INTRODUCTION

How to Use This Manual

This manual is divided into 23 sections. The first page of each section is marked with a black tab that lines up with its corresponding thumb index tab on this page and the back cover. You can quickly find the first page of each section without looking through a full table of contents. The symbols printed at the top corner of each page can also be used as a quick reference system.

Each section includes:

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

Special Information

⚠ WARNING Indicates a strong possibility of severe personal injury or loss of life if instructions are not followed.

CAUTION: Indicates a possibility of personal injury or equipment damage if instructions are not followed.

NOTE: Gives helpful information.

CAUTION: Detailed descriptions of *standard workshop* procedures, safety principles and service operations are not included. Please note that this manual contains warnings and cautions against some specific service methods which could cause PERSONAL INJURY, damage a vehicle or make it unsafe. Please understand that these warnings cannot cover all conceivable ways in which service, whether or not recommended by HONDA, might be done, or of the possible hazardous consequences of every conceivable way, nor could HONDA investigate all such ways. Anyone using service procedures or tools, whether or not recomended by HONDA, *must satisfy himself thoroughly* that neither personal safety nor vehicle safety will be jeopardized.

All information contained in this manual is based on the latest product information available at the time of printing. We reserve the right to make changes at any time without notice. No part of this publication may be reproduced, stored in retrieval system, or transmitted, in any form by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of the publisher. This includes test, figures and tables.

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Service Publication office

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

*General Info
Special Tools
Specifications
Maintenance
Engine
Cooling
Fuel and Emissions
*Transaxle
*Steering
Suspension
*Brakes (Including ABS)
*Body
*Heater and Air Conditioner
*Electrical (Including SRS)

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Special Tools

Individual tool lists are located at the front of each section.

Standards and Service Limits

Differential (Manual transmission) — Section 15

	MEASUREMENT		STANDARD (NEW)	SERVICE LIMIT
Differential carrier	Pinion shaft contact area I.D.	B18B1 engine	18.000 – 18.016 (0.7087 – 0.7093)	———
		B18C1 engine	18.000 – 18.018 (0.7087 – 0.7094)	———
	Carrier-to-pinion clearance	B18B1 engine	0.013 – 0.045 (0.0005 – 0.0018)	0.1 (0.004)
		B18C1 engine	0.013 – 0.047 (0.0005 – 0.0019)	0.1 (0.004)
	Driveshaft/intermediate shaft contact area I.D.			
		B18B1 engine	28.000 – 28.021 (1.1024 – 1.1032)	———
		B18C1 engine	28.005 – 28.025 (1.1026 – 1.1033)	———
	Carrier-to-driveshaft clearance	B18B1 engine	0.020 – 0.062 (0.0008 – 0.0024)	———
		B18C1 engine	0.045 – 0.086 (0.0018 – 0.0034)	———
	Carrier-to-intermediate shaft clearance			
		B18B1 engine	0.050 – 0.087 (0.0020 – 0.0034)	———
		B18C1 engine	0.075 – 0.111 (0.0030 – 0.0044)	———
Differential pinion gear	Backlash		0.05 – 0.15 (0.002 – 0.006)	Adjust
	I.D.		18.042 – 18.066 (0.7103 – 0.7113)	———
	Pinion gear-to-pinion shaft clearance		0.055 – 0.095 (0.0022 – 0.0037)	0.15 (0.006)
Set ring-to-bearing outer race clearance		B18B1 engine	0 – 0.10 (0 – 0.004)	Adjust
Differential taper roller bearing preload Starting torque N·m (kgf·cm, lbf·in)		B18C1 engine	2.11 – 3.04 (21.5 – 31.0, 13.0 – 18.7)	Adjust

Differential (Automatic transmission) — Section 15

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Differential carrier	Pinion shaft contact area I.D.	18.000 – 18.018 (0.7087 – 0.7094)	———
	Carrier-to-pinion clearance	0.016 – 0.052 (0.0006 – 0.0020)	0.1 (0.004)
	Driveshaft/intermediate shaft contact are I.D.	28.005 – 28.025 (1.1026 – 1.1033)	———
	Carrier-to-driveshaft clearance	0.025 – 0.066 (0.0010 – 0.0026)	0.12 (0.005)
Differential pinion gear	Backlash	0.05 – 0.15 (0.002 – 0.006)	Adjust
	I.D.	18.042 – 18.066 (0.7103 – 0.7113)	———
	Pinion gear-to-pinion shaft clearance	0.059 – 0.095 (0.0023 – 0.0037)	0.15 (0.006)
Set ring-to-bearing outer race clearance		0 – 0.15 (0 – 0.006)	Adjust

Steering — Section 17

	MEASUREMENT	STANDARD (NEW)
Steering wheel	Rotational play at steering wheel circumference	0 – 10 (0 – 0.39)
	Starting load at steering wheel circumference N (kgf, lbf) Engine running	34 (3.5, 7.7)
Gearbox	Angle of rack-guide-screw loosened from locked position	20° ± 5°
Pump	Pump pressure with shut-off valve closed kPa (kgf/cm², psi)	6,400 – 7,400 (65 – 75, 920 – 1,100)
Power steering fluid	Recommended fluid	Honda power steering fluid-V
	Fluid capacity For overhaul	1.06 (1.12, 0.98)
	ℓ (US qt, Imp qt) For fluid change	0.79 (0.83, 0.70)
Power steering belt*	Deflection with 98 N (10 kgf, 22 lbf) between pulleys	11.5 – 13.5 (0.45 – 0.53) with used belt 8.0 – 10.0 (0.31 – 0.39) with new belt
	Belt tension N (kgf, lbf) Measured with belt tension gauge	390 – 540 (40 – 55, 88 – 120) with used belt 740 – 880 (75 – 90, 170 – 200) with new belt

* When using a new belt, adjust deflection or tension to new values. Run the engine for 5 minutes then turn it off. Readjust deflection or tension to used belt values.

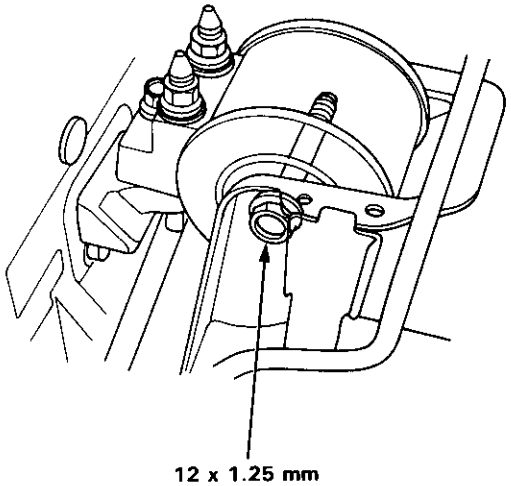
Engine

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Cooling 10-1

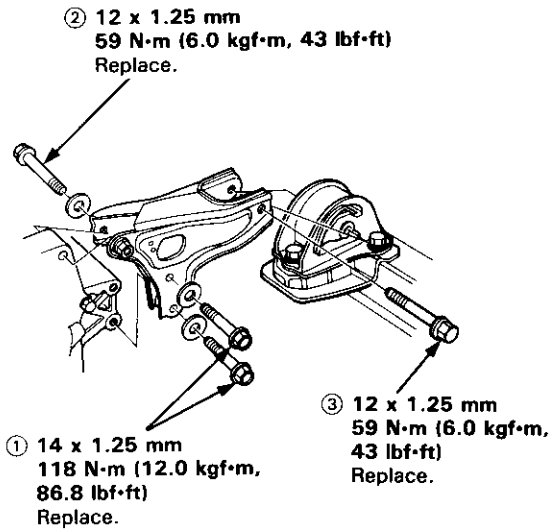


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4. Tighten the mount bolt on the side engine mount.

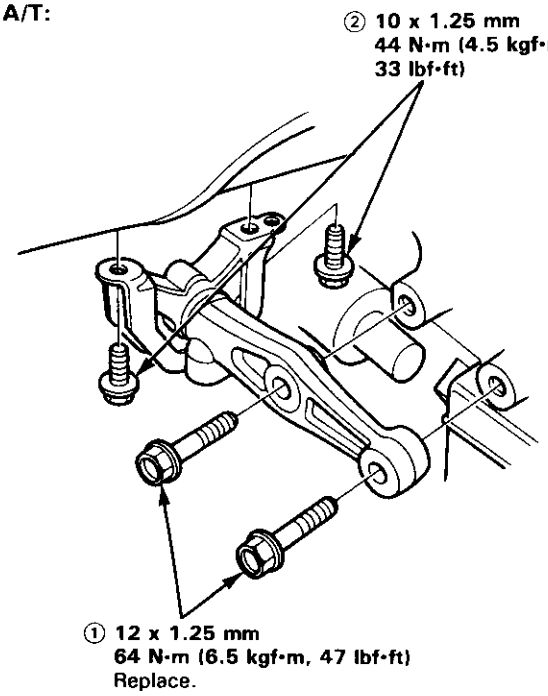


5. Install the rear mount bracket, then tighten the bolts in the numbered sequence as shown (①—③).

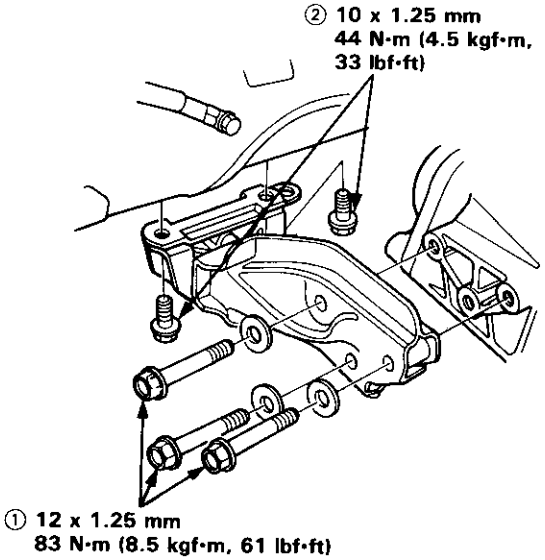


6. Install the right front mount/bracket, then tighten the bolts in the numbered sequence as shown (①—②).

A/T:



M/T:



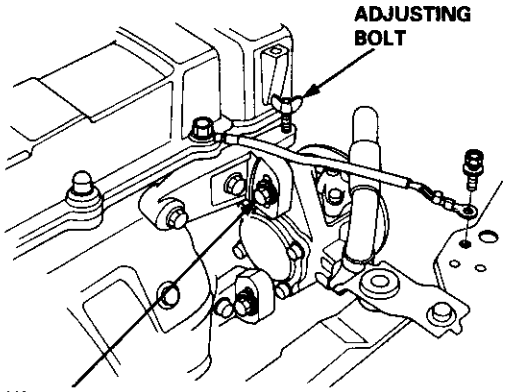
Timing Belt

Removal

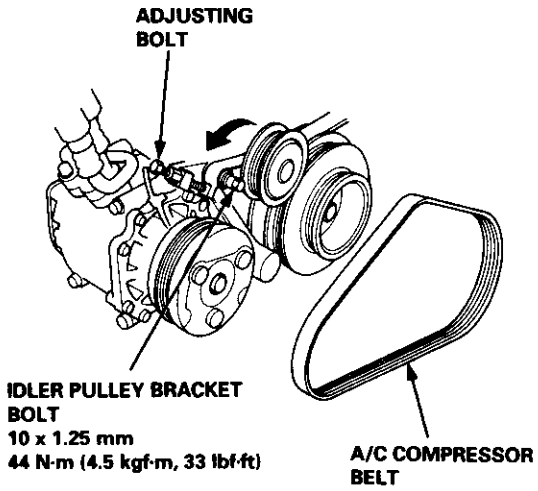
NOTE:
- Turn the crankshaft pulley so the No. 1 piston is at top dead center (TDC) before removing the belt (see page 6-12).
- Inspect the water pump when removed the timing belt (see page 10-9).

1. Remove the wheel well splash shield (see page 6-18).

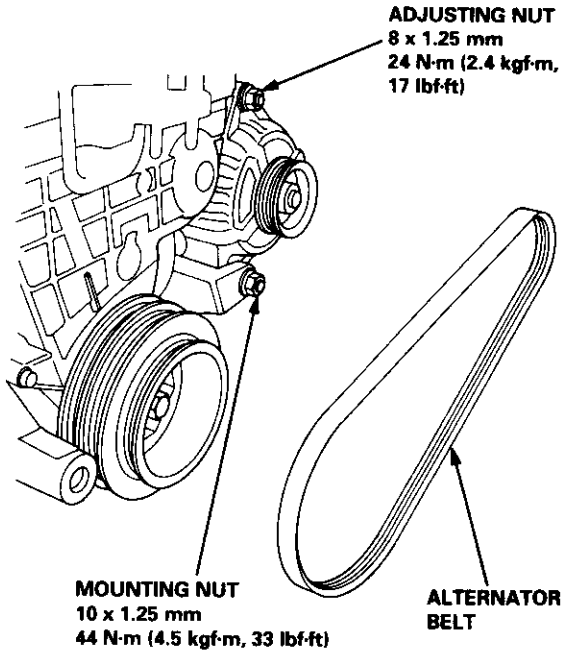
2. Loosen the adjusting bolt and mounting bolts, then remove the power steering (P/S) pump belt.



3. Loosen the adjusting bolt and idler pulley bracket bolt, then remove the air conditioning (A/C) compressor belt.

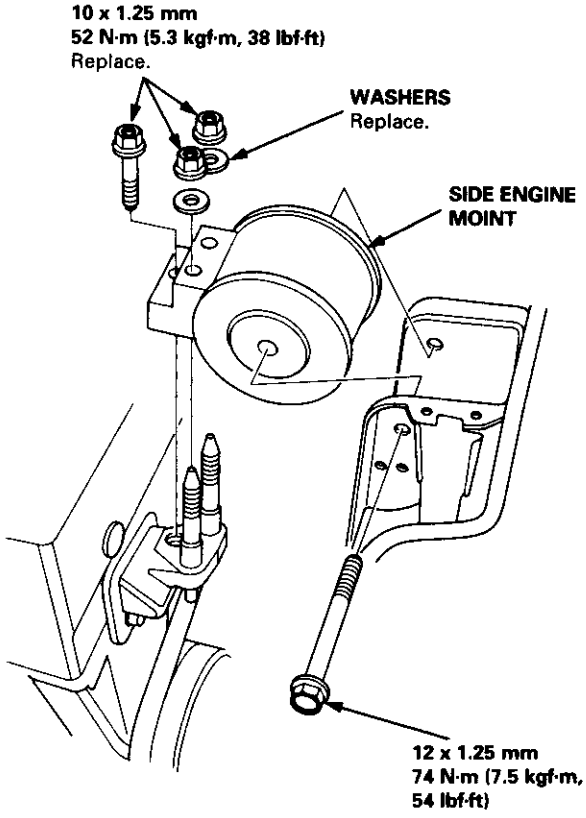


4. Loosen the adjusting nut and mounting nut, then remove the alternator belt.



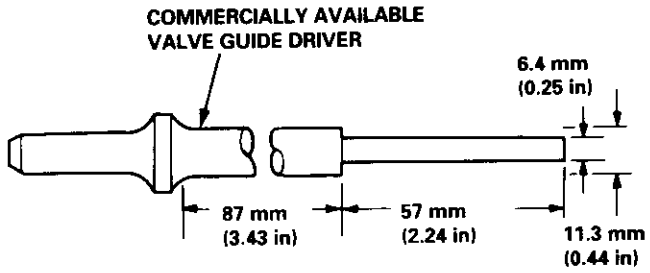
5. Remove the cruise control actuator (see page 6-18).

6. Remove the side engine mount.



Replacement

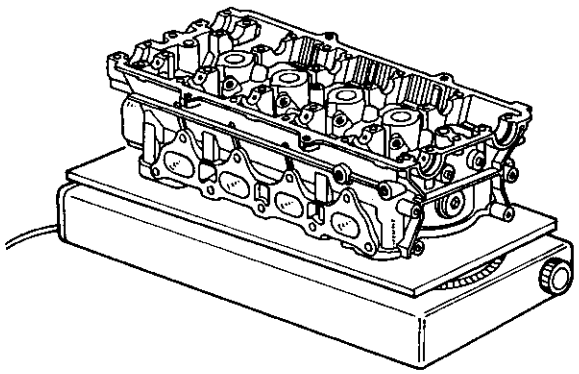
1. As illustrated in the removal steps of this procedure, use a commercially–available air-impact driver attachment modified to fit the diameter of the valve guides. In most cases, the same procedure can be done using the Valve Guide Driver and a conventional hammer.



Removal and Installation
VALVE GUIDE DRIVER, 6.6 mm
07942 – 6570100

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

3. Use a hot plate or oven to evenly heat the cylinder head to 300°F (150°C). Monitor the temperature with a cooking thermometer.



CAUTION:
- **Do not use a torch; it may warp the head.**
- **Do not get the head hotter than 300°F (150°C); excessive heat may loosen the valve seats.**
- **To avoid burns, use heavy gloves when handling the heated cylinder head.**

4. 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.

CAUTION:
- **Always wear safety goggles or a face shield when using the air hammer.**
- **Hold the air hammer directly in line with the valve guide to prevent damaging the driver.**

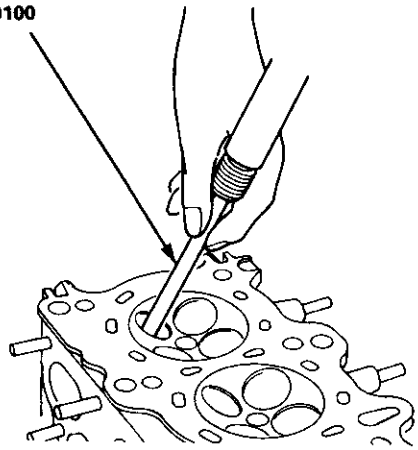
5. Turn the head over and drive the guide out toward the camshaft side of head.

If a valve guide still won't move, drill it out with a 8 mm (5/16 in) bit, then try again.

CAUTION: Drill guides only in extreme cases: You could damage the cylinder head if the guide breaks.



VALVE GUIDE DRIVER, 6.6 mm
07942 – 6570100



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

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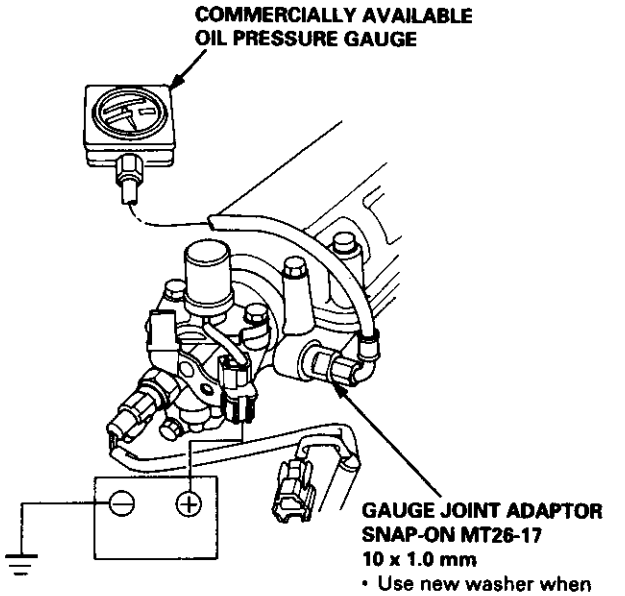
Troubleshooting Flowchart — VTEC Pressure Switch (cont'd)

(From page 6-39)

Disconnect the 1P connector from the VTEC solenoid valve.

Attach the battery positive terminal to the GRN/WHT terminal.

Start the engine and check oil pressure at 5,000 rpm (for VTEC oil pressure test).



NOTE:
Keep measuring time as short as possible because engine is running with no load (less than one minute).

Is pressure above 400 kPa (4kgf/cm², 60 psi)?

NO → **Inspect the VTEC solenoid valve.**

YES

Check for continuity between the 2 terminals on the VTEC pressure switch under above condition.

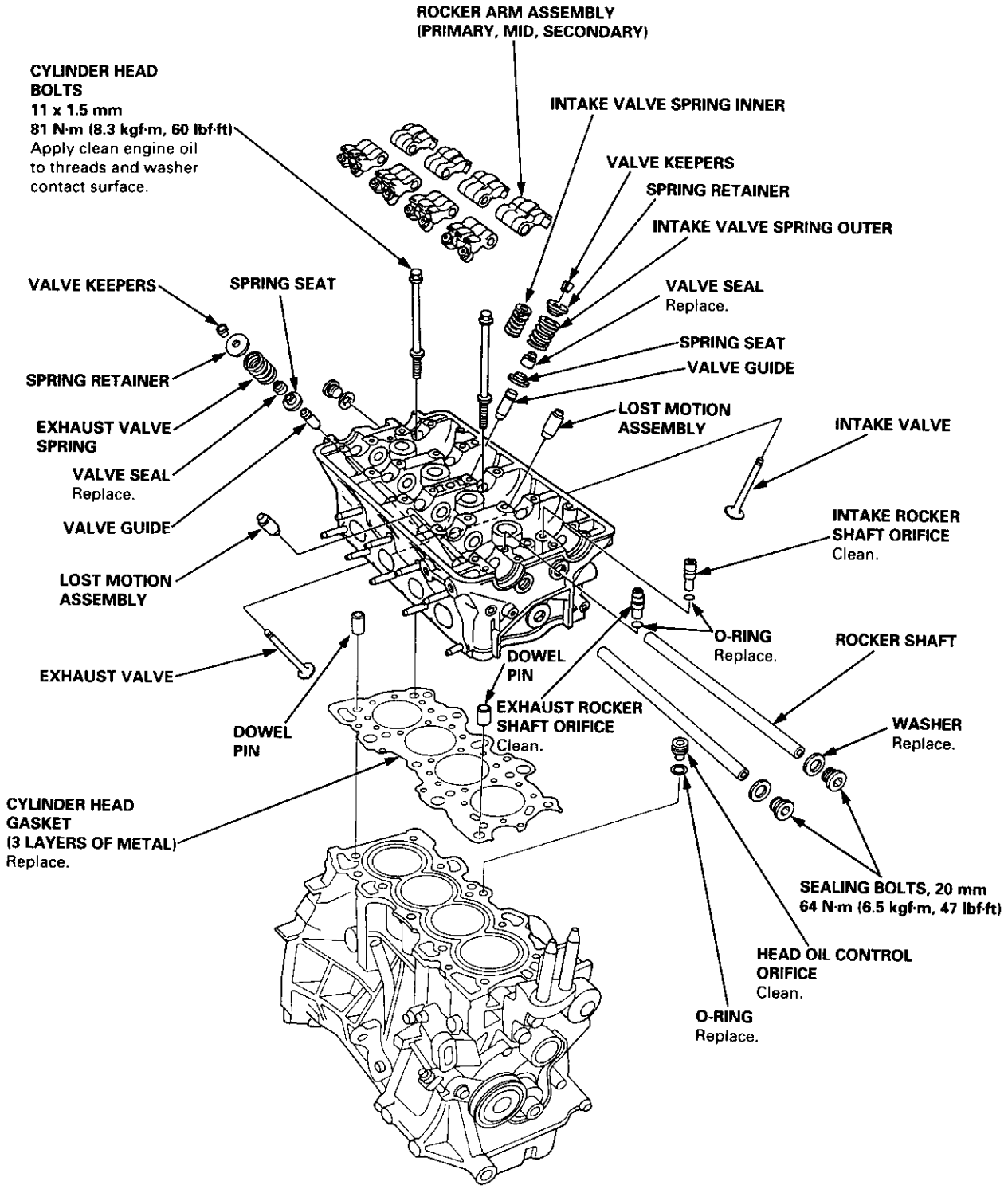
Is there continuity?

YES → **Replace the VTEC pressure switch.**

NO

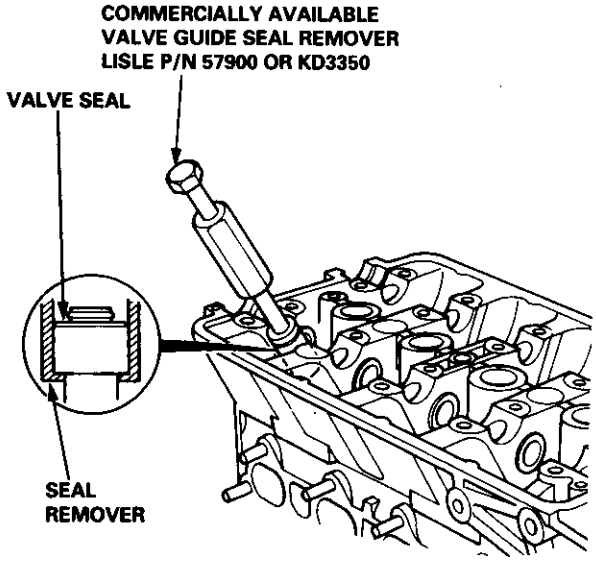
Substitute a known-good ECM and recheck. If symptom/indication goes away replace the original ECM.

NOTE: Clean the head oil control orifice and the rocker shaft orifices when installing.

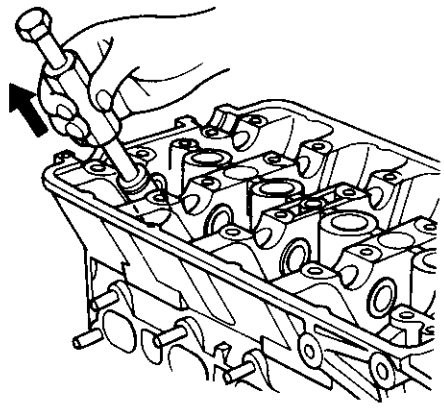


Removal (cont'd)

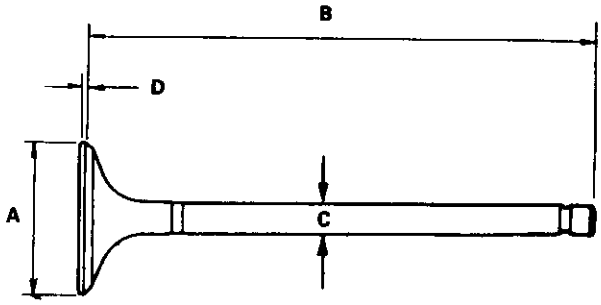
3. Install the special tool as shown.



4. Remove the valve guide seal.



Valve Dimensions



Intake Valve

A Standard (New): 32.90 – 33.10 mm (1.295 – 1.303 in)
B Standard (New): 101.00 – 101.30 mm (3.976 – 3.988 in)
C Standard (New): 5.475 – 5.485 mm (0.2156 – 0.2159 in)
C Service Limit: 5.445 (0.2144 in)
D Standard (New): 1.05 – 1.35 mm (0.041 – 0.053 in)
D Service Limit: 0.85 mm (0.033 in)

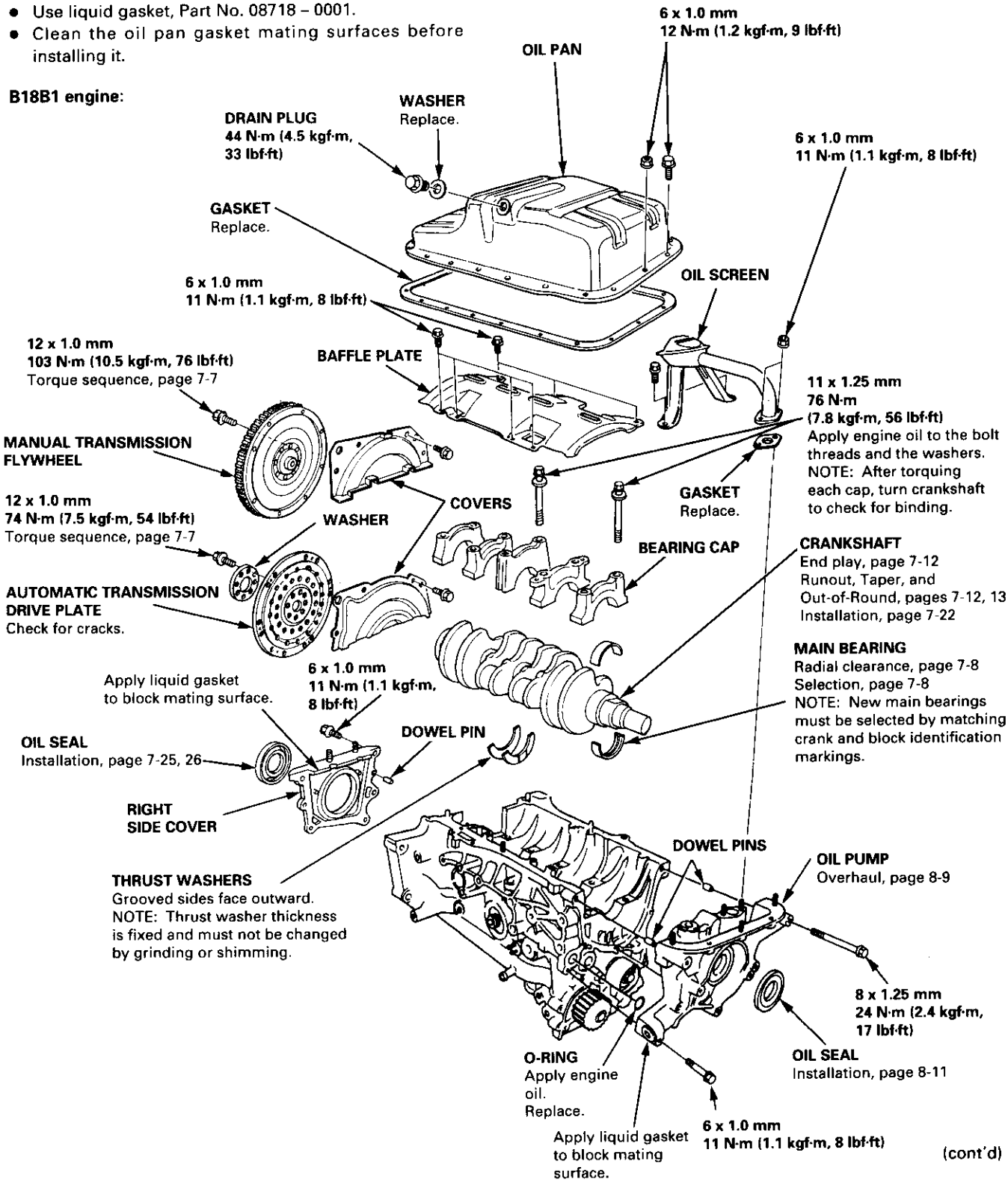
Exhaust Valve

A Standard (New): 27.90 – 28.10 mm (1.098 – 1.106 in)
B Standard (New): 100.60 – 100.90 mm (3.961 – 3.972 in)
C Standard (New): 5.450 – 5.460 mm (0.2146 – 0.2150 in)
C Service Limit: 5.420 (0.2134 in)
D Standard (New): 1.65 – 1.95 mm (0.065 – 0.077 in)
D Service Limit: 1.45 mm (0.057 in)

NOTE:
- Apply liquid gasket to the mating surfaces of the right side cover and oil pump housing before installing them.
- Use liquid gasket, Part No. 08718 – 0001.
- Clean the oil pan gasket mating surfaces before installing it.

Lubricate all internal parts with engine oil during reassembly.

B18B1 engine:

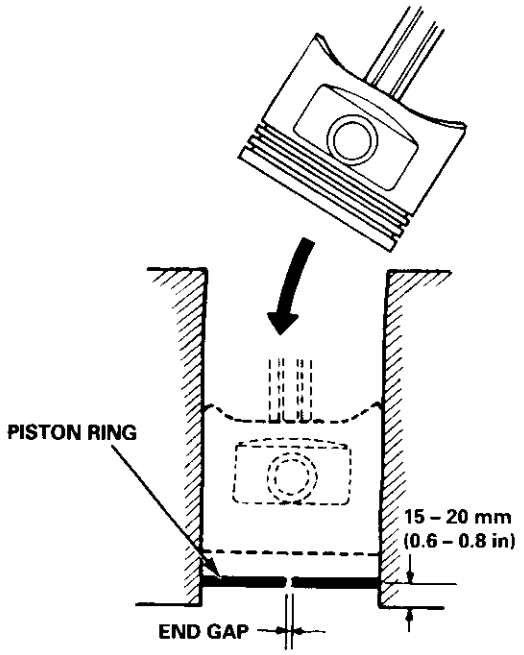


(cont'd)

End Gap

1. Using a piston, push a new ring into the cylinder bore 15 – 20 mm (0.6 – 0.8 in) from the bottom.
2. Measure the piston ring end-gap 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 on page 7-13. 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)*1
0.20 – 0.30 mm (0.008 – 0.012 in)*2
Service Limit: 0.60 mm (0.024 in)
Second Ring
Standard (New): 0.40 – 0.55 mm (0.016 – 0.022 in)
Service Limit: 0.70 mm (0.028 in)
Oil Ring
Standard (New): 0.20 – 0.50 mm (0.008 – 0.020 in)*1
0.20 – 0.45 mm (0.008 – 0.018 in)*2
Service Limit: 0.70 mm (0.028 in)



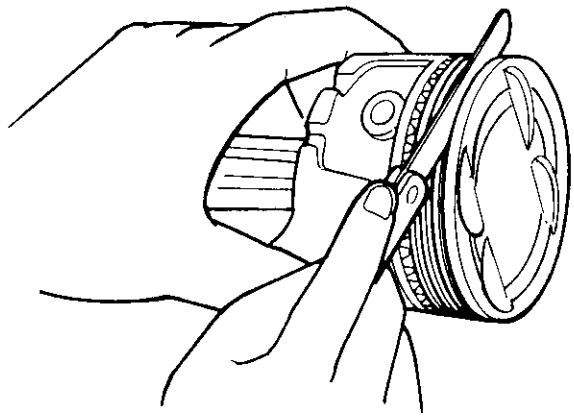
*1: RIKEN manufactured piston ring
*2: TEIKOKU PISTON RING manufactured piston ring (B18B1 engine only)

Ring-to-Groove Clearance

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

Top Ring Clearance:
Standard (New): 0.045 – 0.070 mm (0.0018 – 0.0028 in)
Service Limit: 0.13 mm (0.005 in)

Second Ring Clearance:
Standard (New): 0.040 – 0.065 mm (0.0015 – 0.0026 in)*1
0.045 – 0.070 mm (0.0018 – 0.0028 in)*2
Service Limit: 0.13 mm (0.005 in)



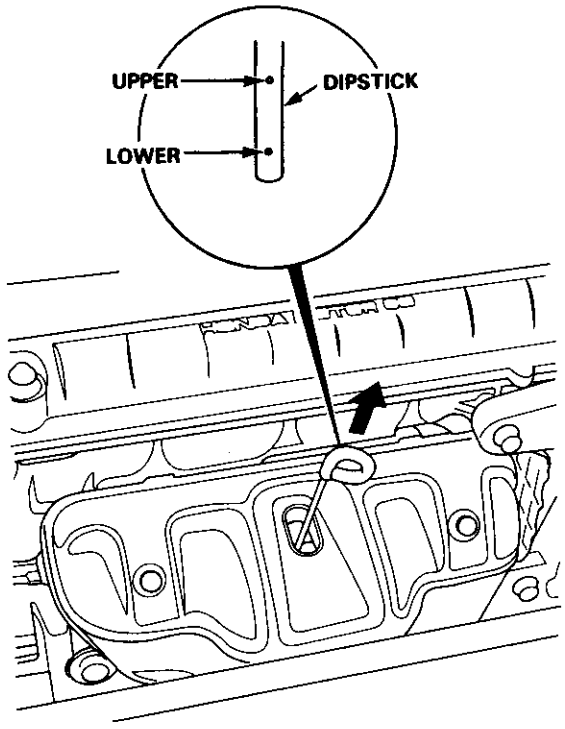
*1: RIKEN manufactured piston ring
*2: TEIKOKU PISTON RING manufactured piston ring (B18B1 engine only)

Engine Oil

Inspection

1. Check engine oil with the engine off and the car parked on level ground.
2. Make certain that the oil level indicated on the dipstick is between the upper and lower marks.
3. If the level has dropped close to the lower mark, add oil until it reaches the upper mark.

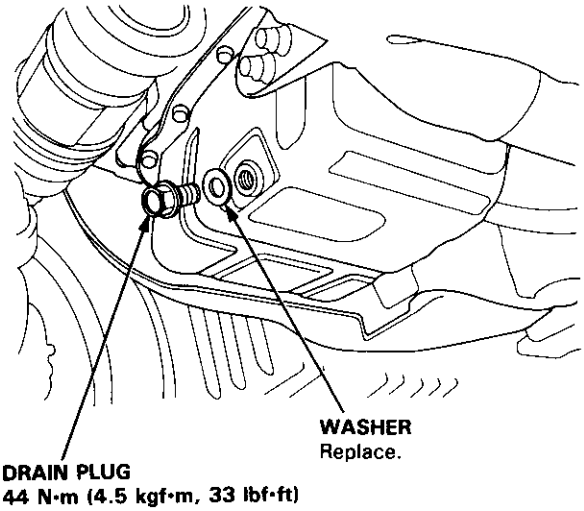
   CAUTION: Insert the dipstick carefully to avoid bending it.



Replacement

CAUTION: Remove the drain plug carefully while the engine is hot; the hot oil may cause scalding.

1. Warm up the engine.
2. Drain the engine oil.



3. Reinstall the drain plug with a new washer, and refill with the recommended oil.

   CAUTION: Do not overtighten the drain plug.

