



FEL-PRO INSTALLATION TIPS

A LIGHTWEIGHT CYLINDER HEADS

This design change has created potential head gasket sealing problems in the area of the spark plug cooling water ports (Figure 1).

Should a significant amount of core shift exist and/or should the head gasket surface undergo repeated or excessive machining during reconditioning, the narrow land area between the spark plug water port and the combustion chamber will move inward toward the combustion chamber and reduce the amount of sealing area on the gasket combustion seal.

Before installing a new cylinder head gasket on a reconditioned lightweight cylinder head (Figure 2), check the location of the gasket combustion seal in relation to the spark plug water port to insure that the casting fits the gasket properly.

FIG 1

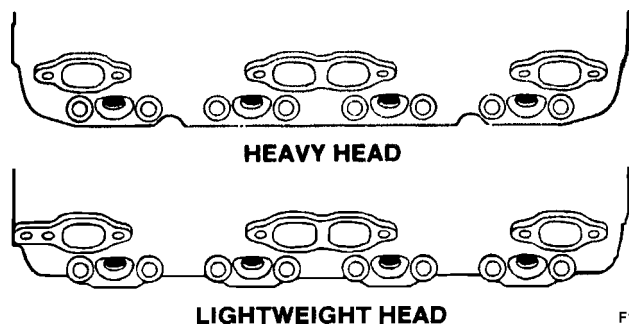
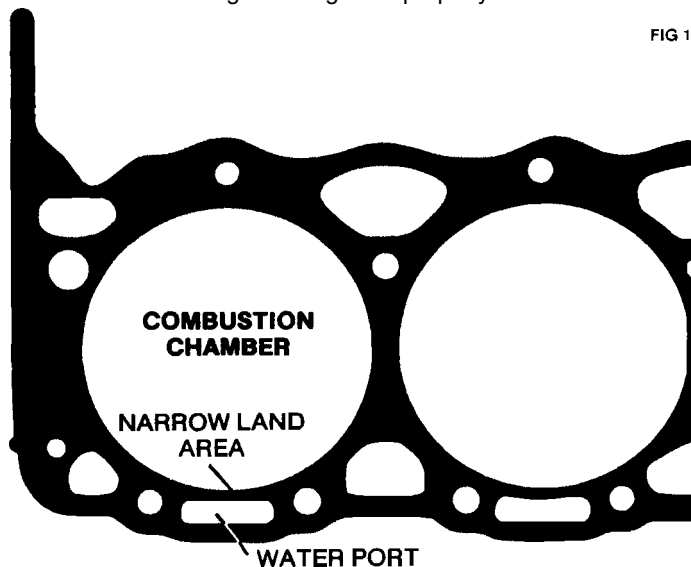


FIG 2

B HEAD GASKET

Bolt holes in the cylinder block are drilled and tapped into the water jacket. It is possible that there has been a build-up of rust and corrosion in the block around the bolt tip area and along the bolt threads. In order to apply proper clamping load for reinstallation it is important that:

1. Correct size threading tap should be run into the block bolt holes, well below the maximum depth of bolt penetration, to

insure no "bottoming" effect on the bolt when tightened to the correct torque level.

2. Bolt threads be thoroughly cleaned with a wire brush.
3. A good grade of non-hardening gasket sealer be applied to all bolt threads to prevent water leak past the bolts.

C INTAKE MANIFOLD

NOTE: Best performance will be obtained by trimming the gasket ports to match the cylinder head ports. Thoroughly read these following instructions, then proceed.

1. Use a quick-drying adhesive cement the side rail gaskets to the cylinder heads at several locations, especially at the narrow walls between the intake ports.

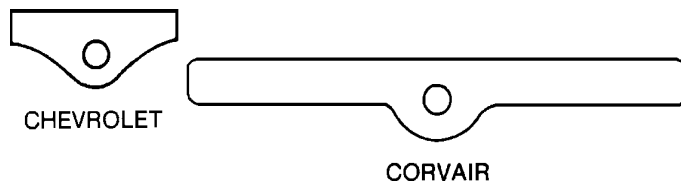
IMPORTANT: Install the manifold gaskets with the blue silicone beads facing up, towards the manifold.

2. Carefully place the manifold onto the gaskets without the end seals. Install several bolts snugly. Allow for adhesive to thoroughly dry.
3. Remove the manifold, then trim the gasket ports, using a sharp cutting tool, to match the cylinder head ports, if necessary.
4. Clean the end seal surfaces of the block with a degreasing agent.
5. Peel the backing from the end strips, then press them into place with fingers. Trim as required.
6. Apply a 1/8" bead of silicone rubber sealant at the side rail and end seal intersections in four places.
7. Install the manifold. Torque to specifications.

NOTE: Check end seal gap between the manifold and block. End strip should be compressed 15%-60%.

D VALVE COVER GASKET

1. Clean cover gasket surface free of foreign particles. Wipe off excess oil with a degreasing agent.
2. Straighten the cover flanges. Distorted covers should be replaced.
3. Cement gasket to cover using a good quick-drying adhesive. Sparingly apply the adhesive, allowing 1-2 minutes of setting time prior to gasket installation.
4. Install cover onto engine; avoid over-torquing. Whenever possible, use load spreader washers under bolt heads, as typically shown below.



- cont'd on reverse side -

E REAR MAIN BEARING SEAL

NOTE: BOTH UPPER AND LOWER HALVES MUST BE INSTALLED AS A PAIR.

1. Clean all foreign material from cylinder block, bearing cap, and crankshaft.

NOTE: CHECK CRANKSHAFT SEALING SURFACE FOR NICKS AND SCRATCHES AND REMOVE WITH CROCUS CLOTH BEFORE INSTALLING SEAL.

