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Installation note for piston pin circlips

*Various types of piston pin circlips are available, which are fitted in different ways.*

To protect piston pins against axial movement during operation, circlips are fitted in most combustion engines. In such cases, the piston pin still has limited axial play and can also rotate in the small end bore and the pin bore of the piston (known as a floating pin).

The situation is different in engines with fixed-pin connecting rods, where the piston pin is shrunk-fit into the small end bore by heating the connecting rod. No circlips are used here. If a piston with a floating pin is repaired or replaced, new circlips must be fitted during reassembly. Repeated use can reduce the necessary tension of the circlips, and there's a risk that they may slip out

of their grooves during operation due to the high acceleration of the piston.

#### Installation direction

The installation direction depends on the type of circlip. Open rings (snap rings) are always fitted with the opening at the six o'clock or twelve o'clock position in the stroke direction. Wire circlips with the lugs pointing outward are fitted into the corresponding recesses in the pin bore. For certain engines (e.g., Porsche opposed-piston engines), the circlip lugs must be fitted to suit the specific cylinder and bank. Always follow the manufacturer's instructions. The circlips must be fully seated in their grooves. Twisting them slightly ensures that they are correctly seated in the groove.



Figure 1: Various circlips



Figure 2: Pistons with wire circlips



Figure 3: In this case, the ring opening should be at six o'clock or twelve o'clock

#### Important!

Bent or deformed circlips must not be reused. During assembly, be sure to maintain cleanliness and use a generous amount of clean oil. Most errors made during engine repair can be traced back to contamination and lack of lubrication.