Requirement	API Service Grade: Use "Energy Conserving II" SG or SH grade oil. SAE 5W–30 preferred.
Capacity	B18B1 engine: 3.5 ℓ (3.7 US qt, 3.1 Imp qt) at oil change. 3.8 ℓ (4.0 US qt, 3.3 Imp qt) at change, including filter. 4.6 ℓ (4.9 US qt, 4.0 Imp qt) after engine overhaul. B18C1 engine: 3.7 ℓ (3.9 US qt, 3.3 Imp qt) at oil change. 4.0 ℓ (4.2 US qt, 3.5 Imp qt) at change, including filter. 4.8 ℓ (5.1 US qt, 4.2 Imp qt) after engine overhaul.
Change	Every 7,500 miles (12,000 km) or 6 months

(cont'd)

Cooling

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Thermostat

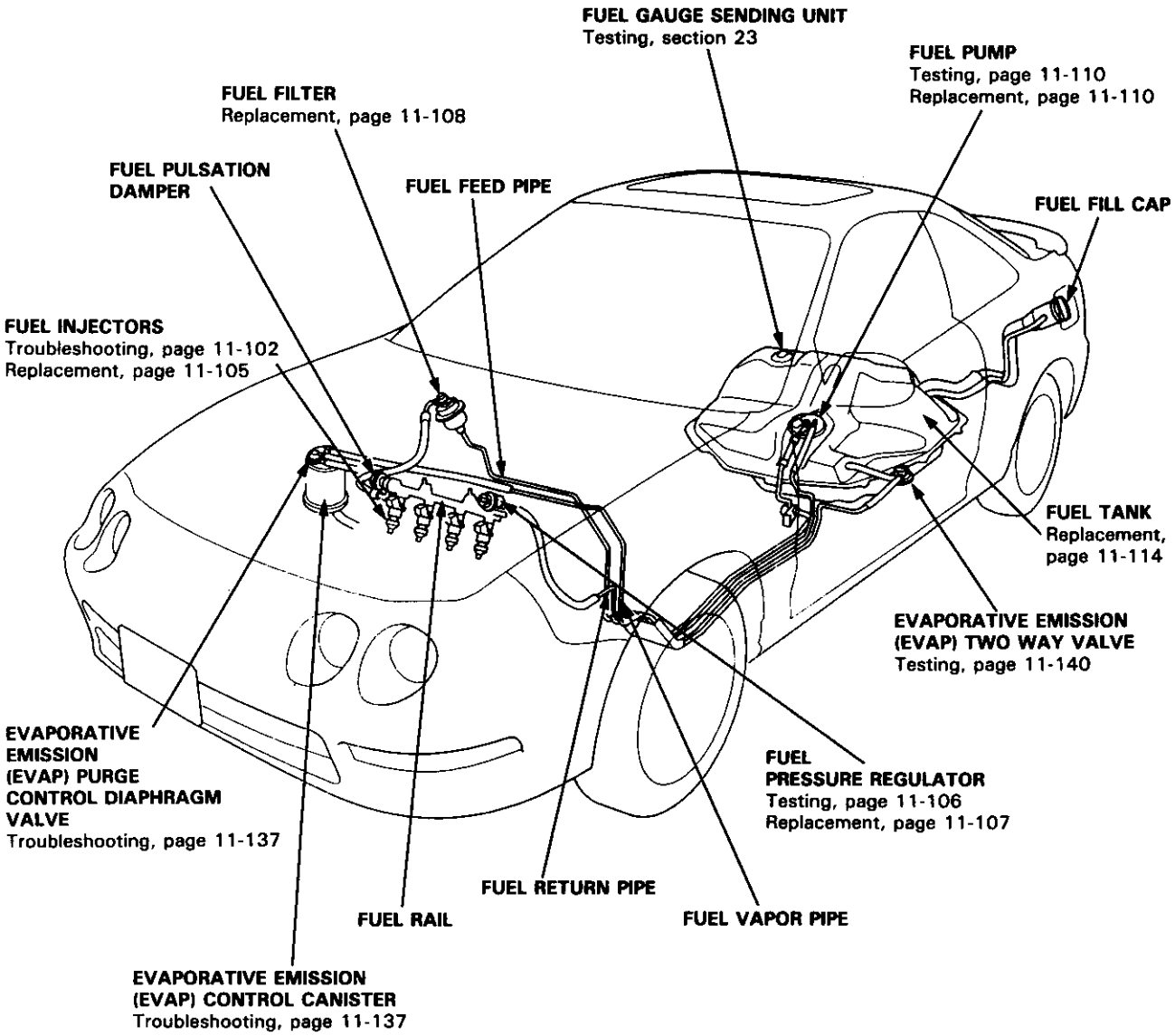
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Water Pump

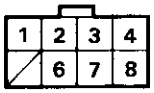
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FUEL RAIL
FUEL VAPOR PIPE
EVAPORATIVE EMISSION (EVAP) CONTROL CANISTER
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C110



①	YEL/GRN	5	—
②	BLU/GRN	⑥	BLU/YEL
③	ORN/BLU	⑦	WHT/YEL
④	ORN[2]	⑧	WHT

C111



①	RED/WHT
②	GRN/BLU

C112



①	BLK[1]
②	BLK/YEL
③	ORN[1]

C113



①	WHT/RED[2]
②	GRN/BLU
③	YEL/BLK
④	ORN/BLK

C114



①	YEL/WHT* YEL/RED
②	GRN/WHT[2]
③	WHT/YEL

*: B18C1 engine

C115



①	GRN/BLU
②	RED/BLK
③	YEL/BLU

C117 (B18C1 engine)



①	YEL/BLK
②	RED[2]

C131



①	GRN/YEL

C132



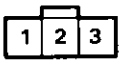
①	BLU/BLK
②	BLK[1]

C214



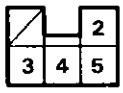
①	WHT/GRN
2	WHT/GRN

C215



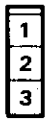
①	WHT/BLK
2	WHT
③	WHT/RED

C216



1	—
②	WHT/BLU
3	RED/GRN
4	WHT
⑤	YEL/WHT

C218



①	BLK
②	GRN/RED
③	BLK/YEL

C220



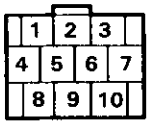
①	RED[2]
②	YEL/BLK

C221



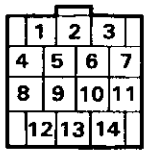
①	RED[1]
②	BRN
③	YEL[1]
④	BLU

C222



①	BRN/BLK	⑥	ORN/BLU
②	WHT/RED[2]	⑦	WHT/BLU
③	BRN/BLK	⑧	BLU/GRN
④	ORN[2]	⑨	BLU/YEL
⑤	WHT	⑩	RED/BLU

C223



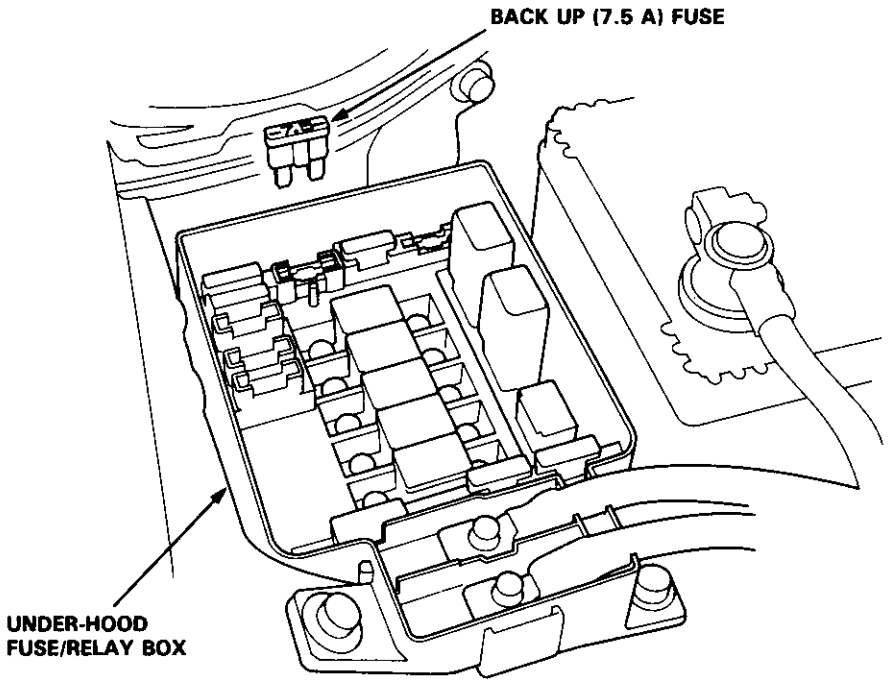
①	WHT/GRN	⑧	RED/BLK
②	ORN/BLK	⑨	GRN/BLU
③	GRN/YEL	⑩	YEL/BLU
④	GRN/WHT[2]	⑪	YEL/GRN
⑤	WHT/YEL	⑫	RED/YEL
⑥	YEL/WHT	⑬	RED/WHT
⑦	BLU/BLK	⑭	WHT/RED[1]

NOTE: ● Different wires with the same color have been given a number suffix to distinguish them (for example, YEL/BLK[1] and YEL/BLK[2] are not the same).
○: Related to Fuel and Emissions System.
● – Connector of male terminals: View from terminal side
– Connector of female terminals: View from wire side

(cont'd)

II. Engine Control Module (ECM) Reset Procedure

1. Turn the ignition switch off.
2. Remove the BACK UP (7.5 A) fuse from the under-hood fuse/relay box for 10 seconds to reset the ECM.



III. Final Procedure (this procedure must be done after any troubleshooting)

1. Remove the SCS Short Connector.

   NOTE: If the SCS short connector is connected and there are no DTCs stored in the ECM, the MIL will stay on.

2. Do the ECM Reset Procedure.

(cont'd)

(From page 11-48)

A

Reconnect the 4P connector to the HO2S.

Connect the test harness "A" connector to the main wire harness only, not the ECM (see page 11-37).

Turn the ignition switch ON.

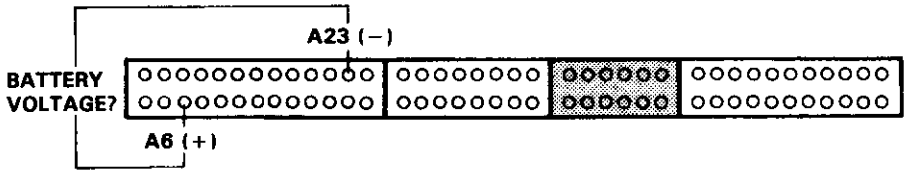
Measure voltage between A6 (+) terminal and A23 (−) terminal.

Is there battery voltage?

NO → **Repair open in ORN/BLK wire between ECM (A6) and the HO2S.**

YES

Substitute a known-good ECM and recheck. If symptom/indication goes away, replace the original ECM.



(From page 11-48)

B

Connect the test harness "A" connector to the main wire harness only, not the ECM (see page 11-37).

Connect an ammeter between terminals A6 (+) and A26 (−)

Turn the ignition switch ON.

* Monitor over a 5 minute period unless the current drops below 0.1A immediately.

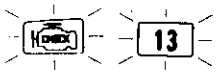
Is the current less than 0.1 A?*

YES → **Replace the HO2S.**

NO

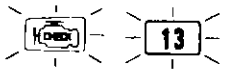
Substitute a known-good ECM and recheck. If symptom/indication goes away, replace the original ECM.

Barometric Pressure (BARO) Sensor



The Malfunction Indicator Lamp (MIL) indicates Diagnostic Trouble Code (DTC) 13: A problem in the Barometric Pressure (BARO) Sensor.

The BARO Sensor is built into the ECM.



- **The MIL has been reported on.**
- **With the SCS short connector connected (see page 11-34), code 13 is indicated.**

↓

Do the ECM Reset Procedure (see page 11-35).

↓

Turn the ignition switch ON.

↓

Is the MIL on and does it indicate code 13 ?

NO → **Intermittent failure, system is OK at this time (test drive may be necessary).**

YES ↓

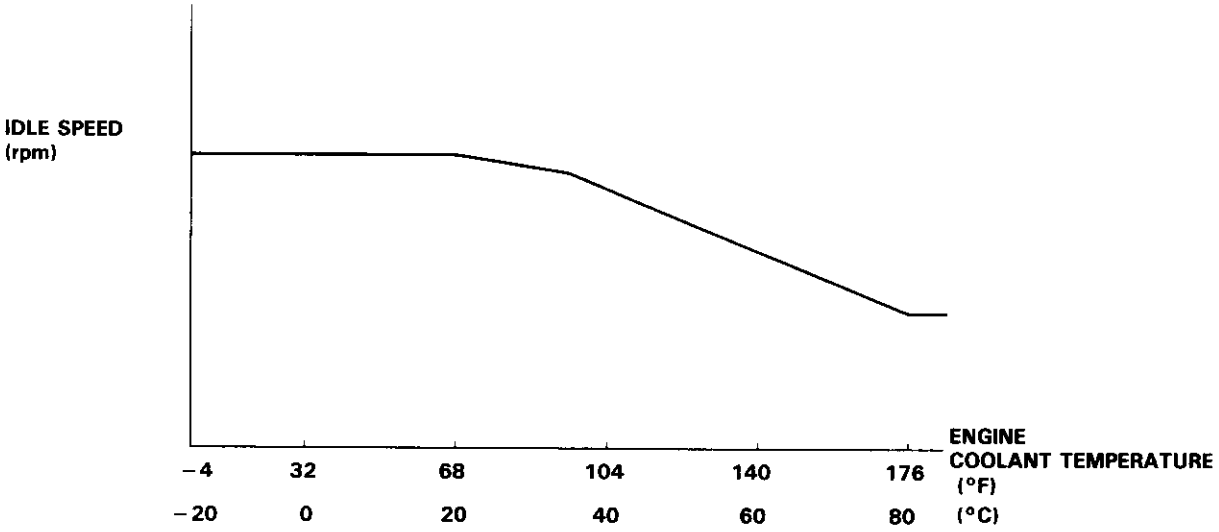
Substitute a known-good ECM and recheck. If symptom/indication goes away, replace the original ECM.

Idle Control System

System Description (cont'd)

1. After the engine starts, the IAC valve opens for a certain time. The amount of air is increased to raise the idle speed about 150—300 rpm.

2. When the coolant temperature is low, the IAC valve is opened to obtain the proper fast idle speed. The amount of bypassed air is thus controlled in relation to the engine coolant temperature.

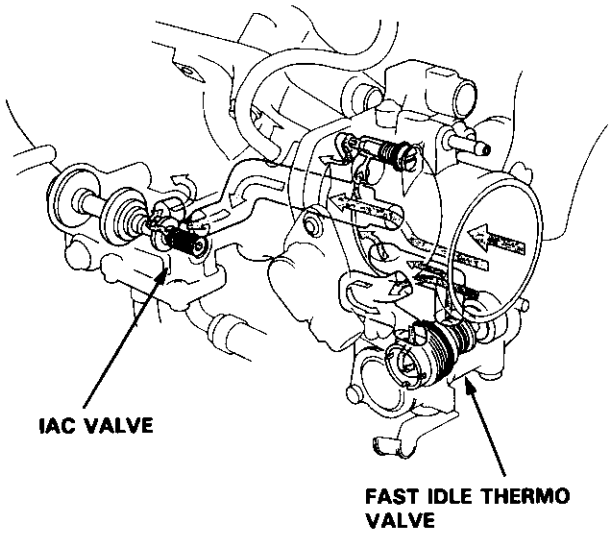


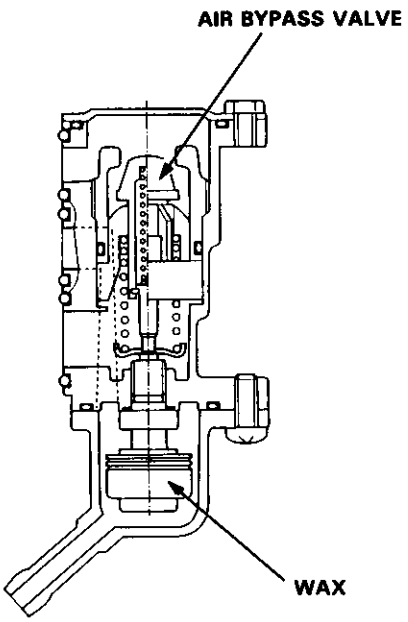
Idle Control System

Fast Idle Thermo Valve

Description

To prevent erratic running when the engine is warming up, it is necessary to raise the idle speed. The fast idle thermo valve is controlled by a thermowax plunger. When the engine is cold, the engine coolant surrounding the thermowax contracts the plunger, allowing additional air to be bypassed into the intake manifold so that the engine idles faster. When the engine reaches operating temperature, the valve closes, reducing the amount of air bypassing into the manifold.

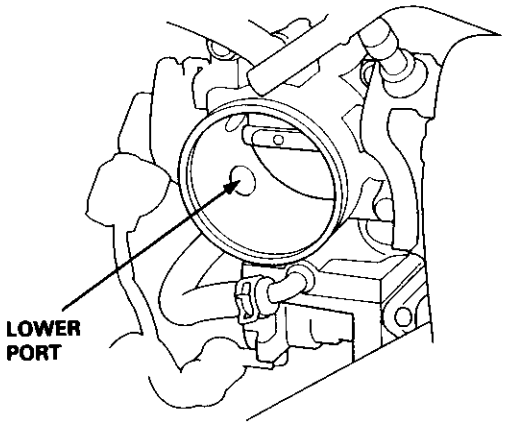




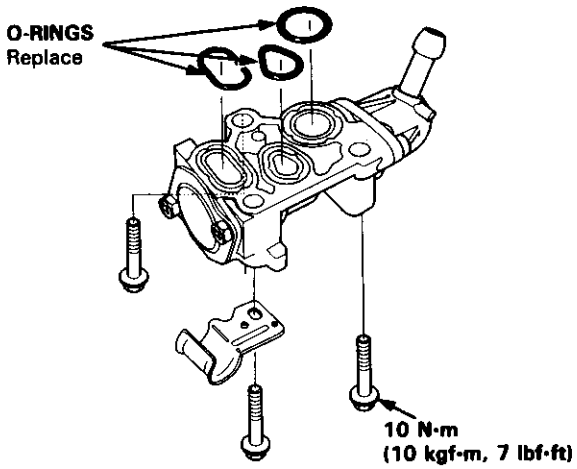
Inspection

NOTE: The fast idle thermo valve is factory adjusted; it should not be disassembled.

1. Remove the intake air duct from the throttle body.
2. Start the engine.
3. Put your finger over the lower port in throttle body and make sure that there is air flow with the engine cold (engine coolant temperature below 86°F, 30°C).



- If not, replace the fast idle thermo valve and retest.



4. Start the engine. Hold the engine at 3,000 rpm with no load (A/T in [N] or [P] position, M/T in neutral) until the radiator fan comes on, then let it idle.
5. Check that valve is completely closed. If not, air suction can be felt at the lower port in the throttle body.
   - If any suction is felt, the valve is leaking. Check engine coolant level and for air in the engine coolant system (see section 10). If OK, replace the fast idle thermo valve and recheck.

Fuel Filter

Replacement

⚠ WARNING

- **Do not smoke while working on fuel system. Keep open flame away from your work area.**
- **While replacing the fuel filter, be careful to keep a safe distance between battery terminals and any tools.**

The fuel filter should be replaced every 4 years or 60,000 miles (96,000 km), whichever comes first, or whenever the fuel pressure drops below the specified value [275–324 kPa, 2.8–3.3 kgf/cm², 40–47 psi (B18C1 engine: 329–378 kPa, 3.35–3.85 kgf/cm², 48–55 psi) with the fuel pressure regulator vacuum hose disconnected] after making sure that the fuel pump and the fuel pressure regulator are OK.

1. Disconnect the battery negative cable from the battery negative terminal.

   NOTE: The LS and GS-R model radio may have a coded theft protection circuit. Be sure to get the customer's code number before disconnecting the battery.
   After service, reconnect power to the radio and turn it on. When the word "CODE" is displayed, enter the customer's 5-digit code to restore radio operation.

2. Place a shop towel under and around the fuel filter.

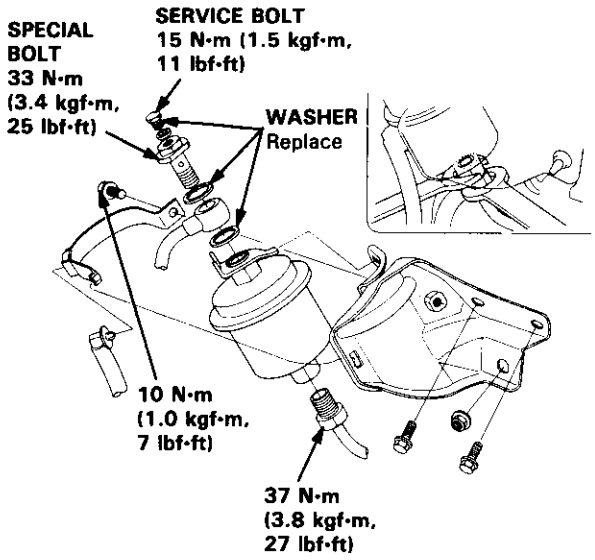
3. Relieve fuel pressure (see page 11-100).

4. Remove the special banjo bolt and the fuel feed pipe from the fuel filter.

5. Remove the fuel filter clamp and fuel filter.

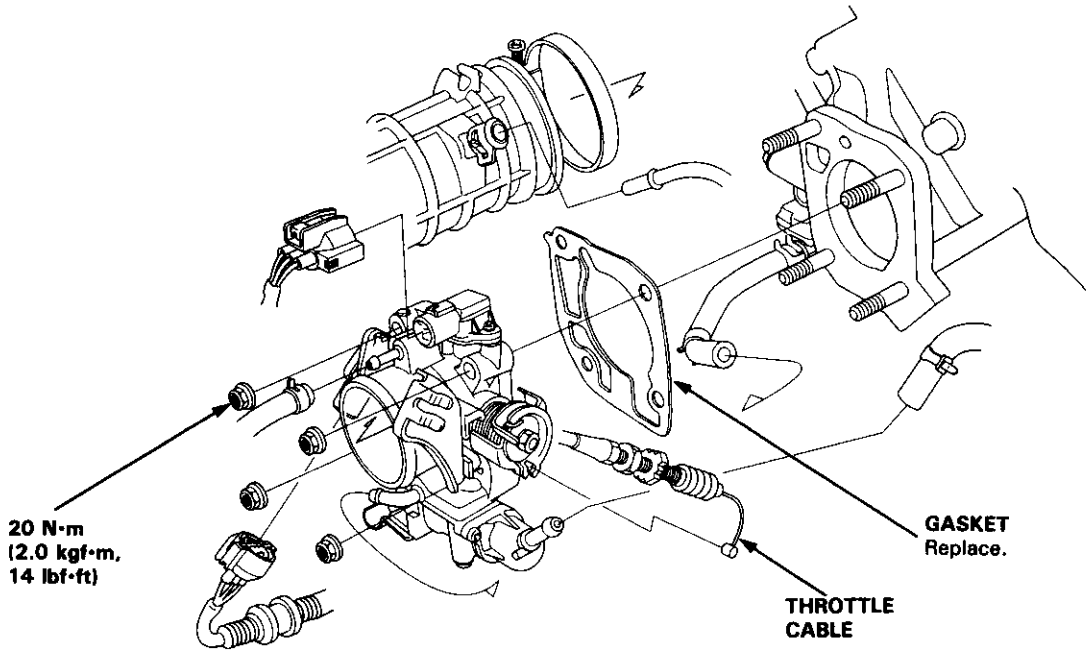
6. When assembling, use new washers, as shown.

   NOTE: Clean the flared joint of high pressure hoses thoroughly before reconnecting them.



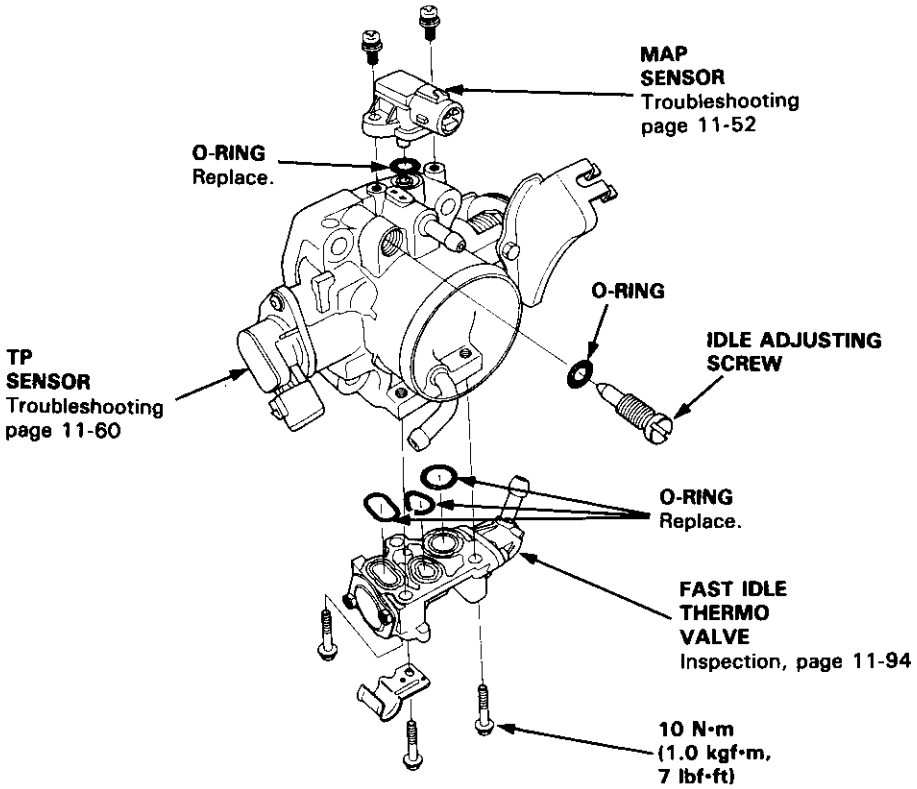
Throttle Body (cont'd)

Disassembly

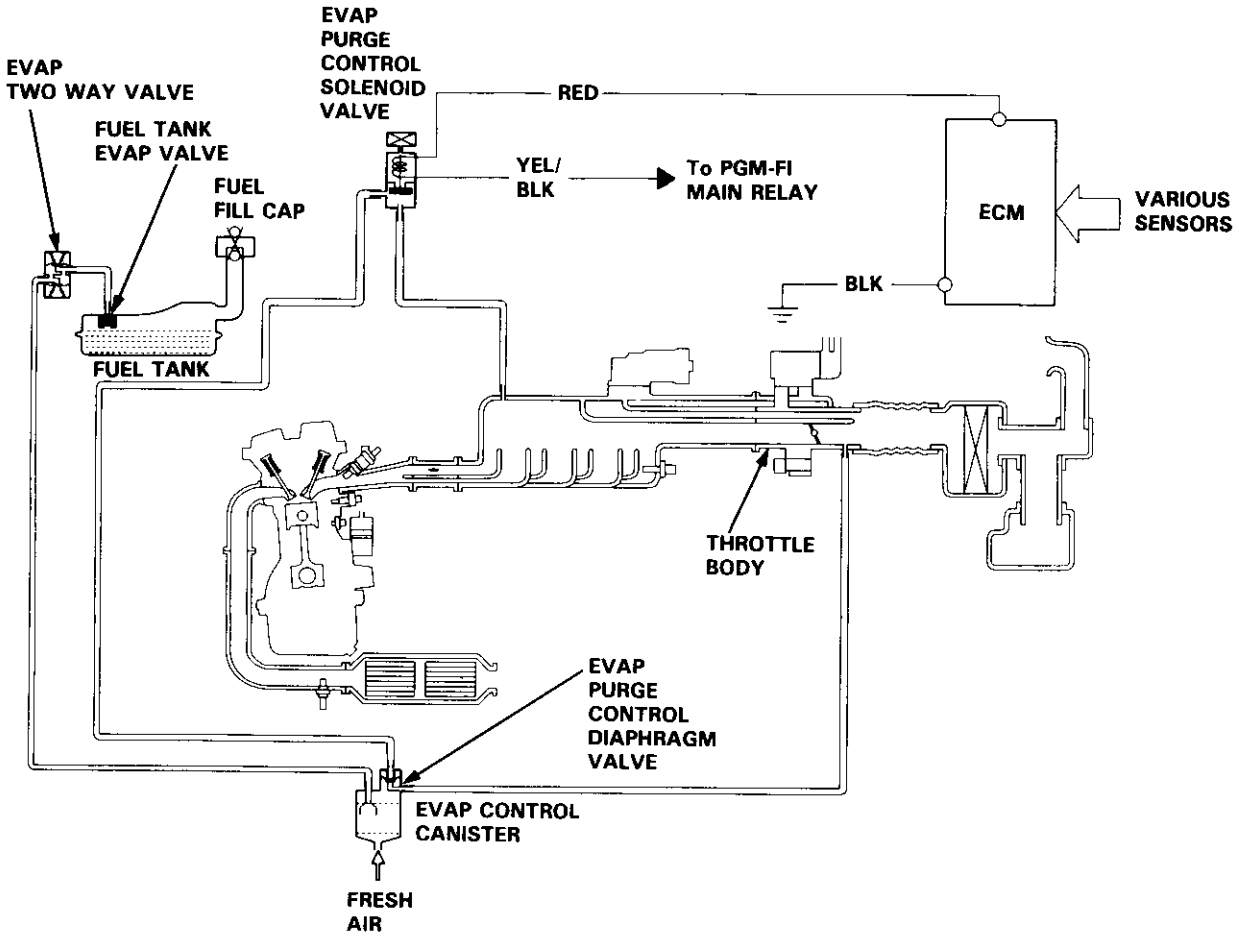


CAUTION:

- **The throttle stop screw is non-adjustable.**
- **After reassembly, adjust the throttle cable (page 11-118, 119), and A/T throttle control cable (section 14) for cars with A/T.**
- **The TP sensor is not removable.**



Evaporative Emission (EVAP) Control (cont'd)



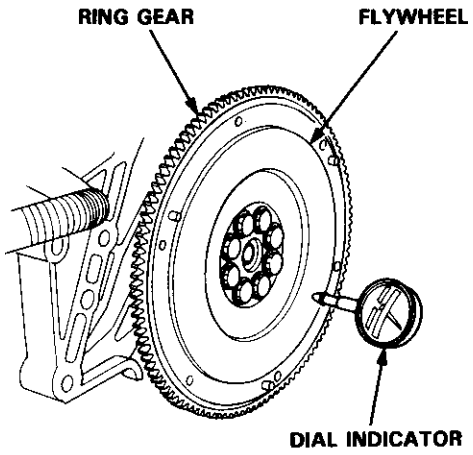
Flywheel, Flywheel Bearing

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 runout using a dial indicator through at least two full turns. Push against the flywheel each time you turn it to take up the crankshaft thrust washer clearance.

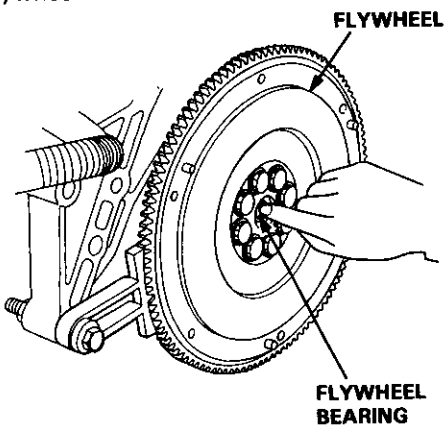
   NOTE: The runout can be measured with engine installed.

   Standard (New): 0.05 mm (0.002 in) Max.
   Service Limit: 0.15 mm (0.006 in)



   - If the runout is more than the service limit, replace the flywheel.

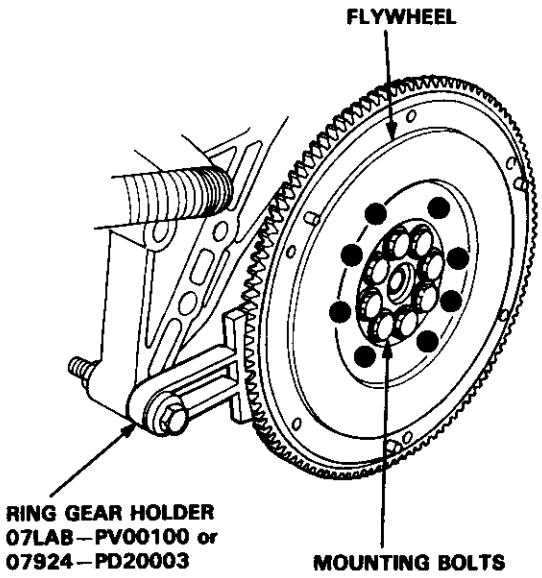
4. Turn the inner race of the flywheel bearing with your finger. The bearing should turn smoothly and quietly. Check that the bearing outer race fits tightly in the flywheel.



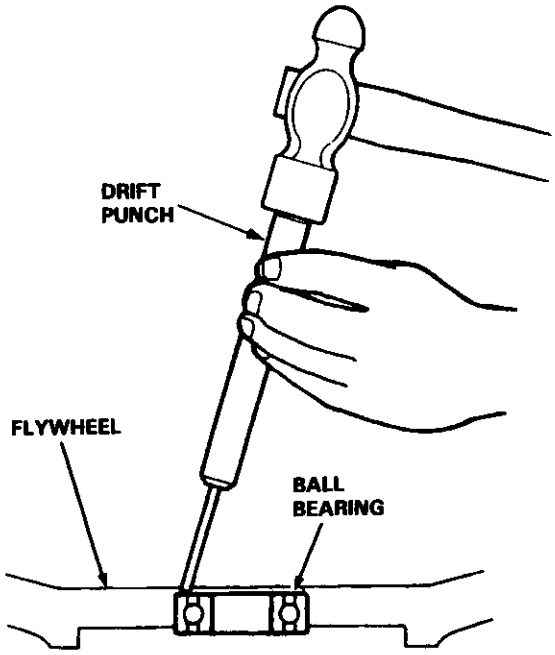
   - If the race does not turn smoothly, quietly, or fit tight in the flywheel, replace the flywheel bearing.

Replacement

1. Install the special tool.
2. Remove the flywheel mounting bolts in a crisscross pattern in several steps as shown, then remove the flywheel.



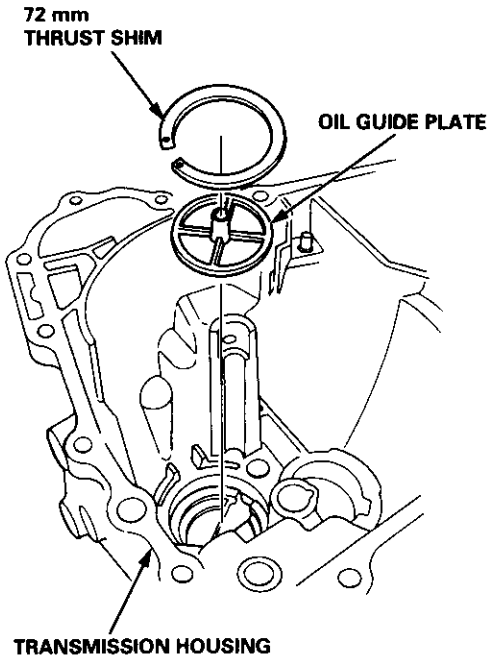
3. Remove the flywheel bearing from the flywheel.



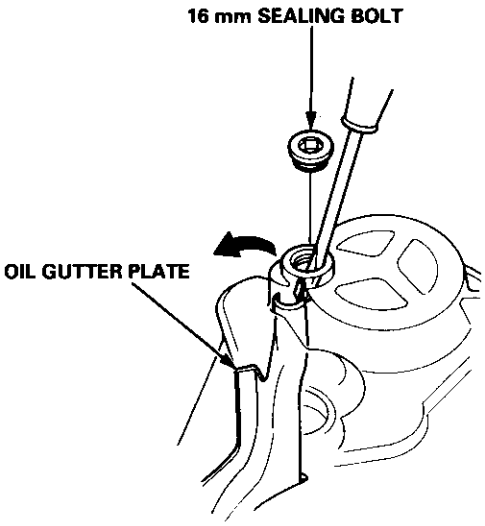
(cont'd)

8. Separate the transmission housing from the clutch housing, and wipe it clean of the sealant.

9. Remove the 72 mm thrust shim and the oil guide plate from the transmission housing.



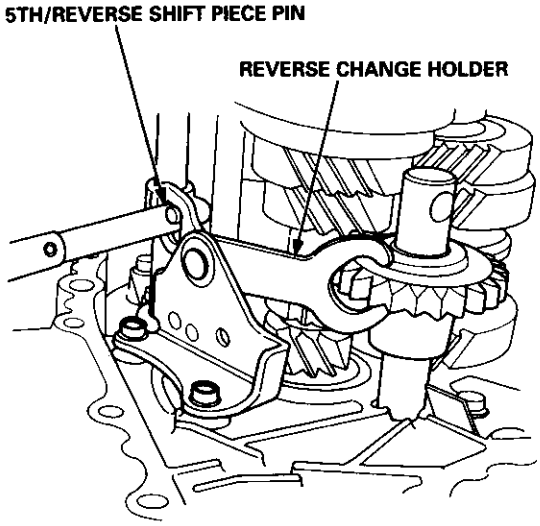
10. Remove the 16 mm sealing bolt and the oil gutter plate.



Clearance Inspection

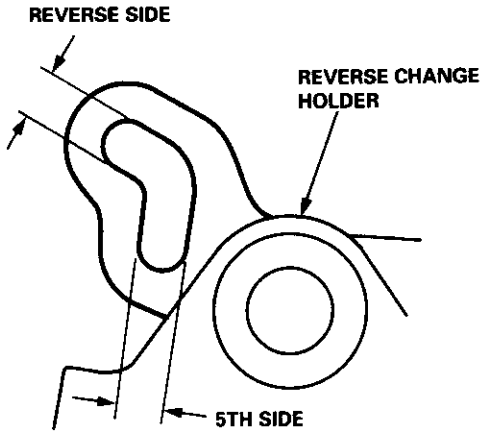
1. Measure the clearance between the reverse change holder and the 5th/reverse shift piece pin.

Standard:
Reverse Side: 0.05 – 0.45 mm (0.002 – 0.018 in)
5th Side: 0.4 – 0.9 mm (0.02 – 0.04 in)



2. If the clearance are not within the standard, measure the width of the grooves in the reverse change holder.

Standard:
Reverse Side: 7.05 – 7.25 mm (0.278 – 0.285 in)
5th Side: 7.4 – 7.7 mm (0.29 – 0.30 in)

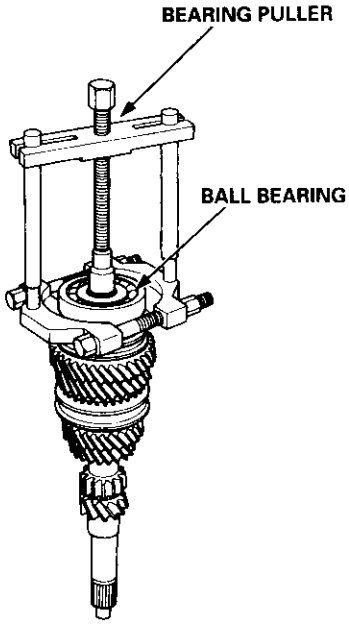


- If the width of the grooves are not within the standard, replace the reverse change holder with a new one.
- If the width of the grooves are within the standard, replace the 5th/reverse shift piece with a new one.

(cont'd)

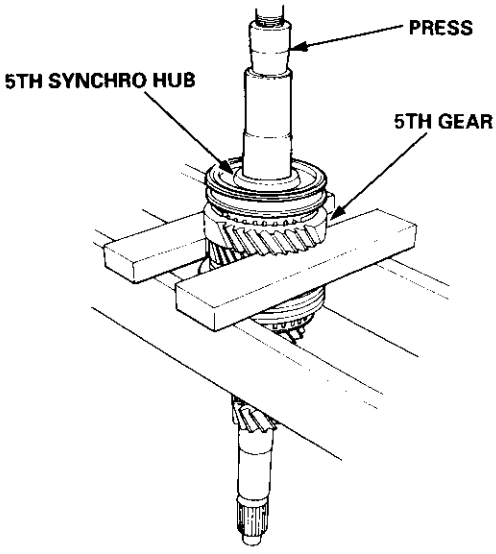
— Disassembly

- Remove the ball bearing using a bearing puller as shown.

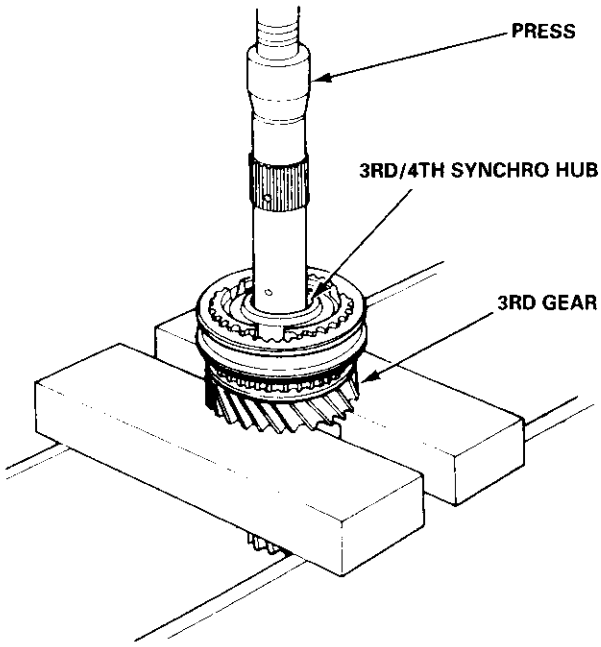


CAUTION: Remove the synchro hubs using a press and the steel blocks as shown. Use of a jaw-type puller can cause damage to the gear teeth.

2. Support 5th gear on steel blocks, and press the mainshaft out of the 5th synchro hub, as shown.



3. Support 3rd gear on steel blocks, and press the mainshaft out of the 3rd/4th synchro hub, as shown.



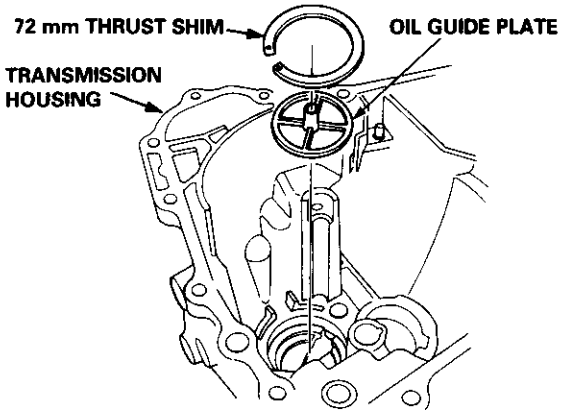
72 mm Thrust Shim

	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 (0.0272 in)
E	23935 – P21 – 000	0.72 mm (0.0283 in)
F	23936 – P21 – 000	0.75 mm (0.0295 in)
G	23937 – P21 – 000	0.78 mm (0.0307 in)
H	23938 – P21 – 000	0.81 mm (0.0319 in)
I	23939 – P21 – 000	0.84 mm (0.0331 in)
J	23940 – P21 – 000	0.87 mm (0.0343 in)
K	23941 – P21 – 000	0.90 mm (0.0354 in)
L	23942 – P21 – 000	0.93 mm (0.0366 in)
M	23943 – P21 – 000	0.96 mm (0.0378 in)
N	23944 – P21 – 000	0.99 mm (0.0390 in)
O	23945 – P21 – 000	1.02 mm (0.0402 in)
P	23946 – P21 – 000	1.05 mm (0.0413 in)
Q	23947 – P21 – 000	1.08 mm (0.0425 in)
R	23948 – P21 – 000	1.11 mm (0.0437 in)
S	23949 – P21 – 000	1.14 mm (0.0449 in)
T	23950 – P21 – 000	1.17 mm (0.0461 in)
U	23951 – P21 – 000	1.20 mm (0.0472 in)
V	23952 – P21 – 000	1.23 mm (0.0484 in)
W	23953 – P21 – 000	1.26 mm (0.0496 in)
X	23954 – P21 – 000	1.29 mm (0.0508 in)
Y	23955 – P21 – 000	1.32 mm (0.0520 in)
Z	23956 – P21 – 000	1.35 mm (0.0531 in)
AA	23957 – P21 – 000	1.38 mm (0.0543 in)
AB	23958 – P21 – 000	1.41 mm (0.0555 in)
AC	23959 – P21 – 000	1.44 mm (0.0567 in)
AD	23960 – P21 – 000	1.47 mm (0.0579 in)
AE	23961 – P21 – 000	1.50 mm (0.0591 in)
AF	23962 – P21 – 000	1.53 mm (0.0602 in)
AG	23963 – P21 – 000	1.56 mm (0.0614 in)
AH	23964 – P21 – 000	1.59 mm (0.0626 in)
AI	23965 – P21 – 000	1.62 mm (0.0638 in)
AJ	23966 – P21 – 000	1.65 mm (0.0650 in)
AK	23967 – P21 – 000	1.68 mm (0.0661 in)
AL	23968 – P21 – 000	1.71 mm (0.0673 in)
AM	23969 – P21 – 000	1.74 mm (0.0685 in)
AN	23970 – P21 – 000	1.77 mm (0.0697 in)
AO	23971 – P21 – 000	1.80 mm (0.0709 in)

7. Check the thrust clearance in the manner described below.

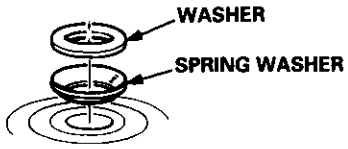
   NOTE: Carry out the measurement at normal room temperature.

