

en

Operator's manual

Telescopic handler

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Conformity:



Contact

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Description	Unit	Value
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- A) For engine type TCD 3.6 L4
 B) For engine type TCD 4.1 L4

1.2.4 Maximum operating weight

The maximum permissible operating weight of the machine may not be exceeded for reasons of machine safety and operating suitability.

In case the maximum operating weight is being exceeded due to special retrofit installations (for example front or rear installations or protective equipment), request a written approval from Liebherr.

The maximum permissible operating weight of machine is: T33-10 = 8600 kg.

1.2.5 Static and dynamic tests

The telescopic handler passed the static and dynamic tests in accordance with the DIN EN 1459-1 standard.

1.2.6 Support loads

The tyres of telescopic handler must transfer significant forces into the ground.

In certain cases, a single tyre must absorb almost the entire weight of telescopic handler including the load and transfer it into the ground.

The ground must be able to support the support load in any case!



DANGER

Danger of tipping the machine if the ground does not have sufficient load bearing capacity!

- ▶ Inquire with construction site management or an expert about the permissible ground pressure. Do not exceed the ground pressure.

If the load bearing capacity of ground is not sufficient to deflect the support loads into the ground:

- ▶ Use support plates or wooden planks to increase the support surface.



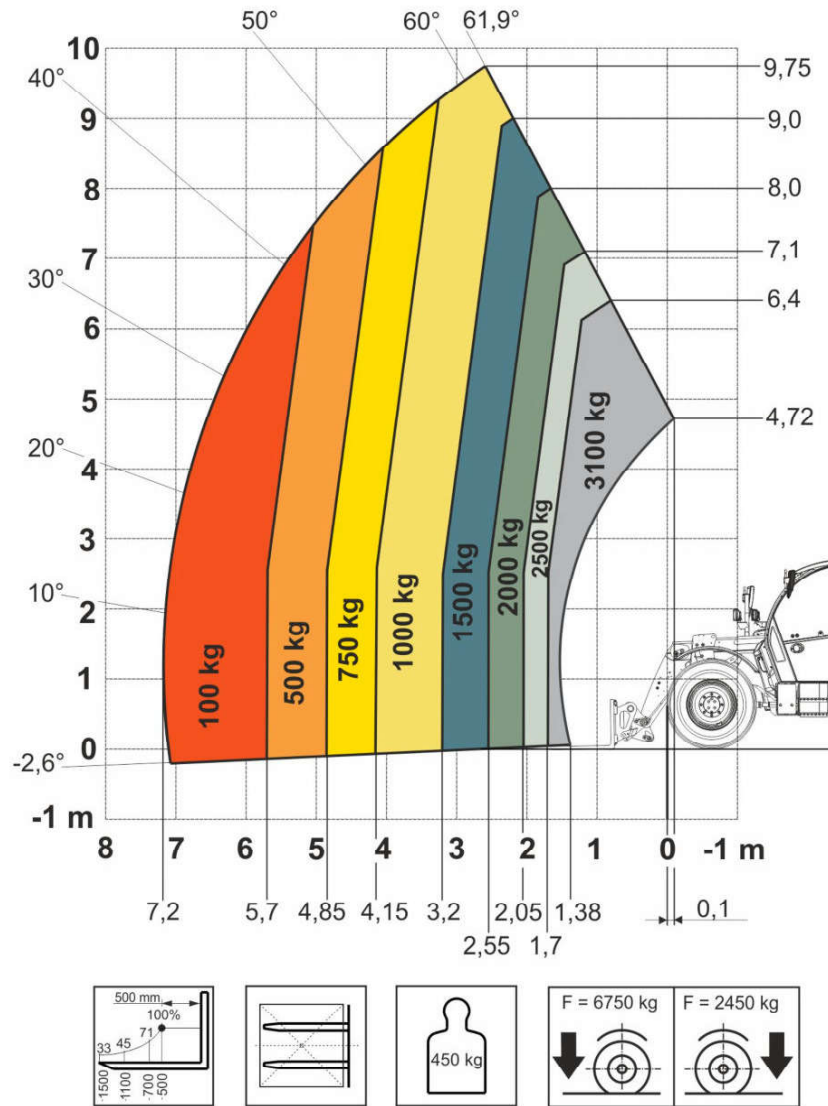
DANGER

Machine tipping!
 Danger to life.

- ▶ Use exclusively stable materials, such as wooden planks or support plates, to support the tyres underneath.
- ▶ To obtain even pressure distribution on the support surface, place the tyres in the centre of support.

Load curve of special forks for T33-10

Load curve: Id. No. 12421144



Tab. 9: Load curve of special forks for T33-10

The load curve applies to all pallet forks, which are not regarded as standard forks, up to a maximum own weight of 450 kg.

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1.2.11 Tyres

The following table lists all tyres and rims approved by Liebherr as well as the associated recommended tyre pressures. Tyres not listed in the following table may only be used following consultation with Liebherr customer service.

The following data regarding air pressure in the tyres refers to:

- Basic air pressure recommendations (according to the set value at delivery from the factory)
- Tyres in cold condition
- An operational machine (basic machine with standard attachment and the permissible load for it)

Tyre inflation pressure for T33-10

Description	Tyre size	Rim size	Offset	Inflation pressure, front axle	Inflation pressure, rear axle
Alliance A580	460/70 R24 159A8/159B	24x DW14L	0	3.00 bar	2.40 bar
Dunlop SP T9 MPT	405/70 R24 168A2/152G	24x DW13L	0	4.50 bar	3.50 bar
Firestone Duraforce-Utility	460/70 R24 159A8	24x DW14L	0	3.50 bar	2.50 bar
Michelin BibLoad	460/70 R24 159A8/159B	24x DW14L	0	3.30 bar	2.60 bar
Michelin XMCL	460/70 R24 159A8/159B	24x DW14L	0	3.30 bar	2.60 bar
Mitas MPT 01	405/70-20 152B	13x20	0	3.75 bar	3.00 bar
Mitas MPT 01	405/70-24 152B	24x DW13L	0	3.75 bar	3.75 bar
Mitas MPT 04	400/70-24 156B	24x DW13L	0	4.00 bar	3.50 bar

Tab. 19: Tyre pressure table for T33-10

Snow chains or tyre protection chains (option)

NOTICE

Improper assembly of the snow chains or tyre protection chains!
Damage to drive system.

- ▶ Install snow chains or tyre protection chains on all four wheels.

The installation of snow chains or tyre protection chains must be made on all four tyres.

Tyre foaming

NOTICE

Filling tyres with foam!
Damage to the machine.

- ▶ Contact Liebherr customer service.

Tyre foaming changes the weight of the machine.

Tyre foaming is not permitted without the approval of Liebherr customer service.

Quality Right Down to the Last Detail

Tried-and-Tested Components

Only components that have been tested under the most rigorous conditions are used in Liebherr telescopic handlers.

Robust and Well-Thought-Out Design

With the robust quick coupler – suitable for Scorpion work attachments – all tools can be perfectly and reliably fitted. Attachments with a hydraulic function can be conveniently operated with a joystick via the double-acting hydraulic circuit-3 installed as standard. A double-acting additional hydraulic circuit with a leakage oil line and a socket can also be installed as an option.

Pressure Release for Hydraulic Circuit-3

The couplings should not require pressure to be applied to enable the attachments to be changed quickly and easily. Pressure release is available as an option and prevents unnecessary loss of oil or broken seals in the couplings.

Coherent Safety Control

Intelligent Overload Warning System

A warning system constantly informs the driver of the load status of the unit. Even before the unit can tip forwards, hydraulic lifting movements are slowed down right until standstill (at this point a sufficient margin of safety is still retained). Beyond this point, only movements of the attachment, which reduce the risk of tipping, can be made.

To enable efficient filling of the bucket, stockpiling mode can be selected. In this setting, boom movements are not limited even if overload is detected, as long as the machine keeps moving forward.

In addition, the driver can temporarily de-activate the overload warning system.

Fuel Tank

Long working and application times are guaranteed with a holding capacity of 150 l/33 Imp.gal. The tank is positioned underneath the cab which provides optimum protection from damage.



Cable Protection

- The tried-and-tested protective braiding prevents wear and mechanical damage to the electrical system.
- In addition, condensation is inhibited to eliminate any risk of short circuiting.

Reliable Safety Systems

A wide variety of standard and optional safety devices enable safe working in every situation.

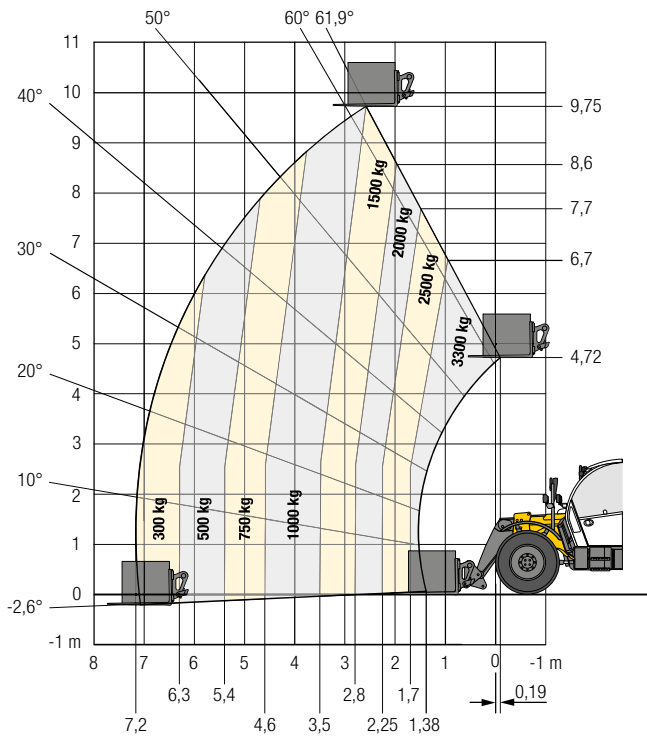
This includes:

- Halogen or LED lighting (option)
- End position damping (standard)
- Emergency lowering (option)
- Reversing and side movement camera (option)
- Inclination display on telescope (option)

Overload Warning System

For stacking, loading or lifting, the right setting can be selected according to requirements, ensuring safety and high-performance operation in compliance with EN 15000 – regardless of the situation.

T 33-10s



Metric standard thread and fine thread				Metric standard thread and fine thread			
At least one element of the screwed connection (screws, washers, nuts, ...) with following surface: flZn = zinc coating (LH standard 10021432, LH standard 10215295 flZnnc-480h-L valid \geq M6)				All elements of the screwed connection (screws, washers, nuts, ...) with following surface: black oxide or phosphated zinc plated (LH standard 10215295 Fe//ZnNi(12)5//Cn//T2)			
Minimum total coefficient of friction $\mu_G = 0.09$				Minimum total coefficient of friction $\mu_G = 0.11$			
Thread	Grade	Assembly prestressing forces F_M in kN	Tightening torques M_A in Nm	Thread	Grade	Assembly prestressing forces F_M in kN	Tightening torques M_A in Nm
M 39	8.8	530	2500	M 39	8.8	520	3000
	10.9	770	3700		10.9	760	4400
	12.9	910	4400		12.9	890	5100
M 39 x 1.5	8.8	610	2800	M 39 x 1.5	8.8	600	3300
	10.9	900	4000		10.9	880	4800
	12.9	1050	4700		12.9	1030	5600
M 39 x 3	8.8	560	2600	M 39 x 3	8.8	550	3100
	10.9	820	3900		10.9	810	4500
	12.9	960	4500		12.9	940	5300

Tab. 22: Prestressing forces and tightening torques for screws

- A) The tightening torques for flZn screws <M10 are non-binding information, because no fixed coefficient of friction window is defined in the standard LH10215295. According to the state of the art and practical experience, the considered coefficients of friction for the respective coatings on small screw diameters are adhered to.

