en **Operator's manual**

Wheel loader

L 538-1268

From serial number 34983

Document ID

ORIGINAL OPERATOR'S MANUAL

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1.2.8 Steering

Type:
- Load sensing swash plate variable displacement pump with pressure cut-off and flow regulator.
- Central articulated joint with two dual-action steering cylinders with shock absorbers.

Emergency steering: Electrohydraulic emergency steering system

Description	Unit	Value
Angle of articulation to each side		40°

1.2.9 Working hydraulics

- Load sensing axial piston pump displacement pump with power controller and flow controller, pressure cut-off in control valve block.
- Hydraulic oil cooling with thermostatically controlled fan and oil cooler.
- Return filter in the hydraulic tank.
- Single-lever control, hydraulic servo system.

Lifting cycle:
- Lifting, neutral, lowering
- Float position using lockable control lever
- Optional automatic lift kick-out

Tilting cycle:
- Tilt out, neutral, tilt in
- Automatic bucket return-to-dig function

Description	Unit	Value
Maximum flow	l/min	171
Maximum operating pressure	bar	$350^{\pm 5}$

1.2.10 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	1.6
Lowering (empty)	s	4.0

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	Designation	Unit	Value	
	Tipping load when straight	kg	10300	8080
	Tipping load when articulated at 40° (ISO 14397-1)	kg	9100	7140
	Operating weight	kg	13380	13750

Tab. 8: Complete machine with loading bucket (parallel kinematics)

A) Rear-loading bucket with angled base for quick-change device
B) Welded tooth holder with plug-in teeth
C) In practice, the bucket capacity can be around 10% greater than as calculated using the ISO 7546 standard. This 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 20.5R25 L3 tyres (For more information see: 1.2.17 Tyres, page 24)
- Including all lubricants
- With a full fuel tank
- With ROPS/FOPS cab and driver

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

▶ Note the information on the tyres and working attachment.

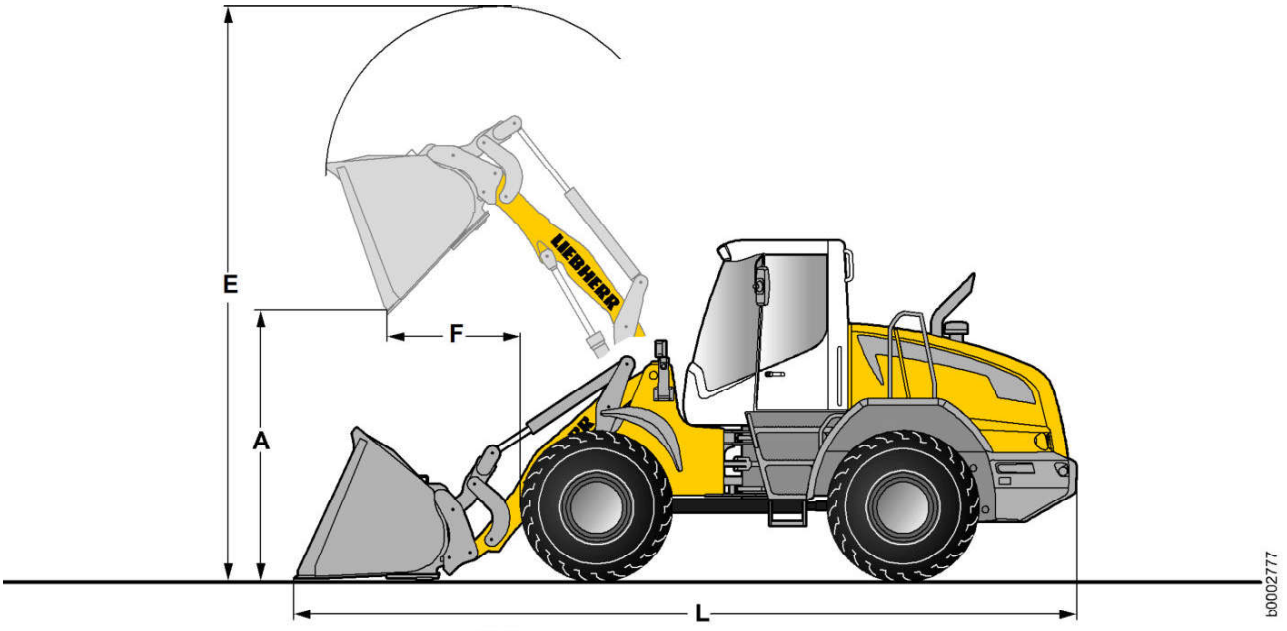

Fig. 6: Attachment: Light material bucket

	Designation	Unit	Value			
	Hydraulic quick coupler		Yes	Yes	Yes	Yes
	Load geometry		A)	A)	A)	A)

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Safety belt decal

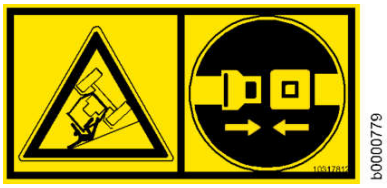

Fig. 20: Safety belt decal

Warns of the risk of accidents, possibly resulting in severe or even fatal injuries.

Meaning: **Fasten your safety belt before starting up the machine.**

Coolant decal

Fig. 21: Coolant decal

Warns of the risk of scalding and severe injuries caused by coolant escaping under pressure.

Meaning: **Do not open the cap on the filler neck until the engine has cooled down.**

Voltage decal

Fig. 22: Voltage decal

Refers to the battery main switch.

Meaning: **The electrical system is energised when the battery main switch is turned on.**

Engine shutdown decal

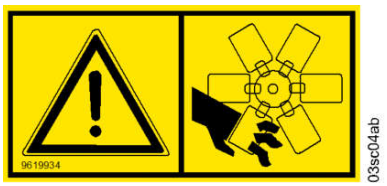

Fig. 23: Engine shutdown decal

Warns of the risk of accidents, possibly resulting in severe injuries.

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Procedure:
- Park the machine on firm, level ground and lower the working attachment to the ground.
- Move all control levers to neutral.
- Shut down the engine and take out the ignition key.