   -1. Install the thrust shim selected and oil guide plate in the transmission housing.



   -2. Install the spring washer and washer on the ball bearing.

   NOTE:
   - Clean the spring washer, washer and thrust shim throughly before installation.
   - Install the spring washer, washer and thrust shim properly.



   -3. Install the mainshaft in the clutch housing.

   -4. Place the transmission housing over the mainshaft and onto the clutch housing.

   -5. Tighten the clutch and transmission housings with several 8 mm bolts.

   NOTE: It is not necessary to use sealing agent between the housings.

   8 x 1.25 mm
   27 N·m (2.8 kgf·m, 20 lbf·ft)

   -6. Tap the mainshaft with a plastic hammer.

(cont'd)

Description

The Automatic Transmission is a combination of a 3-element torque converter and triple-shaft electronically controlled automatic transmission which provides 4 speeds forward and 1 speed 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 torque converter is connected to the engine crankshaft so they turn together as a unit 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, countershaft and sub-shaft. The mainshaft is in line with the engine crankshaft.

The mainshaft includes the clutches for 1st, and 2nd/4th, and gears for 3rd, 2nd, 4th, reverse and 1st (3rd gear is integral with the mainshaft, while reverse gear is integral with the 4th gear).

The countershaft includes the 3rd clutch and gears for 3rd, 2nd, 4th, reverse, 1st and parking. Reverse and 4th gears can be locked to the countershaft at its center, providing 4th gear or reverse, depending on which way the selector is moved.

The sub-shaft includes the 1st-hold clutch and gears for 1st and 4th.

The gears on the mainshaft are in constant mesh with those on the countershaft and sub-shaft. When certain combinations of gears in the transmission are engaged by the clutches, power is transmitted from the mainshaft to the countershaft via the sub-shaft to provide [D4], [D3], [2], [1] and [R] position.

Electronic Control

The electronic control system consists of the Transmission Control Module (TCM), sensors, and 4 solenoid valves. Shifting and lock-up are electronically controlled for comfortable driving under all conditions.

The TCM is located below the dashboard, behind the left side kick panel on the driver's side.

Hydraulic Control

The valve bodies include the main valve body, secondary valve body, regulator valve body, servo body, and lock-up valve body through the respective separator plates.

They are bolted on the torque converter housing.

The main valve body contains the manual valve, 1-2 shift valve, 2-3 shift valve, Clutch Pressure Control (CPC) valve, 4th exhaust valve, relief valve, and oil pump gears.

The secondary valve body contains the 4-3 kick-down valve, 3-2 kick-down valve, 2-3 orifice control valve, 3-4 shift valve, orifice control valve, modulator valve, and servo control valve.

The regulator valve body contains the pressure regulator valve, lock-up control valve, torque converter check valve, and cooler check valve.

The servo body contains the servo valve which is integrated with the reverse shift fork, throttle valve B, and accumulators.

The lock-up valve body contains the lock-up shift valve and lock-up timing B valve, and is bolted on the secondary valve body.

Fluid from the regulator passes through the manual valve to the various control valves.

Shift Control Mechanism

Input to the TCM from various sensors located throughout the car determines which shift control solenoid valve should be activated.

Activating a shift control solenoid valve changes modulator pressure, causing a shift valve to move. This pressurizes a line to one of the clutches, engaging that clutch and its corresponding gear.

Lock-up Mechanism

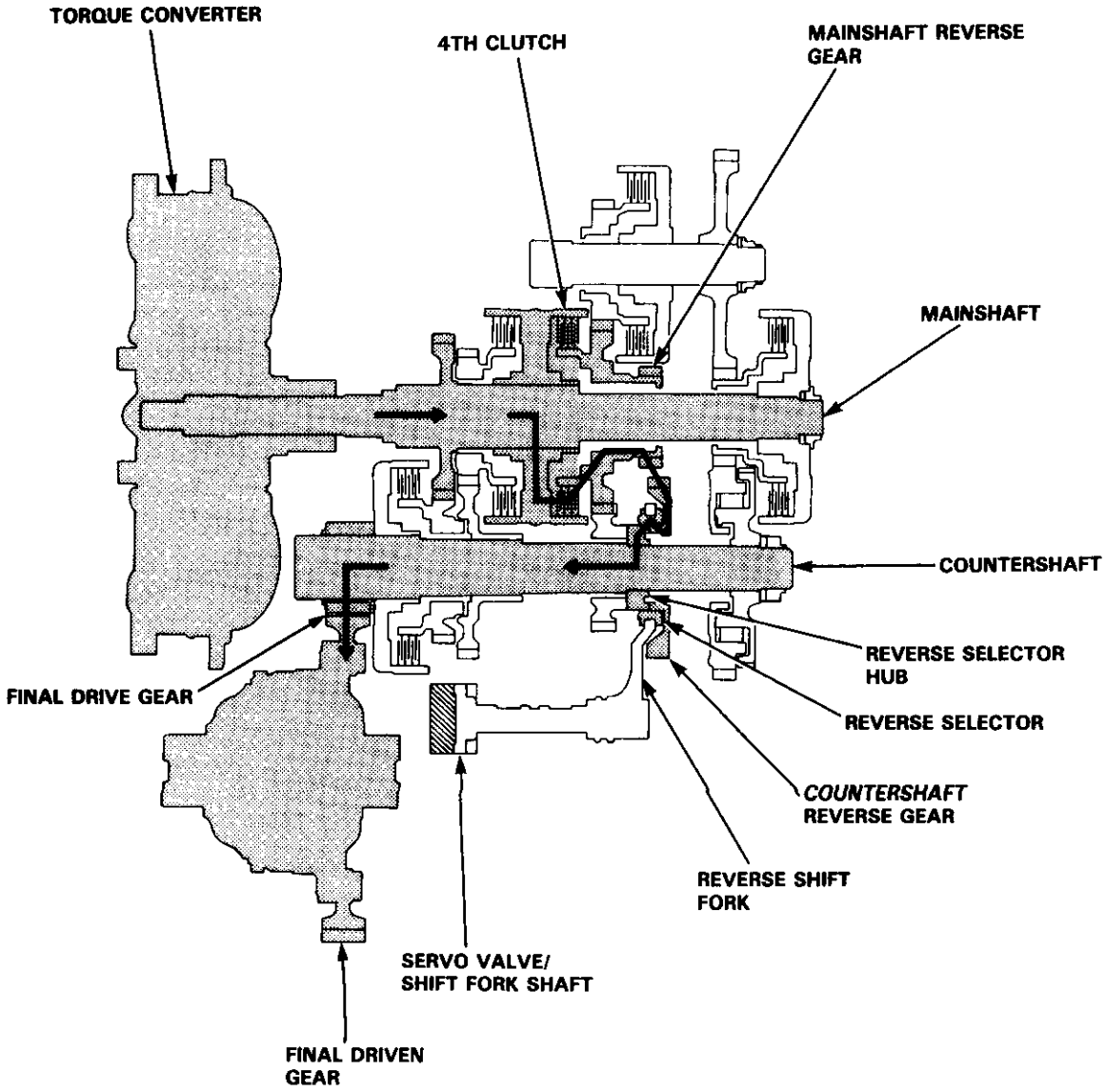
In [D4] position, in 2nd, 3rd and 4th, and [D3] position in 3rd, pressurized fluid can be drained from the back of the torque converter through an oil passage, causing the lock-up piston to be held against the torque converter cover. As this takes place, the mainshaft rotates at the same speed as the engine crankshaft. Together with hydraulic control, the TCM optimizes the timing of the lock-up mechanism.

The lock-up valves control the range of lock-up according to lock-up control solenoid valves A and B, and throttle valve B. When lock-up control solenoid valves A and B activate, modulator pressure changes. Lock-up control solenoid valves A and B are mounted on the torque converter housing, and are controlled by the TCM.

(cont'd)

[R] Position

1. Hydraulic pressure is switched by the manual valve to the servo valve, which moves the reverse shift fork to the reverse position. The reverse shift fork engages with the reverse selector, reverse selector hub,and the countershaft reverse gear.
2. Hydraulic pressure is also applied to the 4th clutch. Power is transmitted from the mainshaft reverse gear via the reverse idler gear to the countershaft reverse gear.
3. Rotation direction of the countershaft reverse gear is changed via the reverse idler gear.
4. Power is transmitted to the final drive gear and drives the final driven gear.

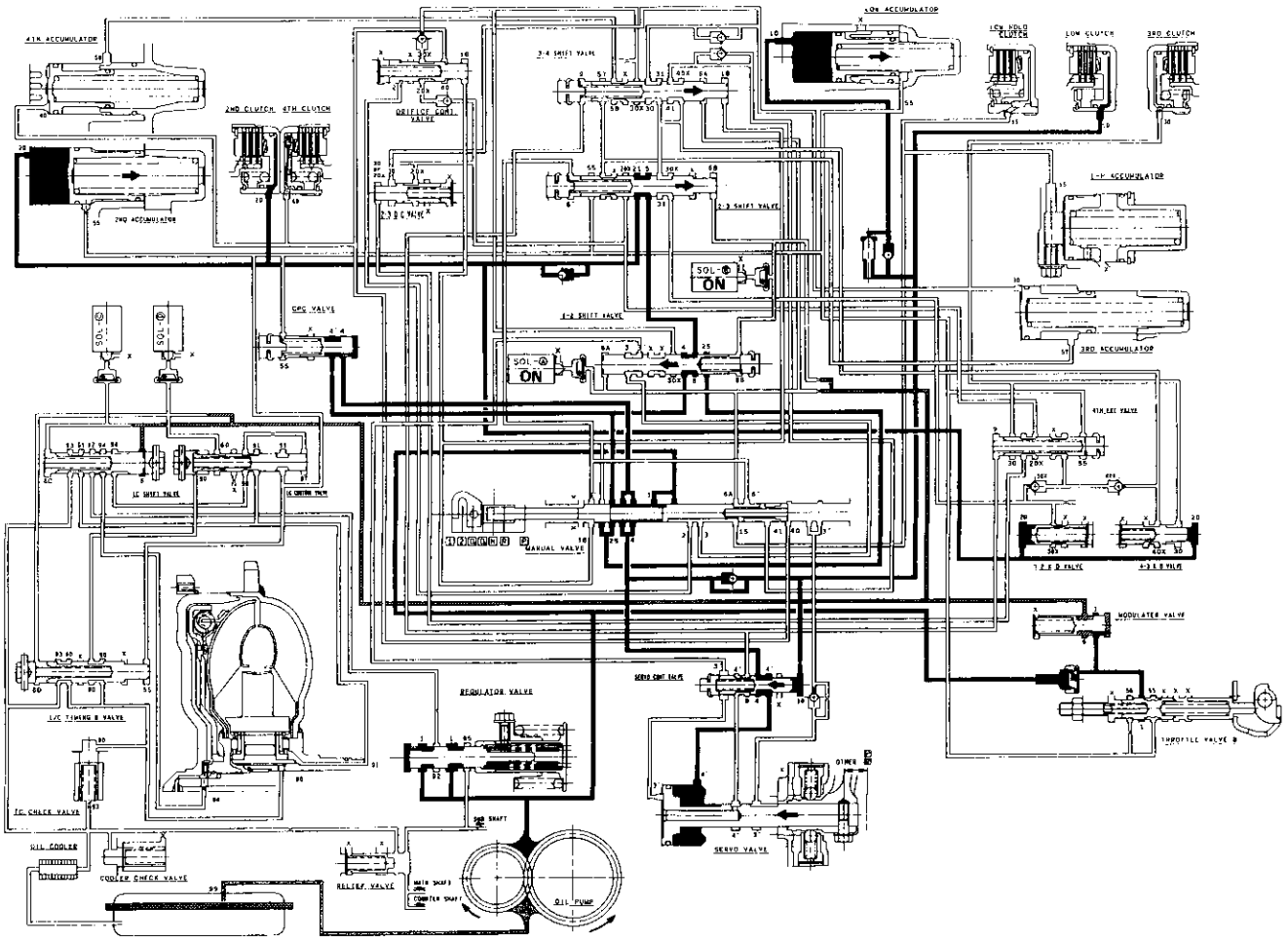


2 Position

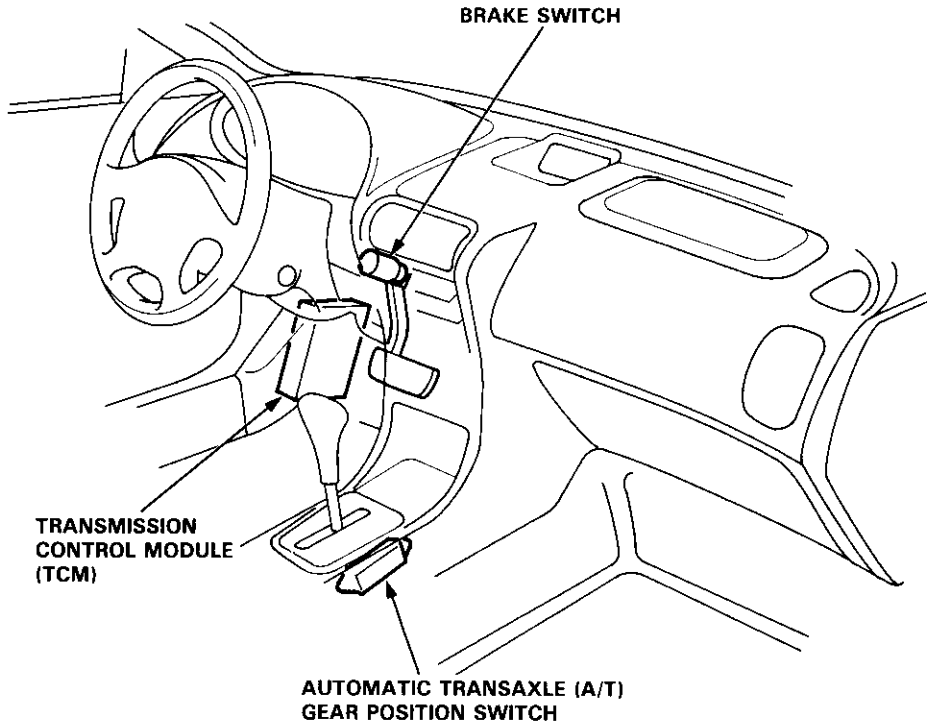
The line pressure (1) becomes line pressure (4) as it passes through the manual valve. It then goes through line (20) to the 2nd clutch via the 1-2 and 2-3 shift valves. Also, line pressure (1) goes to the modulator valve through the filter and becomes the modulator pressure (6). Modulator pressure (6) is not supplied to the 1-2, 2-3 and 3-4 shift valves because the shift control solenoid valves A and B are turned on by the TCM.

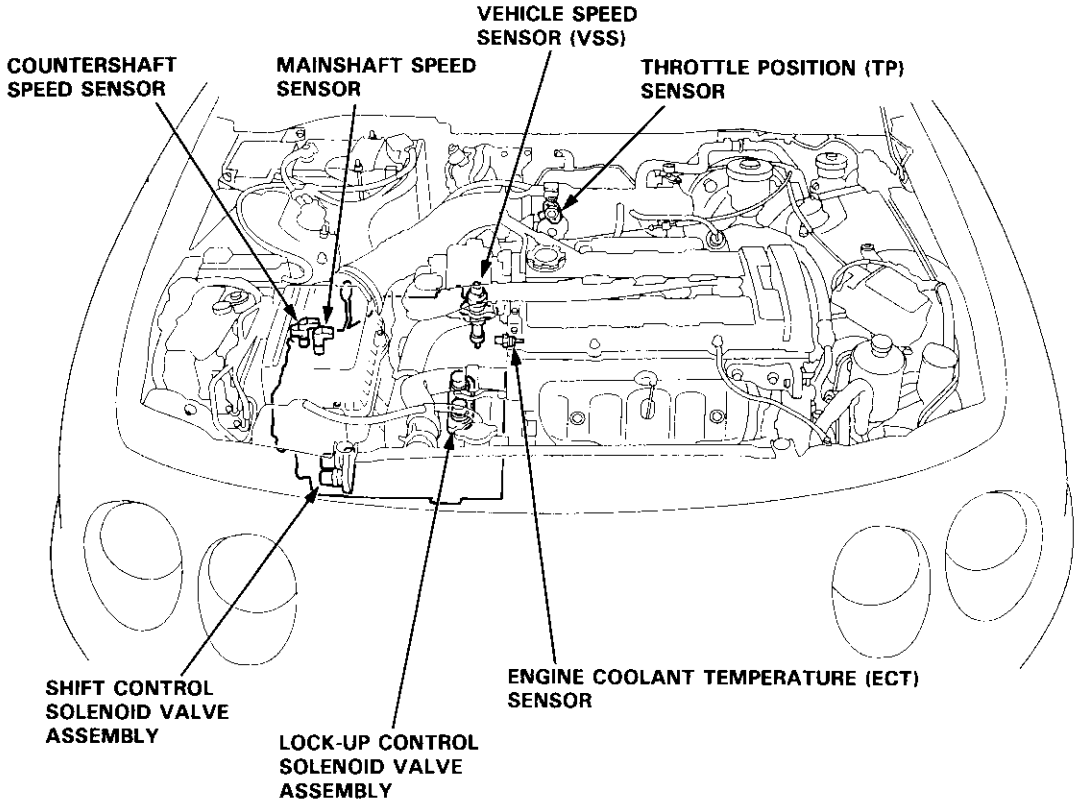
NOTE:

- When used, "left" or "right" indicates direction on the flowchart.
- SOL-Ⓐ: Shift Control Solenoid Valve A
- SOL-Ⓑ: Shift Control Solenoid Valve B
- SOL-Ⓒ: Lock-up Control Solenoid Valve A
- SOL-Ⓓ: Lock-up Control Solenoid Valve B



(cont'd)

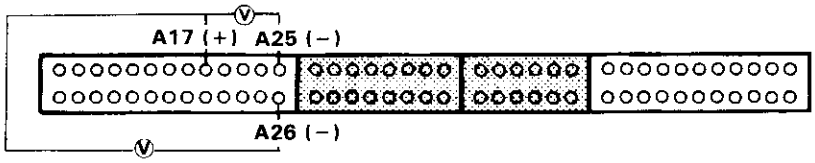

BRAKE SWITCH
TRANSMISSION CONTROL MODULE (TCM)
AUTOMATIC TRANSAXLE (A/T) GEAR POSITION SWITCH


VEHICLE SPEED SENSOR (VSS)
COUNTERSHAFT SPEED SENSOR
MAINSHAFT SPEED SENSOR
THROTTLE POSITION (TP) SENSOR
SHIFT CONTROL SOLENOID VALVE ASSEMBLY
LOCK-UP CONTROL SOLENOID VALVE ASSEMBLY
ENGINE COOLANT TEMPERATURE (ECT) SENSOR

From page 14-58

Shift to other than [D4] position.

Measure the voltage between the A17 and A25 or A26 terminals.



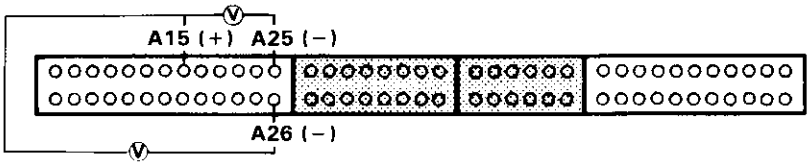
Is there battery voltage?

NO → **Check for short in PNK/GRN wire between the A17 terminal and the A/T gear position switch. If wire is OK, check for loose TCM connectors. If necessary, substitute a known-good TCM and recheck.**

YES

Shift to other than [D3] position.

Measure the voltage between the A15 and A25 or A26 terminals.



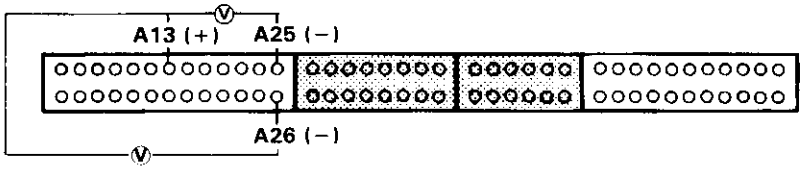
Is there battery voltage?

NO → **Check for short in GRN/BLU wire between the A15 terminal and the A/T gear position switch or A/T gear position indicator. If wire is OK, check for loose TCM connectors. If necessary, substitute a known-good TCM and recheck.**

YES

Shift to other than [2] position.

Measure the voltage between the A13 and A25 or A26 terminals.



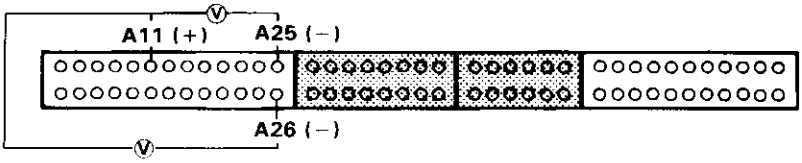
Is there battery voltage?

NO → **Check for short in GRN/YEL wire between the A13 terminal and the A/T gear position switch or A/T gear position indicator. If wire is OK, check for loose TCM connectors. If necessary, substitute a known-good TCM and recheck.**

YES

Shift to other than [1] position.

Measure the voltage between the A11 and A25 or A26 terminals.



Is there battery voltage?

NO → **Check for short in LT GRN/WHT wire between the A11 terminal and the A/T gear position switch or A/T gear position indicator. If wire is OK, check for loose TCM connectors. If necessary, substitute a known-good TCM and recheck.**

YES

Check for loose TCM connectors. If necessary, substitute a known-good TCM and recheck.

(cont'd)

Self-diagnosis D4 indicator light blinks fourteen times.

Possible Cause
• Short or open in FAS (YEL) wire. • Faulty ECM.

Is the Malfunction Indicator Lamp (MIL) on?

YES → **Repair the PGM-FI System (see section 11).**

NO

Start the engine and warm it up to normal operating temperature (the radiator fan comes on).

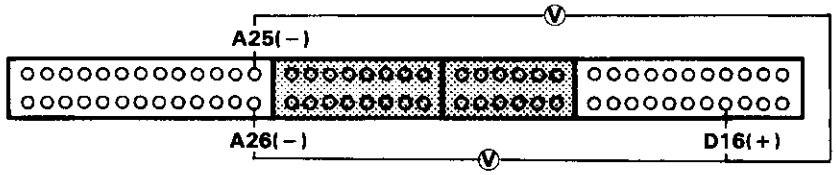
Shift to P position.

Turn the ignition switch OFF.

Connect the Test Harness between the TCM and connectors (see page 14-49).

Turn the ignition switch ON and wait for at least two seconds.

Measure the voltage between the D16(+) and A25 or A26(−) terminals.



Is there approx. 5 V?

YES → **Check for loose TCM connectors. If necessary, substitute a known-good TCM and recheck.**

NO

Turn the ignition switch OFF.

Disconnect the Test Harness from the TCM.
Leave connected to car harness.

Turn the ignition switch ON.

To page 14-74

(cont'd)

	PROBABLE CAUSE
1.	Shift cable broken/out of adjustment.
2.	Throttle cable too short.
3.	Throttle cable too long.
4.	Wrong type ATF.
5.	Idle rpm too low/high.
6.	Oil pump worn or binding.
7.	Pressure regulator stuck.
8.	1st clutch defective.
9.	2nd clutch defective.
10.	3rd clutch defective.
11.	4th clutch defective.
12.	1st-hold clutch defective.
13.	Mainshaft worn/damaged.
14.	Modulator valve stuck.
15.	Throttle valve B stuck.
16.	ATF strainer clogged.
17.	Torque converter defective.
18.	Torque converter check valve stuck.
19.	1—2 shift valve stuck.
20.	2—3 shift valve stuck.
21.	3—4 shift valve stuck.
22.	Servo control valve stuck.
23.	Clutch pressure control (CPC) valve stuck.
24.	2—3 orifice control valve stuck.
25.	Orifice control valve stuck.
26.	3—2 kick-down valve stuck.
27.	4—3 kick-down valve stuck.
28.	4th exhaust valve stuck.
29.	1st accumulator defective.
30.	2nd accumulator defective.
31.	3rd accumulator defective.
32.	4th accumulator defective.
33.	1st-hold accumulator defective.
34.	Servo valve stuck.
35.	Lock-up timing B valve stuck.
36.	Lock-up shift valve stuck.
37.	Lock-up control valve stuck.
38.	Shift fork bent.
39.	Reverse gears worn/damaged (3 gears).
40.	Reverse selector worn.
41.	3rd gears worn/damaged (2 gears).
42.	Final gears worn/damaged (2 gears).
43.	Differential pinion shaft worn.
44.	Feedpipe O-ring broken.
45.	4th gears worn/damaged (2 gears).
46.	Gear clearance incorrect.
47.	Clutch clearance incorrect.
48.	One-way (sprag) clutch defective.
49.	Sealing rings/guide worn.
50.	Axle-inboard joint clip missing.

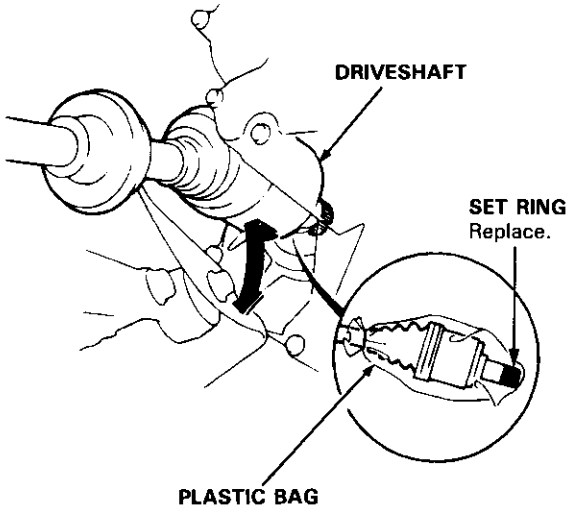
(cont'd)

12. Pry the right driveshaft out of the differential and pry the left driveshaft out of the intermediate shaft.

13. Pull on the inboard joint and remove the right and left driveshafts (see section 16).

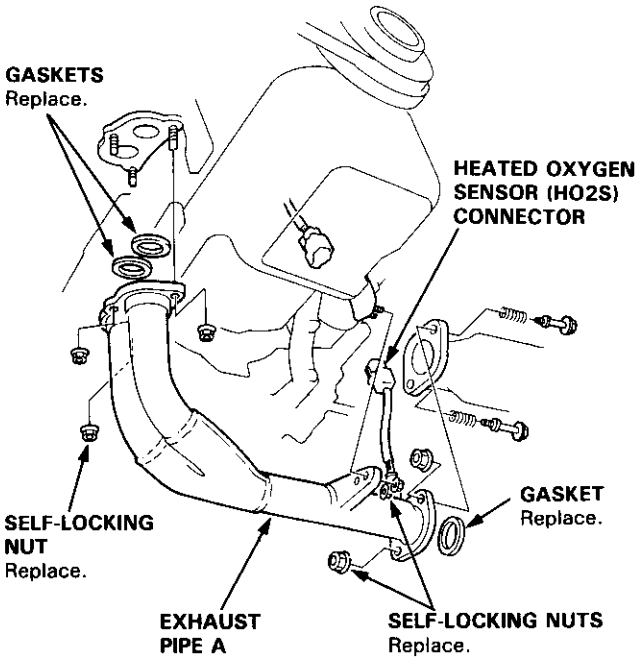
14. Tie plastic bags over the driveshaft ends.

    NOTE: Coat all precision finished surfaces with clean engine oil.

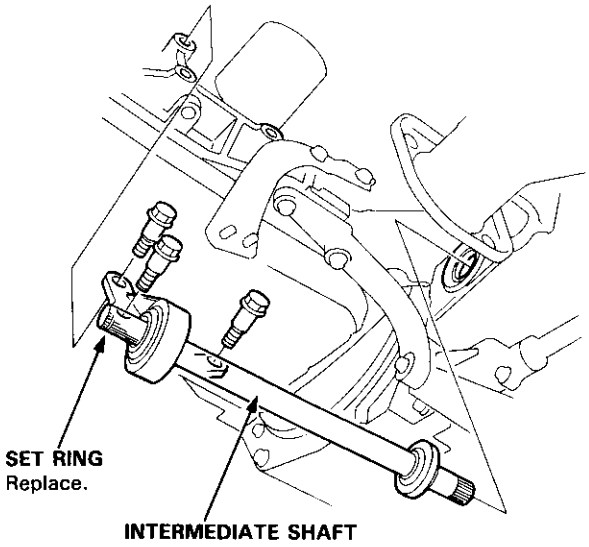


15. Disconnect the heated oxygen sensor (HO2S) connector.

16. Remove the exhaust pipe A.

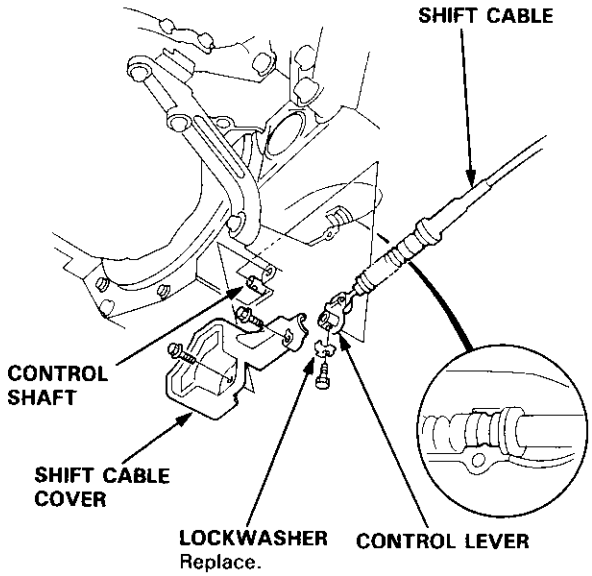


17. Remove the intermediate shaft.



18. Remove the shift cable cover, then remove the shift cable by removing the control lever.

    CAUTION: Take care not to bend the shift control cable while removing it.



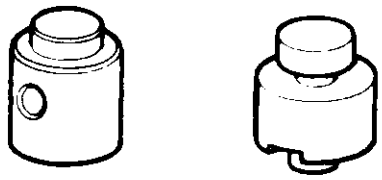
(cont'd)

Valve Caps

Description

- Caps with one projected tip and one flat end are installed with the flat end toward the inside of the valve body.
- Caps with a projected tip on each end are installed with the smaller tip toward the inside of the valve body. The small tip is a spring guide.

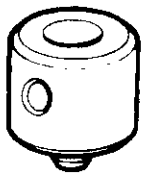
Toward outside of valve body.



Toward inside of valve body.

- Caps with one projected tip and hollow end are installed with the tip toward the inside of the valve body. The tip is a spring guide.

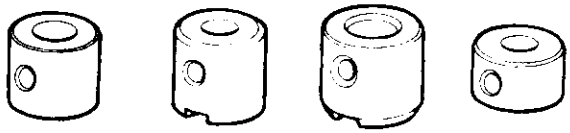
Toward outside of valve body.



Toward inside of valve body.

- Caps with hollow ends are installed with the hollow end away from the inside of the valve body.
- Caps with notched ends are installed with the notch toward the inside of the valve body.
- Caps with flat ends and a hole through the center are installed with the smaller hole toward the inside of the valve body.

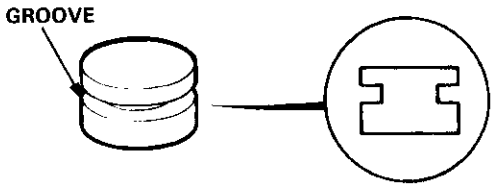
Toward outside of valve body.



Toward inside of valve body.

- Caps with flat ends and a groove around the cap are installed with the grooved side toward the outside of the valve body.

Toward outside of valve body.



Sectional view.

Toward inside of valve body.

Mainshaft

Inspection

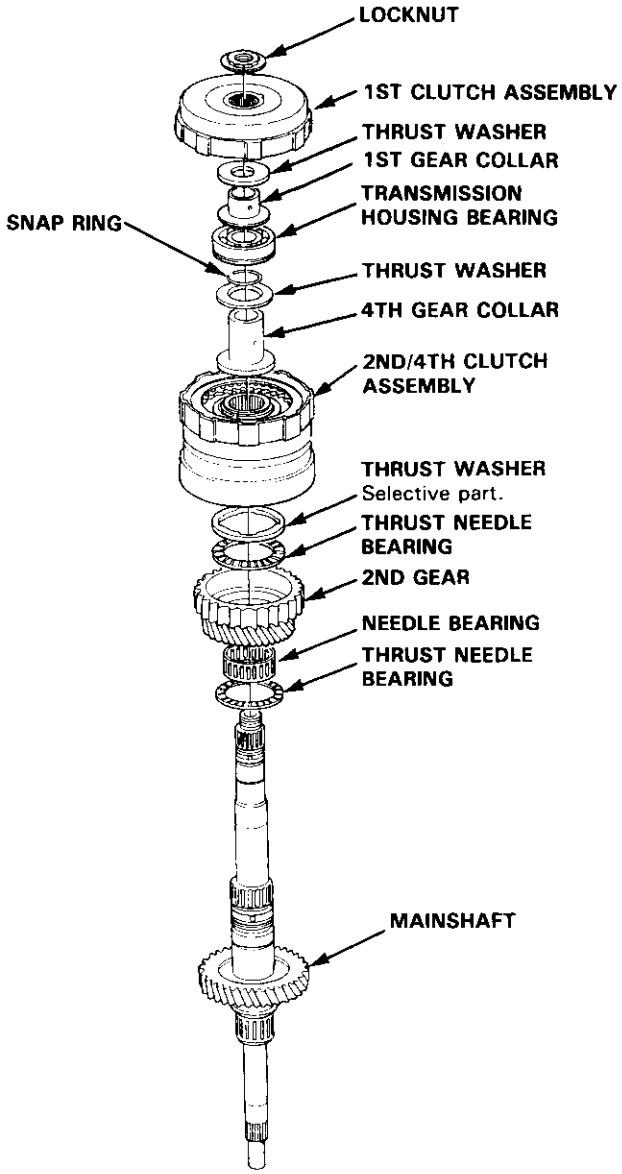
● Clearance Measurement

NOTE: Lubricate all parts with ATF during assembly.

1. Remove the mainshaft bearing from the transmission housing (see page 14-152).

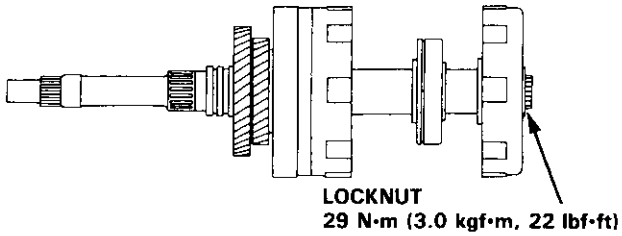
2. Assemble the parts below on the mainshaft.

   NOTE: Do not assemble the O-rings while inspecting.



3. Torque the mainshaft locknut to 29 N·m (3.0 kgf·m, 22 lbf·ft).

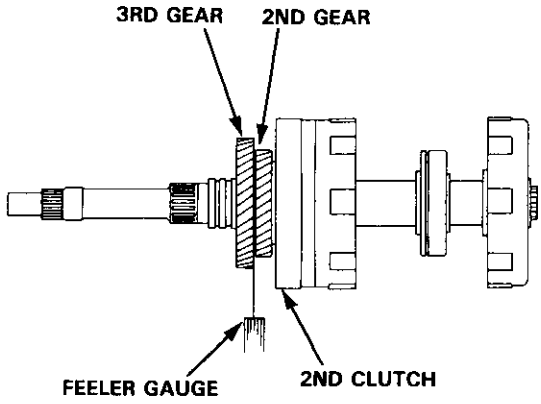
   NOTE: Mainshaft locknut has left-hand threads.

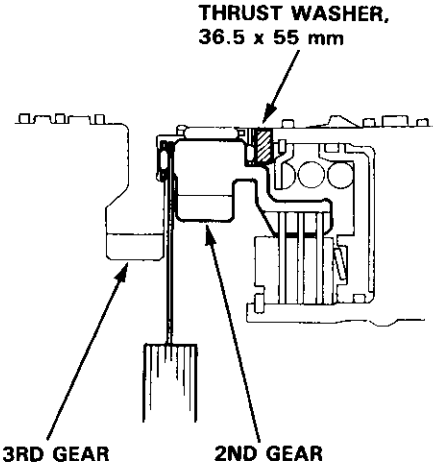


4. Hold 2nd gear against the 2nd clutch, then measure the clearance between 2nd gear and 3rd gear with a feeler gauge.

   NOTE: Take measurements in at least three places and take the average as the actual clearance.

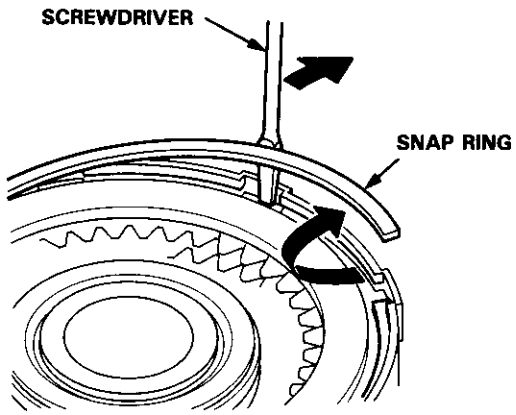
   STANDARD: 0.05—0.13 mm (0.002—0.005 in)



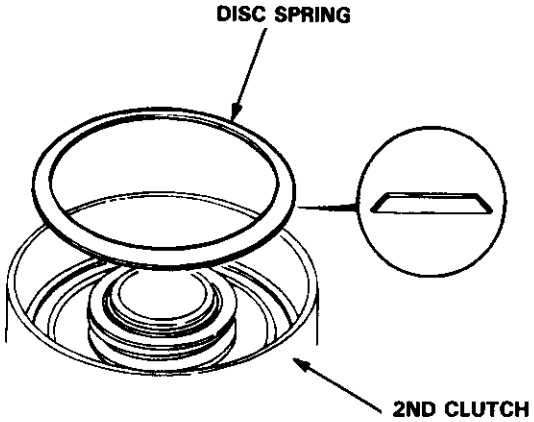


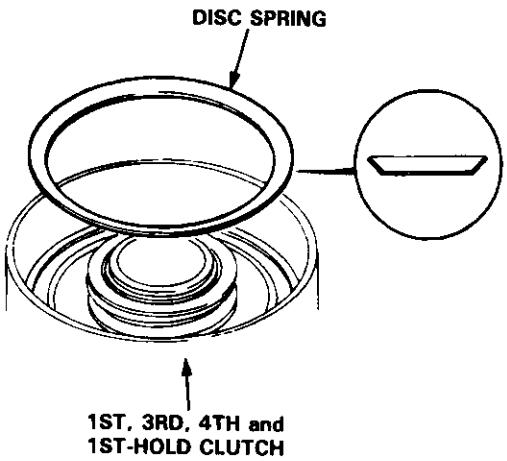
Disassembly

1. Remove the snap ring, then remove the clutch end plate, clutch discs and plates.

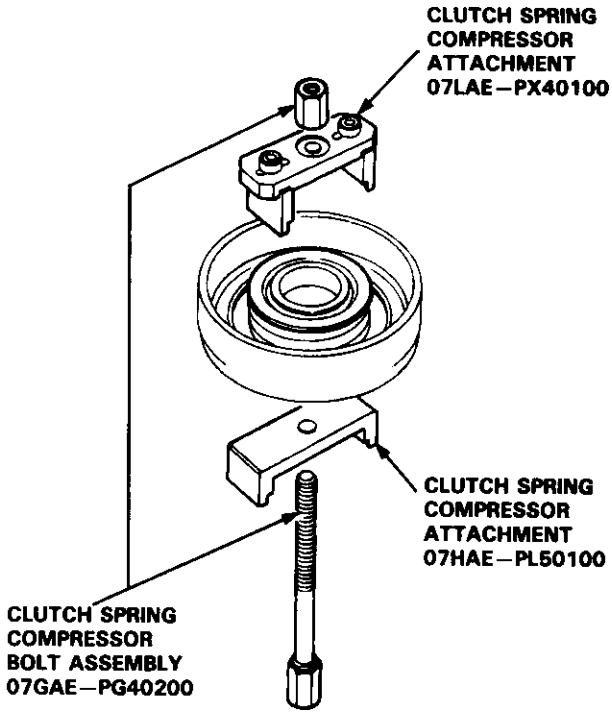


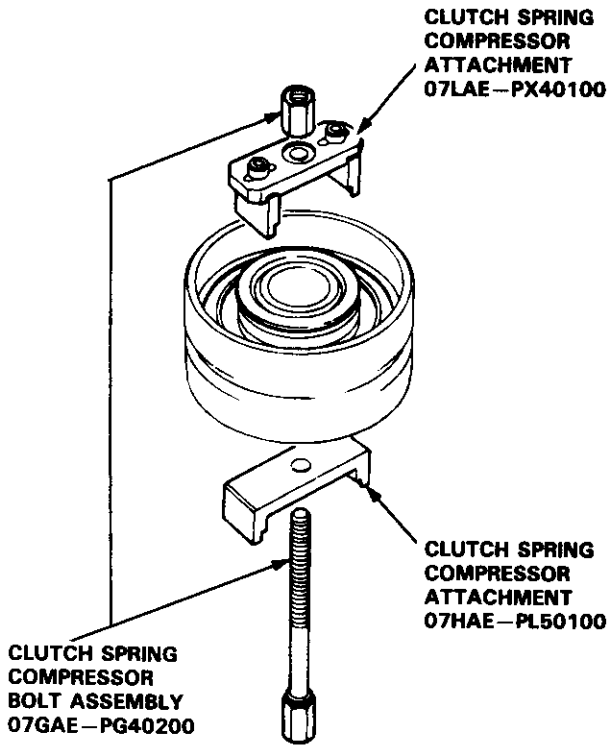
2. Remove the disc spring.





