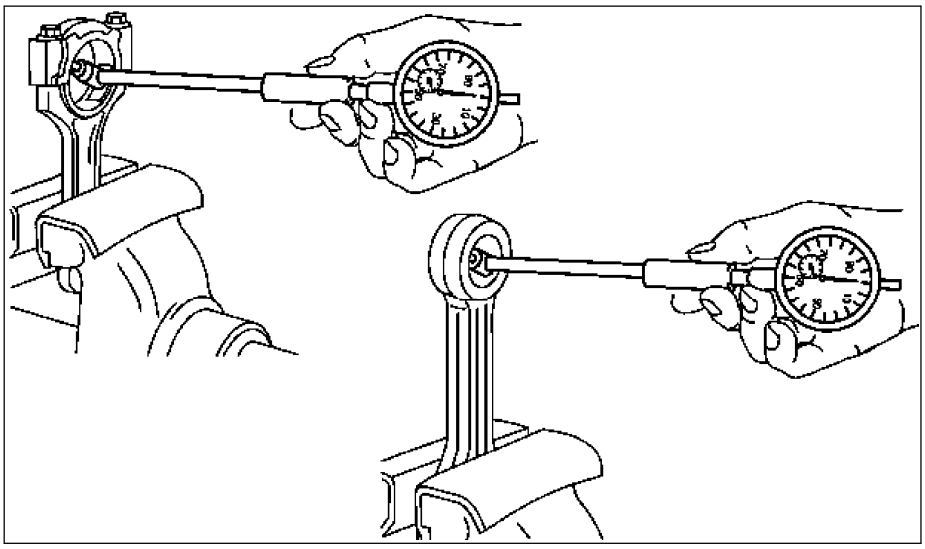
ENGINE 601, 602, 603 (except 602.98)

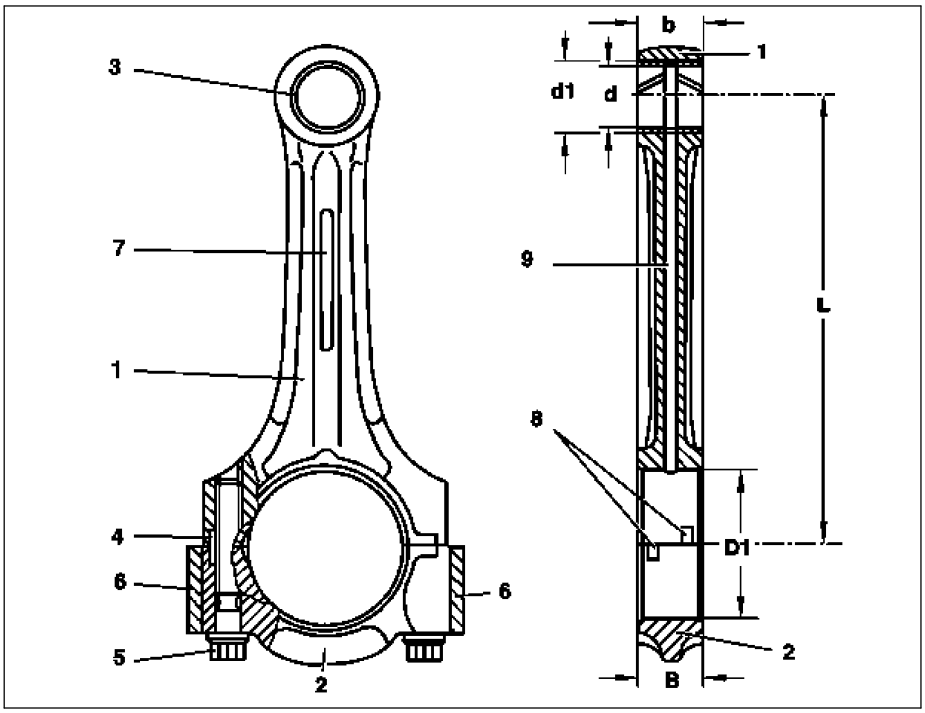


P03.10-0200-05

Connecting rod arrangement on naturally aspirated engines 601, 602, 603

1 Conrod
2 Conrod bearing cap
3 Conrod bush
4 Dowel sleeve
5 Conrod bolt
6 Balancing weight
7 Field for identification
8 Slots for locating conrod bearing shells
9 Oil hole

"b" Width at conrod bush bore
"B" Width at conrod bearing bore
"d" Conrod bush inside dia.
"d1" Conrod bush basic bore dia.
"D1" Conrod bearing shell basic bore dia.
"L" Distance from center of conrod bearing bore to conrod bush bore



