LIEBHERR

Radio remote control

LR 1600/2-W

LICCON1

Operating instructions

BAL No.: 918102-01-02

Serial No.	
Date	

ORIGINAL OPERATING INSTRUCTIONS

The operating instructions are part of the crane!

They must always be available within reach!

The regulations for crane operation must be observed!

Liebherr-Werk Ehingen GmbH
Postfach 1361
D-89582 Ehingen / Donau
+49 (0) 7391 502–0
+49 (0) 7391 502–3399
info.lwe@liebherr.com
www.liebherr.com

Preface

Manufacturer

Liebherr - Werk Ehingen GmbH
Postfach 1361
D-89582 Ehingen / Donau
+49 (0) 7391 502–0
+49 (0) 7391 502-3399
info.lwe@liebherr.com
www.liebherr.com

General

This crane was built according to the state of technology and recognized safety technical regulations. Despite that, dangers to body and life for the user and / or third persons or damage to the crane and / or other material assets can occur.

This crane may only be used:
- In impeccable technical condition.
- For destined use.
- By trained personnel, which acts in a safety and danger conscious way.
- When no safety relevant problems are present.
- When no modifications were made on the crane.

Any problems, which could affect safety must be fixed immediately.

Modifications on the crane may only be made with written approval by Liebherr-Werk Ehingen GmbH.

Data logger

This crane is equipped with a data recording device. Among others, the following data is recorded:
- Date and time of day.
- Entered set up configuration of the crane.
- Actual load.
- Percentage of utilization of the crane.
- Boom radius (working radius).
- Main boom angle, luffing jib angle.
- Total telescopic boom length, length of each telescopic section.
- Every actuation of bypass devices.

The recorded data can be read with a respective software.

Safety and warning display

The safety and warning display is directed to all persons who work with the crane.

The terms **DANGER**, **WARNING**, **CAUTION** and **NOTICE** used in the crane documentation are intended to point out certain rules of conduct to all persons working with the crane.

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Warning signs	Signal word	Explanation
	**DANGER**	Designates a dangerous situation which will lead to death or serious injury if it is not prevented. [1)]
	**WARNING**	Designates a dangerous situation, which can lead to death or serious injury if it is not prevented. [1)]
	**CAUTION**	Designates a dangerous situation, which can lead to slight or medium-grade injuries if it is not prevented. [1)]
	NOTICE	Designates a dangerous situation, which can lead to property damage if it is not prevented.

[1)] This could also result in property damage.

Additional notes

The term **Note** is used in the crane documentation to make all persons working with the crane aware of useful information and tips.

Sign	Signal word	Explanation
	**Note**	Designates useful information and tips.

Crane documentation

The crane documentation is comprised of:
- All supplied documents on paper and in digital form.
- All supplied programs and applications.
- All subsequently supplied information, updates and addenda for the crane documentation.

The crane documentation:
- Makes it possible for you to operate the crane safely.
- Supports you to utilize the permissible application possibilities of the crane.
- Provides you with information about the functionality of important components and systems.

Note
Terminology in the crane documentation.
Certain expressions are used in the crane documentation.
▶ In order to avoid misunderstandings, the same expressions should always be used.

Translations from the German version of the crane documentation: The crane documentation has been translated to be best of one's knowledge. Liebherr-Werk Ehingen GmbH assumes no liability for translation errors. The German version of the crane documentation is solely applicable for factual accuracy. If you find any errors or if any misunderstandings arise when reading the crane documentation, please contact Liebherr-Werk Ehingen GmbH immediately.

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WARNING
Danger of accident due to incorrect operation of the crane!
Incorrect operation of the crane can lead to accidents!
Personnel can be killed or seriously injured!
This could result in property damage!
- ▶ Only authorized and trained expert personnel are permitted to work on the crane.
- ▶ The crane documentation is part of the crane and must be accessible on the crane.
- ▶ The crane documentation and on-site regulations and specifications (such as accident prevention regulations) must be observed.

Using the crane documentation:
- **Makes it easier** to become familiar with the crane.
- **Avoids** problems due to improper operation.

Observing the crane documentation:
- **Increases** reliability in use.
- **Extends** the service life of the crane.
- **Minimizes** repair costs and downtime.

Place the crane documentation accessible in the driver's cab or in the crane cab.

WARNING
Outdated version of crane documentation!
If subsequently supplied information, updates and addenda to the crane documentation are not observed and added, there is a danger of accidents!
Personnel can be killed or seriously injured!
This could result in property damage!
- ▶ Observe and add all subsequently supplied information, updates and addenda for the crane documentation.
- ▶ Make sure that all affected persons always know and understand the latest version of the crane documentation.

WARNING
Crane documentation is not understood!
If parts of the crane documentation are not understood and the tasks are carried out on or with the crane, then there is a danger of accidents!
Personnel can be killed or seriously injured!
This could result in property damage!
- ▶ Clear up open questions regarding the crane documentation with Liebherr Service before carrying out the respective task.

All accident prevention guidelines, operating instructions, load charts etc. are based on destined use of the crane.

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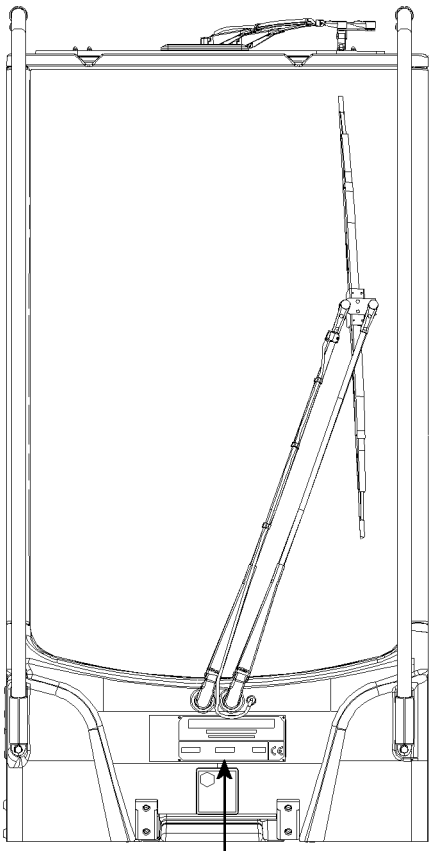

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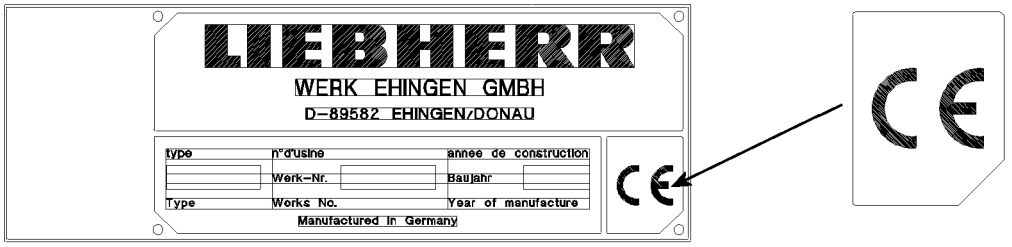

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Fig.110001

CE marking

The CE marking is a mark according to EU laws:
- Cranes with CE-marking according to the European machinery directive 2006/42/EC and the EN 13000! Data tag Crane with CE-marking, see illustration **1**.
- Cranes that are operated outside the respective area of application of the European machinery directive do not require a CE marking. Data tag Crane without CE marking, see illustration **2**.
- It is prohibited to market and operate cranes without CE marking, which do not meet the product-specific regulations valid in Europe, when a CE marking is specified for the country.
- It is prohibited to operate cranes with a tipping load utilization of 85 % within the European Union or in countries that only permit a lower tipping load utilization! The national regulations apply. These cranes may not have a CE marking!

Destined use

The destined use of the crane consists solely in vertical lifting and lowering of free and non-adhered loads, whose weight and center of gravity are known.

To do so, a hook or hook block approved by Liebherr must be reeved on the hoist rope and it may only be operated within the permissible crane configurations.

Driving with the crane, with or without an attached load is only permissible if a corresponding driving or load chart is available. The set up configurations intended for it and the safety conditions must be observed according to the corresponding crane documentation.

Any other use or any other exceeding utilization is **not** destined use.

Destined use also includes the adherence of the required safety guidelines, conditions, prerequisites, set up conditions and working steps in the crane documentation (for example: Operating instructions, load charts, erection and take down charts, job planner).

The manufacturer is **not** liable for damages, which are caused by non-destined use or improper use of the crane. Any associated risk it is carried solely by the owner, the operator and the user of the crane.

Non-destined use

Non-destined use is:
- Working outside the permissible set up configurations according to the load chart.
- Working outside the permissible boom radii and slewing ranges according to the load chart.
- Selecting load charts, which do not correspond to the actual set up configuration.
- Selection of a set up configuration via code or via manual entry, which does not correspond to the actual set up configuration.
- Working with bypassed / deactivated safety equipment, for example bypassed load torque limiter or with bypassed hoist limit switch.
- Increasing the boom radius of the lifted load after a LMB shut off, for example by diagonally pulling the load.
- Using the support pressure display as information in order to utilize the crane up to the tipping limit!
- Use of equipment parts which are not approved for the crane.
- Operation of the crane in an area exposed to explosion hazards.
- Using the crane at sports and recreational events, especially for "Bungee" jumps and / or "Dinner in the sky".
- On-road driving in non-permissible travel condition (axle load, dimension).
- Driving with the equipment in place in a non-permissible travel condition.
- Pushing, pulling or lifting loads with the level control, the sliding beams or the support cylinders.
- Pushing, pulling or lifting loads by actuating the slewing gear, the luffing gear or the telescoping gear.
- Ripping stuck objects loose with the crane.
- Utilizing the crane for a longer period of time for material handling tasks.
- Releasing the crane suddenly (grapple or dumping operation).
- Utilizing the crane when the weight of the load, which is suspended on the crane is changed, for example by filling a container suspended on the load hook, except:

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- The load torque limiter was checked before for function with a known load.
- The crane cab is occupied.
- The crane is operational.
- The container size is selected in such a way that an overload of the crane with full load is eliminated within the valid used load chart.

The crane may **not** be used for:
- Attaching a stuck load for which the weight and center of gravity are not known and which is released only by flame cutting, for example.
- Letting persons drive along outside the driver's cab.
- Transporting personnel in the crane cab while driving.
- Transporting personnel with the load handling equipment and on the load.
- Transporting of persons with work baskets (cherry pickers), if the national regulations of the responsible work safety organization are not observed.
- Transporting loads and objects on the crane chassis.
- Transporting loads and objects on the crane superstructure.
- Transporting loads and objects on the boom lattice sections and / or the crane boom.
- Two hook operation without auxiliary equipment.
- Extended material handling operation.
- Crane operation on a barge if the conditions are not determined and the written release by **Liebherr Werk Ehingen GmbH** is not present.

The crane documentation must be read and used by all persons who are involved in use, operation, assembly and maintenance of the crane.

Ambient temperature

The crane is designed for an ambient temperature of -20 °C to +50 °C.

If the ambient temperature is lower than -20 °C the crane must be modified with "auxiliary equipment for working at low temperatures".

WARNING
Working at low temperatures without the corresponding auxiliary equipment!
The crane components can be damaged and fail. The load can rip off.
Death or severe bodily injuries.

If the crane is operated at an ambient temperature lower than -20 °C:
▶ Make sure that the crane is equipped with the corresponding "auxiliary equipment for working at low temperatures". Observe and adhere to the Crane operating instructions, chapter 2.08.
▶ Use the operating fluids for the corresponding ambient temperature in time. Observe and adhere to the Crane operating instructions, chapter 7.07.

Safety equipment

Special attention must be paid to the safety equipment built into the crane. The safety equipment must constantly be checked for functionality. The crane may not be operated if the safety equipment are not working or not working correctly.

Note
Your motto must always be:
▶ **Safety first!**

The crane has been built in accordance with the applicable travel operation and driving regulations and has been approved by the relevant authorities.

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Equipment and spare parts

WARNING
Danger to life if original equipment parts are **not** used!
If the crane is operated with equipment parts, which are **not** original, then the crane can fail and cause fatal accidents!
Crane components can be damaged!
- ▶ Operate the crane only with original equipment parts!
- ▶ Crane operation with equipment parts, which do **not** belong to the crane is prohibited!
- ▶ If there is any doubt about the origin of equipment parts, contact Liebherr Service!

WARNING
The crane permit and the manufacturer's warranty will become void!
If any original installed parts are modified, manipulated or replaced (e.g. removal of parts, installation of non-original Liebherr parts), both the crane permit and the manufacturer's warranty will become void.
- ▶ Leave installed original parts unchanged!
- ▶ Do not remove installed original parts!
- ▶ Use only Original Liebherr spare parts!
- ▶ If there is any doubt about the origin of spare parts, contact Liebherr Service!

For ordering equipment and spare parts, always keep the crane number handy and provide it.

Definition of directional data for mobile cranes

Driving forwards: Driving with the driver's cab on the front.

Driving in reverse: Driving with the taillights of the crane chassis on the front.

Front, **rear**, **right**, **left** in the **driver's cab** refer to the crane chassis. The driver's cab is always in the front.

Front, **rear**, **right**, **left** in the **crane cab** refer to the crane superstructure. Front is always in direction of the placed down boom.

0° turning angle of the crane superstructure: The boom points in the longitudinal direction to the rear past the rear of the vehicle.

180° turning angle of the crane superstructure: The boom points in the longitudinal direction to the front past the driver's cab.

Definition of directional data for crawler cranes

Driving forward driving forward from the view of the crane operator seated in the crane cab. Turntable in 0° or 180° position.

Driving reverse driving backward from the view of the crane operator seated in the crane cab. Turntable in 0° or 180° position.

Front, **rear**, **right**, **left** always orient themselves on the **crawler track** from the position of the chain tension devices. The chain tension devices on the crawler track are always on the front.

Front, **rear**, **right**, **left** refer to the direction of view of the crane operator seated in the **crane cab**. Front is always in direction of the placed down boom.

Optional equipment and functions

The equipment marked with ***** and the functions are optionally available and are **not** part of the standard crane (optional equipment).

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Conversion chart

	Initial unit	Multiplication factor	Target unit
Length	mm	0.03937	in
	in	25.4000	mm
	mm	0.00328	ft
	ft	304.8	mm
	cm	0.39370	in
	in	2.5400	cm
	cm	0.0328	ft
	ft	30.48	cm
	m	39.37	in
	in	0.0254	m
	m	**3.281**	**ft**
	ft	**0.3048**	**m**
	km	0.62137	mile
	mile	1.6093	km
Surface	cm^2	0.155	in^2
	in^2	6.4516	cm^2
	m^2	**10.764**	**ft^2**
	ft^2	**0.0929**	**m^2**
Volume	cm^3	0.06102	in^3
	in^3	16.387	cm^3
	m^3	35.3147	ft^3
	ft^3	0.0283	m^3
	l	0.001	m^3
	m^3	1000	l
	l	61.024	in^3
	in^3	0.016387	l
	l	0.0353	ft^3
	ft^3	28.32	l
	l	0.264178	US. liq. gal
	US. liq. gal	3.7853265	l

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	Initial unit	Multiplication factor	Target unit
Mass (weight)	kg	2.20462	lb
	lb	0.45359	kg
	t	**2204.62**	**lb**
	lb	**0.0004536**	**t**
	t	1.1023	short ton US (tn. sh.)
	short ton US (tn. sh.)	0.90718	t
	t	**0.45359**	**kip**
	kip	**2.20462**	**t**
Mass / length	kg/m	0.055998	lb/in
	lb/in	17.857781	kg/m
	kg/m	0.67197	lb/ft
	lb/ft	1.48816	kg/m
Force	N	0.2248	lbf
	lbf	4.4483986	N
	kN	**224.809**	**lbf**
	lbf	**0.0044483986**	**kN**
Turning moment	Nm	8.85075	lbf·in
	lbf·in	0.112984	Nm
	Nm	0.73756	lbf·ft
	lbf·ft	1.3559	Nm
Performance	HP (DIN HP)	0.7355	kW
	kW	1.3596	HP (DIN HP)
Speed	m/s	39.37	in/s
	in/s	0.0254	m/s
	m/s	**3.28084**	**ft/s**
	ft/s	**0.3048**	**m/s**
	km/h	0.62137	mph (mi/h)
	mph (mi/h)	1.60935	km/h
	m/s	2.2369	mph (mi/h)
	mph (mi/h)	0.44704	m/s

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	Initial unit	Multiplication factor	Target unit
Pressure	kPa (kN/m²)	0.01	bar
	bar	100	kPa (kN/m²)
	bar	14.5038	psi
	psi	0.06895	bar
	kPa (kN/m²)	**0.145038**	**psi**
	psi	**6.894759**	**kPa (kN/m²)**
	N/cm²	1.450377	psi
	psi	0.6894759	N/cm²
	N/m²	0.000145038	psi
	psi	6894.759	N/m²
	t/m²	204.81	lbs/ft²
	lbs/ft²	0.0048828	t/m²
Load-related surface	m²/t	0.004882	ft²/lbs
	ft²/lb	204.81	m²/t
Temperature	**°C**	**([°C] · 1.8) + 32**	**°F**
	°F	**([°F] - 32) / 1.8**	**°C**

Conversion chart

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6 Auxiliary equipment

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6 Auxiliary equipment

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6.08 Radio remote control

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Fig.195219

1 Safety instructions

WARNING
Danger of accident due to operating error!
Insufficient familiarity and errors in the operation of the crane with the radio remote control can cause accidents.
Personnel can be killed or seriously injured.
This could result in property damage.
- ▶ In any case, read the entire crane documentation.
- ▶ The crane may only be operated if the contents of the crane documentation have been understood.
- ▶ This chapter is only one part of the crane documentation. The entire crane documentation must be observed.
- ▶ The operating instructions “Driving with the equipment in place” must be observed.
- ▶ The valid national regulations to control a crane with a radio remote control must be observed and adhered to.
- ▶ The crane operator must be able to see and monitor the route while driving with the radio remote control.
- ▶ The crane operator must ensure that no persons or obstacles are within the danger zone of the crane.
- ▶ As a rule, always give a warning signal before initiating a crane movement.

WARNING
Lack of knowledge about the contents of the crane documentation!
The sole use of this chapter in order to operate the crane could result in dangerous situations, up to the toppling of the crane.
Death, bodily injury, property damage.
- ▶ The radio remote control is only to be considered as an alternative to the operating and control instruments installed fixed on the crane.
- ▶ The crane movements *turning the crane superstructure*, *spooling the winches up / out*, *increasing / decreasing the derrick ballast boom radius*, *extending / retracting / locking the pull cylinder* and *extending / retracting the assembly cylinder* are only permissible for assembly operation.
- ▶ The respective chapters in the crane documentation are decisive for crane operation.
- ▶ The detailed information and safety guidelines in the respective chapters must be observed.

WARNING
Danger of accident due to incorrect operation of radio remote control!
- ▶ Check all functions of the radio remote control for function before starting to work!
- ▶ Check all display values of the radio remote control for plausibility before starting to work!
- ▶ Only operate the radio remote control if it is intact.

WARNING
Personnel in the danger zone!
An incorrectly selected location of the crane operator or crane personnel could result in the danger of accident.
- ▶ Select the location in such a way that the entire work area is visible.
- ▶ Select the location in such a way that the entire travel range is visible.
- ▶ Select the site location in such a way that the danger zone does not need to be accessed.
- ▶ Select the location in such a way that the entire danger zone is visible and monitored.
- ▶ All involved personnel must be able to communicate with each other at any time.

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WARNING
Crane out of control!
Jerky crane movements / steering movements can cause accidents.
Excessive acceleration / deceleration of the travel movement can lead to accidents.
- ▶ Slowly and evenly start and end crane movements / steering movements.
- ▶ Slowly and evenly accelerate and decelerate travel movements.
- ▶ Do not let the deflected manual control lever snap.
- ▶ Do not operate the manual control lever suddenly.

WARNING
The crane is not horizontally aligned with the crawler travel gear!
The crane can topple over.
Death, severe bodily injuries, property damage.

If not otherwise specified in the crane documentation:
- ▶ The crane may be inclined maximum 0.3° or 0.5 %.

WARNING
The crane is not horizontally aligned on the support!
The crane can topple over.
Death, severe bodily injuries, property damage.
- ▶ Align the crane horizontally to 0.0° during the support procedure.

WARNING
No transmission signal!
If the distance or the disturbances between the radio remote control and crane are too large, the transmission signal can break down.
If the radio remote control's rechargeable battery is not charged enough, the transmission signal cannot be maintained.
Crane movements / travel movements and the crane engine are turned off uncontrolled.
The crane can no longer be controlled.
- ▶ Continuously check the indicator lights.
- ▶ Select a location where a good transmission signal is ensured.
- ▶ Bypass the radio condition if there are signs of a transmission signal problem, see section "Measures in case of problems".
- ▶ Make sure the rechargeable battery in the radio remote control is charged sufficiently.

WARNING
Unauthorized crane access!
- ▶ The operating elements in the crane cab must be secured against unauthorized access.

NOTICE
Improper use of the radio remote control!
Improper use can lead to damage / destruction of the radio remote control.
- ▶ Protect the radio remote control from direct sun exposure.
- ▶ Protect the radio remote control from dirt and moisture.
- ▶ Keep the radio remote control, BTT and the charging console clean.
- ▶ Never clean the radio remote control, BTT and the charging console with solvents, paint thinners, cleaning fluids or other chemical substances.
- ▶ Maintenance work on the BTT and the radio remote control may only be carried out by appropriate qualified personnel.

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2 Description of the function

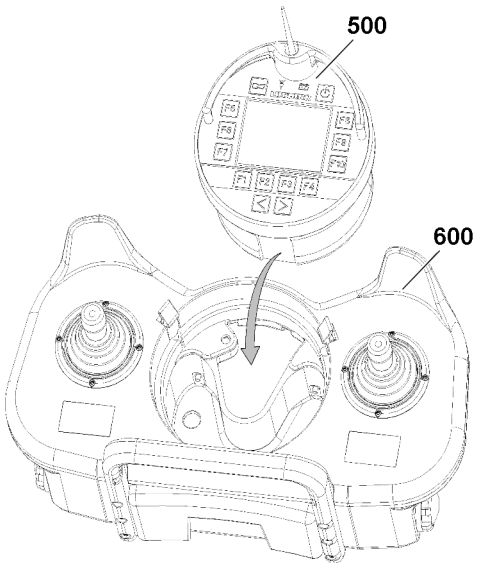

*Fig.126305: Inserting the BTT **500** into the radio remote control panel **600***

Note
- ▶ The Bluetooth Terminal is described as BTT in the description.
- ▶ The Bluetooth Basis is referred to as BTB in the description.

This crane is equipped with a radio remote control panel **600**. The radio remote control panel **600**, in connection with the BTT **500** forms a radio remote control.

The control commands are sent by the radio remote control panel **600** via the BTT **500** to the crane.

At the same time, the BTT **500** display indicates all the important crane data as well as displaying any warning, monitoring and operational messages.

Note
- ▶ The illustrations, icons and screen displays in this chapter are only examples.
- ▶ The numerical values in the individual icons and charts do not have to necessarily match the crane exactly.
- ▶ Numbers and letters can be replaced by place holders.
- ▶ The display and assignment of the icons can deviate, depending on the set up configuration, operating status and configuration of the crane.
- ▶ In addition, many of the illustrations show the maximum configuration of the monitor display with icons.
- ▶ In crane operation, an identical display will **not** appear on the BTT **500** display.

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3 Operating and control instruments

3.1 Operating and control instruments Radio remote control

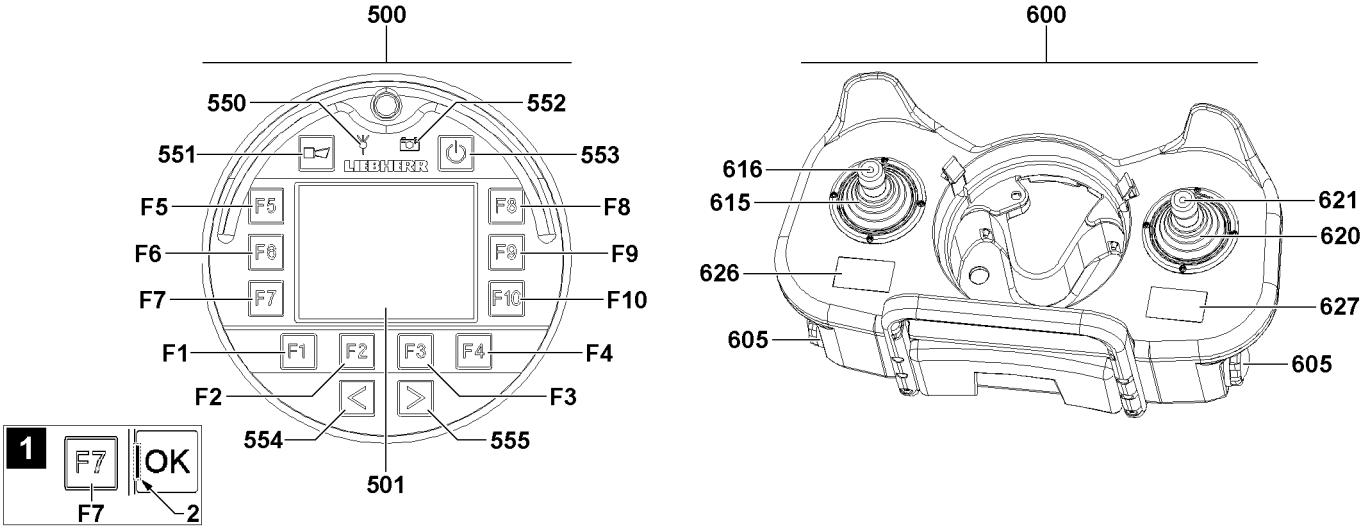

Fig.123802: Operating and control instruments Radio remote control

500 BTT

501 BTT display

550 Transmission signal control light
- Indicator light *green*: Transmission signal *good*
- Indicator light *yellow*: Transmission signal *weak*
- Indicator light *red*: Transmission signal *no connection*

551 Horn *button*
- Operate the acoustic signal (horn signal)

552 Rechargeable battery indicator light
- Indicator light *green*: Sufficient charge condition of rechargeable battery
- Indicator light *yellow*: Rechargeable battery almost discharged
- Indicator light *red*: Rechargeable battery discharged

553 On / off button
- Turn the BTT on / off

554 Change over key
- Function menu / operating screen dependent

555 Change over key
- Function menu / operating screen dependent

Note

Function keys on the BTT **500**

▶ The assignment of the function keys **F1** to **F10** is menu / operating screen dependent and is described in the respective section.

▶ A small bar **2** marks the respectively assigned function key, see illustration **1**: Example for icon *OK*, assigned to function key **F7**.

600 Radio remote control panel

605 Battery compartments
- The power supply for the radio remote control panel is provided by the BTT **500**. If the rechargeable battery in the BTT **500** is weak, then radio remote control operation can be continued by inserting batteries.

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615 Manual control lever, left
- Assignment according to Graphic display left **626**

616 Key
- -No function-

620 Manual control lever, right
- Assignment according to Graphic display right **627**

621 Key
- Rapid gear (Power plus) on / off

626 Graphic display left
- Assignment display manual control lever **left**

627 Graphic display right
- Assignment display manual control lever **right**

3.2 Charging the rechargeable battery for the radio remote control

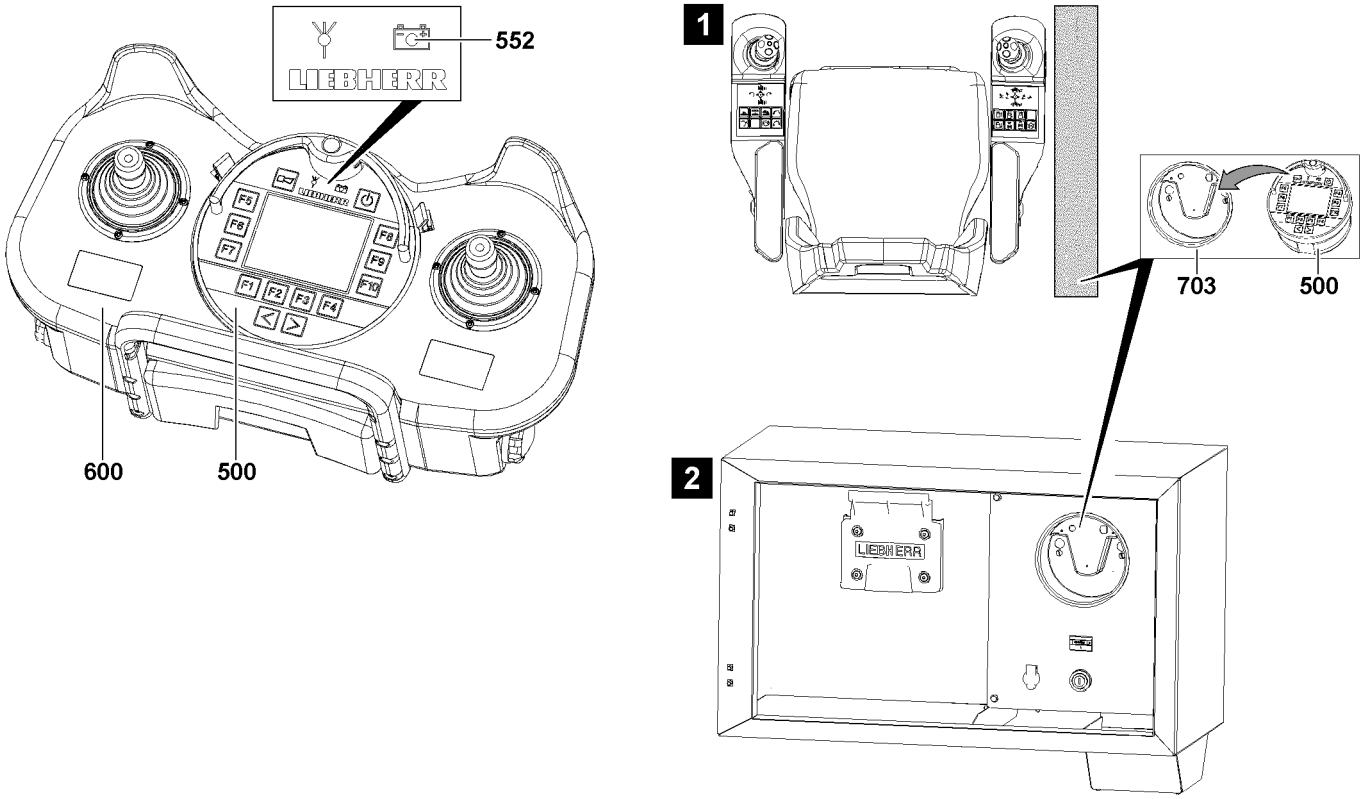

Fig.148690: Charging the rechargeable battery for the radio remote control

Note
The rechargeable battery discharges after a long operating duration. As the state of charge of the BTT rechargeable battery decreases, the color of the *rechargeable battery* indicator light **552** changes from green to yellow to red.

