en **Operator's manual**

Wheel loader

L 566-1616

From serial number 37904

Document ID

ORIGINAL OPERATOR'S MANUAL
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Manufacturer: Liebherr Machinery (Dalian) Co. Ltd.
Type: L 566
Type no.: 1616
From Serial no.: 37904

Contact

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1.2.14 Tyres

The driving performance of the machine depends, among other things, on the tyres.

Note
Installing and changing the working attachment or tyres.

▶ (For more information see: 2.4.18 Attachments and accessories, page 54)

Note
Use tyres of the same size for all four wheels.
A difference of more than 3% of the dynamic or static tyre diameter at the front and rear axle will cause damage to the travel drive.
If there is a difference of more than 1.5% between the left and right wheels, this will cause damage to the travel drive.

▶ Check the tyre diameter.

The correct tyre pressure is crucial for:
– Reliable operation of the machine during use
– Tyre service life

The table below contains the following information:
– Recommended tyre sizes
– Tyre tread
– Tyre pressure

The tyre pressure specifications refer to:
– Value set when delivered from the factory
– Cold tyres
– Machine ready for operation with standard equipment and permissible load

Note
Observe the maximum tyre pressure permitted by the tyre manufacturer.
When used for industrial timber handling or similar, higher tyre pressures are required.

▶ Check and adjust the tyre pressure. (For more information see: 5.14.1 Checking the tyre pressure, page 255)

Size and tread code		Change in operating weight	Loader width across tyres	Change in height	Air pressure		
					FA A)	RA B)	p - max. C)
		kg	mm	mm	bar	bar	bar
Techking 26.5R25 ET6A **	L3	0	2960	0	5.00	3.50	6.50
Triangle 26.5-25 TL612 28PR	E4	-324	2960	+10	5.00	4.00	6.50
Techking 26.5R25 ETLDD2 **	L5	+860	2960	+5	5.00	3.50	5.50
Bridgestone 26.5R25 VJT *	L3	-20	2970	-16	4.00	3.00	5.00
Bridgestone 26.5R25 VSDT **	L5	+858	2970	+20	4.50	3.00	6.50

Tab. 2: Tyres for the standard machine

A) Front axle

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2 Safety warnings, signs

Working on the machine poses safety risks to the operator, driver or maintenance personnel. You can prevent risks and accidents by regularly reading and observing the various safety instructions.

This is especially important for personnel who only occasionally work on the machine, for example, carrying out rigging or maintenance work.

The safety instructions listed below, if conscientiously followed, will ensure your own safety and that of others, and will prevent the machine from being damaged.

Whenever tasks which could cause danger to personnel or damage to the machine are described, the necessary safety precautions are explained in this manual.

2.1 How the warnings are marked

	This is the warning symbol. It warns you of potential injuries. To prevent injury or death, carry out all the measures identified by this warning symbol.

Tab. 9

The warning symbol always appears together with the signal words:
DANGER, WARNING, CAUTION

	**DANGER**	indicates a hazardous situation that will immediately lead to serious or fatal injury if it is not avoided.
	**WARNING**	indicates a hazardous situation that may lead to serious or fatal injury if it is not avoided.
	**CAUTION**	indicates a hazardous situation that may lead to minor or moderate injury if it is not avoided.
	ATTENTION	indicates a hazardous situation that may lead to damage if it is not avoided.

Tab. 10

2.1.1 Further markings

	**Note**	indicates useful tips and information.

Tab. 11

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Operating manual decal

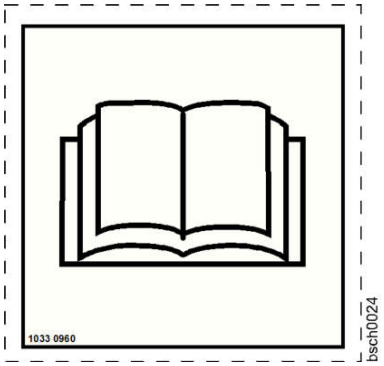

Fig. 35: Operating manual decal

Indicates where the operating manual is kept.

Check wheel tightness decal

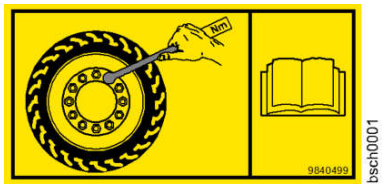

Fig. 36: Check wheel tightness decal

Indicates the maintenance interval specified in the operating manual.

ROPS/FOPS decal

Fig. 37: ROPS/FOPS decal

States the maximum load of the roll-over protection system.

Forklift bearing load table decal

This equipment is optional.

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23. Only allow experienced personnel to sling loads and direct crane drivers. The person giving directions must remain in sight of the operator or at least be in spoken contact with him.
24. When carrying out fitting work above head height, use the safety climbing aids and working platforms provided or equivalent. Do not use parts of the machine for climbing. Wear a safety harness when working at height. Keep all handles, steps, rails, gangways, platforms and ladders free from dirt, snow and ice.
25. When working on the attachment (for example replacing teeth), make sure it is properly supported. Avoid direct metal-to-metal contact.
26. Never lie under the machine when it is raised using the working attachment, unless the undercarriage is securely supported using wooden beams.
27. Always support the machine on blocks, so that it cannot become unbalanced by any shift in weight. Avoid metal-to-metal contact.
28. Only trained specialist staff may perform work on the chassis, brake and steering systems.
29. If you have to repair the machine on a slope, secure the wheels with wedges. Move the working attachment to the maintenance position and engage the articulation lock.
30. Only personnel with the requisite skills and experience may work on hydraulic equipment.
31. Wear protective gloves when looking for leaks. Under pressure, a thin jet of liquid can pierce the skin.
32. Never release hydraulic lines or bolts before setting down the working attachment and shutting down the engine.
    Before starting any work on the hydraulic circuit, you must also press the working hydraulics lockout button and actuate all pilot control units (joystick and pedals) in both directions in order to reduce the control pressure and accumulated pressure in the operating circuits. You must then reduce the internal tank pressure.
33. Regularly check all hydraulic oil lines, hoses and bolted connections for leaks and visible damage. Repair all damage immediately. Oil escaping under pressure can cause injury and fires.
34. Before beginning repair work, depressurise the system sections and pressurised lines (hydraulics, compressed air) which are to be opened, as instructed in the assembly descriptions.
35. Lay and fit hydraulic and compressed air lines in the proper manner. Do not switch the connections. Fittings, as well as the length and quality of the hose lines, must match the manufacturer's requirements.
    Only use Liebherr spare parts.
36. Replace hydraulic hose lines at appropriate intervals, even if there are no apparent defects which may impair safety.
37. Work on the machine's electrical equipment may only be carried out by a qualified electrician or by instructed persons under the direction and supervision of a qualified electrician, in accordance with the recognised electrical engineering rules.
38. Only use original fuses with the stated current ratings. If there are malfunctions in the electrical power supply, switch off the machine immediately.
39. Inspect and test the machine's electrical equipment regularly. Immediately rectify all faults, such as loose connections, scorched or worn cables or burnt out fuses and bulbs.
40. If you have to carry out work on live components, have a second person assist you, who can throw the emergency stop or main switch in an emergency. Cordon off the working area with a red and white safety chain and a warning sign. Only use insulated tools.
41. When working on high-voltage assemblies after they have been isolated from the power supply, short the supply cable and the components, such as capacitors, with an earthing rod.

