	BLK	GROUND	OUTPUT
2	LT GRN	SENSOR COMMON GROUND	INPUT
3	———	———	———
4	GRY	AIR MIX POTENTIAL +5V	OUTPUT
5	BRN	EVAPORATOR TEMPERATURE SENSOR	OUTPUT
6	ORN	SUNLIGHT SENSOR	OUTPUT
7	PNK	OUTSIDE TEMPERATURE SENSOR	OUTPUT
8	LT BLU	IN-CAR TEMPERATURE SENSOR	OUTPUT
9	PNK/BLU	AIR MIX POTENTIAL	OUTPUT
10	———	———	———
11	YEL/GRN	MODE 5	OUTPUT
12	WHT/BLU	MODE 3,6	OUTPUT
13	RED/BLU	MODE 2	OUTPUT
14	RED/YEL	MODE 1,4	OUTPUT
15	BLK/YEL	IG2 (Power)	INPUT
16	BLU/RED	BLOWER FEEDBACK	INPUT
17	BLU/YEL	POWER TRANSISTOR	OUTPUT
18	RED/WHT	ENGINE COOLANT TEMPERATURE (ECT) SENSOR	OUTPUT
19	———	———	———
20	GRN	AIR MIX COOL	OUTPUT
21	PNK/BLU	AIR MIX HOT	OUTPUT
22	YEL/RED	MODE DEF	OUTPUT
23	YEL/BLU	MODE VENT	OUTPUT
24	BLU	A/C PRESSURE SWITCH	INPUT
25	GRN/WHT	FRESH	INPUT
26	GRN/YEL	RECIRCULATE	INPUT
27	YEL/BLK	REAR WINDOW DEFOGGER RELAY	INPUT
28	RED	DASH LIGHTS BRIGHTNESS CONTROLLER (In the gauge assembly)	OUTPUT
29	———	———	———
30	RED/BLK	No.2 (15A) FUSE (In the under-hood fuse/relay box)	INPUT

Circuit Diagram




BLK/YEL
BLU/WHT
BLOWER MOTOR
M
BLU/BLK
POWER TRANSISTOR
BLU/RED
BLU/YEL
12V
LT BLU
PNK
BRN
ORN
A : IN-CAR TEMPERATURE SENSOR
B : OUTSIDE AIR TEMPERATURE SENSOR
C : SUNLIGHT SENSOR
D : EVAPORATOR TEMPERATURE SENSOR
LT GRN
5V
GRY
PNK/BLK
GRN
PNK/BLU
S5V
AMD-P
M-COOL
M-HOT
S-COM
AIR MIX CONTROL MOTOR
BLU
DRIVING CIRCUIT
RED/WHT
YEL/RED
YEL/BLU
M-DEF
M-VENT
MODE1
MODE4
MODE2
MODE3
MODE6
MODE5
MODE CONTROL MOTOR
RED/YEL
RED/BLU
WHT/BLU
YEL/GRN
REAR WINDOW DEFOGGER RELAY
YEL/BLK
No.2 (15A) FUSE (In the under-hood fuse/relay box)
RED/BLK
LIGHT
DASH LIGHTS BRIGHTNESS CONTROLLER (In the gauge assembly)
RED
GRN/WHT
GRN/YEL
FRS
REC
RECIRCULATION CONTROL MOTOR
IG2
BLK
CLIMATE CONTROL UNIT
G402
G402

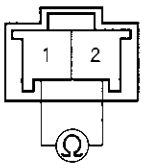
DTC Troubleshooting

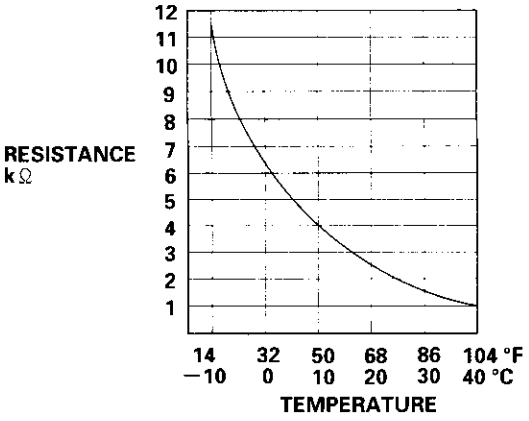
DTC 1: An Open in the In-car Temperature Sensor Circuit

1. Remove the in-car temperature sensor (see page 21-39).

2. Measure the resistance between the No. 1 and No. 2 terminals of the in-car temperature sensor. *Check for a change in resistance by heating or cooling the sensor with a hair drier.

IN-CAR TEMPERATURE SENSOR





**Is the resistance within the specifications shown on the graph?*

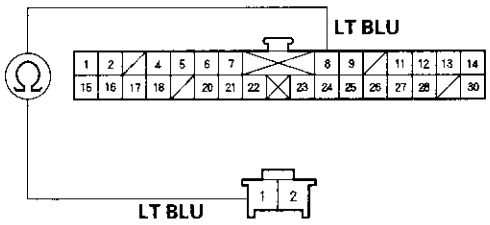
YES – Go to step 3.

NO – Replace the in-car temperature sensor. ■

3. Disconnect the climate control unit 30P connector.

4. Check for continuity between the No. 8 terminal of the climate control unit 30P connector and the No. 1 terminal of the in-car temperature sensor 2P connector.

CLIMATE CONTROL UNIT 30P CONNECTOR
Wire side of female terminals



IN-CAR TEMPERATURE SENSOR 2P CONNECTOR
Wire side of female terminals

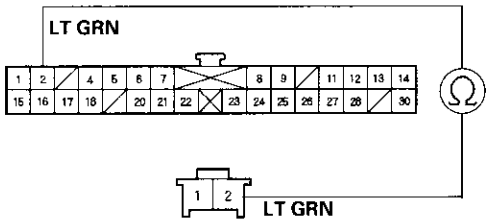
Is there continuity?

YES – Go to step 5.

NO – Repair open in the wire between the climate control unit and the in-car temperature sensor. ■

5. Check for continuity between the No. 2 terminal of the climate control unit 30P connector and the No. 2 terminal of the in-car temperature sensor 2P connector.

CLIMATE CONTROL UNIT 30P CONNECTOR
Wire side of female terminals



IN-CAR TEMPERATURE SENSOR 2P CONNECTOR
Wire side of female terminals

Is there continuity?

YES – Check for loose wires or poor connections at the climate control unit 30P connector and at the in-car temperature sensor 2P connector. If the connections are good, substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

NO – Repair open in the wire between the climate control unit and the in-car temperature sensor. ■

DTC 2: A Short in the In-car Temperature Sensor Circuit

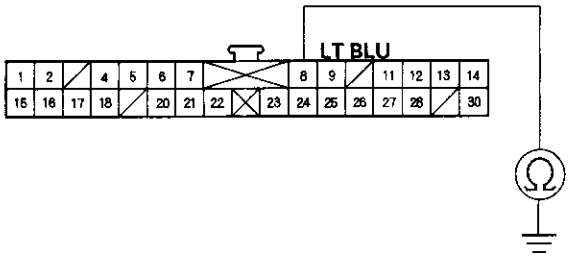
1. Remove the in-car temperature sensor (see page 21-39).
2. Test the in-car temperature sensor (see page 21-39).

   Is the resistance within the specifications shown on the graph?

   YES – Go to step 3.

   NO – Replace the in-car temperature sensor. ■
3. Disconnect the climate control unit 30P connector.
4. Check for continuity between the No. 8 terminal of the climate control unit 30P connector and body ground.

CLIMATE CONTROL UNIT 30P CONNECTOR



Wire side of female terminals

Is there continuity?

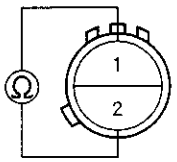
YES – Repair short to body ground in the wire between the climate control unit and the in-car temperature sensor. ■

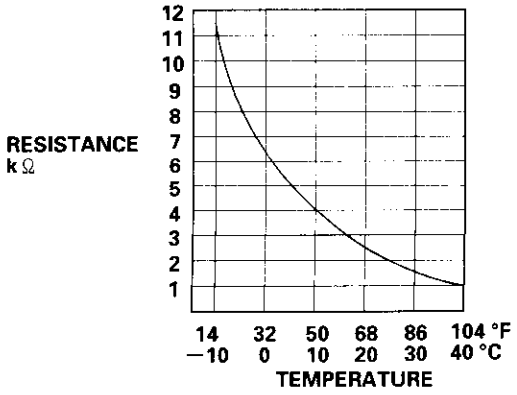
NO – Substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

DTC 3: An Open in the Outside Air Temperature Sensor Circuit

1. Remove the outside air temperature sensor (see page 21-40).
2. Measure the resistance between the No. 1 and No. 2 terminals of the outside air temperature sensor.
   *Dip the sensor in ice water, and measure resistance. Then pour warm water on the sensor, and check for a change in resistance.

OUTSIDE AIR TEMPERATURE SENSOR





**Is the resistance within the specifications shown on the graph?*

YES – Go to step 3.

NO – Replace the outside air temperature sensor. ■

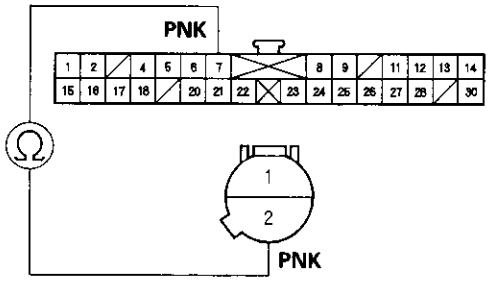
3. Disconnect the climate control unit 30P connector.

(cont'd)

DTC Troubleshooting (cont'd)

4. Check for continuity between the No. 7 terminal of the climate control unit 30P connector and the No. 2 terminal of the outside air temperature sensor 2P connector.

CLIMATE CONTROL UNIT 30P CONNECTOR
Wire side of female terminals



OUTSIDE AIR TEMPERATURE SENSOR 2P CONNECTOR
Wire side of female terminals

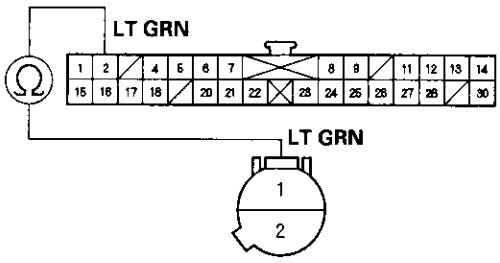
Is there continuity?

YES – Go to step 5.

NO – Repair open in the wire between the climate control unit and the outside air temperature sensor. ■

5. Check for continuity between the No. 2 terminal of the climate control unit 30P connector and the No. 1 terminal of the outside air temperature sensor 2P connector.

CLIMATE CONTROL UNIT 30P CONNECTOR
Wire side of female terminals



OUTSIDE AIR TEMPERATURE SENSOR 2P CONNECTOR
Wire side of female terminals

Is there continuity?

YES – Check for loose wires or poor connections at the climate control unit 30P connector and at the outside air temperature sensor 2P connector. If the connections are good, substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

NO – Repair open in the wire between the climate control unit and the outside air temperature sensor. ■

DTC 4: A Short in the Outside Air Temperature Sensor Circuit

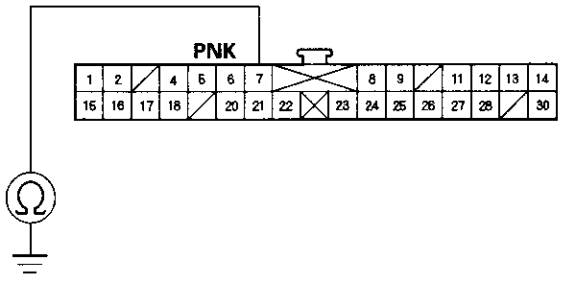
1. Remove the outside air temperature sensor (see page 21-40).
2. Test the outside air temperature sensor (see page 21-40).

   Is the resistance within the specifications shown on the graph?

   YES – Go to step 3.

   NO – Replace the outside air temperature sensor. ■
3. Disconnect the climate control unit 30P connector.
4. Check for continuity between the No. 7 terminal of the climate control unit 30P connector and body ground.

CLIMATE CONTROL UNIT 30P CONNECTOR



Wire side of female terminals

Is there continuity?

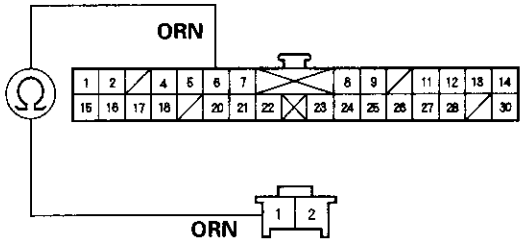
YES – Repair short to body ground in the wire between the climate control unit and the outside air temperature sensor. ■

NO – Substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

DTC 5: An Open in the Sunlight Sensor Circuit

1. Disconnect the sunlight sensor 2P connector.
2. Disconnect the climate control unit 30P connector.
3. Check for continuity between the No. 6 terminal of the climate control unit 30P connector and the No. 1 terminal of the sunlight sensor 2P connector.

CLIMATE CONTROL UNIT 30P CONNECTOR
Wire side of female terminals



SUNLIGHT SENSOR 2P CONNECTOR
Wire side of female terminals

Is there continuity?

YES – Go to step 4.

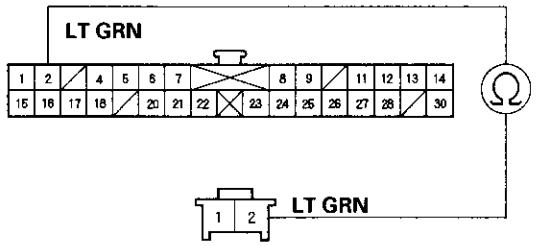
NO – Repair open in the wire between the climate control unit and the sunlight sensor. ■

(cont'd)

DTC Troubleshooting (cont'd)

4. Check for continuity between the No. 2 terminal of the climate control unit 30P connector and the No. 2 terminal of the sunlight sensor 2P connector.

CLIMATE CONTROL UNIT 30P CONNECTOR
Wire side of female terminals



SUNLIGHT SENSOR 2P CONNECTOR
Wire side of female terminals

Is there continuity?

YES – Go to step 5.

NO – Repair open in the wire between the climate control unit and the sunlight sensor. ■

5. Reconnect the sunlight sensor 2P connector.
6. Reconnect the climate control unit 30P connector.
7. Test the sunlight sensor (see page 21-41).

Is the sunlight sensor OK?

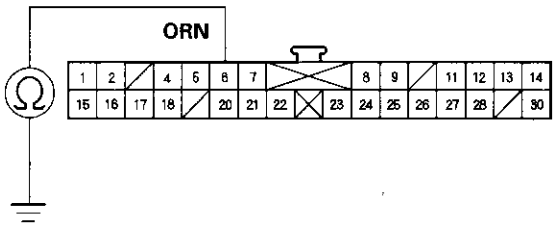
YES – Check for loose wires or poor connections at the climate control unit 30P connector and at the sunlight sensor 2P connector. If the connections are good, substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

NO – Replace the sunlight sensor. ■

DTC 6: A Short in the Sunlight Sensor Circuit

1. Disconnect the sunlight sensor 2P connector.
2. Disconnect the climate control unit 30P connector.
3. Check for continuity between the No. 6 terminal of the climate control unit 30P connector and body ground.

CLIMATE CONTROL UNIT 30P CONNECTOR



Wire side of female terminals

Is there continuity?

YES – Repair short to body ground in the wire between the climate control unit and the sunlight sensor. ■

NO – Go to step 4.

4. Reconnect the sunlight sensor 2P connector.
5. Reconnect the climate control unit 30P connector.
6. Test the sunlight sensor (see page 21-41).

Is the sunlight sensor OK?

YES – Substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

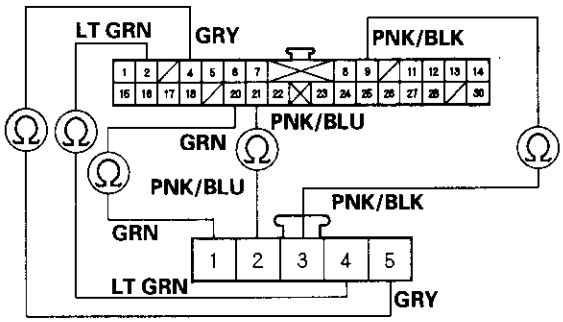
NO – Replace the sunlight sensor. ■

DTC 7: An Open in the Air Mix Control Motor Circuit

1. Disconnect the air mix control motor 5P connector.
2. Disconnect the climate control unit 30P connector.
3. Check for continuity between following terminals of the climate control unit 30P connector and the air mix control motor 5P connector.

30P:	5P:
No. 2	No. 4
No. 4	No. 5
No. 9	No. 3
No. 20	No. 1
No. 21	No. 2

CLIMATE CONTROL UNIT 30P CONNECTOR
Wire side of female terminals



AIR MIX CONTROL MOTOR 5P CONNECTOR
Wire side of female terminals

Is there continuity?

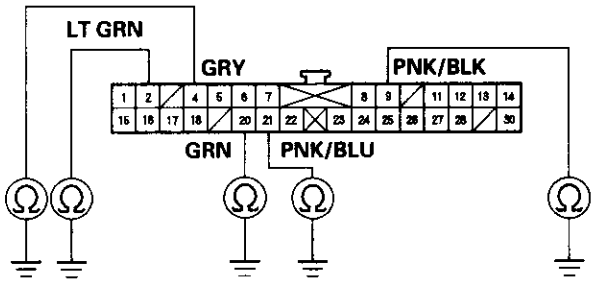
YES – Check for loose wires or poor connections at the climate control unit 30P connector and at the air mix control motor 5P connector. If the connections are good, substitute a known-good air mix control motor, and recheck. If the symptom/indication goes away, replace the original air mix control motor. If the symptom/indication continues, substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

NO – Repair any open in the wire(s) between the climate control unit and the air mix control motor. ■

DTC 8: A Short in the Air Mix Control Motor Circuit

1. Disconnect the air mix control motor 5P connector.
2. Disconnect the climate control unit 30P connector.
3. Check for continuity between body ground and the climate control unit 30P connector terminals No. 2, 4, 9, 20, and 21 individually.

CLIMATE CONTROL UNIT 30P CONNECTOR



Wire side of female terminals

Is there continuity?

YES – Repair any short to body ground in the wire(s) between the climate control unit and the air mix control motor. ■

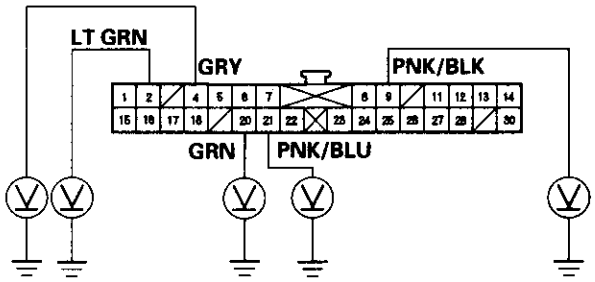
NO – Go to step 4.

(cont'd)

DTC Troubleshooting (cont'd)

4. Turn the ignition switch ON (II), and check the same terminals for voltage.

CLIMATE CONTROL UNIT 30P CONNECTOR



Wire side of female terminals

Is there any voltage?

YES—Repair any short to power in the wire(s) between the climate control unit and the air mix control motor. This short may also damages the climate control unit. Repair the short to power before replacing the climate control unit.■

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 climate control unit, 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 21-43).

   Is the air mix control motor OK?

   YES—Substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit.■

   NO—Go to step 2.

2. Remove the air mix control motor (see page 21-43).

3. Check the air mix control linkage and door for smooth movement.

   Do the air mix control linkage and door move smoothly?

   YES—Replace the air mix control motor.■

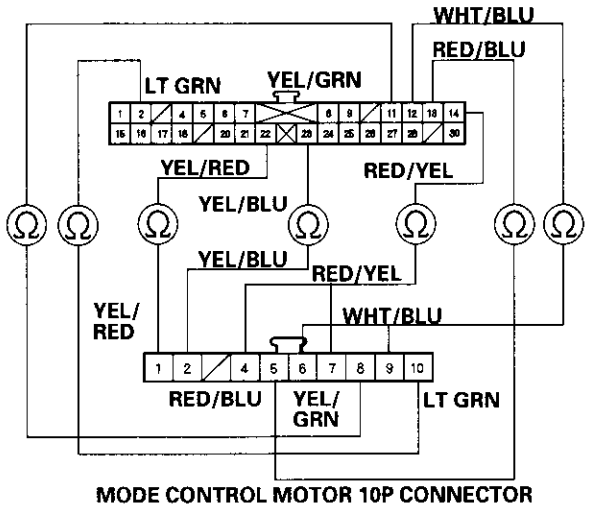
   NO—Repair the air mix control linkage or door.■

DTC 10: An Open or Short in the Mode Control Motor Circuit

1. Disconnect the mode control motor 10P connector.
2. Disconnect the climate control unit 30P connector.
3. Check for continuity between following terminals of the climate control unit 30P connector and the mode control motor 10P connector.

30P:	10P:
No. 2	No. 10
No. 11	No. 8
No. 12	No. 6, 9
No. 13	No. 5
No. 14	No. 4, 7
No. 22	No. 1
No. 23	No. 2

CLIMATE CONTROL UNIT 30P CONNECTOR
Wire side of female terminals



MODE CONTROL MOTOR 10P CONNECTOR
Wire side of female terminals

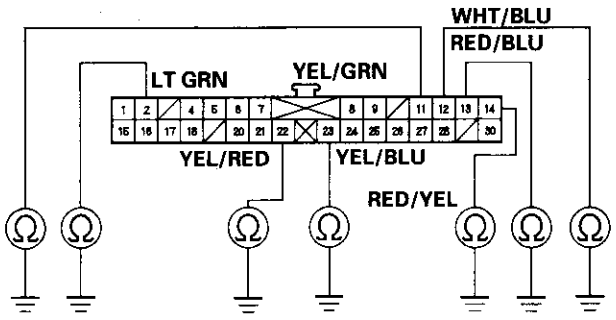
Is there continuity?

YES—Check for loose wires or poor connections at the climate control unit 30P connector 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 climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit.■

NO—Go to step 4.

4. Check for continuity between body ground and the climate control unit 30P connector terminals No. 2, 11, 12, 13, 14, 22, and 23 individually.

CLIMATE CONTROL UNIT 30P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair any short to body ground in the wire(s) between the climate control unit and the mode control motor.■

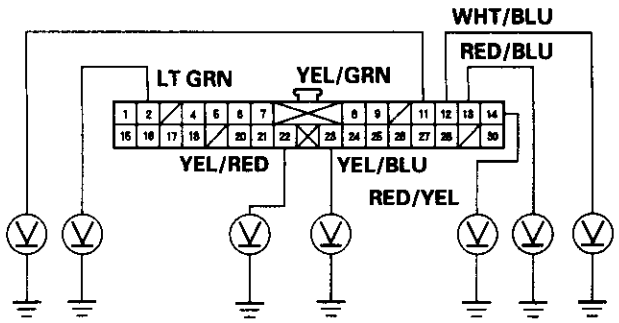
NO—Go to step 5.

(cont'd)

DTC Troubleshooting (cont'd)

5. Turn the ignition switch ON (II), and check the same terminals for voltage.

CLIMATE CONTROL UNIT 30P CONNECTOR



Wire side of female terminals

Is there any voltage?

YES—Repair any short to power in the wire(s) between the climate control unit and the mode control motor. This short may also damages the climate control unit. Repair the short to power before replacing the climate control unit.■

NO—Repair any open in the wire(s) between the climate control unit 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 21-44).

   Is the mode control motor OK?

   YES—Substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit.■

   NO—Go to step 2.

2. Remove the mode control motor (see page 21-44).

3. Check the mode control linkage and doors for smooth movement.

   Do the mode control linkage and doors move smoothly?

   YES—Replace the mode control motor.■

   NO—Repair the mode control linkage or doors.■

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.

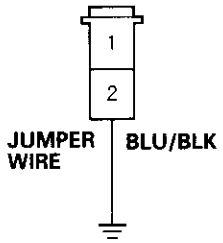
   Are the fuses OK?

   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).

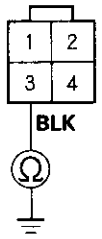
   Does the blower motor run?

   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

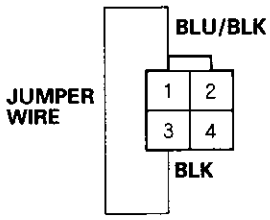
   Is there continuity?

   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 G402. ■

8. Connect the No. 1 and No. 3 termials 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.

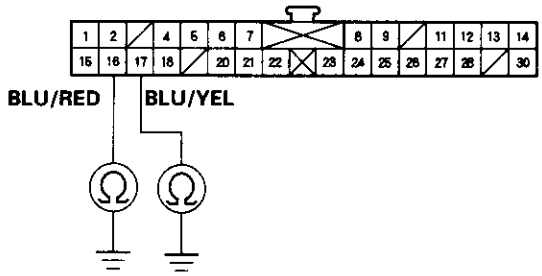
(cont'd)

DTC Troubleshooting (cont'd)

12. Disconnect the climate control unit 30P connector.

13. Check for continuity between the No. 16 and No. 17 terminals of the climate control unit 30P connector and body ground individually.

CLIMATE CONTROL UNIT 30P CONNECTOR



Wire side of female terminals

Is there continuity?

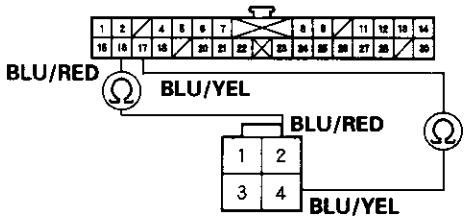
YES – Repair any short to body ground in the wire(s) between the climate control unit and the power transistor. ■

NO – Go to step 14.

14. Check for continuity between the following terminals of the climate control unit 30P connector and power transistor 4P connector.

30P:	4P:
No. 16	No. 2
No. 17	No. 4

CLIMATE CONTROL UNIT 30P CONNECTOR
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 climate control unit and the power transistor. ■

15. Reconnect the climate control unit 30P connector.

16. Test the power transistor (see page 21-46).

Is the power transistor OK?

YES – Check for loose wires or poor connections at the climate control unit 30P connector and at the power transistor 4P connector. If the connections are good, substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

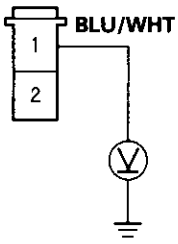
NO – Replace the power transistor. ■

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 22-55).

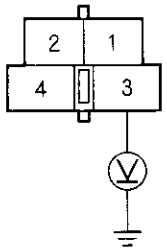
Is there relay OK?

YES – Go to step 22.

NO – Replace the blower motor relay. ■

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?

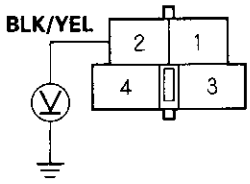
YES – Go to step 23.

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?

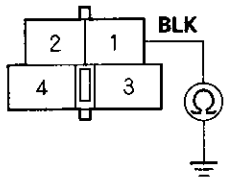
YES – Go to step 25.

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.■

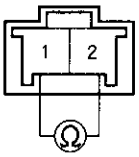
DTC Troubleshooting (cont'd)

DTC 14: An Open in the Evaporator Temperature Sensor Circuit

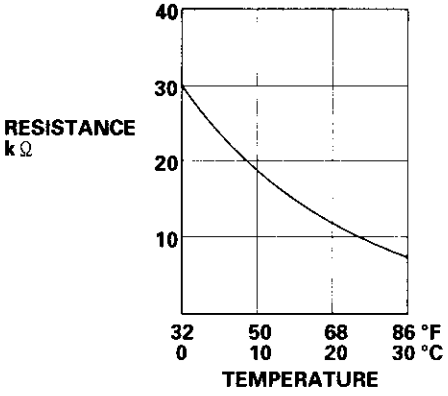
1. Remove the evaporator temperature sensor (see page 21-42).

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 warm 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?

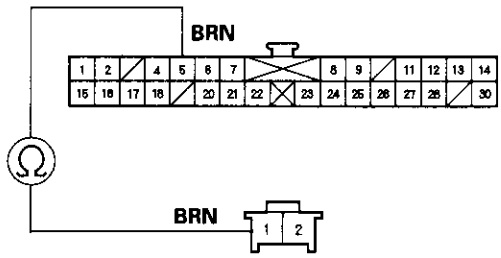
YES – Go to step 3.

NO – Replace the evaporator temperature sensor. ■

3. Disconnect the climate control unit 30P connector.

4. Check for continuity between the No. 5 terminal of the climate control unit 30P connector and the No. 1 terminal of the evaporator temperature sensor 2P connector.

CLIMATE CONTROL UNIT 30P CONNECTOR
Wire side of female terminals



EVAPORATOR TEMPERATURE SENSOR 2P CONNECTOR
Wire side of female terminals

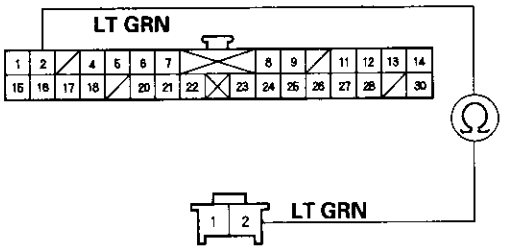
Is there continuity?

YES – Go to step 5.

NO – Repair open in the wire between the climate control unit and the evaporator temperature sensor. ■

5. Check for continuity between the No. 2 terminal of the climate control unit 30P connector and the No. 2 terminal of the evaporator temperature sensor 2P connector.

CLIMATE CONTROL UNIT 30P CONNECTOR
Wire side of female terminals



EVAPORATOR TEMPERATURE SENSOR 2P CONNECTOR
Wire side of female terminals

Is there continuity?

YES – Check for loose wires or poor connections at the climate control unit 30P connector and at the evaporator temperature sensor 2P connector. If the connections are good, substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

NO – Repair open in the wire between the climate control unit and the evaporator temperature sensor. ■

DTC 15: A Short in the Evaporator Temperature Sensor Circuit

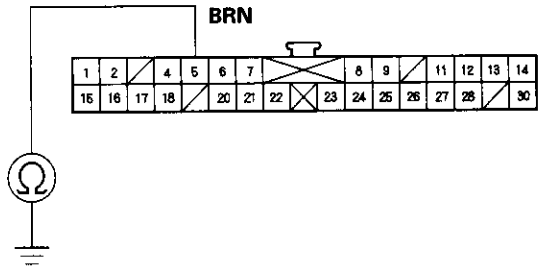
1. Remove the evaporator temperature sensor (see page 21-42).
2. Test the evaporator temperature sensor (see page 21-42).

   Is the resistance within the specifications shown on the graph?

   YES – Go to step 3.

   NO – Replace the evaporator temperature sensor. ■
3. Disconnect the climate control unit 30P connector.
4. Check for continuity between the No. 5 terminal of the climate control unit 30P connector and body ground.

CLIMATE CONTROL UNIT 30P CONNECTOR



Wire side of female terminals

Is there continuity?

YES – Repair short to body ground in the wire between the climate control unit and the evaporator temperature sensor. ■

NO – Substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

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.

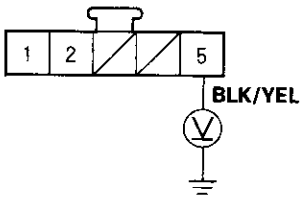
   NO – Replace the fuse, and recheck. ■

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 21-45).

   Is the recirculation control motor OK?

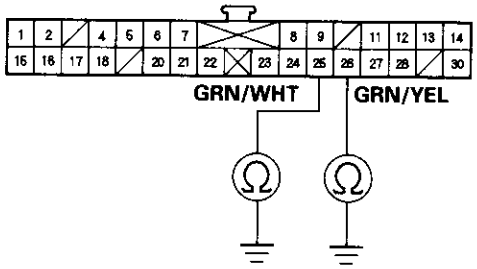
   YES – Go to step 7.

   NO – Go to step 12.

7. Disconnect the climate control unit 30P connector.

8. Check for continuity between the No. 25 and No. 26 terminals of the climate control unit 30P connector and body ground individually.

CLIMATE CONTROL UNIT 30P CONNECTOR



Wire side of female terminals

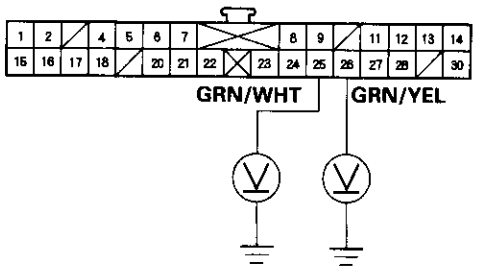
Is there continuity?

YES – Repair any short to body ground in the wire(s) between the climate control unit and the recirculation control motor. ■

NO – Go to step 9.

9. Turn the ignition switch ON (II), and check the same wires for voltage.

CLIMATE CONTROL UNIT 30P CONNECTOR



Wire side of female terminals

Is there any voltage?

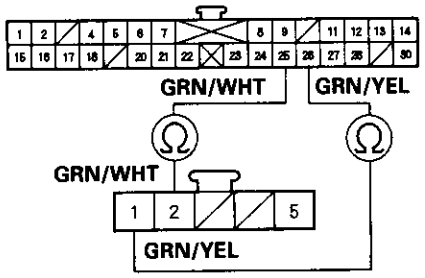
YES – Repair any short to power in the wire(s) between the climate control unit and the recirculation control motor. This short may also damages the climate control unit. Repair the short to power before replacing the climate control unit. ■

NO – Go to step 10.

10. Turn the ignition switch OFF.

11. Check for continuity between the following terminals of the climate control unit 30P connector and the recirculation control motor 5P connector.
    30P: 5P:
    No. 25 No. 2
    No. 26 No. 1

CLIMATE CONTROL UNIT 30P CONNECTOR
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 the climate control unit 30P connector and at recirculation control motor 5P connector. If the connections are good, substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

NO—Repair any open in the wire(s) between the climate control unit and the recirculation control motor. ■

12. Remove the recirculation contol motor (see page 21-45).

13. Check the recirculation control linkage and doors for smooth movement.

    Do the recirculation control linkage and doors move smoothly?

    YES—Replace the recirculation control motor. ■

    NO—Repair the recirculation control linkage or doors. ■

1. Check the malfunction indicator lamp (MIL).

   Does the malfunction indicator lamp come on?

   YES—Refer to the Fuel and Emissions section (see page 11-3). ■

   NO—Go to step 2.

2. Turn the ignition switch OFF.

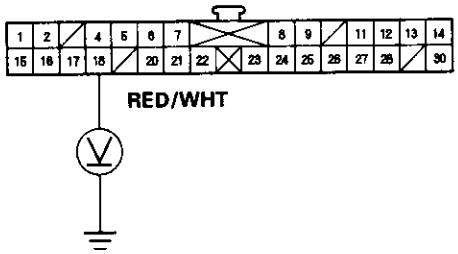
3. Disconnect the ECT sensor 2P connector.

4. Disconnect the climate control unit 30P connector.

5. Turn the ignition switch ON (II).

6. Measure the voltage between the No. 18 terminal of the climate control unit 30P connector and body ground.

CLIMATE CONTROL UNIT 30P CONNECTOR



Wire side of female terminals

Is there about 5 V?

YES—Check for loose wires or poor connections at the climate control unit 30P connector and at the ECT sensor 2P connector. If the connections are good, substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

NO—Repair open in the wire between the climate control unit and the ECT sensor. ■

Climate Control Power and Ground Circuits Troubleshooting

1. Check the No. 14 (10A) fuse in the under-dash fuse/relay box.

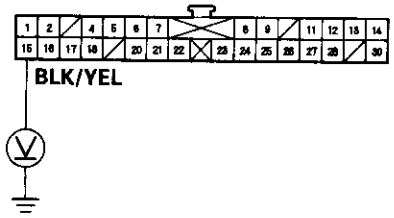
   Is the fuse OK?

   YES – Go to step 2.

   NO – Replace the fuse, and recheck. ■

2. Disconnect the climate control unit 30P connector.
3. Turn the ignition switch ON (II).
4. Measure the voltage between the No. 15 terminal of the climate control unit 30P connector and body ground.

CLIMATE CONTROL UNIT 30P CONNECTOR



Wire side of female terminals

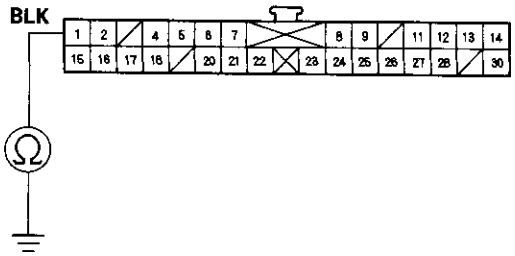
Is there battery voltage?

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 climate control unit. ■

5. Turn the ignition switch OFF.
6. Check for continuity between the No. 1 terminal of the climate control unit 30P connector and body ground.

CLIMATE CONTROL UNIT 30P CONNECTOR



Wire side of female terminals

Is there continuity?

YES – Check for loose wires or poor connections at the climate control unit 30P connector. If the connections are good,substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

NO – Check for an open in the wire between the climate control unit and body ground. If the wire is OK, check for poor ground at G402. ■

Condenser Fan Circuit Troubleshooting

1. Check the No. 1 (30A) 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 22-55).

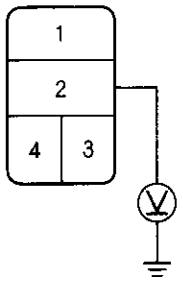
   Is the relay OK?

   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



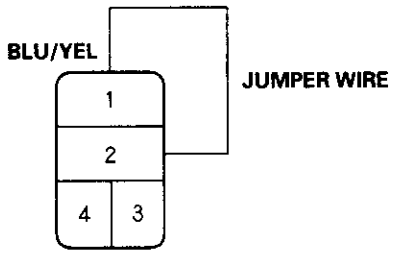
   Is there battery voltage?

   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.

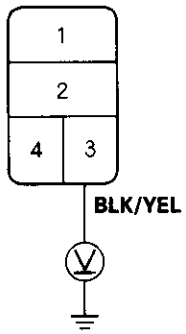
   NO – Go to step 8.

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. ■

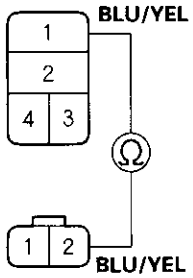
8. Disconnect the jumper wire.

(cont'd)

Condenser Fan Circuit Troubleshooting (cont'd)

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

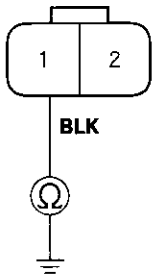
Is there continuity?

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 G302.■

Radiator and Condenser Fans Common Circuit Troubleshooting

1. Check the No. 1 (30A) 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.

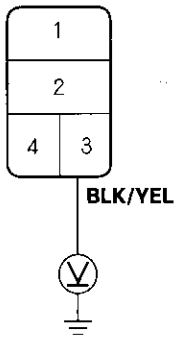
Are the fuses OK?

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?

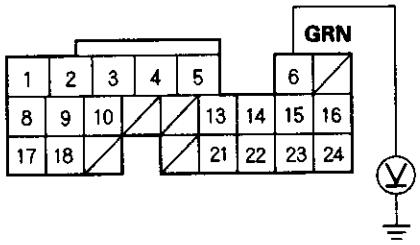
YES—Go to step 5.

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).

9. Measure the voltage between the No. 6 terminal of ECM/PCM connector B (24P) and body ground with the ECM/PCM connectors connected.

ECM/PCM CONNECTOR B (24P)



Wire side of female terminals

Is there battery voltage?

YES – Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM. ■

NO – Repair open in the wire between the radiator fan relay, the condenser fan relay and the ECM/PCM. ■

Compressor Clutch Circuit Troubleshooting

1. Check the No. 1 (30A) 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 normal, the throttle position sensor reading too high, or the idle speed to 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 22-55).

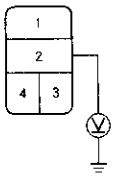
   Is the relay OK?

   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.

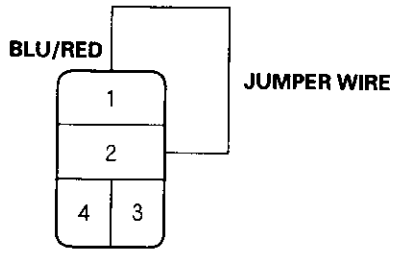
NO – Replace the under-hood fuse/relay box. ■

(cont'd)

Compressor Clutch Circuit Troubleshooting (cont'd)

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



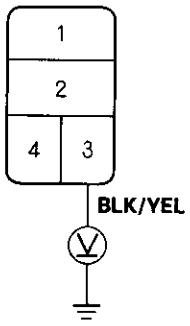
Does the compressor clutch click ?

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



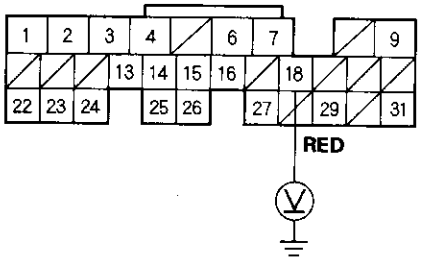
Is there battery voltage?

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. Measure the voltage between the No. 18 terminal of ECM/PCM connector E (31P) and body ground with the ECM/PCM connectors connected.

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

Is there battery voltage?

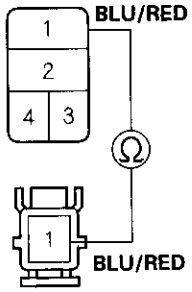
YES – Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM, then recheck (see page 11-6). If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM. ■

NO – Repair open in the wire between the compressor clutch relay and the ECM/PCM. ■

14. Disconnect the jumper wire.
15. Disconnect the compressor clutch 1P connector.

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?

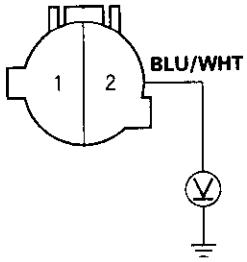
YES – Check the compressor clutch clearance, the thermal protector, and the compressor clutch field coil (see page 21-55). ■

NO – Repair open in the wire between the compressor clutch relay and the compressor clutch. ■

A/C Pressure Switch Circuit Troubleshooting

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

A/C PRESSURE SWITCH 2P CONNECTOR



Wire side of female terminals

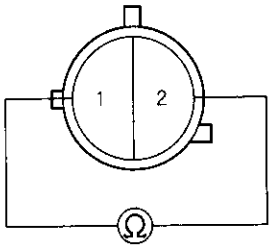
Is there battery voltage?

YES – Go to step 4.

NO – Go to step 10.

4. Turn the ignition switch OFF.
5. 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 – Go to step 6.

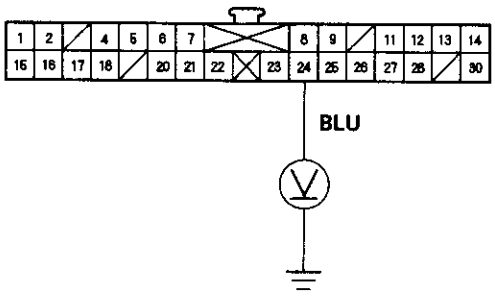
NO – Go to step 12.

(cont'd)

A/C Pressure Switch Circuit Troubleshooting (cont'd)

6. Reconnect the A/C pressure switch 2P connector.
7. Disconnect the climate control unit 30P connector.
8. Turn the ignition switch ON (II).
9. Measure the voltage between the No. 24 terminal of the climate control unit 30P connector and body ground.

CLIMATE CONTROL UNIT 30P CONNECTOR



Wire side of female terminals

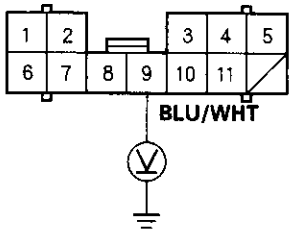
Is there battery voltage?

YES – Check for loose wires or poor connections at the climate control unit 30P connector and at the A/C pressure switch 2P connector. If the connections are good, substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

NO – Repair open in the wire between the climate control unit and the A/C pressure switch. ■

10. Make sure the A/C switch is OFF.
11. Measure the voltage between the No. 9 terminal of under-dash fuse/relay box connector F (12P) and body ground with the under-dash fuse/relay box connectors connected.

UNDER-DASH FUSE/RELAY BOX CONNECTOR F (12P)



Wire side of female terminals

Is there battery voltage?

YES – Repair open in the wire between the under-dash fuse/relay box and the A/C pressure switch. ■

NO – Refer to the multiplex control system (see page 22-175). ■

12. Check for proper A/C system pressure (see page 21-64).

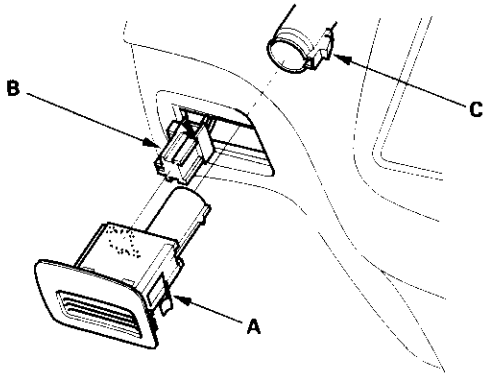
Is the pressure within specifications?

YES – Replace the A/C pressure switch. ■

NO – Repair the A/C pressure problem. ■

In-car Temperature Sensor Replacement

1. Remove the in-car temperature sensor (A) from the dashboard, then disconnect the 2P connector (B) and the air hose (C). Be careful not to damage the sensor and the dashboard.



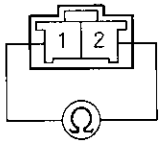
2. Install the sensor in the reverse order of removal. Be sure to connect the air hose securely.

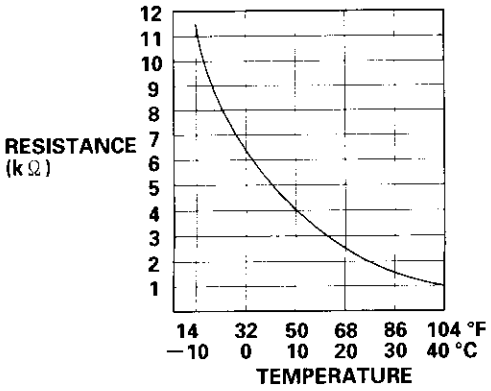
In-car Temperature Sensor Test

Check for a change in resistance by heating or cooling the sensor with a hair drier.

Compare the resistance reading between the No. 1 and No. 2 terminals of the in-car temperature sensor with the specifications shown in the graph; the resistance should be within the specifications.

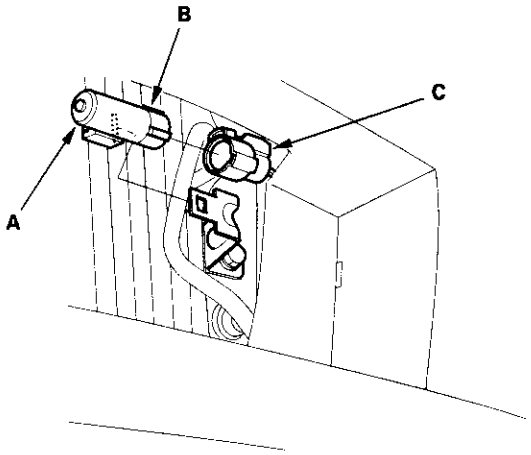
IN-CAR TEMPERATURE SENSOR





Outside Air Temperature Sensor Replacement

1. Lift the tab (A) to release the lock, and remove the outside air temperature sensor (B), then disconnect the 2P connector (C).



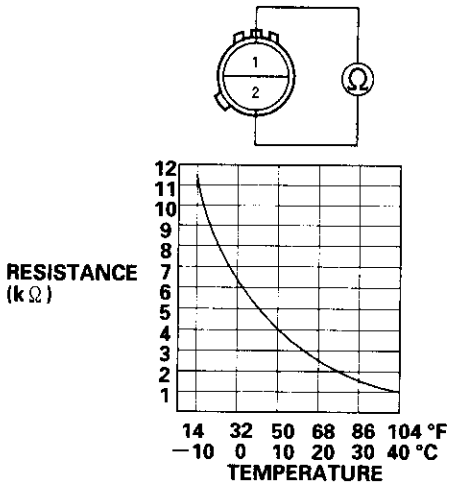
2. Install the sensor in the reverse order of removal.

Outside Air Temperature Sensor Test

Dip the sensor in ice water, and measure the resistance. Then pour warm water on the sensor, and check for a change in resistance.

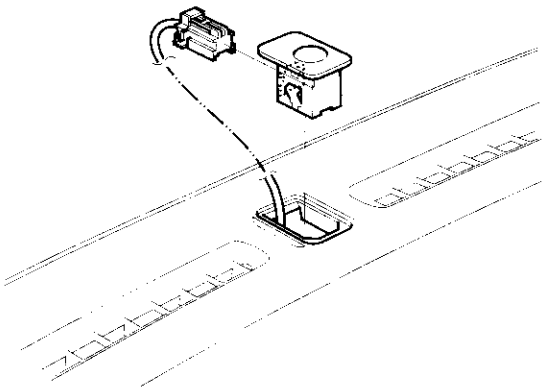
Compare the resistance reading between the No. 1 and No. 2 terminals of the outside air temperature sensor with the specifications shown in the graph; the resistance should be within the specifications.

OUTSIDE AIR TEMPERATURE SENSOR



Sunlight Sensor Replacement

1. Remove the sunlight sensor from the dashboard, then disconnect the 2P connector. Be careful not to damage the sensor or the dashboard.

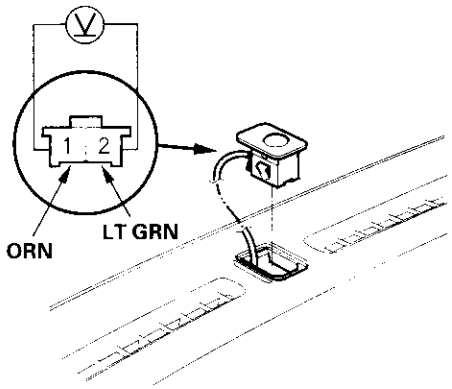


2. Install the sensor in the reverse order of removal.

Sunlight Sensor Test

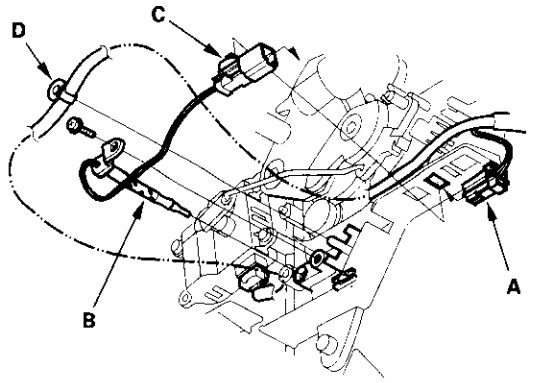
Turn the ignition switch ON (II). Measure the voltage between the terminals with the (+) probe on the No. 1 terminal and the (−) probe on the No. 2 terminal with the 2P connector connected. The voltage reading will not change under the light of a flashlight or a fluorescent lamp. Voltage should be:

- 3.6 − 3.7 V or more with the sensor out of direct sunlight.
- 3.3 − 3.5 V or less with the sensor in direct sunlight.



Evaporator Temperature Sensor Replacement

1. Disconnect the 2P connector (A) from the evaporator temperature sensor (B), then remove the connector clip (C) and wire harness clip (D). Remove the self-tapping screw, and carefully pull out the evaporator temperature.

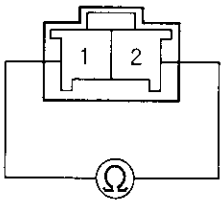


2. Install the sensor in the reverse order of removal.

Evaporator Temperature Sensor Test

1. Dip the sensor in ice water, and measure the resistance between its terminals.

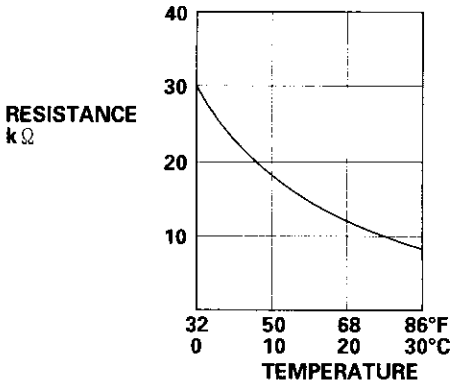
EVAPORATOR TEMPERATURE SENSOR



Terminal side of male terminals

2. Then pour warm 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.



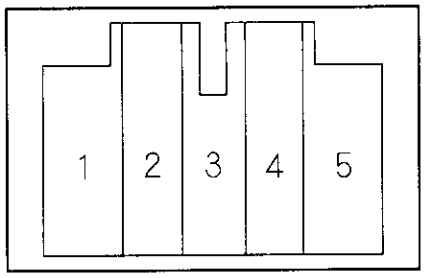
Air Mix Control Motor Test

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 sticks or binds, 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).

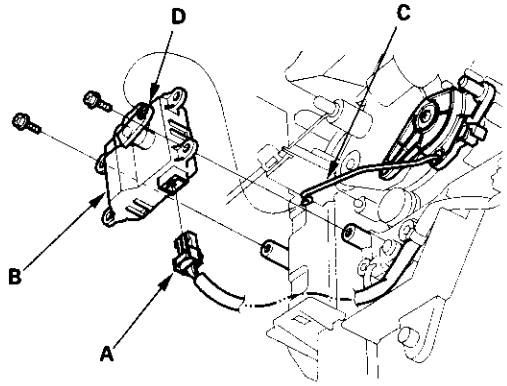
5. Using the backprobe set, measure the voltage between the No. 3 and No. 4 terminals.

   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 control motor.

Air Mix Control Motor Replacement

1. 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.

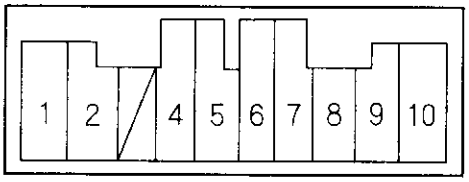


2. Install the motor in the reverse order of removal. After installation, make sure the motor runs smoothly.

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.

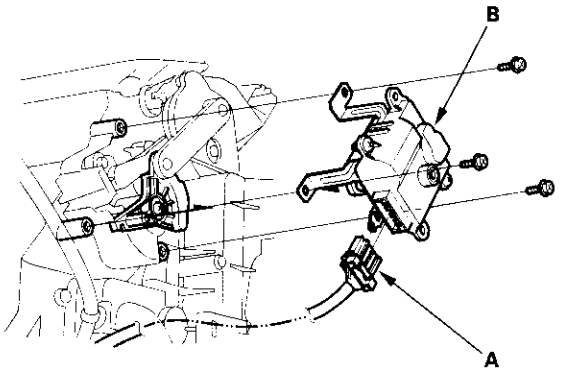
MODE CONTROL MOTOR



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 terminals.
5. If there is no continuity for a moment at each terminal, replace the mode control motor.

Mode Control Motor Replacement

1. Open the glove box. Remove the glove box stop on each side, then hang the glove box down (see page 20-65).
2. 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.



3. 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.

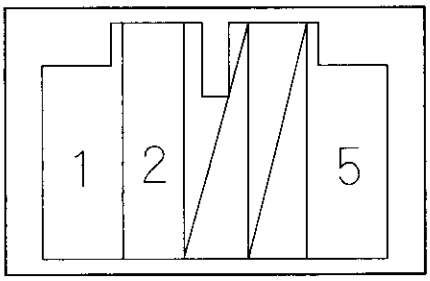
Recirculation Control Motor Test

1. Disconnect the 5P connector from the recirculation control motor.

NOTICE
Incorrectly applying power and ground to the recirculation control motor will damage 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



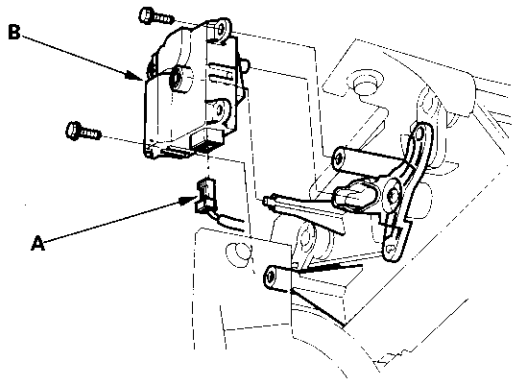
3. If the recirculation control motor does not run in step 2, remove it, then check the recirculation control linkage and doors for smooth movement.

- 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. Open the glove box. Remove the glove box stop on each side, then hang the glove box down (see page 20-65).

2. 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.

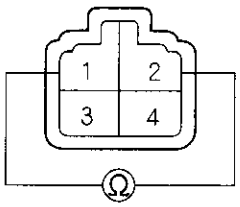


3. Install the motor in the reverse order of removal. Make sure the pin on the motor is properly engaged with the linkage. After installation, make sure the motor runs smoothly.

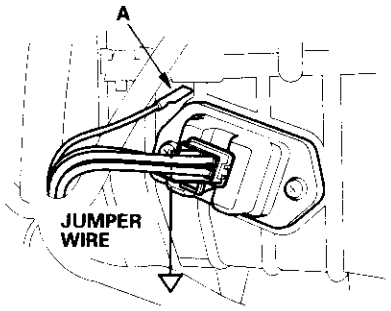
Power Transistor Test

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



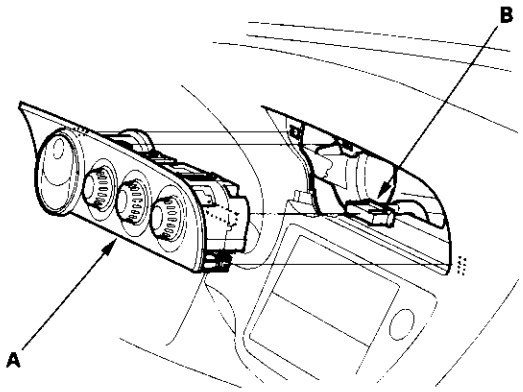
3. Carefully release the lock tab on the No. 4 terminal (BLU/YEL) (A) in the 4P connector, then remove the terminal and insulate it from body ground.



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.

Climate Control Unit Removal and Installation

1. Remove the climate control unit (A) from the dashboard, then disconnect the 30P connector (B). Be careful not to damage the control unit or the dashboard.

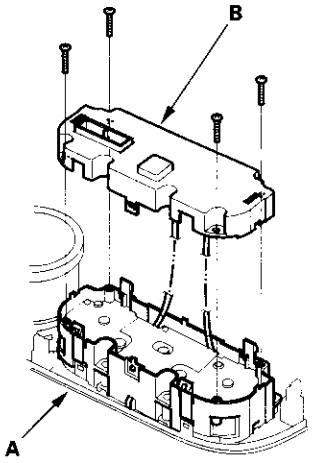


2. Install the control unit in the reverse order of removal. After installation, operate the control unit controls to see whether it works properly.
3. Run the self-diagnosis function to confirm that there are no problems in the system (see page 21-8).

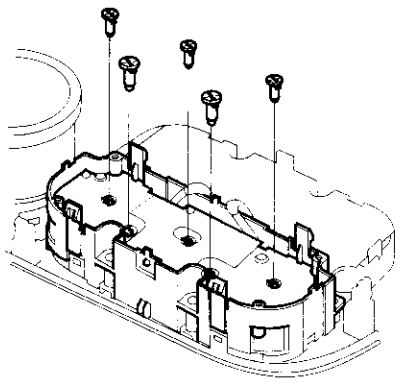
Climate Control Unit Bulb Replacement

1. Discharge the static electricity (which accumulated on you when you removed the climate control unit) by touching the door striker or other body parts.

2. Remove the self-tapping screws, then carefully separate the climate control unit to the display (A) and the control unit (B). Do not kink or pull on the wires between the display and the control unit. Do not touch the electronic components on the printed circuit board in the control unit.



3. Remove the bulb(s) with a flat-tip screwdriver.



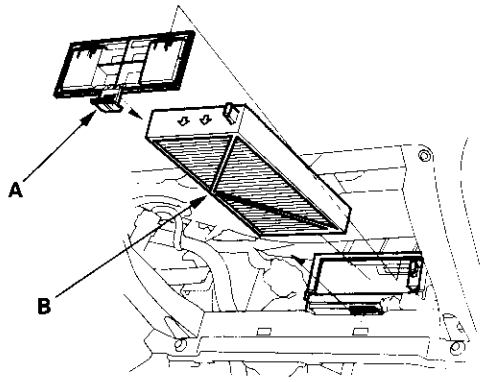
4. Install the bulb in the reverse order of removal.

Dust and Pollen Filter Replacement

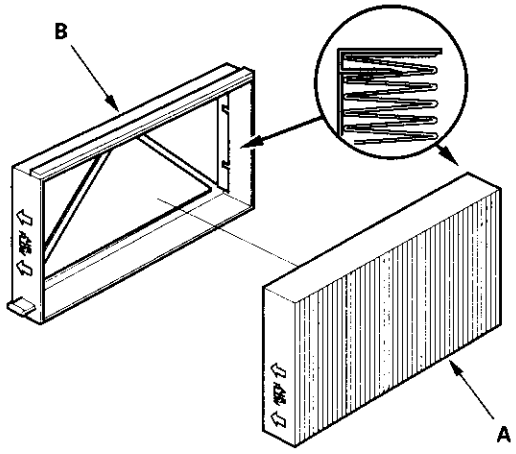
The dust and pollen filters should be replaced every 30,000 miles (48,000 km) or 24 months whichever comes first. Replace the filters more often if the air flow is less than usual.

1. Open the glove box. Remove the glove box stop on each side, then hang the glove box down (see page 20-65).

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.

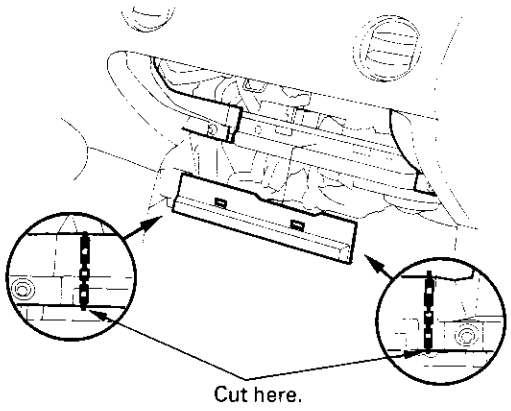


4. Install the filters in the reverse order of removal.

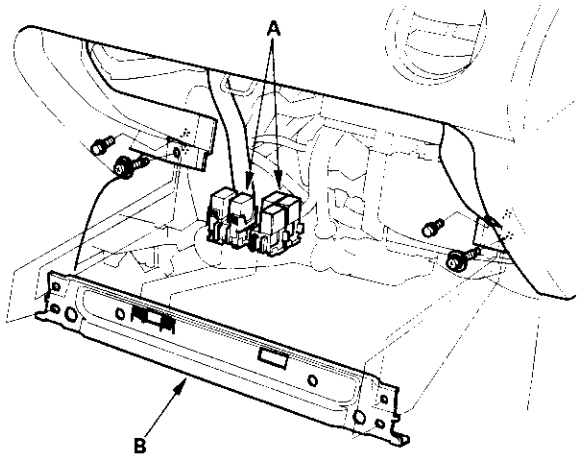
Blower Unit Removal and Installation

1. Remove the passenger's dashboard lower cover (see page 20-64), the right kick panel (see page 20-49), and the glove box (see page 20-65).

2. Cut the plastic cross brace in the glove box opening with diagonal cutters in the area shown. Remove and discard the plastic cross brace.

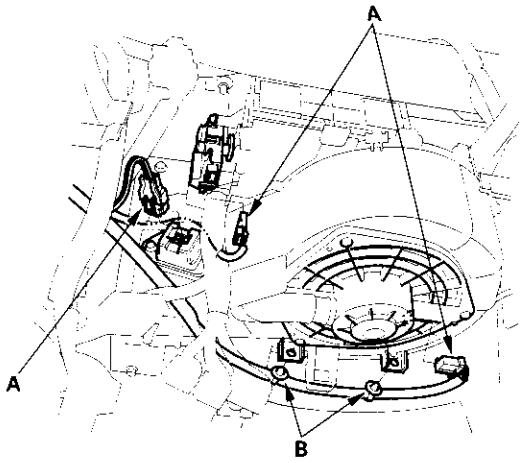


3. Remove the relays (A), then remove the bolts and the glove box frame (B).

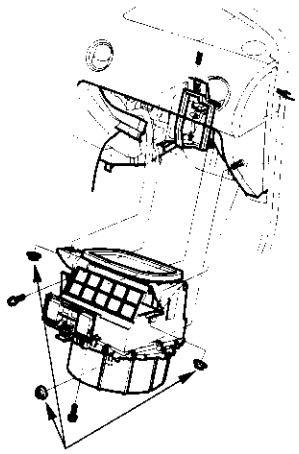


4. Remove the ECM/PCM (see page 11-4).

5. Disconnect the connectors (A) from the blower motor, the power transistor, and the recirculation control motor, then remove the wire harness clips (B).



6. Remove the mounting bolts, the mounting nut, and the blower unit.



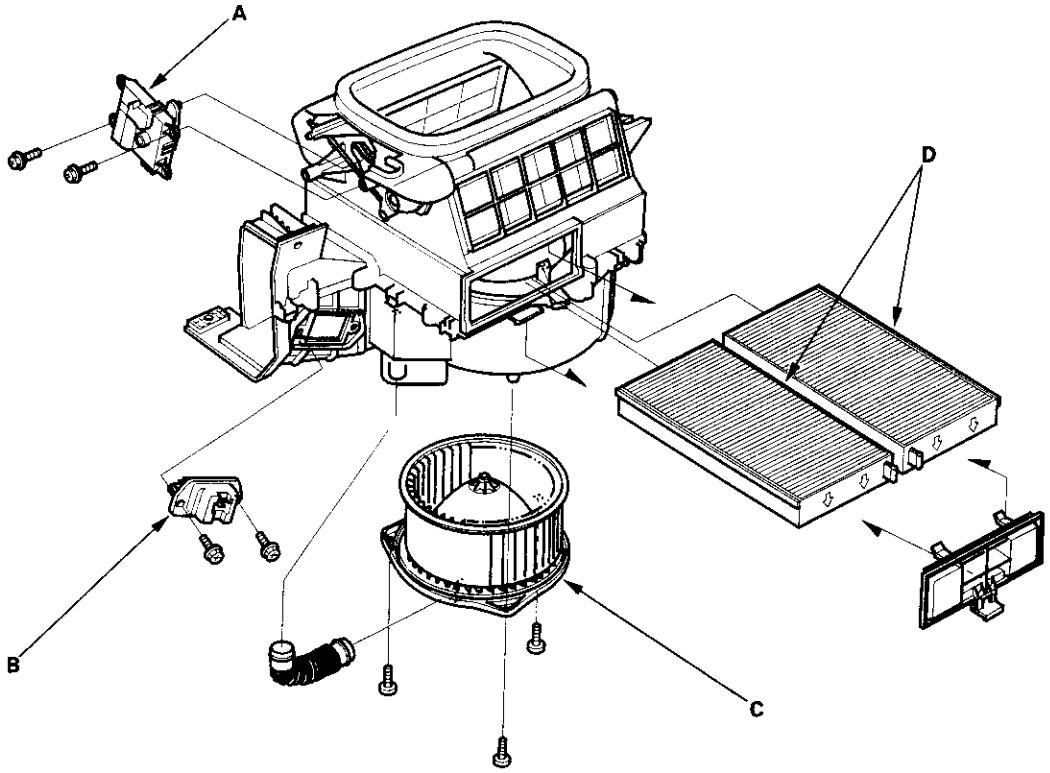
6 x 1.0 mm
9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)

7. Install the unit in the reverse order of removal. Make sure that there is no air leakage.

Blower Unit Components Replacement

Note these items when overhauling the blower unit:

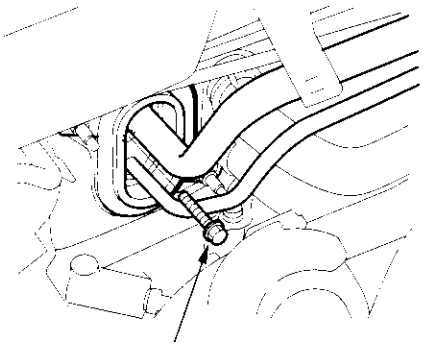
- The recirculation control motor (A), the power transistor (B), the blower motor (C), and the dust and pollen filters (D) can be replaced without removing the blower unit.
- Before reassembly, make sure that the recirculation control linkage and doors move smoothly.
- After reassembly, make sure the recirculation control motor runs smoothly (see page 21-45).



Evaporator Core Replacement

1. Recover the refrigerant with a recovery/recycling/charging station (see page 21-60).

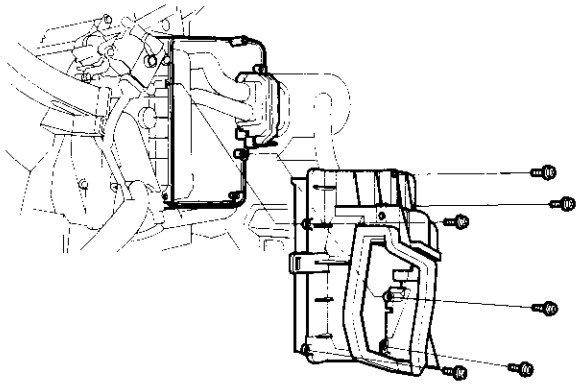
2. Remove the bolt, then disconnect the suction line (A) and the receiver line (B) from the evaporator core.



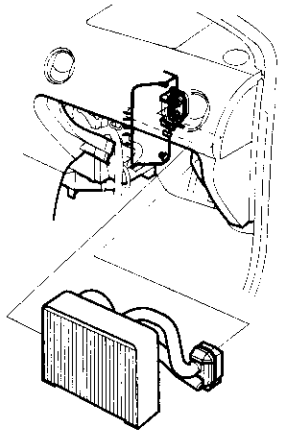
6 x 1.0 mm
9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)

3. Remove the blower unit (see page 21-48).

4. Remove the self-tapping screws and the expansion valve cover.



5. Carefully pull out the evaporator core without bending the pipes.



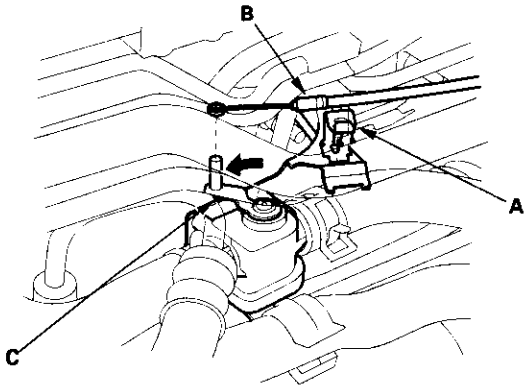
6. Install the core in the reverse order of removal, and note these items.

- 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 21-62).

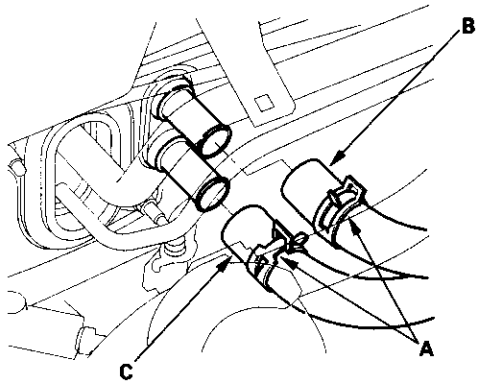
Heater Unit/Core Replacement

SRS components are located in this area. Review the SRS component locations (see page 23-10), and precautions and procedures (see page 23-11) in the SRS section before performing repairs or service.

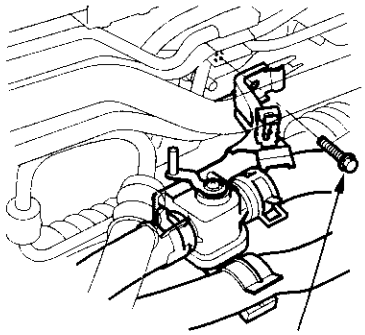
1. Turn the ignition switch ON (II).
2. Turn the mode control dial to the floor vent position. This will prevent the mode control doors from being damage when the dashboard is removed.
3. Turn the ignition switch OFF.
4. Make sure you have the anti-theft code for the radio, then write down the frequencies for the radio's preset buttons.
5. Disconnect the negative cable from the battery.
6. Disconnect the suction and receiver lines from the evaporator core (see page 21-50).
7. 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.



8. When the engine is cool, drain the engine coolant from the radiator (see page 10-6).
9. 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.



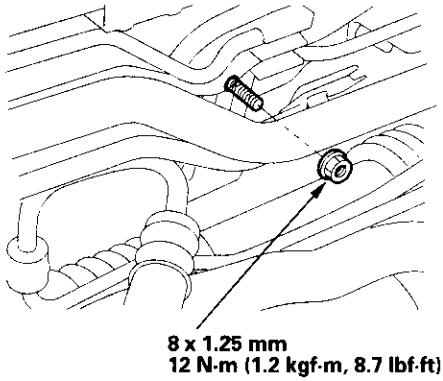
10. Remove the mounting bolt and the heater valve as shown.



(cont'd)

Heater Unit/Core Replacement (cont'd)

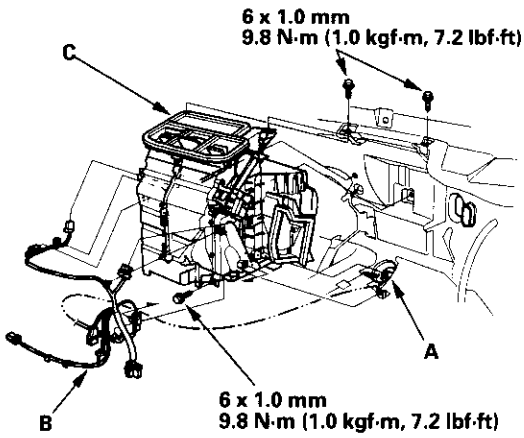
11. Remove the mounting nut from the heater unit. Take care not to damage or bend the fuel lines and the brake lines, etc.



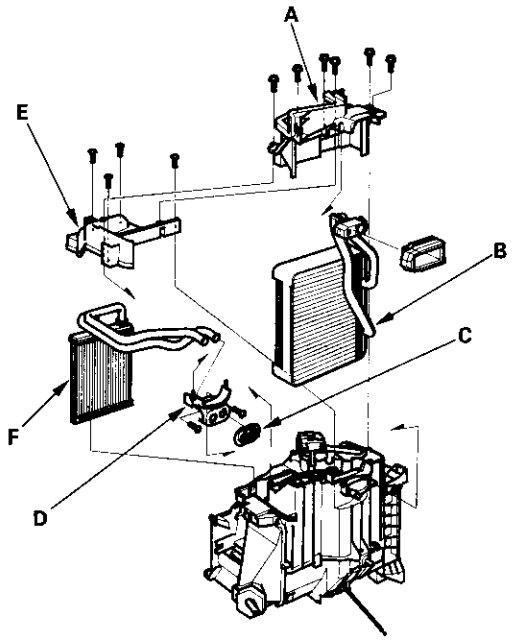
12. Remove the dashboard (see page 20-66).

13. Remove the blower unit (see page 21-48).

14. Disconnect the drain hose (A), then remove the wire harness (B), the mounting bolts and the heater unit (C).



15. 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.



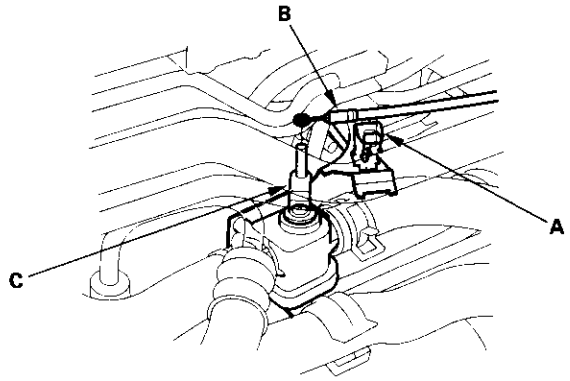
16. Install the heater core and the evaporator core in the reverse order of removal.

17. Install the heater unit in the reverse order of removal, and note these items:

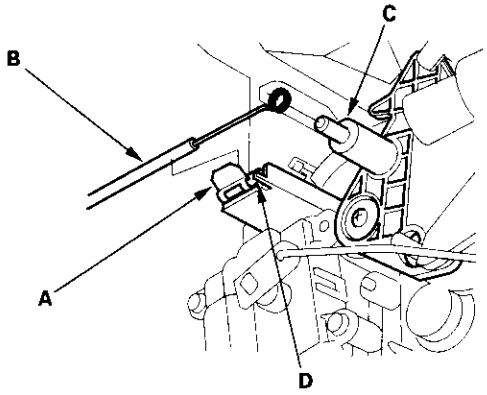
- Do not interchange the inlet and outlet heater hoses, and install the hose clamps securely.
- Refill the cooling system with engine coolant (see page 10-6).
- Be sure to connect the drain hose securely.
- Adjust the heater valve cable (see page 21-53).
- Make sure that there is no coolant leakage.
- Make sure that there is no air leakage.
- Do the ECM/PCM idle learn procedure (see page 11-149).
- Enter the anti-theft code for the radio, then enter the customer's radio station presets.
- Refer to evaporator core replacement (see step 6 on page 21-50).

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).



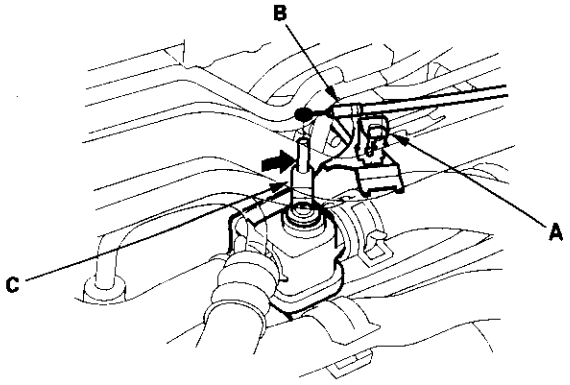
2. From under the dash, disconnect the heater valve cable housing from the cable clamp (A), and disconnect the heater valve cable (B) from the air mix control linkage (C).



3. Set the temperature control dial on Max Cool (58°F or 18°C) with the ignition switch ON (II).

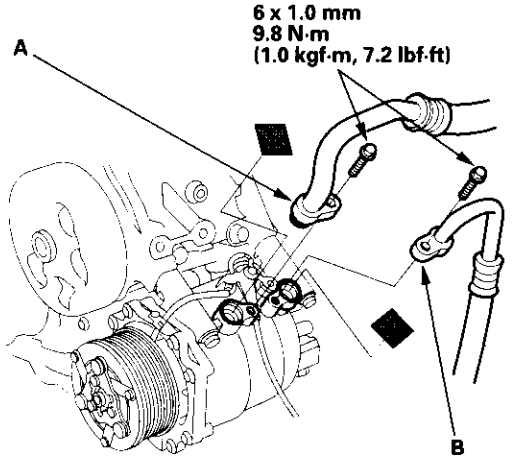
4. Attach the heater valve cable (B) to the air mix control linkage (C) as shown above. Hold the end of the heater valve cable housing against the stop (D), then snap the heater valve cable housing into the cable clamp (A).

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).

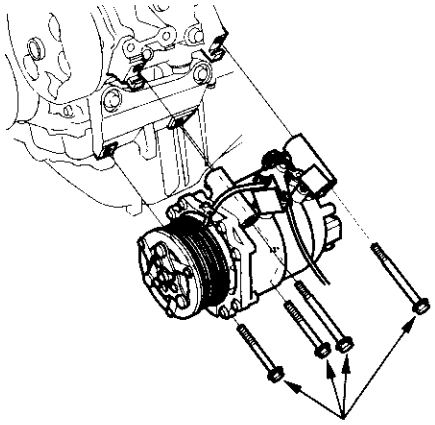


Compressor Replacement

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 21-60).
5. Remove the alternator (see page 4-35).
6. Remove the bolts, then disconnect the suction line (A) and the discharge line (B) from the compressor. Plug or cap the lines immediately after disconnecting them to avoid moisture and dust contamination.



7. Remove the mounting bolts and the compressor.

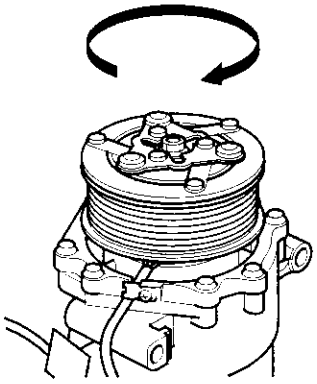


8. Install the compressor in the reverse order of removal, and note these items:
   - If you're installing a new compressor, you must calculate the amount of refrigerant oil to be removed from it (see page 21-6).
   - Replace the O-rings with new ones at each fitting, and apply a thin coat of refrigerant 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 21-62).
   - Do the ECM/PCM idle learn procedure (see page 11-149).
   - 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 21-56).

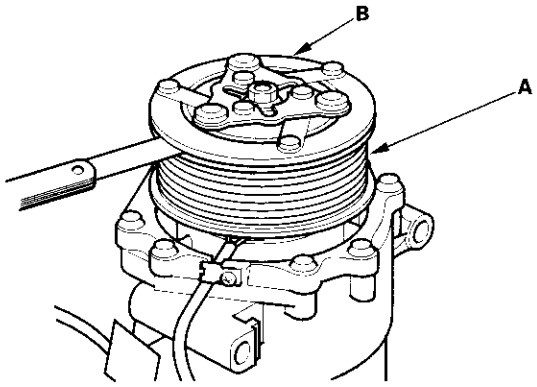
2. Check the rotor pulley bearing play and drag by rotating the rotor pulley by hand. Replace the clutch set with a new one if it is noisy or has excessive play/drag (see page 21-56).



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 21-56) and add or remove shims as needed to increase or decrease clearance.

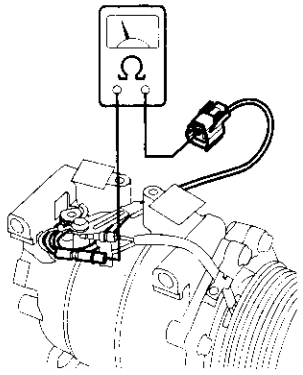
   Clearance: 0.5±0.15 mm (0.020±0.006 in.)

   NOTE: The shims are available in four thicknesses: 0.1 mm, 0.2 mm, 0.4 mm, and 0.5 mm.



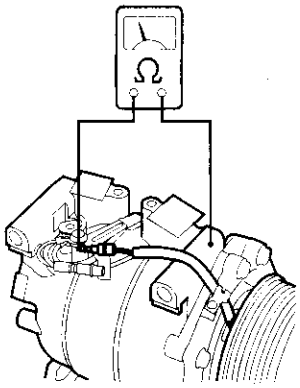
4. Release the field coil connector from the holder, then disconnect it. Check the thermal protector for continuity. If there is no continuity, replace the thermal protector (see page 21-58).

   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 21-56).

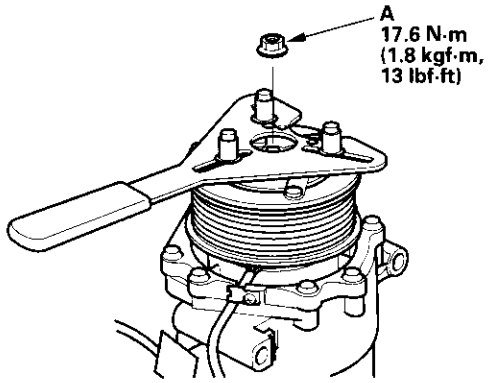
   Field Coil Resistance: 3.05−3.35 ohms at 68°F (20°C)



Compressor Clutch Overhaul

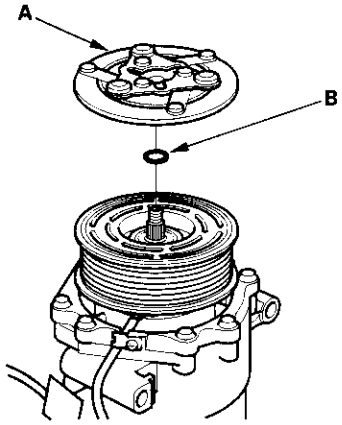
Special Tool Required
A/C clutch holder, Robinair 10204, Kent-Moore J37872, or Honda Tool and Equipment KMT-J33939, commercially available

1. Remove the center nut (A) while holding the armature plate with a commercially available A/C clutch holder (B).

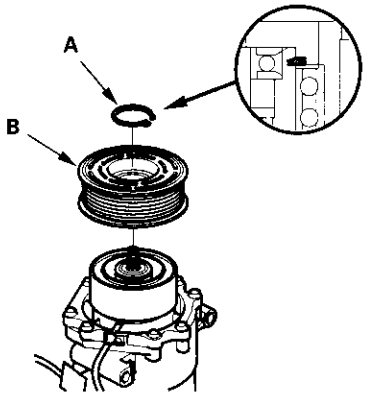


2. Remove the armature plate (A) and shim(s) (B), taking care not to lose the shim(s). If the clutch needs adjustment, increase or decrease the number and thickness of shims as necessary, then reinstall the armature plate, and recheck its clearance (see page 21-55).

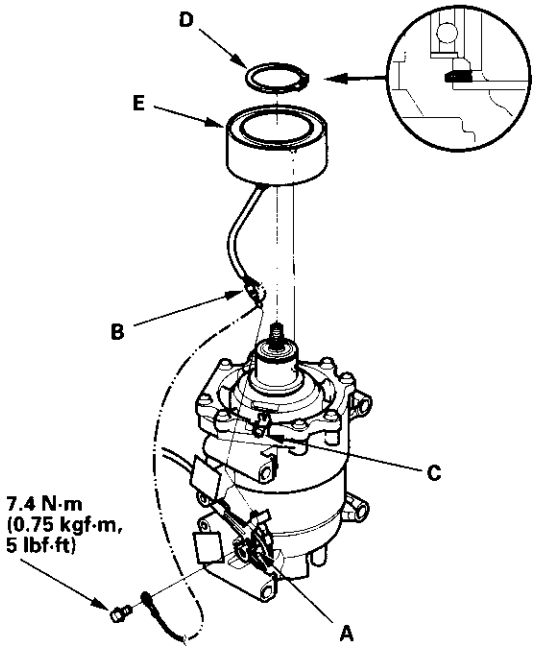
   NOTE: The shims are available in four thiskness: 0.1 mm, 0.2 mm, 0.4 mm, and 0.5mm.



3. If you are replacing the field coil, remove the snap ring (A) with snap ring pliers, then remove the rotor pulley (B). Be careful not to damage the rotor pulley and 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 and compressor.

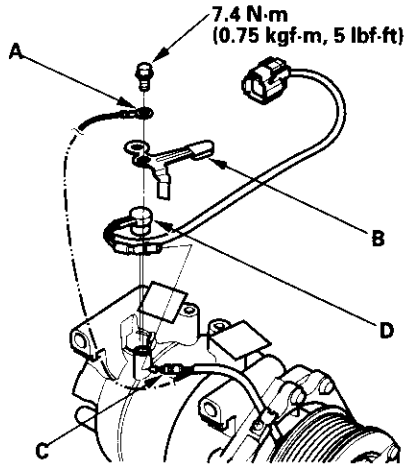


5. Reassemble the clutch in the reverse order of disassembly, and note these items:

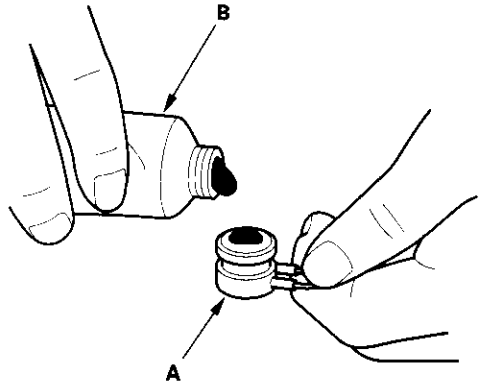
   - Install the field coil with the wire side facing down, and align the boss on the field coil with the hole in the compressor.
   - Clean the rotor pulley and compressor sliding surfaces with contact cleaner or other non-petroleum solvent.
   - Install new snap rings, note the installation direction, 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.

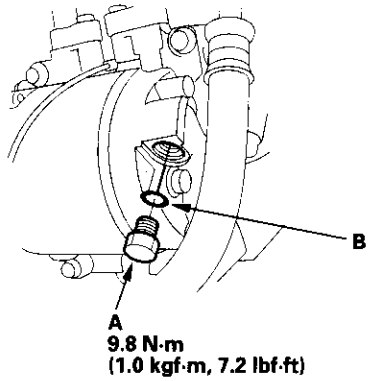


3. Install in the reverse order of removal.

Compressor Relief Valve Replacement

1. Recover the refrigerant with a recovery/recycling/charging station (see page 21-60).

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. Replace the O-ring with a new one at the relief valve, and apply a thin coat of refrigerant oil before installing it.

5. Remove the plug, and install and tighten the relief valve.

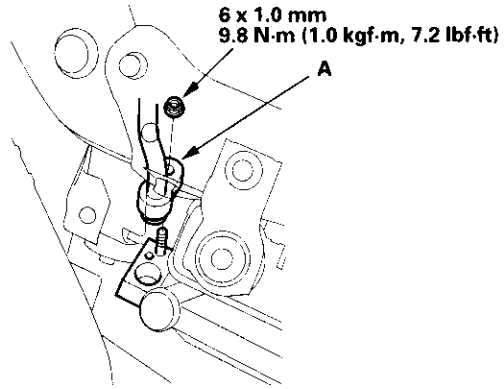
6. Charge the system (see page 21-62).

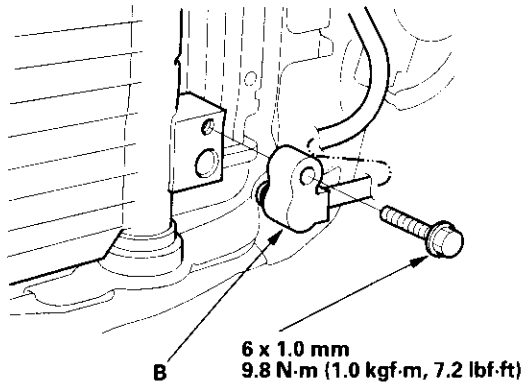
Condenser Replacement

1. Recover the refrigerant with a recovery/recycling/charging station (see page 21-60).

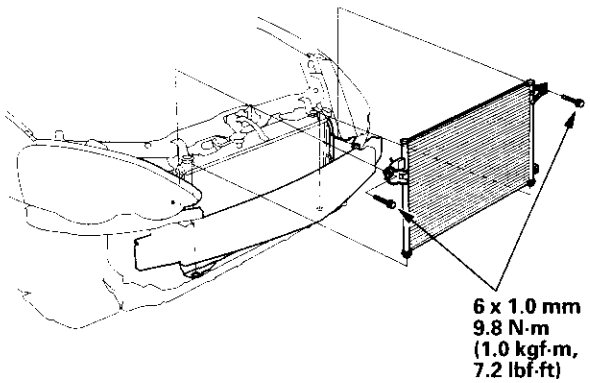
2. Remove the front bumper (see page 20-87).

3. Remove the nut and the bolt, 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 21-62).

Refrigerant Recovery

⚠CAUTION

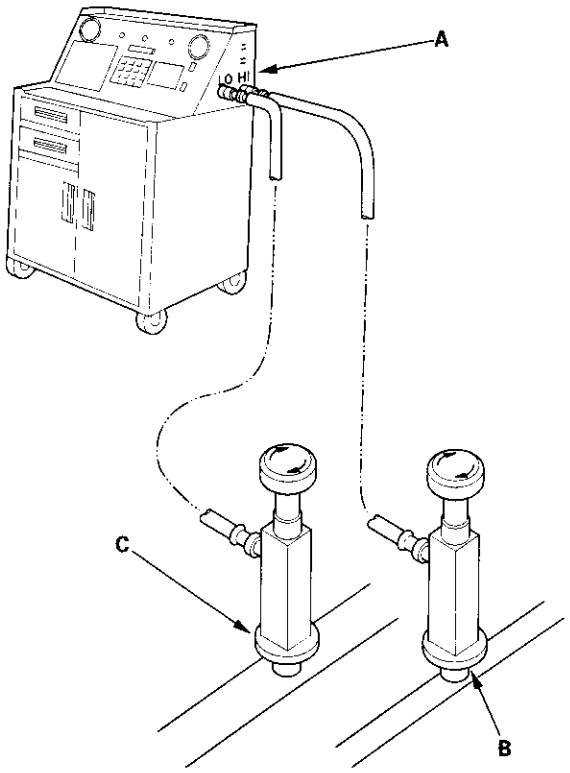
- Air conditioning refrigerant or lubricant vapor can irritate your eyes, nose, or throat.
- Be careful when connecting service equipment.
- Do not breathe refrigerant or vapor.

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 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

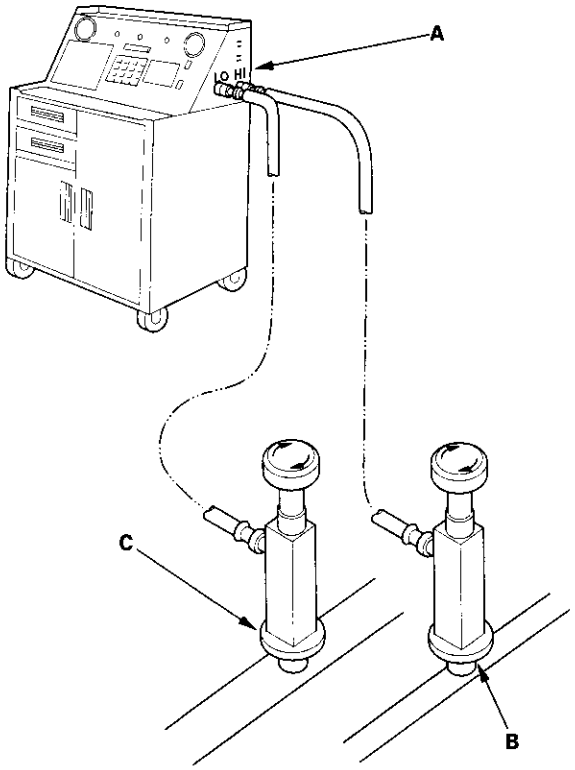
- Air conditioning refrigerant or lubricant vapor can irritate your eyes, nose, or throat.
- Be careful when connecting service equipment.
- Do not breathe refrigerant or vapor.

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 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.

System Charging

⚠CAUTION

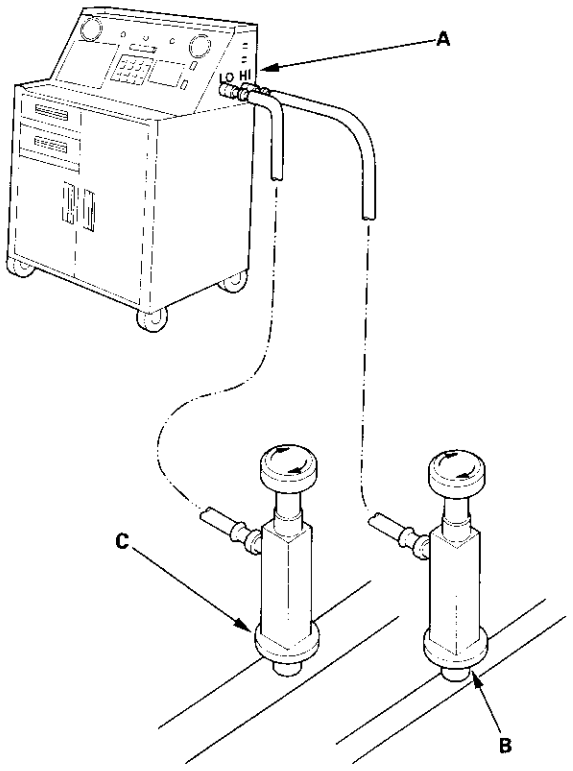
- Air conditioning refrigerant or lubricant vapor can irritate your eyes, nose, or throat.
- Be careful when connecting service equipment.
- Do not breathe refrigerant or vapor.

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 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 21-61).
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
   1.1 to 1.2 lbs
   17.6 to 19.4 oz
5. Check for refrigerant leaks (see page 21-63).
6. Check for system performance (see page 21-64).

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.

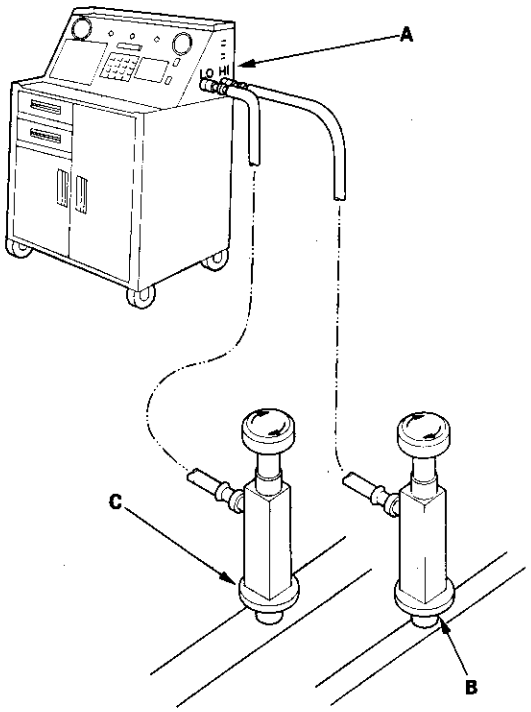
Use only service equipment that is U.L.-listed and is certiified to meet the requirements of SAE J2210 to remove HFC-134a (R-134a) from the air conditioning system.

If accidental system discharge occurs, ventilate 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 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
   1.1 to 1.2 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, the system must be evacuated.

A/C System Tests

Performance Test

⚠ WARNING

- Compressed air mixed R-134a forms a combustible vapor.
- The vapor can burn or explode causing serious injury.
- Never use compressed air to pressure test R-134 a 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 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.

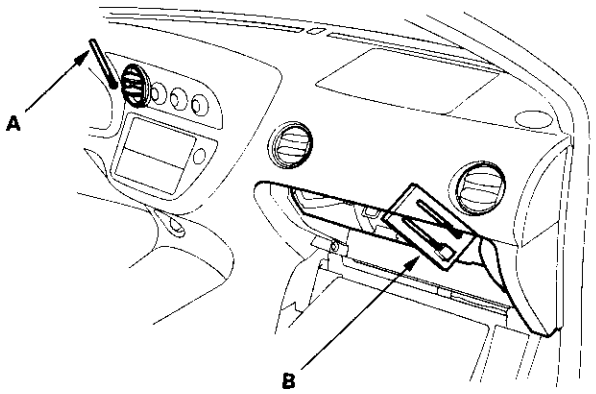
Additional health and safety information may be obtained from the refrigerant and lubricant manufacturers.

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. Remove the glove box stops, and let the glove box hang down (see page 20-65).

4. Insert a thermometer (A) in the center vent, and place a thermometer (B) near the blower unit.



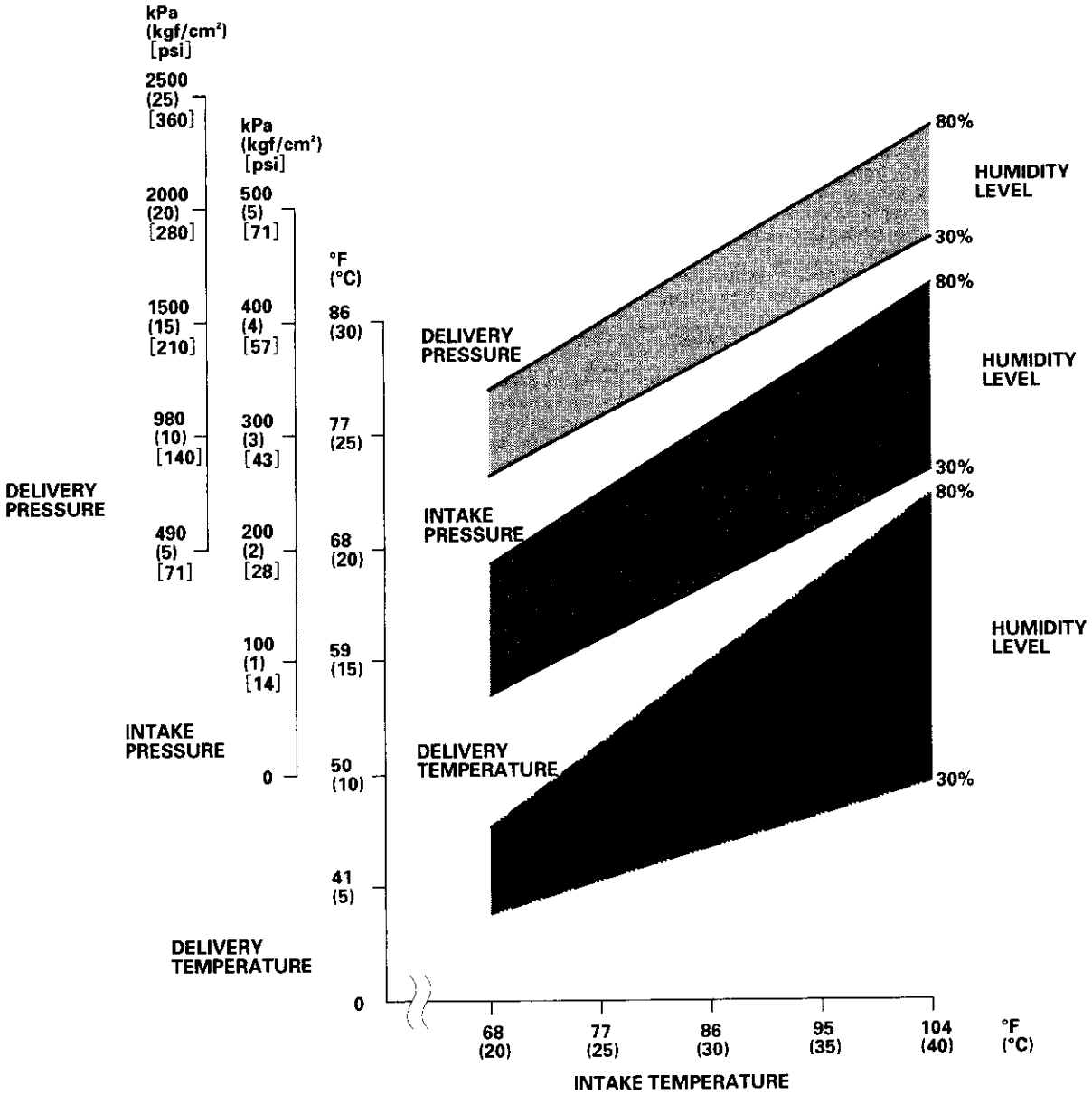
5. Test conditions:

   - Avoid direct sunlight.
   - Open the hood.
   - Open the front doors.
   - Set the temperature control dial on Max Cool (60 °F or 18°C), 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 1,500 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.



(cont'd)

A/C System Tests (cont'd)

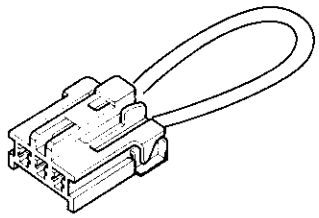
Pressure Test

Test results	Related symptoms	Probable cause	Remedy
Discharge (high) pressure abnormally high	After stopping compressor, pressure drops to about 196 kPa (2.0 kgf/cm², 28 psi) quickly, and then falls gradually.	Air in system	Recover, evacuate (see page 21-61), and recharge with specified amount (see page 21-62).
	Reduced or no 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.
	Line to condenser is excessively hot.	Restricted flow of refrigerant in system	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 • Recover, evacuate, 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, 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
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.

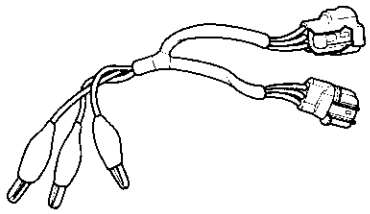
Body Electrical

Special Tools

Ref. No.	Tool Number	Description	Qty
①	07WAZ-001010A	MPCS Short Connector	1
②	07LAJ-PT3020A	Test Harness	1
③	07XAJ-001000A	Terminal Inspection Feeler Tool Set	1



①



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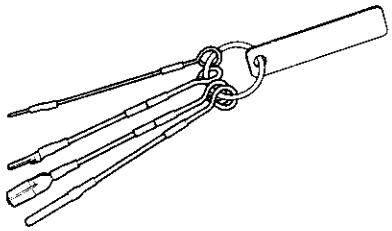


③

General Troubleshooting Information

Tips and Precautions

Before Troubleshooting

1. Check applicable fuses in the appropriate fuse/relay box.

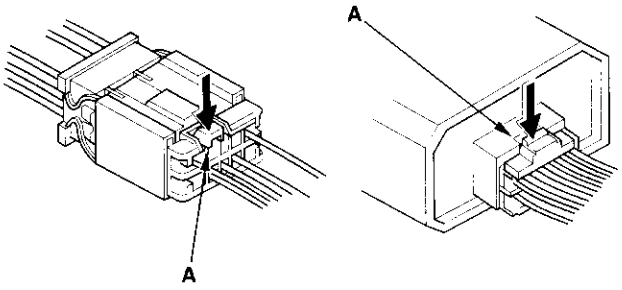
2. Check the battery for damage, state of charge, and clean and tight connections.

NOTICE

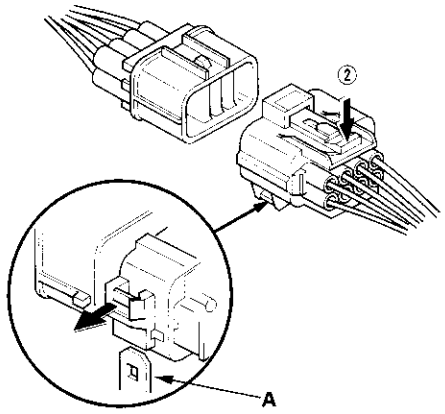
- Do not quick-charge a battery unless the battery ground cable has been disconnected, otherwise you will damage the alternator diodes.
- Do not attempt to crank the engine with the battery ground cable loosely connected or you will severely damage the wiring.

Handling Connectors

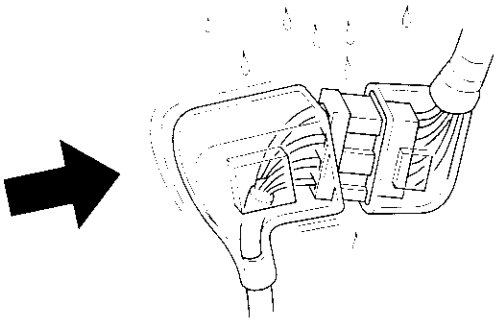
- Make sure the connectors are clean and have no loose wire terminals.
- Make sure multiple cavity connectors are packed with dielectric grease (except watertight connectors).
- *All connectors have push-down release type locks (A).*



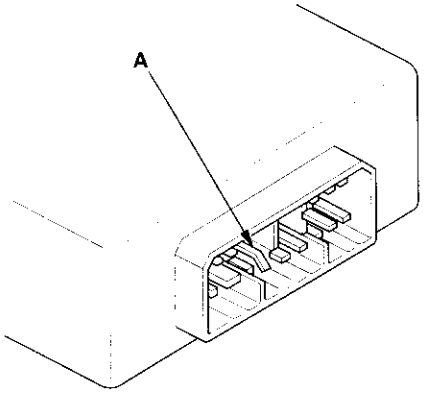
- Some connectors have a clip on their side used to attach them to a mount bracket on the body or on another component. This clip has a pull type lock.
- Some mounted connectors cannot be disconnected unless you first release the lock and remove the connector from its mount bracket (A).



- Never try to disconnect connectors by pulling on their wires; pull on the connector halves instead.
- *Always reinstall plastic covers.*



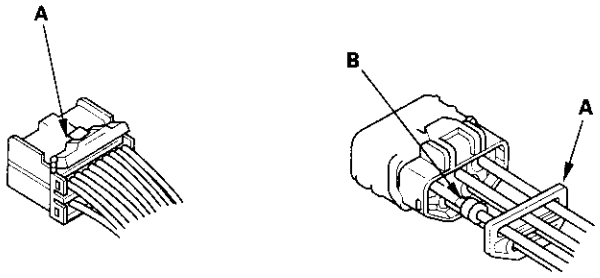
- Before connecting connectors, make sure the terminals (A) are in place and not bent.



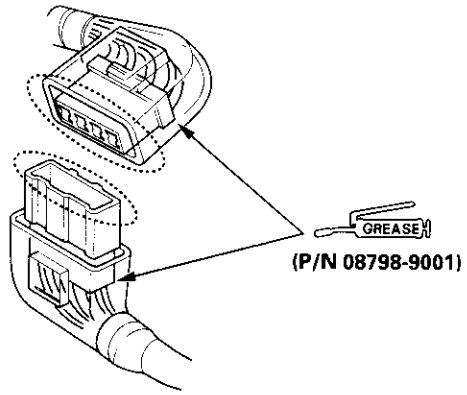
(cont'd)

General Troubleshooting Information (cont'd)

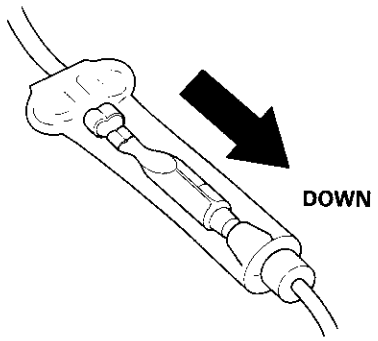
- Check for loose retainer (A) and rubber seals (B).



- The backs of some connectors are packed with dielctric grease. Add grease if necessary. If the grease is contaminated, replace it.

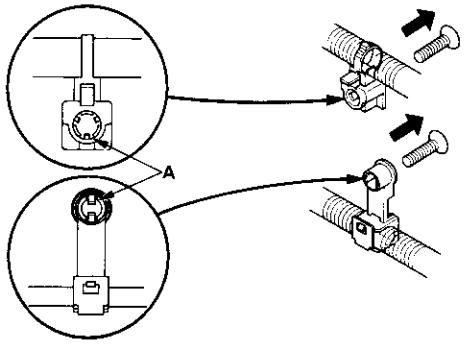


- Insert the connector all the way and make sure it is securely locked.
- Position wires so that the open end of the cover faces down.

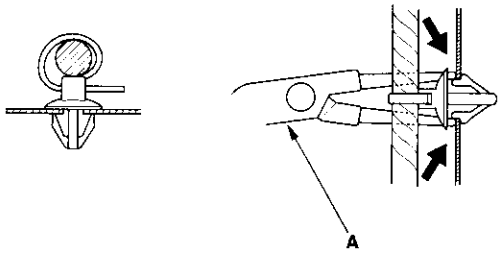


Handling Wires and Harnesses

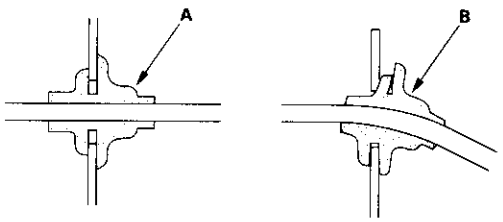
- Secure wires and wire harnesses to the frame with their respective wire ties at the designated locations.
- Remove clips carefully; don't damage their locks (A).



- Slip pliers (A) under the clip base and through the hole at an angle, then squeeze the expansion tabs to release the clip.

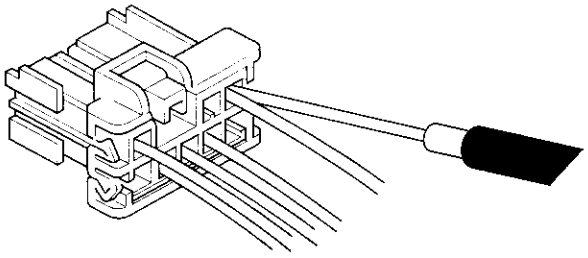


- After installing harness clips, make sure the harness doesn't interfere with any moving parts.
- Keep wire harnesses away from exhaust pipes and other hot parts, from sharp edges of brackets and holes, and from exposed screws and bolts.
- Seat grommets in their grooves properly (A). Do not leave grommets distorted (B).

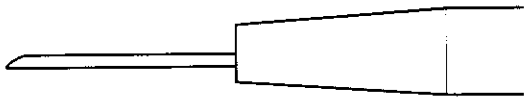


Testing and Repairs

- 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 a probe with a tapered tip.



- 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.

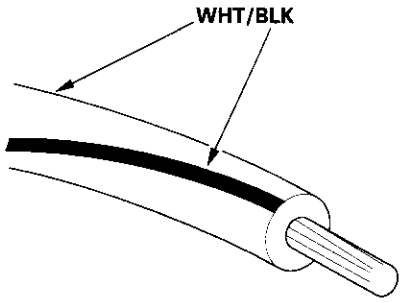
5. Make Sure The Circuit Works
   Turn on all components in the repaired circuit in all modes to make sure you've fixed the entire problem. If the problem was a blown fuse, be sure to test all of the circuits on the fuse. Make sure no new problems turn up and the original problem does not recur.

Wire Color Codes

The following abbreviations are used to identify wire colors in the circuit schematics:

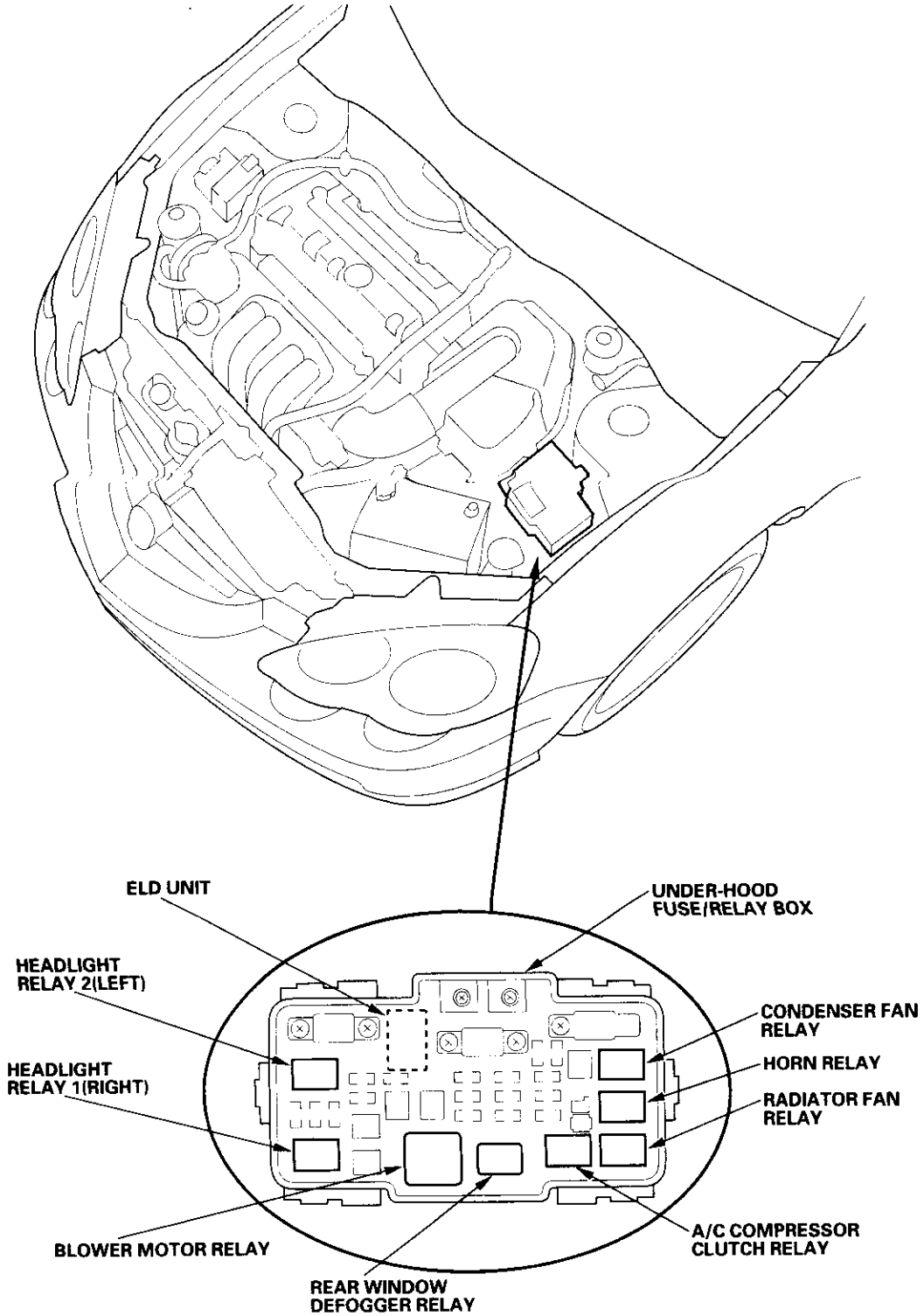
WHT	White
YEL	Yellow
BLK	Black
BLU	Blue
GRN	Green
RED	Red
ORN	Orange
PNK	Pink
BRN	Brown
GRY	Gray
PUR	Purple
LT BLU	Light Blue
LT GRN	Light Green

The wire insulation has one color or one color with another color stripe. The second color is the stripe.