- If defects which affect safety occur: take the machine out of operation immediately.
- Carry out inspections of the machine prescribed by Liebherr in accordance with the inspection intervals.
- Carry out nationally prescribed inspections of the machine in accordance with the inspection intervals.
- Observe national legal requirements for the provision of machines and tools by the employer (hazard assessment and risk assessment by the operating company).
- Report every accident involving the machine to Liebherr:
 - With serious injuries
 - With significant property damage
- Allow Liebherr personnel to have unrestricted access to the machine in connection with the product monitoring obligation.
- Create an operational plan for the machine.
- Clearly define the responsibility of personnel (for operation, setup, maintenance and repair).
- Ensure that no modifications are carried out on the machine without prior consultation with the manufacturer.
- Use only original Liebherr spare parts.

2.4.4 Operator

Responsibility

The operator has the following duties:

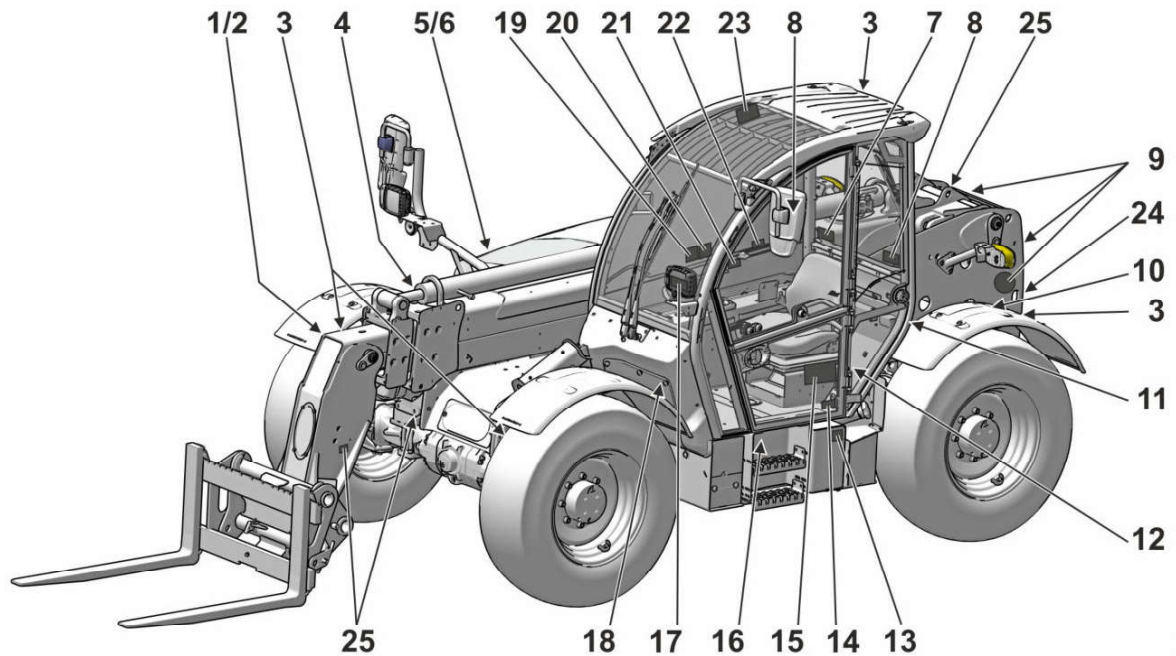
- Read the operator's manual.
- Read the other documentation supplied:
 - Operator's manuals for the components
 - Operator's manuals of third-party manufacturers
 - Additional manuals
- Wear personal protective equipment.
- Operate the machine in accordance with the intended use.
- Avoid questionable working methods.
- Observe the safety regulations at the job site.
- Report all safety-impacting changes to the machine to the operating company.
- If a safe manner of working is no longer possible: stop operating the machine immediately.
- Modifications to the machine may only be carried out after prior consultation with the manufacturer.
- Use only original Liebherr spare parts.

Requirement

The operator possesses the following skills and qualifications:

- Has reached the minimum age prescribed by law.
- Is physically and mentally capable of operating the machine safely:
 - Sufficient vision
 - Sufficient hearing
 - Short reaction time
- Has the requisite authorisation to operate the machine.
- Is able to estimate distance, height and clearances.
- Knows all escape routes in the event of an emergency.
- Does not have any physical or mental impairment that impinges upon any of the stated requirements (e.g. alcohol, drugs, medication).

Location of information signs



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Fig. 60: Location of information signs

- | | | |
|---------------------------------|--|---|
| 1 Rigging point sign | 10 Diesel exhaust fluid sign | 19 Standard fork load curve sign |
| 2 Slinging / lifting point sign | 11 Hydraulic oil sign | 20 Control lever sign |
| 3 Peak point sign | 12 ROPS/FOPS sign | 21 Gradual travel device and manual throttle sign |
| 4 CE conformity mark sign | 13 Tank nozzle sign | 22 Rear hydraulics sign ⁶⁾ |
| 5 Coolant sign | 14 Wheel lugs sign | 23 Working headlights sign ⁶⁾ |
| 6 Windscreen washer fluid sign | 15 Lubrication chart | 24 Maximum support load sign ⁶⁾ |
| 7 Noise protection sign | 16 Preheating 230 V sign ⁶⁾ | 25 Manual lubricating points sign ⁶⁾ |
| 8 Emergency exit sign | 17 Tyre inflation pressure sign | |
| 9 Speed sign | 18 Brake oil sign | |

⁶⁾ Option

Rear hydraulics (option) sign

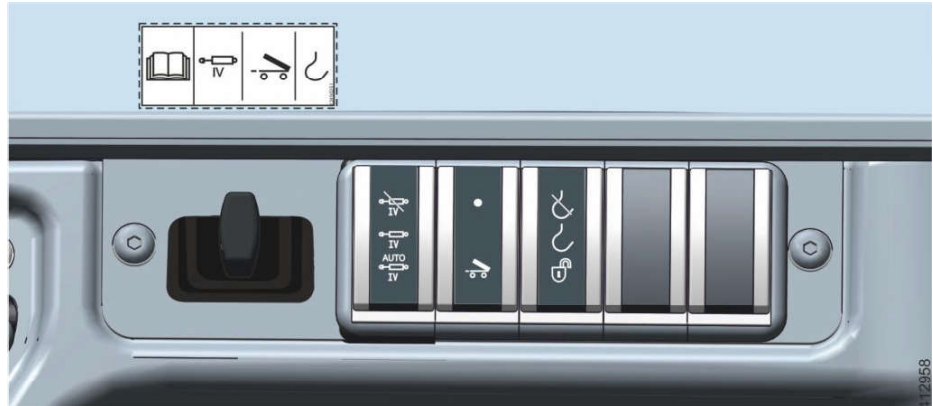


Fig. 82: Rear hydraulics sign

The sign is located on the right of the operator's cab.
Shows the functions of the side console control elements.

Working headlights (option) sign

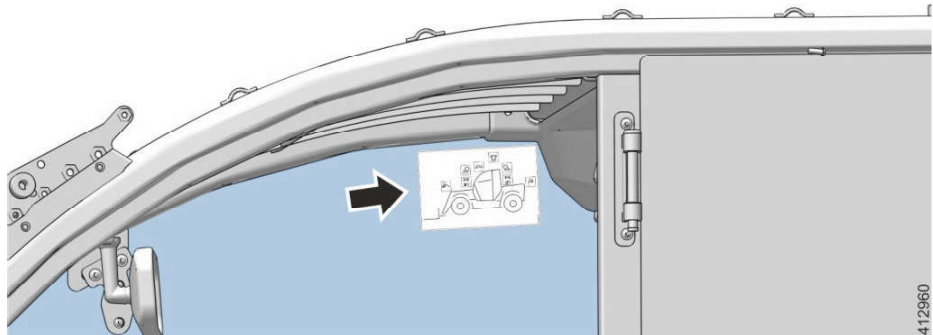


Fig. 83: Working headlights sign

The sign is located on the right-hand cab window.
Shows the location of working headlights.

4. The rod, which is used to tow the machine must be adequate to pull the machine and must be connected to the appropriate bores and towing devices. Damage or accidents which occur when towing or recovering the machine cannot be covered by manufacturer's guarantee under any circumstances.
5. During towing procedure, keep within required transport position, permissible speed and distance.
6. When returning machine to operation, proceed only as outlined in operator's manual.
7. After the towing or recovering procedure, be certain to return the machine to series condition.

2.6.12 Safety guidelines for maintenance

1. Never perform any maintenance or repairs for which you are not qualified or you do not understand.
2. Observe the stated intervals or time periods for repeat checks and inspections as outlined in the operating instructions. Always use appropriate tools to carry out maintenance work.
3. The chart in these operating instructions defines exactly who must or may carry out which type of work. The operator may only carry out work marked in the maintenance and inspection schedule with "by maintenance personnel". The remaining tasks may only be carried out by expert technicians with appropriate training.
4. Spare parts must meet the technical requirements set forth by the manufacturer. This is always ensured by using Original spare parts. Spare parts, which do not meet the technical requirements of the manufacturer can impact the safety and function of the machine.
5. Always wear safe work clothing when maintaining the machine. For certain work, safety glasses and work gloves are required, in addition to a hard hat and safety shoes.
6. Keep unauthorized personnel away from the machine during maintenance.
7. Secure a wide-ranging area for service, as necessary.
8. Inform the operator before carrying out any special task or maintenance work. Make sure he knows the person who is in charge of the work.
9. If not otherwise noted in these operating instructions, carry out all maintenance work on the machine on firm and level ground, with the engine turned off.
10. During maintenance and repairs, make sure you always tighten any loosened screw connections.
11. If it becomes necessary to remove any safety devices during set up, maintenance and repairs, the safety devices which were removed must be reinstalled immediately after completion of the maintenance and repair work and then be inspected for proper function.
12. Before any maintenance and repair work, especially when working under the machine, attach an easily visible warning sign "**DO NOT TURN ON**" on the ignition switch. Pull the ignition key off.
13. Before any maintenance and repairs, clean the machine, especially connections and fittings to remove oil, fuel or cleaning substances. Never use aggressive cleaning substances. Use only lint-free cleaning cloths.
14. To clean the machine, never use flammable cleaning fluids.
15. Before any welding, cutting and grinding, clean the machine and surrounding area of dust and flammable substances and assure adequate ventilation.
 - Otherwise there is a **DANGER OF EXPLOSION!**
16. Before cleaning with water, steam (high pressure cleaner) or other cleaning fluids, cover / tape off all openings whose safety and function could be affected by infiltration of water, steam or cleaning fluid. Electrical motors, switch boxes and battery compartments are especially endangered.

The following visual shadows cannot be seen from the operator's seat:

- Areas with a grey background in the sector **A, C und E** indicate the restrictions of field of vision.