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3.1.5 Control lever

Use the control lever to control the travel direction and movements of the working attachment.

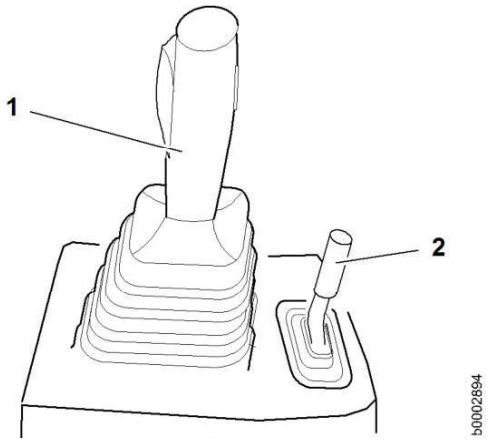

Fig. 49: Control lever

1 Control lever **2** Additional control lever

For more information see: *Control lever* and *Controlling a working attachment with its own hydraulic supply* in the section on operation

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Adjusting the lumbar support

Standard seat / comfort seat

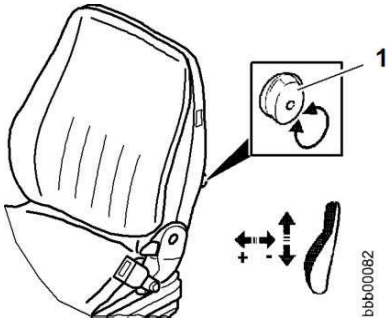

Fig. 66: Adjusting the lumbar support

1 Knob for *lumbar support*

▶ Turn the knob **1** to the left or right until the adjustment is correct.

Adjusting the back rest inclination

Standard seat / comfort seat

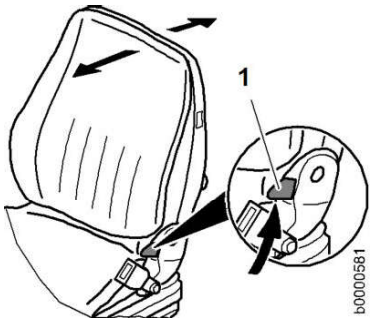

Fig. 67: Adjusting the back rest inclination

1 *Back rest inclination adjustment* lever

▶ Push up the lever **1**.

▶ Move the back rest to the angle required.

▶ Let go of the lever **1**.

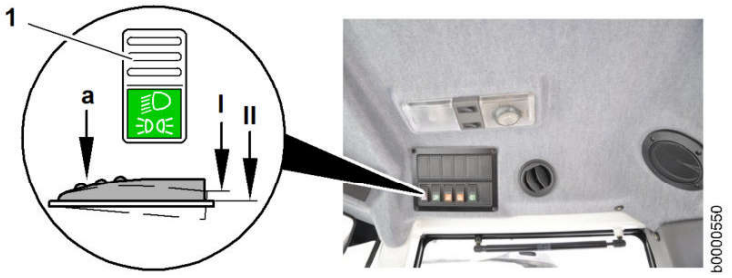

Fig. 83: Switching on the lights

1 *Marker lights and low beam* switch
I *Marker light* position
II *Low beam* position
a Switching off the lights

▶ Move the switch **1** to position **I**.
The following lights are switched on:
▷ Marker lights
▷ Tail light
▷ Licence plate lights (optional)

▶ Move the switch **1** to position **II**.
The following lights are switched on:
▷ Low beam
▷ Tail light
▷ Licence plate lights (optional)

To switch off the lights:

▶ Move the switch **1** to position **a**.

Switching on high beam

Make sure that low beam is switched on.

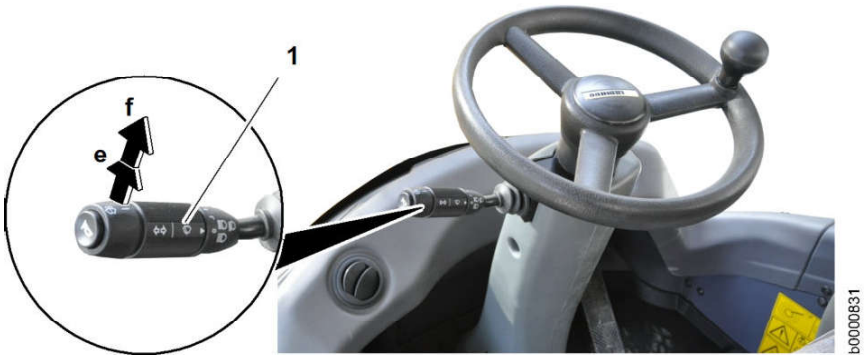

Fig. 84: Switching on high beam

1 Steering column switch
e Headlight flasher
f Switching on high beam

▶ Move the steering column switch **1** in direction **f**.
▷ *High beam* symbol field in the display lights up.
▷ The high beam lights up.

To switch back to low beam:

▶ Move the steering column switch **1** in direction **f** again.
▷ *High beam* symbol field in the display goes out.
▷ The low beam lights up.