2. Lubricate new seal lips and back seal bead with light engine oil. Do not lubricate seal mating ends.

NOTE: MAKE SURE LIP SIDE (side with groove) IS TOWARD FRONT OF ENGINE.

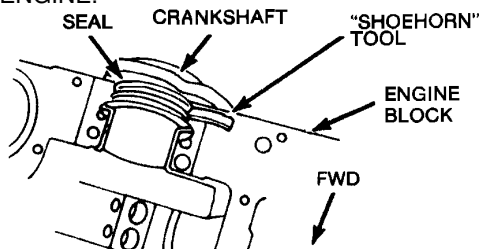


FIGURE #1

3. IF CRANKSHAFT IS OUT OF BLOCK, install one seal half in the cylinder block using the "shoehorn" installation aid provided to protect the back sealing bead from the sharp edge of the cylinder block locating flange. (See Figure 1). Press seal half into groove in block by thumb pressure. Seal ends must be flush with face of casting.
4. IF CRANKSHAFT IS IN BLOCK, remove old seals with needle nose pliers. Assist by rotating shaft. To install new upper seal, position "shoehorn" installation aid as in Figure 1 and push the seal around the crankshaft utilizing finger pressure or a blunt instrument to prevent damage to the seal. The "shoehorn" installation aid must remain in position until the seal is properly positioned with both seal ends flush with the engine block.
5. Remove the "shoehorn" installation aid.

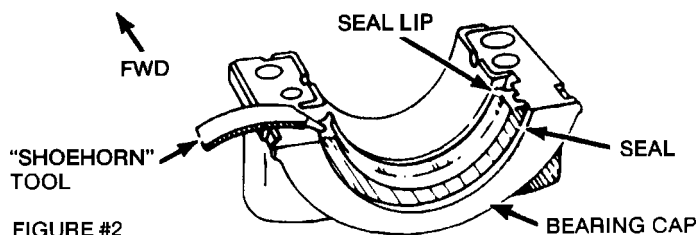


FIGURE #2

6. Install seal half in bearing cap again using the "shoehorn" installation aid to protect the back sealing bead as you feed the seal into the cap using light thumb and finger pressure (See Figure 2).

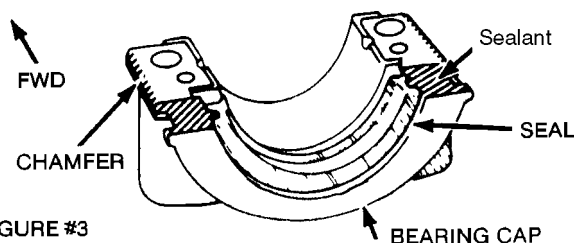


FIGURE #3

7. Apply a thin coat on the bearing cap mating surface immediately adjacent to the seal, and to the chamfer as shown (Figure 3).

CAUTION: KEEP SEALANT AWAY FROM SEAL MATING ENDS.

8. Place the rear main bearing cap in position and install the cap bolts finger tight.

NOTE: THE REAR MAIN BEARING CAP MUST BE POSITIONED BEFORE THE CAP IS TORQUED TO SPECS.

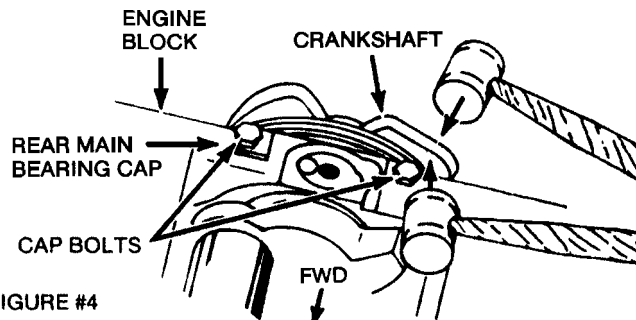


FIGURE #4

9. Initially torque the cap bolts to 10/12 ft. lbs. Tap the crankshaft first rearward and then forward with a lead hammer and leave in forward position (See Figure 4). Torque cap bolts to specs.
10. After seal is installed, rotate crankshaft slowly at least 15 to 20 turns to insure proper sealing of seal lip against crankshaft.

F IMPORTANT PREPARATIONS FOR ROTATING SHAFT SEALS

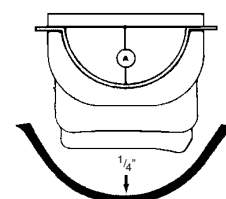
Wipe a thin film of lubricant on sealing lip and on shaft before installation.

NEVER INSTALL ANY SEAL WITHOUT BREAK-IN LUBRICANT PROTECTION.

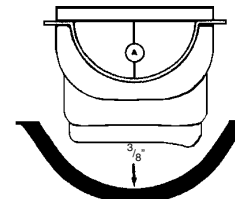
G OIL PAN GASKETS

1. Clean pan gasket surface FREE of foreign particles. Wipe off excess oil with a degreasing agent.
2. Straighten the pan flanges. Severely distorted pans should be replaced.

NOTE: There are two pan front seals available.



Use 1/4" Thick seal on oil pans having "A" dimension of 2 1/4"



Use 3/8" Thick seal on oil pans having "A" dimension of 2 3/8"

For proper installation, lay a straightedge across the flanges at the front of oil pan. Measure the distance from the lowest point of the end strip area to the bottom of the straightedge.

3. Apply a fast drying adhesive to end seals at several places and install into proper cavity.
4. Install oil pan side rail gaskets using fast drying adhesive. Allow ample time for adhesive to dry prior to assembly.
5. Apply 1/8" bead of silicone rubber sealant at the four connecting joints of the side rails and end seals.
6. Install oil pan to crankcase; avoid over-torquing.