14. Before starting any work on the hydraulic circuit, you must also press the working hydraulics lockout button and actuate all pilot control units (joystick and pedals) in both directions in order to reduce the control pressure and accumulated pressure in the operating circuits. You must then reduce the internal tank pressure.
15. Lock the working hydraulics to prevent accidental actuation before leaving the driver's cab.
    Lock the working hydraulics in accordance with the instructions in the **operating manual**.
16. Secure all loose parts of the machine.
17. Never start up a machine without first making a thorough tour of inspection and checking if any warning signs are missing or illegible.
18. Observe all signs with warnings or safety instructions.
19. Special safety apparatus must be fitted to the machine for certain applications. If this is the case, only work with this apparatus fitted and in working order.
20. Do not make any modifications, extensions or conversions to the machine with possible safety implications without the approval of the supplier. This also applies to installing and adjusting safety apparatus and valves, as well as to welding load-bearing components.
21. Avoid standing near the engine while it is running. People who have a pacemaker must not stand next to the diesel engine while it is running (minimum distance 50 cm).
22. Do not touch live components of the solenoid controlled unit pumps on their electrical connections.

2.4.2 Instructions on preventing crushing injuries and burns

1. Do not work under the attachment if it is not resting on the ground or supported.
2. Do not use any ropes or chains which are damaged or which have insufficient load bearing capacity.
   Wear protective gloves when handling wire ropes.
3. When working with the attachment, never align the boreholes with your fingers, instead, use a suitable mandrel for this purpose.
4. Make sure no objects come into contact with the fan when the engine is running.
   Objects which fall or project into the fan will be thrown back out or destroyed and could damage the fan.
5. When the machine is near operating temperature, the engine cooler system is hot and pressurised.
   Do not touch parts carrying cooling water.
   This can lead to burns.
6. Only check the coolant level once the cap on the expansion tank has cooled down enough to touch.
   Carefully open the cap to let out excess pressure.
7. When running at or near the operating temperature, the engine oil and hydraulic oil are hot.
   Avoid touching hot oil or parts which carry oil.
8. Wear goggles and safety gloves when working on the battery.
   Avoid sparks and naked lights.
9. Never let anyone move the bucket or other working attachments into position by hand.

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Preventing injuries

The cab roll-over protection system can only protect the driver if he is wearing a safety belt.

Any modifications to the interior of the cab, such as installing accessories, may not impair the driver's working space.

Objects carried in the cab may not project into the driver's working space. Loose objects must be stored securely.

2.4.18 Attachments and accessories

1. Attachments and accessories produced by third-party manufacturers or those which have not been generally approved by LIEBHERR for installation or for external fitting may not be installed or fitted on the machine without prior written consent from LIEBHERR.
2. The appropriate technical documentation should be made available to LIEBHERR for this purpose.
3. When adding or converting equipment or tyres, the stability of the machine must be tested and ensured in accordance with **EN 474**.
(For more information see: 1.2 Technical data, page 18)

2.4.19 Protection against vibrations

1. The vibrations to which mobile construction machines are subjected are mainly due to the way they are used.

   The following parameters in particular have a great effect:
   - Terrain conditions: bumps and potholes.
   - Operating methods: speed, steering, braking, use of the controls while driving and while working.
2. The amount of vibration depends to a large extent on the machine operator, because he determines the speed, gear ratio, working methods and distance covered.
   This results in a wide range of different vibrations for the same type of machine.
3. The machine operator can reduce overall vibration by following these recommendations:
   - Select a suitable machine, equipment and accessories for the job.
   - Use a machine equipped with a suitable seat (i.e. for earthworking machines, a seat which complies with EN ISO 7096).
   - Keep the seat in good repair and adjust the position and cushioning according to the height and weight of the driver.
   - Regularly check the suspension and adjustment mechanisms of the seat and make sure the seat is kept in the condition specified by the manufacturer.
   - Check the service condition of the machine, especially the tyre pressure, brakes, steering, mechanical connections etc.
   - Do not steer, brake, accelerate, shift gears or load the working attachment of the machine suddenly.
   - Adjust the speed of the machine to the distance to be driven in order to reduce vibrations.
     Slow down when driving over difficult terrain.
     Drive around obstacles and avoid difficult terrain.
   - Keep the area on which the machine is operated in a tidy condition.
     Remove any large rocks and obstacles.
     Fill in any trenches or holes.

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▷ The cab door is opened and held in position by a gas-filled spring **4**.

▶ Get into the cab.

▶ Close the cab door again.

Leaving the driver's cab

Fig. 58: Leaving the driver's cab

1 Cab door **2** *Door opener* lever

▶ Open the cab door **1** with the lever **2**.
▷ The cab door is opened and held in position by a gas-filled spring (see: fig. 57, page 70) .

▶ Leave the cab and close the door.

▶ If necessary, lock it using the ignition key.

3.2.4 Cab windows

The right window can be opened partially or all the way. The left window is fitted as an option.

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Adjusting the driver's seat horizontally

Standard seat / comfort seat / premium seat

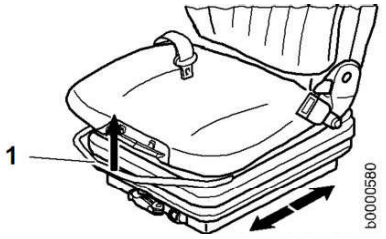

Fig. 75: Adjusting the driver's seat horizontally

1 *Driver's seat surface horizontal adjustment* lever

▶ Pull the lever **1** in the direction of the arrow.

▶ Adjust the driver's seat horizontally.

▶ Let go of the lever **1**.

Activating and deactivating the horizontal suspension on the driver's seat

Under certain conditions, you can increase comfort by activating the horizontal suspension.

Advantage: The driver's seat can better absorb shocks in the direction of travel.