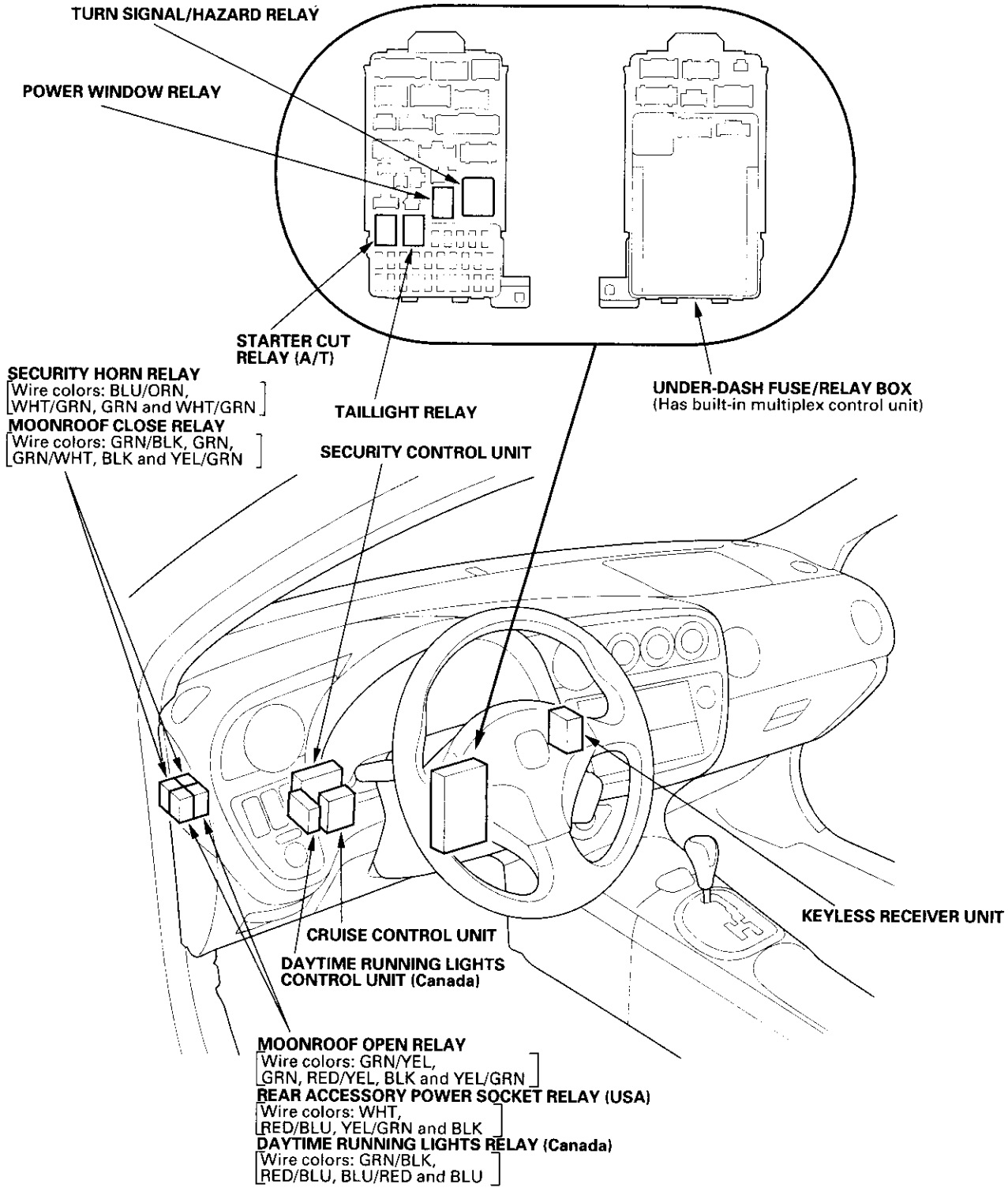
Relay and Control Unit Locations

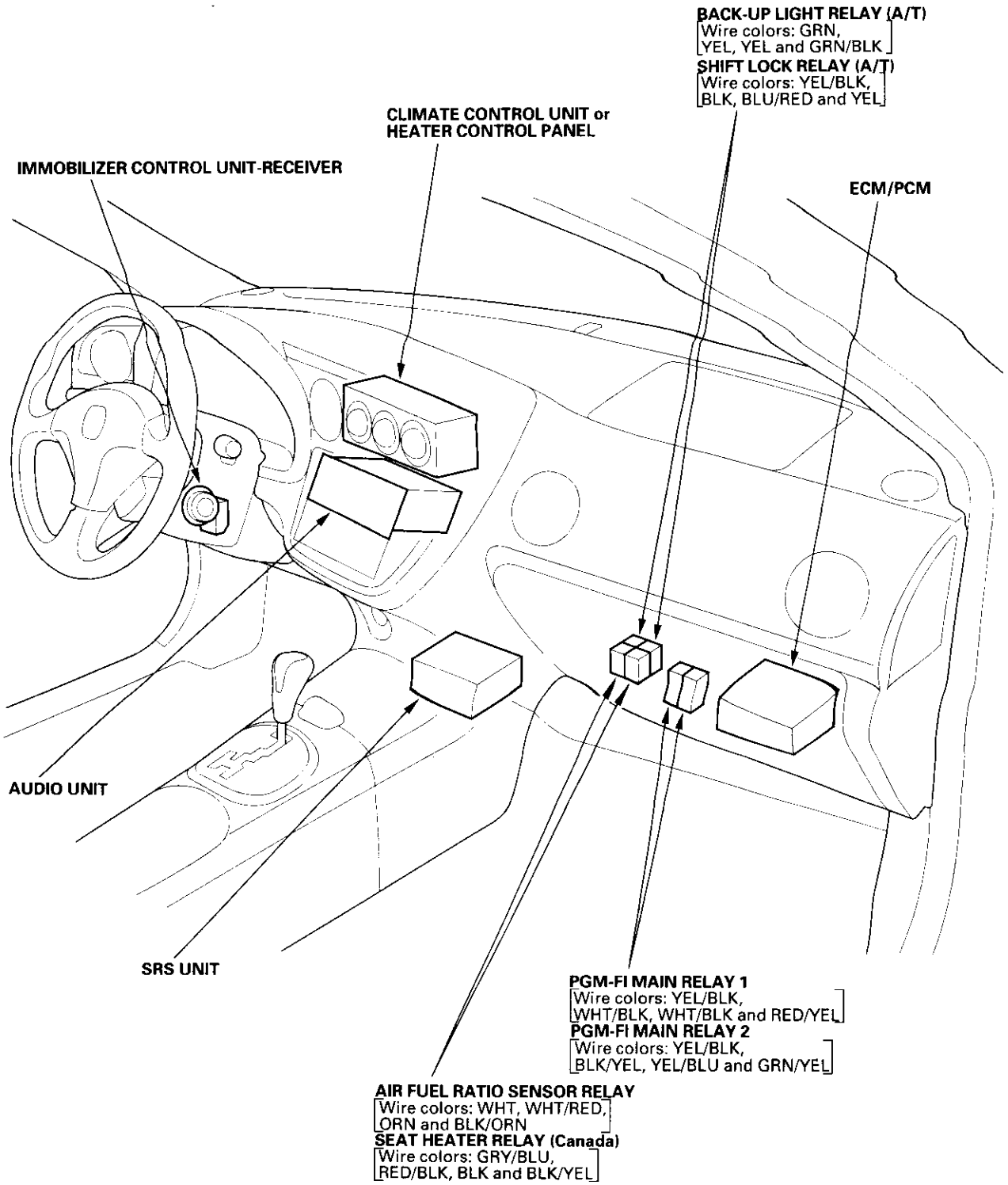
Engine Compartment



Relay and Control Unit Locations

Dashboard

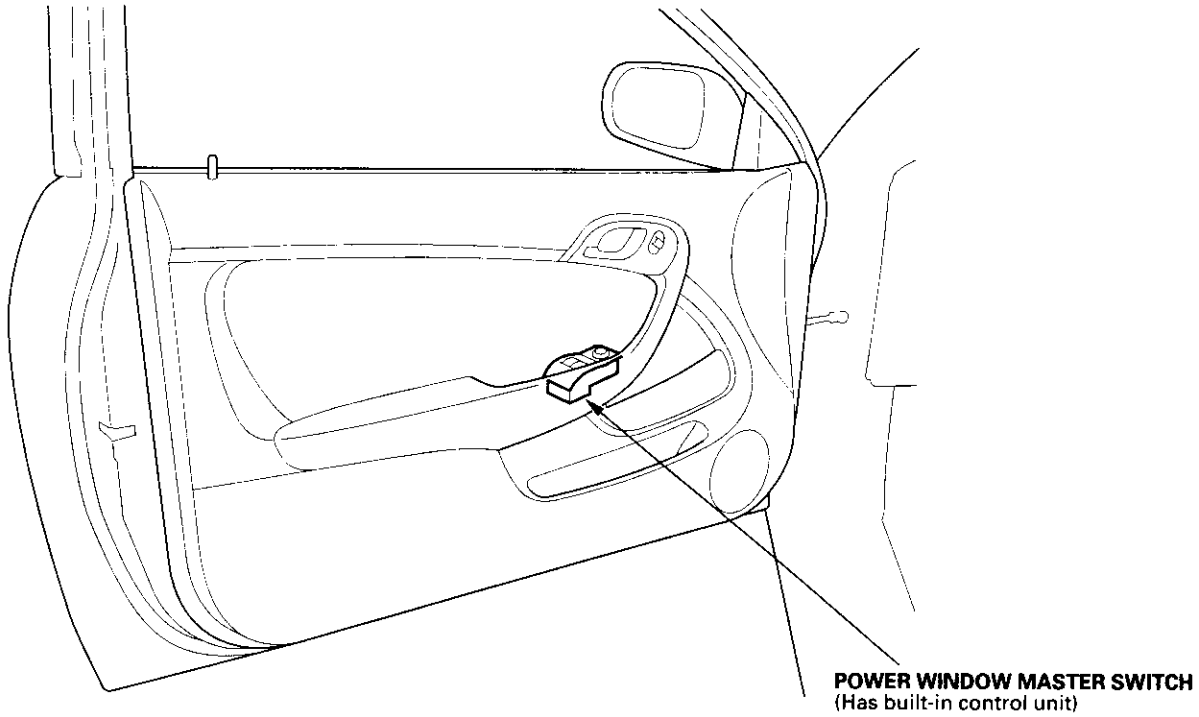



BACK-UP LIGHT RELAY (A/T)
Wire colors: GRN, YEL, YEL and GRN/BLK
SHIFT LOCK RELAY (A/T)
Wire colors: YEL/BLK, BLK, BLU/RED and YEL
CLIMATE CONTROL UNIT or HEATER CONTROL PANEL
IMMOBILIZER CONTROL UNIT-RECEIVER
ECM/PCM
AUDIO UNIT
SRS UNIT
PGM-FI MAIN RELAY 1
Wire colors: YEL/BLK, WHT/BLK, WHT/BLK and RED/YEL
PGM-FI MAIN RELAY 2
Wire colors: YEL/BLK, BLK/YEL, YEL/BLU and GRN/YEL
AIR FUEL RATIO SENSOR RELAY
Wire colors: WHT, WHT/RED, ORN and BLK/ORN
SEAT HEATER RELAY (Canada)
Wire colors: GRY/BLU, RED/BLK, BLK and BLK/YEL

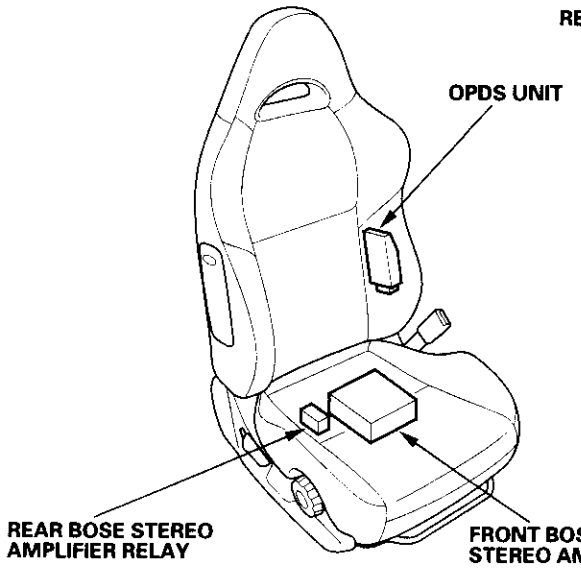
Relay and Control Unit Locations

Door, Rear and Seat

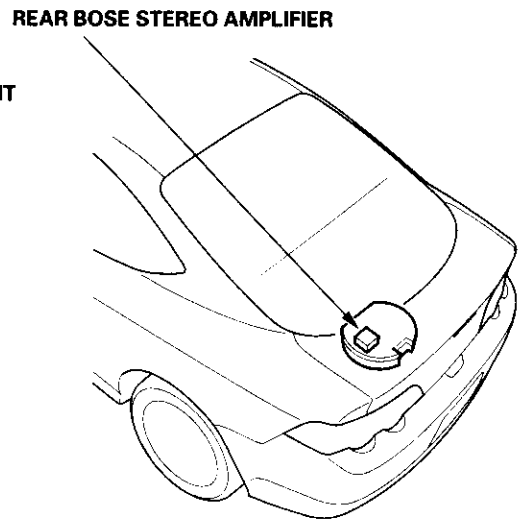
DRIVER'S DOOR:



FRONT PASSENGER'S SEAT:



CARGO AREA:



Connectors and Harnesses

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, Hatch, and Roof)	Notes
Battery ground cable	T3, (−) G1			(see page 22-12)
Engine ground cable	T4 G2			(see page 22-12)
Starter subharness	C102 and C103 T1, T2, and (+) T101 and T102			(see page 22-13)
Engine wire harness	C101 through C105 G101			(see page 22-14)
Transmission range switch subharness (A/T)	C105			(see page 22-16)
Engine compartment wire harness (Right branch)	G201 and G202			(see page 22-18)
Engine compartment wire harness (Left branch)	G301 and G302			(see page 22-18)
Engine compartment wire harness (Dashboard)		C483	C401, C402, C403, C501, C502	(see page 22-18)
Dashboard wire harness (Left branch)	C101	C404, C451, C452, C551, C552 G401		(see page 22-24)
Dashboard wire harness (Right branch)		C405, C481, C482, C571 G402, G403	C401, C402, C403, C503, C504, C505 G404	(see page 22-24)
Wiper subharness		C451 and C452 G451		(see page 22-30)
Floor wire harness (Front side)			C501 through C505 C801*1, C851*2 G501	(see page 22-32)
Floor wire harness (Rear side)			C601, C701, C702 G502	(see page 22-32)
Rear wire harness			C601, C602 G601	(see page 22-36)
License plate light subharness			C602	(see page 22-36)
Rear window defogger wire harness				(see page 22-36)
Hatch wire harness			C701, C702 G701, G702	(see page 22-38)
Roof wire harness		C404		(see page 22-40)
Front SRS sensor harness		C405		(see page 22-42)
OPDS unit harness			C851	(see page 22-42)
Driver's door wire harness		C551, C552		(see page 22-44)
Passenger's door wire harness		C571		(see page 22-45)
A/C wire harness		C481, C482, C483		(see page 22-46)
Passenger's seat subharness*1			C801*1, C851*1	(see page 22-47)

*1: With BOSE Sound System
*2: Without BOSE Sound System

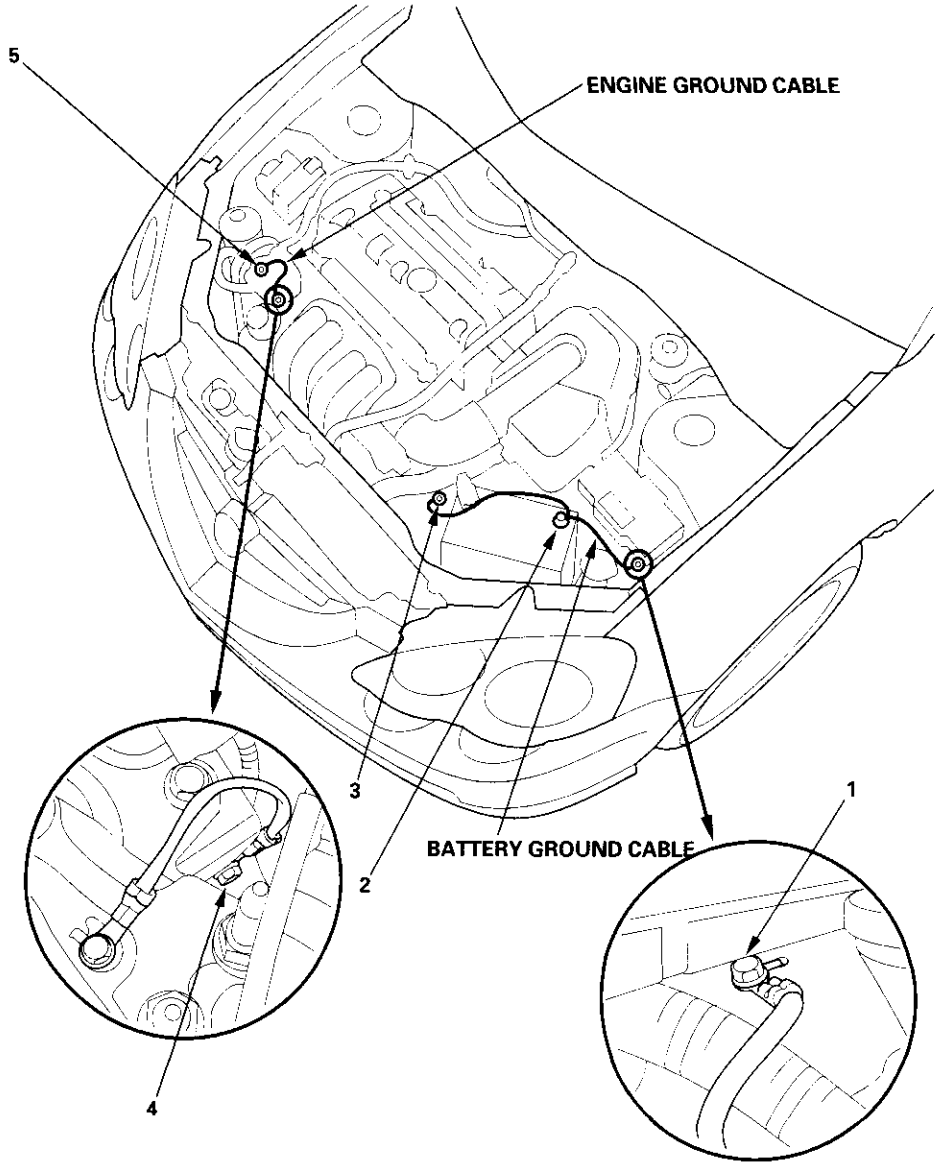
Connector to Harness Index

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	

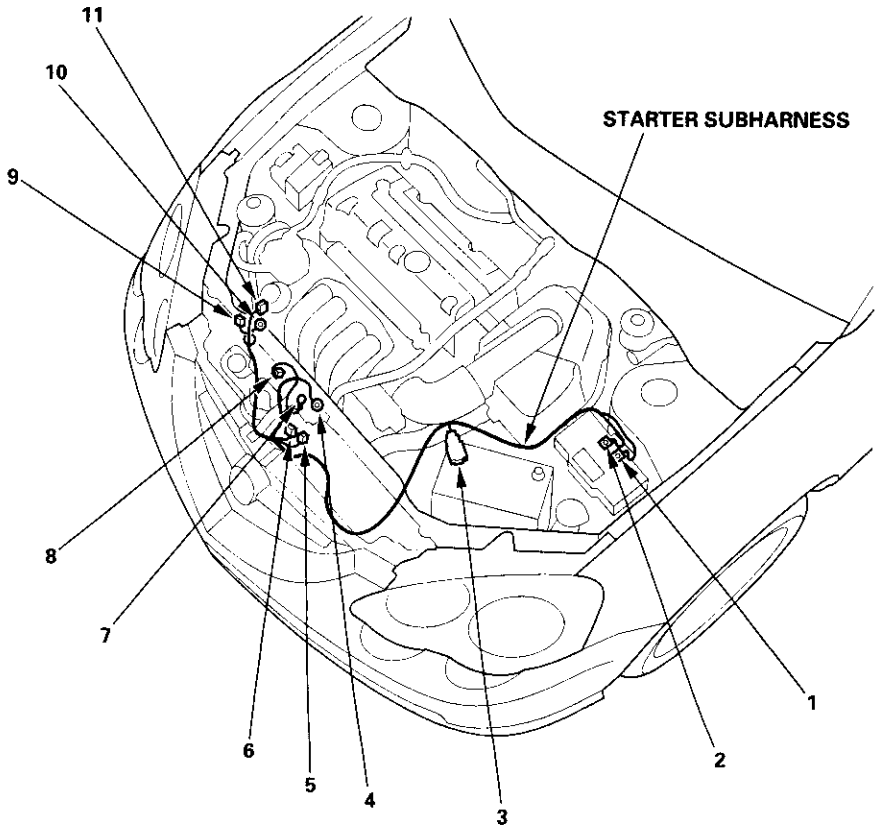
Engine Ground Cable

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
T4	5		Right side of engine compartment		
G2	4		Right side of engine compartment	Body ground via engine ground cable	



Starter Subharness

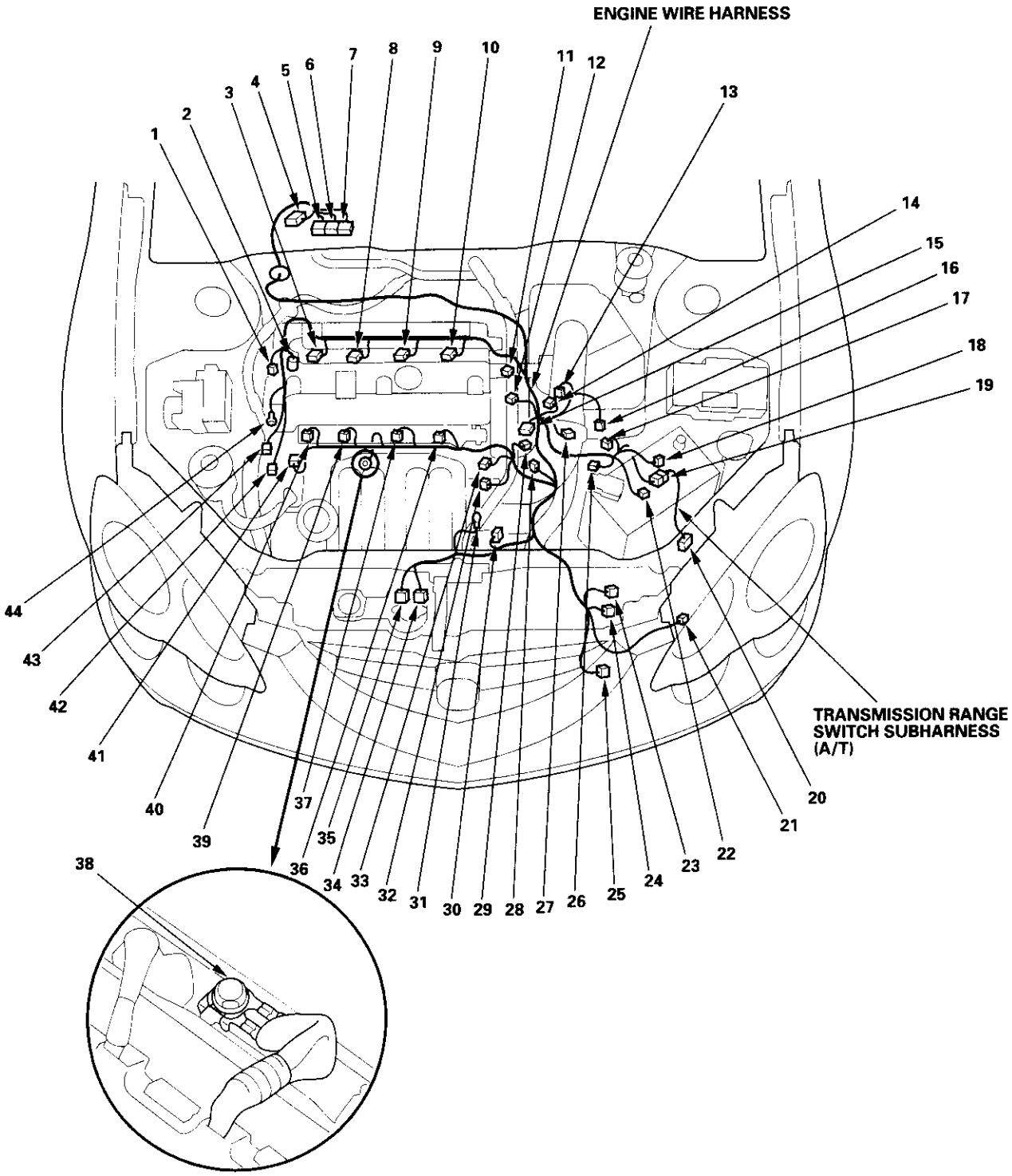
Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Alternator	9	4	Right side of engine compartment		
IMRC sensor	11	3	Right side of engine		Except Type-S
Knock sensor	8	1	Front of engine		
Starter solenoid	7	1	Middle of engine compartment		Type-S
C102	6	6	Front of engine compartment	Engine wire harness (see page 22-14)	Type-S
C102	6	8	Front of engine compartment	Engine wire harness (see page 22-14)	Except Type-S
C103	5	1	Front of engine compartment	Engine wire harness (see page 22-14)	Type-S
T1	1		Left side of engine compartment	Under-hood fuse/relay box	
T2	4		Middle of engine compartment	Starter motor	
T101	2		Under-hood fuse/relay Box		
T102	10		Alternator		
(+)	3		Battery	Battery positive terminal	



Connector to Harness Index (cont'd)

Engine Wire Harness

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
ATFT sensor and shift solenoid valve sensors	25	8	Transmission housing		A/T
A/T pressure control solenoid valve A	22	2	Transmission housing		A/T
A/T pressure control solenoid valve B	24	2	Transmission housing		A/T
A/T pressure control solenoid valve C	23	2	Transmission housing		A/T
Back-up light switch	27	2	Transmission housing		M/T
Camshaft position (CMP) sensor	12	3	Left side of engine		
CKP sensor	42	3	Right side of engine		
Countershaft speed sensor	17	3	Transmission housing		A/T
ECM/PCM connector A	7	31	Under glove box		
ECM/PCM connector B	6	25	Under glove box		
Engine coolant temperature (ECT) sensor	14	2	Left side of engine		
Engine oil pressure switch	44	1	Right side of engine		
EVAP canister purge valve	32	2	Left side of intake manifold		
Idle air control (IAC) valve	30	3	Left side of intake manifold		
Ignition coil No. 1	3	3	Middle of engine compartment		
Ignition coil No. 2	8	3	Middle of engine compartment		
Ignition coil No. 3	9	3	Middle of engine compartment		
Ignition coil No. 4	10	3	Middle of engine compartment		
Injector No. 1	40	2	Middle of engine compartment		
Injector No. 2	39	2	Middle of engine compartment		
Injector No. 3	37	2	Middle of engine compartment		
Injector No. 4	36	2	Middle of engine compartment		
Intake air temperature (IAT) sensor	29	2	Intake air duct		
Intake manifold runner control (IMRC) valve	41	2	Right side of intake manifold		Except Type-S
MAP sensor	33	3	Left side of intake manifold		
Mainshaft speed sensor	18	3	Transmission housing		A/T
PCM connector C	5	22	Under glove box		
Reverse lockout solenoid valve	16	2	Transmission housing		Type-S
Starter solenoid	31	1	Under intake manifold		Exept Type-S
TDC sensor	11	3	Left side of engine		
Throttle position (TP) sensor	28	3	Left side of intake manifold		
Vehicle speed sensor (VSS)	13	3	Transmission housing		M/T
VTEC oil control solenoid valve	43	2	Right side of engine		
VTEC oil pressure switch	2	2	Right side of engine		
VTEC solenoid valve	1	2	Right side of engine		
2nd clutch pressure switch	26	1	Transmission housing		A/T
3rd clutch pressure switch	21	1	Transmission housing		A/T


ENGINE WIRE HARNESS
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TRANSMISSION RANGE SWITCH SUBHARNESS (A/T)

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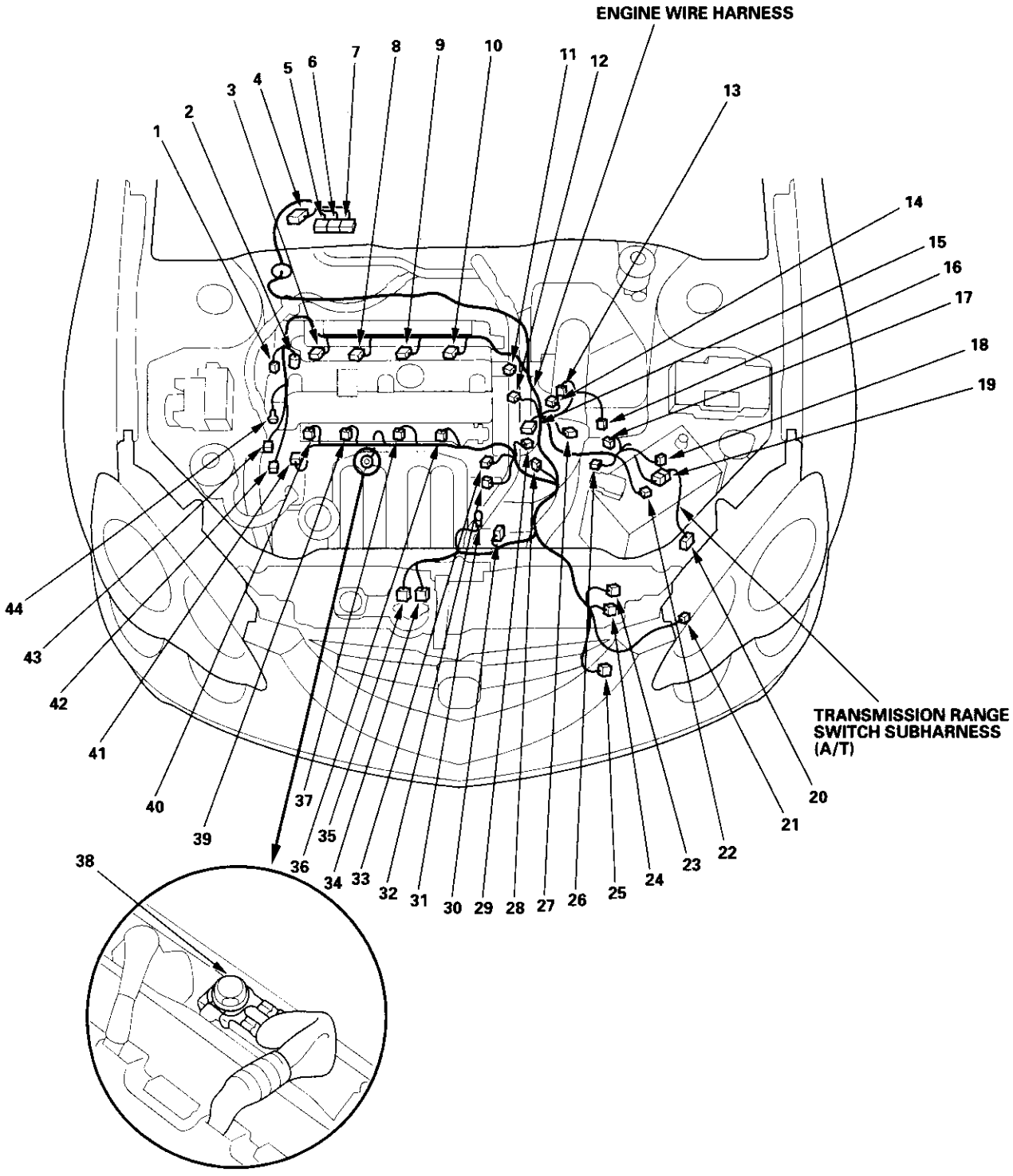
Connector to Harness Index (cont'd)

Engine Wire Harness (cont'd)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
C101	4	20	Under right side of dash	Engine compartment wire harness (see page 22-18)	
C102	35	6	Front of engine compartment	Starter subharness (see page 22-13)	Type-S
C102	35	8	Front of engine compartment	Starter subharness (see page 22-13)	
C103	34	1	Front of engine compartment	Starter subharness (see page 22-13)	Type-S
C104 (Junction connector)	15	24	Under right side of dash	Junction connector	
C105	19	10	Transmission housing	Transmission range switch subharness	A/T
G101	38		Cylinder head cover	Engine ground, via engine wire harness	

Transmission Range Switch Subharness (A/T)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Transmission range switch	20	10	Transmission housing		
C105	19	10	Transmission housing	Engine wire harness	


ENGINE WIRE HARNESS
TRANSMISSION RANGE SWITCH SUBHARNESS (A/T)
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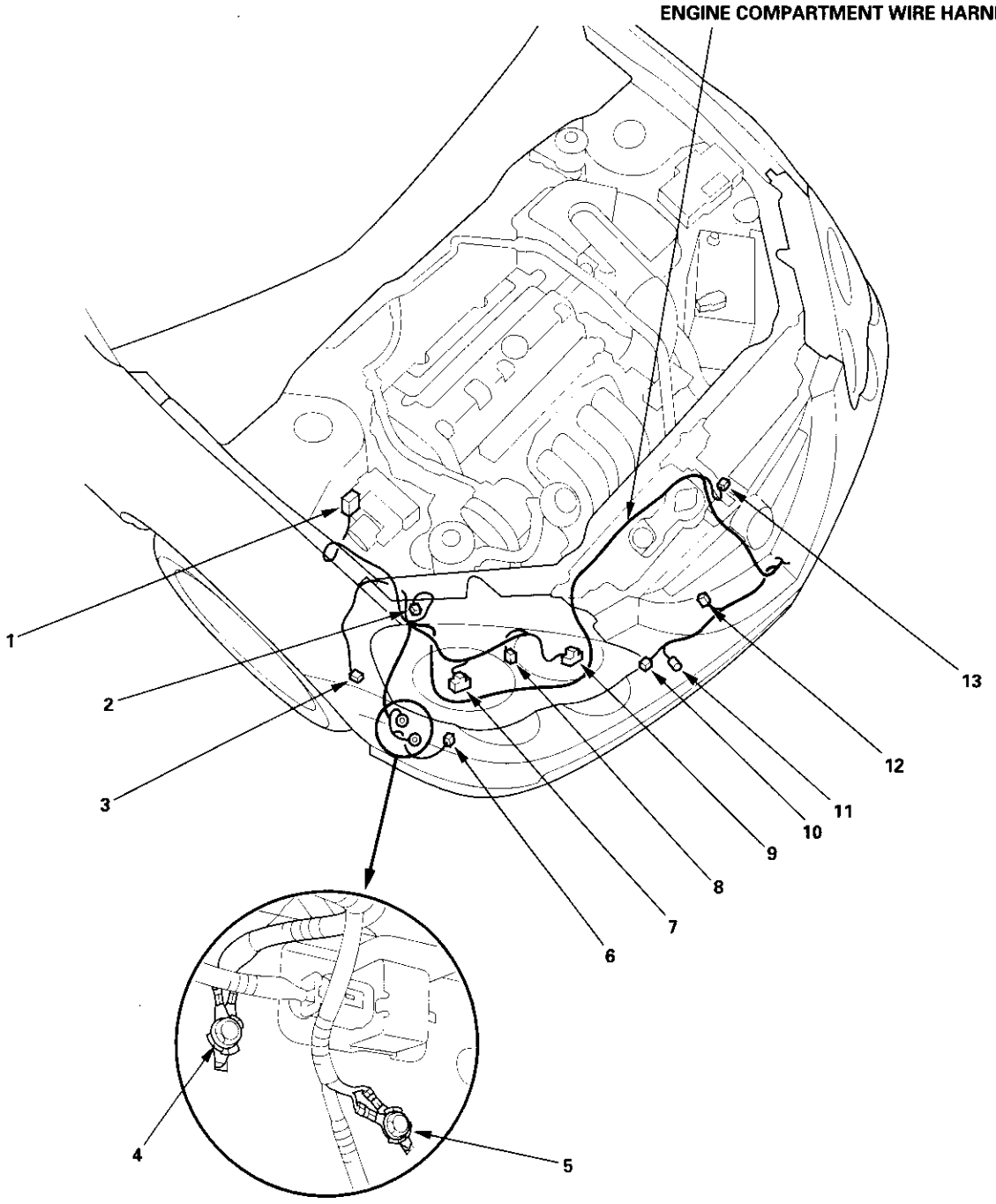
Connector to Harness Index (cont'd)

Engine Compartment Wire Harness (Right branch)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
ABS modulator-control unit	1	25	Right side of engine compartment		
A/C compressor clutch	10	1	Front of engine compartment		
Condenser fan motor	12	2	Front of engine compartment		
Hood switch (security)	13	2	Front of engine compartment		
Horn (security)	6	1	Behind front bumper		
Radiator fan switch	11	2	Front of engine compartment		
Right front ABS wheel sensor	3	2	Right side of engine compartment		
Right front parking light	2	2	Behind right headlight		
Right front turn signal light	8	2	Behind right headlight		
Right headlight (high beam)	9	3	Behind right headlight		
Right headlight (low beam)	7	3	Behind right headlight		
G201	5		Behind right side of front bumper	Body ground via engine compartment wire harness	
G202	9		Behind right side of front bumper	Body ground via engine compartment wire harness	



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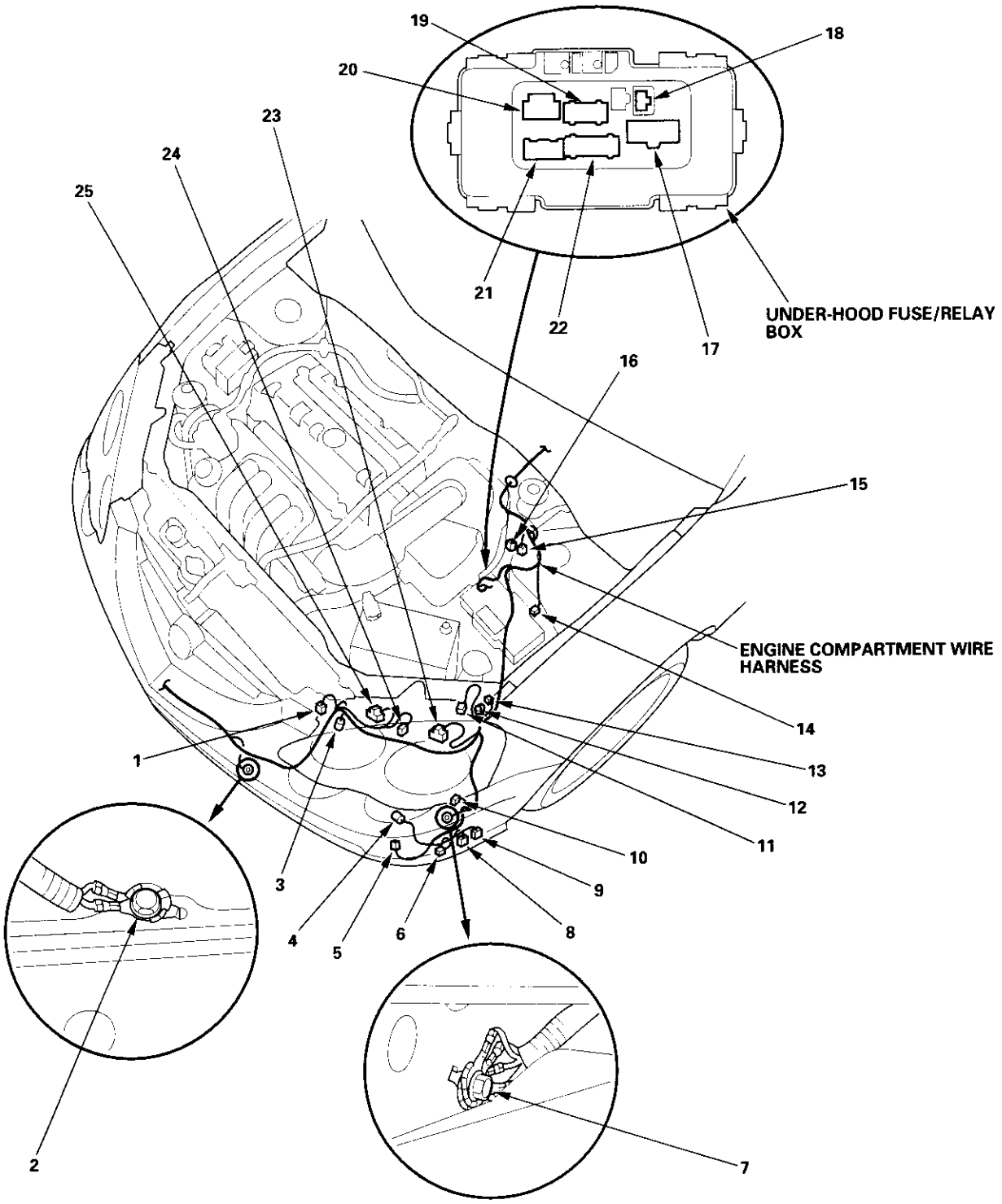
Connector to Harness Index (cont'd)

Engine Compartment Wire Harness (Left branch) (cont'd)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
A/C pressure switch	3	2	Front of engine compartment		
Air fuel ratio sensor	16	4	Below the backside of engine		
ELD unit	18	3	Under-hood fuse/relay box		
Horn (Low)	5	1	Behind front bumper		
Left front ABS wheel sensor	14	2	Left side of engine compartment		
Left front airbag sensor	10	2	Left side of engine compartment		
Left front parking light	11	2	Behind left headlight		
Left front turn signal light	24	2	Behind left headlight		
Left headlight (high beam)	23	3	Behind left headlight		
Left headlight (low beam)	25	3	Behind left headlight		
Optional connector (for fog light)	12	1	Left side of engine compartment		
Outside air temperature sensor	4	2	Behind front bumper		
Radiator fan motor	1	2	Front of engine compartment		
Rear window washer motor	9	2	Behind left side of front bumper		
Secondary heated oxygen sensor (SHO2S)	15	4	Left side of engine compartment		
Test tachometer connector	13	2	Left side of engine compartment		
Under-hood fuse/relay box connector A (see page 22-48)	20	2	Under-hood fuse/relay box		
Under-hood fuse/relay box connector B (see page 22-48)	19	12	Under-hood fuse/relay box		
Under-hood fuse/relay box connector C (see page 22-48)	17	7	Under-hood fuse/relay box		
Under-hood fuse/relay box connector D (see page 22-48)	22	14	Under-hood fuse/relay box		
Under-hood fuse/relay box connector E (see page 22-48)	21	5	Under-hood fuse/relay box		
Washer fluid level switch	6	2	Behind left side of front bumper		Canada
Windshield washer motor	8	2	Behind left side of front bumper		
G301	7		Left side of engine compartment	Body ground via engine compartment wire harness	
G302	2		Under the radiator	Body ground via engine compartment wire harness	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UNDER-HOOD FUSE/RELAY BOX
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ENGINE COMPARTMENT WIRE HARNESS
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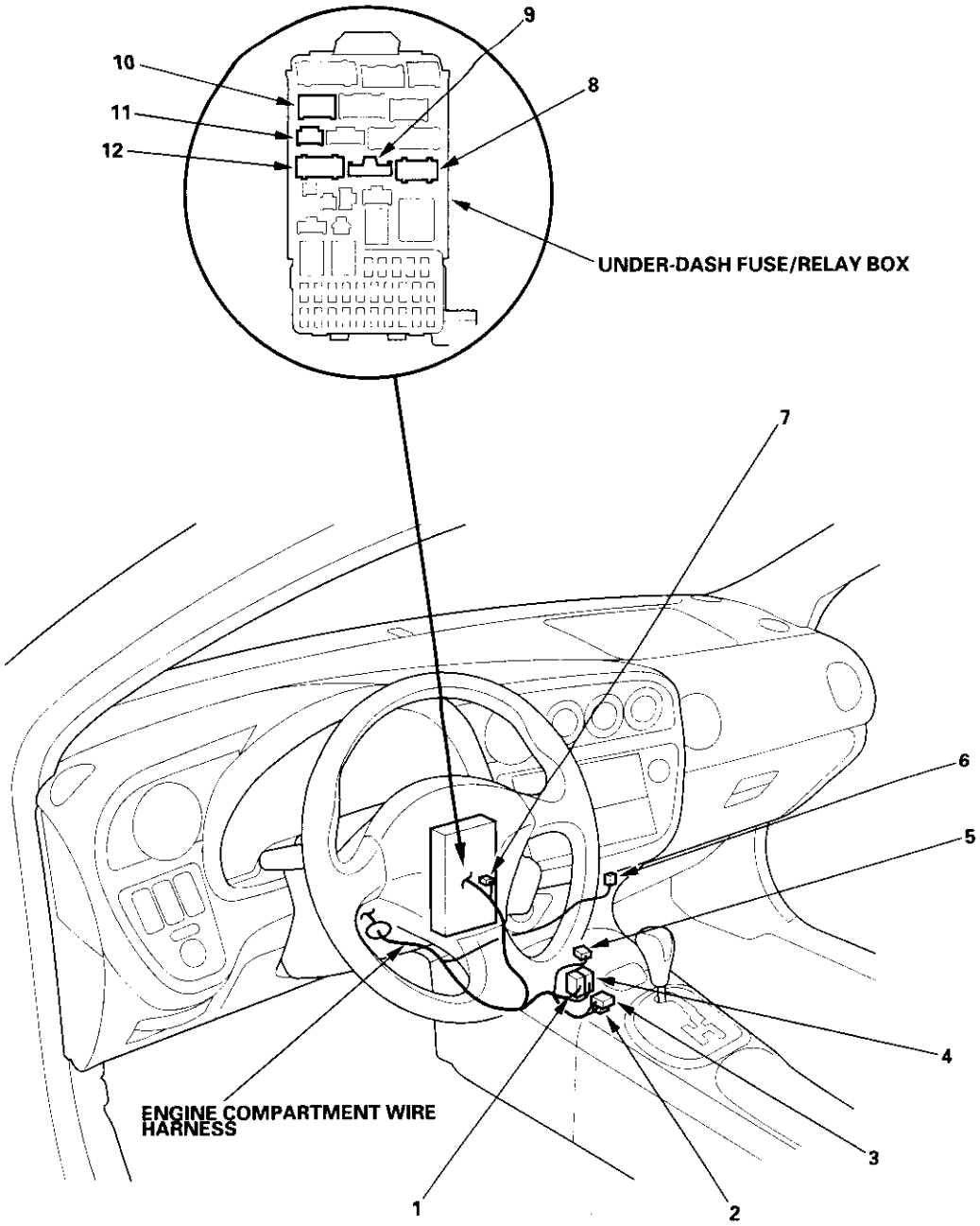
Connector to Harness Index (cont'd)

Engine Compartment Wire Harness (Dashboard)(cont'd)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Optional connector (for fog light)	7	1	Under left side of dash		USA
Optional connector (for fog light)	7	2	Under left side of dash		Canada
Under-dash fuse/relay box connector F (see page 22-49)	12	12	Under left side of dash		
Under-dash fuse/relay box connector G (see page 22-49)	8	10	Under left side of dash		
Under-dash fuse/relay box connector H (see page 22-49)	9	3	Under left side of dash		
Under-dash fuse/relay box connector I (see page 22-49)	11	5	Under left side of dash		
Under-dash fuse/relay box connector J (see page 22-49)	10	8	Under left side of dash		
C401	1	24	Under middle of dash	Dashboard wire harness (see page 22-24)	
C402	4	12	Under middle of dash	Dashboard wire harness (see page 22-24)	
C403	5	4	Under middle of dash	Dashboard wire harness (see page 22-24)	
C483	6	1	Under middle of dash	A/C wire harness (see page 22-46)	
C501	3	6	Under middle of dash	Floor wire harness (see page 22-32)	
C502	2	1	Under middle of dash	Floor wire harness (see page 22-32)	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UNDER-DASH FUSE/RELAY BOX
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ENGINE COMPARTMENT WIRE HARNESS
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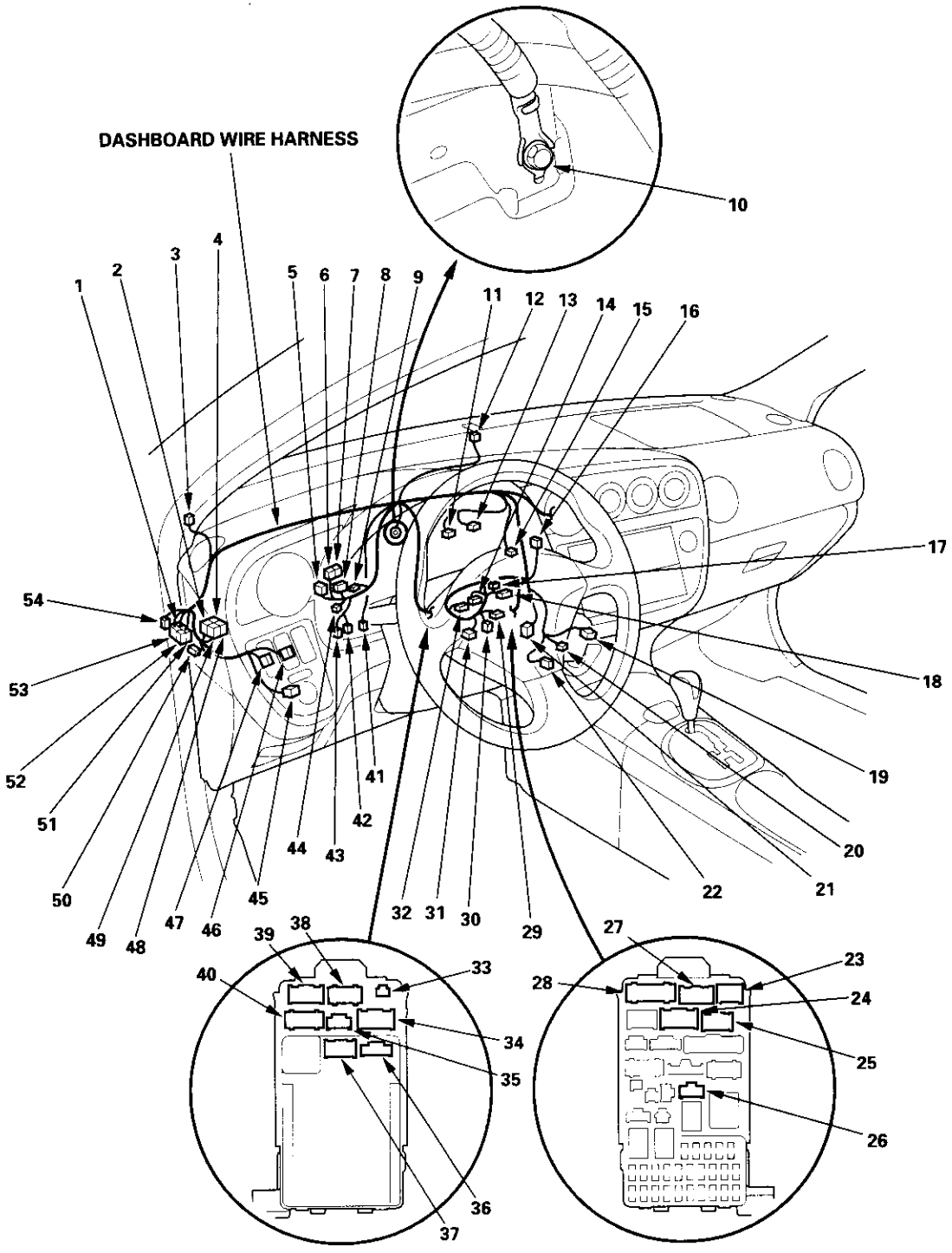
Connector to Harness Index (cont'd)

Dashboard Wire Harness (Left branch)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Airbag inflator (driver's)	32	4	In steering column cover		
Beverage holder light	20	2	Under middle of dash		
Brake pedal position switch	41	4	Under left side of dash		
Cable reel	17	5	In steering column cover		
Clutch switch	42	2	Under left side of dash		Cruise
Clutch interlock switch	43	2	Under left side of dash		
Combination light switch	14	16	In steering column cover		
Cruise control unit	8	14	Under left side of dash		
Cruise main switch	47	5	left side of dash		
Data link connector (DLC)	21	16	Under middle of dash		
Daytime running lights control unit	5	14	Under left side of dash		Canada
Daytime running lights relay	49	4	Under left side of dash		Canada
Diode (for security system)	9	2	Under left side of dash		
Diode (for daytime running lights system)	44	2	Under left side of dash		Canada
Front accessory power socket	22	2	Under middle of dash		
Gauge assembly connector A	11	22	Behind gauge		
Gauge assembly connector B	13	18	Behind gauge		
Ignition key switch	30	6	In steering column cover		
Ignition switch	31	7	In steering column cover		
In-car temperature sensor	15	2	Under middle of dash		
Immobilizer control unit-receiver	29	7	In steering column cover		
Keyless receiver unit	16	5	Under middle of dash		
Moonroof close relay	4	5	Under left side of dash		
Moonroof open relay	48	5	Under left side of dash		
Moonroof switch	46	6	Left side of dash		
Optional rear accessory power socket connector	50	2	Under left side of dash		Canada
Power mirror switch	45	13	Left side of dash		
Rear accessory power socket relay	49	4	Under left side of dash		USA
Tweeter (left side)	3	2	Left side of dash		
Seat heater switch	19	10	Under middle of dash		Canada
Security control unit connector A	6	20	Middle of dash		
Security control unit connector B	7	16	Under left side of dash		
Security relay	2	4	Under left side of dash		
Sunlight sensor	12	2	Under left side of dash		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(View of back side)
(View of front side)

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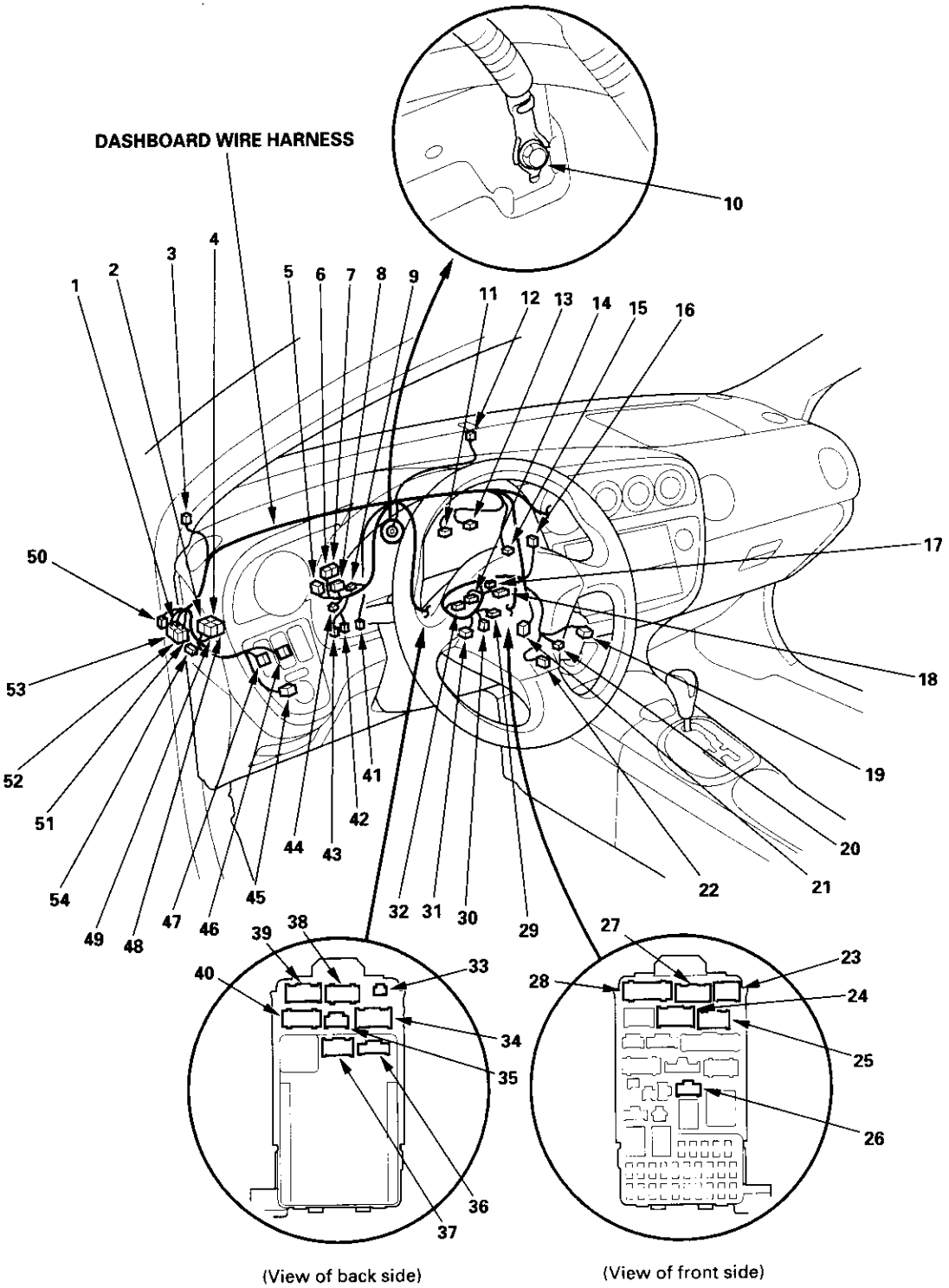
Connector to Harness Index (cont'd)

Dashboard Wire Harness (Left branch)(cont'd)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Under-dash fuse/relay box connector A (see page 22-49)	27	5	Under-dash fuse/relay box		
Under-dash fuse/relay box connector B (see page 22-49)	23	6	Under-dash fuse/relay box		
Under-dash fuse/relay box connector C (see page 22-49)	28	14	Under-dash fuse/relay box		
Under-dash fuse/relay box connector D (see page 22-49)	24	12	Under-dash fuse/relay box		
Under-dash fuse/relay box connector E (see page 22-49)	25	13	Under-dash fuse/relay box		
Under-dash fuse/relay box connector K (see page 22-49)	39	17	Under-dash fuse/relay box		
Under-dash fuse/relay box connector L (see page 22-49)	38	10	Under-dash fuse/relay box		
Under-dash fuse/relay box connector M (see page 22-49)	40	12	Under-dash fuse/relay box		
Under-dash fuse/relay box connector N (see page 22-49)	35	6	Under-dash fuse/relay box		
Under-dash fuse/relay box connector O (see page 22-49)	34	12	Under-dash fuse/relay box		
Under-dash fuse/relay box connector R (see page 22-49)	26	6	Under-dash fuserelay box		A/T
Under-dash fuse/relay box connector S (see page 22-49)	33	2	Under-dash fuse/relay box		
Under-dash fuse/relay box connector X (see page 22-49)	36	8	Under-dash fuse/relay box		
Under-dash fuse/relay box connector Y (see page 22-49)	37	13	Under-dash fuse/relay box		
Wiper/washer switch	18	14	In steering column cover		
C404	54	6	Under left side of dash	Roof wire harness (see page 22-40)	
C451	1	6	Under left side of dash	Wiper subharness (see page 22-30)	
C452	51	5	Under left side of dash	Wiper subharness (see page 22-30)	
C551	53	16	Under left side of dash	Driver's door wire harness (see page 22-44)	
C552	52	6	Under left side of dash	Driver's door wire harness (see page 22-44)	
G401	10		Under left side of dash	Body ground via dashboard wire harness	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(View of front side)

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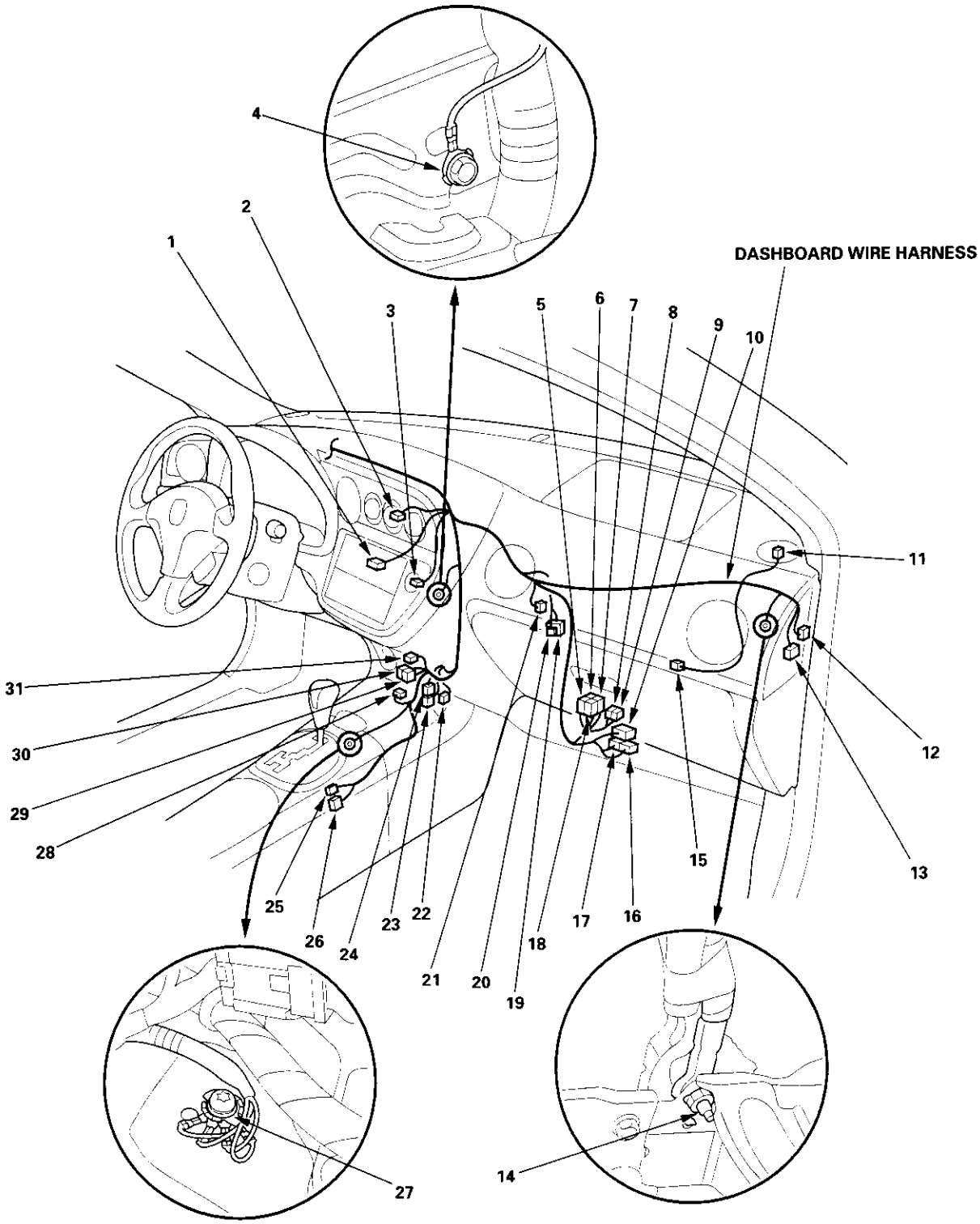
Connector to Harness Index (cont'd)

Dashboard Wire Harness (Right branch)(cont'd)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Airbag inflator (passenger's)	21	4	Under right side of dash		
Air fuel ratio sensor relay	5	4	Behind glove box		
Audio unit	1	20	Behind audio unit		
Back-up light relay	6	4	Behind glove box		A/T
Climate control unit	2	30	Behind climate control unit		
ECM/PCM connector E	17	31	Under glove box		
Glove box light	15	2	Behind glove box		
Hazard warning switch	3	10	Middle of dash		
Heater control panel	2	30	Behind heater control panel		
Park pin switch and shift lever position console light	26	8	Under shift lever console panel		A/T
PCM connector D	16	17	Under glove box		
PGM-FI main relay 1	8	4	Behind glove box		
PGM-FI main relay 2	9	4	Behind glove box		
Reverse relay	7	5	Behind glove box		A/T
Seat heater relay	18	4	Behind glove box		Canada
Shift lock solenoid	25	2	Under shift lever console panel		A/T
SRS unit connector C	28	18	Under middle of dash		
Tweeter (right side)	11	2	Right side of dash		
C101	10	20	Under middle of dash	Engine wire harness (see page 22-14)	
C401	29	24	Under middle of dash	Engine compartment wire harness (see page 22-18)	
C402	30	12	Under middle of dash	Engine compartment wire harness (see page 22-18)	
C403	31	4	Under middle of dash	Engine compartment wire harness (see page 22-18)	
C405	12	4	Under right side of dash	SRS sensor subharness (see page 22-42)	
C481	19	21	Under right side of dash	A/C wire harness (see page 22-46)	
C482	20	1	Under right side of dash	A/C wire harness (see page 22-46)	
C503	24	21	Under middle of dash	Floor wire harness (see page 22-32)	
C504	23	4	Under middle of dash	Floor wire harness (see page 22-32)	
C505	22	14	Under middle of dash	Floor wire harness (see page 22-32)	BOSE
C505	22	2	Under middle of dash	Floor wire harness (see page 22-32)	
C571	13	18	Under right side of dash	Passenger's door wire harness (see page 22-45)	
G402	14		Under right side of dash	Body ground via dashboard wire harness	
G403	4		Behind audio unit	Body ground via dashboard wire harness	
G404	27		Under shift lever console panel	Body ground via dashboard wire harness	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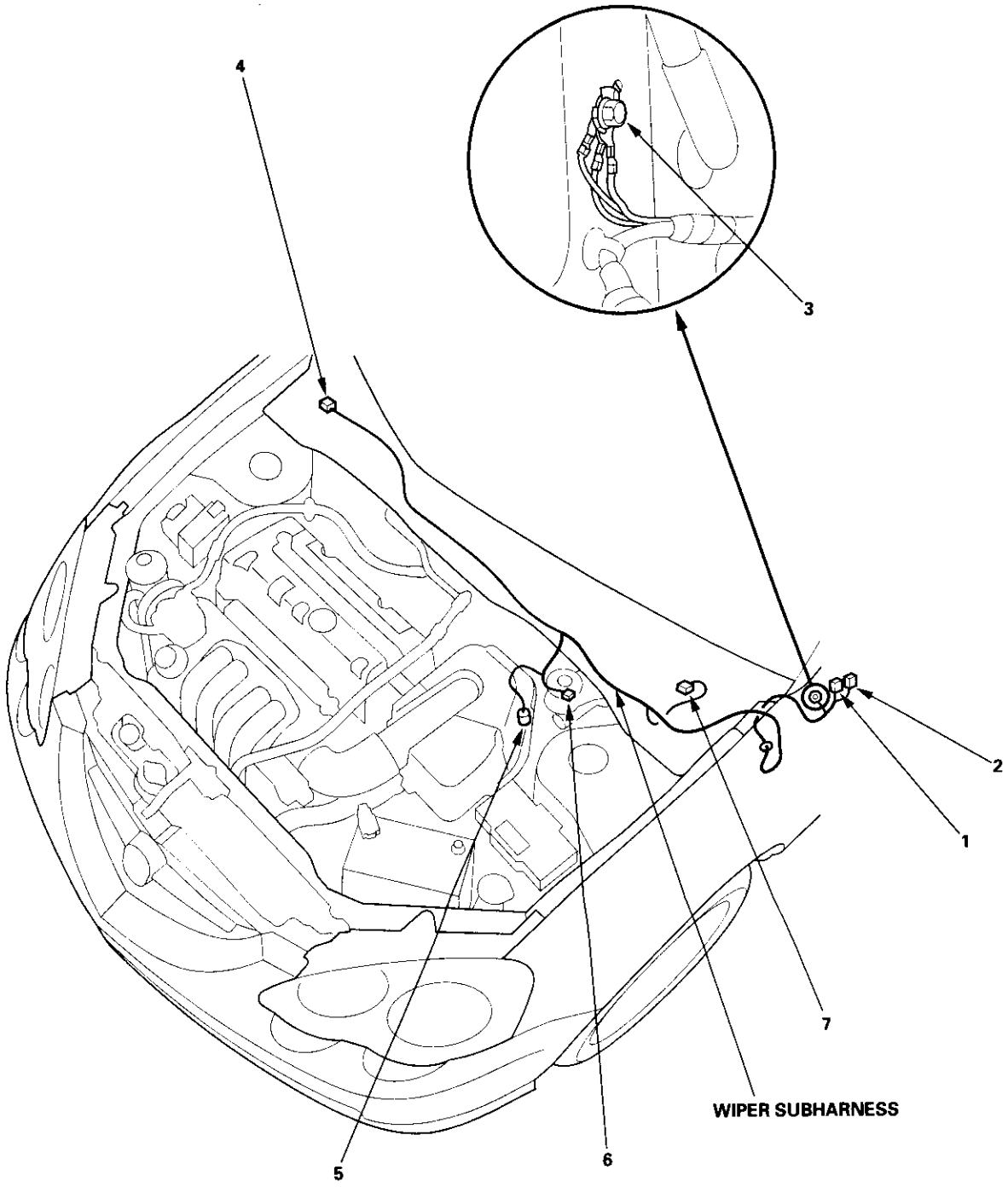
Connector to Harness Index (cont'd)

Wiper Subharness

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Brake fluid level switch	6	2	Left side of engine compartment		
Cruise control actuator	4	4	Under right side of cowl cover		
Power steering pressure (PSP) switch	5	2	Left side of engine compartment		
Windshield wiper motor	7	5	Under left side of cowl cover		
C451	2	6	Under left side of dash	Dashboard wire harness (see page 22-24)	
C452	1	5	Under left side of dash	Dashboard wire harness (see page 22-24)	
G451	3		Under left side of dash	Body ground via wiper sub-harness	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WIPER SUBHARNESS
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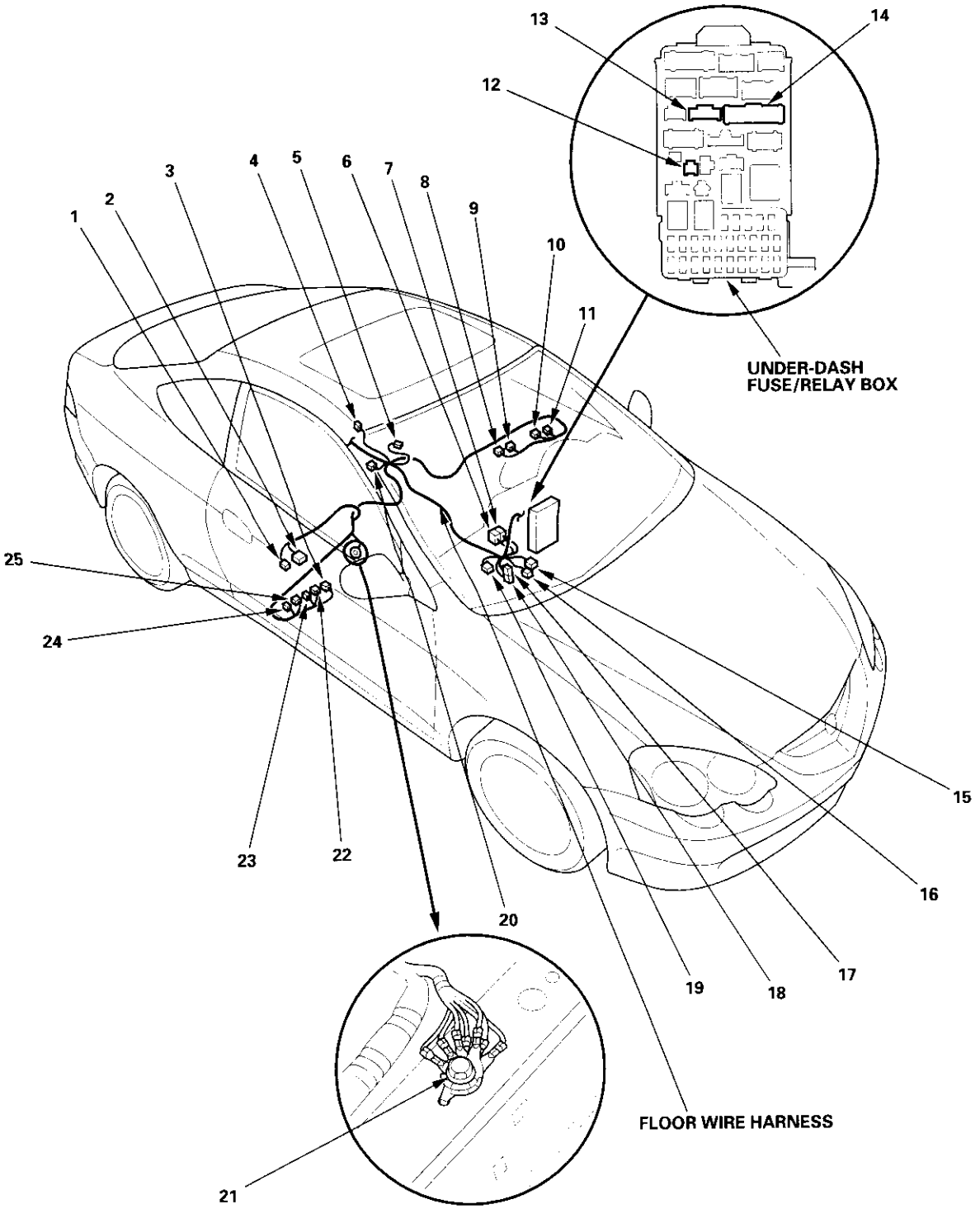
Connector to Harness Index (cont'd)

Floor Wire Harness (Front side)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Driver's seat belt switch	9	3	Under driver's seat		
Driver's seat heater	10	2	Under driver's seat		Canada
Driver's side airbag inflator	11	2	Under driver's seat		
Front BOSE stereo amplifier	2	26	Under passenger's seat		
Left side seat belt buckle tensioner	8	4	Under driver's seat		
Memory erase signal (MES) connector	12	2	Under-dash fuse/relay box		
Optional rear accessory power socket connector	20	2	Middle of floor		Canada
Parking brake switch	5	1	Middle of floor		
Passenger's seat belt switch	22	3	Under passenger's seat		*1
Passenger's seat heater	25	2	Under passenger's seat		Canada*1
Passenger's side airbag inflator	23	2	Under passenger's seat		
Rear accessory power socket	4	2	Rear console		USA
Rear BOSE stereo amplifier relay	1	4	Under passenger's seat		
Right side seat belt buckle tensioner	3	4	Under passenger's seat		
SRS unit connector A	15	18	Under middle of dash		
SRS unit connector B	16	8	Under middle of dash		
Under-dash fuse/relay box connector P	14	18	Under-dash fuse/relay box		
Under-dash fuse/relay box connector Q	13	8	Under-dash fuse/relay box		
C501	7	6	Under middle of dash	Engine compartment wire harness (see page 22-18)	
C502	6	1	Under middle of dash	Engine compartment wire harness (see page 22-18)	
C503	17	21	Under middle of dash	Dashboard wire harness (see page 22-24)	
C504	19	4	Under middle of dash	Dashboard wire harness (see page 22-24)	
C505	18	14	Under middle of dash	Dashboard wire harness (see page 22-24)	BOSE
C505	18	2	Under middle of dash	Dashboard wire harness (see page 22-24)	Without BOSE
C801	25	10	Under passenger's seat	Passenger's seat subharness (see page 22-42)	BOSE
C851	24	4	Under passenger's seat	OPDS unit harness (see page 22-42)	*1
G501	21		Under passenger's seat	Body ground via floor wire harness	

*1: Without BOSE Sound System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UNDER-DASH
FUSE/RELAY BOX
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FLOOR WIRE HARNESS

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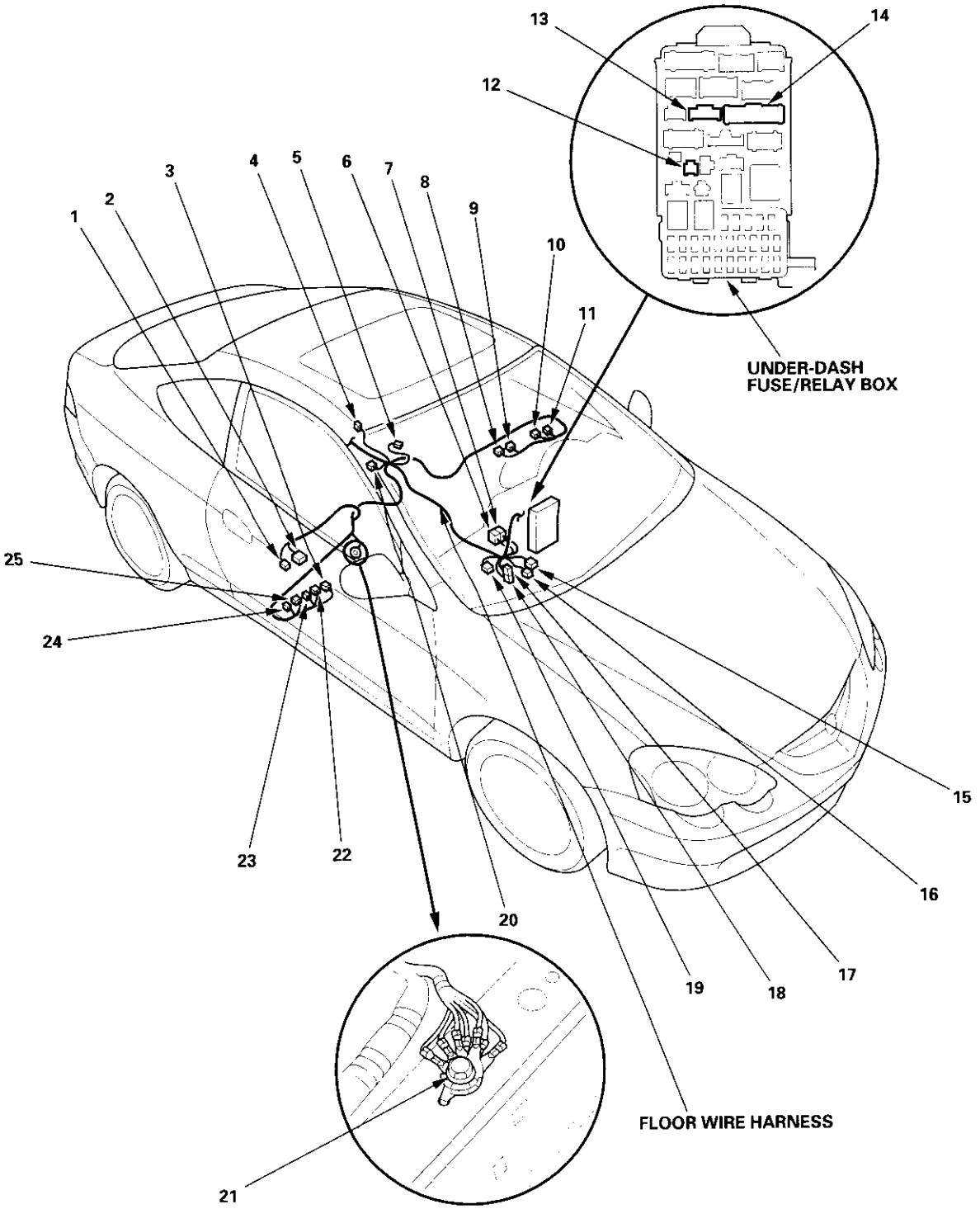
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UNDER-DASH
FUSE/RELAY BOX
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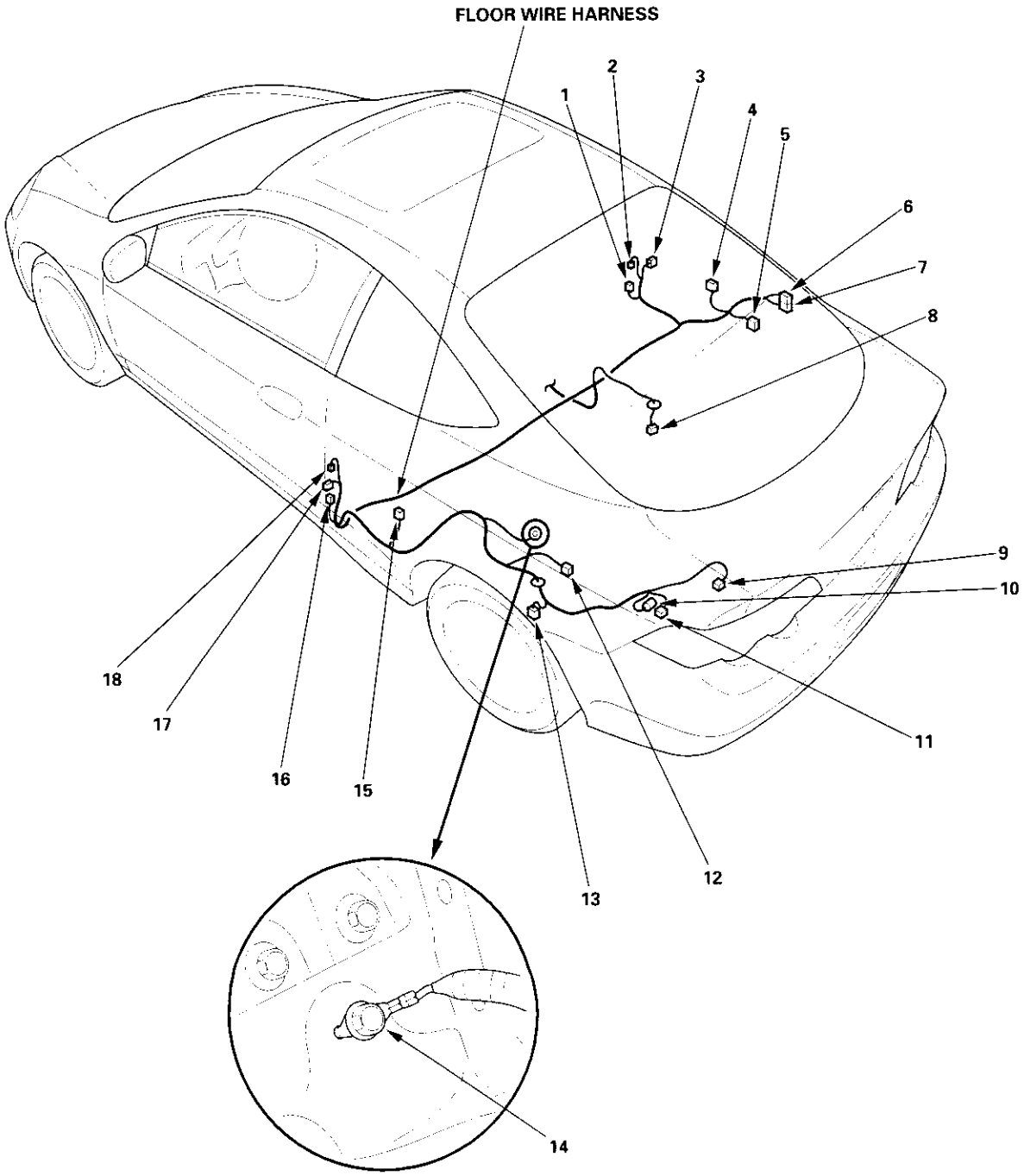
FLOOR WIRE HARNESS

(cont'd)

Connector to Harness Index (cont'd)

Floor Wire Harness (Rear side) (cont'd)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Driver's door switch	18	1	Left B-pillar		
Driver's side impact sensor	16	2	Left B-pillar		
EVAP emission bypass solenoid valve	11	2	Fuel tank		
EVAP emission control canister vent shut valve	9	2	Fuel tank		
Fuel pump/sending unit	8	5	Fuel tank		
Fuel tank pressure sensor	10	3	Fuel tank		
Left rear ABS wheel sensor	13	2	Left rear of floor		
Left rear speaker	15	2	Left quarter panel		
Left side seat belt tensioner	17	2	Left B-pillar		
Passenger's door switch	2	1	Right B-pillar		
Passenger's side impact sensor	1	2	Right B-pillar		
Rear BOSE stereo amplifier/woofer speaker	12	6	At spare tire		
Right rear speaker	4	2	Right quarter panel		
Right side seat belt tensioner	3	2	Right B-pillar		
C601	5	10	Right quarter panel	Rear wire harness (see page 22-36)	
C701	7	8	Right quarter panel	Hatch wire harnes (see page 22-38)	
C702	6	2	Right quarter panel	Hatch wire harnes (see page 22-38)	
G502	14		Behind left rear seat back	Body ground via floor wire harness	BOSE


FLOOR WIRE HARNESS
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Connector to Harness Index (cont'd)

Rear Wire Harness

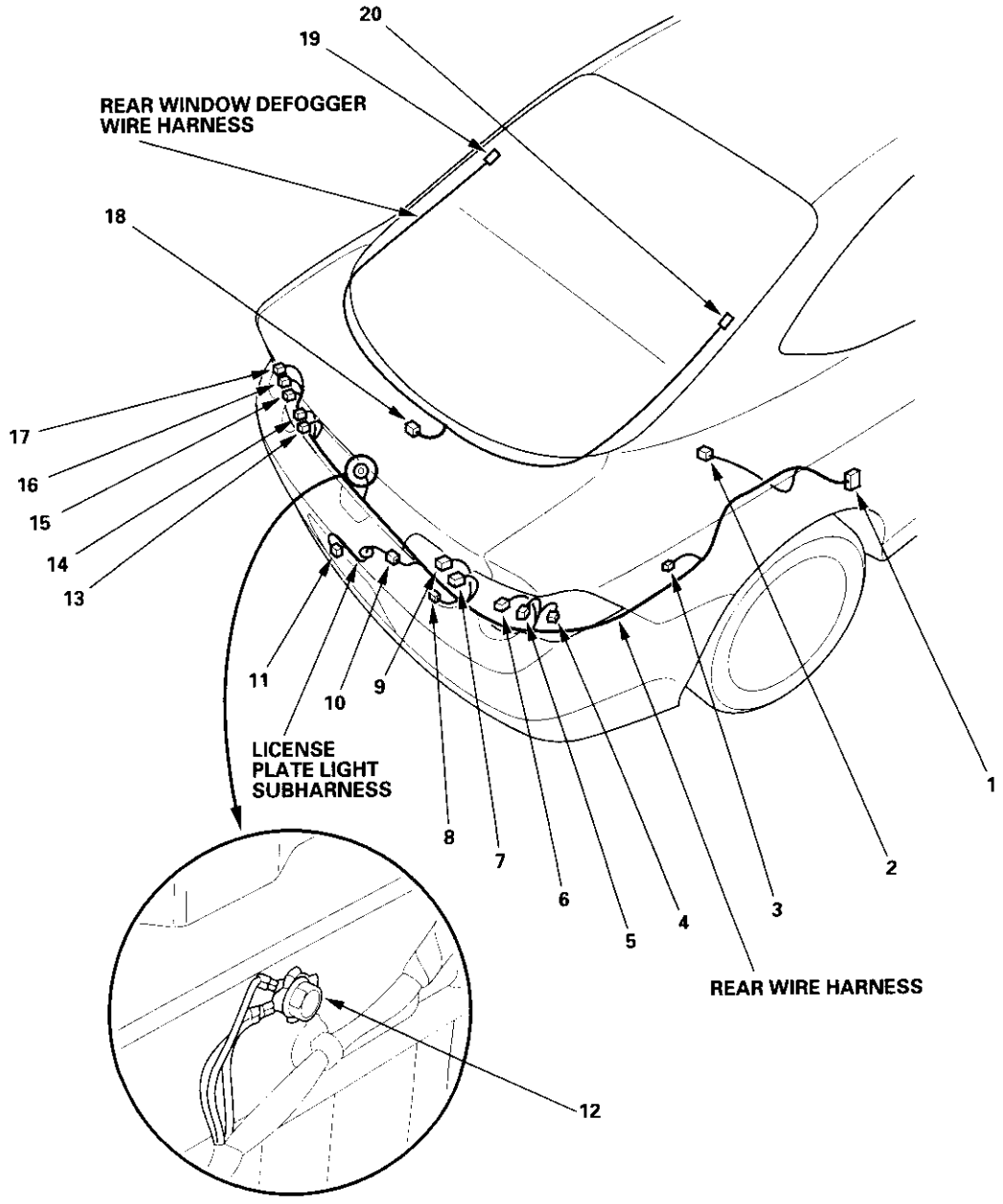
Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Cargo area light	3	2	Right side of cargo area		
Left back-up light	13	2	Left taillights		
Left rear side marker light	17	2	Left taillights		
Left rear turn signal light	16	2	Left taillights		
Left taillight/brake light connector A	15	3	Left taillights		
Left taillight/brake light connector B	14	3	Left taillights		
Right back-up light	9	2	Right taillights		
Right rear ABS wheel sensor	2	2	Under right rear of floor		
Right rear side marker light	4	2	Right taillights		
Right rear turn signal light	5	2	Right taillights		
Right taillight/brake light connector A	6	3	Right taillights		
Right taillight/brake light connector B	7	3	Right taillights		
Trailer lighting connector	8	6	Middle of cargo area		
C601	1	10	Right rear side of floor	Floor wire harness (see page 22-32)	
C602	10	2	Middle of cargo area	License plate light subharness	
G601	12		Middle of cargo area	Body ground via rear wire harness	

License Plate Light Subharness

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
License plate light connector	11	2	Behind rear bumper		
C602	10	2	Middle of cargo area	Rear wire harness	

Rear Window Defogger Wire Harness

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Rear window defogger connector A (+)	20	1	Right C-pillar		
Rear window defogger connector B (−)	19	1	Left C-pillar		
Window antenna coil connector B	18	2	Middle of hatch		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REAR WINDOW DEFOGGER WIRE HARNESS
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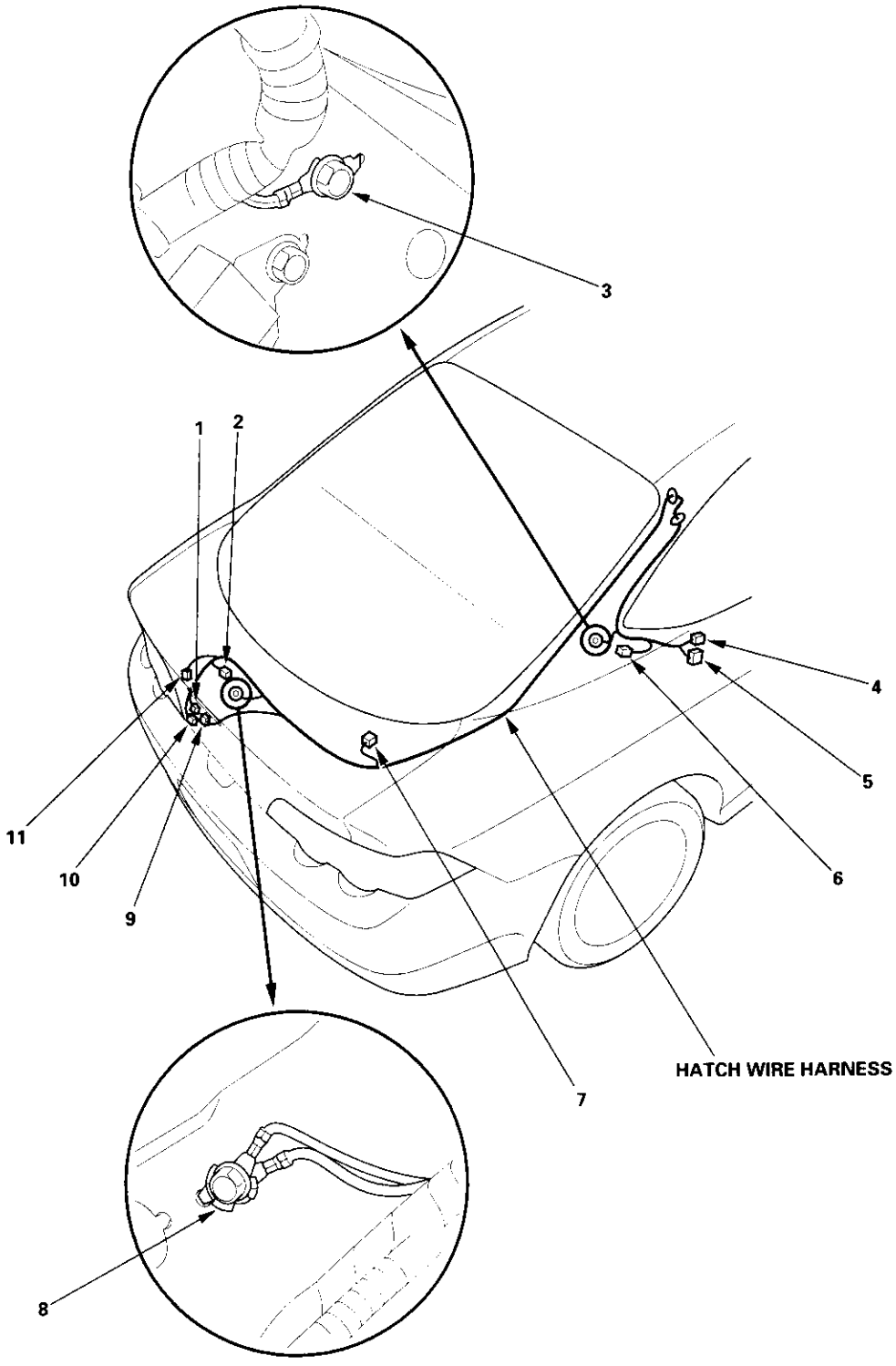
LICENSE PLATE LIGHT SUBHARNESS
REAR WIRE HARNESS
12

Connector to Harness Index (cont'd)

Hatch Wire Harness

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Hatch latch switch	11	2	Middle of hatch		
Hatch opener actuator	10	2	Middle of hatch		
Hatch security look knob switch	1	3	Middle of hatch		
High mount brake light	9	2	Middle of hatch		
Noise condenser	6	3	Right C-pillar		
Rear window wiper motor	2	4	Right side of hatch		
Window antenna coil connector A	7	1	Middle of hatch		
C701	5	8	Right quarter panel	Floor wire harness (see page 22-32)	
C702	4	2	Right quarter panel	Floor wire harness (see page 22-32)	
G701	3		Right C-pillar	Body ground via hatch wire harness	
G702	8		Middle of hatch	Body ground via hatch wire harness	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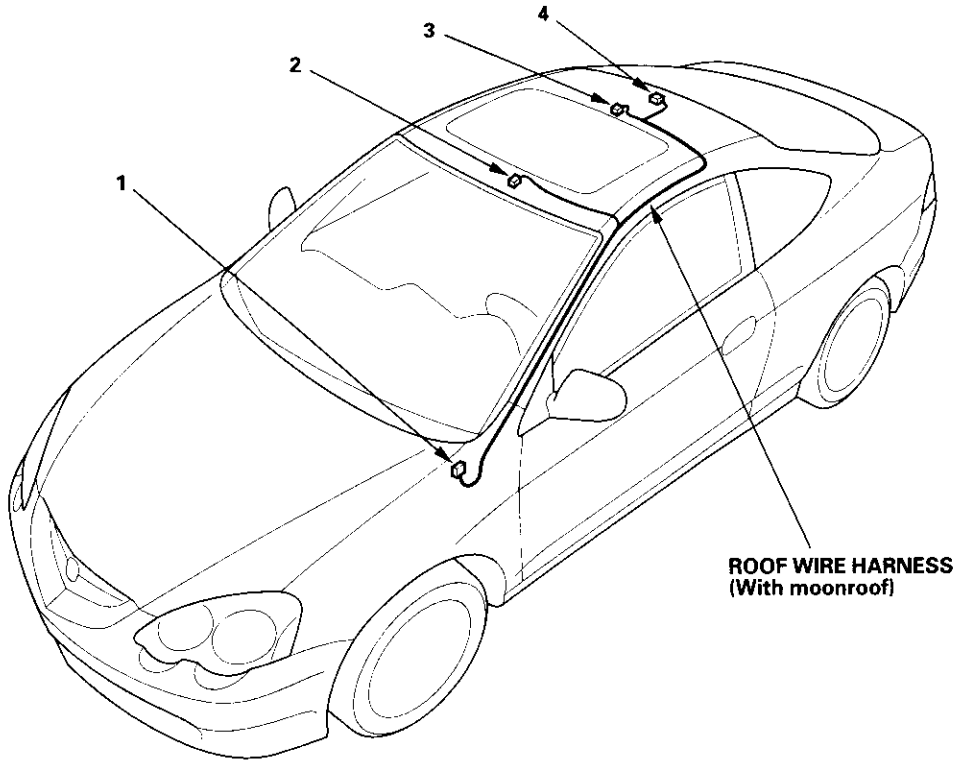
HATCH WIRE HARNESS

Connector to Harness Index (cont'd)

Roof Wire Harness

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Ceiling light	3	3	Middle of roof		Moonroof
Ceiling light	[5]	3	Front of roof		Without moonroof
Moonroof motor	4	2	Middle of roof		Moonroof
Spotlight	2	2	Front of roof		Moon roof
C404	1	6	Under left side of dash	Dashboard wire harness (see page 22-24)	Moonroof
C404	[6]	6	Under left side of dash	Dashboard wire harness (see page 22-24)	Without moonroof

[ ] : Without moonroof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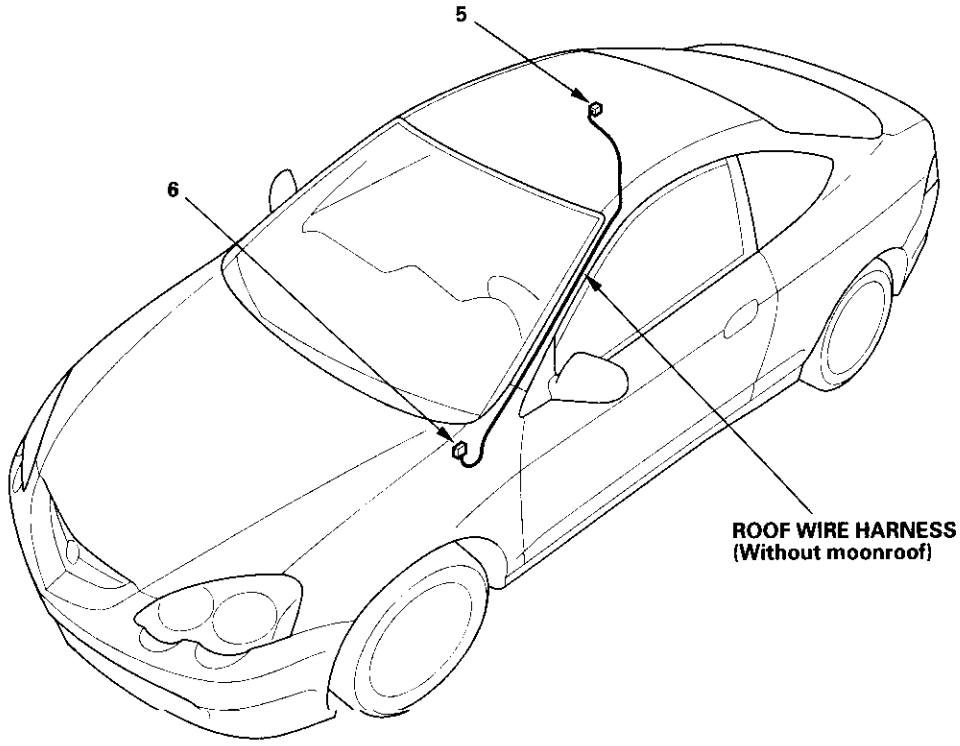
ROOF WIRE HARNESS
(With moonroof)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6
ROOF WIRE HARNESS
(Without moonroof)

Connector to Harness Index (cont'd)

Front SRS Sensor Harness (With BOSE Sound System)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Right front SRS sensor	3	2	Behind right side of front bumper		
C405	4	2	Under right side of dash	Dashboard wire harness (see page 22-24)	

Floor Wire Harness (With BOSE Sound System) (SRS branch)

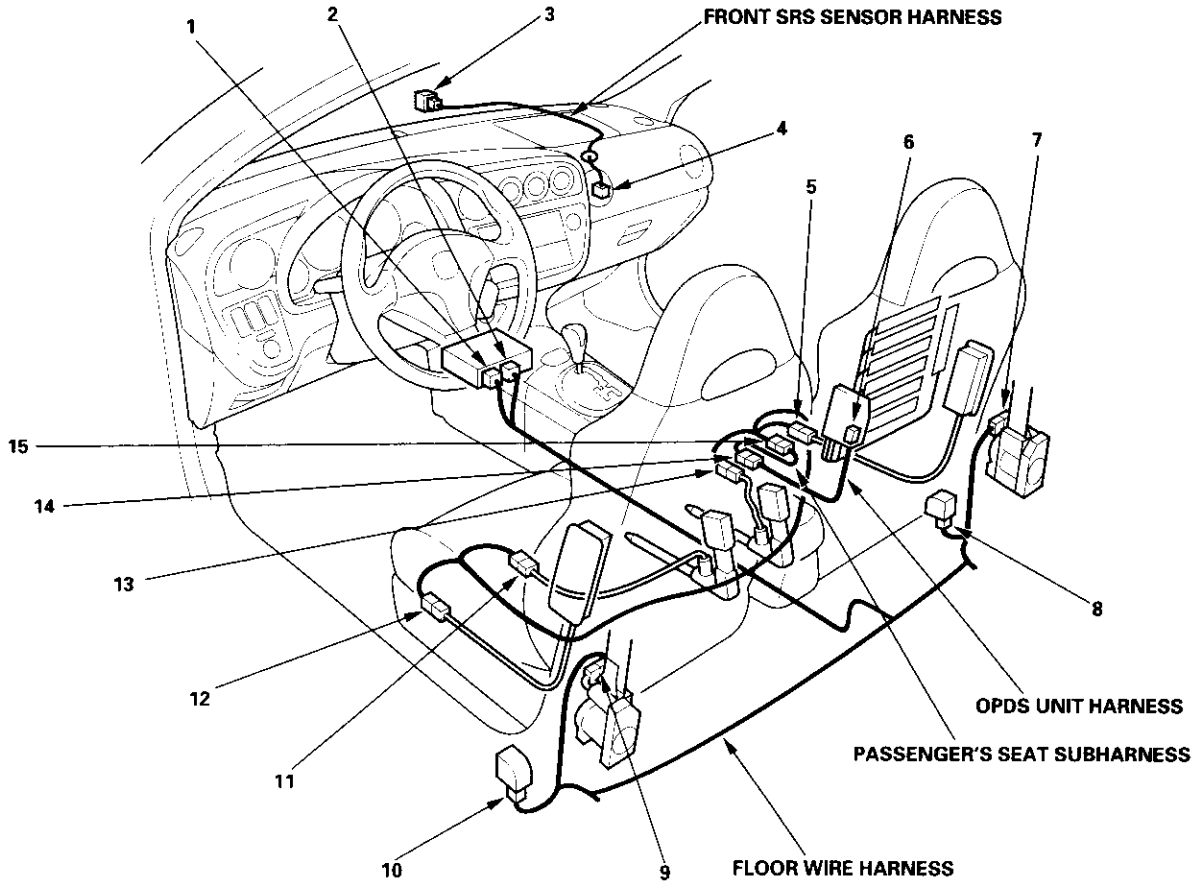
Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Driver's seat belt tensioner	11	2	Under driver's seat		
Driver's seat belt tensioner	9	2	Left B-pillar		
Driver's side airbag inflator	12	2	Under driver's seat		
Driver's side impact sensor	10	2	Left side of floor		
Passenger's seat belt buckle tensioner	13	2	Under passenger's seat		
Passenger's seat belt tensioner	7	2	Right B-pillar		
Passenger's side airbag inflator	5	2	Under passenger's seat		
Passenger's side impact sensor	8	2	Right side of floor		
SRS unit connector A	2	18	Under middle of dash		
SRS unit connector B	1	8	Under middle of dash		
C801	15	10	Under passenger's seat	Passenger's seat subharness	

Passenger's Seat Subharness (With BOSE Sound System) (SRS branch)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
C801	15	10	Under front passenger's seat	Floor wire harness	
C851	14	4	Under front passenger's seat	OPDS unit harness	

OPDS Unit Harness (With BOSE Sound System)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
OPDS unit	6	4	In passenger's seat		
C851	14	4	Under passenger's seat	Passenger's seat subharness	



Connector to Harness Index (cont'd)

Front SRS Sensor Harness (With BOSE Sound System)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Right front SRS sensor	3	2	Behind right side of front bumper		
C405	4	2	Under right side of dash	Dashboard wire harness (see page 22-24)	

Floor Wire Harness (With BOSE Sound System) (SRS branch)

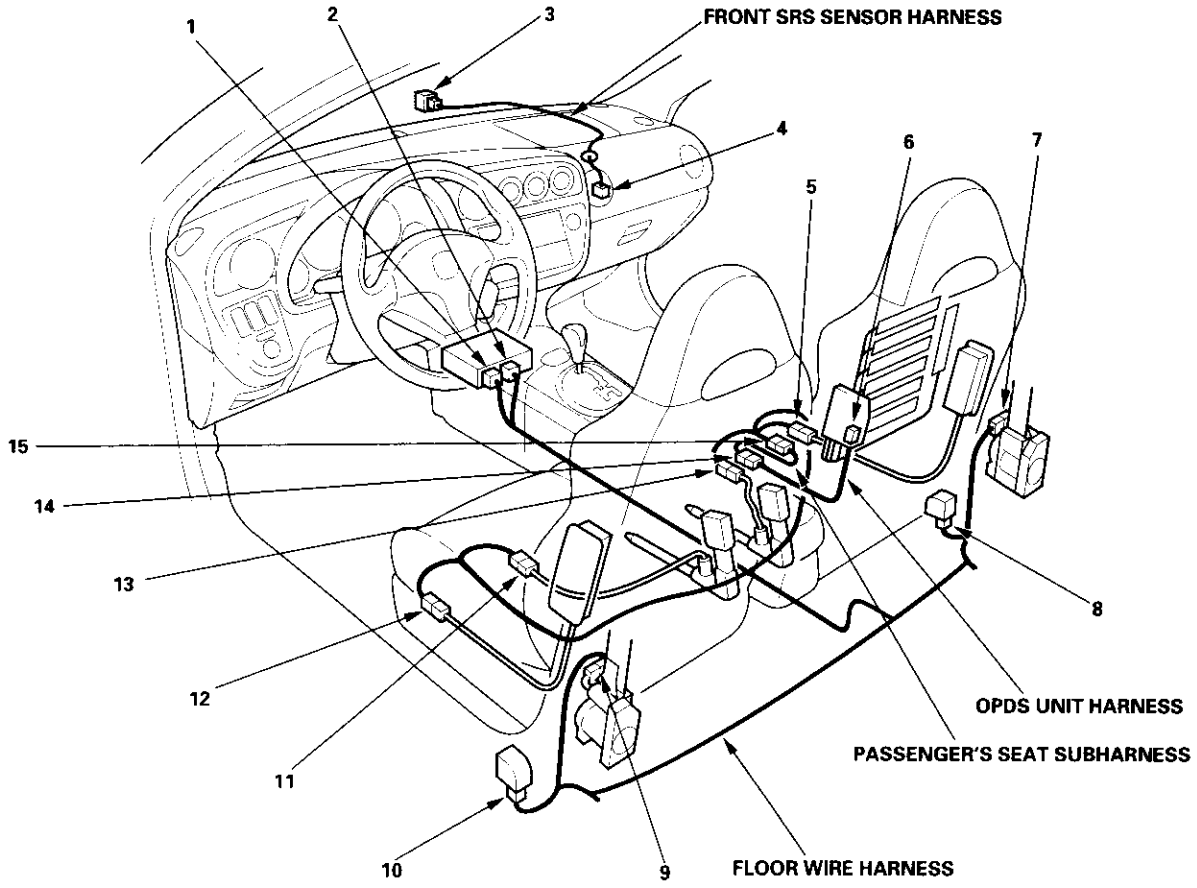
Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Driver's seat belt tensioner	11	2	Under driver's seat		
Driver's seat belt tensioner	9	2	Left B-pillar		
Driver's side airbag inflator	12	2	Under driver's seat		
Driver's side impact sensor	10	2	Left side of floor		
Passenger's seat belt buckle tensioner	13	2	Under passenger's seat		
Passenger's seat belt tensioner	7	2	Right B-pillar		
Passenger's side airbag inflator	5	2	Under passenger's seat		
Passenger's side impact sensor	8	2	Right side of floor		
SRS unit connector A	2	18	Under middle of dash		
SRS unit connector B	1	8	Under middle of dash		
C801	15	10	Under passenger's seat	Passenger's seat subharness	

Passenger's Seat Subharness (With BOSE Sound System) (SRS branch)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
C801	15	10	Under front passenger's seat	Floor wire harness	
C851	14	4	Under front passenger's seat	OPDS unit harness	

OPDS Unit Harness (With BOSE Sound System)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
OPDS unit	6	4	In passenger's seat		
C851	14	4	Under passenger's seat	Passenger's seat subharness	



Front SRS Sensor Harness (Without BOSE Sound System)

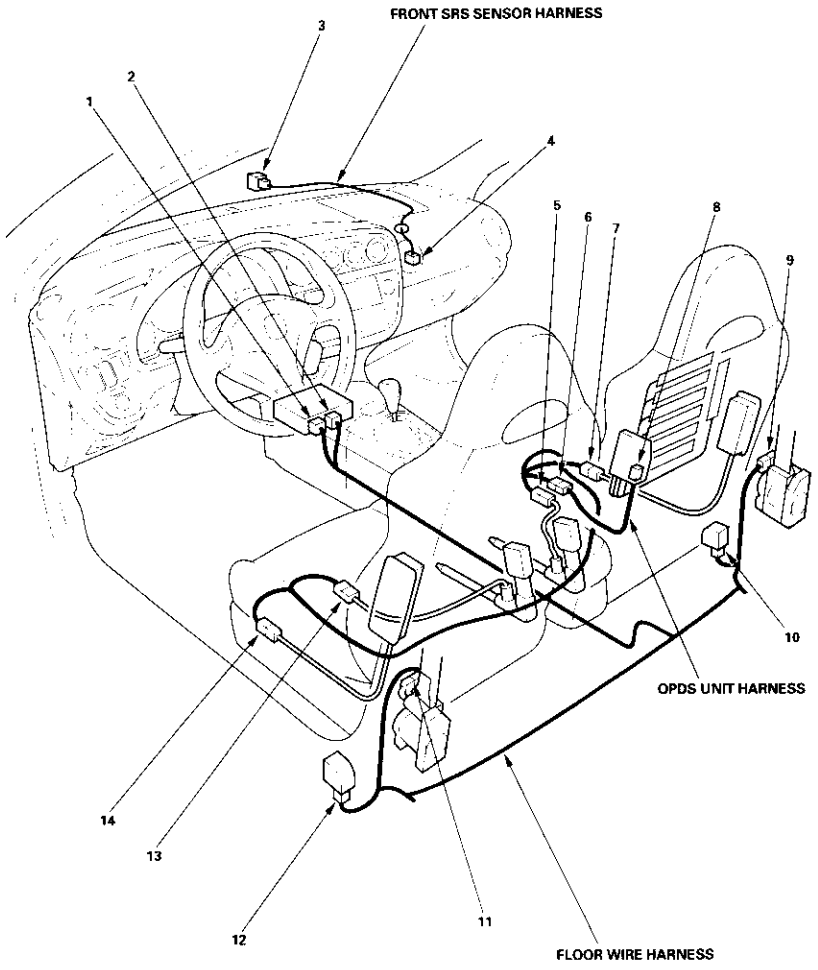
Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Right front SRS sensor	3	2	Behind right side of front bumper		
C405	4	2	Under right side of dash	Dashboard wire harness (see page 22-24)	

Floor Wire Harness (Without BOSE Sound System) (SRS branch)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Driver's seat belt tensioner	13	2	Under driver's seat		
Driver's seat belt tensioner	11	2	Left B-pillar		
Driver's side airbag inflator	14	2	Under driver's seat		
Driver's side impact sensor	12	2	Left side of floor		
Passenger's seat belt buckle tensioner	5	2	Under passenger's seat		
Passenger's seat belt tensioner	9	2	Right B-pillar		
Passenger's side airbag inflator	7	2	Under passenger's seat		
Passenger's side impact sensor	10	2	Right side of floor		
SRS unit connector A	2	18	Under middle of dash		
SRS unit connector B	1	8	Under middle of dash		
C851	6	4	Under passenger's seat	OPDS unit harness	

OPDS Unit Harness (Without BOSE Sound System)

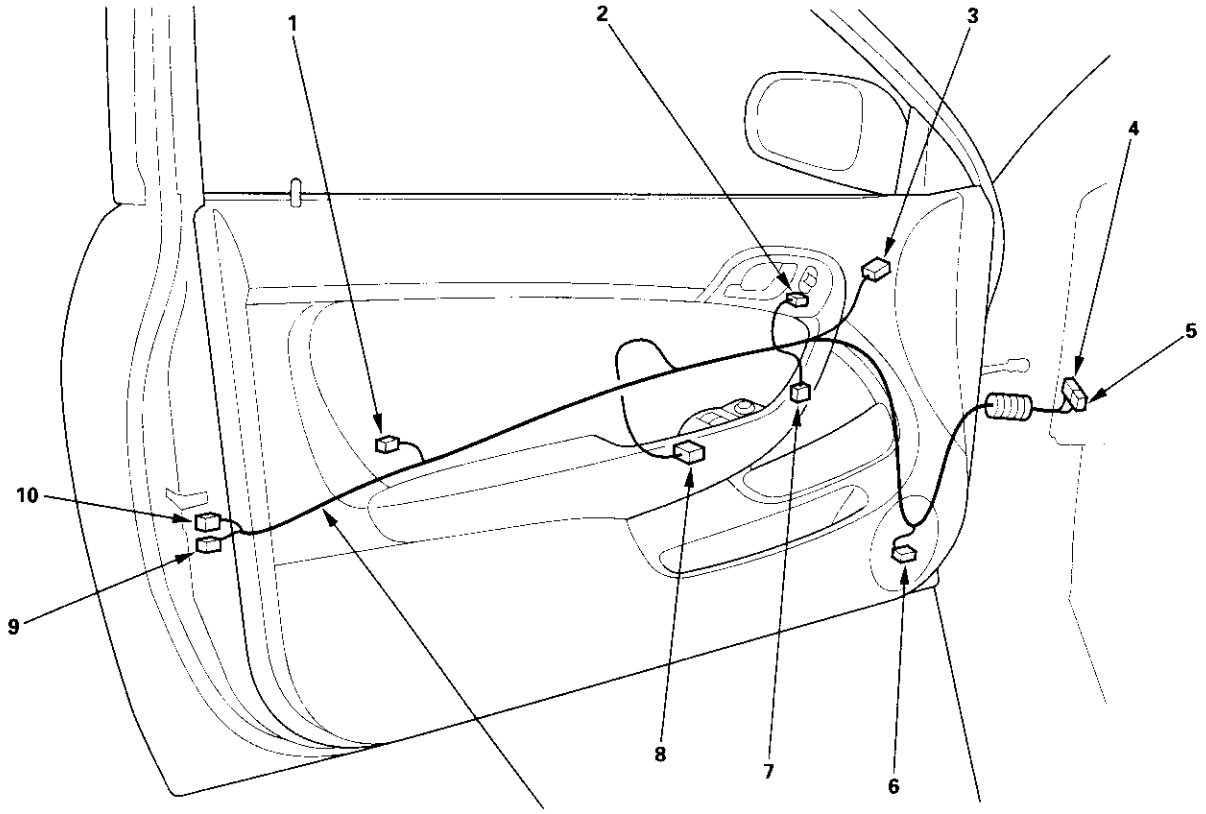
Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
OPDS unit	8	4	In passenger's seat		
C851	6	4	Under passenger's seat	Floor wire harness	



Connector to Harness Index (cont'd)

Driver's Door Wire Harness

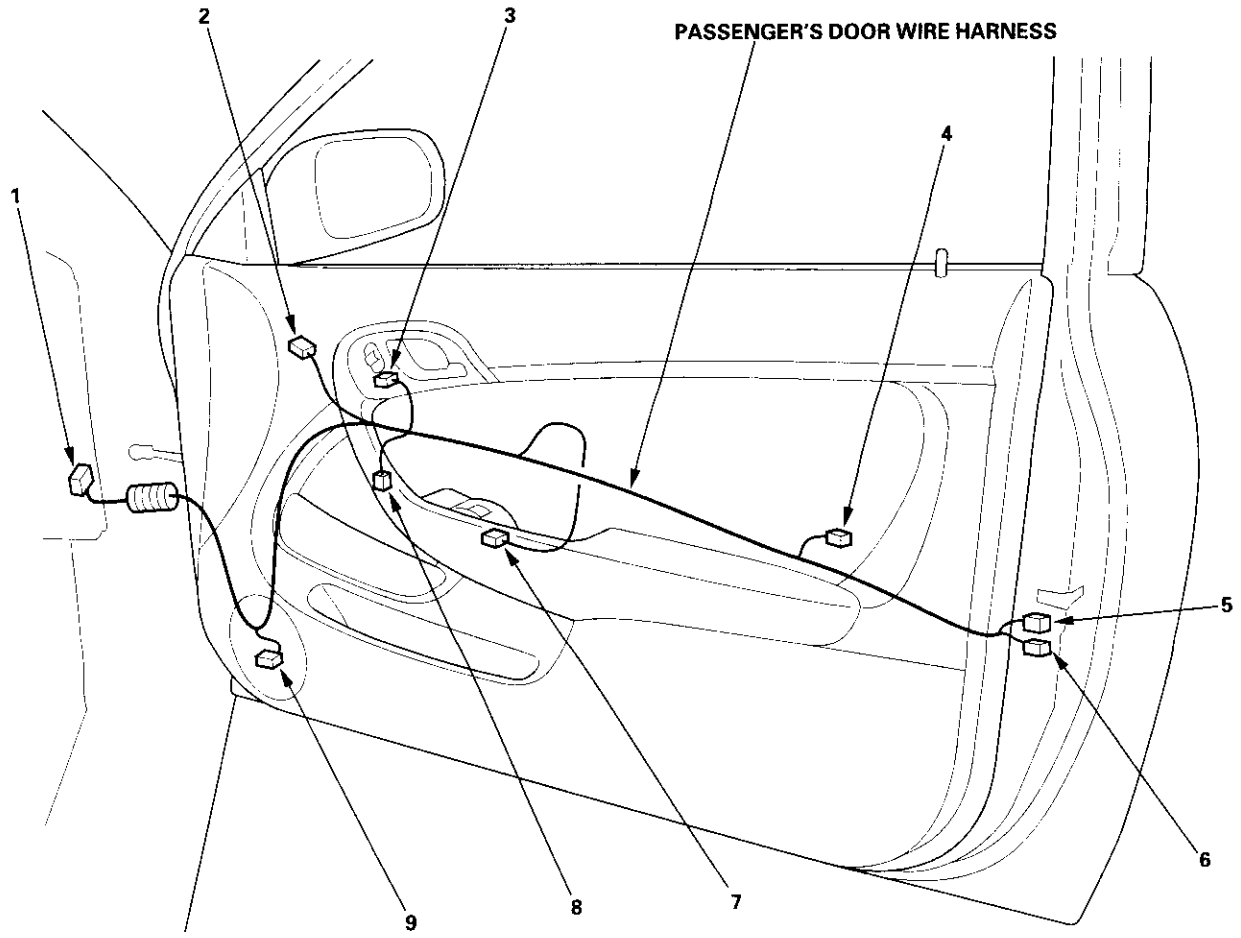
Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Driver's door key cylinder switch	1	3	Driver's door		
Driver's door lock actuator	9	2	Driver's door		
Driver's door lock knob switch	10	3	Driver's door		
Driver's door lock switch	2	3	Driver's door		
Driver's power window motor	7	6	Driver's door		
Left front speaker	6	2	Driver's door		
Left power mirror	3	3	Driver's door		USA
Left power mirror	3	6	Driver's door		Canada
Power window master switch	8	14	Driver's door		
C551	4	16	Under left side of dash	Dashboard wire harness (see page 22-24)	
C552	5	6	Under left side of dash	Dashboard wire harness (see page 22-24)	



DRIVER'S DOOR WIRE HARNESS

Passenger's Door Wire Harness

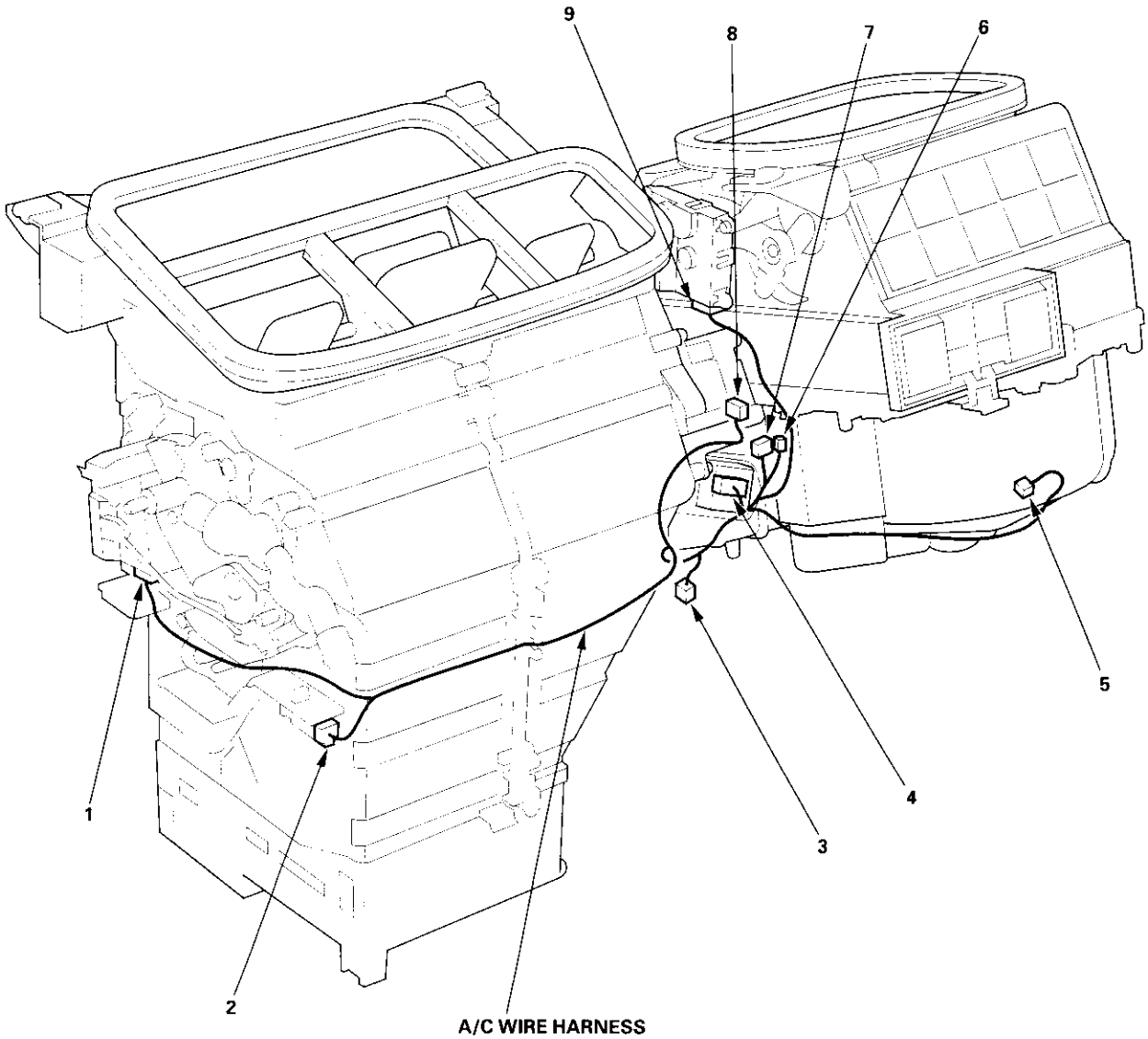
Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Passenger's door key cylinder switch	4	3	Passenger's door		
Passenger's door lock actuator	6	2	Passenger's door		
Passenger's door lock knob switch	5	3	Passenger's door		
Passenger's door lock switch	3	3	Passenger's door		
Passenger's power window motor	8	2	Passenger's door		
Passenger's power window switch	7	5	Passenger's door		
Right front speaker	9	2	Passenger's door		
Right power mirror	2	3	Passenger's door		USA
Right power mirror	2	6	Passenger's door		Canada
C571	1	18	Under right side of dash	Dashboard wire harness (see page 22-24)	



Connector to Harness Index (cont'd)

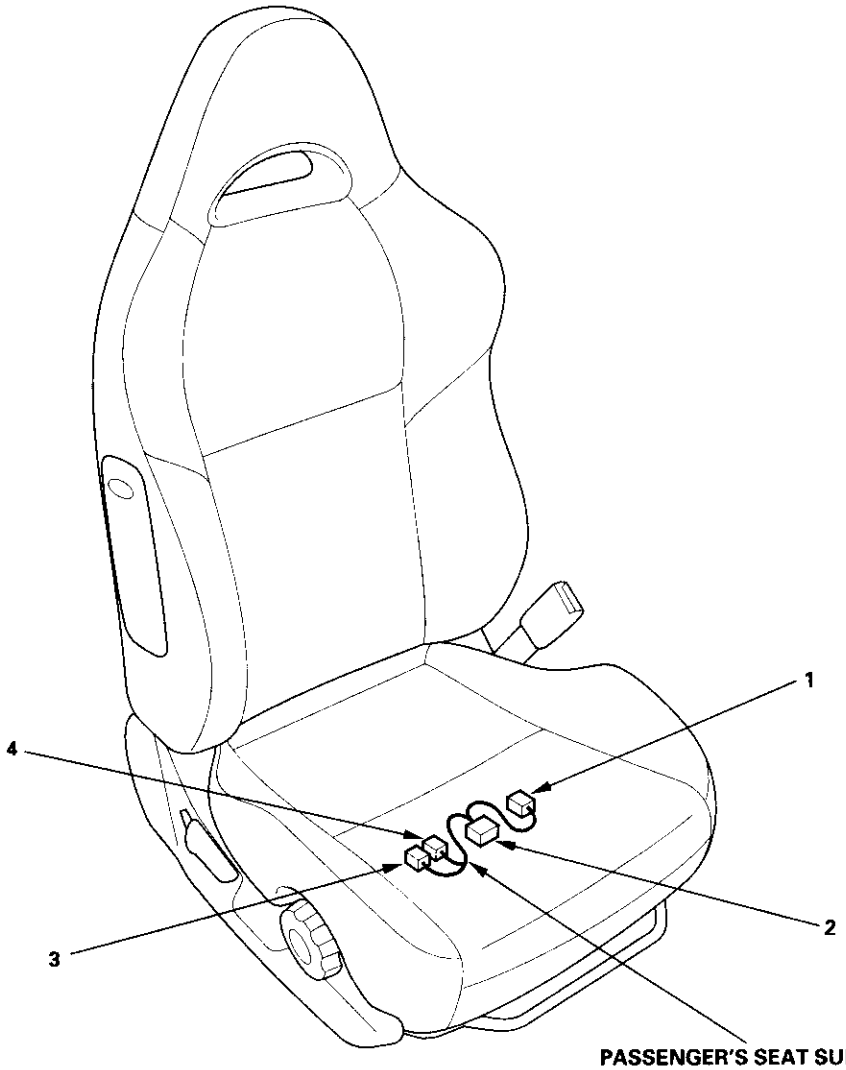
A/C Wire Harness

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Air mix control motor	1	5	Under middle of dash		
Blower motor	5	2	Under right side of dash		
Evaporator temperature sensor	2	2	Under middle of dash		
Mode control motor	8	10	Under right side of dash		
Power transistor	4	4	Under right side of dash		
Recirculation control motor	9	5	Under right side of dash		
C481	7	21	Behind glove box	Dashboard wire harness (see page 22-24)	
C482	6	1	Behind glove box	Dashboard wire harness (see page 22-24)	
C483	3	1	Under middle of dash	Engine compartment wire harness (see page 22-18)	



Passenger's Seat Subharness (With BOSE Sound System)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Passenger's seat belt buckle switch	3	3	Under passenger's seat		
Seat heater	4	2	Under passenger's seat		Canada
C801	2	10	Under passenger's seat	Floor wire harness (see page 22-32).	
C851	1	4	Under passenger's seat	OPDS unit harness (see page 22-32).	

