

PISTON RING INSTALLATION



Install with "Mark" toward top of piston



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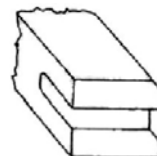
Install with Inside Groove toward top of piston



Install with O.D Groove toward bottom of piston



Install "Unmarked" Rings With either side up



Install Beveled Oil Rings with bevel toward top of piston

GENERAL INSTRUCTIONS

1. Remove *any* ridge present at the top of the cylinders before removing the pistons to avoid damage to the pistons.
2. Cylinder bores must be conditioned properly. Remove glaze from the cylinders with a hone or deglazer. After honing thoroughly wash the cylinder walls with detergent and hot water to remove abrasive particles and
Wipe with a clean white rag and light weight engine oil until no discoloration can be lifted from the cylinder wall.
3. if reusing the pistons, clean them thoroughly, removing all carbon deposits from the grooves and drain holes. Check the piston groove to ring side clearance with a feeler gauge. If the clearance is .006" (.15mm) or more, groove spacers should be installed or the piston replaced.
4. Be sure the rings are the correct size for the engine. Use a piston to square the ring in the cylinder bore and check to assure the end gap meets minimum end gap specifications using a feeler gauge. Minimum end gaps should be approximately .004" (.10mm) per each 1" (25.4mm) of bore diameter. Example: 4" (101.6mm) X .004" (0.10mm) = .016" (.40mm) minimum gap.
5. Carefully install the rings on the piston using a ring installation tool. Always install the lower groove ring first (See the special instructions included for "Three Piece Steel Oil Ring installations". For compression ring installation, the top mark, "TOP", "T", "O" or a machined dash "-" should always be installed facing toward the top of the piston. If a ring has an inside bevel but no marking, install the inside bevel toward the top of the piston.
6. Lubricate the piston and ring assembly with an abundant amount of oil before installation. Install the assembly into the cylinder using a good ring compressor.
7. Pre-tune the engine as accurately and completely as possible before starting the engine. Start the engine and run at fast idle until the engine reaches operating temperature.
8. **IMPORTANT: Do not allow engine to overheat in early operation.**
Operate as you would a new engine for the first 500 miles or 10 hours.

THREE PIECE STEEL OIL RING INSTALLATION

1. Place the spacer-expander in the oil ring groove of the piston with gap ends butted.
2. Place one end of a segment on the top side of the spacer-expander with the segment end approximately 1" (25.4mm) to the right of the butting ends of the spacer-expander. Spiral the segment into the groove.
3. Place one end of the other segment on the bottom side of the spacer-expander with the segment end approximately 1" (25.4mm) to the left of the butting ends of the spacer-expander. Spiral the segment into the groove.
4. Check final assembly make sure the spacer-expander is butted correctly. The three piece assembly should rotate freely as a unit.