

**REMOVE MANIFOLDS** from cylinder heads. **IMPORTANT:** You must disassemble the intake manifold from the exhaust manifold to allow for corrected realignment of the manifolds to the cylinder head during the reassembly.

**REASSEMBLE MANIFOLDS.** Install the intake-to-exhaust gasket between the intake and exhaust manifolds. Only finger tighten the manifolds together.

**ATTACH AND ALIGN GASKET(S) TO CYLINDER HEAD(S).** If gasket is steel faced on one side and fiber on the other, install steel faced side toward the manifold.

**ATTACH AND ALIGN** fiber faced intake manifold gasket over the intake/exhaust gasket.

**REINSTALL INTAKE AND EXHAUST MANIFOLD ASSEMBLY** to cylinder heads. Torque securely to OEM specifications.

Now torque the intake manifold exhaust connection to OEM specifications. Over-torquing can fracture the manifold or cause the bolts and studs to break.

## ROTATING SHAFT SEALS

**RUBBER SEAL(S):** Install seal with its **largest raised sealing lip toward the engine.** Two-piece rubber seals may be installed using a "shoehorn" installation aid placed underneath seals to protect them from sharp edges.

**ROPE SEALS:** Install seals into grooves of cap and block by firmly pressing packing into grooves with a "packing tool." Ensure that ends of seals protrude above face of cap and block.

**IMPORTANT:** Final interference of rope packing seals against crankshaft is critical. To achieve proper interference, it is best to install packings using correct **Packing Tool** for your engine. With "packing tool" in position, cut protruded ends of seals flush with cap and block.

**LUBRICATE SEALING LIPS AND CRANKSHAFT** with motor oil or grease. If engine will not be started within several days, grease is recommended.

**IMPORTANT:** Never install any seal without break-in lubricant protection.

**REAR MAIN BEARING CAP:** Prior to installation, apply an anaerobic sealant to mating surfaces of cap or block. **AVOID** sealant on ends of seals.

## OIL PAN GASKET

**ATTACH AND ALIGN GASKET(S).** Apply a quick-drying adhesive sparingly. Mount gasket and/or seals. **PRIOR TO INSTALLING OIL PAN** apply a dab of silicone sealer where all gaskets and seals meet.



## FEL-PRO INSTALLATION TIPS

### GENERAL INSTRUCTIONS

**CLEAN MATING SURFACES** of all foreign material. Use a degreaser.

**CLEAN THREADS** of bolts/studs using a wire brush; all nuts/threaded holes using a bottoming tap.

**Determine Which Bolts** extend into the coolant passages. Those **entering** the coolant passages require a pliable non-hardening sealer on the bolt threads and the underside of the bolt head. Those **not entering** the coolant passages require oil on the bolt threads and the underside of the bolt head.

**Exhaust Assembly:** Apply a high temperature anti-seize lubricant to the threadings.

**CHECK ALL CASTINGS** for flatness; straighten, resurface or replace if out of flat conditions exists.

**CYLINDER HEAD AND BLOCK:** refer to OEM manual to determine flatness tolerances and resurfacing limitations.

**Attach and align gasket(s) following any directional markings shown on the gasket.** If no markings exist, simply install the gasket by matching the gasket to engine deck surface.

**Fiber Faced Gasket(s)** are to be installed dry.

**FINAL ASSEMBLY** always requires torquing of fasteners according to OEM specifications. For certain assemblies we have provided specific torquing specifications.

**NOTE:** CYLINDER HEAD torquing procedures are critical and therefore we recommend to double-check with OEM.

**Some procedures may be repeated with additional specific information for your application.**

### VALVE STEM SEALS

**INSERT VALVES INTO GUIDES** of cylinder head assembly. Place assembly on a flat covered surface to prevent damage to valve heads and cylinder head gasket surface.

**SUPPORT OR PROP UP EACH VALVE HEAD** with a wood block or other resilient material prior to installing seals.

**NYLON TYPE SEAL:** Place directly on valve stem seal.

**TAP SEAL DOWN** gently using provided plastic tube placed over stem. Move seal down approximately halfway on stem. The seal will find its proper position on the stem once the engine starts.

### VALVE COVER/PUSH ROD COVER

**ATTACH AND ALIGN GASKET(S):** Use a quick-drying adhesive applied sparingly. If gasket has installation tabs, adhesive is not required. **IMPORTANT:** If gasket is rubber, install dry.

### INTAKE AND EXHAUST MANIFOLD GASKETS

Upon disassembly, it is likely to find the absence of an exhaust manifold gasket since none was offered as original equipment. However, this set includes an exhaust manifold gasket to accommodate slight casting distortion or corrosion that may have occurred over the engine's service life. Therefore, we recommend that the included exhaust manifold gasket be installed by the following instructions.

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