

J3

AR03.20-P-4355A

Measuring crankshaft and installing in bearings

17.4.96

ENGINE 604, 605, 606 /**Shown on engine 604**

i The thrust washers (22) in the bearing cap each have two retaining lugs as an anti-twist lock.

The oil grooves (arrow) in the thrust washers (22) and (23) must face towards the thrust collars of the crankshaft.

A Crankcase

B Bearing cap

20 Crankshaft

21 Main bearings in bearing caps

22 Thrust washers (axial bearings) in bearing caps

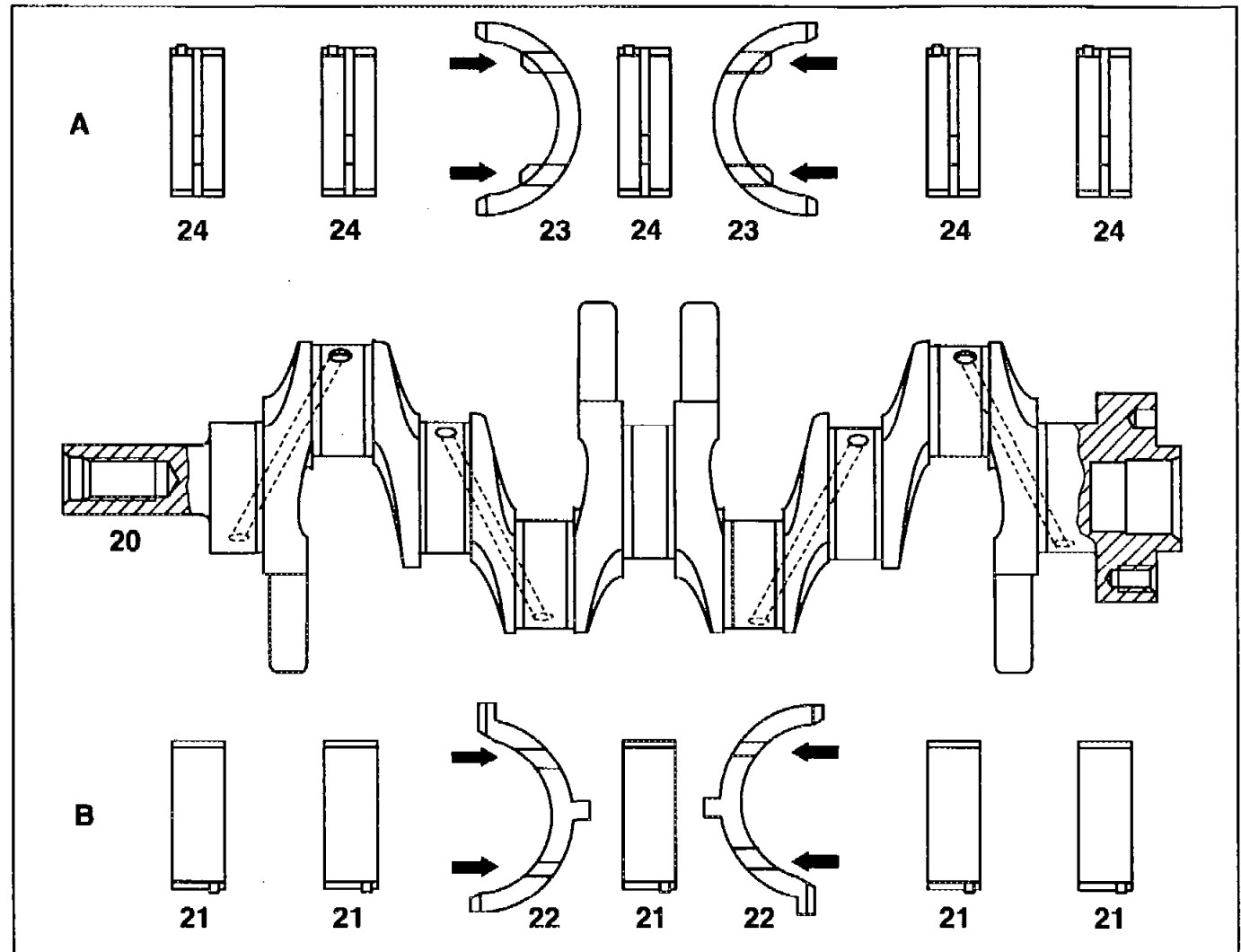
23 Thrust washers (axial bearings) in crankcase

Engine 604 3rd main bearing = fit bearing

Engine 605 4th main bearing = fit bearing

Engine 606 5th main bearing = fit bearing











24 Main bearings in crankcase





	Removing		
1	Remove crankshaft		AR03.20-P-4351B E3
2	Clean engine parts	<p> After bearing damage has occurred, any swarf present has to be removed from the conrod bores of the crankshaft and crankcase oil galleries ↓</p> <p>Clean main oil gallery and seal</p>	AR01.40-P-8498A
	Inspecting		
3	Inspect conrod	<p> After bearing damage has occurred: Replace conrod which has been overheated because of a bearing damage (blue discoloration). The conrod stem must not have any cross scores and notches.</p>	
4	Inspect crankshaft	<p> After bearing damage has occurred: Visual inspection! If damage present ↓</p> <p>inspect crankshaft and recondition</p>	
5	Mount crankshaft radially in bearings	<p>Inspection data of crankshaft clearance</p> <p>Inspection data of crankcase</p> <p>Inspection data of standard size crankshaft bearing shells</p>	<p>AR03.20-P-4355-01A M15</p> <p>BE03.20-P-1001-04A</p> <p>BE01.40-P-1001-02B</p> <p>BE03.20-P-1001-03A</p>



