



Type:

HS 885 HD

Serial number:

187 612



ORIGINAL

001 - 30.06.2015 / lwncsj0

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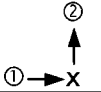
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1.4 Conversion tables

The following tables simplify the conversion of all conventional units of measure. Please note that the accuracy of the conversion factors depends on the size of the unit of measure.

For that reason, avoid size combinations, where the conversion factor in the table takes on a very small or a very large value. For example, the direct conversion of square inches [in²] into square kilometers [km²] provides inexact results.

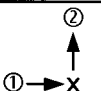
1.4.1 Length

	Millimeter mm	Zentimeter cm	Meter m	Kilometer km	Inch in	Foot ft	Mile (US Survey) mi
mm	1	0.1	10 ⁻³	10 ⁻⁶	0.03937	3.281 x 10 ⁻³	6.214 x 10 ⁻⁷
cm	10	1	0.01	10 ⁻⁵	0.3937	0.03281	6.214 x 10 ⁻⁶
m	10 ³	100	1	0.001	39.37008	3.28084	6.214 x 10 ⁻⁴
km	10 ⁶	10 ⁵	10 ³	1	3.937 x 10 ⁴	3280.8399	0.62137
in	25.4	2.54	0.0254	2.54 x 10 ⁻⁵	1	0.08333	1.578 x 10 ⁻⁵
ft	304.801	30.4801	0.3048	3.048 x 10 ⁻⁴	12	1	1.894 x 10 ⁻⁴
mi	1.609 x 10 ⁶	1.609 x 10 ⁵	1609.34722	1.60935	6.336 x 10 ⁴	5280.01056	1

Length conversion

Table 1-01

1.4.2 Surface area

	Quadrat- millimeter mm ²	Quadrat- meter m ²	Quadrat- kilometer km ²	Square inch sq in	Square foot sq ft	Square yard sq yd	Square mile (US Survey) sq mi
mm ²	1	10 ⁻⁶	10 ⁻¹²	0.00155	1.076 x 10 ⁻⁵	1.196 x 10 ⁻⁶	3.861 x 10 ⁻¹³
m ²	10 ⁶	1	10 ⁻⁶	1550.0031	10.76391	1,19599	3.861 x 10 ⁻⁷
km ²	10 ¹²	10 ⁶	1	1.55 x 10 ⁹	1.076 x 10 ⁷	1.196 x 10 ⁶	0.3861
sq in	645.16	6.452 x 10 ⁻⁴	6.452 x 10 ⁻¹⁰	1	6.944 x 10 ⁻³	7.716 x 10 ⁻⁴	2.491 x 10 ⁻¹⁰
sq ft	92903.04	0.0929	9.29 x 10 ⁻⁸	144	1	0.11111	3.587 x 10 ⁻⁸
sq yd	8.361 x 10 ⁵	0.83613	8.361 x 10 ⁻⁷	1296	9	1	3.228 x 10 ⁻⁷
sq mi	2.589 x 10 ¹²	2.589 x 10 ⁶	2.58999	4.015 x 10 ⁹	2.788 x 10 ⁷	3.097 x 10 ⁶	1

Surface area conversion

Table 1-02

2.2.1 State-of-the-art technology

The machine as delivered complies with the complex of rules defining the state of the art cited in the EU declaration of conformity. The operating instructions and all safety and warning notices in this operation manual must be rigorously observed and implemented, otherwise the machine may pose a risk.

2.2.2 Machine classification

The following applies if used as lifting gear according to the crane charts:
The steel fabrication is calculated on the basis of F.E.M. 1.001

The machine classification is based on ISO 4301 Parts 1 and 2:

Class of utilization: U2

State of loading: Q1

Crane group: A1

U2, Q1 and A1 mean the following:

Class of utilization U2

Irregular use, maximum number of operating cycles: **63,000**. Original text: (Class of utilization U2: Irregular use, maximum number of operating cycles: **63,000**).

State of loading Q1

The SWL (safe working load) is hoisted very rarely. Normally only light loads are hoisted. Original text: (State of loading Q1: Cranes which hoist the safe working load very rarely and normally, light loads).

Crane group A1

Cranes for general hook duties, not used for continuous service. Original text: (Mobile crane group classification A1: Cranes for general hook duties, not used for continuous service).

Heavy applications

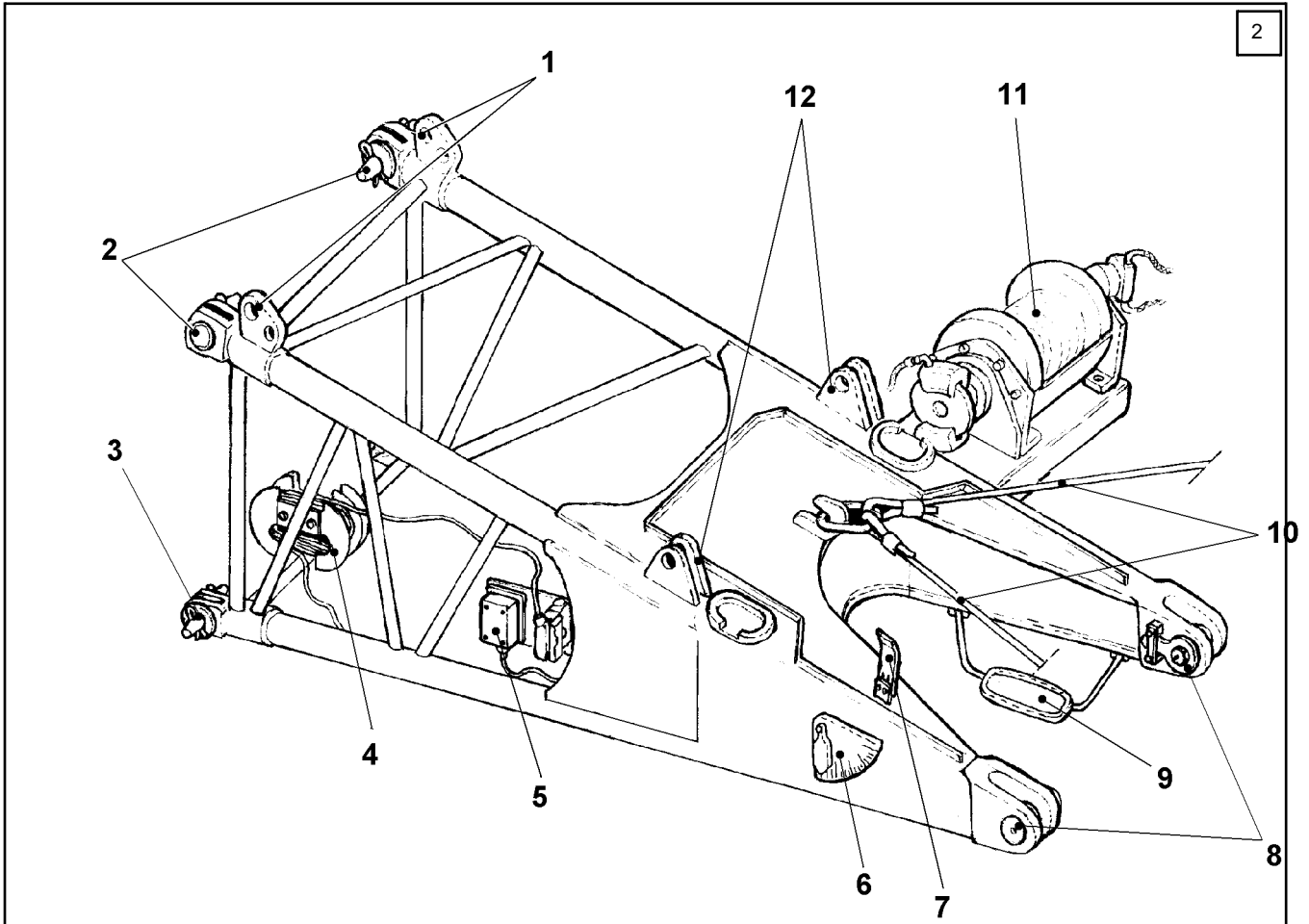
The specific tables for the application in question apply. In these tables, the SWL is reduced to take account of the dynamics involved in heavy-duty applications and to ensure a long service life when used for such work.

Load assumptions for the rating:

- Rotation: 1 rpm with 4 sec. integration time.
- Not combined with traveling.
- Trim / heel: 1% / 1%
- Luffing: 0.12 rpm with 3 sec. integration time

The load correction value is calculated according to F.E.M 1.001, Part 2 HC1, HD4.

Boom base section



Boom base section 4.0 m [13 ft], HS 885 HD

- | | | | |
|---|--------------------------------|----|---|
| 1 | Fixing point for assembly rope | 7 | Stopping rail for limit switch |
| 2 | Shouldered bolts (2x) | 8 | Pivot points |
| 3 | Double taper pin (2x) | 9 | Outside mirror |
| 4 | Wire bracket | 10 | Transport device |
| 5 | Angle sensor (LML) | 11 | Tagline winch |
| 6 | Boom angle indicator | 12 | Lifting point for erection mast (A-frame) |

Fixing point for assembly rope

The assembly ropes of the A-frame are fastened to the main boom base section for erecting and disassembling the boom (Figure 2, item 1).

Shouldered bolts

Shouldered bolts, tapered at one end, are inserted at the top of the main boom base section for fixing the first main boom base section (Figure 2, item 2).

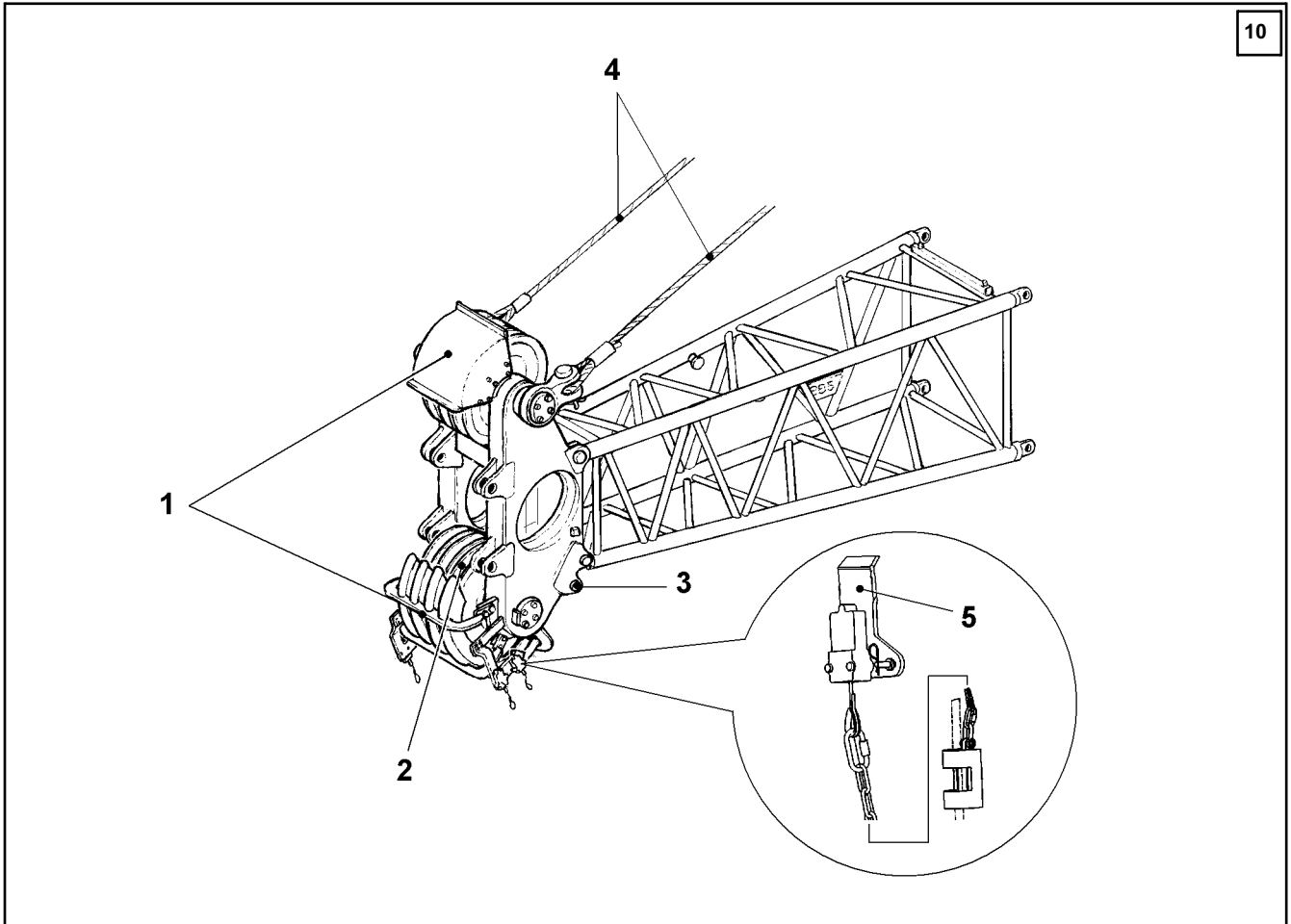


NOTE !

For certain equipment, the boom base section must first be reconfigured. The upper left and right shouldered bolts must be replaced by special shouldered bolts.

Chapter 9 describes this necessary replacement of shouldered bolts on the boom base section for certain equipment.

Boom head



Boom head 7.78 m [25.7 ft], HS 885 HD

- | | | | |
|---|------------------------|---|---|
| 1 | Rope protection (2x) | 4 | Pendant ropes / pendant straps |
| 2 | Rope pulleys (3x / 3x) | 5 | Hoisting limit switch with chain and weight |
| 3 | Rope fixation | | |

Rope protection (item 1)

The rope protection prevents the hoist rope from jumping out of the rope pulleys.

Pulleys (item 2)

The hoist rope of the hoist winches is led through the rope pulleys on the boom head.

Rope fixation (item 3)

The end of the hoist rope is fastened in the rope thimble of the rope fixation.

Pendant straps (item 4)

Both pendant ropes / pendant straps of the boom head are joined to the main boom pendant ropes / pendant straps.

Limit switch (item 5)

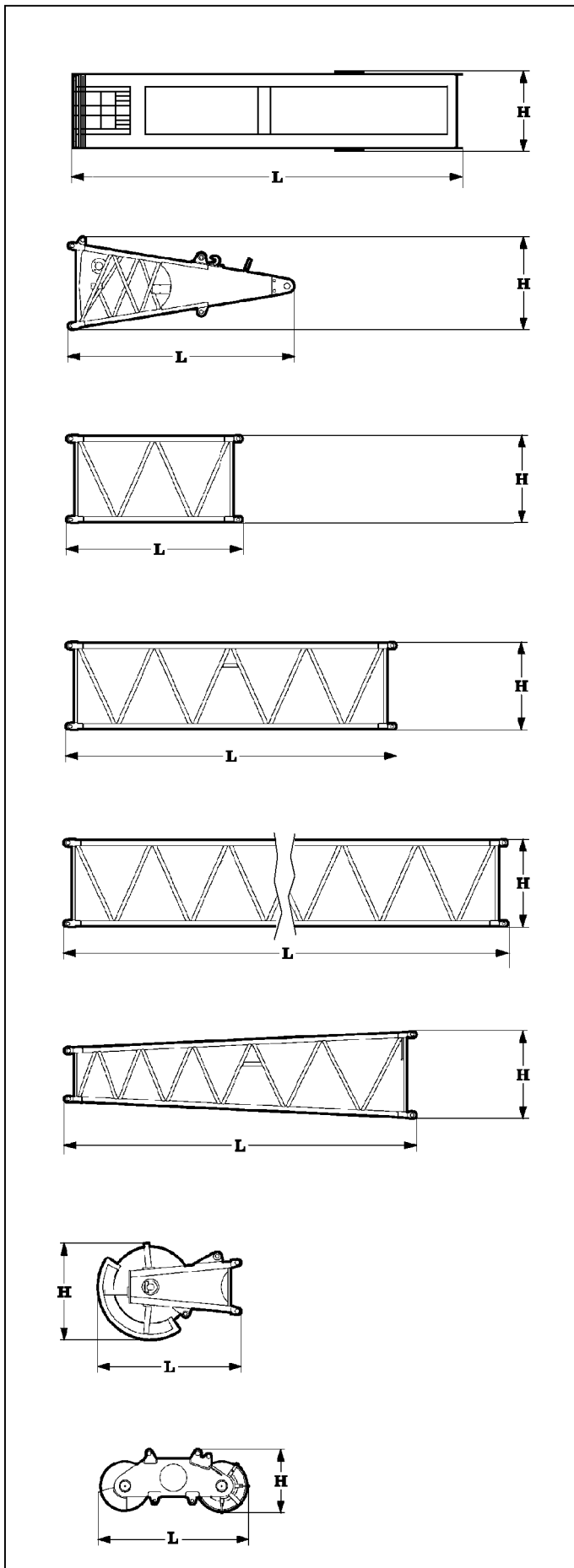
Position number (8) shows the possible mounting positions for the hoisting limit switch(es). The limit switch weight is suspended on the hoist rope and linked to the hoisting limit switch by a chain.

2.11 Technical data

The “Technical data” shown are guide values.

Due to the various different machine variants, dimensions and weights can deviate from the guide values!

The exact delivery weight values for the basic machine can be requested from the Liebherr customer support department.



Erection mast

H	1520 mm
L	6930 mm
Width	600 mm
Weight*	2195 kg

Base section

H	1700 mm
L	4300 mm
Width	1660 mm
Weight*	2070 kg

Intermediate section 3m

H	1640 mm
L	3170 mm
Width	1660 mm
Weight*	770 kg

Intermediate section 6m

H	1640 mm
L	6170 mm
Width	1660 mm
Weight*	1240 kg

Intermediate section 12m

H	1640 mm
L	12170 mm
Width	1660 mm
Weight*	2120 kg

Boom head section 6.4 m

H Height	1630 mm
L Length	6600 mm
Width	1660 mm
Weight*	1310 kg

Boom head

H Height	1800 mm
L Length	2665 mm
Width	1070 mm
Weight*	1800 kg

Boom head

H Height	1210 mm
L Length	2820 mm
Width	780 mm
Weight*	1500 kg

*) Including pendant ropes

HS 885 HD TT V019 (is) LWN - TD24/6/2015

Dimensions of machine components

Figure 2-13

3.5 Work area

In accordance with the EU Machinery Directive, the machine must be operated by a machine operator.

The workplace is the cab on the uppercarriage.

Make sure that the following conditions are satisfied when operating the machine:

- no one other than the machine operator is on the machine or within the danger zone around the machine.
- the machine operator is in the cab at all times.

The operating elements may only be operated from the driver's seat. Operating any operating elements through the open cab door is prohibited.

Requirements for a safe working environment:

- keep the operator's cab clean.
- do not place any articles on the control panels.
- do not keep tools in the cab.
- hang any clothing on the hook provided for this purpose.
- keep the entrance to the cab clean and free of snow and ice; do not obstruct the entrance or block the escape routes.
- keep the screens and mirrors (internal and external) clean and free of condensation and ice.



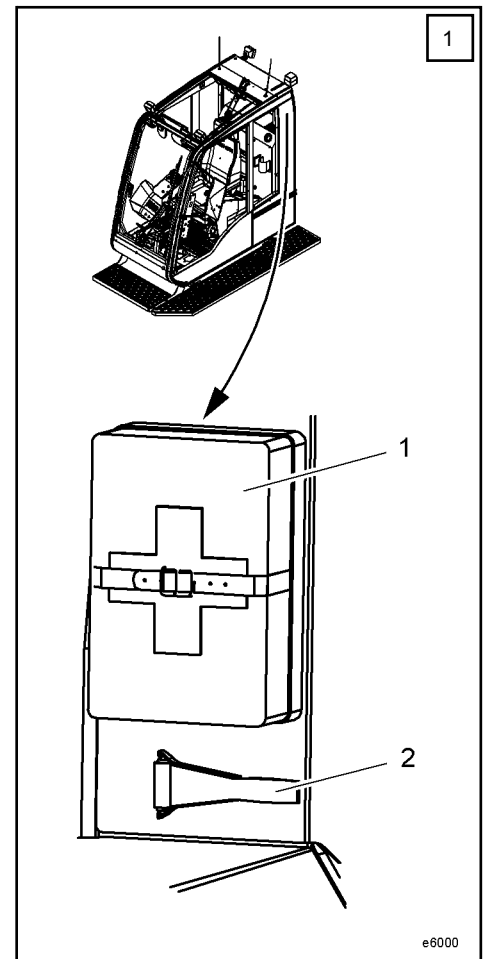
NOTE!

All sterile items and plasters are to be replaced after use or as required.

- Familiarise yourself with the first-aid measures and national regulations.

The first-aid box supplied with the machine (see Fig. 1, item 1) is equipped in accordance with ÖNORM V 5101.

If it is no longer possible to open the operator's cab doors by hand, the emergency hammer (Fig. 1, item 2) can be used to break one of the windows to create an emergency exit.



3.9 Meaning of the safety signs

Safety signs are divided into different groups with different shapes and colours.

3.9.1 Prohibition signs

Prohibition signs are round with a red border and have a diagonal line through them. The symbol is black. Prohibition signs are located wherever a potentially dangerous action is prohibited.



No fire, naked flames or smoking



No access for unauthorised personnel



No access for persons with pacemakers



Do not step on this surface



Pedestrians forbidden



Do not operate

3.9.2 Warning signs

Warning signs are triangles with a yellow background and a black border. The symbol is black. Warning signs are located to warn of risks or hazards.



Danger zone



Risk from high voltages



Danger from swinging loads

3.11.7 Poisoning and suffocation



WARNING!

Inadequate ventilation or fresh air!

Poisonous vapours or other atmospheres hazardous to health can lead to poisoning or suffocation.

- Observe situation-specific safety instructions and those concerned with handling.



NOTE!

Observe the following safety instructions:

- ensure adequate ventilation in the cab.
- use breathing apparatus when working with hazardous materials.

Examples of poisoning and suffocation hazards:



- Engine exhaust fumes contain carbon monoxide and other hazardous gases.
- If the machine is used in areas where hazardous substances are present, contact with hazardous gases is a possibility.
- The refrigerant from the air conditioning system circuit displaces the oxygen in the air.



First aid

1. Protection/personal safety
 - Identify - what is the nature of the emergency?
 - Think - what are the dangers for the injured party or the helper?
 - Act - make the situation safe.
2. Emergency call
3. Emergency life-saving measures
 - Recovery position
 - Cardiac massage, artificial respiration and defibrillation
 - Staunch bleeding, deal with shock
4. Additional first aid



First aid

1. Protection/personal safety
 - Identify - what is the nature of the emergency?
 - Think - what are the dangers for the injured party or the helper?
 - Act - make the situation safe.
2. Emergency call
3. Emergency life-saving measures
 - Recovery position
 - Cardiac massage, artificial respiration and defibrillation
 - Staunch bleeding, deal with shock
4. Additional first aid
 - (For further information see: Chapter 3, How to respond in the event of a current transfer)

3.14.2 Transport of the machine on floating devices

The operator bears sole responsibility for transporting the machine.

The machine must be secured while being transported on the floating device.

The machine must be secured on the floating device in such a way that the following consequences are ruled out:

- Damage to machine
- Sliding of machine
- Rotation of uppercarriage
- Capsizing of the floating device

Forces may result during transport through acceleration or deformation of the floating device. These forces may have an incalculable influence on the machine structure and impair the support structure, stability or service life of the machine, for example.



Improper transport of the machine on floating devices!
Damage to machine.

- ▶ Put down main boom. Secure main boom against lateral movement.
- ▶ Secure main boom against lifting.
- ▶ Make sure that the main boom is not distorted, because distortions of the floating device may lead to damage to the boom structure or machine.
- ▶ Deinstall counterweight from the uppercarriage and secure on floating device.

Erecting and dismantling the machine on the floating device is the sole responsibility of the operator.

3.14.3 Higher risk of machine corrosion on floating devices

The possibly higher risk of corrosion on machines in a maritime environment is the sole responsibility of the operator.

The following components may be damaged prematurely due to corrosion in a maritime environment (examples):

- Hydraulic cylinders
- Steel ropes
- Electric and electronic components
- Cabin

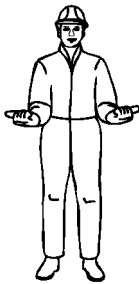
Therefore, the main components and the structure of the machine must be checked periodically by a qualified person.

The machine structure may not come into direct contact with saltwater.



Travelling with one crawler track

- Bend the arm and hold up a fist on the same side as the stationary crawler track
- Bend the other arm in front of the body on the side of the moving track
- Indicate the travel direction by making circular movements with the fist



Extend boom

- Hold both fists in front of the body
- Thumbs facing outwards



Retract boom

- Hold both fists in front of the body
- The thumbs point towards each other



Retract boom (one-handed signal)

- Hold one fist in front of your chest
- Your thumb points to your chest



Retract boom (one-handed signal)

- Hold one fist in front of your chest
- Your thumb points to your chest

Names of components in Figure 4-02:

- | | | | |
|-----------|---|-----------|---|
| 1 | Screenwash container | 13 | Pedal for left-hand crawler |
| 2 | Left-hand control panel (X12) | 14 | Pedal for right-hand crawler |
| 3 | Left-hand control panel (X11) | 15 | Brake pedal for free-fall brake* of winch 2 |
| 4 | Two-axis control lever for main boom adjustment and swing control | 16 | Gas pedal * |
| 5 | Safety lever for Litronic control system | 17 | LCD monitor |
| 6 | Operating hours counter * | 18 | Right-hand control panel (X23) |
| 7 | Grab handle | 19 | Ignition switch |
| 8 | Recirculated air/fresh air selector | 20 | Outer T-lever for winch 2 |
| 9 | Air vents | 21 | Inner T-lever for winch 1 |
| 10 | Hand lever for left and right crawlers* | 22 | - |
| 11 | Brake pedal for free-fall brake* of winch 1 | 23 | Radio |
| 12 | Spirit level for inclinometer | | |

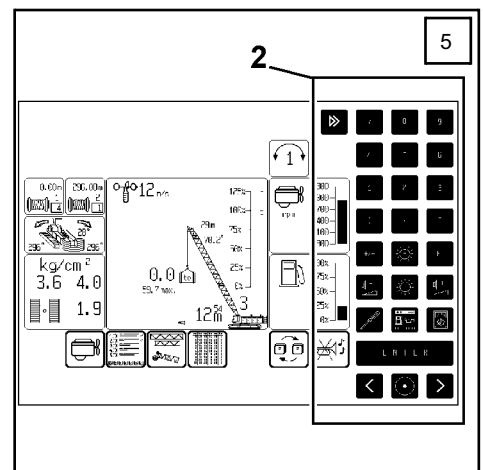
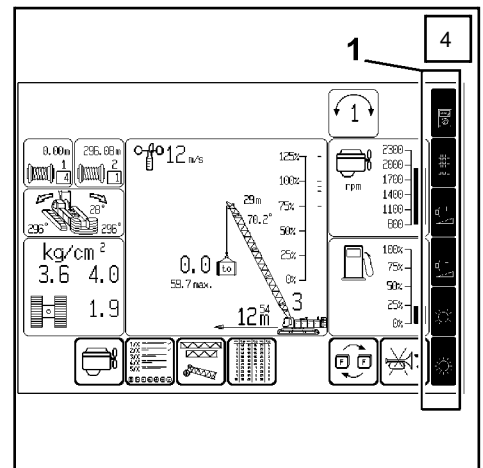
4.8 Litronic service panel on the LCD screen

4.8.1 Menu bar

The **menu bar** (Figure 4, item 1) for the Litronic® service panel is displayed following the start up screen on the right hand side of the LCD screen.

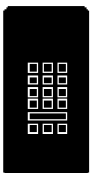
The menu bar function symbols use Touch Screen functionality to:

- switch to the Litronic® test system,
- switch to the **keyboard menu** (Figure 5, item 2),
- adjust the volume of the warning buzzer,
- adjust the brightness of the LCD screen.



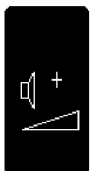
Test system

Switch over to Litronic® test system.



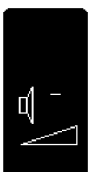
Keyboard

Switches from the **menu bar** to the **keyboard menu** (Figure 5, item 2).



Increase volume

Adjusts the volume of the warning buzzer.



Decrease volume

Adjusts the volume of the warning buzzer.

