	Contents	Part 1

Title	Validity	Page
Technical data engine - complete	ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927	3
Technical data engine - complete	ENGINE 542.920 /921 /922 /923 /925 /926	8
Removing, installing engine	ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927, 542.920 /921 /922 /923 /925 /926	12
Inspecting engine for dust damage	ENGINE 904 /, 906, 541, 542	21
Inspecting cylinders with light probe	ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927, 542.920 /921 /922 /923 /925 /926	23
Testing compression pressure	ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927, 542.920 /921 /922 /923 /925 /926	25
Removing, installing cylinder head cover	ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927, 542.920 /921 /922 /923 /925 /926	28
Removing, installing protective sleeve	ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927, 542.920 /921 /922 /923 /925 /926	29
Removing, installing cylinder head	ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927, 542.920 /921 /922 /923 /925 /926	32
Checking, facing cylinder head contact surface	ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927, 542.920 /921 /922 /923 /925 /926	37
Removing, installing timing case cover	ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927, 542.920 /921 /922 /923 /925 /926	41
Removing, installing front radial seal in housing cover	ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927, 542.920 /921 /922 /923 /925 /926	44
Measuring cylinder bores	ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927, 542.920 /921 /922 /923 /925 /926	48
Measuring projection of cylinder liner	ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927, 542.920 /921 /922 /923 /925 /926	51
Removing, installing, sealing cylinder liner	ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927, 542.920 /921 /922 /923 /925 /926	53
Removing and installing oil pan	ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927, 542.920 /921 /922 /923 /925 /926	57
Removing, installing decompression brake valve	ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927, 542.920 /921 /922 /923 /925 /926	61
Removing, installing timing case	ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927, 542.920 /921 /922 /923 /925 /926	63
Testing, repairing connecting rod	ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927, 542.920 /921 /922 /923 /925 /926	69
Removing, installing pistons	ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927, 542.920 /921 /922 /923 /925 /926	75
Removing and installing piston rings	ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927, 542.920 /921 /922 /923 /925 /926	82
Removing, installing race on crankshaft	ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927, 542.920 /921 /922 /923 /925 /926	84
Replacing rear crankshaft radial seal	ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927, 542.920 /921 /922 /923 /925 /926	85
Removing and installing crankshaft	ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927, 542.920 /921 /922 /923 /925 /926	87
Measuring and mounting crankshaft	ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927, 542.920 /921 /922 /923 /925 /926	92
Removing, installing belt pulley/vibration damper	ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927, 542.920 /921 /922 /923 /925 /926	100
Removing, installing flywheel	ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927, 542.920 /921 /922 /923 /925 /926	102
Checking and re-machining flywheel	ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927, 542.920 /921 /922 /923 /925 /926	105

	Contents	Part 2

Title	Validity	Page
Replacing ring gear of flywheel	ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927, 542.920 /921 /922 /923 /925 /926	3
Removing, installing race on flywheel	ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927, 542.920 /921 /922 /923 /925 /926	5
Removing, installing guide bush in flywheel	ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927, 542.920 /921 /922 /923 /925 /926	6
Removing, installing rocker arm assembly	ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927, 542.920 /921 /922 /923 /925 /926	9
Removing and installing camshaft	ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927, 542.920 /921 /922 /923 /925 /926	12
Replacing valve stem seals	ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927, 542.920 /921 /922 /923 /925 /926	17
Removing and installing valves	ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927, 542.920 /921 /922 /923 /925 /926	18
Replacing valve guides	ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927, 542.920 /921 /922 /923 /925 /926	25
Replacing valve seat rings	ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927, 542.920 /921 /922 /923 /925 /926	28
Grinding valves	ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927, 542.920 /921 /922 /923 /925 /926	41
Machining valve seat rings	ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927, 542.920 /921 /922 /923 /925 /926	44
Removing and installing fuel heat exchanger	ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927, 542.920 /921 /922 /923 /925 /926	53
Removing and installing nozzle holder assembly	ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927, 542.920 /921 /922 /923 /925 /926	55
Removing and installing MR/PLD control module	ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927, 542.920 /921 /922 /923 /925 /926	58
Removing, adjusting and installing crankshaft angle position sensor bracket	ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927, 542.920 /921 /922 /923 /925 /926	61
Removing and installing MR/PLD unit pump	ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927, 542.920 /921 /922 /923 /925 /926	63
Removing and installing MR/PLD injection pipes	ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927, 542.920 /921 /922 /923 /925 /926	66
Removing and installing fuel filter	ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927, 542.920 /921 /922 /923 /925 /926	69
Removing and installing intake manifold	ENGINE 542.920 /921 /922 /923 /925 /926	71
Inspecting turbocharger	ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927, 542.920 /921 /922 /923 /925 /926	72
Removing and installing exhaust gas turbocharger	ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927	75
Removing and installing exhaust gas turbocharger	ENGINE 542.920 /921 /922 /923 /925 /926	77
Removing and installing charge air pipe	ENGINE 542.920 /921 /922 /923 /925 /926	80
Testing intercooler and charge air hoses for leaks	ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927, 542.920 /921 /922 /923 /925 /926	81
Removing and installing charge air manifold	ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927, 542.920 /921 /922 /923 /925 /926	83
Removing and installing poly V-belt	ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927, 542.920 /921 /922 /923 /925 /926	86
Removing and installing poly V-belt tensioning device	ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927, 542.920 /921 /922 /923 /925 /926	88
Disassembling and assembling compressor	ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927, 542.920 /921 /922 /923 /925 /926	89

