en **Operator's manual**

Wheel loader

Document ID

ORIGINAL OPERATOR'S MANUAL

Order number: 11838918
Issued: 01-2019
Version: 22
Author: LBH / Technical Documentation Department

Product ID

Manufacturer: Liebherr-Werk Bischofshofen GmbH
Type: L 550
Type no.: 1214
From Serial no.: 40314

Conformity: CE

Contact

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Travel speeds

- For forward and reverse travel
- With standard tyres

Description	Unit	Value
Travel range A	km/h	0-40.0
Travel range 1 (can be limited)	km/h	10-19.0
Travel range 2 (can be limited)	km/h	20-29.0
Travel range 3 (can be limited)	km/h	30-40.0

1.2.7 Axles

- Four-wheel drive
- Axle ratio: planetary drives in wheel hubs

Front axle

Rigidly mounted planetary axle.

Description	Unit	Value
Track width	mm	2003
Automatic self-locking differential	%	45

Rear axle

Oscillating planetary axle.

Description	Unit	Value
Track width	mm	2003
Automatic self-locking differential	%	45
Angle of articulation to each side	°	13
Maximum obstacle height (standard tyres), with all four wheels on the ground.	mm	460

1.2.8 Braking

The brake systems comply with the roadworthiness certification regulations.

Service brake

- Self-arrest of travel drive, acting on all four wheels.
- Hydraulic pump accumulator brake system with wet disc brakes (two separate brake circuits)

Parking brake

Electrohydraulically actuated spring accumulator disc brake on the transmission.

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	Designation	Unit	Value		
	Cutting tool		C)	C)	C)
	Lift arm length	mm	2600	3000 D)	3000 D)
	Bucket capacity as per ISO 7546 E)	m^3	3.0	2.6	2.8
	Bucket width	mm	2700	2700	2700
	Specific material weight	t/m^3	1.8	1.8	1.6
A	Dump height at maximum lifting height and 45° tilt-out angle	mm	2880	3550	3520
B	Dump height	mm	3500	4100	4100
C	Maximum bucket base height	mm	3795	4360	4360
D	Maximum bucket pivot point height	mm	4075	4640	4640
E	Maximum bucket top height	mm	5580	6090	6120
F	Reach at maximum lifting height and 45° tilt-out angle	mm	1135	940	960
G	Digging depth	mm	80	80	80
H	Height above operator's cab	mm	3370	3370	3370
I	Height above exhaust	mm	3020	3020	3020
J	Ground clearance	mm	490	490	490
K	Wheelbase	mm	3395	3395	3395
L	Overall length	mm	8550	8940	9000
	Turning radius over bucket outer edge	mm	6630	6830	6850
	Breakout force (SAE)	kN	125	136	134
	Tipping load when straight	kg	12800	10700	10600
	Tipping load when fully articulated (ISO 14397-1)	kg	11100	9200	9100
	Operating weight	kg	18700	18900	18950

Tab. 8: Complete machine with loading bucket (industrial lift arms)

A) Industrial lift arms with parallel guidance including quick coupler
B) Earth bucket with short, straight base for quick coupler
C) Welded tooth holder with plug-in teeth
D) High lift
E) In practice, the bucket capacity can be around 10% greater than as calculated using the ISO 7546 standard. The bucket filling level depends on the type of material.

1.2.23 Working attachment: light material bucket

Values stated refer to machine:

- In standard version
- With 23.5R25 L3 tyres (For more information see: 1.2.18 Tyres, page 25)
- Including all lubricants
- With a full fuel tank
- With ROPS/FOPS cab and operator
- On level and stable ground

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2.3 Foreseeable misuse

Do not use the machine:
- To carry persons without fitted and working safety equipment.
- To lift persons without fitted and working safety equipment.
- To pull loads (e.g. containers, wagons, trailers).
- For work in explosion hazard zones.
- For work in contaminated environments.
- To break rocks.
- To hammer in posts.

Note

The manufacturer accepts no liability for damage caused by improper use.

2.4 Signs on the machine

There are various types of sign attached to the machine.

Sign types:
- Safety signs
- Information signs
- Type plates

The item codes can be found in the spare parts list.

2.4.1 Safety signs

Obeying the instructions on the safety signs can prevent severe or even fatal injuries. Check regularly that the signs are complete and legible. Replace any missing or illegible safety signs immediately.

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9. Do not take passengers on the machine.
10. Only work when seated and wearing a safety belt.
11. Report any malfunctions and make sure that any necessary repairs are completed immediately.
12. Check personally to ensure that no-one is endangered when the machine starts moving.
13. Before starting work, check the brake system as instructed in the **operator's manual**.
14. Never get out of the operator's seat while the machine is still in motion.
15. Never leave the machine unattended with the diesel engine running.
16. When driving the machine, lower the working attachment to the transport position and carry the load as close as possible to the ground.
17. Avoid movements which could cause the machine to tip over.
    If the machine does start to tip over or slide sideways, put down the working attachment immediately and point the machine downhill.
    Wherever possible, work up or downhill and not sideways to the slope.
18. Drive carefully on rocky or slippery terrain and on slopes.
19. Only drive downhill within the permitted speed limit, otherwise you could lose control of the machine.
    The diesel engine must be running at the rated speed and you should only reduce the travel speed using the pedals.
    Shift down to a lower gear before reaching the downhill slope. Do not wait until you are actually on it.
20. When loading a truck, insist on the driver getting out of the operator's cab, even if it has a falling object protective structure.
21. When performing work such as demolition work, clearance and crane operation, always use the protective equipment provided for these specific tasks.
22. Have someone direct you when vision is restricted and whenever else this is necessary.
    Only allow one person to give you signals.
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 the operator.

2.5.7 Safety instructions for driving on slopes

1. On downward slopes, always drive carefully and never at top speed, as you could otherwise lose control over the machine.

   Travel speeds:
   - Never exceed the speed limits specified in the **operator's manual**.
   - Exceeding the maximum speed causes the permitted limits to be exceeded for all rotating parts, including the drive motor, the drive shaft, all gears including axles and ultimately the diesel engine itself.
2. Therefore, before driving onto a slope, select a travel range (gear) in which you can safely negotiate the whole slope without endangering yourself, the machine and other people.
3. Also, take your foot off the travelling pedal when driving onto a downhill route.

2.5.8 Parking safely

1. When possible, always park the machine on flat, firm ground.
   If you have to park on a slope, use wheel wedges to prevent the machine from moving.
2. If the machine has articulated steering, engage the articulation lock.
   This only applies to wheel loaders with articulated steering.

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3 Handling and operation

3.1 Control elements

3.1.1 Cab

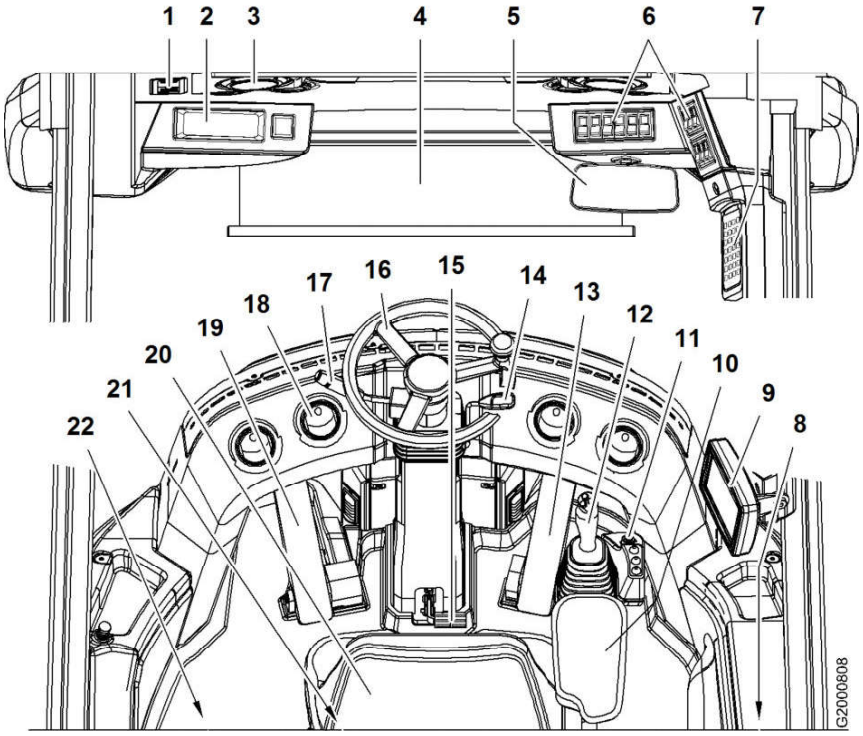

Fig. 55: Cab

1 Interior lighting
2 Radio (optional)
3 Speaker
4 Sun blind
5 Interior mirror
6 Switch panels
7 Control unit
8 Diagnostic plug
9 Display
10 Adjustable arm rest
11 Starter switch
12 Control lever
13 Accelerator pedal
14 Lever for adjusting *steering wheel inclination* and *height*
15 *Steering wheel distance adjustment* lever
16 Steering wheel
17 Steering column switch
18 Heating, ventilation and air conditioning nozzles
19 Inch/brake pedal
20 Driver's seat
21 Storage compartment
22 Fuse box