Potentiometer

The two potentiometers on the right-hand control panel can be used to make various settings, depending on the options installed on the machine. Two separate functions can be assigned to each of the two potentiometers. The function assignment is indicated by the corresponding LED on the selection display.

The potentiometer is adjusted from minimum to maximum by turning it clockwise. It can be turned through two revolutions. It can be fixed in the desired position with the small lever.



Potentiometer 1



Selection display "Casing oscillator capacity"

The function assigned to potentiometer 1 is indicated by the LED.



Grab slow-down height selection display (optional)

Used to adjust the slow-down height.



Potentiometer 2



Selection display "Casing oscillator power regulation"

The function assigned to potentiometer 2 is indicated by the LED



Slack rope cut-out selection display (optional)

Used to adjust the switching threshold for the slack rope cut-out.



IMPORTANT!

The potentiometer setting always applies to the active selection.
(LED in the selection display lights up.)

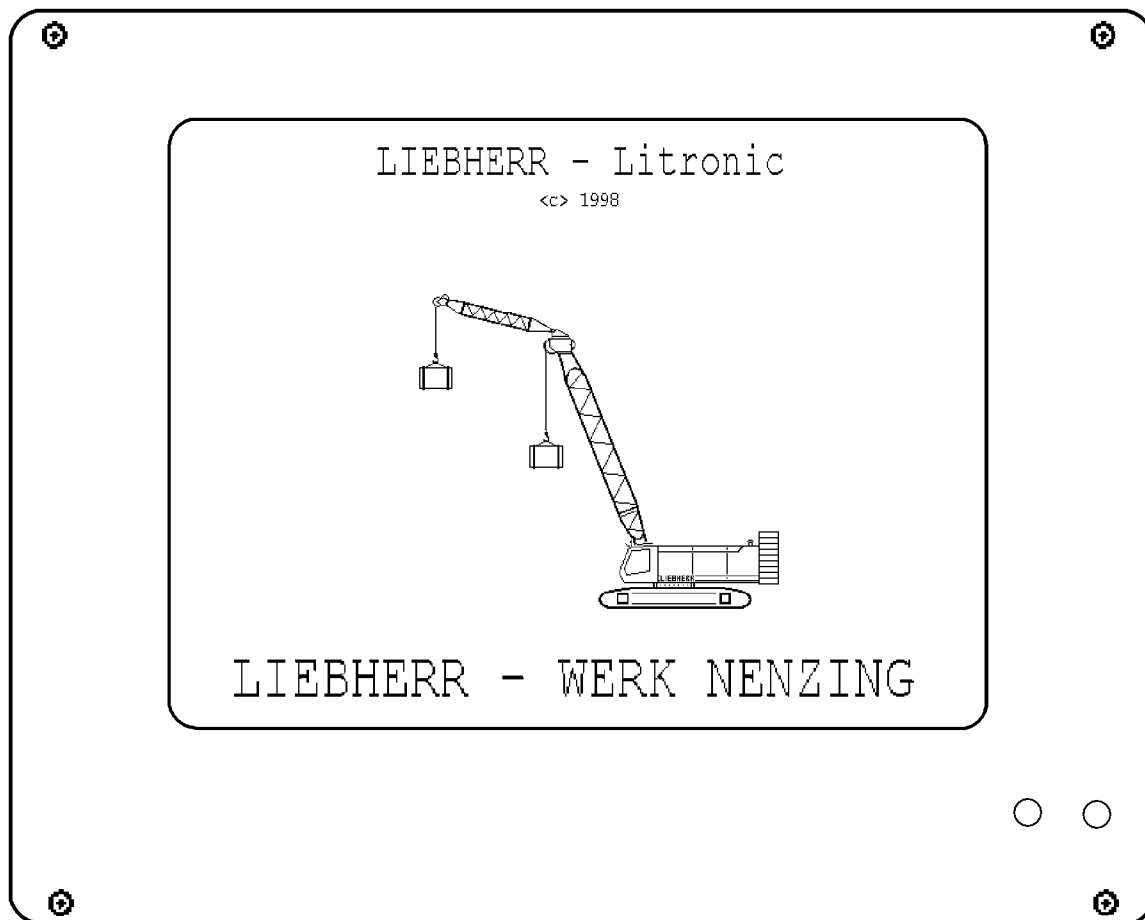
4.12 Operator guidance on the display screen

General

All possible displays on the display screen are quoted and described throughout the following pages. Beginning with the start-up screen, appearing directly upon start up of the machine, across the possible display screen pages, up to a description of the installed test system of the Litronic control.

4.13 Start-up screen

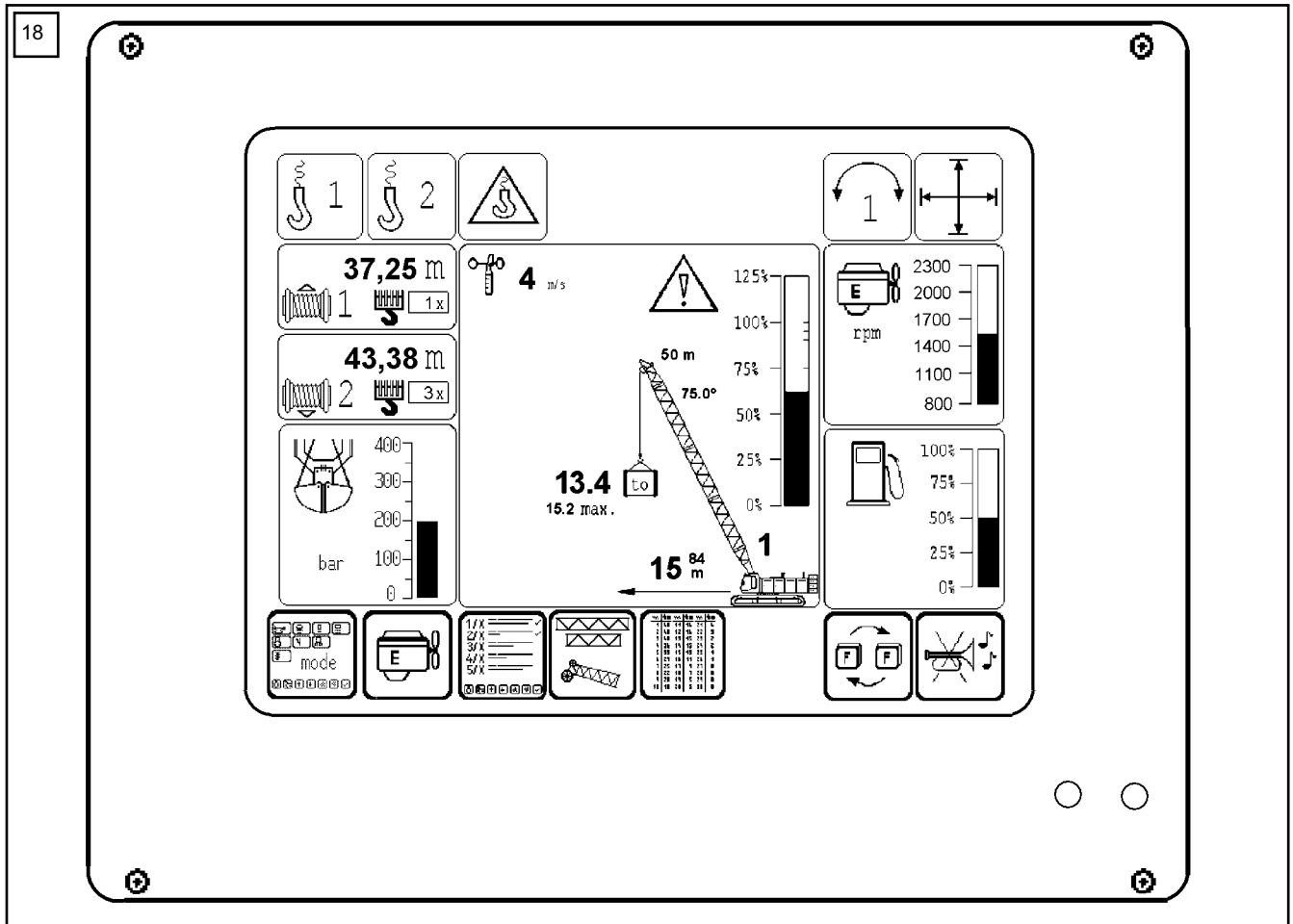
The start-up screen appears and the control boots up when the Litronic control system is turned on. The word "booting" is displayed.



Start-up screen

Figure 4-00

4.15 "Mode screen" page



"Mode screen" page

The mode screen includes important displays and information for operating the machine.

Description of status displays



"Free-fall winch 1" symbol

Indicates that winch 1 is currently in free-fall.



"Free-fall winch 2" symbol

Indicates that winch 2 is currently in free-fall.



"Unsecured free-fall mode" symbol

Indicates that "Unsecured free-fall mode" has been selected.



"Secured free-fall mode" symbol



"Fast-speed winch 1" symbol

Indicates that "Fast-speed winch 1" has been selected.



"Fast-speed winch 2" symbol

Indicates that "Fast-speed winch 2" has been selected.

4.18 Motor error message

4.18.1 Serious motor error message



Severe damage to the machine results when a serious motor error message is ignored. The diesel motor is not automatically stopped when a motor error message appears.

Safely switch off the machine with the appearance of a serious motor error message.

With the appearance of a serious motor error message, the motor display flashes “Switch off immediately” on the operating screen.



Motor display - Switch off immediately

As a result of the fault message, the speeds of these functions and movements are reduced to 50%:

- Lift lifting winches 1 + 2
- Lift feed
- Drilling drive
- Running gear
- Hammer
- Grabber
- Milling head

Course of action with the appearance of a serious motor error message:

- **Discontinue dangerous movement.**
- **Place load on the ground.**
- **Switch off diesel motor.**
- **Determine cause of error and take corrective measures.**

- Check that the load capacity charts needed for the current operation are kept in the cab.
- Check that the angle indicator on the main boom pivot piece is working properly and clean it if necessary.
- Check that both fire extinguishers
 - are present and ready for use
 - have undamaged seals
 - have not passed their inspection date.
- Check engine oil level.
See Chapter 7.
- Check coolant level.
See Chapter 7.
- Empty the water separator of the fuel system.
See Chapter 7.
- Perform daily lubrication tasks according to maintenance plan.
See Chapter 7.
- Check hydraulic oil levels.
See Chapter 7.
- Check hydraulic tank shut-off valve.
 - The shut-off valve must be open!For explanation see Chapter 7.

**CAUTION!**

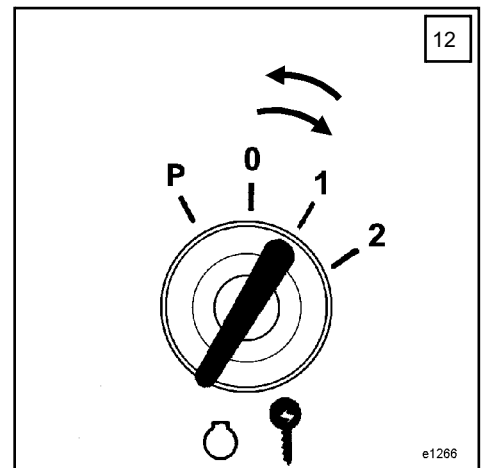
The hydraulic system will be wrecked if the diesel engine is started with the shut-off valve closed (positioned at right angles to the suction pipe).

- Check the battery main switch.
The main switch must be on; for an explanation see Chapter 7.
- Unlock all emergency shut-down switches by turning them anticlockwise.
For layout and explanations see Chapter 4.

Switch off the ignition to save the new operating mode.

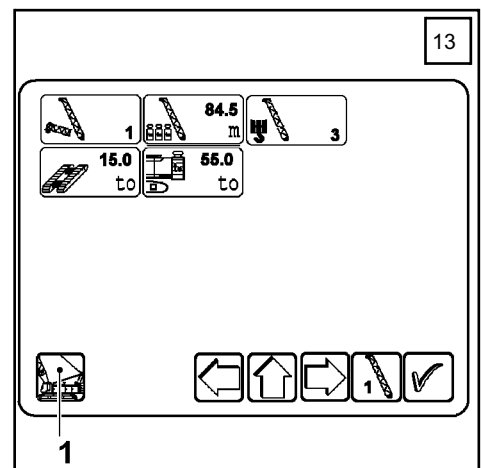
3.) Turn the ignition key to the left (Position "0") (Figure 12).

4.) Wait a few moments and then turn the ignition key to the right (Position 1) (ignition on).



The "Set-up screen" appears on the monitor

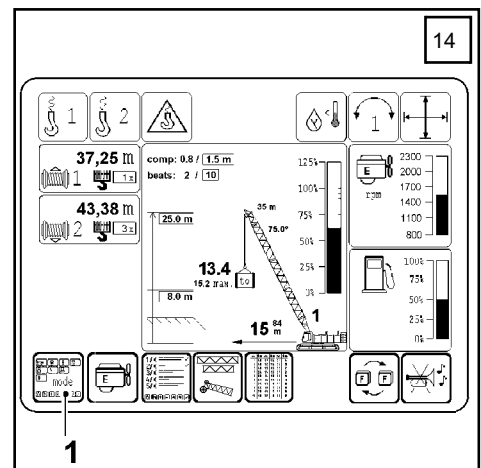
Tap on this symbol (Figure 13, item 1) to switch from the "Set-up screen" to the "Piling mode screen".



The "Piling operation screen" page (Figure 14) is displayed on the monitor in place of the "Set-up screen".

Initialization of "Lifting operation" in "Piling mode" has been concluded.

If the machine operator wants to select another operating mode on the monitor, he can switch from the "Piling mode" screen to the "Operating modes" screen by tapping on the "Select operating mode" symbol (Figure 14, item 1).



IMPORTANT!

The machine operator must ensure that the lockable cover on the left-hand control panel (X12) is locked whenever a new operating mode has been initialized.

5.6 Operating the hoisting winches



NOTE!

Operation of the hoisting winches in free-fall mode is explained in section 5.



WARNING!

Danger of accidents and possible damage to the machine!

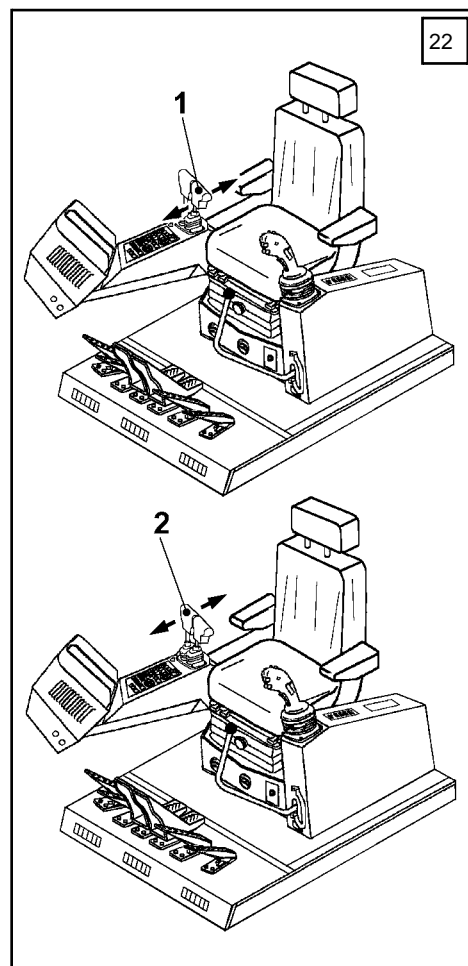
- The winches must not be unwound if there is no tension on the hoisting rope!
Otherwise, the hoisting rope will be lifted off the winch, causing the 3-windings limit switch and the pay out metering to malfunction!

The operation of the hoisting winches is the same in lifting mode and in set-up mode:

- Using the **inner T-bar joystick** (Figure 22, item 1), **winch "1"** can be moved steplessly from standstill to maximum speed.
- Using the **outer T-bar joystick** (Figure 22, item 2), **winch "2"** can be moved steplessly from standstill to maximum speed.

For both winches "1" and "2":

- Push joystick forwards = lower load hook
- Place joystick in neutral = load hook stays in position
- Pull joystick back = raise load hook



5.7.6 Lifting loads with the main boom head, with tip boom fitted*.



NOTE!

The main boom bears the load, the tip boom is not used for hoisting.

CAUTION!

- The mounted tip boom* falsifies the load indication in the mode screen.
- The weight of the tip boom* reduces the maximum possible load.



NOTE!

Before hoisting any load with winch "1" the reduced maximum load has to be calculated by the machine operator.

For a rough calculation of the reduced maximum load, the following formulae are applicable depending on the set-up of the tip boom*:

Tip boom without reeved hoisting rope:
Load reduced = Load in load capacity chart -1000 kg [2200 lbs]

Tip boom with 600 kg [1300 lbs] empty hook:
Load reduced = Load in load capacity chart - 2000 kg [4400 lbs]

Tip boom with 1500 kg [3300 lbs] empty hook:
Load reduced = Load in load capacity chart - 3250 kg [7200 lbs]

For the exact calculation of the reduced load, e.g. during planning, the following formula should be used:

$$SWL_{HPT} = \frac{SWL * (@ HPT - X ROD) - (SWL_{SPITZENA.} + m_{SPITZENA.}) * (@ HPT - X ROD + D@ SPITZENA.)}{(@ HPT - X ROD)}$$

The meaning of the symbols:

- SWL_{HPT} reduced load for hoisting with the main boom head
- SWL maximum load capacity for main boom from the load capacity chart at @ HPT
- @ HPT Outreach of the main boom
- X ROD Distance between rotation axle and main boom pivot point
- SWL_{SPITZENA.} Load on the tip boom, in this case the weight of the empty hook
- m_{SPITZENA.} Weight of the tip boom (600 kg [1320 lbs])
- D@ SPITZENA. Amount outreach increased by tip boom

Prerequisites

- The hoisting rope on the main boom head must be at least of the same reeving as the hoisting rope on the fly jib head.

If the above condition is met, the operation continues as follows:

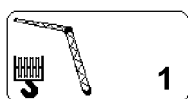


Press function key **F4** in the crane operation screen.
One of the set-up screens will appear on the screen.
Press function key
"F7" to select set-up screen no. "3".
Set-up 3 = "Main boom with fixed fly jib"



"Load position" function key

In this display field, use the arrow keys to specify if the load is to be taken up in combined twin hook operation (Figure 31).



Press function key **"F4"** or **"F6"** to select the "Fly jib hoisting rope reeving" input field.

- Press function key **"F5"** to select the desired reeving



This check mark flashes above the function key **"F8"**

- Press function key **"F8"**, the set-up is recalculated.
At the same time, the hourglass symbol appears instead of the check mark above function key **"F8"**.
- Once the calculation has been completed the hourglass symbol changes back into the check mark.
The calculation is complete.
- Press function key **"F1"**;
; the crane operation screen is displayed again on the screen.
- Before starting work check the functions of the hoisting limit switches on the main boom and fly jib in the following sequence:
 - Slowly raise the pulley block or load hook until the load on the chain on the relevant hoisting limit switch eases and the hoisting limit switch trips.



Lights up for the triggered hoisting limit switch (hoisting winch 1) of the fly jib in the mode screen.



Lights up for the triggered hoisting limit switch (hoisting winch 2) of the main boom in the mode screen.

Position of the A-frame table

As of the specified main boom angles, the A-frame protrudes beyond the rear counterweight. This angle varies according to the main boom angle. (See table).

Table

Main boom length A	Outreach B	A-frame height C	Main boom angle X
11m/36ft	3,9 m	7,5 m	82°
20m/66ft	5,1 m	6,8 m	82°
32m/105ft	6,7 m	6,4 m	82°
44m/144ft	8,4 m	6,3 m	82°
56m/184ft	10,1 m	6,3 m	82°

Tab. 1: Position of the A-frame in relation to the main boom angle at different main boom lengths.

**IMPORTANT!**

The "Free-fall on/off" button must be held down until the corresponding brake pedal to the free-fall winch has been pressed down fully; otherwise the free-fall winch will remain disabled for safety reasons.

Depending on which brake pedal is pressed, the following symbols appear on the LCD monitor:



"Winch 1 clutch open" symbol



"Winch 2 clutch open" symbol

- Lower empty hook in free-fall:
Release the free-fall brake with the corresponding brake pedal in a controlled manner.
- Stop the free-fall of the load hook:
Depress the corresponding brake pedal carefully and sensitively.

**CAUTION!**

Constantly monitor the LML bargraph and the lifting capacity display in the lifting appliance mode screen during braking. The maximum permitted lifting capacity must not be exceeded!

**CAUTION!**

In free-fall operation the "lowering" direction is not switched off automatically by the 3-rope windings limit switch!

Overrunning of the hoist rope

- makes dangerous slacking of the rope possible,
- causes the windings on the free-fall winch to become loose and irregular,
- can change the 3-rope windings limit switch and the rope measuring system* setting.

Countermeasure:

Stop the free-fall winch with the appropriate brake pedal immediately after the empty hook has reached the ground.

- Lift the empty hook again: Actuate relevant control lever.

**IMPORTANT!**

A "winch stop monitor" checks the swing movement of the free-fall winches*. The empty hook can only be raised again after the corresponding free-fall winch* is at a standstill.

5.9.12 Ramming control/chisel control

General

Ramming control (automatic control for dynamic earth compaction) is used to compact the earth with a special weight called a **"drop weight"** .

Chisel control is used to break up the earth using a special chisel so that it can then be picked up with a grab.

Ramming control works in conjunction with free-fall control and rope length metering and runs automatically, as follows:

- The hoisting rope to which the drop weight is attached is tensioned
- The drop weight is raised to a defined hoisting height
- The drop weight is allowed to free fall
- The hoisting winch is braked at the correct moment

The steps described above are referred to below as the **ramming cycle** , or more simply as the **"beat"** .

The ramming control system can be operated with one or both hoisting winches

When moving the machine, during dynamic soil compaction, particular attention must be paid to the ground conditions.



Operating errors during ramming operations can lead to injuries and severe damage to equipment.

Precautions:

When operating the HS 885 HD with ramming control, the following additional points must be noted:

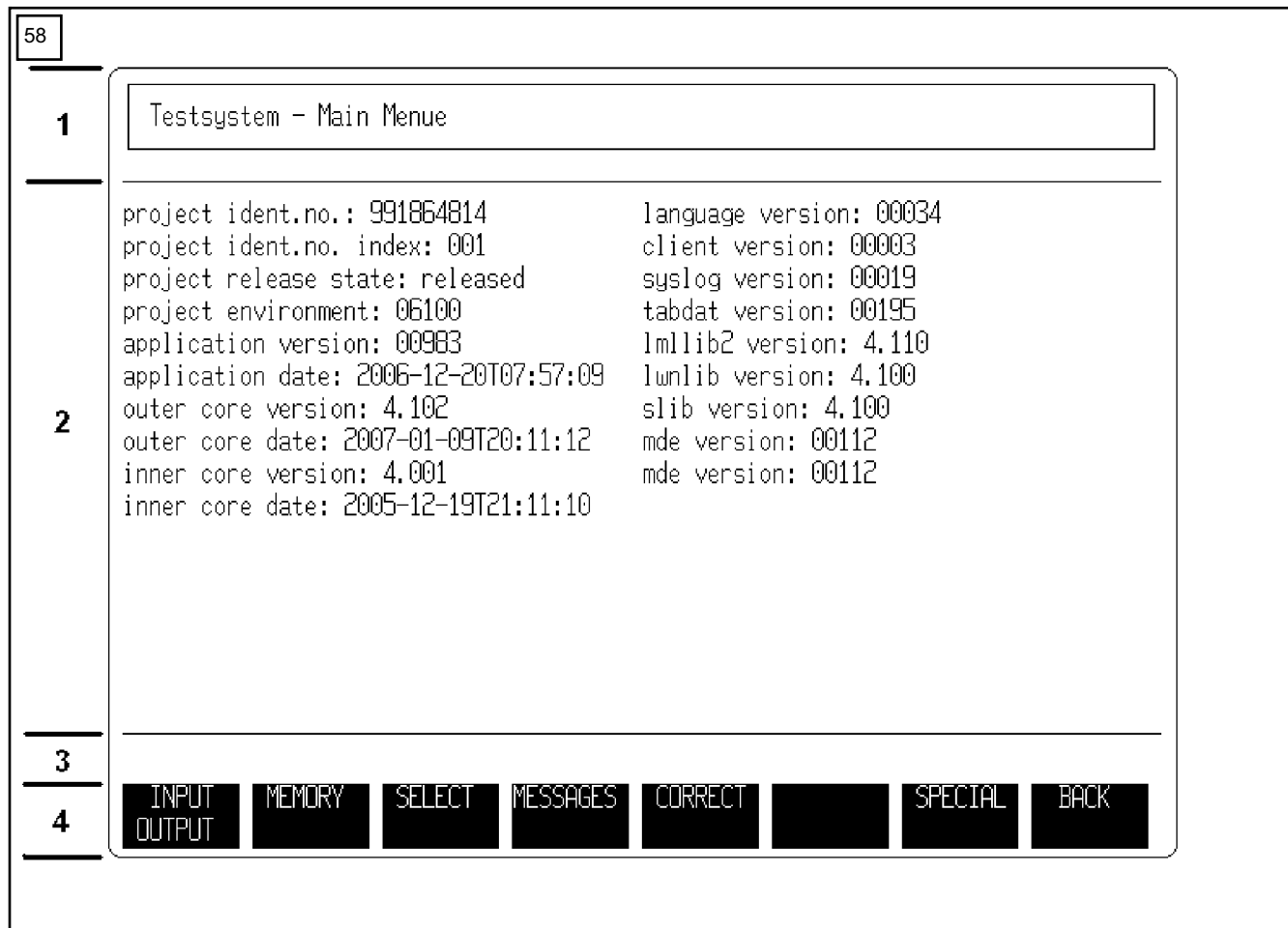
- The machine operator must be familiar with this special operating mode. He must not switch on the ramming control unless he has read and understood this section of the operating manual.
- In ramming operation, the uppercarriage must be at right angles to the crawlers. Any other position reduces the stability of the machine and/or would lead to localised overloading of the machine, resulting in damage to certain components.
- The machine operator must keep his eye on the drop weight, so that he can stop the automatic system at any time in the event of a malfunction.
- The machine operator must watch to ensure that the drop weight is properly fastened and stop the automatic system at once in case of damage.
- During a ramming cycle, the superstructure may be turned only with extreme care and only in order to compensate for any diagonal pull.
- When adjusting the main boom, ensure that the optional load moment limiter is bypassed. Danger: the machine could topple over!
- The brake pedals must not be operated while the drop weight is in free-fall.
- Traveling is forbidden during a ramming cycle.

5.10.3 Starting the Litronic® test system



The Litronic® test system is started by pressing this key on the Litronic®. It can be started at any time while the ignition is switched on and also during operation.

- The Litronic® test system main menu (figure 58) appears on the LCD screen.



- | | |
|---|---|
| <p>1 header line: Description of the page currently showing</p> <p>2 Main section: Contains the actual data</p> | <p>3 Input line: Displays the values entered, with the option of making corrections, Displays status messages and prompts to enter data</p> <p>4 Menu bar: Changing configuration of the eight function symbols</p> |
|---|---|

DANGER!

While the Litronic® test system is in operation, fault messages from the Litronic® control system do not display!

System status menu

This page displays the current system status (running, stopped, etc.) and the timing for the PLC tasks (programmable logic controller).

Description of the function symbols.

- **SYSTEM TASKS** displays information about the system tasks.
- **BOARD INFO** displays information about the board (voltage, temperature etc.).
- **BACK** goes back to the SPECIAL FUNCTIONS menu.

MDE/PDE menu

This page displays the status of the MDE (machine data entry), the PDE (process data entry) and of the data logger.

Description of the function symbols.

- **MDE** displays the MDE data.
- **PDE** displays the PDE data.
- **SELECT GRAPHIC** lists saved graphics (such as the company logo) in order to print out the PDE data. The required graphic can be selected.
- **LOGGER** displays the data logger data.
- **SAVE TO CARD** saves the MDE, PDE or data logger data in a file. As you do so a menu appears for you to select a file name - a standard file name (made up from today's date) is suggested. Of course you can change this name if you want (see Select File Save page):
- **BACK** goes back to the SPECIAL FUNCTIONS menu.

Clients menu

This page displays the status of the individual communications ports (Clients).

Description of the function symbols.

- **PREVIOUS** and **NEXT** switch between the ports.
- **BACK** goes back to the SPECIAL FUNCTIONS menu.

