

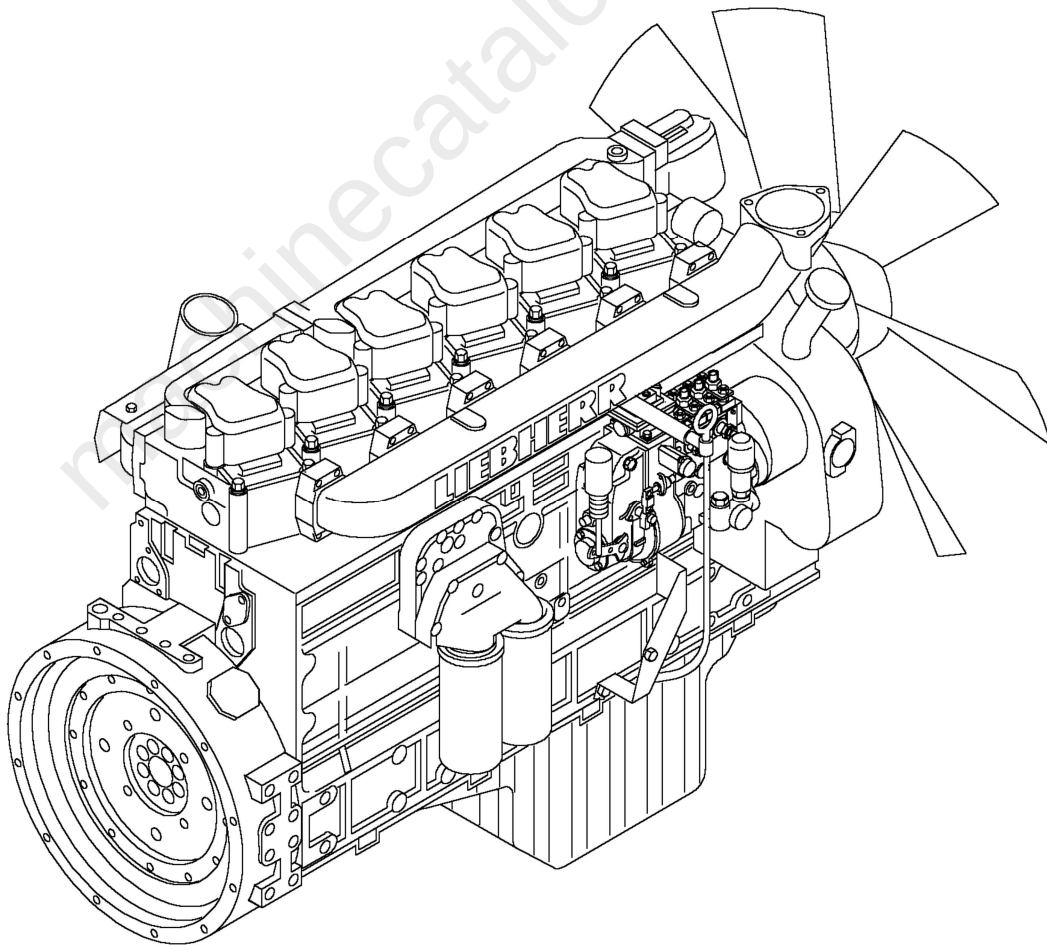
Service Manual

LIEBHERR Diesel engines

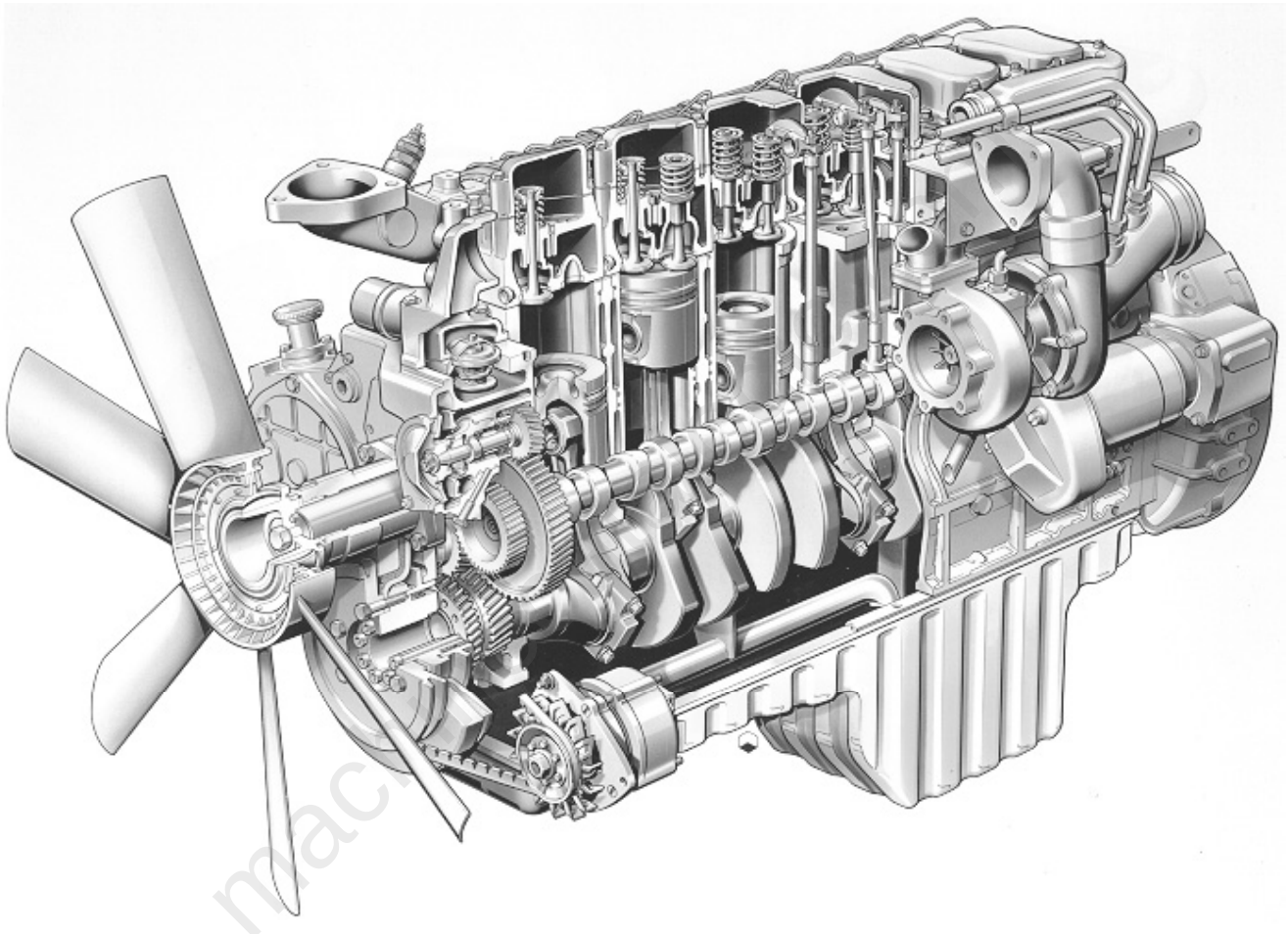
D 904 / 906

D 914 / 916

D 924 / 926



Length section



LIEBHERR

Datum / Edition / Date
12 / 2003

Benennung / Description / Denomination

Technical description

Typ
Model
Type
D 926 T/TI-E

Blatt
Page
Feuille
2.1

7 Cylinder head gaskets

On D 904 / 906 / 914 / 916 / 926 TI engines, soft cylinder head gaskets are installed.

On D 924 / 926 T-E / TI-E engines, the soft cylinder head gaskets have been replaced by metallic elastomer gaskets.

Important:

On engines, which were equipped with soft cylinder head gaskets, reinstall soft gaskets.

If metallic elastomer gaskets were installed, also use the same metallic elastomer gaskets due to the different cylinder liner protrusion to the crankcase and the grooves on the seating surface of the gasket.

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17 Lube oil filter and oil cooler

The oil cooler is installed on the oil cooler housing, on the right hand side of the crankcase, when viewed onto the flywheel right.

The lube oil filter can be installed „hanging“ or „upright“ on the oil cooler housing or away from the oil cooler housing, depending on the engine model.

When it is installed away from the oil cooler housing, the connections must be connected as shown on page 17.1.

Removal:

Drain the coolant on plug 5. Remove the lube oil filter 4 from the oil filter console 3. If the lube oil filter is installed away from the oil cooler housing, remove the oil lines from the oil cooler housing 2. Remove the connector screws from the oil cooler housing 2 to the crankcase. Remove the oil cooler housing 2 together with the oil filter console 3 and the oil cooler 1 from the crankcase.

Note:

To remove the oil cooler housing 2, only the two outer screws on the oil filter console 3 need to be removed (see arrows).

Important:

When removing the oil cooler housing 2, make sure that the bypass valve between the oil cooler housing 2 and the crankcase is also removed.

Installation:

Inset the piston of the bypass valve into the center bore in the crankcase. Install the oil cooler housing 2 with oil cooler 1 and new seal onto the crankcase. Install the lube oil filter 4 onto the oil filter console 3 or the oil lines onto the oil filter housing 2. Install the coolant drain plug 5 and add coolant. Check the engine oil level, add oil as necessary.