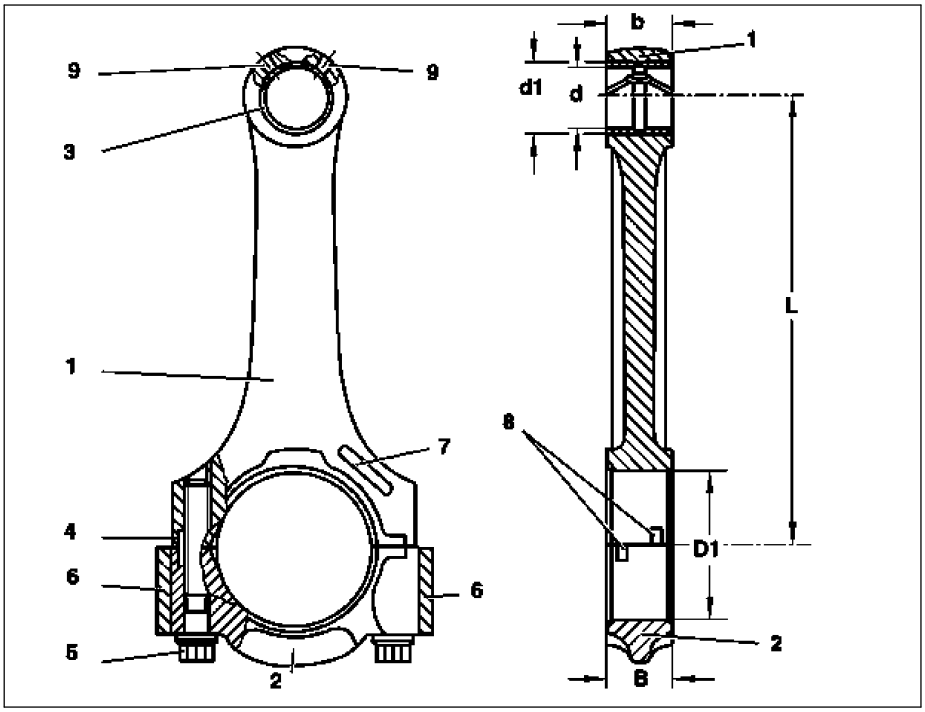
D03.10-0006-06

Conrods shown on engines 602.96, 603.96 and 603.97 (USA) (turbocharged engines)

1 Conrod
2 Conrod bearing cap
3 Conrod bush
4 Dowel sleeve
5 Conrod bolt
6 Balancing weight
7 Field for identification
8 Slots for locating conrod bearing shells
9 Oil spray holes

i Engines 602.96, 603.96 as of 01/88 up to 08/88: 3 holes for piston pin lubrication
Engines 602.96, 603.96 and 603.97 (USA) as of 09/88: 2 holes for piston pin lubrication

"b" Width at conrod bush bore
"B" Width at conrod bearing bore
"d" Conrod bush inside dia.
"d1" Conrod bush basic bore dia.
"D1" Conrod bearing shell basic bore dia.
"L" Distance from center of conrod bearing bore to conrod bush bore



D03.10-0007-06

⛶ ⛶	**Remove, Install**		
1	Remove pistons		AR03.10-P-7021AW
◀	**Inspect**		
2	Check conrods for blue discoloration, cross scores and notches	(!) Never re-use connecting rods that exhibit a bluish discoloration (resulting from bearing damage), with scoring or notches. ↓ Replace conrods and compensate for different conrod weights by milling off the balancing weight.	*BE03.10-P-1005-01C
3	Screw conrod bearing cap to conrod	i The conrod and conrod bearing cap are drawn together and are located with two dowel sleeves. Tighten connecting rod bearing caps to initial torque. ↓ Tighten conrod bolts. Nm Nm	AR03.10-P-6111-02AW *BA03.10-P-1001-01C *BA03.10-P-1002-01C
4	Measure conrod bearing basic bore, repair	If the max. permissible diameter is exceeded, grind down contact surface on conrod bearing cap by max. 0.02 mm. 	*BE03.10-P-1002-01C *001589322100 *WH58.30-Z-1004-12A *WH58.30-Z-1006-12A
5	Check conrod bush inside diameter	 If excessive wear is present ↓ Press in new conrod bush	*BE03.10-P-1006-01C *001589322100 *WH58.30-Z-1003-12A *WH58.30-Z-1005-12A AR03.10-P-6111-03AW *BE03.10-P-1006-01C *BE03.10-P-1007-01C *BE03.10-P-1008-01C *BE03.10-P-1009-01C *BE03.10-P-1010-01C
6	Align conrod	 	AR03.10-P-6111-04AW *WH58.30-Z-1017-05A *WH58.30-Z-1018-05A *BE03.10-P-1003-01C *BE03.10-P-1004-01C *BE03.10-P-1001-01C
7	Install in the reverse order		

