



## 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.

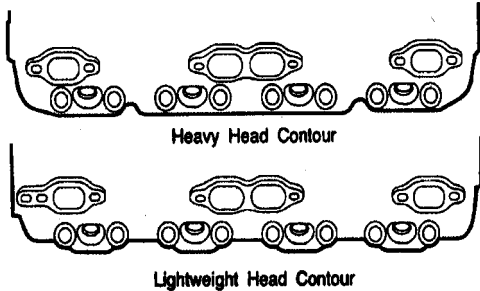
**BOLT PREPARATION:** Those **entering** coolant passages require pliable non-hardening sealer on threads and underside of bolt heads. Those **not entering** coolant passages require oil on threads and underside of bolt heads. **Exhaust Assembly:** Apply high temperature anti-seize lubricant to threadings.

**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.

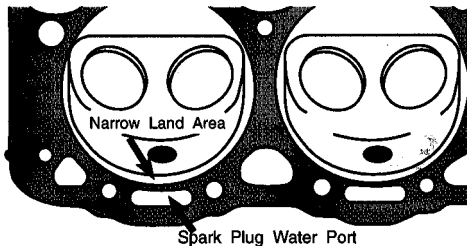
### HEAD GASKET

**LIGHTWEIGHT CYLINDER HEADS** have created potential head gasket sealing problems around the spark plug cooling water ports.



To determine cylinder head type, refer to the contour differences between the heavy and lightweight cylinder heads (see drawing).

Lightweight Cylinder Head Casting Outline



If a significant amount of core shift exists and/or head surface has been excessively resurfaced, the narrow land area between the spark plug water port and the combustion chamber will move inward toward the combustion chamber. This will reduce the amount of sealing area on the head gasket's combustion seal and cause the gasket not to seal.

To insure proper fit and alignment of the gasket, check the location of the gasket's combustion seal in relation to the spark plug water port. If the gasket does not fit properly, replacement of the cylinder head may be necessary.

**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.

### VALVE STEM SEALS



Positive Intake



"O" Ring Intake & Exhaust

For 1981 and later applications use Positive Intake and Umbrella Exhaust in addition to the "O" Ring. Prior to 1981 use "O" Ring Intake and Exhaust only.

**POSITIVE GUIDE SEAL:** Use the plastic installation sleeve(s), included in this set, to prevent damage to the lip of the seal. Trim the plastic sleeve so it extends 1/16" below the keeper groove. Place the sleeve on the stem.

Carefully start valve stem seal over sleeve.

Remove plastic installation sleeve and reuse for installing remaining seals

**FOR RUBBER JACKET SEALS:** Push seal down over valve guide until it bottoms.

**FOR SOLID OR METAL JACKET SEALS:** The use of an OEM service tool is recommended. If tool is unavailable, use a deep socket or rigid tube of appropriate diameter. Center tool (or socket) over the shoulder of the seal and tap the seal down over the guide until it bottoms.

**"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.

### VALVE COVER GASKET



To effectively seal this sophisticated engine application, FEL-PRO has included PERMA-DRY® molded rubber gasket(s) in this set.

#### ATTACH AND ALIGN GASKET

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

**PLACE GASKET IN VALVE COVER.** This gasket is intentionally manufactured undersized and **requires slight stretching** to fit snugly into the cover.

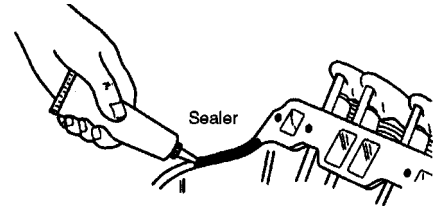
### INTAKE MANIFOLD GASKET



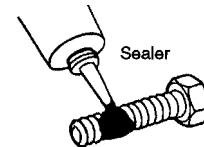
Rear restricted port

Install the intake manifold side rail gaskets with the restricted port toward the rear of engine.

**ATTACH AND ALIGN GASKET(S) TO CYLINDER HEAD(S).** Apply quick-drying adhesive sparingly in several places on the cylinder heads. Mount gasket(s) on cylinder head(s). Allow time for adhesive to set. Test for slippage with light pressure. If gasket moves, allow more time.



**CREATE INTAKE MANIFOLD END SEALS** by applying a continuous 3/16" bead of silicone sealer across the front and rear ends of the cylinder block, from one cylinder head to the other.



**REINSTALL INTAKE MANIFOLD TO ENGINE** while RTV is still wet. **Important:** The bolts attaching the manifold to the heads should be coated with a thread locking sealer. Torque securely to OEM specifications.

