



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 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 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. **Metal Faced Gasket(s):** Requires a thin even coat of sealer applied to the metal side(s) of gasket.

VALVE STEM SEALS



This set contains: "O" Rings and Umbrella Seals, install as indicated.

Passenger Car:

Taxi and Police

Exhaust:

1967- early 1970 Use "O" Ring Seal.

Exhaust:

late 1970 - 1972 Use Umbrella Seal

Intake:

1967 - 72 Use Umbrella Seal

Except Taxi and Police

Intake & Exhaust:

1965 - 72 Use Umbrella Seal

Truck

Intake & Exhaust:

240 Eng. 1965 - 1974 Use Umbrella Seal

300 Eng. 1971 - 1986 Use Umbrella Seal

F100, F250, F350 (4x2)

1965 - 1970 Use Umbrella Seal

Except F100, F250, F350 (4x2)

Intake:

1965 - 1970 Use Umbrella Seal

Exhaust:

1965 - 1970 Use "O" Ring Seal

UMBRELLA TYPE SEAL: Start valve stem seal over valve stem and push seal down on seal body until it touches top of valve stem guide or "boss". The seal will find its proper position on the stem once the engine starts.

"O" Ring Type Seal: Place "O" Ring Seal on valve stem and position it into the proper groove. If "O" RING IS USED IN CONJUNCTION WITH A POSITIVE OR UMBRELLA SEAL, install the "O" Ring last.

REPLACE VALVE SPRING ASSEMBLIES AND INSTALL "O" RINGS. Compress springs just enough to install "O" Ring seal in second groove. **IMPORTANT:** If other types of seals are also being used, excessive compression can result in spring retainer damaging the seals. Install "O" Ring seal, then install keepers in first groove. Release spring carefully.

VALVE COVER/PUSH ROD COVER

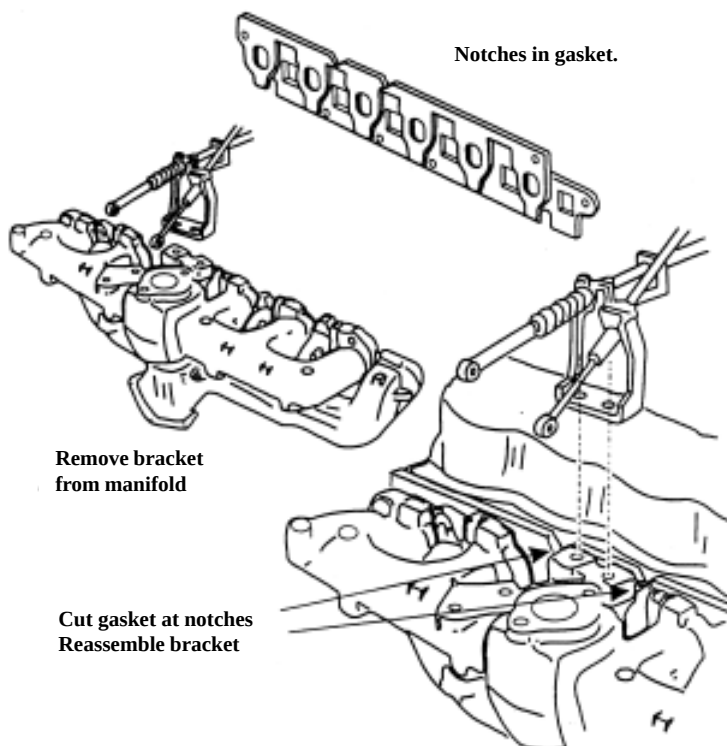
ATTACH AND ALIGN GASKET(S): Use quick-drying adhesive, applied sparingly. If gasket has installation tabs, adhesive is not required. **IMPORTANT:** If gasket is rubber, install dry.

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.

REMOVE MANIFOLD 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.



PRIOR TO INSTALLING MANIFOLD GASKET the throttle linkage bracket must be unbolted from the manifold (see drawing).

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

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

Now cut the gasket at the notches prior to reinstallation of the throttle linkage bracket. **DO NOT** cut the gasket before the manifold is assembled, and tightened.

WATER OUTLET, WATER PUMP, FUEL PUMP AND TIMING COVER GASKETS

If a supplementary sealer is desired, apply a thin coat of gasket sealer to both sides of gasket(s).

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 the 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 anaerobic sealant to mating surfaces of cap or block. **AVOID** sealant on ends of seals.

OIL PAN GASKET

ATTACH AND ALIGN GASKET(S). Apply 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.