en **Operator's manual**

Wheel loader

Document ID

ORIGINAL OPERATOR'S MANUAL

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Product ID

Manufacturer: Liebherr-Werk Bischofshofen GmbH
Type: L 580
Type no.: 1464 (USA / CAN)
From Serial no.: 33031

Contact

Liebherr-Werk Bischofshofen GmbH
Dr. Hans Liebherr-Straße 4
A – 5500 Bischofshofen

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Description	Unit	Value
	s	6.1
Tilting out	s s	3.2 3.2
Lowering (empty)	s s	3.5 3.5

1.2.11 Cab

Design:
- Hydraulically mounted soundproof cab
- ROPS rollover protection in accordance with EN/ISO 3471/EN 474-1
- FOPS stone impact protection in accordance with EN/ISO 3449/EN 474-1, Cat. II
- Cab door with sliding window, sliding window on right side
- Front window in green-tinted compound safety glass as standard
- Side windows in single-pane safety glass
- Heated rear window
- 3-way continuously adjustable steering column

Operator's seat

6-position, shock-absorbing driver’s seat, adjustable to the driver’s weight.

Seat surface, height and inclination adjustment as standard.

Control lever mounted on the driver’s seat as standard.

Alternative versions:
- Comfort
- Premium (optional)

1.2.12 Heating, ventilation

- Air direction on 4 levels
- Cooling water heater
- Filter system with pre-filter, fresh air filter and recirculated air filter

Description	Unit	Value
Number of blower speeds		6
Heating power	kW kW	11 11

1.2.13 Air conditioning

4-zone air conditioning unit

Description	Unit	Value
Refrigerant		R134a
Cooling power	kW kW	9.7 9.7

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	Designation	Unit	Value	
	Operating weight	kg lb	28050 61,839	28200 62,169

Tab. 7: Complete machine with loading bucket (industrial lift arms)

A) Industrial lift arms with parallel movement including quick coupler
B) Earth bucket with short, straight base for quick coupler
C) Welded tooth holder with plug-in teeth
D) 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.

1.2.22 Attachment: Light material bucket

The values stated refer to the machine:

- In its standard version
- With 26.5R25 L3 tyres (For more information see: 1.2.17 Tyres, page 23)
- Including all lubricants
- With a full fuel tank
- With ROPS/FOPS cab and operator

Note
The tyres and working attachments affect the operating weight and tipping load.

▶ Note the information on the tyres and working attachment.

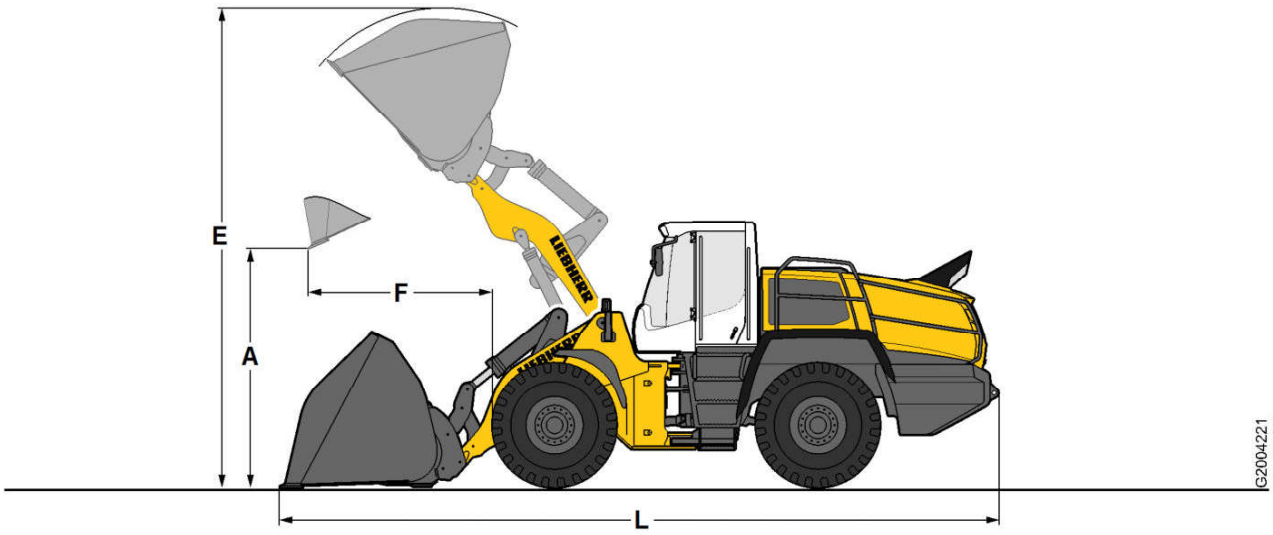

Fig. 5: Attachment: Light material bucket

	Designation	Unit	Value	
	Hydraulic quick coupler		Yes	Yes
	Load geometry		A)	A)
	Lift arm length		B)	B)
	Cutting tool		C)	C)

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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 Warning symbols

	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. 12

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. 13

2.1.1 Other designations

	**Note**	Indicates useful tips and information.

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Avoid sparks and naked lights.

9. Never let anyone move the bucket or other working attachments into position by hand.
10. Any time you open the engine compartment, secure the compartment doors from falling shut.
11. Before starting up the machine, close and lock the engine compartment doors and the battery compartment cover.
12. Never lie under the machine when it is raised using the working attachment, unless the undercarriage is securely supported using wooden beams.
13. Avoid touching hot surfaces and liquids. This can lead to burns.

2.5.3 Instructions on preventing fires and explosions

1. When refuelling, the diesel engine must be turned off. Switch off the auxiliary heater, if installed.
2. Do not smoke. Avoid naked flames when refuelling or where batteries are being recharged.
3. Always follow the instructions in the **operator's manual** when starting the diesel engine.
4. Check the electrical system.
   Immediately eliminate all faults such as loose connections, worn cables or burnt out fuses and bulbs.
5. Do not carry combustible fluids on the machine outside the tanks provided.
6. Regularly check all lines, hoses and bolted connections for leaks and damage.
7. Repair the leaks immediately and replace the damaged components.
   Oil escaping from leaks can easily cause fires.
8. Make sure that all brackets and protective plates are properly installed to prevent vibrations, abrasion and heat build-up.
9. Starting agent (ether) is a particularly dangerous fire hazard.
   Never use ether starting agent near head sources, naked lights (such as cigarettes) or in poorly ventilated spaces.
10. Do not use starting agents containing ethers to start diesel diesel engines with preglow or flame glow systems.
    There is otherwise a **RISK OF EXPLOSION**.
11. Familiarise yourself with the location and use of fire extinguishers and find out about fire alarm and firefighting facilities on site.
12. Clean the machine before putting it into operation. Due to the risk of fire, watch out for combustible deposits around the diesel engine, particularly in fire hazard environments such as rubbish dumps or sawmills.

2.5.4 Safety instructions for start-up

1. Each time you start up the machine, make a thorough tour of inspection.
2. Check the machine for loose bolts, screws, cracks, wear, leaks and deliberate damage.
3. Never start up a damaged machine.
4. Make sure the damage is rectified immediately.
5. Ensure that all hoods and covers are closed and locked. Check that all the warning and instruction signs are in place.
6. Clean the windows and both interior and exterior mirrors, and secure the doors and windows against inadvertent movement.
7. Make sure no-one is working on or underneath the machine. Warn anyone in the danger area before you start up the machine.
8. After getting into the operator's cab, adjust the seat, the interior and exterior mirrors, the control lever and the safety belt so that you can work comfortably.
9. Sound insulation equipment on the machine must be in place during operation.

