General Information

Chassis and Paint Codes

Vehicle Identification Number

2HH MB45 4 * V H 900001

Manufacturer, Make and Type of Vehicle
- 2HH: HONDA OF CANADA MFG., INC. ACURA Passenger car

Line, Body and Engine Type
- MB4: 1.6EL/D16Y8

Body Type and Transmission Type
- 5: Sedan/5-speed Manual
- 6: Sedan/4-speed Automatic

Vehicle Grade
- 4: Standard
- 5: Standard with ABS
- 6: Sport
- 7: Premium

Check Digit

Model Year
- V: 1997

Factory Code
- H: Alliston Plant, Ontario, Canada

Serial Number

Engine Number

D16Y8 - 2750001

Engine Type
- D16Y8: 1.6 ℓ SOHC VTEC 16-valves Sequential Multiport Fuel-injected Engine

Serial Number

Transmission Number

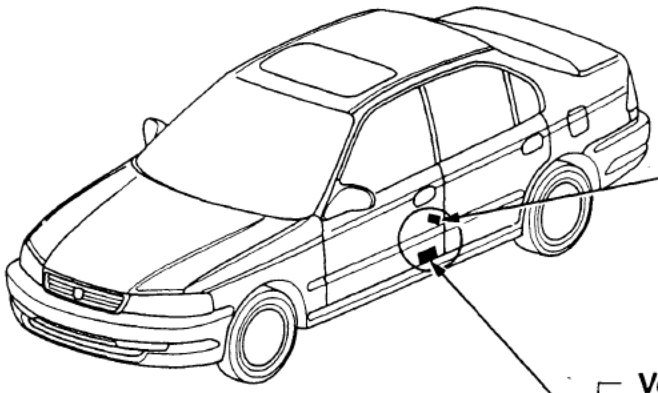
APBA - 1000001

Transmission Type
- APBA: 4-speed Automatic Transmission
- S40 : 5-speed Manual Transmission

Serial Number
- APBA: 1000001~
- S40 : 1000001~

Paint Code

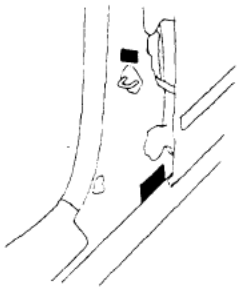
Paint Code	Color
B-73M	Cyclone Blue Metallic
G-82P	Cypress Green Pearl
NH-503P	Granada Black Pearl
R-97	Roma Red
RP-27M	Primrose Mist Metallic



Paint Code

COLOR B-73M

Vehicle Identification Number and Canadian Motor Vehicle Safety Standard Certification



Standards and Service Limits

Cooling — Section 10

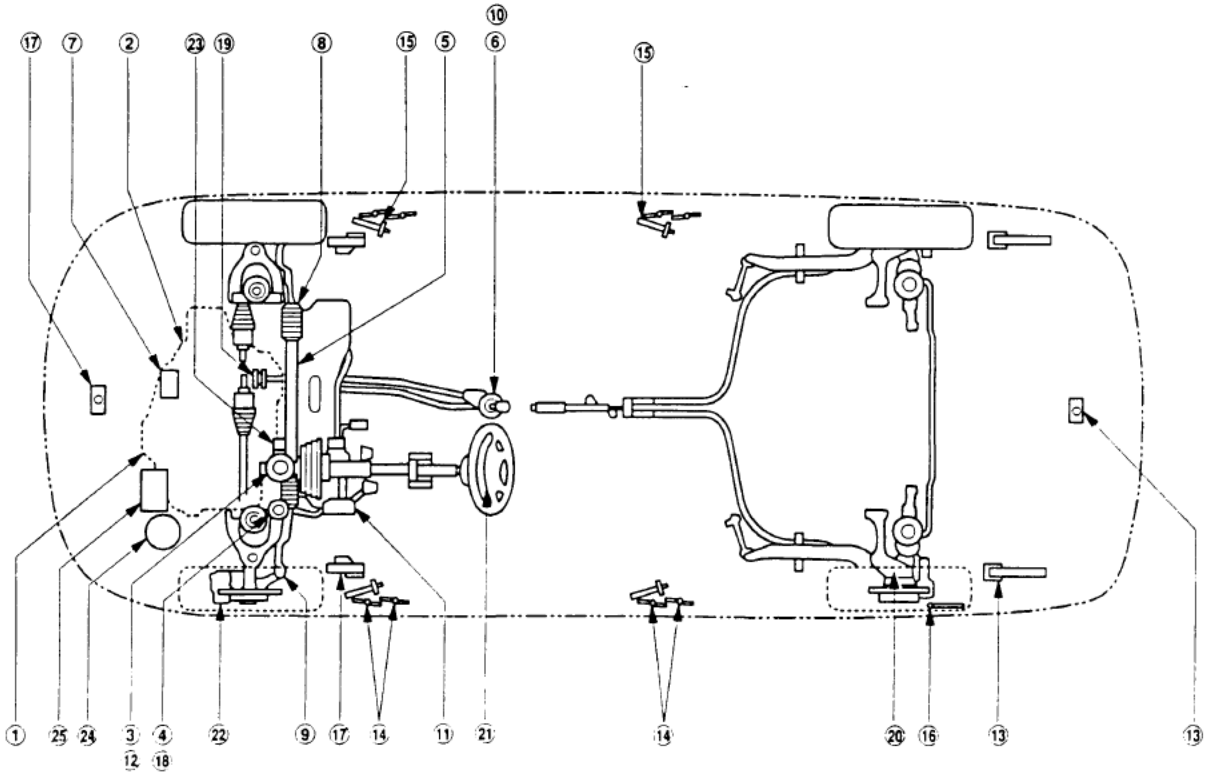
	MEASUREMENT		STANDARD (NEW)
Radiator	Engine coolant capacity ℓ (US qt, Imp qt) including engine, heater, cooling line and reservoir Reservoir capacity: 0.4 ℓ (0.42 US qt, 0.35 Imp qt)	M/T A/T	4.2 (4.4, 3.7) for overhaul 3.8 (4.0, 3.3) for coolant change 4.3 (4.5, 3.8) for overhaul 3.9 (4.1, 3.4) for coolant change
Radiator cap	Opening pressure kPa (kgf/cm², psi)		93 – 123 (0.95 – 1.25, 13.5 – 17.8)
Thermostat	Start to opening °F (°C) Fully open °F (°C) Valve lift at fully open		169 – 176 (76 – 80) 194 (90) 8.0 (0.31) min.
Cooling fan	Thermoswitch "ON" temperature Thermoswitch "OFF" temperature	°F (°C) °F (°C)	196 – 203 (91 – 95) Subtract 5 – 15 (3 – 8) from actual "ON" temperature

Fuel and Emission — Section 11

	MEASUREMENT	STANDARD (NEW)	
Fuel pressure regulator	Pressure with fuel pressure regulator vacuum hose disconnected kPa (kgf/cm², psi)	260 – 310 (2.7 – 3.2, 38 – 46)	
Fuel tank	Capacity ℓ (US gal, Imp gal)	45 (11.9, 9.9)	
Engine	Idle speed rpm	M/T (neutral)	A/T (N or P position)
		750 ± 50	750 ± 50
	Idle CO %	0.1 max.	