Comfort seat

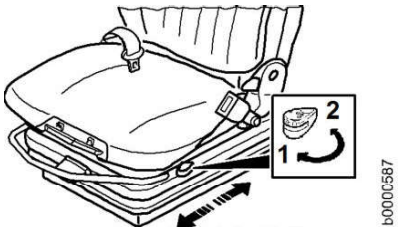

Fig. 76: Activating and deactivating the horizontal suspension on the driver's seat

1 Horizontal suspension OFF **2** Horizontal suspension ON

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Ignition key serial number display

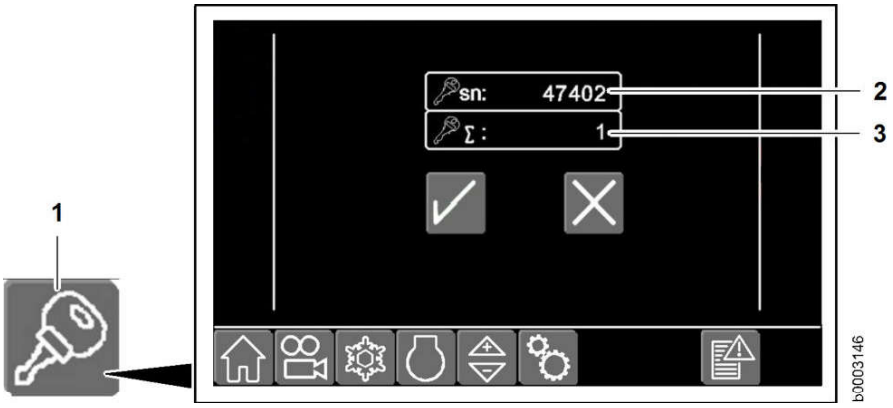

Fig. 92: Ignition key serial number display

1 *Electronic immobiliser* button

2 *Ignition key serial number* display

3 *Number of programmed keys* display (including master keys)

▶ Switch on the ignition using the ignition key.

▶ Call up the display screen using the button **1**.
▷ The serial number and the number of programmed ignition keys are displayed.

Troubleshooting

Possible faults and how to eliminate them:

Cause:	Remedy:
The following symbol appears on the display.  b0000624	- Use a programmed key. - Remove other programmed keys from the bunch
Ignition key cannot be programmed.	- No master key or wrong master key used previously. - The key to be programmed cannot be encoded.
Programmed ignition keys cannot be deleted.	- No master key or wrong master key used.

Tab. 18: Troubleshooting

Note
Problem cannot be eliminated.

▶ Contact Liebherr customer service.

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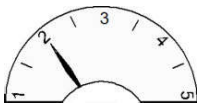
Machine status icons	Designation
	Engine oil pressure - Shows the engine oil pressure in bar.

Tab. 19: Machine status icons

Machine warning symbols	Designation
	Emergency steering check - Lights up briefly when the engine is started and goes out once the check has been successfully completed.
	Emergency steering - Lights up if the engine shuts down or if the steering pump fails when the machine is moving.
	Brake accumulator pressure - Appears when the brake accumulator pressure is too low.
	Hydraulic oil temperature - Lights up when the hydraulic oil temperature is too high. The symbol field is also accompanied by an intermittent warning tone.
	Battery charge - Appears when the battery is not charged.
	Coolant temperature - Lights up when the coolant temperature in the engine is too high.
	Engine oil pressure - Appears when the engine oil pressure is too low.
	Overspeed protection - Flashes if the machine is operated at excessive engine speed.
	Engine warning - Lights up when a corresponding service code occurs.
	“STOP” - Flashes when a service code occurs that requires the machine to be stopped.

Tab. 20: Machine warning symbols

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Item	Designation
7	*Electronic immobiliser* button
8	*Reset daily operating hours* button
9	*Driver identification* button
10	*Reversing camera* button (optional)
11	*Service (SCOTTI)* button

Tab. 28: System settings

Display brightness setting

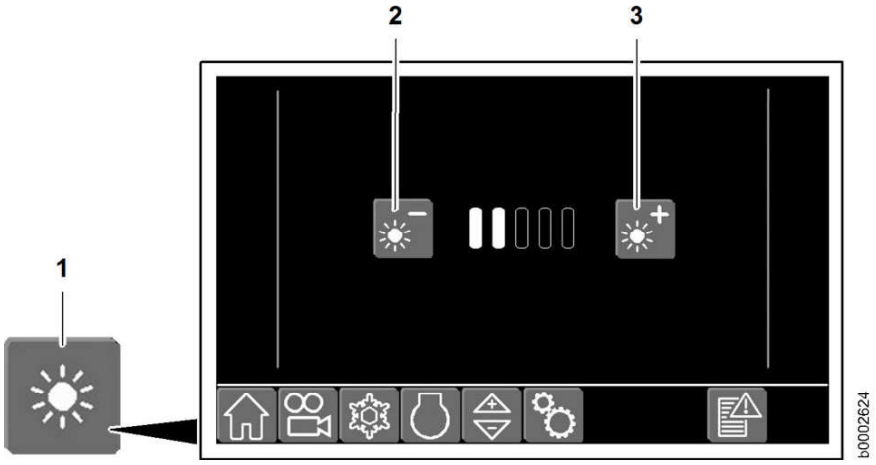

Fig. 112: Display brightness setting

1 *Display brightness* button
2 Decrease brightness
3 Increase brightness

Clock and time zone setting

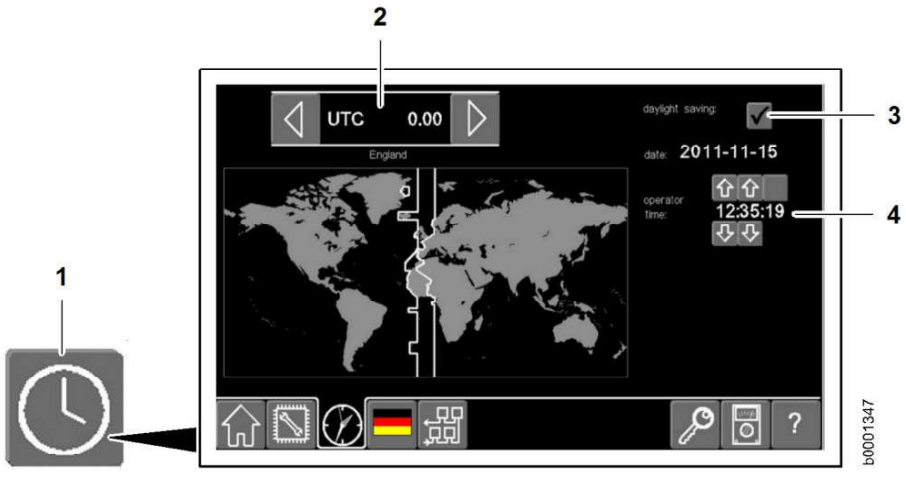

Fig. 113: Clock and time zone setting

1 *Clock and time zone setting* button
2 Time zone setting
3 Daylight saving
4 Clock setting

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To deactivate engine shutdown:

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

▶ Press the button **2**.
▷ The button **2** is white (no symbol appears in the main menu).

