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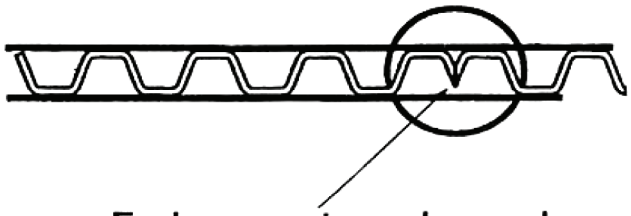
INSTALLATION INSTRUCTIONS

RINGS

TOP RINGS	SECOND RINGS	OIL RINGS
Molybdenum faced, barrel lapped, ductile spheroidal graphite iron, phosphate coated.	Grey cast iron, reverse torsoinal twist, taper faced, zinc phosphate coated.	Stainless expander, circum-ferential type, chromium plated rails, low radial dept

STEP 1

Install the oil rings first. Wind on the stainless expander first with the ends pointing down and butting.



Ends cannot overlap and must point to bottom of piston.

STEP 2

Install the upper rail before installing the bottom rail. If you attempt to install the lower rail fist the assembly will become tangled as the rail passes over the expander gap. Install the upper rail gap about 90° counterclockwise from the expander gap. Install the lower rail with the gap about 90° clockwise from the expander gap. The reason that rail gaps must be separate from each other and the expander gap is to avoid overstressing of the expander. If the two rails are fitted with their gaps in line the friction effect of the rail inners against the expander rail support pads will cause most of the relative movement to be concentrated over a small number of humps. This will cause the most highly stressed hump to break. Also, the expander will either overlap or become tangled if its gap is assembled in line with either or both of the rail gaps.

STEP 1

Install the second ring with the dot to the top of the piston. Install top ring last. If there is a dot on the top ring, install with the dot to the top of the piston. If there is no dot, but there is a chamfer on the inside diameter, install the chamfer to the top of the piston. If there is no dot or chamfer on the ring, it is symmetrical and can be installed in the groove either way.

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RINGS

END GAP

ROSS RACING RINGS FOR THE TOP AND SECOND GROOVES ARE OVERSIZED AND MUST BE FILE FITTED TO OBTAIN PROPER END GAP.

The proper amount of end gap required is directly dependent upon the amount of heat to which the top ring in most cases should be the bore size in inches x .004. (To convert mm to inches multiply the bore size in mm x .03937). To determine the proper end gap in the second ring on normally aspirated engines multiply the bore size in inches x .005. It is recommended that the second rings have more end gap than the top rings to allow any blowby gasses passing the top rings to quickly escape to the crankcase. If the second ring gaps are set smaller than the top ring gaps, the engine may show less leak down under static conditions!

Should the top ring land be .180 or narrower add .002 total to the above computed end gaps.

EXAMPLE: 3.625 (92mm) bore with. 150 width top land: 3.625 x .004
= .015 plus .002 for the narrow top land = .017 total end gap.

For engines that are blown, turbocharged, or run nitrous systems of more than 30 horsepower per cylinder add .004 total to the end gaps shown above. EXAMPLE: 3.625 x .004 = .015 plus .004 for turbocharger - .019 total end gap.

BLOCK HONING

When boring the block allow a minimum of .003 for finish hone. If finish bore size is to be 3.500, bore to dia. of 3.497, any less than this will leave boring marks remaining after honing and will prevent proper ring seating.

USE TORQUE PLATES WHILE HONING OR THE PISTONS ARE LIKELY TO SCUFF AND THE RINGS WILL NOT SEAL PROPERLY.

Two stages of honing are required to achieve the fine surface finish which we recommend for Ross Racing Rings. The first stage is used to bring the bore to a size of .0005 smaller than the finished bore size.

Honing speed should be approximately bore diameter in inches divided into 1000 (ie for 3” bores 300 RPM and for 4” bores 250 RPM). We recommend a 30° cross hatch angle. First stage honing should be done with a 220 grit stone and the finish stone should be 400 grit. Use care to avoid burnishing or burning cylinders.

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INSTALLATION INSTRUCTIONS

RINGS

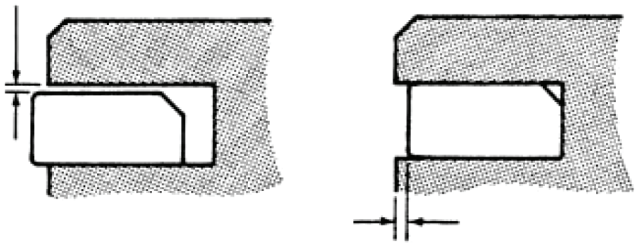
CHECKING THE GROOVES

Spin all rings in grooves to be sure that the rings are free in the grooves. Check ring side clearance with feeler gages. The top compression rings and second rings should have a side clearance of .002 to .004 unless the pistons are gas ported (with gas ports it is permissible to run the side clearance as tight as .0015. Ross Racing Oil Rings should have between .003 and .005 side clearance.

Back clearance can best be measured by pushing the ring into the piston ring groove until it bottoms against the root of the groove. The amount that the face of the ring is below the ring lands is the ring back clearance. It should not protrude beyond the lands when the ring is bottomed in the groove. Ross Racing Top and Second Rings should have approximately .004 back clearance. This will allow oil (which has been scraped off the cylinder wall by the top oil ring rail) to flow radially to the oil return holes. We recommend approximately .030 back clearance with our oil rings.

Please note that all three (mm) or narrower oil rings, regardless of brand, work best with split radius oil return holes in the pistons. All Ross Racing Pistons include split radius oil return holes with three (mm) or narrower oil ring grooves.

End gaps in the top two rings should be staggered approximately 180°. Lubricate pistons and rings with a premium grade oil of at least 20W/50 weight before installing in the bores.



- **Low viscosity monograde oil is not recommended**.
- **Do not use additives, either for initial lubrication or in the engine oil system, until the rings have seated.**