

Mack Test Ring Cleaning and Measuring Procedure

1. Pre-test Procedure

1.1 Prior to measuring rings, identify the cylinder number by a series of small axial notches filed in the top inside diameter corner, to the left of the ring gap, with the gap oriented at 12:00. Be careful not to raise a burr while marking the ring.

1.2 Clean the rings with aliphatic naphtha. Use a soft brush if necessary. Spray rings dry with air. Rinse in pentane. Do not handle rings with bare hands. Use gloves or plastic covered tongs.

1.3 The ring measurements specified in 1.4 are required. The ring measurements specified in 1.5 are optional.

1.4 Weigh the top rings, second rings, and oil rings on a scale capable of a resolution of 1 mg. Include the oil ring expander in the oil ring weight.

1.5 Measure ring end gaps for the top ring, second ring, and oil ring with the ring individually confined in a 123.825-mm (4.8750-in.) diameter gage and through a cutout of no more than 12.7 mm (0.50 in.) in length. Be careful not to raise a burr while inserting the ring.

1.6 Take ring face profile traces at 25.4 mm (1 in.) from gap (both sides) and 180° from gap. Profile traces shall be of sufficient magnification to determine face bearing widths to compare with post-test measurements in order to determine wear.

1.7 Take ring height measurements for the top ring 25.4 mm (1 in.) from gap (both sides) and 180° from gap. Use a special holder with a 2.54-mm (0.10-in.) gage width for this keystone ring. Use a dial indicator and establish zero by using a calibration ring or a standard made into the holder.

1.8 Take second ring axial width measurements 25.4 mm (0.10 in.) from gap (both sides) and 180° from gap. To measure the width (top to bottom) of this rectangular ring, use a hand held micrometer.

1.9 Take oil ring rail face width/profile measurements 25.4 mm (1 in.) from gap (both sides) and 180° from gap.

2. Post Test Procedure

2.1 Place the rings in a blaster, and blast the carbon coated surfaces with a walnut shell medium until the carbon has been removed from the grooves in the rings.

2.2 Mix a solution of 2500 mL water and 50 mL Natural Orange18 (or equivalent) in a container. Place the rings in the solution, and then place the container into a sonic cleaner for 15 min. Visually inspect the rings for cleanliness. If carbon remains on the rings, soak the rings for an additional 5 to 10 min in the sonic cleaner.

2.3 Rinse the rings in hot water immediately after removing them from the cleaning solution.

2.4 Spray the rings with aliphatic naphtha and then spray the rings dry with air. Rinse in pentane. Do not handle rings with bare hands. Use gloves or plastic covered tongs.

2.5 The ring measurements specified in 2.6 are required. The ring weight loss will be used for the test evaluation. The ring measurements specified in 2.7-2.11 are optional.

2.6 Weigh top rings, second rings, and oil rings on a scale capable of a resolution of 1 mg. Include the oil ring expander in the oil ring weight.

2.7 Measure ring end gaps for the top ring, second ring, and oil ring with the ring individually confined in a 123.825-mm (4.8750-in.) diameter gage and through a cutout of no more than 12.7 mm (0.50 in.) in length. Be careful not to raise a burr while inserting or removing the ring.

2.8 Take ring face profile traces at 25.4 mm (1 in.) from gap (both sides) and 180° from gap. Profile traces should be of sufficient magnification to determine face bearing widths to compare with pretest measurements in order to determine wear.

2.9 Take ring height measurements for the top ring at 25.4 mm (1 in.) from gap (both sides) and 180° from gap. Use a special holder with a 2.54-mm (0.10-in.) gage width for this keystone ring. Use a dial indicator, and establish zero by using a calibration ring or a standard made into the holder.

2.10 Take second ring axial width measurements 25.4 mm (1 in.) from gap (both sides) and 180° from gap. Measure the width (top to bottom) of this rectangular ring with a hand held micrometer.

2.11 Take oil ring rail face width/profile measurements 25.4 mm (1 in.) from gap (both sides) and 180° from gap.