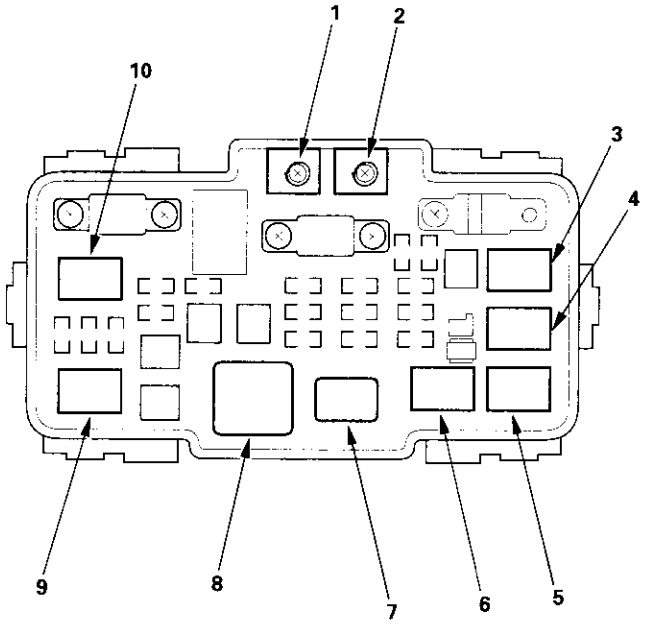


PASSENGER'S SEAT SUBHARNESS

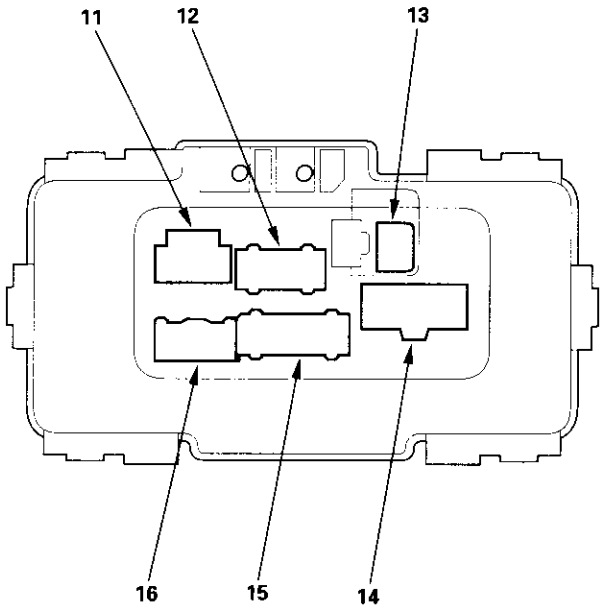
Connector to Fuse/Relay Box Index

Under-hood Fuse/Relay Box

Socket	Ref	Terminal	Connects to
A	11	2	Engine compartment wire harness (see page 22-18)
A/C compressor clutch relay	6	4	
B	16	5	Engine compartment wire harness (see page 22-18)
Blower motor relay	8	4	
C	12	12	Engine compartment wire harness (see page 22-18)
Condenser fan relay	3	4	
D	15	14	Engine compartment wire harness (see page 22-18)
E	14	7	Engine compartment wire harness (see page 22-18)
ELD unit	13	3	Engine compartment wire harness (see page 22-18)
Horn relay	4	4	
Headlight relay 1	9	4	
Headlight relay 2	10	4	
Radiator fan relay	5	4	
Rear window defogger relay	7	4	
T1 (Battery)	2		Starter subharness (see page 22-13)
T101 (Alternator)	1		Starter subharness (see page 22-13)



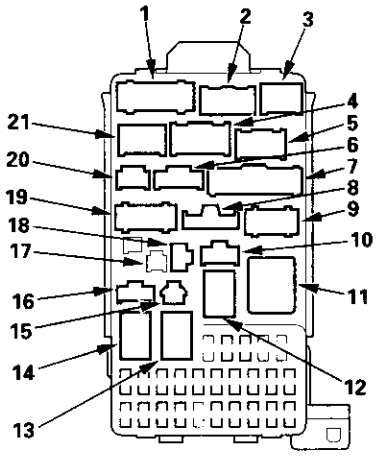
(View of front side)



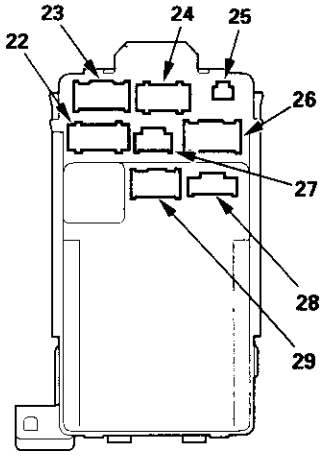
(View of back side)

Under-dash Fuse/Relay Box

Socket	Ref	Terminal	Connects to
A	2	5	Dashboard wire harness (see page 22-24)
B	3	6	Dashboard wire harness (see page 22-24)
C	1	14	Dashboard wire harness (see page 22-24)
D	4	12	Dashboard wire harness (see page 22-24)
E	5	13	Dashboard wire harness (see page 22-24)
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 (see page 22-24)
L	24	10	Dashboard wire harness (see page 22-24)
M	22	12	Dashboard wire harness (see page 22-24)
N	27	6	Dashboard wire harness (see page 22-24)
O	26	12	Dashboard wire harness (see page 22-24)
P	7	18	Floor wire harness (see page 22-32)
Q	6	8	Floor wire harness (see page 22-32)
R	10	6	Dashboard wire harness (see page 22-24)
Power window relay	12	4	
S	25	2	Dashboard wire harness (see page 22-24)
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 22-32)
X	28	8	(Plugs directly into the multiplex control unit)
Y	29	13	(Plugs directly into the multiplex control unit)



(View of front side)



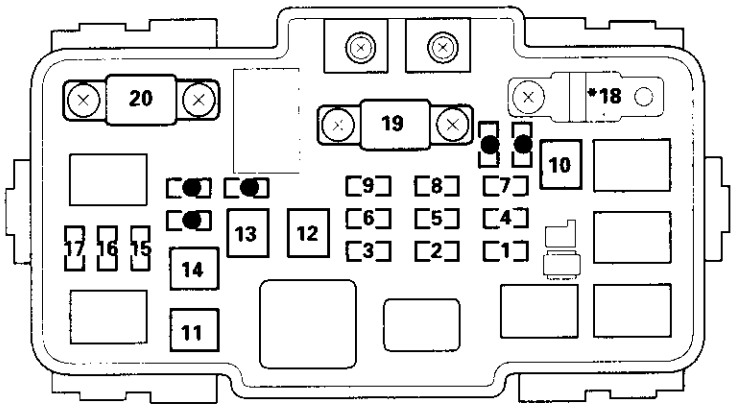
(View of back side)

Fuse to Components Index

Under-hood Fuse/Relay Box

Fuse Number	Amps	Wire Color	Component(s) or Circuit(s) Protected
1	30A	BLU/YEL	Condenser fan motor
		BLU/RED	A/C compressor clutch
2	15A	WHT/GRN	Dash lights, Front parking lights, License plate lights, Taillights, Trailer lighting connector, Rear side marker lights
3	7.5A	WHT/BLU	Cargo area light, Ceiling light, Ignition key light, Spotlights (with moonroof)
4	20A	BLU/BLK	Radiator fan motor
5	15A	WHT/BLK	Turn signal/hazard relay, Turn signal lights
6	15A	WHT/BLK	CKP sensor, ECM/PCM, 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/PCM, Trailer lighting connector, Security horn relay, Security horn
		BLU/RED	Horn
8	20A	WHT/GRN	ABS modulator-control unit
9	7.5A	WHT/RED	Audio unit, Data link connector (DLC), Gauge assembly, Immobilizer control unit-receiver, Immobilizer indicator light, Keyless receiver unit, Multiplex control unit, Security control unit
10	30A	WHT/RED	ABS modulator-control unit
11	40A	BLK/YEL	Rear window defogger, Noise condenser
12	40A	BLU/WHT	Blower motor
13	40A	WHT/BLK	No. 7 and 21 fuse (in the under-dash fuse/relay box), Power window relay
14	30A	WHT/RED	No. 2, 3, 15 and 16 fuses (in the under-dash fuse/relay box)
15	20A	RED/YEL	Daytime running lights relay (Canada), Daytime running lights control unit (Canada), High beam indicator light (USA), Left headlight
16	15A	WHT	Multiplex control unit
17	20A	RED	Daytime running lights control unit (Canada), Right headlight
18	———	WHT/BLU	Optional connector (Canada)
19	100A	———	Battery, Power distribution
20	40A * 1 50A * 2	WHT	Ignition switch (BAT)

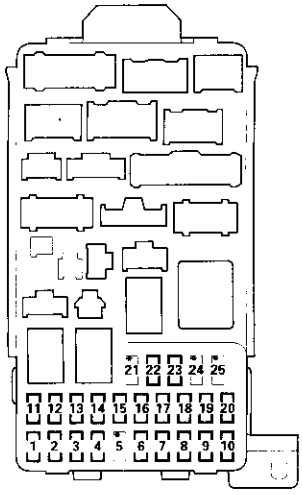
* 1: USA
* 2: Canada



●: Spare fuse
*: Not used

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/PCM
3	10A	RED/BLU	Daytime running lights control unit (Canada), Rear accessory power socket (USA)
4	10A	BLK/ORN	Alternator, Air fuel ratio sensor relay, CMP sensor, Cruise control unit, ELD unit. Evaporative emission (EVAP) bypass solenoid valve, Evaporative emission (EVAP) canister vent shut valve. Evaporative emission (EVAP) canister purge valve, Intake manifold runner control (IMRC) solenoid valve, Reverse lock solenoid (Type S), Secondary HO2S, Vehicle speed sensor (M/T)
5	—	—	Not used
6	7.5A	YEL/GRN	Moonroof open and close relay, Power window control unit (in the power window master switch), Power window relay
7	20A	GRN	Moonroof motor
8	7.5A	YEL/RED	Audio unit, Shift lock solenoid
9	10A	GRN	OPDS unit, Rear window wiper motor, Rear window washer motor
10	7.5A	YEL	A/T reverse relay, Back-up lights, Gauge assembly, Keyless receiver unit, Multiplex control unit, Security control unit, Shift lock relay
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, Climate control unit, Condenser fan relay, Blower motor relay, Power mirror actuator, Power mirror defogger (Canada). Radiator fan relay, Recirculation control motor, Rear window defogger relay, Seat heater relay (Canada)
15	20A	BLU/RED	Front stereo amplifier (with BOSE sound system), Rear stereo amplifier (with BOSE sound system)
16	20A	RED/BLK	Seat heater (Canada)
17	15A	BLK/YEL	ECM/PCM, Fuel pump, SRS unit
18	15A	YEL/GRN	Front accessory power socket, Rear accessory power socket relay (USA)
19	7.5A	YEL/BLK	Turn signal/hazard relay
20	20A	GRN/BLK	Multiplex control unit, Windshield wiper motor, Windshield washer 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 mount bracket
G101	ECM (PG1 and PG2 are BLK; LG1 and LG2 are BRN/YEL), CMP sensor, CKP sensor, Countershaft speed sensor (A/T), Idle air control (IAC) valve, Ignition coils, Mainshaft speed sensor (A/T), TDC sensor, Transmission range switch (A/T), Vehicle speed sensor (VSS)(M/T), VTEC oil pressure switch, VTEC solenoid valve
	Shielding between the ECM/PCM and Knock sensor has BRN/YEL wire
G201	Right headlight (low beam), Right front parking light, Right front turn signal light
G202	ABS modulator unit (2 wires)
G301	Blower motor relay, ELD unit, Left headlight (low beam), Left front parking light, Left front turn signal light, Windshield and rear window washer motors, Windshield washer fluid level switch (Canada), Power window relay, Turn signal/hazard relay, Multiplex control unit (3 wires), Multiplex control unit service connector
G302	Condenser fan motor, Hood switch (security), Radiator fan motor, Radiator fan switch
G401	Combination light switch, Cruise control unit, Cruise control main switch, Data link connector (DLC), Daytime running lights control unit (Canada) (2 wires), Driver's door lock knob switch, Driver's door lock switch, Driver's door key cylinder switch, Front accessory power socket, Gauge assembly, Ignition key switch, Keyless receiver unit, Left power mirror defogger (Canada), Moonroof open/close relays, Moonroof switch, Multiplex control unit (2 wires), Power mirror switch, Power window master switch (2 wires), Rear accessory power socket relay (USA), Security control unit, Wiper/washer switch (windshield and rear window)
G402	Climate control unit/Heater control panel, Clutch switch (M/T), Clutch interlock switch (M/T), Gauge assembly, Glove box light, Ignition key switch (A/T), Park pin switch/shift lock solenoid (A/T), Power transistor, Seat heater relay (Canada), Seat heater switch (Canada), Shift lock relay (A/T), Passenger's door lock switch, Passenger's door lock knob switch, Passenger's door key cylinder switch, Right power mirror defogger (Canada)
G403	Audio unit
	Shielding between the audio unit and speaker has RED/BLU wire (With BOSE sound system)
G404	SRS unit (2 wires), SRS front sensors
G451	Brake fluid level switch, Cruise control actuator, Power steering pressure (PSP) switch windshield wiper motor
G501	Fuel gauge sending unit, Fuel pump, Memory erase signal (MES) connector, Optional rear accessory power socket accessory (Canada), Rear accessory power socket (USA), Seat belt switches, Seat heaters (Canada), OPDS unit
G502	Front BOSE stereo amplifier, Rear BOSE stereo amplifier, Rear BOSE stereo amplifier relay
G601	Left taillight/brake lights (2 wires), Left back-up light, Left rear side marker light, Left rear turn signal light, License plate light, Right taillight/brake lights (2 wires), Right back-up light, Right rear side marker light, Right rear turn signal light, Trailer lighting connector
G701	Hatch latch switch, High mount brake light, Rear window wiper motor, Security hatch latch switch, Shielding (High mount brake light, Hatch latch switch)
G702	Shielding (Rear window wiper motor, Condenser, Hatch lock actuator)

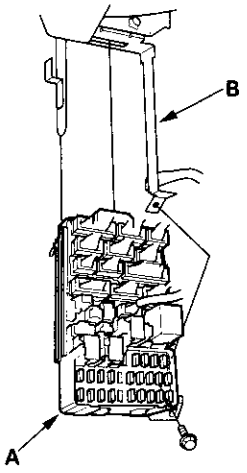
Under-dash Fuse/Relay Box

Removal and Installation

SRS components are located in this area. Review the SRS component locations (see page 23-10) and precautions and procedures (see page 23-11) 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 3 minutes.
3. Remove the dashboard lower cover (see page 20-61).
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 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 23-15).

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 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.

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.■

Relays

Power Relay Test

Use this chart to identify the type of relay, then do the test listed for it.

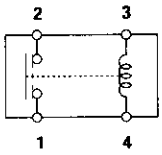
NOTE: See page 22-89 for the turn signal/hazard relay input test.

Relay	Test
A/C compressor clutch relay	Normally-open type A
Air fuel ratio sensor relay	
Condensor fan relay	
Headlight relay 1	
Headlight relay 2	
Horn relay	
Power window relay	
Radiator fan relay	
Reverse relay(A/T)	
Rear accessory power socket relay (USA)	
Seat heater relay (Canada)	
Security horn 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 BOSE stereo amplifier relay	
Rear window defogger relay	
Moonroof close relay	Five terminal type
Moonroof open relay	
Shift lock relay (A/T)	

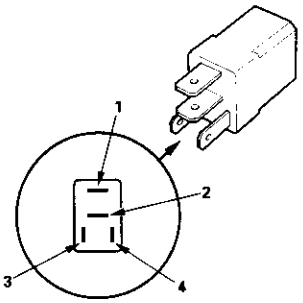
Normally-open type A:

Check for continuity between the terminals.

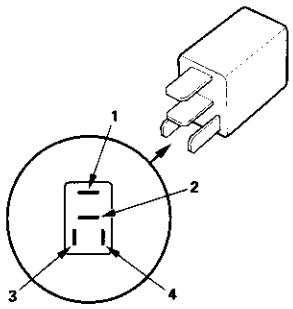
- There should be continuity between the No. 1 and No. 2 terminals when power and ground are connected to the No. 3 and No. 4 terminals.
- There should be no continuity between the No. 1 and No. 2 terminals when power is disconnected.



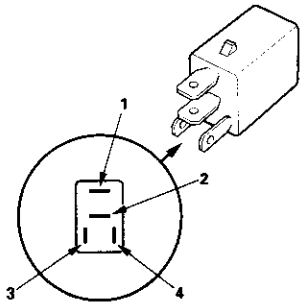
type 1:



type 2:



PGM-FI main relay 1
PGM-FI main relay 2
type 1:



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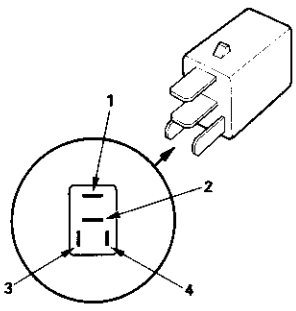


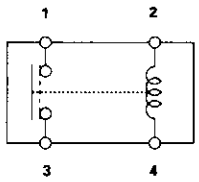
(cont'd)

Power Relay Test (cont'd)

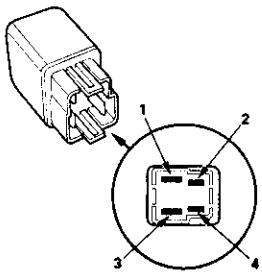
Normally-open type B:

Check for continuity between the terminals.

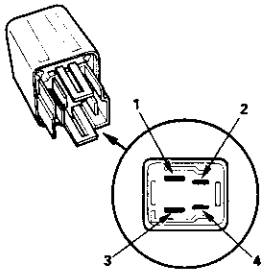
- There should be continuity between the No. 1 and No. 3 terminals when power and ground are connected to the No. 2 and No. 4 terminals.
- There should be no continuity between the No. 1 and No. 3 terminals when power is disconnected.



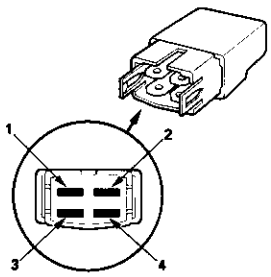
Blower motor relay type 1:



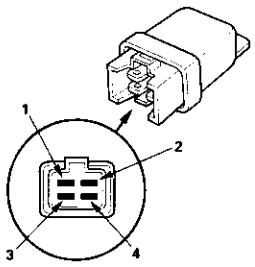
type 2:



Rear window defogger relay



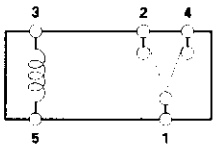
Rear BOSE stereo amplifier relay

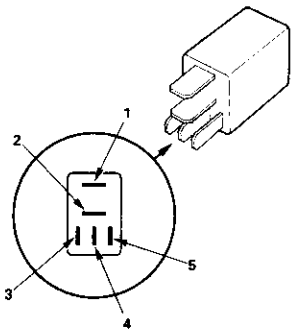


Five-terminal type:

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.





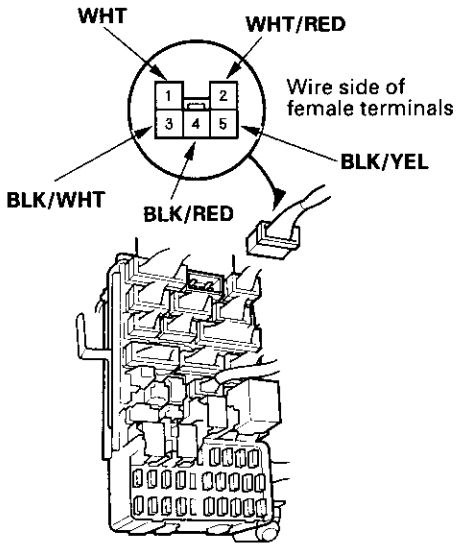
Ignition Switch

Test

SRS components are located in this area. Review the SRS component locations (see page 23-10) and precautions and procedures (see page 23-11) in the SRS section before performing repairs or servicing.

1. Remove the dashboard lower cover (see page 20-61)

2. Disconnect the 5P connector from the under-dash fuse/relay box.

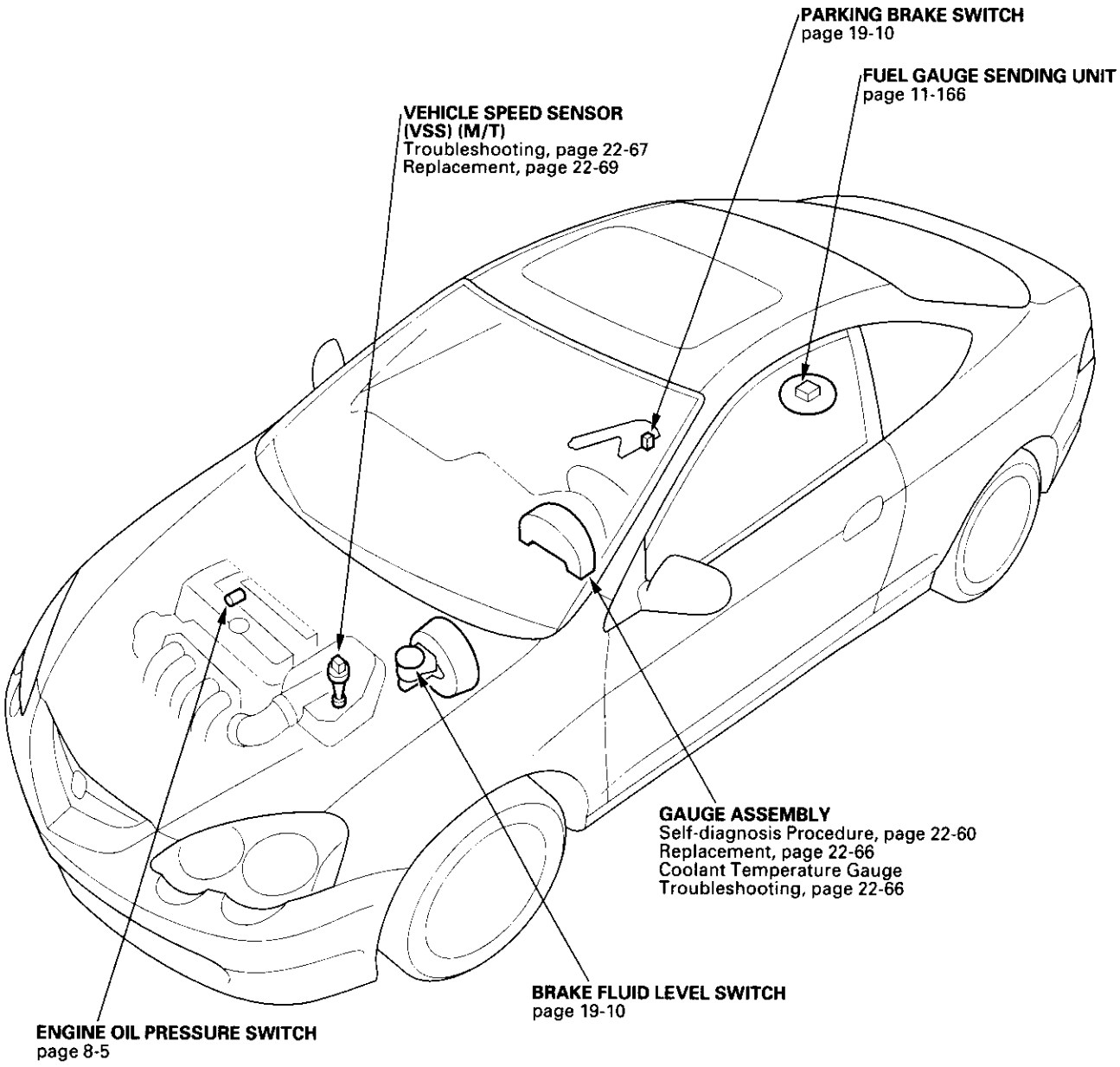


3. Check for continuity between the terminals in each switch position according to the table.

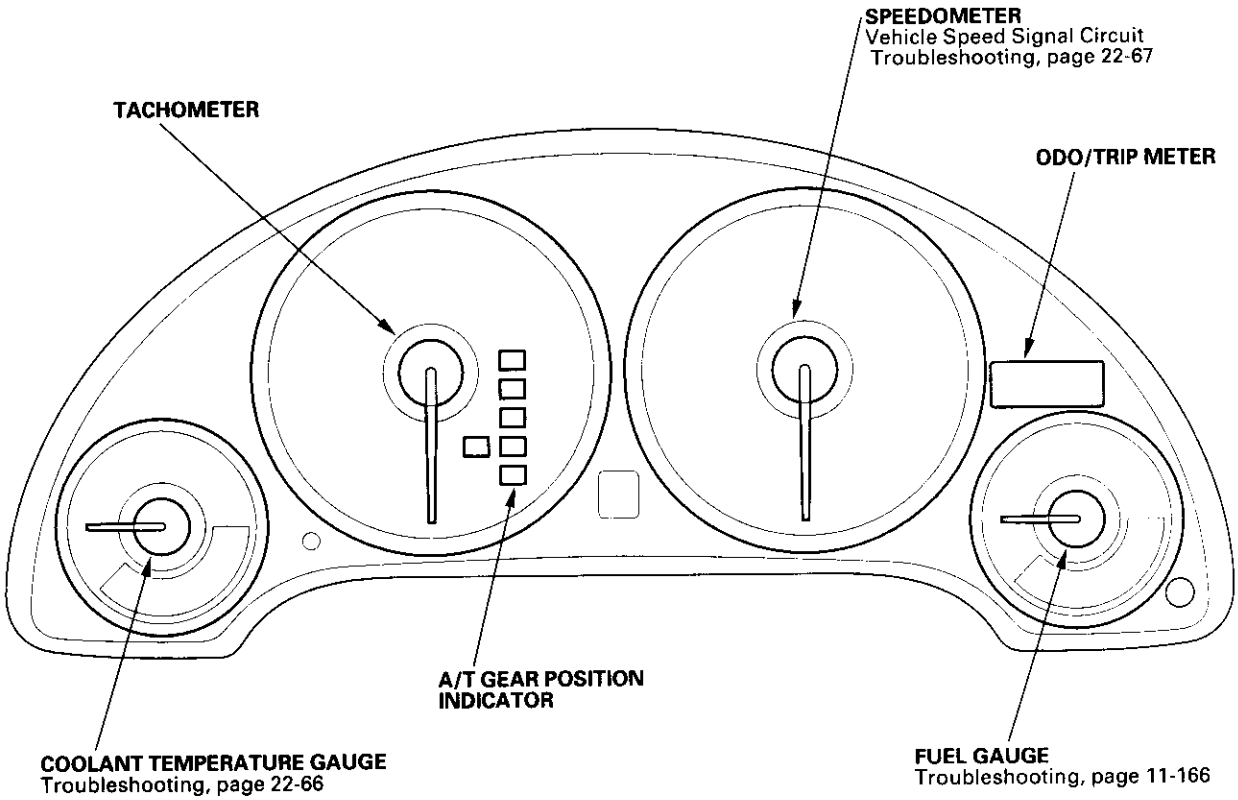
Terminal / Position	WHT/ RED (ACC)	WHT (BAT)	BLK/ YEL (IG1)	BLK/ RED (IG2)	BLK/ WHT (ST)
0 (LOCK)					
I (ACC)	○——	——○			
II (ON)	○——	——	——○		
			○——	——○	
			○——	——	——○
III (START)		○——	——○		
		○——	——	——	——○

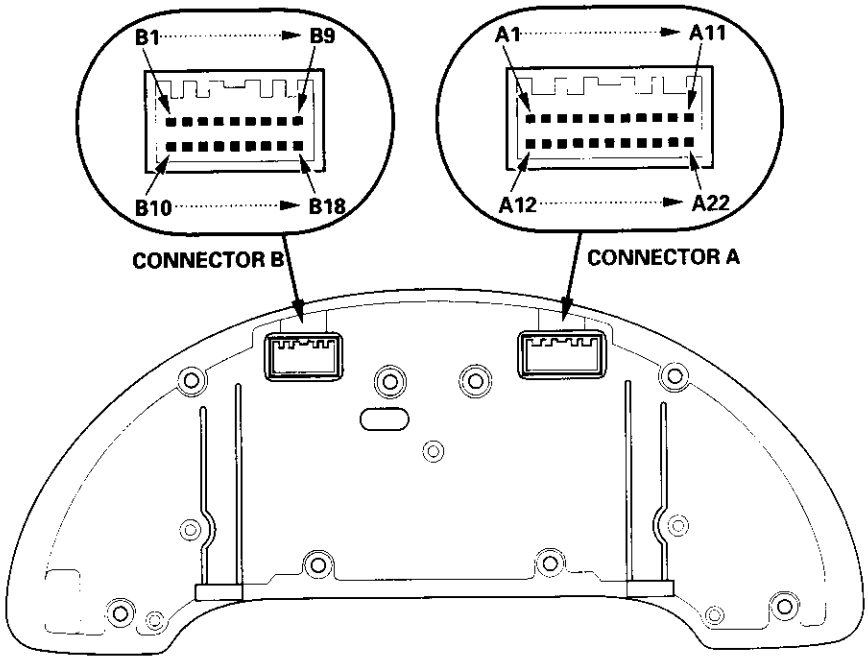
4. If the continuity checks do not agree with the table, replace the steering lock assembly (see page 17-29).

Component Location Index



Gauge/Terminal Location Index:





Self-diagnostic Procedure

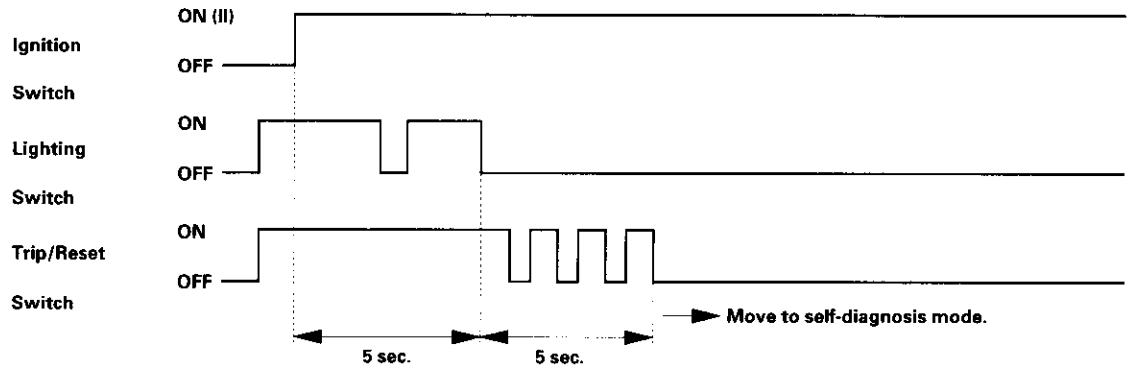
The gauge assembly has a self-diagnosis function.
- The beeper drive circuit check
- The indicator drive circuit check
- The LCD segments check
- The gauges drive circuit check (speedometer, tachometer, fuel gauge, coolant temperature gauge)
- The communication line check (the coolant temperature signal line between the gauge and ECM/PCM)

Entering the Self-diagnosis Function:

Before doing the self-diagnosis function, check the No. 9 (7.5A) 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. With in 5 sec., turn the lighting switch OFF, then ON and OFF again.
5. With in 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 test and the gauge drive circuit 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:

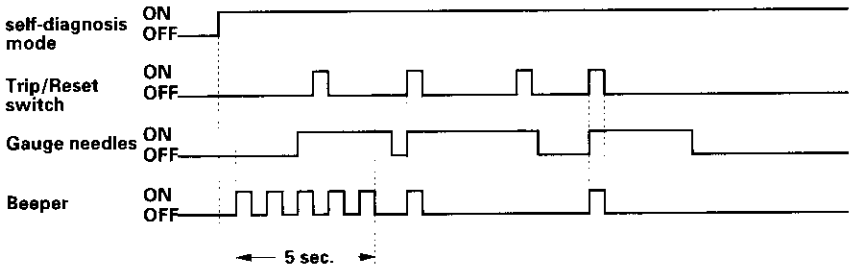
When entering the self-diagnosis mode, the beeper sounds five times.

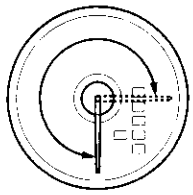
The Indicator Drive Circuit Check:

When entering the self-diagnosis mode, the following indicators lights and sequential sportshift mode segments blink.
Seat belt indicator light, Door/hatch indicator light, Brake system light, Charging system light, Low fuel indicator light, Maintenance required indicator light (USA), Washer fluid level indicator light (Canada),
A/T gear position indicator (except [P], [R], [N]) and sequential sportshift mode segments)

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 from the minimum position to maximum position, then return to the minimum position.
NOTE:
After the beeper stops sounding and the gauge 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 gauge 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/PCM.

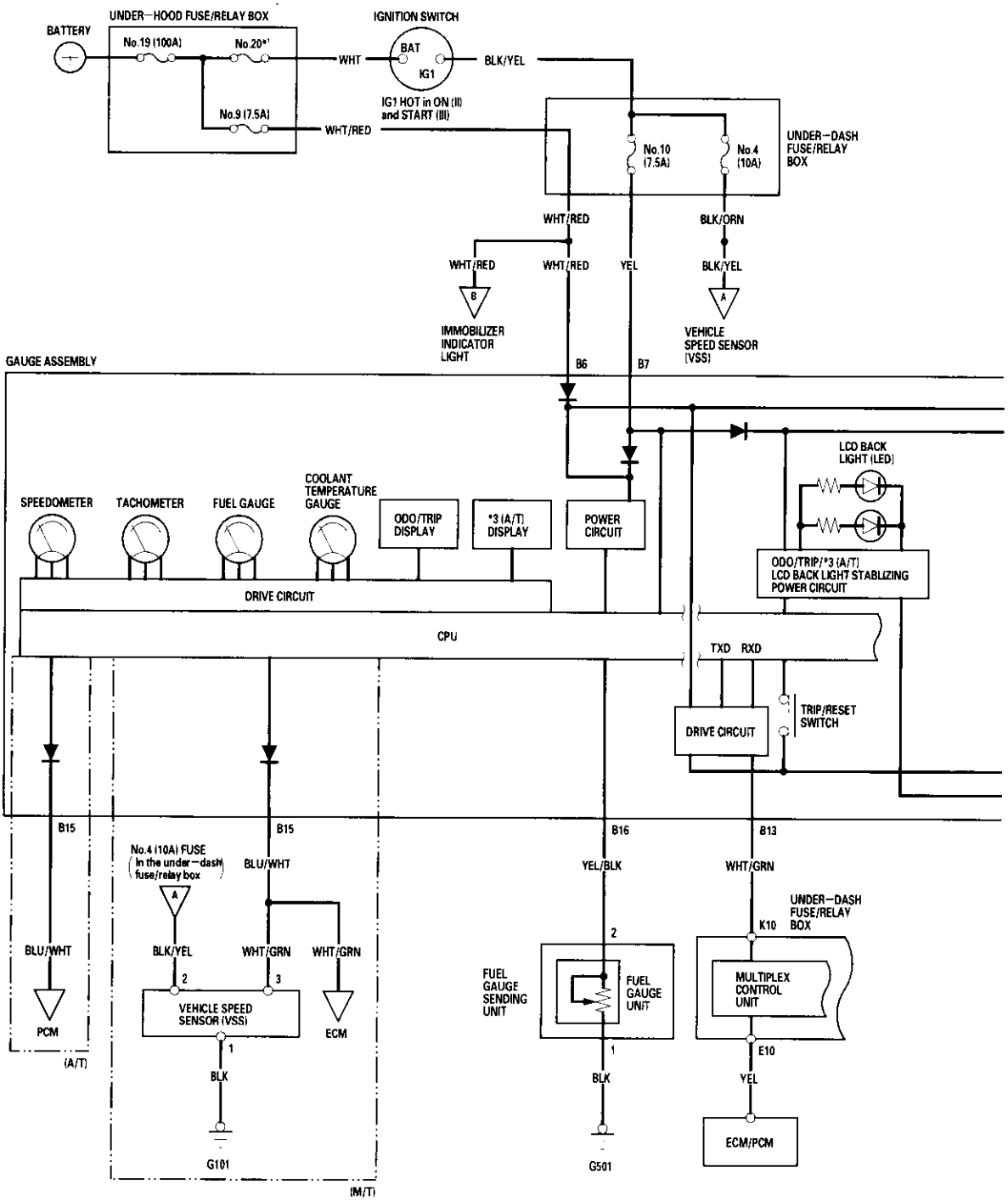
Normal:

Faulty:

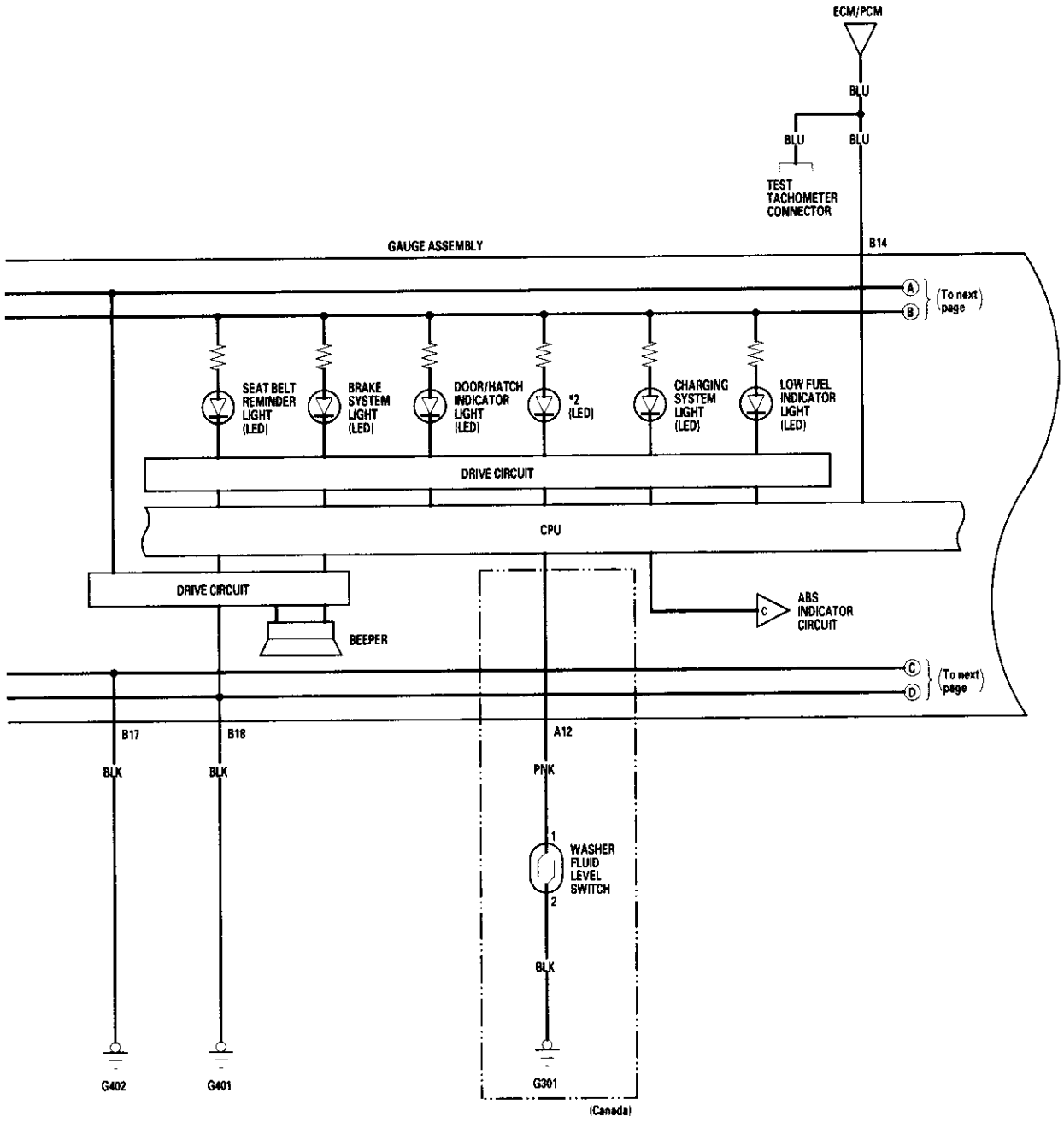
Ending the Self-diagnosis Function:
Turn the ignition switch OFF.
Note: If the vehicle speed exceeds 1.2 mph (2 km/h), the self-diagnosis function ends.

If any of the checks do not function as specified, replace the gauge assembly.

Circuit Diagram



*1 No.20 (40A) : USA
No.20 (50A) : Canada
*2 USA : MAINTENANCE REQUIRED INDICATOR LIGHT
Canada : WASHER FLUID LEVEL INDICATOR LIGHT
*3 : SEQUENTIAL SPORTSHIFT MODE



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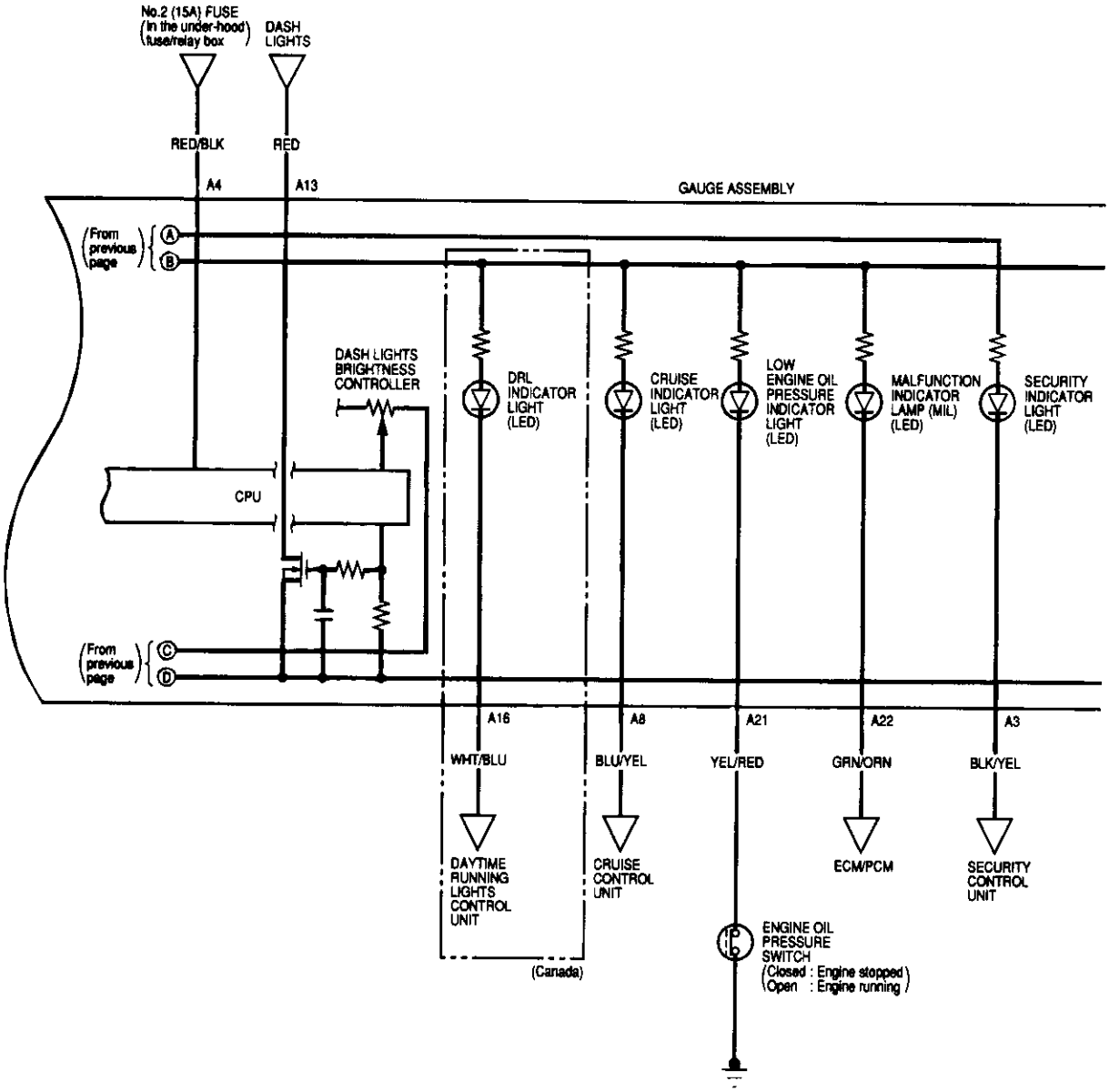
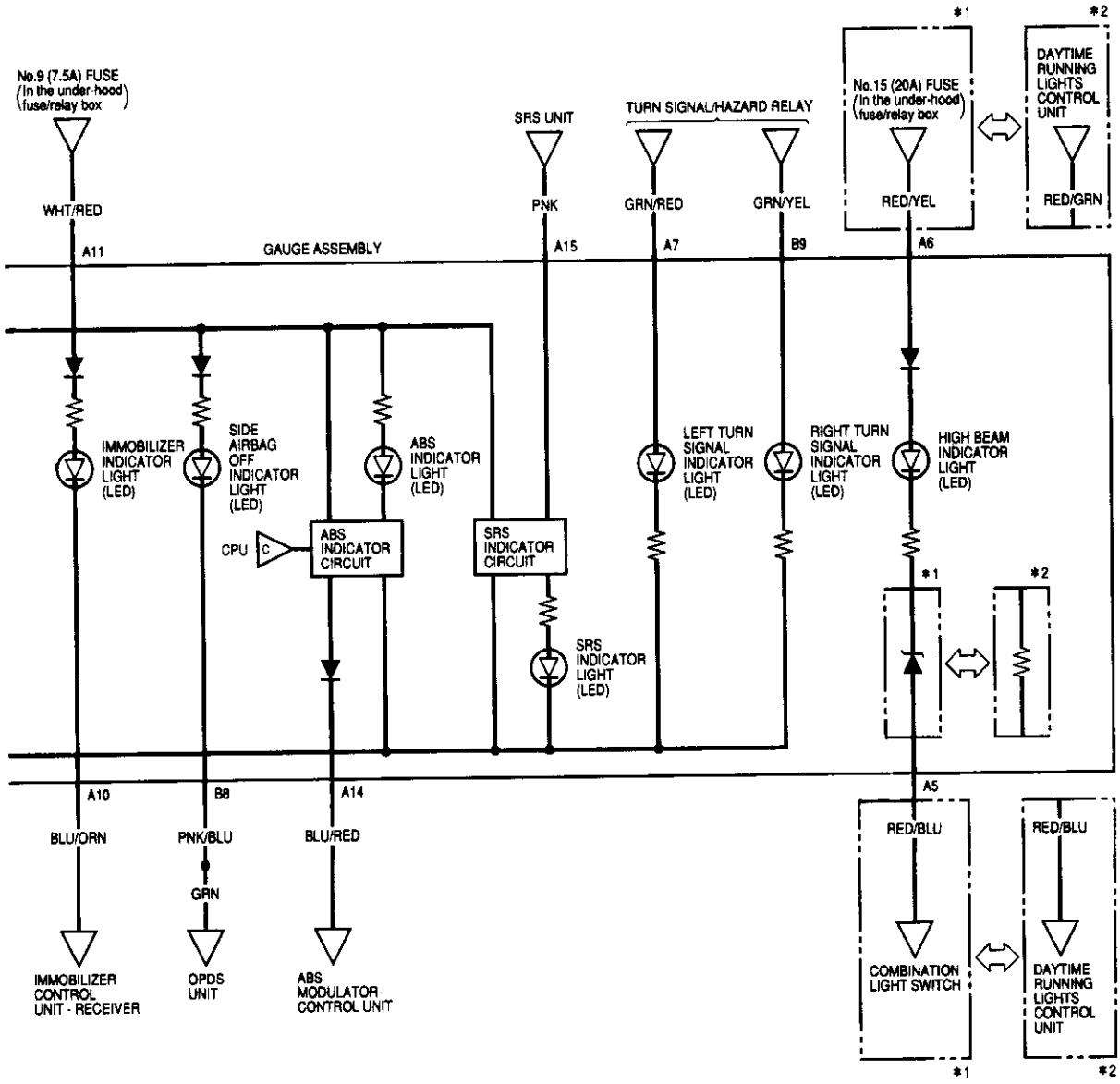
Circuit Diagram (cont'd)

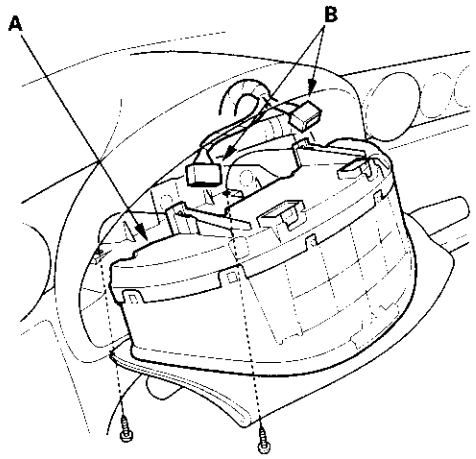


*1 : USA
*2 : Canada



Gauge Assembly Replacement

1. Remove the driver's dashboard lower cover (see page 20-61). then remove the upper column cover (see page 17-25).
2. Remove the two mounting screws from the gauge assembly (A).



3. Disconnect the connectors (B), and remove the gauge assembly.
4. Install the gauge assembly in the reverse order of removal.

Coolant Temperature Gauge Troubleshooting

Before testing, check the No. 9 (7.5A) fuse in the under-dash 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/PCM DTC (see page 11-61), and recheck. ■
   NO Go to step 2.

2. Check for a multiplex control unit DTC (see page 22-175).

   Is a DTC indicated?

   YES – Troubleshooting the cause of the multiplex control unit DTC (see page 22-175), and recheck. ■
   NO – Go to step 3.

3. Do the communication line check with the self-diagnosis procedure (see page 22-60).

   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/PCM. Check for an open in the WHT/GRN wire (gauge connector terminal B13). ■
   NO – Go to step 4.

4. Does the gauge drive circuit check with the self-diagnosis procedure (see page 22-60).

   Dose 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/PCM, and recheck.

   Did the symptom/indication go away?

   YES – Replace the ECM/PCM.
   NO – Substitute a known-good gauge assembly. If the symptom/indication goes away, replace the gauge assembly. ■

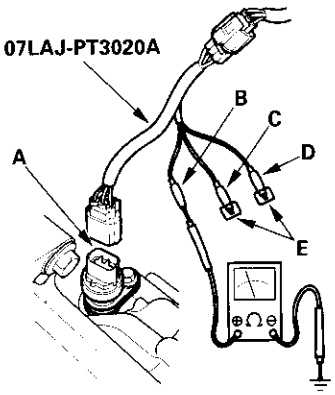
Vehicle Speed Signal Circuit Troubleshooting

Special Tools Required:
Test Harness 07LAJ-PT3020A

M/T:

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).



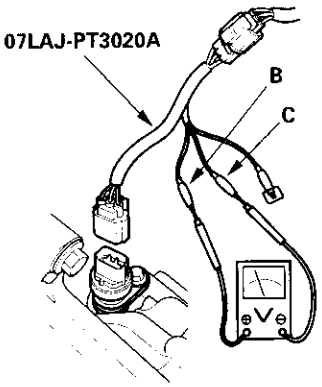
2. Connect the test harness only to the engine wire harness.
3. Connect the RED test harness clip (B) to the positive prove of an ohmmeter. Cover the white (C) and green (D) test harness with protective tape (E).
4. Check for continuity between the RED test harness clip and body ground.

   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.



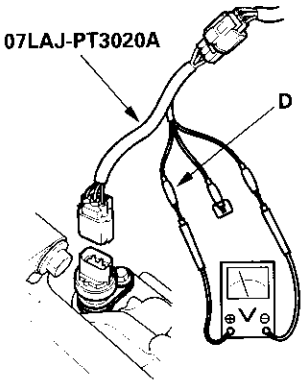
6. Turn the ignition switch ON (II).

   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 battery voltage?

   YES – Go to step 9.

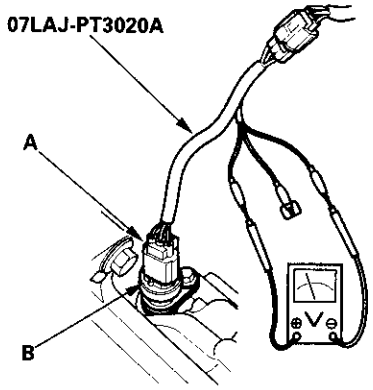
   NO – Repair short in the BLU/WHT [WHT/GRN] wire between the VSS and the ECM. ■

(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.

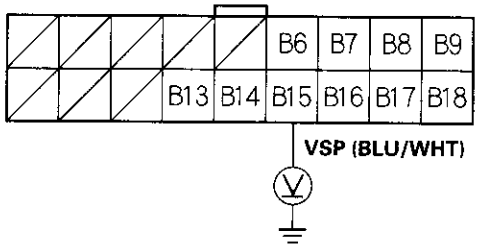
Does voltage pulse from 0 to about 5 V or battery voltage?

YES – Go to step 14.

NO – Replace the VSS. ■

14. Disconnect the 18P connector "B" from the gauge assembly.

GAUGE ASSEMBLY CONNECTOR B (18P)



Wire side of female terminals

15. Touch the voltmeter positive probe to the gauge assembly B15 terminal, and connect the negative probe to body ground.

16. Slowly rotate one wheel with the other wheel blocked.

Does voltage pulse from 0 to about 5 V or battery voltage?

YES – Replace the speedometer assembly. ■

NO – Repair open in the BLU/WHT [WHT/GRN] wire between the VSS and the speedometer. ■

A/T:

Before testing, check the No. 9 (7.5A) 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 PCM DTC (see page 11-61), and recheck.

   NO—Go to step 2.

2. Check the multiplex control unit DTC (see page 22-175).

   Is the DTC indicated?

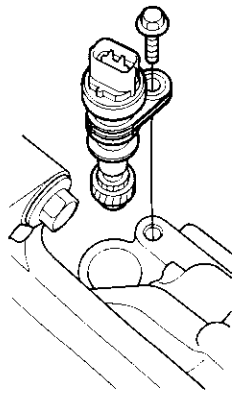
   YES—Troubleshoot the DTC (see page 22-175), and recheck.■

   NO—Inspect the connector and socket terminals of the gauge assembly connectors. If the terminals look OK, replace the gauge assembly.■

VSS Replacement

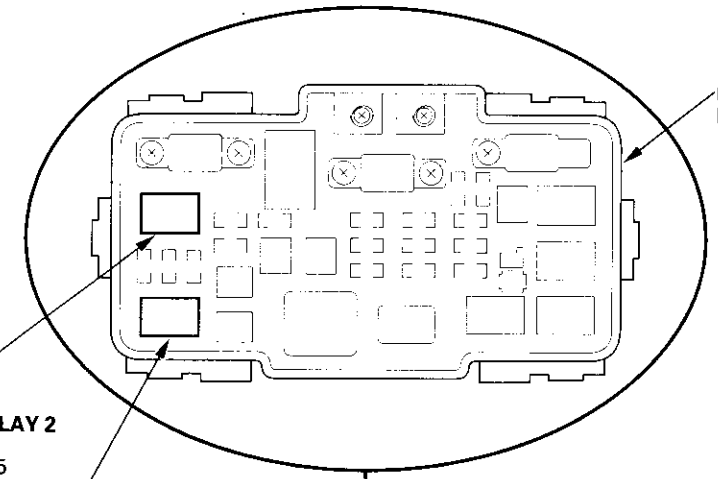
M/T only:

1. Remove the air cleaner (see page 11-179).
2. Disconnect the 3P connector from the vehicle speed sensor (VSS).



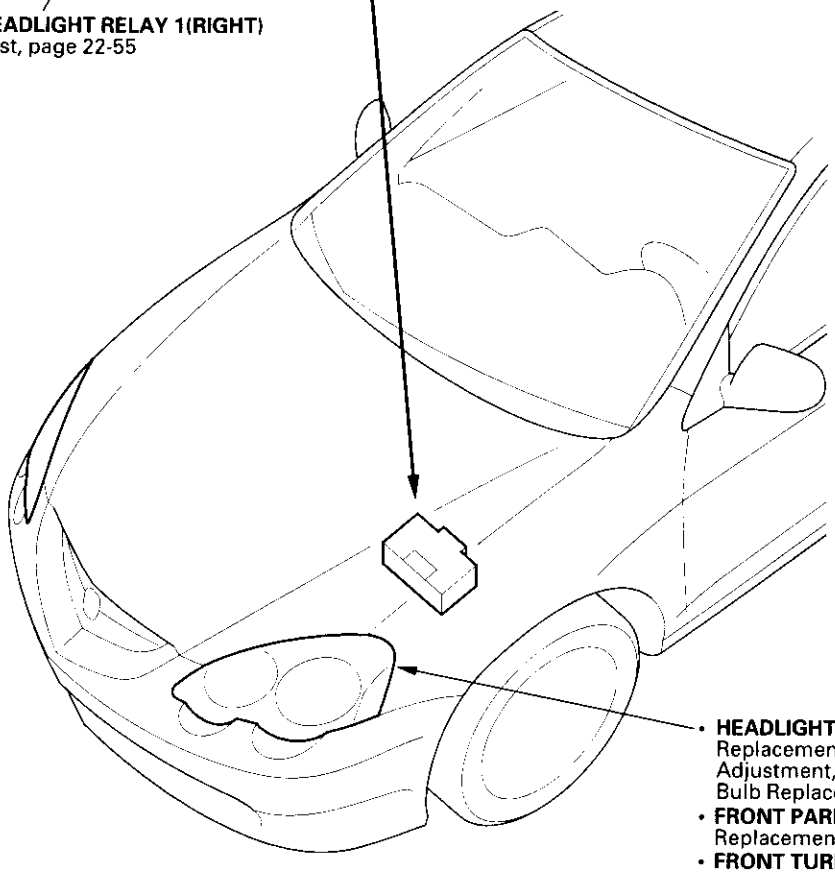
3. Remove the mounting bolt, then remove the VSS.
4. Install the VSS in the reverse order of removal.

Component Location Index

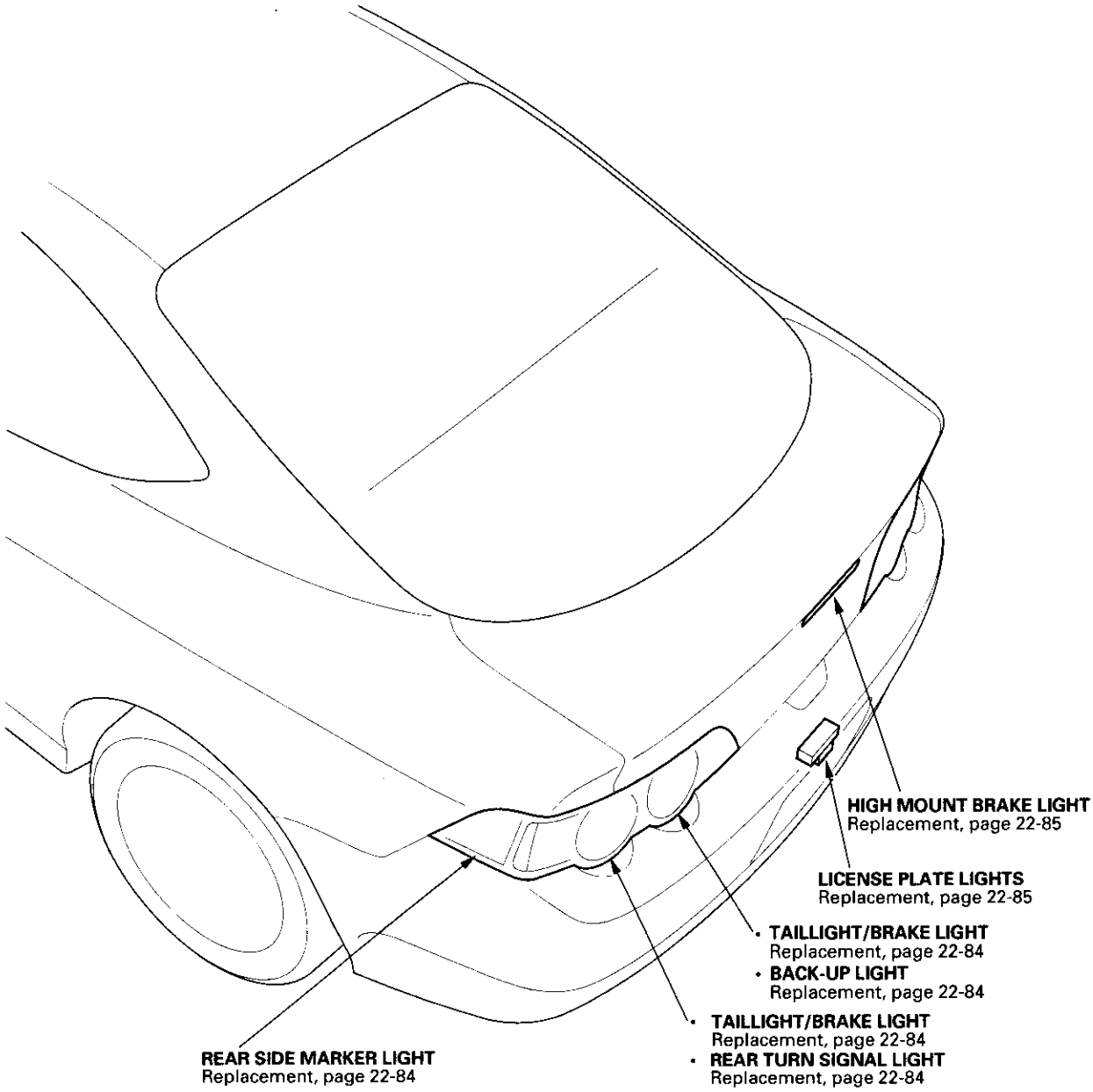


HEADLIGHT RELAY 2 (LEFT)
Test, page 22-55

HEADLIGHT RELAY 1(RIGHT)
Test, page 22-55

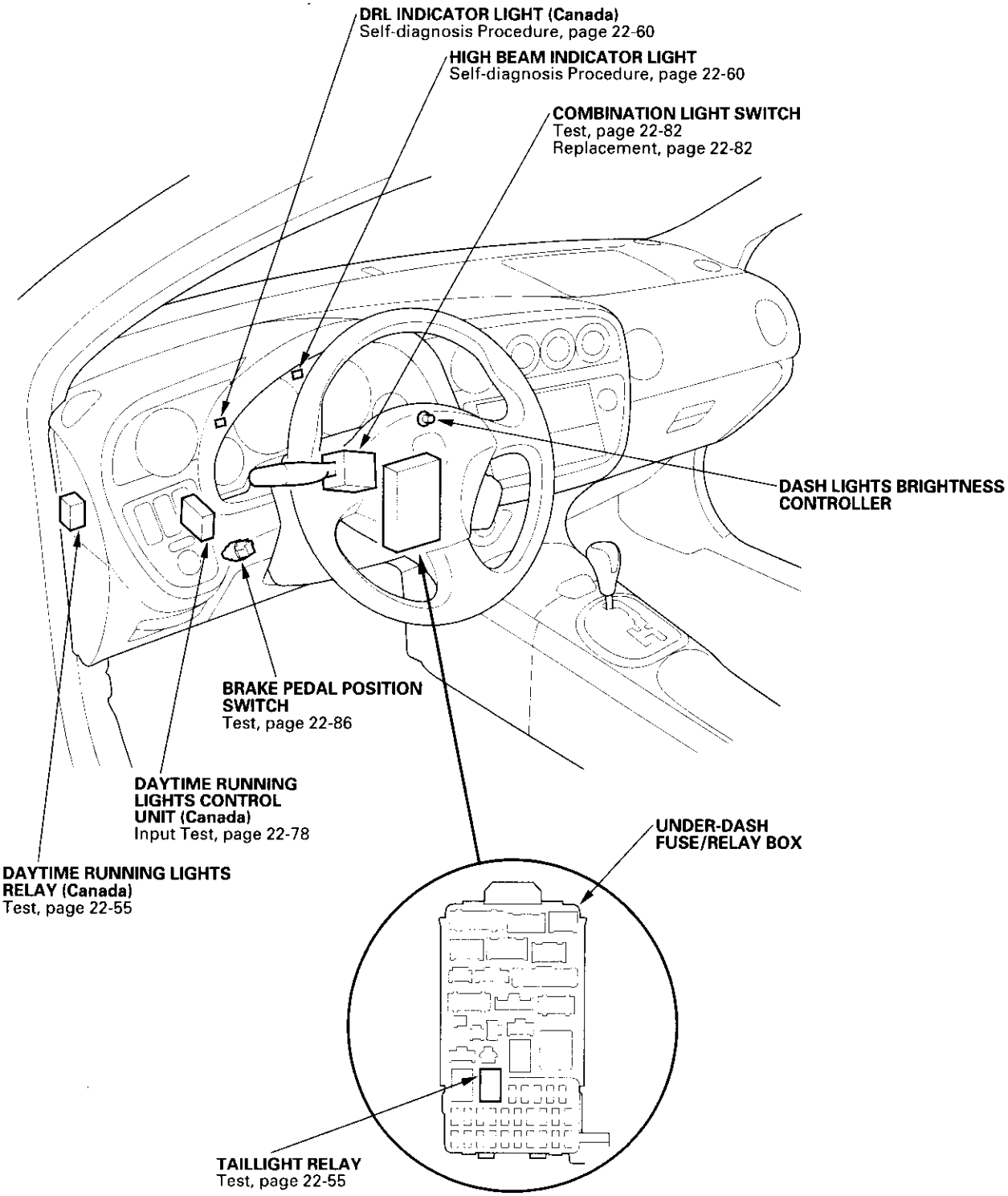


- **HEADLIGHTS**
  Replacement, page 22-81
  Adjustment, page 22-80
  Bulb Replacement, page 22-83
- **FRONT PARKING LIGHT**
  Replacement, page 22-84
- **FRONT TURN SIGNAL LIGHT**
  Replacement, page 22-84

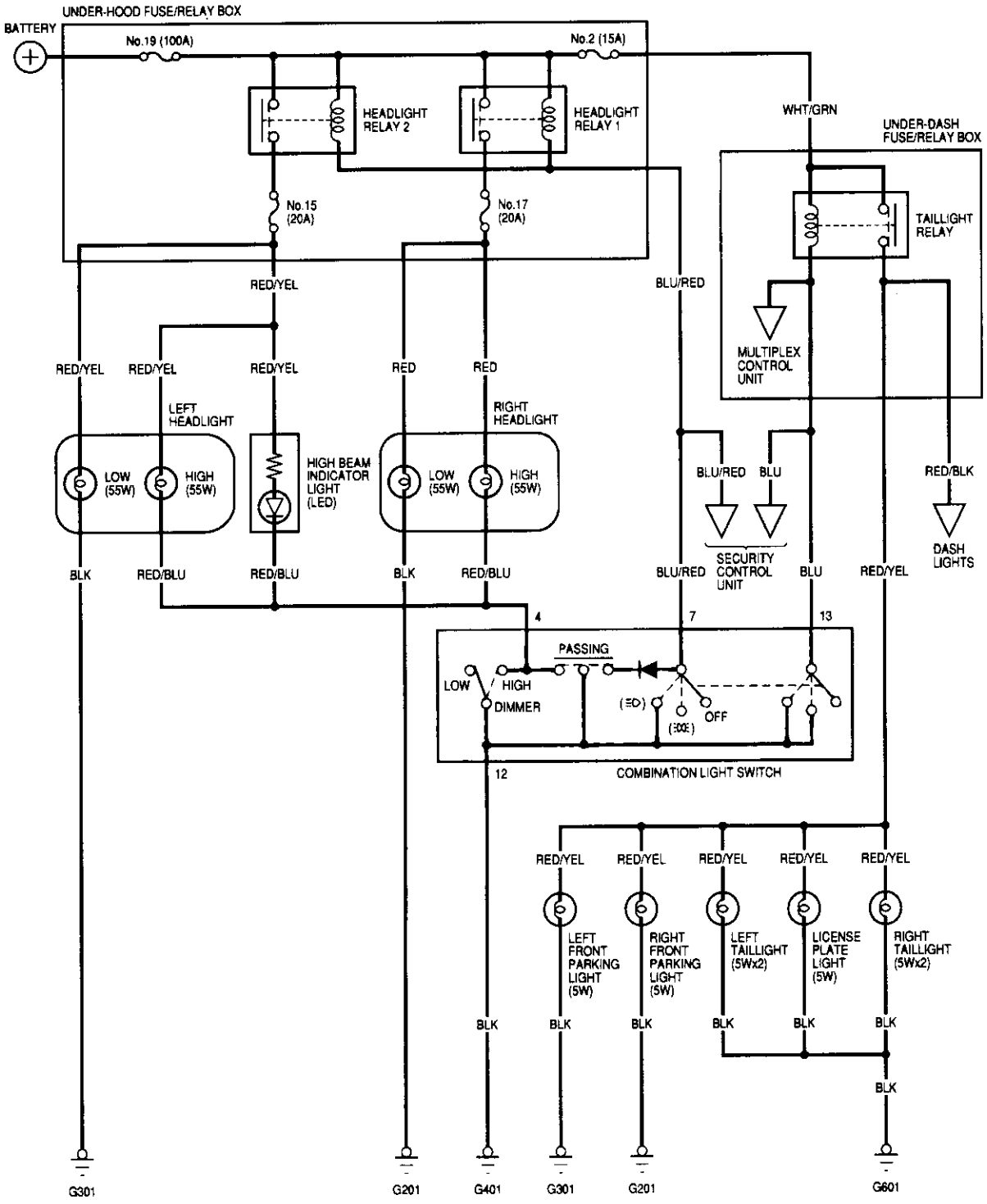

HIGH MOUNT BRAKE LIGHT
Replacement, page 22-85
LICENSE PLATE LIGHTS
Replacement, page 22-85
• TAILLIGHT/BRAKE LIGHT
Replacement, page 22-84
• BACK-UP LIGHT
Replacement, page 22-84
• TAILLIGHT/BRAKE LIGHT
Replacement, page 22-84
• REAR TURN SIGNAL LIGHT
Replacement, page 22-84
REAR SIDE MARKER LIGHT
Replacement, page 22-84

(cont'd)

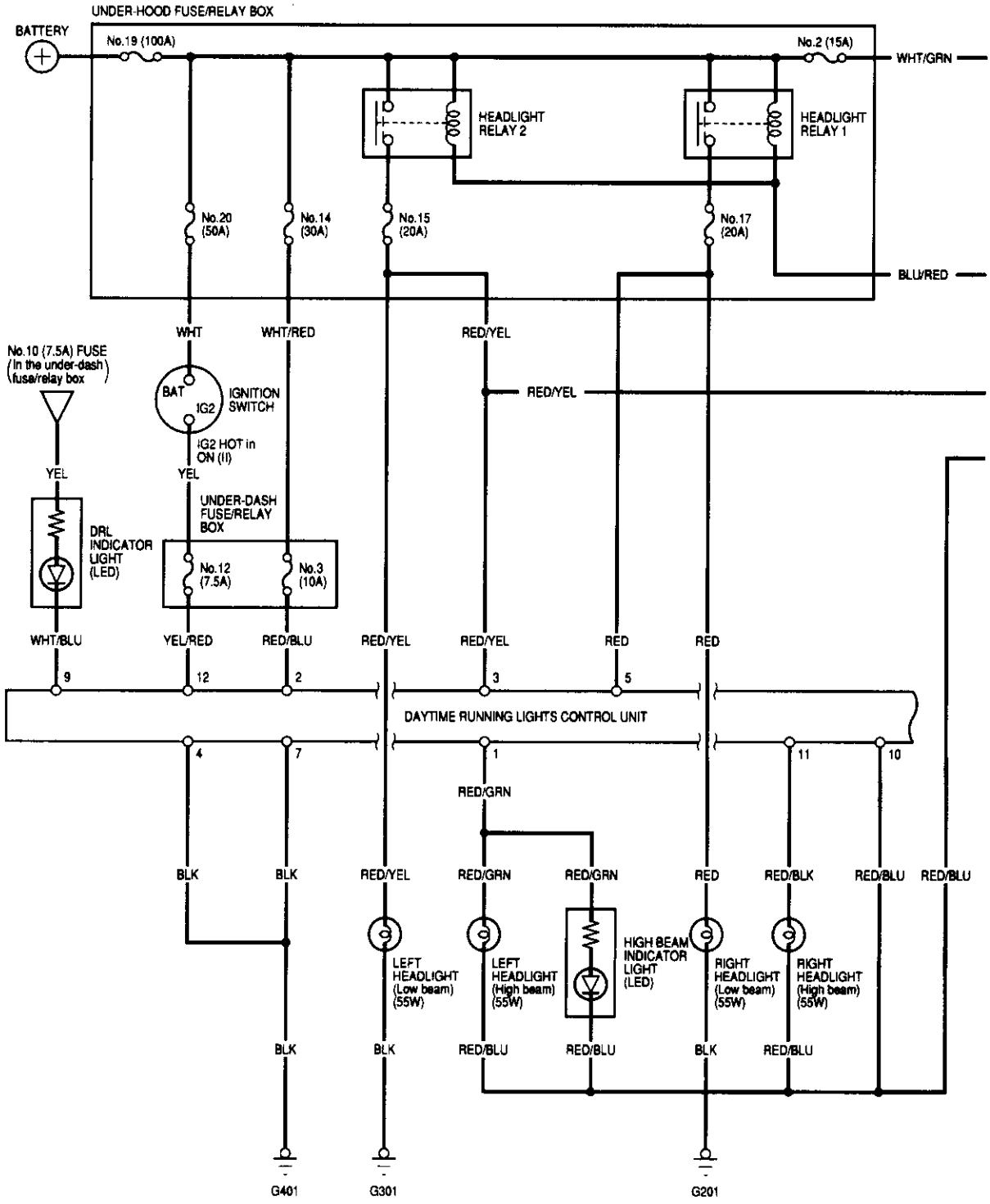
Component Location Index (cont'd)

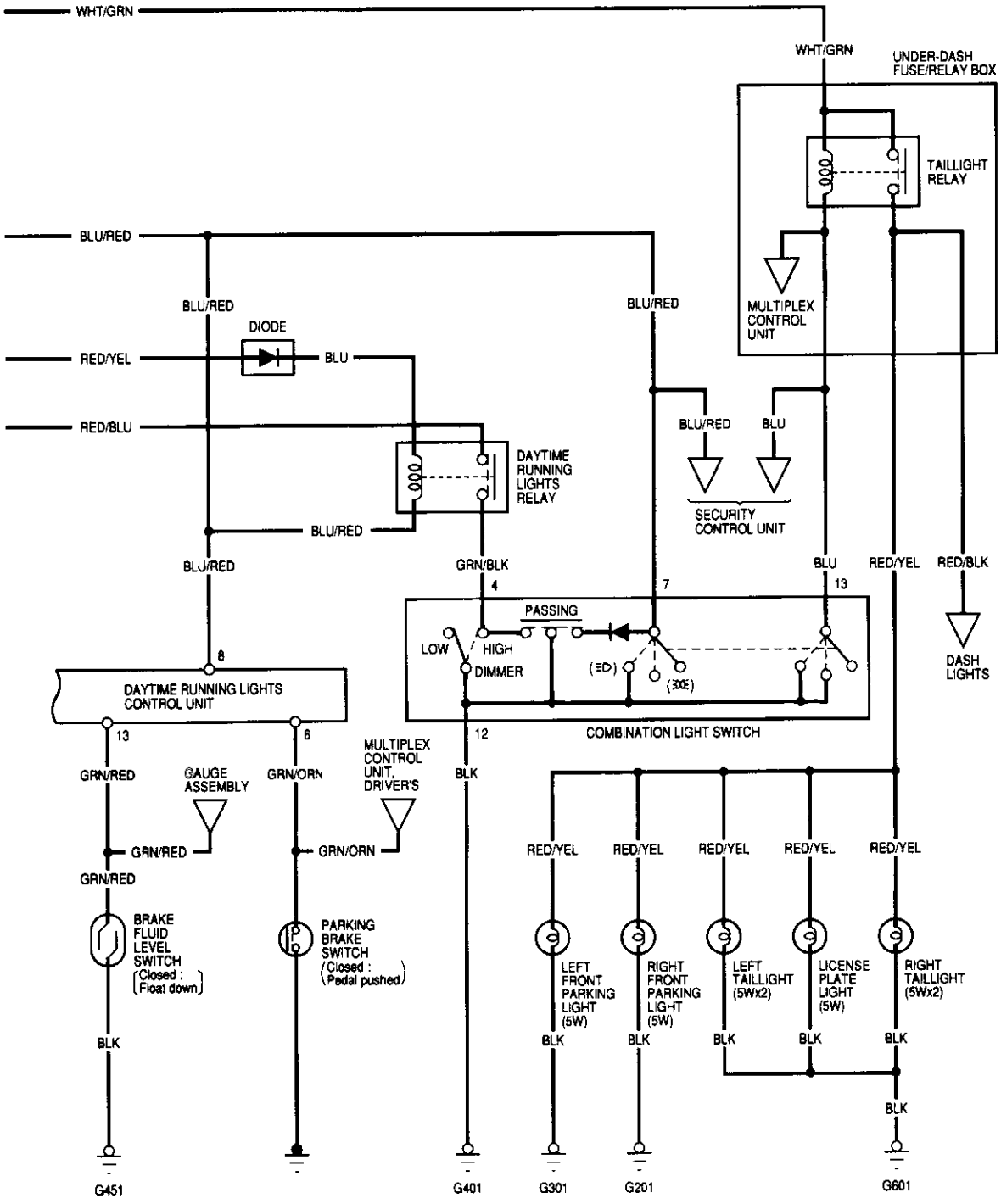


Circuit Diagram - USA

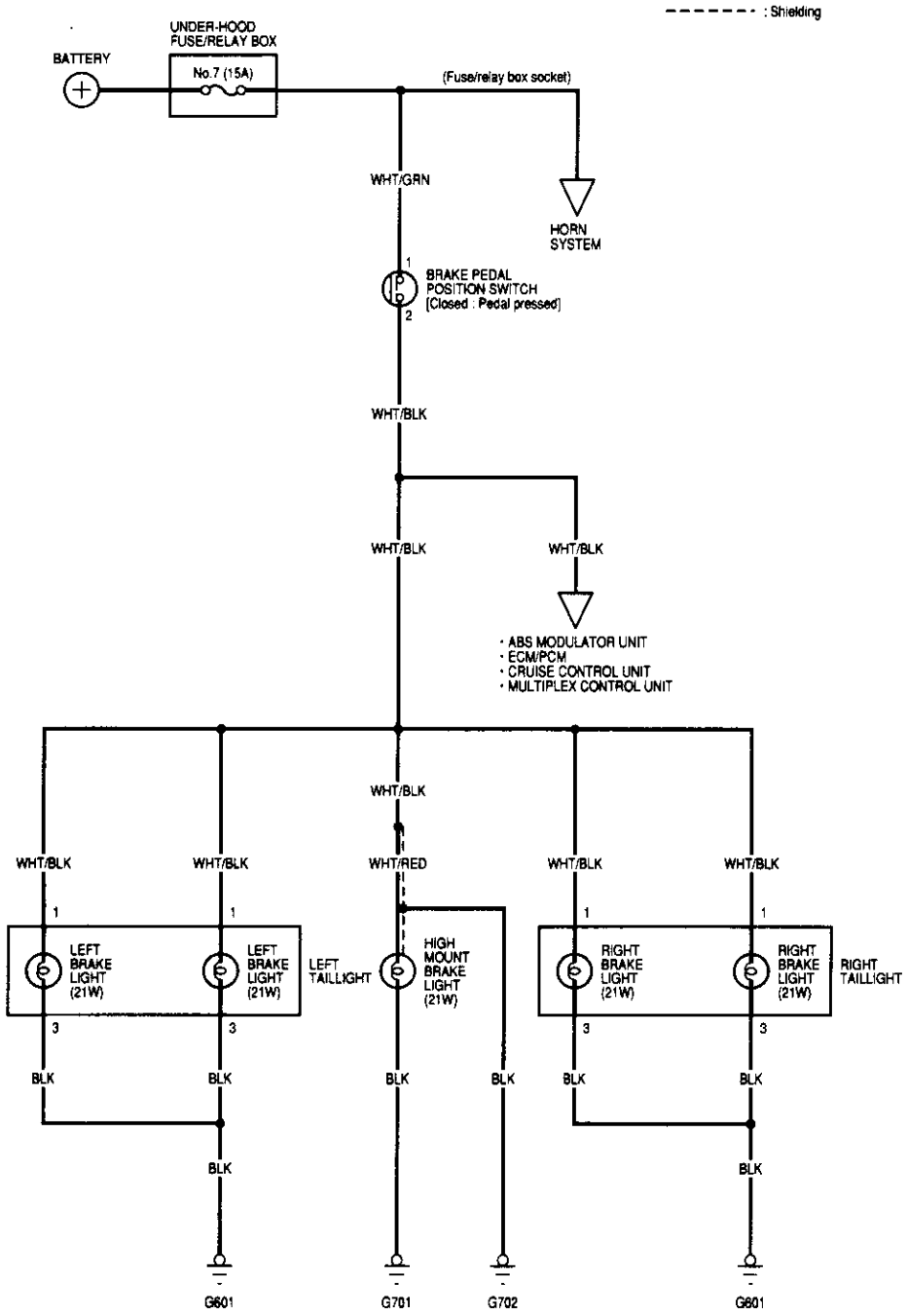


Circuit Diagram - Canada

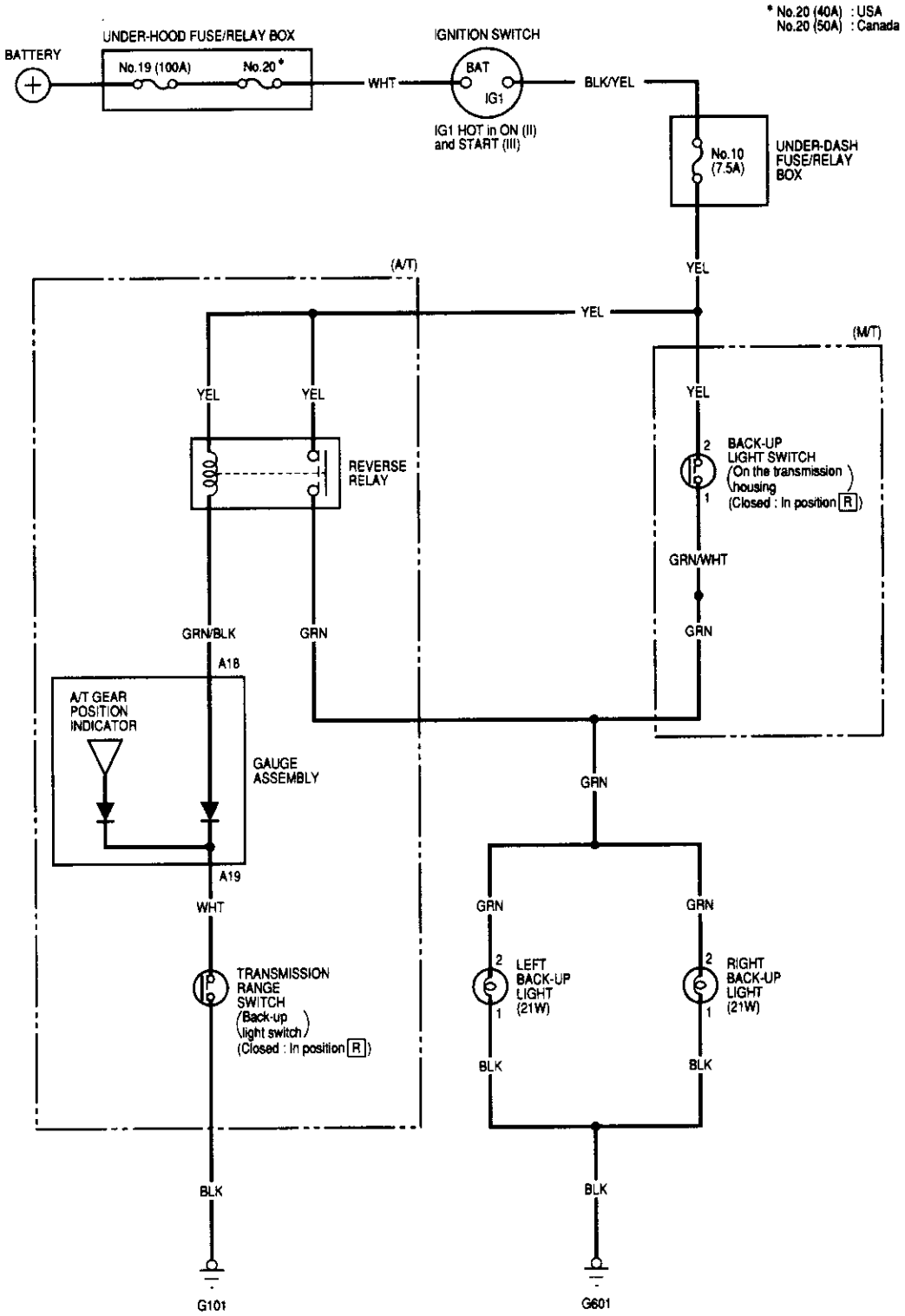



WHT/GRN
WHT/GRN
UNDER-DASH FUSE/RELAY BOX
TAILLIGHT RELAY
MULTIPLEX CONTROL UNIT
BLU/RED
BLU/RED
BLU/RED
DIODE
RED/YEL
BLU
RED/BLU
DAYTIME RUNNING LIGHTS RELAY
BLU/RED
BLU
SECURITY CONTROL UNIT
BLU/RED
GRN/BLK
BLU
RED/YEL
RED/BLK
4
7
13
PASSING
LOW
HIGH
DIMMER
DASH LIGHTS
8
DAYTIME RUNNING LIGHTS CONTROL UNIT
COMBINATION LIGHT SWITCH
13
6
12
MULTIPLEX CONTROL UNIT, DRIVER'S
GRN/RED
GAUGE ASSEMBLY
GRN/ORN
BLK
RED/YEL
RED/YEL
RED/YEL
RED/YEL
RED/YEL
GRN/RED
GRN/ORN
GRN/RED
BRAKE FLUID LEVEL SWITCH (Closed : Float down)
PARKING BRAKE SWITCH (Closed : Pedal pushed)
LEFT FRONT PARKING LIGHT (5W)
RIGHT FRONT PARKING LIGHT (5W)
LEFT TAILLIGHT (5Wx2)
LICENSE PLATE LIGHT (5W)
RIGHT TAILLIGHT (5Wx2)
BLK
BLK
BLK
BLK
BLK
BLK
BLK
G451
G401
G301
G201
G601

Circuit Diagram - Brake Lights



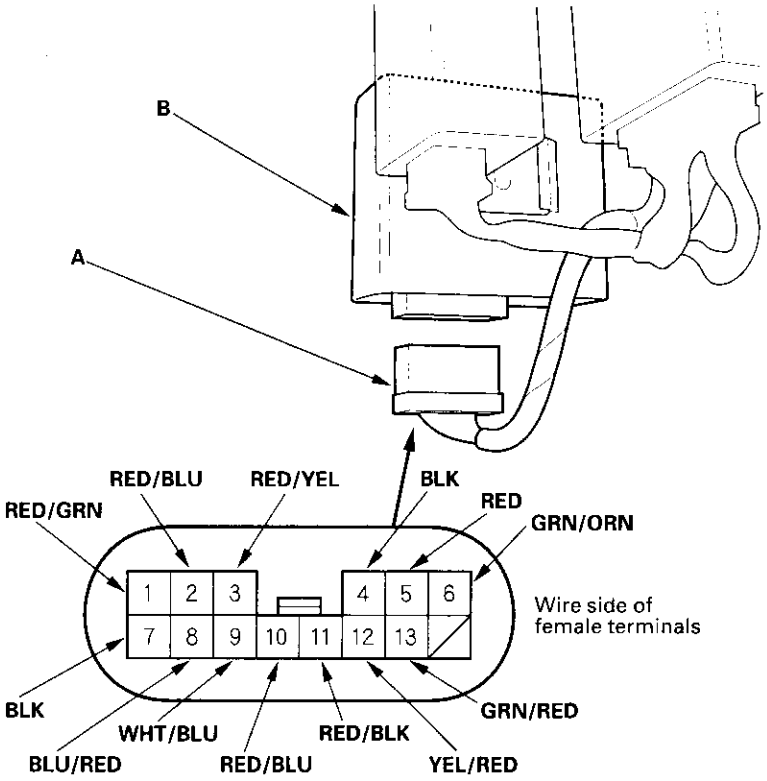
Circuit Diagram - Back-up Lights



Daytime Running Lights Control Unit Input Test - Canada

1. Remove the driver's dashboard lower cover (see page 20-61).

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 (30A) 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 (G401) • An open in the wire
7	BLK	Under all conditions	Check for continuity to ground: There should be continuity.	• Poor ground (G401) • An open in the wire
3	RED/YEL	Combination light switch ON (≣D)	Check for voltage to ground: There should be battery voltage.	• Blown No. 15 (20A) fuse in the under-hood fuse/relay box • Faulty headlight relay 2 • Faulty combination light switch • An open in the wire
5	RED	Combination light switch ON (≣D)	Check for voltage to ground: There should be battery voltage.	• Blown No. 17 (20A) fuse in the under-hood fuse/relay box • Faulty headlight relay 1 • Faulty combination light switch • An open in the wire
1	RED/GRN	Combination light switch ON (≣D), and dimmer switch in HIGH	Connect a jumper wire between No. 3 and No. 1 and No. 8 and No. 4 terminals. Left headlight (HIGH) and high beam indicator light should come on.	• Blown bulb • Faulty daytime running lights relay • Faulty combination light switch • Poor ground (G401) • 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 and No. 8 and No. 4 terminals. Right headlight (HIGH) should come on.	• Blown bulb • Faulty day time running lights relay • Faulty combination light switch • Poor ground (G401) • An open in the wire
10	RED/BLU	Combination light switch ON (≣D), and dimmer switch in HIGH	Connect a jumper wire between No. 8 and No. 4 terminals. Check for continuity to ground: There should be continuity.	• Faulty day time running lights relay • Faulty combination light switch • Poor ground (G401) • 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	Under all conditions	Attach to ground: Headlights (LOW) should come on.	• Faulty headlight relays • Blown bulb • An open in the wire
9	WHT/BLU	Ignition switch ON (II)	Attach to ground: The DRL indicator light should come on.	• An open in the wire
13	GRN/RED	Ignition switch ON (II)	Attach to ground: The brake system light should come on.	• An open in the wire

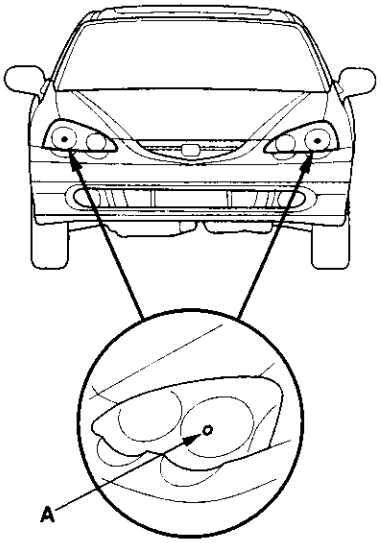
Headlight Adjustment

⚠CAUTION

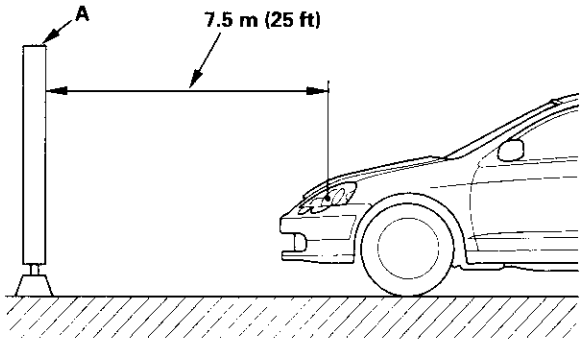
Headlights become very hot while use; do not touch them or any attaching hardware immediately after they have been turned off.

Before adjusting the headlights:
- Park the vehicle on a level surface.
- Make sure the tire pressures are correct.
- The driver or someone who weights 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).



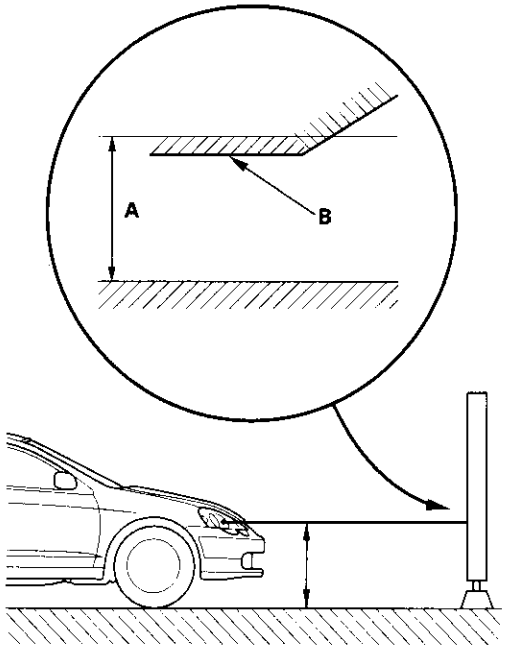
2. Park the vehicle 7.5 m (25 ft) away from a wall or a screen (A).



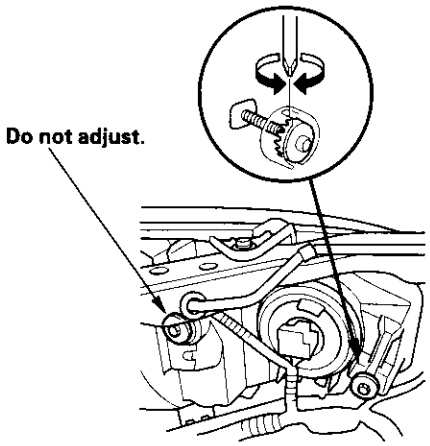
3. Turn the low beams on.

4. 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).

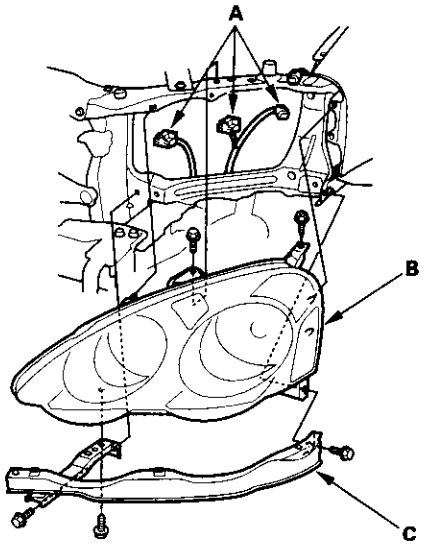


5. If necessary, open the hood and adjust the headlights to local requirements by turning the vertical adjuster.



Headlight Replacement

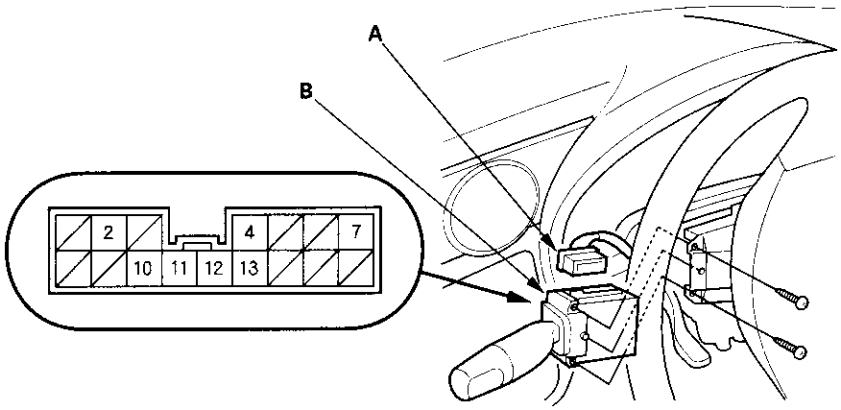
1. Remove the front bumper (see page 20-87).
2. Disconnect the connectors (A) from the headlight (B).



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 dashboard lower cover (see page 20-61).
2. Remove the steering column covers (see page 17-25).
3. Disconnect the 16P connector (A) from the combination light switch (B).



4. Remove the two screws, then pull 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 necesaary, 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 in the table, replace the switch.

Light switch:

Position \ Terminal			4	7		12	13
Headlight switch	OFF						
	≡D					o—o	
		LOW		o—o		o—o	o—o
		HIGH	o—o	o—o		o—o	o—o
Passing switch	OFF						
	ON		o—o	o—▶—o		o—o	

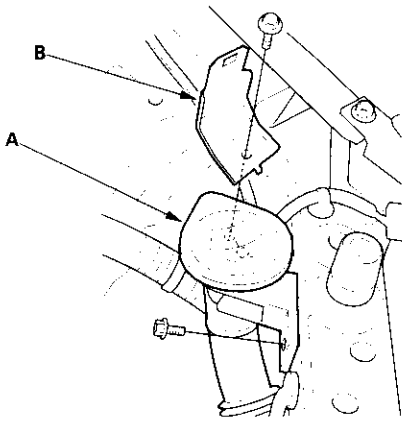
Turn signal switch:

Position \ Terminal	2	10	11
LEFT	o—o		
NEUTRAL			
RIGHT		o—o	

Bulb Replacement

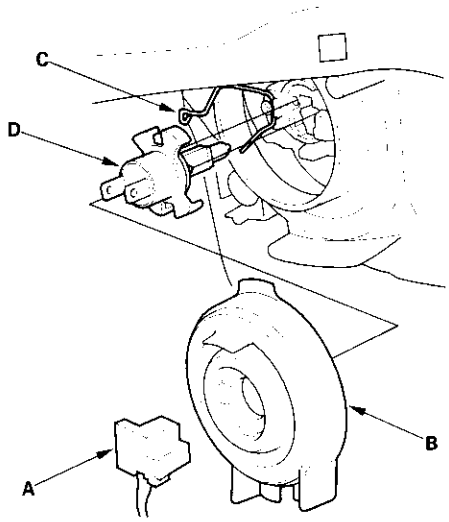
Headlight (low beam):

1. Left headlight: Remove the battery, the washer tank neck (A) and the under-hood fuse/relay box bracket (B).



2. Disconnect the 3P connector (A) from the headlight.

   Headlight (low beam): 55 W

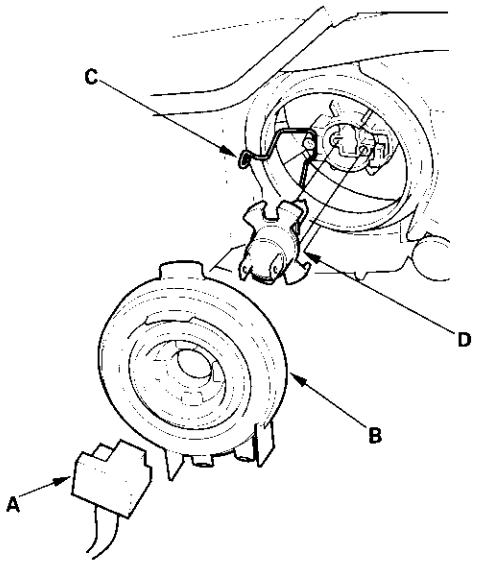


3. Remove the rubber cover (B).
4. Pull the retaining spring (C) away from the bulb (D), then remove the bulb.
5. Install a new bulb in the reverse order of removal. Make sure the notches in the bulb align with the tabs in the headlight.

Headlight (high beam):

1. Disconnect the 3P connector (A) from the headlight.

   Headlight (high beam): 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.

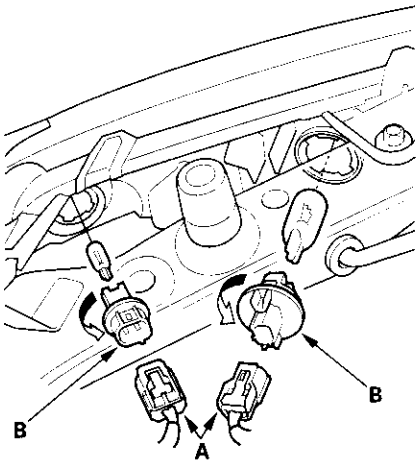
(cont'd)

Bulb Replacement (cont'd)

Front Parking Lights and Turn Signal Lights:

1. Disconnect the connectors (A) from the light.

   Front Parking Light: 5 W
   Front Turn Signal Light: 21 W

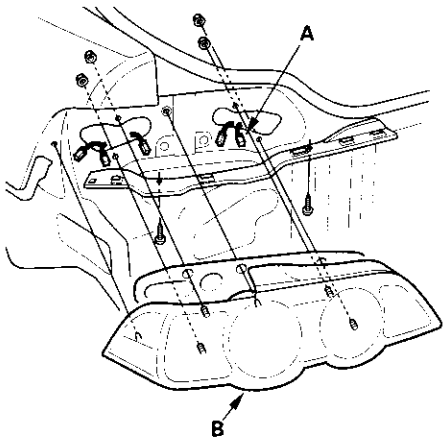


2. Turn the bulb socket (B) 45° counterclockwise to remove them from the housing.
3. Install the new bulb(s) in the reverse order of removal.

Taillights Replacement

1. Remove the rear bumper (see page 20-89).
2. Open the hatch, and remove the taillight access lid.
3. Disconnect the connectors (A) from the taillight (B).

Brake/Taillight:	**21/5 W x 2**
Back-up Light:	**21 W**
Rear Turn Signal Light:	**21 W**
Rear Side Marker Light:	**5 W**



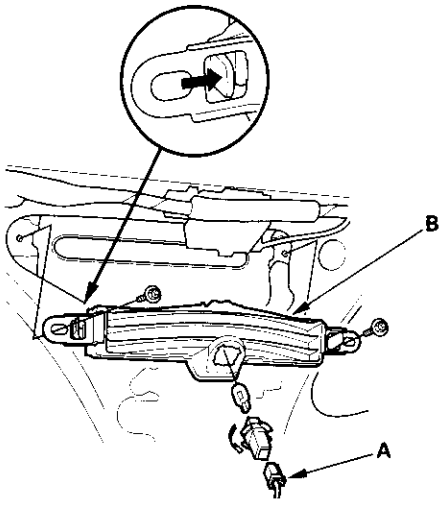
4. Turn the bulb socket 45 ° counterclockwise to remove the bulb socket.
5. Remove the mounting nuts, then remove the taillight.
6. Install the taillight and note these items:

   - Inspect the gasket; replace it if it is distorted or stays compressed.
   - After installing the taillight, run water over it to make sure it does not leak.

High Mount Brake Light Replacement

1. Open the hatch, and remove the hatch lower trim (see page 20-53).
2. Disconnect the 2P connectors (A) from the high mount brake light (B).

High Mount Brake Light: **21 W**

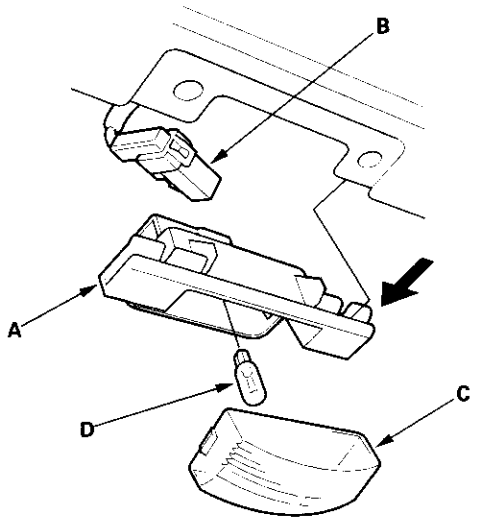


3. Turn the bulb socket 45 ° counterclockwise to remove the bulb socket.
4. Remove the two mounting bolts and the high mount brake light.
5. Install the light in the reverse order of removal.

License Plate Light Replacement

1. Remove the license plate light (A) from the rear bumper.

License Plate Light Bulb: **5 W**

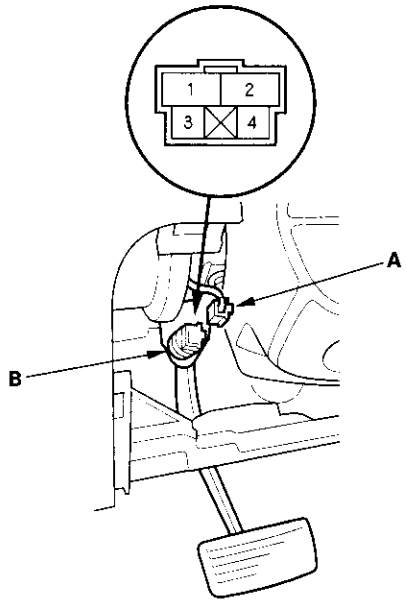


2. Disconnect the 2P connector (B) from the light.
3. Take the lens (C) off, then remove the bulb (D).
4. Install the light in the reverse order of removal.

Brake Pedal Position Switch Test

1. Remove the driver's dashboard lower cover (see page 20-61).

2. Disconnect the 4P connector (A) from the brake pedal position switch (B).



3. 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.

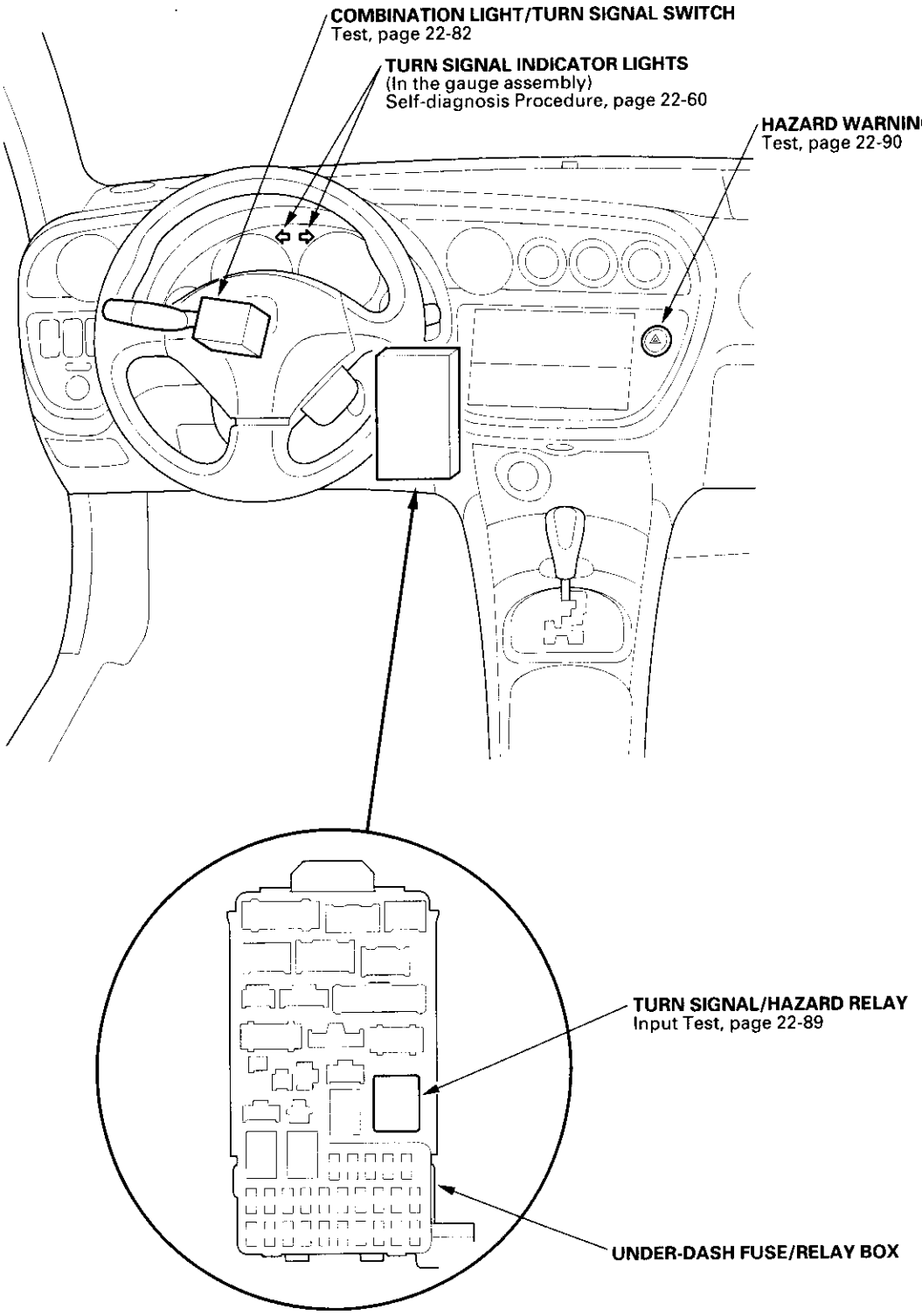
4. Check for continuity between the No. 3 and No. 4 terminals (with cruise control).

   - There should be no continuity when the brake pedal is pressed.
   - There should be continuity when the brake pedal is released.

5. If necessary, adjust or replace the switch, or adjust the pedal height (see page 19-6).

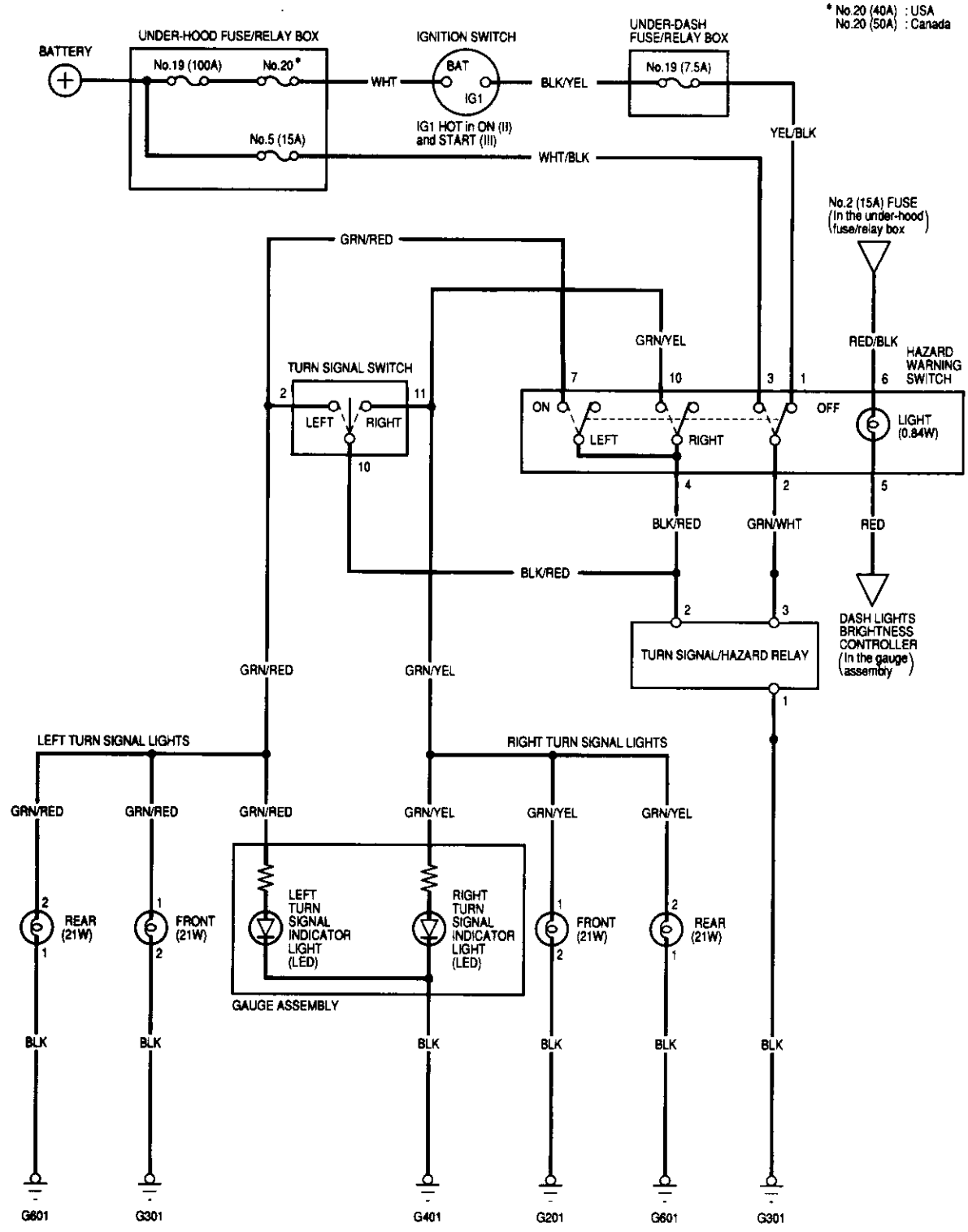
Turn Signal/Hazard Flasher

Component Location Index



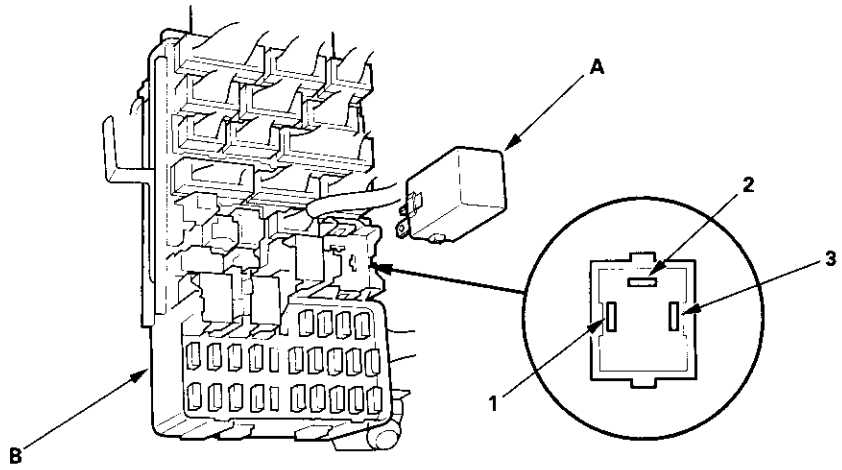
Turn Signal/Hazard Flasher

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.

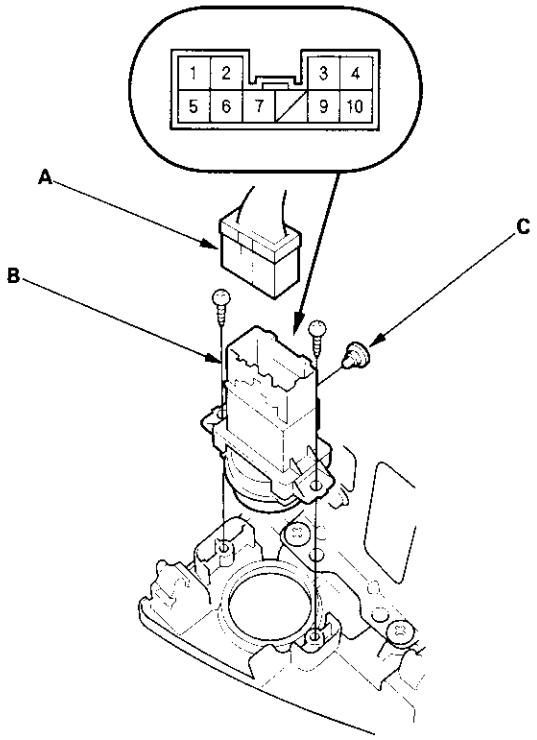
3. Make these input tests at the fuse/relay box.

