Mercedes-Benz OM906LA
Mercedes-Benz OM926LA

CLAAS

Repair manual

Service & Parts

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CCN (CLAAS Component Number)

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1044-004

Introduction

General Information

162113-001

Validity of manual

This manual applies to the Mercedes-Benz diesel engines below:

Engine	Type design	Engine no.
OM 906 LA	906.991	906.991-00-xxxxxx
OM 926 LA	926.929	926.929-00-xxxxxx
OM 926 LA	926.959	926.959-00-xxxxxx
OM 926 LA	926.970	926.970-xx-xxxxxx

123139-005

Handling the manual

This repair manual should help you to maintain ongoing operational capacity. The high value of the harvesting machine is ensured through careful maintenance and technical monitoring by customer service.

This repair manual is a compilation of our service technicians' and shop-floor experience.

The picture sequence demonstrates the steps in a repair procedure. The text provides you with the information required for making adjustments, using special tools and further similar information.

Essential repairs are listed in such a way that even individual and small repairs can be easily found and followed.

Supplements are added to reflect the ongoing technical development of the machines and the manual is thereby continuously being updated as a reference book.

As a precaution, always compare the setting values and fill quantities with the most recent operator's manual and the technical systems documents for the respective machine.

Texts and figures

Pictures and graphics apply to all models covered by this manual. Differences are highlighted by captions below the figures.

In general, texts are short and apply to all models covered by this manual. Differences are highlighted by intermediate headings.

Different text categories can be easily identified by the formatting. The following different formattings are distinguished:

1044-004

Formatting	Meaning	Description
Description	Descriptive text	Further information on the subject.
– Procedure instructions	Process	Operations which must be carried out one after the other.
Result	Result	Result of the processes carried out.

References can be easily identified by corresponding symbols. The following symbols are distinguished:

Symbol	Meaning	Description
	See index	The symbol indicates that further information on this subject is available in other sections of this manual.
	See the index of the Operator's Manual in question	The  symbol indicates that further information on this subject is available in the Operator's Manual of the machine or of the implement in question.

Document structure based on the assembly structure

The chapters of the present manual are subdivided into assemblies as far as contents permit. The structure of these assemblies is the same in all chapters.

Different product groups have different assembly structures. CLAAS makes every effort to keep this assembly structures identical in any document.

Search and find

Due to the constantly recurring assembly structure, the subject in question can be quickly found using the table of contents or the header of this manual.

In addition, the index provided in this manual is a useful tool for locating a subject. The index can be found on the last pages of this manual.

Directions

Front, rear, right and left refer to the direction of forward travel. If necessary, a direction arrow is used for indicating the direction of travel in figures.

1044-004

Abbreviations

Abbreviation	Description
bar	bar (unit for pressure)
approx.	approximately
cm	Centimetre
DIN	German Standardization Institute
EC	European Community
EN	European Standard
GPS	Satellite navigation system
h	Hours
Ident no.	Identification number of machine
ISO	International Standardization Organisation
kg	Kilogram
kPa	Kilopascal
km	Kilometre
km/h	Kilometres per hour
m	Metre
mm	Millimetre
Nm	Newtonmetre
psi	pound per square inch
StVZO	German Regulations Authorizing the Use of Vehicles for Road Traffic
e.g.	for instance
%	percent
°C	degrees Celsius (unit for temperature)

1044-004

Technical terms

Technical term	Description
recycle	Re-use of used, defective or no longer required products
Season	Recurring periods of a year
Ignition TDC	Ignition top dead centre (diesel engine piston position)
Overlap TDC	Valve overlap top dead centre (diesel engine piston position)
BDC	Bottom dead centre (diesel engine piston position)

Your CLAAS Service Department

1044-004

General repair instructions

123153-002

Technical specifications

Technical specifications, dimensions and weights are non-binding. Technical specifications are subject to modification in the course of technical development, and all errors and omissions are excepted.

123192-003

Information on proper repairs

- ► Mark rotating machine components before removing or dismounting them in order to ensure well-balanced component seating on the correct side after refitting.
- ► The slots of expansion pins must always point to the loaded side.

  When they are installed with a **90°** twist, they come loose, fall out or shear off.
- ► Replace cotter pins, locking wires, sheet retention devices, lock washers and spring washers in the repair process.
- ► Align sprockets and V-belt pulleys with one another.
- ► Observe the information in the hydraulic system chapter when working on the hydraulic system.
- ► Do not mix different oil grades.

123164-004

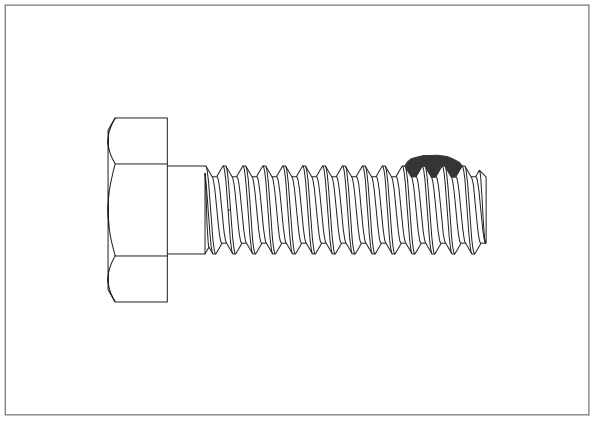
Self-locking bolts

Self-locking bolts must not come in contact with sealing compound.

- ► Tighten self-locking bolt speedily up to the specified torque.
  - ► The full hardening time can be reduced by heating-up, e.g. to **15 minutes** at **+ 70 °C**.
  - ► The full load capacity is achieved after **24 hours** at **+ 20 °C**.
- ► When unscrewing self-locking bolts, unscrew them quickly.

120820-003

Liquid locking compound



151599-001

1

- ► Use liquid locking compound (glue) only at the spots described in the Repair Manual.
- ► The surfaces to be joined must be absolutely clean and free of grease.
  - ► A suitable cleaner and an activator possibly delivered along with the glue can be used for cleaning.
- ► No cleaner residues may remain on the surfaces to be joined.

  This applies in particular to tapped holes with a bottom.
  - ► Let the surfaces dry well before applying the glue.

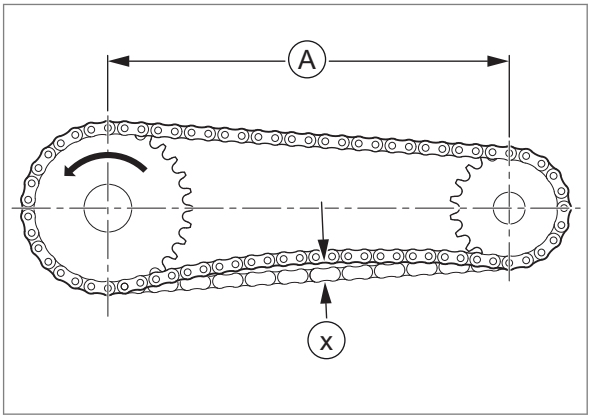
1044-004

- ► Apply the glue only in the areas shown in the figure if possible.
  When applying the glue at an unfavourable spot or when applying too much glue, the joint may tear off when loosening.
- ► Observe the glue producer's instructions for use and application!

A joint secured by liquid locking compound can be loosened by heating up to approx. 200 °C.

120771-004

Steel roller chains



13827-006

2

Tensioning

Checking the tension of steel roller chains:

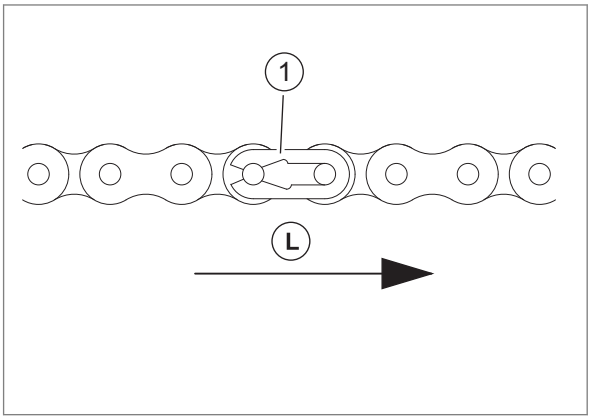
- ► Apply a small load to the tight span.
- ► Push down the slack span in the middle between the sprockets with your thumb.

You should be able to push down the slack span around 2 % of the spacing between the axles.

Example:

Axle spacing (A) = **500 mm**

Pushing distance (x) of slack span = approx. **10 mm**



123668-001

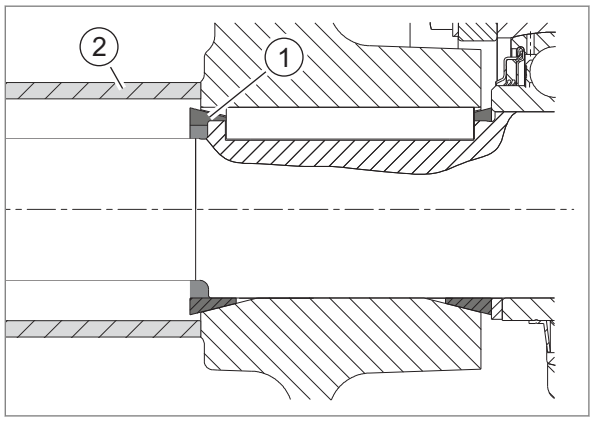
3

Chain connector

- ► The closed side of chain connector (1) must point in running direction (L)!

1044-004
120801-005

Taper ring fasteners



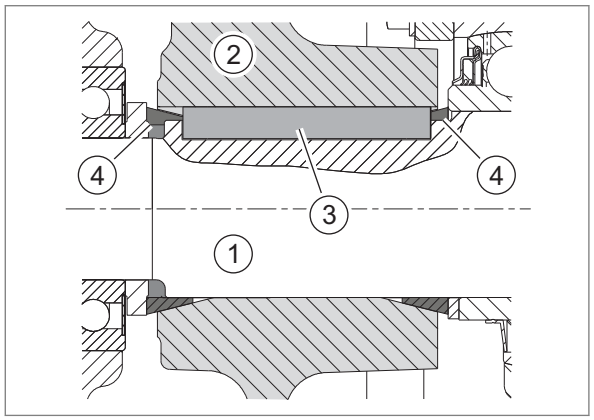
154769-001

4

Dismounting

► Slacken off tapered ring (1) with a blow.
  ► Use an auxiliary tool (2) if required.

Installation



154486-001

5

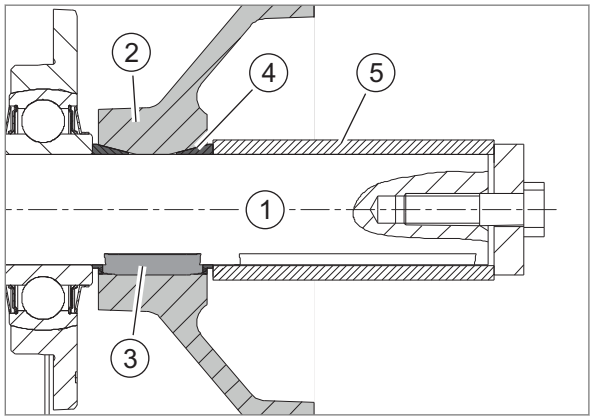
13975-003

NOTICE! Sticking together at the taper ring fasteners. The joint cannot be loosened or comes off only with difficulty.

► Do not install parts with tough grease.

► Clean shaft (1), hub (2), parallel key (3) and tapered rings (4) thoroughly and apply some CLAAS AGRIGREASE LC 00 / 000.

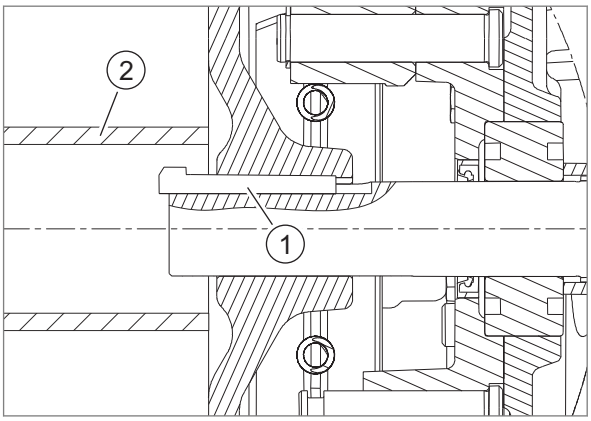
► Tighten to the specified torque.
  ► In case of several taper ring fasteners fitted behind one another, tighten those separately.
  ► Use an auxiliary tool (5) if required.



154768-001

6

Gib head key joints

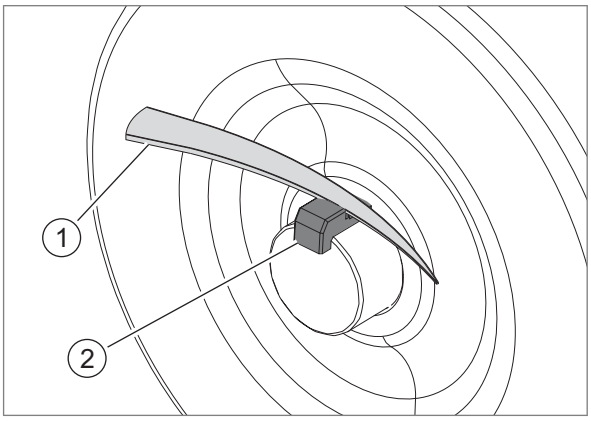


154811-001

7

Dismounting

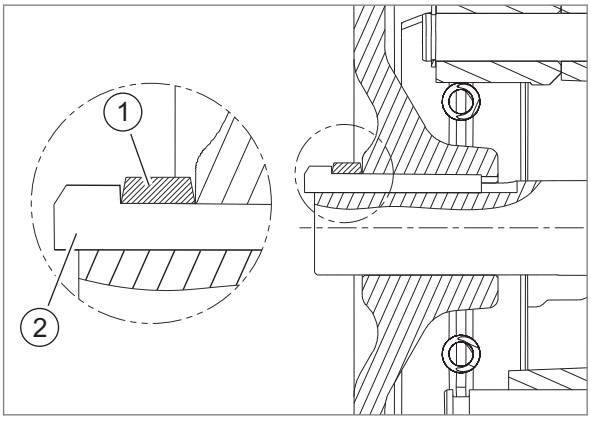
► Slacken off gib head key (1) with a blow if possible.
  ► Use an auxiliary tool (2) if required.



154813-001

8

► Drive out the gib head key (2) with a key drawer (1).
  ► Ensure that the key drawer is used as shown in the figure.



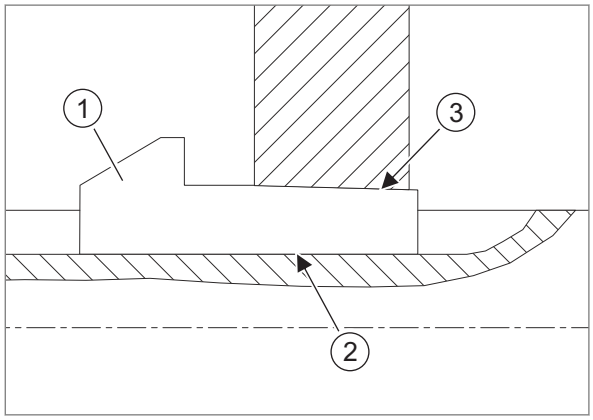
154812-001

9

Installation

The gib head key (1) comes in raw condition as a spare part and must be machined to suit the application by milling or grinding.

1044-004



154492-001

- ► Grind the gib head key (1) to suit the application at surface (2).
  - ► Surface (3) must **not** be machined.
- ► Clean shaft, hub and keyway to be free of grease, paint and rust prior to assembly.

85675-003

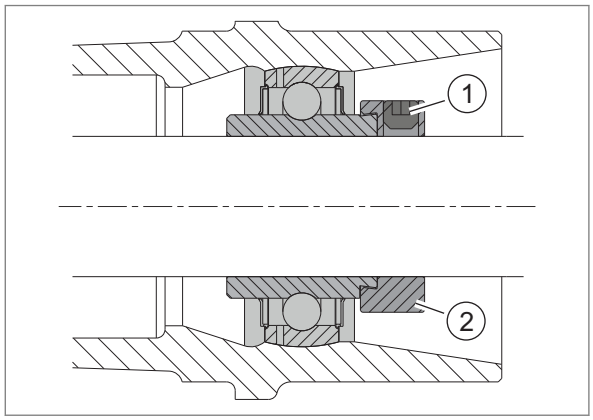
NOTICE! Excessive force employed when installing the gib head key. Damage to the gib head key joint. The gib head key cannot be removed any more.

- ► Drive in the gib head key carefully with a suitable and not too heavy hammer.
- ► Ensure that the gib head key is driven in only so far that it can still be removed without problems, using a key extractor.

10

123167-002

Lock collar bearing

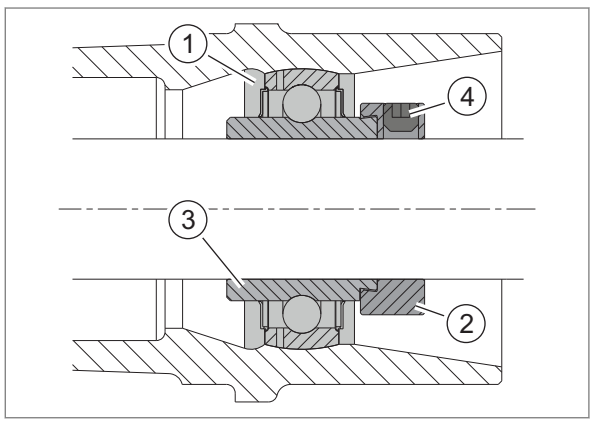


154814-001

11

Dismounting

- ► Slacken off set screw (1).
- ► Drive off eccentric ring (2) against the shaft's sense of rotation.
- ► Remove bearing.



154500-001

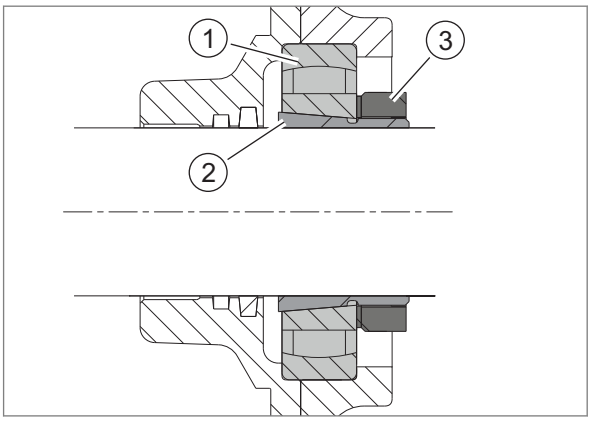
12

Installation

- ► Tighten lock collar bearing (1) on the shaft by twisting eccentric ring (2) over the inner bearing race (3).
  - ► Arrest the eccentric ring with moderate force in the sense of rotation of the shaft.
  - ► To make dismounting easier, the inner race and the shaft can be coated with CLAAS AGRIGREASE LC 00 / 000.
- ► Tighten set screw (4).

1044-004
120831-003

Adapter sleeve bearings

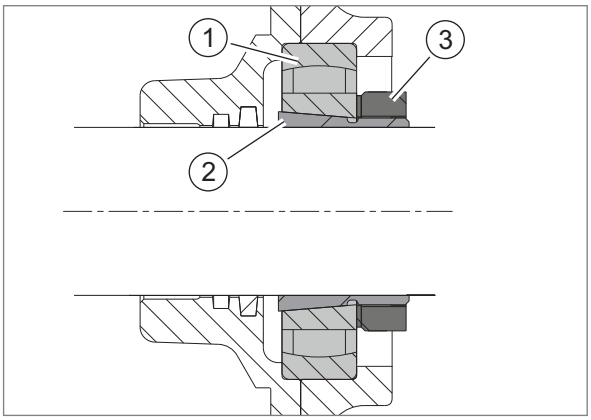


154510-001

13

Dismounting

- ► Loosen the tab of sleeve nut (3).
- ► Slacken off sleeve nut by some turns only.
  - ► Ensure that the thread is still completely engaged.
- ► Slacken off expansion pin (2) with a firm blow.
- ► Pull off adapter sleeve bearing (1) completely.



154510-001

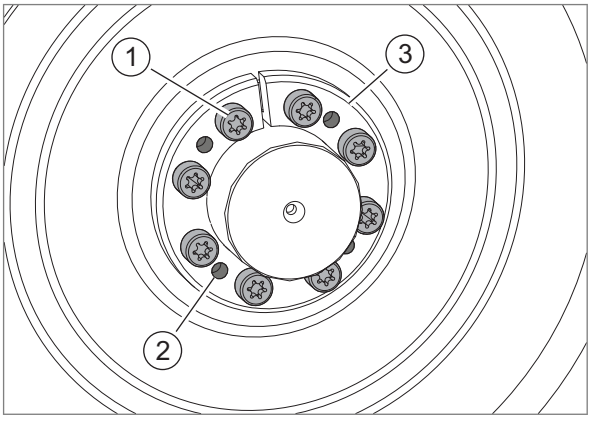
14

Installation

- ► Clean expansion pin (2) and shaft and check easy movement of the sleeve nut (3).
- ► Install adapter sleeve bearing (1) according to the conical inside ring (2).
- ► Tighten the sleeve nut with the suitable special tool and to the prescribed torque.
- ► Continue tightening the sleeve nut to the specified degrees.
- ► Tighten sleeve nut until the nearest tab can be applied.
- ► Secure sleeve nut with the tab.

144598-002

Chuck bushing



Version 1

154820-002

15

Dismounting

- ► Unscrew bolts (1).
- ► Screw in bolts (1), or longer bolts if required at (2).
  - ► Screw in bolts until the chuck bushing (3) comes loose.
  - ► Apply a little oil to bushing if necessary.
- ► Remove the chuck bushing if required.

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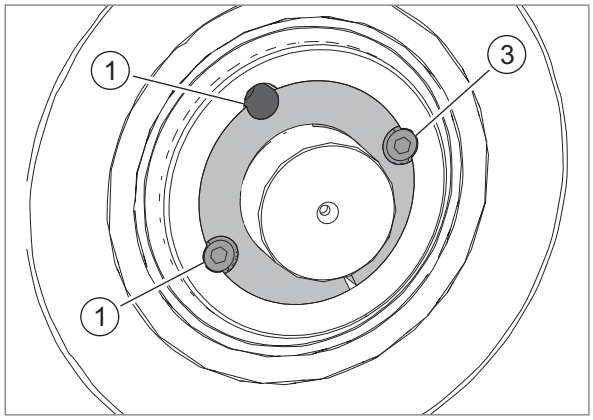
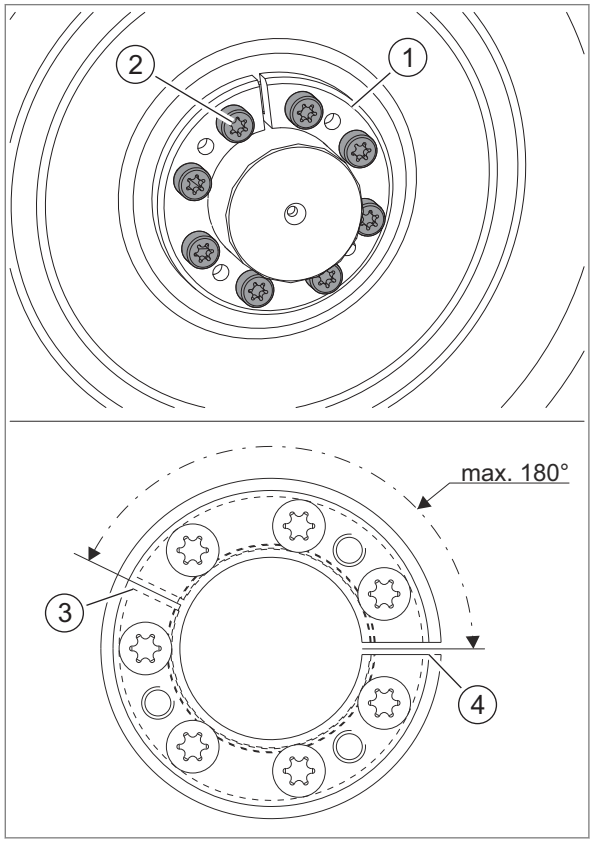


Version 2 154836-002

16

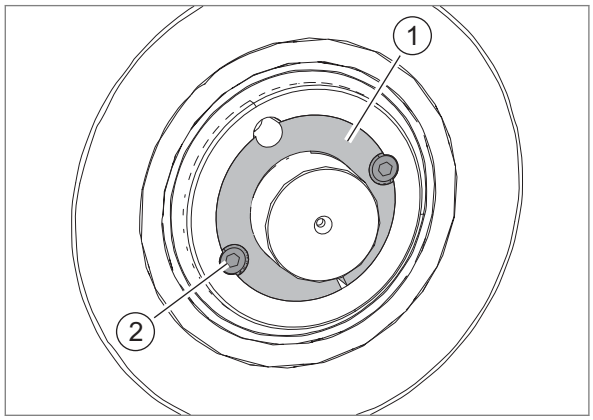
Installation

- ► Clean chuck bushing (1) and shaft thoroughly.
- ► Insert chuck bushing.
  - ► Ensure that slots (3) and (4) are mounted with the **maximum possible angle offset**.
- ► Tighten bolts (2) evenly crosswise in **three** steps.
  - ► Observe the specified torques of the respective steps.



Version 1 185680-001

17



Version 2 154844-002

18

1044-004
144716-004

Circlips

144718-002

NOTICE

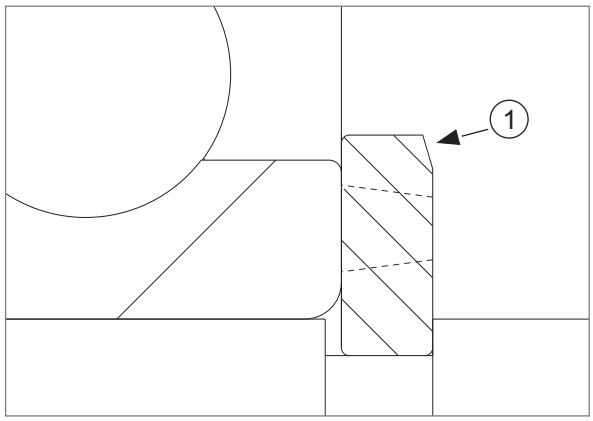
Overspreading the circlip.

Plastic material deformation.

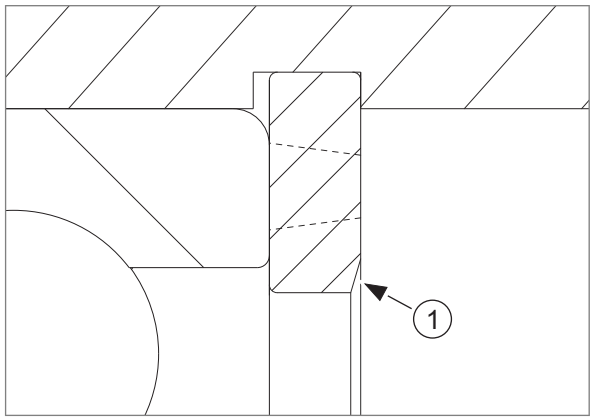
No safe fixing of component.

- ► Spread circlip only as far as needed for installation and dismounting.
- ► Do not use any circlip already overspread before.

- ► Insert circlips as shown in the figures.
  - ► Ensure that chamfer (1) does **not** make contact with the component to be secured.
  - ► If required, make circlip engage with a slight blow.



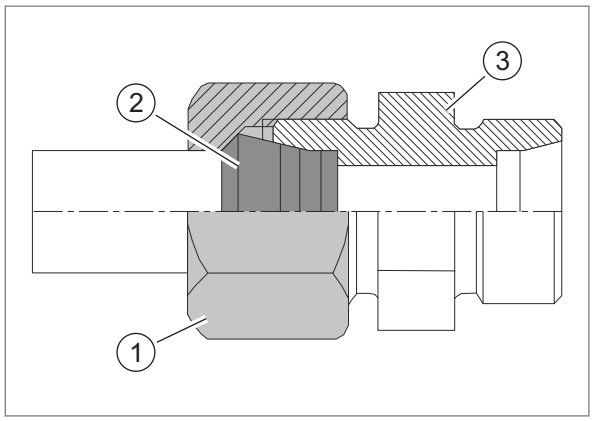
Circlip DIN 471 155144-001 **19**



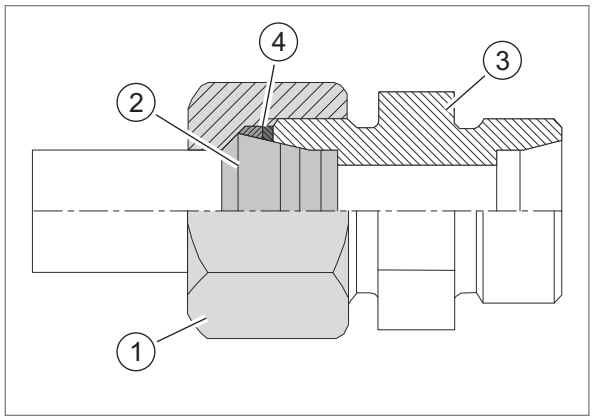
Circlip DIN 472 155145-001 **20**

1044-004
120840-004

Ferrule fittings



Ferrule without seal 154515-001



Ferrule with seal 154516-001

Screwing in

- ► Cut off the corresponding tube at right angles.
  - ► Do not use a pipe cutter.

  In case of pipe bends, the straight pipe end up to where the bending radius starts must be at least twice the height of the union nut.
- ► Slightly deburr the pipe end on the inside and outside.
  - ► Do not chamfer the pipe end.
- ► Clean the pipe end.
- ► Push the union nut (1) and the ferrule (2) on the pipe.

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- ► Push the pipe against the stop in the connector (3) and tighten the union nut until the ferrule seizes the pipe.

  This pressure point can be felt because increased power is needed from here.

  The pipe must be fixed securely during assembly and must not rotate.
- ► Tighten the union nut by half a rotation beyond the first pressure point.
- ► Check the incision at the cutting edge.

  A visible collar must fill the space ahead of the ferrule face end.

  The ferrule may rotate, but axial displacement must not be possible.

22

- ► Insert the pre-assembled pipe into the well-oiled threaded joint.
- ► Screw on the union nut until the power needed to do this clearly increases.
- ► After that, continue to screw the union nut on for half a turn beyond that point.
  - ► Observe the tightening torques. Page 23

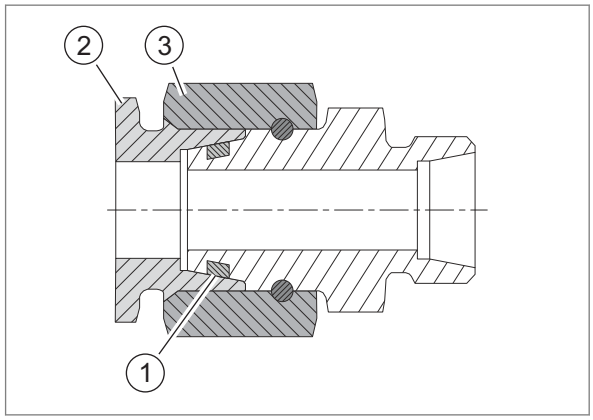
Non-tight ferrule connection

- ► If a connection leaks, loosen the union nut until some oil escapes.
- ► Then tighten according to instructions.
- ► Replace the seal (4) if required.

1044-004

123189-002

Sealing cone fittings



154527-001

23

- ► Apply seal (1) on the sealing cone (2).
- ► Tighten the union nut (3) a third of a turn beyond the point where resistance is felt.
  - ► Observe the tightening torques! Page 24

120856-007

Hydraulic hoses

124582-003

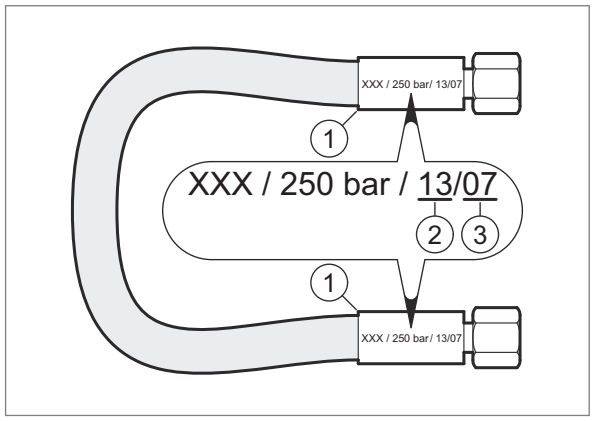
NOTICE

Failure of hydraulic hose lines due to ageing.

Uncontrolled lowering of machine parts.

- ► Replace hydraulic hose lines 6 years after manufacture at the latest.

To facilitate identifying of hydraulic hoses, each hose has the CLAAS part number printed on it.



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24

- ► Check hydraulic hoses before initial commissioning and thereafter at least once a year.
- ► In the case of damage and ageing, replace hydraulic hoses.

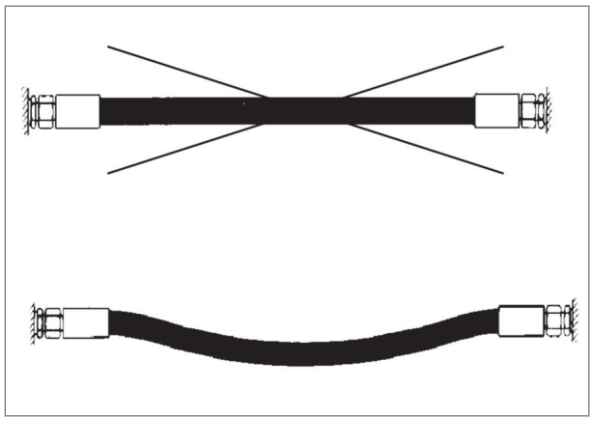
The date of manufacture can be seen on the hose fittings (1).

(2) = year (e.g. 12 = 2012)

(3) = month (e.g. 07 = July)

1044-004

Hose placement



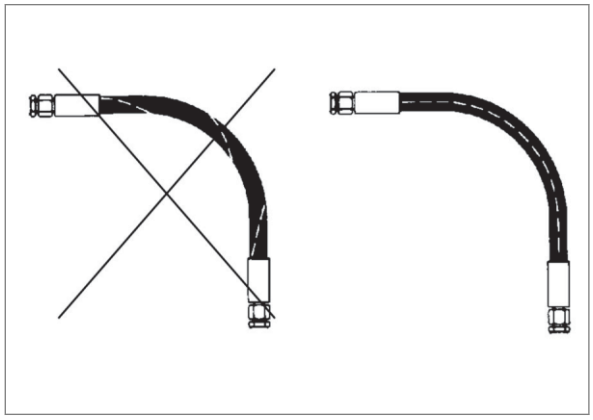
5727-002

13989-003

NOTICE! Hoses laid in a straight line get shorter as the hydraulic pressure is built up. Valves may be torn off.

- ► Always install hoses with a slight slack.
- ► Install hoses so that no tension or compression loads will occur in any operating conditions.
  - ► Check: If you shake the hose line in the middle between two brackets/connectors (e.g. clamps), the overall play of the hose line should be at least 1 cm.

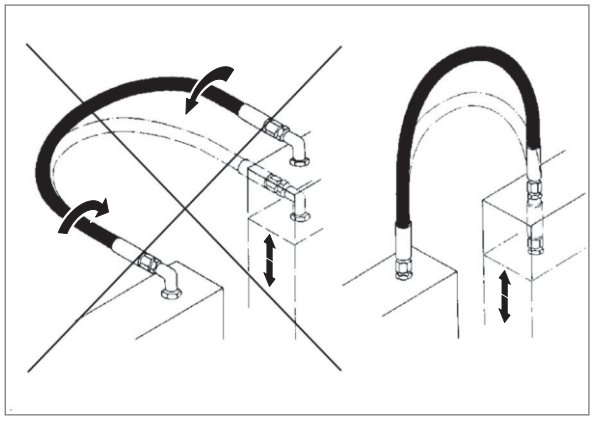
25



5728-002

- ► Do not install hose with a twist.
  - ► Particularly if there is movement at the hose line.

26



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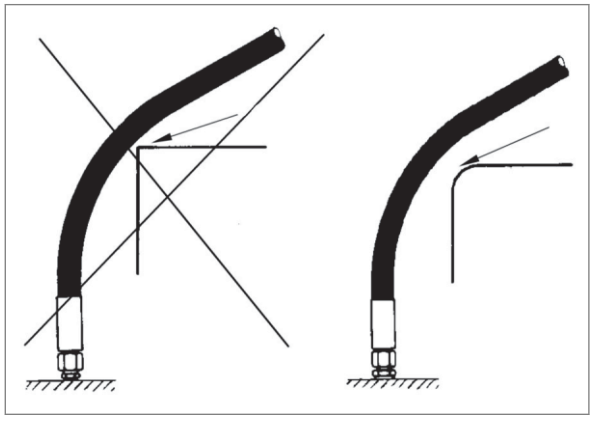
27



5726-002

- ► Avoid external mechanical impacts on hoses.
  - ► Avoid chafing the hoses against each other or against components through proper placement and fastening.
  - ► Keep an adequate distance from components.
  - ► Keep sharp-edged components covered at all times.
- ► When high outside temperatures are involved, install hose lines at a sufficient distance from components radiating heat.
  - ► If necessary, protect hose by a protective guard.

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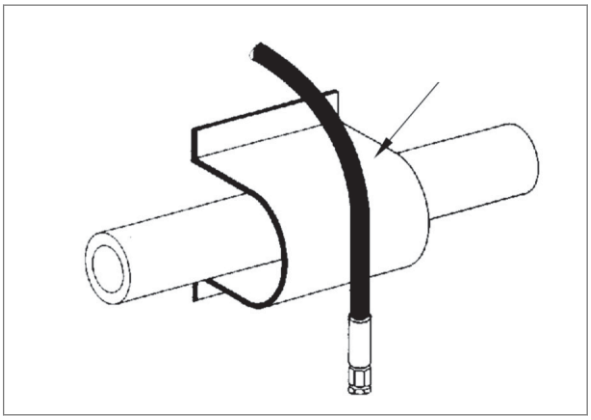
1044-004



5730-002

29

157962-002

Treatment of sealing faces

Close all oil, coolant and fuel bores thoroughly prior to treating the sealing faces.

Ensure that when treating sealing faces of components containing oil, coolant and fuel, no abrasives are used. Loose particles cause pollution and damage.

Ensure that no seal residues, rust, lime and combustion residues end up in open components (gearbox halves).

Remove sealing residues, rust, lime and combustion residues only using scraping tools or cleaning agents.

123155-004

Spare parts

11210-003

⚠WARNING

Use of unauthorised spare parts.

Death or serious injury.

- ► Spare parts must at least comply with the technical standards required by the manufacturer of the implement!
- ► We recommend using genuine CLAAS spare parts.

- ► Please quote the machine identification number when ordering spare parts or making technical enquiries.

CLAAS will assume no liability whatsoever for damage incurred as a result of the use of non-genuine CLAAS parts, accessories, and ancillary equipment.

1044-004

Torque settings

123194-003

Tightening torques for metric standard threads

The tightening torques specified below apply only when:

- A friction coefficient of μ tot = 0.14 is achieved in connection with thread lubricant.
  To achieve this, a surface protection agent such as A3C+L, Dacromet or Termosil is recommended.
- No other tightening torque is specified in the descriptive text.
- No additional screw retention is used, such as MK-type bolts or liquid locking compound.

		Tightening torque in Nm at a friction coefficient μ tot = 0.14		
Bolts and nuts				
Strength class		**8.8**	**10.9**	**12.9**
	Dimensions			
Hex. bolts ISO 4014 to ISO 4018 Cheese-head screws ISO 4762 Hex. nuts ISO 4032	M 4	2.9	4.3	5
	M 5	5.8	8.5	10
	M 6	10	14.5	17
	M 8	24.5	36	42
	M 10	48.5	71	83.5
	M 12	83.5	123	144
	M 14	133	196	229
	M 16	207	304	355
	M 18	296	422	494
	M 20	417	594	695
	M 22	570	813	951
	M 24	718	1022	1196
	M 27	1058	1506	1763
	M 30	1437	2046	2395
	M 33	1944	2770	3240
	M 36	2500	3561	4167
	M 39	3237	4610	5394

Tightening torques for metric fine thread screws

The tightening torques specified below apply only when:

- A friction coefficient of μ tot = 0.14 is achieved in connection with thread lubricant.
  To achieve this, a surface protection agent such as A3C+L, Dacromet or Termosil is recommended.
- No other tightening torque is specified in the descriptive text.
- No additional screw retention is used, such as MK-type bolts or liquid locking compound.

		Tightening torque in Nm at a friction coefficient μ tot = 0.14		
Bolts and nuts				
Strength class		**8.8**	**10.9**	**12.9**
	Dimensions			
Hex. bolts ISO 8765, ISO 8876 Hex. nuts ISO 4032	M 8 x 1	26	38.5	45
	M 10 x 1	54	79	92.5
	M 10 x 1.25	51	74.5	88
	M 12 x 1.25	90.5	134	156
	M 12 x 1.5	87	128	150
	M 14 x 1.5	143	210	246
	M 16 x 1.5	219	323	378
	M 18 x 1.5	331	470	551
	M 18 x 2	313	446	522
	M 20 x 1.5	459	655	766
	M 22 x 1.5	622	886	1037
	M 24 x 1.5	809	1152	1348
	M 24 x 2	778	1108	1297
	M 27 x 1.5	1173	1672	1956
	M 27 x 2	1135	1617	1892
	M 30 x 2	1580	2251	2634
	M 33 x 2	2116	3015	3528
	M 36 x 2	2773	3951	4623
	M 39 x 2	3557	5067	5930

1044-004
123198-002

Tightening torques for hydraulic screw fittings and air conditioner screw fittings with sealing cone and O-ring according to DIN 3865

Outside pipe diameter in mm	Tightening torque (light series) in Nm	Tightening torque (heavy series) in Nm
6	10	15
8	15	25
10	25	35
12	35	50
15	50	-
16	-	80
18	80	-
20	-	110
22	110	-
25	-	160
28	160	-
30	-	210
35	210	-
38	-	320
42	320	-

1044-004
123197-002

Tightening torques for hydraulic screw fittings with ferrule according to DIN 3861

Outside pipe diameter in mm	Tightening torque (light series) in Nm	Tightening torque (heavy series) in Nm
6	15	25
8	25	35
10	35	50
12	50	80
15	80	-
16	-	110
18	110	-
20	-	160
22	160	-
25	-	210
28	210	-
30	-	320
35	320	-
38	-	400
42	400	-

1044-004
123200-004

Tightening torques for SDS hydraulic male connectors

Shape B with sealing edge (cutting edge)

Shape E with soft ring seal

Dimension	Tightening torque (light series) in Nm	Tightening torque (heavy series) in Nm
M5	-	-
M6	-	-
M8 x 1	-	-
M10 x 1	18	-
M12 x 1.5	30	35
M14 x 1.5	45	55
M16 x 1.5	60	70
M18 x 1.5	70	110
M20 x 1.5	-	140
M22 x 1.5	140	170
M26 x 1.5	180	220
M27 x 2	190	250
M33 x 2	300	300
M42 x 2	500	550
M48 x 2	550	600
G 1/8 A	20	25
G 1/4 A	35	40
G 3/8 A	70	90
G 1/2 A	100	150
G 3/4 A	180	270
G 1 A	250	350
G 1-1/4 A	450	500
G 1-1/2 A	550	600
7/16 - 20 (11.1 mm)	-	-
1/2 - 20 (UNF)	-	-
9/16 - 18 (14.3 mm)	-	-
3/4 - 16 (19.1 mm)	-	-
7/8 - 14 (22.2 mm)	-	-

1044-004

Dimension	Tightening torque (light series) in Nm	Tightening torque (heavy series) in Nm
1-1/16 - 12 (27 mm)	-	-
1-5/16 - 12 (33.3 mm)	-	-
1-5/8 - 12 (UNF)	-	-
1-7/8 - 12 (UNF)	-	-
2 - 12 (UNF)	-	-

Shape F with O-ring and plug

Dimension	Tightening torque (light series) in Nm	Tightening torque (heavy series) in Nm
M5	2.8	-
M6	5.2	-
M8 x 1	7	-
M10 x 1	11	-
M12 x 1.5	15	15
M14 x 1.5	25	25
M16 x 1.5	35	35
M18 x 1.5	50	50
M20 x 1.5	-	55
M22 x 1.5	80	80
M26 x 1.5	110	110
M27 x 2	110	160
M33 x 2	160	210
M42 x 2	210	320
M48 x 2	320	420
G 1/8 A	-	-
G 1/4 A	-	-
G 3/8 A	-	-
G 1/2 A	-	-
G 3/4 A	-	-
G 1 A	-	-
G 1-1/4 A	-	-

1044-004

Dimension	Tightening torque (light series) in Nm	Tightening torque (heavy series) in Nm
G 1-1/2 A	-	-
7/16 - 20 (11.1 mm)	15	20
1/2 - 20 (UNF)	20	25
9/16 - 18 (14.3 mm)	30	30
3/4 - 16 (19.1 mm)	35	60
7/8 - 14 (22.2 mm)	70	90
1-1/16 - 12 (27 mm)	85	100
1-5/16 - 12 (33.3 mm)	150	170
1-5/8 - 12 (UNF)	250	300
1-7/8 - 12 (UNF)	300	350
2 - 12 (UNF)	350	400

Shape H with O-ring and chamber ring

Dimensions	Tightening torque (light series) in Nm	Tightening torque (heavy series) in Nm
G 1/8 A	20	20
G 1/4 A	40	40
G 3/8 A	75	75
G 1/2 A	85	85
G 3/4 A	180	180
G 1 A	310	310
G 1-1/4 A	450	450
G 1-1/2 A	540	540

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123204-003

Tightening torques for hydraulic swivel fittings

Dimensions	Tightening torque (light series) in Nm	Tightening torque (heavy series) in Nm
M10 x 1	20	30
M12 x 1.5	35	40
M14 x 1.5	45	50
M16 x 1.5	60	70
M18 x 1.5	75	80
M20 x 1.5	-	100
M22 x 1.5	125	130
M26 x 1.5	130	-
M27 x 2	130	140
M33 x 2	300	300
M42 x 2	500	500
M48 x 2	600	600
G 1/8 A	20	-
G 1/4 A	40	40
G 3/8 A	65	70
G 1/2 A	90	100
G 3/4 A	130	130
G 1 A	270	380
G 1-1/4 A	500	600
G 1-1/2 A	600	700

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123206-002

Tightening torques for hollow screws DIN 7643

Dimensions	Tightening torque in Nm
M8 x 1	8
M10 x 1	15
M12 x 1.5	27
M14 x 1.5	38
M16 x 1.5	45
M18 x 1.5	58
M22 x 1.5	95
M26 x 1.5	130
M30 x 1.5	183

Tightening torques for direction-adjustable SDE hydraulic male connectors

Shape F with O-ring

Dimensions	Tightening torque (very light series) in Nm	Tightening torque (light series) in Nm	Tightening torque (heavy series) in Nm
M8 x 1	-	-	-
M10 x 1	20	15	-
M12 x 1.5	-	25	35
M14 x 1.5	-	35	45
M16 x 1.5	-	40	55
M18 x 1.5	-	45	90
M20 x 1.5	-	-	140
M22 x 1.5	-	60	170
M26 x 1.5	-	100	190
M27 x 2	-	100	190
M33 x 2	-	160	310
M42 x 2	-	210	330
M48 x 2	-	260	420
7/16 - 20 (11.1 mm)	-	15	20
1/2 - 20 (UNF)	-	30	40
9/16 - 18 (14.3 mm)	-	35	45
3/4 - 16 (19.1 mm)	-	55	60
7/8 - 14 (22.2 mm)	-	80	90
1-1/16 - 12 (27 mm)	-	100	100
1-5/16 - 12 (33.3 mm)	-	150	170
1-5/8 - 12 (UNF)	-	290	340
1-7/8 - 12 (UNF)	-	325	415
2 - 12 (UNF)	-	350	450

Shape H with O-ring and chamber ring

Dimensions	Tightening torque (very light series) in Nm	Tightening torque (light series) in Nm	Tightening torque (heavy series) in Nm
M8 x 1	10	-	-
M10 x 1	20	18	-

1044-004

Dimensions	Tightening torque (very light series) in Nm	Tightening torque (light series) in Nm	Tightening torque (heavy series) in Nm
M12 x 1.5	-	30	35
M14 x 1.5	-	45	55
M16 x 1.5	-	60	80
M18 x 1.5	-	70	105
M20 x 1.5	-	-	140
M22 x 1.5	-	125	125
M26 x 1.5	-	180	180
M27 x 2	-	180	180
M33 x 2	-	300	380
M42 x 2	-	450	500
M48 x 2	-	600	600
G 1/8 A	20	20	25
G 1/4 A	-	35	45
G 3/8 A	-	70	75
G 1/2 A	-	100	100
G 3/4 A	-	180	180
G 1 A	-	300	300
G 1-1/4 A	-	450	450
G 1-1/2 A	-	540	540

1044-004
123207-004

Tightening torques for brake line screw fittings

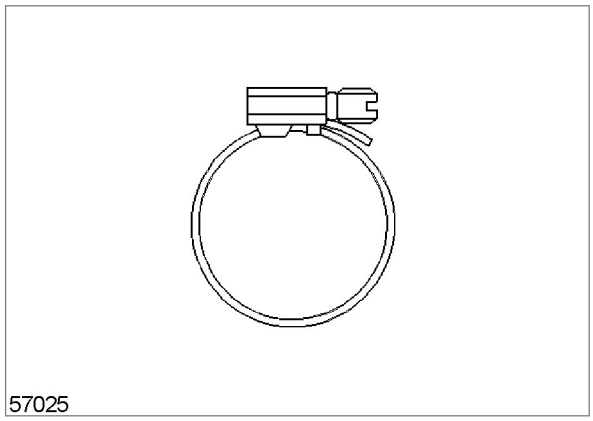
Shape F union screws

Shape FS union screws with chime

Dimensions	Tightening torque in Nm
M10 x 1	14+2

123209-003

Tightening torques for worm drive hose clamps



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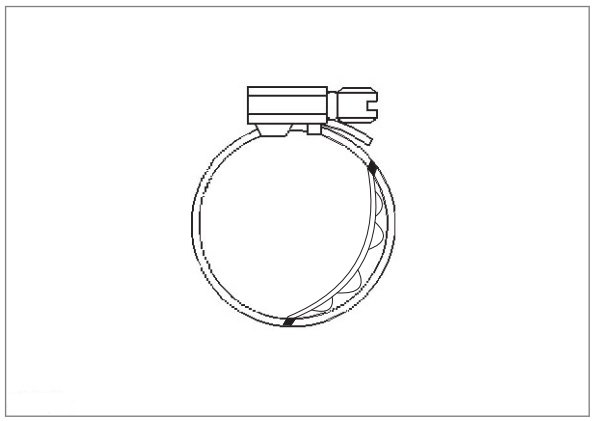
8515-001

Width of clip	Tightening torques for new hoses when installing for the first time	Tightening torques for retightening or reassembling
7.9 mm (0.31 inch)	0.9 ± 0.2 Nm (8 ± 2 lb in)	0.7 ± 0.2 Nm (6 ± 2 lb in)
13.5 mm (0.53 inch)	4.5 ± 0.5 Nm (40 ± 4 lb in)	3.0 ± 0.5 Nm (27 ± 4 lb in)
15.9 mm (0.63 inch)	7.5 ± 0.5 Nm (65 ± 4 lb in)	4.5 ± 0.5 Nm (40 ± 4 lb in)

123211-002

Tightening torque for spring-loaded worm drive hose clamps



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37503-001

Width of clip	Clamp diameter	Tightening torque
12 mm	60 - 80 mm	5 + 0.5 Nm
12 mm	70 - 90 mm	5 + 0.5 Nm

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CCN explanation

CCN (CLAAS Component Number)

120555-004

General

The CCN (CLAAS Component Number) arises from a CLAAS standard for hydraulic and electric systems. This standard is based on the hydraulic and electric functions on the machine.

146587-001

Electric systems standard

In the electric systems standard, the components are subdivided according to their function, using letters.

Pos.	Component
A	Terminal / module
B	Sensor
C	Electric / electronic devices
E	Lighting
G	Voltage source
H	Signalling device / lamp
J	Information units (required for function diagnosis)
M	Motor (electric)
P	Gauge
R	Potentiometer / resistor
S	Switches / pushbuttons - Cab operation
T	Switches - Terminal operation
U	Switches - External operation
V	Electronic component
W	Antenna
X	Connectors
Y	Solenoid coil
Z	Actual value switch

Hydraulic system standard

In the hydraulic systems standard, the components are subdivided according to their function, using number ranges.

Pos.	Component
1000	Oil reservoir / oil filter / oil cooler
2000	Pump / motor
3000	Hydraulic cylinder
4000	Restrictor / orifice plate
5000	Pressure accumulator
6000	Valve - mechanically actuated
7000	Valve - hydraulically actuated
8000	Couplings / connections
9000	Measuring point / gauge

CCN (CLAAS Component Number)

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CCN (CLAAS Component Number)

CCN Index

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1044-004

Safety

General Information

123229-002

Of special importance

In order to prevent accidents, the information provided in this repair manual must be read and observed by all persons who use, maintain, repair, service or monitor the machine.

Read the section on safety in particular.

123231-004

Identification of warning and danger signs

We have marked all points of this Repair Manual involving your safety and the safety of the front attachment or of the machine with the signs below. Please pass all safety precautions on to other users as well.

9-003

WARNING

Nature and source of danger

Consequences: probable incidence of serious injury or death

► Countermeasures

11-003

CAUTION

Nature and source of danger

Consequences: probable incidence of slight injuries

► Countermeasures

13-003

NOTICE

Nature and source of danger

Consequences: probable incidence of material damage

► Countermeasures

1044-004

16-003

Information

Nature and source of information

Consequences: inefficient use

► Measures

18-001

Environment!

Nature and source of danger

Consequences: damage to the environment

► Countermeasures

The warning and information signs on the machine provide important information for hazard-free operation. Observing these warnings and information serves your safety!

157730-003

Regulations for avoiding accidents with personal injuries

General

– In addition to this manual, the Repair Manual for the machine must always be observed.
– Observe all general rules concerning safety and accident prevention.
– Testing, adjusting and repair work may be carried out only by CLAAS sales partners.

Testing, adjusting and repair work

1497-002

⚠WARNING

Pinch point from pre-loaded components.

Serious injuries.

► Never move your hands between pre-loaded components.

– Secure the engine when removing it.
– Keep the engine, ladders, stairs, bridges and their surroundings free of oil and grease.
– Switch off the battery isolating switch while working in built-in condition.
– Ensure that the engine is not started accidentally by unauthorised persons.

1044-004

Engine operation

160525-002

CAUTION

Bruises and burns when intervening into the starting process or while the engine is running.

Danger of injury

- ► Wear closed and tight-fitting working clothes.
- ► Do not touch any hot or rotating parts.

173-002

CAUTION

Contact with hot liquids or machine parts.

Danger of burns

- ► Wear suitable protective clothing.
- ► Let liquids or machine parts cool down.
- ► Comply with instructions.

Suspended loads

57765-002

WARNING

Lifting heavy components.

Risk of death or serious injury.

- ► Use a lifting tool with a sufficient bearing load.
- ► Use a lifting tool that operates reliably.
- ► Use the lifting tool on solid and even ground.
- ► Attach the lifting tool to the component at the intended or a suitable position.
- ► Only use faultless and sufficiently dimensioned lifting accessories.
- ► Protect lifting accessories against sharp corners and edges, for example using protectors.

- ► Do not lift heavy components with your body's force.
- ► Ensure that no persons are present beneath suspended loads.

1044-004

Working on piping and hoses

157932-002

⚠WARNING

Fire / explosion hazard when handling fuel.

Death or serious injury.

- ► No fires, sparks, open light and no smoking.
- ► Fill fuel only into suitable containers.
- ► Wear protective clothing.

125670-003

⚠CAUTION

Contact with hot liquids.

Risk of burns.

- ► Release pressure on the system/wait for pressure to drop.
- ► Leave liquids to cool.
- ► Wear suitable protective clothing.

124851-001

Environment!

Lubricants, operating utilities and fuels escape into the environment.

Environmental pollution.

- ► Collect and store lubricants, operating utilities and fuels in suitable containers and ensure proper disposal.

- ► Neither retighten nor open any piping and hoses under pressure.

1044-004

Work on the Common Rail System

161964-002

NOTICE

Unprofessional installation on Common Rail system.

Damage to Common Rail system.

- ► All work on components of the Common Rail system may be carried out only by specially trained personnel.
- ► Prior to starting work, the engine must be standing still for at least 5 minutes in order to relieve the pressure in the pressure pipe or pressure reduction must be controlled with the CDS.
- ► Absolute cleanliness must be ensured during all work in all areas.
- ► Prior to any work on the clean side of the fuel system, the engine and the engine compartment must be cleaned (e.g. steam jet cleaner) with the fuel system remaining closed.
- ► Absolutely avoid moisture.
- ► Slackened-off inlet connectors must always be replaced.
- ► Plugs once used for high-pressure lines, pressure pipe and injectors must not be re-used.
- ► Observe the sequence specified in the description when tightening the injectors, high-pressure lines, pressure pipe and inlet connector.

161966-002

NOTICE

Unclosed components.

Damage to the Common Rail system.

- ► Dismount only one fuel line at a time.
- ► Close the component connections immediately with new and clean caps.

Working on the electric system

- ► Start the engine only with firmly connected batteries.
- ► Do not disconnect the batteries while the engine is running.
- ► Do not use any quick-charging devices for starting the engine.
  - ► Assist-starting only with separate batteries.
- ► The connections of control units may be disconnected and connected only with the electric system switched off.

1044-004

- ► Incorrect polarity of the control units may cause their destruction.
- ► Always tighten the connections on the injection system to the specified tightening torques.
- ► When temperatures above 80 °C must be expected, the control units must be removed.
- ► Use only suitable testing lines for measurements on connectors.
- ► Observe the manufacturer's regulations for batteries.
- ► Wear protective clothing when handling batteries.
- ► Do not tilt the batteries, acid might escape.
- ► Measure the voltage only with a suitable measuring device.
- ► Electrolytic gas may form in closed battery boxes.
  - ► Be particularly careful after the engine has run for an extended period and after charging the battery with a charger.
- ► When disconnecting the batteries, non-disconnected continuous consumers may generate sparks that ignite the gas.
  - ► Vent the battery box sufficiently prior to disconnecting.
- ► Avoid short-circuits by wrong polarity or placing metal objects on the battery terminals.
- ► Disconnect batteries when the engine has been shut down and recharge every four weeks.

Working on the hydraulic system

64831-003

⚠WARNING

Residual oil pressure in hoses / hydraulic components.

Serious injury of eyes / of skin.

- ► Relieve the residual oil pressure in the hydraulic system.

11741-003

NOTICE

Serious damage to hydraulic circuit components.

- ► Before installing hydraulic system components, the entire hydraulic circuit and the hydraulic system components remaining on the machine must be flushed.
- ► The entire hydraulic system must be free of dirt and foreign objects.
- ► Replace the hydraulic oil filter.

1044-004

Electric welding

- ► Observe the welding information sheets.
- ► Disconnect the batteries.
- ► Fit earthing point of the welder close to the welding spot.
- ► Disconnect the control units.

Painting work

- ► During painting work, electronic components may be exposed to high temperatures (up to 95 °C) only for a short time.
- ► Disconnect the batteries.
- ► Remove sensitive electric components.
- ► Screw fittings of high-pressure lines must **not** be painted. Danger of introducing dirt in case of repairs.

Working with urea solution

124844-004

⚠CAUTION

Contact with urea solution.

Danger of injury.

- ► Wash your skin thoroughly with water and soap. See a doctor if necessary.
- ► Flush eyes thoroughly with plenty of water. See a doctor if necessary.
- ► Flush mouth and drink plenty of water. See a doctor if necessary.

149012-002

NOTICE

Foreign substances pollute the system

Damage to exhaust gas system.

- ► Keep foreign substances and residual quantities of diesel fuel out of this system.
- ► Increased cleanliness requirements during installation work.

1044-004

124885-005

NOTICE

Surfaces get in contact with urea solution.

Component corrosion.

► Flush the surfaces concerned with plenty of water immediately.

157737-001

Information on how to avoid damage and premature wear

General

– Engines are built exclusively for the intended use according to the shipping package.
– Unauthorised modifications on the engine will exclude any liability of the manufacturer for any resulting damage.
  Manipulations on the injection and control system may also influence the output and waste gas behaviour.
  Meeting the statutory environmental protection requirements is no longer guaranteed in this condition.
– If any trouble occurs during operation, locate and remove the reason immediately.
– Clean the engine thoroughly before starting repairs.
  - Ensure that no dirt, sand or foreign objects end up inside the engine.
– Only use genuine CLAAS spare parts.
– Never let the engine run dry.
– Never let the engine run without coolant.
– Fit a corresponding note on engines that are not ready for operation.
– Use only operating utilities approved by CLAAS.
– Do not fill in engine oil beyond the maximum level mark.

157745-001

Liability limitation

General

► All information and notes in this manual were compiled considering the standards and regulations in force, the state of the art and many years of experience.
► CLAAS will not assume any liability for damage caused by:
  ► failure to comply with this manual
  ► use not in line with the intended use
  ► use of non-trained personnel
  ► unauthorised conversions
  ► technical modifications
  ► use of non-approved spare part and operating utilities

1044-004

Shutting down and storage

► Shutting down the engine for an extended period of time requires temporary corrosion protection.

157747-001

Regulations for avoiding health and environmental damage

Precautionary measures for protection against health and environmental damage

► Avoid extended, excessive or repeated skin contact with operating utilities, auxiliary operating utilities, diluents or solvents.
► Protect your skin by suitable skin protection agents or protective gloves.
► Do not use any operating utilities, auxiliary operating utilities, diluents or solvents for cleaning of skin.
  ► Wash polluted skin thoroughly with water and soap.
► Change oil-soaked clothing and shoes.
► Do not put any oil-soaked rags into the pockets of your working clothes.

Disposal of operating utilities and auxiliary operating utilities

► Observe the regulations of the local authorities.
► Ensure that no operating utilities will end up in the soil, sewer or in waters.
► Different operating utilities must be collected and disposed of in different containers.
► Use tight containers for draining operating utilities.
  ► Ensure that food or drink containers are **never** used - danger of confusion.
► Ensure that operating utilities are correctly disposed of.
  ► Operating utilities count among the water-hazardous substances!

157748-002

Information for working on the diesel engine

Accident protection

► Fuel jets may cut the skin.
► Fire hazard due to fine spraying of fuel.
► Avoid standing near the running engine.
► Never slacken off the screw fittings of fuel lines while the engine is running.
  The lines may be under very high pressure (up to 1800 bar).
► The engine must have been stopped for at least 5 minutes before slackening off the fuel lines.
  ► Check the line pressure values with the CDS if necessary.
► Do not touch live parts of electric connections while the engine is running.

1044-004

- ► Persons wearing a pacemaker must not come closer than 20 cm to the running engine.
- ► Any modifications of the original engine cabling may result in exceeding threshold values of the pacemaker regulations.

Cleanliness

Diesel injection components consist of high-precision parts that are subject to extreme loads. In view of this high-precision equipment, maximum cleanliness must be ensured during all work on the fuel system. Even dirt particles measuring more than 0.002 mm may make components fail.

Before starting work, absolutely comply with the rules below:

- ► Clean engine and engine compartment before starting the work.
  - ► Ensure that the fuel system is closed here.
  - ► When using a jet cleaner, do not aim directly on electric components or fit covers.
- ► Clean tools and working materials before starting work.
  - ► Use only undamaged tools.
- ► Cover up engine compartment areas where dirt particles may come off with a new and clean dust film.
- ► Wash your hands before starting dismounting and put on fresh working clothing.
- ► Carry out a visual inspection for leaks and damage on the fuel system.
- ► Remove any loose dirt particles such as paint chips and insulation material with a suitable suction device.
- ► When removing and installing components, no materials such as cloths, cardboard or wood may be used as these materials may lose particles and fibres.
- ► Carefully remove paint chippings resulting from slackening off bolts before completely removing the bolts.
- ► Place the engine in a clean area of the workshop where no work is carried out that raises dust.
- ► Avoid air motion (possible raising of dust by starting engines, workshop ventilation or heating system, air draught etc.).
- ► Clean and dry the area of the still closed fuel system with compressed air.
  - ► After opening the clean-side fuel system, use of compressed air for cleaning is no longer allowed.
- ► Use only non-fluff cleaning cloths on the fuel system.
- ► Close connecting openings of all removed parts of the clean-side fuel system immediately with suitable caps.

1044-004

- ► Caps must be packed dust-tight before use and must be disposed of after using them once.

► Keep components carefully in a clean and closed container.

- ► Never use pre-used cleaning or testing liquids for these components.

► New parts may be taken out of their original packaging only just before using them.

► Carry out work on removed components only at a workplace equipped for this purpose.

► If removed parts are dispatched, always use the original packaging of the new part.

Installation instructions

► Piping of all kinds must not be bent, risk of cracking!

► Regulations for flawless installation of flat seals:

- ► Only use genuine CLAAS seals.
- ► Sealing faces must be undamaged and clean.
- ► Do not use any sealants or glues.
- ► Tighten bolts evenly to the specified torque.

► Regulations for flawless installation of round seals:

- ► Only use genuine CLAAS seals.
- ► Sealing faces must be undamaged and clean.
- ► Always wet O-rings with engine oil according to the manufacturer's specification when installing.

Engine overhaul

The service life of an engine is influenced by very different factors. Specifying a certain number of operating hours for basic overhauls is therefore not possible.

Opening an engine or a basic overhaul is not appropriate as long as the engine has good compression values and the following operating values have not significantly changed as compared with those measured and accepted upon commissioning:

► Charge pressure.

► Exhaust gas temperature.

► Coolant and lubricating oil temperature.

► Oil pressure and oil consumption.

► Smoke behaviour.

The criteria below have major influence on the engine's service life:

► Correct setting of output, depending on the type of use.

► Proper installation.

1044-004

- ► Acceptance of installation by authorised personnel.
- ► Regular maintenance according to the maintenance schedule.
- ► Selection and quality of lubricating oil, fuel and coolant according to the manufacturer's specifications.

Putting into operation after an engine overhaul

Pre-fill the engine with engine oil after finishing repair, i.e. in dry condition, before putting it back into operation. This process can also be applied when establishing damage and reasons.

On all engines that have not been pre-filled with lubricating oil, the danger of premature damage to the bearing surface is very big because the lubrication oil fed by the oil pump from the oil sump takes relatively long before it reaches the individual bearings.

Such initial damage will not necessarily make the bearings fail, but can affect bearing function and reduce the service life.

Pre-filling the engine with engine oil: Page 178

123242-003

First aid measures

Inhaling:

- – Give the person fresh air and consult a doctor depending on his or her symptoms.
- – Remove the person from the danger area.

Contact with the eyes:

- – Rinse the eyes thoroughly with large amounts of water for several minutes. Consult a doctor if required.

Contact with the skin:

- – Wash thoroughly with plenty of water and soap, remove polluted and soaked clothing immediately, consult a doctor if the skin is irritated (e.g. reddening).

Swallowing:

- – Do not induce vomiting; consult a doctor immediately.

1044-004

01 Engine

0102 Complete component

162116-001

Type design

The engines of the OM 906 LA and OM 926 LA series are available in three different versions.

These are differentiated by the different type designs:

Series	Type design	Exhaust gas level	Note!
OM 906 LA OM 926 LA	906.991 926.929	Tier 3 / Stage IIIA	
OM 926 LA	926.959 926.970	Tier 4i / Stage IIIB	

162117-001

Engine data

OM 906 LA

Designation	Value	
Dry weight	530	kg
Wet weight	573	kg
Engine type	In-line engine	
Number of cylinders	6	
Cylinder bore	102	mm
Cylinder stroke	130	mm
Cubic capacity	6.370	cm³
Direction of rotation of engine when viewing the flywheel	Left	

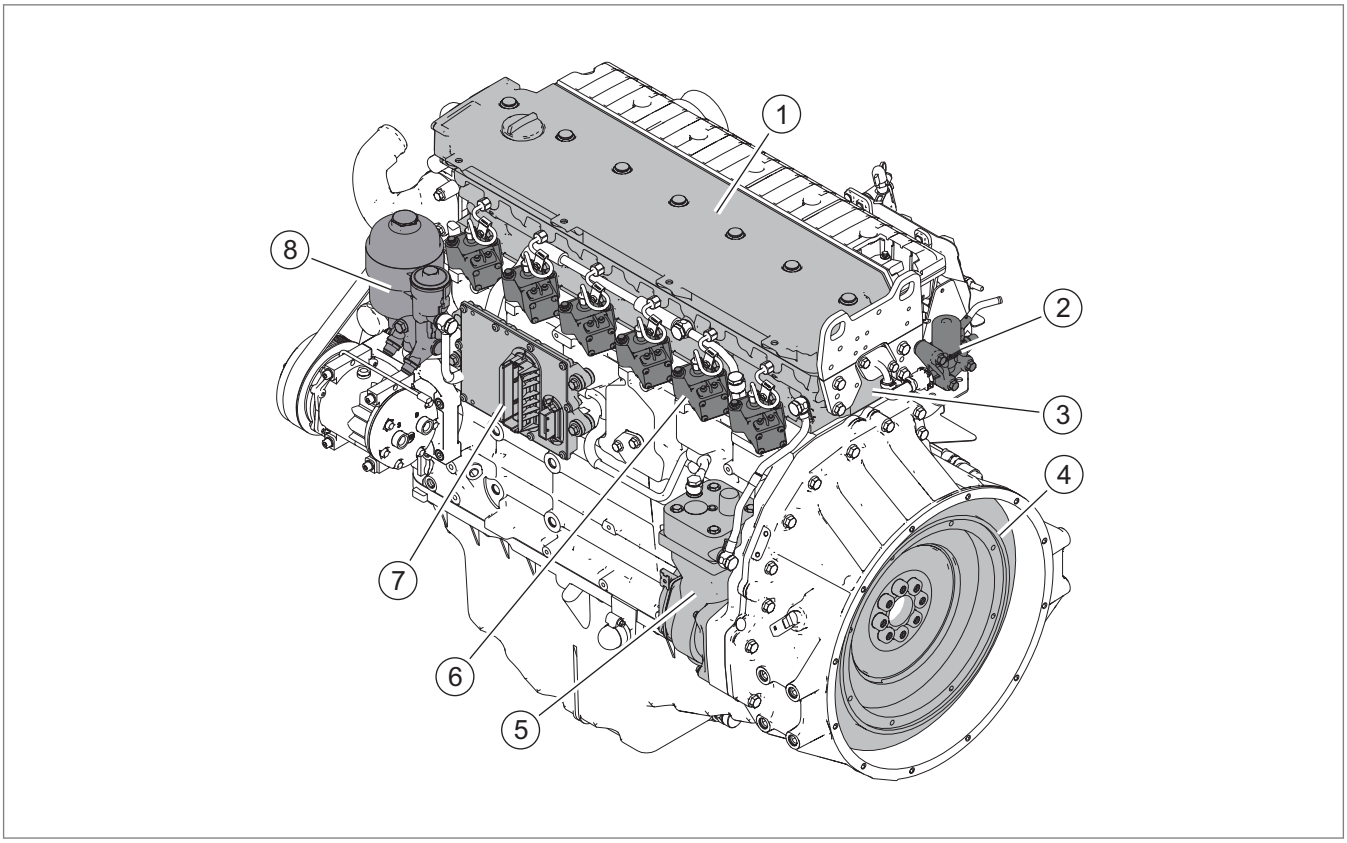
OM 926 LA

Designation	Value	
Dry weight	530	kg
Wet weight	573	kg
Engine type	In-line engine	
Number of cylinders	6	
Cylinder bore	106	mm
Cylinder stroke	136	mm
Cubic capacity	7.200	cm³
Direction of rotation of engine when viewing the flywheel	Left	

1044-004
162119-002

Engine description

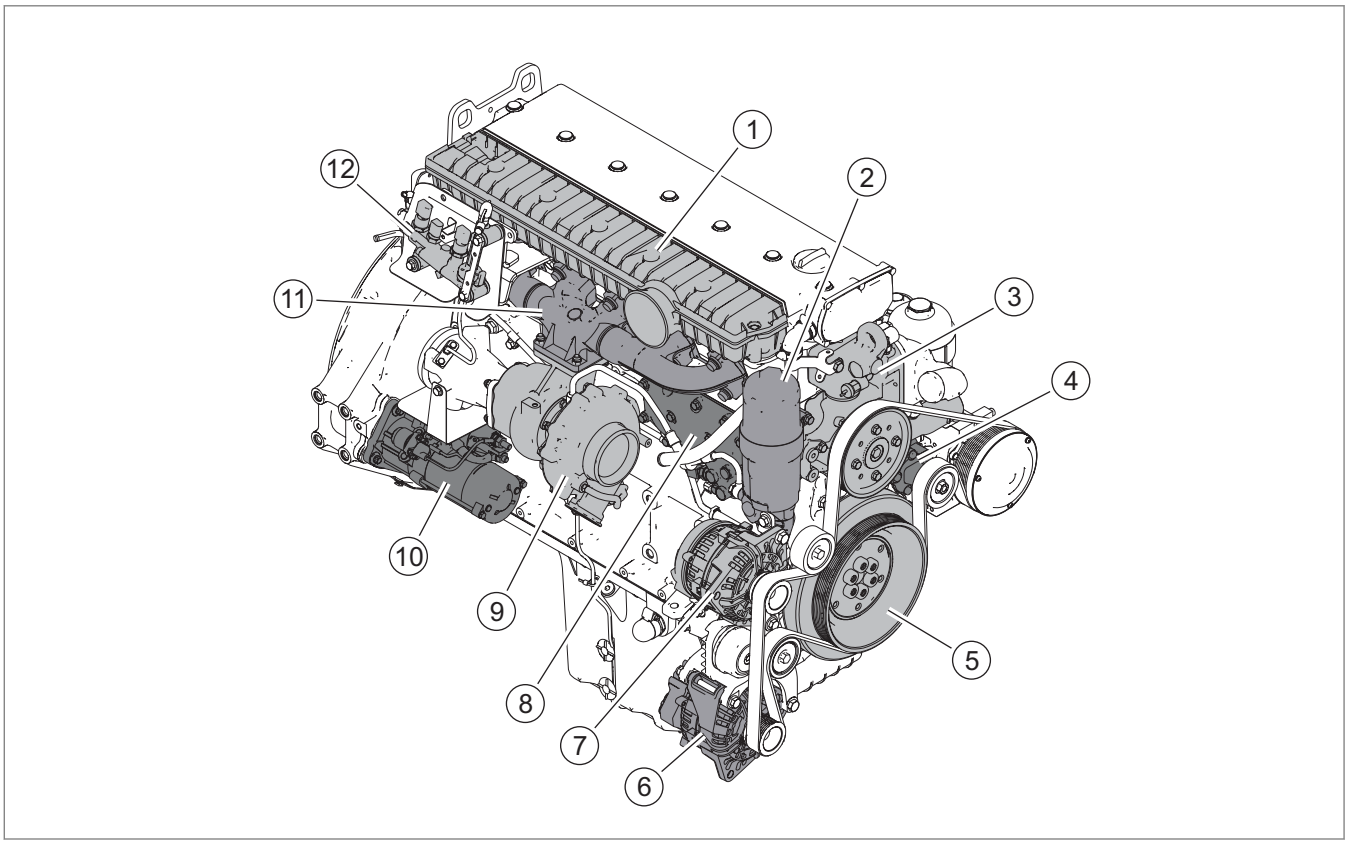
Engine components



188319-001 **32**

	Designation	
1	Valve cover	Page 118
2	Urea heater valve Applies to: Type designs 926.959 and 926.970	Page 263
3	Cylinder head	Page 121
4	Flywheel	Page 111
5	Compressor	Page 251
6	Plug-on pump	Page 167
7	MR/PLD control unit	Page 256
8	Fuel filter	Page 175

1044-004

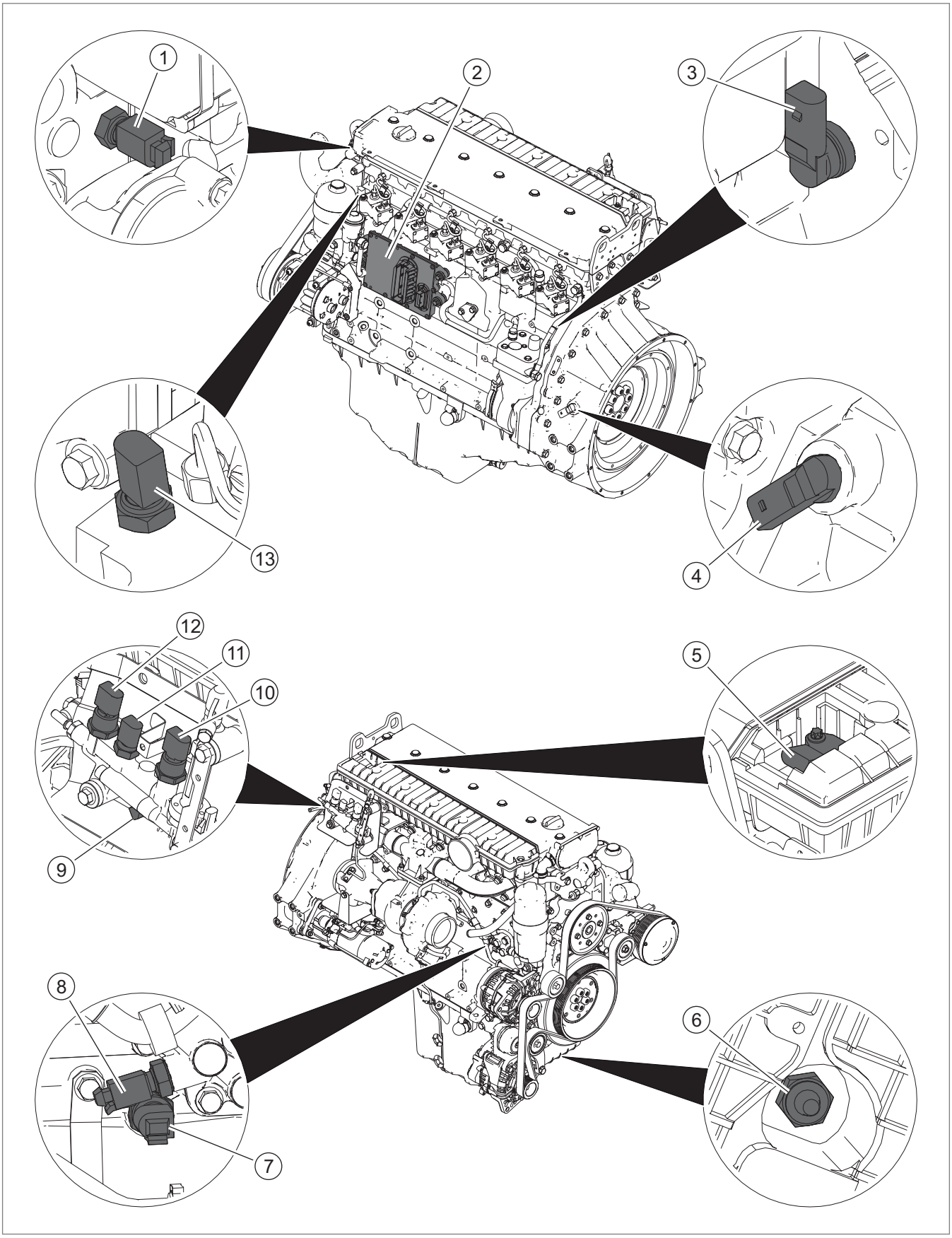


188320-001 **33**

	Designation	
1	Intake housing	Page 232
2	Oil filter housing	Page 184
3	Coolant pump	Page 201
4	Fuel pump	Page 172
5	Oscillation damper	Page 109
6	Alternator 24 V Applies to: Type designs 926.959 and 926.970	Page 245
7	Alternator 12 V	Page 240
8	Oil cooler	Page 189
9	Exhaust turbo charger	Page 218
10	Electric starting motor	
11	Exhaust manifold	Page 213
12	Urea dosing unit Applies to: Type designs 926.959 and 926.970	Page 277

1044-004

Sensors



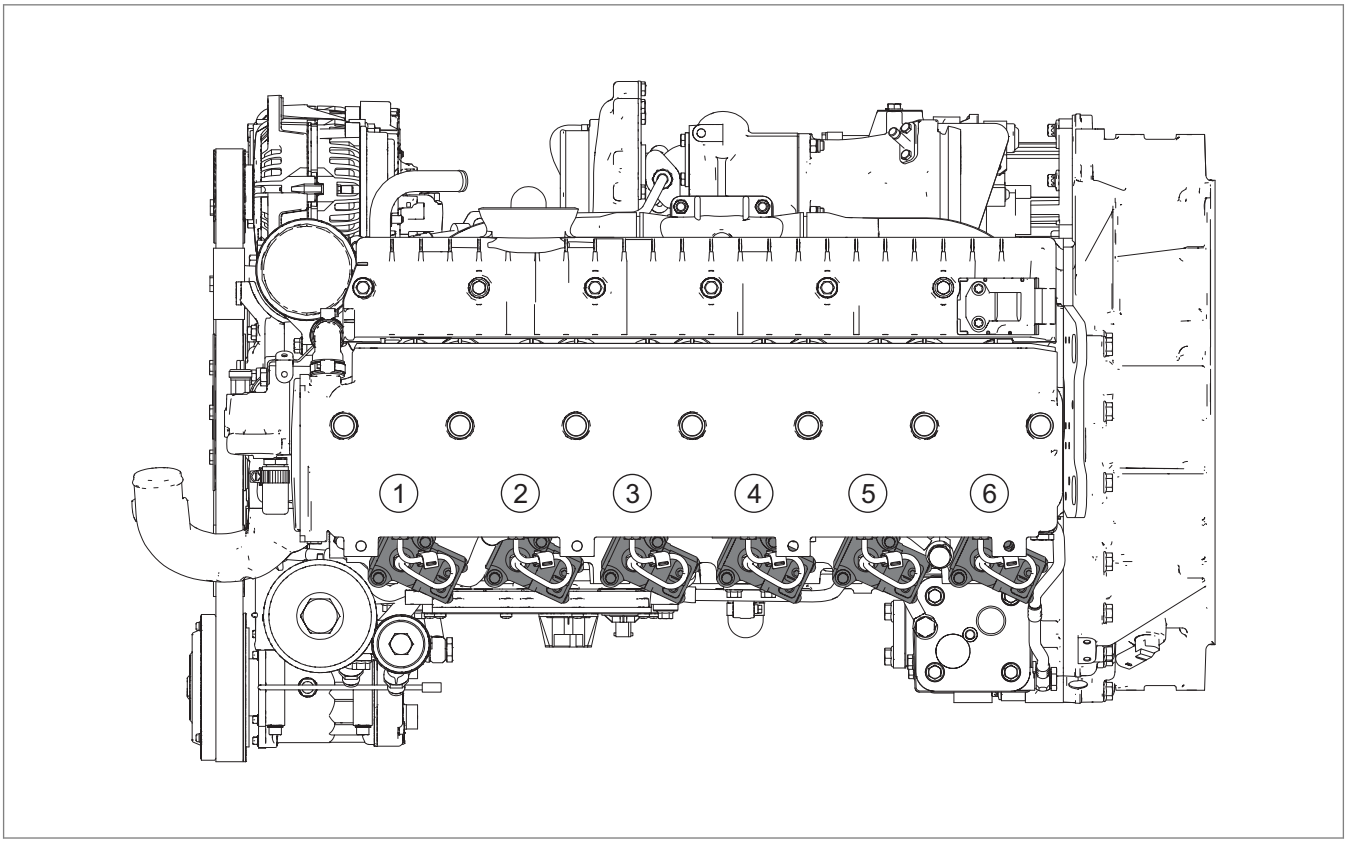
188321-001 **34**

1044-004

	Value	CCN	Remark / designation	
1		B65-MB	Coolant temperature sensor	Page 201
2		A6-MB (A015)	MR/PLD control unit	Page 256
3		B16-MB	Camshaft position sensor	
4		B15-MB	Crankshaft position sensor	Page 77
5		B111-MB	Charge air temperature and pressure sensor	Page 232
6		B14-MB	Oil level sensor	Page 63
7		B12-MB	Oil pressure sensor	Page 189
8		B11-MB	Oil temperature sensor	Page 189
9		Y109-MB (Y487)	Urea dosing valve	Page 279
10		B128-MB	Dosing unit air pressure sensor	Page 279
11		B130-MB	Urea temperature sensor	Page 279
12		B129-MB (B360)	Urea pressure sensor	Page 279
13		B10-MB	Fuel temperature sensor	
Tightening torques not specified, see section on tightening torques				

1044-004

Ignition order



188322-001 **35**

The piston (1) is at the ignition top dead centre (ignition TDC) when the synchronous piston (6) is at the valve overlap top dead centre (overlap TDC).

