

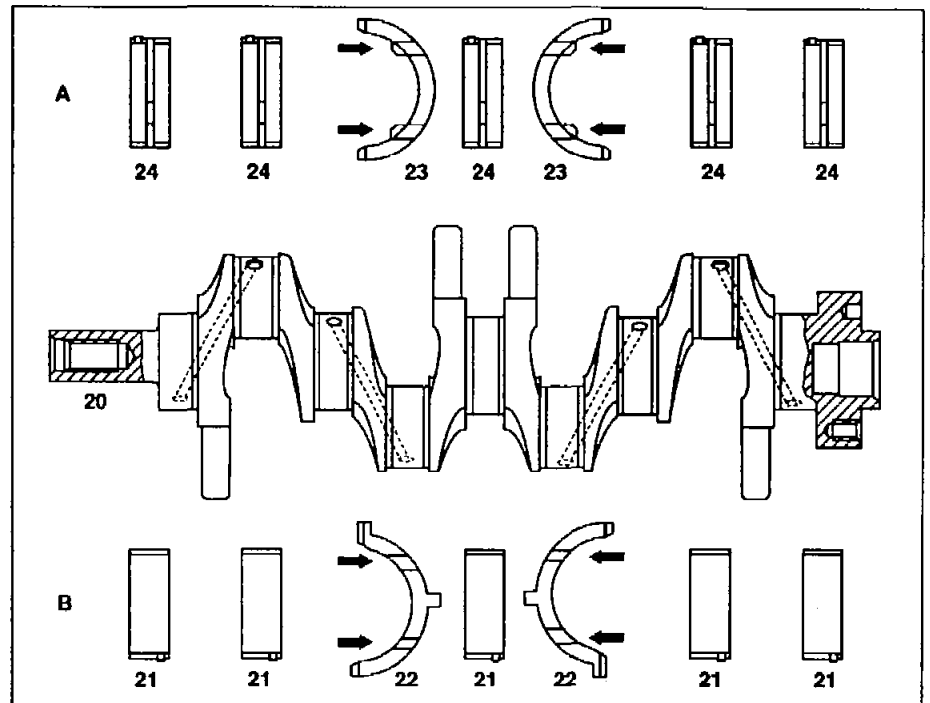
**ENGINE 601, 602, 603 (except , 602.98)**

Shown on engine 601

**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) should point toward the thrust collars of the crankshaft.













- A Crankcase  
 B Bearing cap  
 20 Crankshaft  
 21 Main bearing in bearing cap  
 22 Thrust washers (axial bearings) in the bearing caps  
 23 Thrust washers (axial bearings) in the crankcase  
 Engine 601 3. main bearing = fit bearing  
 Engine 602 4. main bearing = fit bearing  
 Engine 603.5 main bearing = fit bearing  
 24 Main bearing in crankcase



P03.20-0216-06

🔧	Removing		
1	Remove crankshaft	⚠️ Installation: Inspect length of crankshaft bearing cap bolts and replace if necessary (2nd version) ⚠️ Pay attention to fit Bearing diagram	BA03.20-P-1001-01A BA03.20-P-1002-01A AH03.20-P-4351-02A <b>AR03.20-P-4355AW/6</b> AH03.20-P-4351-01AW <b>AR03.20-P-4355AW/6</b>
2	Clean engine parts	⚠️ After bearing damage has occurred, any swarf present has to be removed from the conrod bores, the crankshaft and the crankcase oil galleries ↓ Cleaning main oil gallery, sealing	01-130
🔍	Inspecting		
3	Inspect conrod, repair if necessary	⚠️ After bearing damage has occurred: Replace conrod which has been overheated because of bearing damage (blue discoloration). The conrod stem must not have any cross scores and notches.	AR03.10-P-6111AW <b>AR03.10-P-6111AW</b>
4	Inspect crankshaft	⚠️ After bearing damage has occurred: Visual inspection! If damage present ↓ Inspect crankshaft, repair	03-318



5	Mount crankshaft radially	<p>Test data of main bearing play</p> <p>Test data of conrod bearing play</p> <p>Test data of crankcase</p> <p>Test data of main bearing shells</p> <p>Test data of crankshaft bearing journal <math>\varnothing</math></p> <p>Test data of conrod bearing journal <math>\varnothing</math></p> <p> Crankshaft bearing cap</p> <p> Conrod bolt</p> <p> Conrod bolt</p> <p></p> <p></p> <p></p> <p></p> <p>It is possible to mount the main bearings of standard size crankshafts radially by assigning the color coded bearing shells, see ↓</p> <p>Assigning crankshaft bearing shells</p>	<p>AR03.20-P-4355-01AW</p> <p><b>AR03.20-P-4355AW/8</b></p> <p>BE03.20-P-1001-04C</p> <p>BE03.20-P-1002-04C</p> <p>BE01.40-P-1001-02D</p> <p>BE03.20-P-1001-03B</p> <p>BE03.20-P-1001-02C</p> <p>BE03.20-P-1002-02C</p> <p>BA03.20-P-1001-01A</p> <p>BA03.10-P-1001-01C</p> <p>BA03.10-P-1002-01C</p> <p>001 589 32 21 00</p> <p>WH58.30-Z-1055-12A</p> <p>WH58.30-Z-1065-12A</p> <p>AR03.20-P-4360-01HA</p> <p><b>AR03.20-P-4355AW/12</b></p>
6	Mount crankshaft axially	<p>Test data of axial bearing play</p> <p>Test data of fit bearing journal width</p> <p> Crankshaft bearing cap</p> <p></p> <p></p> <p></p> <p></p>	<p>AR03.20-P-4355-02AW</p> <p><b>AR03.20-P-4355AW/14</b></p> <p>BE03.20-P-1001-04C</p> <p>BE03.20-P-1003-02C</p> <p>BA03.20-P-1001-01A</p> <p>001 589 32 21 00</p> <p>363 589 02 21 00</p> <p>WH58.30-Z-1055-12A</p> <p>WH58.30-Z-1065-12A</p>
7	Install in the reverse order		