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Opening the sliding window

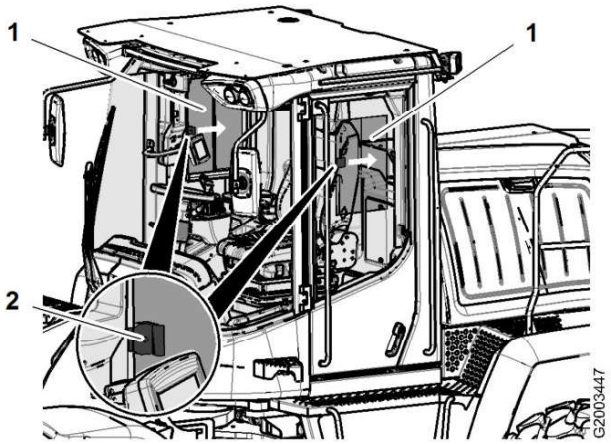

Fig. 67: Opening the sliding window

1 Sliding window **2** Handle

▶ Use the handle **2** to unlatch the sliding window **1**.

▶ Move the sliding window **1** to the required position.

To close the window:

▶ Use the handle **2** to close the sliding window **1**.
  ▷ Handle **2** locked in window frame.

3.2.5 Emergency exit

The right side window and the rear window are designed as emergency exits and should be used as such in this event.

There is an emergency hammer in the cab for breaking the side and windows.

Using the emergency hammer

Make sure that the following requirements are fulfilled:

❑ The emergency hammer is in the cab.

❑ It is possible to get out through the emergency exit.

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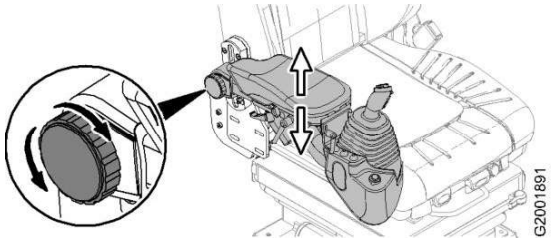
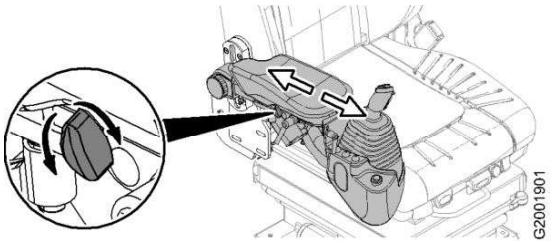
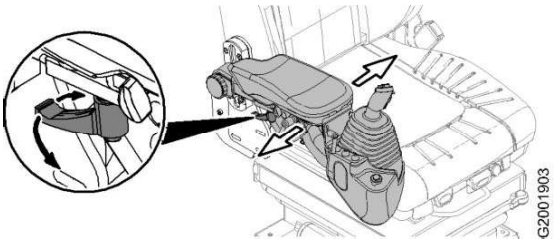
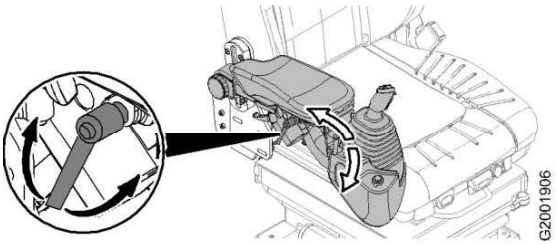
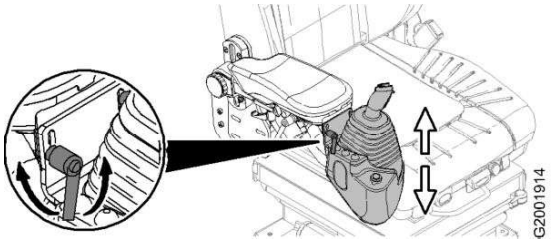
Adjustment options	
	**Arm rest:** adjusting the height.
	**Arm rest:** horizontal adjustment.
	**Arm rest:** adjusting the distance to your body.
	**Arm rest:** adjusting the inclination.
	**Control lever:** adjusting the height.

Tab. 24: Adjusting the driver's seat arm rest

3.2.8 Safety belt

Depending on version, safety belt is installed with following warning devices:
- No warning device
- With acoustic warning device (warning sound in operator's cab) (option)
- With acoustic (warning sound in operator's cab) and visual warning device (option)

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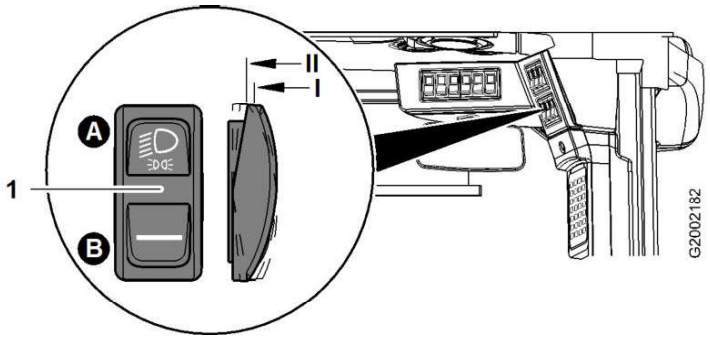

Fig. 128: Driving headlights, tail lights, marker lights (option) and licence plate lights (option)

1 Switch for *parking light, low beam*

- ▶ To switch on the parking lights, tail lights, marker lights and licence plate lights: push the switch **1** to position **A** in position **I**.
- ▶ To switch on the low beam, tail lights, marker lights and number plate light: push the switch **1** to position **A** in position **II**.
- ▶ To switch off the lighting: push the switch **1** to position **B**.

High beam

Make sure that following requirements are fulfilled:
- ❑ Low beam is activated.

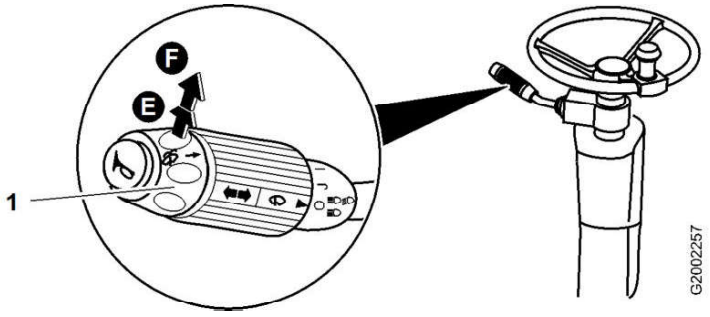

Fig. 129: High beam

1 Steering-column switch
E Headlight flasher
F High beam

- ▶ To switch on the high beam: push the steering-column switch **1** in direction **F**.
  - ▷ The *high beam* symbol is shown in the display.
- ▶ To switch off the high beam: press steering-column switch **1** in direction **F** again.
  - ▷ The *high beam* symbol is not shown in the display.

Working headlights

The working headlights still work when the ignition key has been taken out.

WARNING
The working headlights can become hot!
Burns, fire.

- ▶ Observe the minimum interval of 1 m to persons and material.