5.12.4 Checks before leaving the machine



When leaving the machine, it must generally be protected against unauthorized use, damage by vandalism and possible environmental harm!

The following points must be observed when leaving the machine:

- The load must be set down on the ground and properly secured.
- The machine must be in a parked position on even ground (see Chapter 3 "Ground conditions on the site").
- No public safety facilities may be impeded (emergency exits, access routes for rescue vehicles, heliports, fire hydrants, etc.).
- The shut-down machine must not impede traffic (on site).
- Additional safety devices can be attached (e.g. helicopter warning lights).
- The ignition key must be pulled out and kept safely. The cab must be locked.
- The optional auxiliary heating must be switched off or correctly programmed for the next time work begins.
- All doors of the machine must be locked.
- The place where the machine is left must be adequately secured.

6.2 Assembly, dismantling and reconfiguring

General

This chapter describes

- assembly and dismantling,
- on-site reconfiguring,
- transportation between sites.
- operational planning.

The HS 885 HD offers the following cost advantages and time-savings:

- No auxiliary crane required for assembling/disassembling the ballast on the machine.
- Guide rails on connecting parts simplify assembly, dismantling and reconfiguring.
- During set-up, loading and unloading, the machine operator is provided with information on the LCD monitor.

Overview of set-up operations

Besides detailed descriptions, the set-up operations to be carried out are listed in the form of overviews.

The set-up team should use copies of these overviews as memory-aids and to check progress.



NOTE!

For the sake of convenience, some of the illustrations in this chapter appear in simplified form. For example, the undercarriage of the basic machine is shown without the superstructure, so as to illustrate the described activities more clearly.

Directional indications

The directional indications "right/left", "forward/back" are always from the point of view of the driver sitting in the cab.

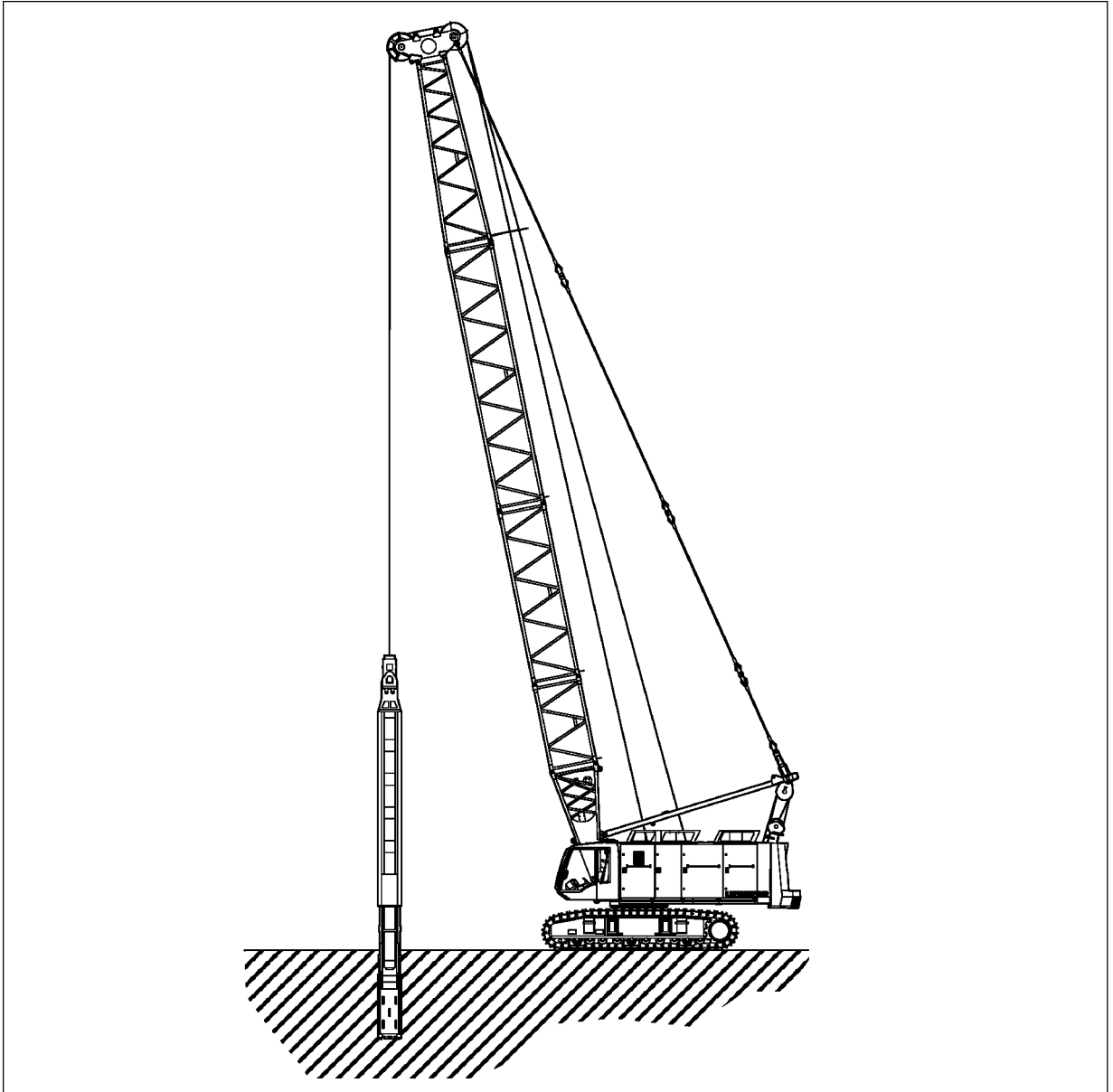
Dimensions

The precise measurements follow the ISO system of units. The US measurements given in square brackets are in some cases rounded upon conversion.

Slurry wall grab working equipment *

Rear counterweight 24.1 t

Additional counterweight 8.4 t



Excavator with slurry wall grab

Figure 6-09

Winch options	2 x 250 kN	2 x 300 kN
Max. rope speed in first gear (m/min)	0 - 69	0 - 55
Max. rope speed in second gear (m/min)	0 - 123	0 - 119
Max. bit weight	16 t	25 t

* Lifting capacities in excavator mode, see Figure 6-10

• Adjusting crawler side frames on work track	
	<p>Enable the cylinder adjustment functions in the cab. Lower the safety lever.</p> <p>Loosen crawler wedging.</p> <p>Adjust right crawler on work track.</p> <p>Tighten crawler wedging.</p> <p>Adjust left crawler side frame on work track. in the manner described for the right crawler.</p> <p>Fit catwalks and platforms.</p>
• Unloading the rear counterweight	
• Mounting the rear counterweight	
	<p>Attach mounting ropes.</p> <p>Operate the main boom adjusting winch (raise rear counterweight).</p> <p>Bolt rear counterweight to uppercarriage.</p> <p>Fit straining screws.</p> <p>Detach mounting ropes.</p>

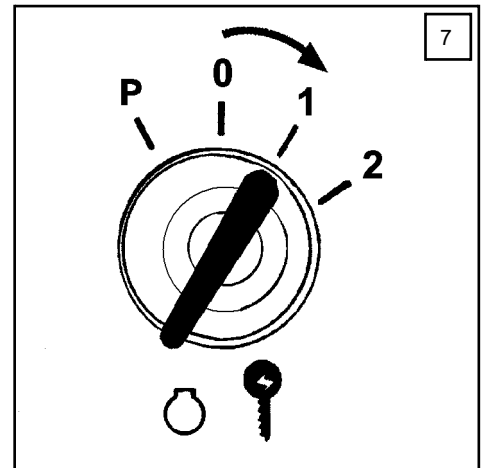
6.5.7 Starting assembly mode

Turn on ignition (Figure 7)

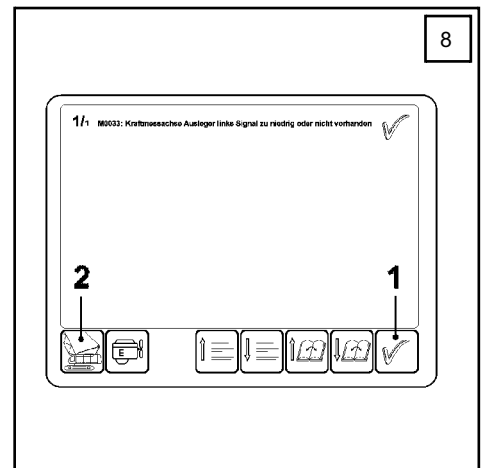
- Insert the ignition key in the ignition switch and turn to position 1.

The LCD screen shows

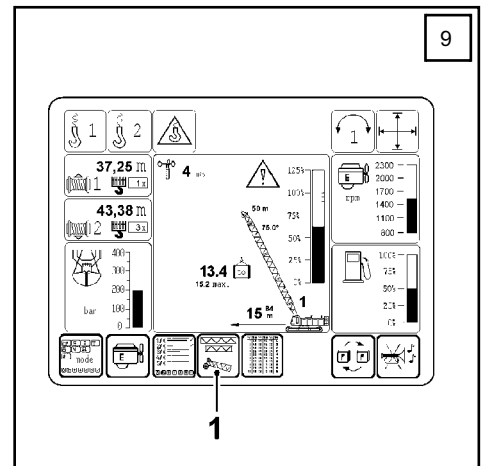
- firstly the start-up screen,
- the set-up screen, once the Litronic control system is operational.



Note: The voltage dip during the start procedure can cause error messages. Acknowledge all error messages on the LCD screen by pressing the symbol (Figure 8, item 1). Then press the symbol (Figure 8, item 2) to open the mode screen.



Press the symbol (Figure 9, item 1) to change to the set-up screen.



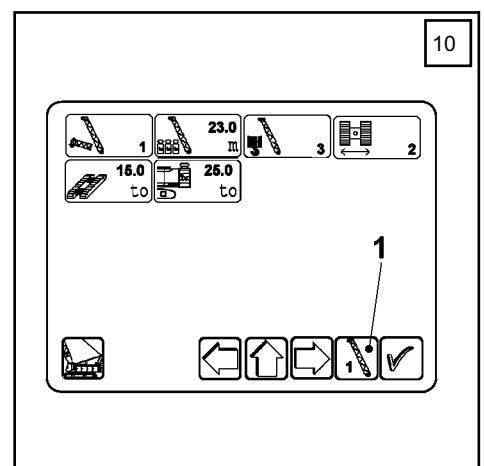
Programming set-up 1 for assembly mode



IMPORTANT!

If the basic machine is to be used as an erection crane, it is helpful if **set-up 1 for main boom** is programmed.

- Check the pre-programmed set-up: The symbol (Figure 10, 1) shows the number of the set-up.

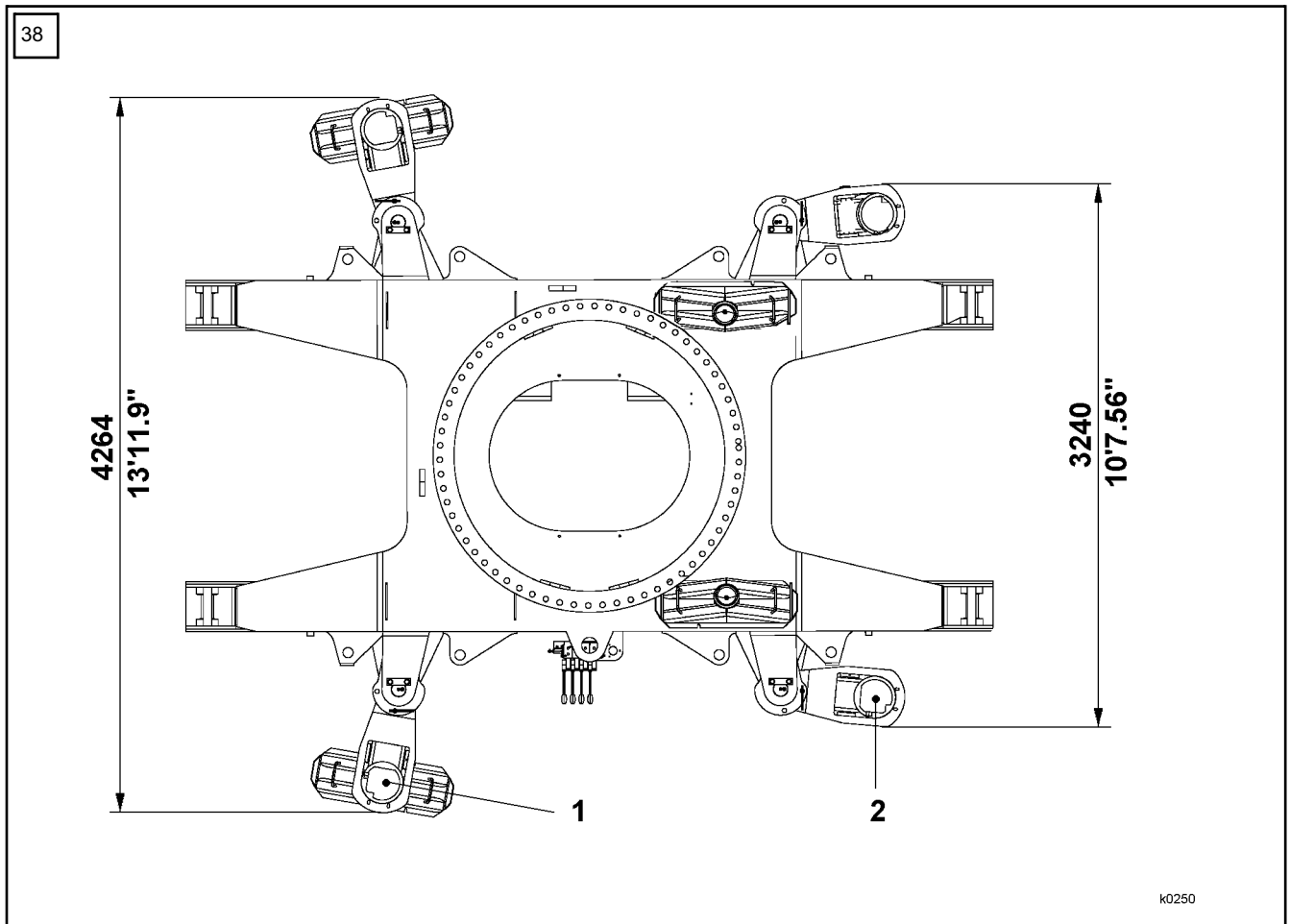


6.5.13 Unloading the basic machine using the self-loading system

The basic machine must be supported on the ground with support cylinders in order to be unloaded from the low-loader and assemble the crawler carriers.

Fold out the folding bracket

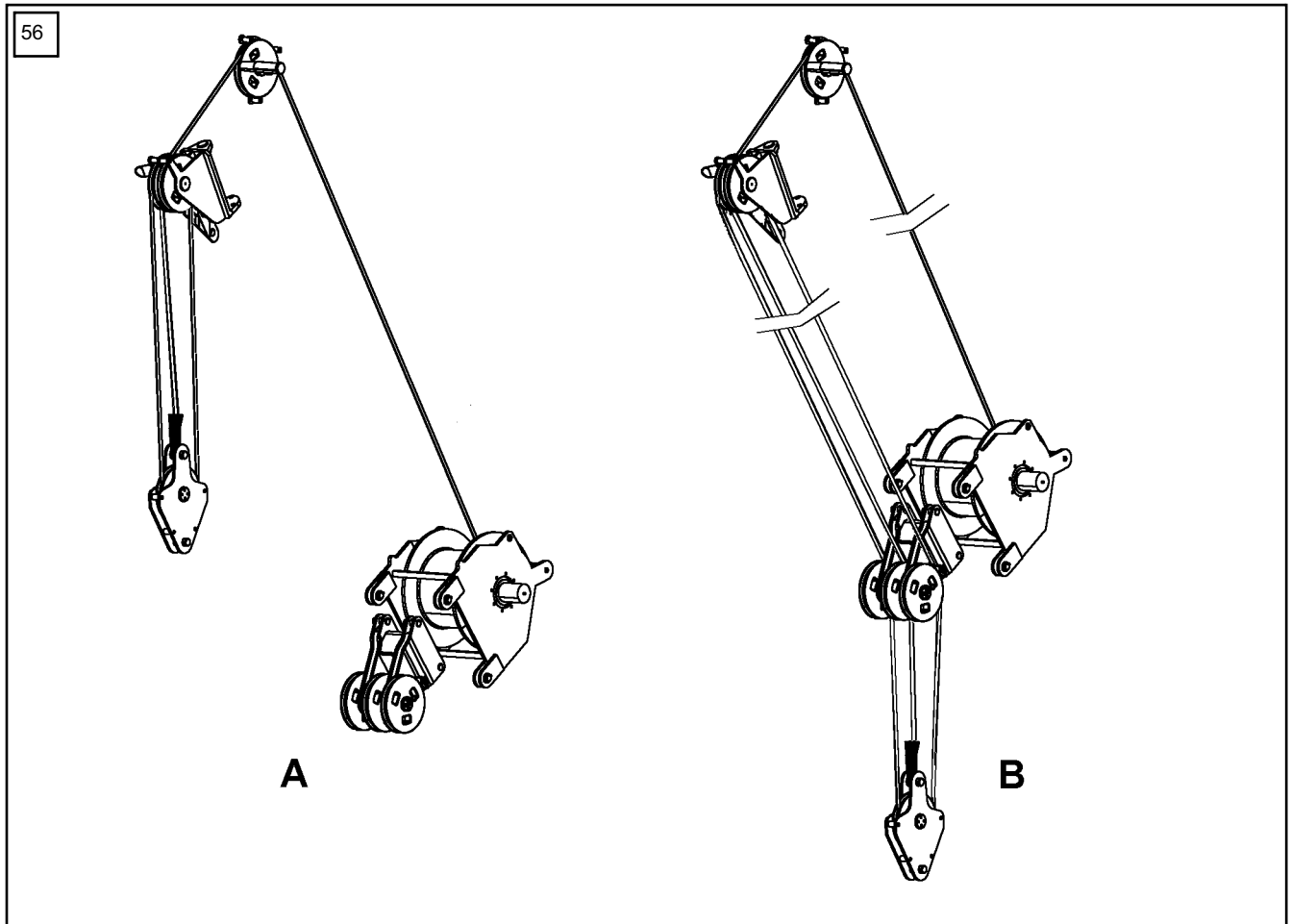
Folding brackets are incorporated to increase the support width of the basic machine and permit the machine to be loaded onto a wider low-loader.



Transport and clearance width with folding brackets.

- 1 Working position for assembly mode 2 Transport position

6.5.16 Rope reeving diagram



Overview

Position A

- The reeving arrangement for loading the crawler carrier onto the low-loader and unloading it is shown in Figure 56, position A.

Position B

- Lay the rope of the auxiliary winch on the guide rollers as shown in the reeving plan (Figure 56, position B) to move the crawler carrier on and off the crossbeam. The ropes are pressed backwards towards the roller block and then laid over the rollers.

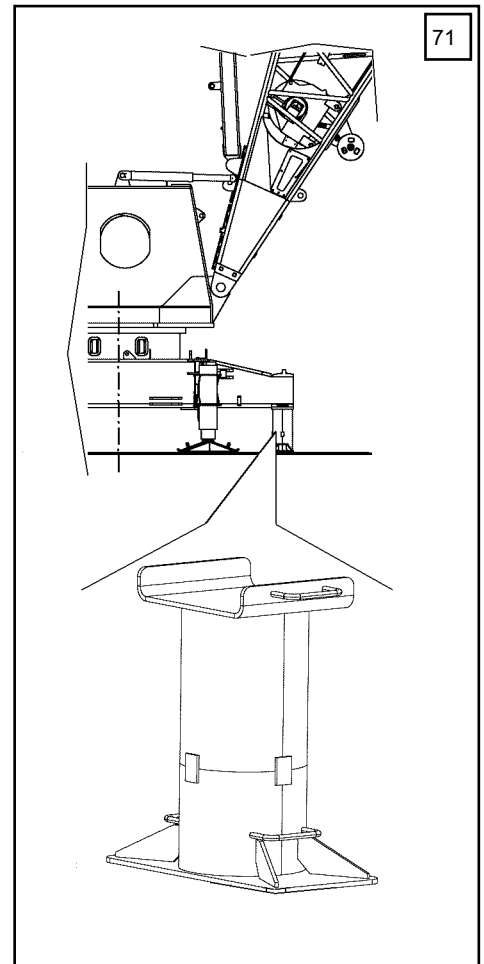
Remove the brackets (Figure 71).

Using the joystick, lift the basic machine evenly over the mounting cylinders. Remove the bracket from below the crossbeam.

Ground clearance for mounting crawlers

A minimum ground clearance of 600 mm [2'] is required for mounting the crawlers.

Lower the basic machine to the determined ground clearance and level it by pressing the control levers evenly downwards while observing the spirit level: The indicated inclination of the machine must not exceed 1°.

**Reeve the hoisting rope (Figure 72).**

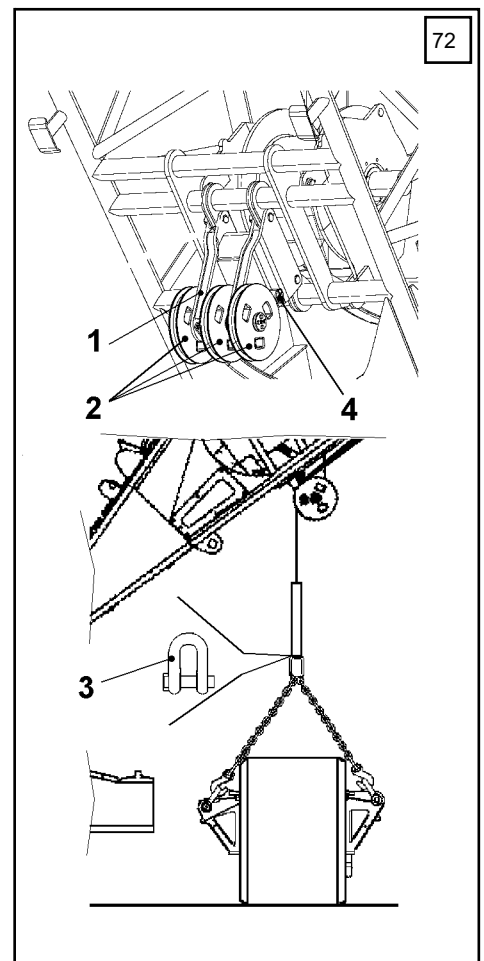
The hoisting rope of the auxiliary winch must be reeved over the guide rollers (2) on the bracket (1) at the pivot piece in order to slide the crawler carrier onto the crossbeams.

Procedure

- Relieve the strain on the auxiliary winch.
- Remove the spring plug and safety bolts on the guide rollers..
- Push the hoisting rope backwards and lay it over the guide rollers (2).
- Insert and secure the safety bolts.

Fasten the shackle between the hook and the rope tackle (Figure 72)

- Reeving the rope over the guide rollers (2) causes the crawler carrier to move sideways as it is lifted. To prevent this, a shackle (4) of suitable lift capacity must be fitted between the hook and the rope tackle.
- Unwind the main boom adjusting winch until the mounting tackle is suspended centrally over the crawler carrier.



6.5.21 Retract the support cylinders

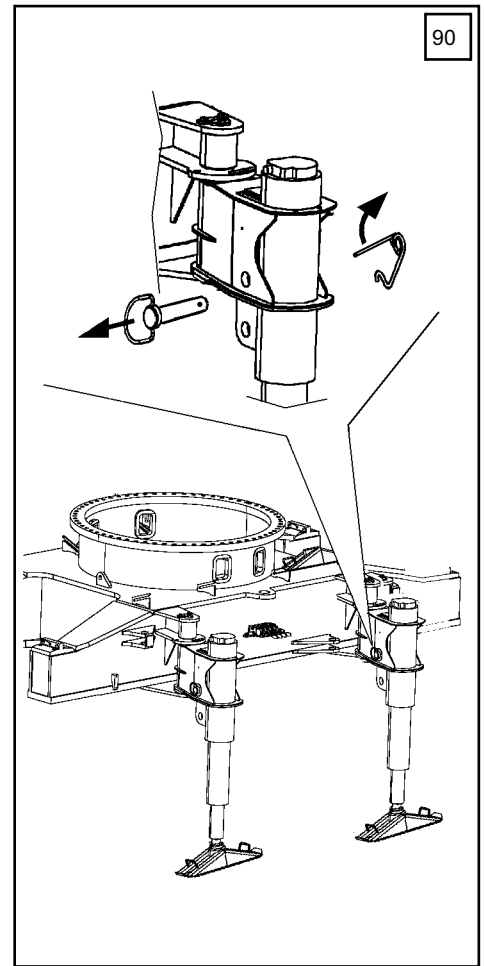
- Retract all support cylinders evenly and slowly until both crawler carriers are fully on the ground.



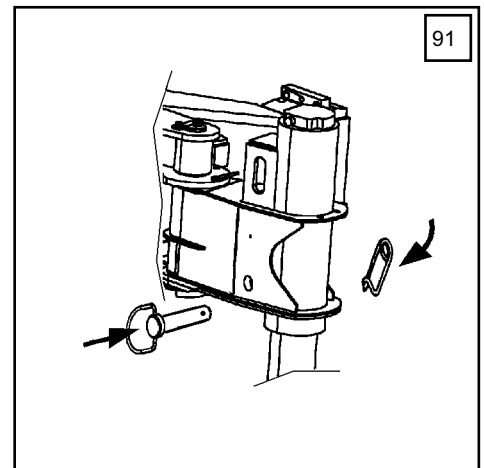
NOTE!

For maximum ground clearance, always bolt all support cylinders to the brackets in the transport position, that is to say in the **lower** fixing hole, before retracting them completely.

- Relieve the strain on each support cylinder in turn using the appropriate control lever.
- Loosen the bolting (Figure 90): Open the retaining spring and extract it. Pull out the fastening bolts by the grip.
- Then slowly retract the support cylinder until the lower fixing hole is exactly aligned with the bolt hole on the folding bracket (Figure 91).

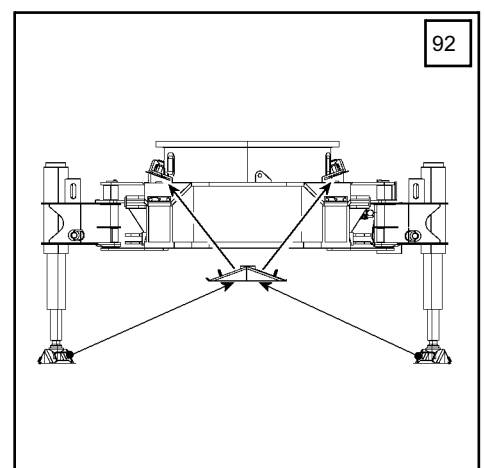


- Replace the fixing bolts and insert retaining springs.
- After bolting in the transport position, fully retract all support cylinders.



Fix base plates in mountings on the center section of the undercarriage

- Insert base plate into mounting on undercarriage. Fasten all other base plates, in the manner described, on the center section of the undercarriage.
- Clear away all chocks used in the support process.



6.5.28 Pushing the crawler carrier onto the chord

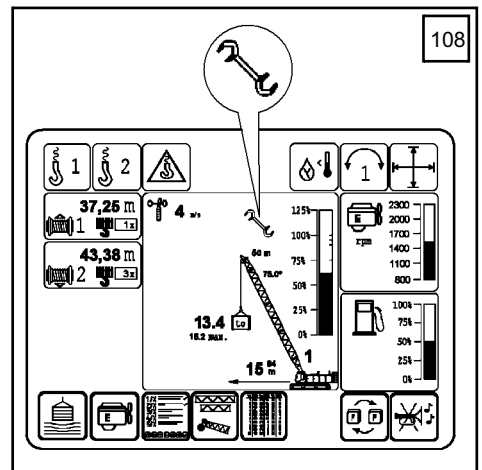
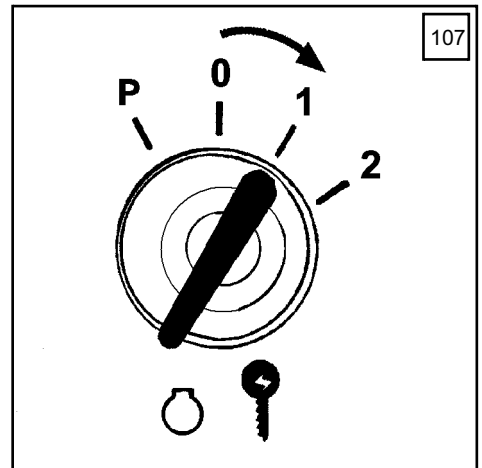
- Driver gets into the cab and closes the cab doors.
- Pull down the safety lever.

