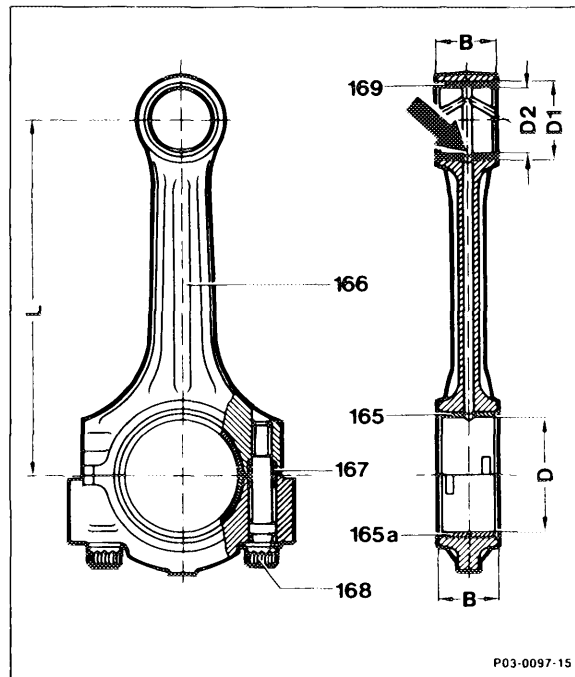


03-313 Reconditioning and squaring connecting rods

Preliminary jobs:
Pistons removed (03-316).



Connecting rod bolts (168) and sleeves (167)	oil.
Connecting rod bearing cap	attach without connecting rod bearing shells (165, 165a), remove, 30 Nm (item 1).
Basic bore (D)	measure, max. 51.619 mm, if dimension is exceeded, machine bearing cap down max. 0.02 mm (item 2).
Connecting rod bushing (169)	press in, approx. 2450 N and machine or ream out (items 3, 4).
Connecting rod (166)	touch up lateral thrust surfaces (item 5).
Connecting rod (166)	square with connecting rod tester (items 6 - 8).

Caution!

The connecting rod bearing bore and connecting rod bushing bore must be parallel to one another.

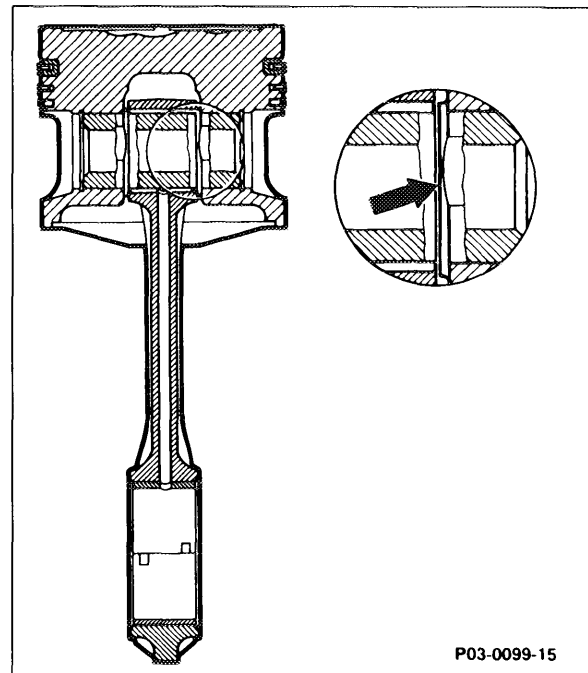
Data

	Engine 602 603.96	<u>148.97</u>
Center of connecting rod bearing bore to center of connecting rod bushing bore (L)		149.03
	Engine 603.970	<u>144.97</u>
		145.03
	1st version	<u>23.974</u>
Width of connecting rod (B) at connecting rod bearing bore and connecting rod bushing bore		24.026
	2nd version	<u>22.000</u>
		21.948
Basic bore for connecting rod bearing shells		<u>51.600</u>
		51.619
	1st version	<u>29.500</u>
		29.521
	2nd version	<u>28.500</u>
Basic bore for connecting rod bushing (D 1)	Engine 602.91	28.521
	Engine 603.96	<u>30.500</u>
	602.96	30.525
	1st version	<u>29.560</u>
		29.600
	2nd version	<u>28.575</u>
Connecting rod bushing \varnothing		28.600
	Engine 603.96	<u>30.575</u>
		30.600
	1st version	<u>27.018</u>
		27.024
Connecting rod bushing \varnothing (D 2)	Engine 602.91	
	2nd version	<u>26.000</u>
		26.000
	Engines 602.96, 603.96/97	<u>28.000</u>
		28.000
Roughness of connecting rod bushing, inside		0.005
Permissible offset of connecting rod bearing bore in relation to connecting rod bushing bore with reference to 100 mm length		0.1
Permissible deviation of parallel axis alignment: Connecting rod bearing bore in relation to connecting rod bushing bore with reference to 100 mm length		0.045
Permissible difference in weight within engine		4 g

Note on connecting rod versions

The axial play of the connecting rods is limited by the piston pin eye (piston-guided connecting rods). For this purpose appropriate thrust surfaces (arrow) are cast on the piston pin eye.

