

B. Boring and Honing of Cylinder Bores

For Models 180 a, 180 b, 190 SL, 220 a, 219, 220 S, and 220 SE these procedures are the same as described for Model 190.

Machining Dimensions of Cylinder Bores

Overhaul stage	180 a, 180 b 190, 190 b 190 SL	220 a, 219 220 S, 220 SE
Standard size	$\frac{85.000}{85.022}$	$\frac{80.000}{80.019}$
Intermediate stage	$\frac{85.250}{85.272}$	$\frac{80.250}{80.272}$
1st Overhaul stage	$\frac{85.500}{85.522}$	$\frac{80.500}{80.522}$
2nd Overhaul stage	$\frac{86.000}{86.022}$	$\frac{81.000}{81.022}$
3rd Overhaul stage	86.500	81.500

Machining Tolerances of Cylinder Bores

Models 180 a, 180 b, 190, 190 b, 190 SL, 220 a, 219, 220 S, and 220 SE

Permissible degree of out-of-round	0.013
Permissible conicity	0.013
Permissible departure of cylinder bores from vertical to crankshaft axis, calculated over total height of cylinder	0.05
Permissible roughness	0.003—0.005
Average depth of corrugation	max. 50% of roughness

The pistons must be so chosen that the difference in weight of the pistons in any one engine does not exceed 4 grams and that the running clearance is 0.04 mm.

C. Machining and Pressure-Testing of Cylinder Head

Machining Dimensions for Cylinder Head

Model	180 a, 180 b 190, 190 b 190 SL	220 a 219 220 S 220 SE
Total height	84.8—85.0	
Permissible stock removal	1	0.8
Permissible departure from plane	in a longitudinal direction	0.1
	in a lateral direction	0
Permissible departure from parallelity between upper and lower separating surface in a longitudinal direction	0.1	
Test pressure with air in hot water (70° C)	2 atm.	

For Models 180 a, 180 b, 190 SL, 220 a, 219, 220 S, and 220 SE this procedure is the same as described for Model 190.

After machining the cylinder head separating surface, remachine the valve seats in order to ensure that the minimum distance between valve head and cylinder head separating surface is maintained (see Section F).

Compression Ratio and Capacity of Compression Chamber

Model	180 a	180 b	220 a 219 ¹⁾ 220 S ¹⁾	219 ²⁾ 220 S ²⁾	220 SE	220 a ³⁾ 219 ³⁾ 220 S ³⁾	190 SL ⁴⁾	190 SL ⁵⁾	
Com- pression ratio	maximum	7.0:1	7.25:1	7.8	9.0	8.8	7.1	8.8	9.2
	standard	6.8:1	7.0:1	7.6	8.7	8.7	6.8	8.5	8.8
	minimum	6.6:1	6.8:1	7.35	8.4	8.4	6.5	8.25	8.45
Total compression chamber capacity with cylinder head fitted in cm ³	78.5—84.5	76—82	53.5—57.5	45.5—49.5	46.9—49.5	61.0—65.0	60.3—66.3	57.8—63.8	
Compression chamber capacity in cylinder head with valves and spark plugs fitted in cc	70.3—71.3	68.5—69.5	44.3—45.3	36.4—37.4	36.4—37.4	51.2—52.2	51.7—53.7	49.3—51.3	
Height of compression chamber in cylinder head	18 ± 0.3	18 ± 0.3	18 ± 0.3	18 ± 0.3	18 ± 0.3	18 ± 0.3	18 ± 0.3	18 ± 0.3	

¹⁾ On Model 219 up to Engine End No. 75 04347, on Model 220 S up to Engine End No. 75 09083.

²⁾ On Model 219 with standard clutch as from Engine End No. N 75 04348, with hydraulic automatic clutch as from Engine End No. Z 75 00002.

On Model 220 S with standard clutch as from Engine End No. N 75 09084, with hydraulic automatic clutch as from Engine End No. Z 75 00008.

³⁾ Engines with lower compression as an optional extra, on Models 220 a and 219 according to SA 10037, on Model 220 S according to SA 10187.

⁴⁾ Up to Engine End No. 65 03803.

⁵⁾ As from Engine End No. 65 03804.

D. Checking and Replacing Valve Guides

For Models 180 a, 180 b, 190 SL, 220 a, 219, 220 S, and 220 SE this procedure is the same as described for Model 190.

On the first cars of Models 190 SL, 219, and 220 S shouldered valve guides were installed, which were later replaced by valve guides with a snap ring (to prevent axial displacement) of the type used on all cars of Models 180 a, 180 b, and 220 SE (Figs. 01-5/1 and 01-5/2). All cars of Model 220 a have shouldered valve guides as standard parts.

When repairs are carried out, the shouldered valve guides can without modification be replaced by valve guides with a snap ring.

On Model 220 SE the exhaust valve sealing system is the same as on the other models, but the inlet valve is sealed by a silicone sealing ring (see Fig. 01-4/25). For this reason, the top of the inlet valve guide has been redesigned (Fig. 01-5/3).

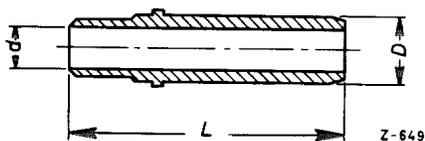


Fig. 01-5/1
1st Version with
shoulder

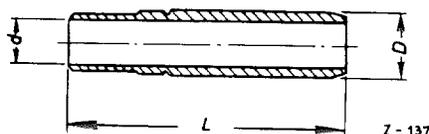


Fig. 01-5/2
2nd Version with
snap ring

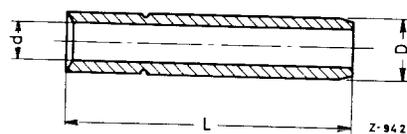


Fig. 01-5/3
Inlet valve guide
Model 220 SE