Note:

Depending on the size of the oil cooler, there might be an intermediate plate installed between the oil cooler housing and the crankcase.

Check the axial play:

The axial play of the coolant pump must be checked the first time at 6000 hours and then every 3000 hours thereafter.

Drain the coolant, remove cover 1.

Install a commercially available dial gauge holder with dial gauge on the shaft of the coolant pump (see arrow) and move the idler 7 back and forth with a screw which was inserted in one of the two threads in the idler 7. Read the axial play.

Permissible axial play = 0.1 mm

Limit value = 0.12 mm

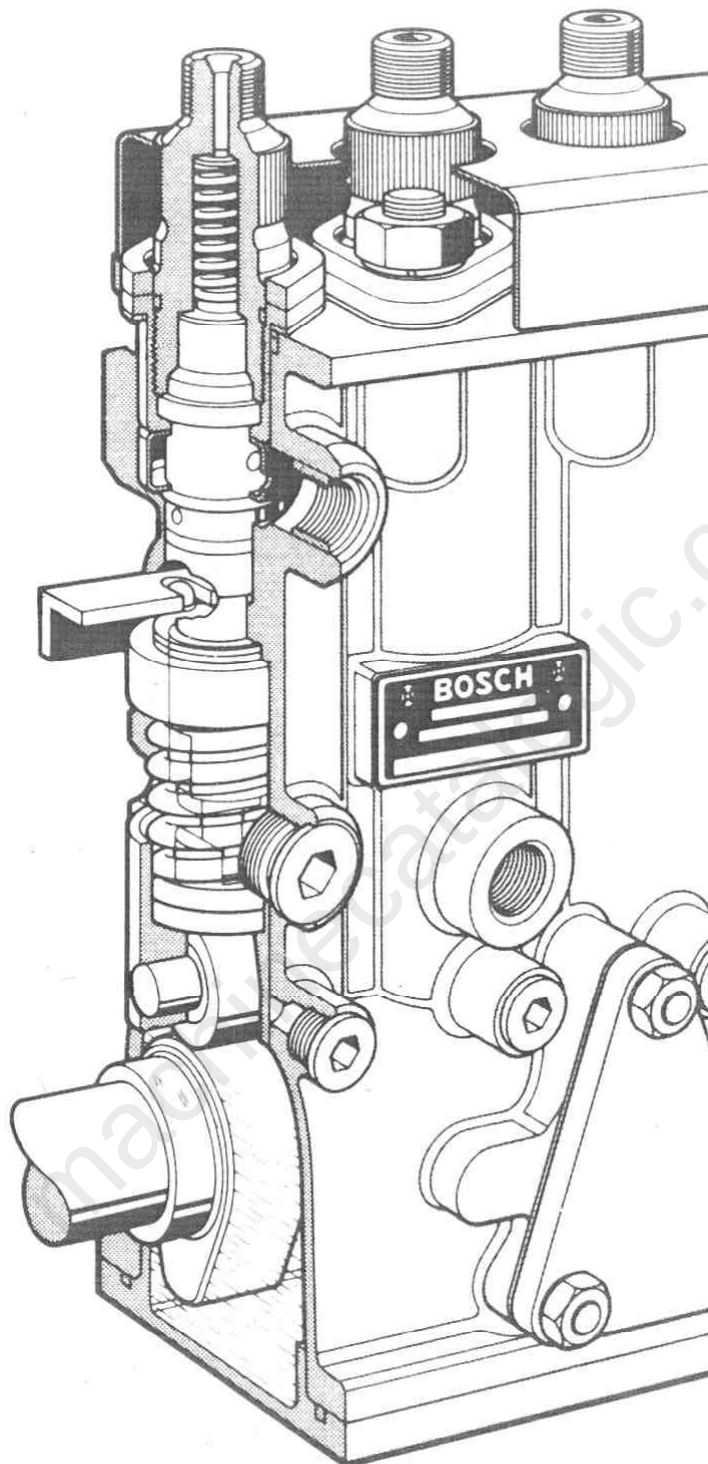
If the given limit value is exceeded, then the coolant pump must be replaced.

Important:

Before operating coolant pump, make sure that coolant has been added.

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LIEBHERR	Benennung / Description / Denomination	Typ	D 904 / 914 / 924
		Model Type	D 906 / 916 / 926
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LIEBHERR

Datum / Edition / Date
12 / 2003

Benennung / Description / Denomination

Injection pump
Pump size >P<

Typ
Model
Type
D 924 / 926

Blatt
Page
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25.2

26 Injection pump drive, adjust begin of delivery

Drive installed on timing case

On this drive, in-line injection pumps of pump size „A“ and „MW“ are installed.
The connection of injection pump to drive is made via gear shaft 1 and coupling sleeve 2.