▶ To charge the rechargeable batteries, remove the BTT **500** from the radio remote control panel **600** and insert it into the charging console **703**. It does not matter for the charging process if the rechargeable battery is charged in the crane operator's cab (illustration **1**) or on the crawler center section (illustration **2**).

▶ Determine the exact charging status of the rechargeable batteries, see section "Settings and status displays on the BTT".

3.3 Operating elements on the crane

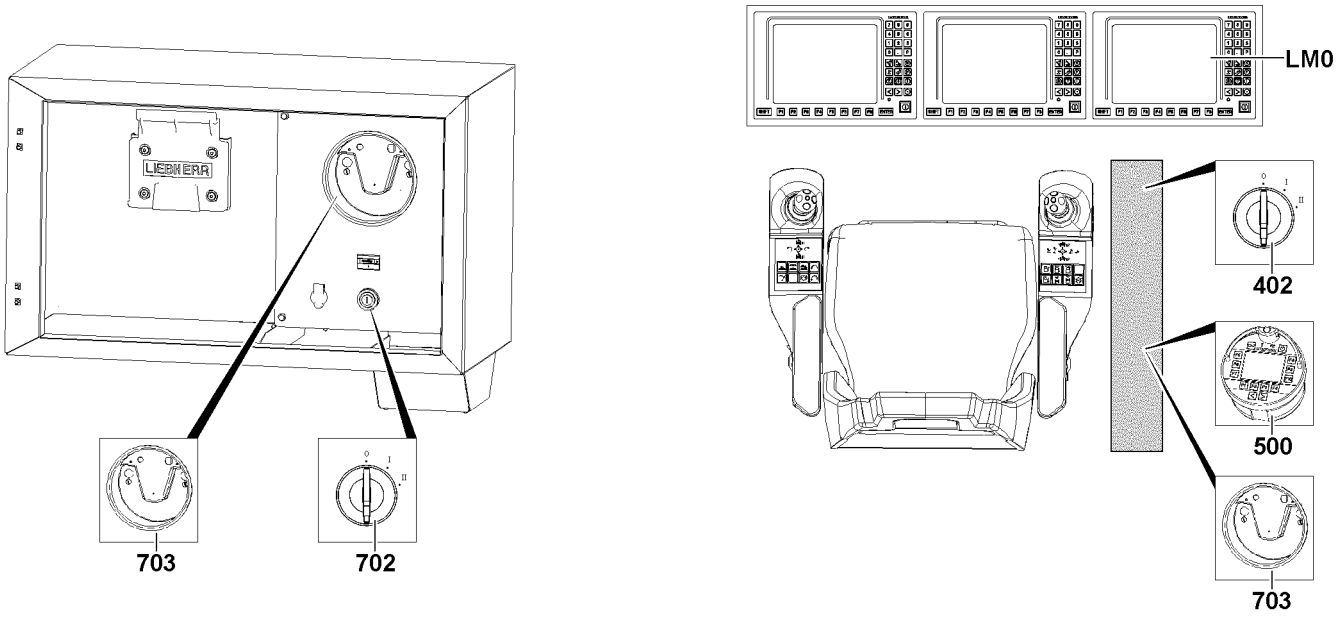

Fig.126917: Radio remote control: Operating elements on the crane

402 Ignition switch
- On the crane cab instrument panel

702 Ignition switch
- In the control cabinet on the crawler center section

703 Charging consoles
- To recharge the rechargeable battery, the BTT **500** must be plugged into the charging consoles **703**
- For the automatic registration of the BTT on the crane, the BTT must be in one of the charging consoles **703** when the LICCON computer system is booted up

LM0 LICCON Monitor 0
- Set the operating mode and set up configuration
- Additional information from the LICCON computer system
- For a detailed description, see Crane operating instructions, chapter 4.02

Note

▶ For a detailed description of the operating and control instruments in the crane cab, see Crane operating instructions, chapter 4.01

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4 Settings and status displays on the BTT

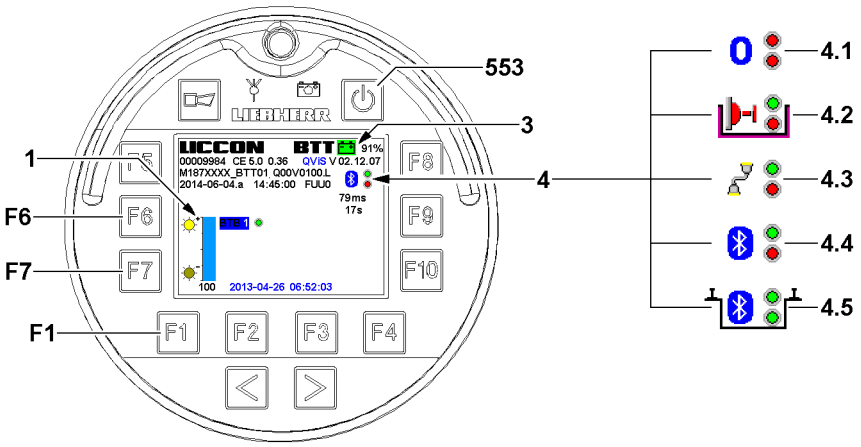

Fig.120694: System screen BTT

Settings can be made and status displays can be read on the BTT system screen.

4.1 Calling up / closing the system screen

Make sure that the following prerequisite is met:
– The start menu is displayed.

▶ Select the system screen: Press the button **553** momentarily (max. 1 second) until the system screen appears.

Note
▶ When the button **553** is pressed too long, the BTT turns off.

▶ To change back to the System menu: Press the function key **F1**.

4.2 Adjusting the brightness level of the BTT display

The current setting stage for brightness can be read on the bar diagram **1**.

▶ BTT display brighter: Press the function key **F6**.
▶ BTT display darker: Press the function key **F7**.

4.3 Determining the exact charge condition of the rechargeable battery

The exact charge condition of the rechargeable battery can be read on the charge condition display **3**.

▶ Read the charge condition, if necessary recharge the BTT by inserting it in the charging console.

4.4 Checking the connection type

The connection type can be read on the connection type display **4**.

▶ Read the connection type.

Result:

– **4.1** No connection
– **4.2** Infrared
Note: Appears only when the BTT is plugged in the charging console.
– **4.3** Cable
– **4.4** Bluetooth
– **4.5** Bluetooth
Note: Appears only when the BTT is plugged in the radio remote control panel* (BTT-E).

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Note

- If the upper dot of the connection type display **4** is red, then there is no connection to the crane.
- If the upper dot of the connection type display **4** lights up green, then there is a connection to the crane.
- If the lower dot of the connection type display **4** is red, then there is no connection to the radio remote control console*.
- If the lower dot of the connection type display **4** lights up green, then there is a connection to the radio remote control console*.

5 Position of the crane: Crane control direction data

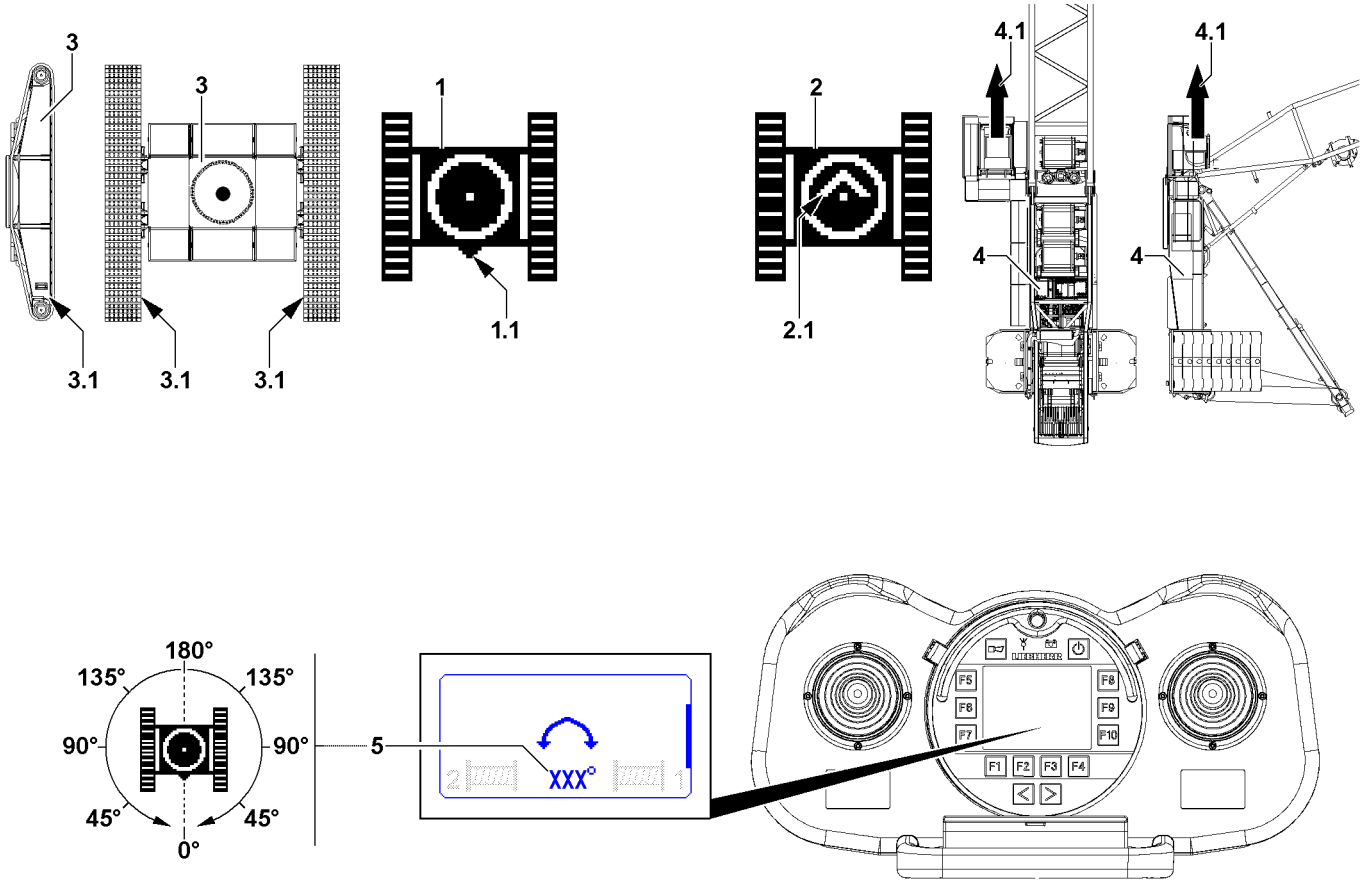

Fig.128615: Position of the crane: Crane control direction data

LICCON icons:

– *Crawler crane* icon **1** with directional triangle **1.1** - Crane control directional data is assigned to the crawler travel gear **3**
– *Crawler crane* icon **2** with directional angle **2.1** - Crane control directional data is assigned to the crane superstructure **4**

The position of the crane superstructure **4** with respect to the crawler travel gear **3** can be read based on the display value for the turning angle **5**:

– At display value 0°, the crane superstructure **4** is exactly in position to the front in relation to the crawler travel gear **3**.
– At display value 180°, the crane superstructure **4** is exactly in position *to the rear* in relation to the crawler travel gear **3**.
– The apex for the assignment of the position of the crane superstructure **4** is at display value 90° in relation to the crawler travel gear **3**. At display values from 0° to 90° the crane superstructure **4** is positioned *to the front*. At display values from 90° to 180° the crane superstructure **4** is positioned *to the rear*.

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5.1 Crane control directional data assigned to the crawler travel gear

– The front side of the crawler travel gear **3** is where the chain tension device **3.1** for the crawler carriers is located. In the *crawler crane* icon **1**, the directional triangle **1.1** indicates the front side.

5.2 Crane control directional data assigned to the crane superstructure

– If the directional data of the crane control is assigned to the crane superstructure **4**, the direction of view *to the front from the crane cab* **4.1** is the determining factor. In the *crawler crane* icon **2**, the directional angle **2.1** indicates the direction of view *to the front from the crane cab* **4.1**.

6 Radio remote control start menu

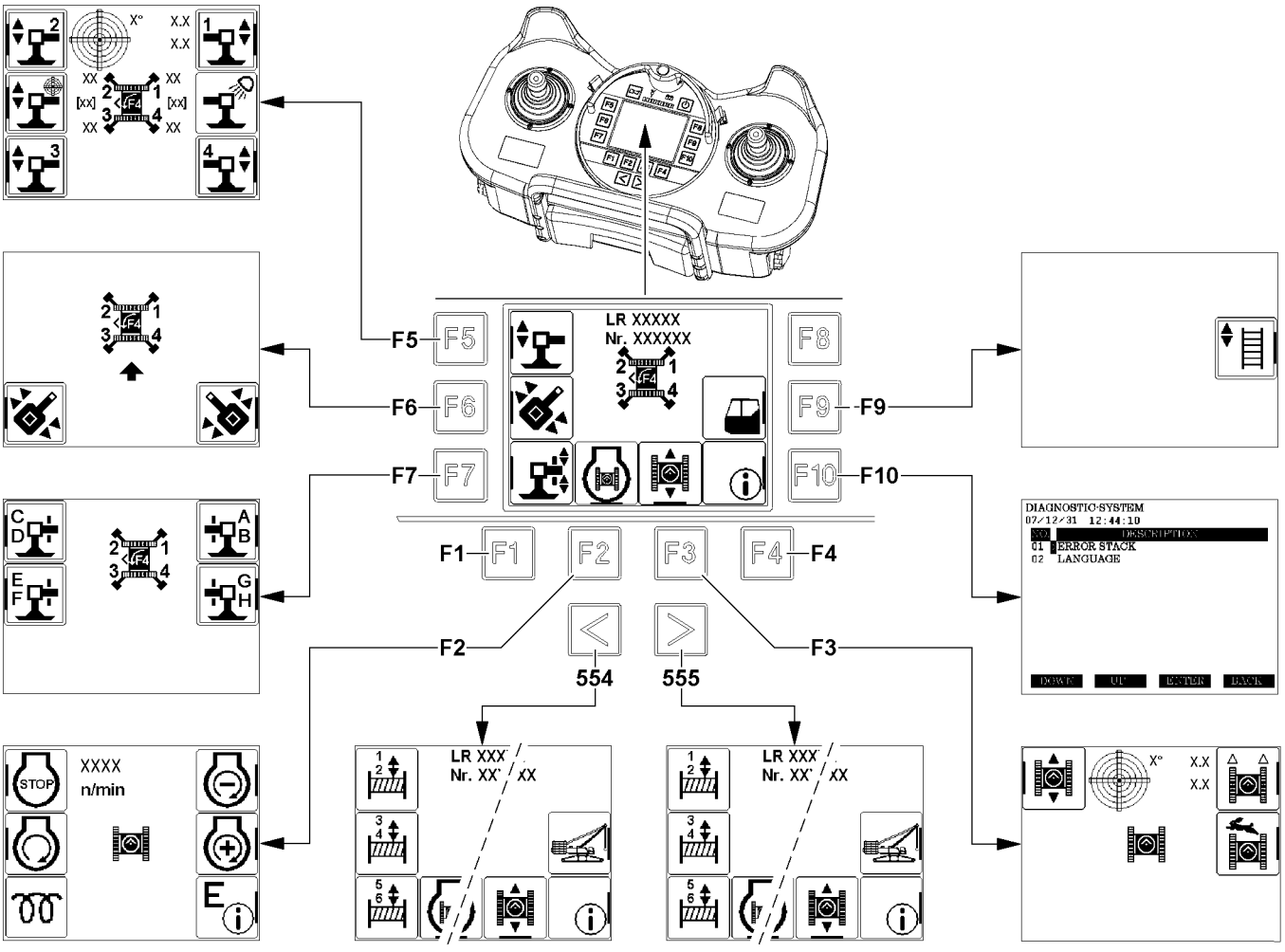

Fig.125440: Radio remote control start menu

Note

- ▶ The radio remote control start up appears automatically as the first display each time the radio remote control is started up. After start up, it is possible to switch between the menu points at any time.
- ▶ Depending on the set up configuration of the crane, individual menu points may be hidden or not have a function.

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F2		***Engine operation* menu**
>>	**F1**	-Back to the start menu-
>>	**F5**	Turn the engine off
>>	**F6**	Turn the engine on
>>	**F8**	Decrease engine rpm
>>	**F9**	Increase the engine rpm
>>	**F10**	Call up the *Test system* program
>>	**554**	Call up engine monitoring functions
>>	**555**	Call up engine monitoring functions

F3		***Crawler operation* menu**
>>	**F1**	-Back to the start menu-
>>	**F5**	Turn crawler operation normal travel on / off
>>	**F8**	Turn crawler operation parallel travel on / off
>>	**F9**	Turn crawler operation rapid gear on / off
>>	**554**	Call up the *Locking the manual control lever direction of deflection* menu
	>> **554**	*Support the crane / Support automatic* menu
>>	**555**	Call up the *Engine operation* menu
	>> **555**	Menu *Swing the support beam*

F4	**Turn off the disengageable acoustic warning signal**
	Note: After an error message of the LICCON computer system the BTT issues an *acoustic warning signal*. Depending on the error message (for example operating error or system error), the warning signal can be turned off directly via the **F4** function key or it remains and additional steps are required.

F5		***Support the crane / Support automatic* menu**
>>	**F1**	-Back to the start menu-
>>	**F2**	Retract the support cylinder (when selected)
>>	**F3**	Extend the support cylinder (when selected)
>>	**F4**	Turn the crane icon in 180° increments
>>	**F5**	Select / deselect the support cylinders according to the crane position
>>	**F6**	Select / deselect automatic support
>>	**F7**	Select / deselect the support cylinders according to the crane position
>>	**F8**	Select / deselect the support cylinders according to the crane position
>>	**F9**	Turn the support beam illumination on / off
>>	**F10**	Select / deselect the support cylinders according to the crane position
>>	**554**	Menu *Swing the support beam*

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F5			***Support the crane / Support automatic* menu**
	>>	**554**	Call up the *Engine operation* menu
>>	**555**		Call up the *Locking the manual control lever direction of deflection* menu
	>>	**555**	Call up the *Crawler operation* menu

F6		**Menu *Swing the support beam***
>>	**F1**	-Back to the start menu-
>>	**F2**	Swing the selected support beam in
>>	**F3**	Swing the selected support beam out
>>	**F4**	Turn the crane icon in 180° increments
>>	**F7**	Select / deselect the support beam according to the crane position
>>	**F10**	Select / deselect the support beam according to the crane position
>>	**554**	Call up the *Engine operation* menu
	>> **554**	Call up the *Crawler operation* menu
>>	**555**	*Support the crane / Support automatic* menu
	>> **555**	Call up the *Locking the manual control lever direction of deflection* menu

F7		**Disassembling / assembling the support beam menu**
>>	**F1**	-Back to the start menu-
>>	**F2**	Insert the selected pin
>>	**F3**	Insert the selected pin
>>	**F4**	Turn the crane icon in 180° increments
>>	**F5**	Select / deselect the pin according to the crane position
>>	**F6**	Select / deselect the pin according to the crane position
>>	**F7**	Unpin the selected pin
>>	**F8**	Select / deselect the pin according to the crane position
>>	**F9**	Select / deselect the pin according to the crane position
>>	**F10**	Unpin the selected pin
>>	**554**	Call up the *Engine operation* menu
>>	**555**	Call up the *Engine operation* menu

F9		**Positioning the stepladder menu**
>>	**F1**	-Back to the start menu-
>>	**F2**	Stepladder up
>>	**F3**	Stepladder down
>>	**F9**	Select / deselect positioning the stepladder

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F10	*Test system* program
	Note: The *Test system* program can be called up at any time. If an error message of the LICCON computer system is present, then an error text can be viewed.

554 / 555		*Radio operation menu overview* [3]
>>	**F1**	-No function in the radio operation *menu overview* [4]-
>>	**F2**	Call up the *Engine operation* menu
>>	**F3**	Call up the *Crawler operation* menu
>>	**F5**	Call up the *Winch1 / winch2 assembly function operating screen* [1]
>>	**F6**	Call up the *Winch3 / winch4 assembly function operating screen* [1]
>>	**F7**	Call up the *Winch5 / winch6 assembly function operating screen* [1]
>>	**F8**	Call up the *Ballast assembly derrick ballast operating screen* [1]
>>	**F9**	Call up the *Winch1 / winch5 assembly function operating screen* [1] / *SA-operating mode operating screen* [2]
>>	**F10**	Call up the *Test system* program
>>	**554**	-Back to the start menu-
>>	**555**	-Back to the start menu-

1) Only if the SA-operating mode is not set up.
2) Only if the SA-operating mode is set up.
3) Observe the following section “Radio operation menu overview”.
4) Back to the start menu via changeover buttons 554/555.

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7 *Radio operation* menu overview

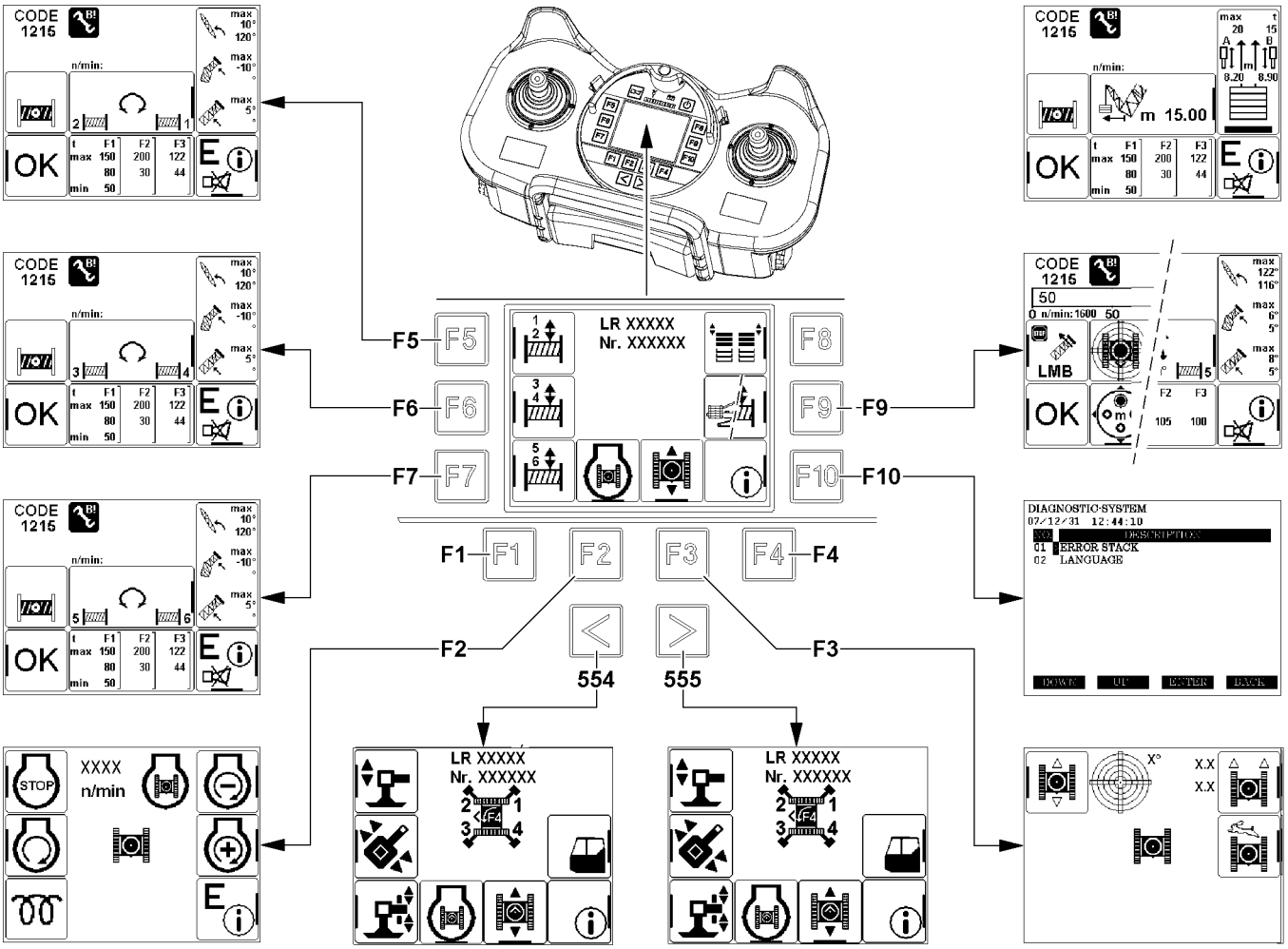

Fig.148668: Radio operation menu overview

Note

▶ Depending on the set up configuration of the crane, individual menu points may be hidden or not have a function.

F2		***Engine operation* menu**
>>	**F1**	-Back to the *Radio operation*-menu overview
>>	**F5**	Turn the engine off
>>	**F6**	Turn the engine on
>>	**F8**	Decrease engine rpm
>>	**F9**	Increase the engine rpm
>>	**F10**	Call up the *Test system* program
>>	**554**	Call up engine monitoring functions
>>	**555**	Call up engine monitoring functions

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F3		***Crawler operation* menu**
>>	**F1**	-Back to the *Radio operation*-menu overview
>>	**F5**	Turn crawler operation normal travel on / off
>>	**F8**	Turn crawler operation parallel travel on / off
>>	**F9**	Turn crawler operation rapid gear on / off
>>	**554**	*Call up locking the manual control lever* menu
	>> **554**	*Support the crane / Support automatic* menu
>>	**555**	Call up the *Engine operation* menu
	>> **555**	Menu *Swing the support beam*

F4	**Turn off the disengageable acoustic warning signal**
	Note: After an error message of the LICCON computer system the BTT issues an *acoustic warning signal*. Depending on the error message (for example operating error or system error), the warning signal can be turned off directly via the **F4** function key or it remains and additional steps are required.

F5		***Winch1 / winch2 assembly function* operating screen[1)]**
>>	**F1**	-Back to the *Radio operation*-menu overview
>>	**F4**	Turn off the disengageable acoustic warning signal
>>	**F7**	*OK* icon, confirmation of the operating mode / lock manual control lever / release manual control level
>>	**F9**	Switch the engine monitoring functions between the winch display and the incline indicator
>>	**F10**	Call up the *Test system* program
>>	**554**	Call up the *Locking the manual control lever direction of deflection* menu
>>	**555**	Call up the *Engine operation* menu

1) Only if the SA-operating mode is not set up.

F6		***Winch3 / winch4 assembly function* operating screen [1)]**
>>	**F1**	-Back to the *Radio operation*-menu overview
>>	**F4**	Turn off the disengageable acoustic warning signal
>>	**F7**	*OK* icon, confirmation of the operating mode / lock manual control lever / release manual control level
>>	**F9**	Switch the engine monitoring functions between the winch display, derrick ballast boom radius and the incline indicator
>>	**F10**	Call up the *Test system* program
>>	**554**	Call up the *Locking the manual control lever direction of deflection* menu
>>	**555**	Call up the *Engine operation* menu

1) Only if the SA-operating mode is not set up.

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F7		*Winch5 / winch6 assembly function operating screen* [1]
>>	**F1**	-Back to the *Radio operation*-menu overview
>>	**F4**	Turn off the disengageable acoustic warning signal
>>	**F7**	*OK* icon, confirmation of the operating mode / lock manual control lever / release manual control level
>>	**F9**	Switch the engine monitoring functions between the winch display and the incline indicator
>>	**F10**	Call up the *Test system* program
>>	**554**	Call up the *Locking the manual control lever direction of deflection* menu
>>	**555**	Call up the *Engine operation* menu

1) Only if the SA-operating mode is not set up.

F8		*Derrick ballast ballast assembly operating screen* [1]
>>	**F1**	-Back to the *Radio operation*-menu overview
>>	**F4**	Turn off the disengageable acoustic warning signal
>>	**F7**	*OK* icon, confirmation of the operating mode / lock manual control lever / release manual control level
>>	**F10**	Call up the *Test system* program
>>	**554**	Call up the *Locking the manual control lever direction of deflection* menu
>>	**555**	Call up the *Engine operation* menu

1) Only if the SA-operating mode is not set up.

F9		*Winch1 / winch5 assembly function operating screen* [1]
>>	**F1**	-Back to the *Radio operation*-menu overview
>>	**F4**	Turn off the disengageable acoustic warning signal
>>	**F7**	*OK* icon, confirmation of the operating mode / lock manual control lever / release manual control level
>>	**F9**	Switch the engine monitoring functions between the winch display and the incline indicator
>>	**F10**	Call up the *Test system* program
>>	**554**	Call up the *Locking the manual control lever direction of deflection* menu
>>	**555**	Call up the *Engine operation* menu

1) Only if the SA-operating mode is not set up.

F9		*SA-operating mode operating screen* [2]
>>	**F1**	-Back to the *Radio operation*-menu overview
>>	**F4**	Turn off the disengageable acoustic warning signal
>>	**F6**	Luff in with suspended load
>>	**F7**	*OK* icon, confirmation of the operating mode / lock manual control lever / release manual control level
>>	**F9**	Switch the engine monitoring functions between the winch display and the incline indicator

F9		*SA-operating mode operating screen* [2]
>>	**F10**	Call up the *Test system* program
>>	**554**	Call up the *Locking the manual control lever direction of deflection* menu
>>	**555**	Call up the *Engine operation* menu

2) Only if the SA-operating mode is set up.

F10	**Call up the *Test system* program**
	Note: The *Test system* program can be called up at any time. If an error message of the LICCON computer system is present, then an error text can be viewed.

554 / 555	**Radio remote control start menu** [5]
	Note: The radio remote control start up appears automatically as the first display each time the radio remote control is started up. After start up, it is possible to switch between the menu points at any time.

5) Observe the previous section “Radio remote control start menu”.

8 Aligning the radio remote control with the crane

WARNING
Danger of accident if the operator is incorrectly aligned with the crane!
If the operator is not correctly oriented to the crane, then the working range / danger zone cannot be viewed completely.
Personnel can be severely injured or killed.
▶ The crane icon on the BTT display must correspond to the actual direction of the operator to the crane.

If the rotation icon **10** appears within the crane icon on the BTT-display, then the location of the operator must be aligned with the radio remote control to the crane.