Measures before and during operation

1. Make sure that persons establish contact with the machine operator before they approach the machine.
2. Check visibility aids for function, cleanliness and correct adjustment.
3. Adjust visibility aids in such a way that the best possible all around visibility is ensured.
4. Clean visibility aids and windows in the operator's cab immediately if dirt affects the visibility.
5. Have defective visibility aids repaired or replaced immediately.
6. Do not use sun visors if they limit visibility.
7. Always monitor the surroundings to recognize potential dangers in time.
8. Prefer direct visibility: plan the work in such a way that the visibility onto the work area is not limited by obstacles.
9. As a rule, always work with a guide for tasks with limited visibility or defective visual aids. Agree on hand signals, for difficult tasks use additional voice contact (for example via radio).
10. Use lights in bad visibility conditions and according to the valid regulations.
11. Restriction and securing of work area.
12. Observation of safety instructions.

2.6.24 Trailer operation

1. The machine must be approved for trailer operation.
2. Adhere to the national regulations regarding trailer operation.
3. The relevant national operator's license is required.
4. Transportation of persons on/in trailers is NOT permitted.
5. Comply with the maximum permissible support load and trailer load.
6. Do not exceed the permissible speed of trailer.
7. Trailer operation at the towing device of machine is not permitted.
8. The operating behaviour of machine changes for trailer operation. The operator must be familiar with this and act accordingly.
9. Observe steering mode of machine and turning range of trailer.
10. Secure the trailer against rolling away prior to connection and disconnection (parking brake, suitable chocks for example).
11. No persons may stand in space between machine and trailer when connecting a trailer.
12. Connect trailer to the machine properly.
13. Make sure that all devices are in proper working order (brakes, lighting systems for example).
14. Prior to driving off, make sure that there are no persons between machine and trailer.

2.6.25 Air brake system for trailers

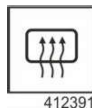
1. If a trailer is connected, do not drive off until the pressure gauge in the operator's cab displays the specified pressure. (For more information see: [Pressure gauge of air brake system, page 225](#))
2. For journeys without a trailer, the covers of coupling heads on the machine need to be closed.
3. Close the coupling head lid on the parked trailer or hang it on the existing dummy coupling heads.

Roof console control elements, left



Fig. 122: Roof console control elements, left

65 Window heating button (option)



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Press bottom part of button: Right-hand side window and rear screen are heated.
Switches off after a certain time.

66 Rear screen windscreen washer system switch



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Press top part of switch: Rear screen windscreen washer system is deactivated.
Press switch to centre position: Rear screen windscreen wiper is activated.
Press bottom part of switch: Rear screen windscreen washer system is activated.

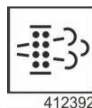
67 Bypass output reduction button



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Press bottom part of button: Output reduction of diesel engine is cancelled for 30 minutes. (For more information see: [Suppressing the output reduction](#), page 254)
Move the machine out of the hazard zone.

68 Exhaust treatment system button



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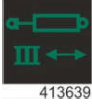
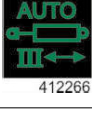

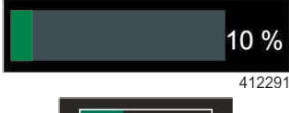



Press button down: exhaust Treatment system regeneration.
Active regeneration exhaust treatment system symbol is shown on the display.

If the function is active:

- Engage parking brake. (For more information see: [37 Parking brake switch](#), page 105)
- Activate *working hydraulics off*. (For more information see: [35 Working hydraulics off switch](#), page 104)

Press button again: active regeneration is aborted. (For more information see: [35 Working hydraulics off switch](#), page 104)

Exhaust treatment system contaminated symbol or *Exhaust treatment system heavily contaminated* symbol is displayed on the display.

Status symbols	Name
	Additional control circuit IV auto on rear ^{A)} (For more information see: Control circuit IV flow volume (option), page 215)
	Auto-hitch locked ^{A)} (For more information see: Hitch trailer coupling, page 243)
	Auto-hitch unlocked ^{A)} (For more information see: Hitch trailer coupling, page 243)
	Tipper active ^{A)} (For more information see: Operation of the tipper connection, page 216)
	Flow volume of control circuit III ^{A)} (For more information see: Control circuit III flow volume (option), page 208)
	Stored flow volume of control circuit III ^{A)} (For more information see: Saving and activating the flow volume, page 210)
	Change over of control circuit III ^{A)} (For more information see: Control circuit III change over (option), page 210)
	Change over of control circuit III auto ^{A)} (For more information see: Control circuit III change over (option), page 210)
	Pressure relief of control circuit III ^{A)} (For more information see: Relieving pressure in the hydraulic system, page 270)
 	Flow volume of control circuit III (For more information see: Control circuit III flow volume (option), page 208)
 	Flow volume of control circuit IV ^{A)} (For more information see: Control circuit IV flow volume (option), page 215)

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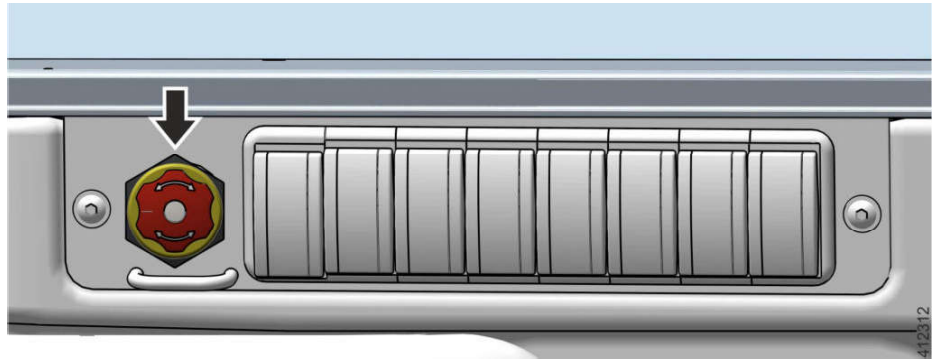


Fig. 160: Emergency stop button

- ▶ Before leaving the operator's cab, press the emergency stop button.
 - ▷ The travel drive, the working attachment and the diesel engine stop abruptly.

3.2.3 Door lock

The cab door is held in closed position by the door lock.

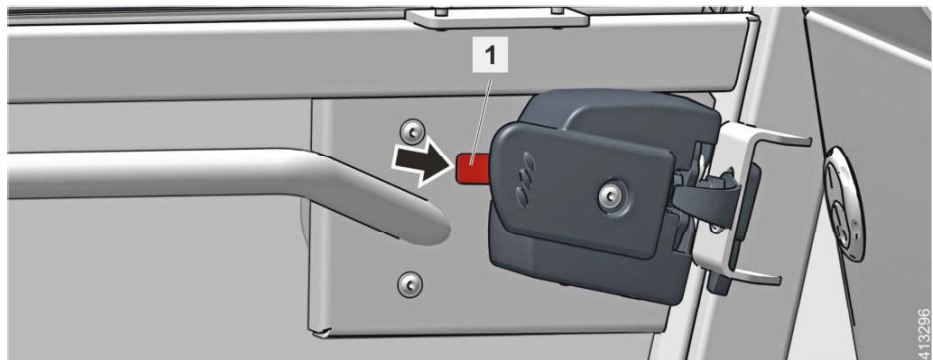


Fig. 161: Opening cab door inside

- ▶ Push handle 1 on the cab door inward.
- ▶ Open cab door from inside.



WARNING

Open cab door!
Injury.

- ▶ Before operating the machine, close the lower half of cab door.
- ▶ Before putting machine into operation, close the cab door.
 - ▷ The cab door engages in the door lock.

3.2.4 Operator's seat

The seat is paramount to ensuring that the vibrations transferred to the operator are reduced. If the seat needs to be replaced, contact the manufacturer.

Adjusting lumbar support

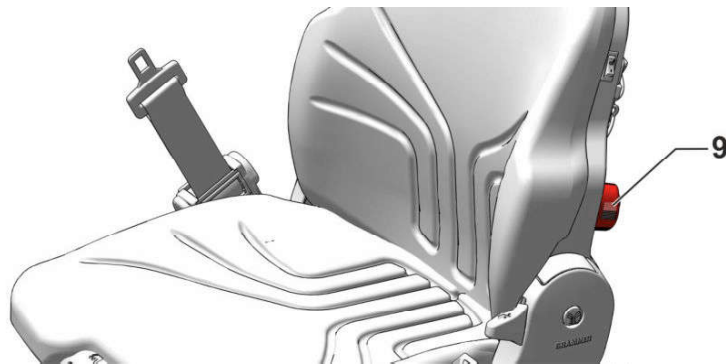


Fig. 180: Adjusting lumbar support

9 Hand wheel Lumbar support

- ▶ Turn Lumbar support hand wheel **9** clockwise or anticlockwise.
- ▷ Lumbar support is set.

Adjusting backrest incline

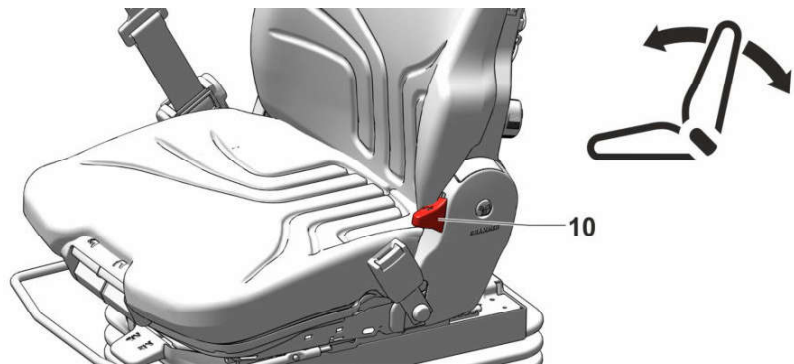


Fig. 181: Adjusting backrest incline

10 Backrest inclination handle

- ▶ Pull Backrest inclination handle **10** up.
- ▶ Adjust backrest to desired incline.
- ▶ Release Backrest inclination handle **10**.

Adjusting horizontal suspension

Impact loads in travel direction can be absorbed better through the horizontal suspension.

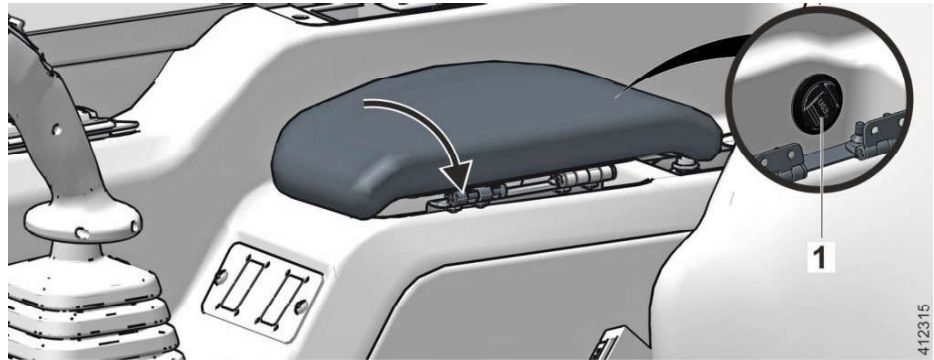


Fig. 199: Armrest

The armrest is hinged.

A compartment and the USB port 1 is located underneath the armrest.

3.2.7 Steering column and steering wheel

By changing the steering column, the steering wheel distance to the body, the steering wheel height and the steering wheel incline can be changed. The adjustments are infinitely variable.



WARNING

Improper steering mode change!
Injury.

- ▶ Set steering mode exclusively when machine is at a standstill.

Adjusting steering wheel distance to the body

By adjusting the steering column, adjust the distance of steering wheel to the body.

