

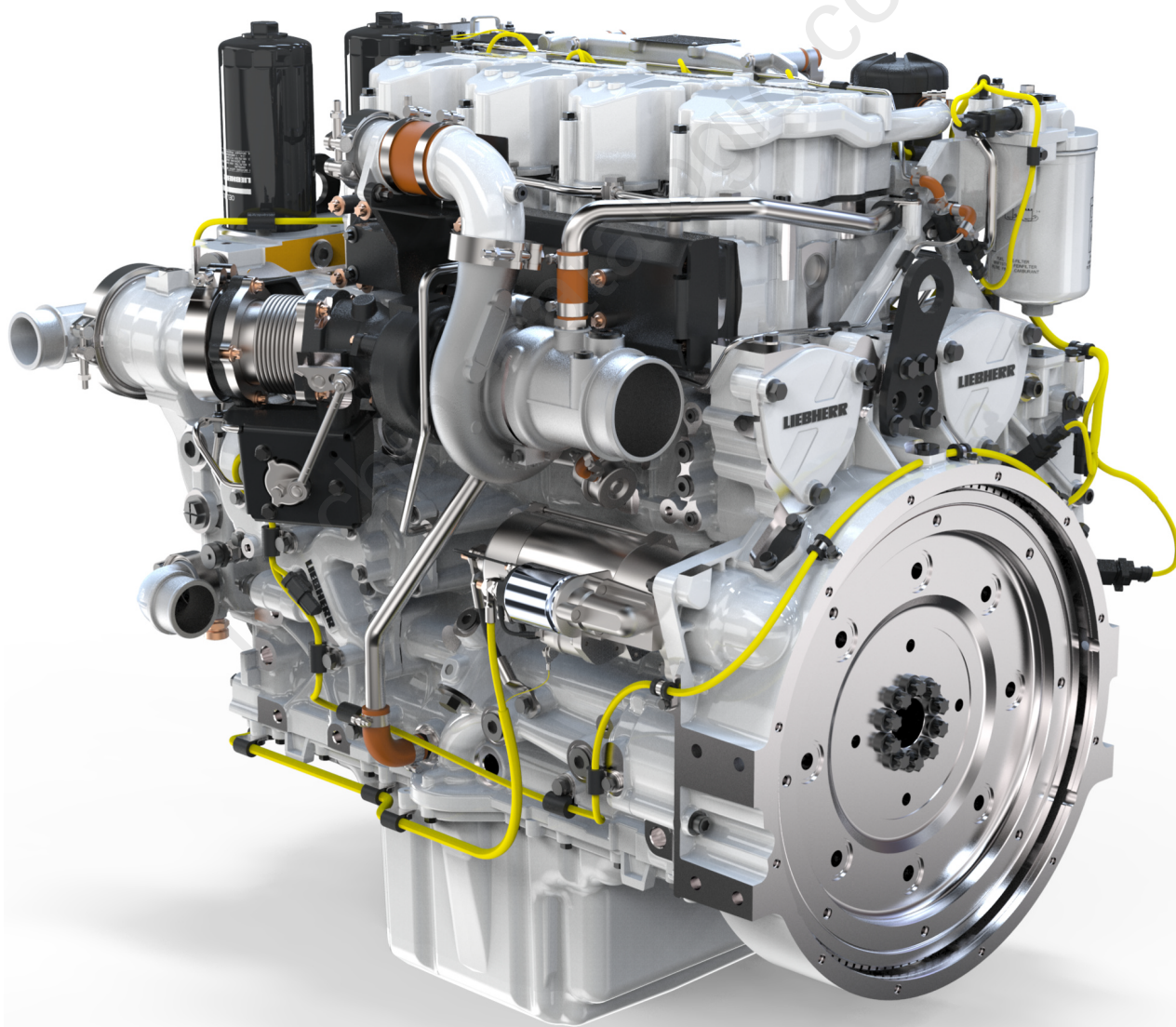
Operator's manual

en

Diesel engine

D944 A7-05 / LWE

From serial number 2018030001



**Note**

The restrictions occur in stages.