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Have machines available to maintain good terrain and plan sufficient time to do so.
- Travel over longer distances (e.g. public roads) at a suitable (medium) speed.
- For machines which are often driven on open roads, use a special additional system (if available) to reduce vibrations during this type of use. If such systems are not available, control your speed to stop the machine from “rocking”.

2.5.20 See and be seen

Field of view and visual aids

Sufficient visibility conditions are required in order to operate and drive the machine safety.

The operator’s field of view is measured according to ISO 5006. This occurs with the bucket attached (bucket bolt 250 mm (9.84“ in) above the ground, bucket tilted in to the maximum). According to EN 474-1, the test is carried out with the vehicle in the standard configuration and with standard working equipment (earth bucket). The required visual aids are positioned accordingly.

If working attachments are used that deviate from the standard and result in limitations to the field of view, the operating company must repeat the visual inspection. In the event that it is determined that the operator’s field of view is limited, the addition to the machine of a forward-looking camera or front mirror is strongly recommended. These grant the operator a view of the working attachment from a clearly elevated position.

– Observe all national regulations for ensuring sufficient vision from the operator's cab.
– Check that the visual aids function properly, are clean and adjusted correctly.
– Adjust the mirrors to ensure the best possible all-round vision.
– Have faulty visual aids repaired or replaced as soon as possible.
– Clean dirty operator's cab windows.
– Note that visual aids may be obscured by the working attachment.

Measures during operation.

- Make sure that persons establish contact with the driver before approaching the machine.
- Make sure that persons approach the vehicle from the front and in the driver’s field of view.
- Always try to ensure a direct view: set up the operating area so that there are no obstacles blocking the view.
- Constantly watch the area around the machine. Use visual aids to monitor areas around the machine which are not directly in sight.
- Only carry out articulation movements when visibility is sufficient. If necessary, position the working attachment so that sufficient visibility is ensured.
- Avoid reverse travel where at all possible.
- When working with a restricted view, make sure a signal giver is available to give signals. Agree hand signals. For difficult tasks, maintain radio contact.
- Make sure that the person giving signals is outside the danger area.
- When visibility is poor, use lighting in accordance with the applicable regulations.
- Only use sun visors if they do not restrict the optimum field of view.

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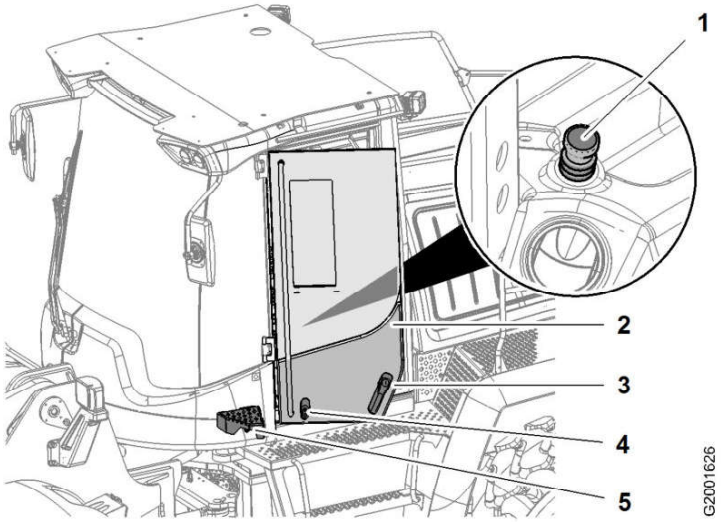

Fig. 64: Entering the operator's cab

1 *Door holder* lever
2 Cab door
3 Door lock
4 *Door holder* bar
5 Door holder

▶ Open the door lock **3** with the ignition key.

▶ To open the cab door: push in the door lock **3**.

▶ Latch the cab door **2** into the door holder **5**.

▶ Enter the operator's cab.

▶ To unlatch the cab door: press the lever **1**.

▶ Close the cab door **2**.

Leaving the operator's cab

Make sure that the following requirements are fulfilled:
❑ The diesel engine is switched off.

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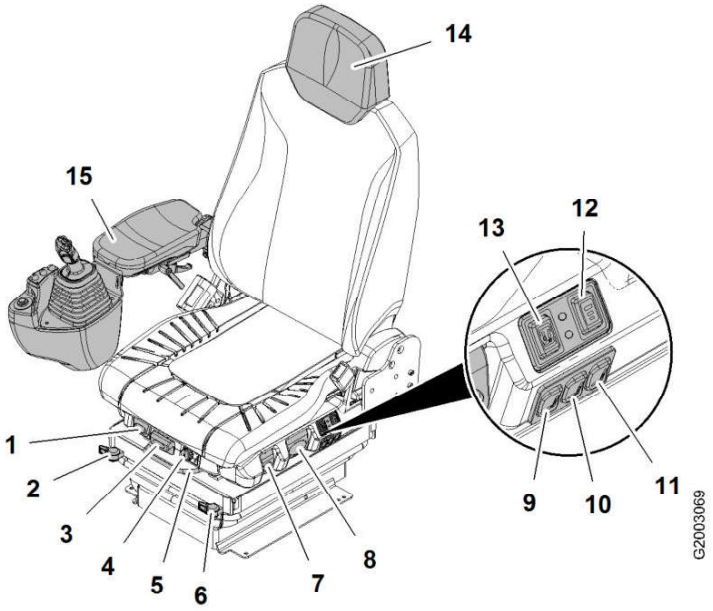
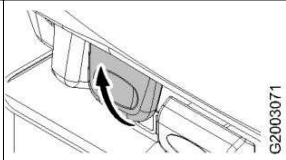
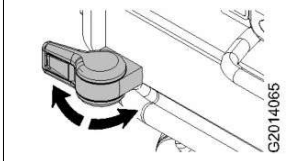
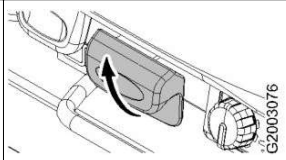
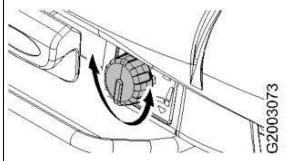
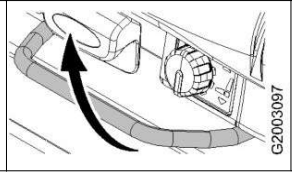


Fig. 96: Driver's seat: ISRI Premium

	Adjustment options	
1	 G2003071	**Inclination adjustment** Pull up the lever and adjust the seat inclination by putting more or less weight on the front of the seat cushion.
2	 G2014065	**Lateral absorption** Turn the lever to the left or right to activate or deactivate lateral absorption.
3	 G2003076	**Seat cushion depth adjustment** Pull up the lever and move the seat cushion.
4	 G2003073	**Height adjustment** Turn the handle to adjust the seat height as required.
5	 G2003097	**Horizontal adjustment** Pull the lever all the way up and move the driver's seat.