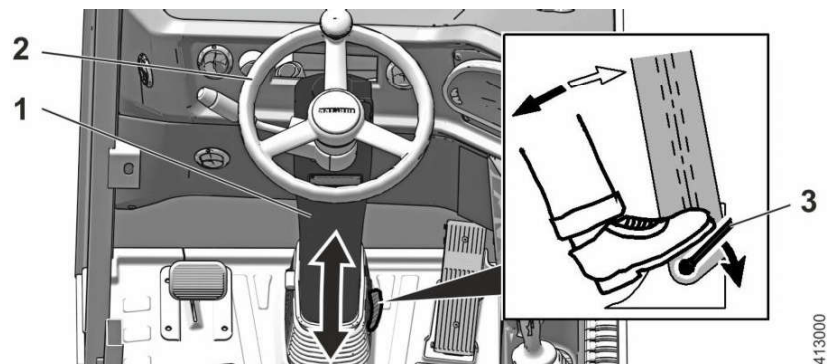


Fig. 200: Adjusting steering wheel distance to the body

- | | | | |
|---|-----------------|---|-------|
| 1 | Steering column | 3 | Lever |
| 2 | Steering wheel | | |

- ▶ Push lever 3 with your foot in direction of arrow.
 - ▷ The steering column 1 is unlocked.
- ▶ Adjust the desired steering wheel distance to the body.
- ▶ Release lever 3.
 - ▷ Steering column 1 is locked.

3.2.15 Electric windscreen washer system

The machine is equipped with an electric windscreen washer system for the front window and the rear screen. It consists of operating elements, the windscreen wipers, the windscreen washer tank and the nozzles for the windscreen washer fluid.

Ensure that following requirements are met:

- The electrical system of the machine is turned on.
- The windscreen wiper blades are not frozen to the window.

Operating windscreen washer system for front window

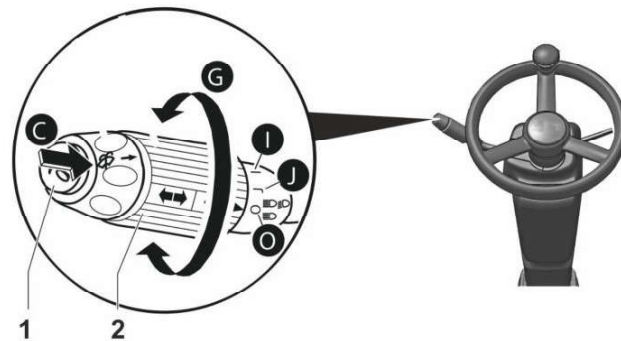


Fig. 222: Front window windscreen washer system

- | | | | |
|---|------------------------------------|---|------------------------|
| 1 | Button | I | Continuous mode |
| 2 | Rotary switch | J | Intermittent operation |
| C | Windscreen washer system actuation | O | Windscreen wiper off |
| G | Windscreen wiper actuation | | |

Symbol	Stage
I	Continuous mode
J	Intermittent operation
O	Windscreen wiper off

Tab. 29: Stages of rotary switch

- ▶ Set rotary switch 2 to the desired stage.

To wash and wipe windscreen:

- ▶ Press and hold button 1 down.
 - ▷ Windscreen washer fluid is sprayed on windscreen via nozzles.
 - ▷ Windscreen wiper is switched on.

413733

Refuelling with diesel



412418

Fig. 240: Fuel display

4 Fuel display

- ▶ Set starting switch to contact position.
- ▶ Check whether there is enough diesel fuel in fuel tank on fuel display 4.



406952

Fig. 241: Safety when refuelling



DANGER

Highly flammable fuel and operating fluids!
Danger to life.

- ▶ Smoking, naked lights and fire are prohibited.
 - ▶ Exclusively refuel when diesel engine is switched off.
-
- ▶ Observe safety instructions for fire and explosion prevention. (For more information see: [2.6.3 Safety guidelines for fire and explosion prevention, page 83](#))

Deactivating the preheating

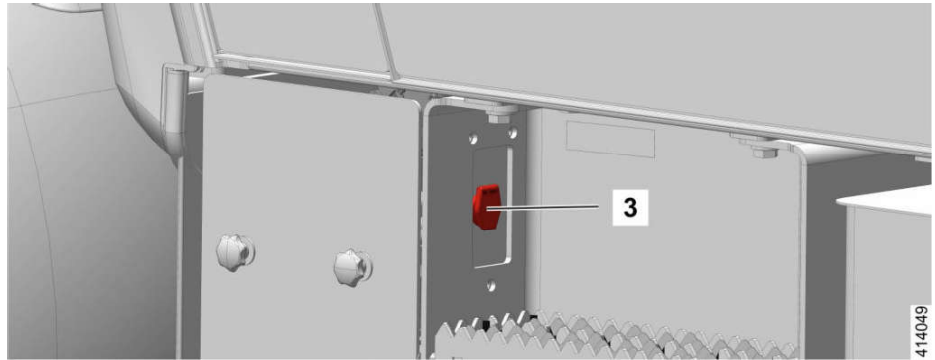


Fig. 258: Plug connection

3 Plug connection

- ▶ Unplug plug connection for the AC mains (230 V).
- ▷ Preheating is deactivated.

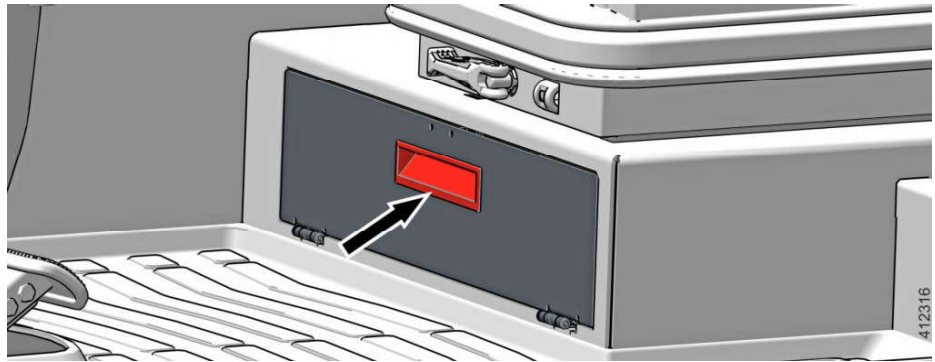


Fig. 259: Compartment

- ▶ Stow the extension cable in the compartment.

Fuel preheating 12 V (option)

The fuel preheating is used to heat the fuel prior to putting the machine into service at low ambient temperatures. Preheating ends automatically at a fuel temperature of 50 °C.

- ▶ Release *front axle steering with adjusted rear axle* button **31**.
 - ▷ Steering angle for the rear axle is fixed.
 - ▷ *Front wheel steering* symbol **2** is shown on the display.

Front axle steering with adjusted rear axle with lock button mode

Selecting front axle steering with adjusted rear axle with lock button mode

Valid from serial number 19544 to serial number 19548.

With front axle steering with adjusted rear axle mode, the steering angle of rear axle can be fixed in the desired position.

The front axle steering with adjusted rear axle mode is suitable for precise working in restricted space conditions.

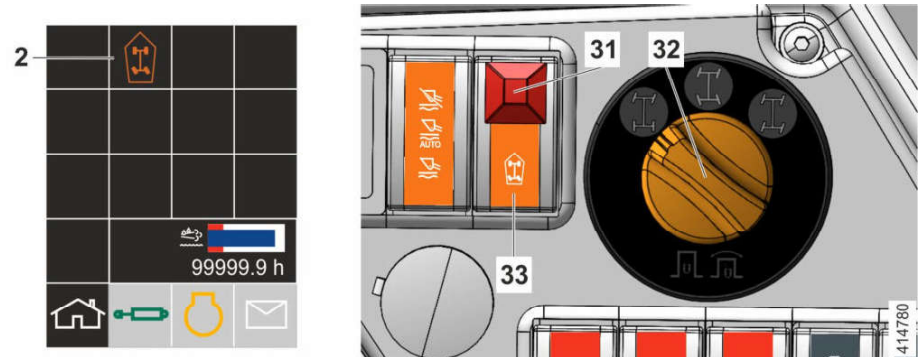


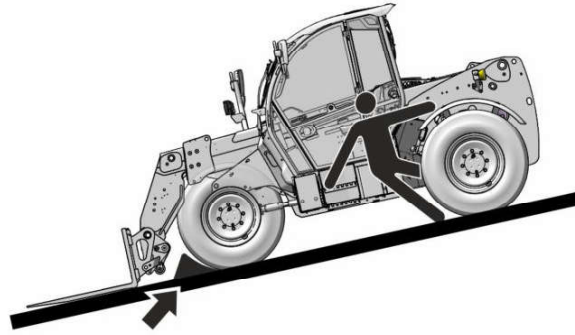
Fig. 280: Front axle steering with adjusted rear axle mode

- | | |
|---|--|
| 2 Front axle steering with adjusted rear axle symbol | 32 Steering modes rotary switch |
| 31 Locking mechanism | 33 Front axle steering with adjusted rear axle button |

- ▶ Select all-wheel steering mode.
- ▶ Turn steering wheel until desired steering angle is reached for the rear axle.
- ▶ Press *steering modes* rotary switch **32** and turn it to the left.
- ▶ Push lock **31** on *front axle steering with adjusted rear axle* button **33** backwards and press button.
 - ▷ The *front axle steering with adjusted rear axle* symbol **2** flashes on the display.
- ▶ Release *front axle steering with adjusted rear axle* button **33**.
 - ▷ Front axle steering with adjusted rear axle mode is set.
 - ▷ Steering angle for the rear axle is fixed.
 - ▷ The *front axle steering with adjusted rear axle* symbol **2** is shown on the display.

Correcting steering angle for rear axle

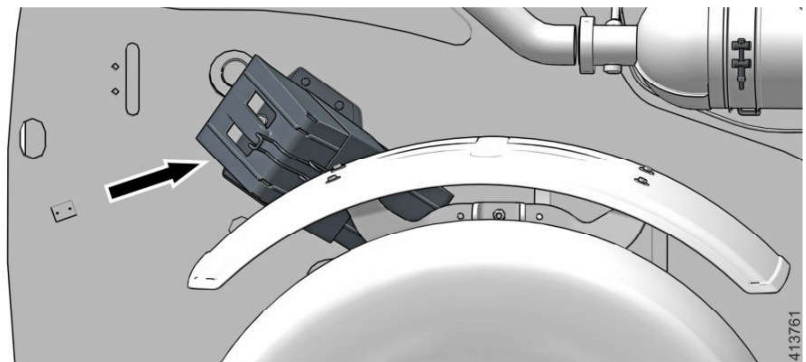
The steering angle for the rear axle can be corrected without changing the steering mode.



412328

Fig. 296: Securing the machine

- ▶ Lower the working attachment to the ground and anchor it slightly in the ground.



413761

Fig. 297: Chock¹¹⁾ on the main frame

- ▶ Take the chock¹¹⁾ out of the retainer.
- ▶ Always secure the machine with chocks¹¹⁾ to prevent it from rolling off.

Using the emergency stop button to stop the travel drive and continuing operation

Stopping the travel drive

In dangerous or unclear situations, the travel drive can be stopped immediately by pressing the emergency stop button.



WARNING

Always wear a safety belt!
Injury.

- ▶ Fasten your safety belt before starting up machine.

¹¹⁾ Option

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- Thank you very much for reading the preview of the manual.
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- Please note: If there is no response to CLICKING the link, please download this PDF first and then click on it.