Note

The heating and air conditioning unit functions can be set on the display or on the control unit. (For more information see: 3.2.19 Heater, air conditioning, page 136)

Menu: Operating status

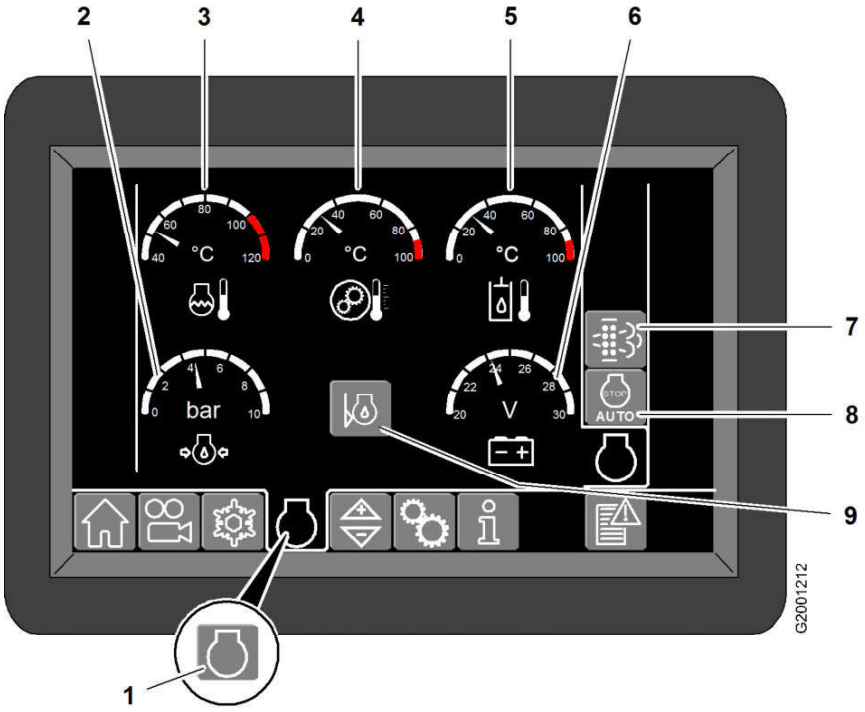

Fig. 157: Menu: Operating status

1 *Operating status* button
2 Engine oil pressure
3 Coolant temperature
4 Gear oil temperature
5 Hydraulic oil temperature
6 Battery voltage
7 *Diesel particulate filter* button (option)
8 *Automatic engine shutdown* button (option)
9 *Check diesel engine oil level* button

Diesel particulate filter

This equipment is optional.

(For more information see: 3.3.7 Regenerating the diesel particulate filter, page 182)

Automatic engine shutdown

This equipment is optional.

This function enables automatic shutdown of the diesel engine under the following conditions:

- ❑ The diesel engine is running at less than 1000 min^{-1}.
- ❑ The coolant temperature of the diesel engine is more than 40 °C.

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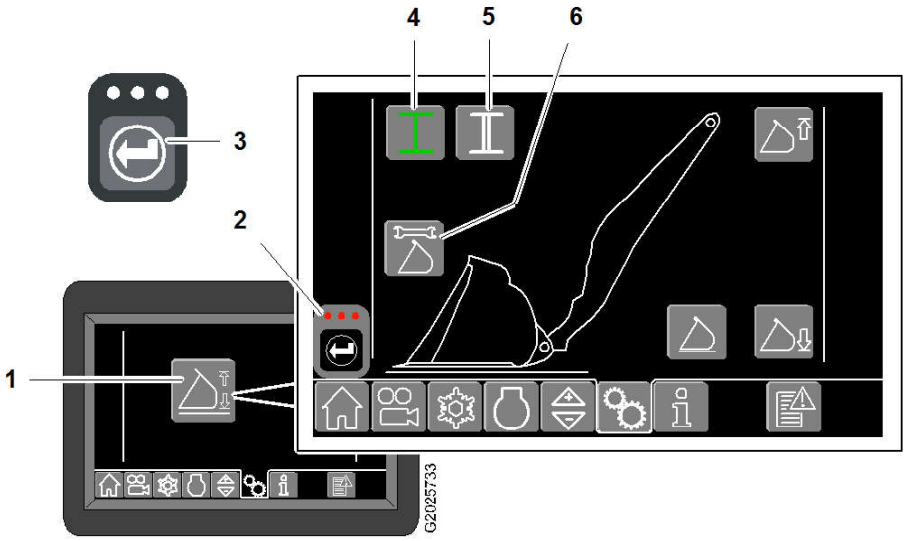

Fig. 187: Working attachment calibration

1	*Adjust working attachment* button	**4**	*Work application I* button
2	*Confirmation prompt* symbol	**5**	*Work application II* button
3	*Confirmation* key	**6**	*Working attachment calibration* button

To define the work application:

▶ Call up display screen using button **1**.

Note

Calibrations can be performed for two different work applications (working attachments).

▶ Press button **4** or **5**.
  ▷ Symbol **2** and selected button flash.

▶ Press key **3**.
  ▷ Selected button lights up green.
  ▷ The work application is defined.

▶ Press button **6**.
  ▷ Menu for working attachment calibration appears in the display.

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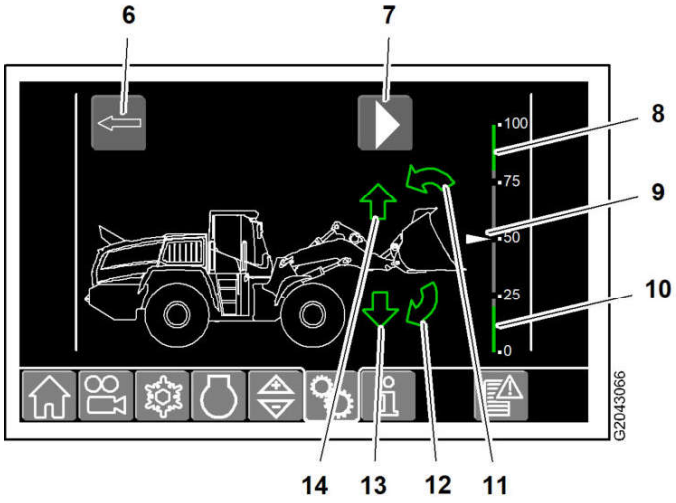

Fig. 204: Stroke limit damping calibration

6	*Back* button	**11**	Tilt in working attachment prompt symbol
7	*Start calibration* button	**12**	Tilt out working attachment prompt symbol
8	Setpoint range for raising lift arms	**13**	Lower lift arms prompt symbol
9	Indicator of current lifting arm position	**14**	Raise lift arms prompt symbol
10	Setpoint range for lowering lift arms		

▶ Press button **7**.
▷ Symbol **13** is shown.

▶ Lower lift arms until indicator **9** is in setpoint range **10**.
▷ Symbol **11** is shown.

▶ Gently tilt in the working attachment up to the stop and hold the control lever in position until an acoustic signal is issued.
▷ Symbol **14** is shown.

▶ Raise the lift arms until indicator **9** is in setpoint range **8**.
▷ Symbol **12** is shown.

▶ Gently tilt out working attachment up to stop and hold control lever in position until an acoustic signal is issued.
▷ Symbol **12** disappears.
▷ The calibration of stroke limit damping is completed.

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A) To avoid damaging the tilt cylinder, always use the high dump function to empty material.

Controlling the hydraulic working attachment

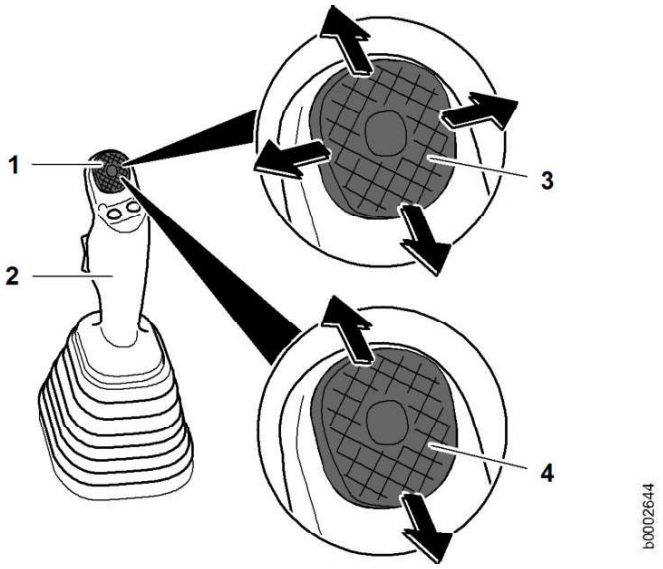

Fig. 224: Controlling the hydraulic working attachment

1	Mini-joystick	**3**	Biaxial mini joystick
2	Control lever	**4**	Monoaxial mini joystick

▶ Grip the control lever **2** in your hand.