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Displaying units

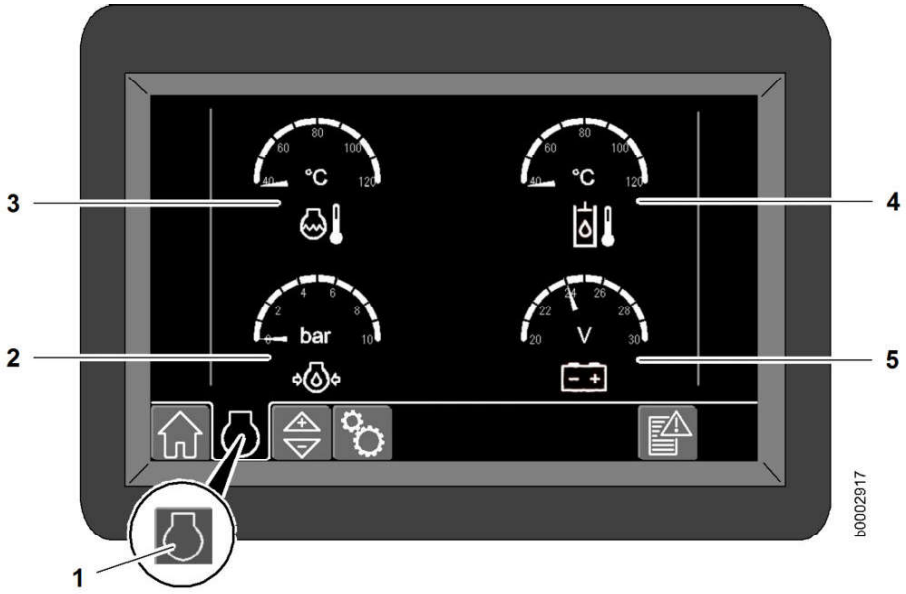

Fig. 93: Displaying units

Item	Designation
1	*Show units* button
2	Engine oil pressure indicator White symbol – normal mode Red symbol – engine oil pressure too low or too high
3	Coolant temperature indicator White symbol – normal mode Red symbol – coolant temperature too high
4	Hydraulic oil temperature indicator White symbol – normal mode Red symbol – hydraulic oil temperature too high
5	Battery voltage indicator White symbol – normal mode Red symbol – battery voltage too low or too high

Tab. 19: Displaying units

System settings

You can make the following system settings:

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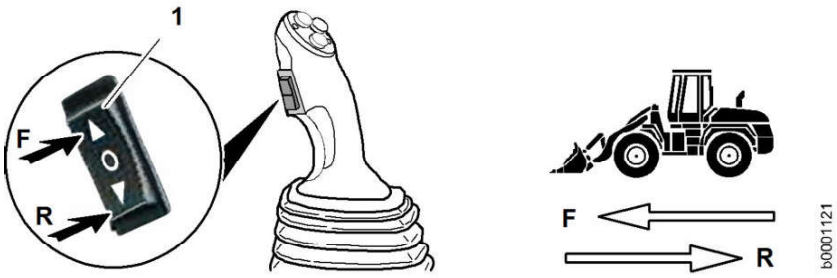

Fig. 107: Selecting the travel direction

1 *Travel direction* switch
F Forward travel direction
0 Neutral travel direction
R Reverse travel direction

▶ Use the switch **1** to select the travel direction.
▷ The travel direction is shown in the display.

Activating the Kick-Down function

The “Kick-Down” function hydrostatically brakes the machine from any travel speed and automatically shifts it to first gear. Once the machine is in first gear the “Kick-Down” function remains active for 10 seconds.

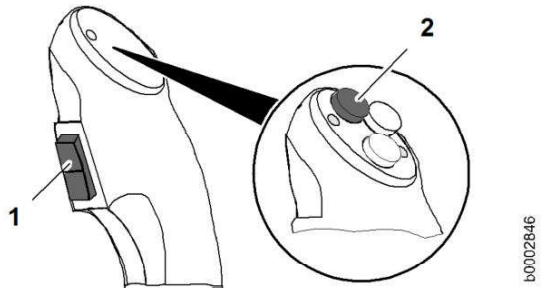

Fig. 108: Activating the Kick-Down function

1 *Travel direction* switch
2 *Kick-Down* button

▶ Press the button **2**.
▷ The machine shifts to first gear.
▷ The “Kick-Down” function is automatically deactivated after 10 seconds.

If you want to deactivate the “Kick-Down” function manually:
▶ Press the switch **1** in the reverse travel direction.

Controlling the working attachment

The working attachment is controlled by moving the control lever.

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Using the front windscreen wiper and washer system

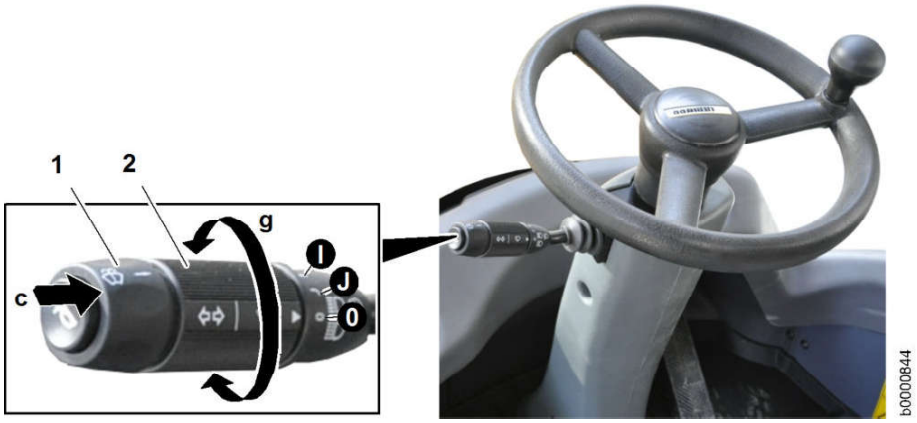

Fig. 122: Using the front windscreen wiper and washer system

1	Button	**c**	Windscreen wiper and washer system activation
2	Knob	**g**	Windscreen wiper activation

To wipe the window:

▶ Turn the switch **2** to the required position.
  ▷ **0** - windscreen wiper off
  ▷ **J** - intermittent wipe
  ▷ **I** - continuous wipe

To wash and wipe the window:

▶ Press and hold the button **1** in the direction of the arrow.
  ▷ Washer fluid is sprayed onto the front windscreen.
  ▷ The wiper is switched on.

Using the rear windscreen wiper and washer system

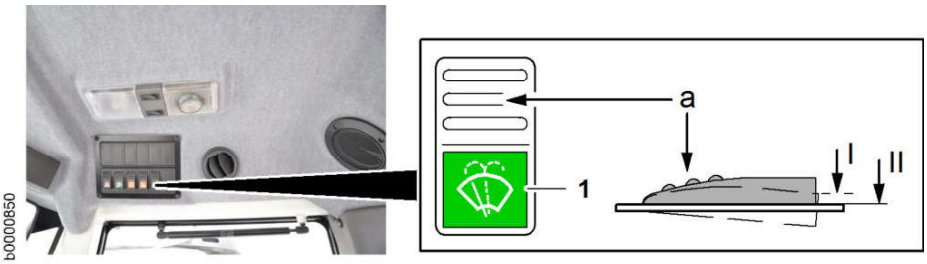

Fig. 123: Using the rear windscreen wiper and washer system

1 Rear windscreen wiper and washer system switch

To wipe the rear window:

▶ Press the switch **1** in position **I**.
  ▷ Continuous wiping

To wash and wipe the rear window:

▶ Press and hold the switch **1** in position **II**.
  ▷ Washer fluid is sprayed onto the rear windscreen.
  ▷ The wiper is switched on.