Switch on the ignition.(Figure 107)

- Insert the ignition key in the ignition switch and turn to position 1.

Select mounting mode

- Check first to see whether mounting mode is already active. In that case the mounting mode symbol (Figure 108) appears in the mode screen.



Vorgangsweise

- Carefully maneuver the machine so that its rear is brought very close to the rear counterweight.
- Adjust the pivot piece to approximately 0° (the pivot piece can subsequently be lowered without any restriction). When raising the pivot piece, ensure that the cylinder rods of the tilting-back supports on the superstructure are fully extended.
- Move the main boom adjusting winch slowly until the mountings (Figure 123) are easily accessible.
- Attach both mounting ropes (Figure 124, item 2)
- Luff the mounting ropes over the rope pulleys on the counterweight (3) and fix the threaded ends on both sides to the mountings on the superstructure (1) with nuts.
- Move the main boom adjusting winch in the "lowering" direction until the mounting ropes are lightly taut. Then check the fastening of the rope pulleys and the rope winding on the winch, and of the rope guide in the pulleys.

**CAUTION!**

Do not stand directly under, next to or behind the rear counterweight while the rear counterweight is being raised.

- Move the main boom adjusting winch in the "lowering" direction and slowly raise the rear counterweight as far as the upper limit stop (check that the rear counterweight remains horizontal).

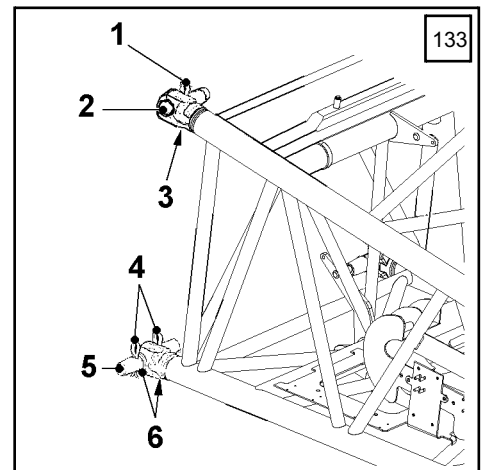
Lower the main boom pivot piece (to approx. 0°)

Bring the pre-assembled main boom to the basic machine

Remove the connecting pins from the pivot piece (Figure 133)

Positioning the main boom pivot piece

Position the main boom pivot piece in relation to the pre-assembled main boom in such a way that the upper connecting shackles of the main boom pivot piece are exactly aligned with the upper connection points of the main boom.



IMPORTANT!

The lower connecting pins (double tapered bolts) may only be fitted to the pivot piece.

Fit and secure upper connecting pins (Figure 133, item 2).

Fit the upper connecting pins from the outside in and secure properly with washer (3) and cotter pin (1).



Do not stand between or underneath the boom intermediate pieces. All connecting pins on the main boom must always be installed from the outside in and secured with washer and cotter pin.

Lifting the main boom pivot piece

After fitting the upper connecting pins, slowly raise the main boom pivot piece until the lower connection points of the pivot piece are aligned with the main boom.

Fit lower connecting pins (Figure 133, item 5).

Fit the lower connecting pins on the main boom pivot piece from the outside in and secure on both sides with washer (6) and cotter pin (4). Fit the optional rope guide for the tuggar winch.



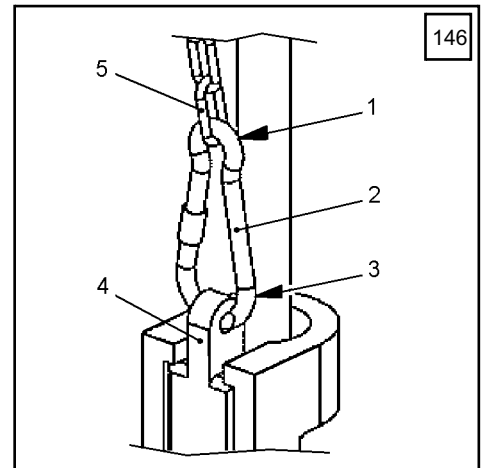
The main boom must not be erected from this position using the A-frame.

6.8.1 Snap hook on hoisting limit switch weight (wedge)

The snap hook (Figure 146, item 2) may only be fitted as shown in the diagram.

The following applies:

- the broader end (3) of the snap hook is fastened to the hoisting limit switch weight (wedge) (4),
- the narrow part (1) to the chain (5).



Other points to be considered when fitting the hoisting limit switch

- The length of chain from which the limit switch weight is suspended depends on the maximum speed of the load hook and the response time of the shut-down system.
For safety reasons it must not be shortened.
- If the hoisting rope is reeved on the boom head, the hoisting limit switch weight should, if possible, be fastened to the static rope.



IMPORTANT!

Check the operation of the hoisting limit switch before erecting the boom.
The main boom can be raised slightly in order to fit the limit switch weight.

Hoisting limit switch actuated

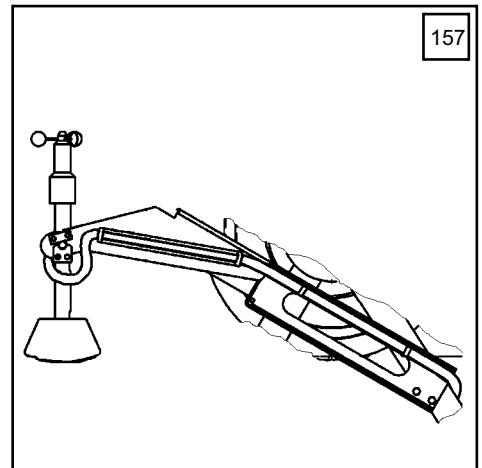
When the hoisting limit switch trips (the limit switch weight rises), the "Upper limit switch winch 1 or 2" symbol appears on the LCD screen **when the corresponding joystick is actuated**(see Chapter 4 under "Mode screen").

The following movements are disabled:

- Winch 1 or winch 2 "lifting"
- Main boom adjusting winch "lowering"

Detaching the anemometer (optional)

Remove the anemometer from the boom head (Figure 157) and stow it away separately for transport.



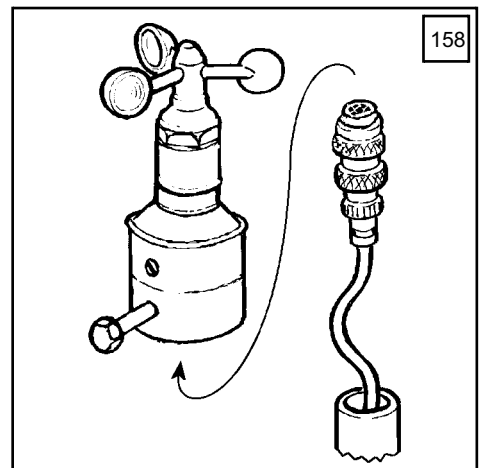
- To do this, loosen the locking screw on the holding tube and carefully remove the anemometer from the holding tube (Figure 158).
- Remove the concentric plug from the bottom of the anemometer and screw on the plug protective cover.

**IMPORTANT!**

The anemometer is a sensitive instrument and must be handled with care during dismantling and transport.

- The connecting cable for the anemometer must be pushed fully into the holding tube to protect the concentric plug from damage.

The mounting of the anemometer can be folded downwards for transportation.



6.10.5 Setting down the rear counterweight

CAUTION!

The superstructure must stand parallel to the undercarriage.

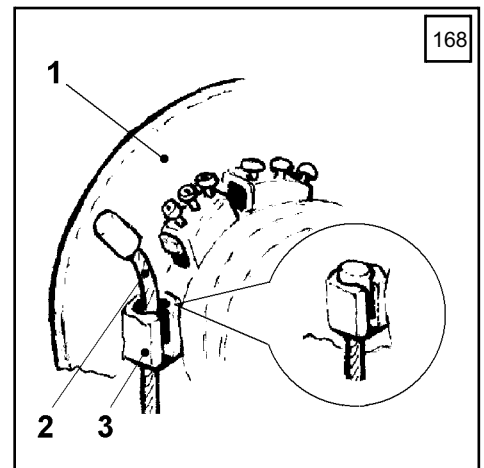
Procedure

- Adjust the pivot piece to approximately 0° so that the pivot piece can be raised without any restriction.
- Move the main boom adjusting winch slowly until the mountings (Figure 168) are easily accessible.
- Fix the mounting rope on both sides.

DANGER!

Crushing hazard!

Work with particular care. Maintain constant contact with the machine operator.

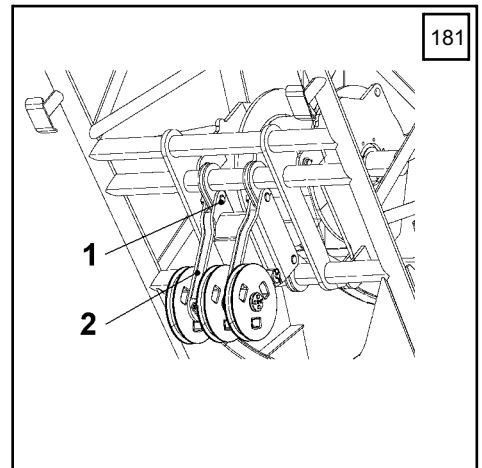


- Wind the mounting rope onto the main boom adjusting winch until approximately 1.5 m [5.0 ft] of rope is free on both sides.

6.10.9 Secure the components for dismantling

Attach the bracket (Figure 181)

Bolt the brackets (2) to the pivot pieces at the attachment points (1). Secure the bolts on the left and right with washers and cotter pins.



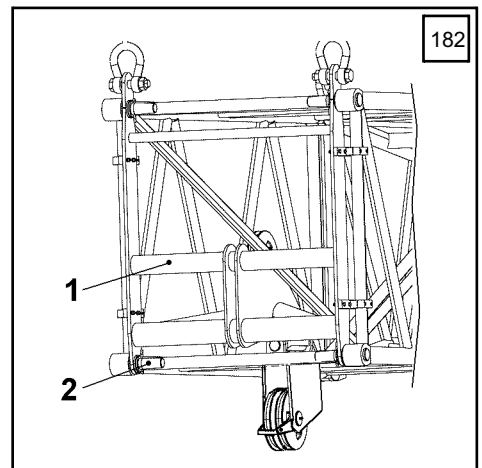
Fasten the crossbar (Figure 182)

Attach the crossbar (1) in front to the 3m intermediate piece. Connect the crossbar to the intermediate piece at the attachment points. Insert the bolts (2) from outside and then secure them with washers and cotter pins.

Bolts used for attaching the crossbar to the intermediate piece:

Top 2 x Ø 70mm x 328mm

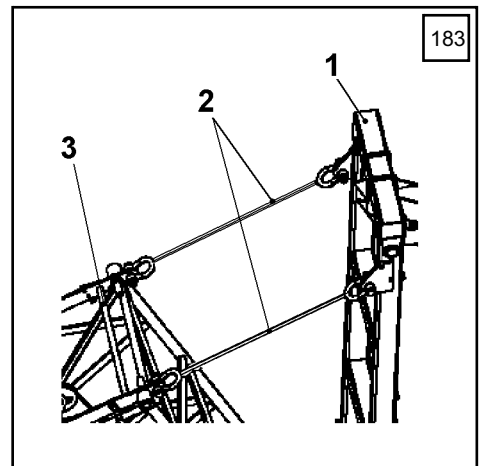
Bottom 2 x Ø 65mm x 328 mm



Fasten the sling rope (Figure 183)

Insert the special sling rope (2) between the crossbar (3) and the A-frame (1). There are shackles at the ends of the sling rope. Fasten these to the attachment points on the crossbar and the A-frame.

The sling rope is 1.8m long and is included with the machine on delivery. These special sling ropes must only be used for installation and dismantling work.



Bolt the support cylinders in the support position

Before supporting the basic machine, the support cylinders must be bolted in the support position.

This step can be ignored if

- the reduced support height with the support cylinders in the transport position is sufficient (see section "Determining the support height")
- or base plates have been chocked up to a sufficient height.

The support cylinders can be extended and retracted with the control levers on the undercarriage (Figure 202). It is possible to operate several or all of the adjusting levers simultaneously.

Prerequisite: In the cab, the "Set-up mode" switch and the "Cylinder adjustment functions on/undercarriage on/off" switch must be pressed.

One assistant operates the control levers while another assistant watches the lowering of the support cylinders and gives instructions.

The support cylinders can be lowered in any sequence.

- If necessary insert additional chocks underneath the base plates to make up for the difference in height between the transport and support position of the support cylinders.



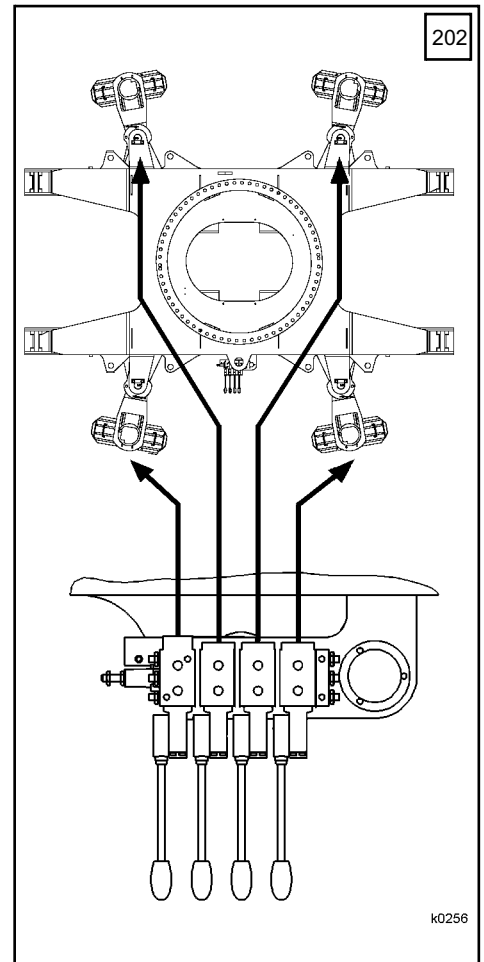
IMPORTANT!

Special chocks, which are placed underneath each base plate in turn, can be used for this purpose. This support only needs to withstand the support cylinder's own weight if it is not used to support the basic machine.

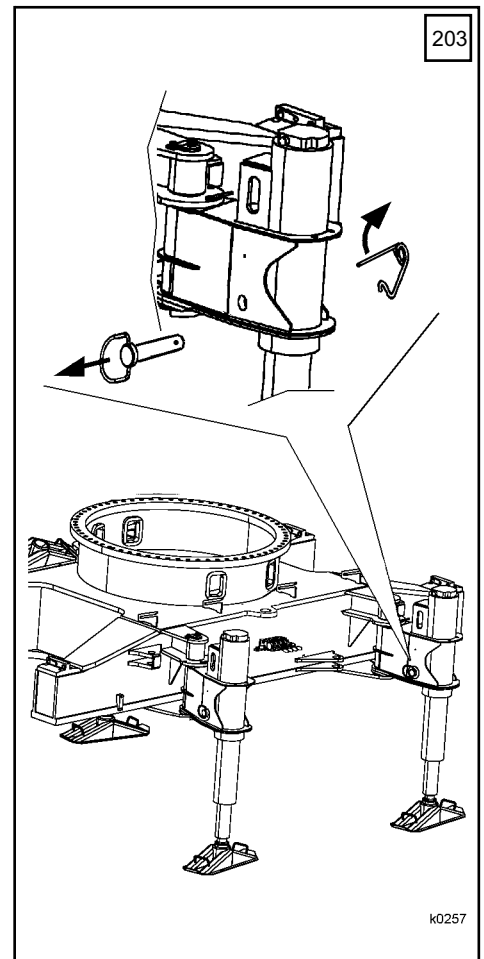
- Press the control lever upwards until the relevant support cylinder is extended just above the base plate.
- Position the base plate exactly underneath the support cylinder.
- Slowly lower the support cylinder in the base plate until there is no more strain on its fastening bolts on the folding bracket.

The second assistant tries to turn or move the fastening bolts by the handle and lets the operator know.

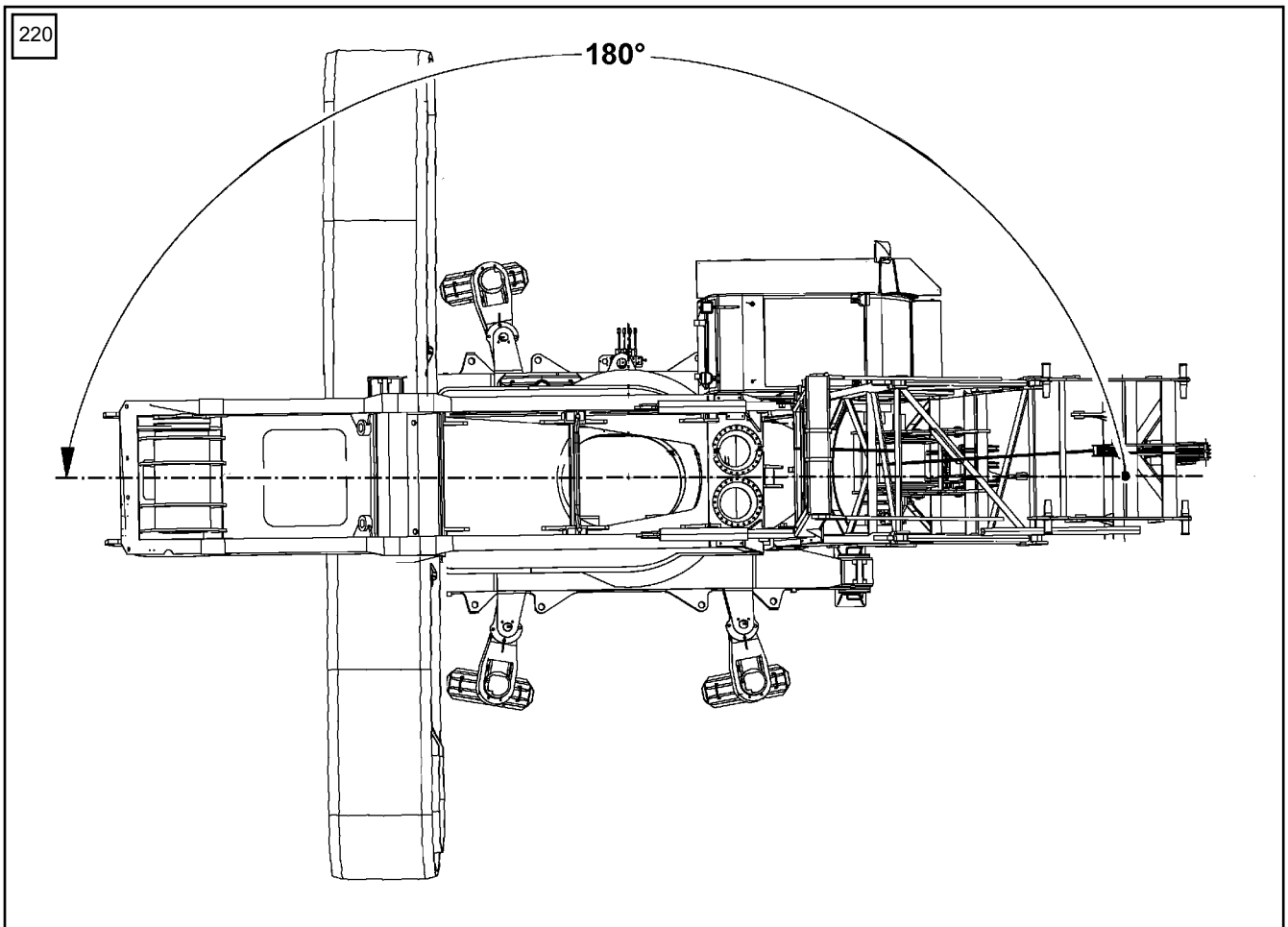
- Loosen the bolting (Figure 203): Open the retaining spring and extract it. Pull out the fastening bolts by the grip.



k0256



k0257



Removing the crawler carrier under difficult conditions (Figure 220)

- To remove the second crawler carrier, slew the superstructure 180° towards the rear.

During this movement, make sure that the mounting tackle does not get caught anywhere on the undercarriage.

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6.10.20 Attachment points

Two lifting lugs are provided behind hoisting winch 1 for lifting the basic machine with an auxiliary crane (Figure A, item 1). Two additional lifting lugs (Figure A, item 3) are fixed on the superstructure in place of the mechanical boom limiters.

Tilting-back supports

The hydraulic connections on the tilting-back supports must be removed before the lifting lugs can be fastened to the front of the superstructure.

The hydraulic lines must only be removed when the diesel engine is stopped. (The ignition key must be in the neutral position).

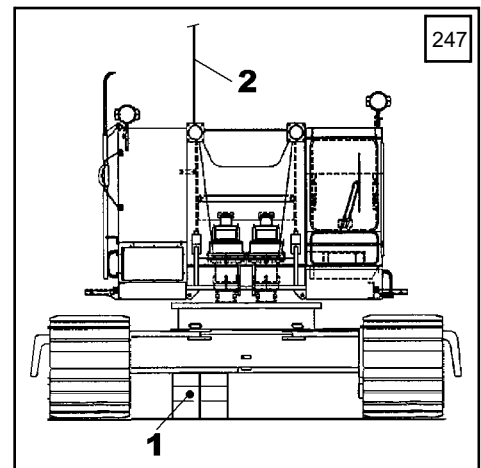
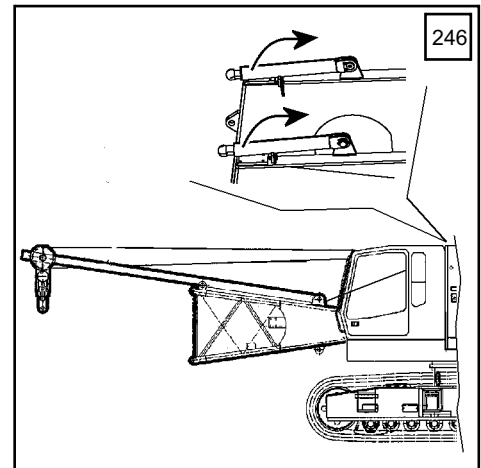
After removing the lines, close the covers on the connections.

Fold the tilting-back supports to the rear and rest them on a wooden beam. Then fasten the lifting lugs to the front of the superstructure.



IMPORTANT!

The additional lifting lugs (Figure A, item 3) are mounted on the superstructure with 10.9 screws. The lifting lugs can bear a maximum load of 25 tons [55.200 lbs] per attachment point.



CAUTION!

The mounting chains that are used must have a precisely defined length, in order to ensure that the superstructure hangs horizontally and to avoid excessive diagonal pull on the attachment points (lifting lugs)!

6.10.21 Fixing mounting chains on the superstructure and supporting the chords

To detach the first crawler carrier, the chord must first be supported with squared timbers.

To do this:

- Fix the mounting chains (Figure 247, item 2) on the side of the superstructure where the crawler carrier is to be pushed off the chords.
- Raise the basic machine slightly.
- Build up the support (Figure 247, item 1) so that the basic machine stands securely and horizontally after being set down on the support.

6.10.30 Fitting the superstructure locking

DANGER!

Danger of accidents due to accidental slewing of the superstructure!

The superstructure locking must be fitted

- during transport,
- during decommissioning and
- during maintenance and repair work on the rotary connection.

CAUTION!

Crushing hazard and risk of damage!

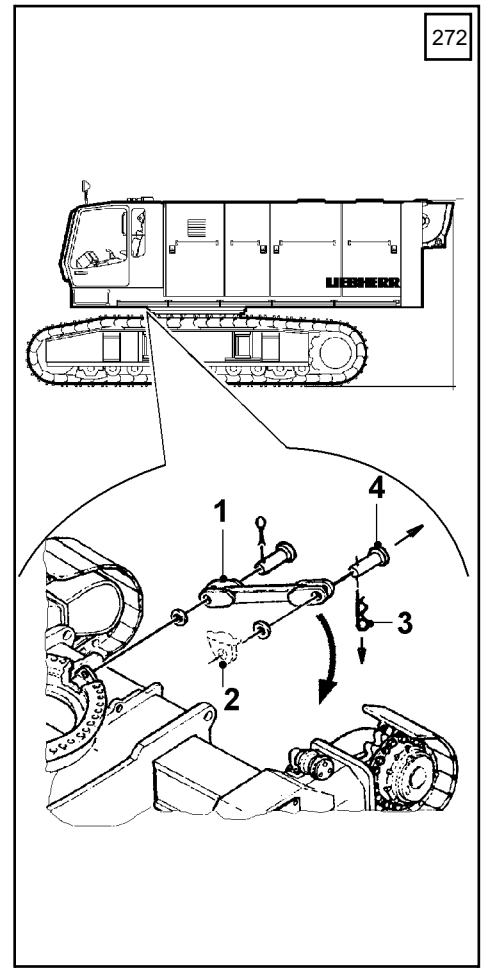
The slewing gear must not be operated when the superstructure is locked.

Exception: to remove the superstructure locking shackle if the bolt is stuck.

Take care when fitting the bolt. Crushing hazard!

Procedure:

- Pull out the retaining spring (Figure 272, item 3) and remove the bolt (4).
- Turn the superstructure so it is exactly parallel to the undercarriage (rear travel drives).
- Bolt the shackle (1) to the superstructure (2) and secure with retaining spring and washer.



6.11.4 Transporting attachments



IMPORTANT!

The weights and dimensions of the attachments are listed in section 2.9 "Technical data".

When transporting with a forklift truck, cover the forks with wooden supports to protect against damage.



CAUTION!

There is a risk of damage when loading boom intermediate pieces with a forklift truck: The diagonal struts may bend when they are loaded onto the forks.

Precautions:

Only use a forklift truck with sufficient fork length or a fork extension.

Transport the boom intermediate pieces carefully with the forklift truck, so that they cannot slide off the fork.

The forks must not come into contact with the struts of the boom intermediate pieces.