CLICK HERE TO **DOWNLOAD** THE COMPLETE MANUAL

Setting the flow volume

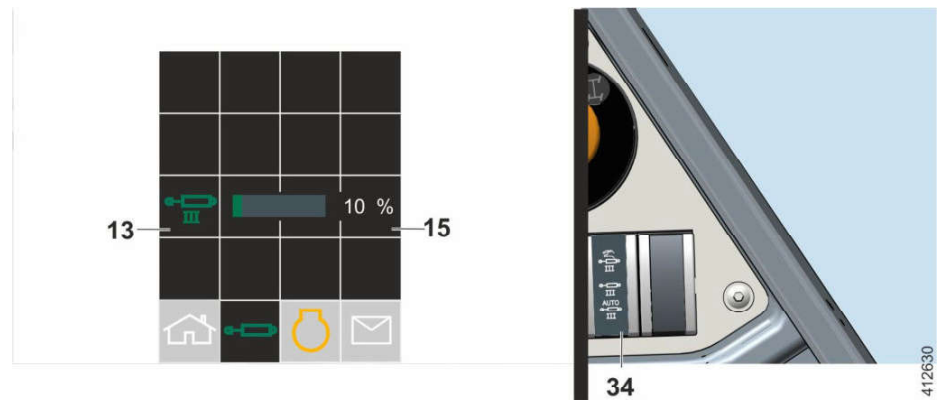


Fig. 316: Setting control circuit III flow volume

- 13** Control circuit III symbol **34** Control circuit III switch
15 Flow volume display

- ▶ Set control circuit III switch **34** to middle position.
 - ▷ Control circuit III symbol **13** is shown on the display.
 - ▷ Flow volume display **15** flashes on the display.



Fig. 317: Setting control circuit III flow volume

- 10** Control circuit III rocker switch **34** Control circuit III switch

- ▶ Press control circuit III rocker switch **10** on control lever to the right (+) or left (-).
 - ▷ Flow volume changes in 1 % increments.
 - ▷ Flow volume is flashing on the display.

Disconnecting the rear socket (option)

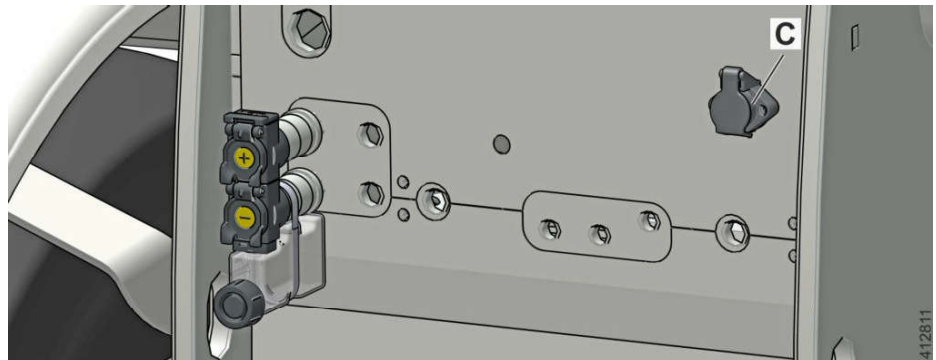


Fig. 334: Location of rear socket

C Rear socket

- ▶ Disconnect cables for working attachment from rear socket **C**.

Ride control (option)

The ride control improves the travel comfort by reducing the vehicle vibrations. For this reason, the ride control should be switched on for longer travel routes.

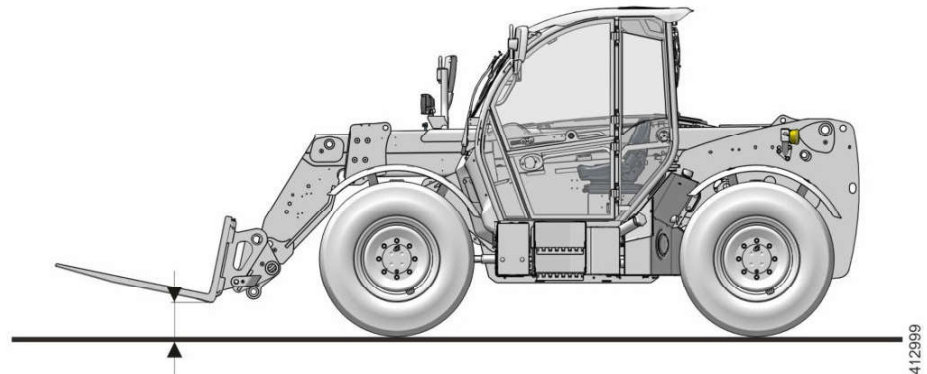


Fig. 335: Lowering working attachment

- ▶ Put the working attachment in transport position.

- ▷ Machine's parking brake is activated.
- ▷ Trailer's parking brake is activated.
- ▶ Turn diesel engine off.
- ▶ Pull key out.
- ▶ Secure trailer with chocks.

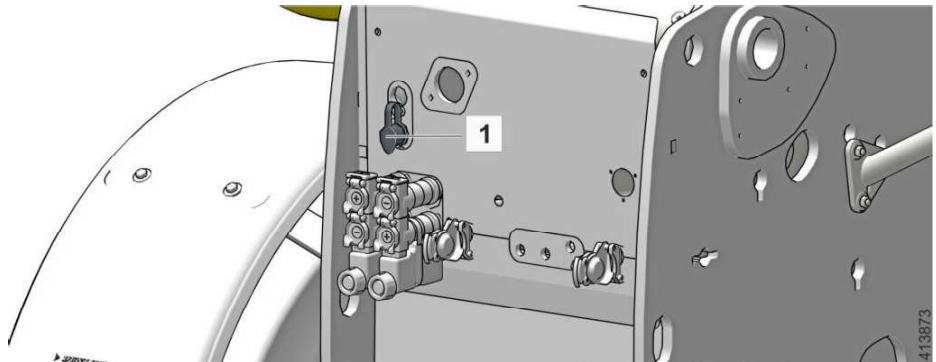


Fig. 355: Disconnecting the brake hose

1 Coupling head

- ▶ Disconnect trailer brake hose from coupling head 1.
- ▶ Disconnect trailer. (For more information see: [3.3.11 Trailer couplings \(option\)](#), page 233)

Hydraulic trailer brake - 2-line (option)

Connecting trailer brake hose

- ▶ Attach trailer to trailer coupling (For more information see: [3.3.11 Trailer couplings \(option\)](#), page 233) .

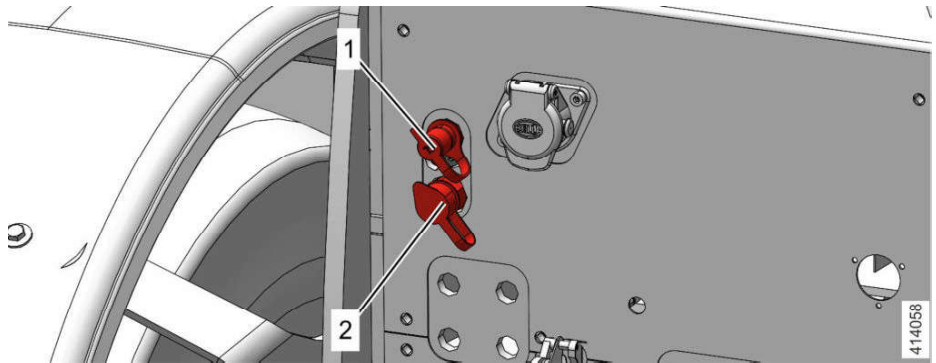


Fig. 356: Brake lines

1 Supply line coupling

2 Brake line coupling

- ▶ Clean the supply line coupling 1, brake line coupling 2 and trailer brake hoses.
- ▶ Connect the trailer brake hose to the brake line coupling 2.
- ▶ Connect the trailer supply line to the supply line coupling 1.

- ▶ Remove cotter pin 1.
- ▶ Remove coupling pin 4.
- ▶ Slowly move machine forward.

Country-specific automatic trailer coupling, height adjustable

Height adjustment of trailer coupling

Adjust the country-specific automatic trailer coupling to height of trailer prior to attachment.

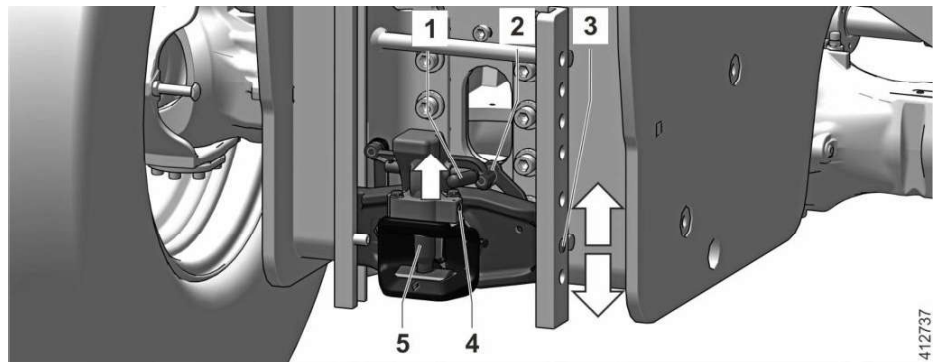


Fig. 368: Country-specific automatic trailer coupling, height adjustable

- | | | | |
|---|-------------|---|---------------|
| 1 | Lever | 4 | Retaining pin |
| 2 | Handle | 5 | Coupling pin |
| 3 | Locking pin | | |

- ▶ Pull handle 2 up and to the right.
 - ▷ Locking pins 3 are retracted.
- ▶ Move trailer coupling up or down.

Once desired height is reached:

- ▶ Let go of handle 2.
 - ▷ The locking pins 3 lock in place in the receptacle plate.

Opening the trailer coupling

- ▶ Pull lever 1 upward until it locks in place.
 - ▷ Lateral retaining pins 4 are extended.
 - ▷ The coupling pin 5 is pushed upward and locked.



CAUTION

The trailer coupling closes automatically!
Crushing injuries.

- ▶ Ensure that there are no body parts or objects inside of the closing range.

- ▶ Remove contamination from the trailer coupling using a suitable tool.

Connecting trailer

Ensure that following requirements are met:

- Trailer is secured against rolling away.

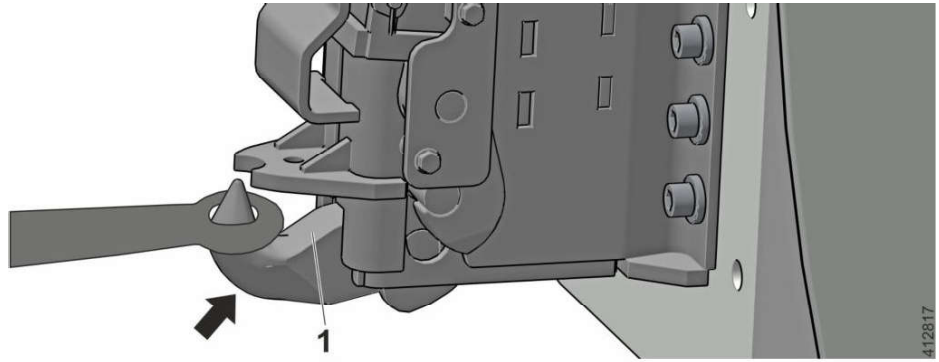


Fig. 381: Raising hitch trailer coupling

1 Hitch trailer coupling

- ▶ Raise hitch trailer coupling **1** to stop.
- ▶ Move *Rear hydraulics* control lever **38** towards **A** to pressure point.
 - ▷ Hitch trailer coupling **1** is locked.
 - ▷ *Auto-hitch locked* symbol **11** is shown on the display.
- ▶ Turn diesel engine off.
- ▶ Engage parking brake.
- ▶ Check whether the pull device of trailer is securely locked in the trailer coupling.
- ▶ Connect hydraulic connections, compressed air connections and electrical connections.