The intake valves and the exhaust valves are relieved at the ignition top dead centre.

When at the overlap top dead centre, the intake valves and the exhaust valves are loaded.

Piston position	**Cylinder / injection order**											
Overlap TDC	1	5	3	6	2	4						
Ignition TDC	6	2	4	1	5	3						

1044-004
162184-002

Cranking the engine

The engine can be cranked by hand both in built-in condition and in removed condition.

Depending on the variant, different special tools are available for this.

– In order to avoid damage to the special tool, it is important to use the respective special tool only for the specified application!

This is why this chapter is sub-divided into two sections:

Cranking the engine in built-in condition: Page 56

Cranking the engine in removed condition: Page 58

1044-004

180243-001

36

Special tool for built-in engine

The following tools of special tool kit 00 0181 932 0 are needed:

	Special tool	Pcs.
1	Cranking tool 00 0181 751 0	1
2	Spacer sleeve 00 0953 440 0	3
3	Hex. bolt ISO 4017 M16x80 00 0237 841 0	3

Compose special tools using the table below, depending on the machine in question:

Machine	Special tool	Part number	
TUCANO Page 56	Cranking tool	00 0181 751 0	1x
	Spacer tube	00 0953 440 0	3x
	Hex. bolt	00 0237 841 0	3x

147485-001

37

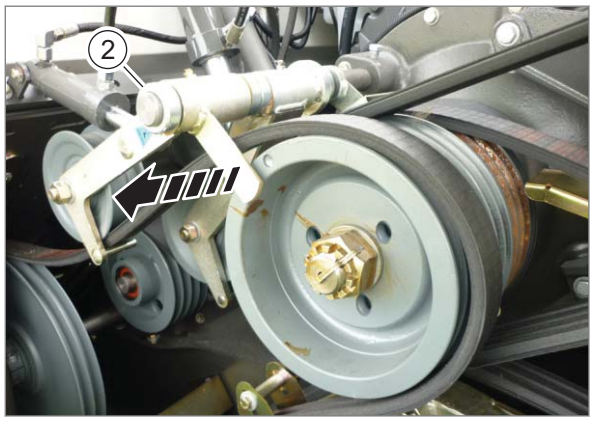
Special tools for removed engine

	Special tool	Pcs.
1	Cranking tool 00 1992 902 0	1

1044-004

Cranking the engine in built-in condition

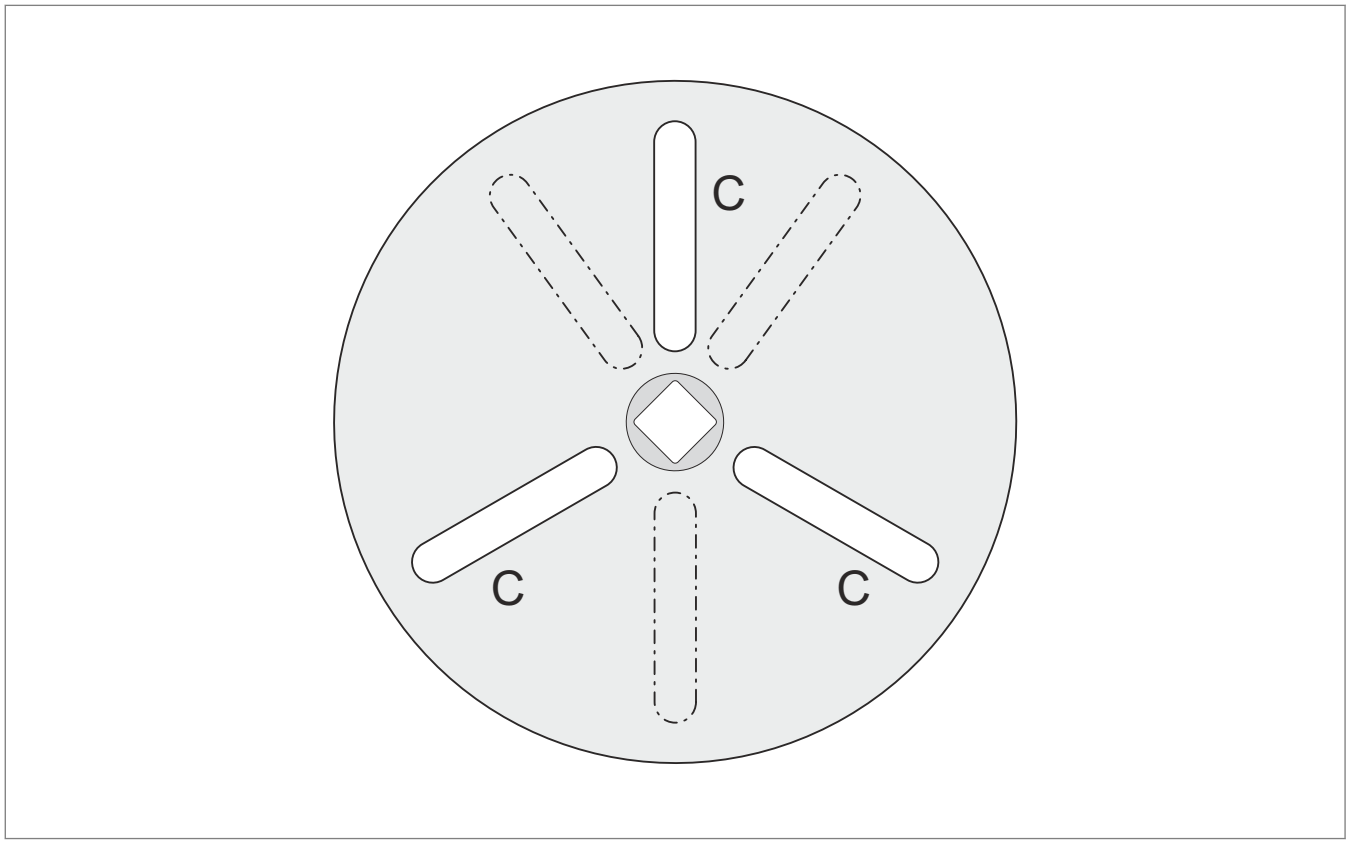
TUCANO



173942-001

38

► Remove bracket (2).

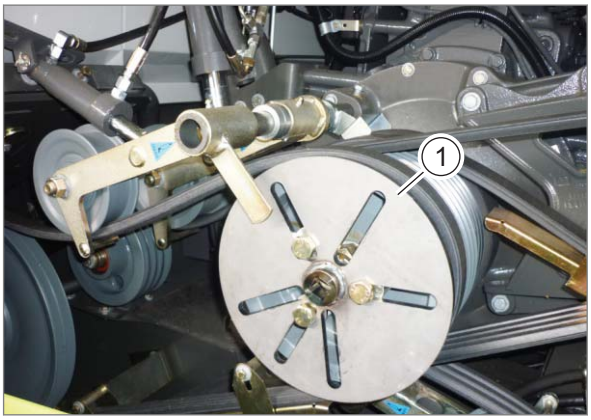


170310-001

39

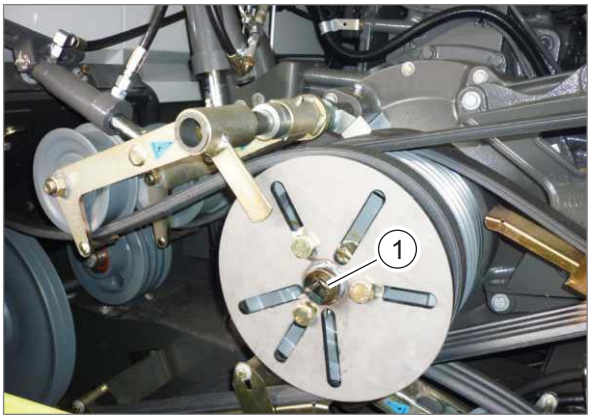
► Screw on special tool (1) (Page 55) through openings (C) of the cranking tool.

1044-004



173943-001

40



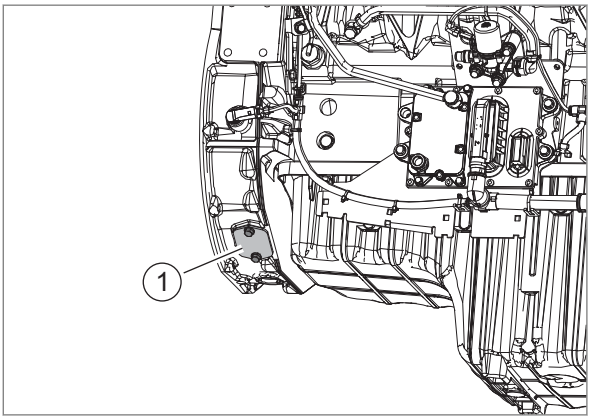
188340-001

41

► Crank engine at (1) until the desired crankshaft position is reached.

1044-004

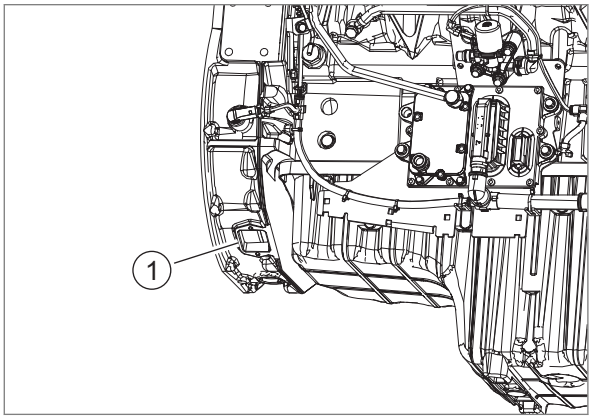
Cranking the engine in removed condition



180254-001

42

► Unscrew plate (1).



180255-001

43

Using the special tool: Page 55

► Fit special tool at (1).

► Crank engine until the desired crankshaft position is reached.

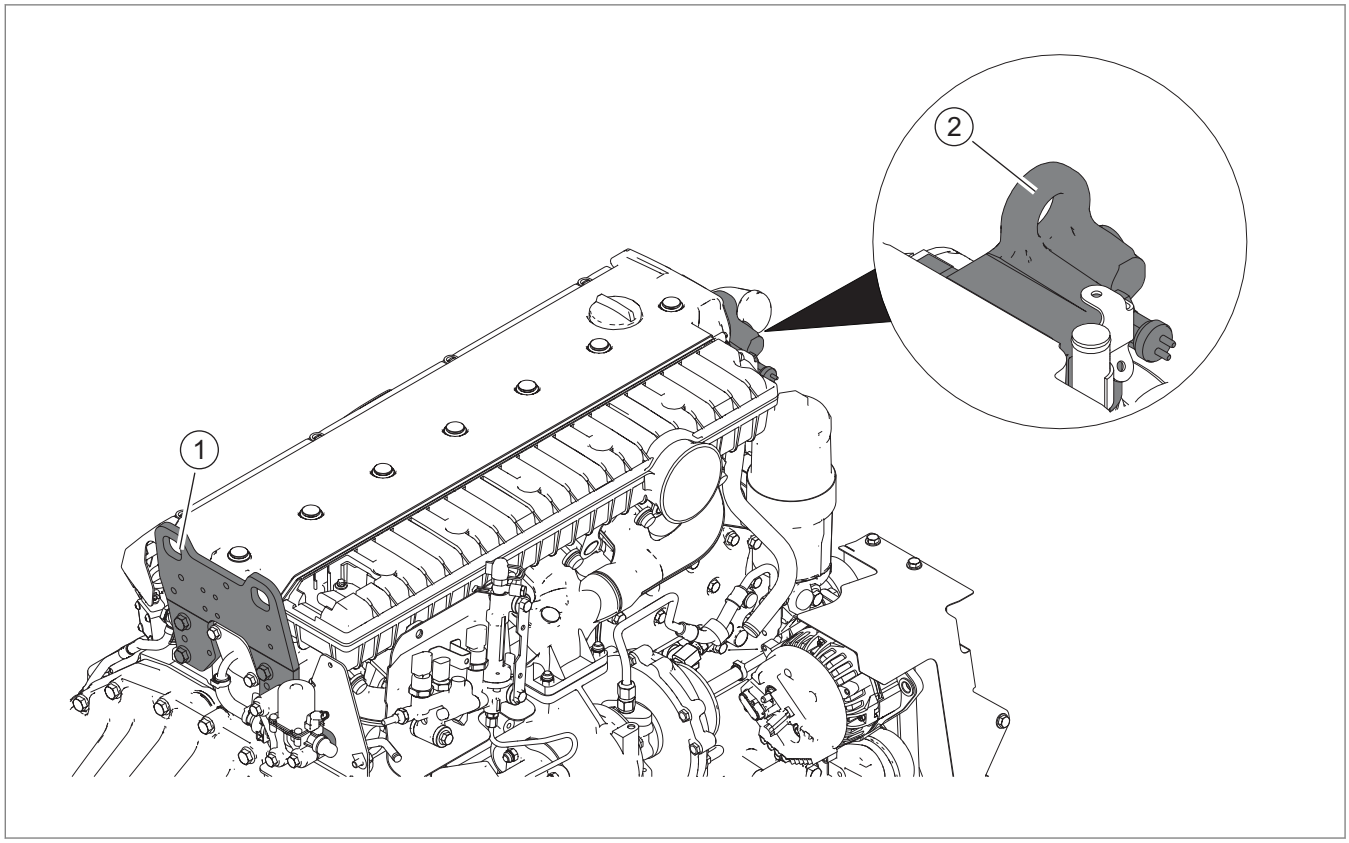
1044-004

0105 Engine suspension

1044-004
162197-001

Lifting eyes

Technical specifications



188362-001 **44**

	Value	CCN	Remark / designation	
1			Crankcase lifting eyes, front See coolant pump	Page 201
2	210 Nm		Crankcase lifting eyes, rear	
Tightening torques not specified, see section on tightening torques				

1044-004

0110 Engine housing

1044-004
162348-001

Oil sump

39225-002

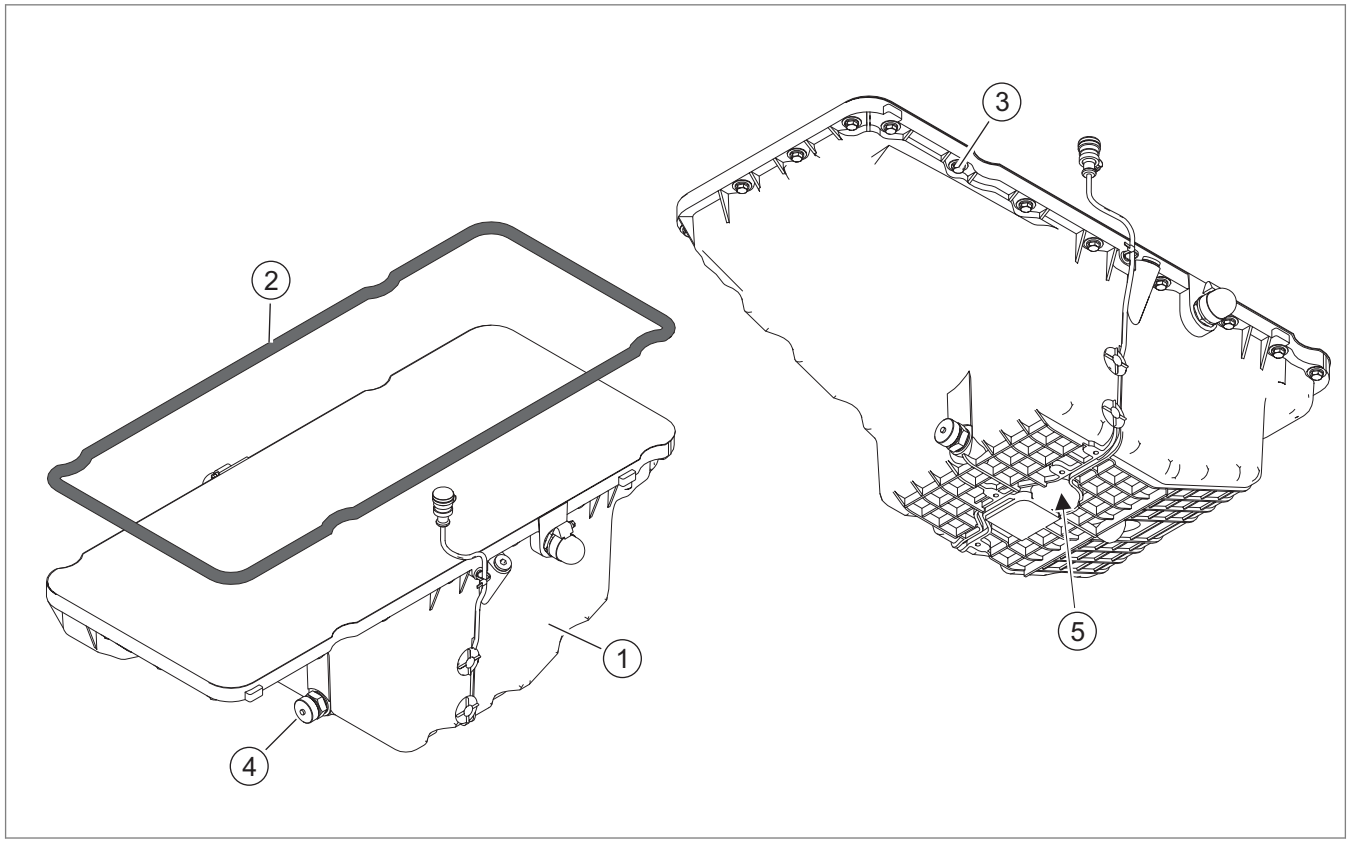
45

Special tool

	Special tool (I)	Pcs.
1	Sealing compound 00 0217 602 0	1

1044-004

Technical specifications



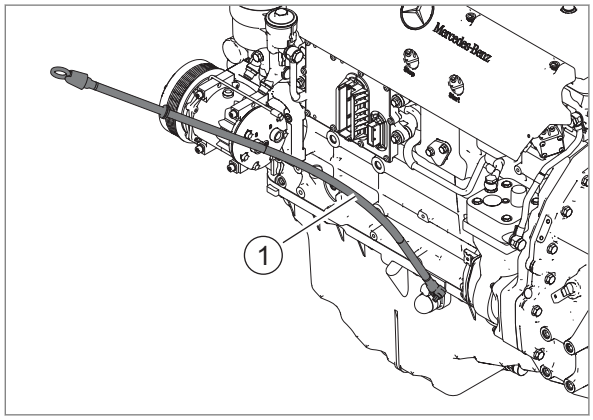
188475-001 **46**

	Value	CCN	Remark / designation	
1	19 kg		Oil sump	
2			Seal	
3	25 Nm		Oil pan mounting bolts	
4	65 Nm		Oil drain plug	
5	65 Nm	B14-MB	Oil level sensor	
Tightening torques not specified, see section on tightening torques				

Removal

- ► Drain the engine oil.
  See the Operator's Manual of the machine in question.
- ► Remove the alternator. Page 247
  Applies to type designs:
  926.959
  926.970

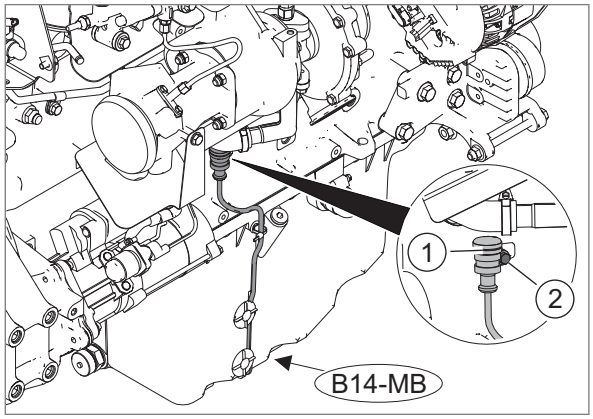
1044-004



188494-001

47

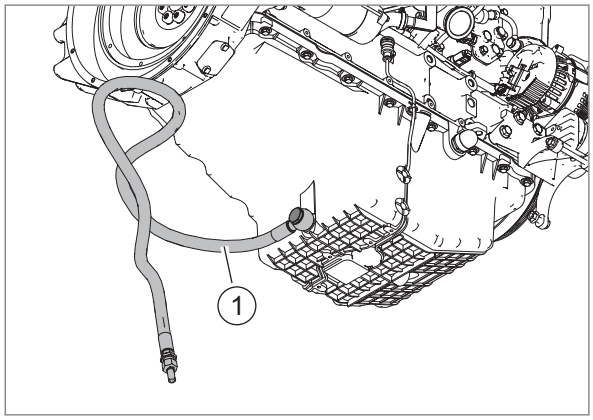
► Unscrew the oil level dipstick (1).



188495-001

48

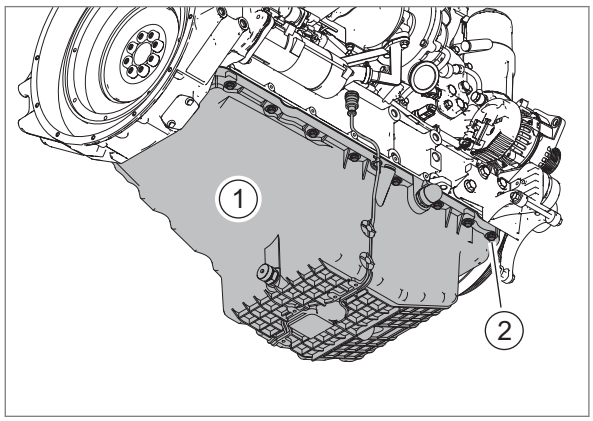
► Disconnect cable connector from sensor (B14-MB) at (1) and unscrew at (2).



188496-001

49

► Unscrew oil drain hose (1).

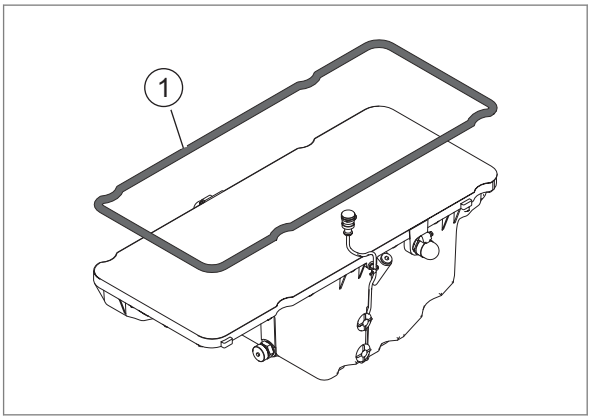


188497-001

50

► Unscrew all bolts (2) and remove oil pan (1).
  ► Ensure that no more cables or lines are attached to the oil pan.

1044-004



188498-001

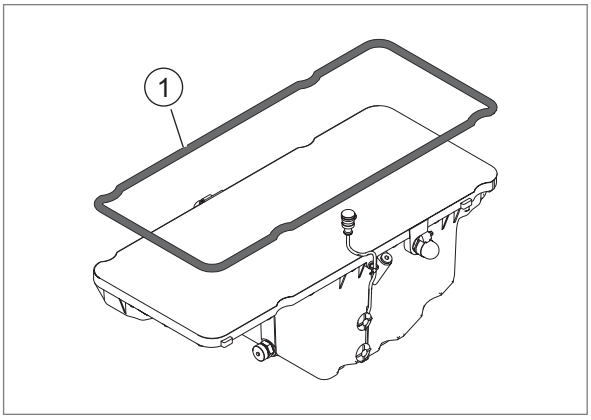
► Remove seal (1) from the oil pan.

51

Installation

► Clean all sealing faces. Page 19

► Place a new seal (1) on the oil pan.



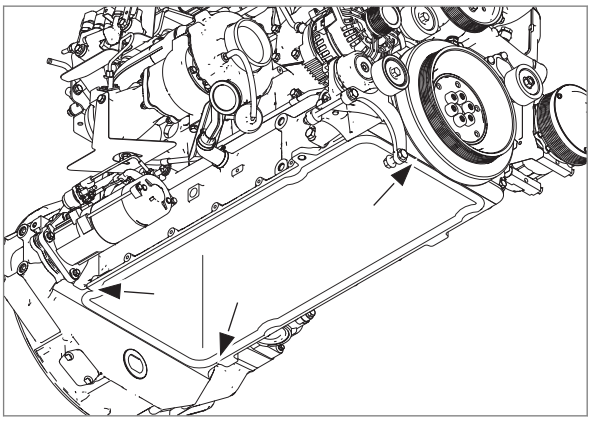
188498-001

52

Use special tool (I). Page 62

► Clean all sealing faces. Page 19

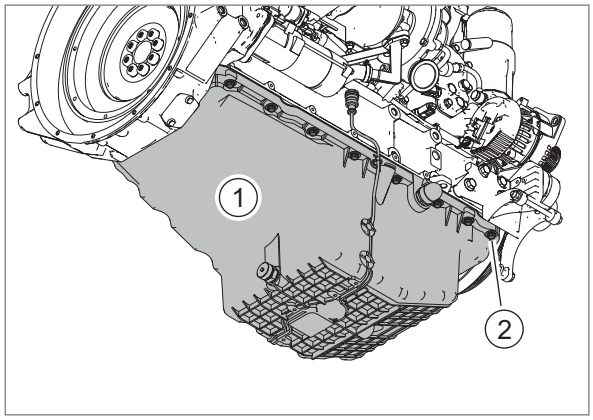
► Apply special tool (I) at the separating points (arrows) with the timing housing and the front housing cover.



188499-001

53

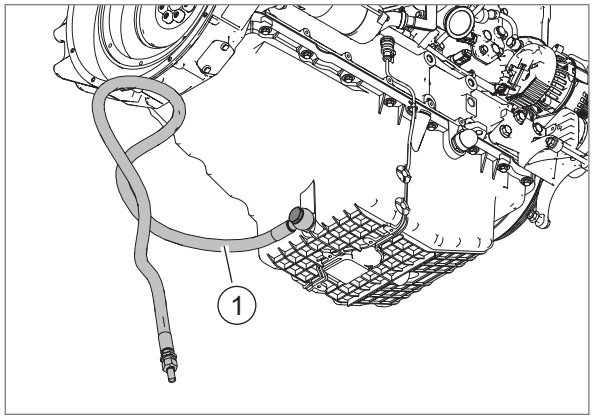
1044-004



188497-001

54

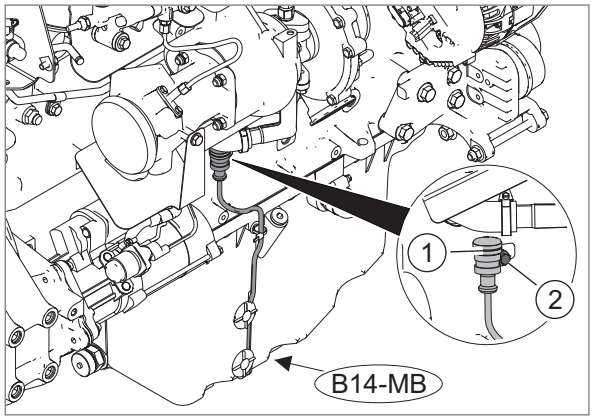
► Bolt down oil pan (1) with bolts (2).
Tightening torque: Page 63



188496-001

55

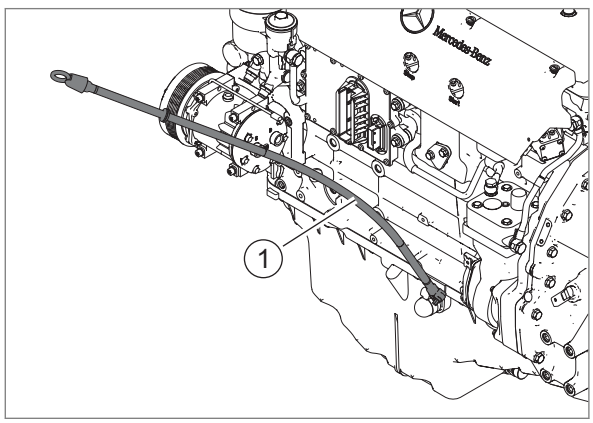
► Bolt down oil drain hose (1).
Tightening torque: Page 63



188495-001

56

► Connect cable connector to sensor (B14-MB) at (1) and screw on at (2).



188494-001

57

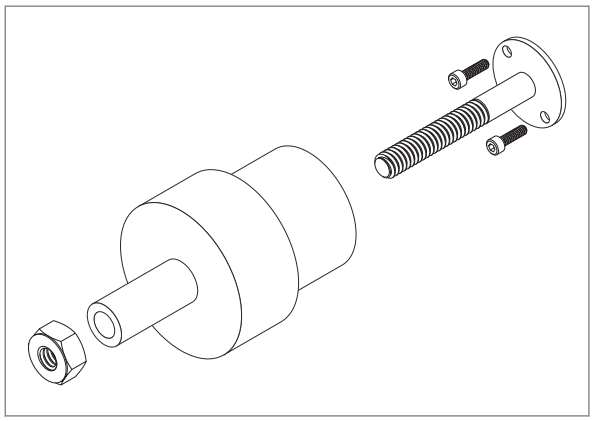
► Bolt down oil level dipstick (1).

1044-004

- ▶ Top up engine oil.
  See the Operator's Manual of the machine in question.
- ▶ Install the alternator. Page 247
  Applies to type designs:
  926.959
  926.970

1044-004
162370-003

Crankshaft front seal



237684-001

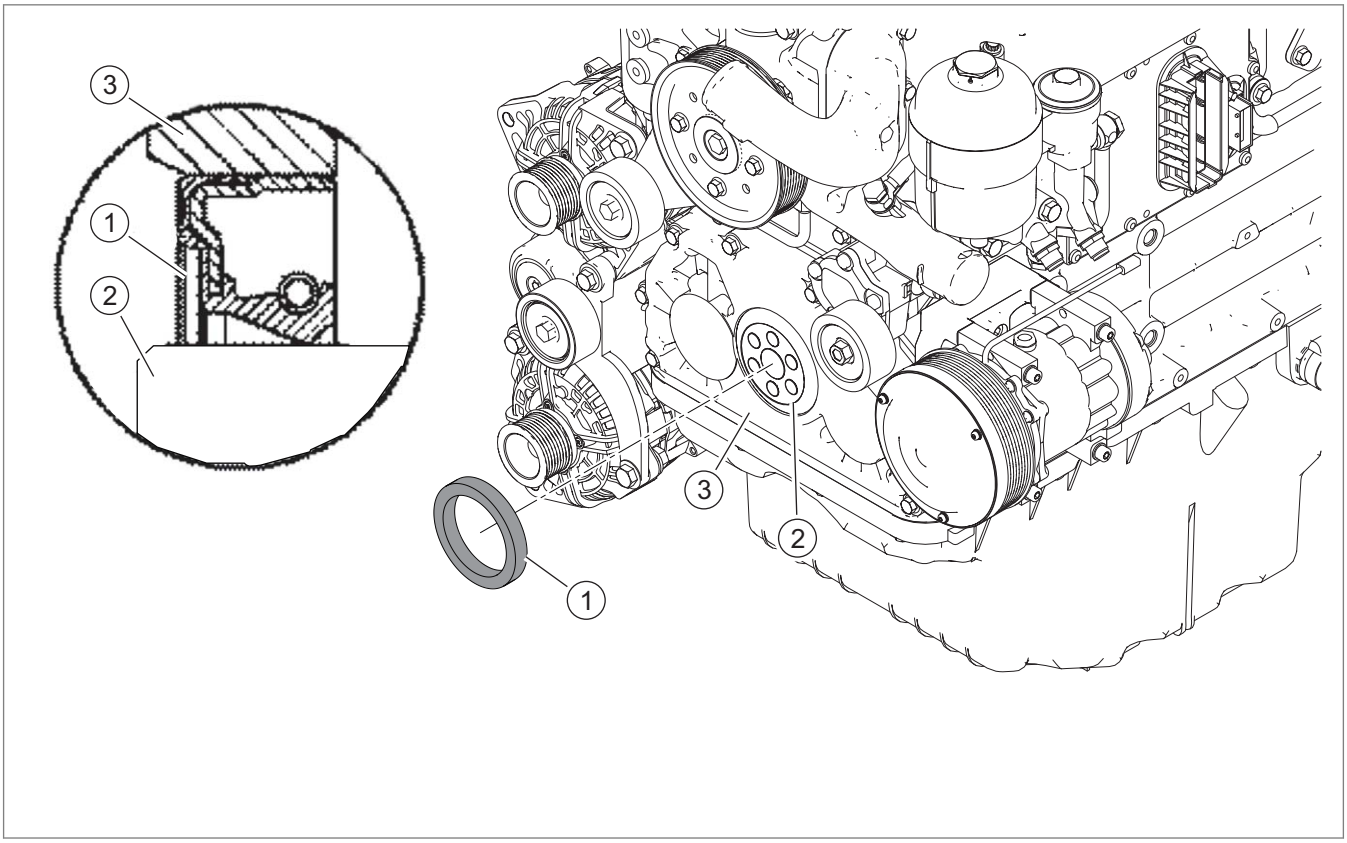
58

Special tool

	Special tool (I)	Pcs.
1	Installation tool 00 1995 525 0	1

1044-004

Technical specifications



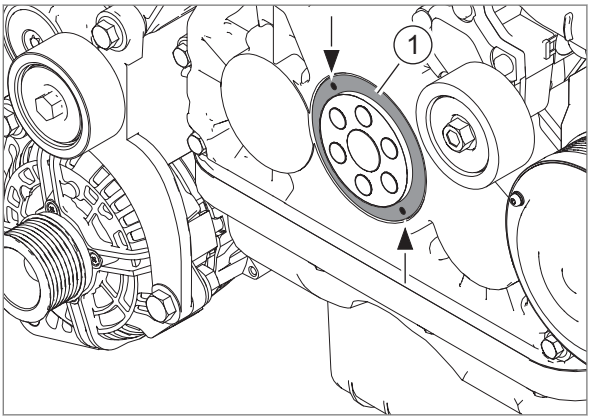
188520-001 **59**

	Value	CCN	Remark / designation	
1			Radial seal Observe the installation position. Coat the inner contact face slightly with engine oil. Replace the seal with every installation.	
2			Crankshaft	Page 98
3			Oil pump	Page 193
Tightening torques not specified, see section on tightening torques				

Removal

► Remove the oscillation damper. Page 109

1044-004



188521-001

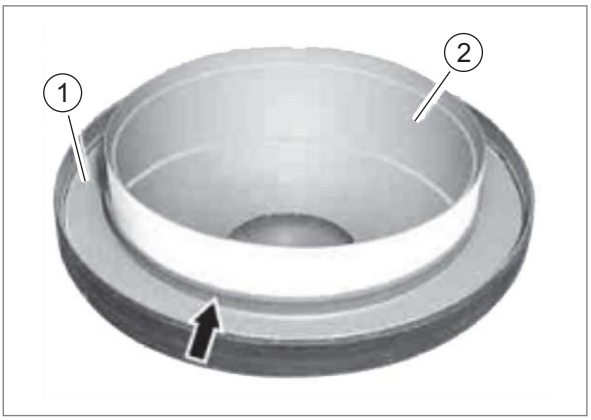
60

- ► Drill two Ø 3 mm holes into seal (1).
- ► Screw two self-tapping screws 4.8x25 mm into the bores.
- ► Pull out the seal (1) at the self-tapping screws.

- ► Check the contact face of the radial seal on the crankshaft flange.
  - ► When run-in traces exist, replace the crankshaft. Page 101

Installation

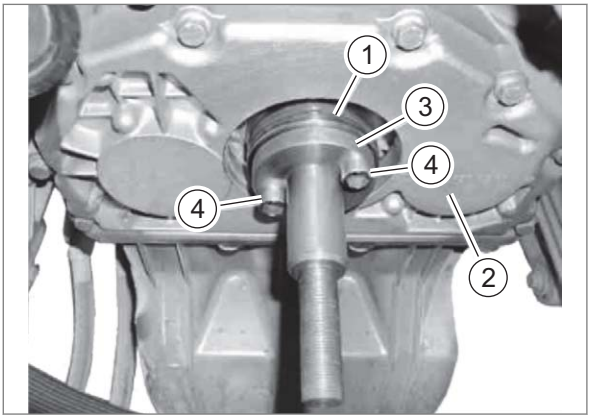
- ► Use special tool (I). Page 68



188536-001

61

- ► Slide the new seal (1) over mounting sleeve (2). Apply a little oil to the seal on the inside only.
  - ► Ensure that the dust lip (arrow) makes complete contact with the mounting sleeve.

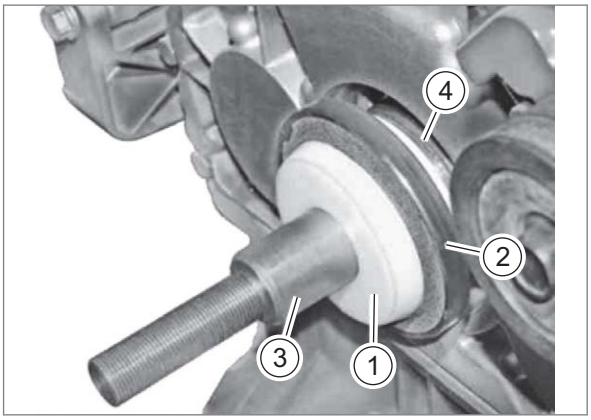


188537-001

62

- ► Clean the sealing faces on the crankshaft flange (1) and on the oil pump housing (2). Page 19
- ► Screw on punch (3) on the crankshaft flange (1), using bolts (4).

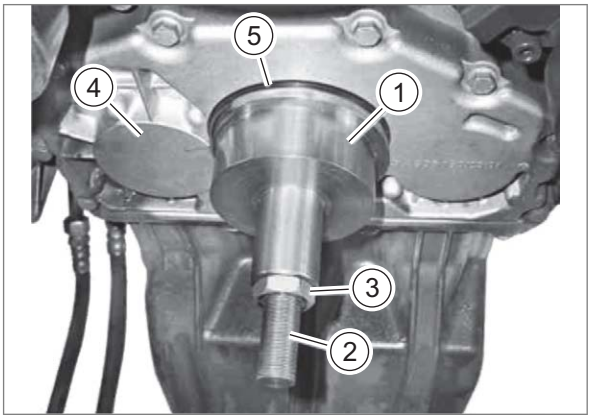
1044-004



188539-001

► Slide the mounting sleeve (1) with the inserted seal (2) over punch (3).
  ► Ensure that the mounting sleeve covers up the crankshaft flange (4).

63



188540-001

► Slide locator tool (1) over punch (2).
  ► Align the recess on the locator tool to the raised section of the oil pump housing at (4).
► Bolt down nut (3) until the locator tool (1) makes contact at the oil pump housing.

The installation depth of the seal is defined by special tool (I).

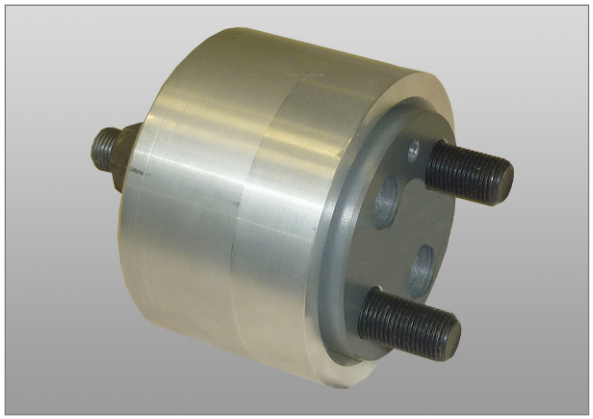
► Remove special tool (I).

64

► Install the oscillation damper. Page 109

1044-004
162376-003

Crankshaft rear seal



237672-001

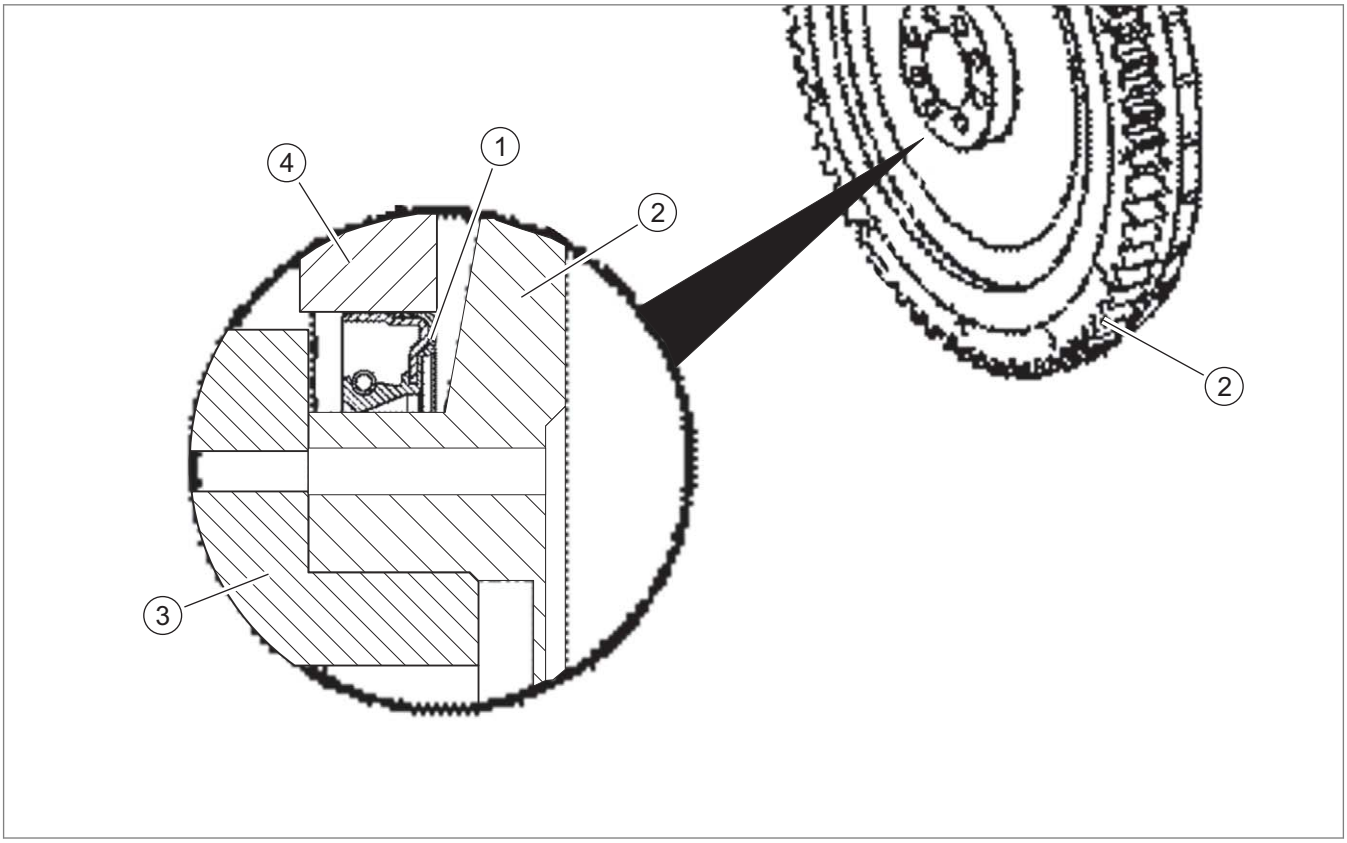
65

Special tool

	Special tool (I)	Pcs.
1	Pull-in device 00 1995 513 0	1

1044-004

Technical specifications



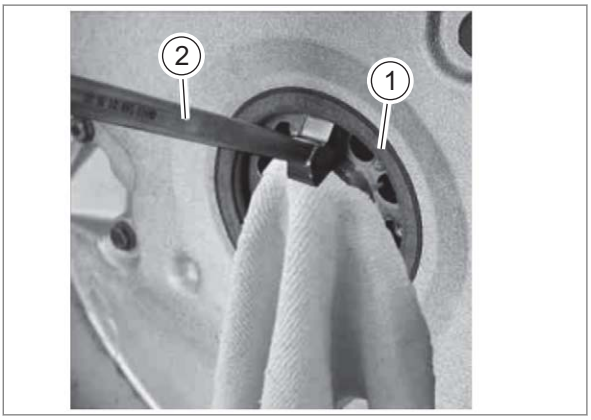
188562-001 **66**

	Value	CCN	Remark / designation	
1			Crankshaft rear radial seal Observe the installation position. Coat the inner contact face slightly with engine oil.	
2			Flywheel	Page 111
3			Crankshaft	Page 98
4			Crankshaft housing	
Tightening torques not specified, see section on tightening torques				

Removal

- ► Remove the torsion dampers.
  - ► See the repair manual of the machine in question.
- ► Remove the flywheel. Page 113

1044-004



183372-001

67

► Remove radial seal (1), using a suitable tool (2).

► Check the contact face of the radial seal on the flywheel flange.
  ► When run-in traces exist, replace the flywheel. Page 113

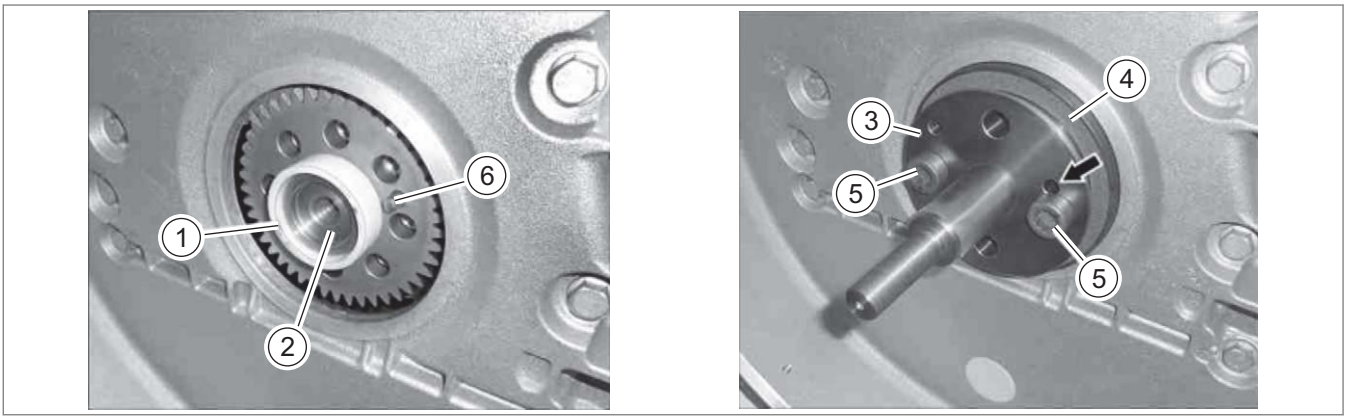
Installation

► Use special tool (I). Page 111

188565-001

68

► Slide a new radial seal (1) over flange (2).
Apply a little oil to the seal on the inside only.



188570-001

69

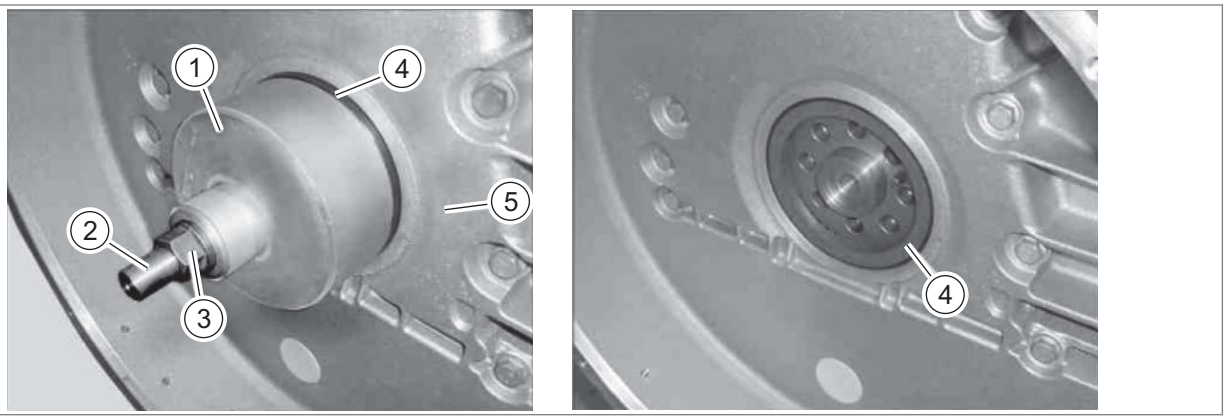
► Slide sleeve (1) over the crankshaft flange (2).

► Place flange (3) with seal (4) inserted over sleeve (1).

1044-004

► Ensure that dowel pin (6) is inserted into the hole (arrow).

► Screw in two bolts (5) of the flywheel.



188571-001 **70**

► Slide sleeve (1) over flange (2).

► Push seal (4) into the timing housing (5) by tightening nut (3) until a stop is felt.

The installation depth of the seal is defined by special tool (I).

► Remove special tool (I) completely.

► Check if inner dust lip of the seal is damaged.

► Install flywheel. Page 114

► Install the torsion damper.

► See the repair manual of the machine in question.

1044-004
162379-002

Timing housing

39225-002

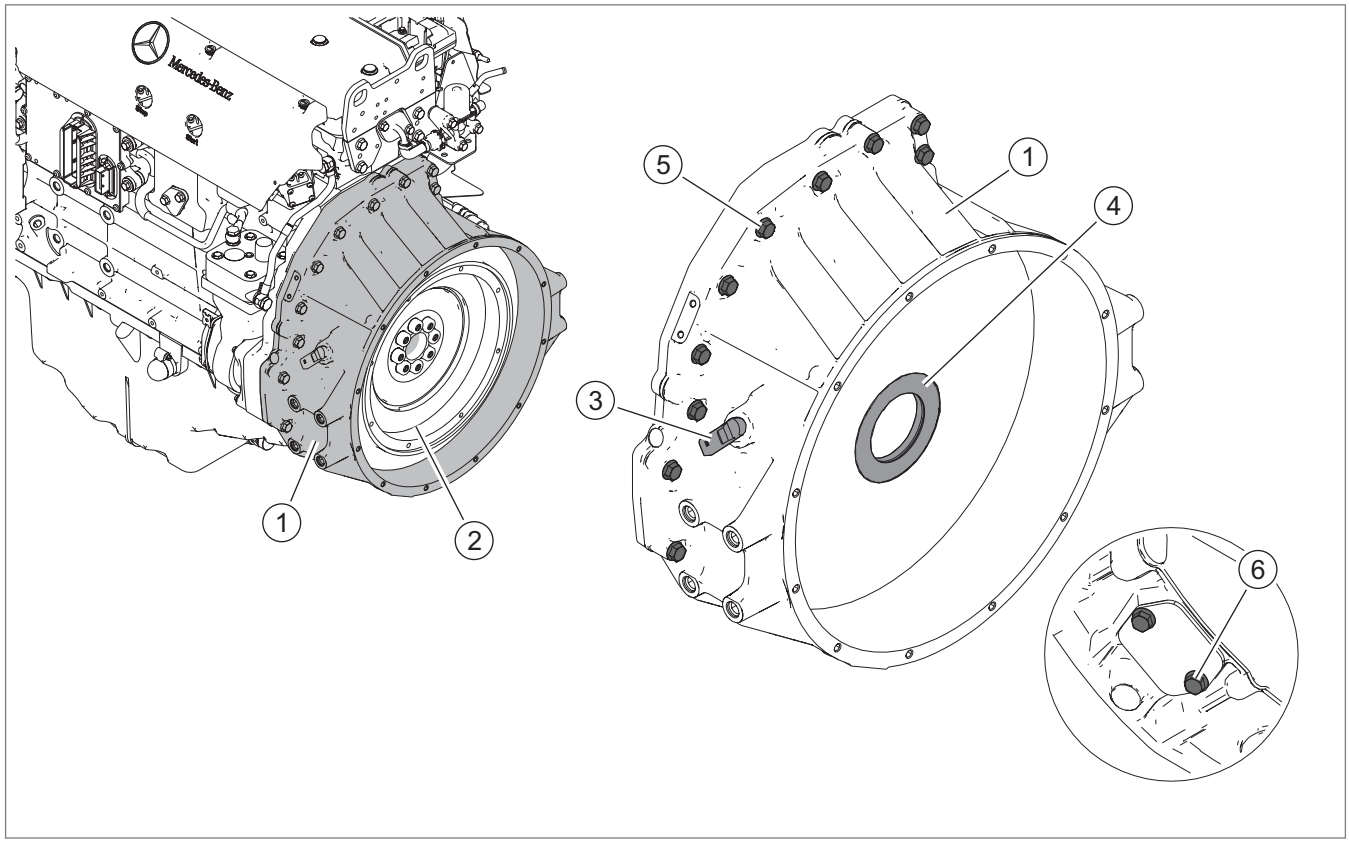
71

Special tool

	Special tool (I)	Pcs.
1	Sealing compound 00 0217 602 0	1

1044-004

Technical specifications



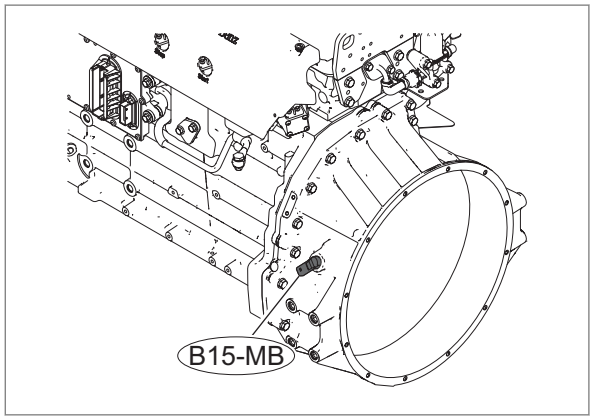
188592-001 **72**

	Value	CCN	Remark / designation	
1			Timing housing	
2			Flywheel	Page 111
3		B15-MB	Crankshaft position sensor	
4			Crankshaft rear seal	Page 72
5	50 Nm		Timing housing mounting bolts	
6	25 Nm		TDC inspection hole cap bolt	
Tightening torques not specified, see section on tightening torques				

Removal

- ► Remove the engine.
  See the repair manual of the machine in question.
- ► Remove the starter. Page 236
- ► Remove the compressor. Page 251
- ► Remove the flywheel. Page 113
- ► Remove oil pan. Page 63

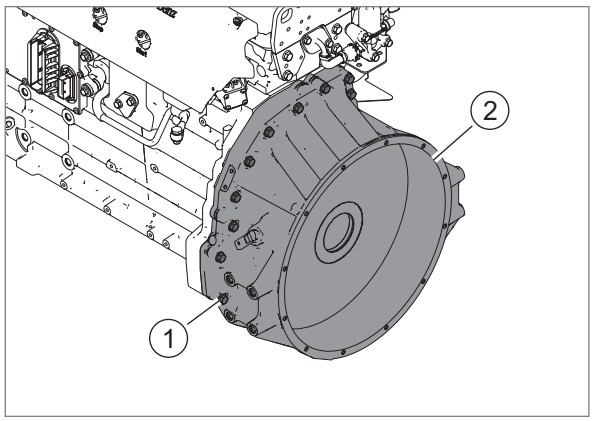
1044-004



188604-001

► Remove sensor (B15-MB).

73



188605-001

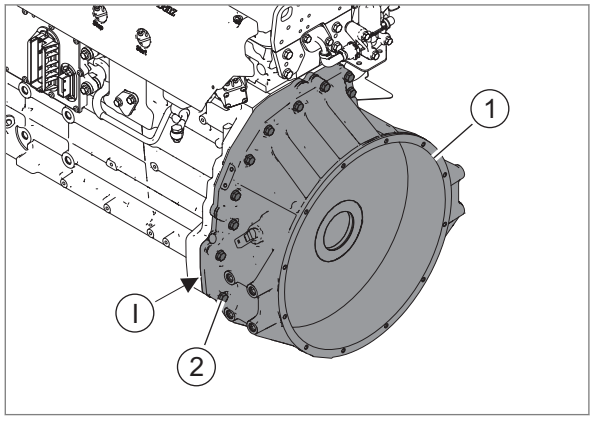
► Ensure that all wiring looms and lines have been removed from the timing housing (2).
► Suspend the timing housing (2) in a suitable lifting equipment.
► Unscrew all bolts (1).
► Remove timing housing (2) carefully from the crankcase.

74

► Clean the sealing faces. Page 19
► Remove the crankshaft rear seal. Page 73

Installation

► Install a new crankshaft rear seal. Page 74



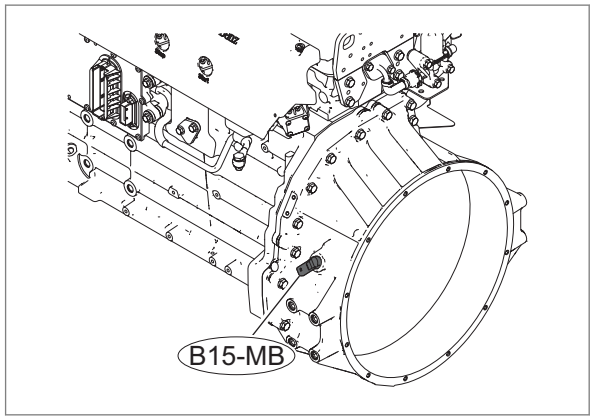
188606-001

Use special tool (I). Page 76

► Apply special tool (I) at the sealing faces.
► Suspend the timing housing (1) in a suitable lifting equipment and carefully place it next to the crankcase.
► Bolt down all bolts (2).
Tightening torque: Page 77

75

1044-004



188604-001

► Insert sensor (B15-MB).

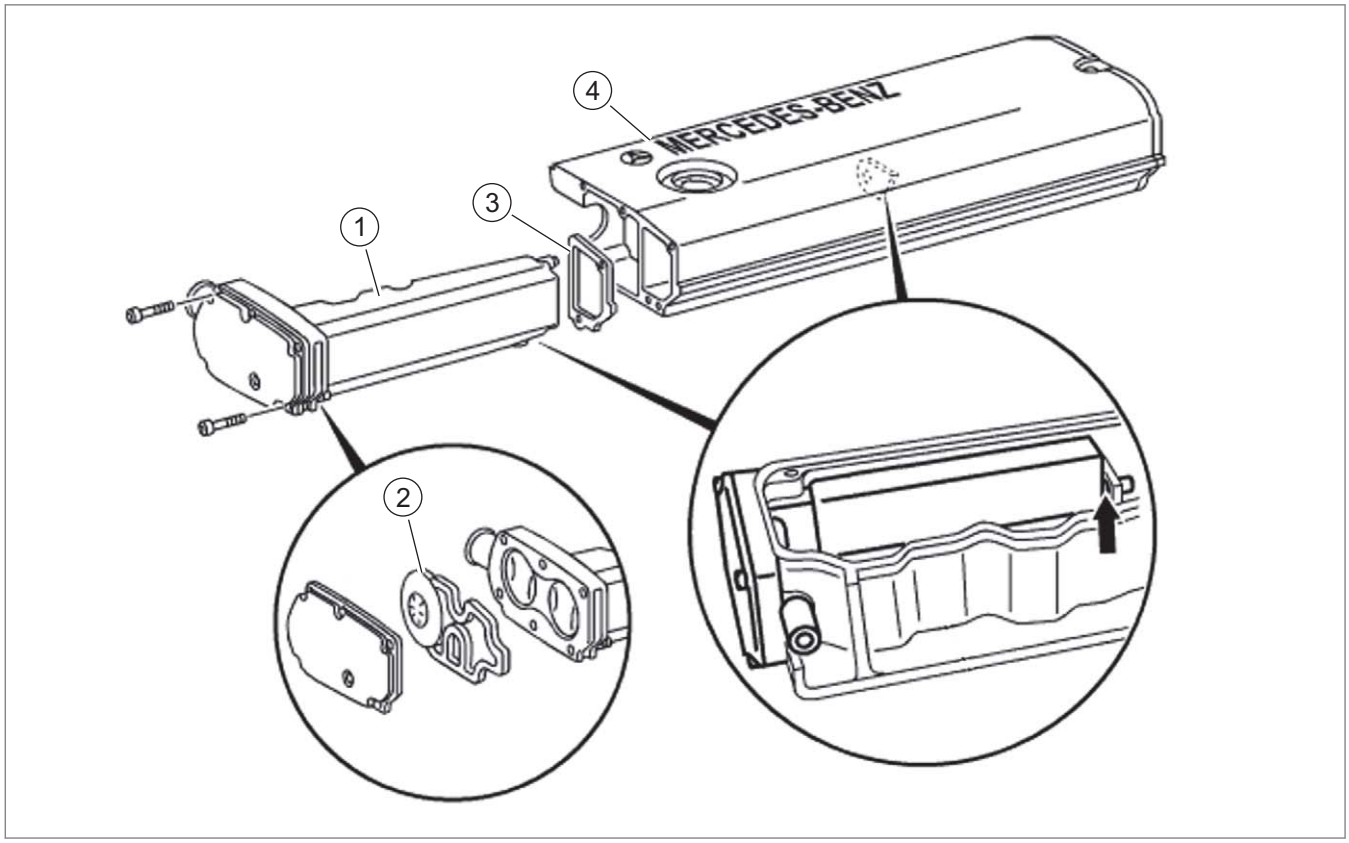
76

► Install the oil pan. Page 65
► Install flywheel. Page 114
► Install the compressor. Page 253
► Install the starter. Page 238
► Install the engine.
See the repair manual of the machine in question.

1044-004
162479-002

Oil separator

Technical specifications



189000-001 **77**

	Value	CCN	Remark / designation	
1			Oil separator – Ensure that the guide rod is inserted into the retainer.	
2			Membrane – Replace the damaged membrane.	
3			Seal	
4			Valve cover	Page 118
Tightening torques not specified, see section on tightening torques				

1044-004

0115 Engine unit

1044-004
162382-002

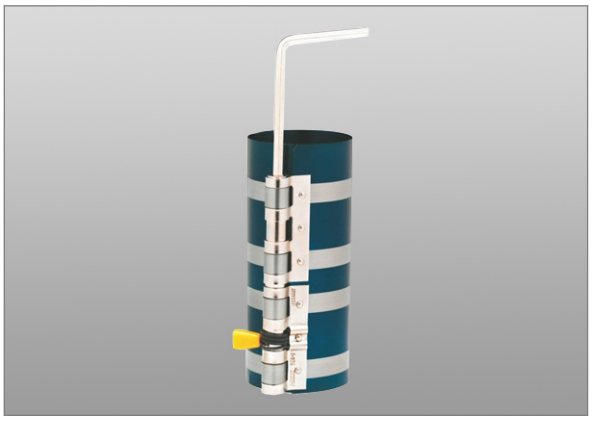
Piston

Special tool

251089-001

78

	Special tool (II)	Pcs.
1	Piston ring expander 00 1995 646 0	1



181552-001

79

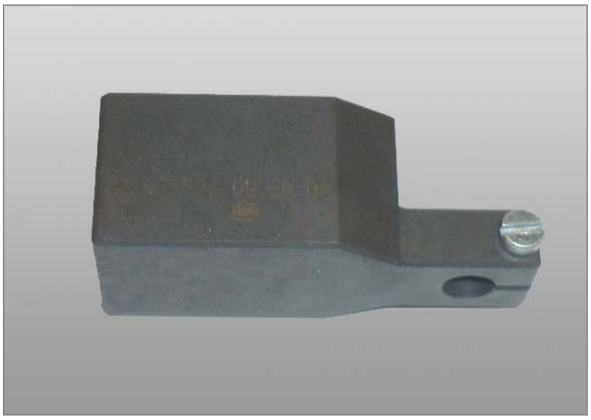
	Special tool (III)	Pcs.
1	Piston ring compressor 00 0147 999 0	1

39240-002

80

	Special tool (IV)	Pcs.
	Clock gauge 60 0500 530 3	1

1044-004



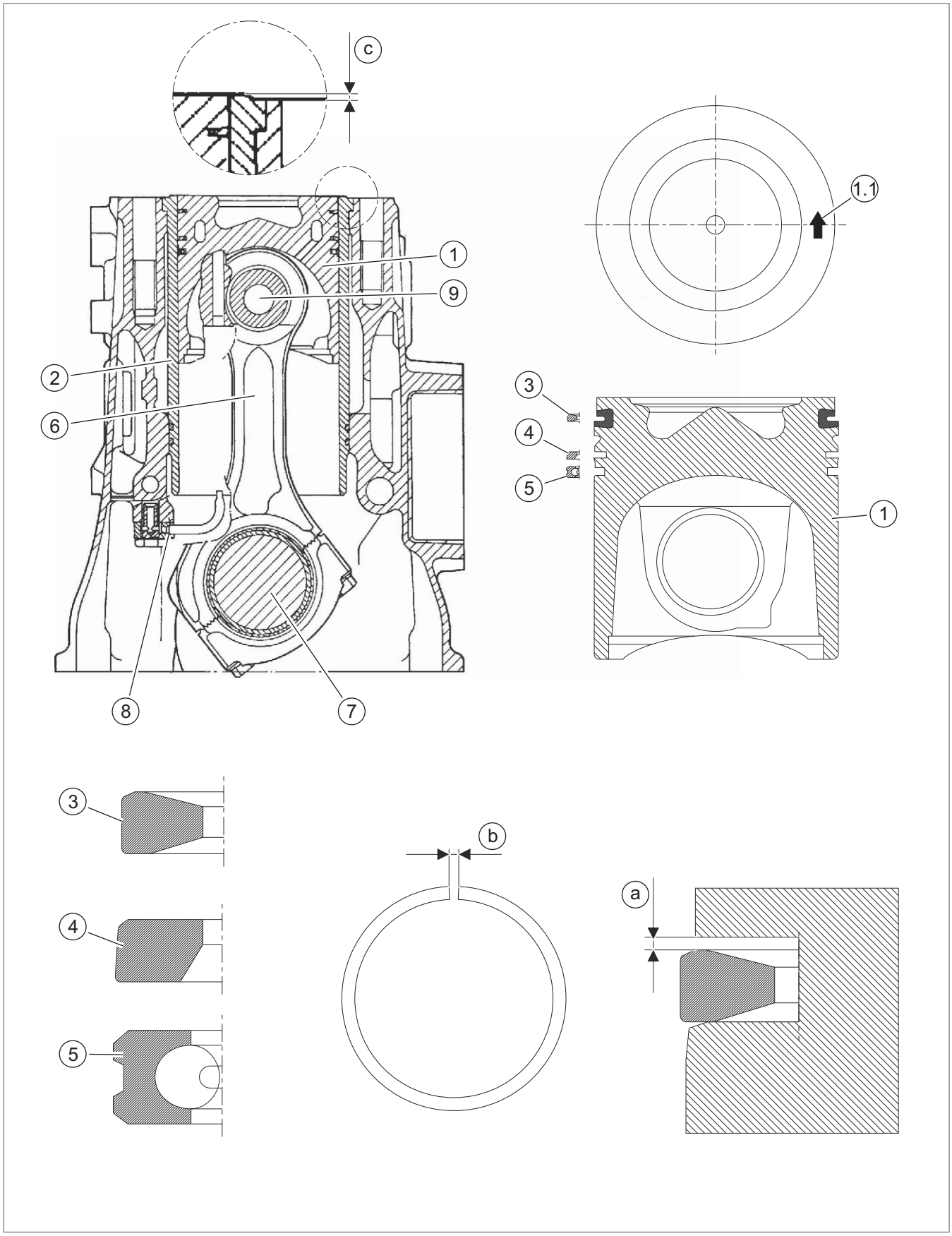
147499-001

81

	Special tool (V)	Pcs.
	Measuring gauge holder 00 1992 870 0	1

1044-004

Technical specifications



182244-001 **82**

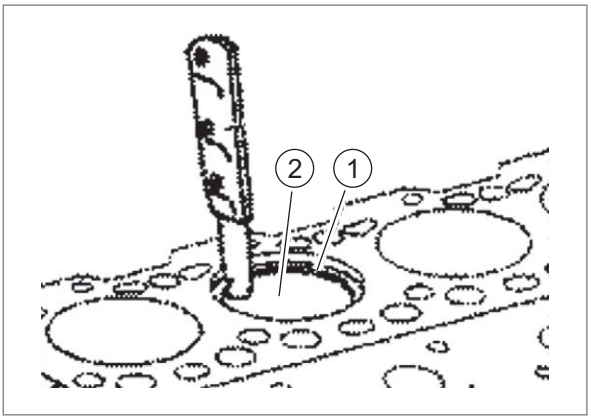
1044-004

	Value	CCN	Remark / designation	
1			Piston Marking (1.1) for installation position and installation point.	
2			Cylinder liner is **not** provided!	
3			Piston ring - double trapezoidal ring	
4			Piston ring - tapered compression ring with inside angle	
5			Piston ring - chamfered ring with coil spring	
6			Connecting rod	Page 91
7			Crankshaft	Page 98
8			Oil spray nozzle	Page 181
9			Slightly coat piston pin with engine oil	
a			Height play of piston rings is **not** provided!	
b			Push play of piston rings Piston ring (3): 0.40 to 0.60 mm Piston ring (4): 0.40 to 0.60 mm Piston ring (5): 0.25 to 0.50 mm	
c	0.280 to 0.500 mm		Piston excess dimension	
Tightening torques not specified, see section on tightening torques				

Removal

- ► Remove oil pan. Page 63
- ► Remove the oil spray nozzles. Page 182
- ► Remove the cylinder head. Page 124
  - ► Ensure that all bores on the separating face of the crankcase are tightly closed.
- ► Fit a direction arrow indicating the installation position of the piston.
  - ► This is required only when the direction arrow is no longer visible.
  - ► The direction arrow must point against the power output side.
- ► Mark the cylinder number on the piston head.
  - ► This is required only if more than one piston is removed.
- ► Twist crankshaft until the piston is at the BDC. See Cranking the engine. Page 54
- ► Protect piston head and crankcase against dirt.

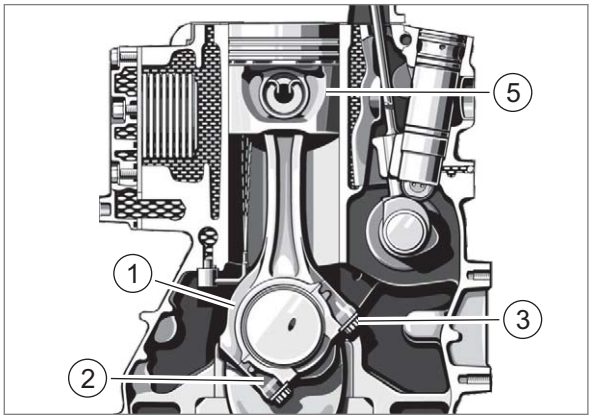
1044-004



188633-001

► Carefully loosen combustion residues at the head land zone at (1) in the cylinder track (2) with a scraper and remove with compressed air.

83



188631-001

► Mark the installation position of connecting rod (1) and connecting rod bearing cap (2) with respect to one another.

► Unscrew bolts (3).

► Remove connecting rod bearing cap (2).

► Ensure that the cracked separating surface is damaged neither at the connecting rod nor on the connecting rod bearing cap.

► Replace the connecting rod if necessary.

► Mark the installation position of connecting rod bearing shell (4) with respect to the connecting rod bearing cap (2).

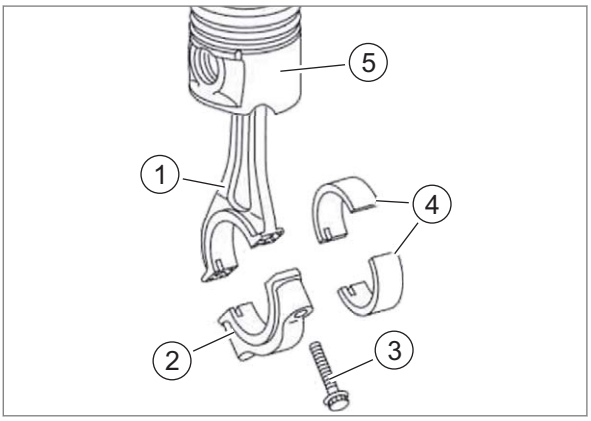
84

► Remove connecting rod bearing shell (4) from connecting rod bearing cap (2).

► Push piston (5) out at the connecting rod bearing seat, using a wooden or plastic rod and remove it carefully.

► Mark the installation position of the connecting rod bearing shell (4) relative to the connecting rod (1).

► Remove the connecting rod bearing shell (4) from connecting rod (1).



181335-001

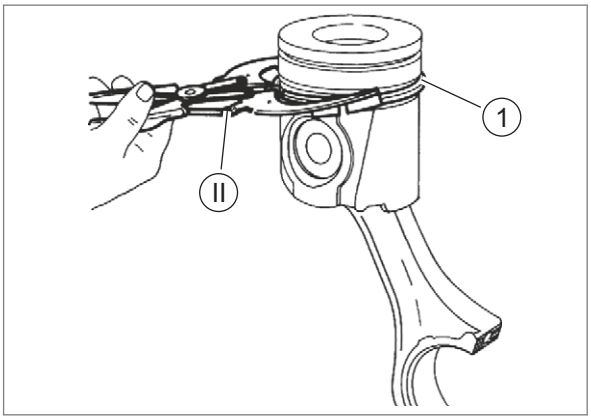
85

Disassembly

► Clamp the connecting rod with the piston in a vice.

► Ensure to use soft cheeks for clamping.

1044-004

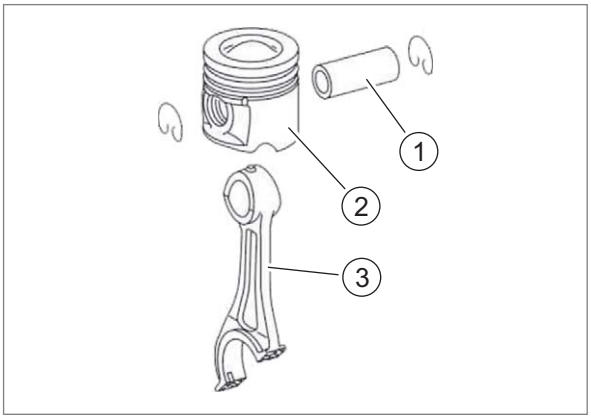


181395-001

Use special tool (II). Page 82

► Remove piston rings (1).

86



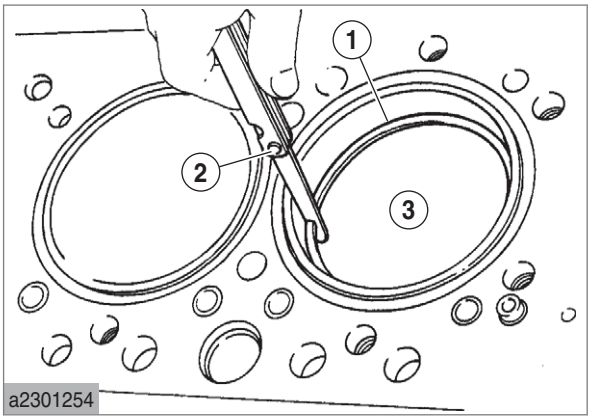
181396-001

► Remove piston pin (1).
► Remove piston (2) from connecting rod (3).
► Mark piston pin (1) and connecting rod (2) with respect to the piston (3) in question.

87

Checking

► Check piston for dust damage, seizing traces, scratches, cracks or other traces of wear. Replace piston if necessary.



171465-001

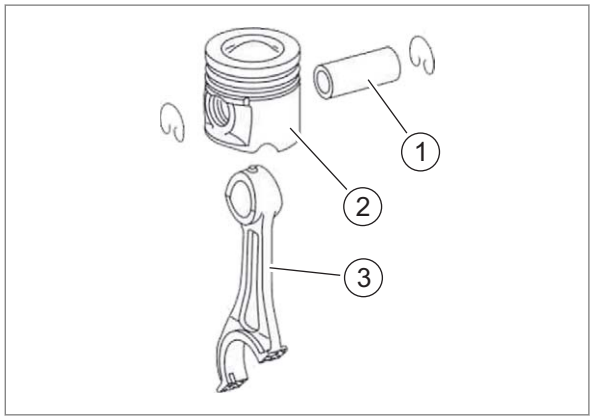
► Checking the joint play (b) of the piston rings:
  ► Clean the cylinder liner.
  ► Insert and align piston ring (1) into the cylinder liner (3) in the bottom unused area.
  ► Remove the coil spring from the chamfered ring.
  ► For aligning, use piston without piston rings.
  ► Check joint play (b) with a feeler gauge (2).
  ► Joint play: Page 84
► Check the joint play on all piston rings.
  ► When one piston ring is worn, all piston rings of the piston in question must be replaced.

88

Assembly

► Check piston and piston rings. Page 87
► Check the connecting rods. Page 92

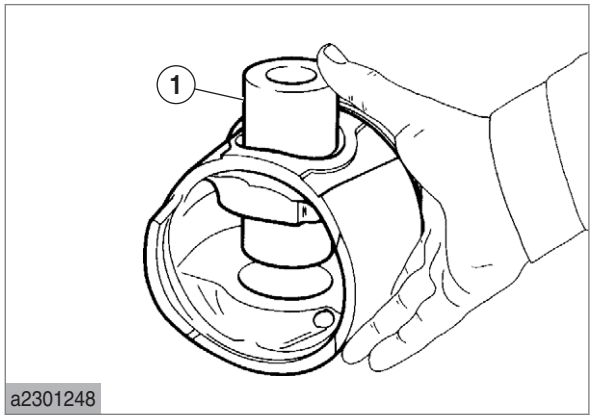
1044-004



181396-001

► Assemble piston (2) and connecting rod (3) by inserting the piston pin (1).
  ► It must be possible to push the piston pin (1) into the piston easily with the fingers and the piston pin must not slide out again due to its own weight.
  ► Apply a little oil to the piston pin.
  ► Observe the installation position.
  ► In addition, observe the specifications of the "Connecting rod" chapter. Page 91
► Insert circlips.

89

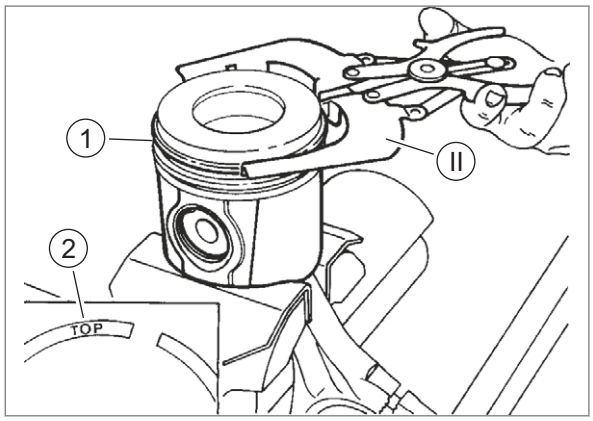


171363-001

90

Use special tool (II). Page 82

► Install piston rings (1).
  ► Observe the installation position of the different piston rings.
  ► See technical specifications: Page 84
  ► Ensure that the "TOP" mark (2) points upwards.
  ► Ensure that the joint ends of the piston ring are installed with a 120° offset with respect to one another.