7.2 Maintenance chart

7.2.1 Work to be carried out

Maintenance/inspection according to Operating hours								WORK TO BE CARRIED OUT	
8 hrs/daily	40 hrs/weekly	500 hrs/3-monthly	1000 hrs/half-yearly	2000 hrs/annually	4000 hrs/every 2 years	6000 hrs/every 3 years	special intervals	by maintenance personnel	
								by authorised qualified personnel	
								<input checked="" type="checkbox"/> One-off task <input type="checkbox"/> At regular intervals <input type="checkbox"/> As and when necessary <input checked="" type="checkbox"/> Every year at the start of the cold season	<input type="checkbox"/> One-off task <input type="checkbox"/> At regular intervals <input type="checkbox"/> As and when necessary <input checked="" type="checkbox"/> Every year at the start of the cold season
HYDRAULIC SYSTEM									
								<input type="checkbox"/>	Check oil level in the hydraulic tank through the top sight glass and top up if necessary. See chapter 7 for the oil type and filling capacity. All cylinders must be retracted. Exception: Tilting-back support cylinders on LR/HS
								<input type="checkbox"/>	Carry out a hydraulic oil analysis ten hours after every oil change (reference measurement)
								<input checked="" type="checkbox"/>	Carry out a hydraulic oil analysis after 500 h
								<input type="checkbox"/>	Carry out a hydraulic oil analysis after 1000 h / 1 year
								<input type="checkbox"/>	Change NON-LIEBHERR hydraulic oil after 2000 h / 2 years
								<input type="checkbox"/>	Change Liebherr "Hydraulik 37" hydraulic oil after 4000 h / 4 years
								<input type="checkbox"/>	Change Liebherr "Hydraulik Plus" and "Hydraulik Plus Arctic" oil after 6000 hrs / 6 years
								<input type="checkbox"/>	Check the hydraulic system for leaks
				<input type="checkbox"/>				<input type="checkbox"/>	Check all hydraulic hoses
								<input type="checkbox"/>	Recommendation: Change all the hydraulic hoses every 12000 hrs; time interval depends on embossed date
			<input type="checkbox"/>					<input type="checkbox"/>	Check and if necessary adjust the working pressures of the hydraulic system
		<input type="checkbox"/>						<input type="checkbox"/>	Check that the rotary connection is firmly attached and does not leak
		<input type="checkbox"/>						<input type="checkbox"/>	Change the ventilation filter on the hydraulic tank
		<input type="checkbox"/>						<input type="checkbox"/>	Change the hydraulic filter elements
		<input type="checkbox"/>						<input type="checkbox"/>	Clean the magnetic rod in the return filter (weekly for the first 250 operating hours)
		<input type="checkbox"/>						<input type="checkbox"/>	Check and clean oil cooler if dirty
		<input type="checkbox"/>						<input type="checkbox"/>	Check that the units and the screw fittings are tight and retighten if necessary
		<input type="checkbox"/>						<input type="checkbox"/>	Check all hydraulic cylinders for leaks and tight fit
		<input type="checkbox"/>						<input type="checkbox"/>	Check the accumulator
					<input type="checkbox"/>			<input type="checkbox"/>	Replace the accumulator
		<input type="checkbox"/>						<input type="checkbox"/>	Lubricate the piston rods of all exposed cylinders
		<input type="checkbox"/>						<input type="checkbox"/>	Protecting the hydraulic cylinder piston rods against corrosion
								<input type="checkbox"/>	Applying protective agent to the hydraulic system piston rods during extended periods of down time
		<input type="checkbox"/>						<input type="checkbox"/>	Check Partial Flow Fine Filtering System
		<input type="checkbox"/>						<input type="checkbox"/>	Replace Filter Partial Flow Fine Filtering System

Service/Inspection according to operating hours								WORK TO BE CARRIED OUT	
8 hrs / daily	40 hrs / weekly	500 hrs / 3-monthly	1000 hrs / half-yearly	2000 hrs / annually	4000 hrs / every 2 years	6000 hrs / every 3 years	Special intervals	by maintenance personnel	by authorized qualified personnel
								<input checked="" type="checkbox"/> one-off task	x one-off task
								<input type="checkbox"/> at regular intervals	o at regular intervals
								<input type="checkbox"/> + as and when necessary	+ as and when necessary
								<input checked="" type="checkbox"/> * every year at the start of the cold season	* every year at the start of the cold season
CRAWLER DRIVE									
			o					Checking the oil level	
		x	o					Changing gear oil	
		o						Changing gear oil (if the crawlers are used a lot, more than 15% of the engine operating hours)	
			o					Check fastening screws for tight fit	
				o				Check tumbler wheel and crawler engine fastening screws for tight fit	
	o							Check gearbox and hydraulic connections for leaks	
CRAWLERS									
		o						Visually check crawler components (carrying rollers, running rollers, idlers, track pads)	
	o							Clean the crawlers, earlier if necessary	
		o						Checking screws, nuts and fixing pins for tight fit	
	o							On telescopic undercarriages, check the locking screws on the chords of the crawler side frames for tight fit and tighten if necessary (HS855 or LR1100: always tighten them until there is absolutely no play)	
		o						Check chain guides for wear and tight fit	
	o							Check chain tension and re-tension if required (earlier if necessary); note: re-tensioning must be done using the crawler control in the case of hydraulic pretensioning	
		o						Tighten track pad screws	
			o					Check tensioning cylinders for leaks	



NOTE

Note the maximum fill level in the container.

- Unscrew the drain plug.
- Drain off the condensate/diesel mixture.
- Leave the drain plug open until only pure fuel runs out of the drain opening.
- Retighten the drain plug.



CAUTION!

Risk of damage to the environment.

Dispose of the condensate/diesel mixture according to the relevant national and international regulations.

7.9 Guide wheels

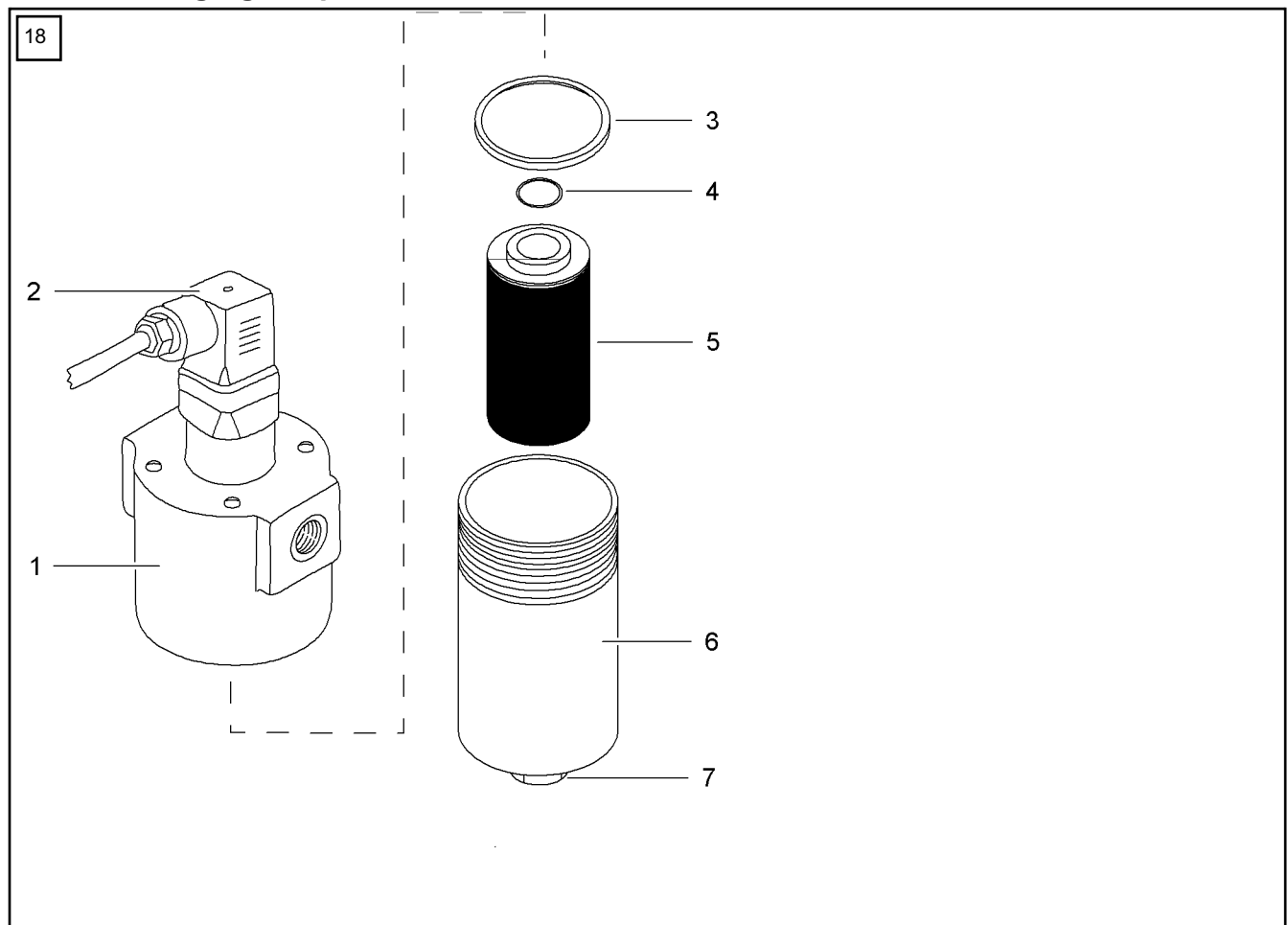
The guide wheels are located in the guides on the crawler side frame and are equipped with a tensioning system.

7.9.1 Overview of the crawler tensioning systems

	Grease tensioner/ Spring	Grease tensioner/ Nitrogen cylinder	Grease tensioner/ Elastomer cylinder	Hydraulic tensioner
Chain tension check	X	X	X	-
HS 825	X			
HS 835	X			
HS 845	X			
HS 855		X		
HS 875			X	
HS 885			X	
HS 895		X		
LR 1100		X		
LR 1130			X	
LR 1160			X	
LR 1200				X
LR 1280				X
LR 1300				X
LB 16	X			
LB 20	X			
LB 24	X			
LB 28	X			
LB 36		X		
LRB 125	X			
LRB 155	X			
LRB 255	X			

7.13 Hydraulic filter

7.13.1 Changing the pressure filter



- | | | | |
|---|-----------------------|---|-----------------------|
| 1 | Upper housing section | 5 | Filter element |
| 2 | Pressure sensor | 6 | Lower housing section |
| 3 | Sealing ring | 7 | Nut |
| 4 | O-ring | | |

- ▶ Unscrew and remove the **7** lower housing section **6** using the nut.
- ▶ Carefully remove the used filter element **5** and dispose of the rest of the oil from the lower housing section **6**.
- ▶ Clean all parts thoroughly.
- ▶ Check the O-ring **4** and sealing ring **3** for damage.

If the O-ring or sealing ring is damaged:

- ▶ Replace the O-ring or sealing ring.
- ▶ Thoroughly clean inside the filter housing.
- ▶ Insert a new filter element.

Check to make sure the O-ring and sealing ring are clean and seated correctly.

- ▶ Reassemble the parts in the reverse order.
 - ▶ Tighten the nut **7** of the lower housing section **6** as far as it will go.
 - ▶ Start the diesel engine and allow it to idle for 5 minutes.
 - ▶ Switch off the diesel engine and retighten the nut **7** of the lower housing section **6** as far as it will go.
 - ▶ Start the diesel engine and leave it to idle.
 - ▶ Check hydraulic system for leaks.
- If there is a leak in the hydraulic system:
- ▶ Contact Liebherr after sales service.

7.16.7 Check the rope for number of permitted wire breaks

The table below shows the permitted number of wire breaks relative to a defined control section of the rope.

Number of bearing wires in the outer strands of the wire rope ¹⁾	Number of wire breaks at end of service life			
	Cross lay over a length of		Lang lay over a length of	
n	6 D	30 D	6 D	30 D
50	2	4	1	2
51 to 75	2	6	2	3
76 to 100	4	8	2	4
101 to 120	5	10	2	5
121 to 140	6	11	3	6
141 to 160	6	13	3	6
161 to 180	7	14	4	7
181 to 200	8	16	4	8
201 to 220	9	18	4	9
221 to 240	10	19	5	10
241 to 260	10	21	5	10
261 to 280	11	22	6	11
281 to 300	12	24	6	12
over 300 ²⁾	0.04 x n	0.08 x n	0.02 x n	0.04 x n
In the case of ropes that have particularly thick wires in the outer layer of the outer strands, round strand ropes 6 x 19 Seale to DIN 3058 or round strand ropes 8 x 19 Seale to DIN 3062, the number of visible wire breaks at the end of the service life is 2 lines lower than the values shown in the table.				
D = diameter of wire rope				

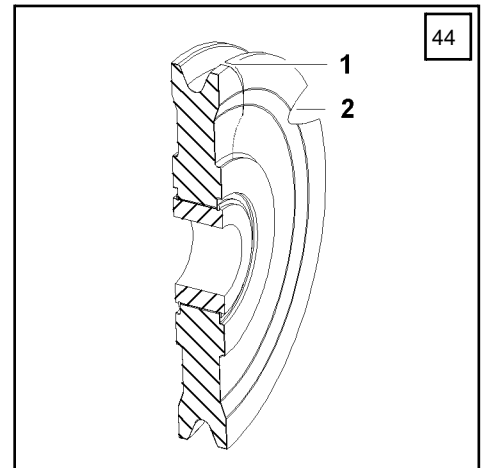
¹⁾ Filler wires are not considered to be bearing wires. In the case of wire ropes with several layers of strand, only the strands in the outermost layer are deemed to be outer strands. In the case of steel-core steel ropes the inner strands are the reinforcement.

²⁾ The numbers calculated should be rounded up.

Checking pulleys for damage

1 Crack

2 Nicks



NOTE!

▪ Pulleys are very susceptible to external damage: Chafing must be avoided at all times and pulleys must not be placed on the ground without protective equipment.

- Check pulley for all types of damage, such as nicks, wobble, cracks and notches, etc.
 - If the pulleys are aligned with the direction in which the rope is running and there is no evidence of wobble or other damage: the result is OK and no further action is required.

Troubleshooting:

If the pulley shows any sign of damage:

- replace the pulley immediately.
- Contact Liebherr after sales service.

Lubricating the pulley bearings

Manually lubricate the pulleys:



NOTE!

▪ The grease must not leak from between the pulleys.

Ensure that the following conditions are satisfied:

- the engine has been switched off and secured against unauthorised starting
- A lever-type grease gun filled with the appropriate grease type as stated on the lubrication chart is available
- The boom is lowered

Checking the bearing for proper seating and position

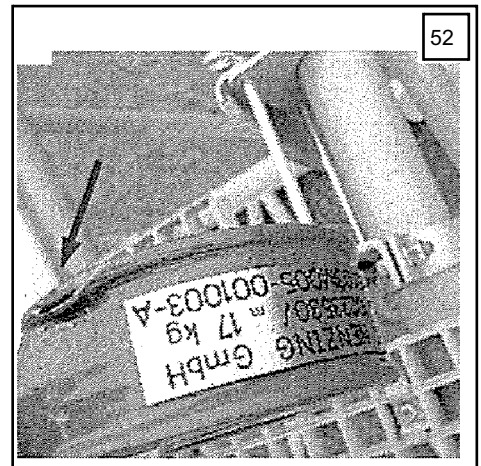
The position of the bearing and circlip must be correct to ensure optimum rope drive.

7.18.4 Wear to the protective sheath

- The pendant straps must be visually checked at regular intervals for the following damage:
- Wear to the protective sheath (Figure 52)
- Fiber damage

If the underlying circumferential are undamaged, then the pendant straps may still be used temporarily.

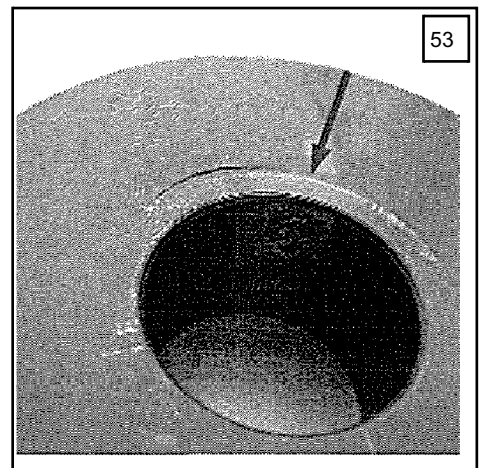
The protective sheath may be damaged by incorrect use or by being pushed against something. Exposed surface areas must be treated with silicone (the pendant strap may still be used for a short while).



7.18.5 Checking the pendant strap bushes

Before every mounting operation, the bushes must be checked for the following:

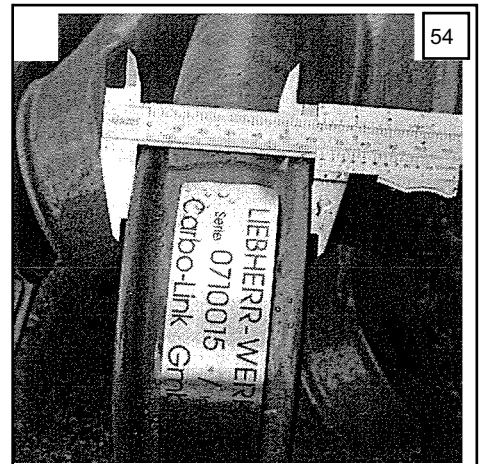
- The flanges of the bushes must be parallel
- Cracks (Figure 53)
- Corrosion (frictional corrosion)
- Deformation



7.18.6 Parallel flanges

The bushes must be circular on the inside and planar on the outside.

- Use a caliper gage to check that the flanges of the bushes are parallel.
- Lubricate the bushes to protect them from corrosion or spray them with a corrosion spray.



7.22 Personal protective gear

- Check that personal protective gear is:
 - Present
 - Intact
 - Complete.

Missing or damaged parts are to be replaced at once

Approved anticorrosion agents (inhibitors) without antifreeze

If it can be demonstrated that no approved anticorrosion agent is available:

In **exceptional cases** and where **the ambient temperature is always above freezing point** mix the water with the following anticorrosion agents:

- **Product DCA 4** (Diesel Coolant Additives 4)
- **Product Caltex / Chevron / Havoline / Total**

Change the coolant every year in this case.

Check the concentration during maintenance work.

**NOTE!**

Drain off the coolant when changing from anticorrosion/antifreeze agent to anticorrosion agent (or vice versa).

Product description	Manufacturer
DCA 4 Diesel Coolant Additives	Fleetguard / Cummins Filtration
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

Cold, damp climate

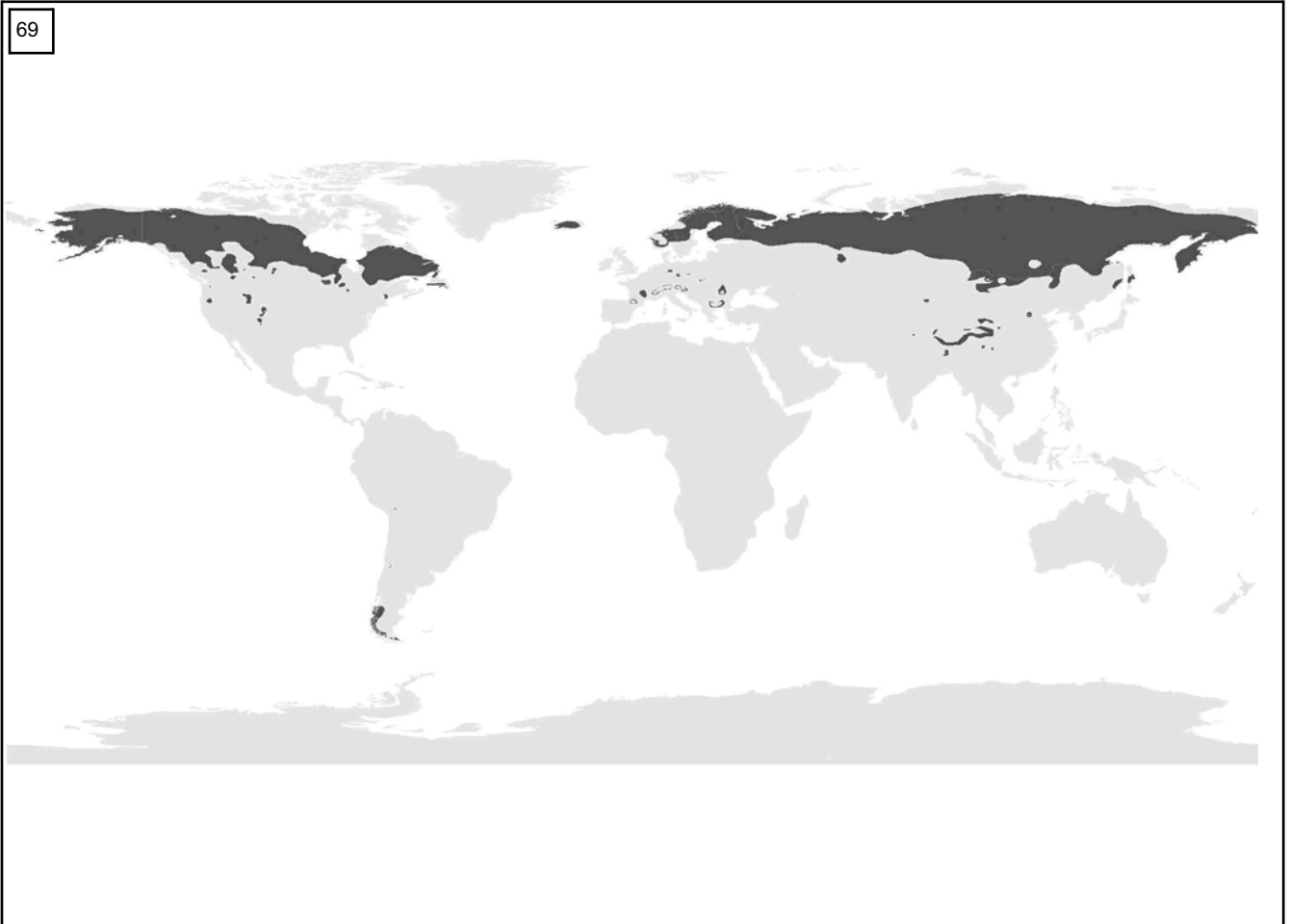


Figure 69: Cold, damp climate

7.33.3 Storing the machine for more than 7 months

Contact Liebherr after sales service when storing the machine for **more than 7** months.

7.33.4 Immobilization

When decommissioning the machine, contact Liebherr after sales service.

7.33.5 Resale

When reseling the machine, contact Liebherr after sales service.

8.2 Fire extinguishers

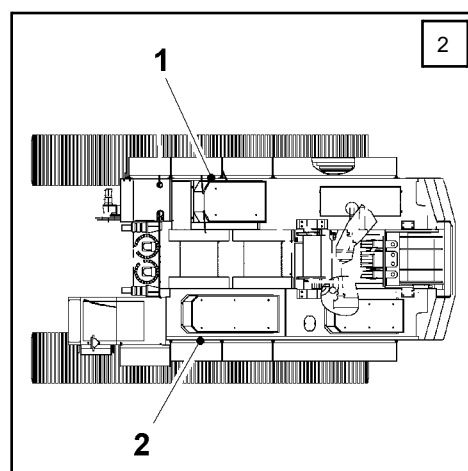
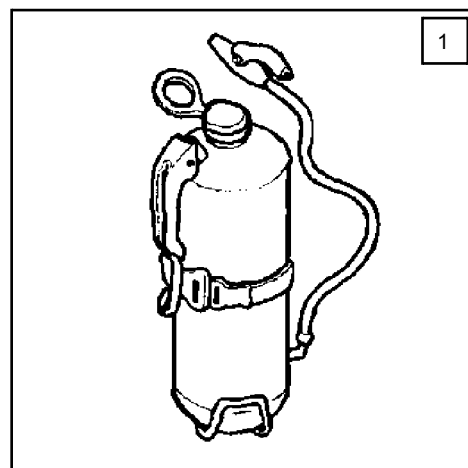
8.2.1 General

There is a fire extinguisher Figure 1) of type GS6 in the superstructure. It is mounted on the left on the inside of the first door (Figure 2, item 2)

This fire extinguisher can be used in the temperature range from **-20° to + 60°** . The fire extinguisher contains a chemical extinguisher (Totalit G CEN) and is therefore certified to fight class A, B and C fires.

The fire extinguisher must be inspected by a specialist at the indicated intervals (refer to inspection label). The further instructions issued by the specialist must be adhered to. The fire extinguisher must be replaced at the indicated intervals (refer to inspection label).

A second fire extinguisher may optionally be mounted on the right on the inside of the first door (Figure 2, item 1)



8.3 Personal protective gear

8.3.1 General

Personal protective gear should be regularly cleaned, maintained and if necessary replaced.

You yourself are responsible for wearing the personal protective gear. In general, when working on the machine, tight-fitting protective clothing should be worn, together with personal protective gear appropriate to the activity concerned. (See also Chapter 3 Personal protective gear).

8.4 Conservation regulations

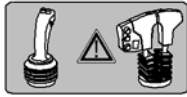
8.4.1 General

If the machine is to be shut down for a prolonged period, the boom must be laid down. The battery main switch must be set to the "0" position.

Depending on the environmental conditions (temperature variations, proximity to the sea), relevant precautions for storage must be taken.

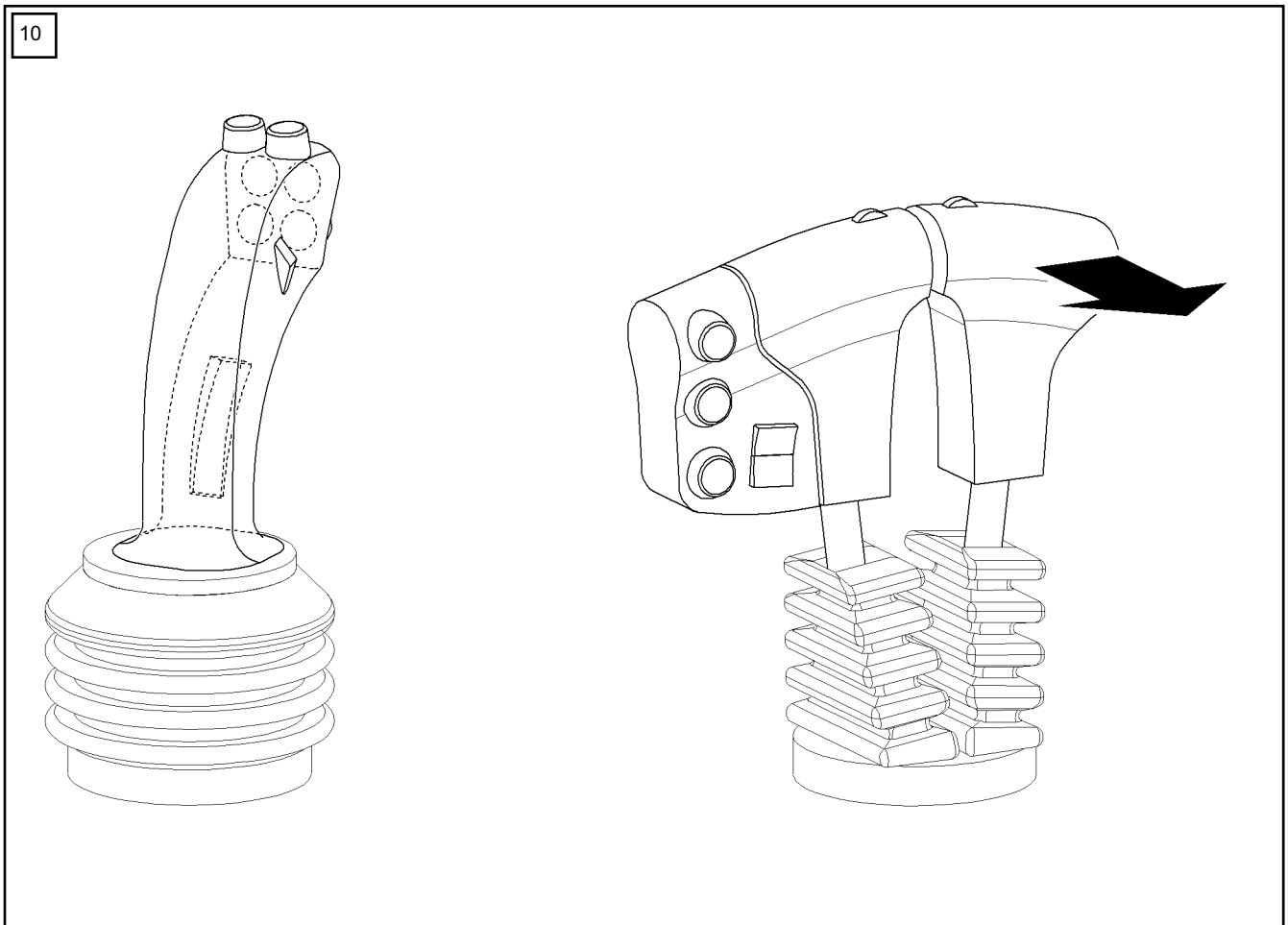
8.5 Selling the machine - decommissioning - salvaging

If the machine is sold, decommissioned, or salvaged Liebherr Customer Services must be informed.



Adjust winch2 with double-T operating lever

Procedure for a machine with one cross operating lever and one double-T operating lever.