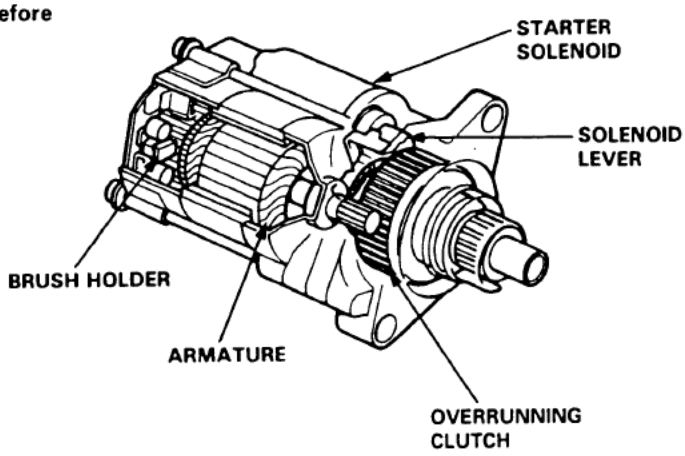
Clutch — Section 12

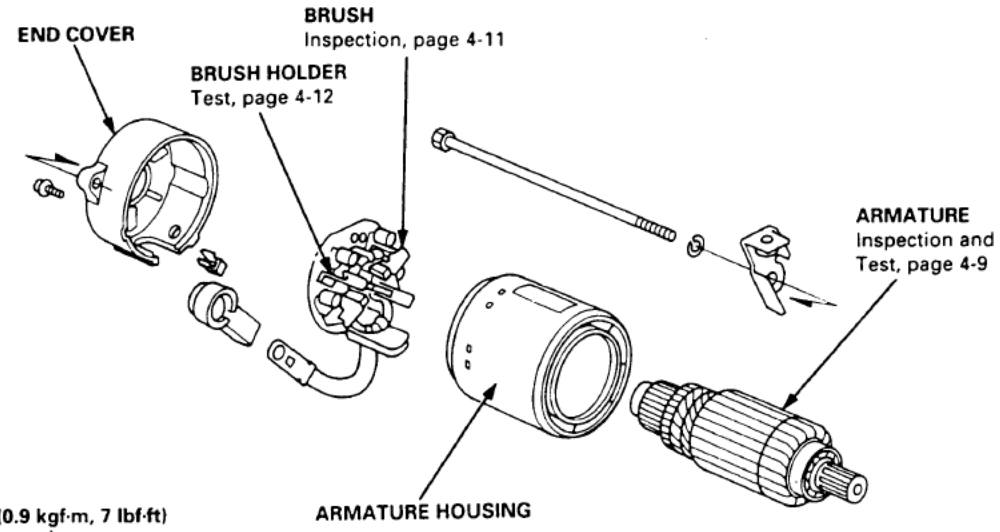
	MEASUREMENT		STANDARD (NEW)	SERVICE LIMIT
Clutch pedal	Pedal height Stroke Pedal play Disengagement height	to floor to floor to carpet	165 (6 1/2) 130 – 140 (5.12 – 5.51) 12 – 21 (0.47 – 0.83) 83 (3.27) 44 (1.73) min. Reference	—— —— —— —— ——
Flywheel	Clutch surface runout		0.05 (0.002) max.	0.15 (0.006)
Clutch disc	Rivet head depth Thickness		1.3 – 1.9 (0.05 – 0.07) 8.5 – 9.1 (0.33 – 0.36)	0.2 (0.01) 5.5 (0.22)
Pressure plate	Warpage Diaphragm spring fingers alignment		0.03 (0.001) max. 0.6 (0.02) max.	0.15 (0.006) 1.0 (0.04)

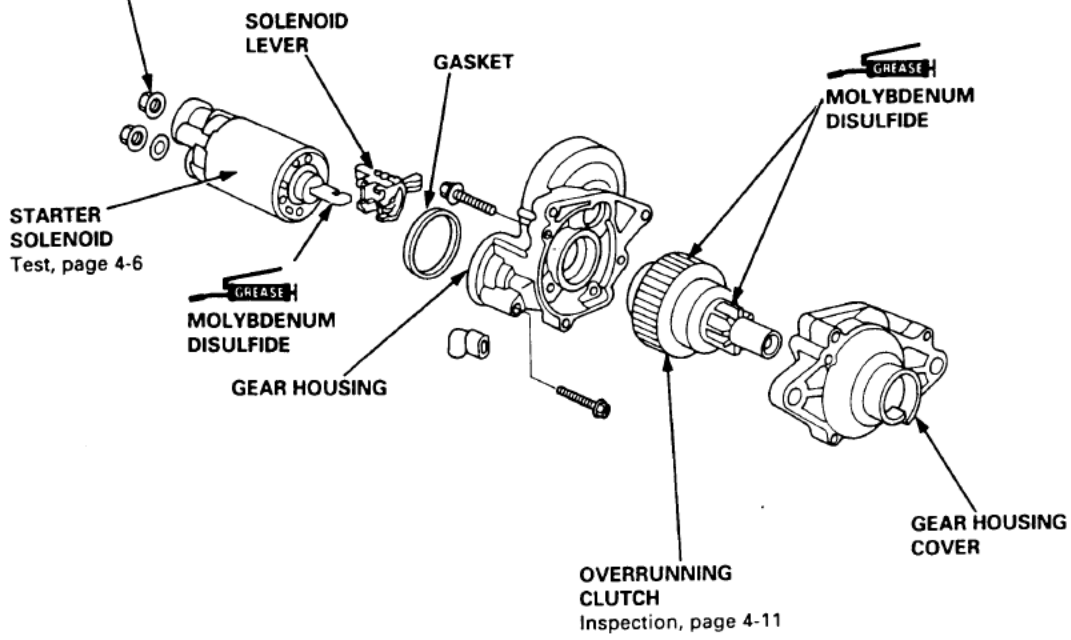

17 7 2 23 19 8 15 5 10 6 15
1 25 24 3 12 4 18 22 9 17 14 11 21 14 20 16 13 13

Starter Overhaul

CAUTION: Disconnect the battery negative cable before removing the starter.