▶ Push the mini joystick **1** in the desired direction.
▷ The hydraulic working attachment is controlled (for example, opening and closing a timber grabber).

Mini joystick function settings

The following function settings can be selected:

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Adjusting the mirrors

Make sure that the following requirements are fulfilled:
❑ The machine is in the operating position.

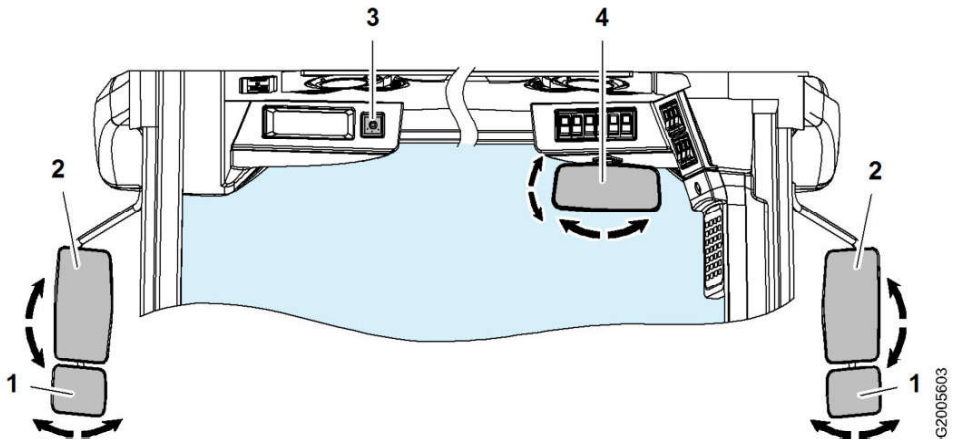

Fig. 256: Adjusting the mirrors

1	Wide-angle mirror (option)	**3**	Exterior mirror adjustment button (option)
2	Operator's cab exterior mirror	**4**	Operator's cab interior mirror

Note
Adjust the mirrors!

▶ The mirrors and other visual aids (such as the reversing camera) must always be adjusted to give the best possible all-round view. (For more information see: 2.5.20 See and be seen, page 59)

▶ All mirrors can be adjusted individually.

Optionally, the exterior mirrors **2** can be adjusted electrically.

▶ Adjust the exterior mirrors **2** individually with button **3**.

3.2.22 Sun blind

The driver’s cab is equipped with a sun blind.

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3.2.28 LiDAT

This equipment is optional.

LiDAT is a data transfer and positioning system for Liebherr machines and those of other manufacturers. Based on the latest data transfer technology, LiDAT supplies information for the localisation and operation of the machines and thereby enables efficient management, optimised deployment planning and remote monitoring.

With LiDAT all important machine data can be viewed at all times. According to the subscription the data is updated several times a day and can be accessed via a web browser at any time. Information that is particularly important such as leaving the machine out of a predefined zone or reports of certain operating states and deployment parameters can also be requested.

Activating data transmission manually

The LiDAT data is transferred between the machine and the LiDAT server via a GSM connection. The LiDAT data is transferred at multiple, predefined transmission times during the course of the day. The transmission times can be set by the LiDAT user.

If a GSM connection is not available at any of the transmission times, manual data transmission must be activated in an area with GSM connection. This ensures that LiDAT data is transmitted.

Examples for uses without GSM connection:
- Tunnel operation
- Operating the machine in closed halls
- Operating the machine in places without a GSM signal

Creating a GSM connection

▶ Park the machine in a place with an available GSM signal.

▶ Switch on the ignition.

▶ Check connection status. (For more information see: Checking connection status, page 153)

Activating data transmission manually

Make sure that the following requirements are fulfilled:
❑ A GSM connection is available. (For more information see: Checking connection status, page 153)

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Selecting travel ranges

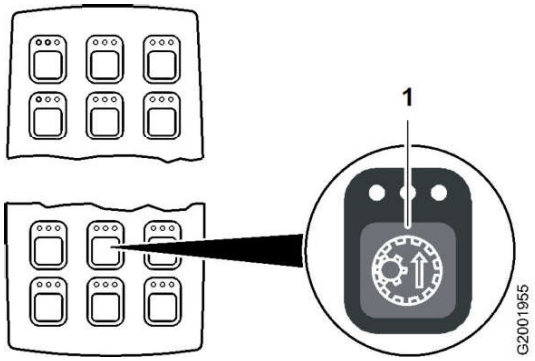

Fig. 280: Selecting travel ranges

1 *Travel range up* button

Press button **1** to shift through all travel ranges in succession.

▶ Press button **1** to select the required travel range.
▷ The travel range is indicated in the display.

Releasing the parking brake

The parking brake can only be released when the diesel engine is running.

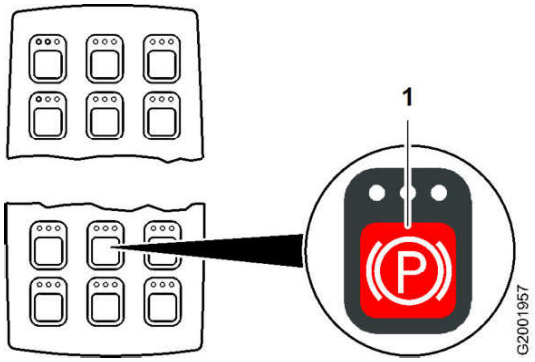

Fig. 281: Releasing the parking brake

1 *Parking brake* button

▶ Press button **1**.
▷ The *parking brake* symbol is not shown in the display.

Selecting the travel direction

The travel direction cannot be selected while the parking brake is engaged.

Make sure that following requirements are fulfilled:
❑ The accelerator pedal is not pressed.
❑ The parking brake is released.

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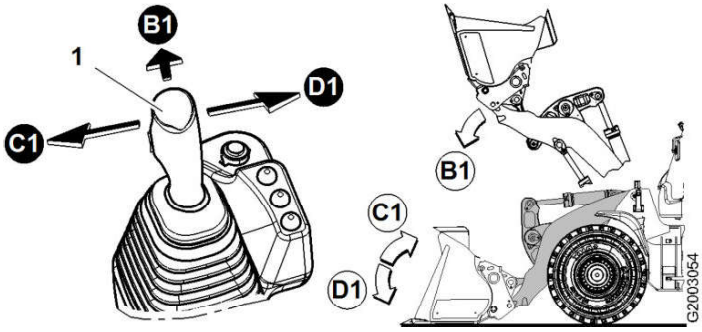

Fig. 294: Lowering the working attachment

1 Control lever

▶ Move the control lever **1** in direction **B1**.
▷ The lift arms are lowered.

▶ Lay the bucket down flat on the ground by moving the control lever **1** in direction **D1** or **C1**.

If a hydraulic working attachment (such as a side dump bucket or timber grabber) is fitted:

▶ Tilt in, close or lock the working attachment, depending on its function.

▶ Lower the lift arms until the working attachment lies on the ground.

Switch off the diesel engine

Do not turn off the diesel engine until the machine has come to a complete halt.

NOTICE
Insufficiently lubricated turbocharger!
Damage to the engine.

▶ Always make sure the machine is idle when you shut down the engine.

▶ Engage parking brake.

▶ Reduce the engine to idling speed by taking your foot off the travelling pedal.

▶ Let the diesel engine continue idling for another 10 to 15 seconds.

Fig. 295: Switch off the diesel engine

▶ Turn the ignition key to the **0** position and pull it out.
▷ All the symbol LEDs go out.
▷ The working hydraulics lockout is activated.

Turning off the battery main switch

The battery main switch is located on the rear left in the ballast weight.

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To save the kick-out position:

▶ Press button **6**.
▷ Symbol **7** flashes.

▶ Press button **3**.
▷ The kick-out position is saved.

Bucket return-to-dig

The bucket return-to-dig function is used for jobs that repeatedly require a particular digging position. This factory-set bucket position can be changed if necessary.

The function can be activated in two different ways:
– With the control lever
– With the *bucket return-to-dig* button (option)

Procedure for saving bucket position of the bucket return-to-dig:
1. Define the work application.
2. Save bucket return-to-dig.

