en **Operator's manual**

Wheel loader

Document ID

ORIGINAL OPERATOR'S MANUAL

Order number: 12203962
Issued: 07-2019
Version: 16
Author: LBH / Technical Documentation Department

Product ID

Manufacturer: Liebherr-Werk Bischofshofen GmbH
Type: L 526
Type no.: 1558 (USA / CAN)
From Serial no.: 36217

Contact

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

LBH/12203962/16/07-2019/en

Description	Unit	Value
Maximum flow rate	l/min gal/min	136 35.93
Maximum operating pressure	bar psi	$330^{\pm 5}$ $4{,}786.22^{\pm 72.52}$

1.2.11 Lift arms

Lift arm versions:
- Z kinematics
- Parallel kinematics

Working cycle time at rated load with Z kinematics

Description	Unit	Value
Lifting	s	5.3
Tilting out	s	2.1
Lowering (empty)	s	3.6

Working cycle time at rated load with parallel kinematics

Description	Unit	Value
Lifting	s	5.3
Tilting out	s s	4.0 4
Lowering (empty)	s	3.6

1.2.12 Cab

Design:
- Elastically mounted, soundproofed cab
- Cab door with:
  - 105° opening angle and side window with 5° vent opener or
  - 180° opening angle with fixed window.
- Right side window with 5° vent opener or 40° opening
- Front window in green-tinted compound safety glass as standard
- Side window in grey-tinted single-pane safety glass
- Infinitely adjustable steering column
- Heated rear window
- 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

Driver's seat

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

Seat position, height and inclination adjustment as standard.

LBH/12203962/16/07-2019/en

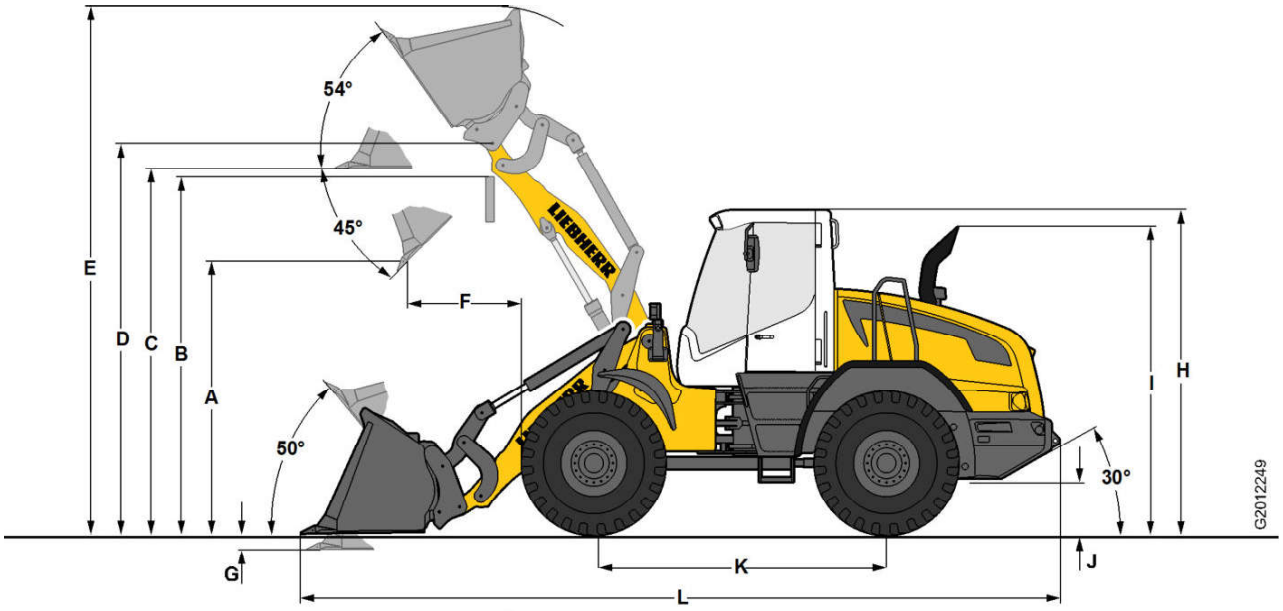


Fig. 4: Complete machine with bucket (parallel kinematics)

	Designation	Unit	Value	
	Hydraulic quick coupler		Yes	Yes
	Bucket type		A)	A)
	Cutting tool		B)	B)
	Lift arm length	mm in	2570 8‘ 5“	3000 9‘ 10“ C)
	Bucket capacity as per ISO 7546 D)	m ^{3}	2.1	2.1
	Bucket width	mm in	2500 8‘ 2“	2500 8‘ 2“
	Specific material weight	t/m ^{3} lb/yd^3	1.8 3,000	1.5 2,500
A	Dump height at maximum lifting height and 45° tilt-out angle	mm in	2775 9‘ 1“	3335 10‘ 11“
B	Dump height	mm in	3380 11‘ 1“	3980 13‘ 1“
C	Maximum bucket base height	mm in	3610 11‘ 10“	4190 13‘ 9“
D	Maximum bucket pivot point height	mm in	3860 12‘ 8“	4435 14‘ 7“
E	Maximum bucket top height	mm in	5130 16‘ 10“	5700 18‘ 8“
F	Reach at maximum lifting height and 45° tilt-out angle	mm in	1170 3‘ 10“	1100 3‘ 7“
G	Digging depth	mm in	120 4.72“	95 3.74“

LBH/12203962/16/07-2019/en

Liebherr at no charge to the owner at any authorized Liebherr Dealer. Any such part repaired or replaced prior to the first scheduled replacement point will be warranted for the remainder of the period prior to the first scheduled replacement point. The owner will not be charged for diagnostic labor that leads to the determination that a warranted part is in fact defective, so long as such diagnostic work is performed by an authorized Liebherr Dealer. If a warranted part fails because of a defect, Liebherr will repair or replace it at any authorized Liebherr Dealer. Any other engine components damaged by the failure of a warranted part will also be repaired or replaced at no charge to the owner.

1.3.6 Warranted parts

Following are the only parts warranted under this Emission Control Warranty.

1. Fuel Injection System
2. Intake Manifold
3. Turbocharger System
4. Charge Air Cooling System
5. Exhaust Gas Recirculation (EGR) System
6. EGR Control System
7. Exhaust Manifold
8. Diesel Particulate Filter System
9. Diesel Oxidation Catalyst
10. Fuel Additive Devices
11. Selective Catalyst Reduction
12. Reductant Containers
13. Electronic Control Unit, Sensors, Solenoids and Wiring Harnesses
14. Emission Control Information Label

1.3.7 Exclusions

This warranty does not cover:

- Malfunctions in any part caused by abuse, misuse, alterations, tampering, disconnection, or improper or inadequate maintenance.
- Damage resulting from fire, accident, negligence, act of God or other events beyond the control of Liebherr.
- Consequential damages such as loss of use of the engine or equipment powered by the engine, towing, machine transportation, loss of time, downtime, inconvenience, telephone, travel, lodging, or any other indirect or direct damages.
- Loss or damage to personal property, loss of revenue, commercial loss or any other matters not specifically included in this warranty statement.
- Any replacement part may be used in the performance of any maintenance or repairs. However, the manufacturer is not liable for non-manufacturer parts.
- Any damages resulting from use of non-genuine Liebherr parts.

