

ENGINE 601, 602, 603 (except, 602.982)

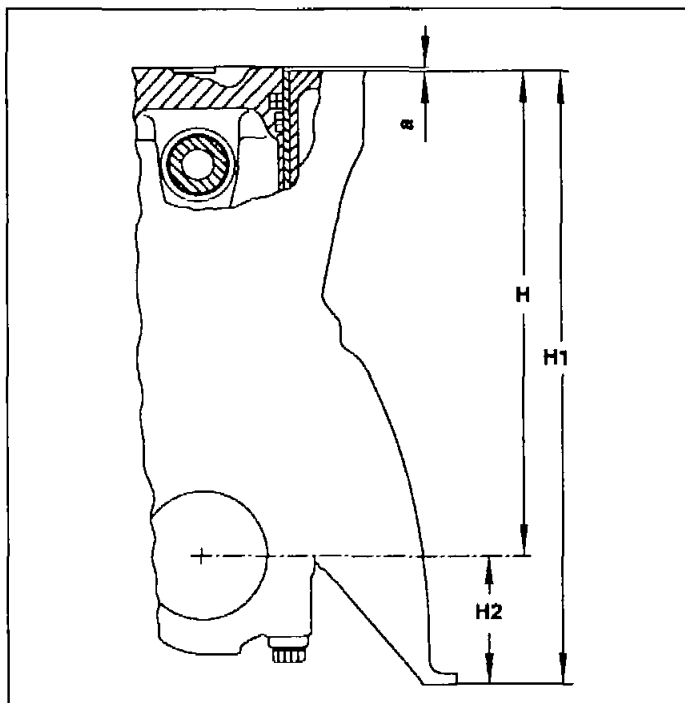
Crankcase

a Piston projection

H Height of crankcase from middle of basic bore

H1 Height of crankcase

H2 Height to middle of basic bearing bore



P01.40-0298-12

	Machining		
i	Only machine crankcase contact surface if cylinder liners have been inserted, porous or damaged points are present or an impermissible variation of the flatness in the longitudinal direction is measured. The stock removal at the cylinder head and the crankcase must together be not more than 0.5 mm. After machining the crankcase contact surface, install a repair cylinder head gasket (1.85 mm thick uncompressed).		
1	Measure piston projection	i The piston projection (a) for a machined crankcase must not be exceeded.	AR03.10-P-7041-01AW AR01.40-P-9133AW/3 BE03.10-P-1001-02B BE03.10-P-1002-02B
2	Remove pistons		AR03.10-P-7021AW
3	Inspect crankcase contact surface for flatness in longitudinal direction	W	BE01.40-P-1005-02D WH58.30-Z-1017-12A
4	Machine contact surface of crankcase together with the timing case cover	P Pay attention to minimum dimensions of the crankcase for the stock removal	BE01.40-P-1002-02D BE01.40-P-1003-02D BE01.40-P-1004-02D BE01.40-P-1005-02D

5	Chamfer cylinder bores		AR01.40-P-9201-01AW AR01.40-P-9133AW/4 BE01.40-P-1006-02D
6	Install pistons		AR03.10-P-7021AW

Test data of crankcase

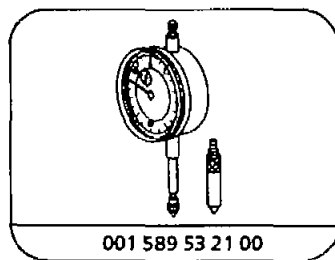
Number	Designation		Engine 601, 602.91/96, 603.91/96
BE01.40-P-1002-02D	Height of crankcase from middle of basic bearing bore (H)	when new	mm 234.95–235.03
		after machining	mm ≥ 234.60
		Fig. see	AR01.40-P-9133AW
BE01.40-P-1003-02D	Height of crankcase (H1)		mm ≥ 299.62
		Fig. see	AR01.40-P-9133AW
BE01.40-P-1004-02D	Height to middle of basic bearing bore (H2)		mm 65.02–64.98
		Fig. see	AR01.40-P-9133AW
BE01.40-P-1005-02D	Crankcase	Peak to valley height (R_z) of top contact surface	mm 0.012
		Waviness (W_t) of top contact surface	mm 0.009–0.012
		Unevenness of contact surface in longitudinal direction	mm 0.03
			mm 0.03
		Unevenness of contact surface in transverse direction	mm 0.05
Variation of parallelism of top contact surface to bottom in longitudinal direction			
BE01.40-P-1006-02D	Chamfer of cylinder bore at crankcase contact surface	mm	0.6-1 \times 75°

Test data of crankcase

Number	Designation		Engine 603.97
BE01.40-P-1002-02D	Height of crankcase from middle of basic bearing bore (H)	when new	mm 234.95-235.03
		after machining	mm ≥ 234.60
		Fig. see	AR01.40-P-9133AW
BE01.40-P-1003-02D	Height of crankcase (H1)		mm ≥ 299.62
		Fig. see	AR01.40-P-9133AW
BE01.40-P-1004-02D	Height of middle of basic bearing bore (H2)		mm 65.02-64.98
		Fig. see	AR01.40-P-9133AW
BE01.40-P-1005-02D	Crankcase	Peak to valley height (R_z) of top contact surface	mm 0.012
		Waviness (W_t) of top contact surface	mm 0.009-0.012
		Unevenness of contact surface in longitudinal direction	mm 0.03
			mm 0.03
		Unevenness of contact surface in transverse direction	mm 0.05
BE01.40-P-1006-02D	Chamfer of cylinder bore at crankcase contact surface		mm $0,6-1 \times 75^\circ$