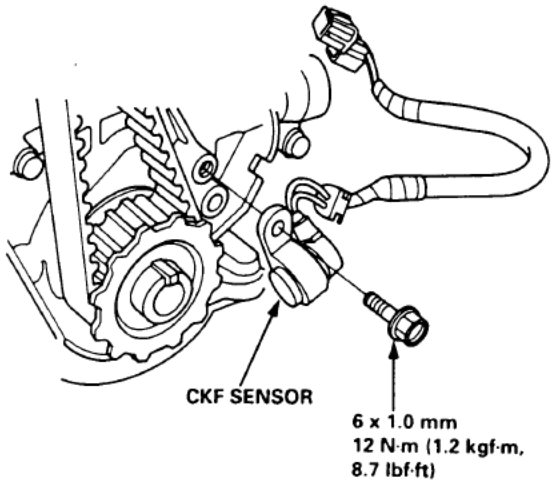




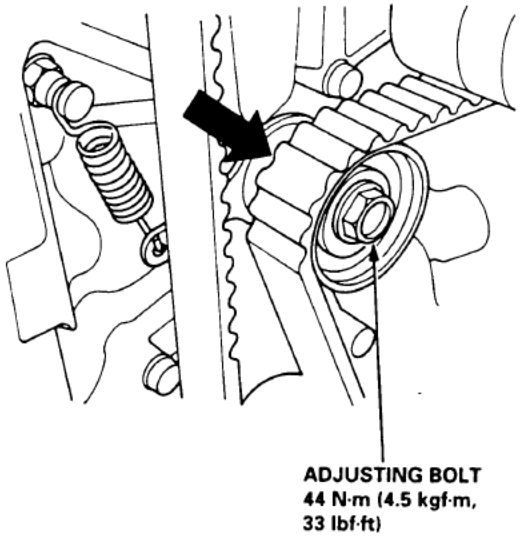


Removal (cont'd)

9. Remove the CKF sensor from the oil pump.



10. Loosen the adjusting bolt 180°. Push the tensioner to remove tension from the timing belt, then retighten the adjusting bolt.

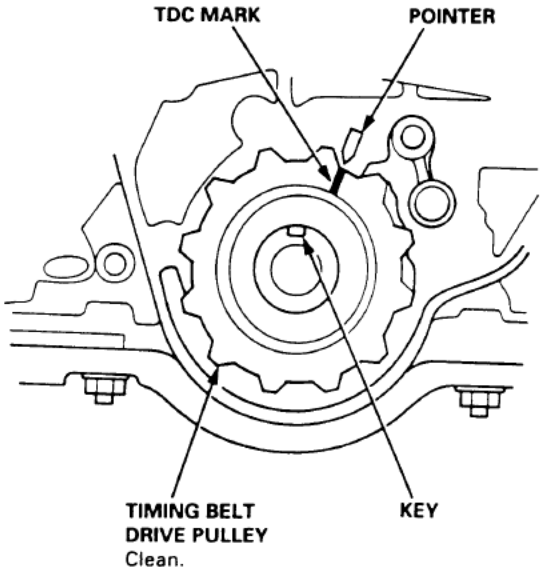


11. Remove the timing belt.

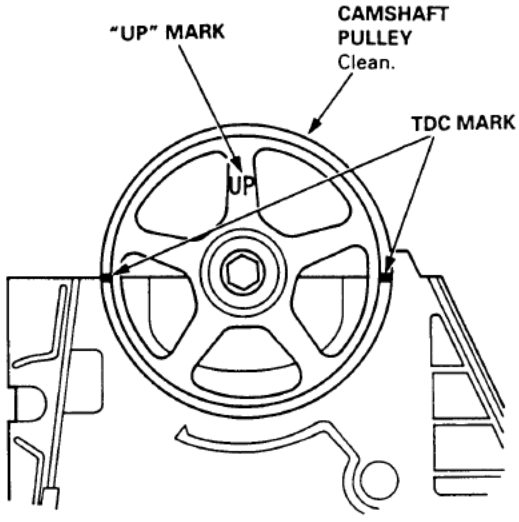
Installation

Install the timing belt in the reverse order of removal; Only key points are described here.

1. Set the timing belt drive pulley so that the No. 1 piston is at top dead center (TDC). Align the groove on the timing belt drive pulley to the pointer on the oil pump.



2. Set the camshaft pulley to TDC. Align the TDC marks on the camshaft pulley to the cylinder head upper surface.



Main Bearings

Clearance

1. To check main bearing-to-journal oil clearance, remove the main caps and bearing halves.

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

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

   NOTE: If the engine is still in the car when you bolt the main cap down to check clearance, the weight of the crankshaft and flywheel will flatten the plastigage further than just the torque on the cap bolt, and give you an incorrect reading. For an accurate reading, support the crank with a jack under the counterweights and check only one bearing at a time.

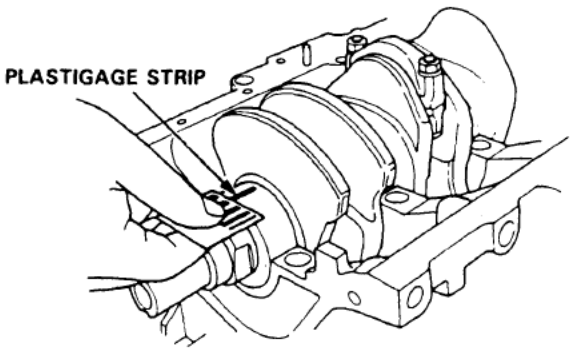
4. Reinstall the bearings and caps, then torque the bolts.

   1st step: 25 N·m (2.5 kgf·m, 18 lbf·ft)
   Final step: 51 N·m (5.2 kgf·m, 38 lbf·ft)

   NOTE: Do not rotate the crankshaft during inspection.

5. Remove the cap and bearing again, and measure the widest part of the plastigage.

   Main Bearing-to-Journal Oil Clearance:
   Standard (New):
   No. 1, 5 Journals:
   0.018 – 0.036 mm (0.0007 – 0.0014 in)
   No. 2, 3, 4 Journals:
   0.024 – 0.042 mm (0.0009 – 0.0017 in)
   Service Limit: 0.05 mm (0.002 in)



6. If the plastigage measures too wide or too narrow, (remove the engine if it's still in the car), remove the crankshaft, and remove the upper half of the bearing. Install a new, complete bearing with the same color code (select the color as shown on the next page), and recheck the clearance.

