en **Operator's manual**

Crawler loader

Document ID

ORIGINAL OPERATOR'S MANUAL

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Product ID

Manufacturer: Liebherr-Werk Telfs GmbH
Type: LR 626
Type no.: 1327
From Serial no.: 15905

Conformity: CE

Contact

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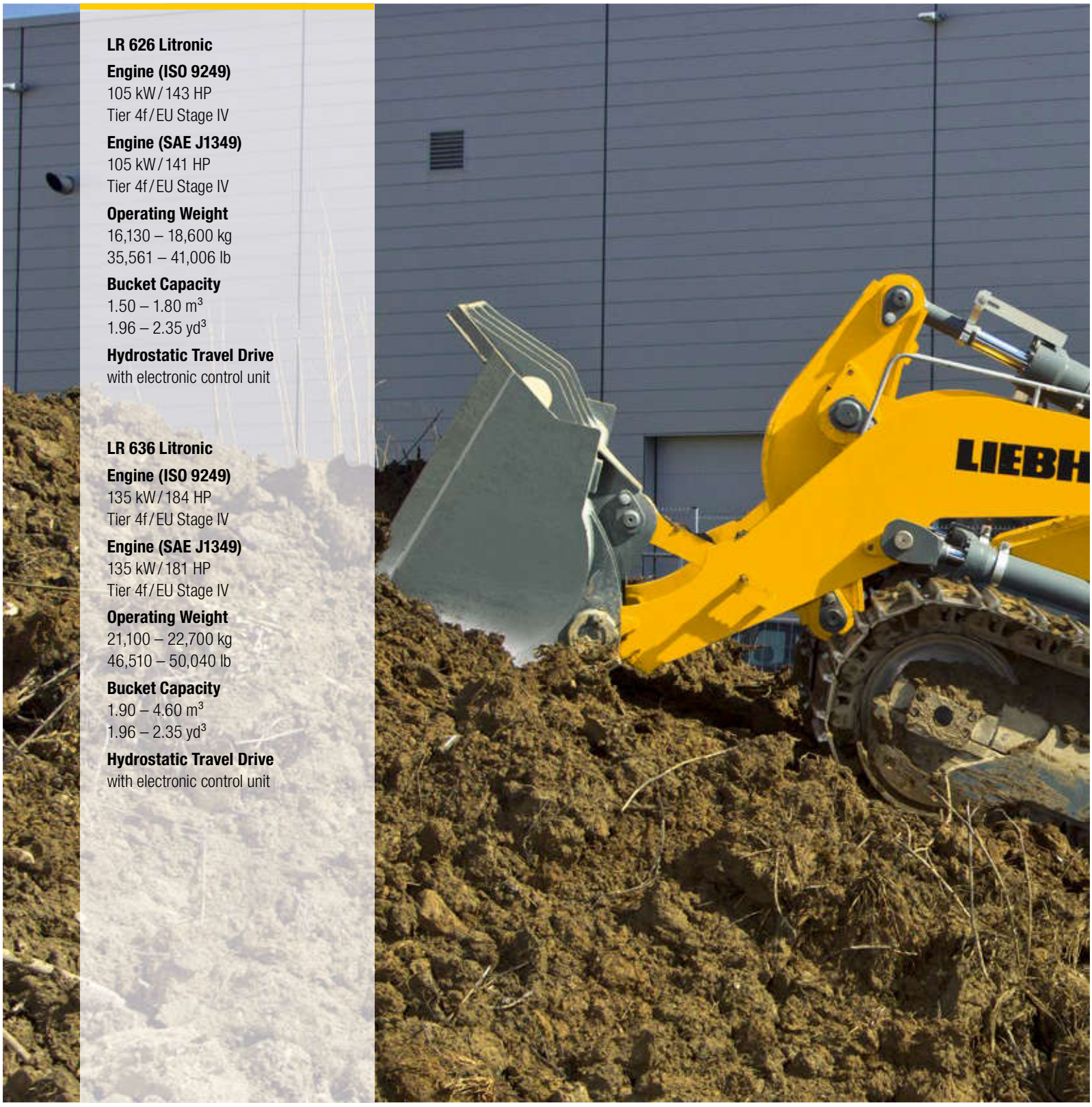
Performance
Outstanding Handling Capacity and Quick Work Cycles

Efficiency
Cost Efficiency Comes Standard



LR 626 Litronic

Engine (ISO 9249)
105 kW / 143 HP
Tier 4f / EU Stage IV

Engine (SAE J1349)
105 kW / 141 HP
Tier 4f / EU Stage IV

Operating Weight
16,130 – 18,600 kg
35,561 – 41,006 lb

Bucket Capacity
1.50 – 1.80 m^3
1.96 – 2.35 yd^3

Hydrostatic Travel Drive
with electronic control unit

LR 636 Litronic

Engine (ISO 9249)
135 kW / 184 HP
Tier 4f / EU Stage IV

Engine (SAE J1349)
135 kW / 181 HP
Tier 4f / EU Stage IV

Operating Weight
21,100 – 22,700 kg
46,510 – 50,040 lb

Bucket Capacity
1.90 – 4.60 m^3
1.96 – 2.35 yd^3

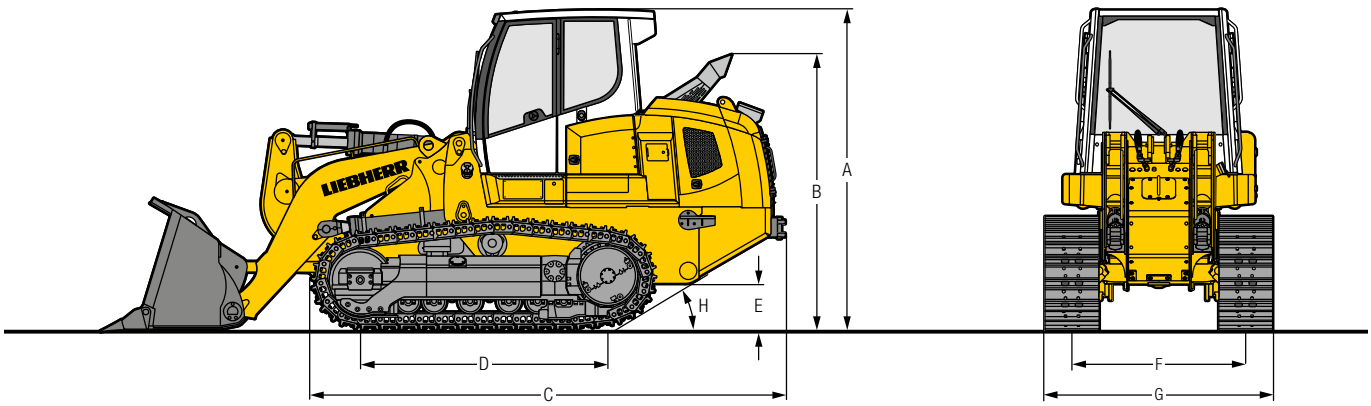
Hydrostatic Travel Drive
with electronic control unit

Maintainability

Simple Maintenance and an Extensive Service Network

Thanks to their minimal maintenance requirements, Liebherr crawler loaders make a reliable contribution to your economic success. A dense service network means short distances, efficient structures and fast service response times for the user.