	Contents	Part 3

Title	Validity	Page
Removing and installing exhaust manifold	ENGINE 541.920 /922 /923 /924 /925 /926 /927	3
Removing and installing exhaust manifold	ENGINE 542.920 /921 /922 /923 /925 /926	5
Removing and installing exhaust gas plenum chamber	ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927	6
Removing and installing transverse exhaust pipe	ENGINE 542.920 /921 /922 /923 /925 /926	8
Repairing engine brake flap connection	ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927, 542.920 /921 /922 /923 /925 /926	9
Removing, installing engine brake flap connection	ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927	12
Removing, installing engine brake flap connection	ENGINE 542.920 /921 /922 /923 /925 /926	13
Removing and installing the generator support	ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927, 542.920 /921 /922 /923 /925 /926	15
Filling engine oil circuit	ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927, 542.920 /921 /922 /923 /925 /926	17
Removing and installing oil spray nozzles (pistons)	ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927, 542.920 /921 /922 /923 /925 /926	20
Removing and installing oil pressure relief valve	ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927, 542.920 /921 /922 /923 /925 /926	22
Removing and installing oil pump	ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927, 542.920 /921 /922 /923 /925 /926	23
Disassembling and assembling oil pump	ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927, 542.920 /921 /922 /923 /925 /926	24
Removing and installing oil filter housing	ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927, 542.920 /921 /922 /923 /925 /926	26
Removing and installing the oil/water heat exchanger	ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927, 542.920 /921 /922 /923 /925 /926	31
Checking cooling system for leaks	ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927, 542.920 /921 /922 /923 /925 /926	32
Removing grease and scale in cooling system	ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927, 542.920 /921 /922 /923 /925 /926	34
Removing and installing engine coolant pump	ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927, 542.920 /921 /922 /923 /925 /926	36
Disassembling, assembling coolant pump	ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927, 542.920 /921 /922 /923 /925 /926	38
Testing coolant thermostat	ENGINE 904.905 /906 /907 /908 /909 /910 /911 /921 /922, 906.910 /911 /920 /921 /922 /923 ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927, 542.920 /921 /922 /923 /925 /926 ENGINE 906.940 /941	41
Removing and engine installing coolant thermostat	ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927, 542.920 /921 /922 /923 /925 /926	43
Removing and installing radiator	ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927, 542.920 /921 /922 /923 /925 /926	45
Removing and installing fan	ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927, 542.920 /921 /925 /926	48
Removing and installing fan	ENGINE 542.922 /923	50
Disassembling and assembling rear engine output	ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927, 542.920 /921 /922 /923 /925 /926 with CODE (N51) Rear engine output, output torque 392 Nm with CODE (N52) Rear engine output, output torque 600 Nm	52
Removing and installing power steering/fuel pump unit	STEERING 765.889 with ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927, 542.920 /921 /922 /923 /925 /926	58
Removing and installing fuel pump/power steering pump unit	ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927, 542.920 /921 /922 /923 /925 /926	62

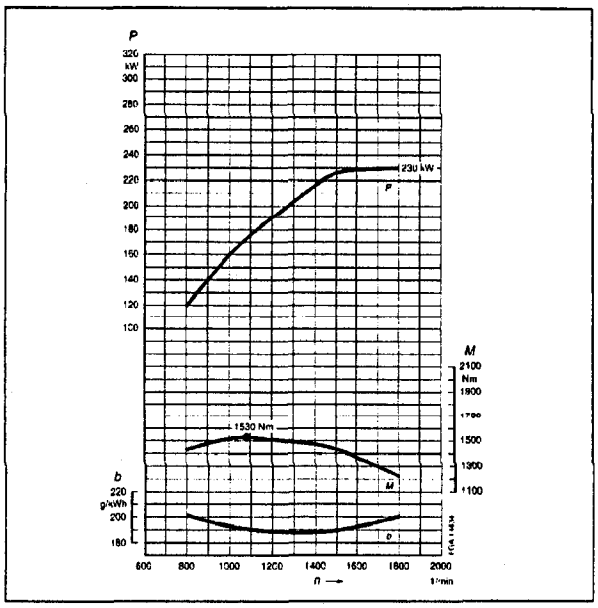
GF01.00-W-2000B	Technical data engine - complete	28.11.96

ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927

GF	Technical data engine	OM 501 LA (engine 541.920/ 926)	**Page 3**
GF	Technical data engine	OM 501 LA (engine 541.922/ 927)	**Page 4**
GF	Technical data engine	OM 501 LA (engine 541.923/ 924)	**Page 5**
GF	Technical data engine	OM 501 LA (engine 541.921/ 925)	**Page 6**

GF01.00-W-1000-01D	Technical data engine	Engine 541.920/926	GF

P *Engine output*
M *Engine torque*
n *Rated speed*
b *Specific fuel consumption*

