

en

Operator's manual

Hydraulic excavator

Document ID

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1.2.3 Specifications

The specifications for this machine are contained in the following technical description.

	LC	mm/ft in			
A	Uppercarriage width	2,990**/ 9'10"***			
B	Uppercarriage height	3,075 /10' 1"			
B1	Uppercarriage height (handrails folded)	2,855 / 9' 4"			
C	Cab height	3,090 /10' 2"			
D	Counterweight ground clearance	1,115 / 3' 8"			
E	Rear-end length	3,075 /10' 1"			
F	Tail swing radius	3,200 /11' 6"			
G	Wheelbase	3,830 /12' 7"			
H	Undercarriage length	4,625 /15' 2"			
I	Undercarriage ground clearance	470 / 1' 7"			
J	Track height	965 / 3' 2"			
K	Track gauge	2,590 / 8' 6"			
L	Track pad width	600 / 24"	700 / 28"	800 / 31"	900 / 35"
M	Width over tracks	3,190/10' 6"	3,290 /10'10"	3,390 /11' 1"	3,490 /11' 5"
N	Width over steps	3,125/10' 3"	3,325*/10'11"	3,325*/10'11"*	3,425* /11' 3"*

* width with removable steps

** without door stop device and spacer

	Stick length m/ft in	Mono boom 6.00 m/19'8" direct mounting mm/ft in
R	Front swing radius	2.50/ 8' 2" / 3,650/12' 3.00/ 9'10" / 3,650/12' 3.50/11' 6" / 3,650/12'
S	Height with boom up	8,350/27' 5"
T	Boom height	2.50/ 8' 2" / 3,200/10' 6" 3.00/ 9'10" / 3,150/10' 4" 3.50/11' 6" / 3,150/10' 4"
U	Length on ground	2.50/ 8' 2" / 6,050/19'10" 3.00/ 9'10" / 5,200/17' 1" 3.50/11' 6" / 4,700/15' 5"
V	Overall length	10,100/33' 2"
	Bucket	1.55 m ³ /2.03 yd ³

Transport Dimensions removable elements disassembled


	Stick m/ft in	Mono boom 6.00 m/19'8" mm/ft in			
Pad width		600 / 24"	700 / 28"	800 / 31"	900 / 35"
Transport width		3,190/10' 6"	3,290/10'10"	3,390/11' 1"	3,490/11' 5"
Transport length		10,100/33'2"			
Transport height	2.50/ 8' 2"	3,200/10'6"			
	3.00/ 9'10"	3,150/10'4"			
	3.50/11' 6"	3,150/10'4"			
Bucket		1.55 m ³ /2.03 yd ³			

2 Safety warnings

2.1 Information on these instructions

2.1.1 Representation of warning messages

Warning symbol

	The warning symbol warns of potential dangers. Obey all measures marked with this symbol to avoid injury or death.
---	--




Tab. 3: Warning symbol

Grading of warning messages

The grading of warning messages is defined by following signal words:


DANGER
WARNING
CAUTION
NOTICE

Definition of warning levels

	DANGER	Indicates an immediately hazardous situation which, if not avoided, will result in death or serious injury.
	WARNING	Indicates a hazardous situation which, if not avoided, could result in death or serious injury.
	CAUTION	Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.
	NOTICE	Indicates a hazardous situation which, if not avoided, could result in property damage.

Tab. 4: Warning levels

2.1.2 Graphic symbols in these instructions

Symbol	Meaning
	Note Identifies useful information and tips.

- The spotter has the necessary education (theoretical and practical) for the following:
 - Spotting
 - Applying all necessary signal signs
- Is not under any physical or mental impairment that limits one of the prescribed requirements.
- Is not under the influence of alcohol.
- Is not under the influence of drugs.

2.4 Signs on the machine

2.4.1 Location of signs

The machine is equipped with the following signs:

- Safety signs
- Information signs
- Identification plate

Exceeding of total weight

- Make sure that total weight of machine (see identification plate) is not exceeded.
- Make sure that the machine does not exceed the total weight with heavy working tools.
- Make sure that the machine does not exceed the total weight after changing the working attachment.
- Make sure that the machine does not exceed the total weight with add-ons or after retrofitting.

2.5.5 Roll over protective structure (ROPS)

Danger to life

Damaged falling object protective structures

- Do not put machine into service with damaged falling object protective structures.
- Do not put machine into service with deformed falling object protective structures.
- Do not use falling object protective structures with structural changes.
- Do not use repaired falling object protective structures.
- Do not perform welding on falling object protective structures.
- Do not cut or saw falling object protective structures.
- Do not drill falling object protective structures.

Exceeding of total weight

- Make sure that total weight of machine (see identification plate) is not exceeded.
- Make sure that the machine does not exceed the total weight with heavy working tools.
- Make sure that the machine does not exceed the total weight after changing the working attachment.
- Make sure that the machine does not exceed the total weight with add-ons or after retrofitting.

2.5.6 Falling object protective structures (FOPS and FGPS)

Danger to life

Damaged falling object protective structures

- Do not put machine into service with damaged falling object protective structures.
- Do not put machine into service with deformed falling object protective structures.
- Do not use falling object protective structures with structural changes.
- Do not use repaired falling object protective structures.
- Do not perform welding on falling object protective structures.
- Do not cut or saw falling object protective structures.
- Do not drill falling object protective structures.

2.8 Safe work

2.8.1 Hydraulic hammer

Danger to life

Unsuitable ground

- Make sure that machine does not sink.
- Check load capacity of ground.
- Remove obstacles from working area.

Incorrect use

- If machine is equipped with undercarriage with adjustable width: Extend side frames to the stop.

Damage to machine

Incorrect use of hydraulic hammer

- Exclusively use hydraulic hammers approved by Liebherr. Use of a hydraulic hammer not approved by Liebherr will invalidate warranty on structural elements of machine.
- Exclusively use hydraulic hammer to break stone, concrete and brittle materials.
- Do not break concrete or rock by moving hydraulic hammer into and out of material.
- Operate hydraulic hammer for no more than 15 s without interruption in one location.

Incorrect use

- When movements approach cylinder stops: Reduce speed of movements.



2.9 Safe maintenance

2.9.1 Spare parts

Danger to life








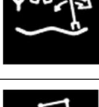
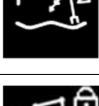

Incorrect spare parts

- Use original Liebherr spare parts wherever possible.
- Make sure that the spare parts meet the technical requirements specified by the manufacturer.
- After replacing parts, tighten loosened screw connections with prescribed tightening torque.
- Find prescribed tightening torque in supplied documentation.