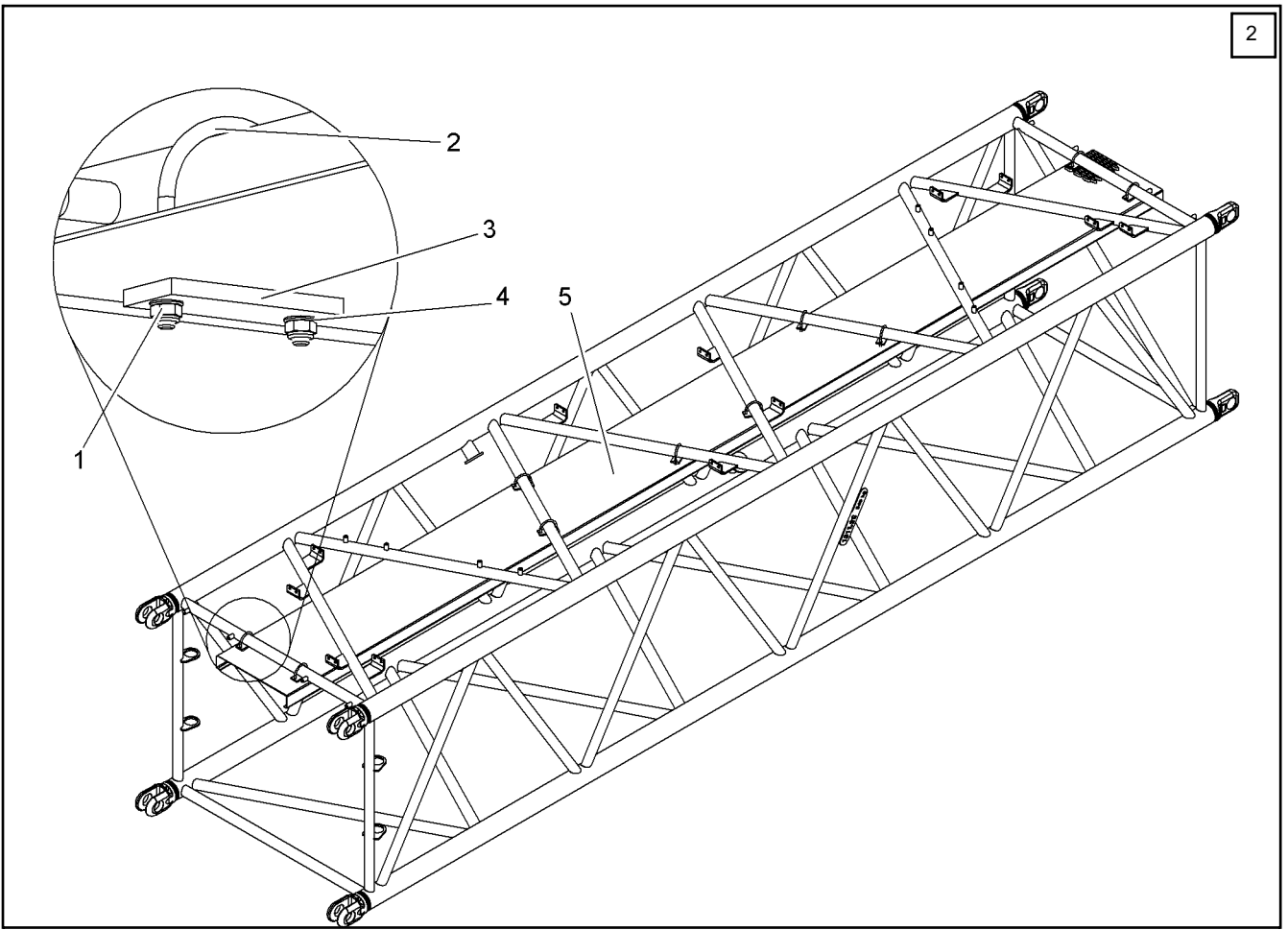


- ▶ Move the right double-T operating lever back.
 - ▷ Auxiliary cable will be coiled on winch2.

CAUTION !

Improper handling!
Damage to the cable.

- ▶ Cable must not graze or touch the cable guard on the boom head.
- ▶ Avoid slack cable on the paddle.



Fitting the 6 m [20 ft] steel boom catwalk

- | | | | |
|---|---------------------|----|----------------|
| 1 | Grating 6 m [20 ft] | 7 | Nut |
| 2 | Grating 2 m | 8 | Screw |
| 3 | Nut | 9 | Guide plate |
| 4 | Bracket | 10 | Boom diagonals |
| 5 | Boom diagonals | 11 | Retaining clip |
| 6 | Retaining clip | | |

9.7 Heating and air conditioning system

9.7.1 General

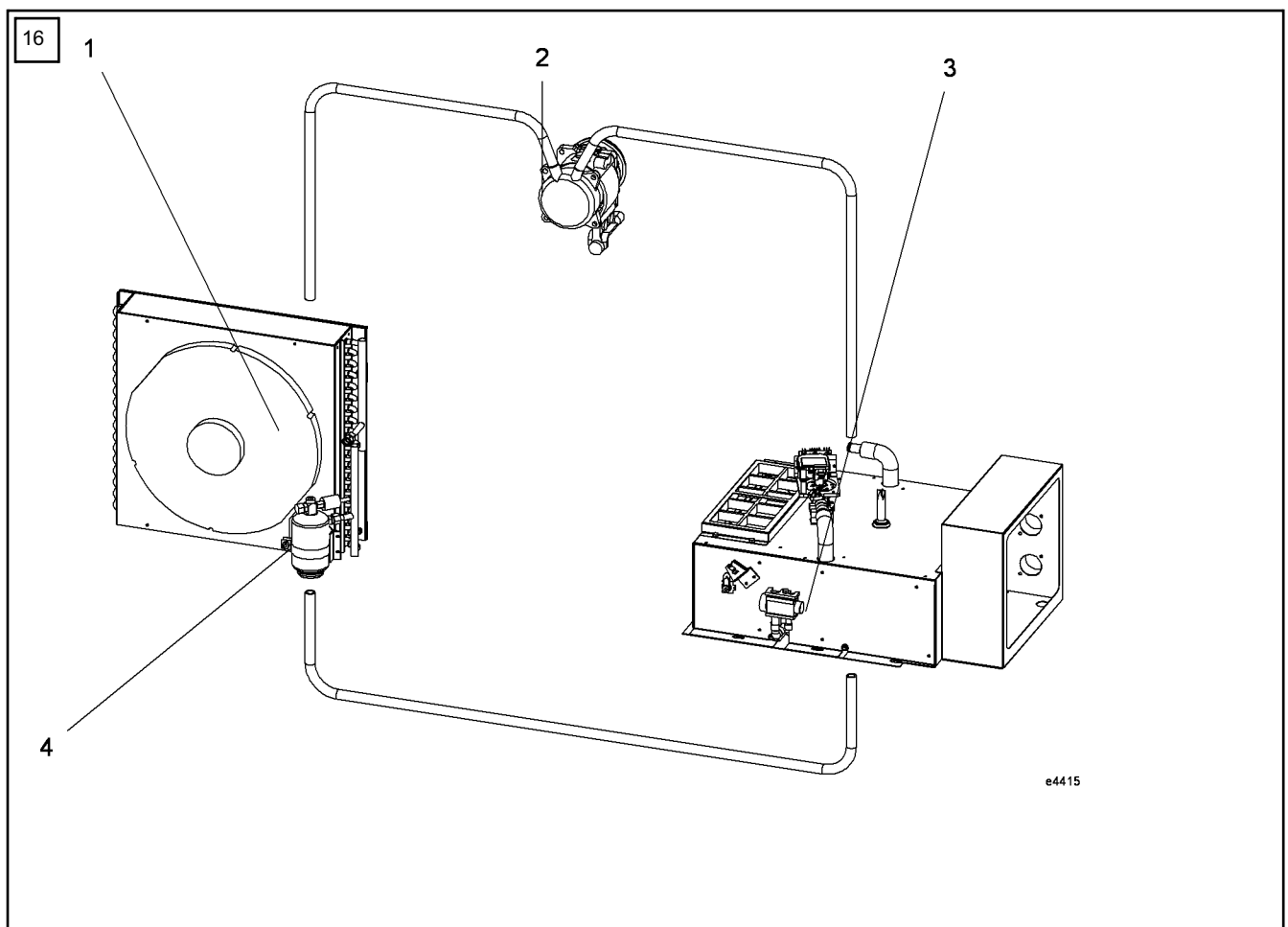
The air conditioning system is combined with the heating and ventilation of the driver's cabin. The heating and air conditioning only work when the diesel engine is running.

The cooling performance of the air conditioning unit depends on the speed of the diesel engine.

Technical Data

Design	Air heating unit with water heat exchanger and evaporator
Thermal output	10.9 kW
Rated voltage	24 V
Blower output	1280 m ³ /h (freely blowing)
Blower motor	three-stage
Coolant	R134 A without CFC

9.7.2 Air conditioning system units

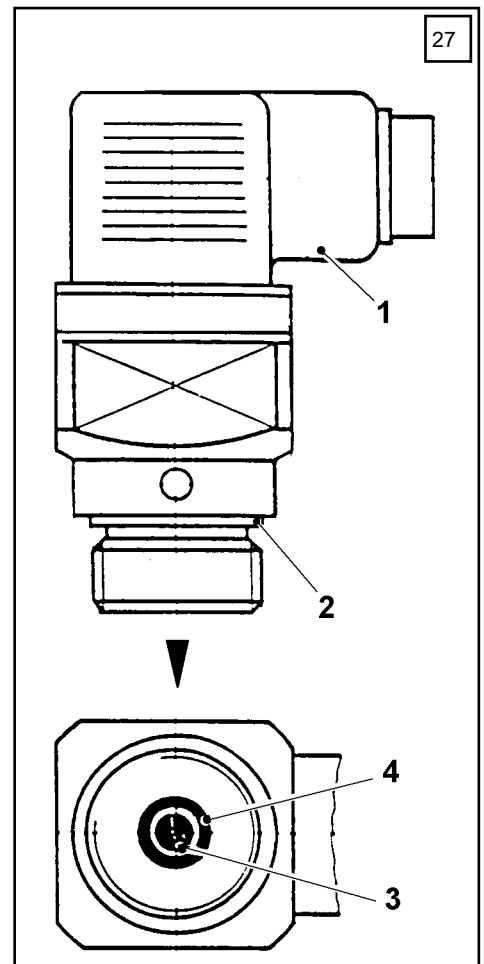


- | | | | |
|---|------------|---|--|
| 1 | Condenser | 3 | Air conditioning box with heating and evaporator |
| 2 | Compressor | 4 | Coolant collector |

9.13.1 Check chip control

Removing the contamination monitor

- ▶ Unscrew the appliance plug (Fig. 27, 1)
- ▶ Unscrew the contamination monitor
- ▶ Check and clean the magnet (3)



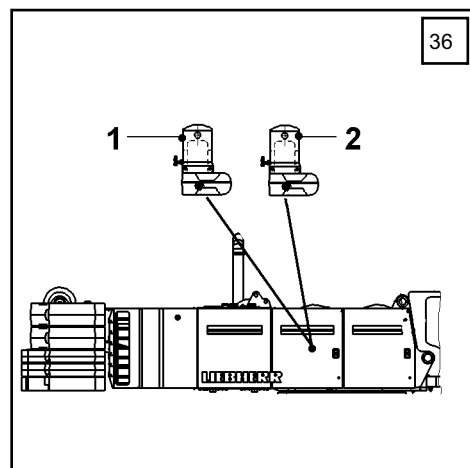
9.18 Central lubrication of the swing ring bearings

9.18.1 General

The lubrication pump for lubricating the bearings of the swing ring is at the rear right of the uppercarriage (Figure 36, item 1).

The lubrication process starts automatically when the diesel engine is switched on, according to the preset lubrication time and break time.

The central lubrication system only works when the diesel engine is running and the safety lever of the control system is in the down position.

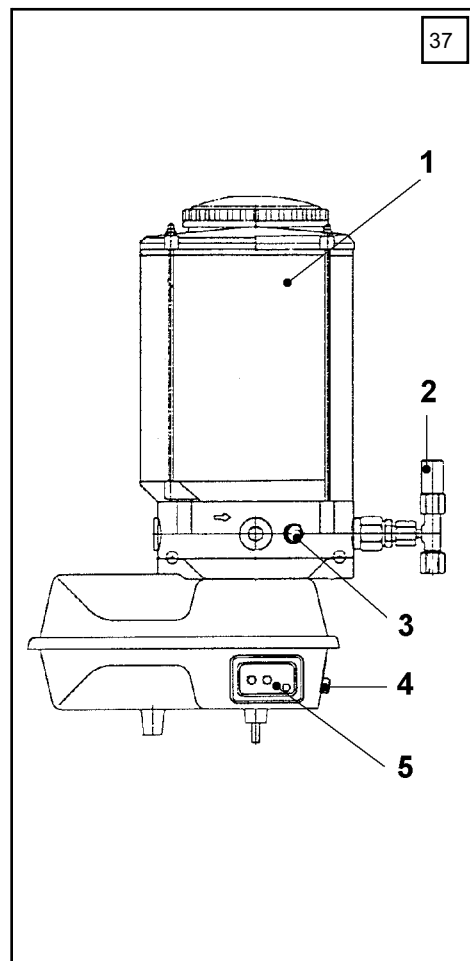


The time intervals for the lubrication time and break time can be set with the switch unit (Figure 37, item 5). If the lubrication pump is switched on, the grease is carried from the grease reservoir to the lubrication points inside the swing ring and distributed evenly around the whole crown gear.



CAUTION!

The overpressure valve (Figure 37, item 2) is set by the manufacturer and must not be adjusted! It protects against overpressure and must not be used to set the working pressure!



9.23 Winch synchronisation

Winch synchronisation involves synchronising the rope speeds of winches 1 and 2.

Winch synchronisation is used:

- when two ropes are reeved on one hook.
- when working with crossbars.



NOTE!

The winch synchronization can only be used in the lifting direction.

After triggering of the hoisting limit switch or the 3-windings limit switch both hoist winches stop.

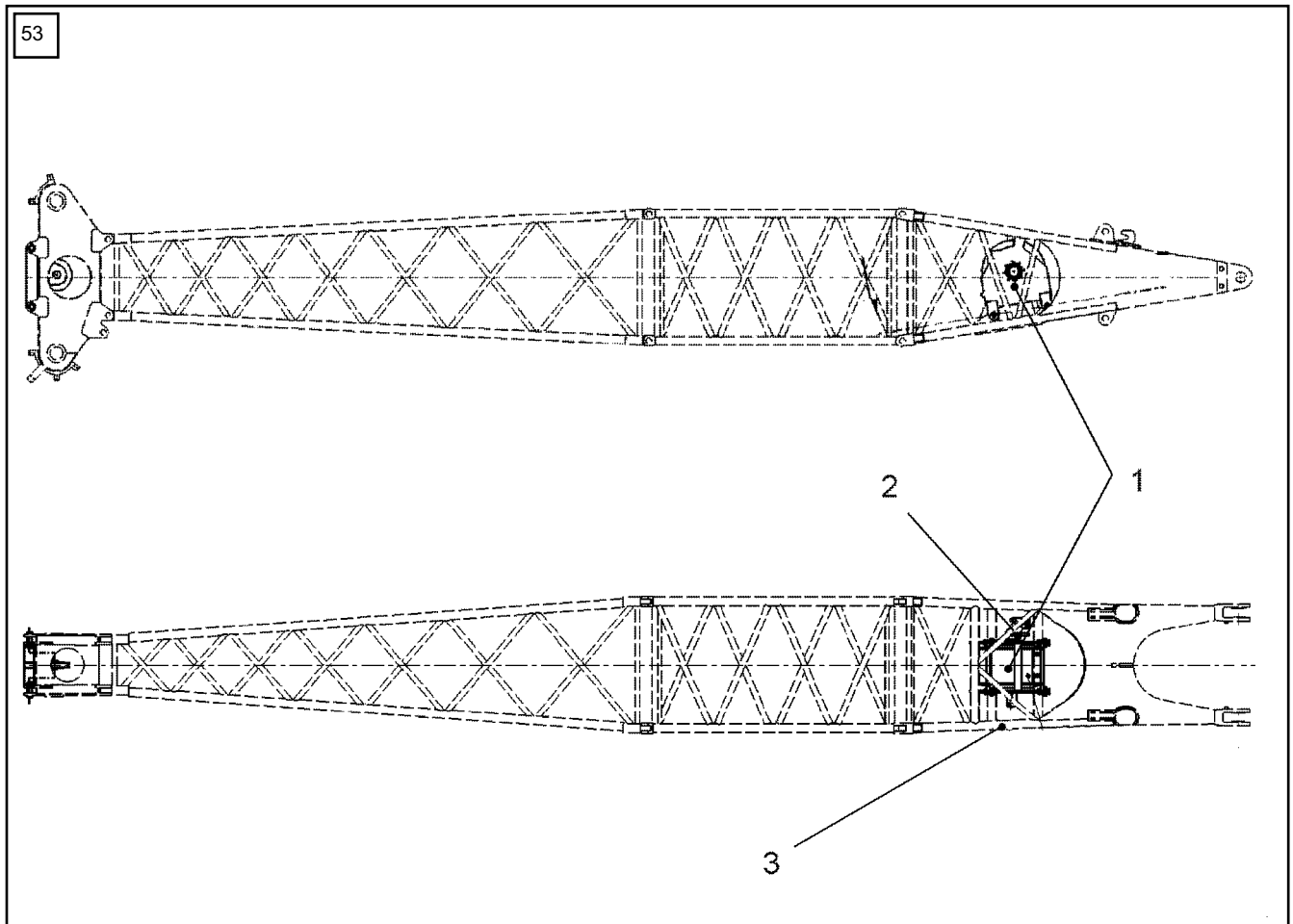
Ensure that the following requirements are met: Winch synchronisation is installed. There is a rope of the same length on each winch.

9.26 Auxiliary winch

9.26.1 General

The optional auxiliary winch is used

- to transport tubes and
- to install working equipment.



Auxiliary winch, HS 885 HD

- | | |
|---|--------------------------|
| <p>1 Auxiliary winch</p> <p>3 Pivot piece</p> | <p>2 Hydraulic motor</p> |
|---|--------------------------|

The auxiliary winch (1)

- is secured in the pivot piece using socket pins,
- is driven by a hydraulic motor (2) via a planetary gear,
- is equipped with a stopping brake,
- has a 3-windings limit switch.

9.26.2 Technical data

Rope pull	max. 82 kN
Rope diameter	20 mm
Safety windings 3	4.62 m
Rope drum diameter	490 mm
Gearbox oil capacity	4.8 litres

Emergency handpump (Fig. B)

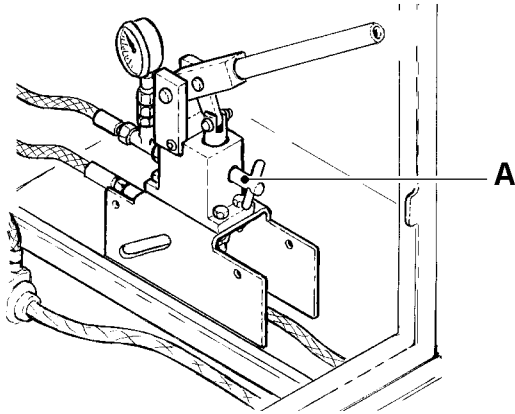


Figure B

Ball valve settings for emergency lowering (Fig. E)

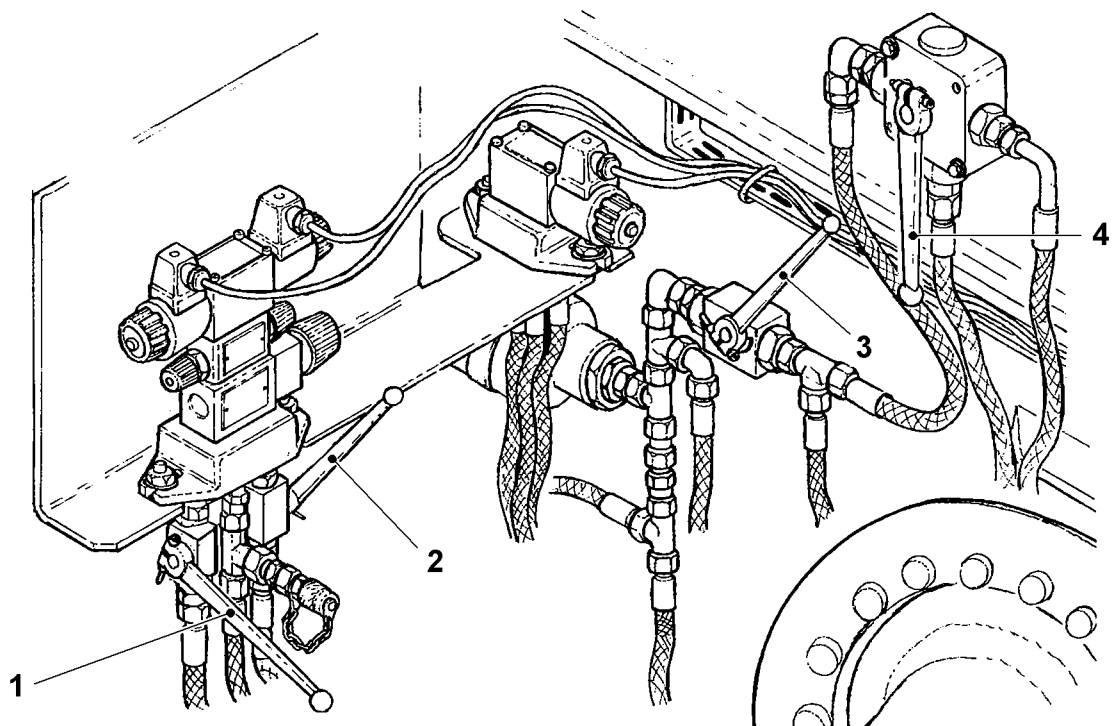


Figure C

9.33.4 Counterweight on crawler track carrier

General

Stability of the machine is dependent upon the total weight of the used counterweights. Additional counterweights are mounted on the undercarriage.

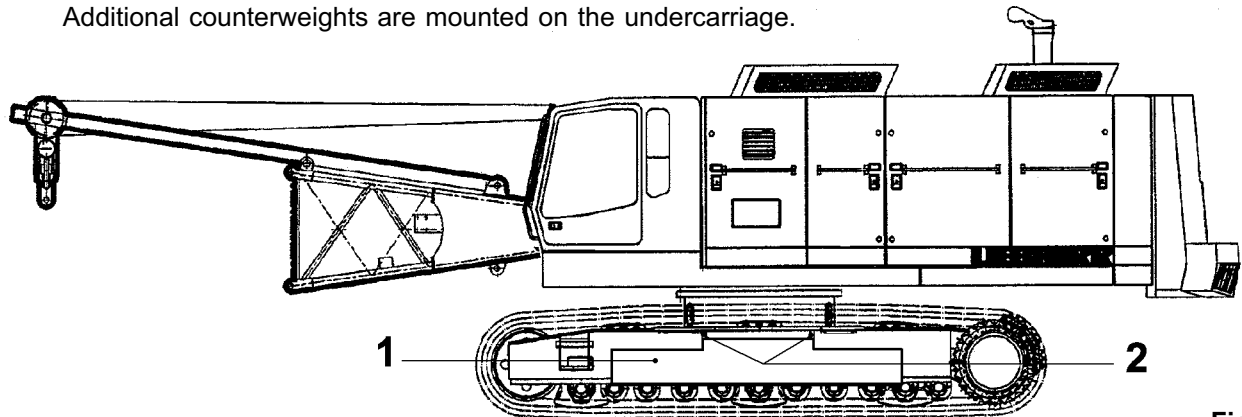


Fig. A

Arrangement

Ballast plates (fig. A, digit 1) weighing **3.5 tons** each have been mounted on the left and right of the crawler track carrier.



IMPORTANT!

Assembly and disassembly of the ballast plates on the crawler track carrier may only be carried out with crawler extended. (wide track). For assembly and disassembly of the ballast plates an auxiliary crane with corresponding load capacity is necessary!

9.33.5 Assembly of ballast plates on left-hand crawler track carrier

1. Fix and secure assembly ropes of the auxiliary crane to the stop points of the ballast plate.
2. Lift ballast plates via auxiliary crane and suspend the ballast plate's mounting plate to the stop points on the crawler track carrier. (Fig. A, digit 2).



IMPORTANT!

When lifting the ballast plate via the auxiliary crane, never stand under or next to the ballast plate!

3. After securing the mounting plates to the stop points on the ballast plate via the auxiliary crane, unwind slowly until the assembly ropes are eased of tension. Then remove assembly ropes.



IMPORTANT!

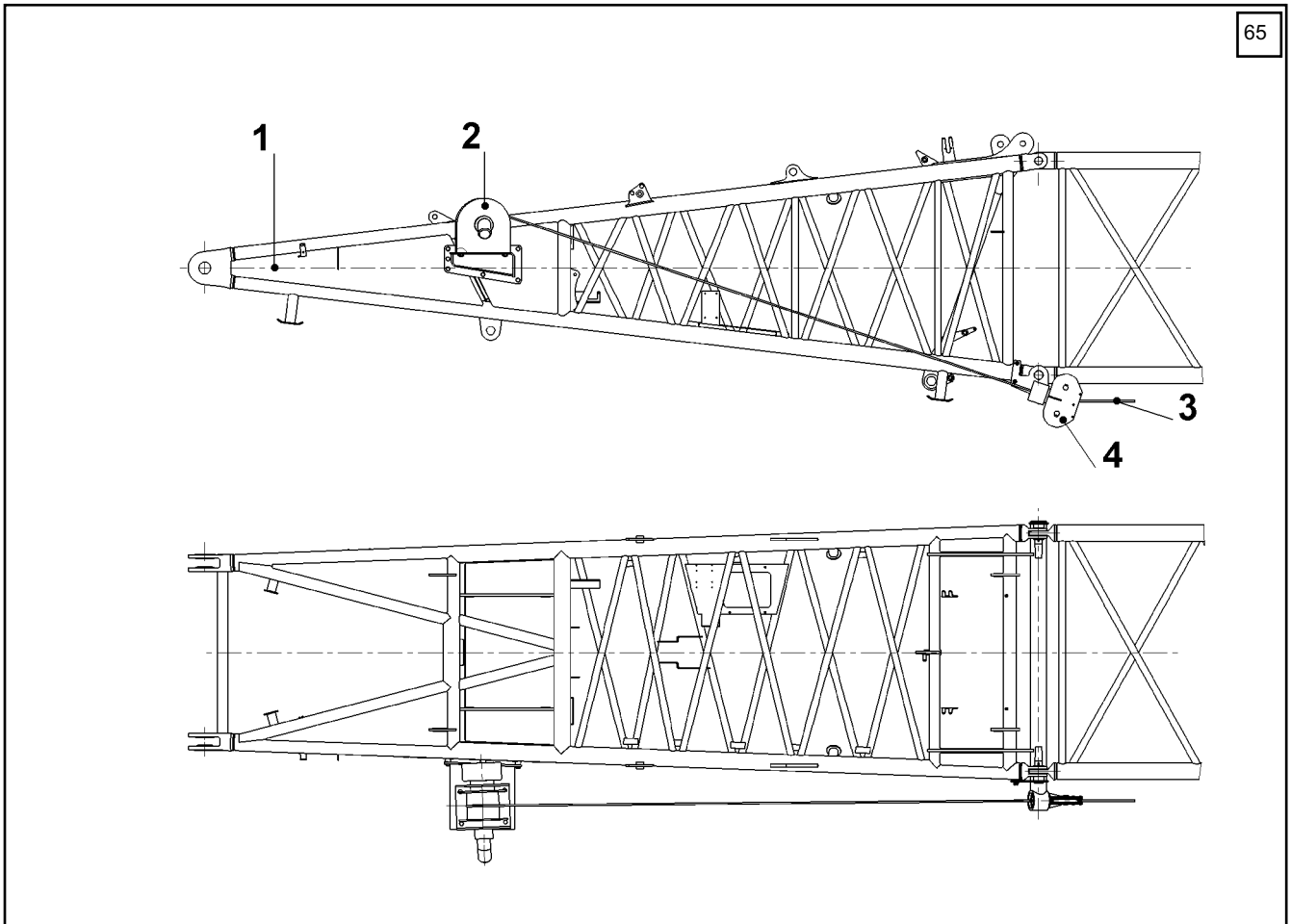
Assembly of the ballast plate on the right-hand crawler track carrier should be carried out in the same order as is described above. Disassembly of the ballast plates is to be carried out in the opposite order to assembly.

9.36 Tugger winch on side of foot

9.36.1 General

The optional stabilizing winch

- is only used in grab operation,
- dampens swinging movements of the grab resulting from rapid swivelling motions of the superstructure,
- is also used to pull up the grab



Stabilizing winch, HS 885 HD

- | | |
|--|---|
| <p>1 Main boom pivot piece
2 Stabilizing winch</p> | <p>3 Stabilizing rope
4 Rope mounting</p> |
|--|---|

The stabilizing winch (2)

- is mounted on a bracket on the side of the main boom pivot piece (1),
- is driven by a hydraulic motor via a planetary gear,
- is equipped with a free-wheeling disc clutch.

The stabilizing rope (3) is attached to the grab with an adjustable tensile force. The stabilizing winch dampens the swinging movements of the grab by winding and unwinding the stabilizing rope.

The rotatable rope mounting (4) prevents the stabilizing rope from being damaged if the rope runs unevenly.

Switching the tigger winch on/off



There is danger of injury and damage if the grab swings out suddenly!

Immediately after the tigger winch is switched on, the stabilizing rope is wound up and tensioned with the preset constant pull.