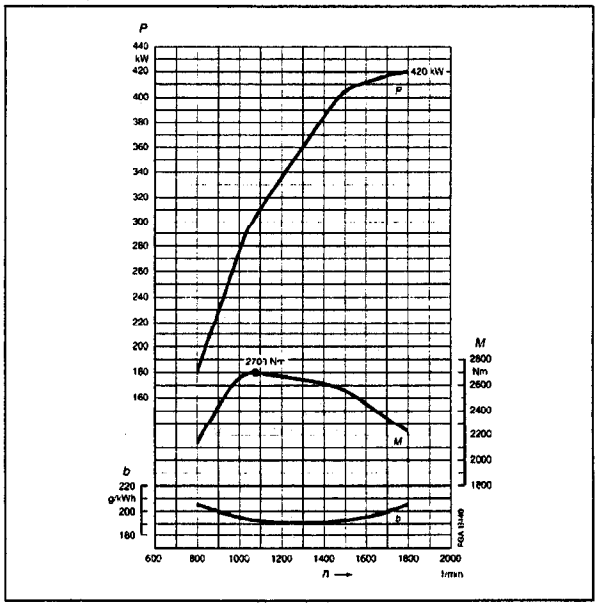


W01.00 0007 12

Additional Information

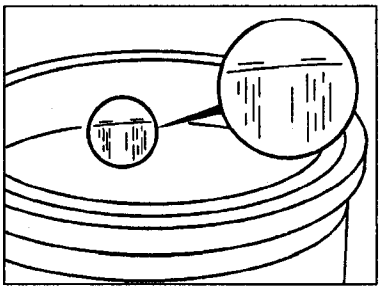
Engine model designation		**542.921** (low) **542.925** (high)
Engine type		OM 502LA. II/1
Engine output (P)	kW/HP	350/476
	rpm	1800
Engine torque (M) max.	Nm	2300
	rpm	1080
Rated speed	rpm	1800
Bore	mm	130
Stroke	mm	150
Total displacement	cm^3	15928
Compression	ε	17.25
Firing order		1-5-7-2-6-3-4-8
No. of cylinders/arrangement		8 in V arrangement
Valves	Inlet	2
	Exhaust	2
Operating method	4-stroke diesel with direct injection	
Combustion method	Exhaust turbocharging and intercooling	
Injection method	Single unit pump with pump-line-nozzle system (PLD)	
Control	Electronic engine management with solenoid valve-controlled injection	
Specific fuel consumption (b)	g/kWh (see diagram)	

P *Engine output*
M *Engine torque*
n *Rated speed*
b *Specific fuel consumption*



W01.00-0013-12

Cylinder walls and cylinder liners with dust damage
The traces of machining from honing are only very faintly visible or not at all. If the wear is well advanced, a wear step can be felt at the reversal point of the first piston ring.

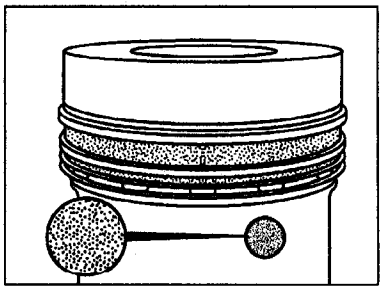


W03.10-0015-01

[i]
Dust damage is caused by poor sealing, splits, chafing damage of the intake lines, seals and hoses.
When carrying out repair and service work, make a careful inspection of intake lines, seals and hoses, also at points not easily accessible.

AH03.10-N-0001-01A	Notes for assessing wear to pistons in the case of dust damage	Engine 541, 542, 904, 906	[i]

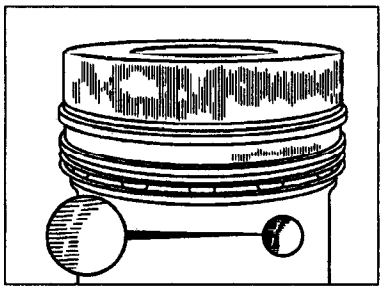
Pistons without dust damage
The contact surface of the piston stem is visible over a large area and the machining grooves can still be recognized within this area.



W03.10-0012-01

[i]
The machining grooves at the circumference are intentional recesses which are filled with oil and contribute to better lubrication.

Pistons with dust damage
The contact pattern at the stem has a mat (pumiced) appearance and the machining grooves are completely worn away within the contact surface. In the advanced stage of wear, slight traces of seizure are already present on the stem and the piston rings are sharp-edged.



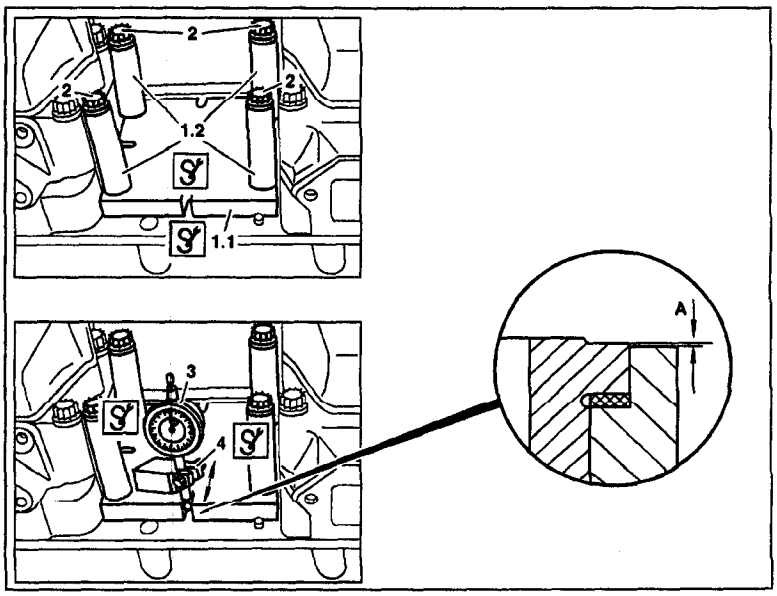
W03.10-0013-01

AR01.40-W-9314A	Measuring projection of cylinder liner	23.1.96

ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927, 542.920 /921 /922 /923 /925 /926