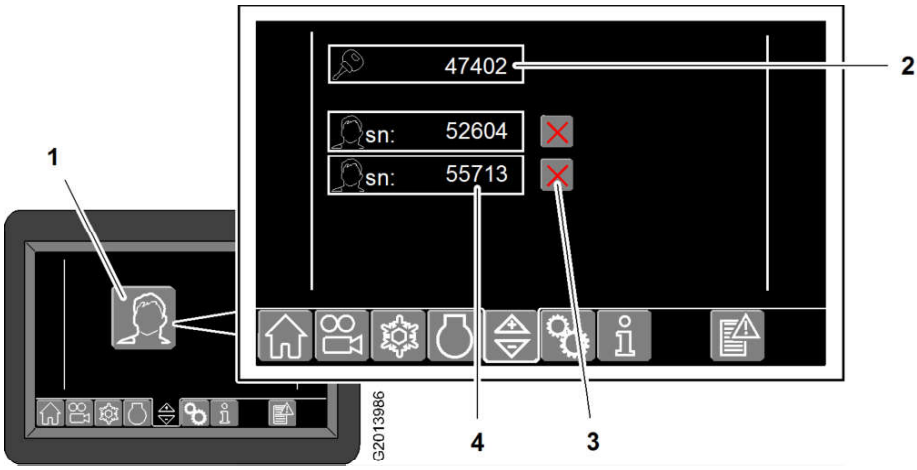


Fig. 125: Ignition key: Deleting saved functions

1	*Driver identification* button	**3**	*Delete saved functions* button
2	*Master key serial number* display	**4**	*Ignition key with saved functions* display

▶ Switch on the ignition with the master key.

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

▶ Press the button **3**.
▷ The functions saved on the ignition key **4** are deleted.

3.2.13 Steering-column switch

The steering column switch consists of the following control elements for:
– Indicator lights
– High beam
– Horn and headlight flasher
– Front windscreen wiper
– Front windscreen washer system

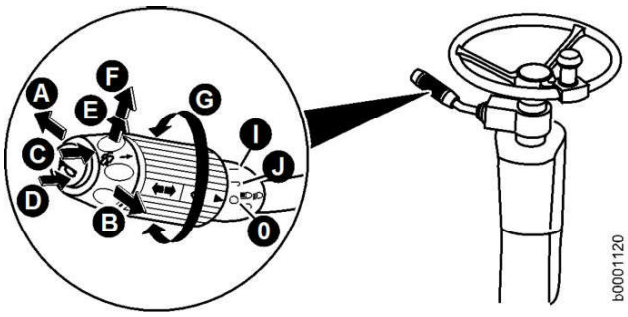


Fig. 126: Steering column switch

Functions of the steering column switch
A - right indicator light
B - left indicator light
C - *front windscreen* washer system
D - horn
E - headlight flasher
F - high beam
G - *front windscreen wiper* knob

Menu: reversing camera

The reversing camera is included in the start page. The display is in full-screen mode when reversing.

Reversing camera: set permanent display

Fig. 136: Reversing camera: set permanent display

1 *Reversing camera* button
2 *Full screen mode* indicator
3 Start page *button*

▶ Press the button **1**.
▷ The reversing camera is displayed in full screen mode when travelling forward and in reverse.

WARNING
Start page button flashes red!
Risk of serious injury and damage to the machine.

▶ Park the machine in a safe area immediately.

▶ (For more information see: 4.1.1 Service code indicator in the display, page 233)

If you want to quit full-screen mode:
▶ Press the button **3**.

Menu: heating, air conditioning

The heating heats the air according to the selected temperature setting.

In air conditioning mode, the air is cooled and dried.

The filters of the heating and air conditioning unit must be regularly serviced in order to ensure good ventilation. The air flow is impaired if a filter is dirty.

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Menu: function settings

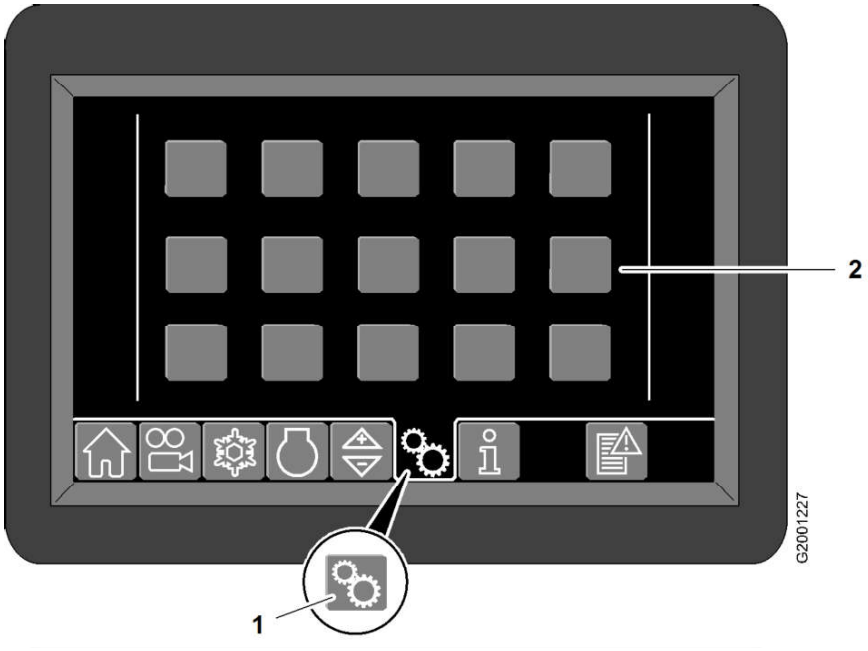

Fig. 149: Menu: function settings

1 *Function settings* button **2** Function buttons

Function buttons	Designation
	Working attachment calibration (For more information see: Working attachment calibration, page 112)
	Lift kick-out (For more information see: Lift kick-out, page 178)
	Lower kick-out (For more information see: Lower kick-out, page 179)
	Bucket return-to-dig (For more information see: Bucket return-to-dig, page 181)
	Adjusting ride control (For more information see: Adjusting ride control, page 114)
	Central lubrication system (option) (For more information see: Central lubrication system, page 116)
	Service management (For more information see: Service management, page 117)
	Working attachment: tilt speed (For more information see: Working attachment: changing tilt speed, page 119)

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Working headlight adaptive lighting

This equipment is optional.

Front working headlight and working headlight on front section are controlled based on lift arm position, articulation angle and travel speed.

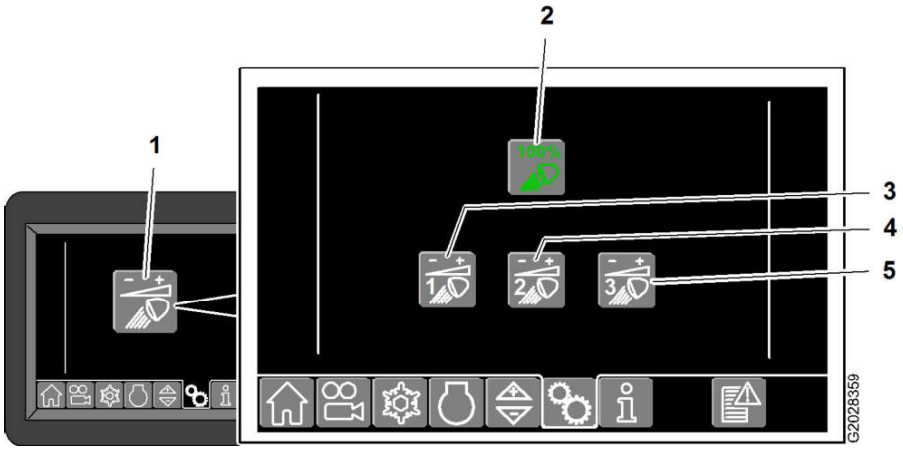

Fig. 162: Working headlight adaptive lighting

1	Adaptive lighting button	**4**	Brightness level 2 button
2	Brightness level 100% button	**5**	Brightness level 3 button
3	Brightness level 1 button		

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

▶ Brightness level 100%: press button **2**.