   - 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 (G301) • An open in the wire
3	Ignition switch ON (II)	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	Check for voltage to ground: There should be battery voltage.	• Blown No. 5 (15A) 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.	• Blown No. 19 (7.5A) fuse in the under-dash fuse/relay box • Poor ground (G201, G301, G401, G601) • Faulty turn signal switch • An open in the wire
	Hazard warning switch ON	Check for voltage to ground: There should be battery voltage.	• Blown No. 5 (15A) fuse in the under-hood fuse/relay box • Poor ground (G201, G301, G401, G601) • Faulty hazard warning switch • An open in the wire

Hazard Warning Switch Test

1. Remove the audio unit (see page 22-105).
2. Disconnect the 10P connector (A) from the hazard warning switch (B).



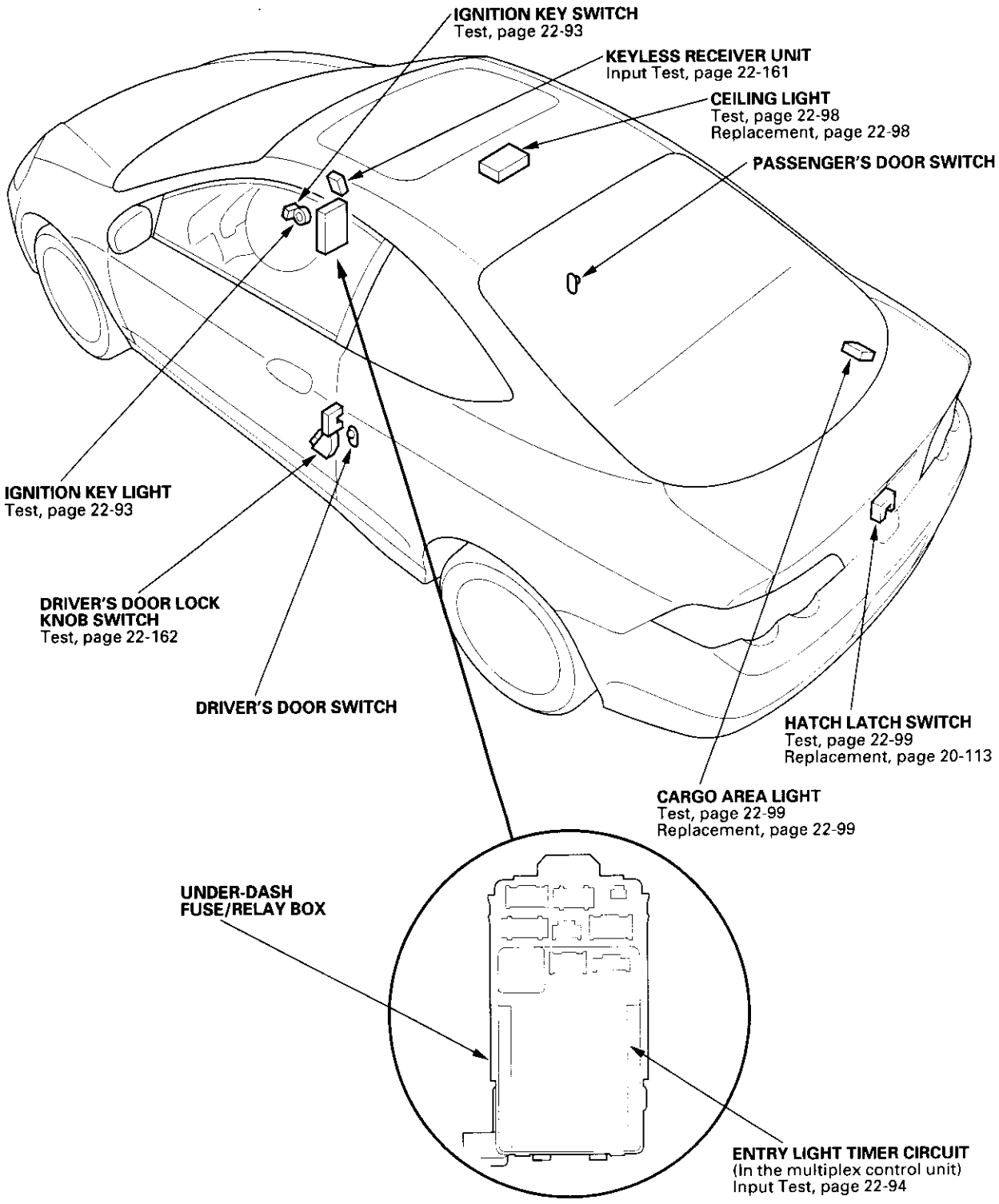
3. Remove the two screws and the hazard warning switch.
4. Check for continuity between the terminals in each switch position according to the table.

Terminal / Position	5		6	1	2	3	4	7	10
OFF	○	⊗	○	○	○				
ON	○	⊗	○		○	○	○	○	○

5. If the continuity is not as specified, replace the illumination bulb (c) or the switch.

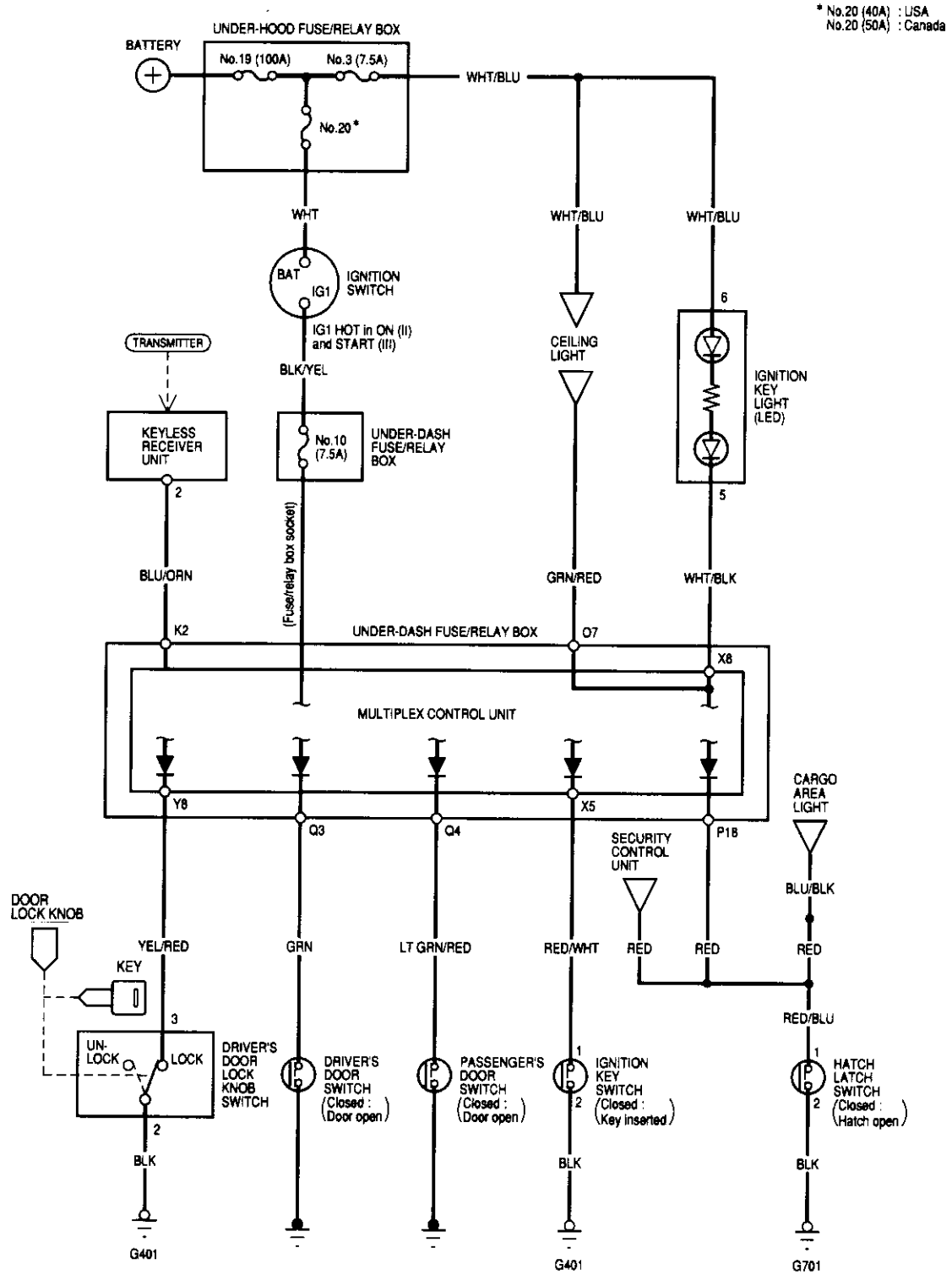
Entry Light Control System

Component Location Index



Entry Light Control System

Circuit Diagram

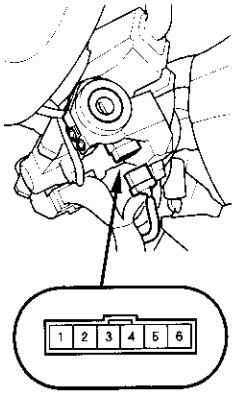


Ignition Key Switch Test

NOTE: For more key-in beeper information, refer to the circuit diagram (see page 22-92) and input test (see page 22-94).

When the ignition key is in the ignition, the key-in beeper circuit of the multiplex control unit senses ground through the closed ignition key switch. When you open the driver's door, the beeper circuit senses ground through the closed door switch. When both switches are closed (driver's door and ignition), the key-in beeper in the gauge assembly is activated.

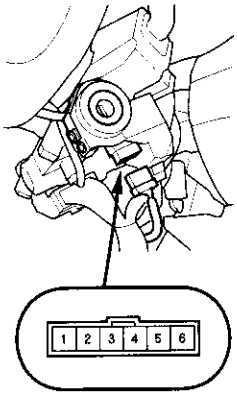
1. Remove the steering column upper and lower covers (see page 17-25).
2. Disconnect the 6P connector.



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.
4. If the continuity check is not as specified, replace the steering lock assembly.

Ignition Key Light Test

1. Remove the steering column upper and lower covers (see page 17-25).
2. Disconnect the 6P connector.



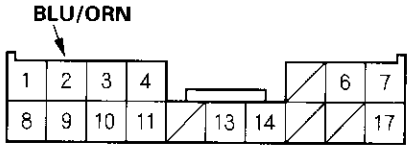
3. The LED should come on when power is connected to the No. 6 terminal and ground is connected to No. 5 terminal.
4. If the LED does not come on, replace the steering lock assembly.

Control Unit Input Test

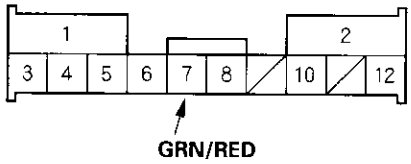
1. Before testing, troubleshoot the multiplex control system (see page 22-175).
2. Remove the dashboard lower cover.
3. Disconnect the under-dash fuse/relay box connectors.

   NOTE: All connectors are wire side of female terminals.

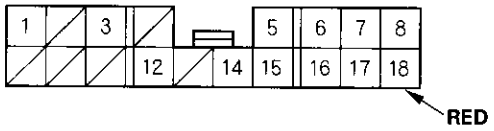
UNDER-DASH FUSE/RELAY BOX CONNECTOR K (17P)



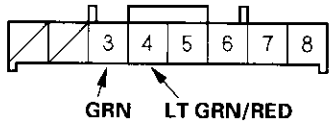
UNDER-DASH FUSE/RELAY BOX CONNECTOR O (12P)



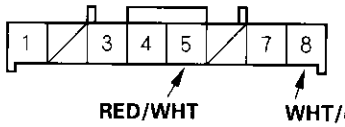
UNDER-DASH FUSE/RELAY BOX CONNECTOR P (18P)



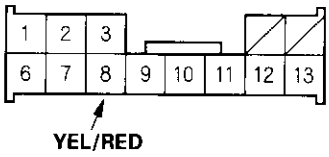
UNDER-DASH FUSE/RELAY BOX CONNECTOR Q (8P)



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 this input test at the connector.

   - If the test indicates a problem, find and correct the cause, then recheck the system.
   - If the input test proves OK, go to step 6.

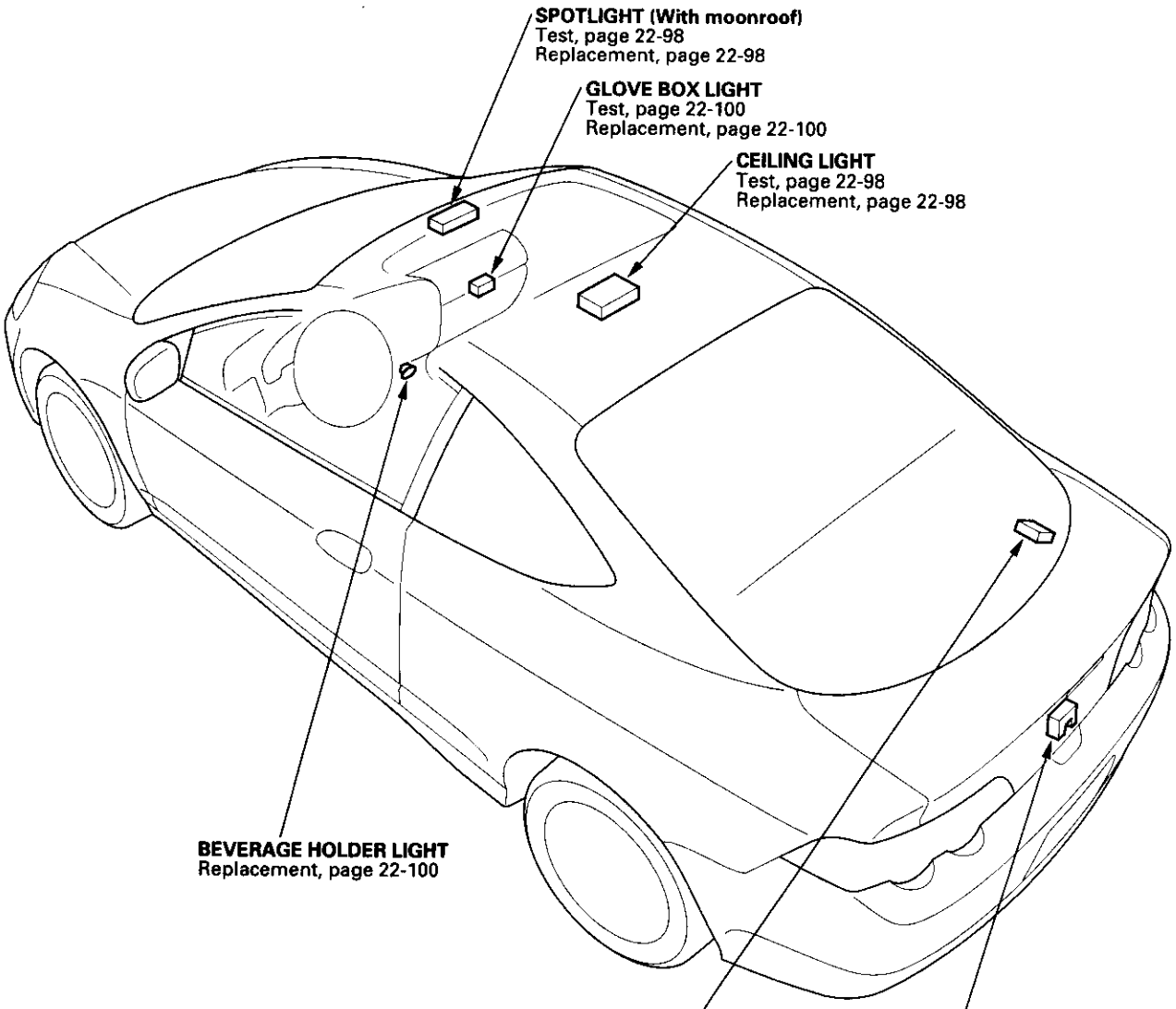
Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
K2	BLU/ORN	Under all conditions	Check for continuity between the K2 terminal and the keyless receiver unit 5P connector No. 2 terminal: There should be continuity.	• An open in the wire

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

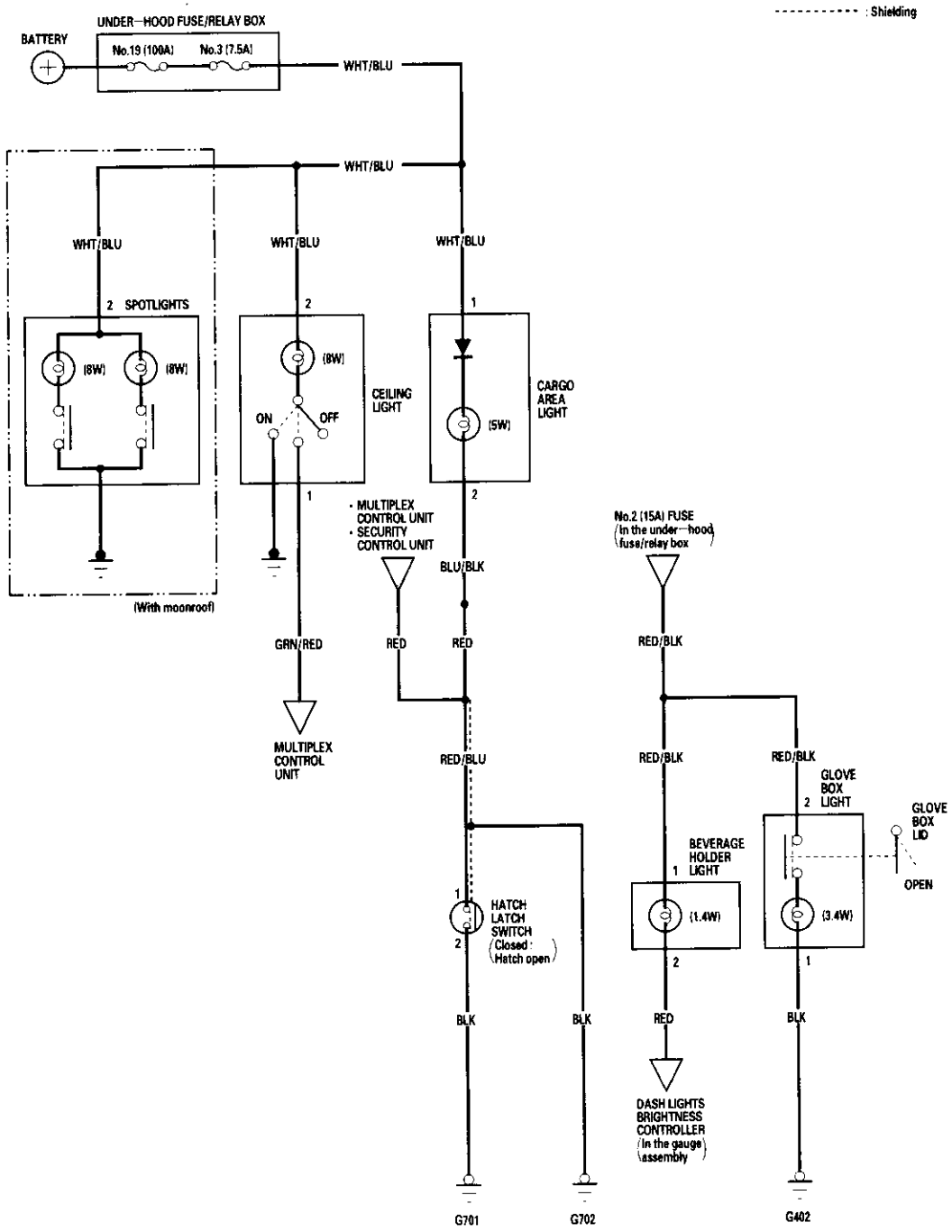
   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If all the input tests prove OK, the multiplex control unit must be faulty, replace the under-dash fuse/relay box assembly.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
O7	GRN/RED	Ceiling light switch in middle position	Attach to ground: Ceiling light 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
P18	RED	Hatch open	Check for voltage to ground: There should be 1 V or less. NOTE: Remove the No. 3 (7.5A) fuse in the under-hood fuse/relay box	• Poor ground (G701) • Faulty hatch latch switch • An open in the wire
		Hatch closed	Check for voltage to ground: There should be 5 V or more. NOTE: Remove the No. 3 (7.5A) fuse in the under-hood fuse/relay box	• 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
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 • An open in the wire
Y8	YEL/RED	Driver's door locked	Check for voltage to ground: There should be 1 V or less.	• Poor ground (G401) • Faulty driver's door lock knob switch • An open in the wire
		Driver's door 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



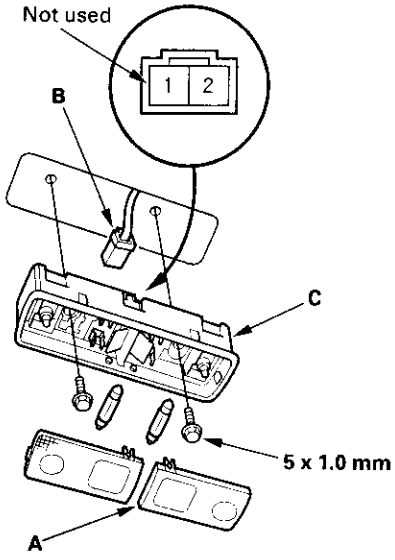
Circuit Diagram



Spotlights Test/Replacement - With Moonroof

1. Turn the light switch OFF.
2. Carefully pry off the lenses (A) with a small screwdriver.

Spotlight: 8 W x 2



3. Remove the two mounting screws.
4. Disconnect the 2P connector (B) from the housing (C).
5. Check for continuity between the terminals in each switch position according to the table.

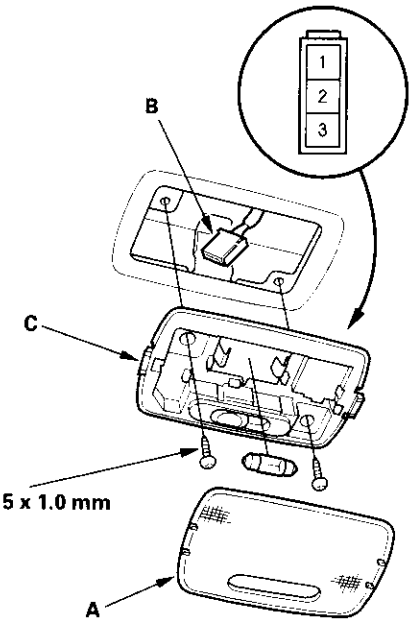
Position \ Terminal		2		1or Body ground
LEFT	ON	○	⊖	○
	OFF			
RIGHT	ON	○	⊖	○
	OFF			

6. If the continuity check is not as specified, check the bulb(s). If the bulb is OK, replace the housing.

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.

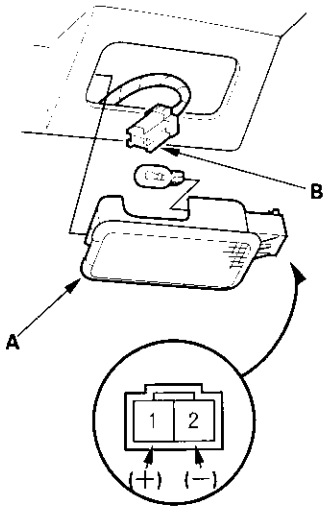
Position \ Terminal	1		2		3
OFF					
MIDDLE	○	⊖	○		
ON			○	⊖	○

6. If the continuity check is not as specified, check the bulb(s). If the bulb is OK, replace the housing.

Cargo Area Light Test/Replacement

1. Open the hatch.
2. Carefully pry out the cargo area light (A).

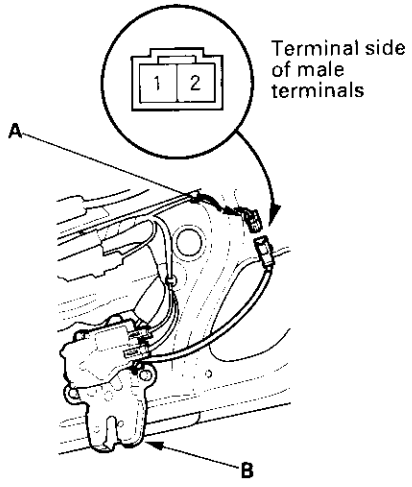
   Cargo Area light: 5 W



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 trim panel (see page 20-53).
3. Disconnect the 2P connector (A) from the hatch latch (B).

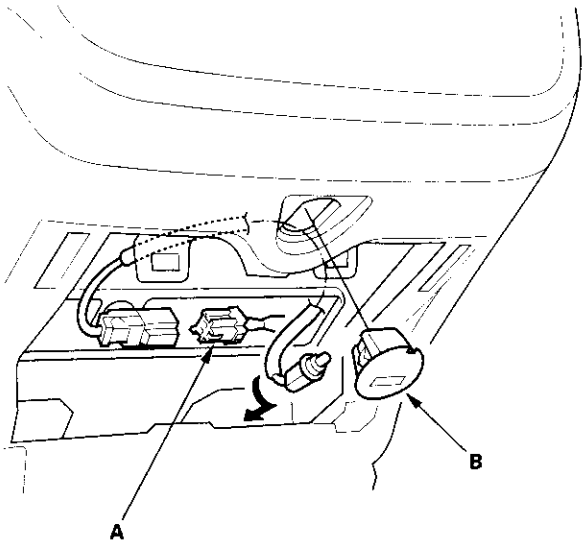


4. Check for continuity between the No. 1 and No. 2 terminals.
   - There should be continuity with the hatch open.
   - There should be no continuity with the hatch closed.
5. If the continuity check is not as specified, replace the switch.

Beverage Holder Light Replacement

1. Remove the dashboard center lower cover (see page 20-63).
2. Remove the audio unit (see page 22-105).
3. Disconnect the 2P connector (A) from the beverage holder light, then remove the beverage holder light (B) from the dashboard.

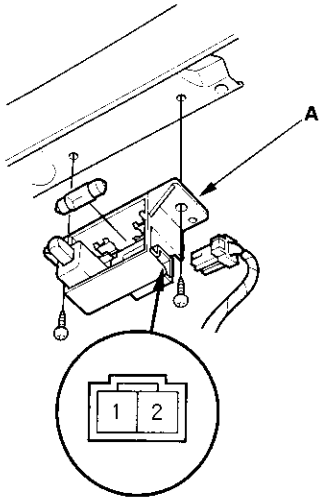
Beverage Holder Light: 1.4 W



Glove Box Light Test/Replacement

1. Open the glove box.
2. Disconnect the 2P connector from the glove box light (A).

Glove Box Light: 3.4 W

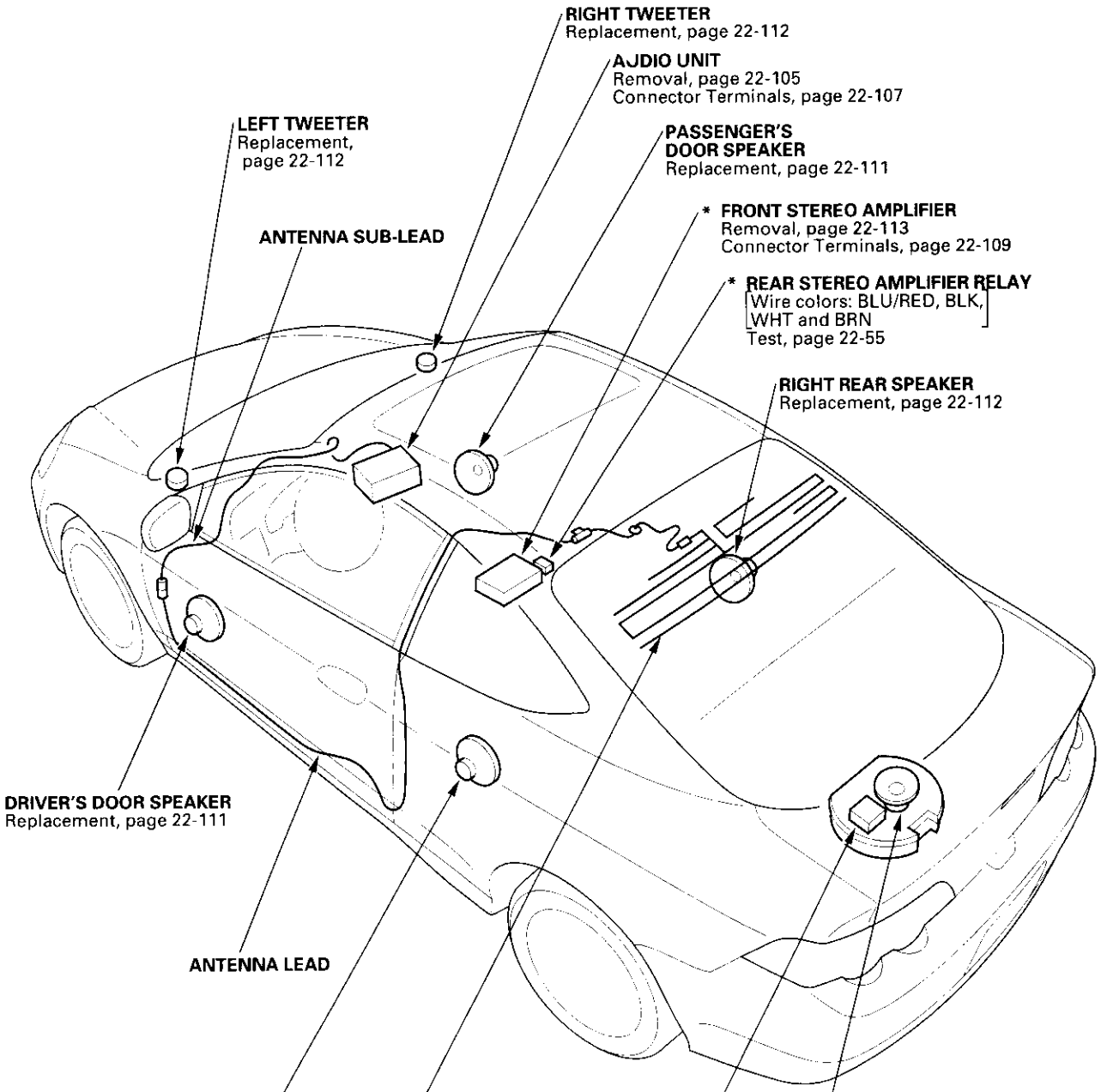


3. Check for continuity between the No. 1 and No. 2 terminals.
   - There should be continuity with the switch released.
   - There should be no continuity with the switch pushed.
4. If the continuity check is not as specified, replace the glove box light.

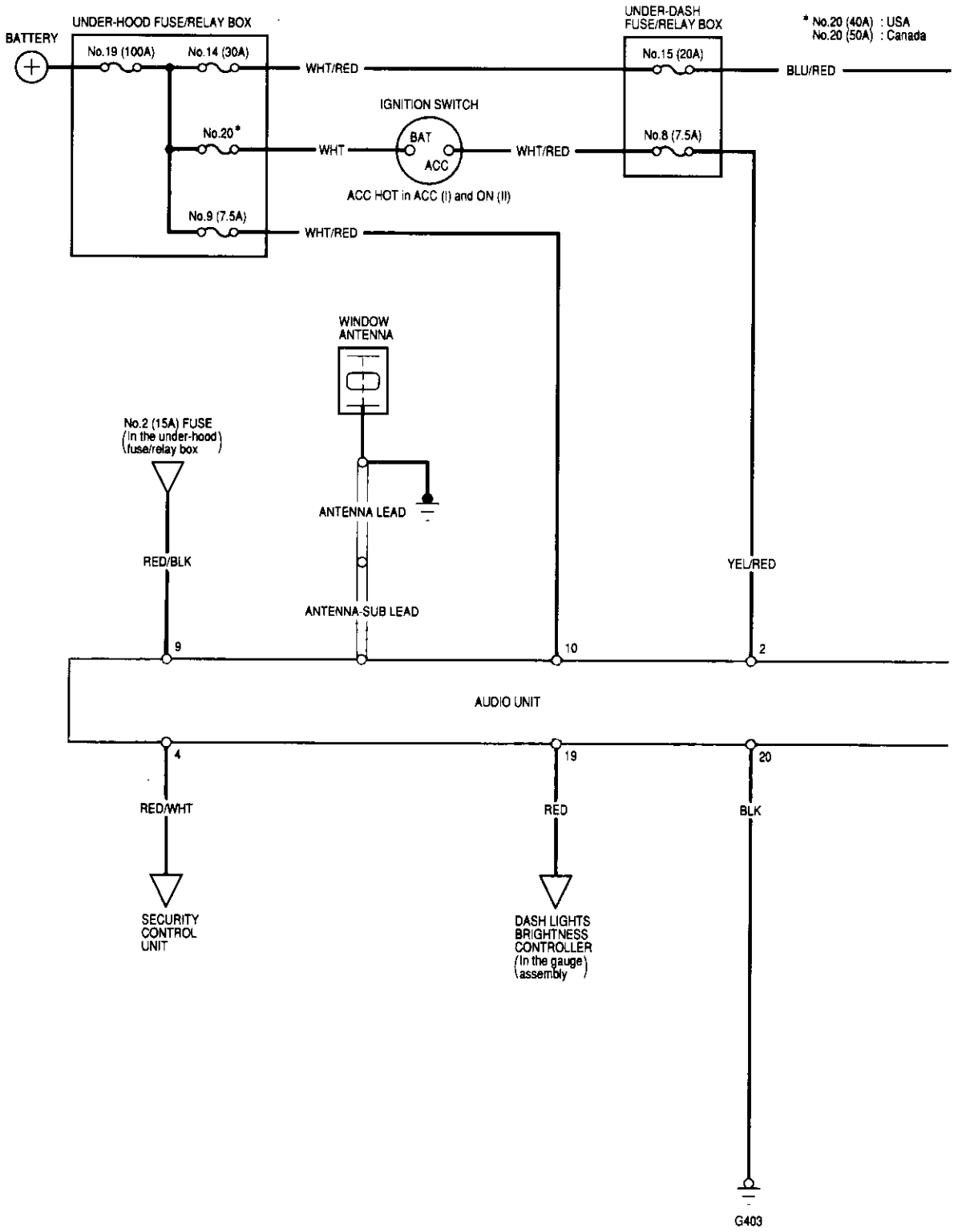
Stereo Sound System

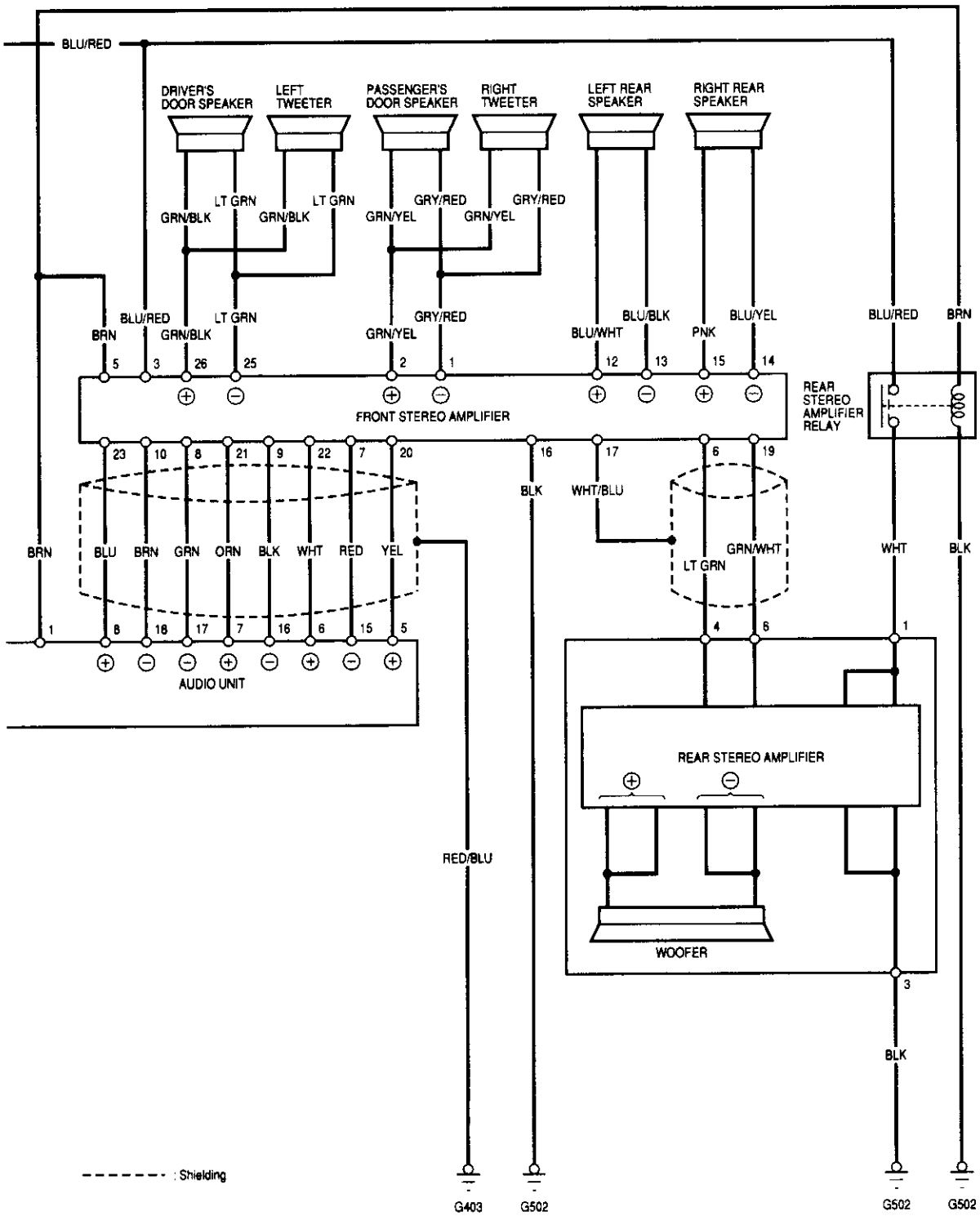
Component Location Index

*: With BOSE sound system

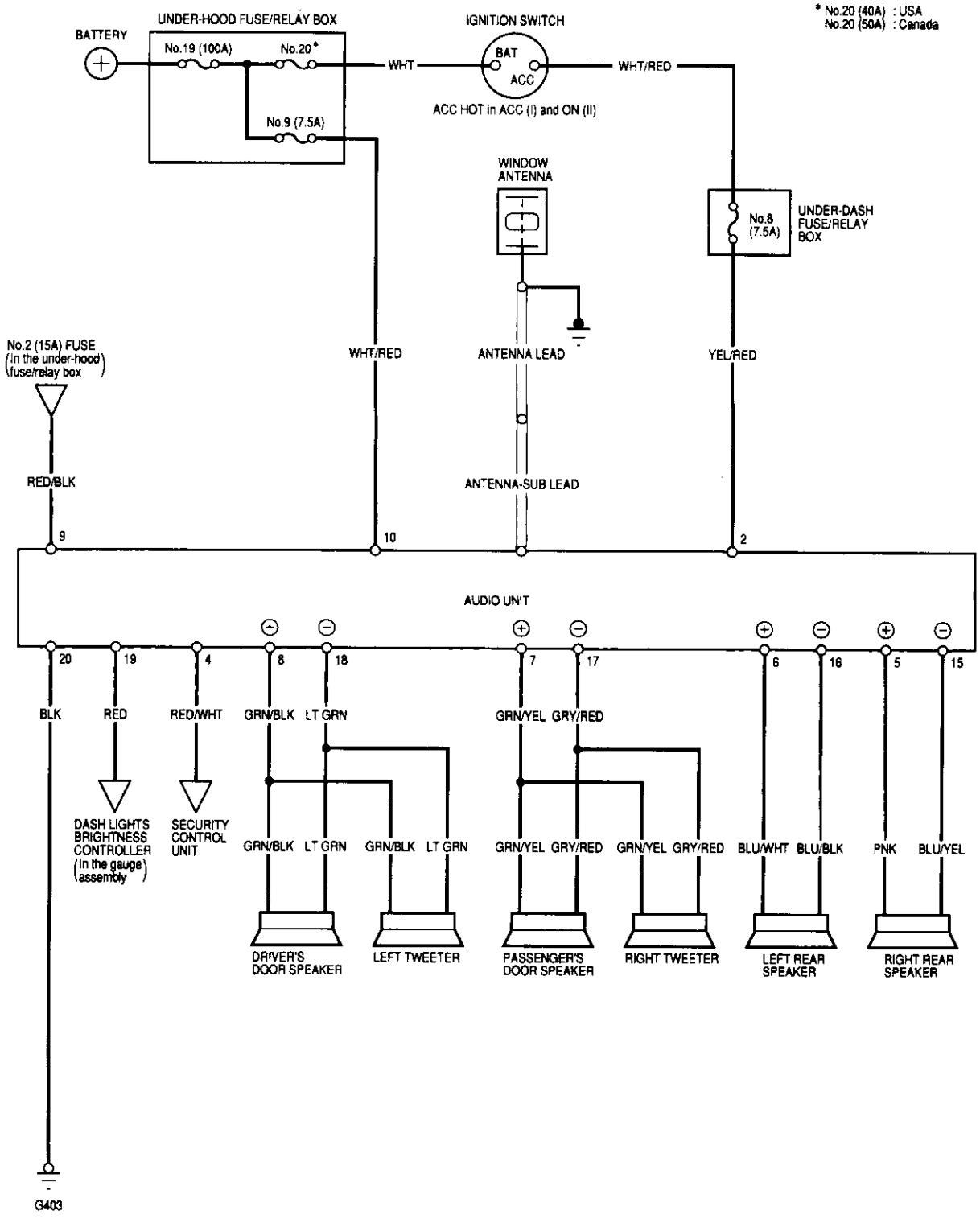


Circuit Diagram - With BOSE Sound System




BLU/RED
DRIVER'S DOOR SPEAKER
LEFT TWEETER
PASSENGER'S DOOR SPEAKER
RIGHT TWEETER
LEFT REAR SPEAKER
RIGHT REAR SPEAKER
GRN/BLK
LT GRN
GRN/BLK
LT GRN
GRN/YEL
GRY/RED
GRN/YEL
GRY/RED
BRN
BLU/RED
GRN/BLK
LT GRN
GRN/YEL
GRY/RED
BLU/WHT
BLU/BLK
PNK
BLU/YEL
5
3
26
25
2
1
12
13
15
14
FRONT STEREO AMPLIFIER
REAR STEREO AMPLIFIER RELAY
BLU/RED
BRN
23
10
8
21
9
22
7
20
16
17
6
19
BRN
BLU
BRN
GRN
ORN
BLK
WHT
RED
YEL
BLK
WHT/BLU
GRN/WHT
LT GRN
WHT
BLK
1
8
18
17
7
16
6
15
5
4
6
1
AUDIO UNIT
REAR STEREO AMPLIFIER
WOOFER
3
BLK
RED/BLU
: Shielding
G403
G502
G502
G502

Circuit Diagram - Without BOSE Sound System



Audio Unit Removal/Installation

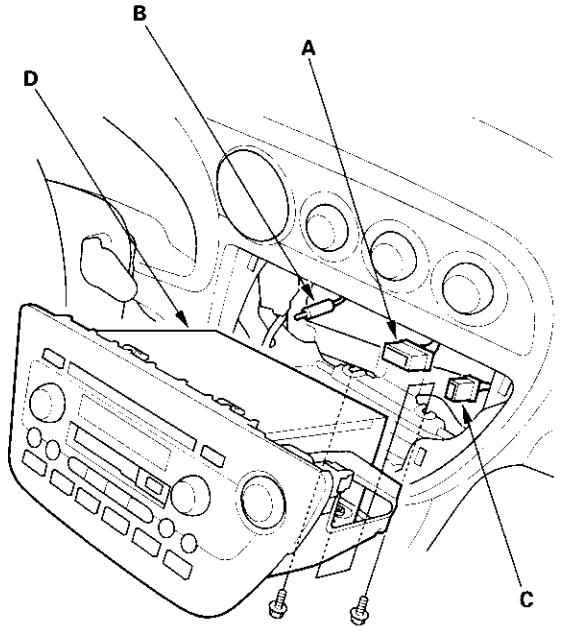
With BOSE Sound System

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.

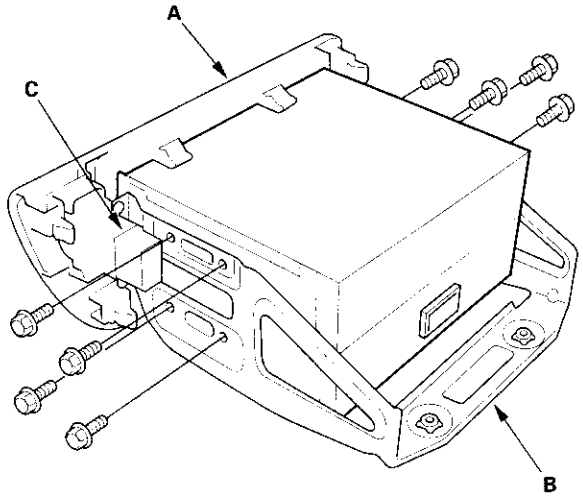
2. Remove the dashboard center lower cover (see page 20-63).

3. Remove the two mounting bolts, then remove the center panel.



4. Disconnect the audio unit connector (A), antenna lead (B) and hazard warning switch connector (C), then remove the audio unit (D).

5. Remove the four mounting bolts and the audio unit assembly (A) from the audio bracket (B).



6. Remove the hazard warning switch (C) from the audio unit assembly.

7. Install the hazard warning switch to the audio unit, then install the audio unit in the reverse order of removal, and note these items:

   - Install the hazard warning switch in the audio unit.
   - Make sure the audio unit and hazard warning light switch 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 Removal/Installation (cont'd)

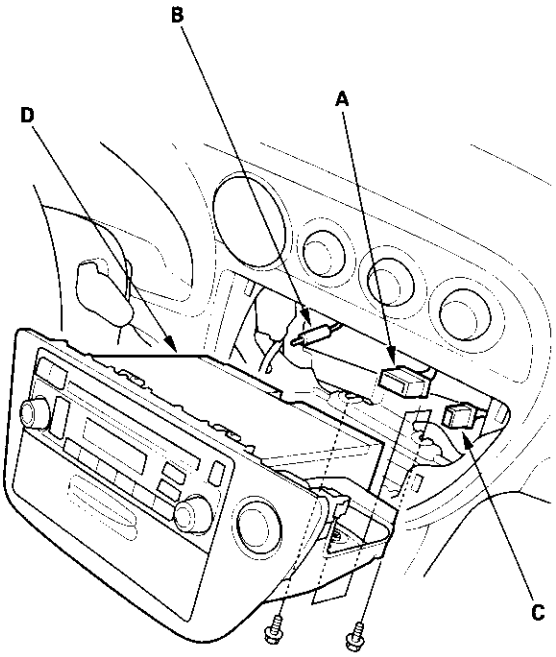
Without BOSE Sound System

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.

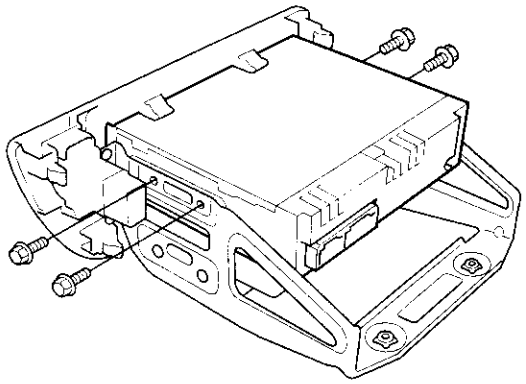
2. Remove the dashboard center lower cover (see page 20-63).

3. Remove the two mounting bolts, then remove the center panel.



4. Disconnect the audio unit connector (A), antenna lead (B) and hazard warning switch connector (C), then remove the audio unit (D).

5. Remove the four mounting bolts and the audio unit from the audio bracket.



6. Install the audio unit in the reverse order of removal, and note these items:

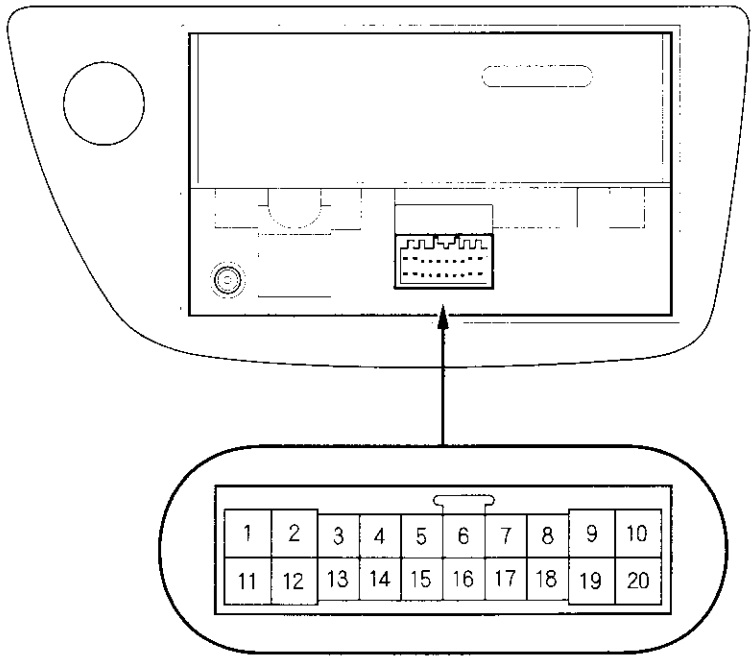
   - Make sure the audio unit and hazard warning light switch connectors are plugged in properly, and the antenna lead is connected properly.
   - Enter the anti-theft code for the radio, then enter the customer's radio station presets.

Audio Unit Connector Replacement

With BOSE Sound System:

When replacing an audio unit connector, match the wires to the cavities as listed in the following table.

Cavity	Wire	Connects to
1	BRN	Radio switched power (Turns ON front stereo amplifier and rear stereo amplifier relay)
2	YEL/RED	ACC (Main stereo power supply)
3	—	Not used
4	RED/WHT	Security input
5	YEL	Front stereo amplifier-right rear (+)
6	WHT	Front stereo amplifier-left rear (+)
7	ORN	Front stereo amplifier-right front (+)
8	BLU	Front stereo amplifier-left front (+)
9	RED/BLK	Lights-on signal
10	WHT/RED	Constant power
11	—	Not used
12	—	Not used
13	—	Not used
14	—	Not used
15	RED	Front stereo amplifier-right rear (−)
16	BLK	Front stereo amplifier-left rear (−)
17	GRN	Front stereo amplifier-right front (−)
18	BRN	Front stereo amplifier-left front (−)
19	RED	Dash lights brightness controller (In the gauge assembly)
20	BLK	Ground (G403)

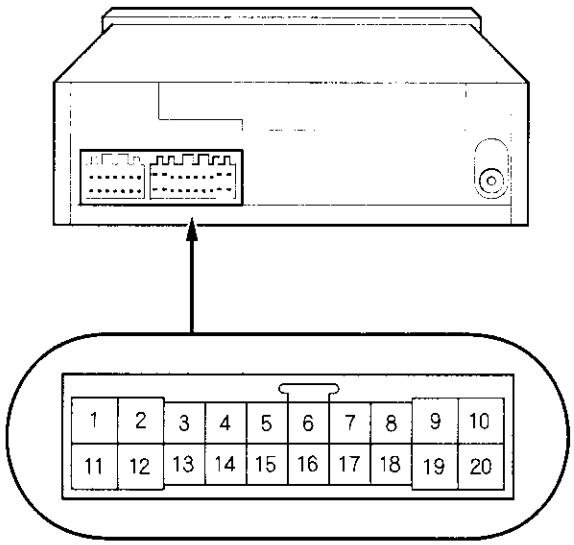


Audio Unit Connector Replacement (cont'd)

Without BOSE Sound System:

When replacing an audio unit connector, match the wires to the cavities as listed in the following table.

Cavity	Wire	Connects to
1	—	Not used
2	YEL/RED	ACC (Main stereo power supply)
3	—	Not used
4	RED/WHT	Security input
5	PNK	Right rear speaker (+)
6	BLU/WHT	Left rear speaker (+)
7	GRN/YEL	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	Passenger's door speaker (−), Right tweeter (−)
18	LT GRN	Driver's door speaker (−), Left tweeter (−)
19	RED	Dash lights brightness controller (In the gauge assembly)
20	BLK	Ground (G403)

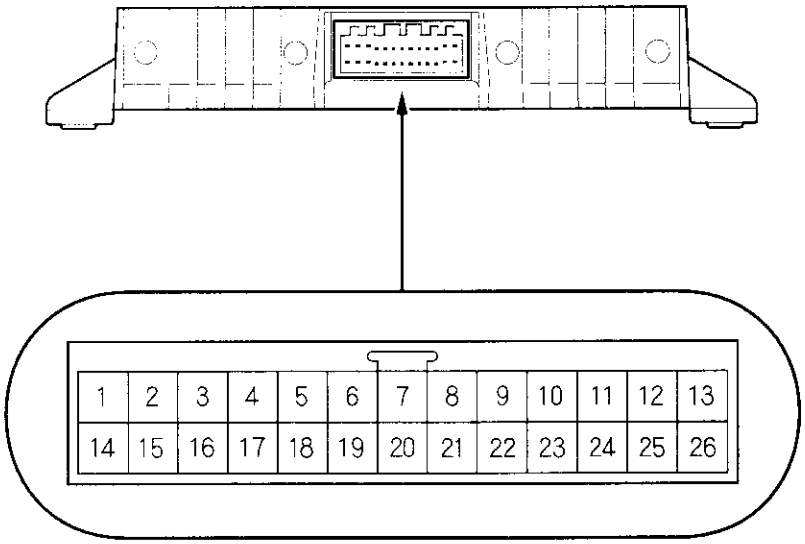


Front Stereo Amplifier Connector Replacement

With BOSE Sound System:

When replacing a stereo amplifier connector, match the wires to the cavities as listed in the following table.

Cavity	Wire	Connects to
1	GRY/RED	Passenger's door speaker (−), Right tweeter (−)
2	GRN/YEL	Passenger's door speaker (+), Right tweeter (+)
3	BLU/RED	Constant power
4	———	Not used
5	BRN	Radio switch
6	LT GRN	Rear stereo amplifier-bass signal (+)
7	RED	Audio unit-right rear (−)
8	GRN	Audio unit-right front (−)
9	BLK	Audio unit-left rear (−)
10	BRN	Audio unit-left front (−)
11	———	Not used
12	BLU/WHT	Left rear speaker (+)
13	BLU/BLK	Left rear speaker (−)
14	BLU/YEL	Right rear speaker (−)
15	PNK	Right rear speaker (+)
16	BLK	Ground (G502)
17	WHT/BLU	Shielding
18	———	Not used
19	GRN/WHT	Rear stereo amplifier-bass signal (−)
20	YEL	Audio unit-right rear (+)
21	ORN	Audio unit-right front (+)
22	WHT	Audio unit-left rear (+)
23	BLU	Audio unit-left front (+)
24	———	Not used
25	LT GRN	Left tweeter (−)
26	GRN/BLK	Driver's door speaker (+), Left tweeter (+)

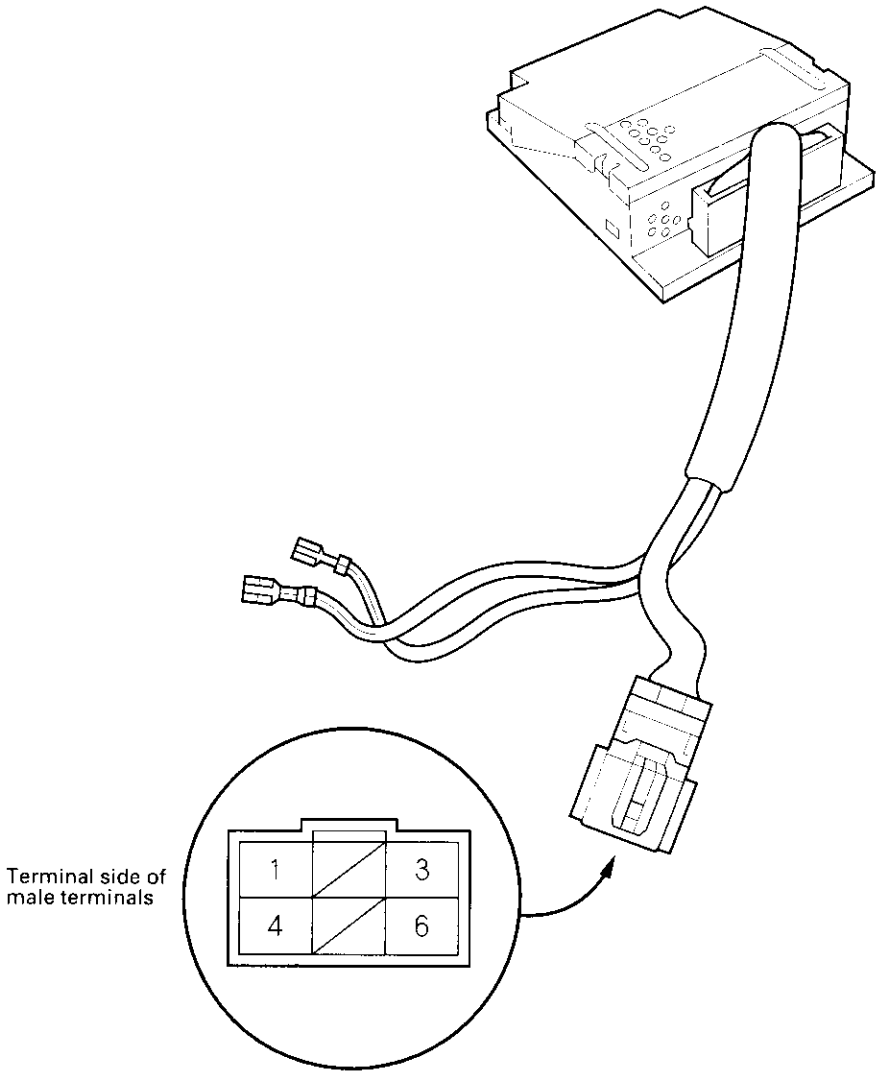


Rear Stereo Amplifier Connector Replacement

With BOSE Sound System:

When replacing a stereo amplifier connector, match the wires to the cavities as listed in the following table.

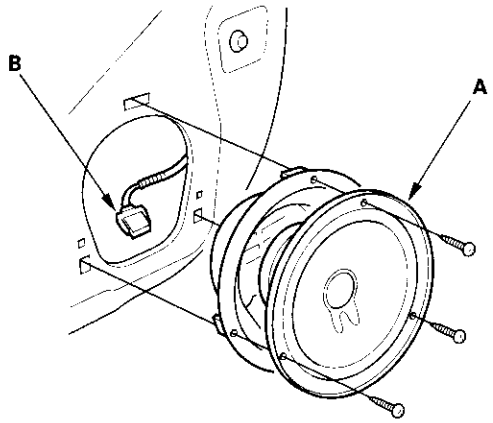
Cavity	Wire	Connects to
1	WHT	Rear stereo amplifier relay (power when radio is ON.)
2	———	Not used
3	BLK	Ground (G502)
4	LT GRN	Front stereo amplifier-bass (+)
5	———	Not used
6	GRN/WHT	Front stereo amplifier-bass (−)



Speaker Replacement

Front Speaker-With BOSE Sound System:

1. Remove the door panel (see page 20-4).
2. Remove the three mounting screws from the front speaker (A).



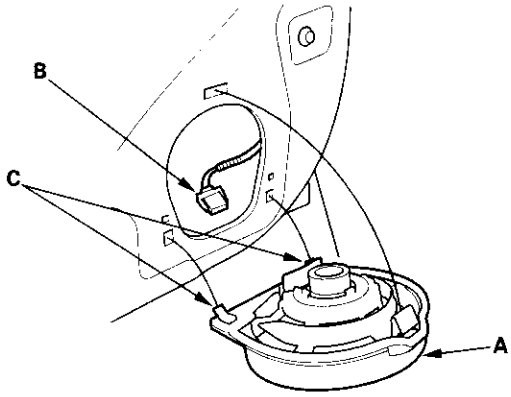
3. Disconnect the 2P connector (B), and remove the speaker.

Front Speaker-Without BOSE Sound System:

1. Remove the door panel (see page 20-4).

NOTICE
If you pull the speaker out too far from the door, you will damage the lower clips(C).

2. Pull the top of the speaker (A) straight out, just enough to release the upper clip. Then lift the speaker straight up to release the lower clips(C).



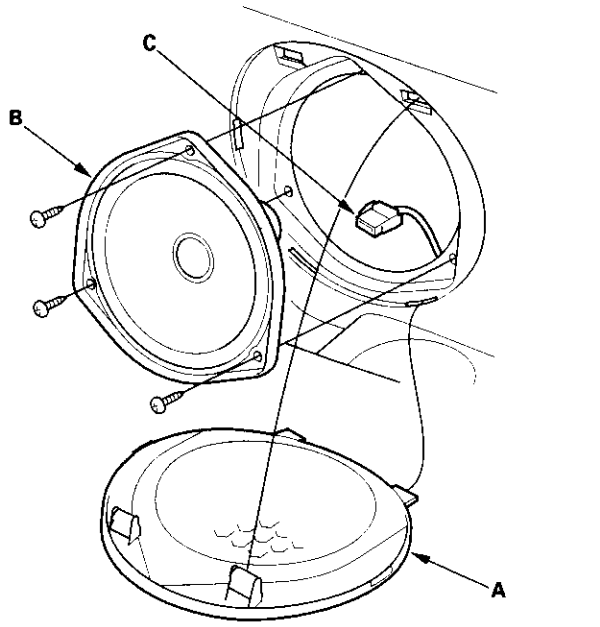
3. Disconnect the 2P connector (B), and remove the speaker.

(cont'd)

Speaker Replacement (cont'd)

Rear Speaker:

1. Remove the speaker grille (A).
2. Remove the three mounting screws from the rear speaker (B).

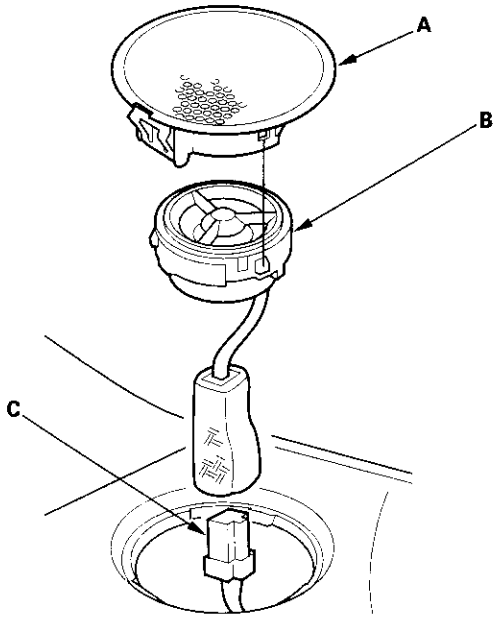


3. Disconnect the 2P connector (C), and remove the speaker.

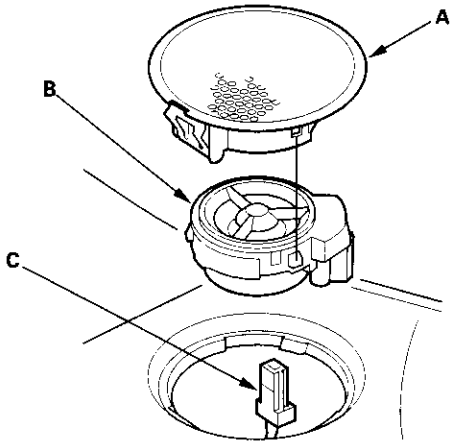
Tweeter:

1. Remove the tweeter speaker grille (A) and tweeter (B) as an assembly.
2. Disconnect the 2P connector (C) from the tweeter.
3. Remove the tweeter speaker grille from the tweeter.

With BOSE Sound System:



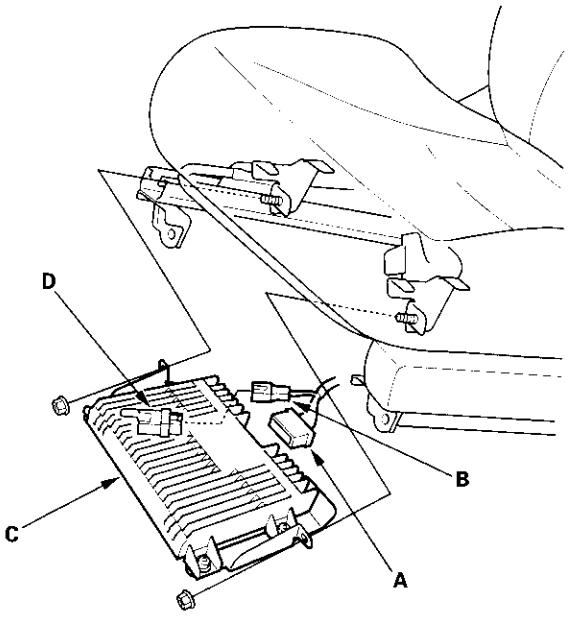
Without BOSE Sound System:



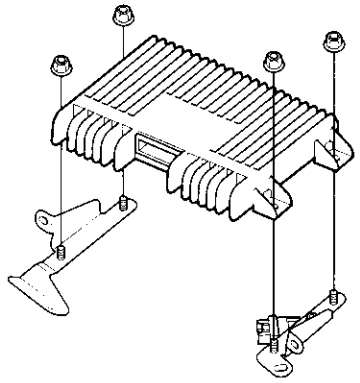
Front Stereo Amplifier Replacement

With BOSE Sound System:

1. Remove the front passenger's seat (see page 20-72).
2. Remove the two mounting nuts from the amplifier brackets, then remove the front stereo amplifier from the front passenger's seat.
3. Disconnect the front stereo amplifier 26P connector (A) and rear stereo amplifier relay 4P connector (B) from the front stereo amplifier (C) and rear stereo amplifier relay (D).



4. Remove the four mounting nuts from the amplifier brackets.

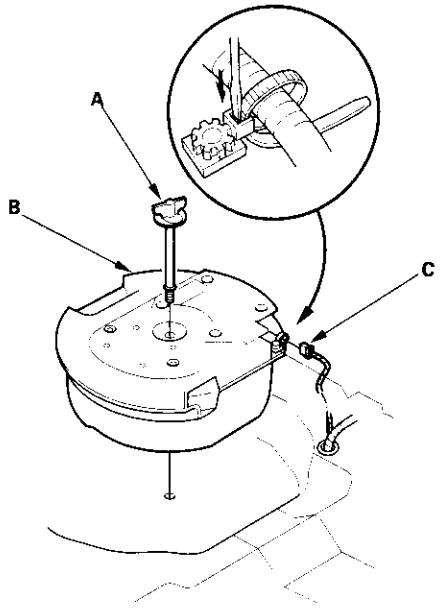


5. Install the front stereo amplifier in the reverse order of removal.

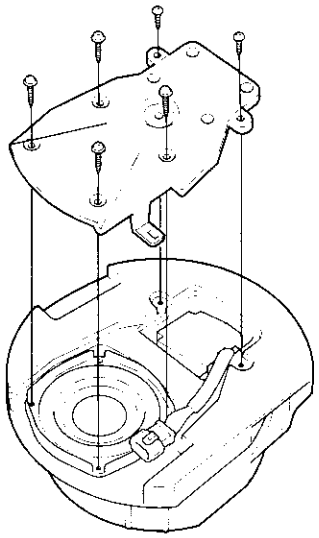
Rear Stereo Amplifier and Woofer Replacement

With BOSE Sound System:

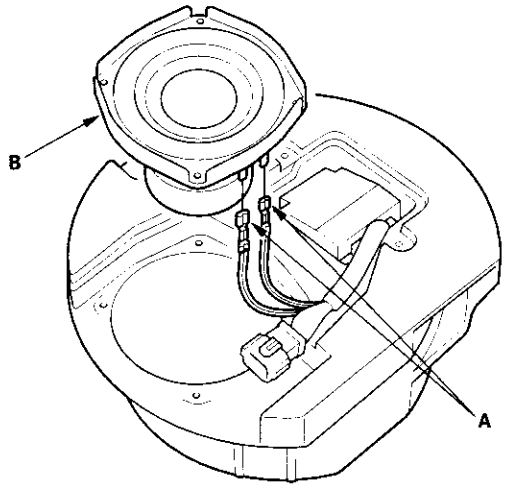
1. Open the hatch.
2. Remove the cargo area floor (see page 20-52).
3. Remove the anchor bolt (A) from the rear stereo amplifier and woofer box (B).



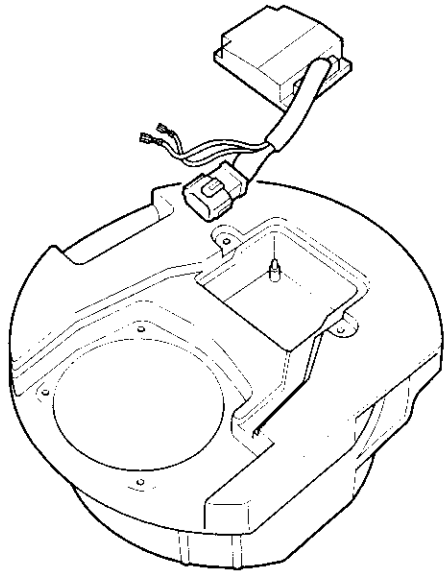
4. Disconnect the 6P connector (C) from the rear stereo amplifier.
5. Remove the six mounting screws from the cover, then remove the cover.



6. Disconnect the connectors (A) from the woofer (B).



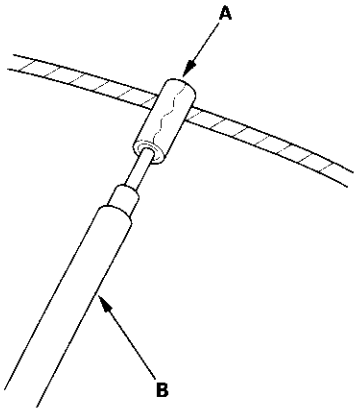
7. Remove the rear amplifier.



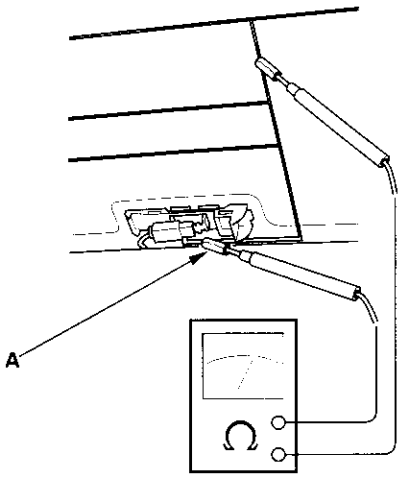
8. Install the rear stereo amplifier and woofer in the reverse order of removal.

Window Antenna Test

1. Wrap aluminum foil (A) around the tip of the tester probe (B) as shown.



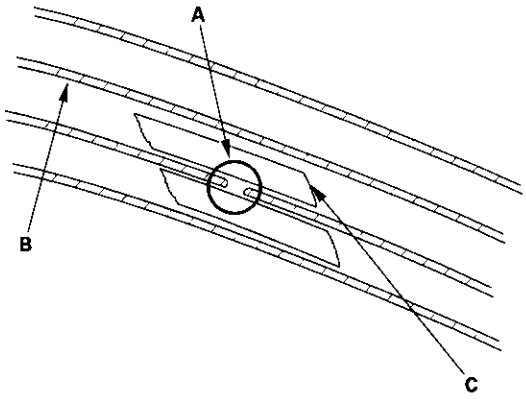
2. Touch one tester probe to the window antenna terminal near (A), and move the other tester probe along the antenna wires to check that continuity exists.



Window Antenna Repair

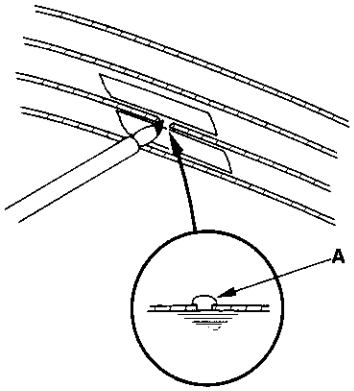
NOTE: To make an effective repair, the broken section must be no longer than 1 inch.

1. Lightly rub the area around the broken section (A) with fine steel wool, then clean it with alcohol.



2. Carefully mask above and below the broken portion of the window antenna wire (B) with cellophane tape (C).

3. Mix the silver conductive paint thoroughly. Using a small brush, apply a heavy coat of the paint (A) extending about 1/8" on both sides of the break. Allow 30 minutes to dry.



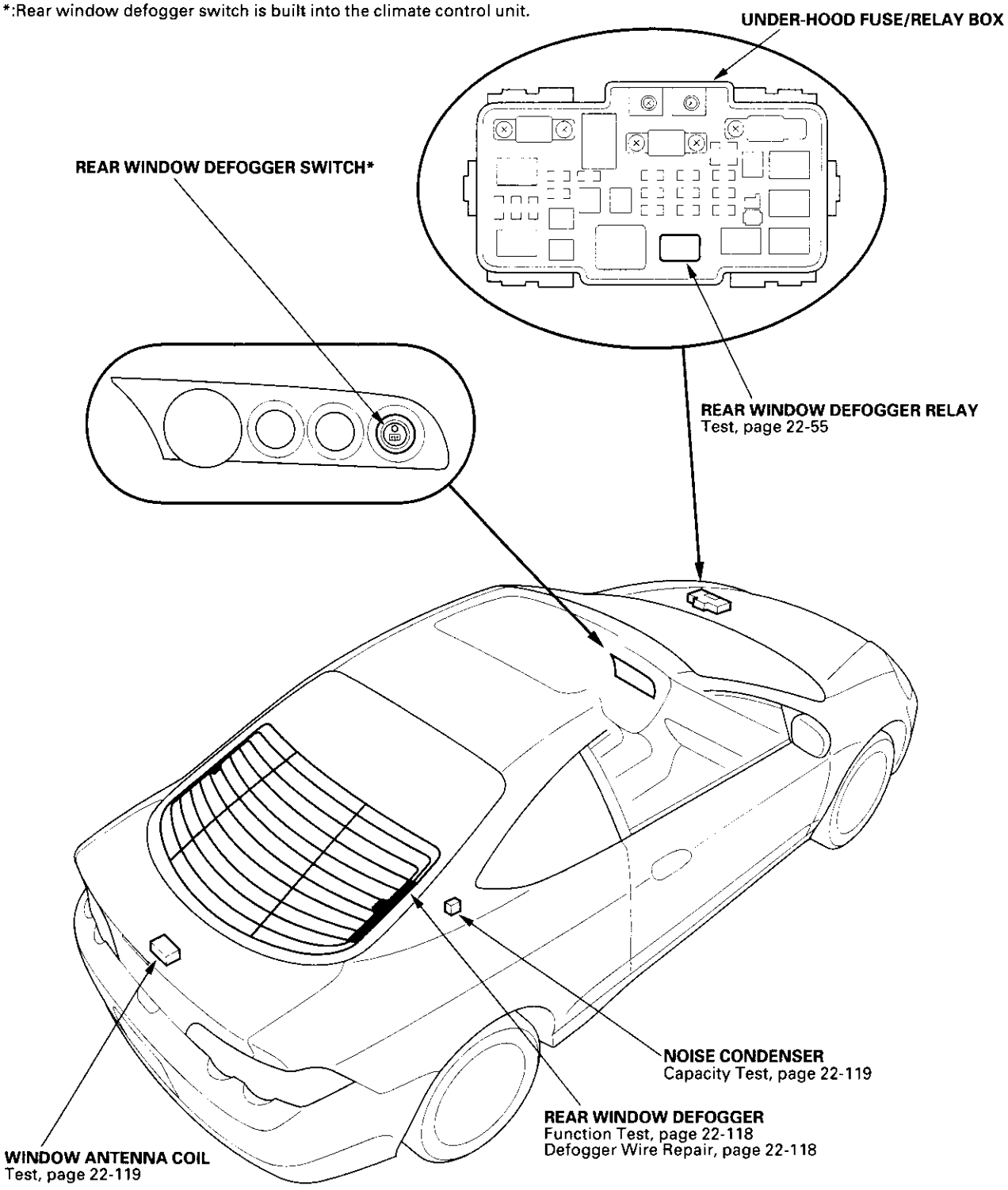
4. Check for continuity in the repaired wire.

5. Apply a second coat of paint in the same way. Let it dry 3 hours before removing the tape.

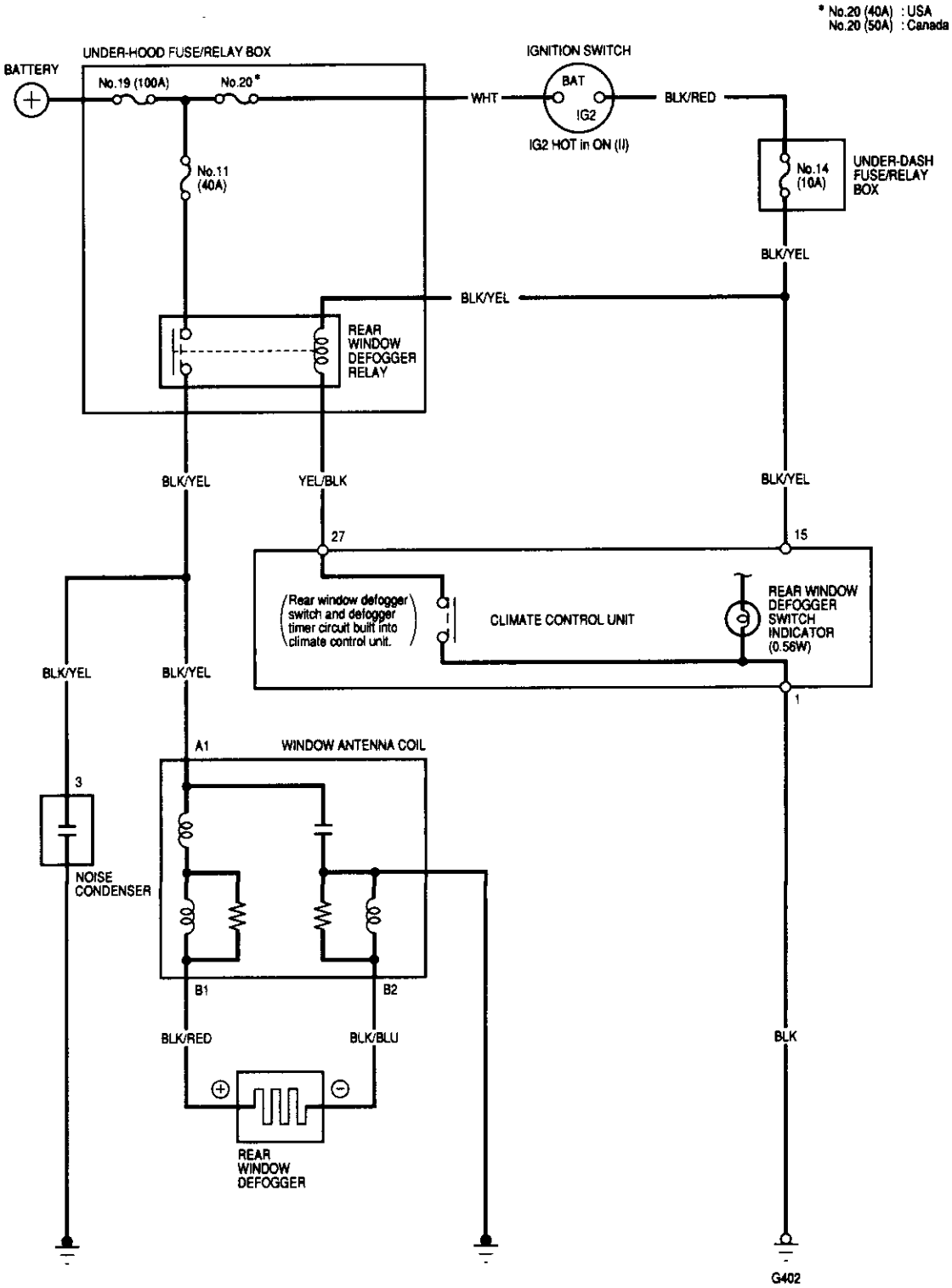
Rear Window Defogger

Component Location Index

*:Rear window defogger switch is built into the climate control unit.



Circuit Diagram



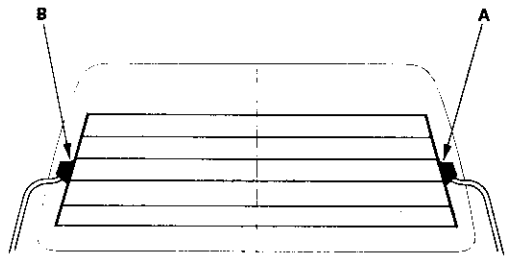
Rear Window Defogger

Function Test

NOTE:
- Be careful not to scratch or damage the defogger wires with the tester probe.
- Before testing, check the No. 11 (40A) fuse in the under-hood fuse/relay box and the No. 14 (10A) fuse in the under-dash fuse/relay box.

1. Check for voltage between the positive terminal (A) and body ground with the ignition switch and defogger switch ON.
   There should be battery voltage.

   - If there is no voltage, check for:
     - faulty defogger relay.
     - faulty window antenna coil.
     - an open in the BLK/RED, BLK/YEL, or YEL/BLK wire.
     - faulty climate control unit.
   - If there is battery voltage, go to step 2.



2. Check for voltage between the positive terminal (A) and the negative terminal (B).
   If there is no voltage, check for:

   - an open in the BLK/BLU wire.
   - faulty window antenna coil.
   - Poor body ground at the window antenna coil mounting bolt.

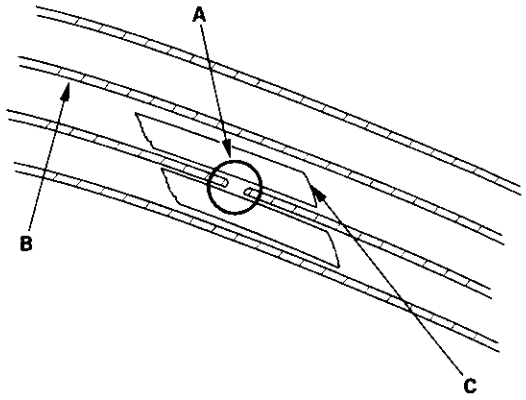
3. Touch the voltmeter positive probe to the halfway point of each defogger wire, and the negative probe to the negative terminal.
   There should be about 6 V with the ignition switch and the defogger switch ON.

   - 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

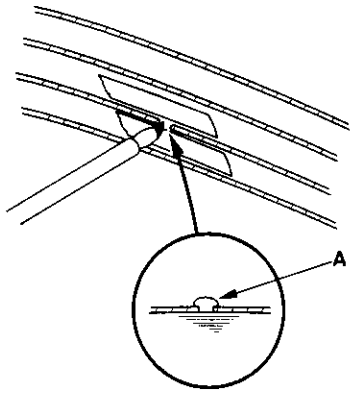
NOTE: To make an effective repair, the broken section must be no longer than 1 inch.

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 the paint extending about 1/8"on both sides of the break. Allow 30 minutes to dry.

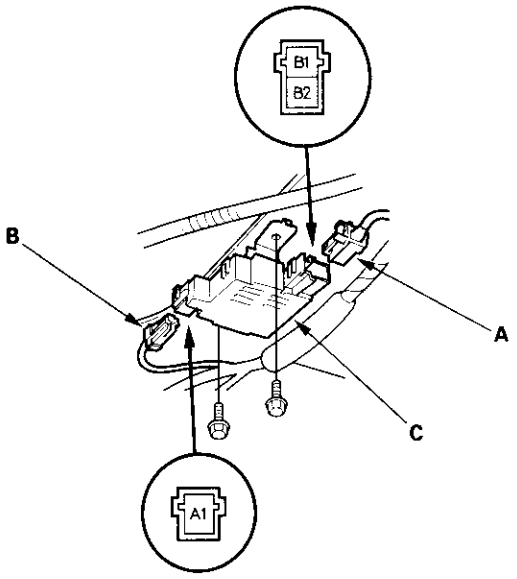


4. Check for continuity in the repaired wire.

5. Apply a second coat of paint in the same way. Let it dry 3 hours before removing the tape.

Window Antenna Coil Test

1. Open the hatch.
2. Remove the hatch trim panel (see page 20-53).
3. Disconnect the 1P connector (A) and 2P connector (B) from the window antenna coil (C).

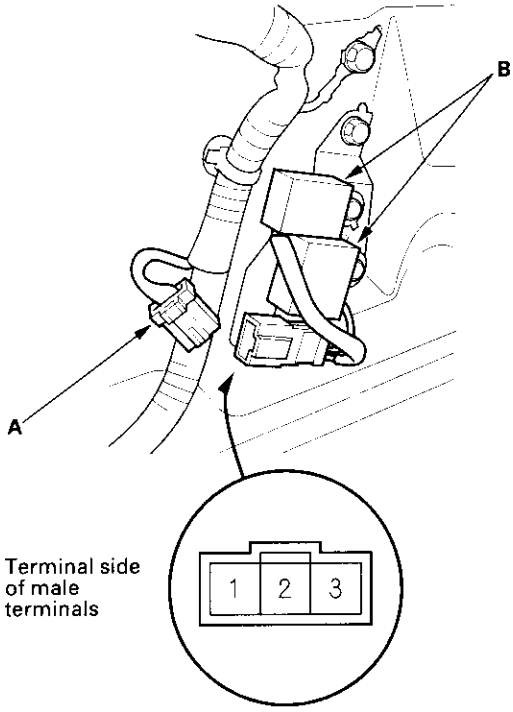


4. Check for continuity between the terminal B2 and body ground, and between terminal A1 and B1.
   There should be continuity.
   There is no continuity,loosen the two bolts, and replace the window antenna coil.

Noise Condenser Capacity Test

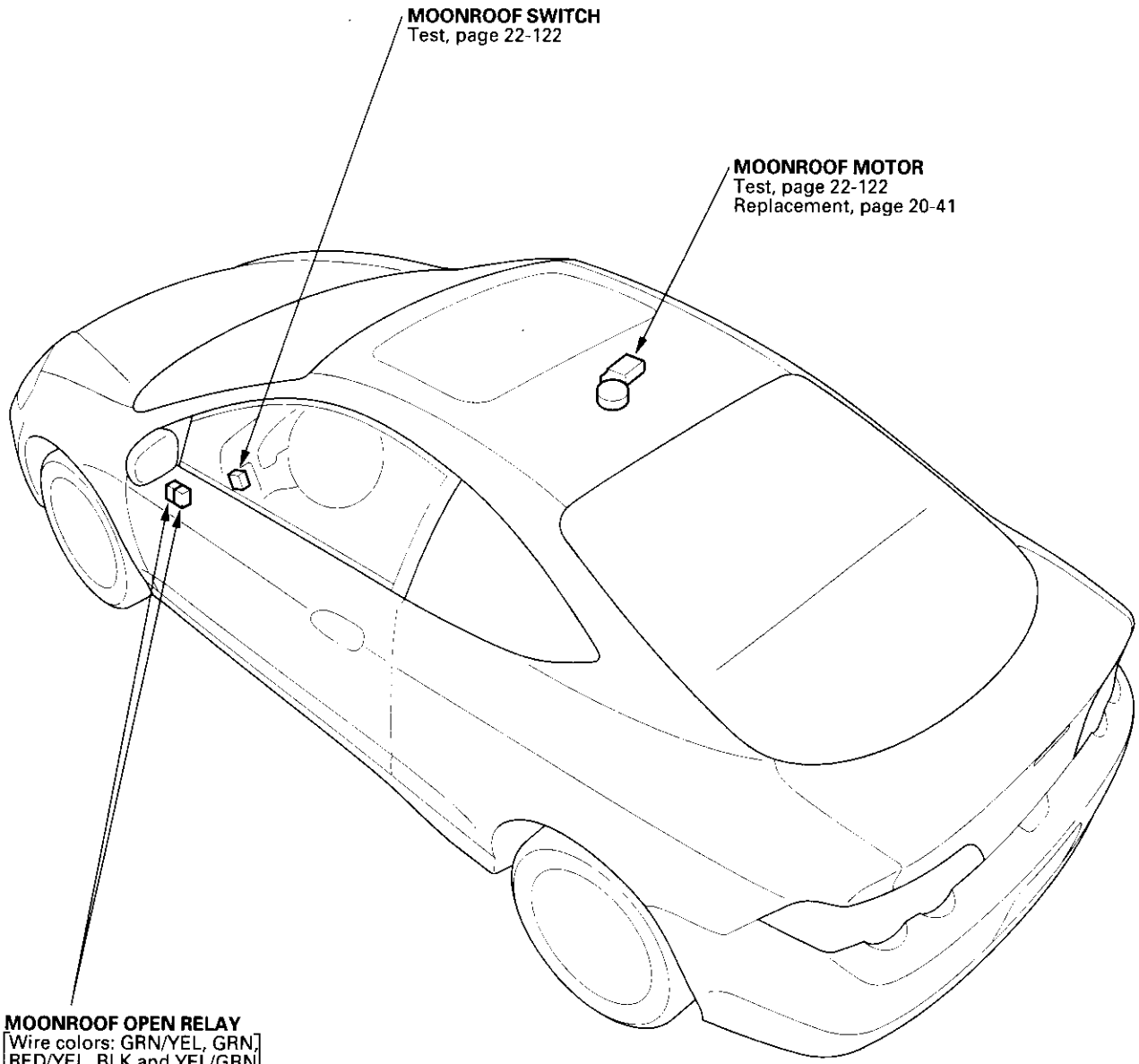
1. Remove the right side trim panel (see page 20-50).
2. Disconnect the 3P connector (A) from the noise condenser.
3. Use a commercially available condenser tester. Connect the condenser tester probes and measure the condenser capacity.

   No. 1 and No. 2 terminal capacity: 1.0 microfarads
   No. 3 terminal capacity: 2.2 microfarads

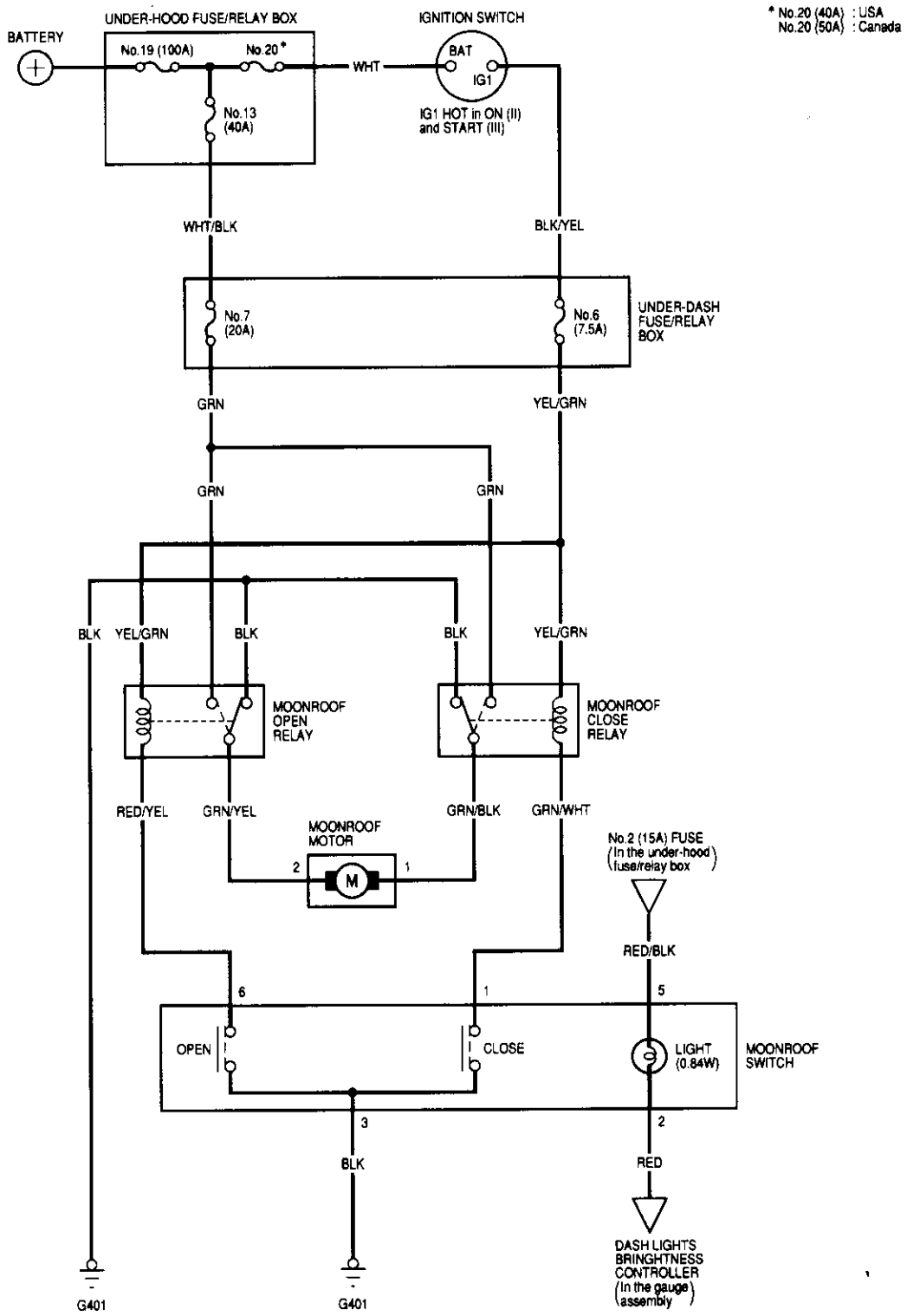


4. If capacity is not within the specification, replace the noise condenser.

Component Location Index

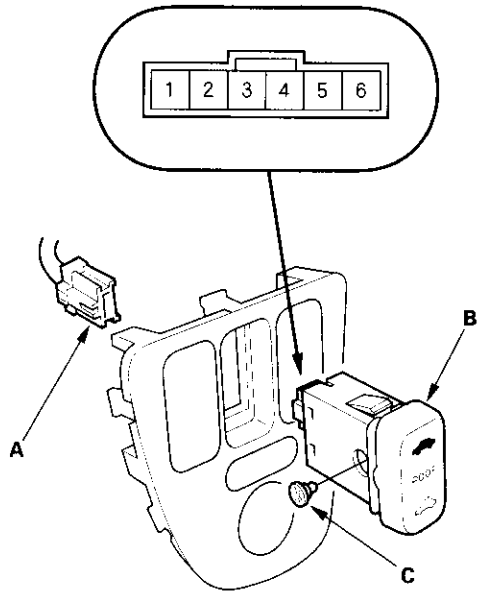


Circuit Diagram



Switch Test/Replacement

1. Carefully pry out the driver's switch panel (see page 20-62).
2. Disconnect the 6P connector (A) from the moonroof switch (B), then remove the switch.



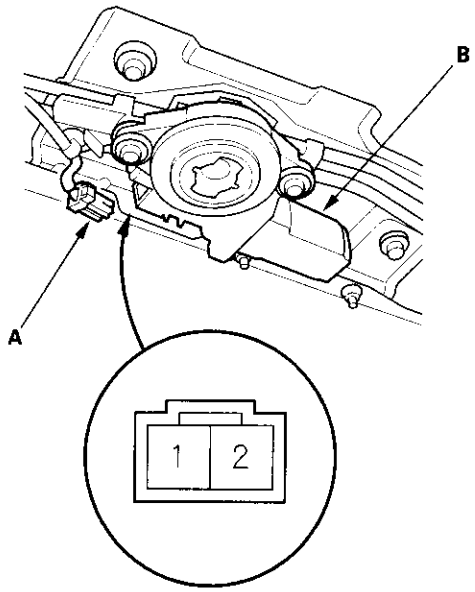
3. Check for continuity between the terminals in each switch position according to the table.

Terminal / Position	2		5	1	3	6
CLOSE	○	⊖	○	○		
OPEN					○	○

4. If the continuity is not as specified, replace the illumination bulbs (c) or the switch.

Motor Test

1. Remove the headliner (see page 20-54).
2. Disconnect the 2P connector (A) from the moonroof motor (B).



3. Check the motor by connecting power and ground according to the table.

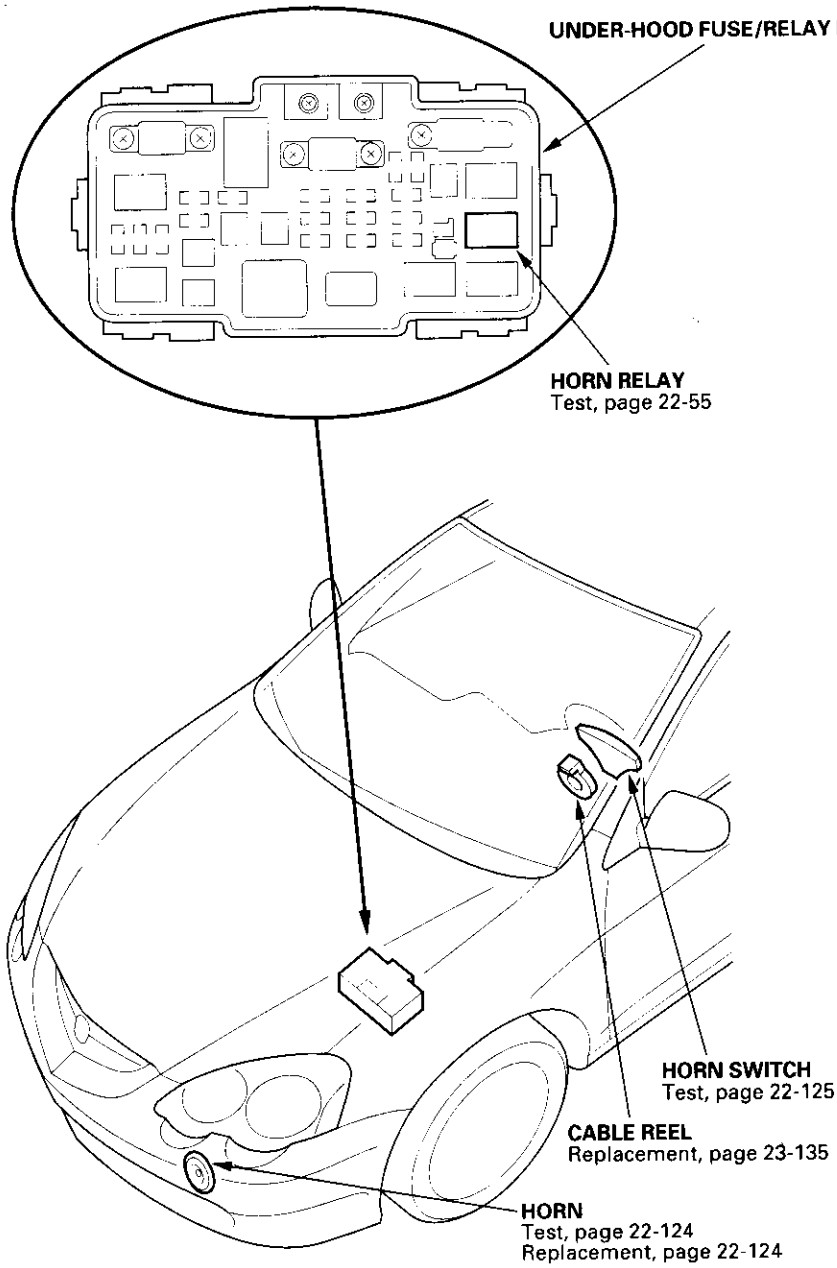
Terminal / Position	1	2
OPEN	⊖	⊕
CLOSE	⊕	⊖

4. If the motor does not run, replace it.

   NOTE: See closing force check (see page 20-47) for motor clutch test.

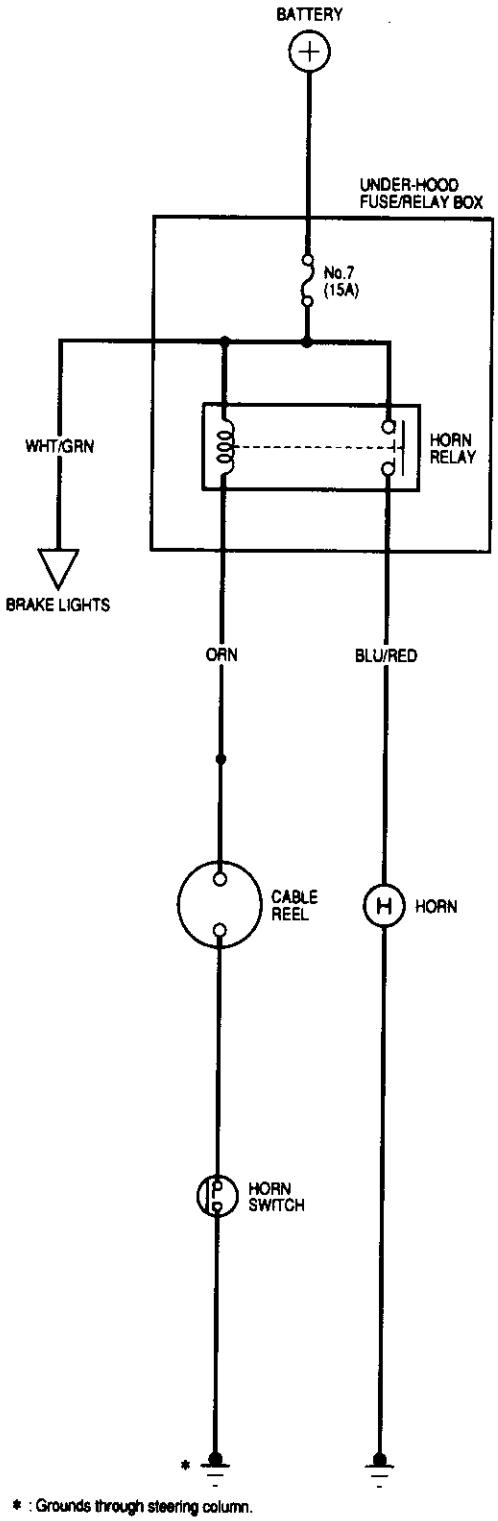
Horn

Component Location Index



Horn

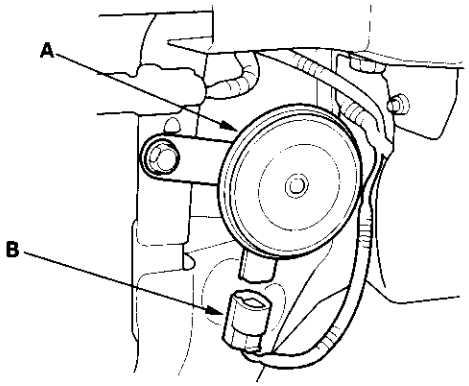
Circuit Diagram



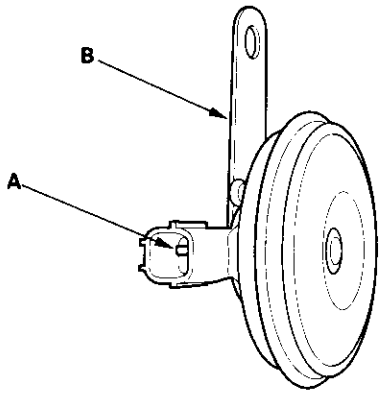
* : Grounds through steering column.

Horn Test/Replacement

1. Remove the front bumper (see page 20-87).
2. Disconnect the 1P connector (B), and remove the horn (A).



3. Test the horn by connecting battery power to the terminal (A) and grounding to the bracket (B). The horn should sound.

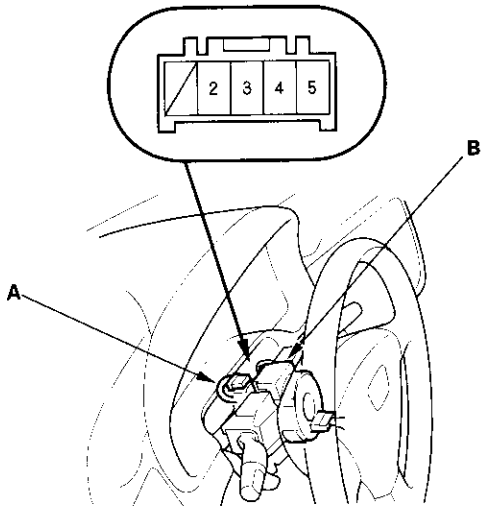


4. If it fails to sound, replace it.
5. Install the horn in the reverse order of removal.

Horn Switch Test

1. Remove the steering column covers (see page 17-25).

2. Disconnect the dashboard wire harness 5P connector (A) from the cable reel (B).

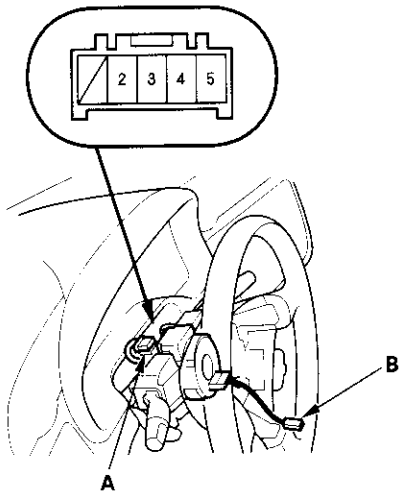


3. Check for continuity between the cable reel No. 2 terminal and body ground with the horn switch pushed. There should be continuity. If there is no continuity, go to step 4.

4. Using a jumper wire, connect the dashboard wire harness B 5P connector (A) No.2 terminal to body ground.

   - If the horn sounds,go to step 5.
   - If the horn does not sound, check these items:
     - Horn relay
     - No. 7 (15A) fuse in the under-hood fuse/relay box.
     - Horn (see page 22-124).
     - An open in the wire

5. Reconnect the dashboard wire harness B SP connector (A), and disconnect the horn switch positive 1P connector (B).



6. Using a jumper wire, connect the horn switch positive 1P connector (B) to ground.

   - If the horn sounds, go to step 7.
   - If the horn does not sound, replace the cable reel.

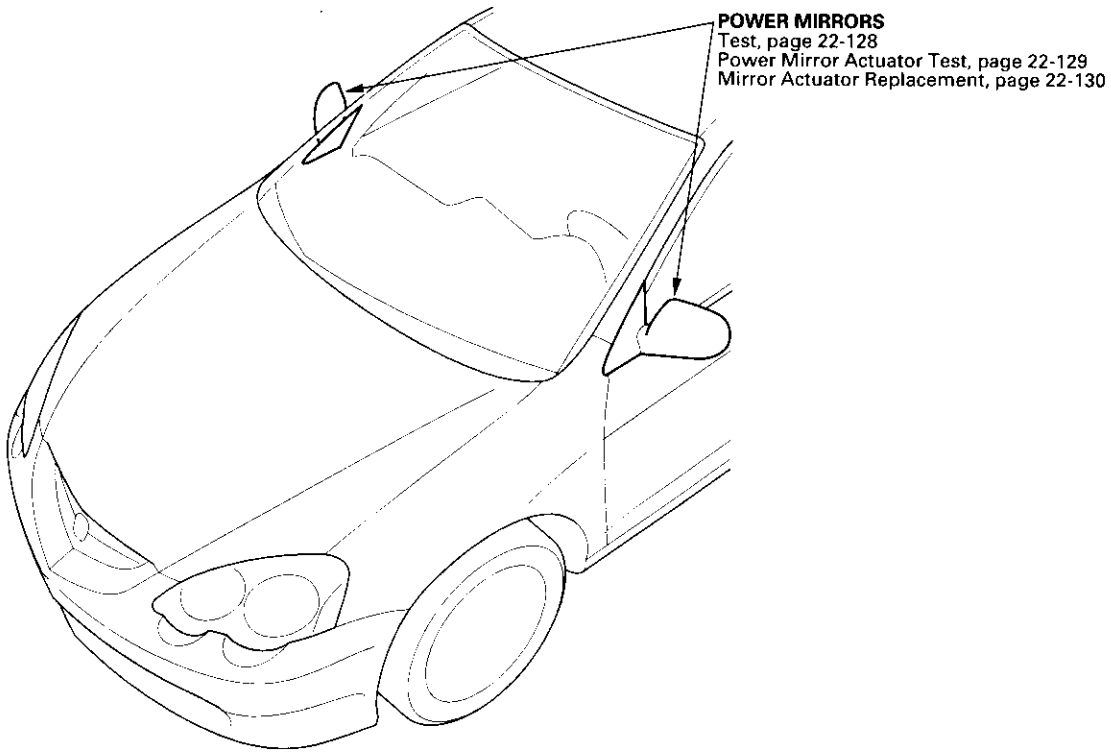
7. Reconnect the horn switch positive connector (B), using a jumper wire, connect the steering wheel to body ground.

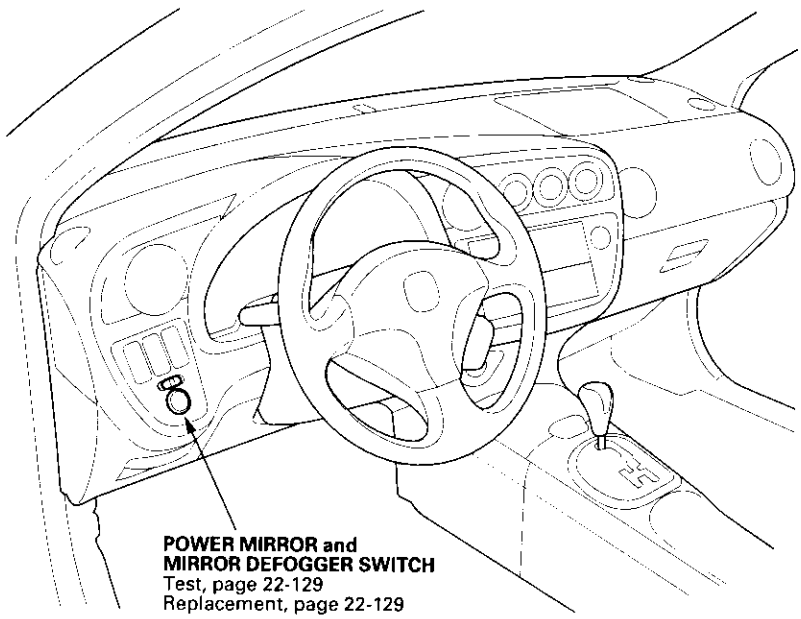
8. Close the contact between the horn plate and the contact place.

   - If the horn sounds, replace the steering column.
   - If the horn does not sound, replace the horn and contact plate.

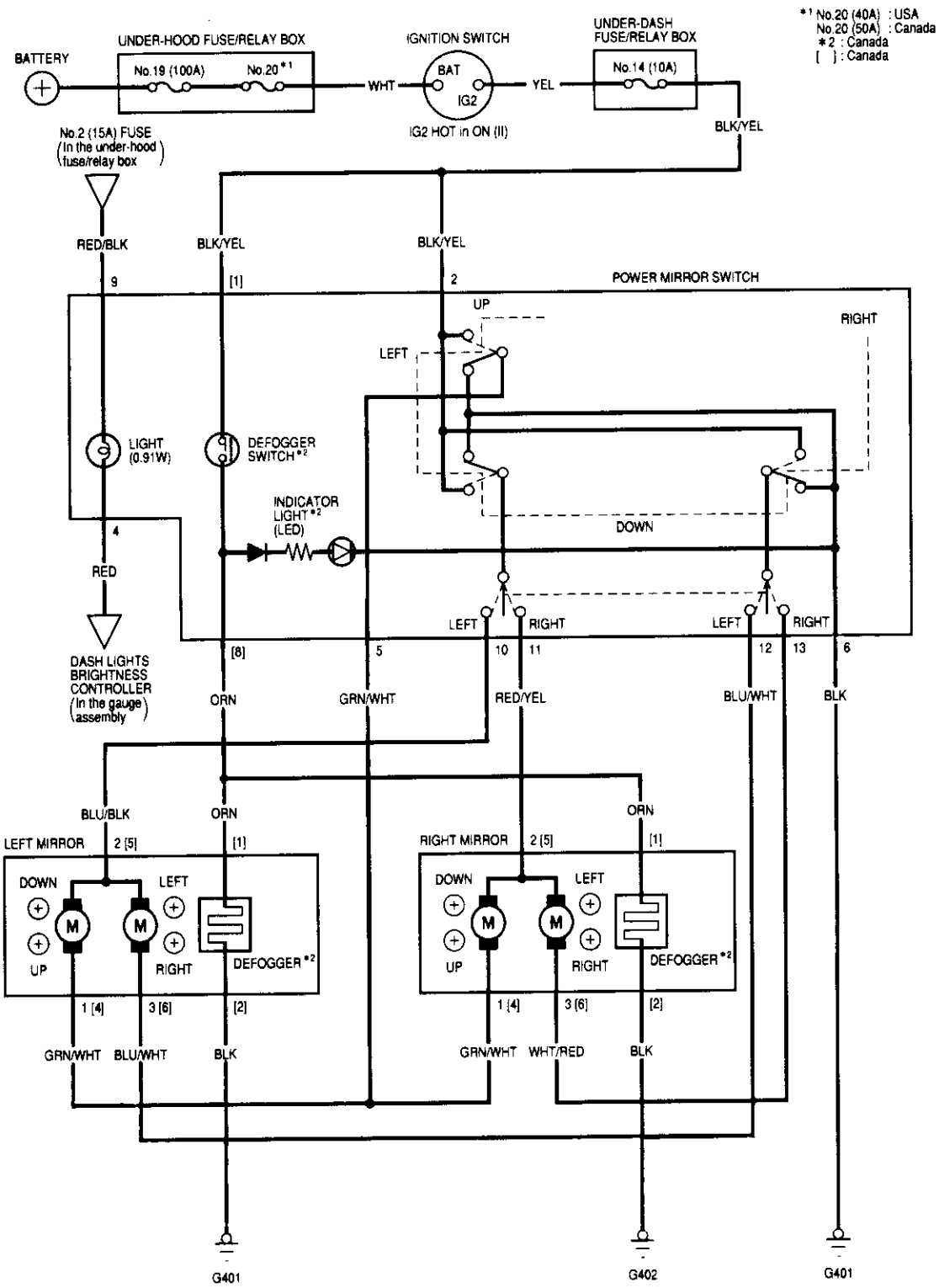
Power Mirrors

Component Location Index





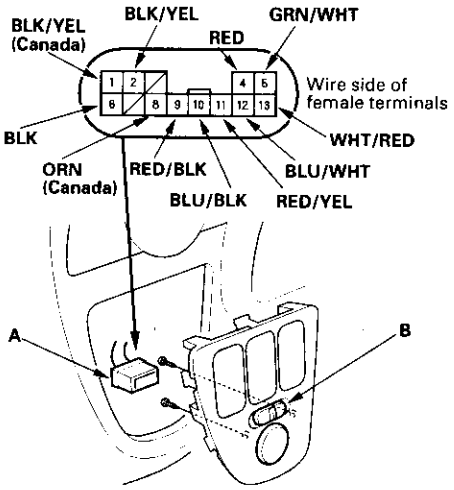
Circuit Diagram



Function Test

1. Carefully pry put the driver's switch panel (see page 20-62).

2. Disconnect the 13P connector (A) from the power mirror switch (B).



3. Remove the two screws and the power mirror 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 (10 A) 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 (G401).
   - 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 body ground 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 (see page 22-129).

Right mirror

8. Connect the No. 2 terminal to the No. 11 terminal, and the No. 5 (or No. 13) terminal to body ground 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 (see page 22-129).

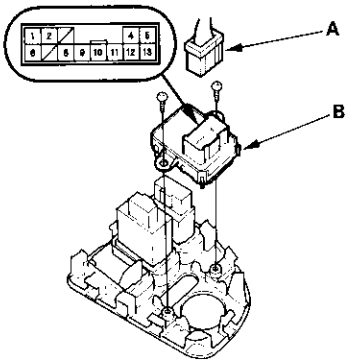
Defogger (Canada)

9. Connect the No. 1 and No. 8 terminals with a jumper wire, and check for voltage between the No. 1 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, BLK, or ORN wire.
     - blown No. 14 (10 A) fuse in the under-dash fuse/relay box.
     - poor ground (G401, G402).
   - If only one fails to warm up, check its defogger.
   - If both warm up, check the defogger switch.

Power Mirror Switch Test

1. Carefully pry out the driver's switch panel (see page 20-62).
2. Disconnect the 13P connector (A) from the power mirror switch (B).



3. Remove the two screws and 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	○			○			○

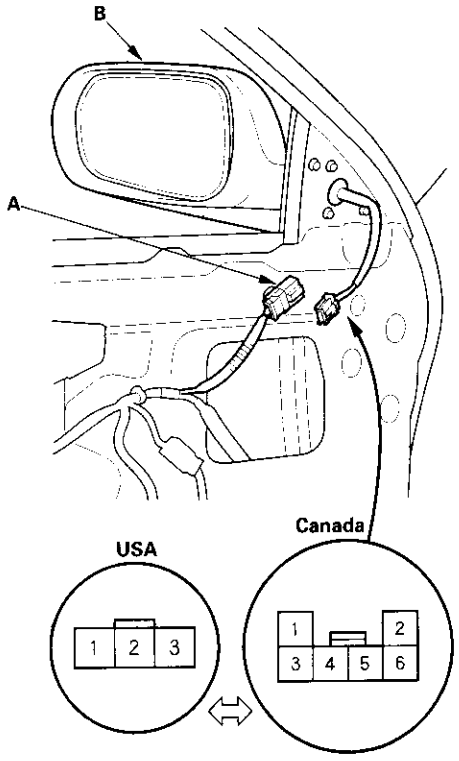
Defogger Switch (Canada):

Terminal / Position	1	8
ON	○	○
OFF		

5. If the continuity is not as specified, replace the switch.

Power Mirror Actuator Test

1. Remove the door panel (see page 20-4).
2. Disconnect the 3P (or 6P) connector (A) from the power mirror actuator (B).



Wire side of female terminals

3. Check actuator operation by connecting power and ground according to the table.

Terminal / Position	1 [4]	2 [5]	3 [6]
TILT UP	⊕	⊖	
TILT DOWN	⊖	⊕	
SWING LEFT		⊕	⊖
SWING RIGHT		⊖	⊕

[ ] :Canada

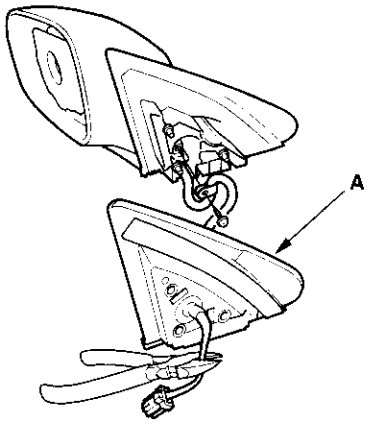
4. If the mirror fails to work properly, replace the mirror actuator.

Defogger Test (Canada):

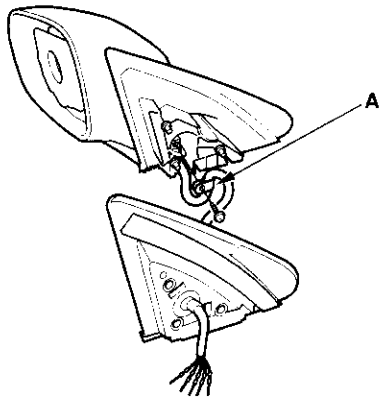
5. Check for continuity between the No. 1 and No. 2 terminals of the 6P connector. There should be continuity.
6. If the continuity is not as specified, replace the mirror actuator.

Power Mirror Actuator Replacement

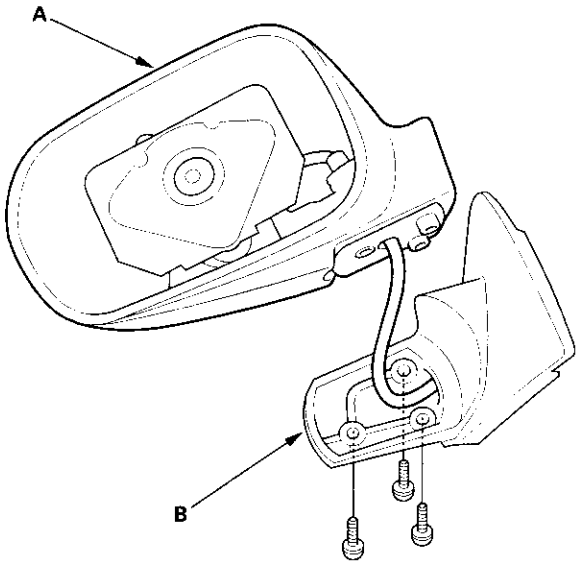
1. Remove the mirror holder, and disconnect the mirror defogger connectors* (see page 20-17).
   *: With defogger
2. Remove the power mirror (see page 20-16).
3. Disconnect the 3P (USA) or 6P (Canada) connector from the mirror, and record the terminal locations and wire colors.
4. Cut the wire harness with cutter, and remove the gasket (A).



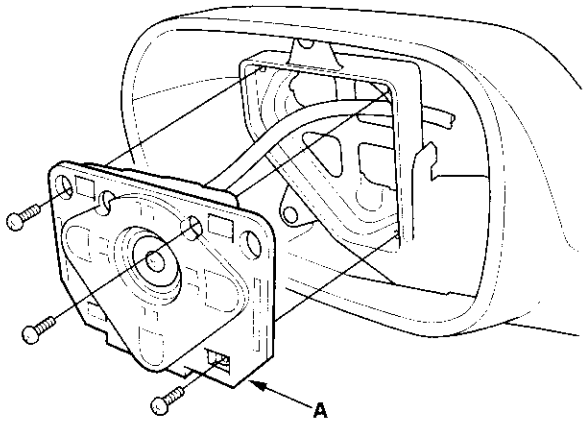
5. Remove the screw from the harness clip (A).



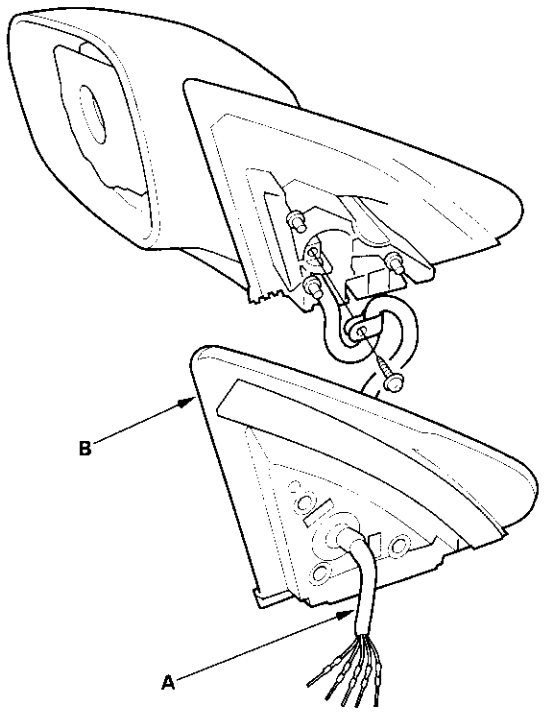
6. Remove the three screws, and separate the mirror housing (A) from the bracket (B).