1.1 Measuring plate
1.2 Spacer tube
2 Cylinder head bolts
3 Dial gauge
4 Dial gauge holder

A Projection of cylinder liner



W01.40-0008-06

	Measuring		
1	Remove cylinder head of the relevant cylinder		Page 32
2	Clean collar of cylinder liner		
3	Attach measuring plate (1.1) to the cylinder liner	Screw measuring plate and spacer tube (1.2) tight with the cylinder head bolts (2), 50 Nm	
			541 589 00 21 00
4	Attach dial gauge (3) with the extension to the dial gauge holder (4) and insert with a preload through one of the recesses in the measuring plate (1.1)	Set scale of dial gauge to "0"	
			001 589 53 21 00
			541 589 00 21 00
			343 589 00 40 00
5	Move dial gauge (3) together with dial gauge holder (4) from collar of cylinder liner to crankcase	Enter measurements in the test sheet 800.98.452.00.	BE01.40-N-1003-03C
6	Conduct measurement of the projection at each recess in the measuring plate (1.1)	Set the scale of the dial gauge (3) to "0" for each measurement. Compare the measurements entered in the test sheet. Max. difference of the 4 measurement points for each cylinder liner 0,02 mm If the measurements differ ↓ Remove cylinder liners.	Page 53
7	Take off measuring plate (1.1)		541 589 00 21 00

Nm Timing case

Number	Designation			Engine 541.920/ 921/922/923/ 924/925/926/927	Engine 542.920/ 921/922/923/ 925/926
BA01.60-N-1001-01B	End cover of TDC inspection hole to timing case		Nm	25	25
BA01.60-N-1002-01B	Bolts of timing case to crankcase	M12×57	Nm	100	100
		M12×167	Nm	80	80
BA01.60-N-1003-01B	End cover of compressor opening on side to timing case		Nm	50	50
BA01.60-N-1004-01B	Nut for oil return flow on turbocharger on left to timing case	M26×1.5	Nm	50	50
BA01.60-N-1005-01B	End cover (engine output) to timing case		Nm	25	25
BA01.60-N-1006-01B	Screw plug of oil return flow of turbocharger in timing case		Nm	80	80

Nm Compressor (compressed air system)

Number	Designation		Engine 541.920/ 921/922/923/ 924/925/926/927	Engine 542.920/ 921/922/923/ 925/926
BA13.30-N-1010-01B	Resonance tank to bracket	Nm	25	25

Nm Engine wiring harness

Number	Designation		Engine 541.920/ 921/922/923/ 924/925/926/927	Engine 542.920/ 921/922/923/ 925/926
BA15.18-N-1003-01A	Bolt of wiring harness to timing case	Nm	25	25

Nm Engine mounts, engine supports

Number	Designation		Engine 542.920/ 921/922/923/ 925/926
BA22.10-N-1003-01D	Rear lifting eyes to timing case	Nm	150

Nm Fuel pipes/hoses

Number	Designation		Engine 541.920/ 921/922/923/ 924/925/926/927	Engine 542.920/ 921/922/923/ 925/926
BA47.25-N-1008-01B	Bracket of fuel pipe to timing case cover and timing case	Nm	25	25

Nm Refrigerant compressor

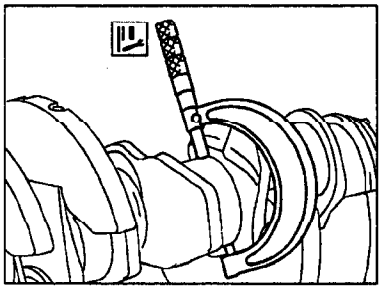
Number	Designation		Model 950	Model 952	Model 953	Model 954
BA83.55-N-1002-01C	Support to fixture of refrigerant compressor/Frigoblock and generator carrier	Nm	50	50	50	50

1 Clean bearing points of the crankshaft with a chamois leather.

2 Use the micrometer to measure main bearing journal Ø to two points (offset about 90°.

i

The dimensions stated in the table should be maintained. If one of the readings obtained is not within the tolerance range, machine crankshaft.



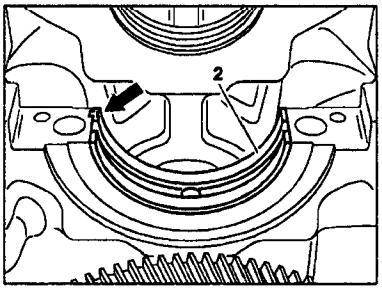
W03.20-0022-01

3 Clean bearing points in crankcase and main bearing caps with a chamois leather.

4 Insert crankshaft bearing shells (2) into the crankcase in the sequence marked.

i

The locking lugs (arrow) of the crankshaft bearing shells (2) should be positioned in the slots of the crankcase basic bores. Oil drillings in the crankshaft bearing shell (2) and crankcase should be aligned.

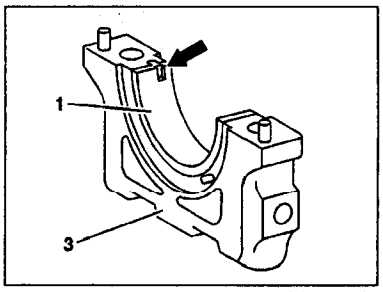


W03.20-0023-01

5 Insert crankshaft bearing shells (1) into the main bearing caps (3, 4) in the sequence marked.

i

The locking lugs (arrows) of the crankshaft bearing shells (1) should be located in the slots of the main bearing caps (3).