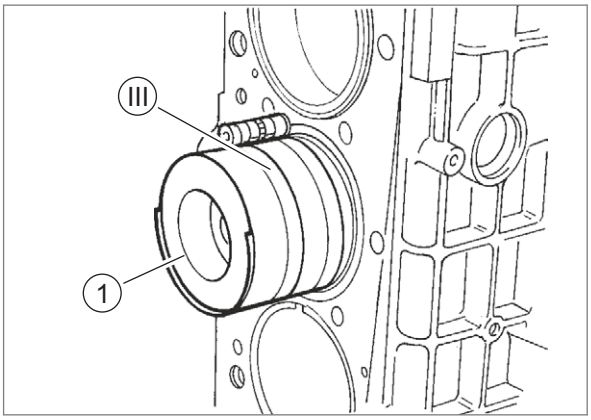
181508-001

91

Installation

► Check the cylinder bore. Page 95
► Check connecting rod bearing pin of the crankshaft. Page 102

1044-004

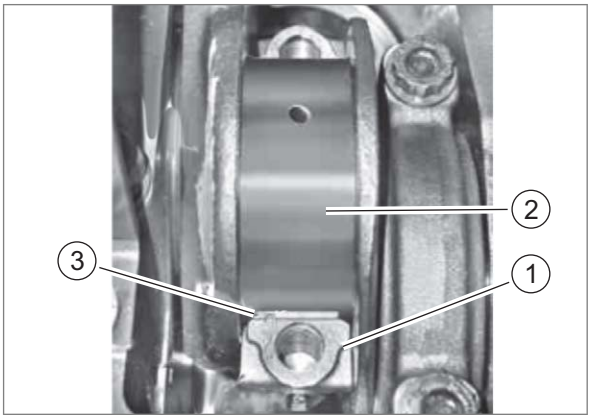


181553-001

Use special tool (III). Page 82

► Insert ram (1).
Observe the installation position.

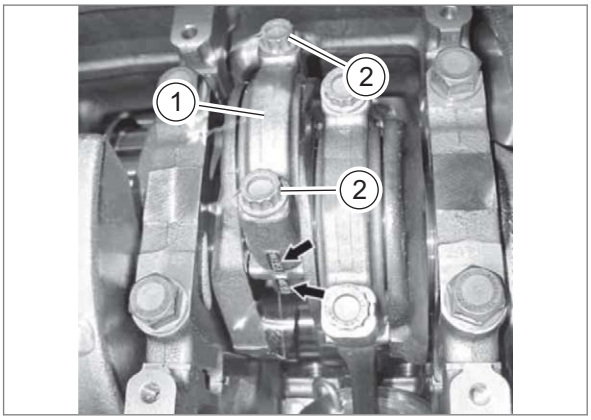
92



181558-001

► Slide the piston into the cylinder line until connecting rod (1) makes firm contact with the connecting rod bearing pin (2) of the crankshaft.
► Insert connecting rod bearing shell (3).

93



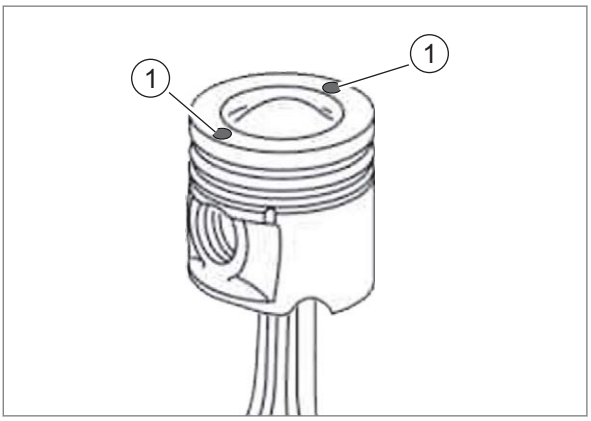
181563-001

► Position connecting rod bearing cover (1) together with the connecting rod bearing shell.
► Screw on the bolts (2).
► Tightening torque: Page 84

94

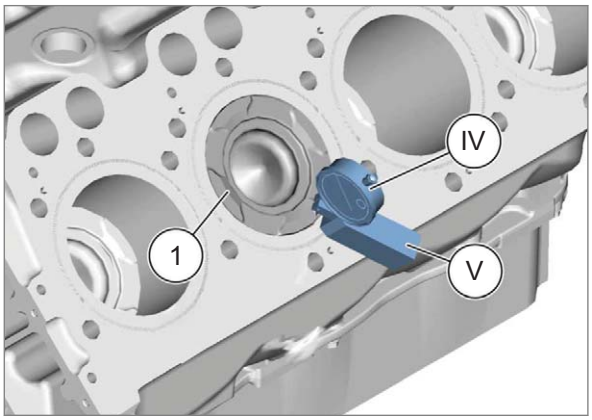
► Measure the piston excess dimension. Page 90
► Install the cylinder head. Page 126
► Install the oil spray nozzles. Page 183
► Install the oil pan. Page 65

1044-004



181596-001

95



250748-001

96

Measuring the excess dimension

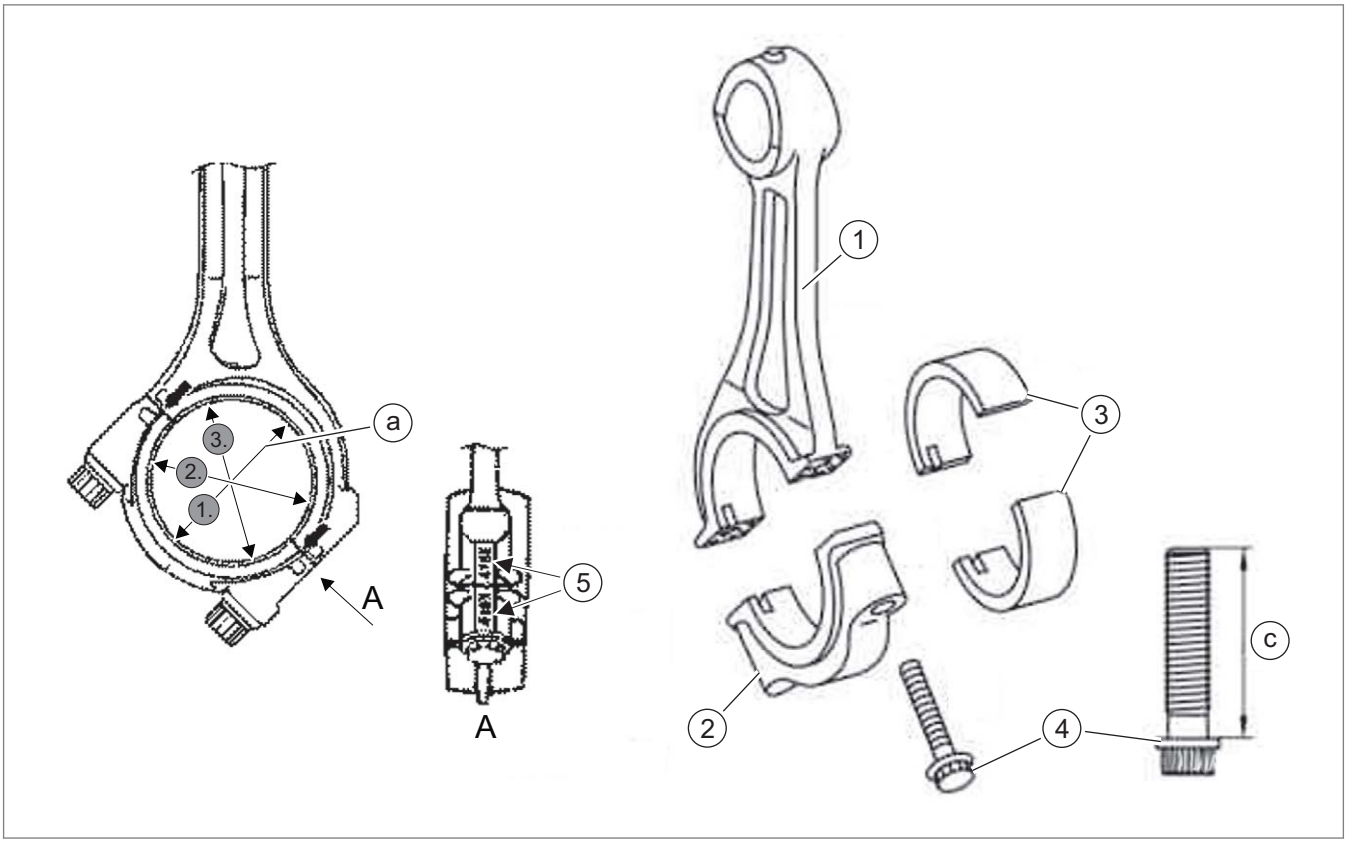
Using special tools (IV) and (V): Page 82

- ► Measure the piston excess dimension (c) without the cylinder head gasket being in place.
  Piston excess dimension: Page 84
  - ► Ensure that no deposits or soiling accumulates on the piston head and on the cylinder head surface.
- ► Measure the piston excess dimension (c) in the direction of the piston pin at (1) in order to eliminate the piston slap play.

1044-004
162393-001

Connecting rod

Technical specifications



182448-001 **97**

	Value	CCN	Remark / designation	
1			Connecting rod Observe marks at (5).	
2			Connecting rod bearing cover Observe marks at (5).	
3			Connecting rod bearing shells Do not confuse the connecting rod bearing shells.	
4			Connecting rod bolt Tighten the bolts in three steps: 1 10 Nm 2 45 Nm 3 90° Observe the shaft length (c).	
5			Mark of connecting rod - connecting rod bearing cover	
Tightening torques not specified, see section on tightening torques				

1044-004

	Value	CCN	Remark / designation	
a			Connecting rod bearing inner diameter (with the connecting rod bearing shells inserted) Standard: 70.054 to 70.093 mm Deviation 0.1: 69.954 to 69.993 mm Deviation 0.25: 69.804 to 69.843 mm Deviation 0.5: 69.554 to 69.593 mm Deviation 0.75: 69.304 to 69.343 mm Deviation 1.0: 69.054 to 69.093 mm	
b			Connecting rod play Radial: 0.039 to 0.098 mm Axial: 0.170 to 0.470 mm	
c	up to 57.0 mm		Shaft length of connecting rod bolt (4)	
Tightening torques not specified, see section on tightening torques				

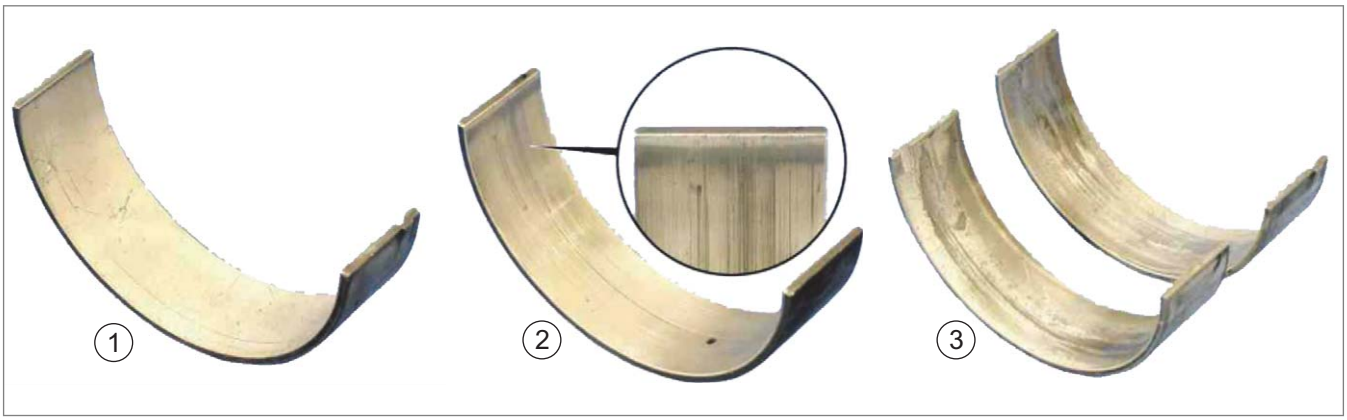
Removal

- ► Remove the piston. Page 85
- ► Disassemble the piston. Page 86

Checking

- ► Check the connecting rod bearing inner diameter (a).
  - ► Check the connecting rod bearing inner diameter on the assembled connecting rod.
  - ► Check the measuring positions in the specified order (1., 2. and 3.).
  - ► The second and third measuring positions are twisted by around 60° each relative to the first measuring position.
  - ► Calculate the average value from the three measured values.
- ► Checking the connecting rod play (b):
  - ► When subtracting the mean diameter value of the connecting rod bearing pin from the mean value of the connecting rod bearing inner diameter, the connecting rod play is obtained.
  - ► Example:
  - ► Connecting rod bearing inner diameter: 94.062 mm
  - ► Diameter of connecting rod bearing pin: 93.990 mm (see technical data of crankshaft Page 99)
  - ► b = 94.062 mm - 93.990 mm = 0.072 mm

1044-004



182462-001 **98**

► Checking the connecting rod bearing shells:

1 Bearing housing without damage.
   ► The surface is even and smooth, without visible scores and without run-in wear.
   ► *The bearing shell can be re-used.*

2 Bearing shell with minor scores and scratches.
   ► Scores and scratches are barely visible on the surface.
   ► *The bearing shell can be re-used.*
   ► *Check if engine oil and oil filter are soiled.*

3 Bearing shell with heavy scores.
   ► The surface scores can be easily seen and felt.
   ► *Do not re-use this bearing shell.*
   ► *Check if engine oil and oil filter are soiled.*

Installation

► Check the connecting rod bearing pin.
See crankshaft. Page 102

► Check the connecting rods. Page 92

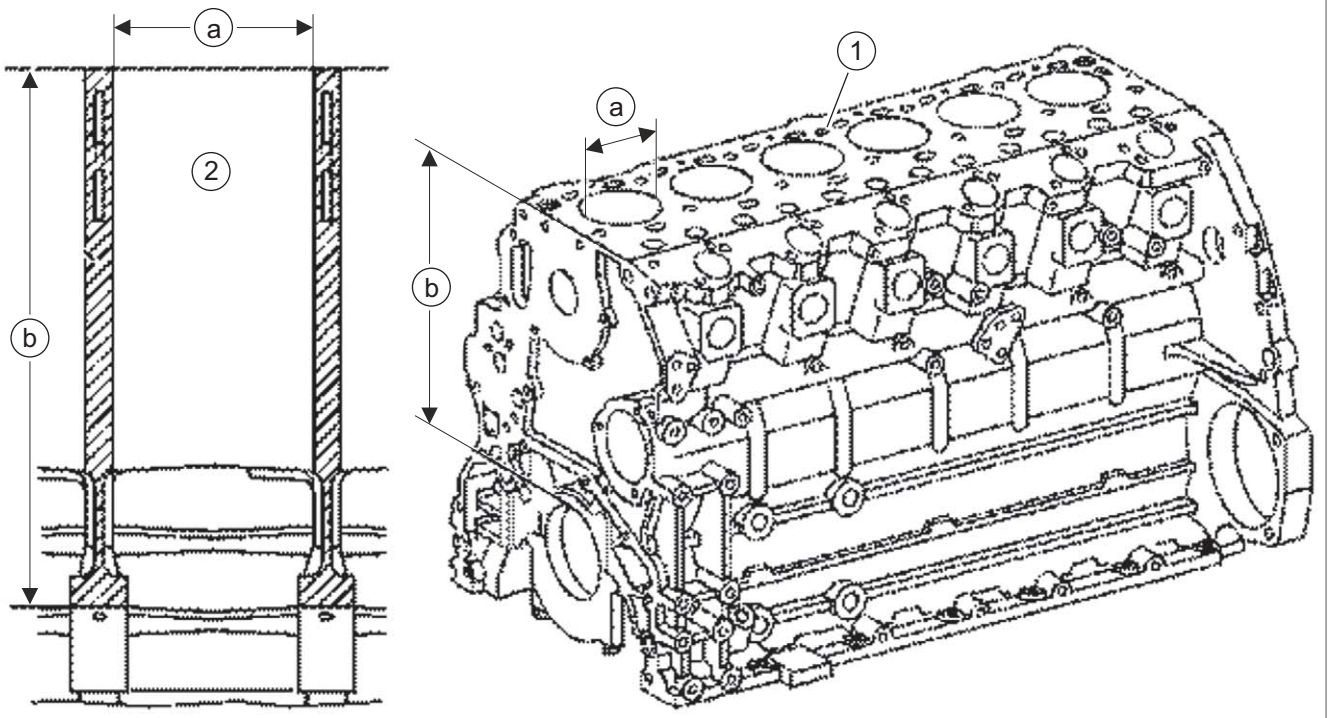
► Assemble the piston. Page 87

► Install the piston. Page 88

1044-004
162397-002

Cylinder bore

Technical specifications

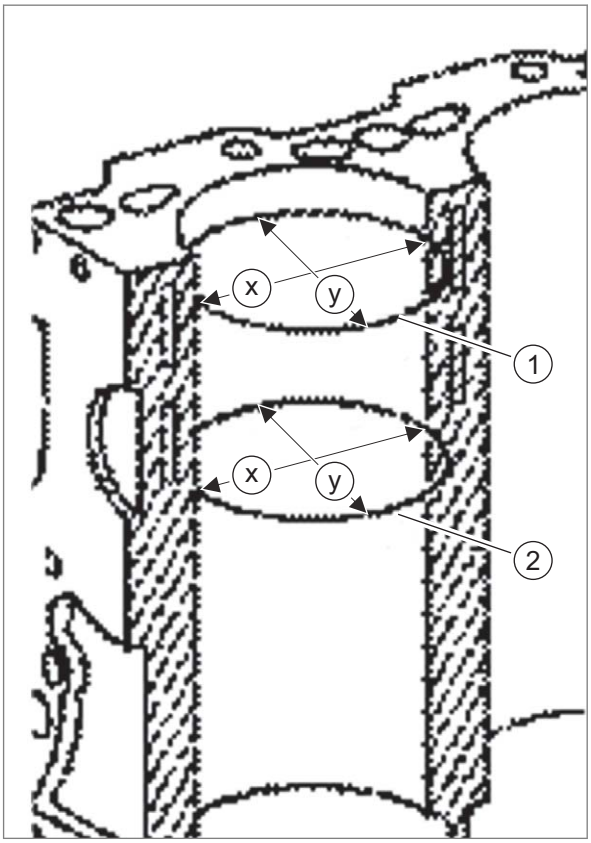


188661-001 **99**

	Value	CCN	Remark / designation	
1			Crank case	
2			Cylinder bore	
a			Diameter of cylinder bore Applies to type design 906.9xx Standard: 101.985 to 101.991 mm Deviation -0.3: 102.285 to 102.291 Deviation -0.6: 102.585 to 102.591 Deviation -0.9: 102.885 to 102.891	
a			Diameter of cylinder bore Applies to type design 926.9xx Standard: 105.985 to 105.991 mm Deviation -0.3: 106.285 to 106.291 Deviation -0.6: 106.585 to 106.591 Deviation -0.9: 106.885 to 106.891	
Tightening torques not specified, see "Introduction / Tightening torques" chapter				

1044-004

	Value	CCN	Remark / designation	
b			Crankcase height Standard: 298.33 to 298.40 mm Deviation -0.3: 298.03 to 298.10 Deviation -0.6: 297.73 to 297.80 Deviation -0.9: 297.43 to 297.50	
c	up to 0.1 mm		Wear of cylinder bore at the upper point of return of the first piston ring	
	0.012 mm		Maximum deviation of cylinder shape	
Tightening torques not specified, see "Introduction / Tightening torques" chapter				



188672-001

100

Checking

- ► Measure the diameter of cylinder bore (a) in the unused section above the upper point of return of the first piston ring.
  Carry out measurement in direction of measurement (x) and (y).
  Observe the deviation from the cylinder shape (c).
- ► Measure the wear of cylinder track at measuring points (1) and (2), in measuring direction (x) and (y) in each case.
- ► Measure the crankcase height (b).

When the largest allowed diameter is exceeded, replace the crankcase.

The cylinder bore and the crankcase height may only be jointly machined and must meet the same dimensional category. Otherwise assigning the pistons is not possible.

Incorrectly assigned pistons may cause engine damage.

1044-004
162405-001

Gear of crankshaft

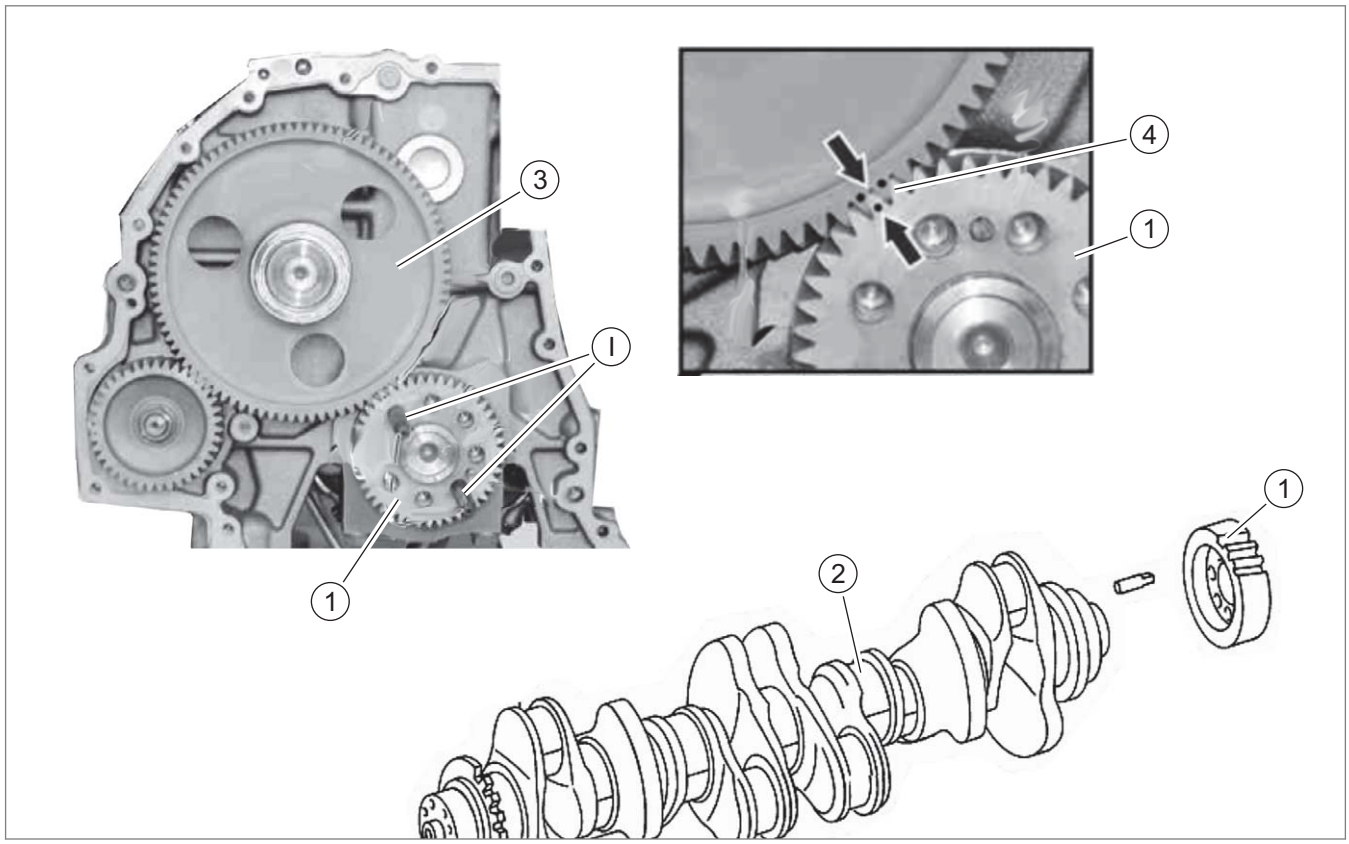
147453-001

101

Special tool

	Special tool (I)	Pcs.
1	Punch 00 1992 879 0	1

1044-004



188707-001 **102**

	Value	CCN	Remark / designation	
1			Gear of crankshaft	
2			Crankshaft	Page 98
3			Camshaft gear	
4			Markings	
Tightening torques not specified, see "Introduction / Tightening torques" chapter				

Installation instructions

Removal:

- Remove the timing housing. Page 77
- Rotate the crankshaft until markings (4) of the crankshaft gear (1) and of the camshaft gear (3) face one another.
- Pull off the crankshaft gear (1) with special tool (I).

Installation:

- Slide on crankshaft gear (1) with special tool (I).
  Observe markings (4).
  Check if dowel pins are tightly seated, replace dowel pins if required.
- Install the timing housing. Page 78

1044-004
162407-001

Crankshaft

Special tool

39240-002

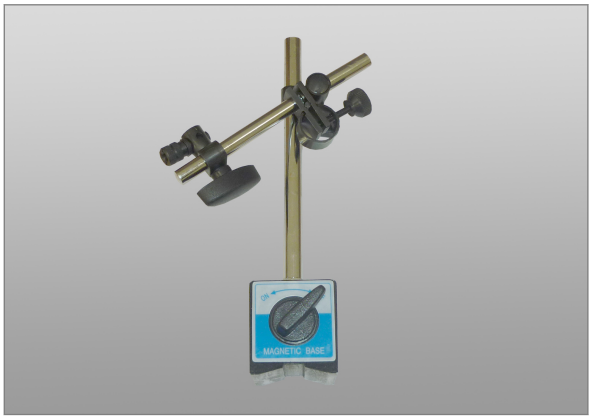
103

	Special tool (II)	Number
1	Clock gauge 60 0500 530 3	1

147530-001

104

	Special tool (III)	Number
1	Extension 00 1992 875 0	1



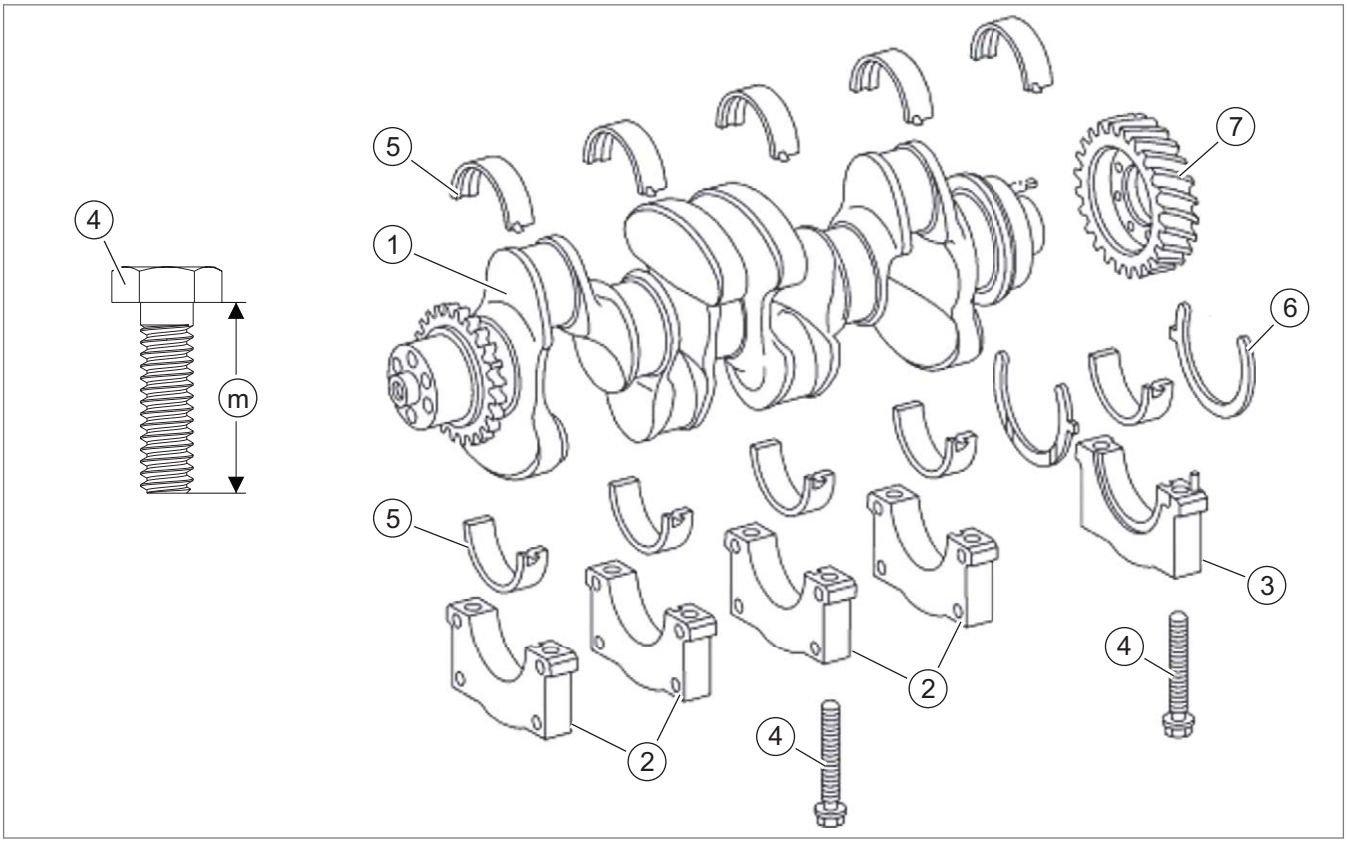
183116-001

105

	Special tool (IV)	Number
1	Measuring gauge holder 60 0500 530 5	1

1044-004

Technical specifications



Representation on a 4-cylinder engine 188823-001 **106**

	Value	CCN	Remark / designation	
1	51 kg		Crankshaft	
2			Main bearing cover	
3			Flange bearing cover	
4			Bolt of main and flange bearing cover – Observe the shaft length (m). – Tighten bolts in 4 steps as per tightening specification. Tightening specification: 1 30 Nm 2 80 Nm 3 155 Nm 4 90°	
5			Coat bearing shells with engine oil. Do not replace the bearing shells individually. When a bearing shell is no longer OK, **all** bearing shells must be replaced.	
Tightening torques not specified, see section on tightening torques				

1044-004

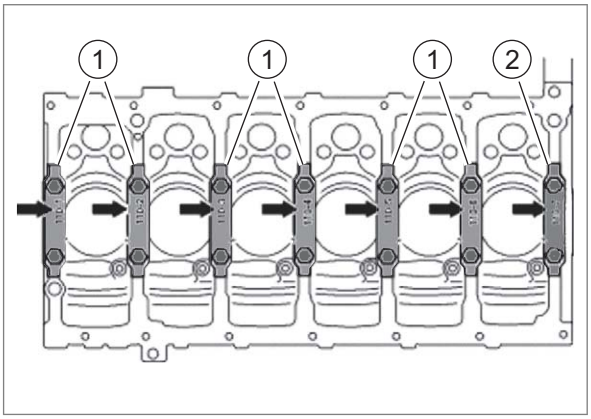
	Value	CCN	Remark / designation	
6			Coat thrust washers with engine oil. Do not replace thrust washers individually. When a thrust washer is no longer OK, **all** thrust washers must be replaced.	
7			Gear of crankshaft	Page 96
b	up to 0.15 mm		Maximum radial runout at the centre main crankshaft journal	
c			Diameter of main and flange bearing journal Standard: 85.990 to 86.010 mm Deviation 0.1: 85.890 to 85.910 mm Deviation 0.25: 85.740 to 85.760 mm Deviation 0.5: 85.490 to 85.510 mm Deviation 0.75: 85.240 to 85.260 mm Deviation 1.0: 84.990 to 85.010 mm	
d	31.0 to 31.2 mm		Width of main bearing journal	
e			Width of flange bearing journal Standard: 31.000 to 31.062 mm Deviation 0.1: 31.000 to 31.062 mm Deviation 0.25: 31.300 to 31.362 mm Deviation 0.5: 31.500 to 31.562 mm Deviation 0.75: 31.500 to 31.562 mm Deviation 1.0: 31.500 to 31.562 mm	
f			Inner diameter of crankshaft main and flange bearing Standard: 86.066 to 86.108 mm Deviation 0.1: 85.966 to 86.008 mm Deviation 0.25: 85.816 to 85.858 mm Deviation 0.5: 85.566 to 85.608 mm Deviation 0.75: 85.316 to 85.358 mm Deviation 1.0: 85.066 to 85.108 mm	
g	0.056 to 0.118 mm		Radial play	
k	0.16 to 0.38 mm		Axial play	
Tightening torques not specified, see section on tightening torques				

1044-004

	Value	CCN	Remark / designation	
l			Material thickness of thrust washers Standard: 3.240 to 3.310 mm Deviation 0.3: 3.390 to 3.460 mm Deviation 0.5: 3.490 to 3.560 mm	
m	134 to 136 mm		Shaft length of bolt of main and flange bearing cover (4)	
Tightening torques not specified, see section on tightening torques				

Removal

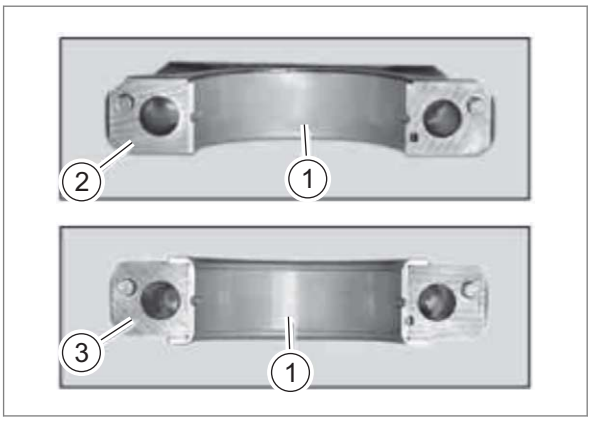
- ► Remove the engine.
  See the repair manual of the machine in question.
- ► Remove the oil pump. Page 194
- ► Remove the timing housing. Page 77
- ► Remove all pistons. Page 85
- ► Remove the crankshaft gear. Page 96



188820-001

107

- ► Remove the main bearing cover (1).
  - ► Check if the mark exists and mark the main bearing cover if necessary.
- ► Remove the flange bearing cover (2).
  - ► Remove thrust washers.



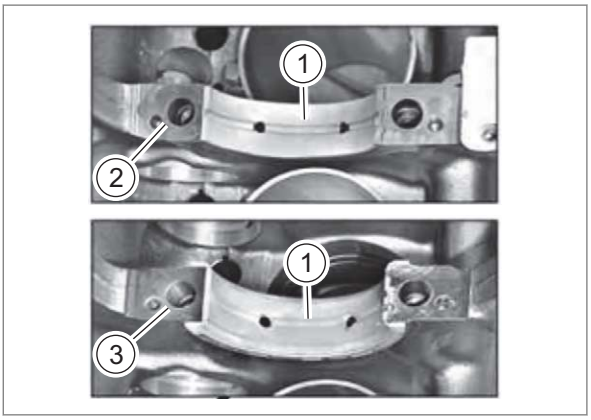
187006-001

108

- ► Remove bearing shells (1).
  - ► Mark the bearing shells with respect to bearing (2) or (3).

- ► Lift out the crankshaft with a suitable lifting equipment.

1044-004



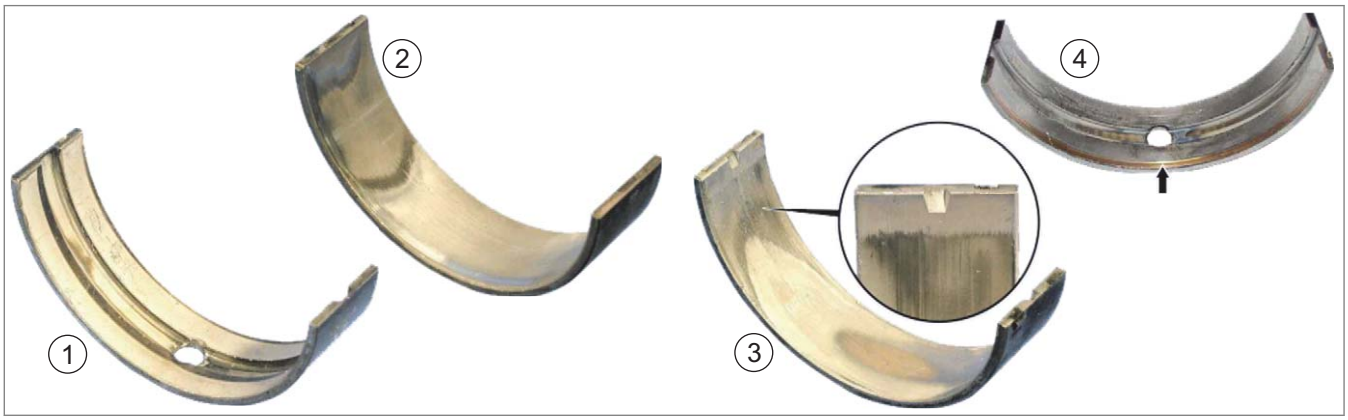
187007-001

109

► Remove bearing shells from the crankcase.
  ► Mark bearing shells with respect to bearing (2) or (3) in the crankcase.
► Clean the crankshaft.
► Clean the main channel. Page 180

Checking

► Check crankshaft for damage and cracks, replace the crankshaft if necessary.



183067-001

110

► Checking the bearing shells:

1 Bearing housing without damage.
  ► The surface is even and smooth, without visible scores and without run-in wear.
  ► *The bearing shell can be re-used.*

2 Bearing shell with minor anti-friction layer wear.
  ► Scores are hardly visible on the surface.
  ► *The bearing shell can be re-used.*

3 Bearing shell with large-surface anti-friction layer wear.
  ► The run-in layer has been removed, the wear spot is clearly visibly.
  ► *Replace all bearing shells.*

4 Bearing shell with edge wear.
  ► The bearing shell shows clear signs of wear on one or both outer edges.
  ► Possible reasons:
  ► Conical journal of crankshaft.
  ► Hollow-ground journals of the crankshaft.
  ► Conical bores in the crankcase.
  ► Hollow bores in the crankcase.

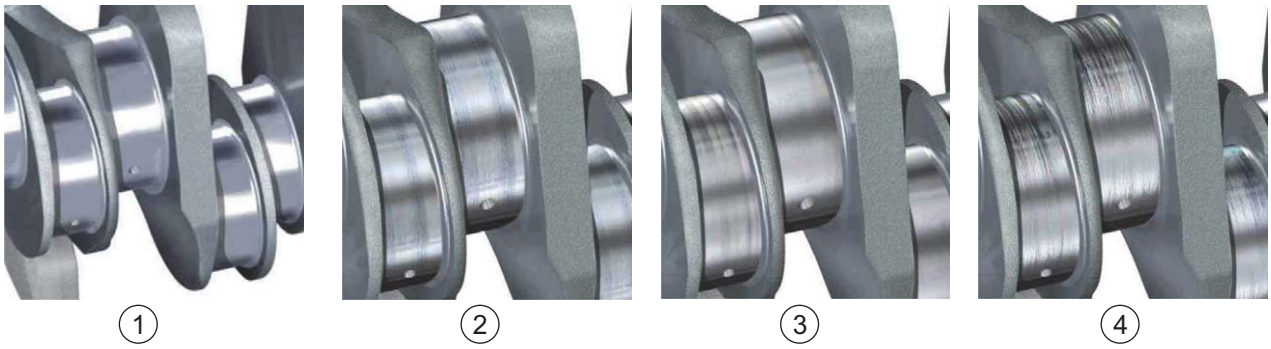
1044-004

► Unbalanced crankshaft.

► Rounding radius between the main bearing journal and crankshaft cheek is too large.

► *Replace all bearing shells.*

► *Check crankshaft and bore in the crankshaft housing.*



183075-001 **111**

► Checking the contact face of the main bearing journal of the crankshaft:

1 Contact faces without damage.

► The surface is even and smooth, without visible scores and without run-in wear.

► *The crankshaft can be re-used if all contact faces are OK.*

2 Contact face with normal running traces.

► The surface is even and smooth, without any visible scores.

► *The crankshaft can be re-used if all contact faces are OK.*

3 Contact face with serious scores and scratches.

► Scores and scratches can be hardly seen and felt on the surface.

► *The crankshaft can be re-used if all other contact faces are OK.*

► *Check if engine oil and oil filter are soiled.*

4 Contact face with serious scores and scratches.

► Scores and scratches can be clearly seen and felt on the surface.

► Possible reasons:

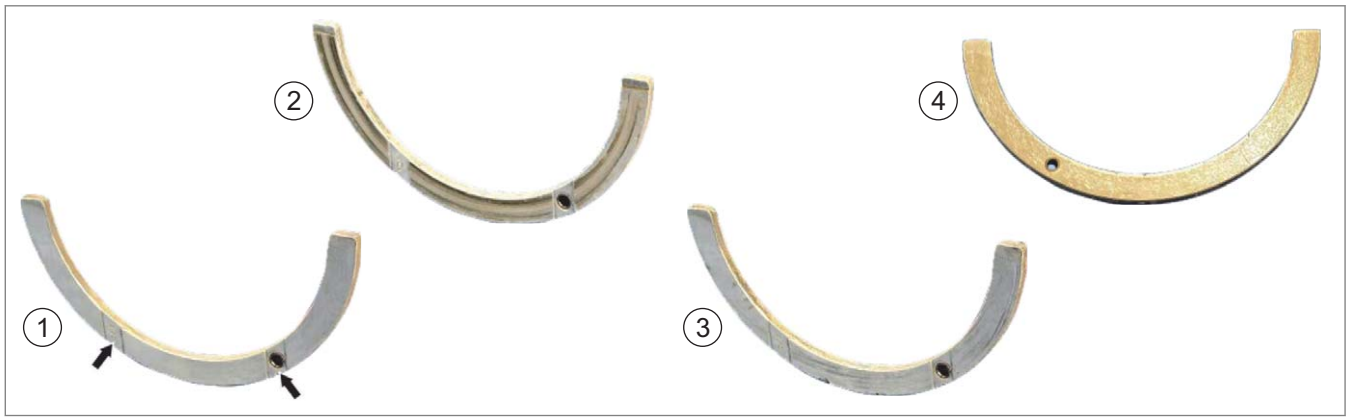
► Dirt and foreign objects in the engine oil circuit.

► Low engine oil pressure.

► *Machine the crankshaft to achieve the next dimension and replace crankshaft if necessary.*

► *Check if engine oil and oil filter are soiled.*

1044-004



183082-001 **112**

► Checking the thrust washers:

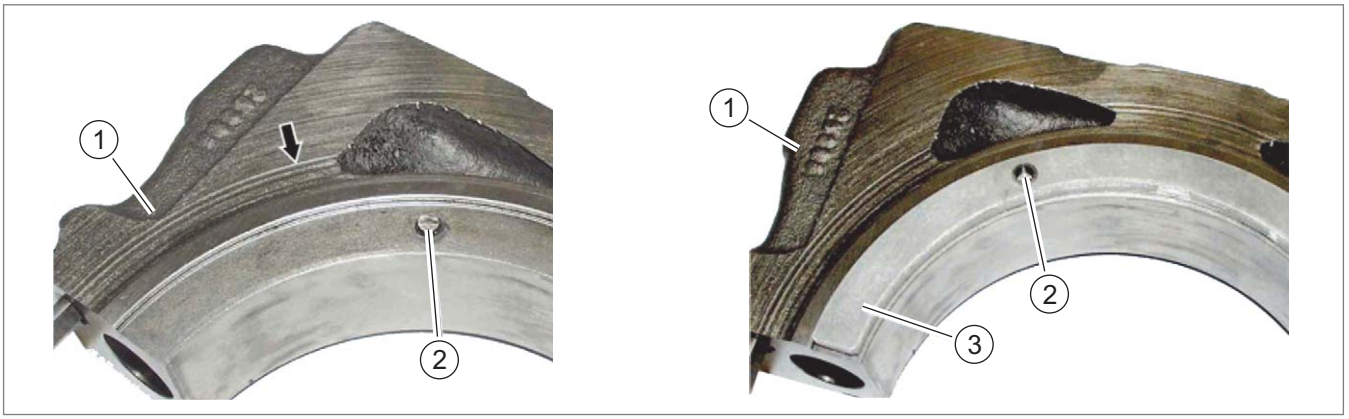
1 Contact faces without damage.
- ► The surface is even and smooth, without visible scores and without run-in wear.
- ► The lubricating oil pockets (arrows) are well visible on both sides.
- ► *The thrust washer can be re-used.*

2 Contact face with serious scores and scratches.
- ► Scores and scratches can be hardly seen and felt on the surface.
- ► *The thrust washer can be re-used.*

3 Contact face with serious scores and scratches.
- ► Scores and scratches can be clearly seen and felt on the surface.
- ► Possible reasons:
- ► Dirt and foreign objects in the engine oil circuit.
- ► Low engine oil pressure.
- ► *Replace all thrust washers.*
- ► *Check if engine oil and oil filter are soiled.*

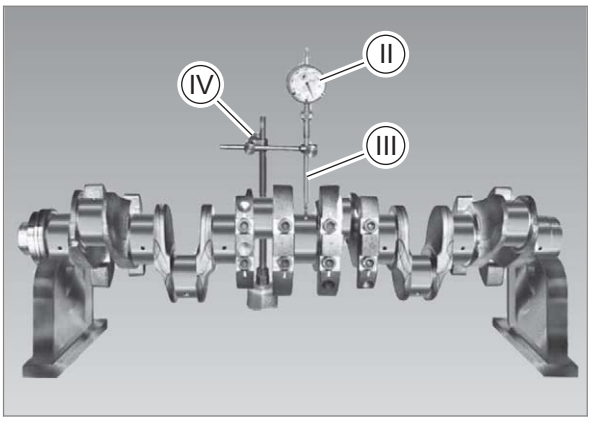
4 Thrust washer worn.
- ► Material has been removed on the rear of the thrust washer (flywheel side) so that the lubricating oil pockets are no longer visible.
- ► Possible reasons:
- ► Self-oscillation of thrust washer.
- ► Excessive axial play of crankshaft.
- ► *Replace all thrust washers.*
- ► *Check the axial play of the crankshaft.*

1044-004



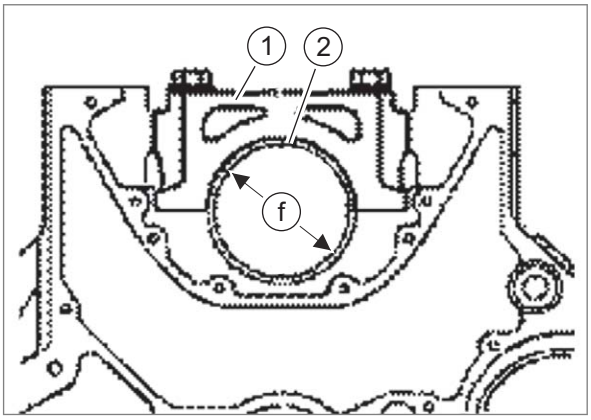
183104-001 **113**

► Check the main and flange bearing covers.
  ► In case of damage (see arrow) on the main and flange bearing cover or on the dowel pins (2), the crankshaft and the dowel pins on the flange bearing covers must be replaced.
  ► When dowel pins (2) are worn or too short, never replace only the thrust washers (3).
  ► *Thrust washers may come loose when dowel pins are too short and cause engine damage.*



183114-001 **114**

► Measure the maximum radial runout (b) of the crankshaft on the centre main bearing journal, using special tools (II), (III) and (IV).
Radial runout: Page 99
  ► If the value is outside of the tolerance, the crankshaft must be replaced.
► Measure the diameter of the main and flange bearing journals (c) at three different positions offset by around 60°.
Diameter: Page 99
Calculate the mean value of the three measurements.



183125-001 **115**

► Check the inner diameter of the main and flange bearings (f).
Inner diameter: Page 99
  ► All main bearing journals and flange bearing journals must have the same machining level.
  ► Insert bearing shells (2) according to the marks.
  ► Bolt down main and flange bearing covers (1) according to the marks.
  ► Measure the inner diameter (f) at three different positions offset by around 60°.
  ► Calculate the mean value of the three measurements.
  ► Unscrew main and flange bearing cover (1) again.

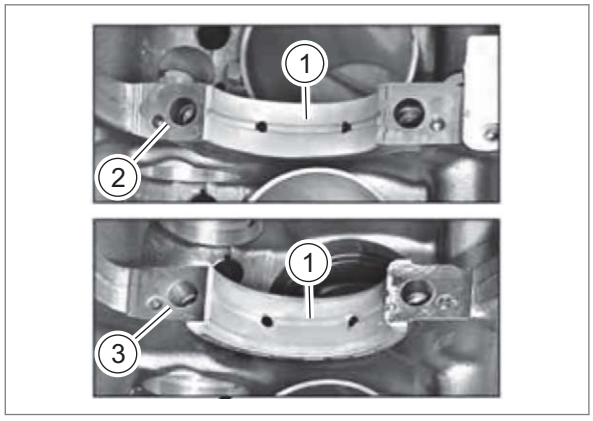
1044-004

► Determining the radial play of main and flange bearing (g):
Radial play: Page 99
  ► Subtract the calculated mean values of the diameters of main and flange bearing journals (c) from the calculated inner diameter of the main and flange bearing (f).
  ► Example:
  ► 108.099 mm (c) - 107.990 mm (f) = 0.109 mm (g)

► Check the connecting rod bearing play. Page 91

Installation

► Remove any existing abraded metal from the oil channels.
► Clean the inner components.

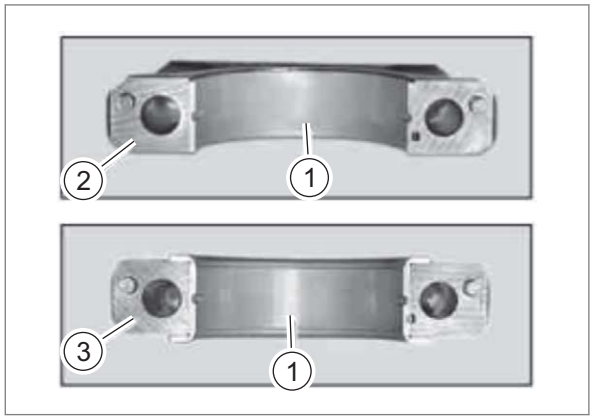


187007-001

116

► Place the bearing shells (1) into bearing (2) or (3) by means of the marks.
  ► Ensure that the oil bores match.

► Insert crankshaft (1).

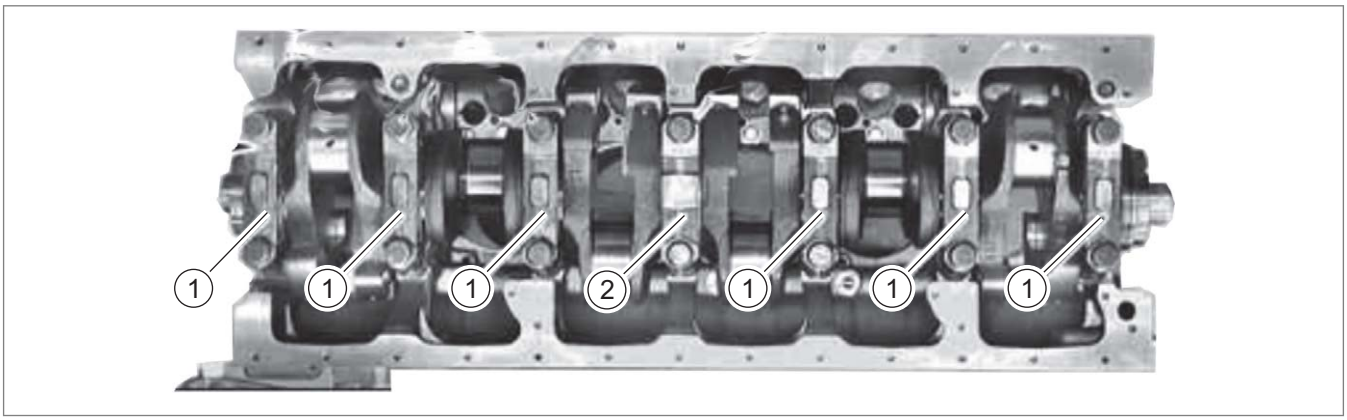


187006-001

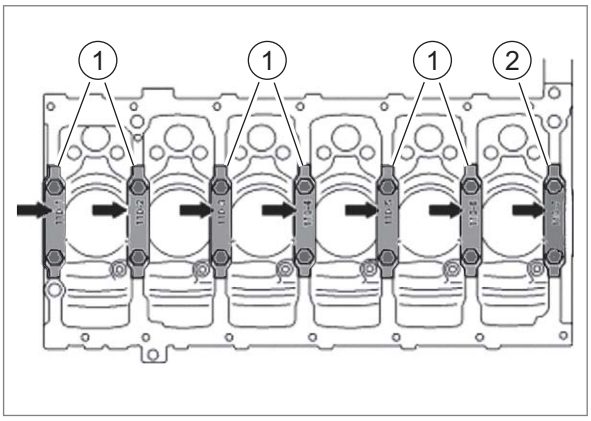
117

► Insert bearing shells (1) into the main bearing covers (2), following the marks.
► Insert bearing shell (1) into flange bearing cover (3) by means of marks.
  ► Ensure that the grooves in the thrust washers point towards the crankshaft cheeks.

1044-004



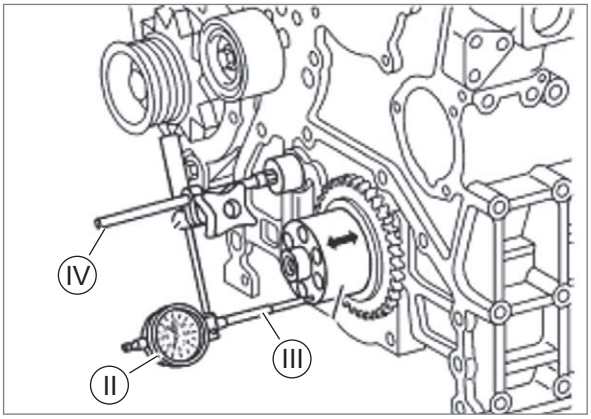
187005-001 **118**



188820-001 **119**

► Insert main bearing cover (1) and flange bearing cover (2), following the marks.
  ► The main bearing covers must **not** be confused!
  ► Insert flange bearing cover with thrust washers.
► Bolt down main bearing cover (1) and flange bearing cover (2) according to tightening regulations.
  Tightening torque: Page 99

► Rotate crankshaft by hand and check free motion.
► Install the crankshaft gear. Page 96



188825-001 **120**

► Check the axial play of crankshaft (k).
  Axial play: Page 99

► Change the oil filter.
► Replace the oil cooler. Page 189
  ► Only when abraded metal is found in the engine oil circuit.
► Replace the oil spray nozzles if required. Page 181
► Check the oil pump. Page 193
  ► Only when abraded metal is found in the engine oil circuit.

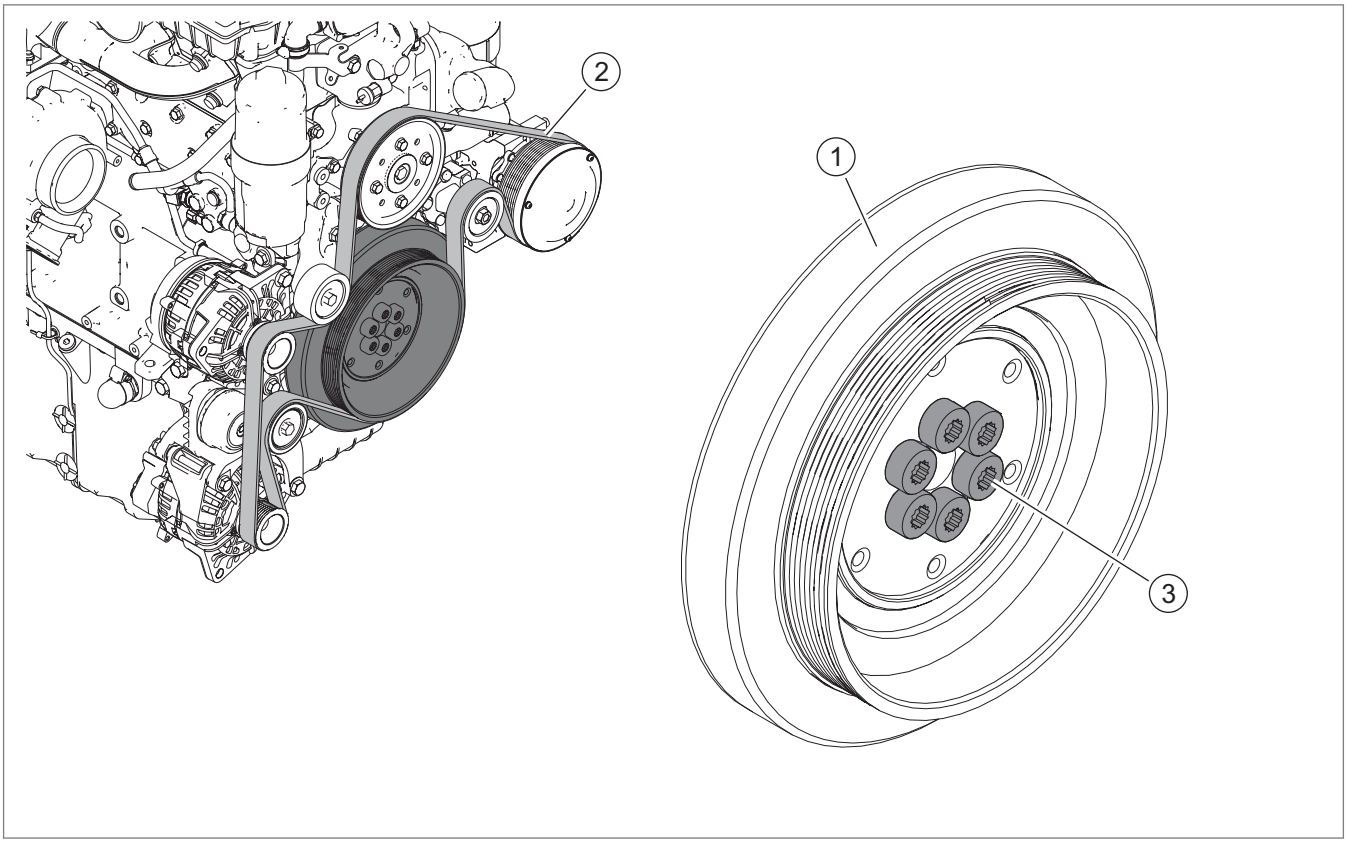
1044-004

- ► Install all pistons. Page 88
- ► Install the timing housing. Page 78
- ► Install the oil pump. Page 195
- ► Install the engine.
  See the repair manual of the machine in question.

1044-004
162438-001

Oscillation damper

Technical specifications



188833-001 **121**

	Value	CCN	Remark / designation	
1	18 kg		Oscillation damper	
2			Alternator drive belt	
3			Mounting bolts Tighten bolts in three steps as per tightening specification. Tightening specification: 1 50 Nm 2 125 Nm 3 90°	
a	up to 61.0 mm		Shaft length of mounting bolts	
Tightening torques not specified, see section on tightening torques				

Installation instructions

Removal:

– Remove the fan drive belt.
  See the Operator's Manual of the machine in question.
– Remove the fan drive pulley.

1044-004

See the repair manual of the machine in question.

– Remove the alternator drive belt.
  See the Operator's Manual of the machine in question.
– Block the engine so it will not rotate.
  - Install the special tool from the Cranking the engine chapter. Page 54

Installation:3

– Install the alternator drive belt.
  See the Operator's Manual of the machine in question.
– Install the fan drive pulley.
  See the repair manual of the machine in question.
– Install the fan drive belt.
  See the Operator's Manual of the machine in question.
– Remove the engine blocking tool.

1044-004
162441-001

Flywheel

147453-001

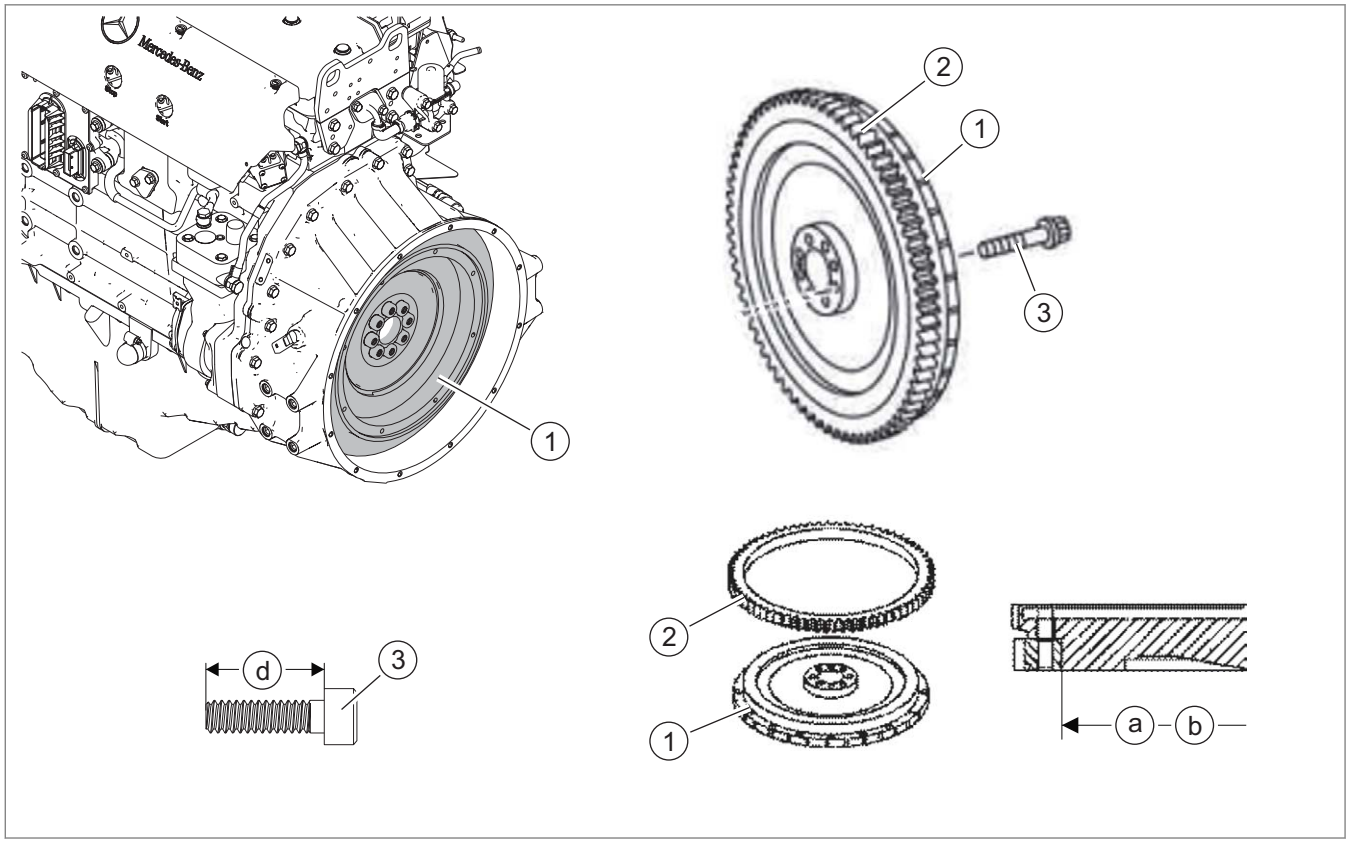
122

Special tool

	Special tool (I)	Pcs.
1	Punch 00 1992 879 0	1

1044-004

Technical specifications



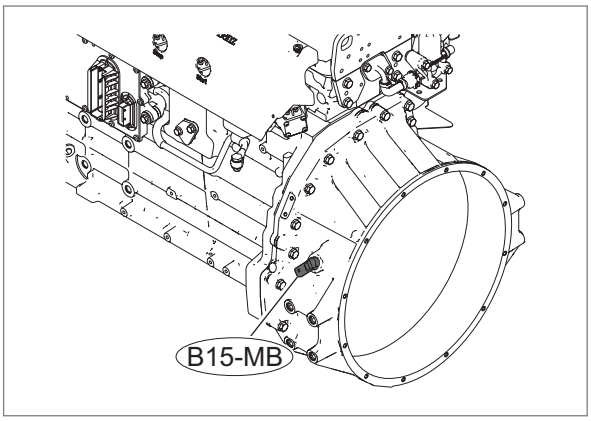
188838-001 **123**

	Value	CCN	Remark / designation	
1	30 kg		Flywheel	
2	4 kg		Flywheel ring gear	
3			Flywheel mounting bolts – Observe the shaft length (d). – Tighten bolts in 3 steps as per tightening specification. Tightening specification: 1 50 Nm 2 125 Nm 3 90°	
a	392.435 to 392.575 mm		Flange diameter on the flywheel	
b	392.000 to 392.140 mm		Ring gear inner diameter	
c	15.6 to 16.0 mm		Ring gear width	
d	up to 61 mm		Shaft length of bolts (3)	
Tightening torques not specified, see section on tightening torques				

1044-004

Removal

► Remove the torsion dampers.
See the repair manual of the machine in question.
► Block the engine so it will not rotate.
► Install the special tool from the Cranking the engine chapter. Page 54



188604-001

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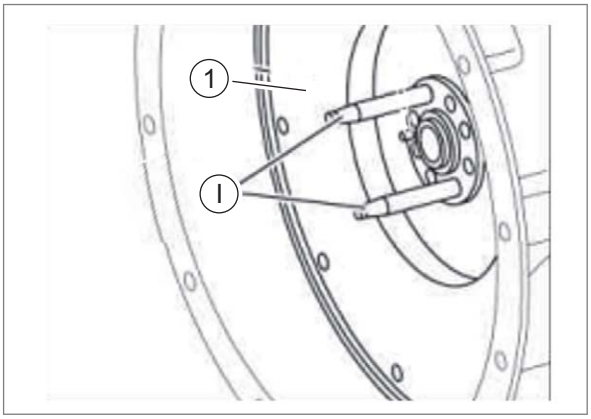
► Remove sensor (B15-MB).

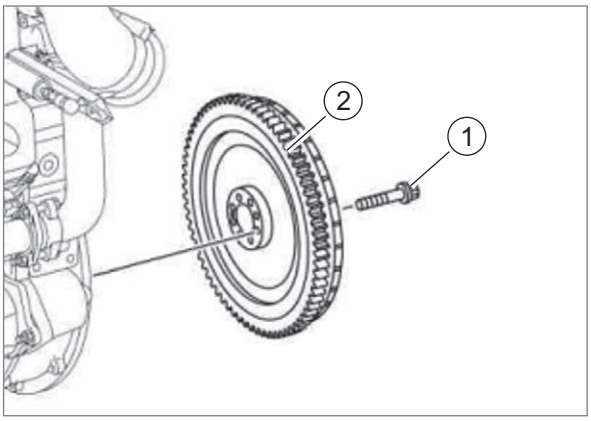


183424-001

125

Use special tool (I). Page 111

► Unscrew two opposite bolts.
► Bolt special tool (I) down in the free bores.



183426-001

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► Unscrew all bolts (1).
► Remove flywheel (2).
► If necessary, force off flywheel by screwing in two bolts M8.

Checking

► Check flywheel flange for wear and run-in traces.
► Replace flywheel if necessary.
► Check the flywheel ring gear.
► Replace the ring gear if necessary. Page 115

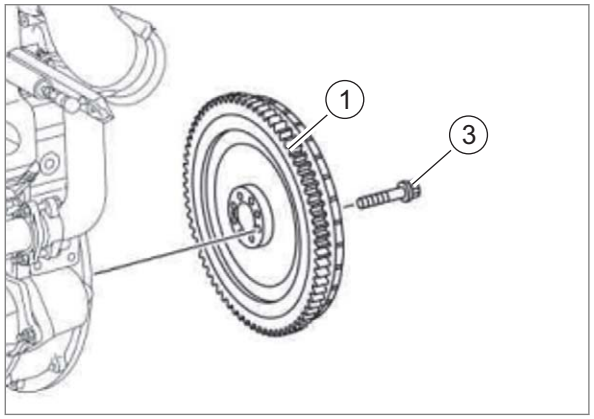
1044-004

► Check the rear crankshaft seal.
  ► Replace seal if required. Page 72
► Check the shaft length (d) of the flywheel mounting bolts. Page 112

Installation

Use special tool (I). Page 111

► Install flywheel (1) over the fitted special tool (I).
  ► Observe the installation position of dowel pin (2).
  ► Screw in bolts (3) hand-tight.
► Remove special tool (I).
► Screw in the remaining two bolts hand-tight.



183444-001

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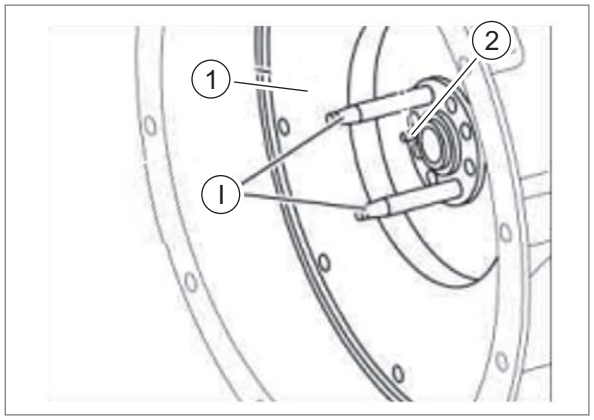

183442-001

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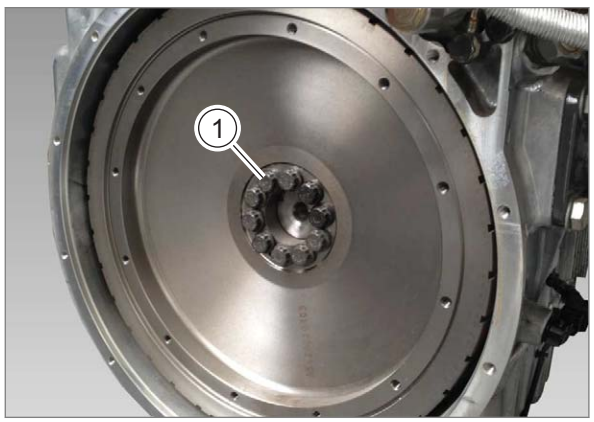
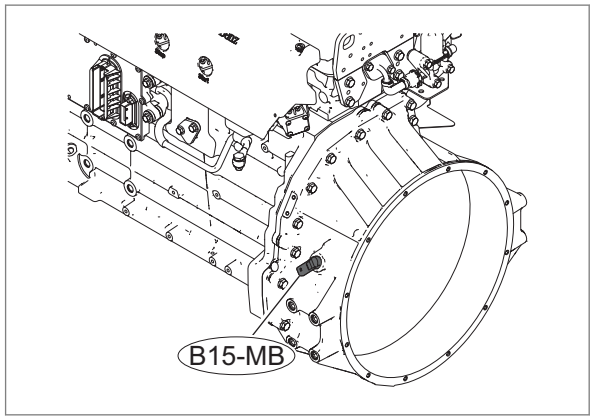
► Tighten all bolts (1) crosswise.
Tightening torque: Page 112



183445-001

129

1044-004



188604-001

130

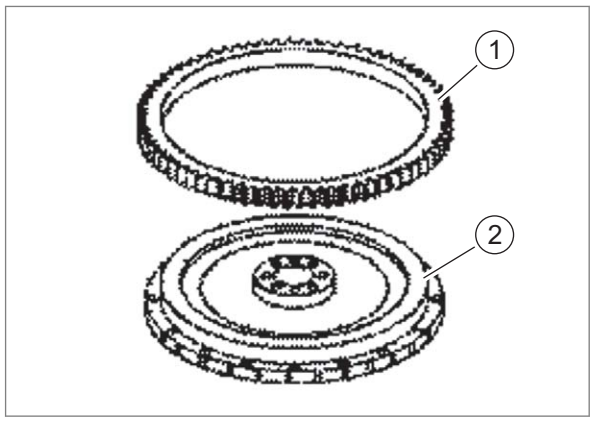
► Install sensor (B15-MB).

► Remove the special tool for blocking the engine.

► Install the torsion damper.
See the repair manual of the machine in question.

Replace ring gear

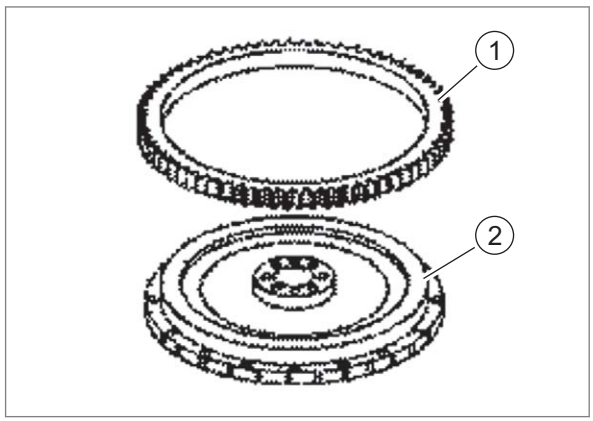
► Remove the flywheel. Page 113



183482-001

131

► Heat up ring gear (1) quickly and force off of flywheel (2).

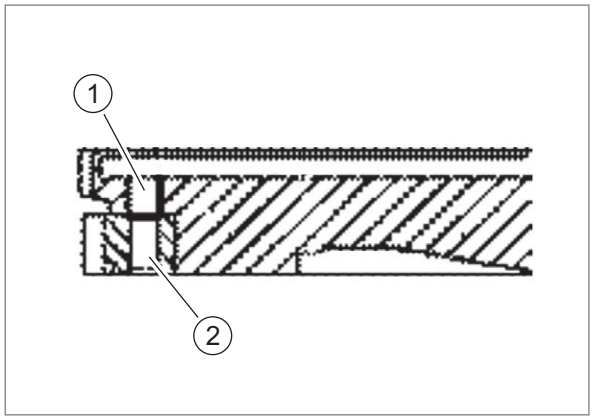


183482-001

132

► Heat up the new ring gear (1) to around 250 to 280 °C (light yellow temper colour) and force onto flywheel (2) up to the stop.
  ► Let the ring gear cool down for at least two minutes.
  ► Readjust the ring gear with a brass punch.

1044-004



183483-001

133

► Following bores (1) in the flywheel, drill tapped holes M10x1.5 (2) into the ring gear.

► Install flywheel. Page 114

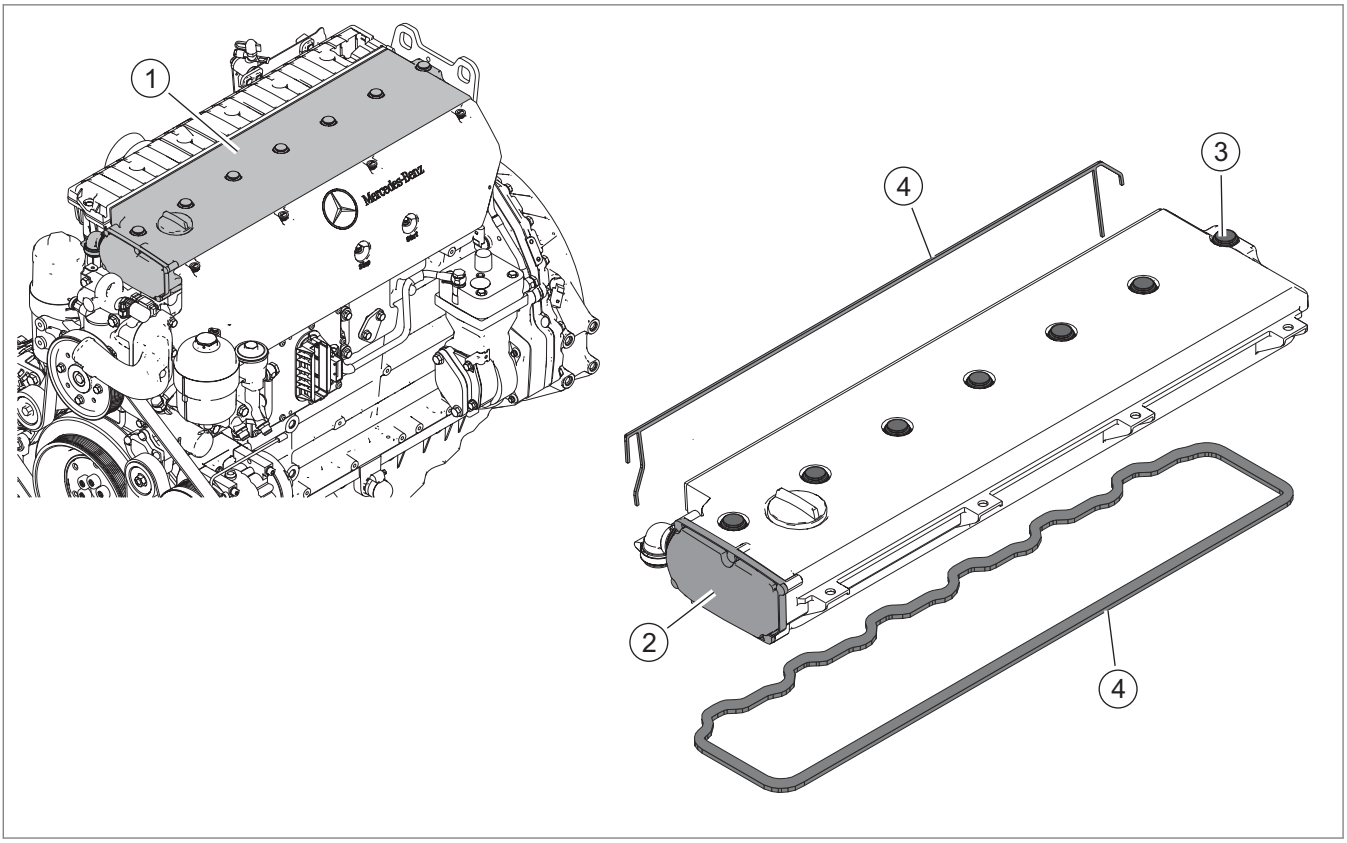
1044-004

0120 Cylinder head / Valves / Idler gear

1044-004
162477-001

Valve cover

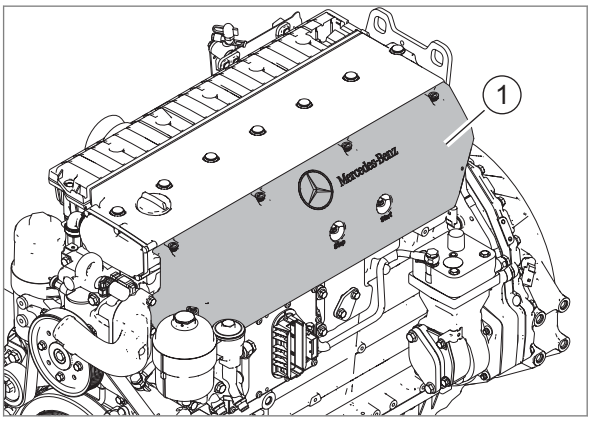
Technical specifications



188989-001 **134**

	Value	CCN	Remark / designation	
1	3 kg		Valve cover	
2			Oil separator	Page 80
3	30 Nm		Cylinder head valve cover mounting bolts – Replace the seals with every installation.	
4			Seals – Clean the sealing faces.	Page 19
Tightening torques not specified, see section on tightening torques				

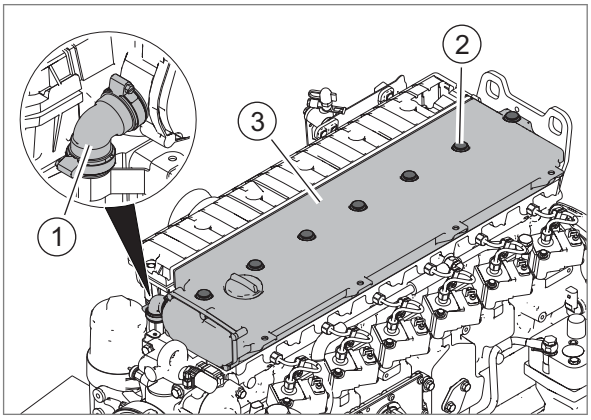
Removal



188990-001

135

► Unscrew guard (1).

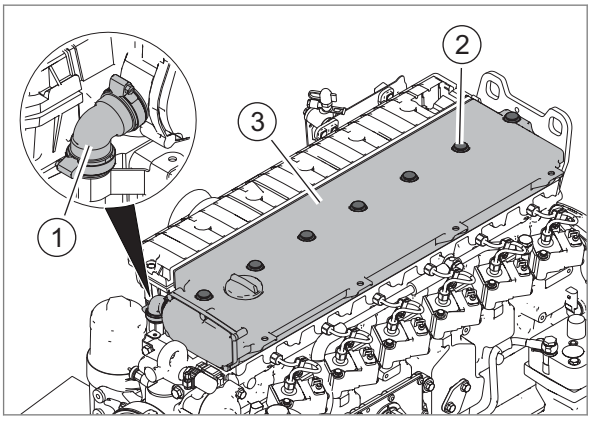


188991-001

136

► Unscrew hose (1).
► Unscrew bolts (2).
► Remove cylinder head valve cover (3).
► Remove seals.
► Clean the sealing faces. Page 19

Installation

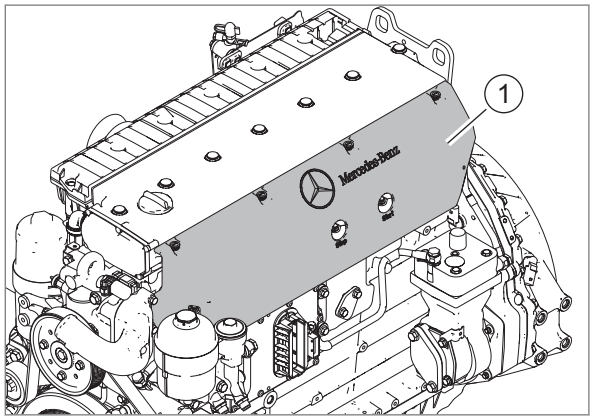


188991-001

137

► Insert cylinder head valve cover (3) with new seals.
► Screw on the bolts (2).
Tightening torque: Page 118
► Screw on the hose (1).