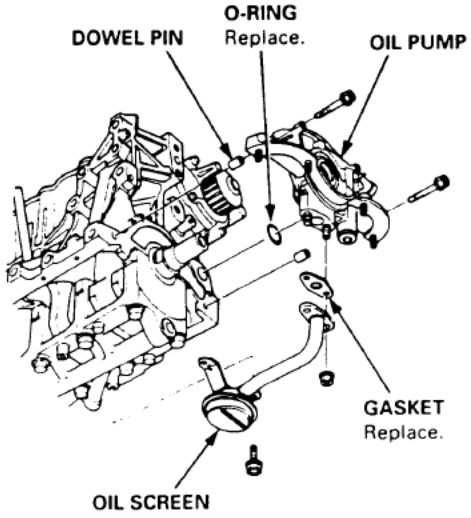
   CAUTION: Do not file, shim, or scrape the bearings or the caps to adjust clearance.

7. If the plastigage shows the clearance is still incorrect, try the next larger or smaller bearing (the color listed above or below that one), and check again.

   NOTE: If the proper clearance cannot be obtained by using the appropriate larger or smaller bearings, replace the crankshaft and start over.

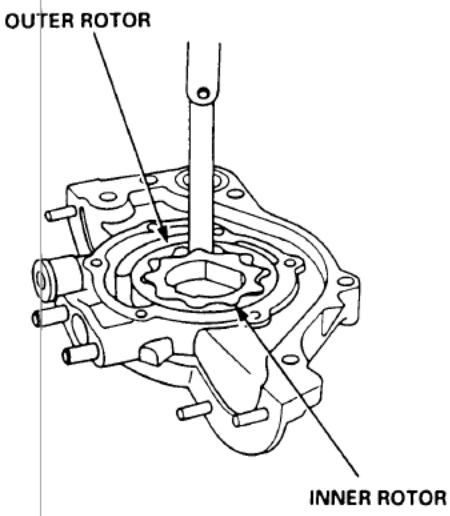
Removal/Inspection/Installation

1. Drain the engine oil.
2. Turn the crankshaft and align the white groove on the crankshaft pulley with the pointer on the lower cover.
3. Remove the cylinder head cover and upper cover.
4. Remove the power steering pump belt, air conditioner belt and the alternator belt.
5. Remove the crankshaft pulley and remove the lower cover.
6. Remove the timing belt.
7. Remove the drive pulley.
8. Remove the oil pan and oil screen.



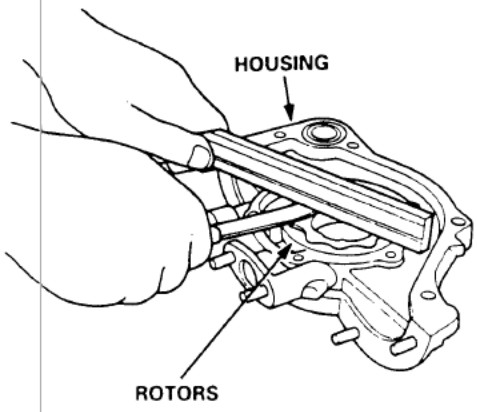
9. Remove the oil pump.
10. Remove the screws from the pump housing, then separate the housing and cover.
11. Check the inner-to-outer rotor radial clearance on the pump rotor. If the inner-to-outer rotor clearance exceeds the service limit, replace the inner and outer rotors.

Inner Rotor-to-Outer Rotor Radial Clearance
Standard (New): 0.02 – 0.14 mm
(0.001 – 0.006 in)
Service Limit: 0.20 mm (0.008 in)



12. Check the housing-to-rotor axial clearance on the pump rotor. If the housing-to-rotor axial clearance exceeds the service limit, replace the set of inner and outer rotors and/or the pump housing.

Housing-to-Rotor Axial Clearance
Standard (New): 0.03 – 0.08 mm
(0.001 – 0.003 in)
Service Limit: 0.15 mm (0.006 in)

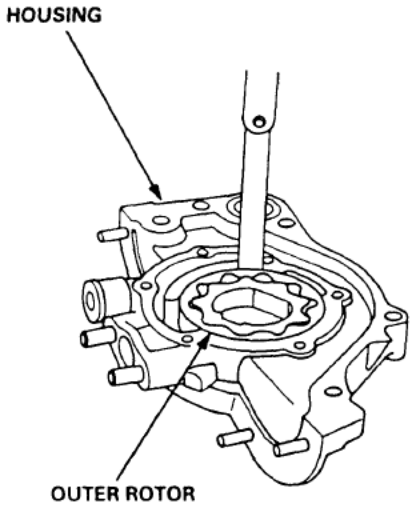


(cont'd)

Removal/Inspection/Installation (cont'd)

13. Check the housing-to-outer rotor radial clearance. If the housing-to-outer rotor radial clearance exceeds the service limit, replace the set of inner and outer rotors and/or the pump housing.

    Housing-to-Outer Rotor Radial Clearance:
    Standard (New): 0.10 – 0.18 mm (0.004 – 0.007 in)
    Service Limit: 0.20 mm (0.008 in)

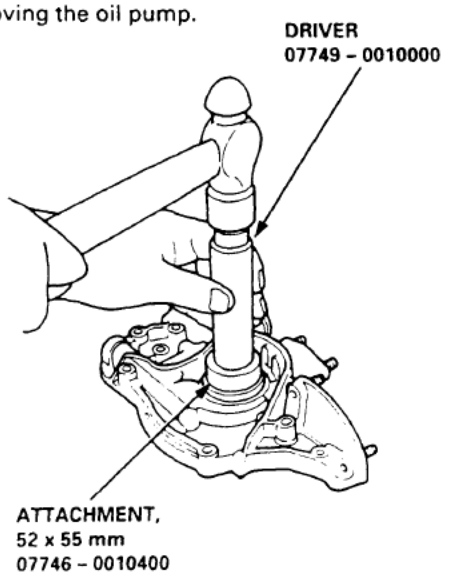


14. Inspect both rotors and the pump housing for scoring or other damage. Replace parts if necessary.

15. Remove the old oil seal from the oil pump.

16. Using the special tool, gently tap in the new oil seal until the driver bottoms against the pump.

    NOTE: The oil seal alone can be replaced without removing the oil pump.