LBH/12203962/16/07-2019/en

  - Is able to guide a load.
- Has the necessary authorisation for attaching loads.
- The slinger has the necessary education (theoretical and practical) for the following:
  - Selecting the suitable slinging gear
  - Attaching slinging gear
  - Securing to prevent unintended disengaging of slinging gear
  - Avoiding damage to slinging gear
  - Spotting
  - Applying all necessary signal signs
- Is not under any physical or mental impairment that limits one of the prescribed requirements.
- Is not under the influence of alcohol.
- Is not under the influence of drugs.

2.3.8 Spotter

Responsibility

The spotter is responsible for the following:
- Wear personal protective equipment.
- Forward signals from slinger to operator.
- If the spotter is the only person for this purpose: Give instructions to operator.
- The spotter must be in the field of view of operator or have voice contact with the operator.

Requirement

The spotter has following qualification and skills:
- Has completed the legally specified minimum age.
- Physically and mentally capable of spotting and providing signals:
  - Satisfactory eyesight
  - Satisfactory hearing ability
  - Quick reactions
  - Is able to estimate distance, height and gaps.
- The spotter has following skills:
  - Is able to operate radio units.
  - Is able to give clear instructions on radio units.
  - Is able to guide a load.
  - Is able to ensure safe movement of load and machine.
- Has the necessary authorisation for giving signal signs.
- The spotter has the necessary education (theoretical and practical) for the following:
  - Spotting
  - Applying all necessary signal signs
- Is not under any physical or mental impairment that limits one of the prescribed requirements.
- Is not under the influence of alcohol.
- Is not under the influence of drugs.

2.4 Signs on the machine

There are various types of decal attached to the machine.

LBH/12203962/16/07-2019/en

Following factors influence size of danger area:
- The travel speed and movement of the machine
- Working attachment installed
- Type of loading material
- Risk of loading material falling

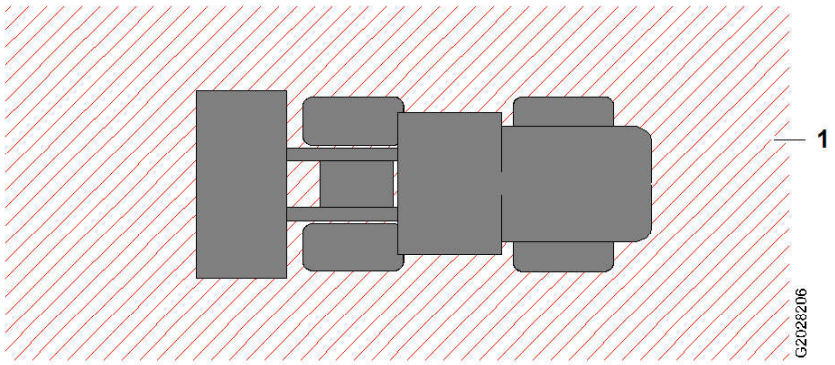


Fig. 54: Machine danger zone (view from above)

1 Danger zone

Danger to life

Unapproved presence in danger zone

- Make sure there is nobody in the danger area.

2.7.6 Visibility

Danger to life

Insufficient visibility

- If equipment is installed that deviates from the standard, the operator must re-evaluate the field of view and, if necessary, take measures.
- Make sure that persons approach the machine from the front and within operator's field of vision.
- Make sure that persons contact the operator before approaching the machine.
- Make sure that no obstacles impair visibility in the working area.
- Use viewing devices to observe environment of machine if necessary.
- Use viewing devices if necessary to observe areas around the machine that cannot be seen directly.
- Position working attachment so that sufficient visibility is ensured.
- Work with spotter if visibility is restricted.
- Agree on which hand signs to use.
- If necessary communicate via radio.
- Make sure that spotter is outside danger zone.
- In conditions of poor visibility use illumination in accordance with the applicable regulations.
- Work with extra care and attention in poor visibility and changing weather.
- Only use sun visors if field of vision is not restricted.

LBH/12203962/16/07-2019/en

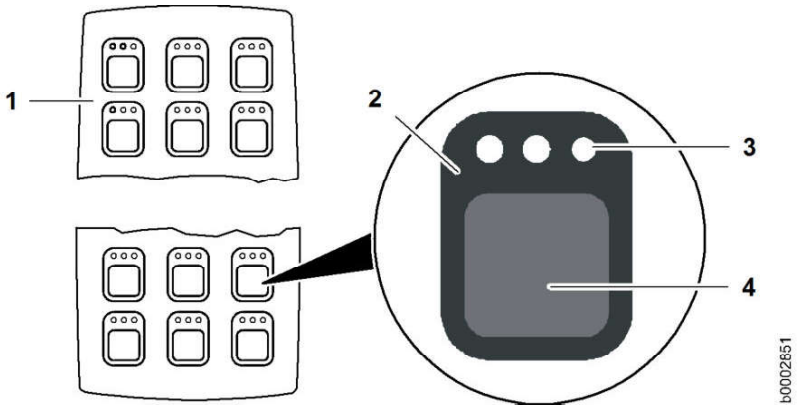


Fig. 57: Control unit

1 Control unit
2 Key
3 LED
4 Symbol

Key	Designation	Key	Designation
	Parking brake [A)]		Working hydraulics lockout [B)]
	Auto lift arm position [B)]		Auto lowering[B)]
	Central lubrication system (option)		Vmax (speed limit)
	Emergency steering		Float position [C)]
	Bucket return-to-dig [B)]		Ride control (option) [B)]
	No function		No function
	Higher travel range		Confirmation
	Automatic heating, air conditioning (option)		Recirculated air

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.

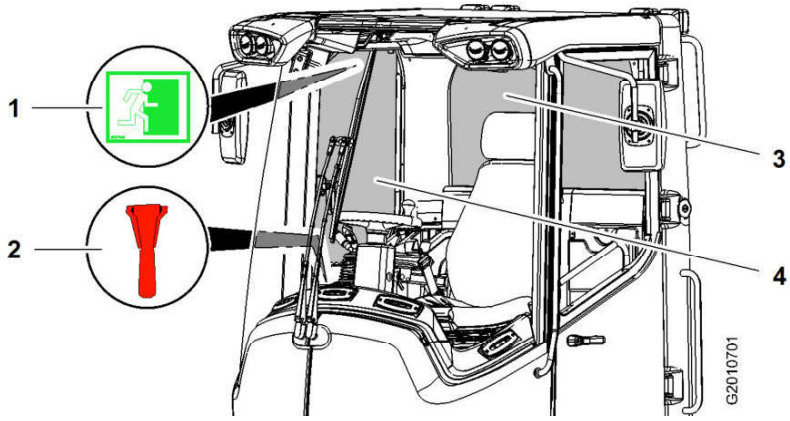


Fig. 71: Using the emergency hammer

1	*Emergency exit* decal	**3**	Side window
2	Emergency hammer	**4**	Rear window

▶ Turn off the engine.
▷ All travel and working functions are switched off.

▶ Depending on the emergency situation: Break the side window **3** or the rear window **4** using the emergency hammer **2**.

▶ Leave the cab through the broken window.

3.2.6 Fire extinguisher

This equipment is optional.