1044-004



188990-001

138

► Screw on guard (1).

Cylinder head

Special tool

147565-001

139

	Special tool (I)	Pcs.
	Socket 00 1992 952 0	1

237685-001

140

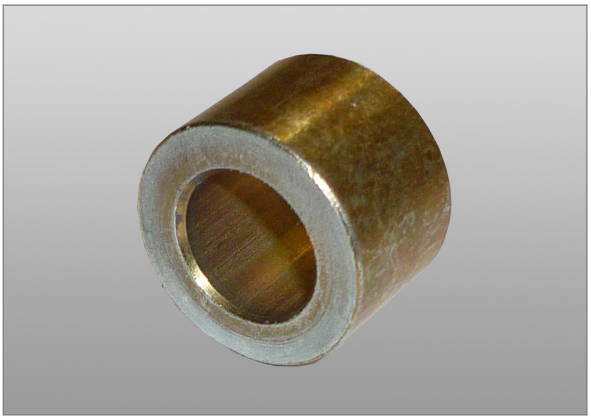
	Special tool (II)	Pcs.
1	Ring bolt 00 0242 963 0	2

237686-001

141

	Special tool (III)	Pcs.
1	Adapter 00 0181 608 0	2

1044-004



237687-001

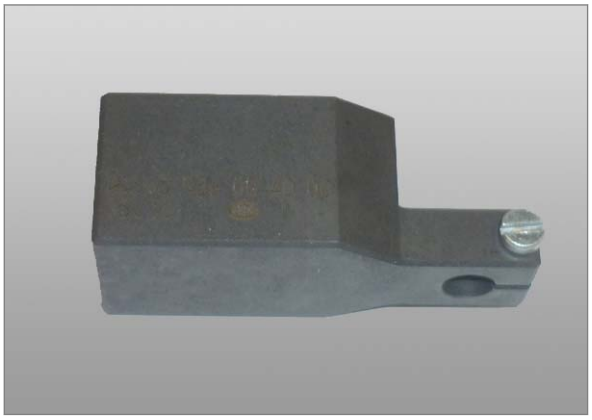
142

	Special tool (IV)	Pcs.
1	Spacer bushing 00 0067 173 0	2

39240-002

143

	Special tool (V)	Pcs.
1	Clock gauge 60 0500 530 3	1



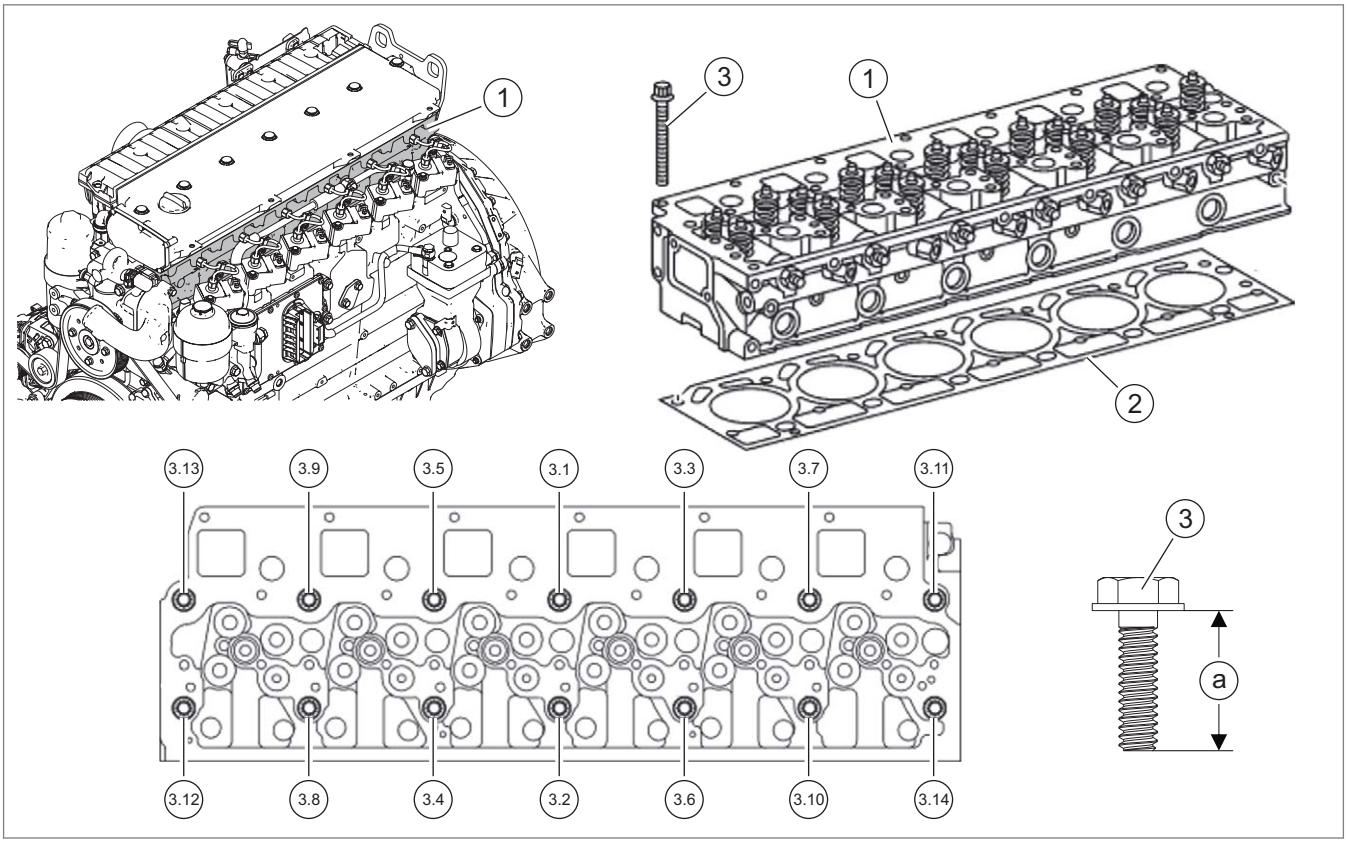
147499-001

144

	Special tool (VI)	Pcs.
1	Measuring gauge holder 00 1992 870 0	1

1044-004

Technical specifications



189027-001 **145**

	Value	CCN	Remark / designation	
1	60 kg		Cylinder head	
2			Cylinder head gasket – Observe the installation position. – Clean the sealing faces.	Page 19
Tightening torques not specified, see section on tightening torques				

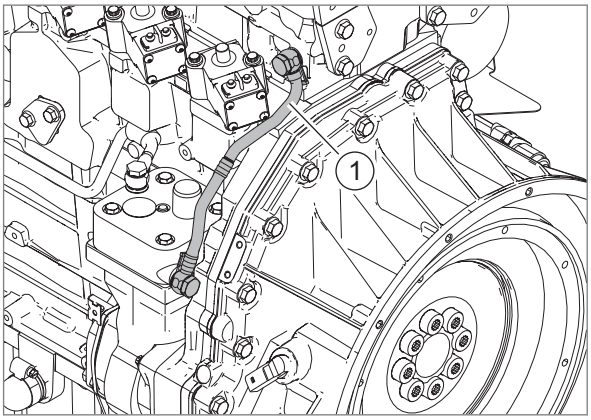
1044-004

	Value	CCN	Remark / designation	
3			Cylinder head bolt – Check shaft length (a). – Slightly coat the threads and the contact faces of cylinder head bolts with engine oil. – Screw in cylinder head bolts with special tool (I). – Tighten cylinder head bolts in the specified order (3.1 - 3.14) in 6 steps as specified. Tightening specification: 1 20 Nm 2 70 Nm 3 170 Nm 4 280 Nm 5 90 °C 6 90 °C When a cylinder head bolt is tightened too much, unscrew all bolts. Check if the bolt in question has the allowed shaft length (a).	
a	149 mm		Shaft length of cylinder head bolt Permitted value: up to 151 mm	
b	0.02 mm		Allowed deviation of levelness of lower separating face in longitudinal direction over a 150 mm length	
b	0.07 mm		Allowed deviation of levelness of lower separating face in longitudinal direction over the total length	
c	107.9 to 108.1 mm		Height of cylinder head Permitted value: 106.9 mm	
d	1.1 to 1.5 mm		Valve depth allowed difference between the intake valves: 0.3 mm	
Tightening torques not specified, see section on tightening torques				

Removal

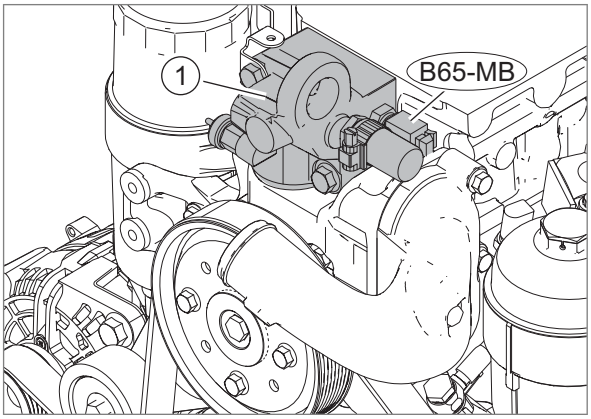
- ► Drain coolant. Page 198
- ► Remove the valve cover. Page 119
- ► Remove the exhaust manifold. Page 214
- ► Remove the intake housing. Page 232
- ► Remove the cylinder head injection line. Page 155
- ► Remove the cylinder head leakage line.
- ► Remove the urea dosing unit. Page 277
- ► Remove the urea heater valve. Page 264
- ► Remove the rocker arm mechanism. Page 134

1044-004



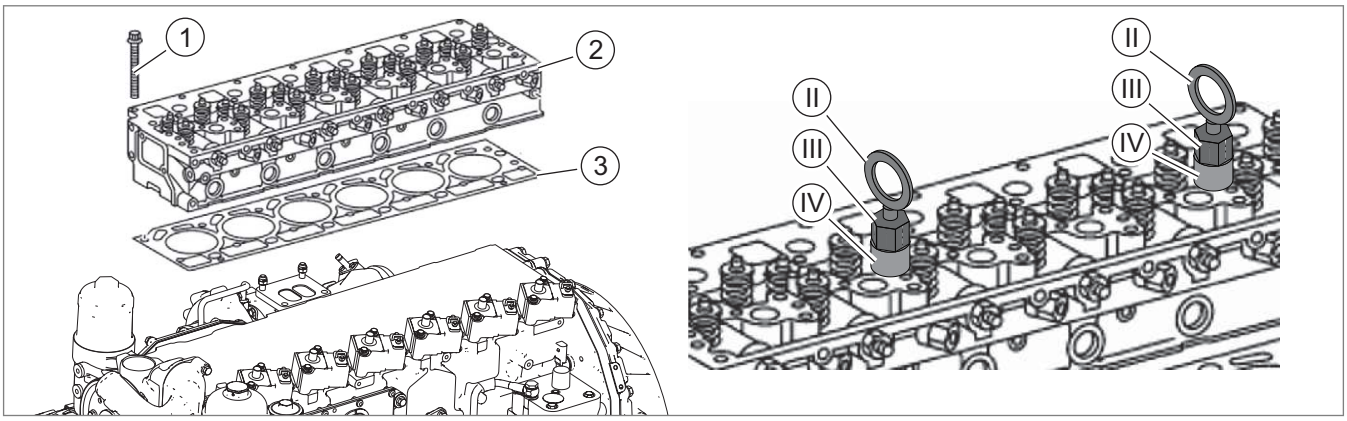
189034-001 **146**

► Unscrew coolant line (1).



189035-001 **147**

► Disconnect connector from sensor (B65-MB).
► Unscrew top section (1) of coolant pump.



189036-001 **148**

Use special tools (I) to (IV). Page 121

► Unscrew cylinder head bolts (1).
► Screw on special tools (II) to (IV) to 25 Nm.
► Remove cylinder head (2) with a suitable lifting tool.
► Remove cylinder head gasket (3).

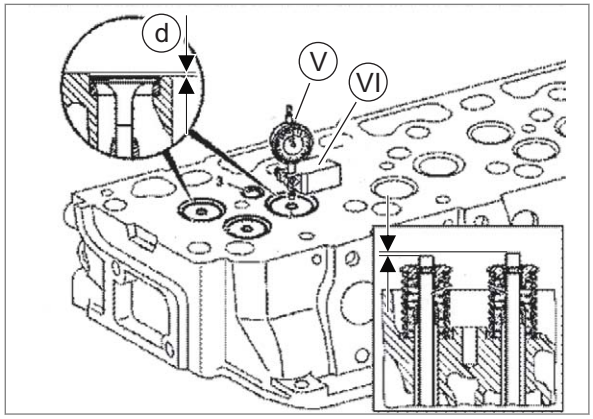
► Close all bores in the separating face of the crankcase and the cylinder bore dust-tight.
► Clean the cylinder head.
► Clean the sealing faces. Page 19

1044-004

Checking

- ► Check the levelness (b) of separating faces.
- ► Measure the height of cylinder head (c).

Dimensions (b) and (c): Page 123

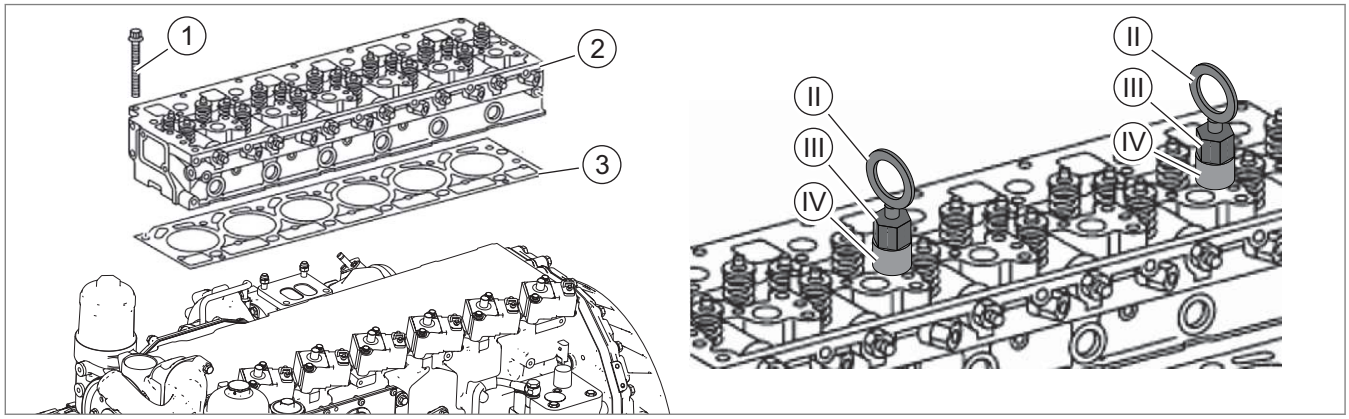


234476-001 **149**

Use special tool (V) and (VI). Page 121

- ► Measure the valve depth (d).
  - ► Observe the maximum difference of intake valves!

Installation



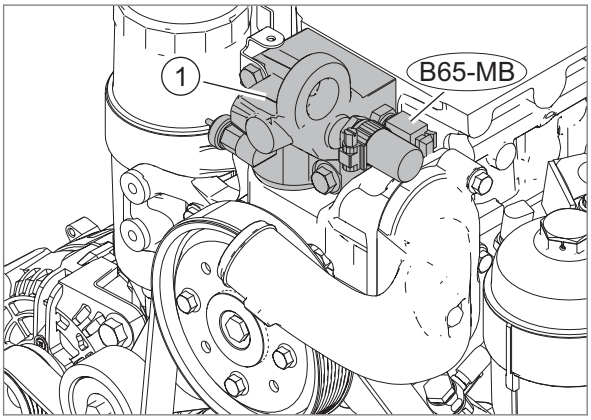
189036-001 **150**

Use special tools (I) to (IV). Page 121

- ► Put on a new cylinder head gasket (3).
- ► Place cylinder head (2) in position, using suitable lifting equipment.
- ► Unscrew special tools (II) to (IV).
- ► Tighten cylinder head bolts (1) as per tightening specifications.

  Tightening specification: Page 123

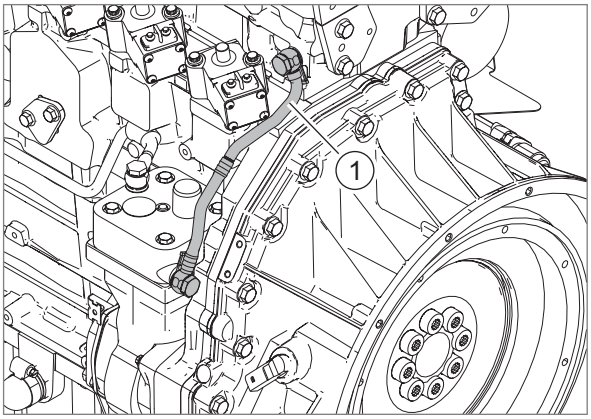
1044-004



189035-001

151

- ► Screw on top section (1) of coolant pump.
  Tightening torque: Page 123
- ► Connect connector on sensor (B65-MB).



189034-001

152

- ► Screw on coolant line (1).

- ► Install the rocker arm mechanism. Page 136
- ► Install the urea heater valve. Page 265
- ► Install the urea dosing unit. Page 277
- ► Install the cylinder head leakage line.
- ► Install the cylinder head injection line. Page 155
- ► Install the intake housing. Page 232
- ► Install exhaust manifold. Page 215
- ► Adjust the valve lash. Page 131
- ► Install the valve cover. Page 119
- ► Top up coolant. Page 199
- ► Check the oil level.
- ► Check tightness of engine in the cylinder head area.

1044-004
162789-002

Valves

188124-001

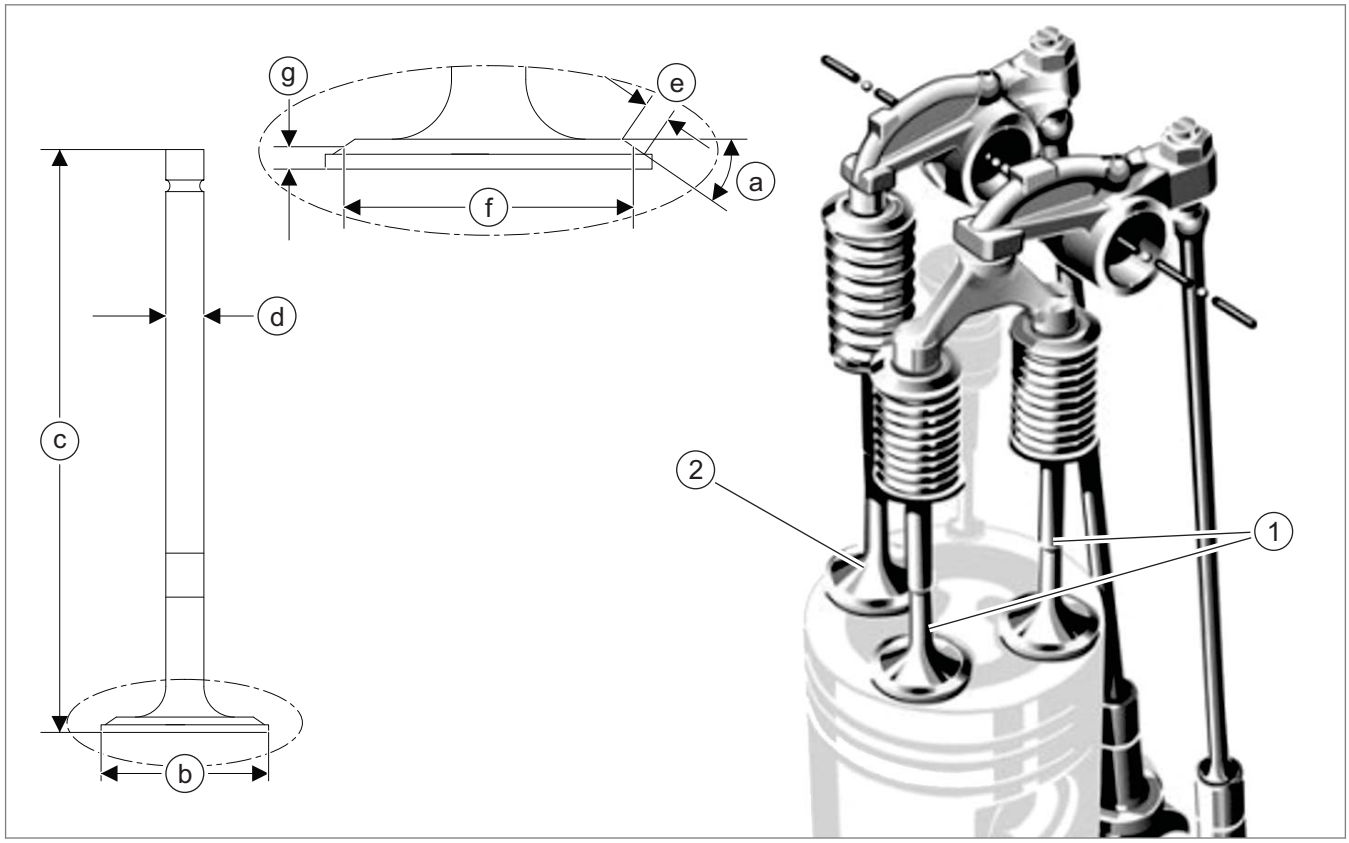
153

Special tool

	Special tool (I)	Pcs.
1	Feeler gauge 00 0409 797 0	1

1044-004

Technical specifications

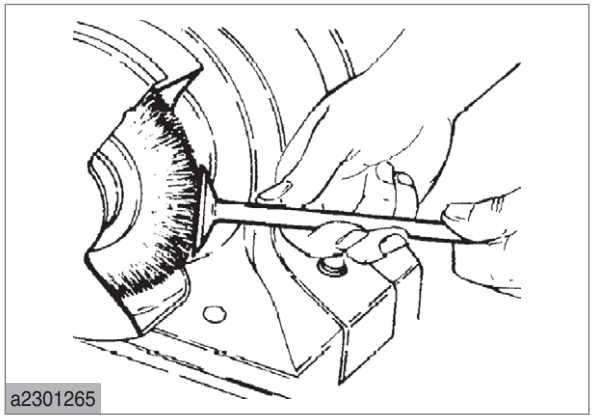


234554-001 **154**

	Value	CCN	Remark / designation	
1			Intake valves – Slightly coat the valve shaft with engine oil.	
2			Exhaust valve – Slightly coat the valve shaft with engine oil.	
a			Valve seat angle Intake: 20° Exhaust: 45°	
b			Valve head Intake: 33.9 to 34.1 mm Exhaust: 37.8 to 38.2 mm	
c			Valve length on type design 926.9xx Intake: 128.45 to 129.05 Exhaust: 152.50 to 152.90	
c			Valve length on type design 906.9xx Intake: 125.65 to 125.95 Exhaust: 152.20 to 152.90	
Tightening torques not specified, see section on tightening torques				

1044-004

	Value	CCN	Remark / designation	
d			Valve stem Intake: 7.935 to 7.950 mm Exhaust: 7.925 to 7.940 mm	
e			Valve seat width at the valve head Intake: 3.19 mm Exhaust: 3.35 mm	
f			Valve seating face Intake: 31.0 mm Exhaust: 36.0 mm	
g			Valve seating face machining dimension Intake: 2.7 to 3.1 mm Exhaust: 2.5 to 3.2 mm	
Tightening torques not specified, see section on tightening torques				



171650-001

155

Installation instructions

Removal:

– Remove the valve springs. Page 139

Installation:

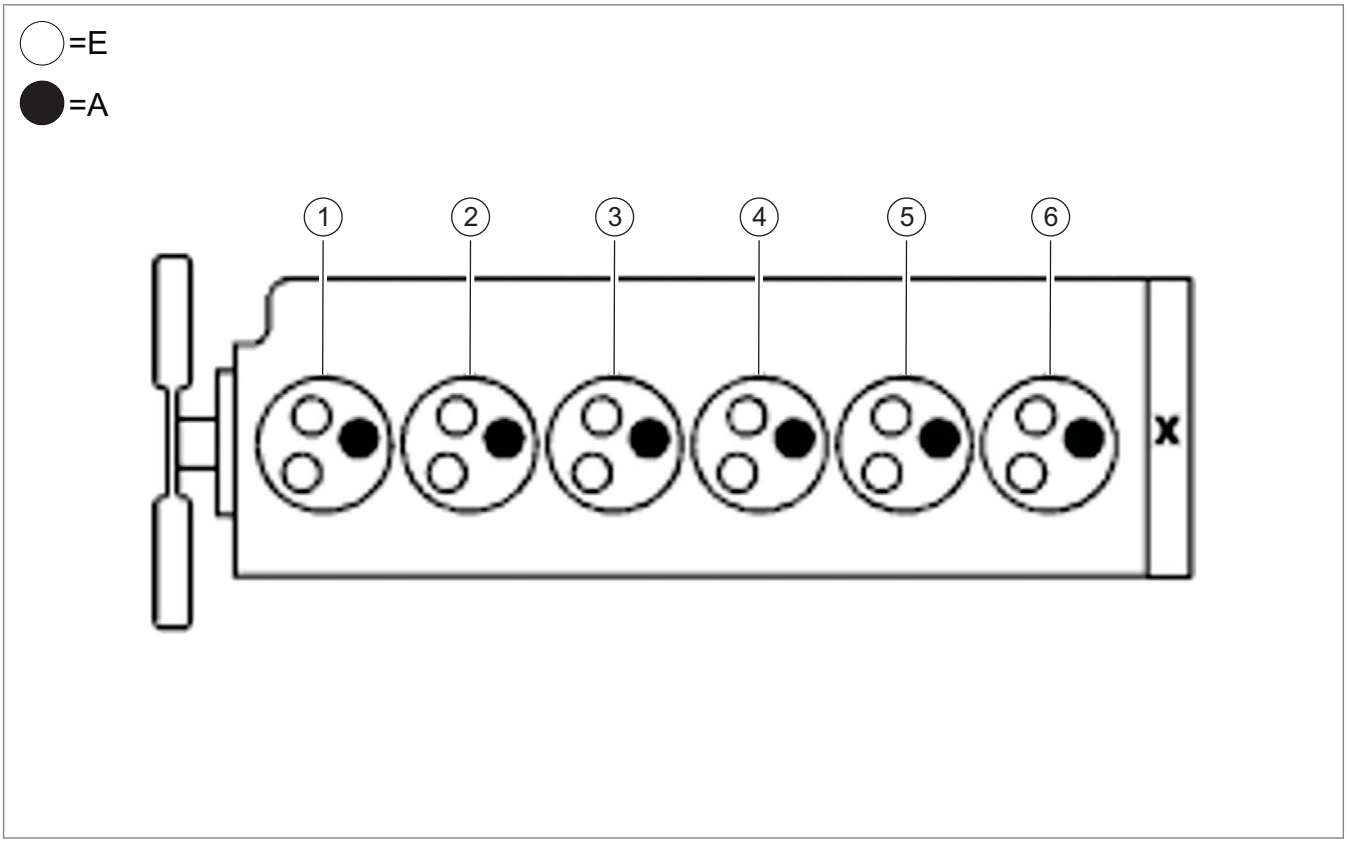
– Check the valves.
– Install the valve springs. Page 140

Checking the valves

► Remove fouling deposits on the valves by means of a wire brush.
► Ensure that the valves have no seizing traces or cracks.
► Check the specified dimensions of the valves.

1044-004

Adjusting the valve lash



234557-001 **156**

	Value	CCN	Remark / designation	
1 - 8			Cylinder 1 to 6	
A	0.60 mm		Valve lash of exhaust valves Test tolerance: +0.1 / -0.1 mm	
E	0.40 mm		Valve lash of intake valves Test tolerance: +0.05 / -0.05 mm	
Tightening torques not specified, see section on tightening torques				

Crankshaft position	1	2	3	4	5	6
Cylinder 6 at overlap TDC	E/A	E	A	E	A	-
Cylinder 1 at overlap TDC	-	A	E	A	E	E/A

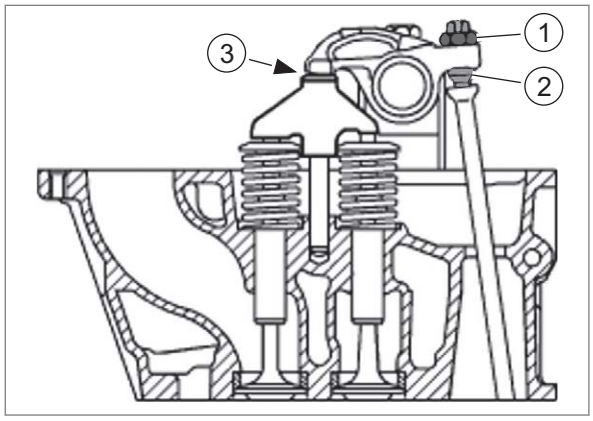
► Set cylinder 6 to overlap TDC.
Cylinder 1 at ignition TDC.
  ► Adjust the corresponding exhaust (A) and intake valves (E).
► Set cylinder 1 to overlap TDC.
Cylinder 6 at ignition TDC.
  ► Adjust the corresponding exhaust (A) and intake valves (E).

Check and adjust valve lash only on a cold engine.

1044-004

► Remove the valve covers. Page 119

► Rotate the crankshaft to the corresponding crankshaft position as described in the Cranking the engine chapter. Page 54



Intake valves 234560-001

157

Use special tool (I). Page 128

► Check the distance between the valve bridge and the rocker lever at (3).

If the deviation exceeds the allowed test tolerances, adjust the valve lash as follows:

► Slacken off lock nut (1).

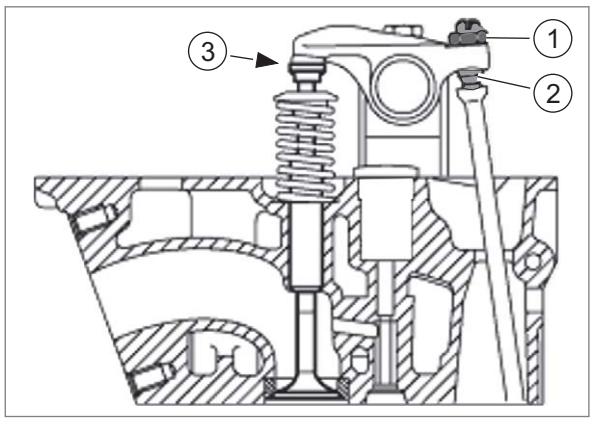
► Turn out adjusting bolt (2) a little.

► Insert feeler gauge at (3).

► Readjust adjusting bolt (2) until the feeler gauge can be just pulled through.

► Tighten lock nut (1).

► Tightening torque: Page 133

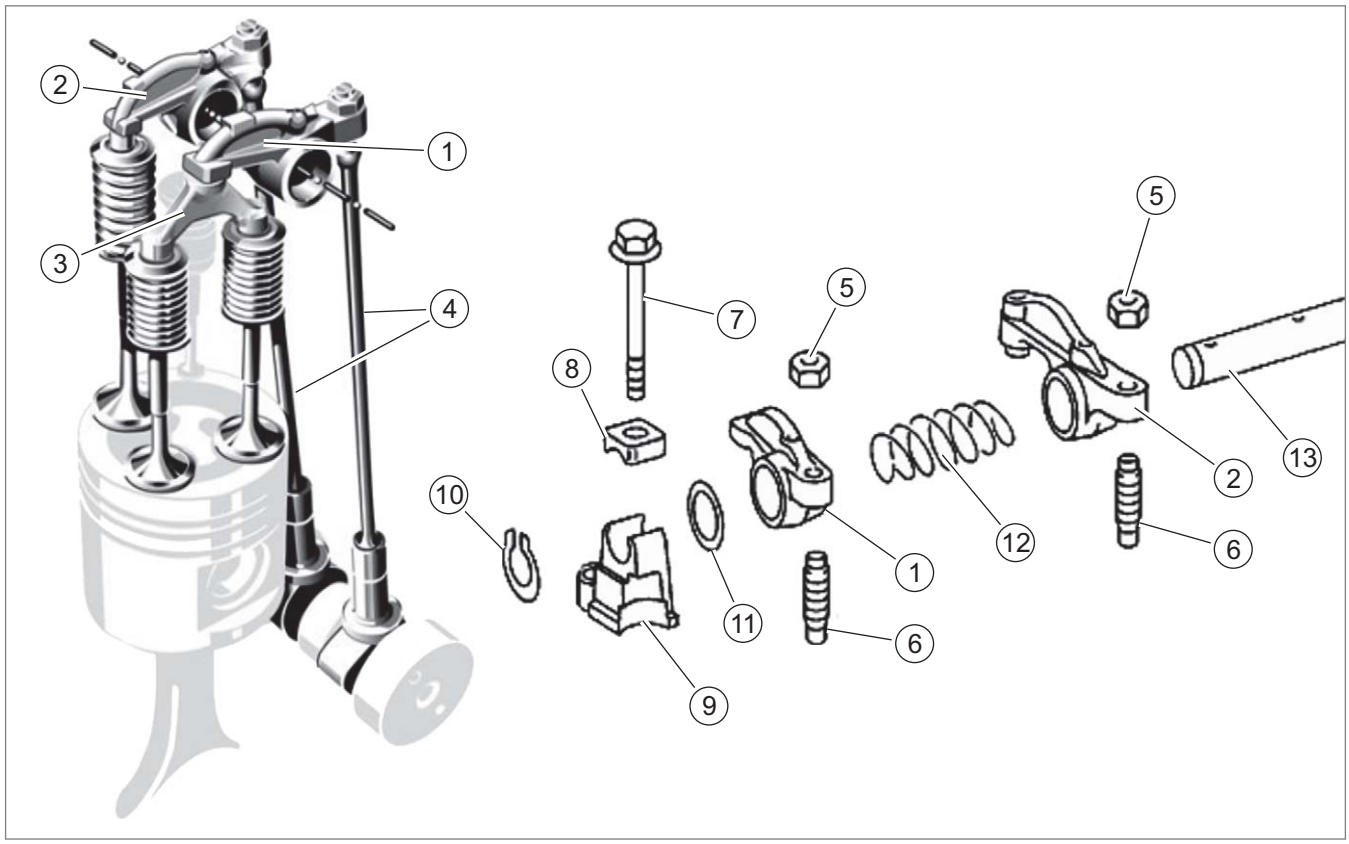


Exhaust valves 234559-001

158

1044-004
162749-001

Rocker lever

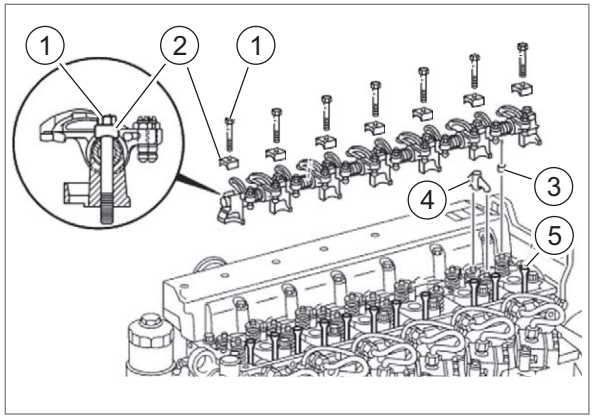


234538-001 **159**

	Value	CCN	Remark / designation	
1			Rocker lever	
2			Rocker lever	
3			Valve bridge	
4			Push rods – Slightly coat the push rod cups with engine oil. – Ensure the correct seat of push rods in the tappets. – Do not confuse the push rods when re-using them.	
5	25 Nm		Lock nut for adjusting bolt (6)	
6			Adjusting bolt	
7	30 Nm		Rocker lever mounting bolt	
8			Tensioner	
9			Rocker lever block	
10			Circlip	
11			Washer	
Tightening torques not specified, see "Introduction / Tightening torques" chapter				

1044-004

	Value	CCN	Remark / designation	
12			Spring	
13			Rocker shaft	
Tightening torques not specified, see "Introduction / Tightening torques" chapter				

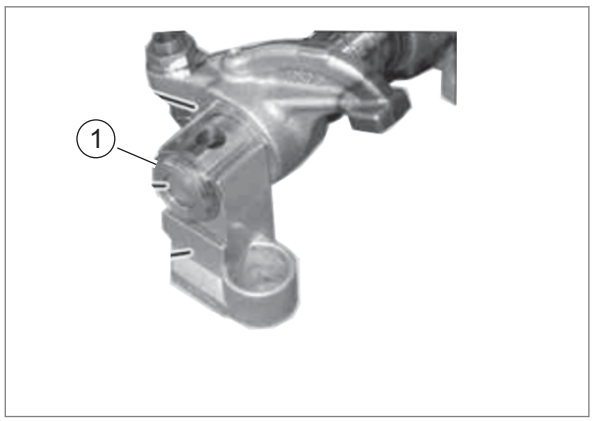


234521-001 **160**

Removal

► Remove cylinder head valve cover. Page 119

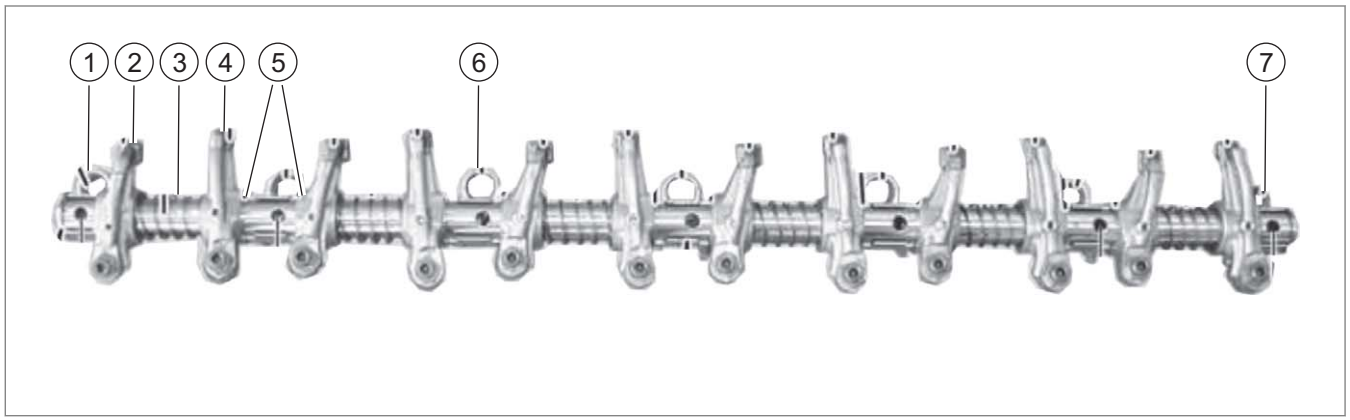
► Unscrew bolts (1).
► Remove tensioners (2).
► Remove flaps (3) of exhaust valves.
► Remove valve bridges (4).
► Remove push rods (5).



234522-001 **161**

Disassembly

► Remove circlip (1).
► Observe the spring pre-loading!

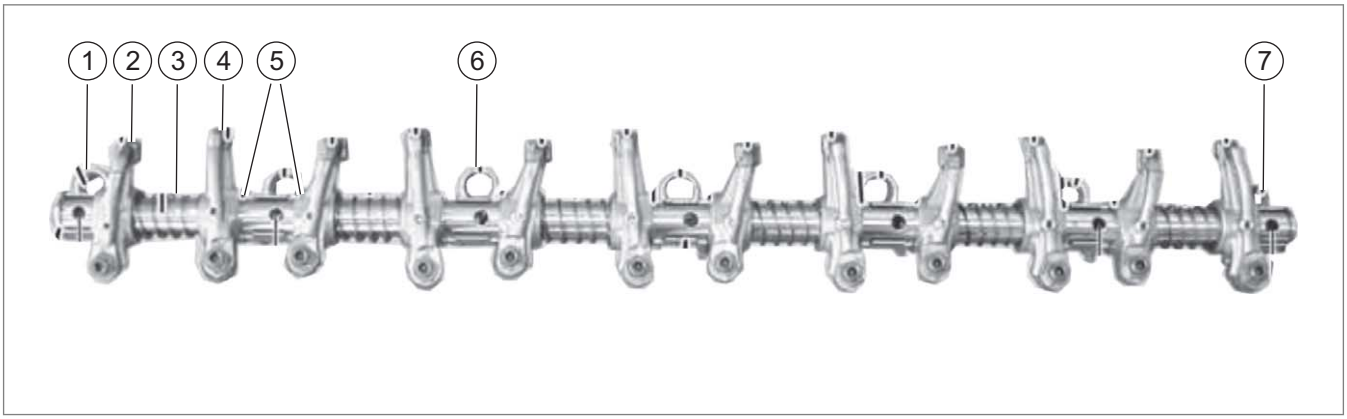


234523-001 **162**

► Remove rocker arm bearing blocks, rocker arms, washer and springs from the rocker arm axle.

1044-004

Assembly

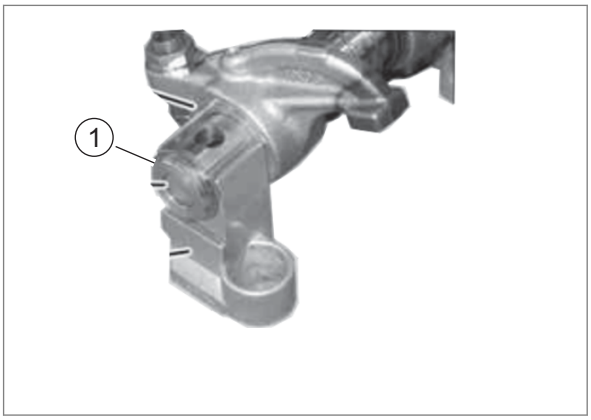


234523-001 **163**

	Designation
1	Pulley side rocker arm bearing blocks
2	Intake valve rocker arm
3	Spring
4	Exhaust valve rocker arm
5	Washers
6	Inner rocker arm bearing block
7	Flywheel side rocker arm bearing block

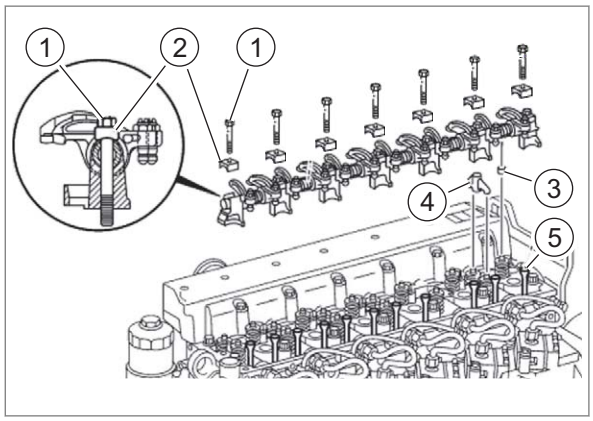
► Slide rocker arm bearing blocks, rocker arms, washers and springs on the rocker arm axle in the order as shown.

► Insert circlip (1).



234522-001 **164**

1044-004



234521-001

165

Installation

- ► Insert push rods (5).
- ► Place valve bridges (4) in position.
- ► Place caps (3) of exhaust valves in position.
- ► Fit tensioners (2).
- ► Screw in bolts (1).
  Tightening torque: Page 133

- ► Adjust the valve lash. Page 131
- ► Install the cylinder head valve cover. Page 119

1044-004
162810-001

Valve springs and valve stem seals

147544-001

166

Special tool

	Special tool (I)	Pcs.
1	Installation tool 00 1992 951 0	1

32852-001

167

	Special tool (II)	Pcs.
1	Magnetic rod 00 0181 842 0	1

147404-001

168

	Special tool (III)	Pcs.
1	Tongs 00 1992 947 0	1

1044-004

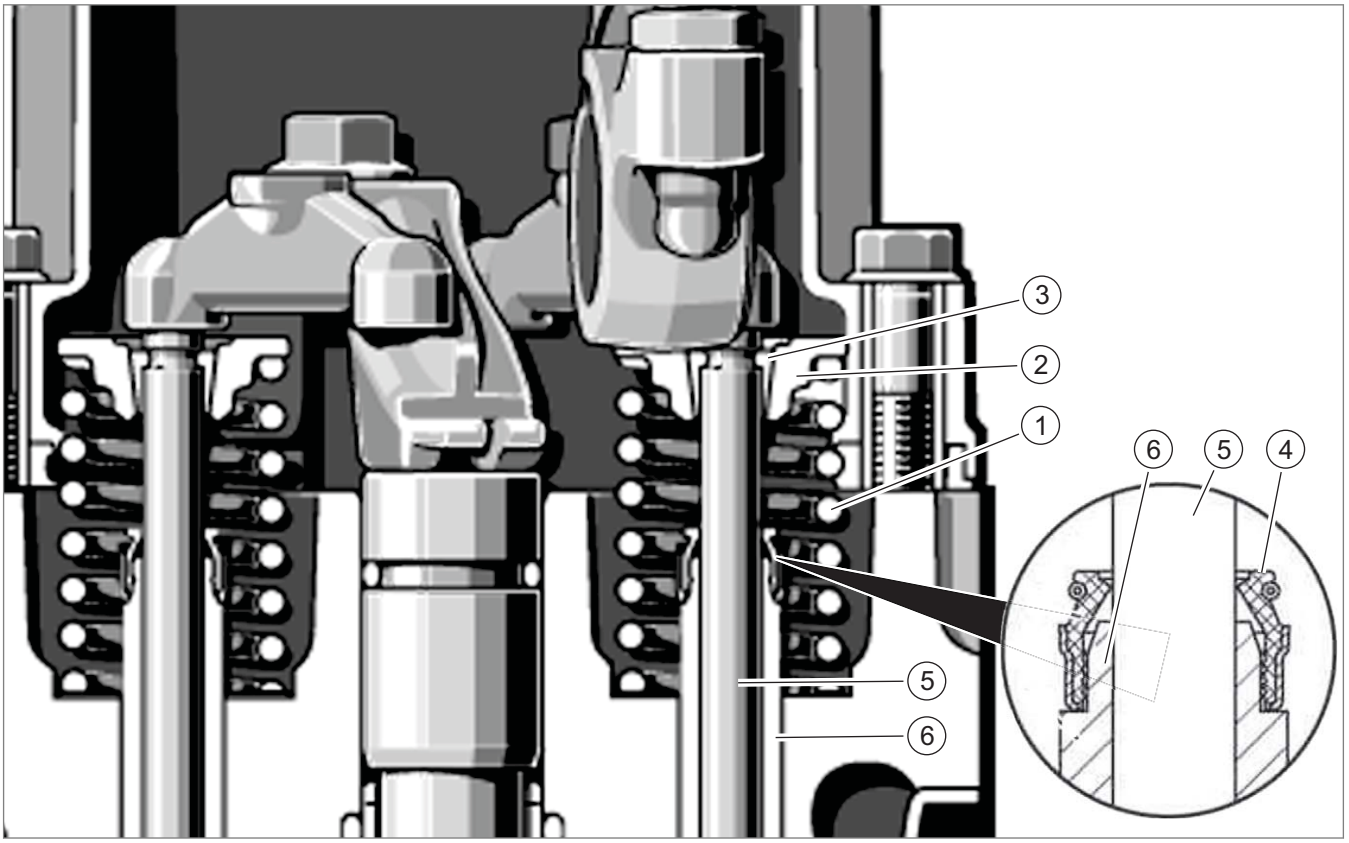
147491-001

169

	Special tool (IV)	Pcs.
1	Sleeve 00 1992 871 0	1

1044-004

Technical specifications



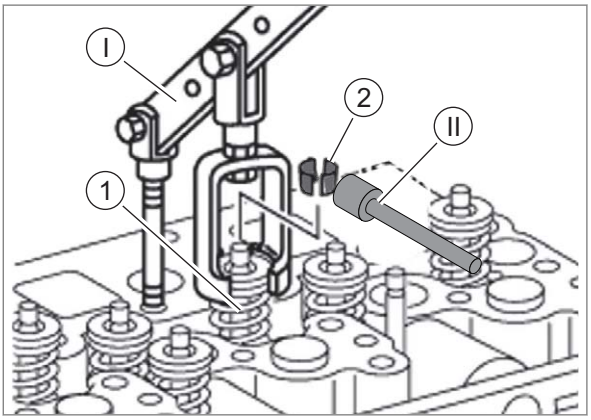
182304-001 **170**

	Value	CCN	Remark / designation	
1			Valve spring Do not confuse the valve springs.	
2			Valve spring retainer	
3			Split valve keepers Observe the installation position!	
4			Valve shaft seal Replace seal in **every** installation process!	
5			Valve	Page 128
6			Valve guide	Page 142
Tightening torques not specified, see section on tightening torques				

Removal

- ► Remove the valve cover. Page 119
- ► Remove rocker lever. Page 134
- ► Set the corresponding piston to the ignition TDC. See Cranking the engine. Page 54

1044-004

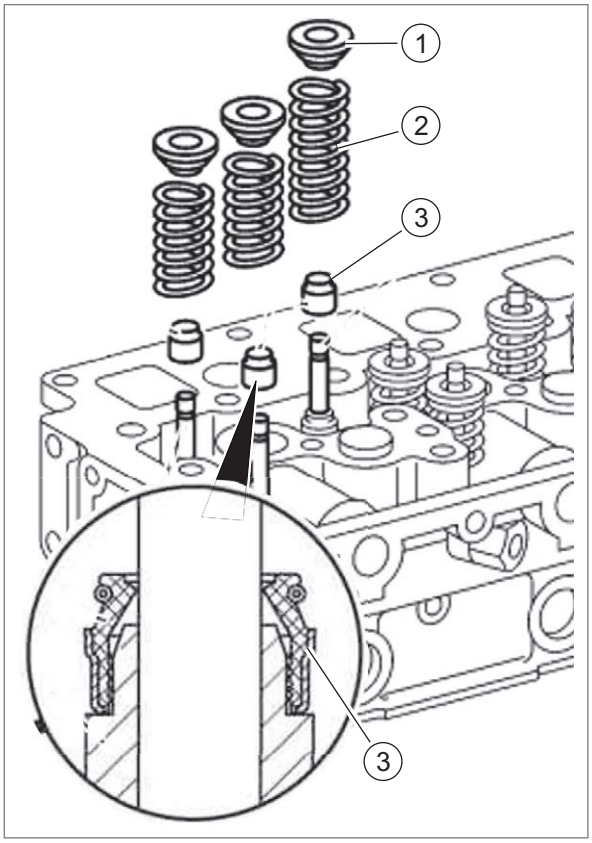


234574-001

171

Use special tools (I) and (II). Page 137

- ► Push down valve spring (1).
- ► Remove split valve keepers (2) with special tool (II).



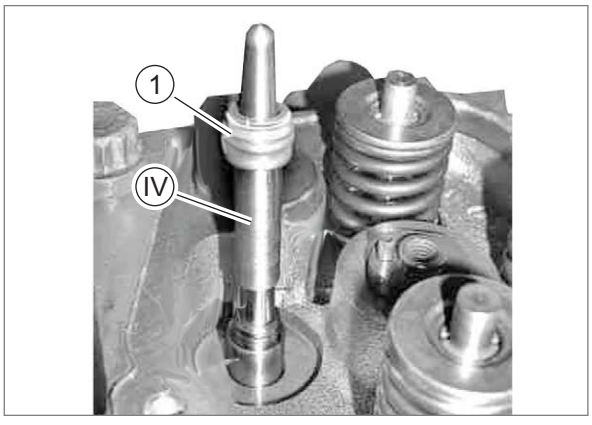
234575-001

172

Use special tool (III). Page 137

- ► Remove valve spring retainer (1) and valve spring (2).
- ► Remove the valve shaft seal (3).

Installation



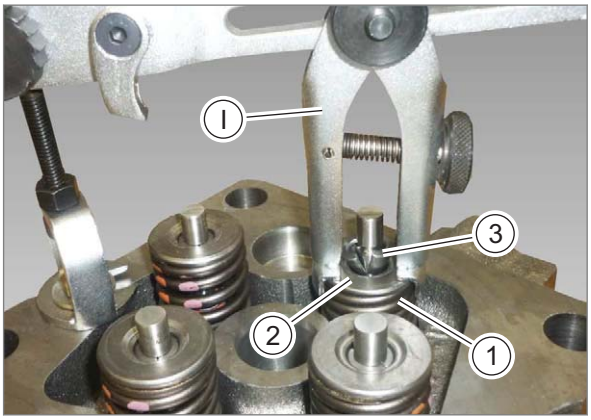
182294-001

173

Use special tool (IV). Page 137

- ► Install valve shaft seal (1) with special tool (IV).

1044-004



182278-001

174

Use special tool (I). Page 137

- ► Insert and push down valve spring (1) together with valve spring retainer (2).
- ► Insert split valve keepers (3).
- ► Carefully relieve the valve spring tension.
  - ► Ensure that the split valve keepers (3) will not get out of place.

- ► Install rocker lever. Page 136
- ► Install the valve cover. Page 119

1044-004
162823-004

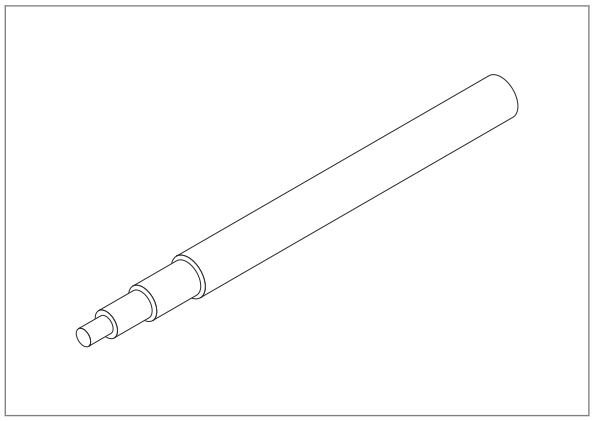
Valve guide

Work preparation

Utilities:

- ► Tool:
  Adjustable reamer - Ø 13.5 mm to Ø 15.5 mm
  Adjustable reamer - Ø up to 7.99 mm
  Reamer - Ø 80 mm H7
  Cylinder brush

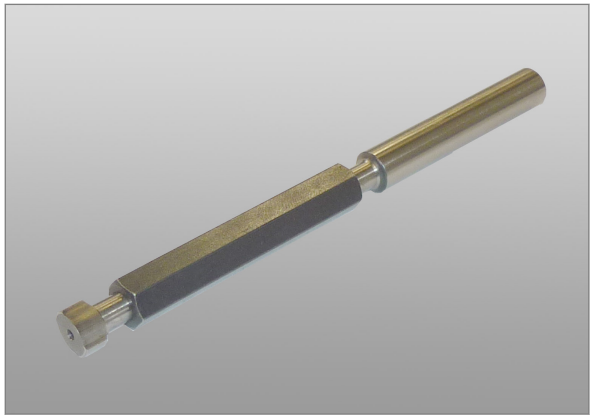
Special tool



237688-001

175

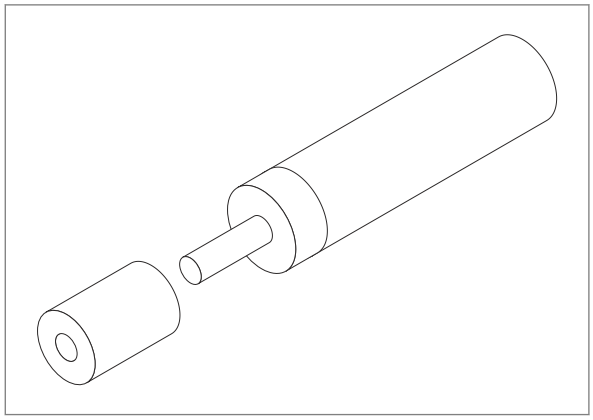
	Special tool (I)	Pcs.
1	Stepped mandrel 00 1995 515 0	1



237689-001

176

	Special tool (II)	Pcs.
1	Punch 00 1995 514 0	1

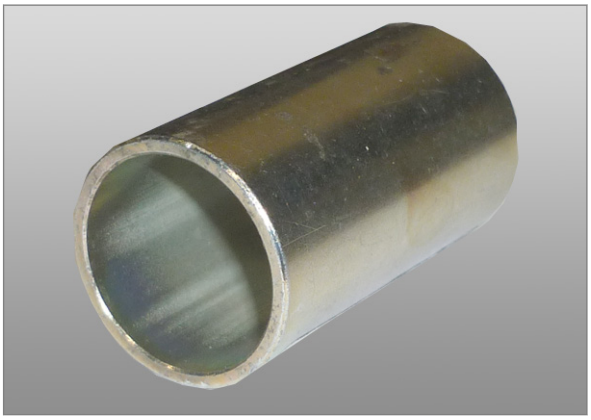


237692-001

177

	Special tool (III)	Pcs.
1	Punch 00 1995 523 0	1

1044-004



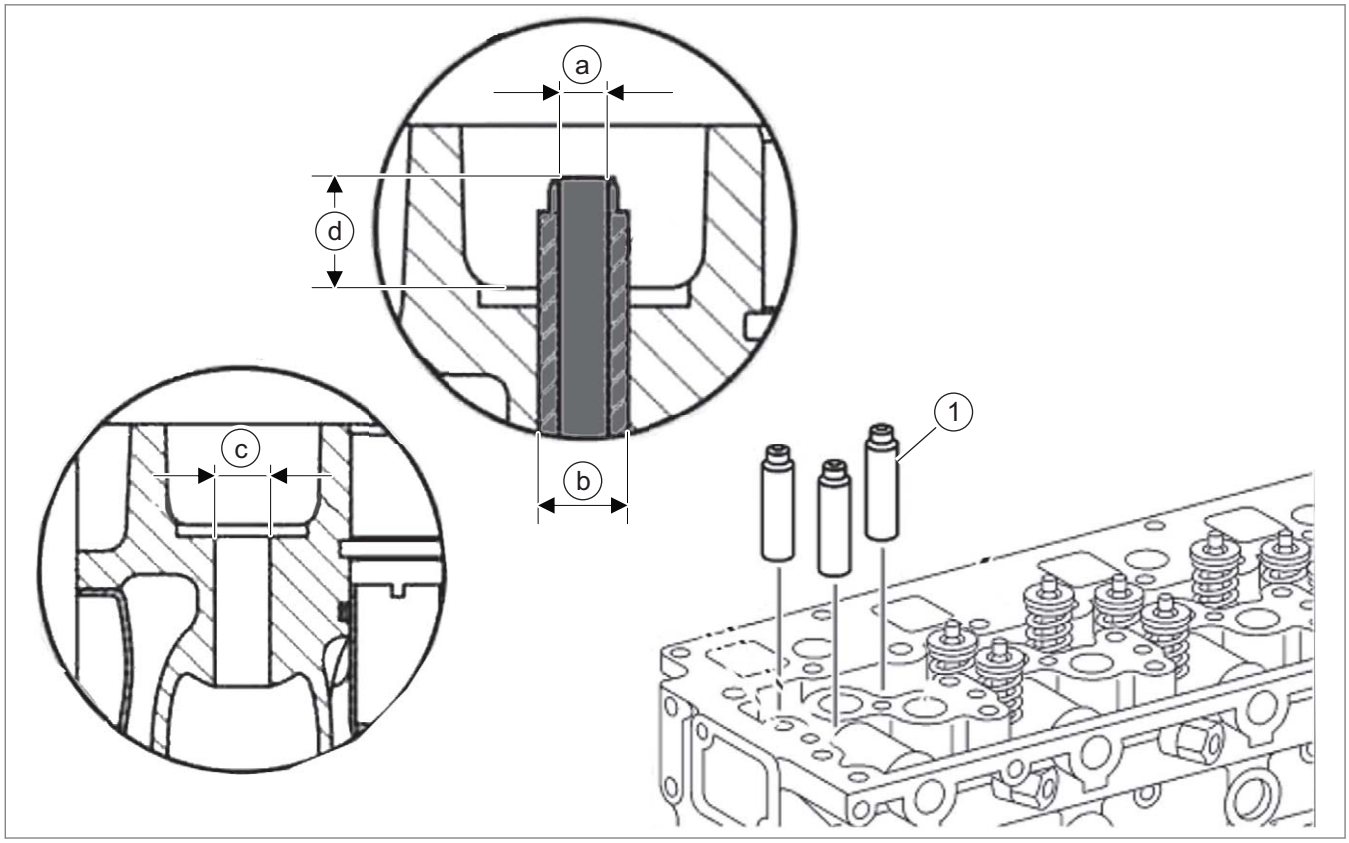
237712-001

178

	Special tool (IV)	Pcs.
1	Sleeve 00 1995 526 0	1

1044-004

Technical specifications



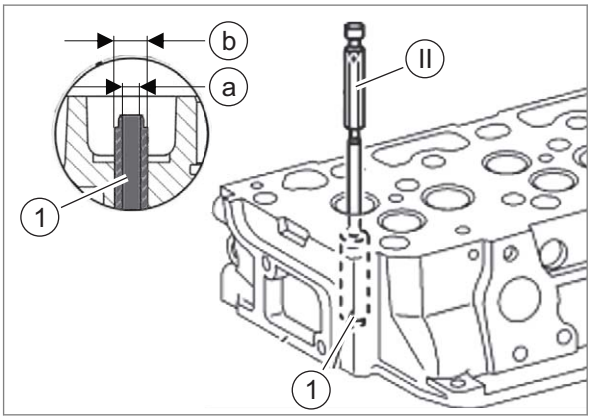
234588-001 **179**

	Value	CCN	Remark / designation	
1			Valve guides Observe check dimensions (a) to (d)!	
a			Bore diameter of valve guide in built-in condition Standard: 8.000 to 8.022 mm	
b			Outer diameter of valve guides Standard version: 14.028 to 14.046 mm Version deviation 0.2: 14.228 to 14.246 mm	
c			Bore diameter in the cylinder head Standard: 14.000 to 14.018 mm Deviation 0.2: 14.200 to 14.218 mm	
d			Clearance between valve guide top edge and valve spring contact face Intake: 13.7 to 14.5 mm Exhaust: 17.2 to 218.0 mm	
Tightening torques not specified, see section on tightening torques				

Checking

► Remove valves. Page 130

1044-004

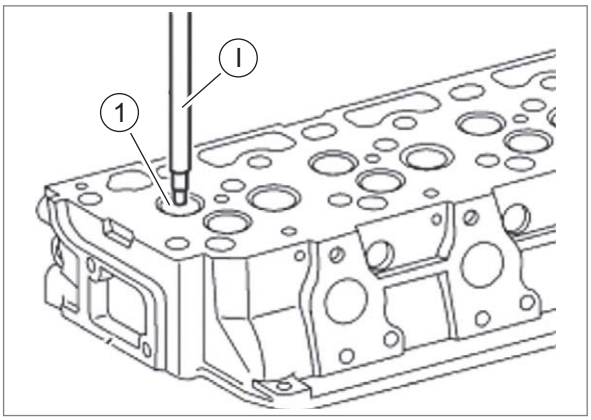


234599-001

180

Use special tool (II). Page 142

- ► Clean valve guides (1) with a cylinder brush (2).
- ► Check valve guides (1) for surface damage.
  - ► Mark the valve guide in question if necessary.
- ► Check dimension (a) of valve guides (1).
  - ► The special tool side marked with a "+" must **not** fit into the valve guide.
  - ► Mark the valve guide in question if necessary.
- ► Check dimension (b) of the valve guide.
  Dimension (b): Page 144
  - ► Mark the valve guide in question if necessary.



234595-001

181

Removal

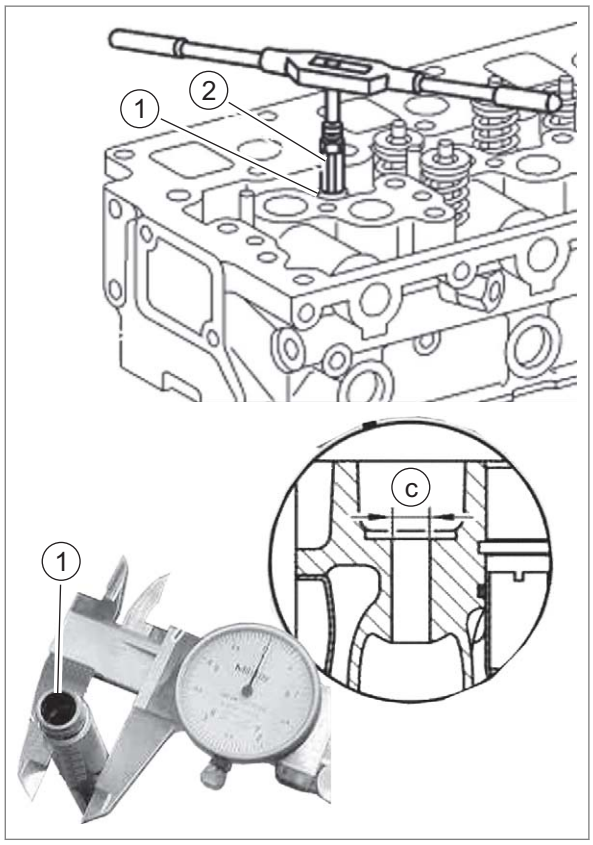
Use special tool (I). Page 142

158806-002

Information! Uneconomic assembly

- ► Check and mark components accordingly before disassembling.
- ► Remove marked valve guides (1) from the combustion side.

1044-004

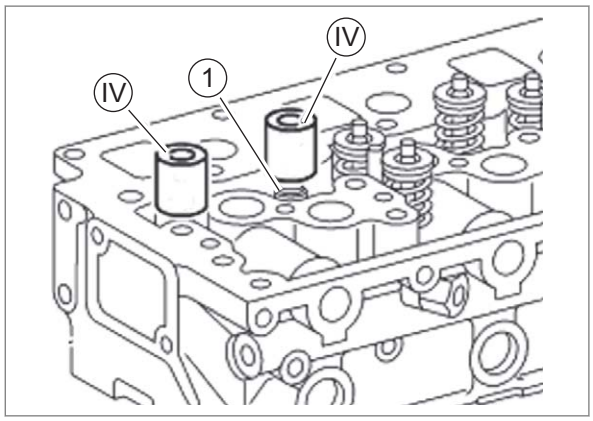


234596-001

182

Installation

- ► Measure the bore diameter (c) for the valve guide on the cylinder head.
  Bore diameter: Page 144
  - ► Select the valve guide (1) with the next bigger deviation.
- ► Check the outer diameter (b) of the new valve guide (1).
  Outer diameter: Page 144
- ► Expand the bore diameter (c) to the corresponding deviation (e.g. Ø 14.2 mm H7), using a reamer (2).
  - ► Turn the reamer only clockwise!
- ► Mark valve guides and bores belonging together accordingly.

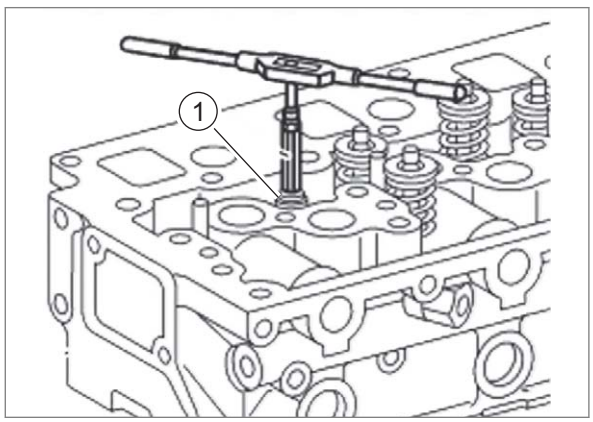


234597-001

183

Use special tools (III) and (IV). Page 142

- ► Cool down the new valve guides (1) heavily.
- ► Drive in the cooled valve guides (1) as marked.
  Clearance (d): Page 144
  - ► Observe the marking of special tools (IV) for intake and exhaust valves.
  - ► The installation position of special tool (IV) defines the clearance (d) between the valve guide top edge and the valve spring contact surface.



234598-001

184

Use special tool (II). Page 142

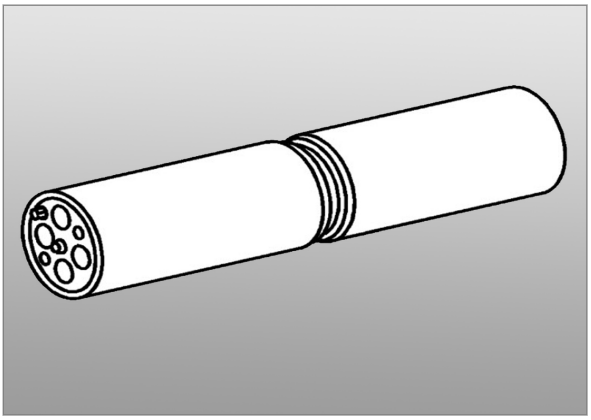
- ► Expand the new valve guides (1) step by step to Ø 7.95 mm max., using an adjustable reamer.
- ► Expand valve guides with a reamer Ø 8 mm H7.
  - ► Turn the reamer only clockwise.
  - ► Clean the bore of valve guides with a cylinder brush.
  - ► Check bore of valve guide with special tool (II).

1044-004

► Install valves. Page 130

1044-004
162857-002

Camshaft



237713-001

185

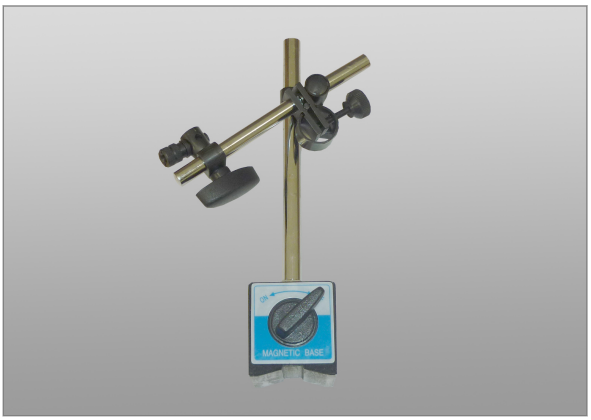
Special tool

	Special tool (I)	Pcs.
1	Guide bushing 00 1995 524 0	1

39240-002

186

	Special tool (II)	Pcs.
1	Clock gauge 60 0500 530 3	1



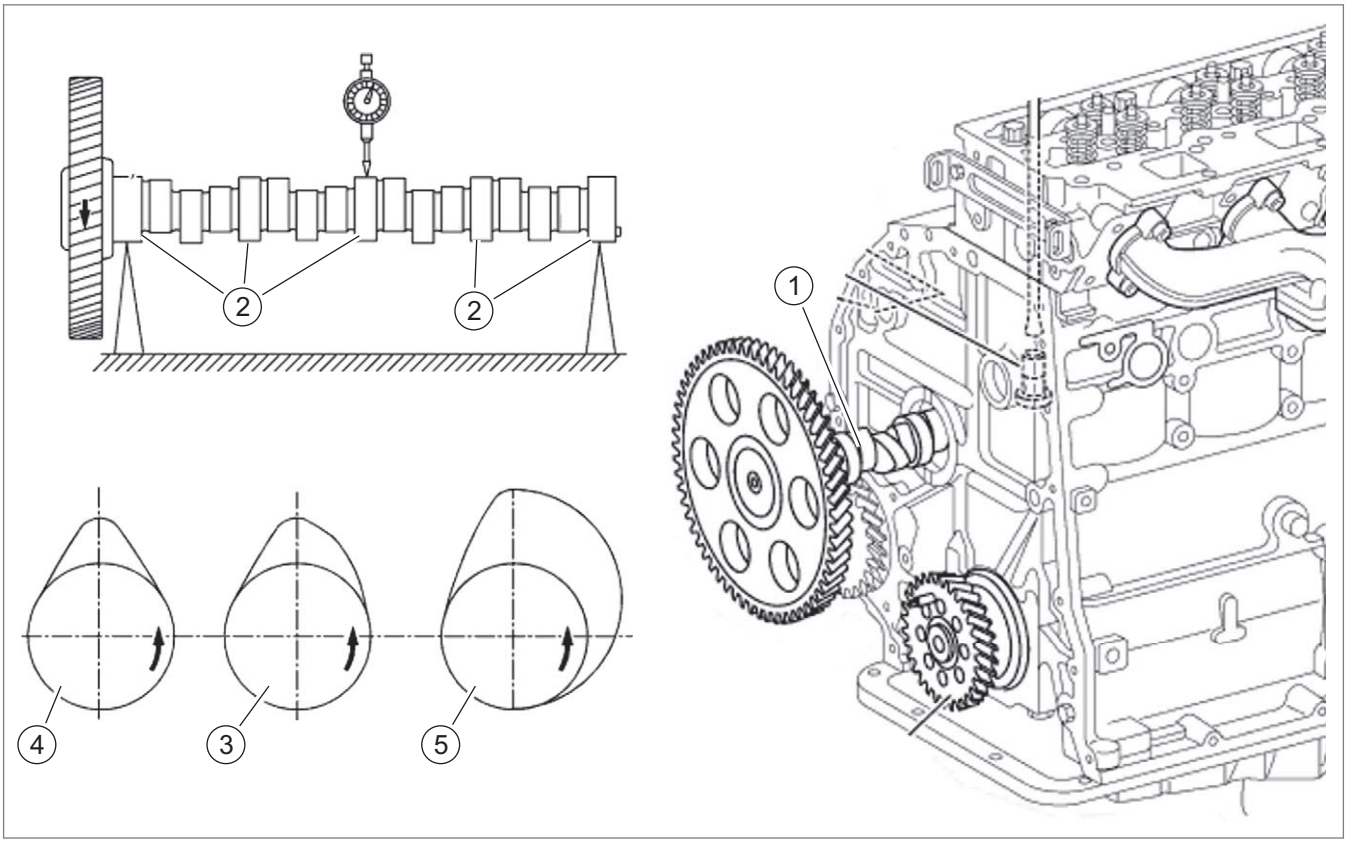
183116-001

187

	Special tool (III)	Pcs.
1	Measuring gauge holder 60 0500 530 5	1

1044-004

Technical specifications



234603-001 **188**

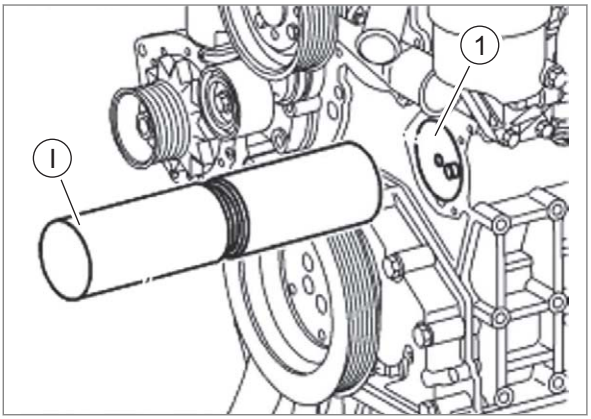
	Value	CCN	Remark / designation	
1	40 kg		Camshaft	
2			Bearing journal Radial runout: up to 0.030 mm	
3			Exhaust valve cam Radial runout: up to 0.025 mm Cam elevation: 8.2 mm	
4			Intake valve cam Radial runout: up to 0.025 mm Cam elevation: 7.3 mm	
5			Plug-on pump cam Radial runout: up to 0.025 mm Cam elevation: 13.8 mm	
Tightening torques not specified, see section on tightening torques				

Removal

- ► Remove oil pan. Page 63
- ► Remove the rocker arm mechanism. Page 134
- ► Remove the push rods.

1044-004

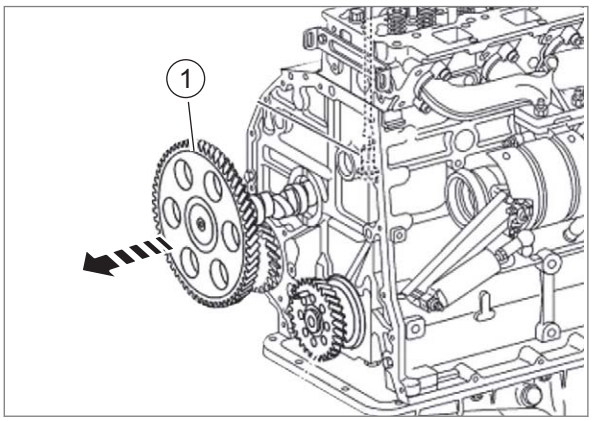
- ► Remove the fuel pump. Page 172
- ► Remove all plug-on pumps. Page 169
- ► Remove sensor (B16-MB).
- ► Remove the timing housing. Page 77
- ► Remove valve tappets from the crankcase.



235134-001

189

- ► Fit special tool (I) to camshaft (1).

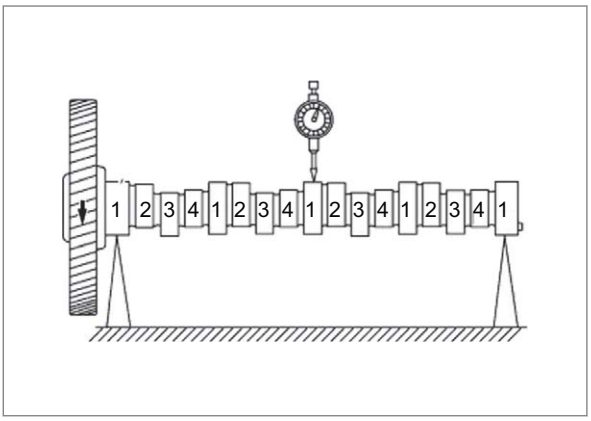


235127-001

190

- ► Pull camshaft (1) carefully out of the crankcase while pushing special tool (I) in accordingly.

Checking



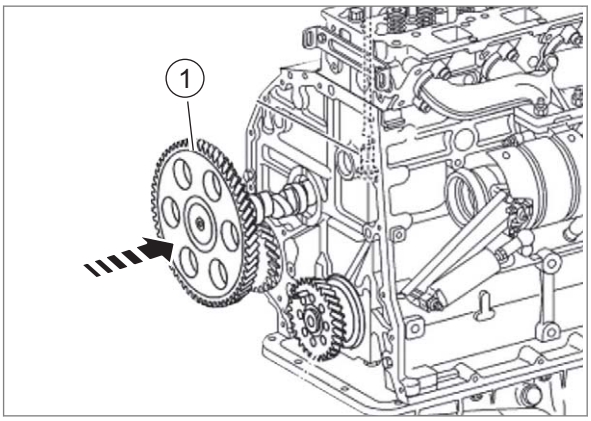
235129-001

191

- ► Support the camshaft (1) on the outer bearing pins.
- ► Measure the radial runout at all bearing points [1].
  Radial runout: Page 149
- ► Measure the cam elevation on all valve cams.
  Cam shape elevation: Page 149
  Exhaust valve cams [2]
  Plug-on pump cams [3]
  Intake valve cams [4]

1044-004

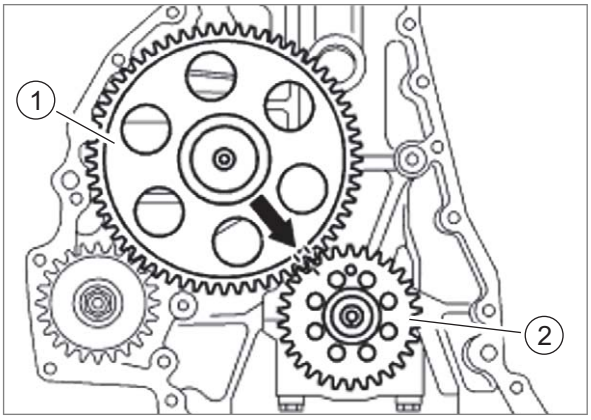
Installation



235128-001

192

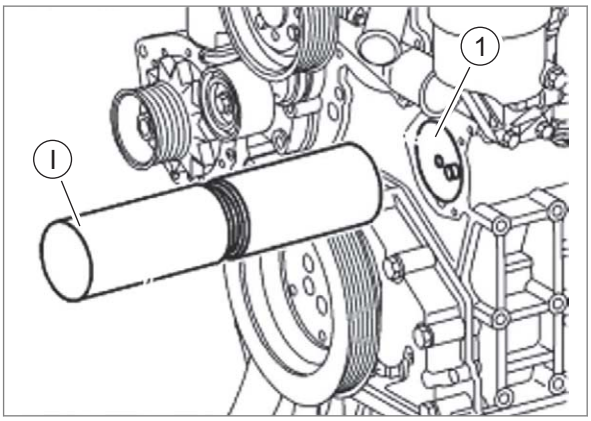
► Slide the camshaft (1) carefully into the crankcase, using special tool (I).
  ► Ensure that the camshaft bearings are not damaged in this process.



235135-001

193

► Ensure that marks (3) of camshaft timing gear wheel (1) and crankshaft gear (2) match.



235134-001

194

► Remove special tool (I) from the camshaft (1).

