



FEL-PRO INSTALLATION TIPS

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

Follow any **directional markings shown on gasket(s)**. If no markings exist, install gasket(s). **Fiber Faced Gasket(s):** Install dry.

VALVE STEM SEALS

POSITIVE GUIDE SEAL:

Use plastic installation sleeve(s), to prevent damage to lip of seal. Trim plastic sleeve so it extends 1/16" below keeper groove. Place sleeve on stem. Carefully start valve stem seal over sleeve. Remove and reuse plastic sleeve. **FOR RUBBER JACKET SEALS:** Push seal over valve guide until it bottoms. **FOR SOLID/METAL**

JACKET SEALS: Use of OEM service tool is recommended. If tool is unavailable, use deep socket or rigid tube of appropriate diameter. Center tool over shoulder of seal and tap seal down over guide until it bottoms.

UMBRELLA TYPE SEAL:

Start valve stem seal over valve stem; push seal down on seal body until it touches top of valve stem guide. Seal will find its proper position on stem once 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 MANIFOLD GASKET

V-TYPE ENGINES - FIBER SIDE GASKET(S) ALONG WITH

FRONT AND REAR END SEAL(S): Attach and align gasket(s) and end seal(s) using a quick-drying adhesive sparingly.

PRIOR TO INSTALLING INTAKE MANIFOLD apply a dab of silicone sealer where all gaskets and seal meet.

IN-LINE ENGINES: Attach and align gaskets to cylinder heads.

EXHAUST MANIFOLD GASKET

ATTACH AND ALIGN GASKET TO CYLINDER HEAD. When reusing a heat shield, install heat shield to cylinder head. Then attach and align gasket between the manifold and heat shield. If gasket is steel faced on one side and fiber on the other, install steel faced side toward the manifold.

ROTATING SHAFT SEALS

RUBBER SEAL(S): Install seal with its **largest sealing lip toward the engine**. Two piece rubber seals may be installed using "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 seals. **PRIOR TO INSTALLING OIL PAN** apply a dab of silicone sealer where all gaskets and seals meet.