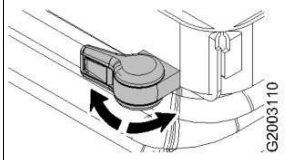
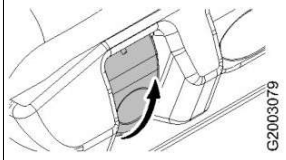
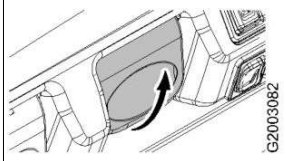
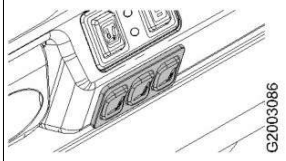
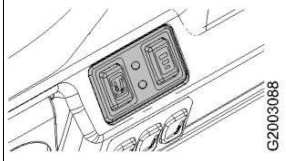
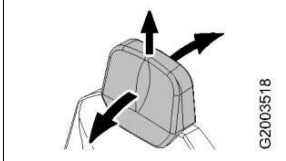
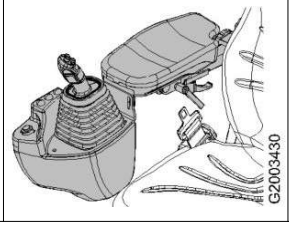
The fire extinguisher is mounted in the driver's cab or outside on the right mudguard.

Note
Use, safety and inspection of the fire extinguisher!

▶ Find out about fire alarm options and fire fighting equipment on the site.

▶ Make sure you know where the fire extinguisher is located and how to use it.

LBH/12203962/16/07-2019/en

	Adjustment options	
6	 G2003110	**Longitudinal absorption** Turn the lever to the left or right to activate or deactivate longitudinal absorption.
7	 G2003079	**Damper adjustment** Use the lever to adjust the firmness of the damper. Handle up: minimum damping force Handle down: maximum damping force
8	 G2003082	**Backrest adjustment** Pull the lever all the way up and move the backrest to the required position by pressing your upper body against it.
9-11	 G2003086	**Lumbar support adjustment** Press the button to adjust the contour of the backrest to your body. Button **9**: lower air chamber Button **10**: upper air chamber Button **11**: side bulges
12-13	 G2003088	**Seat heating / seat climate control** Press the seat heating switch **12** to switch the seat heating or seat climate control on or off. Heating / air conditioning can be set to three levels using switch **13**.
14	 G2003518	**Head rest** Adjust the inclination and height of the head rest by pulling or pushing it.
15	 G2003430	**Adjusting the armrest** (For more information see: Adjusting the operator's seat armrest, page 91)

Tab. 24: Operator's seat: ISRI Premium

Adjusting the operator's seat armrest

The control lever is mounted on the armrest and moves with it when it is adjusted.

WARNING
Uncontrolled activation of the control lever!
Risk of injury.

▶ Only carry out the adjustments when the engine is switched off.

0 - windscreen wiper off
J - intermittent operation
I - continuous operation

3.2.14 Lighting

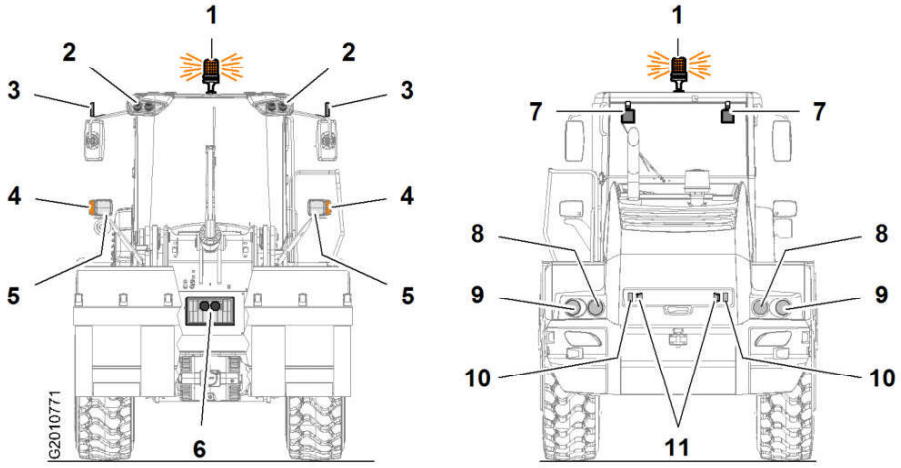


Fig. 139: Lighting

1 Flashing beacon (option)
2 Front working headlights
3 Marker lights (option)
4 Front indicator light
5 Driving headlights
6 Front section working headlight (option)
7 Rear working headlight (option)
8 Reversing light
9 Brake light, tail light, rear indicator
10 Flash (option)
11 License plate light (option)

Driving headlight includes:
– Low beam
– Parking light
– High beam

NOTICE
Battery discharged for too long!
Damage.

▶ Charge a flat battery as soon as possible.

Driving headlights, tail lights, marker lights (option) and licence plate lights (option)

The parking lights, tail lights, marker lights and licence plate lights remain operational even if the ignition key has been removed.

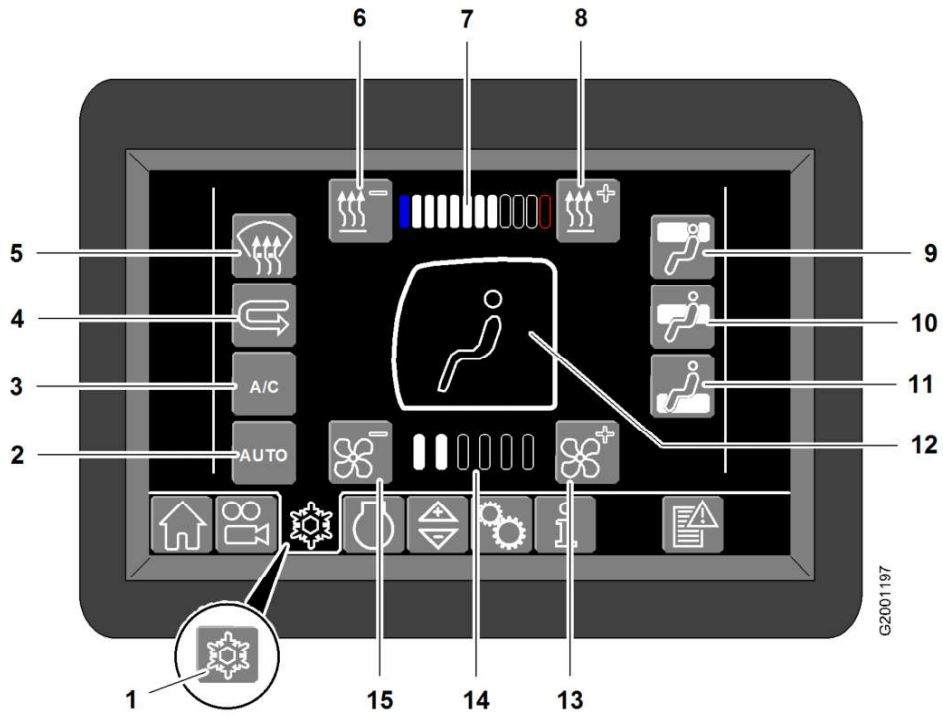


Fig. 167: Menu: heating, air conditioning

1	*Heating, air conditioning* button	**9**	*Head-level air distribution* button
2	*Automatic mode* button (option)	**10**	*Mid-level air distribution* button
3	*Heating/air conditioning mode* button (option)	**11**	*Foot-level air distribution* button
4	*Recirculated air mode* button	**12**	*Air distribution* indicator
5	*Defrost mode* button	**13**	*Blower speed up* button
6	*Reduce temperature* button	**14**	Blower speed
7	Inflow temperature	**15**	*Blower speed down* button
8	*Increase temperature* button		

NOTICE
Missing cab air filter!
Damage to the air conditioning system.