7. Remove the three screws and the actuator (A).



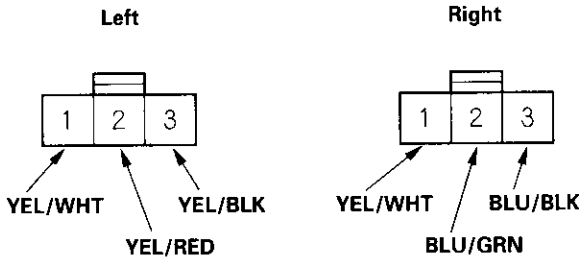
8. Route the wire harness (A) of the new actuator through the hole in the bracket (B) and gasket (C).



9. Install the actuator, bracket, harness clip, and gasket in the reverse order of removal.

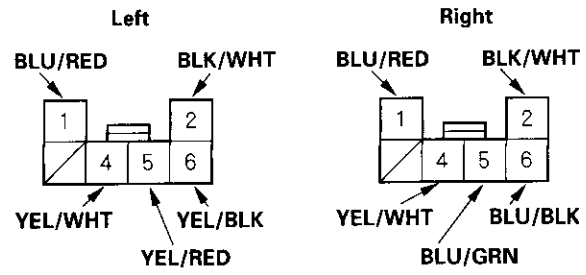
10. Insert the new actuator terminals into the connector in the original arrangement as shown below.

USA:



Wire side of female terminals

Canada:



Wire side of female terminals

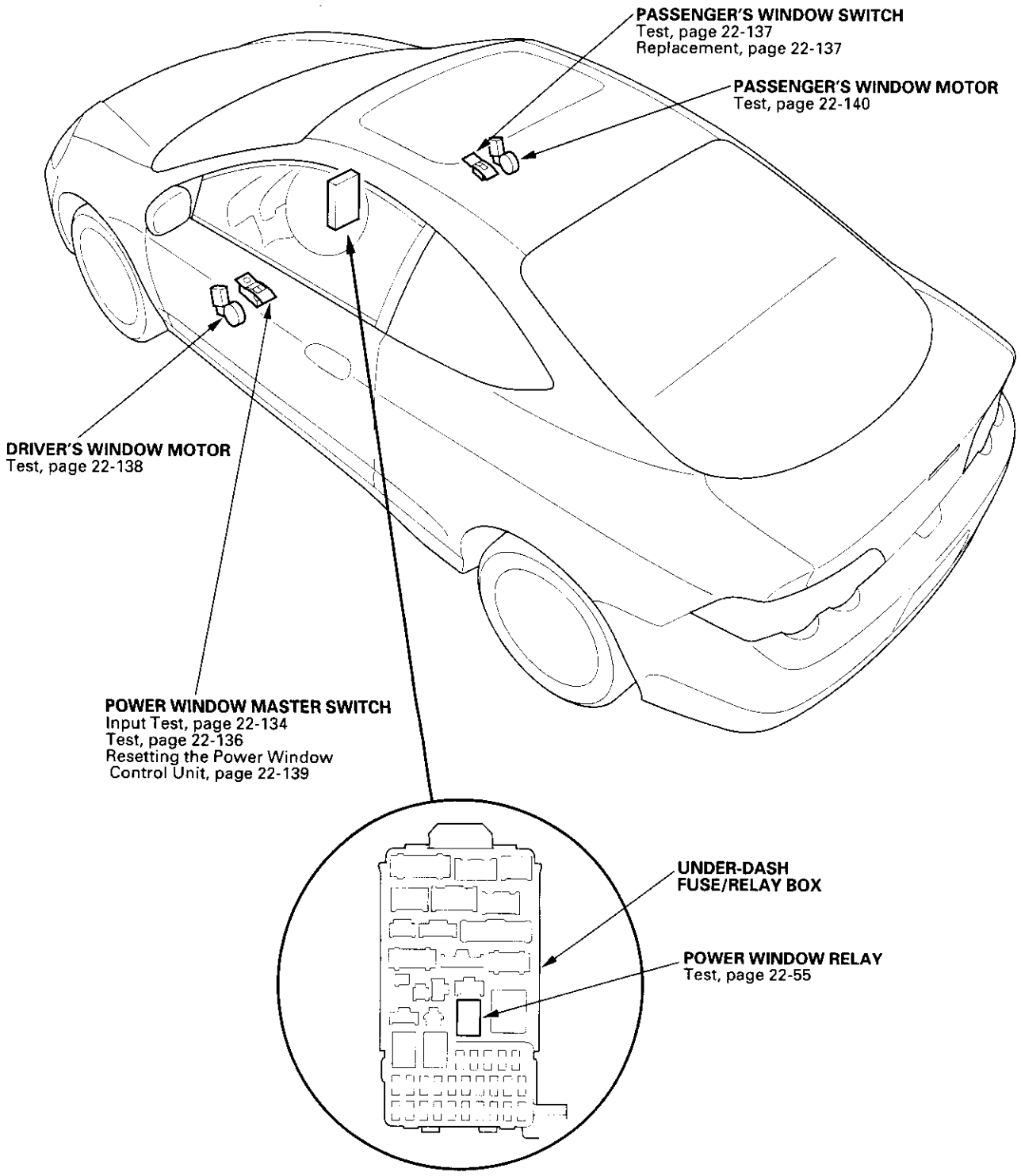
11. Apply tape to seal the intersection of the wire harness.

12. Reassemble in the reverse order of disassembly. Be careful not to break the mirror when reinstalling it to the actuator (see page 20-17).

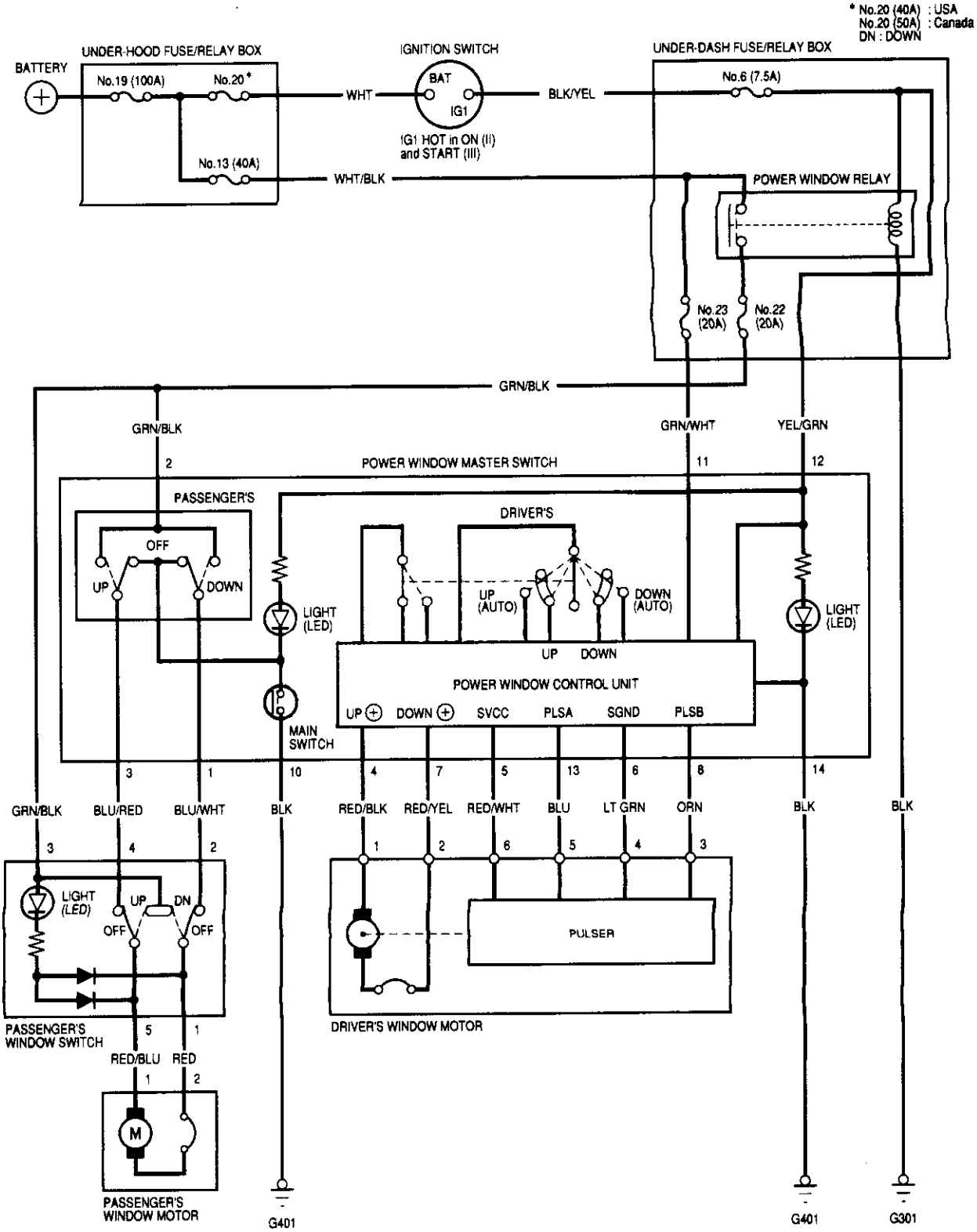
13. Reinstall the mirror assembly on the door.

14. Operate the power mirror to ensure smooth operation.

Component Location Index



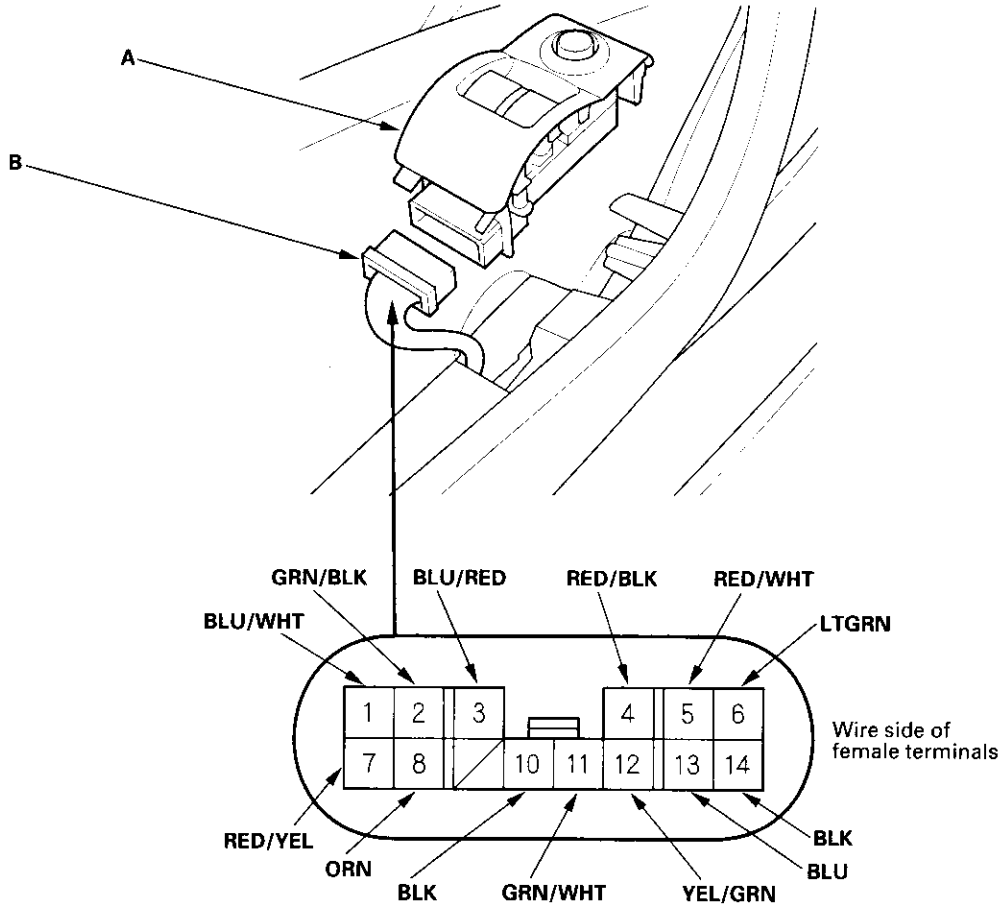
Circuit Diagram



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 switch panel from the door panel (see page 20-4).
2. Disconnect the 14P connector (B) from the master switch (A).



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 (G401) • An open in the wire
12	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
11	GRN/WHT	Under all conditions	Check for voltage to ground: There should be battery voltage.	• Blown No. 23 (20A) fuse in the under-dash fuse/relay box • An open in the wire
2	GRN/BLK	Ignition switch ON (II)	Check for voltage to ground: There should be battery voltage.	• Blown No. 13 (40A) fuse in the under-hood fuse/relay box • 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 • Faulty poser window relay ground or wire • An open in the wire
4 7	RED/BLK RED/YEL	Connect the No. 7 and No. 11 terminals, and the No. 4 and No. 14 terminals.	Check for driver's window motor operation: It should run (the driver's window moves down).	• Poor ground (G401) • Faulty driver's window motor • An open in the wire
1 3	BLU/WHT BLU/RED	Connect the No. 1 and No. 2 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).	• Poor ground (G401) • Fault passenger's window motor • Fault passenger's window switch • An open in the wire

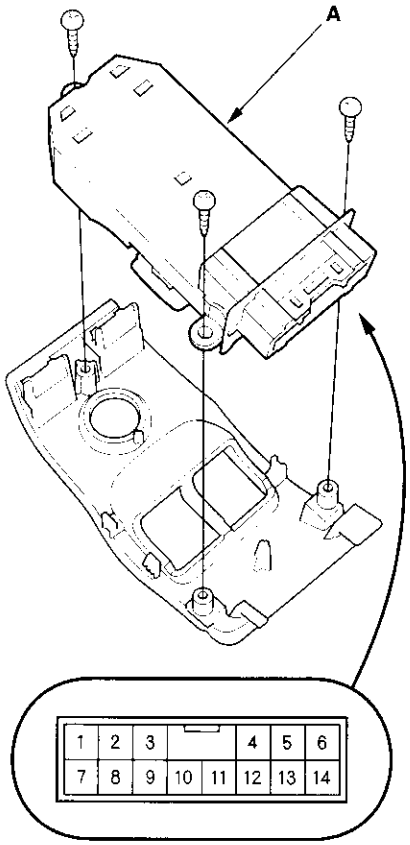
5. Reconnect the 14P connector to the switch, and perform the following input tests.

   - 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
5	RED/WHT	Ignition switch ON (II)	Check for voltage to ground: There should be battery voltage.	• Faulty power window master switch • Short to ground in the wire
6	LT GRN	Under all conditions	Check for voltage to ground: There should be less than 1 V.	• An open in the wire
13	BLU	Ignition switch ON (II), and the driver's window switch AUTO DOWN	Check for voltage between the No. 13 and No. 6 terminals: There should be 0 V—about 5 V—0 V—about 5 V repeatedly (a digital voltmeter reads about 2.5 V while the window moves).	• Blown No. 6 (7.5A) fuse in the under-dash fuse/relay box • Blown No. 23 (20A) fuse in the under-dash fuse/relay box • Faulty power window relay • Faulty power window master switch • Short to ground in the wire
8	ORN	Ignition switch ON (II), and the driver's window switch AUTO DOWN	Check for voltage between the No. 8 and No. 6 terminals: There should be 0 V—about 5 V—0 V—about 5 V repeatedly (a digital voltmeter reads about 2.5 V while the window moves).	

Master Switch Test/Replacement

1. Remove the switch panel from the door panel (see page 20-4).
2. Disconnect the 14P connector from the power window master switch (A).



3. Remove the three screws and power window master switch.
4. Check for continuity between the terminals in each switch according to the table.

Driver's Switch:

The driver's switch is combined with the control unit so you cannot isolate the switch to test it.
Instead, run the master switch input test procedures on page 22-134. If the tests are normal, the driver's switch must be faulty. If the driver's switch is faulty, replace it.

Passenger's Switch:

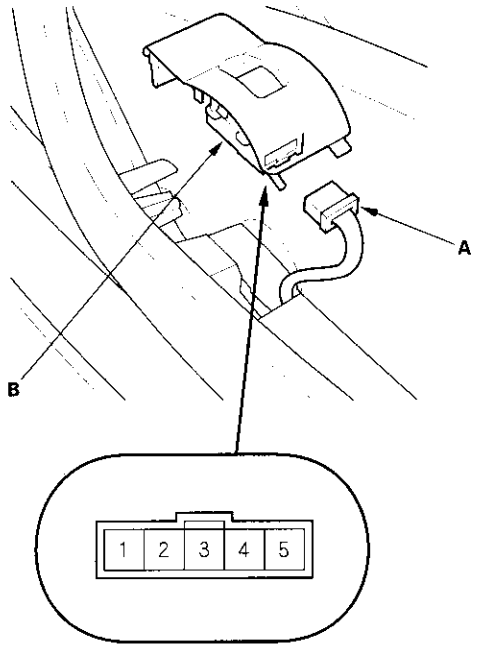
Position	Terminal / Main Switch	1	2	3	10
OFF	ON	○		○	○
	OFF	○		○	
UP	ON		○	○	○
	OFF		○	○	
DOWN	ON	○			○
	OFF	○			

5. If the continuity is not as specified, replace the passenger's switch.

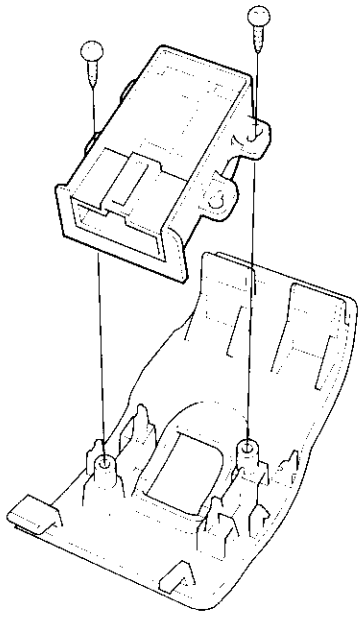
Passenger's Window Switch Test/Replacement

1. Remove the switch panel from the door panel (see page 20-4).

2. Disconnect the 5P connector (A) from the passenger's power window switch (B).



3. Remove the two screws and passenger's power window switch.



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

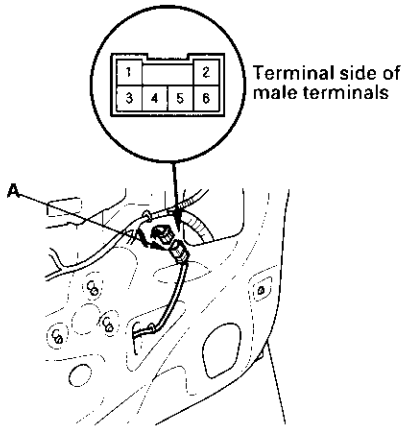
Terminal / Position	1	2	3	4	5
UP	○	○		○	○
OFF				○	○
DOWN	○	○	○	○	○

5. If the continuity is not as specified, replace the switch.

Driver's Window Motor Test

Motor Test:

1. Remove the driver's door panel (see page 20-4).
2. Disconnect the 6P 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.

NOTICE

To prevent damage to the motor, disconnect one lead as soon as the motor stops running.

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 6P connector to the window motor, and reconnect the 14P connector to the power window master switch.
2. Check for voltage between the terminals.
   - There should be battery voltage between the No. 6 (+) and No. 4 (−) terminals when the ignition switch is turned ON (II).
   - Connect an analog voltmeter between the No. 5 (+) and No. 4 (−) terminals, and run the window motor down or up. The voltmeter needle should move back and forth alternately (a digital voltmeter should show the average voltage between 0−5 V).
   - Connect an analog voltmeter between the No. 3 (+) and No. 4 (−) terminals, and run the window motor down or up. The voltmeter needle should move back and forth alternately (a digital voltmeter should show the average voltage between 0−5 V).
3. If the voltage is not as specified, replace the driver's window motor.

Resetting the Power Window Control Unit

Resetting the power window control unit is required after performing the following procedures:

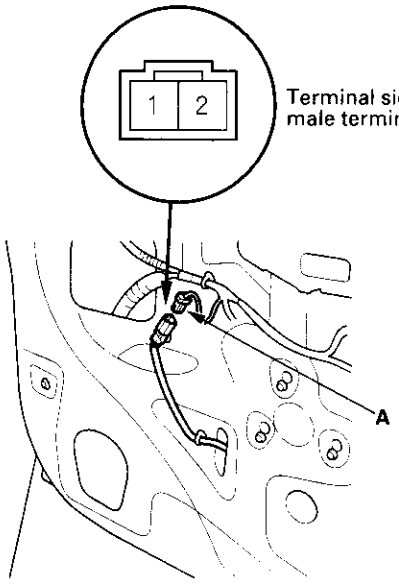
- Disconnecting the battery
- Removing the No. 8 (7.5A) and/or the No. 23 (20A) fuses in the under-dash fuse/relay box.
- Disconnecting the driver' s door wire harness

1. Turn the ignition switch ON (II).
2. Move the driver's window all the way down using the driver's switch when the window reaches the bottom, hold the driver's window switch in the DOWN position for 2 seconds.
3. Move the driver's window all the way up using the driver's switch when the window reaches the top, hold the driver's window switch in the UP position for 2 seconds.
4. If the window does not work in AUTO, repeat steps 1 through 4.

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.

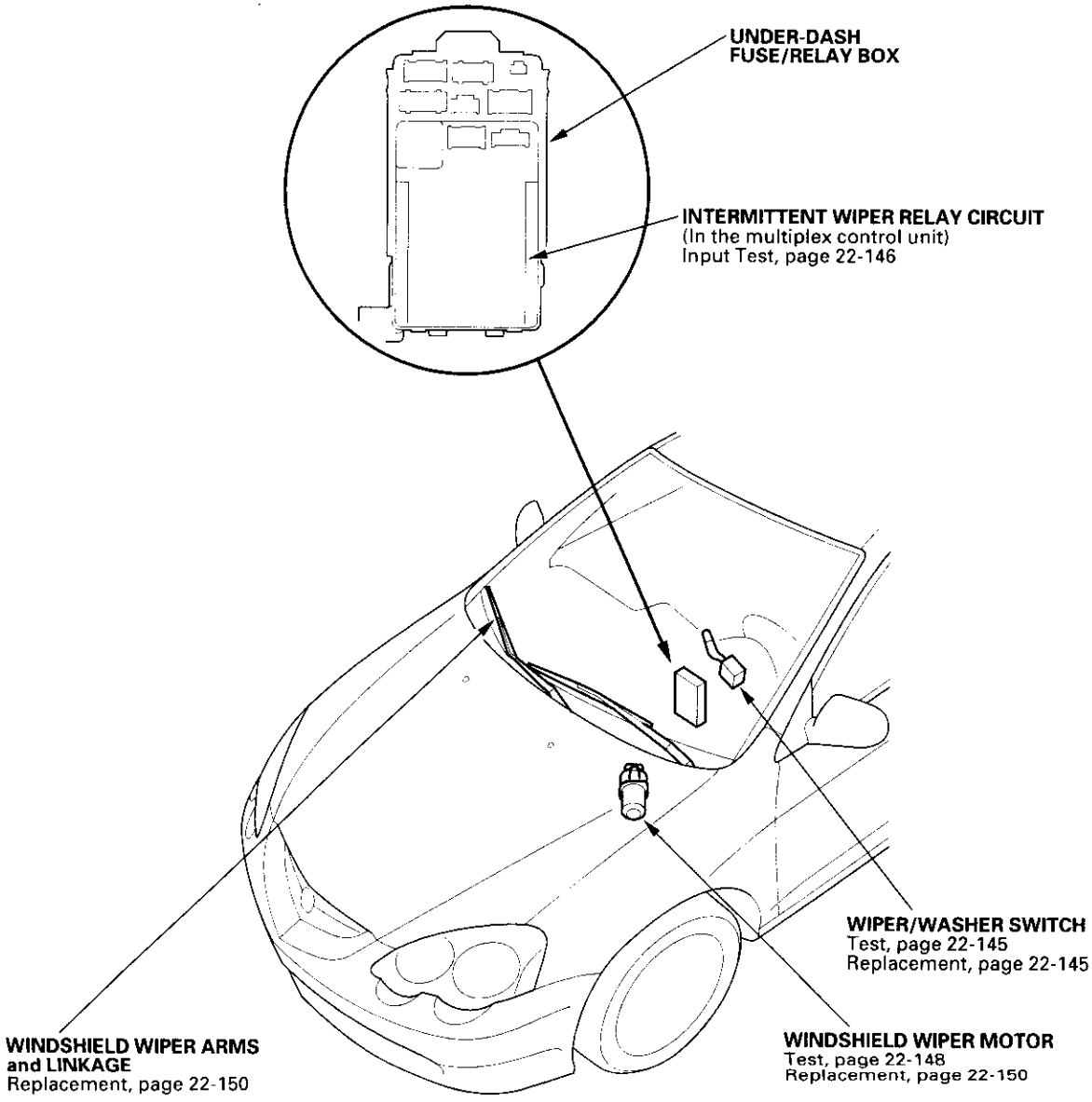
NOTICE

To prevent damage to the motor, disconnect one load as soon as the motor stops running.

Terminal / Direction	1	2
UP	⊕	⊖
DOWN	⊖	⊕

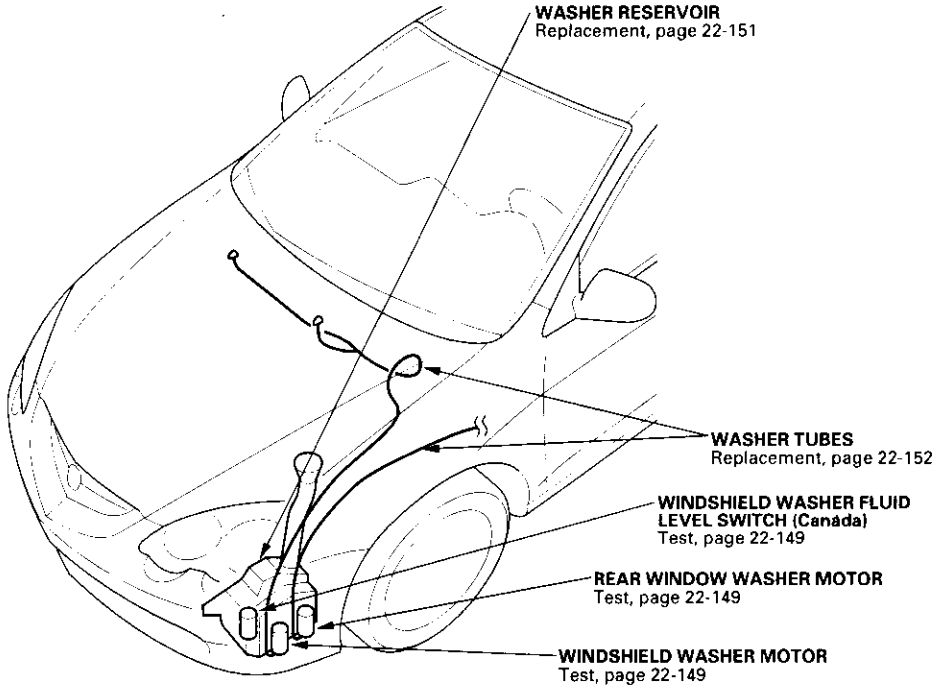
4. If the motor does not run or fails to run smoothly, replace it.

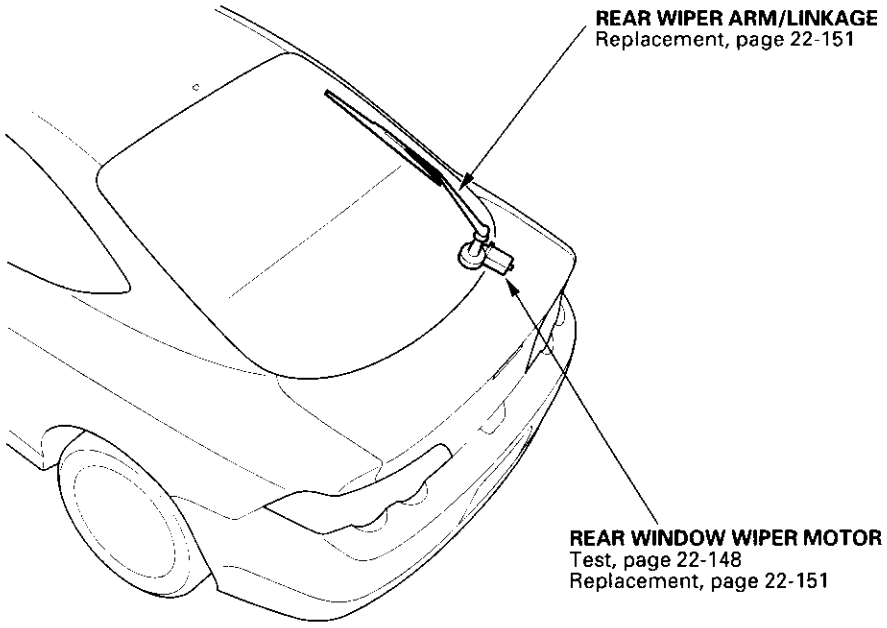
Component Location Index



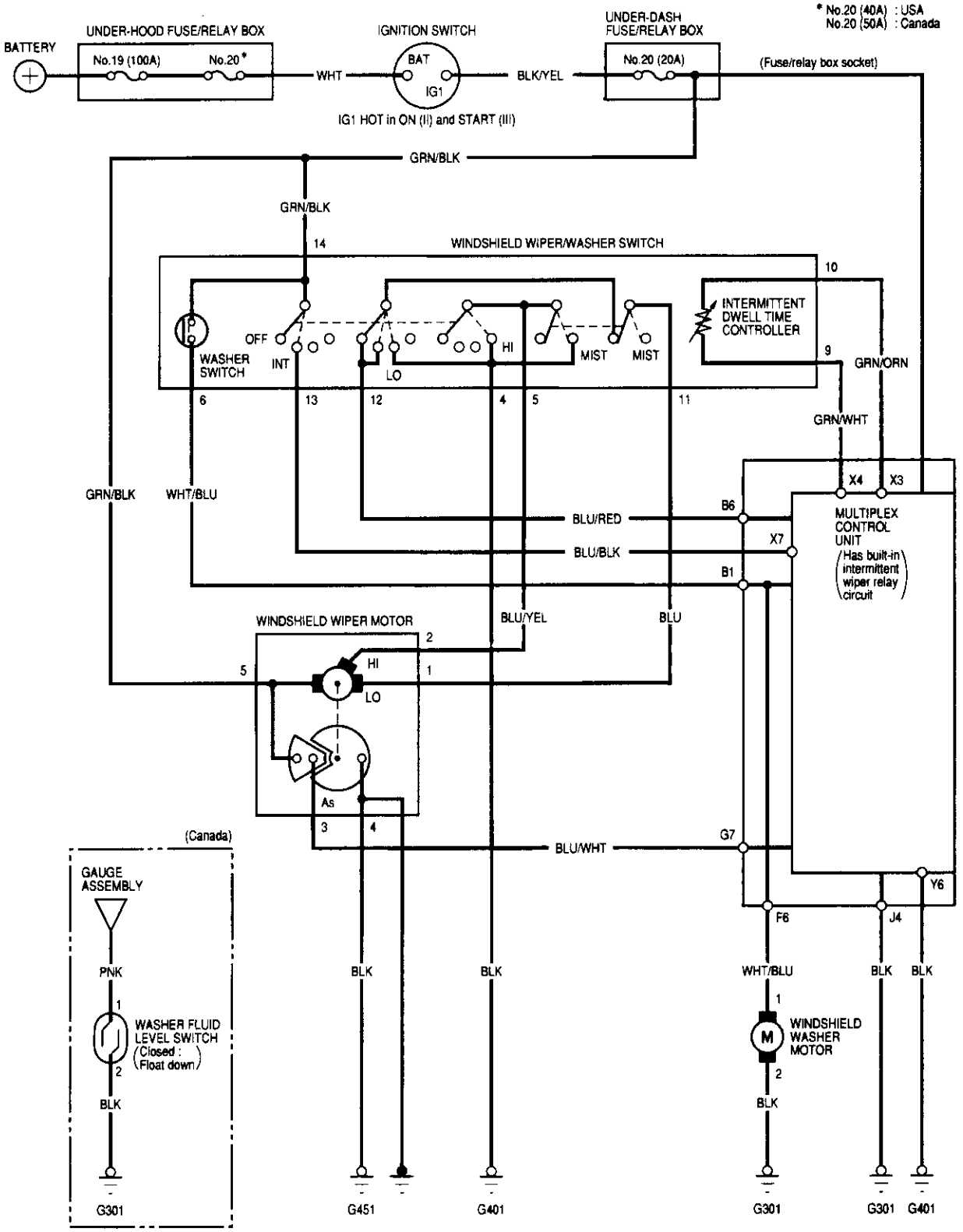
(cont'd)

Component Location Index (cont'd)

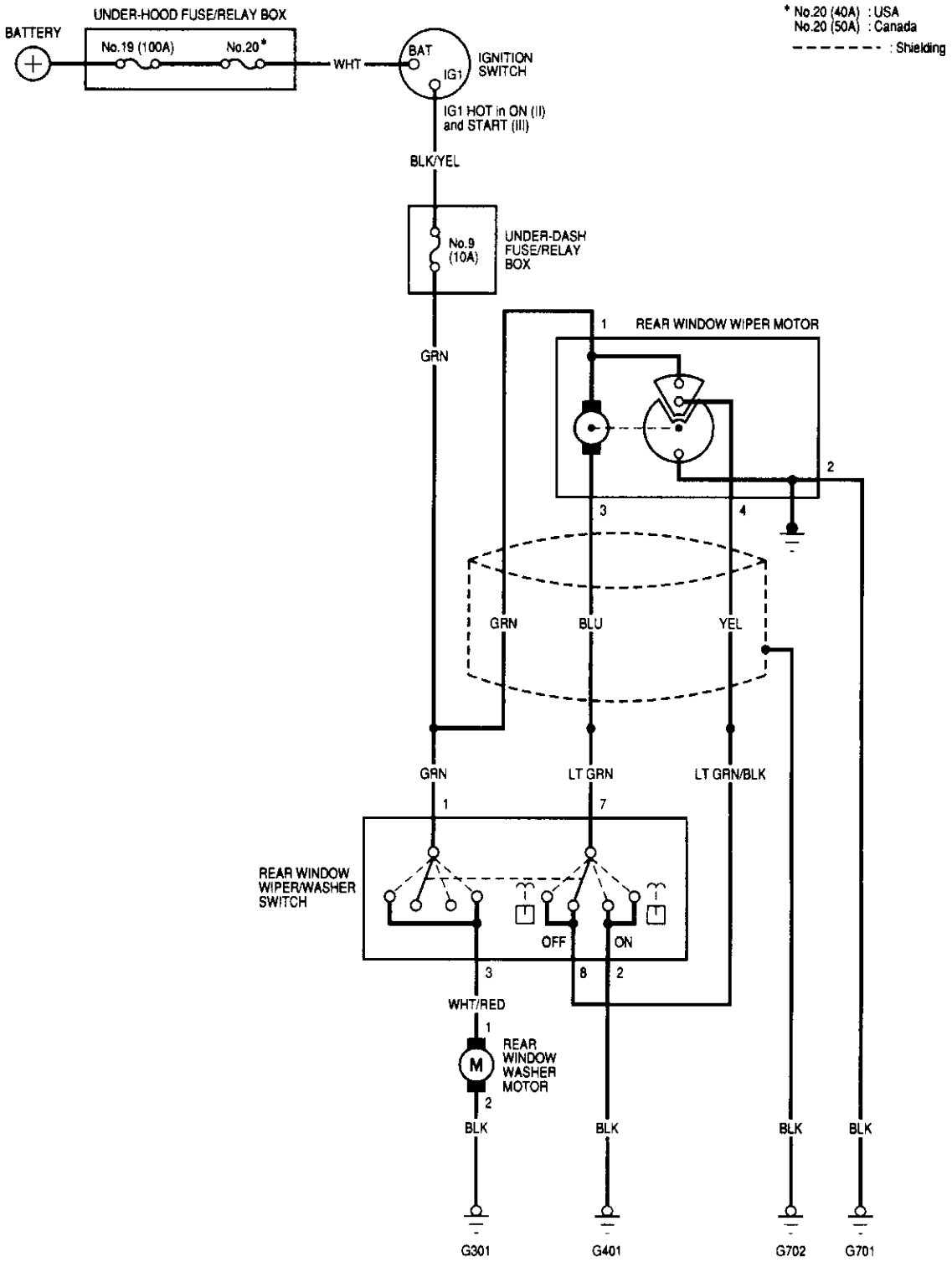




Circuit Diagram - Windshield

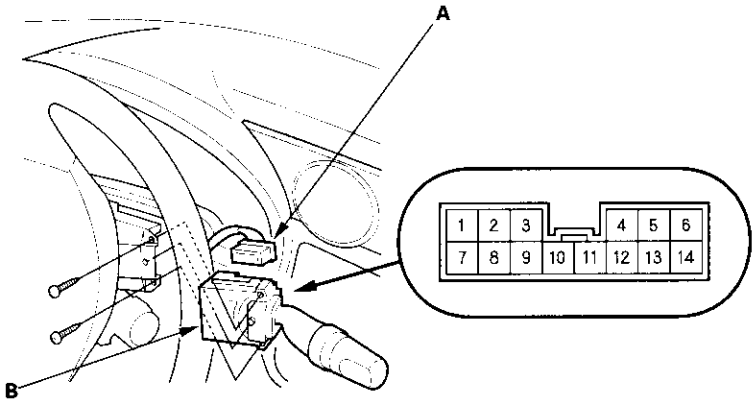


Circuit Diagram - Rear Window



Wiper/Washer Switch Test/Replacement

1. Remove the dashboard lower cover (see page 20-61).
2. Remove the steering column covers (see page 17-25).
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.

Windshield:

Terminal / Position	4	5	6	11	12	13	14	9		10
OFF				○	○					
INT				○	○	○	○			
LO	○			○						
HI	○	○								
Mist switch ON	○	○								
Washer switch ON			○				○			
Intermittent dwell time controller turned								○	0-30 kΩ	○

Rear Window:

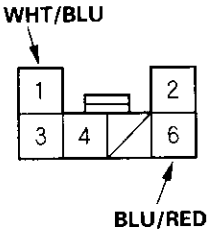
Terminal / Position	1	2	3	7	8
Washer switch ON and wiper switch OFF	○		○	○	○
OFF				○	○
ON		○		○	
Wiper and Washer switch ON	○	○	○	○	

Control Unit Input Test

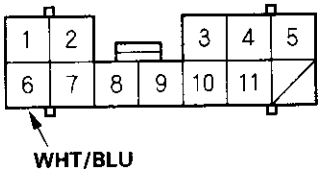
1. Before testing, troubleshoot the multiplex control system (see page 22-175).
2. Remove the dashboard lower cover.
3. Disconnect the under-dash fuse/relay box connectors B, F, G, J, X and Y.

   NOTE: All connectors are wire side of female terminals.

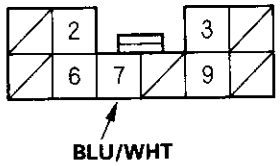
UNDER-DASH FUSE/ RELAY BOX CONNECTOR B (6P)



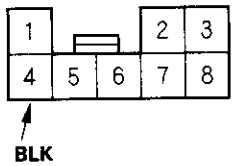
UNDER-DASH FUSE/ RELAY BOX CONNECTOR F (12P)



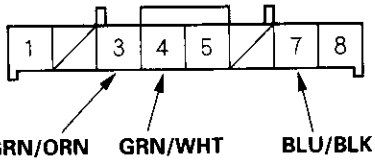
UNDER-DASH FUSE/ RELAY BOX CONNECTOR G (10P)



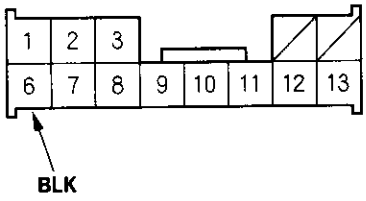
UNDER-DASH FUSE/ RELAY BOX CONNECTOR J (8P)



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.

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, go to step 6.

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 (G301) • An open in the wire
Y6	BLK	Under all conditions	Check for voltage to ground: There should be 1 V or less.	• Poor ground (G401) • An open in the wire
B1 . F6	WHT/BLU	Ignition switch ON (II) and washer switch ON	Check for voltage to ground: There should be battery voltage. Check windshield washer motor operation: The washer motor should run.	• Poor ground (G301) • Blown No. 20 (20A) fuse in the under-dash fuse/relay box • Faulty wiper/washer switch • Faulty windshield washer motor • An open in the wire
B6	BLU/RED	Ignition switch ON (II), wiper switch in OFF or INT, Jump B6 to ground.	Check for voltage to ground: There should be battery voltage. Check wiper motor operation: The wiper motor should run at low speed.	• 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

6. Disconnect the X connector from the under-dash fuse/relay box, and make this input test at the connector

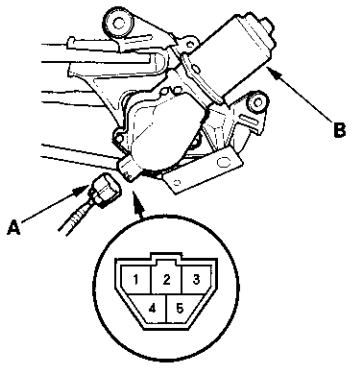
   - If this input test proves OK, the multiplex control unit must be faulty; replace the under-dash fuse/relay box assembly.

X3 X4	GRN/ORN GRN/WHT	Intermittent dwell time control ring turned	Check for resistance between the terminals: It should vary from 0 to 30 k Ω as the ring is turned.	• Faulty intermittent dwell time controller • An open in the wire

Wiper Motor Test

Windshield:

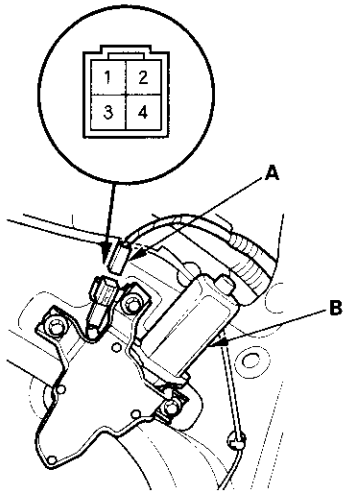
1. Remove the wiper arms, hood seals, and cowl covers (see page 22-150).
2. Disconnect the 5P connector (A) from the wiper motor (B).



3. Test the motor by connecting battery power to the No. 5 terminal and ground the No. 1 terminal of the wiper motor 5P connector. The motor should run. If the motor does not run or fails to run smoothly, replace the motor.
4. Connect an analog voltmeter between the No. 3 (+) and No. 4 (−) terminals, 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 windshield wiper motor.

Rear Window:

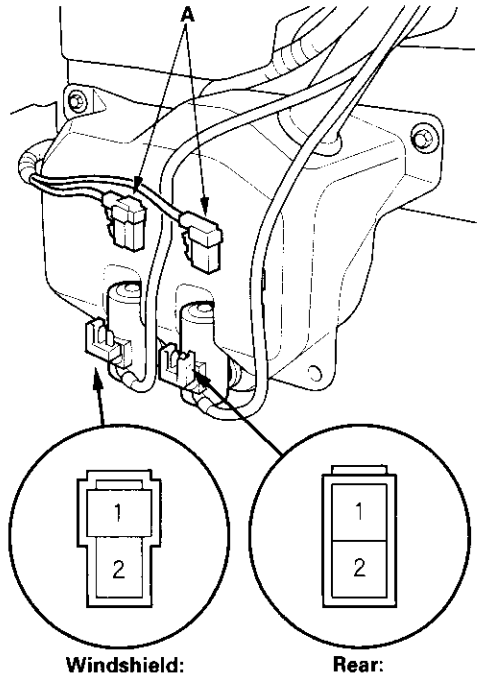
1. Open the hatch, and remove the hatch trim panel (see page 20-53).
2. Disconnect the 4P connector (A) from the wiper motor (B).



3. Test the motor by connecting battery power to the No. 1 terminal and ground the No. 3 terminal of the wiper motor. The motor should run. If the motor does not run or fails to run smoothly, replace the motor.
4. Connect an analog voltmeter between the No. 4 (+) and No. 2 (−) terminals, and run the motor. The voltmeter should indicate 12 V and 4 V or less alternately. If it does not, replace the rear window wiper motor.

Washer Motor Test

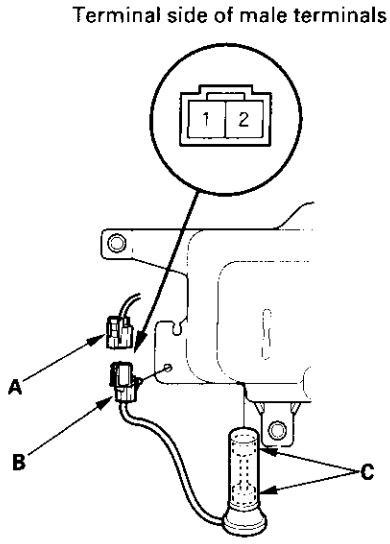
1. Remove the left inner fender (see page 20-102).
2. Disconnect the 2P connectors (A) from the washer motors (B).



3. Test the motor by connecting battery power to the No. 1 terminal and ground the No. 2 terminal of the washer motor. The motor should run.
   - If the motor does not run or fails to run smoothly, replace it.
   - If the motor runs smoothly, but little or no washer fluid is pumped, check for a disconnected or blocked washer hose, or a clogged pump outlet in the motor.

Washer Fluid Level Switch Test - Canada

1. Partially remove the left inner fender (see page 20-102).
2. Disconnect the 2P connector (A) from the washer fluid level switch (B).



3. Remove the washer fluid level switch from the washer reservoir.

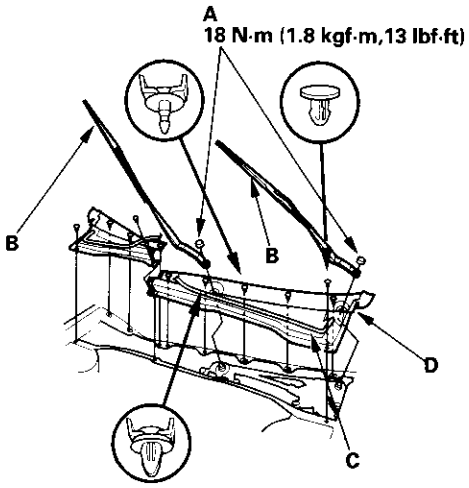
   NOTE: Fluid may flow out of the opening.

4. Check for continuity between the No. 1 and No. 2 terminals in each float position (C).
   - There should be continuity when the float is down.
   - There should be no continuity when the float is up.
5. If the continuity is not as specified replace the switch.

Wiper Motor Replacement

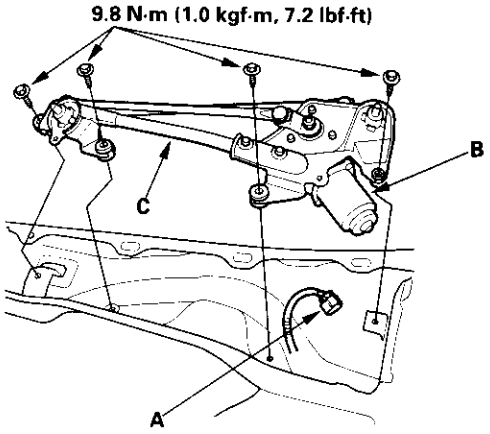
Windshield Wiper Motor:

1. Open the hood. Remove the nuts (A) and the windshield wiper arms (B).



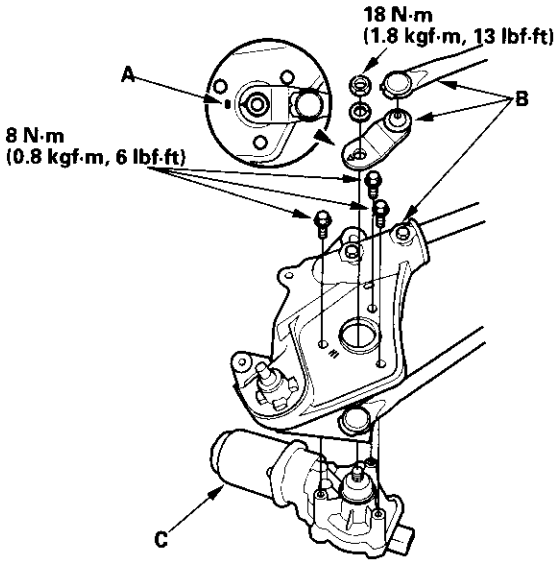
2. Remove the hood seals (C) and cowl covers (D).

3. Disconnect the 5P connector (A) from the wiper motor (B).



4. Remove the four bolts and wiper linkage assembly (C).

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).

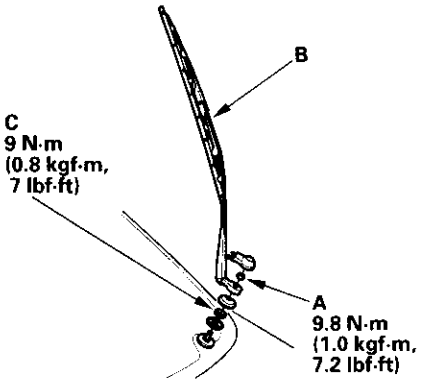


6. Install in the reverse order of removal, and note these items:

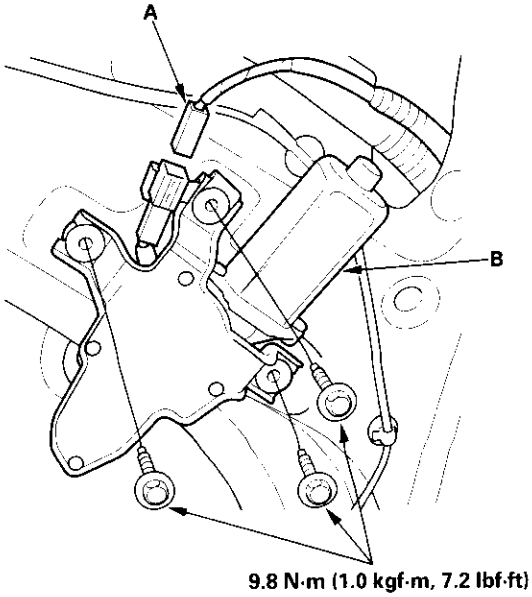
   - Apply multipurpose grease to the moving parts.
   - Before reinstalling the wiper arms, turn the wiper switch ON, then OFF to return the wiper shafts to the park position.
   - If necessary, replace any damaged clips.
   - Check the wiper motor operation.

Rear Window Wiper Motor:

1. Open the hatch, and remove hatch trim panel (see page 20-53).
2. Remove the mounting nut (A), wiper arm (B), and special nut (C).



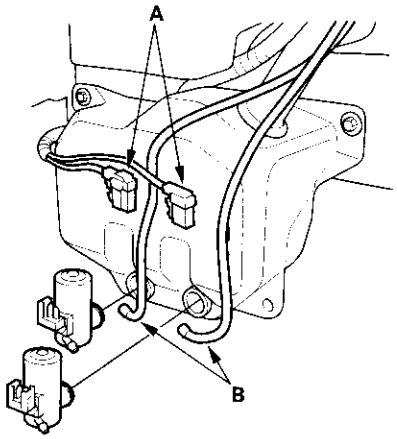
3. Disconnect the 4P connector (A) from the wiper motor (B).



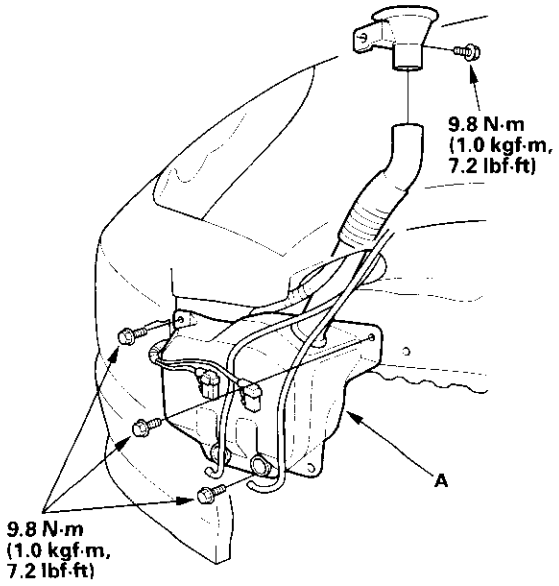
4. Remove the three bolts and wiper motor.
5. Install in the reverse order of removal. Check the wiper motor operation.

Washer Reservoir Replacement

1. Remove the left inner fender (see page 20-102).
2. Disconnect the 2P connector(s) (A) and washer tube (B).



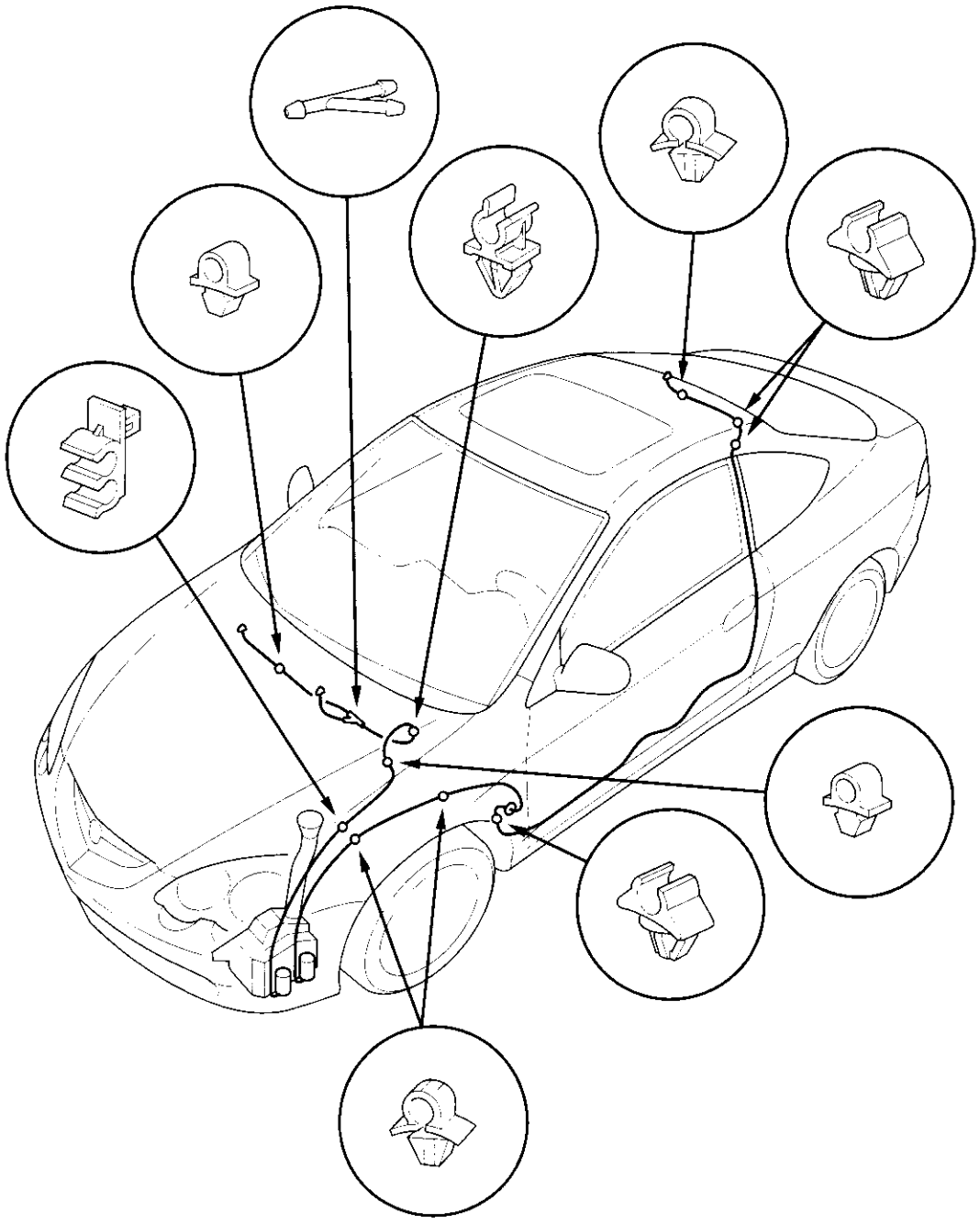
3. Remove the four bolts and washer reservoir (A).



4. Install the reservoir in the reverse order of removal. Check the washer motor operation.

Washer Tubes Replacement

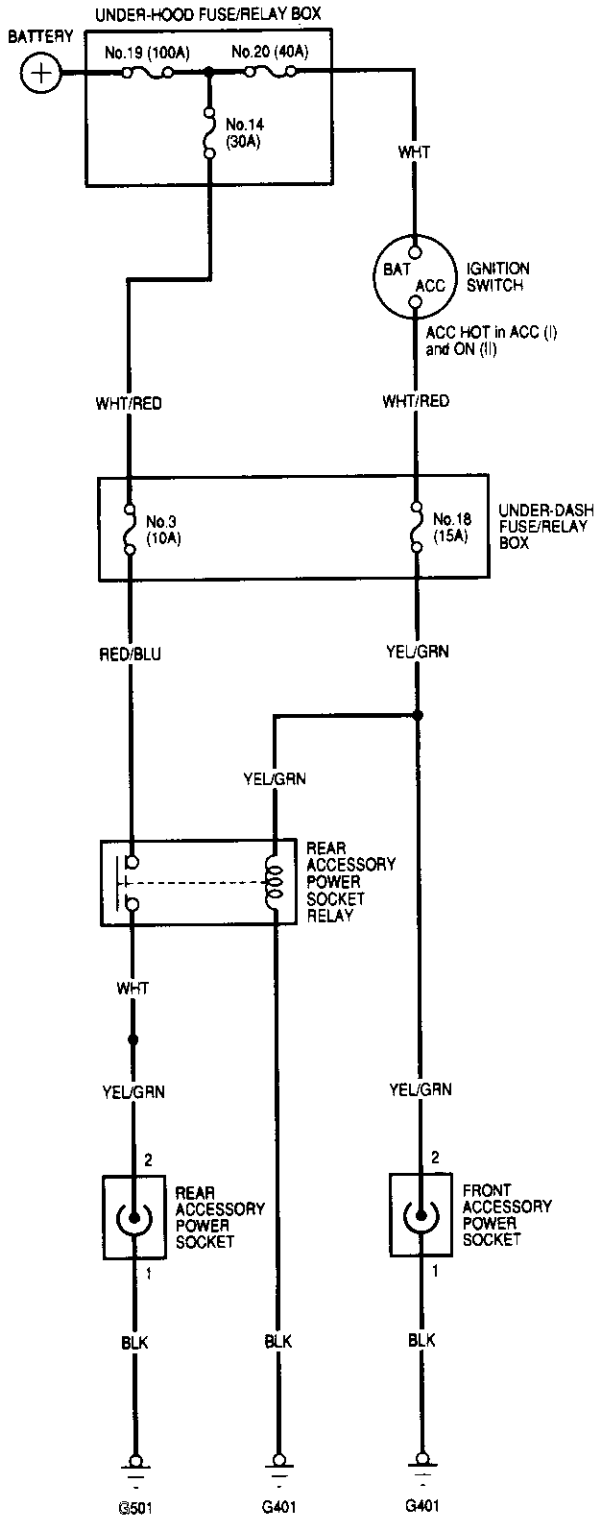
1. Remove the left inner fender (see page 20-102).
2. Remove the headliner (see page 20-54).
3. Remove the windshield washer nozzles and clips, then remove the tubes.



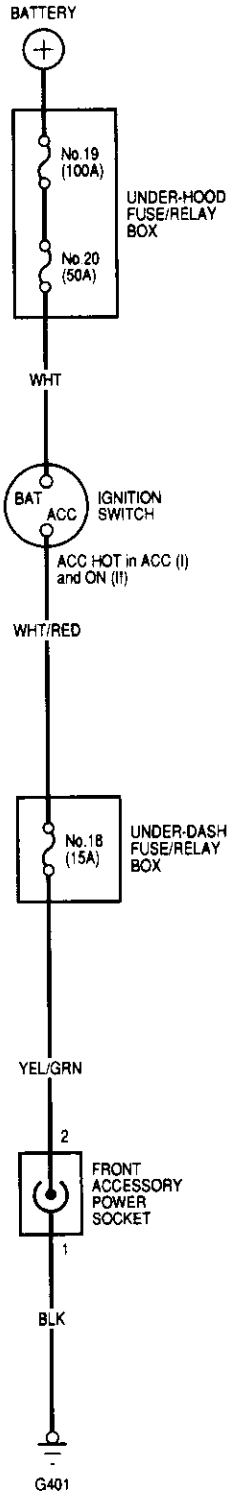
4. Install in the reverse order of removal. Take care not to pinch the washer tubes. Check the washer operation.

Accessory Power Socket

Circuit Diagram - USA



Circuit Diagram - Canada

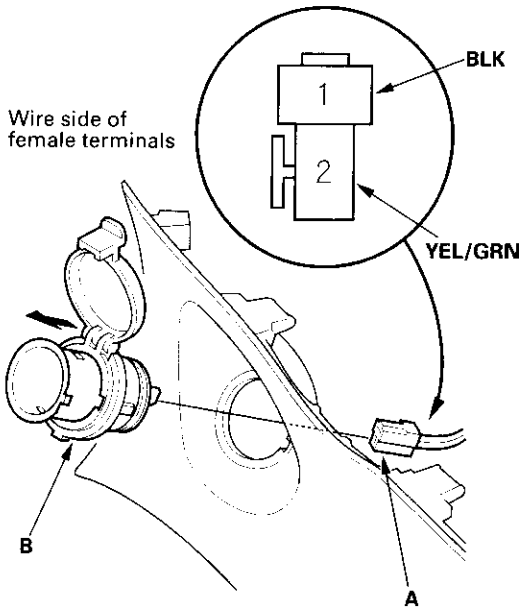


Accessory Power Socket

Test/Replacement

Front:

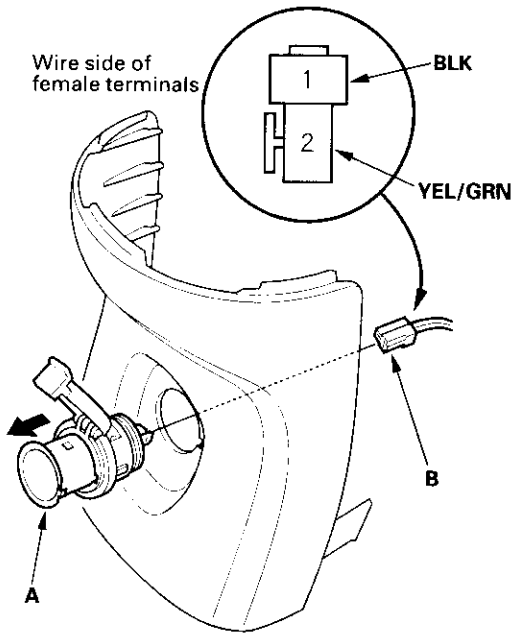
1. Remove the dashboard center lower cover (see page 20-63).
2. Disconnect the 2P connector (A) from the socket (B).
3. Carefully pry the accessory power socket (B) out from the dashboard.



4. 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 5.
5. 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 (G401).
     - an open in the wire.
     - blown No. 18 (15A) fuse in the under-dash fuse/relay box.

Rear:

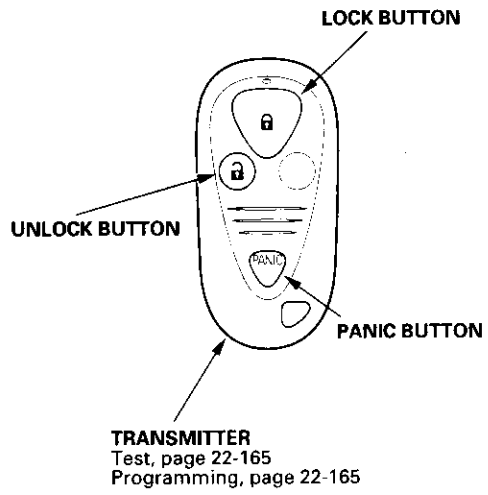
1. Remove the rear console cover (see page 20-60).
2. Disconnect the 2P connector (B) from the socket.
3. Carefully pry the accessory power socket (B) out from the rear console cover.

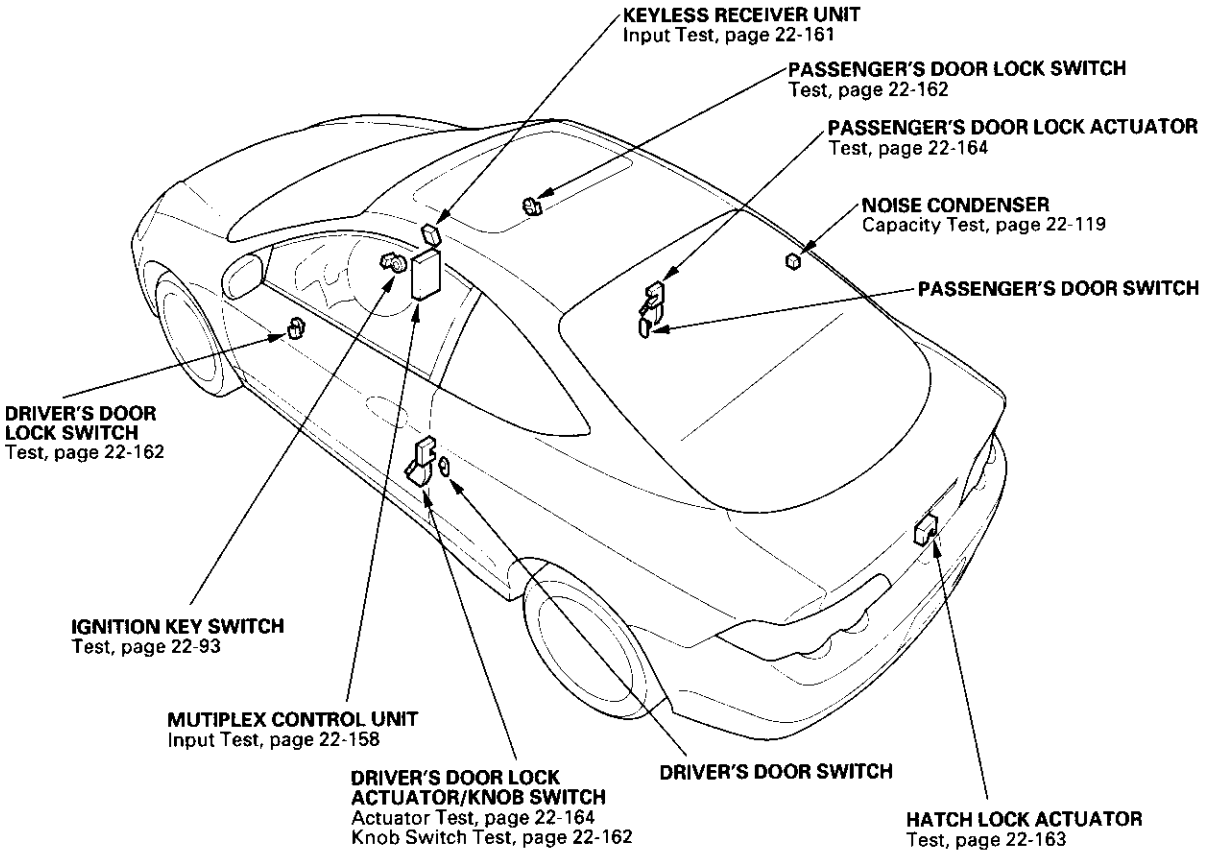


4. Inspect the connector terminals to be sure they are all making good contact.
   - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
   - If the terminals look OK, go to step 5.
5. Turn the ignition switch ACC (I), and check for voltage between the No. 1 and No. 2 terminals.
   - There should be battery voltage.
   - If there is no battery voltage, check for:
     - poor ground (G401, 501).
     - an open in the wire.
     - blown No. 18 (15A) fuse in the under-dash fuse/relay box.
     - blown No. 3 (10A) fuse in the under-dash fuse/relay box.
     - faulty rear accessory power socket relay.

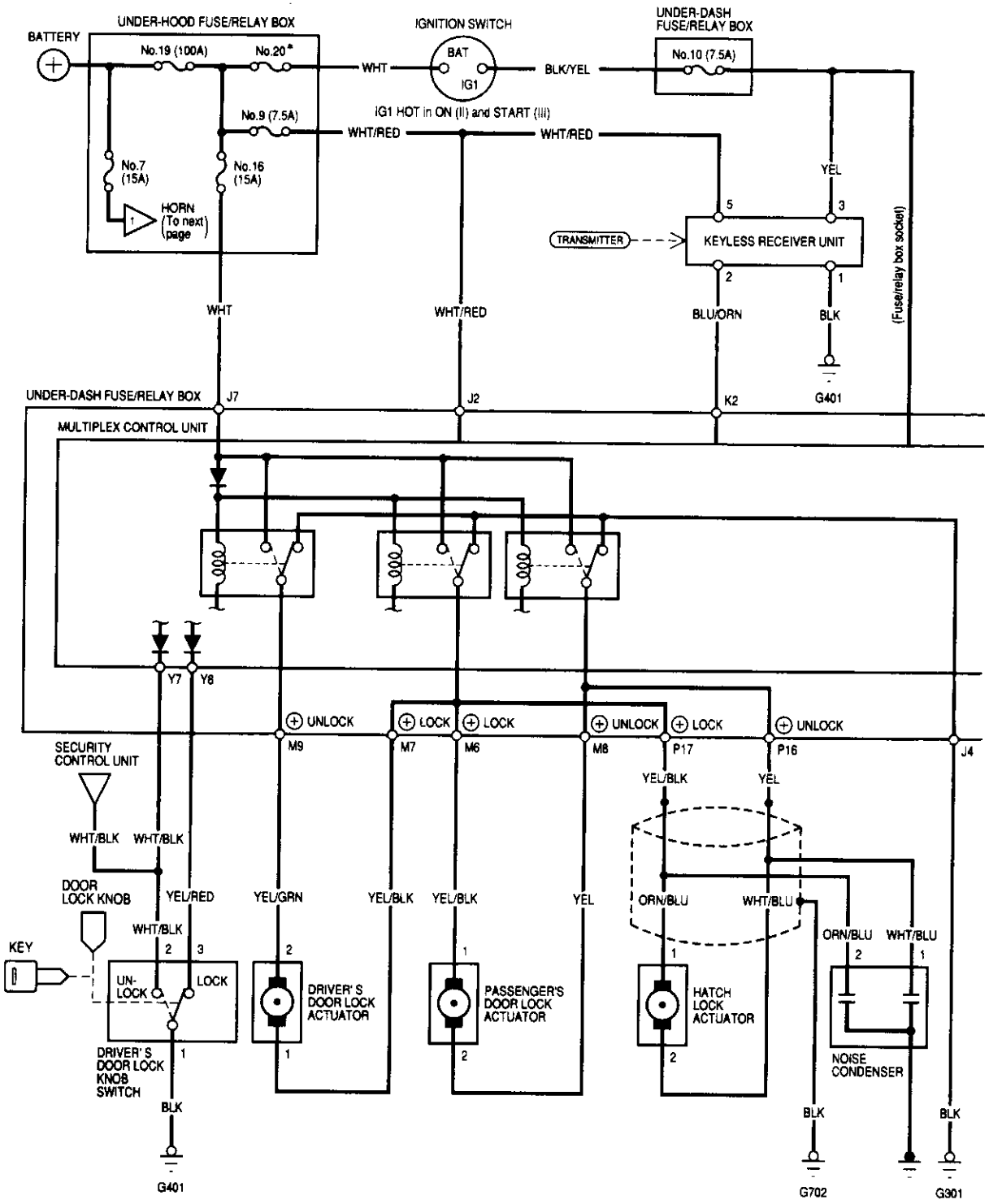
Keyless/Power Door Lock System

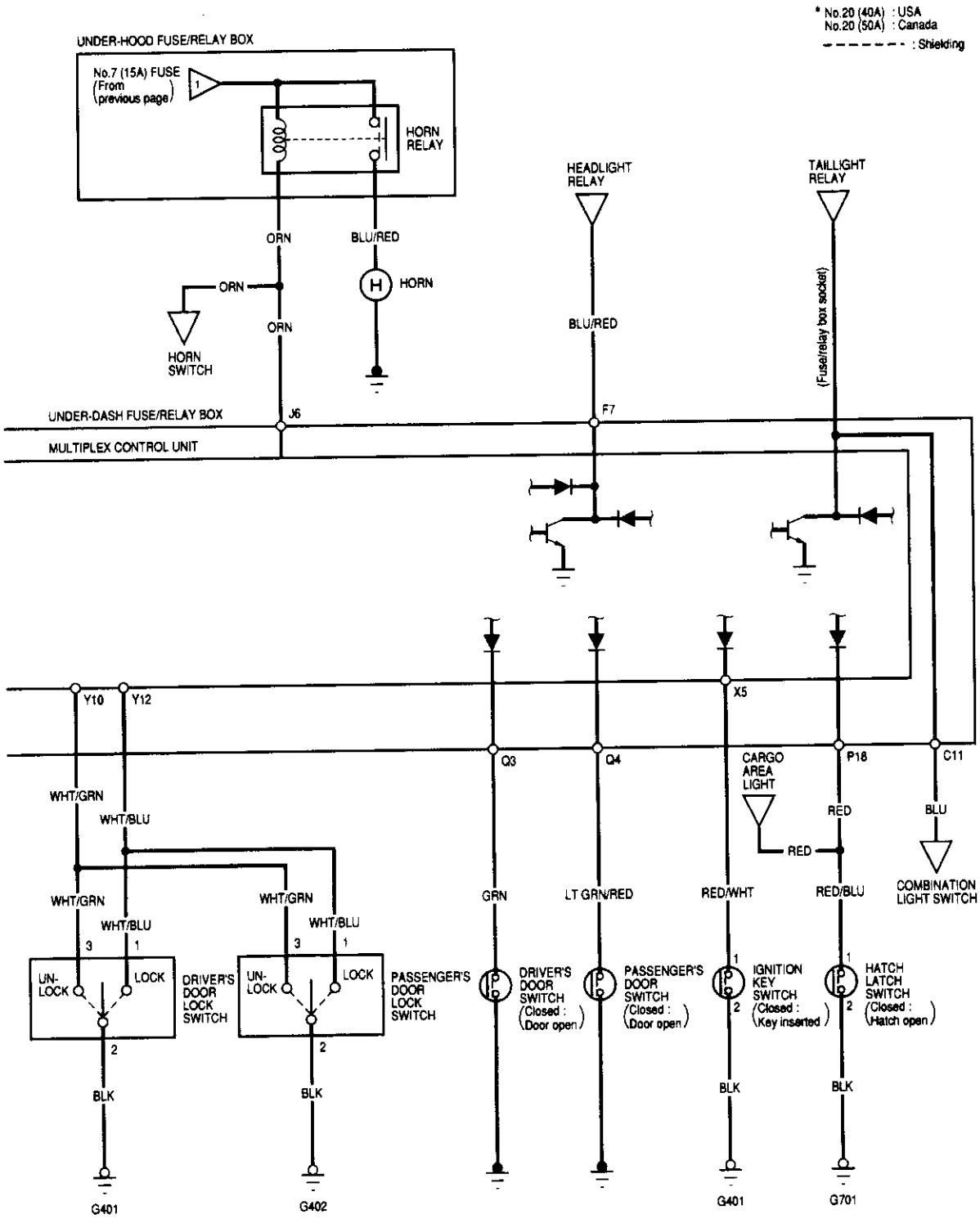
Component Location Index





Circuit Diagram



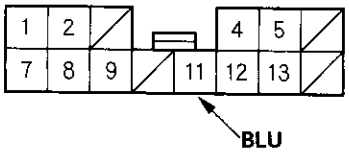

* No.20 (40A) : USA
No.20 (50A) : Canada
- - - - - - - : Shielding
UNDER-HOOD FUSE/RELAY BOX
No.7 (15A) FUSE (From previous page)
HORN RELAY
HEADLIGHT RELAY
TAILLIGHT RELAY
(Fuse/relay box socket)
ORN
BLU/RED
HORN
HORN SWITCH
BLU/RED
UNDER-DASH FUSE/RELAY BOX
J6
F7
MULTIPLEX CONTROL UNIT
Y10
Y12
X5
Q3
Q4
P18
C11
CARGO AREA LIGHT
RED
BLU
COMBINATION LIGHT SWITCH
WHT/GRN
WHT/BLU
GRN
LT GRN/RED
RED/WHT
RED/BLU
UN-LOCK
LOCK
DRIVER'S DOOR LOCK SWITCH
PASSENGER'S DOOR LOCK SWITCH
DRIVER'S DOOR SWITCH (Closed : Door open)
PASSENGER'S DOOR SWITCH (Closed : Door open)
IGNITION KEY SWITCH (Closed : Key inserted)
HATCH LATCH SWITCH (Closed : Hatch open)
BLK
G401
G402
G701

Control Unit Input Test

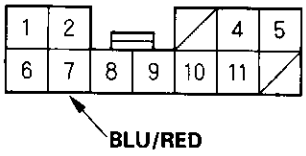
1. Before testing, troubleshoot the multiplex control system (see page 22-175).
2. Remove the dashboard lower cover.
3. Disconnect the under-dash fuse/relay box connectors.

   NOTE: All connectors are wire side of female terminals.

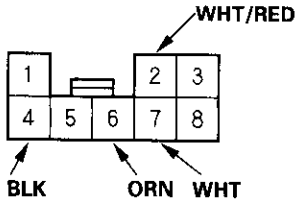
CONNECTOR C (14P)



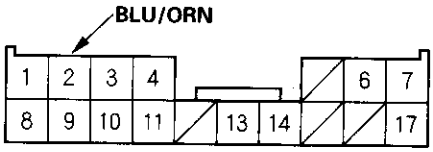
CONNECTOR F (12P)



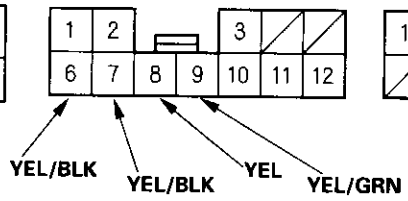
CONNECTOR J (8P)



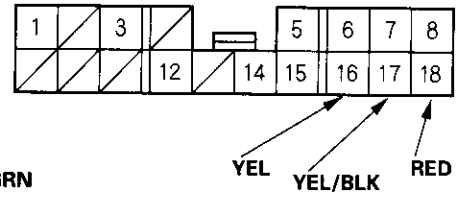
CONNECTOR K (17P)



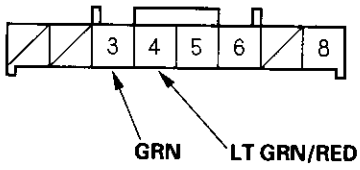
CONNECTOR M (12P)



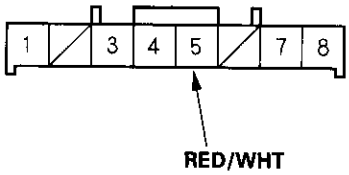
CONNECTOR P (18P)



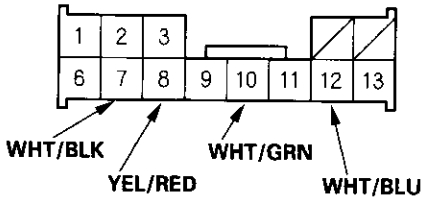
CONNECTOR Q (8P)



CONNECTOR X (8P)



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.

5. 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 6.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
J4	BLK	Under all conditions	Check for continuity to ground: There should be continuity.	• Poor ground (G301) • An open in the wire
J2	WHT/RED	Under all conditions	Check for voltage to ground: There should be battery voltage.	• Blown No. 9 (7.5A) fuse in the under-hood fuse/relay box • An open in the wire
J7	WHT	Under all conditions	Check for voltage to ground: There should be battery voltage.	• Blown No. 16 (15A) fuse in the under-hood fuse/relay box • An open in the wire
F7	BLU/RED	Under all conditions	Attach to ground: The headlights should come on.	• Blown No. 15 or 17 (20A) fuse in the under-hood fuse/relay box • Faulty headlight relay 1 or 2 • An open in the wire
J6	ORN	Under all conditions	Attach to ground: The horn should sound.	• Faulty horn relay • Faulty horn • An open in the wire
K2	BLU/ORN	Under all conditions	Check for continuity between the K2 terminal and keyless receiver unit 5P connector No. 2 terminal with the 5P connector disconnected. There should be continuity.	• An open in the wire
M7 M9	YEL/BLK YEL/GRN	Connect J7 terminal to M7 (M 9) terminal, and M 9 (M7) terminal to J4 terminal.	Check actuator operation: The driver's door lock actuator should lock (unlock).	• Blown No. 16 (15A) fuse in the under-hood fuse/relay box • Faulty driver's door lock actuator • An open in the wire
M6 M8	YEL/BLK YEL	Connect J7 terminal to M6 (M 8) terminal, and M 8 (M6) terminal to J4 terminal.	Check actuator operation: The passenger's door lock actuator should lock (unlock).	• Blown No. 16 (15A) fuse in the under-hood fuse/relay box • Faulty passenger's door lock actuator • An open in the wire
P16 P17	YEL YEL/BLK	Connect J7 terminal to P17 (P 16) terminal, and P 16 (P17) terminal to J4 terminal.	Check actuator operation: The hatch lock actuator should lock (unlock).	• Blown No. 16 (15A) fuse in the under-hood fuse/relay box • Faulty hatch lock actuator • An open in the wire

(cont'd)

Control Unit Input Test (cont'd)

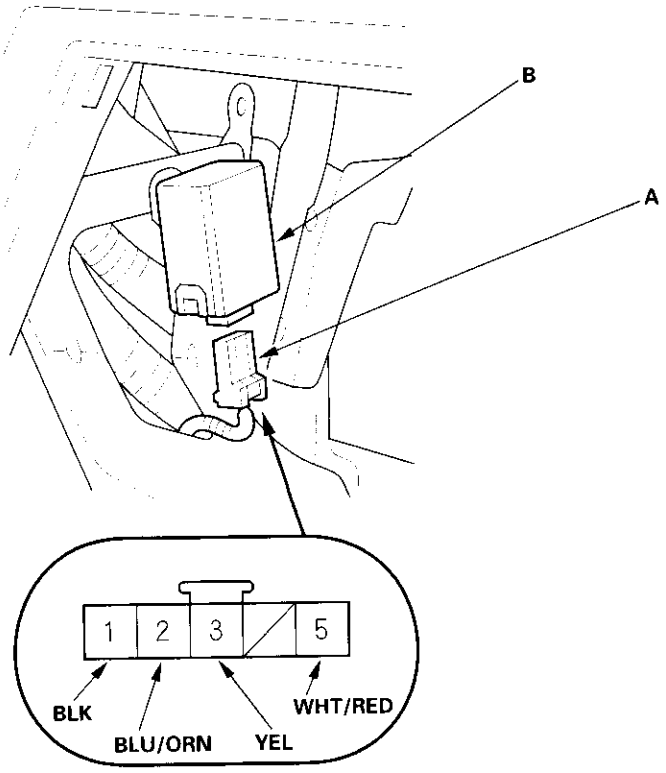
6. Reconnect all connectors to the under-dash fuse/relay box, and make these input tests at the appropriate connectors on the under-dash fuse/relay box

- 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
C11	BLU	Under all conditions	Attach to ground: The 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
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 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 switch • Short to ground
P18	RED	Hatch open	Check for voltage to ground: There should be 1 V or less.	• 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
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 in UNLOCKED position	Check for voltage to ground: There should be 1 V or less.	• Poor ground (G401) • Faulty driver's door lock knob switch • An open in the wire
		Driver's door lock knob switch in LOCKED position	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 in LOCKED position	Check for voltage to ground: There should be 1 V or less.	• Poor ground (G401) • Faulty driver's door lock knob switch • An open in the wire
		Driver's door lock knob switch in UNLOCKED position	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 or passenger's door lock switch in UNLOCKED position	Check for voltage to ground: There should be 1 V or less.	• Poor ground (G401, G402) • Faulty driver's door lock switch • An open in the wire
		Driver's or passenger's door lock switch in neutral or LOCKED position	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 or passenger's door lock switch in LOCKED position	Check for voltage to ground: There should be 1 V or less.	• Poor ground (G401, G402) • Faulty door lock switch • An open in the wire
		Driver's or passenger's door lock switch in neutral or UNLOCKED position	Check for voltage to ground: There should be 5 V or more.	• Faulty door lock switch • Short to ground

Keyless Receiver Unit Input Test

1. Remove the audio unit (see page 22-105).
2. Disconnect the 5P connector (A) from the keyless receiver unit (B).



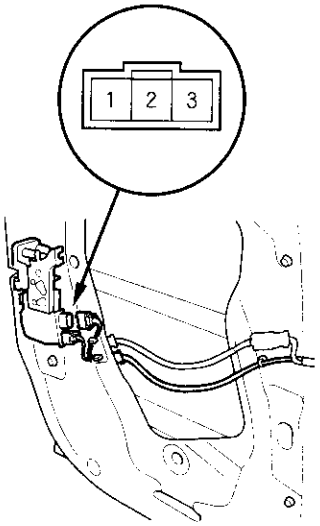
Wire side of female terminals

3. Inspect the connector and socket terminals to be sure they are all making good contact.
   - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
   - If the terminals are OK, go to step 4.
4. With the connector still disconnected, 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 continuity to ground: There should be continuity.	• Poor ground (G401) • 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 (7.5A) fuse in the under-hood fuse/relay box • An open in the wire
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

Door Lock Knob Switch Test

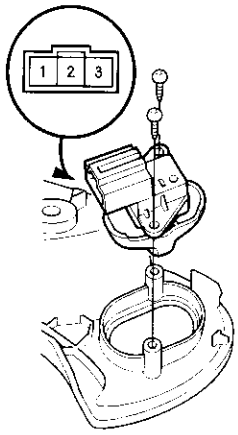
1. Remove the driver's door panel (see page 20-4).
2. Disconnect the 3P connector from the actuator.



3. Check for continuity between the No. 1 and No. 3 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. 1 and No. 2 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 driver's door lock actuator.

Door Lock Switch Test

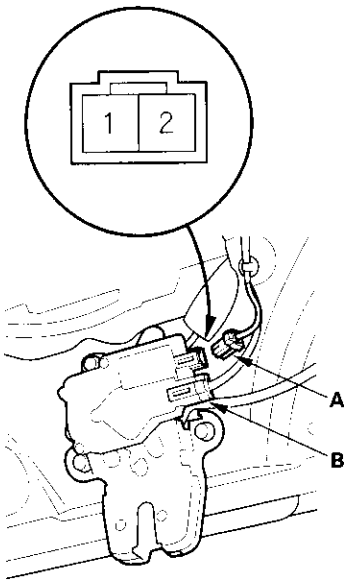
1. Remove the door panel (see page 20-4).
2. Remove the two mounting screws and the door lock switch.



3. Check for continuity between the No. 1 and No. 2 terminals:
   - There should be continuity when the door lock switch is in the LOCKED position.
   - There should be no continuity when the door lock 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 switch is in the UNLOCKED position.
   - There should be no continuity when the door lock switch is in the LOCKED position.
5. If the continuity is not as specified, replace the door lock switch.

Hatch Lock Actuator Test

1. Remove the hatch trim panel (see page 20-53).
2. Disconnect the 2P connector (A) from the actuator (B).



3. Check actuator operation by connecting power to the No. 2 terminal and ground the No. 1 terminal for a moment.
   The actuator should move to UNLOCK.

   NOTICE
   To prevent damage to the actuator, apply battery voltage momentarily.

4. Check actuator operation by connecting power to the No. 1 terminal and ground the No. 2 terminal for a moment.
   The actuator should move to LOCK.

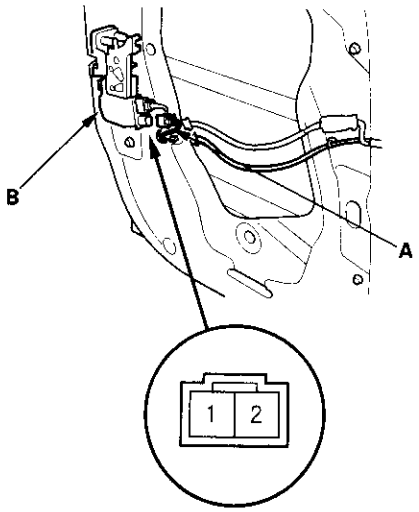
   NOTICE
   To prevent damage to the actuator, apply battery voltage momentarily.

5. If the actuator does not work as specified, replace it.

Door Lock Actuator Test

Driver's Door:

1. Remove the driver's door panel (see page 20-4).
2. Disconnect the 2P connector (A) from the actuator (B).



3. Check actuator operation by connecting power to the No. 1 terminal and ground the No. 2 terminal for a moment.
   The actuator should move to LOCK.

   NOTICE
   To prevent damage to the actuator, apply battery voltage momentarily.

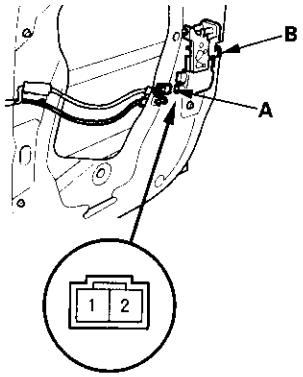
4. Check actuator operation by connecting power to the No. 2 terminal and ground the No. 1 terminal for a moment.
   The actuator should move to UNLOCK.

   NOTICE
   To prevent damage to the actuator, apply battery voltage momentarily.

5. If the actuator does not work as specified, replace it.

Passenger's Door:

1. Remove the passenger's door panel (see page 20-4).
2. Disconnect the 2P connector (A) from the actuator (B).



3. Check actuator operation by connecting power to the No. 1 terminal and ground the No. 2 terminal for a moment.
   The actuator should move to LOCK.

   NOTICE
   To prevent damage to the actuator, apply battery voltage momentarily.

4. Check actuator operation by connecting power to the No. 2 terminal and ground the No. 1 terminal for a moment.
   The actuator should move to UNLOCK.

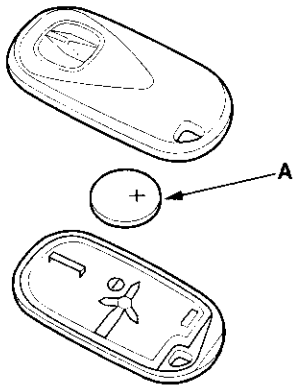
   NOTICE
   To prevent damage to the actuator, apply battery voltage momentarily.

5. If the actuator does not work as specified, replace it.

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 or the hatch is open, you cannot lock the doors with the transmitter.
- If you unlocked the doors with the transmitter, but do not open any of the doors within 30 seconds, the doors relock automatically.
- The doors do not lock or unlock with the transmitter if the ignition key is inserted in the ignition switch.

1. 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.
2. Replace the transmitter battery (A) with a new one, and try to lock and unlock the doors with the transmitter.
   - If the doors lock and unlock, the transmitter is OK.
   - If the doors don't lock and unlock, go to step 3.



3. 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.

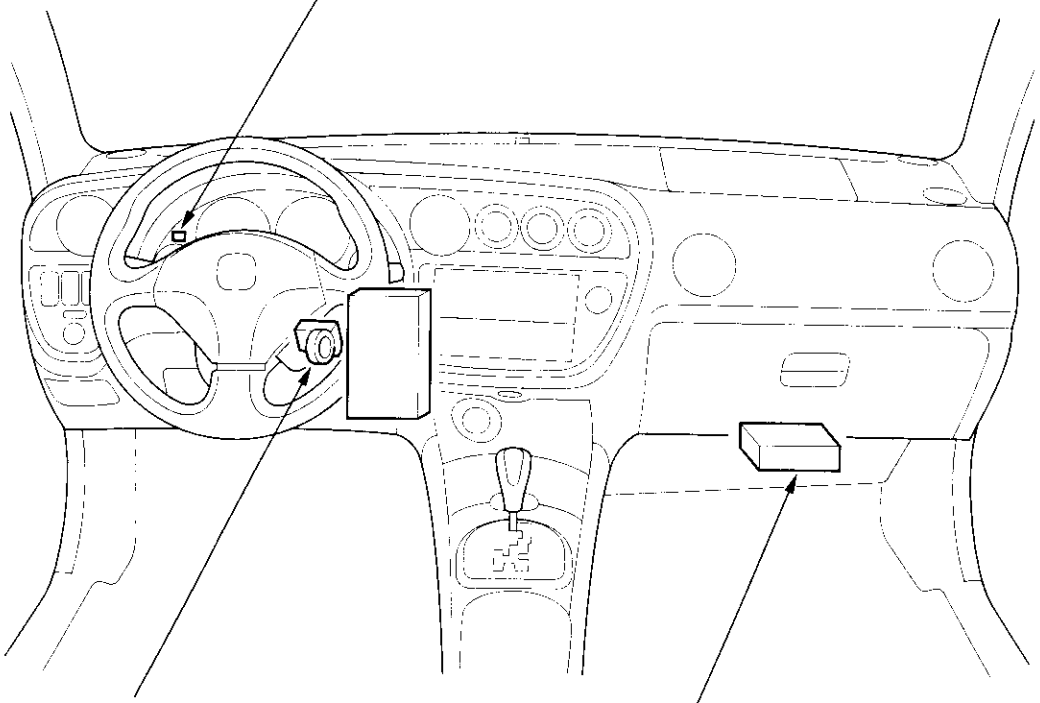
Transmitter Programming

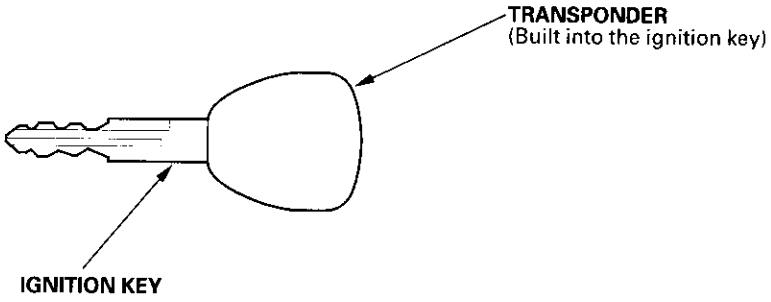
Storing transmitter codes:
The codes of up to three transmitters can be stored in the keyless receiver unit memory. (If a fourth code is stored, the code which was input first will be erased.)

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 under the audio unit.
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 under the audio unit.
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 under the audio unit.
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 under the audio unit.
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 remaining transmitters (up to two auditional 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 transmitters.

Component Location Index

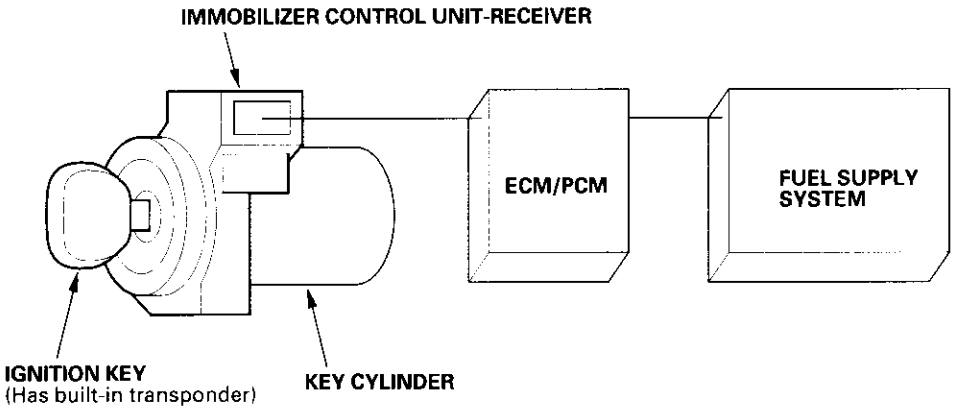




System Description

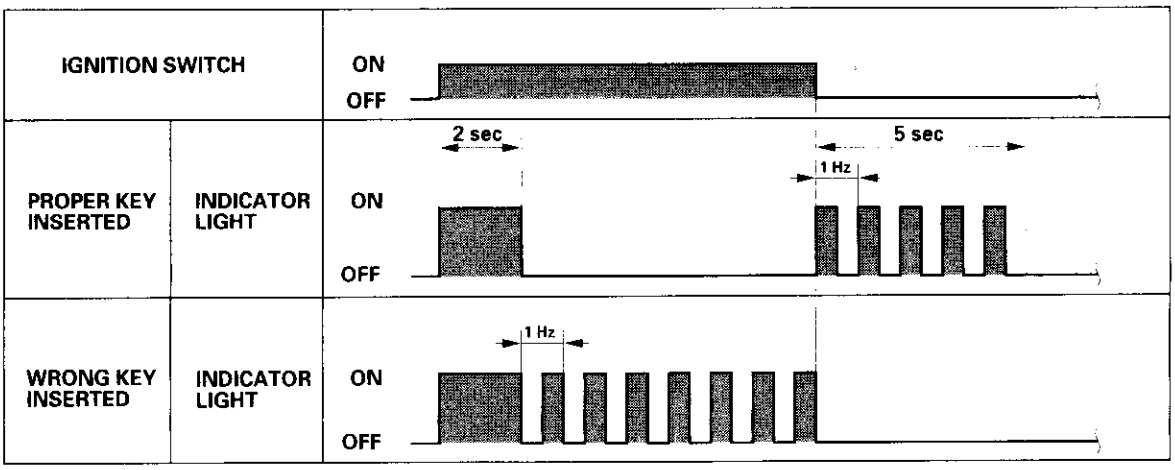
The vehicle is equipped with an immobilizer system that will disable the vehicle unless the proper ignition key is used. This system consists of a transponder located in the ignition key, an immobilizer control unit-receiver, an indicator light, and the ECM/PCM.

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/PCM.



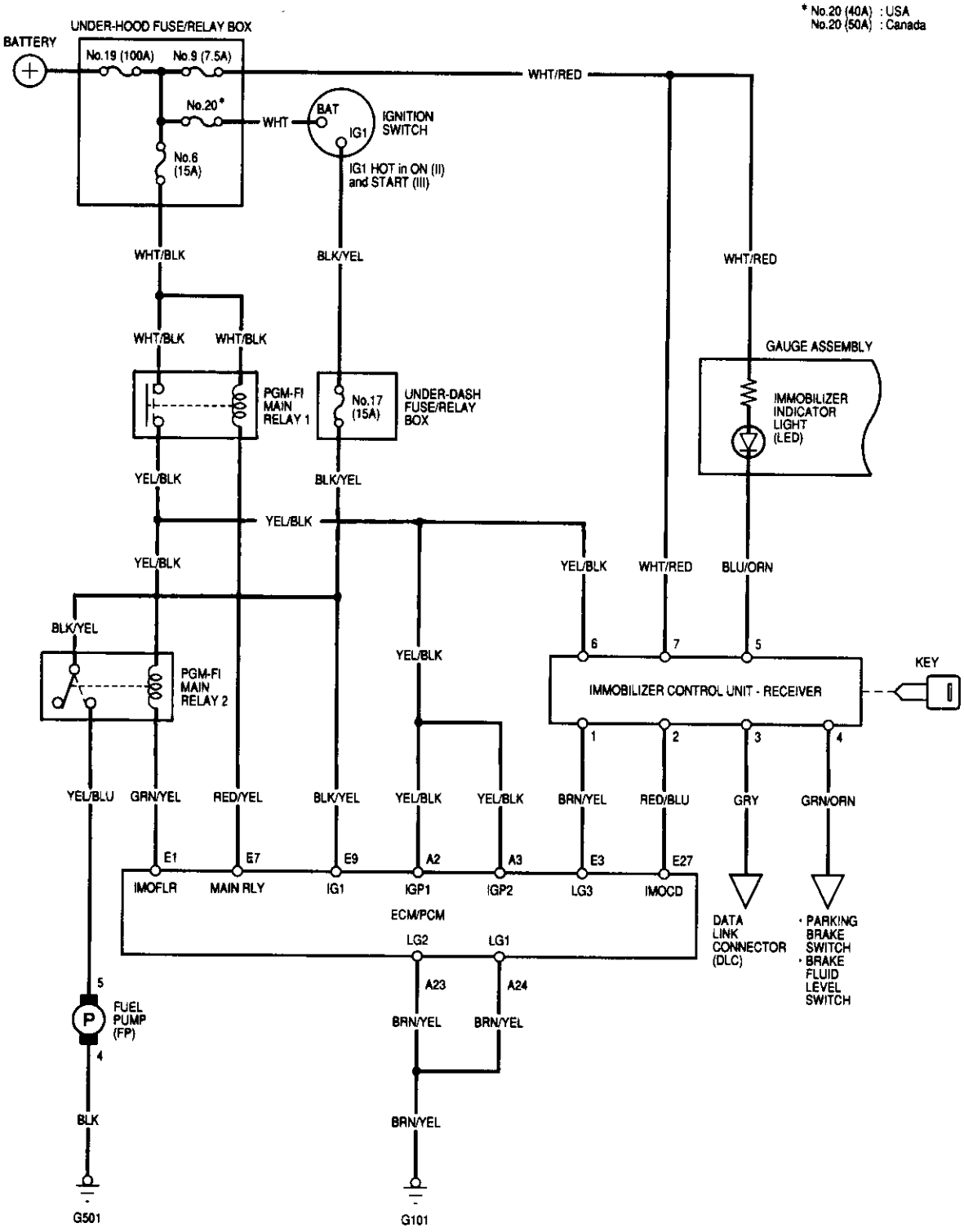
- If the proper key has been used, the immobilizer indicator light will come on for about 2 seconds, then go off.
- If the wrong key has been used or the code was not received or recognized by the unit, the indicator light will come on for about 2 seconds, then it will blink until the ignition switch 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 Acura Customer Relations.

IMMOBILIZER INDICATOR LIGHT BLINKING PATTERN:



Immobilizer System

Circuit Diagram



Troubleshooting

Before troubleshooting the immobilizer system, troubleshoot any ECM/PCM Diagnostic Trouble Codes (DTCs) (see page 11-3), and make sure the ECM/PCM 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.

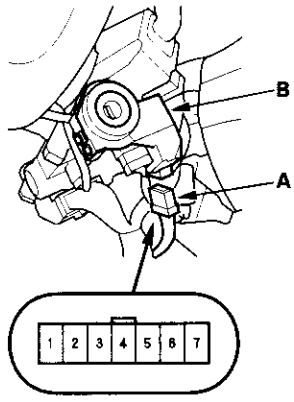
   NO – Check for these problems, then go to step 3.

   - Blown No. 9 (7.5A) 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 dashboard lower cover (see page 20-61).

4. Remove the steering column lower cover (see page 17-28).

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 (7.5A) 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 9.

   NO – Check for these problems:

   - Open on the BRN/YEL wire. ■
   - Faulty ECM/PCM. ■

9. Check for continuity between the immobilizer control unit-receiver 7P connector No. 2 terminal and ECM/PCM terminal E27.

   Is there continuity?

   YES – Go to step 10.

   NO – Repair the open in the RED/BLU wire. ■

10. Reconnect the 7P connector to the immobilizer control unit-receiver.

11. 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:

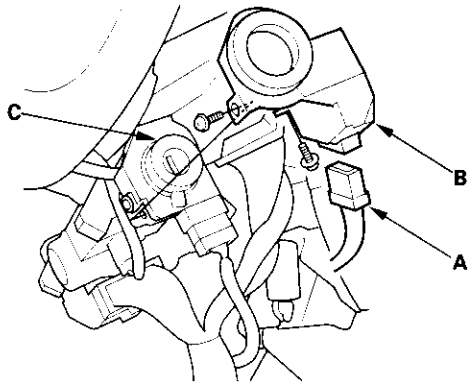
    - Faulty parking brake switch or a poor body ground of the parking brake switch. ■
    - Repair open in the GRN/ORN wire. ■

Immobilizer Control Unit-Receiver Replacement

1. Remove the dashboard lower cover (see page 20-61).

2. Remove the steering column covers (see page 17-25).

3. Disconnect the 7P connector (A) from the immobilizer control unit-receiver (B).

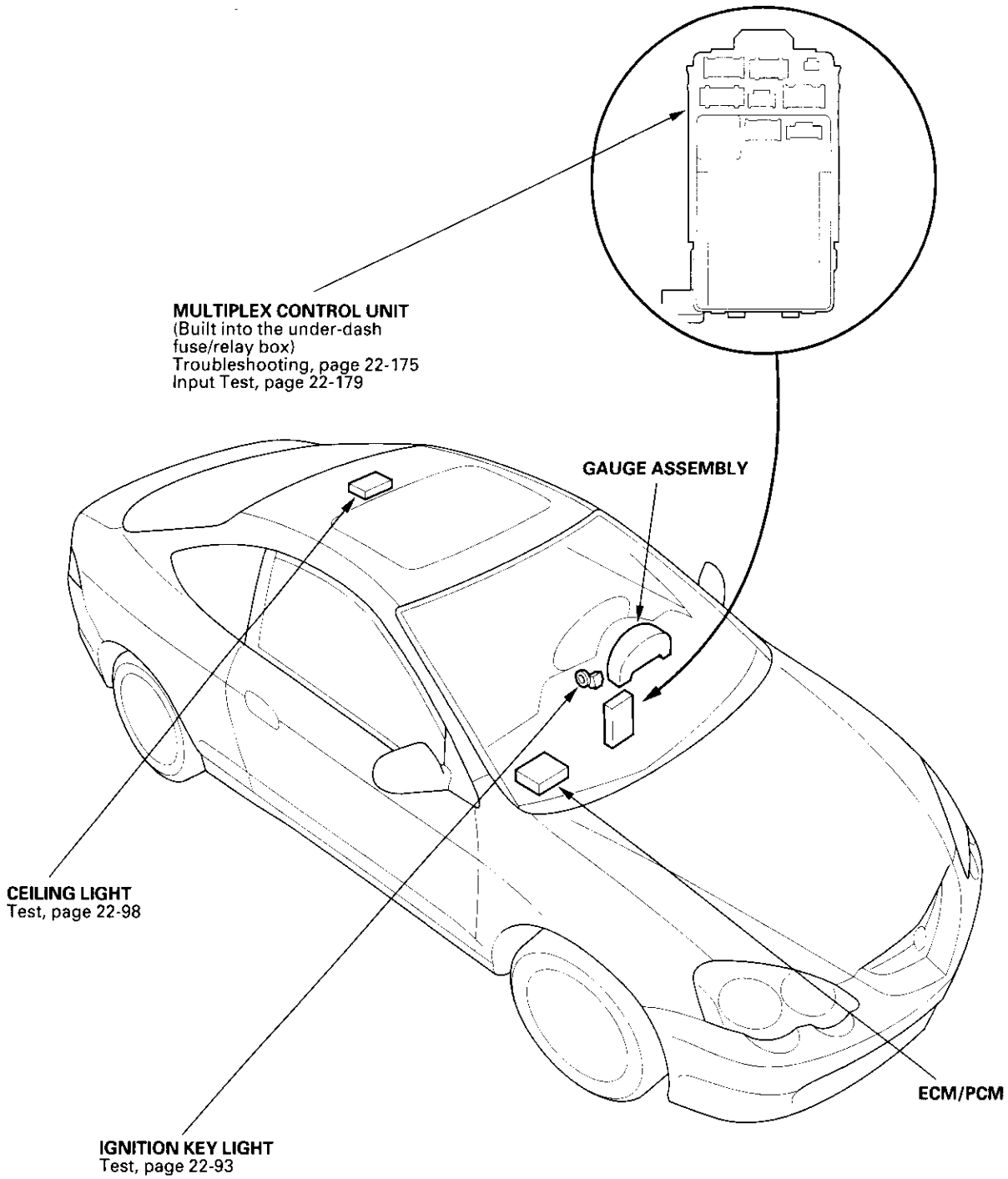


4. Remove the two screws and the immobilizer control unit-receiver from the ignition key cylinder (C).

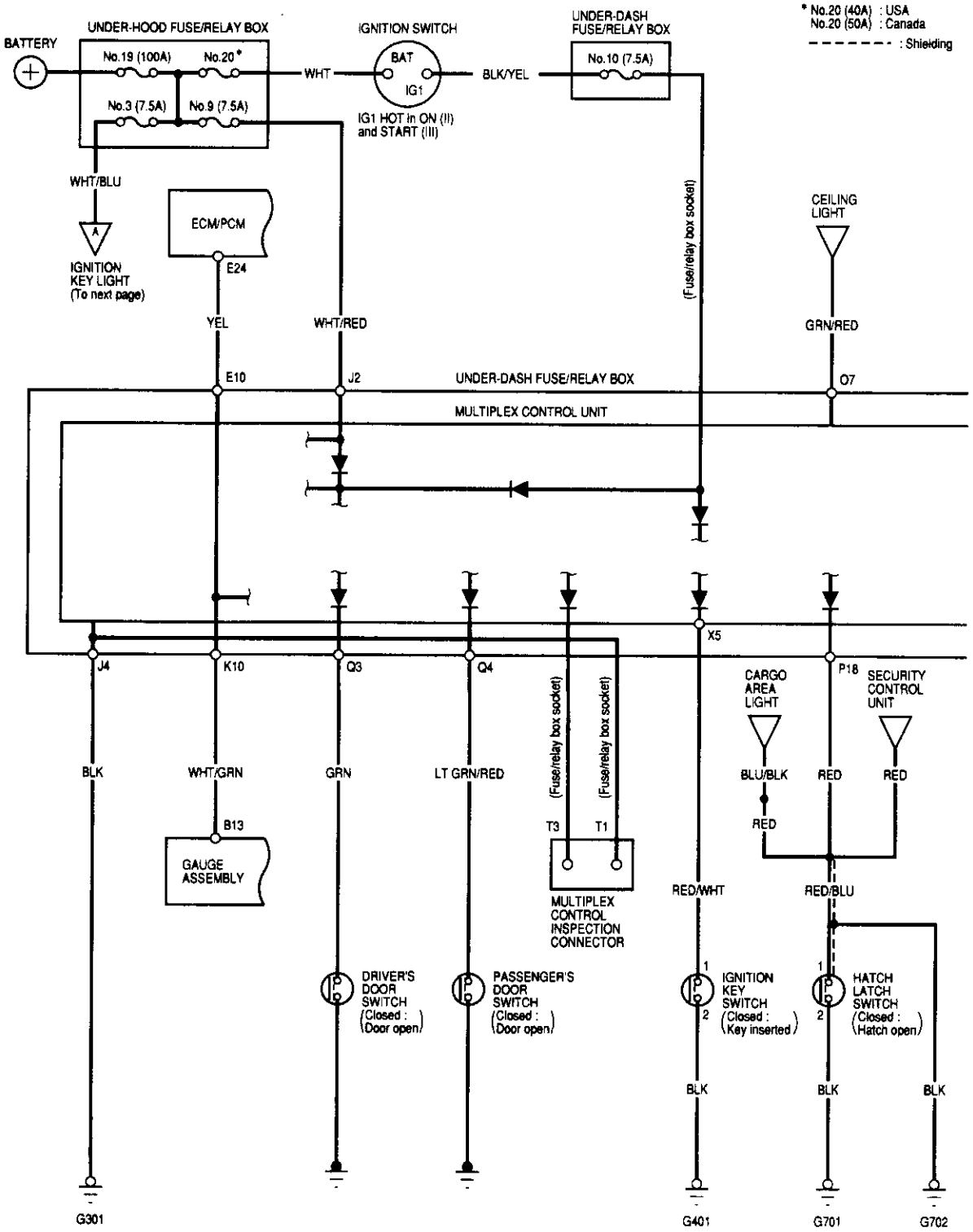
5. Install the immobilizer control unit-receiver in the reverse order of removal.

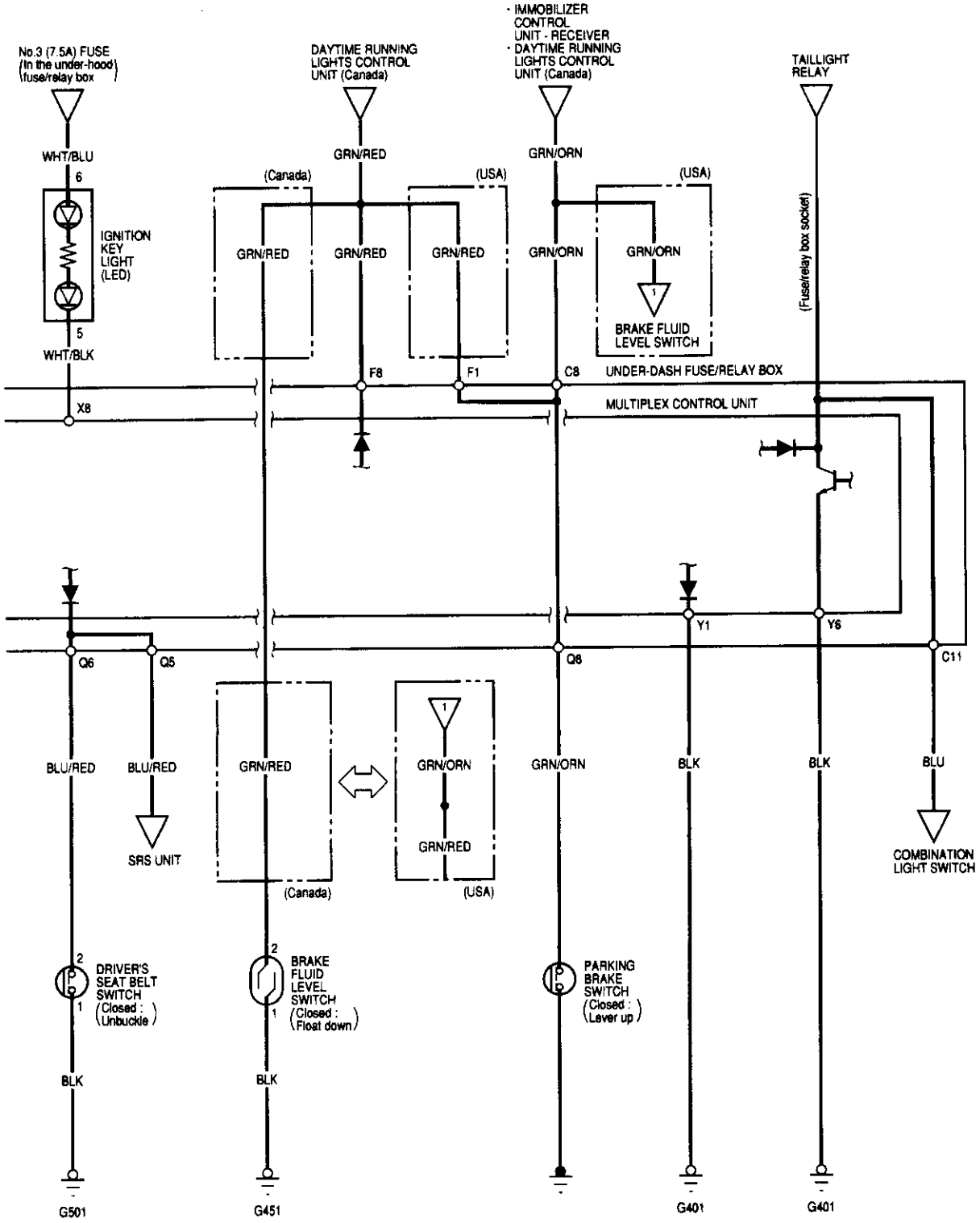
6. After replacement, rewrite the unit with a Honda PGM Tester, then check the immobilizer system.

Component Location Index



Circuit Diagram




No.3 (7.5A) FUSE (In the under-hood fuse/relay box)
DAYTIME RUNNING LIGHTS CONTROL UNIT (Canada)
· IMMOBILIZER CONTROL UNIT - RECEIVER
· DAYTIME RUNNING LIGHTS CONTROL UNIT (Canada)
TAILLIGHT RELAY
WHT/BLU
GRN/RED
GRN/ORN
(Canada)
(USA)
(USA)
(Fuse/relay box socket)
IGNITION KEY LIGHT (LED)
GRN/RED
GRN/RED
GRN/RED
GRN/ORN
GRN/ORN
BRAKE FLUID LEVEL SWITCH
WHT/BLK
F8
F1
C8
UNDER-DASH FUSE/RELAY BOX
X8
MULTIPLEX CONTROL UNIT
Y1
Y6
Q6
Q5
Q8
C11
BLU/RED
BLU/RED
GRN/RED
GRN/ORN
GRN/RED
GRN/ORN
BLK
BLK
BLU
SRS UNIT
(Canada)
(USA)
COMBINATION LIGHT SWITCH
DRIVER'S SEAT BELT SWITCH (Closed : Unbuckle)
BRAKE FLUID LEVEL SWITCH (Closed : Float down)
PARKING BRAKE SWITCH (Closed : Lever up)
BLK
BLK
G501
G451
G401
G401

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)
- Interlock system
- Keyless/power door lock
- Gauge assembly, temperature gauge, and indicator lights
- HVAC (compressor and fan control)
- Key-in reminder
- Lights-on reminder
- Seat belt 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/PCM, 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 40 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

Special Tool Required:
MPCS Service Connector 07WAZ-001010A

Mode 1 Test

1. Remove the dashboard lower cover (see page 20-61).

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?

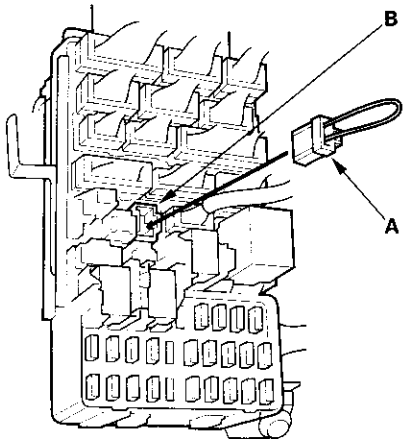
   YES – Go to step 2.

   NO – Find and repair the cause of the blown fuse. ■

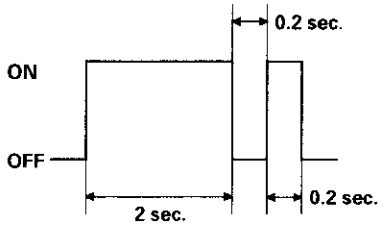
3. Turn the ignition switch ON (II).
   If the driver's seat belt is unbuckled, the seat belt remainder will chime 6 times.

4. Set the ceiling light to the center position and close all the doors.

5. Connect the special tool (A) to the multiplex inspection connector (B).



MODE 1: Ignition switch light and ceiling light



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 the No. 4 terminal 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 there 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 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 good 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.

(cont'd)

Troubleshooting (cont'd)

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/PCM 1. Faulty power or ground to the ECM/PCM 2. Faulty ECM*/PCM 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 ECM/ PCM 1. Faulty power or ground to the ECM/PCM 2. Faulty gauge assembly
6	The ECM cannot receive signals from the multiplex control unit and the gauge assembly 1. Faulty power or ground to the ECM/PCM 2. Faulty gauge ECM*/PCM

*Before replacing a Faulty ECM/PCM make sure it has the latest software revision. Update if necessary before swapping or replacing.

Multiple DTCs

Multiplex DTCs	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 ECM/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 terminalB13 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 B13
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/PCM terminal E10 and ECM/ PCM terminal E24

MODE 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 celing 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 celing light will blink once. If the circuit is faulty, the lights will not blink.

   Tip: Operating the switches most closely related to the problem you are diagnosing is quick way of testing the circuits integrity.

Switch	Lights blinks when:
Windshield washer switch	Washer switch pulled
Windshield wiper switch	Switch in the INT position
Driver's door switch	As door is opened
Pssenger's door switch	As door is opened
Hatch latch switch	As hatch is opened
Parking brake switch	As parking brake applied
Driver's door lock switch	Pushed to lock and unlock
Driver's door knob switch	Knob in unlock or lock position
A/C switch	A/C switch ON and blower switch ON
Headlight swtich	switched to the PARK position
Brake pedal position switch	Brake pedal pressed
Transmission range switch	• Shift [P], [R], [D], [D3] (A/T) • Up shift then downshift (M/T)

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 singe switch falls in mode 2, troubleshoot its circuit.

(cont'd)

Troubleshooting (cont'd)

Multiplex Sleep Mode Test

1. Connect the positive lead of a voltmeter to terminal 10 of the under-dash fuse/relay box connector E (YEL) or K (WHT/GRN) and the negative lead to body ground.
2. Connect an ammeter between the negative battery cable and the negative battery post.
3. Remove the special tool from the multiplex inspection connector.
4. Close the doors, the hatch, turn the headlights off, turn off the ignition switch and remove the key.
5. Within 1 minute, the voltage on the communication wire (E10 or K10) should change from about 4 – 10 V to battery voltage and the amperage at the negative battery terminal should drop from about 70 – 80 mA to less than 10 mA.
6. Record your findings and go to the Multiplex Wake-up Test.Multiplex Wake-up Test.

Multiplex Wake-up Test

1. From the sleep mode, wake-up the multiplex system by performing one of the following operations;

Operation	Method used for wake up
Cycle ignition switch on	All multiplex units wake up simultaneously (regardless of ability to communicate)
Turn combination light switch to parking light position	Multiplex control unit wakes up the other units via communication lines.
Open the driver's door	Multiplex control unit wakes up the other units via communication lines.