– The determining factor for the orientation of the radio remote control is the crane chassis.
– A selection can be made between two alignments.

1

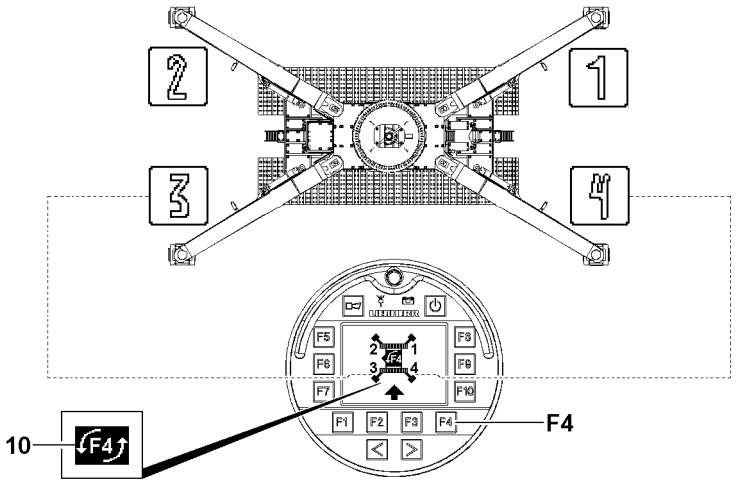

Fig.126919: Example for BTT / radio remote control oriented to the side of support 3 and support 4

– Illustration **1**:

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- Operator is standing on the side of support 3 and support 4.
- In the crane icon on the BTT display, the supports with number 3 and number 4 are on the bottom.

2

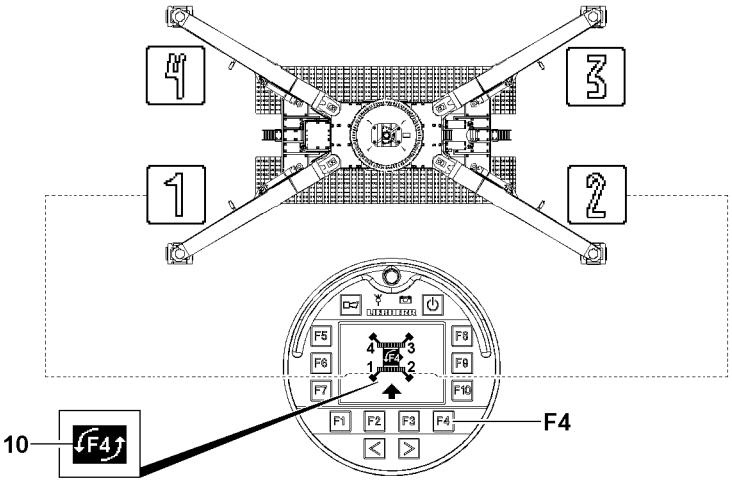

Fig.126920: Example for BTT / radio remote control oriented to the side of support 1 and support 2

– Illustration **2**:

- Operator is standing on the side of support 1 and support 2.
- In the crane icon on the BTT display, the supports with number 1 and number 2 are on the bottom.

F4 Function key
- When the rotation icon **10** appears within the crane icon:
  Press the function key **F4** to turn the crane icon in 180° increments.

9 *Engine operation* menu

9.1 Icons in the *Engine operation* menu

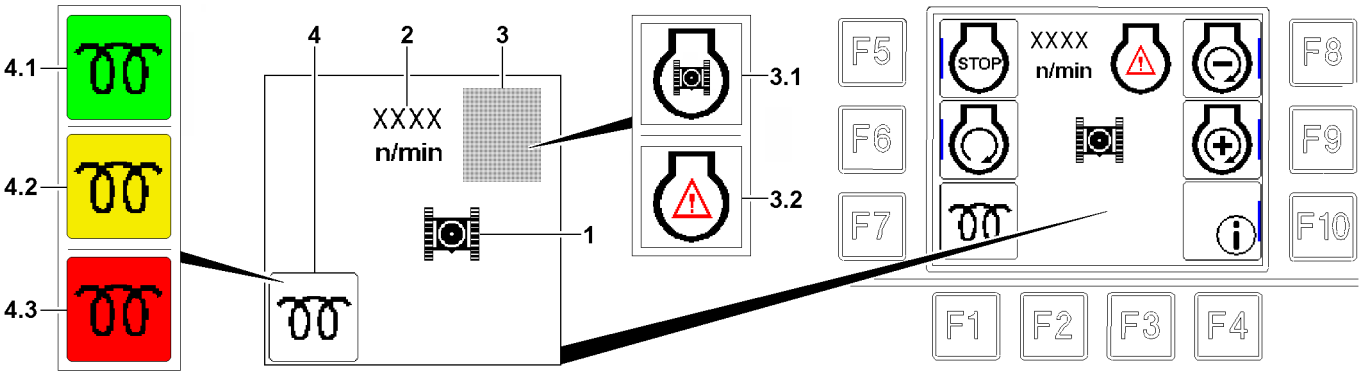

Fig.148669: Icons in the Engine operation menu

1 *Crawler crane* icon

2 Engine rpm
- Actual engine rpm

3 Engine monitoring
- **3.1** *Engine monitoring OK* icon
- **3.2** *Advance warning / warning present* icon - Find the cause immediately

NOTICE!: Call up engine monitoring functions and evaluate. If there is an active warning, immediately bring the crane to a standstill, turn the engine off and remedy the problem. Determine the cause with the error message or on the LICCON monitor.

4 Ignition control display*
- **Note**: Only present for certain crane types.
- **4.1** Monitoring indicator lights up green: Engine ready to start
- **4.2** Monitoring indicator lights up yellow: Engine preglow is active
- **4.3** Monitoring indicator lights up red: Engine not ready to start

9.2 Function keys in the *Engine operation* menu

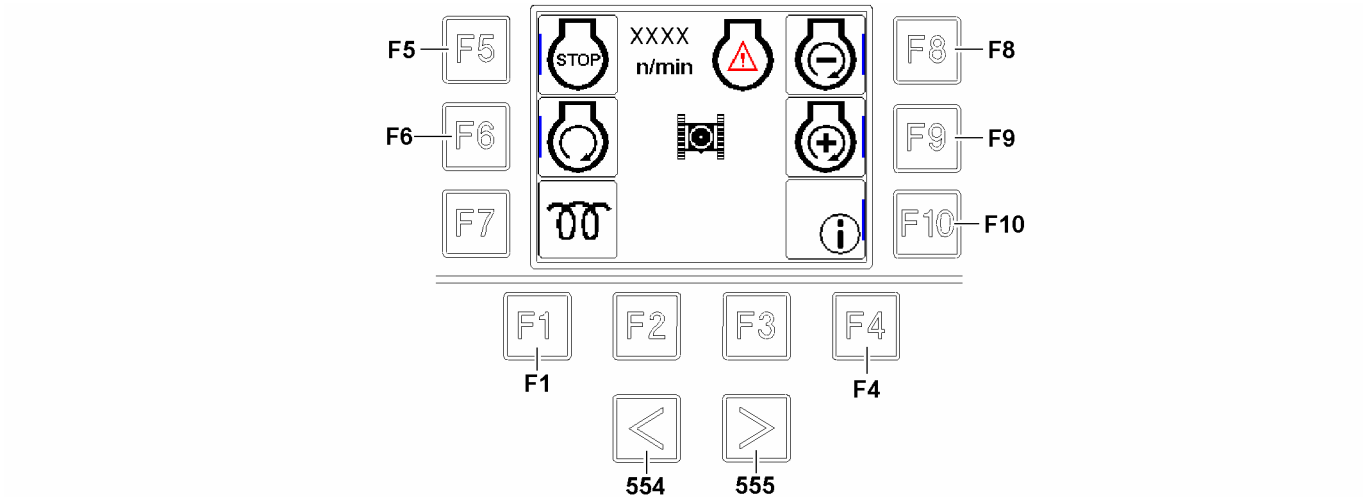

Fig.148670: Function keys in the Engine operation menu

554 Change over key
- Call up engine monitoring functions
- **Note:** Only possible if switching from the start menu or the *Radio operation* menu overview directly to the *Engine operation* menu.

555 Change over key
- Call up engine monitoring functions
- **Note:** Only possible if switching from the start menu or the *Radio operation* menu overview directly to the *Engine operation* menu.

F1 Function key
- Back to the *Radio operation* menu overview

F4 Function key
- After an error message: turn off the disengageable *acoustic warning signal* of the BTT

F5 Function key
- Turn the engine off

F6 Function key
- Turn the engine on

F8 Function key
- Decrease engine rpm

F9 Function key
- Increase the engine rpm

F10 Function key
- Call up the *Test system* program

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Note
Control release
- ▶ Radio remote control: The control release is issued automatically.
- ▶ BTT outside of the radio remote control console: The control release must be performed by touching the 2-hand keypad on the rear.

9.3 Monitoring functions for the engine

WARNING
Messages / warnings of the engine monitoring functions ignored!
If messages / warnings of the engine monitoring functions are ignored, problems can occur.
If problems are not immediately rectified, the crane can fail and dangerous situations may occur.
Personal injury and property damage can result.
- ▶ Remedy the problem immediately.

WARNING
Triggers power reduction or start block of engine!
If the urea level is too low or if there is a malfunction in the exhaust aftertreatment, then a power reduction or starting block of the engine can be triggered.
The crane operation and travel operation can be limited or disabled.
- ▶ Replenish the Urea level in time.
- ▶ Remedy the faulty function of the exhaust aftertreatment immediately.
- ▶ Observe any valid national / regional regulations and the vehicle configuration.

The engine monitoring functions can be displayed by:
– Press one of the changeover buttons in the *Engine operation* menu
  - If a warning sound or an error message indicates a critical condition for the monitoring functions, the engine monitoring functions must be called up as soon as possible.
  - **Note:** Only possible if switching from the start menu or the *Radio operation* menu overview directly to the *Engine operation* menu.

and / or
– automatic, situation-related switching to the engine monitoring functions
  - **Note:** If the crane control detects a critical condition for the monitoring functions. Under some circumstances, this is indicated first by a warning sound or an error message.

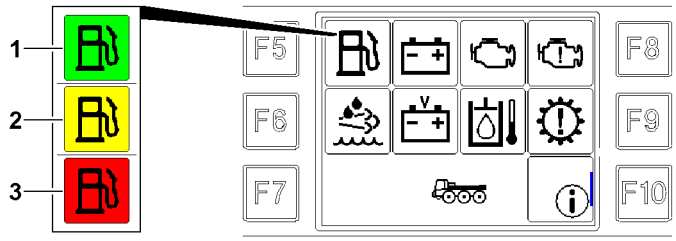

Fig.122479: Example for the colors in the icons

The colors in the icons for the engine monitoring functions mean:
– If a function is highlighted **green** (example icon **1**), then the function is operating correctly.
– If a function is highlighted **orange** (example icon **2**), then the respective function has a problem. An advance warning is active for the *Engine monitoring functions*.
– If a function is highlighted **red** (example icon **3**), then the respective function has a problem. A warning is active for the *Engine monitoring functions*.

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9.3.1 Function keys in the Engine monitoring functions

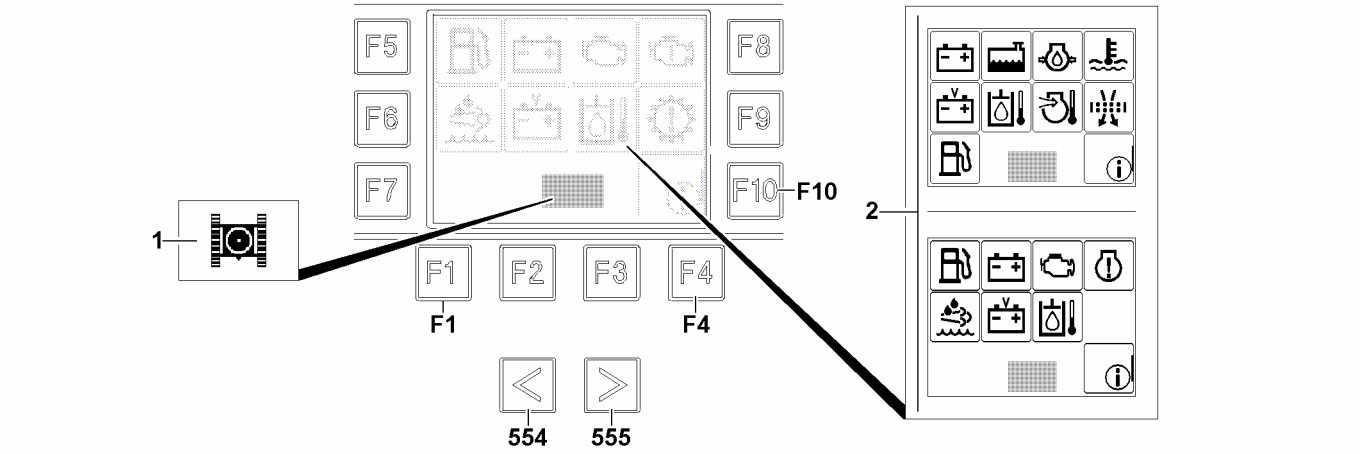

Fig.148673: Engine monitoring functions function keys

1 *Crawler crane* icon

Depending on the crane type, the depiction of the *Engine monitoring function* icons **2** can vary.

554 Change over key
- Call up the *Engine operation* menu

555 Change over key
- Call up the *Engine operation* menu

F1 Function key
- Back to menu overview

F4 Function key
- After an error message: turn off the disengageable *acoustic warning signal* of the BTT

F10 Function key
- Change to test system

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9.3.2 Icons in the Engine monitoring functions

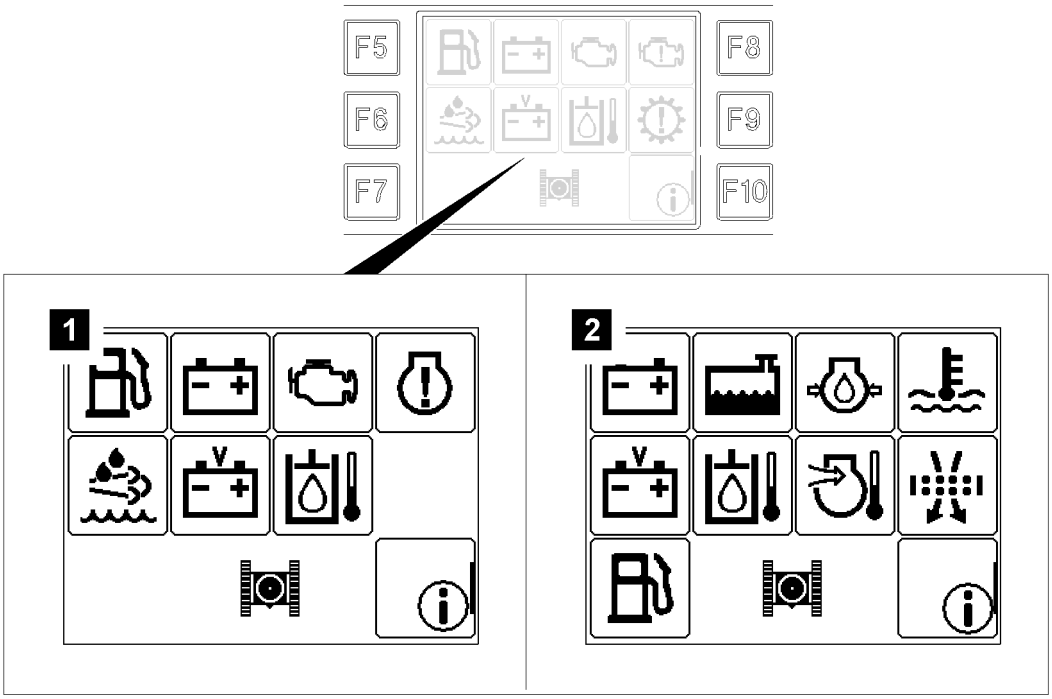


Fig.148672: Icons in the engine monitoring functions, both variations

Note

- ▶ In order to call up the Engine monitoring functions, the *Engine operation* menu must be called up from the radio operation menu overview.
- ▶ Engines **with SCR system** for exhaust aftertreatment - Display in BTT display, see illustration **1**.
- ▶ Engines **without SCR system** - Display in BTT display, see illustrations **2**.

Note

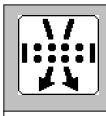
The scope of the monitoring functions depends on the crane type and crane configuration.

- ▶ Not all crane types have all listed monitoring functions.

	**Fuel reserve**
Green:	Fuel reserve is at the fill level, an exact display value can be seen on the LIC-CON monitor
Yellow:	Fuel reserve is short, check the display value on the LICCON monitor and add to the fuel reserve if necessary
Red:	Fuel reserve **low / depleted** / system error **NOTICE!** Immediately bring the crane to a standstill, turn the engine off and remedy the problem (add to the fuel reserve immediately / remedy the system error). Pay attention to the error message.

	**Coolant temperature**
Green:	Coolant temperature OK
Red:	Coolant temperature **too high** / system error **NOTICE!** Immediately bring the crane to a standstill, turn the engine off and remedy the problem. Pay attention to the error message.

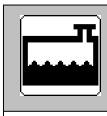
	**Engine oil pressure**
Green:	Engine oil pressure OK (engine on)
Red:	Engine oil pressure too low (engine on) / system error **NOTICE!** Immediately bring the crane to a standstill, turn the engine off and remedy the problem. Pay attention to the error message.

	**Air filter Engine**
Green:	Air filter OK (engine on)
Yellow	Air filter dirty (engine on) / system error **NOTICE!** Immediately bring the crane to a standstill, turn the engine off and remedy the problem. Pay attention to the error message.

	**Charge control display (alternator)**
Green:	Charge control OK (engine on)
Red:	Charge control has a problem (engine on) / system error **NOTICE!**: Immediately bring the crane to a standstill, turn the engine off and remedy the problem. Pay attention to the error message.

	**Urea tank / exhaust aftertreatment** [1]
Green:	Urea available
Yellow / red:	Urea level too low or erroneous function of exhaust aftertreatment system / system error **NOTICE!** Add urea or remedy the erroneous function of the exhaust aftertreatment Under some circumstances a power reduction or start block of the engine [2] is triggered, pay attention to the error message.

1) Valid only for engines which are equipped with an SCR system with exhaust aftertreatment.
2) The type and scope of a power reduction of the engine depends on the respectively valid national / regional regulations and the vehicle configuration. The engine can possibly not be started any longer (start block).

	**Coolant level**
Green:	Coolant level OK
Red:	Insufficient coolant / system error **NOTICE!**: Immediately bring the crane to a standstill, turn the engine off and remedy the problem. Pay attention to the error message.

	**Charge air temperature**
Green:	Charge air temperature OK
Red:	Charge air temperature too high / system error **NOTICE!**: Immediately bring the crane to a standstill, turn the engine off and remedy the problem. Pay attention to the error message.

	**Hydraulic oil temperature**
Green:	Hydraulic oil temperature OK
Red:	Hydraulic oil temperature too high / system error **NOTICE!**: Immediately bring the crane to a standstill, turn the engine off and remedy the problem. Pay attention to the error message.

	**Battery voltage**
Green:	Battery voltage OK
Red:	On-board power supply over / undervoltage / system error **NOTICE!**: Immediately bring the crane to a standstill, turn the engine off and remedy the problem. Pay attention to the error message.

	**Engine oil level**
Green:	Engine oil level OK
Blue	The engine oil level can not be checked here on the display, call up the individual indicator light
Red:	Engine oil level not OK / System error **NOTICE!**: Immediately bring the crane to a standstill, turn the engine off and remedy the problem. Call up individual indicator lights and adjust the engine oil according to the display - pay attention to error message.

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	**Hydraulic oil level**
Green:	Hydraulic oil level OK
Red:	Hydraulic oil level too low / error / system error **NOTICE!**: Immediately bring the crane to a standstill, turn the engine off and remedy the problem. Pay attention to the error message.

	**Exhaust aftertreatment** [1]
Green:	Exhaust aftertreatment OK
Yellow / red:	Malfunction Exhaust aftertreatment or Urea level too low / system error **NOTICE!** Add urea or remedy the erroneous function of the exhaust aftertreatment Under some circumstances a power reduction or start block of the engine [2] is triggered, pay attention to the error message.

1) Valid only for engines which are equipped with an SCR system with exhaust aftertreatment.
2) The type and scope of a power reduction of the engine depends on the respectively valid national / regional regulations and the vehicle configuration. The engine can possibly not be started any longer (start block).

	**Collective warning**
Green:	No warning messages present
Generally at yellow or red:	A warning is present / system error **NOTICE!** Determine the cause with the error message or in the LICCON monitor and observe the following description.
Yellow:	Air intake opening / air filter dirty **NOTICE!** Turn the engine off immediately and remedy the problem, pay attention to the error message.
Red:	Engine oil pressure too low or too high **NOTICE!** Turn the engine off immediately and remedy the problem, pay attention to the error message.
Red:	Engine oil level too low or too high **NOTICE!** Call up engine oil level display in the LICCON monitor and match the engine oil according to the display, see Crane operating instructions, chapter 4.02. Pay attention to the error message.
Red:	Coolant level too low **NOTICE!** Turn the engine off and add coolant, see Crane operating instructions, chapter 7.04 or chapter 7.05. Pay attention to the error message.
Red:	Coolant temperature too high **NOTICE!** Bring the coolant temperature into a permissible range, turn the engine off if necessary. Pay attention to the error message.
Red:	Charge air temperature too high **NOTICE!** Bring the charge air temperature into a permissible range, turn the engine off if necessary. Pay attention to the error message.

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	Information field
B / E:	If a *B (operating error)* or *E (system error)* appears in the information field, then at least one error message is present. Call up and evaluate the error message by pressing function key F10 on the BTT, see the Diagnostics Manual.

Note
Triggers power reduction or start block of engine
If the urea level is too low or if there is a malfunction in the exhaust aftertreatment, then a power reduction or starting block of the engine can be triggered.
The crane operation, assembly operation and travel operation can be limited or disabled.
- ▶ Replenish the Urea level in time.
- ▶ Remedy the faulty function of the exhaust aftertreatment immediately.
- ▶ Observe any valid national / regional regulations and the crane configuration.

10 *Crawler operation* menu

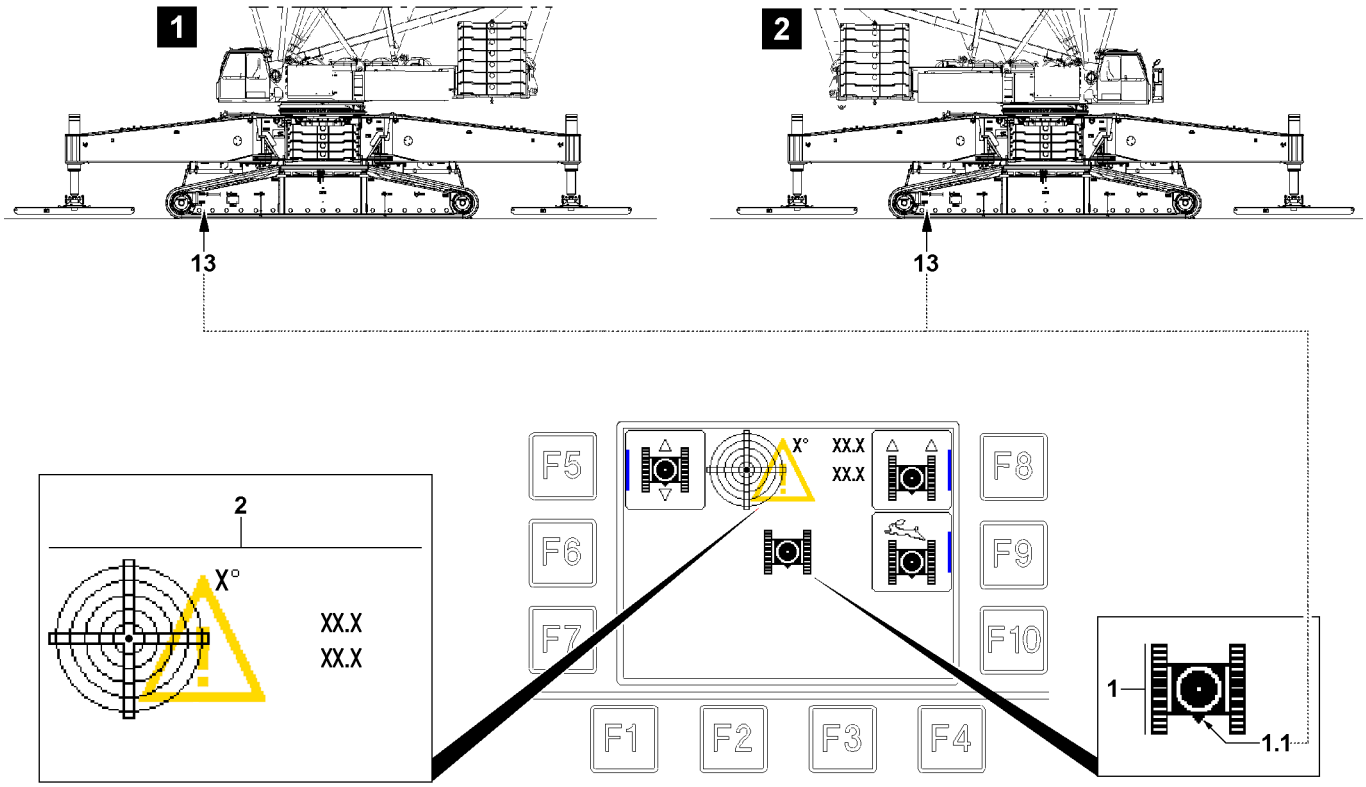

Fig.148678: Icons in the Crawler operation menu

Functions in the *Crawler operation* menu:
- Turning crawler operation on / off
- Select crawler operation mode
- Driving the crane

The crane icon **1** is assigned to the crawler travel gear:
- The *front side of crawler travel gear* marker **1.1** shows the position in the display of the front side of the crawler travel gear.

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- The front and rear on the crawler travel gear can be determined on the crane by the chain tension devices **13** (chain tension side). The chain tension devices **13** are always on the front of the crawler travel gear.
- In the *Crawler operation* menu, the inclination information / direction data from the *incline indicator* icon **2** is assigned to the crane icon **1** and therefore the crawler travel gear.
- In the *Crawler operation* menu, the alignment of the crane icon **1** with the *incline indicator* icon **2** cannot be adjusted.
- The position of the crane superstructure does not have any influence on the alignment of the display value in the *incline indicator* icon **2**, see illustration example **1** and illustration **2**.

10.1 Icons in the *Crawler operation* menu

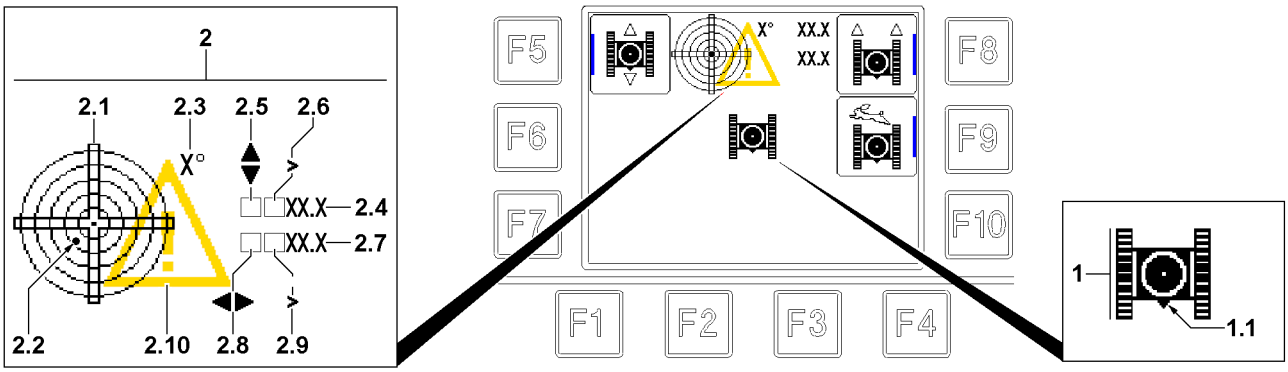

Fig.148676: Icons in the Crawler operation menu

1 *Crawler crane* icon

1.1 *Front side of crawler travel gear* marker
- The *Front side of crawler travel gear* marker **1.1** indicates that the directional data is assigned to the crawler travel gear. Therefore, the incline directions can be assigned from the *incline display* icon **2**.

2 *Incline display* icon
- The incline of the crane in longitudinal and lateral direction is shown graphically and numerically in the *Incline display* icon

2.1 Graphic incline indicator
- Display of incline in graphic display
- The graphic incline indicator **2.1** simulates a digital sight gauge. The dot **2.2** represents the bubble.
- The current crane incline and the incline direction is shown by the dot **2.2**.

2.3 Resolution of the *incline display*
- Number value resolution in [°]
  This value describes the resolution of the graphic view. If the dot **2.2** reaches the outermost marking circle of the digital sight gauge, then the number value of the incline indicator resolution **2.3** is reached. The displayed marker circles divide the number value equally.
  If the incline is less than 1° in the lateral direction **and** in the longitudinal direction, the entire display encompasses the 1° range. If at least one value exceeds the 1° limit, it switches to the next larger available range.
  The range change is automatic.

2.4 Incline in the *longitudinal direction*
- Numeric value of incline of crane in longitudinal direction.
- In [°].

2.5 *Longitudinal direction* arrow
- Arrow shows the incline direction of the crane on longitudinal direction.

2.6 *Larger than* icon
- Is displayed when the display range of the incline display is exceeded in longitudinal direction.

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- **Note:** The crane is inclined further than can be shown.

2.7 Incline in the *lateral direction*
- Numeric value of incline of crane in lateral direction.
- In [°].

2.8 *Lateral direction* arrow
- Arrow shows the incline direction of the crane on lateral direction.

2.9 *Larger than* icon
- Is displayed when the display range of the incline display is exceeded in lateral direction.
- **Note:** The crane is inclined further than can be shown.

2.10 *Warning* icon
- The crane must be driven according to the specifications in the crane documentation.

WARNING
The crane can topple over!
The *larger than* icon **2.6/2.9** shows that the crane is inclined further than can be shown.
The exact incline can then not be read.
▶ Do not exceed the permissible incline of the crane.