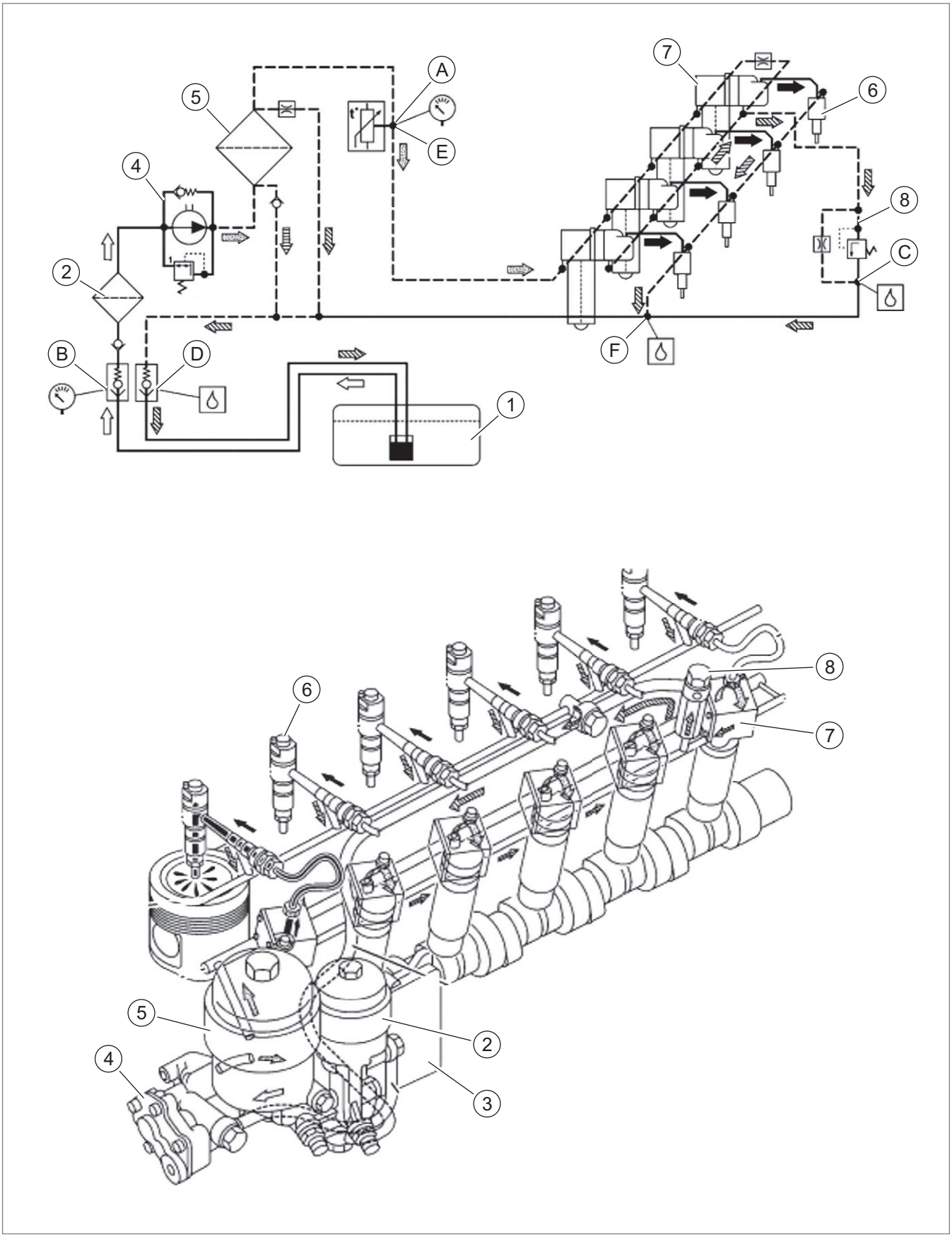
► Insert valve tappets into the crankcase.
► Install the timing housing. Page 78
► Insert sensor (B16-MB).
► Install all plug-on pumps. Page 169
► Install the fuel pump. Page 174
► Insert the push rods.
► Install the rocker arm mechanism. Page 136
► Install the oil pan. Page 65
► Pre-fill the lubricating oil system. Page 178
► Top up engine oil as specified in the relevant Operator's Manual.

1044-004

0125 Injection - / Fuel system

1044-004
163002-001

Fuel system



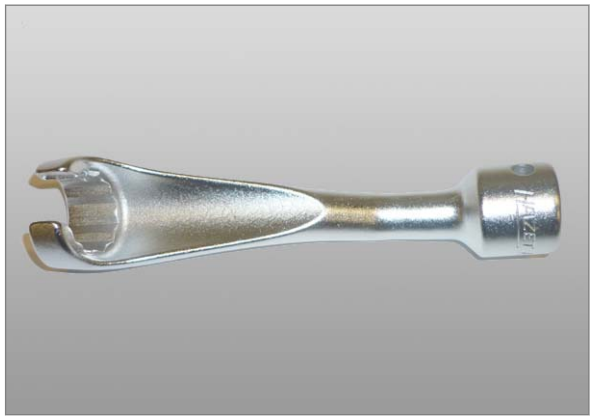
235151-001 **195**

1044-004

	Value	CCN	Remark / designation	
1			Fuel tank See the repair manual of the machine in question.	
2			Fuel sediment filter See the repair manual of the machine in question.	
3			MR/PLD control unit	Page 256
4			Fuel pump	Page 172
5			Fuel filter	Page 175
6			Nozzle holder combination	Page 158
7			Plug-on pump	Page 167
8			Overflow valve	
A			Fuel pressure downstream of fuel filter test point Idle speed: 4.3 bar Limiting speed: 4.0 to 6.5 bar	
B			Fuel intake pressure ahead of fuel pump test point Idle speed: -0.09 to -0.12 bar Limiting speed: -0.40 to -0.50 bar	
C			Fuel return quantity test point at the fuel filter housing outlet Idle speed: 0.3 l/min Limiting speed: 0.3 l/min	
D			Fuel return quantity test point at overflow valve Idle speed: 0.9 to 1.7 l/min Limiting speed: 2.7 to 7.5 l/min	
E			Fuel circuit tightness test point Test pressure: 5.0 bar Test period: 5 min Pressure drop: 0.25 bar	
F			Fuel return quantity test point on nozzle holder combination Test period: 5 min No fuel	
Tightening torques not specified, see section on tightening torques				

1044-004
163004-003

Cylinder head injection line



147520-001

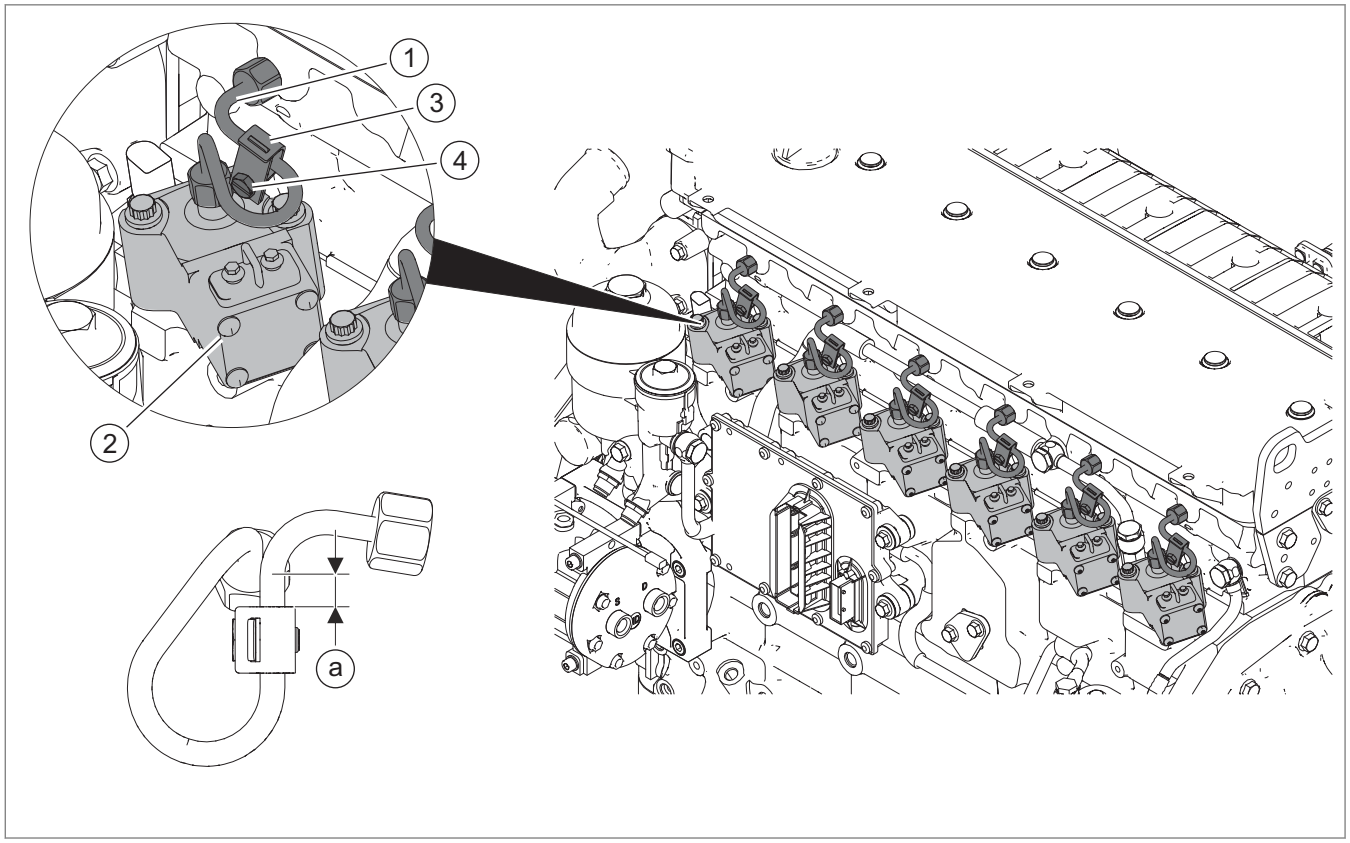
196

Special tool

	Special tool (I)	Pcs.
1	Special tool 00 1992 864 0	1

1044-004

Technical specifications



235166-001 **197**

	Value	CCN	Remark / designation	
1	35 Nm		Never bend injection lines! Observe the installation position. Plug all openings so they are dust-tight. Plug injection lines so they are dust-tight.	
2			Plug-on pump	Page 167
3			Oscillation damper Observe the installation position. Applies to type designs: 926.959 926.970	
3	4 Nm		Oscillation damper mounting bolt	
a	7.4 to 8.4 mm		Adjusting dimension for oscillation damper	
Tightening torques not specified, see section on tightening torques				

Installation instructions

Removing:

– Remove guard.

1044-004

Installing:

– Tighten inlet connector. Page 160
– Screw on injection line.
– Start the diesel engine and let it run at idle speed for 10 s min.
  - Vent fuel system by hand if required.
  - See the Operator's Manual of the machine in question.
– Let the diesel engine run at different speeds.
– Carry out a visual tightness inspection of injection line screw fittings.
  - Replace injection line if necessary.
– Fit guard.

1044-004
163018-003

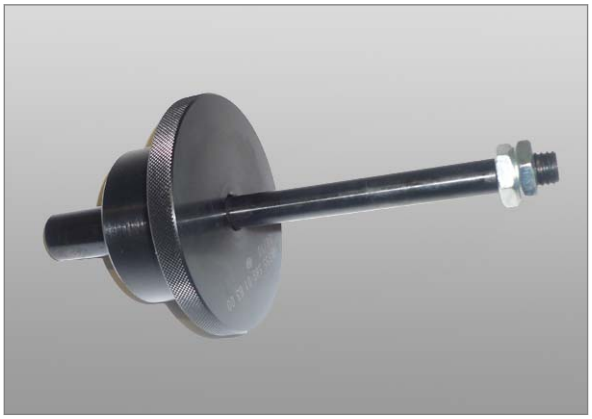
Nozzle holder combination

Work preparation

Utilities:

- ► Assembly pastes:
  Anti-Seize - 00 0136 571 0

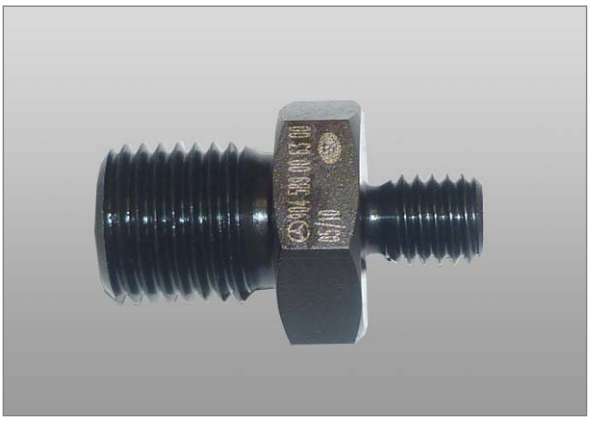
Special tool



147517-001

198

	Special tool (I)	Pcs.
	Slide hammer puller 00 1992 873 0	1



147490-001

199

	Special tool (II)	Pcs.
	Threaded insert 00 1992 897 0	1

147427-001

200

	Special tool (III)	Pcs.
	Puller 00 1992 904 0	1

1044-004

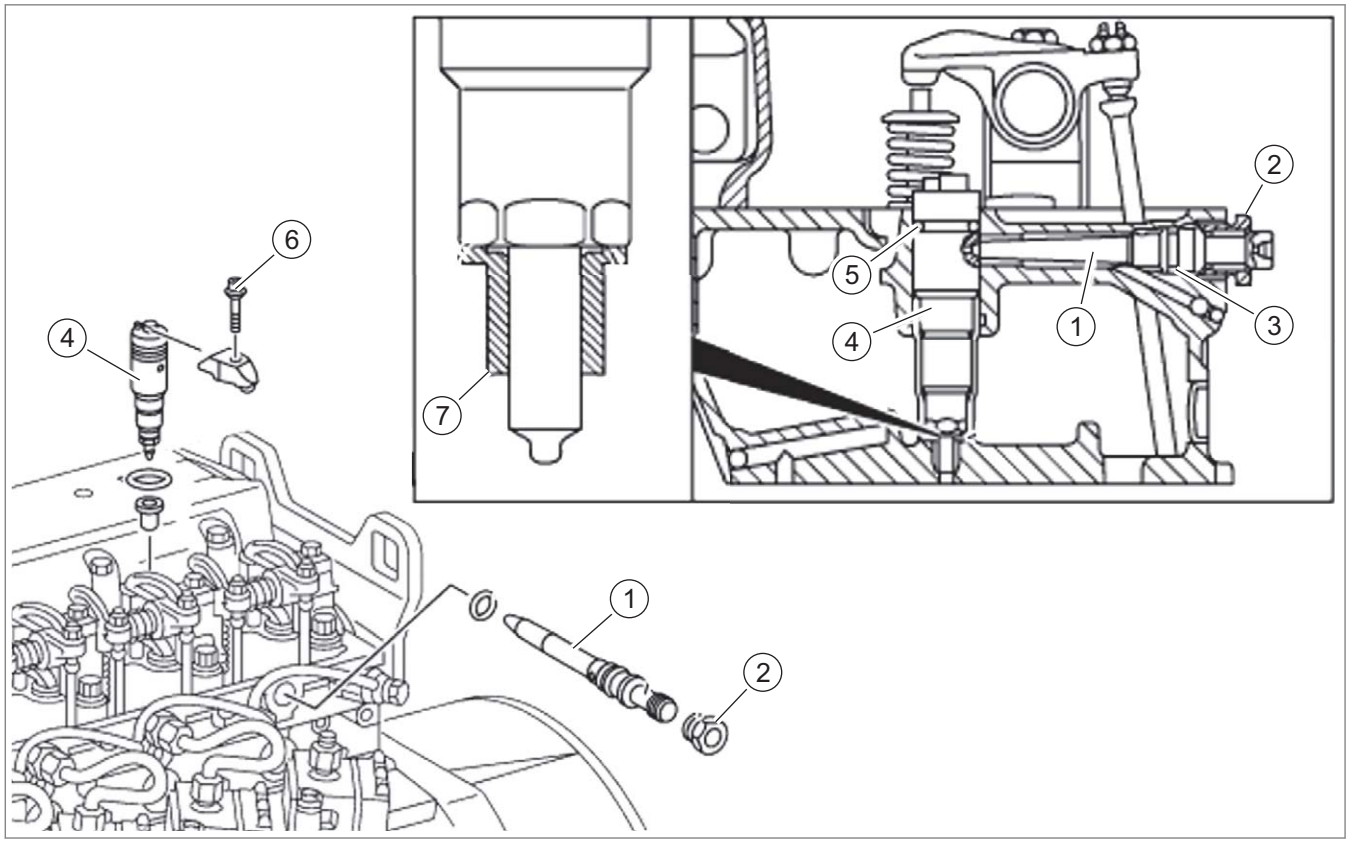
147501-001

201

	Special tool (IV)	Pcs.
	Punch 00 1992 905 0	1

1044-004

Technical specifications



235229-001 **202**

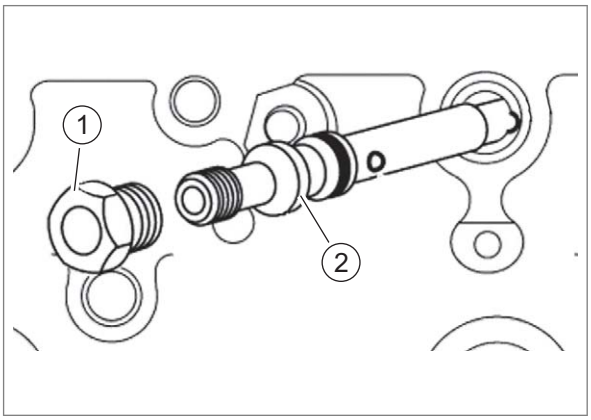
	Value	CCN	Remark / designation	
1			Inlet connector – Ensure that the inlet connector is inserted into the cylinder head so that it engages in the fuel bore of the nozzle holder combination (4). – Replace O-ring (3) in every installation process.	
2	45 Nm		Thrust bolt – Slightly coat the thrust bolt with engine oil.	
3			O-ring – Slightly grease the O-ring.	
4			Nozzle holder combination – Observe the installation position relative to the inlet connector (1). – Replace O-ring (5) in every installation process.	
5			O-ring – Slightly grease the O-ring.	
Tightening torques not specified, see section on tightening torques				

1044-004

	Value	CCN	Remark / designation	
6			Clamping bracket bolt Socket head bolt: 30 Nm Dodecagon bolt: 35 Nm	
7			Coat outer faces of sealing sleeve with Anti-Seize.	
Tightening torques not specified, see section on tightening torques				

Removal

- ► Remove the valve cover. Page 119
- ► Remove the cylinder head injection line. Page 155

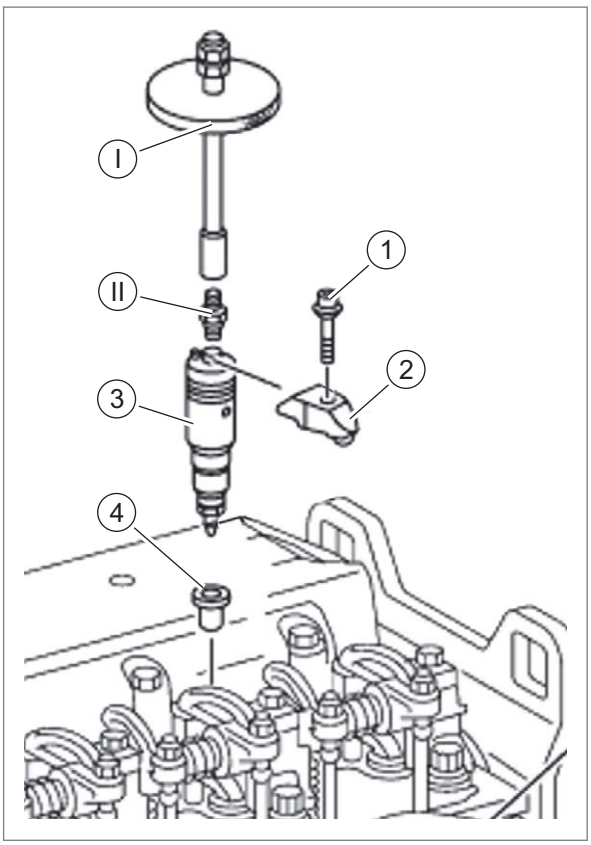


235234-001

203

- ► Unscrew thrust bolt (1).
- ► Remove inlet connector (2).
- ► Close opening so it is dust-tight.

Use special tool (I), (II) and (III). Page 158



235235-001

204

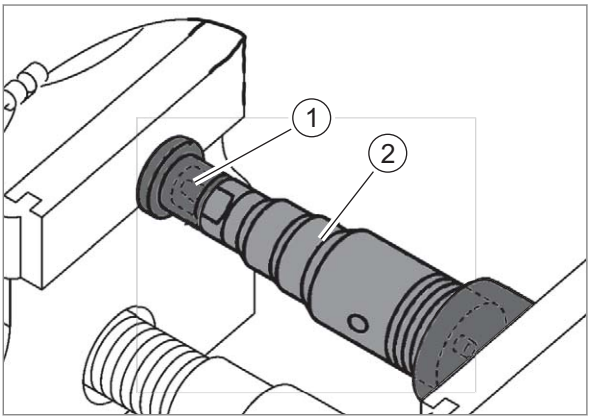
- ► Unscrew bolt (1).
- ► Remove clamping piece (2).
- ► Remove nozzle holder combination (3), using special tools (I) and (II).
- ► If necessary, remove sealing sleeve (4) with special tools (I) and (III).

1044-004

► Remove protective sleeve if required. Page 0

Installation

► Install protective sleeve if required. Page 0



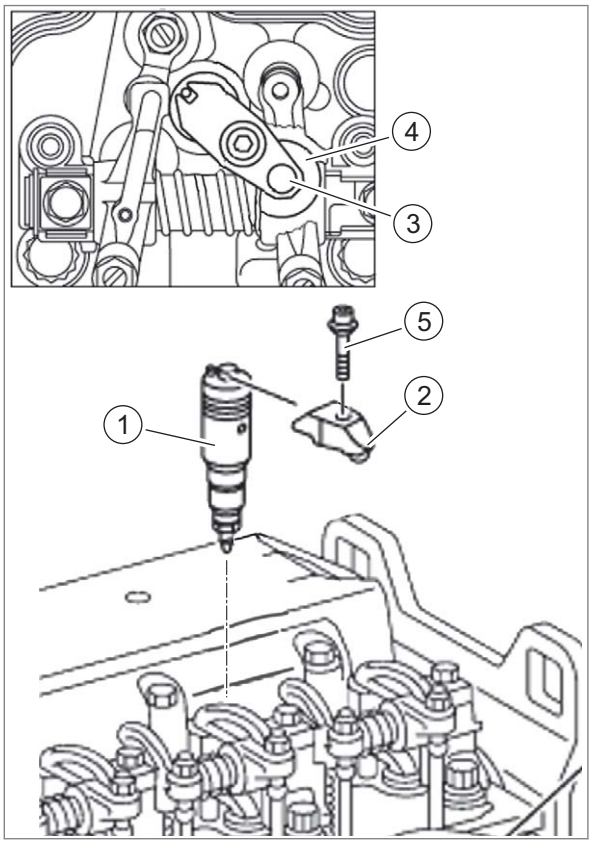
179958-001

205

Only when re-using the nozzle holder combination:

Use special tool (IV). Page 158

► Force new sealing sleeve (1) on the nozzle holder combination (2).
Coat outer faces of sealing sleeve with Anti-Seize.



235237-001

206

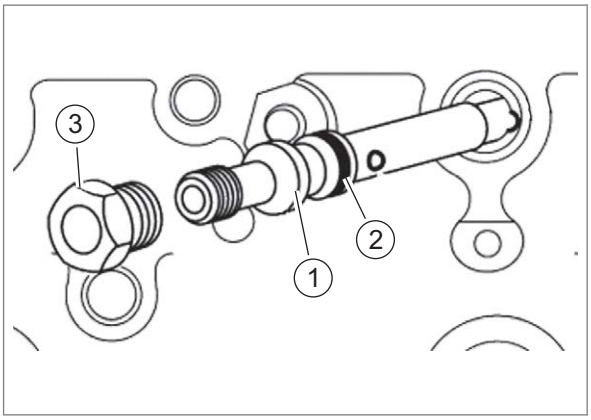
Use special tools (I) and (II). Page 158

► Insert nozzle holder combination (1).

► Twist nozzle holder combination (1) with clamping bracket (2) until the forced-in ball (3) matches the fixing in the cover (4).

► Screw on the bolt (5).
Tightening torque: Page 160

1044-004



235236-001

207

- ► Replace the O-ring (2) on the inlet connector (1). Coat O-ring with Anti-Seize.
- ► Insert inlet connector (1).
- ► Screw on the bolt (3). Tightening torque: Page 160

- ► Install the cylinder head injection line. Page 155
- ► Install the valve cover. Page 119

1044-004
160058-001

Protective sleeve

147494-001

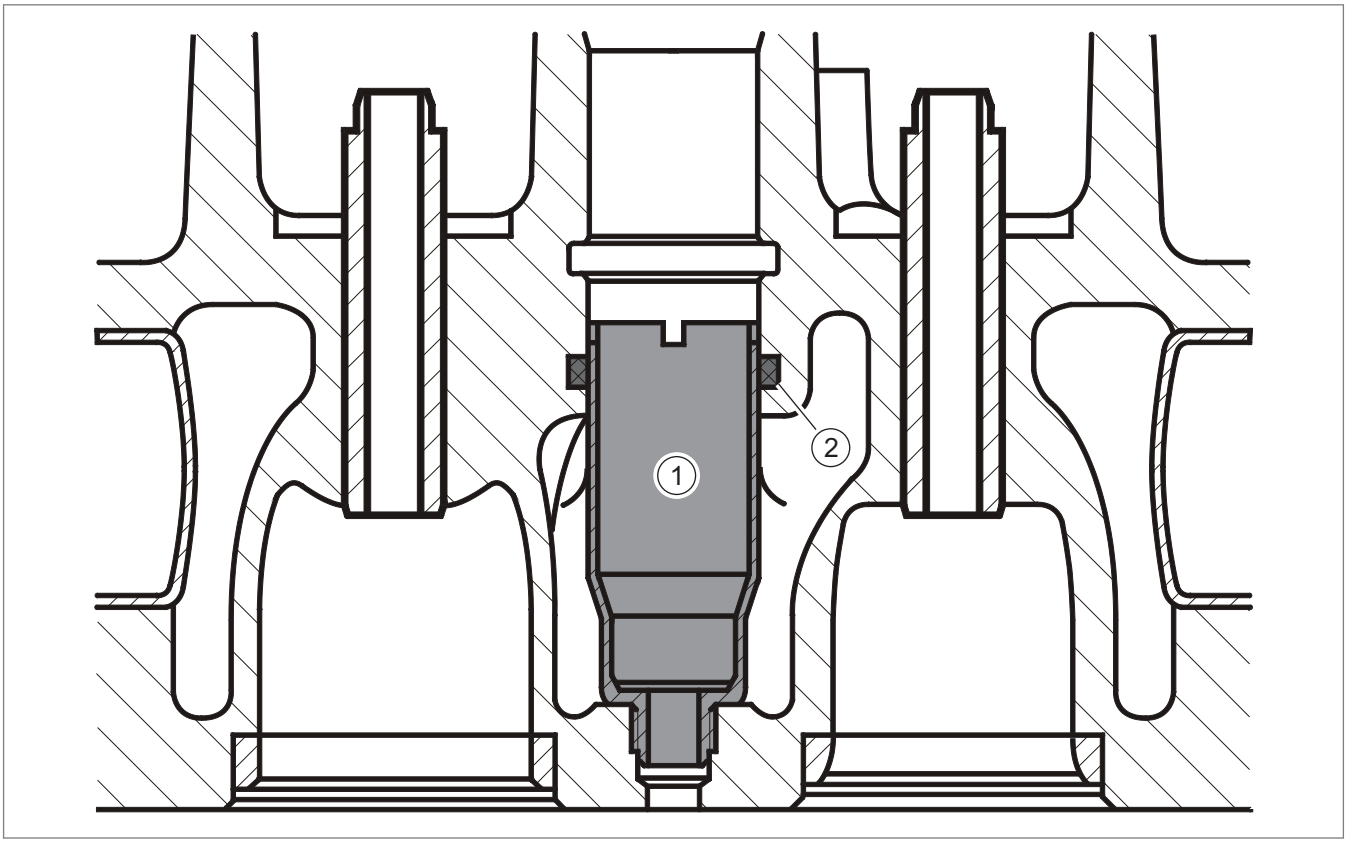
208

Special tool

	Special tool (I)	Pcs.
1	Claw key 00 1992 895 0	1

1044-004

Technical specifications



183732-001 **209**

	Value	CCN	Remark / designation	
1			Protective sleeve Tightening specification: • M12x1: 40 Nm • M14x1: 45 Nm	
2			O-ring Apply a thin coat of grease to the O-ring.	
Tightening torques not specified, see section on tightening torques				

Installation instructions

Removing:

– Drain coolant. Page 198
Applies to type designs:
906.991
926.9xx
– Remove the nozzle holder combination. Page 161
– Slacken off the protective sleeve with special tool (l).
– Remove protective sleeve.
– Remove O-ring.

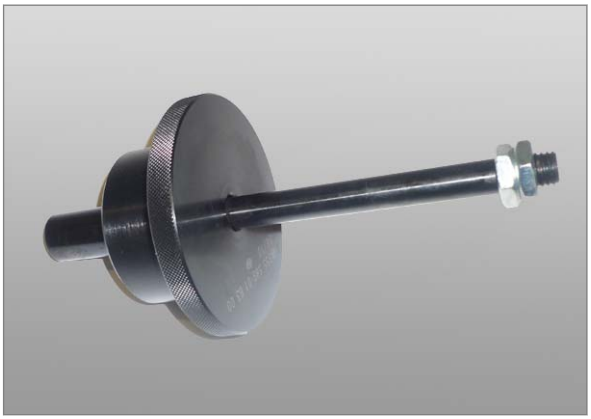
1044-004

Installing:

- Install a new O-ring.
- Insert protective sleeve.
- Screw on protective sleeve with special tool (I).
- Install the nozzle holder combination. Page 162
- Top up coolant. Page 199
  Applies to type designs:
  906.991
  926.9xx

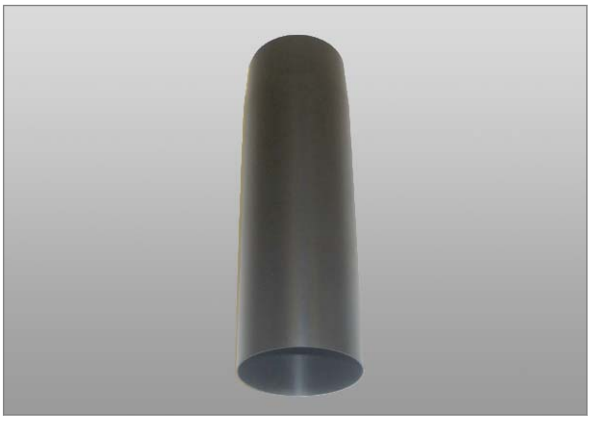
1044-004
163005-003

Plug-on pump



147517-001

210



147492-001

211

Special tool

	Special tool (I)	Pcs.
	Slide hammer puller 00 1992 873 0	1

	Special tool (II)	Pcs.
	Sleeve 00 1992 901 0	1

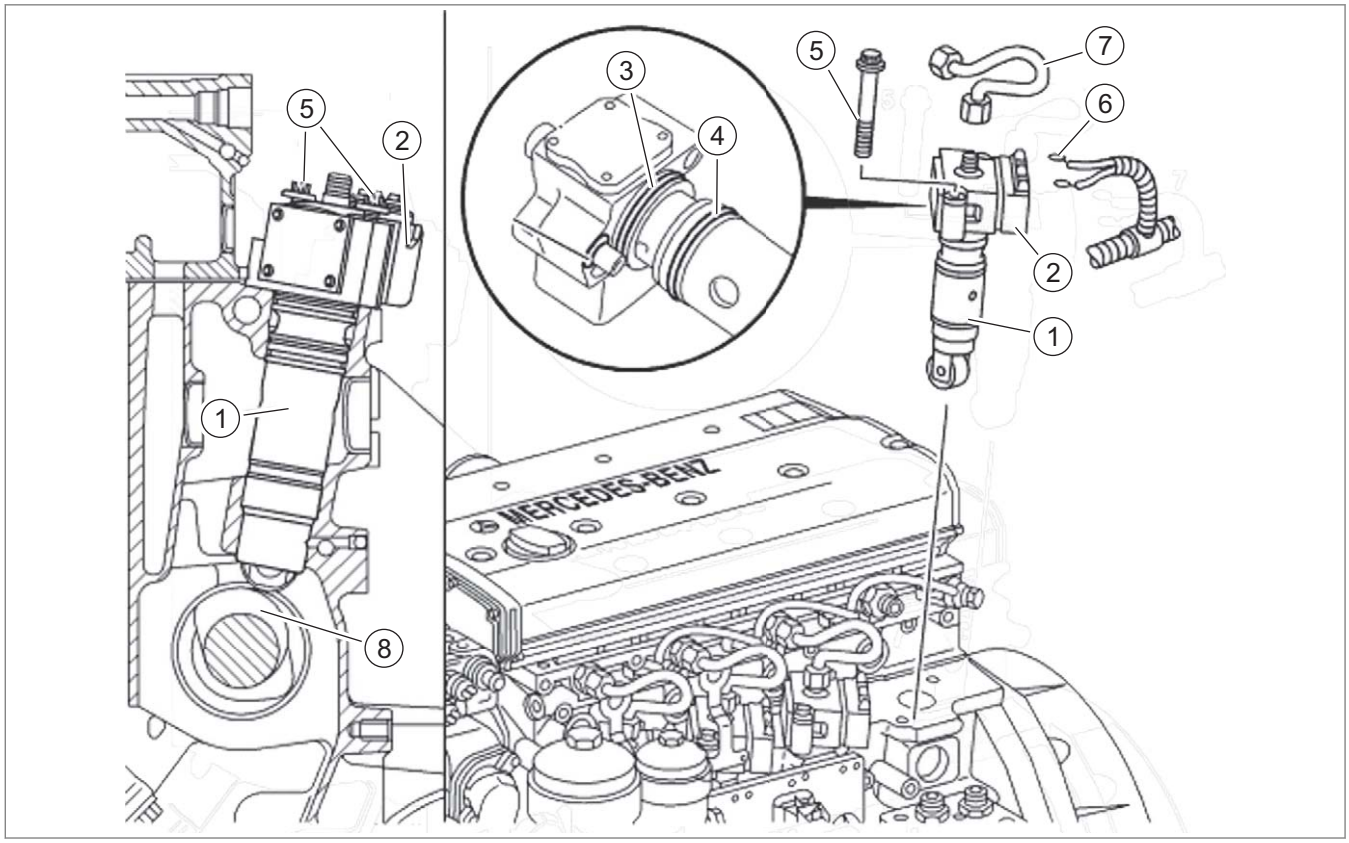
Work preparation

Utilities:

► Assembly paste:
Anti-Seize - 00 0136 571 0

1044-004

Technical specifications



235219-001 **212**

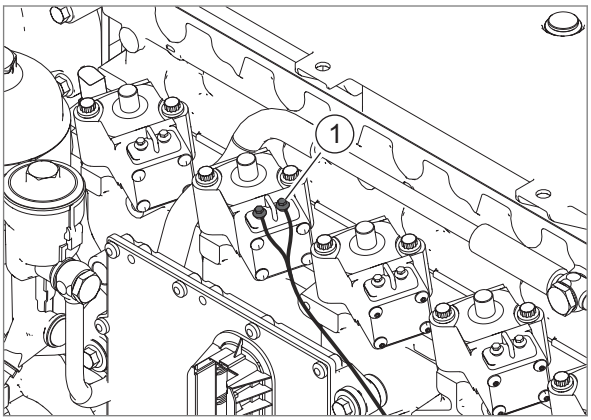
	Value	CCN	Remark / designation	
1			Plug-on pump – Mark the plug-on pumps relative to the respective cylinder. – Do **not** confuse the plug-on pumps. – Configure the new plug-on pumps with the CDS. – Do **not** confuse sealing rings (3) and (4). - The black sealing ring (3) must always be installed on top. – Slightly coat the plug-on pump with Anti-Seize.	
2		Y6-MB to Y11-MB	Plug-on pump valve	
3			Sealing ring - black – Coat sealing ring with Anti-Seize.	
4			Sealing ring - coloured – Coat sealing ring with Anti-Seize.	
5	65 Nm		Plug-on pump mounting bolts	
6	1.5 Nm		Wiring loom mounting bolts	
Tightening torques not specified, see section on tightening torques				

1044-004

	Value	CCN	Remark / designation	
7			Cylinder head injection line	Page 155
8			Plug-on pump cam (camshaft)	Page 148
Tightening torques not specified, see section on tightening torques				

Removal

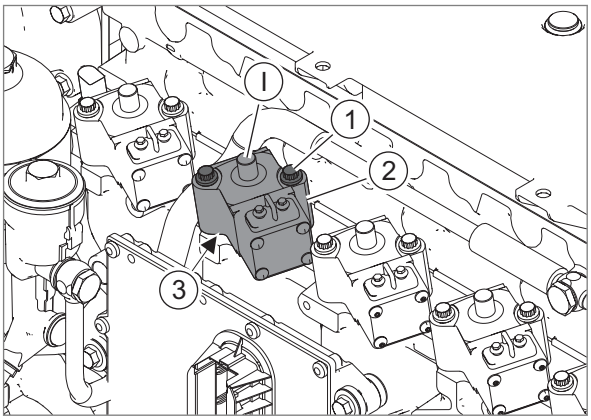
► Remove the cylinder head injection line. Page 155



235223-001

213

► Unscrew wiring loom at (1).



235224-001

214

Use special tool (I). Page 167

► Unscrew bolts (1) of plug-on pump (2) by only 4 to 5 mm.
  ► The plug-on pump is spring-loaded!
  ► Crank the engine if required to reduce the spring force.

► Remove plug-on pump (2) carefully.
  ► Do **not** lever out the plug-on pump at the valve or at the housing (3)!

► Unscrew bolts (1) carefully and remove plug-on pump (2) completely.

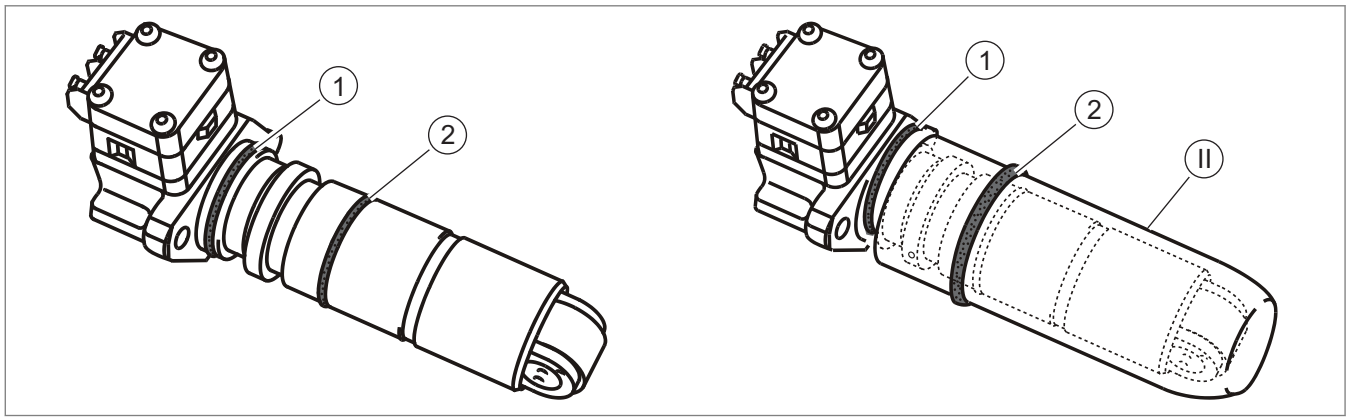
► If necessary, mark the plug-on pump with respect to the cylinder in question.

Installation

► Turn engine until the corresponding cam of the plug-on pump is set to the base circle.
  ► See the "Cranking the engine" chapter. Page 54

► Check the plug-on pump for damage.

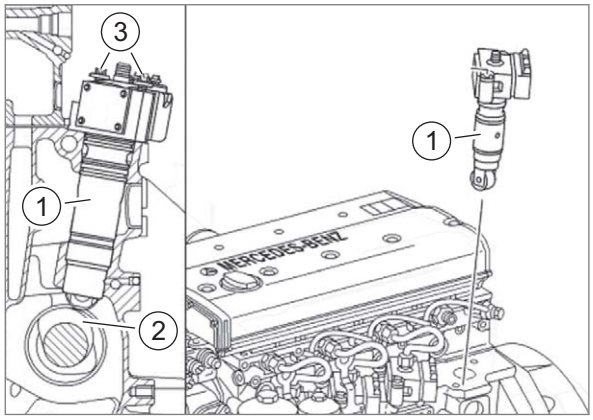
1044-004



183696-001 **215**

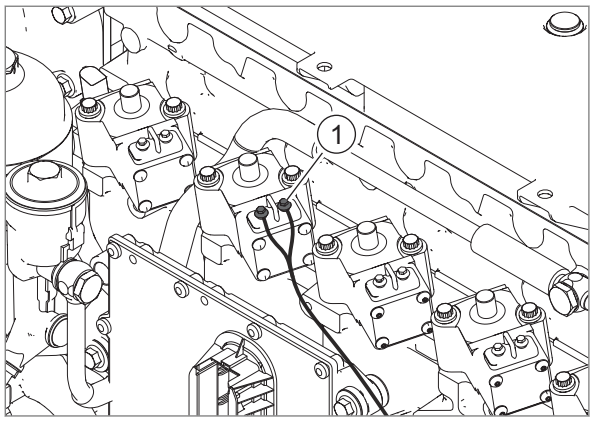
Use special tool (II). Page 167

► Slide on black O-ring (1) and coloured O-ring (2). Coat O-rings with Anti-Seize.
  ► Do **not** confuse the installation position of O-rings!



235225-001 **216**

► Insert plug-on pump (1).
  ► Ensure that the plug-on pump cam (2) is set to base circle.
► Carefully push in plug-on pump (1) by hand against the spring force up to a clearance of around 4 to 5 mm.
► Tighten bolts (3) alternatingly in several steps. Tightening torque: Page 168

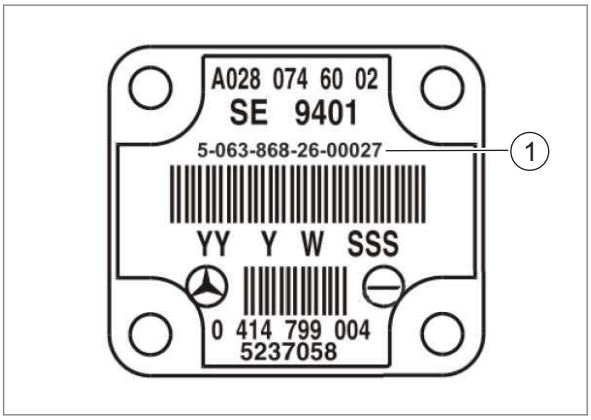


235223-001 **217**

► Screw on wiring loom at (1). Tightening torque: Page 168

► Install the cylinder head injection line. Page 156
► Top up coolant. Page 199

1044-004



253037-001

218

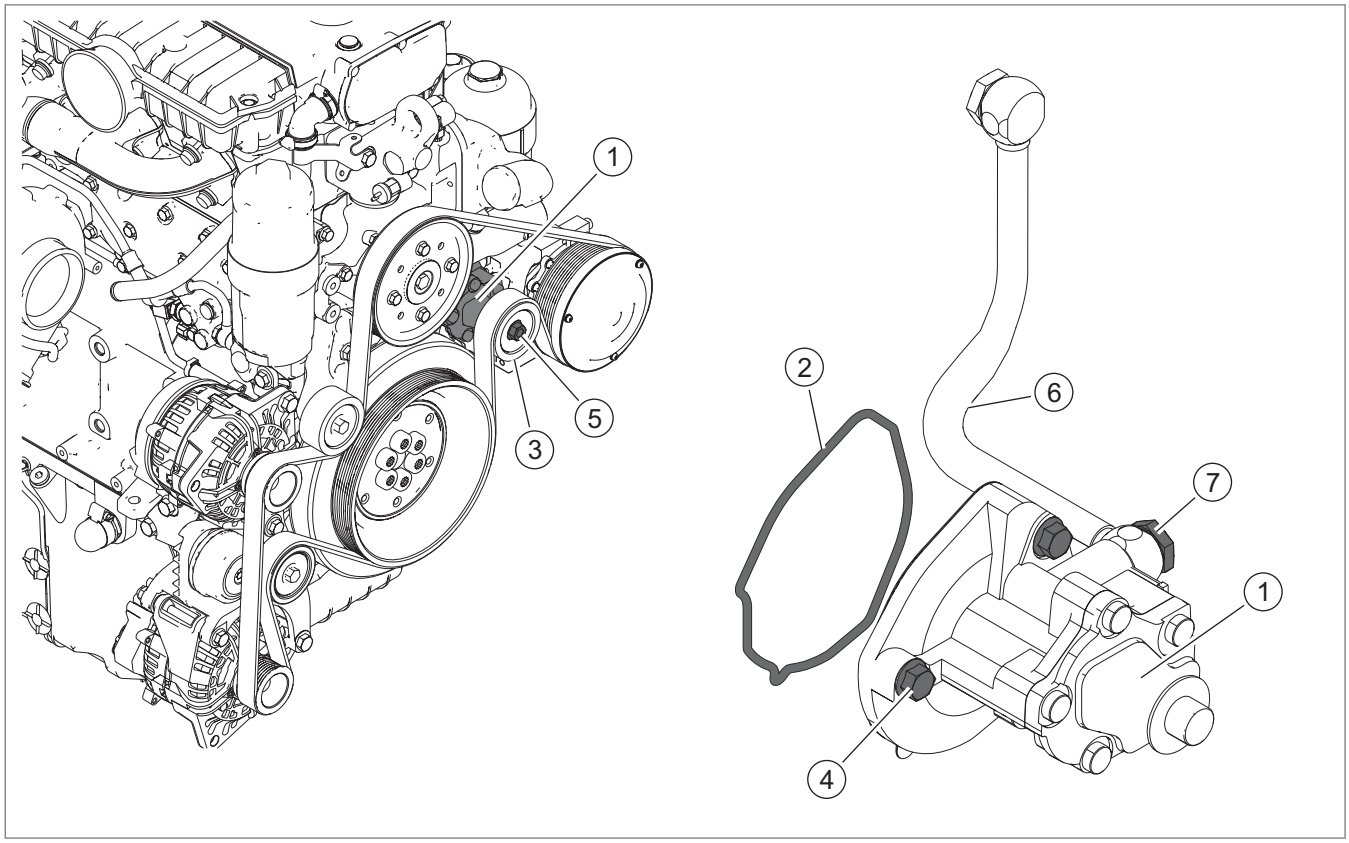
When installing new plug-on pumps:

► Enter the bar code number (1) of the plug-on pump with the CDS.
Enter the bar code number with a minus sign in the CDS.

1044-004
163021-003

Fuel pump

Technical specifications



235261-001 **219**

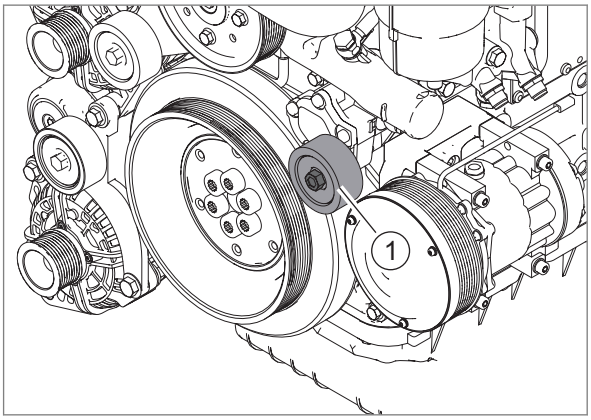
	Value	CCN	Remark / designation	
1	2.5 kg		Fuel pump	
2			Seal – Replace seal in every installation process.	
3			Guide roller	
4	25 Nm		Fuel pump mounting bolts	
5	25 Nm		Guide roller mounting bolt	
6			Fuel line	
7	45 Nm		Fuel line hollow screw	
Tightening torques not specified, see section on tightening torques				

Removal

► Remove the alternator drive belt as specified in the Operator's Manual.

► Unscrew the cover of the fuel filter housing.

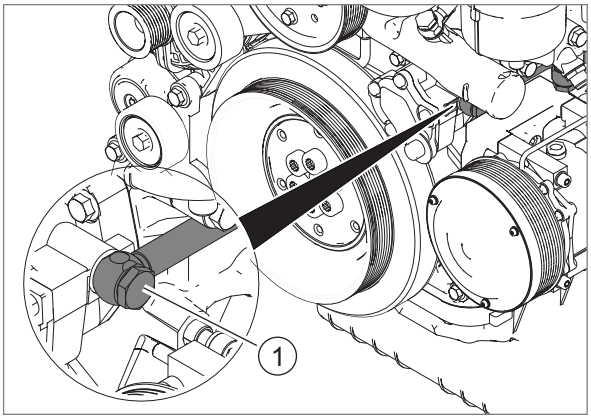
1044-004



235258-001

220

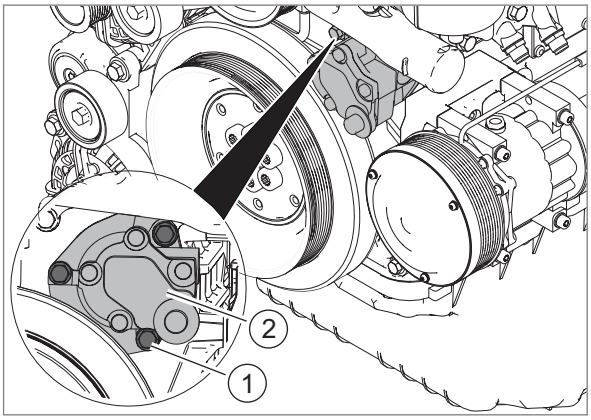
► Unscrew guide roller (1).



235259-001

221

► Unscrew fuel line (1).



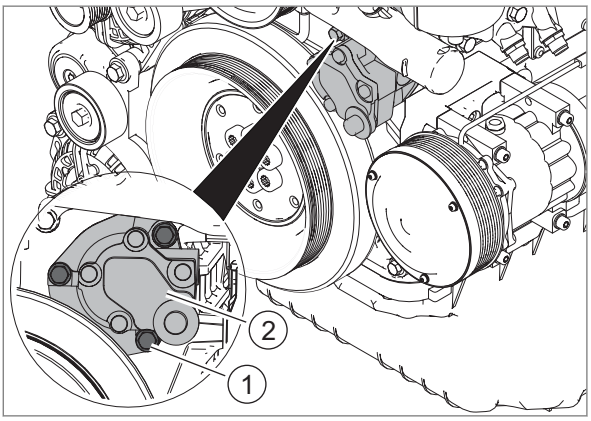
235260-001

222

► Unscrew bolts (1).
► Remove fuel pump (2).

1044-004

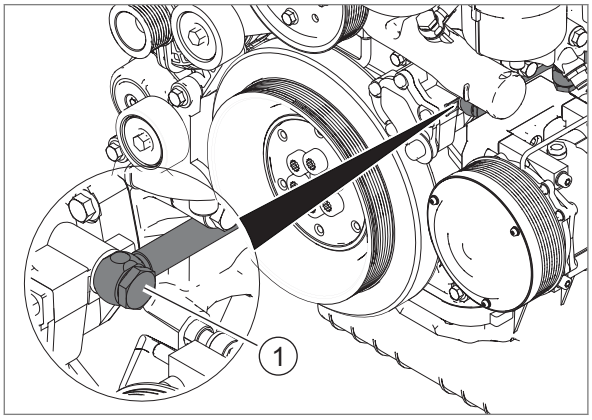
Installation



235260-001

223

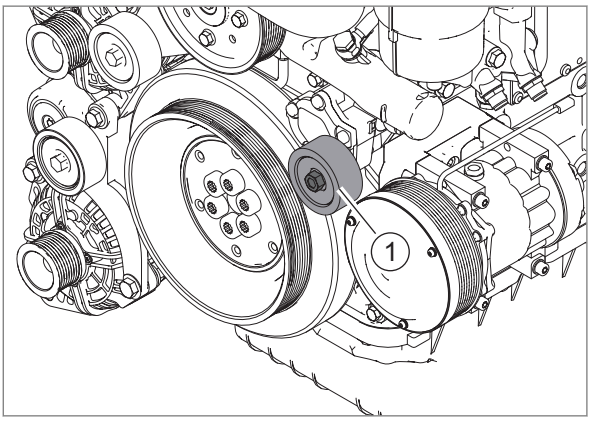
► Screw on fuel pump (2) with a new seal, using bolts (1).
Tightening torque: Page 172
► Ensure that the fuel pump coupler does **not** make contact at the camshaft dowel pin.



235259-001

224

► Screw on fuel line (1).
Tightening torque: Page 172



235258-001

225

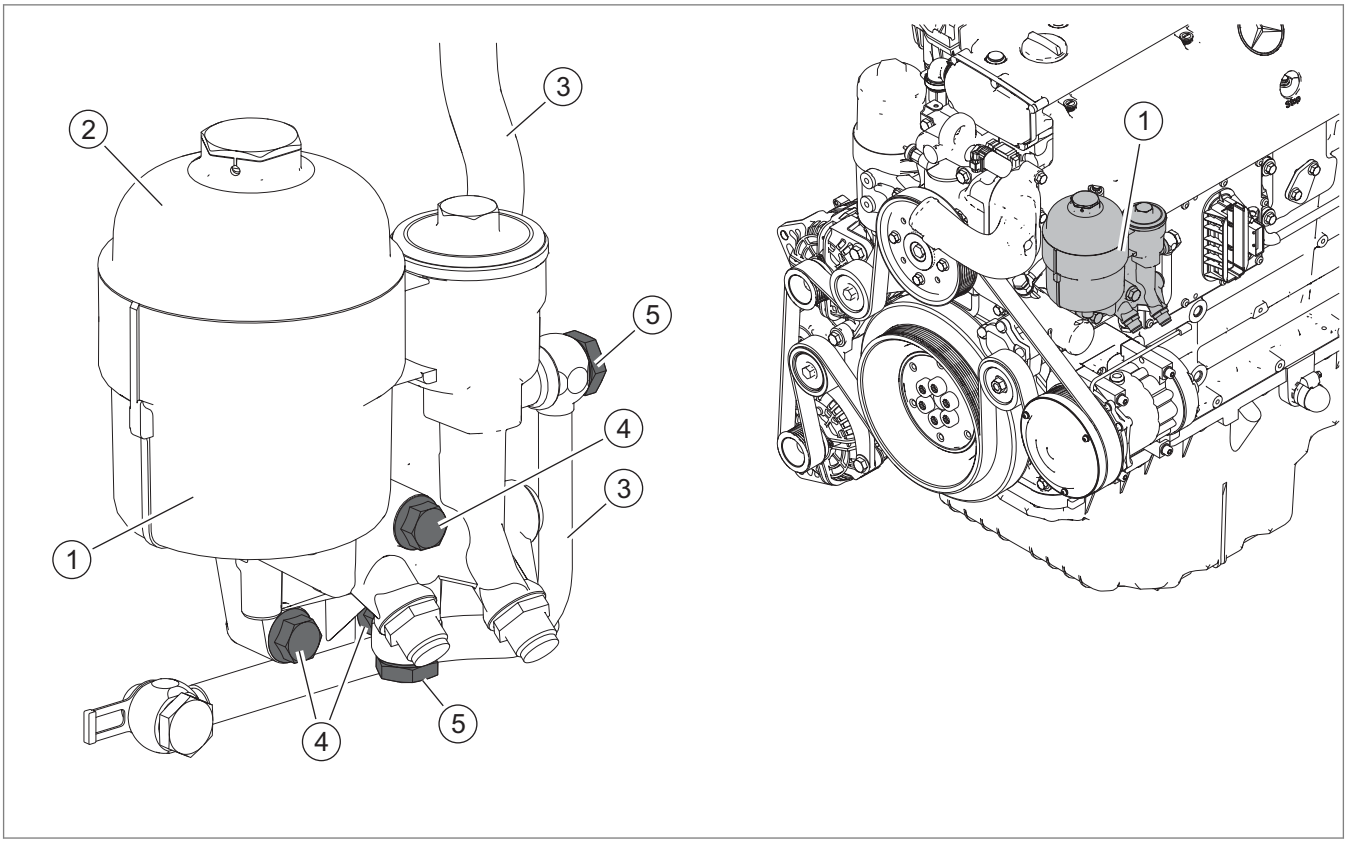
► Bolt down guide roller (1).
Tightening torque: Page 172

► Screw on the cover of the fuel filter housing.
Tightening torque: Page 175
► Install the alternator drive belt as specified in the Operator's Manual.
► Check tightness of fuel pump.

1044-004
163026-003

Fuel filter housing

Technical specifications



235271-001 **226**

	Value	CCN	Remark / designation	
1	2 kg		Fuel filter housing	
2	25 Nm		Cover	
3			Fuel line	
4	50 Nm		Fuel filter housing mounting bolts	
5	45 Nm		Fuel lines hollow screws	
Tightening torques not specified, see section on tightening torques				

1044-004

0130 Lubricating oil system

1044-004
163036-001

Lubricating oil system

147502-001

227

Work preparation

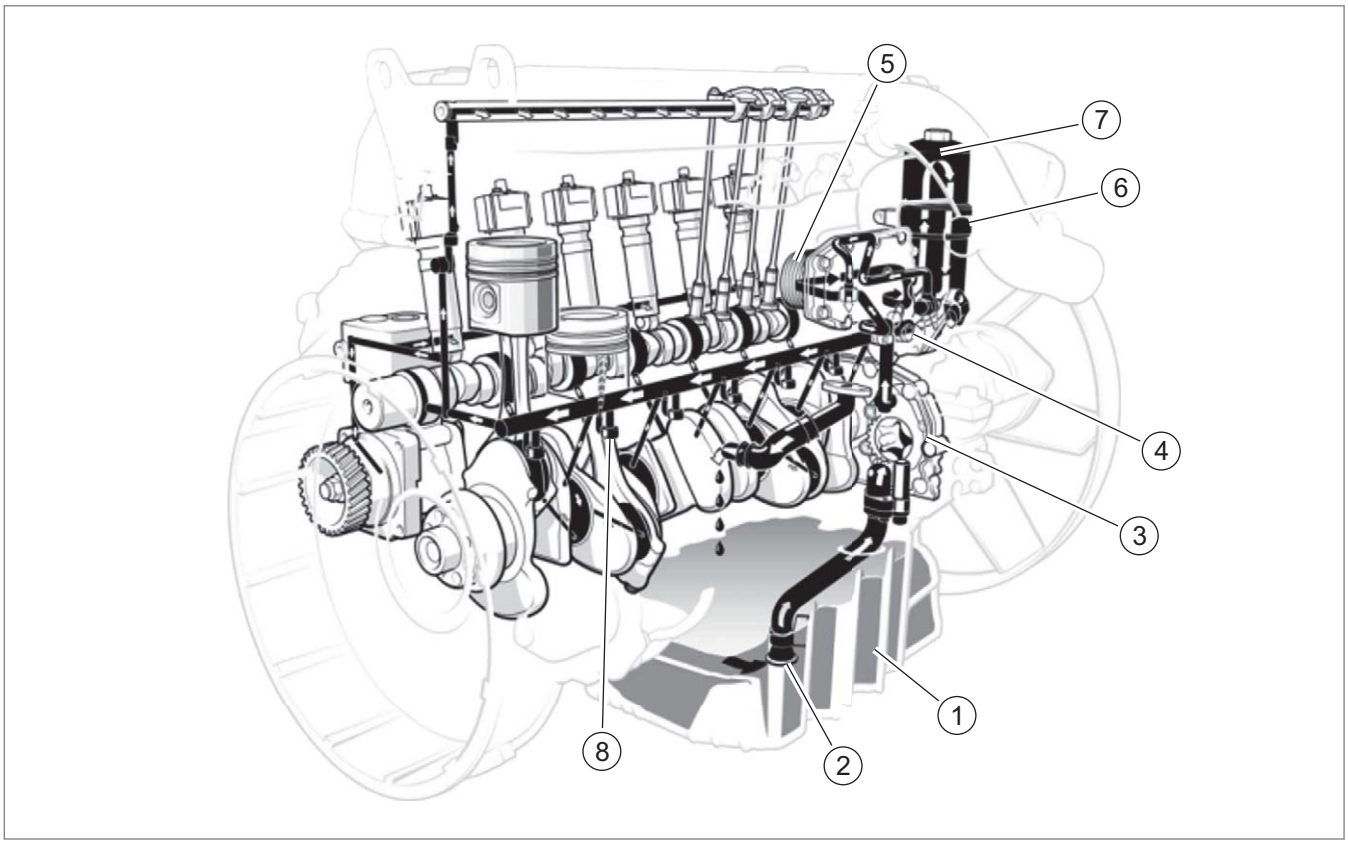
Utilities:

- ► Sealing agents and adhesives:
  LOCTITE 271 - 60 0571 153 2

Special tool

	Special tool (I)	Pcs.
1	Oil filling container 00 1992 872 0	1

1044-004



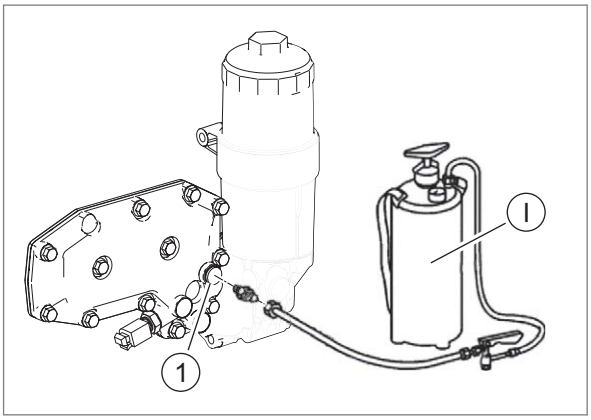
235338-001 **228**

	Value	CCN	Remark / designation	
1			Oil sump	Page 62
2			Pump sieve with intake pipe	
3			Oil pump	Page 193
4			Oil retaining valve see oil filter housing	Page 184
5			Oil cooler	Page 189
6			Oil filter housing	Page 184
7			Filter bypass valve see oil filter housing	Page 184
8			Oil spray nozzles	Page 181
Tightening torques not specified, see section on tightening torques				

Pre-filling

► Remove cylinder head valve cover. Page 119

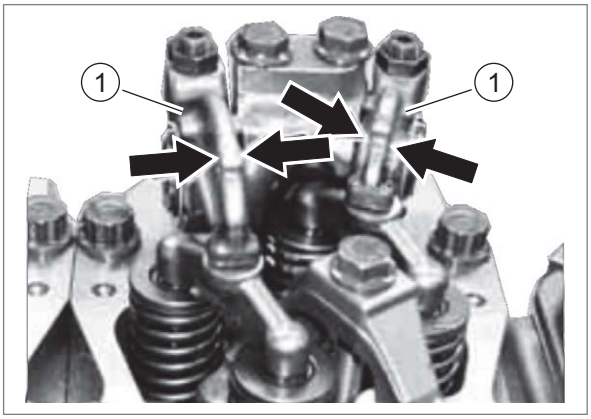
1044-004



235339-001

229

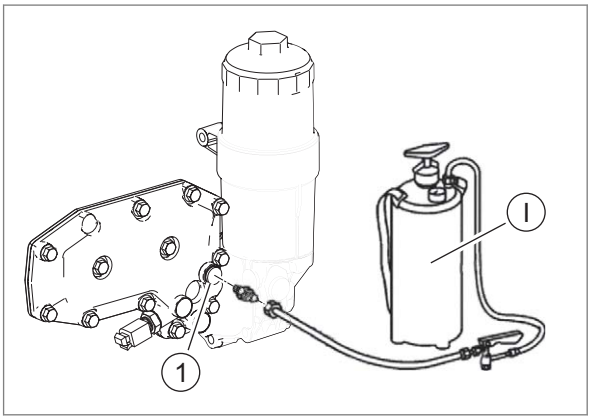
- ► Unscrew screw plug at (1).
- ► Screw on special tool (I) at (1).



185732-001

230

- ► Fill the oil container of special tool (I) with engine oil according to the instructions in the Operator's Manual of the machine in question.
- ► Charge the oil container of special tool (I) to an excess pressure of around 3 bar, using the built-in hand pump.
- ► Open shut-off valve on special tool (I) until around 4 litres of engine oil were pumped into the oil channels and the engine oil comes out of the bores (see arrows) of the rocker levers (1) without bubbles.
  - ► Do not let the pressure in the oil container drop below 1.5 bar.
  - ► Do not empty the oil container completely as otherwise air is pushed into the lubricating oil system.



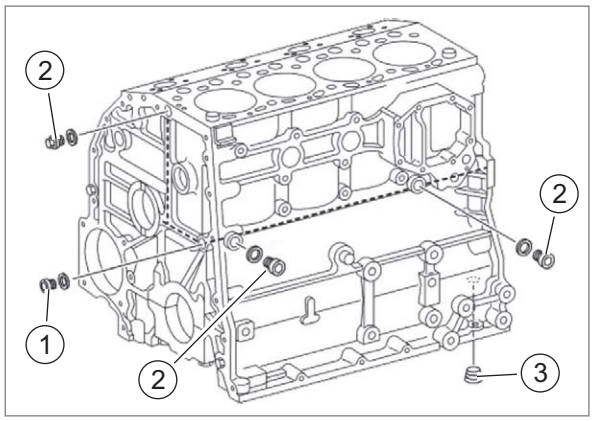
235339-001

231

- ► Remove special tool (I).
- ► Screw on screw plug at (1).
  Tightening torque: Page 184

- ► Install the cylinder head valve cover. Page 119
- ► Check the engine oil level as specified in the Operator's Manual in question.

1044-004



235337-001

232

Cleaning the main oil channel

- ► Unscrew screw plug (1) and clean main oil channel with compressed air.
  - ► Ensure that all other screw plugs are still closed.
- ► Unscrew screw plugs (2) and (3) and clean main oil channel with compressed air.
- ► Screw on all screw plugs.
  - ► Insert screw plug (3) with LOCTITE 271.

Tightening torques:
M14x1.5: 35 Nm
M16x1.5: 35 Nm
M18x1.5: 40 Nm
M20x1.5: 50 Nm

1044-004
162481-001

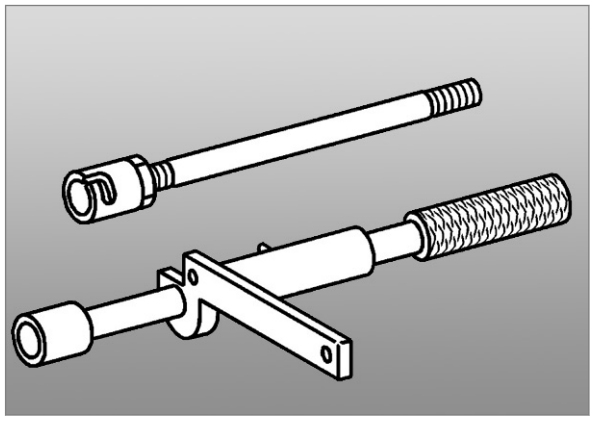
Oil spray nozzle

147517-001

233

Special tool

	Special tool (I)	Pcs.
1	Slide hammer puller 00 1992 873 0	1



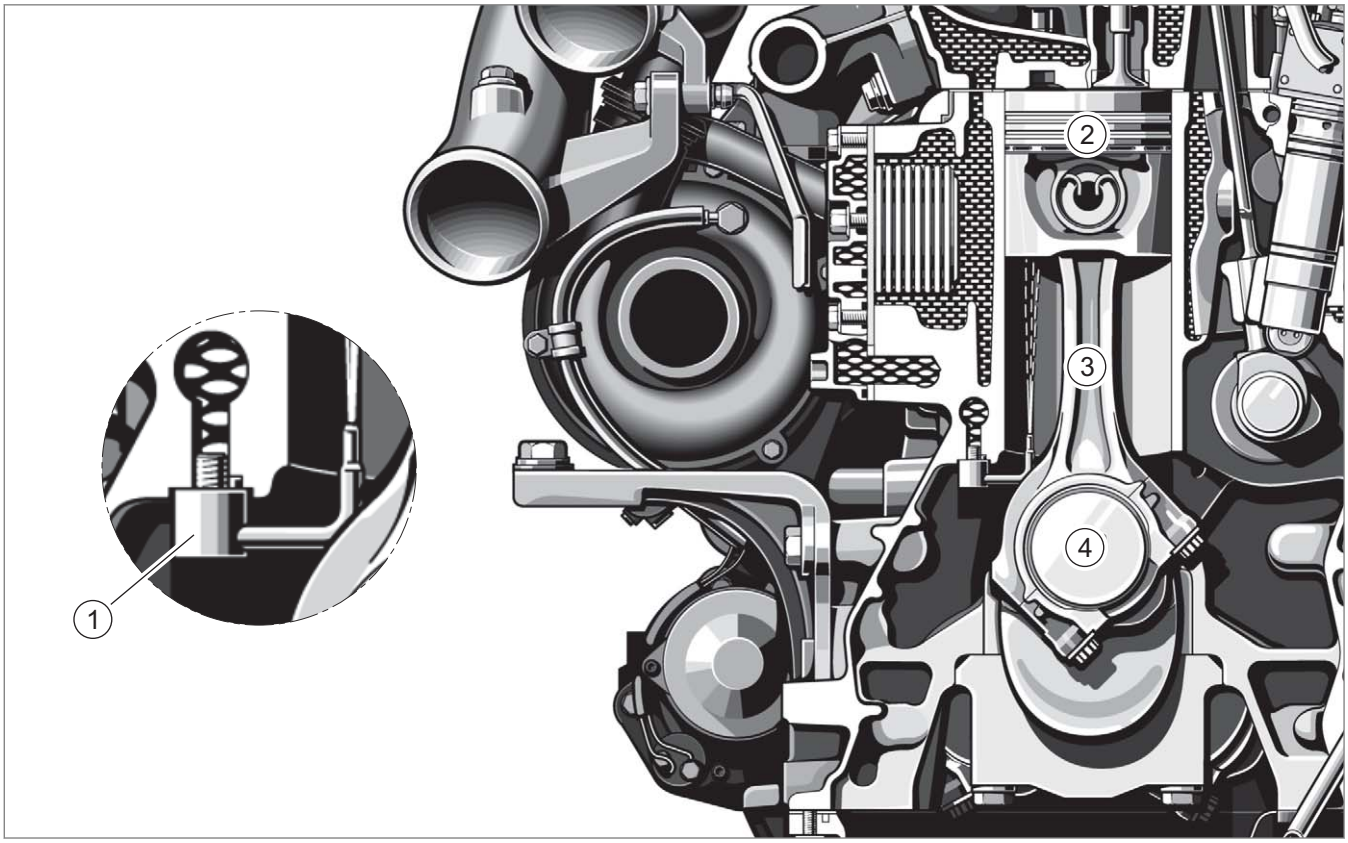
189007-001

234

	Special tool (II)	Pcs.
1	Installation tool 00 0176 973 0	1

1044-004

Technical specifications



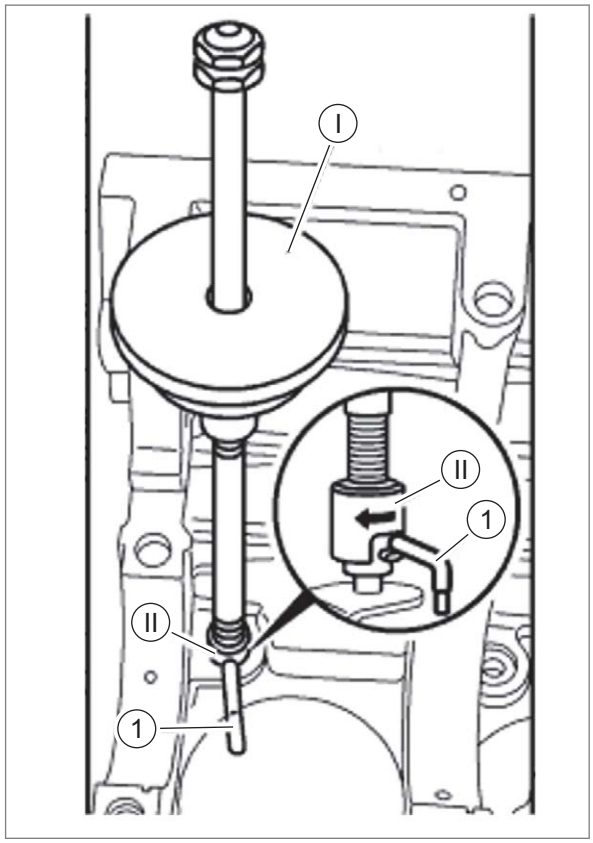
189005-001 **235**

	Value	CCN	Remark / designation	
1			Piston cooling oil spray nozzle Correcting the oil spray nozzle is **not** allowed because the oil spray pipe is soldered in and straightening may cause preliminary damage. – If the oil spray nozzle was damaged in an assembly process or if it cannot be guaranteed that the nozzle was not damaged, replace the nozzle.	
2			Piston	Page 82
3			Connecting rod	Page 91
4			Crankshaft	Page 98
Tightening torques not specified, see section on tightening torques				

Removal

► Remove the crankshaft. Page 101

1044-004



189008-001

236

► Force out oil spray nozzle (1) with special tools (I) and (II).

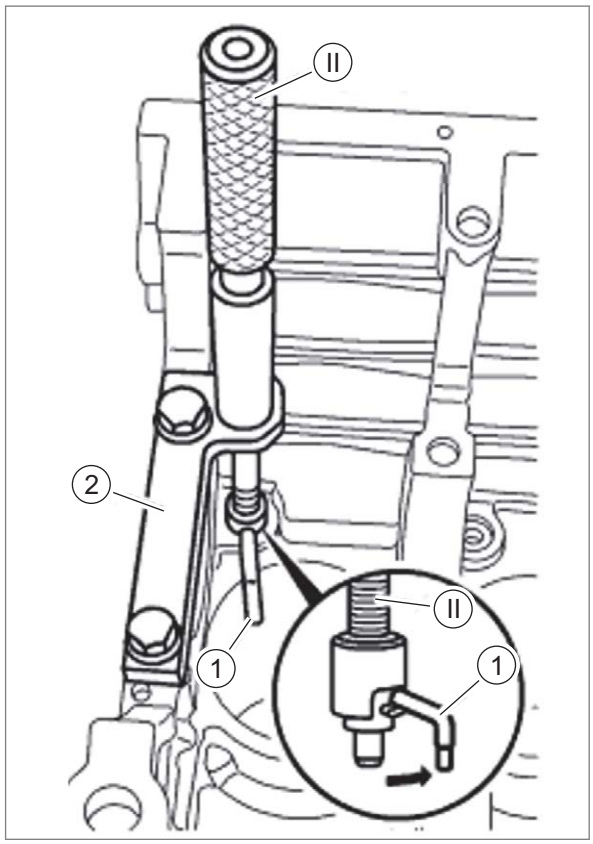
Installation

► Bolt down special tool (II) at (2).

► Drive in oil spray nozzle (1) with special tool (II).

► Ensure that the oil spray nozzle is vertical to the contact face.

► Unscrew special tool (II).



189009-001

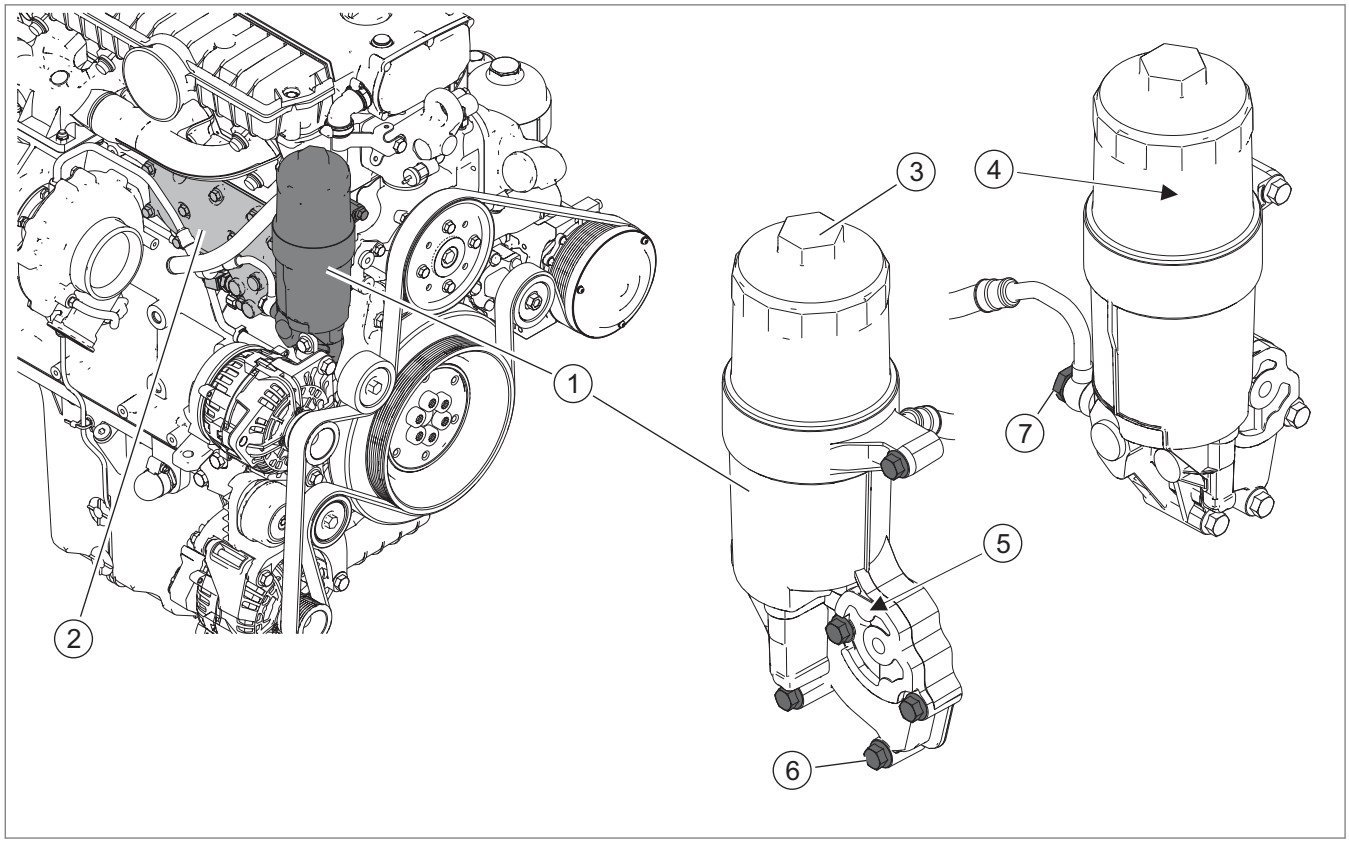
237

► Install the crankshaft. Page 106

1044-004
163057-003

Oil filter housing

Technical specifications



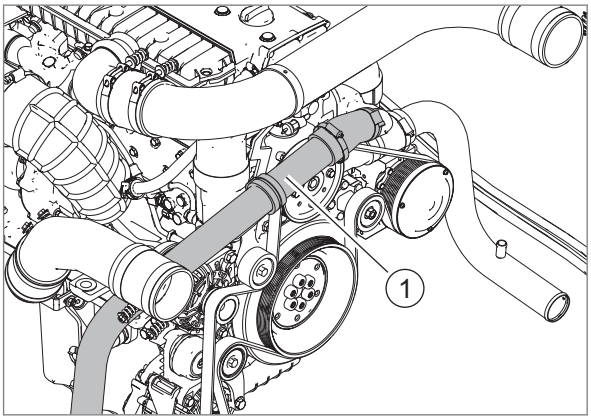
235485-001 **238**

	Value	CCN	Remark / designation	
1	2 kg		Oil filter housing Replace seal in every installation process.	
2			Oil cooler	Page 189
3	25 Nm		Cover	
4			Filter bypass valve Opening pressure: 1.8 to 2.6 bar	
5			Oil retaining valve Opening pressure: 0.03 to 0.07 bar	
6	25 Nm		Oil filter housing mounting bolts	
7			Oil line hollow screw	
Tightening torques not specified, see section on tightening torques				

Removal

- ► Let the engine cool down.
- ► Drain coolant. Page 198

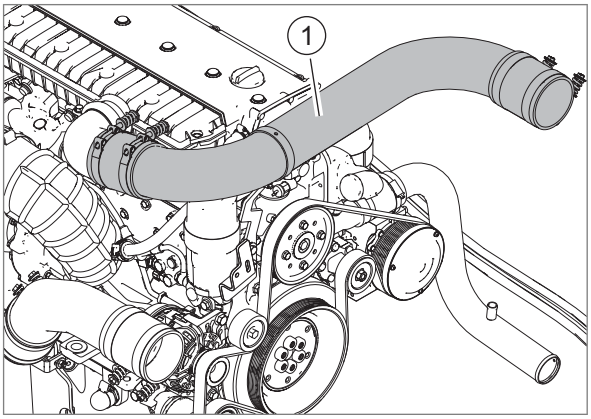
1044-004



235479-001

239

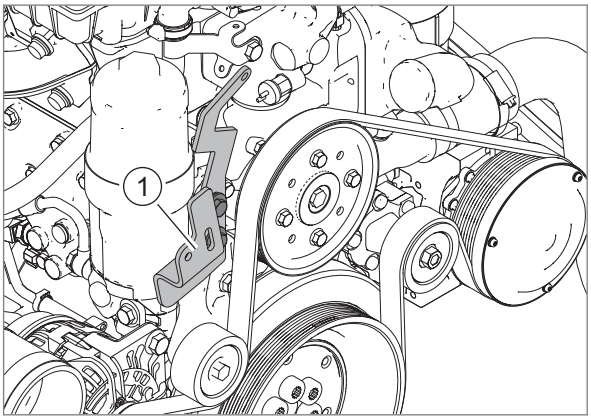
► Remove coolant line (1).