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NOTICE
Beware of damaging the starter.

▶ Do not attempt to start for more than 20 seconds at a time.

▶ Turn the ignition key to the starting position II until the engine starts.

▶ Release the ignition key.

When the engine starts, the following symbol fields should go out:
– Battery charge
– Brake accumulator pressure
– Engine oil pressure

When the symbol fields have gone out:
▶ Let the engine warm up at medium speed before you run it at full load.

3.3.3 Driving

Preparations for driving

Make sure the following preconditions are met:
❑ The machine is in the operating position. (For more information see: Putting the machine in the operating position, page 118)
❑ The mirrors and other visual aids (such as the reversing camera) are adjusted for the best possible all-round view. (For more information see: 2.4.20 See and be seen, page 55)
❑ All lighting equipment has been checked and correctly adjusted. (For more information see: 5.12.1 Checking the lights, page 253)
❑ The engine has started.

Putting the working attachment into position

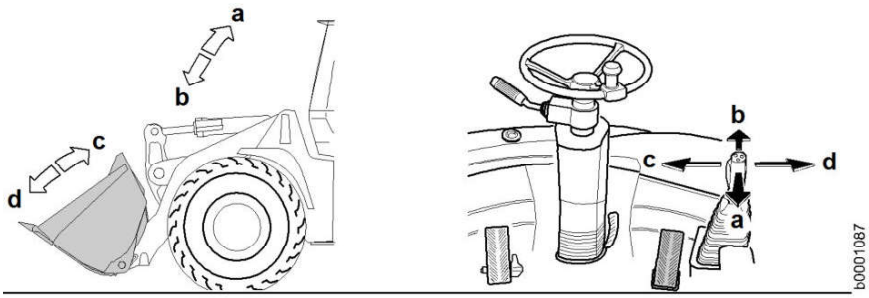

Fig. 134: Bucket position

▶ Raise or lower the lift arms as required.

▶ Move the loading bucket into position.

Selecting travel ranges

Travel range A1-3 is automatically selected when the engine is started.

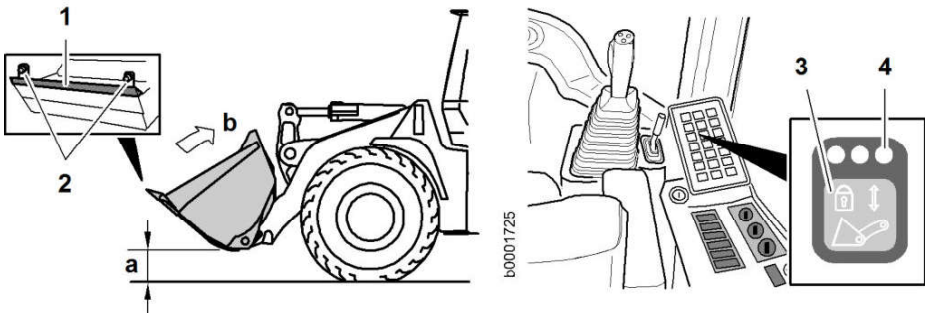

Fig. 147: Driving on public roads

1	Tooth guard	**4**	LED
2	Marker lights	**a**	Approx. 40 cm
3	*Working hydraulics lockout button*	**b**	Loading bucket at limit

- ▶ Remove coarse dirt from the machine and clean the tyre treads. (For more information see: 5.6.3 Cleaning the machine, page 217)
- ▶ Close all service hatches and if possible lock them.
- ▶ Attach the tooth guard **1** to the bucket.
- ▶ Secure the marker lights **2** and connect the cable.
- ▶ Put the machine in the transport position.
  - ▷ The bucket pivot point must be about 40 cm above the ground.
  - ▷ The bucket must be tilted in to the limit **b**.
- ▶ Press the button **3** to lock the working hydraulics and protect the working attachment from inadvertent use.
  - ▷ The LEDs **4** light up.
- ▶ Drive with appropriate care.
- ▶ Observe the highway code.

3.3.5 Shutting down the machine

Take the following precautions before you switch off the engine and leave the machine.

DANGER
There is a risk of accidents if the machine rolls away!

- ▶ Park the machine on level ground.

Lowering the working attachment

Make sure that the working attachment is empty.

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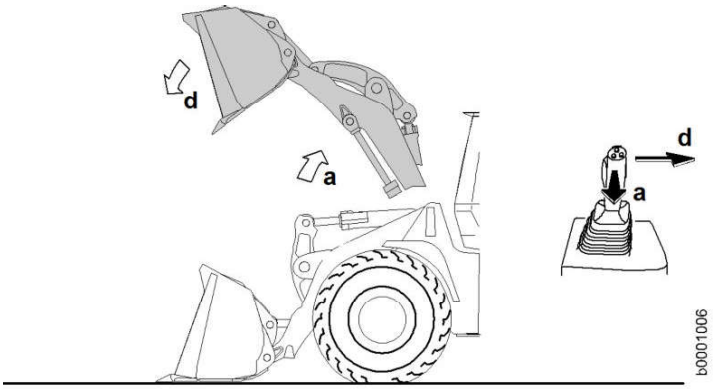

Fig. 162: Working with the return-to-dig function

To raise the lift arms:

▶ Move the control lever in direction **a**.

To tilt the bucket out in the raised position:

▶ Move the control lever in direction **d**.