### EXHAUST MANIFOLD GASKET

**ATTACH AND ALIGN GASKET(S).** If gasket has only one steel faced side, install steel side towards manifold.

### MISCELLANEOUS FLUID SEALING GASKETS

**ATTACH AND ALIGN GASKET(S)/SEAL(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**.



## 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.

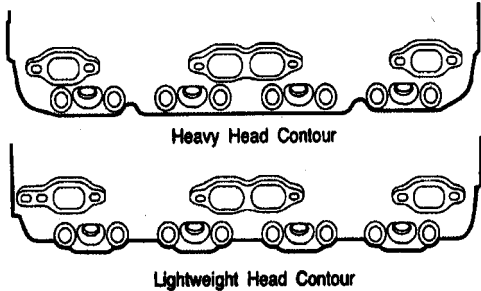
**BOLT PREPARATION:** Those **entering** coolant passages require pliable non-hardening sealer on threads and underside of bolt heads. Those **not entering** coolant passages require oil on threads and underside of bolt heads. **Exhaust Assembly:** Apply high temperature anti-seize lubricant to threadings.

**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.

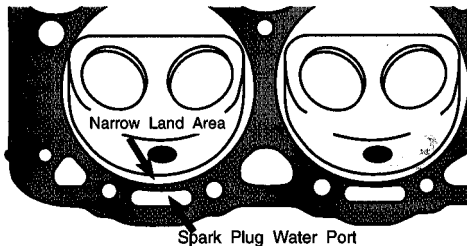
### HEAD GASKET

**LIGHTWEIGHT CYLINDER HEADS** have created potential head gasket sealing problems around the spark plug cooling water ports.



To determine cylinder head type, refer to the contour differences between the heavy and lightweight cylinder heads (see drawing).

Lightweight Cylinder Head Casting Outline



If a significant amount of core shift exists and/or head surface has been excessively resurfaced, the narrow land area between the spark plug water port and the combustion chamber will move inward toward the combustion chamber. This will reduce the amount of sealing area on the head gasket's combustion seal and cause the gasket not to seal.

To insure proper fit and alignment of the gasket, check the location of the gasket's combustion seal in relation to the spark plug water port. If the gasket does not fit properly, replacement of the cylinder head may be necessary.

**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.

### VALVE STEM SEALS



Positive Intake



"O" Ring Intake & Exhaust

For 1981 and later applications use Positive Intake and Umbrella Exhaust in addition to the "O" Ring. Prior to 1981 use "O" Ring Intake and Exhaust only.

**POSITIVE GUIDE SEAL:** Use the plastic installation sleeve(s), included in this set, to prevent damage to the lip of the seal. Trim the plastic sleeve so it extends 1/16" below the keeper groove. Place the sleeve on the stem.

Carefully start valve stem seal over sleeve.

Remove plastic installation sleeve and reuse for installing remaining seals

**FOR RUBBER JACKET SEALS:** Push seal down over valve guide until it bottoms.

**FOR SOLID OR METAL JACKET SEALS:** The use of an OEM service tool is recommended. If tool is unavailable, use a deep socket or rigid tube of appropriate diameter. Center tool (or socket) over the shoulder of the seal and tap the seal down over the guide until it bottoms.

**"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.

### VALVE COVER GASKET



To effectively seal this sophisticated engine application, FEL-PRO has included PERMA-DRY® molded rubber gasket(s) in this set.

#### ATTACH AND ALIGN GASKET

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

**PLACE GASKET IN VALVE COVER.** This gasket is intentionally manufactured undersized and **requires slight stretching** to fit snugly into the cover.

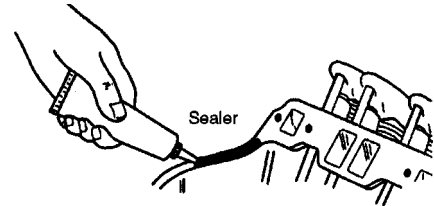
### INTAKE MANIFOLD GASKET



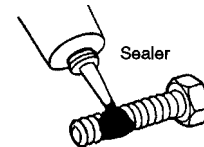
Rear restricted port

Install the intake manifold side rail gaskets with the restricted port toward the rear of engine.

**ATTACH AND ALIGN GASKET(S) TO CYLINDER HEAD(S).** Apply quick-drying adhesive sparingly in several places on the cylinder heads. Mount gasket(s) on cylinder head(s). Allow time for adhesive to set. Test for slippage with light pressure. If gasket moves, allow more time.



**CREATE INTAKE MANIFOLD END SEALS** by applying a continuous 3/16" bead of silicone sealer across the front and rear ends of the cylinder block, from one cylinder head to the other.



**REINSTALL INTAKE MANIFOLD TO ENGINE** while RTV is still wet. **Important:** The bolts attaching the manifold to the heads should be coated with a thread locking sealer. Torque securely to OEM specifications.

### EXHAUST MANIFOLD GASKET

**ATTACH AND ALIGN GASKET(S).** If gasket has only one steel faced side, install steel side towards manifold.

### MISCELLANEOUS FLUID SEALING GASKETS

**ATTACH AND ALIGN GASKET(S)/SEAL(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**.