▶ Adaptive lighting: press button **3**, button **4** or button **5**.

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Controlling the hydraulic working attachment

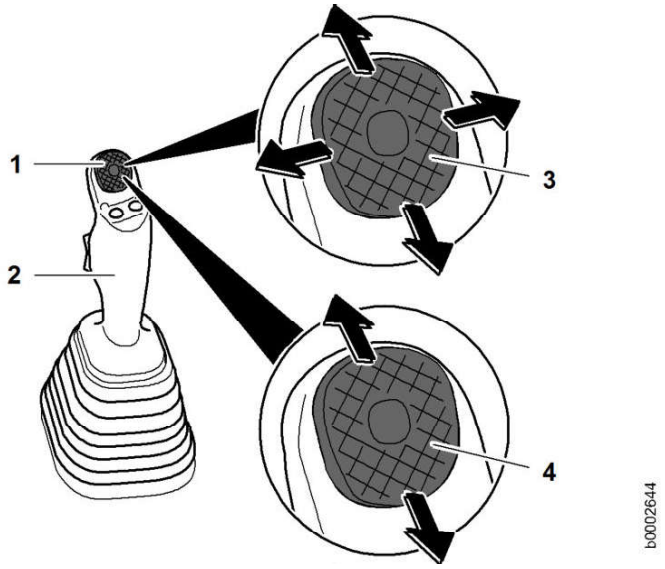

Fig. 182: Controlling the hydraulic working attachment

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:

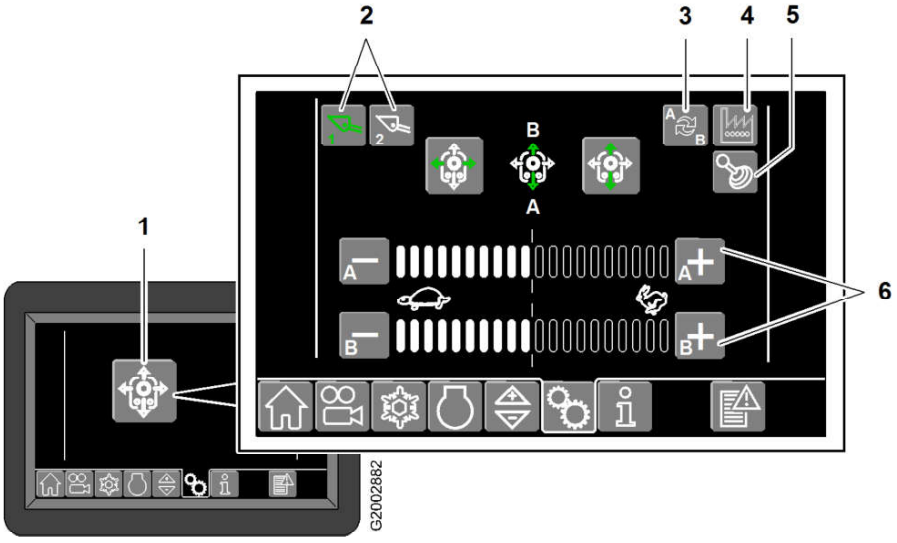

Fig. 183: Mini joystick function settings

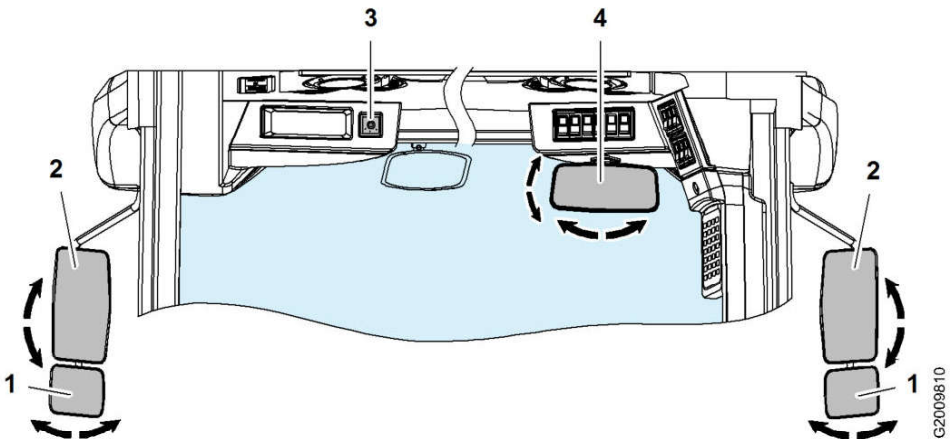

Fig. 214: Adjusting exterior mirrors, interior mirror and wide-angle mirrors

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 61)

▶ All mirrors can be adjusted individually.

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

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

Adjusting the front mirror

The front mirror makes it easier to see what is in front of the machine.

Make sure that the following requirements are fulfilled:
❑ The machine is in the operating position.
❑ The working attachment is fully tilted in and is just above the ground.

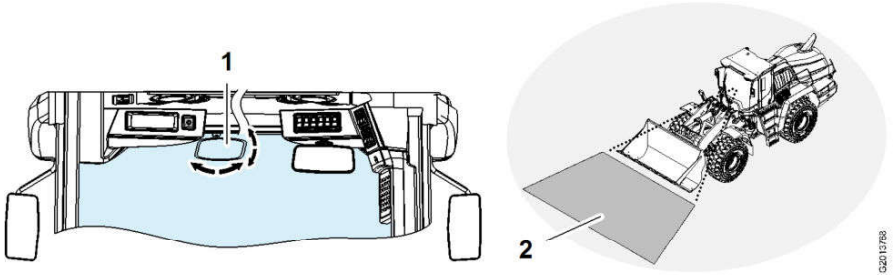

Fig. 215: Adjusting the front mirror

1	Front mirror	**2**	Field of vision for front mirror

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▶ Push the switch **1** from position **A** to position **I**.
▷ The flashing beacon **2** is active when travelling in reverse.

Flashing beacon in continuous operation

▶ Push the switch **1** from position **A** to position **II**.
▷ The flashing beacon **2** is continuously active.

Flashing beacon off

WARNING
Deactivated reversing alarm!
Risk of injury.

▶ Make sure there is nobody in the danger area.

▶ Push the switch **1** to position **B**.
▷ The flashing beacon **2** is switched off.

3.2.27 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)

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Selecting travel ranges

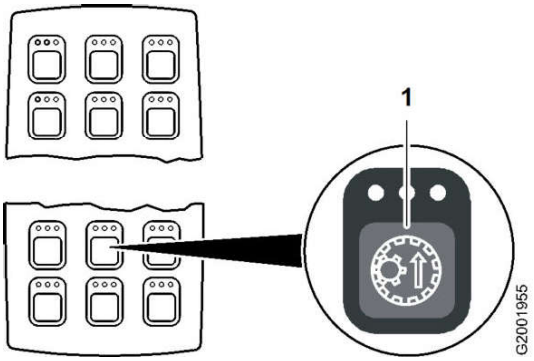

Fig. 238: Selecting travel ranges

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.

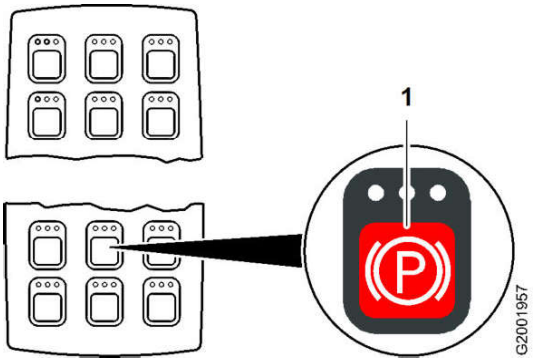

Fig. 239: Releasing the parking brake

1 *Parking brake* button

▶ Press the button **1**.
▷ The *parking brake* symbol field in the display goes out.