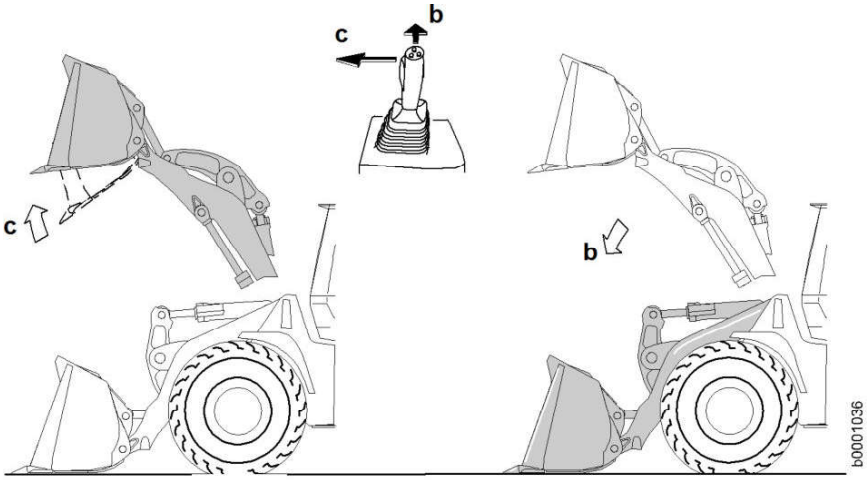

Fig. 163: Working with the return-to-dig function

Bucket return-to-dig (tilting in the bucket while raised):

▶ Move the control lever in direction **c** as far as it will go, then release it.
  ▷ The control lever is held in this position by magnetic force.
  ▷ The bucket is moved to the preliminary position for digging.
  ▷ As soon as the bucket is in the preliminary position, the joystick switches to a neutral position.

To lower the lift arms:

▶ Move the control lever in direction **b**.
  ▷ The bucket is moved to the digging position on the ground.

3.3.7 Forklift

This equipment is optional.

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3.4.5 Loading a transport vehicle

Transport routes

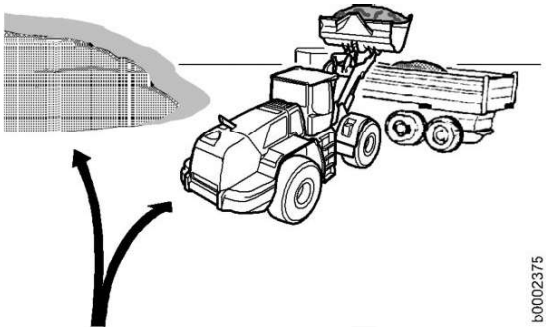

Fig. 177: Y movement

The vehicle to be loaded should be parked so that the transport distance for the machine is as short as possible.

If possible, make a **Y movement**.

Loading procedure

If you slow down the machine before the truck with the inch/brake pedal:
- Loading procedure is speeded up.
- Sensitive speed adjustment.
- Optimum power adjustment for the working attachment.

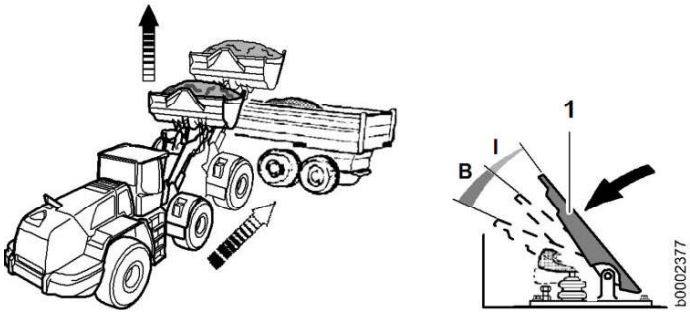

Fig. 178: Loading procedure

1 Inch/brake pedal
I Inching
B Braking

▶ Shortly before reaching the unloading point, slow down the machine with the inch/brake pedal and raise the lift arms.

WARNING
There is a risk of accidents due to falling material.

▶ Do not allow anyone into the danger area.

▶ Do not allow any persons to be present in the unsecured driver's cab (FOPS).

▶ Do not swivel over operating and working sites.

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3.6 Transport

3.6.1 Transporting the machine

Note
Clean the machine before transport.

▶ Remove any loose parts, coarse dirt, mud, ice, snow etc.

Lifting the machine by crane

Observe the safety regulations when lifting the machine by crane.

(For more information see: 2.4.15 Safety instructions for transporting the machine by crane, page 53)

Find out about:
– Weight and main dimensions of the machine (For more information see: 1.2 Technical data, page 16)
– Load bearing capacity and length of the slinging gear

NOTICE
The machine may leak fluids if it is tilted!

▶ Always make sure the machine is level when lifting it.

Make sure the following preconditions are met:
❑ Working attachment and loading equipment is lowered and tilted back to its limit.
❑ The articulation lock is engaged.
❑ The control lever is in neutral position.
❑ The engine is switched off.
❑ The doors, hatches and hoods on the machine are closed and locked.

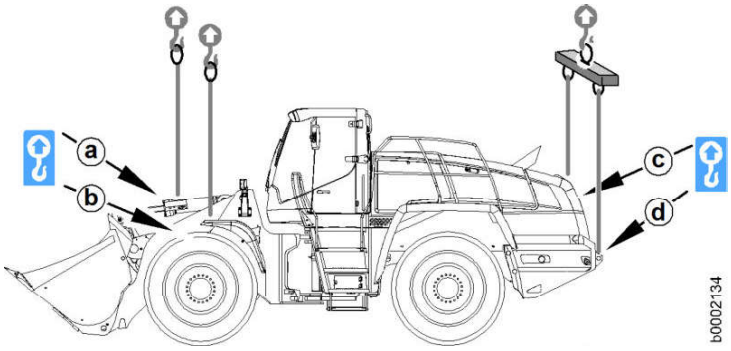

Fig. 192: Lifting the machine by crane

a	Front right slinging and lifting point	**c**	Rear right slinging and lifting point
b	Front left slinging and lifting point	**d**	Rear left slinging and lifting point

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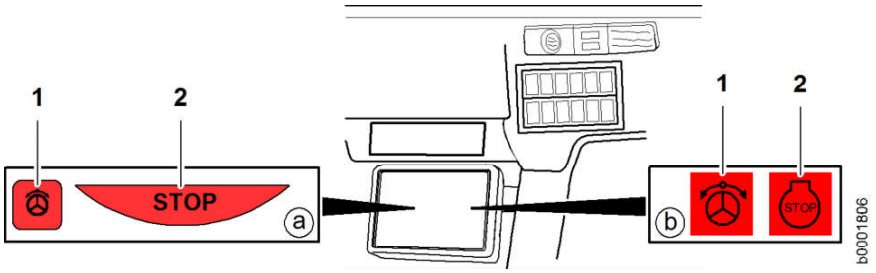

Fig. 205: Emergency steering

1	Emergency steering pump symbol field	**a**	LC display
2	STOP symbol field	**b**	Touch screen display (optional)

When the emergency steering function takes effect, the following light up:
– Emergency steering pump symbol field **1**
– STOP symbol field **2**, accompanied by a continuous tone

▶ Steer the machine out of the danger area within the 40 seconds available.

▶ Stop the machine.

▶ Contact Liebherr customer service.