Dimensions LR 636



Dimensions

A	**Height over cab**	**mm**	3,330
		ft in	10'11"
B	**Height over exhaust pipe**	**mm**	2,866
		ft in	9'5"
C	**Length to front of track**	**mm**	4,940
		ft in	16'2"
D	**Distance idler / sprocket center**	**mm**	2,580
		ft in	8'6"
E	**Ground clearance**	**mm**	483
		ft in	1'7"
F	**Track gauge**	**mm**	1,800[1)]
		ft in	5'11"
G	**Track shoes 508 mm / 20"**	**mm**	2,308
	Machine width	**ft in**	7'7"
G	**Track shoes 560 mm / 22"**	**mm**	2,360
	Machine width	**ft in**	7'9"
G	**Track shoes 610 mm / 24"**	**mm**	2,550
	Machine width	**ft in**	8'4"
H	**Approach angle**		30°

[1)] Track guard with 610 mm / 24" track shoes: 1,940 mm / 6'4"

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 ≥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 μ_G= 0.09				Minimum total coefficient of friction μ_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 12	8.8	45	69	M 12	8.8	44	80
	10.9	66	102		10.9	64	118
	12.9	77	119		12.9	75	140
M 12 x 1.25	8.8	50	74	M 12 x 1.25	8.8	49	86
	10.9	73	109		10.9	71	125
	12.9	85	125		12.9	84	150
M 12 x 1.5	8.8	47	72	M 12 x 1.5	8.8	46	83
	10.9	69	105		10.9	68	122
	12.9	81	123		12.9	79	145
M 14	8.8	61	110	M 14	8.8	60	125
	10.9	90	160		10.9	88	185
	12.9	105	190		12.9	103	220
M 14 x 1.5	8.8	67	117	M 14 x 1.5	8.8	66	135
	10.9	99	170		10.9	96	200
	12.9	115	200		12.9	113	235
M 16	8.8	84	170	M 16	8.8	82	195
	10.9	123	250		10.9	120	290
	12.9	145	290		12.9	140	340
M 16 x 1.5	8.8	91	175	M 16 x 1.5	8.8	89	205
	10.9	135	260		10.9	130	300
	12.9	155	300		12.9	150	360
M 18	8.8	102	235	M 18	8.8	100	270
	10.9	150	350		10.9	145	400
	12.9	175	410		12.9	170	470
M 18 x 1.5	8.8	117	260	M 18 x 1.5	8.8	115	300
	10.9	175	380		10.9	170	440
	12.9	200	440		12.9	200	520
M 18 x 2	8.8	110	245	M 18 x 2	8.8	107	290
	10.9	160	360		10.9	160	420
	12.9	190	420		12.9	185	490

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– Have rubber disposed of by a rubber recycling point.
– Have electronic components disposed of by an electronics recycling point.

2.4 Description of personnel

2.4.1 Personal protective equipment

Operators, assistants and maintenance staff are responsible for the following:
– Wearing of personal protective equipment
– Regular cleaning and care of protective equipment
– Immediate replacement of damaged parts of the protective equipment

The personal protective equipment consists of the following components:
– Hard hat
– Safety glasses
– Hearing protection
– Breathing mask
– Protective gloves
– Warning apparel (reflective, in signal colour)
– Safety shoes
– Special protective clothing:
  • Against burns
  • Against reductions of body temperature
  • Against itching
  • Against needlestick and cutting injuries

2.4.2 Requirements for personnel

– Ensure that only authorised and trained persons operate, maintain or repair the machine.
– Ensure that all persons who operate, maintain or repair the machine are of the prescribed minimum age.
– Ensure that the training for personnel includes theoretical information (technique and safety) and practical training on the machine.
– Ensure that the personnel have read and understood the operator's manual and the other documentation supplied.
– Ensure that any person either still to be trained or already in training to operate or work on the machine is always under the constant supervision and guidance of an experienced instructor or operator.
– Regularly check that personnel are working in a safety-conscious and risk-aware manner.
– Clearly define the responsibilities of personnel for operation, setup, maintenance and repair.

2.4.3 Operator

Responsibility

The operating company has the following duties:
– Ensure that only trained personnel operate the machine.
– Ensure that only trained personnel maintain the machine.
– Check the qualifications of the persons working with the machine.
– Authorise the activities of the persons working with the machine.

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Accident prevention sign

Fig. 27: Accident prevention sign

The sign is located on the front left in the operator's cab.

Shows the importance of reading the operator's manual and the printed safety instructions for accident prevention.

Meaning: **Operate the machine only if you have read and understood the operator's manual. The accident prevention guidelines given in the operator's manual must be carefully observed when operating the machine!**

ROPS / FOPS warning sign

Fig. 28: ROPS / FOPS warning sign

The sign is located on the front left in the operator's cab.

Warns of risk of accidents potentially leading to death or very severe injuries.

Meaning: **Structural modifications (e.g. welding, drilling) on the ROPS / FOPS operator's cab without consulting with Liebherr customer service are not permitted!**

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The CE mark is included in the identification plate. It is on the front left of the main frame.

Shows conformity to EU machine regulations.

2.5.3 Identification plates

The machine and components, such as the diesel engine, transmission, pumps etc. are marked with a identification plate. The serial numbers for the individual components are shown on the identification plate.

Machine identification plate

Fig. 49: Machine identification plate

The plate is fitted to the left front on the main frame.

Information on the identification plate:

- Type
- Vehicle Id. No.
- Permissible total weight
- Year of manufacture
- Engine power
- Maximum speed

2.6 Safety instructions

2.6.1 General safety instructions

1. Please familiarize yourself with **operator's manual** before putting machine into service.
   Make sure that you have obtained, read and understand any additional instructions relating to special accessories for machine.
2. Only explicitly authorized personnel may operate, maintain or repair the machine.
   Observe the permissible minimum legal age limit!
3. Use only trained or instructed personnel, clearly determine the responsibility of the personnel for operation, set up, maintenance and repairs.
4. Determine machine operator responsibility (also in regards to traffic regulations) and allow him to refuse unsafe instructions from third persons.

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8. When replacing hoses and hose lines, use only Original spare parts.
9. Route and install hoses and hose lines properly. Do not mix up connections.

2.6.15 Safety guidelines for maintenance work on machines with hydro accumulators

1. Only especially trained expert personnel may work on hydro accumulators.
2. Improper mounting and handling of hydro accumulators can cause severe accidents.
3. Do not operate damaged hydro accumulators.
4. Before working on hydro accumulators, relieve pressure in hydraulic system (hydraulic system including hydraulic tank), as described in these operating instructions.
5. Do not weld or solder on hydro accumulator and do not carry out any mechanical work.
   Hydro accumulator can be damaged due to heat exposure and can rupture due to mechanical treatment. **THERE IS A DANGER OF EXPLOSION!**
6. Fill hyrdo accumulator only with nitrogen. When using oxygen or air, there is a **DANGER OF EXPLOSION!**
7. Accumulator housing can become hot during operation, there is a danger of burning.
8. New hydro accumulators must be charged to required pressure for application before use.
9. Operating data (minimum and maximum pressure) is marked permanently on hydro accumulators. Make sure that marks remain visible.

2.6.16 Roll over protection (ROPS) and falling object protection (FOPS)

Machine is equipped with an operator's cab, which provides overroll (ROPS) and falling objects (FOPS) protection for machine operator.

Avoid accidents

Dangerous situations can occur depending on application and method of operation, even with intact protective devices. Avoid all unsafe methods of operation.

Note
Overall weight of machine!

▶ At installation of attached tools and attachments make sure that overall weight of machine is below weight for which overroll protection was certified. Protective function of overroll protection is not longer ensured if maximum permissible overall weight of machine is exceeded (see Data tag).

Following changes on machine can cause maximum permissible overall weight to be exceeded:

– Use of attached tools which are too heavy
– Change of working attachment
– Additions or modifications on machine

A machine with a damaged cab protective system (ROPS, FOPS) may not be placed into operation.

Damage on operator's cab can be caused by following work and occurrences:

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4 Starting switch

Fig. 62: Starting switch

“STOP” position

Contact position

Start position

Park position

5 Emergency stop button

Fig. 67: Emergency stop button

The machine stops immediately when the emergency stop button is pressed.

The working attachment can still be moved.

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13 Air filter contamination


408331

– Display if air filter is contaminated.
  Perform air filter maintenance.

14 Automatic diesel engine stop [10)]

410764

– Symbol lights up:
  Display if diesel engine stop is activated.
– Symbol flashes:
  Display if diesel engine is turned off via automatic diesel engine stop.

