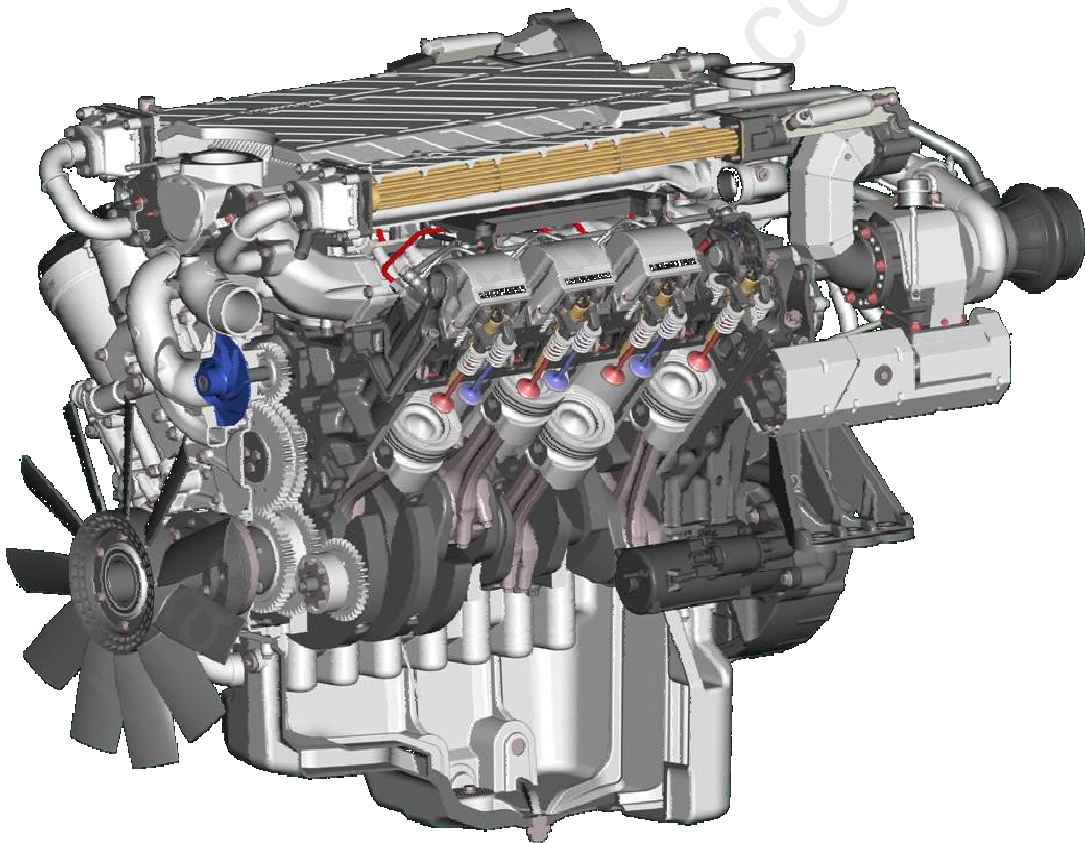


Service - Handbook

1st draft

The definitive edition of the Service Handbook will be released mid-summer 2007

Diesel Engine D 9508 A7



Uwe Wolf 2007

2.4 Cylinder liners

The cylinder liner, pos. (1), is rinsed directly from the cooling water, pos. (2), and are thus wet cylinder liners. The seal for the crankcase on the upper collar is resulted exclusively by pressing the surface of the cylinder liner collar with the crankcase fitting. The lower seal for the engine oil is resulted via two O-rings (4).