10.2 Function keys in the *Crawler operation* menu

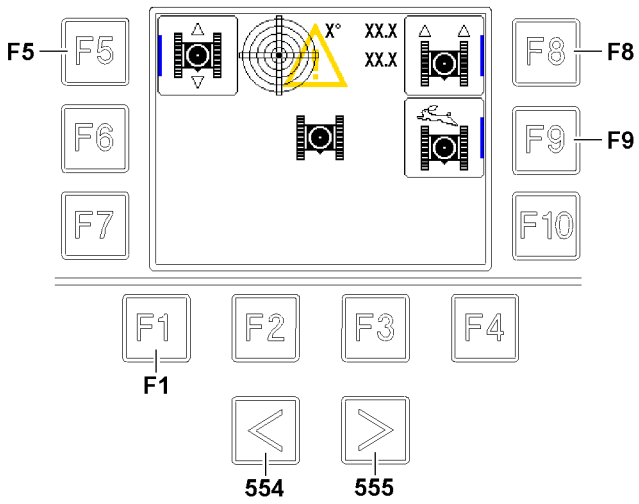

Fig.148679: Function keys in the Crawler operation menu

554 Change over key
- Press once: Call up the *Locking the manual control lever direction of deflection* menu
- Press twice: Call up the *Support the crane / Support automatic* menu
- Press three times: Call up the *Swing the support beam* menu
- Press four times: Call up the *Engine operation* menu
- Press five times: Call up the *Crawler operation* menu

555 Change over key
- Press once: Call up the *Engine operation* menu
- Press twice: Call up the *Swing the support beam* menu
- Press three times: Call up the *Support the crane / Support automatic* menu
- Press four times: Call up the *Locking the manual control lever direction of deflection* menu
- Press five times: Call up the *Crawler operation* menu

F1 Function key
- Back to the *Radio operation* menu overview

F5 Function key
- Turn crawler operation normal travel on / off

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F8 Function key
- Turn crawler operation parallel travel on / off

F9 Function key
- Select rapid gear crawler operation

10.3 Manual control lever in the *Crawler operation* menu

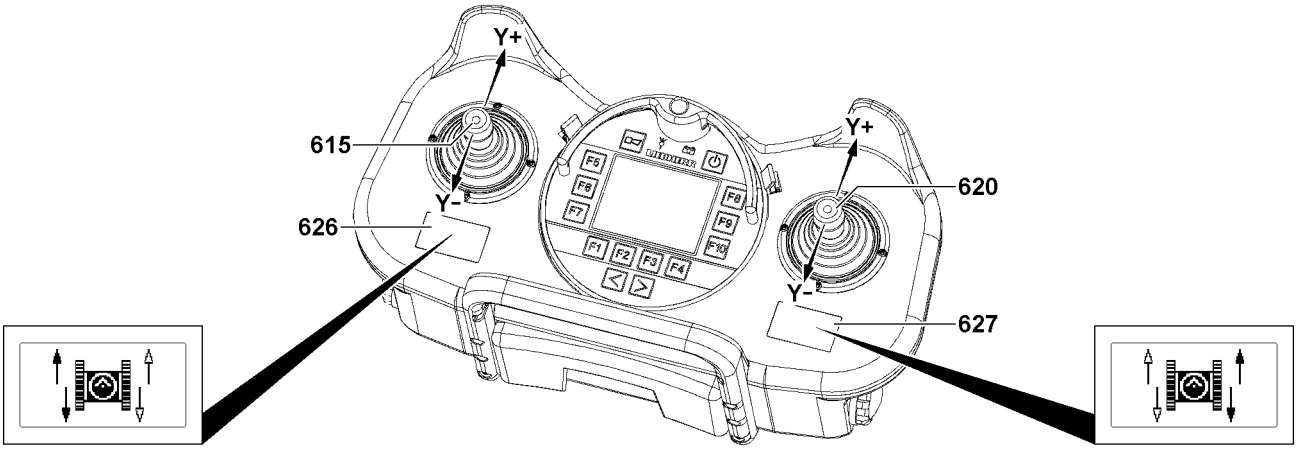

Fig.128612: Manual control lever in the Crawler operation menu

Note
The travel directions of the crawler chains are assigned to the viewing direction *to the front from the crane cab*.
- ▶ Section “Position of the crane: ”Observe the “Crane control direction data”.
- ▶ Observe the section “Travel operation with radio remote control”.

615 Manual control lever
- Shown in the graphic display **626** is the function of the manual control lever **615** according to the direction of deflection
  - Direction **Y+**: left crawler crane forward
  - Direction **Y-**: left crawler crane reverse

620 Manual control lever
- Shown in the graphic display **627** is the function of the manual control lever **620** according to the direction of deflection
  - Direction **Y+**: right crawler crane forward
  - Direction **Y-**: right crawler crane reverse

10.4 Engine warning in the *Crawler operation* menu

If an engine warning occurs in the *Crawler operation* menu, the crane driver will be informed of this by an acoustic warning from the BTT. As soon as the manual control lever is no longer moved, the Engine monitoring functions will be shown automatically. Observe the section “Engine monitoring functions”.

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10.5 Turning crawler operation on / off

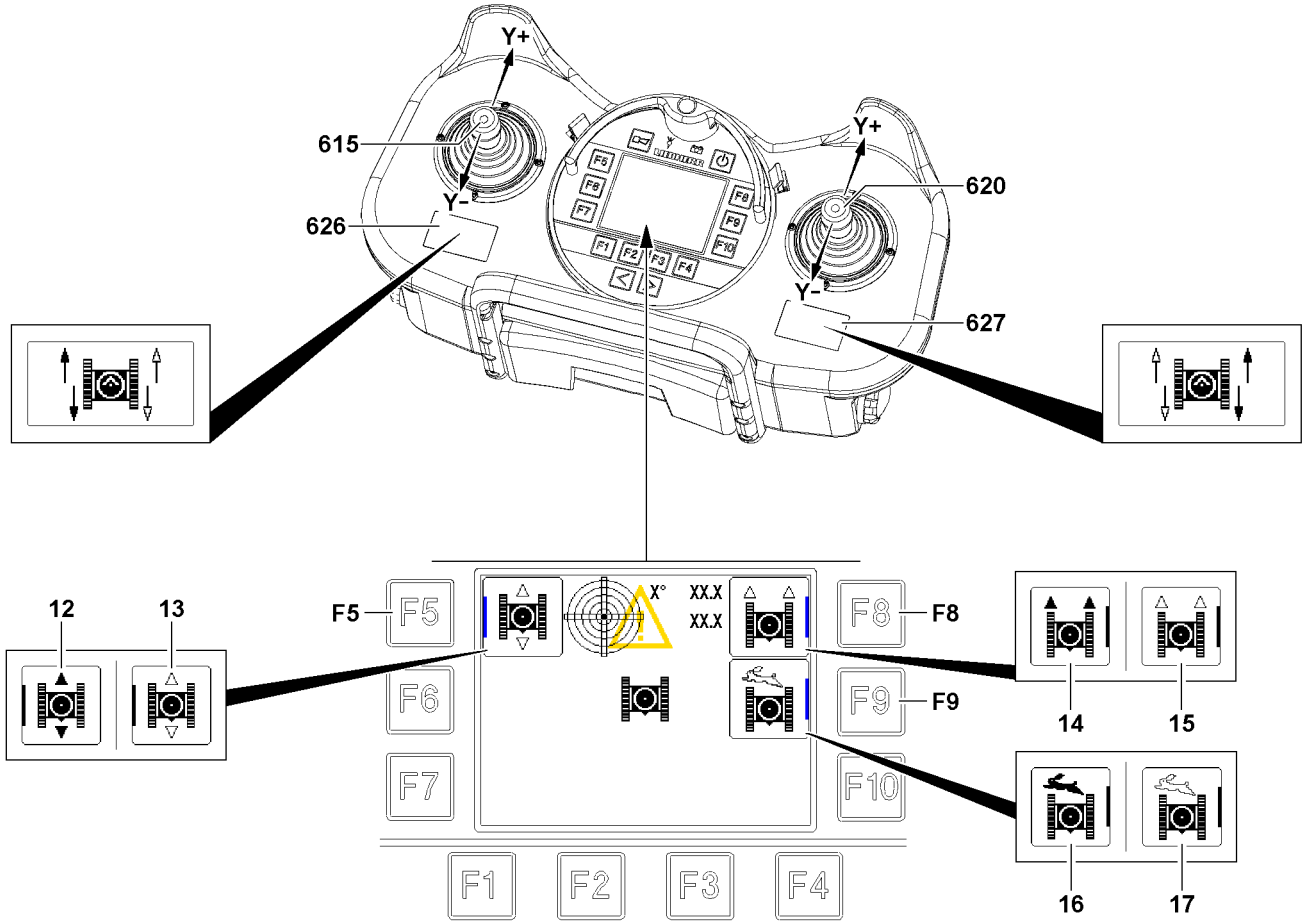

Fig.148677: Turning crawler operation on / off

The crawler operation can only be selected / deselected in the *Crawler operation* menu.

WARNING
Erroneous operation of the crane!
▶ Before driving the crawler crane, pay attention to and adhere to the section “Travel operation with the radio remote control”.

– **Turn crawler operation normal travel on / off**
  • **F5** Function key
    • Normal travel crawler operation added: The icon **12** appears.
      The graphic display **626** and graphic display **627** show the assigned functions of the manual control lever **615** and manual control lever **620**.
      The crawler crane can be driven according to section “Travel operation with radio remote control”.
    • Normal travel crawler operation turned off: The icon **13** appears.

– **Turn crawler operation parallel travel on / off**
  • **F8** Function key
    • Parallel travel crawler operation added: The icon **14** appears.
      The graphic display **626** and graphic display **627** show the assigned functions of the manual control lever **615** and manual control lever **620**.
      The crawler crane can be driven according to section “Travel operation with radio remote control”.
    • Parallel travel crawler operation turned off: The icon **15** appears.

– **Turn crawler operation rapid gear on / off**

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The normal travel crawler operation must be turned on.

- **F9** Function key
  - Rapid gear crawler operation is added: The icon **16** appears.
    Note: Only possible if normal travel was previously selected.
    Graphic display **626** and graphic display **627** show the assigned functions of the manual control lever **615** and manual control lever **620**.
    The crawler crane can be driven according to section “Travel operation with radio remote control”.
  - Rapid gear crawler operation is turned off: The icon **17** appears.

Note

▶ The rapid gear crawler operation makes it possible to increase the crane’s highest speed if the following prerequisites are met.

▶ It is not always possible to switch on rapid gear crawler operation.

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Empty page!

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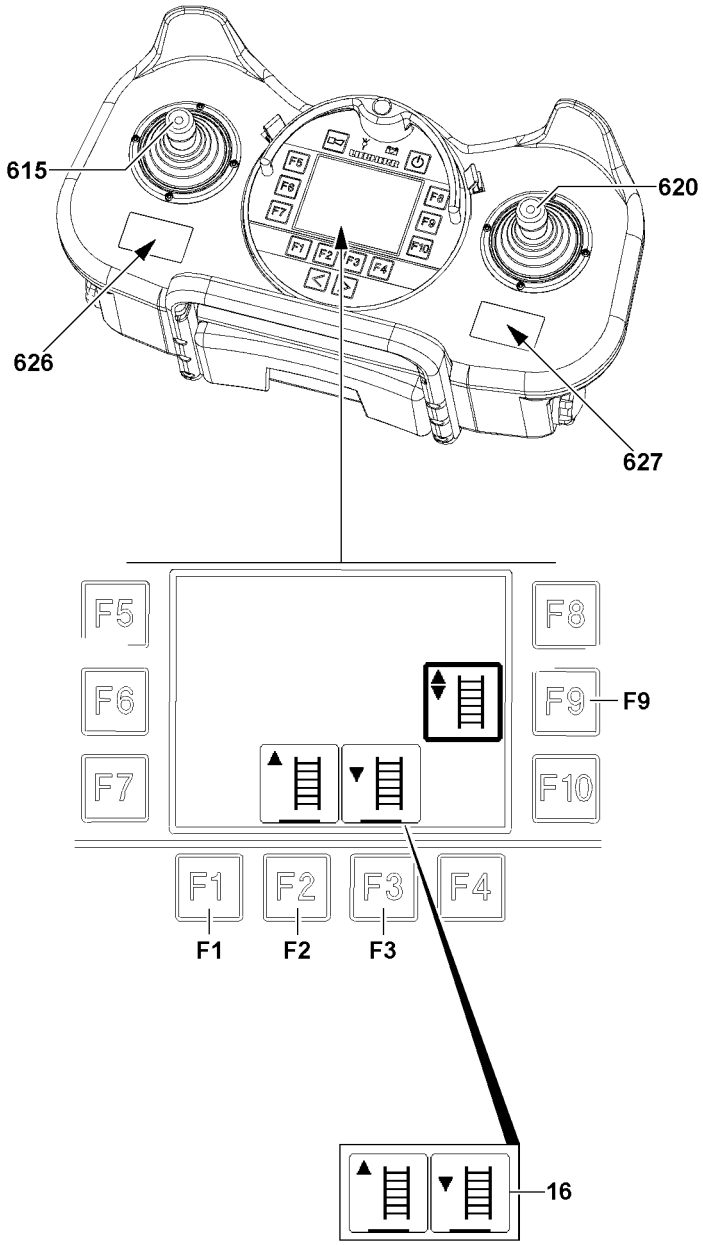

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Fig.125450: Positioning the stepladder menu

11 *Positioning the stepladder* menu

11.1 Function keys in the *Positioning the stepladder* menu

F1 Function key
- Back to the start menu

F2 Function key
- The function is available after selecting the function key **F9**
  The operating icons **16** appear: Stepladder up

F3 Function key
- The function is available after selecting the function key **F9**
  The operating icons **16** appear: Stepladder down

F9 Function key
- Selection / deselection of positioning the stepladder
- After selection, the operating icons **16** appear additionally

11.2 Positioning the stepladder

– **Selection / deselection of positioning the stepladder:**
- **F9** Function key
  - **Result**: When the selection has been made, the border on the icon on the right of function key **F9** is bolded. After selection the control release is made, the icons over the function key **F2** and function key **F3** appear.

– **Control release:**
- The control release is issued automatically after selection.
- After completed control release, the icons over the function key **F2** and function key **F3** are highlighted in purple.

Note

▶ To control the functions, a control release must be issued: The corresponding icons must be highlighted in purple.

F2 Function key
- Stepladder up

F3 Function key
- Stepladder down

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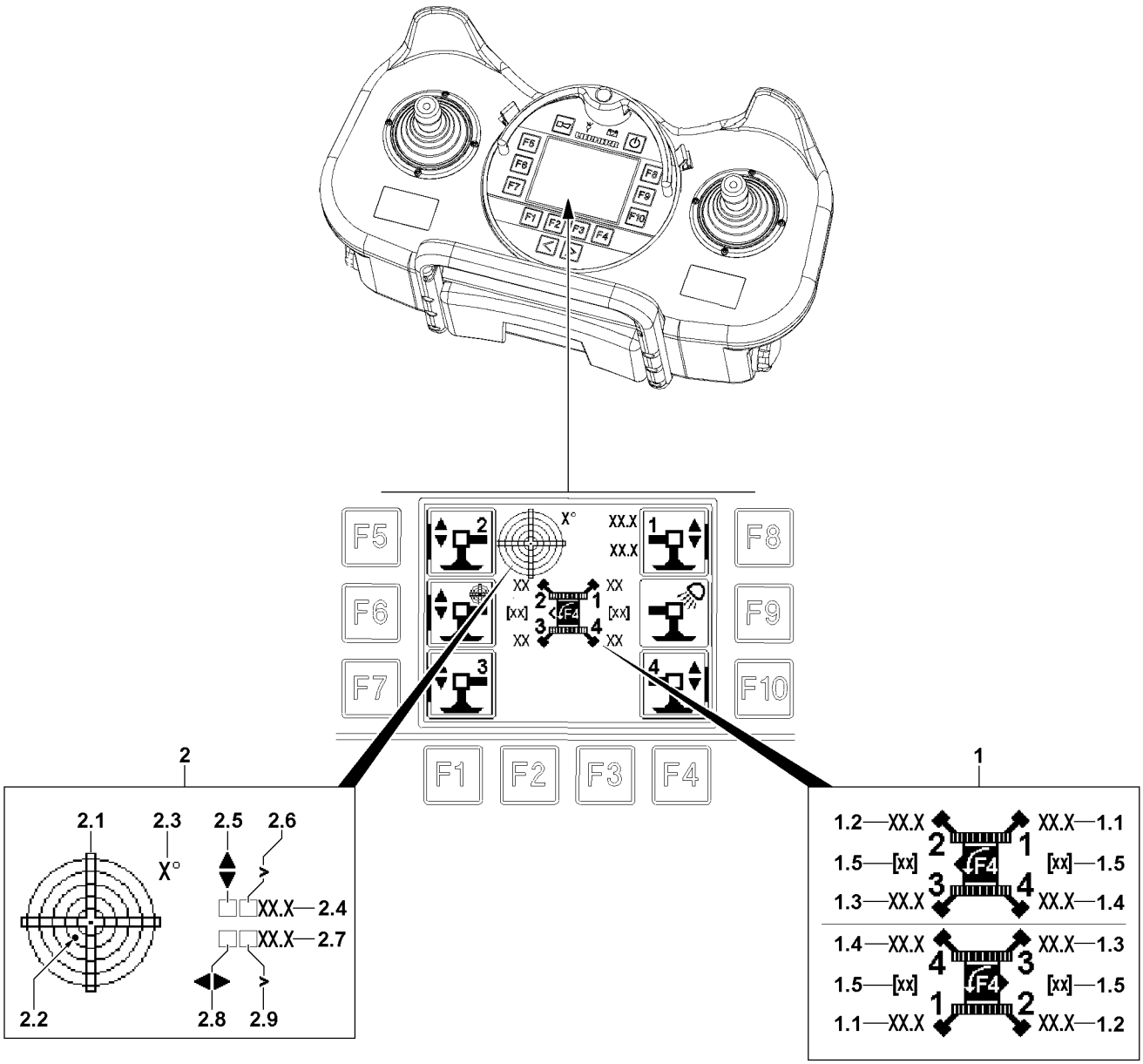

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Fig.125446: Support the crane / Support automatic menu

12 *Support the crane / Support automatic* menu

The operator can select between manual support and automatic support in the *Support the crane / Support automatic* menu.

WARNING
Personnel in the danger zone!
Personnel can be caught and injured or killed.
- ▶ Orient the crane icon on the BTT display according to the position of the operator to the crane.
- ▶ Select the location in such a way that the danger zone can be fully viewed and monitored by the operator.
- ▶ Maintain a sufficient safety distance from moving parts.

12.1 *Support the crane / Support automatic* menu icons

1 Crane icon
- On the crane icon, the numbered support beams are shown
- Press the function key **F4** to rotate the crane icon in the display by 180°

1.1 Support force value*
- Support force value of support cylinder 1
- In [t] or [kips]

1.2 Support force value*
- Support force value of support cylinder 2
- In [t] or [kips]

1.3 Support force value*
- Support force value of support cylinder 3
- In [t] or [kips]

1.4 Support force value*
- Support force value of support cylinder 4
- In [t] or [kips]

1.5 Measuring unit*
- Measuring unit of displayed support force values

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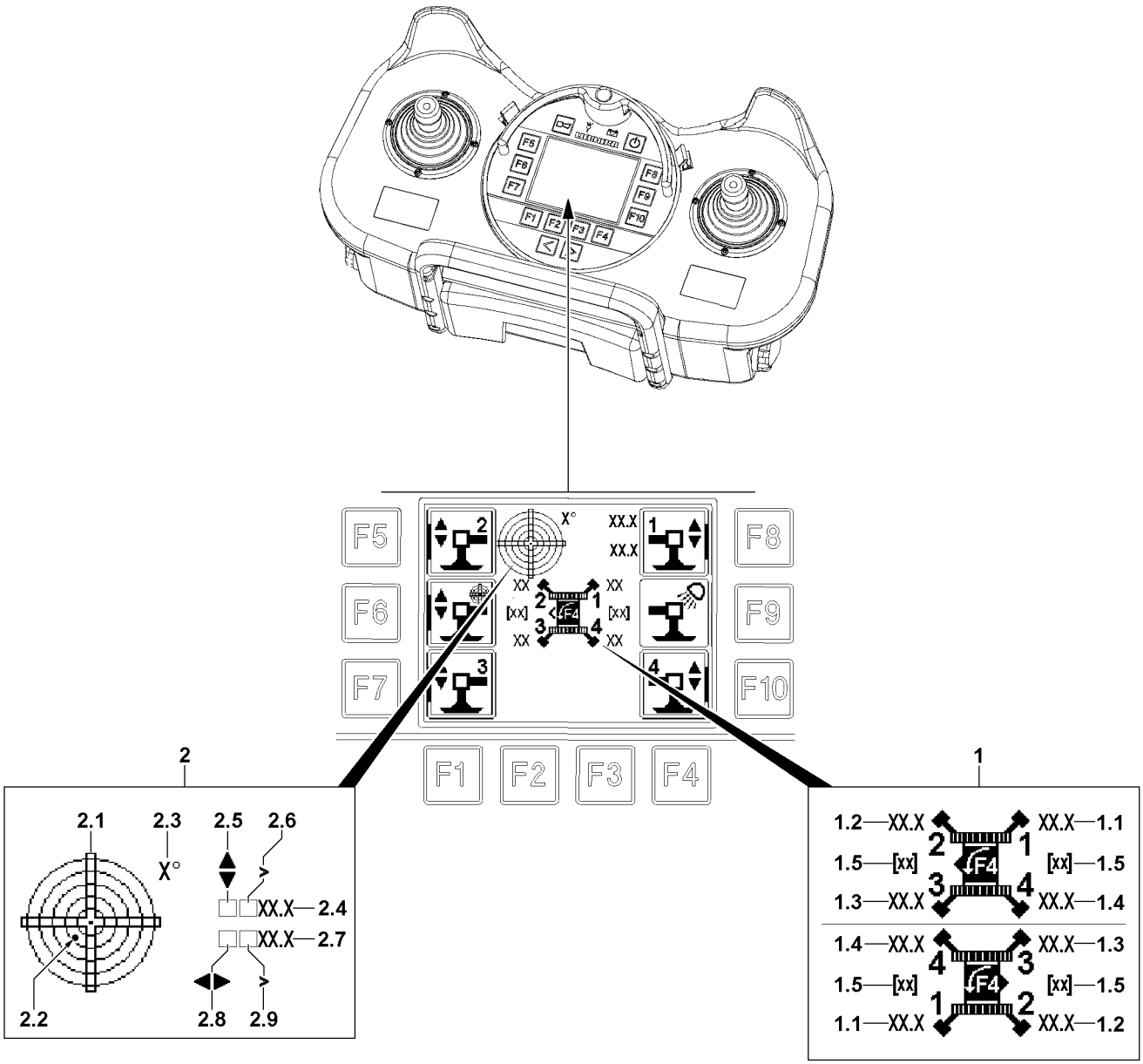

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Fig.125446: Support the crane / Support automatic menu

2 *Incline display* icon
- The incline of the crane in longitudinal and lateral direction is shown graphically and numerically in the *Incline display* icon.
- The direction data refers to the orientation of the crane icon **1**.

2.1 Graphic incline indicator
- Display of incline in graphic display.
- The graphic incline indicator **2.1** simulates a digital sight gauge. The dot **2.2** represents the bubble.
- The current crane incline and the incline direction is shown by the dot **2.2**.

2.3 Resolution of the *incline display*
- Number value resolution in [°]
  This value describes the resolution of the graphic view. If the dot **2.2** reaches the outermost marking circle of the digital sight gauge, then the number value of the *incline indicator* resolution **2.3** is reached. The displayed marker circles divide the number value equally.
  If the incline is less than 1° in the lateral direction **and** in the longitudinal direction, the entire display encompasses the 1° range. If at least one value exceeds the 1° limit, it switches to the next larger available range.
  The range change is automatic.

2.4 Incline in the *lateral direction*
- Numeric value of incline of crane in lateral direction.
- In [°].

2.5 *Lateral direction* arrow
- Arrow shows the incline direction of the crane on lateral direction.

2.6 *Larger than* icon
- Is displayed when the display range of the incline display is exceeded in lateral direction.
- **Note:** The crane is inclined further than can be shown.

2.7 Incline in the *longitudinal direction*
- Numeric value of incline of crane in longitudinal direction.
- In [°].

2.8 *Longitudinal direction* arrow
- Arrow shows the incline direction of the crane on longitudinal direction.

2.9 *Larger than* icon
- Is displayed when the display range of the incline display is exceeded in longitudinal direction.
- **Note:** The crane is inclined further than can be shown.

WARNING
The crane can topple over!
If the *larger than* icon appears (display range exceeded), then the crane is inclined further than can be shown.
The exact incline can then not be read.
▶ Do not exceed the permissible incline of the crane.

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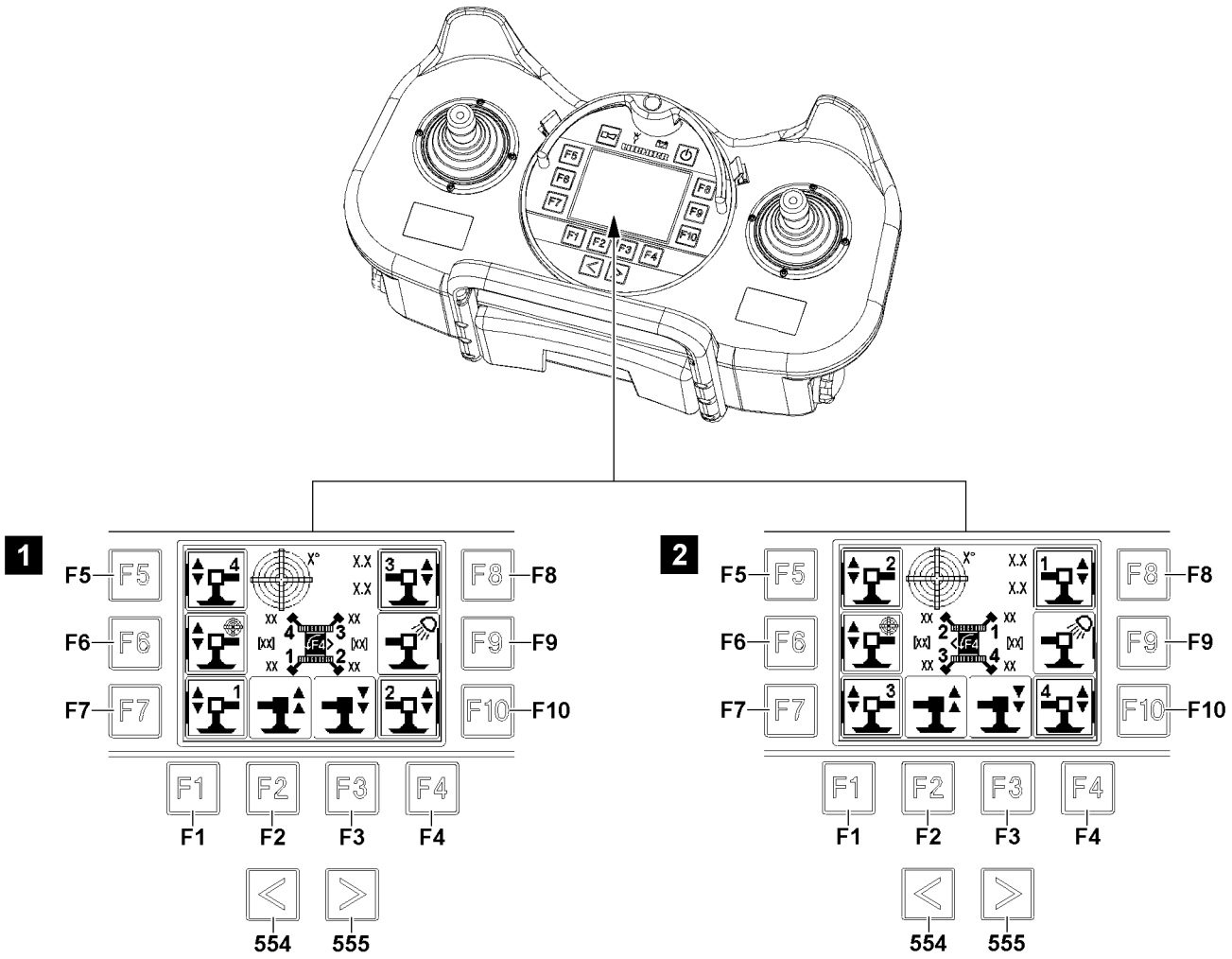

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Fig.125445: Menu Support the crane / Support automatic - possible view settings

12.2 Function keys *Support the crane / Support automatic* menu

554 Change over key
- Call up the *Swing the support beam* menu

555 Change over key
- Call up the *Crawler operation* menu

F1 Function key
- Back to the start menu

F2 Function key
- The function is available after prior selection:
  Retract the selected support cylinder
  or
  Levelling the crane by retracting the support cylinder

F3 Function key
- The function is available after prior selection:
  Extend the selected support cylinder
  or
  Levelling the crane by extending the support cylinder

F4 Function key
- Turn the crane icon in 180° increments

F5 Function key
- Select / deselect the support cylinders according to the crane position

F6 Function key
- Select / deselect automatic support*

F7 Function key
- Select / deselect the support cylinders according to the crane position

F8 Function key
- Select / deselect the support cylinders according to the crane position

F9 Function key
- Turn the support beam illumination on / off

F10 Function key
- Select / deselect the support cylinders according to the crane position

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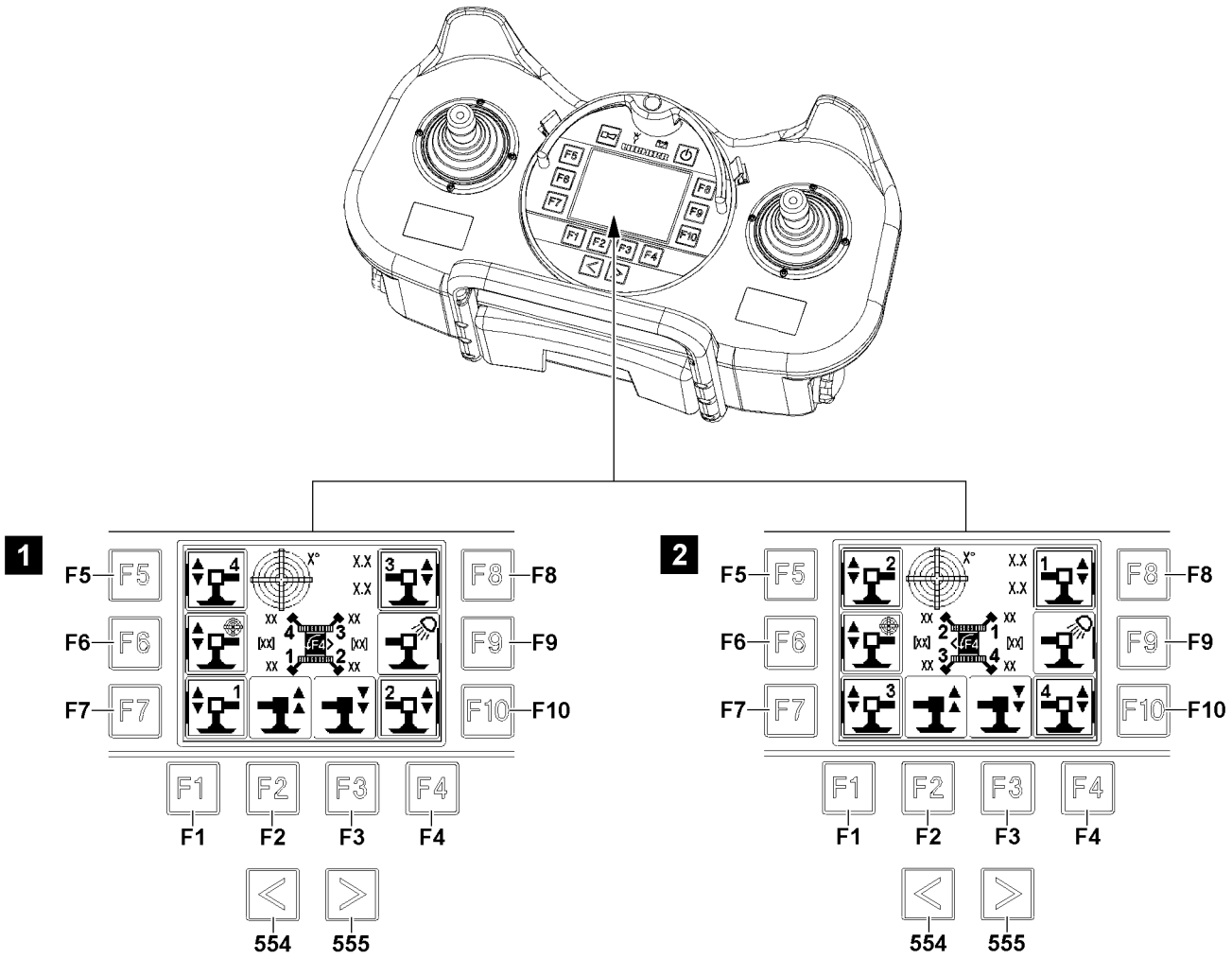

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Fig.125445: Menu Support the crane / Support automatic - possible view settings

12.3 Support beam illumination

The support beam illumination can be turned on / off automatically and manually.