Reversible fan drive

This equipment is optional.

The function is used to clean the cooler.

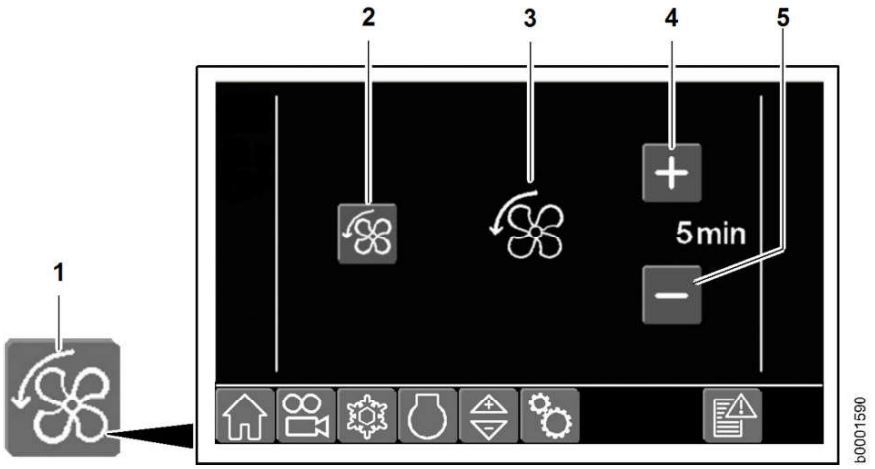

Fig. 128: Reversible fan drive

1	*Reversible fan drive* button	**4**	Increase interval
2	Activate/deactivate fan reversal	**5**	Reduce interval
3	*Fan* symbol		

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

▶ Press thebuttons **4** and **5** to set the time interval.

▶ Press the button **2** to activate/deactivate fan reversal.
▷ When fan reversal is activated, the button **2** is green. The fan symbol in the main menu is white.
▷ When the fan reverses, the symbol **3** flashes green. The fan symbol in the main menu is green.

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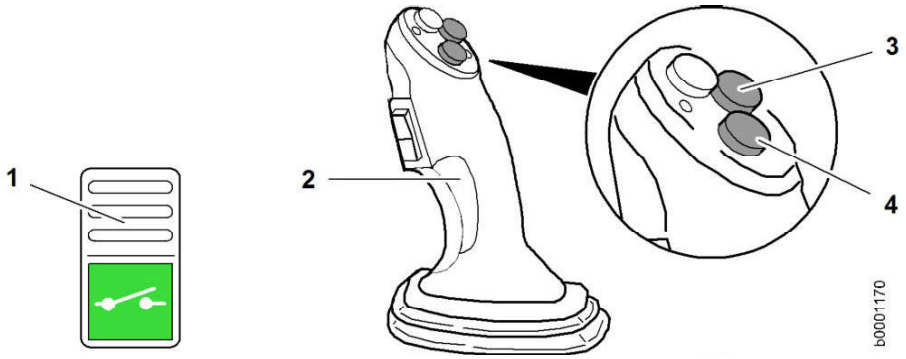

Fig. 137: Button control

1	*Button control* switch	**3**	*Button control* button
2	Control lever	**4**	*Button control* button

▶ Press the switch **1**.

▶ Press the **3** or **4** to move the hydraulic working attachment (for example to open or close a timber grabber).

To deactivate the additional hydraulic function:

▶ Release the button **3** or **4**.

Mini joystick

The mini-joystick is for activating a working attachment with its own hydraulic circuit (e.g. timber grabber).

The working attachment can be controlled with a high degree of sensitivity, i.e. the further the mini-joystick is pushed in a direction, the faster the motion of the working attachment.

WARNING
Incorrect operation of the working attachment can lead to injuries.

▶ Observe the manufacturer's operating manual.

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

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▷ This stops the windows from misting up.

3.2.22 Rear window heater and mirror heater (optional)

Switching the rear window heater and mirror heater (optional) on and off

Fig. 158: Switching the rear window heater and mirror heater (optional) on and off

1 *Rear window heater*, *mirror heater* switch (optional)

To switch on the rear window heater and mirror heater (optional):

▶ Press the switch **1**.
  ▷ The indicator lamp on the switch lights up.
  ▷ The rear window heater and mirror heater (optional) are switched on.

To switch off the rear window heater and mirror heater (optional):

▶ Press the switch **1** in the opposite direction.
  ▷ The indicator lamp on the switch goes out.
  ▷ The rear window heater and mirror heater (optional) are switched off.

3.2.23 Interior and exterior mirrors

The driver's cab is equipped with interior and exterior mirrors.

Adjusting the mirrors

First make sure that the machine is in its operating position.

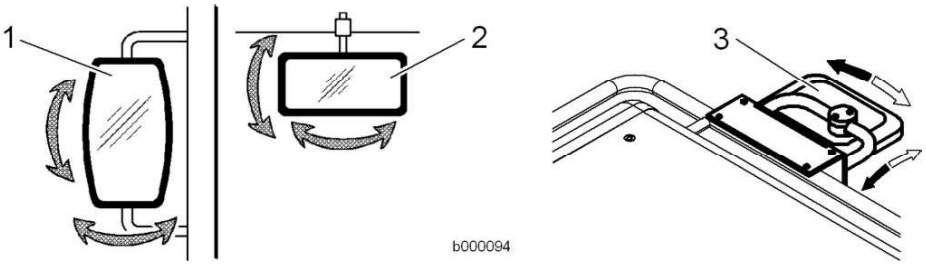

Fig. 159: Adjusting the mirrors

1 Exterior mirror

2 Interior mirror

3 Mirror for all-round vision toward the rear

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▷ The flashing beacon is switched off.

3.2.29 Reversible fan drive

This equipment is optional.

The function is used to clean the cooler. This reverses the direction of rotation of the fan.

The interval until the next fan reversal is adjustable because the need for cleaning depends on the conditions of use. The fan running time cannot be adjusted.

Activate or deactivating fan reversal

Note
Touch screen display.
If a touch screen is installed, the function can also be operated from there.