▶ Never operate the air conditioning system without a cab air filter.

Note

The heating and air conditioning unit functions can be set on the display or on the control unit. (For more information see: 3.1.3 Control unit, page 70)

LBH/12203962/16/07-2019/en

Function buttons	Designation
	Reversible fan drive (option) (For more information see: Reversible fan drive, page 128)
	Mini-joystick (option) (For more information see: Mini joystick function settings, page 141)
	Joystick steering (option) (For more information see: 3.3.11 Joystick steering, page 198)
	Selecting the travel direction switch (option) (For more information see: Travel direction switch, page 203)
	Multi-lever control (option) See the separate operator's manual for more information
	Weighing device (option) See the separate operator's manual for more information
	Working headlight adaptive lighting (option) (For more information see: Working headlight adaptive lighting, page 129)
	Stroke limit damping (option) (For more information see: Stroke limit damping, page 130)

Tab. 32: Menu buttons

Working attachment calibration

Calibration of the working attachment is necessary to be able to access the full capabilities of machine.

Note

Each installed working attachment (earth bucket, high dump bucket, log grappler etc.) must be calibrated!

The calibration affects the following factors:
- Transmission control unit
- Ride control
- Auto lowering

Calibration of the working attachment consists of three steps:
1. Define the work application.
2. Calibrating the working attachment parallel to the ground.
3. Calibrating the working attachment perpendicular to the ground.

LBH/12203962/16/07-2019/en

3 Adjustment range for tilting in working attachment

▶ Call up the display screen using button **1**.
▷ The display screen for activating three stroke limit damping is shown.

Indicator in the display	Stroke limit damping
	Disabled
	Weak damping activated
	Strong damping activated

Tab. 37: Stroke limit damping

When the working attachment is changed:
▶ Press button **5**.
▷ The menu for stroke limit damping calibration appears in the display.

Note

A calibration must be performed for each working attachment attached without a quick coupler.

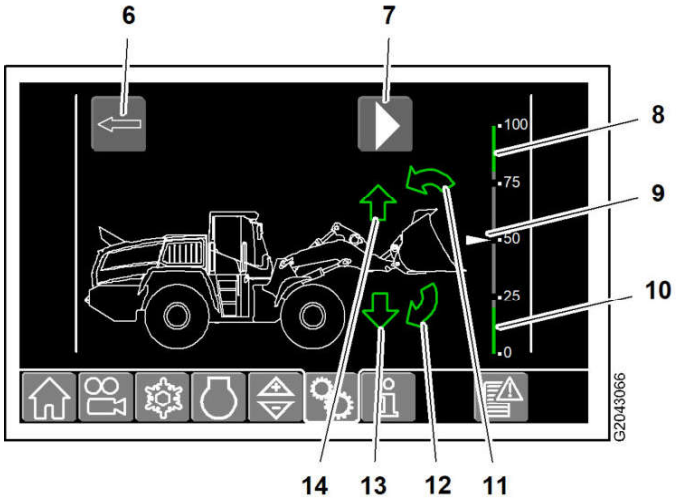


Fig. 196: Stroke limit damping calibration

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

LBH/12203962/16/07-2019/en

Controlling the hydraulic working attachment

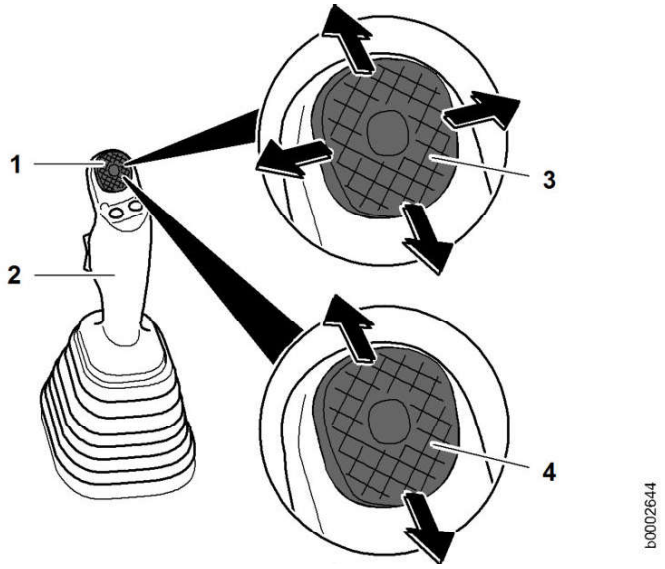


Fig. 216: Controlling the hydraulic working attachment

1 Mini-joystick
2 Control lever
3 Biaxial mini joystick
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:

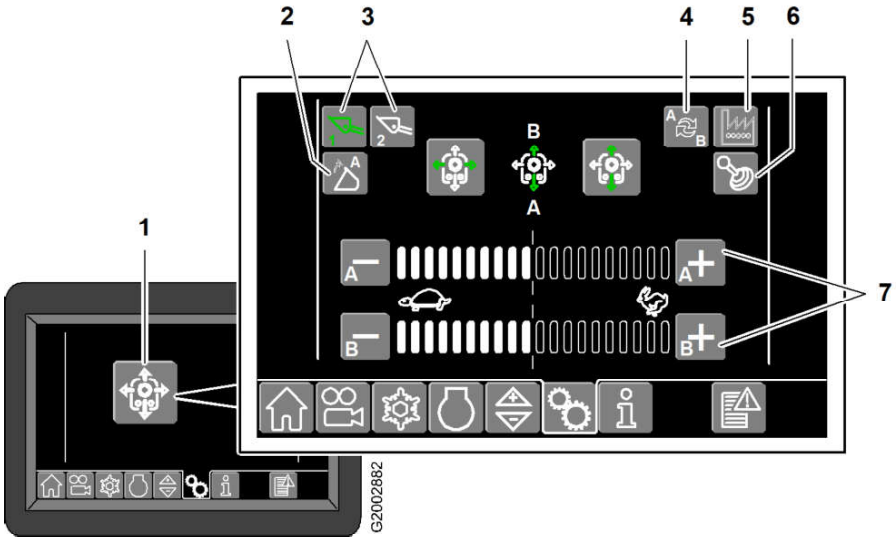


Fig. 217: Mini joystick function settings

3.2.20 Rear window heater and exterior mirror heater (option)

This function is only available when the ignition is on.

Switching rear window heater and exterior mirror heater on and off

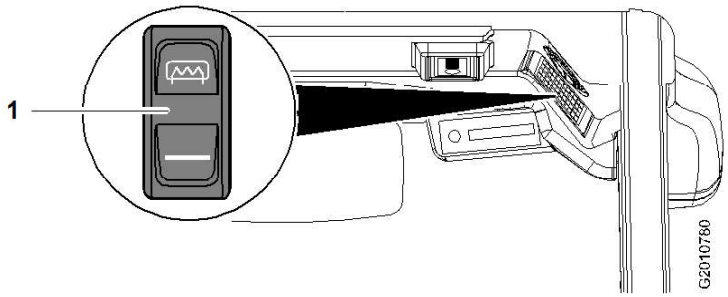


Fig. 248: Switching rear window heater and exterior mirror heater on and off

1 *Rear window heater*, *exterior mirror heater* button

▶ To switch on rear window heater and exterior mirror heater: press button **1**.