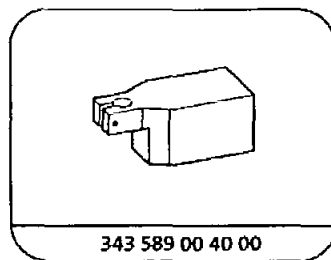
Test data of pistons

Number	Designation		Engine 601, 602 except 602.98, 603
BE03.10-P-1001-02B	Piston projection (a) with new crankcase	mm	0.74-0.96
		Fig. see	AR03.10-P-7041-02AW
BE03.10-P-1002-02B	Piston projection (a) with machined crankcase	mm	0.96-1.16
		Fig. see	AR03.10-P-7041-02AW



001 589 53 21 00

Dial gage



343 589 00 40 00

Dial gage holder

Commercially available tools (see Workshop Equipment Manual)

Number	Designation	Make (e.g.)	Order number
WH58.30-Z-1017-12A	Steel rule, length 500 mm DIN 874/11	Hahn und Kolb Borsigstr. 50 D-70469 Stuttgart	37420

AR03.10-P-7041-01AW	Measuring piston projection	<input checked="" type="checkbox"/> 343 589 00 40 00 Dial gauge holder <input checked="" type="checkbox"/> 001 589 53 21 00 Dial gage	
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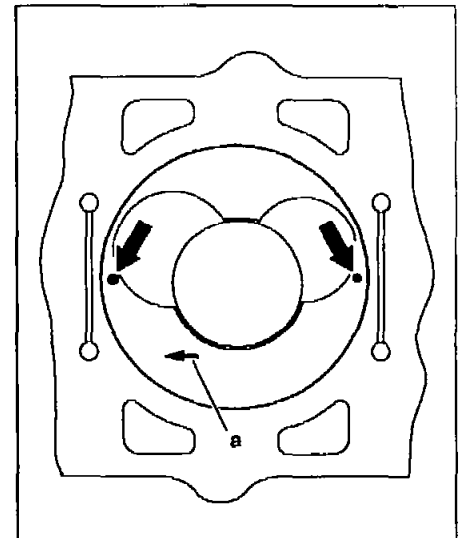
Test data of pistons

Number	Designation	Engine
		601, 602 except 602.982 603
BE03.10-P-1001-02B	Piston projection (a) with new crankcase	mm 0.74-0.96
	Fig. see	AR03.10-P-7041-02AW
BE03.10-P-1002-02B	Piston projection (a) with machined crankcase	mm 0.96-1.16
	Fig. see	AR03.10-P-7041-02AW

I After replacing the pistons/conrod or after machining the crankcase contact surface, it is necessary to measure the piston projection.

Measure projection between piston crown and contact surface of crankcase without the cylinder head gasket fitted. The measurement should be carried out in the direction of the piston pin in order to eliminate the piston rock.

- 1 Position piston at TDC
- 2 Measure piston projection between piston crown and crankcase contact surface at the two measuring points (arrows).



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AR01.40-P-9201-01AW	Chamfering cylinder bores	Engine 601, 602 except 602.982, 603	
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Test data of crankcase

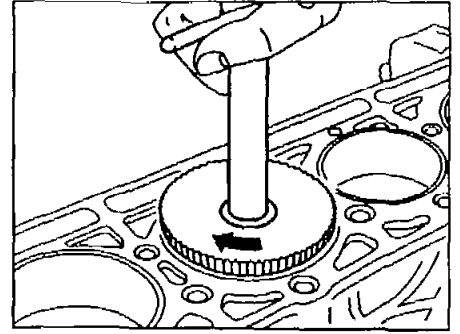
Number	Designation	Engine
		601, 602.91/96, 603.91/96
BE01.40-P-1006-02D	Chamfer of cylinder bore at crankcase contact surface	mm 0.6-1×75°

Test data of crankcase

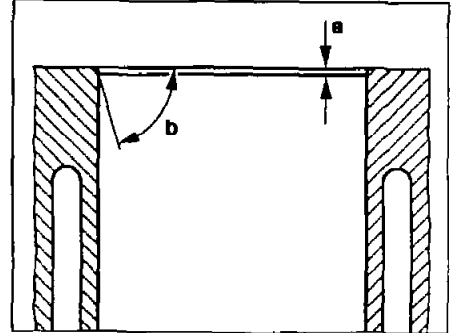
Number	Designation	Engine
		603.97
BE01.40-P-1006-02D	Chamfer of cylinder bore at crankcase contact surface	mm 0.6-1×75°



- 1 After widening or machining, chamfer cylinder bores with an appropriate tool (e.g., hand milling cutter) as shown in the drawing.
- 2 Equalize bottom edge of chamfer with polishing wheel.

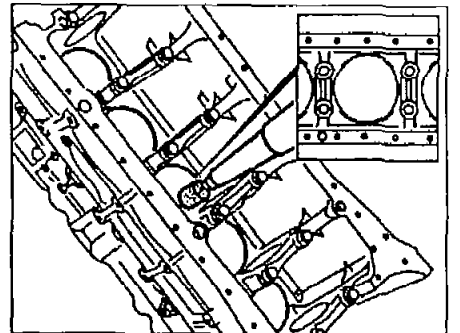


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P01.40-2009-01

- 3 If the cylinder barrel has been machined, additionally debur bottom cylinder runout in the rock area of the pistons with a fine grindstone.



D01.40-0056-01