▶ (For more information see: Reversible fan drive, page 121)

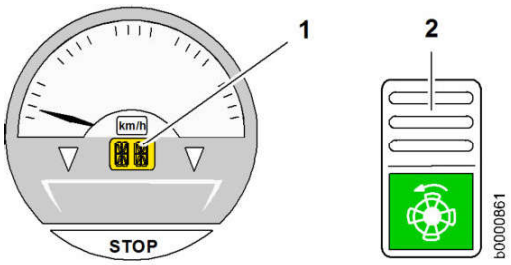

Fig. 172: Activate or deactivating fan reversal

1 *Reversible fan drive* indicator **2** *Reversible fan drive* button

▶ Press the button **2** for less than 2 seconds.
The indicator **1** displays the following:
▷ **X** The reversible fan drive is activated.
▷ ***** Fan drive reversed.

If you want to change the default intervals for fan reversal:

▶ Hold down the button **2** for at least 2 seconds.
▷ The time to be set is shown in the indicator **1**.

▶ Press the button **2** several times within 2 seconds.
▷ The pause interval is changed.
▷ The set time is saved if no button is pressed within three seconds.

3.2.30 Working basket

This equipment is optional.

The working basket is fitted to the lift arm. It can be lifted to the required position, whenever personnel are required to work above head height.

The attachment of a working basket is subject to official approval before it can be put into operation. Observe the applicable legislation and regulations of the operation site.

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Activating ride control

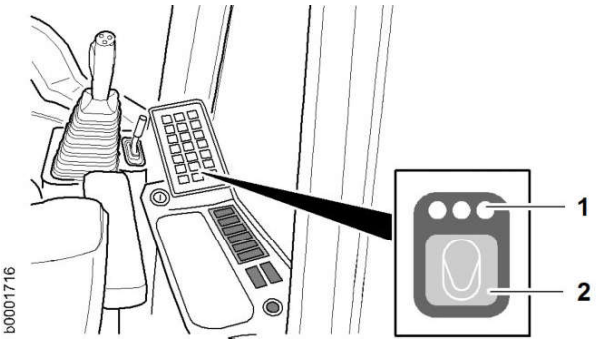

Fig. 187: Activating ride control

1 LEDs **2** *Ride control* button

▶ Press the button **2**.
▷ All the LEDs **1** light up.
▷ Ride control is activated and automatically switches on when the machine speed is more than 9 km/h.

Deactivating ride control

▶ Press the button **2** again.
▷ All the LEDs **1** on the button go out.
▷ Ride control is deactivated.

Reversing

The machine can be reversed in either travel direction and at any travel speed.

CAUTION
Beware of injuries when reversing the machine.

▶ Fasten your safety belt before starting up the machine.

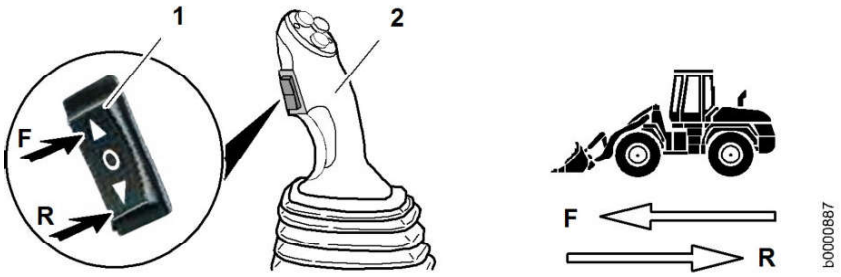

Fig. 188: Reversing

1 *Travel direction* switch **F** "Forward" travel direction
2 Control lever **R** "Reverse" travel direction

To change the travel direction:

▶ Press the switch **1**.
▷ Depending on the switch position, the symbol field for forward travel or for reverse travel lights up.

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To raise the lift arms while tilting the bucket out:

▶ Move the control lever in direction **g**.
▷ The lift arms are raised while the bucket is tilted out.

Lowering the lift arms while tilting the bucket in or out

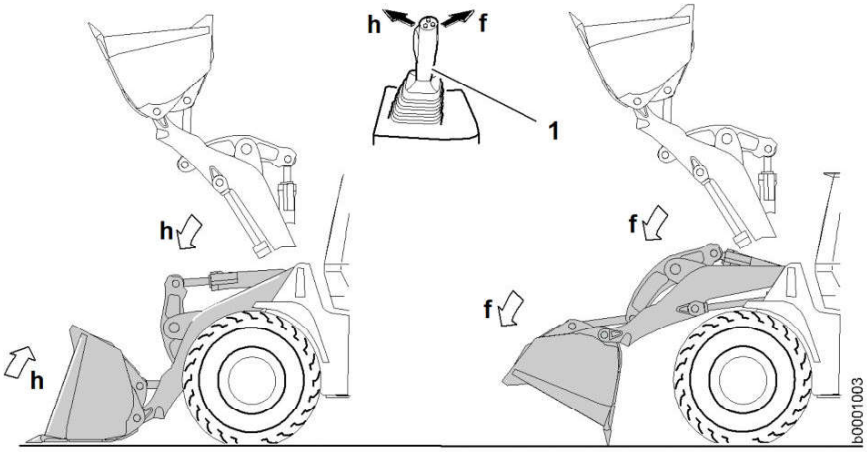

Fig. 202: Lowering the lift arms while tilting the bucket in or out

1 Control lever

To lower the lift arms while tilting the bucket in:

▶ Move the control lever in direction **h**.
▷ The lift arms are lowered while the bucket is tilted in.

To lower the lift arms while tilting the bucket out:

▶ Move the control lever in direction **f**.
▷ The lift arms are lowered while the bucket is tilted out.

Float position

The float position allows the working attachment to lie on the ground under its own weight and to move freely on uneven ground.