3. Install the special tools as shown.



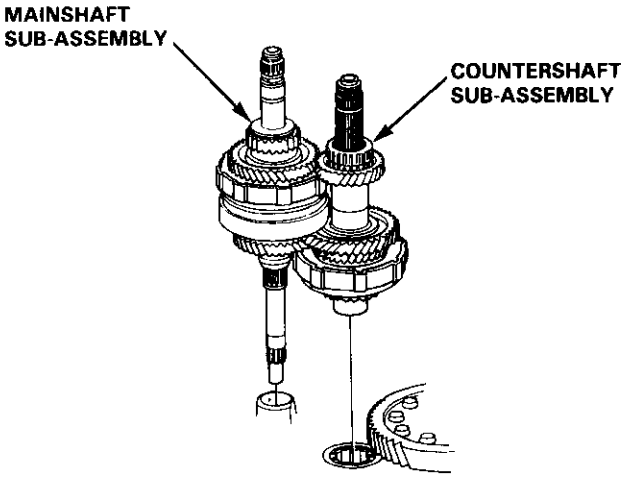


18. Install the sub-shaft assembly in the transmission housing (see page 14-138).

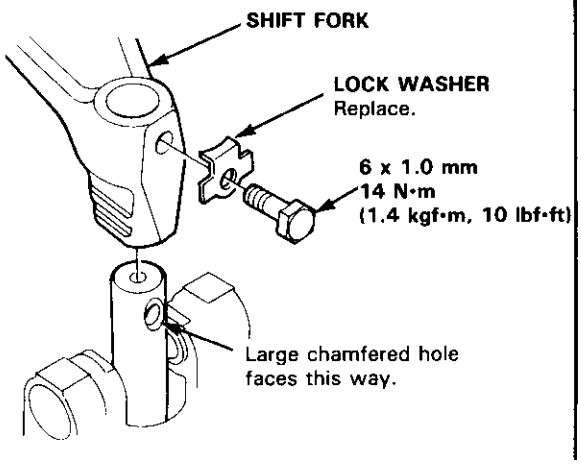
19. Install the reverse idler gear and gear shaft holder (see page 14-154).

20. Install the differential assembly in the torque converter housing.

21. Install the mainshaft and countershaft sub-assembly together in the torque converter housing.



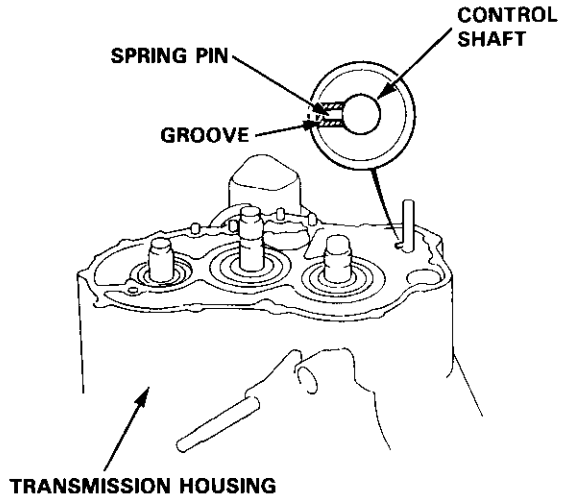
22. Turn the shift fork so the large chamfered hole is facing the fork bolt hole, then install the shift fork with the reverse selector and torque the lock bolt. Bend the lock tab against the bolt head.



23. Install the reverse gear with the collar and needle bearing on the countershaft.

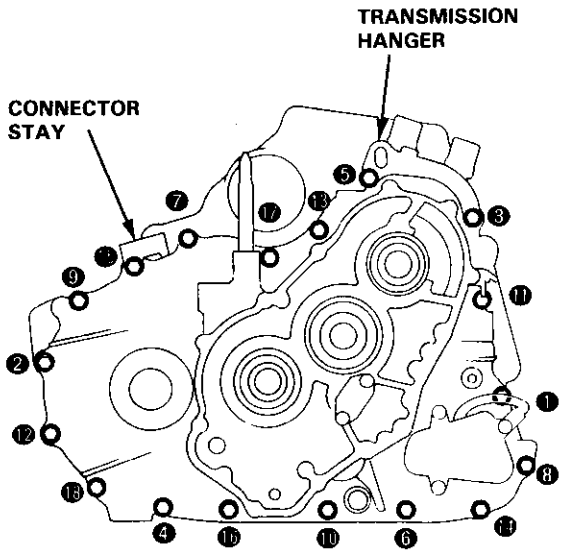
24. Align the spring pin of the control shaft with the transmission housing groove by turning the control shaft.

25. Place the transmission housing on the torque converter housing with a new gasket and the dowel pins.



26. Install the transmission housing bolts along with the transmission hanger and the connector stay, then torque the bolts in two or more steps in the sequence shown.

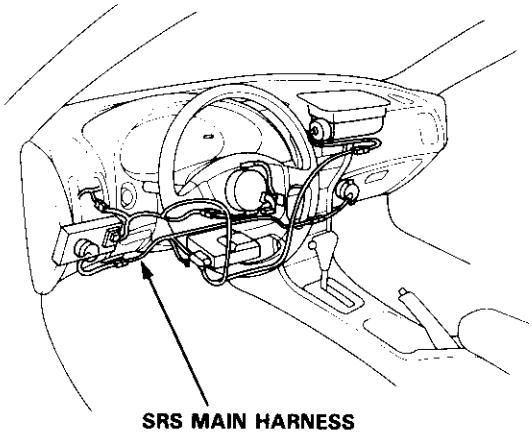
TORQUE: 44 N·m (4.5 kgf·m, 33 lbf·ft)



Shift Indicator Panel

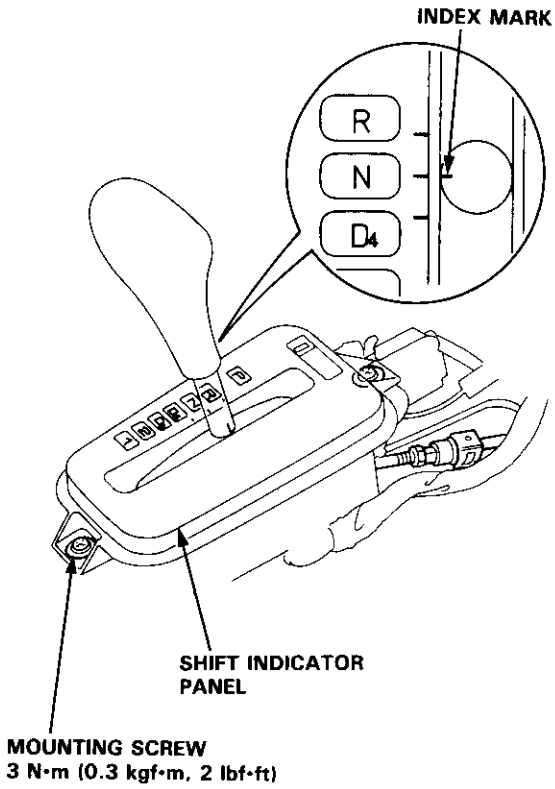
Adjustmet

CAUTION:
- **All SRS electrical wiring harnesses are covered with yellow insulation.**
- **Before disconnecting any part of the SRS wire harness, connect the short connectors (see page 23-70).**
- **Replace the entire affected SRS harness assembly if it has an open circuit or damaged wiring.**



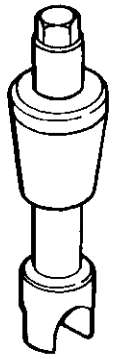
1. Check that the index mark on the indicator aligns with the [N] mark on the shift indicator panel when the transmission in NEUTRAL.
2. If not aligned, remove the center console (see section 20).
3. Remove the shift indicator panel mounting screws and adjust by moving the panel.

   NOTE: Whenever the shift indicator panel is removed, reinstall the panel as described above.

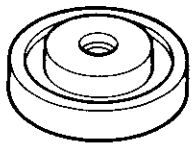


Special Tools

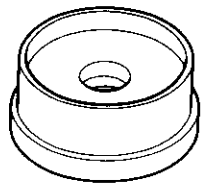
Ref. No.	Tool Number	Description	Qty	Page Reference
①	07HAJ-PK40201	Preload Inspection Tool	1	15-15
②	07JAD-PH80101	Seal Driver Attachment	1	15-14, 17
③	07NAD-PX40100	Driver Attachment	1	15-14
④	07746-0030100	Driver, 40 mm I.D.	1	15-13, 14
⑤	07749-0010000	Driver	1	15-14, 17
⑥	07947-SD90200	Seal Driver Attachment	1	15-17



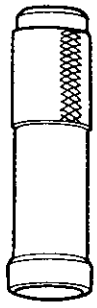
①



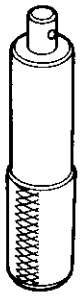
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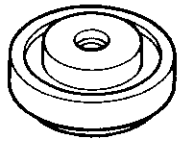
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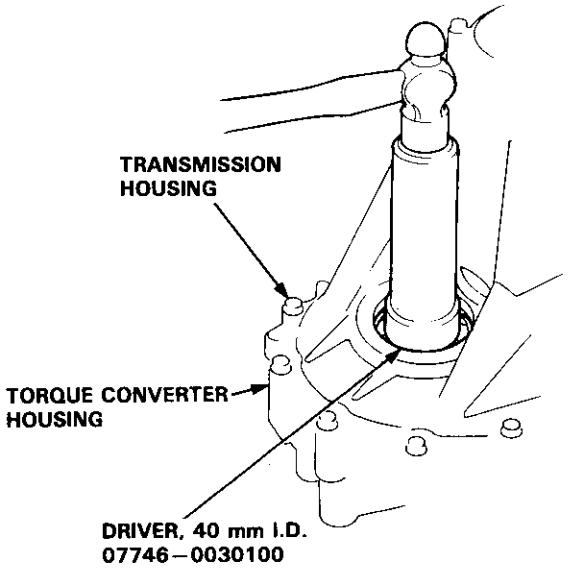


⑤



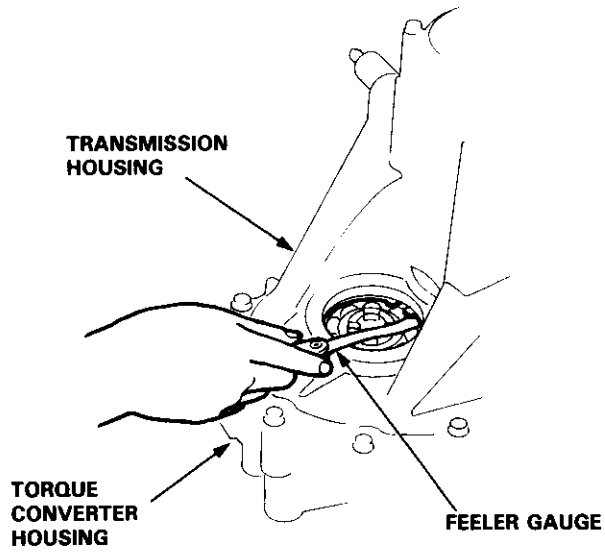
⑥

4. Tap on the transmission housing side of the differential assembly with the special tool to seat the differential assembly in the torque converter housing.



5. Measure the clearance between the thrust shim and outer race of the ball bearing in the transmission housing.

STANDARD: 0–0.15 mm (0–0.006 in)



6. If out of limits, select a new thrust shim from the following table:

THRUST SHIM, 80 mm

Part Number	Thickness
90414–689–000	2.50 mm (0.09843 in)
90415–689–000	2.60 mm (0.10236 in)
90416–689–000	2.70 mm (0.10630 in)
90417–689–000	2.80 mm (0.11024 in)
90418–689–000	2.90 mm (0.11416 in)
90419–PH8–000	3.00 mm (0.11811 in)

NOTE: If the thrust shim-to-ball bearing outer race clearance measured in step 5 is less than the specification, it is not necessary to perform steps 7 and 8.

7. Remove the transmission housing.

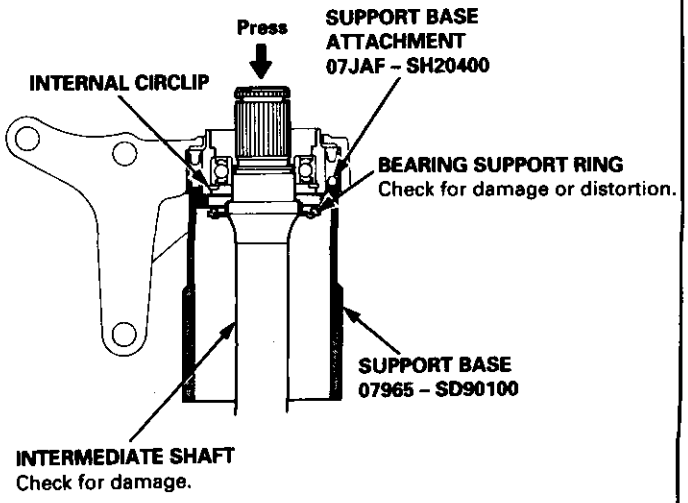
8. Replace the 2.50 mm (0.098 in) thrust shim with the one of the correct thickness selected in step 6.

9. Install the transmission housing (see section 14).

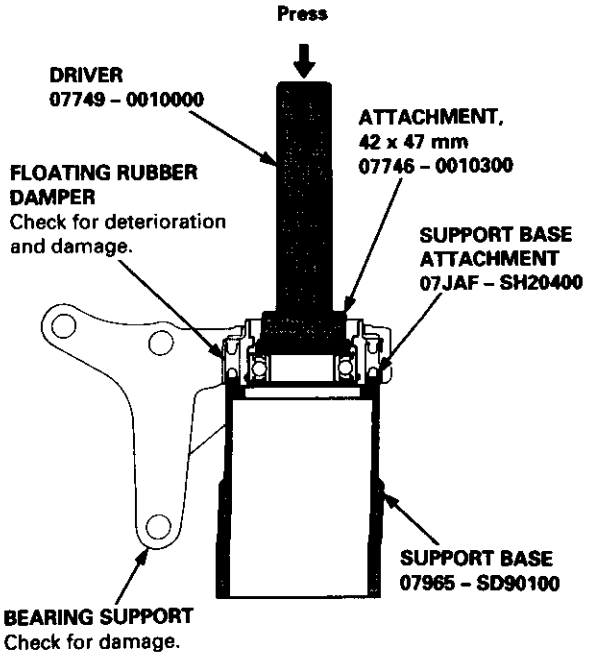
(cont'd)

Disassembly

4. Press the intermediate shaft out of the shaft bearing using the special tools and a press as shown.
5. Remove the internal circlip.

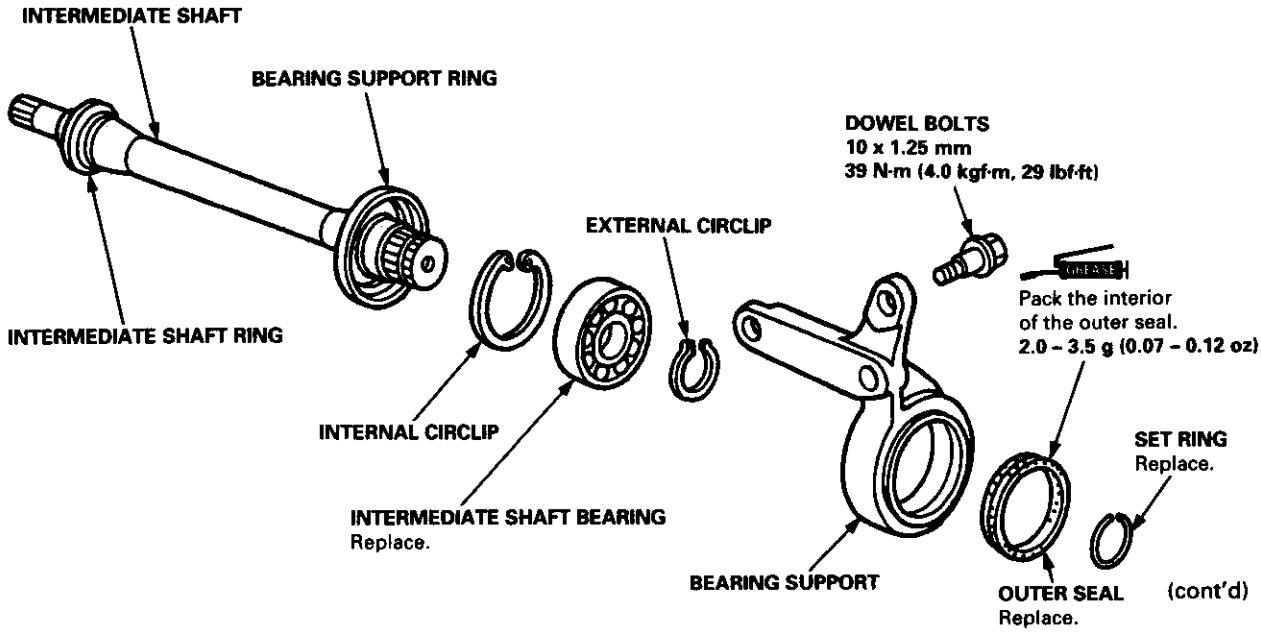


6. Press the intermediate shaft bearing out of the bearing support using the special tools and a press as shown.



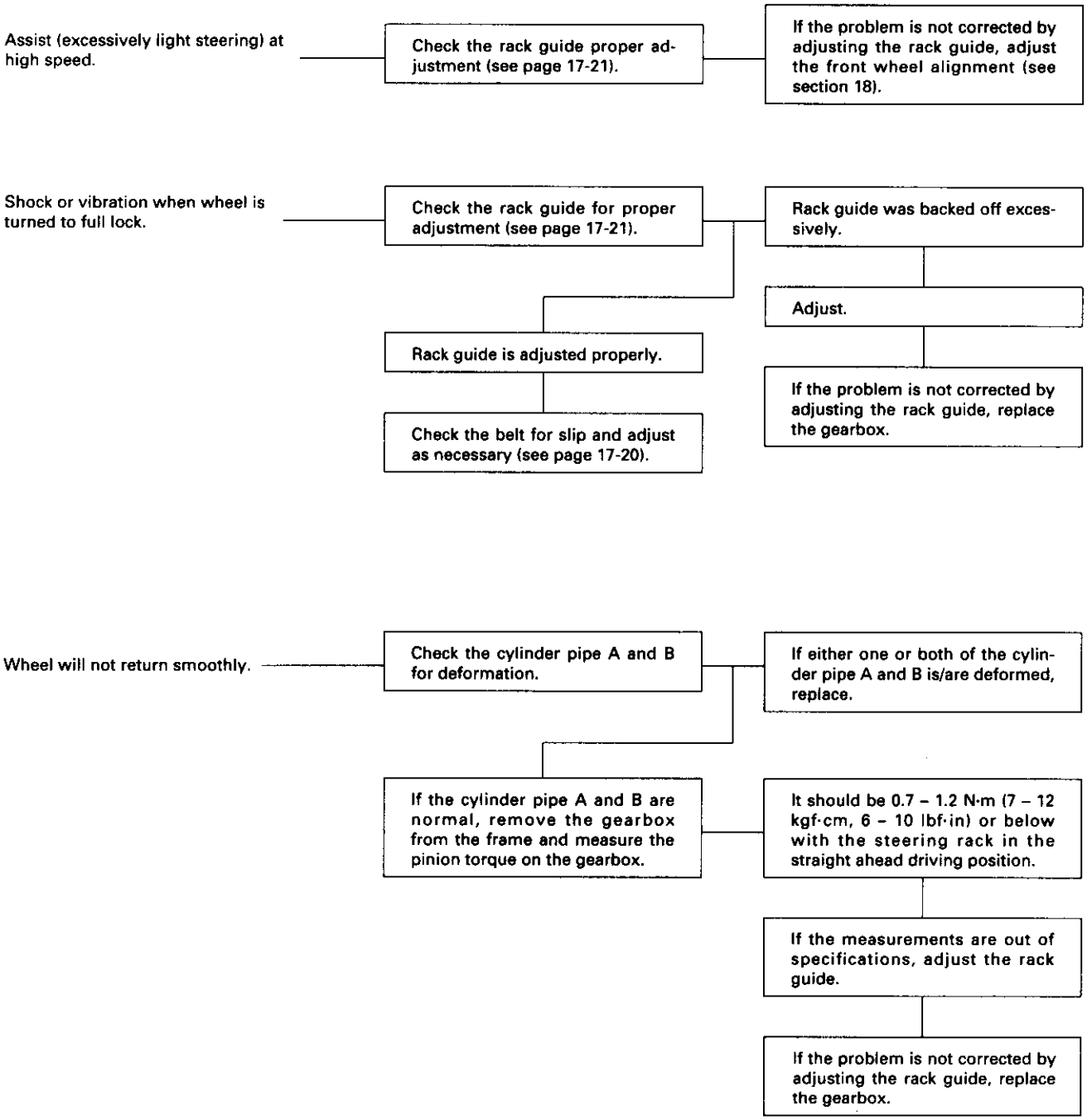
Reassembly

NOTE:
- Clean the disassembled parts with solvent, and dry them thoroughly with compressed air. Do not wash the rubber parts with solvent.
- Be careful not to damage the metal rings on the intermediate shaft during reassembly.



(cont'd)

General Troubleshooting (cont'd)



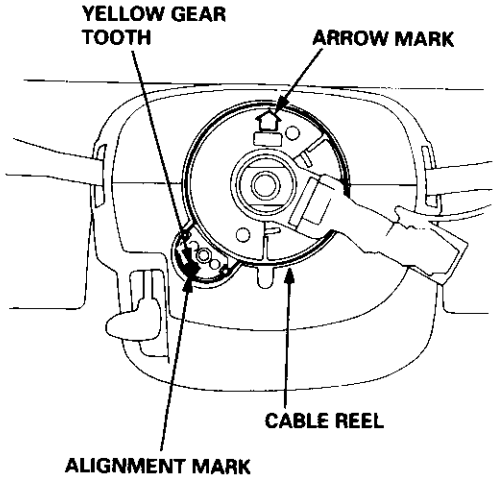
Installation

Airbag installation

CAUTION:
- **Before installing the steering wheel, align the front wheels straight ahead.**
- **Be sure to install the harness wires so that they are not pinched or interfering with other car parts.**
- **Do not replace the original steering wheel with any other design, since it will make it impossible to properly install the airbag. (Only use genuine HONDA replacement parts)**
- **After reassembly, confirm that the wheels are still straight ahead and that steering wheel spoke angle is correct. If minor spoke angle adjustment is necessary, do so only by adjustment of the tie-rods, not by removing and repositioning the steering wheel.**

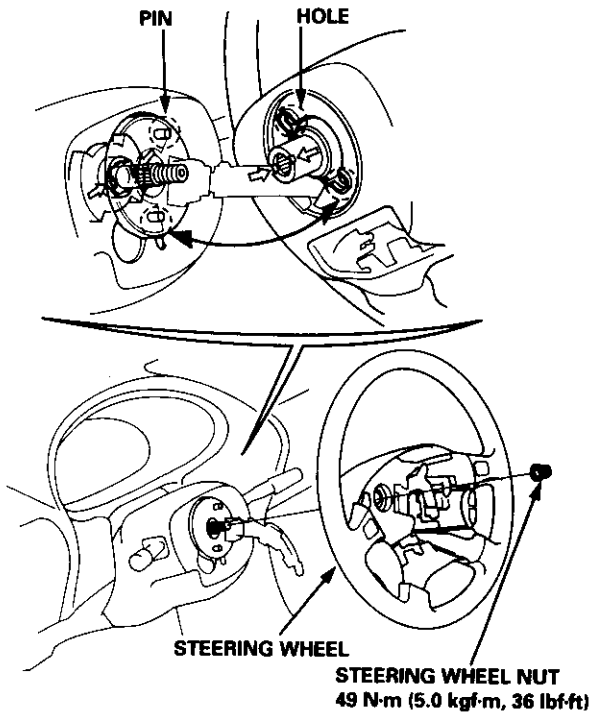
⚠ WARNING Confirm that the airbag assembly is securely attached to the steering wheel; otherwise, severe personal injury could result during airbag deployment.

1. Before installing the steering wheel, center the cable reel.
   Do this by first rotating the cable reel clockwise until it stops.
   Then rotate it counterclockwise (approximately two turns) until:
   — The yellow gear tooth lines up with the mark on the cover.
   — The arrow on the cable reel label points straight up.



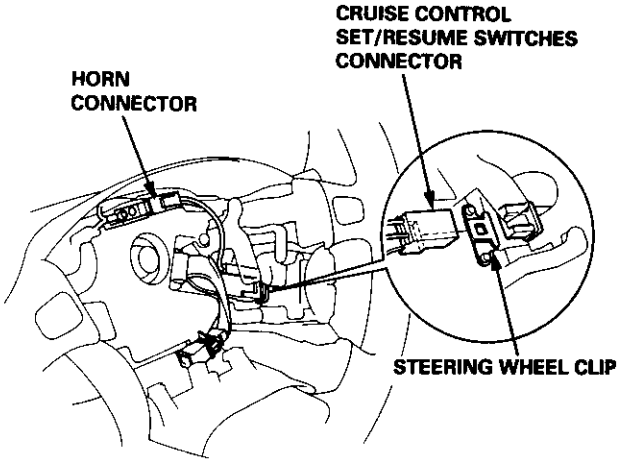
2. Install the steering wheel.

   NOTE: Be sure the steering wheel shaft engages the cable reel and canceling sleeve.



3. Attach the cruise control set/resume switches connector to the steering wheel clip.

4. Connect the horn connector.



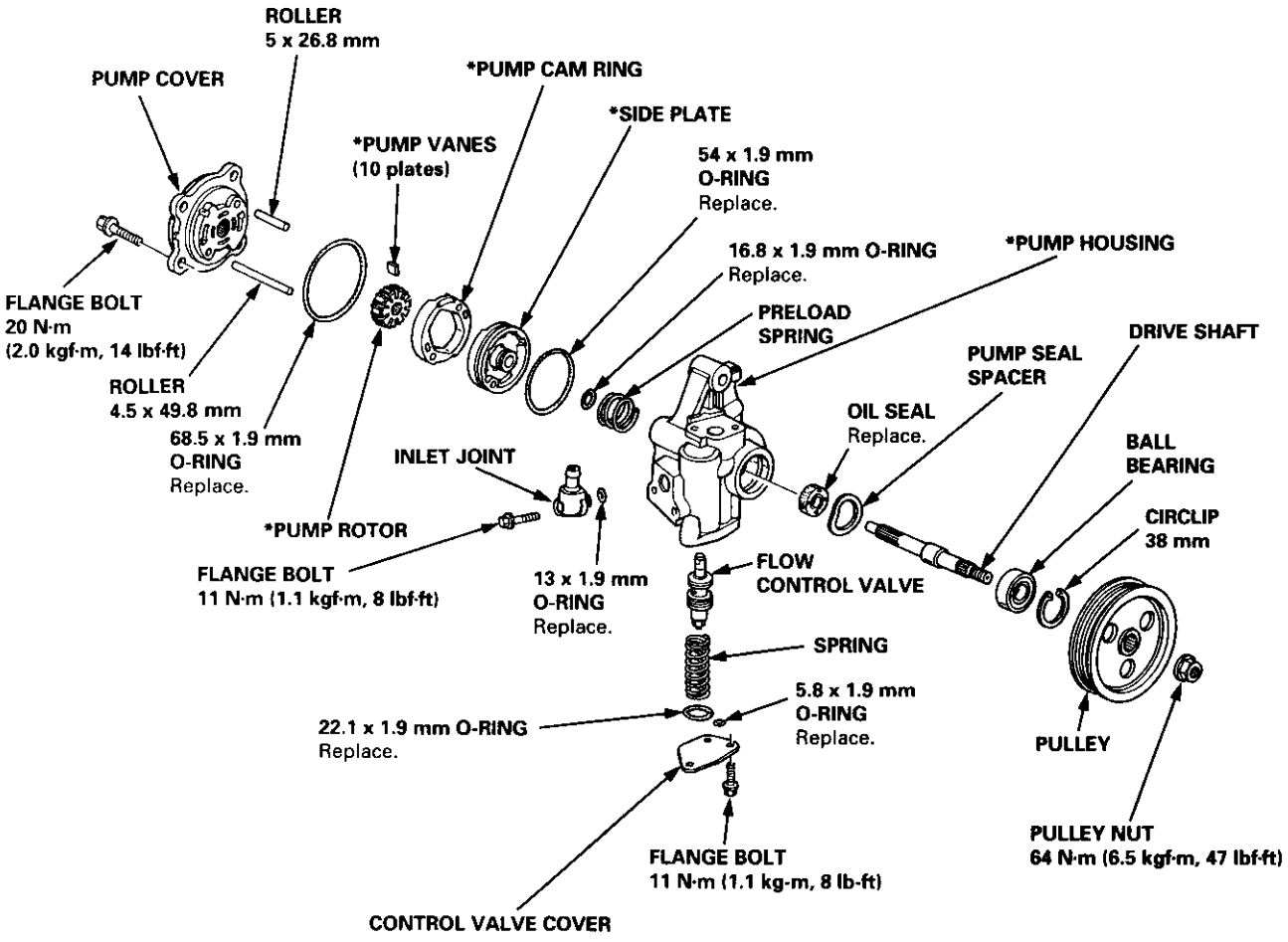
Power Steering Pump

Reassembly

CAUTION: The power steering components are made of aluminum. Avoid damaging the components during assembly.

NOTE:

- Clean the disassembled parts with a solvent and dry them with compressed air. Do not dip the rubber parts in a solvent.
- Always replace the O-rings and rubber seals with new ones before assembly.
- Apply recommended power steering fluid or steering grease (Honda P/N: 08733 – B070E) to the parts indicated in the assembly procedures.
- Do not allow dust, dirt, or other foreign materials to enter the power steering system.
- Replace the pump as an assembly if the parts indicated with asterisk (*) are worn or damaged.

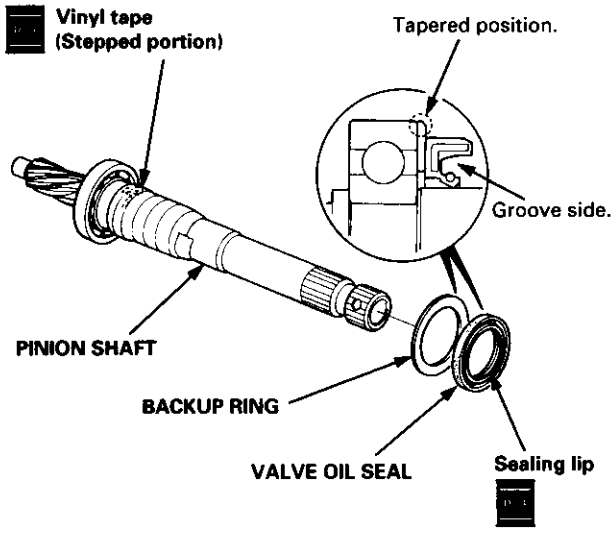


Reassembly (cont'd)

Valve Body Reassembly

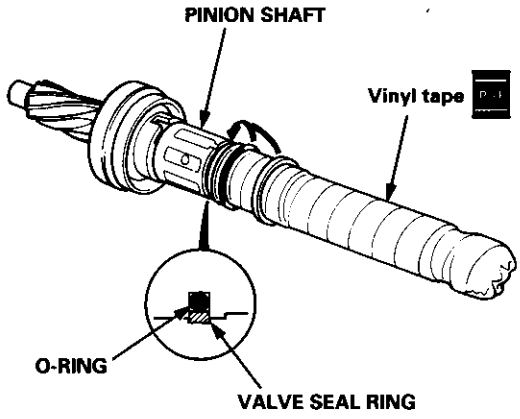
1. Apply vinyl tape to the stepped portion of the pinion shaft, and coat the surface of the vinyl tape with the power steering fluid.
2. Install the backup ring with its tapered side as shown below.
3. Coat the inside surface of the new valve oil seal with power steering fluid.
4. Slide the valve oil seal over the pinion shaft, being careful not to damage the sealing lip.

   CAUTION: Install the valve oil seal with its grooved side facing opposite the bearing.

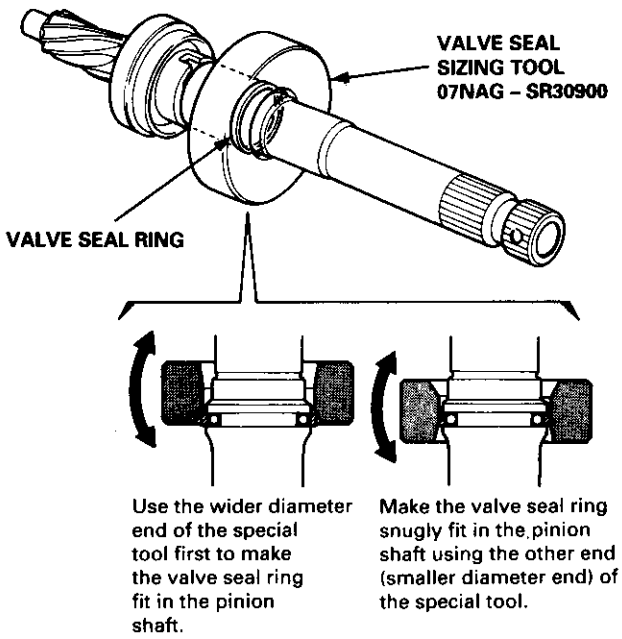


5. Fit the new O-ring in the groove of the pinion shaft. Then slide the new valve seal ring over the shaft and groove in on the pinion shaft.
6. Remove the vinyl tape from the pinion shaft.

   NOTE: Do not over – expand the valve seal ring.



7. Apply power steering fluid to the surface of the valve seal ring that was installed on the pinion shaft.
8. 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.
9. Move the special tool up and down several times to make the valve seal ring fit in the pinion shaft.
10. Remove the special tool.
11. Turn the special tool over and set the smaller diameter end of the special tool over the valve seal ring. Move the special tool up and down several times to make the valve seal ring snugly fit in the pinion shaft.



Use the wider diameter end of the special tool first to make the valve seal ring fit in the pinion shaft.

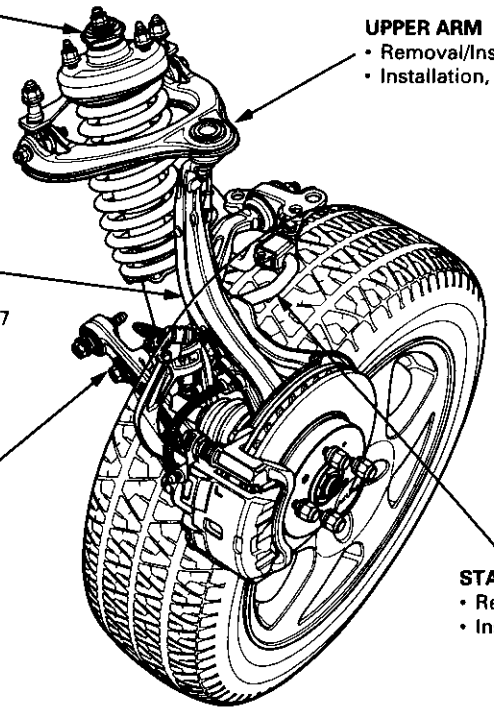
Make the valve seal ring snugly fit in the pinion shaft using the other end (smaller diameter end) of the special tool.

Component Location

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- Installation, page 18-25

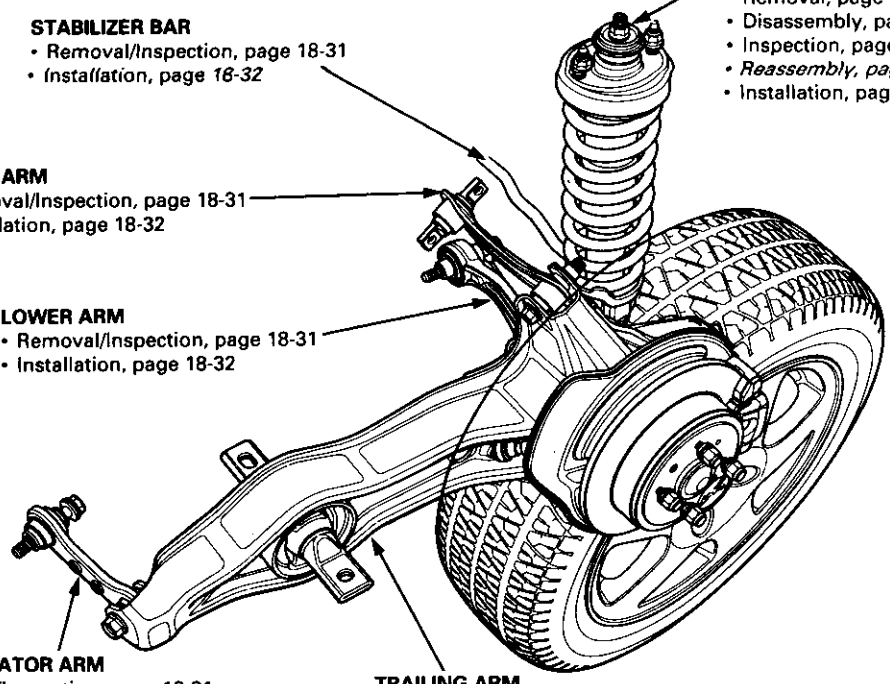
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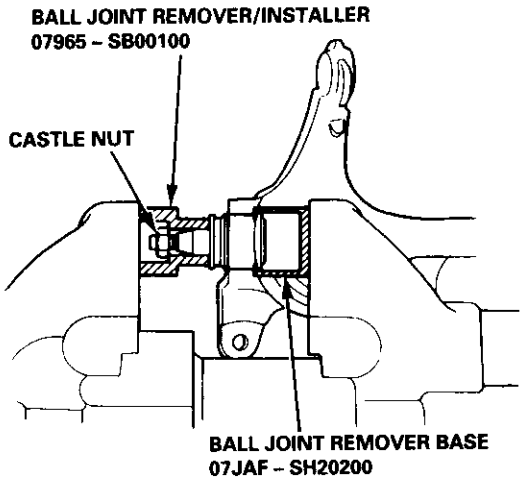
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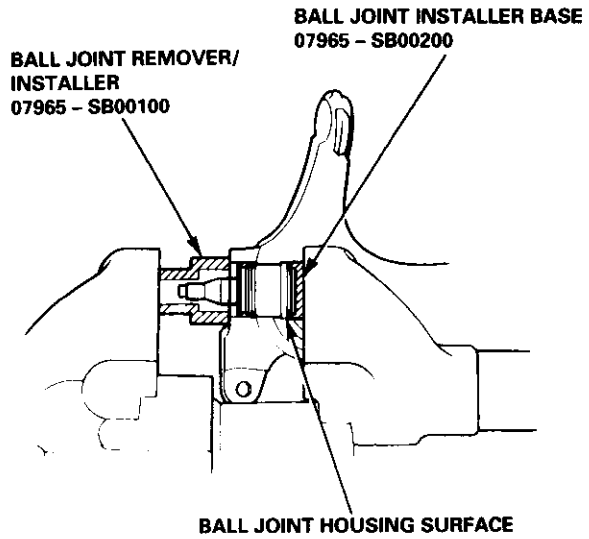
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Lower Ball Joint Replacement

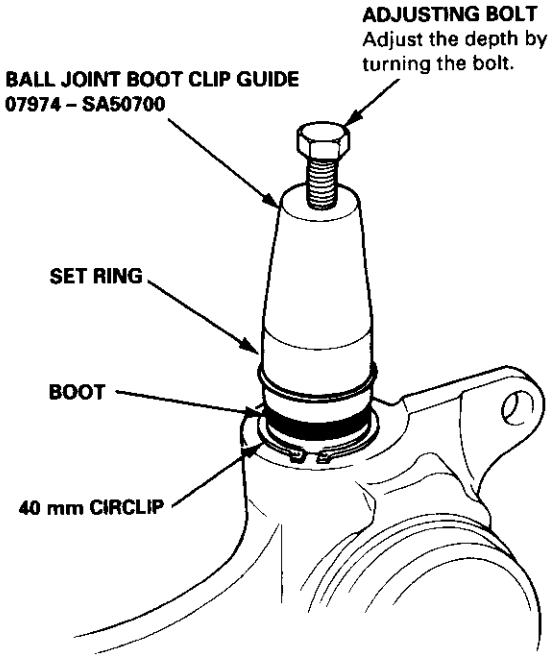
1. Remove the knuckle (see page 18-10).
2. Remove the boot by prying the set ring off.
3. Check the boot for deterioration and damage, replace if it is necessary.
4. Remove the 40 mm circlip.
5. Install the special tools on the ball joint and tighten the castle nut.
6. Position the special tools over the ball joint as shown, then set the assembly in a vise. Press the ball joint out of the knuckle.



7. Place the ball joint in position by hand.
8. Install the special tools over the ball joint as shown, then press the ball joint in.