		 Crankshaft bearing caps     It is possible to mount the main bearings of standard size crankshafts radially by assigning the color-coded bearing shells, see ↓ Assigning crankshaft bearing shells	BA03.20-P-1001-01A 001 589 53 21 00 WH58.30-Z-1065-12A WH58.30-Z-1055-12A AR03.20-P-4360-01HA C16
6	Mount crankshaft axially in bearings	Inspection data of crankshaft bearing clearance  Crankshaft bearing caps    	AR03.20-P-4355-02A G16 BE03.20-P-1001-04A BA03.20-P-1001-01A 001 589 53 21 00 363 589 02 21 00 WH58.30-Z-1065-12A WH58.30-Z-1055-12A
7	Install in the reverse order		

**Inspection data of crankcase**

Number	Designation	Engine 604.910/912	
BE01.40-P-1001-02B	Crankshaft bearings	Basic bore diameter	mm 62.500–62.519
		Basic bore width at fit bearing	mm 19.979–20.000
		Permissible out-of-roundness and conicity of basic bore	mm 0.02

Inspection data of crankcase

Number	Designation	Engine 604.915/917, 605.91/96, 606.91/96	
BE01.40-P-1001-02B	Crankshaft bearings	Basic bore diameter	mm 62.500–62.519
		Basic bore width at fit bearing	mm 19.979–20.000
		Permissible out-of-roundness and conicity of basic bore	mm 0.02



Inspection data of crankshaft main bearing shells

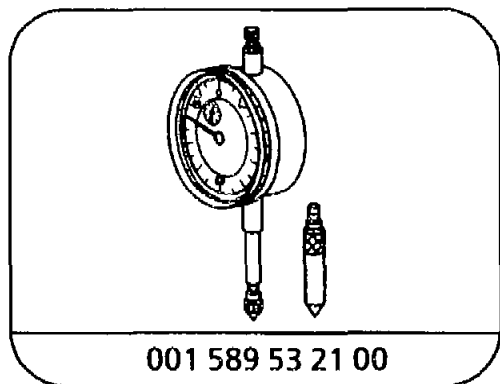
Number	Designation	Engine 604, 605, 606	
BE03.20-P-1001-03A	Main bearing shells standard size for crankcase and bearing cap	Replacement part additional index (color coding blue)	52
	Ø58.00 mm	Bearing shell thickness mm	2.255–2.260
BE03.20-P-1002-03A	Main bearing shells standard size for crankcase and bearing cap	Replacement part additional index (color coding yellow)	54
	Ø58.00 mm	Bearing shell thickness mm	2.260–2.265
BE03.20-P-1003-03A	Main bearing shells standard size for crankcase and bearing cap	Replacement part additional index (color coding red)	56
	Ø58.00 mm	Bearing shell thickness mm	2.265–2.270
BE03.20-P-1004-03A	Main bearing shells standard size for bearing caps	Replacement part additional index (color coding white)	57
	Ø58.00 mm	Bearing shell thickness mm	2.270–2.275
BE03.20-P-1005-03A	Main bearing shells standard size for bearing caps	Replacement part additional index (color coding purple)	58
	Ø58.00 mm	Bearing shell thickness mm	2.275–2.280

**Inspection data of crankshaft bearing clearance**

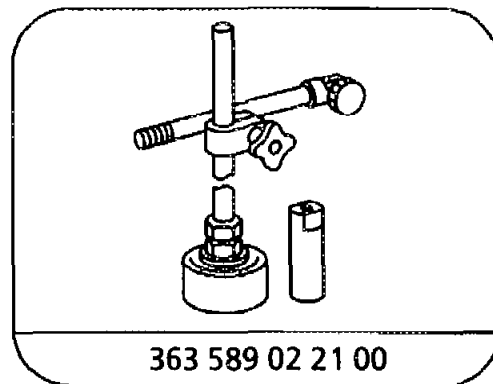
Number	Designation	Engine 604, 605, 606
BE03.20-P-1001-04A	Crankshaft bearing clearance (when new)	Radial when new mm 0.03–0.05
		Radial wear limit mm 0.08
		Axial when new mm 0.10–0.25
		Axial wear limit mm 0.3

Nm Crankshaft bearing caps

Number	Designation	Engine 604, 605, 606
BA03.20-P-1001-01A	Bolt of crankshaft bearing caps M11 1st stage	Nm 55
	2nd stage	4° 90



Dial gage



Dial gage holder

Commercially available tools (see Workshop Equipment Manual)

Number	Designation	Make (e.g.)	Order number
WH58.30-Z-1065-12A	Quick calipers for internal measurements	Hahn und Kolb Borsigstr. 50 70469 Stuttgart	33520 080
WH58.30-Z-1055-12A	Gage for micrometer	Hahn und Kolb Borsigstr. 50 70469 Stuttgart	31414150