Disconnecting the trailer from the hitch trailer coupling

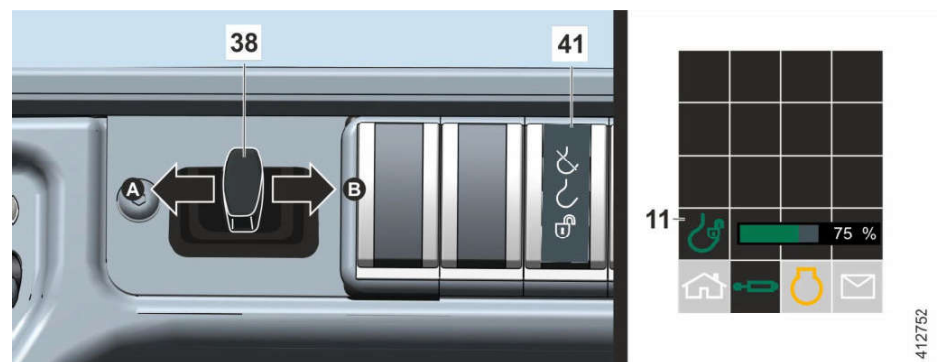


Fig. 382: Unlocking hitch trailer coupling

- 11** *Auto-hitch unlocked* symbol **41** *Hitch trailer coupling* switch
38 *Rear hydraulics* control lever

- ▶ Press down *hitch trailer coupling* switch **41** and hold it.
- ▶ Move *Rear hydraulics* control lever **38** towards **B** to pressure point.
 - ▷ Hitch trailer coupling is unlocked.
 - ▷ *Auto-hitch unlocked* symbol **11** is shown on the display.



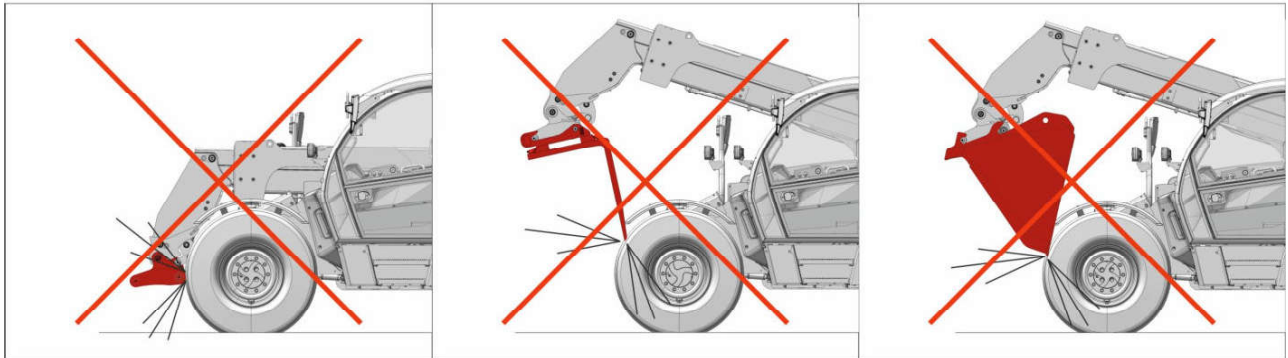
Note

When hitch trailer coupling is unlocked, the travel speed is reduced to 5 km/h.

3.4 Work methods

The routine working methods are described in this section.

3.4.1 Collision between quick coupler and working attachment



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Fig. 404: Collision between quick coupler and working attachment

NOTICE

Working attachment collision!
Damage to tyres.

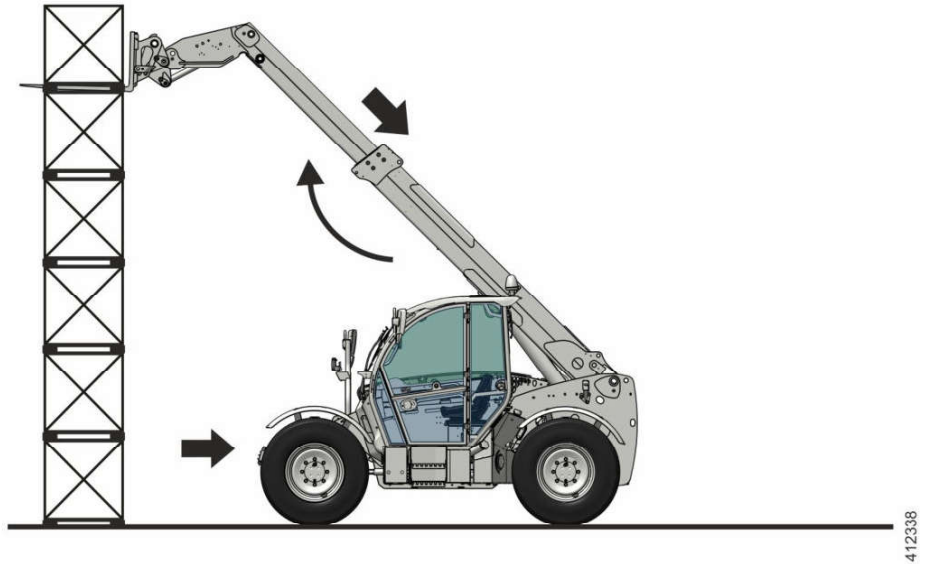
- ▶ When driving, tilt the working attachment in and lower it to the transport position.
-

If quick coupler is fully tilted out, quick coupler or working attachment may collide with machine.

3.4.2 Transport position

Only transport the loaded bucket and forklift in the transport position.

The maximum permissible travel speed at rated load is 10 km/h.



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Fig. 421: Set the load on the stack

- ▶ Align the load horizontally.
- ▶ Set load down on stack carefully until forklift is relieved.
- ▶ Drive the machine back slowly.
- ▶ Retract telescopic boom.
- ▶ Lower the telescopic boom.

- ▶ Disconnect hydraulic lines for the attached working attachment from control circuit III connections **A**.
- ▶ Attach protective caps to control circuit III connections **A**.

Control circuit III change over (option)

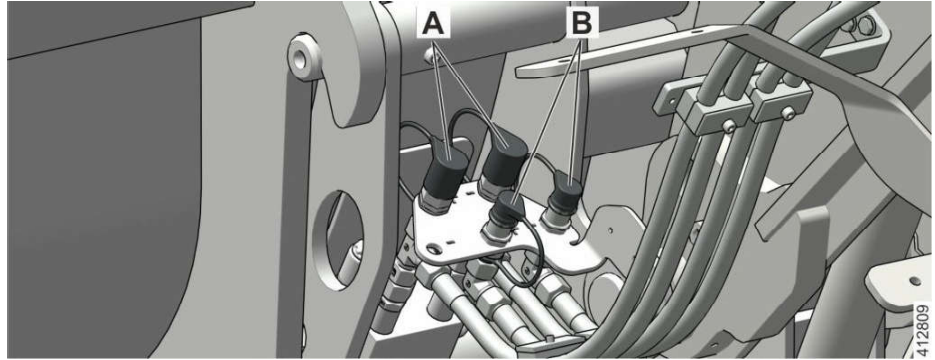


Fig. 439: Disconnecting the hydraulic lines

- A** Connections, control circuit III **B** Connections, control circuit III change over (option)

- ▶ Disconnect hydraulic lines for the attached working attachment from control circuit III change over connections **B**.
- ▶ Attach protective caps to control circuit III change over connections **B**.

Leak oil port (option)

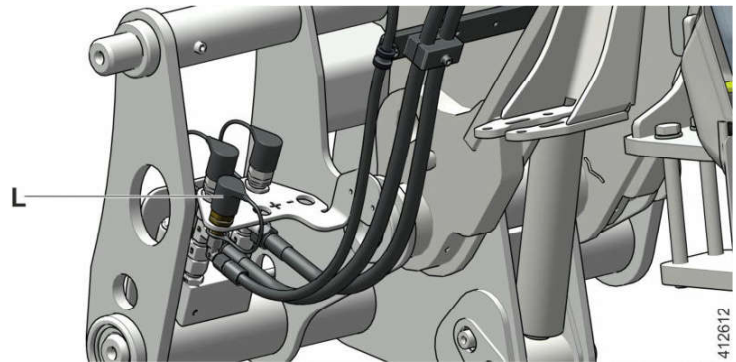


Fig. 440: Arrangement of leak oil line

- L** Leak oil port

- ▶ Disconnect the leak oil lines for the attached working attachment from the leak oil port **L**.
- ▶ Attach the protective cap to the leak oil port **L**.

Connecting the control circuit III connections

The connections are attached on front left of tool holder.

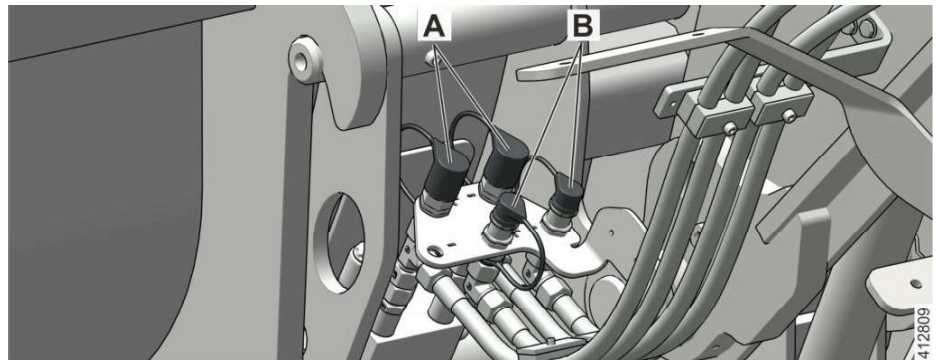


Fig. 461: Connecting hydraulic lines

A Connections, control circuit III **B** Connections, control circuit III change over (option)

- ▶ Remove protective caps from hydraulic lines.
- ▶ Connect hydraulic lines for the attached working attachment to control circuit III connections **A**.
- ▶ Route hydraulic lines in such a way that they are not pinched when working with the working attachment.

Leak oil port (option)

The leak oil port is attached on front left of tool holder.

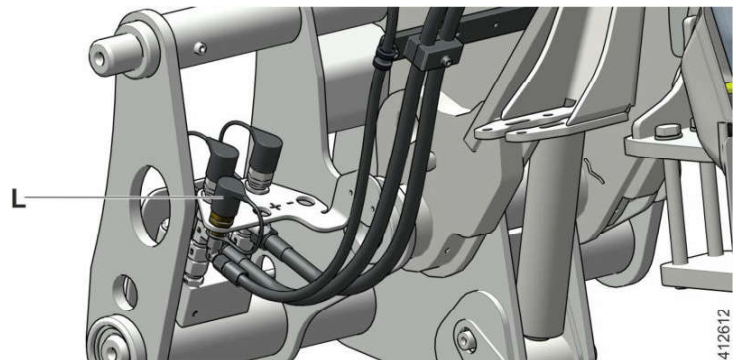


Fig. 462: Arrangement of leak oil line

L Leak oil port

- ▶ Remove protective cap from leak oil port **L**.
- ▶ Connect the leak oil line to the leak oil connection **L**.
- ▶ Route hydraulic lines in such a way that they are not pinched when working with the working attachment.

Control circuit III change over (option)

The control circuit III change over is attached on front left of tool holder.

Preparing for transport



WARNING

Suspended and falling loads!
Danger to life, serious injuries.