Display (pictograms are examples)		System status	Restrictions	Remedy
 MIL off  Reducing agent lights up yellow continuously.	 Acoustic signal	Reduction agent level < 10 % or malfunction of exhaust aftertreatment system.	No restriction	Refill reduction agent. In case of malfunction, contact Liebherr customer service.
 MIL flashes or lights up yellow continuously  Reducing agent lights up yellow continuously.	 Acoustic signal	Reduction agent level < 5 % or malfunction of exhaust aftertreatment system	Low power limitation	
 MIL flashes or lights up yellow continuously.  Reducing agent flashes or lights up red continuously.	 Acoustic signal	Reduction agent level < 2.5 % or malfunction of exhaust aftertreatment system	High power limitation	
 MIL flashes or lights up red continuously.  Reducing agent flashes or lights up red continuously.	 Acoustic signal	Reduction agent level < 0 % or malfunction of exhaust aftertreatment system		

Tab. 2: Exhaust aftertreatment system warning and malfunction strategies

Stationary operation (for example, crane operation at construction site)

**Note**

The reduction agent tank is deemed empty as of a fill level of <2.5%.

Zone	1	2	3	4	5
Error text				 8D/8C+D0077 "High soot load - perform regeneration soon"	 8D/8C+D0078 "Critical soot load - notify service"

Tab. 5: Regeneration of the filter module

5000h since the last filter module replacement	6000h since the last filter module replacement
Warning (P242F) is shown in the device display when the ignition is switched on	Permanent error (P13E2)
	 MIL lamp illuminates.
	Low power limitation

Tab. 6: Ash load of the filter module

For optimum filter module operation, it is recommended not to interrupt a manually running regeneration. However, if there is a risk of fire, it is imperative that a manual regeneration is terminated.

Cleaning hydrocarbon (HC) deposits

During operation of the engine in the low load and speed range, HC particles may accumulate and deposit in the exhaust aftertreatment system. The operating range is therefore monitored and the engine idling speed is increased, if necessary.

Lamp	Torque limitation	Display
-	Torque limitation to 50%	Note to the operator through the device display.

Tab. 7: Cleaning hydrocarbon deposits

1.1.3 Engine type itemization

Engine type designation					
D	94	4	A7	-05	Description
D					Engine type: D = diesel engine
	94				Family (l/cylinder): 94: 2 l/cylinder
		4			Number of cylinders
			A7		Injection system: A7 = Common Rail System
				-05	Emission standard: Stage V Exhaust aftertreatment system: SCRFilter (Selective Catalytic Reduction with diesel particle filter)

Tab. 8: Engine type itemization

3.4 Storage

3.4.1 Storage



Note

Liebherr recommends:

- ▶ Keep storage times as short as possible.
- ▶ Immediately install repair kits, sealing kits and conversions kits, as well as engines.
- ▶ Use the "first in first out" logistics method.

Make sure that the following prerequisites are met:

- ☐ Storage space in closed buildings (preferably brick or concrete buildings)
- ☐ No direct contact with atmospheric conditions (weather)
- ☐ Storage space well ventilated
- ☐ Storage space protected against frost
- ☐ Building is not in the immediate vicinity of fresh water or salt water resources
- ☐ Avoid direct sunlight, only low light irradiation permissible
- ☐ Falling below the dew point does not occur regularly
- ☐ Cover the engine with suitable aids to protect against UV exposure
- ☐ Storage at high storage locations in high-bay warehouses only permissible in fully air-conditioned storage spaces
- ☐ Recommended storage temperature: +18 °C to +23 °C (air-conditioned warehouse)
- ☐ Approved storage temperature: +5 °C to +35 °C
- ☐ Approved relative humidity 30 - 60%
- ☐ Engine stored shock-resistant, slip-resistant

Preservation with VCI corrosion protection film

Products that are not painted or that have bare surfaces are also packed in VCI corrosion protection film to protect against water and oxygen. When the volatile corrosion inhibitor "VCI" diffuses from the film to the metallic product, an atmosphere consisting of amines and nitrides arises and protects the product against the formation of rust and verdigris. The substance, or rather the protective atmosphere, evaporates without residues after unpacking.