Precautions:

- Nobody may stand in the area between the tigger winch and the grab.
- Always watch the grab when the tigger winch is switched on.



NOTE!

If the stabilizing rope is attached to the grab, the tigger winch must be switched when the machine is started up. Otherwise, the switched-off tigger winch may be wrecked during operations.



"Tigger winch on/off" button

As soon as the diesel engine is running, the tigger winch can be switch on or off with the button on the right-hand control panel.

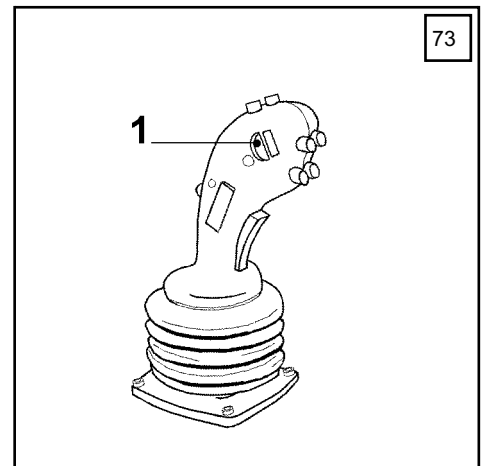
The LED in the button lights up when the tigger winch is switched on.

Set constant tension of the tigger winch

With the hand wheel (Figure 73, item 1) on the left-hand joystick the tigger winch can be supplied with a constant tension to dampen the swinging movements of the grapple.

This "constant pull"

- is at least 170 kg [375 lbs],
- is usually set to an empirical value below 50% of the maximum tensile force.



9.39.8 Maintenance of the cable remote control

If used correctly, the cable remote control does not require any maintenance.

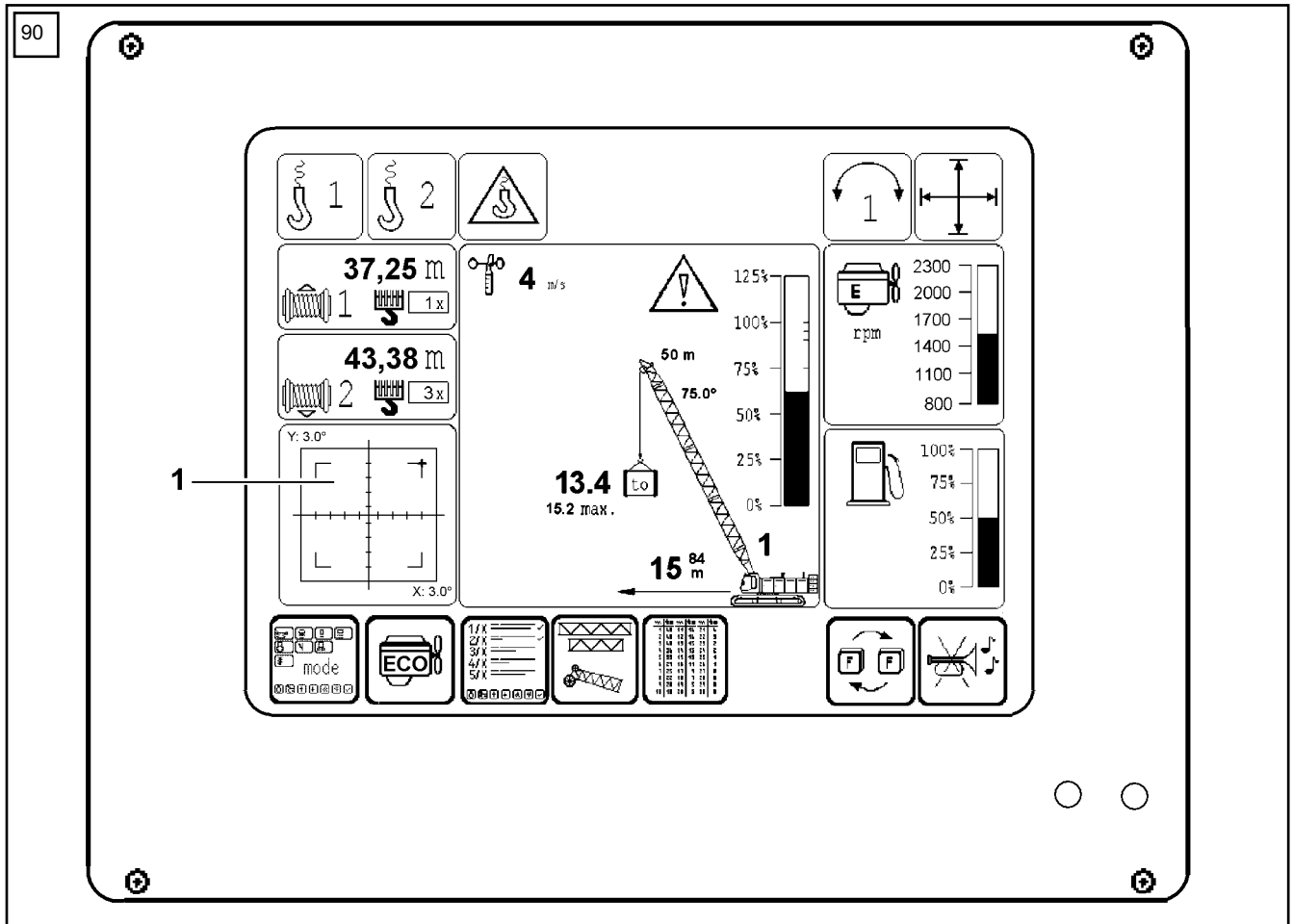
From time to time, check that the anti-kink sleeve is not damaged and is functioning properly. The same applies to the remote control cable.



IMPORTANT!

Replace damaged parts with original spare parts as soon as possible.

9.43 Inclination display



Figur Mode screen page

1 Inclination display

9.43.1 Operating the inclinometer

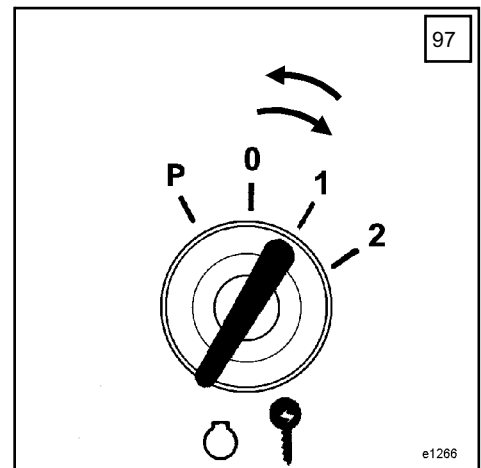
The angle indicator on the screen shows the angle of the uppercarriage in the X and Y axis in degrees.

Values up to $\pm 3^\circ$ (3°) can be displayed.

Switch the ignition off to save the grab operating mode.

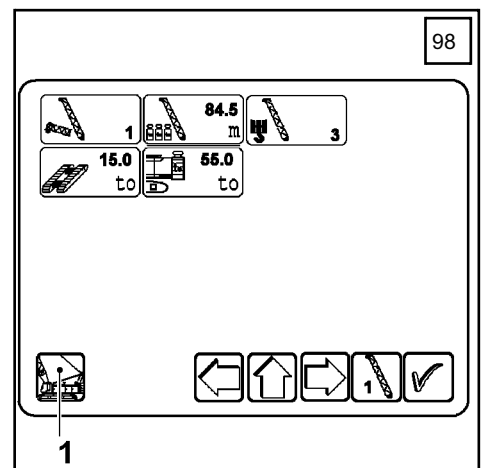
3.) Turn the ignition key to the left (Position "0") (Figure 97).

4.) Wait for a short period of time and then turn the ignition key to the right (Position 1) (ignition on).



The "Set-up screen" page appears on the monitor

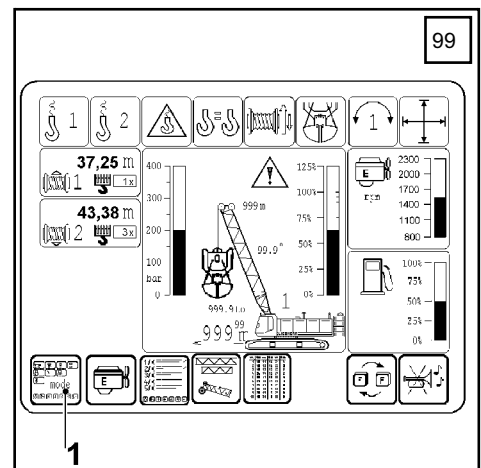
Touch the symbol shown (Figure 98, item 1) to switch from the "Set-up screen" page to the "Soilmec grab" page.



The "Soilmec grab" page (Figure 99) is displayed on the monitor instead of the "Set-up screen" page.

Initialization from "Lifting operation" to "Grab mode" has been concluded.

If the machine operator wants to select another operating mode on the monitor, he can switch from the "Grab mode screen" page to the "Operating modes" page by touching the "Select operating mode" symbol (Figure 99, item 1).



IMPORTANT!

The machine operator must be aware that following successful initialization of a new operating mode, the cover on the left-hand control panel (X12) will be locked.

The two hose guides (10)

- are mounted roughly in the middle of the main boom head,
- guide the hoses on the main boom.

The cable winch (6)

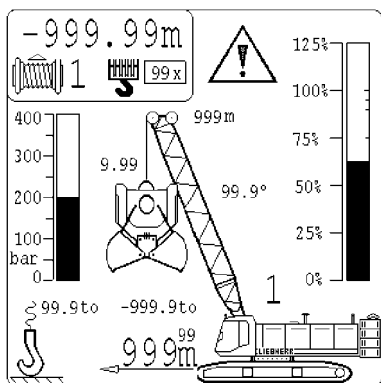
- automatically moves the cable (5) in parallel to the diaphragm wall grab during operation,
- is driven by a hydraulic motor,
- may be manually actuated for assembly purposes.

The cable guide (4)

- is fitted underneath the main boom,
- guides the cable under the main boom.

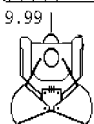
The additional head

- is attached to the boom head,
- consists of two hose guide pulleys (1) and two rope scrapers (3) for deflecting the hoses, and one cable guide pulley (2) for the cable (5).



"Grab" field

The bar chart shows the pressure when opening/closing the grab.



"Slow-down height" display

The numerical value indicates the set slow-down height. The value will be between 0 and 2 m [6'7"].



"Slack rope cut-out" display

This display flashes when the slack rope cut-out stops the winch lowering movement. The numerical value indicates the set switching threshold for the slack rope cut-out.



NOTE!

All the other displays are described in chapter 4 under "Mode screen".

9.46 Slurry wall grab with automatic inclination

9.46.1 General

The machine is equipped for operating a hydraulic slurry wall grab.

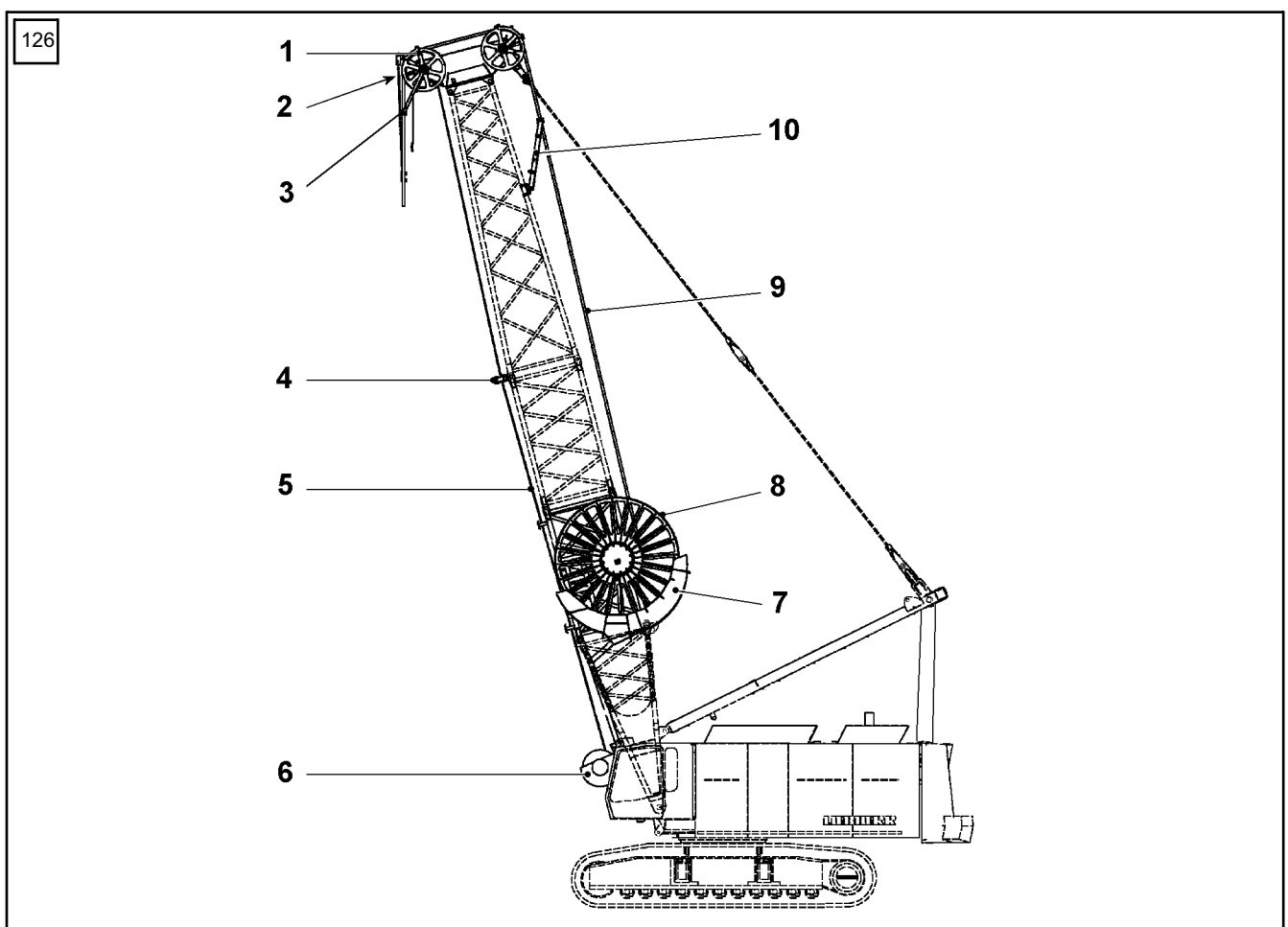
Leffer grab



NOTE!

The special safety and operating instructions, together with the assembly and maintenance instructions for the grab, can be found in the manufacturer's operation manual.

The hydraulic system on the basic machine is extended accordingly. The hydraulic and electrical connections from the basic machine to the slurry wall grab are located at the front right of the uppercarriage.



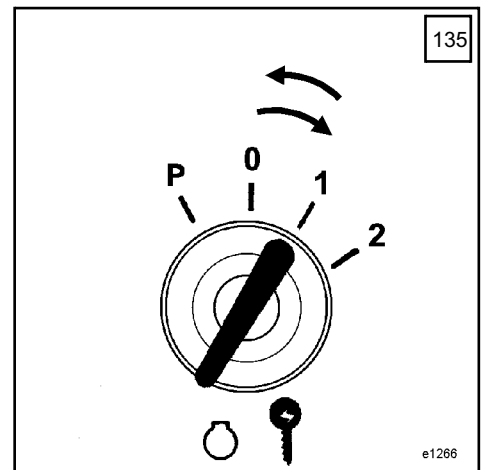
Overview of the HS 885 HD with slurry wall grab

- | | | | |
|---|--------------------|----|-----------------|
| 1 | Hose reel | 6 | Cable winch |
| 2 | Cable guide pulley | 7 | Collecting tray |
| 3 | Scraper | 8 | Hose winches |
| 4 | Cable duct | 9 | Hydraulic hoses |
| 5 | Cable | 10 | Hose guides |

Switch the ignition off to save grab operation mode.

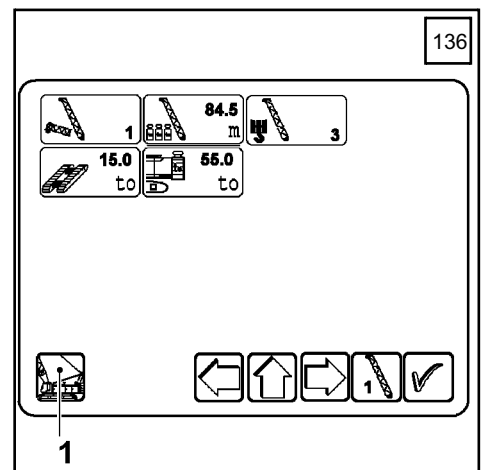
3.) Turn the ignition key to the left (position "0") (Figure 135).

4.) Wait a few moments and then turn the ignition key to the right (Position 1). (Ignition on).



The "Setup screen" appears on the monitor

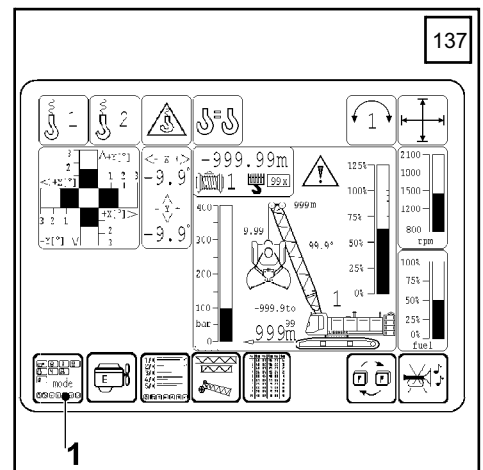
Tap this symbol (Figure 136, item 1) to switch from the "Setup" screen to the "Leffer grab" screen.



The "Leffer grab" screen (Figure 137) is displayed on the monitor in place of the "Setup" screen.

Initialization from "Lifting mode" to "Grab operation mode" has been concluded.

If the operator wants to select another operation mode on the monitor, he can switch from the "Grab operation mode" screen to the "Operation modes" screen by tapping the "Select operation mode" symbol (Figure 137, item 1).



IMPORTANT!

The operator must be aware that following successful initialization of a new operation mode, the cover on the left-hand control panel X12 must be locked!

The slack rope cut-out on its own is too slow and would result in too much slack rope, so a preliminary braking facility is integrated for the winches. This reduces the winch speed after a variable slow-down height.

Setting the slow-down height



Potentiometer 1



The slow-down height is set to between 0 and 2 m, starting from the most recent depth, by turning potentiometer 1 on the right-hand control panel (X23).

Once the set slow-down height is reached, the winch speed is automatically reduced to a preset value (creep speed).



The set slow-down height appears on the LCD monitor.



NOTE!

Creep speed is only activated within the slow-down height. On the other hand, the slack rope cut-out is activated if the grab becomes wedged in the trench (above the slow-down height). The operator must then manually reduce the speed using the double T-lever or multi-directional joystick until the slow-down height is reached. This ensures that the remaining distance is not traveled at reduced speed if the slack rope cut-out responds (before the slow-down height is reached).



NOTE!

If the slack rope cut-out responds, a forced zero position of the joystick is necessary to continue lowering.

9.47.4 Collision hazard

Risk of collision between fixed leader (platform) and cab during operation with fixed leader.

The respective machine operator must exercise great care when activating the leader cylinder using additional panel X25. Note that a collision between the fixed leader, particularly the platform, and the cab is possible when the fixed leader is laterally inclined.

Selection keys



Z6 "Lateral leader inclination cylinder/platform slewing cylinder" left/right selection key

Selects the lateral leader inclination cylinder/platform slewing cylinder left/right.



Z2 "Leader inclination cylinder/platform height adjustment cylinder" up/down selection key

Selects the leader inclination cylinder/platform height adjustment cylinder up/down.



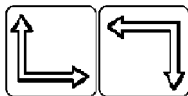
Z4 "Leader radius adjustment cylinder/platform adjustment cylinder" selection key

Selects the leader radius adjustment cylinder/platform adjustment cylinder.

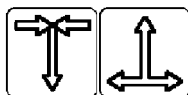
Take special care when the selection keys specified above are preselected and the cylinders on the leader are actuated using the direction keys specified below.

Direction keys

The direction keys **"Lower/Left"** and **"Raise/Right"**.



The direction keys **"Lower/Close"** and **"Raise/Open"**.



CAUTION!

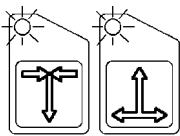
It is the sole responsibility of the respective machine operator to avoid this collision between the fixed leader, particularly the platform, and the cab.

9.47.9 Operating leader with additional panel X25

The functions are preselected on additional panel X25 and actuated using the corresponding direction keys.

The corresponding direction keys light up when a function is preselected.

Example:



Leader height adjustment

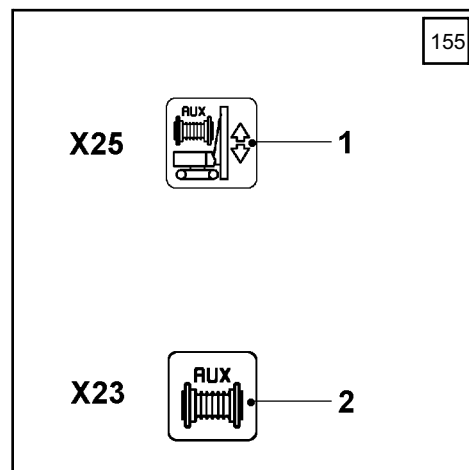
The leader height (Figure 155, 1) is adjusted by actuating the auxiliary winch on panel X23 (Figure 155, 2).

Preselection is possible at any time.



IMPORTANT!

Operating the auxiliary winch is described separately in Chapter 9.



Lateral leader inclination/platform slewing "Z6"

The lateral leader inclination cylinder/platform slewing cylinder is used to move the leader to the left and right in the x-axis.



"Z6" "Lateral leader inclination cylinder/platform slewing cylinder" selection key

Select function on additional panel X25.



The direction keys "Lower/Left" and "Raise/Right" are enabled.

9.48 Vibrator

9.48.1 General

The HS 885 HD can be used together with a vibrator if required.

The hydraulic system on the basic machine is extended accordingly. The hydraulic connection between the basic machine and the add-on unit is established by means of quick-release couplings on the front right of the superstructure. The electrical connection is made using a cable.



NOTE!

Technical data, special safety precautions, operating and maintenance instructions for the add-on units can be found in the relevant manufacturer's operating manual.

Vibrator operation

Vibrator operation is a process that employs vibration to reduce the resistance between the pile and the ground, consequently making it easier to drive in the pile. Other advantages compared with driving are lower noise levels and less danger of building damage.

The fact that the weights are arranged in an eccentric manner (imbalance) means that the pile, which is held in place by clamping tongs, starts to vibrate.

This is done as follows: Position pile and hold in place with clamping tongs

- start up the vibrator; if eccentric adjustment is provided, the eccentric should be retracted (no imbalance)
- extend the eccentric when the final speed (frequency) is reached
- drive pile into the ground

The following optional items of equipment can be fitted

- eccentric adjustment
- frequency monitoring device

Vibrator operation can take place in two ways.

- vibrator with eccentric
- vibrator without eccentric

Switch on the vibrator

When the vibrator is switched on, a distinction is made between vibrators with and without eccentric adjustment.

• Vibrator with eccentric adjustment

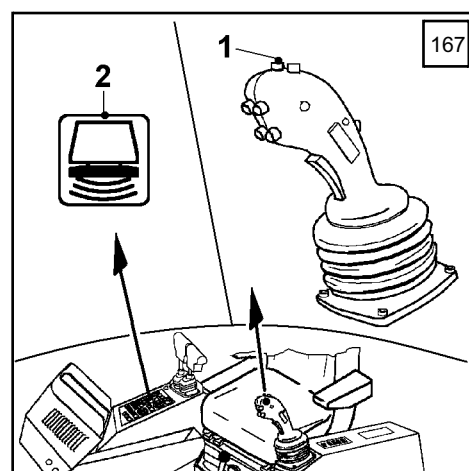
In the case of vibrators with eccentric adjustment, before the vibrator starts up the eccentric is selected automatically and retracted in line with the selected integration time. Only then is the vibrator ramped up continuously to the selected flow rate.

• Vibrator without eccentric adjustment

In cases where there is no eccentric adjustment, the vibrator is immediately ramped up to the selected flow rate.

The vibrator can be switched on in two ways:

- By pressing the **key (Figure 167, item 1)** on the **left-hand joystick** .
- By pressing the **key (2)** on the **right-hand control panel (X23)** .



Adjusting the oil quantity



The LED in the "Vibrator operation" selection display on the right-hand control panel (X23) lights up.



Potentiometer 1 on the right-hand control panel (X23).

The flow of oil to the vibrator can be set to between 0 and the maximum flow rate.

Adjusting the eccentric *

Prerequisite: An integration time for the eccentric must have been specified.
Integration time = 0 means there is no eccentric



"Extend eccentric/increase lift" button

The eccentric is extended.



"Retract eccentric/reduce lift" button

The eccentric is retracted.

9.51.1 Selecting the concrete cutters

Operating note

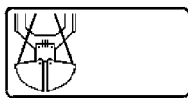
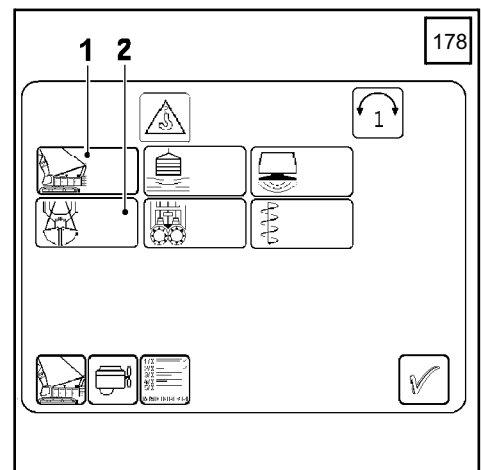
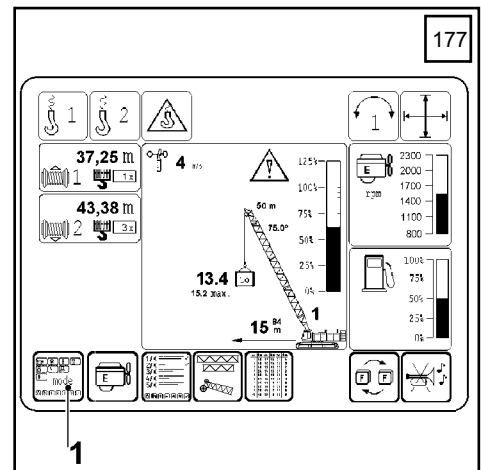
Touch the "Select operating mode" symbol (Figure 177, item 1) to switch from the mode screen to the "Select operating modes" screen.

The selected operating mode is indicated by the highlighted frame around the display (Figure 178, item 1)

Current operating mode "Lifting mode"

Selecting concrete cutter mode

Tap the "Concrete cutter mode" display (Figure 178, item 2) to change the selection from "Lifting mode" to the "Concrete cutter mode" display.



"Concrete cutter mode" display

The selection is indicated by highlighting the frame around the "Concrete cutter mode" display.

