To maintain the proper relationship between the basic bore and the bearing, that is, to maintain the specified radial play, bearing shells of different wall thickness are available. They are marked in red and blue to show the difference. But this does not mean that the dimensions of the bearing shells have been changed. Actually, the already existing production tolerances of the wall thickness were measured and bearings were subdivided into two pertinent color groups. This provides a possibility for obtaining accurate bearing plays.

This is one of the main points of significance for service shops handling a large number of engines, since this arrangement of identifying bearing shells in relation to the crankcase and the crankshaft will save considerable time.

The bearings cannot be supplied already sorted. For this reason a spare parts stock should include an adequate supply of bearing shells for the various engine types so that the correct mating of basic bore and bearing shell can be made in each case.

In workshops with a low number of basic engine overhauls the bearings can be handled as before, if a double supply of bearing shells is not a paying proposition. No attention need then be paid to the color marks. Obviously, the bearing shells must be properly selected to maintain the specified bearing plays.

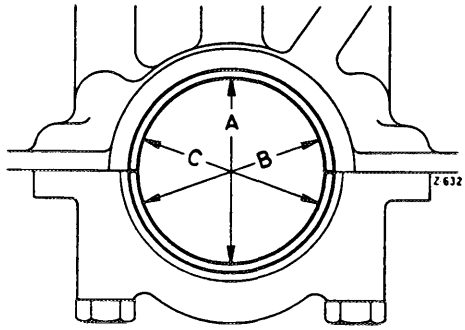
The bearing shells can be obtained in sets and in the usual manner from the spare parts department of the Untertürkheim Plant, Esslingen-Mettingen.

1 Remove and disassemble engine.

2 Carefully clean main and connecting rod bearing caps on supporting surfaces of bearing caps.

3 Unless damaged, put bearing caps back and tighten bolts to specified torque and angle of rotation.

4 Measure main and connecting rod bearing basic bores in three directions with internal measuring instrument (refer to tables).



Note: To check the conicity of the bearing bores, measurements are made at the front and rear in bore. If the permissible out-of-round of 0.01 mm in direction "A" is exceeded, the excess dimension on the bearing cap can be removed by carefully applying fine emery cloth. Place emery cloth on surface plate for this purpose.

5 Select bearings.

Note: If the tolerance for a basic bore is found to be 0 - 10 µ, install a bearing marked blue in pertinent basic bore; if the tolerance is 10 - 20 µ, use a bearing marked in red. (Always start from the largest of the three values measured). To obtain the specified radial play, the excess dimension in the

basic bore is balanced by the varying wall thicknesses of the bearings marked blue or red.

6 Remove bearing caps.

7 Install selected bearings.

8 Position bearing caps and tighten bolts to specified torque and angle of rotation.

Crankshaft Bearing Basic Bore

Model	200 D/8, 220 D/8 200/8, 220/8	230/8, 250/8 250 E/8
Basic bore dia. for crankshaft bearing	74.500 74.519	67.000 67.019
Perm. cut-of-round of basic bore	0.01	
Perm. conicity of basic bore	0.01	

Connecting Rod Bearing Basic Bore

Model	200 D/8, 220 D/8 200/8, 220/8	230/8, 250/8 250 E/8
Basic bore dia. for connecting rod bearings	55.600 55.619	51.600 51.619
Perm. out-of-round and perm. conicity	0.01	

ID of Crankshaft Bearings with Bearing Shell Halves Inserted

Model	Normal	Rep. Stages
200 D/8, 220 D/8 200/8, 220/8	69.99 70.02	from 1 to 4 each smaller by 0.25 mm
230/8	59.99 60.03	
250/8, 250 E/8	60.00 60.04	

ID of Connecting Rod Bearings with Bearing Shell Halves Inserted

Model	Normal	Rep. Stages
200 D/8, 220 D/8 200/8, 220/8	51.99 52.02	from 1 to 4 each smaller by 0.25 mm
230/8, 250/8 250 E/8	47.99 48.02	

Revision: Table bearing play revised.

9 Measure main and connecting rod bearing journals of crankshaft as wel as bearing bores (as described under Item 4) with bearing shells inserted. Compute radial play from difference of the two dimensions.

Note: Values given in tables must be maintained. If the radial play is too high in spite of a correctly selected bearing, and if a blue bearing has been used, a red bearing may be used instead. If the radial play is still not yet attained, use another crankshaft.

Crankshaft, Bearing Journal Dimensions

Model	Crankshaft Bearing Journal		Crankpin	
	Dia. of journal normal dimension	Width of journal on fitted bearing	Dia of pin normal dimension	Width of pin
200 D/8 220 D/8 200/8 220/8	69.965 69.955	34.025 34.000	51.965 51.955	32.000 32.100
230/8		30.000 30.021	47.965 47.955	30.000 30.084
250/8 250 E/8		29.000 29.021	47.965 47.955	28.000 28.084

Note: Repair stages 1 to 4 are smaller by 0.25 mm each.

Bearing Plays

Model	Crankshaft Bearing Play		Connecting Rod Bearing Play		
	radial[1]	axial[2] (fitted bearing)	radial[1]	Axial when new	Axial in case of repairs
200 D/8 220 D/8	0.03 - 0.07	0.10 - 0.24	0.01-0.05[3]	0.12-0.25	up to 0.5
200/8 220/8			0.03-0.07[4]		
230/8 250/8 250 E/8			0.02-0.06	0.11-0.23	

1) For radial play try for medium value
2) In repair cases an axial play up to 0.30 is permitted.
3) Aluminium bearing shells
4) 3-Component bearing shells