Selecting the travel direction

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

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

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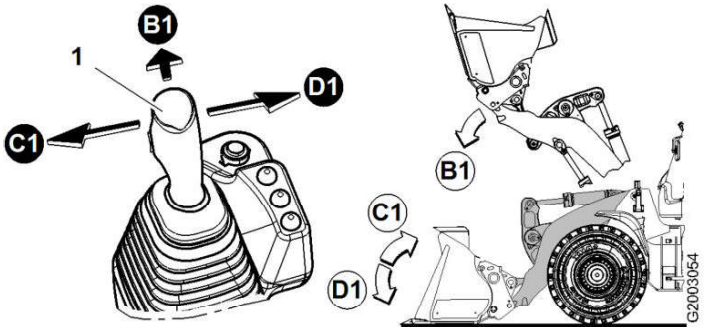

Fig. 252: Lowering the working attachment

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 engine

Do not turn off the 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 accelerator pedal.

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

Fig. 253: Switch off the engine

▶ Turn the ignition key to the **0** position and pull it out.
▷ All the symbol fields 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 the button **6**.
▷ Symbol **7** flashes.

▶ Press the 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.

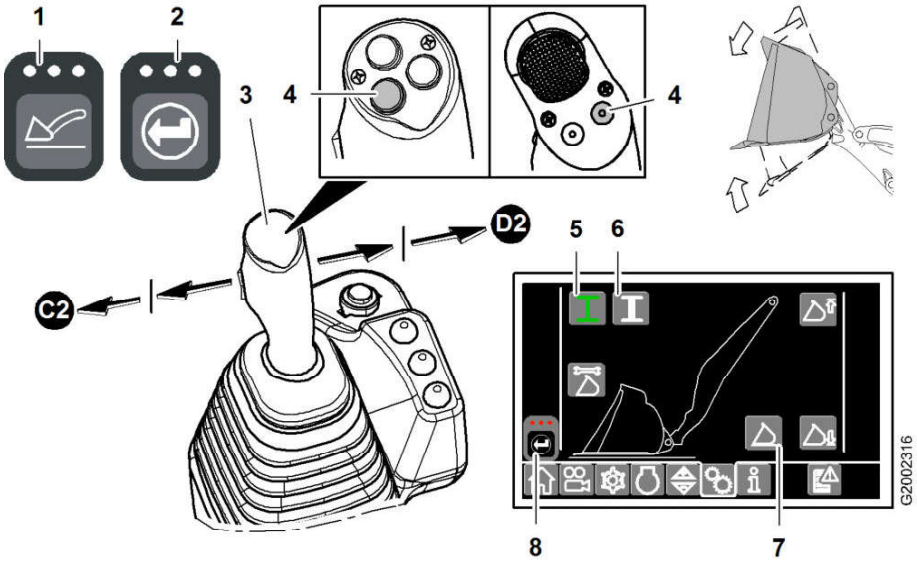

Fig. 266: Bucket return-to-dig

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

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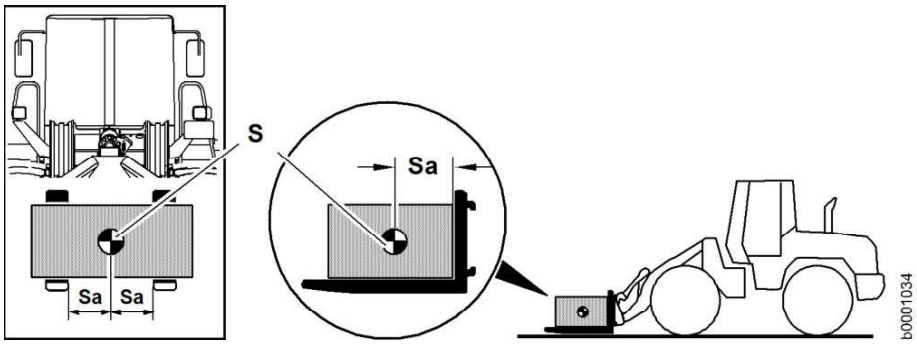

Fig. 275: Working with the forklift

S Centre of gravity **Sa** Distance from centre of gravity

Picking up the load

- ▶ Keep as close as possible to the centre of gravity **Sa** of the load.
- ▶ To ensure good load stability: Mount the prongs as far outward as possible on the fork carrier.

Travelling with a load

- ▶ When driving unloaded or carrying goods, tilt the forklift slightly in and carry it low.
- ▶ Travel at an appropriate speed for the load and the surface.
- ▶ If the load obstructs your view: Drive in reverse.
- ▶ When driving on slopes, always keep the load uphill.
- ▶ Never drive across slopes.
- ▶ Never turn on slopes.
- ▶ Only lift and lower the load when at a standstill.

3.3.10 2in1 steering

This equipment is optional.

2-in-1 steering is a fully hydraulic dual steering function.

Steering modes:
– Conventional steering mode
– Direct steering mode

Direct steering mode allows short steering movements with a faster articulation movement compared to conventional steering mode. Direct steering mode is designed to make work with repeated steering movements easier.

DANGER
Driving in direct steering mode on public roads is prohibited!
Death, injuries.

- ▶ Deactivate direct steering mode when driving on public roads.

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3.4 Working methods

This section describes the routine working methods.

The driver is responsible for:
– Properly picking up and carrying the load
– Operating the machine safely at the workplace

DANGER
Machine tipping!
Risk of fatal injury.

- ▶ Make sure that the ground surface has sufficient load capacity.
- ▶ Observe the maximum tipping load.
- ▶ Keep the load low during transportation.
- ▶ Do not change direction too quickly.
- ▶ Do not brake suddenly.

3.4.1 Picking up material

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

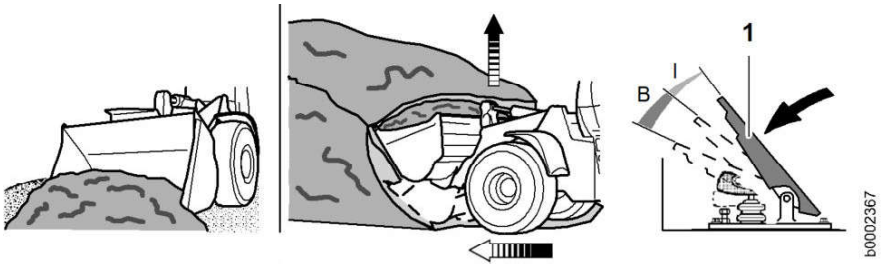

Fig. 285: Picking up material

1 Inch/brake pedal
I Inching
B Braking

- ▶ Do not work with a strong downwards pressure on the working attachment.
- ▶ To provide better support, gently tilt the working attachment in and out while driving into the material.

Pressing the inch/brake pedal reduces tractive force, which makes loading easier.

This is necessary when the machine is working on loose terrain and picking up solid or coarse material.

- ▶ Also move the inch/brake pedal **1** within the range **I**.
  - ▷ The power of the travel hydraulics is reduced, which prevents the wheels from spinning.
  - ▷ The power of the working attachment is reduced.
- ▶ Tilt in the loaded working attachment as far as it will go and raise the lift arms.

