

# Fitting of Pistons with Rings

Types 220 and 220a

Operation No.
M 4d

## Special Tools:

Piston ring pliers, diameter 50–100 mm (1.97–3.94")	000 589 00 37
Feeler gauge	000 581 01 30
Piston ring compressor	136 589 02 61

## Procedure:

**Note:** Fig. M 4d/00 shows the piston for Type 220 (left) and piston with extended skirt (right) for Type 220a and Convertible A of Type 220. Pistons with extended skirt can also be installed into engine of Type 220.

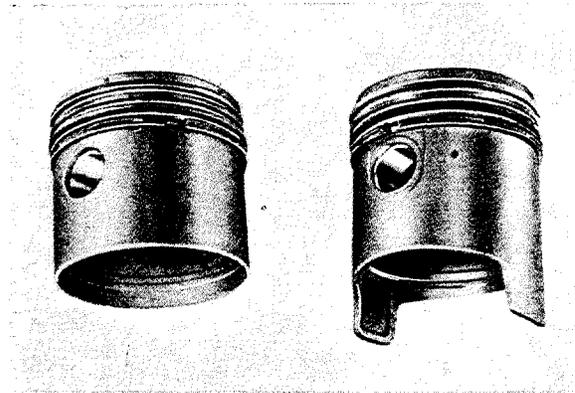


Fig. M 4d/00

Clean cylinders carefully before fitting in the pistons. The temperature of pistons and cylinder crankcase must be equal.

**The piston play is 0.04 mm (0.0016")**

The piston size is stamped into the piston crown. Select the pistons according to the cylinder bore sizes allowing for the prescribed piston play.

Within the oversizes the pistons are available in three sizes varying from 0.01 to 0.01 mm (0.0004"). See Table 2.

In case the cylinder bores are to be reconditioned, they are generally honed to fit the available pistons.

When selecting the pistons for an engine, be sure that the difference in their weight is not larger than 4 g (0.14 oz.).

The pistons are slightly tapered, the maximum diameter being at the bottom of the skirt. At this point the piston cross-section is not circular, but elliptical: dimension A is smaller than dimension B. The piston diameter is measured at the

bottom of the piston skirt in direction B (Fig. M 4d/1).

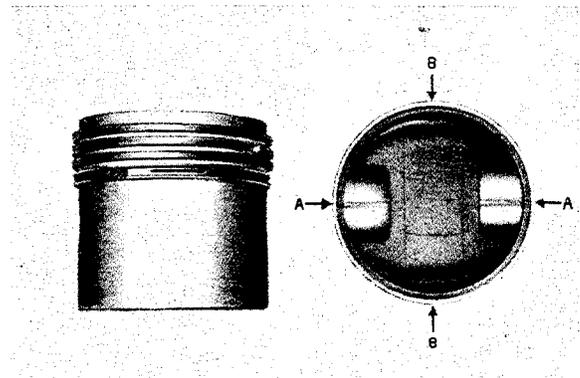


Fig. M 4d/1

In general it is not required to check piston ring gap clearance and side clearance in groove, because the pistons are delivered ready for installation, i.e. with pin and rings fitted.

In exceptional cases where piston rings are ordered and fitted separately, refer to the side clearance specifications given in Table 3.

## Piston Ring Clearance Specifications in mm (in.)

Table 3

Side clearance in groove	Mahle pistons	Nüral pistons
1. Compression ring	0.035 –0.062 (0.0014–0.0024)	0.030 –0.057 (0.0012–0.0022)
2. Tapered compression ring	0.035 –0.062 (0.0014–0.0024)	0.030 –0.057 (0.0012–0.0022)
3. Novix nose-type ring*	0.035 –0.062 (0.0014–0.0024)	0.030 –0.057 (0.0012–0.0022)
4. Novix slotted ring	0.035 –0.062 (0.0014–0.0024)	0.030 –0.057 (0.0012–0.0022)
Gap clearance	Mahle and Nüral pistons	
1. Compression ring	0.30–0.45 (0.012–0.018)	
2. Tapered compression ring	0.30–0.45 (0.012–0.018)	
3. Novix nose-type ring*	0.30–0.45 (0.012–0.018)	
4. Novix slotted ring	0.25–0.40 (0.0098–0.016)	

\* The Novix nose-type ring is only installed in pistons with extended skirt.

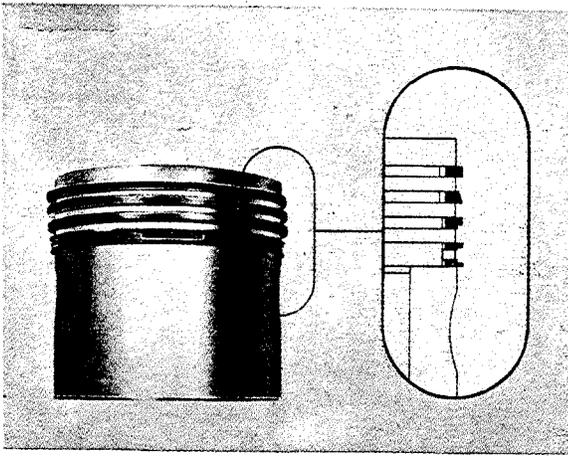


Fig. M 4d/2

Make sure that the piston rings are fitted in the correct order (Fig. M 4d/2).

Check side clearance of piston pins with a feeler gauge (Fig. M 4d/3).

To check the gas clearance, place piston rings in bore about 40 to 50 mm (1½ to 2") from top. Be sure that the rings are strictly square with the cylinder wall (Fig. M 4d/4).

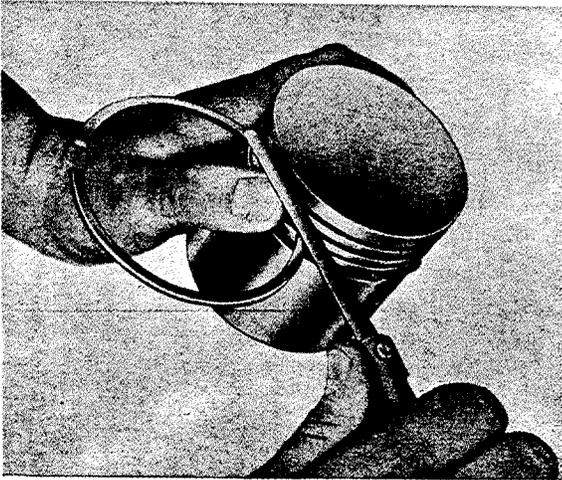


Fig. M 4d/3

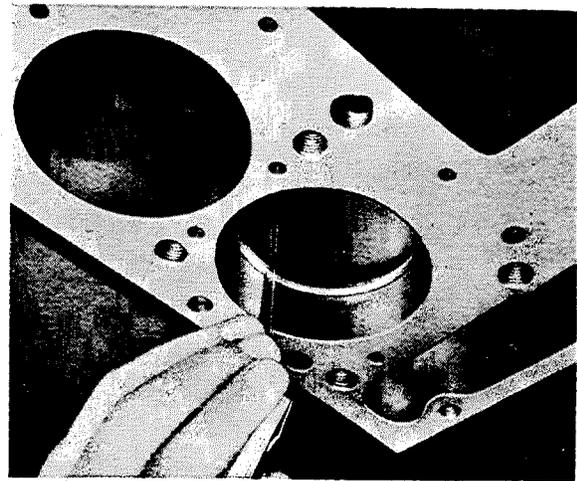


Fig. M 4d/4