9. Install the 40 mm circlip.
10. Install the ball joint boot and set ring using the special tool (see page 18-18).



11. Install the knuckle (see page 18-15).
12. Check the front wheel alignment and adjust if necessary (see page 18-4).

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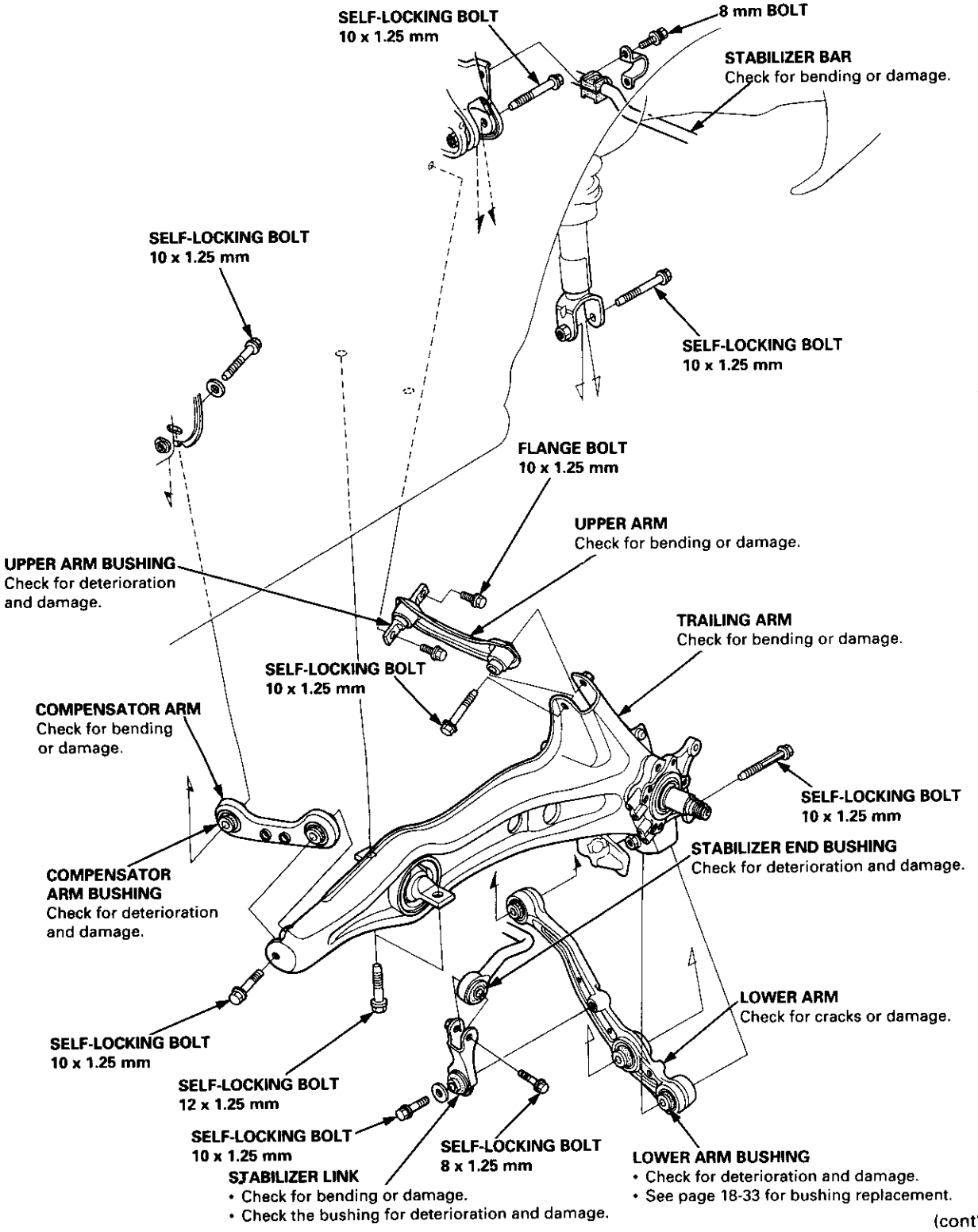


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Removal/Inspection

CAUTION: Replace the self-locking bolts if you can easily thread a non-self-locking nut past their nylon locking inserts. (It should require 1 N·m (0.1 kgf·m, 0.7 lbf·ft) of torque to turn the nut on the bolt).



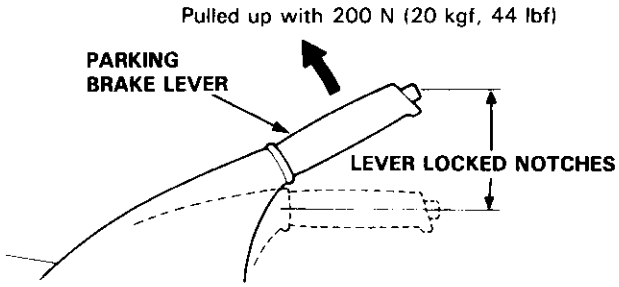
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Parking Brake

Inspection

1. Pull the parking brake lever with 200 N (20 kgf, 44 lbf) force to fully applied the parking brake. The parking brake lever should be locked within the specified notches.

   Lever Locked Notches: 6—10



2. Adjust the parking brake if the lever notches are out of specification.

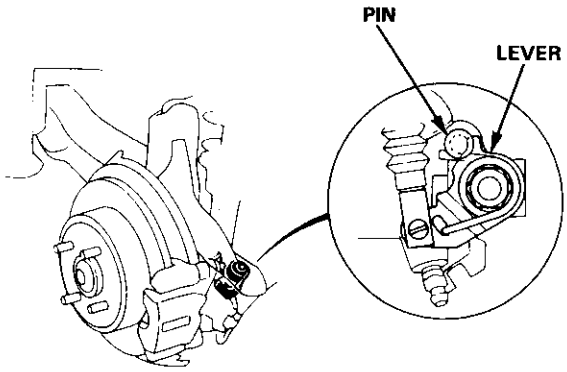
Adjustment

NOTE: After rear brake caliper servicing, loosen the parking brake adjusting nut, start the engine and depress the brake pedal several times to set the self-adjusting brake before adjusting the parking brake.

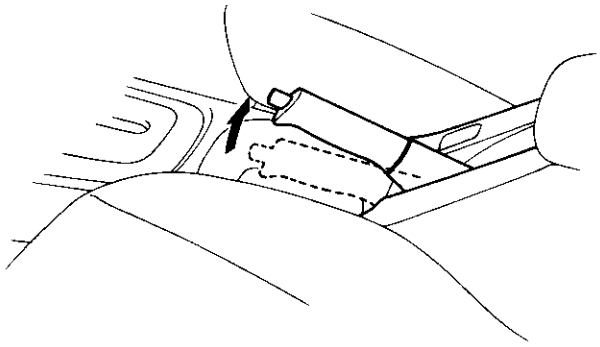
1. Raise the rear wheels off the ground and support on safety stands.

   ⚠ WARNING Block the front wheels before jacking up the rear of the car.

2. Make sure the parking brake arm on the rear brake caliper contacts the brake caliper pin.

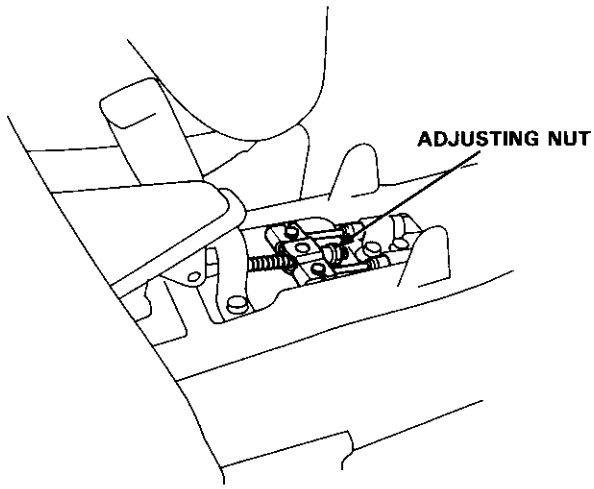


3. Pull the parking brake lever up on notch.



4. Remove the rear console (see section 20).

5. Tighten the adjusting nut until the rear wheels drag slightly when turned.



6. Release the parking brake lever fully, and check that the rear wheels do not drag when turned. Readjust if necessary.

7. Make sure that the parking brakes are fully applied with the parking brake lever is pulled up fully.

8. Install the cap onto the parking brake cable end, and reinstall the rear console.

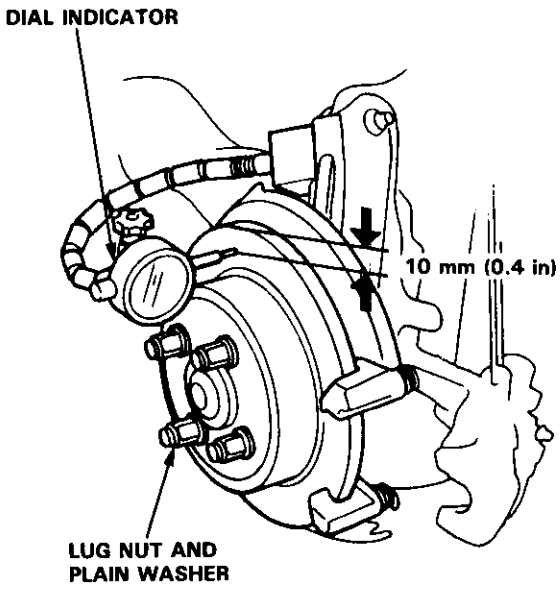
Rear Brake Disc

Disc Runout Inspection

1. Loosen the rear wheel nuts slightly, then raise the car and support on safety stands. Remove the rear wheels.
2. Remove the brake pads (see page 19-16).
3. Inspect the disc surface for damage or cracks. Clean the disc thoroughly and remove all rust.
4. Use wheel nuts and suitable plain washers to hold the disc securely against the hub, then mount a dial indicator 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) max.
5. If the disc is beyond the service limit, refinish the brake disc.

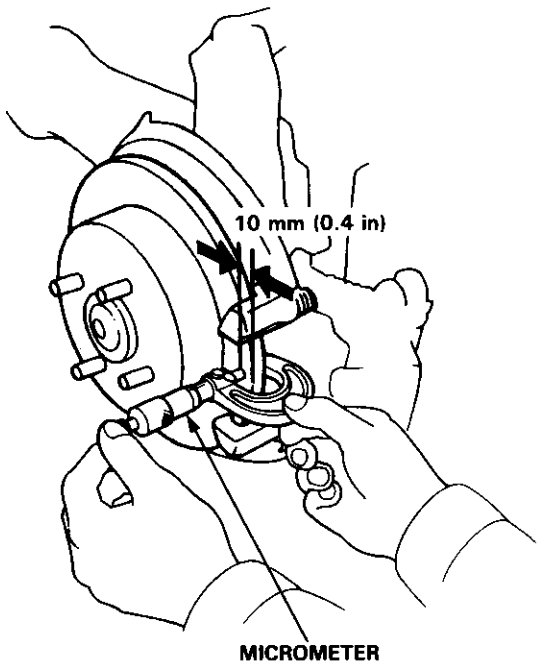
   Max. Refinishing Limit: 8.0 mm (0.32 in)



NOTE: A new disc should be refinished if its runout is greater than 0.10 mm (0.004 in).

Thickness and Parallelism Inspection

1. Loosen the rear wheel lug nuts slightly, then raise the car and support on safety stands. Remove the rear wheels.
2. Remove the brake pads (see page 19-16).
3. Using a micrometer, measure disc thickness at eight points, approximately 45° apart and 10 mm (0.4 in) in from the outer edge of the disc.



Brake Disc Thickness:
Standard: 8.9–9.1 mm (0.35–0.36 in)
Max. Refinishing Limit: 8.0 mm (0.31 in)

NOTE: Replace the brake disc if the smallest measurement is less than the max. refinishing limit.

Brake Disc Parallelism: 0.015 mm (0.0006 in) max.

NOTE: This is the maximum allowable difference between the thickness measurement.

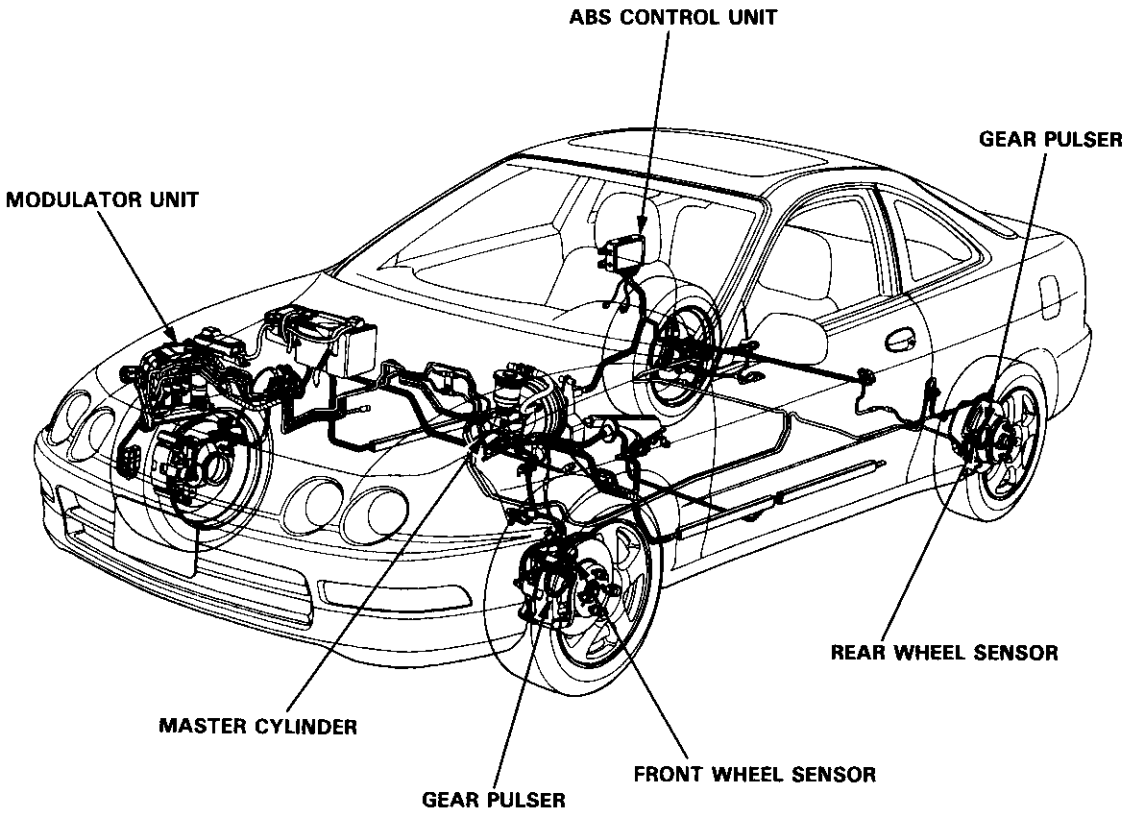
4. If the disc is beyond the service limit for parallelism, refinish the brake disc.

   NOTE: See page 18-29 for brake disc replacement.

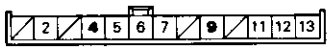
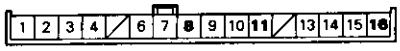
Anti-lock Brake System (ABS)

Features/Construction

In a conventional brake system, if the brake pedal is depressed very hard, the wheels can lock before the vehicle comes to a stop. In such a case, the stability of the vehicle is reduced if the rear wheels are locked, and maneuverability of the vehicle is reduced if the front wheels are locked, creating an extremely unstable condition.
The Anti-lock Brake System (ABS) modulates the pressure of the brake fluid applied to each front caliper or both rear calipers, thereby preventing the locking of the wheels, whenever the wheels are likely to be locked due to hard braking. It then restores normal hydraulic pressure when there is no longer any possibility of wheel locking.
The ABS equipped on this car is compact, with its hydraulic control system incorporated into one modulator unit. It is a 3-channel anti-lock brake system that has individual control of the front wheels and common control ("Select Low") for the rear wheels. "Select Low" means that the rear wheel that would lock first (the one with the lowest resistance to lock-up) determines anti-lock brake system activation for both rear wheels.



PART NAME	MAJOR FUNCTION
Gear pulser	Attached to the rotating part of the wheel and detects the wheel speed together with the wheel sensor.
Wheel sensor	Generates pulse signal corresponding to the revolution of the gear pulser.
ABS control unit	Controls the working of the anti-lock brake system by performing calculations based on the signals from the individual wheel sensors and the individual switches.
Modulator unit	* Adjusts the hydraulic pressure applied to each caliper on the basis of the signals received from the ABS control unit. * Pump, accumulator, solenoid valves and pistons are integrated in the modulator unit.
Motor Relay	Controls the ABS pump motor's power supply according to the signal from the ABS control unit.
Fail-safe-relay	Cuts off the solenoid valve ground circuit when the fail-safe device is at work.

No.	Wire harness	Number of terminals	Color	Description	Location
C28	C	1P	GRY	Parking brake switch connector 	Connected to parking brake switch
C29	D	13P	GRY	Gauge assembly connector 	Connected to rear of gauge assembly
C30	D	16P	GRY	Gauge assembly connector 	
C31	D	20P	GRN	Under-dash fuse/ relay box connector 	Connected to front of under-dash fuse/relay box
C32	E	14P	GRY	Relay connector: Engine compartment wire harness-to-engine wire harness 	Left side of engine compartment
C33	E	2P	ORN	Left-front wheel sensor connector 	Left side of engine compartment
34	E	6P Ground	GRY	Brake fluid level switch ground 	Connected to body at front left side of engine compartment
C35	F	4P	GRY	Alternator connector 	Connected to alternator

The ABS indicator light does not come on when the ignition switch is turned ON.

Check the BACK-UP LIGHT (10A) fuse in the under-dash fuse/relay box.

NOTE: All indicator lights except the charging system indicator light will not come on when the BACK-UP LIGHT (10A) fuse in blown.

Is the fuse OK?

NO → **Replace the fuse and recheck.**

NOTE: Reinstall the fuse if it is OK.

YES

Disconnect the gauge assembly 13P connector.

Turn the ignition switch ON.

Measure the voltage between the gauge assembly 13P connector No. 4 (YEL) terminal and body ground.

Is there battery voltage?

NO → **• Repair open in the YEL wire between the BACK-UP LIGHT *(10A) fuse and gauge assembly.***
• Replace the under-dash fuse/relay box. (Open circuit inside the fuse/relay box)

YES

Check the ABS indicator light bulb in the gauge assembly.

Is the bulb OK?

NO → **Replace the ABS indicator light bulb.**

YES

Connect the gauge assembly 13P connector.

Short the gauge assembly 16P connector No. 8 (BLU/RED) terminal to body ground.

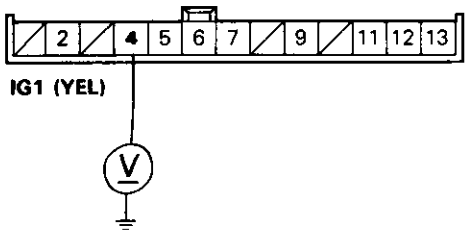
Does the ABS indicator light come on?

NO → **Replace the printed circuit board in the gauge assembly.**

YES

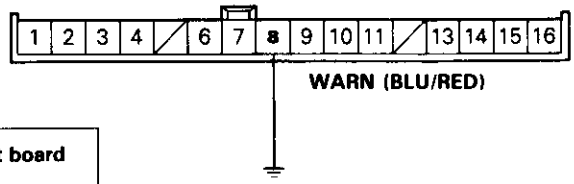
(To page 19-64)

GAUGE ASSEMBLY 13P CONNECTOR



WIRE SIDE OF FEMALE TERMINALS

GAUGE ASSEMBLY 16P CONNECTOR



WIRE SIDE OF FEMALE TERMINALS

(cont'd)

(From page 19-76)

Measure the voltage between the ABS control unit 22P connector No. 21 (YEL/RED) terminal and body ground.

Is there battery voltage?

NO

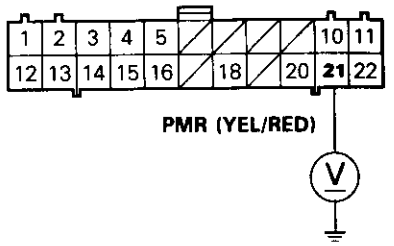
Repair open in the YEL/RED wire between the under-hood ABS fuse/relay box and ABS control unit.

YES

Reconnect the connectors properly, bleed high pressure fluid and start the engine. If DTC 2-1 is stored again, replace the ABS control unit.

NOTE: Add the brake fluid if the fluid level is lower than the MIN line.

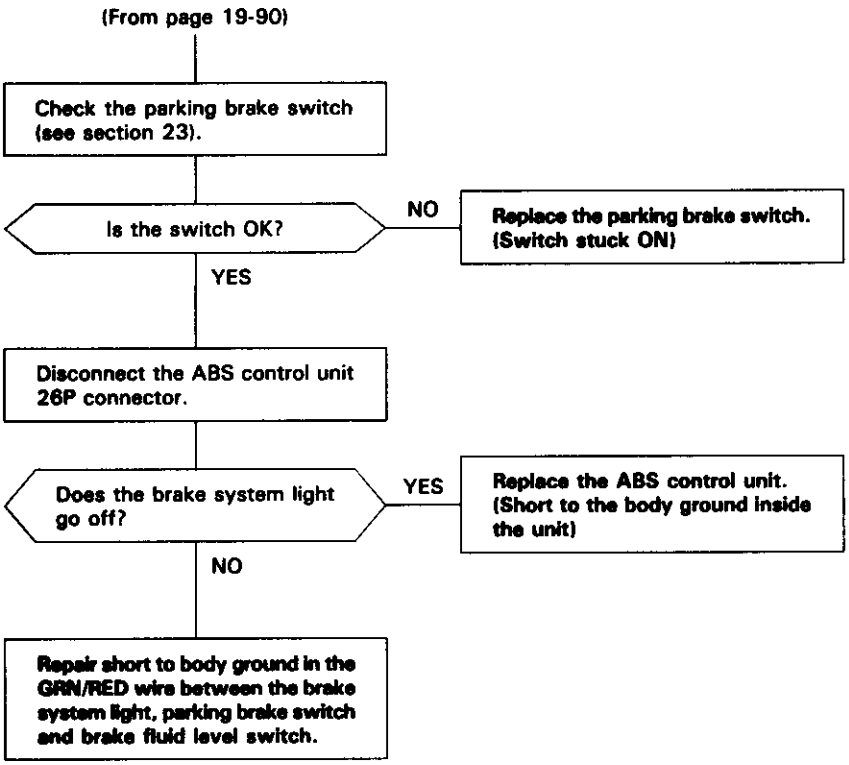
ABS CONTROL UNIT 22P CONNECTOR



WIRE SIDE OF FEMALE TERMINALS

(cont'd)

(From page 19-90)



(From page 19-104)

Connect the right-rear wheel sensor 2P connector.

Measure the resistance between the ABS control unit 22P connector No. 15 (GRN/YEL) and No. 16 (BLU/YEL) terminals.

Is there 700—1100 Ω?

NO → Short the ABS control unit 22P connector No. 15 (GRN/YEL) terminal to body ground.

YES

Disconnect the right-rear wheel sensor 2P connector.

Check for continuity between the wheel sensor 2P connector No. 2 (GRN/YEL) terminal and body ground.

NOTE: Check with the ABS control unit 22P connector disconnected.

Is there continuity?

NO → **Repair open in the GRN/YEL wire between the ABS control unit and right-rear wheel sensor.**

YES

Repair open in the BLU/YEL wire between the ABS control unit and right-rear wheel sensor.

Measure the right-rear wheel sensor air gap (see page 19-158).

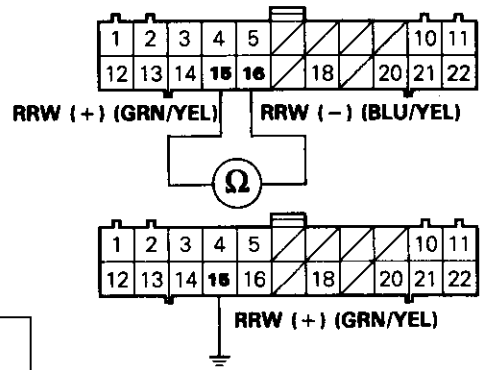
Is the air gap OK?

NO → **Correct the right-rear wheel sensor air gap (see page 19-158).**

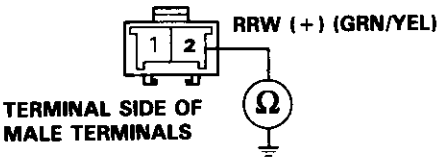
YES

- If an ALB checker is available, go to page 19-106.
- When the ALB checker is not available, go to page 19-107.

ABS CONTROL UNIT 22P CONNECTOR



RIGHT-REAR WHEEL SENSOR 2P CONNECTOR



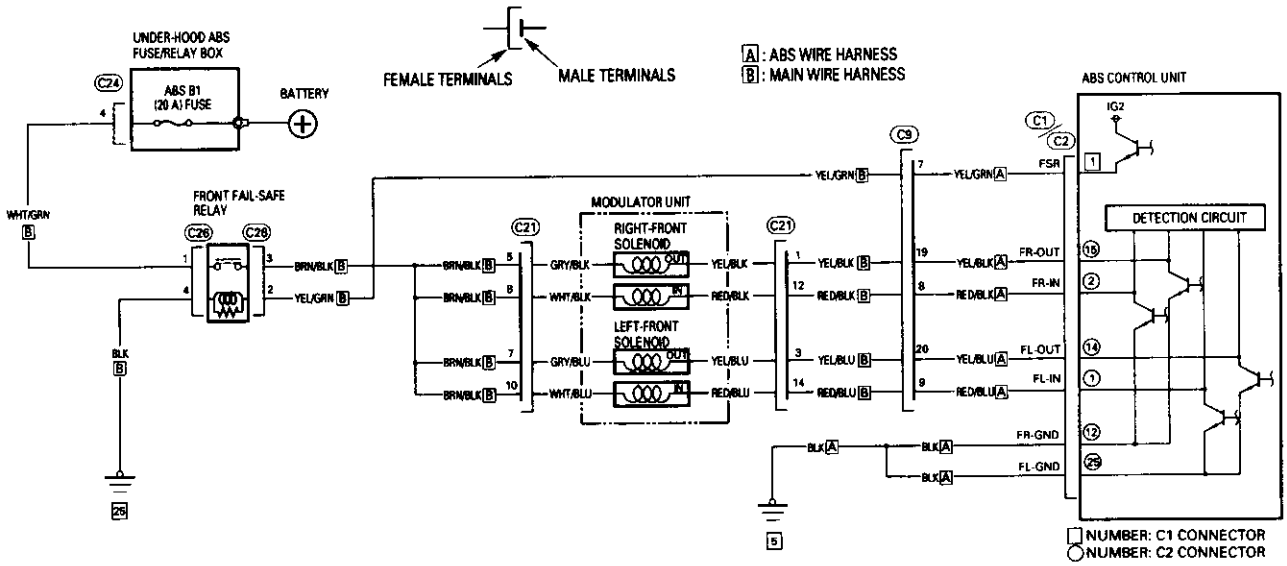
(cont'd)

Front Fail-safe Relay

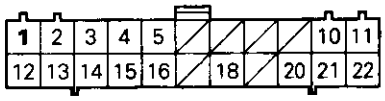
Diagnostic Trouble Code (DTC) 6-1: Front Fail-safe Relay Diagnosis

The ABS control unit monitors the voltage from the battery for the six solenoids during the initial diagnosis when the fail-safe relays are OFF.
The ABS control unit keeps the ABS indicator light on if it detects battery voltage at the front solenoid circuits.
Possible causes:

- Front fail-safe relay stuck ON
- Short to power in the solenoid drive circuits between the front fail-safe relay and ABS control unit.



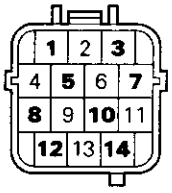
C1 22P ORN



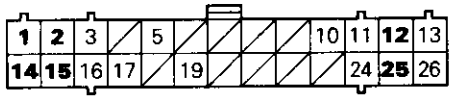
C26 4P ORN



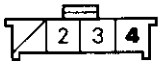
C21 14P ORN



C2 26P ORN

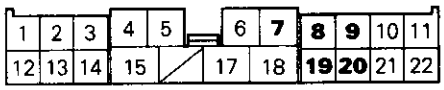


C24 4P ORN



TERMINAL SIDE OF MALE TERMINALS

C9 22P ORN



WIRE SIDE OF FEMALE TERMINALS

5 / 25 GROUND



(cont'd)

(From page 19-131)

Measure the voltage between the under-hood ABS fuse/relay box 4P connector No. 4 (WHT/GRN) terminal and body ground.

Is there battery voltage?

NO → **Replace the under-hood ABS fuse/relay box. (Internal open)**

YES

Disconnect the front fail-safe relay connector.

Wire colors of the front fail-safe relay connector: WHT/GRN, BRN/BLK, YEL/GRN, BLK

Measure the voltage between the front fail-safe relay connector No. 1 (WHT/GRN) terminal and body ground.

Is there battery voltage?

NO → **Repair open in the WHT/GRN wire between the under-hood ABS fuse/relay box and front fail-safe relay.**

YES

Check the front fail-safe relay (see page 19-157).

Is the relay OK?

NO → **Replace the front fail-safe relay.**

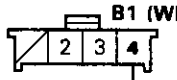
YES

Disconnect the modulator unit 14P connector.

Connect the front fail-safe relay connector No. 1 (WHT/GRN) and No. 3 (BRN/BLK) terminals using a jumper wire.

(To page 19-134)

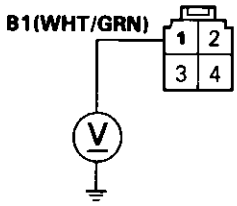
UNDER-HOOD ABS FUSE/RELAY BOX 4P CONNECTOR



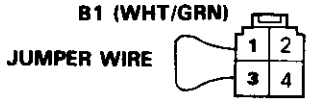
WIRE SIDE OF FEMALE TERMINALS



FRONT FAIL-SAFE RELAY CONNECTOR



WIRE SIDE OF FEMALE TERMINALS



SOLENOID (BRN/BLK)

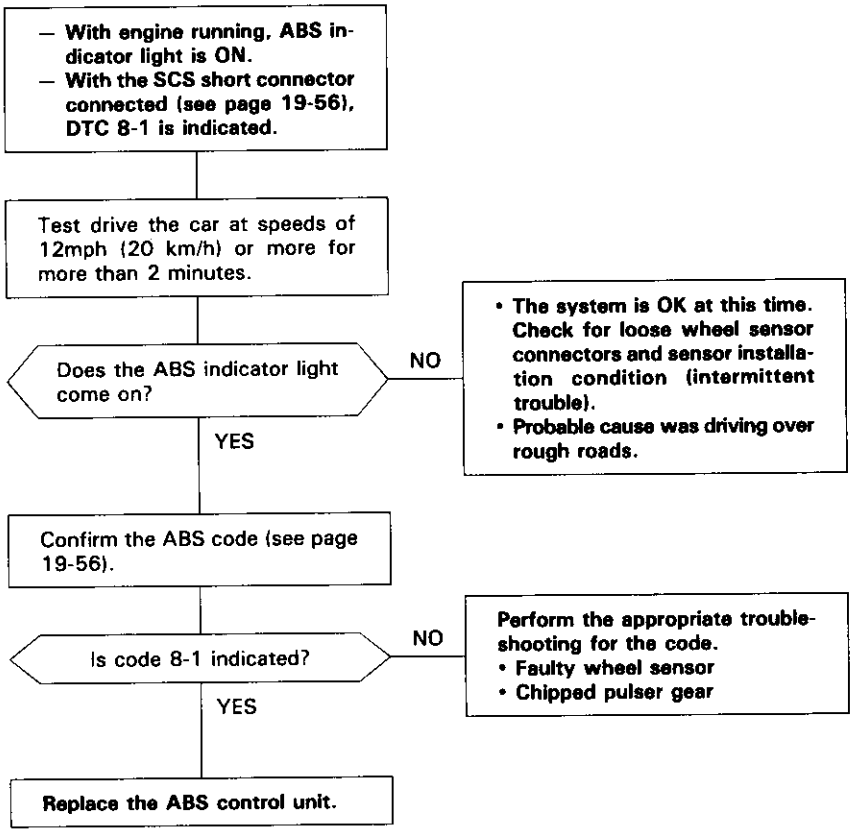
(cont'd)

ABS Function

Diagnostic Trouble Code (DTC) 8-1: ABS Function Diagnosis

The ABS control unit monitors the ABS functioning time during regular diagnosis, and it turns the ABS indicator light on if the ABS is functioning for a prolonged time.
Possible causes:

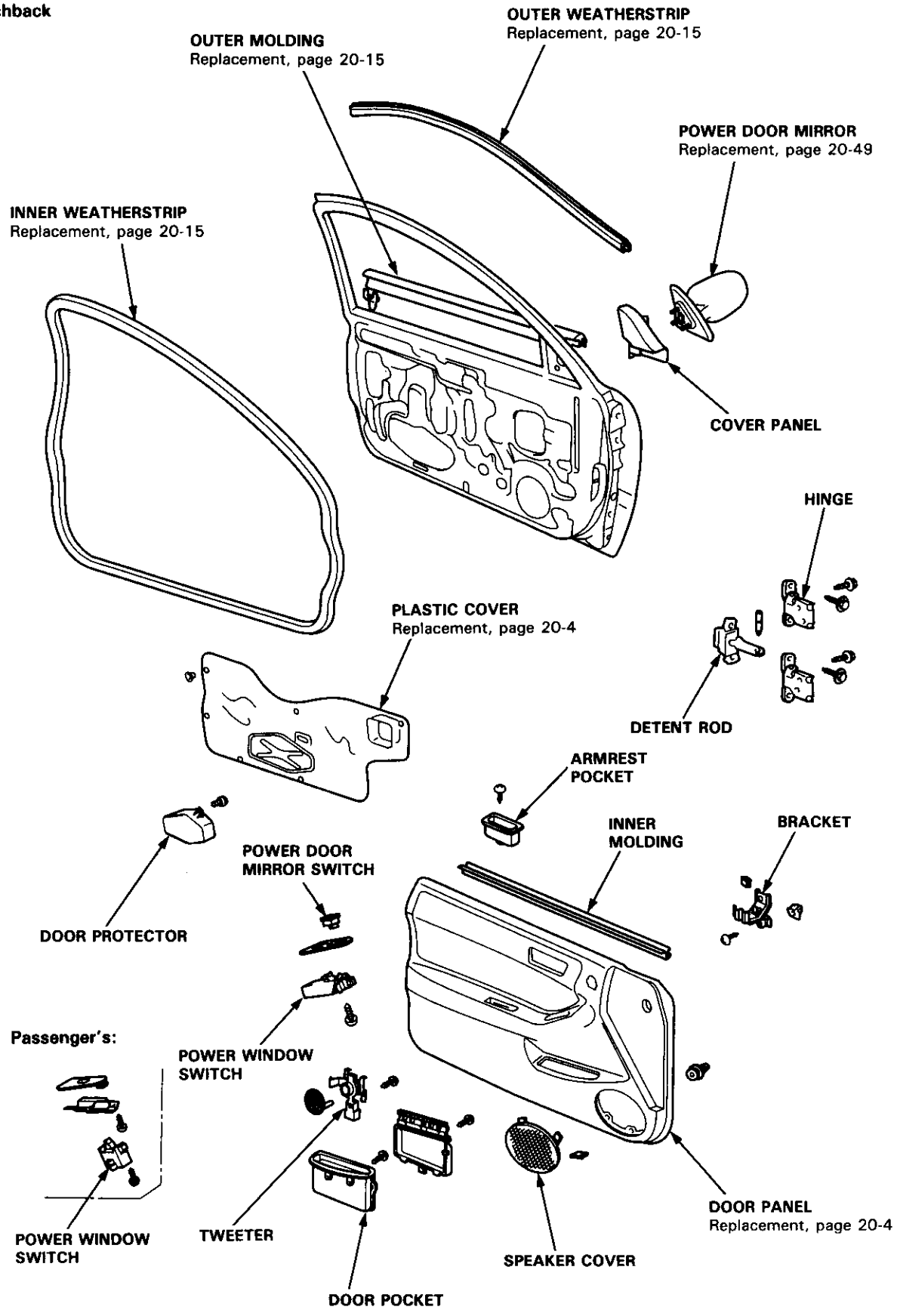
- Wheel sensor signal disappears at speeds of 6 mph (10 km/h) or less
- Faulty ABS control unit



Doors

Door Index

Hatchback

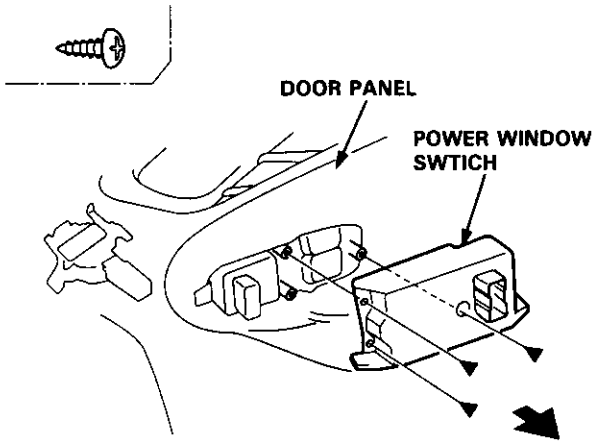


Glass Adjustment

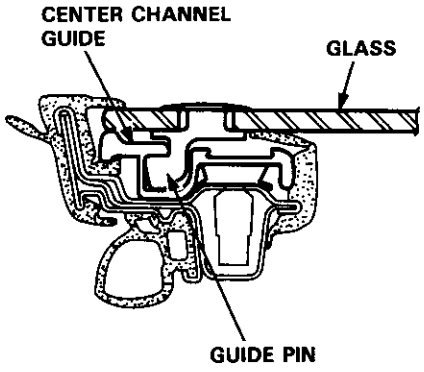
NOTE:
- Place the vehicle on a firm, level surface when adjusting the glass.
- Check the weatherstrips and glass run channel for damage or deterioration and replace if necessary.

1. Remove the door panel, and peel off the plastic cover (see page 20-4).
2. Remove the power window switch from the door panel.

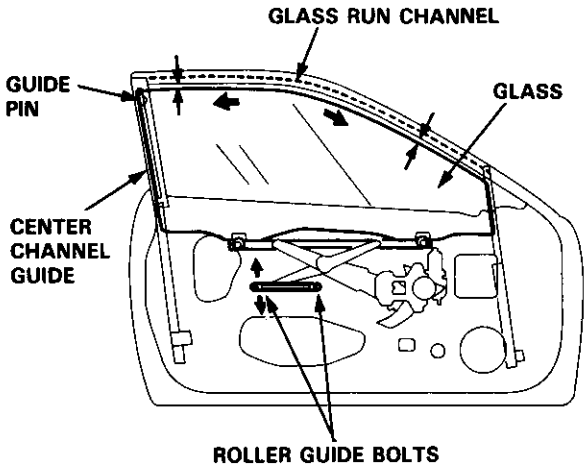
◀: Screw locations, 5



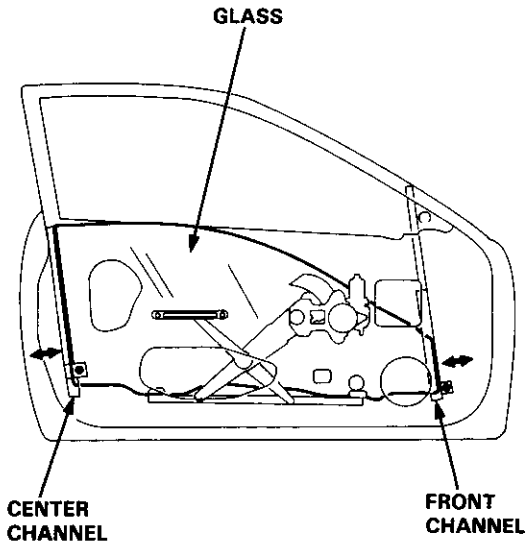
3. Connect the power window switch to the door harness.
4. Make sure the guide pin is installed in the center channel guide properly.



5. Raise the glass as far up as possible, and hold it against the glass run channel.
6. Loosen the roller guide bolts, and adjust the glass so it is parallel with the glass run channel.

