



FEL-PRO INSTALLATION TIPS

Fel-Pro products are the result of exhaustive research and strict quality control. However, no sealing product is better than the quality of its installation.

GENERAL INSTRUCTIONS

CLEAN MATING SURFACES. Use a degreaser.

CLEAN THREADS of bolts/studs; for nuts/threaded holes use a bottoming tap.

BOLT PREPARATION: Those **entering** coolant passages require a pliable non-hardening sealer on threads and underside of bolt heads. Those **not entering** coolant passages require oil on threads and underside of bolt heads. **Exhaust Assembly:** Apply a high temperature anti-seize lubricant to threadings.

CHECK CASTINGS for flatness. Straighten, resurface or replace if needed. **CYLINDER HEAD AND BLOCK:** Refer to OEM manual to determine flatness tolerances and resurfacing limitations.

FINAL ASSEMBLY: Torque all fasteners to OEM specifications unless noted. **CYLINDER HEAD** torquing is critical; we recommend that you confirm with OEM.

HEAD GASKET

IMPORTANT: Due to some recent engineering changes, the cylinder head gasket(s) in this set may appear different from those previously provided for this application.

The engine this cylinder head gasket will be installed on is a leanburn-high fuel efficient design. It can experience localized "hot spots" between cylinders. Consequently, premature cylinder head gasket failure may occur. The formation of localized hot spots can be minimized by following the preparation and installation procedure outlined below:

CLEAN MATING SURFACES of all foreign materials. You may wish to use a degreaser. Improper use of power scrapers and abrasive pads can cause deep scratches, waviness and rounded edges.

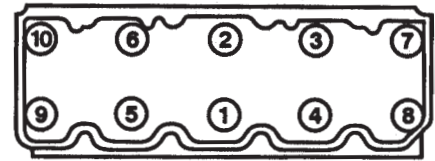
CHECK HEAD AND BLOCK for flatness. Recommended maximum combined head and block out-of-flat is .004 when measured diagonally and lengthwise; .002" maximum widthwise. If resurfacing is required, remove only the minimal amount of material to provide a flat casting. Surface finish is critical. A surface roughness of less than 65 RMS (60 RA) is recommended. A smooth surface is more beneficial for sealing this particular engine than a rough surface.

LUBRICATE the threads and the underside of every bolt head with oil. **DO NOT DIP BOLTS INTO OIL.**

ATTACH AND ALIGN GASKET Following any directional markings shown on gaskets(s). If no markings exist, simply install the gasket by matching the gasket to engine deck surface.

IMPORTANT: The use of OEM steel washers under each bolt head is required for the installation of the head bolts. **NOTE:** washers not included in this set. Existing washers can be reused.

Late 1985 and newer engines use 11mm head bolts. **DO NOT** interchange 10mm/11mm head bolts as cylinder block bolt hole threadings will be damaged.



Consult the latest OEM torque specifications as changes may have taken place since this printing.

TORQUE SPECIFICATIONS WHEN INSTALLING 11 mm HEAD BOLTS: Following sequence shown in illustration, torque all **11mm bolts:** in the following steps:

Torque all bolts to 45 ft. lbs. (61 Nm.)

Torque all bolts to 65 ft. lbs. (88 Nm.)

Torque all bolts again to 65 ft. lbs. (88 Nm.)

Finally turn all bolts an additional 1/4 turn (90°).

TO INSURE PROPER ENGINE OPERATION WE RECOMMEND THE FOLLOWING:

Thoroughly inspect radiator for corrosion, test the radiator coolant flow rate, check for bent or damaged fins. To ensure proper engine performance replacement of the radiator is recommended.

- Bleed cooling system, prior to engine start up. It may be necessary to raise the front of the vehicle to completely bleed the air from the cooling system .
- Use OEM recommended spark plugs, with the correct heat range.
- Vacuum leaks cause lean air/fuel ratios and hot engine operation. Check vacuum hoses.
- Check for proper operation of the EGR valve. **Remove EGR pipe and thoroughly clean.**
- Check O2 Sensor, coolant entering the combustion chamber from a cracked cylinder block/heads or a leaking head gasket can cause the O2 sensor to become inoperative, replace if necessary.

ANY CYLINDER HEAD GASKET INSTALLATION SHOULD INCLUDE THE FOLLOWING CHECKS.

- Radiator flow and corrosion condition
- All coolant hoses for deterioration
- Thermostat operation
- Fan belt tension
- Water pump flow
- Radiator thermostatic fan switch operation
- Anti-freeze mixture
- Radiator cap that maintains rated pressure
- Coolant reservoir fill level
- Ignition timing setting
- Emission controls
- Vacuum leaks
- Restriction in exhaust system.

CAM TOWER

CLEAN MATING SURFACES.

PREPARE MATING SURFACES, for application of anaerobic sealant by applying Cleaner/Primer to mating surface. Allow 1 to 2 minutes to dry.

SEAL CAM TOWER MATING SURFACE. Apply a thin continuous bead of anaerobic sealant to the cam tower surface of the cap(s). Wipe off any excess sealant.

VALVE COVER GASKET

INSTALL END SEAL.

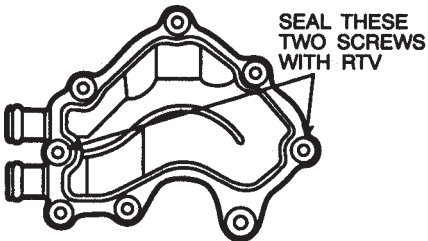
IMPORTANT: This molded rubber silicone end seal must be installed **DRY** without any chemical adhesive.

ATTACH AND ALIGN GASKET. Apply quick-drying adhesive sparingly in several places on the mating surface of cover. If gasket has installation tabs, adhesive is **not required.** Mount gasket on cover. **Allow time for adhesives to set.** Test for slippage with light pressure. If gasket moves, allow more time.

REINSTALL COVER TO ENGINE. Torque securely to 35 in. lbs. Over-torquing can distort cover and cause leakage.

INTAKE AND EXHAUST MANIFOLD GASKETS

ATTACH AND ALIGN GASKET(S)



IMPORTANT: to prevent coolant leakage apply silicone sealer on the threads of the 2 center screws which enter the intake manifold water cover.

MISCELLANEOUS FLUID SEALING GASKETS

ATTACH AND ALIGN GASKET(S)/FLUID(S): If supplementary sealer is desired, apply a thin coat of gasket sealer to both sides of gasket(s). However, molded rubber gasket(s) or those with colored sealing beads, install **DRY**.

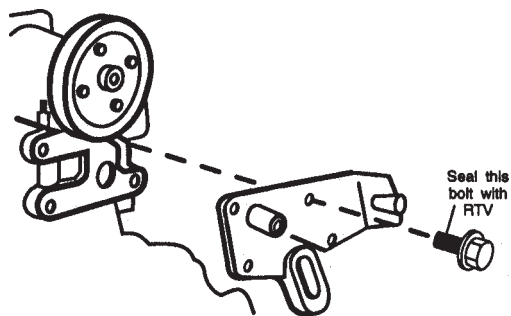
ROTATING SHAFT SEALS

PRIOR TO INSTALLING THE ROTATING SHAFT AND/OR SEAL

apply a thin coat of lubricant, such as grease, on the sealing lip and shaft.

IMPORTANT: Do not install any seal without break-in lubricant protection.

IMPORTANT: Rubber seals are properly installed when its largest raised sealing lip is closest towards engine.



IMPORTANT: To prevent oil seepage apply silicone sealer on the threads of the **one** bolt which passes through the air pump mounting bracket and into the cylinder head.