235480-001

240

► Remove the charge air line (1).



235481-001

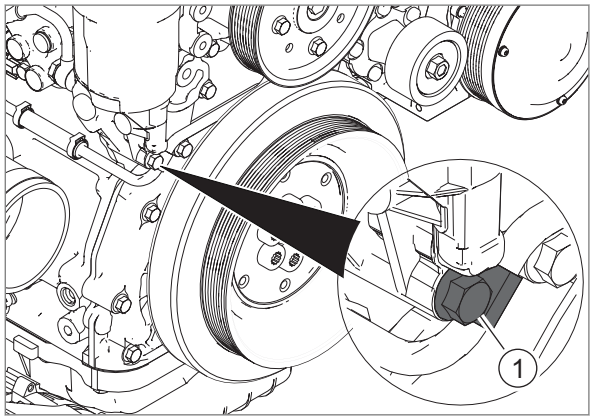
241

► Unscrew bracket (1).

► Remove the alternator drive belt tensioner. Page 245

► Remove the alternator (G002). Page 241

1044-004

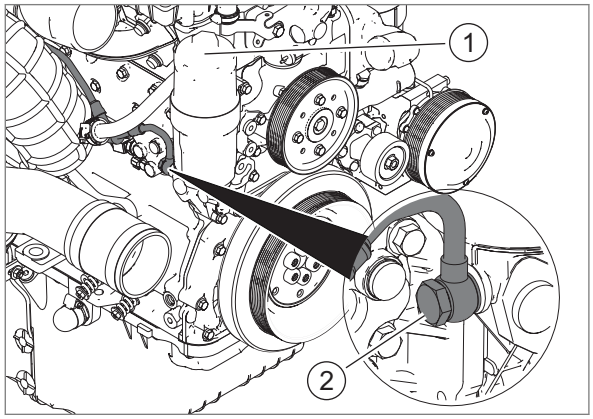


235482-001

242

Applies to type designs: 926.959 and 926.970

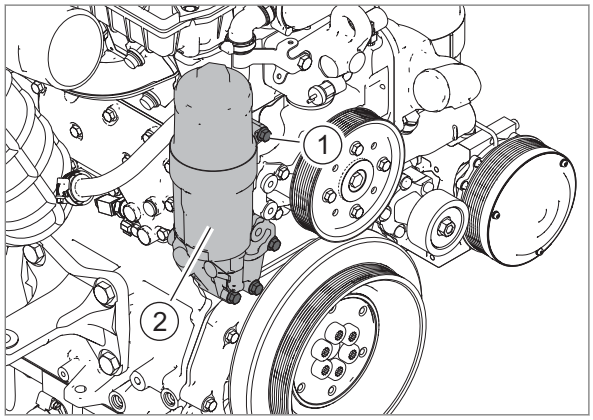
► Remove coolant line bracket (1).



235483-001

243

► Unscrew cover (1) from the oil filter.
► Unscrew oil line at (2).



235484-001

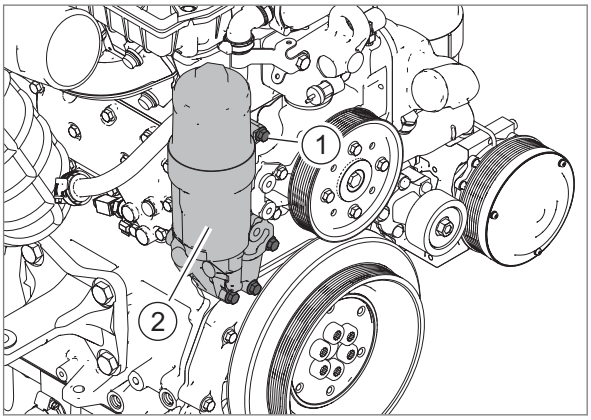
244

► Unscrew bolts (1).
► Remove oil filter housing (2).
  ► Remove seal from the oil filter housing.

Installation

► Clean the sealing faces. Page 19

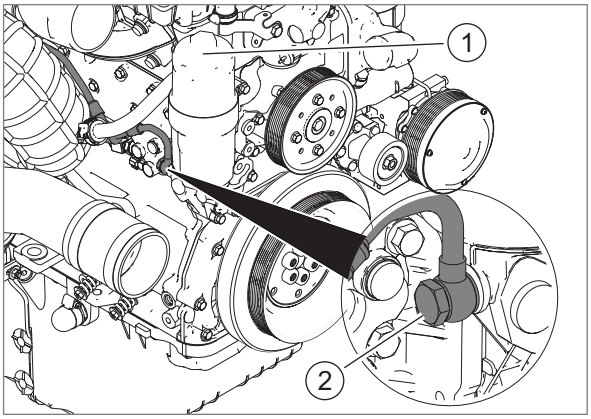
1044-004



235484-001

245

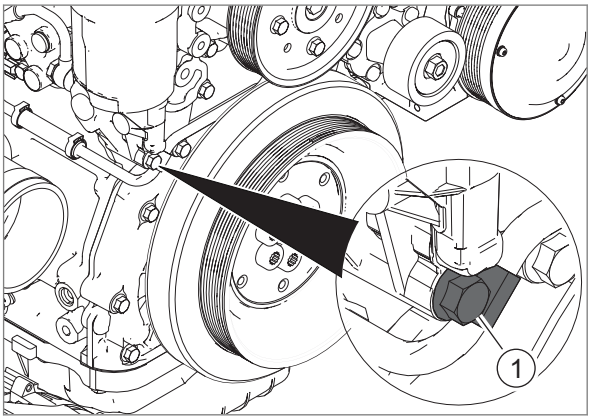
- ► Insert a new seal into the oil filter housing.
- ► Insert oil filter housing (2).
- ► Screw in bolts (1).
  Tightening torque: Page 19



235483-001

246

- ► Screw on oil filter lid (1).
  Tightening torque: Page 184
- ► Screw on oil line at (2).



235482-001

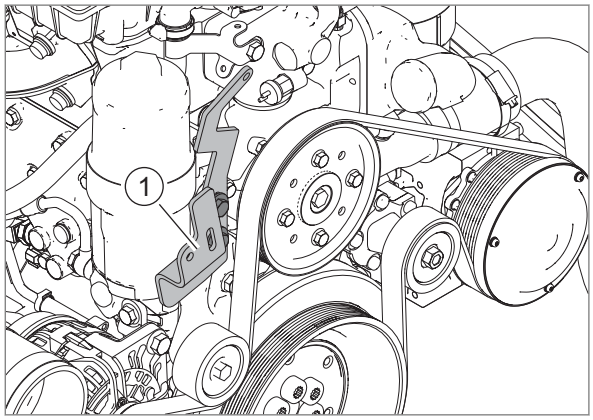
247

Applies to type designs: 926.959 and 926.970

- ► Install bracket of coolant line (1).

- ► Install alternator (G002). Page 242
- ► Install the alternator drive belt tensioner. Page 245

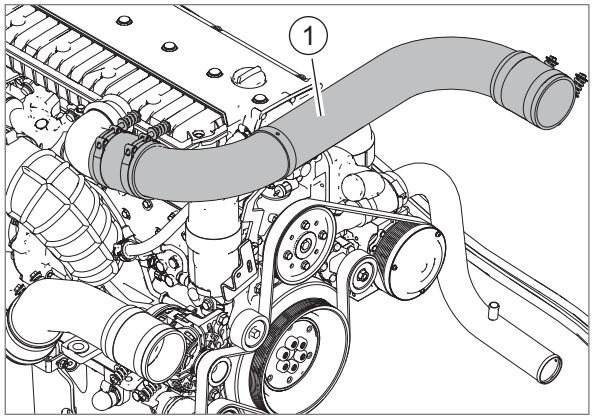
1044-004



235481-001

248

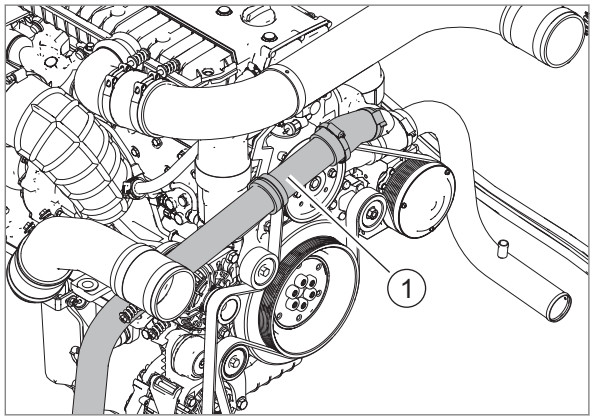
► Screw on bracket (1).



235480-001

249

► Install the charge air line (1).
See the repair manual of the machine in question.



235479-001

250

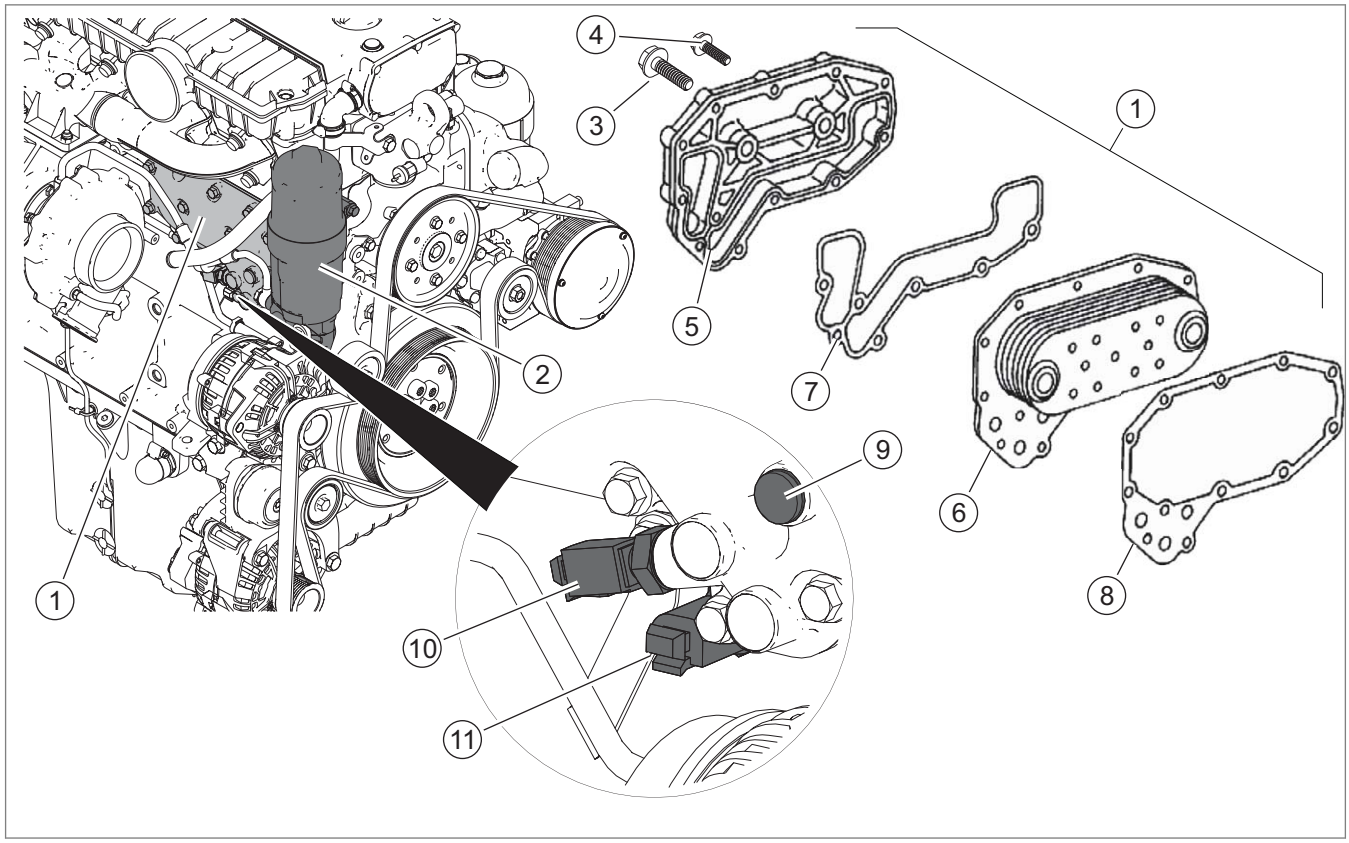
► Install coolant line (1).
See the repair manual of the machine in question.

► Top up coolant. Page 199
► Pre-fill the lubricating oil system. Page 178
► Top up engine oil as specified in the relevant Operator's Manual.
► Start the diesel engine.
► Check the oil pressure.
Observe the information provided in the Technical Systems documentation of this engine.
► Stop the diesel engine.
► Check if oil filter housing is tight.
► Check the oil level as described in the relevant Operator's Manual.

1044-004
163089-001

Oil cooler

Technical specifications



235921-001 **251**

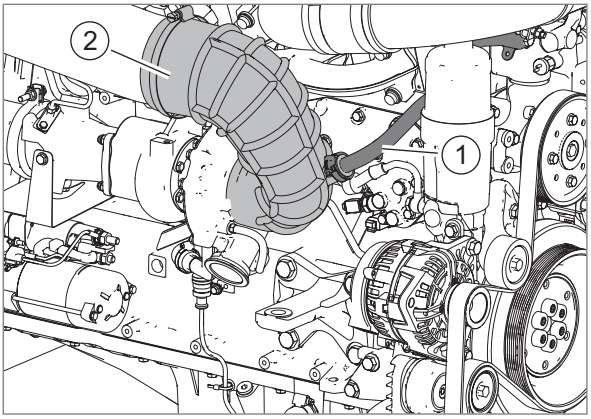
	Value	CCN	Remark / designation	
1	4 kg		Oil cooler	
2			Oil filter housing	Page 184
3	25 Nm		Oil cooler mounting bolts	
4	25 Nm		Oil cooler unit mounting bolt	
5			Oil cooler housing cover	
6			Oil cooler unit – Replace the oil cooler unit when externally damaged.	
7			Seal between oil cooler unit and oil cooler housing cover – Replace for every assembly.	
8			Seal between oil cooler and crankcase – Replace for every assembly.	
9	20 Nm		Oil cooler housing cover screw plug	
Tightening torques not specified, see section on tightening torques				

1044-004

	Value	CCN	Remark / designation	
10	45 Nm	B11-MB	Oil temperature sensor	
11	35 Nm	B12-MB	Oil pressure sensor	
Tightening torques not specified, see section on tightening torques				

Removal

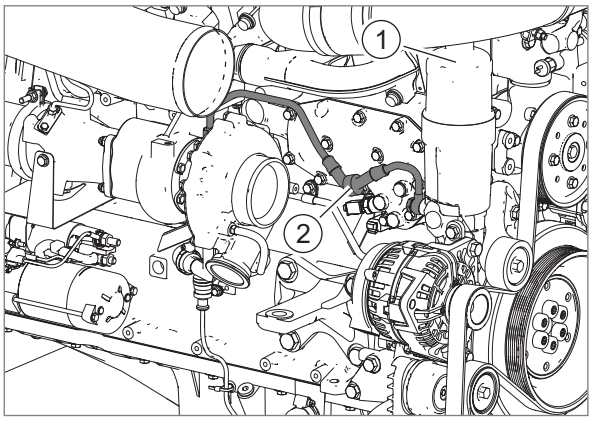
► Drain coolant. Page 198



235918-001

252

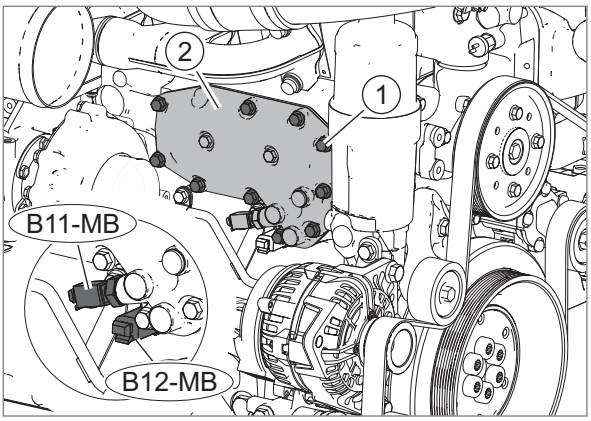
► Remove the venting line (1).
► Remove the air intake line (2).



235919-001

253

► Unscrew cover (1) from the oil filter.
► Remove oil line (2).



235920-001

254

► Disconnect cable connectors of sensors (B11-MB) and (B12-MB).
► Unscrew bolts (1).
► Remove oil cooler (2).

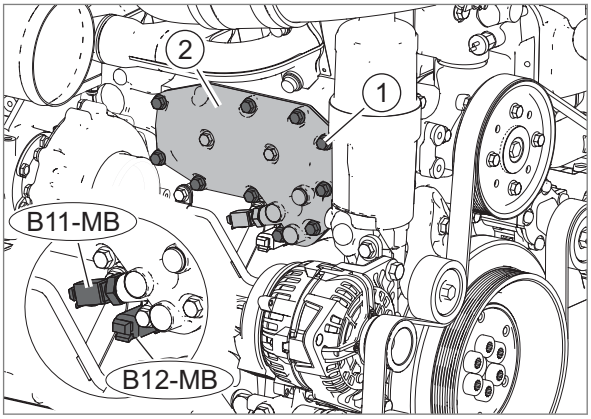
Installation

► Clean the sealing faces. Page 19
► Check the oil cooler unit for damage.

1044-004

If the oil cooler unit was removed:

- ► Screw in the bolts joining the oil cooler unit with the oil cooler housing cover only hand-tight.

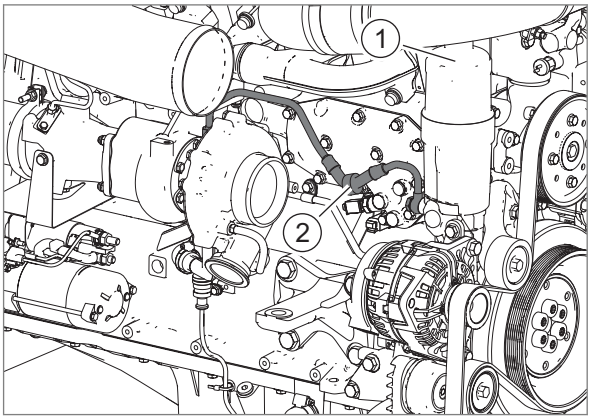


235920-001

255

- ► Insert oil cooler (2) with a new seal.
- ► Screw in bolts (1).
  Tightening torque: Page 189
- ► Connect cable connector of sensors (B11-MB) and (B12-MB).

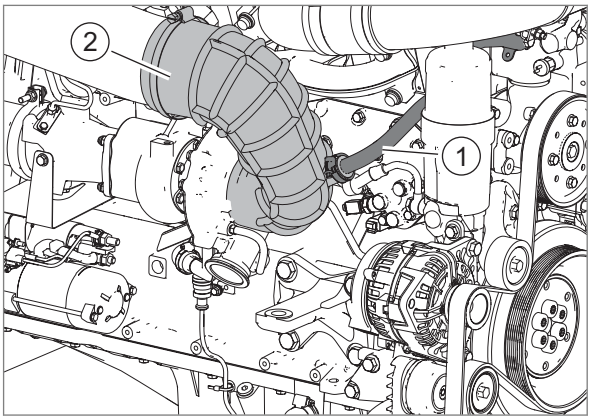
- ► If required, tighten bolts between oil cooler unit and oil cooler housing cover.
  Tightening torque: Page 189



235919-001

256

- ► Screw on oil filter lid (1).
  Tightening torque: Page 189
- ► Install oil line (2).
  See turbocharger chapter: Page 219



235918-001

257

- ► Install the air intake line (2).
  See the repair manual of the machine in question.
- ► Install vent line (1).

- ► Top up coolant. Page 199
- ► Pre-fill the lubricating oil system. Page 178
- ► Top up engine oil as specified in the relevant Operator's Manual.
- ► Start the diesel engine.
- ► Check the oil pressure.

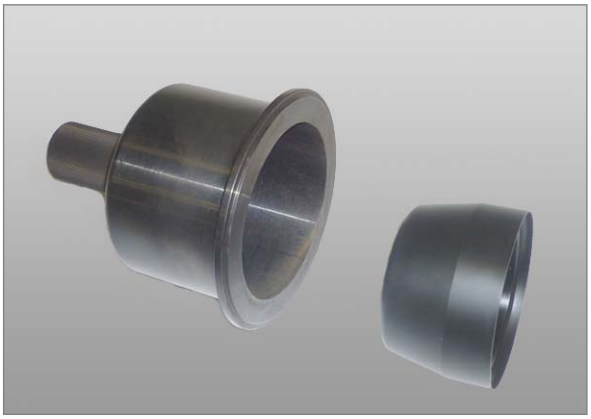
1044-004

Observe the information provided in the Technical Systems documentation of this engine.

- ► Stop the diesel engine.
- ► Check if oil cooler is tight.
- ► Check the oil level as described in the relevant Operator's Manual.

1044-004
163041-001

Oil pump



147456-001

258

Work preparation

Utilities:

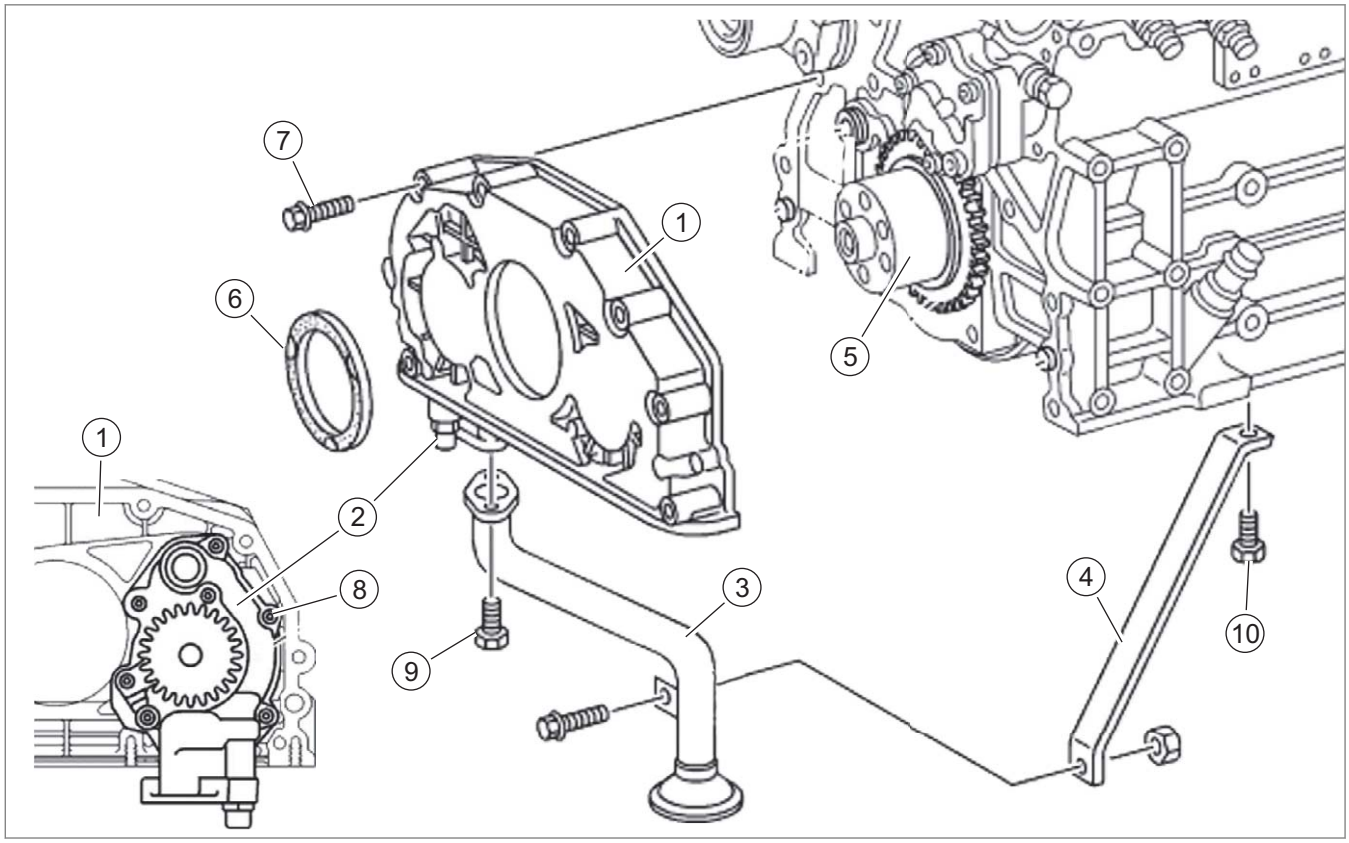
- ► Sealing agents and adhesives:
  LOCTITE 510 - 60 0500 935 5

Special tool

	Special tool (I)	Pcs.
1	Punch 00 1992 900 0	1

1044-004

Technical specifications



235388-001 **259**

	Value	CCN	Remark / designation	
1	3 kg		Oil pump	
2			Oil pump unit	
3			Oil suction tube	
4			Oil suction tube bracket	
5			Crankshaft	Page 98
6			Radial seal	
7	25 Nm		Oil pump mounting bolts	
8	12 Nm		Oil pump unit mounting bolt	
9	25 Nm		Oil suction tube mounting bolts	
10	50 Nm		Bracket mounting bolt	
Tightening torques not specified, see section on tightening torques				

Removal

- ► Remove the oscillation damper. Page 109
- ► Remove oil pan. Page 63
- ► Remove the oil suction tube.
- ► Unscrew the oil pump.

1044-004

► Remove the radial seal.

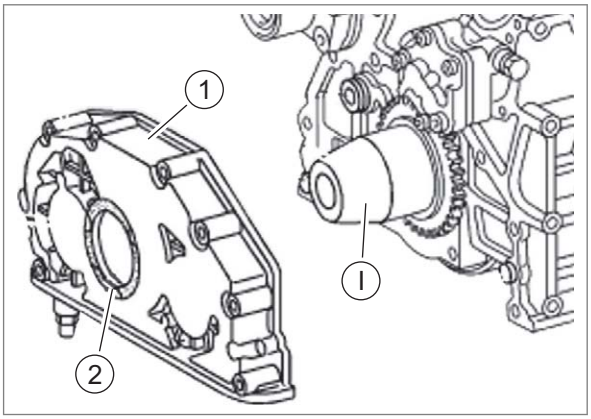
► Remove the oil pump unit from the housing.
When run-in traces and wear are found on the oil pump unit or on the housing, the oil pump must be replaced.

Installation

► Clean the sealing faces. Page 19

► Install the oil pump unit into the housing.
Tightening torque: Page 19

► Install the radial seal. Page 70



235399-001

260

Use special tool (I). Page 193

► Coat the sealing face of oil pump (1) with LOCTITE 510.

► Place special tool (I) on the crankshaft flange.

► Bolt down the oil pump (1).
  ► Ensure that the radial seal (2) is not damaged.
  Tightening torque: Page 194

► Install the oil suction tube.
Tightening torque: Page 194

► Install the oil pan. Page 65

► Install the oscillation damper Page 109

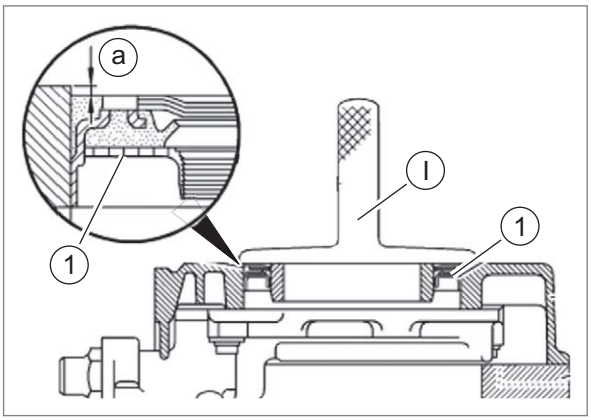
► Pre-fill the lubricating oil system. Page 178

► Top up engine oil as specified in the relevant Operator's Manual.

Installing the radial seal

Use special tool (I). Page 193

► Push in the radial seal (1) dry, with parallel axles and evenly around all its circumference.
The depth (a) is specified by special tool (I).



235400-001

261

1044-004

0135 Cooling system

1044-004
157808-004

Coolant

253134-001

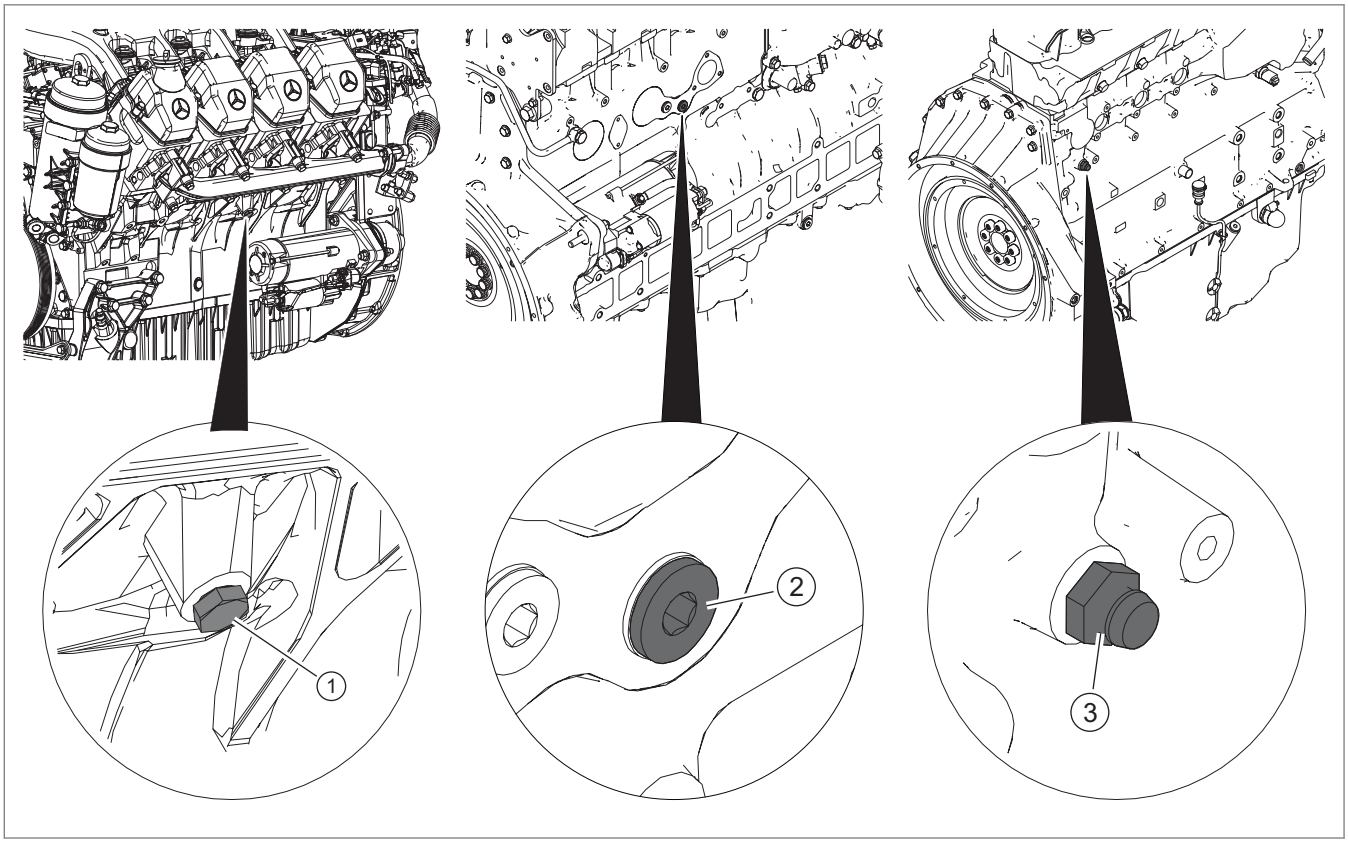
262

Special tool

	Special tool (I)	Pcs.
1	Cleaner 00 0147 907 0	1

1044-004

Technical specifications



179772-001 **263**

	Value	CCN	Remark / designation	
1	50 Nm		Coolant drain plugs Type design: 942.99x – Plugs on both sides of the engine. – Screw in bolts with a new sealing ring.	
2	50 Nm		Coolant drain plug Type design: 458.99x – Insert bolt with a new sealing ring.	
3	60 Nm		Coolant drain plug Type design: 906.99x and 926.9xx – Insert bolt with a new sealing ring.	
Tightening torques not specified, see section on tightening torques				

Draining

► Drain the coolant from the machine radiator. See the Operator's Manual of the machine in question.

157892-002

WARNING! Drain the coolant from the engine block. Danger of skin and eye injury from hot coolant. Danger of poisoning when swallowed.

1044-004

- ► Open the cooling system only if the coolant temperature is below 90 °C.
- ► Open the cooling system slowly and relieve the excess pressure.
- ► Wear protective clothing.
- ► Unscrew the coolant drain plug carefully and drain coolant.
  - ► Refit the plug immediately after draining.
  - ► Tightening torque: Page 198

Filling up

- ► Top up coolant only as described in the Operator's Manual of the machine in question.

Cleaning the coolant circuit

- ► Start the diesel engine and bring it to operating temperature.
  Then stop the diesel engine.
- ► Disconnect the battery isolating switch of the machine.
- ► Park the machine safely and secure it against rolling away.
- ► To allow the oil to precipitate upwards, allow a 30-minute rest period.
- ► Check if there is oil in the cooling system compensating tank.
  Withdraw coolant from the compensating tank if required and dispose of it properly.
- ► Drain coolant. Page 198

WARNING! Filling undiluted cleaning concentrate into the cooling system. Damage to cooling system.

- ► Mix the cleaning concentrate with clear and warm water outside of the cooling system.
- ► Produce a 3 % cleaning solution with cleaning agent (00 0147 907 0) and clear, warm water.
  Observe the coolant filling quantity for the machine in question.
  See the Operator's Manual of the machine in question.
- ► Remove the compensating tank.
  See the repair manual of the machine in question.
- ► Flush the compensating tank with 3 % cleaning solution.
  After that, flush the compensating tank with warm water.
- ► Install the compensating tank.
  See the repair manual of the machine in question.
- ► Fill the coolant circuit with 3 % cleaning solution.
- ► Switch on the battery isolating switch of the machine.
- ► Set the cab heater to maximum heating capacity.
- ► Start the diesel engine and heat up the coolant to around 80 °C at medium speed.
- ► Maintain the coolant temperature at 80 °C for about 5 minutes.

1044-004

Cover up the radiator if required.

Ensure that a hydraulic oil cooler that may be installed is **not** covered up in this process!

- ▶ Stop the diesel engine.
- ▶ Let the coolant cool down to around 50 °C.
- ▶ Drain the 3 % cleaning solution completely.
- ▶ Flush the coolant circuit with clear water at least twice.

  Let the diesel engine run for about 5 minutes with every flushing filling.

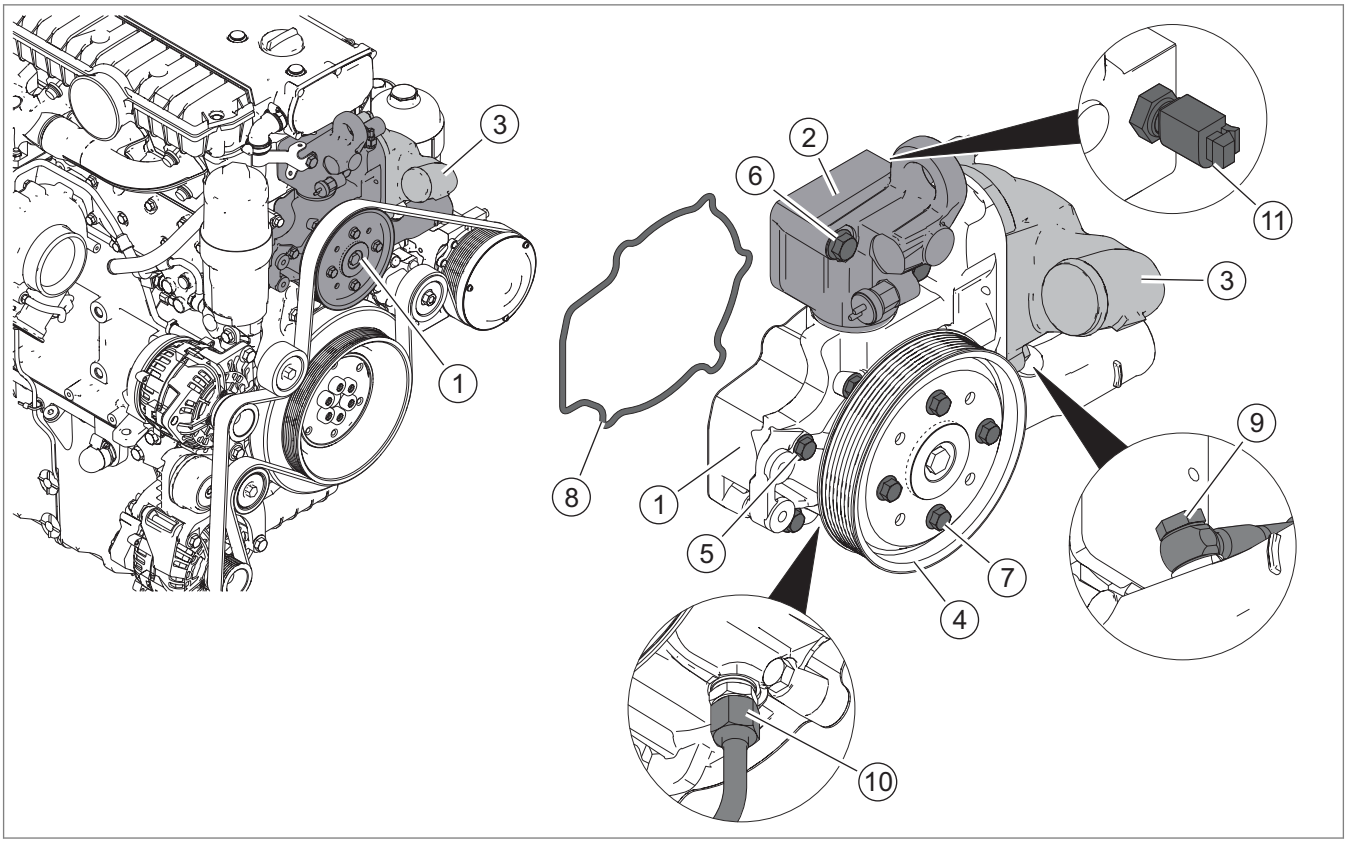
  Ensure that no cleaning solution remains in the cooling system after the last flushing process.

  If necessary, carry out further flushing processes with clear water.
- ▶ Top up coolant. Page 199

1044-004
163096-003

Coolant pump

Technical specifications



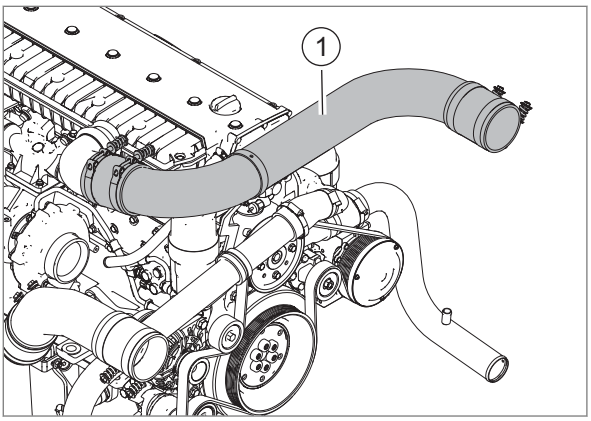
235969-001 **264**

	Value	CCN	Remark / designation	
1	10 kg		Coolant pump – Replace seal in every installation process.	
2			Coolant pump connector	
3			Thermostat housing See coolant thermostat	Page 207
4			Coolant pump pulley	
5	25 Nm		Coolant pump mounting bolts	
6	50 Nm		Coolant pump connector mounting bolt	
7	25 Nm		Pulley mounting bolts	
8			Coolant pump seal	
9	40 Nm		Compressor coolant line hollow screw	
10			Exhaust treatment coolant line screw fitting	
11	35 Nm	B65-MB	Coolant temperature sensor	
Tightening torques not specified, see section on tightening torques				

1044-004

Removal

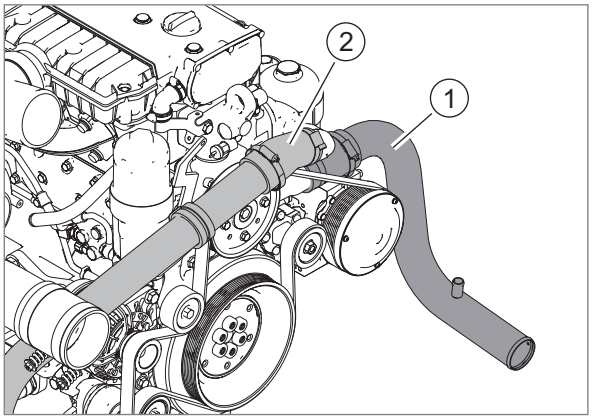
- ► Let the engine cool down.
- ► Drain coolant. Page 198



235961-001

265

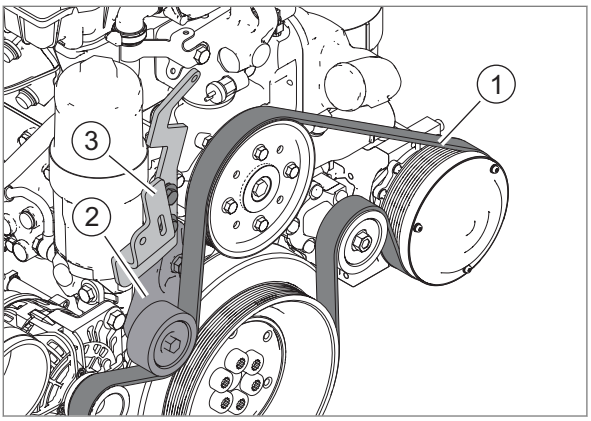
- ► Remove the charge air line (1).



235962-001

266

- ► Remove the coolant lines (1) and (2).

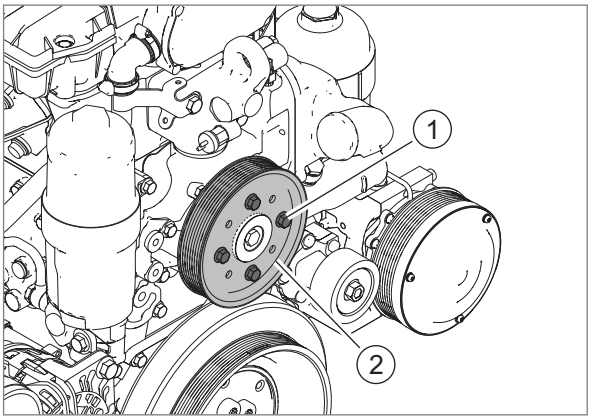


235963-001

267

- ► Remove the alternator drive belt.
- ► Remove belt tensioner (2).
- ► Remove bracket (3).

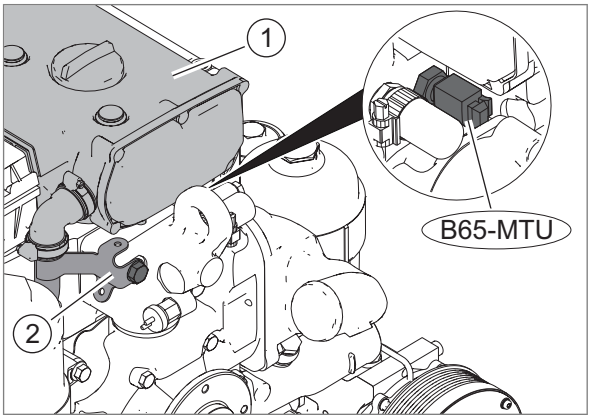
1044-004



235964-001

268

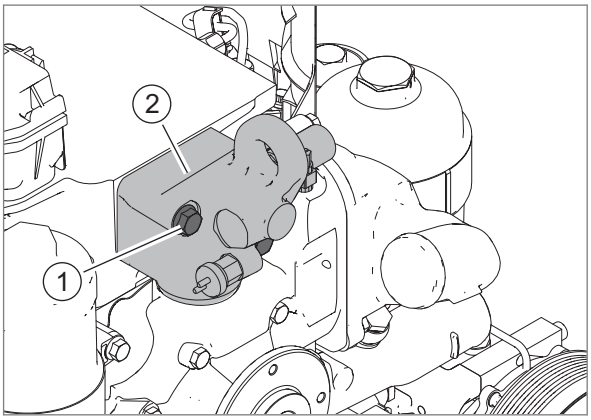
► Unscrew bolts (1) and remove pulley (2).



235965-001

269

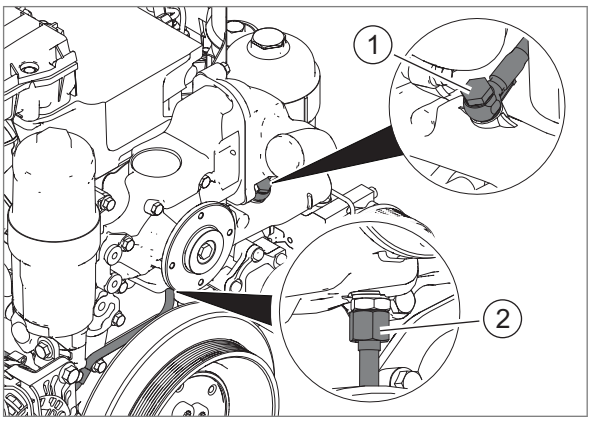
► Remove the cylinder head valve cover (1). Page 119
► Unscrew bracket (2).
► Disconnect the cable connector from sensor (B65-MB).



235966-001

270

► Unscrew bolts (1).
► Pull out the connector (2) to the top.

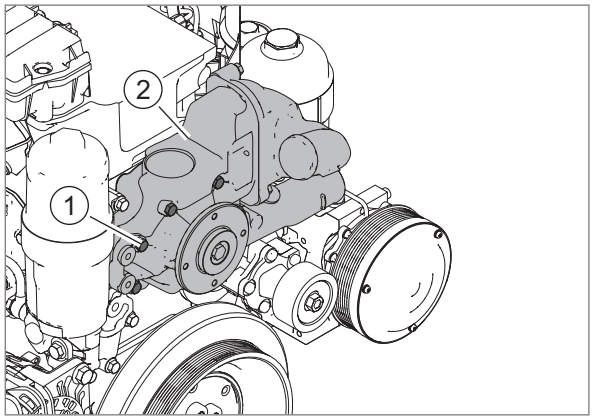


235967-001

271

► Unscrew the compressor coolant line (1).
► Unscrew the exhaust treatment coolant line (2).
  ► Applies to type designs: 926.959 and 926.970

1044-004



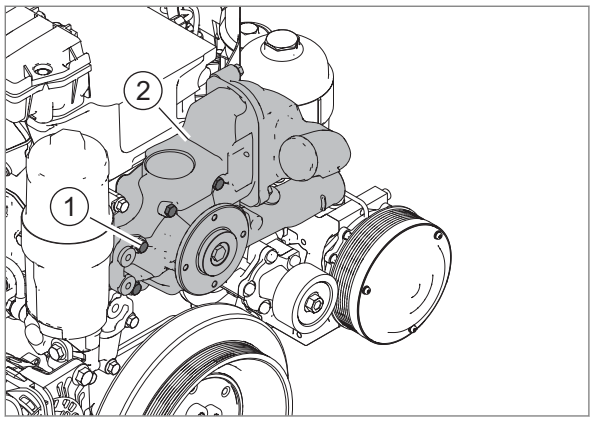
235968-001

272

- ► Unscrew bolts (1) and remove coolant pump (2).
- ► Remove coolant pump seal.

Installation

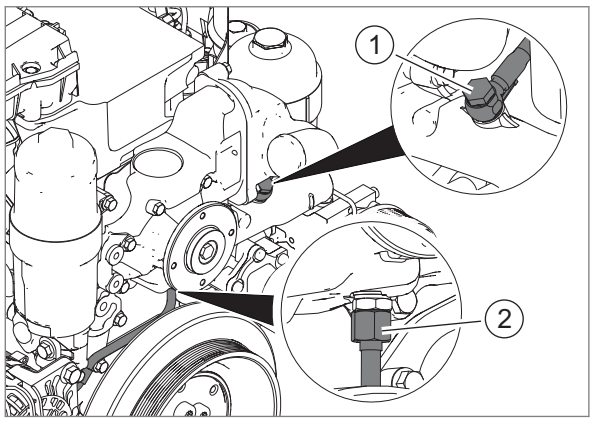
- ► Clean the sealing faces. Page 19



235968-001

273

- ► Insert coolant pump (2) with a new seal.
- ► Screw in bolts (1).
  Tightening torque: Page 19

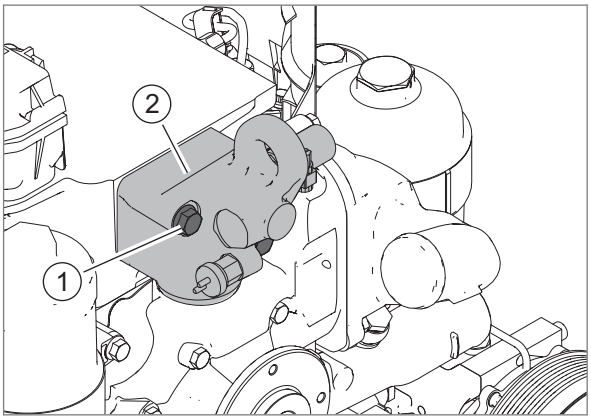


235967-001

274

- ► Screw on compressor coolant line (1).
  Tightening torque: Page 201
- ► Screw on exhaust treatment coolant line (2).
  - ► Applies to type designs:
    926.959 and 926.970

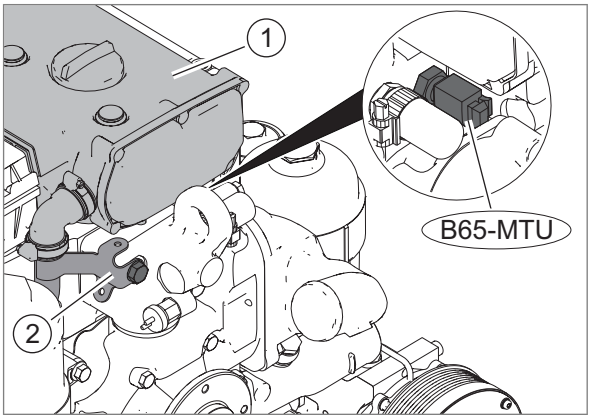
1044-004



235966-001

275

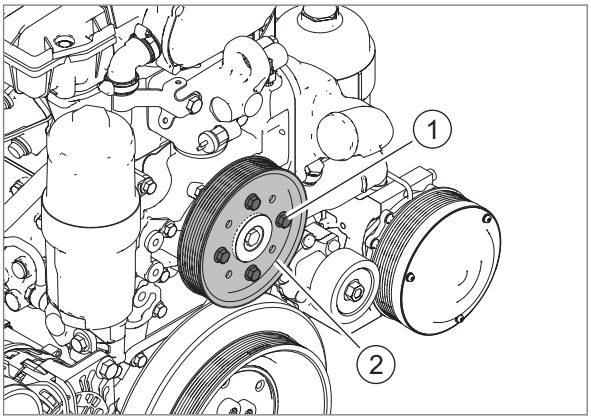
- ► Insert connector (2) with a new union.
- ► Screw in bolts (1).
  Tightening torque: Page 201



235965-001

276

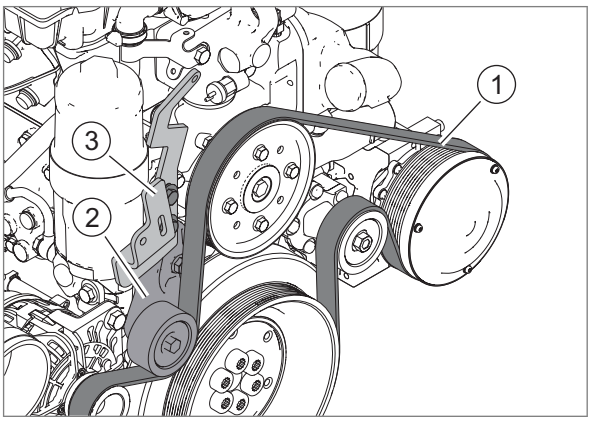
- ► Plug cable connector on sensor (B65-MB).
- ► Install the cylinder head valve cover (1). Page 119
- ► Screw on bracket (2).



235964-001

277

- ► Bolt down pulley (2) with bolts (1).
  Tightening torque: Page 201

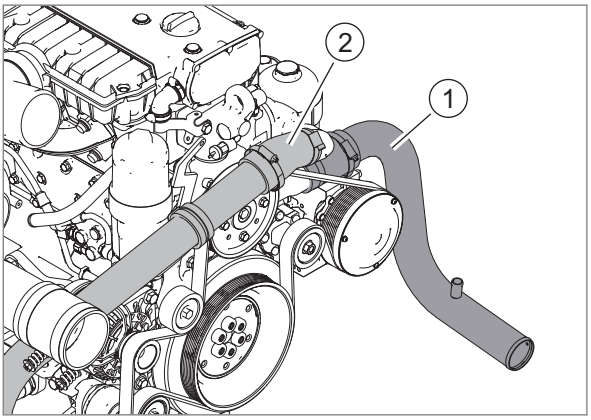


235963-001

278

- ► Install bracket (3).
- ► Install belt tensioner (2).
- ► Install the alternator drive belt as specified in the Operator's Manual.

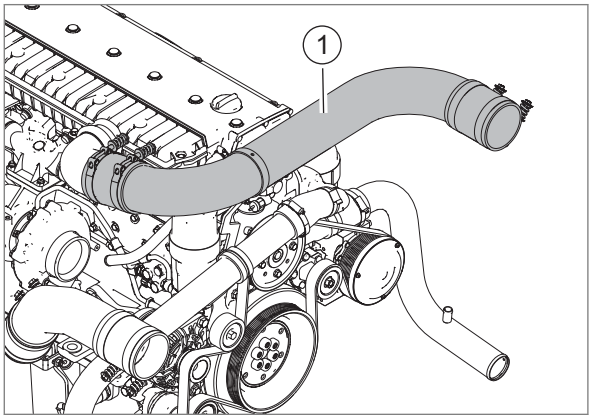
1044-004



235962-001

279

► Install the coolant lines (1) and (2).
See the repair manual of the machine in question.



235961-001

280

► Install the charge air line (1).
See the repair manual of the machine in question.

► Top up coolant. Page 199

► Start the diesel engine.
  ► Let the diesel engine run for some time until the operating temperature is reached.

► Check tightness of coolant pump.

► Check coolant level as described in the relevant Operator's Manual.

1044-004
163138-003

Coolant thermostat

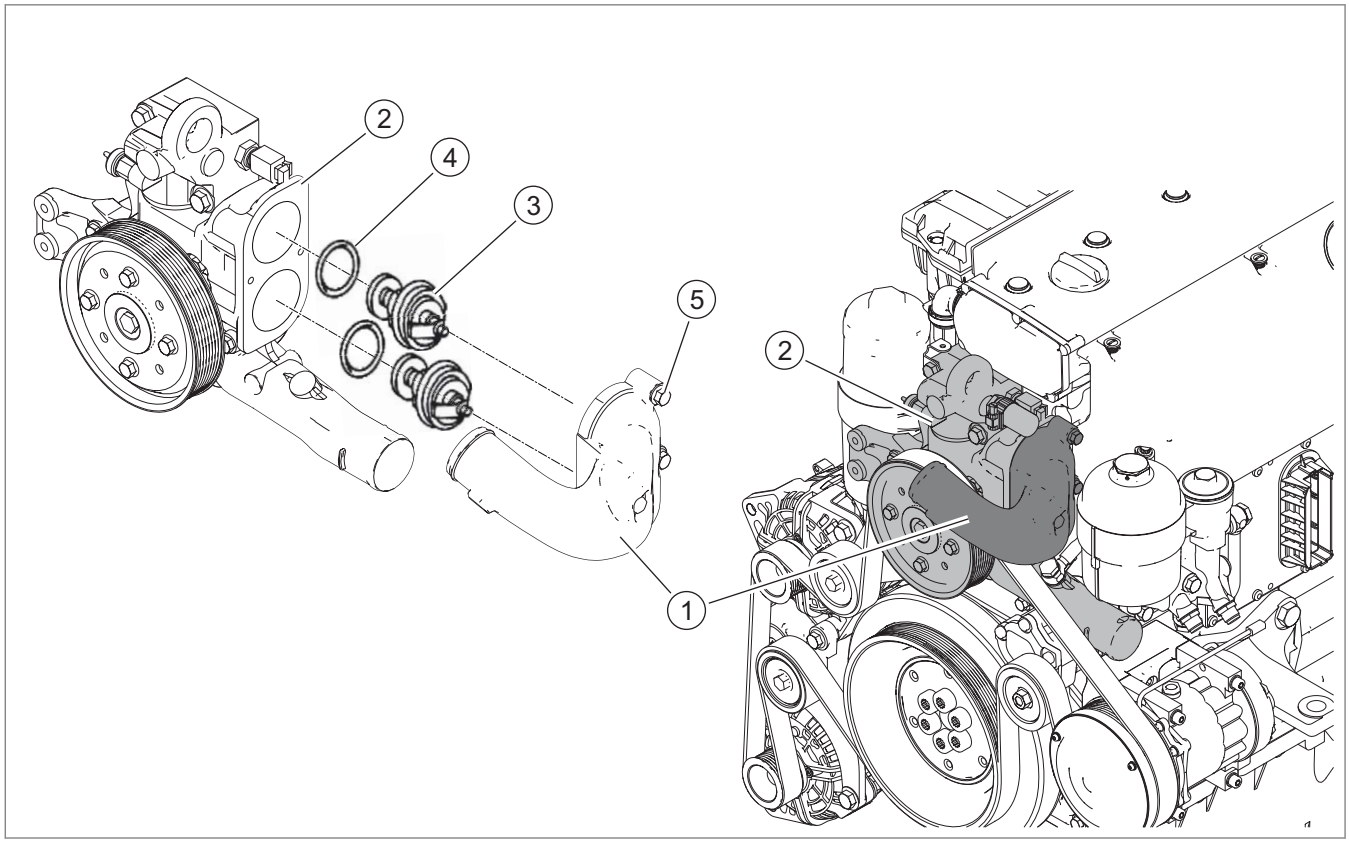
Work preparation

Utilities:

- ► Lubricants:
  CLAAS AGRIGREASE EP 2 - 00 0147 437 0

1044-004

Technical specifications



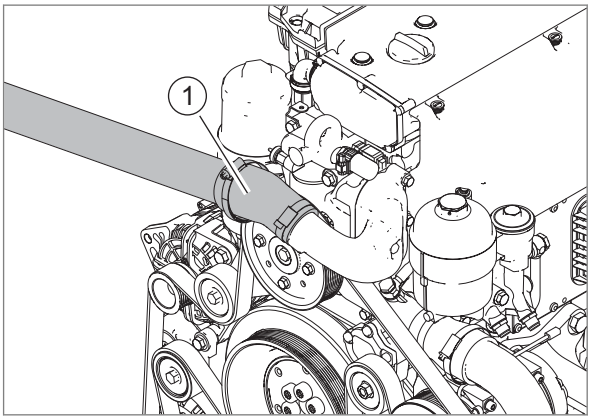
236004-001 **281**

	Value	CCN	Remark / designation	
1			Thermostat housing	
2			Coolant pump	Page 201
3			Coolant thermostat	
4			Coolant thermostat seal – Apply a thin coat of CLAAS AGRIGREASE EP 2 to the seal.	
5	25 Nm		Thermostat housing mounting bolt	
a	75 °C		Coolant thermostat opening start temperature value	
b	95 °C		Coolant thermostat main valve full opening temperature value	
c	92 °C		Coolant thermostat short circuit valve closed temperature value	
d	8 mm		Coolant thermostat main valve stroke	
Tightening torques not specified, see section on tightening torques				

Removal

► Let the engine cool down.
► Drain coolant. Page 198

1044-004

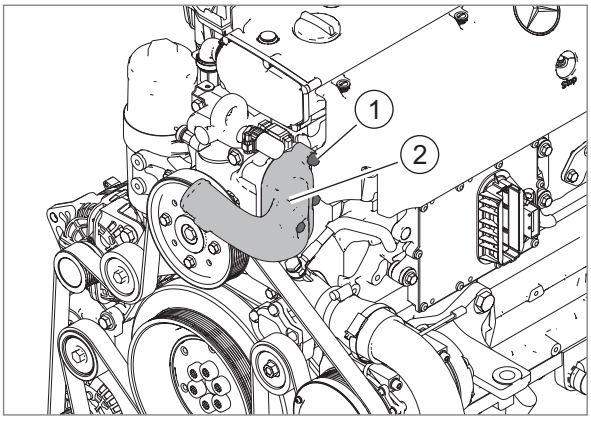


236000-001

282

► Remove coolant line (1).

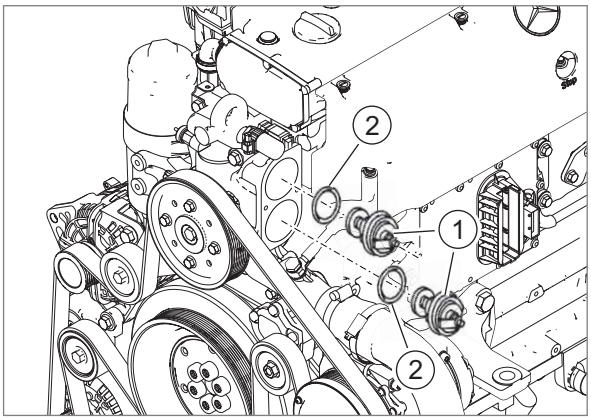
► Remove the fuel filter housing. Page 175



236001-001

283

► Unscrew bolts (1).
► Remove thermostat housing (2).

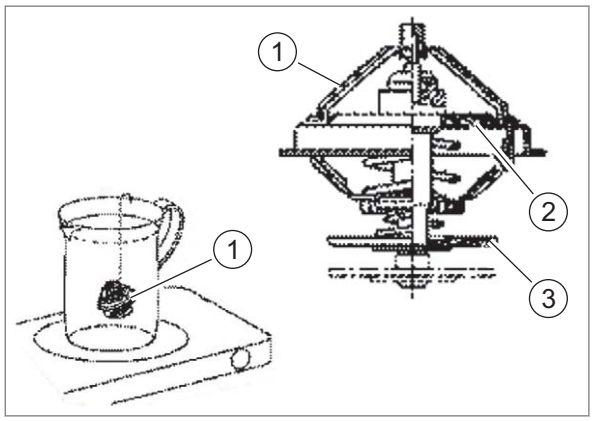


236002-001

284

► Remove coolant thermostats (1) together with sealing rings (2).
► Check coolant thermostats (1).
► Clean the sealing faces. Page 19

1044-004

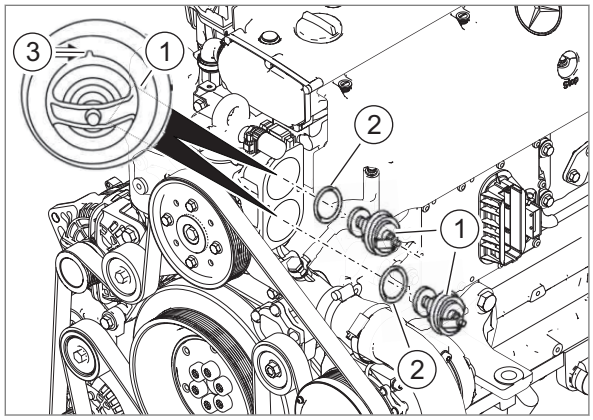


185928-001

285

Checking

- ► Hang the coolant thermostat (1) into a container filled with water.
- ► Heat up the water.
- ► Measure the water temperature and watch the opening start of the coolant thermostat.
  - ► Observe the temperature value (a). Page 208
  - ► Starting at approx. 8 °C below the opening start, the water heating rate must not exceed 1 to 2 °C per minute.
- ► Continue heating the water until the short circuit valve (3) is closed.
  - ► Observe the temperature value (c). Page 208
- ► Continue heating the water until the main valve (2) is completely open.
  - ► Observe the temperature value (b). Page 208
- ► Remove coolant thermostat and let it cool down until the main valve is closed.
- ► Check dimension (d). Page 208

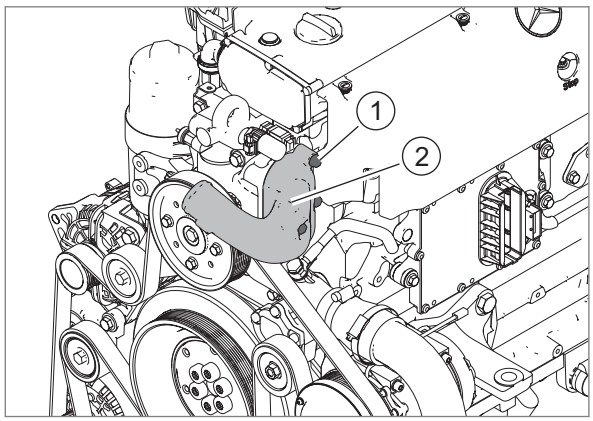


236003-001

286

Installation

- ► Place new seals (2) on the coolant thermostats (1).
  Slightly grease the sealing rings.
- ► Install coolant thermostats (1).
  - ► The marks (3) must point upwards.



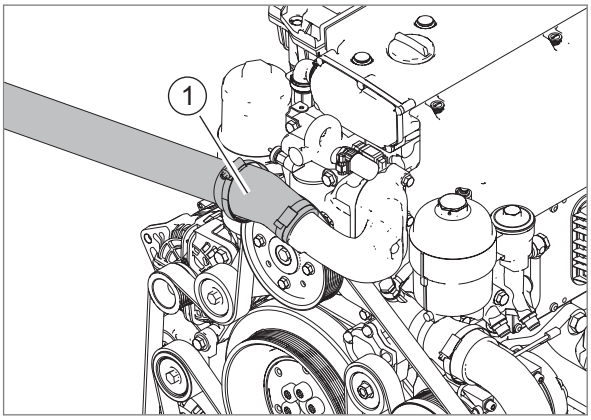
236001-001

287

- ► Insert the thermostat housing (2).
- ► Screw in bolts (1).
  Tightening torque: Page 208

- ► Install the fuel filter housing. Page 175

1044-004



236000-001

288

► Install coolant line (1).
See the repair manual of the machine in question.

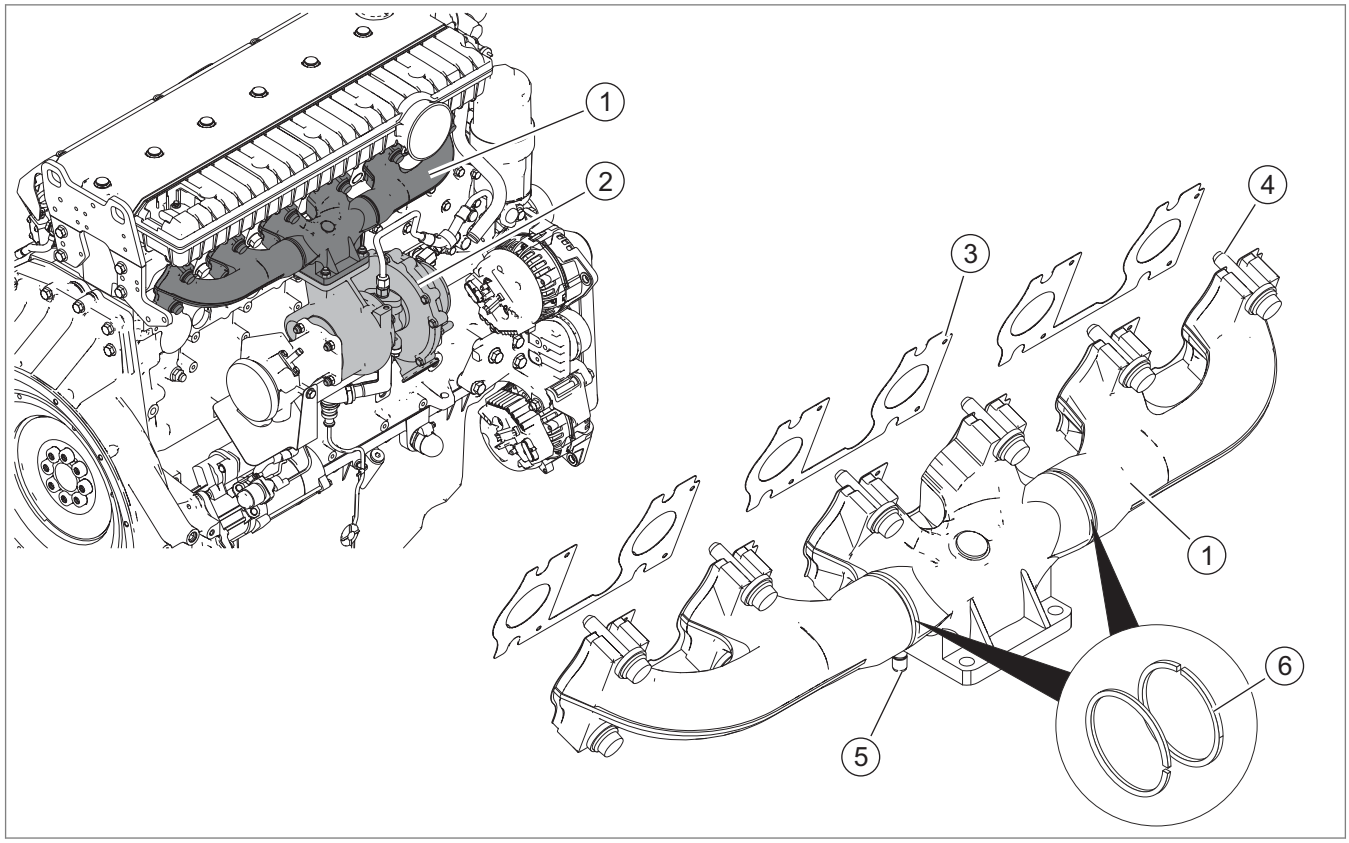
► Top up coolant. Page 199
► Start the diesel engine.
  ► Let the diesel engine run until the operating temperature is reached.
► Check tightness of thermostat housing.
► Check coolant level as described in the relevant Operator's Manual.

0140 Exhaust system

1044-004
163155-003

Exhaust manifold

Technical specifications



236055-001 **289**

	Value	CCN	Remark / designation	
1	9.5 kg		Exhaust manifold	
2			Exhaust turbo charger	Page 218
3			Seal – Replace seal for installation. – Clean the sealing faces thoroughly. – Observe the installation position of the seal.	Page 19
4			Exhaust gas manifold mounting bolt Tighten the bolts in three steps: 1 10 Nm 2 55 Nm 3 90° Observe the shaft length (a).	
5	15 Nm		Exhaust manifold stud	
Tightening torques not specified, see section on tightening torques				

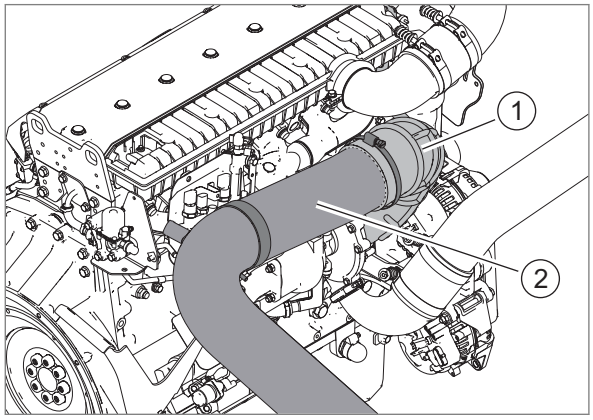
1044-004

	Value	CCN	Remark / designation	
6			Exhaust manifold seals – Install the seals in dry condition. Do not use any grease or lubricant! – Install the ring openings of seals with a 90° offset with respect to one another.	
a	47 to 47.5 mm		Exhaust manifold mounting bolt shaft length	
Tightening torques not specified, see section on tightening torques				

Removal

► Let the engine cool down.

► Remove air intake lines (1) and (2).

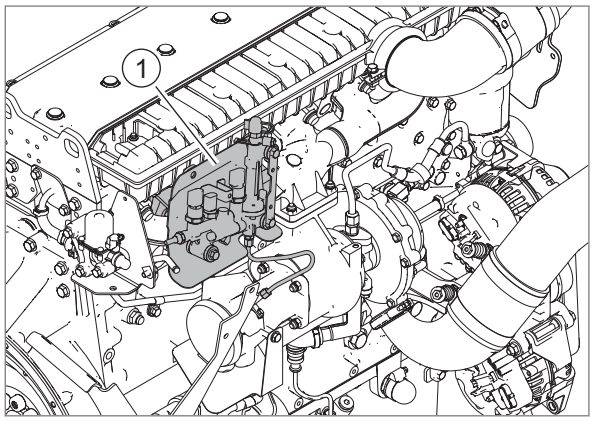


236051-001

290

Applies to type designs: 926.959 and 926.970

► Remove urea dosing unit (1). Page 277

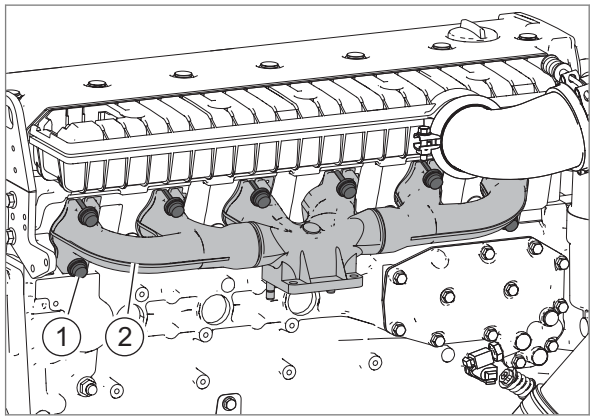


236052-001

291

► Remove the exhaust turbo charger. Page 220

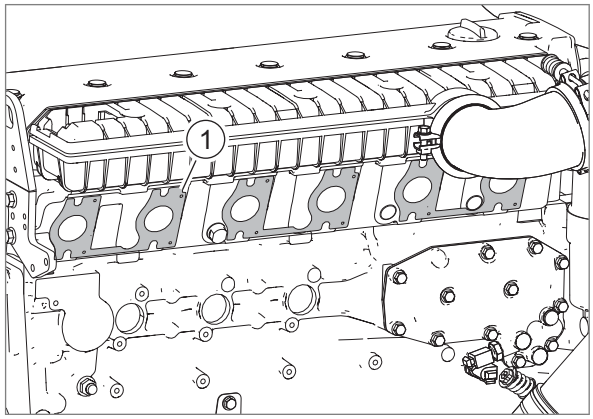
1044-004



236053-001

292

► Unscrew bolts (1).
► Remove exhaust gas manifold (2).

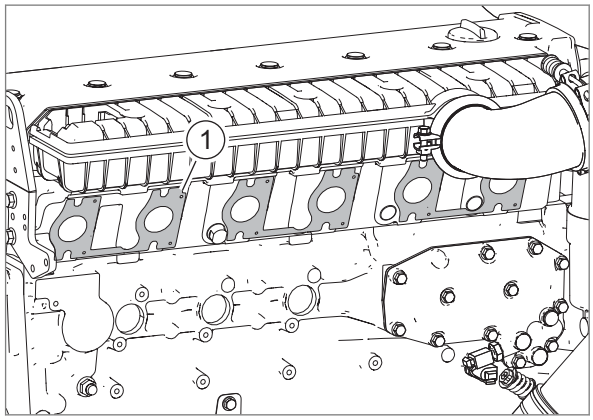


236054-001

293

► Remove the seals (1).

Installation

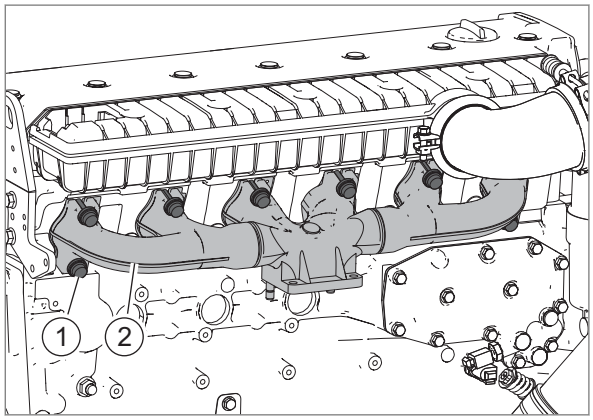


236054-001

294

► Insert the seals (1).

1044-004

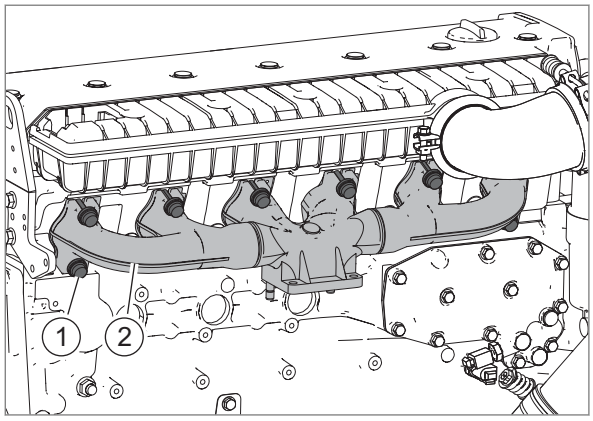


236053-001

295

► Fit exhaust gas manifold (2).
► Screw in bolts (1) hand-tight.

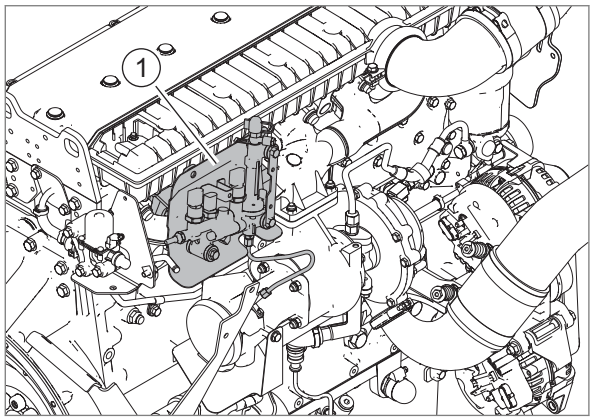
► Install the exhaust turbo charger. Page 221



236053-001

296

► Tighten bolts (1) so that the exhaust manifold (2) will not be subject to strain.
Tightening torque: Page 213



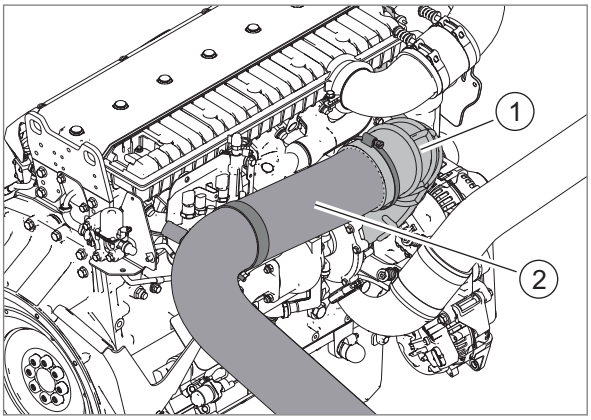
236052-001

297

Applies to type designs: 926.959 and 926.970

► Install urea dosing unit (1). Page 277

1044-004



236051-001

298

► Install air intake lines (1) and (2).
See the repair manual of the machine in question.