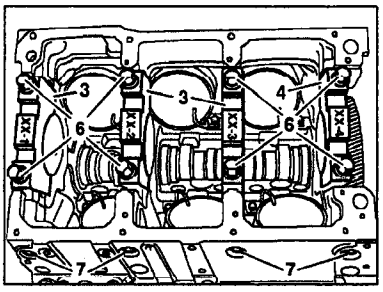


W03.20-0024-01

6 Attach main bearing caps (3, 4) to the crankcase.

i

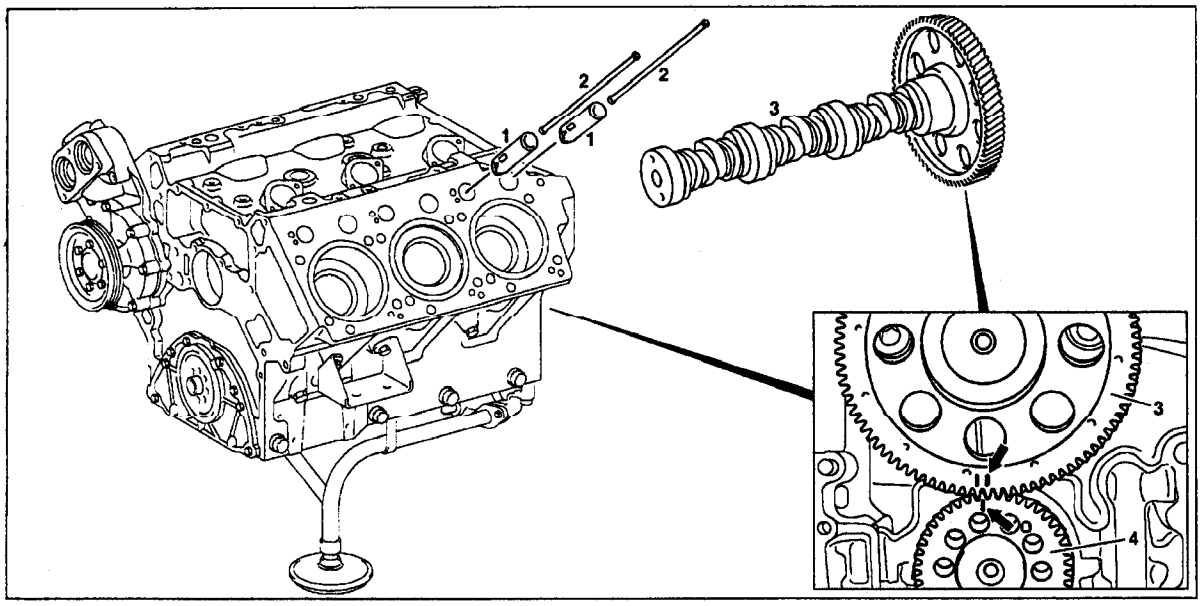
All the main bearing caps (3, 4) have dowel pins and are identified with numbers. They should be installed in accordance with the numbers in ascending order, starting from the front.
Oil main bearing bolts (6, 7) and pay attention to tightening order: first of all fully tighten the central main bearing bolts (6, 7) and then the side bolts.



W03.20-0025-01

AR05.20-W-6292B	Removing and installing camshaft	14.6.96

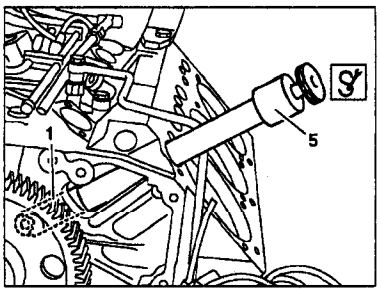
ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927, 542.920 /921 /922 /923 /925 /926



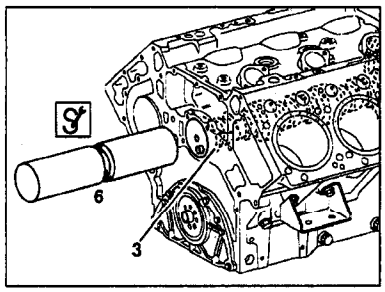
W05.20-0010-09

1 Roller tappet
2 Tappet rods
3 Camshaft with camshaft gear
4 Crankshaft gear

1 Roller tappet
3 Camshaft with camshaft gear
5 Clamp holder
6 Installation sleeve



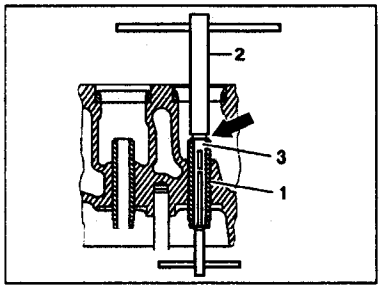
W05.20-0011-01



W05.20-0009-01

	Removing, installing		
1	Remove engine		AR01.10-W-2400B
2	Attach engine to engine repair stand	Engine repair stand	WE58.40-Z-1001-11A
		Attachment angle bracket	WE58.40-Z-1005-11A
3	Remove oil pan		AR01.45-W-7500B
4	Remove timing case		AR01.60-W-8200B
5	Remove oil filter housing		AR18.20-W-3471B
6	Remove all PLD unit pumps		Page 63
7	Remove all cylinder heads		AR01.30-W-5800B

1 Insert pilot (2) (9 mm Ø) into the valve guide (1) until the stop (arrow) of the collet chuck (3) is positioned on the valve guide (1); press collet chuck (3) down with the screwdriver, if necessary. Turn tight with the drift insert into the pilot (2) at top and bottom.



