Types and technical terms

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.

Versions
- Cr = Chromium
- CrC = Chromium multilayer
- CrK = Chromium-ceramic
- Fe = Ferrous oxide
- Mo = Molybdenum
- P = Phosphate
- N = Nitrided
- PVD = Chromium-nitrided
- IF = Internal bevel (top)
- IFU = Internal bevel (bottom)
- IW = Internal step (top)
- IWU = Internal step (bottom)
Oil control rings

Bevelled ring

Bevelled ring with coil spring

U-flex ring (multi-piece)

Double-bevelled ring

Double-bevelled ring with coil spring

Oil control ring (multi-piece)

Slotted oil control ring

Slotted oil control ring with coil spring

Napier ring

Taper-faced Napier ring

Conversion from millimetres to inches

<table>
<thead>
<tr>
<th>mm</th>
<th>1.600</th>
<th>1.990</th>
<th>2.385</th>
<th>3.160</th>
<th>3.947</th>
<th>4.747</th>
<th>6.335</th>
</tr>
</thead>
<tbody>
<tr>
<td>in.</td>
<td>1/16</td>
<td>5/64</td>
<td>3/32</td>
<td>1/8</td>
<td>5/32</td>
<td>3/16</td>
<td>1/4</td>
</tr>
</tbody>
</table>

Technical information
Fitting recommendations

The ring grooves must be cleaned thoroughly before the rings are fitted. It is essential to make sure that neither the groove flanks nor the radiiuses in the groove root are damaged.

In the case of coil-supported oil control rings, the spring joint (the spring end with the connector wire) must be positioned at 180° to the ring gap. If the coil spring has a Teflon coil cover, care must be taken to ensure that the cover ends at the ring gap.

The rings are fitted with suitable piston ring pliers, starting with the lowest ring. Overstretching the rings should be avoided, since this can lead to their deformation and inability to provide a perfect seal.

It is essential that the TOP identification is observed. Rings with TOP identification are fitted with the marking facing upwards in the direction of the piston crown.

Special care is required when fitting steel rail rings (3S rings). After the spring has been loaded, the rails are fitted such that the rail gaps point towards the pin bore. When fitting the upper rail, the ends of the spring must be held together so as to prevent overlapping (attention is to be paid to the colour marking when doing so). The lower rail can then be fitted.
In the case of pistons with ring joint stops in the ring grooves, care must be taken to ensure that the ring gaps are positioned alongside the safety dowel pins.

After the rings have been fitted, the ring gaps must be spread evenly around the circumference (e.g. at 120° for a 3-ring piston).

The side clearance must be checked after the rings have been fitted. Clearances of up to 0.100 mm are acceptable; if the clearance is greater, the piston must be replaced.

The ring sets allow for a certain amount of wear on the cylinder surface. This should not exceed a value of approx. 0.100 mm (in relation to the cylinder diameter). In case of greater wear, a new cylinder liner must be used or the cylinder bore must be re-bored and equipped with a suitable oversize piston.

Chromium-plated piston rings must not be used in conjunction with chromium-plated cylinder surfaces.