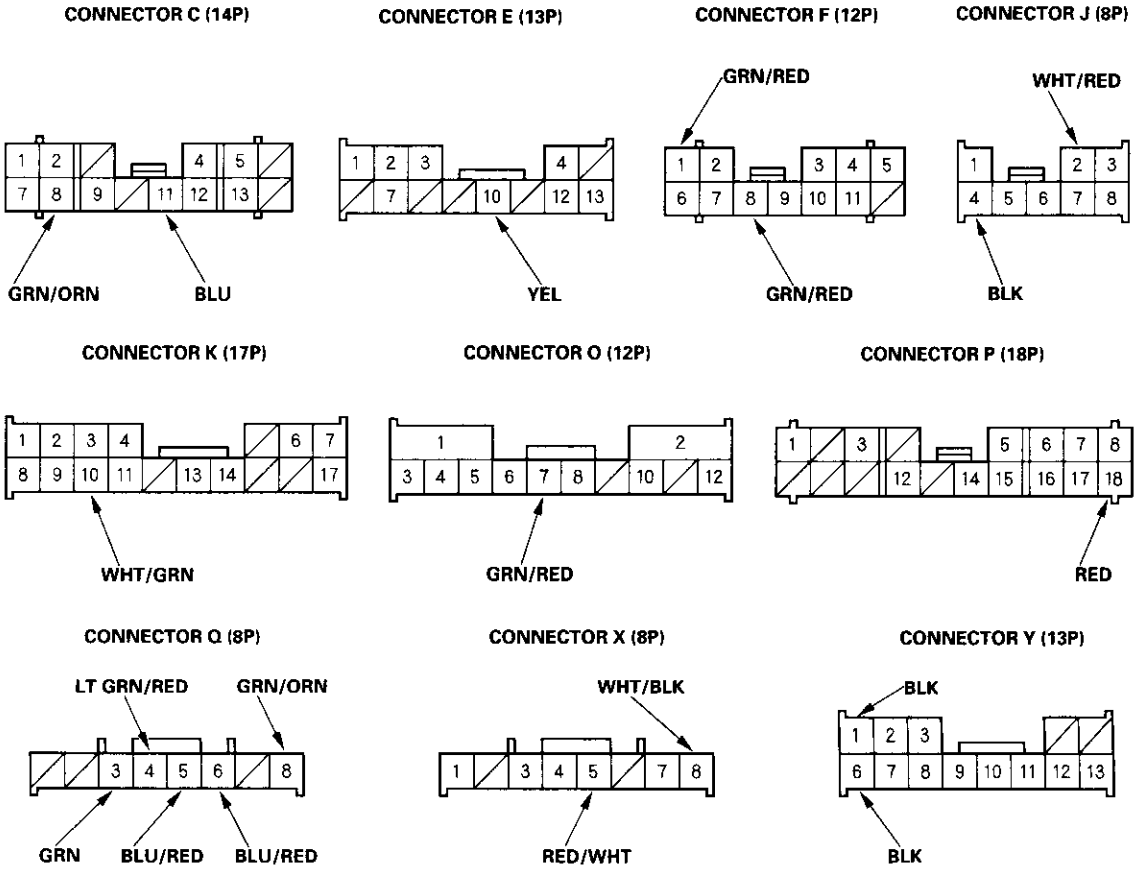
2. As the system shifts to its active (wake-up) mode, communication wire voltage will return to 4 – 10 V and the battery terminal current will return to 70 – 80 mA.
3. If the system does not go into sleep mode or wake-up properly, perform the Multiplex Control Unit Input Test (see page 22-179).

   NOTE: If multiple circuits fall to respond in the mode 2 tests and/or the multiplex circuit falls to go into sleep mode or wake-up, it may mean that a control unit failed without triggering a DTC in mode 1. Perform the Multiplex Control Unit Input Test (see page 22-179).
   If the input test confirms that all the inputs are working properly,substitute a known-good multiplex control unit, gauge assembly or ECM/PCM one at a time. If after swapping one of the above components the system works properly, replace the original component, it is faulty.

Multiplex Control Unit Input Test

1. Remove the driver's dashboard lower cover (see page 20-61).

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.



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.

(cont'd)

Multiplex Control Unit Input Test (cont'd)

4. 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 5.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
J4	BLK	Under all conditions	Check for continuity to ground: There should be continuity.	• Poor ground (G301) • An open in the wire
Y6	BLK	Under all conditions	Check for continuity to ground: There should be continuity.	• Poor ground (G401) • An open in the wire
Y1	BLK	Under all conditions	Check for continuity to ground: There should be continuity.	• Poor ground (G401) • An open in the wire

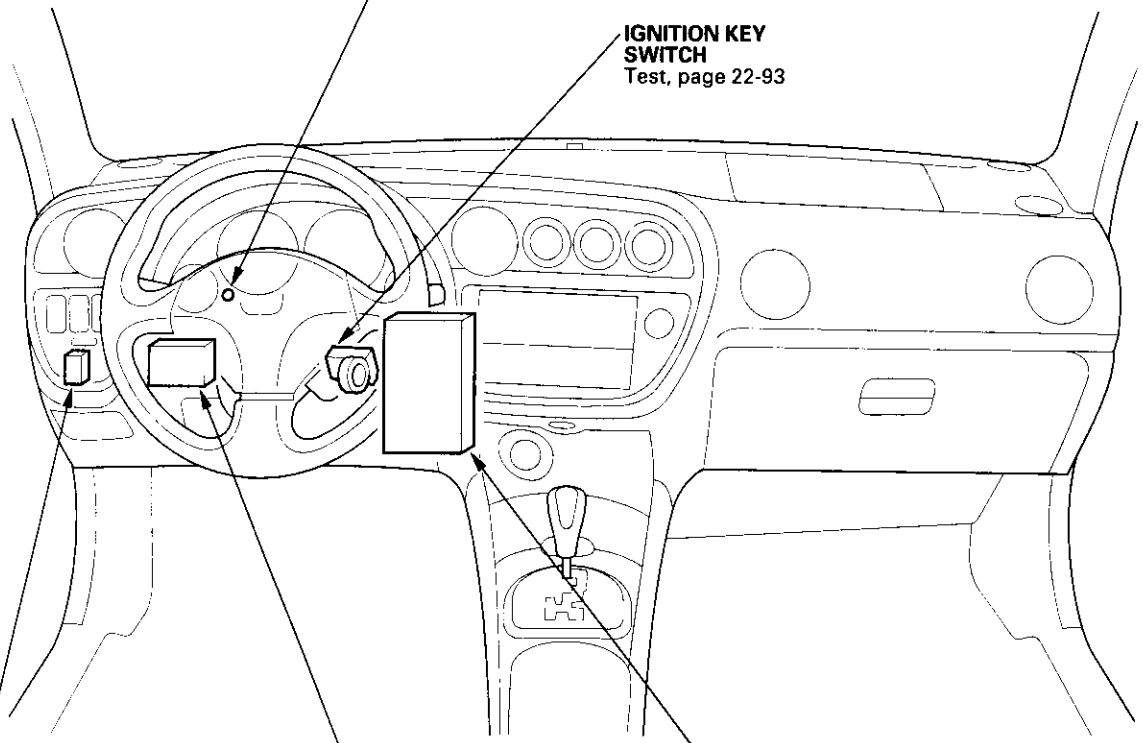
5. Reconnect the connectors to the under-dash fuse/relay box, and make sure these input tests at the appropriate connectors on the under-dash fuse/relay box.

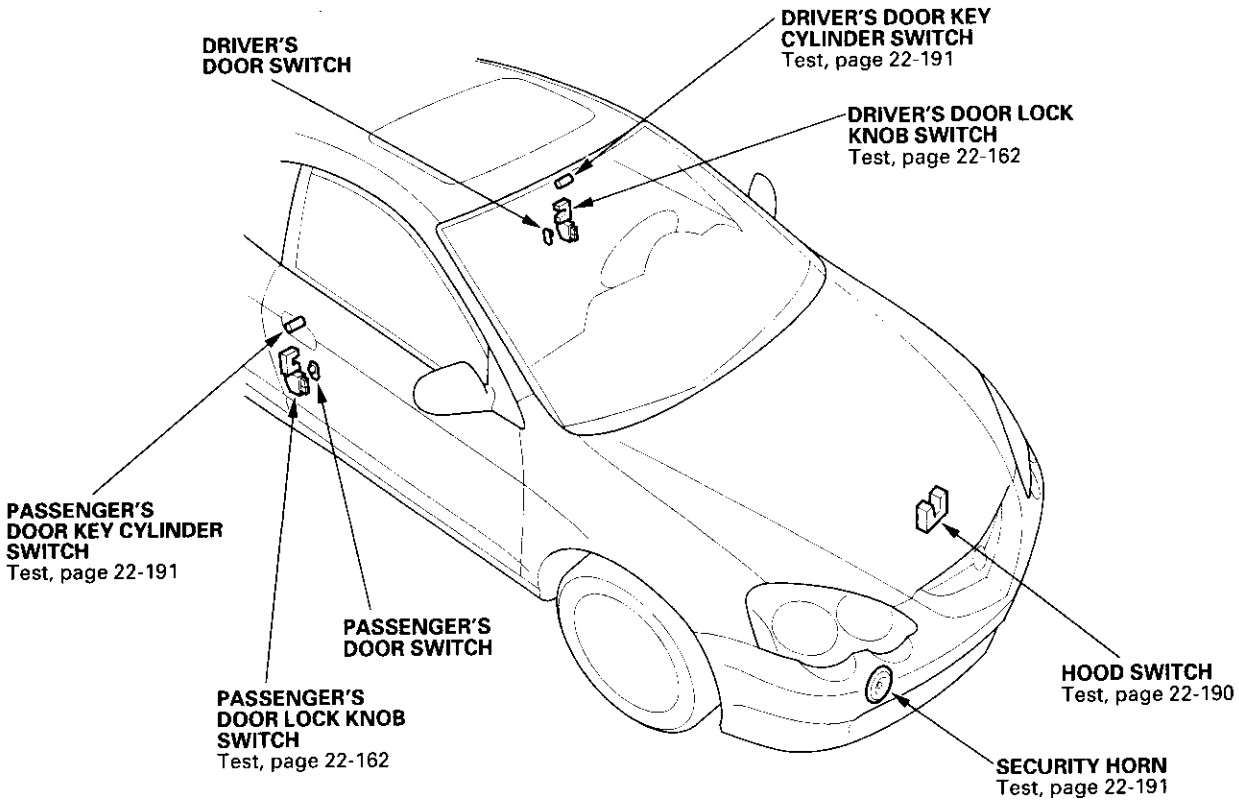
   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If all the input tests prove OK, the multiplex control unit must be faulty, replace the under-dash fuse/relay box assembly.

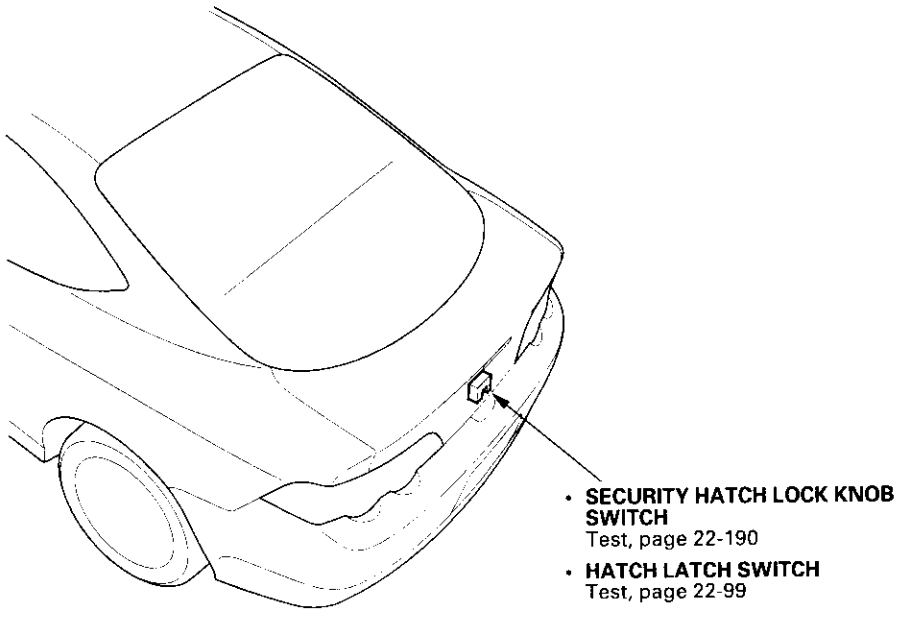
Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
J2	WHT/RED	Under all conditions	Check for voltage to ground: There should be battery voltage.	• Blown No. 9 (7.5A) fuse in the under-hood fuse/relay box • An open in the wire
Q3	GRN	Driver's door open	Check for voltage 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	GRN/ORN	Parking brake lever down	Check for voltage to ground: There should be 5 V or more.	• Faulty parking brake switch • Short to ground
F1	GRN/RED			
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 5 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 (G701) • 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 is 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 is 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 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

Component Location Index

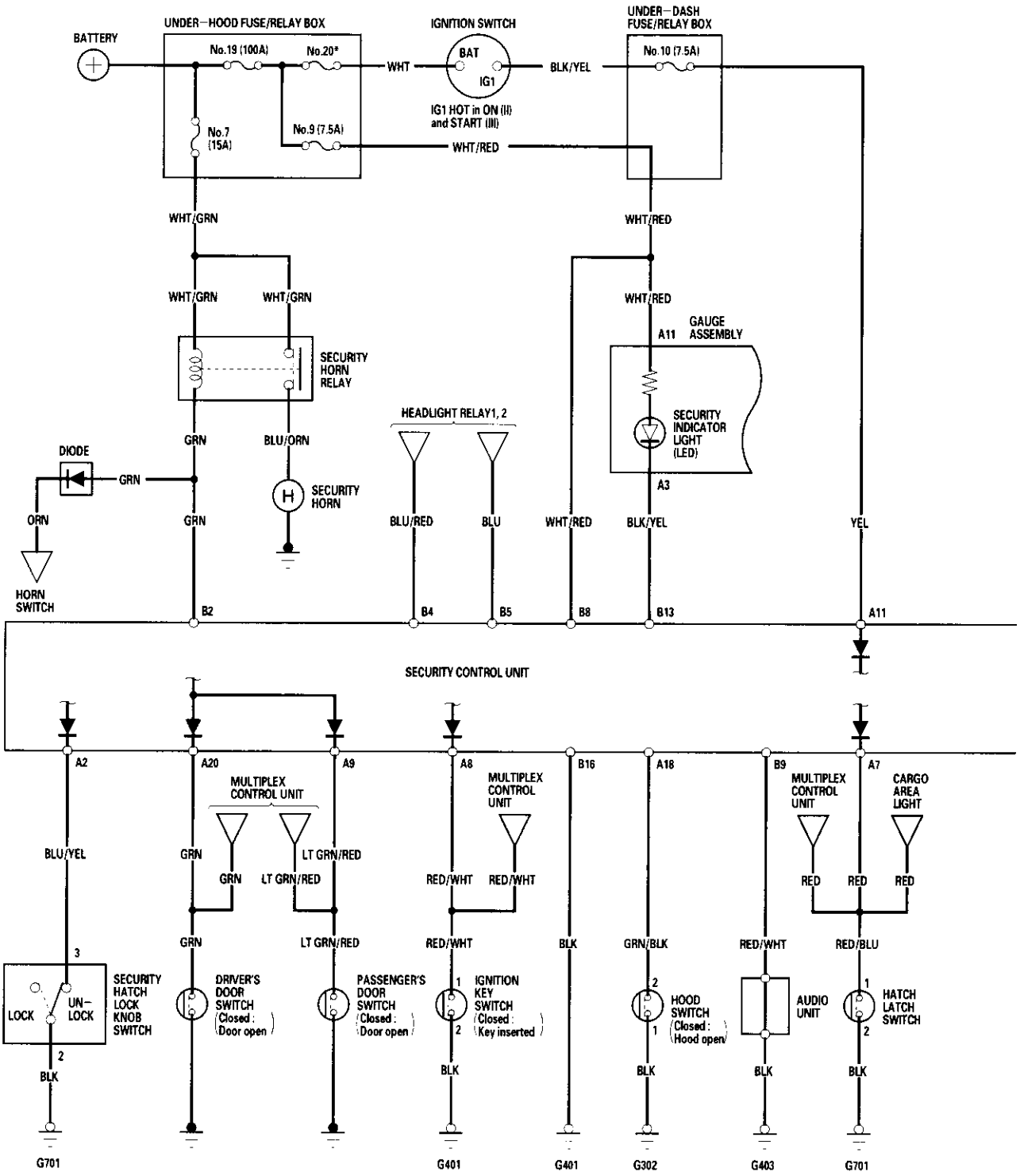



DRIVER'S DOOR SWITCH
DRIVER'S DOOR KEY CYLINDER SWITCH
Test, page 22-191
DRIVER'S DOOR LOCK KNOB SWITCH
Test, page 22-162
PASSENGER'S DOOR KEY CYLINDER SWITCH
Test, page 22-191
PASSENGER'S DOOR SWITCH
PASSENGER'S DOOR LOCK KNOB SWITCH
Test, page 22-162
HOOD SWITCH
Test, page 22-190
SECURITY HORN
Test, page 22-191

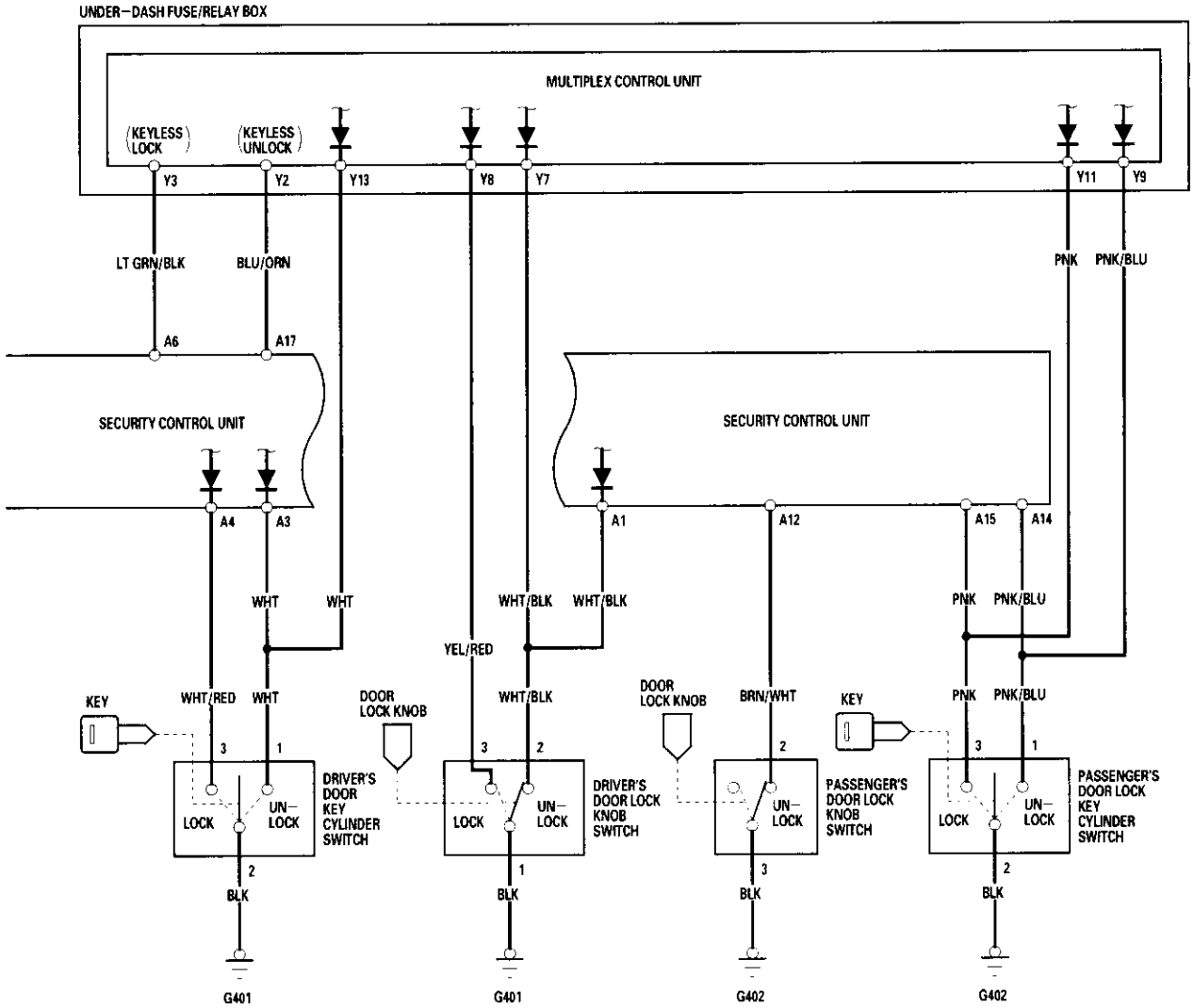

• SECURITY HATCH LOCK KNOB SWITCH
Test, page 22-190
• HATCH LATCH SWITCH
Test, page 22-99

Security Alarm System

Circuit Diagram



* No.20 (40A) : USA
No.20 (50A) : Canada



System Description

Security Alarm System

The security alarm system is armed automatically after the doors, hood, and hatch are closed and locked. For the system to arm, the ignition switch must be off and the key removed, and the security control unit must receive signals that the doors, hood, and hatch are closed and locked. The alarm can be disarmed at any time by unlocking either door with the key or the remote transmitter.

When everything is closed and locked, none of the control unit inputs are grounded (switches open). 10 seconds after the doors are locked with the key or the lock knob, or immediately after locking the doors with the remote transmitter, the system arms and the security indicator on the gauge assembly flashes.

If one of the switches is misadjusted or there is a short in the system, the system will not arm. As long as the control unit continues to receive a ground signal, it senses that the vehicle is not closed and locked, and it will not arm. Conversely, a switch that is slightly misadjusted can sound an alarm for no apparent reason. In this case, it may only take a significant change in outside temperature, the vibration of a passing truck, or someone bumping into the vehicle to make the alarm sound.

If anything is opened or improperly unlocked after the system is armed, the control unit receives a ground signal from that switch. The system sounds the alarm when any of these things occur:

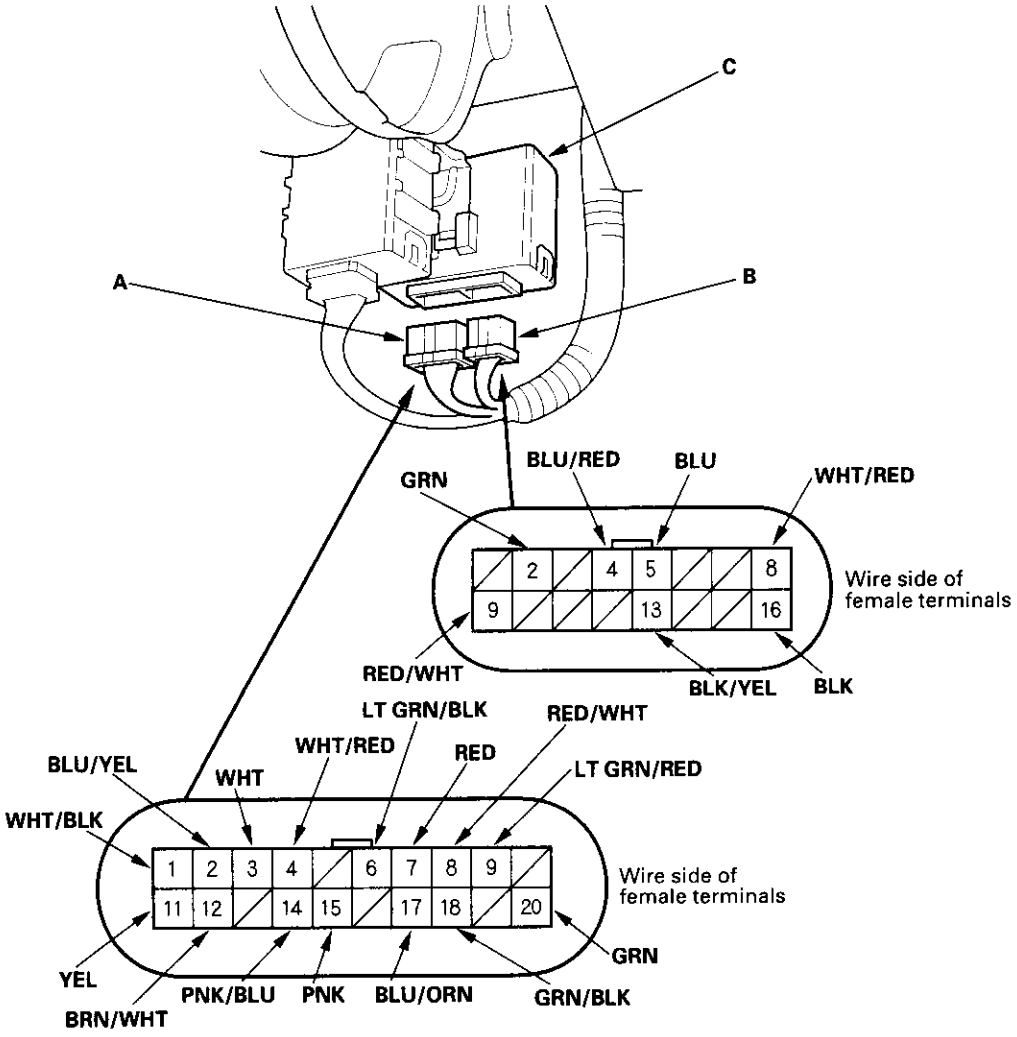
- The ignition switch is turned ON (II)
- A door is forced open
- A door or hatch is unlocked without using the key or the remote transmitter
- The hood is opened
- The hatch is opened
- The audio unit is removed

When the system sounds the alarm because of one of these violations, the security horn sounds and the headlight (low beam), parking lights, taillights, and side marker lights flash for 120 seconds.The alarm then shuts off and the system rearms. The alarm can be stopped by unlocking either door with the key or the remote transmitter.

When the panic button is pressed on the remote transmitter, the security horn sounds and the headlights (low beam), parking lights, taillights, and side marker lights flash for 30 seconds. The alarm then shuts off, locks the doors, and arms the system.

Security Control Unit Input Test

1. Remove the dashboard lower cover (see page 20-61).
2. Disconnect the 20P connector (A) and 16P connector (B) from the control unit (C).



3. Inspect the all 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.

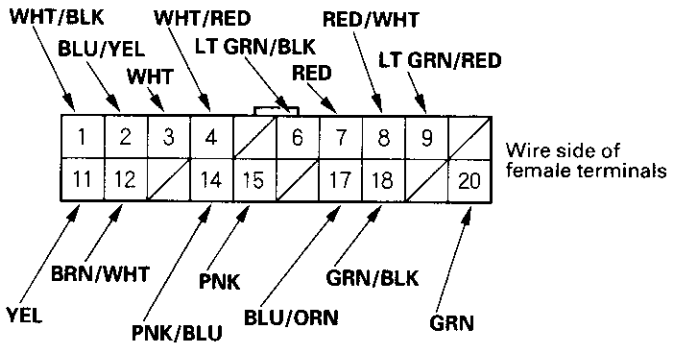
(cont'd)

Security Control Unit Input Test (cont'd)

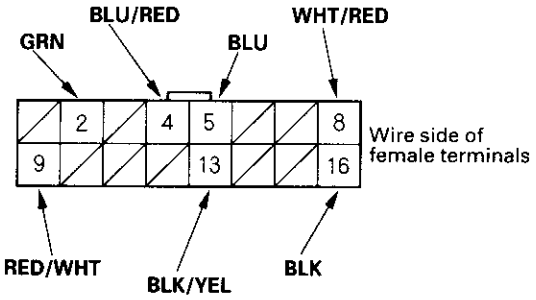
4. With the connectors still disconnected, make these input tests at the connector.

   - 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 5.

CONNECTOR A:



CONNECTOR B:



Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
B16	BLK	Under all conditions	Check for continuity to ground: There should be continuity.	• Poor ground (G401) • An open in the wire
B8	WHT/RED	Under all conditions	Check for voltage to ground: There should be battery voltage.	• Blown No. 9 (7.5A) fuse in the under-hood fuse/relay box • An open in the wire
A11	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
B2	GRN	Under all conditions	Attach to ground: The security horn should sound.	• Blown No. 7 (15A) fuse in the under-hood fuse/relay box • Faulty security horn relay • Faulty security horn • An open in the wire
B13	BLK/YEL	Under all conditions	Attach to ground: The security indicator should come on.	• Blown No. 9 (7.5A) fuse in the under-dash fuse/relay box • Faulty gauge assembly • An open in the wire
B9	RED/WHT	Under all conditions	Check for continuity to ground: There should be continuity.	• Poor ground (G403) • Faulty audio unit • An open in the wire
A6	LT GRN/BLK	Under all conditions	Check for continuity between the A6 terminal and multiplex control unit connector Y3 terminal: There should be continuity.	• An open in the wire
A17	BLU/ORN	Under all conditions	Check for continuity between the A 17 terminal and multiplex control unit connector Y2 terminal: There should be continuity.	• An open in the wire
B4	BLU/RED	Under all conditions	Attach to ground: The headlights (low beam) should come on.	• Blown No. 15 or 17 (20A) fuse in the under-hood fuse/relay box • Faulty headlight relay 1 or 2 • Blown bulb • An open in the wire
B5	BLU	Under all conditions	Attach to ground: The dash lights and parking lights, taillights should come on.	• Blown No. 2 (15A) fuse in the under-hood fuse/relay box • Faulty taillight relay • An open in the wire

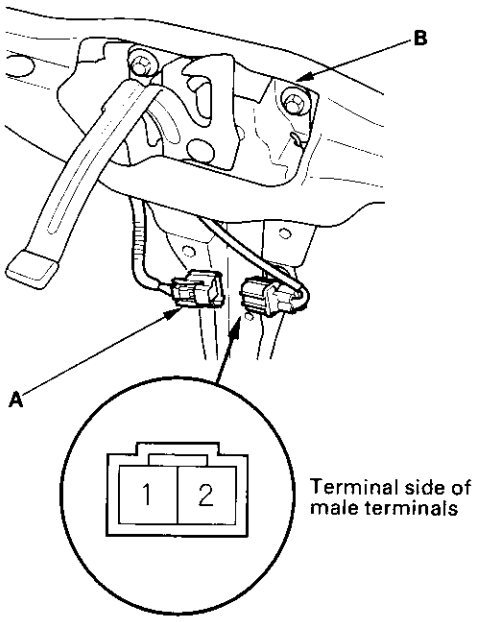
5. Reconnect the connectors to the security control unit, and perform the following input tests at the appropriate connector.

- If any test indicates a problem, find and correct the cause, then recheck the system.
- If the input tests prove OK, the security control unit internal circuit must be faulty, replace the control unit.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
A20	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 • A short to ground
		Driver's door closed	Check for voltage to ground: There should be 5 V or more.	
A9	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 • A short to ground
		Passenger's door closed	Check for voltage to ground: There should be 5 V or more.	
A18	GRN/BLK	Hood open	Check for voltage to ground: There should be 1 V or less.	• Faulty hood switch • Poor ground (G302) • An open in the wire • A short to ground
		Hood closed	Check for voltage to ground: There should be 5 V or more.	
A7	RED	Hatch open	Check for voltage to ground: There should be 1 V or less. NOTE: Remove the No. 3 (7.5A) fuse in the under-hood fuse/relay box.	• Faulty hatch latch switch • Poor ground (G701) • An open in the wire • A short to ground
		Hatch closed	Check for voltage to ground: There should be 5 V or more. NOTE: Remove the No. 3 (7.5A) fuse in the under-hood fuse/relay box.	
A1	WHT/BLK	Driver's door lock knob unlocked	Check for voltage to ground: There should be 1 V or less.	• Faulty driver's door lock knob switch • Poor ground (G401) • An open in the wire • A short to ground
		Driver's door lock knob locked	Check for voltage to ground: There should be 5 V or more.	
A12	BRN/WHT	NOTE: First lock both doors with the driver's door lock switch. Passenger's door lock knob unlocked	Check for voltage to ground: There should be 1 V or less.	• Faulty passenger's door lock knob switch • Poor ground (G402) • An open in the wire • A short to ground
		Passenger's door lock knob locked	Check for voltage to ground: There should be 5 V or more.	
A4	WHT/RED	Driver's door key cylinder locked	Check for voltage to ground: There should be 1 V or less.	• Faulty driver's door key cylinder switch • Poor ground (G401) • An open in the wire • A short to ground
		Driver's door key cylinder in neutral	Check for voltage to ground: There should be 5 V or more.	
A3	WHT	Driver's door key cylinder unlocked	Check for voltage to ground: There should be 1 V or less.	• Faulty driver's door key cylinder switch • Poor ground (G401) • An open in the wire • A short to ground
		Driver's door key cylinder in neutral	Check for voltage to ground: There should be 5 V or more.	
A15	PNK	Passenger's door key cylinder locked	Check for voltage to ground: There should be 1 V or less.	• Faulty passenger's door key cylinder switch • Poor ground (G402) • An open in the wire • A short to ground
		Passenger's door key cylinder in neutral	Check for voltage to ground: There should be 5 V or more.	
A14	PNK/BLU	Passenger's door key cylinder unlocked	Check for voltage to ground: There should be 1 V or less.	
		Passenger's door key cylinder in neutral	Check for voltage to ground: There should be 5 V or more.	
A8	RED/WHT	Ignition key is in the ignition switch	Check for voltage to ground: There should be 1 V or less.	• Poor ground (G401) • An open in the wire • A short to ground
		Ignition key is out of the ignition switch	Check for voltage to ground: There should be 5 V or more.	
A2	BLU/YEL	Doors and hatch are locked	Check for voltage to ground: There should be 1 V or less.	• Faulty security hatch lock knob switch • Poor ground (G701) • An open in the wire • A short to ground
		Doors and hatch are unlocked	Check for voltage to ground: There should be 5 V or more.	

Hood Switch Test

1. Open the hood, and disconnect the 2P connector (A) from the hood switch (B).



2. Check for continuity between the No. 1 and No. 2 terminals.

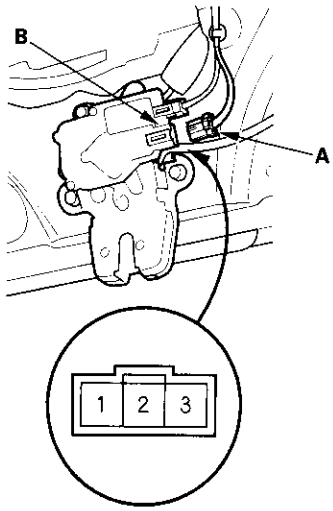
   - There should be continuity when the hood is opened (lever released).
   - There should be no continuity when the hood is closed (lever pushed down).

3. If the continuity check is not as specified, replace the switch.

Security Hatch Lock Knob Switch Test

1. Open the hatch, and remove the hatch lower trim (see page 20-53).

2. Disconnect the 3P connector (A) from the security hatch lock knob switch (B).



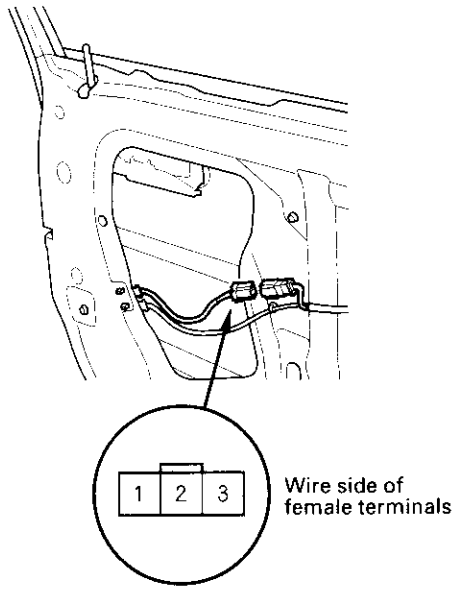
3. Use the driver's door lock switch to unlock and lock the hatch, then check for continuity between the No. 2 and No. 3 terminals.

   - There should be continuity when the hatch is unlocked.
   - There should be no continuity when the hatch is locked.

4. If the continuity check is not as specified, replace the switch.

Door Key Cylinder Switch Test

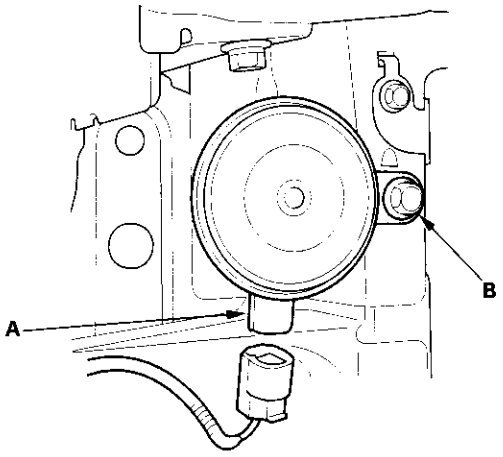
1. Remove the door panel (see page 20-4).
2. Disconnect the 3P connector from the key cylinder switch.



3. Check for continuity between the terminals.
   - There should be continuity between the No. 2 and No. 3 terminals when the door key cylinder switch is in the LOCK position.
   - There should be continuity between the No. 1 and No. 2 terminals when the door key cylinder switch is in the UNLOCK position.
4. If the continuity is not as specified, replace the switch.

Security Horn Test

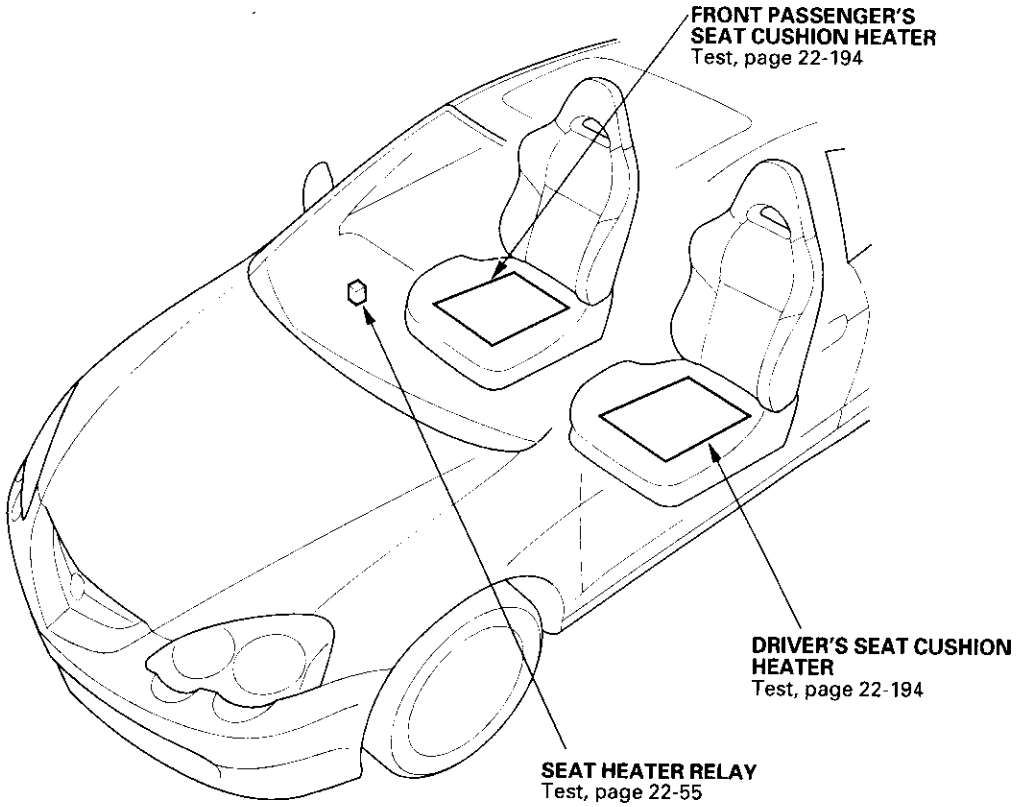
1. Remove the front bumper (see page 20-87).
2. Disconnect the 1P connector from the horn (under the right headlight).

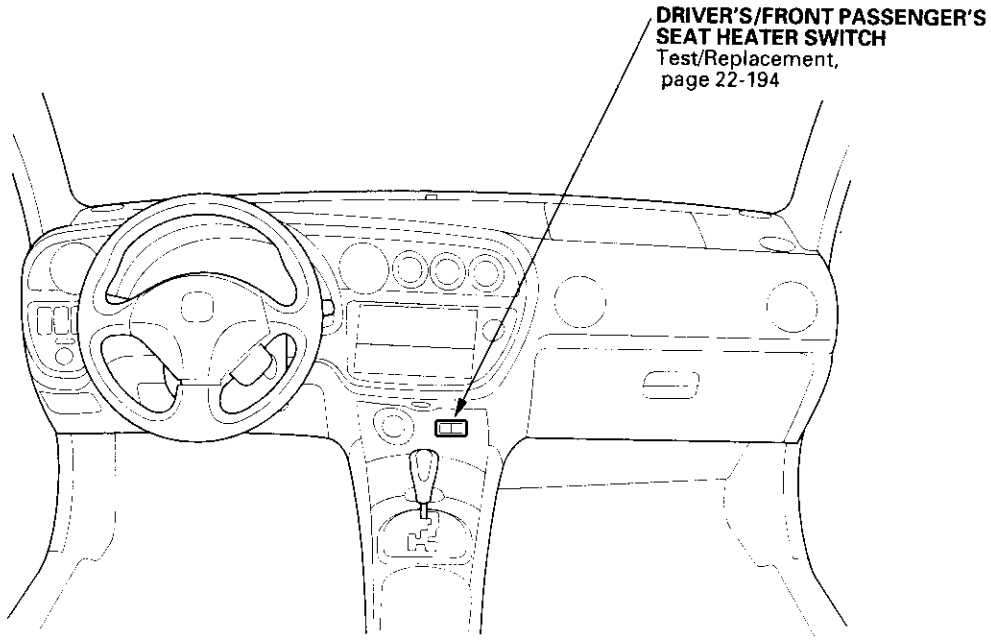


3. Test the horn by connecting battery power to the terminal (A) and grounding the body ground (B). The horn should sound.
4. If the horn fails to sound, check for a faulty mounting bolt. If the bolt is OK, replace the horn.

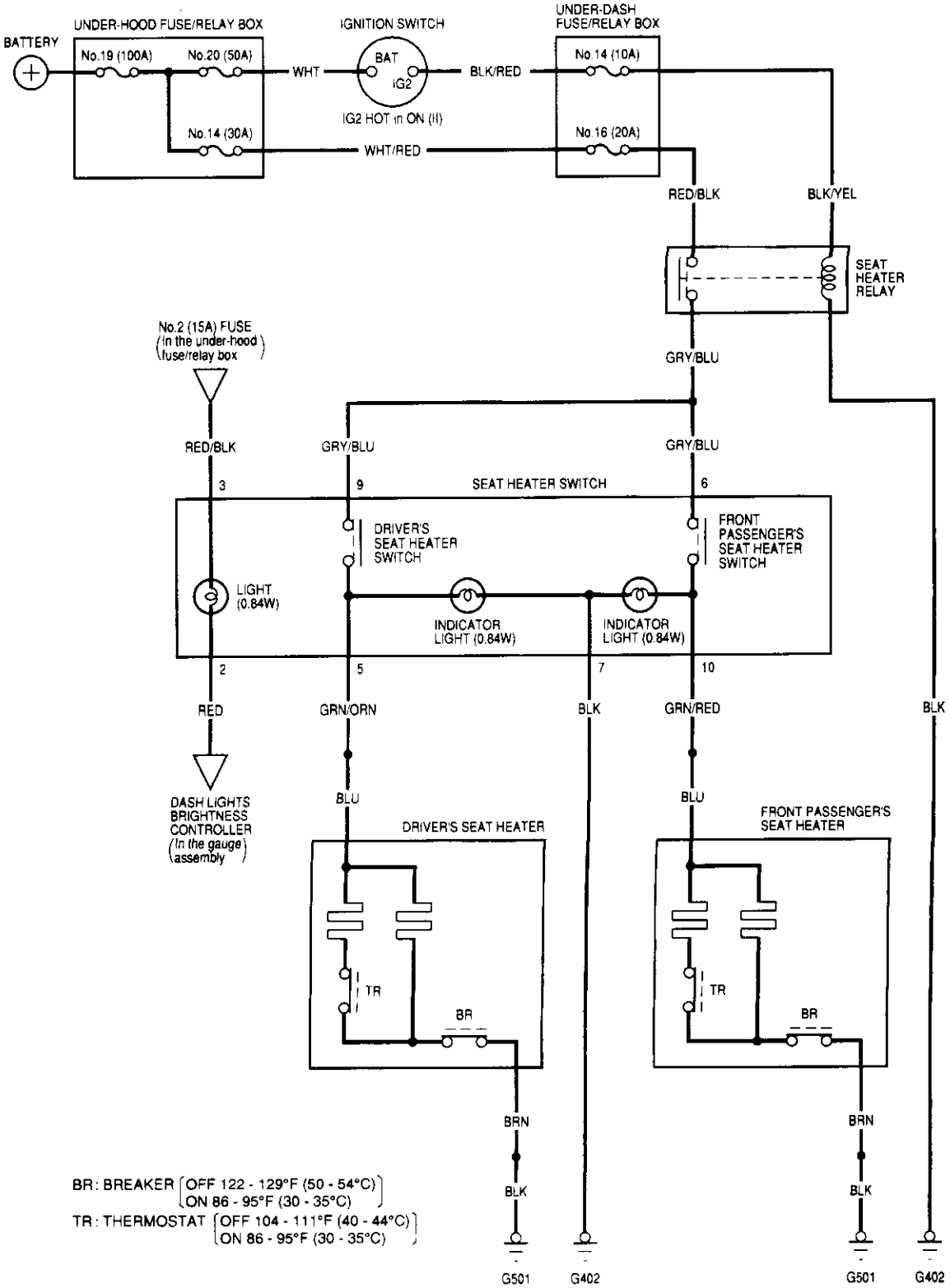
Seat Heaters - Canada

Component Location Index



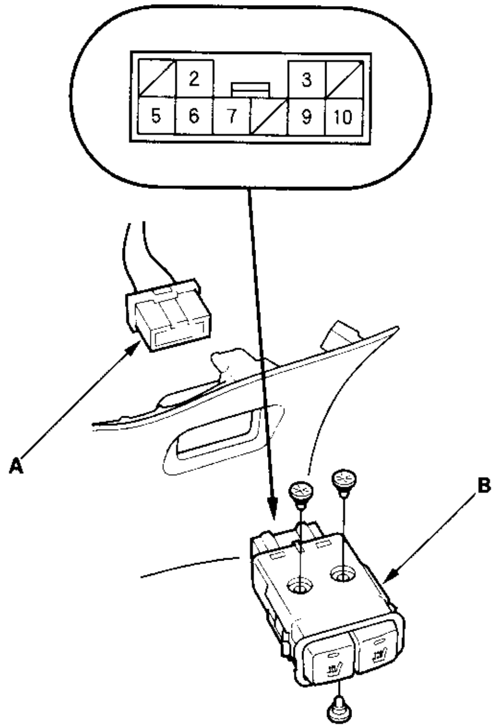


Circuit Diagram



Seat Heater Switch Test/ Replacement

1. Remove the dashboard center lower cover (see page 20-63).
2. Disconnect the 10P connector (A) from the seat heater switch (B), then remove the switch.

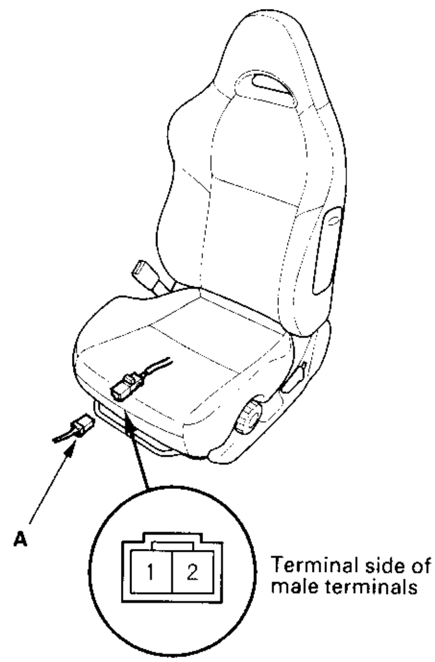


3. Check for continuity in each switch position according to the table.

Terminal / Position	2		3	5	6		7		9	10
ON	O	lamp	O	O	O	lamp	O	lamp	O	O
OFF	O	lamp	O	O	—	lamp	O	lamp	—	O

Seat Heater Test

1. Remove the front seat (see page 20-72).
2. Disconnect the 2P connector (A) from the seat heater.



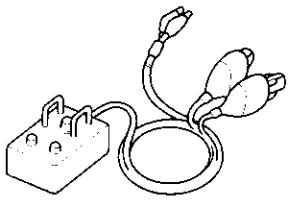
3. The temperature of the seat must be below 122°F (50°C). Check for continuity between the No. 1 and No. 2 terminals. There should be continuity.
If there should be no continuity, replace the seat cushion (see page 20-74).

Restraints

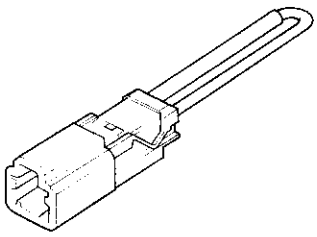
Special Tools

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

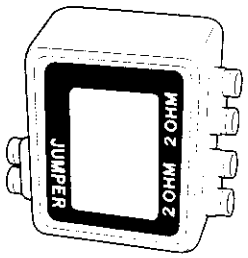
* 1: Included in SRS Tool Set 07MAZ-SM5000B
* 2: Use with the stacking patch cords from T/N 07SAZ-001000A, Backprobe Set.



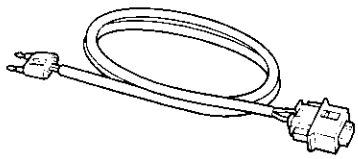
①



②



③



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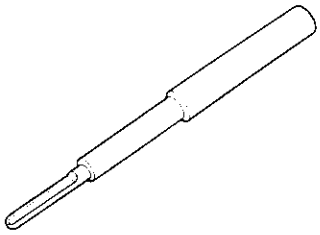
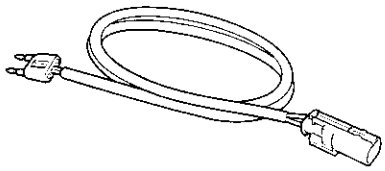
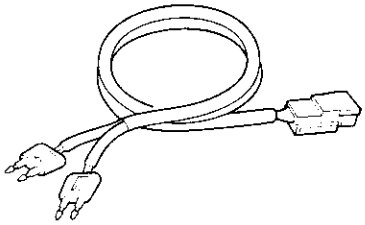


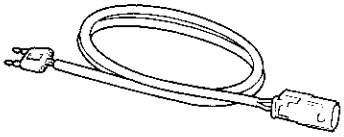
⑤



⑥

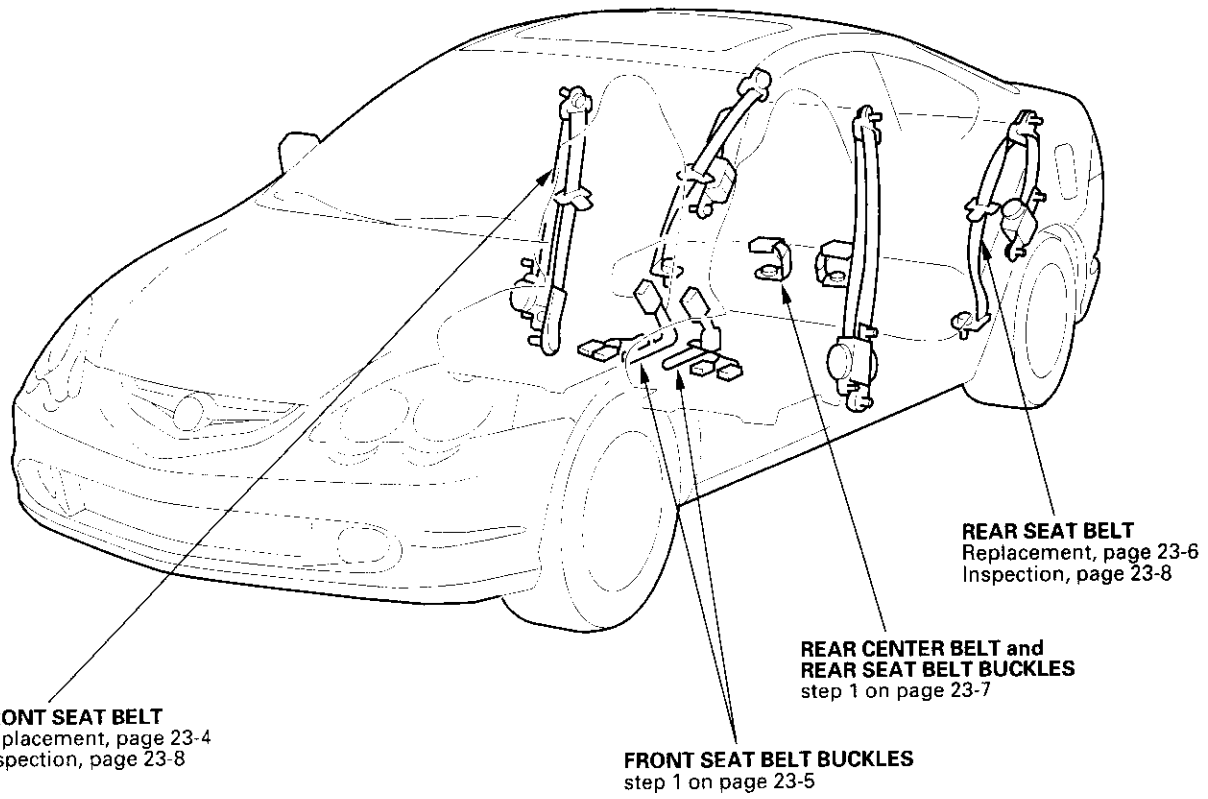


⑦



⑧

Component Location Index



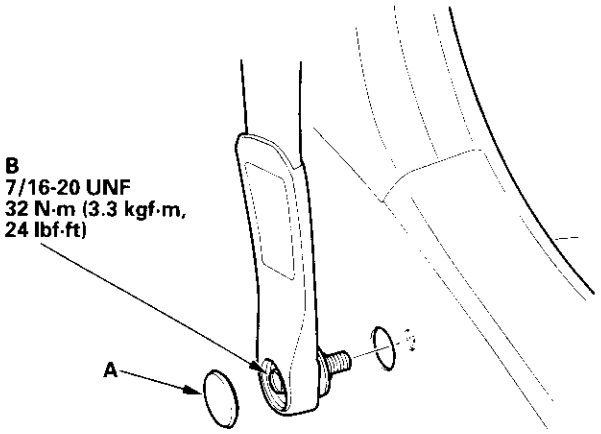
Front Seat Belt Replacement

SRS components are located in this area. Review the SRS component locations (see page 23-10) and the precautions and procedures (see page 23-11) in the SRS section before performing repairs or service.

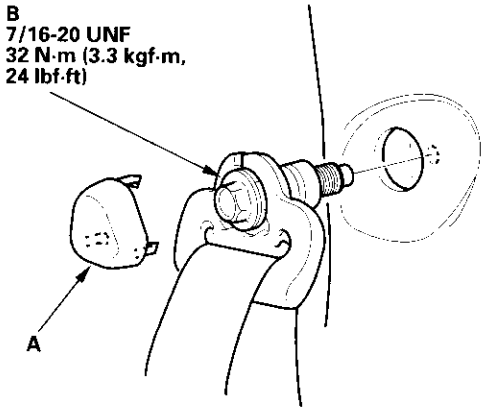
NOTE: Check the front seat belts for damage, and replace them if necessary. Be careful not to damage them during removal and installation.

Front Seat Belt

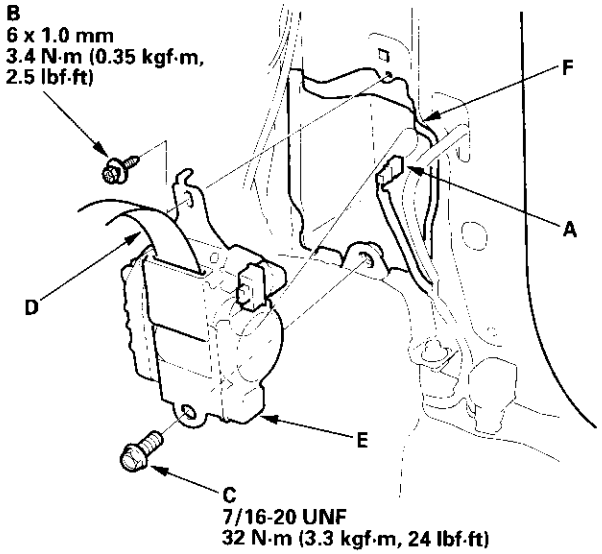
1. Make sure you have the anti-theft code for the radio, then write down the frequencies for the preset buttons.
2. Disconnect the negative cable from the battery, and wait at least 3 minutes before beginning work.
3. Slide the front seat forward fully.
4. Remove the rear side trim panel (see page 20-50).
5. Remove the lower anchor cap (A), and remove the lower anchor bolt (B).



6. Remove the upper anchor cap (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).

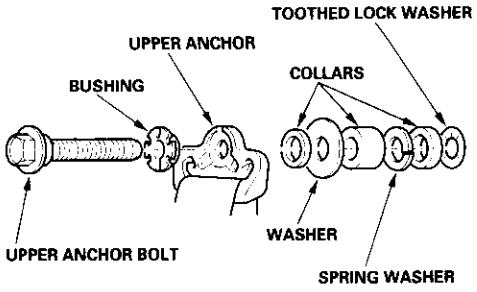


8. If necessary, remove the front seat belt protector (F).

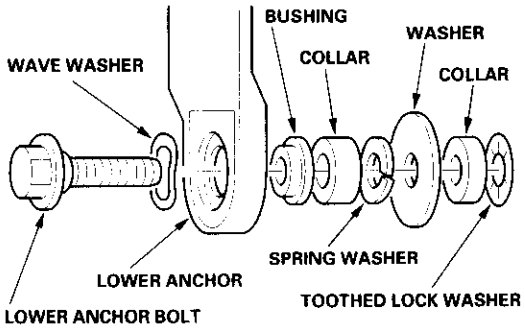
9. Install the belt in the reverse order of removal, and note these items:

   - 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 bolts before reinstallation.
   - Check that the retractor locking mechanism functions (see page 23-8).
   - 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.
   - 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 11-149).

Upper anchor bolt construction:



Lower anchor bolt construction:



Seat Belt Buckle

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

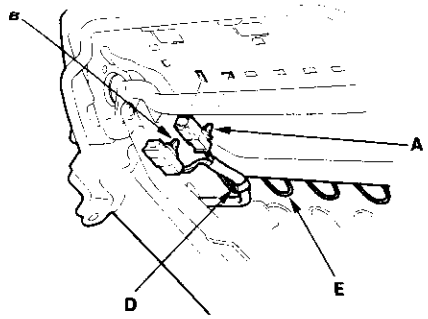
2. Disconnect the negative cable from the battery, and wait at least 3 minutes before beginning work.

3. Remove the front seat (see page 20-72).

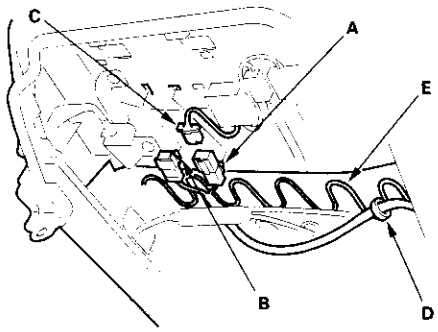
4. On the passenger's seat with BOSE sound system, remove the front stereo amplifier (see page 22-113).

5. Detach the seat belt switch connector clip (A) and seat belt buckle tensioner connector clip (B), and on the passenger's seat with BOSE sound system, disconnect the sub-harness connector (C) from the seat belt switch connector. Remove the harness band (D) from the seat cushion frame spring (E). The driver's seat and passenger's seat with BOSE sound system are shown, the passenger's seat without BOSE sound system is similar with the driver's seat.

Driver's seat:



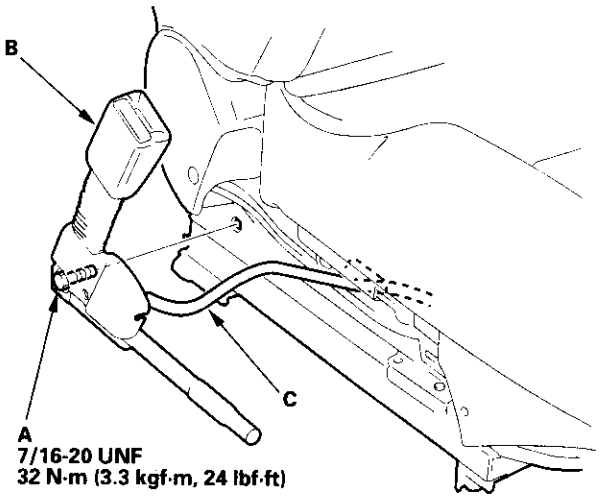
Passenger's seat with BOSE sound system:



(cont'd)

Front Seat Belt Replacement (cont'd)

6. Remove the center anchor bolt (A), and remove the seat belt buckle (B).



7. Pull the seat belt switch/tensioner harness (C) out through the hole on the seat track.

8. Install the buckle in the reverse order of removal, and note these items:

   - 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 11-149).

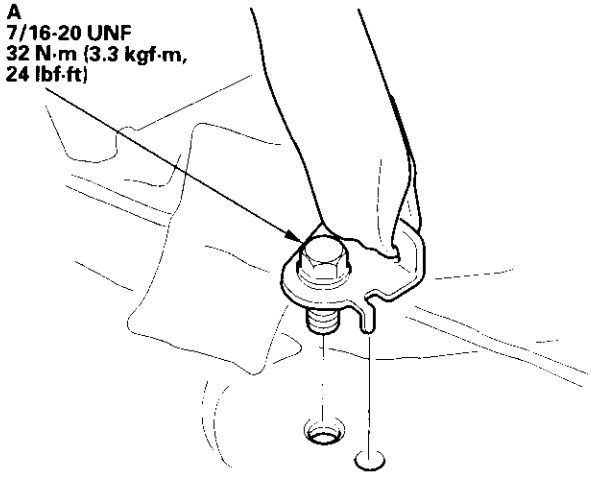
Rear Seat Belt Replacement

NOTE: Check the rear seat belts for damage, and replace them if necessary. Be careful not to damage them during removal and installation.

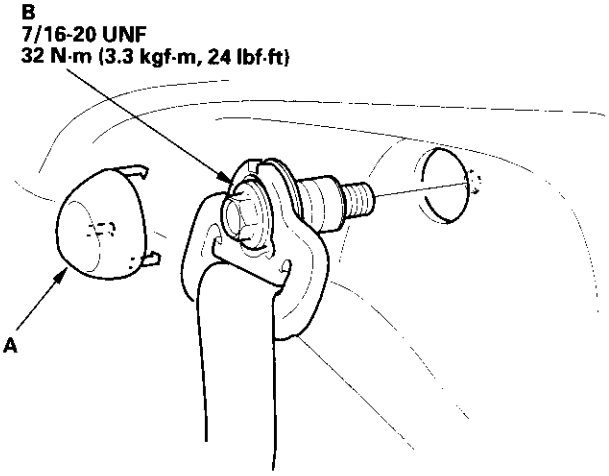
Rear Seat Belt

1. Remove the rear side trim panel (see page 20-50).

2. Remove the lower anchor bolt (A).

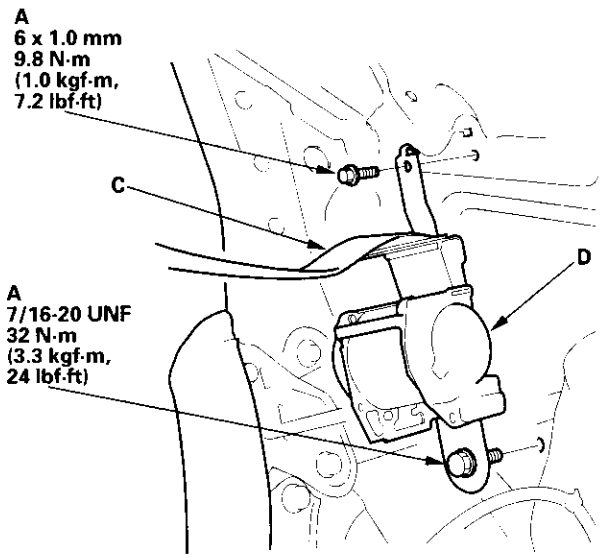


3. Remove the upper anchor cap (A), and remove the upper anchor bolt (B).



4. Remove the quarter piller trim as necessary (see page 20-51).

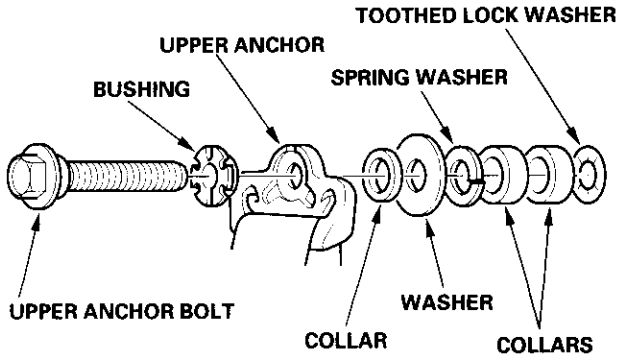
5. Remove the retractor mounting bolt (A) and the retractor bolt (B), then remove the rear seat belt (C) and retractor (D).



6. Install the belt in the reverse order of removal, and note these items:

   - Apply liquid thread lock to the anchor bolts before reinstallation.
   - Check that the retractor locking mechanism functions as described (see page 23-8).
   - Assemble the washers, collars, and bushing on the upper anchor bolt as shown.
   - Before installing the anchor bolt, make sure there are no twists or kinks in the rear seat belt.

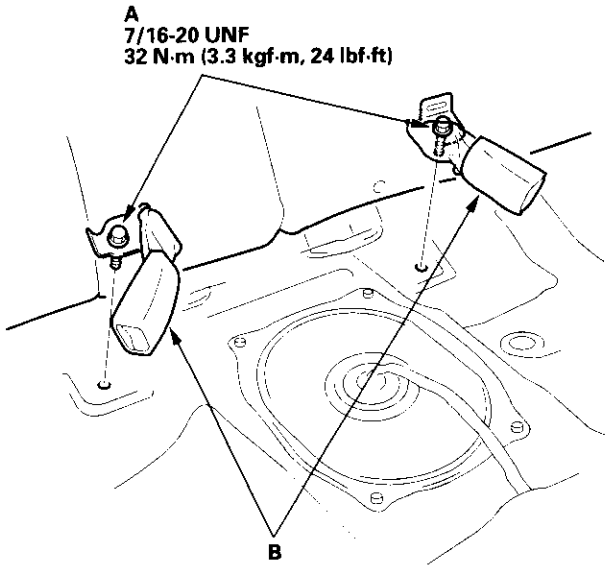
Upper anchor bolt construction:



Seat Belt Buckles

1. Remove the rear seat cushion (see page 20-82).

2. Remove the center anchor bolts (A), and remove the seat belt buckles (B).



3. Install the buckles in the reverse order of removal, and apply liquid thread lock to the anchor bolts before reinstallation.

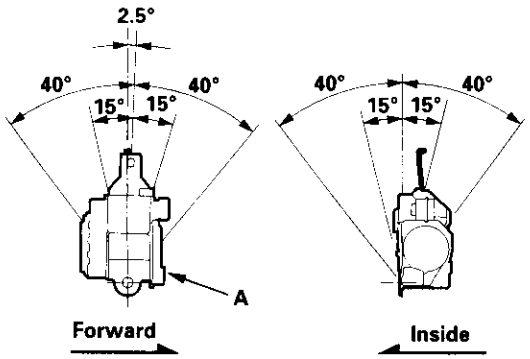
Inspection

For front seat belt retractor with seat belt tensioner, review the SRS component locations (see page 23-10) and the precautions and procedures (see page 23-11) in the SRS section before performing repairs or service.

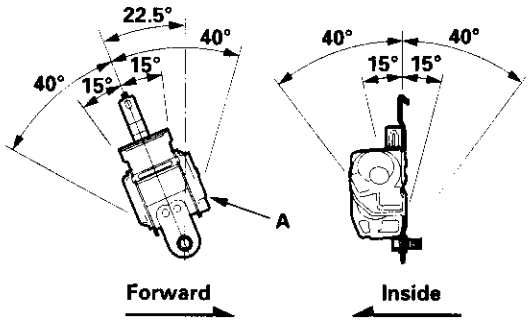
Retractor

1. Before installing the retractor, check that the seat belt can be pulled out freely.
2. Make sure that the seat belt does not lock when the retractor (A) is leaned slowly up to 15° from the mounted position. The seat belt should lock when the retractor is leaned over 40°. Do not attempt to disassemble the retractor.

Front:



Rear:



3. Replace the seat belt with a new assembly if there is any abnormality. Do not disassemble any part of the seat belt for any reason.

In-vehicle

1. Check that the seat belt is not twisted or caught on anything.
2. After installing the anchors, check for free movement on the anchor bolts. If necessary, remove the anchor bolts and check that the washers and other parts are not damaged or improperly installed.
3. Check the seat belts for damage or discoloration. Clean with a shop towel if necessary. Use only soap and water to clean.

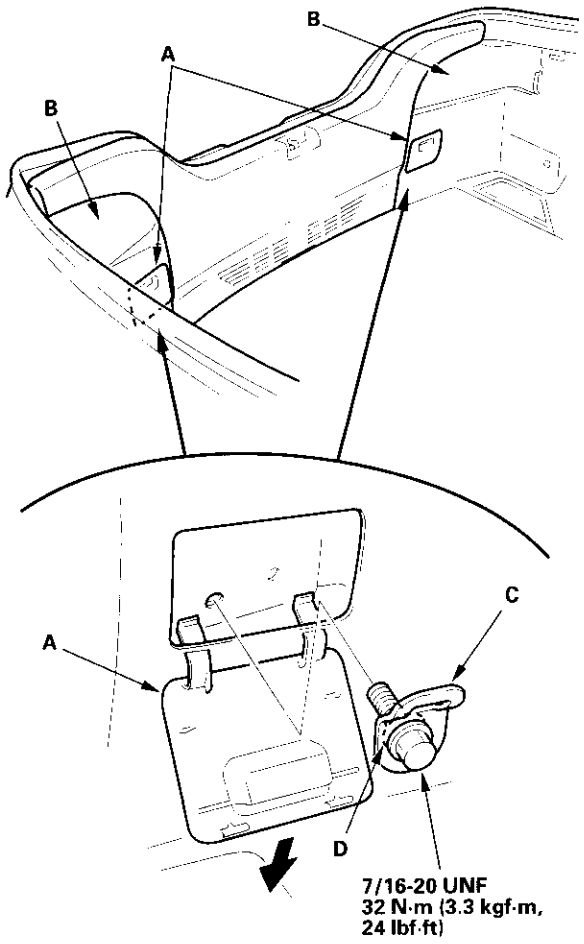
   NOTE: Dirt build-up in the loops of the upper anchors can cause the seat belts to retract slowly. Wipe the inside of the loops with a clean cloth dampened in isopropyl alcohol.
4. Check that the seat belt does not lock when pulled out slowly. The seat belt is designed to lock only during a sudden stop or impact.
5. Make sure that the seat belt will retract automatically when released.
6. For 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.
7. Replace the seat belt with a new assembly if there is any abnormality. Do not disassemble any part of the seat belt for any reason.

Child Seat Tether Anchor Removal/Installation

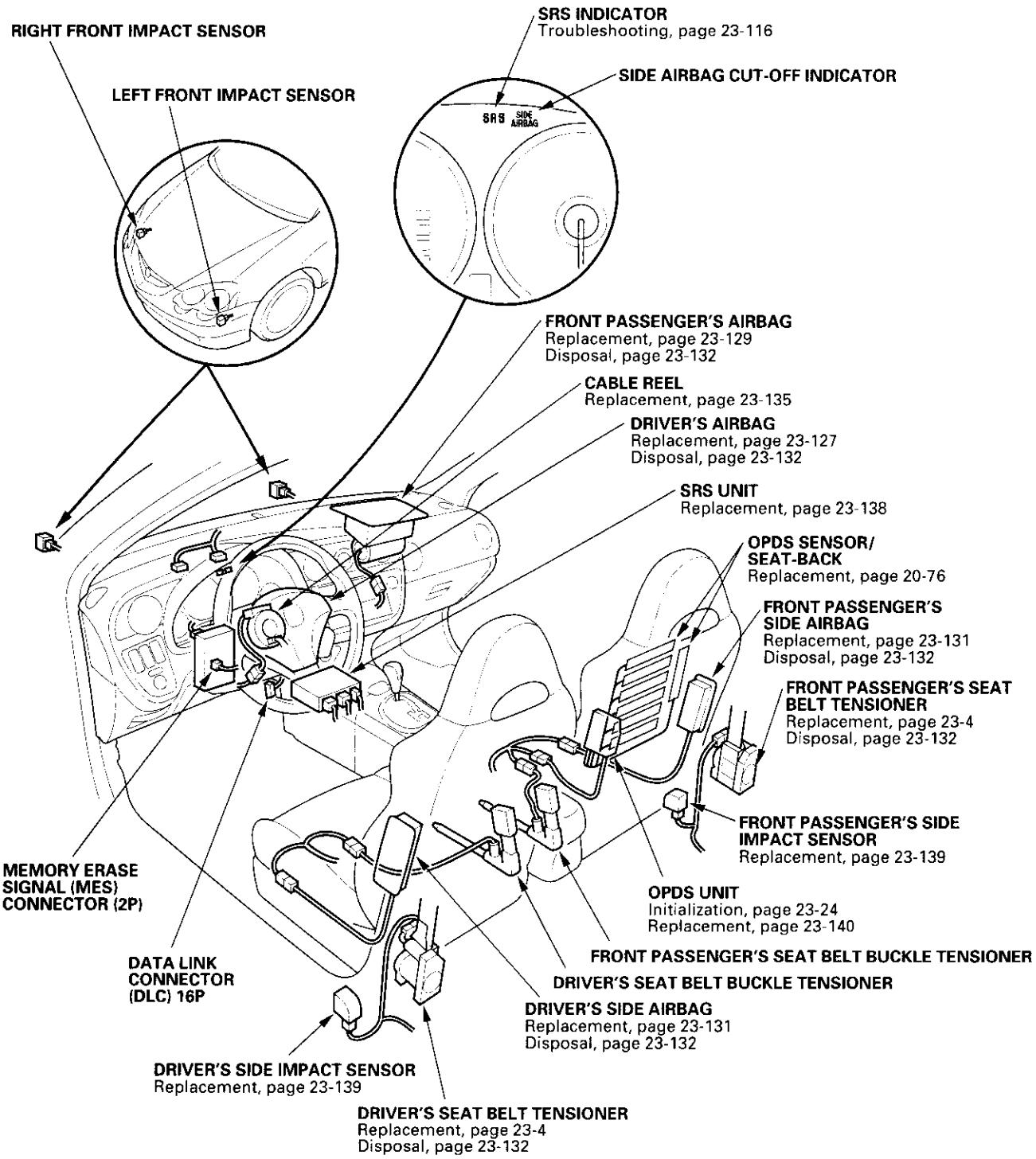
1. Open the child seat tether anchor cap (A) in the trunk side trim panel (B).



2. Remove the child seat tether anchor (C). Do not remove the toothed washer (D) from the tether anchor.

3. Install the anchor in the reverse order of removal.

Component Location Index

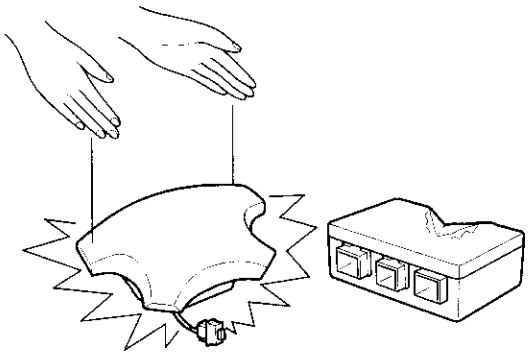


Precautions and Procedures

General Precautions

Please read the following precautions carefully before performing the 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 and 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. 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 of the SRS parts (including disconnection of the 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 (0.01 A) or less when switched to the lowest value in the ohmmeter range. A tester with a higher output could cause accidental deployment and possible injury.
- Do not put objects on the front passenger's airbag.
- The original 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 idle learn procedure (see page 11-149).

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 23-137).

  – Installation of the steering wheel
  – Installation of the cable reel
  – Installation of the steering column
  – Other steering-related adjustment or installation

- Do not disassemble the cable reel.

- Do not apply grease to the cable reel.

- If the cable reel shows any signs of damage, replace it with a new one. For example, it does not rotate smoothly.

(cont'd)

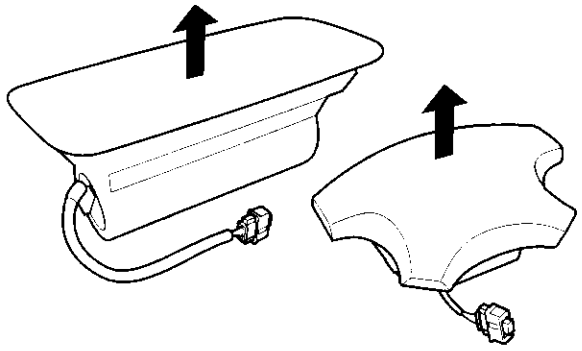
Precautions and Procedures (cont'd)

Airbag Handling and Storage

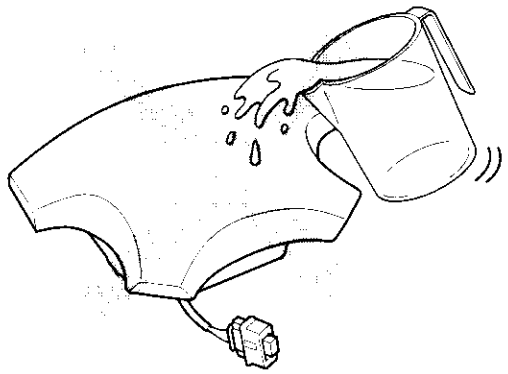
Do not disassemble an airbag. It has no serviceable parts. Once an airbag has been deployed, it cannot be repaired or reused.

For temporary storage of the airbag during service, please observe the following precautions.

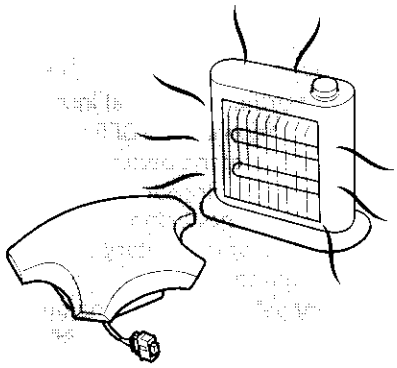
- Store the removed airbag with the pad surface up. Never put anything on the removed airbag.



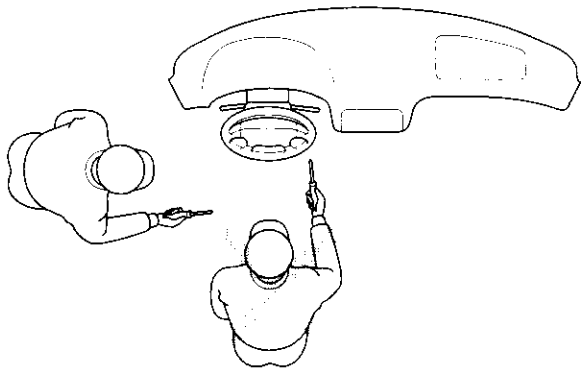
- To prevent damage to the airbag, keep it free from any oil, grease, detergent, or water.



- Store the removed airbag on a secure, flat surface away from any high heat source (exceeding 200°F/ 93°C).



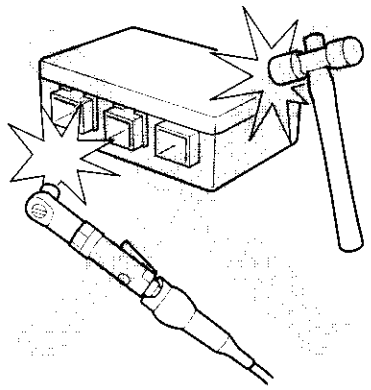
- Never perform electrical inspections to the airbags, such as measuring resistance.
- Do not position yourself in front of the airbag during removal, inspection, or replacement.



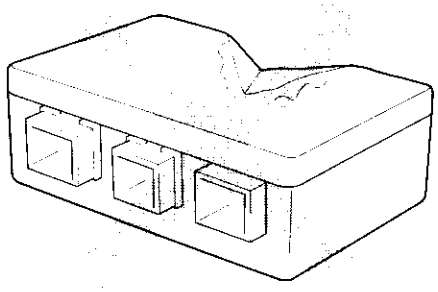
- Refer to the scrapping procedures for disposal of the damaged airbag.

SRS Unit, Front Sensors and Side Impact Sensors

- Be careful not to bump or impact the SRS unit, front sensors or the 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 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 sensors, and other related components (see page 23-126). 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 sensors, and the side impact sensors. If there is any damage, replace the SRS unit and/or the side impact sensors.



- Do not disassemble the SRS unit, front sensors, or the 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 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 or the side impact sensors, and keep them away from dust.
- Store the SRS unit and the side impact sensors in a cool (less than 104°F/40°C) and dry (less than 80 % relative humidity, no moisture) area.

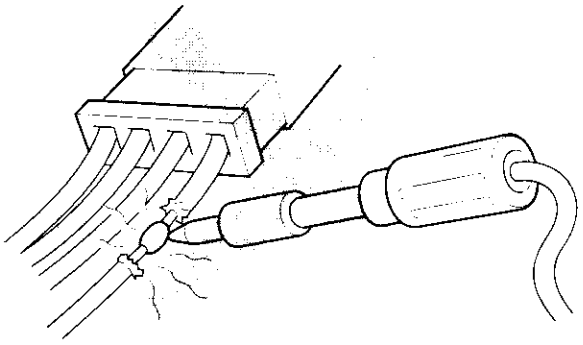
(cont'd)

Precautions and Procedures (cont'd)

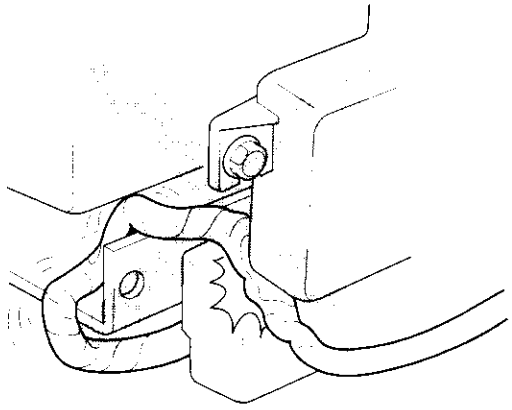
Wiring Precautions

Some of the SRS wiring can be identified by a special yellow outer covering, and the SRS connectors can be identified by their yellow color.
Observe the 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.



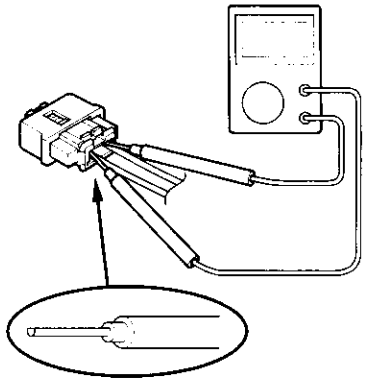
- Be sure to install the harness wires so they do not get pinched or interfere with other parts.



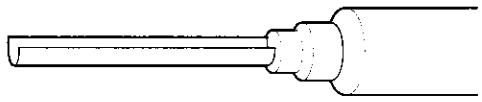
- Make sure all SRS ground locations are clean, and grounds are securely fastened for optimum metal-to-metal contact. Poor grounding can cause intermittent problems that are difficult to diagnose.

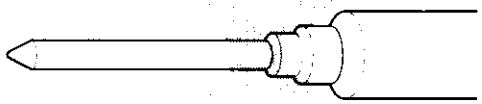
Precautions for Electrical Inspections

- 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.





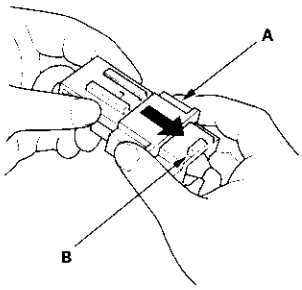
- Use specified service connectors in troubleshooting. Using improper tools could cause an error in inspection due to poor metal-to-metal contact.

Spring-loaded Lock Connector

Some SRS system connectors have a spring-loaded lock.

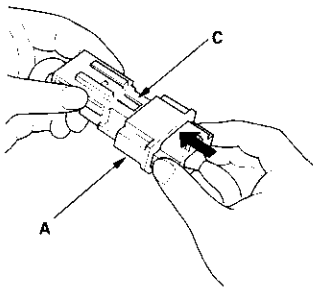
Front Airbag Connectors:

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.

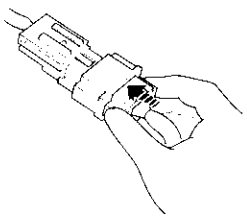


Connecting

1. To reconnect, hold the pawl-side connector, and press on the back of the sleeve-side connector in the direction shown. As the 2 connector halves are pressed together, the sleeve (A) is pushed back by the pawl (C). Do not touch the sleeve.

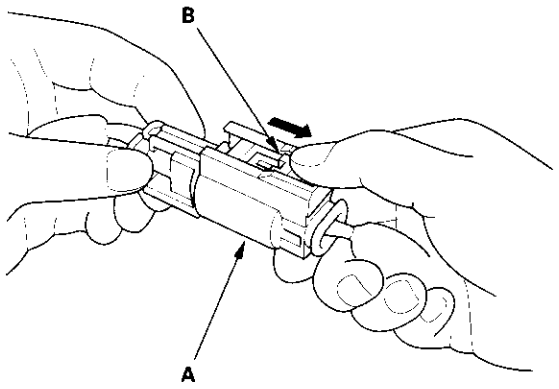


2. When the connector halves are completely connected, the pawl is released, and the spring-loaded sleeve locks the connector.

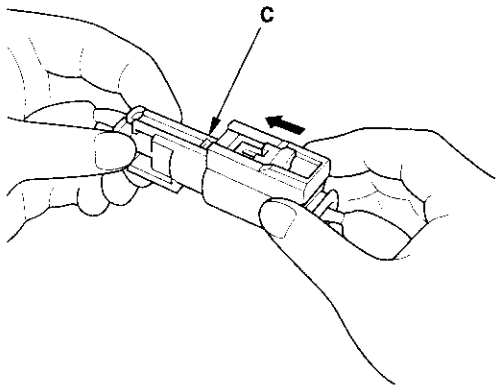


Side Airbag Connector:

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.



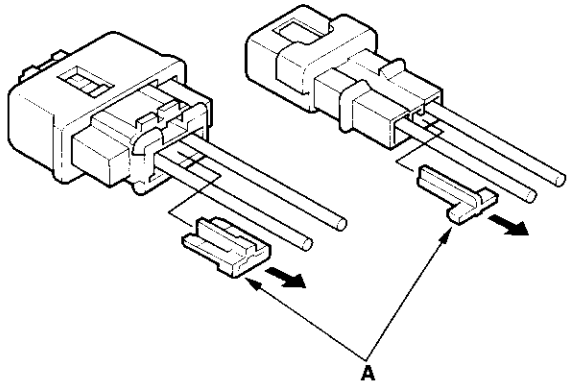
(cont'd)

Precautions and Procedures (cont'd)

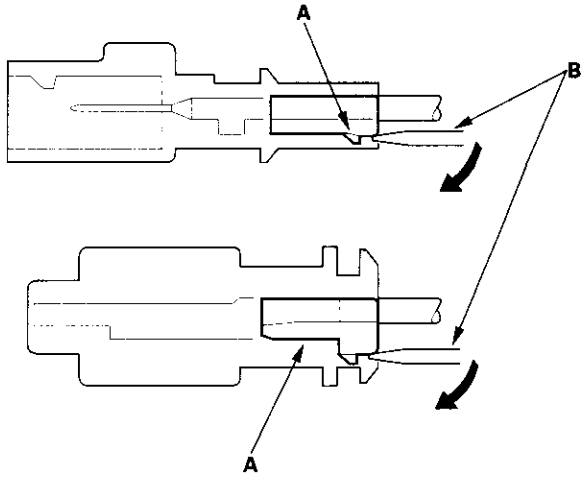
Backprobing Spring-loaded Lock Connectors

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.

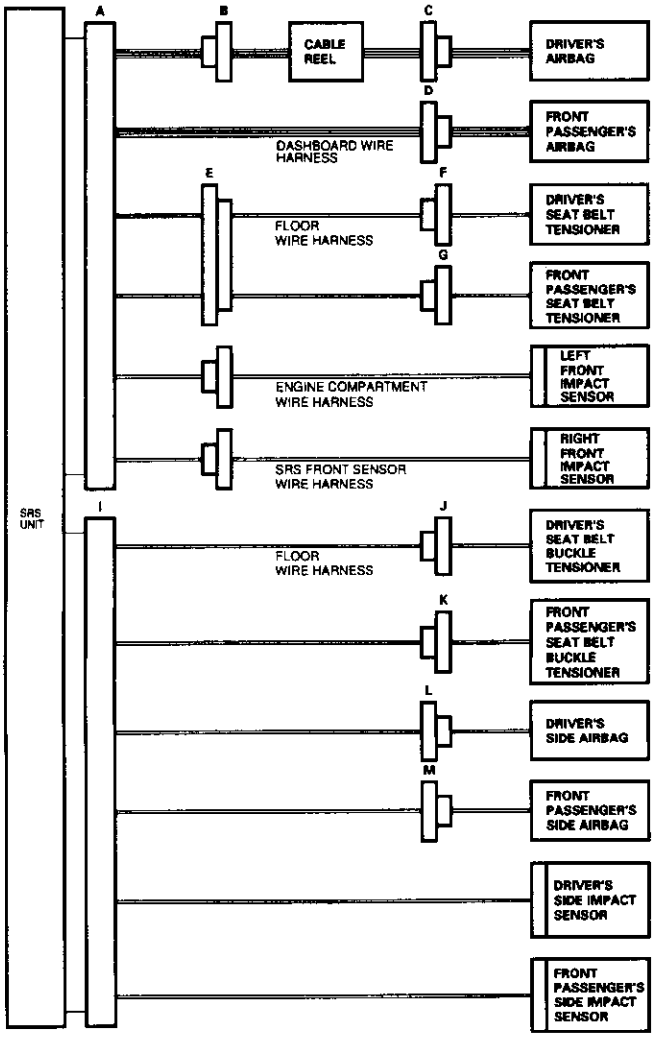
- When cleaning, do not saturate the seat with liquid, and do not spray steam on the seat.
- Do not repair a torn or frayed seat-back cover. Replace the seat-back cover.
- After a collision in which the side airbag was deployed, replace the side airbag with new parts. If the seat-back cushion is split, 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.).

Disconnecting System Connectors

Before removing a front airbag, side airbag or other SRS related devices (the SRS unit, the cable reel, the front impact sensor, 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 and disconnect the negative cable from the battery, and wait at least 3 minutes before beginning the following procedures.

- Before disconnecting the SRS unit connector C (18P) (A) from the SRS unit, disconnect the driver's airbag 4P connector (C), the front passenger's airbag 4P connector (D), the left side seat belt tensioner 2P connector (F), and the right side seat belt tensioner 2P connector (G).
- Before disconnecting the floor wire harness 18P connector (I) from the SRS unit, disconnect both side airbag 2P connectors (L, M) and both seat belt buckle tensioner 4P connectors (J, K).
- Before disconnecting the cable reel 4P connector (B), disconnect the driver's airbag 4P connector (C).
- Before disconnecting the floor wire harness 4P connector (E), disconnect both seat belt tensioner 2P connectors (F, G).



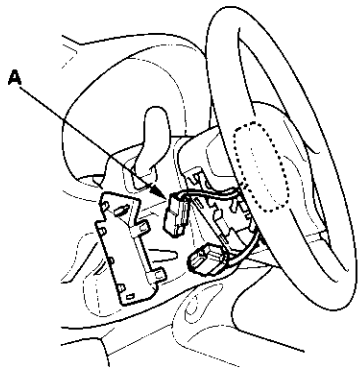
(cont'd)

Precautions and Procedures (cont'd)

1. Disconnect the negative battery cable, and wait at least 3 minutes.

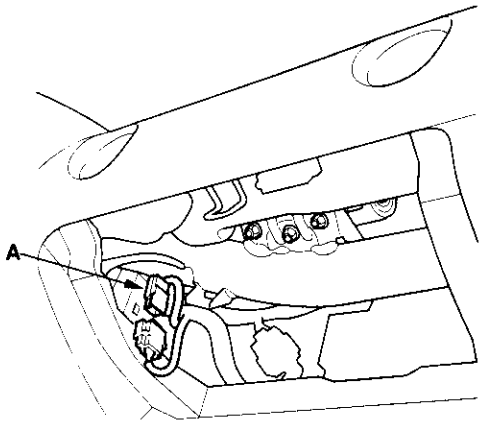
Driver's Airbag

2. Remove the access panel from the steering wheel, then disconnect the driver's airbag 4P connector (A) from the cable reel.



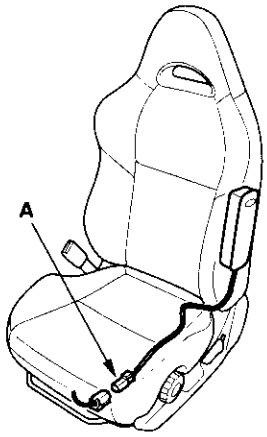
Front Passenger's Airbag

3. Remove the glove box, then disconnect the front passenger's airbag 4P connector (A) from the dashboard wire harness.



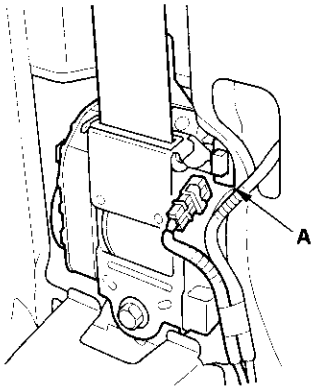
Side Airbag

4. Disconnect both side airbag 2P connectors (A) from the floor wire harness.



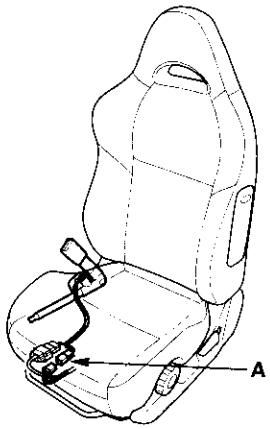
Seat Belt Tensioner

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).



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 date 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

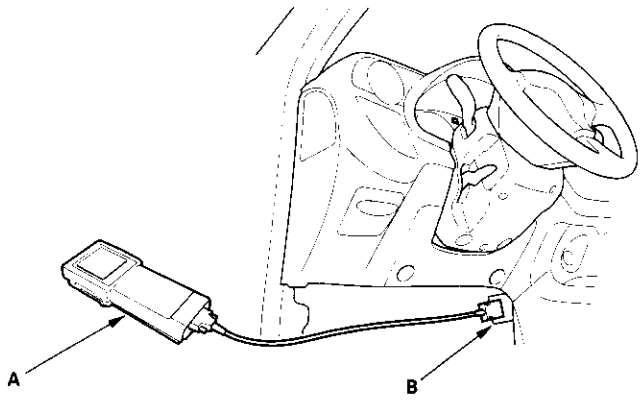
- Use only a digital multimeter to check the system. If it's not a Honda multimeter, make sure it's output is 10 mA (0.01A) or less when switched to the smallest value in the ohmmeter range. A tester with a higher output could damage the airbag circuit or cause accidental airbag deployment and possible 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 main 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

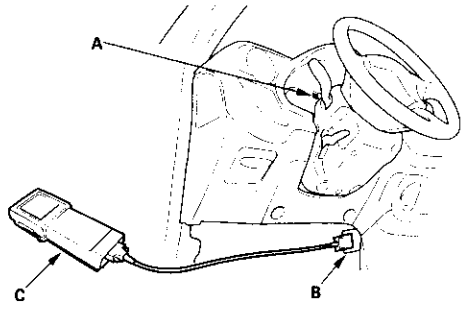
Connect the Honda PGM Tester (A) to the 16P Data Link Connector (DLC)(B), and follow the Tester's prompts in the "SRS" menu. If the Tester indicates no DTC, DTC 3-6 to 3-10, DTC 4-6 to 4-10, DTC 9-1, or DTC 9-2, double-check by using the "SCS" menu method.



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 (C) is connected to the DLC (data link connector) (16P) (B).

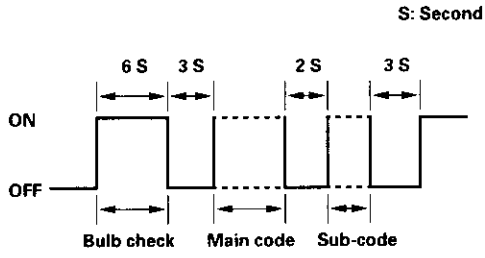
1. Make sure the ignition switch is OFF.
2. Connect the Honda PGM Tester (C) to the DLC (16P) (B), and follow the Tester's prompts in the "SCS" menu (see the Honda PGM Tester Operator's Manual).



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 DTCs (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 (C) from the DLC (16P) (B).
7. Proceed with the troubleshooting procedure for the DTC.

Patterns of DTC Indications:

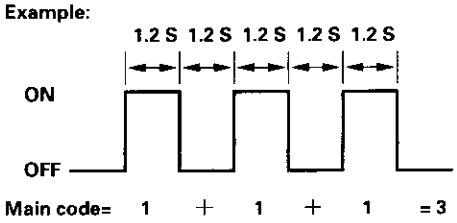
The DTC consists of a main code and sub-code.



Reading the main code:

In case of 1 ~ 10
Count the number of blinks.

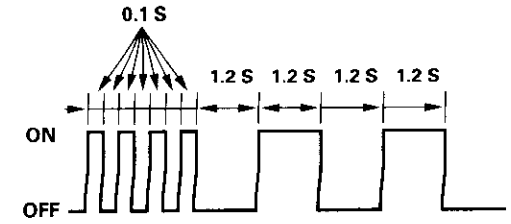
Example:



Main code= 1 + 1 + 1 = 3

In case of 11 ~ 15
Four fast blinks count as 10.
Add any further blinks together as shown.

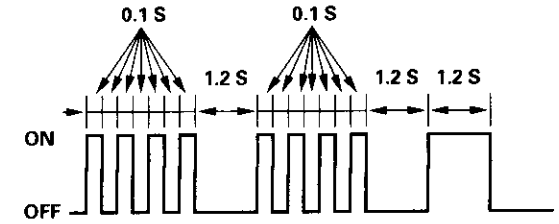
Example:



Main code= 10 + 1 + 1 = 12

In case of 20 or more
Two sets of four continuous blinks count as 20.
Add any further blinks together as shown.

Example:

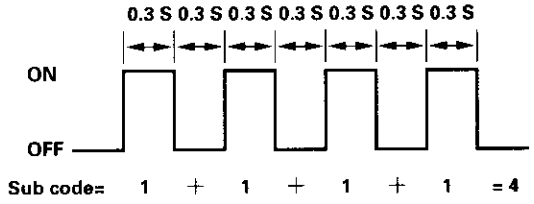


Main code= 10 + 10 + 1 = 21

Reading the sub code:

Count the number of blinks.

Example:



Sub code= 1 + 1 + 1 + 1 = 4

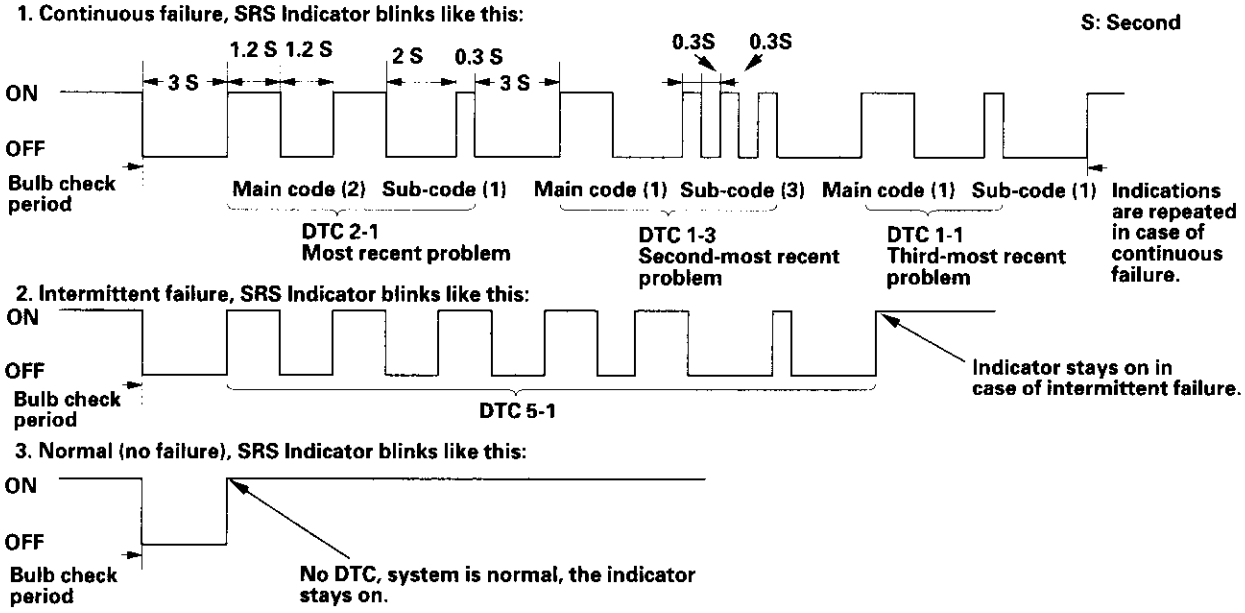
If the main code is '3', and the sub code is '4', record a DTC 3-4.

(cont'd)

General Troubleshooting Information (cont'd)

- 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 DTC), 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:

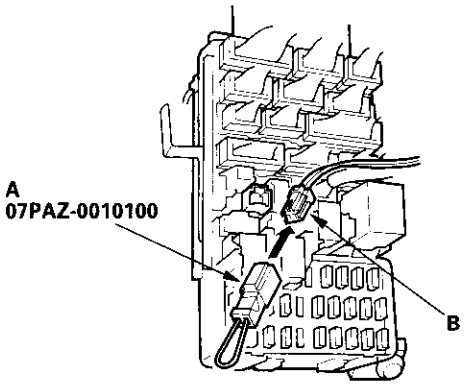


Erasing the DTC Memory

Special Tools 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 connector (2P) (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 (2P) within 4 seconds after the indicator goes off.
5. The SRS indicator will come on again. Reconnect the SCS service connector to the MES connector (2P) within 4 seconds after the indicator comes on.
6. When the SRS indicator goes off, remove the SCS service connector from the MES connector (2P) within 4 seconds.
7. The SRS indicator 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 after the procedure. The SRS system 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 the engine 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.

(cont'd)

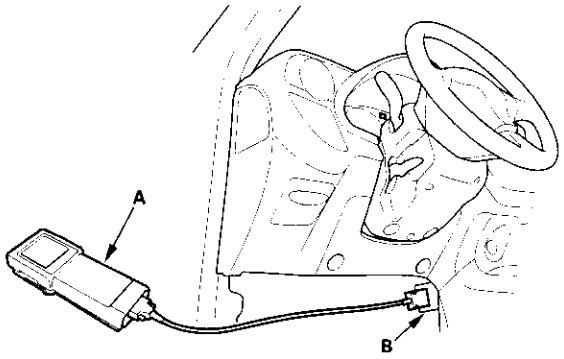
General Troubleshooting Information (cont'd)

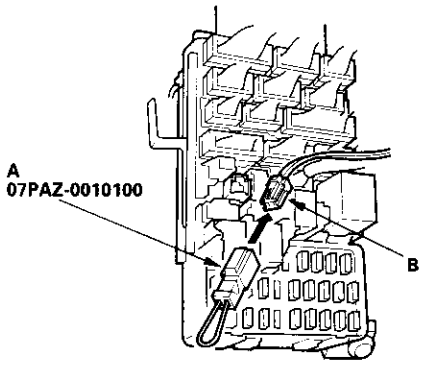
Initializing the OPDS (Occupant Position Detection System) Unit

Special Tools Required
SCS service connector 07PAZ-0010100

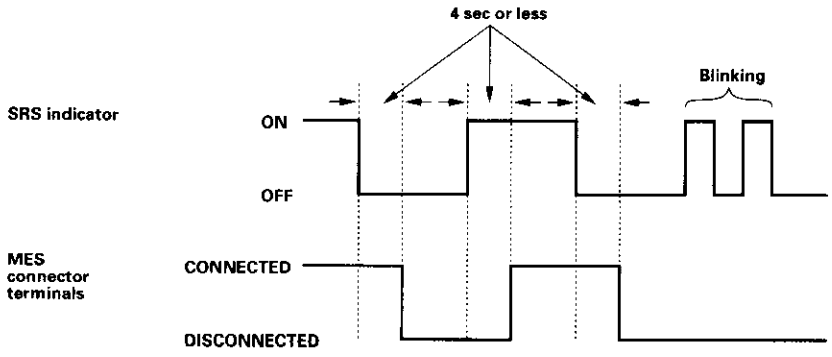
When the seat-back cover, seat-back cushion, and/or OPDS unit are replaced, initialize the OPDS system by following the procedure below.
NOTE: Make sure the passenger's seat is dry. Set the seat-back in the normal position, and make sure there is nothing on the front passenger's seat.

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 (A) to the MES connector (2P) (B). 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, and 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 or increased resistance in driver's airbag inflator	(see page 23-32)
1-3	Short to another wire or decreased resistance in driver's airbag inflator	(see page 23-34)
1-4	Short to power in driver's airbag inflator	(see page 23-36)
1-5	Short to ground in driver's airbag inflator	(see page 23-38)
2-1	Open or increased resistance in front passenger's airbag inflator	(see page 23-40)
2-3	Short to another wire or decreased resistance in front passenger's airbag inflator	(see page 23-41)
2-4	Short to power in front passenger's airbag inflator	(see page 23-43)
2-5	Short to ground in front passenger's airbag inflator	(see page 23-44)
3-1	Open or increased resistance in driver's seat belt tensioner	(see page 23-46)
3-3	Short to another wire or decreased resistance in driver's seat belt tensioner	(see page 23-48)
3-4	Short to power in driver's seat belt tensioner	(see page 23-50)
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 23-57)
21-5	Short to ground in driver's seat belt buckle tensioner	(see page 23-58)
4-1	Open or increased resistance in passenger's seat belt tensioner	(see page 23-60)
4-3	Short to another wire or decreased resistance in passenger's seat belt tensioner	(see page 23-62)
4-4	Short to power in passenger's seat belt tensioner	(see page 23-64)
4-5	Short to ground in passenger's seat belt tensioner	(see page 23-66)
22-1	Open or increased resistance in passenger's seat belt buckle tensioner	(see page 23-68)
22-3	Short to another wire or decreased resistance in passenger's seat belt buckle tensioner	(see page 23-69)
22-4	Short to power in passenger's seat belt buckle tensioner	(see page 23-71)
22-5	Short to ground in passenger's seat belt buckle tensioner	(see page 23-72)
5-1	Internal failure of SRS unit NOTE: Before troubleshooting DTCs 5-1 through 8-6, check battery/system voltage. If voltage is low, repair the charging system before troubleshooting the SRS system.	(see page 23-74)
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		

(cont'd)

DTC Troubleshooting Index (cont'd)

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 23-23). 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 23-74)
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 23-23). 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 23-76)
9-4	Faulty front passenger's seat belt buckle switch	(see page 23-79)
9-6	Faulty left front impact sensor	(see page 23-82)
9-7	Faulty right front impact sensor	(see page 23-85)
10-1	Seat belt and seat belt buckle tensioners (and airbag(s)) deployed	(see page 23-74)
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 23-88)
11-3	Short to another wire or decreased resistance in driver's side airbag inflator	(see page 23-89)
11-4	Short to power in driver's side airbag inflator	(see page 23-91)
11-5	Short to ground in driver's side airbag inflator	(see page 23-92)
12-1	Open or increased resistance in front passenger's side airbag inflator	(see page 23-94)
12-3	Short to another wire or decreased resistance in front passenger's side airbag inflator	(see page 23-95)
12-4	Short to power in front passenger's side airbag inflator	(see page 23-97)
12-5	Short to ground in front passenger's side airbag inflator	(see page 23-98)
13-1	Internal failure of the driver's side impact sensor	(see page 23-75)
13-2		
13-3	No signal from the driver's side impact sensor	(see page 23-100)
13-4	Faulty power supply to the driver's side impact sensor	(see page 23-101)
14-1	Internal failure of the front passenger's side impact sensor	(see page 23-75)
14-2		
14-3	No signal from the front passenger's side impact sensor	(see page 23-103)
14-4	Faulty power supply to the front passenger's side impact sensor	(see page 23-104)
15-1	Faulty OPDS unit or OPDS system not initialized	(see page 23-106)
15-2	Faulty side airbag cut-off indicator circuit	(see page 23-110)
15-3	Faulty OPDS sensor	(see page 23-115)

Symptom Troubleshooting Index

Symptom	Diagnostic procedure	Also check for
SRS indicator doesn't come on	SRS Indicator Troubleshooting (see page 23-116)	
SRS indicator stays on when in "SCS" menu method	SRS Indicator Troubleshooting (see step 1 on page 23-119)	• Inability to retrieve DTCs with the PGM Tester. Retrieve the flash codes using the SCS menu method (see page 23-21).
• Side airbag cut-off indicator stays on after bulb check (If the indicator stay 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 cut-off indicator stays on after the ignition switch is turned ON (II), initialize the OPDS unit (see page 23-24). – If the side airbag cut-off indicator operates normally, the system is OK. – If the side airbag cut-off indicator stays on, replace the OPDS sensor (see section 20). The sensor is part of the seatback pad.	DTC 15-2 troubleshooting

System Description

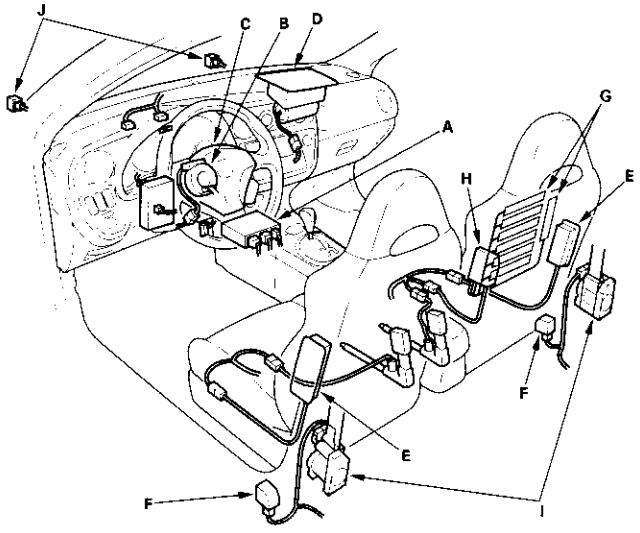
SRS Components

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), side airbags (E), seat belt tensioners (I), and front impact sensors (J).
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 minimal.

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 a 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 SRS 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 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 side airbag will deploy in a side impact.



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.

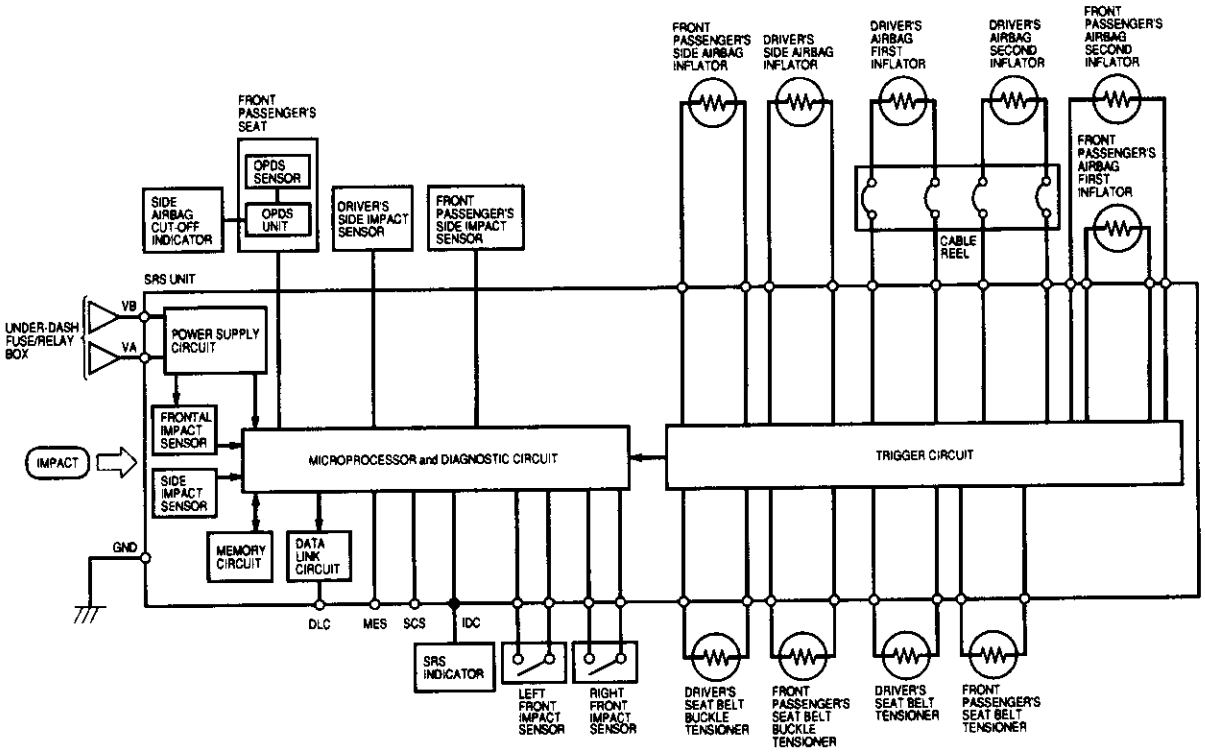
For the SRS to operate:

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 SRS 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.

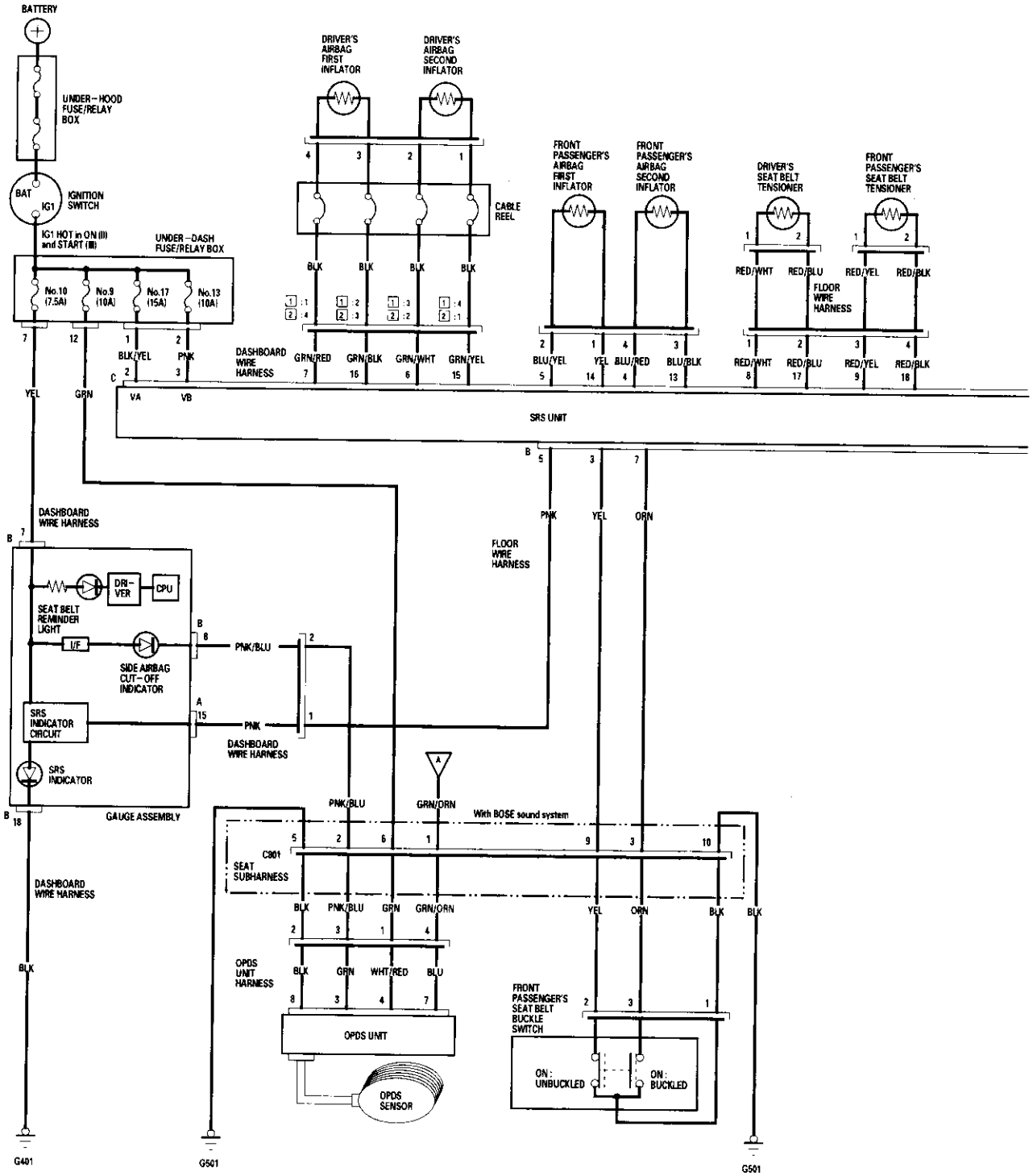


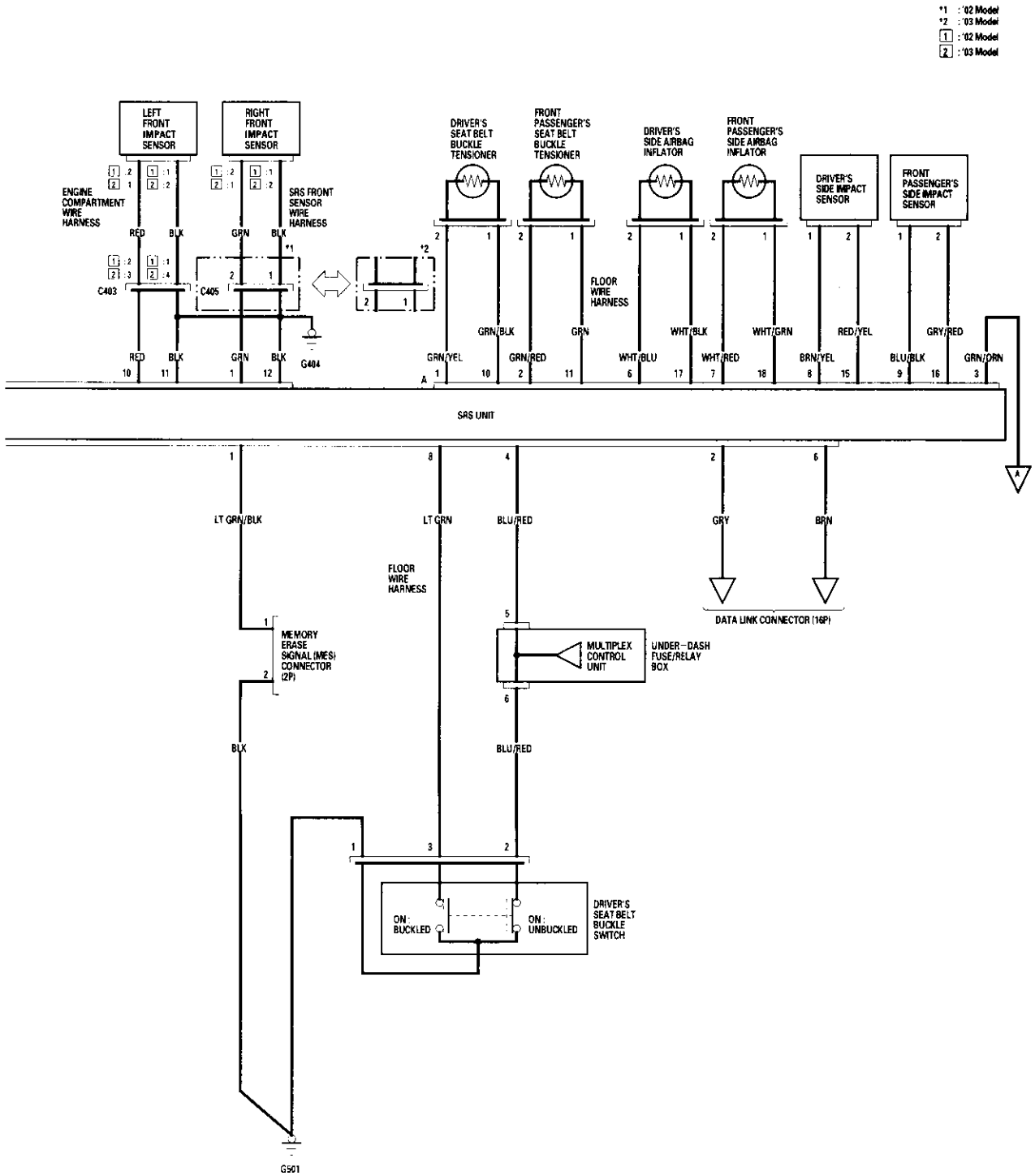
Self-diagnosis System

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 connector (DLC). This information can be read with the Honda PGM Tester when it is connected to the DLC (16P) (see page 23-20).