Note

Rear window heater and exterior mirror heater switch off automatically after 15 minutes.

3.2.21 Interior mirror, exterior mirrors and wide-angle mirrors (option)

The machine is equipped with one interior mirror, two exterior mirrors and two wide-angle mirrors (option).

Adjusting the mirrors

Make sure that following requirements are met:
❑ Machine is in operating position.

LBH/12203962/16/07-2019/en

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 163)

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 163)

LBH/12203962/16/07-2019/en

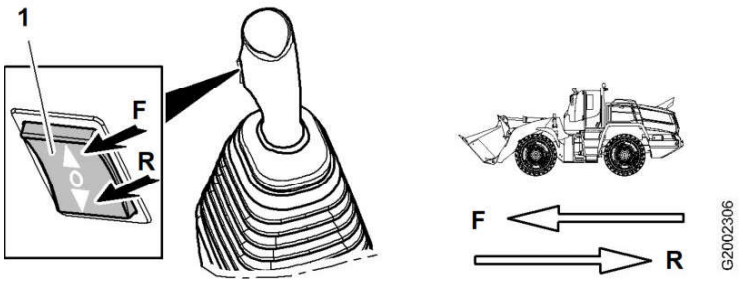


Fig. 272: Selecting the travel direction

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

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

Driving

This section deals with the following topics:
– Setting off
– Overspeed protection
– Driving with Vmax (speed restriction)
– Driving with ride control
– Reversing

Setting off

Make sure that following requirements are met:
❑ The preparations for travel mode have been completed. (For more information see: 3.3.3 Travel mode, page 169)

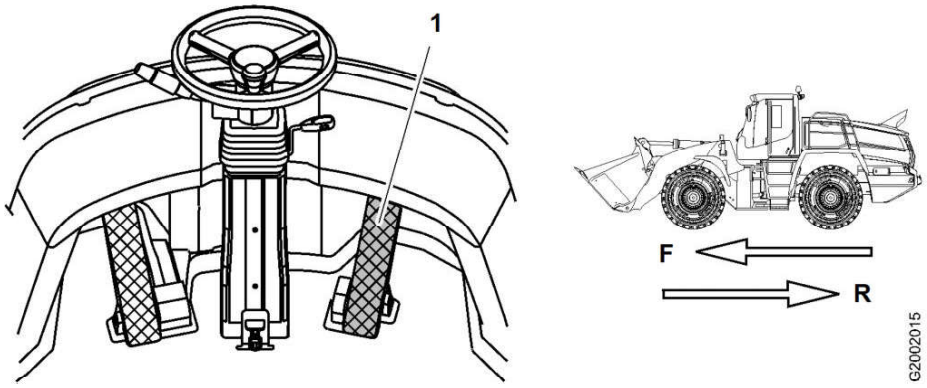


Fig. 273: Setting off

1 Accelerator pedal

▶ Carefully press down the accelerator pedal **1**.
▷ The machine starts moving.
▷ The travel speed and travel range are indicated on the display.

LBH/12203962/16/07-2019/en

Releasing the working hydraulics

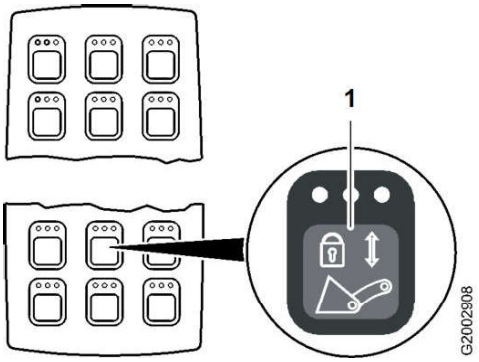


Fig. 286: Releasing the working hydraulics

1 *Working hydraulics lockout* key

▶ Press key **1**.
  ▷ *Working hydraulics lockout* symbol is not shown in display.
  ▷ The working hydraulics are ready for operation.

Raising and lowering the lift arms

WARNING
Persons in the danger area!
Risk of injury.

▶ Make sure there is nobody in the danger area.

Raising the lift arms

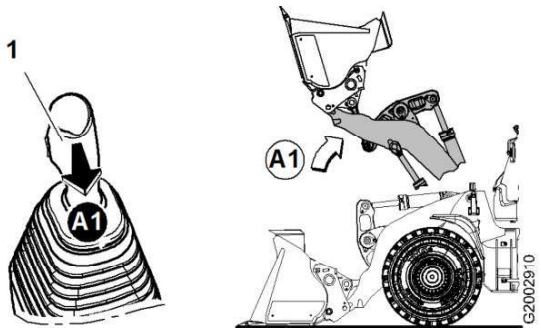


Fig. 287: Raising the lift arms

1 Control lever

▶ Move the control lever in direction **A1**.
  ▷ The lift arms are raised.

Lower the lift arms

There are two ways to lower the lift arms:
– Normal lowering function
– Quick drop function

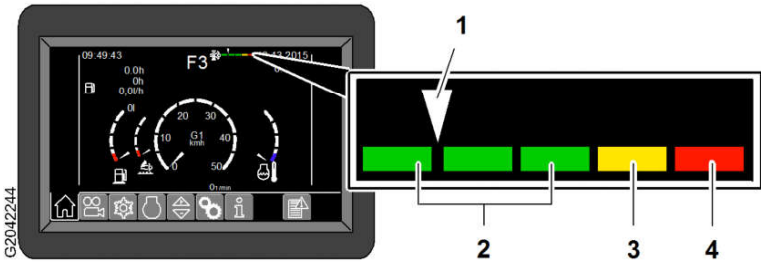


Fig. 297: Diesel particulate filter load condition

1 Indicator of the current load condition of the diesel particulate filter
2 Load condition *low - high*
3 Load condition *contaminated*
4 Load condition *heavily contaminated*

Symbol	Meaning	Notes
	High exhaust temperature	Regeneration is in progress, which means high exhaust temperatures are generated. Normal operation can continue. Do not turn off the diesel engine if possible. Automatic regeneration can be deactivated when working in fire hazard zones. Fuel can be saved by regeneration in the normal working cycle.
	Diesel particulate filter regeneration disabled	For use in fire hazard zones or during working cycles with very little engine load.
	Regenerate diesel particulate filter prompt	The diesel particulate filter is contaminated. Manual regeneration can be carried out. Leave the fire hazard zone. Start regeneration as soon as possible.
	Regenerate diesel particulate filter prompt	The diesel particulate filter is heavily contaminated. This results in reduced engine power. Carry out manual regeneration immediately. Leave the fire hazard zone before regeneration.
	Diesel particulate filter is overloaded	This results in greatly reduced engine power. Regeneration must be carried out by Liebherr customer service. Beware of damaging the filter. Turn off diesel engine. Contact Liebherr customer service.