Test data of crankshaft main bearing shells

Number	Designation	Engine 601, 602 except 602.982, 603	
BE03.20-P-1001-03B	Main bearing shells standard size for crankcase and bearing cap Ø58.00 mm	Part additional number (color coding blue)	52
		Bearing shell thickness mm	2.255–2.260
BE03.20-P-1002-03B	Main bearing shells standard size for crankcase and bearing cap Ø58.00 mm	Part additional number (color coding yellow)	54
		Bearing shell thickness mm	2.260–2.265
BE03.20-P-1003-03B	Main bearing shells standard size for crankcase and bearing cap Ø58.00 mm	Part additional number (color coding red)	56
		Bearing shell thickness mm	2.265–2.270
BE03.20-P-1004-03B	Main bearing shells standard size for bearing cap Ø58.00 mm	Part additional number (color coding white)	57
		Bearing shell thickness mm	2.270–2.275
BE03.20-P-1005-03B	Main bearing shells standard size for bearing cap Ø58.00 mm	Part additional number (color coding purple)	58
		Bearing shell thickness mm	2.275–2.280
BE03.20-P-1006-03B	Main bearing shell repair size 1 for crankcase and bearing cap Ø57.70 mm	Bearing shell thickness mm	2.37
BE03.20-P-1007-03B	Main bearing shell repair size 2 for crankcase and bearing cap Ø57.40 mm	Bearing shell thickness mm	2.50
BE03.20-P-1008-03B	Main bearing shell repair size 3 for crankcase and bearing cap Ø57.20 mm	Bearing shell thickness mm	2.62
BE03.20-P-1009-03B	Main bearing shell repair size 4 for crankcase and bearing cap Ø56.90 mm	Bearing shell thickness mm	2.75

Test data of crankcase

Number	Designation	Engine 601, 602.91/96, 603.91/96	
BE01.40-P-1001-02D	Crankshaft bearing	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

Test data of crankcase

Number	Designation	Engine 603.97	
BE01.40-P-1001-02D	Crankshaft bearing	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



### Test data of crankshaft bearing play

Number	Designation	Engine 601, 602 except 602.982, 603		
BE03.20-P-1001-04C	Main bearing play	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
BE03.20-P-1002-04C	Conrod bearing play	radial when new	mm	0.020–0.065

### Test data of crankshaft

Number	Designation		Engine 601 up to 06/84	Engine 601 as of 07/84, 602 except 602.98, 603
BE03.20-P-1001-02C	Crankshaft bearing journal $\varnothing$	Standard size	mm	57.940–57.965
		1st repair size	mm	57.700–57.715
		2nd repair size	mm	57.450–57.465
		3rd repair size	mm	57.200–57.215
		4th repair size	mm	56.950–56.965
BE03.20-P-1002-02C	Conrod bearing journal $\varnothing$	Standard size	mm	47.940–47.965
		1st repair size	mm	47.700–47.715
		2nd repair size	mm	47.450–47.465
		3rd repair size	mm	47.200–47.215
		4th repair size	mm	46.950–46.964
BE03.20-P-1003-02C	Fit bearing journal width	Standard size	mm	26.500–26.520
			mm	26.600–26.620
		Repair size	mm	26.700–26.720
			mm	26.900–26.920
			mm	27.000–27.020
			24.500–24.533	24.600–24.633
			24.700–24.733	24.900–24.933
			25.000–25.033	

### Test data of crankshaft bearing cap bolts

Number	Designation	Engine 601, 602 except 602.982, 603		
BE03.20-P-1001-01B	Crankshaft bearing cap bolt (2nd version)	Thread diameter	M	11
		Length (L) when new	mm	62.0
		max. length (L)	mm	63.8
		Fig. see		AR03.20-P-4351-03A

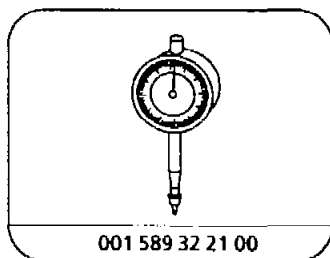


**Nm** Crankshaft bearing cap

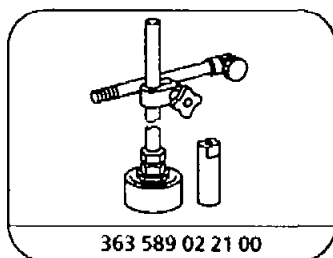
Number	Designation	Engine 601, 602, 603 except 602.98
BA03.20-P-1001-01A	Crankshaft bearing cap bolt M11	1st stage Nm 55
		2nd stage $\Delta^\circ$ 90
BA03.20-P-1002-01A	Crankshaft bearing bolt M12	Nm 90