Note
If the 40 seconds are not sufficient for the emergency steering function:
The emergency steering pump can be activated for another 10 seconds in total when the ignition is on.

▶ Activate the emergency steering pump manually.

If manual emergency steering is required:
▶ Press and hold the *emergency steering* switch for the duration of the steering manoeuvre.

▶ Steer the machine out of the danger area.

▶ Stop the machine.

▶ Contact Liebherr customer service.

3.7.4 Jump starting

If you have problems starting, the machine can be jump started with external batteries.

Make sure you have taken all the following safety precautions.

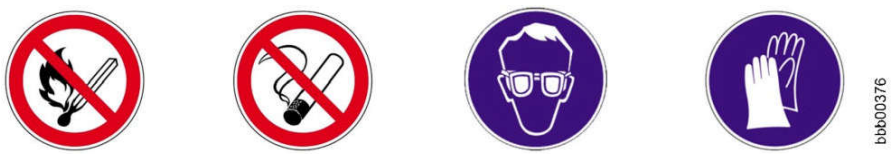

Fig. 207: Jump starting

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Malfunction	Cause	Remedy
Pump working but not delivering fluid	Air trapped in pump piston	Bleed the pump
	Filling level below minimum	Fill the reservoir
	Pump element defective	Replace the pump element
No grease collar on any lubrication points	Pump not working	Contact Liebherr customer service
	Pause time too long	Reduce the pause time or increase the lubrication time
	System blocked	See the section on “Grease escaping from pressure relief valve”
No grease collar on several lubrication points	Supply lines to auxiliary distributor broken or leaking	Replace the lines
	Leaky screw connections	Tighten or replace the screw connections
No grease collar on one lubrication point	Supply line broken or leaking	Replace the line
	Leaky screw connection	Tighten or replace the screw connection
Grease escaping from pressure relief valve	System pressure too high	Check the system
	Progressive distributor blocked	Replace the distributor
	System blocked	Repair the blocked/jammed bearing
	Valve spring defective	Replace the pressure relief valve

Tab. 31: Troubleshooting the Liebherr automatic central lubrication system

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

Maintenance / inspection after service hours							Tasks to be performed			
On handover	All 8-10 h	All 50 h	All 500 h	All 1000 h	All 2000 h	Other intervals	Additional labelling	**By maintenance staff** ■ Once-only activity ● Repeat interval ✦ If necessary ❄ Annually before the winter **with authorised specialist staff** ☐ Once-only activity ❍ Repeat interval ✧ If necessary **Additional labelling** Assistance required Have this task carried out exclusively by a certified electrician	Confirm tasks	See page
Cab, heating and air conditioning										
					❍			Lubricating the elongated hole on the accelerator pedal and checking the bearing		
			❍	❍	❍	✦		Cleaning the fresh and recirculated air filters		264
				❍	❍	✦		Changing the fresh and recirculated air filters		265
			❍	❍	❍	✦		Checking the condition and function of the safety belt		266
			❍	❍	❍			Checking the condition and function of the windscreen washer system		
						✦		Checking and topping up the windscreen washer reservoir		266
						✦		Checking the seals on the driver's cab		267
			❍	❍	❍			Testing the air conditioning unit		
Lubrication system										
☐		●	❍	❍	❍			Checking the lubrication system grease reservoir level		269
☐		●	❍	❍	❍			Checking the pipes, hoses and lubrication points of the lubrication system		269
☐		●	❍	❍	❍			Checking whether metered quantities are adequate at the bearing points (grease collars) of the lubrication system		270

LBH/11825461/02/02-2015/en

Complicating factor for engines without external exhaust gas recirculation (external EGR)	Oil quality	
0.5 % to 1.0 %	125 h	250 h

Tab. 39: Oil change intervals depending on complicating factor for engines without external exhaust gas recirculation (external EGR)

A) Operating hours

Complicating factor for engines with external exhaust gas recirculation (external EGR)	Oil quality	
	CI-4, CI-4 Plus, CJ-4, E4, E5	E6, E7
Sulphur content in the fuel	**Interval A)**	
Up to 0.5 %	250 h	500 h

Tab. 40: Oil change intervals depending on complicating factor for engines with external exhaust gas recirculation (external EGR)

A) Operating hours

5.3.5 Coolants for diesel engines

General recommendations

Antifreezes and corrosion inhibitors approved by Liebherr:
- Guarantee adequate protection from cold, corrosion and cavitation.
- Do not corrode seals and hoses.
- Do not foam.

Coolant is a mixture of water with corrosion inhibiting and antifreeze additives.

The cooling system only functions reliably under pressure. The cooling system must be clean and leak-tight. The cooling shut-off and working valves must work correctly. Maintain the required coolant level.

Coolants cause cavitation or corrosion damage in the cooling system if they contain unsuitable antifreeze and corrosion inhibitors or are incorrectly prepared. Insulating deposits that accumulate on components that conduct heat can lead to overheating and engine failure.

Emulsifying anti-corrosion oils are prohibited.

Water (fresh water)

Water that is colourless, clear, free of mechanical contamination, drinkable tap water featuring the following restricted analysis values is suitable.

Seawater, brackish water, brine and industrial wastewater are unsuitable.

Designation	Rating
Water hardness	0.6 mmol/l to 3.6 mmol/l (3 to 20°d)
PH level at 20 °C	6.5 to 8.5
Chloride ion content	maximum 80 mg/l

LBH/11825461/02/02-2015/en

5.4 Safety precautions

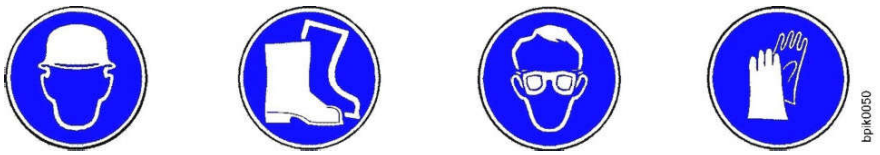

Fig. 228: Safety precautions

Make sure you are wearing safe working clothing.

Certain jobs not only require a hard hat and safety boots, but also goggles and safety gloves.

The relevant **safety regulations** must be observed whenever maintenance, inspection or repair work is carried out. Local health and safety regulations, accident prevention regulations and national laws must be observed.

(For more information see: 2.4.11 Measures for ensuring safe maintenance, page 49)

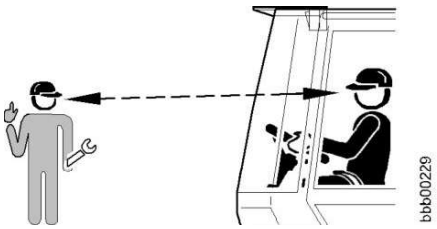

Fig. 229: Visual contact

Make sure that visual contact between the operator in the cab and maintenance personnel is always maintained.