17. Reassemble the oil pump, applying thread lock to the pump housing screws.

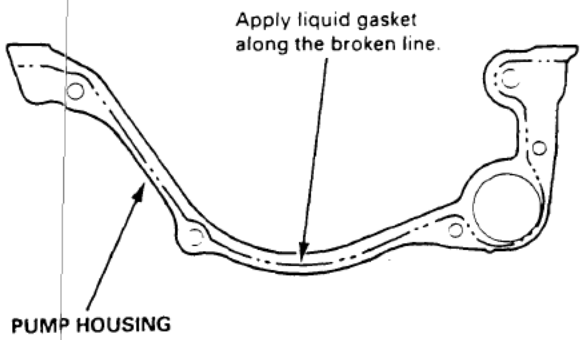
18. Check that the oil pump turns freely.

19. Apply a light coat of oil to the seal lip.

20. Install the two dowel pins and new O-ring on the oil pump.

21. Apply liquid gasket to the cylinder block mating surface of the oil pump.

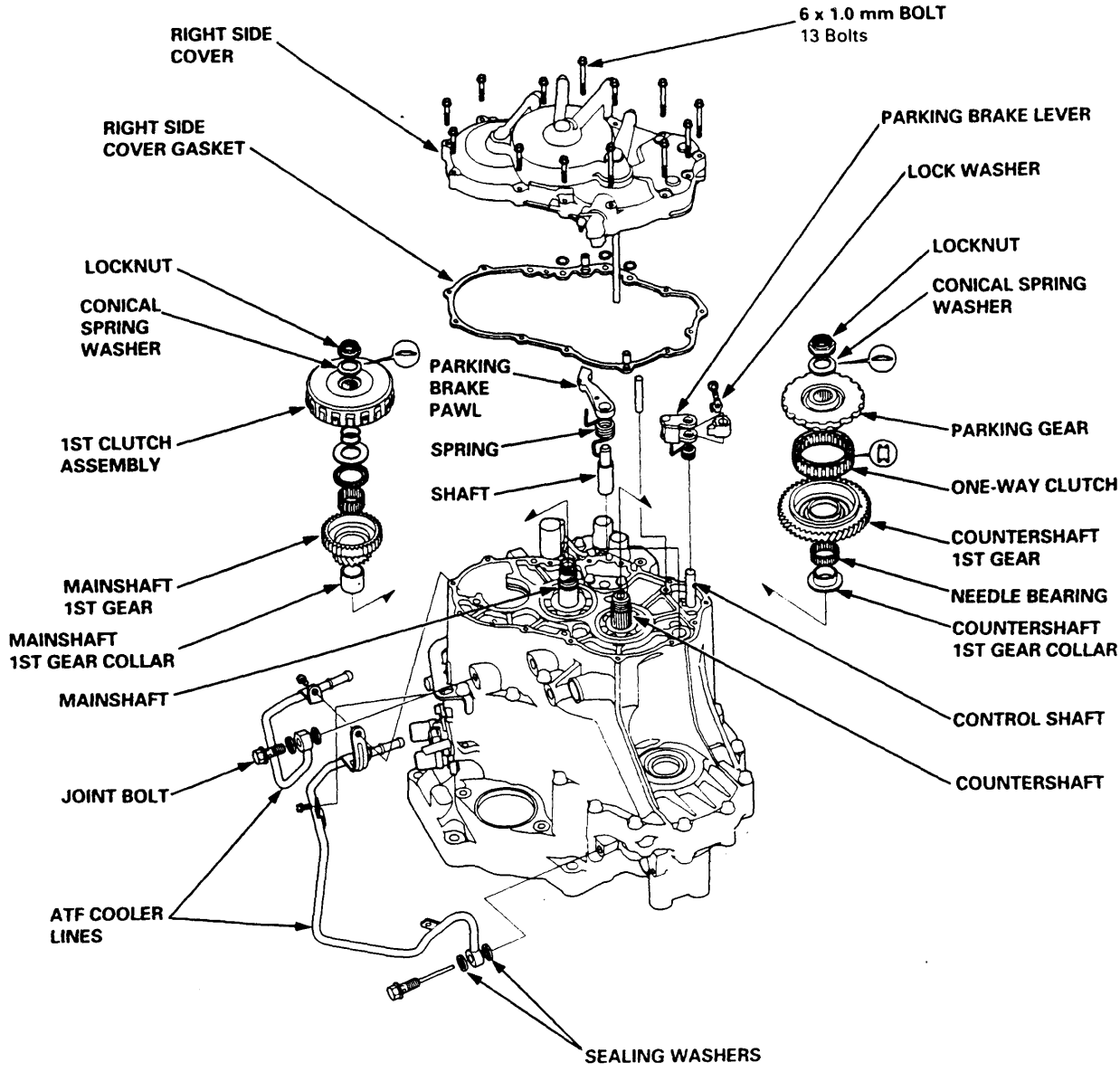
    NOTE:
    - Use liquid gasket, Part No. 08718 – 0001 or 08718 – 0003
    - Check that the mating surfaces are clean and dry before applying liquid gasket.
    - Apply liquid gasket evenly, in a narrow bead centered on the mating surface.
    - To prevent oil leakage, apply liquid gasket to the inner threads of the bolt holes.
    - Do not install the parts if five minutes or more have elapsed since applying liquid gasket. Instead reapply liquid gasket after removing the old residue.
    - After assembly, wait at least 20 minutes before filling the engine with oil.



Right Side Cover

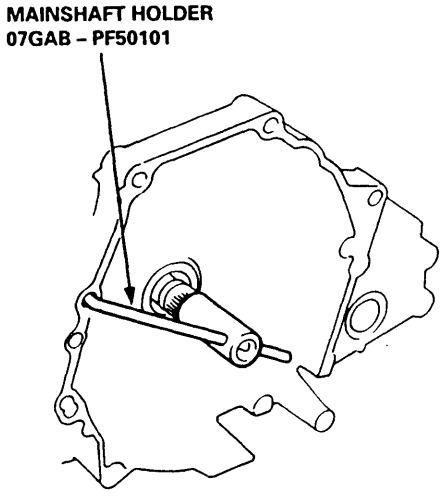
Removal

NOTE:
- Clean all parts thoroughly in solvent or carburetor cleaner, and dry with compressed air.
- Blow out all passages.
- When removing the right side cover, replace the following:
  - — O-rings
  - — Mainshaft and countershaft locknuts
  - — Conical spring washers
  - — Right side cover gasket
  - — Lock washer
  - — Sealing washers



1. Remove the 13 bolts securing the right side cover, then remove the right side cover.

2. Slip the special tool onto the mainshaft as shown.

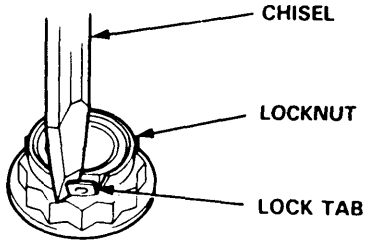


3. Engage the parking brake pawl with the parking gear.

4. Cut the lock tabs of the mainshaft and countershaft locknuts using a chisel as shown, then remove the locknuts and conical spring washers.