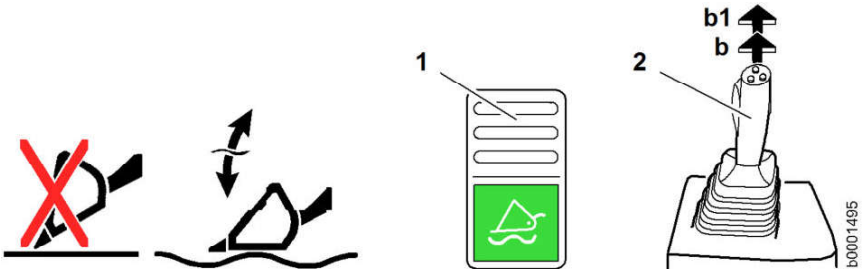

Fig. 203: Float position

1 *Float* switch **2** Control lever

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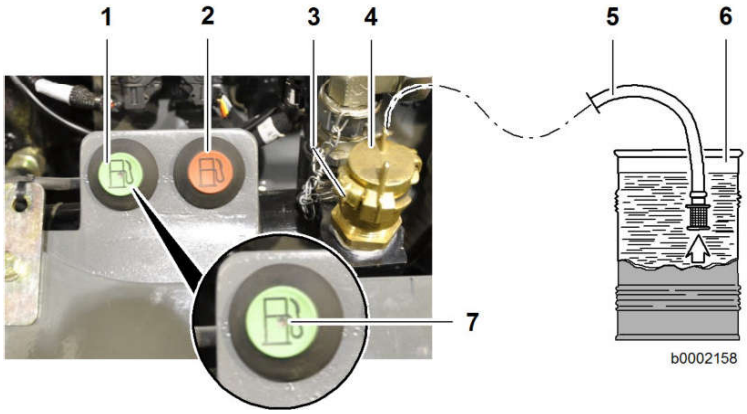

Fig. 217: Filling the tank using the filling pump

1 *Filling pump ON* switch
2 *Filling pump OFF* switch
3 Hose coupling
4 Dummy plug
5 Suction line (extension)
6 Fuel container
7 LED

▶ Open the engine compartment hood.

▶ Open the dummy plug **4**.

▶ Connect the suction line **5** to the hose coupling **3**.

▶ Lower the suction line **5** into the fuel container **6**.

NOTICE
Beware of damaging the refuelling pump by running dry.

▶ Make sure that fuel is being drawn in during the refuelling process.

▶ Press the switch **1**.
▷ Refuelling begins.
▷ The LED **7** lights up.
▷ When the maximum filling quantity is reached, the refuelling pump switches off automatically. The refuelling pump remains in standby mode.

To finish refuelling:

▶ Press the switch **2**.
▷ The LED **7** goes out.
▷ Refuelling is completed.

To pump out the suction pipe:

▶ Lift the suction line **5** up to the upper edge of the fuel container.

▶ Press and hold the switch **2** until the suction line **5** is empty.
▷ The remaining fuel is pumped into the fuel tank.

▶ Disconnect the suction line **5** from the hose coupling **3**.

▶ Attach the dummy plug **4**.

3.3.11 Forklift

This equipment is optional.

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- ▶ Tip the material into the middle of the skip.
- ▶ Load long transport vehicles from front to back.

Working near overhead power lines

DANGER
Beware of current flash-overs when working close to overhead power lines.
There is a risk of fatal injury.

- ▶ Obtain the necessary information on safety clearances.
- ▶ Ensure that the electrical cables are not live.

Fig. 232: Working near overhead power lines

- ▶ Keep the machine and attachment a safe distance away from power lines.
- ▶ (For more information see: 2.4.6 Instructions for safe working, page 53)

Loading large rocks

Make sure that the loading surface of the transport vehicle can withstand the impact of large rocks.

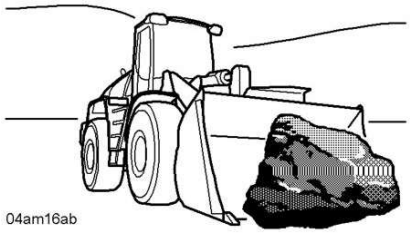

Fig. 233: Loading large rocks

- ▶ First put a load of smaller rocks into the transport vehicle.
- ▶ Carry on loading the transport vehicle.

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DANGER
Beware of falling loads!
There is a risk of fatal injury.

- ▶ Align slinging gear vertically (maximum angle of incline = 10°).
- ▶ Do not stand under raised machinery.

- ▶ Fix the lifting tackle to the slinging and lifting points **a, b, c, d** on the machine.

In order to avoid damage, the slinging gear must not touch any other parts of the wheel loader when lifting:

- ▶ Carefully lift the machine and load it.

Transporting the machine by lorry or rail

Observe the safety regulations when transporting the machine. (For more information see: 2.4.9 Transporting the machine safely, page 55)

Fig. 246: Transporting the machine by lorry or rail

The inclination of the ramp **W** may not exceed 30°.

Make sure the following preconditions are met:
- ❑ Wedges are available.
- ❑ Suitable tensioning ropes or chains are available to lash the machine down.
- ❑ A ramp is available for driving the machine onto the loading area.

Driving onto the loading area

WARNING
There is a risk of injury to the person giving directions!

To give directions safely:
- ▶ Take up a position outside the danger area of the machine.
- ▶ Stay in view of the operator or keep in spoken contact.

Make sure there is someone to give the driver the necessary signals.

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Towing the machine

WARNING
There is a risk of accidents when the machine is in tow.
The steering function is restricted.

▶ Use the emergency steering function when towing.

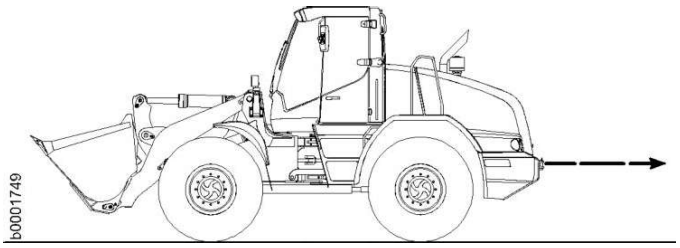

Fig. 259: Towing the machine

▶ Attach and fasten the tow bar to the towing device on the rear section.

▶ Carefully tow the machine out of the danger area.

▶ Do not tow at more than 2 km/h.

If you activate the emergency steering function:
▶ Switch on the electrical system of the machine.