- ▶ Make sure there is nobody in danger area around machine.
-
- ▶ If necessary, remove a part of the working attachment before loading the machine with the crane.
 - ▶ Pay attention to the weight and cargo dimensions of the machine. For additional information, see section "Technical Data".
 - ▶ Pay attention to load bearing capacity and the length of slinging gear: for additional information, see section "Technical Data".

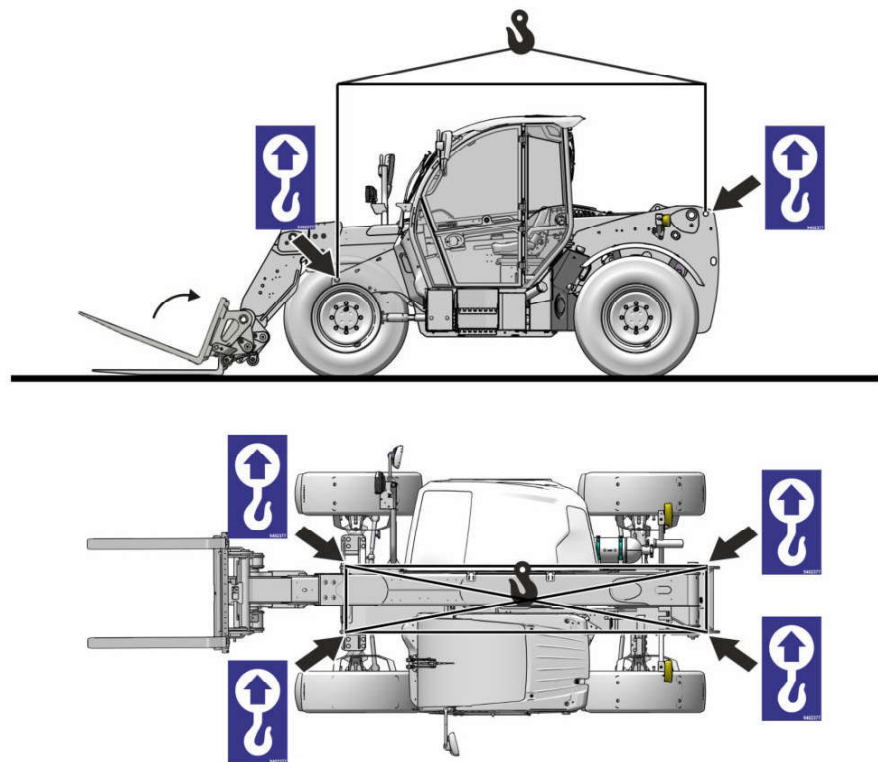


Fig. 482: Slings / lifting points

- ▶ Install or hang the suspension on the designated slinging / lifting points on the machine.



Note

- ▶ The slinging / lifting points are marked with a corresponding sign.
- ▶ Carefully lift and load the machine.

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4 Operating problems

Warning and malfunction messages

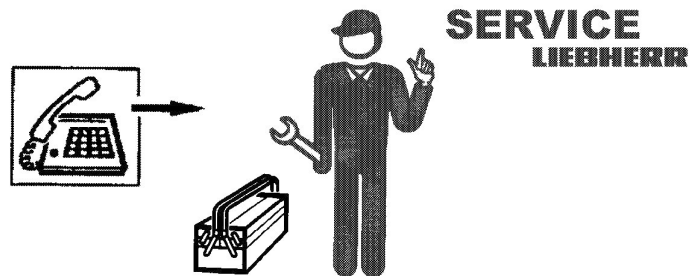
- Various malfunctions are shown optically via the respective indicator lights or via the display instruments on the instrument panel.
- Warning functions are also acoustically supported.

Identification and remedy of malfunctions and errors

- Malfunctions can very often be traced back to incorrect operation or maintenance of the machine.

For that reason, read the relevant chapter in the operating instructions again carefully for each malfunction.

- Analyze the cause of the malfunction and rectify it immediately!
- Describe the malfunction and all accompanying circumstances as precisely as possible when you contact **Liebherr Service**.
Precise information makes it possible to find and rectify the cause of the malfunction quickly. Additionally, precise information on the type and serial number of the machine is also required.
- Do not carry out any work which you have not been trained or instructed to do.



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Fig. 497: Liebherr Service



Note

Taking care of problems with the “Service code charts”?

- ▶ Contact Liebherr Service.
-

SPN	FMI	Component	Problem detected	Possible cause	Effect	Remedy
002931	14	Level switch brake oil	Status signal for "Brake oil level low" active	Brake oil level too low; air / leak in the brake system	No machine response; braking effect unreliable! Danger! Stop the machine! 	Contact Liebherr customer service.
004212	02	Hydrostatic fan proportional valve	Measured current too high or too low: by 200 mA (by 10 mA in idle state) too high/too low for 2000 ms	Broken cable; short circuit to ground	Fan control not available; fan rotates at maximum speed	Contact Liebherr customer service.
004212	06	Hydrostatic fan proportional valve	Measured overload at the control unit output: greater than 5 A	Current load at the output too high	Fan control not available; fan rotates at maximum speed	Contact Liebherr customer service.
004212	14	Hydrostatic fan proportional valve	Shut off detected in the control unit safety circuit	Short circuit to supply; error in the control unit safety circuit; error in the output end stage; internal supply to the control unit output defective	Fan control not available; fan rotates at maximum speed	Contact Liebherr customer service.
520192	14	Display	Internal memory error		Display no longer operational	Contact Liebherr customer service.
520193	14	CAN 1 / communication I	Interference signal on CAN bus, communication not possible	CAN bus OFF; short circuit to supply; loose contact of ground pin to control unit	No machine response; machine not operational	Contact Liebherr customer service.

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SPN	FMI	Component	Problem detected	Possible cause	Effect	Remedy
520248	06	Auxiliary hydraulic motor proportional valve	Measured overload at the control unit output: greater than 5 A	Current load at the output too high	Auxiliary motor not available; maximum speed is not reached	Contact Liebherr customer service.
520248	14	Auxiliary hydraulic motor proportional valve	Shut off detected in the control unit safety circuit	Short circuit to supply; error in the control unit safety circuit; error in the output end stage; internal supply to the control unit output defective	Auxiliary motor not available; potentially reduced pulling force	Contact Liebherr customer service.
520249 B)	05	Level adjustment A	Measured current lower than 220 mA / overload detected at the control unit output for more than 2000 ms	Cable break / current load at the output too high	Level adjustment A not available	Contact Liebherr customer service.
520249 A)	05	Level adjustment A	Measured current too low for more than 2000 ms	Broken cable / short circuit to supply	Level adjustment A not available	Contact Liebherr customer service.
520249 B)	06	Level adjustment A	Measured output signal does not correspond to the command for more than 2000 ms	Short circuit to supply	Level adjustment A not available	Contact Liebherr customer service.
520249 A)	06	Level adjustment A	Measured overload at the control unit output: greater than 5 A	Current load at the output too high	Level adjustment A not available	Contact Liebherr customer service.
520249	14	Level adjustment A	Shut off detected in the control unit safety circuit	Short circuit to supply; error in the control unit safety circuit; error in the output end stage; internal supply to the control unit output defective	Level adjustment A not available	Contact Liebherr customer service.
520250 B)	05	Level adjustment B	Measured current lower than 220 mA / overload detected at the control unit output for more than 2000 ms	Cable break / current load at the output too high	Level adjustment B not available	Contact Liebherr customer service.

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SPN	FMI	Component	Problem detected	Possible cause	Effect	Remedy
520269	02	CAN 1 / communication I	CAN timeout of control circuit 3 signal or defective signal is received for more than 250 ms	CAN line to joystick disconnected; joystick not supplied; joystick has detected an error	Control circuit 3 not available	Contact Liebherr customer service.
520270	02	CAN 1 / communication I	CAN timeout of tilt signal or defective signal is received for more than 250 ms	CAN line to joystick disconnected; joystick not supplied; joystick has detected an error	PF3: tilt in and tilt out not available	Contact Liebherr customer service.
520271	02	Ride control rocker switch	Measured input signals are not suitable for the logic of the switch for more than 2000 ms	Short circuit to supply	Ride control not available	Contact Liebherr customer service.
520272	03	Battery + control box, working hydraulics	Measured voltage too high: >36 V for 2000 ms	Alternator faulty	Failures of any nature possible; inputs are being ignored, outputs not available	Contact Liebherr customer service.
520272	04	Battery + control box, working hydraulics	Measured voltage too low: <7 V for 2000 ms	Battery weak	Control unit A30 cannot work properly; proportional outputs not available	Contact Liebherr customer service.
520273	02	Working hydraulics control box sensor supply	Measured voltage too high or too low: <3.5 V for 2000 ms or >7.5 V for 2000 ms	Battery voltage too low; short circuit to ground or output overloaded; short circuit to supply;	Connected sensors cannot work properly and are not being evaluated	Contact Liebherr customer service.
520274	03	Battery + control box, working hydraulics	Measured voltage too high: >36 V for 2000 ms	Alternator faulty	Failures of any nature possible; inputs are being ignored, outputs not available	Contact Liebherr customer service.
520274	04	Battery + control box, working hydraulics	Measured voltage too low: <7 V for 2000 ms	Battery weak	Control unit A40 cannot work properly; proportional outputs not available	Contact Liebherr customer service.
520275	02	Retract telescope proportional valve	Measured current too high or too low: by 100 mA (by 10 mA in idle state) too high/too low for 2000 ms	Broken cable; short circuit to ground	Telescoping in not available	Contact Liebherr customer service.

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Malfunction / error	Cause	Remedy
Rpm changes are possible and diagnostics light lights up	Engine electronic has recognized system error and activates a replacement speed	Check error according to error code and remedy the error
Diesel engine gets too hot, temperature warning system does not respond	Vent line to expansion tank for coolant plugged up	Clean
	Injector defective	Replace
	Coolant heat exchanger dirty	Clean
	Coolant pump defective (V-belt broken or loose)	Check if broken or loose
	Lack of coolant	Add
	Resistance in cooling system too high / flow quantity too low	Check cooling system
	Fan or viscous coupling defective, V-belt broken or loose	Check or change or tension
	Intercooler dirty	Check or clean
	Air filter dirty / exhaust turbo charger defective	Check or change
	Restrictor flap defective	Check or change
	Coolant temperature sensor	Check or change
	Coolant thermostat defective	Check or change
	Coolant cover defective	Check or change
Diesel engine has insufficient power	Lube oil level too high	Check lube oil level and drain, if necessary
	Restrictor flap defective	Check or change
	Exhaust return, controller defective	Check or change
	Fuel intake temperature too high	Check system
	Fuel quality does not correspond to operator's manual	Change the fuel
	Air filter dirty / exhaust turbo charger defective	Check or change
	Air filter maintenance switch / air filter maintenance indicator defective	Check or change
	Fan defective / V-belt broken or loose	Check fan / V-belt and change if necessary
	Charge air line leaks	Check charge air line
	Intercooler dirty	Clean
	Exhaust counter pressure too high	Check or clean
	Injection line leaks	Check injection line
	Injector defective	Replace
Exhaust turbo charger defective	Replace	

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4.3 Problem remedy

4.3.1 Changing fuses

To avoid damage to the electrical system, only use fuses with the corresponding fuse rating.

Before replacing a fuse, check the affected circuit.

Fuses in the engine compartment

The fuses on the left in the engine compartment can be changed after removing the cover.

