

# Checking and Reconditioning

Types 220 and 220a

Operation No.
M 4

Proper handling of the special machine tools, measuring instruments, gauges and special equipment described in the following sections is just as important for checking and reconditioning engines as are technical knowledge and experience.

It is therefore recommended to make extensive use of our system of exchanging complete engine assemblies as well as single units, such as cylinder crankcases, crankshafts, transmission assemblies, oil, water and fuel pumps, carburetors, distributors, etc. These units are reconditioned according to advanced production methods and warrant perfect operation.

Proceed with greatest cleanliness and care when assembling and treating reconditioned parts. A small defective spot may cause seizing of the bearings or other damages. It is therefore necessary to check all ground or fine finished parts prior to assembly for any subsequent damage and to recondition the parts, if necessary.

For overhauling the engines, oversizes and undersizes have been fixed for machining the cylinder bores, crankshafts, camshafts and bearings. The data listed in the tables are binding for all our repair shops.

## Cylinder Crankcase

The cylinder bores are rebored and honed to sizes varying from 0.5 to 0.5 mm (0.02 to 0.02"). The largest oversize is 1.5 mm (0.06") above the standard size. The piston play is contained in the piston size. The pistons for the respective cylinder bores will be delivered ready for installation (see table 2).

Crankshaft, camshaft and connecting rod bearing journals are ground to the specified undersizes.

In table 1 a general survey of the various sizes is given.

Table 1

Oversizes  
in mm (in.)

Size	Deviation from standard size			
	Cylinder crankcase	Crankshaft		Camshaft
	Cylinder bore and piston dia.	Crankshaft bearing bore and journal dia.	Connecting rod bearing bore and journal dia.	Camshaft bearing bore and journal dia.
Standard size	0	0	0	0
Intermediate size	—	—	—	0.10 (0.004)
1st oversize	0.50 (0.02)	0.25 (0.01)	0.25 (0.01)	0.25 (0.01)
2nd oversize	1.00 (0.04)	0.50 (0.02)	0.50 (0.02)	—
3rd oversize	1.50 (0.06)	0.75 (0.03)	0.75 (0.03)	—
4th oversize	—	1.00 (0.04)	1.00 (0.04)	—