   CAUTION: Keep all of the chiseled particles out of the transmission.

   NOTE:
   - Mainshaft and countershaft locknuts have left-hand threads.
   - Always wear safety glasses.



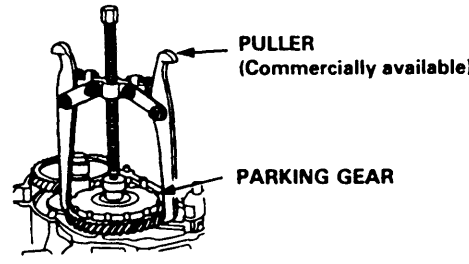
5. Remove the special tool from the mainshaft after removing the locknuts.

6. Remove the 1st clutch and mainshaft 1st gear assembly and mainshaft 1st gear collar from the mainshaft.

7. Remove the parking brake pawl, spring and shaft.

8. Remove the parking brake lever from the control shaft.

9. Using a universal two-jaw puller, remove the parking gear, one-way clutch and countershaft 1st gear assembly.

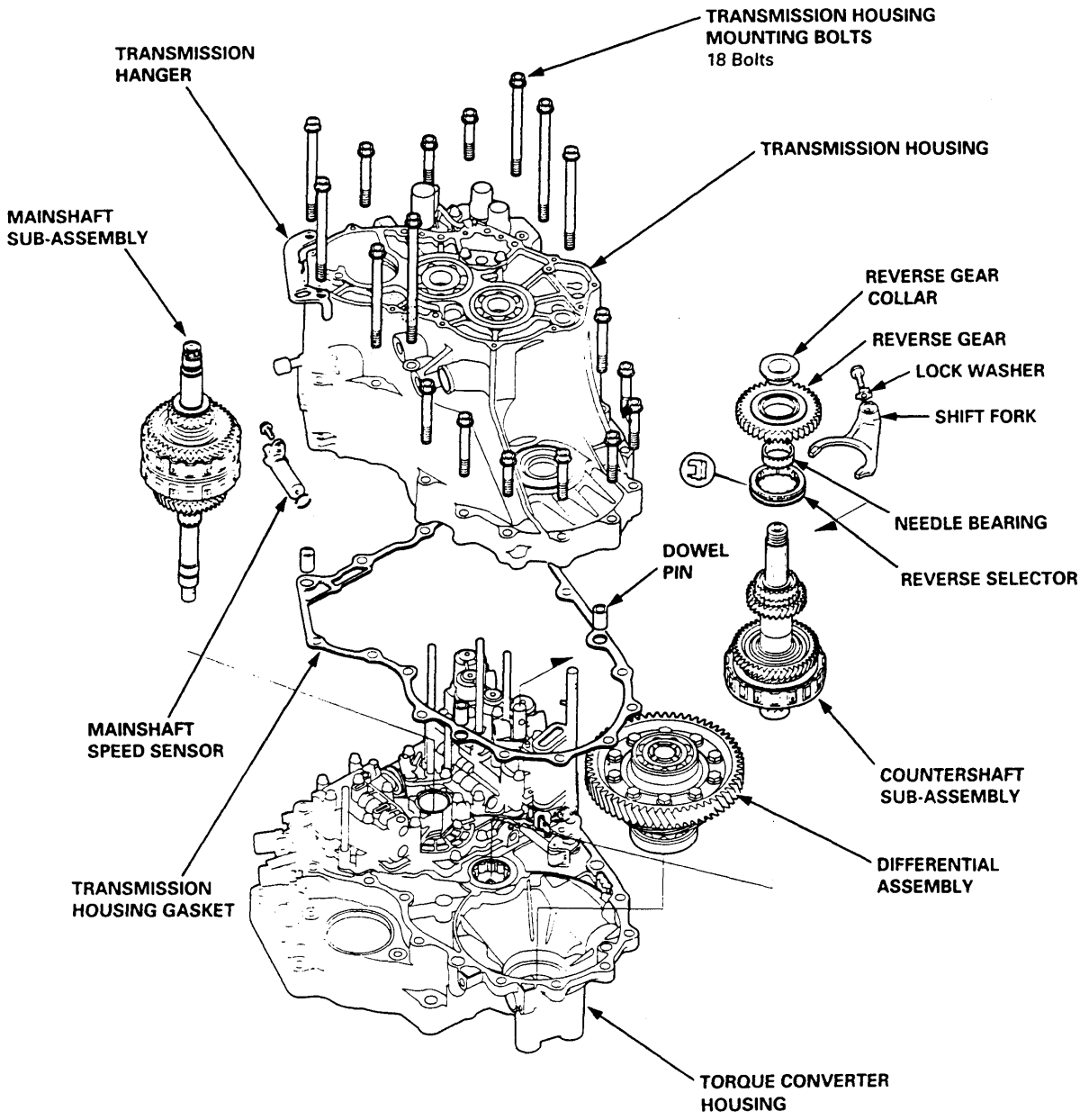


10. Remove the needle bearing and the countershaft 1st gear collar from the countershaft.

11. Remove the ATF cooler lines and ATF dipstick.

Transmission Housing

Removal



Master Cylinder/Brake Booster

Removal/Installation

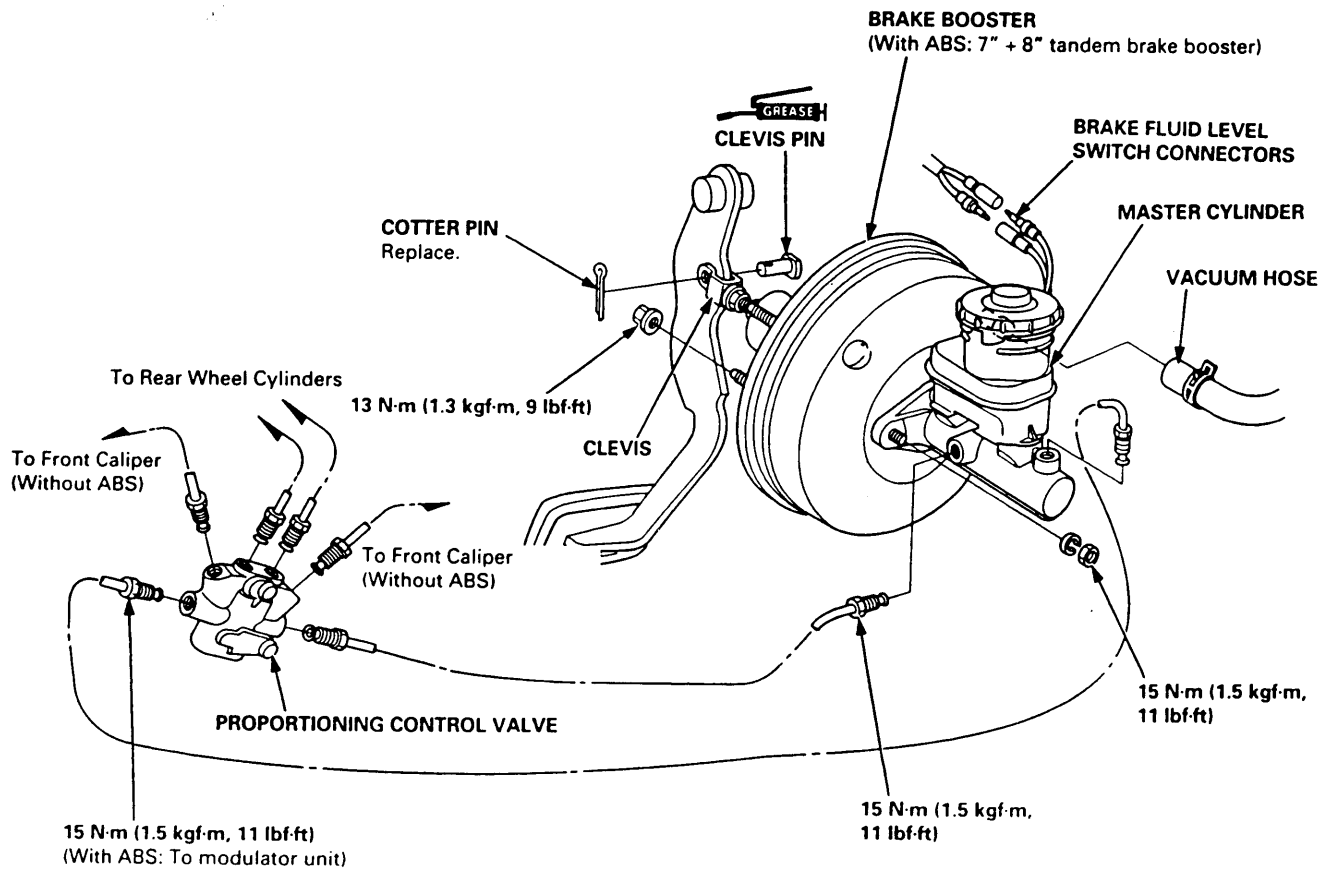
CAUTION:
- **Be careful not to bend or damage the brake lines when removing the master cylinder.**
- **Do not spill brake fluid on the vehicle; it may damage the paint; if brake fluid does contact the paint, wash it off immediately with water.**
- **To prevent spills, cover the hose joints with rags or shop towels.**

1. Disconnect the brake fluid level switch connectors.
2. Remove the reservoir cap from the master cylinder.
3. The brake fluid may be sucked out through the top of the master cylinder reservoir with a syringe.
4. Disconnect the brake lines from the master cylinder.
5. Remove the master cylinder mounting nuts and washers.
6. Remove the master cylinder from the brake booster.
7. Disconnect the vacuum hose from the brake booster.