410767

– Display or remaining time until automatic diesel engine stop in idling operation.

15 Reversible fan


410650

– Display if reverse operation of fan is active.


410651

– Display if reverse operation of fan is deactivated.

16 ECO Mode[10)]

410533

– Display if ECO Mode is activated.

17 Fuel water separator


408332

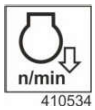
– Display if there is water in the fuel water separator.
  Carry out fuel water separator maintenance.

18 Service notification


408512

– Display if service is due.
– Advance warning period 100h = lights up yellow
– Warning period 100h = flashes red

19 Negative travelling pedal



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– Display if negative travelling pedal function is activated.

[10)] Except for RL46/RL56/RL66

3 Set the language
4 Set the time zone, time and date
5 Set the time
8 LiDAT Release of remote access
9 Setting the brightness level of the display unit and the volume of the display tone
10 Set the date format

Setting units

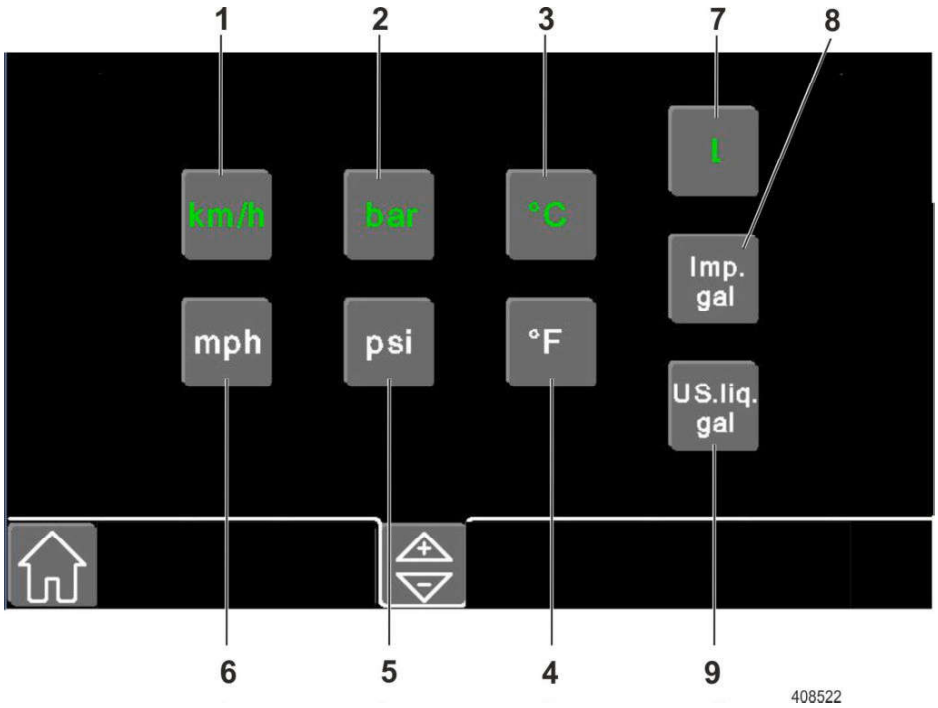

Fig. 155: Setting unit

1 Km/h selection
2 Bar selection
3 °C selection
4 °F selection
5 Psi selection
6 Mph selection
7 l selection
8 Imp. gal selection
9 US liq. gal selection

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Setting ECO-Mode (option)

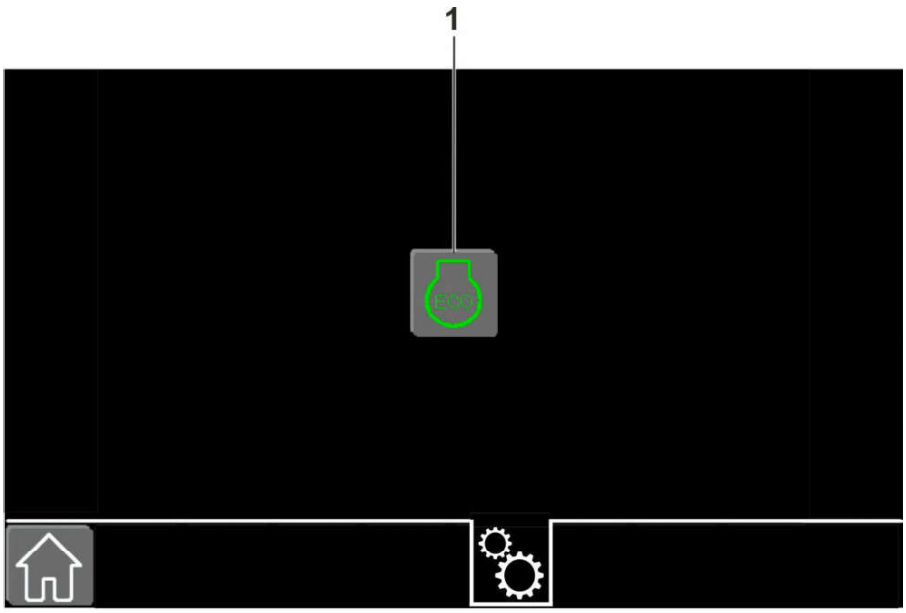

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Fig. 165: Setting ECO-Mode

1 Selection ECO-Mode

– Automatic diesel engine rpm reduction at defined travel situation.
– If the ECO-Mode is activated, the machine is switched into a range where the diesel engine rpm is automatically reduced in certain situations.

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Messages, service codes

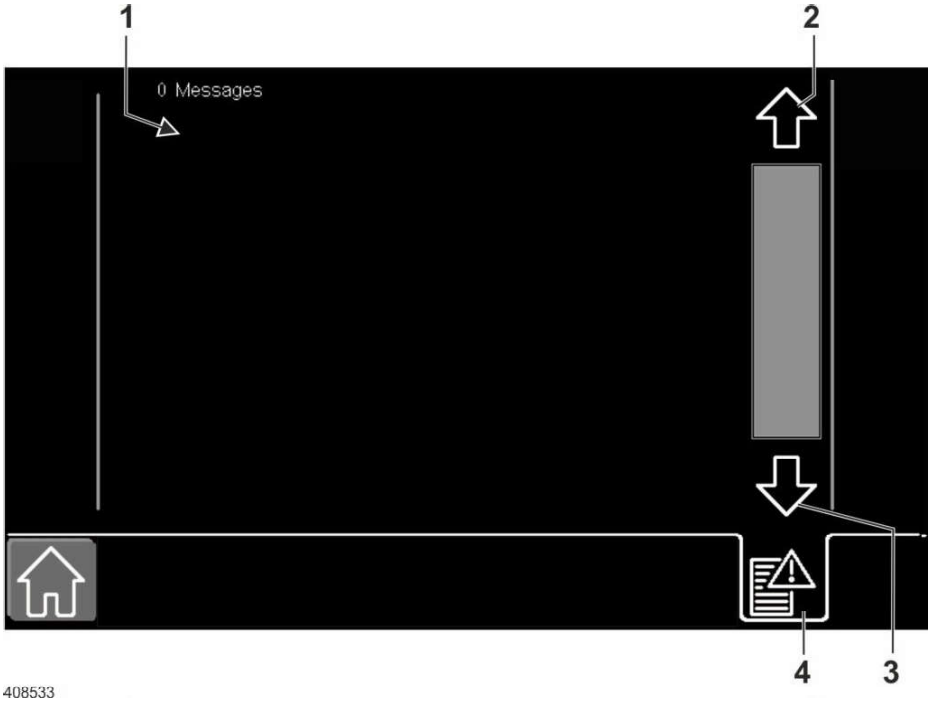

Fig. 176: Messages (service codes) display

1	Message text display	**3**	Scroll to next page symbol
2	Scroll to previous page symbol	**4**	Message page symbol

Display of service codes:

The symbol **4** is shown in white: there are no active service codes pending.

The symbol **4** flashes red: there are active service codes pending.