1044-004
163201-003

Exhaust turbo charger

Special tool

39240-002

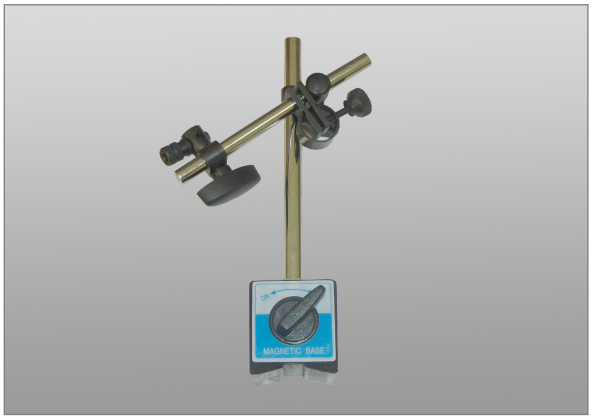
299

	Special tool (I)	Pcs.
1	Clock gauge 60 0500 530 3	1

147530-001

300

	Special tool (II)	Pcs.
1	Extension 00 1992 875 0	1



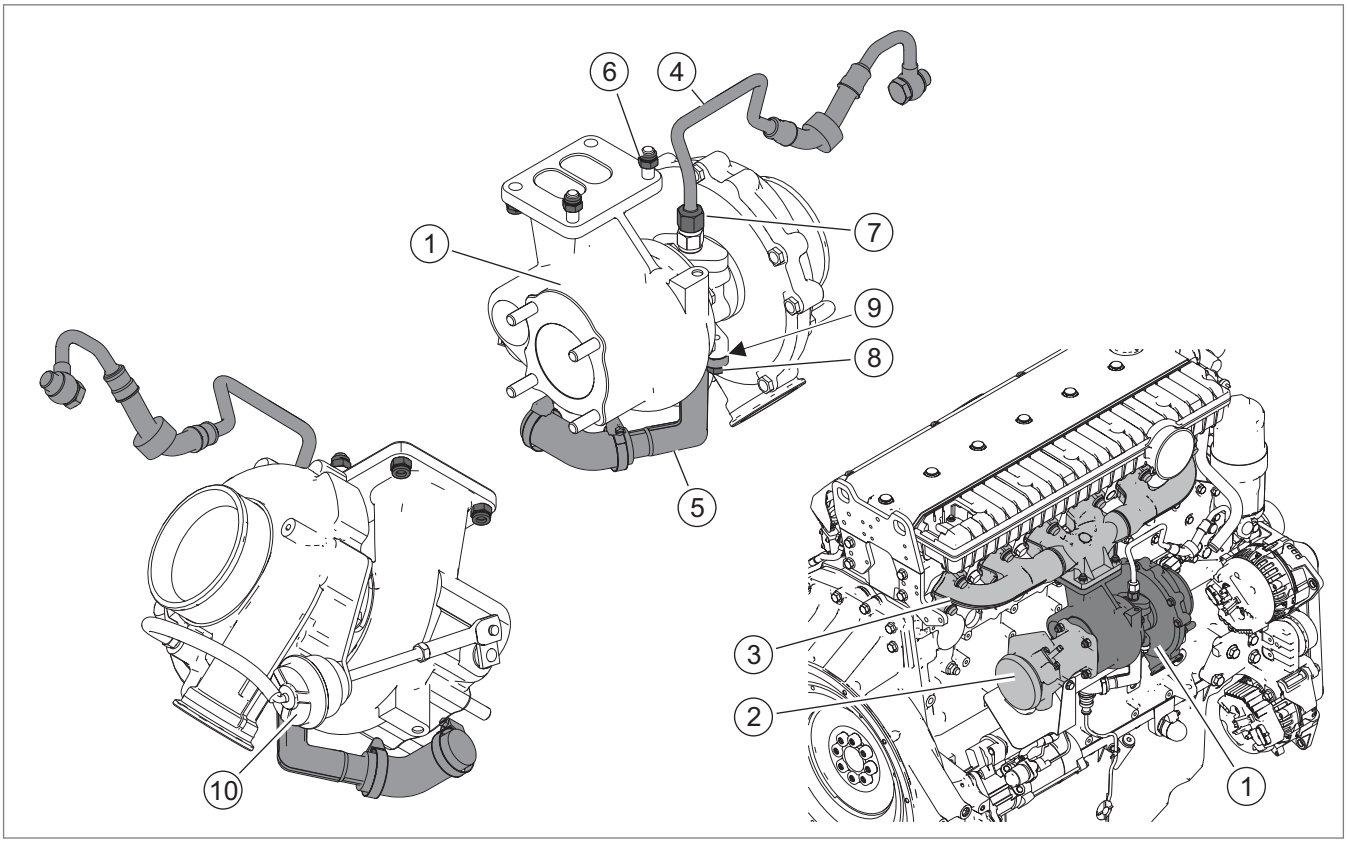
183116-001

301

	Special tool (III)	Pcs.
1	Clock gauge 60 0500 530 5	1

1044-004

Technical specifications



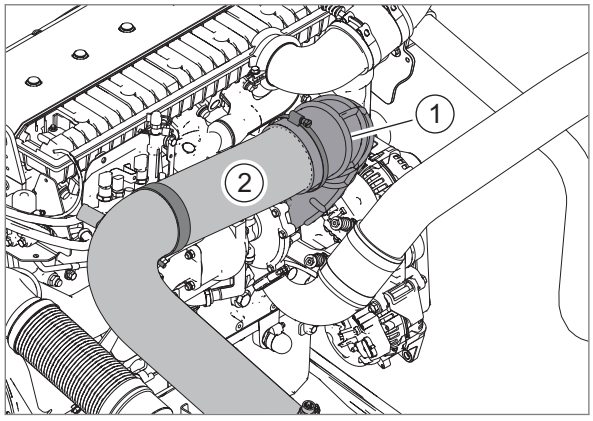
236162-001 **302**

	Value	CCN	Remark / designation	
1	20 kg		Exhaust turbo charger	
2			Flap nozzle	Page 224
3			Exhaust manifold	Page 213
4			Oil feed line	
5			Oil return line	
6	50 Nm		Turbocharger mounting nuts	
7	40 Nm		Oil pressure line union nut	
8	10 Nm		Oil return line mounting bolts	
9			Oil return line seal Installation position: The seal bead must point towards the flange of the oil return line.	
10			Timing box Test pressure: 1 bar	
a	0 to 0.1 mm		Axial play of rotor shaft	
b	0 to 0.9 mm		Radial play of rotor shaft	
Tightening torques not specified, see section on tightening torques				

1044-004

Removal

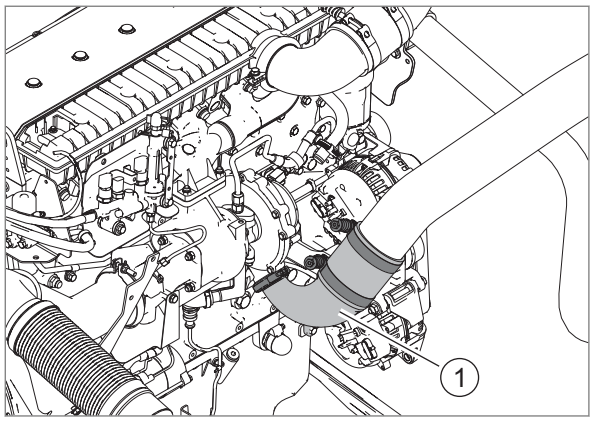
► Let the engine cool down.



236158-001

303

► Remove air intake lines (1) and (2).

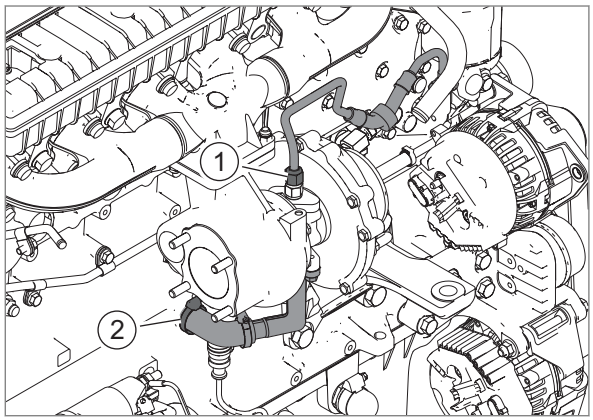


236159-001

304

► Remove the charge air line (1).

► Remove flap nozzles. Page 225
► Applies to type designs 926.959 and 926.970

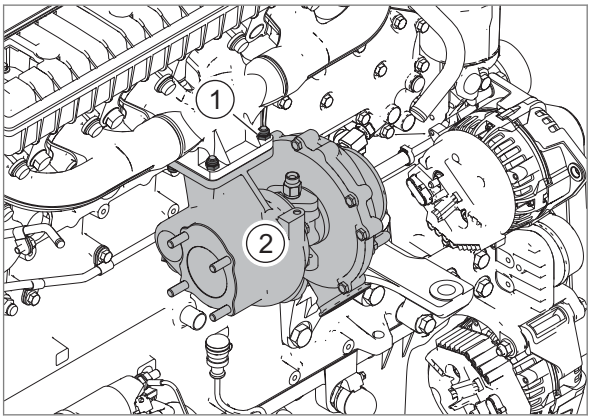


236160-001

305

► Unscrew oil pressure line at (1).
► Unscrew oil return line at (2).

1044-004



236161-001

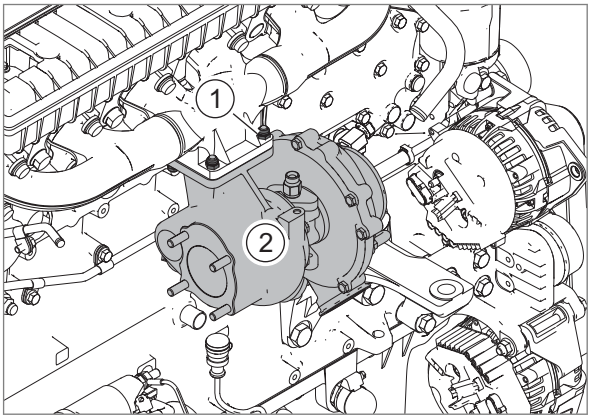
306

► Unscrew bolts (1) and remove exhaust turbo charger (2).

Installation

► Check if oil feed and return lines are soiled or damaged and replace if necessary.

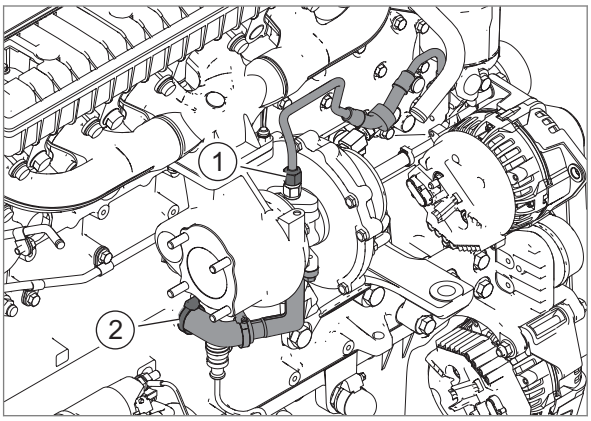
► Check the exhaust turbo charger. Page 222



236161-001

307

► Insert exhaust turbo charger (2) and bolt down with bolts (1).
Tightening torque: Page 219



236160-001

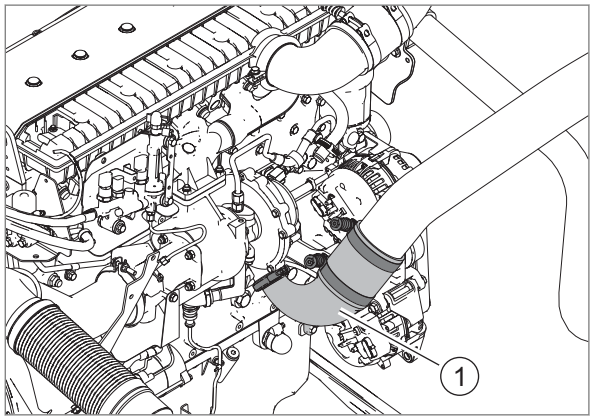
308

► Screw on the oil pressure line at (1).

► Screw on the oil return line at (2).
Tightening torques: Page 219

► Install the flap nozzle. Page 226
► Applies to type designs 926.959 and 926.970

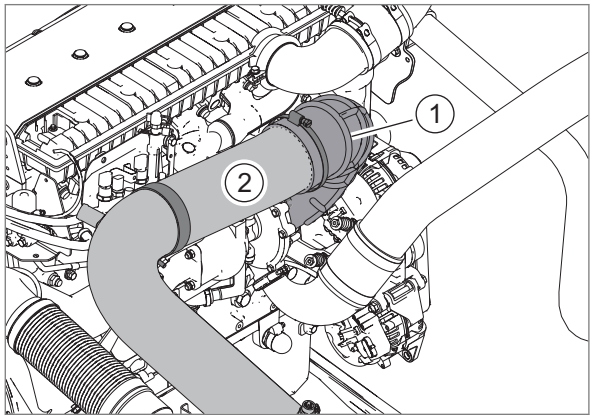
1044-004



236159-001

309

► Install the charge air line (1).
See the repair manual of the machine in question.



236158-001

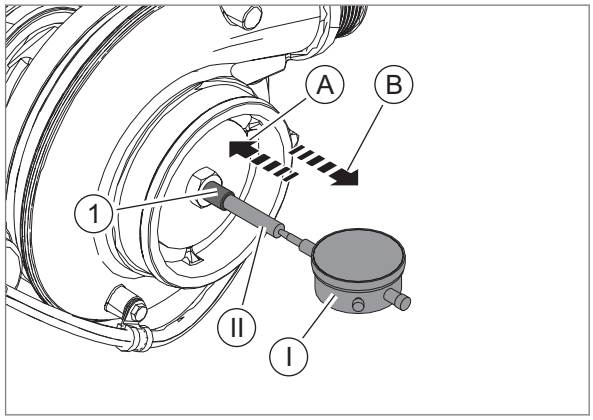
310

► Install air intake lines (1) and (2).
See the repair manual of the machine in question.

Checking

► Remove fouling deposits in the compressor housing.
  ► To do this, turn the rotor shaft back and forth on the shaft nut or the compressor wheel until the shaft is free of fouling deposits.
► Check the exhaust turbo charger compressor housing for damage.
  ► Replace a damaged exhaust turbo charger.
► Check the exhaust turbo charger compressor housing for oil deposits.
  ► If the compressor housing is only slightly wetted with oil, this is not to be considered a damage on the exhaust turbo charger.
  ► When there is oil precipitation in the compressor housing, the components below must be thoroughly checked:
  ► Check if engine venting and oil separator are damaged and if flow is provided.
  ► Check if oil return lines are damaged and if flow is provided.
► Check axial and radial play of rotor shaft as follows:

1044-004



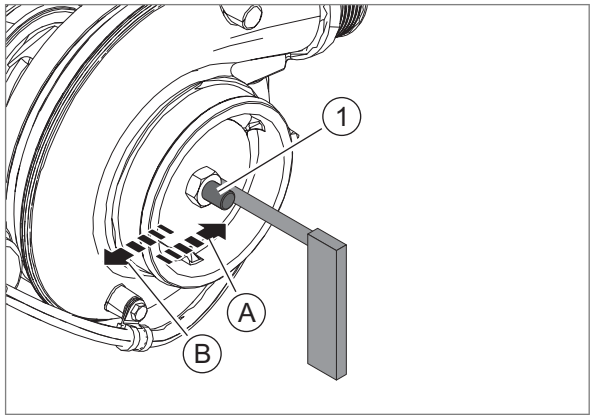
184532-001

311

Checking the axial play

- ► Push rotor shaft (1) in direction (A) up to the stop.
- ► Position special tools (I) and (II) at the rotor shaft.
- ► Pull and hold rotor shaft (1) in direction (B) up to the stop.
- ► Rear the measured value on special tool (I).

This measured value equals the axial play (a). Page 219



184533-001

312

Checking the radial play

The two measurements below must be carried out at the same spot of the compressor housing and on the same blade of the compressor wheel.

- ► Push rotor shaft (1) in direction (A) up to the stop.
- ► Determine the smallest play with a feeler gauge.
- ► Pull rotor shaft (1) in the opposite direction (B) up to the stop.
- ► Determine the biggest play with a feeler gauge.

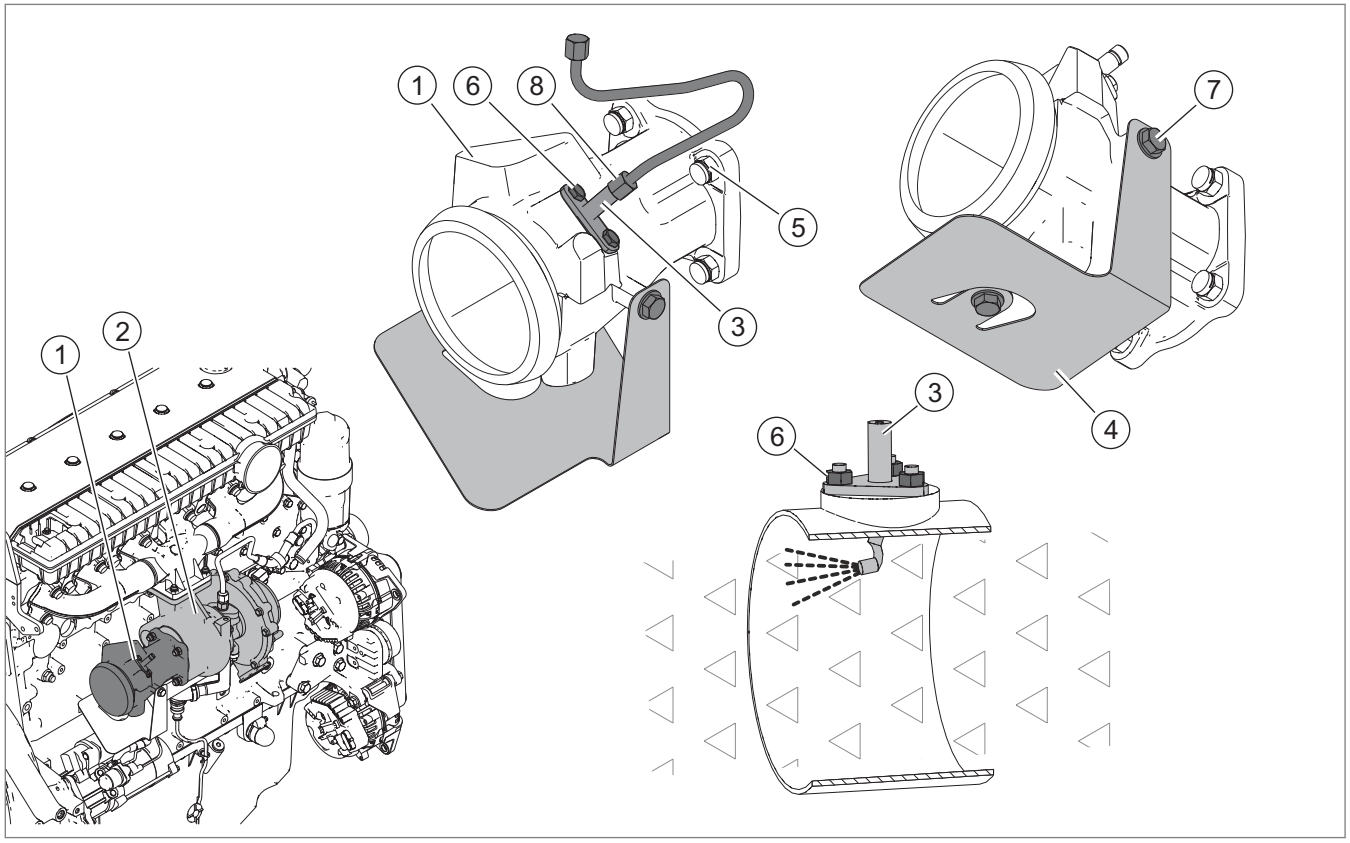
The difference of these two measured values is the radial play (b). Page 219

1044-004
163186-002

Flap nozzle

Applies to:
Type design 926.959
Type design 926.970

Technical specifications



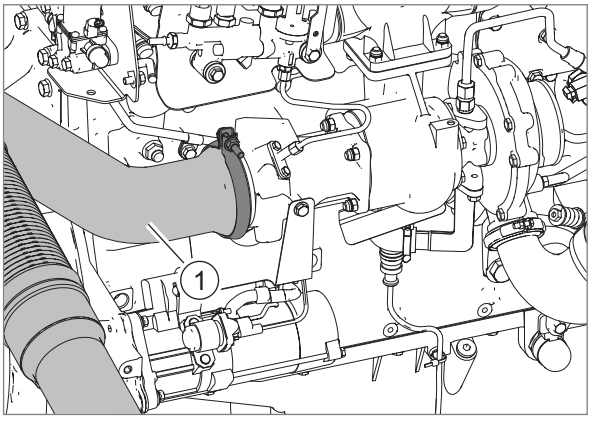
236088-002 **313**

	Value	CCN	Remark / designation	
1			Flap nozzle	
2			Exhaust turbo charger	Page 218
3			Urea injector – Install the urea injector with the nozzle opening in flow direction.	
4			Guard	
5	50 Nm		Flap nozzle mounting bolts	
6	10 Nm		Urea injector mounting bolts	
7	25 Nm		Guard mounting bolts	
8	14 Nm		Urea injection line	
Tightening torques not specified, see section on tightening torques				

1044-004

Removal

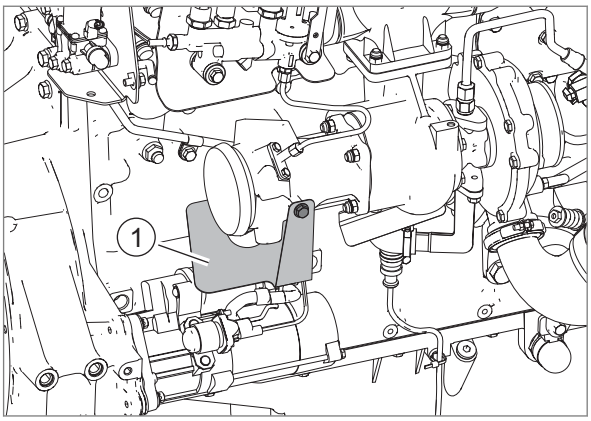
► Let the engine cool down.



236084-001

314

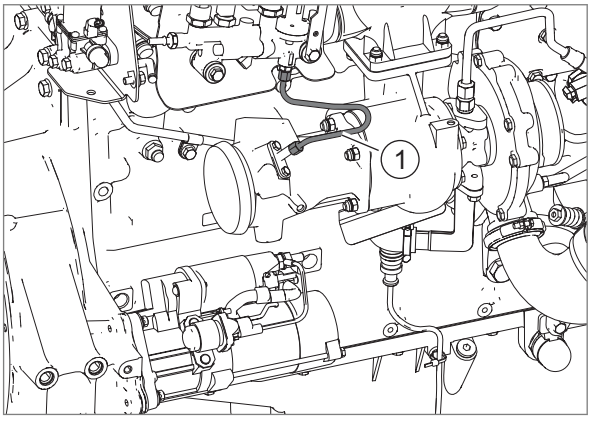
► Remove exhaust gas pipe (1).



236085-001

315

► Remove guard (1).

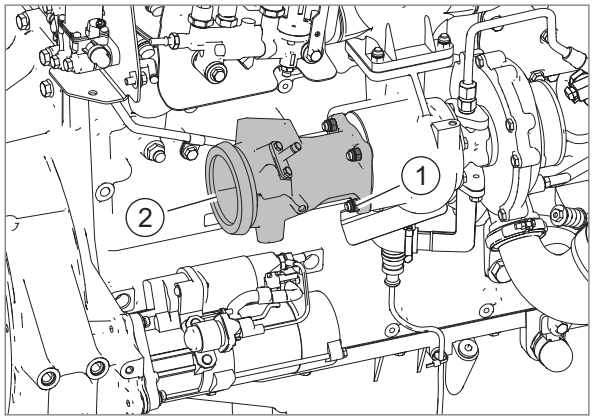


236086-001

316

► Remove the urea injection line (1).

1044-004

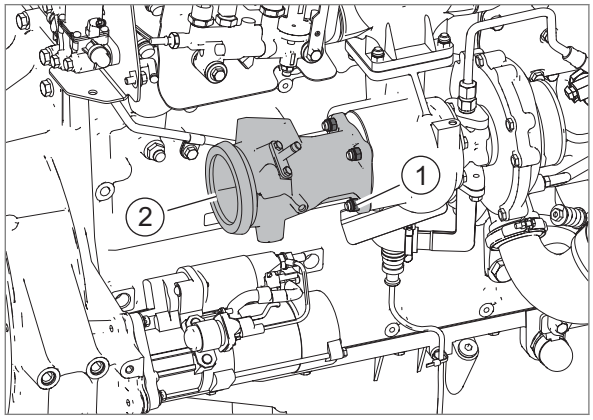


236087-001

317

- ► Unscrew bolts (1).
- ► Remove flap nozzle (2).

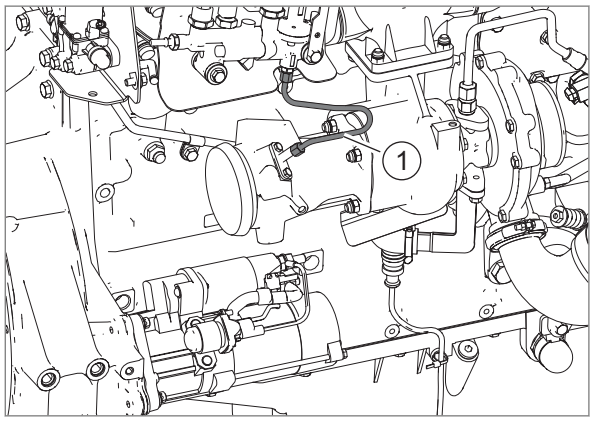
Installation



236087-001

318

- ► Insert flap nozzle (2).
- ► Screw in bolts (1).
  Tightening torque: Page 224

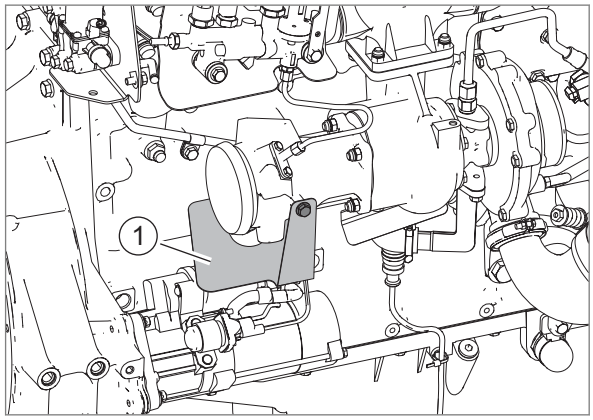


236086-001

319

- ► Install urea injection line (1).
  Tightening torque: Page 224

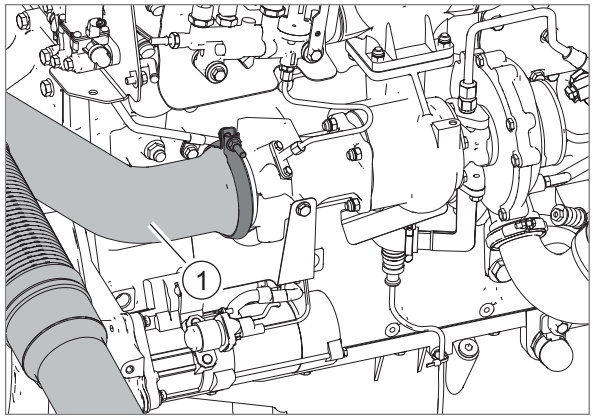
1044-004



236085-001

320

► Fit guard (1).
Tightening torque: Page 224



236084-001

321

► Install the exhaust pipe (1).
See the repair manual of the machine in question.

1044-004
161214-003

Catalyst

Applies to:

Type design 942.993

Type design 458.992

Type design 926.959

Type design 926.970

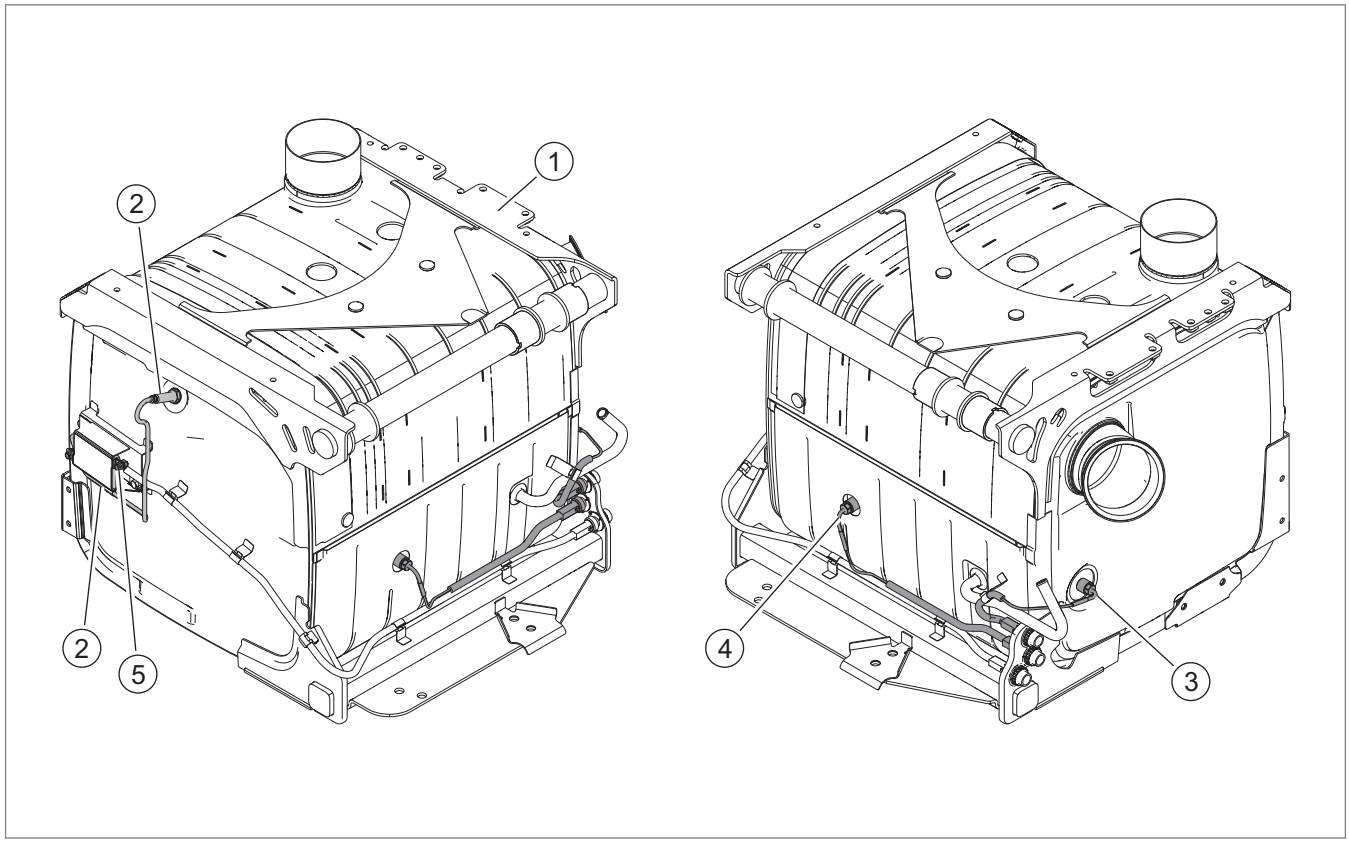
Work preparation

Utilities:

- ► Assembly pastes:
  Anti-Seize - 00 0136 571 0

1044-004

Technical specifications



186084-001 **322**

	Value	CCN	Remark / designation	
1	150 kg		Catalyst Observe the installation instructions in the repair manual of the machine in question.	
2	50 Nm	A113-MB (B350)	NOx sensor (with module) – Insert sensor with Anti-Seize.	
3	45 Nm	B115-MB (B351)	Exhaust temperature sensor upstream of catalyst – Insert sensor with Anti-Seize.	
4	45 Nm	B116-MB (B352)	Exhaust temperature sensor downstream of catalyst – Insert sensor with Anti-Seize.	
5	12 Nm		NOx sensor module mounting bolts	
Tightening torques not specified, see section on tightening torques				

Installation instructions

Removal of sensors:

– Let the exhaust system cool down.
– Remove the NOx sensor unit in the following order:
  - Unscrew the NOx sensor module.

1044-004

- Unscrew the NOx sensor.

– Remove the temperature sensors in the following order:
  - Disconnect the connectors of wiring looms.
  - Unscrew the temperature sensors.

Installation of sensors:

– Install the NOx sensor unit in the following order:
  - Screw on the NOx sensor.
  - Screw on the NOx sensor module.
– Install the temperature sensors in the following order:
  - Screw on the temperature sensors.
  - Connect the connectors of wiring looms.

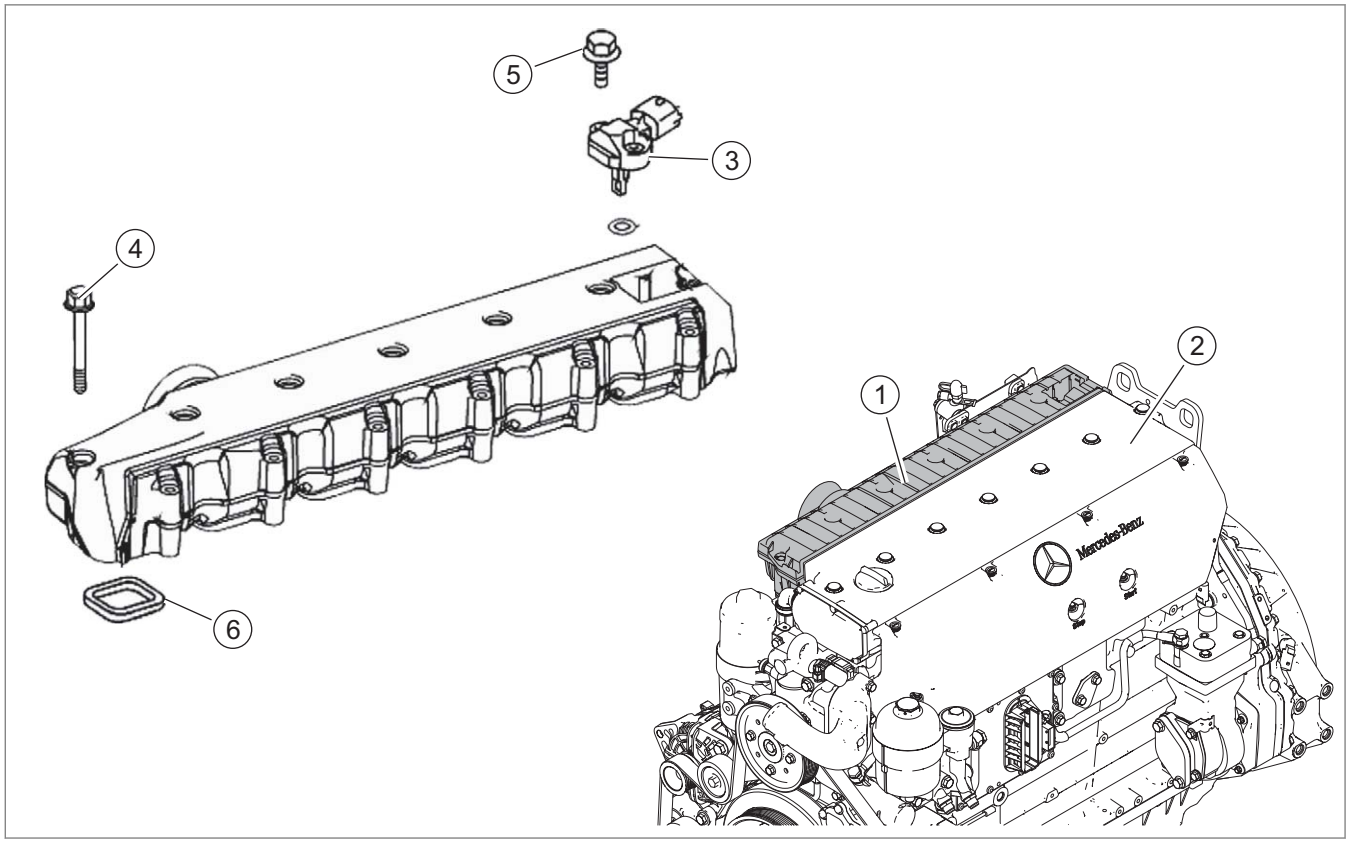
1044-004

0145 Air intake

1044-004
163206-001

Intake housing

Technical specifications



236197-001 **323**

	Value	CCN	Remark / designation	
1	3.5 kg		Intake housing	
2			Valve cover	Page 118
3		B111-MB	Combined charge air temperature and charge air pressure sensor	
4	25 Nm		Intake housing mounting bolts	
5	10 Nm		Combines sensor mounting bolts	
6			Seals – Replace the seals during installation – Clean the sealing faces thoroughly.	Page 19
Tightening torques not specified, see section on tightening torques				

Installation instructions

Removal:

– Remove the charge air line.
– Remove cylinder head valve cover. Page 119

1044-004

Installation:

– Clean the sealing faces. Page 19
– Install the cylinder head valve cover. Page 119
– Install the charge air line.
  See the repair manual of the machine in question.

1044-004

0150 Engine attachment parts

1044-004
163217-003

Electric starting motor

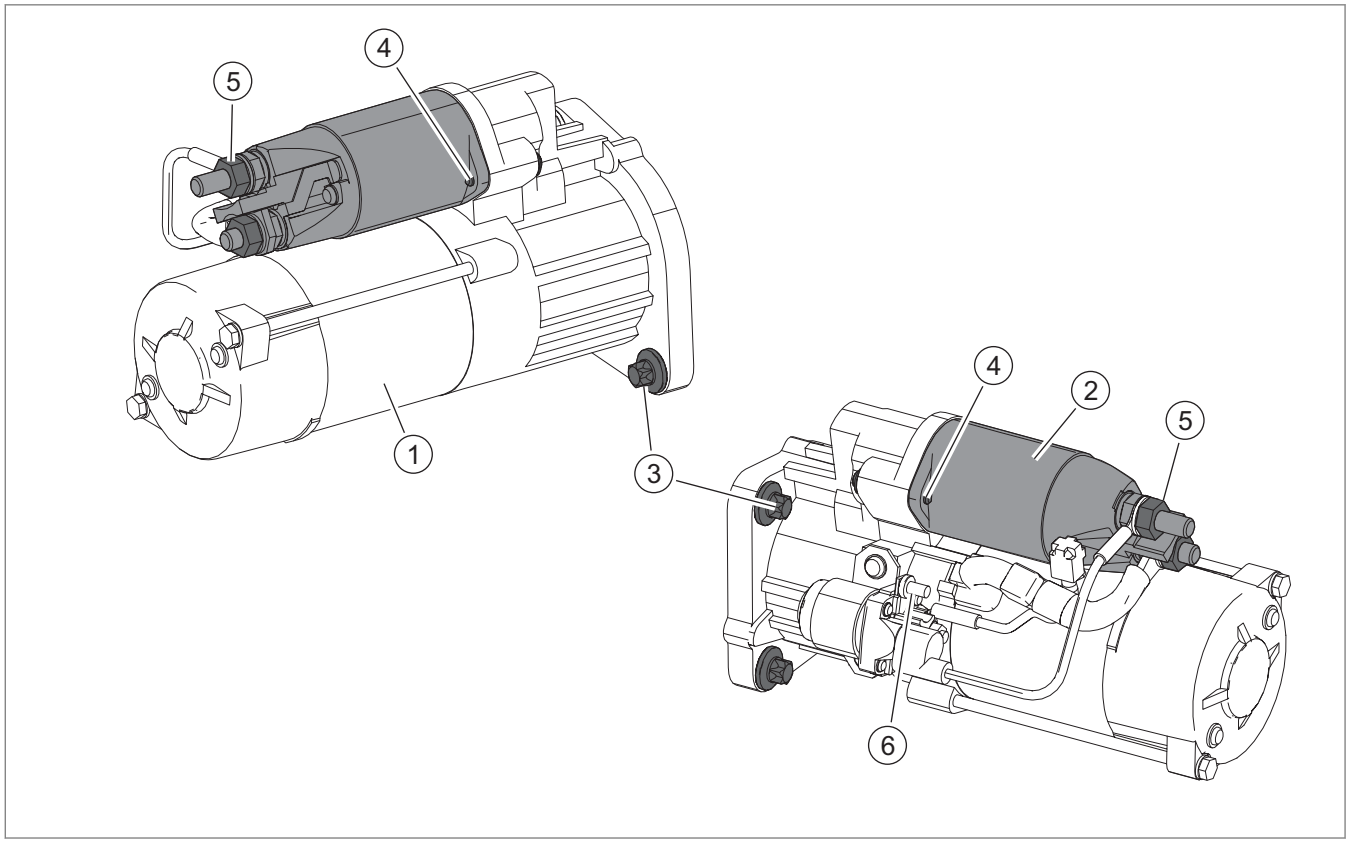
Work preparation

Utilities:

- ► Sealing agents and adhesives:
  LOCTITE 243 - 60 0571 153 1

1044-004

Technical specifications



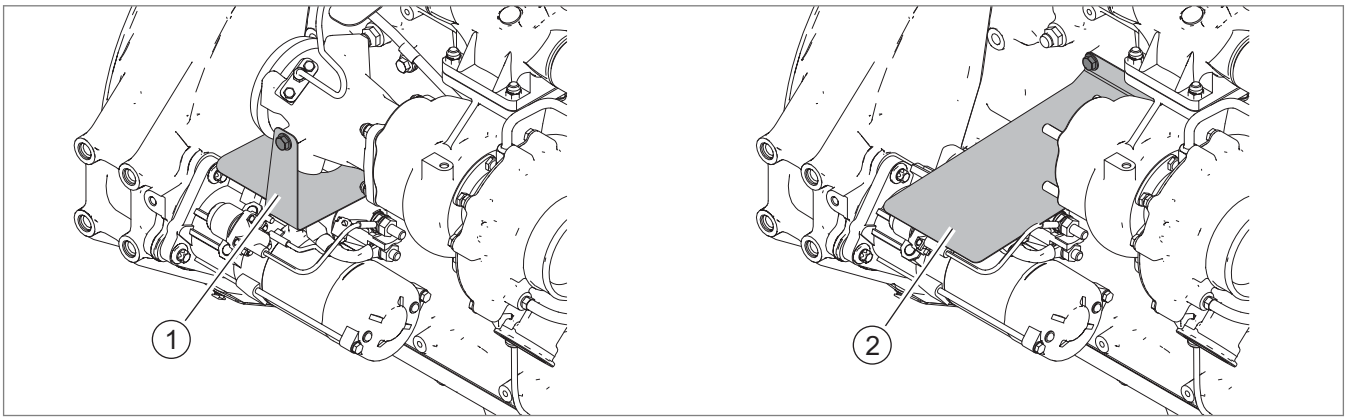
236257-001 **324**

	Value	CCN	Remark / designation	
1	14.5 kg	M1-MB (M021)	Electric starting motor	
2			Solenoid switch	
3	50 Nm		Mounting bolts	
4	6.5 Nm		Solenoid switch mounting bolts Insert bolts with LOCTITE 243.	
5	30 Nm		Nut of terminal 30	
6	2.5 Nm		Nut of terminal 50	
Tightening torques not specified, see section on tightening torques				

Removal

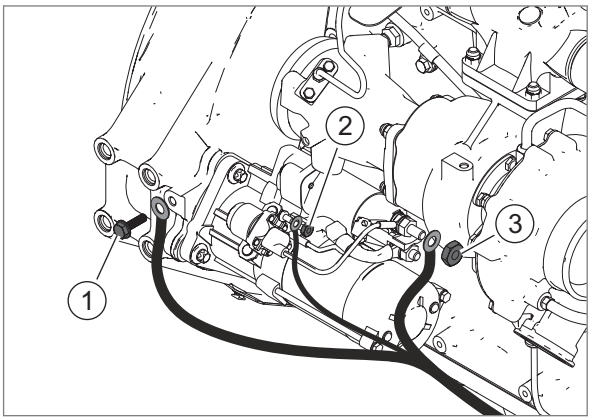
- ► Let the engine cool down.
- ► Disconnect the battery.
  See the repair manual of the machine in question.

1044-004



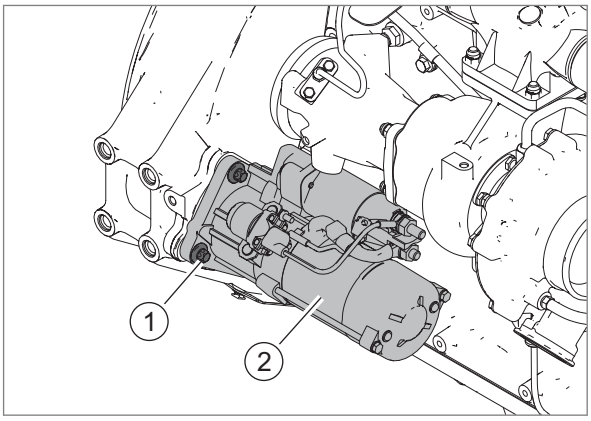
236254-001 **325**

► Remove guard (1).
Applies to type designs: 926.959 and 926.970
► Remove guard (2).
Applies to type designs: 906.991 and 926.929



236255-001 **326**

► Unscrew cables in the order of (1) to (3).

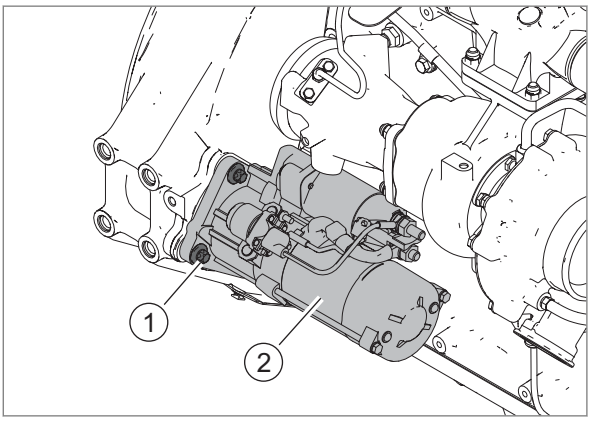


236256-001 **327**

► Unscrew bolts (1).
► Remove the electric starting motor (2).

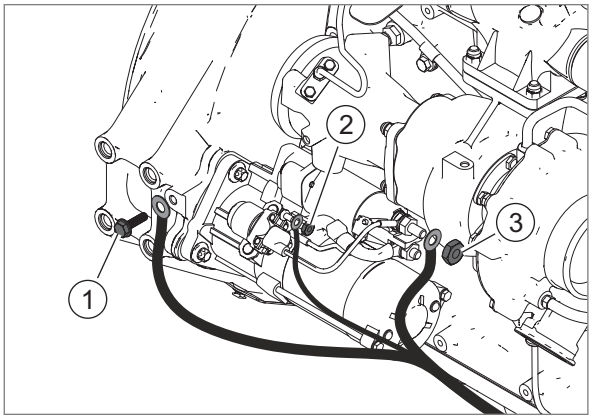
1044-004

Installation



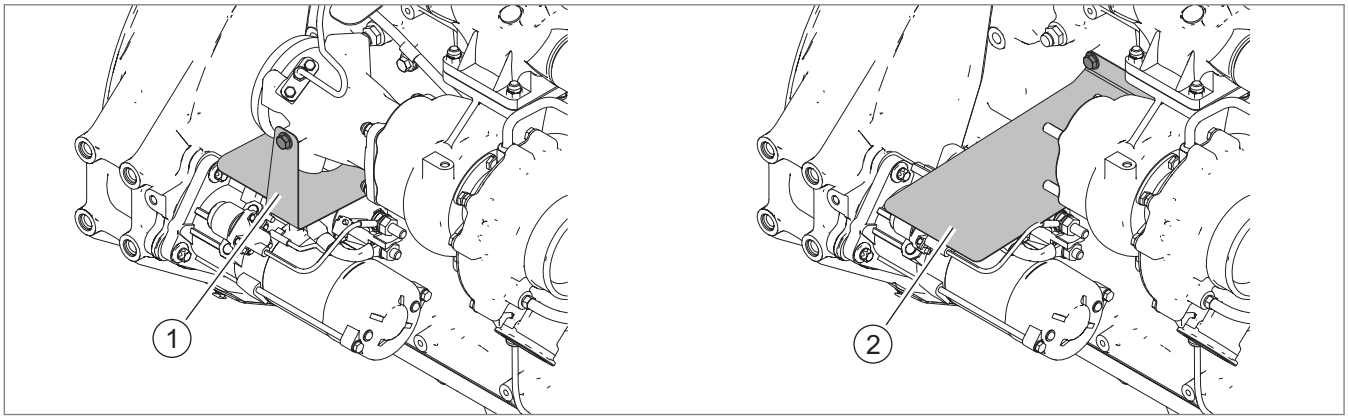
236256-001 **328**

► Insert electric starting motor (2) and bolt down with bolts (1).
Tightening torque: Page 236



236255-001 **329**

► Screw on cables in the order of (1) to (3).



236254-001 **330**

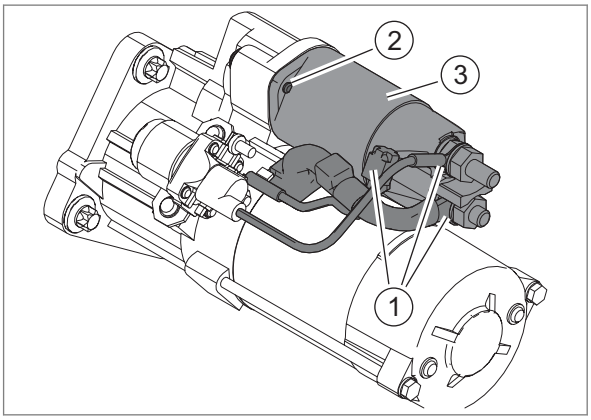
► Fit guard (1).
Applies to type designs: 926.959 and 926.970
► Fit guard (2).
Applies to type designs: 906.991 and 926.929

► Connect the battery.
See the repair manual of the machine in question.

Removing the solenoid switch

► Remove the electric starting motor. Page 236

1044-004

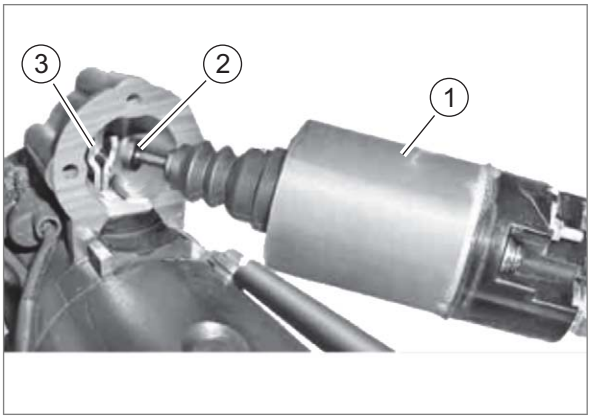


236264-001

331

► Unscrew cables (1).
► Unscrew bolts (2).
► Carefully remove solenoid switch (3).

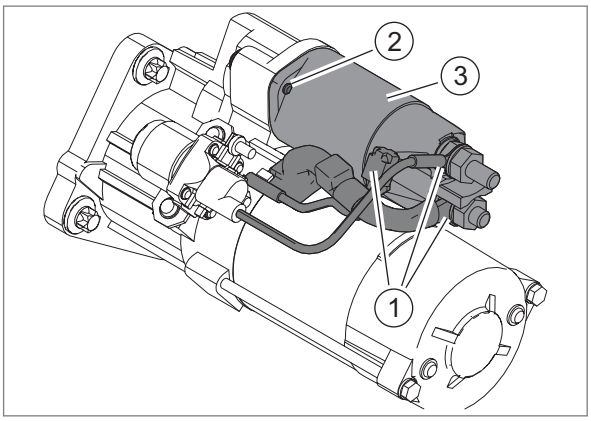
Installing the solenoid switch



185369-001

332

► Insert solenoid switch (1).
  ► Ensure that coupler (2) is inserted into release fork (3).



236264-001

333

► Bolt down solenoid switch (3) with bolts (2). Tightening torque: Page 236
► Screw on cables (1).

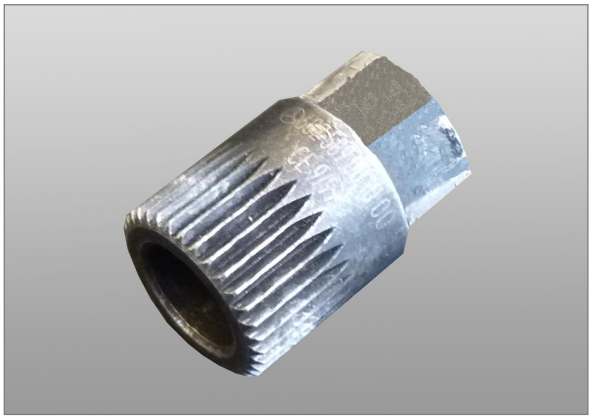
► Install the electric starting motor. Page 238

1044-004
163238-003

Alternator

Applies to:
Type design 906.991
Type design 926.929

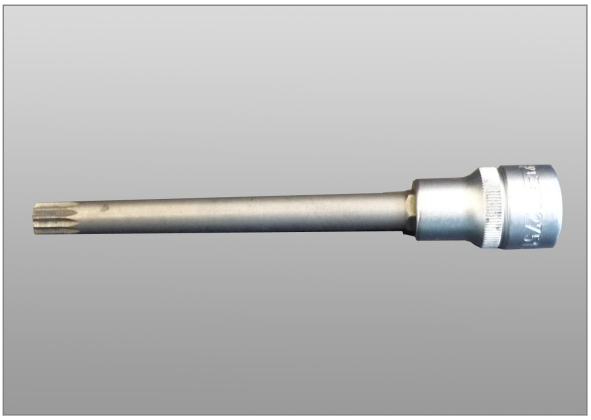
Special tool



188026-001

334

	Special tool (I)	Pcs.
1	Socket wrench 00 1995 457 0	1



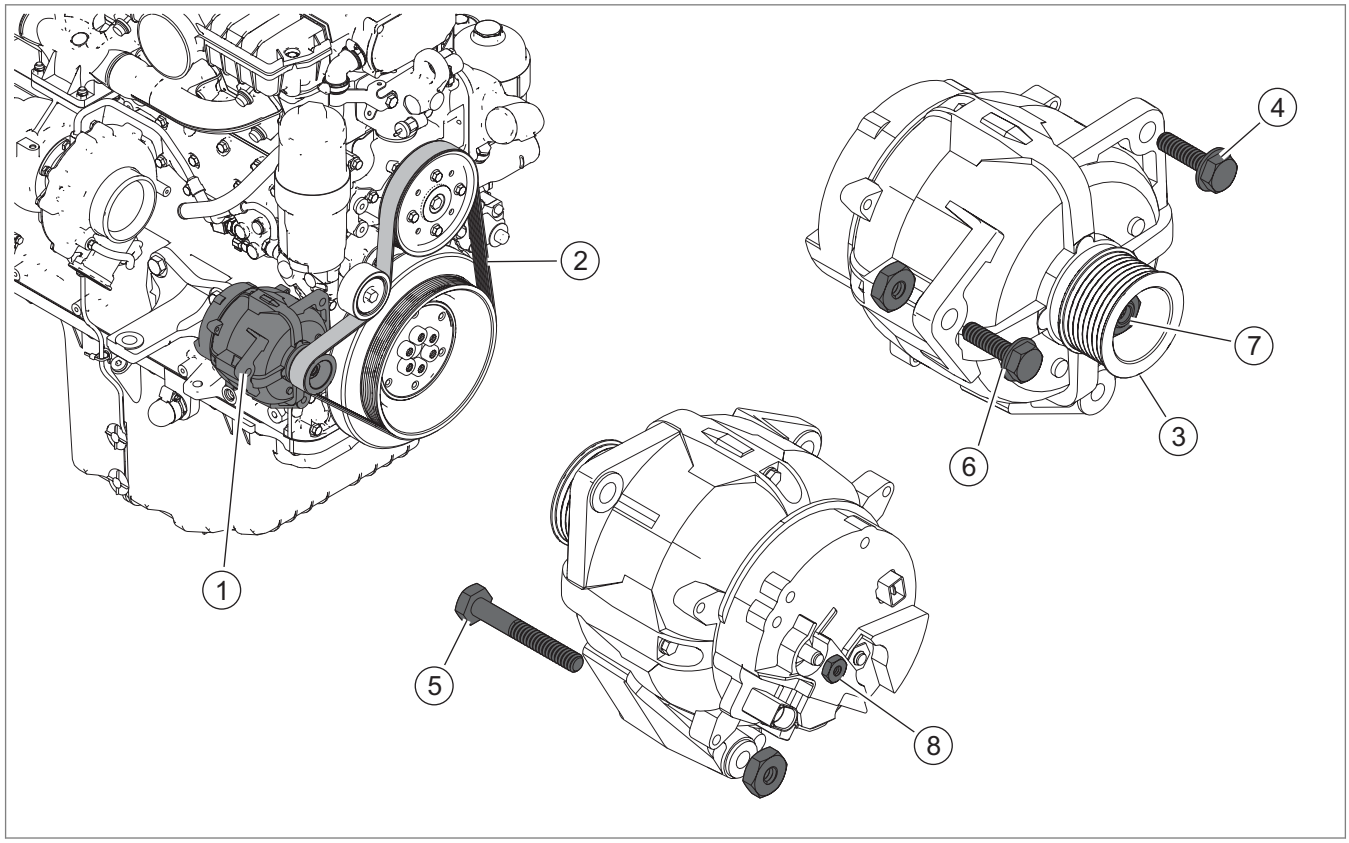
188023-001

335

	Special tool (II)	Pcs.
1	Socket 00 1995 456 0	1

1044-004

Technical specifications



236301-001 **336**

	Value	CCN	Remark / designation	
1	7.5 kg	G2-MB (G002)	Alternator 12 V	
2			Alternator drive belt See the Operator's Manual of the machine in question.	
3			Pulley	
4	80 Nm		Mounting bolt	
5	50 Nm		Bolt on pivot point	
6	12 Nm		Earth line screw	
7	70 Nm		Pulley nut	
8	15 Nm		Terminal B2 screw	
Tightening torques not specified, see section on tightening torques				

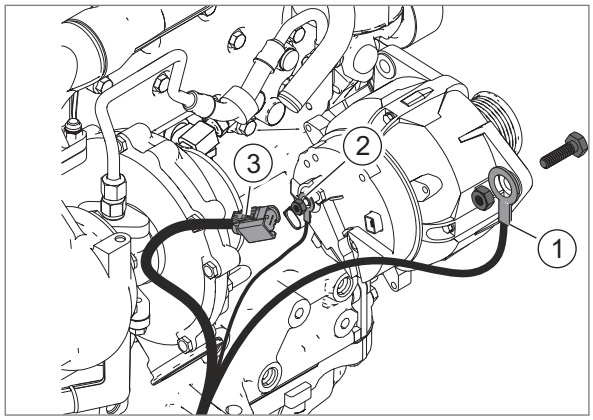
Removal

- ► Let the engine cool down.
- ► Disconnect the battery.
  See the repair manual of the machine in question.
- ► Remove the fan drive belt.

1044-004

See the Operator's Manual of the machine in question.

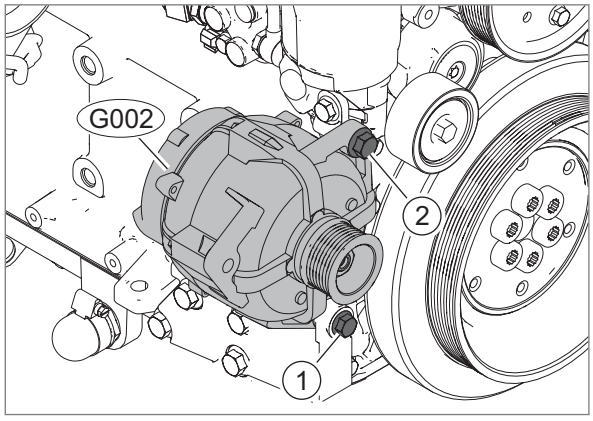
► Remove the alternator drive belt.
See the Operator's Manual of the machine in question.



236298-001

337

► Unscrew earth cable (1).
► Disconnect cable (2).
► Disconnect connector (3).

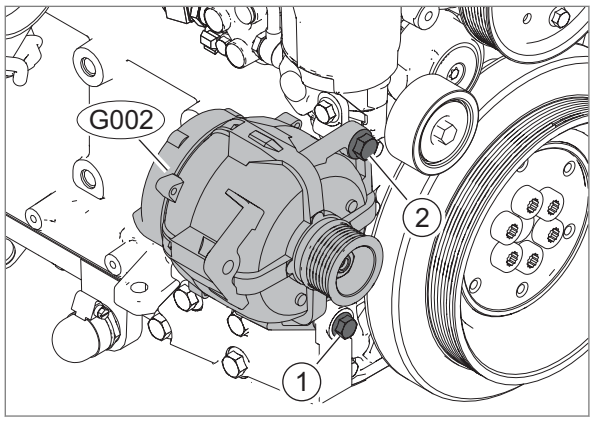


236300-001

338

► Unscrew bolt (1).
► Unscrew bolt (2) and remove alternator (G002).

Installation

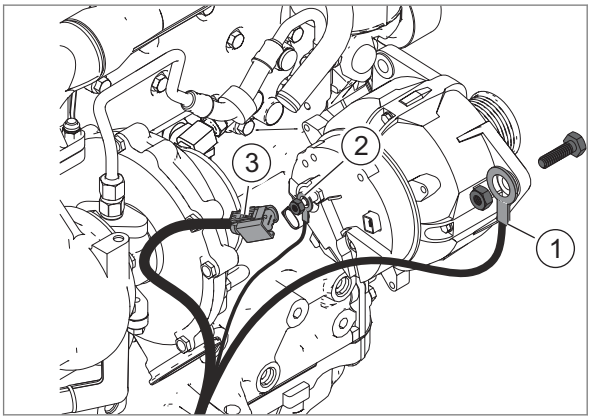


236300-001

339

► Insert alternator (G002) and bolt down with bolt (2).
► Screw on the bolt (1).
Tightening torques: Page 241

1044-004



236298-001

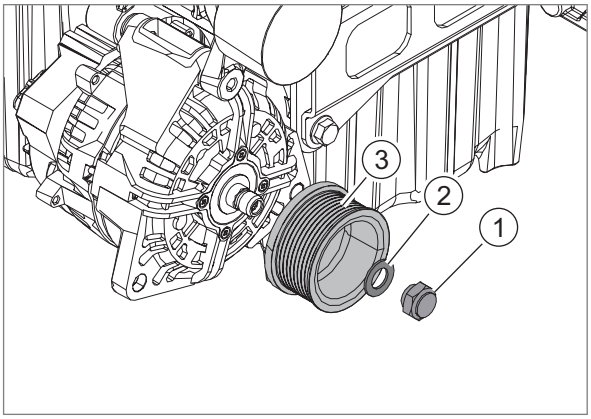
340

- ► Connect connector (3).
- ► Screw on cable (2).
- ► Screw on earth cable (1).
  Tightening torques: Page 241

- ► Install the alternator drive belt.
  See the Operator's Manual of the machine in question.
- ► Install the fan drive belt.
  See the Operator's Manual of the machine in question.
- ► Connect the battery.
  See the repair manual of the machine in question.

Removing the pulley

- ► Let the engine cool down.
- ► Remove the alternator drive belt.
  See the Operator's Manual of the machine in question.



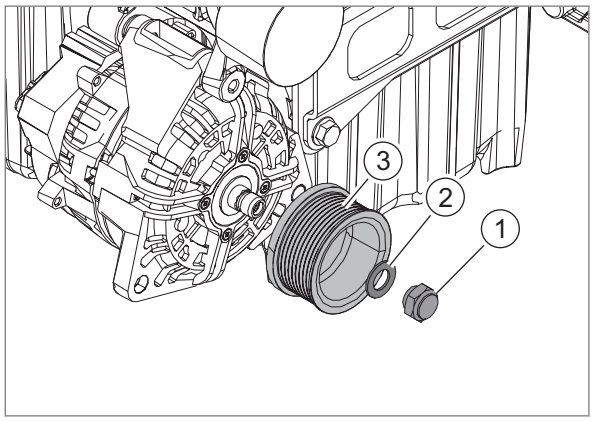
185450-001

341

Use special tools (I) and (II). Page 240

- ► Unscrew bolt (1) and back up alternator shaft in this process.
- ► Remove washer (2).
- ► Remove pulley (3).

1044-004



185450-001

342

Installing the pulley

Use special tools (I) and (II). Page 240

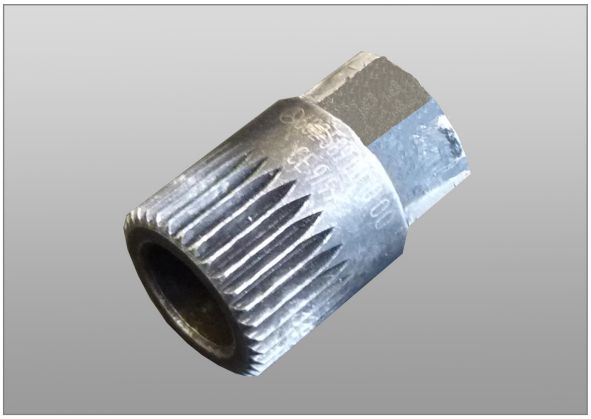
- ► Slide on pulley (3).
- ► Slide on washer (2).
- ► Screw on bolt (1) and back up alternator shaft in this process.
  Tightening torque: Page 241

- ► Install the alternator drive belt.
  See the Operator's Manual of the machine in question.

Alternator

Applies to:
Type design 926.959
Type design 926.970

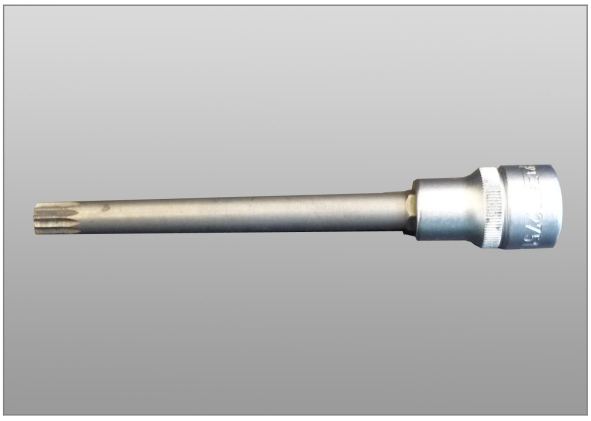
Special tool



188026-001

343

	Special tool (I)	Pcs.
1	Socket wrench 00 1995 457 0	1



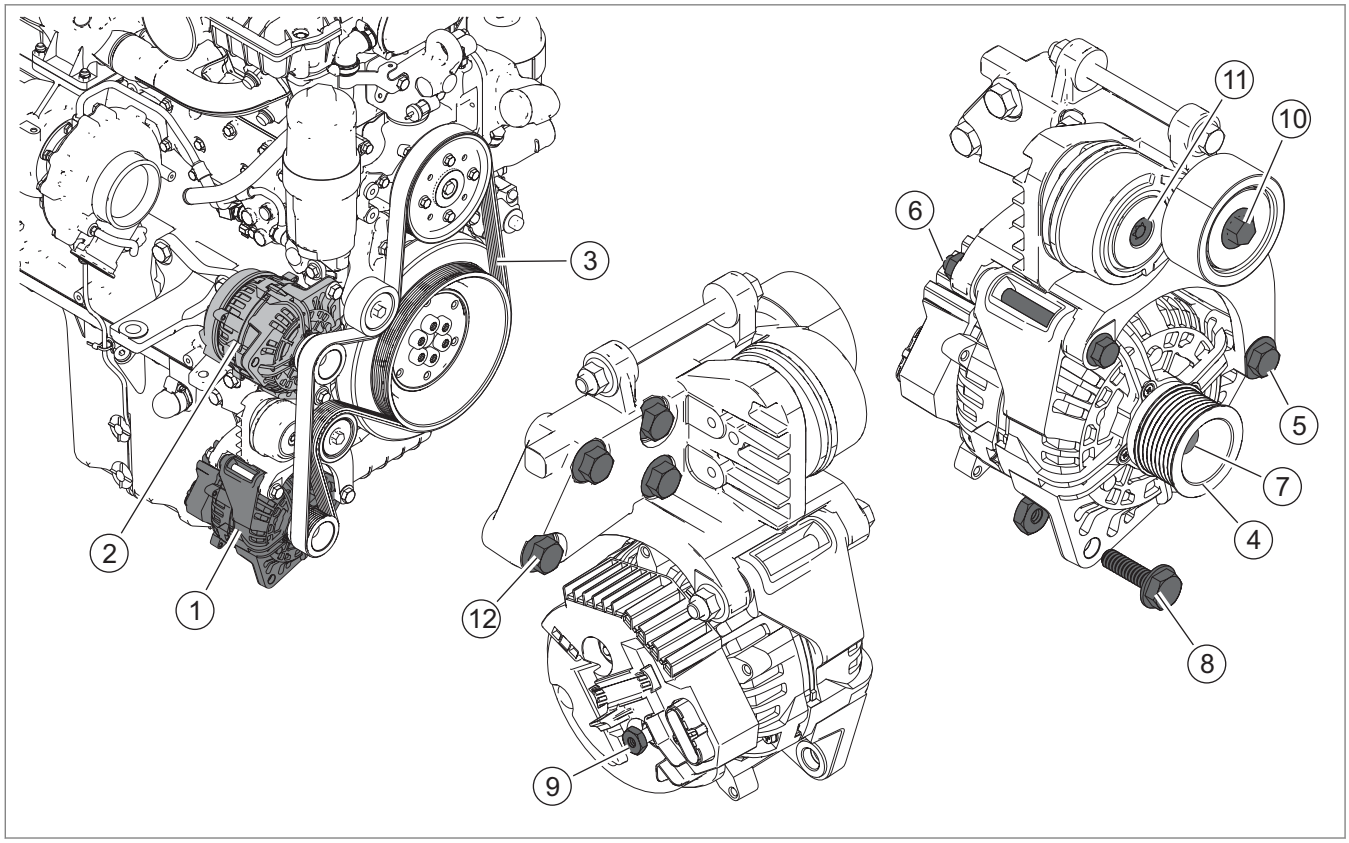
188023-001

344

	Special tool (II)	Pcs.
1	Socket 00 1995 456 0	1

1044-004

Technical specifications



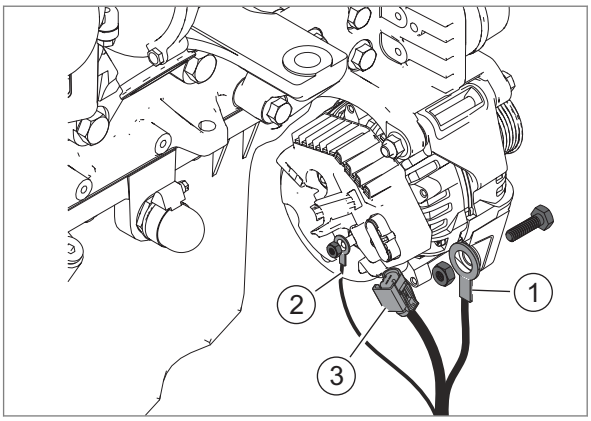
236326-001 **345**

	Value	CCN	Remark / designation	
1	7.5 kg	G2-MB (G002)	Alternator 12 V	
2	7.5 kg	G003	Alternator 24 V	
3			Alternator drive belt See the Operator's Manual of the machine in question.	
4			Pulley	
5	80 Nm		Mounting bolt	
6	50 Nm		Bolt on pivot point	
7	70 Nm		Pulley nut	
8	12 Nm		Bracket and earth line bolt	
9	15 Nm		Terminal B2 screw	
10	50 Nm		Guide roller bolt	
11	50 Nm		Tensioning element bolt	
12	50 Nm		Bracket mounting bolts	
Tightening torques not specified, see section on tightening torques				

1044-004

Removal

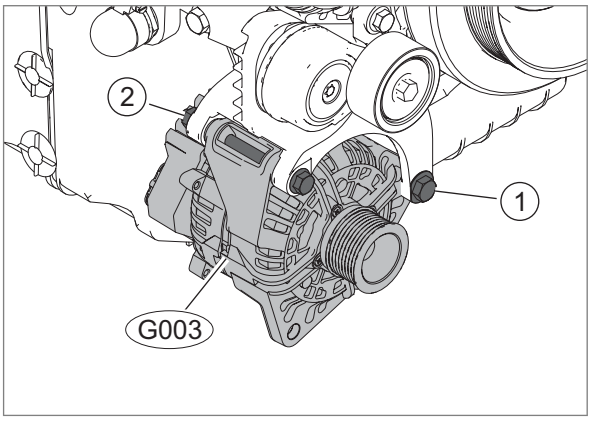
- ► Let the engine cool down.
- ► Disconnect the battery.
  See the repair manual of the machine in question.
- ► Remove the fan drive belt.
  See the Operator's Manual of the machine in question.
- ► Remove the alternator drive belt.
  See the Operator's Manual of the machine in question.



236324-001

346

- ► Unscrew earth cable (1).
- ► Disconnect cable (2).
- ► Disconnect connector (3).

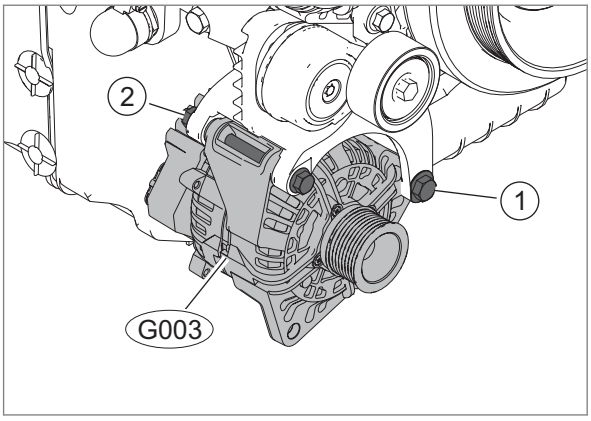


236325-001

347

- ► Unscrew bolt (1).
- ► Unscrew bolt (2) and remove alternator (G003).

Installation

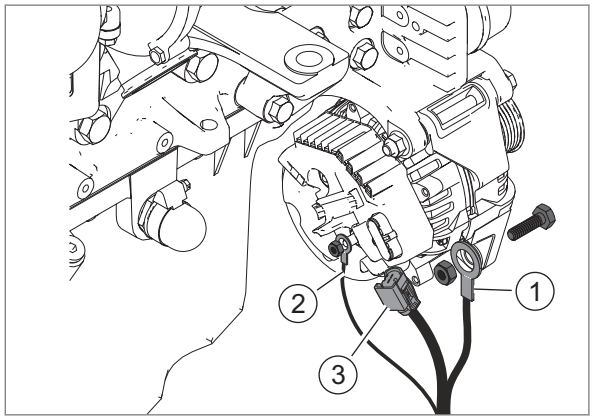


236325-001

348

- ► Insert alternator (G003) and bolt down with bolt (2).
- ► Screw on the bolt (1).
  Tightening torques: Page 246

1044-004



236324-001

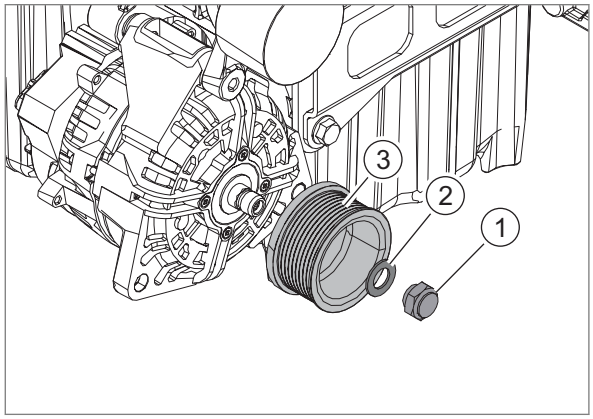
349

- ► Connect connector (3).
- ► Screw on cable (2).
- ► Screw on earth cable (1).
  Tightening torques: Page 246

- ► Install the alternator drive belt.
  See the Operator's Manual of the machine in question.
- ► Install the fan drive belt.
  See the Operator's Manual of the machine in question.
- ► Connect the battery.
  See the repair manual of the machine in question.

Removing the pulley

- ► Let the engine cool down.
- ► Remove the alternator drive belt.
  See the Operator's Manual of the machine in question.



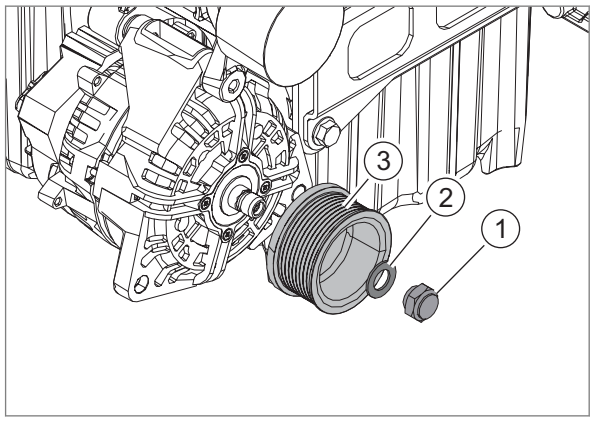
185450-001

350

Use special tools (I) and (II). Page 245

- ► Unscrew bolt (1) and back up alternator shaft in this process.
- ► Remove washer (2).
- ► Remove pulley (3).

1044-004



185450-001

351

Installing the pulley

Use special tools (I) and (II). Page 245

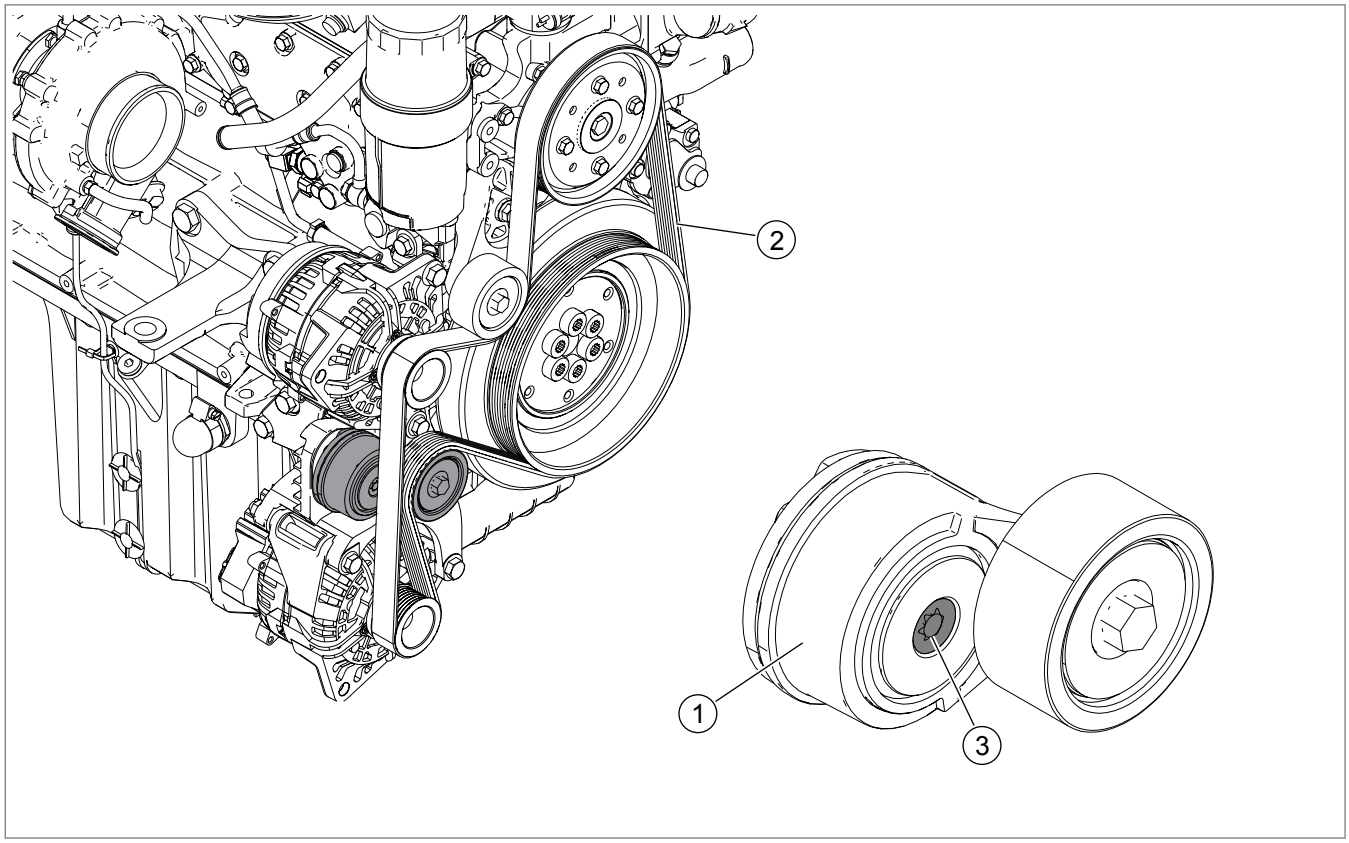
- ► Slide on pulley (3).
- ► Slide on washer (2).
- ► Screw on bolt (1) and back up alternator shaft in this process.
  Tightening torque: Page 246

- ► Install the alternator drive belt.
  See the Operator's Manual of the machine in question.

1044-004
172933-001

Alternator drive belt tensioner

Technical specifications



261032-001 **352**

	Value	CCN	Remark / designation	
1			Belt tensioner	
2			Alternator drive belt	
3	50 Nm		Tensioning element bolt	
Tightening torques not specified, see section on tightening torques				

Installation instructions

Removing:

– Remove the alternator drive belt.
  See the Operator's Manual of the machine in question.