Set begin of delivery (FB):

For begin of delivery data, see Engine Data.
Remove screws 7 and push cover 8 from the timing case.
Set cylinder 1 to the exact FB mark.

Note:

The center of the two threaded holes on the inspection port / flywheel housing are the reference points.

The flywheel is marked with the OT (upper dead center) and the 10° to 30° marks.

Install a high pressure hand pump or overflow pipe on cylinder 1 of the injection pump. Turn off the starting boost. Release screws 9, turn the drive hub 3 with a commercially available pin spanner approx. 90° to the left (turning direction as seen from the fan side onto the engine). Actuate the hand pump, turn back the drive hub 3 to the right until flows from the overflow pipe in droplets. The FB is set. Tighten screws 9 and check the FB (begin of delivery) again by turning the engine.

If adjustment is correct, reinstall everything.

Turn off the starting boost:

Injection pump „A“ with RQV regulator:

Remove the protective cap and push the regulating rod back until the lock engages.

Injection pump „A“ with RSV regulator:

Remove the protective cap and position the regulating rod in such a way, that it emerges about 10 to 12 mm from the end of the thread of the protective cap.

Injection pump „MW“ with RSV regulator:

Set the shut off lever to shut off. Attach the retaining device, Id. No. 0527462 to the shut off lever and move the shut off lever back to the stop of the retaining device to the injection pump. Set the control lever to full load.

Injection pump „MW“ with RSV regulator and solenoid for release of starting boost:

The solenoid may not be actuated with electrical current. Bring the shut off lever from shut off position to normal position.

Set the control lever to full load.

Note:

The injection pump and regulator descriptions are noted on the data tag of the injection pump or regulator.

Coolant with DCA 4 (DCA 4 = Diesel coolant additives)

The coolant must contain at least 50 % corrosion inhibitor / antifreeze all year round. This protects to approx. -37°C.

If coolant is lost, it has to be ensured that the percentage never drops below 50%.

Important: Do not use more than 60% corrosion inhibitor / antifreeze, a higher percentage would actually reduce the cooling effect and antifreeze protection.

The mixing ratio of corrosion inhibitor, antifreeze and the DCA 4 concentration must be checked during maintenance work (every 500 hrs.) and must be corrected, if necessary.

The DCA 4 concentration must be between 0.3 – 0.8 units per liter.

To check, we recommend the test kit CC 2602 M by Fleetguard.

The coolant must be changed every 2 years.

Before adding new coolant, check the cooling system for cleanliness, clean if necessary.

To fill the cooling system

To fill or refill the cooling system after repairs, liquid DCA 4 must be added to the corrosion inhibitor / antifreeze in addition to the DCA 4 concentration already contained in the water filters.

Cooling system contents	Required quantity DCA 4 liquid		DCA 4 Water filter	
	Container @	0.5 Liter	Liter	
Liter			Description	Id. No.
24 - 39	3	or	1,4	WF 2071 7367045
40 - 59	4	or	1,9	WF 2072 7381493
60 - 79	5	or	2,4	WF 2073 7367052
80 -115	8	or	3,8	WF 2073 7367052

Water filter change intervals

Water filter change intervals every 500 hrs.

If no coolant has been lost in the cooling system, the DCA 4 concentration in the cooling system should be sufficient if the water filter is changed every 500 hrs.

Use of DCA 4 without corrosion inhibitor / antifreeze

In exceptional cases and if ambient temperatures are always above freezing, for example in tropical areas and where no approved corrosion inhibitors / antifreeze fluids are available, water + **DCA 4 may be used as coolant.**

To protect the cooling system from corrosion in that case, twice as much DCA 4 must be used as compared to the usual mixing ratio of corrosion inhibitor / antifreeze fluid.

The DCA 4 concentration must be between 0.6 – 1.06 units per liter.

The DCA 4 concentration must be checked during maintenance work (every 500 hrs.), correct as necessary.

The coolant must be changed once a year.

Check the cooling system for cleanliness before adding coolant, flush the system, if necessary.

LIEBHERR	Benennung / Description / Denomination	Typ Model Type	D 904 / 914 / 924 D 906 / 916 / 926
	Service Fluids	Blatt Page Feuille	38.1
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Full Version Available

Liebherr D 904 to D 926 Diesel Engine Service Manual Set

Liebherr _General engine service manual, D904 to D926. Repair procedures, adjustments and main systems in 3 PDF files. Instant PDF download.

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