Automatic turn on / off:
- When a function is activated for the first time in the *Support the crane / support automatic* menu, the support beam illumination automatically turns itself on.
- The support beam illumination remains turned on until:
  - The support beam illumination is manually turned off using function key **F9**.
  - The crane engine is turned off.

12.3.1 Turning the support beam illumination manually on / off

Turn the support beam illumination on manually:

▶ Press the function key **F9**.

Turn the support beam illumination off manually:

▶ Press function key **F9** again.

Note

▶ If the support beam illumination has been turned off with the function key **F9**, the automatic turn on function is not reactivated until the function key **F9** has been pressed again or the crane has been restarted.

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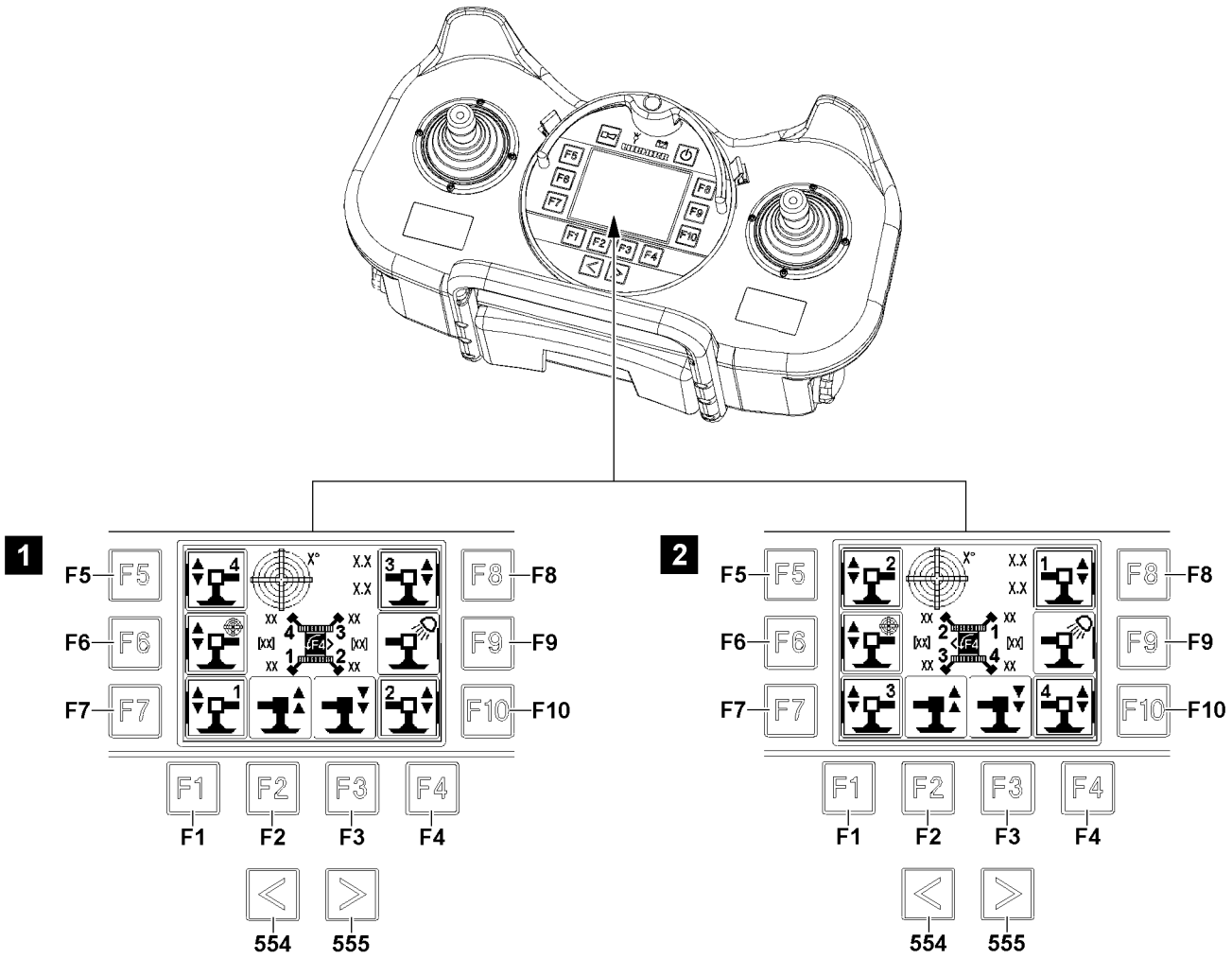


LWE/LICCON1/918102-01-02/en

Fig.125445: Menu Support the crane / Support automatic - possible view settings

12.4 Manual support

The supports can be selected and controlled individually or in groups. When a support cylinder is directly selected, then the automatic support selection is cancelled.

Make sure that the following prerequisite is met:
– The orientation of the operator to the crane has been set correctly.

– **Selection / deselection of the support cylinder:**
  • Illustration **1**:
    • Function key **F5** for support cylinder 4.
    • Function key **F7** for support cylinder 1.
    • Function key **F8** for support cylinder 3.
    • Function key **F10** for support cylinder 2.
      • **Result**: Selected support cylinders are bordered in bold. The support cylinders can be selected / deselected as desired.
        The icons above the function key **F2** and function key **F3** appear.
  • Illustration **2**:
    • Function key **F5** for support cylinder 2.
    • Function key **F7** for support cylinder 3.
    • Function key **F8** for support cylinder 1.
    • Function key **F10** for support cylinder 4.
      • **Result**: Selected support cylinders are bordered in bold. The support cylinders can be selected / deselected as desired.
        The icons above the function key **F2** and function key **F3** appear.

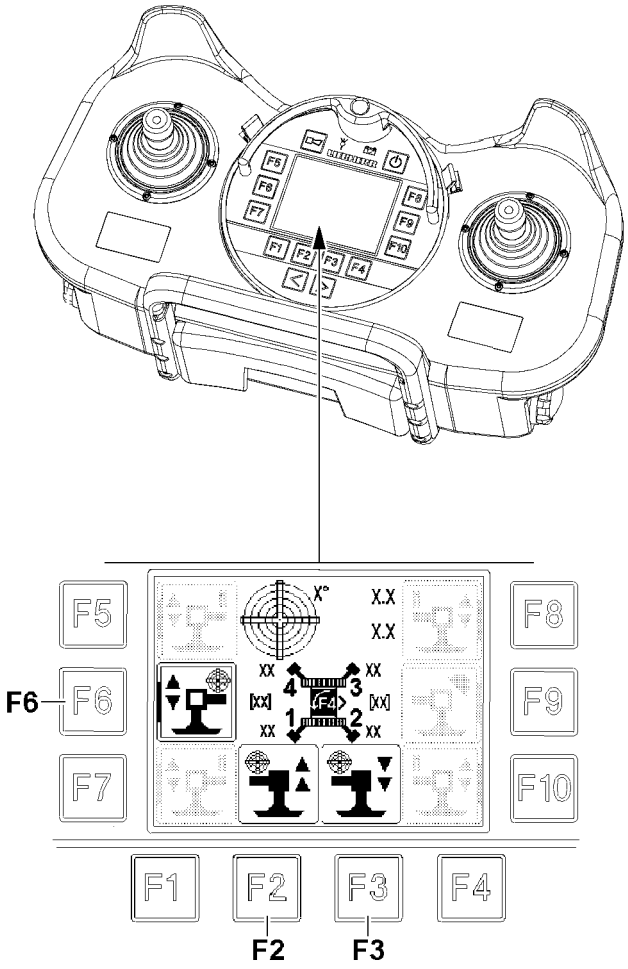
– **Control release:**
  • The control release is issued automatically.
  • After completed control release, the icons over the function key **F2** / function key **F3** are highlighted in purple.

Note
▶ To control the support cylinders, a control release must be issued: The corresponding icons must be highlighted in purple.

F2 Function key
  • Retracting the support cylinders

F3 Function key
  • Extending the support cylinders

LWE/LICCON1/918102-01-02/en



LWE/LICCON1/918102-01-02/en

Fig.125444: Automatic support function

12.5 Automatic support

The automatic support function automatically levels the crane during the support procedure.

At selection of the support automatic, an existing individual selection of the support cylinders will be deleted.

Make sure that the following prerequisite is met:
– The orientation of the operator to the crane has been set correctly.

– **Support automatic selection:**
  • **F6** Function key
    • **Result**: When the support automatic is selected, the icon is surrounded with a bold border. The icons above the function key **F2** and function key **F3** appear.

– **Control release:**
  • The control release is issued automatically.
  • After completed control release, the icons over the function key **F2** / function key **F3** are highlighted in purple.

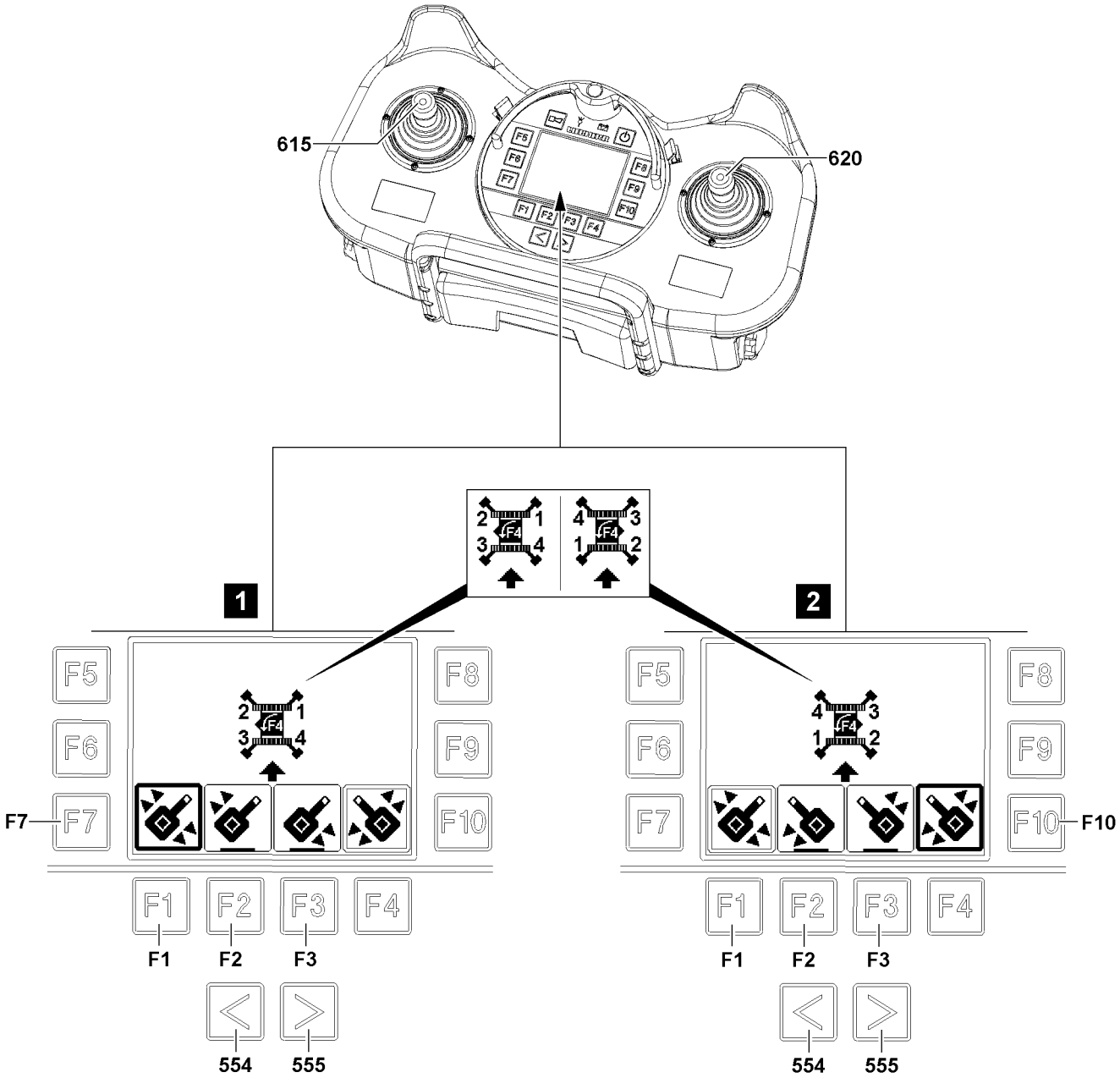
Note

▶ To control the automatic support, a control release must be issued: The corresponding icons must be highlighted in purple.

F2 Function key
  • Levelling the crane by retracting the support cylinder

F3 Function key
  • Levelling the crane by extending the support cylinder

LWE/LICCON1/918102-01-02/en



LWE/LICCON1/918102-01-02/en

Fig.126886: Menu Swing the support beam - possible view settings

13 Menu *Swing the support beam*

WARNING
Danger of accident if the operator is incorrectly aligned with the crane!
If the operator is not correctly oriented to the crane, then the working range / danger zone cannot be viewed completely.
Personnel can be severely injured or killed.
▶ The crane icon on the BTT display must correspond to the actual position of the operator with respect to the crane, see section “Aligning the radio remote control to the crane”.

13.1 Function keys in the menu *Swing the support beam*

554 Change over key
- Call up the *Engine operation* menu

555 Change over key
- Call up the *Support the crane / Support automatic* menu

F1 Function key
- Back to the start menu

F2 Function key
- The function is available after prior selection:
  Swing the selected support beam in

F3 Function key
- The function is available after prior selection:
  Swing the selected support beam out

F7 Function key
- Select or deselect the support beam according to the crane position

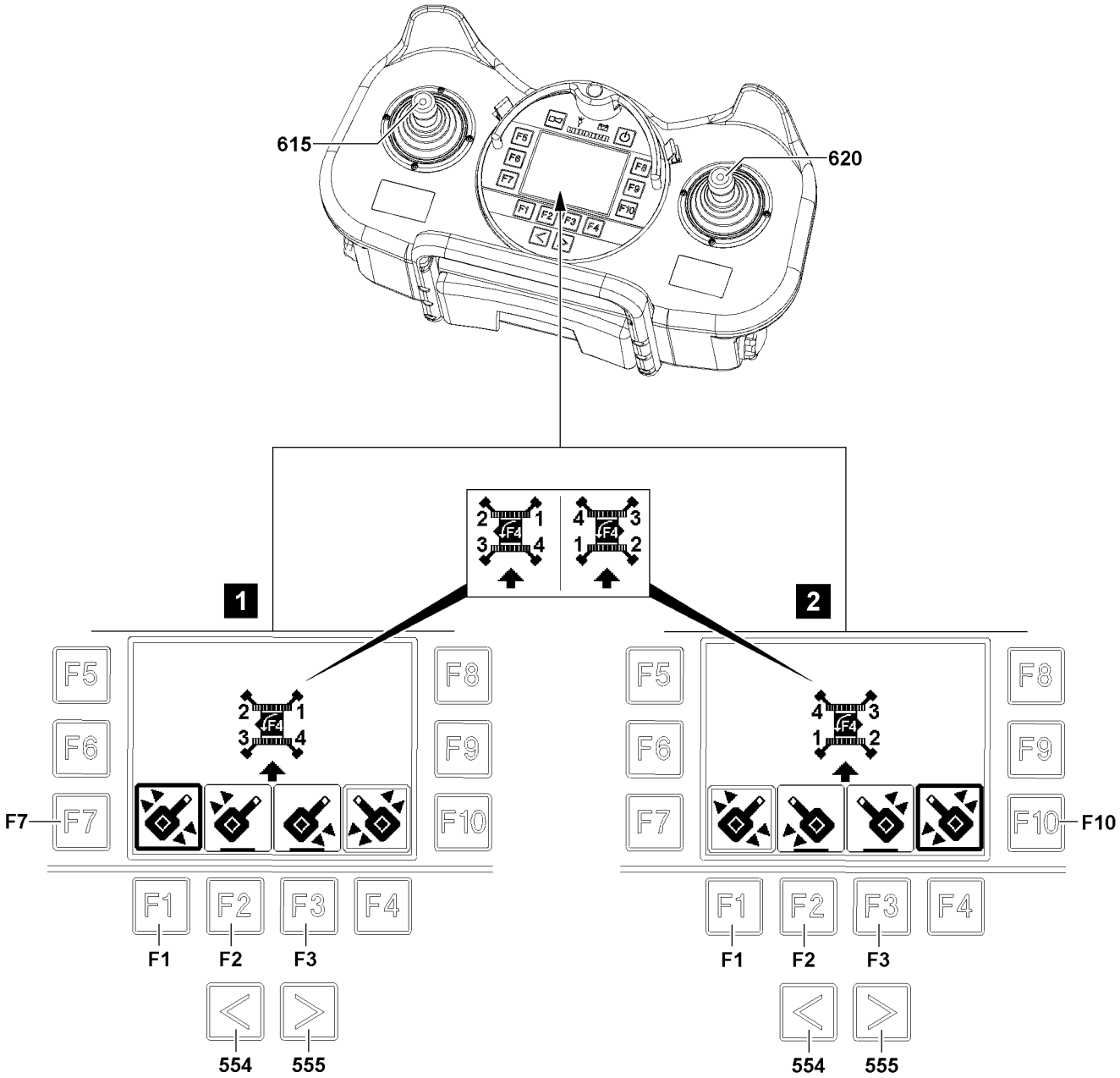
F10 Function key
- Select or deselect the support beam according to the crane position

13.2 Manual control lever in the menu *Swing the support beam*

615 Manual control lever
- No function in the menu *Swing the support beam*

620 Manual control lever
- No function in the menu *Swing the support beam*

LWE/LICCON1/918102-01-02/en



LWE/LICCON1/918102-01-02/en

Fig.126886: Menu Swing the support beam - possible view settings

13.3 Swinging the support beam

Make sure that the following prerequisite is met:

– The orientation of the operator to the crane has been set correctly:
  • Example illustration **1**: Operator is standing facing support beam 3 and support beam 4.
  • Example illustration **2**: Operator is standing facing support beam 1 and support beam 2.

– **Selection / deselection of the support cylinder:**
  • Function key **F7** for support beam *in the direction of view to the left* (example illustration **1** for support beam 3)
    or
  • Function key **F10** for support beam *in the direction of view to the right* (example illustration **2** for support beam 2)
    • **Result**: The selected support beam stack is bordered in bold. Pressing the function key again cancels the selection.
      The icons above the function key **F2** and function key **F3** appear.

– **Control release:**
  • The control release is issued automatically.
  • After completed control release, the icons over the function key **F2** / function key **F3** are highlighted in purple.

Note

▶ To control the support beam, a control release must be issued: The corresponding icons must be highlighted in purple.

F2 Function key
  • Swing the support arm in

F3 Function key
  • Swing the support arm out

LWE/LICCON1/918102-01-02/en

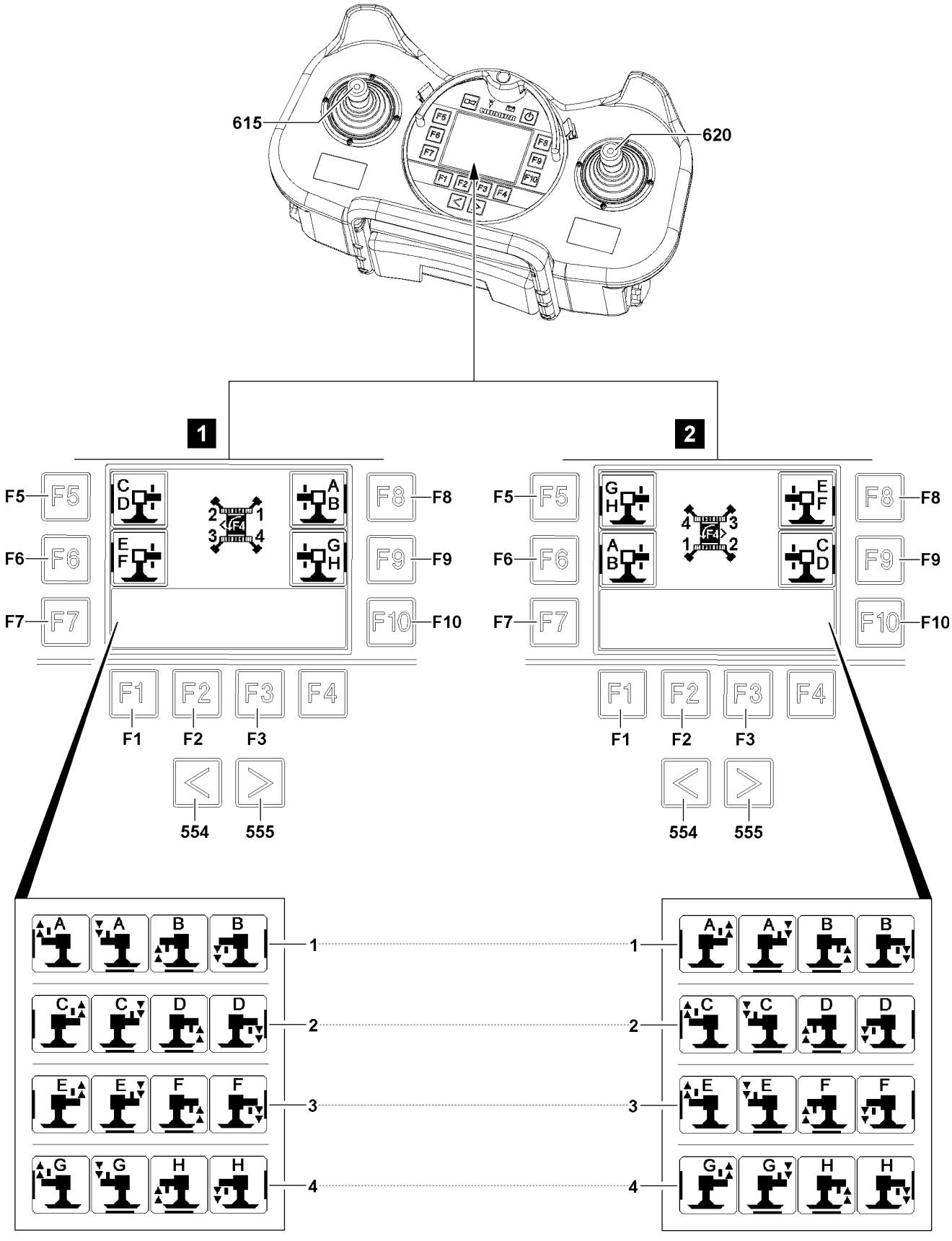


Fig.126887: Menu Disassembling / assembling the support beam - possible view settings

14 *Disassembling / assembling the support beam* menu

The support beam pins are controlled in the menu *Disassembling / assembling the support beam*.

WARNING
Danger of accident if the operator is incorrectly aligned with the crane!
If the operator is not correctly oriented to the crane, then the working range / danger zone cannot be viewed completely.
Personnel can be severely injured or killed.
▶ The crane icon on the BTT display must correspond to the actual position of the operator with respect to the crane, see section “Aligning the radio remote control to the crane”.

14.1 Function keys in the *Disassembling / assembling the support beam* menu

Note
▶ The assignment of the function keys change partially according to the orientation of the operator to the crane, see illustration **1** and illustration **2**

554 Change over key
- Call up the *Engine operation* menu

555 Change over key
- Call up the *Engine operation* menu

F1 Function key
- Back to the start menu

F2 Function key
- Operate the pins according to the selection:
  - The operating icons **1** appear: Insert pin A
  - The operating icons **2** appear: Insert pin C
  - The operating icons **3** appear: Insert pin E
  - The operating icons **4** appear: Insert pin G

F3 Function key
- Operate the pins according to the selection:
  - The operating icons **1** appear: Insert pin B
  - The operating icons **2** appear: Insert pin D
  - The operating icons **3** appear: Insert pin F
  - The operating icons **4** appear: Insert pin H

F5 Function key
- Alignment Illustration **1**: Select / deselect pin C / D (support beam 2)
- Alignment Illustration **2**: Select / deselect pin G / H (support beam 4)

LWE/LICCON1/918102-01-02/en

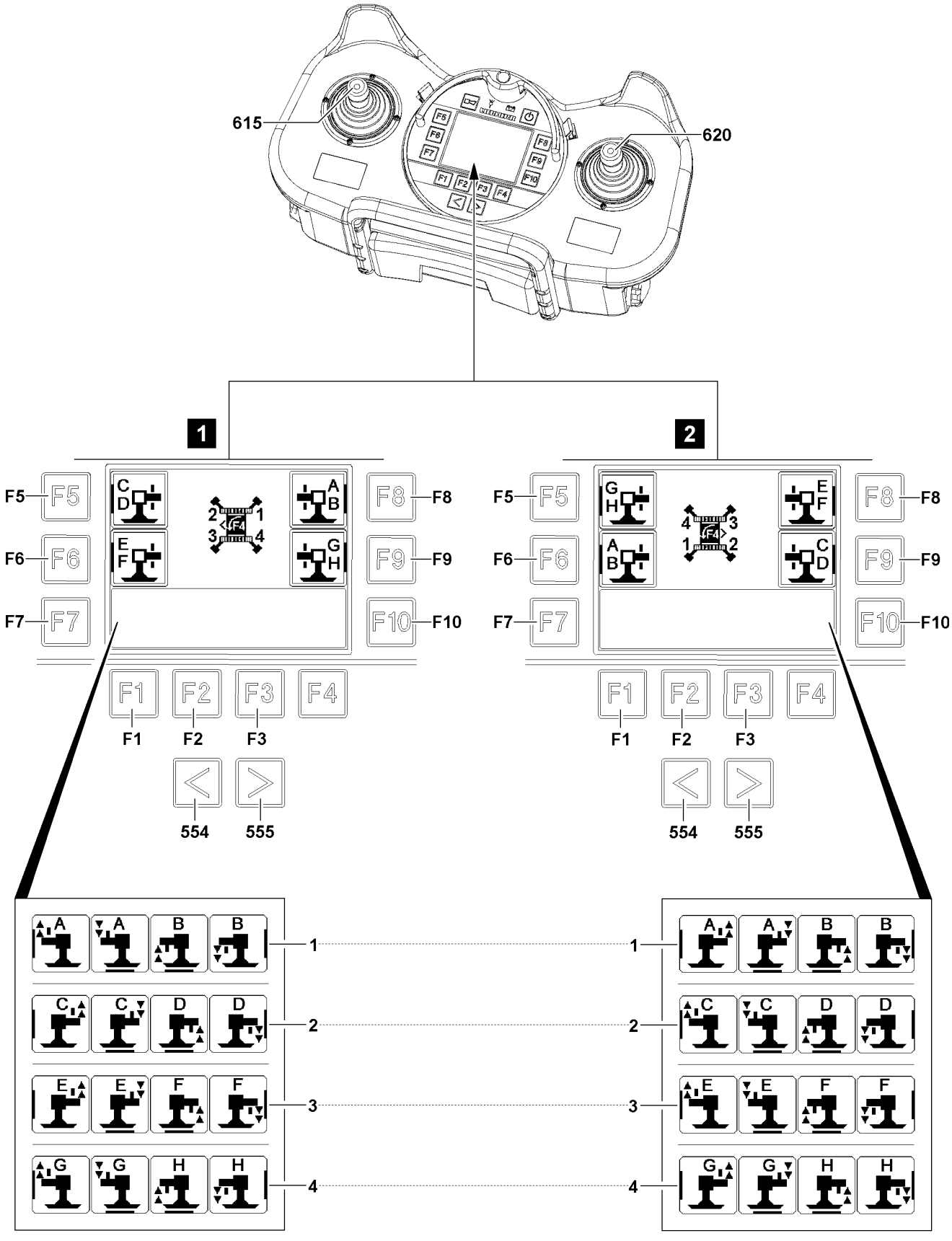


Fig.126887: Menu Disassembling / assembling the support beam - possible view settings

F6 Function key
- Alignment Illustration **1**: Select / deselect pin E / F (support beam 3)
- Alignment Illustration **2**: Select / deselect pin A / B (support beam 1)