**Nm** Connecting rod

Number	Designation	Engine 601, 602 except 602.98, 603 except 603.970 up to 11/90	Engine 601, 602 except 602.98, 603 except 603.970 as of 12/90 – 10/92	Engine 601, 602 except 602.98, 603 as of 11/92
BA03.10-P-1001-01C	Conrod bolt (stretch shank)	1st stage new Nm –	45	40
		used Nm –	40	–
	2nd stage $\Delta^\circ$ –	90	90	
	Fig. see	–	AR03.10-P-6111-01AW	AR03.10-P-6111-01AW
BA03.10-P-1002-01C	Conrod bolt (straight stretch shank)	1st stage Nm 30	–	–
		2nd stage $\Delta^\circ$ 90	–	–
	Fig. see	AR03.10-P-6111-01AW		



Dial gage



Dial gage holder

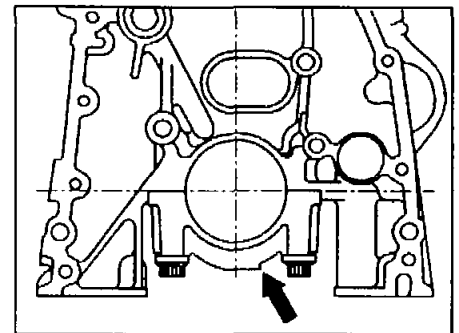
Commercially available tools (see Workshop Equipment Manual)

Number	Designation	Make (e.g.)	Order number
WH58.30-Z-1055-12A	Quick calipers for internal measurements	Hahn und Kolb Borsigstr. 50 D-70469 Stuttgart	33520 080
WH58.30-Z-1065-12A	Gage for micrometer	Hahn und Kolb Borsigstr. 50 70469 Stuttgart	31414 150



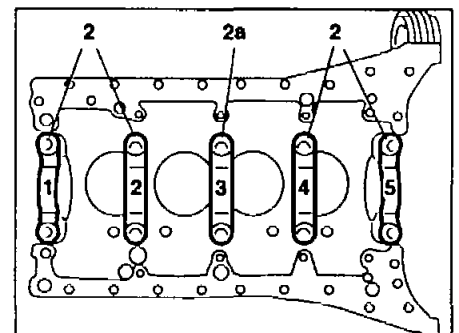
ⓑ The crankshaft bearing caps are machined together with the crankcase and must not be inter-changed.

1 The crankshaft bearing caps are interference-fitted in the side of the crankcase. The fit is off-centered 0.5 mm with the result that it is only possible to install the bearing caps in one position. If the bearing caps are correctly installed, the lug (arrow) on the crankshaft bearing cap is facing toward the left (intake side), when viewed in the direction of travel.



S03.20-3007-01

The crankshaft bearing caps (2, 2a) are consecutively numbered, beginning with the first crankshaft bearing cap at the front.

