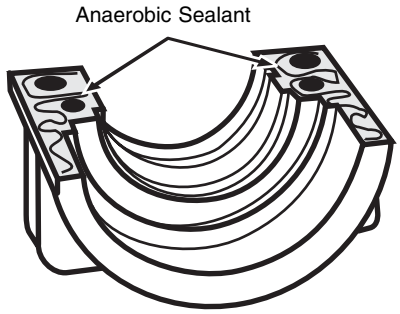
PRIOR TO INSTALLING THE CRANKSHAFT SEAL, check crankshaft for grooves. If grooves are present, install the spacer shim washer first. **Note:** When the spacer shim washer is installed, the sealing lip of the replacement seal will position itself on a different area of the shaft in order to avoid seal leakage problems commonly associated with groove worn shafts.

IMPORTANT: The seal will function on refinished shafts up to .015" undersize.

REAR MAIN BEARING SEAL

REMOVE NICKS AND SCRATCHES (IF ANY) FROM THE CRANKSHAFT SEALING SURFACE using a crocus cloth.



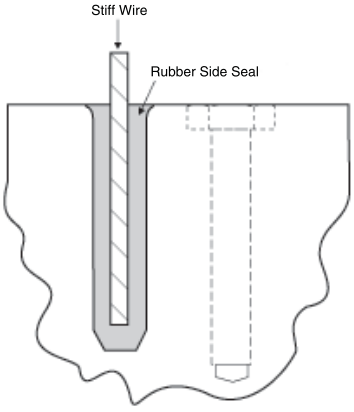
PRIOR TO INSTALLING THE REAR MAIN BEARING CAP apply an anaerobic sealant to either the rear main bearing cap or cylinder block mating surfaces. **Never** apply sealant on the ends of the seals.

INSTALL SEAL into the cylinder block. The seal is properly installed when its largest raised sealing lip is toward the **front** of the engine. (Seals with a metal garter spring require the spring to face towards the **front** of the engine.)

LUBRICATE SURFACE of seal lip and crankshaft by applying a thin coat of 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.

REINSTALL SEAL RETAINER TO CYLINDER BLOCK. Torque to OEM specifications.



INSTALL RUBBER SIDE SEAL(S):

To aid installation, insert a stiff wire inside each side seal(s). Stretch the side seal over the wire, make certain wire bottoms out.

Install seals into the side cavities of the rear main bearing cap.

Release seal (seal will snap into the place).

REMOVE STIFF WIRE.

TEST RUN ENGINE. Check all mating areas thoroughly to determine that all seals hold during operation.

Printed in U.S.A.
Form No. I-1649 (Rev. 10/02)

FEL-PRO INSTALLATION TIPS

GENERAL INSTRUCTIONS

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

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

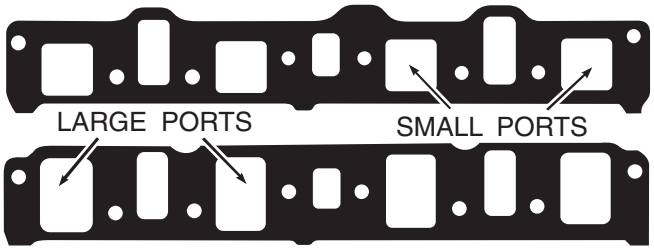
Fiber Faced Gasket(s) are to be installed dry. **Metal Faced Gasket(s)** require a thin even coat of sealer to be applied to the metal side(s) of the gasket.

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.

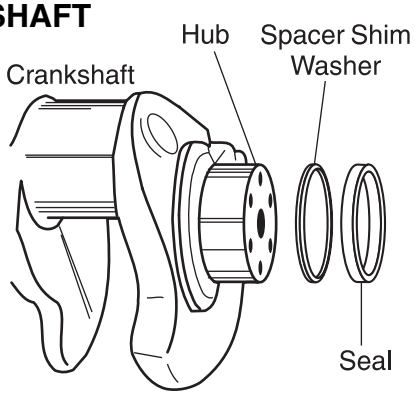
INTAKE MANIFOLD GASKET



This set contains 2 pairs of manifold gaskets. For exact fit, check the gaskets against the head. Identify and install as indicated.

V 266 & V 304 Engs. - Use gasket with small ports
V 345 & VC 392 Engs. - Use gasket with large ports

CRANKSHAFT



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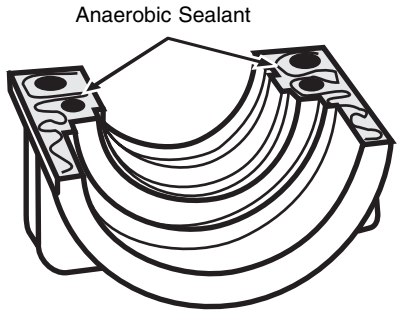

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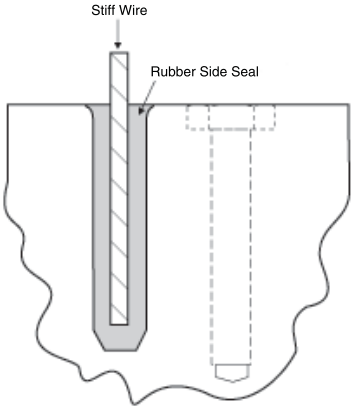

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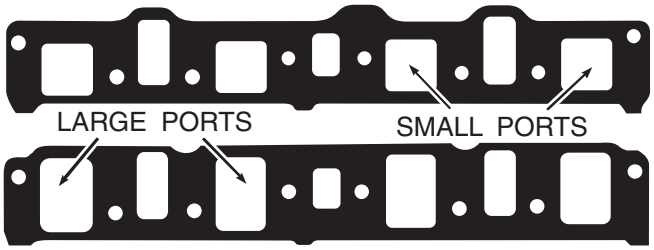

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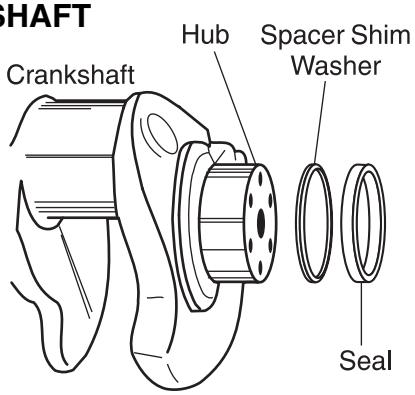

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