– Press the symbol **4**: the message page is called up.

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3.2.6 Operator’s seat with pneumatic comfort suspension

The ergonomically designed operator's seat provides a high level of seat comfort.

The adjustability of the seat surface, backrest, and suspension allows the operator to make individual adjustments for a comfortable seat position.

Vibration damping:

- The operator's seat installed in the machine complies with ISO 7096.
- If the machine is used in accordance with regulations, the values of the vibration transmitted by the operator’s seat are less than or equal to the tested excitation vibration for the relevant machine class in accordance with ISO 7096, Class EM3.
- The evaluated vibration acceleration “a^{ZW}” values, measured in accordance with ISO 2631, Part 1 therefore comply with the requirements for protection against whole body vibration set out in EN 474-1.

Note

▶ When replacing a seat, only use original Liebherr operator seats with seat contact switch.

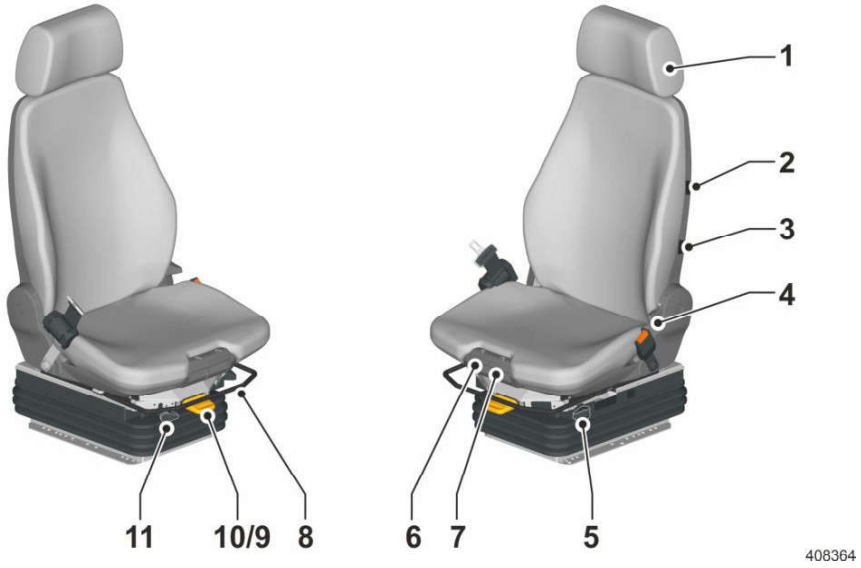

Fig. 191: Operator’s seat - main components and adjustment elements

1	Headrest	**7**	*Seat depth* lever
2	*Seat heater* button	**8**	*Horizontal adjustment* lever
3	*Lumbar support* button	**9**	*Weight adjustment* lever
4	*Backrest inclination* lever	**10**	*Seat height* lever
5	*Horizontal suspension* lever	**11**	*Shock absorption* lever
6	*Seat surface incline* lever		

Individual adjustment of ergonomic seat position

Individual adjustment of the operator's seat provides the greatest possible seating comfort for the operator.

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Adjusting the operator's seat depth horizontally

Fig. 208: Adjusting the operator's seat depth horizontally

7 *Horizontal seat depth* lever

- ▶ Push the lever **7** up.
- ▶ Adjust seat depth of operator's seat horizontally.
- ▶ Release the lever **7**.

Adjusting the operator's seat horizontally

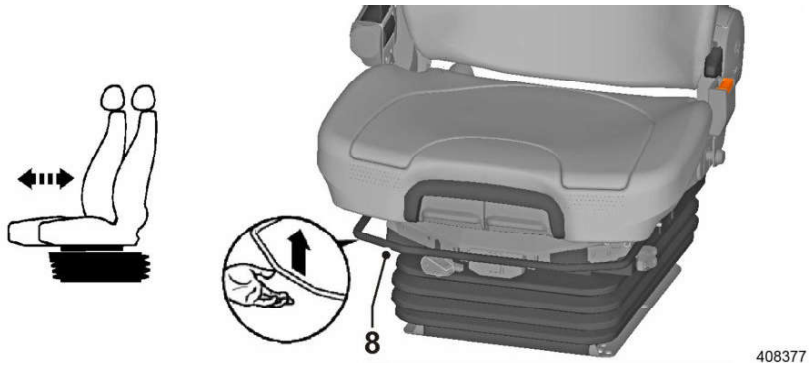

Fig. 209: Adjusting the operator's seat horizontally

8 *Operator's seat horizontal adjustment* lever

- ▶ Pull the lever **8** up.
- ▶ Adjust the operator's seat horizontally.
- ▶ Release the lever **8**.

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Adjusting the armrests[23)]

Fig. 227: Adjusting the armrests

11 *Armrest* turn handle

▶ Lift the armrest slightly.

▶ Turn the turn handle **11** to the right or left.
▷ The armrest tilts upwards or downwards.

3.2.9 Safety belt

WARNING
Always wear a safety belt!
Injury.

▶ Always wear safety belt before putting machine into service.

2-point safety belt

Putting on 2-point safety belt

Ensure that following requirements are met:
- ❑ Condition, function and attachment of the 2-point safety belt have been checked.
- ❑ Damaged parts have been replaced.
- ❑ 2-point safety belt is not twisted.
- ❑ A proper seating position has been adopted.

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[23)] Option

Operate the window washer system

Fig. 246: Switch Window washer system

1 Switch *Interval control*

2 Switch *Window washer system - front window*

3 Switch *Window washer system - rear window*

▶ Activate the window washer system: Press switch **2** or **3**.

▶ Activate the interval control: Press the switch **1**.

Wipe the window

▶ Press switch **2** or **3**.

The selected window wiper is activated.

Wash the window

▶ Press switch **2** or **3** and hold down.
▷ The window washer fluid is sprayed on the windows via the nozzles.

Intermittent wipe

Press the switch **1**.

▶ Intermittent wipe: Push the switch up.

Add window washer fluid

The reservoir for the window washer fluid is installed on the left in the battery compartment.

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Note

▶ To avoid condensation in fuel tank, add fuel after completion of work or after a shift change, if possible.

Refuel with diesel using refuelling pump (option)

The refuelling pump is installed on the right-hand side underneath the step in the refuelling pump container.

Fig. 263: Safety when refuelling

DANGER
Risk of fire and explosion when refuelling.

▶ Do not smoke and avoid open flames when refuelling.

▶ Refuel exclusively when the diesel engine is turned off.

▶ Observe safety instructions for fire and explosion prevention. (For more information see: 2.6.3 Safety guidelines for fire and explosion prevention, page 55)

Note
Sulphur content in the fuel influences the change interval for the engine oil and the oil filter.

▶ Pay attention to the sulphur content in the fuel and change intervals for the engine oil. (For more information see: Aggravating circumstances, page 269)

If sulphur content in the fuel is not known:

▶ Determine sulphur content with an oil analysis set.

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Note

- When diesel engine is warm and high ambient temperatures are present, symbol field *air preheating* does not light up. Start diesel engine.

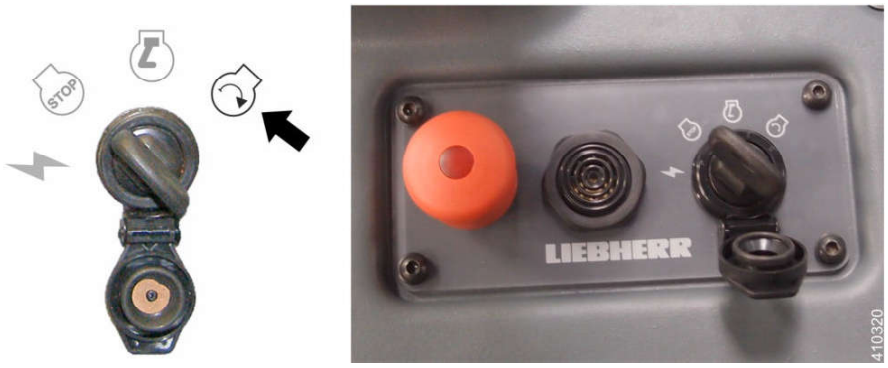

Fig. 281: Starting switch - Starting position

- Turn the starting switch to contact position.
  - ▷ At automatic air preheating symbol field *air preheating* lights up.
  - ▷ When diesel engine is ready to start, *air preheating* symbol field turns off.
- Turn starting switch to starting position and hold it in this position until engine starts.
- Do not try to start the engine for longer than maximum 10 seconds without a break.