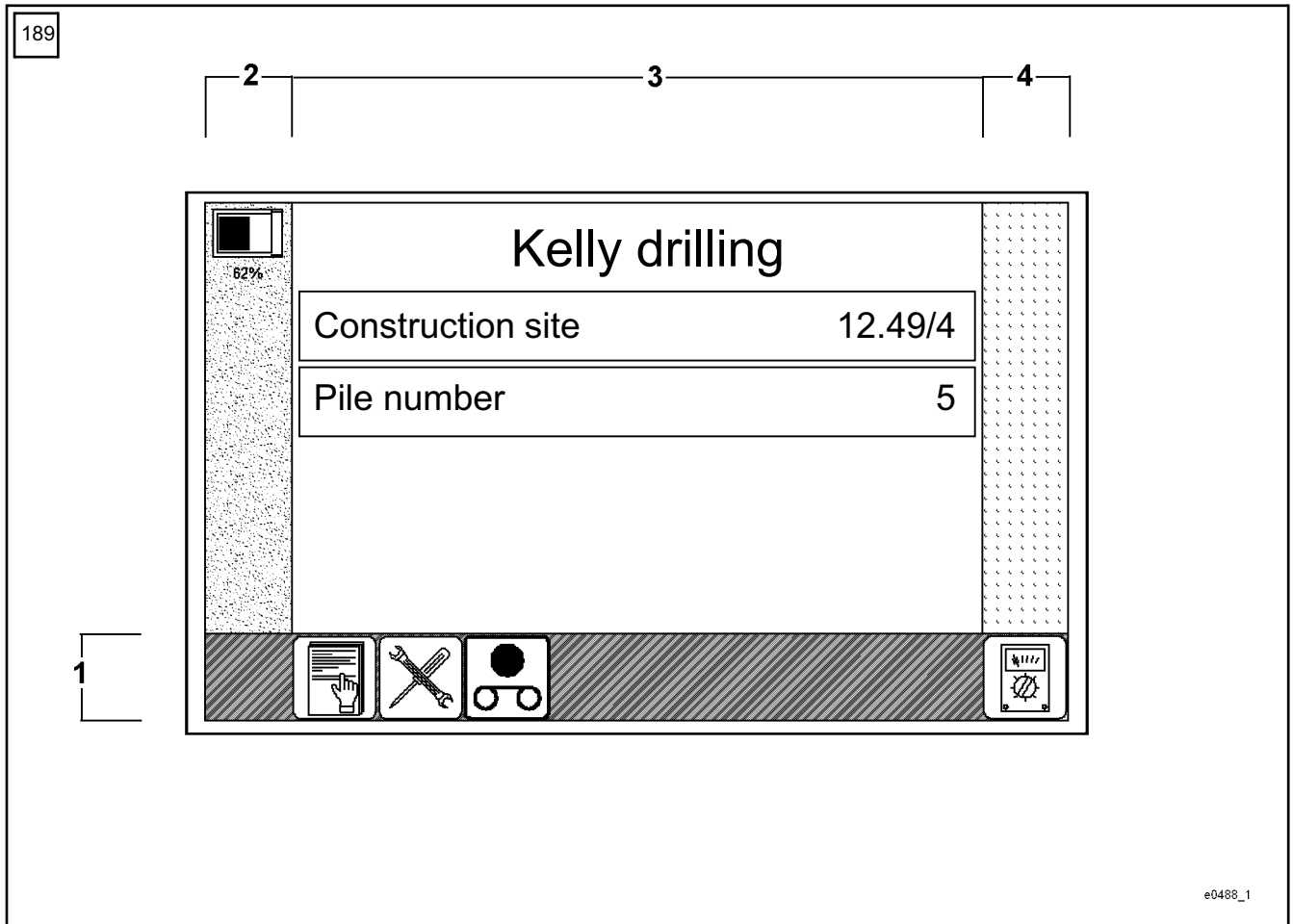


IMPORTANT!

The other symbols and displays in (Figure 177 and Figure 178) are described in Chapter 4.

9.52.3 PDE monitor

The PDE monitor is split into four main areas. These main areas apply to all screen pages, unless stated otherwise.



Overview of PDE monitor

- | | | | |
|---|------------|---|------------------|
| 1 | Symbol bar | 3 | Operator's panel |
| 2 | Status bar | 4 | Error bar |

Description of symbol bar



"PDE" symbol

Tap on this symbol to go to the PDE home page.



"Error messages" symbol

Tap on this symbol to go to the "Error messages" page.



"Settings" symbol

Tap on this symbol to enter/change settings (e.g.: to select a submode for vibrator operation).

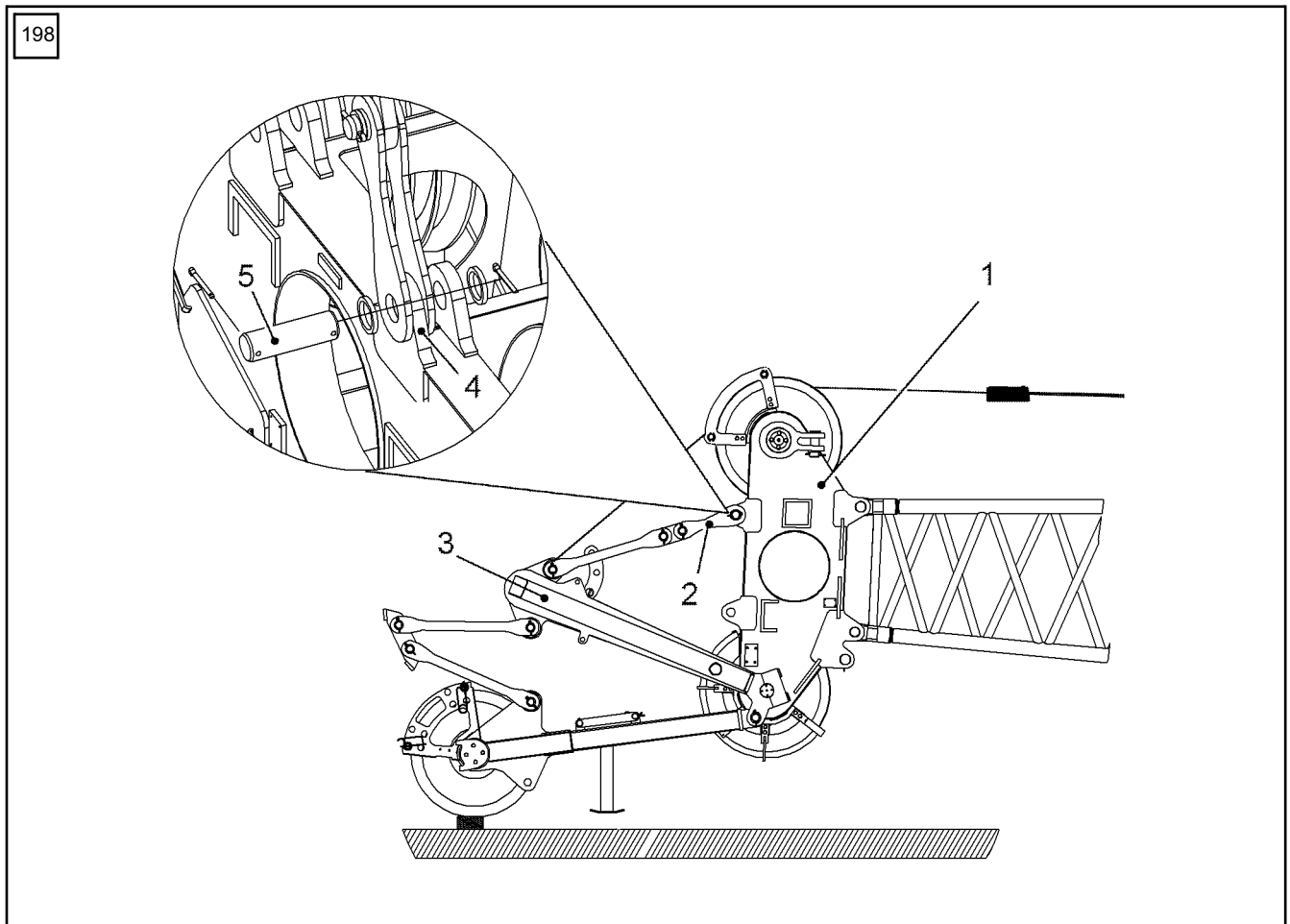
Switching off the machine

The machine can be switched off at any time. The current status is stored and generated again when the machine is next switched on.

If the machine is switched off while recording a cycle, all the data are stored and recording will resume at the same place when the machine is started again.

The machine assumes the status it was in when it was switched off.

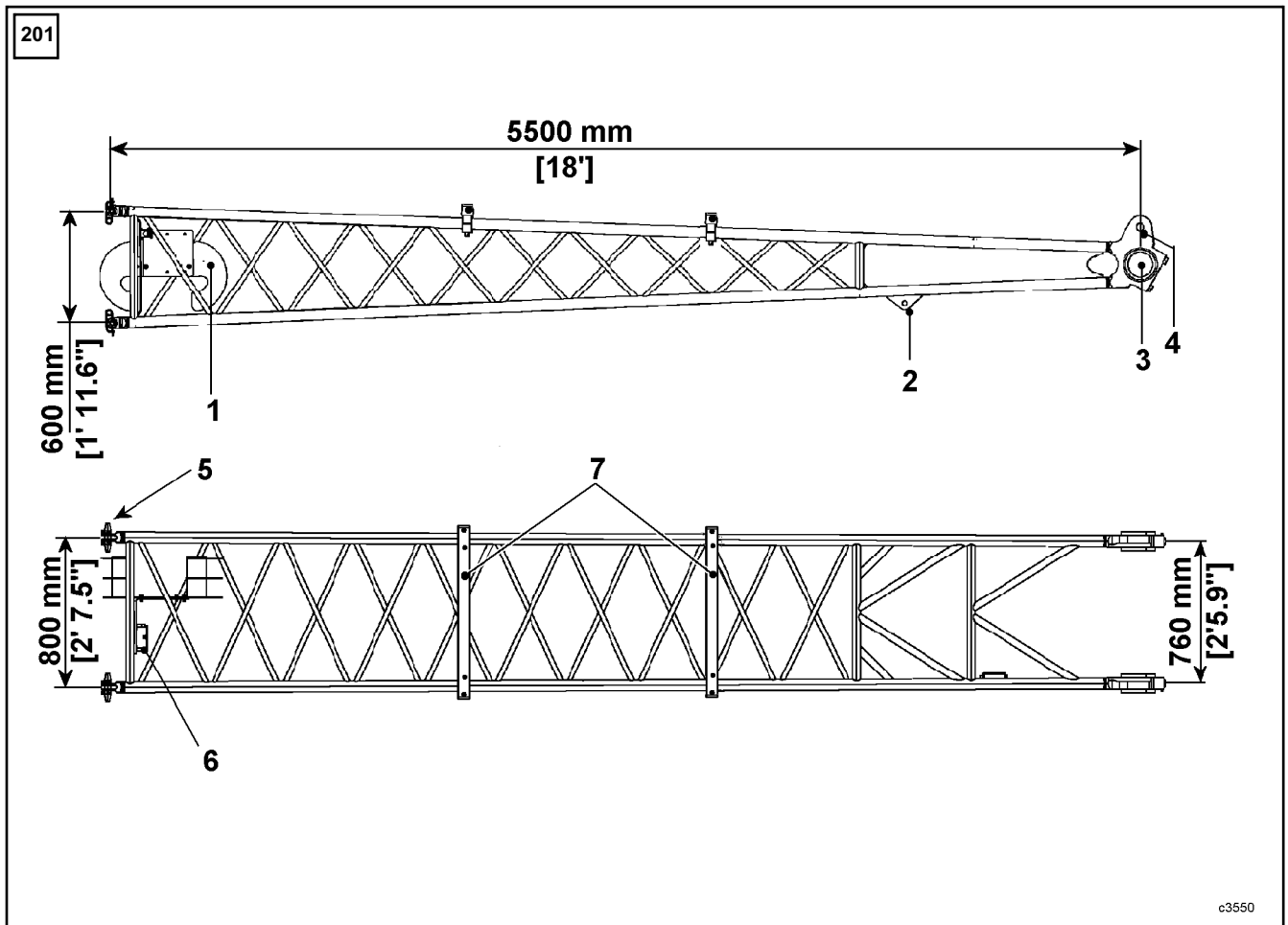
9.53.11 Securing boom top to upper lifting point on boom head section



- | | | | |
|---|-------------------|---|----------------------------------|
| 1 | Boom head section | 4 | Flange on main boom head section |
| 2 | Link plate (2x) | 5 | Rig pin |
| 3 | A-frame | | |

- ▶ Move A-frame (3) using winch 1 on the boom head section (1).
- ▶ Fold shackles (2) upwards and position on the outer flanges (4) on the boom head section.
- ▶ Insert and secure rig pins (5).
- ▶ Remove round sling.

Fly jib pivot piece, system lengths: 5.5 m [18 ft]



- | | | | |
|---|---------------------------------------|---|---|
| 1 | Cable holder | 5 | Double-tapered pins (4x) |
| 2 | Pivot piece for retaining device (2x) | 6 | Front blank plug for transport purposes |
| 3 | Jib pivot piece pivot points | 7 | Rope supports (2x) |
| 4 | Pivot point for A-frame | 8 | Rear blank plug for transport purposes |

The connecting cable for the fly jib head is wound onto the cable holder (1).

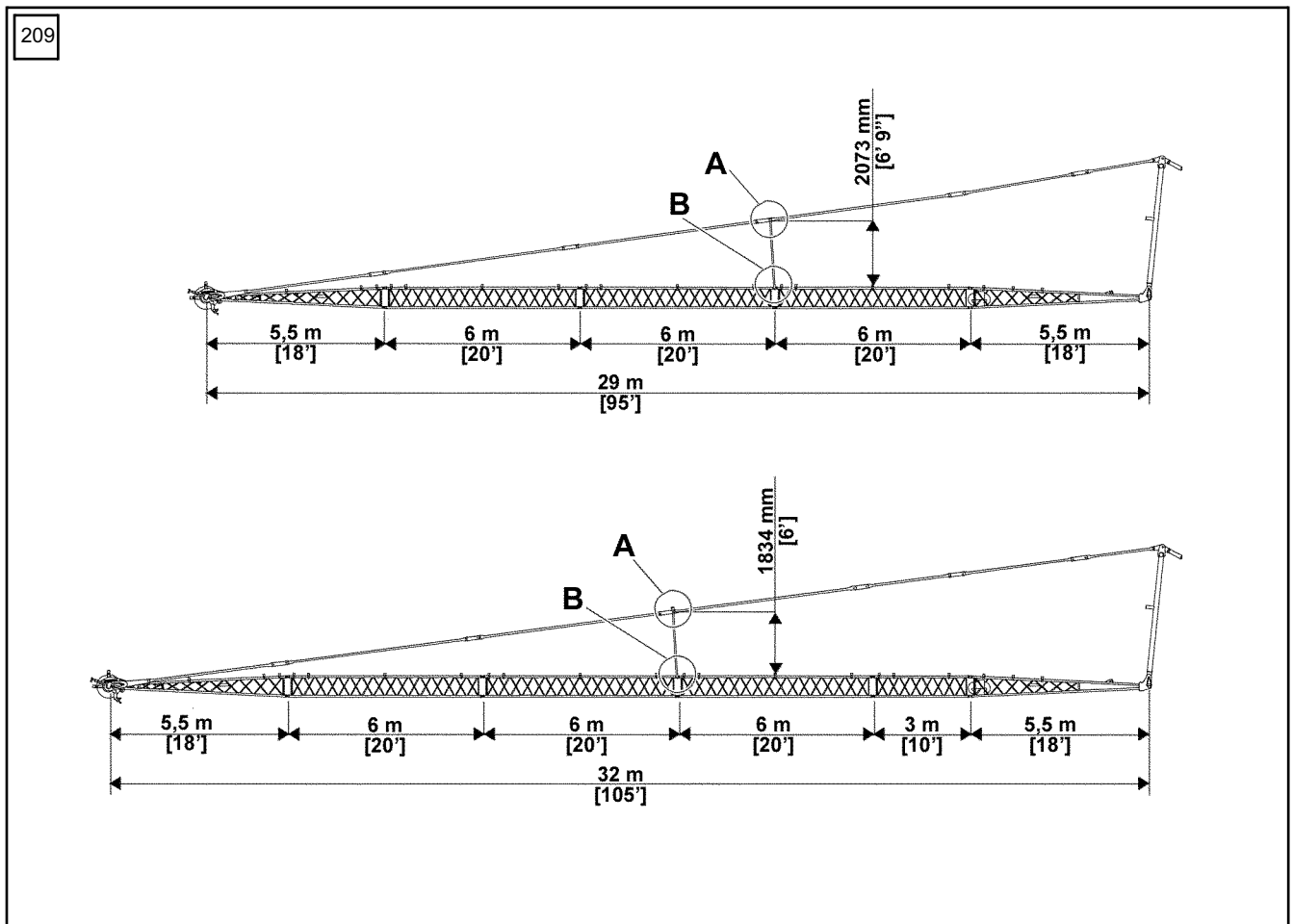
The jib pivot piece is connected to the bracket at both pivot points (3).

For the sake of clarity the fly jib pivot piece is illustrated without the bracket or the A-frame attached at position (4).

9.55.6 Intermediate tensioners on the fixed fly jib

If the fly jib is more than 29m [95'] in length, intermediate tensioning of the fixed needle is mandatory.

Arrangement of the tensioning ropes



The details **A** and **B** are shown in Figures 211 and 21.



The fly jib may buckle if

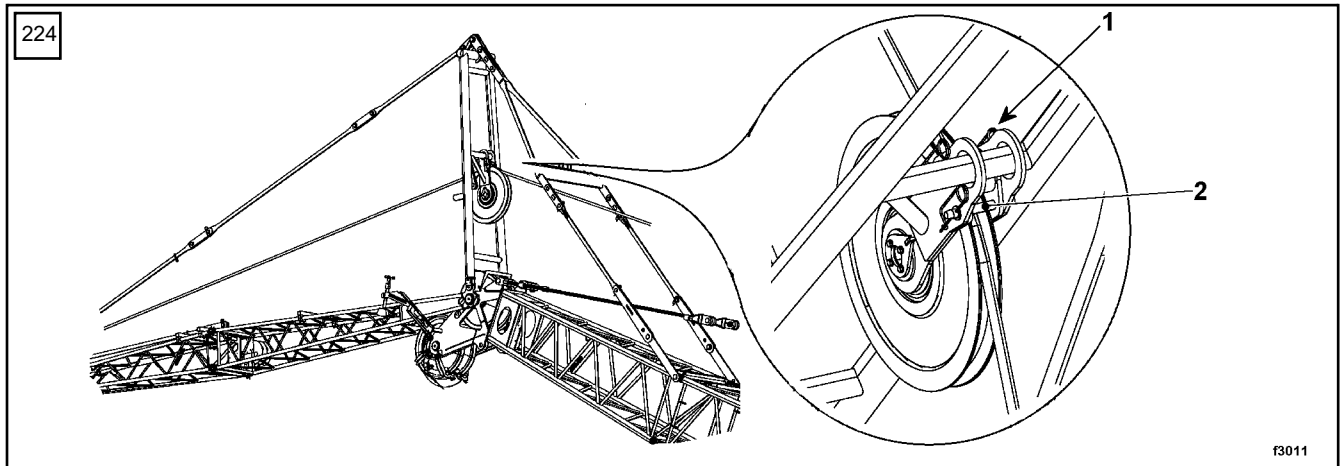
- intermediate tensioners are missing or wrongly arranged,
- tensioning ropes are the wrong length.

Precautions:

If the fly jib is more than 29 m [95 ft] in length, the fly jib anchoring rods must also be fastened to the fly jib with two intermediate tensioners, to prevent the jib from hanging down dangerously.

The installation positions and lengths of the tensioning ropes must be checked during assembly.

9.55.13 Luffing the hoisting rope



Before the hoisting rope of the fly jib is luffed, the rope guard rods (Figure 224, 1 and 2) on the deflection pulley and those on the fly jib head (Figure 225, 1) must be removed.

After luffing the hoisting rope, refit the rope guard rods (Figure 224, 1 and 2) to the deflection pulley and the fly jib head (Figure 225, 1).

9.55.14 Reeve the pulley block (or load hook) on the boom head

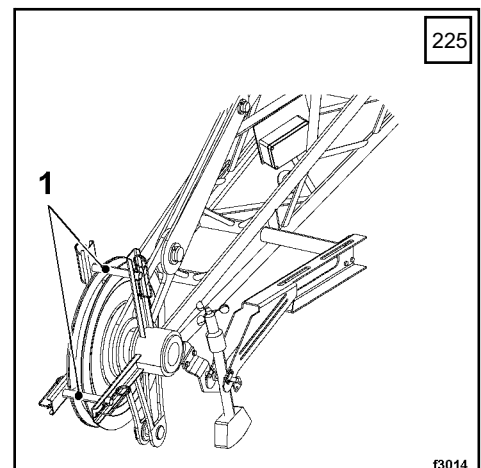
Reeving should be carried out as described in Chapter 6 "Rope reeving plans".



As the load is being lowered, the rope can be pulled out of the rope fixation on the winch!

It is a **mandatory** requirement that there are always at least **three** so-called **safety windings** remaining.

The length of hoisting rope required for this purpose depends on the boom or jib configuration, the reeving of the load hook and the type of application.



9.56.2 Preparations in lifting operation

The following preparations are required in lifting operation:

- Position the machine in such a way that there is sufficient space to lay down the boom and dismantling can be carried out with the basic machine.



IMPORTANT!

After laying the jib down on the ground, there must be sufficient space at the front to dismantle the jib.

- The superstructure must stand parallel to the undercarriage.
- Lower the boom with fixed jib attached until the load moment limitation disables the lowering movement.



IMPORTANT!

The use of squared timbers to support the boom sections is recommended.

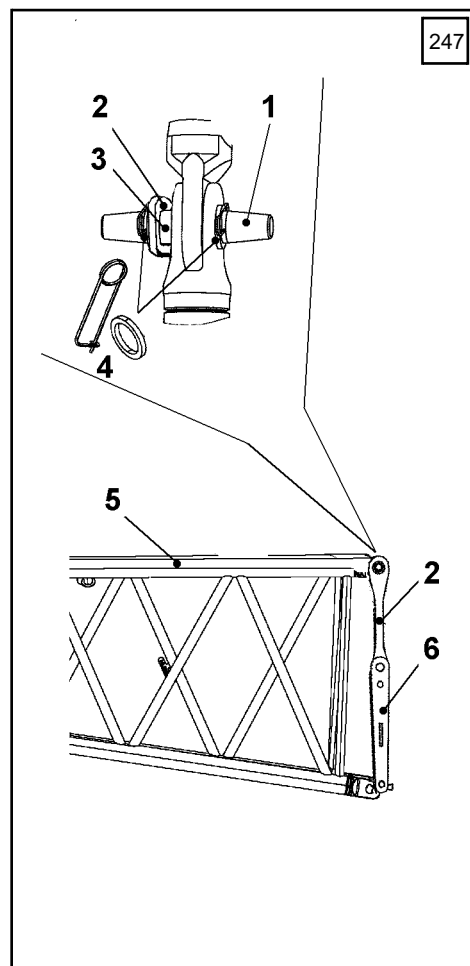
9.56.3 Select assembly mode

The boom is laid down in assembly mode.
See Chapter 6 "Information on assembly mode".

9.56.10 Removing the coupling links

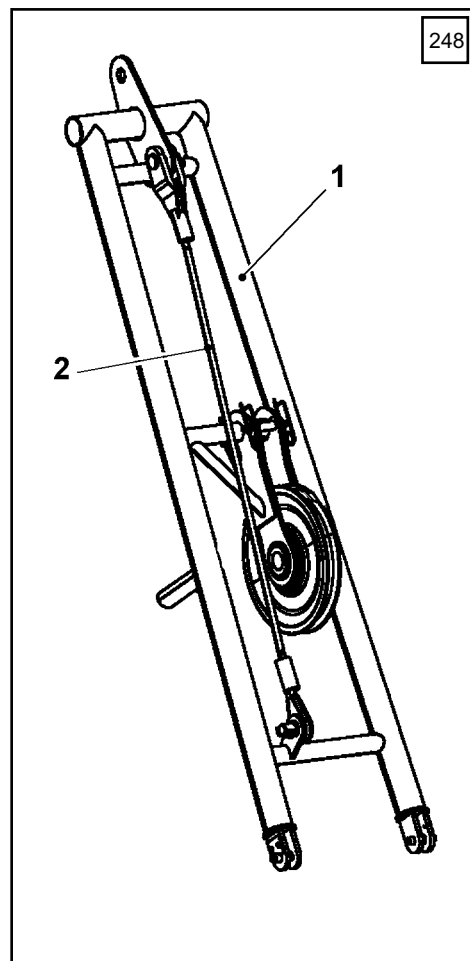
Procedure

- Remove the locking clips (4) and washers on the special bolt (1).
- Remove coupling link (2) and spacer (3).
- Replace special bolt (1) by standard bolt.
- Secure special bolts on both sides using washer supplied and locking clip.
- Insert the special bolt and spacer into the coupling link and secure using washer and locking clip.
- Fasten the coupling link to the fly jib intermediate piece.



Fastening the guy rope to the A-frame.

After lowering the A-frame (1), fasten the guy rope (2) to the A-frame.
The guy rope may only be used for raising and lowering the A-frame.



9.60 Rock guard (variant 3)

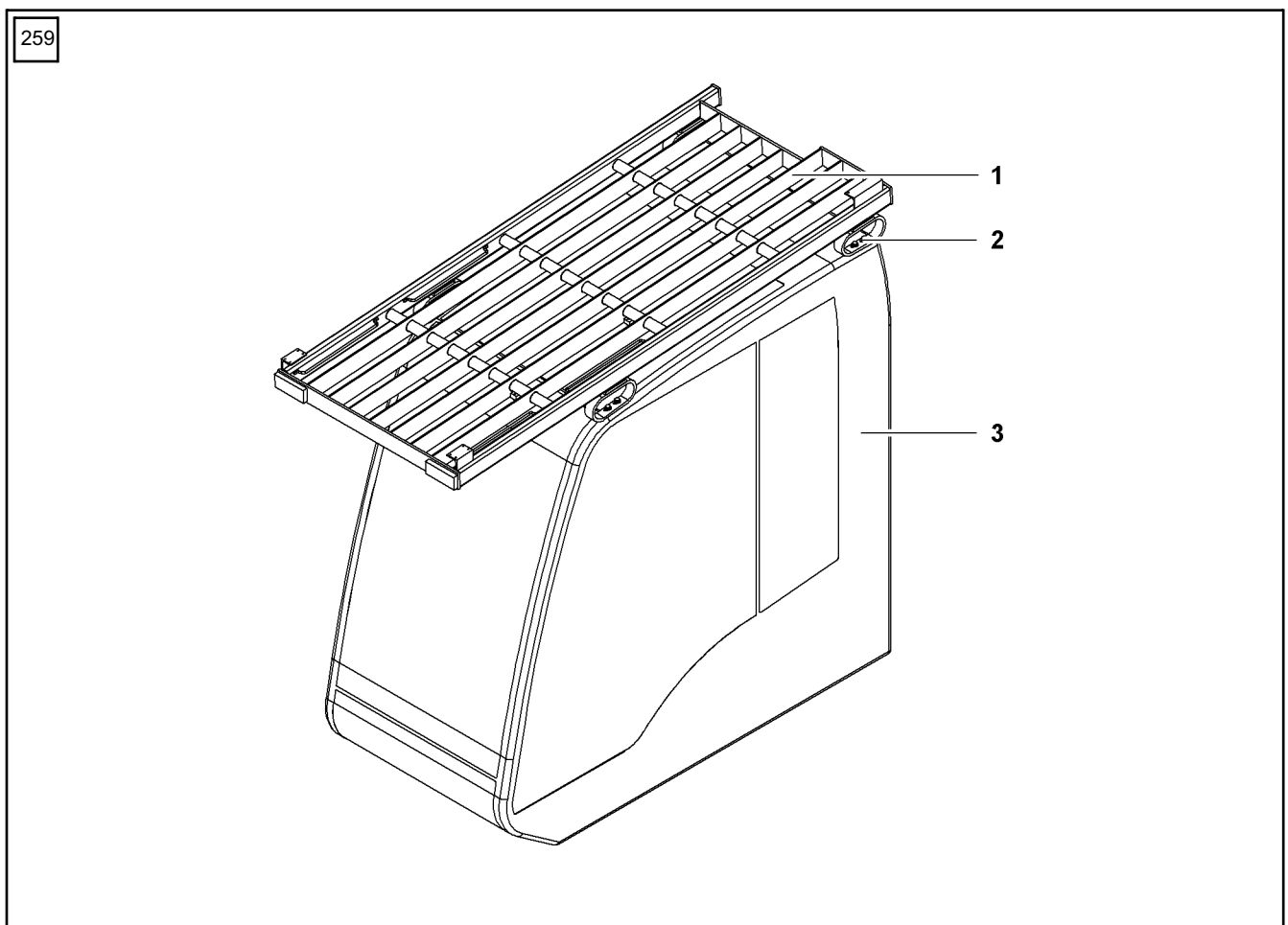
The rock guard is tested in accordance with DIN EN ISO 3449 Level 2.

⚠ ATTENTION!

Damaged rock guard!

Danger of injury due to falling parts. If deformation and / or cracks are detected on the rock guard it must be replaced with a new rock guard. Do not execute any repairs on the rock guard! !

Overview



- 1 Rock guard
- 2 Fastening point 4x

- 3 Cabin

9.60.1 Use

Demolition with grabber.

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