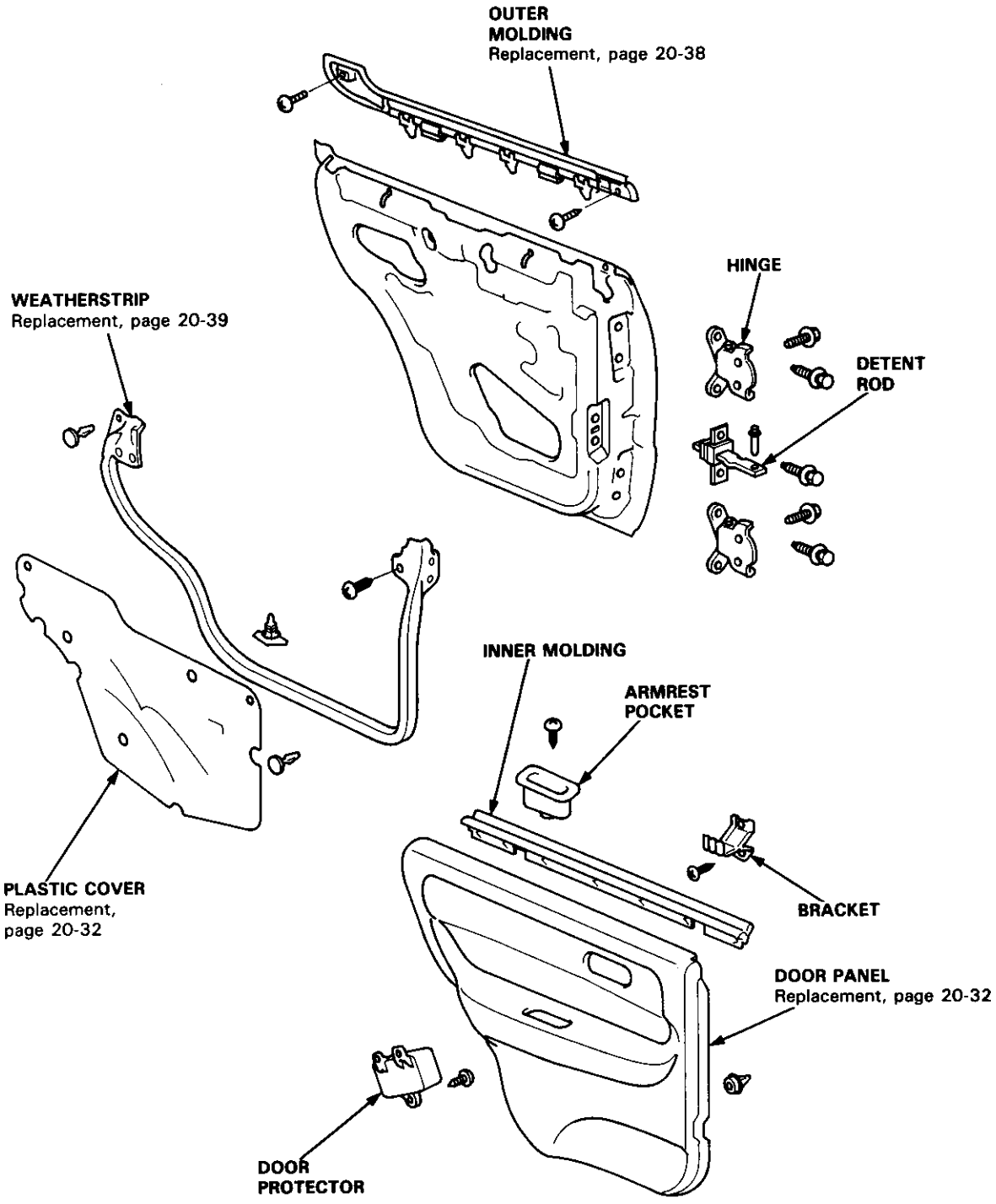


7. Tighten the roller guide bolts.
8. Check that the glass moves smoothly.
9. If necessary, adjust the front and center channels.



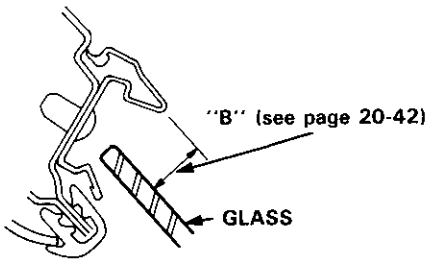
Rear Door Index

Sedan



Glass Adjustment (cont'd)

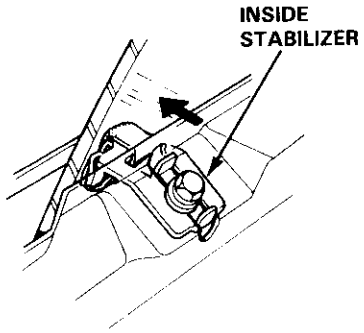
12. Adjust clearance "B" as follows.



—1 Lower the glass 10 mm (0.39 in).

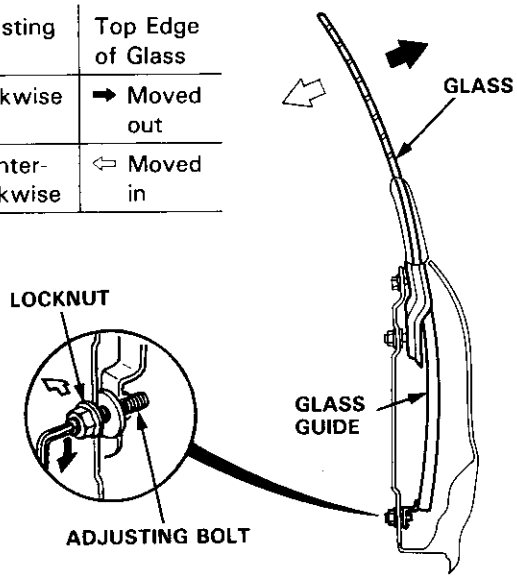
—2 Push the glass outward 10 mm (0.39 in), then push the inside stabilizers against the glass lightly. Fasten the inside stabilizers.

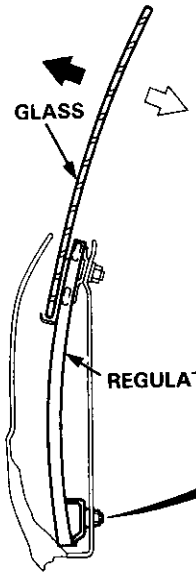
NOTE: Check that the glass moves smoothly.



—3 Loosen the locknut, and turn the adjusting bolt until the clearance "B" is within the specified value.

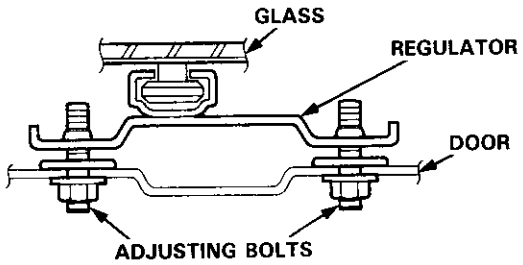
Adjusting Bolt	Top Edge of Glass
Clockwise	➡ Moved out
Counter-clockwise	⇦ Moved in





Adjusting Bolt	Top Edge of Glass
Clockwise	⬅ Moved out
Counter-clockwise	⇨ Moved in

NOTE: Turn the front and rear adjusting bolts the same amount to keep the regulator parallel with the seating surface of the door.
After tightening the adjusting bolts, make sure that the ends of the adjusting bolts still project out of the locknuts.



—4 Align the front sash with the glass using the adjusting bolt at the bottom of the front sash.

—5 Move the glass up and down to seat it, then measure clearance "B" at the designated locations.

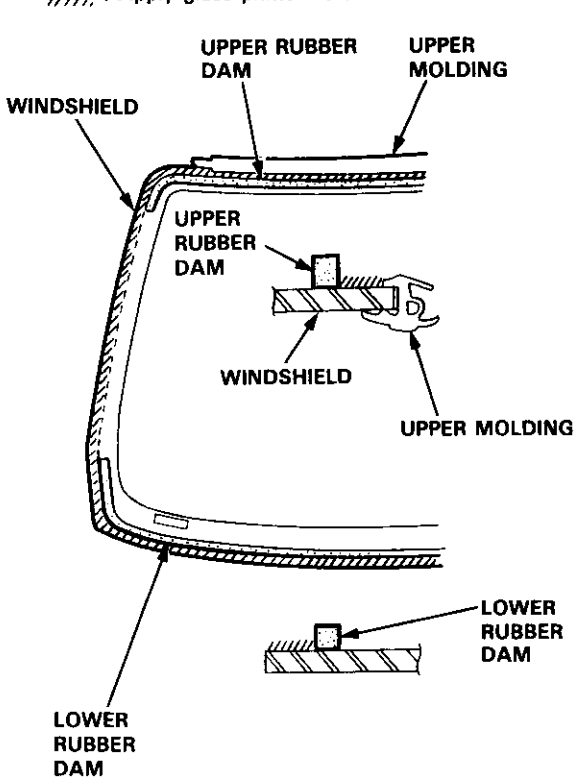
—6 Measure clearance "H" again to make sure it is still within the specified limits at the designated locations.

NOTE: Repeat the above steps until the correct clearances are obtained.

Installation (cont'd)

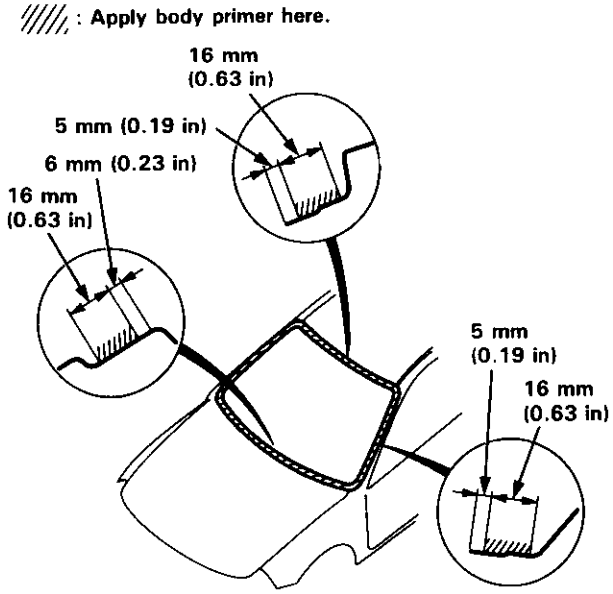
9. With a sponge, apply a light coat of glass primer around the edge of the windshield as shown, then lightly wipe it off with gauze or cheesecloth.

   NOTE:
   - 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.



10. 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.

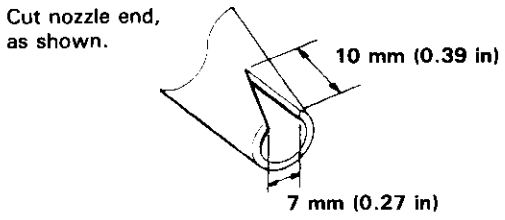
    NOTE:
    - Do not apply glass primer to the body, and be careful not to mix up glass and body primer sponges.
    - Never touch the primed surfaces with your hands.
    - Mask off the dashboard before painting the flange.



11. Thoroughly mix the adhesive and hardener together on a glass or metal plate with a putty knife.

    NOTE:
    - Clean the plate with a sponge and alcohol before mixing.
    - Follow the instructions that come with the adhesive.

12. Before filling a cartridge, cut the end of the nozzle, as shown.

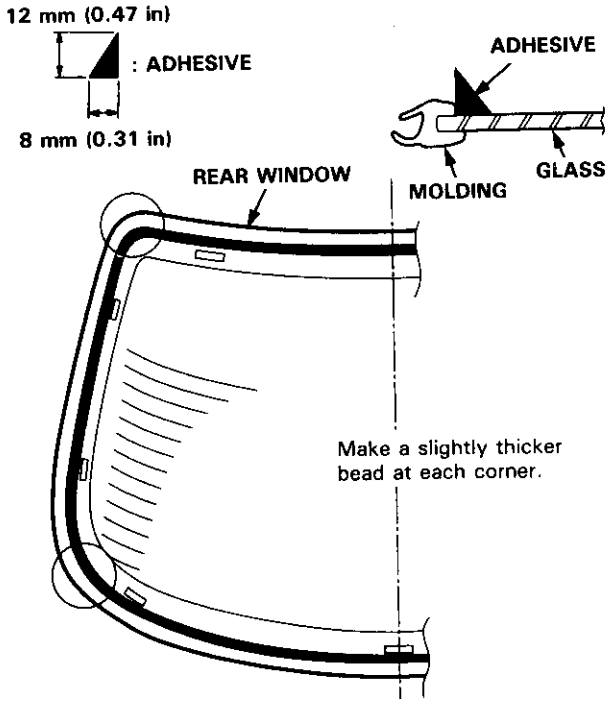


Rear Window

Installation (cont'd)

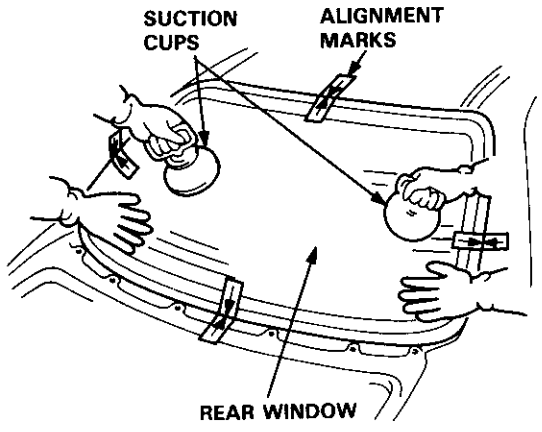
14. Pack adhesive into the cartridge without air pockets to ensure continuous delivery. Put the cartridge in a caulking gun, and run a bead of adhesive around the edge of the rear window, as shown.

    NOTE: Apply the adhesive within 30 minutes after applying the glass primer.



15. Use suction cups to hold the rear window over the opening, align it with the alignment marks made in step 8, and set it down on the adhesive. Lightly push on the rear window until its edges are fully seated on the adhesive all the way around.

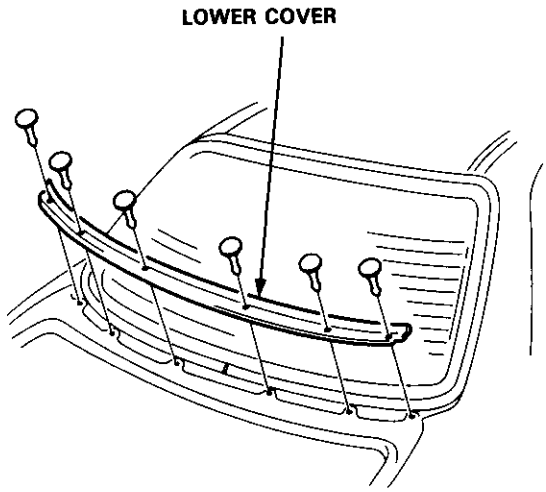
    NOTE: Do not close or open the doors until the adhesive is dry.



16. Scrape or wipe the excess adhesive off with a putty knife or towel.

    NOTE: To remove adhesive from a painted surface or the rear window, use a soft shop towel dampened with alcohol.

17. Install the lower cover.



18. Let the adhesive dry for at least one hour, then spray water over the rear window and check for leaks. Mark leaking areas, let the rear window dry, then seal with sealant.

    NOTE: Let the car stand for at least four hours after rear window installation. If the car has to be used within the first four hours, it must be driven slowly.

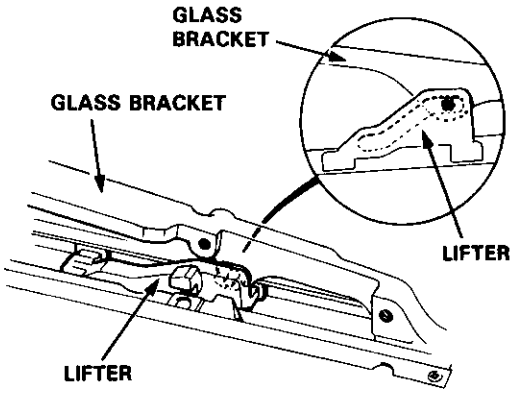
19. Raise the headliner back up into position, then install:
    - Rear pillar trim panel
    - Rear shelf
    - Rear seat-back side bolsters

Moonroof

Rear Edge 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, adjust it.

1. Remove the headliner (see page 20-100).
2. Remove the glass.
3. Remove the motor (see page 20-87).
4. Align the tilt-up position of the lifter on each side.



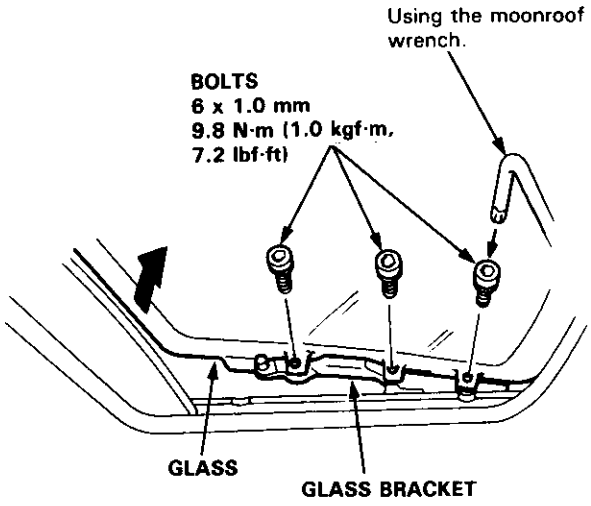
5. Check that the alignment left and right, then install the motor.
6. Install the glass, then check for water leaks.

   NOTE: Do not use high pressure water.

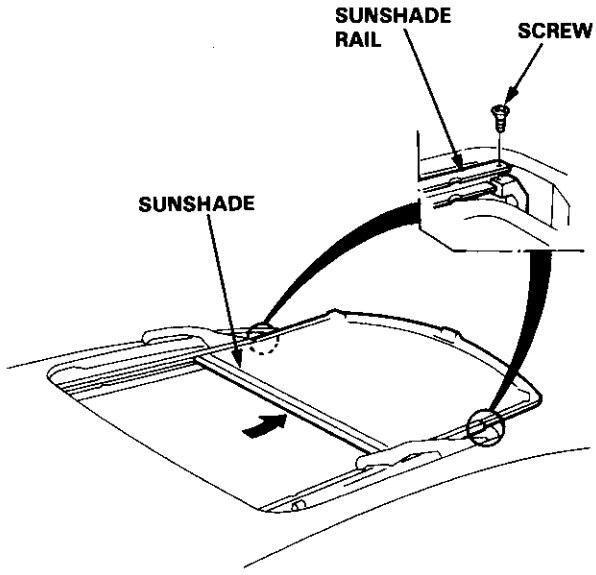
7. Install the headliner.

Glass and Sunshade Replacement

1. Open the sunshade.
2. Tilt-up the glass.
3. Remove the bolts, then remove the glass from the glass bracket.



4. Remove the screws and lift the sunshade rails.
5. Silde the sunshade forward, then remove the sunshade.



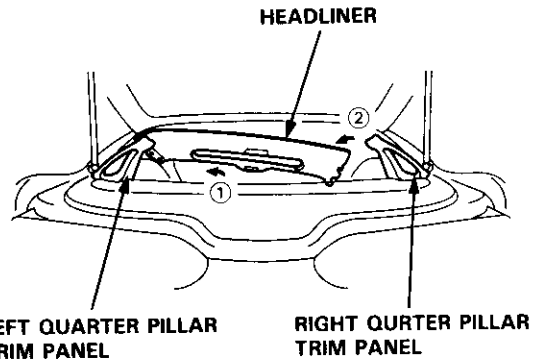
6. Installation is the reverse of the removal procedure.
7. Check for water leaks.

   NOTE: Do not use high pressure water.

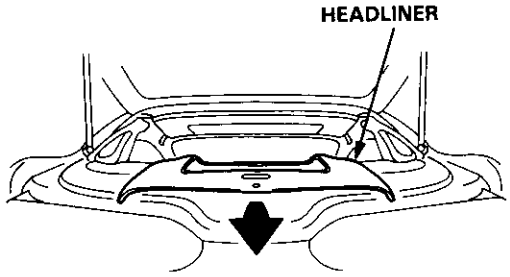
Replacement (cont'd)

9. Lower the headliner as shown.

NOTE: Take care not to bend and scratch the headliner.



10. Remove the headliner through the hatch opening.



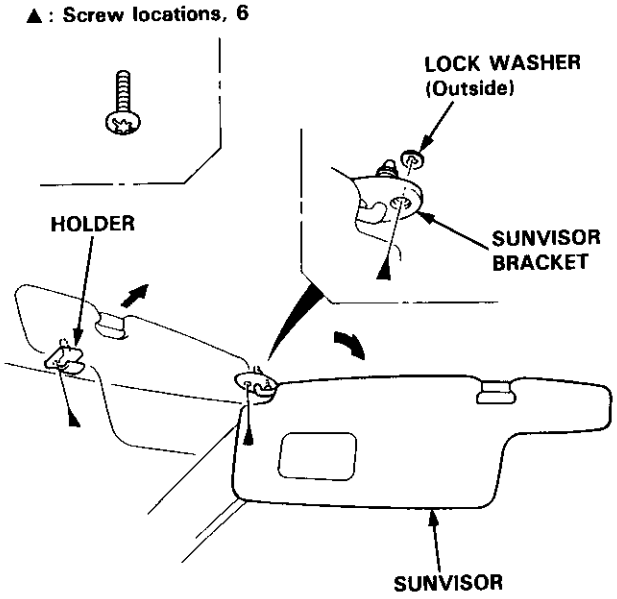
11. Installation is the reverse of the removal procedure.

NOTE:
- When inserting the headliner through the hatch opening, be careful not to fold or bend it. Also, be careful not to scratch the body.
- Check that both sides of the headliner are securely attached to the trim and panels.
- When installing the roof trim, install the joint toward the rear.

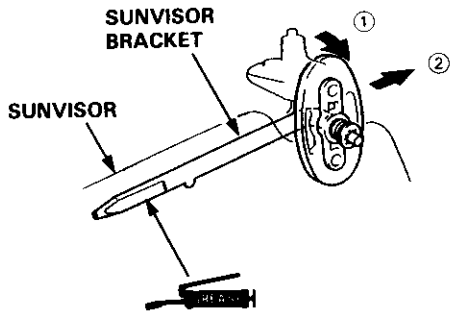
Sedan

1. Remove:
   - Center pillar lower trim (see page 20-94)
   - Front and rear door trim (see page 20-94)
   - Front pillar trim (see page 20-91)
   - Center pillar trim (see page 20-94)
   - Rear pillar trim panel (see page 20-95)
   - Rearview mirror (see page 20-52)

2. Remove the sunvisor and holder from each side.



NOTE:
- If necessary, remove the sunvisor bracket as shown.
- When installing the sunvisor bracket, apply grease and make sure it's installed properly.

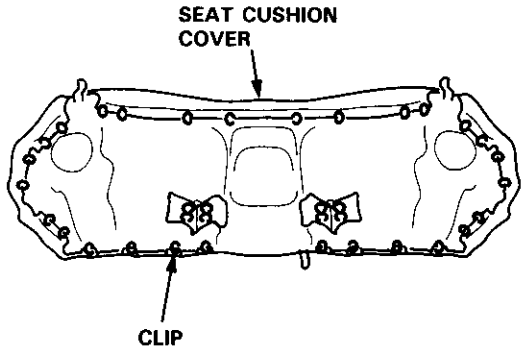


Rear Seat Cover Replacement (cont'd)

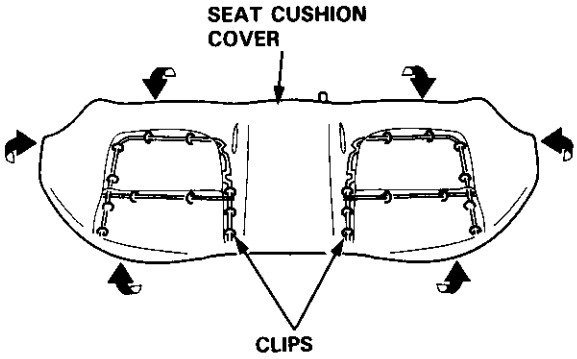
Sedan

1. Remove the seat cushion (see page 20-111).

2. Remove all the clips from under the seat cushion, then loosen the seat cushion cover.

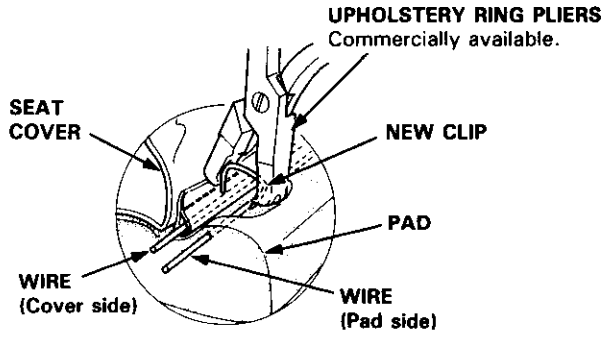


3. Pull back the edge of the seat cushion cover all the way around, then release the clips.



Installation is the reverse of the removal procedure.

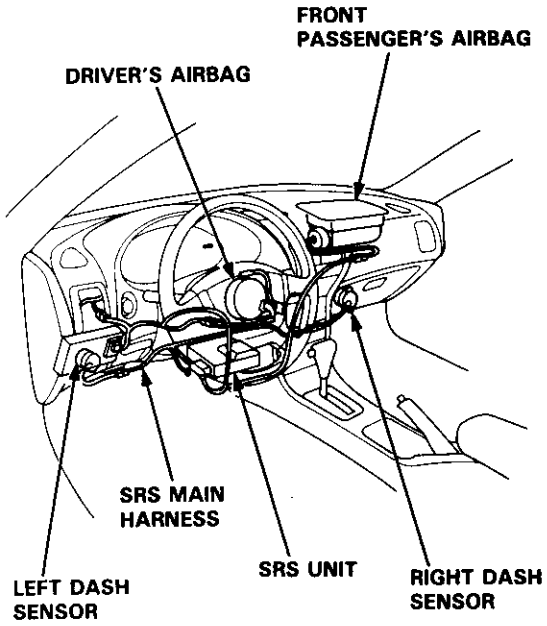
NOTE:
- To prevent wrinkles when installing a seat cover, mark sure the material is stretched evenly over the pad before securing all the clips.
- Replace the released clips with new ones.



Replacement

SRS wire harnesses are routed near the front console.

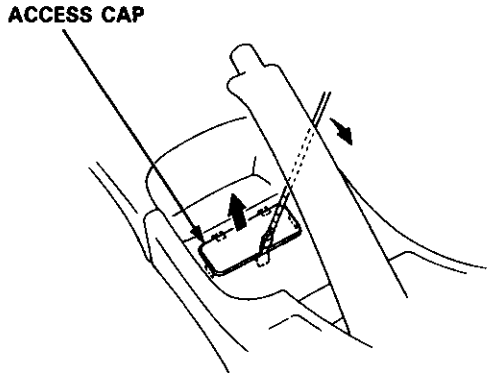
CAUTION:
- **All SRS electrical wiring harnesses are covered with yellow insulation.**
- **Before disconnecting any part of the SRS wire harness, connect the short connectors (see page 20-272).**
- **Replace the entire affected SRS harness assembly if it has an open circuit or damaged wiring.**



NOTE: Take care not to scratch the front and rear consoles, and dashboard.

1. Remove the access cap.

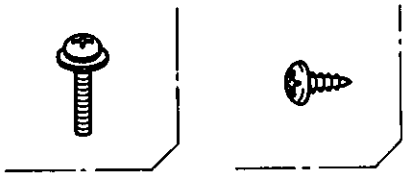
   CAUTION: When prying with a flat tip screwdriver, wrap it with protective tape to prevent damage.

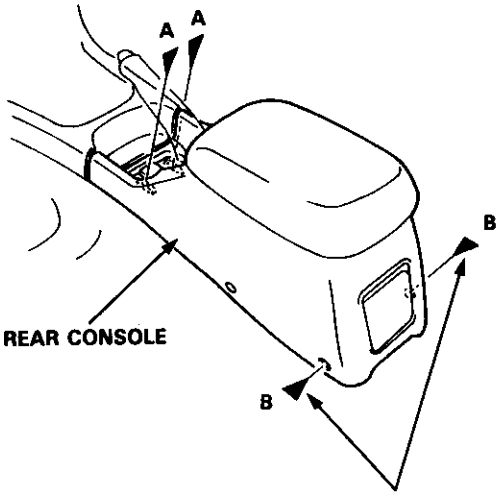


2. Remove the screws.

▼: Screw locations

A▼: Screw, 2 **B▼: Screw, 2**



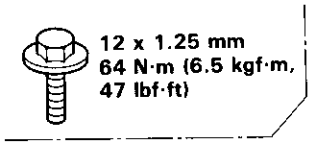


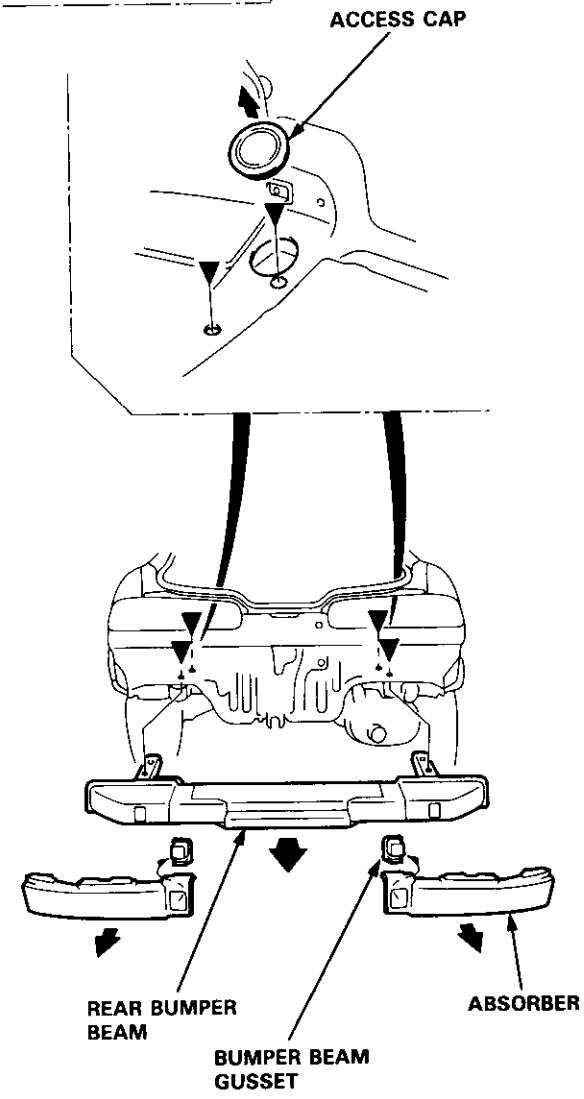
To remove the screws, slide the front seat forward.

Rear Bumper Replacement (cont'd)

6. Remove the absorber, bumper beam gusset and rear bumper beam.

▼ : Bolt locations, 4





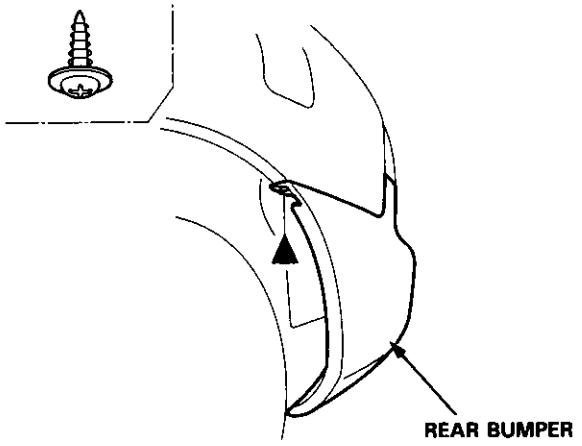
7. Installation is the reverse of the removal prcedure.

NOTE: Make sure the license plate light connector is connected, and the grommet is installed properly.

Sedan

1. Remove the screw from each side.

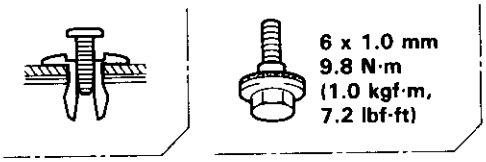
▲ : Screw locations, 2

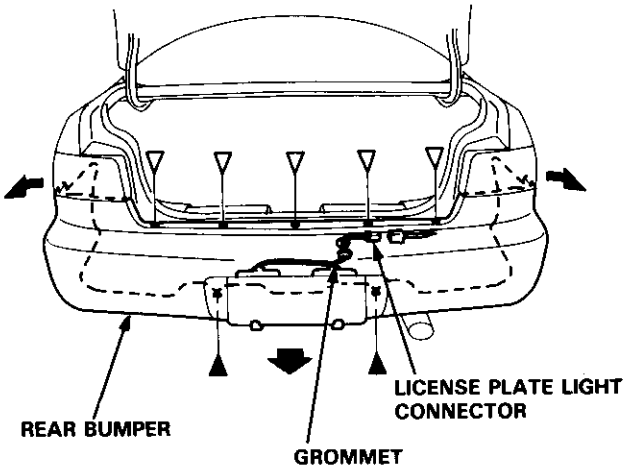


2. Open the trunk lid, then remove the rear trim panel (see page 20-97).

3. Disconnect the license plate light connector and grommet from the rear trunk area. Remove the clips and bolts, then remove the rear bumper.

▽ : Clip locations, 5 ▲ : Bolt locations, 2



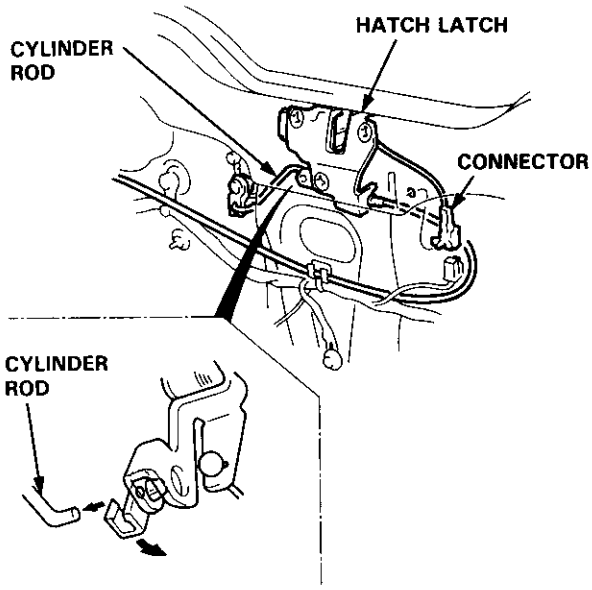


Hatch Latch and Lock Cylinder

Replacement

NOTE: Take care not to bend the cylinder rod and hatch opener cable.

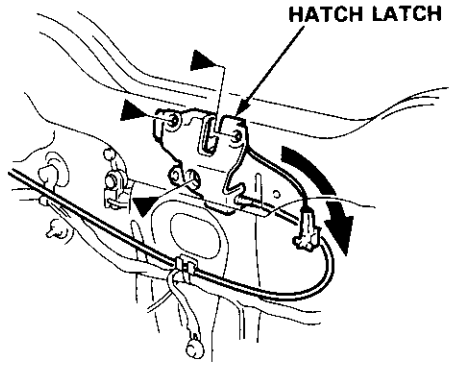
1. Remove the rear trim panel (see page 20-92).
2. Disconnect the cylinder rod and connector.



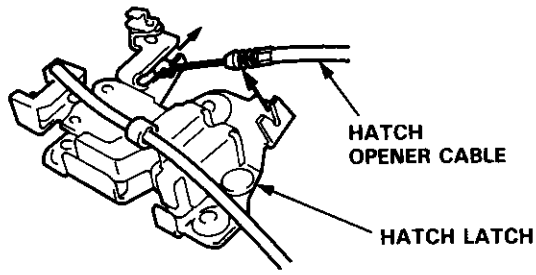
3. Remove the hatch latch.

▶: Screw locations, 3

6 x 1.0 mm
9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)



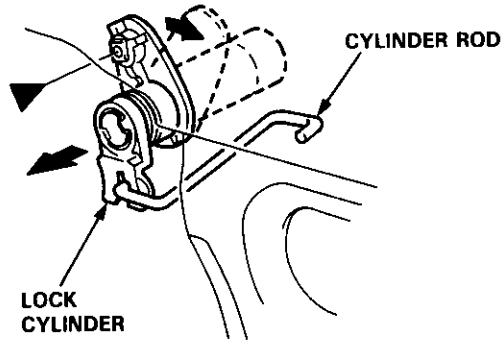
4. Disconnect the hatch opener cable.



5. Remove the lock cylinder by turning it 45°.

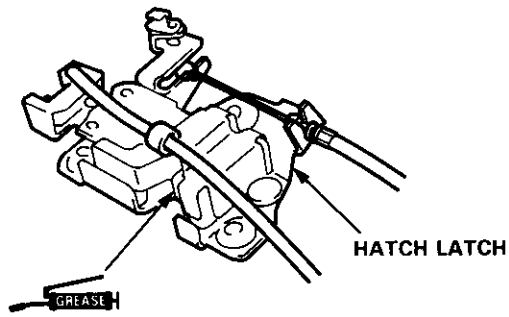
▶: Bolt location, 1

6 x 1.0 mm
9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)



6. Installation is the reverse of the removal procedure.

NOTE:
- Apply grease to the hatch latch.



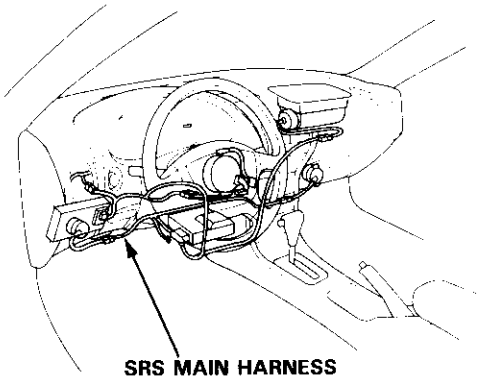
- Make sure the hatch locks securely.
- Make sure the hatch opens properly.
- Make sure the connector is connected properly.

Illustrated Index

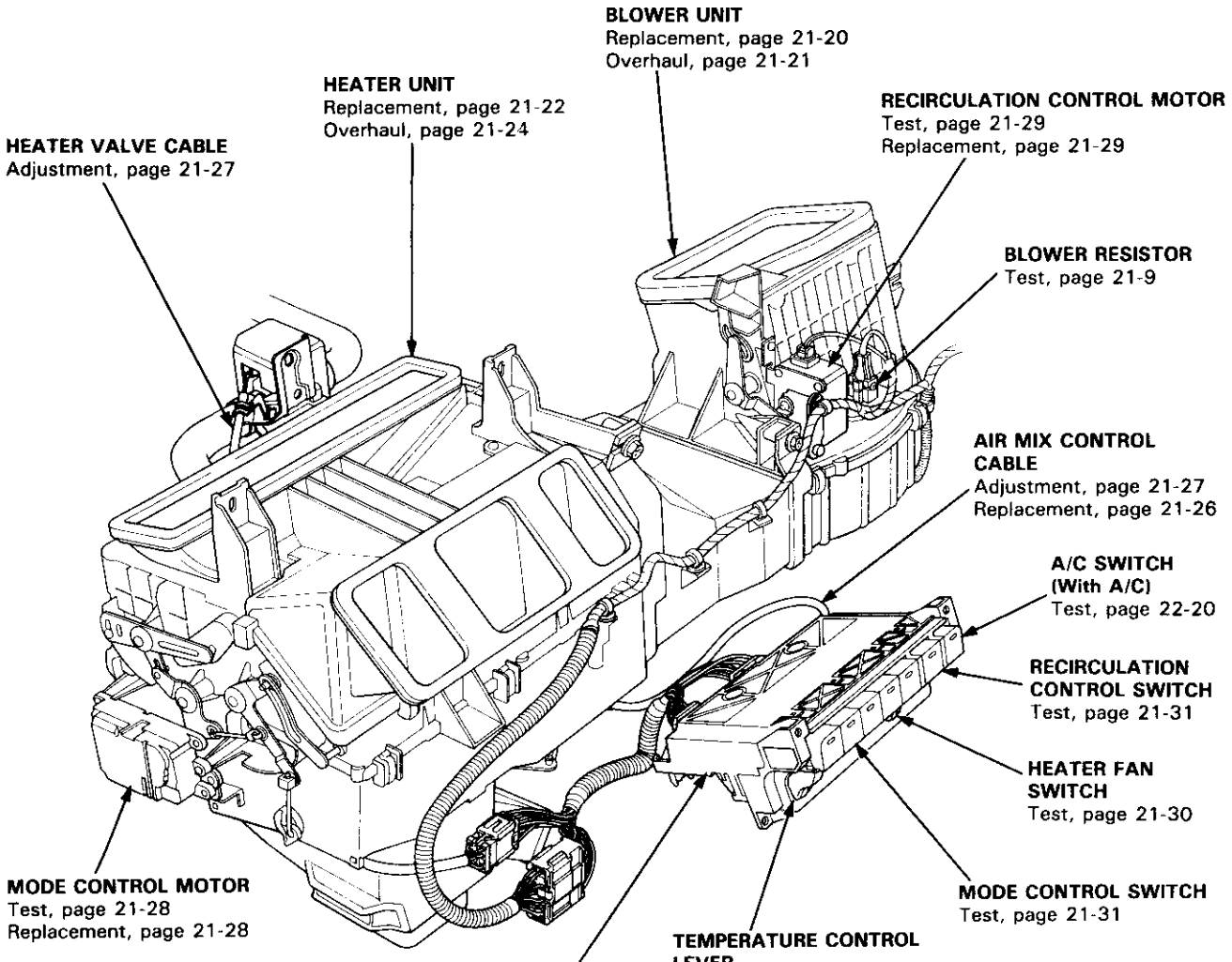
CAUTION:

- **All SRS electrical wiring harnesses are covered with yellow insulation.**
- **Before disconnecting any part of the SRS wire harness, connect the short connector(s).**
- **Replace the entire affected SRS harness assembly if it has an open circuit or damaged wiring.**

NOTE: The original radio has a coded theft protection circuit. Be sure to get the customer's code number before
– disconnecting the battery.
– removing the No. 32 (7.5 A) fuse from the underhood fuse/relay box.
– removing the radio.
After service, reconnect power to the radio and turn it on. When the word "CODE" is displayed, enter the customer's 5-digit code to restore radio operation.



