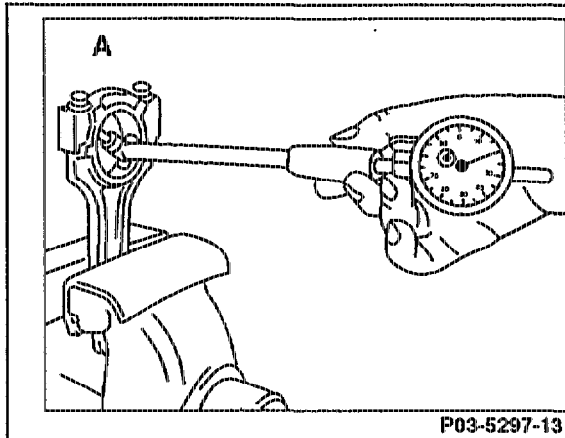


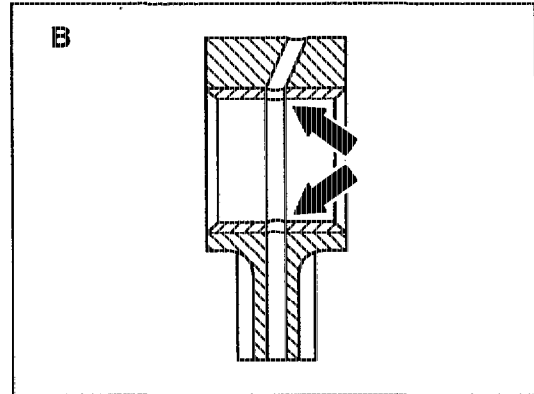
03-3130 Servicing, aligning and mounting conrod bearings

Preceding work:
Conrod removed

Operation no. of operation texts and work units or standard texts
and flat rates:
03-6111 - 03-6401



P03-5297-13

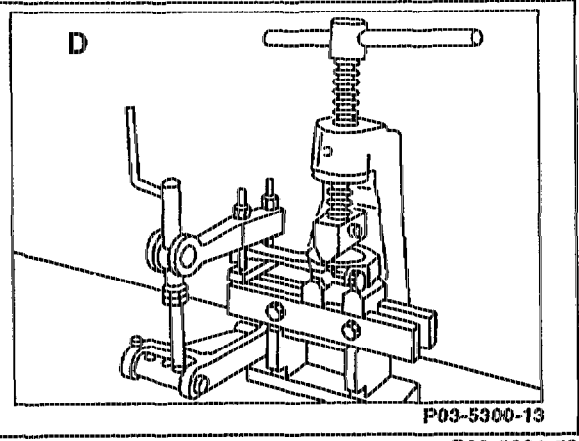
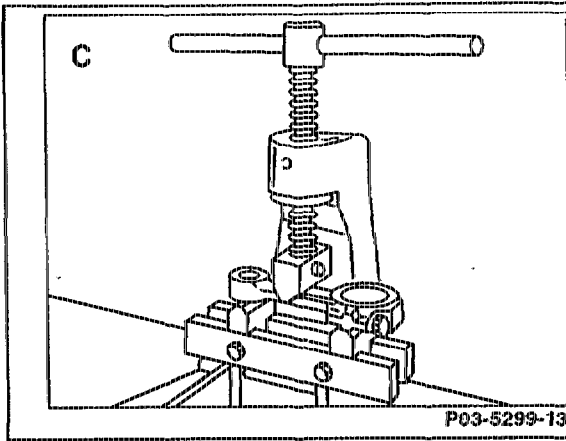


P03-5298-13

P03-5293-53

Repairing

Conrod bolts	check (03-3100).
Conrod bearing caps	install; oil thread and bolt head contact surface for this step and tighten to 40 Nm.
Conrod bearing basic bore	measure (Fig. A).
New conrod bush	Note If basic bore exceeds the value of 51.619 mm or is conical, dress contact surface of conrod bearing cap to max. 0.02 mm. Machine conrod cap together with conrod. press in (Fig. B).
Conrod bush	Note Press in new conrod bush so that the oil drillings are aligned (arrows). Insertion pressure 2450 N.
Contact surfaces of conrod at side	turn or ream. dress on a dressing plate.

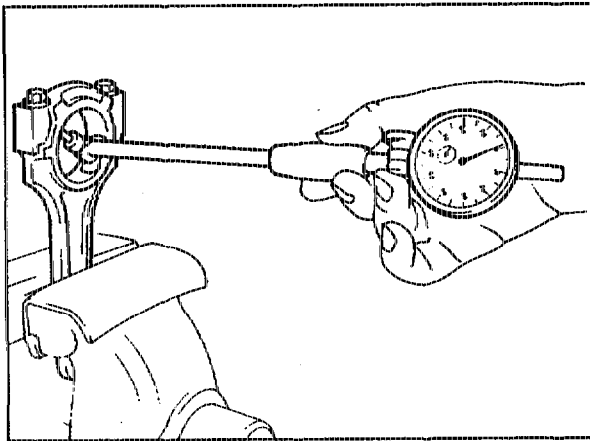


P03-5294-53

Aligning

- Conrod
- Conrod
- Parallelism of conrod bearing bore to conrod bush bore
- Twist of conrod bearing bore to conrod bush bore

- check with bearing shells and piston pins installed with conrod inspection equipment.
- align with conrod aligning equipment.
- align (Fig. C).
- align (Fig. D).



