

IN-VEHICLE SERVICE (Continued)

5. Ensure seal groove in rear main cap is clean.
NOTE: When using silicone rubber sealer, assembly must occur within 15 minutes after sealer application. After this time, the sealer may start to set, and its sealing effectiveness may be reduced.
6. Apply a 3mm (1/8 inch) bead of Silicone Rubber D6AZ-19562-AA (ESB-M4G92-A and ESE-M4G195-A) or equivalent to rear main bearing cap-to-cylinder block parting line.
7. Lubricate bearing surfaces with Engine Assembly Lubricant D9AZ-19579-D (ESR-M99C80-A) or equivalent heavy engine oil. Install main bearing caps and retaining bolts.
8. Tighten main bearing cap retaining bolts as follows:
NOTE: Do not jam the screwdriver into position. Carefully tap on the screwdriver until it holds crankshaft toward front of engine.
 - a. Wedge a screwdriver between cylinder block web and crankshaft cheek in front of the No. 3 main bearing.
NOTE: No. 2 main bearing retaining stud should be tightened to 90-110 N·m (67-81 lb-ft).
 - b. Tighten main bearing cap retaining bolts to 88-110 N·m (65-81 lb-ft).
 - c. Remove screwdriver.
9. Check crankshaft end play as outlined.
10. Install crankshaft rear oil seal as outlined.
11. If crankshaft connecting rod journals have been refinished to a definite undersize, remove bearing inserts from connecting rods and rod caps.
Install new bearings. Ensure tabs on insert securely engage the slots in cap and rod.
12. Rotate crankshaft as necessary to bring each crankshaft throw to lowest point of travel. Pull piston downward until connecting rod seats on crank throw and install rod caps.
13. Check connecting rod clearance. Refer to Section 03-00.
As each clearance check is completed, lubricate bearing surfaces with Engine Assembly Lubricant D9AZ-19579-D (ESR-M99C80-A) or equivalent heavy engine oil before installing connecting rod cap.
Tighten retaining nuts to 41-49 N·m (31-36 lb-ft), back off nuts two to three turns. Final tighten the nuts to 41-49 N·m (31-36 lb-ft).

14. Install timing chain and front cover / water pump assembly as outlined.
15. Install distributor drive gear.
16. Install oil pan as outlined.
17. Install rear cover plate and flywheel as outlined.
18. Install spark plugs.
19. Install distributor cap. Connect secondary wires to spark plugs.
20. Tighten lower intake manifold bolts to specification if loosened to service main bearings.
21. Install engine in the vehicle as outlined.

Camshaft**Removal**

1. Remove engine from vehicle as outlined.
2. Remove intake manifold as outlined.
3. Remove tappets, guide plates and guide plate retainers as outlined.
4. Remove front cover and timing chain as outlined.
5. Remove oil pan as outlined.
6. Remove thrust plate.
7. Remove camshaft through the front of the engine, being careful not to damage bearing surfaces.

Installation

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

Inspect bore plug for damage or leakage. Replace or reseal as necessary (engine removed).

1. Lubricate the cam lobes and bearing surfaces with Engine Assembly Lubricant D9AZ-19579-D (ESR-M99C80-A) or equivalent.
2. Install camshaft being careful not to damage bearing surfaces while sliding into position.
3. Install thrust plate. Tighten bolts to 8-14 N·m (70-124 lb-in).
4. Check end play of crankshaft as outlined.
5. Install front cover and timing chain as outlined.
6. Install oil pan as outlined.
7. Install tappets, guide plates and guide plate retainers as outlined.
8. Install intake manifolds as outlined.