8. Remove the cotter pin and clevis pin from the clevis.

   CAUTION: Do not disconnect the clevis by removing it from the operating rod of the brake booster. If the clevis is loosened, adjust the pushrod length before installing the brake booster (see page 19-17).
9. Remove the four booster mounting nuts.
10. Pull the brake booster forward until the clevis is clear of the bulkhead.
11. Remove the brake booster from the engine compartment.
12. Install the brake booster and master cylinder in the reverse order of removal.

    CAUTION:
    - **When connecting the brake lines, make sure that there is no interference between the brake lines and other parts.**
    - **Be careful not to bend or damage the brake lines when installing the master cylinder.**

    NOTE: If replacing the master cylinder or brake booster, check and adjust the pushrod clearance before installing the master cylinder (see page 19-19).
13. Fill the master cylinder reservoir, and bleed the brake system (see page 19-7).
14. After installation, check the brake pedal height and brake pedal free play (see page 19-5) and adjust if necessary.

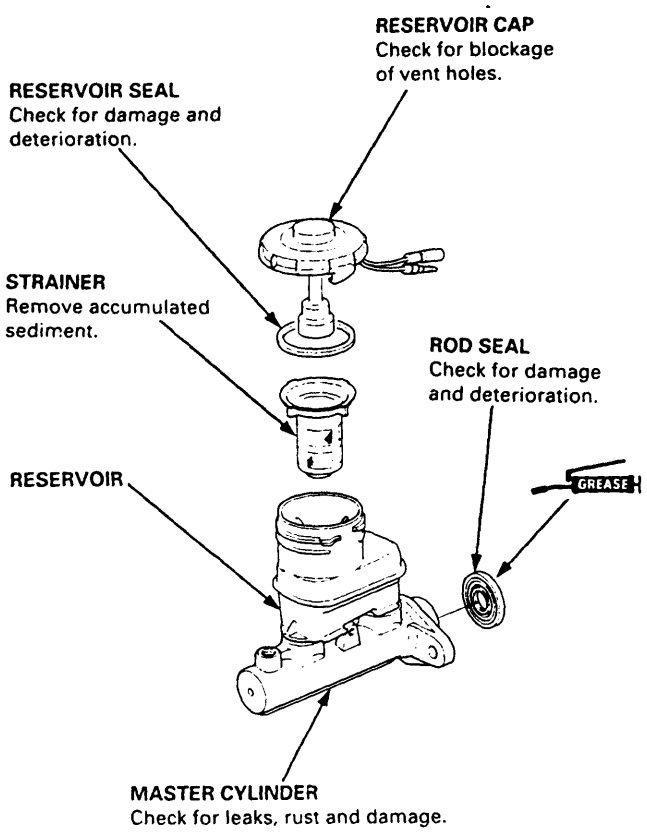


Master Cylinder/Brake Booster

Inspection/Disassembly

CAUTION:

- **Do not spill brake fluid on the vehicle; it may damage the paint; if brake fluid does contact the paint, wash it off immediately with water.**
- **Before reassembling, check that all parts are free of dust and other foreign particles.**
- **Do not try to disassemble the master cylinder assembly. Replace the master cylinder assembly with a new part if necessary.**
- **Make sure no dirt or other foreign matter is allowed to contaminate the brake fluid.**