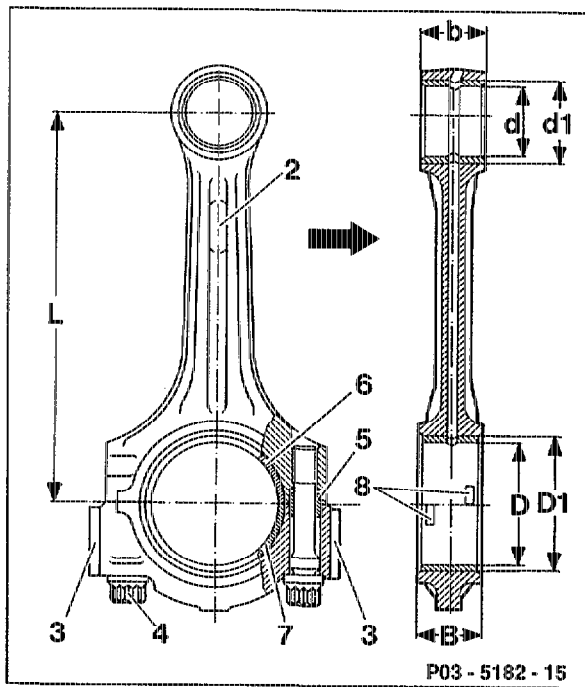
P03-2010-13

Fitting new bearings

- Conrod basic bore
- Conrod bearing journal \varnothing
- Conrod radial bearing play
- Conrod bearing shell

- measure, note.
- measure, note.
- calculate.
- match.

Conrod install on pistons (03-3160).



- 2 Identification
- 3 Bottom balancing weight
- 4 M9 x 1 conrod bolt
- 5 Dowel sleeve

- 6 Top conrod bearing shell
- 7 Bottom conrod bearing shell
- 8 Bearing shell locating lugs
- Arrow Direction of travel

Data

Engine	104.94	104.98/99
Center of conrod bearing bore to center of conrod bush bore (L)	148.995 – 149.005	144.995 – 145.005
Width of conrod at conrod bearing bore (B)	21.948 – 22.000	
Width of conrod at conrod bush bore (b)	21.948 – 22.000	
Conrod bearing shell basic bore (D1)	51.600 – 51.619	
Conrod bush basic bore (d1)	24.500 – 24.571	

Data

Conrod bush inner \varnothing (d)	22.007 – 22.013
Piston pin play in conrod bush	0.013 – 0.018
Peak-to-valley height of conrod bush on inside	0.005
Permissible twist of conrod bearing bore to conrod bush bore	0.15
Permissible difference in axial parallelism of conrod bearing bore to conrod bush bore	0.07
Permissible difference in concentricity of conrod bearing bore	0.01
Permissible difference in weight of complete conrod within an engine	4 g

Crankshaft Identification and machining dimensions

Crankshaft	Size	Color coding on crankshaft web 2)	Machining dimensions 1)
Conrod bearing journal \varnothing	Standard	none	47.955 – 47.965
	Standard 1 2)	orange	47.945 – 47.955
	Standard 2 2)	blue	47.935 – 47.945
	1st repair size	--	47.700 – 47.715
	2nd repair size	--	47.450 – 47.465
	3rd repair size	--	47.200 – 47.215
	4th repair size	--	46.950 – 46.965
Conrod bearing journal width		Standard	27.958 – 28.042
		Repair size up to	28.300

1) The crankshaft should be machined so as to maintain the specified bearing play with the existing bearing shells.

2) Up to 12/93

Test data

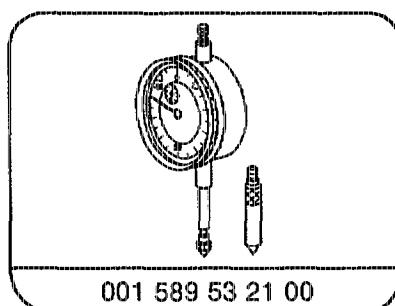
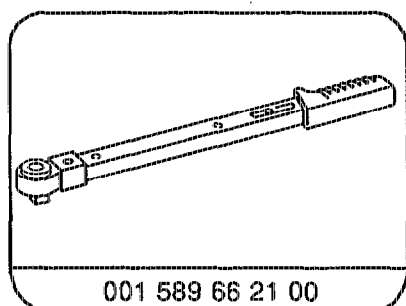
Conrod bearing play	radial	0.02 – 0.04
	axial	piston-guided

Conrod bearing shells

Color coding	red	yellow	blue
Wall thickness in mm			
Standard	1.806 – 1.810	1.810 – 1.814	1.814 – 1.818
Standard 1 1)	1.811 – 1.815	1.815 – 1.819	1.819 – 1.823
Standard 2 1)	1.816 – 1.820	1.820 – 1.824	1.824 – 1.828
1st repair size	–	1.995 – 1.999	–
2nd repair size	–	2.060 – 2.064	–
3rd repair size	–	2.185 – 2.189	–
4th repair size	–	2.310 – 2.314	–

1) Standard 1 and standard 2: wall thicknesses are not supplied as replacement parts.

Special tools



Commercially available tools

Conrod tester	e. g. Model BC 501 KWT 63128 Dietzenbach
Conrod aligning tool	e.g. Model BC 503 KWT 63128 Dietzenbach
Quick-caliper for internal measurements	
∅ 20 – 40 mm	
∅ 40 – 60 mm	
Micrometer	
0 – 25 mm	
50 – 75 mm	

Notes

Conrod and conrod caps are marked together (arrow).

Conrods which have been overheated because of bearing damage (blue discolouration) must not be re-used.

The conrod shaft must not have any cross scores and notches.

Conrods with machined conrod bush are supplied as a replacement part.

The conrod and the conrod cap are located relative to each other with fit sleeves.

Pay attention to difference in weight when replacing the conrod.

