

# 2020 MAHLE Ring Features & Benefits



## MAHLE Performance Ring Sets

Featuring 9254 high alloy steel base material, with HV385 thermal spray face coating, patented by MAHLE combines to create the ultimate in performance piston ring technology. High tensile strength allows the piston ring to be used in smaller and lighter cross sections and still maintain structural strength, and torsional rigidity needed to seal and hold back extreme firing pressures. High yield resistance allows the piston ring to maintain strength and tension in high heat operating conditions of a high compression, and power adder applications. Extended fatigue resistance increases cycle life and overall durability of the piston ring, increasing RPM expectations of the performance engine builder. Increased material hardness improves overall piston ring wear on all critical mating surfaces

**PREPARING THE RINGS** Drop in ring sets typically require no adjustment to end gaps, but MAHLE recommends that the rings be checked for minimum end gap. File fit rings require individual gap adjustments to the top and second rings. This allows you to set the ring gap precisely to your exact needs. The following chart gives suggested minimum ring end gaps for various applications. If running aggressive boost or nitrous applications it may be necessary to increase end gaps.

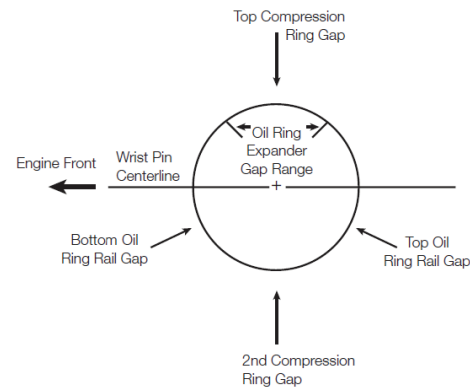
**PROPER RING GAP MEASUREMENT MINIMUM** (See chart)  
A torque plate is highly recommended to insure correct measurements. The ring should be square in the bore, 1 inch down from the deck. Measure the end gap with a feeler gauge or other measuring device.

**OIL CONTROL RING TENSION** MMS highly recommends that all wet sump or aluminum block applications use standard tension. Standard tension (3mm) expander sets are available to supplement the "ML-043" sets which are low tension.

### PROPER RING FILING

The ring gap should be filed using the proper ring gap filing tool. Ring gap should only be filed in an inward direction and square to the ring sides.

### PROPER RING ALIGNMENT

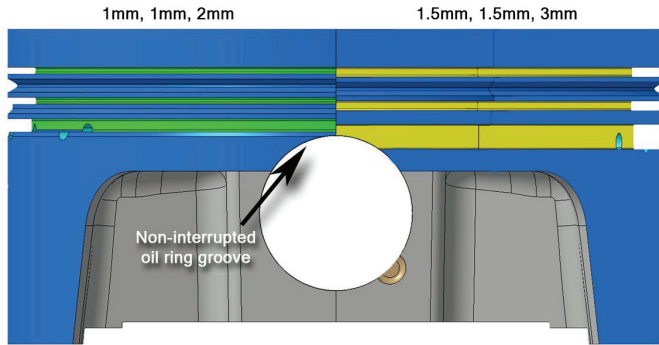


Application	Top Ring	Second Ring	Oil Ring Rail	4.000 example Top, 2nd, Oil Rails
High Performance Street - NA	Bore x 0.0045"	Bore x 0.0050"	Min 0.015"	0.018", 0.020", Min 0.015"
Circle Track, Drag Racing - NA	Bore x 0.0050"	Bore x 0.0060"	Min 0.015"	0.020", 0.024", Min 0.015"
Nitrous up to 200hp (25HP/cyl)	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"

Due to the nature of performance applications, this information should not be considered absolute. Final decisions concerning the installation and use of these products is ultimately the responsibility of the customer.

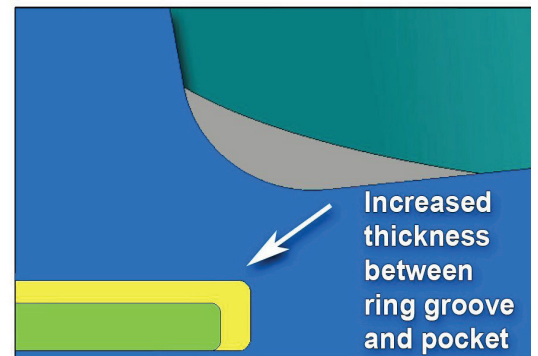
**WARNING:** Tight ring gap clearances may cause major engine damage.

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## MAHLE PowerPak 1.0mm, 1.0mm, 2.0mm Performance Rings

- Increased flexibility and freedom of piston design
- Increase in the number of applications with uninterrupted oil ring grooves
- Opportunities to increase cross sectional thickness in key high stress areas such as the valve pocket to top ring groove or ring land lighter weight
- Improvement in horsepower and torque
- Ease of ring installation



The MAHLE HV385 thermal spray face coating uses a patented blend of hard self-lubricating metal and ceramic alloys, along with an aerospace inspired application process, that work together to create a ring face coating with overall strength and toughness comparable to heat treatments like gas nitride, PVD and DLC, yet scuff resistant to the cylinder wall like moly based plasmas.



Relative Coating Strength vs. Scuff Resistance

