

## IN-VEHICLE SERVICE (Continued)

21. Install damper washer and retaining bolt. Tighten bolt to 140-180 N·m (103-132 lb-ft).
22. Install crankshaft pulley. Tighten retaining bolts to 26-38 N·m (19-28 lb-ft).
23. Lower vehicle.
24. Connect coolant bypass hose. Tighten clamp securely.
25. Install distributor with rotor pointing at No. 1 distributor cap tower. Refer to Section 03-04C.
26. Install distributor cap and coil wire.
27. Connect radiator upper hose at thermostat housing. Tighten clamp securely.
28. Connect heater hose. Tighten clamp securely.
29. If equipped with air conditioning, install compressor and mounting brackets. Tighten retaining bolts to specification. Refer to Group 12 in the applicable Section for torque specifications.
30. Install power steering pump and mounting brackets. Tighten retaining bolts to specification. Refer to Group 11 in the applicable Section for torque specifications.
31. Position accessory drive belt over the pulleys.
32. Install water pump pulley.
33. Position accessory drive belt over water pump pulley and tighten the belt. Refer to Section 03-05.
34. Connect battery ground cable.
35. Fill crankcase with correct viscosity and amount of engine oil.  
**CAUTION: This engine has aluminum cylinder heads and requires a special corrosion inhibited coolant formulation to avoid cooling system damage. Refer to Section 03-03 for coolant specifications.**
36. Fill cooling system with specified coolant.
37. Start engine and check for coolant, oil or fuel leaks.
38. Check ignition timing and curb idle speed, adjust as required. Refer to Powertrain Control/Emissions Diagnosis Manual<sup>1</sup>. Tighten distributor hold-down bolt to 27-40 N·m (20-29 lb-ft).
39. Install air cleaner assembly and air intake duct.

**Tappet (Roller)**

**NOTE:** Before replacing a tappet for noisy operation, ensure the noise is not caused by improper valve-to-rocker arm clearance or by worn rocker arms or push rods.

**Tools Required:**

- Spark Plug Wire Remover T74P-6666-A

<sup>1</sup> Can be purchased as a separate item.

**Removal**

1. Disconnect secondary ignition wires at the spark plugs. To avoid damaging plug wires use Spark Plug Wire Remover T74P-6666-A.
2. Remove plug wire routing clips from studs on the rocker arm cover retaining bolts. Lay plug wires with routing clips toward front of engine.
3. Remove upper intake manifold as outlined.
4. Remove rocker arm covers as outlined.
5. Remove lower intake manifold as outlined.
6. Sufficiently loosen each rocker arm fulcrum retaining bolt to allow rocker arm to be lifted off push rod and rotated to one side.
7. Remove push rods. The location of each push rod should be identified. When engine is assembled each rod should be installed in its original position.
8. Remove two tappet guide plate retainers and six guide plates.
9. Remove tappets using a magnet. The location of each tappet should be identified. When engine is assembled each tappet should be installed in its original position.

If tappets are stuck in bores due to excessive varnish or gum deposits, it may be necessary to use a magnet or a claw-type tool to aid removal. When using a remover tool, rotate tappet back and forth to loosen it from gum or varnish that may have formed on the tappet.

**Installation**

**NOTE:** Lightly oil all bolt and stud bolt threads before installation except those specifying special sealant.

Using solvent, clean the cylinder head and valve rocker arm cover sealing surfaces.

1. Lubricate each tappet and bore with Engine Assembly Lubricant D9AZ-19579-D (ESR-M99C80-A) or equivalent heavy engine oil.
2. Install each tappet in bore from which it was removed. If a new tappet(s) is being installed, check new tappet for a free fit in bore.
3. Align flats on sides of tappets and install six guide plates between adjacent tappets (make sure the word "up" and/or button is showing). Install two guide plate retainers and tighten four bolts to 8-14 N·m (6-10 lb-ft).
4. Dip each push rod end in Engine Assembly Lubricant D9AZ-19579-D (ESR-M99C80-A) or equivalent heavy engine oil. Install push rods in their original position.
5. For each valve, rotate crankshaft until tappet rests onto heel (base circle) of camshaft lobe. Position rocker arms over push rods. Install fulcrums. Tighten fulcrum retaining bolt to 5 N·m (44 lb-in).