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: over-expanding the piston rings will cause lasting deformation and compromise their running behaviour.

2. TESTING
- If used parts are 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 centre wear. If the wear exceeds 0.100 mm in diameter, the cylinder must be bored to the next oversize or the cylinder liner must be replaced.
- Note: for used engines, MAHLE offers V-type piston ring sets. These are an economical solution for normalising 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
- Only use suitable ring pliers to fit the piston rings, starting with the bottom ring.
- Do not over-expand the piston rings.
- Install rings labelled “Top” with the lettering facing upwards towards 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 colour 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.