Tab. 57: Symbols in the display

The following regeneration modes can be set:
– Automatic regeneration mode
– Regeneration mode disabled
– Manual regeneration mode

LBH/12203962/16/07-2019/en

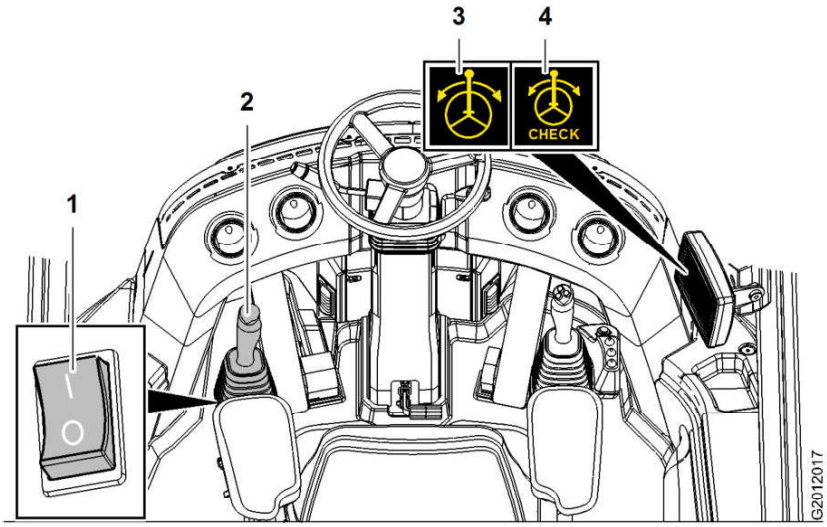


Fig. 318: Activating joystick steering

1	Joystick steering switch	**3**	*Joystick steering active* symbol
2	Joystick	**4**	*Joystick steering check* symbol

▶ Move the switch **1** to position **I**.
▷ The symbol **4** appears on the display.

▶ **To carry out the joystick steering check:** Move the joystick **2** to the left, to the right and to the left again.
▷ The symbol **4** goes out.
▷ The symbol **3** appears on the display.
▷ Joystick steering is activated.

Note
Joystick steering check incomplete or unsuccessful!

▶ The machine travel speed is restricted to 8 km/h (5 mph).

Steering procedure

DANGER
Incorrect steering!
Death, injuries.

▶ Only use joystick steering at a speed you can control.

LBH/12203962/16/07-2019/en

3.4.5 Loading with clamp buckets

Buckets with downholder clamps are mainly used for loading light bulky goods, such as compost, branches and garbage.

The downholder clamp is only used to keep the load in the working attachment.

NOTICE
Unnecessary jolting of the working attachment!
Damage to the lift arms and lay the working attachment flat.

▶ Avoid unnecessary jolting.

Make sure that following requirements are met:
❑ Observe manufacturer's separate operating manual.
❑ The hydraulic lines of the clamp buckets are correctly connected.
❑ The functions have been checked.

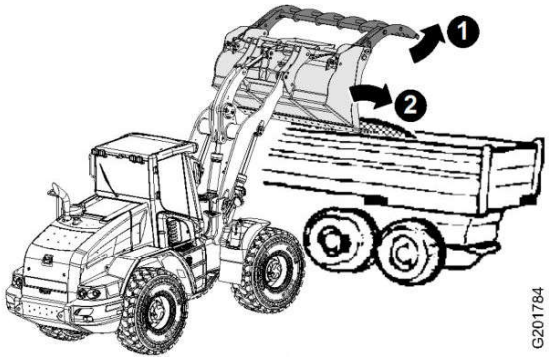


Fig. 331: Loading with clamp buckets

▶ Take up the loading material with the clamp bucket titled in and the downholder clamp open.

▶ At the unloading site, open the downholder clamp and empty the loading material.

3.4.6 Grading work

There are two different ways to carry out grading work.
– In forward travel direction
– In reverse travel direction

Grading in forward travel direction

The following procedures are recommended to avoid any possible loss of traction.
– Do not work with a strong downwards pressure on the working attachment.
– Use *float position* function.

LBH/12203962/16/07-2019/en

▷ The working attachment **7** is disconnected.

If you are not going to install a working attachment:

▶ Press the button **3** in position **B**.
▷ The locking pins **8** of the quick coupler **2** extend.
▷ The warning tone stops.
▷ The symbol **5** goes out in the display.

3.5.3 Fitting working attachments to the quick coupler

This equipment is optional.

The quick coupler is fitted on the front of the attachment holder. It enables you to change the working attachment without getting out of the cab.

DANGER
Falling working attachment!
Danger to life.

▶ Make sure there is nobody in danger area.

Note
Changing the working attachment alters the total weight of the machine!

▶ In order to ensure the roll over protective structure of the operator's cab, do not exceed the permissible total weight of the machine (see identification plate).

Note
No equipment or attachments from other manufacturers may be installed or attached to the machine without prior written consent from Liebherr.

▶ The appropriate technical documentation should be made available to Liebherr for this purpose.

The following tasks must be carried out in the following sequence in order to safely remove the working attachment:

1. Connect and lock the working attachment
2. Checking that the working attachment is locked
3. Connect hydraulic lines. [63)]

Connecting and locking the working attachment

Make sure that the following requirements are met:

❑ The quick coupler is completely unlocked.

[63)] If a working attachment with its own hydraulic supply is installed.

3.7 Emergency modes

This section describes the emergency modes of the machine.

Emergency modes:
- Lowering the lift arms if the diesel engine fails
- Towing the machine
- Emergency steering procedure
- Jump starting procedure

3.7.1 Lowering the lift arms if the diesel engine fails

If the diesel engine fails, lower the lift arms and depressurise the hydraulic system.

Lowering the lift arms and depressurising the hydraulics

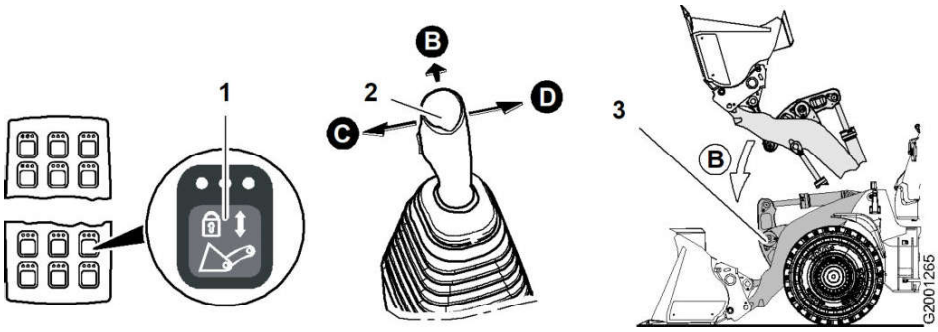


Fig. 355: Lower the lift arms

1 *Working hydraulics lockout* key
2 Control lever
3 Lift arms

▶ Switch on the ignition.

▶ Press and hold down the key **1** while moving the control lever **2** in direction **B** and lower the lift arms **3** to the ground.

▶ Press and hold down the key **1** while moving the control lever **2** several times in directions **C** and **D**.
▷ The hydraulics are depressurised.

Depressurising the hydraulics of the working attachment

If the working attachment has an independent hydraulic circuit, the hydraulic operating circuits must be depressurised.

Make sure that the following requirements are met:
❑ The lift arms have been lowered.

