

## IMPORTANT NOTICE:

- If using Hypereutectic Pistons, follow piston manufacturers ring end gap specifications.
- After installing rings on piston, do not oil rings! Use light oil thinly applied on cylinder walls. Before installing piston, piston skirts may be lightly oiled. **Rings should be allowed to seat dry on cylinder walls.** Remember: excessive oiling of rings may keep rings from seating.
- **During engine break-in, use petroleum based motor oils only.** Synthetic oils may be used after break-in cycle is complete.
- **Do not** install these rings in chrome plated cylinders. Special non-chrome rings must be used.
- **Do not intermix gapless ring rails with oil ring rails or try to substitute rails from any other ring set.** Total Seal Gapless rings and rails are carefully machined to fit together and are not interchangeable with other Total Seal rings or with any other rings not from this set.

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# Installation Sheet



*Thank you for choosing Total Seal® Piston Rings—the longest lasting piston rings available for your engine.*

We are confident you will enjoy the Total Seal benefits of:

- low blowby
- increased horsepower
- improved fuel economy
- cooler and cleaner oil
- longer engine life

Please spend a few minutes and read through this entire instruction sheet before you begin installation.

Proper installation will assure that you receive all the benefits of this fine ring set.

If you have questions, please call our technical service line for additional information at 602-678-4977.

## Engine Preparation

Finish hone cylinder walls with torque plates installed if available. Recommended hone by grit specification: moly-face or cast iron top ring 320-380 grit. Chrome face top ring: 220-280 grit. Finish hone with a 20 to 30 degree cross-hatch pattern off horizontal axis.

All cylinder heads (new, used or rebuilt) must have valve stem to guide clearance checked. Excessive clearances may lead to oil consumption. Valve to guide clearance must be fitted to the minimum end of manufacturers specification. All applications must use a positive type viton valve guide seal on intake and exhaust valves.

Total Seal Gapless® rings seal so well that increased manifold vacuum and decreased crankcase pressures may lead to excessive flow in the PCV system if the engine is so equipped. For street use, it may be necessary to reduce PCV system flow to prevent oil from being pulled through the PCV system. In most cases, a plug in the PCV line with an .062" orifice is sufficient to remove all pressure from the crankcase without pulling oil into the induction system.

## RING INSTALLATION

### Top Rings

- 1) Install red head rings double groove down.
- 2) If ring has a dot, install dot side up.
- 3) Unmarked rings with inner bevel are installed bevel side up.
- 4) Rings without dot or inner bevel install either side up (see fig. 3).

### Gapless Total Seal Ring Installed in 2nd Groove

- 1) Install machined ring first with groove side down and gap 180° from top ring end gap (see fig. 1).
- 2) Install rail into groove machined in ring with gaps opposed 180° (see fig. 1).

### Non Gapless 2nd and 3rd Rings

- 1) Install rings with marked side up (see fig. 3).

### Oil Control Ring

- 1) Three piece type - install as shown in figure 1.
- 2) Do not attempt to modify expander in any way.

### Oil rings with Nylon Buttons

These buttons are installed as an Anti-Overlap feature. They may be removed if desired. If removed, caution should be taken to insure the expander ends are not overlapped upon installation.

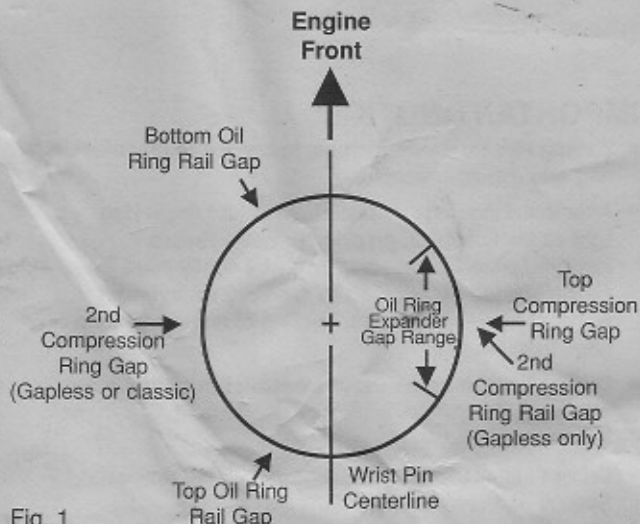


Fig. 1

\*If piston has more than 2 compression grooves, subsequent rings should be positioned 180° apart in descending order.

## Helpful Tips For Ring Fitting And Seating

All pistons (including new ones) should be checked for proper ring to groove clearances.

Ring to piston groove back clearance should be a MINIMUM of .005" deeper than radial wall dimension of piston ring. If piston ring sticks out of groove by any amount, you have the wrong rings (see fig. 2).

Ring to groove side clearance should be a minimum of .0015 to a maximum of .003" (see fig. 2).

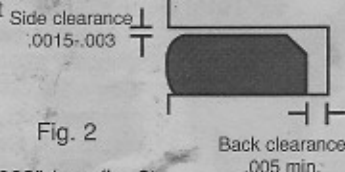


Fig. 2

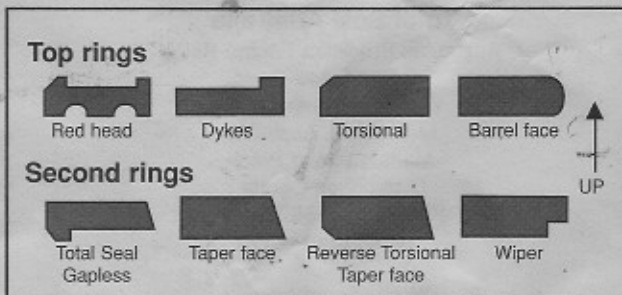


Fig. 3