Troubleshooting

Diesel engine does not start?

- Set starting switch to zero position.
- Repeat start process after a break of at least 2 minutes.

If diesel engine does not start at second attempt:

- Repeat start process after a break of at least 5 minutes.

If diesel engine does not start at third attempt:

- Determine cause as per troubleshooting chart and remedy it. (For more information see: 4 Operating problems, page 243)

- Release starting switch as soon as diesel engine is running. The starting switch returns by itself to operating position.
- Do not subject diesel engine to a full load until after a short warm up period (coolant temperature > 60 °C).

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Turning right

Fig. 297: Turning right

- ▶ Deflect the travel joystick forward and push it to the right.
  - ▷ The machine drives forward with a slight right hand curve, both chains turn forward.
- ▶ To drive in a tighter curve: push the travel joystick further to the right.

If the travel joystick is deflected by 80%, then the track on the inside of the curve stops, the outer track turns in the preselected speed. From 80% deflection on, the track on the inside of the curve turns in the opposite direction to the track on the outside of the curve. The further the travel joystick is deflected, the faster the track on the inside of the curve will turn in the opposite direction. The machine counter rotates.

- ▶ To turn on the spot: deflect the travel joystick more than 80%.

3.3.6 Braking

Braking using the travel joystick

The hydrostatic travel drive of the machine also functions as an operating brake. When moving the travel joystick back toward the neutral position, the travel speed decreases in the same ratio.

Fig. 298: Travel joystick in neutral position

- ▶ Set the travel joystick to the neutral position.
  - ▷ In the travel joystick neutral position, the hydrostatic drive secures the machine, preventing it rolling away.

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- ▶ To deactivate the bucket release: move the bucket control lever backward into neutral position.
- ▶ Then turn off the preselection for the bucket release on the bucket control lever.

Automatic hoist limit control

For loading work where the full dumping height is not required, a reduced dumping height can be set with the aid of the hoist limit control.

The hoist procedure is thereby automatically interrupted.

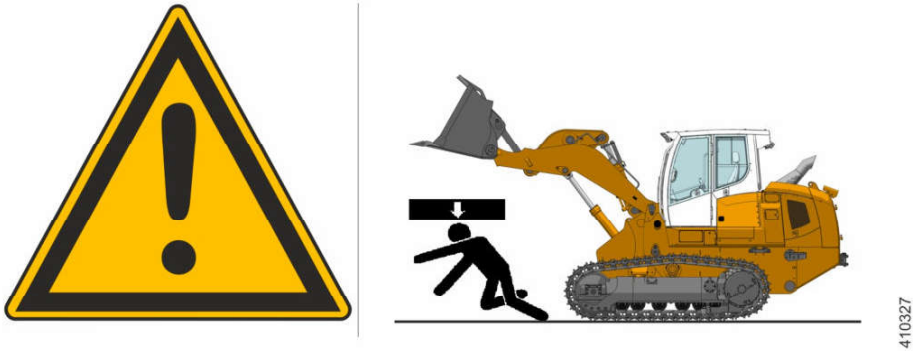

Fig. 316: Hazardous situation

WARNING
Risk of accidents due to raised components and loads!
Falling components or loads can result in severe bodily injuries or even death.

- ▶ Never work under raised components and loads if they are not properly supported or laying on the ground.

Setting the automatic hoist limit control

- ▶ Lift the loading equipment to the desired height.
- ▶ Bring the parking switch into operating position.
- ▶ Turn diesel engine off.

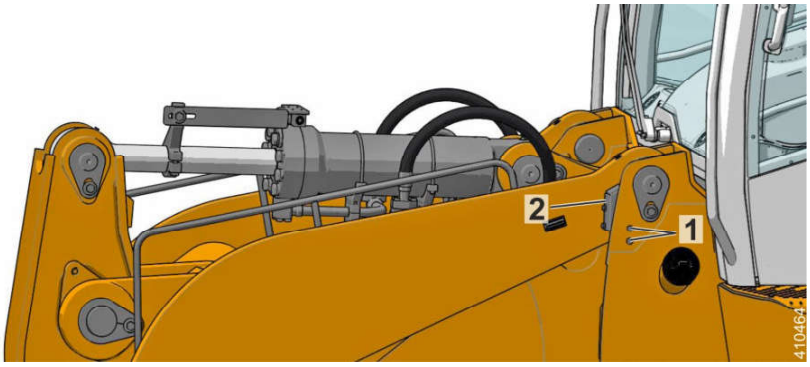

Fig. 317: Hoist limit control

- ▶ Release the hex head screws **1** and move the limit switch **2** until it is no longer covered.

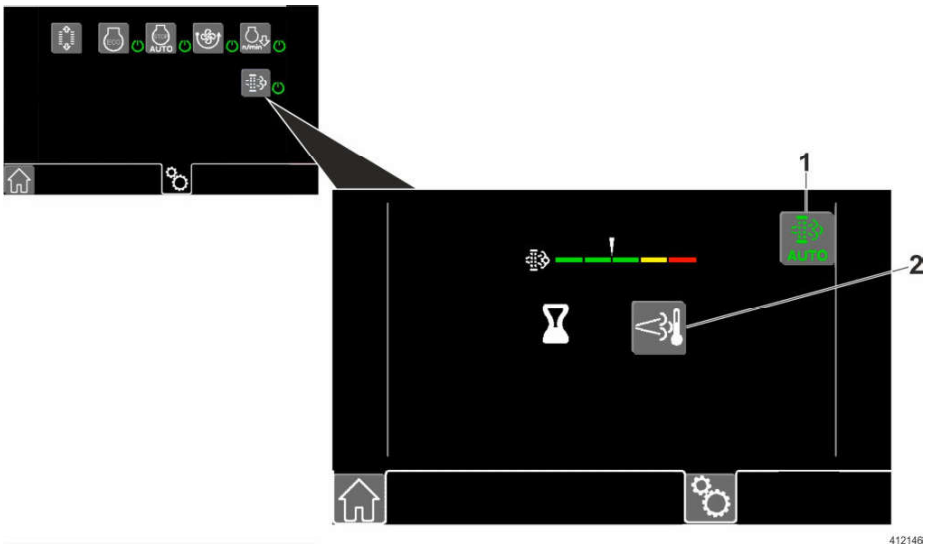

Fig. 341: Regeneration mode: automatic

1 Regeneration mode automatic button

2 Regeneration mode manual button

▶ Call up display page.

▶ Put button **2** at white.

▶ Set button **1** to green.
  ▷ Automatic regeneration of diesel particle filter has been set.
  ▷ Regeneration starts depending on operating status of diesel particle filter.

Regeneration needs to be stopped in an emergency:

▶ Suppress regeneration.

Regeneration mode: suppressed

In this regeneration mode, regeneration of diesel particle filter remains suppressed even after engine has been restarted.

