

3

Installation of rings – step by step

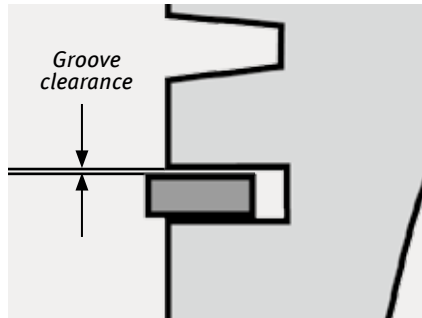
Step 1: Cleaning the pistons

Clean the pistons thoroughly first of all and remove all traces of carbon from the ring grooves. Remove the carbon from the oil return bores with a twist drill and tap wrench. Clean the grooves without damaging the groove sides in the process. Replace cracked or sunken and worn pistons.



Step 2: Checking the piston ring grooves

If between a parallel sided compression ring and the associated groove flank a distance of 0.12 mm or more is measured, the piston is excessively worn and must be replaced.

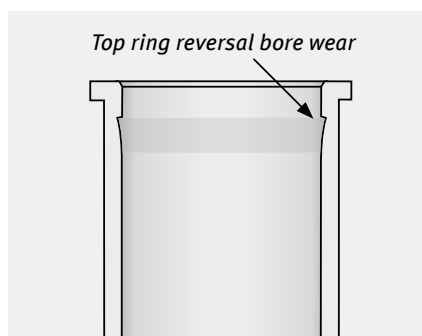


Measurement of the piston ring grooves with a feeler gauge. KS art. no. 50 009 824

Groove clearance (mm)	Usability of the pistons
0,05 – 0,10	Pistons can be used without concern
0,11 – 0,12	Increased caution is required
> 0,12	A new piston must be used!

Step 3: Checking the cylinder wear and tear

If the cylinder wear is higher than 0.1 mm for Otto engines and 0.15 mm for Diesel engines, the cylinder must also be replaced (top ring reversal bore wear).



Step 4: Cleaning the cylinders

Remove carbon residues at upper unused area of the cylinder liner.



Step 5: Checking the ring set components

When replacing the piston rings, we always recommend replacing a complete set. The ring height is checked with a calliper. A comparison with our catalogue data is recommended.

The diameter can be checked with a measuring ring or reworked cylinder; the joint clearance based on a subjective assessment or with a feeler gauge. When checking the ring diameter in worn cylinders/ cylinder liners, note that the joint clearance can assume larger values.



Checking with KS calliper with dial gauge, accuracy 0.01 mm
KS art. no. 50 009 814



Chrome plated piston rings must not be installed in chrome plated cylinder liners.

Step 6: Installing the piston rings

Insert the piston rings into the respective piston ring groove with the correct fitting tool.

Excessive spreading of the piston rings during mounting is to be avoided; this causes permanent deformations and affects the piston ring's performance.

The "TOP" marking must point to the piston crown, so that the scraping effect is pointing to the skirt end of the piston.



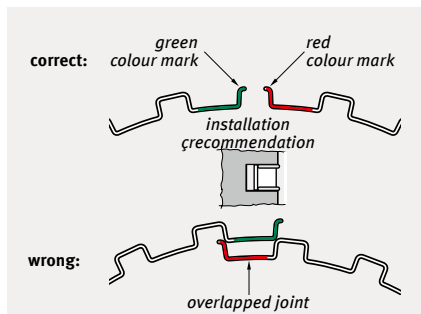
Piston ring pliers
KS art. no. 50 009 815 for \varnothing 50–110 mm
KS art. no. 50 009 829 for \varnothing 110–160 mm

Special:

Installation of steel rail spring washers



1. The expander spring is fitted into the groove.



Steel rail oil ring

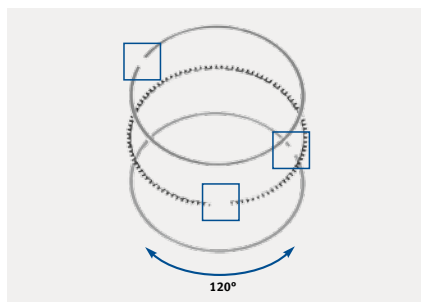


Note:

With three-digit steel rail spring washers, it can happen that the expander spring overlaps on the joint ends. For this reason, always control the position of expander feathers before installing the pistons.



2. The bottom fin is inserted by 120° joint twist.



Step 7: Function test / Twisting the piston rings

Once the piston rings are installed, it must be ensured that they can move freely. Twist the joint ends of the piston rings by 120° each on the piston.

Note:

Pistons for two-stroke engines with piston rings which are secured against twisting must not be twisted when inserted into the cylinders.

In this process, the locking pin can move below the piston ring sprung outwards in the area of a cylinder window and break this off at the opposite window edge.



Step 8: Inserting the piston into the cylinder liner

Sufficiently oil piston rings and pistons and install with a closing piston ring clamp or a conical assembly sleeve to prevent the piston rings from being damaged.



KS art. no.	Name
50 009 816	Piston ring scuff band for \varnothing 57 – 125 mm
50 009 828	Piston ring scuff band for \varnothing 90 – 175 mm
50 009 913	Piston ring assembly kit set



*Piston ring assembly kit set:
art. no. 50 009 913*