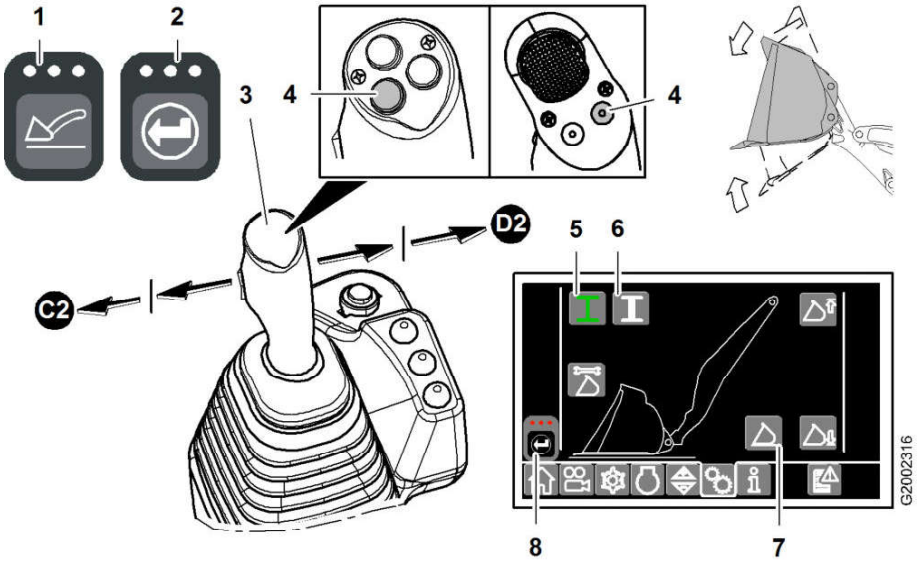

Fig. 308: Bucket return-to-dig

1 *Bucket return-to-dig* button
2 *Confirmation* button
3 *Control lever*
4 *Bucket return-to-dig* button (option)
5 *Work application I* button
6 *Work application II* button
7 *Bucket return-to-dig* button
8 *Confirmation prompt* symbol

WARNING
Unexpected movements of the working attachment!
Damage, injuries.

▶ Familiarise yourself with the working attachment in a secure area.

▶ Press button **1**.
▷ The LEDs light up.
▷ The bucket return-to-dig function is activated.

Make sure the following preconditions are met:
- ❑ The forklift is around 10 cm above the ground.
- ❑ The engine is switched off.
- ❑ The wheel loader is secured against rolling away.

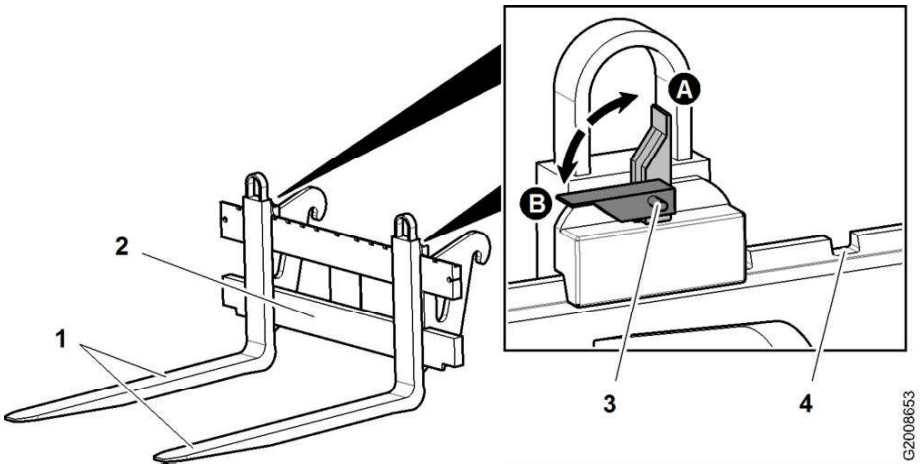

Fig. 326: Adjusting the prongs on the fork carrier

1	Fork prongs	**4**	Notch
2	Fork carrier	**A**	Fork prong lock open
3	Fork prong lock	**B**	Fork prong lock closed

▶ Open the fork prong lock **3**.

▶ Push the prongs **1** to the correct position.

▶ When closing the fork prong lock **3** let it latch in the notch **4**.
▷ The prongs are held tight.

Working with the forklift

– On lift arms with P kinematics or industrial lift arms, there is parallel movement of the load over the entire lifting range.
– On lift arms with Z kinematics, there is no parallel movement of the load over the entire lifting range.

Make sure that the following requirements are fulfilled:
– You have checked the forklift for cracks and damage.
– The prongs are locked on the fork carrier.

DANGER
Machine tipping!
Risk of fatal injury.

▶ Carry out load lifting work very carefully.

WARNING
Load slipping off the forks!
Risk of serious injury.

▶ Slightly tilt in the forklift.

▶ Carry out load lifting work very carefully.

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▷ The setting for the reaction speed is displayed.

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Moving the machine back

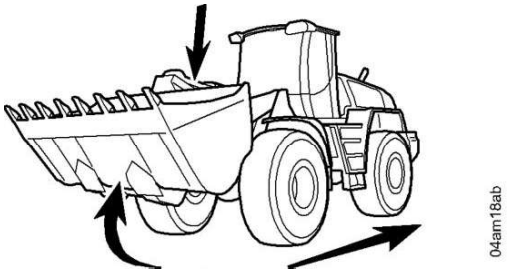

Fig. 352: Moving the machine back

- ▶ Tilt in the working attachment.
- ▶ When driving back, put the machine in the transport position.

3.4.9 Excavation

Excavating material

Use a working attachment with teeth for excavating hard material.

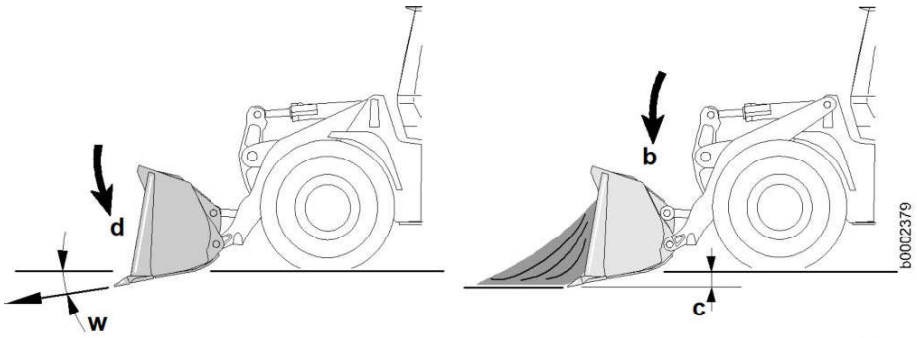

Fig. 353: Excavating material

- ▶ Lower the working attachment to the ground.
- ▶ Set a small cutting angle **W** of no more than 10°.
- ▶ Approach with the machine and press the lift arms down simultaneously, until a sufficient penetration depth **C** is reached.

Note
The following procedure is recommended to avoid any possible loss of traction.

- ▶ Do not work with a strong downwards pressure on the working attachment.

- ▶ Make horizontal cuts when driving forward.
- ▶ Raise and lower the lift arms slightly to provide better support.

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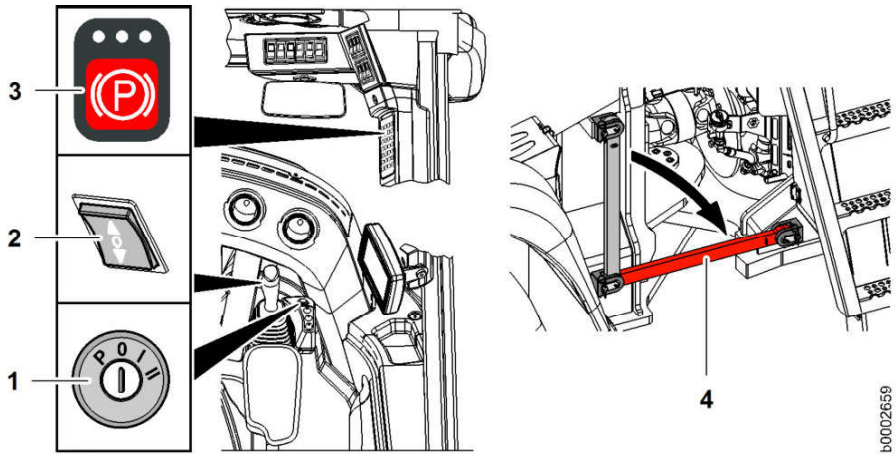

Fig. 362: Driving the machine onto the loading area

1	Starting switch	**3**	*Parking brake* key
2	*Travel direction* switch	**4**	Articulation lock

- ▶ Start the diesel engine with starting switch **1**.
- ▶ Press key **3** to release the parking brake.
- ▶ Preselect travel direction with switch **2**.
- ▶ Carefully drive the machine to the loading area and stop.
- ▶ Activate the parking brake using the key **3**.
- ▶ Engage the articulation lock **4**.
- ▶ Lower the lift arms and lay the loading bucket down flat on the loading area.
- ▶ Start the diesel engine with the starting switch **1**.
- ▶ Close and lock the doors and service hatches on the machine.