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Excavating foundations

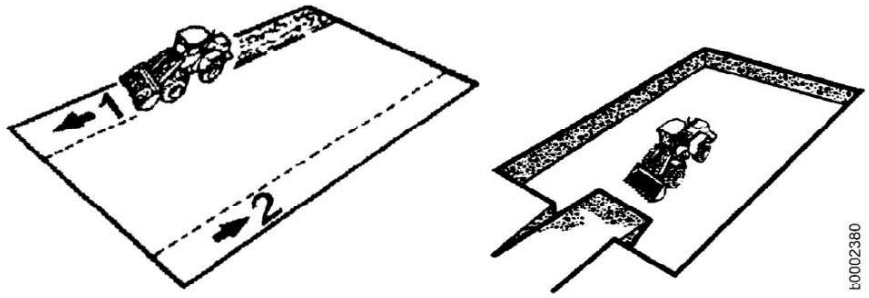

Fig. 302: Excavating foundations

▶ Make a first trench along the side of the pit.

When the first trench is down to a depth of approx. 1 m (3‘ 3“ ft-in):

▶ Start a second trench along the opposite side.

▶ Excavate the middle area to the same depth as the two side trenches. Heap the material at one side.

When the foundations have been excavated to the required depth:

▶ Use the heaped material to create an exit ramp.

▶ Drive forwards out of the pit.

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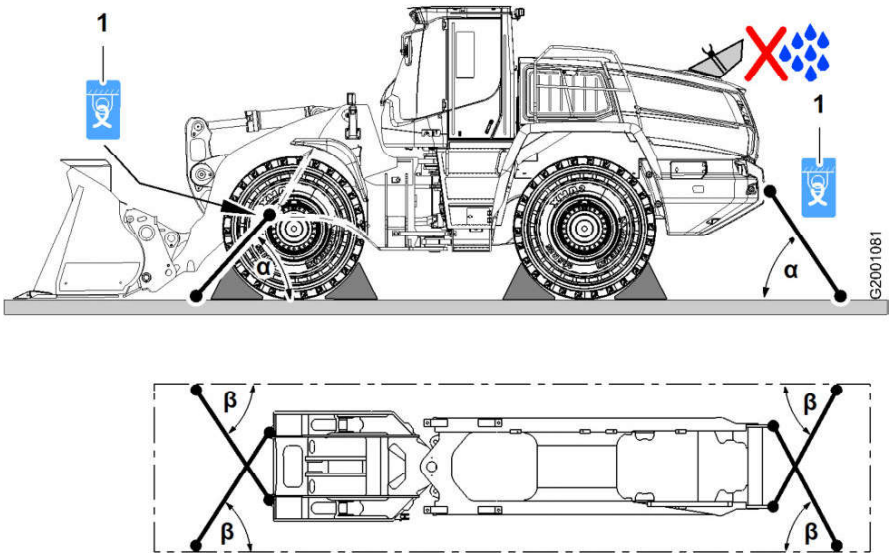

Fig. 311: Securing the machine

1 Lashing points
α Lashing angle 20° to 40°
β Lashing angle 20° to 40°

▶ Fasten the lashing material to the lashing points **1** on the machine.

▶ Fasten the lashing gear crosswise to the lashing points on the low-bed truck, maintaining the specified **lashing angles α** and **β.**

NOTICE
Risk of water in the exhaust system!
Risk of damage to the exhaust system.

▶ Prevent water from entering.

▶ Seal the exhaust system using waterproof material which cannot slip.

Driving the machine off the loading area

Make sure that the following requirements are fulfilled:
❑ A person is available to give direction signals.
❑ The lashing material and wedges have been removed.
❑ The exhaust system sealing material has been removed.

DANGER
Person giving signals in the danger area!
Risk of fatal injury.

▶ Make sure there are no unauthorised persons in the danger area.

▶ Always maintain visual contact with the person giving the signals.

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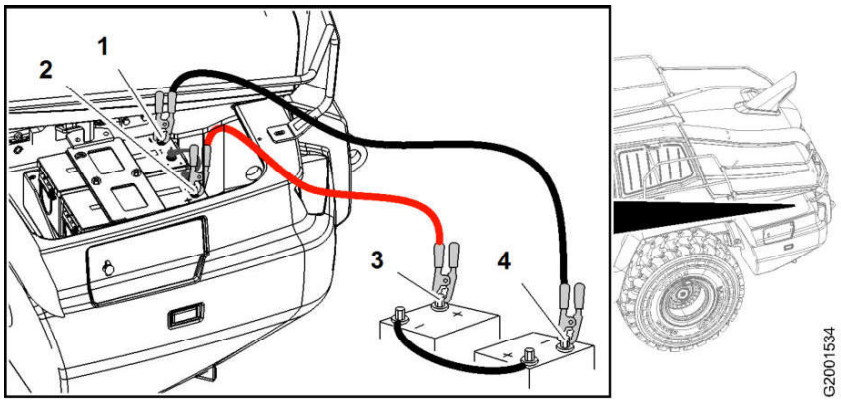

Fig. 321: Jump starting procedure

1	Negative terminal of flat battery	**3**	Positive terminal of donor battery
2	Positive terminal of flat battery	**4**	Negative terminal of donor battery

- ▶ Only use jump leads of a suitable cross-section.
- ▶ First connect one jump lead to the positive terminal **2** of the flat battery and then to the positive terminal **3** of the external battery.
- ▶ Connect the second jump lead first to the negative terminal **4** of the external battery and then to the negative terminal **1** of the flat battery.
- ▶ Start the engine.

To disconnect the external battery:

Excess voltage can be avoided by switching on major consumers such as headlights.

- ▶ Make sure the engine is at the lower idling speed.
- ▶ First disconnect the jump lead from the negative terminal **1** of the flat battery and then from the negative terminal **4** on the donor battery.
- ▶ Then remove the second jump lead from the positive terminal **2** of the discharged battery and then from the positive terminal **3** of the donor battery.

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4.3 Problem remedy

4.3.1 Replacing fuses

NOTICE
Incorrect fuse rating!
Damage.

▶ Use a fuse of the correct rating.

Make sure that the following requirements are fulfilled:
❑ The 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 cab
❑ Fuse board A4a in the left ballast weight
❑ Fuse board A4b in the cab