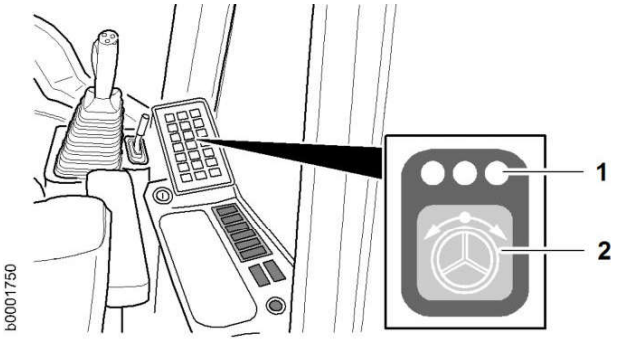

Fig. 260: Activating the emergency steering function

1 LED

2 *Emergency steering function* button

▶ Press the button **2** until the steering manoeuvre is complete.
  ▷ The LEDs **1** light up.
  ▷ “Emergency steering” symbol field in the display lights up.
  ▷ The emergency steering function can only be activated for 10 seconds in total.

When towing has been completed:

WARNING
Beware of accidents if the machine starts moving.

▶ Secure the machine against rolling away.

▶ Only authorised, qualified staff may adjust the parking brake.

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Symbol in the display		Meaning	Cause	Remedy
LCD	Touch screen			
		Air filter contamination	Air filter is dirty	Clean/replace air filter, contact Liebherr customer service

Tab. 42: Warning symbols

4.2.2 Troubleshooting the Liebherr automatic central lubrication system

This automatic central lubrication system is optional.

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

Tab. 43: Troubleshooting the Liebherr automatic central lubrication system

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

Maintenance / inspection after service hours								Tasks to be performed		
On handover	All 8-10 h	All 50 h	All 500 h	All 1000 h	All 2000 h	Other intervals	Additional labelling	**By maintenance staff** ■ Once-only activity ● Repeat interval ✦ If necessary ❄ Annually before the winter **with authorised specialist staff** ☐ Once-only activity ❍ Repeat interval ✧ If necessary **Additional labelling** Assistance required Task may only be carried out by a qualified electrician	Confirm tasks	See page
			❍	❍	❍			Checking the indicator and filling level beads in the dryer-collector unit of the air conditioner (optional)		
			❍	❍	❍			Testing the air conditioning unit		
Lubrication system										
☐		●	❍	❍	❍			Checking the lubrication system grease reservoir level		302
☐		●	❍	❍	❍			Checking the pipes, hoses and lubrication points of the lubrication system		302
☐		●	❍	❍	❍			Checking whether metered quantities are adequate at the bearing points (grease collars) of the lubrication system		303

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NOTICE
Too much antifreeze and corrosion inhibitor in the coolant.
The engine will overheat and can be damaged.

▶ Do not use more than 60% antifreeze and corrosion inhibitor.

Permissible antifreeze and corrosion inhibitors

Product designation	Manufacturer	Contains silicates
Liebherr Antifreeze Concentrate	Liebherr	Yes
Liebherr Antifreeze Mix A)	Liebherr	Yes

Tab. 53: Permissible antifreeze and corrosion inhibitors

A) Mix = prepared mixture (50% water and 50% antifreeze/corrosion inhibitor)

Note
If Liebherr coolant is not available at your location:

▶ Use coolant that meets the coolant specifications for Liebherr engines (consult customer service).

NOTICE
Mixing different antifreeze and corrosion inhibitors can degrade the properties of the coolant.

▶ Do not combine different products.

▶ Never mix coolants with and without silicates, as this can damage the cooling system.

Corrosion inhibitors without antifreeze

In **exceptional cases** and **if ambient temperatures constantly remain above freezing point**, for example in tropical regions where there is demonstrably no authorised antifreeze and corrosion inhibitor available, prepare coolant by mixing water with the following inhibitors:

– **DCA 4 Diesel Coolant Additives**
– **Caltex XLI / Delo XLI / Texaco XLI / Havoline XLI**

In this case, change the coolant annually.

When carrying out maintenance tasks, test the concentration and adjust it as necessary.

NOTICE
Mixing different corrosion inhibitors can degrade the properties of the coolant.

▶ Do not combine different products.

▶ Never mix coolants with and without silicates, as this can damage the cooling system.

If changing between corrosion inhibitor with and without antifreeze:
▶ Drain the coolant completely.

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- ▶ Set the machine down on level ground.
- ▶ The articulation lock.
- ▶ Lower the lift arms.
- ▶ Tilt the bucket out and set it down on the ground on its teeth or cutting edge.
- ▶ Engage the parking brake.
- ▶ Turn off the engine.
- ▶ Take out the ignition key.
- ▶ Turn off the battery main switch.

5.5.2 Opening the service accesses

CAUTION
Beware of injury when opening and closing hatches.

- ▶ Make sure you are standing safely when opening or closing the hood.

Opening the engine compartment hood

When the hood is open, you can access the following components:
– Engine
– Air filter
– Hydraulic pumps
– Battery
– Battery main switch

WARNING
Rotating parts and hot surfaces can cause injuries.
Beware of scalding when opening the engine compartment hood.

- ▶ Only open the hood when the engine is cooled and at a standstill.

Fig. 289: Opening the engine compartment hood

1 Engine compartment hood
2 Handle
3 Gas-filled spring

- ▶ Open the lock with the ignition key.

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- ▶ Start the engine and let it run for 3 minutes at medium idling speed.
  ▷ The engine oil is circulated.
- ▶ Turn off the engine.
- ▶ Put the machine in maintenance position 1.

CAUTION
Beware of burns from hot surfaces on the exhaust system.

- ▶ Do not touch hot surfaces.

- ▶ Insert the sampling hose through the dipstick tube to 5 cm below the oil level **A**.
- ▶ Fill the sample container using the hand pump.
- ▶ Put the dipstick **1** back in again.

Coolant circuit

The coolant sample is taken from the cooler.

Fig. 294: Sampling point for coolant

- ▶ Start the engine.
- ▶ Turn the heating system to the maximum temperature and wait for three minutes.
  ▷ The coolant is circulated.
- ▶ Turn off the engine.
- ▶ Put the machine in maintenance position 1.

CAUTION
Beware of injury due to coolant escaping under pressure

- ▶ The coolant temperature must not exceed 45 °C.
- ▶ Wear protective clothing and safety glasses.
- ▶ Carefully open the cap.

- ▶ Carefully open the cap **1**.
- ▶ Insert the sampling hose and take an oil sample.
- ▶ Close the cap **1**.

Transmission

The coolant sample is taken from the transmission.

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▷ The dust discharge valve **4** must face down.

▶ Turn the service cover **3** clockwise until it is locked.

▶ Close the safety clamp **1**.