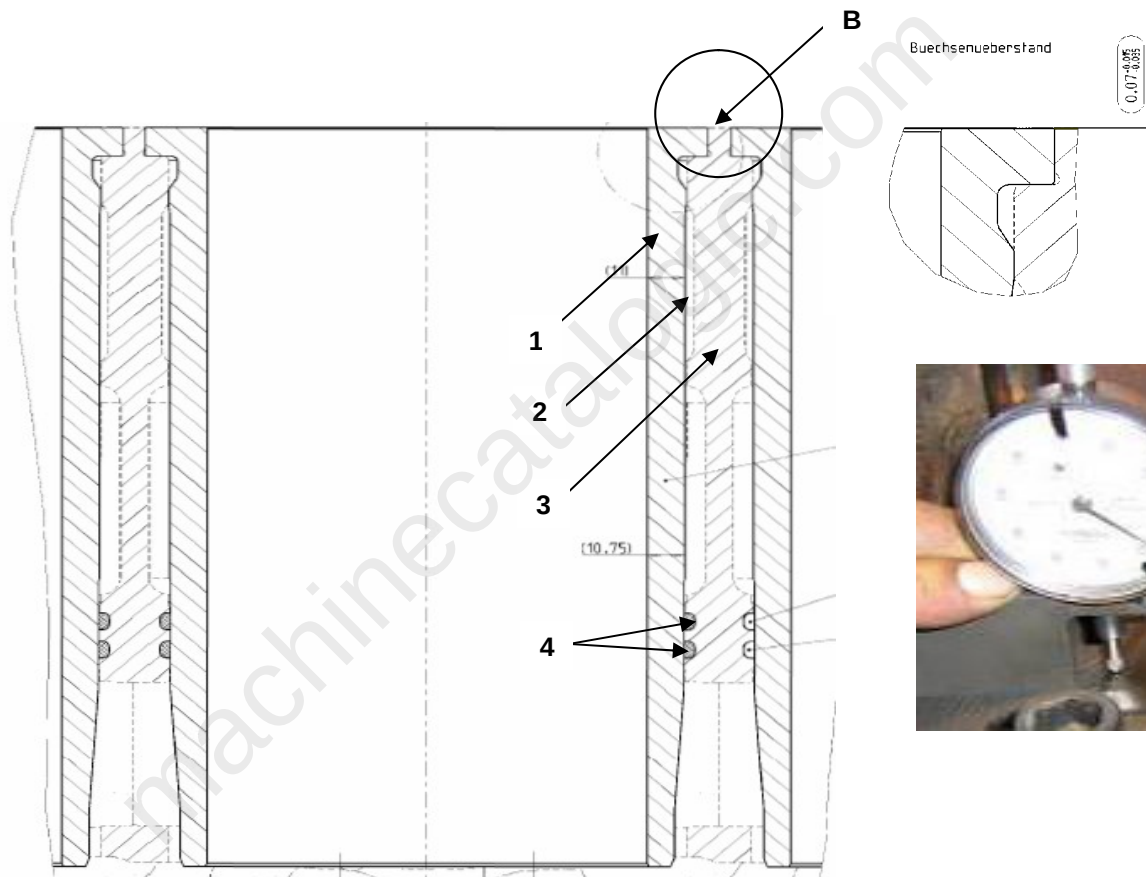
Checking the cylinder lining projection:

Cylinder lining projection **B** to the crankcase totals $0.07 + 0.015 - 0.035$

The cylinder liner projection should always be checked whenever the cylinder head gasket is replaced.

Installing the cylinder liner

Check the sealing face, as well as upper and lower cylinder liner fitting for damage. Apply a coating of grease (GBUY ID no. 8655027) to the O-rings before fitting and push the cylinder liner into the crankcase by hand.



1. Cylinder liner
2. Water jacket
3. Crankcase
4. O-rings

5.2 Cooling water pump



1



2

1

5.2.1 Dismantling the cooling water pump

The drive of the cooling water pump is resulted via gears. The cooling water pump is mounted in the aggregate carrier.

Technical data:

Flow rate for engines with 320 – 360 KW and 0.6 bar counterpressure: approx. 725 l/min at 1800 rpm

Flow rate for engines with 400 – 500 KW and 0.6 bar counterpressure: approx. 930 l/min at 1900 rpm

Removing the cooling water pump

Drain the coolant at the drain plug (3). Unscrew the fastening screws. Push out the cooling water pump using a flat screwdriver or tyre lever.

Installing the cooling water pump:

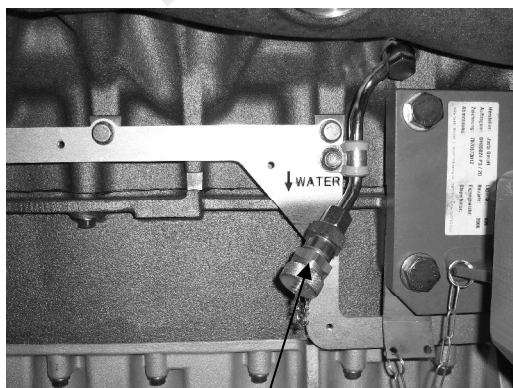
Fit the cooling water pump (1) in the pump housing (2), ensuring that the pump housing has been fitted with new O-rings (2) and retract evenly into the housing using the fastening screws.