Symbol	Meaning
	Control valve block bleeding completed
	Machine movements locked

Tab. 10: General status symbols

Working attachment and working tools

Symbol	Meaning
	Overload warning
	Overload warning system not available
	Control changeover activated
	Control changeover activated
	Boom adjustment active
	Lateral boom adjustment active
	Mode 1 of float position of the boom activated
	Mode 2 of float position of the boom activated
	Mode 3 of float position of the boom activated
	Float position of the boom not available

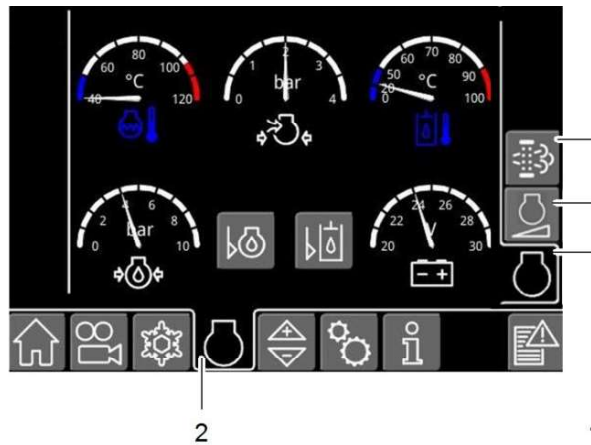





Fig. 151: Operating status menu

1 Menu buttons

2 Operating status menu

Menu buttons	Designation
	Diesel particulate filter (For more information see: 3.2.7 Diesel particulate filter submenu (option) , page 75)
	Sensor-controlled low idle automatic and automatic engine stop (For more information see: 3.2.8 Sensor-controlled low idle automatic and automatic engine stop submenu (option) , page 76)
	Measurement displays (For more information see: 3.2.9 Measurement displays submenu , page 77)

Tab. 17: Operating status menu

3.2.7 Diesel particulate filter submenu (option)

Menu call:  > 

The display of this submenu varies depending on machine configuration:

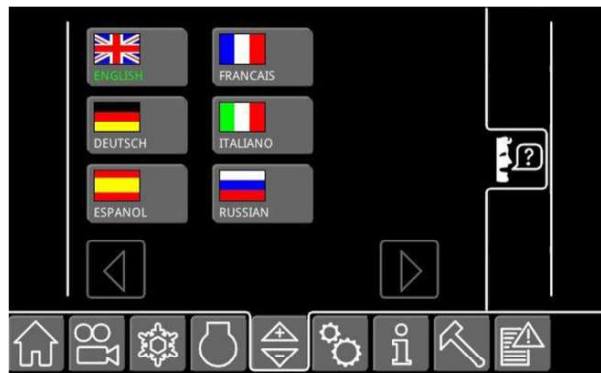


Fig. 177: Language selection submenu

- ▶ Press button for the desired language.
 - ▷ Button of selected language is framed in white.

The change of language only takes effect after the system data are stored.

- ▶ Set ignition key to 0.
- ▶ Wait 40 seconds.
- ▶ Set ignition key to 1.
 - ▷ Change of language takes effect.

3.2.22 Brightness of LED headlights submenu (option)

Menu call:  > 

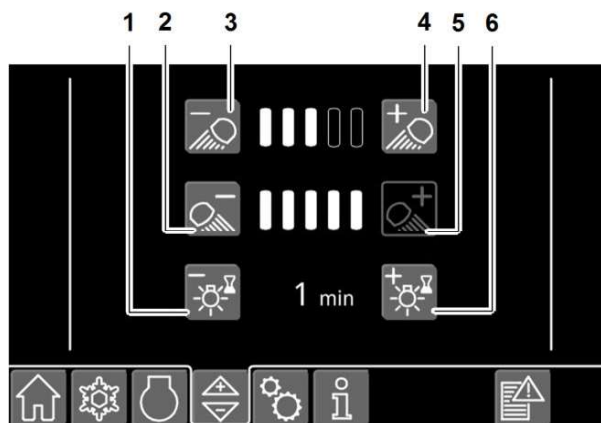


Fig. 178: Brightness of LED headlights submenu

- | | | | |
|---|--|---|--|
| 1 | Reducing duration of Leaving Home mode button | 4 | Increasing brightness of front LED headlights button |
| 2 | Reducing brightness of rear LED headlights button | 5 | Increasing brightness of rear LED headlights button |
| 3 | Reducing brightness of front LED headlights button | 6 | Increasing duration of Leaving Home mode button |

- ▷ User profiles remain saved.

3.2.32 Working tools submenu

Sensitivity of mini-joysticks submenu

The display of this submenu varies depending on machine configuration.

Controlling working tool

Menu call:  >  > 

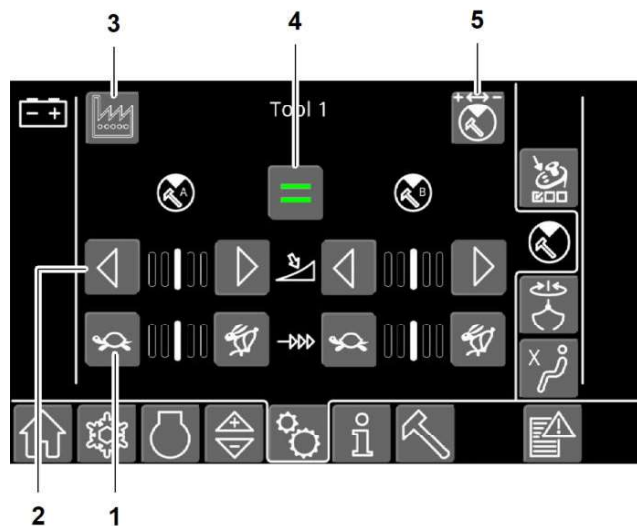


Fig. 206: Controlling working tool

- | | | | |
|---|---|---|------------------------------------|
| 1 | Adjusting speed of working tool button | 4 | Symmetrical mode button |
| 2 | Adjusting progressivity of control button | 5 | Reversing control direction button |
| 3 | Factory settings button | | |

Operating the mini-joystick causes the affected adjustment area to appear in green.

Asymmetrical mode

With the asymmetrical mode the speed and progressivity of the control direction can be adjusted independently of each other.

- ▶ Activate asymmetrical mode: Press *symmetrical mode* button **4**.
 - ▷ Symbol is displayed in white.

Symmetrical mode

The symmetrical mode is activated as standard.

- ▶ Activate symmetrical mode from asymmetrical mode: Press *symmetrical mode* button **4**.
 - ▷ *Symmetrical mode* button **4** flashes 5 seconds.
 - ▷ Symbols of working tool are displayed as yellow buttons.

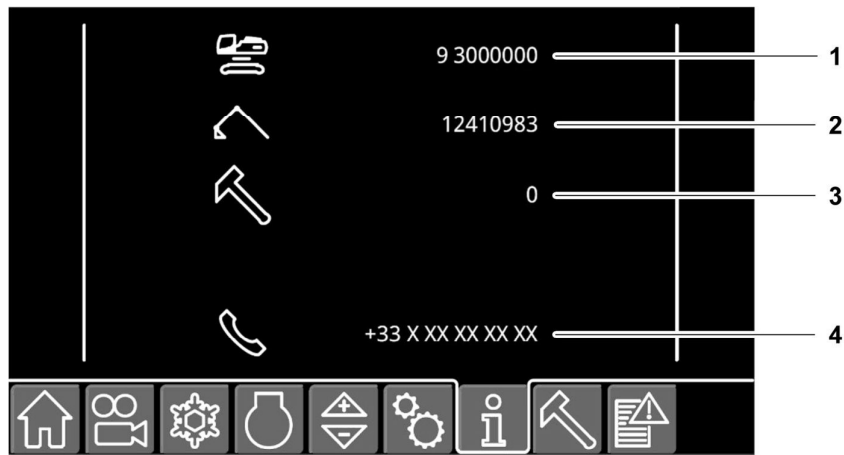


Fig. 226: CodingKey submenu

- | | | | |
|---|---------------------------------|---|----------------------------------|
| 1 | CodingKey of machine | 3 | Number of installed working tool |
| 2 | CodingKey of working attachment | 4 | Phone number of dealer |

3.2.45 Tool Control menu

Menu call:

In *Tool Control* menu a special working tool can be selected and the corresponding parameters can be activated.

It is possible to program multiple special working tools individually. The settings of the special working tools are saved after the ignition is switched off. For setting and saving parameters for special working tools contact Liebherr customer service.