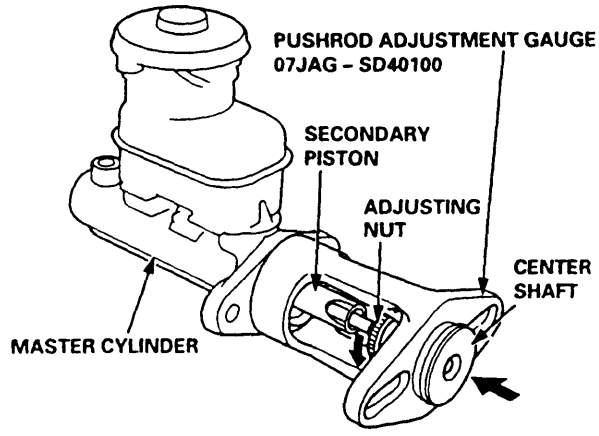


Pushrod Clearance Adjustment

NOTE:

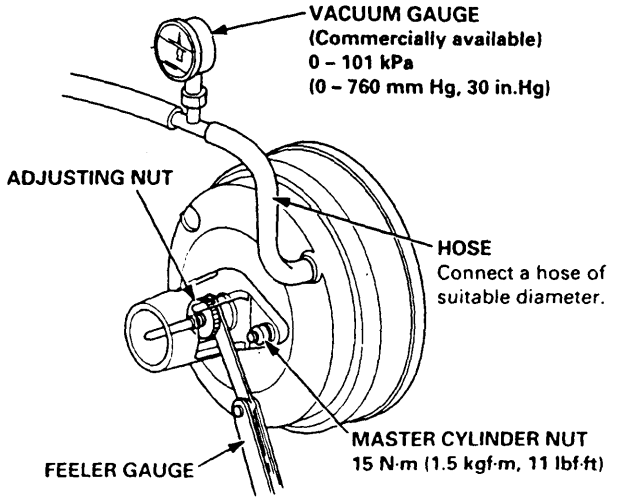
- Master cylinder pushrod-to-piston clearance must be checked and adjustments made, if necessary, before installing master cylinder.
- ABS type is shown, conventional brake type is similar.

1. Set the special tool on the master cylinder body; push in the center shaft until the top of it contacts the end of the secondary piston by turning the adjusting nut.



2. Without disturbing the center shaft's position, install the special tool upside down on the booster.
3. Install the master cylinder nuts and tighten to the specified torque.
4. Connect the booster in-line with a vacuum gauge 0 – 101 kPa (0 – 760 mmHg, 30 in.Hg) to the booster's engine vacuum supply, and maintain an engine speed that will deliver 66 kPa (500 mmHg, 20 in.Hg) vacuum.
5. With a feeler gauge, measure the clearance between the gauge body and the adjusting nut as shown.

Clearance: 0 – 0.4 mm (0 – 0.02 in)



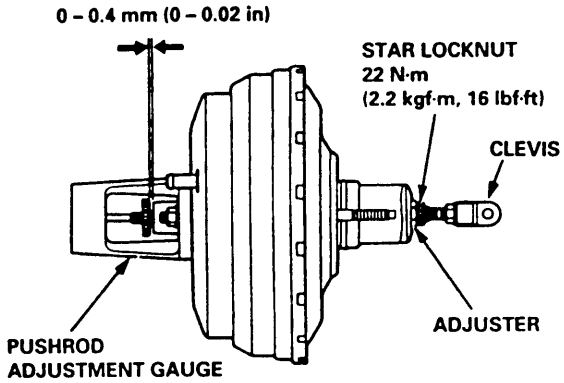
NOTE: If the clearance between the gauge body and adjusting nut is 0.4 mm (0.02 in), the pushrod-to-piston clearance is 0 mm. However, if the clearance between the gauge body and adjusting nut is 0 mm, the pushrod-to-piston clearance is 0.4 mm (0.02 in) or more. Therefore it must be adjusted and rechecked.

6. If clearance is incorrect, loosen the star locknut and turn the adjuster in or out to adjust.

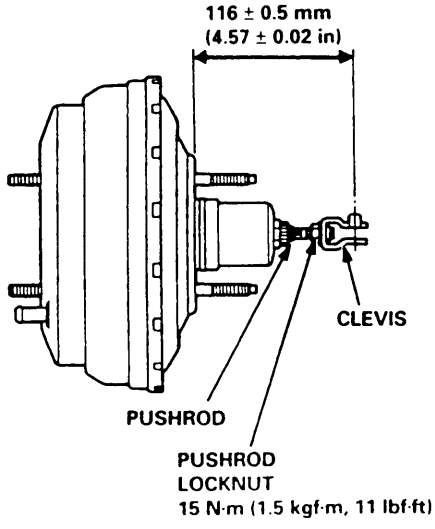
   NOTE:
   - Adjust the clearance while the specified vacuum is applied to the booster.
   - Hold the clevis while adjusting.

7. Tighten the star locknut securely.

8. Remove the special tool.



9. Adjust the pushrod length as shown if the booster is removed.



10. Install the master cylinder (see page 19-15).

Brake Booster Inspection

Functional Test

1. With the engine stopped, depress the brake pedal several times to deplete the vacuum reservoir, then depress the pedal hard and hold it for 15 seconds. If the pedal sinks, either the master cylinder is bypassing internally, or the brake system (master cylinder, lines, modulator, proportioning control valve, or caliper) is leaking.
2. Start the engine with the pedal depressed. If the pedal sinks slightly, the vacuum booster is operating normally. If the pedal height does not vary, the booster or check valve is faulty.
3. With the engine running, depress the brake pedal lightly. Apply just enough pressure to hold back automatic transmission creep. If the brake pedal sinks more than 25 mm (1.0 in.) in three minutes, the master cylinder is faulty. A slight change in pedal height when the A/C compressor cycles on and off if normal. (The A/C compressor load changes the vacuum available to the booster.)

Leak Test

1. Depress the brake pedal with the engine running, then stop the engine. If the pedal height does not vary while depressed for 30 seconds, the vacuum booster is OK. If the pedal rises, the booster is faulty.
2. With the engine stopped, depress the brake pedal several times using normal pressure. When the pedal is first depressed, it should be low. On consecutive applications, the pedal height should gradually rise. If the pedal position does not vary, check the booster check valve.

Booster Check Valve Test

1. Disconnect the brake booster vacuum hose at the booster.
2. Start the engine and let it idle. There should be vacuum. If no vacuum is available, the check valve is not working properly. Replace the brake booster vacuum hose and check valve, and retest.