

# Fitting recommendation

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

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

In the case of pistons that have a graphitised skirt, another 0.015–0.020 mm should be deducted from the measured piston diameter to allow for the thickness of the layer; this then gives the nominal diameter for the piston, which is stamped on it.



Example:

Measured diameter on layer of graphite	90.000 mm
less diameter identified on piston crown	89.960 mm
gives thickness of the layer of graphite	0.040 mm

The piston rings have been mounted with the greatest of care. Each time they are removed unnecessarily and refitted with excessive stretching, permanent deformation is caused and the operating performance is impaired.

The piston pins are packed in a way that protects them from corrosion and they are enclosed with the piston, as are the pin locking devices (if required).

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

## Assembly of piston and con rod

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

On assembly it must be ensured that the components are lubricated sufficiently. The pistons and con rods must always be assembled in the prescribed installation direction.



## Technical information

### Pistons ■ Piston rings ■ Cylinder liners/finned cylinders ■ Assembly

#### Shrink fit

Assembling pistons and pins with shrink fit in the con rod 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 in the piston pin bore. The circlips must be mounted with a suitable tool. When this is done it should be ensured that the circlips fit completely into the slot 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, otherwise permanent deformations can result.

#### Installation of the piston

When the piston is installed, the installation direction must be observed. The impacts on the individual piston rings are to be distributed evenly across their circumference. The pin locking device is to be installed in such a way 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 fitted in the cylinder bore, a suitable tool is to be used for assembly (e.g. ring sleeve, ...).

In the case of diesel engines, the clearance must be measured and the relevant instructions from the engine manufacturer must be followed.

In the case of pistons with a hard anodised crown, the crown should not be machined.

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



The parts of the engine (cylinder block, crankshaft, con rod and oil pan) must be cleaned carefully before assembly to remove machining residues and deposits.