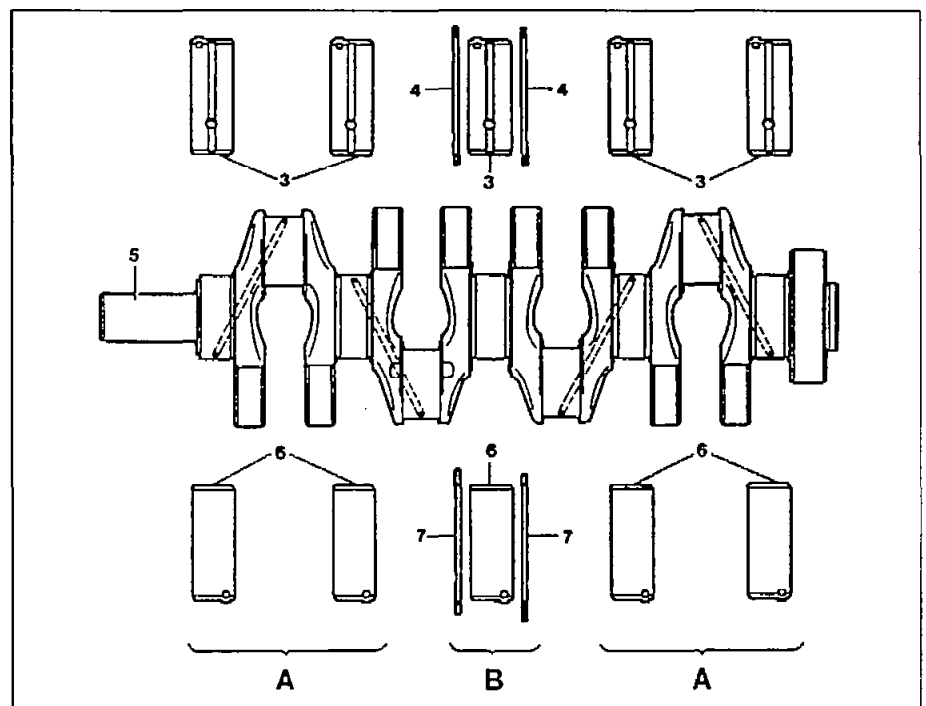


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Shown on engine 111

Engine 601

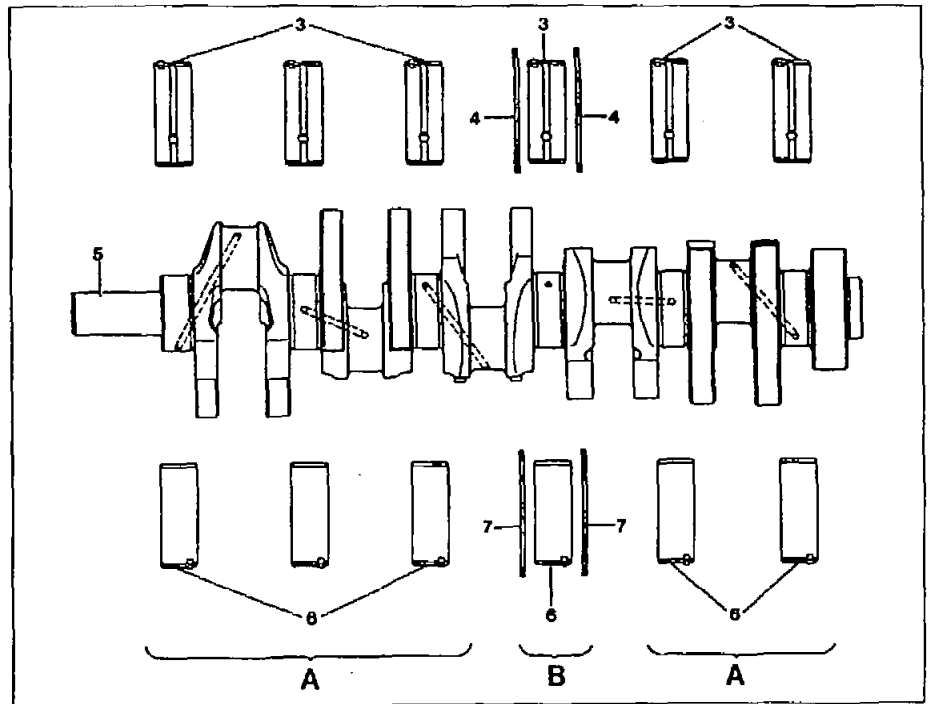
- 3 Crankshaft bearing shells
  - 4 Thrust washers (top)
  - 5 Crankshaft
  - 6 Crankshaft bearing shells (bottom)
  - 7 Thrust washers (bottom)
- A Radial bearings  
 B Radial and axial bearing (fit bearing)



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**Engine 602**

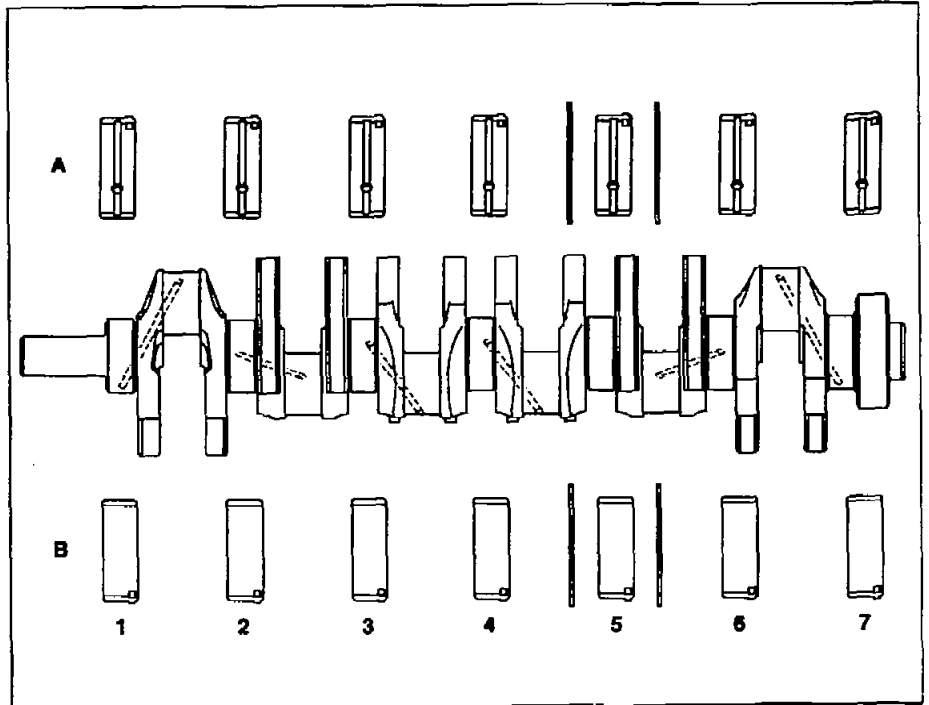
- 3 Crankshaft bearing shells
  - 4 Thrust washers (top)
  - 5 Crankshaft
  - 6 Crankshaft bearing shells (bottom)
  - 7 Thrust washers (bottom)
- A Radial bearings  
 B Radial and axial bearing (fit bearing)