SRS MAIN HARNESS
(Covered with yellow insulation)



BLOWER UNIT
Replacement, page 21-20
Overhaul, page 21-21

HEATER UNIT
Replacement, page 21-22
Overhaul, page 21-24

RECIRCULATION CONTROL MOTOR
Test, page 21-29
Replacement, page 21-29

HEATER VALVE CABLE
Adjustment, page 21-27

BLOWER RESISTOR
Test, page 21-9

AIR MIX CONTROL CABLE
Adjustment, page 21-27
Replacement, page 21-26

A/C SWITCH (With A/C)
Test, page 22-20

RECIRCULATION CONTROL SWITCH
Test, page 21-31

HEATER FAN SWITCH
Test, page 21-30

MODE CONTROL MOTOR
Test, page 21-28
Replacement, page 21-28

MODE CONTROL SWITCH
Test, page 21-31

TEMPERATURE CONTROL LEVER
(Adjustment: See AIR MIX CONTROL CABLE)

HEATER CONTROL PANEL
Replacement, page 21-25
Overhaul, page 21-26

Mode Control Motor (cont'd)

From page 21-15

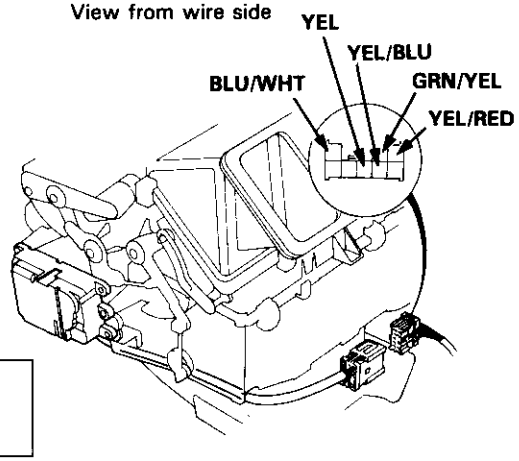
Check each wire for continuity between the mode control motor and the heater control panel.
- YEL/BLU wire
- YEL wire
- BLU/WHT wire
- GRN/YEL wire
- YEL/RED wire

Is there continuity?

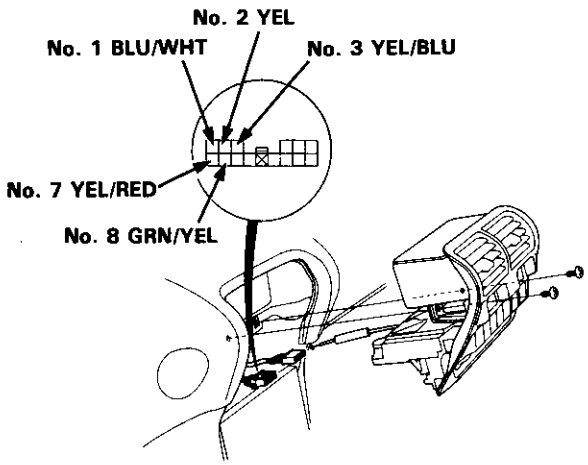
NO → **Repair any open in the wire(s) between the mode control motor and the heater control panel.**

YES → **Replace the heater control panel.**

View from wire side



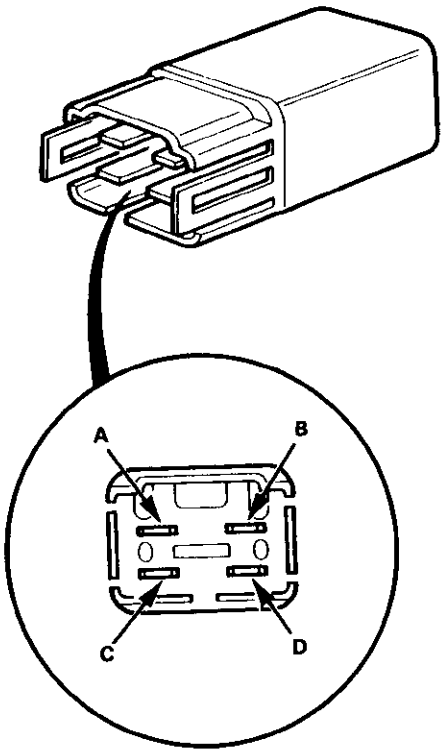
View from wire side

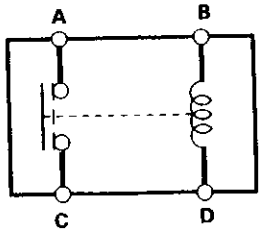


Relay

Test

There should be continuity between the A and C terminals when power and ground are connected to the B and D terminals.
There should be no continuity when power is disconnected.



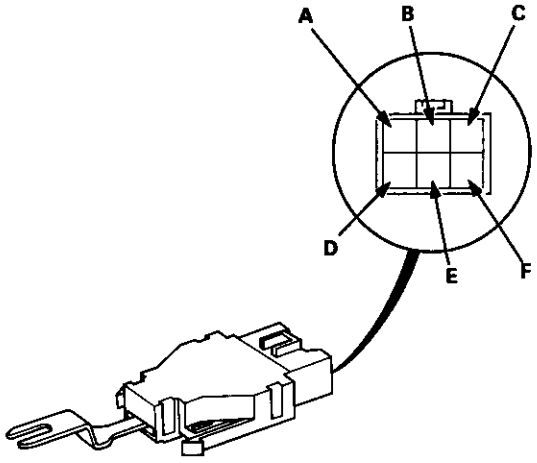


Heater Fan Switch

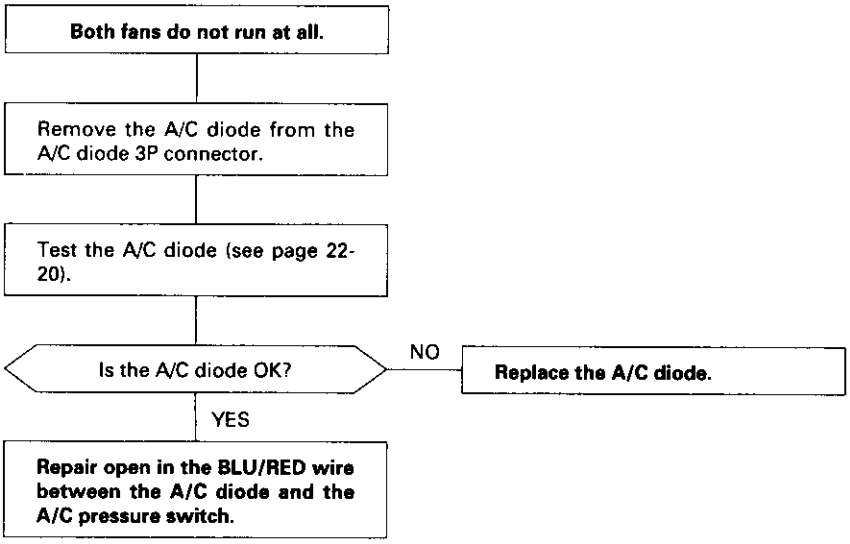
Test

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

Position \ Terminal	A	F	D	B	E	C
OFF						
1	○	○	○			
2	○	○		○		
3	○	○			○	
4	○	○				○



Both Fans

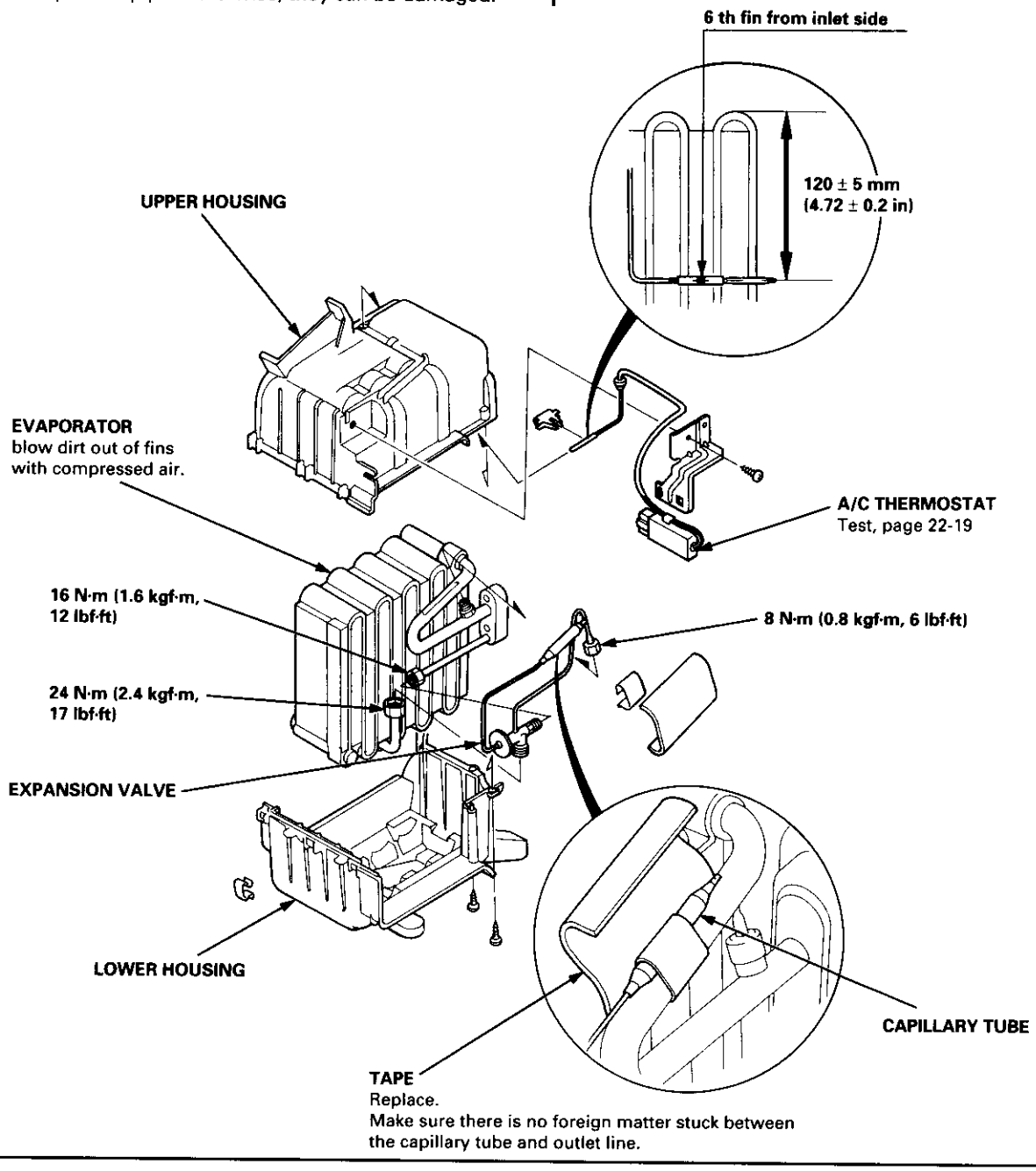

Both fans do not run at all.
Remove the A/C diode from the A/C diode 3P connector.
Test the A/C diode (see page 22-20).
Is the A/C diode OK?
NO
Replace the A/C diode.
YES
Repair open in the BLU/RED wire between the A/C diode and the A/C pressure switch.

Overhaul

1. Pull out the A/C thermostat sensor from the evaporator fins.
2. Remove the self-tapping screws and clamps from the housing.
3. Carefully separate the housings and remove the evaporator.
4. If necessary, remove the expansion valve.

   NOTE: When loosening the expansion valve nuts, use a second wrench to hold the expansion valve or evaporator pipe. Otherwise, they can be damaged.

5. Assemble in the reverse order of disassembly, and:
   - replace the O-rings with new ones at each fitting, and apply a thin coat of refrigerant oil (ND-OIL 8: P/N 38899 – PR7 – A01) before installing them. NOTE: Be sure to use the right O-rings for HFC-134a (R-134a) to avoid leakage.
   - install the expansion valve capillary tube with the capillary tube in contact with the suction line directly, and wrap it with tape.
   - reinstall the A/C thermostat sensor to its original location.



Troubleshooting

Tips and Precautions

Before Troubleshooting

- Check applicable fuses in the appropriate fuse/relay box.
- Check the battery for damage, state of charge, and clean and tight connections.
- Check the alternator belt tension.

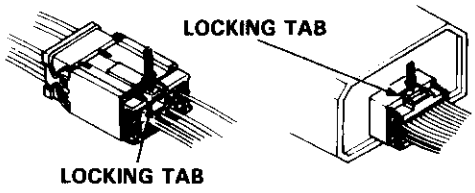
CAUTION:

- **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.**
- **The original radio has a coded theft protection circuit. Be sure to get the customer's code number before**
  - **— disconnecting the battery.**
  - **— removing the No. 32 (7.5 A) fuse from the under-hood fuse/relay box.**
  - **— removing the radio.**

  After service, reconnect power to the radio and turn it on. When the word "CODE" is displayed, enter the customer's 5-digit code to restore radio operation.

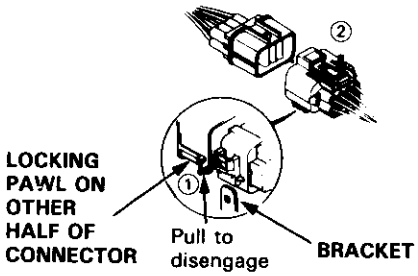
Handling Connectors

- Make sure the connectors are clean and have no loose wire terminals.
- Make sure multiple cavity connectors are packed with grease (except watertight connectors).
- All connectors have push-down release type locks.

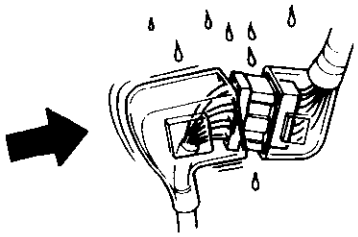


- Some connectors have a clip on their side used to attach them to a mount bracket on the body or on another component. This clip has a pull type lock.

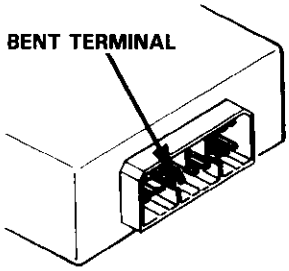
- Some mounted connectors cannot be disconnected unless you first release the lock and remove the connector from its bracket.



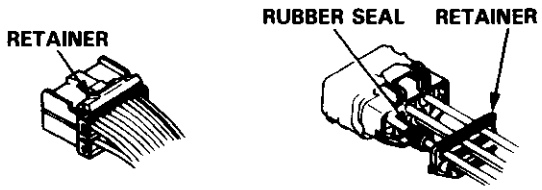
- Never try to disconnect connectors by pulling on their wires; pull on the connector halves instead.
- Always reinstall plastic covers.



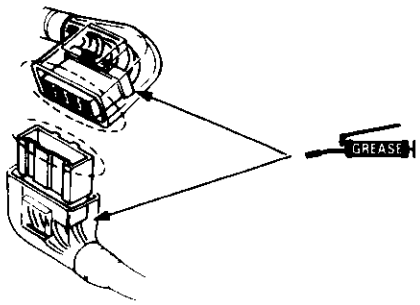
- Before connecting connectors, make sure the terminals are in place and not bent.



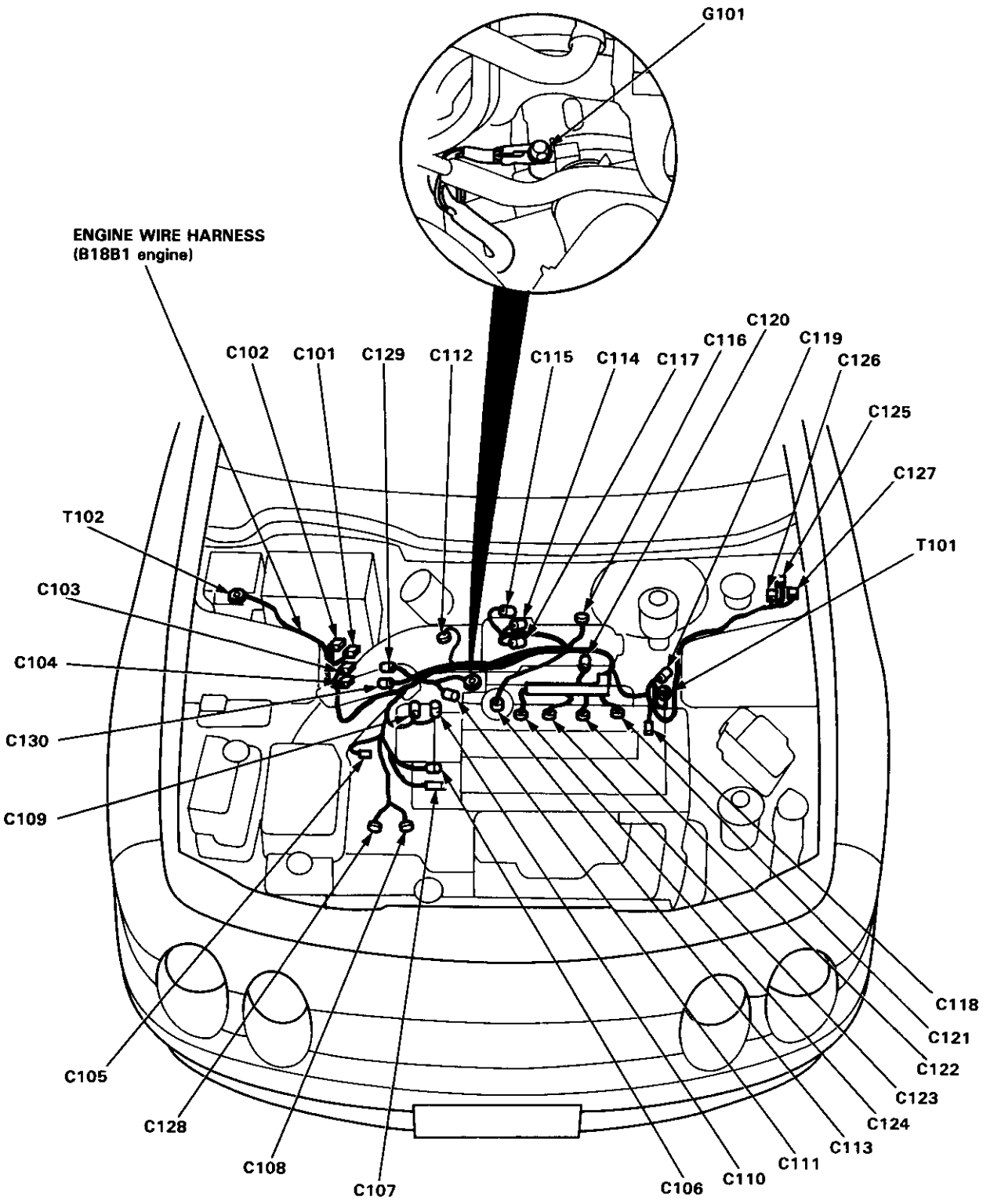
- Check for loose retainer and rubber seals.

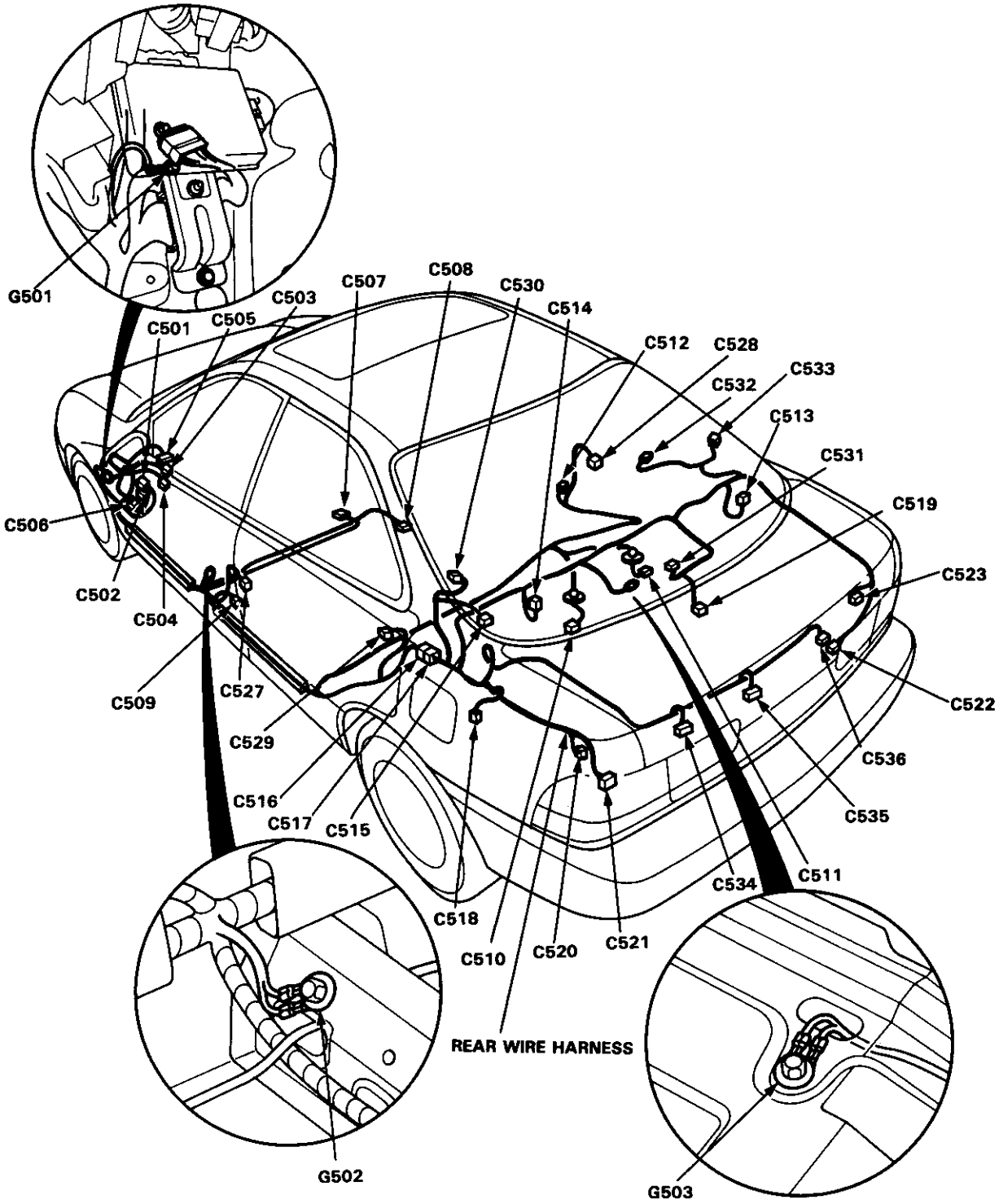


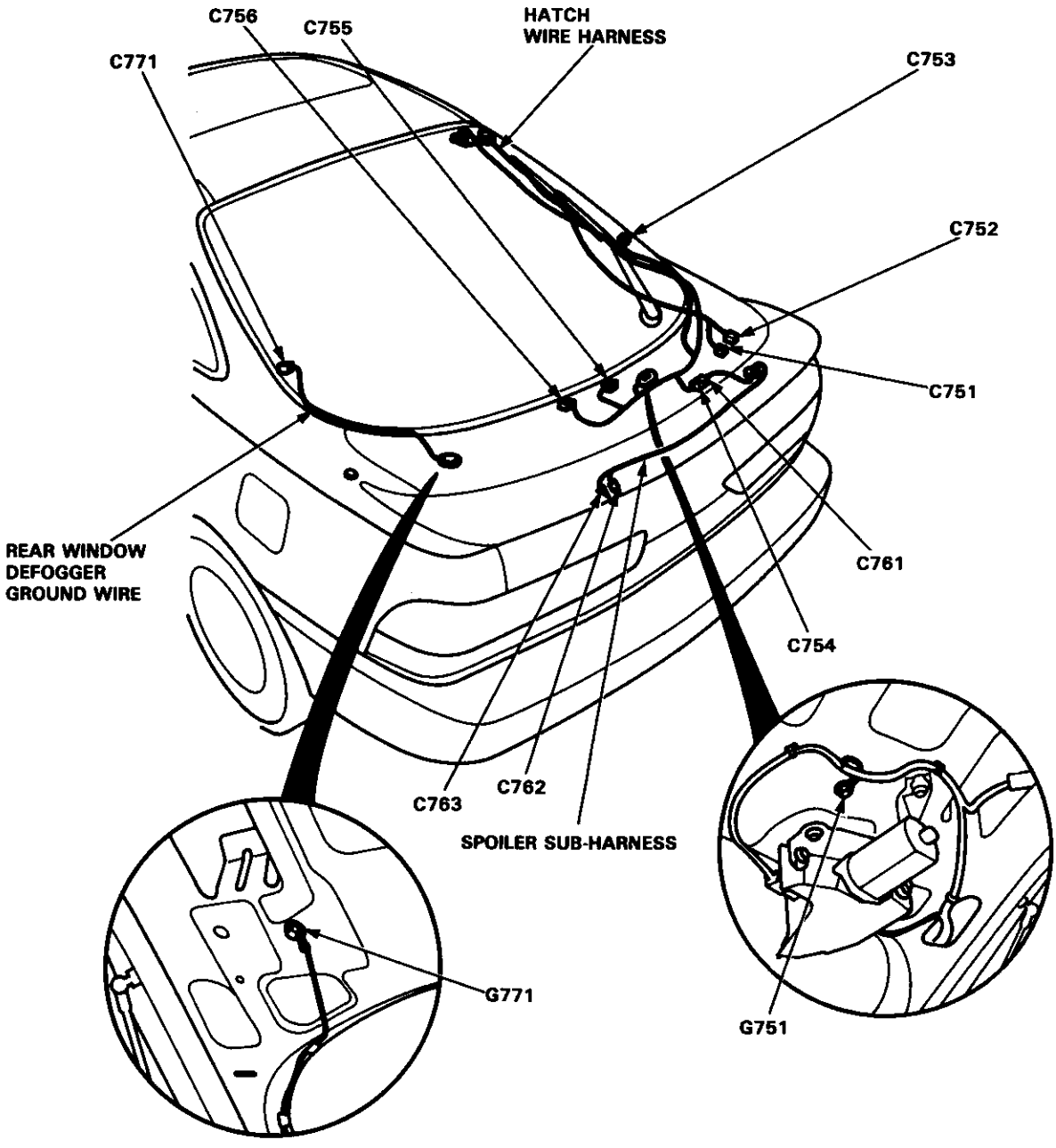
- The backs of some connectors are packed with grease. Add grease if needed. If the grease is contaminated, replace it.

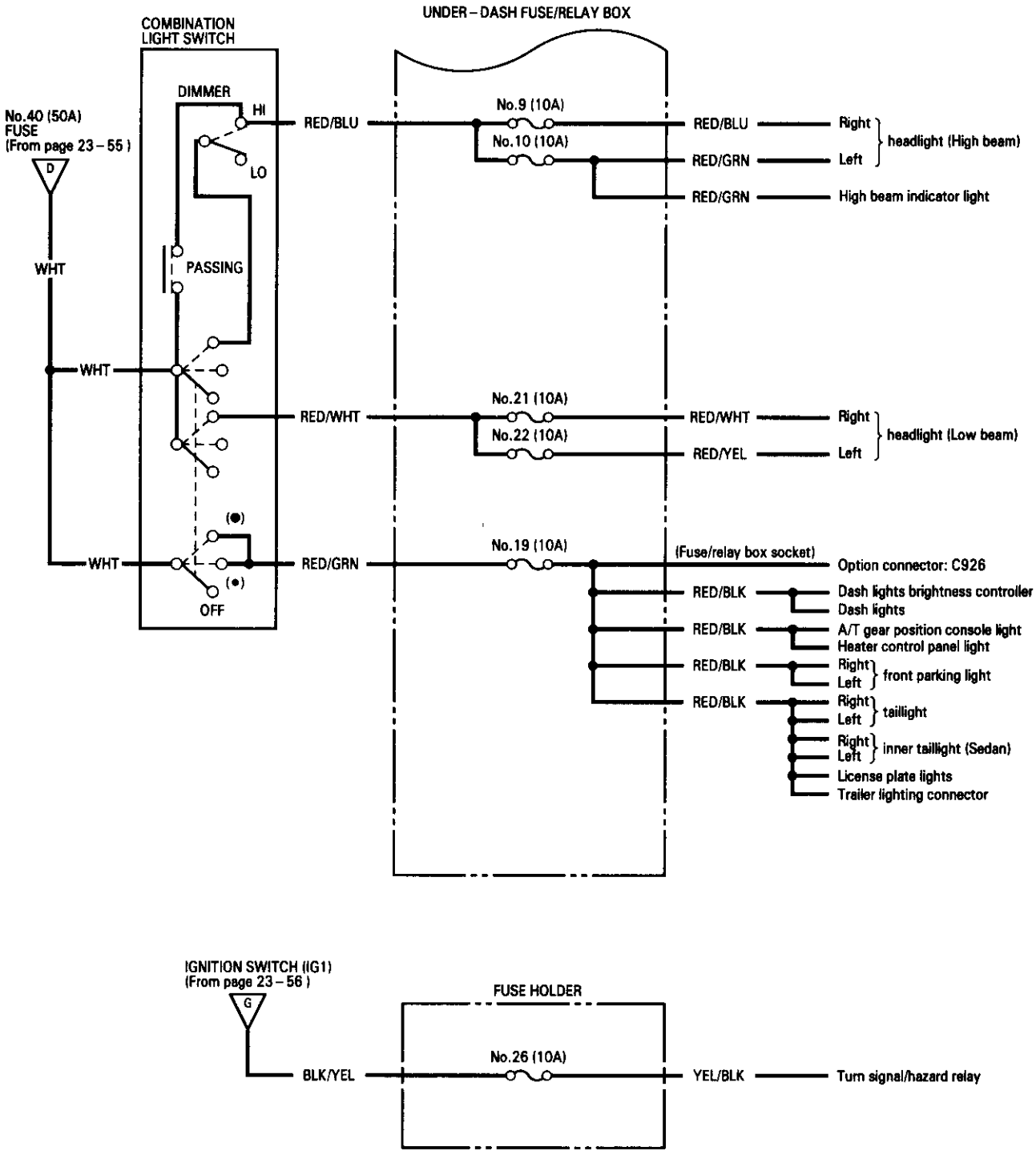


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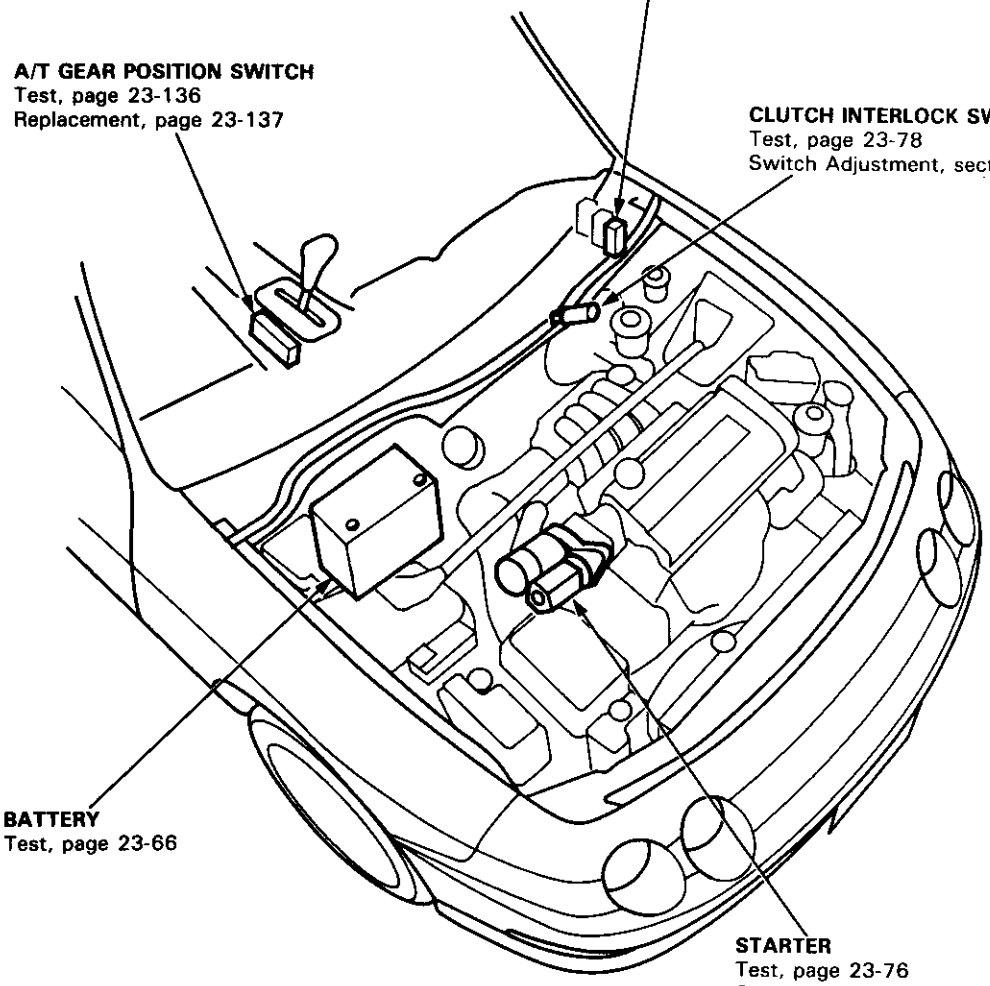

G101
ENGINE WIRE HARNESS
(B18B1 engine)
C102
C101
C129
C112
C115
C114
C117
C116
C120
C119
C126
C125
C127
T102
T101
C103
C104
C130
C109
C118
C121
C122
C123
C124
C113
C111
C110
C106
C107
C108
C128
C105


G501
C501
C503
C505
C507
C508
C530
C514
C512
C528
C533
C532
C513
C531
C519
C523
C522
C536
C535
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C534
C521
C520
C510
C518
C515
C517
C516
C529
C527
C509
C504
C502
C506
REAR WIRE HARNESS
G502
G503


C756
C755
HATCH
WIRE HARNESS
C771
C753
C752
C751
C761
C754
REAR WINDOW
DEFOGGER
GROUND WIRE
C763
C762
SPOILER SUB-HARNESS
G771
G751


UNDER – DASH FUSE/RELAY BOX
COMBINATION LIGHT SWITCH
DIMMER
HI
LO
PASSING
OFF
No.40 (50A) FUSE
(From page 23 – 55)
D
WHT
WHT
WHT
RED/BLU
RED/WHT
RED/GRN
No.9 (10A)
No.10 (10A)
No.21 (10A)
No.22 (10A)
No.19 (10A)
RED/BLU
RED/GRN
RED/WHT
RED/YEL
RED/GRN
Right
Left
headlight (High beam)
High beam indicator light
headlight (Low beam)
(Fuse/relay box socket)
Option connector: C926
RED/BLK
Dash lights brightness controller
Dash lights
A/T gear position console light
Heater control panel light
front parking light
taillight
inner taillight (Sedan)
License plate lights
Trailer lighting connector
IGNITION SWITCH (IG1)
(From page 23 – 56)
G
BLK/YEL
FUSE HOLDER
No.26 (10A)
YEL/BLK
Turn signal/hazard relay

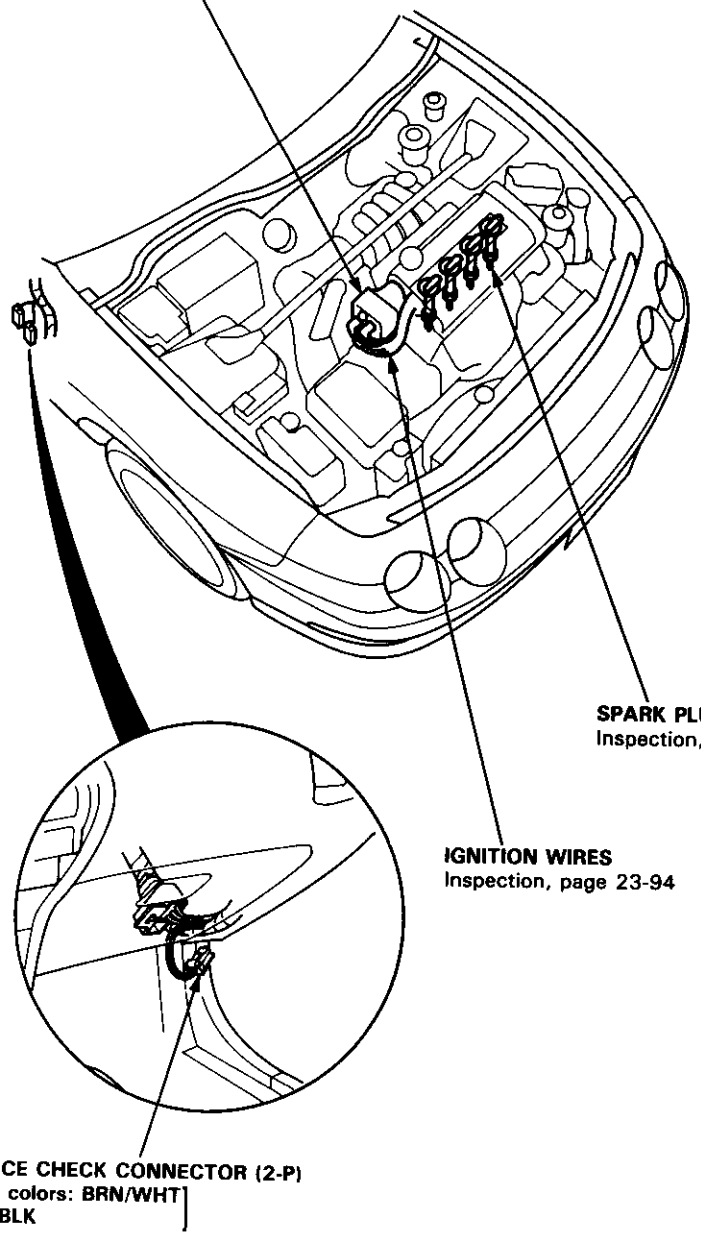
Component Location Index



Component Location Index

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IGNITION WIRES
Inspection, page 23-94

SERVICE CHECK CONNECTOR (2-P)
[Wire colors: BRN/WHT and BLK]

(From page 23-100)

*No. 24 (15 A): B18B1 engine
No. 24 (20 A): B18C1 engine

Turn the ignition switch off.

Check fuse *No. 24 in the under-dash fuse/relay box.

Is the fuse OK? NO → **Replace the fuse.**

YES

Disconnect the 4-P connector from the alternator.

Turn the ignition switch on (II).

Check for voltage between the IG terminal (BLK/YEL wire) of the 4-P connector and body ground.

Is there battery voltage? NO → **Repair open in the BLK/YEL wire.**

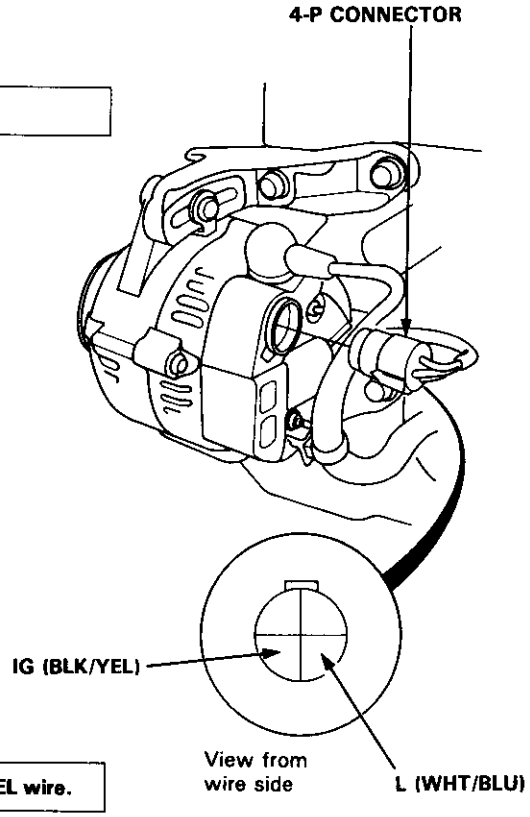
YES

Ground the WHT/BLU wire at the L terminal of the 4-P connector.