Test values for conrod

Number	Designation			Engine 601.921 (USA) up to 09/84	Engine 601.921 (USA) as of 10/84
BE03.10-P-1001-01C	Dimension	Distance from middle of conrod bearing bore up to conrod bush bore (L)	mm	144,97-145,03	144,97-145,03
		Width of conrod at conrod bearing bore (B) and at conrod bush bore (b)	mm	23,974-24,026	21,948-22,000
		Fig. see		AR03.10-P-6111AW	AR03.10-P-6111AW
BE03.10-P-1002-01C		Conrod bearing shell basic bore (D1) dia.	mm	51,600-51,619	51,600-51,614
		Permissible out-of-roundness and conicity of basic bore	mm	0,02	0,02
		Fig. see		AR03.10-P-6111AW	AR03.10-P-6111AW
BE03.10-P-1003-01C		Permissible twist of conrod bearing bore to conrod bush bore over a length of 100 mm	mm	0,1	0,1
BE03.10-P-1004-01C		Permissible variation of axial parallelism of conrod bearing bore to conrod bush bore over a length of 100 mm	mm	0,045	0,045
BE03.10-P-1005-01C		permissible difference in weight of complete conrod of an engine	g	2	2
BE03.10-P-1006-01C		Wristpin bushing inner diameter	mm	27,018-27,024	26,012-26,018
		Fig. see		AR03.10-P-6111AW	AR03.10-P-6111AW
BE03.10-P-1007-01C		Conrod bush outside dia.	mm	29,560-29,600	28,575-28,600
		Fig. see		AR03.10-P-6111AW	AR03.10-P-6111AW
BE03.10-P-1008-01C		Conrod bush basic bore dia. (d1)	mm	29,500-29,521	28,500-28,521
		Fig. see		AR03.10-P-6111AW	AR03.10-P-6111AW
BE03.10-P-1009-01C		Piston pin play in conrod bush	mm	0,007-0,018	0,007-0,018
BE03.10-P-1010-01C		Peak-to-valley height (Rz) of inner conrod bush	µm	5	5

Test values for conrod

Number	Designation			Engine 601 up to 09/84 except 601.921 (USA)	Engine 601 as of 10/84 except 601.921 (USA), engines 602.91, 603.91
BE03.10-P-1001-01C	Dimension	Distance from middle of conrod bearing bore up to conrod bush bore (L)	mm	148,97-149,03	148,97-149,03
		Width of conrod at conrod bearing bore (B) and at conrod bush bore (b)	mm	23,974-24,026	21,948-22,000
		Fig. see		AR03.10-P-6111AW	AR03.10-P-6111AW
BE03.10-P-1002-01C		Conrod bearing shell basic bore (D1) dia.	mm	51,600-51,619	51,600-51,614
		Permissible out-of-roundness and conicity of basic bore	mm	0,02	0,02
		Fig. see		AR03.10-P-6111AW	AR03.10-P-6111AW
BE03.10-P-1003-01C		Permissible twist of conrod bearing bore to conrod bush bore over a length of 100 mm	mm	0,1	0,1
BE03.10-P-1004-01C		Permissible variation of axial parallelism of conrod bearing bore to conrod bush bore over a length of 100 mm	mm	0,045	0,045
BE03.10-P-1005-01C		permissible difference in weight of complete conrod of an engine	g	2	2

BE03.10-P-1006-01C		Wristpin bushing inner diameter	mm	27,018-27,024	26,012-26,018
		Fig. see		AR03.10-P-6111AW	AR03.10-P-6111AW
BE03.10-P-1007-01C		Conrod bush outside dia.	mm	29,560-29,600	28,575-28,600
BE03.10-P-1008-01C		Conrod bush basic bore dia. (d1)	mm	29,500-29,521	28,500-28,521
		Fig. see		AR03.10-P-6111AW	AR03.10-P-6111AW
BE03.10-P-1009-01C		Piston pin play in conrod bush	mm	0,007-0,018	0,007-0,018
BE03.10-P-1010-01C		Peak-to-valley height (Rz) of inner conrod bush	µm	5	5