D03.20-0053-06

**Engine 603**

- 5 Fit bearing (axial bearing)
- A Top bearing shells, crankcase  
 B Bottom bearing shells



P03.20-0287-06

AR03.20-P-4355-01AW	Positioning crankshaft in mounts radially	 001 589 32 21 00 Dial gauge
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#### Test data of crankshaft main bearing shells

Number	Designation	Engine 601, 602 except 602.982, 603
BE03.20-P-1001-03B	Main bearing shells standard size for crankcase and bearing cap	Part additional number (color coding blue)
	∅58.00 mm	Bearing shell thickness mm 2.255–2.260
BE03.20-P-1002-03B	Main bearing shells standard size for crankcase and bearing cap	Part additional number (color coding yellow)
	∅58.00 mm	Bearing shell thickness mm 2.260–2.265
BE03.20-P-1003-03B	Main bearing shells standard size for crankcase and bearing cap	Part additional number (color coding red)
	∅58.00 mm	Bearing shell thickness mm 2.265–2.270
BE03.20-P-1004-03B	Main bearing shells standard size for bearing cap	Part additional number (color coding white)
	∅58.00 mm	Bearing shell thickness mm 2.270–2.275
BE03.20-P-1005-03B	Main bearing shells standard size for bearing cap	Part additional number (color coding purple)
	∅58.00 mm	Bearing shell thickness mm 2.275–2.280
BE03.20-P-1006-03B	Main bearing shells repair size 1 for crankcase and bearing cap ∅57.70 mm	Bearing shell thickness mm 2.37
BE03.20-P-1007-03B	Main bearing shells repair size 2 for crankcase and bearing cap ∅57.40 mm	Bearing shell thickness mm 2.50
BE03.20-P-1008-03B	Main bearing shells repair size 3 for crankcase and bearing cap ∅57.20 mm	Bearing shell thickness mm 2.62
BE03.20-P-1009-03B	Main bearing shells repair size 4 for crankcase and bearing cap ∅56.90 mm	Bearing shell thickness mm 2.75

#### Test data of crankcase

Number	Designation	Engine 601, 602.91/96, 603.91/96
BE01.40-P-1001-02D	Crankshaft bearing	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



#### Test data of crankcase

Number	Designation	Engine 603.97	
BE01.40-P-1001-02D	Crankshaft bearing	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

#### Test data of crankshaft bearing play

Number	Designation	Engine 601, 602 except 602.982, 603		
BE03.20-P-1001-04C	Main bearing play	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
BE03.20-P-1002-04C	Crankshaft bearing play	radial when new	mm	0.020–0.065

#### Test data of crankshaft

Number	Designation	Engine 601 up to 06/84		Engine 601 as of 07/84, 602 except 602.98, 603	
BE03.20-P-1001-02C	Crankshaft bearing journal $\varnothing$	Standard size	mm	57.940–57.965	57.940–57.965
		1st repair size	mm	57.700–57.715	57.700–57.715
		2nd repair size	mm	57.450–57.465	57.450–57.465
		3rd repair size	mm	57.200–57.215	57.200–57.215
		4th repair size	mm	56.950–56.965	56.950–56.965
BE03.20-P-1002-02C	Crankshaft bearing journal $\varnothing$	Standard size	mm	47.940–47.965	47.940–47.965
		1st repair size	mm	47.700–47.715	47.700–47.715
		2nd repair size	mm	47.450–47.465	47.450–47.465
		3rd repair size	mm	47.200–47.215	47.200–47.215
		4th repair size	mm	46.950–46.964	46.950–46.964

#### Test data of crankshaft bearing cap bolts

Number	Designation	Engine 601, 602 except 602.982, 603		
BE03.20-P-1001-01B	Crankshaft bearing cap bolt (2nd version)	Thread diameter	M	11
		Length (L) when new	mm	62.0
		max. length (L)	mm	63.8
		Fig. see		AR03.20-P-4351-03A



**mm** Crankshaft bearing cap

Number	Designation	Engine 601, 602, 603 except 602.98
BA03.20-P-1001-01A	Crankshaft bearing cap bolt M11	1st stage Nm 55
		2nd stage $\Delta^\circ$ 90
BA03.20-P-1002-01A	Crankshaft bearing bolt M12	Nm 90

**Nm** Connecting rod

Number	Designation	Engine 601, 602 except 602.98, 603 except 603.970 up to 11/90 603.970 up to 8/90	Engine 601, 602 except 602.98, 603 except 603.970 as of 12/90 – 10/92 603.970 as of 9/90 – 10/92	Engine 601, 602 except 602.98, 603 as of 11/92
BA03.10-P-1001-01C	Conrod bolt (stretch shank)	1st stage new Nm –	45	40
		used Nm –	40	–
		2nd stage $\Delta^\circ$ –	90	90
		Fig. see	AR03.10-P-6111-01AW	AR03.10-P-6111-01AW
BA03.10-P-1002-01C	Conrod bolt (straight stretch shank)	1st stage Nm 30	–	–
		2nd stage $\Delta^\circ$ 90	–	–
		Fig. see	AR03.10-P-6111-01AW	

Commercially available tools (see Workshop Equipment Manual)

