Fitting recommendations

MAHLE Original repair pistons are ready for installation with mounted piston rings.

Piston diameter, installation clearance, and where applicable, direction of installation are marked on the piston crown. The specified piston diameter added to the corresponding installation clearance gives the cylinder diameter.

For pistons with a graphite-coated skirt, another 0.015–0.020 mm must be deducted from the measured piston diameter to allow for the thickness of the coating.

Example:

<table>
<thead>
<tr>
<th>Measured diameter on graphite layer</th>
<th>90.00 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diameter specified on the piston crown</td>
<td>89.96 mm</td>
</tr>
<tr>
<td>Thickness of the graphite coating</td>
<td>0.04 mm</td>
</tr>
</tbody>
</table>

The piston rings are fitted with the greatest of care. Permanent deformation is caused to the rings each time they are removed unnecessarily and put back into place with excessive stretching, which in turn impairs the operating performance.

The piston pins are packed such that they are protected from corrosion and are enclosed with the piston, as are the circlips (if required).

The piston pins are selected for the appropriate fit and can be exchanged within the same piston type. However, some of the pistons and pins are colour-coded. These parts must not be exchanged for others under any circumstances.

Assembly of pistons and connecting rods

Prior to assembly, the connecting rods have been checked to see that their bores are on parallel axes (to ensure that there has been no bending or distortion) and, where necessary, replaced.

It must be ensured that the components are adequately lubricated on assembly. As a rule, pistons and connecting rods must always be assembled in the prescribed installation direction.
Shrink fit
Assembling pistons and pins with shrink fit in the conrod requires the greatest of care. It is particularly important that there is freedom of movement between piston and pin after assembly.

Floating pin
For pistons with floating pins, the enclosed circlips serve to fix the piston into place in the pin bore.

The circlips must be fitted using a suitable tool. When doing so, it must be ensured that the circlips fit completely into the groove for which they are intended and that the impact is always in the stroke direction of the piston. Never use old circlips and avoid pressing them together too much, as this can cause permanent deformation.

Installing the piston
When installing the piston, the direction of installation must be observed. The impacts on the individual piston rings should be distributed evenly across their circumference. The circlip must be fitted such that the impact is at the top or the bottom. The cylinder bore or the pistons and the rings must be oiled.

In order to avoid damage when the piston is being installed in the cylinder bore, a suitable tool must be used for installation (e.g. ring sleeve, etc.).

With diesel engines, the gap width must be measured and the relevant instructions from the engine manufacturer must be followed.

The piston crown on pistons with a hard-anodised crown should not be machined.

It should be ensured that only cylinder head gaskets and filters for air, fuel, and oil approved by the engine manufacturers are used.

The components (cylinder block, crankshaft, conrod, and oil sump) must be cleaned carefully before assembly to remove machining remainders and deposits.