Circuit Diagram




*1 : '02 Model
*2 : '03 Model
1 : '02 Model
2 : '03 Model
LEFT FRONT IMPACT SENSOR
RIGHT FRONT IMPACT SENSOR
ENGINE COMPARTMENT WIRE HARNESS
SRS FRONT SENSOR WIRE HARNESS
C403
C405
G404
DRIVER'S SEAT BELT BUCKLE TENSIONER
FRONT PASSENGER'S SEAT BELT BUCKLE TENSIONER
DRIVER'S SIDE AIRBAG INFLATOR
FRONT PASSENGER'S SIDE AIRBAG INFLATOR
DRIVER'S SIDE IMPACT SENSOR
FRONT PASSENGER'S SIDE IMPACT SENSOR
FLOOR WIRE HARNESS
SAS UNIT
LT GRN/BLK
LT GRN
BLU/RED
GRY
BRN
FLOOR WIRE HARNESS
DATA LINK CONNECTOR (16P)
MEMORY ERASE SIGNAL (MES) CONNECTOR (2P)
MULTIPLEX CONTROL UNIT
UNDER-DASH FUSE/RELAY BOX
BLK
BLU/RED
ON: BUCKLED
ON: UNBUCKLED
DRIVER'S SEAT BELT BUCKLE SWITCH
G501

DTC Troubleshooting

DTC 1-1: Open or Increased Resistance in Driver's Airbag Inflator

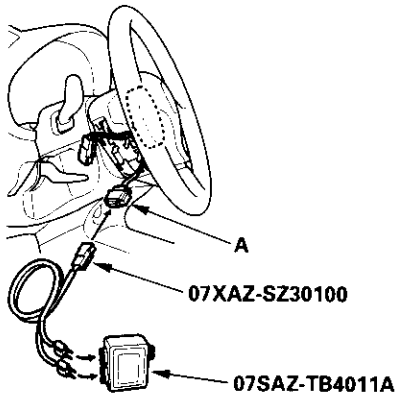
Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead F 07XAZ-SZ30100

1. Erase the DTC memory (see page 23-23).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on?

   YES – Go to step 3.

   NO – Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-23).
3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
4. Disconnect the driver's airbag 4P connector from the cable reel (A).

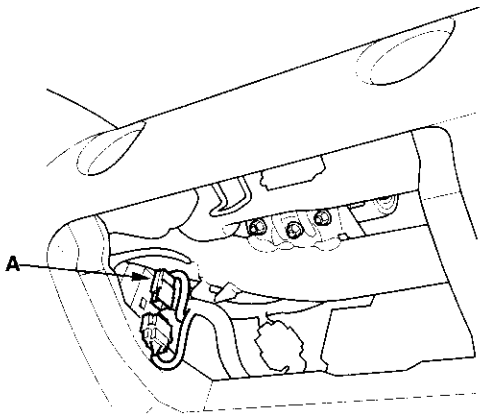


5. Connect the special tool (2 Ω connectors) to the cable reel 4P connector.
6. Reconnect the battery negative cable.
7. Erase the DTC memory.
8. Read the DTC.

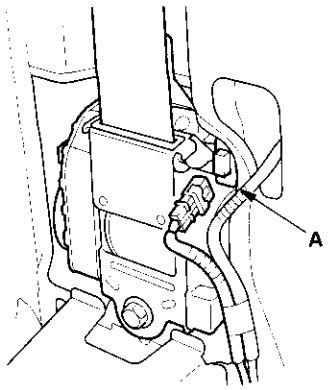
   Is DTC 1-1 indicated?

   YES – Go to step 9.

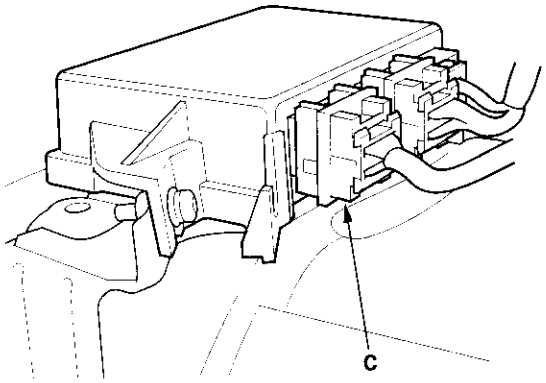
   NO – Open or increased resistance in the driver's airbag inflator; replace the driver's airbag (see page 23-127). ■
9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
10. Disconnect the front passenger's airbag 4P connector (A) from the dashboard wire harness.



11. Disconnect both seat belt tensioner 2P connectors (A) from the floor wire harness.

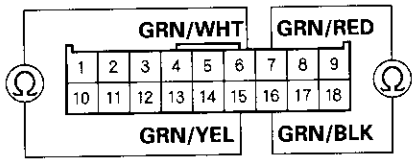


12. Disconnect SRS unit connector C (18P) from the SRS unit. Do not disconnect the special tool from the cable reel.



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 C (18P). There should be 2.0—3.0 Ω.

SRS UNIT CONNECTOR C (18P)



Wire side of female terminals

Is the resistance as specified?

YES—Faulty SRS unit or poor contact at SRS unit connector C (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 23-138).■

NO—Open or increased resistance in the dashboard wire harness or the cable reel; replace the cable reel. If the problem is still present, replace the dashboard wire harness.■

DTC Troubleshooting (cont'd)

DTC 1-3: Short to Another Wire or Decreased Resistance in Driver's Airbag Inflator

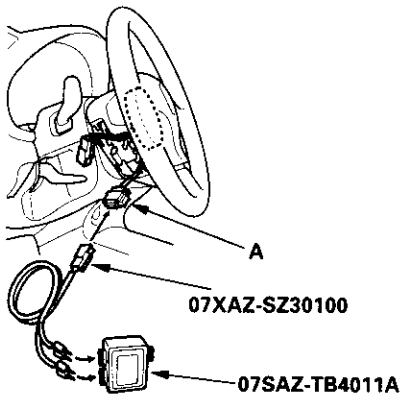
Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead F 07XAZ-SZ30100

1. Erase the DTC memory (see page 23-23).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on?

   YES – Go to step 3.

   NO – Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-23).
3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
4. Disconnect the driver's airbag 4P connector from the cable reel (A).

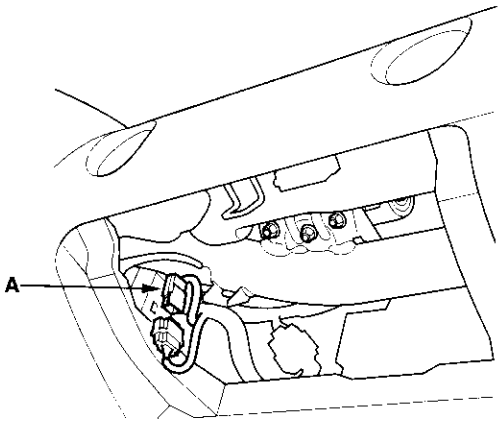


5. Connect the special tool (2 Ω connectors) to the cable reel 4P connector.
6. Reconnect the battery negative cable.
7. Erase the DTC memory.
8. Read the DTC.

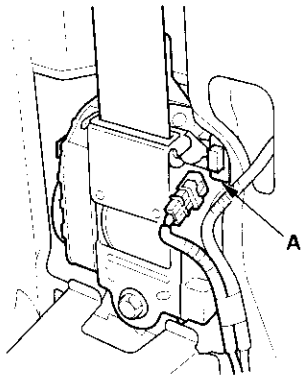
   Is DTC 1-3 indicated?

   YES – Go to step 9.

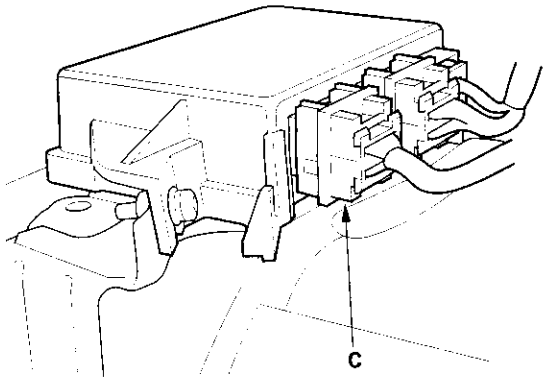
   NO – Short in the driver's airbag; replace the driver's airbag (see page 23-127). ■
9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
10. Disconnect the front passenger's airbag 4P connector (A) from the dashboard wire harness.



11. Disconnect both seat belt tensioner 2P connectors (A) from the floor wire harness.



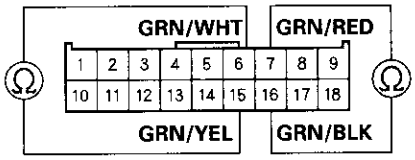
12. Disconnect SRS unit connector C (18P) from the SRS unit.



13. Disconnect the special tool from the cable reel 4P connector.

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 C (18P). There should be an open circuit, or at least 1 MΩ.

SRS UNIT CONNECTOR C (18P)



Wire side of female terminals

Is the resistance as specified?

YES – Faulty SRS unit; replace the SRS unit (see page 23-138). ■

NO – Go to step 15.

15. Disconnect the cable reel from the dashboard wire harness. 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 C (18P). There should be an open circuit, or at least 1 MΩ.

Is the resistance as specified?

YES – Replace the cable reel. ■

NO – Replace the dashboard wire harness. ■

DTC Troubleshooting (cont'd)

DTC 1-4: Short to Power in Driver's Airbag Inflator

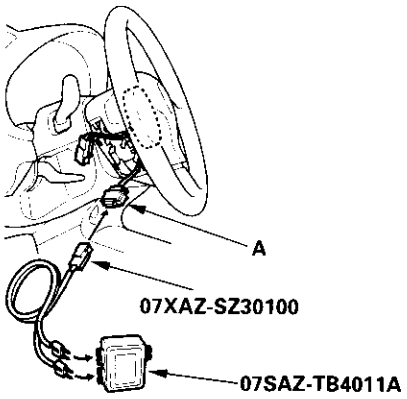
Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead F 07XAZ-SZ30100

1. Erase the DTC memory (see page 23-23).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on?

   YES – Go to step 3.

   NO – Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-23).
3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
4. Disconnect the driver's airbag 4P connector from the cable reel (A).

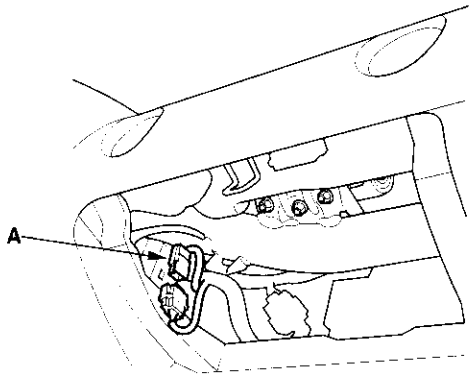


5. Connect the special tool (2 Ω connectors) to the cable reel 4P connector.
6. Reconnect the battery negative cable.
7. Erase the DTC memory.
8. Read the DTC.

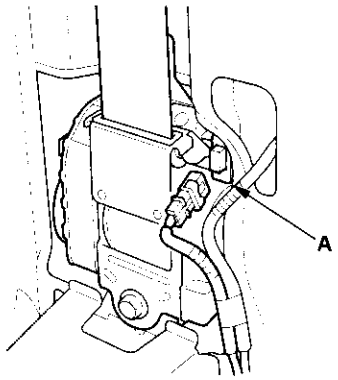
   Is DTC 1-4 indicated?

   YES – Go to step 9.

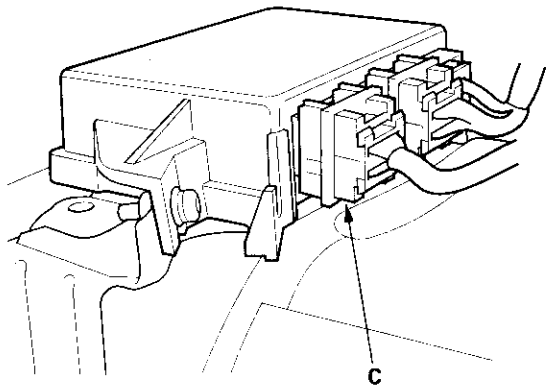
   NO – Short to power in the driver's airbag; replace the driver's airbag (see page 23-127). ■
9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
10. Disconnect the front passenger's airbag 4P connector (A) from the dashboard wire harness.



11. Disconnect both seat belt tensioner 2P connectors (A) from the floor wire harness.



12. Disconnect SRS unit connector C (18P) from the SRS unit.



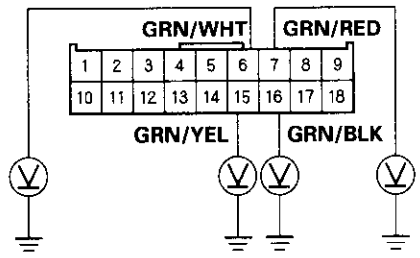
13. Disconnect the special tool from the cable reel 4P connector.

14. Reconnect the battery negative cable.

15. Turn the ignition switch ON (II).

16. Check for voltage between the No. 7 terminal of SRS unit connector C (18P) and body ground, between the No. 16 terminal and body ground, between the No. 6 terminal and body ground, and between the No. 15 terminal and body ground. There should be 0.5 V or less.

SRS UNIT CONNECTOR C (18P)



Wire side of female terminals

Is the voltage as specified?

YES – Faulty SRS unit; replace the SRS unit (see page 23-138). ■

NO – Go to step 17.

17. Turn the ignition switch OFF.

18. Disconnect the cable reel from the dashboard wire harness.

19. Turn the ignition switch ON (II).

20. Check for voltage between the No. 7 terminal of SRS unit connector C (18P) and body ground, between the No. 16 terminal and body ground, between the No. 6 terminal and body ground, and between 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 the dashboard wire harness. ■

DTC Troubleshooting (cont'd)

DTC 1-5: Short to Ground in Driver's Airbag Inflator

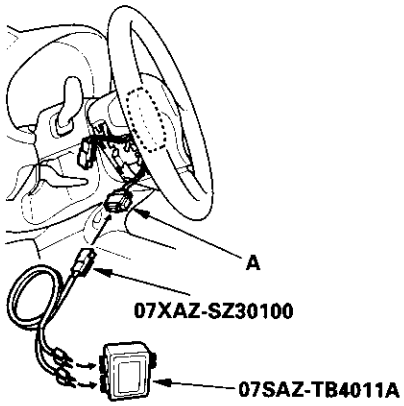
Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead F 07XAZ-SZ30100

1. Erase the DTC memory (see page 23-23).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on?

   YES – Go to step 3.

   NO – Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-23).
3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
4. Disconnect the driver's airbag 4P connector from the cable reel (A).

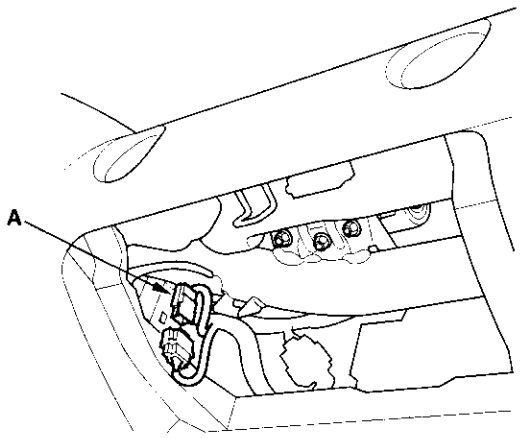


5. Connect the special tool (2 Ω connectors) to the cable reel 4P connector.
6. Reconnect the battery negative cable.
7. Erase the DTC memory.
8. Read the DTC.

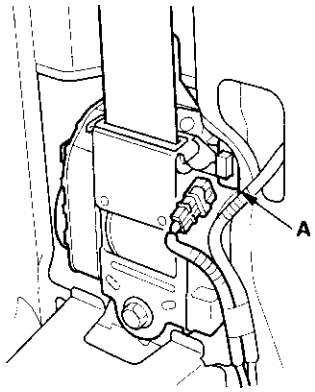
   Is DTC 1-5 indicated?

   YES – Go to step 9.

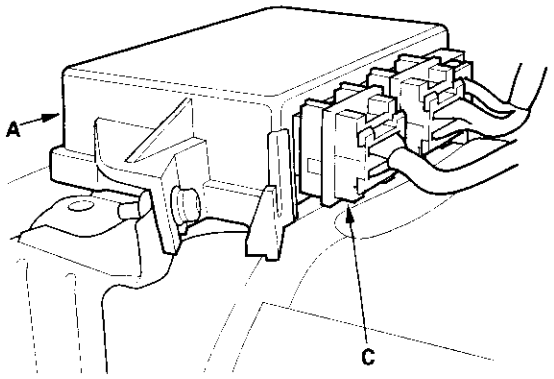
   NO – Short to ground in the driver's airbag inflator; replace the driver's airbag (see page 23-127). ■
9. Disconnect the battery negative cable, and wait for 3 minutes.
10. Disconnect the front passenger's airbag 4P connector (A) from the dashboard wire harness.



11. Disconnect both seat belt tensioner 2P connectors (A) from the floor wire harness.



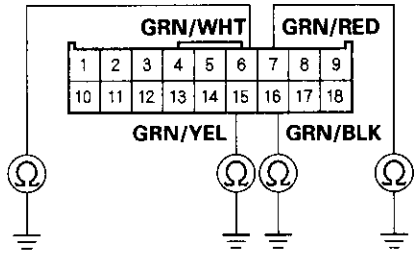
12. Disconnect SRS unit connector C (18P) from the SRS unit (A).



13. Disconnect the special tool from the cable reel 4P connector.

14. Check resistance between the No. 7 terminal of SRS unit connector C (18P) and body ground, between the No. 16 terminal and body ground, between the No. 6 terminal and body ground, and between the No. 15 terminal and body ground. There should be an open circuit, or at least 1 MΩ.

SRS UNIT CONNECTOR C (18P)



Wire side of female terminals

Is the resistance as specified?

YES – Faulty SRS unit; replace the SRS unit (see page 23-138).■

NO – Go to step 15.

15. Disconnect the cable reel from the dashboard wire harness.

16. Check resistance between the No. 7 terminal of SRS unit connector C (18P) and body ground, between the No. 16 terminal and body ground, between the No. 6 terminal and body ground, and between 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 the dashboard wire harness.■

DTC Troubleshooting (cont'd)

DTC 2-1: Open or Increased Resistance in Front Passenger's Airbag Inflator

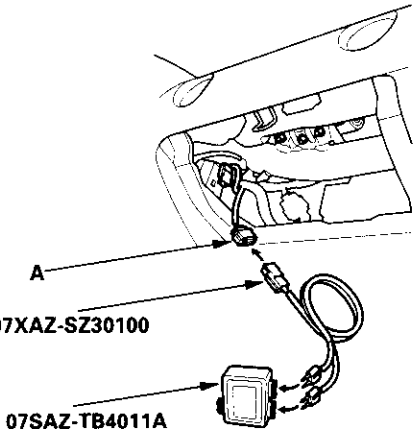
Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead F 07XAZ-SZ30100

1. Erase the DTC memory (see page 23-23).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on?

   YES – Go to step 3.

   NO – Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-23).
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 from the dashboard wire harness (A).

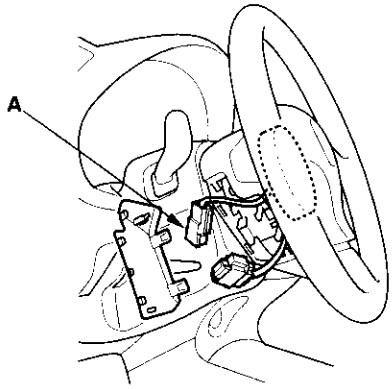


5. Connect the special tool (2 Ω connectors) to the dashboard wire harness 4P connector.
6. Reconnect the battery negative cable.
7. Erase the DTC memory.
8. Read the DTC.

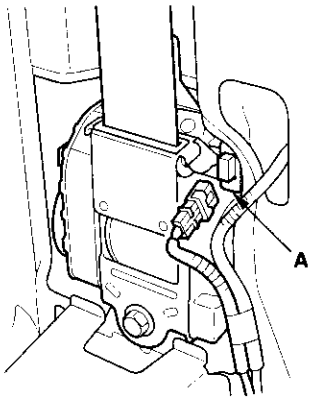
   Is DTC 2-1 indicated?

   YES – Go to step 9.

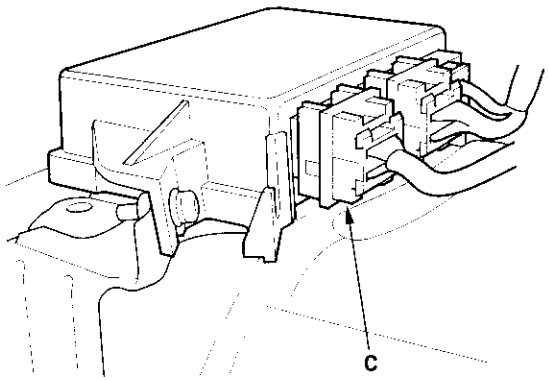
   NO – Open or increased resistance in the front passenger's airbag inflator; replace the front passenger's airbag (see page 23-129). ■
9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
10. Disconnect the driver's airbag 4P connector (A) from the cable reel.



11. Disconnect both seat belt tensioner 2P connectors (A) from the floor wire harness.

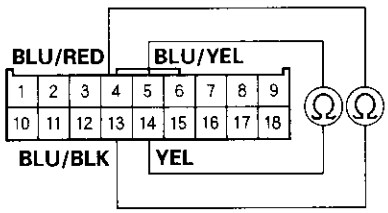


12. Disconnect SRS unit connector C (18P) from the SRS unit. Do not disconnect the special tool from the dashboard wire harness.



13. Check resistance between the No. 4 and No. 13 terminals and between the No. 5 and No. 14 terminals of SRS unit connector C (18P). There should be 2.0 - 3.0 Ω.

SRS UNIT CONNECTOR C (18P)



Wire side of female terminals

Is the resistance as specified?

YES — Faulty SRS unit or poor contact at the SRS unit connector C (18P). Check the connection; if the connection is OK, replace the SRS unit (see page 23-138). ■

NO — Open or increased resistance in the dashboard wire harness; replace the dashboard wire harness. ■

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 23-23).

2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

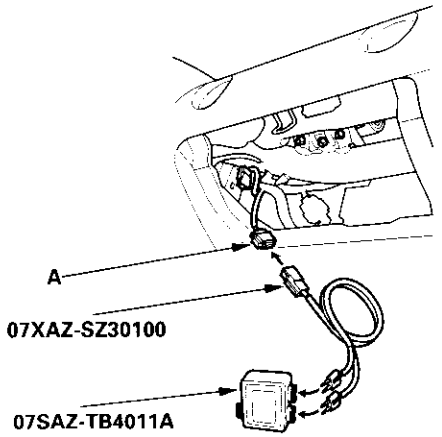
   Does the SRS indicator stay on?

   YES — Go to step 3.

   NO — Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-23).

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 from the dashboard wire harness (A).



5. Connect the special tool (2 Ω connectors) to the dashboard wire harness 4P connector.

6. Reconnect the battery negative cable.

7. Erase the DTC memory.

(cont'd)

DTC Troubleshooting (cont'd)

8. Read the DTC.

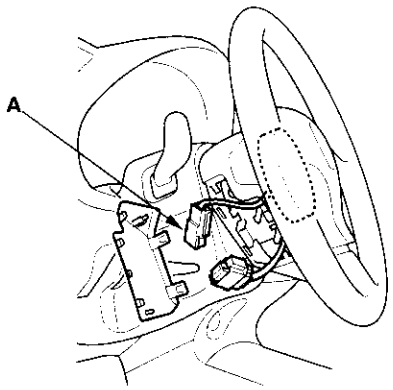
   Is DTC 2-3 indicated?

   YES – Go to step 9.

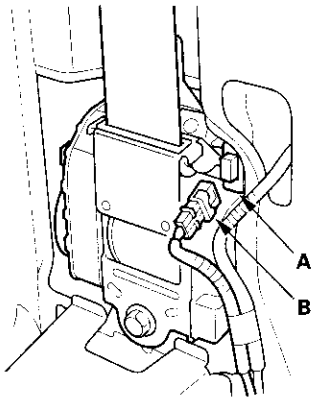
   NO – Short in the front passenger's airbag inflator; replace the front passenger's airbag (see page 23-129). ■

9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.

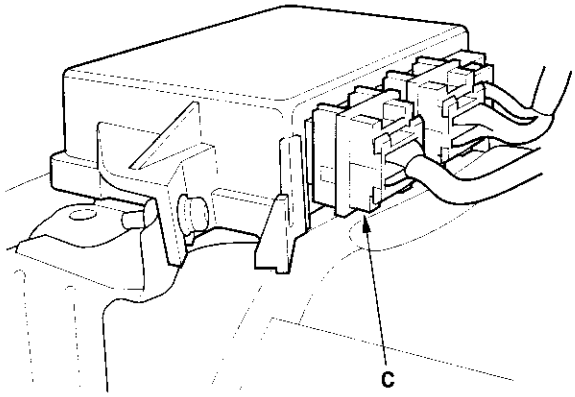
10. Disconnect the driver's airbag 4P connector (A) from the cable reel.



11. Disconnect both seat belt tensioner 2P connectors (A) from the floor wire harness 2P connectors (B).



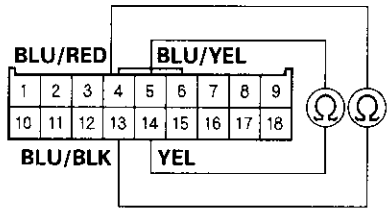
12. Disconnect SRS unit connector C (18P) from the SRS unit.



13. Disconnect the special tool from the dashboard wire harness 4P connector.

14. Check resistance between the No. 4 and No. 13 terminals and between the No. 5 and No. 14 terminals of SRS unit connector C (18P). There should be an open circuit, or at least 1 MΩ.

SRS UNIT CONNECTOR C (18P)



Wire side of female terminals

Is the resistance as specified?

YES – Faulty SRS unit; replace the SRS unit (see page 23-138). ■

NO – Short in the dashboard wire harness; replace the dashboard wire harness. ■

DTC 2-4: Short to Power in Front Passenger's Airbag Inflator

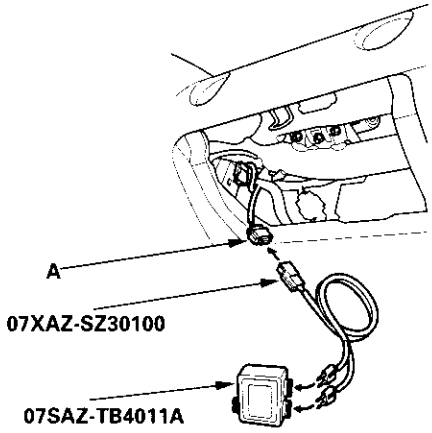
Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead F 07XAZ-SZ30100

1. Erase the DTC memory (see page 23-23).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on?

   YES – Go to step 3.

   NO – Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-23).
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 from the dashboard wire harness (A).

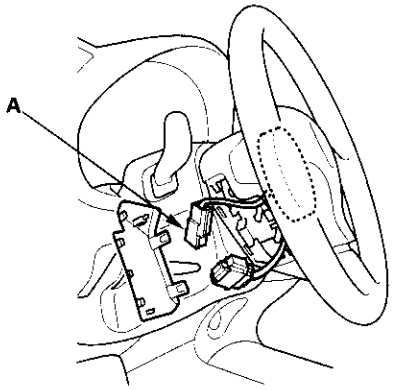


5. Connect the special tool (2 Ω connectors) to the dashboard wire harness 4P connector.
6. Reconnect the battery negative cable.
7. Erase the DTC memory.
8. Read the DTC.

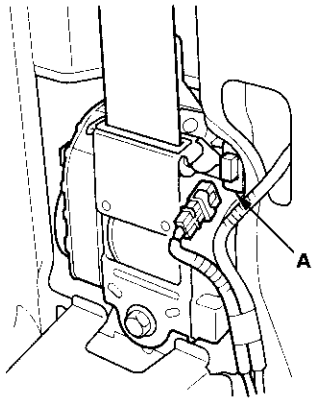
   Is DTC 2-4 indicated?

   YES – Go to step 9.

   NO – Short to power in the front passenger's airbag inflator; replace the front passenger's airbag (see page 23-129).■
9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
10. Disconnect the driver's airbag 4P connector (A) from the cable reel.



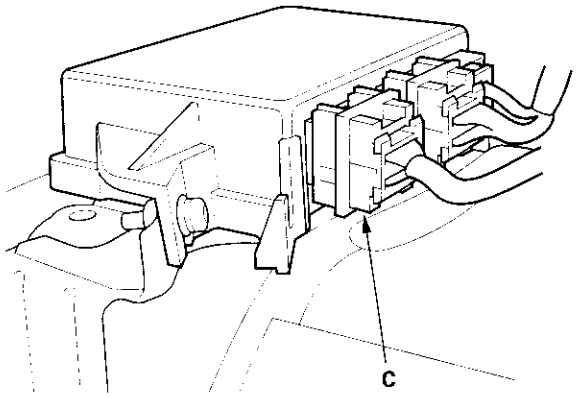
11. Disconnect both seat belt tensioner 2P connectors (A) from the floor wire harness.



(cont'd)

DTC Troubleshooting (cont'd)

12. Disconnect SRS unit connector C (18P) from the SRS unit.



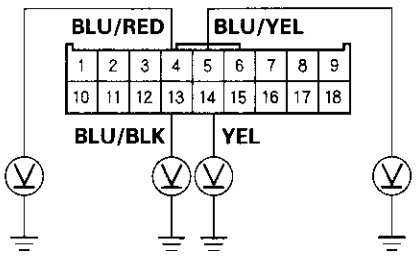
13. Disconnect the special tool from the dashboard wire harness 4P connector.

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 C (18P) and body ground, between the No. 13 terminal and body ground, between the No. 5 terminal and body ground, and between the No. 14 terminal and body ground. There should be 0.5 V or less.

SRS UNIT CONNECTOR C (18P)



Wire side of female terminals

Is the voltage as specified?

YES – Faulty SRS unit; replace the SRS unit (see page 23-138). ■

NO – Short to power in the dashboard wire harness; replace the dashboard wire harness. ■

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 23-23).

2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

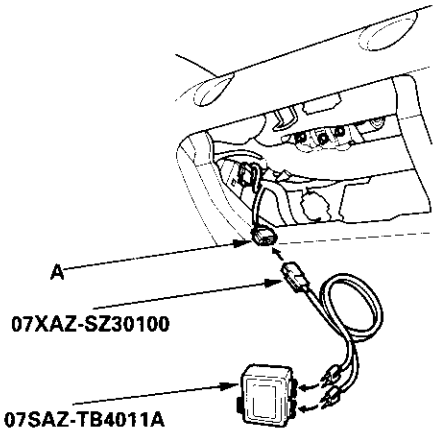
   Does the SRS indicator stay on?

   YES – Go to step 3.

   NO – Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-23).

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 from the dashboard wire harness (A).



5. Connect the special tool (2 Ω connectors) to the dashboard wire harness 4P connector.

6. Reconnect the battery negative cable.

7. Erase the DTC memory.

8. Read the DTC.

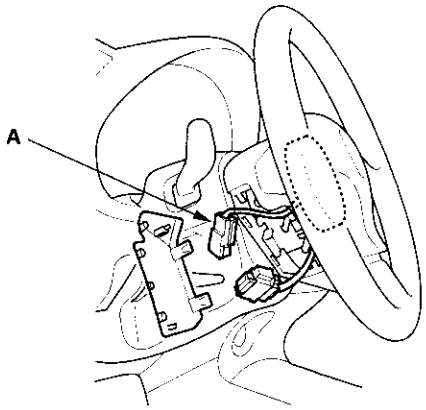
   Is DTC 2-5 indicated?

   YES – Go to step 9.

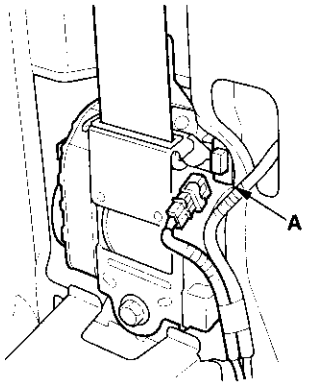
   NO – Short to ground in the front passenger's airbag inflator; replace the front passenger's airbag (see page 23-129). ■

9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.

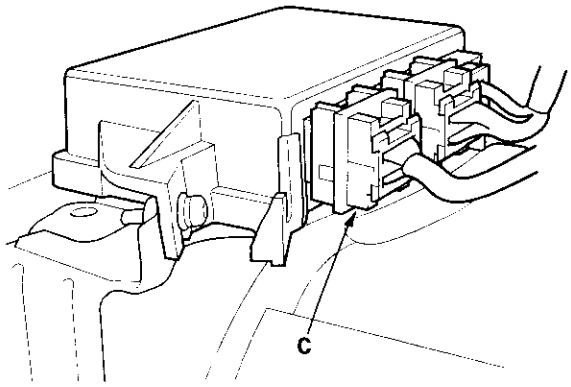
10. Disconnect the driver's airbag 4P connector (A) from the cable reel.



11. Disconnect both seat belt tensioner 2P connectors (A) from the floor wire harness.



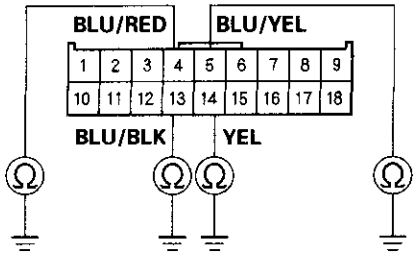
12. Disconnect SRS unit connector C (18P) from the SRS unit.



13. Disconnect the special tool from the dashboard wire harness 4P connector.

14. Check resistance between the No. 4 terminal of SRS unit connector C (18P) and body ground, and between the No. 13 terminal and body ground, between the No. 5 terminal and body ground, and between the No. 14 terminal and body ground. There should be an open circuit, or at least 1 MΩ.

SRS UNIT CONNECTOR C (18P)



Wire side of female terminals

Is the resistance as specified?

YES – Faulty SRS unit; replace the SRS unit (see page 23-138). ■

NO – Short to ground in the dashboard wire harness; replace the dashboard wire harness. ■

DTC Troubleshooting (cont'd)

DTC 3-1: Open or Increased Resistance in Driver's Seat Belt Tensioner

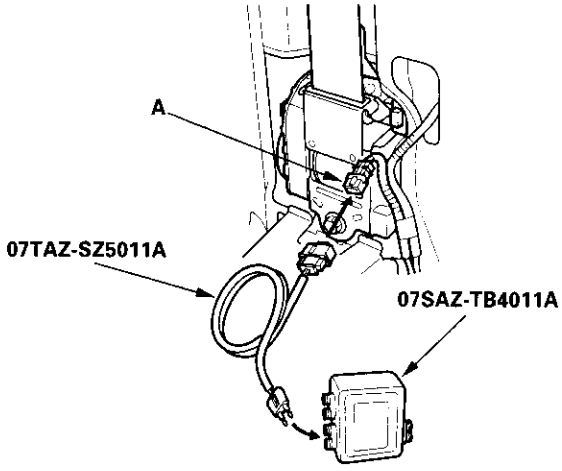
Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead C 07TAZ-SZ5011A
- SRS simulator lead F 07XAZ-SZ30100

1. Erase the DTC memory (see page 23-23).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on?

   YES – Go to step 3.

   NO – Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-23).
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 from the floor wire harness (A).

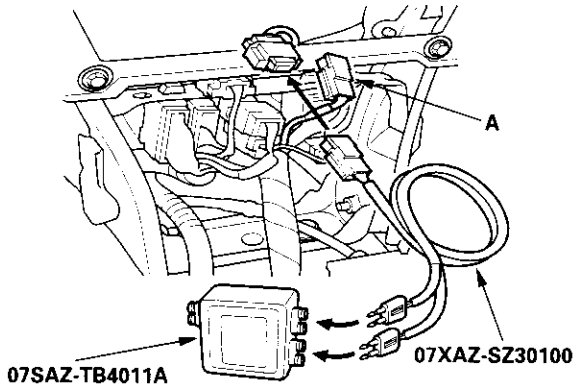


5. Connect the special tool (2 Ω connector) to the floor wire harness 2P connector.
6. Reconnect the battery negative cable.
7. Erase the DTC memory.
8. Read the DTC.

   Is DTC 3-1 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 (A) from the dashboard wire harness.



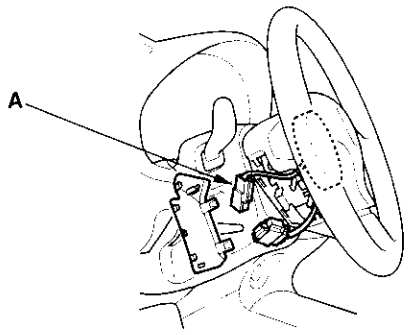
11. Connect the special tool (2 Ω connectors) to the dashboard wire harness 4P connector.
12. Reconnect the battery negative cable.
13. Erase the DTC memory.
14. Read the DTC.

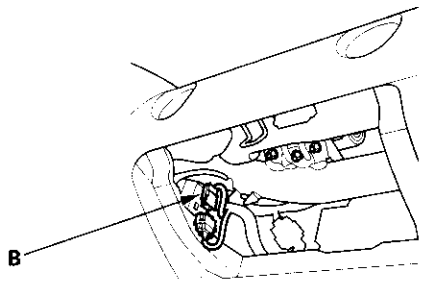
    Is DTC 3-1 indicated?

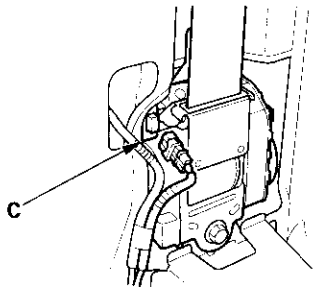
    YES – Go to step 15.

    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.

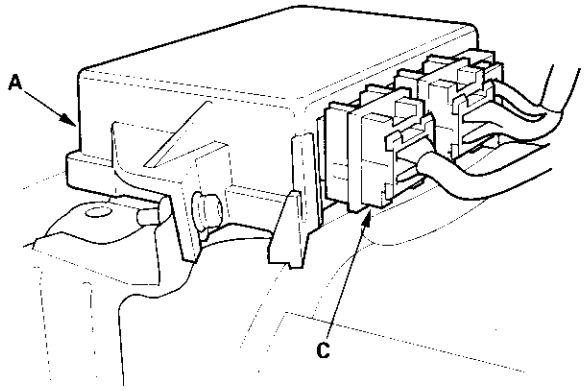
16. Disconnect the driver's airbag connector (A), front passenger's airbag connector (B), and front passenger's seat belt tensioner connector (C).





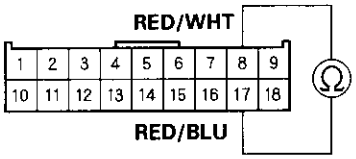


17. Disconnect SRS unit connector C (18P) from the SRS unit (A). Do not disconnect the special tool from the dashboard wire harness.



18. Check resistance between the No. 8 terminal and the No. 17 terminal of SRS unit connector C (18P). There should be 2.0 – 3.0 Ω.

SRS UNIT CONNECTOR C (18P)



Wire side of female terminals

Is the resistance as specified?

YES – Faulty SRS unit or poor contact at SRS unit connector C (18P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 23-138). ■

NO – Open or increased resistance in the dashboard wire harness; replace the dashboard wire harness. ■

DTC Troubleshooting (cont'd)

DTC 3-3: Short to Another Wire or Decreased Resistance in Driver's Seat Belt Tensioner

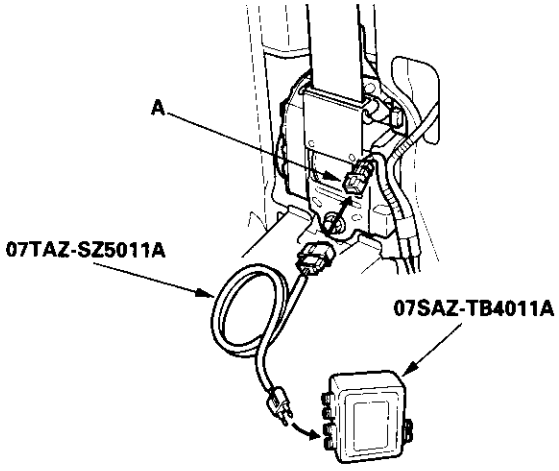
Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead C 07TAZ-SZ5011A
- SRS simulator lead F 07XAZ-SZ30100

1. Erase the DTC memory (see page 23-23).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on?

   YES – Go to step 3.

   NO – Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-23).
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 from the floor wire harness (A).

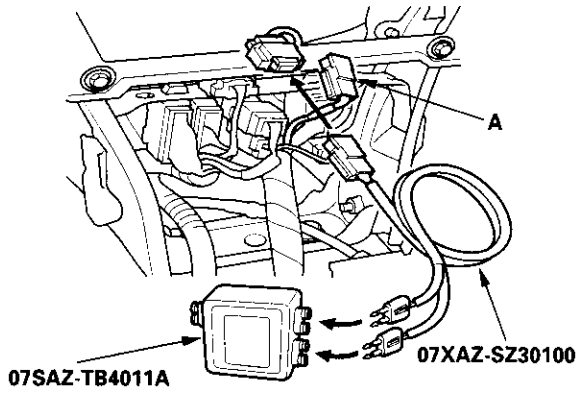


5. Connect the special tool (2 Ω connector) to the floor wire harness 2P connector.
6. Reconnect the battery negative cable.
7. Erase the DTC memory.
8. Read the DTC.

   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 the floor wire harness 4P connector (A) from the dashboard wire harness.



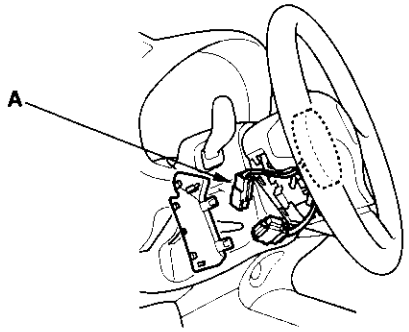
11. Connect the special tool (2 Ω connectors) to the dashboard wire harness 4P connector.
12. Reconnect the battery negative cable.
13. Erase the DTC memory.
14. Read the DTC.

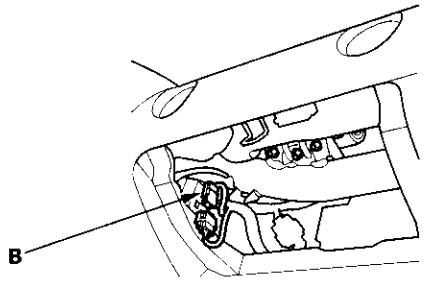
    Is DTC 3-3 indicated?

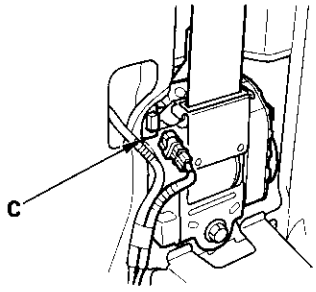
    YES – Go to step 15.

    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.

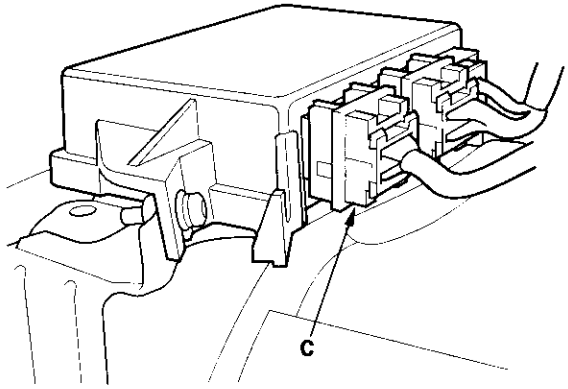
16. Disconnect the driver's airbag connector (A), front passenger's airbag connector (B), and front passenger's seat belt tensioner connector (C).







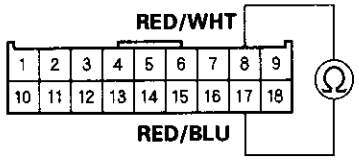
17. Disconnect SRS unit connector C (18P) from the SRS unit.



18. Disconnect the special tool from the dashboard wire harness 4P connector.

19. Check resistance between the No. 8 terminal and the No. 17 terminal SRS unit connector C (18P). There should be an open circuit, or at least 1 MΩ.

SRS UNIT CONNECTOR C (18P)



Wire side of female terminals

Is the resistance as specified?

YES—Faulty SRS unit; replace the SRS unit (see page 23-138).■

NO—Short in the dashboard wire harness; replace the dashboard wire harness.■

DTC Troubleshooting (cont'd)

DTC 3-4: Short to Power in Driver's Seat Belt Tensioner

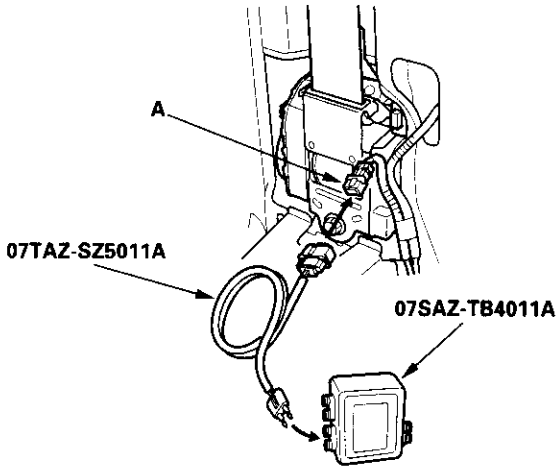
Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead C 07TAZ-SZ5011A
- SRS simulator lead F 07XAZ-SZ30100

1. Erase the DTC memory (see page 23-23).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on?

   YES – Go to step 3.

   NO – Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-23).
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 from the floor wire harness (A).

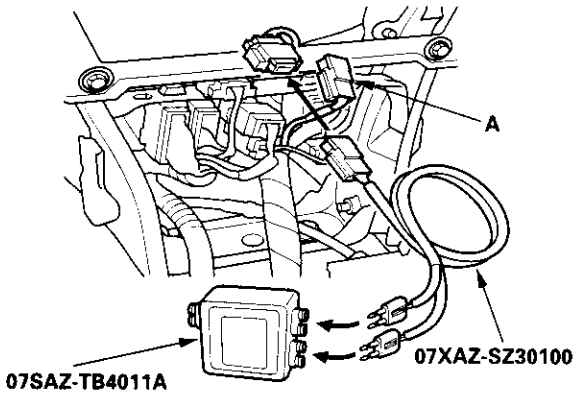


5. Connect the special tool (2 Ω connector) to the floor wire harness 2P connector.
6. Reconnect the battery negative cable.
7. Erase the DTC memory.
8. Read the DTC.

   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 the floor wire harness 4P connector (A) from the dashboard wire harness.



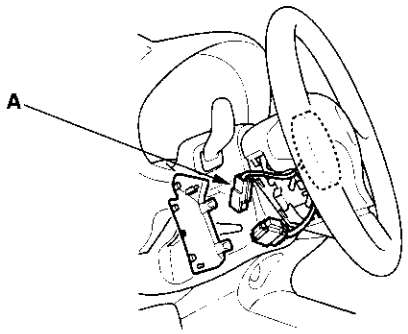
11. Connect the special tool (2 Ω connectors) to the dashboard wire harness 4P connector.
12. Reconnect the battery negative cable.
13. Erase the DTC memory.
14. Read the DTC.

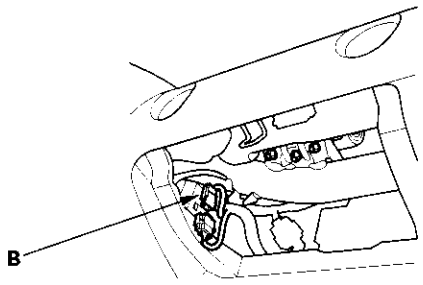
    Is DTC 3-4 indicated?

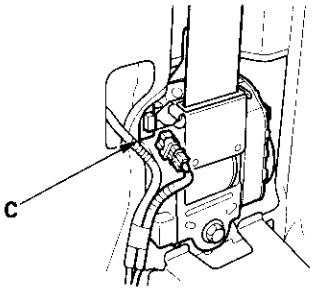
    YES – Go to step 15.

    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.

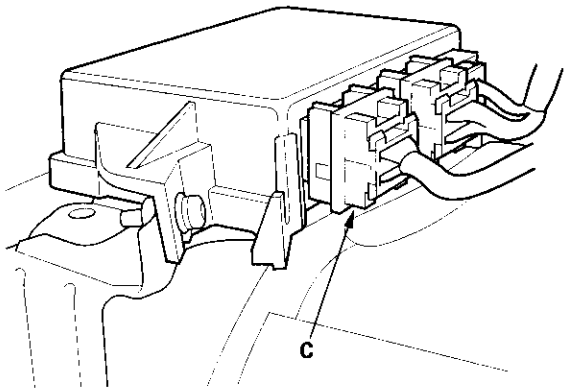
16. Disconnect the driver's airbag connector (A), front passenger's airbag connector (B), and front passenger's seat belt tensioner connector (C).







17. Disconnect SRS unit connector C (18P) from the SRS unit.



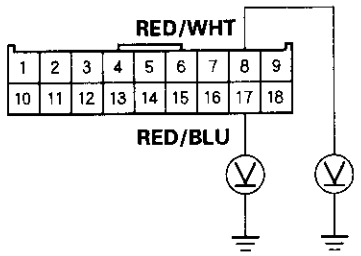
18. Disconnect the special tool (2 Ω) from the dashboard wire harness 4P connector.

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 C (18P) and body ground, and between the No. 17 terminal and body ground. There should be 0.5 V or less.

SRS UNIT CONNECTOR C (18P)



Wire side of female terminals

Is the voltage as specified?

YES – Faulty SRS unit; replace the SRS unit (see page 23-138). ■

NO – Short to power in the dashboard wire harness; replace the dashboard wire harness. ■

DTC Troubleshooting (cont'd)

DTC 3-5: Short to Ground in Driver's Seat Belt Tensioner

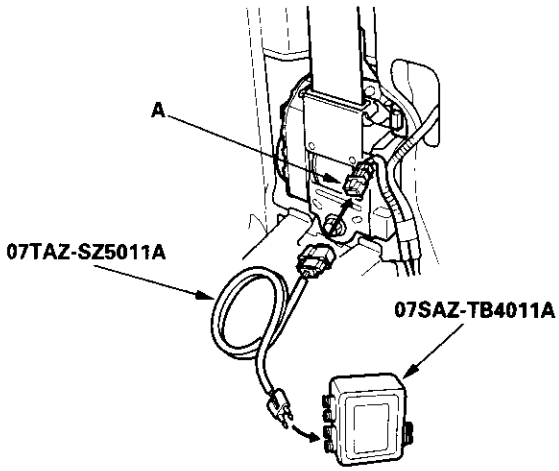
Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead C 07TAZ-SZ5011A
- SRS simulator lead F 07XAZ-SZ30100

1. Erase the DTC memory (see page 23-23).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on?

   YES – Go to step 3.

   NO – Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-23).
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 from the floor wire harness (A).

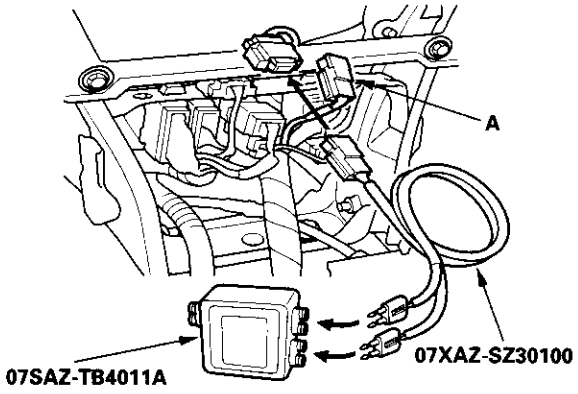


5. Connect the special tool (2 Ω connector) to the floor wire harness 2P connector.
6. Reconnect the battery negative cable.
7. Erase the DTC memory.
8. Read the DTC.

   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 the floor wire harness 4P connector (A) from the dashboard wire harness.



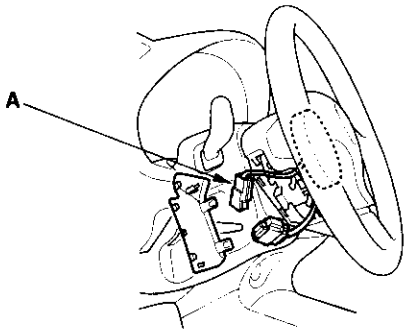
11. Connect the special tool (2 Ω connectors) to the dashboard wire harness 4P connector.
12. Reconnect the battery negative cable.
13. Erase the DTC memory.
14. Read the DTC.

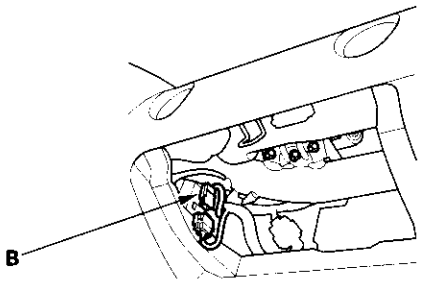
    Is DTC 3-5 indicated?

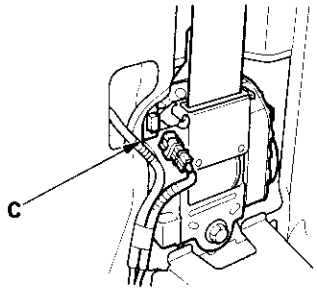
    YES – Go to step 15.

    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.

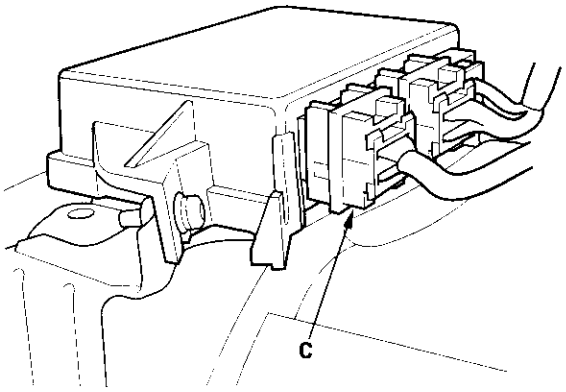
16. Disconnect the driver's airbag connector (A), front passenger's airbag connector (B), and front passenger's seat belt tensioner connector (C).







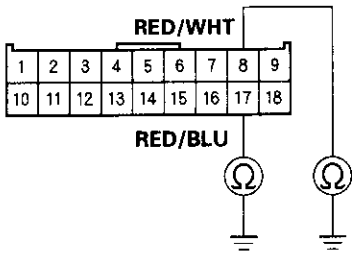
17. Disconnect SRS unit connector C (18P) from the SRS unit.



18. Disconnect the special tool from the dashboard wire harness 4P connector.

19. Check resistance between the No. 8 terminal of SRS unit connector C (18P) and body ground, and between the No. 17 terminal and body ground. There should be an open circuit, or at least 1 MΩ.

SRS UNIT CONNECTOR C (18P)



Wire side of female terminals

Is the resistance as specified?

YES -- Faulty SRS unit; replace the SRS unit (see page 23-138).■

NO -- Short to ground in the dashboard wire harness; replace the dashboard wire harness.■

DTC Troubleshooting (cont'd)

DTC 21-1: Open or Increase Resistance in Driver's Seat Belt Buckle Tensioner

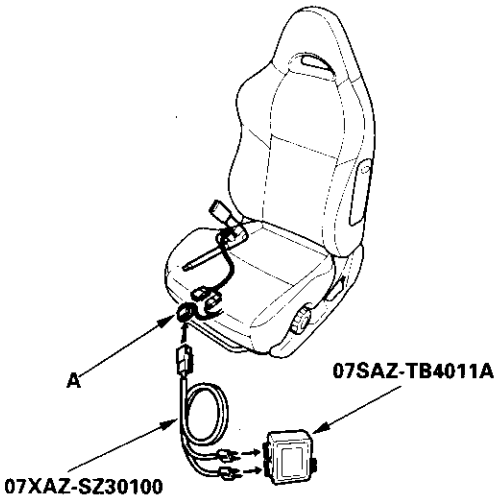
Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead F 07XAZ-SZ30100

1. Erase the DTC memory (see page 23-23).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on?

   YES – Go to step 3.

   NO – Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-23).
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 from the floor wire harness (A).

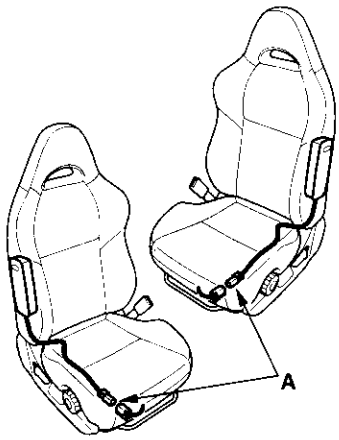


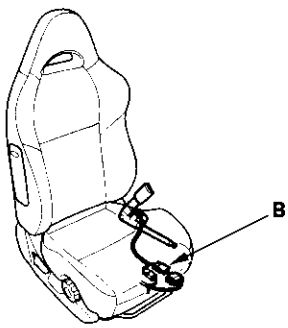
5. Connect the special tool (2 Ω connectors) to the floor wire harness 4P connector.
6. Reconnect the battery negative cable.
7. Erase the DTC memory.
8. Read the DTC.

   Is DTC 21-1 indicated?

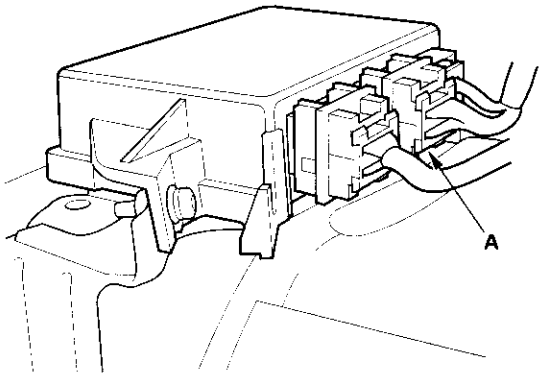
   YES – Go to step 9.

   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 (A) and the front passenger's seat belt buckle tensioner 4P connector (B).



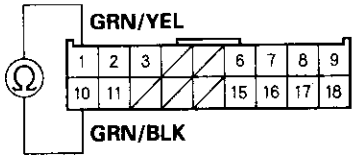


11. Disconnect SRS unit connector A (18P) from the SRS unit. Do not disconnect the special tool from the floor wire harness.



12. Check resistance between the No. 1 and No. 10 terminals of SRS unit connector 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 23-138). ■

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 23-23).

2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

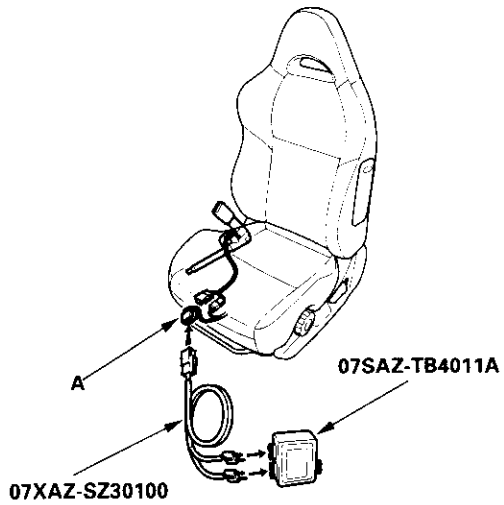
   Does the SRS indicator stay on?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-23).

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 from the floor wire harness 4P connector (A).



5. Connect the special tool (2 Ω connectors) to the floor wire harness 4P connector.

6. Reconnect the battery negative cable.

7. Erase the DTC memory.

(cont'd)

DTC Troubleshooting (cont'd)

8. Read the DTC.

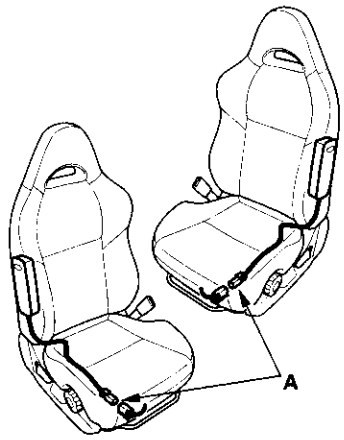
   Is DTC 21-3 indicated?

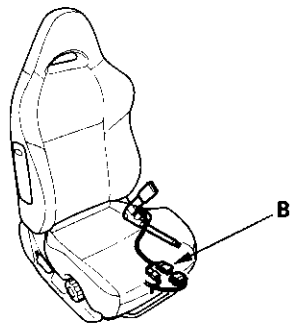
   YES – Go to step 9.

   NO – Short in the driver's seat belt buckle tensioner; replace the driver's seat belt buckle. ■

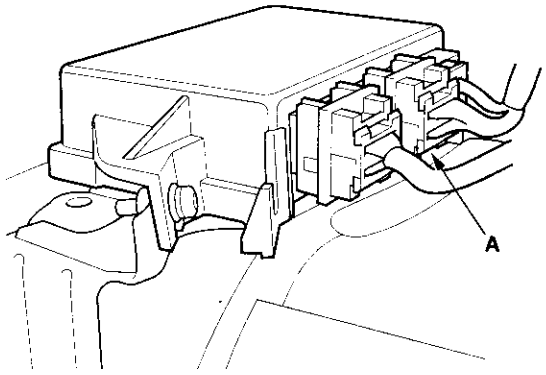
9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.

10. Disconnect both side airbag 2P connectors (A) and the front passenger's seat belt buckle tensioner 4P connector (B).





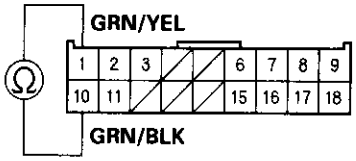
11. Disconnect SRS unit connector A (18P) from the SRS unit.



12. Disconnect the special tool from the floor wire harness 2P connector.

13. Check resistance between the No. 1 and No. 10 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 23-138). ■

NO – Short in the floor wire harness; replace the floor wire harness. ■

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 23-23).

2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

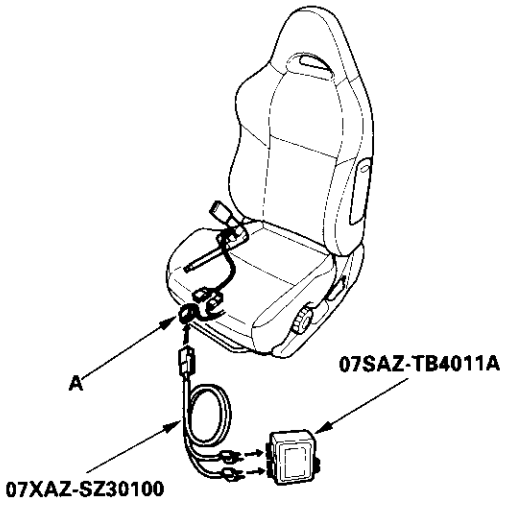
   Does the SRS indicator stay on?

   YES – Go to step 3.

   NO – Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-23).

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 from the floor wire harness (A).



5. Connect the special tool (2 Ω connectors) to the floor wire harness 4P connector.

6. Reconnect the battery negative cable.

7. Erase the DTC memory.

8. Read the DTC.

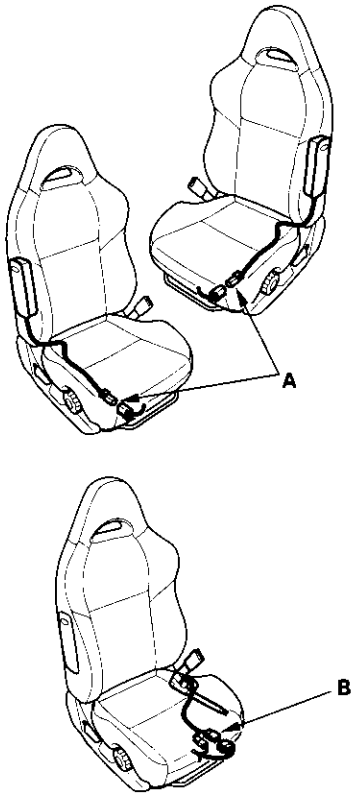
   Is DTC 21-4 indicated?

   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. Disconnect the battery negative cable, and wait for 3 minutes.

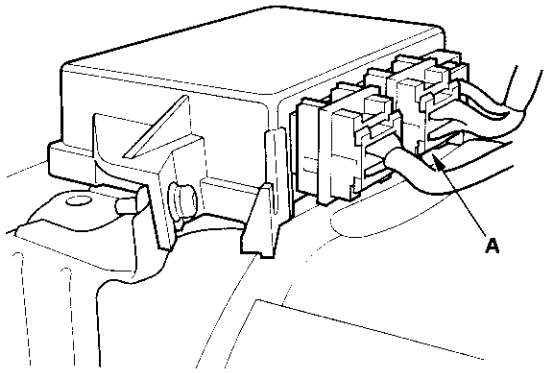
10. Disconnect both side airbag 2P connectors (A) and the front passenger's seat belt buckle tensioner 4P connector (B).



(cont'd)

DTC Troubleshooting (cont'd)

11. Disconnect SRS unit connector A (18P) from the SRS unit.



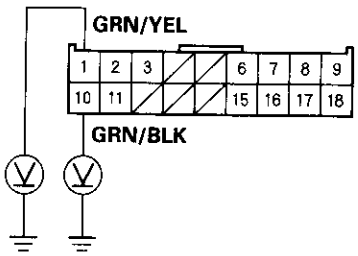
12. Disconnect the special tool from the floor wire harness 2P connector.

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 A (18P) and body ground, and between the No. 10 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 23-138). ■

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 23-23).

2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

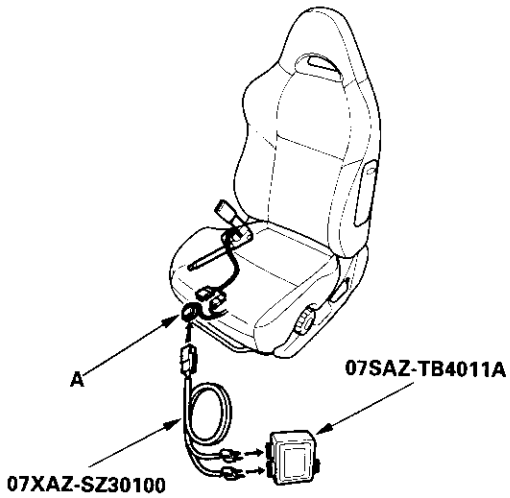
   Does the SRS indicator stay on?

   YES – Go to step 3.

   NO – Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-23).

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 from the floor wire harness (A).



5. Connect the special tool (2 Ω connectors) to the floor wire harness 4P connector.

6. Reconnect the battery negative cable.

7. Erase the DTC memory.

8. Read the DTC.

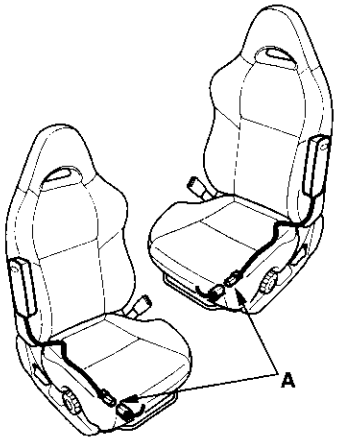
   Is DTC 21-5 indicated?

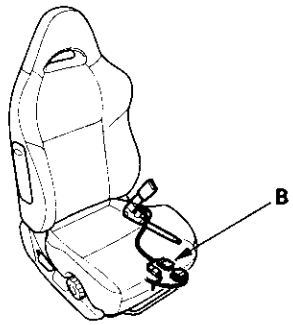
   YES—Go to step 9.

   NO—Short to ground in the driver's seat belt buckle tensioner; replace the driver's seat belt buckle. ■

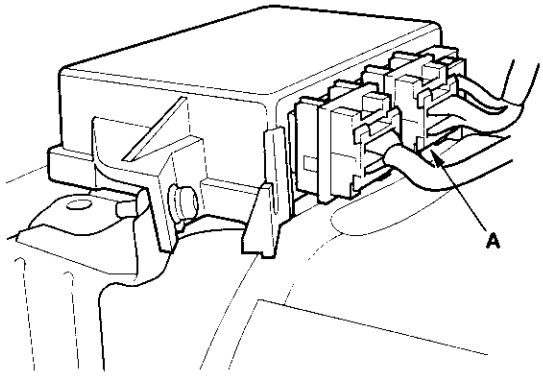
9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.

10. Disconnect both side airbag 2P connectors (A) and the front passenger's seat belt buckle tensioner 4P connector (B).





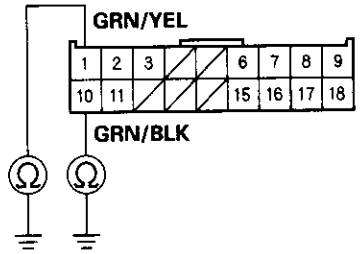
11. Disconnect SRS unit connector A (18P) from the SRS unit.



12. Disconnect the special tool from the floor wire harness 2P connector.

13. Check resistance between the No. 1 terminal of SRS unit connector A (18P) and body ground, and between the No. 10 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 23-138). ■

NO—Short to ground in the floor wire harness; replace the floor wire harness. ■

DTC Troubleshooting (cont'd)

DTC 4-1: Open or Increase Resistance in Front Passenger's Seat Belt Tensioner

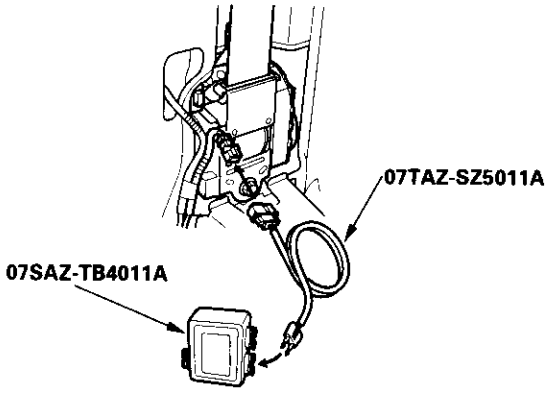
Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead C 07TAZ-SZ5011A
- SRS simulator lead F 07XAZ-SZ30100

1. Erase the DTC memory (see page 23-23).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on?

   YES – Go to step 3.

   NO – Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-23).
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 from the floor wire harness.

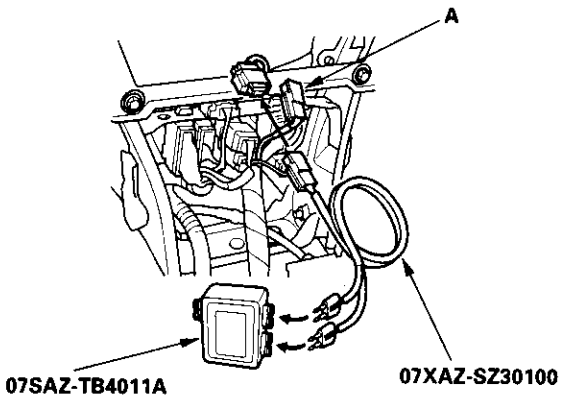


5. Connect the special tool (2 Ω connector) to the floor wire harness 2P connector.
6. Reconnect the battery negative cable.
7. Erase the DTC memory.
8. Read the DTC.

   Is DTC 4-1 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 (A) from the dashboard wire harness.



11. Connect the special tool (2 Ω connectors) to the dashboard wire harness 4P connector.
12. Reconnect the battery negative cable.
13. Erase the DTC memory.
14. Read the DTC.

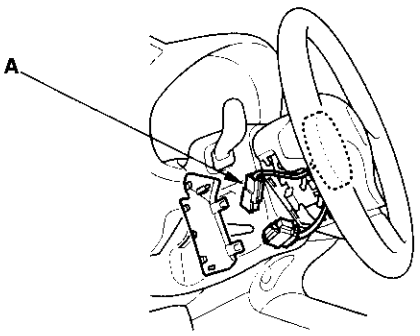
    Is DTC 4-1 indicated?

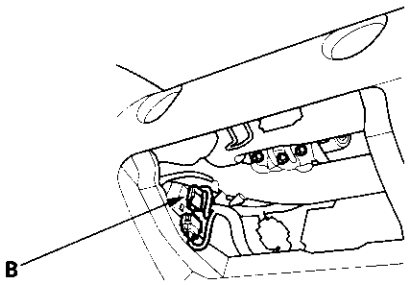
    YES – Go to step 15.

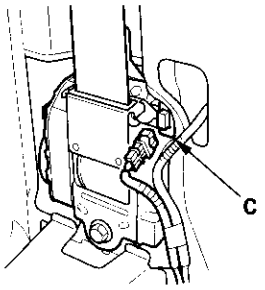
    NO – Open or increased resistance in the floor wire harness; replace the floor wire harness. ■

15. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.

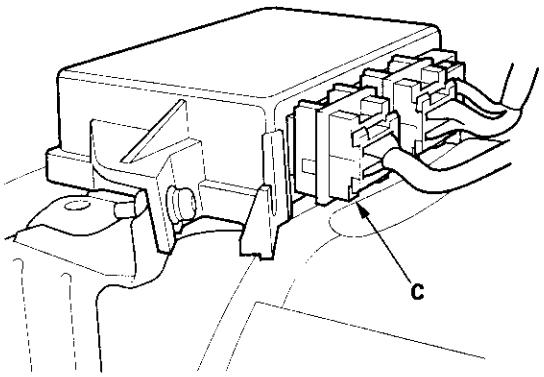
16. Disconnect the driver's airbag connector (A), front passenger's airbag connector (B), and driver's seat belt tensioner connector (C).





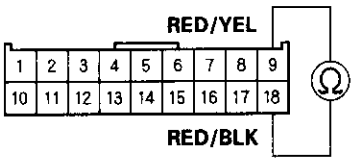


17. Disconnect SRS unit connector C (18P) from the SRS unit. Do not disconnect the special tool from the dashboard wire harness.



18. Check resistance between the No. 9 terminal and the No. 18 terminal of SRS unit connector C (18P). There should be 2.0—3.0 Ω.

SRS UNIT CONNECTOR C (18P)



Wire side of female terminals

Is the resistance as specified?

YES—Faulty SRS unit or poor contact at SRS unit connector C (18P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 23-138). ■

NO—Open or increased resistance in the dashboard wire harness; replace the dashboard wire harness. ■

DTC Troubleshooting (cont'd)

DTC 4-3: Short to Another Wire or Decreased Resistance in Front Passenger's Seat Belt Tensioner

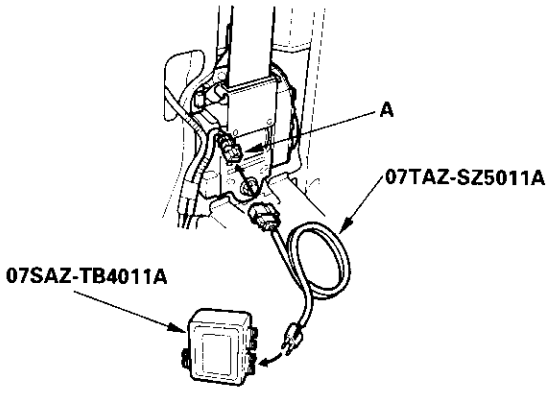
Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead C 07TAZ-SZ5011A
- SRS simulator lead F 07XAZ-SZ30100

1. Erase the DTC memory (see page 23-23).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on?

   YES – Go to step 3.

   NO – Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-23).
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 from the floor wire harness (A).

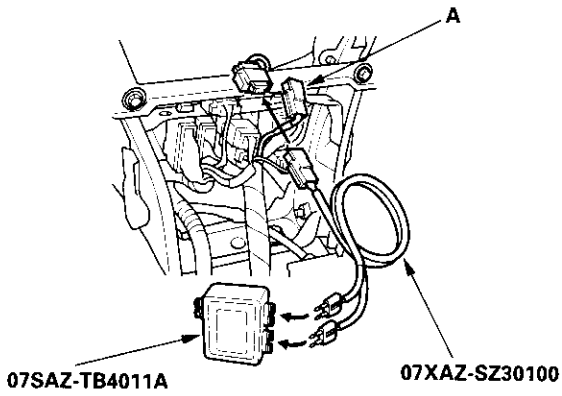


5. Connect the special tool (2 Ω connector) to the floor wire harness 2P connector.
6. Reconnect the battery negative cable.
7. Erase the DTC memory.
8. Read the DTC.

   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 (A) from the dashboard wire harness.



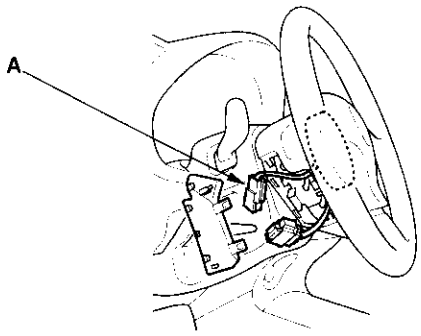
11. Connect the special tool (2 Ω connectors) to the dashboard wire harness 4P connector.
12. Reconnect the battery negative cable.
13. Erase the DTC memory.
14. Read the DTC.

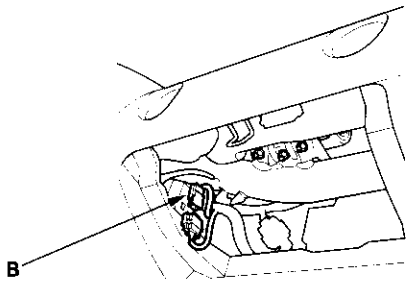
    Is DTC 4-3 indicated?

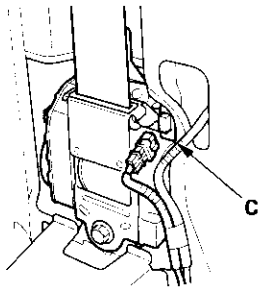
    YES – Go to step 15.

    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.

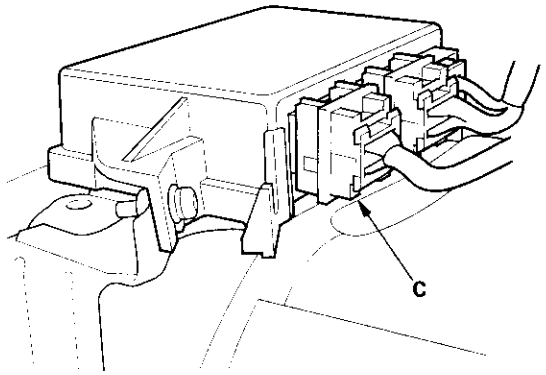
16. Disconnect the driver's airbag connector (A), front passenger's airbag connector (B), and driver's seat belt tensioner connector (C).







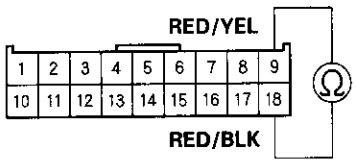
17. Disconnect SRS unit connector C (18P) from the SRS unit.



18. Disconnect the special tool (2 Ω) from the dashboard wire harness 4P connector.

19. Check resistance between the No. 9 terminal and the No. 18 terminal of SRS unit connector C (18P). There should be an open circuit, or at least 1 MΩ.

SRS UNIT CONNECTOR C (18P)



Wire side of female terminals

Is the resistance as specified?

YES – Faulty SRS unit; replace the SRS unit (see page 23-138). ■

NO – Short in the dashboard wire harness; replace the dashboard wire harness. ■

DTC Troubleshooting (cont'd)

DTC 4-4: Short to Power in Front Passenger's Seat Belt Tensioner

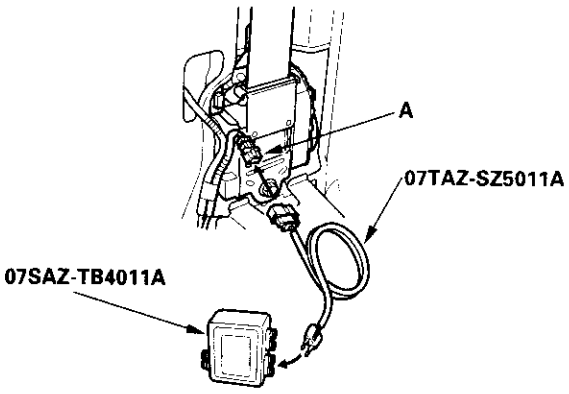
Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead C 07TAZ-SZ5011A
- SRS simulator lead F 07XAZ-SZ30100

1. Erase the DTC memory (see page 23-23).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on?

   YES – Go to step 3.

   NO – Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-23).
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 from the floor wire harness (A).

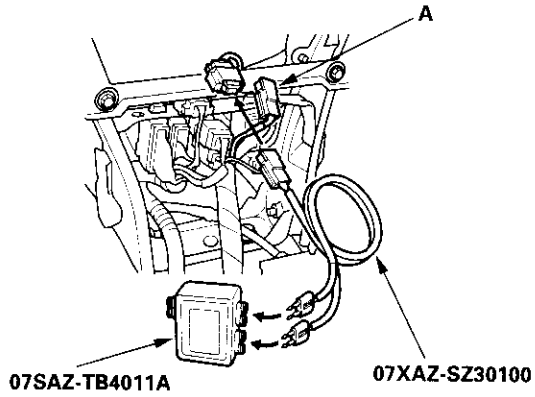


5. Connect the special tool (2 Ω connector) to the floor wire harness 2P connector.
6. Reconnect the battery negative cable.
7. Erase the DTC memory.
8. Read the DTC.

   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. Disconnect the battery negative cable, and wait for 3 minutes.
10. Disconnect the floor wire harness 4P connector (A) from the dashboard wire harness.



11. Connect the special tool (2 Ω connectors) to the dashboard wire harness 4P connector.
12. Reconnect the battery negative cable.
13. Erase the DTC memory.
14. Read the DTC.

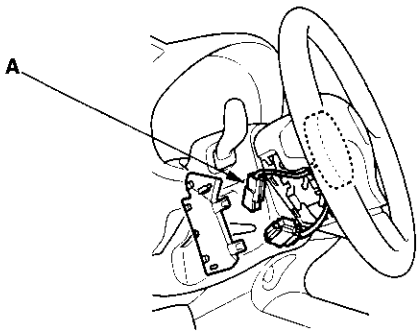
    Is DTC 4-4 indicated?

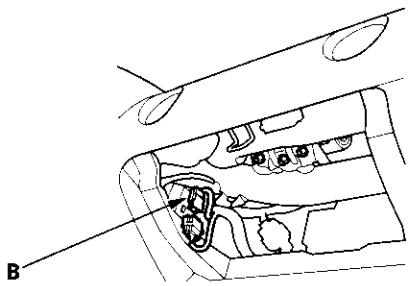
    YES – Go to step 15.

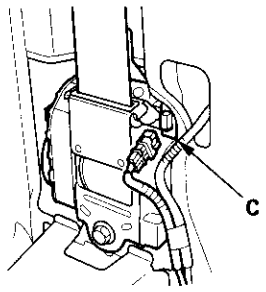
    NO – Short to power in the floor wire harness; replace the floor wire harness. ■

15. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.

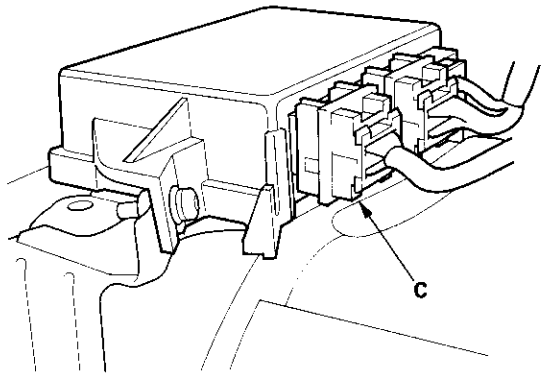
16. Disconnect the driver's airbag connector (A), front passenger's airbag connector (B), and driver's seat belt tensioner connector (C).







17. Disconnect SRS unit connector C (18P) from the SRS unit.



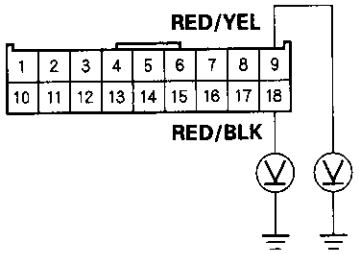
18. Disconnect the special tool (2 Ω) from the dashboard wire harness 4P connector.

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 C (18P) and body ground, and between the No. 18 terminal and body ground. There should be 0.5 V or less.

SRS UNIT CONNECTOR C (18P)



Wire side of female terminals

Is the voltage as specified?

YES – Faulty SRS unit; replace the SRS unit (see page 23-138).■

NO – Short to power in the dashboard wire harness; replace the dashboard wire harness.■

DTC Troubleshooting (cont'd)

DTC 4-5: Short to Ground in Front Passenger's Seat Belt Tensioner

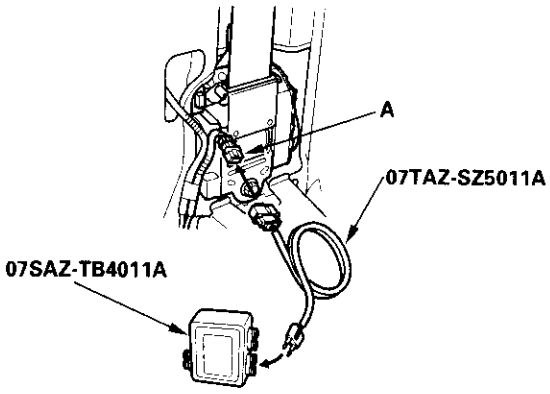
Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead C 07TAZ-SZ5011A
- SRS simulator lead F 07XAZ-SZ30100

1. Erase the DTC memory (see page 23-23).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on?

   YES – Go to step 3.

   NO – Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-23).
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 from the floor wire harness (A).

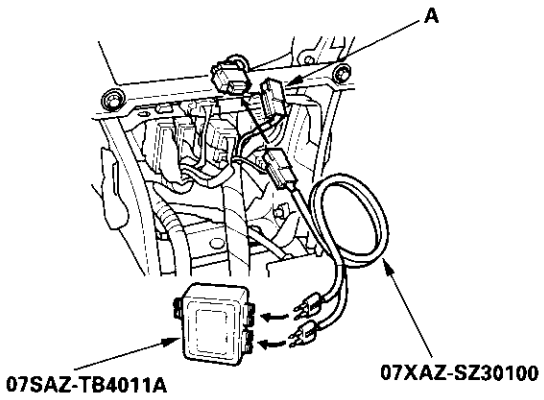


5. Connect the special tool (2 Ω connector) to the floor wire harness 2P connector.
6. Reconnect the battery negative cable.
7. Erase the DTC memory.
8. Read the DTC.

   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 (A) from the dashboard wire harness.



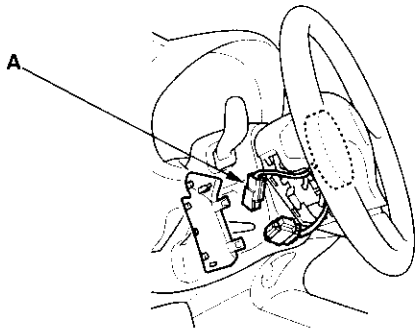
11. Connect the special tool (2 Ω connectors) to the dashboard wire harness 4P connector.
12. Reconnect the battery negative cable.
13. Erase the DTC memory.
14. Read the DTC.

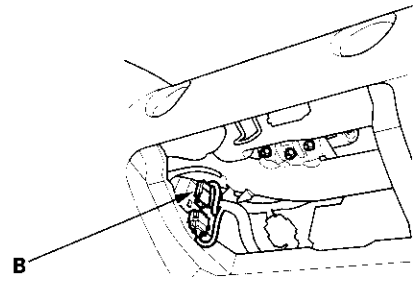
    Is DTC 4-5 indicated?

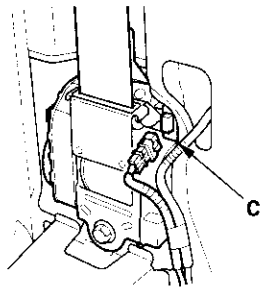
    YES – Go to step 15.

    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.

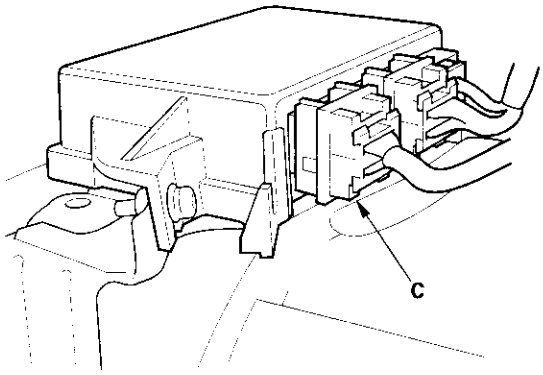
16. Disconnect the driver's airbag connector (A), front passenger's airbag connector (B), and driver's seat belt tensioner connector (C).







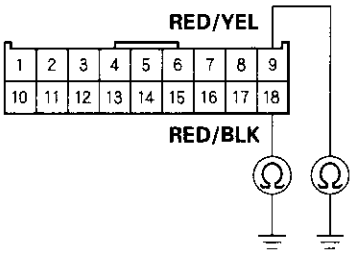
17. Disconnect SRS unit connector C (18P) from the SRS unit.



18. Disconnect the special tool (2 Ω) from the dashboard wire harness 4P connector.

19. Check resistance between the No. 9 terminal of SRS unit connector C (18P) and body ground, and between the No. 18 terminal and body ground. There should be an open circuit, or at least 1 MΩ.

SRS UNIT CONNECTOR C (18P)



Wire side of female terminals

Is the resistance as specified?

YES—Faulty SRS unit; replace the SRS unit (see page 23-138).■

NO—Short to ground in the dashboard wire harness; replace the dashboard wire harness.■

DTC Troubleshooting (cont'd)

DTC 22-1: Open or Increased Resistance in Front Passenger's Seat Belt Buckle Tensioner

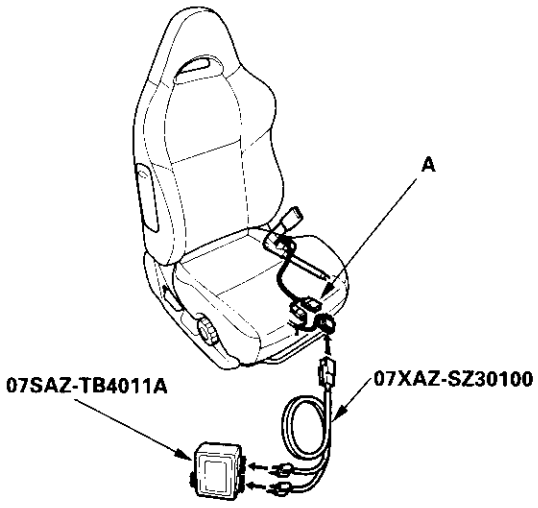
Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead F 07XAZ-SZ30100

1. Erase the DTC memory (see page 23-23).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on?

   YES – Go to step 3.

   NO – Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-23).
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.

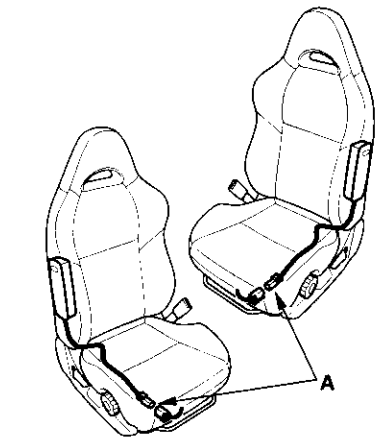


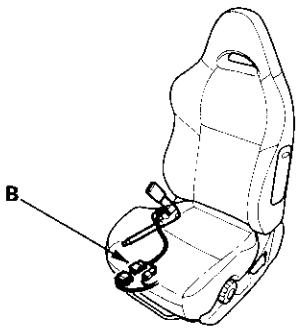
5. Connect the special tool (2 Ω connectors) to the floor wire harness 4P connector.
6. Reconnect the battery negative cable.
7. Erase the DTC memory.
8. Read the DTC.

   Is DTC 22-1 indicated?

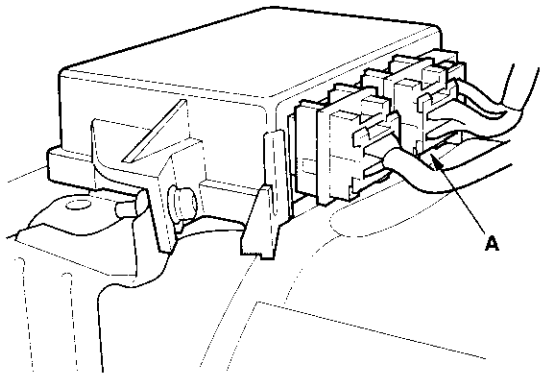
   YES – Go to step 9.

   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 (A) and the driver's seat belt buckle tensioner 4P connector (B).



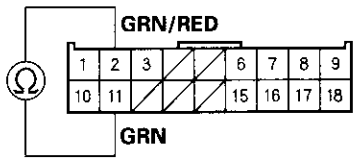


11. Disconnect SRS unit connector A (18P) from the SRS unit. Do not disconnect the special tool from the floor wire harness 4P connector.



12. Check resistance between the No. 2 and No. 11 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 at the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 23-138). ■

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

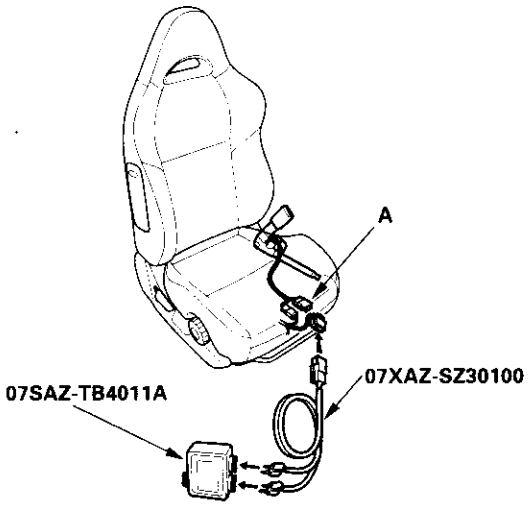
Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead F 07XAZ-SZ30100

1. Erase the DTC memory (see page 23-23).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-23).
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 (A) connector from the floor wire harness.



5. Connect the special tool (2 Ω connectors) to the floor wire harness 4P connector.
6. Reconnect the battery negative cable.
7. Erase the DTC memory.

(cont'd)

DTC Troubleshooting (cont'd)

8. Read the DTC.

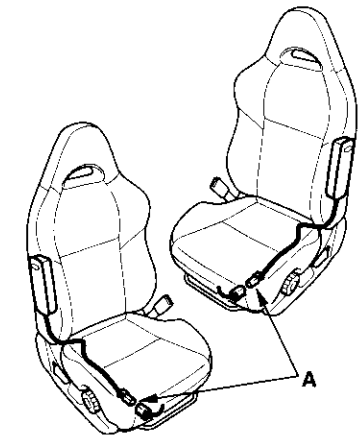
   Is DTC 22-3 indicated?

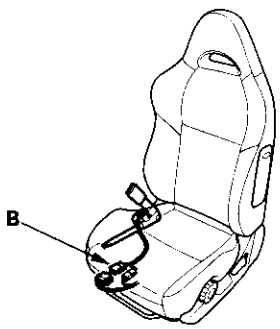
   YES – Go to step 9.

   NO – Short in the front passenger's seat belt buckle tensioner; replace the front passenger's seat belt buckle. ■

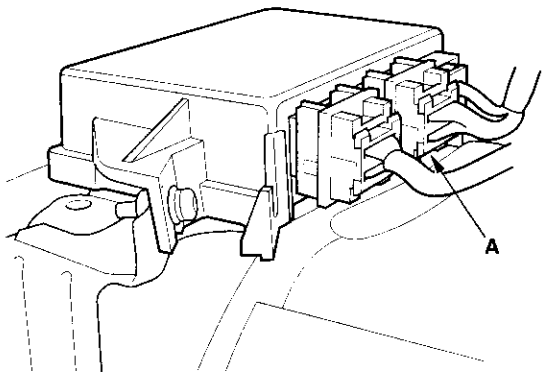
9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.

10. Disconnect both side airbag 2P connectors (A) and the driver's seat belt buckle tensioner 4P connector (B).





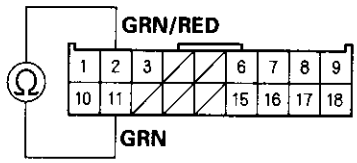
11. Disconnect SRS unit connector A (18P) from the SRS unit.



12. Disconnect the special tool from the floor wire harness 2P connector.

13. Check resistance between the No. 2 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 – Faulty SRS unit; replace the SRS unit (see page 23-138). ■

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

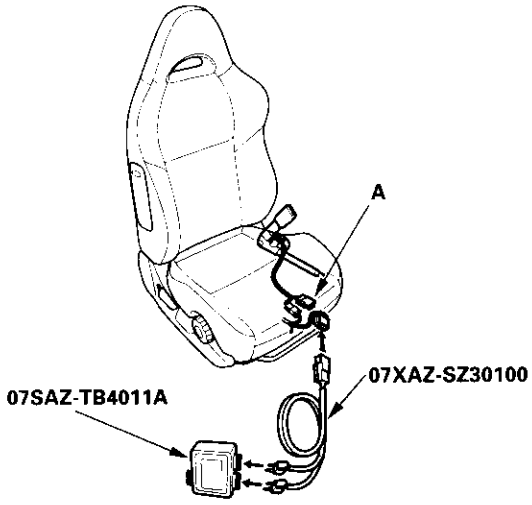
Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead F 07XAZ-SZ30100

1. Erase the DTC memory (see page 23-23).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on?

   YES – Go to step 3.

   NO – Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-23).
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.

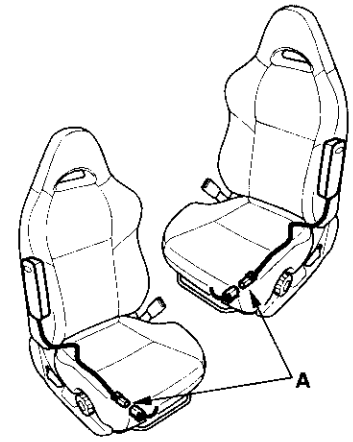


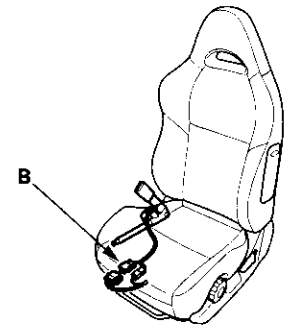
5. Connect the special tool (2 Ω connectors) to the floor wire harness 4P connector.
6. Reconnect the battery negative cable.
7. Erase the DTC memory.
8. Read the DTC.

   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 (A) and the driver's seat belt buckle tensioner 4P connector (B).

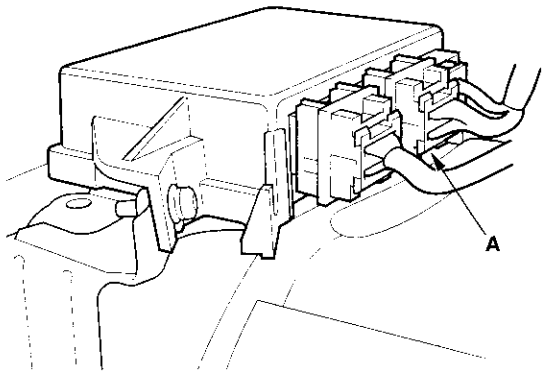




(cont'd)

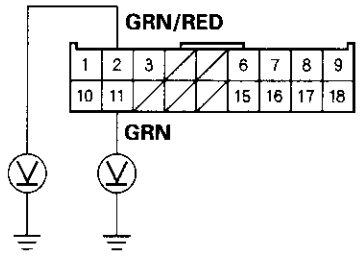
DTC Troubleshooting (cont'd)

11. Disconnect SRS unit connector A (18P) from the SRS unit.



12. Disconnect the special tool from the floor wire harness 2P connector.
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 A (18P) and body ground, and between the No. 11 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 23-138). ■

NO—Short to power in the floor wire harness; replace the floor wire harness. ■

DTC 22-5: Short to Ground in Front Passenger's Seat Belt Buckle Tensioner

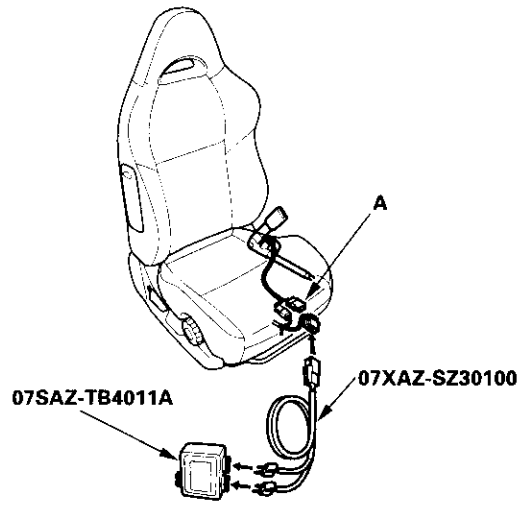
Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead F 07XAZ-SZ30100

1. Erase the DTC memory (see page 23-23).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-23).
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 special tool (2 Ω connectors) to the floor wire harness 4P connector.
6. Reconnect the battery negative cable.
7. Erase the DTC memory.

8. Read the DTC.

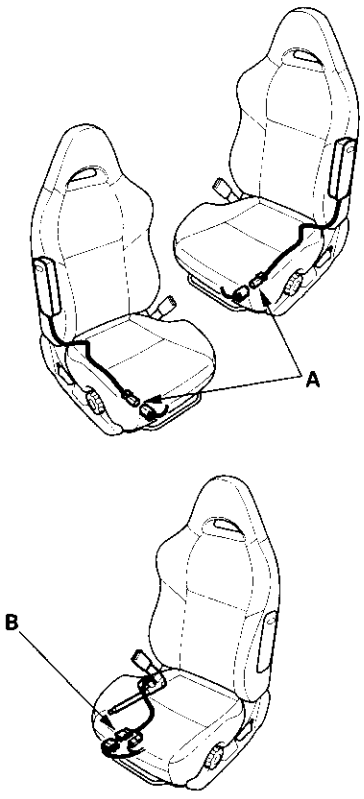
   Is DTC 22-5 indicated?

   YES – Go to step 9.

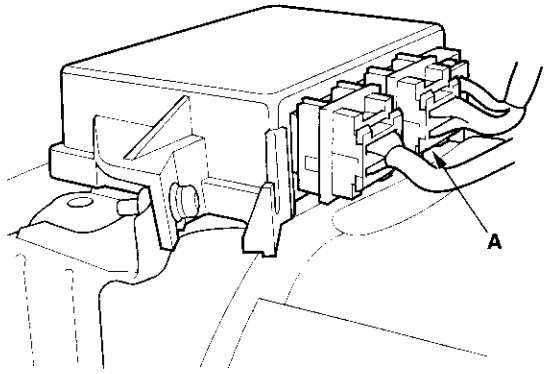
   NO – Short to ground in the front passenger's seat belt buckle tensioner; replace the front passenger's seat belt buckle.■

9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.

10. Disconnect both side airbag 2P connectors (A) and the driver's seat belt buckle tensioner 4P connector (B).



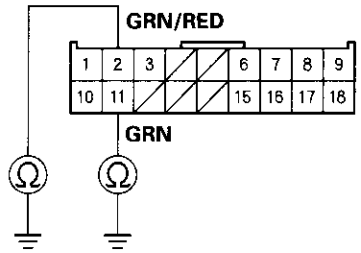
11. Disconnect SRS unit connector A (18P) from the SRS unit.



12. Disconnect the special tool from the floor wire harness 2P connector.

13. Check resistance between the No. 2 terminal of SRS unit connector A (18P) and body ground, and between the No. 11 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 23-138).■

NO – Short to ground in the floor wire harness; replace the floor wire harness.■

DTC Troubleshooting (cont'd)

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 23-23).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on?

   YES – Replace the SRS unit (see page 23-138).■

   NO – Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-23).

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 have deployed (see page 23-138).■

DTC 13-1, 13-2: Internal Failure of the Driver's Side Impact Sensor

1. Erase the DTC memory (see page 23-23).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on?

   YES – Replace the driver's side impact sensor (see page 23-139). ■

   NO – Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-23).

DTC 14-1, 14-2: Internal Failure of the Front Passenger's Side Impact Sensor

1. Erase the DTC memory (see page 23-23).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on?

   YES – Replace the front passenger's side impact sensor (see page 23-139). ■

   NO – Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-23).

DTC Troubleshooting (cont'd)

DTC 9-3: Faulty Driver's Seat Belt Buckle Switch

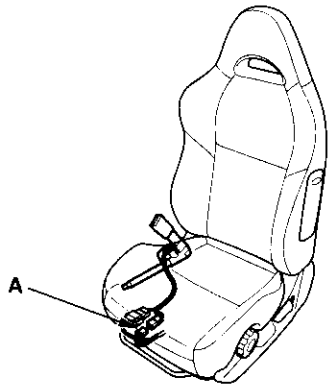
1. Erase the DTC memory (see page 23-23).
2. Turn the ignition switch ON (II), then buckle and unbuckle the driver's seat belt several times.
3. Read the DTC.

   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 23-23).

4. Turn the ignition switch OFF.
5. Disconnect the floor wire harness 3P connector (A) from the driver's seat belt buckle switch.

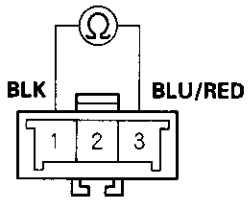


6. Buckle the driver's seat belt.

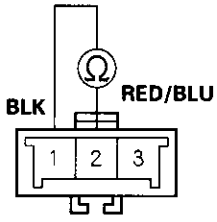
   Check resistance between the No. 1 and No. 3 terminals of the driver's seat belt buckle switch 3P connector. There should be 0 – 1 Ω.

   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.

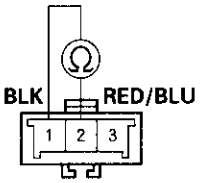
NO – Replace the driver's seat belt buckle assembly, and clear the DTC. ■

7. Unbuckle the driver's seat belt.

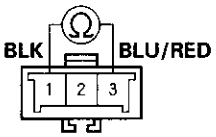
   Check resistance between the No. 1 and No. 2 terminals of the driver's seat belt buckle switch 3P connector. There should be 0 – 1 Ω.

   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

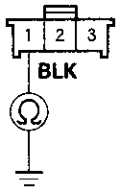
Is the resistance as specified?

YES – Go to step 8.

NO – Replace the driver's seat belt buckle assembly, and 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

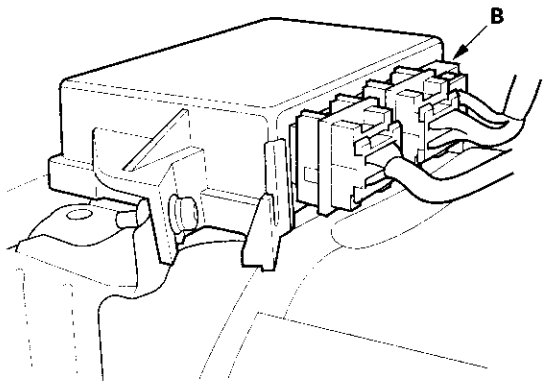
Is the resistance as specified?

YES – Go to step 9.

NO – Open in the floor wire harness or poor ground connection at G501. If G501 is OK, replace the floor wire harness.■

9. Disconnect the negative cable from the battery.

10. Disconnect the SRS unit connector B (8P) from the SRS unit.

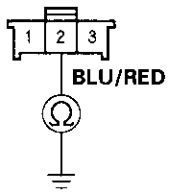


(cont'd)

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

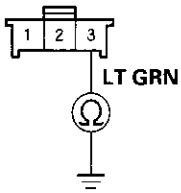
Is the resistance as specified?

YES – Go to step 12.

NO – Short to ground in the floor wire harness or multiplex control unit. Replace the faulty harness or component. ■

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

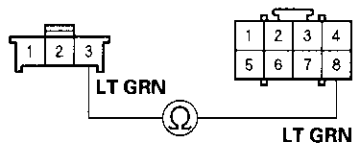
Is the resistance as specified?

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 B (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 B (8P)**



Wire side of female terminals

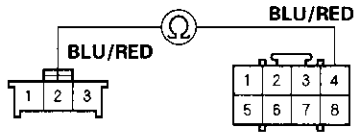
Is the resistance as specified?

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 B (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 B (8P)**



Wire side of female terminals

Is the resistance as specified?

YES – Replace the SRS unit. ■

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. ■

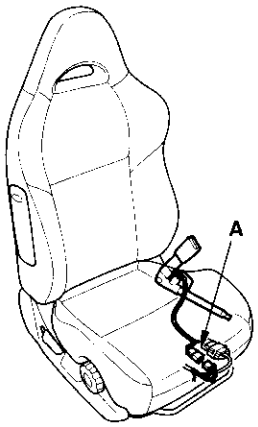
DTC 9-4: Faulty Front Passenger's Seat Belt Buckle Switch

1. Erase the DTC memory (see page 23-23).
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 23-23).
4. Turn the ignition switch OFF.
5. Disconnect the front passenger's seat belt buckle switch 3P connector (A) from the floor wire harness.

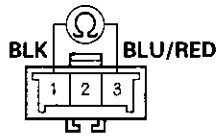


6. Buckle the front passenger's seat belt.

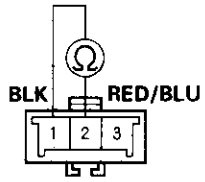
   Check resistance between the No. 1 and No. 3 terminals of the front passenger's seat belt buckle switch 3P connector. There should be 0 – 1 Ω.

   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, and clear the DTC.■

(cont'd)

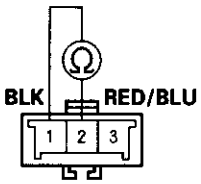
DTC Troubleshooting (cont'd)

7. Unbuckle the front passenger's seat belt.

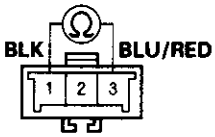
   Check resistance between the No. 1 and No. 2 terminals of the front passenger's seat belt buckle switch 3P connector. There should be 0 – 1 Ω.

   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

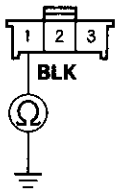
Is the resistance as specified?

YES – Go to step 8.

NO – Replace the front passenger's seat belt buckle assembly, and 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

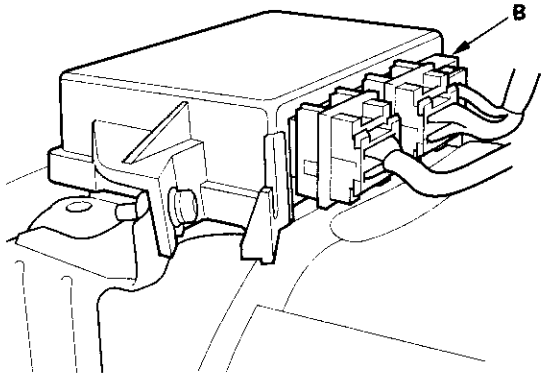
Is the resistance as specified?

YES – Go to step 9.

NO – Open in the floor wire harness or poor ground connection at G501. If G501 is OK, replace the floor wire harness.■

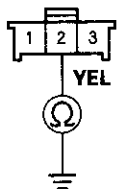
9. Disconnect the negative cable from the battery.

10. Disconnect SRS unit connector B (8P) from the SRS unit.



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

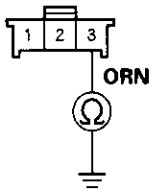
Is the resistance as specified?

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

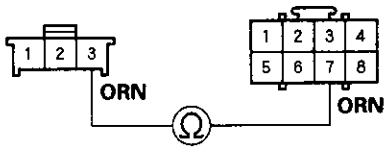
Is the resistance as specified?

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 B (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 B (8P)**



Wire side of female terminals

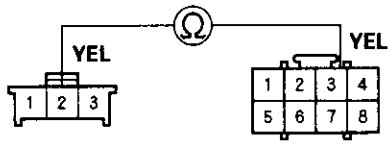
Is the resistance as specified?

YES – Go to step 14.

NO – Open in the floor wire harness or seat subharness (with BOSE sound system); replace the faulty harness. ■

14. Check resistance between the No. 3 terminal of SRS unit connector B (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 B (8P)**



Wire side of female terminals

Is the resistance as specified?

YES – Replace the SRS unit (see page 23-138). ■

NO – Open in the floor wire harness or seat subharness (with BOSE sound system); replace the faulty harness. ■

DTC Troubleshooting (cont'd)

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 23-23).

2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on?

   YES – Go to step 3.

   NO – Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-23).

3. Turn the ignition switch OFF. Check the connections between SRS unit connector C (18P) and the SRS unit, between the engine compartment wire harness 2P connector and the left front sensor (see page 23-10) and at connector C403.

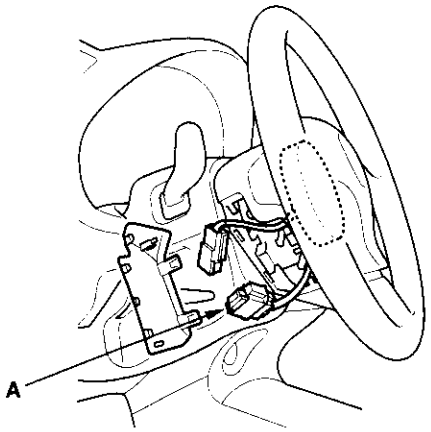
   Are the connections OK?

   YES – Go to step 4.

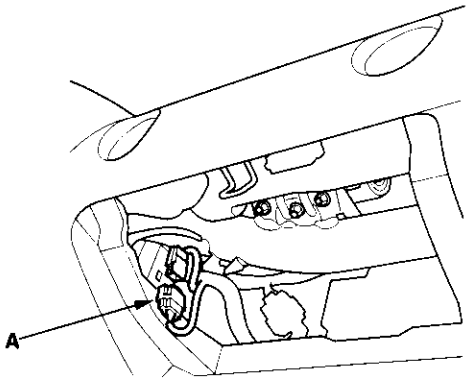
   NO – Repair the poor connections and retest. If DTC 9-6 still present, go to step 4.

4. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.

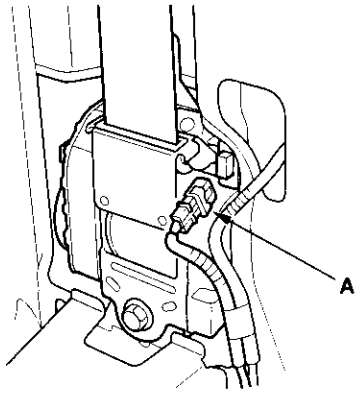
5. Disconnect the driver's airbag 4P connector from the cable reel (A).



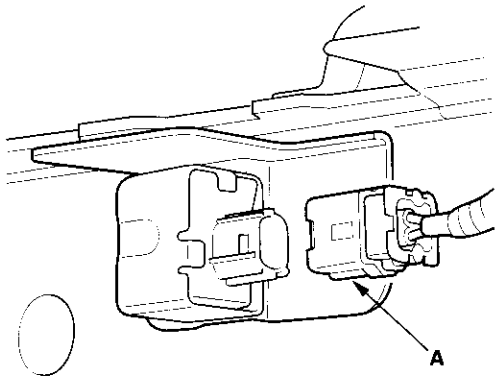
6. Disconnect the front passenger's airbag 4P connector from the dashboard wire harness (A).



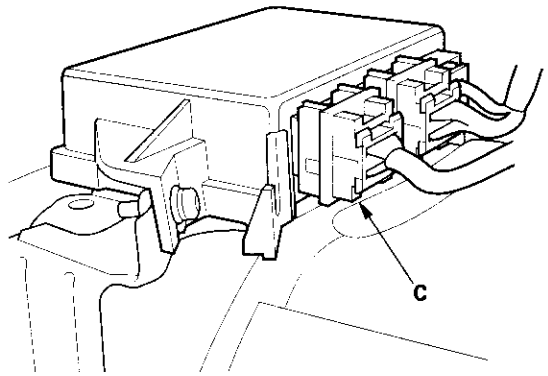
7. Disconnect both seat belt tensioner 2P connectors from the floor wire harness (A).



8. Disconnect the engine compartment wire harness 2P connector (A) from the left front impact sensor.

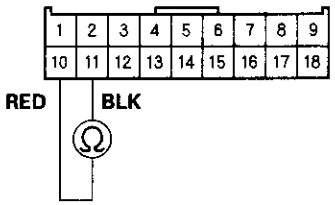


9. Disconnect SRS unit connector C (18P) from the SRS unit.



10. Check resistance between the No. 10 and No. 11 terminals of SRS unit connector C (18P). There should be an open circuit, or at least 1 MΩ.

SRS UNIT CONNECTOR C (18P)



Wire side of female terminals

Is the resistance as specified?

YES – Go to step 11.

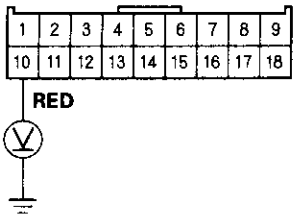
NO – Short in the engine compartment wire harness or dashboard wire harness; replace the faulty harness. ■

11. Reconnect the battery negative cable.

12. Turn the ignition switch ON (II).

13. Check the voltage between the No. 10 terminal of SRS unit connector C (18P) and the body ground. There should be 1 V or less.

SRS UNIT CONNECTOR C (18P)



Wire side of female terminals

Is the voltage as specified?

YES – Go to step 14.

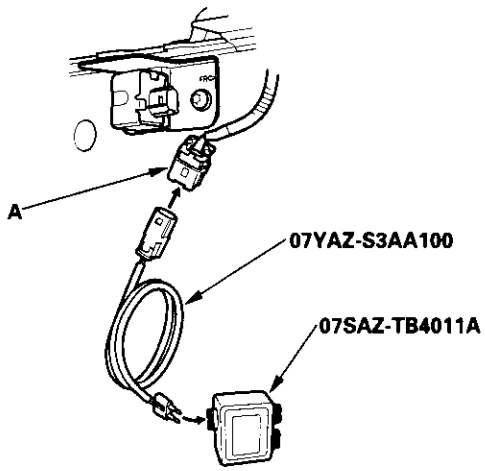
NO – Short to power in the engine compartment wire harness or dashboard wire harness; replace the faulty harness. ■

(cont'd)

DTC Troubleshooting (cont'd)

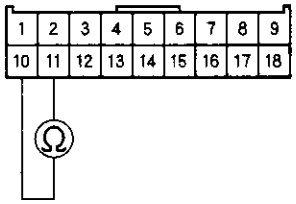
14. Turn the ignition switch OFF.

15. Connect the special tool (jumper connector) to the engine compartment wire harness 2P connector (A).



16. Check resistance between the No. 10 and No. 11 terminals of SRS unit connector C (18P). There should be 1 Ω or less.

SRS UNIT CONNECTOR C (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; if the problem is still present,replace the SRS unit (see page 23-138). ■

NO – Faulty engine compartment wire harness or dashboard wire harness; 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 23-23).

2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on?

   YES – Go to step 3.

   NO – Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-23).

3. Turn the ignition switch OFF. Check the connections between SRS unit connector C (18P) and the SRS unit, and between the front impact sensor wire harness 2P connector and the right front impact sensor (see page 23-10) and at connector C405.

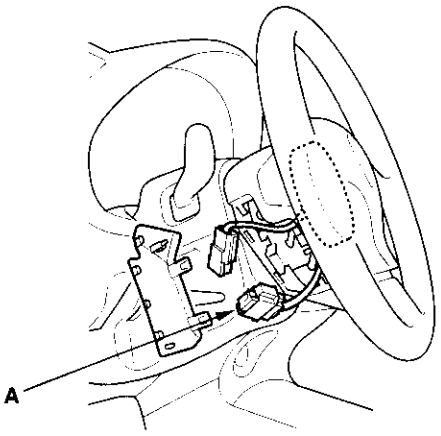
   Are the connections OK?