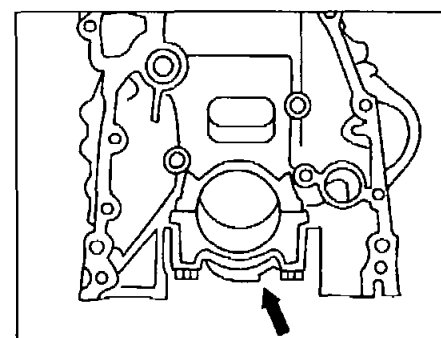
Number	Designation	Make (e.g.)	Order number
WH58.30-Z-1065-12A	Quick calipers for internal measurements	Hahn und Kolb Borsigstr. 50 70469 Stuttgart	33520 080
WH58.30-Z-1055-12A	Gage for micrometer	Hahn und Kolb Borsigstr. 50 70469 Stuttgart	31414 150

Mounting main bearing radially

1 Install crankshaft bearing caps.

**i** The crankshaft bearing caps are fitted at the side into the crankcase. The fit is off-centered 0.5 mm so that the bearing caps can only be installed in one position. If correctly installed, the lug (arrow) on the crankshaft bearing cap is pointing to the left (intake side), when looking into direction of travel.

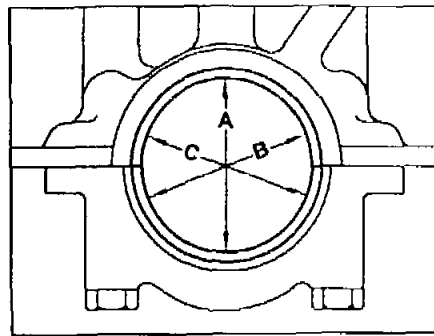
**Ⓢ** The crankshaft bearing caps are machined together with the crankcase and must not be mixed up.



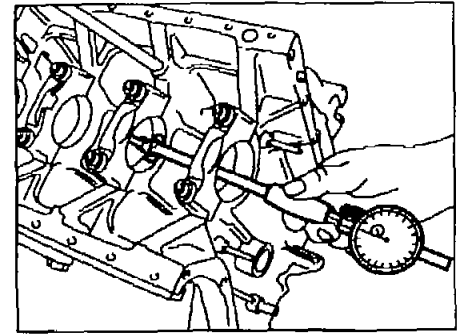
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2 Measure crankshaft bearing bore in direction A, B and C at two levels (roundness).

ⓘ If the measurement obtained for the crankshaft bearing bore exceeds the specified figure or if the bearing bore is out of round, dress bearing cap at its contact surface on a dressing plate to max. 0.02 mm.



P03.20-0247-01



P03.20-0246-01

3 Measure crankshaft bearing bore in direction A, note the measurement obtained.  
Example: 62.51 mm.

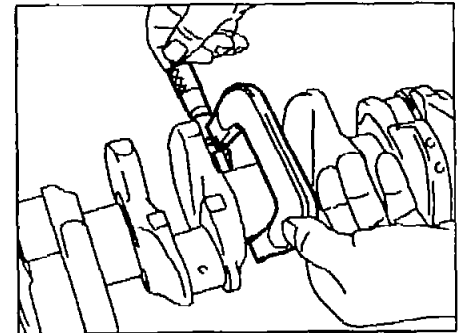
4 Take off crankshaft bearing cap.

5 Measure crankshaft bearing journal Ø. Example: 57.95 mm.

6 Determine bearing shell thickness.

Example:

Bearing bore Ø	62.51 mm
Crankshaft bearing journal Ø	-57.95 mm
	4.55 mm
Radial bearing play	-0.04 mm
Test data → table "Crankshaft bearing play"	4.51 mm : 2
Bearing shell thickness	<u>2.255 mm</u>



P03.20-0248-01

ⓘ Only one bearing shell thickness is available for repair size crankshafts. The crankshaft should be reground in accordance with the specified repair bearing shells + radial play.

7 Assign bearing shells.

Example:

Bearing shell thickness 2.255 mm → table "Test data of crankshaft bearing shells"

Top bearing shell "blue"

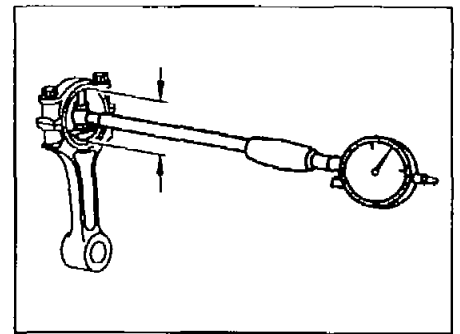
Bottom bearing shell "blue"

ⓘ If the bearing shell thickness differs, install the thicker bearing shell in the bearing cap.



### Mounting conrod bearings radially

- 8 Insert conrod bearing shells into conrod bearing cap, position conrod bearing cap with conrod bearing shells and tighten conrod bolts to the specified torque.
- 9 Measure conrod bearing in direction of conrod and note the measurement obtained.