Fuses on fuse board A4 in the operator's cab

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

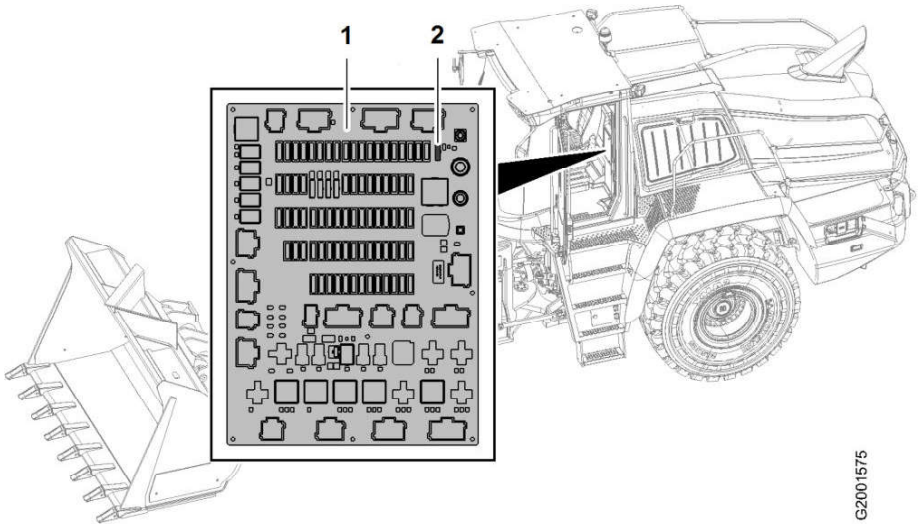

Fig. 347: Fuses on fuse board A4 in the operator's cab

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

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

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
		●	●	❍	❍			Air filter system: Clean the service cover and dust discharge valve.			288
				❍	❍	✦		Air filter system: Clean or change the main element (when indicated by the vacuum switch, or at least once a year)			290
					❍	✦		Air filter system: Clean the safety element (after replacing the main element three times, or every year at the latest).			293
☐		●	●	❍	❍			Splitter box: Check the oil level.			294
				❍	❍			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.			296
						❍4500h		Diesel particulate filter: clean the filter module (optional).			
					❍			Compressed air system: Change the air dryer.			
					❍			Check the compressed air system.			
Cooling system											
	●	●	●	❍	❍			Cooling system: Check the coolant level.			298
					❍	❄		Check the concentration of antifreeze and corrosion protection agent or corrosion inhibitor in the coolant (at least once a year).			299
						✦		Clean the cooling system.			306
						❍6000h		Cooling system: Change the coolant (at least every 4 years).			
Hydraulic components											
☐	●	●	●	❍	❍			Hydraulic tank: Check the oil level.			308
				❍	❍			Hydraulic tank: Drain off condensate and sediment.			
				❍	❍			Hydraulic tank: Change the return filter insert.			
					❍			Hydraulic tank: Change the breather filter.			
						✧		Hydraulic tank: analyse the oil (For more information see: Oil analysis, page 263)			
						✧		Hydraulic tank: change the oil (For more information see: Oil change, page 263)			
Steering system											
☐	●	●	●	❍	❍			Steering: Check the function.			311
☐		●	●	❍	❍			Steering cylinders: Lubricate the bearings.			311

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5.3.5 Engine oils

Liebherr recommendation

Ambient temperature	Designation
-30 °C (-22 °F) to 35 °C (95 °F)	Liebherr engine oil 5W-30
-30 °C (-22 °F) to 35 °C (95 °F)	Liebherr engine oil 5W-30 low ash

Tab. 73: Recommendation for engine oils

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

Other approved engine oils

Ambient temperature	Designation
-20 °C (-4 °F) to 45 °C (113 °F)	Liebherr engine oil 10W-40
-20 °C (-4 °F) to 45 °C (113 °F)	Liebherr engine oil 10W-40 low ash

Tab. 74: Other approved engine oils

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

Minimum quality requirement

Specification	
Without diesel particulate filter	LH-00-ENG3A
With diesel particulate filter	LH-00-ENG3A LA

Tab. 75: 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 as per the minimum requirements of LH-00-ENG3A.	500 h

Tab. 76: Changing intervals

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

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To close the cooler hood:

▶ Fully close the cooler hood **2** with the handle **1**.

Right cab access

The cab access on the right side serves as a maintenance access to the fresh air filter on the cab.

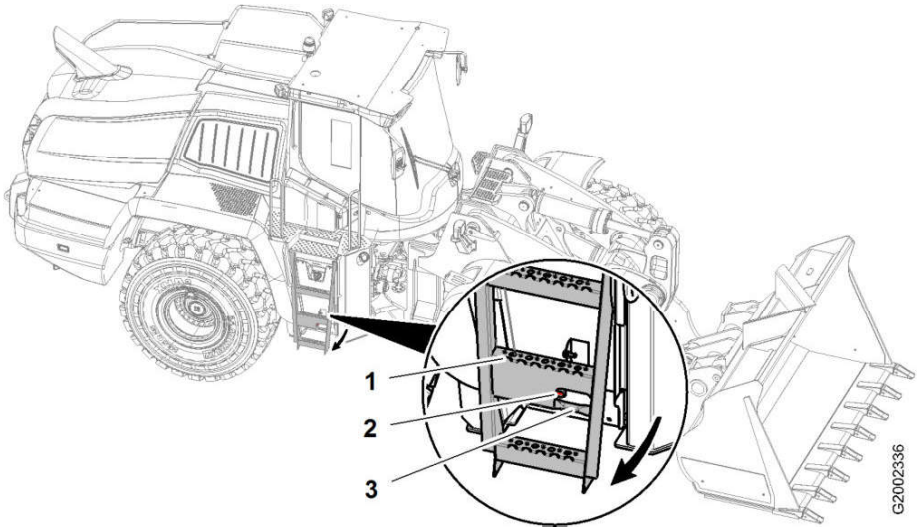

Fig. 358: Right cab access

1 Cab access
2 Lever
3 Handle

To extend the cab access:

▶ Use lever **2** to release the lock.

▶ Push out the cab access **1** with the handle **3** until the locking mechanism engages.
▷ The cab access **1** is held in position.

NOTICE
Cab access extended.
Risk of damage to the machine.

▶ Before starting up the machine: Fold up the cab access.

To fold up the cab access:

▶ Release the locking mechanism by hand.

▶ Fold up the cab access **1** with the handle **3**.
▷ The cab access **1** is locked.

Service cover in the left of the cab access

When the service cover is open, it is possible to access the following components:
– Central lubrication system
– Windscreen washer fluid reservoir

- Control units
- Electrical components
- Relay boards and fuse boards
- Plug connections
- Sensors
- Air filter
- Exhaust system

Cleaning

▶ Do not clean the machine with aggressive cleaning agents or combustible liquids.

▶ Soften up dirt with water.

▶ Rinse off the softened dirt with water.

If the engine has to be cleaned:

▶ Open the service hatch.

▶ Clean the engine.

After cleaning

▶ Remove all masking and covers over openings and components.

▶ Check all fuel lines, engine oil lines and hydraulic lines (for leaks, loose connections, abrasion and damage).

▶ Repair any defects immediately.

▶ To displace any water that has penetrated: Lubricate all bearings and pin connections again.

▶ If necessary, renew the corrosion protection on components and surfaces.

If the engine has been cleaned:

▶ Let the engine warm up at idling speed.
▷ This allows the engine to dry better.

Cleaning the interior of the cab

Note

Only clean the interior equipment of the cab with warm water, without any cleaning additives.

▶ Wipe surfaces with a soft, damp cloth.

Cleaning the front windscreen of the cab

The front windscreen only needs to be cleaned after working in very dirty environments.

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

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Removing the main element

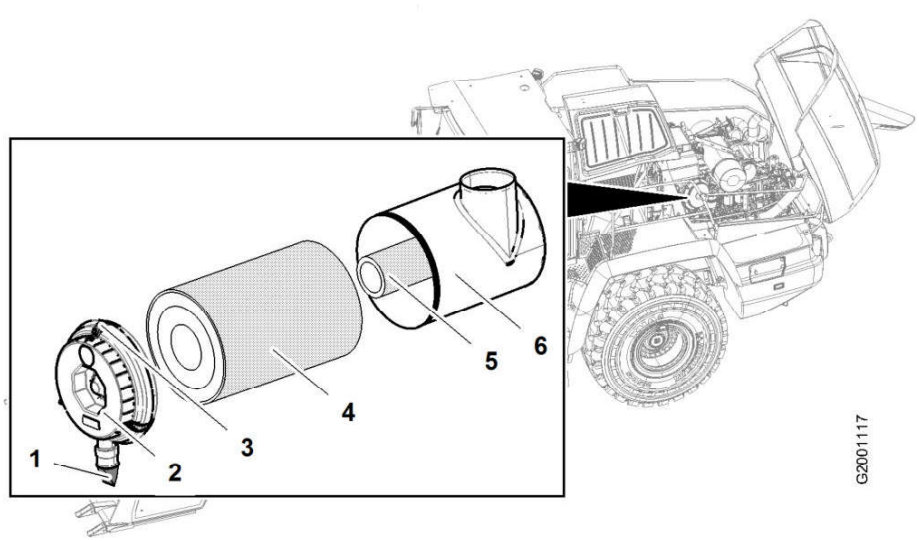

Fig. 377: Removing the main element

1	Dust discharge valve	**4**	Main element
2	Service cover	**5**	Safety element
3	Fixing clips	**6**	Filter housing

NOTICE
Always carry out maintenance correctly.
Damage to the engine.