Connecting rods for engines 602.96, 603.96/97 are not bored hollow.

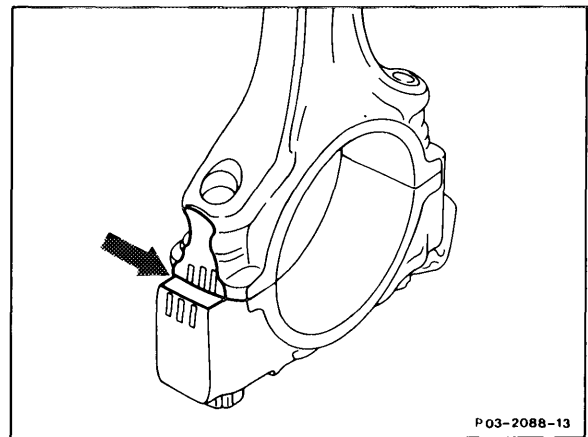


Overheated connecting rods

Connecting rods which have been overheated due to a damaged bearing (blue discoloration) cannot be reused.

Matching connecting rods and connecting rod bearing caps are marked (arrow). The connecting rod shafts should not have any transverse score marks or notches.

Replacement connecting rods are supplied with machined connecting rod bushings.



Connecting rod width

Connecting rod width (B) on engines 602 and 603 from start of production is 22 mm.

Engines 602.91, 603.91 starting 11/85

The connecting rods are heat treated before machining to reduce the tendency to warp.

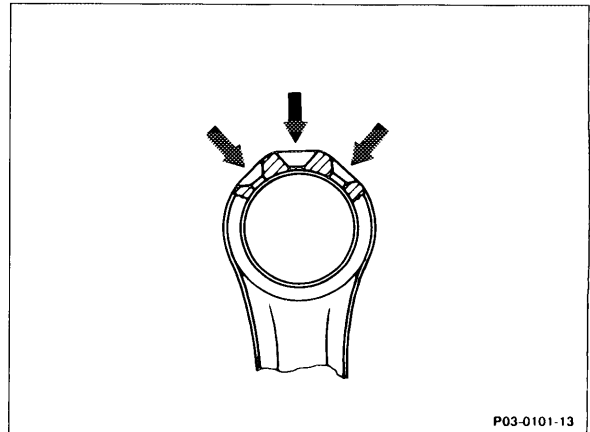
Production beakpoint: 11/85

Model	Engine	Engine end No.		Vehicle ident end No.	
		manual transmission	automatic transmission	A	F
201.126	602.911	009490	002235	268999	175981

* not registered

Engine 603.960 starting 01/88

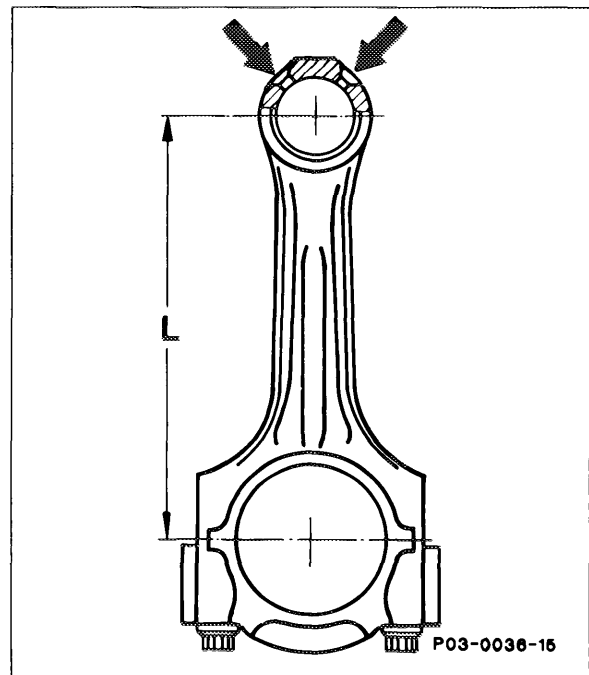
On these engines there are 3 bores (arrows) with a dia. of 4.5 mm in the connecting rod eye for lubrication of the piston pin.



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Engines 602.961, 602.962, 603.970 and 602.96, 603.96 starting 09/88

On these engines the connecting rod eye is now equipped with 2 bores (arrows) with a dia. of 4.5 mm.



Engines 602.91, 603.91

Shaft cross section of piston rods reduced (standardized with M 102) and material changed 49 Mn VS 3 (was CK 45 V 7 50).

Production breakpoint: 09 - 12/86

Model	Engine	Engine end No.		Vehicle ident end No.	
		manual transmission	automatic transmission	A	F
201.126	602.911	028194 - 034399	006787 - 008285	*	*

* not registered

Engine 602.91

Shaft cross section was changed back, material 49 Mn VS 3.