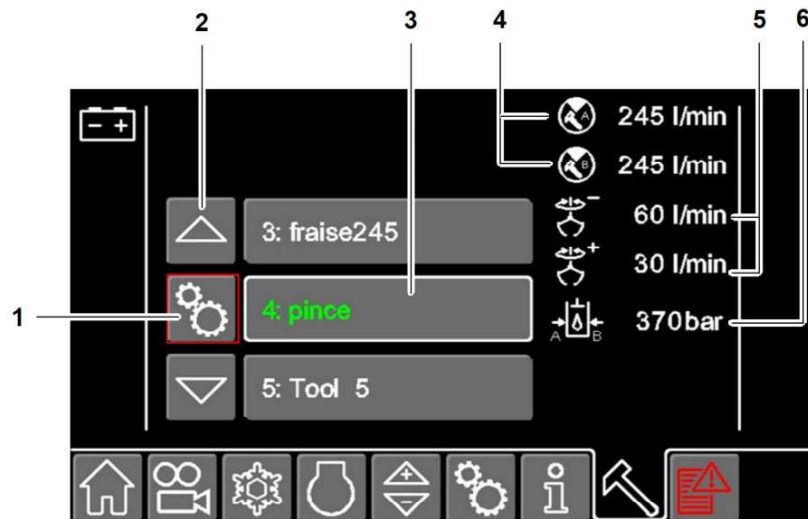


Fig. 227: Tool Control menu

- | | | | |
|---|---------------------------|---|---|
| 1 | Tool settings menu button | 4 | Maximum flow rate in high pressure circuit of special working tool during operation |
|---|---------------------------|---|---|

See next page for continuation of the image legend

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3.3.5 Folding console

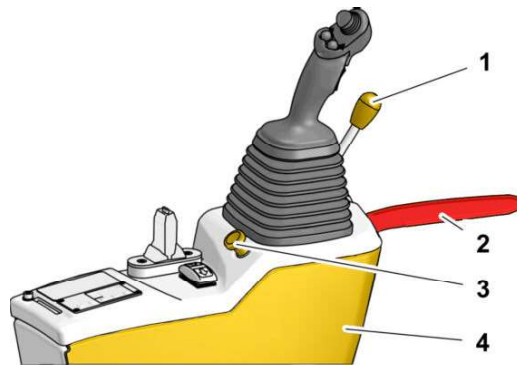


Fig. 261: Folding console

- 1 Console handle
- 2 Safety barrier
- 3 Unlocking button
- 4 Folding console

Position of folding console	State of servo control	Functions
	Servo control is activated.	Selected brake function is activated again.
	Servo control is deactivated.	Parking brake is applied. Slewing brake is applied. Diesel engine can be started.

Tab. 28: Positions of folding console

Activating servo control



DANGER
Unexpected machine movement!
Danger to life.

► Exclusively move folding console down with console handle.



Note
Servo control is activated 1 second after folding down folding console.

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**DANGER**

Defective safety belt!
Danger to life.

- ▶ Check condition and function of safety belt.
- ▶ Immediately replace damaged parts.

Putting on safety belt

- ▶ Unroll safety belt from belt reel 2.
 - ▷ Safety belt can lock in case of sudden unrolling.
- ▶ Insert belt buckle latch 1 in belt buckle 3.

Releasing safety belt

- ▶ Press unlocking button 4.
 - ▷ Safety belt is wound onto belt reel 2.

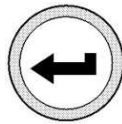
3.3.8 Confirmation button

Fig. 282: Confirmation button

Several functions of machine require a confirmation (for example for functions of shut-offs and limitations):

- Activating functions
- Deactivating functions
- Changing the settings of functions

Activating function via key on control unit

- ▶ Preselect function: Press corresponding key on control unit.
 - ▷ *Confirmation required* status symbol appears on the display:



- ▷ LEDs in key flash.



- ▶ Activate function: Press confirmation button within 5 seconds.
 - ▷ LEDs in key light up.

If function is not activated:

- ▶ Preselect and confirm function again.

Deactivating function via key on control unit

- ▶ Preselect function: Press corresponding key on control unit.
 - ▷ *Confirmation required* status symbol appears on the display:

Adjusting left mirror electrically (option)

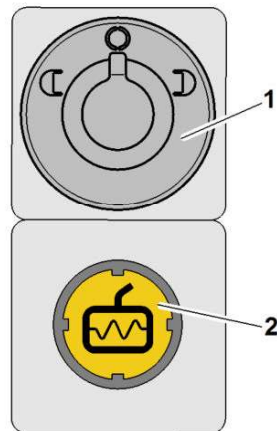


Fig. 306: Control unit for electrical mirror

1 Rotary switch

2 Mirror heater button

Make sure the following preconditions are met:

- Machine is parked on level ground.

Adjusting mirrors

- ▶ Turn rotary switch 1 left.
- ▶ Operate rotary switch 1 to adjust mirrors.

Mirror heater (option)

- ▶ Switch on mirror heater: Press *mirror heater* button 2.
 - ▷ *Mirror heater* button 2 lights up.
- ▶ Switch off mirror heater: Press *mirror heater* button 2.
 - ▷ *Mirror heater* button 2 goes out.

Right mirror

Checking green area covered by right mirror

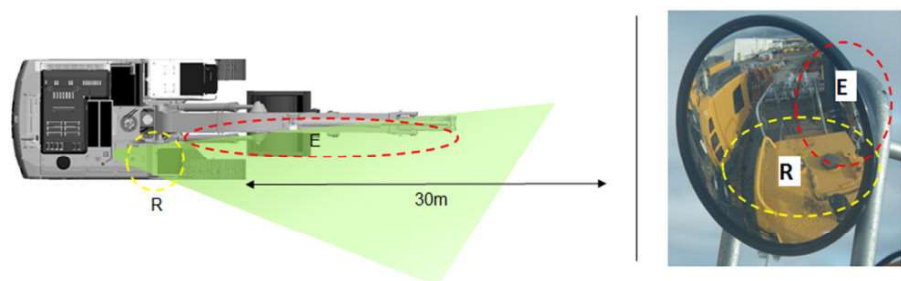


Fig. 307: Checking green area covered by right mirror

- ▶ Align uppercarriage parallel to undercarriage.

Travel gear

- ▶ Check track tension. (For more information see: [5.12.1 Checking track tension, page 329](#)) Re-tighten if necessary. (For more information see: [5.12.2 Tightening track, page 330](#))

Working attachment

- ▶ Lubricate working tool.
- ▶ Check pin connections.
- ▶ Check steel structure for cracks.

If quick coupler is installed:

- ▶ Check that warning sound sounds and display status symbols appear.
- ▶ Check condition of locking pins, hydraulic hoses, electric cables and safety latches.

3.4.2 Refuelling

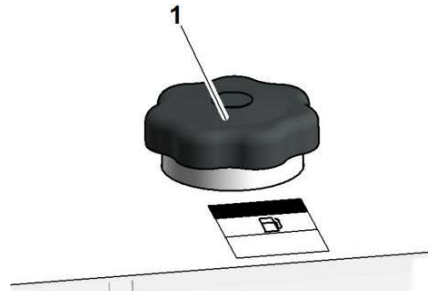


Fig. 333: Fuel tank

1 Tank lid



DANGER

Explosion of highly flammable fuel!
Danger to life.

- ▶ Avoid naked flames.
- ▶ Do not smoke.



Note

Sulphur content of fuel affects change interval of engine oil and oil filter.

- ▶ Adhere to sulphur content of fuel and change intervals of engine oil. (For more information see: [Difficulty factors, page 274](#))

If sulphur content of fuel is not known:

- ▶ Determine sulphur content with oil analysis set.

3.4.3 Refuelling with electric refuelling pump (option)

The electric refuelling pump is behind the front right side door.

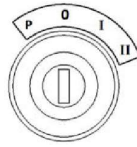
NOTICE

Incorrect cold start of the diesel engine!
Damage to diesel engine.

