

Fig. 158 Measuring lobe height

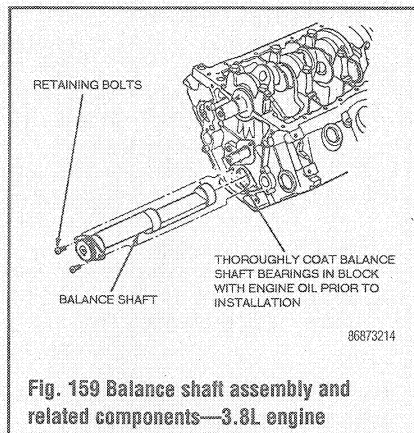


Fig. 159 Balance shaft assembly and related components—3.8L engine

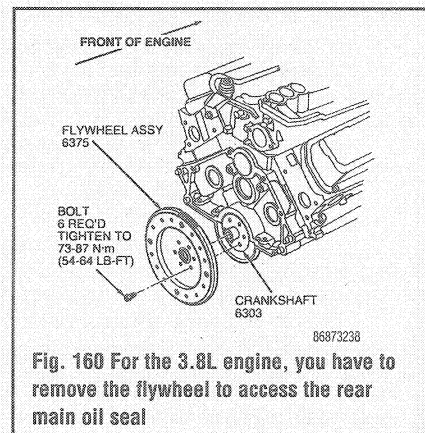


Fig. 160 For the 3.8L engine, you have to remove the flywheel to access the rear main oil seal

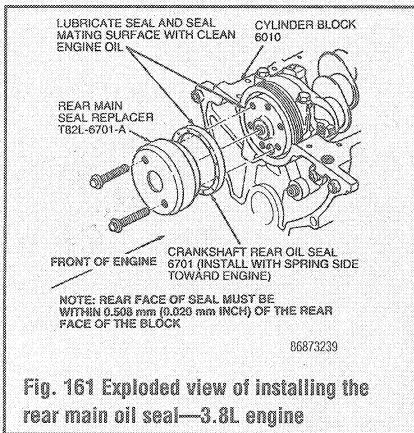


Fig. 161 Exploded view of installing the rear main oil seal—3.8L engine

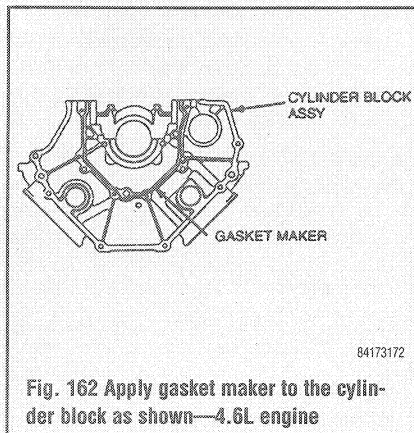


Fig. 162 Apply gasket maker to the cylinder block as shown—4.6L engine

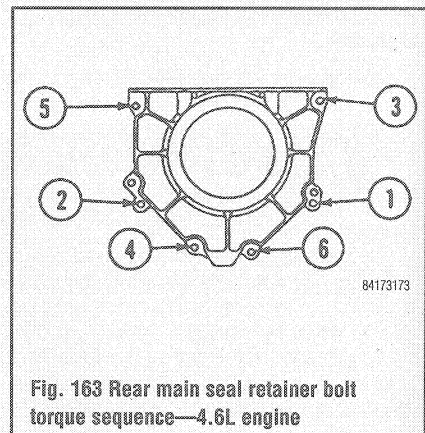


Fig. 163 Rear main seal retainer bolt torque sequence—4.6L engine

➔ **Lobe pitting except in the area shown in the figure will not hurt the operation of the camshaft; do not replace the camshaft because of pitting unless the pitting has occurred in the lobe lift area.**

3. Using a micrometer, measure the diameter of the journals and compare to specifications. Replace the camshaft if any journals are not within specification.

4. Measure the camshaft lobes at the major (A-A) and minor (B-B) diameters, using a micrometer. The difference in readings is the lobe height. Compare your measurements with the lobe height specifications. Replace the camshaft if any lobe heights are not within specification.

Balance Shaft

REMOVAL & INSTALLATION

3.8L Engine

➔ **See Figure 159**

1. Remove the engine from the vehicle.
2. Remove the intake manifolds.
3. Remove the oil pan.
4. Remove the front cover and timing chain and camshaft sprocket.
5. Remove the balance shaft drive gear and spacer.
6. Remove the balance shaft gear, thrust plate and shaft assembly.

To install:

7. Thoroughly coat the balance shaft bearings in the block with engine oil.
8. Install the balance shaft gear.
9. Install the balance shaft, thrust plate and gear, then tighten the retaining bolts to 6–10 ft. lbs. (8–14 Nm).
10. Install the timing chain and camshaft sprocket.
11. Install the oil pan.
12. Install the timing cover.
13. Install the intake manifolds.
14. Install the engine in the vehicle.

Rear Main Seal

REMOVAL & INSTALLATION

3.8L Engine

➔ **See Figures 160 and 161**

1. Disconnect the negative battery cable.
2. Raise and safely support the vehicle.
3. Remove the transaxle. For details, please refer to the procedure located in Section 7 of this manual.
4. Remove the flywheel and the rear cover plate, if necessary.
5. Using a sharp awl, punch one hole into the crankshaft rear oil seal metal surface between the seal lip and the cylinder block.
6. Screw in the threaded end of Jet Plug

Remover or an equivalent seal removing tool, then use the tool to remove the seal.

➔ **Use caution to avoid damaging the oil seal surface.**

To install:

7. Inspect the crankshaft seal area for any damage that may cause the seal to leak. If damage is evident, service or replace the crankshaft as necessary.
8. Coat the crankshaft seal area and the lip with engine oil.
9. Using a Rear Crankshaft Seal Replacement tool, or an appropriate seal installer tool, install the seal. Tighten the bolts of the seal installer tool evenly so the seal is straight and seats without misalignment.
10. Install the flywheel. Tighten attaching bolts to 54–64 ft. lbs. (73–87 Nm).
11. Install rear cover plate, if necessary.
12. Install the transaxle and connect the negative battery cable.

4.6L Engine

➔ **See Figures 162 and 163**

➔ **The Front Wheel Drive 4.6L Engine has to be removed with the transaxle intact mounted onto the sub-frame as an assembly. It requires the use of a hoist and a special lifting platform to lower the assembly from the body**

1. Disconnect the negative battery cable.
2. Remove the transmission; refer to Section 7.