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3.4.6 Excavation

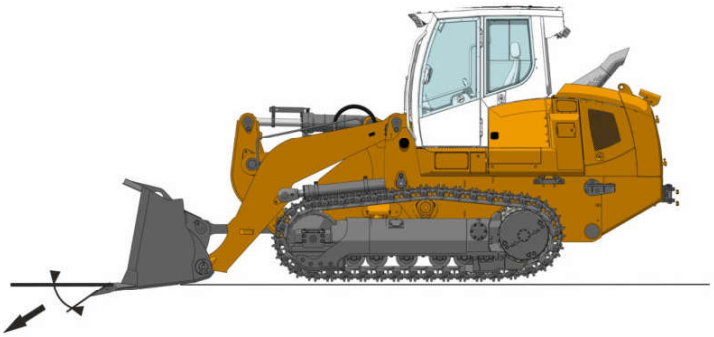

Fig. 356: Bucket penetration angle

- ▶ Lower the bucket to the ground and set a small penetration angle (max. 10°).
- ▶ When starting to drive the machine, push the lift arms down simultaneously until a sufficient penetration depth is reached.

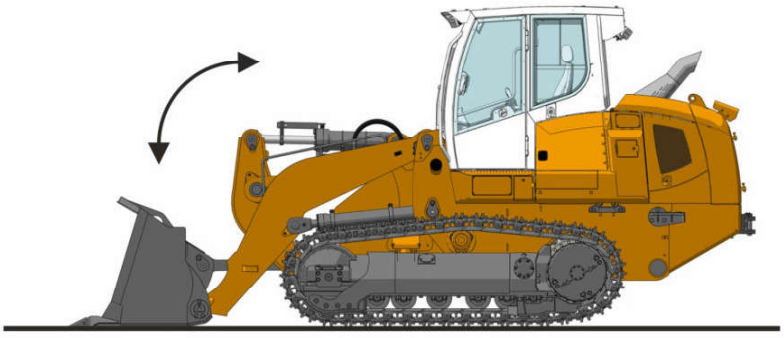

Fig. 357: Lift arm movement

- ▶ Make horizontal cuts by lifting and lowering the lift arms accordingly when driving forward.

3.4.7 Example of excavating a foundation

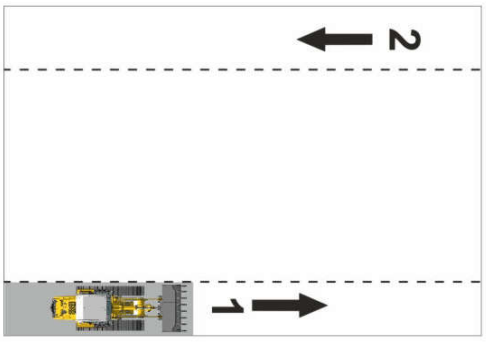

Fig. 358: Lengthwise cuts

- ▶ Use the bucket to make the first cut along the outer edge of the excavation pit.

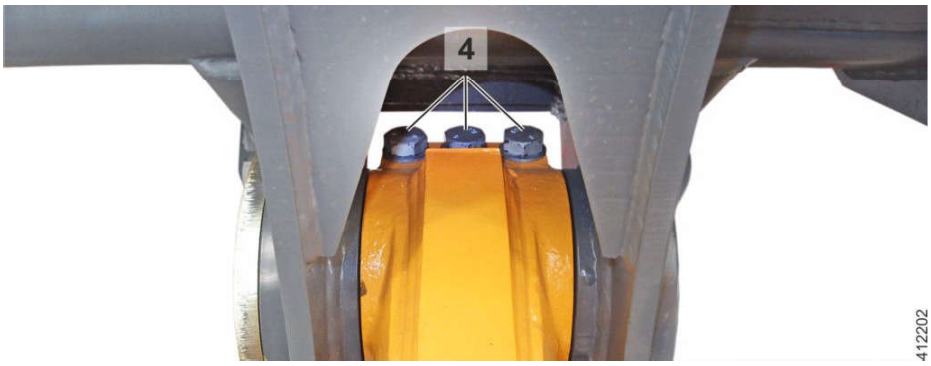

Fig. 376: Lock screws

- ▶ Loosen lock screws **4** on the bucket arm.
- ▶ Knock out bearing pin with a suitable tool.
- ▶ Carefully drive machine back until the 4-in-1 bucket is standing feely.

Note

- ▶ Install 4-in-1 bucket in reverse order.
- ▶ For extended storage, protect parts from corrosion.

- ▶ Check hydraulic oil level after installation of bucket.

3.5.4 Removing and installing the ripper

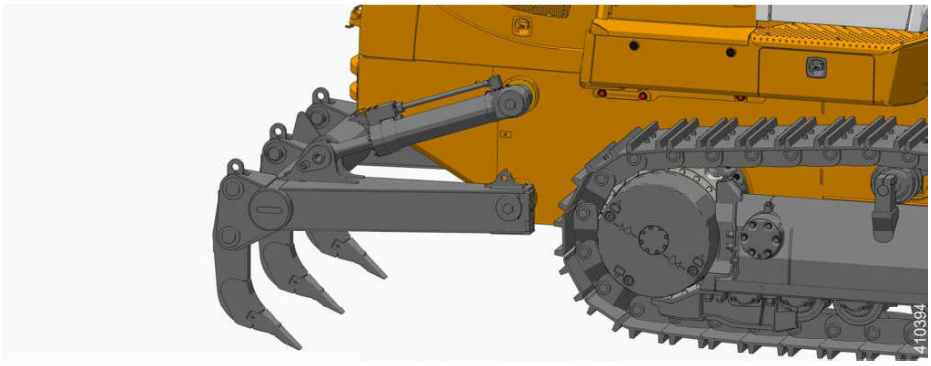

Fig. 377: Lower the working attachment

- ▶ Lower the ripper to the ground.

3.7 Emergency operations

3.7.1 Emergency mode function

The electronic system of the machine is monitored by the electronic box. If an error occurs, then this error is saved in the system. Depending on the error, the machine is switched into various types of the emergency operation.

Unrestricted operation

Unrestricted operation:
– The *service codes* symbol flashes on the display.
– Full scope of functions of the machine

▶ Check the service code.

▶ Carry out the requisite measures.

Restricted operation

Restricted operation:
– The *service codes* symbol flashes on the display.
– Limited scope of functions of the machine

▶ Contact Liebherr customer service.

Safety lock out

Safety lock out:
– The *service codes* symbol flashes on the display.
– The machine is stopped and can no longer be operated.

▶ Contact Liebherr customer service.

3.7.2 Towing machine

In case of a problem, the machine must be towed from the danger zone if necessary, or it may be possible to back it out of the danger zone.

The following towing instructions are for exceptional situations only and for bringing a disabled machine to a location, where it can be repaired or loaded.

Towing speed and towing distance:
– Max. towing speed no more than 2 km/h (walking speed),
– only short distances are permitted to tow the machine from the danger zone (max. 200 m).

Always use a transport vehicle to convey the machine over long distances!

Towing the machine is problematic and is always carried out at the owner's risk.

Damage or accidents which occur when towing the machine cannot be covered by the manufacturer's guarantee under any circumstances.

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4 Operating problems

Warning messages and fault messages:
- Various malfunctions are shown via respective symbols or service codes on the display. (For more information see: 3.1.3 Display unit, page 75)
- Warning functions are also acoustically supported if necessary.

Identifying and rectifying faults and errors:
- Malfunctions can very often be traced back to incorrect operation or maintenance of machine.
  For that reason, read the relevant chapter in the operator's manual again carefully for each malfunction.
- **Analyse the cause of the malfunction and rectify it immediately!**
- Describe the malfunction and all accompanying circumstances when you contact **Liebherr customer service**. Precise information makes it possible to find and rectify the cause of the fault 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.

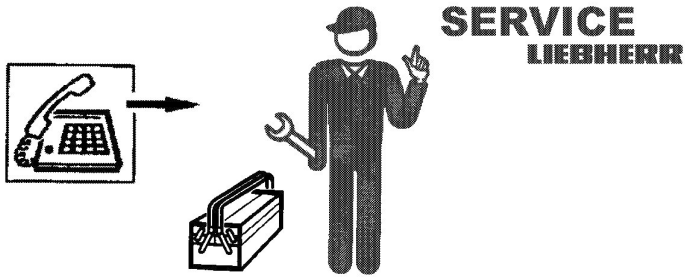

Fig. 413: Liebherr customer service

Note
It is not possible to identify or correct the malfunction using the service codes.