- ▶ Start diesel engine.
- ▶ Let diesel engine run at idle speed for 15 seconds.
- ▶ Slowly warm up diesel engine at medium load and medium speed.

Make sure the following preconditions are met:

- Fuel tank is full.
- Battery main switch is **ON**.
- Safety lever or folding console is up.
- Joysticks and pedals are in neutral position.
- Nobody is in danger zone of machine.



- ▶ Warn bystanders before starting machine: Activate horn. (For more information see: 3.3.9 Horn, page 127)
- ▶ Set ignition key to **I**.
 - ▷ Autocheck begins.
 - ▷ All LEDs briefly light up.
- ▶ During autocheck, check that the LEDs are functioning correctly.

If LEDs are defective:

- ▶ Have LEDs replaced.
- ▶ Press **START STOP** key for about half a second.
 - ▷ During starting of diesel engine, LEDs in **START STOP** key flash.
 - ▷ LEDs in **START STOP** key light up as soon as diesel engine has started.

**Troubleshooting**

Diesel engine does not start?

Starting the diesel engine ends automatically after 30 seconds. Starting can be extended beyond 30 seconds by pressing and holding **START STOP** key while starting. If two attempts to start fail, there is probably a malfunction of the diesel engine.

- ▶ Wait for at least 1 minute before the next attempt to start the diesel engine.
- ▶ Press **START STOP** key and keep it pressed continuously while starting.
- ▶ If there are two unsuccessful attempts to start the diesel engine, establish the cause of the fault and eliminate it.

Starting at low temperatures

At low outside temperatures, preglowing of the diesel engine is activated.



Engine preglowing activated status symbol appears on the display during preglowing of diesel engine.

When preglowing of the diesel engine is in progress:

- ▶ Do not start diesel engine.

When preglowing of diesel engine has finished:

- ▶ Start diesel engine.

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Travelling sensitively

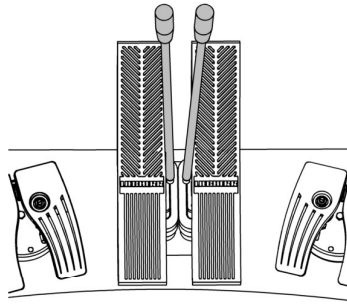


Fig. 363: Driving lever

When sensitive travel is required:

- ▶ Insert driving levers in accelerator pedals.

At the end of work:

- ▶ Pull out driving levers and stow in operator's cab.

Travelling in creeper gear and in automatic travel mode

The creeper gear permits sensitive travelling and improves travelling behaviour on difficult ground.

In automatic travel mode, the travel speed is adjusted to the ground conditions.

Key	Status of LEDs	Travelling	Travel speed
	○ ○ ○	Manual	Fast
	● ● ●		Slow
	● ● ○	Automatic	Slow
	● ○ ○		Fast

Tab. 34: Travel modes

- ▶ Select travel mode: Press *creeper gear* key.

Braking



DANGER

Machine tipping over!
Danger to life.

- ▶ Release accelerator pedals slowly.
- ▶ Release accelerator pedals.
 - ▷ Accelerator pedals return to neutral position.
 - ▷ Machine is braked hydraulically.
 - ▷ Mechanical brake blocks relevant gearbox after a few seconds.
 - ▷ Machine stops.

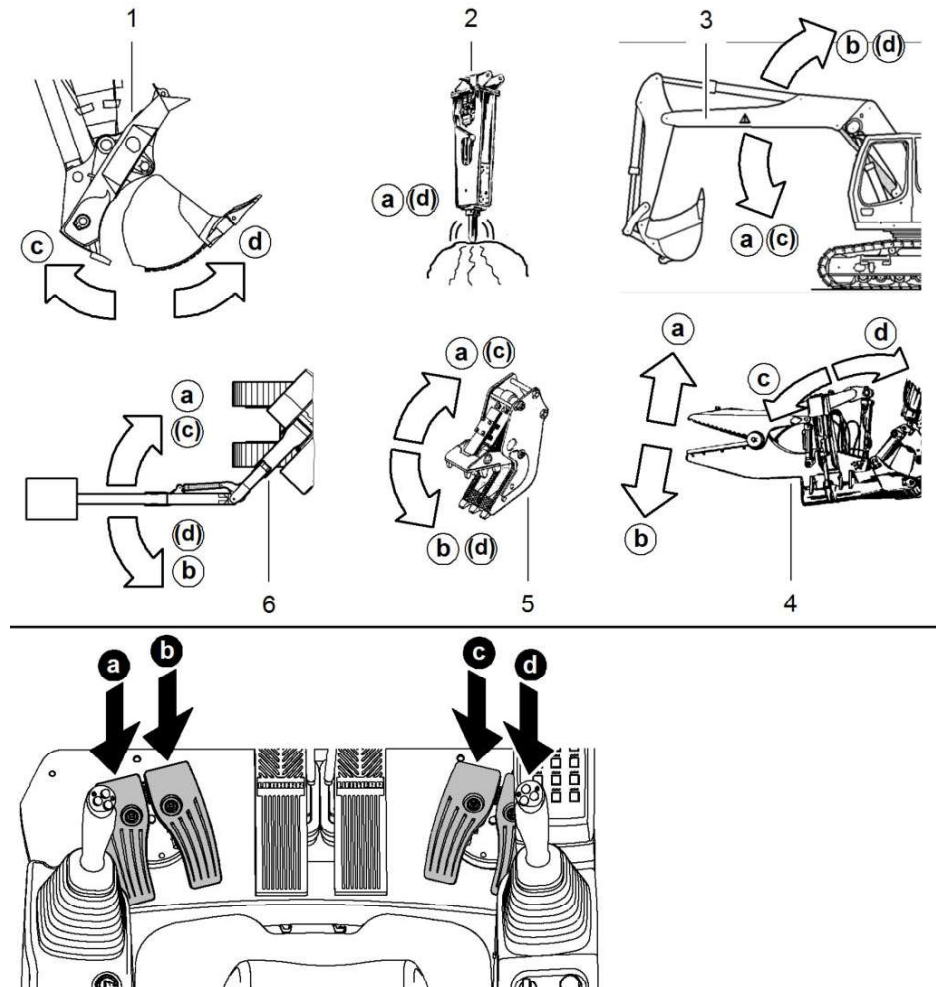


Fig. 395: Controlling special working attachment with double pedal

- | | | | |
|---|------------------------|---|------------------------------|
| 1 | Bottom dump shovel | 4 | Scrap shear |
| 2 | Hydraulic hammer | 5 | Concrete shear or pulveriser |
| 3 | Height-adjustable boom | 6 | Laterally adjustable boom |

If machine has only one special working attachment, this is controlled with left double pedal.

If machine has two special working attachments:

- First is controlled with left double pedal.
- Second is controlled with right double pedal.

Control description sticker information sign describes controls of double pedals.



WARNING

Unintended movements of the machine!
Danger to life.

- Before working with machine, check assignment and function of controls.