   YES – Go to step 4.

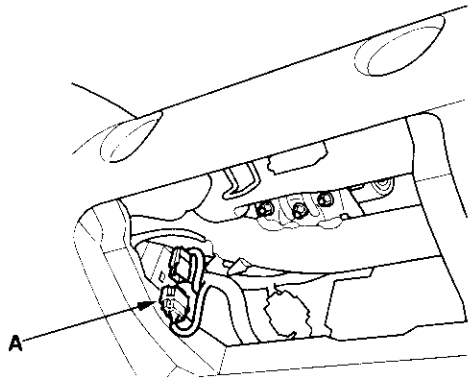
   NO – Repair the poor connections and retest. If DTC 9-7 still present, go to step 4.

4. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.

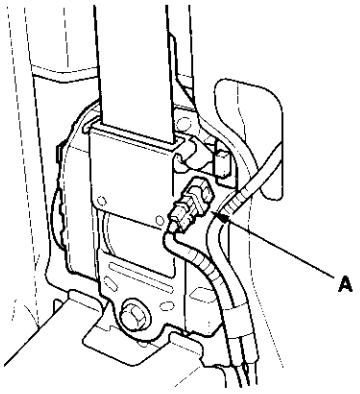
5. Disconnect the driver's airbag 4P connector from the cable reel (A).



6. Disconnect the front passenger's airbag 4P connector from the dashboard wire harness (A).



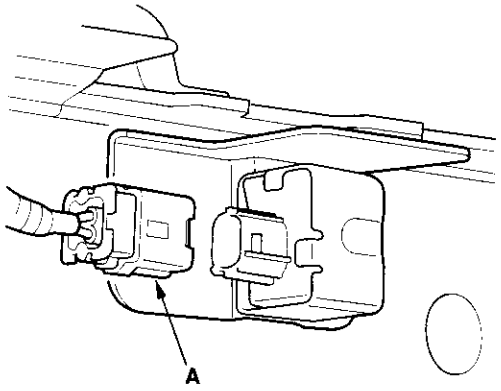
7. Disconnect both seat belt tensioner 2P connectors from the floor wire harness (A).



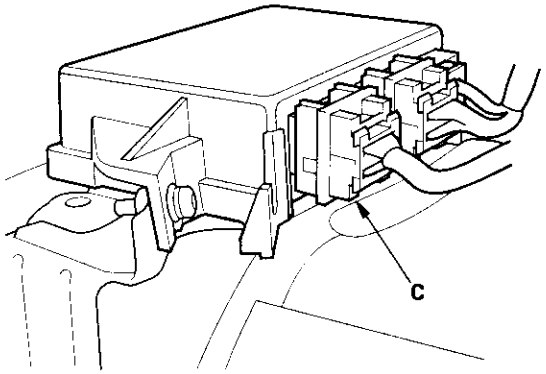
(cont'd)

DTC Troubleshooting (cont'd)

8. Disconnect the front impact sensor wire harness 2P connector (A) from the right front impact sensor.

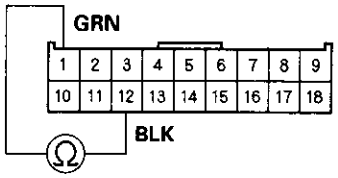


9. Disconnect SRS unit connector C (18P) from the SRS unit.



10. Check resistance between the No. 1 and No. 12 terminals of SRS unit connector C (18P). There should be an open circuit, or at least 1 MΩ.

SRS UNIT CONNECTOR C (18P)



Wire side of female terminals

Is the resistance as specified?

YES – Go to step 11.

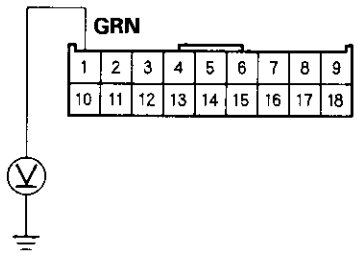
NO – Short in the front impact sensor wire harness or dashboard wire harness; replace the faulty harness.■

11. Reconnect the battery negative cable.

12. Turn the ignition switch ON (II).

13. Check the voltage between the No. 1 terminal of SRS unit connector C (18P) and body ground. There should be 1 V or less.

SRS UNIT CONNECTOR C (18P)



Wire side of female terminals

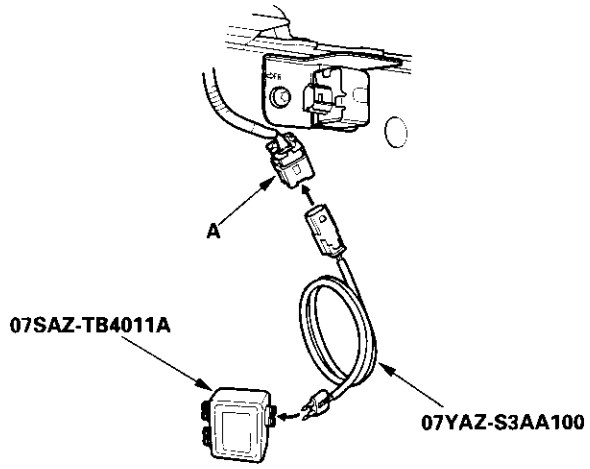
Is the voltage as specified?

YES – Go to step 14.

NO – Short to power in the front impact sensor wire harness or the dashboard wire harness; replace the faulty harness.■

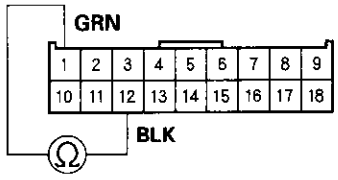
14. Turn the ignition switch OFF.

15. Connect the special tool (jumper connector) to the front impact sensor wire harness 2P connector (A).



16. Check resistance between the No. 1 and No. 12 terminals of SRS unit connector C (18P). There should be 1 Ω or less.

SRS UNIT CONNECTOR C (18P)



Wire side of female terminals

Is the resistance as specified?

YES – Faulty right front impact sensor or SRS unit. Replace the right front impact sensor; if the problem is still present, replace the SRS unit (see page 23-138). ■

NO – Faulty front impact sensor wire harness or dashboard wire harness; replace the faulty harness. ■

DTC Troubleshooting (cont'd)

DTC 11-1: Open or Increased Resistance in Driver's Side Airbag Inflator

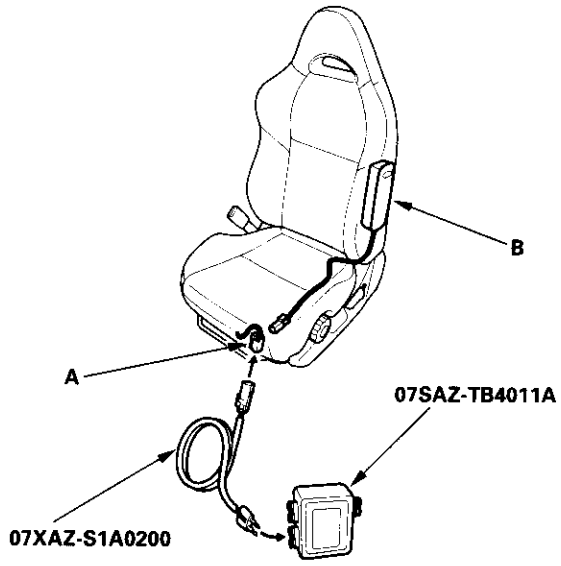
Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead E 07XAZ-S1A0200

1. Erase the DTC memory (see page 23-23).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on?

   YES – Go to step 3.

   NO – Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-23).
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 (B).

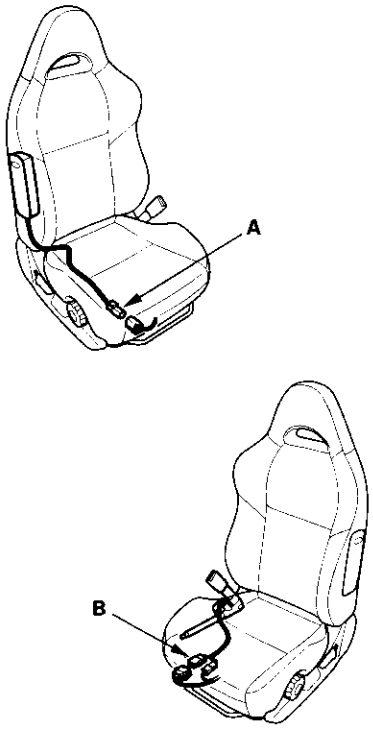


5. Connect the special tool (2 Ω connector) to the floor wire harness 2P connector.
6. Reconnect the battery negative cable.
7. Erase the DTC memory.
8. Read the DTC.

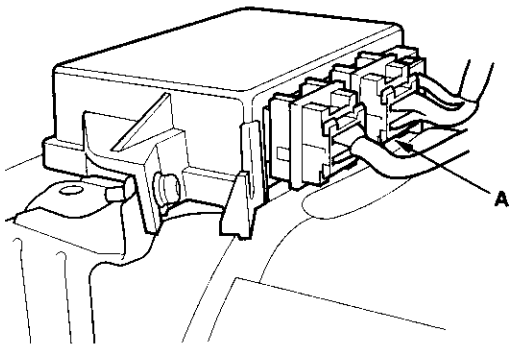
   Is DTC 11-1 indicated?

   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 23-131). ■
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 (A) and both seat belt buckle tensioner 4P connectors (B).

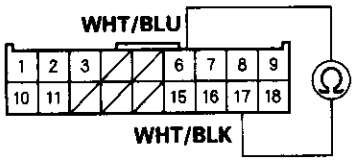


11. Disconnect SRS unit connector A (18P) from the SRS unit. Do not disconnect the special tool from the floor wire harness 2P connector.



12. Check resistance between the No. 6 and No. 17 terminals of SRS unit connector 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 23-138).■

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 23-23).

2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

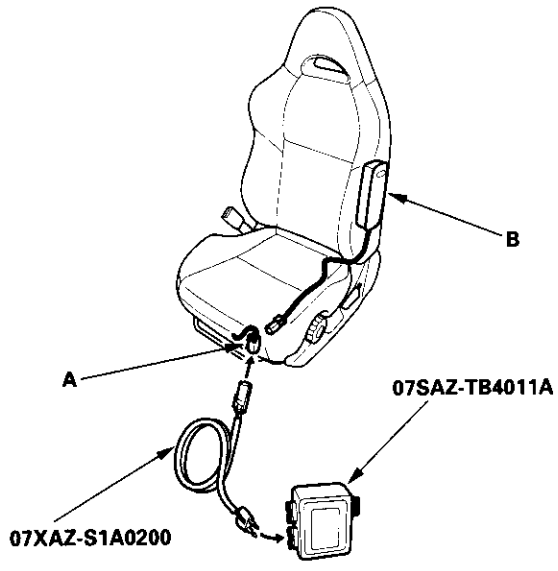
   Does the SRS indicator stay on?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-23).

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 (B).



5. Connect the special tool (2 Ω connector) to the floor wire harness 2P connector.

6. Reconnect the battery negative cable.

7. Erase the DTC memory.

(cont'd)

DTC Troubleshooting (cont'd)

8. Read the DTC.

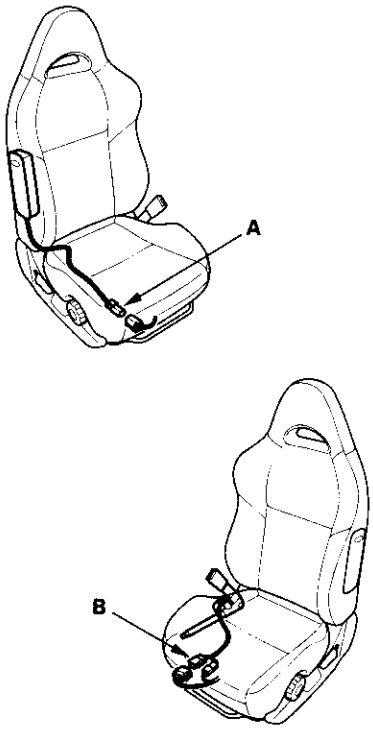
   Is DTC 11-3 indicated?

   YES – Go to step 9.

   NO – Short to another wire in the driver's side airbag inflator; replace the driver's side airbag. ■

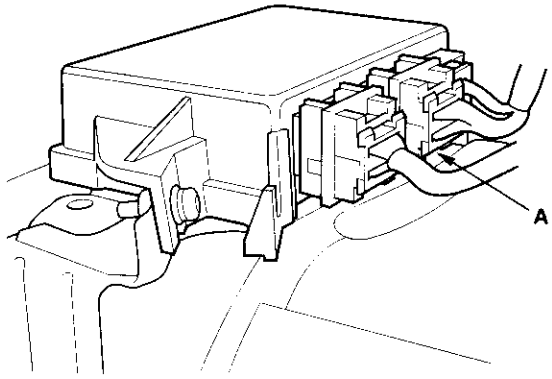
9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.

10. Disconnect the front passenger's side airbag 2P connector (A) and both seat belt buckle tensioner 4P connectors (B).



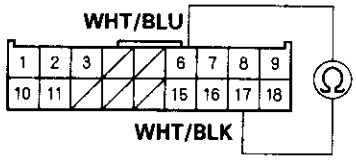
11. Disconnect the special tool from the floor wire harness 2P connector.

12. Disconnect SRS unit connector A (18P) from the SRS unit.



13. Check resistance between the No. 6 and No. 17 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 23-138). ■

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 23-23).

2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

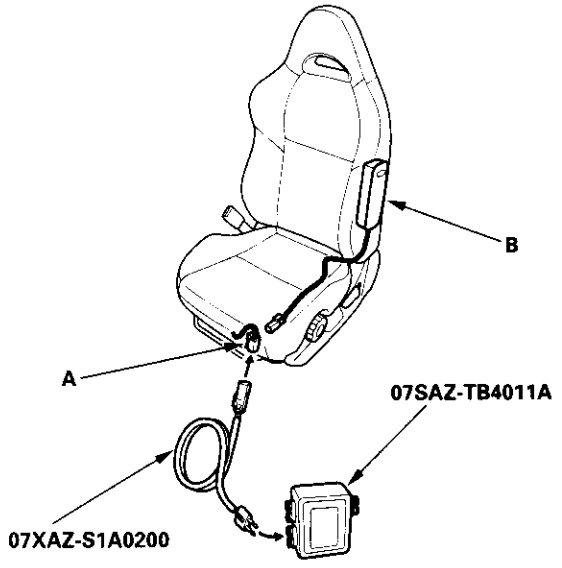
   Does the SRS indicator stay on?

   YES – Go to step 3.

   NO – Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-23).

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 (B).



5. Connect the special tool (2 Ω connector) to the floor wire harness 2P connector.

6. Reconnect the battery negative cable.

7. Erase the DTC memory.

8. Read the DTC.

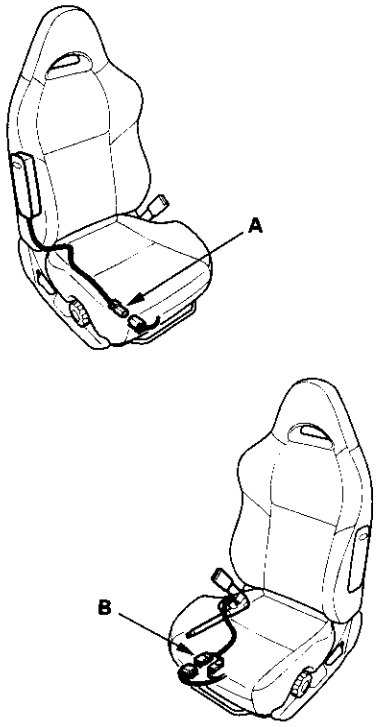
   Is DTC 11-4 indicated?

   YES – Go to step 9.

   NO – Short to power in the driver's side airbag inflator; replace the driver's side airbag (see page 23-131). ■

9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes. ■

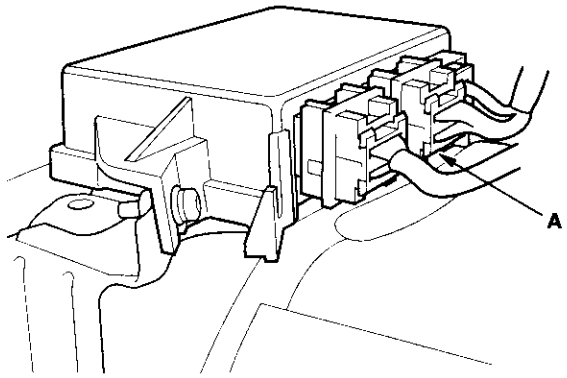
10. Disconnect the front passenger's side airbag 2P connector (A) and both seat belt buckle tensioner 4P connectors (B).



(cont'd)

DTC Troubleshooting (cont'd)

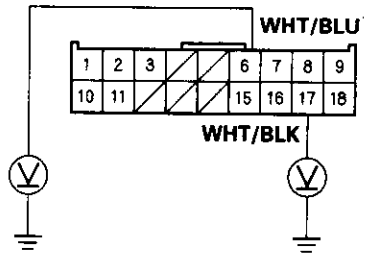
11. Disconnect SRS unit connector A (18P) from the SRS unit.



12. Turn the ignition switch ON (II).

13. Check for voltage between the No. 6 terminal of SRS unit connector A (18P) and body ground, and between 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 23-138). ■

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 23-23).

2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

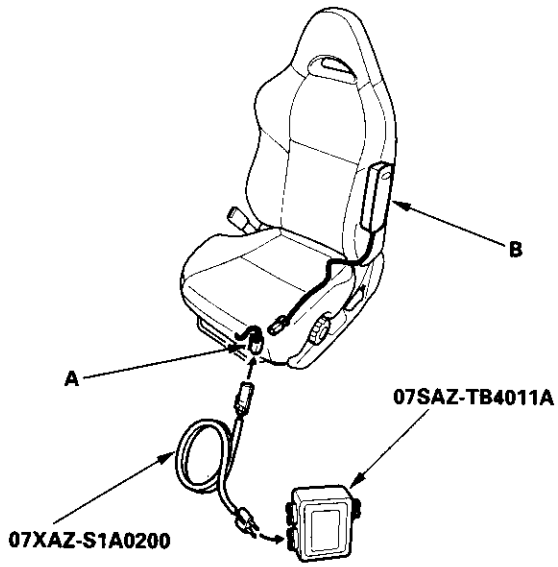
   Does the SRS indicator stay on?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-23).

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 (B).



5. Connect the special tool (2 Ω connector) to the floor wire harness 2P connector.

6. Reconnect the battery negative cable.

7. Erase the DTC memory.

8. Read the DTC.

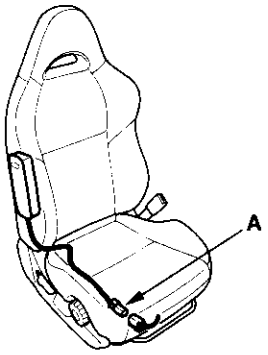
   Is DTC 11-5 indicated?

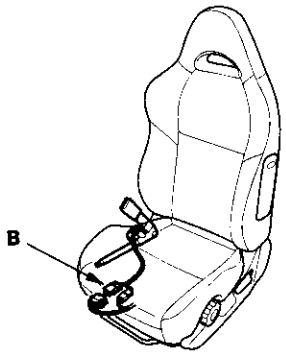
   YES – Go to step 9.

   NO – Short to ground in the driver's side airbag inflator; replace the driver's side airbag (see page 23-131). ■

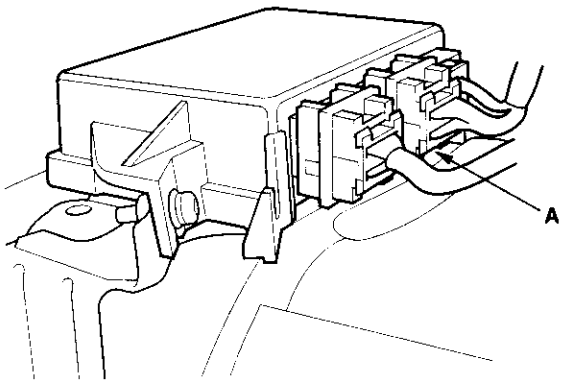
9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.

10. Disconnect the front passenger's side airbag 2P connector (A) and both seat belt buckle tensioner 4P connectors (B).

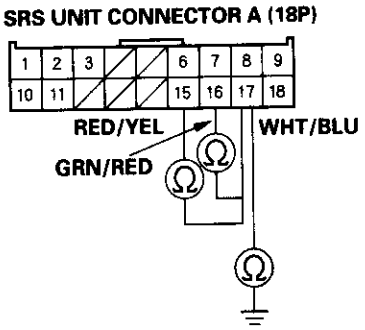




11. Disconnect SRS unit connector A (18P) from the SRS unit.



12. Check resistance between the No. 17 and No. 15 terminals of SRS unit connector A (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 23-138). ■

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

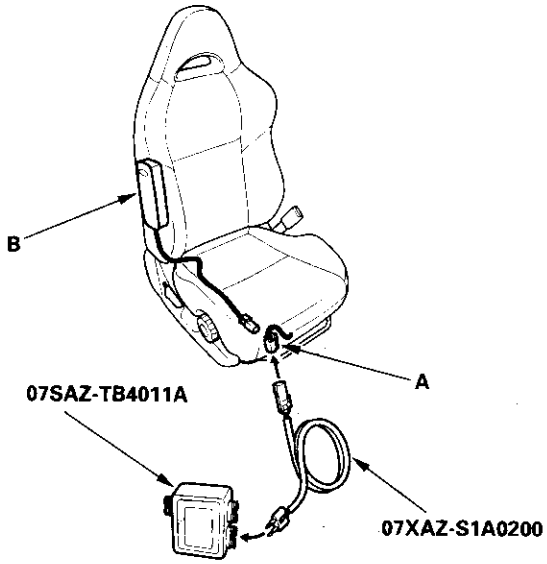
Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead E 07XAZ-S1A0200

1. Erase the DTC memory (see page 23-23).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on?

   YES – Go to step 3.

   NO – Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-23).
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 (B).

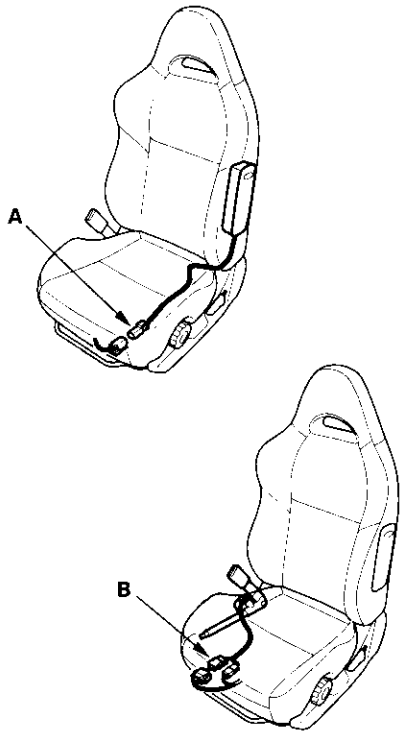


5. Connect the special tool (2 Ω connector) to the floor wire harness 2P connector.
6. Reconnect the battery negative cable.
7. Erase the DTC memory.
8. Read the DTC.

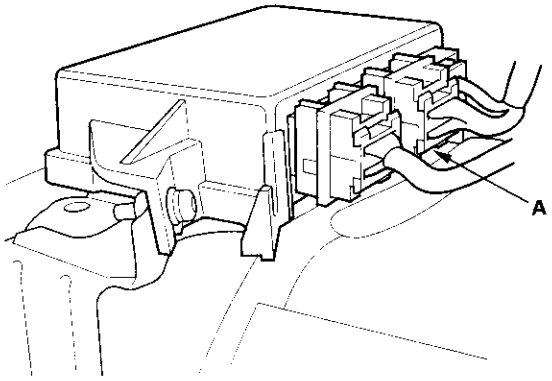
   Is DTC 12-1 indicated?

   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 23-131). ■
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 (A) and both seat belt buckle tensioner 4P connectors (B).

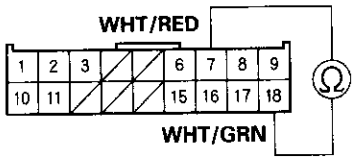


11. Disconnect SRS unit connector A (18P) from the SRS unit. Do not disconnect the special tool from the floor wire harness 2P connector.



12. Check resistance between the No. 7 and No. 18 terminals of SRS unit connector 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 23-138).■

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 23-23).

2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

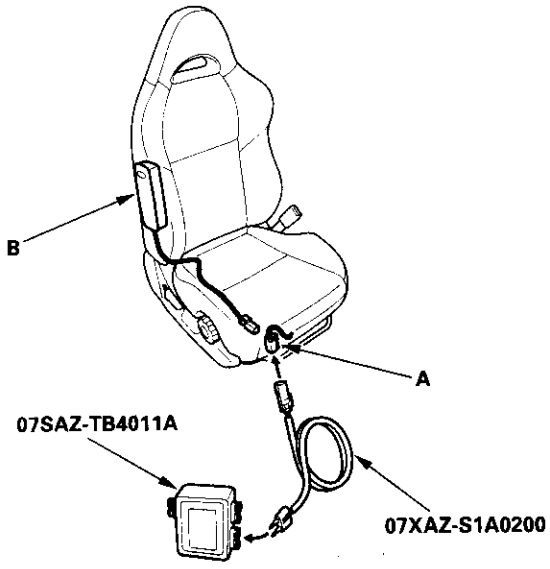
   Does the SRS indicator stay on?

   YES – Go to step 3.

   NO – Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-23).

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 (B).



5. Connect the special tool (2 Ω connector) to the floor wire harness 2P connector.

(cont'd)

DTC Troubleshooting (cont'd)

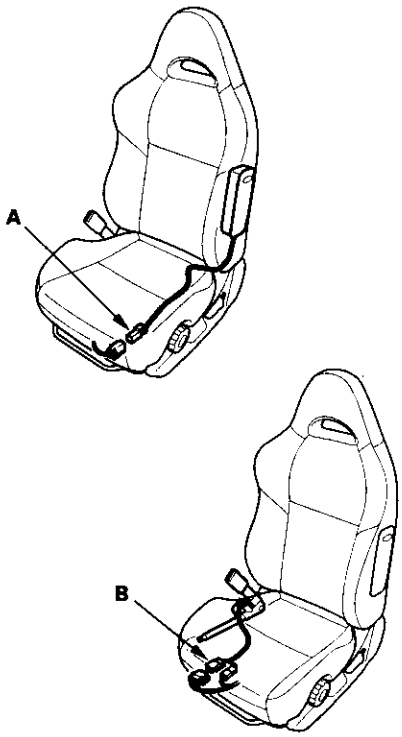
6. Reconnect the battery negative cable.
7. Erase the DTC memory.
8. Read the DTC.

   Is DTC 12-3 indicated?

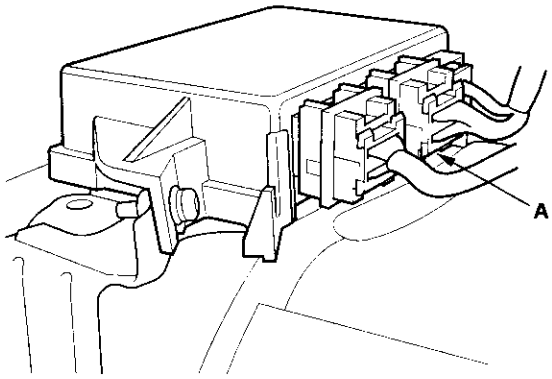
   YES – Go to step 9

   NO – Short to another wire in the front passenger's side airbag inflator; replace the front passenger's side airbag. ■

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 (A) and both seat belt buckle tensioner 4P connectors (B).

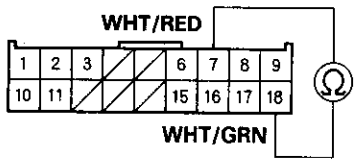


11. Disconnect the special tool from the floor wire harness 2P connector.
12. Disconnect SRS unit connector A (18P) from the SRS unit.



13. Check resistance between the No. 7 and No. 18 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 23-138). ■

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

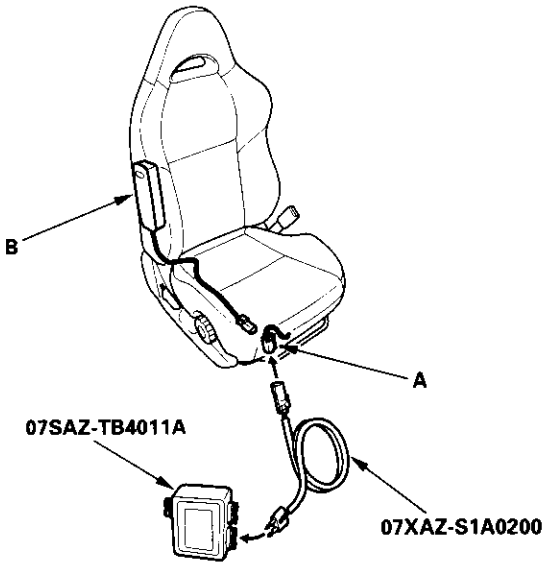
Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead E 07XAZ-S1A0200

1. Erase the DTC memory (see page 23-23).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on?

   YES – Go to step 3.

   NO – Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-23).
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 (B).

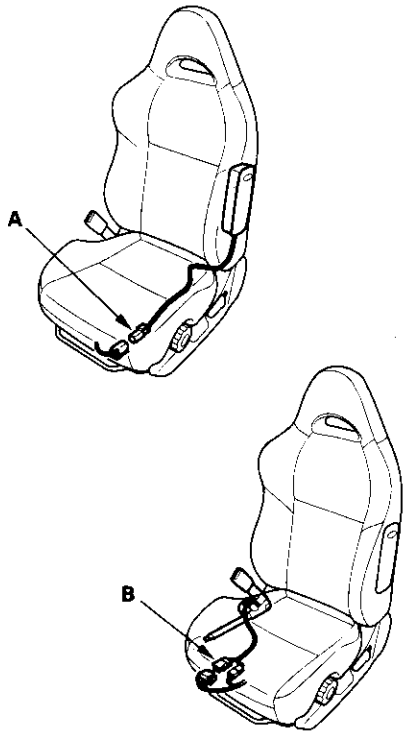


5. Connect the special tool (2 Ω connector) to the floor wire harness 2P connector.
6. Reconnect the battery negative cable.
7. Erase the DTC memory.
8. Read the DTC.

   Is DTC 12-4 indicated?

   YES – Go to step 9.

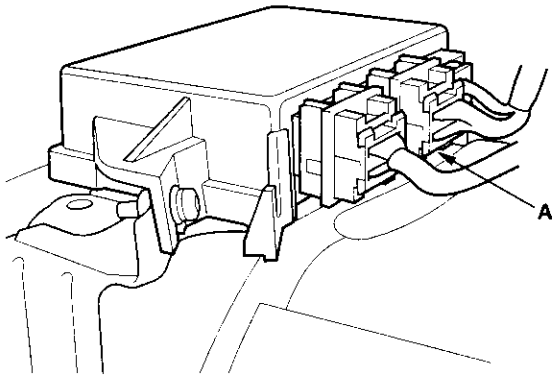
   NO – Short to power in the front passenger's side airbag inflator; replace the front passenger's side airbag (see page 23-131). ■
9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
10. Disconnect the driver's side airbag 2P connector (A) and both seat belt buckle tensioner 4P connectors (B).



(cont'd)

DTC Troubleshooting (cont'd)

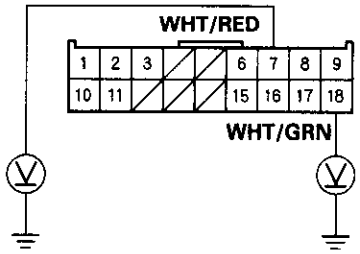
11. Disconnect SRS unit connector A (18P) from the SRS unit.



12. Turn the ignition switch ON (II).

13. Check for voltage between the No. 7 terminal of SRS unit connector A (18P) and body ground, and between the No. 18 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 23-138). ■

NO – Short to power in the floor wire harness; replace the floor wire harness. ■

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 23-23).

2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

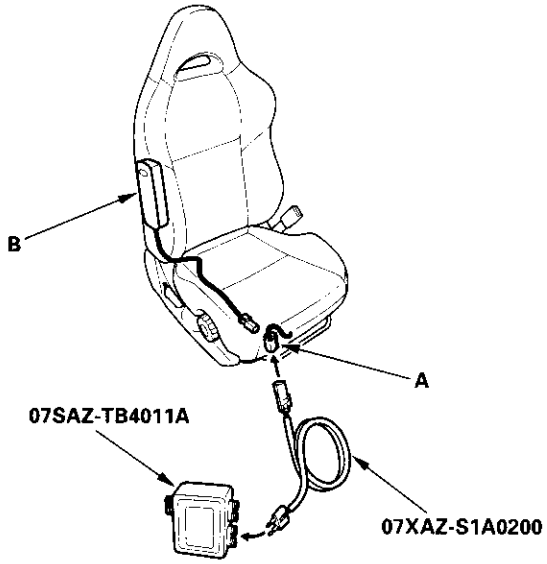
   Does the SRS indicator stay on?

   YES – Go to step 3.

   NO – Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-23).

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 (B).



5. Connect the special tool (2 Ω connector) to the floor wire harness 2P connector.

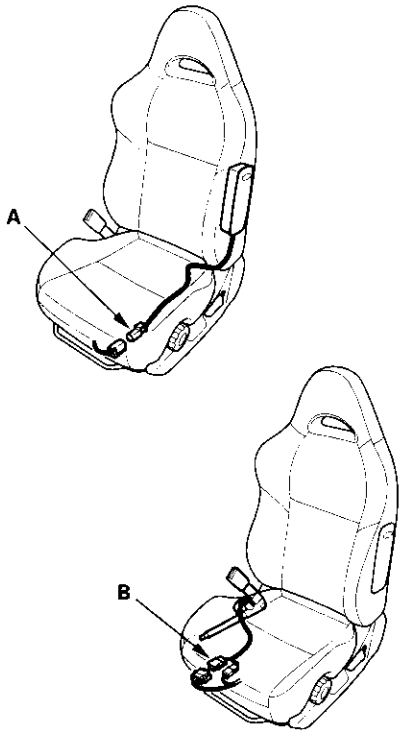
6. Reconnect the battery negative cable.
7. Erase the DTC memory.
8. Read the DTC.

   Is DTC 12-5 indicated?

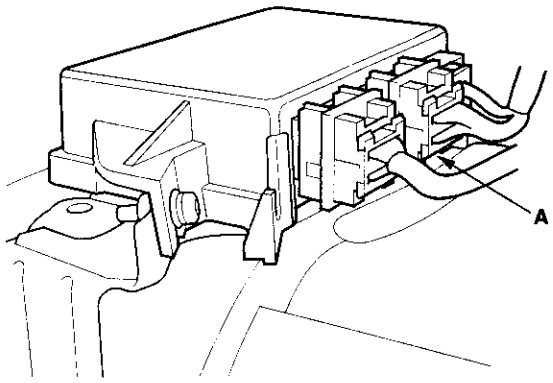
   YES—Go to step 9.

   NO—Short to ground in the front passenger's side airbag inflator; replace the front passenger's side airbag (see page 23-131).■

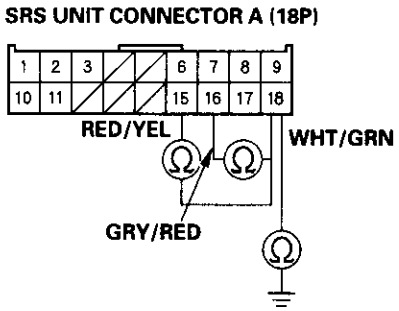
9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
10. Disconnect the driver's side airbag 2P connector (A) and both seat belt buckle tensioner 4P connectors (B).



11. Disconnect SRS unit connector A (18P) from the SRS unit.



12. Check resistance between the No. 15 and No. 18 terminals of SRS unit connector A (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 23-138).■

NO—Short to ground in the floor wire harness; replace the floor wire harness.■

DTC Troubleshooting (cont'd)

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 23-23).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on?

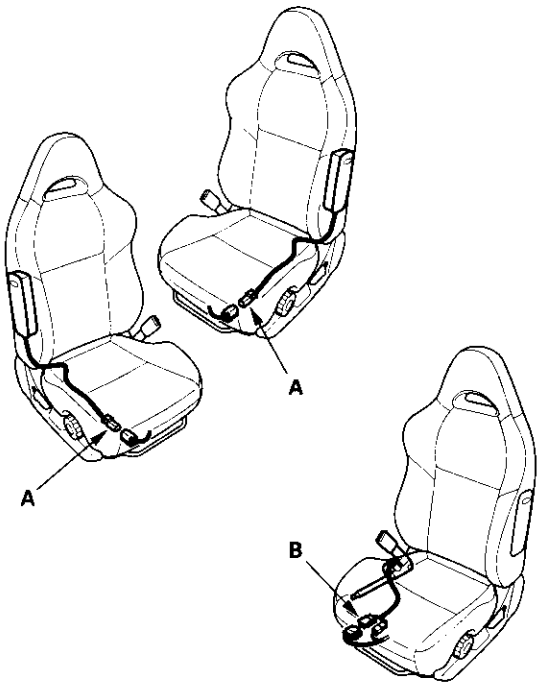
   YES – Go to step 3.

   NO – Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-23).
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.

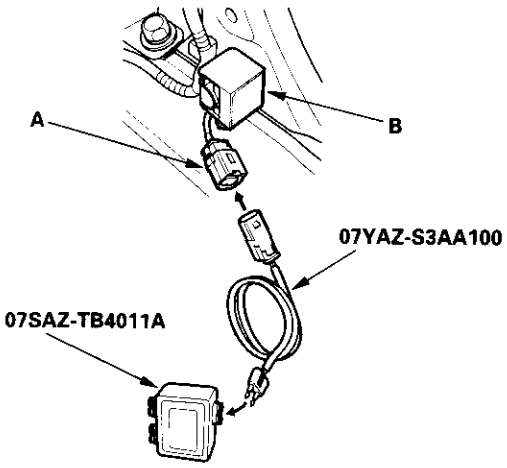
   Is the connection OK?

   YES – Go to step 5.

   NO – Replace the driver's side impact sensor and/or the floor harness, as needed (see page 23-139). ■
5. Disconnect the driver's side airbag and front passenger's side airbag 2P connectors (A), and disconnect both seat belt buckle tensioner 4P connectors (B).

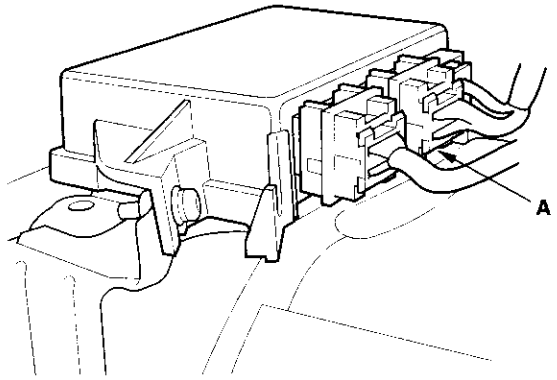


6. Disconnect the floor wire harness 2P connector (A) from the driver's side impact sensor (B).



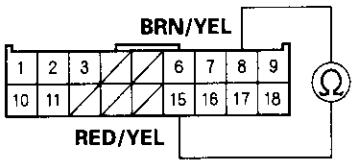
7. Connect the special tool (jumper connector) to the floor wire harness 2P connector.

8. Disconnect SRS unit connector A (18P) from the SRS unit.



9. Check resistance between the No. 8 and No. 15 terminals of SRS unit connector A (18P). There should be 0 – 1.0 Ω.

SRS UNIT CONNECTOR A (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 23-139). If the problem is still present, replace the SRS unit (see page 23-138). ■

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 23-23).

2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

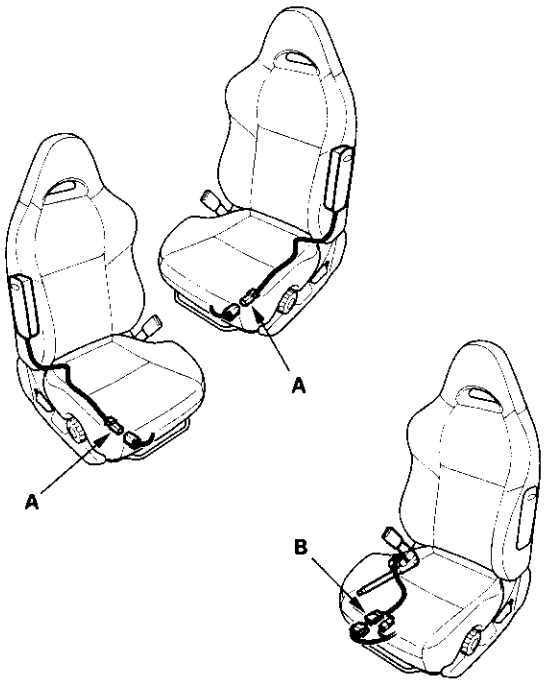
   Does the SRS indicator stay on?

   YES – Go to step 3.

   NO – Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-23).

3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.

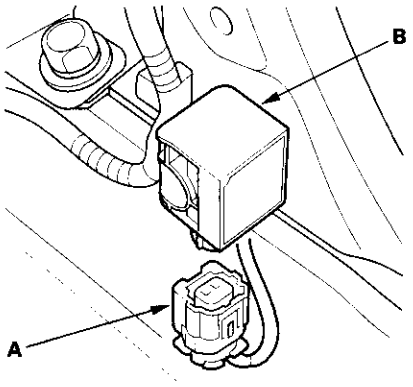
4. Disconnect the driver's side airbag and front passenger's side airbag 2P connectors (A), and disconnect both seat belt buckle tensioner 4P connectors (B).



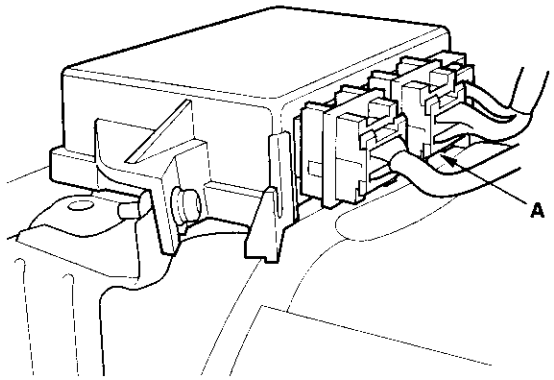
(cont'd)

DTC Troubleshooting (cont'd)

5. Disconnect the floor wire harness 2P connector (A) from the driver's side impact sensor (B).

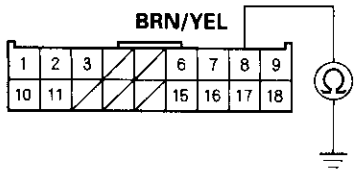


6. Disconnect SRS unit connector A (18P) from the SRS unit.



7. Check resistance between the No. 8 terminal of SRS unit connector A (18P) and body ground. There should be an open circuit, or at least 1 MΩ.

SRS UNIT CONNECTOR A (18P)



Wire side of female terminals

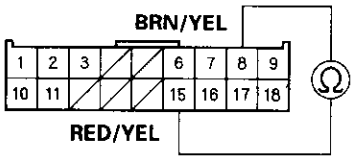
Is the resistance as specified?

YES – 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 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 driver's side impact sensor or SRS unit; replace the driver's side impact sensor (see page 23-139). If the problem is still present, replace the SRS unit (see page 23-138). ■

NO – Short in the floor wire harness; replace the floor wire harness. ■

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 23-23).

2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on?

   YES – Go to step 3.

   NO – Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-23).

3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.

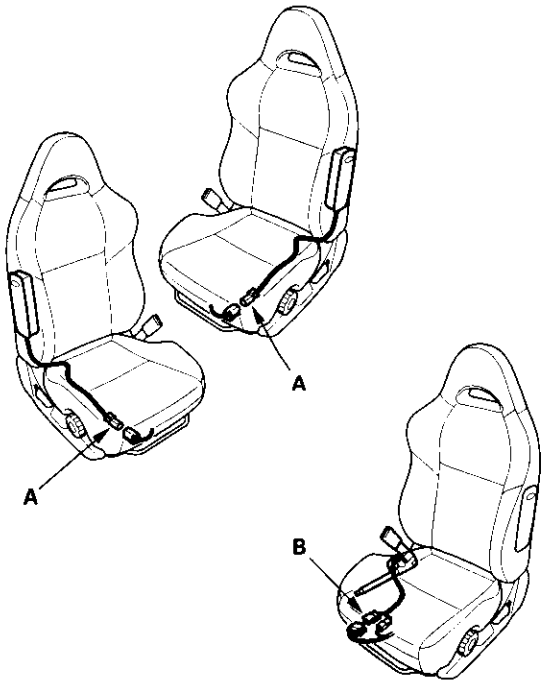
4. Check the connection between the floor wire harness 2P connector and the front passenger's side impact sensor.

   Is the connection OK?

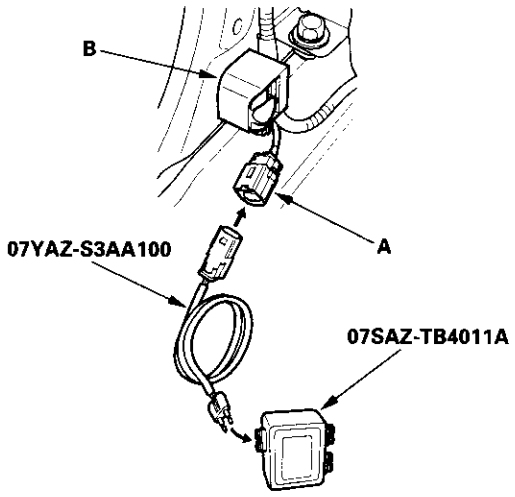
   YES – Go to step 5.

   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 (see page 23-139). ■

5. Disconnect the driver's side airbag and front passenger's side airbag 2P connectors (A), and disconnect both seat belt buckle tensioner 4P connectors (B).



6. Disconnect the floor wire harness 2P connector (A) from the front passenger's side impact sensor (B).

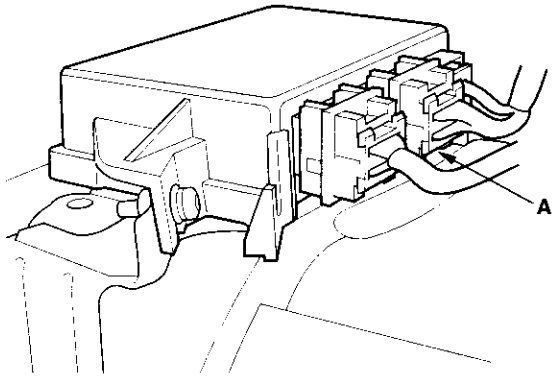


(cont'd)

DTC Troubleshooting (cont'd)

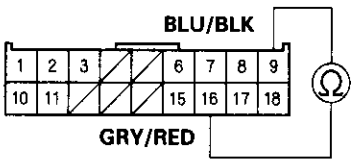
7. Connect the special tool (jumper connector) to the floor wire harness 2P connector.

8. Disconnect SRS unit connector A (18P) from the SRS unit.



9. Check resistance between the No. 9 and No. 16 terminals of SRS unit connector A (18P). There should be 0 – 1.0 Ω.

SRS UNIT CONNECTOR A (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 23-139). If the problem is still present, replace the SRS unit (see page 23-138). ■

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 23-23).

2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

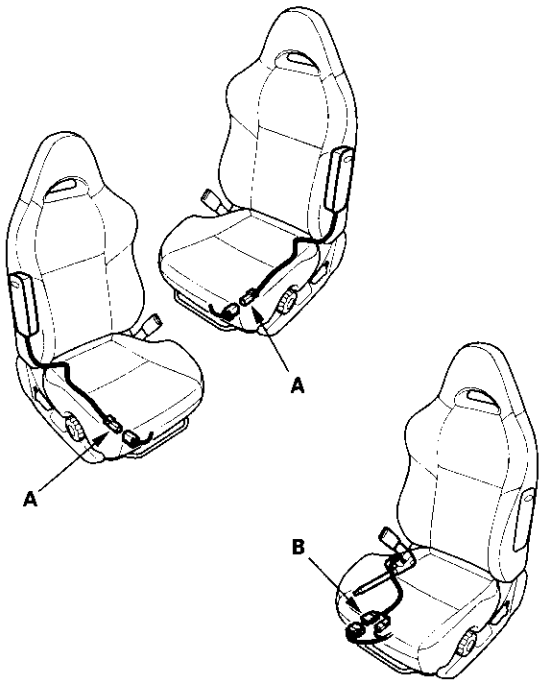
   Does the SRS indicator stay on?

   YES – Go to step 3.

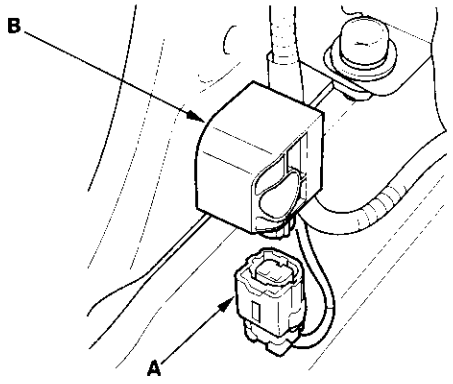
   NO – Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-23).

3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.

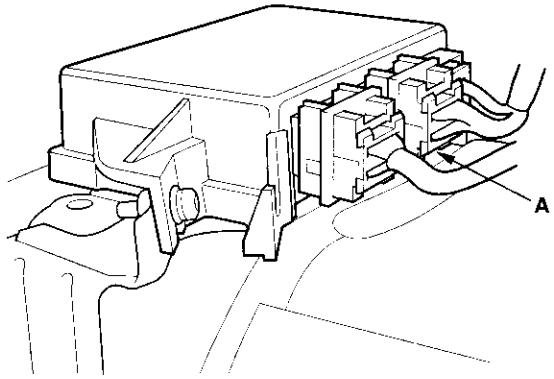
4. Disconnect the driver's side airbag and front passenger's side airbag 2P connectors (A), and disconnect both seat belt buckle tensioner 4P connectors (B).



5. Disconnect the floor wire harness 2P connector (A) from the front passenger's side impact sensor (B).

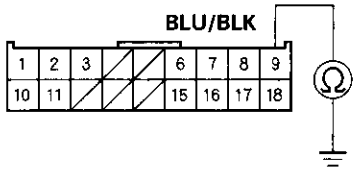


6. Disconnect SRS unit connector A (18P) from the SRS unit.



7. Check resistance between the No. 9 terminal of SRS unit connector A (18P) and body ground. There should be an open circuit, or at least 1 MΩ.

SRS UNIT CONNECTOR A (18P)



Wire side of female terminals

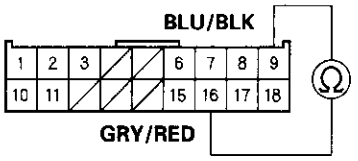
Is the resistance as specified?

YES – 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 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 front passenger's side impact sensor or SRS unit; replace the front passenger's side impact sensor (see page 23-139). If the problem is still present, replace the SRS unit (see page 23-138). ■

NO – Short in the floor wire harness; replace the floor wire harness.■

DTC Troubleshooting (cont'd)

DTC 15-1: Faulty OPDS Unit

1. Make sure nothing is on the front passenger's seat.
2. Initialize the OPDS unit (see page 23-24).
3. Erase the DTC memory (see page 23-23).
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 23-23).

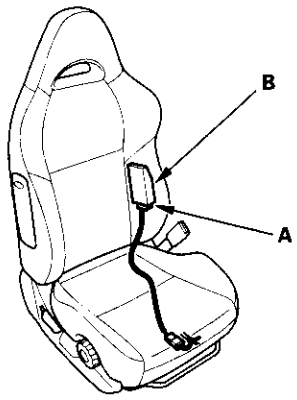
5. Check the No. 9 (10A) fuse in the under-dash fuse/relay box.

   Is the fuse OK?

   YES – Go to step 6.

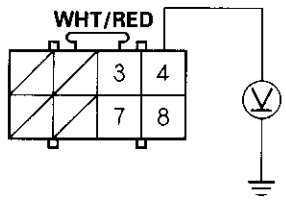
   NO – Go to step 9.

6. Disconnect the OPDS unit harness 8P connector (A) from the OPDS unit (B) (see page 23-140).



7. Turn the ignition switch ON (II).
8. Check for voltage between the No. 4 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 16.

NO – Open in the floor wire harness or in the 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 in under-dash fuse/relay box.

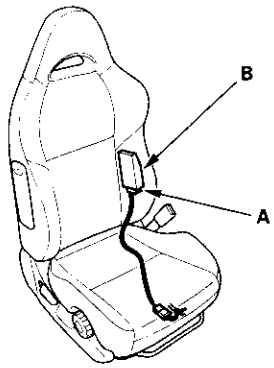
    Is the fuse OK?

    YES – Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-23).

    NO – Go to step 12.

12. Replace the No. 9 (10A) fuse in the under-dash fuse/relay box.

13. Disconnect the OPDS unit harness 8P connector (A) from the OPDS unit (B).



14. Turn the ignition switch ON (II) for 30 seconds, then turn it off.

15. Check the No. 9 (10A) fuse in the under-dash fuse/relay box.

Is the fuse OK?

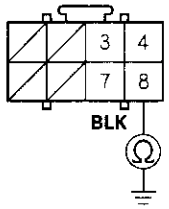
YES – Short to ground in the OPDS unit; replace the OPDS unit (see page 23-140).■

NO – Short to ground in the No. 9 (10A) circuit.■

16. Turn the ignition switch OFF.

17. Check resistance between the No. 8 terminal of the 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

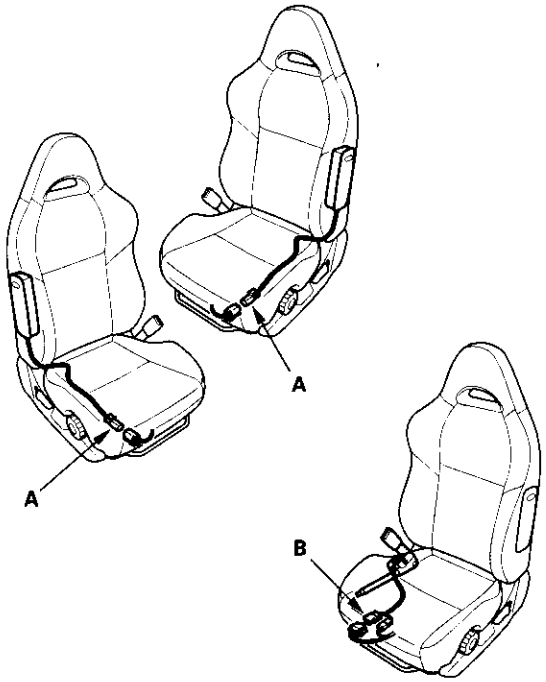
Is the resistance as specified?

YES – Go to step 18.

NO – Open in floor wire harness or OPDS unit harness, or poor ground (G501). If the G501 is OK, replace the faulty harness.■

18. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.

19. Disconnect both side airbag connectors (A) and both seat belt buckle tensioner 4P connectors (B).



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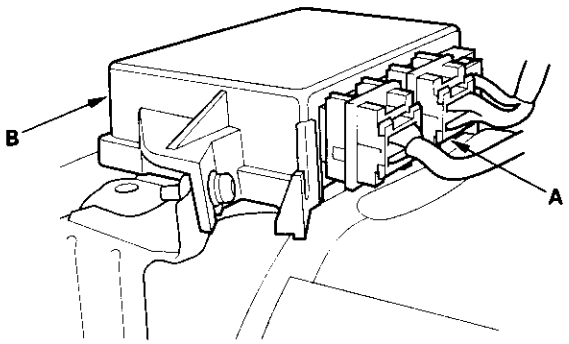
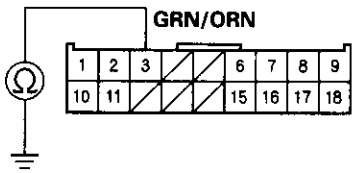
DTC Troubleshooting (cont'd)

20. Disconnect SRS unit connector A (18P) from the SRS unit (B).



21. Check resistance between the No. 3 terminal of SRS unit connector A (18P) and body ground. There should be an open circuit, or at least 1 MΩ.

SRS UNIT CONNECTOR A (18P)



Wire side of female terminals

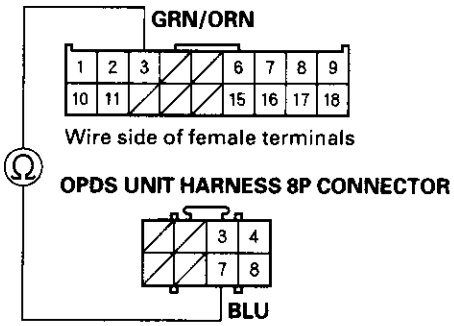
Is the resistance as specified?

YES – 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 A (18P) and the No. 7 terminal of the OPDS unit harness 8P connector. There should be 0 – 1.0 Ω.

SRS UNIT CONNECTOR A (18P)



Wire side of female terminals

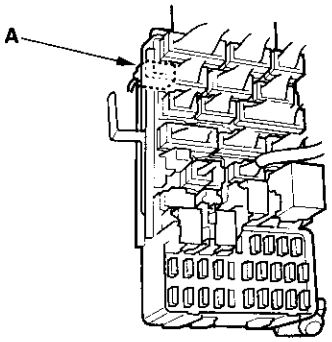
Wire side of female terminals

Is the resistance as specified?

YES – Go to step 23.

NO – Open in the floor wire harness, seat subharness (with BOSE sound system), or in the OPDS unit harness; replace the faulty harness. ■

23. Disconnect the dashboard wire harness 2P connector (A) from the under-dash fuse/relay box.

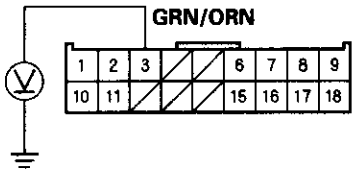


24. Reconnect the negative battery cable.

25. Turn the ignition switch ON (II).

26. Check for voltage between the No. 3 terminal of SRS unit connector A (18P) 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 – Go to step 27.

NO – Short to power in the floor wire harness or in the OPDS unit harness; replace the faulty harness. ■

27. Replace the OPDS unit (see page 23-140), then initialize the system (see page 23-24).

28. Erase the DTC memory, then check for DTC 15-1.

Is DTC 15-1 indicated?

YES – Replace the SRS unit (see page 23-138). ■

NO – The system is OK. ■

DTC Troubleshooting (cont'd)

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 23-23).
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 23-23).

   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?

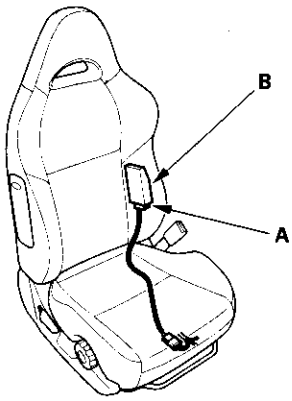
   YES – Faulty OPDS unit or SRS unit; replace the OPDS unit (see page 23-140). If the problem is still present, replace the SRS unit (see page 23-138). ■

   NO – Go to step 32.
6. Turn the ignition switch OFF.
7. Check the No. 10 (7.5A) fuse in the under-dash fuse/relay box.

   Is the fuse OK?

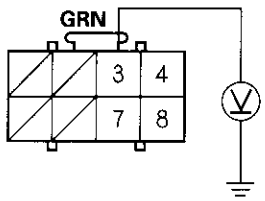
   YES – Go to step 8.

   NO – Repair the short to ground in the No. 10 (7.5A) fuse circuit. ■
8. Disconnect the OPDS unit harness 8P connector (A) from the OPDS unit (B) (see page 23-140).



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.

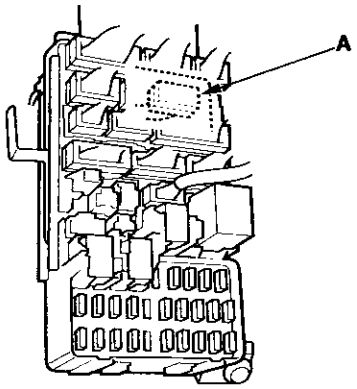
Is there battery voltage?

YES – Go to step 11.

NO – Go to step 23.

11. Turn the ignition switch OFF.

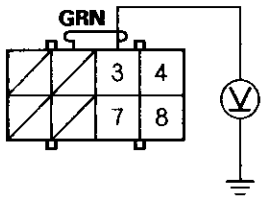
12. Disconnect the dashboard wire harness 17P connector (A) from the under-dash fuse/relay box.



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.

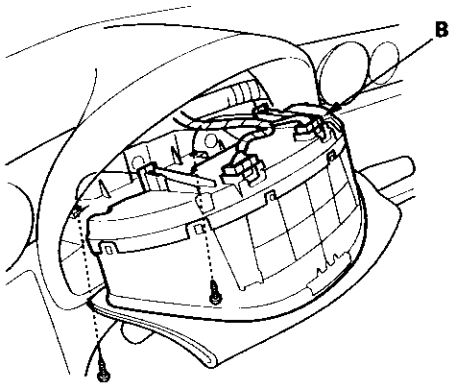
Is the voltage as specified?

YES—Faulty OPDS unit; replace the OPDS unit (see page 23-140).■

NO—Go to step 15.

15. Turn the ignition switch OFF.

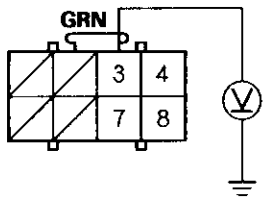
16. Remove the gauge assembly (see page 22-66), then disconnect gauge assembly connector B (18P) from the gauge assembly.



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.■

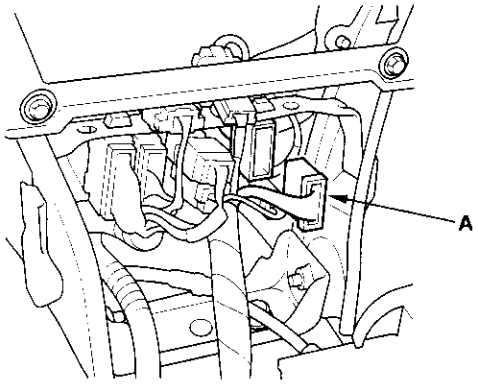
NO—Go to step 19.

(cont'd)

DTC Troubleshooting (cont'd)

19. Turn the ignition switch OFF.

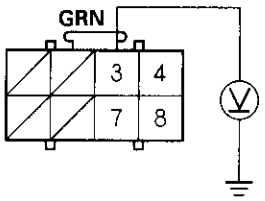
20. Disconnect the floor wire harness 21P connector (A) from the dashboard wire harness.



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.

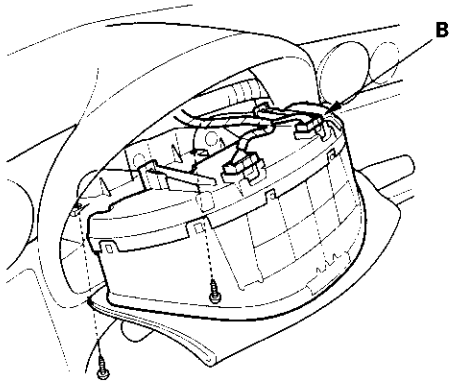
Is the voltage as specified?

YES – Short to power in the dashboard wire harness; replace the dashboard wire harness. ■

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. ■

23. Turn the ignition switch OFF.

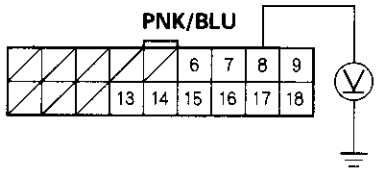
24. Remove the gauge assembly (see page 22-66). With the connectors still connected to the gauge assembly, backprobe the No. 8 terminal of gauge assembly connector B (18P).



25. Turn the ignition switch ON (II).

26. Check for voltage between the No. 8 terminal of gauge assembly connector B (18P) and body ground. There should be battery voltage.

GAUGE ASSEMBLY CONNECTOR B (18P)



Wire side of female terminals

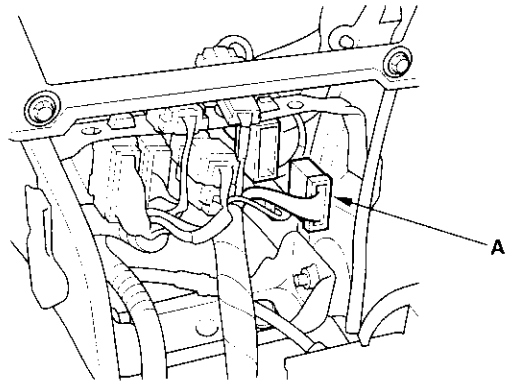
Is there battery voltage?

YES – Go to step 27.

NO – Go to step 31.

27. Turn the ignition switch OFF.

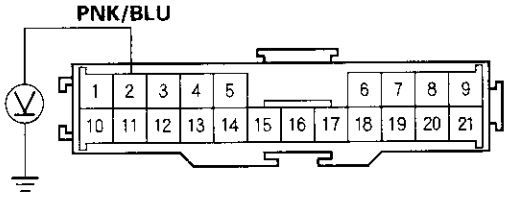
28. Disconnect the floor wire harness 21P connector (A) from the dashboard wire harness.



29. Turn the ignition switch ON (II).

30. Check for voltage between the No. 2 terminal of the dashboard wire harness 21P connector and body ground. There should be battery voltage.

DASHBOARD WIRE HARNESS 21P CONNECTOR



Terminal side of male terminals

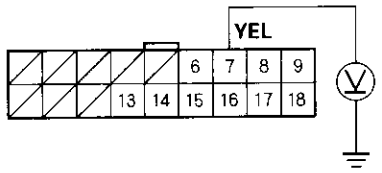
Is there battery voltage?

YES – Poor contact at the dashboard wire harness 21P and floor wire harness 21P connectors, or an open in the floor wire harness or in the OPDS unit harness. Check the connection; if the connection is OK, replace the faulty harness. ■

NO – Poor contact at gauge assembly connector B (18P) or an open in the dashboard wire harness. Check gauge assembly connector B (18P); if the connections are OK, replace the dashboard wire harness. ■

31. Check for voltage between the No. 7 terminal of gauge assembly connector B (18P) and body ground. There should be battery voltage.

GAUGE ASSEMBLY CONNECTOR B (18P)



Wire side of female terminals

Is there battery voltage?

YES – Faulty side airbag cutoff indicator circuit; replace the gauge assembly. ■

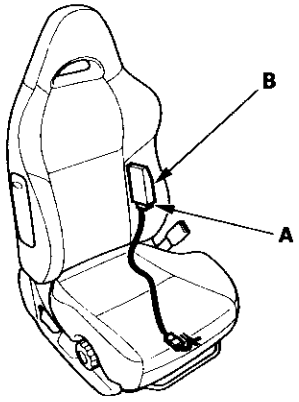
NO – Open in the dashboard wire harness; replace the dashboard wire harness. ■

(cont'd)

DTC Troubleshooting (cont'd)

32. Turn the ignition switch OFF.

33. Disconnect the OPDS unit harness 8P connector (A) from the OPDS unit (B) (see page 23-140).



34. Turn the ignition switch ON (II).

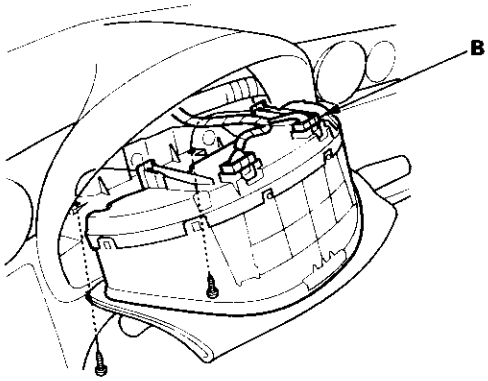
    Does the side airbag cutoff indicator come on?

    YES – Go to step 35.

    NO – Faulty OPDS unit; replace the OPDS unit.■

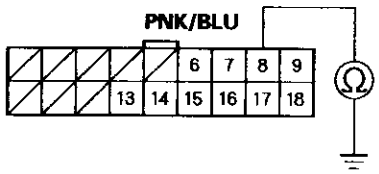
35. Turn the ignition switch OFF.

36. Remove the gauge assembly (see page 22-66), then disconnect gauge assembly connector B (18P) from the gauge assembly.



37. Check resistance between the No. 8 terminal of gauge assembly connector B (18P) and body ground. There should be an open circuit, or at least 1 MΩ.

GAUGE ASSEMBLY CONNECTOR B (18P)



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, the floor wire harness, or the OPDS unit harness; replace the faulty harness.■

DTC 15-3: Faulty OPDS Sensor

1. Erase the DTC memory (see page 23-23).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on?

   YES – Go to step 3.

   NO – Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-23).

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 20-76), and reinitialize the OPDS system (see page 23-24).
5. Erase the DTC memory, then check for DTC 15-3.

   Is DTC 15-3 indicated?

   YES – Replace the OPDS unit (see page 23-140).

   NO – System is OK.■

SRS Indicator Circuit Troubleshooting

The SRS Indicator Doesn't Come On

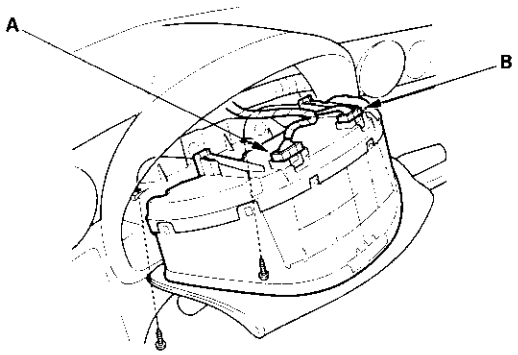
1. Turn the ignition switch ON (II), and check to see if the other indicators come on (brake system, etc).

   Do the other indicators come on?

   YES – Go to step 2.

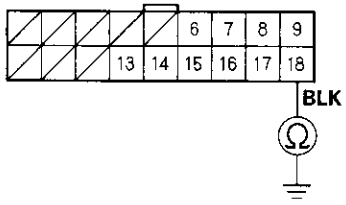
   NO – Go to step 8.

2. Turn the ignition switch OFF, then remove the gauge assembly (see page 22-66). Disconnect gauge assembly connector A (22P), and B (18P) from the gauge assembly.



3. Check resistance between the No. 18 terminal of gauge assembly connector B (18P) and body ground. There should be 0 – 1.0 Ω.

GAUGE ASSEMBLY CONNECTOR B (18P)



Wire side of female terminals

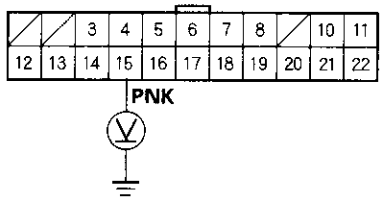
Is the resistance as specified?

YES – Go to step 4.

NO – Open in the BLK wire of the dashboard wire harness or faulty body ground terminal (G401). If the body ground terminal is OK, replace the dashboard wire harness. ■

4. Check for voltage between the No. 15 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

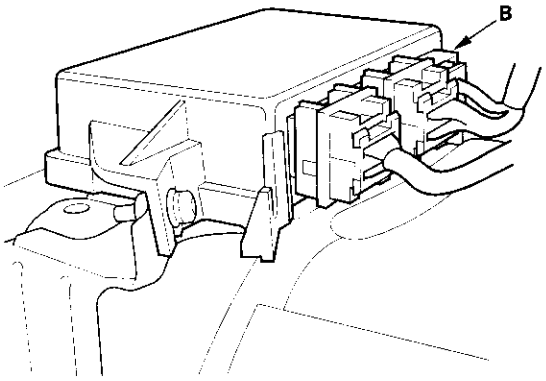
Is the voltage as specified?

YES – Faulty SRS indicator circuit in the gauge assembly; replace the gauge assembly. ■

NO – Go to step 5.

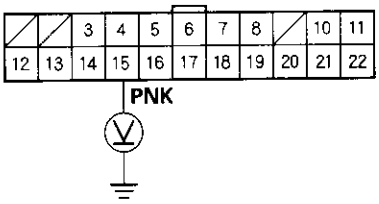
5. Turn the ignition switch OFF.

6. Disconnect SRS unit connector B (8P) from the SRS unit.



7. Disconnect gauge assembly connector A (22P). Connect a voltmeter between the No. 15 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 23-138). ■

NO – Short to power in the PNK wire of the dashboard wire harness 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 fuse No. 10 (7.5A) blow?

YES – Go to step 10.

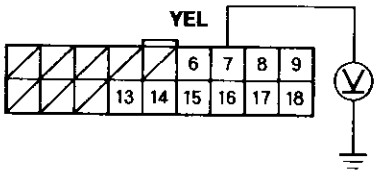
NO – Go to step 9.

(cont'd)

SRS Indicator Circuit Troubleshooting (cont'd)

9. Connect a voltmeter between the No. 7 terminal of gauge assembly connector B (18P) and body ground. Turn the ignition switch ON (II), and measure the voltage. There should be battery voltage.

GAUGE ASSEMBLY CONNECTOR B (18P)



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 (18P) and 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. If the under-dash fuse/relay box is OK, replace the faulty harness. ■

10. Replace the No. 10 (7.5A) fuse, and check to see if the SRS indicator comes on.

Does the SRS indicator 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 line. ■

The SRS Indicator Stays On When In "SCS" Menu Method

NOTE:
- If you cannot retrieve DTCs with the PGM Tester using the SCS menu method, retrieve the flash codes with the Tester in SCS mode (see page 23-21).
- 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 23-23).

   Does the SRS indicator go off while you erase 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 in the under-dash fuse/relay box.

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 in the under-dash fuse/relay box.

   Is the fuse OK?

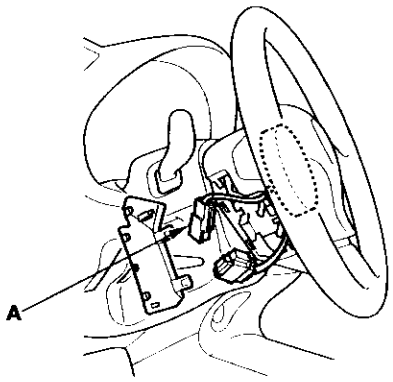
   YES – The system is OK at this time.■

   NO – Go to step 6.

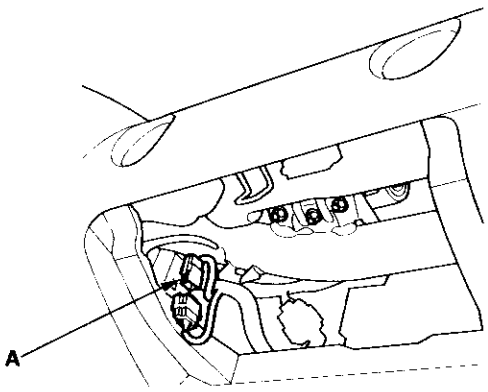
6. Replace the No. 13 (10A) fuse in the under-dash fuse/relay box.

7. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.

8. Disconnect the driver's airbag 4P connector (A).



9. Disconnect the front passenger's airbag 4P connector (A).



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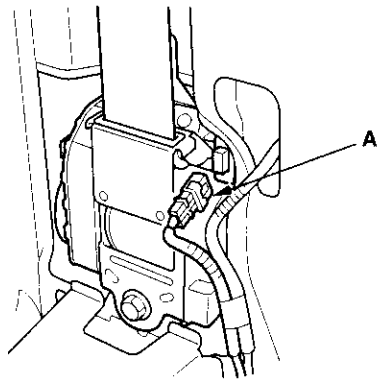
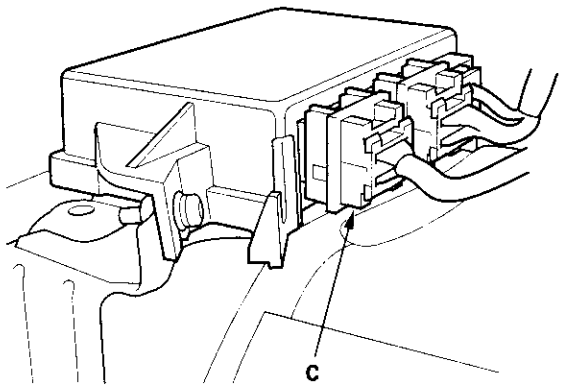
SRS Indicator Circuit Troubleshooting (cont'd)

10. Disconnect both seat belt tensioner 2P connectors (A).



11. Disconnect SRS unit connector C (18P) from the SRS unit.



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 in the under-dash fuse/relay box.

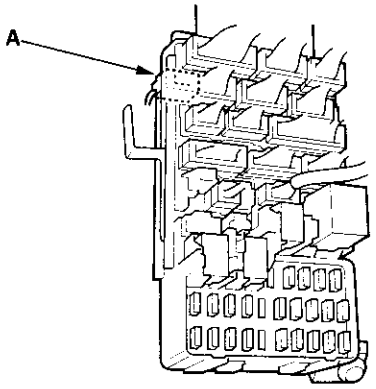
    Is the fuse OK?

    YES – Short to ground in the SRS unit; replace the SRS unit (see page 23-138). ■

    NO – Go to step 15.

15. Replace the No. 13 (10A) fuse in the under-dash fuse/relay box.

16. Disconnect the dashboard wire harness 2P connector (A) 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 in the under-dash fuse/relay box.

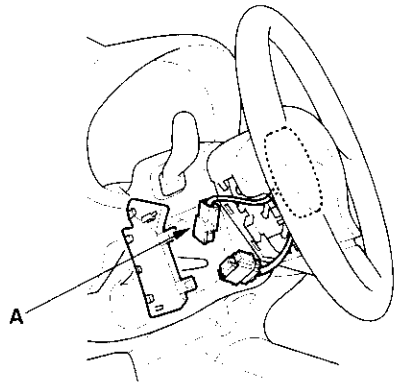
    Is the fuse OK?

    YES – Short to ground in the dashboard wire harness; replace the dashboard wire harness. ■

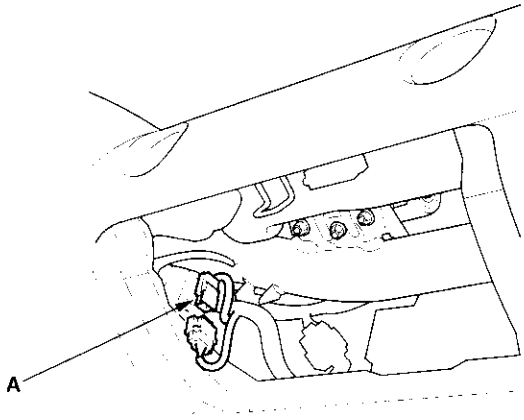
    NO – Repair the short to ground in the under-dash fuse/relay box No. 13 (10A) fuse line; replace the under-dash fuse/relay box or repair it. ■

19. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.

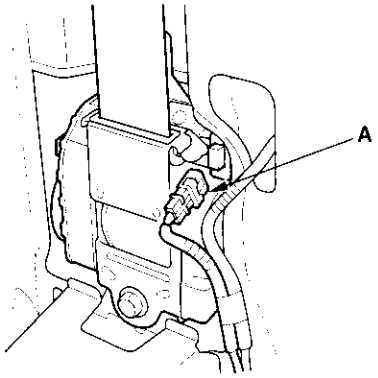
20. Disconnect the driver's airbag 4P connector (A).



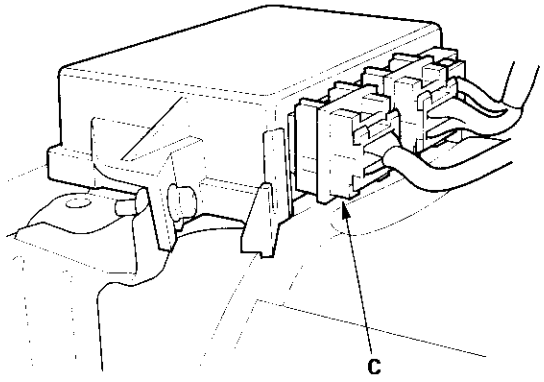
21. Disconnect the front passenger's airbag 4P connector (A).



22. Disconnect both seat belt tensioner 2P connectors (A).



23. Disconnect SRS unit connector C (18P) from the SRS unit.



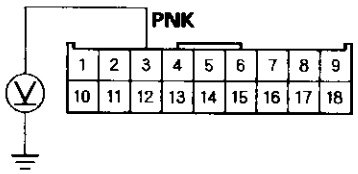
(cont'd)

SRS Indicator Circuit Troubleshooting (cont'd)

24. Reconnect the battery negative cable.

25. Connect a voltmeter between the No. 3 terminal (+) of SRS unit connector C (18P) and body ground. Turn the ignition switch ON (II), and measure the voltage. There should be battery voltage.

SRS UNIT CONNECTOR C (18P)



Wire side of female terminals

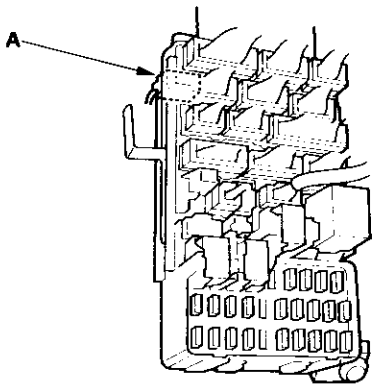
Is there battery voltage?

YES – Go to step 29.

NO – Go to step 26.

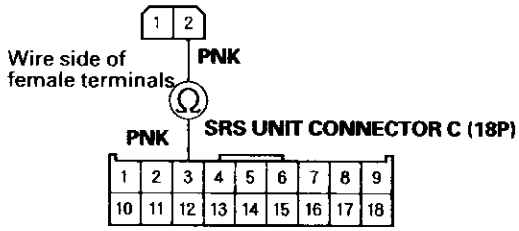
26. Turn the ignition switch OFF.

27. Disconnect the dashboard wire harness 2P connector (A) from the under-dash fuse/relay box.



28. Check resistance between the No. 3 terminal of SRS unit connector C (18P) and the No. 2 terminal of the dashboard wire harness 2P connector. There should be 0 – 1.0 Ω.

DASHBOARD WIRE HARNESS 2P CONNECTOR



Wire side of female terminals

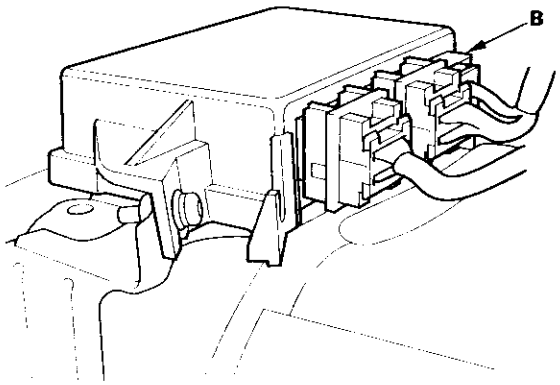
Is the resistance as specified?

YES – Open in the under-dash fuse/relay box or poor contact at the dashboard wire harness 2P connector; check the connection. If the connection is OK, replace the under-dash fuse/relay box. ■

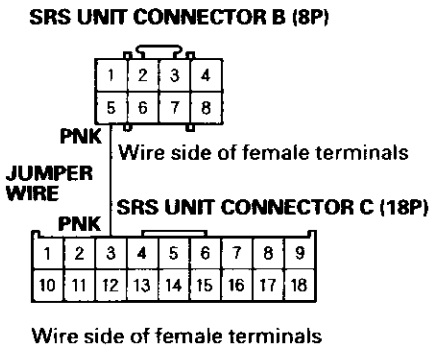
NO – Open in the dashboard wire harness; replace the dashboard wire harness. ■

29. Turn the ignition switch OFF.

30. Disconnect SRS unit connector B (8P) from the SRS unit.



31. Connect the No. 3 terminal of SRS unit connector C (18P) and the No. 5 terminal of the SRS unit connector B (8P) with a jumper wire.



Wire side of female terminals

32. Turn the ignition switch ON (II).

33. Check the SRS indicator.

Does the SRS indicator go off?

YES - Faulty SRS unit; replace the SRS unit (see page 23-138).■

NO - Go to step 34.

34. Turn the ignition switch OFF.

35. Disconnect the jumper wire between the No. 3 terminal of SRS unit 18P connector C (18P) and the No. 5 terminal of the floor wire harness 8P connector.

36. Check the No. 13 (10A) fuse in the under-dash fuse/relay box.

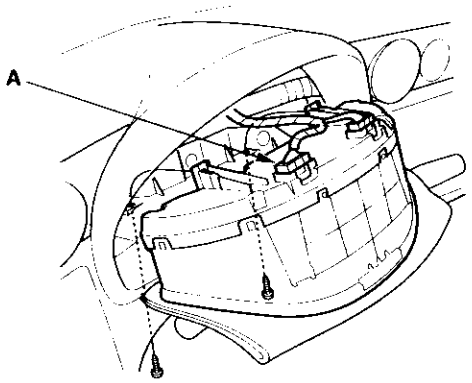
Is the fuse OK?

YES – Go to step 40.

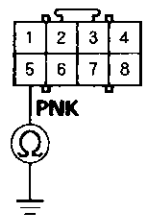
NO – Go to step 37.

37. Replace the No. 13 (10A) fuse in the under-dash fuse/relay box.

38. Remove the gauge assembly (see page 22-66) then disconnect connector A (22P) from the gauge assembly.



39. Check resistance between the No. 5 terminal of SRS unit connector B (8P) and body ground. There should be an open circuit, or at least 1 M Ω.



Wire side of female terminals

Is the resistance as specified?

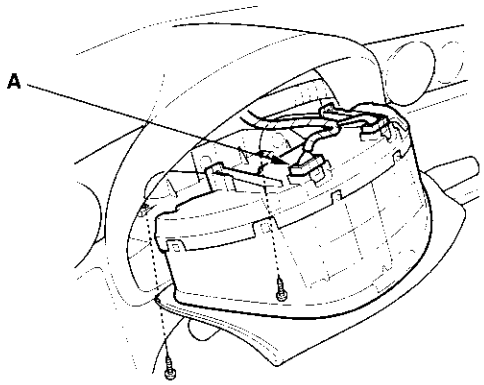
YES – Faulty SRS indicator circuit in the gauge assembly; replace the gauge assembly.■

NO – Short to ground in the floor wire harness or in the dashboard wire harness; replace the faulty harness.■

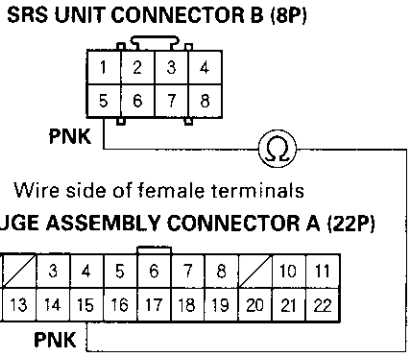
(cont'd)

SRS Indicator Circuit Troubleshooting (cont'd)

40. Remove the gauge assembly (see page 22-66), then disconnect gauge assembly connector A (22P) from the gauge assembly.



41. Check resistance between the No. 15 terminal of gauge assembly connector A (22P) and the No. 5 terminal of SRS unit connector B (8P). There should be 1 Ω or less.



Is the resistance as specified?

YES – Faulty SRS indicator circuit in the gauge assembly or poor contact at the 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 the dashboard wire harness; replace the faulty harness. ■

42. Turn the ignition switch OFF.

43. If necessary, remove the SCS service connector from the MES connector.

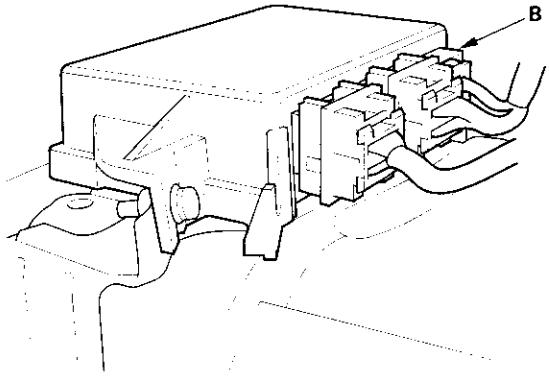
44. Turn the ignition switch ON (II).

Does the SRS indicator come on for about 6 seconds and then go off?

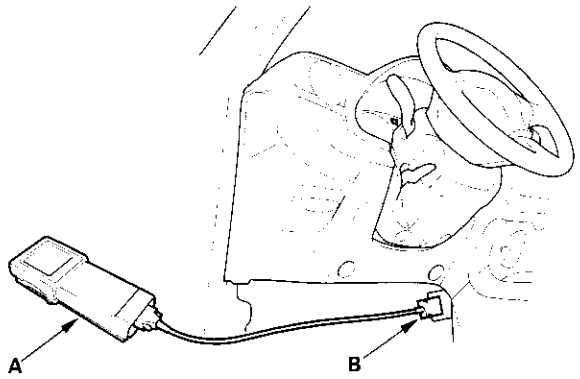
YES – The system is OK at this time. ■

NO – Go to step 45.

45. Disconnect SRS unit connector B (8P) from the SRS unit.

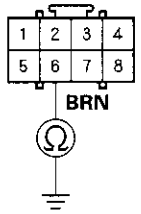


46. Connect the Honda PGM Tester (A) to the Data Link Connector (16P) (B), and follow the Tester's prompts in the "SCS" menu (see the Tester's operating manual).



47. Check resistance between the No. 6 terminal of SRS unit connector B (8P) and body ground. There should be 0 – 1.0 Ω.

SRS UNIT CONNECTOR B (8P)



Wire side of female terminals

Is the resistance as specified?

YES – Faulty SRS unit or poor contact at SRS unit connector B (8P); check the connection. If the connection is OK, replace the SRS unit (see page 23-138).■

NO – Open in the SCS line between the No. 6 terminal of SRS unit connector B (8P) and the No. 9 terminal (BRN wire) of the data link connector (DLC) (16P), 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 impact sensors, side airbag sensors, etc.)

After a collision where the seat belt tensions deployed, replace these items:
- Seat belt tensioners
- Seat belt buckle tentioners
- SRS unit
- Front impact sensors

After a collision where the frontal 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 side(s) 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.

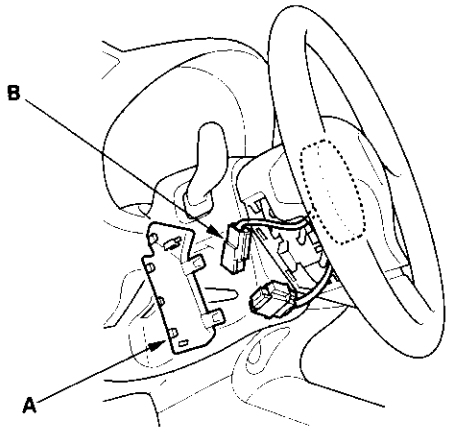
After the vehicle is completely repaired, turn the ignition switch ON(II). If the SRS indicator comes on for about 6 seconds and then goes off, the SRS airbag system is OK. If the indicator does not function properly, use the PGM Tester SRS Menu Method to read the DTC (s). If this doesn't retrieve any codes, use the Tester's SCS menu method. If you still cannot retrieve a code, go to SRS Indicator Circuit Troubleshooting.

Driver's Airbag Replacement

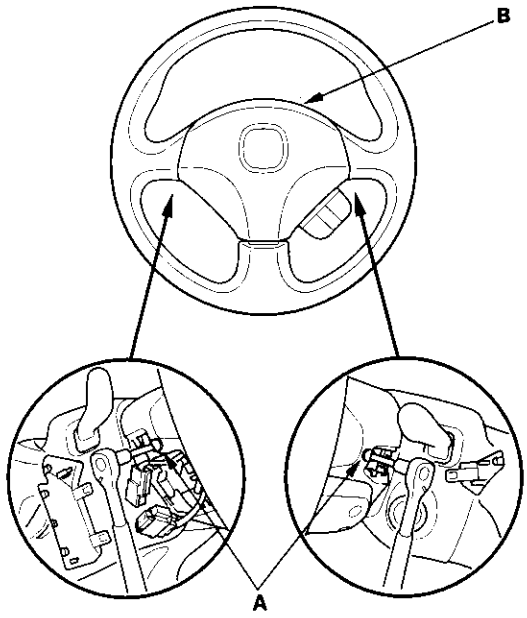
Removal

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 two Torx bolts (A) using a Torx T30 bit. Then remove the driver's airbag (B).

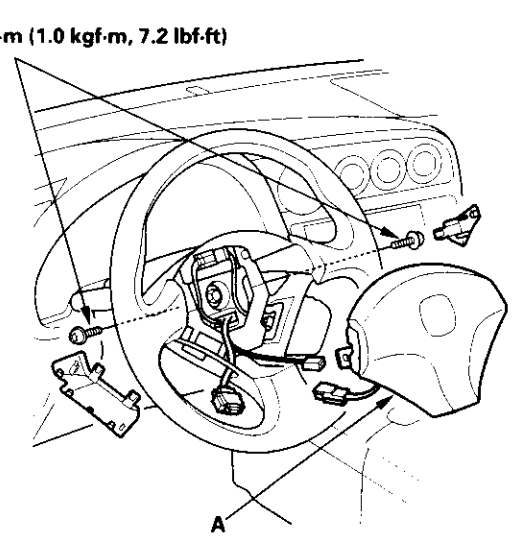


(cont'd)

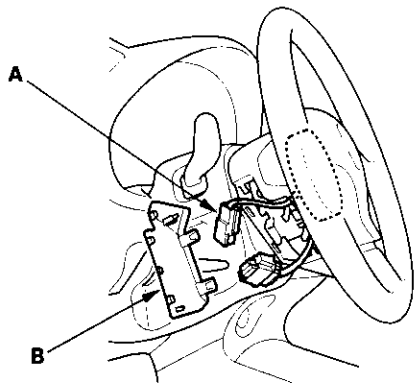
Driver's Airbag Replacement (cont'd)

Installation

1. Place the new driver's airbag (A) in the steering wheel, and secure it with new Torx bolts (B).



2. Connect the cable reel to the driver's airbag 4P connector (A), then install the access panel (B) on the steering wheel.



3. Connect the battery negative cable.

4. 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.

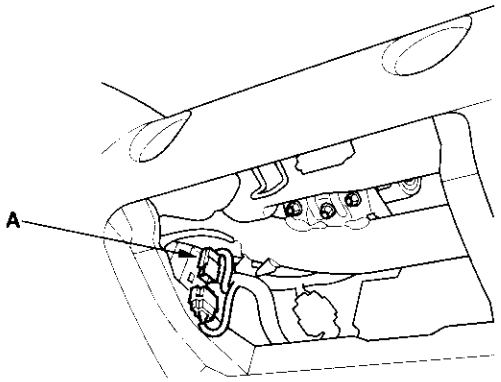
Front Passenger's Airbag Replacement

Removal

1. Disconnect the battery negative cable, and wait at least 3 minutes before beginning work.

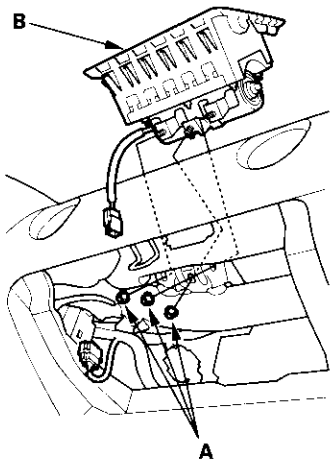
2. Remove the glove box (see page 20-65).

3. Disconnect the front passenger's airbag 4P connector (A) from the dashboard wire harness.



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.

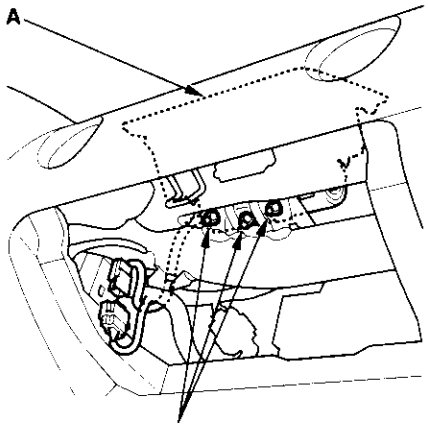


(cont'd)

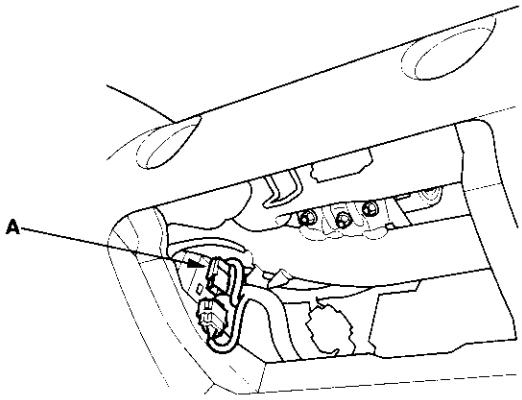
Front Passenger's Airbag Replacement (cont'd)

Installation

1. Place the new front passenger's airbag (A) into the dashboard. Tighten the front passenger's airbag mounting nuts (B).



2. Connect the front passenger's airbag 4P connector (A) to the dashboard wire harness, then reinstall the glove box.



3. Reconnect the battery negative cable.

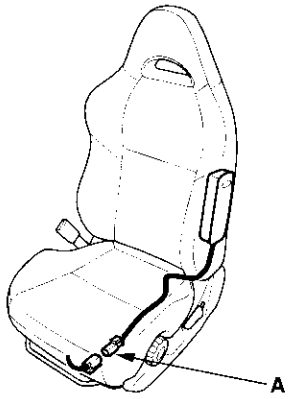
4. After installing the airbag, confirm proper system operation: Turn the ignition switch ON (II); the SRS indicator should come on for about 6 seconds and then go off.

Side Airbag Replacement

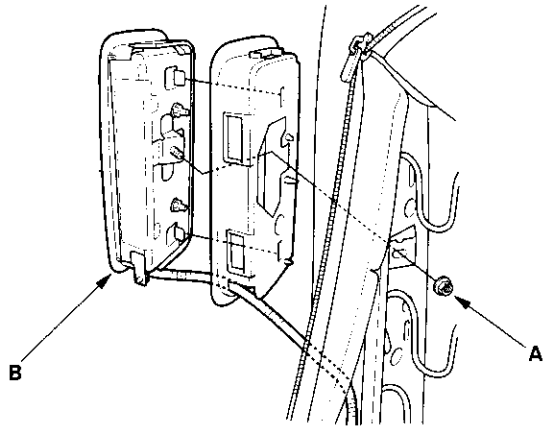
NOTE: Review the seats replacement procedure in the body section (see page 20-72) before performing repair or service.

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).



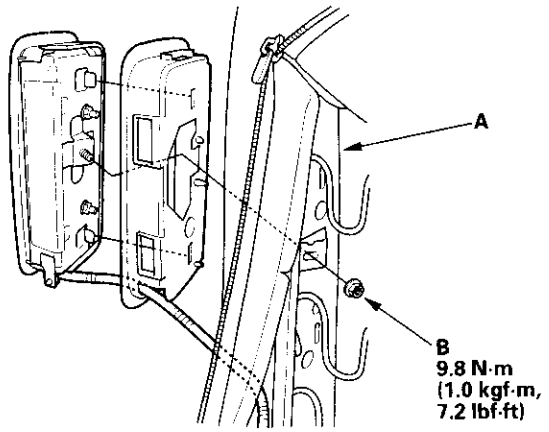
3. Remove the seat assembly (see page 20-72) and seat-back cover (see page 20-76).
4. Remove the mounting nut (A) and the side airbag (B).



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 20-76).
3. Install the seat assembly (see page 20-72), then connect the side airbag harness 2P connector.
4. Move the seat cushion 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 Acura District Parts and 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.

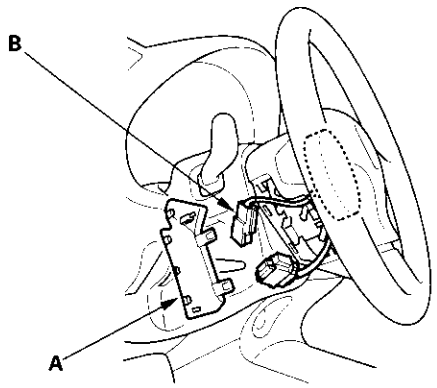
Deploying Airbags in the vehicle

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.

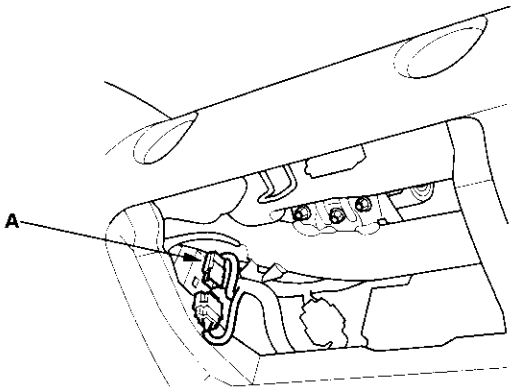
Driver's Airbag:

4. Remove the access panel (A) from the steering wheel, then disconnect the driver's airbag 4P connector (B) from the cable reel.



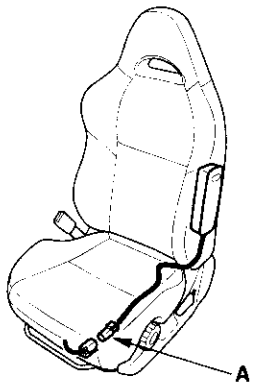
Front Passenger's Airbag:

5. Remove the glove box, then disconnect the front passenger's airbag 4P connector (A) and dashboard wire harness.



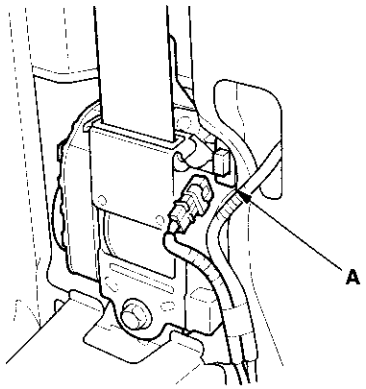
Side Airbag:

6. Disconnect the side airbag 2P connector (A) from the floor wire harness.



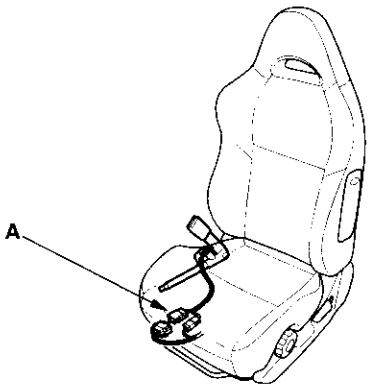
Seat belt tensioner:

7. Disconnect the seat belt tensioner 2P connector (A) from floor wire harness.Pull the seat belt out all the way and cut it.



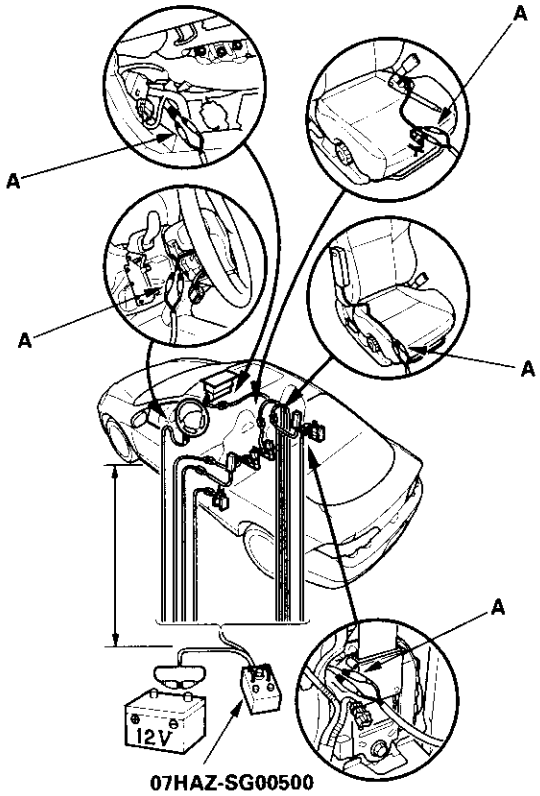
Seat belt buckle tensioner:

8. Disconnect the seat belt buckle tensioner 4P connector (A) from floor wire harness.



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.



(cont'd)

Airbag Disposal (cont'd)

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.

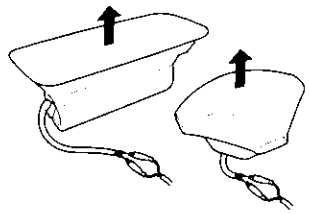
11. Push the tool's deployment switch. The airbags and tensioners should deploy (deployment is both highly audible and visible: a loud noise and rapid inflation of the bag, followed by slow deflation).

    - 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 airbag can become hot enough to burn you. Wait 30 minutes after deployment before touching the airbag.

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.

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 throuh 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 23-127), front passenger's airbag (see page 23-129), side airbag (see page 23-131), 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 2 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 exactly the same packaging that the new replacement part came in.
4. Mark the outside of the box "DAMAGED AIRBAG NOT DEPLOYED", "DAMAGED SIDE AIRBAG NOT DEPLOYED", "DAMAGED 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 Acura District Parts and Service Manager for how and where to return it for disposal.

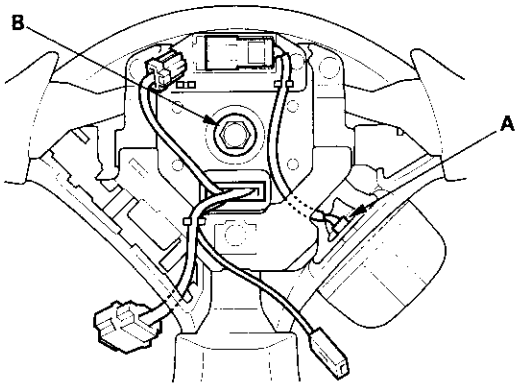
Deployment Tool Check

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.

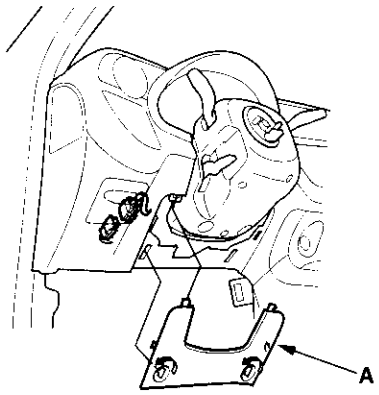
Cable Reel Replacement

Removal

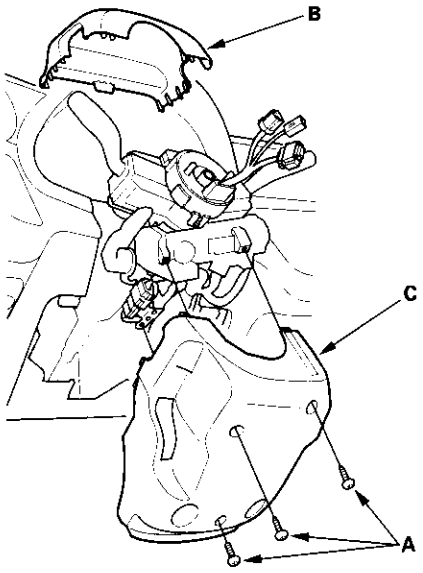
1. Make sure the front wheels are aligned straight ahead.
2. Disconnect the battery negative cable, and wait at least 3 minutes.
3. Remove the driver's airbag (see page 23-127).
4. Disconnect the connector (A) from the cruise control set/resume switch, then remove the steering wheel bolt (B).



5. Align the front wheels straight a head, then remove the steering wheel with a steering wheel puller (see step 3 on page 17-22).
   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).



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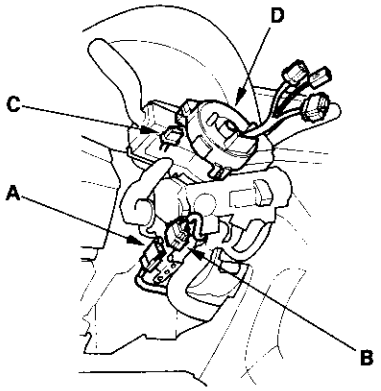
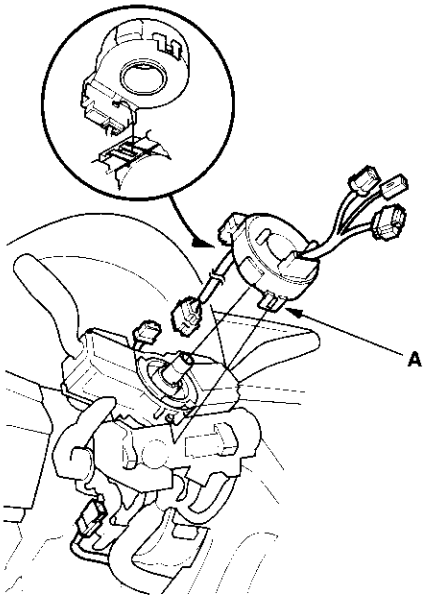
Cable Reel Replacement (cont'd)

8. Disconnect the dashboard wire harness 4P connector (A) from the cable reel 4P connector (B), then disconnect the dashboard wire harness 5P connector (C) from the cable reel (D).

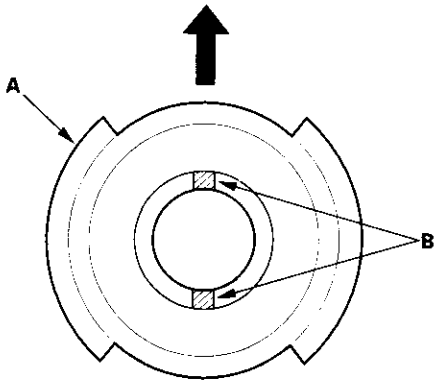


9. Release the tab (A), then remove the cable reel from the column.

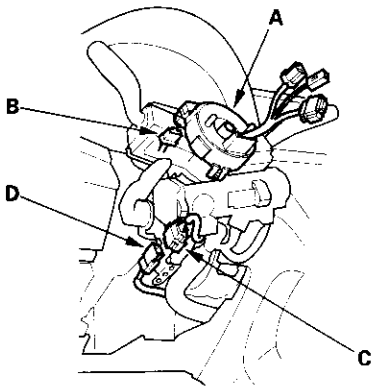


Installation

1. Before installing the steering wheel, align the front wheels straight ahead.
2. Disconnect the battery negative cable, and wait at least 3 minutes.
3. Set the cancel sleeve (A) so that the projections (B) are aligned vertically.

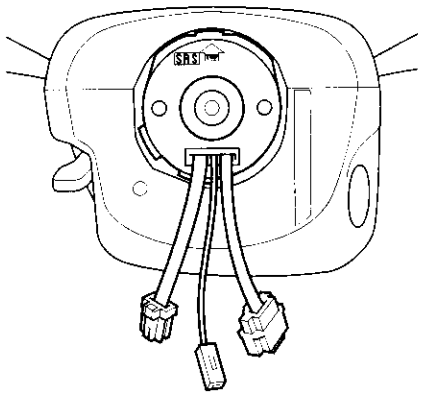


4. Carefully install the cable reel (A) on the steering column shaft. Then connect the 5P connector (B) to the cable reel, and connect the 4P connector (C) to the dashboard wire harness (D).

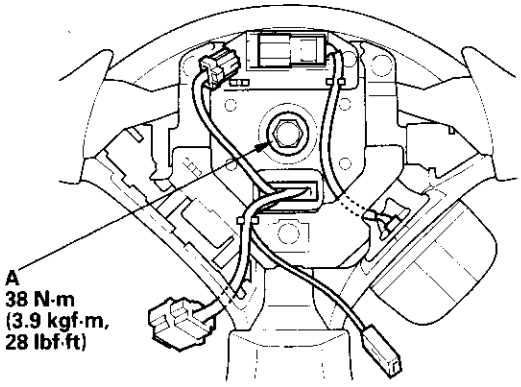


5. Install the steering column covers.

6. If necessary, center the cable reel. (New replacement cable reels come centered.) Do this by first rotating the cable reel clockwise until it stops. Then rotate it counterclockwise (approximately 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 23-128).

9. Reconnect the battery negative cable.

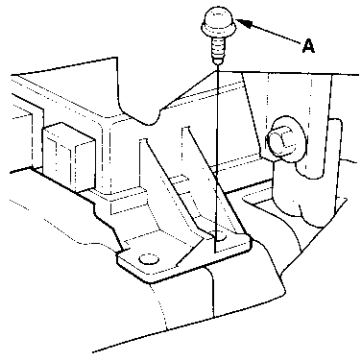
10. After installing the cable reel, confirm proper system operation:

    - 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.

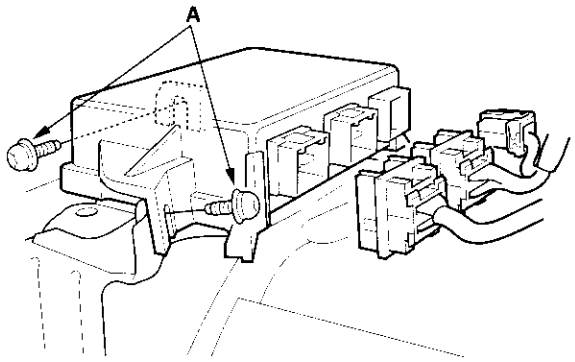
SRS Unit Replacement

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 23-18).
3. Disconnect the side airbag connectors (see page 23-18).
4. Disconnect both seat belt tensioner connectors (see page 23-19) and both seat belt buckle tensioner connectors (see page 23-19).
5. Remove the dashboard center lower cover (see page 20-63).
6. Pull down the carpet, then remove the Torx bolt (A) from the SRS unit.



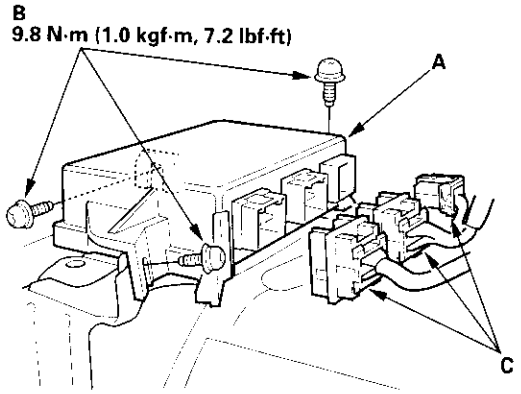
7. Disconnect the connectors and remove the two Torx bolts (A), then pull out the SRS unit.



Installation

1. Install the new SRS unit (A) with Torx bolts (B), then connect the connectors (C) to the SRS unit; push it into position until it clicks.

   NOTE: When tightening the Torx bolts to the specified torque after replacement, be careful to turn them in so that their heads rest squarely on the brackets.

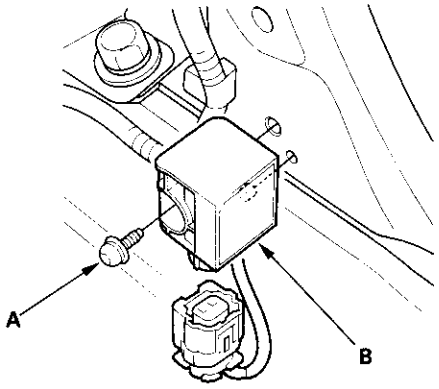


2. Reinstall the dashboard center lower cover (see page 20-63).
3. Reconnect the driver's and front passenger's airbag connectors (see page 23-18).
4. Reconnect the side airbag connectors (see page 23-18).
5. Reconnect both seat belt tensioner connectors (see page 23-19) and both seat belt buckle tensioner connectors (see page 23-19).
6. Reconnect the battery negative cable.
7. Initialize the OPDS unit (see page 23-24).
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

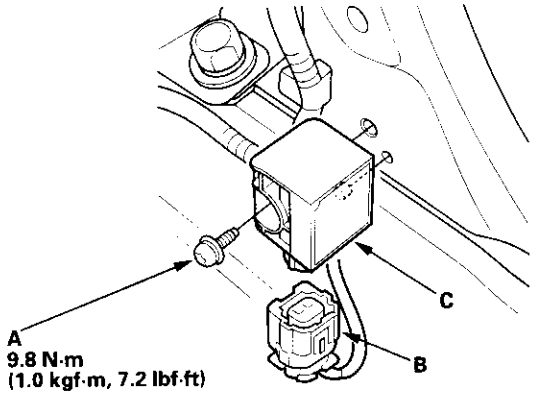
Removal

1. Disconnect the battery negative cable, and wait at least 3 minutes before beginning work.
2. Disconnect the appropriate side airbag 2P connector.
3. Remove the seat assembly (see page 20-72).
4. Remove the rear side 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).



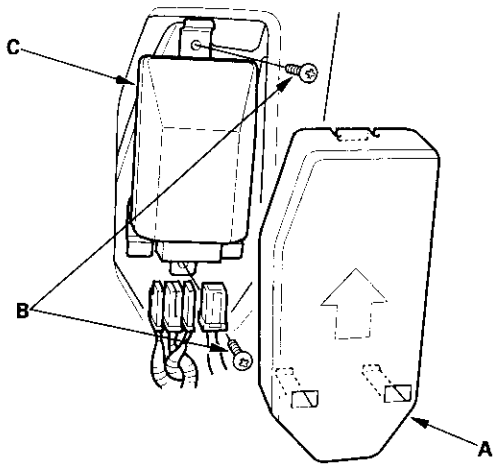
2. Reconnect the battery negative cable.
3. After installing the side impact sensor, confirm proper system operation: Turn the ignition switch ON (II): the SRS indicator should come on for about 6 seconds and then go off.
4. Install all removed parts.

OPDS Unit Replacement

NOTE: Review the seats replacement procedure in the body section before performing repair or service.

Removal

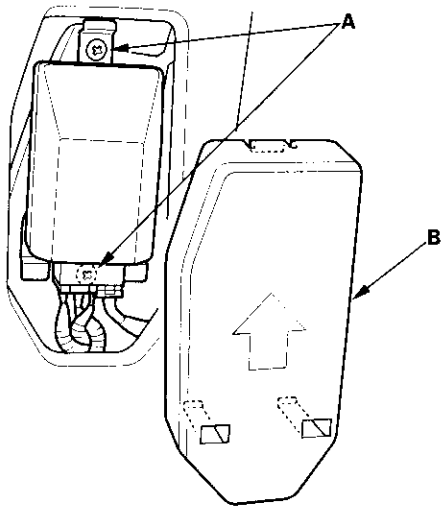
1. Disconnect the battery negative cable, and wait at least 3 minutes before beginning work.
2. Disconnect the passenger's side airbag harness 2P connector (see step 4 on page 23-18).
3. Remove the passenger's seat assembly (see page 20-72) and seat-back cover (see page 20-76).
4. Remove the cover (A), then disconnect the OPDS unit harness 8P and sensor connectors from the OPDS unit.



5. Remove the two screws (B) and OPDS unit (C).

Installation

1. Place the new OPDS unit on the seat-back frame. Tighten the two screws (A), and connect the OPDS unit harness 8P and sensor connector to the OPDS unit. Reinstall the cover.

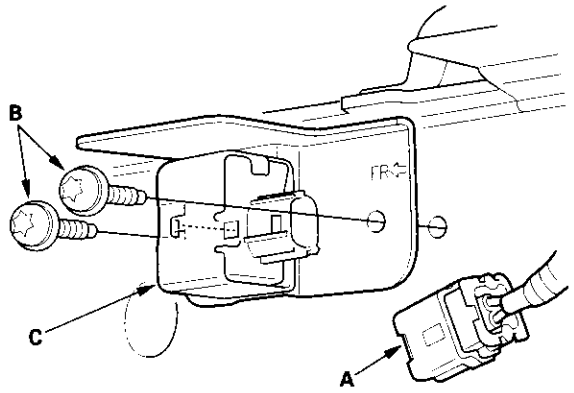


2. Install the seat-back cover (see page 20-76).
3. Install the seat assembly (see page 20-72), then connect the side airbag harness 2P connector.
4. Reconnect the battery negative cable.
5. Set the seat-back in the normal position, and make sure there is nothing sitting on the front passenger's seat.
6. Initialize the OPDS unit (see page 23-24).
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

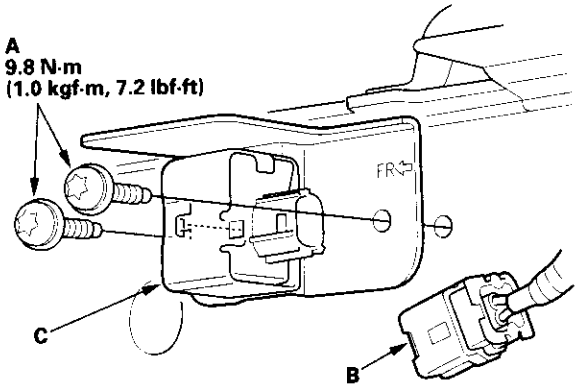
Removal

1. Disconnect the battery negative cable, and wait at least 3 minutes before beginning work.
2. Remove the front inner fender (see page 20-102).
3. 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

(cont'd)

Service Manual Index

(cont'd)

D

E

(cont'd)

Service Manual Index

(cont'd)

(cont'd)

Service Manual Index

(cont'd)

S

(cont'd)

Service Manual Index

(cont'd)

1

2

3