

3-34 ENGINE AND ENGINE OVERHAUL

To install:

5. Apply clean engine oil to the sealing surface of the damper. Apply a small amount of silicone sealer to the damper keyway. Line up the crankshaft damper keyway with the crankshaft key and install the damper using a damper installation tool.

*** WARNING

Do not drive the damper onto the crankshaft with a hammer; damage to the crankshaft and/or thrust bearings may result. Always use a crankshaft damper installation tool.

6. Install the damper retaining bolt and tighten to 70–90 ft. lbs. (95–122 Nm).

7. Install the remaining components in the reverse order of their removal.

Timing Chain Cover

REMOVAL & INSTALLATION

3.8L Engine

1. Disconnect the negative battery cable.
2. Loosen the accessory drive belt idler.
3. Raise the vehicle and support safely.
4. Disengage the accessory drive belt and remove crankshaft pulley.
5. Remove the crankshaft/vibration damper using a Crankshaft Damper Remover and a Vibration Damper Remover Adapter, or equivalent suitable removal tools.
6. Remove the seal from the front cover with a suitable prying tool. Use care to prevent damage to front cover and crankshaft.

To install:

→ **Inspect the front cover and crankshaft damper for damage, nicks, burrs or other roughness which may cause the seal to fail. Service or replace components as necessary.**

7. Lubricate the seal lip with clean engine oil and install the seal using Damper/Front Cover Seal Replacer and Front Cover Seal Replacer or equivalent suitable seal installers.
8. Lubricate the seal surface on the damper with clean engine oil. Install damper and pulley assembly. Install the damper attaching bolt and tighten to 103–132 ft. lbs. (140–179 Nm).
9. Position the crankshaft pulley and install the retaining bolts. Tighten to 19–28 ft. lbs. (26–38 Nm).
10. Position accessory drive belt over crankshaft pulley.
11. Lower the vehicle.
12. Check accessory drive belt for proper routing and engagement in the pulleys. Adjust the drive belt tension.
13. Connect the negative battery cable. Start the engine and check for leaks.

4.6L Engine

♦ See Figure 132

→ **To replace the seal in the front cover (timing chain cover), it will be necessary to obtain special tools. A power steering pump pulley**

remover and replacer will be necessary; it is also necessary to use a crankshaft damper remover and replacer to effectively complete this job

1. Disconnect the negative battery cable.
2. Remove the windshield wiper module assembly, if necessary.
3. Remove the engine appearance cover, if applicable.
4. Remove the air cleaner outlet tube and the engine air intake resonator, where necessary.
5. Remove the cooling fan and shroud. Loosen the water pump pulley bolts, remove the accessory drive belt, and remove the water pump pulley.
6. Raise and safely support the vehicle.
7. Remove the bolts retaining the power steering pump to the engine block and cylinder front cover. The lower front bolt on the power steering pump will not come all the way out. Wire the power steering pump out of the way.
8. Remove the four bolts retaining the oil pan to the front cover. Remove the crankshaft damper retaining bolt and washer. Remove the damper using a puller.
9. Lower the vehicle. Remove the bolt retaining the air conditioner high-pressure line to the right coil bracket.
10. Remove the front bolts and loosen the remaining bolts on the valve covers. Using plastic wedges or similar tools, prop up both valve covers. Disconnect both ignition coils and Camshaft Identification (CID) sensor.
11. Remove the nuts retaining the right coil bracket to the front cover. Position the power steering hose out of the way.
12. Remove the nuts retaining the left coil bracket to the front cover. Slide both coil brackets and spark plug wires off the mounting studs and lay the assembly on top of the engine.
13. Disconnect the crankshaft position sensor. Remove the seven stud bolts and four bolts retaining the front cover to the engine and remove the front cover.

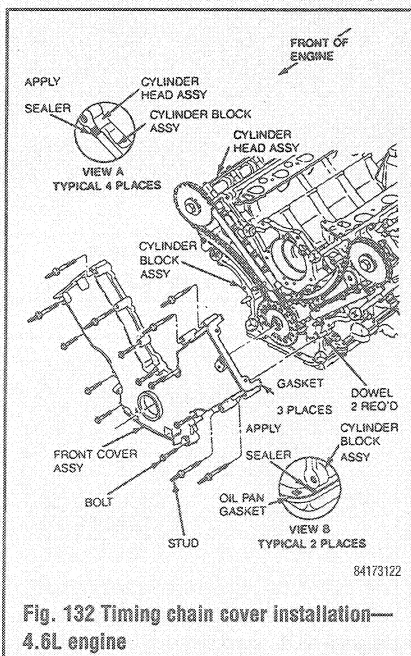


Fig. 132 Timing chain cover installation—4.6L engine

To install:

14. Inspect and replace the front cover seal as necessary and clean the sealing surfaces of the cylinder block. Apply silicone sealer to the oil pan where it meets the cylinder block and to the points where the cylinder head meets the cylinder block.
15. Install the front cover and the attaching studs and bolts. Tighten to 15–22 ft. lbs. (20–30 Nm). Connect the crankshaft position sensor.
16. Position the coil brackets and spark plug wires as an assembly onto the mounting studs. Position the power steering hose and install the nuts retaining the coil brackets to the front cover. Tighten the nuts to 15–22 ft. lbs. (20–30 Nm). Connect both ignition coils and CID sensor.
17. Remove the plastic wedges holding up the valve covers. Apply silicone sealer where the front cover meets the cylinder head and make sure the valve cover gaskets are properly positioned. Install the front retaining bolts into the valve cover and tighten the bolts to 6.0–8.8 ft. lbs. (8–12 Nm).
18. Position the air conditioner high-pressure line on the right coil bracket and install the bolt. Raise and safely support the vehicle.
19. Apply a small amount of silicone sealer in the rear of the keyway in the damper. Position the damper on the crankshaft and install, using a suitable installation tool. Install the damper bolt and washer and tighten to 114–121 ft. lbs. (155–165 Nm).
20. Install the four bolts retaining the oil pan to the front cover. Tighten to 15–22 ft. lbs. (20–30 Nm).
21. Position the power steering pump on the engine and install the 4 retaining bolts. Tighten to 15–22 ft. lbs. (20–30 Nm). Lower the vehicle.
22. Install the water pump pulley with the four bolts. Tighten to 15–22 ft. lbs. (20–30 Nm). Install the accessory drive belt and the cooling fan and shroud.
23. Connect the negative battery cable, start the engine and check for leaks.

5.0L Engines

♦ See Figure 133

1. Disconnect the negative battery cable.
2. Drain the cooling system. Remove the air inlet tube.

*** CAUTION

Never open, service, or drain the radiator or cooling system when hot; serious burns can occur from the steam and hot coolant. In addition, when draining engine coolant, keep in mind that cats and dogs are attracted to ethylene glycol antifreeze and could drink any that is left in an uncovered container or in puddles on the ground. This will prove fatal in sufficient quantities. Always drain coolant into a sealable container. Coolant should be reused unless it is contaminated or is several years old.

3. Remove the fan shroud attaching bolts and position the shroud over the fan. Remove the fan and clutch assembly from the water pump shaft and remove the shroud.
4. Remove the air conditioner drive belt and idler pulley bracket. Remove the alternator and power steering drive belts. Remove the power steering pump and position aside, leaving the hoses