

3-10 ENGINE AND ENGINE OVERHAUL

Rocker Arms/Roller Followers

REMOVAL & INSTALLATION

3.8L Engine

1. Disconnect the negative battery cable.
2. Remove the rocker arm/valve cover(s). For details, please refer to the procedure located earlier in this section.
3. Remove the rocker arm bolt, fulcrum, and rocker arm. Keep all parts in order so they can be reinstalled in their original positions.

To install:

4. Lubricated all rocker arms with an Engine Assembly Lubricant.

➔Rocker arm seats must be fully seated in the cylinder head, and pushrods must be seated in the rocker arm sockets before final tightening, or engine damage may occur.

5. For each valve, rotate the crankshaft until the valve lifter rests on the heel (base circle) of the camshaft lobe. Position the rocker arm(s) over the push rods, then install the rocker arm seats. Tighten the rocker arm seat retaining bolts to 44 inch lbs. (5 Nm).
6. Final tightening of the rocker arm retaining bolt(s) is to 19–25 ft. lbs. (25–35 Nm). For final tightening, the camshaft may be in any position.
7. Clean the rocker arm cover and cylinder head mating surfaces of old gasket material and dirt.
8. Install the rocker arm/valve cover(s). For details, please refer to the procedure located earlier in this section.
9. Connect the negative battery cable.

4.6L Engine

♦ See Figure 21

1. Disconnect the negative battery cable.
2. Remove the valve cover(s).
3. Position the piston of the cylinder being serviced at the bottom of its stroke and position the camshaft lobe on the base circle.
4. Install a valve spring spacer tool, between the spring coils to prevent valve seal damage.

*** WARNING

If the valve spring spacer tool is not used, the retainer will hit the valve stem seal and damage the seal.

5. Install a valve spring compressor tool, under the camshaft and on top of the valve spring retainer.
6. Compress the valve spring and remove the roller follower. Remove the valve spring compressor and spacer.

7. Repeat Steps 3–6 for each roller follower to be removed. Inspect the roller follower(s) for wear and/or damage and replace, as necessary.

To install:

8. Apply engine oil or assembly lubricant to the valve stem tip and roller follower contact surfaces.
9. Install a valve spring spacer tool, between the spring coils. Compress the valve spring using a valve spring compressor tool, and install the roller follower.

➔The piston must be at the bottom of its stroke and the camshaft at the base circle.

10. Remove the valve spring compressor and spacer.
11. Repeat Steps 8–10 for each roller follower to be installed.
12. Install the valve cover(s). Connect the negative battery cable.

5.0L Engine

♦ See Figure 22

1. Disconnect the negative battery cable.
2. Remove the rocker arm cover(s). Use the procedures given earlier in this section.
3. Remove the rocker arm fulcrum bolt, fulcrum seat, and rocker arm. Keep all rocker arm assemblies together. Identify each assembly so it may be reinstalled in its original position.
4. Inspect the rocker arm and fulcrum seat contact surfaces for wear and/or damage. Also, check the rocker arm for wear on the valve stem tip contact surface and the pushrod socket. Replace complete rocker arm assemblies, as necessary.
5. Inspect the pushrod end and the valve stem tip. Replace pushrods, as necessary. If the valve stem tip is worn, the cylinder head must be removed to replace or machine the valve.

To install:

6. Apply engine oil or assembly lubricant to the valve stem tip and pushrod end. Also, apply lubricant to the rocker arm and fulcrum seat contact surfaces.
7. Rotate the crankshaft until the lifter is on the camshaft base circle (all the way down) and install the rocker, fulcrum seat and fulcrum bolt. Tighten the bolts to 18–25 ft. lbs. (24–34 Nm).
8. Install the rocker arm cover(s).
9. Connect the negative battery cable.

Thermostat

REMOVAL & INSTALLATION

3.8L Engine

♦ See Figure 23

1. Disconnect the negative battery cable.
2. Place a suitable drain pan below the radiator.
3. Carefully remove the radiator cap, then connect a 3/8 in. (9.5mm) hose to the drain tube, then open the draincock. Drain the radiator to a level below the water outlet connection, then close the draincock.
4. Loosen the upper radiator hose clamp at the radiator, then remove the water outlet connection retaining bolts and lift the water outlet clear of the engine. Note the position of the thermostat in the water outlet. Remove the thermostat by rotating it counterclockwise in the water outlet connection until the thermostat becomes free to remove.

➔Do not pry the water outlet connection off.

To install:

5. Make sure the water outlet connection pocket and all mating surfaces are clean.
6. Fully insert the thermostat and rotate it clockwise in the water outlet connection to secure; be sure that the pellet goes toward the block.
7. Position the water outlet connection to the intake manifold with a new gasket and secure the retaining bolts. Tighten the bolts to 15–22 ft. lbs. (20–30 Nm).

➔Make sure the hose clamps are beyond the bead and placed in the center of the clamping surface of the connection. Any worn hose clamps must be replaced with a new clamp to ensure proper sealing at the connection.

8. Position the upper radiator hose to the radiator. Position the clamps between the alignment marks on both ends of the upper radiator hose, then slide the hose on the connections. Tighten the screw clamps to 20–30 inch lbs. (2.2–3.4 Nm).
9. Refill the cooling system. Connect the negative battery cable. Start the engine and check for leaks. Check the coolant level and add as required.

4.6L Engine

♦ See Figures 24

1. Drain the cooling system to a level below the thermostat.

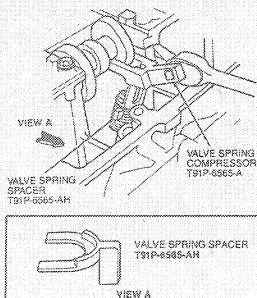


Fig. 21 Roller follower installation—4.6L engine

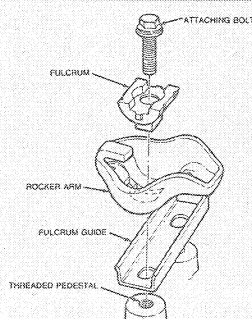


Fig. 22 Rocker arm assembly—5.0L

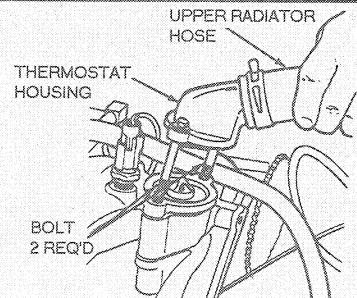


Fig. 23 Thermostat and related components—3.8L engine