F7 Function key
- Operate the pins according to the selection:
  - The operating icons **1** appear: Unpin pin A
  - The operating icons **2** appear: Unpin pin C
  - The operating icons **3** appear: Unpin pin E
  - The operating icons **4** appear: Unpin pin G

F8 Function key
- Alignment Illustration **1**: Select / deselect pin A / B (support beam 1)
- Alignment Illustration **2**: Select / deselect pin E / F (support beam 3)

F9 Function key
- Alignment Illustration **1**: Select / deselect pin G / H (support beam 4)
- Alignment Illustration **2**: Select / deselect pin C / D (support beam 2)

F10 Function key
- Operate the pins according to the selection:
  - The operating icons **1** appear: Unpin pin B
  - The operating icons **2** appear: Unpin pin D
  - The operating icons **3** appear: Unpin pin F
  - The operating icons **4** appear: Unpin pin H

14.2 Manual control lever in the *Disassembling / assembling the support beam* menu

615 Manual control lever
- No function in the *Disassembling / assembling the support beam* menu

620 Manual control lever
- No function in the *Disassembling / assembling the support beam* menu

LWE/LICCON1/918102-01-02/en

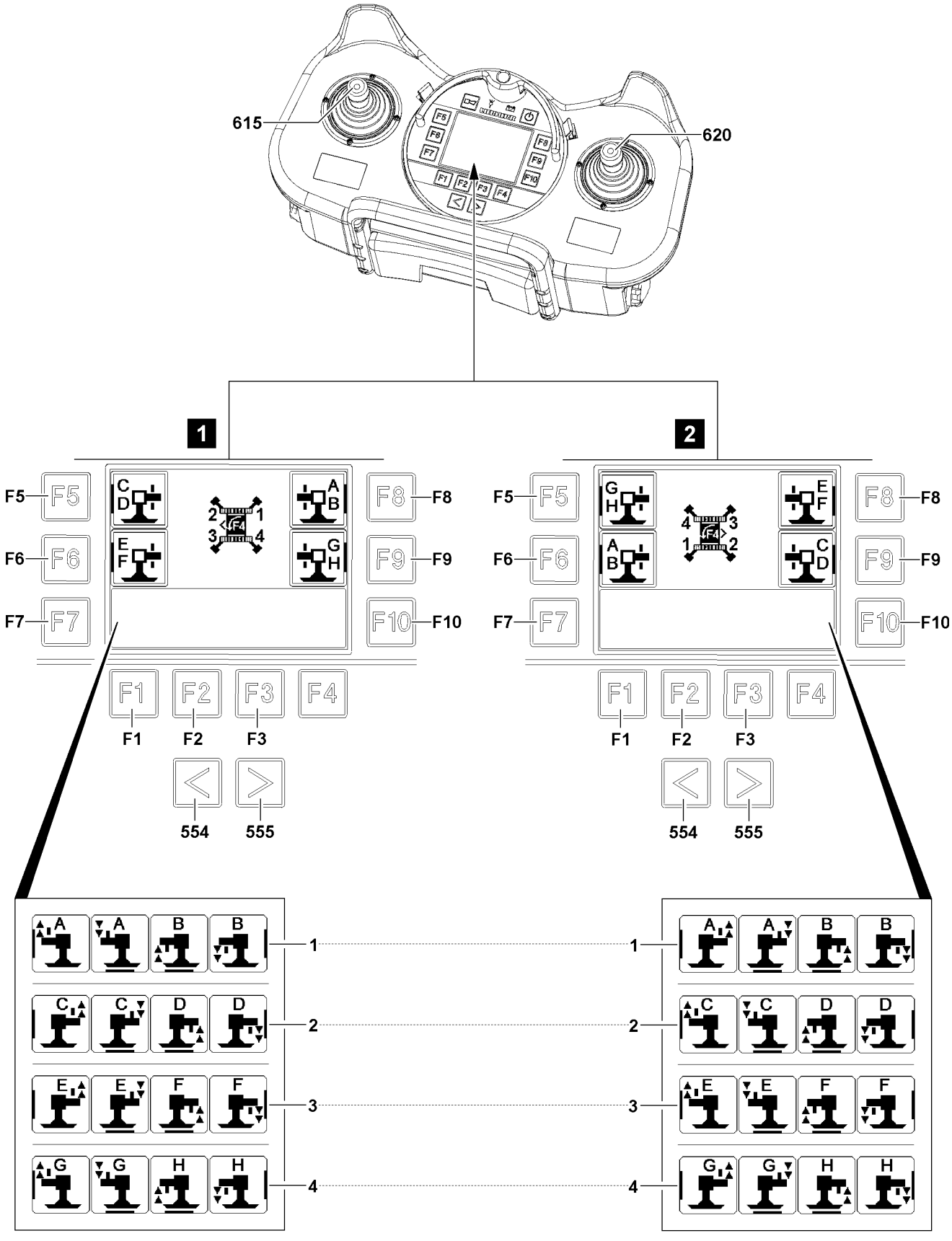


Fig.126887: Menu Disassembling / assembling the support beam - possible view settings

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14.3 Controlling the support beam pins

Selection / deselection of the support cylinder:

– Illustration **1**:
  • Function key **F5** for pin C / D (support beam 2)
  • Function key **F6** for pin E / F (support beam 3)
  • Function key **F8** for pin A / B (support beam 1)
  • Function key **F9** for pin G / H (support beam 4)
    • **Result**: Selected pins are bordered in bold.
      The corresponding operating icons **1**-**4** appear.

– Illustration **2**:
  • Function key **F5** for pin G / H (support beam 2)
  • Function key **F6** for pin A / B (support beam 3)
  • Function key **F8** for pin E / F (support beam 1)
  • Function key **F9** for pin C / D (support beam 4)
    • **Result**: Selected pins are bordered in bold.
      The corresponding operating icons **1**-**4** appear.

– **Control release:**
  • The control release is issued automatically after selection.
  • After provided control release, the operating icons are highlighted in purple.

Note

▶ To control the pins, a control release must be issued: The corresponding icons must be highlighted in purple.

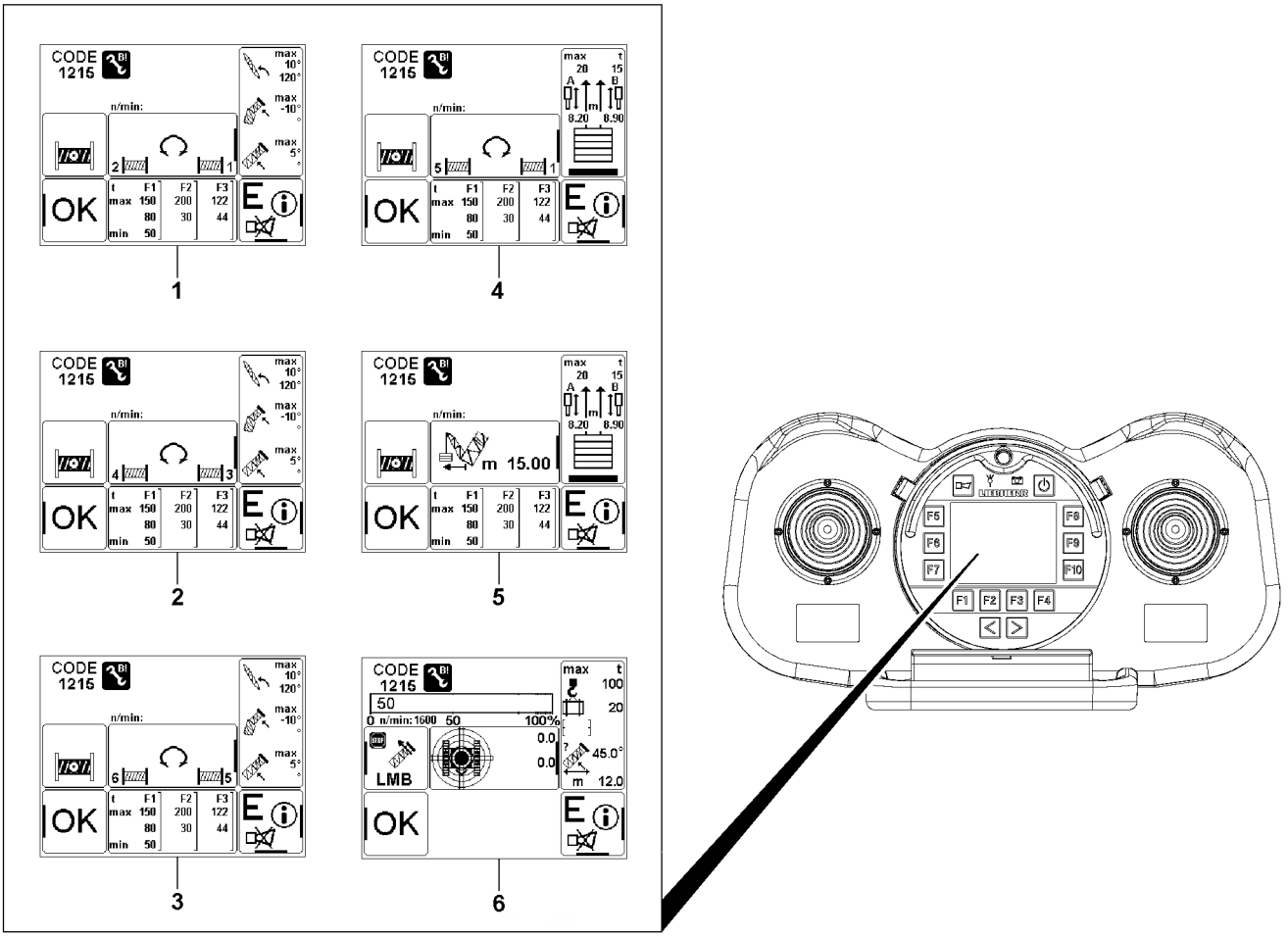
F2 Function key
  • Insert the selected pin

F3 Function key
  • Insert the selected pin

F7 Function key
  • Remove the selected pin

F10 Function key
  • Remove the selected pin

LWE/LICCON1/918102-01-02/en



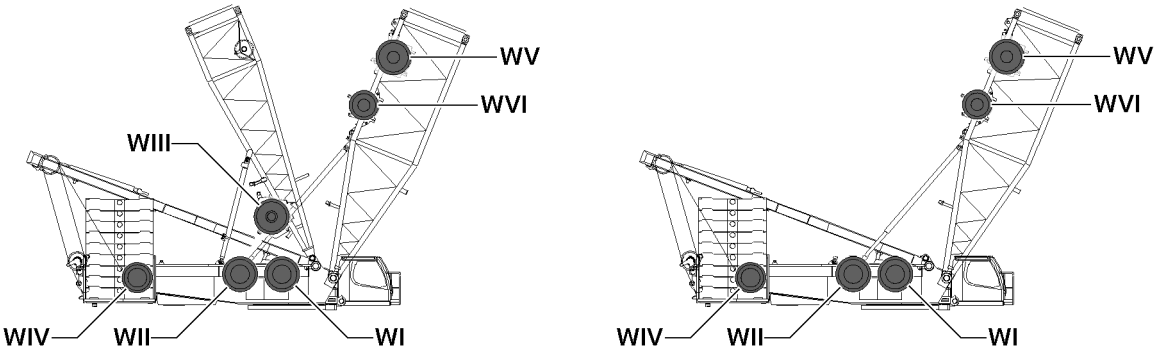


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Fig.149613: Radio operation / winch position operating screens

15 Radio operation operating screens

Various operating screens can be selected individually:
- **1** *Winch1 / winch2 assembly function* operating screen
- **2** *Winch3 / winch4 assembly function* operating screen
- **3** *Winch5 / winch6 assembly function* operating screen
- **4** *Winch1 / winch5 assembly function* operating screen
- **5** *Derrick ballast ballast assembly* operating screen
- **6** *SA-operating mode* operating screen

15.1 *Winch assembly function* operating screen

Note

For the winch 1 **WI** / winch 2 **WII** assembly function:
▶ Select the *Winch 1 / winch 2 assembly function* operating screen.

For the winch 3 **WIII** / winch 4 **WIV** assembly function:
▶ Select the *Winch 3 / winch 4 assembly function* operating screen.

For the winch 5 **WV** / winch 6 **WVI** assembly function:
▶ Select the *Winch 5 / winch 6 assembly function* operating screen.

For the winch 1 **WI** / winch 5 **WV** assembly function:
▶ Select the *Winch 1 / winch 5 assembly function* operating screen.

WARNING
Uncoordinated procedure for assembly tasks!
Death, severe bodily injuries, property damage.
- ▶ Before starting the assembly tasks, define the course of action and agree on all steps with all involved personnel.
- ▶ Monitor all steps and continuously check the course of action.
- ▶ In the case of unforeseen events, stop the course of action and agree on the new situation with all involved personnel.
- ▶ Make sure that winches and / or crane movements are only controlled by people who are aware of the effects on the crane and / or boom system as well as the connected dangers.
- ▶ Make sure that no persons, objects or obstacles are within the danger zone of the crane.
- ▶ Prewarn persons within the surrounding area of the crane, for example via a horn signal.
- ▶ Perform all winch and / or crane movements anticipatorily and at a low speed.

LWE/LICCON1/918102-01-02/en

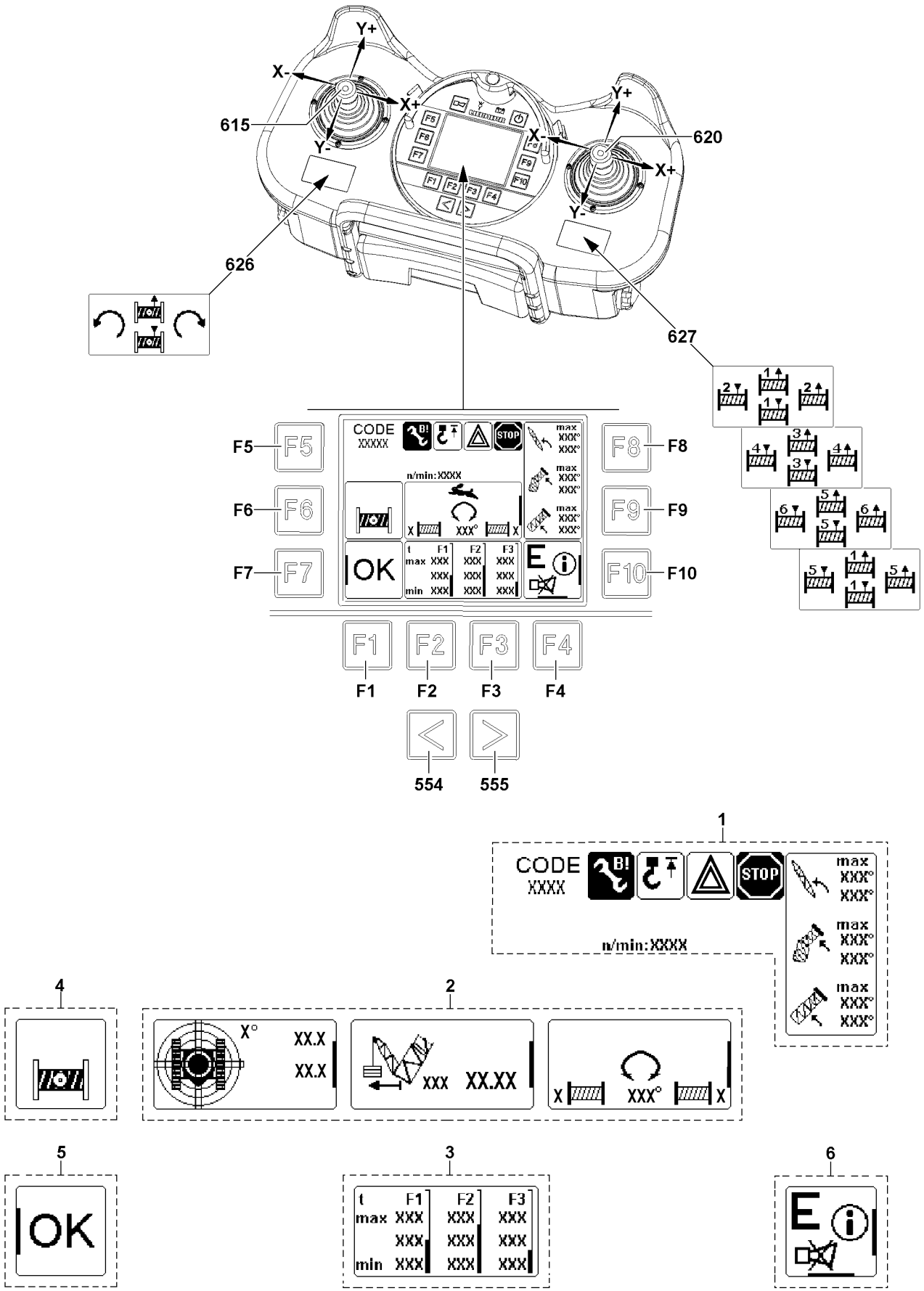


Fig.149614: Winch assembly function operating screen

LWE/LICCON1/918102-01-02/en

15.1.1 Function keys in operating screen *Assembly function winches*

554 Change over key
- Call up the *Engine operation* menu

555 Change over key
- Call up the *Engine operation* menu

F1 Function key
- -Back to the *Radio operation*-menu overview

F2 Function key
- -Not assigned-

F3 Function key
- -Not assigned-

F4 Function key
- Shut-off of acoustic warning in case of operating / system errors

F5 Function key
- -Not assigned-

F6 Function key
- -Not assigned-

F7 Function key
- *OK* icon, confirmation of operating mode
- Locking / releasing the manual control lever
  Note: The manual control lever can be locked by cancelling the confirmation of the operating mode.

F8 Function key
- -Not assigned-

F9 Function key
- Switching the monitoring functions between:
  - Incline display
  - Winch display
  - Derrick ballast boom radius (only for winch 3 / winch 4 assembly function)

F10 Function key
- Call up the *Test system* program

LWE/LICCON1/918102-01-02/en

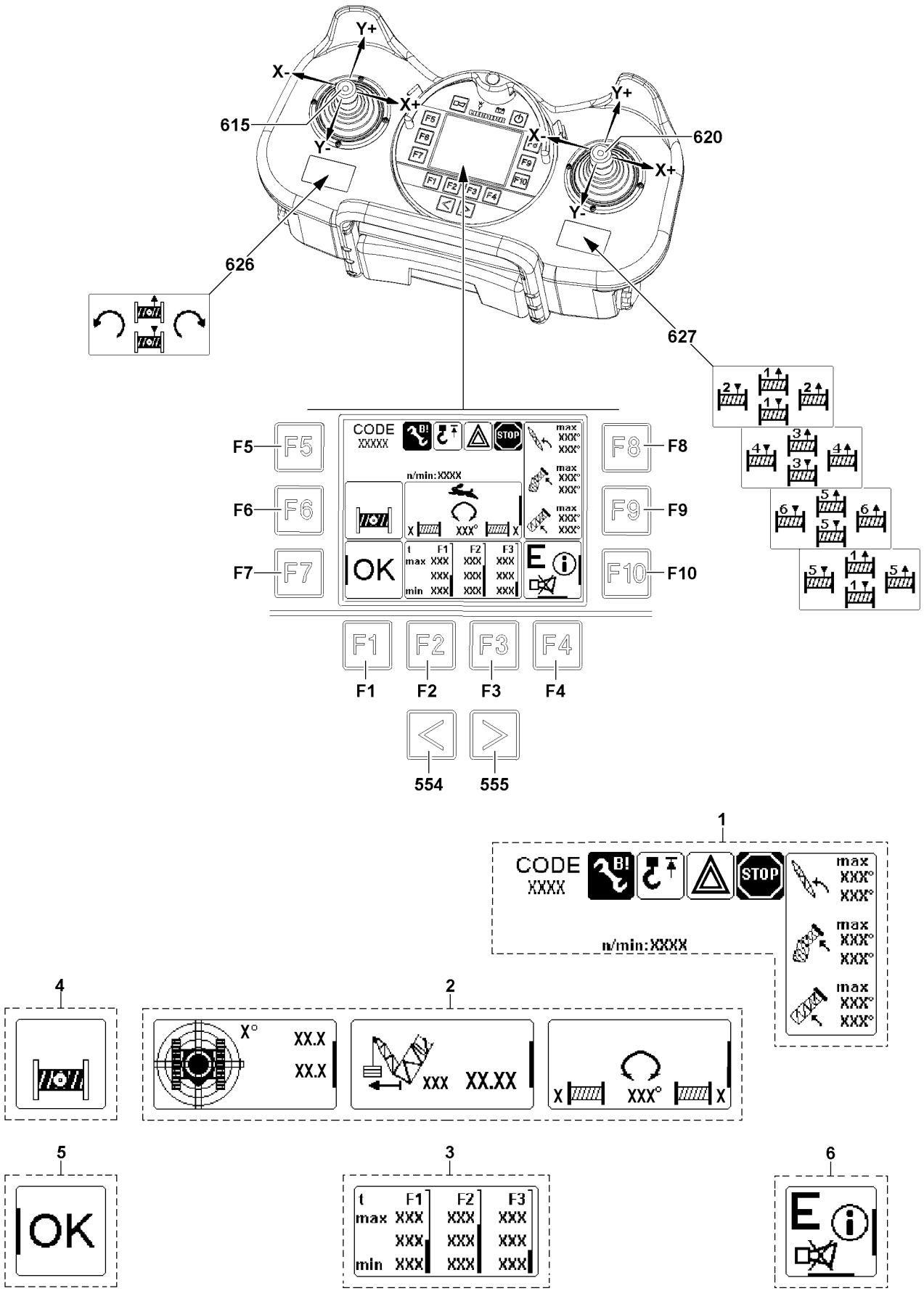


Fig.149614: Winch assembly function operating screen

LWE/LICCON1/918102-01-02/en

15.1.2 Manual control lever in the *Winch assembly function* operating screens

WARNING
Erroneous operation of the crane!
▶ Before operating the crane with the manual control levers, observe and adhere to section “Assembly operation with radio remote control”.

If no crane movement must be performed:
▶ Lock the manual control lever, see section “Locking / releasing the manual control lever”.

If the selected direction of deflection of the manual control levers is to be locked:
▶ Lock the manual control lever direction of deflection, see section “Locking the manual control lever”.

615 Manual control lever
- Shown in the graphic display **626** is the function of the manual control lever **615** according to the direction of deflection
  - Direction **X+**: Turn the turntable to the right (in clockwise direction)
  - Direction **X-**: Turn the turntable to the left (in counterclockwise direction)
  - Direction **Y+**: Spool the assembly winch out
  - Direction **Y-**: Spool the assembly winch up

620 Manual control lever
- Shown in the graphic display **627** is the function of the manual control lever **620** according to the direction of deflection
  - Direction **X+**: Spool winch 2/4/5/6 out
  - Direction **X-**: Spool winch 2/4/5/6 up
  - Direction **Y+**: Spool winch 1/3/5 out
  - Direction **Y-**: Spool winch 1/3/5 up

15.1.3 BTT display in operating screen *Assembly functions winches*

For a detailed description of the displays in the BTT display, see section “Icons and displays in the operating screens”.

1 Crane geometry and load information
- Chart name / chart number
- Crane geometry
- Crane engine rpm
- Alarm functions

2 Monitoring functions
- Incline display
- Winch display
- Derrick ballast boom radius (only for winch 3 / winch 4 assembly function)

3 Additional information
- F-load display

4 Special functions
- Assembly winch

5 Operating mode confirmation

6 *Test system* icon
- See section “Test system program”

LWE/LICCON1/918102-01-02/en

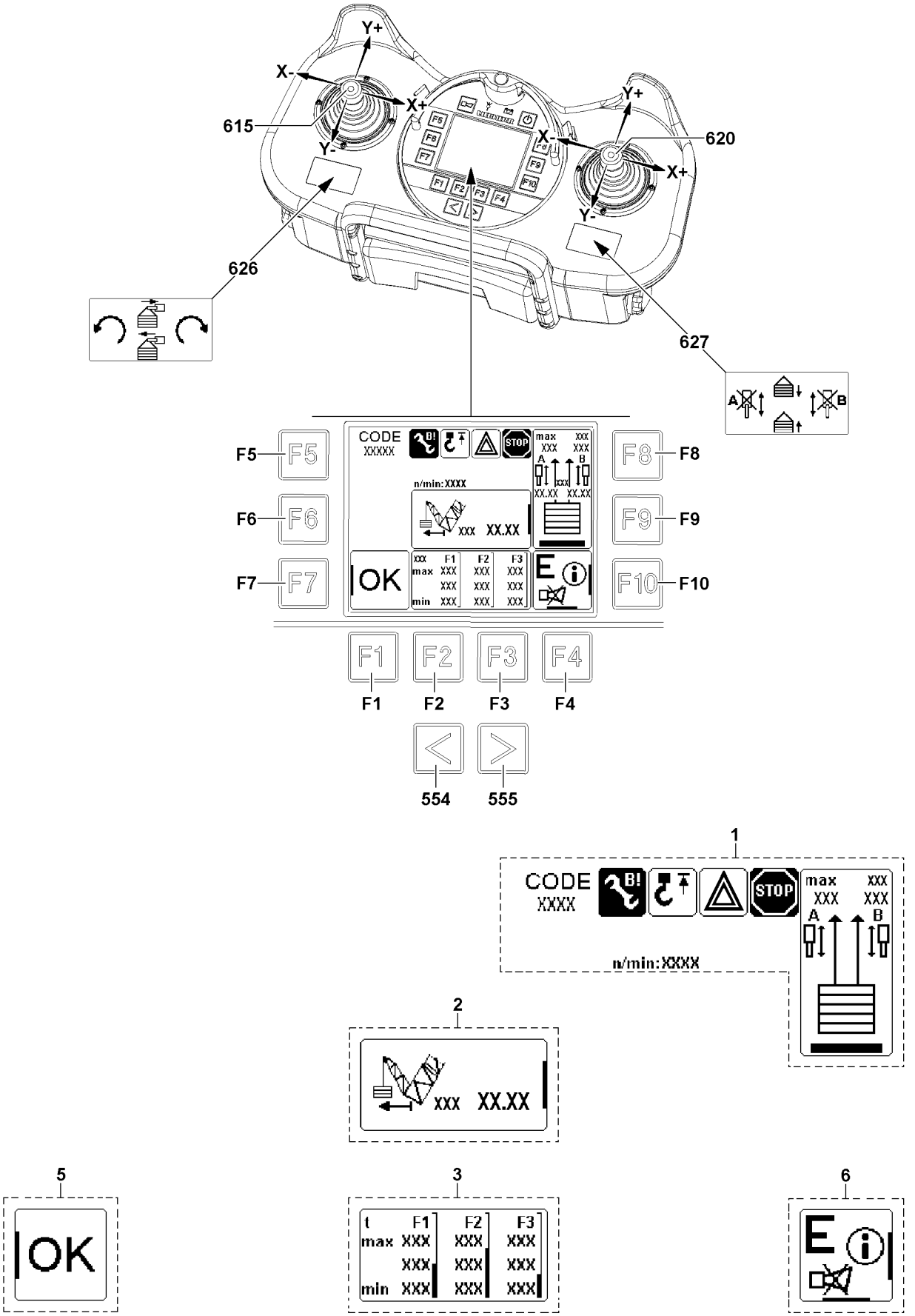


Fig.149615: Derrick ballast ballast assembly operating screen

LWE/LICCON1/918102-01-02/en

15.2 *Derrick ballast ballast assembly* operating screen

15.2.1 Function keys in operating screen *Derrick ballast ballast assembly*

554 Change over key
- Call up the *Engine operation* menu

555 Change over key
- Call up the *Engine operation* menu

F1 Function key
- -Back to the *Radio operation*-menu overview

F2 Function key
- -Not assigned-

F3 Function key
- -Not assigned-

F4 Function key
- Shut-off of acoustic warning in case of operating / system errors

F5 Function key
- -Not assigned-

F6 Function key
- -Not assigned-

F7 Function key
- *OK* icon, confirmation of operating mode
- Locking / releasing the manual control lever
  Note: The manual control lever can be locked by cancelling the confirmation of the operating mode.

F8 Function key
- -Not assigned-

F9 Function key
- -Not assigned-

F10 Function key
- Call up the *Test system* program

LWE/LICCON1/918102-01-02/en

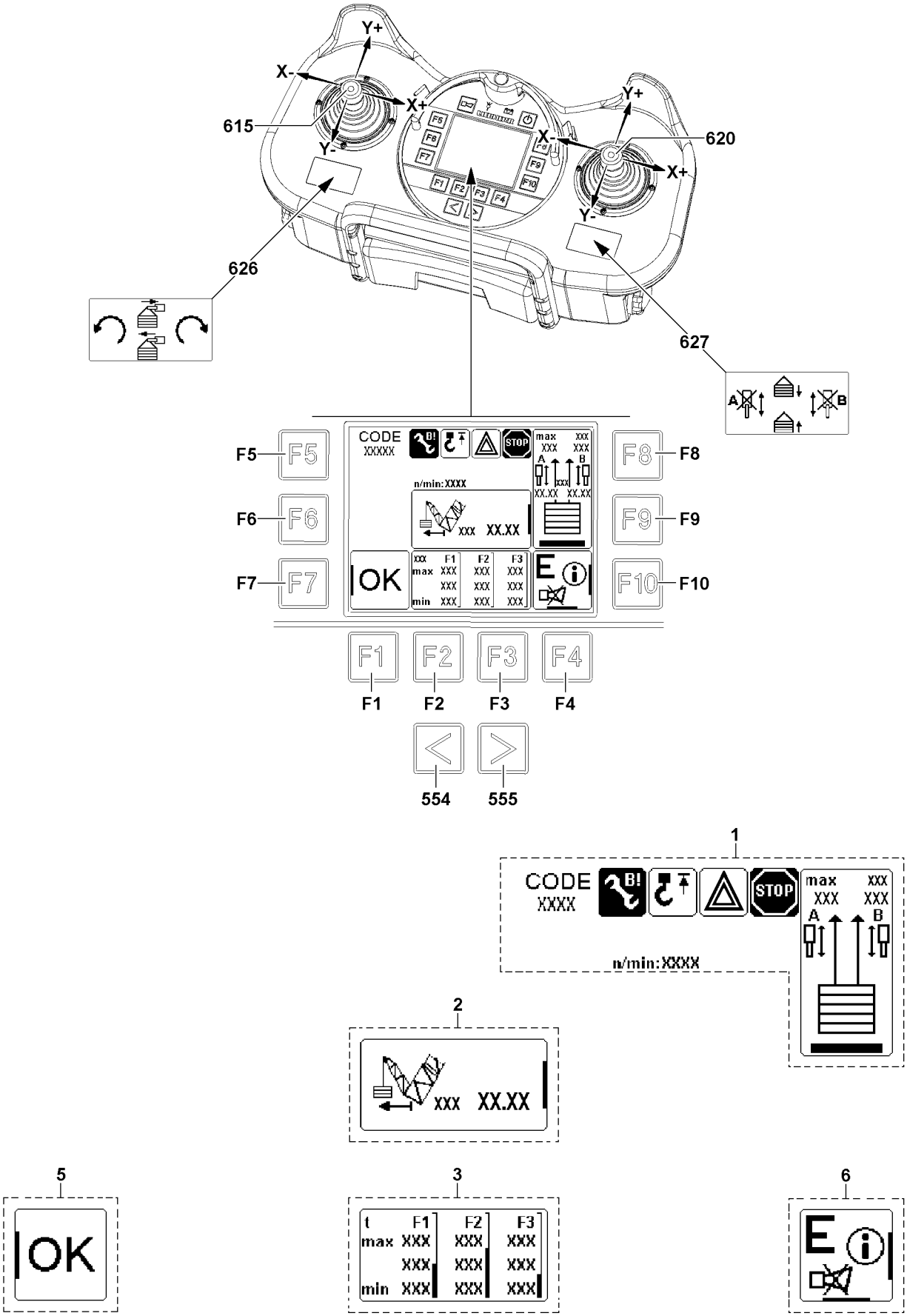


Fig.149615: Derrick ballast ballast assembly operating screen

LWE/LICCON1/918102-01-02/en

15.2.2 Manual control levers on the *Ballast assembly derrick ballast* operating screen

WARNING
Erroneous operation of the crane!
▶ Before operating the crane with the manual control levers, observe and adhere to section “Assembly operation with radio remote control”.