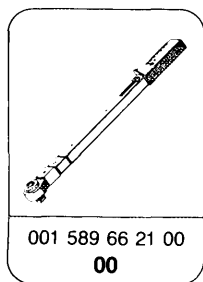
Production breakpoint: 12/86

Model	Engine	Engine end No.		Vehicle ident end No.	
		manual transmission	automatic transmission	A	F
201.126	602.911	034400	008286	*	*

* not registered

Tightening torque

Connecting rod bolts	Initial tightening torque	30 Nm
	Rotation angle	90 – 100°

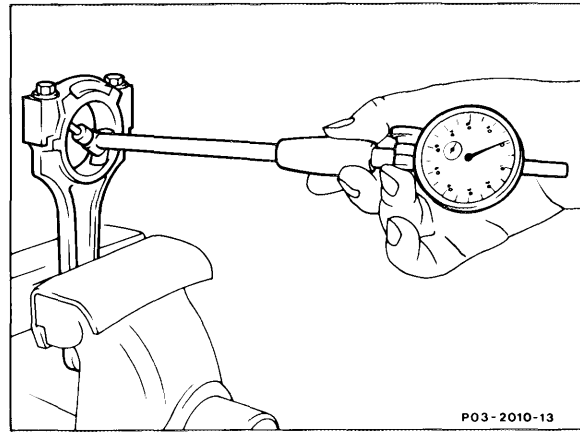
Special tool**Commercially available tools**

Connecting rod straightener	e.g .	Hahn & Kolb, D-7000 Stuttgart Model BC 503
Runout gauge	e.g .	Carl Mahr, D-7300 Esslingen Model 844 N

Reconditioning

1 Install connecting rod bearing cap without connecting rod bearing. For this purpose lubricate threads and bolt head contact surface and tighten to 30 Nm.

2 Measure connecting rod bearing basic bore. If the basic bore diameter exceeds the value of 51.619 mm or if it is conical, touch up bearing cap at contact surface on surface plate up to max. 0.02 mm.



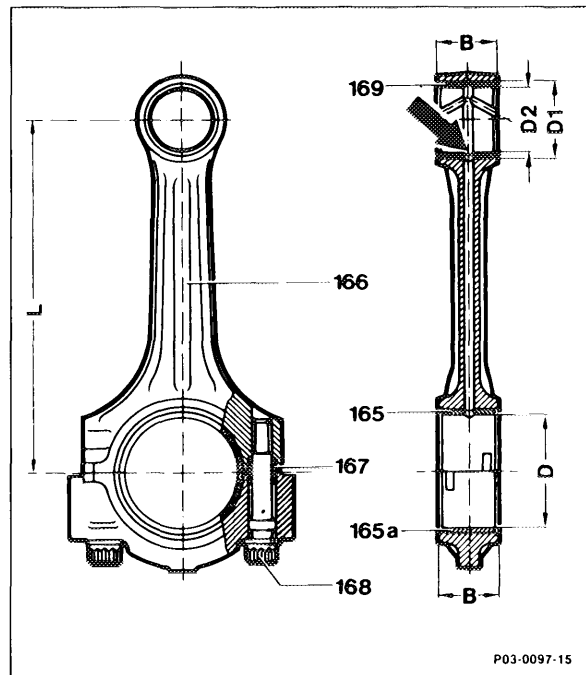
P03-2010-13

3 Press in new connecting rod bushing (169) such that oil bores are aligned (arrow). Pressing force 2450 N.

4 Machine or ream connecting rod bushing (169).

5 Touch up lateral thrust surfaces of connecting rod (166) on surface plate.

- D1 Connecting rod bushing basic bore
- D2 Connecting rod bushing \varnothing
- 165 Upper connecting rod bearing shell
- 165 a Lower connecting rod bearing shell
- 166 Connecting rod
- 167 Sleeve
- 168 Connecting rod bolts
- 169 Connecting rod bushing
- B Connecting rod width
- D Basic bore
- L Center of connecting rod bearing bore to center of connecting rod bushing bore

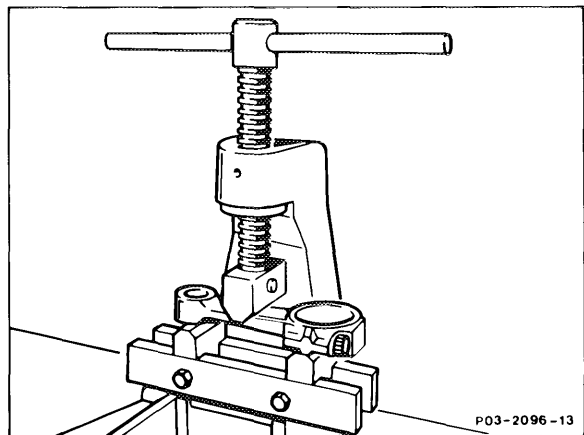


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Squaring

6 Square connecting rod with connecting rod tester.

7 Align connecting rod bearing bore with connecting rod bushing bore (parallel alignment).



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8 Check offset of connecting rod bearing bore in relation to connecting rod bushing bore and correct, if required.

