

# Ring Gap Instructions

Application	Top Ring (minimum)	Second Ring (minimum)	Oil Ring Rail	4.000 Bore Example Top, 2nd, Oil Rails
High Performance Street - NA	Bore x 0.0045"	Bore x 0.0050"	Min 0.015"	0.018", 0.020", Min 0.015"
Circle Track, Drag Racing - NA	Bore x 0.0050"	Bore x 0.0060"	Min 0.015"	0.020", 0.024", Min 0.015"
Nitrous up to 200hp (25HP/cyl)	Bore x 0.0060"	Bore x 0.0060"	Min 0.015"	0.024", 0.024", Min 0.015"
Nitrous Race 200hp+ (25HP/cyl)	Bore x 0.0070"	Bore x 0.0070"	Min 0.015"	0.028", 0.028", Min 0.015"
Turbo / Supercharger	Bore x 0.0060"	Bore x 0.0060"	Min 0.015"	0.024", 0.024", Min 0.015"
Turbo / Supercharger Race	Bore x 0.0070"	Bore x 0.0070"	Min 0.015"	0.028", 0.028", Min 0.015"
Diesel - Turbocharged	Bore x 0.0060"	Bore x 0.0055"	Min 0.015"	0.024", 0.022", Min 0.015"

**NOTE:** The second ring gap recommendations have continued to change over the years. Current recommendations are such that the 2nd ring gap is larger than the top rings for most applications. Testing has proven that a larger second ring gap increases the top ring's stability allowing for a better seal. This larger "escape" path prevents inter-ring pressure from building up and lifting the top ring off the piston allowing combustion to get by. Many engine builders have reported lower blow-by and horsepower gains at the upper RPM ranges with the wider second ring gaps. Also, almost every new car made is using this inter-ring pressure reduction method to lower blow-by and emissions and to increase engine output. Additionally, and for these reasons, these ring gap recommendations are to be considered minimums, and some kits will come with larger gaps than the minimum listed in the table directly out of the box.

## PROPER RING INSTALLATION

**Top ring:** If there is a dot (pip mark) or a laser etching (commonly etched as "TOP" or the MAHLE logo, or a number designator) on one of the flats of the top ring, this marking is indicating the top of the ring. Typically, if there is a bevel on the ID of the top ring, the bevel should be facing up toward the top of the piston.



**2nd Ring:** If there is a dot (pip mark) or a laser etching (commonly etched as "TOP" or the MAHLE logo, or a number designator) on one of the flats of the top ring, this marking is indicating the top of the ring. Typically, if there is a bevel on the ID of the 2nd ring, the bevel should be facing down toward the bottom of the piston. Any marking indicating the top of the piston ring supersedes the location of the ID bevel of the ring.



**Oil Ring** - may be either 2 piece or 3 piece design:

**2 Piece Instructions:** Remove the coil spring from the oil ring and place the coil spring in the groove, noting the location of the coil spring joint. Install the oil ring in the ring groove; the oil ring gap must be assembled opposite (180 degrees) to coil spring joint.

**3 Piece Instructions:** Place the expander in the groove, ensure the ends are butted against each other. Position the expander ends in the desired orientation on the piston, an image of the recommended installation location is provided in the Proper Ring Alignment section. Install the lower steel ring, the ring end gap must be approximately 90° to 120° left from the expander edges. Install the upper steel ring observing the same distance for the right side. After ring installation, check if oil ring set can move freely without binding. Important: expander ends must not overlap.