Securing the machine

DANGER
Risk of the machine falling!
Risk of fatal injury.

- ▶ Fasten the machine and the components securely using wedges and lashing gear.

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Manual emergency steering

Manual emergency steering is used, for example, for towing the machine with the diesel engine shut down. This provides an emergency steering function for the machine for 40 seconds.

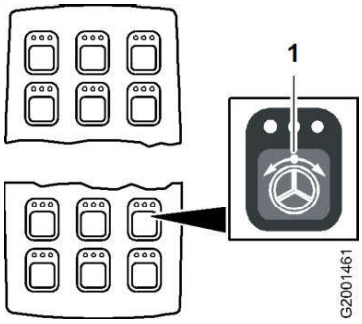

Fig. 371: Manual emergency steering

1 *Emergency steering* button

▶ Press and hold the *emergency steering* button **1** for the duration of the steering manoeuvre.

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

▶ Stop the machine.

▶ Contact Liebherr customer service.

3.7.4 Jump starting procedure

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

Make sure that following requirements are fulfilled:
❑ Following safety precautions are observed.

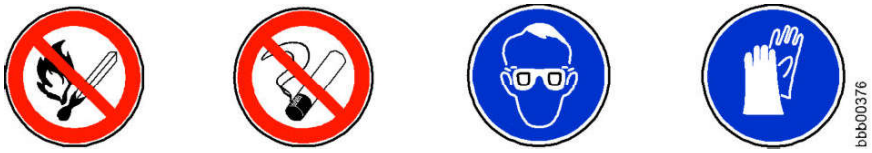

Fig. 372: Jump starting procedure

WARNING
Gas forming in the batteries!
Explosion.

▶ Avoid naked lights and fire.

▶ Wear safety glasses and protective gloves.

NOTICE
Flat battery and donor battery with different voltages!
Damage.

▶ Use batteries of the same voltage.

4.3 Problem remedy

4.3.1 Replacing fuses

NOTICE
Incorrect fuse rating!
Damage.

▶ Use a fuse of the correct rating.

Make sure that following requirements are fulfilled:
❑ Affected circuit has been checked.
❑ The battery main switch of the machine is turned off.

NOTICE
Live components!
Risk of injury.

▶ Turn off the battery main switch.

There are three fuse boards on the machine:
❑ Fuse board A4 in the operator's cab
❑ Fuse board A4a in the left ballast weight
❑ Fuse board A4b in the operator's cab

Fuses on fuse board A4 in the operator's cab

The board with the plug-in fuses is beside the operator's seat.

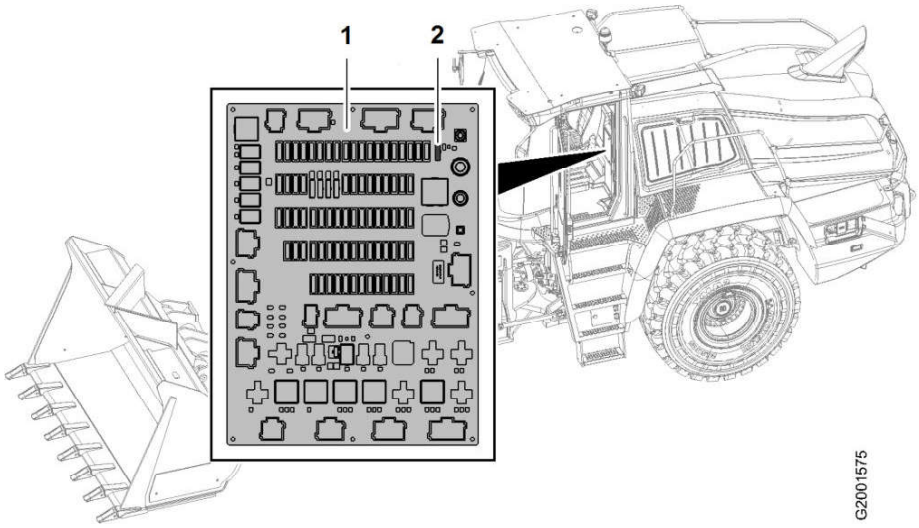

Fig. 401: Fuses on fuse board A4 in the operator's cab

1 Fuse board A4 **2** FUSE-TEST

If fuses have to be replaced:
▶ Switch off ignition.

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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 **By 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
				❍	❍			Fuel fine filter: Change the filter element.		
				❍	❍			Diesel exhaust fluid tank: check the ventilation.		
		●	●	❍	❍			Air filter system: Clean the service cover and dust discharge valve.		290
				❍	❍	✦		Clean or change the main element of the air filter system (when indicated by the vacuum switch, or at least once a year).		292
					❍	✦		Air filter system: Clean the safety element (after replacing the main element three times, or every year at the latest).		295
☐		●	●	❍	❍			Splitter box: Check the oil level.		296
				❍	❍			Splitter box: Change the oil.		
				❍	❍			Engine: Check that the intake and exhaust system is in good condition and not loose or leaking.		
		●	●	❍	❍			Engine: Check for leaks, contamination and damage.		298
						❍4500 h		Diesel particulate filter (option): clean the filter module.		
					❍			Compressed air system: Change the air dryer.		
					❍			Check the compressed air system.		
Cooling system										
	●	●	●	❍	❍			Cooling system: Check the coolant level.		300
					❍	❄		Check the concentration of anti-freeze and corrosion protection agent or corrosion inhibitor in the coolant (at least once a year).		301
						✦		Clean the cooling system.		308
						❍6000 h		Cooling system: Change the coolant (at least every 4 years).		
Hydraulic components										
☐	●	●	●	❍	❍			Hydraulic tank: Check the oil level.		310
				❍	❍			Hydraulic tank: Drain off condensate and sediment.		
				❍	❍			Hydraulic tank: Change the return filter insert.		
					❍			Hydraulic tank: Change the breather filter.		
						✧		Hydraulic tank: perform oil analysis. (For more information see: Oil analysis, page 263)		
						✧		Hydraulic tank: change oil. (For more information see: Oil change, page 264)		
Steering system										
☐	●	●	●	❍	❍			Steering: Check the function.		313

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5.3.5 Engine oils

Liebherr recommendation

Ambient temperature	Designation
-30 °C to 35 °C	Liebherr engine oil 5W-30
-30 °C to 35 °C	Liebherr engine oil 5W-30 low ash

Tab. 76: Recommendation for engine oils

For machines with a diesel particulate filter, the low ash engine oil must be used.

Other approved engine oils

Ambient temperature	Designation
-20 °C to 45 °C	Liebherr engine oil 10W-40
-20 °C to 45 °C	Liebherr engine oil 10W-40 low ash

Tab. 77: Other approved engine oils

For machines with a diesel particulate filter, the low ash engine oil must be used.

Minimum quality requirement

Specification	
Without diesel particulate filter	LH-00-ENG3A
	ACEA E4, API CH-4, API CI-4
With diesel particulate filter	LH-00-ENG3A LA
	ACEA E6, API CJ-4

Tab. 78: Minimum requirement for engine oils

When using engine oils from other manufacturers, information on the oil change intervals must be obtained from the manufacturer or supplier.