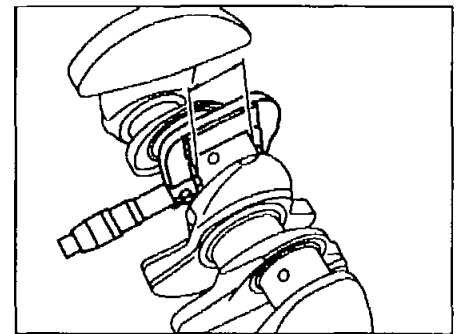
S03.20-3019-01

- 10 Measure conrod bearing journal and determine the conrod bearing radial play.

#### Determining conrod bearing radial play

$$\begin{aligned} & \text{Measurement of } \varnothing \text{ conrod bearing} \\ - & \text{Measurement of } \varnothing \text{ conrod bearing journal} \\ = & \text{Conrod bearing radial play} \end{aligned}$$

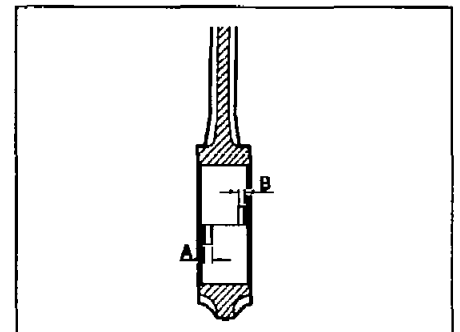
**i** The conrod bearing shells are available only in one bearing shell thickness (color yellow). For repair size crankshafts, the conrod bearing journals should be reground to the existing repair bearing shells + radial play.



S03.20-3020-01

- 11 Unscrew conrod bearing bolts and take off conrod bearing cap.

- 12 **i** The dimension (B) on turbo engines differs from that on naturally aspirated engines in order to ensure the installation position of the conrod bearing shells.



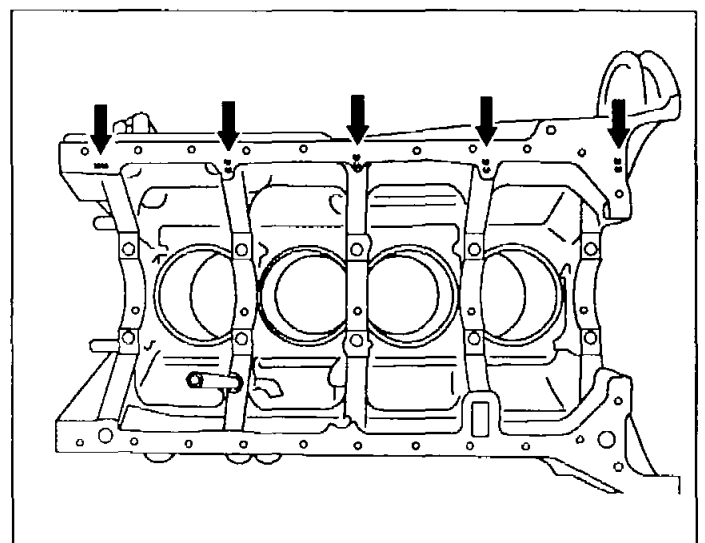
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AR03.20-P-4360-01HA	Assigning crankshaft bearing shells		
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### Assigning bearing shells to crankcase

The bearing shells are marked on the side with the colors blue, yellow and red. Chisel punches are provided next to the main bearing at the bottom contact surface at the crankcase. Assign the bearing shells in accordance with the number of chisel punches.

- 1 Chisel punch indicates the blue bearing shell (part code 52)
- 2 Chisel punches indicate the yellow bearing shell (part code 54)
- 3 Chisel punches indicate the red bearing shell (part code 56)



P03.20-0276-11



### Assigning bearing shells to crankshaft bearing caps

The bearing shells for the crankshaft bearing caps are marked with the colors blue, yellow, red, white and purple.

- blue (part code 52)
- yellow (part code 54)
- red (part code 56)
- white (part code 57)
- purple (part code 58)

The marking assignment for the bearing shells in the crankshaft bearing caps are located at the crankshaft.

The crankshaft is marked as described below.

- A** Colored dots (arrows) at the crankshaft webs.  
 Insert bearing with the same color as the color dot into the bearing cap.  
**Example:** red colored dot on crankshaft = red bearing in bearing cap.

**B** Chisel punches next to main bearings at crankshaft

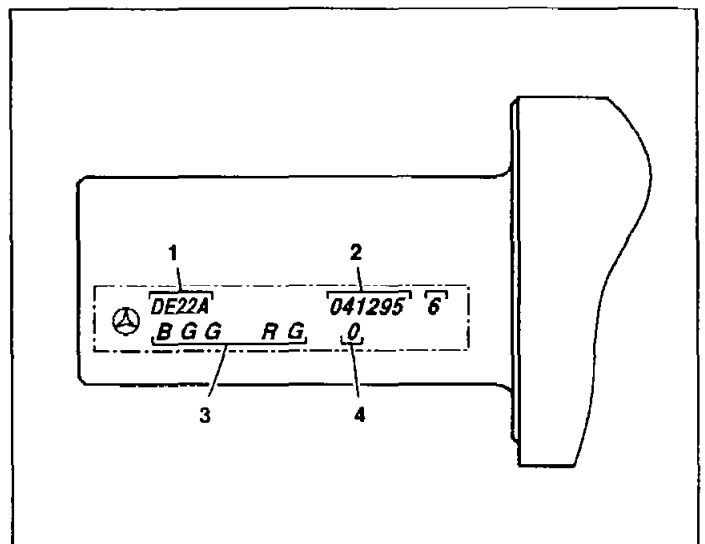
- = for blue bearing shell
- = for yellow bearing shell
- = for red bearing shell
- = for white bearing shell
- = for purple bearing shell

Install bearing shell to match the number of chisel punches.  
**Example:** four chisel punches next to main bearing = white bearing shell.