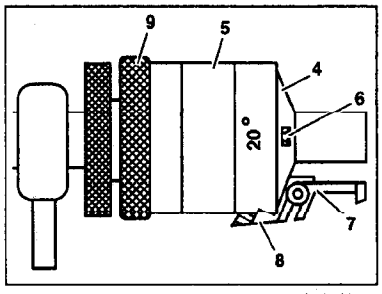
W05.30-0007-01

2 Attach turning head D2/20° (4) to the turning tool (5), loosely screw in both hexagon socket screws (6), align turning head (4) so that the distance between the toothed side, the rack and the opposite side is about 0.5 to 0.8 mm. Then tighten both hexagon socket screws fully.

ⓘ

It should be possible to move the tool slide (8) back and forward relatively easily with the quick-adjustment (9).

3 Screw cutting tool C6 (7) tight onto the turning head (4).



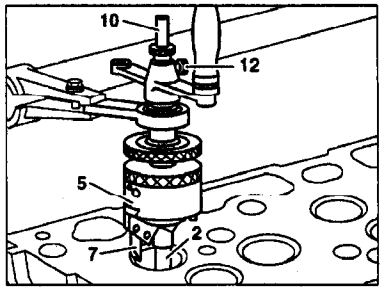
W05.30-0052-01

4 Moisten pilot (2) with oil.

5 Insert turning tool (5) over the pilot (2) until the stop pin is resting on the pilot (2) or the cutting tool (7) is resting on the cylinder head.

⚠

The cutting tool must not strike the cylinder head, otherwise the carbide metal tip will be damaged.



W05.30-0009-01

6 Turn quick-adjustment (8) until the cutting tool (7) is touching the pilot (2) or until it is positioned in front of the valve seat ring, but not touching.

7 Hold turning tool (5) tight, slacken clamping screw (12) of the stop pin (10), carefully lower turning tool until the blade of the cutting tool (7) dimension (X) is positioned about 1 mm above the inner edge of the valve seat ring (11). Press stop pin against pilot (2), tighten clamping screw (12).

8 Clamp pendulum guide (13) tight horizontally, approximately in the middle of the guide, with the steadyrest clamp (14).

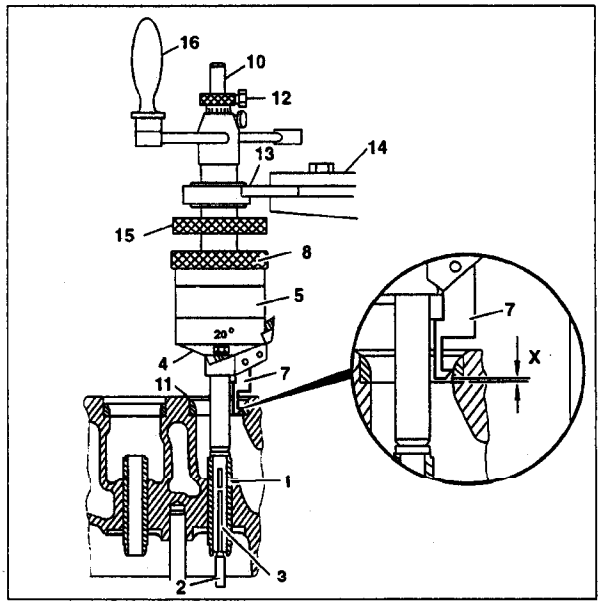
ⓘ

It should now still be possible to easily turn the turning tool as before.

9 Hold knurled disk (15) for infeed mechanism tight and rotate handcrank (16) clockwise. This usually produces an irregular chip removal.

ⓘ

Inspect distance dimension (X) approx. 1 mm at valve seat ring (11).



W05.30-0010-12

Fuel pipes/hoses

Number	Designation			Engine 541.920/ 921/922/923/ 924/925/926/927	Engine 542.920/ 921/922/923/ 925/926
BA47.25-N-1001-01B	Fuel pipe to fuel heat exchanger	M16×1.5	Nm	40	40

AS47.00-Z-0001-01A	**Risk of explosion** from ignition of fuel, risk of poisoning if fuel is inhaled or swallowed and risk of injury if skin or eyes come into contact with fuel	Fire, the creation of sparks, naked lights and smoking prohibited. Only pour fuels into containers which are suitable and are correspondingly marked. Wear protective clothing when handling fuels.	⚠ Danger!

Potential dangers

Risk of explosion, poisoning and injury
Fuels are highly flammable and are poisonous if swallowed. Fuel can cause damage to the skin. Contact with gasoline fuel, for example, removes the skin's natural oils. Fuel vapors are explosive and invisible, and spread out along the floor. They are poisonous if inhaled and can cause unconsciousness in high concentrations.

Protective measures/rules for handling fuels
- Observe local national safety regulations.
- Fire, the creation of sparks, naked lights and smoking forbidden.
- Make sure that the work area is sufficiently well ventilated.
- Never drain or add fuels over workshop pits.
- Always put drained fuel into containers which are suitable and can be properly closed off.
- Immediately remove any fuel which has been spilt.