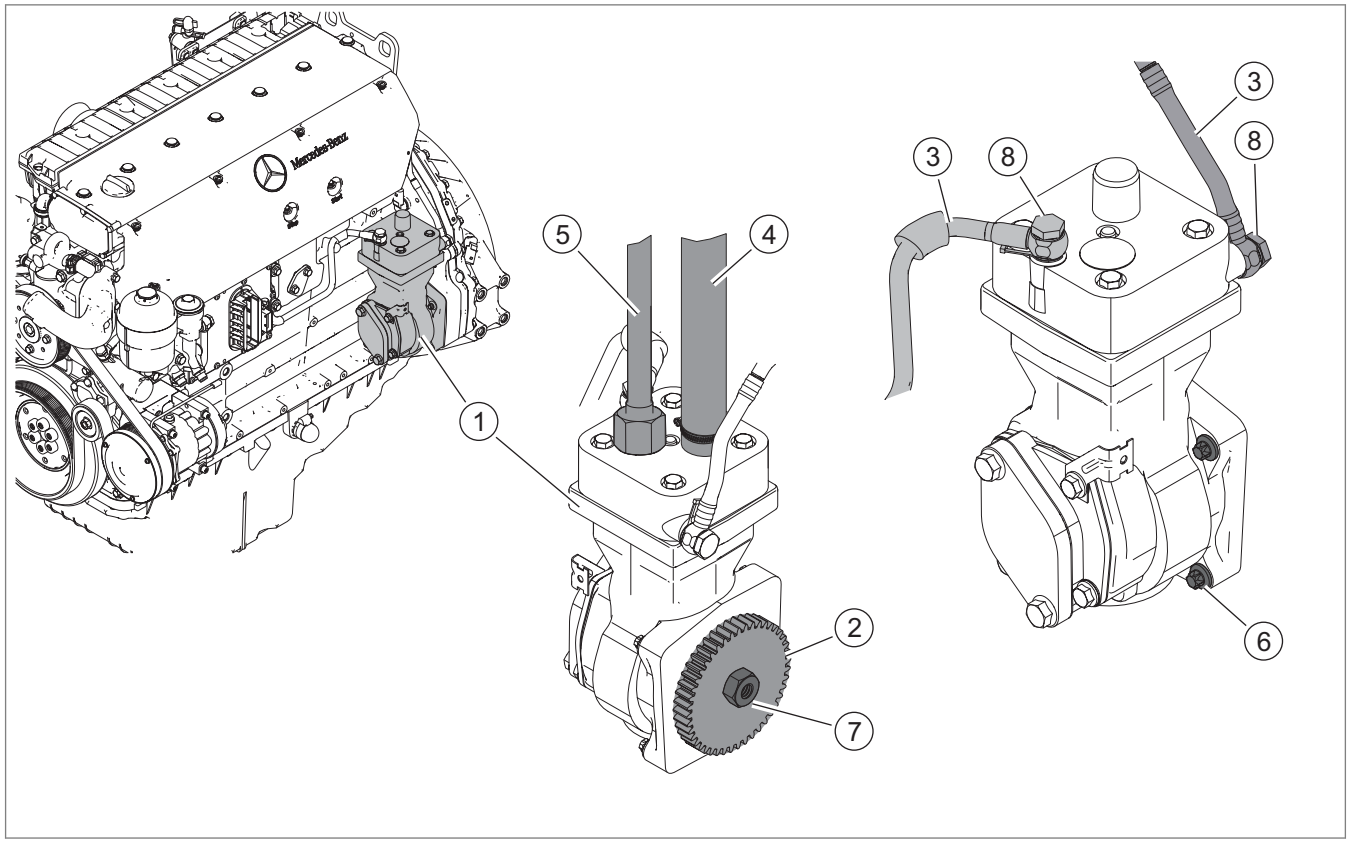
Installing:

– Install the alternator drive belt.
  See the Operator's Manual of the machine in question.

1044-004
163256-003

Air compressor

Technical specifications



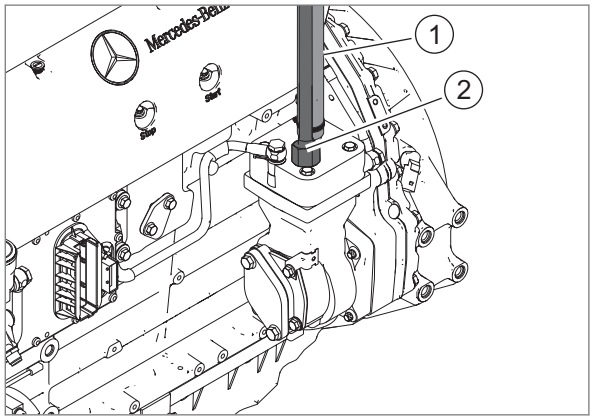
236372-001 **353**

	Value	CCN	Remark / designation	
1			Air compressor	
2			Drive gear	
3			Coolant lines	
4			Air intake line	
5	90 Nm		Compressed air line	
6	50 Nm		Compressor mounting bolts	
7	270 Nm		Drive wheel nut	
8	40 Nm		Coolant line hollow screw	
Tightening torques not specified, see "Introduction / Tightening torques" chapter				

Removal

► Drain coolant. Page 198

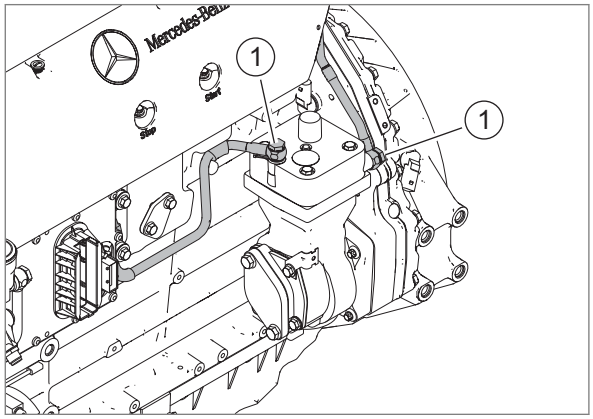
1044-004



236373-001

354

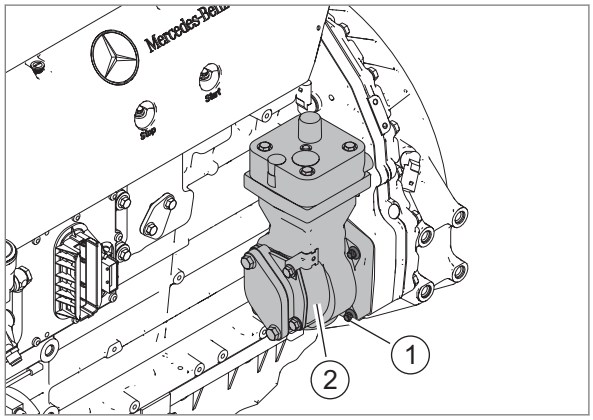
► Unscrew the air intake line (1).
► Unscrew the compressed air line (2).



236374-001

355

► Unscrew the coolant lines at (1).



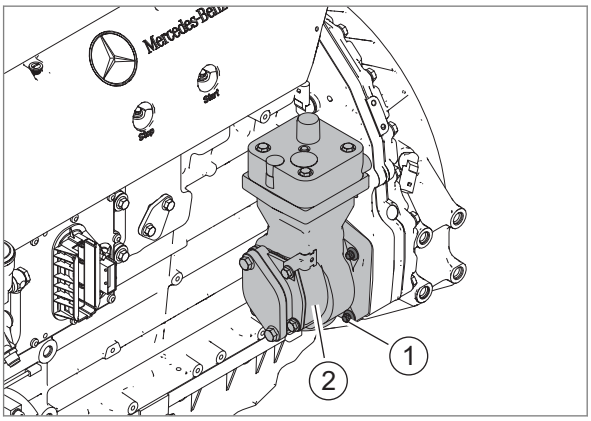
236375-001

356

► Unscrew bolts (1).
► Remove air compressor (2).

1044-004

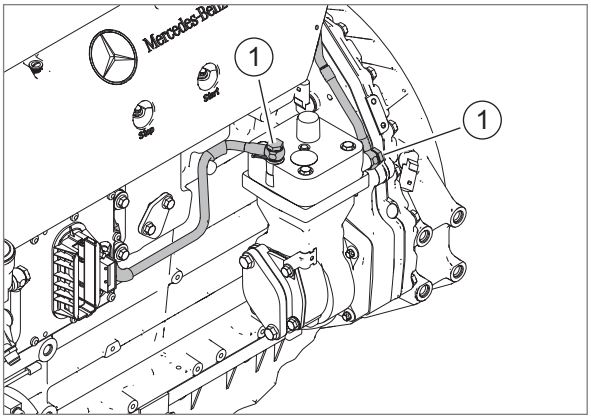
Installation



236375-001

357

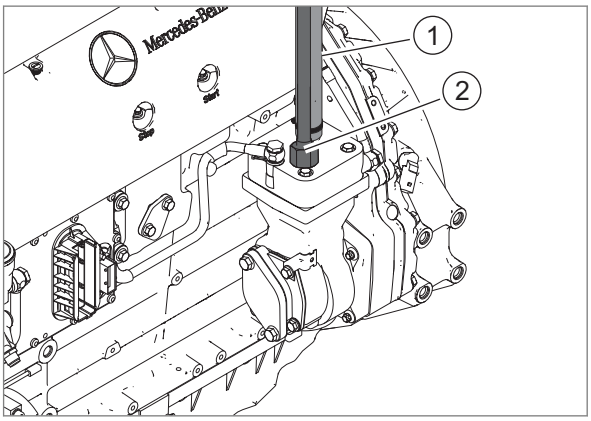
- ► Insert air compressor (2).
- ► Screw in bolts (1).
  Tightening torque: Page 251



236374-001

358

- ► Screw on coolant lines at (1).
  Tightening torque: Page 251



236373-001

359

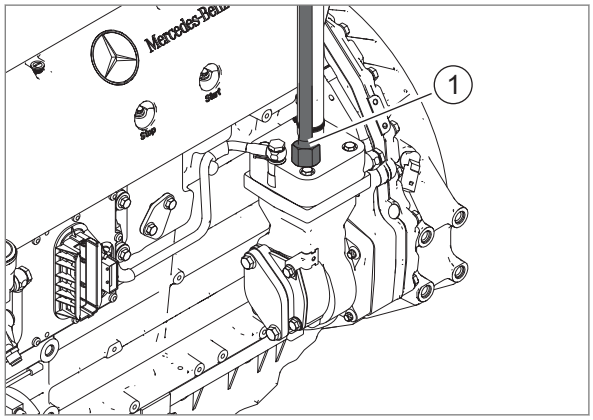
- ► Screw on air intake line (1).
- ► Screw on compressed air line (2).
  Tightening torque: Page 251

- ► Top up coolant. Page 199

Checking the oil thrown out

- ► Bring the engine to its operating temperature.

1044-004

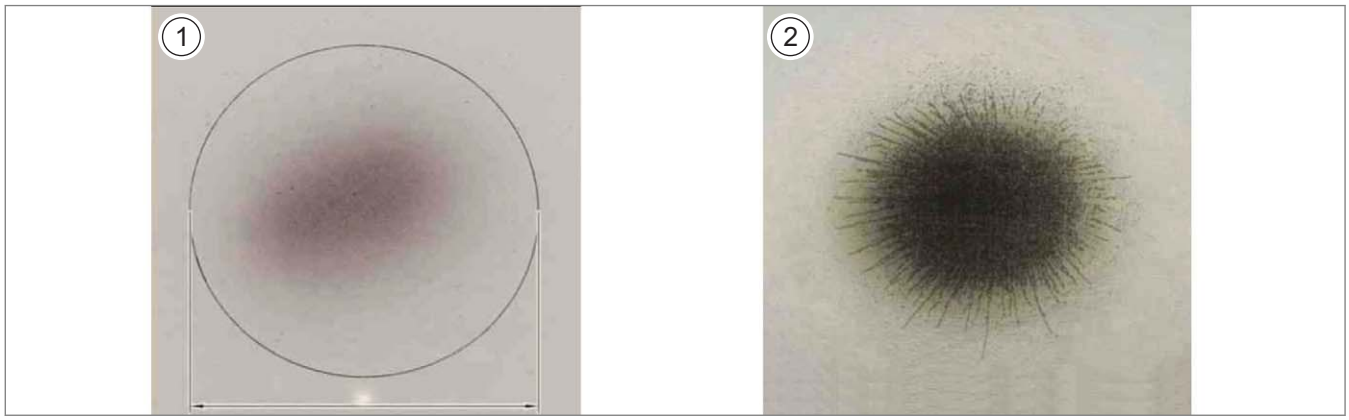


236376-001

360

► Remove the compressed air line (1).

► Start the engine and check the oil thrown out, using a test sheet.
  ► Ensure that no foreign objects are taken in through the air compressor suction side!
  ► Let the engine run at upper idle speed for 60 seconds. In this process, hold the test sheet 10 cm ahead of the opening on the air compressor delivery side.



184837-001 **361**

	Oil thrown out	Resulting pattern
1	Normal amount of oil thrown out	The resulting pattern is black, but feels dry.
2	Too much oil thrown out	The resulting pattern is black, but feels wet.

When detecting an excessive amount of oil being thrown out, the test sheet must be delivered along with the defective part in cases of warranty or goodwill. Otherwise, the matter cannot be dealt with as a case of warranty or goodwill.

► Refit after checking the compressed air line. Tightening torque: Page 251

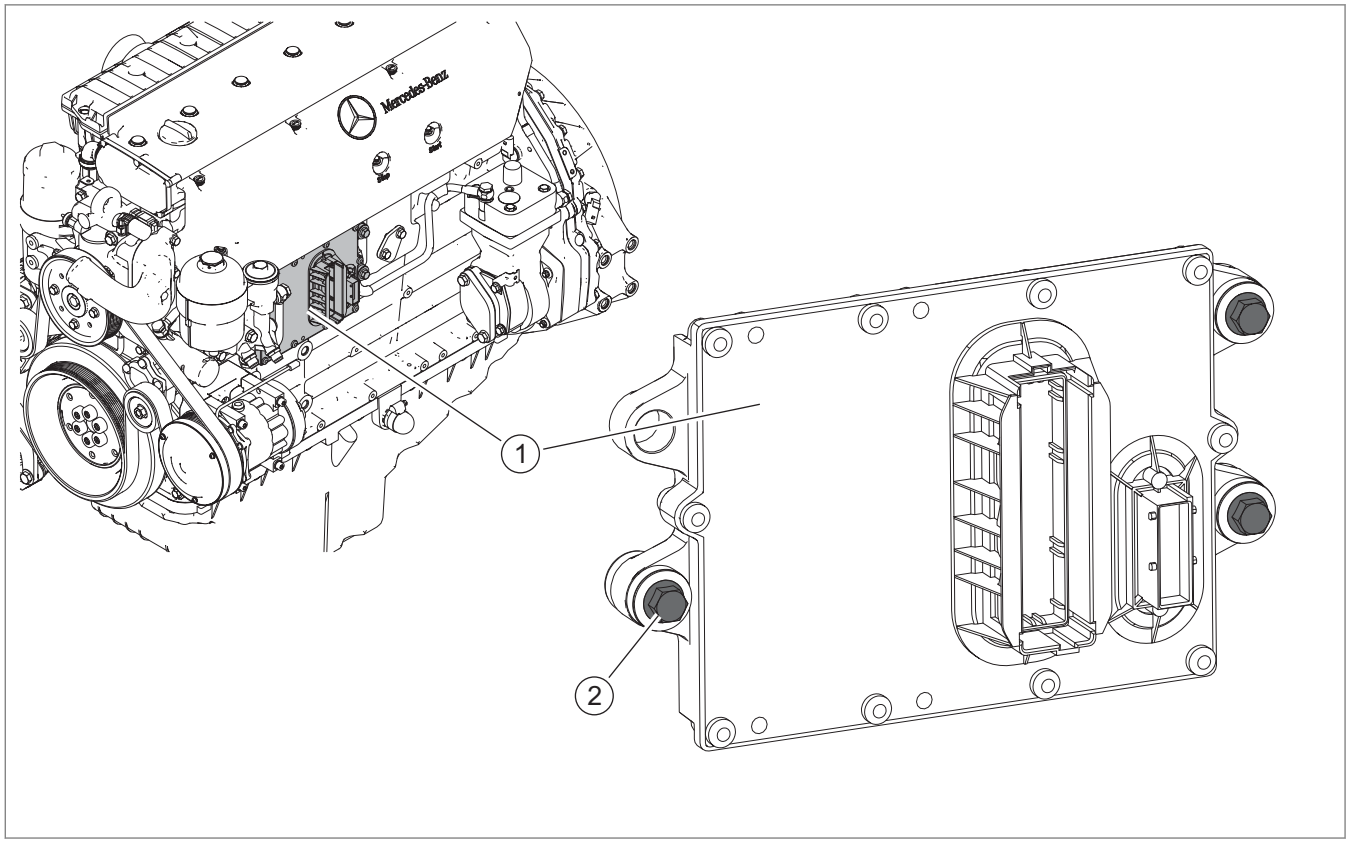
1044-004

0155 Engine control

1044-004
163259-001

MR/PLD control unit

Technical specifications



236348-001 **362**

	Value	CCN	Remark / designation	
1		A6-MB (A015)	MR/PLD control unit	
2	15 Nm		MR/PLD control unit mounting bolts	
Tightening torques not specified, see section on tightening torques				

Installation instructions

Removing:

– Read out and save the parametrization of the control unit with the CDS.

Installing:

– Load the control unit parametrization with the CDS.

1044-004

0165 Exhaust gas treatment

1044-004
161181-004

Exhaust treatment system

Applies to:

Type design 942.993

Type design 458.992

Type design 926.959

Type design 926.970

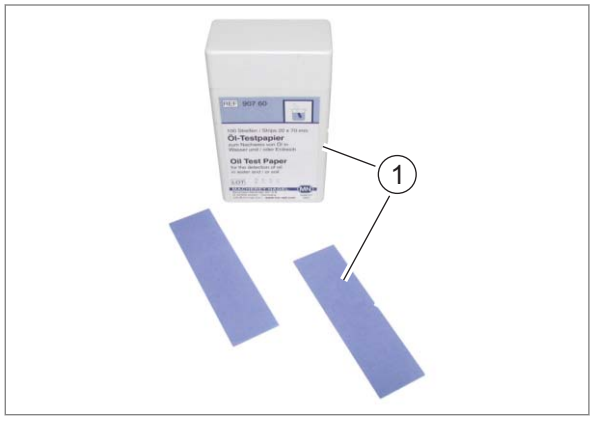
Work preparation

Tool:

- ► Urea collecting tank
  - ► Observe the safety precautions for storage of urea solution!
- ► Protective clothing

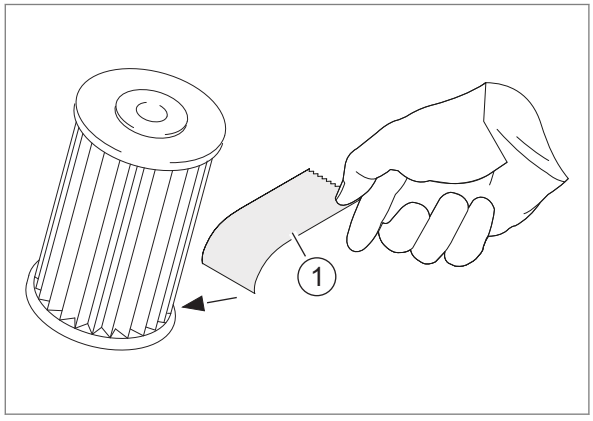
Special tool

	Special tool (I)	Pcs.
1	Test strips 00 1145 145 0	1



165495-001

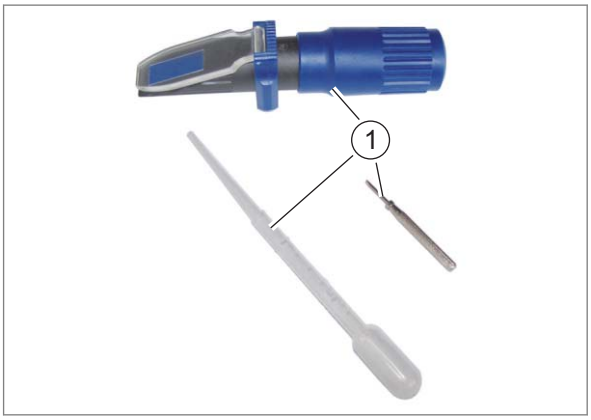
363



165530-001

364

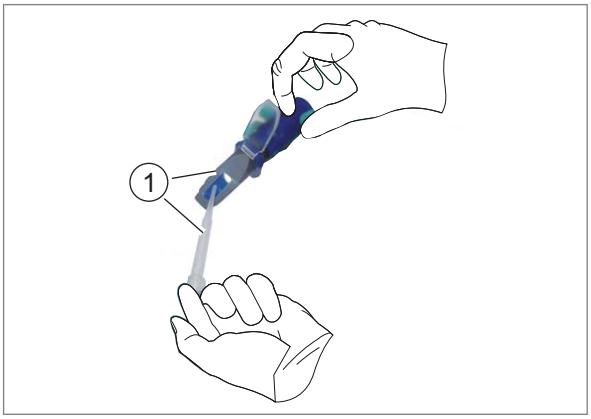
1044-004



165517-001

365

	Special tool (II)	Pcs.
1	Refractometer with pipette 00 1145 146 0	1



165541-001

366

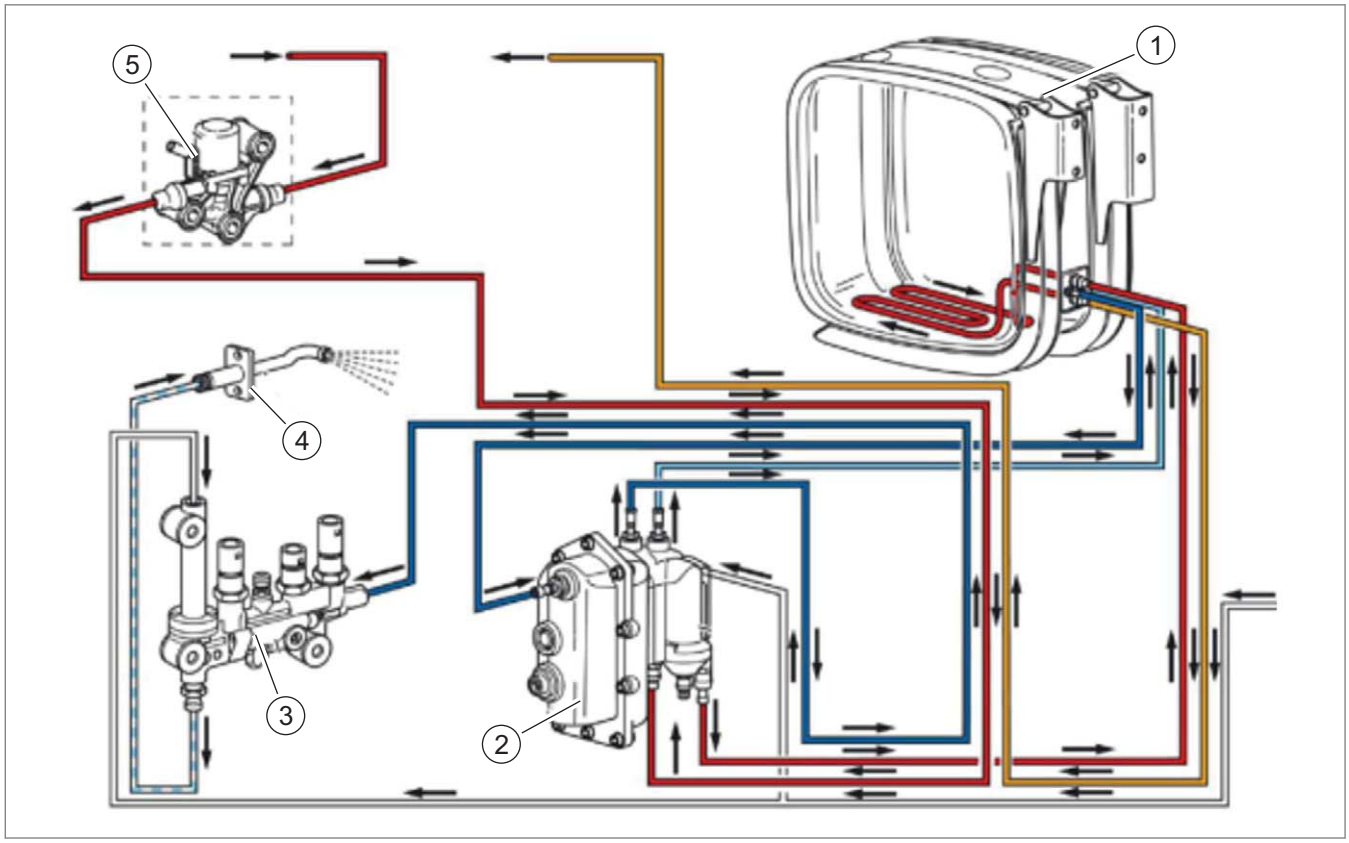
236351-001

367

	Special tool (III)	Pcs.
1	Tongs (zipper of urea lines) 00 0175 997 0	1

1044-004

Technical specifications



186042-001 **368**

	Value	CCN	Remark / designation	
1			Urea tank – See the repair manual of the machine in question	
2		M25-MB (M047)	Urea pump	Page 266
3			Urea dosing unit	Page 277
4			Urea injector	
5		Y107-MB (Y488)	Urea heater valve	Page 263
Tightening torques not specified, see section on tightening torques				

1044-004

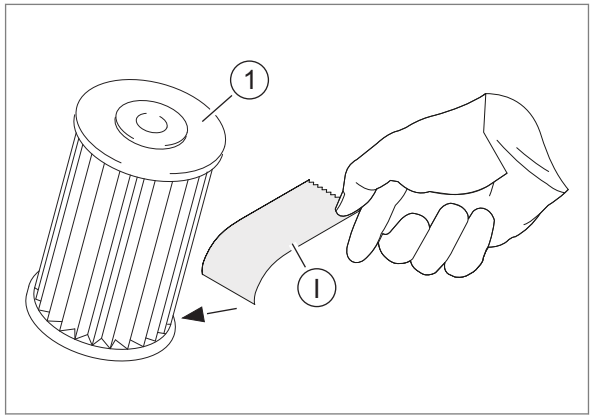
Checking the urea solution (purity)

This check detects traces of hydrocarbons, e.g. diesel fuel, in the urea solution.

The injection system components are very sensitive against hydrocarbons and can be damaged.

Flawless function of the exhaust gas treatment system then is **no longer** guaranteed.

- ► Disconnect the battery isolating switch of the machine.
- ► Wait for at least five minutes after stopping the diesel engine for the residual pressure in the system to be relieved.
- ► Remove urea filter as described in the relevant Operator's Manual.



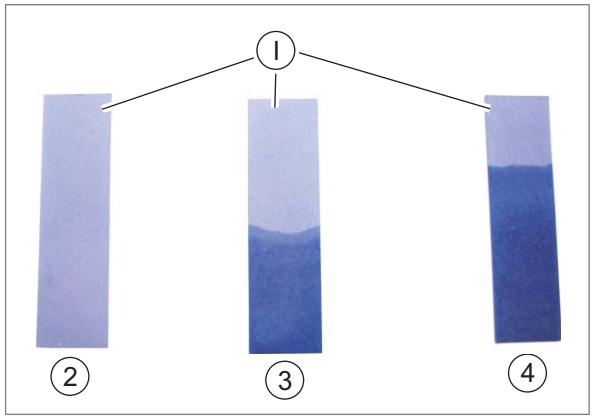
165543-001

369

- ► Slide a test strip of the special tool (I) between the lamellas of the removed filter (1) and impregnate it with the sticking urea solution.

A bright discolouration (2) of the test strip indicates that the urea solution is free of impurities (hydrocarbons).

A dark discolouration (3) or (4) of the test strip indicates that the urea solution is polluted with hydrocarbons.



165544-001

370

- ► Install urea filter as described in the relevant Operator's Manual.

1044-004

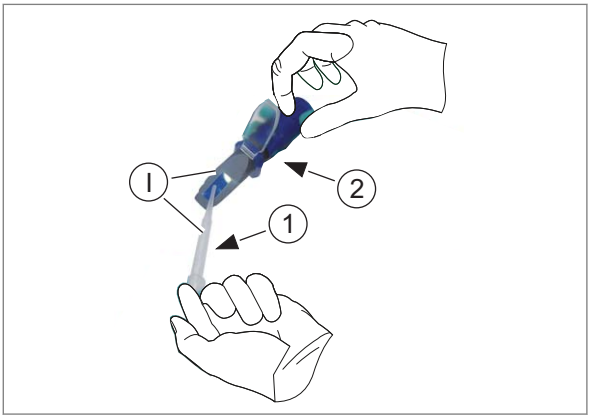
Checking the urea solution (density)

This check establishes the density of the urea solution.

The usable urea solution consists of 32.5 % urea and 67.5 % distilled water.

When the water portion is too high, the function of the exhaust gas treatment system will be affected.

- ► Disconnect the battery isolating switch of the machine.
- ► Wait for at least five minutes after stopping the diesel engine for the residual pressure in the system to be relieved.
- ► Remove urea filter as described in the relevant Operator's Manual.



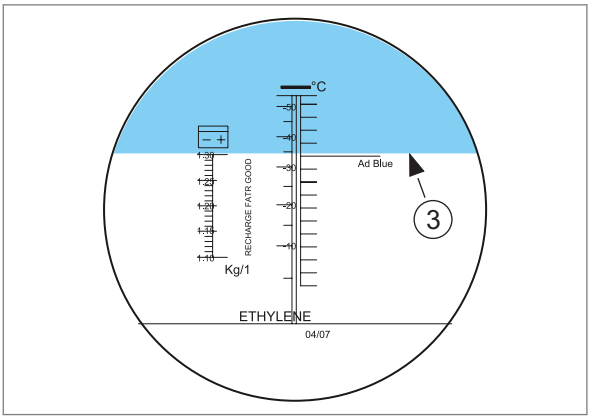
165550-001

371

- ► Use the pipette (1) of special tool (I) and withdraw a urea solution sample from the removed filter and from the urea tank.
- ► Put the withdrawn sample on the refractometer prism (2).
- ► The white area is to stop at the characteristic curve (3) of the urea solution.

*When the white area is below the characteristic curve (3), the urea solution does **not** contain the specified percentage rate of urea.*

When the white area is slightly above the characteristic curve (3), this can be considered as normal, depending on the urea solution producer.



165551-001

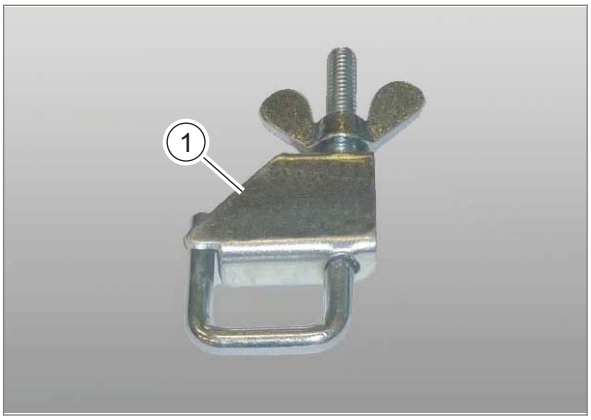
372

- ► Install urea filter as described in the relevant Operator's Manual.

1044-004
158925-004

Urea heater valve

Applies to:
Type design 942.993
Type design 458.992
Type design 926.959
Type design 926.970



124108-001

373

Work preparation

Tool:

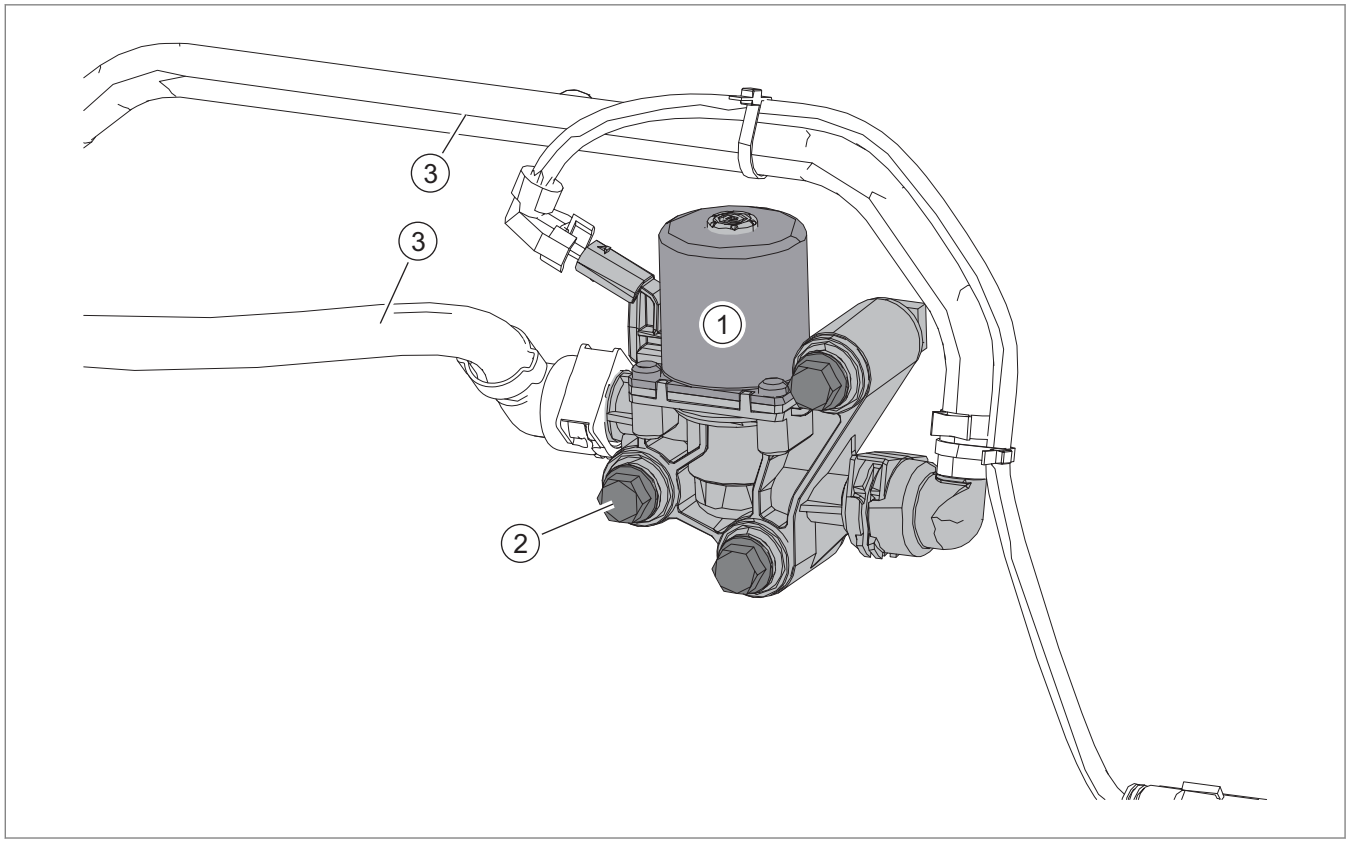
- ► Cooling water collecting tank
- ► Protective clothing

Special tool

	Special tool (I)	Pcs.
1	Hose clamp 00 0181 867 0	2

1044-004

Technical specifications



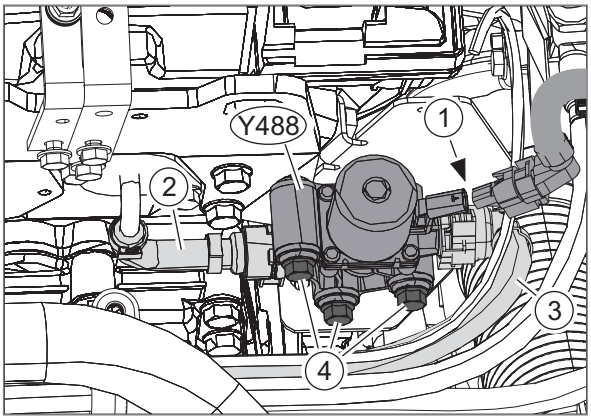
186114-001 **374**

	Value	CCN	Remark / designation	
1		Y107-MB (Y488)	Urea heater valve Position of valve: See chapter "Location of components" in the relevant Technical Systems documentation.	
2	25 Nm		Urea heater valve mounting bolts	
3			Coolant lines	
Tightening torques not specified, see section on tightening torques				

Removal

- ► Allow the diesel engine to cool down.
- ► Disconnect the battery isolating switch of the machine.
- ► Wait for at least 5 minutes after stopping the diesel engine for the residual pressure in the system to be relieved.

1044-004

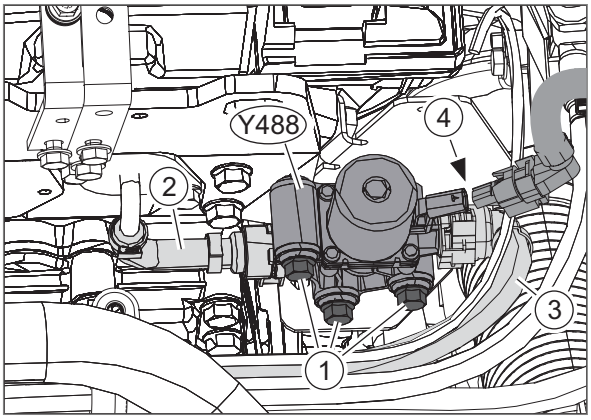


182247-001

375

- ► Disconnect connector at (1).
- ► Disconnect cooling water hoses (2) and (3) with special tool (I).
- ► Mark and unlock cooling water hoses (2) and (3) and pull off of valve (Y488).
- ► Unscrew bolts (4).
- ► Remove valve (Y488).

Installation



182248-001

376

- ► Bolt down valve (Y488) with bolts (1).
  Tightening torque: Page 264
- ► Plug on and lock cooling water hoses (2) and (3).
- ► Remove special tool (I).
- ► Connect and lock connector (XY488) at (4).

- ► Top up coolant. Page 199
- ► Start the diesel engine.
  - ► Let the diesel engine run until the operating temperature is reached.
- ► Check if SCR system and coolant circuit is tight.
- ► Check coolant level as described in the relevant Operator's Manual.

1044-004
161224-004

Urea pump

Applies to:

Type design 942.993

Type design 458.992

Type design 926.959

Type design 926.970

Work preparation

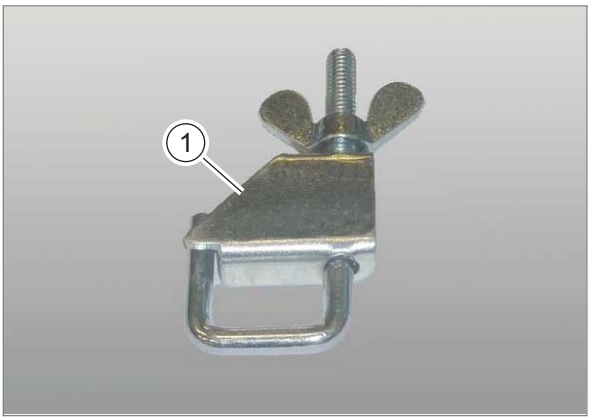
Utilities:

- Lubricants:
  Silicon grease - 00 0791 754 1

Tool:

- Cooling water collecting tank
- Protective clothing

Special tool



124108-001

377

	Special tool (I)	Pcs.
1	Hose clamp 00 0181 867 0	2

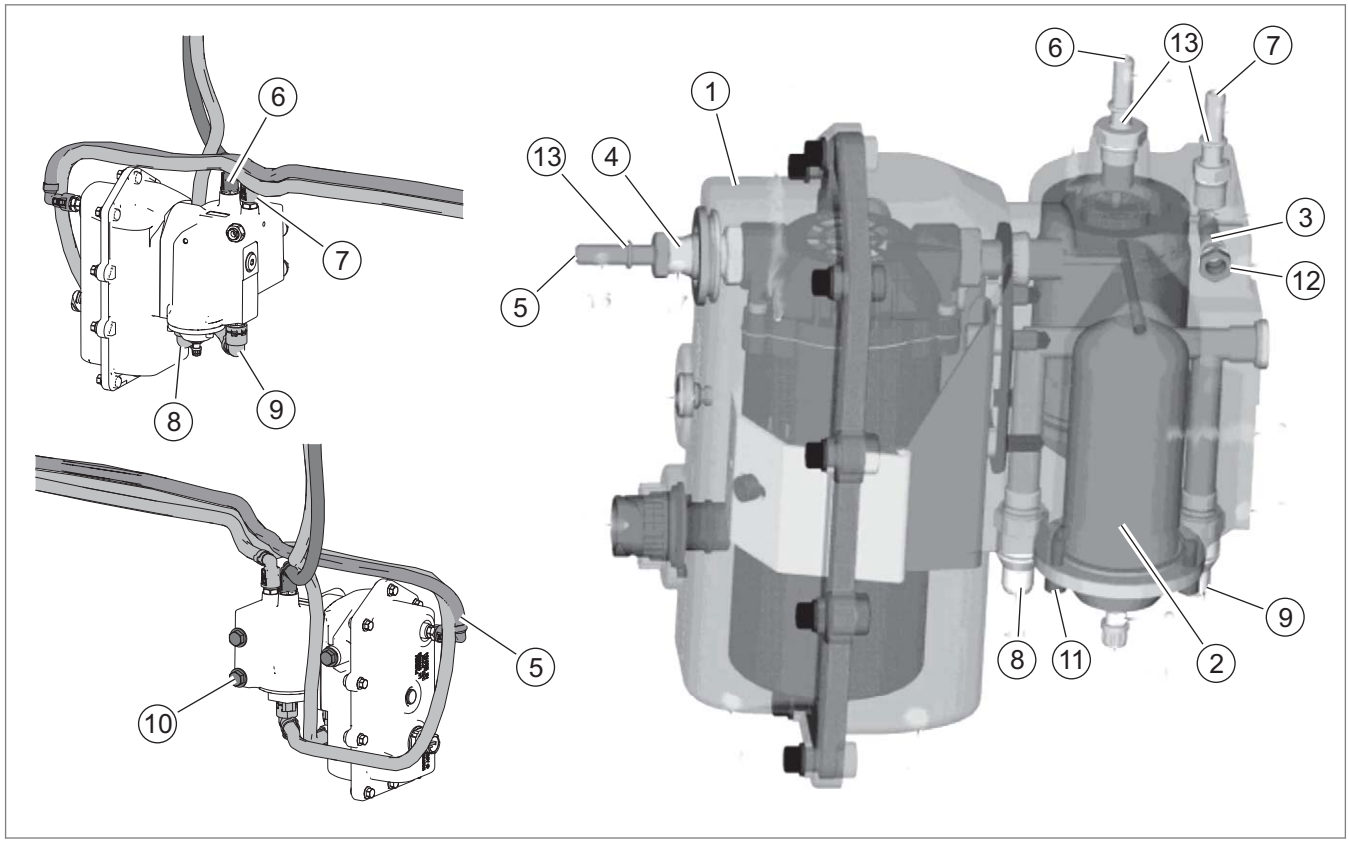
186215-001

378

	Special tool (II)	Pcs.
1	Hand pump 00 1994 247 0	2

1044-004

Technical specifications



186231-001 **379**

	Value	CCN	Remark / designation	
1	5.5 kg	M25-MB (M047)	Urea pump Position of pump: See chapter "Location of components" in the relevant Technical Systems documentation.	
2	3.2 ± 0.2 bar		Pressure accumulator – Replace O-ring in every installation process. – Apply a thin coat of silicon grease to the pressure accumulator and the O-ring. - Use only the specified silicon grease.	
3			Dump valve – Replace the O-rings every time when assembling. – Coat O-rings slightly with silicon grease. - Use only the specified silicon grease.	
4			Intake filter	
5			Urea intake line	
6			Urea feed line	
7			Urea return line	
Tightening torques not specified, see section on tightening torques				

1044-004

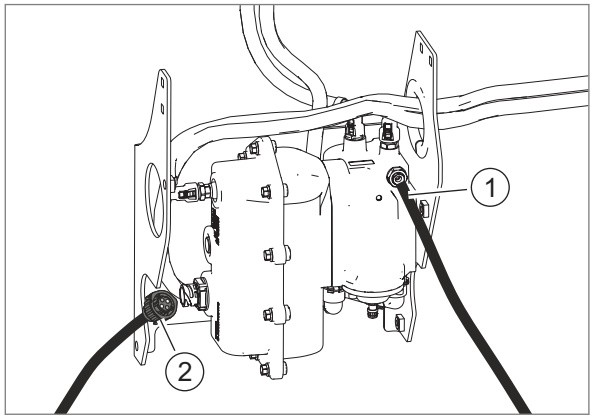
	Value	CCN	Remark / designation	
8			Inlet coolant lines	
9			Outlet coolant lines	
10	60 Nm		Urea pump mounting bolts	
11	4 Nm		Pressure accumulator mounting bolts	
12	10 Nm		Compressed-air connection screw fitting	
13	15 Nm		Urea lines screw fittings – Replace the O-rings every time when assembling. – Coat O-rings slightly with silicon grease. - Use only the specified silicon grease.	
Tightening torques not specified, see section on tightening torques				

Removal

► Allow the diesel engine to cool down.

► Disconnect the battery isolating switch of the machine.

► Wait for at least 5 minutes after stopping the diesel engine for the residual pressure in the system to be relieved.

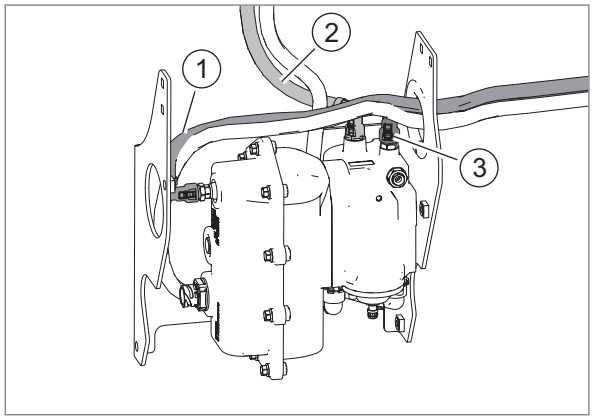


186135-001

380

► Remove the compressed air line (1).

► Remove connector (2).



186136-001

381

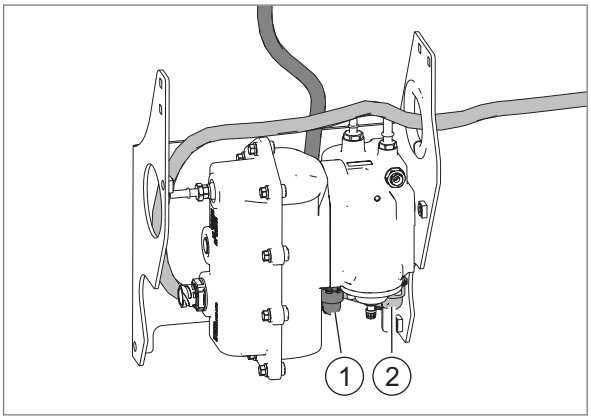
► Mark urea lines (1) to (3) and pinch off with special tool (I).

► Remove urea intake line (1).

► Remove urea feed line (2).

► Remove urea return line (3).

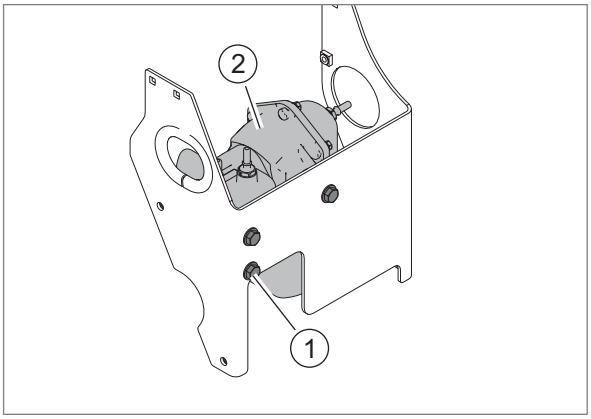
1044-004



186137-001

382

► Mark coolant lines (1) and (2) and pinch off with special tool (I).
► Remove coolant inlet lines (1).
► Remove coolant outlet lines (2).

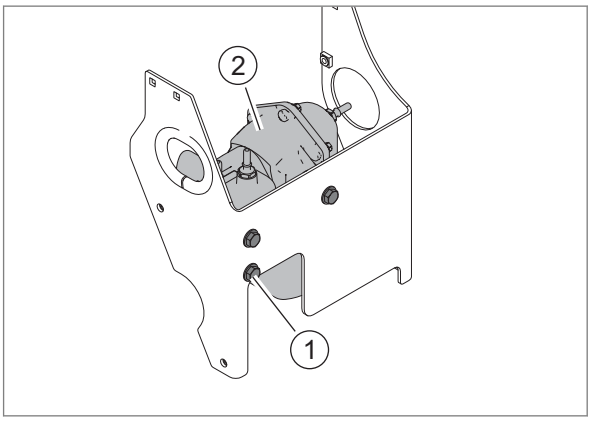


186138-001

383

► Unscrew bolts (1) and remove urea pump (2).

Installation

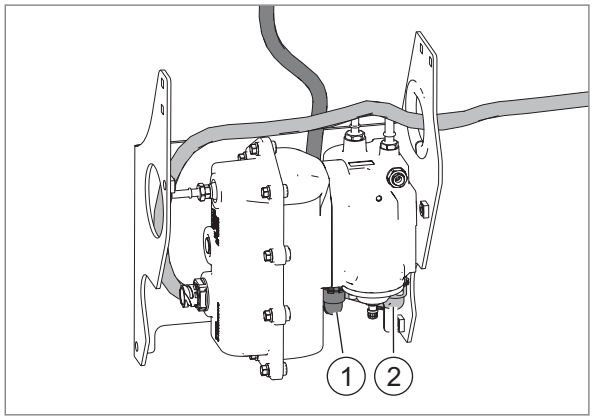


186138-001

384

► Bolt down urea pump (2) with bolts (1).
Tightening torque: Page 267
► Fill the urea pump pressure accumulator. Page 276
► With a new urea pump:

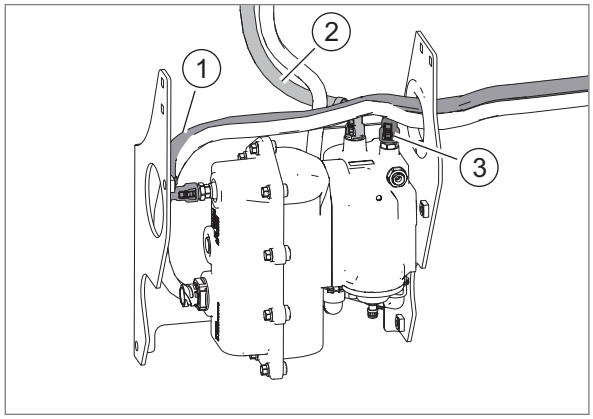
1044-004



186137-001

385

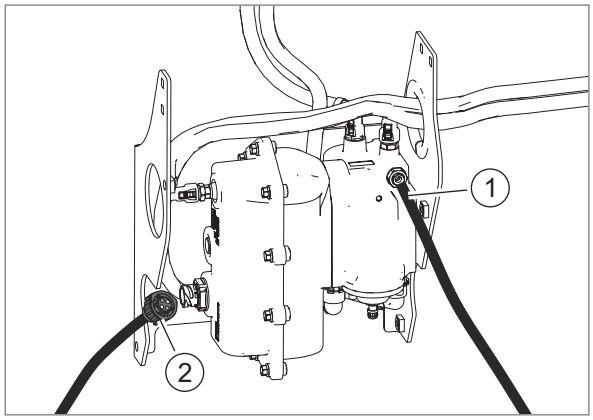
- ► Install coolant inlet lines (1).
- ► Install coolant outlet lines (2).



186136-001

386

- ► Install urea intake line (1).
- ► Install urea feed line (2).
- ► Install urea return line (3).



186135-001

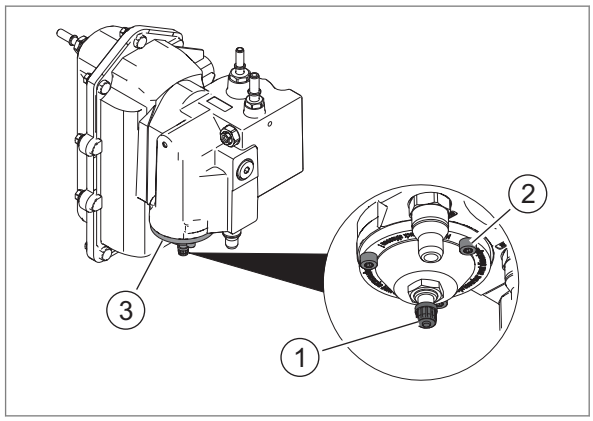
387

- ► Install compressed air line (1).
- ► Connect the connector (2).

- ► Remove special tool (I) from all lines.
- ► Top up coolant. Page 199
- ► Start the diesel engine.
  - ► Let the diesel engine run until the operating temperature is reached.
- ► Check if exhaust treatment system and coolant circuit are tight.
- ► Check coolant level as described in the relevant Operator's Manual.

1044-004

Removing the pressure accumulator

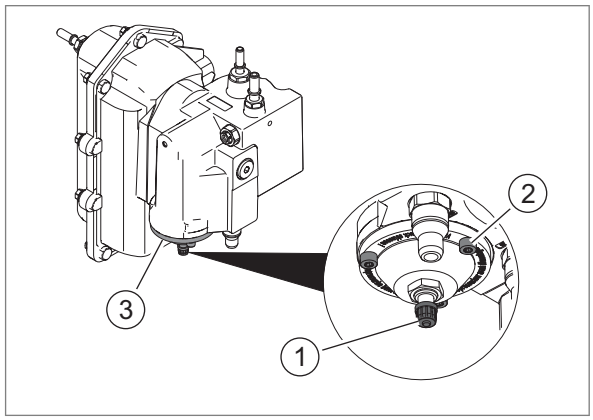


388

186176-001

- ► Keep valve (1) pressed until pressure accumulator (3) is completely empty.
- ► Unscrew bolts (2) and pull out pressure accumulator (3).

Installing the pressure accumulator

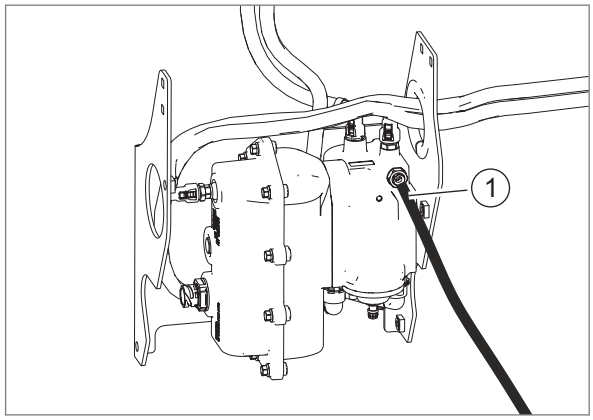


389

186176-001

- ► Insert pressure accumulator (3) with a new O-ring bolt down with bolts (2).
  Tightening torque: Page 267
- ► Fill pressure accumulator (3) at (1). Page 276.

Removing the dump valve

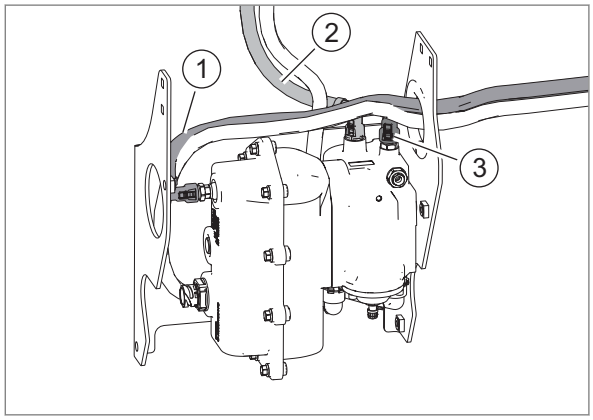


390

186189-001

- ► Remove the compressed air line (1).

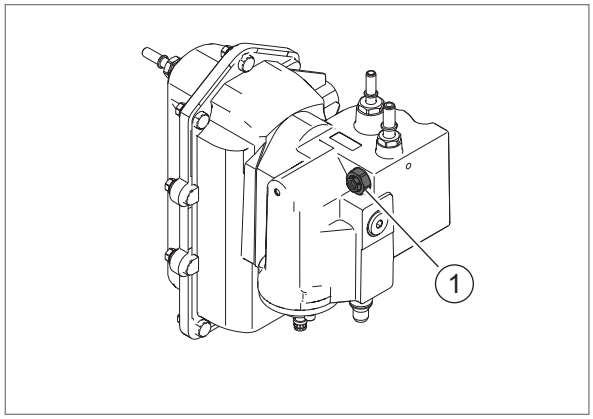
1044-004



186136-001

391

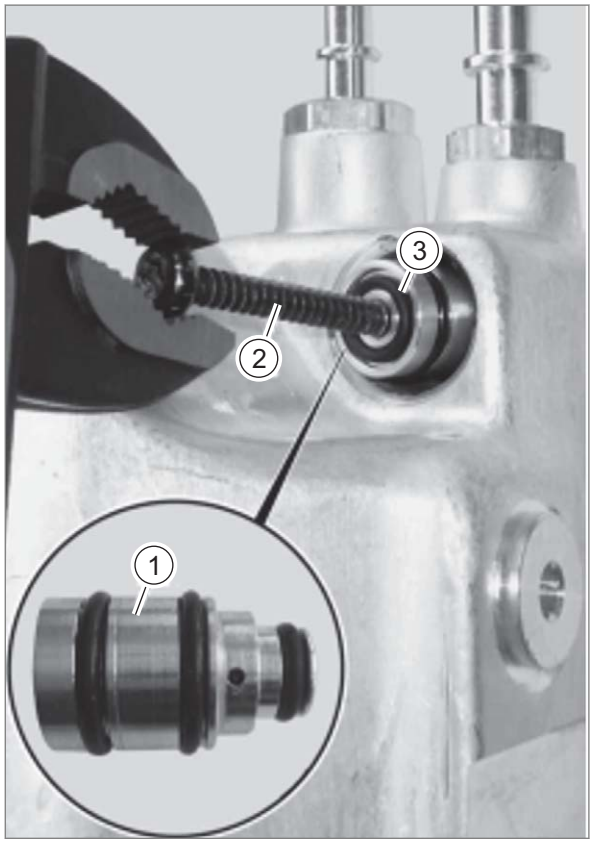
► Mark urea lines (1) to (3) and pinch off with special tool (I).



186191-001

392

► Remove screw fitting (1).



186194-001

393

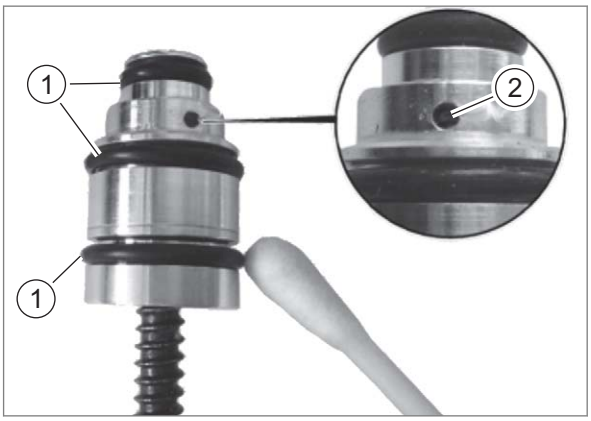
► Screw the screw (2) into the dump valve (1) until the stop is felt.
Screw M5x50 mm

► Pull out dump valve (1) by means of screw (2).

► Ensure that the axial O-ring (3) is also removed.

1044-004

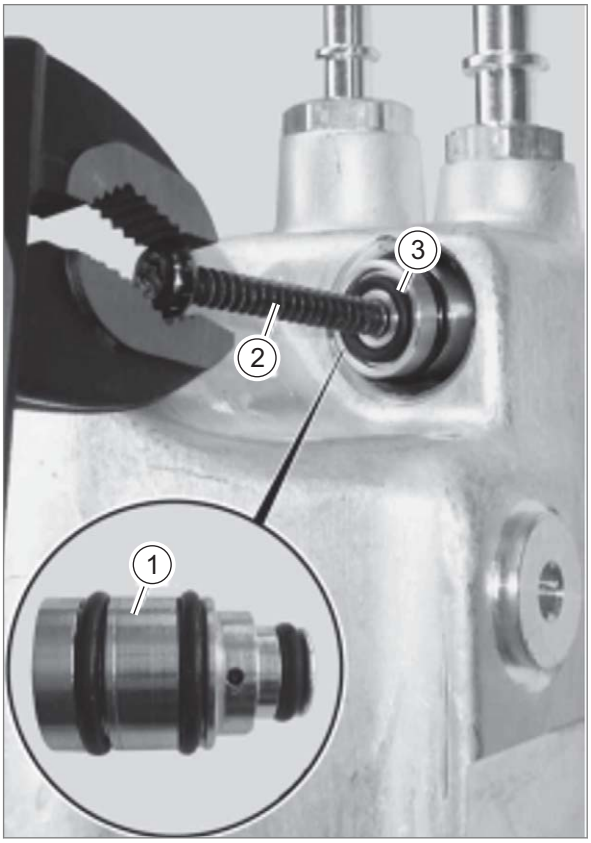
Installing the dump valve



186197-001

394

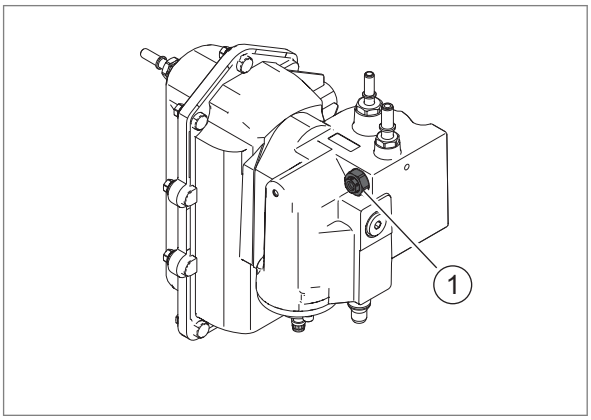
► Install new O-rings on the dump valve.
Coat O-rings with silicone grease.
► Ensure that drilled holes (2) are not clogged.



186194-001

395

► Screw the screw (2) into the dump valve (1) until the stop is felt.
Screw M5x50 mm
► Insert dump valve (1) by means of screw (2).
► Ensure that no dirt can enter the drilled hole.
► Insert axial O-ring (3).

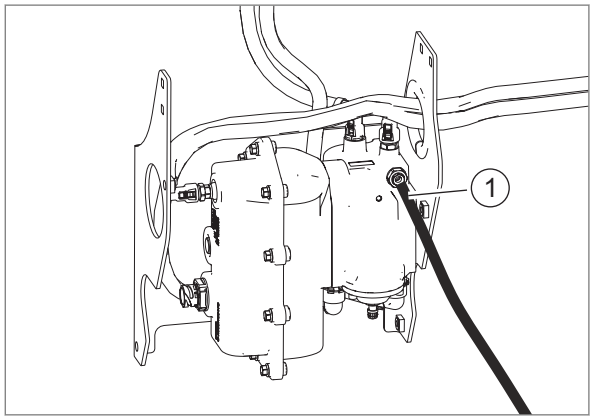


186191-001

396

► Screw on screw fitting (1).
Tightening torque: Page 267

1044-004



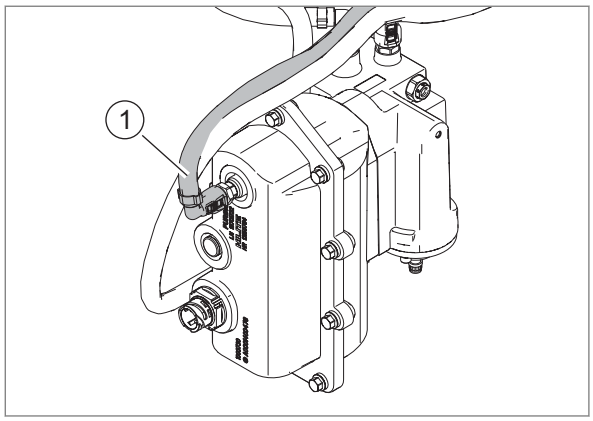
186189-001

397

► Install compressed air line (1).

► Remove special tool (I) from the urea lines.

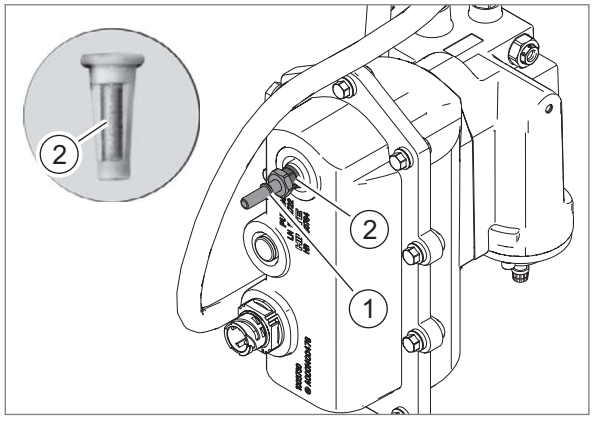
Removing the intake filter



186206-001

398

► Pinch off urea lines (1) with special tool (I) and remove them from the urea pump.



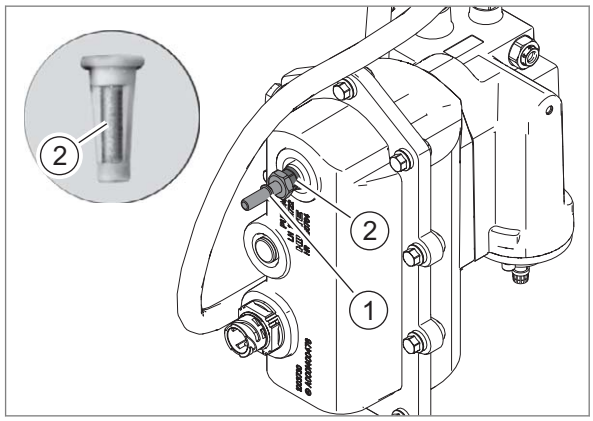
186207-001

399

► Unscrew male connector (1).
► Pull out intake filter (2).

1044-004

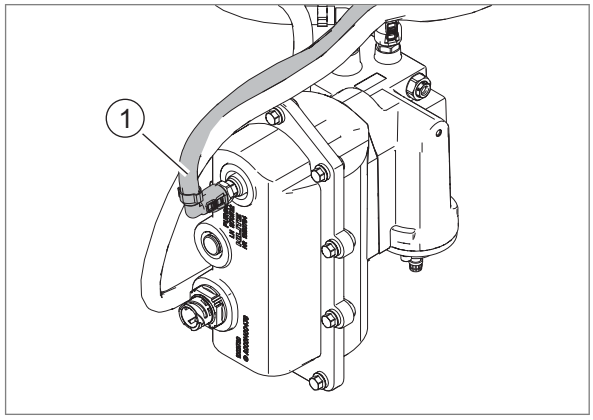
Installing the intake filter



186207-001

400

- ► Insert intake filter (2).
- ► Screw on male connector (1).
  Tightening torque: Page 267

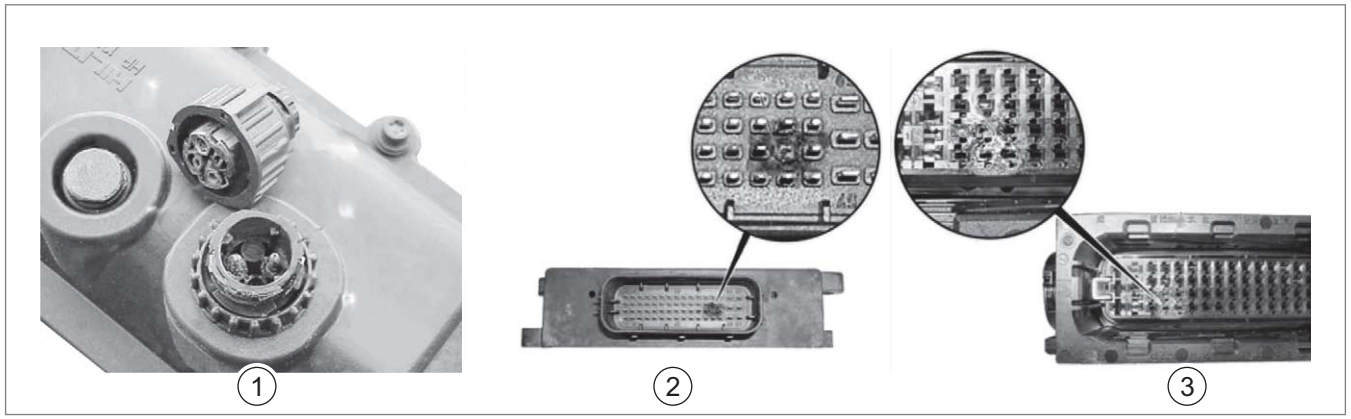


186206-001

401

- ► Fit urea lines (1) on the urea pump.
- ► Remove special tool (I) from the urea line (1).

Checking the electric wiring loom



186214-001

402

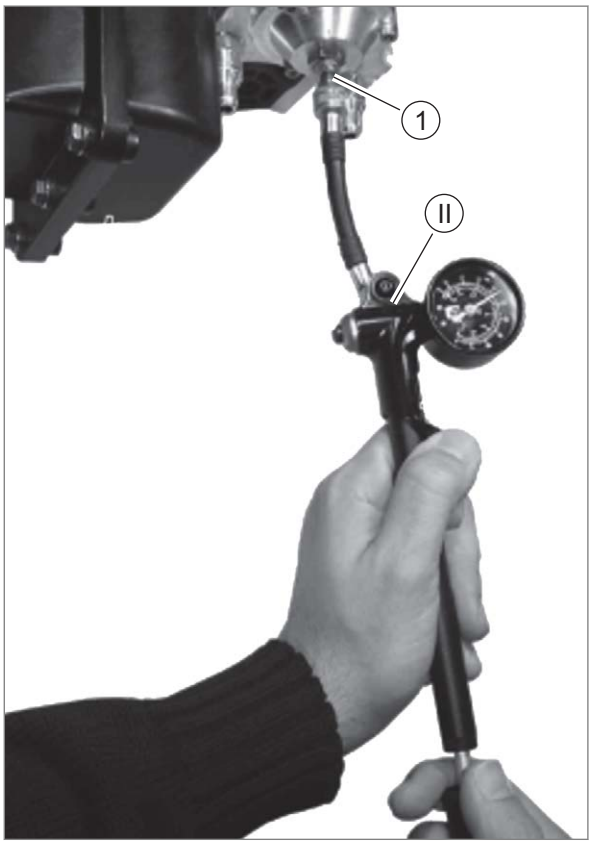
- ► Checking the wiring loom:

1 Corrosion damage on urea pump connector.

2 Corrosion damage on exhaust gas treatment module (A95-MB) (A032).

3 Corrosion damage on exhaust gas treatment module connector.

1044-004



186222-001

403

Filling the accumulator

- ► Fit special tool (II) on the valve at (1).
- ► Read the pressure and adjust if required.
  Pressure: Page 267
  - ► Set the pressure 0.2 bar higher as a slight pressure loss cannot be avoided when disconnecting the pump.
  - ► Pumping = Increasing the pressure.
  - ► Pressing the relieve button = Reducing the pressure.

In case of a new pressure accumulator:

- ► Remove special tool (II).

In case of a re-used pressure accumulator:

- ► Remove special tool (II).
- ► Refit special tool (II) again after waiting for 5 minutes.
- ► Read the pressure.

In case of pressure loss, the pressure accumulator must be replaced.

- ► Set the pressure 0.2 bar higher again.
  Pressure: Page 267
- ► Remove special tool (II).

Urea dosing unit

Applies to:

Type design 942.993

Type design 458.992

Type design 926.959

Type design 926.970

Work preparation

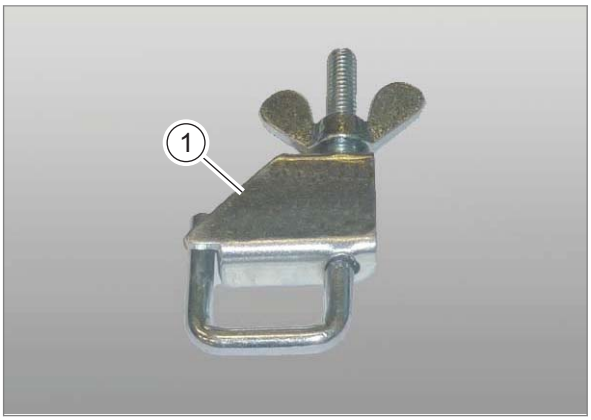
Utilities:

- ► Lubricants:
  Silicon grease - 00 0791 754 1

Tool:

- ► Cooling water collecting tank
- ► Protective clothing

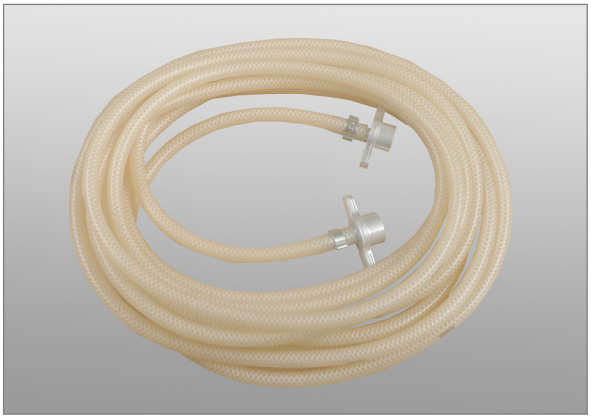
Special tool



124108-001

404

	Special tool (I)	Pcs.
1	Hose clamp 00 0181 867 0	2



236414-001

405

	Special tool (II)	Pcs.
1	Hose 00 0181 659 0	1

1044-004

00 1990 503 0 237680-001

406

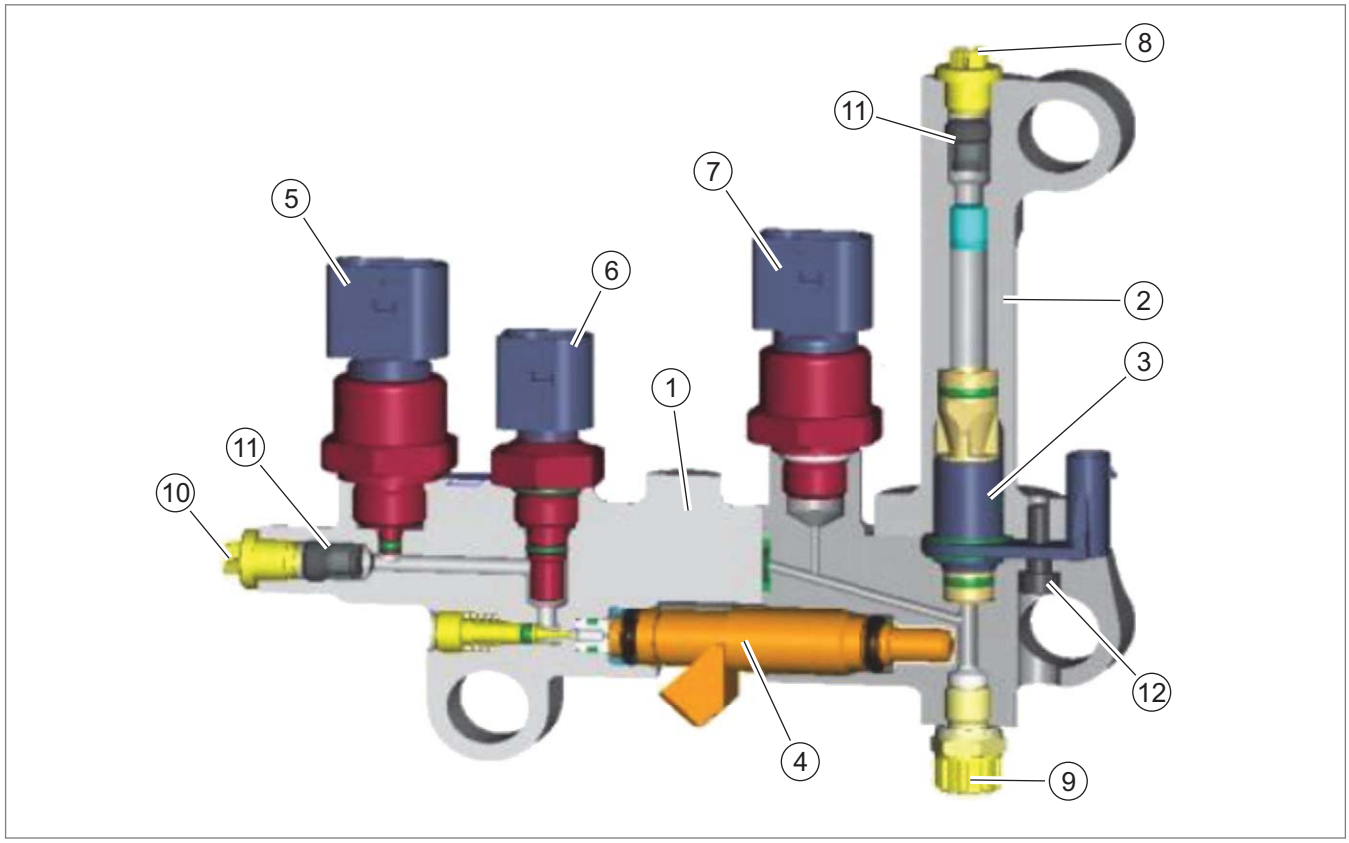
00 1993 306 0 237681-001

407

	Special tool (III)	Pcs.
1	Test connection 00 1990 503 0 Applies to type designs 942.993 and 458.992	1
1	Test connection 00 1993 306 0 Applies to type designs 926.959 and 926.970	1

1044-004

Technical specifications

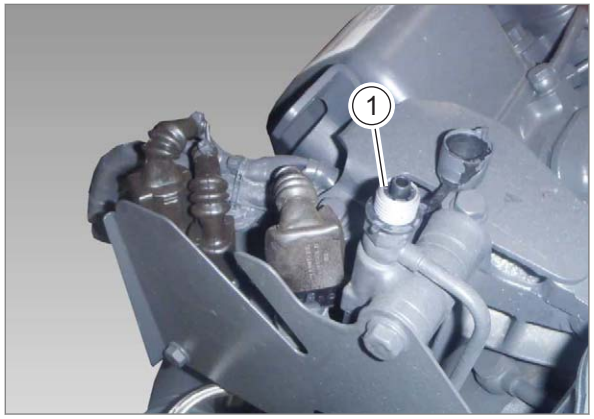


186235-001 **408**

	Value	CCN	Remark / designation	
1			Urea dosing unit Position of dosing unit: See chapter "Location of components" in the relevant Technical Systems documentation.	
2			Compressed-air tube	
3		R25-MB	Diffusor heater	
4		Y109-MB (Y487)	Urea dosing valve	
5	30 Nm	B129-MB (B360)	Urea pressure sensor	
6	30 Nm	B130-MB	Urea temperature sensor	
7	30 Nm	B128-MB	Air pressure sensor	
8	15 Nm		Compressed air inlet line union	
9			Urea/air mixture outlet line union	
10	22 Nm		Urea inlet line union	
11			Sieve	
Tightening torques not specified, see section on tightening torques				

1044-004

	Value	CCN	Remark / designation	
12	6 Nm		Compressed-air tube mounting bolts	
13			O-rings – Replace the O-rings every time when assembling. – Coat O-rings slightly with silicon grease. - Use only the specified silicon grease.	
13	15 Nm		Urea injection line	
Tightening torques not specified, see section on tightening torques				



236418-001

409

Installation instructions

Removal:

– Remove the urea injection line.
– Remove the urea inlet line.
  - Ensure that no urea will drip on electric components.
– Remove the compressed air line.
– Disconnect the electric connectors.

Installation

– Connect the electric connectors.
– Install compressed air line.
  - Check if line union is soiled.
– Install the urea inlet line.
  - Check if urea line and line union are soiled.
  - Shorten the urea line by 2 cm.
– Install the new urea injection line.

Flushing

Use special tool (III). Page 277

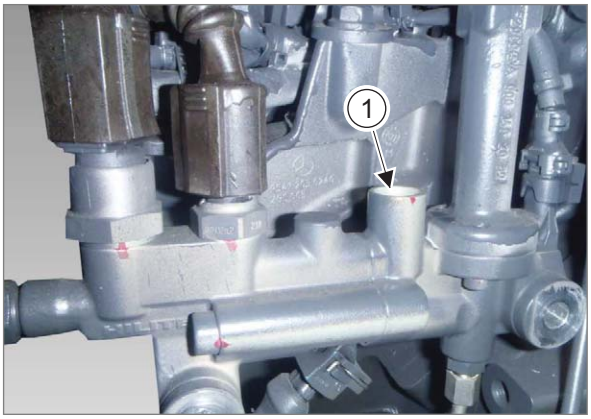
► Screw on test connection at (1) if necessary.

1044-004

236419-001

410

► Unscrew sensor (B128-MB) carefully.
  ► Take the remaining system pressure into account.



236420-001

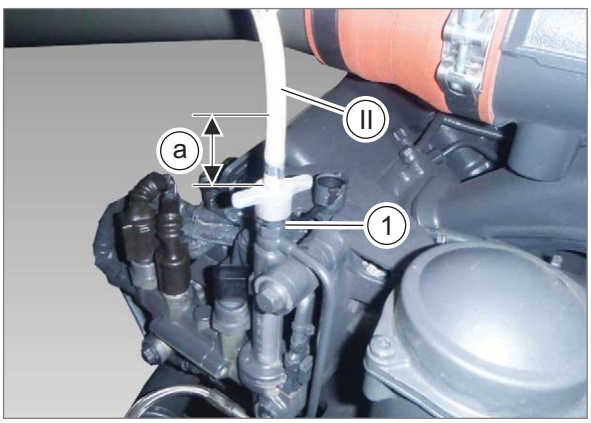
411

► Fill water into drilled hole (1) until the drilled hole overflows.

236419-001

412

► Screw on sensor (B128-MB).
  ► Tightening torque: Page 279



236421-001

413

Use special tool (II). Page 277

► Bolt down special tool (II) at (1).
► Fill as much water into the flushing hose to produce a water column (a) of 4 cm.
  ► To apply the water to the test connection, keep the flushing hose in a high position.
► Apply flushing hose with compressed air until the water has completely disappeared.
  ► Do **not** exceed a maximum pressure of 5.5 bar!
► Remove special tool (II).
  ► The test connection may remain on the urea dosing unit.

1044-004

236419-001

414

► Connect connector on sensor (B128-MB).

► Check the compressed air of the dosing unit, using the CDS.

If the value is outside of the tolerance range (1250 to 2500 mbar), the flushing process must be repeated.

If the value is not OK after repeated flushing, the urea dosing unit must be replaced.

1044-004
169716-001

Urea injector

Applies to:

Type design 458.992

Type design 926.959

Type design 926.970

See chapter Flap nozzle in section 01 40 Exhaust system: Page 224

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