Does the charging system light come on? NO → **Check for a blown charging system light bulb. If the bulb is OK, repair open in the WHT/BLU wire.**

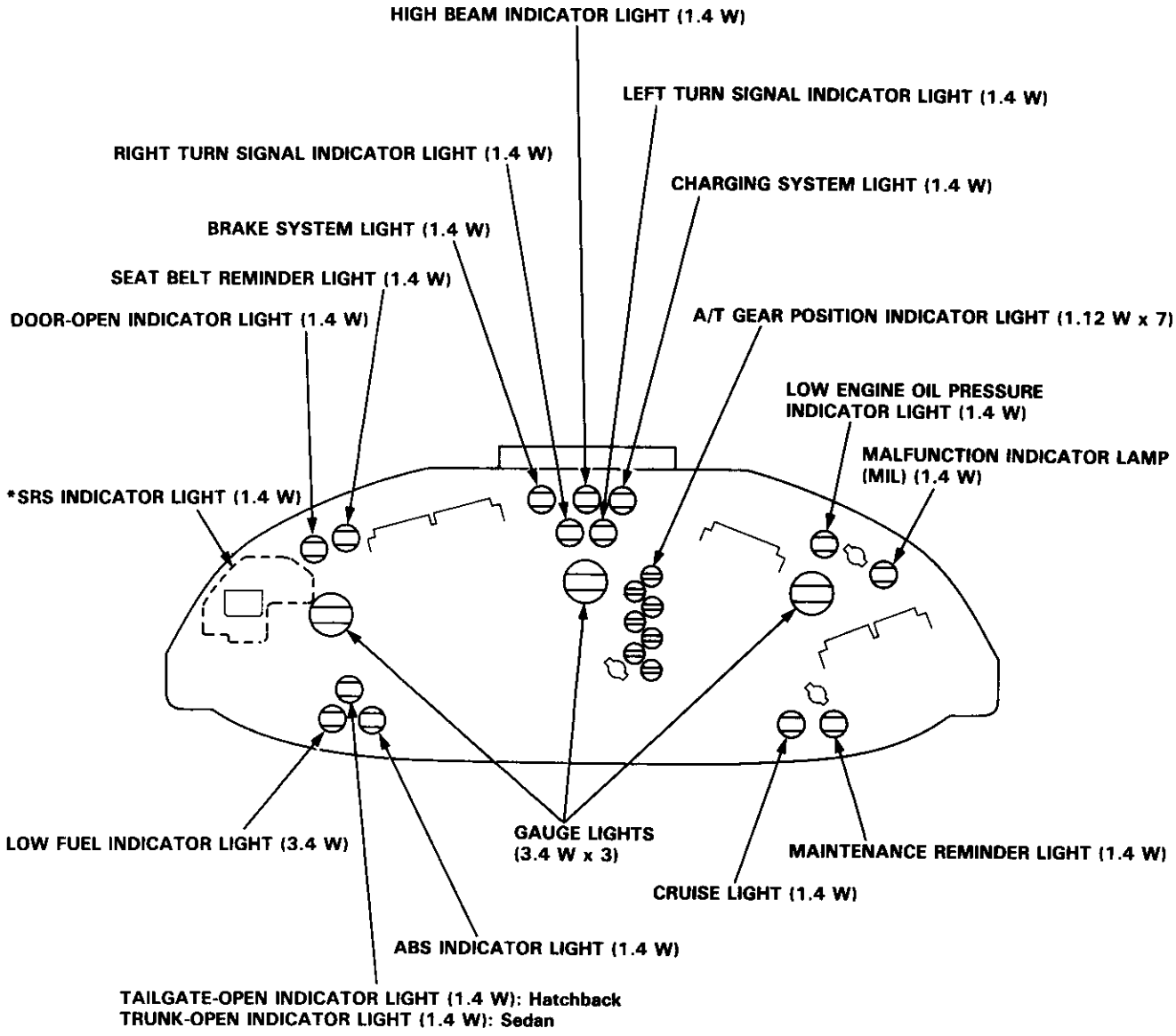
YES

Replace the voltage regulator.



(cont'd)

Bulb Locations

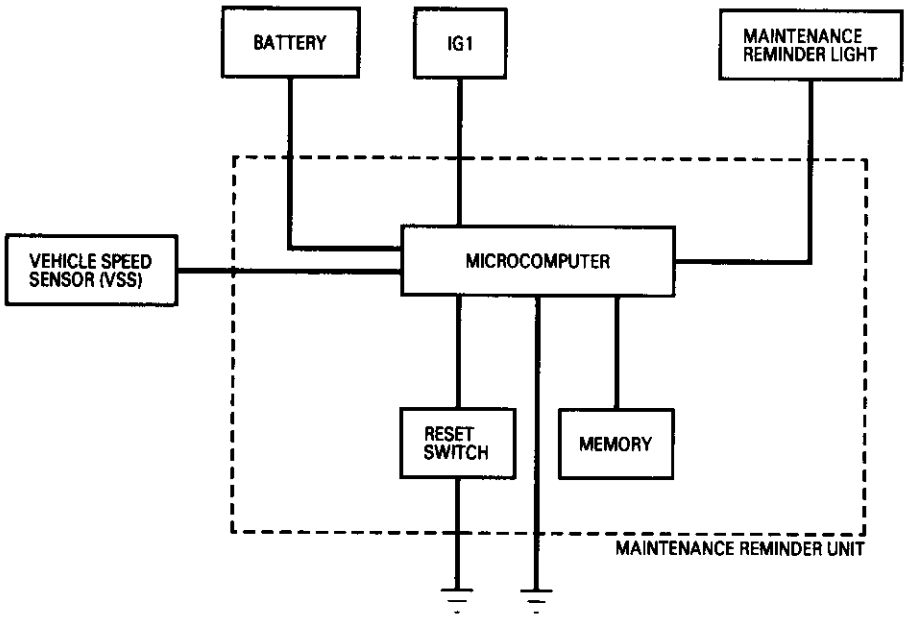


*: On the SRS printed circuit board

Description

Based on signals received from the vehicle speed sensor (VSS), the microcomputer in the maintenance reminder unit, which is located behind the dashboard lower cover, computes the distances traveled. When you turn the ignition switch on, the reminder light in the gauge assembly will come on for two seconds (bulb check function). At 9,650 ± 160 km (6,000 ± 100 miles) intervals, the reminder light will glow for two seconds and then blink ten seconds after you turn the ignition switch on. This will repeat every time you turn the ignition switch on until the car reaches 12,070 ± 160 km (7,500 ± 100 miles).
Beyond the 12,070 ± 160 km (7,500 ± 100 mile) interval, the light will continue to glow after the bulb check until you turn the ignition switch off or reset the unit.
To reset the unit, the car must be parked and the ignition switch must be on. Press the reset button on the unit for more than three seconds, and the reminder light will go off.

NOTE:
- Turn the ignition switch OFF before you remove the 5-P connector from the maintenance reminder unit, otherwise you will cancel all data in the memory.
- The data will remain in the memory even when the ignition switch is turned off, or if the unit is disconnected. When the ignition switch is turned on, and the car is driven, additional data will be stored.

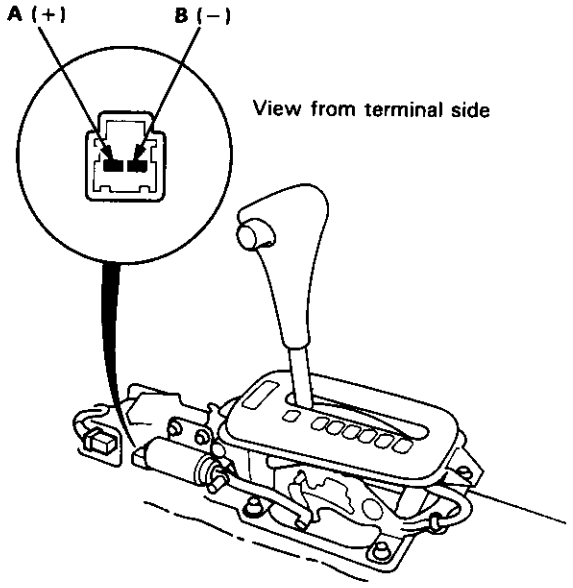


Shift Lock Solenoid Test/Replacement

1. Remove the console, then disconnect the 2-P connector of the shift lock solenoid from the main wire harness.

   NOTE: Do not connect power to the B (−) terminal (reverse polarity) or you will damage the diode inside the solenoid.

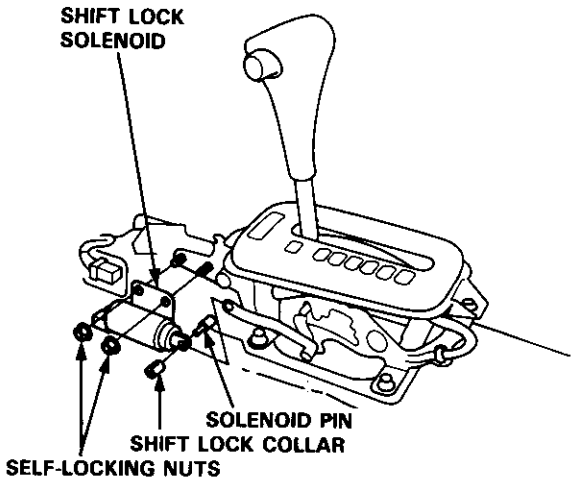
2. Connect battery power to the A terminal, ground the B terminal momentarily, and check solenoid operation.



   - If the solenoid does not operate, replace it as described in steps 3,4, and 5.
   - If the solenoid does operate, check and, if necessary, adjust its two positions as shown in step 5.

3. Remove the shift lock collar and the solenoid pin.

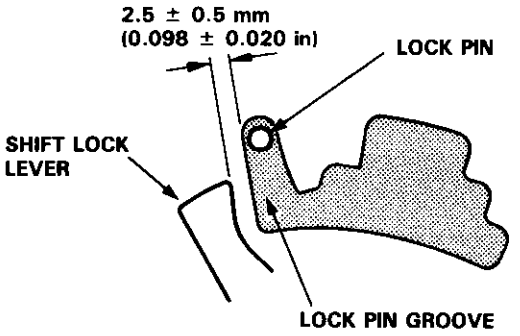
4. Remove the self-locking nuts and shift lock solenoid, then install the new solenoid in the reverse order of removal.



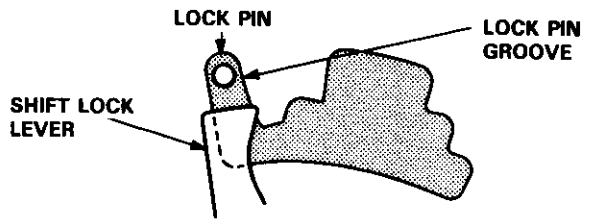
5. Check and, if necessary, adjust the solenoid's position.

   - When the shift lock solenoid is ON, check that there is a clearance of 2.5 ± 0.5 mm (0.098 ± 0.020 in) between the top rear corner of the shift lock lever and the lock pin groove, then tighten the self-locking nuts.

   NOTE: Use new self-locking nuts.



   - When the shift lock solenoid is OFF, make sure that the lock pin is blocked by the shift lock lever.

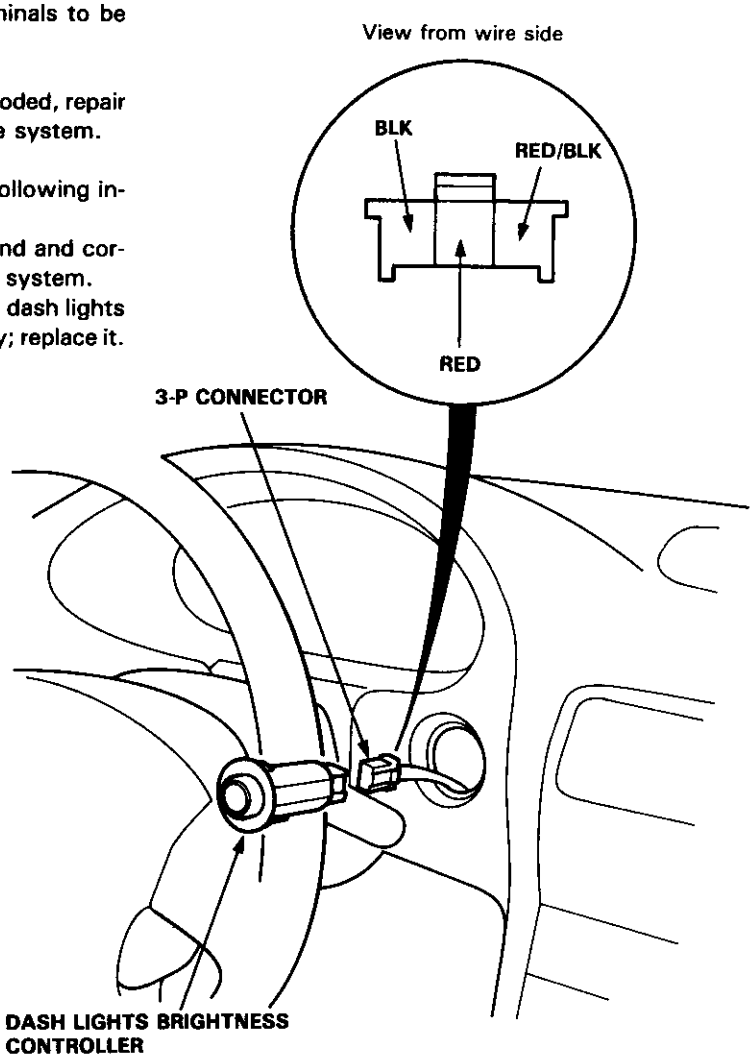


No.	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
1	BLK	Under all conditions	Check for continuity to ground: There should be continuity.	• Poor ground (G201, G401) • An open in the wire
2	WHT/YEL	Under all conditions	Check for voltage to ground: There should be battery voltage.	• Blown No. 17 (10 A) fuse in the under-dash fuse/relay box • An open in the wire
3	YEL/BLK	Ignition switch ON (II)	Check for voltage to ground: There should be battery voltage.	• Blown No. 16 (7.5 A) fuse in the under-dash fuse/relay box • Faulty ignition switch • An open in the wire
4	RED/WHT	Combination light switch in "●" position	Check for voltage to ground: There should be battery voltage.	• Blown No. 40 (50 A) fuse in the under-hood fuse/relay box • Faulty combination light switch • An open in the wire
5	WHT/RED	Combination light switch is OFF; connect a jumper wire between the YEL/BLK and WHT/RED terminals, then turn the ignition switch ON.	Left and right headlight (high beam) should be on but dim, and high beam indicator light should come on.	• Poor ground (G201, G401, G301) • Blown bulbs • Faulty daytime running lights resistor • An open in the wire
6	GRN/RED	Ignition switch ON (II), brake fluid reservoir full, and parking brake lever down	Connect to ground: The brake system light should come on.	• Blown No. 15 (10 A) fuse in the under-hood fuse/relay box • Blown brake system light • An open in the wire
7	RED/GRN	Parking brake lever up	Check for continuity to ground: There should be continuity.	• Faulty brake lever switch • An open in the wire

Controller Input Test

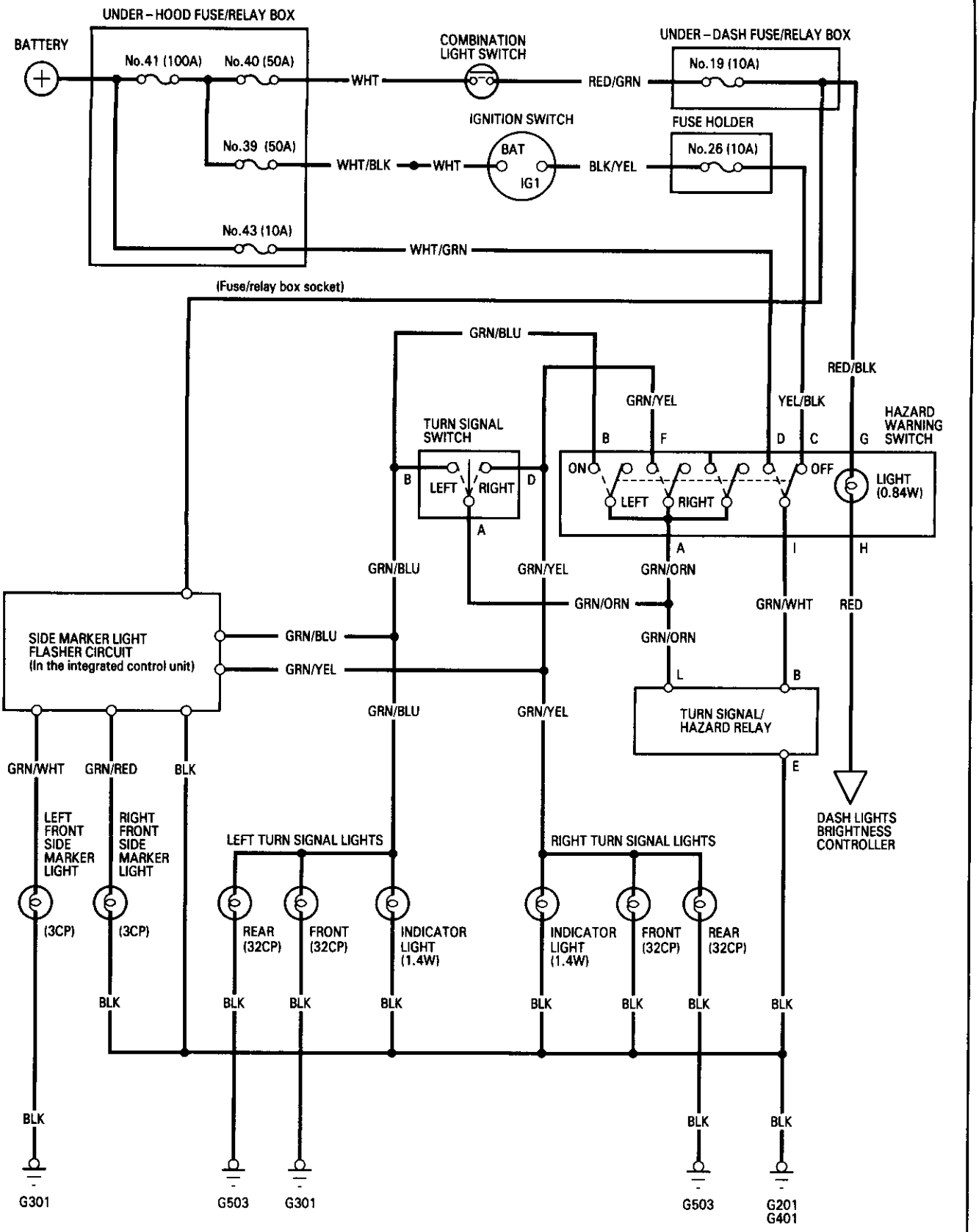
NOTE: Be careful not to damage the controller and the instrument panel.

1. Remove the instrument panel from the dashboard (see page 23-118).
2. Remove the dash lights brightness controller from the dashboard, then disconnect the 3-P connector.
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, make the following 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 dash lights brightness controller must be faulty; replace it.



No.	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 (G201, G401) • An open in the wire
2	RED/BLK	Headlight switch ON	Check for voltage to ground: There should be battery voltage.	• Blown No. 19 (10 A) fuse in the under-dash fuse/relay box • Faulty combination light switch • An open in the wire
3	RED	Headlight switch ON	Connect to ground: Dash lights should come on full bright.	• An open in the wire

Circuit Diagram

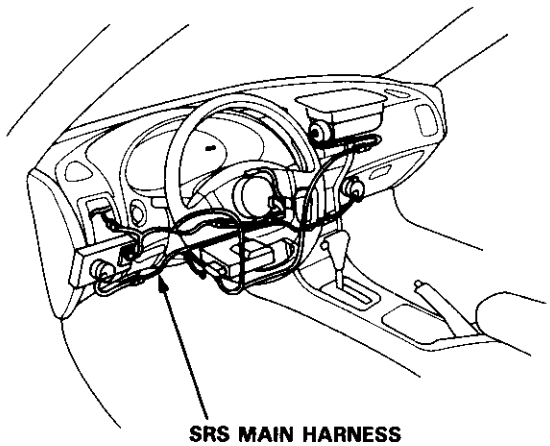


Horn

Component Location Index

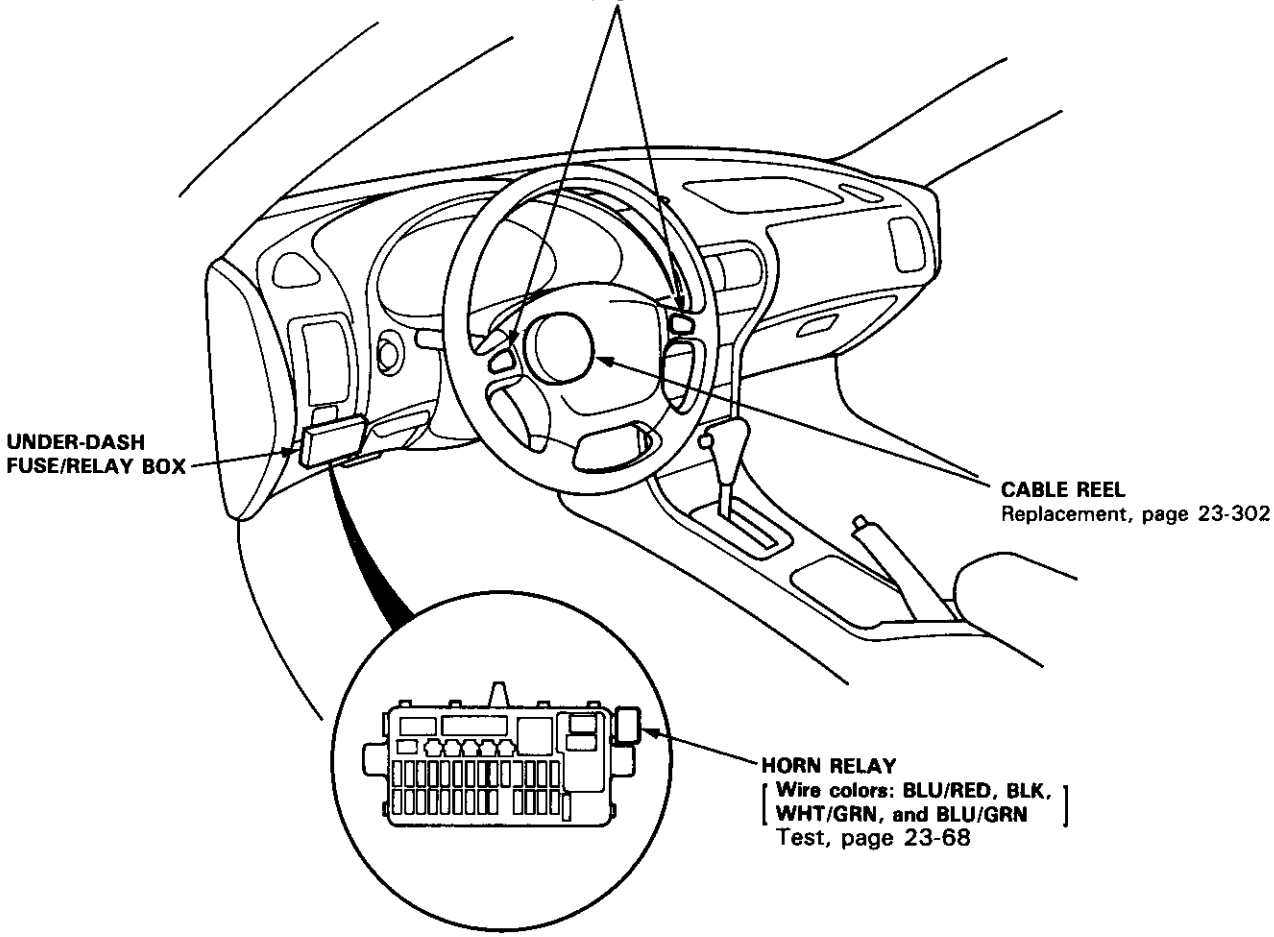
CAUTION:
- **All SRS electrical wiring harnesses are covered with yellow insulation.**
- **Before disconnecting any part of the SRS wire harness, connect the short connector(s).**
- **Replace the entire affected SRS harness assembly if it has an open circuit or damaged wiring.**

HORN
Test, page 23-203



SRS MAIN HARNESS
(Covered with yellow insulation)

HORN SWITCHES
Test, page 23-201



UNDER-DASH FUSE/RELAY BOX

CABLE REEL
Replacement, page 23-302

HORN RELAY
[Wire colors: BLU/RED, BLK, WHT/GRN, and BLU/GRN]
Test, page 23-68

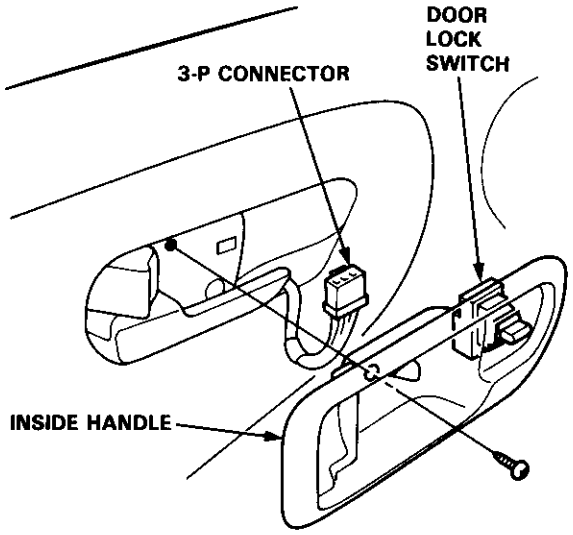
NOTE: The numbers in the table show the troubleshooting sequence.

Symptom	Item to be inspected	Clutch out of adjustment, foreign matter stuck between guide rail and moonroof, or outer cable not attached properly	Blown No. 1 (30 A) fuse (In the under-dash fuse/relay box)	Blown No. 14 (20 A) fuse (In the under-dash fuse/relay box)	Moonroof switch	Function test	Moonroof relay	Moonroof motor	Poor ground	Open circuit, loose or disconnected terminals
Moonroof does not move, but motor turns.		1								
Moonroof does not move and motor does not turn (moonroof can be moved with moonroof wrench).	In all switch positions		1	2		3	4	5	G201 G401	WHT, GRN/BLK, GRN,BLK
	With OPEN switch				1		2			GRN/RED
	With CLOSE switch				1		2			GRN/YEL

No.	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
1	BLK[2] and BLK[3]	Under all conditions	Check for continuity to ground: There should be continuity.	• Poor ground (G501, G502) • An open in the wire
2	WHT/YEL BLU/BLK GRN/BLK YEL/BLK	Ignition switch ON (II)	Check for voltage to ground: There should be battery voltage.	• Blown No. 14 (20 A) fuse in the under-dash fuse/relay box • Blown No. 5, 8, 7 or 4 (20 A) fuse in the under-dash fuse/relay box • Faulty power window relay • An open in the wire
3	RED/BLU[1] and RED/YEL[1]	Connect the WHT/YEL and RED/YEL[1] terminals, and the RED/BLU[1] and BLK[3] terminals with jumper wires, then turn the ignition switch ON (II).	Check the driver's window motor: It should run (the window moves down).	• Faulty driver's window motor • An open in the wire
4	BLU/YEL and BLU/GRN	Connect the BLU/BLK and BLU/GRN terminals, and the BLU/YEL and BLK[2] terminals with jumper wires, then turn the ignition switch ON (II).	Check the front passenger's window motor: It should run (the window moves down).	• Faulty front passenger's window motor • An open in the wire
5	GRN/YEL and GRN	Connect the GRN/BLK and GRN terminals, and the GRN/YEL and BLK[2] terminals with jumper wires, then turn the ignition switch ON (II).	Check the left rear window motor: It should run (the window moves down).	• Faulty left rear window motor • Faulty left rear window switch • An open in the wire
6	YEL/GRN and YEL	Connect the YEL/BLK and YEL/GRN terminals, and the YEL and BLK[2] terminals with iumper wires, then turn the ignition switch ON (II).	Check the right rear window motor: It should run (the window moves down).	• Faulty right rear window motor • Faulty right rear window switch • An open in the wire
7	BLU and BLK/WHT	Connect the WHT/YEL and RED/YEL[1] terminals, and the RED/BLU[1] and BLK[3] terminals with jumper wires, then turn the ignition switch ON (II).	Connect an analog ohmmeter to terminals BLU and BLK/WHT: The meter needle should move back and forth alternately as the driver's window motor runs.	• Faulty pulser • Faulty driver's window motor • An open in the wire

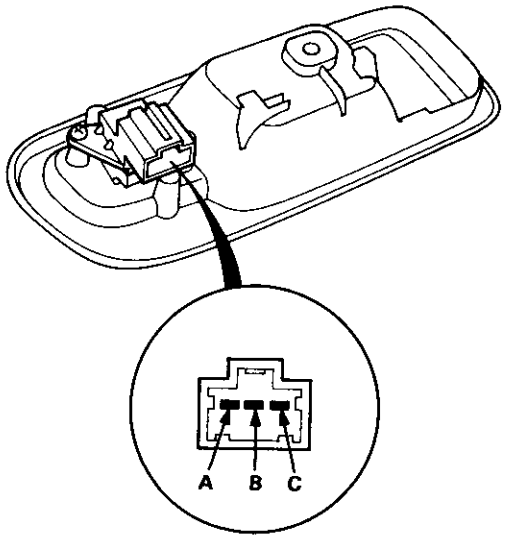
Door Lock Switch Test

1. Remove the inside handle.

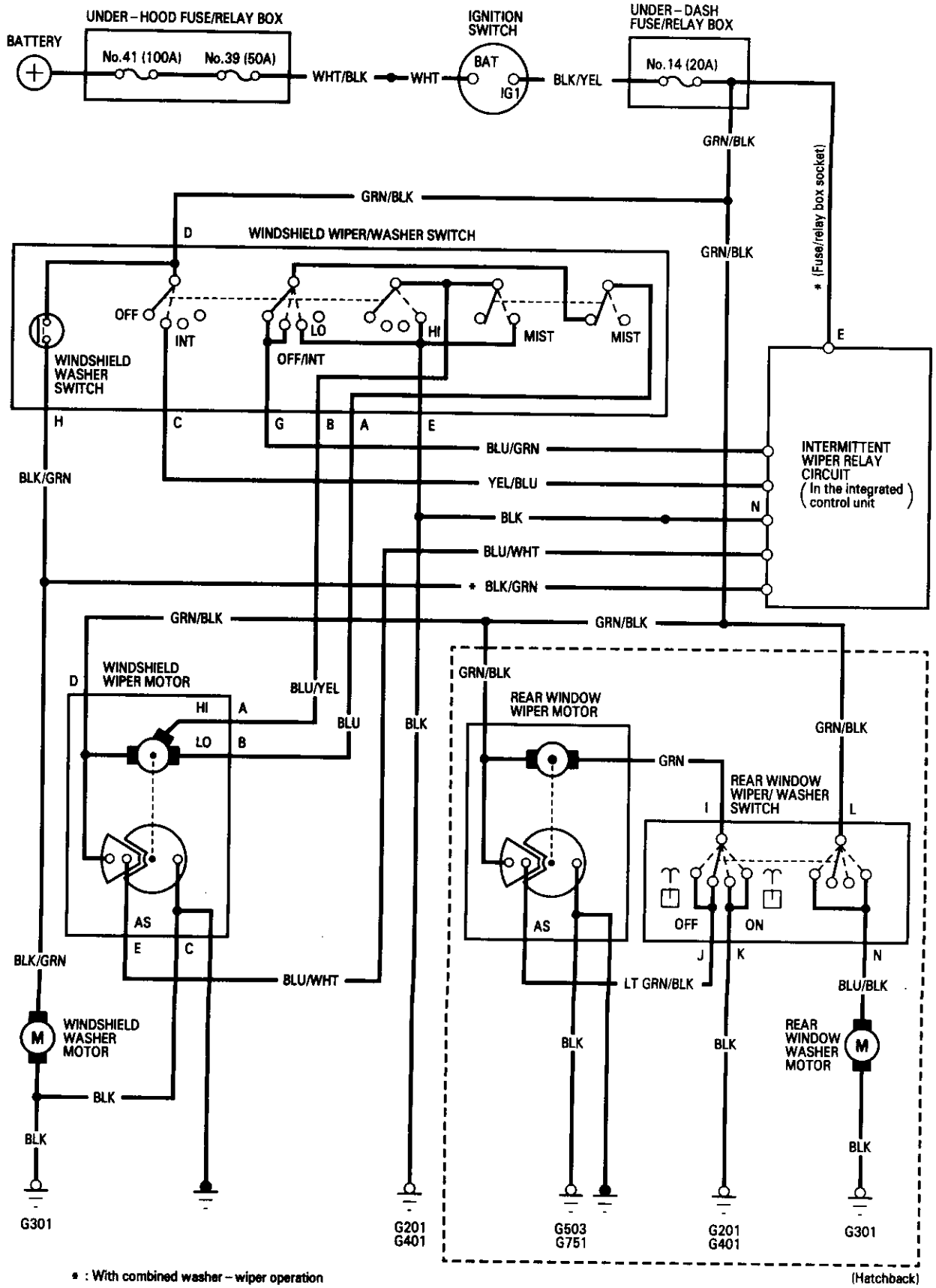


2. Disconnect the 3-P connector from the switch.
3. Check for continuity between the terminals in each switch position according to the table.

Terminal / Position	A	B	C
LOCK	○	○	
OFF			
UNLOCK		○	○



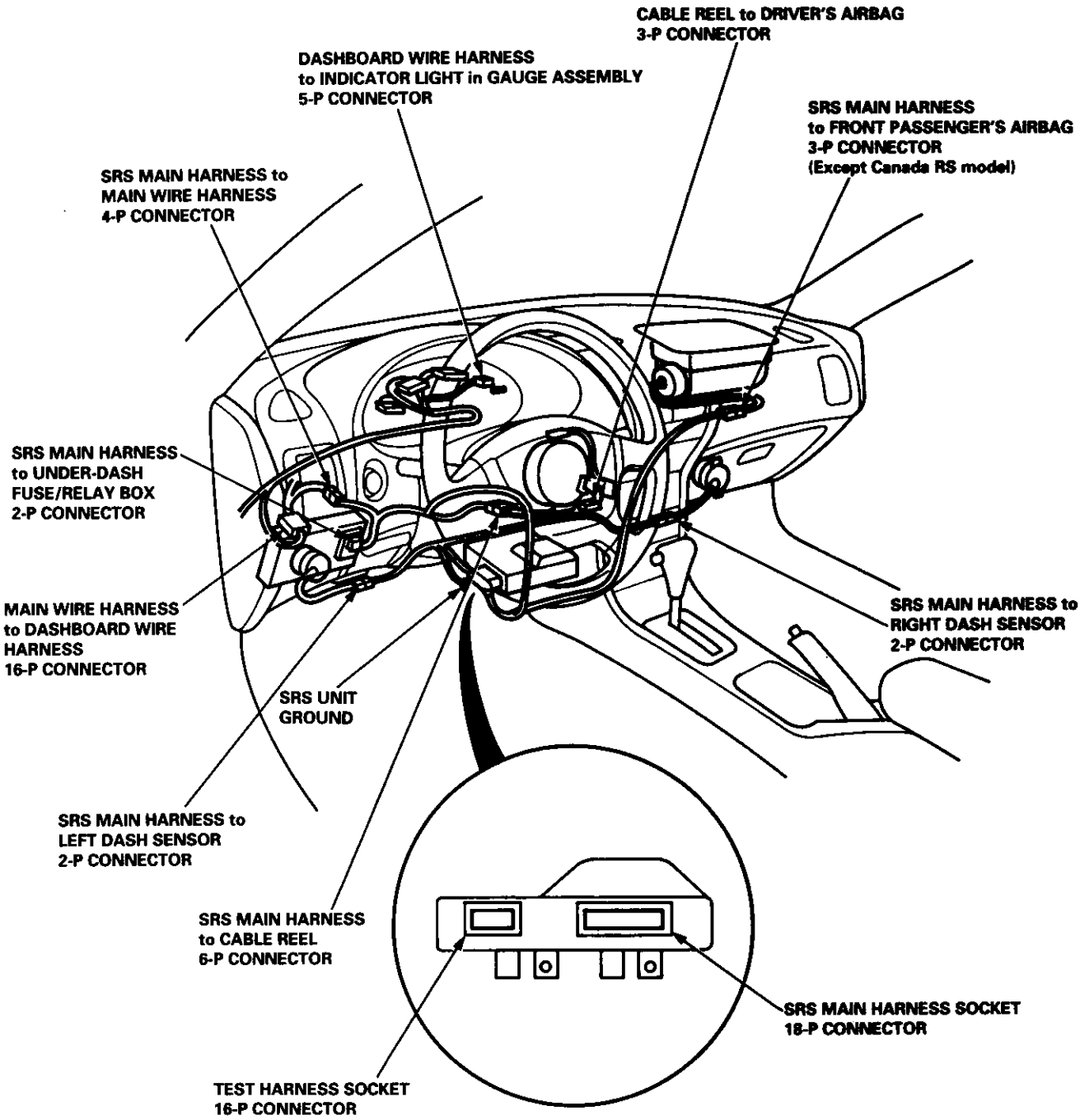
Circuit Diagram



Wiring Locations

CAUTION: Make sure all SRS ground locations are clean and grounds are securely attached.

NOTE:
- All SRS electrical wiring harnesses are covered with yellow insulation.
- Replace the entire affected SRS harness assembly if it has an open circuit or damaged wiring.



Troubleshooting (cont'd)

NOTE: Do not disconnect the airbag when checking SRS unit voltages.

Without front passenger's airbag:

Test Harness Terminal	1 SADH	–	–	4 VCC	5 SV	–	–	8 SADC	–	10 BUC1	–	12 GND	13 IDC	14 MI	–	–	Probable Failure Mode
Normal Voltage	4.3 –5.6	–	–	4.5 –5.5	12.0 –14.3	–	–	5.6 –7.3	–	11.5 –14.5	–	0	8.5 –13.6	8.4 –10.9	–	–	
Your Voltage Reading		–	–			–	–		–		–				–	–	
Failure Mode Voltage	2.8 –3.7	–	–	4.5 –5.5	12.0 –14.3	–	–	3.7 –4.9	–	11.5 –14.5	–	0	2.0 –8.5	8.4 –10.9	–	–	A Open in one cowl sensor contact
	0	–	–	4.5 –5.5	12.0 –14.3	–	–	0	–	11.5 –14.5	–	0	2.0 –8.5	8.4 –10.9	–	–	B • Open in both cowl sensor contacts • Short in one dash sensor • Short to driver's airbag inflator (body grond)
	8.6 –11.3	–	–	4.5 –5.5	12.0 –14.3	–	–	11.2 –14.6	–	11.5 –14.5	–	0	2.0 –8.5	8.4 –10.9	–	–	C Short in cowl sensor or open in both dash sensors
	5.7 –7.4	–	–	4.5 –5.5	12.0 –14.3	–	–	7.4 –9.7	–	11.5 –14.5	–	0	2.0 –8.5	8.4 –10.9	–	–	D Open in one dash sensor
	8.6 –11.3	–	–	4.5 –5.5	12.0 –14.3	–	–	3.7 –4.9	–	11.5 –14.5	–	0	2.0 –8.5	8.4 –10.9	–	–	E Open in driver's airbag inflator or cable reel
	4.3 –5.6	–	–	0	0	–	–	5.6 –7.3	–	11.5 –14.5	–	0	2.0 –8.5	8.4 –10.9	–	–	H Blown SRS fuse (No. 25 10 A) or open in the wire
	4.3 –5.6	–	–	4.5 –5.5	12.0 –14.3	–	–	5.6 –7.3	–	11.5 –14.5	–	0	0 (8.5 –13.6)	8.4 –10.9	–	–	I Short (or open) in SRS indicator wire harness

Mode A: Open in one cowl sensor contact

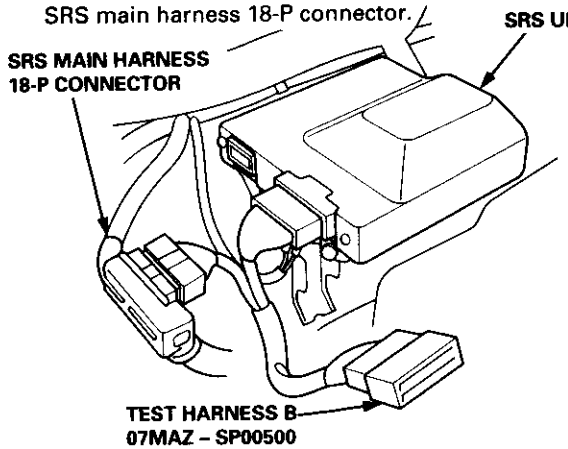
- The SRS unit is faulty. Substitute a known-good SRS unit and recheck the voltages according to the chart on page 23-283.

Mode B:

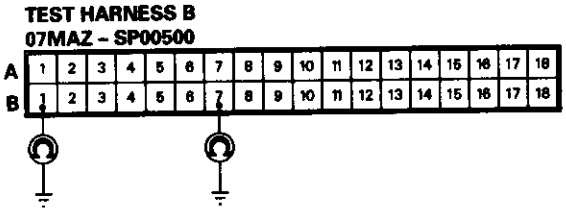
- **Short to driver's or passenger's airbag inflator body (body ground)**
- **Short in dash sensor**
- **Open in both cowl sensor contacts**

NOTE: The original radio has a coded theft protection circuit. Be sure to get the customer's code number before disconnecting the battery cables.

1. Disconnect the battery negative cable and then the positive cable. Then connect the short connectors(s) (RED) to the airbag(s) (see page 23-272).
2. Connect Test Harness B between the SRS unit and SRS main harness 18-P connector.

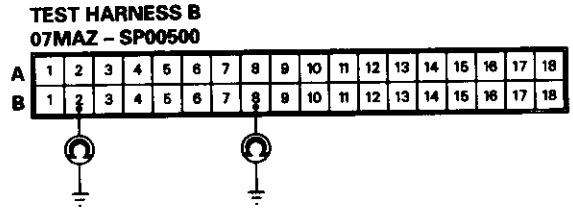


3. Reconnect the driver's airbag connector, then check continuity between the B1 terminal and body ground, and between the B7 terminal and body ground.



- If there is continuity at either terminal, go to step 6.
- If there is no continuity at either terminal,
  — go to step 5 (without front passenger's airbag).
  — go to step 4 (with front passenger's airbag).

4. Reconnect the front passenger's airbag connector, then check continuity between the B2 terminal and body ground, and between the B8 terminal and body ground.



- If there is continuity at either terminal, go to step 10.
- If there is no continuity at either terminal, go to step 5.

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