Working on the vehicle using a naked flame
(e.g. when welding etc.).
- Before carrying out such work, remove the relevant parts of the fuel system and seal off open fuel lines with plugs.

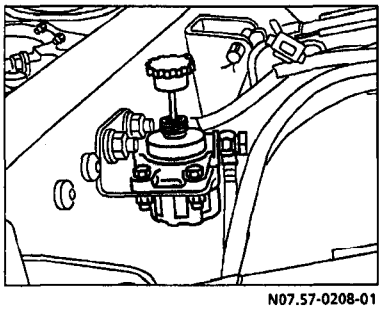
First aid measures
- Wash any fuel from skin using soap and water.
- Change out of clothing on which fuel has been spilt as soon as possible.
- If fuel is splashed into the eyes, rinse out the eyes immediately with water; consult a doctor if appropriate.

AP47.00-W-1720-01A	Bleeding air in fuel system		

1 Loosen handle on manual pump.

2 Actuate manual pump until overflow valve opens audibly.

3 Tighten handle on manual pump.

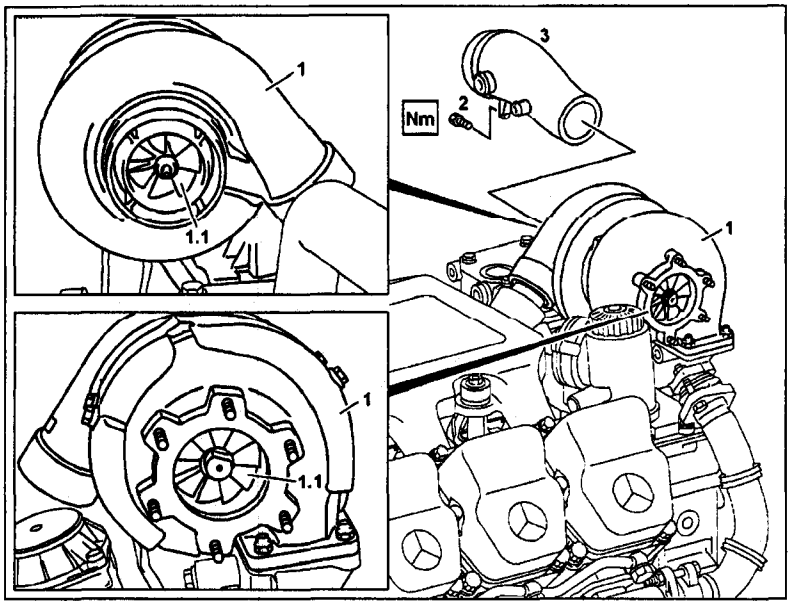


N07.57-0208-01

AR09.40-W-5910B	Inspecting turbocharger	14.6.96

ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927, 542.920 /921 /922 /923 /925 /926

1 Turbocharger
1.1 Rotor shaft
2 Bolt
3 Intake manifold



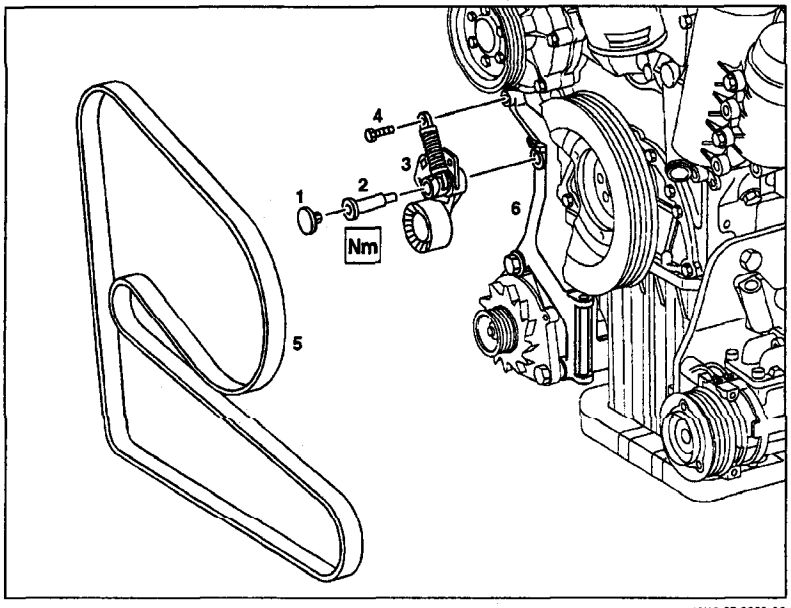
W09.40-0007-06

	Removing, installing		
1.1	Remove engine brake flap connection	On engine 541.920 - 927 On engine 542.920 - 923/925/926 At left-hand turbocharger	AR14.15-W-6302B AR14.15-W-6302C
1.2	Remove transverse exhaust pipe	On engine 542.920 - 923/925/926 At right-hand turbocharger	AR14.10-W-3925A
2.1	Detach intake manifold (3)	On engine 541.920 - 927 with air intake above cab Do not detach connection piece with integrated compensating ring at turbocharger. Nm Air intake manifold to bracket	 BA09.20-N-1001-02C
2.2	Detach intake hose	On engine 541.920 - 927 with plate-type air filter Take off compensating ring. Installation: compensating ring should rest against turbocharger flange.	
2.3	Remove intake manifold	On engine 542.920 - 923/925/926	**Page 71**
	Inspecting		
3	Inspect turbocharger rotor shaft (1.1) for unobstructed operation	Axle play and radial play are correct if there is no indication of rotor shaft rubbing against turbocharger housing on either side. If there is an indication of rotor shaft rubbing against turbocharger housing ↓ replace turbocharger On engine 541.920 - 927	**Page 73** **Page 75**