LBH/12203962/16/07-2019/en

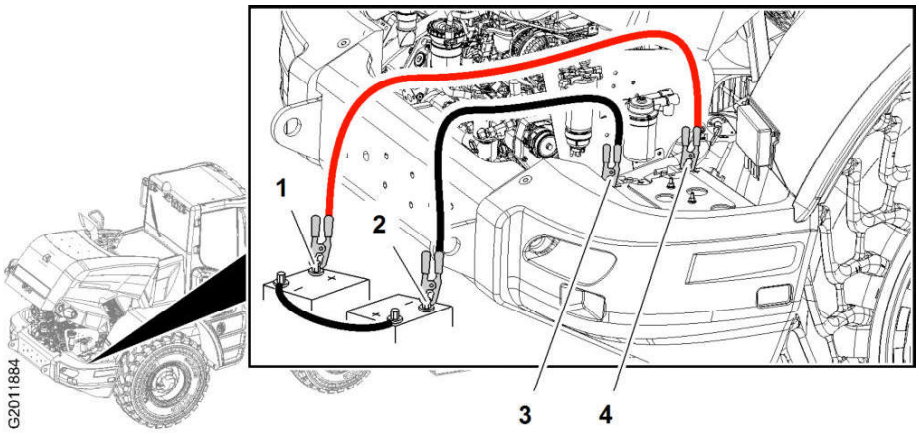


Fig. 368: Jump starting procedure

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

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

To disconnect external battery:

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

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

LBH/12203962/16/07-2019/en

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.

Fuses are fitted at 3 places on the machine:
❑ Fuse board A4 in the operator's cab
❑ Fuse board A4b in the operator's cab
❑ Fuses in the right ballast weight

Fuses on fuse board A4 in the operator's cab

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

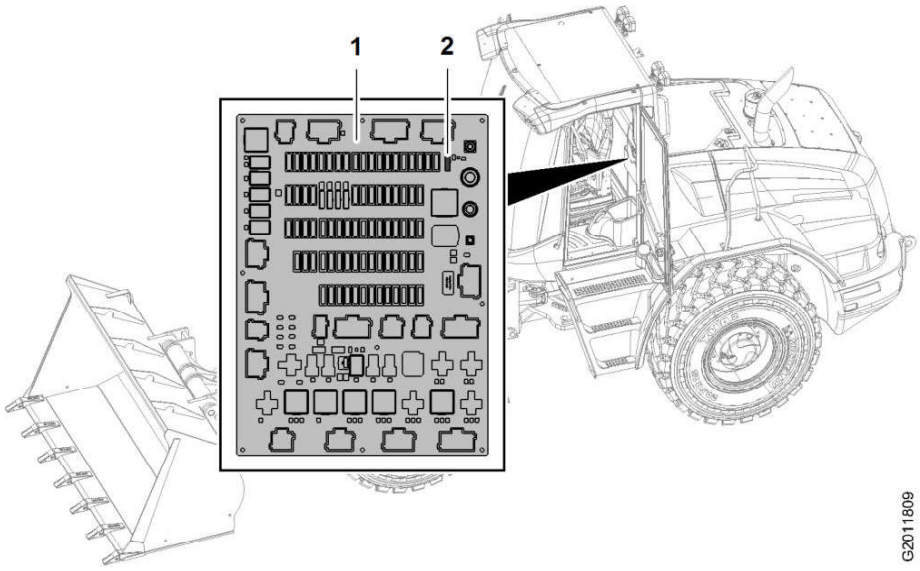


Fig. 391: Fuses on fuse board A4 in the operator's cab

1 Fuse board **2** FUSE-TEST

If fuses have to be replaced:
▶ Switch off 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
				❍	❍	✦		Cab: Clean and maintain the seals.		320
			❍	❍	❍			Air conditioning (optional): Check the indicator bead in the dryer-collector unit.		
			❍	❍	❍			Heating air conditioning (optional): Check the function.		
Lubrication system										
☐		●	❍	❍	❍			Check grease level in grease reservoir of central lubrication system (option).		321
☐		●	❍	❍	❍			Central lubrication system (optional): Check the pipes, hoses and lubrication points for leaks and damage.		322
☐		●	❍	❍	❍			Central lubrication system (optional): Check the lubrication of the bearings.		322

LBH/12203962/16/07-2019/en

Hydraulic oil	Without oil analysis	With oil analysis[68)]
Liebherr Hydraulic HVI	Every 3000 h	Every 6000 h
Liebherr Hydraulic Basic 68		
Biodegradable		
Liebherr Hydraulic Plus	Every 4000 h	Every 8000 h

Tab. 87: Oil change

5.3.10 Gear oil

Liebherr recommendation

Ambient temperature	Designation
-40 °C (-40 °F) to +50 °C (122 °F)	Liebherr Hydraulic-Gear ATF

Tab. 88: Liebherr recommendation

Minimum quality requirement

Specifications
ZF: TE-ML 03D

Tab. 89: Minimum quality requirement

When using oil from other manufacturers, you must obtain information from the **Liebherr Lubricant Hotline**.

5.3.11 Axle oil

Liebherr recommendation

Ambient temperature	Designation
-30 °C (-22 °F) to 50 °C (122 °F)	Liebherr Gear Basic 90 LS

Tab. 90: Liebherr recommendation

Minimum quality requirement

Specifications
ZF: TE-ML 05C, 05F

Tab. 91: Minimum quality requirement

Only axle oils with a phosphorus content of at least **1900 mg/kg1900 ppm** may be used for wheel loaders.

[68)] If the result of the oil analysis is positive, the oil can continue being used. If the result of the oil analysis is negative, the oil must be changed.

The general safety instructions must be observed when working on the hydraulic system.

Make sure that following requirements are met:
❑ Machine is in maintenance position 2.

Minor damage to the hydraulic lines

Wear or damage to the outer jacket of the hydraulic line

Wear or damage to the outer jacket of the hydraulic line is caused by friction or contact with other components. As long as the steel fabric of the hydraulic line is not damaged or not visible, this is classified as minor damage.

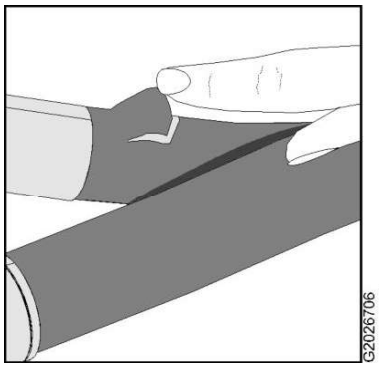


Fig. 417: Wear or damage to the outer jacket of the hydraulic line

▶ Document the damage and observe whether the condition deteriorates.

▶ Check the routing of the hydraulic line, contact Liebherr customer service if necessary.

If the condition deteriorates:
▶ Have the hydraulic lines replaced by Liebherr customer service.

Moist surfaces, no visible oil leak

Moist spots can be seen on the surface. An oil leak or oil drops are not visible. As long as you do not observe an obvious oil leak, it is classified as minor damage.

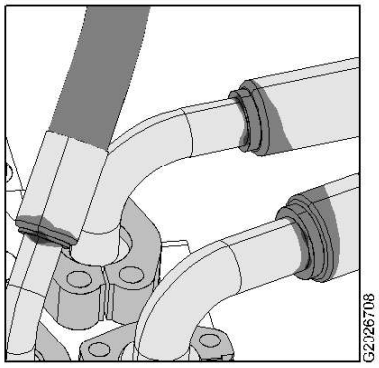


Fig. 418: Moist surfaces, no visible oil leak

▶ Document the damage and observe whether the condition deteriorates.