Affix the cooling water pump, complete with housing and new O-rings (apply a light coating of oil to the O-ring) on the aggregate carrier

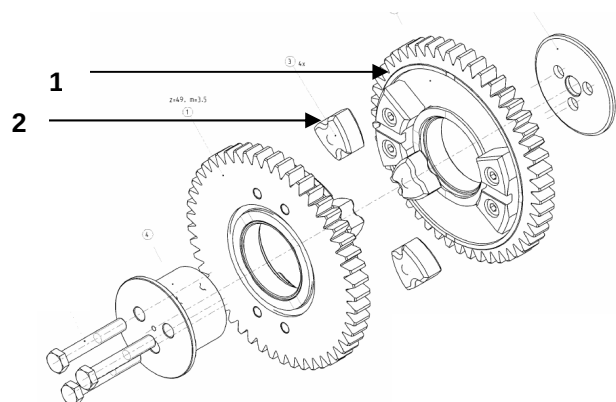
until the gear wheel in the gear train has quite clearly been felt to engage in the mating gear. Push in the coolant pump evenly with fastening screws and tighten. Fasten the leakage hose once again using the clamp.

!Note!

The water pump drive is (1) rubber-cushioned (2).



3



14. Mechanical fault list

Preview

Troubleshooting can prove to be difficult for diesel engines. For possible diesel engine problems with suspected causes and remedial measures, see „Error summary“

With diesel engines featuring EDC electronic regulation, additional error codes are displayed on the equipment to diagnose faults, and are described in the respective equipment documentation.

Fundamental logical steps for diagnosis are detailed in the following list:

Familiarity with the diesel engine and all associated systems

Scrutinise the problem thoroughly.

Relate the problem and knowledge of the diesel engine and its systems.

Diagnose the problem, whereby the simplest assumptions are worked upon.

Double check before beginning disassembly.

Establish the causes and perform repair work thoroughly.

Following repair, allow the diesel engine to run under normal operating conditions and check whether the problem and the cause have been remedied.

Electrical concept

The checks encompass measurements of voltage, current and resistance, as well as inspections for broken power circuits.

Utilisation of the following concepts is essential in utilisation of the diagnosis procedure:

Voltage (Volts DC)

Current (Amperes)

Resistance (Ohms)

Broken power circuits

Oscilloscope inspection

Ensure before commencing the search for errors:

No operation of equipment with excessive additional weight

Operating conditions correspond with the configuration of the equipment

Proper functioning of the hydraulic system

3052 ErrCylinderA3**Cylinder errorA3**

- | | | |
|---|----------------|--|
| 0 | Type of error: | No current flow |
| | Cause: | Current < (approx.) 1 A |
| | Reaction: | None |
| | Measure: | Check cable harness / plug / solenoid valve / engine control unit |
| 1 | Type of error: | Overcurrent LowSide |
| | Cause: | Hardware has switched off the cylinder due to overcurrent LowSide |
| | Reaction: | None |
| | Measure: | Check cable harness / plug / solenoid valve / engine control unit |
| 2 | Type of error: | Overcurrent HighSide at the PWM-transistor |
| | Cause: | Hardware has switched off the cylinder due to overcurrent HighSide at the PWM-transistor |
| | Reaction: | None |
| | Measure: | Check cable harness / plug / solenoid valve / engine control unit |
| 3 | Type of error: | Overcurrent HighSide at the FREEWHEEL-transistor |
| | Cause: | Hardware has switched off the cylinder due to overcurrent HighSide at the FREEWHEEL-transistor |
| | Reaction: | None |
| | Measure: | Check cable harness / plug / solenoid valve / engine control unit |
| 4 | Type of error: | No time-of-flight measured |
| | Cause: | CPLD faulty |
| | Reaction: | None |
| | Measure: | Replace engine control unit |
| 5 | Type of error: | Time-of-flight insufficient |
| | Cause: | Time-of-flight insufficient |
| | Reaction: | None |
| | Measure: | Check cable harness / plug / solenoid valve / engine control unit |
| 6 | Type of error: | Time-of-flight excessive |
| | Cause: | Time-of-flight excessive |
| | Reaction: | None |
| | Measure: | Check cable harness / plug / solenoid valve / engine control unit |
| 7 | Type of error: | No rise time measured |
| | Cause: | CPLD faulty |
| | Reaction: | None |
| | Measure: | Replace engine control unit |
| 8 | Type of error: | Rise time excessive |
| | Cause: | Current has not attained the prescribed booting current during the booting phase |
| | Reaction: | None |
| | Measure: | New data record, or replace engine control unit |

Full Version Available

Liebherr D 9508 Engine Service Manual

Liebherr D 9508 engine service manual with fault lists, injection and maintenance info for repair and troubleshooting. 2 PDF files. Instant PDF download.

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