Make sure that the following prerequisites are met

- ☐ Perform packing in enclosed spaces with low humidity and constant temperatures.
- ☐ Engine clean and dry
- ☐ Temperature of the engine identical to the ambient temperature (formation of condensation)

VCI film cover LxWxH	ID no.
2100x1100x2150	10165707
1250x850x1500	10042128
1250x850x2100	11694088
990x540x1300	11067328
2000x1500x2000	11826670
3200x1500x2000	11826671
540x350x540	11067327
350x250x550	11067326

Customer:..... Machine type:..... Serial no.:..... Operating hours:..... Date:.....

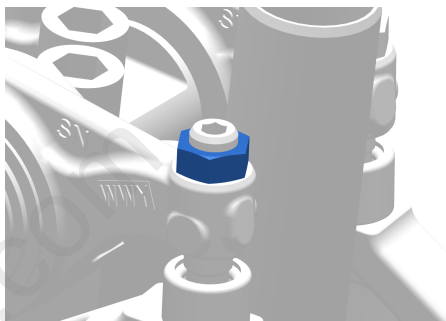
intervals (the earlier date is decisive)		Tasks to be performed		
		By maintenance staff ■ Once-only activity ● Repeat interval ✦ If necessary ❄ Annually before the winter	By authorized specialist staff □ Once-only activity ○ Repeat interval ✧ If necessary	Confirm tasks See page
■ 500 h	● 1000 h	Check sensors, actuators, cable holders and plugs for damage.		121
	❄	Check heating flange, if present.		123
	○ 10000 h	Replace heating flange, if present.		127
Exhaust aftertreatment system				
	● 10 h	Check exhaust aftertreatment system for leaks and damage.		129
■ 50 h	● 1000 h	Check components		131
	○ 5000 h	Replace the filter module.		132

4 Allen wrench

- ▶ Slide feeler gauge **1** between the valve bridge **2** and tappet **6**.
- ▶ Check the valve clearance.

If the valve clearance does not correspond to the settings:

- ▶ Release the lock nut **3** on the adjusting screw **5** of the tappet **6**.
- ▶ Correct the setting by turning the adjusting screw **5**.
- ▶ Hold onto the adjusting screw **5**.

Tensioning instruction for M10X1-6G6H lock nut		
Lubricant	-	
Locking agent	-	
Part contact surfaces	-	
Screws	Reusable	
Stage	Tightening torque	
1.	45 Nm	

Tab. 25: Tensioning instruction

- ▶ Tighten the lock nut **3** according to the tensioning instruction.
- ▶ Check the setting again.
- ▶ Repeat the process for all cylinders.

When the valves have been checked and set:

- ▶ Install cylinder head covers with inspected, intact seals.

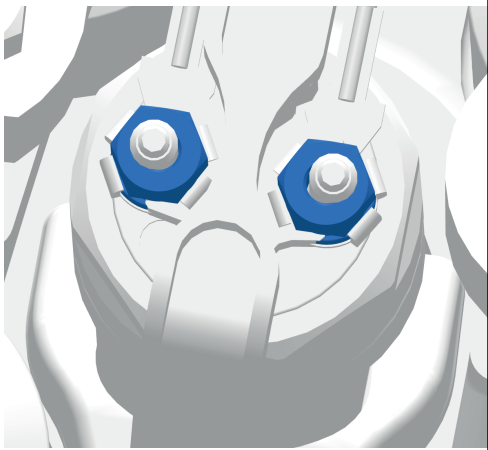
Checking and setting the valve clearance for the outlet valve with auxiliary brake system (ABS) (optional)

Setting the valve clearance for the inlet valve: [\(For more information see: Checking and setting the valve clearance for the inlet valve and outlet valve, page 100.\)](#)

Make sure that the following prerequisites are met:

- ☐ The engine is in the maintenance position. [\(For more information see: 5.2.1 Bringing the engine into maintenance position, page 68.\)](#)
- ☐ The cylinder head covers are removed.
- ☐ The cylinder to be checked is at ignition TDC.