Changing intervals

Engine oil	Changing interval
Liebherr engine oil 5W-30, Liebherr engine oil 5W-30 low ash	2000 h
Liebherr engine oil 10W-40, Liebherr engine oil 10W-40 low ash	1000 h
Engine oil from third-party manufacturers that meets the minimum requirements (For more information see: Minimum quality requirement, page 261)	500 h

Tab. 79: Changing intervals

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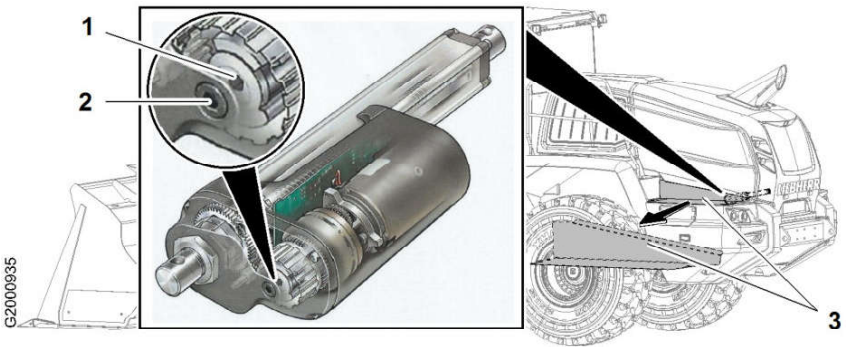

Fig. 415: Manual emergency operation of the engine bonnet

1 Drive gear
2 Screw plug
3 Battery compartment cover

▶ Remove the battery compartment cover **3**.
▷ The provides access to the emergency actuation mechanism.

▶ Unscrew the screw plug **2**.

▶ Turn the drive gear **1** by hand with an Allen key.
▷ The engine bonnet opens.

Note

Torque for emergency operation: 6 to 8 Nm

Opening and closing the cooler hood

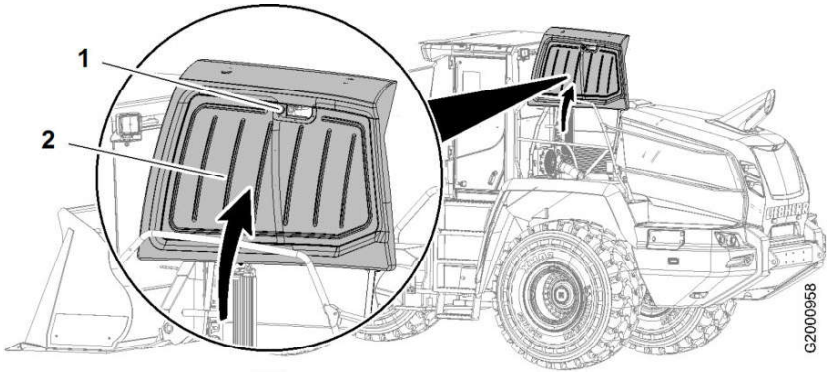

Fig. 416: Cooler hood

1 Handle
2 Cooler hood

To open the cooler hood:

▶ Fully open the cooler hood **2** with the handle **1**.
▷ The cooler hood **2** is held in this position by gas-filled springs.

Troubleshooting
If the gas-filled springs do not hold the hood open:

▶ Contact Liebherr customer service.

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5.6.4 Cleaning the machine

Thoroughly clean the machine of all dirt and deposits in the following situations:
– After completing each job
– Before maintenance work
– Before repairs

NOTICE
Beware of corrosive materials and working environments.
Risk of damage to the machine.

▶ Clean the machine thoroughly after completing the work.

Regular cleaning prevents dirt and foreign particles from getting into the machine.

Clean the machine immediately after the following work:
– Working in salty environments (for example contact with road salt, or by the sea)
– Working with alkaline or acidic substances
– Working with corrosive materials (such as lime compounds or cement)

NOTICE
Always carry out cleaning correctly
Risk of damage to the machine.

▶ Only clean electrical systems, cables and wiring harnesses with low-pressure equipment.

▶ Only clean soundproofing material with low-pressure equipment.

▶ When new (or after respraying), do not clean the machine with a high-pressure cleaner for two months.

▶ Observe the operating manual of the high-pressure cleaner.

CAUTION
High-pressure jet!
Risk of injury.

▶ Wear protective clothing and safety glasses.

Cleaning the outside of the machine

Before cleaning

Make sure that the following requirements are fulfilled:
❑ The machine is in maintenance position 2.

Before washing with water or with a high-pressure cleaner, carry out the following tasks in order to prevent water from getting inside.

▶ Lubricate all bearings and pin connections.

▶ Clean oil, fuel and maintenance products from all connections and bolts.

If components behind openings have to be prevented from water getting in:

▶ Cover or mask the openings.

Components particularly at risk are:
– Electric motors

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❑ Suitable protective equipment is used.

Cleaning the service cover

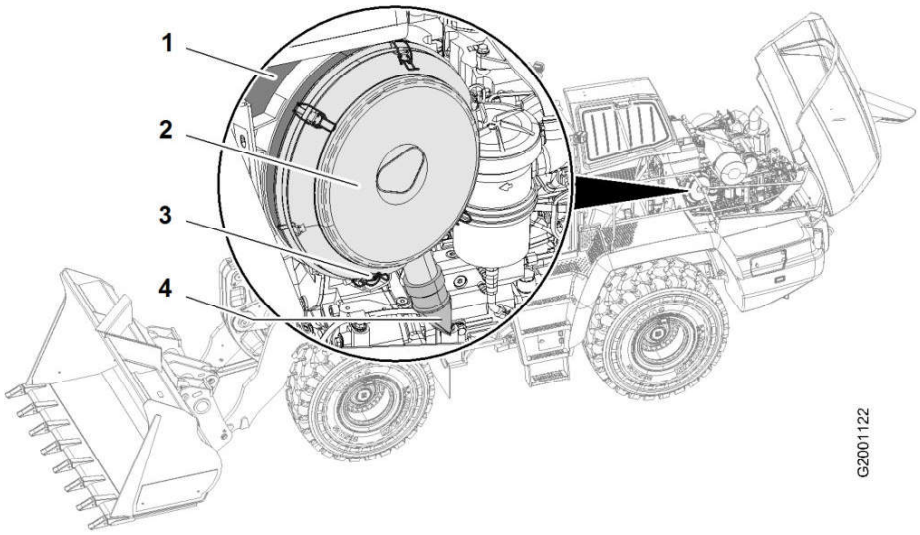

Fig. 435: Air filter system: Clean the service cover and dust discharge valve.

1 Filter housing
2 Service cover
3 Fixing clips
4 Dust discharge valve

▶ Open the fixing clips **3** and take off the service cover **2**.

▶ Clean the service cover **2** and place it back onto the filter housing **1**.
▷ The dust discharge valve **4** must face down.

▶ Place the service cover **2** fully over the filter housing **1**.

▶ Close the fixing clips **3**.

Cleaning the dust discharge valve

Note
When using the machine in dusty conditions:

▶ Check and empty the dust discharge valve more often.

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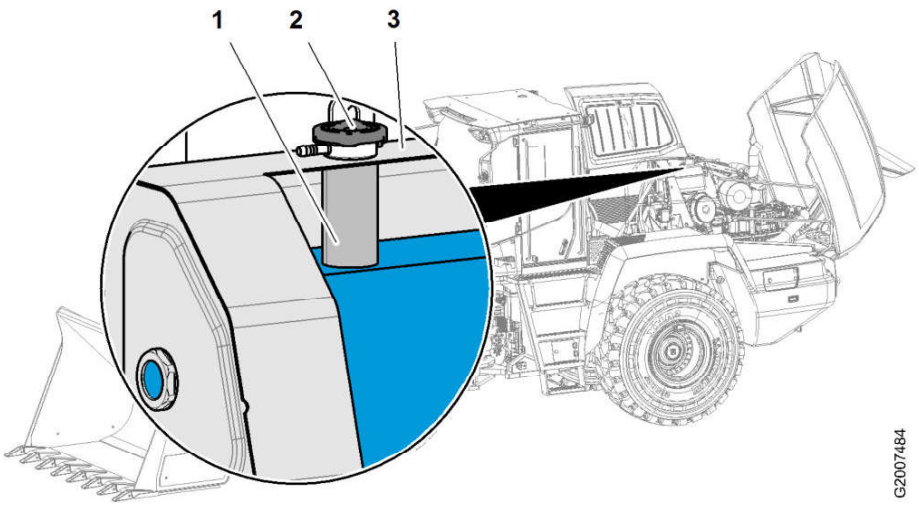

Fig. 446: Checking the coolant level

1 Filler neck
2 Cover
3 Equalising reservoir

CAUTION
Hot. pressurised liquid!
Beware of burns.