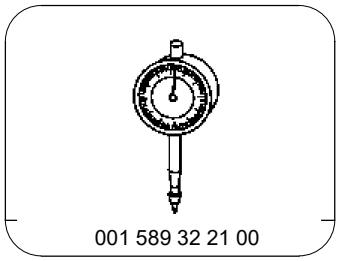
Test values for conrod

Number	Designation			Engine 602.96, 603.96	Engine 603.97
BE03.10-P-1001-01C	Dimension	Distance from middle of conrod bearing bore up to conrod bush bore (L)	mm	148,97-149,03	144,97-145,03
		Width of conrod at conrod bearing bore (B) and at conrod bush bore (b)	mm	21,948-22,000	21,948-22,000
		Fig. see		AR03.10-P-6111AW	AR03.10-P-6111AW
BE03.10-P-1002-01C		Conrod bearing shell basic bore (D1) dia.	mm	51,600-51,619	51,600-51,614
		Permissible out-of-roundness and conicity of basic bore	mm	0,02	0,02
		Fig. see		AR03.10-P-6111AW	AR03.10-P-6111AW
BE03.10-P-1003-01C		Permissible twist of conrod bearing bore to conrod bush bore over a length of 100 mm	mm	0,1	0,1
BE03.10-P-1004-01C		Permissible variation of axial parallelism of conrod bearing bore to conrod bush bore over a length of 100 mm	mm	0,045	0,045
BE03.10-P-1005-01C		permissible difference in weight of complete conrod of an engine	g	2	2
BE03.10-P-1006-01C		Wristpin bushing inner diameter	mm	28,012-28,024	28,018-28,024
		Fig. see		AR03.10-P-6111AW	AR03.10-P-6111AW
BE03.10-P-1007-01C		Conrod bush outside dia.	mm	30,575-30,600	30,575-30,600
		Fig. see		AR03.10-P-6111AW	AR03.10-P-6111AW
BE03.10-P-1008-01C		Conrod bush basic bore dia. (d1)	mm	30,500-30,521	60,500-30,525
		Fig. see		AR03.10-P-6111AW	AR03.10-P-6111AW
BE03.10-P-1009-01C		Piston pin play in conrod bush	mm	0,007-0,018	0,007-0,018
BE03.10-P-1010-01C		Peak-to-valley height (R_z) of inner conrod bush	µm	5	5

Nm Conrod

Number	Designation	Engines 601, 602 except 602.98, 603 except 603.970 up to 11/90 603.970 up to 8/90	Engines 601, 602 except 602.98, 603 except 603.970 as of 12/90 - 10/92 603.970 as of 9/90 - 10/92	Engines 601, 602 except 602.98, 603 as of 11/92

BA03.10-P-1001-01C	Conrod screw (stretch shank)	1st stage	new	NM	-	45	40
			used	NM	-	40	-
		2nd stage		∡°	-	90	90
		Fig. see			-	AR03.10-P-6111-01AW	AR03.10-P-6111-01AW
BA03.10-P-1002-01C	Conrod bolt (stretch bolt)	1st stage		NM	30	-	-
		2nd stage		∡°	90	-	-
		Fig. see			AR03.10-P-6111-01AW		



001 589 32 21 00

Dial gage

Commercially available tools (see Workshop Equipment Manual)

Number	Designation	Make (e.g.) g.)	Order number
WH58.30-Z-1017-05A	Conrod inspection equipment	Model BC 501 Make KWT D-63128 Dietzenbach	
WH58.30-Z-1018-05A	Conrod aligning tool	Model BC 503 Make KWT D-63128 Dietzenbach	
WH58.30-Z-1003-12A	Quick calipers for internal measurements, ∅ 20 - 40 mm	Hahn und Kolb Borsigstr. 50 D-70469 Stuttgart www.hahn-kolb.de	
WH58.30-Z-1004-12A	Quick calipers for internal measurements, ∅ 40 - 60 mm	Hahn und Kolb Borsigstr. 50 D-70469 Stuttgart www.hahn-kolb.de	
WH58.30-Z-1005-12A	External micrometer 0 - 25 mm (included in set 31414 150)	Hahn und Kolb Borsigstr. 50 D-70469 Stuttgart www.hahn-kolb.de	31366 005
WH58.30-Z-1006-12A	External micrometer 50 - 75 mm (included in set 31414 150)	Hahn und Kolb Borsigstr. 50 D-70469 Stuttgart www.hahn-kolb.de	31366 050