▶ Contact Liebherr customer service.

4.1 Servicecodes

4.1.1 Service code - Display unit

The machine is monitored in many functions by the control system.

It is monitored for short circuit, broken wires, external voltage and incorrect incoming and outgoing signals.

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Fuse	Value	Unit	Name / Function
F400	10	A	Radio

Tab. 19: Fuse in the radio

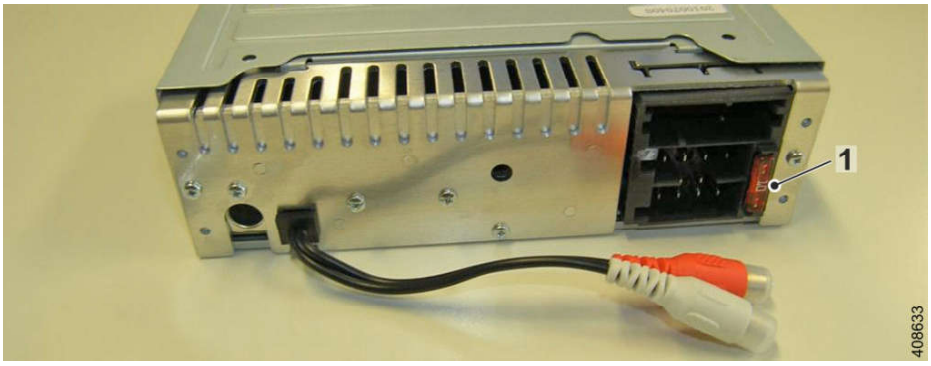

Fig. 418: Fuse in the radio

If the radio is not functioning:

▶ Remove the radio and check the fuse **1**.

▶ Replace the defective fuse with a new fuse (amperage depending on placement).

Fuses in the central electric compartment

Access to the main circuit board

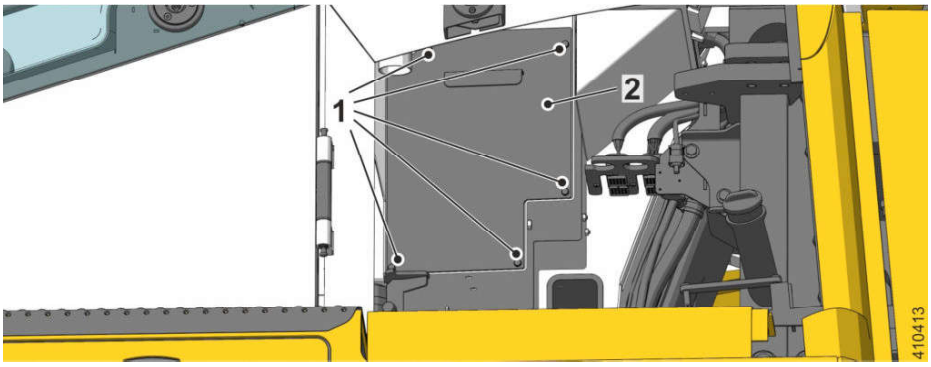

Fig. 419: Central electric compartment

▶ Remove screws **1** and take off cover **2**.

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

Maintenance / inspection after service hours							Tasks to be performed			
On handover	All 8-10 h	All 50 h	All 500 h	All 1000 h	All 2000 h	Other intervals	Additional labelling	**By maintenance staff** ■ Once-only activity ● Repeat interval ✦ If necessary ❄ Annually before the winter **By authorised specialist staff** ☐ Once-only activity ❍ Repeat interval ✧ If necessary **Additional labelling** Assistance required Have this task carried out exclusively by a certified electrician	Confirm tasks	See page
				❍	❍			Take oil sample before oil change and send it in for analysis		
Track components										
			❍	❍	❍	■250 h		Checking the nuts and bolts of the travel gear components are firmly seated		309
			❍	❍	❍			Check the carrier rollers, track rollers and idlers for tightness.		
			❍	❍	❍			Check the idler guides and adjust, if necessary		
						✦		Check the chain tension and adjust, if necessary		310
						✧		Check the travel gear wear.		
			☐	❍	❍			Checking the oil fill of the axle bearings		
			❍	❍	❍	●250 h		Greasing the oscillating axle frame bearing (shorten interval if necessary)		314
Working attachment										
	●	●	❍	❍	❍			Check the cutting edges, bucket and ripper teeth for wear (ensure that the equipment suits the application.)		315
			❍	❍	❍			Checking the bucket attachment stops		
			❍	❍	❍			Check the equipment for accidental damage		
			❍	❍	❍			Checking the bearing points of the working attachment for play and wear		
		■	❍	❍	❍			Check the mounting screws and pin retainers of the working attachment for tight seating.		315

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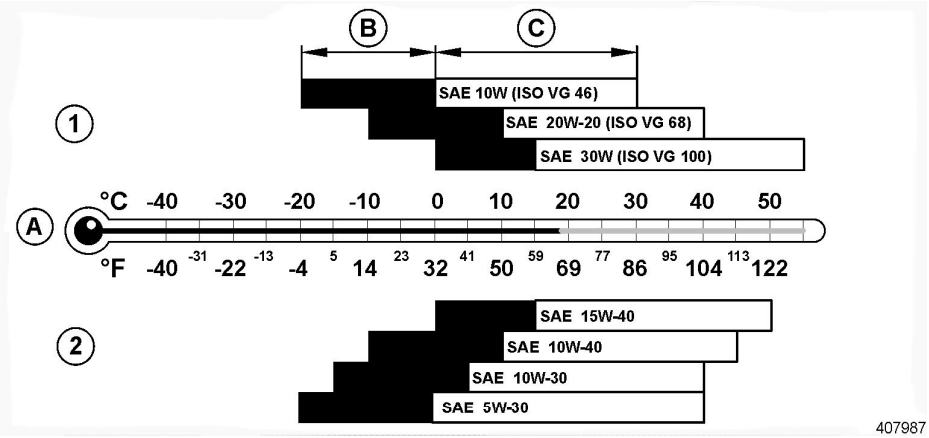

Fig. 439: Engine oil for use as hydraulic oil, temperature dependent selection of viscosity classification [34)]

A Ambient temperature
B Cold start range with warm up guideline
C Operating range
1 Single-grade oils
2 Multi-grade oils

Warm up specification

The black bar **B** marks the ambient temperatures, which are up to 20 °C below the operating range **C**.

If a cold start is made at ambient temperatures within range **B**, the following warm up specification for hydraulic oil applies:

1. After starting, set the Diesel engine to medium rpm (to no more than maximum half of the highest rpm).
2. Carefully actuate the working hydraulic. Actuate the hydraulic cylinder and move it to stop for a short period.
3. After approx. 5 minutes actuate the travel hydraulic too. Total warm up period is approx. 10 minutes.

If the cold start is made at even lower ambient temperatures, the following warm up procedure applies: Warm up the hydraulic tank first before starting the engine. Then start the warm up specification with Pt. **1**.

Biodegradable hydraulic oils

NOTICE
Improper mixing of hydraulic oils!
Mixing biodegradable hydraulic oils on ester basis or with mineral oils can cause aggressive reactions. Damage to the hydraulic system will be the result.

▶ Do not mix biodegradable hydraulic oils made by various manufacturers and do not mix them with mineral oils.

Liebherr recommends the following hydraulic oils for the machine, depending on the temperature range: **Liebherr Hydraulic Plus** or **Liebherr Hydraulic Plus Arctic**.

[34)] In case of deviating viscosity classification: Check with Service Dept.