▶ Let the engine cool down.

▶ Carefully open the cap **2** of the equalising reservoir **3**.

NOTICE
Non-approved coolant!
Damage to the engine and cooling system.

▶ Only use coolant that meets the Liebherr specifications.

▶ Do not mix coolants with and without silicates.

▶ Top up coolant to the bottom of the filler neck **1**. (For more information see: 5.3.7 Coolant, page 262)

▶ Close the cover **2**.

5.8.2 Checking concentration of anti-freeze and corrosion protection agent or corrosion inhibitor in coolant

Checking anti-freeze and corrosion protection agent concentration

The machine is delivered factory-filled with anti-freeze and corrosion protection agent.

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Topping up the oil

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

CAUTION
Poorly accessible maintenance point!
Risk of injury.

▶ Use suitable climbing aids.

Note
To top up the oil:

▶ Put the machine in maintenance position 1.

▶ Only top up oil through the return filter.

▶ Oil specification: (For more information see: 5.3.8 Hydraulic oil, page 263)

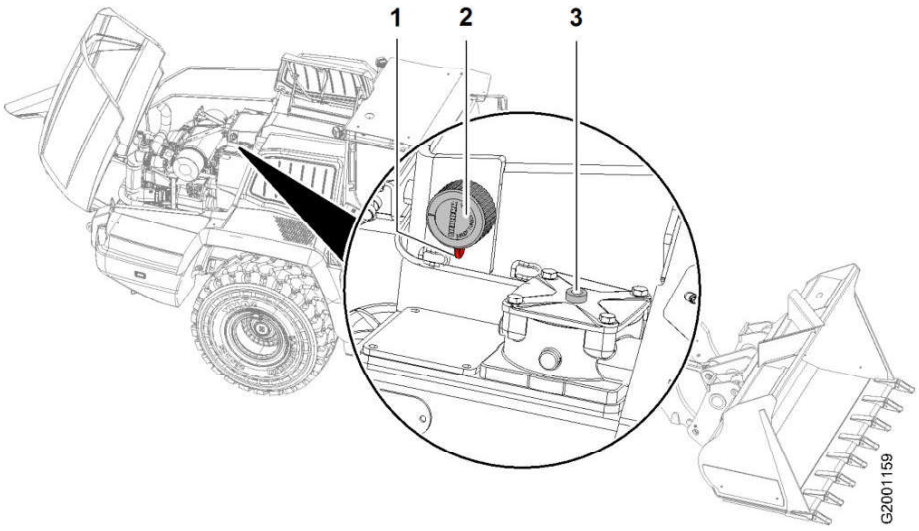

Fig. 454: Topping up the oil

1 Plug
2 Breather filter
3 Plug

▶ Insert the plug **1** in the breather filter.
▷ The anti-twist device of the breather filter is released.

▶ Unscrew the breather filter **2** on the hydraulic tank by two turns.
▷ The tank preload pressure is released.

▶ Unscrew the plug **3**.

NOTICE
Non-approved oil!
Damage to the hydraulic system.

▶ Only use oil that meets the Liebherr specifications.

▶ Do not mix different oils.

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Troubleshooting
If the oil level is above the HOT range or if leakages are detected on the transmission:

▶ Contact Liebherr customer service.

Topping up the oil

Make sure that the following requirements are fulfilled:
❑ The machine is in maintenance position 1.
❑ The machine is level.

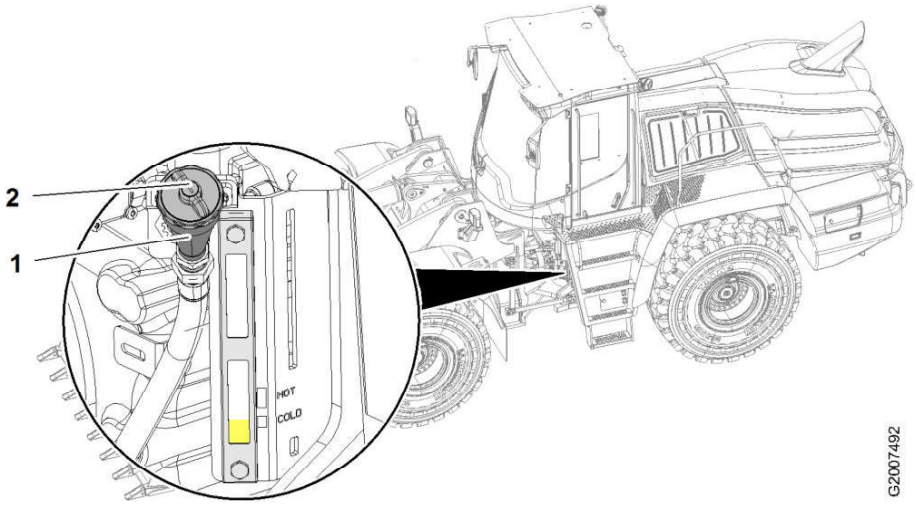

Fig. 462: Topping up the oil

1 Filling tube **2** Cover

▶ Open the cover **2**.

NOTICE
Non-approved oil!
Damage.

▶ Only use oil that meets the Liebherr specifications.

▶ Top up the corresponding quantity of gear oil via the filling tube **1**. (For more information see: 5.3.10 Gear oil, page 264)

Note

10 mm on the sight glass roughly corresponds to 1 l.

▶ Clean the cover **2**, place it on the filling tube **1** and tighten it.

▶ Check the oil level. (For more information see: 5.13.1 Transmission: checking the oil level, page 319)

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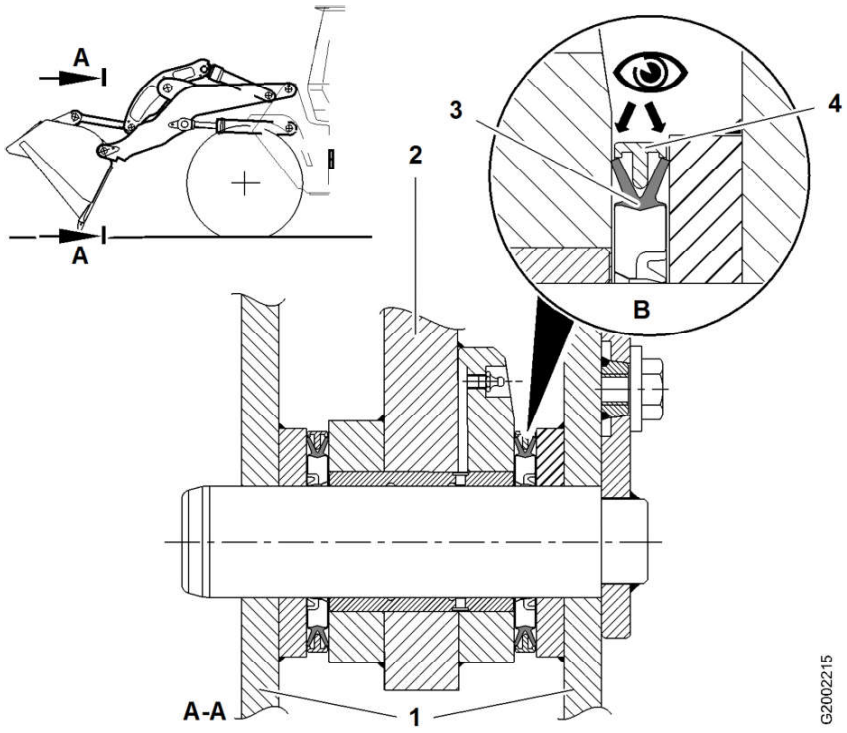

Fig. 472: Lift arms: Checking the bucket bearing seals

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 cleaner.

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

Replace the bucket bearing seals 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
Replace the bucket bearing seals!

▶ Contact Liebherr customer service.

5.16.3 Bucket: Check the teeth or undercut blade for wear and replace if necessary

Make sure that the following requirements are fulfilled:
❑ Bucket base is lowered to 10 cm above the ground.
❑ Bucket or lift arms are secured against unintended lowering.
❑ The battery main switch of the machine is turned off.
❑ Machine is cleaned.
❑ Suitable protective equipment is used.

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