3.4.25 Control changeovers for joysticks (option)

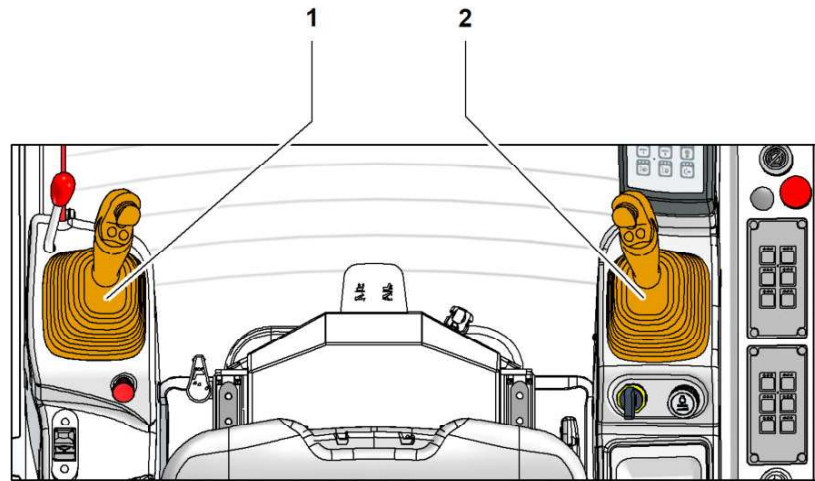


Fig. 418: Control changeover

1 Left joystick

2 Right joystick

Activating or deactivating control changeovers



WARNING

Unintended movements of the machine!
Danger to life.

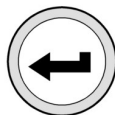
- ▶ Before working with machine, check assignment and function of controls.

Make sure following requirements are fulfilled:

- Joysticks are not actuated.



- ▶ Activate or deactivate control changeovers: Press *control changeovers* key.
 - ▷ *Confirmation required* status symbol appears on the display.
 - ▷ LEDs in *control changeover* key flash.



- ▶ Press confirmation button within 5 seconds.

Retracting and extending hydraulic cylinders

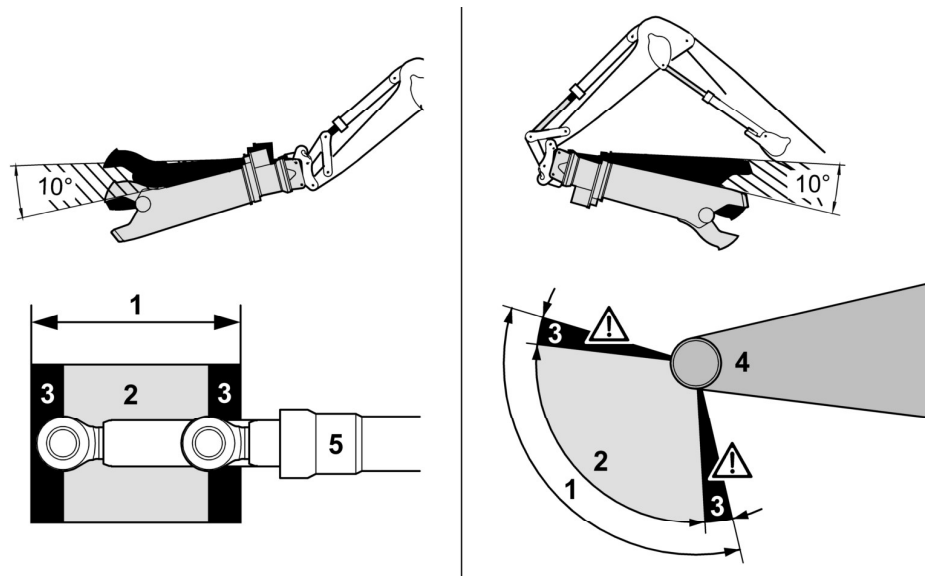


Fig. 453: Movement range of hydraulic cylinders

- | | | | |
|---|---|---|--------------------|
| 1 | Possible movement range | 4 | Boom or stick |
| 2 | Permitted movement range with safety angle of 10° to end position | 5 | Hydraulic cylinder |
| 3 | Prohibited movement range | | |

- ▶ Do not extend and retract hydraulic cylinder of working attachment to the stop during operation of machine.
- ▶ Adhere to permitted movement range with safety angle of 10° to end position 2.
- ▶ Slowly retract and extend hydraulic cylinders near end stops.

Lifting machine

- ▶ Do not lift machine using working attachment.

In case of unintentional lifting:

- ▶ Do not use working attachment to brace falling movement.
- ▶ Slowly lower machine to the ground.

Diesel engine

- ▶ Do not let diesel engine run at idle speed for long periods.
- ▶ Shut off diesel engine when machine is not in use.

Travel gear

- ▶ Position sprocket wheel in rear area of machine in the following cases:
 - Travelling over longer distances
 - Pipe-laying work
- ▶ If moving earth in longitudinal direction, for example when excavating a ditch, position working attachment above idler-wheels to travel backwards.

2 Closing clamshell

- ▶ Position stick at right angle to ground.
- ▶ Fully open clamshell buckets.
- ▶ Lower clamshell to the ground.
- ▶ Fully close clamshell buckets. At the same time lift boom slightly.
- ▶ Fully close clamshell buckets.
- ▶ Raise boom.

Dumping digging material

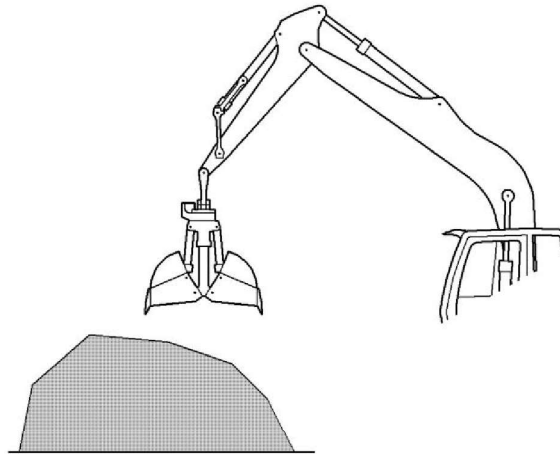


Fig. 464: Dumping digging material



WARNING

Machine tipping over!
Danger to life.

- ▶ Make sure there are no unauthorised persons in danger zone.
 - ▶ Make sure that machine is on load-bearing and level ground.
 - ▶ Do not raise heavy loads with boom and stick extended too far out.
-
- ▶ Position working attachment above dumping point.
 - ▶ Open clamshell buckets.

Installing bucket with special seal

NOTICE

Incorrectly set throttle check valves!
Damage to working attachment.

- ▶ Adapt throttle check valves to bucket size: Have throttle check valves adjusted by Liebherr customer service or authorised specialist staff.
-

Make sure the following preconditions are met:

- Grease used is approved. (For more information see: [5.3.9 Greases, page 280](#))
- ▶ Position working attachment so that bearings of stick **7** are aligned with bearings (stick side) **A** of bucket **1**.
- ▶ Insert pin **6** and sealing rings in bearing (stick side) **A** of bucket **1**.
- ▶ Insert O-rings **5** and covers **4**.
- ▶ Position working attachment so that hole of link **2** is aligned with bearings (link side) **B** of bucket **1**.
- ▶ Insert pin **6** in bearing (link side) **B**: Use same procedure as for inserting pin **6** in bearing (stick side) **A**.
- ▶ Lubricate pins **6** via grease fitting until clear grease emerges from bearings.

If stopcocks **9** are available:

- ▶ Set stopcocks **9** to **0**.

Removing bucket with special seal

- ▶ Remove covers **4** and O-rings **5**.
- ▶ Pull pins **6** out of bearings. Raise working attachment slightly if necessary.

3.7.4 Using quick coupler



WARNING

Pressurised hydraulic lines!
Injuries.

- ▶ Before installing and removing depressurise hydraulic system.
 - ▶ Follow operator's manual of the quick coupler manufacturer.
-

3.7.5 Installing and removing grapple on the stick

Two people are required for installing and removing a grapple.

If machine is equipped with dozer blade or support blade:

- ▶ Position idler-wheel 1 on front of machine.

or

If machine is equipped with neither dozer blade nor support blade:

Position machine with sprocket wheel 2 in the forward travel direction.

- ▶ Use driving lever for sensitive travel of machine.
- ▶ Align machine in straight line with loading ramp.