If no crane movement must be performed:
▶ Lock the manual control lever, see section “Locking / releasing the manual control lever”.

If the selected direction of deflection of the manual control levers is to be locked:
▶ Lock the manual control lever direction of deflection, see section “Locking the manual control lever”.

615 Manual control lever
- Shown in the graphic display **626** is the function of the manual control lever **615** according to the direction of deflection
  - Direction **X+**: Turn the turntable to the right (in clockwise direction)
  - Direction **X-**: Turn the turntable to the left (in counterclockwise direction)
  - Direction **Y+**: Decrease derrick ballast boom radius
  - Direction **Y-**: Increase derrick ballast boom radius

620 Manual control lever
- Shown in the graphic display **627** is the function of the manual control lever **620** according to the direction of deflection
  - Direction **X+**: Lock pull cylinder B
  - Direction **X-**: Lock pull cylinder A
  - Direction **Y+**: Extend pull cylinders together
  - Direction **Y-**: Retract pull cylinders together

15.2.3 BTT display in operating screen *Derrick ballast ballast assembly*

For a detailed description of the displays in the BTT display, see section “Icons and displays in the operating screens”.

1 Crane geometry and load information
- Chart name / chart number
- Ballast information
- Crane engine rpm

2 Monitoring functions
- Derrick ballast boom radius

3 Additional information
- F-load display

5 Operating mode confirmation

6 *Test system* icon
- See section “Test system program”

LWE/LICCON1/918102-01-02/en

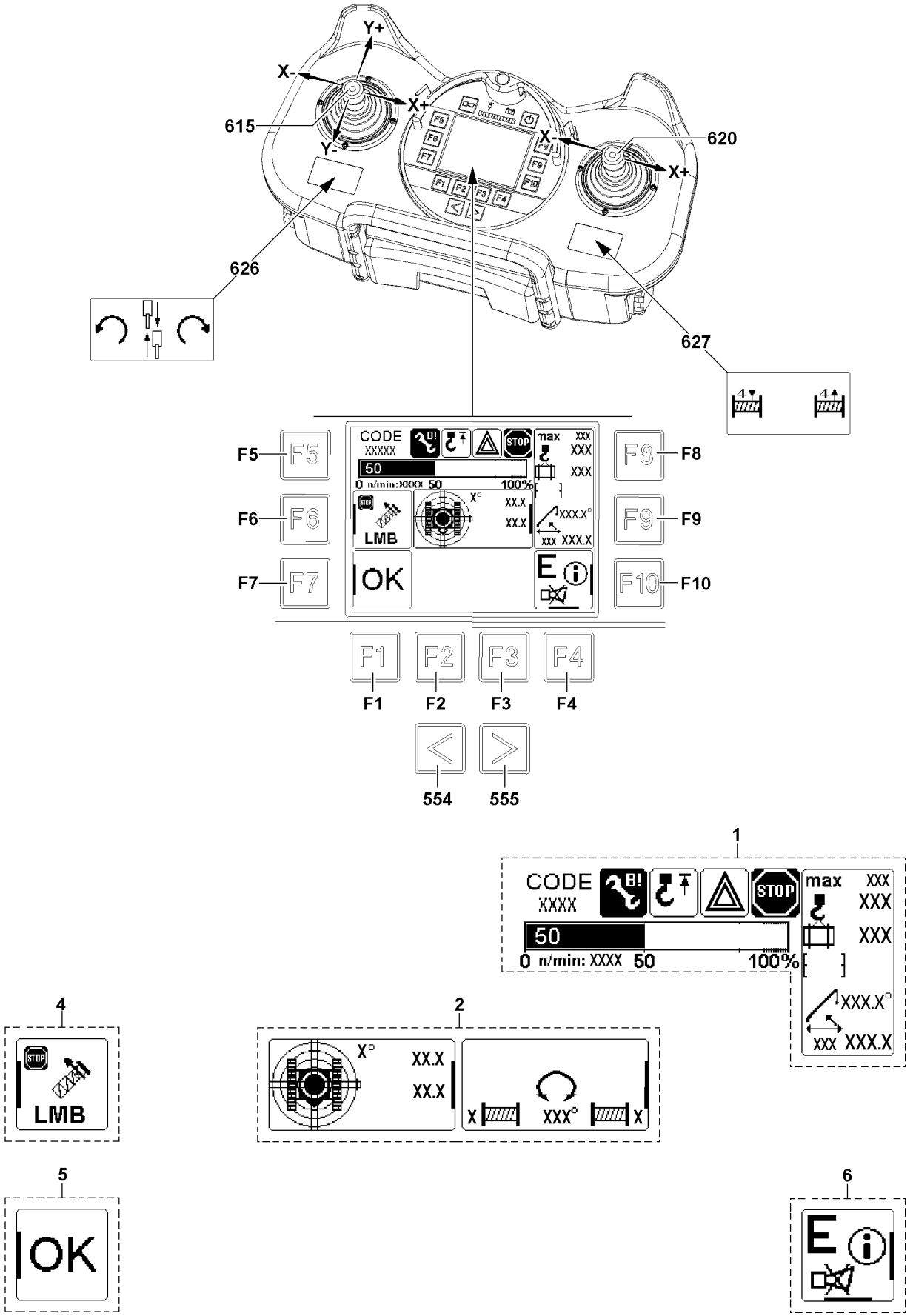


Fig.149616: SA-operating mode operating screen

15.3 *SA-operating mode* operating screen

15.3.1 Function keys in operating screen *SA-operating mode*

554 Change over key
- Call up the *Engine operation* menu

555 Change over key
- Call up the *Engine operation* menu

F1 Function key
- -Back to the *Radio operation*-menu overview

F2 Function key
- -Not assigned-

F3 Function key
- -Not assigned-

F4 Function key
- Shut-off of acoustic warning in case of operating / system errors

F5 Function key
- -Not assigned-

F6 Function key
- Luff in with suspended load

F7 Function key
- *OK* icon, confirmation of operating mode
- Locking / releasing the manual control lever
  Note: The manual control lever can be locked by cancelling the confirmation of the operating mode.

F8 Function key
- -Not assigned-

F9 Function key
- Switching the monitoring functions between:
  - Incline display
  - Winch display

F10 Function key
- Call up the *Test system* program

LWE/LICCON1/918102-01-02/en

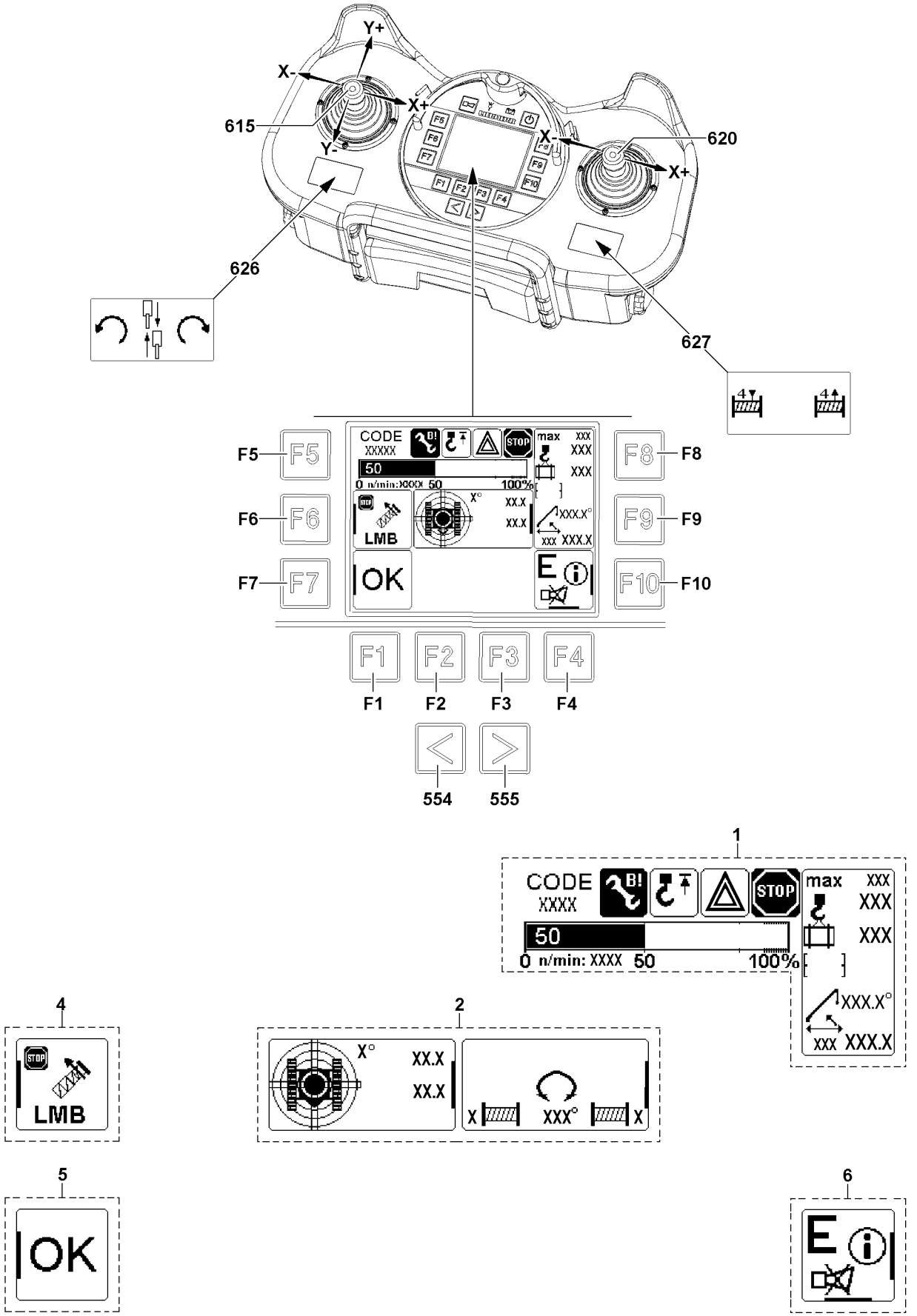


Fig.149616: SA-operating mode operating screen

15.3.2 Manual control levers on the *SA-operating mode* operating screen

WARNING
Erroneous operation of the crane!
▶ Before operating the crane with the manual control levers, observe and adhere to section “Assembly operation with radio remote control”.

If no crane movement must be performed:
▶ Lock the manual control lever, see section “Locking / releasing the manual control lever”.

If the selected direction of deflection of the manual control levers is to be locked:
▶ Lock the manual control lever direction of deflection, see section “Locking the manual control lever”.

615 Manual control lever
- Shown in the graphic display **626** is the function of the manual control lever **615** according to the direction of deflection
- For the manual control lever assignment *m* (see illustration) the following applies:
  - Direction **X+**: Turn the turntable to the right (in clockwise direction)
  - Direction **X-**: Turn the turntable to the left (in counterclockwise direction)
  - Direction **Y+**: Extend the assembly cylinder
  - Direction **Y-**: Retract the assembly cylinder

620 Manual control lever
- Shown in the graphic display **627** is the function of the manual control lever **620** according to the direction of deflection
- For the manual control lever assignment *m* (see illustration) the following applies:
  - Direction **X+**: Spool winch 4 out (swing SA-frame to the front)
  - Direction **X-**: Spool winch 4 up (swing SA-frame to the rear)

15.3.3 BTT display in operating screen *SA-operating mode*

For a detailed description of the displays in the BTT display, see section “Icons and displays in the operating screens”.

1 Crane geometry and load information
- Chart name / chart number
- Crane geometry
- Utilization / crane engine rpm display
- Alarm functions

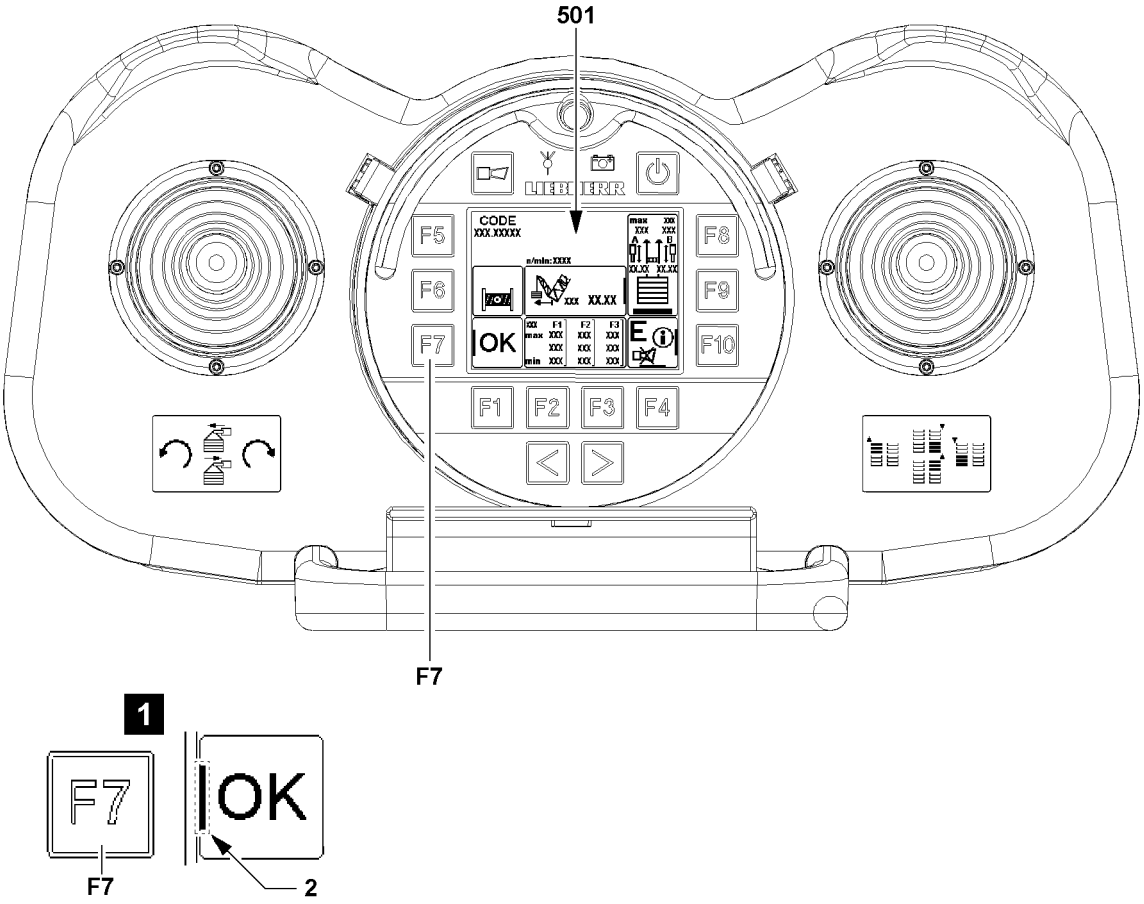
2 Monitoring functions
- Incline display
- Winch display

4 Special functions
- Luff in with suspended load

5 Operating mode confirmation

6 *Test system* icon
- See section “Test system program”

LWE/LICCON1/918102-01-02/en



LWE/LICCON1/918102-01-02/en

Fig.119576: Icons and displays in the operating screens

15.4 Icons and displays in the operating screens

WARNING
Incorrect display values!
An incorrectly set overload protection calculates the utilization of the crane incorrectly and transmits faulty display values.
▶ The actual set up configuration of the crane must match the entries and settings in the LICCON computer system.

Note
▶ A question mark (?) is shown instead of values when no load chart value can be accessed. Example: The crane is not in the range of the load chart.
▶ A question mark (?) is shown instead of values if the value cannot be calculated / determined. Example: A sensor error can be present - pay attention to error messages.

Note
Function keys **F1** to **F10**
▶ Icons are assigned to the individual function keys. A small bar **2** marks the assigned button. See illustration **1**: Example for function key **F7**.

The section describes the icons and displays of all operating screens of the radio remote control.

Not all icons and displays are shown simultaneously on the BTT display **501**.

Every operating screen has a selection of icons and displays available depending on its function.

LWE/LICCON1/918102-01-02/en

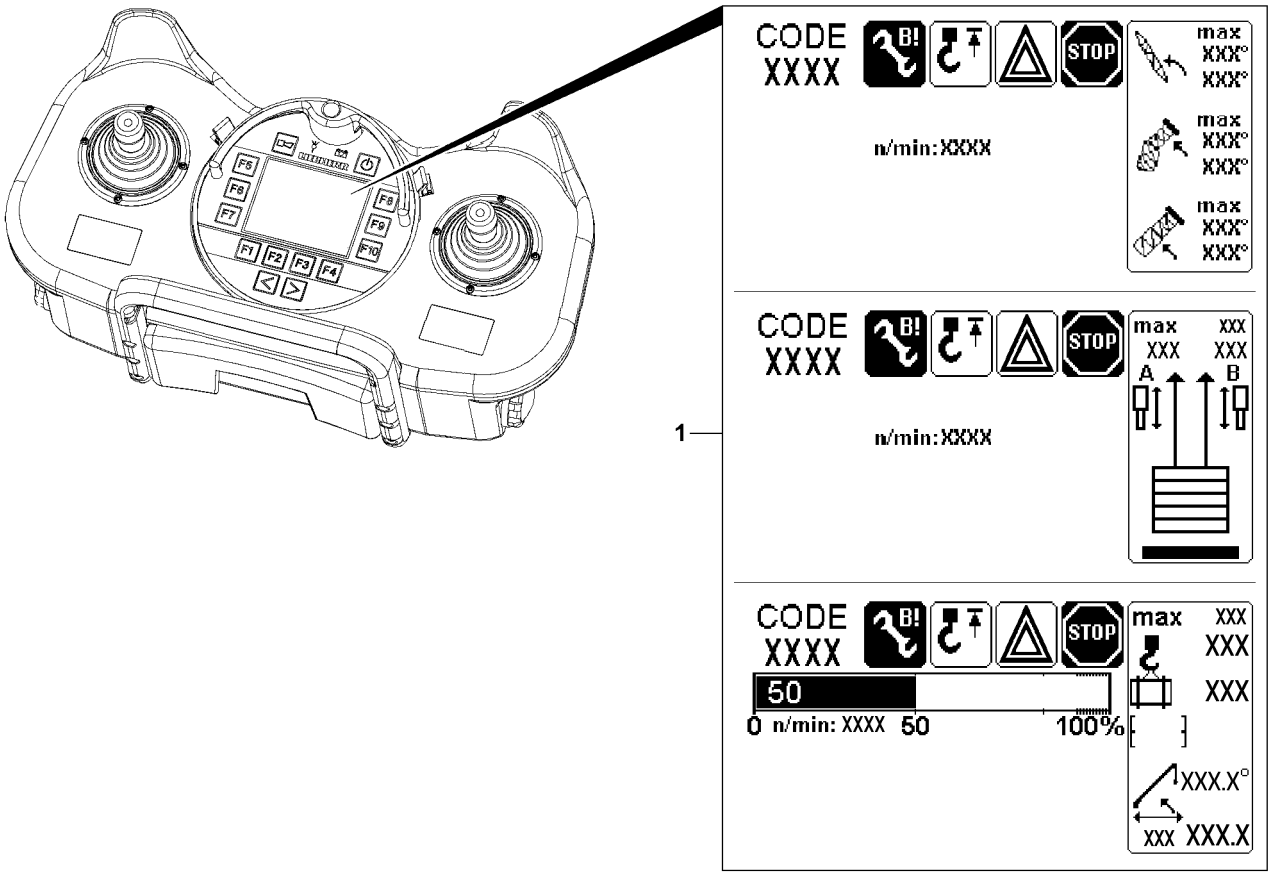


Fig.149617: Crane geometry and load information

LWE/LICCON1/918102-01-02/en

15.4.1 Crane geometry and load information

The Information about crane geometry and load **1** has an assigned area in the BTT display.

WARNING
Tolerances at actual load display!
Due to tolerances, deviations can occur for the displayed values in the actual load **1.2.13**.
The actual load display is not a calibrated weighing device.
▶ Always observe the actual weight of the load in connection with the load charts and the set up configuration of the crane.

WARNING
Overload of crane!
▶ Always observe the actual weight of the load in connection with the specifications of the crane documentation and the set up configuration of the crane.
▶ The assembly procedure or take down procedure must always be carried out in accordance with the specifications of the crane documentation.

1.1 Chart name
- Chart name / chart number of entered set up configuration

1.2 *Crane geometry and load* icon
- Illustration and scope of display depends on the selected operating screen

1.2.1 Maximum angle of the Derrick
- Permissible maximum angle derrick boom in [°]

1.2.2 Actual angle of the Derrick
- Current actual angle of derrick boom in [°]
  If the permissible value is exceeded, the lettering appears in red.

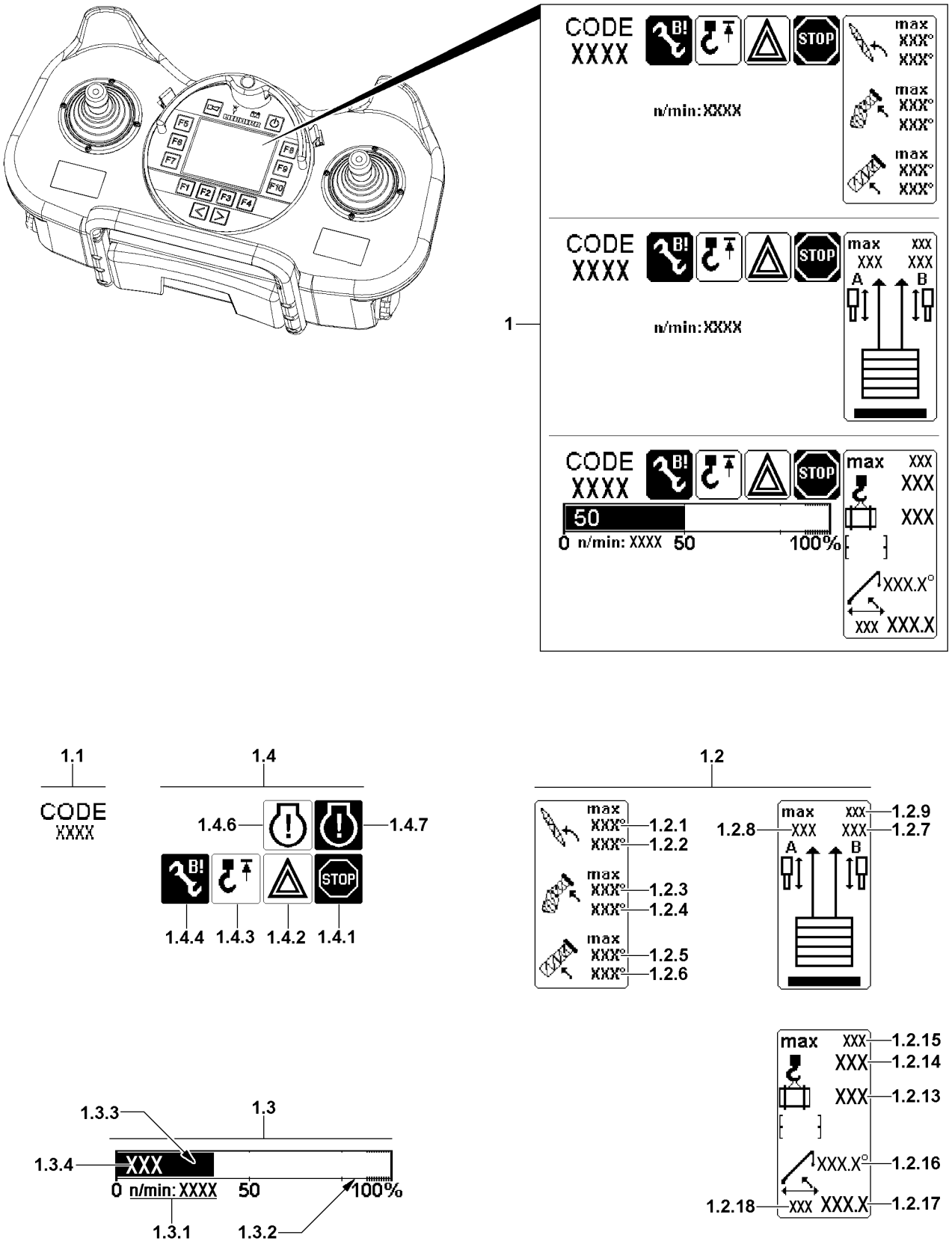
1.2.3 Maximum angle of the accessory
- Permissible maximum angle accessory / auxiliary boom in [°]

1.2.4 Actual angle of the accessory
- Current actual angle accessory / auxiliary boom in [°]
  If the permissible value is exceeded, the lettering appears in red.

1.2.5 Maximum angle of the main boom
- Permissible maximum angle main boom in [°]

1.2.6 Actual angle of the main boom
- Current actual angle of main boom in [°]
  If the permissible value is exceeded, the lettering appears in red.

