

C. Reconditioning and Re-bushing of Connecting Rods

This work for models 180 a, 180 b, 180 c, 190 SL, 220 a, 219, 220 S and 220 SE is the same as for model 190.

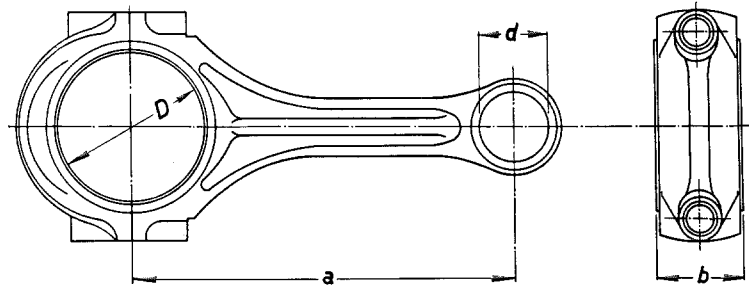


Fig. 03-5/3

Bearing Play Values For Connecting Rod

Model	Radial Play ¹⁾	End Play	
		when new	after repairs
180 a, 180 b, 180 c, 190, 190 b, 190 SL	0.045–0.060	0.120–0.259	up to 0.5
220 a, 219, 220 S, 220 SE	0.045–0.060	0.110–0.227	

¹⁾ The stated radial play with new engines is produced by proper selection of crankshaft and bearing shells, trying for a bearing play of 0.05 mm. When repairing, this radial play should by all means be adhered to.

Diameter of Conrod Bearings with inserted Bearing Shell Halves Fitted

Model	Standard	Overhaul Stages			
		I	II	III	IV
180 a, 180 b, 180 c, 190, 190 b, 190 SL	51.99	51.74	51.49	51.24	50.99
	52.02	51.77	51.52	51.27	51.02
220 a, 219 220 S, 220 SE	47.99	47.74	47.49	47.24	46.99
	48.02	47.77	47.52	47.27	47.02

Dimensions of Connecting Rod

Model	180 a, 180 b, 180 c, 190, 190 b, 190 SL	220 a and 219, 220 S 1st Version	219, 220 S 2nd Version and 220 SE	
Base bore D	<u>55.600</u> 55.619	<u>54.000</u> 54.019		
Base bore d ¹⁾	Standard Size	<u>28.000</u> 28.021	<u>27.000</u> 27.021	
	Overhaul Stage	<u>28.500</u> 28.521	<u>27.500</u> 27.521	
Perm. out-of-roundness of base bore	0.01			
Perm. conicity of base bore	0.01			
Crush of bearing shell halves	+ 0.01			
Distance "a" from center of bore to center of bore ²⁾	<u>153.95</u> 154.05	<u>134.95</u> 135.05		
Width of connecting rod "b"	<u>31.880</u> 31.841	<u>29.890</u> 29.857		
Perm. difference in weight between connecting rod assemblies in any one engine	5 g			
Perm. departure from axial parallelity for a length of 100 mm	0.03			
Perm. longitudinal distortion for a length of 100 mm	0.1			

¹⁾ The base bore "d" for models 180 c and 190 SL as from engine No. 121 928 000 001 = 29.000–29.021 mm.

²⁾ Distance a for models 180 c and 190 SL as from engine No. 121 928 000 001 = 148.95–149.05 mm.

Dimensions of Piston Pin Bushing

Model	O. D.		I. D.	
	Standard Size	Overhaul Stage	Rough-turning Dimensions	Final Dimensions ¹⁾
180 a, 180 b, 190, 190 b, 190 SL	$\frac{28.048}{28.035}$	$\frac{28.548}{28.535}$	$\frac{24.500}{24.552}$	$\frac{25.007}{25.013}$
180 c, 190 SL ²⁾	$\frac{29.108}{29.070}$	$\frac{29.608}{29.570}$	$\frac{25.705}{25.603}$	$\frac{26.012}{26.018}$
220 and 219, 220 S 1 st Version	$\frac{25.048}{25.035}$	$\frac{25.548}{25.535}$	$\frac{21.500}{21.552}$	$\frac{22.007}{22.013}$
219, 220 S 2 nd Version	$\frac{27.048}{27.035}$	$\frac{27.548}{27.535}$	$\frac{21.500}{21.552}$	$\frac{22.007}{22.013}$
220 SE	$\frac{27.048}{27.035}$	$\frac{27.548}{27.535}$	$\frac{23.500}{23.552}$	$\frac{24.007}{24.013}$

¹⁾ Tolerance subdivisions of final-turned piston pin bushing, refer to page 03-5/7

²⁾ 190 SL as from engine design 121.928.

For model 220 SE the connecting rod eyes are larger and the I. D. and O. D. of the pressed-in bushings are 2 mm larger. For reasons of standardization models 219 and 220 S are now also provided with heavier connecting rods, with the O. D. of the bushings also increased by 2 mm, while the I. D. remains the same.

D. Fitting Pistons, together with Rings, into Cylinders

This work is for models 180 a, 180 b, 180 c, 190 SL, 220 a, 219, 220 S and 220 SE the same as for model 190.

Similar to model 190, models 190 SL, 220 a, 219, 220 S and 220 SE are provided with full-skirt autothermic pistons (so-called slipper pistons) with extended skirt. Models 180 a and 180 b on the other hand have full-skirt autothermic pistons without extended skirt (Fig. 03-5/4).

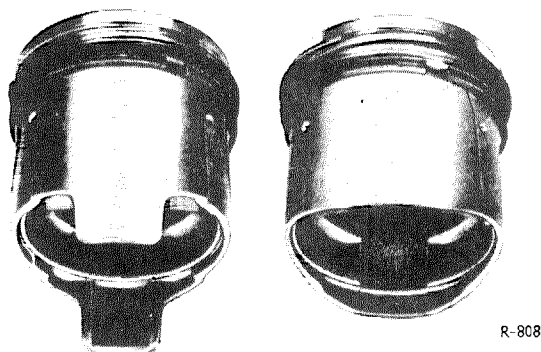


Fig. 03-5/4

Piston for models
180 c, 190, 190 b, 190 SL,
220 a, 219, 220 S and 220 SE

Piston for models
180 a and 180 b