If machine is equipped with undercarriage with adjustable width:

- ▶ Retract side frames.
- ▶ Drive over loading ramp in straight line.
- ▶ Drive machine onto low-loader.

Positioning machine on low-loader

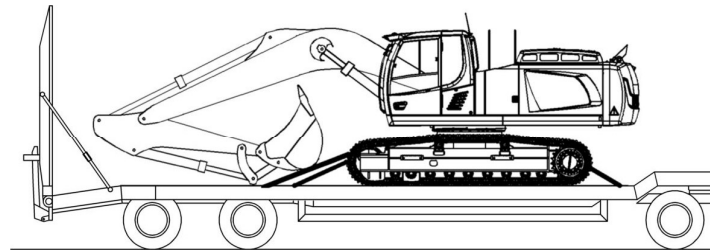


Fig. 479: Positioning machine on low-loader

Positioning uppercarriage

- ▶ Turn uppercarriage 180°.

Positioning standard attachment

- ▶ Lower attachment to low-loader platform.
- ▶ Retract stick to maximum: Deactivate movement restriction for stick and float position of the boom. (For more information see: [3.5.1 Movement restriction for stick \(option\)](#), page 186) (For more information see: [3.4.19 Float position of boom \(option\)](#), page 171)

Positioning Multi-User attachment

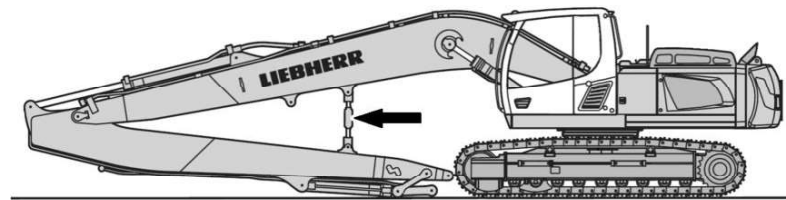


Fig. 480: Securing Multi-User attachment

- ▶ Retract Multi-User attachment without fully extending stick cylinder.
- ▶ Lower Multi-User attachment to low-loader platform.

3.10.2 Lowering working attachment when engine is shut off

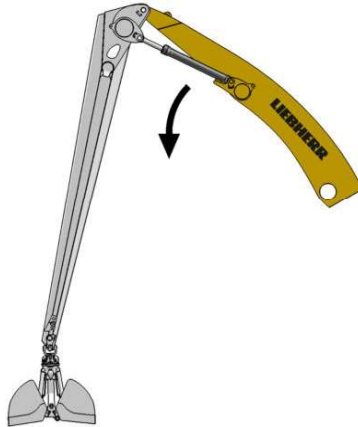


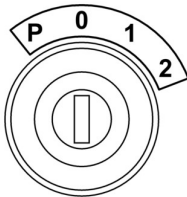
Fig. 489: Lowering working attachment when engine is shut off



Note

Limited pressure reserve!

- ▶ When engine is shut off, move joysticks exclusively to lower working attachment.
- ▶ When engine is shut off, press pedals exclusively to lower working attachment.



- ▶ Set ignition key to 1.
- ▶ Move folding console down.
- ▶ Lower working attachment: Operate joystick or pedal.

Malfunction / error	Cause	Remedy
Diesel engine switches off inadvertently.	Power supply interrupted	Contact Liebherr customer service.
	Leak or too low pressure in low pressure fuel system	Have leak test performed.
	Fault in electronic components	Check error memory of diesel engine control unit. Contact Liebherr customer service.
Low diesel engine power (reduced power)	Malfunction in fuel system (clogged, leaking)	Perform visual inspection and search for leaks. Replace fuel fine filter. Contact Liebherr customer service.
	Charging pressure too low	Tighten loose clamps. Replace seals and hoses. Clean air filter. Repair turbo charger.
	Intake air temperature too high (automatic power reduction by diesel engine control unit)	Clean intake air filter. Check blower power. Reduce ambient temperature. Contact Liebherr customer service.
	Coolant temperature too high (automatic power reduction by diesel engine control unit)	Check the cleanliness of radiator. Check fan and thermostat. Check coolant level. Contact Liebherr customer service.
	Fuel temperature too high (automatic power reduction by diesel engine control unit)	Contact Liebherr customer service.
	Area of deployment more than 5905' 6" ft-in above sea level	No remedy; power of diesel engine is automatically reduced.
	Injection nozzles blocked or not injecting.	Contact Liebherr customer service.
	Diesel engine compression too low	Contact Liebherr customer service.
	Fault in electronic components	Check error memory of diesel engine control unit. Contact Liebherr customer service.
	Clogged exhaust treatment system	Contact Liebherr customer service.
Inadequate diesel engine braking power	Fault in electronic components	Contact Liebherr customer service.