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Method	Determination of
FT Infrared spectroscopy (FT-IR),	Oil condition and contaminants: oil oxidation, glycol, water, nitrates, fuel, carbon
Viscosity	Viscosity test: viscosity at 40°C and 100°C: viscosity index - reference to lubricity and mixture
Analex PQ-Index	Magnetic metallic particles: statement regarding the quantity of collected magnetisable iron wear debris larger than 5 microns in oil

Tab. 47: Oil analysis data

Liebherr recommends that oil analyses are carried out by the company WEAR CHECK and that oil changes are performed on the basis of the lab report (see also customer service and product information).

A kit of sample bottles, sampling hose, sample documentation and protective envelopes for postage are available from Liebherr under the following item codes:

- ID No.: 70 18 369 (12 units)
- ID No.: 70 18 368 (6 units)
- ID No.: 81 45 666, hand pump for taking samples (not included in kit.)

▶ Arrange for oil analysis to be carried out.

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▶ Turn the sealing cover **3** in counter-clockwise direction to relieve the pressure, then open it.

CAUTION
Coolant may cause eye injuries and allergic skin reactions!

▶ Avoid skin contact with coolant.

▶ Follow manufacturer's instructions.

▶ When mixing coolant, wear rubber gloves and safety glasses.

▶ In the event of an accidental splash, thoroughly rinse eyes or skin immediately with plenty of water.

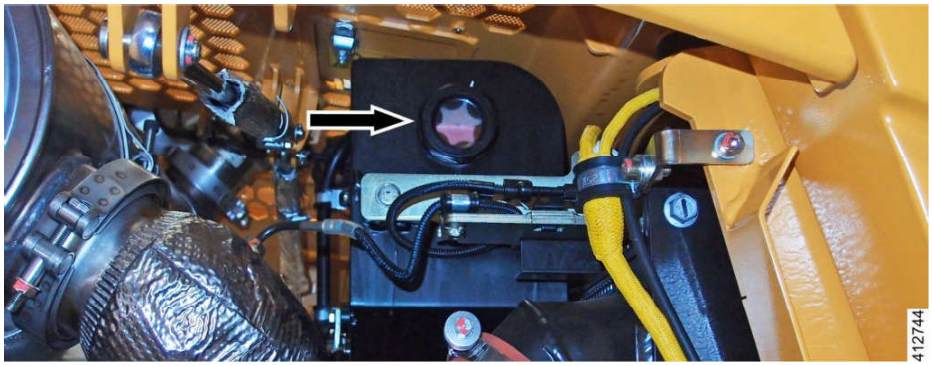

Fig. 481: Coolant expansion tank

▶ Add coolant up to the centre of sight gauge.

▶ Fit the sealing cover **3** onto the expansion tank and tighten it.

▶ Close the flap **2** on the engine bonnet.

▶ Close the locking mechanism **1**.

5.8.2 Clean the cooling system

Make sure that the following prerequisites are met:
❑ The machine is in maintenance position.

To ensure proper cooling of the media to be cooled, clean the cooler, if necessary.

In dust intensive applications, check the cooler daily and clean, if necessary.

Dirty cooler units lead to overheating. As a result, a visual warning is automatically issued.

Dust and other grime can be removed from the cooler fins with pressurised water jet, steam or compressed air. Use of compressed air is recommended.

NOTICE
Danger of damage to the cooling system.
Careless handling damages the cooler fins!

▶ Do not use hard objects or excessive water pressure for cleaning.

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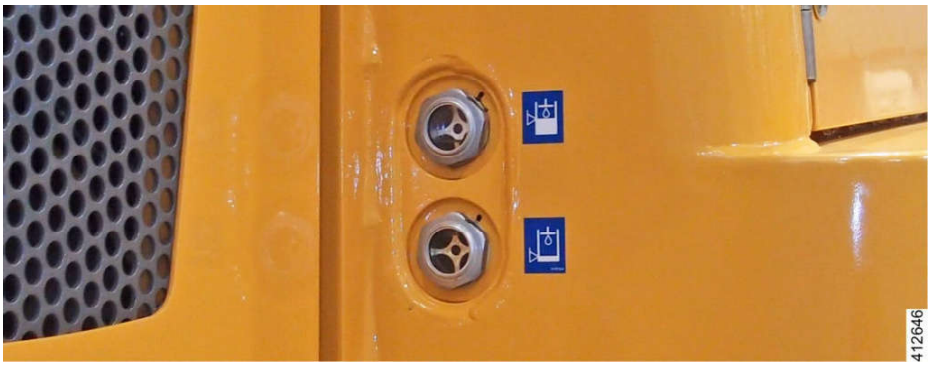

Fig. 498: Sight gauge

▶ Check the oil level on the sight gauge.

If the oil level is below the nominal height:
▶ Top up hydraulic oil.

Topping up hydraulic oil

Fig. 499: Bleeder screw on the hydraulic tank

▶ To relieve the tank pre-tension: undo the bleeder screw **1** on the hydraulic tank by two turns.

Note

▶ Add hydraulic oil only via the return filter.

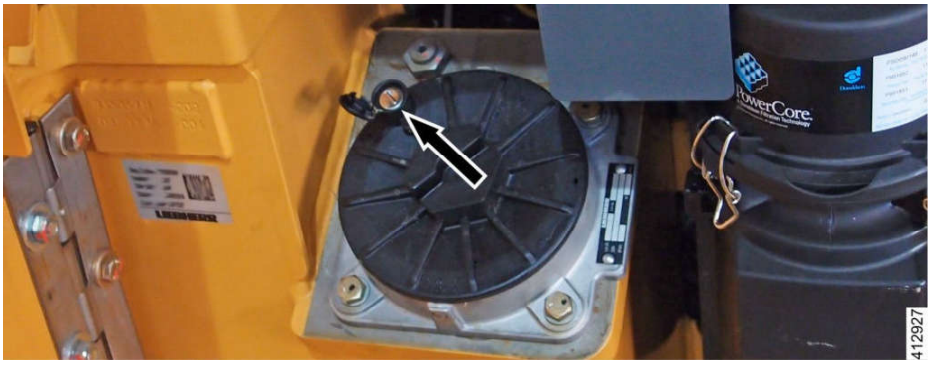

Fig. 500: Return filter cover

Fig. 511: Manual grease gun

- ▶ Connect the manual grease gun to the fitting on the chain tension cylinder.
- ▶ Press in grease until the specified sag dimension (30 mm to 40 mm) is obtained.
- ▶ Attach the cover with hex head bolts **1**.

Release the chain tension

Make sure that the following prerequisites are met:
- ❑ The machine is in maintenance position.

- ▶ Clean the cover and the surrounding areas on the track roller frame.
- ▶ Remove the hex head bolts **1** and remove the cover **2**.

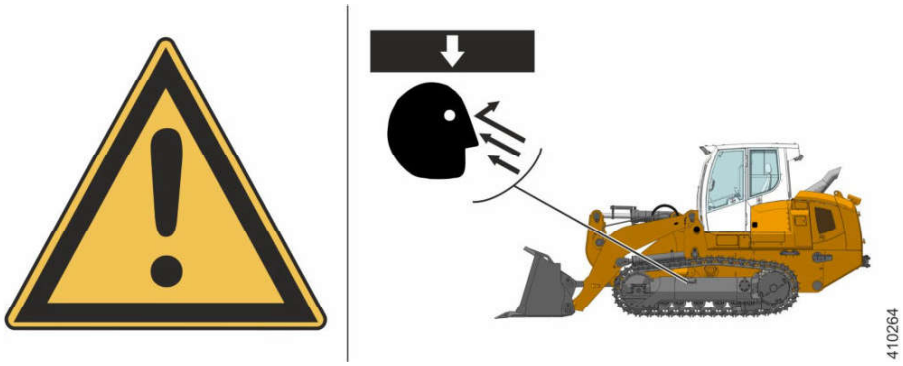

Fig. 512: Danger of injury

WARNING
Danger of injury when releasing the grease fitting on the chain tension cylinder! When releasing the grease fitting, the chain can suddenly sag and crush body parts. Splashing grease can cause severe injuries.

- ▶ Wear protective gloves and safety glasses and keep the head away from the track roller frame.