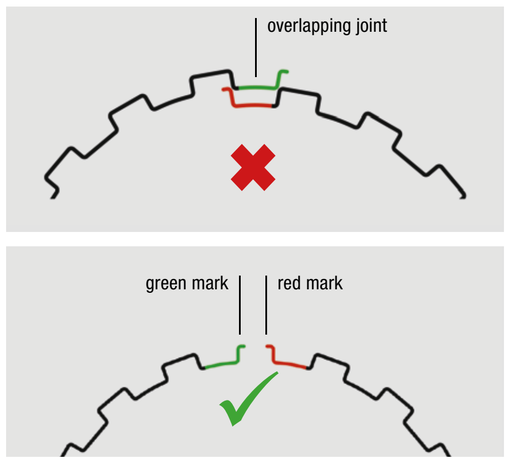
Piston ring fitting

1. Removal

- Mark the installation direction and position of the pistons, conrod caps, etc.
- Remove the cooling oil nozzles, if present, to avoid damaging them when fitting or removing the pistons.
- Carefully remove oil carbon from the cylinder to avoid damaging the piston during disassembly.
- Remove the piston—see details on the “Piston fitting” poster.
- Remove the piston rings using ring pliers.
- Caution: Overexpanding the piston rings will cause lasting deformation and compromise their running behavior.

2. Inspection

- If used parts are to be refitted, the dimensional accuracy of all parts must be checked.
- Inspect the piston rings for damage and distortion.
- Bent rings must be replaced, since they can no longer rotate freely in the groove, thereby increasing wear and impairing the seal.
- Carefully remove oil carbon and other residue from the ring grooves and oil drainage holes.
- Check the ring grooves for wear by measuring the distance between the piston ring and ring groove using a feeler gauge. If the clearance exceeds 0.100 mm, the piston should be replaced.
- Determine the gap clearance by positioning the ring in the upper part of the cylinder and measuring the distance using a feeler gauge.
- Pay particular attention to the top dead center wear. If the wear exceeds 0.100 mm in
- diameter, the cylinder must be bored to the next overdimension or the cylinder liner must be replaced.
- Note: For used engines, MAHLE offers V-type piston ring sets. These are an economical solution for normalizing oil consumption and decreasing compression loss. N-type ring sets correspond to original equipment and can therefore be used for both new and used pistons.



3. Fitting

- Note the installation markings during assembly.
- Only use suitable ring pliers to fit the piston rings, starting with the bottom ring.
- Do not overexpand the piston rings.
- Install rings labelled “Top” with the lettering facing upward toward the piston crown.
- The ring gaps must be fitted at a 120° angle.
- In the case of oil control rings with coil-supported spring lock washers, the spring joint (the end with the connector wire) must be positioned at 180° to the ring gap.
- Three-piece oil control rings (3S rings) must not overlap at the gap. Both color markings must be visible.
- Place the assembled piston in the engine using a ring sleeve—see details on the “Piston fitting” poster.
- Note: Chrome-plated rings must not be used on chrome-plated cylinder surfaces.

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