Revision: On diesel engines, cylinder bores standard dimension only. Table "Distance from piston head to parting surface of cylinder crankcase" removed (refer to Technical Data Manual).

General Data, Dimensions and Tolerances

Cylinder Bores

Repair stages of cylinder bores	200/8, 200 D/8 220/8, 220 D/8	230/8 Version 2	250/8, 250 E/8 230/8 Version 1
Normal size	87.000 87.022	81.750 81.772	82.000 82.022
Intermediate stage	87.250 87.272	82.000 82.022	82.250 82.272
Rep.-St. 1	87.500 87.522	82.250 82.272	82.500 82.522
Rep.-St. 2	88.000 88.022	82.500 82.522	83.000 83.022
Rep.-St. 3	88.500 88.522	83.000 83.002	-

Note: On Models 200 D/8 and 220 D/8 with cylinder liners only the normal size is permitted.

Machining Tolerances of Cylinder Bores

Perm. out-of-round	0.013
Perm. conicity	0.013
Perm. deviation from vertical to crankshaft axis with reference to cylinder height	0.05
Perm. roughness	0.002-0.004
Undulation	50 % of roughness

Note: Max. wear limit of cylinder bores for repairs: In direction of driving or crosswise 0.10 mm (Diesel engines 0.20 mm), out-of-true and conicity 0.05 mm.

Cylinder Crankcase

Model		200/8, 200 D/8 220/8, 220 D/8	230/8 250/8, 250 E/8
Total height of cylinder crankcase when new		242.8-242.9	213.1-213.2
Minimum height after required stock removal		242.5	212.8
Perm. unevenness of parting surfaces	in longitudianal direction	0.08	0.10
	in crosswise direction	0.05	
Perm. deviation from parallel of upper parting surface in relation to bottom surface in longitudinal direction		0.1	
Perm. roughness of upper parting surface		0.020	
Leak test pressure with air under water in atü		3	

Cylinder Head

Model		200/8 220/8	200 D/8 220 D/8	230/8, 250/8, 250 E/8
Total height of cylinder head when new		84.8-85.0		
Perm. total material removal		0.8 [1)]		
Perm. unevenness of parting surfaces	in longitudinal direction	0.1		
	in crosswise direction	0.0		
Perm. diviation from parallel of upper parting surface in relation to bottom surface in longitudinal direction		0.1		
Leak test pressure with air under water in atü		2		

Note: When refinishing the cylinder head parting surface refinish valve seats in such a manner that the permissible distance between the valve disc and the cylinder head parting surface is available.

1) On Models 200 D/8 and 220 D/8 after refinishing the cylinder head parting surface, the distance "c" of 5.5 to 5.9 mm between the face of the prechamber and the parting surface of the cylinder head must be maintained by adding a pertinent sealing ring (13) (Fig. 01-0/1).

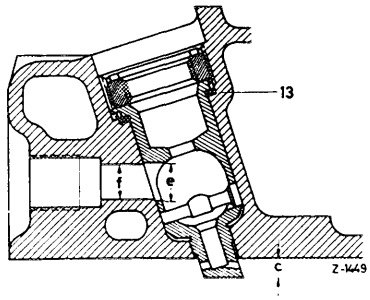

Fig. 01-0/1

Compression Ratio and Compression Chamber

Engines with Normal Compression

Model	Compression ratio	Depth of compression chamber in cylinder head	Total compression chamber with cylinder head installed cc	Compression chamber in cylinder head with valves attached and spark plugs installed cc
200/8	9.0 : 1	17.7-18.3	61.4-64.7	49.3-50.3
220/8			67.8-71.1	57.6-58.6
200 D/8	21 : 1	-	23.5-25.5	-
220 D/8			26.5-28.5 +	
230/8	9.0 : 1	17.85-18.15	47.0-49.7	37.6-38.6
250/8			51.0-53.7	41.6-42.6 +
250 E/8	9.5 : 1		47.96-55.66	38.7-39.7

Engines with Low Compression

200/8	8.0 : 1	17.7-18.3	70.0-74.2	59.1-60.1
220/8	7.8 : 1		80.3-83.1	68.9-69.9
230/8	7.2 : 1	17.85-18.15	61.0-63.7	53.1-54.1 +
250/8 250 E/8	7.7 : 1			51.5-52.5 +

Valve Seat Finishing

Model	200 D/8, 220 D/8	200/8, 220/8, 230/8 250/8; 250 E/8
Valve seat width	Inlet 1.3-1.6	1.25-2.0
	Exhaust 2.6-2.9	
Adjusting angle for machining valve seat	30° +	45° +
Perm. out-of-true of valve seat	0.05	
Backing-off of valve seat	with backing-off cutter at least 0.1	

Perm. depth (-) or height (+) of valve disc in relation to cylinder head parting surface

Model	Minimum distance with new valve seats and new valves		Max. distance with refinished valve seats and reground valves	
	Inlet	Exhaust	Inlet	Exhaust
200/8, 220/8	- 0.5	- 16	-2.0	- 17.5
200 D/8, 220 D/8		- 0.5		- 2.0
230/8, 250/8, 250 E/8		- 15		- 16.5

Note: The bottom edge of the valve seat on the valve should not be permitted to rest on cylinder head, since the edge will work itself into the seat, the valve will start to leak and tend to burn out. For this reason the valve seat should be backed off or relieved at this point.