WARNING
Beware of accidents during maintenance
The presence of unauthorised persons on the machine can place the maintenance personnel in extreme danger.

▶ Never enter a dangerous area of the machine without making your presence known.

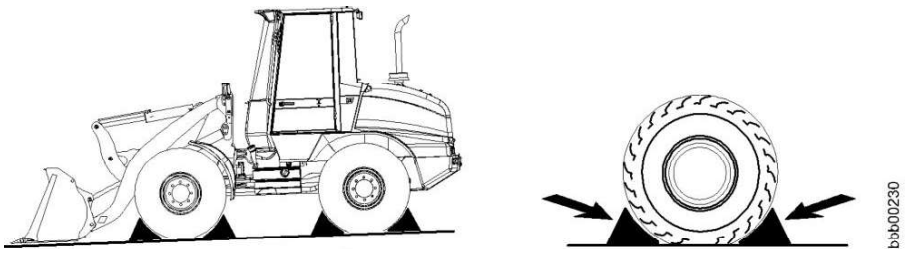

Fig. 230: Wheel wedges

▶ Use wheel wedges to prevent the machine from accidentally rolling away.

LBH/11825461/02/02-2015/en

Oelcheck offers various methods of analysis for a wide range of components and units. Liebherr has chosen two methods analysis that are specially adapted to the particular requirements of our systems and components.

	Green lid: mineral oil, coolant	Yellow lid: bio oil
Single analysis kit	8145660	7026 817
6-sample analysis kit	7018 368	7026 088
12-sample analysis kit	7018 369	

Tab. 56: Available analysis kits

The analysis kits with the green lid can be used for hydraulic systems filled with mineral oil, diesel engines, transmission and lubrication grease.

The analysis kits with the yellow lid are to be used solely for the diagnostics of bio hydraulic oils. The difference in the scope of the investigation is that the relatively expensive “Karl Fisher method” is used to determine the precise water content of all bio-oils. This investigation is however essential for an precise diagnosis of bio oils.

If other test laboratories are used, the oil analyses must at least include the following data:

Test method	Determination of
Atomic emission spectroscopy (AES)	Metal wear particles, additives, contaminants, iron, chrome, tin, aluminium, nickel, copper, lead, molybdenum, silver, silicon, potassium, magnesium, boron, zinc, phosphorus, barium
Fourier transform infrared spectrometer (FTIR)	Oil condition and pollution, oil oxidation, glycol, water, nitration, fuel, soot
Viscosity	Measurement taken at 40 °C and 100 °C, viscosity index, indication of lubricity and mixture
Particle quantifier index	Magnetic abrasion debris (measures the amount of the ferromagnetic abrasion debris in the oil > 5 µm)

Tab. 57: Test method

Sending oil samples

▶ Label the sample container with the barcode (the red laboratory number on the sample information form).
  ▷ This ensures that the accompanying form containing the sample information is allocated to the correct sample.

▶ Carefully complete the sample information form.
  ▷ The more information that is provided on the machine and the oil used for the evaluation, the more accurate the diagnosis that can be carried out.

▶ Always identify subsequent samples for the same machine with an identical sample description.
  ▷ This ensures that the analysed values are included as history on the printed laboratory reports. This makes the assessment of a trend easier. It is only through a trend that unequivocal evidence of the changing conditions caused by pollution, wear, oil ageing and contamination with other service fluids can clearly be recognised.

LBH/11825461/02/02-2015/en

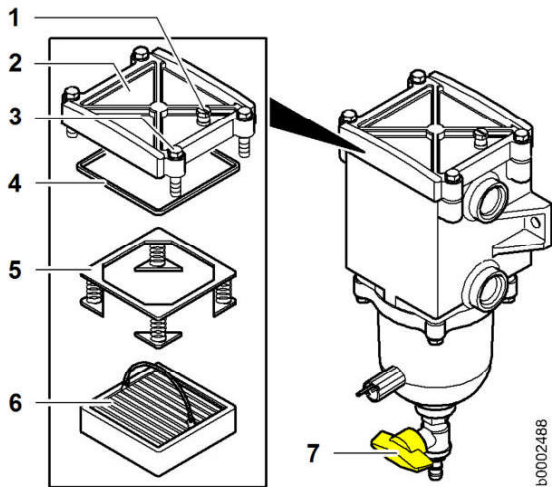

Fig. 246: Changing the Separ fuel pre-filter

1	Bleeder screw	**5**	Spring packet
2	Cover	**6**	Fuel pre-filter insert
3	4 screws	**7**	Drain valve
4	Seal		

Note
To prevent condensate flowing back into the fuel tank:

▶ Open the bleeder screw in front of the drain valve.

▶ Place a receptacle under the Separ fuel pre-filter.

▶ Carefully clean the Separ fuel pre-filter and the area around it.

When you drain off fuel:

▶ Open the bleeder screw **1**.

▶ Open the drain valve **7**.
▷ Fuel flows out of the pre-filter until it is empty.

▶ Open the screws **3** and remove the cover **2** with the seal **4**.

▶ Take out the fuel pre-filter insert **6** along with the spring packet **5**.

NOTICE
Beware of damage to the Common Rail system.

▶ Make sure no dirt gets into the clean side of the filter.

▶ Install the new fuel pre-filter **6**.

▶ Check the seal **4** and replace it if necessary.

▶ Check that the cover **2** is clean, put it on again and tighten the screws **3** crosswise and evenly.

▶ Close the drain valve **7**.

▶ Tighten the bleeder screw **1** to a torque of 6 Nm.

LBH/11825461/02/02-2015/en

5.8 Cooling system

5.8.1 Checking the coolant level

Make sure that the following requirements are fulfilled:
- ❑ The machine is in maintenance position 1.
- ❑ The service access is open.
- ❑ The engine has cooled down.

