

Fig. 153 Camshaft and related components—4.6L engine

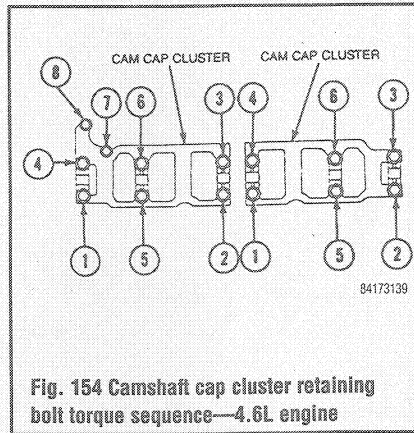


Fig. 154 Camshaft cap cluster retaining bolt torque sequence—4.6L engine

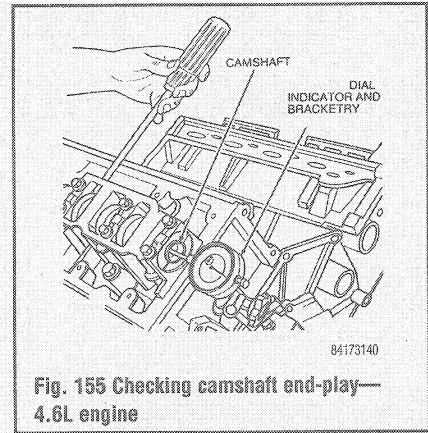


Fig. 155 Checking camshaft end-play—4.6L engine

➔ **The camshafts should turn freely with a slight drag.**

13. Check camshaft endplay as follows:

a. Install a suitable dial indicator on the front of the engine. Position it so the indicator foot is resting on the camshaft sprocket bolt or the front of the camshaft.

b. Push the camshaft toward the rear of the engine and zero the dial indicator.

c. Pull the camshaft forward and release it. Compare the dial indicator reading with specification.

d. If endplay is too tight, check for binding or foreign material in the camshaft thrust bearing. If endplay is excessive, check for worn camshaft thrust plate and replace the cylinder head, as required.

e. Remove the dial indicator.

14. If necessary, install the cam positioning tools, on the flats of the camshafts and install the spacers and camshaft sprockets. Install the bolts and washers and tighten to 81–95 ft. lbs. (110–130 Nm).

15. Install a valve spring compressor, under the camshaft and on top of the valve spring retainer.

➔ **The valve spring spacer tool, must be installed between the spring coils and the camshaft must be at the base circle before compressing the valve spring.**

16. Compress the valve spring far enough to install the roller followers.

17. Repeat Steps 15 and 16 until all roller followers are installed.

18. Rotate the crankshaft clockwise 45 degrees to position the crankshaft at TDC.

➔ **The crankshaft must only be rotated in the clockwise direction and only as far as TDC.**

19. Install the timing chains and install the timing chain front cover. Install the valve covers.

20. Install the remaining components in the reverse order of removal.

21. Connect the negative battery cable. Start the engine and check for leaks.

5.0L Engines

➔ **See Figures 156 and 157**

1. Disconnect the negative battery cable and drain the cooling system.

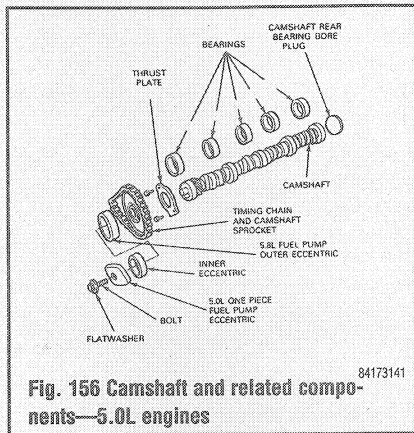


Fig. 156 Camshaft and related components—5.0L engines

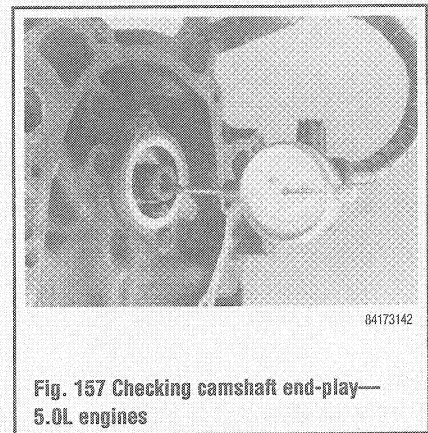


Fig. 157 Checking camshaft end-play—5.0L engines

** 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.

2. Relieve the fuel system pressure as described in Section 5. Discharge the air conditioning system.

3. Remove the radiator and air conditioner condenser.

4. Remove the grille.

5. Remove the intake manifold and the lifters.

6. Remove the timing chain front cover, the timing chain and camshaft sprocket.

7. Check the camshaft endplay as follows:

a. Position a dial indicator on the front of the engine, with the indicator foot resting on the end of the camshaft.

b. Push the camshaft toward the rear of the engine and set the indicator pointer to 0.

c. Pull the camshaft forward and release it. Check the dial indicator reading.

d. If endplay exceeds specification, replace the thrust plate.

e. Recheck the endplay with the new thrust plate installed. If endplay is still excessive, check the camshaft and rear camshaft bore plug.

8. Remove the thrust plate. Remove the camshaft, being careful not to damage the bearing surfaces.

To install:

9. Lubricate the cam lobes and journals with heavy engine oil. Install the camshaft, being careful not to damage the bearing surfaces while sliding into position.

10. Install the thrust plate. Tighten the bolts to 9–12 ft. lbs. (12–16 Nm).

11. Install the timing chain and sprockets. Install the engine front cover.

12. Install the lifters and the intake manifolds.

13. Install the grille and the air conditioner condenser.

14. Install the radiator. Fill the cooling system.

15. Connect the negative battery cable. Start the engine and check for leaks.

16. Have a MVAC certified tech evacuate and recharge the air conditioning system.

INSPECTION

➔ **See Figure 158**

1. Clean the camshaft in solvent and allow it to dry.

2. Inspect the camshaft for obvious signs of wear: scores, nicks, or pits on the journals or lobes. Light scuffs or nicks can be removed with oil stone.