AR13.25-W-3200B	Removing and installing poly V-belt tensioning device	17.1.96

ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927, 542.920 /921 /922 /923 /925 /926

1 *End cover*
2 *Hexagon socket screw*
3 *Tensioning device with tensioning pulley*
4 *Bolt*
5 *Poly V-belt*
6 *Carrier*



W13.25-0002-06

Modifiction notes

6.2.97	Tightening torque of poly V-belt tensioning device to carrier modified	Step 2	**Page 88**

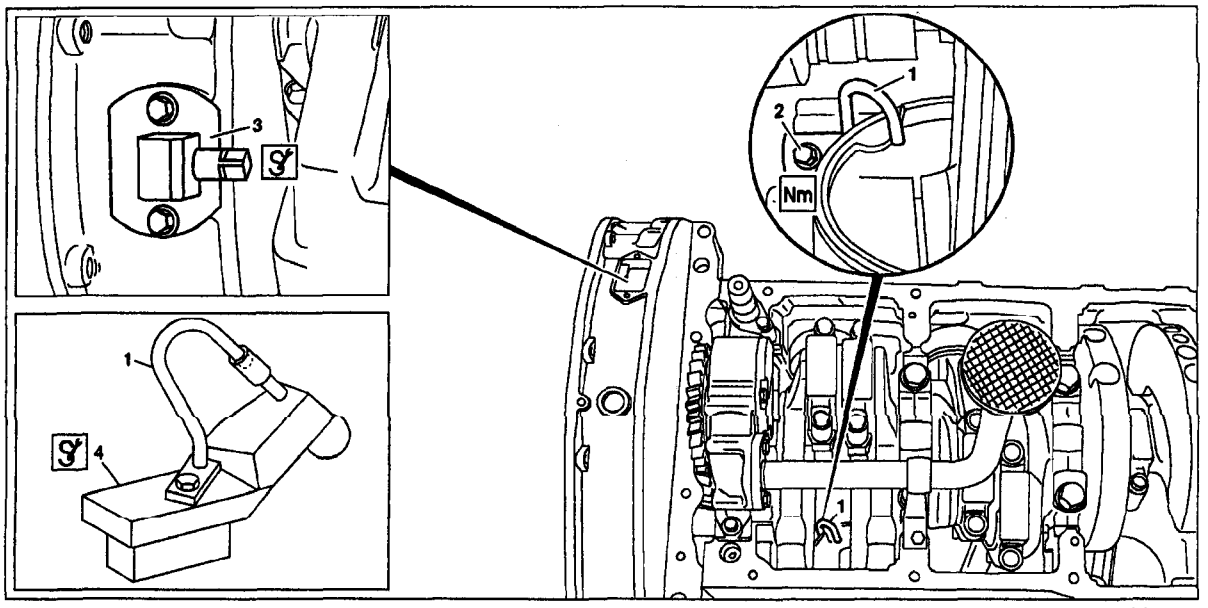
	Removing, installing		
1	Slacken poly V-belt (5) and take it off the tensioning pulley (3)	Slacken tensioning device.	**Page 86**
2	Take off end cover (1) and remove hexagon socket screw (2)	Nm Poly V-belt tensioning device to carrier	BA13.25-N-1001-01D
3	Unscrew bolt (4) at tensioning element of the tensioning device (3)	Nm Tensioning element to tensioning device	BA13.25-N-1003-01D
4	Take off tensioning device (3)	Nm Belt pulley to tensioning device	BA13.25-N-1002-01D
5	Install in the reverse order		

Nm Belt tensioning device

Number	Designation			Engine 541.920/ 921/922/923/ 924/925/926/927	Engine 542.920/ 921/922/923/ 925/926
BA13.25-N-1001-01D	Poly V-belt tensioning device to carrier	M10	Nm	50	50
		M18	Nm	105	105
BA13.25-N-1002-01D	Belt pulley to tensioning device		Nm	50	50
BA13.25-N-1003-01D	Tensioning element to tensioning device		Nm	35	35

AR18.00-W-4000B	Removing and installing oil spray nozzles (pistons)	14.6.96

ENGINE 541.920 /921 /922 /923 /924 /925 /926 /927, 542.920 /921 /922 /923 /925 /926



W18.00-0004-09

1 Oil spray nozzle
2 Bolt
3 Cranking device
4 Gage

	Removing, installing		
1	Remove oil pan		AR01.45-W-7500B
2	Attach cranking device (3) for engine to timing case	Cranking device has to be removed before starting engine Cover of TDC inspectio hole to timing case	 407 589 00 63 00 BA01.60-N-1001-01B
3	Rotate crankshaft until the oil spray nozzle (1) to be removed is accessible		
4	Remove oil spray nozzle (1)	Installation: the guide at the oil spray nozzle should engage in the hole in the crankcase. Oil spray nozzles to crankcase	 BA18.00-N-1001-01C
5	Inspect oil spray nozzle (1) for damage	 Bolt oil spray nozzle tight to gage (4). Inspect oil spray pipe with guide for deformation, if necessary ↓ adjust oil spray pipe or replace oil spray nozzle	541 589 00 23 00
6	Install in the reverse order		