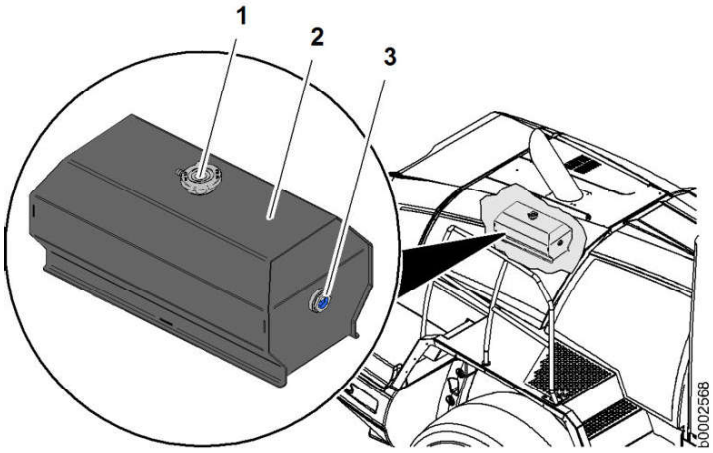

Fig. 257: Checking the coolant level

1 Cap
2 Equalising reservoir
3 Sight glass

CAUTION
Beware of scalding due to coolant escaping under pressure.
Do not open the cap on the filler neck until the engine has cooled down.

▶ Let the engine cool down.

▶ Check the coolant level through the sight glass **3**.

If no coolant is visible through the sight glass **3**:

▶ Carefully open the cap **1** on the filler neck.

NOTICE
Mixing different antifreeze/corrosion inhibitors can result in damage to the cooling system.

▶ Do not mix coolants with and without silicates.

▶ Top up the coolant.
  ▷ Coolant should now be visible in the sight glass **3**.

▶ Close the cap **1** on the filler neck.

LBH/11825461/02/02-2015/en

5.11 Brake system

5.11.1 Testing the service brake and parking brake

Make sure that there is enough room to check the service brake and parking brake.

WARNING
Beware of injuries while testing.

- ▶ Make sure there is no-one in the danger area.
- ▶ Perform the test on level ground with no obstacles.

Testing the service brake

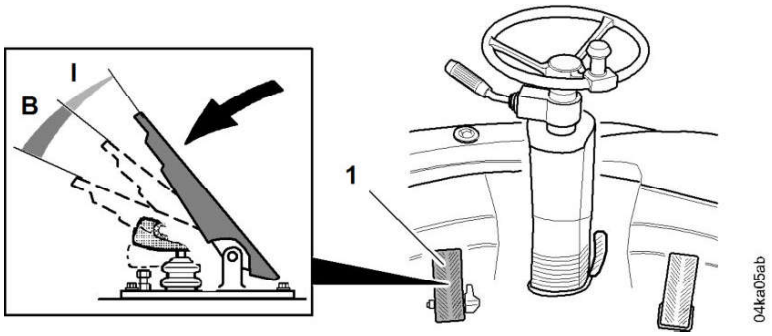

Fig. 269: Testing the service brake

1 Inch/brake pedal
I Inching
B Braking

- ▶ Start the machine.
- ▶ Select forward travel and drive it forwards at around 8 km/h.
- ▶ While the vehicle is moving, press the inch/brake pedal **1** all the way down.
  ▷ The machine must come to an abrupt halt.

Troubleshooting
If the braking effect is too slight or entirely absent?

- ▶ Contact Liebherr customer service.

Testing the parking brake

- ▶ Start the machine.
- ▶ Select forward travel and drive it forwards at around 5 km/h.
- ▶ Press the *parking brake* button while travelling.
  ▷ The machine must come to an abrupt halt.

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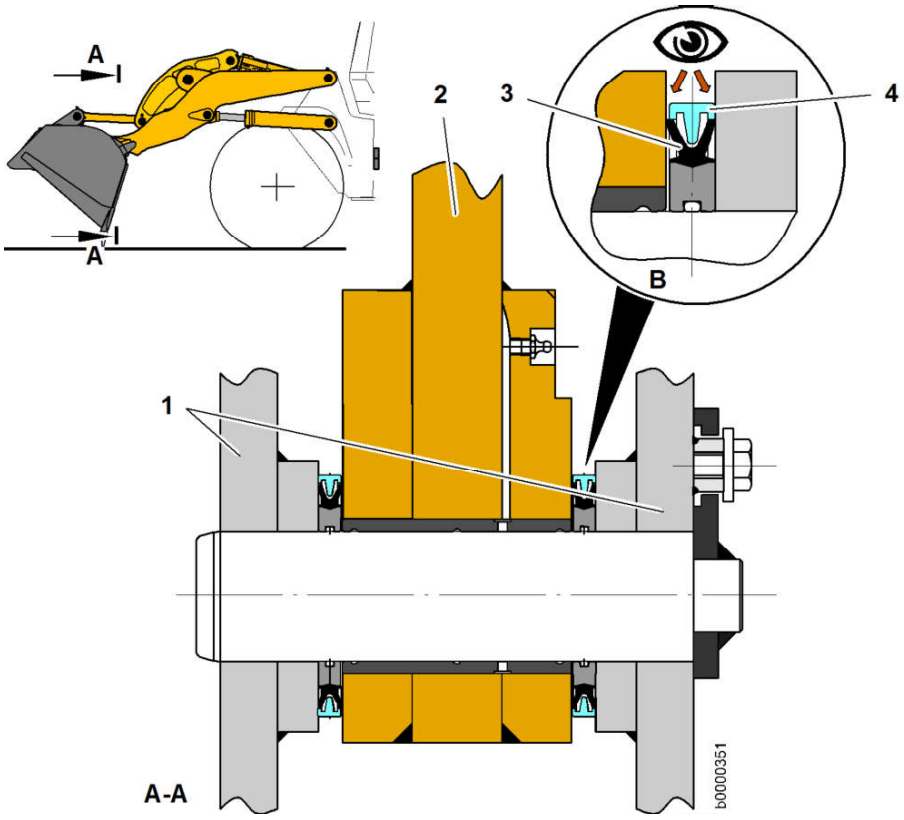

Fig. 281: Checking the bucket bearing seal

1 Bucket bearing plate
2 Bucket arm
3 Sealing lips
4 Dirt guard
B Bucket bearing seal

▶ Clean the bucket bearing seal **B** using a steam jet.

▶ Visually check whether the sealing lips **3** touch the sides of the bucket arm **2** and bucket bearing plate **1**.

Replace the bucket bearing seal if:
– The bucket bearing seal **B** is damaged
– The sealing lips **3** do not touch the bucket bearing plate **1**
– The sealing lips **3** do not touch the bucket arm **2**

Note
To replace the bucket bearing seal:

▶ Contact Liebherr customer service.

Checking the bearing bushings for wear

Dirt or insufficient lubrication causes wear on the bearing bushings. Wear is recognisable through increased play between the pin and bearing bushing or through loud noises. Replace the bearing bushings in good time to prevent damage to the bucket arms.

LBH/11825461/02/02-2015/en