Cleaning the dust discharge valve

Note
When using the machine in dusty conditions:

▶ Check and empty the dust discharge valve more often.

Fig. 304: Cleaning the dust discharge valve

1 Dust discharge valve

▶ Press the rubber seal on the dust discharge valve **1** several times to remove the dust from the service cap.

If the dust discharge valve is damaged or stays open:
▶ Replace the dust discharge valve.

5.7.8 Cleaning or changing the main filter element

NOTICE
Always carry out maintenance correctly.
Otherwise the engine may be damaged.

▶ Do not clean the safety element.

▶ Always replace the safety element.

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

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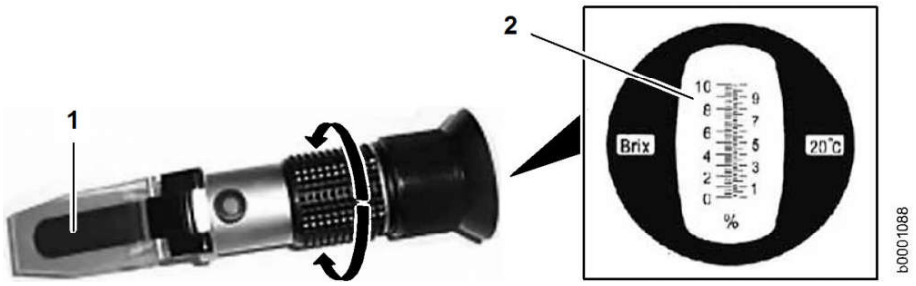

Fig. 315: Checking the mixing ratio with a refractometer

1 Prism with cover **2** Eyepiece with scale

- ▶ Clean the cover and the prism carefully.
- ▶ Place one or two drops of coolant on the prism.
  ▷ Close the cover to distribute the fluid.
- ▶ Look through the eyepiece against a light background and focus the scale.
- ▶ Read the Brix value off the blue dividing line.
- ▶ Convert the Brix value using the conversion diagram to find the actual corrosion inhibitor concentration.

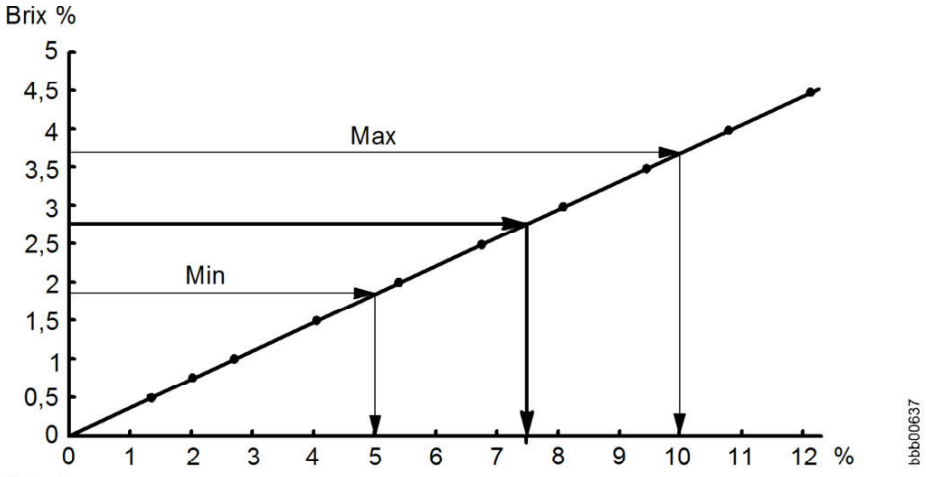

Fig. 316: Checking the mixing ratio with a refractometer

5.8.3 Cleaning the cooling system

Clean the coolers whenever necessary in order to ensure proper cooling. In dusty environments, check the coolers every day and clean if necessary.

Dirty cooler units result in overheating. This results in an audible and visual warning with simultaneous power reduction of the travel drive.

Dust and other dirt can be removed from the cooling fins using a high-pressure cleaner or compressed air. Compressed air is preferable.

Make sure that the following requirements are fulfilled:
- ❑ The machine is in maintenance position 1.
- ❑ The air conditioning condenser (optional) is pulled forward.

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5.13.2 Checking the wheel tightness (once after 50, 100 and 250 h)

Make sure that the following requirements are fulfilled:
- ❑ The machine is in maintenance position 1.
- ❑ A torque wrench with a measuring range of over 650 Nm is available.

Note
Intervals for checking the tightness of the wheels.

▶ This one-off maintenance task scheduled for 50, 100 and 250 service hours must also be performed every time the wheels are changed.

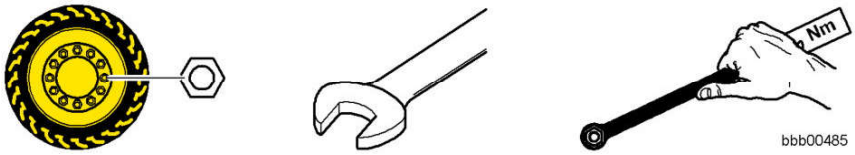

Fig. 326: Checking the wheel tightness

Designation	Rating
Spanner size	30 mm
Tightening torque	650 Nm

Tab. 66: Checking the wheel tightness

▶ Check that all the nuts on the four wheels have been tightened with the required torque.

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NOTICE
Ice can damage the windscreen washer system.
Icing up can damage the windscreen washer system and cause it to fail.

▶ You must protect the windscreen washer system using antifreeze.

▶ Use commercially available windscreen antifreeze.

▶ Top up with an appropriate quantity of antifreeze before the winter starts.

5.16.5 Checking the seals on the driver's cab

Make sure that the machine is in maintenance position 1.

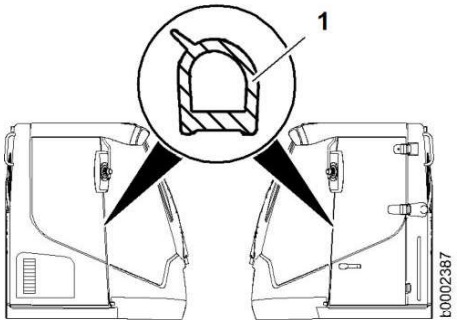

Fig. 339: Checking the seals on the driver's cab

1 Seal

▶ Check the condition of the seals.

▶ Completely replace any damaged seals.

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