Settings for valve clearance: [\(For more information see: 1.2.2 Valve clearance, page 36.\)](#)

Tensioning instruction for M4 hex nut		
Lubricant	-	
Locking agent	-	
Part contact surfaces	-	
Screws	-	
Stage	Tightening torque	
1.	1.8 Nm	

Tab. 26: Tightening instruction 12977315_000

- ▶ Tighten the hex nuts **7** according to the tensioning instruction.
- ▶ Install the cylinder head cover **2**.
- ▶ Tighten the external hex bolts **1**.
- ▶ Tighten the external hex bolt **3**.
- ▶ Connect the electrical line to the electrical plug connection **4**.

Sulfur content in fuel in ppm	Limit values
Lubricating oil specification	LH-00-ENG LA

Tab. 34: Engine oil change intervals when using non-Liebherr products

5.11.3 Coolant



Note

It is possible that mixing different anticorrosive and antifreeze agents can cause the properties of the coolant to deteriorate.

- ▶ Avoid combining different products.
- ▶ Make sure that silicate-containing and silicate-free coolants are not mixed.

Anticorrosive antifreeze agent

Liebherr recommendation

Type	Name
Premix ^{A)}	Liebherr Antifreeze OS Mix

Tab. 35: Recommendations for anticorrosive and antifreeze agents

A) Premix = finished mixture (50 % water and 50 % anticorrosive and antifreeze agents)

Minimum requirements for the quality

Specification
LH-01-COL

Tab. 36: Minimum requirement for the quality

Water

Liebherr recommends water having the following qualities
Corresponds to the guideline for drinking water from the World Health Organization (WHO) from 2006
Demineralized water (reverse osmosis water)