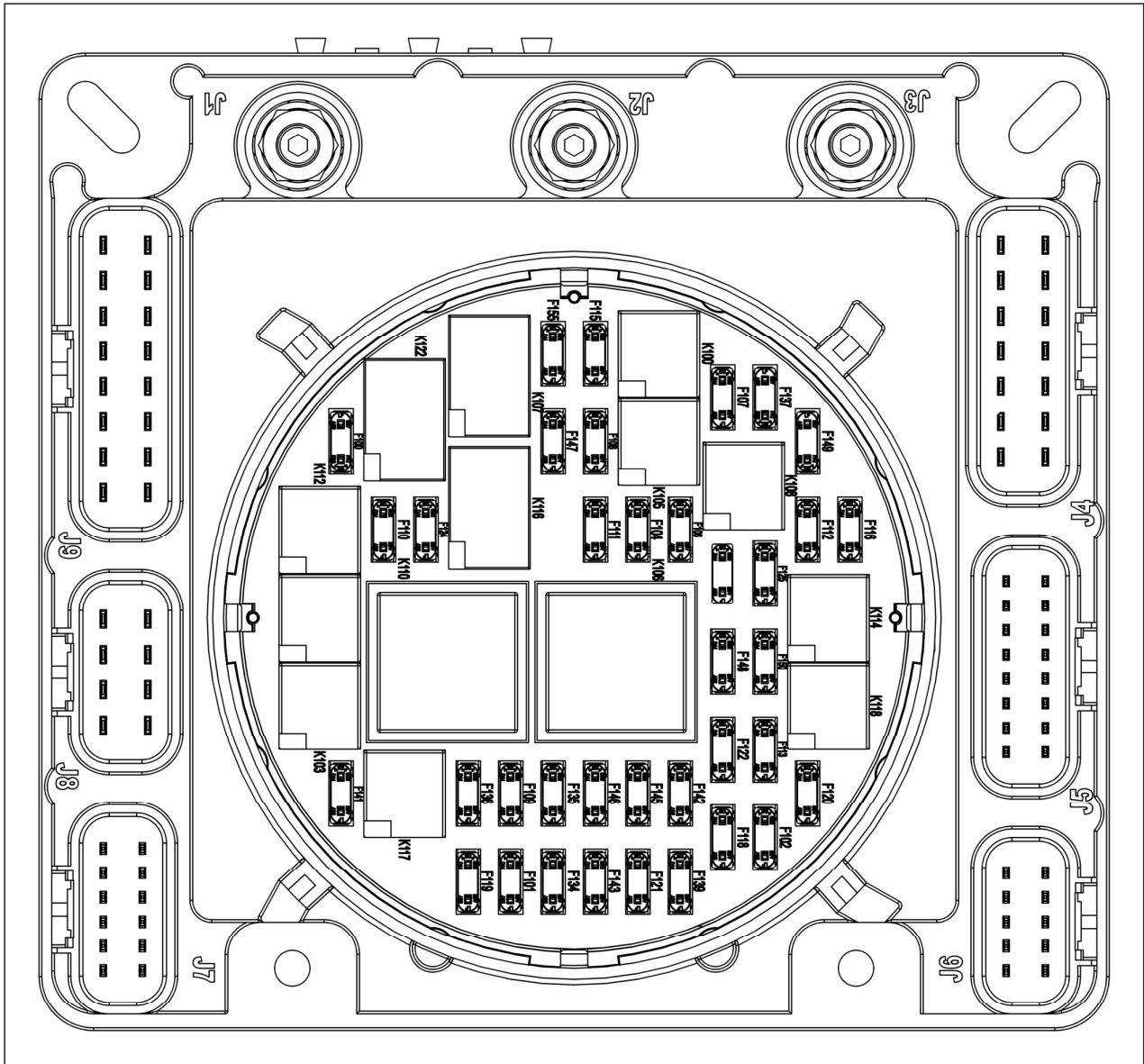


Fig. 543: Electric cabinet E75

	Current value [A]	Function
Fuses		
F100	5	Headlight Service Pack Headlight Coming home & Leaving home
F101	10	Tool change, not Liebherr
F102	10	Diagnostic interface
F104	5	Beacon on operator's cab and beacon on counterweight
F106	30	Front uppercarriage working headlight
F107	20	Power supply bank A179

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5.2 Filling quantities and lubrication chart

5.2.1 Filling quantities

Lubricants

Designation	Quantity ¹⁴⁾
Diesel engine	7.4 gal
Hydraulic system: System capacity	125.48 gal
Hydraulic system: Oil change volume	66.04 gal
Hydraulic system: Tank capacity	63.14 gal
Slewing gearbox	1.9 gal
Travel gearbox	2 x 1.14 gal
Pump distributor gear	3.38 liq qt

Tab. 49: Filling quantities for lubricants

Fuels and operating fluids

Designation	Quantity ¹⁴⁾
Fuel tank ¹⁵⁾	163.79 gal
Diesel exhaust fluid tank	23.78 gal
Air conditioning	2.78 lb
Cooling system	13.21 gal
Windscreen washer system	1.4 gal

Tab. 50: Filling quantities for fuels and operating fluids

¹⁴⁾ Guidance values

¹⁵⁾ For France: Fuel GNR (Gazole Non Routier)

Designation	Air conditioning unit
Global warming potential	1430
CO ₂ equivalent of 2.20 lb R134a at 77 °F	3,153 lb

Tab. 60: Refrigerant

Adhere to machine-specific filling quantity of air conditioning.

5.3.5 Coolant

Requirements for water used

Make sure that water used meets the following requirements:

- In accordance with directive on drinking water of the World Health Organisation (WHO) from 2006

Corrosion inhibitors

Liebherr recommendation

Description	Manufacturer
Caltex XL Corrosion Inhibitor Concentrate	Chevron Texaco
Chevron Heavy Duty Extended Life Corrosion Inhibitor Nitrite Free (ELC)	Chevron Texaco
Havoline Extended Life Corrosion Inhibitor (XLI)	Chevron Texaco
Total WT Supra	Total, Paris

Tab. 61: Liebherr recommendation with mixing ratio 50:50

Anti-freeze and corrosion protection agent

Liebherr recommendation

Type	Description
Concentrate	Liebherr-Antifreeze OS Concentrate
Premix ^{A)}	Liebherr-Antifreeze OS Mix

Tab. 62: Liebherr recommendation

Ambient temperature	Mixing ratio
Down to -58 °F	40 % water 60 % anti-freeze and corrosion protection agent
Down to -35 °F	50 % water 50 % anti-freeze and corrosion protection agent

Tab. 63: Mixing ratio

5.5 Preparing for maintenance

5.5.1 Maintenance procedures

Definition of maintenance tasks



Note

Put machine in maintenance position before beginning maintenance tasks. (For more information see: [5.5.3 Putting machine in maintenance position, page 287](#))

Following maintenance tasks are defined:

- Lubricate complete machine.
- Check complete machine for cracks.
- Change fuels and operating fluids.
- Replace filter.
- Clean components.
- Check hydraulic system.
- Perform visual inspection for defects.

Definition of visual inspection

Symbol	Meaning
	Visual inspection Indicates places to be examined by visual inspection.

Tab. 81: Symbol of visual inspection

Visual inspection is a visual inspection process of the complete machine and individual components.

The legal basis for visual inspection is provided by DIN EN 13018 or country-specific standards, ordinances and regulations.

Visual inspection without aids

Criteria for the visual inspection without aids are:

- An uninterrupted optical path between the eyes of the inspector and the inspected surface.
- Examination of the complete machine and individual components with the naked eye.

Visual inspection with aids

Criteria for the visual inspection with aids are:

- An interrupted optical path between the eyes of the inspector and the inspected surface.
- Examination of the complete machine and individual components with suitable aids such as mirrors, magnifiers and lighting.



Fig. 567: Cold humid climate

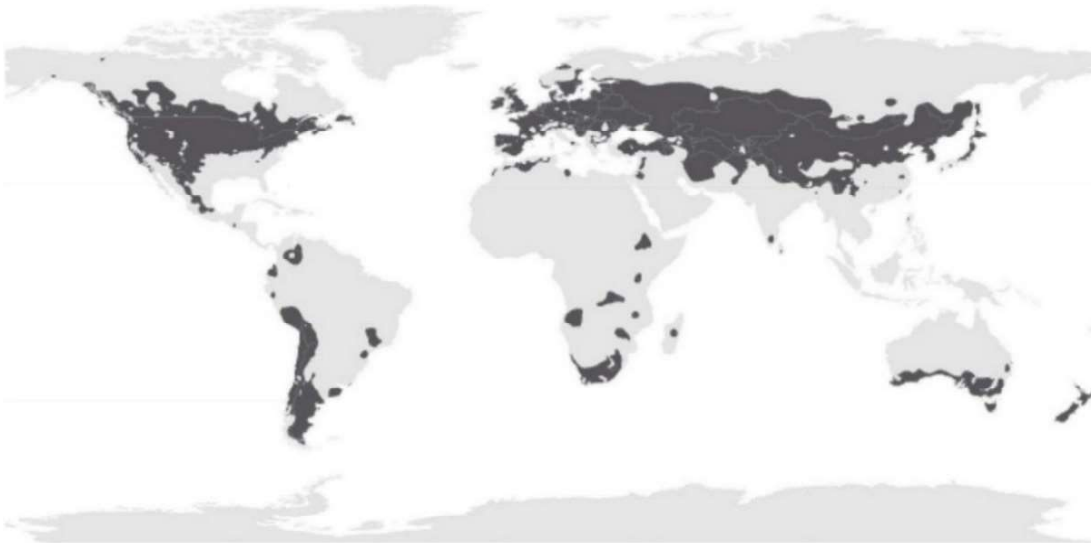


Fig. 568: Warm temperate climate

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Manually lubricating bearings

NOTICE

Insufficient lubrication!
Damage to bearings.

- ▶ Make sure that grease emerges at all lubricating points.
 - ▶ Check grease fitting for damage.
 - ▶ Check lubricating bores for blockages.
 - ▶ Check viscosity of grease.
-

Lubricate following lubricating points manually:

- Lubricating points on quick coupler (For more information see: [5.2.2 Lubrication chart, page 266](#))
- Lubricating points on working tools (For more information see: [5.2.2 Lubrication chart, page 266](#))
- Lubricating points on undercarriage (For more information see: [5.2.2 Lubrication chart, page 266](#))
- Lubricating points on uppercarriage (For more information see: [5.2.2 Lubrication chart, page 266](#))
- ▶ Prepare hand grease gun.
- ▶ Adhere to lubrication chart. (For more information see: [5.2.2 Lubrication chart, page 266](#))
- ▶ Remove protective cap before lubrication.
- ▶ Inject grease into grease fitting until grease emerges from bearings.
- ▶ Put on protective cap after lubricating.

