Data

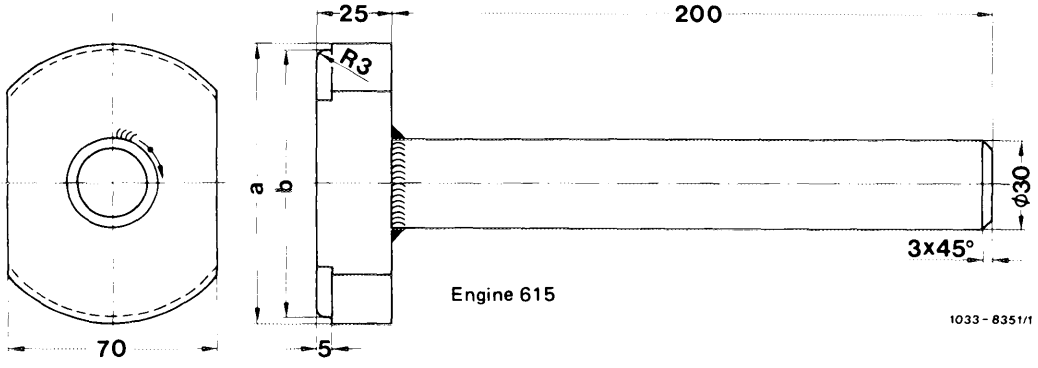
Engines[1]			615		616, 617 1st version		2nd version	
Version		Group No.	Piston dia.	Cylinder bore	Piston dia.	Cylinder bore	Piston dia.	Cylinder bore
Standard	Cylinder 1	0	86.98	87.009–87.018	90.98	91.009–91.018	90.88	90.909–90.918
		1	86.99	87.019–87.028	90.99	91.019–91.028	90.89	90.919–90.928
		2	87.00	87.029–87.038	91.00	91.029–91.038	90.90	90.929–90.938
	Cylinders 2-4 and 5	0	86.98	86.998–87.008	90.98	90.998–91.008	90.88	90.898–90.908
		1	86.99	87.009–87.018	90.99	91.009–91.018	90.89	90.909–90.918
		2	87.00	87.019–87.028	91.00	91.019–91.028	90.90	90.919–90.928
Basic bore in crankcase for cylinder liner				90.000 / 90.035		94.000 / 94.035		

Permissible ovality of basic bore in crankcase	0.1
Permissible ovality and conicity of cylinder bore	0.01
Permissible peak-to-valley height of cylinder bore	0.002–0.004
Permissible waviness of cylinder bore	50 % of peak-to-valley height
Honing angle	25°
Peak-to-valley height of crankcase parting surface	0.006–0.016
Cylinder bore chamfer	see illustration

[1] There are no repair stages for these engines.

Shop-made tool

Drift to force or drive out cylinder liners



Note

Never use any liners other than those approved (see spare parts documentation).

Replacement

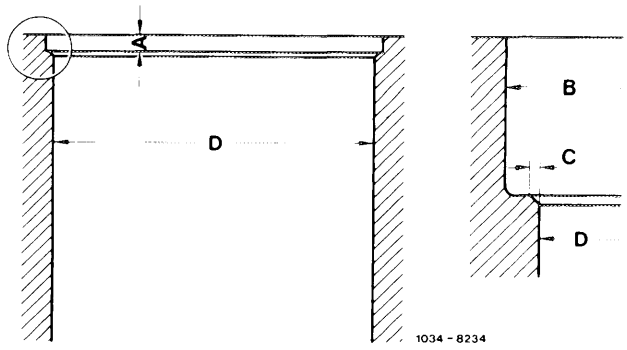
1 Cylinder liners are to be forced out with your own drift and a press or knocked out using a hammer.

2 Thorougly clean basic bore.

3 Measure basic bore (D) in crankcase.

If ovality exceeds 0.01 mm be sure to discard crankcase.

A = 4.3–4.6 mm
B = 92.02–92.08 mm (engine 615)
B = 96.02–96.08 mm (engines 616, 617)
C = 0.25–0.35 mm
D = 94.000–94.035 mm (engines 616, 617)
D = 90.000–90.035 mm (engine 615)



4 Apply new cylinder liners. Place steel plate of appropriate size on liner flange, forcing liner into position with a press or driving home with a hammer.

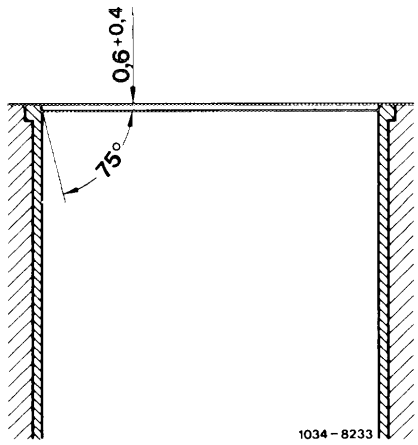
Having fitted liner, continue to apply press for about 7 more seconds (settling pressure), or continue to hammer as the case may be.

5 Projecting liner flange is to be milled or ground off. Remove as little stock as possible from crankcase parting surface. Hold cutter or grinding wheel over center of cylinder bores.

6 Bore cylinder liners in two passes. An allowance of 0.03 mm for honing is to be left in bores.

Caution:
For engine models 616 and 617, cylinder bores of 90.0 mm nominal size only are required in future (2nd version).

7 Chamfer edges of cylinder liners.



8 Hone cylinder bores.

9 Measure cylinder bores and select appropriate pistons (03–316).