Tab. 37: Minimum requirements for the quality

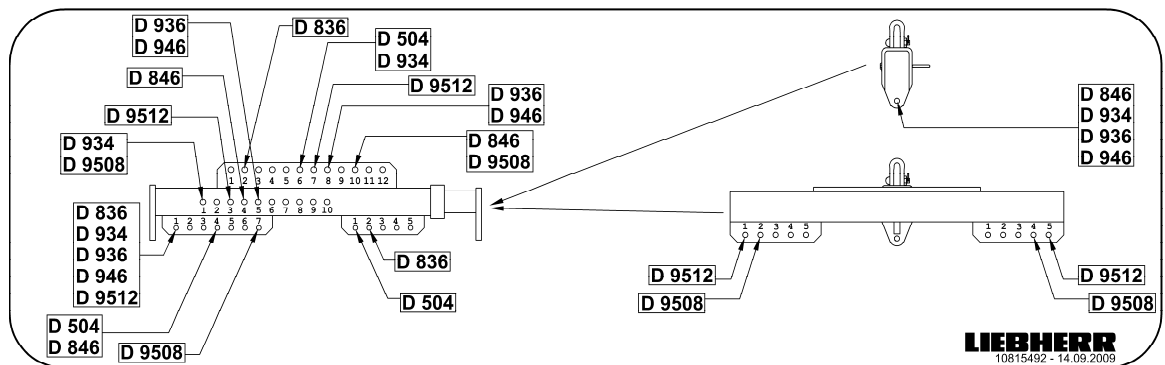


Fig. 158: Attachment point sticker

7.2.2 Lifting traverse with two-point-raising

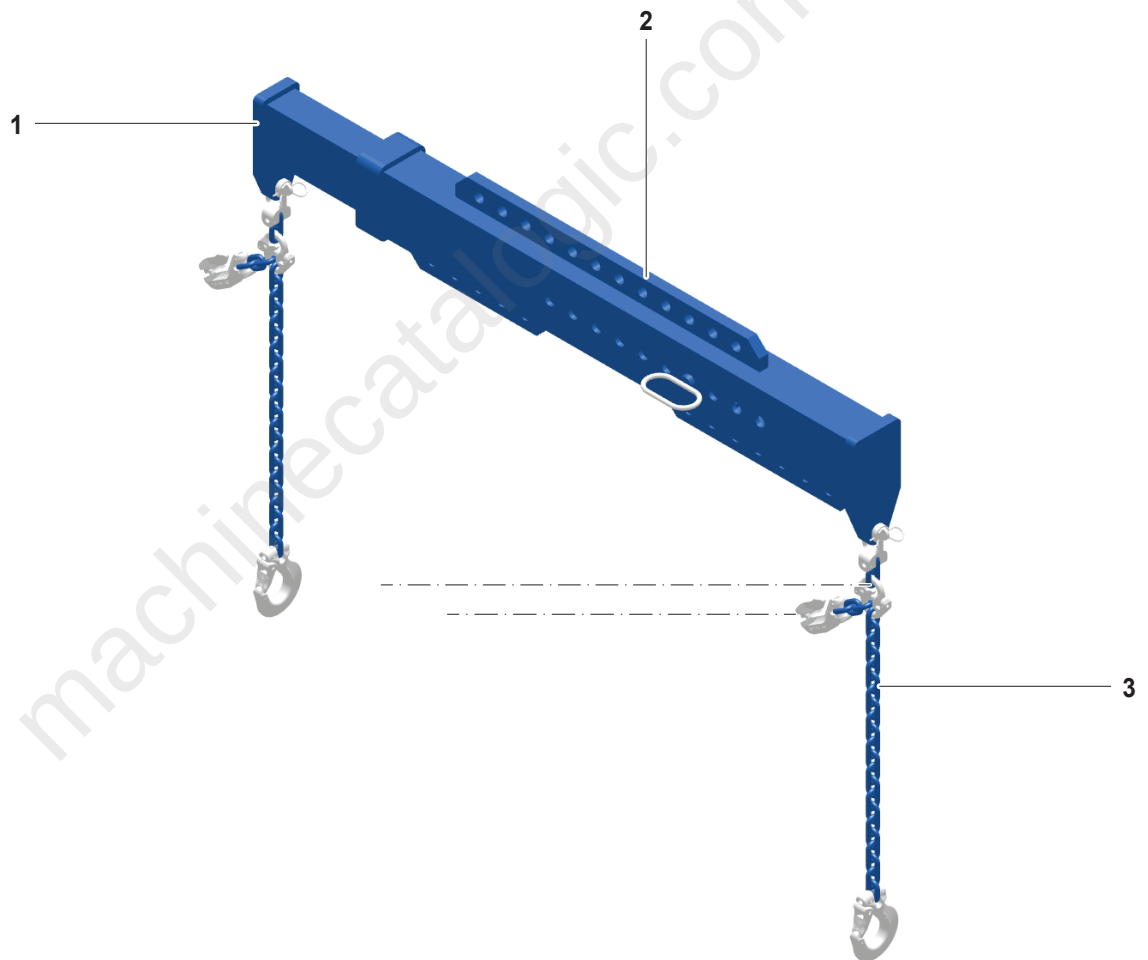


Fig. 159: Lifting traverse with two-point-raising

- 1 I-slide piece
- 2 I-reception tube

- 3 Chain suspension

Full Version Available

Liebherr D 944 Engine Operator Manual

Liebherr D 944 engine operator manual, covering safe operation, daily checks and care. 2 searchable PDF files, 280 pages. Instant PDF download.

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