5.7.3 Checking components for cracks

NOTICE

Incorrect check!
Damage to machine.

- ▶ Perform visual inspections as per maintenance and inspection schedule.
 - ▶ Check components for cracks.
-

5.8.8 Diesel particulate filter (option): Activating and deactivating regeneration

The diesel particulate filter reduces the amount of pollution particles output with the exhaust gases. During regeneration, the particles retained in the diesel particulate filter are combusted.

Manual regeneration

Regeneration lasts 50 minutes.

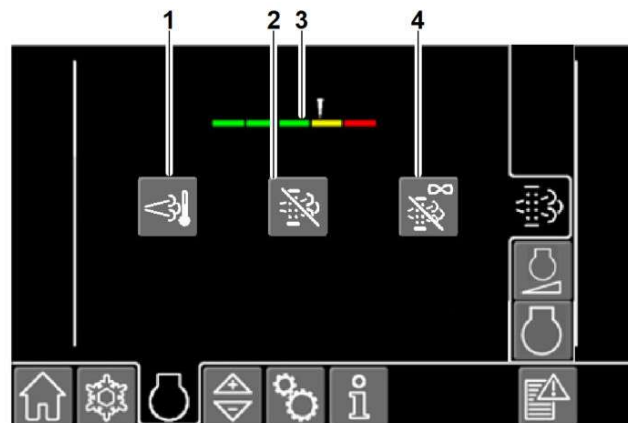


Fig. 580: Diesel particulate filter submenu

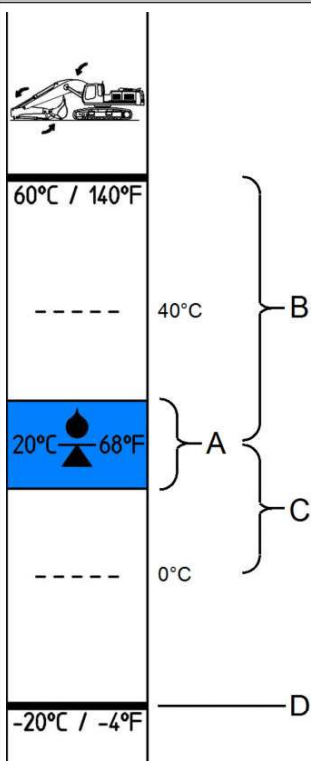
- 1 Activating regeneration button
- 2 Blocking regeneration button
- 3 Contamination level
- 4 Blocking regeneration permanently button

The following table shows in which cases regeneration is required.

	Contamination level	End of contamination level
Status symbols shown on the display		
Meaning	Diesel particulate filter contaminated	Diesel particulate filter not in operation
Consequences	—	Engine power and hydraulic flow restricted to 50 %
Measure	Regeneration required	Contact Liebherr customer service.

Tab. 96: Contamination level

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Oil sight glass	Hydraulic oil temperature	Required hydraulic oil level
	Approximately 68 °F	In blue area A
	Between 68 and 140 °F	In area B
	Between 32 and 68 °F	In area C
	Below 32 °F	Above D

Tab. 97: Required hydraulic oil level

Make sure following requirements are fulfilled:

- Machine is in maintenance position. (For more information see: [5.5.3 Putting machine in maintenance position, page 287](#))

Recommended hydraulic oil temperature for checking hydraulic oil level is approximately 68 °F.

- ▶ Check hydraulic oil temperature shown on the display. (For more information see: [3.2.9 Measurement displays submenu, page 77](#))
- ▶ Check that hydraulic oil level in oil sight glass 3 corresponds to required hydraulic oil level. (see: [tab. 97, page 325](#))

or

Check that the hydraulic oil level displayed on the display corresponds to required hydraulic oil level. (For more information see: [3.2.9 Measurement displays submenu, page 77](#))

If hydraulic oil level does not correspond to required hydraulic oil level:

- ▶ Fill with hydraulic oil. (For more information see: [Filling with hydraulic oil, page 325](#))

Filling with hydraulic oil

NOTICE

Incorrect filling with hydraulic oil!
Hydraulic system is damaged.

- ▶ Fill hydraulic tank via return filter.

5.14 Operator's cab, heating and air conditioning

5.14.1 Filling with windscreen washer fluid

The windscreen washer tank is in front of the radiators.

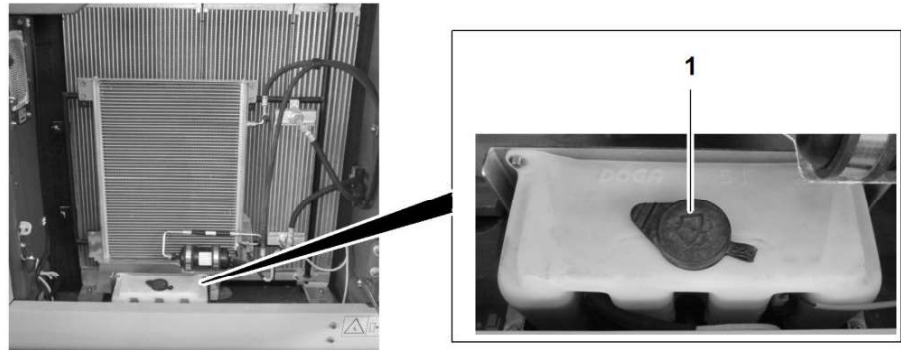


Fig. 601: Windscreen washer tank

1 Cover

- ▶ Open cover 1 of windscreen washer tank.
- ▶ Fill with windscreen washer fluid.
- ▶ Close cover 1 of windscreen washer tank.

5.14.2 Heating: Checking function

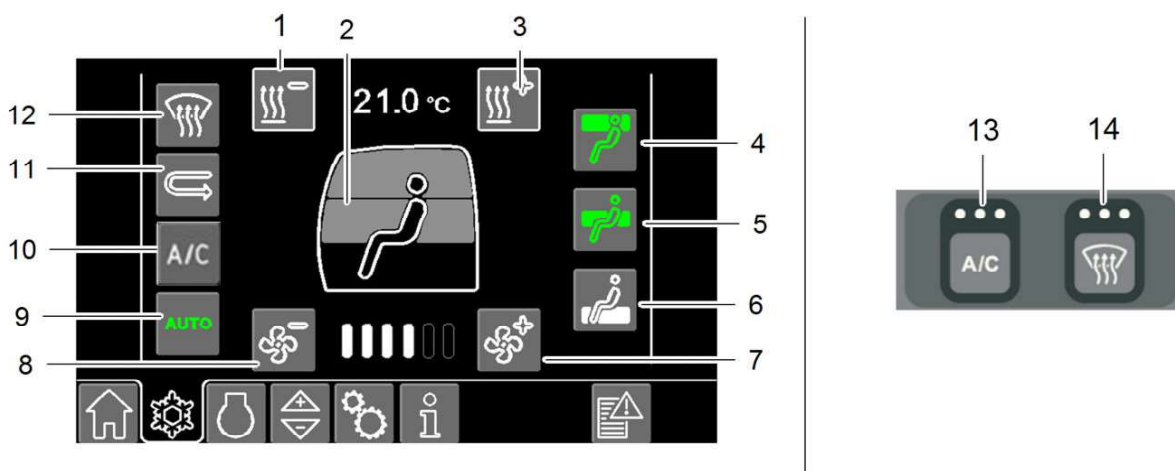


Fig. 602: Air conditioning unit menu and buttons of control unit A

1 Reducing temperature button 6 Foot area air supply button

11 Recirculated air button

[See next page for continuation of the image legend](#)

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