▶ Always replace damaged filter elements.

▶ Release the fixing clips **3** on the service cover **2**.

▶ Take off the service cover **2**.

▶ Remove the main element **4** and check it for damage before cleaning it.

If the main element is damaged:
▶ Change the damaged filter element.

If the main element is not damaged:
▶ Clean the main element.

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Description	Unit	Value
		max. -47
Corresponds to antifreeze and corrosion inhibitor concentration	% %	min. 50 max. 60 min. 50 max. 60

Note
Unless otherwise required by the ambient temperatures:

▶ Adjust the freezing point to -37 °C (-35 °F) (50% antifreeze and corrosion inhibitor).

If the value is correct:

▶ Close the cap **1** of the equalising reservoir **2**.

If the value is not correct:

▶ Correct the antifreeze and corrosion inhibitor concentration.

Correcting the antifreeze and corrosion inhibitor concentration

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5.10 Steering system

5.10.1 Steering: Checking the function

Make sure that the following requirements are fulfilled:
- ❑ The working attachment is in the transport position.
- ❑ Articulation lock is released.
- ❑ There is enough space to test the steering.

WARNING
Persons in the danger area!
Risk of injury.

▶ Make sure there is nobody in the danger area.

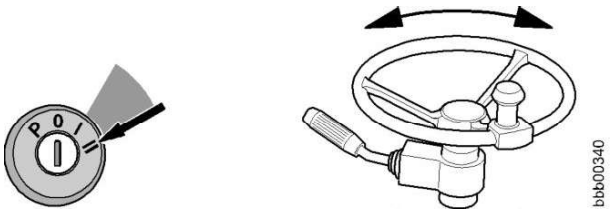

Fig. 395: Steering: Checking the function

▶ Start the engine.

▶ Without moving the machine, turn the steering in both directions and check that it is functioning properly.

5.10.2 Steering cylinders: Lubricating the bearings

Make sure that the following requirements are fulfilled:
- ❑ The machine is in maintenance position 1.
- ❑ The lubrication point has been cleaned.

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5.14 Axles and drive shafts

5.14.1 Checking the tyre pressure

Make sure that the following requirements are fulfilled:
- ❑ The machine is in maintenance position 1.
- ❑ You have the recommended tyre pressures from the manufacturer or dealer at hand.

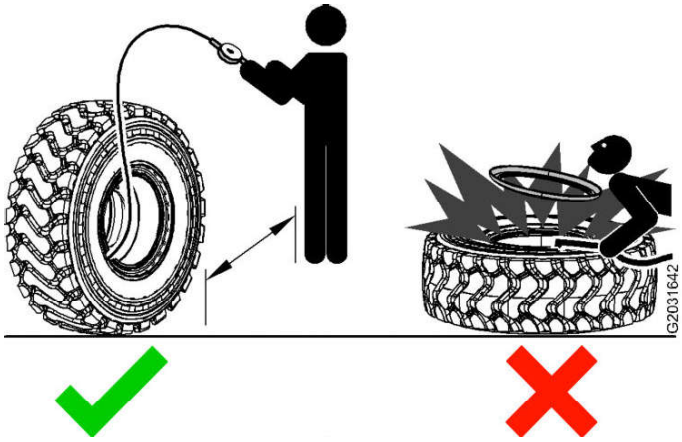

Fig. 403: Checking the tyre pressure

DANGER
Tyre lock rings coming loose!
Fatal injury.

- ▶ Make sure there is no one in the danger area.
- ▶ Keep a safe distance to the side.
- ▶ Use a sufficiently long filling hose with a self-retaining valve.

- ▶ Check the tyre pressure.

If the tyre pressure is not correct:
- ▶ Correct the tyre pressure.

5.14.2 Checking the wheel tightness

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

Make sure that the following special tools are ready:
- ❑ A torque wrench with a measuring range of at least 600 Nm (443 ft-lb)

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- ▶ Remove the catch **3**.
- ▶ Clean the tooth adapter **2**.
- ▶ Check whether the tooth adapter **2** is worn.

If the tooth adapter **2** is worn:

- ▶ Have the tooth adapter **2** replaced by Liebherr customer service.

Installing a tooth

- ▶ Clean the tooth adapter **2**.
- ▶ Insert the catch **3** in the tooth adapter **2**.
- ▶ Place a new tooth **1** on the tooth adapter **2**.
- ▶ Insert the retaining pin **4** up to the stop.
- ▶ Turn the retaining pin **4** with the square spanner about 30° in the direction of the bucket.
  - ▷ The lug of retaining pin **4** engages the catch **3**.
- ▶ Attach the plug **5** to outer end of the retaining pin **4**.

Changing the undercut blade

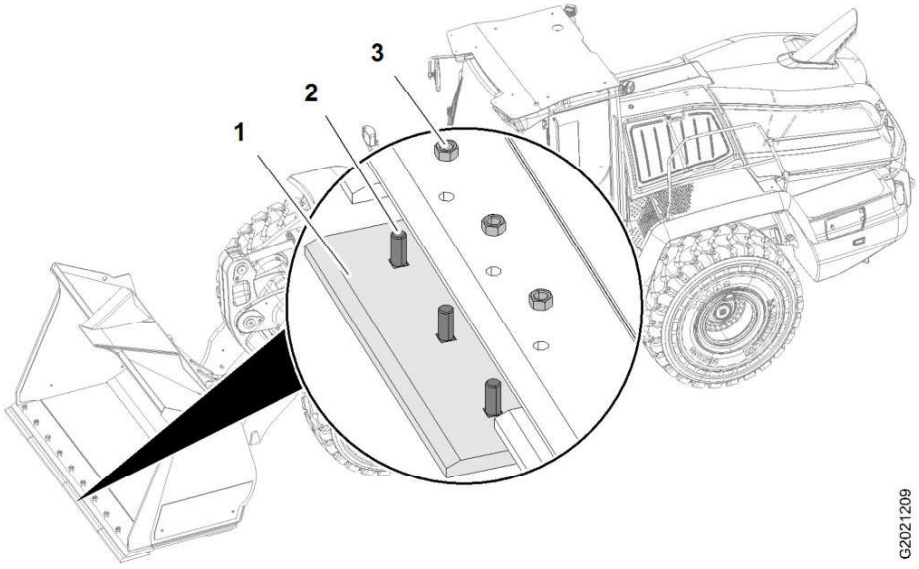

Fig. 414: Changing the undercut blade

1	Undercut blade	**3**	Nut
2	Screw		

Removing the undercut blade

- ▶ Loosen and unscrew the nuts **3**.
  - ▷ The undercut blade **1** is detached and can be removed.

Installing the undercut blade

- ▶ Clean contact surface between the undercut blade **1** and bucket.

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