LBH/12203962/16/07-2019/en

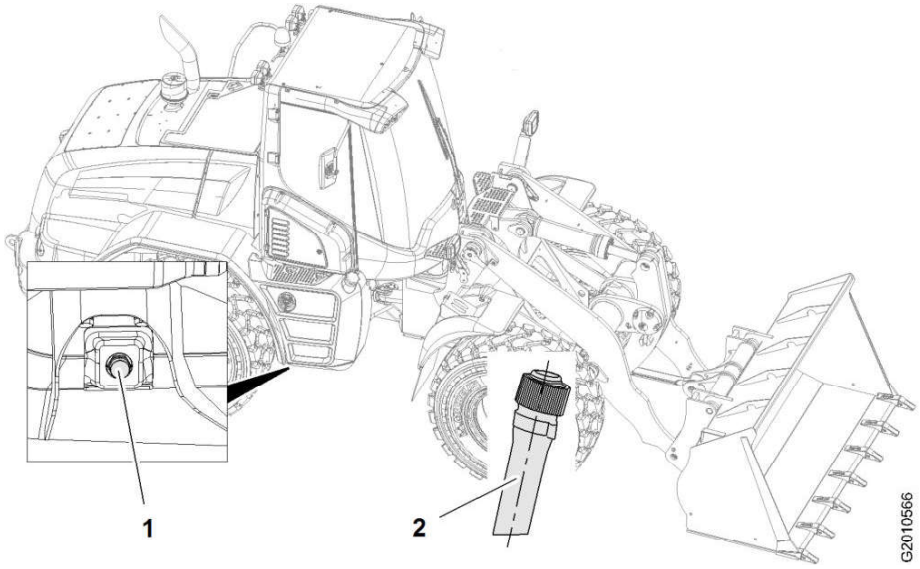


Fig. 427: Draining condensate and sediment from the fuel tank

1 Drain valve **2** Drain hose

- ▶ Place a receptacle under the fuel tank.
- ▶ Unscrew the cap on the drain valve **1** on the bottom of the fuel tank.
- ▶ Screw the drain hose **2** onto the drain valve **1**.
  ▷ Condensate and sediment drain off.
- ▶ Drain the condensation and sediment into a suitable receptacle until clean fuel begins to flow.
- ▶ Unscrew the drain hose **2**.
- ▶ Screw the cap onto the drain valve **1** and tighten it.

5.7.3 Draining off condensate from the fuel pre-filter

When the water level probe in the fuel pre-filter is activated (the service code is displayed), the water collector tank must be drained.

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

WARNING
Highly flammable consumables!
Beware of burns.

- ▶ Avoid naked lights and fire.

LBH/12203962/16/07-2019/en

5.9 Hydraulic components

5.9.1 Hydraulic tank: Checking the oil level

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

Checking the oil level

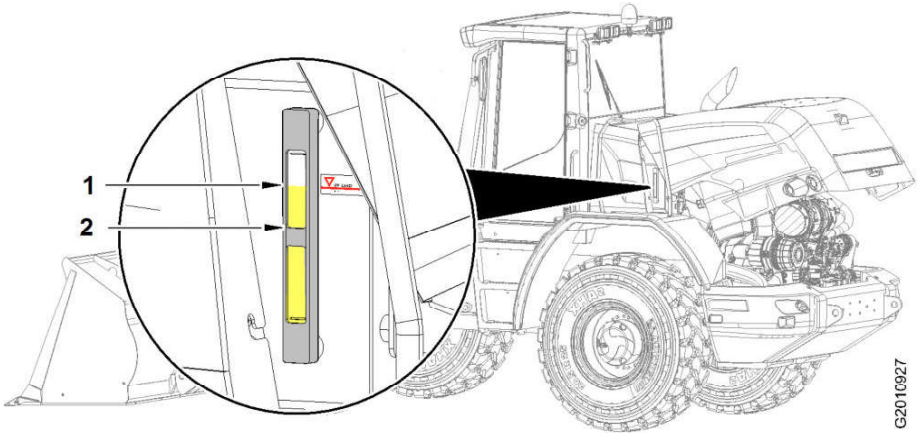


Fig. 439: Checking the oil level

1 Maximum oil level **2** Minimum oil level

Note
Check the hydraulic oil level.

▶ Put the machine in maintenance position 1.

▶ Check the oil level.
  ▷ The oil level must be between the maximum **1** and minimum **2**.

If the oil level is below the minimum **2**:
▶ Top up with hydraulic oil.

Troubleshooting
If the oil is above the maximum level **1**:

▶ Contact Liebherr customer service.

LBH/12203962/16/07-2019/en

5.14 Working attachment

5.14.1 Lubricating the lift arms and working attachment

For jobs that require daily cleaning, the lift arms and attachment must be lubricated every day.

Make sure that the following requirements are fulfilled:
- ❑ The machine is in maintenance position 2.
- ❑ The lubrication point has been cleaned.

Lift arms with Z kinematics

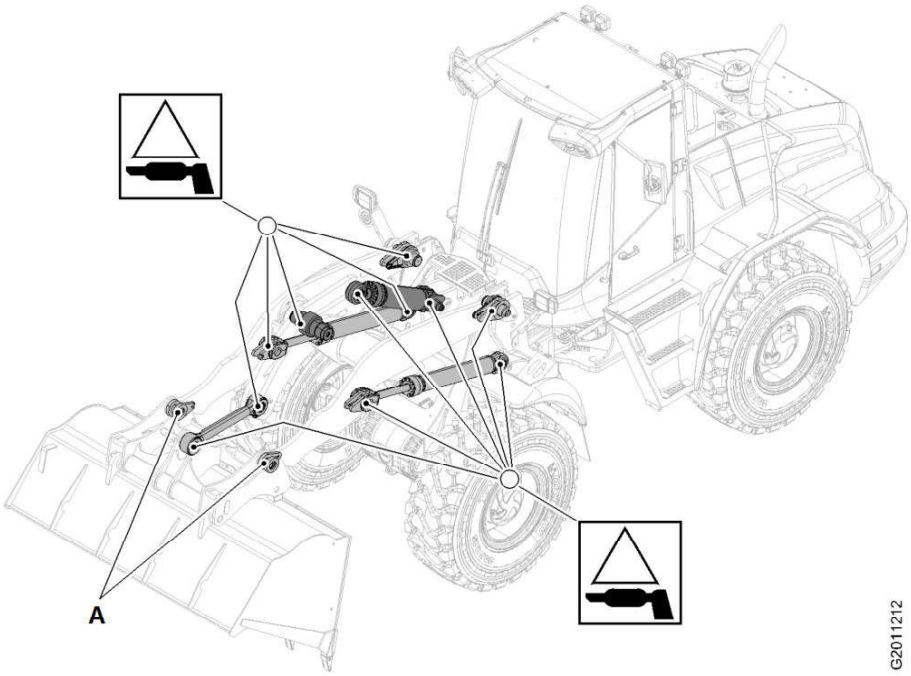


Fig. 448: Lift arms with Z kinematics

A Lower bucket bearing

▶ Take the cap off the grease fitting.

▶ Grease the lift arm bearings at the lubrication points.

▶ The lower bucket bearings **A** should be lubricated daily in accordance with requirements.

▶ Put the cap on the grease fitting.

LBH/12203962/16/07-2019/en