**C** Letters at front of crankshaft

Assign bearing shells according to the letter.  
**Example:** G = yellow bearing in bearing shell

- 1 Type designation e.g. DE22A
- 2 Date of inspection
- 3 Dimensional tolerances of 5 main bearing colored markings e.g.: B = blue, G = yellow, R = red
- 4 Fit bearing width e.g.: 0 = standard size, 1 = standard size I





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D Actual dimensions at front of crankshaft (dimensional tolerances of bearing journals  $58.000 - 0.035 = 57.965$  actual dimension)

Actual dimension 35 - 39 = blue bearing shell  
 Actual dimension 40 - 44 = yellow bearing shell  
 Actual dimension 45 - 49 = red bearing shell  
 Actual dimension 50 - 54 = white bearing shell  
 Actual dimension 55 - 60 = purple bearing shell

Assign bearing shells to match the actual dimensions.  
 Example: actual dimension 47 = red bearing shell in bearing cap.

AR03.20-P-4355-02AW	Positioning crankshaft in mounts axially	 001 589 53 21 00 Dial gage	
		 363 589 02 21 00 Dial gage holder	

**Test data of crankshaft bearing play**

Number	Designation	Engine 601, 602 except 602.982, 603		
BE03.20-P-1001-04C	Main bearing play	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

**Test data of crankshaft**

Number	Designation		Engine 601 up to 06/84	Engine 601 as of 07/84, 602 except 602.98, 603
BE03.20-P-1003-02C	Fit bearing journal width	Standard size	mm	26.500-26.520
				26.600-26.620
		Repair size	mm	26.700-26.720
			mm	26.900-26.920
			mm	27.000-27.020
			24.500-24.533	
			24.600-24.633	
			24.700-24.733	
			24.900-24.933	
			25.000-25.033	

**Test data of crankshaft bearing cap bolts**

Number	Designation	Engine 601, 602 except 602.982, 603		
BE03.20-P-1001-01B	Crankshaft bearing cap bolt (2nd version)	Thread diameter	M	11
		Length (L) when new	mm	62.0
		max. length (L)	mm	63.8
		Fig. see		AR03.20-P-4351-03A

**Nm** Crankshaft bearing cap

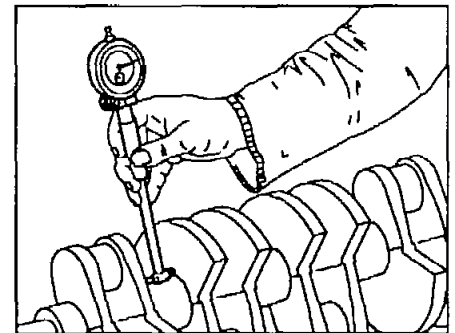
Number	Designation	Engine 601, 602, 603 except 602.98
BA03.20-P-1001-01A	Crankshaft bearing cap bolt	M11 1st stage Nm 55
		2nd stage $\Delta$ ° 90
BA03.20-P-1002-01A	Crankshaft bearing bolt	M12 Nm 90

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	31414 150

- 1 Measure fit bearing width at crankcase and at fit bearing cap and note.
- 2 Measure fit bearing width at crankshaft and note.
- 3 Determine thickness of thrust washer.

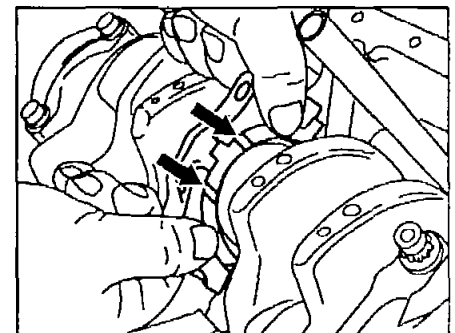
**1** Identically thick thrust washers must always be inserted on one side in the crankcase and in the fit bearing cap.  
Thrust washers are available in thicknesses from 2.15 to 2.40 mm in graduations of 0.05 mm.



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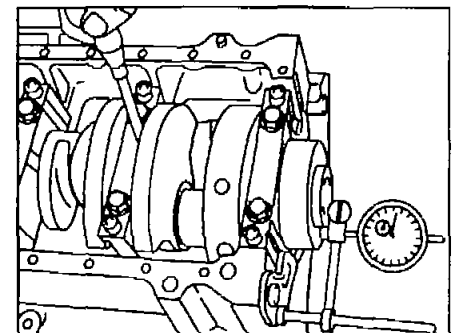
- 4 Install thrust washers.

**1** The oil grooves (arrows) should point toward the contact surface of the crankshaft and be oiled. The anti-twist lock is in the bearing cap at the thrust washer.



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- 5 Measure axial bearing play and adjust, if necessary.



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