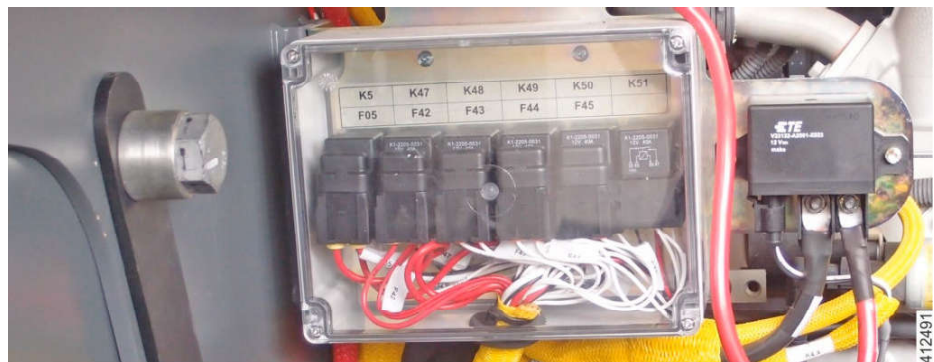


Fig. 507: Fuses in the engine compartment

Fuse	Value	Unit	Name / Function
F03	100	A	Glow main fuse
F05	20	A	Fuel pump
F42	30	A	Exhaust system heating ^{A)}
F43	15	A	NO _x sensors ^{A)}
F44	5	A	Quality, level and temperature sensors ^{A)}
F45	5	A	Restrictor flap ^{A)}

Tab. 39: Overview of fuses in the engine compartment

A) Only for emission stage IV and V

Fuses in the operator's cab

The fuses on the left in the operator's cab can be changed after removing the cover.

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	By authorised specialist staff	Confirm tasks	See page
								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			
Lubrication system											
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			Grease container: check the fill level			430
Options											
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			Air brake system: draining the pressure tank			433
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			Air brake system: checking the compressor for tight seating			
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			Air brake system: checking belt tension of compressor			
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			Air brake system: cleaning external pressure tanks			
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			Checking air brake system for leaks			
						†		Air brake system: checking the anti-freeze pump level and topping it up if necessary			

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Specification
LH-00-UREA

Tab. 62: Minimum quality requirement

5.3.6 Hydraulic oils

Liebherr recommendation

Ambient temperature	Name
	Liebherr Mineral oil
15 to 55 °C	Liebherr Hydraulic Basic 100
10 to 45 °C	Liebherr Hydraulic Basic 68
-20 to 40 °C	Liebherr Hydraulic HVI
	Liebherr PAO²²⁾ biodegradable
-25 to 45 °C	Liebherr Hydraulic Plus
-40 to 30 °C	Liebherr Hydraulic Plus Arctic

Tab. 63: Liebherr recommendation

Minimum quality requirement

Specification
EMT LH-00-Minimum-HYE

Tab. 64: Minimum quality requirement

When using hydraulic oils or filters of third party manufacturers, information about the change intervals is to be obtained from the respective manufacturer or supplier.

Oil analysis

		Dust intensive use	Normal use
Normal use (oil analysis optional)	Liebherr Mineral oil	Every 250 h, at least once a year	Every 1000 h, at least once a year
	Liebherr Hydraulic Basic 68		
	Liebherr Hydraulic Basic 100		
	Liebherr Hydraulic HVI		

LWT193517324/06/01.02.2020/en

²²⁾ PAO = Poly-alpha-olefin

Ensure that following requirements are met:

- Diesel engine is turned off.



WARNING

Hot components!
Injury.

- ▶ Let components cool down.



Fig. 534: Opening engine bonnet

- ▶ Unlock the lock with the key.



WARNING

Faulty gas cylinders!
Injury.

- ▶ Ensure that the open position is maintained by the gas cylinders.

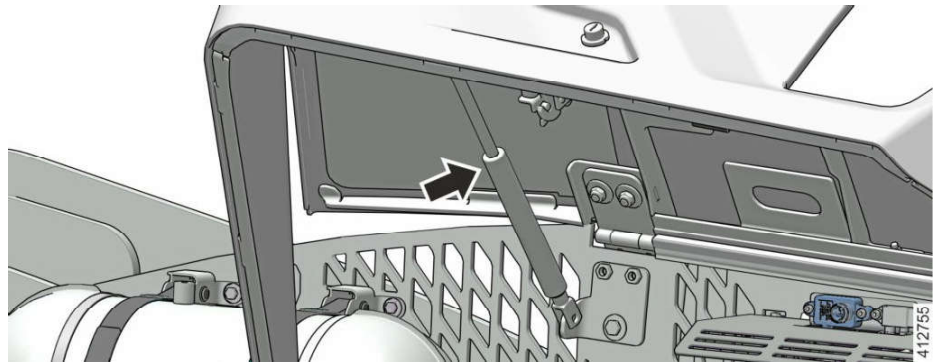


Fig. 535: Gas cylinder

- ▶ Open engine bonnet.
 - ▷ Engine bonnet is held in this position by the gas cylinders.

Troubleshooting

Engine bonnet is not held?

- ▶ Replace the faulty gas cylinders.

5.7 Cooling system

5.7.1 Cooling system: checking the coolant level

Checking the coolant level

The coolant container with filler pipe is located on upper right in the engine compartment.

Access to the filler pipe is provided via the engine bonnet.

The coolant must be in the area of mark when the diesel engine is turned off.

When the diesel engine is warm, the coolant level may also be higher.



Fig. 547: Coolant container

When the coolant is below the mark **MIN**:

- ▶ Top up the coolant.

Topping up coolant

The coolant to be added must have the correct anti-freeze concentration.



Fig. 548: Risk of scalding

5.10 Hydraulic system

5.10.1 Checking the oil level in the hydraulic tank and topping up oil

Checking the hydraulic oil level

Ensure that following requirements are met:

- The hydraulic oil is cold.



Fig. 561: Sight gauge

- ▶ Check the oil level on the sight gauge.
- If the hydraulic oil is not visible in the sight gauge:
 - ▶ Top up hydraulic oil.

Topping up hydraulic oil

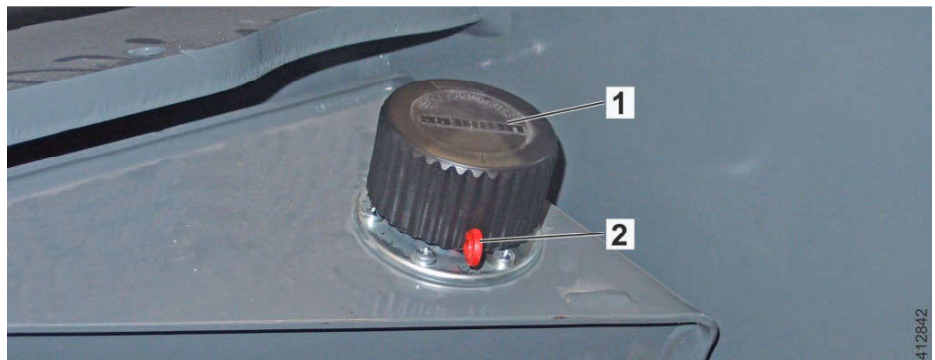


Fig. 562: Breather filter

- ▶ Insert the plug 2 on the breather filter 1.
 - ▷ Twist guard on the breather filter is released.
- ▶ Unscrew the breather filter 1 on the hydraulic tank.

5.14 Brake system

5.14.1 Service brake and parking brake: Checking function and effectiveness

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



WARNING

Persons in danger area!
Injury.

- ▶ Make sure there is nobody in danger area.
 - ▶ Carry out inspection procedure on level and clear ground.
-



WARNING

Always wear a safety belt!
Injury.

- ▶ Fasten your safety belt before starting up machine.
-

Check the service brake

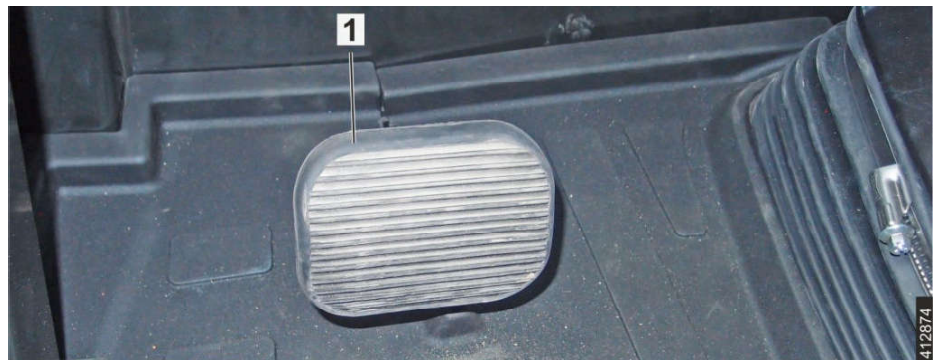


Fig. 574: Inching brake pedal

- ▶ Start machine, select forward travel direction and travel approx. 8 km/h.
 - ▶ While travelling, depress the inching brake pedal **1** fully.
 - ▷ Machine must come to a standstill abruptly.
-

Troubleshooting

If braking effect is insufficient or if there is no braking effect at all:

- ▶ Contact Liebherr customer service.
 - ▶ Do not operate the machine in the meantime.
-

Lubricating rear glide elements

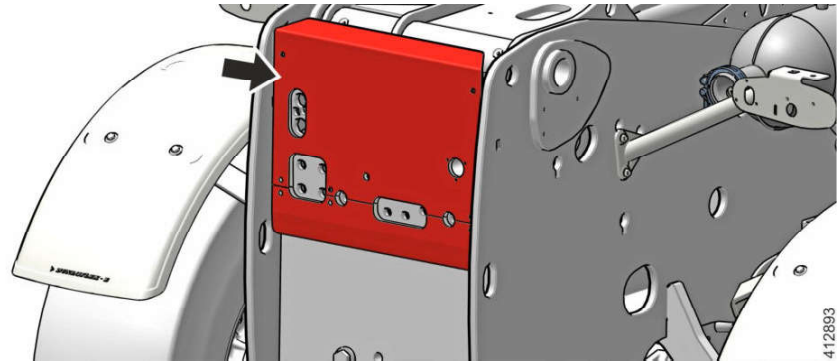


Fig. 587: Cover plate on the main frame

- ▶ Undo screws on cover plate.
- ▶ Remove cover plate.

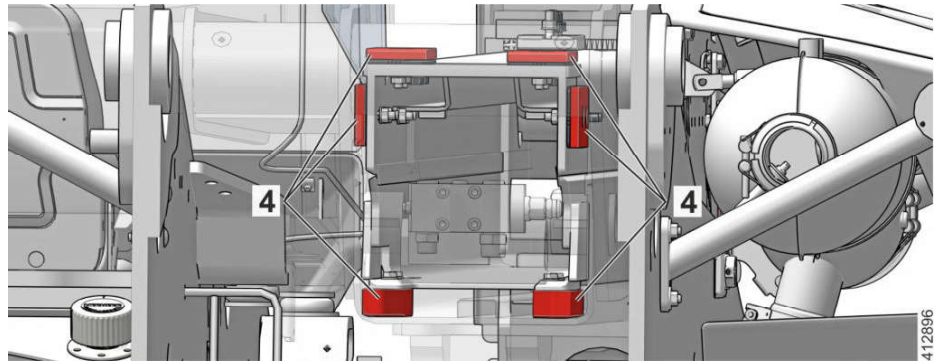


Fig. 588: Lubricating rear glide elements

4 Glide element

- ▶ Lubricate rear glide elements **4** using an appropriate tool (a long brush for example).
- ▶ Lubricate glide elements according to the lubrication chart with telescope grease.

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