LWE/LICCON1/918102-01-02/en



LWE/LICCON1/918102-01-02/en

Fig.149617: Crane geometry and load information

1.2.7 Actual ballast
- Current pulled ballast
  If the permissible value is exceeded, the lettering appears in red.

1.2.8 Maximum ballast
- Maximum ballast which may be pulled

1.2.9 Ballast measuring unit
- [t] or [lbs]

1.2.13 Actual load
- Current actual load on assembly cylinder

1.2.14 Maximum load
- Permissible maximum load in SA-operating mode

1.2.15 Load measuring unit
- [t] or [lbs]

1.2.16 Actual angle of SA-frame
- Current actual angle of SA-frame in [°]

1.2.17 Boom radius
- Current SA-frame boom radius

1.2.18 Boom radius measuring unit
- [m] or [ft]

1.3 Utilization / crane engine rpm display
- Illustration and scope of display depends on the selected operating screen

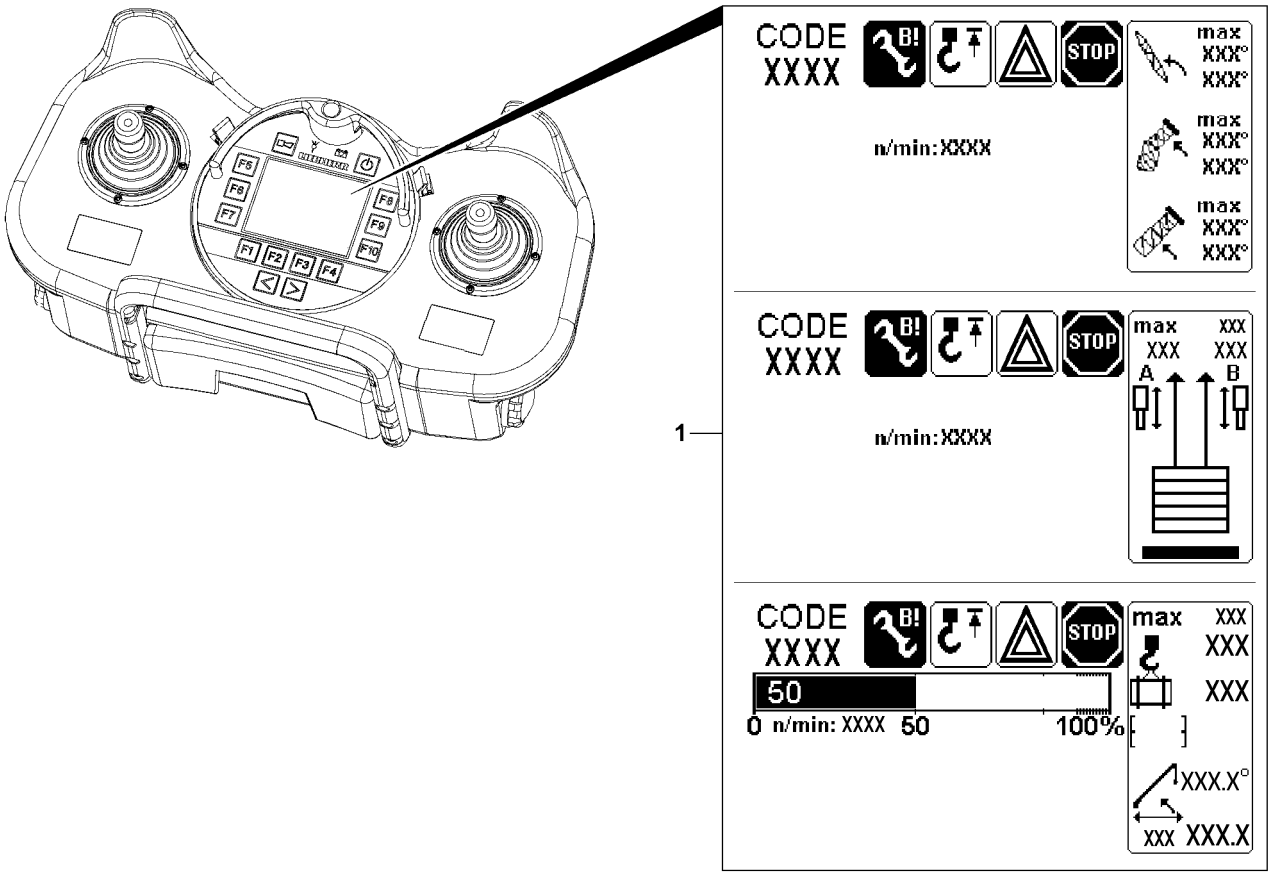
1.3.1 Rpm
- Current crane engine rpm in [n/min]

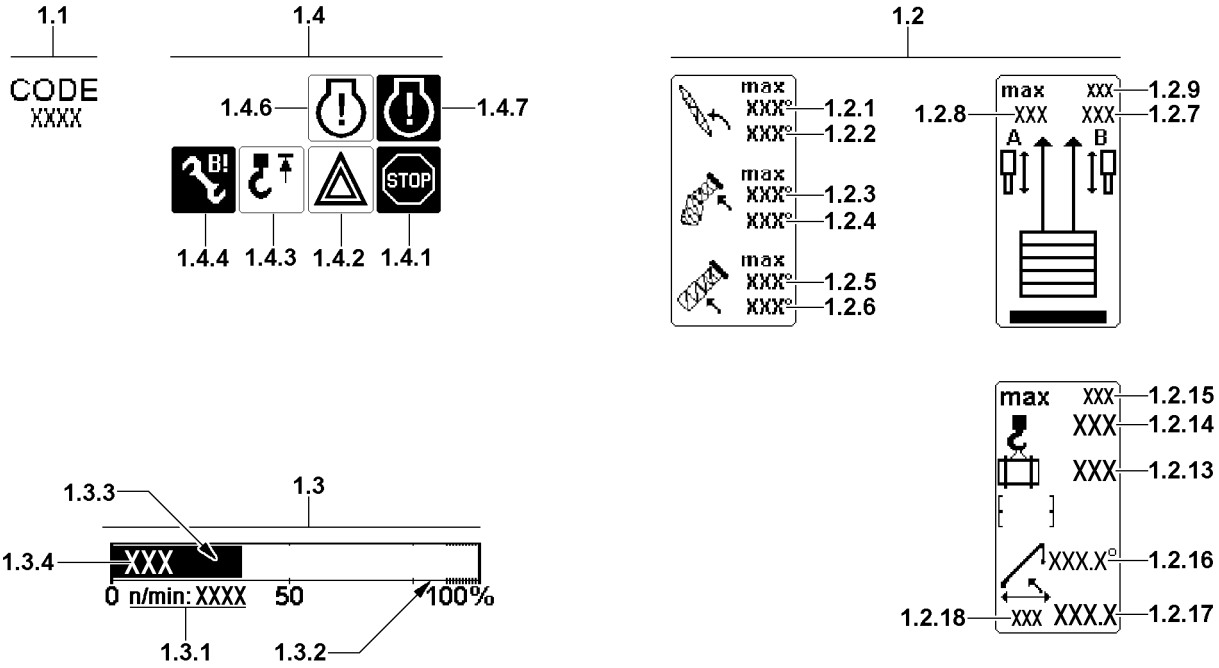
1.3.2 Utilization scale
- Marking from 90 % utilization: **Advance warning**
- Marking above 100 % utilization: **STOP shut-off**

1.3.3 Utilization bar
- The utilization bar **1.3.3** shows the current utilization of the crane via the utilization scale **1.3.2**, based on the load chart and reeving.
- Appears in blue, green, yellow and red, depending on the situation
- Utilization bar **blue / green**: Utilization in permissible range
- Utilization bar **yellow**: Advance warning! - Utilization just before impermissible range
- Utilization bar **red**: Warning! - Utilization in impermissible range

1.3.4 Utilization in percentages
- Utilization of the crane as a number value in percentages based on the load chart and reeving

LWE/LICCON1/918102-01-02/en





LWE/LICCON1/918102-01-02/en

Fig.149617: Crane geometry and load information

1.4 Alarm functions

1.4.1 *STOP* icon

- The *STOP* icon appears when the current utilization of the crane exceeds the **100 % mark**.
- An occurrence has happened which triggered a LMB STOP.
- **Note**: Certain crane movements are turned off, for example crane movements which increase the load torque.

1.4.2 *Advance warning* icon

- Load chart utilization
  The *Advance warning* icon appears, if the current utilization of the crane exceeds the limit programmed for the advance warning (**90 %**).

1.4.3 *Hoist top triggered* icon

- The *Hoist top triggered* icon **1.4.3** appears when:
  - The hook block / rope clamp triggers the hoist limit switch.
  - The minimum weight on the hoist limit switch is not attached (for example on a taken down boom).
- **Note**: Spool up hoist winches is turned off. Pay attention to the error message.

1.4.4 *Assembly* icon

- The *Assembly* icon **1.4.4** appears if:
  - The *Radio assembly* function is active
    and / or
  - Shut-offs are bypassed by the *radio assembly* function
- **Note**: The crane may solely be operated according to the specifications in the crane documentation. There are shut-offs that are only effective with radio assembly - pay attention to the error message.

1.4.6 *Engine advance warning* icon

- The yellow *Advance warning Engine* icon appears when the monitoring functions for the engine report an advance warning.

1.4.7 *Engine warning* icon

- The red *Warning Engine* icon appears when the monitoring functions for the engine report a warning. Under certain circumstances, the crane engine is forced to turn off.

LWE/LICCON1/918102-01-02/en

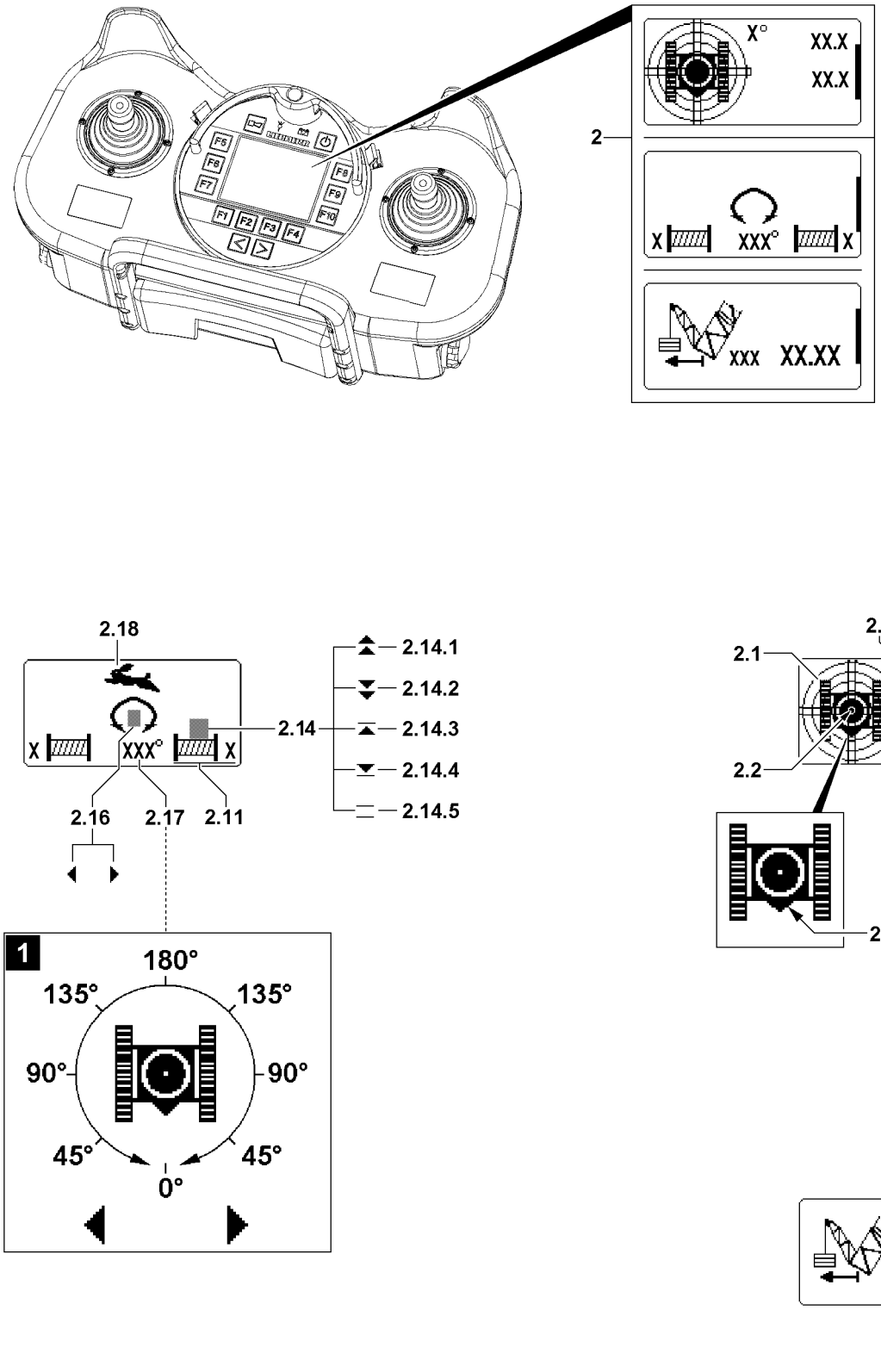


Fig.126890: Monitoring functions

LWE/LICCON1/918102-01-02/en

15.4.2 Monitoring functions

The monitoring functions **2** have an assigned area in the BTT display.

In the monitoring functions **2** appears, depending on the selected operating mode:

- Incline display
  - The incline of the crane in longitudinal and lateral direction is shown graphically and numerically in the *Incline display* icon.
- Winch display
  - In the *Winch display* icon, detailed information for winch 1/2, 3/4 or 5/6 and the slewing range is displayed.
- Derrick ballast boom radius
  - The radius for the derrick ballast is shown numerically in the *Derrick ballast boom radius* icon.

2 *Incline display* icon

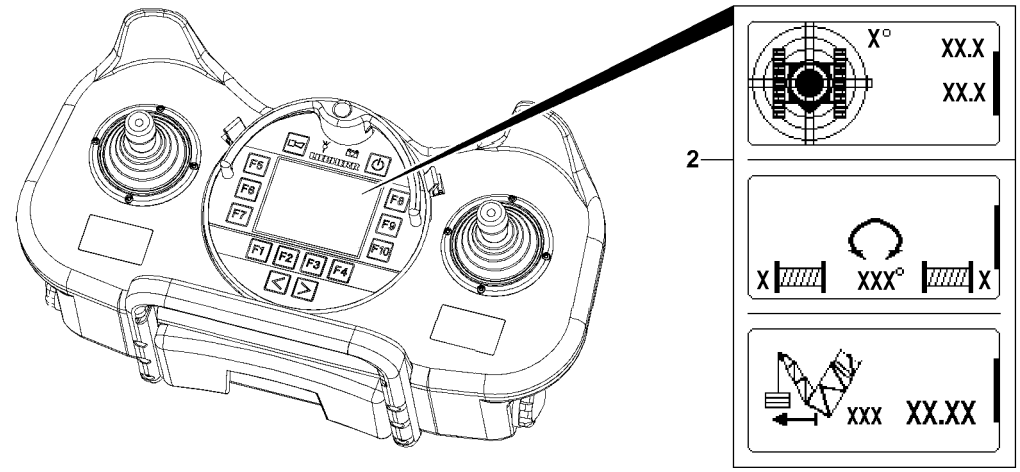
2.1 Graphic incline indicator
- Display of incline in graphic display.
- The graphic incline indicator **2.1** simulates a digital sight gauge. The dot **2.2** represents the bubble.
- The current crane incline and the incline direction is shown by the dot **2.2**.

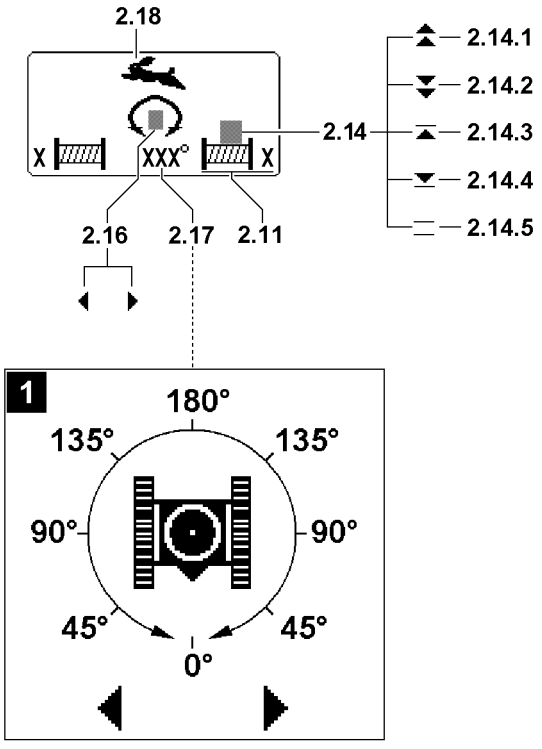
2.3 Resolution of the incline display
- Number value resolution in [°].
  This value describes the resolution of the graphic view. If the dot **2.2** reaches the outermost marking circle of the sight gauge, then the number value of the incline display resolution **2.3** is reached. The displayed marker circles divide the number value equally.
  If the incline is less than 1° in the lateral direction **and** in the longitudinal direction, the entire display encompasses the 1° range. If at least one value exceeds the 1° limit, it switches to the next larger range.
  The range change is automatic.

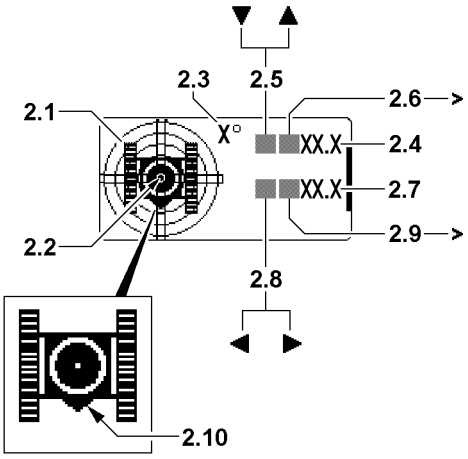
2.4 Incline in the longitudinal direction
- Numeric value of incline of crane in longitudinal direction.
- In [°].

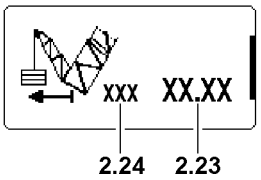
2.5 Longitudinal direction arrow
- Arrow shows the incline direction of the crane on longitudinal direction.

LWE/LICCON1/918102-01-02/en









LWE/LICCON1/918102-01-02/en

Fig.126890: Monitoring functions

2.6 *Larger than* icon
- Is displayed when the display range of the incline display is exceeded in longitudinal direction.
- **Note:** The crane is inclined further than can be shown.

2.7 Incline in the lateral direction
- Numeric value of incline of crane in lateral direction.
- In [°].

2.8 Lateral direction arrow
- Arrow shows the incline direction of the crane on lateral direction.

2.9 *Larger than* icon
- Is displayed when the display range of the incline display is exceeded in lateral direction.
- **Note:** The crane is inclined further than can be shown.

2.10 Directional triangle
- The directional triangle shows where the front side of the crawler travel gear is in the icon.
  Note: See section “Position of the crane: Crane control direction data”

Note

▶ The meaning of the icons for the winches is identical and is explained via the right icon half.

▶ For description of activation or deactivation of winches, see Crane operating instructions, chapter 4.01.

2.11 Winch icon
- Winch icon with winch number

2.14 Winch status field

2.14.1 Spool out (blinking)

2.14.2 Spool up (blinking)

2.14.3 Spooled out
- Spooling out is blocked

2.14.4 Spooled up
- Spooling up is blocked

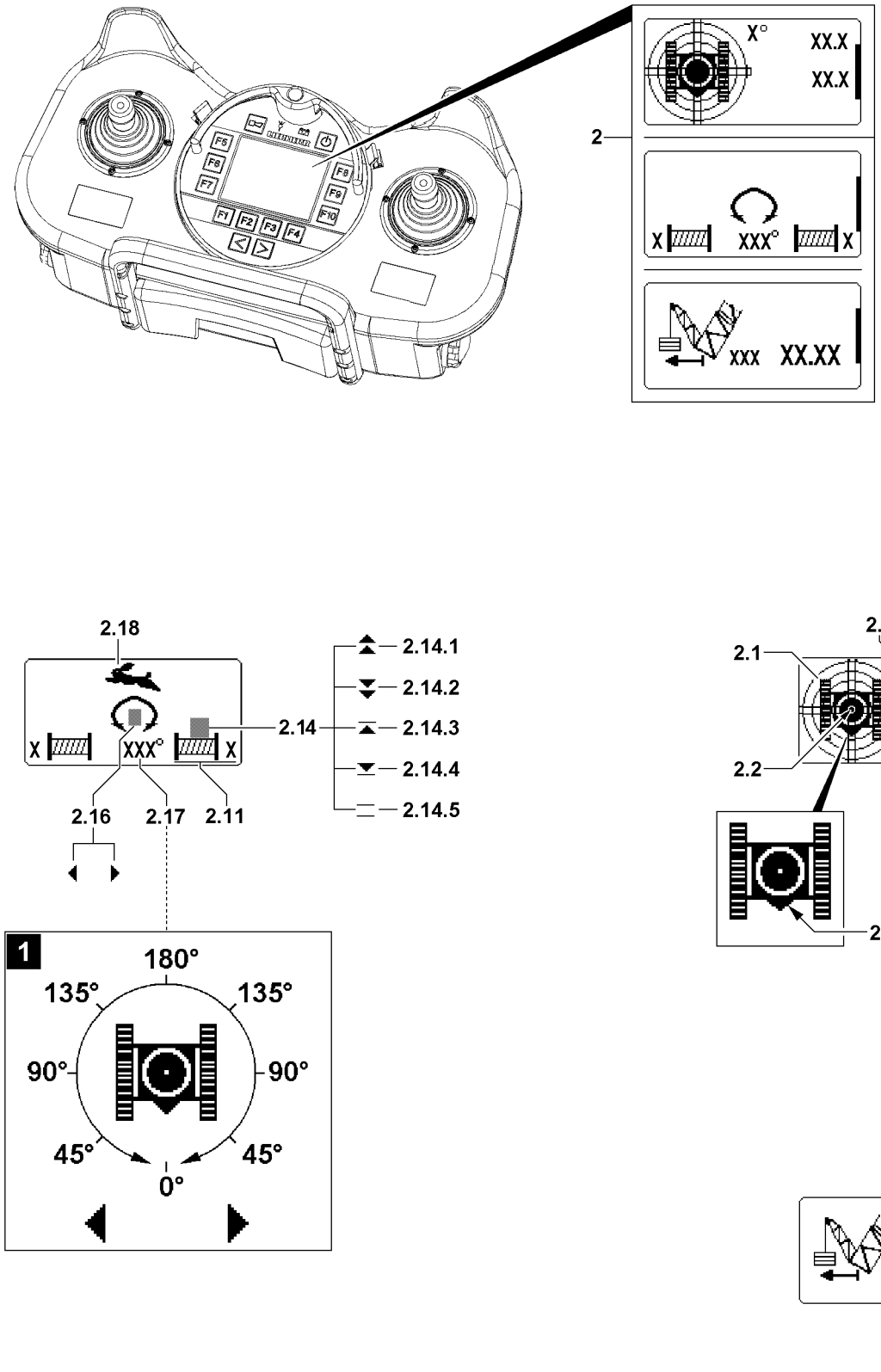


Fig.126890: Monitoring functions

LWE/LICCON1/918102-01-02/en

2.14.5 Winch status report
- Winch is deactivated or unplugged, or the turn sensor is defective or not present on the system bus.
- No winch movements possible.
- **Note**: If no winch status appears, the activated winch is inactive and is neither spooled up nor spooled out.

2.16 Direction of rotation

The arrow in front of the value indicates the direction of rotation of the crane superstructure:
- Arrow to the right: The crane superstructure is turned to the right.
- Arrow to the left: The crane superstructure is turned to the left.

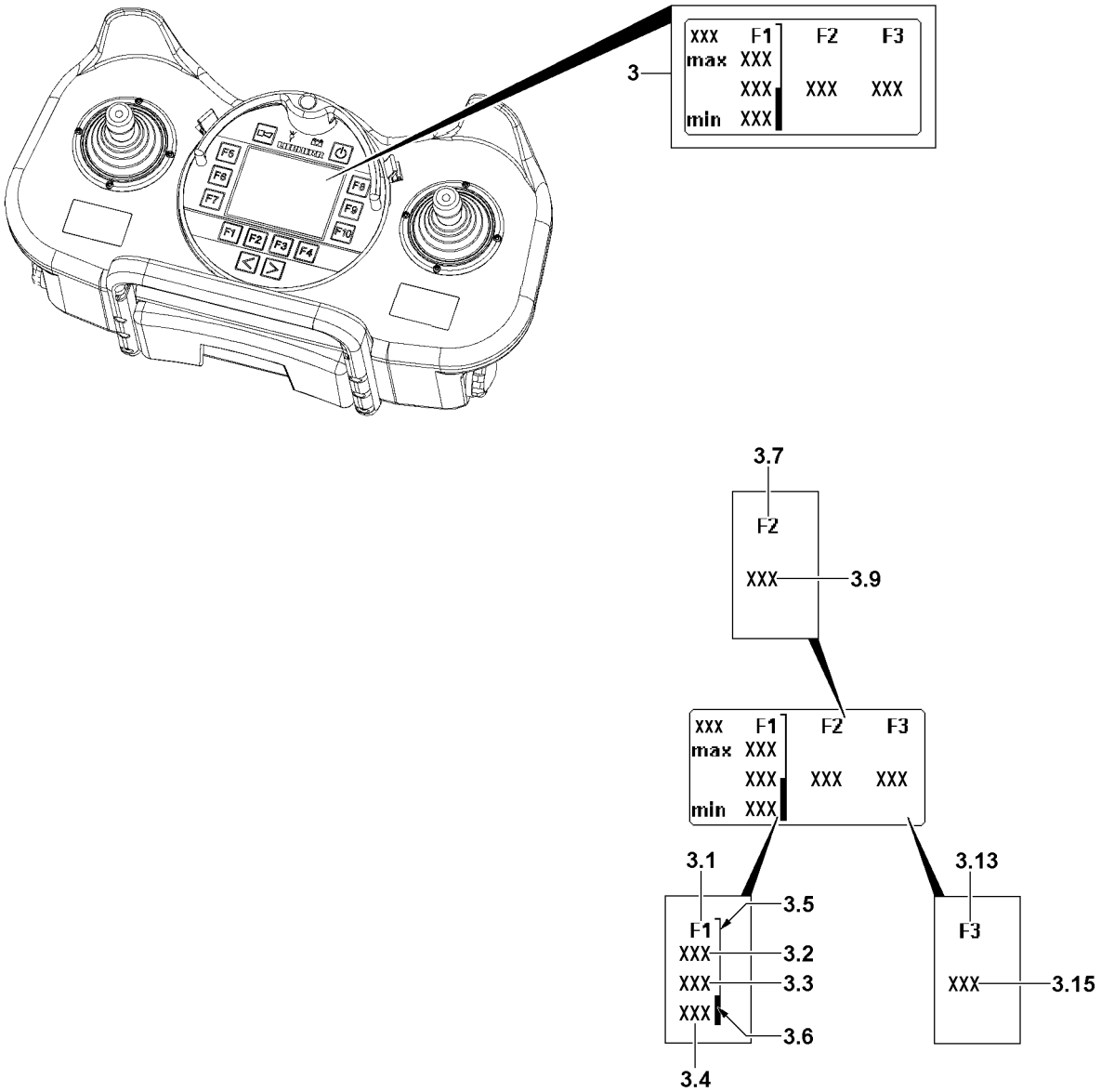
2.17 Slewing angle setting
- Current position of the crane superstructure in relation to the working direction *to the front* (0°).
  Increases to the maximum value of 180°, see illustration **1**.

2.18 Rapid gear
- The icon appears if rapid gear (Power plus) is enabled during a crane movement.
- This is possible for the following crane movements:
  - Spool up / spool out winch 1 - winch 6

2.23 Derrick boom boom radius
- Current derrick boom radius.

2.24 Boom radius measuring unit
- [m] or [ft]

LWE/LICCON1/918102-01-02/en



LWE/LICCON1/918102-01-02/en

Fig.149625: Additional information

15.4.3 Additional information

The supplementary information **3** has an assigned area in the BTT display.

In the supplementary information **3** appears, depending on the selected operating mode:

– F-load display
  • In the *F-load display* icon, the forces / loads of test points 1 to 3 (F1 to F3) are shown graphically and numerically.

3.1 F1-load display

3.2 F1-maximum
  • Maximum permissible force / load on test point 1.
  • **Note**: Appears only when a maximum force / load on test point 1 is reported.

3.3 F1-actual
  • Current F1-force / load on test point 1.
  • Value F1-actual is green: F1-actual is within the permissible range.
  • Value F1-actual is red: Warning F1-actual is within the impermissible range.

3.4 F1-minimum
  • Minimum permissible force / load on test point 1.
  • **Note**: Appears only when a minimum force / load on test point 1 is reported.

3.5 Utilization scale F1
  • The display value for the F1-load display is shown as a bar display.
    The upper end marks the maximum value.
    The lower end marks the minimum value / zero point.

3.6 Utilization bar F1
  • Appears in green and red, depending on the situation.
  • Utilization bar green: F1-actual is within the permissible range.
  • Utilization bar red: Warning F1-actual is within the impermissible range.

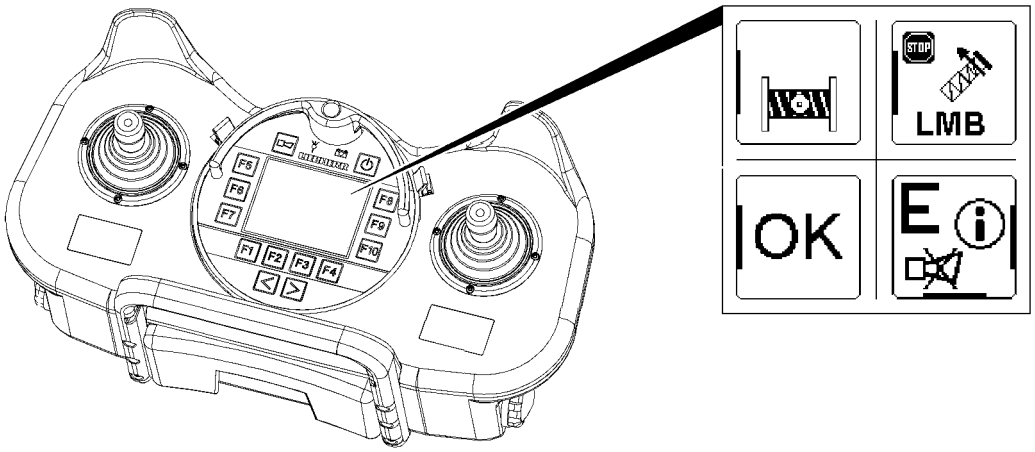
3.7 F2-load display
  • **Note**: Appears only when the force / load on test point 2 is reported.

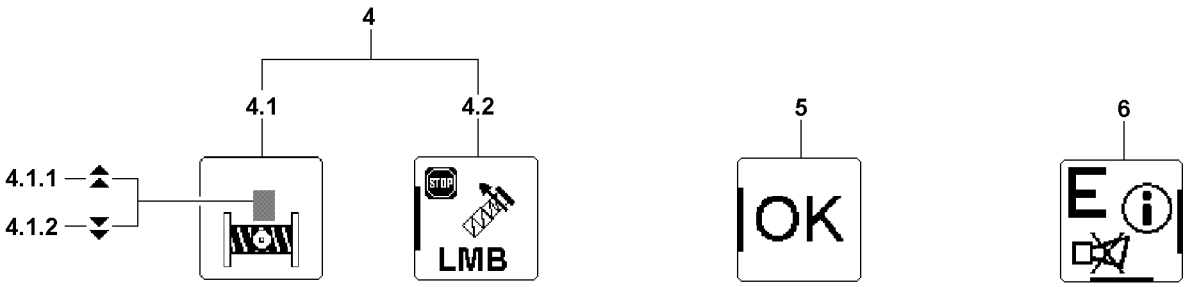
3.9 F2-actual
  • Current F2-force / load on test point 2.

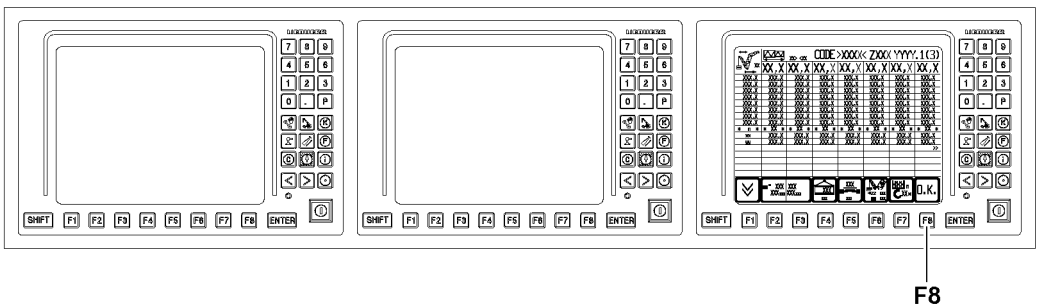
3.13 F3-load display
  • **Note**: Appears only when the force / load on test point 3 is reported.

3.15 F3-actual
  • Current F3-force / load on test point 3.

LWE/LICCON1/918102-01-02/en







LWE/LICCON1/918102-01-02/en

Fig.126891: Special function / Operating mode confirmation / set up configuration / test system

15.4.4 Special functions

The special functions **4** have an assigned area in the BTT display.

In the special functions **4** appears, depending on the selected operating mode:
- Assembly winch
  - The status of the assembly winch is shown in the *Assembly winch* icon.
- Luff in with suspended load
  - The *Luffing in with suspended load* icon is used to visualize the special function *Luffing in with suspended load*.

4.1 Assembly winch

4.1.1 Spools out (blinking)

4.1.2 Spools up (blinking)

4.2 Luff in with suspended load
- Special function *Luffing in with suspended load*

15.4.5 Operating mode confirmation / set up configuration

The Operating mode confirmation **5** has an assigned area in the BTT display.

WARNING
Incorrect set up configuration confirmed!
▶ The operating mode / set up configuration may only be confirmed on the BTT when the actual set up configuration of the crane and the entries and settings in the LICCON computer system correspond with the specifications in the crane documentation.

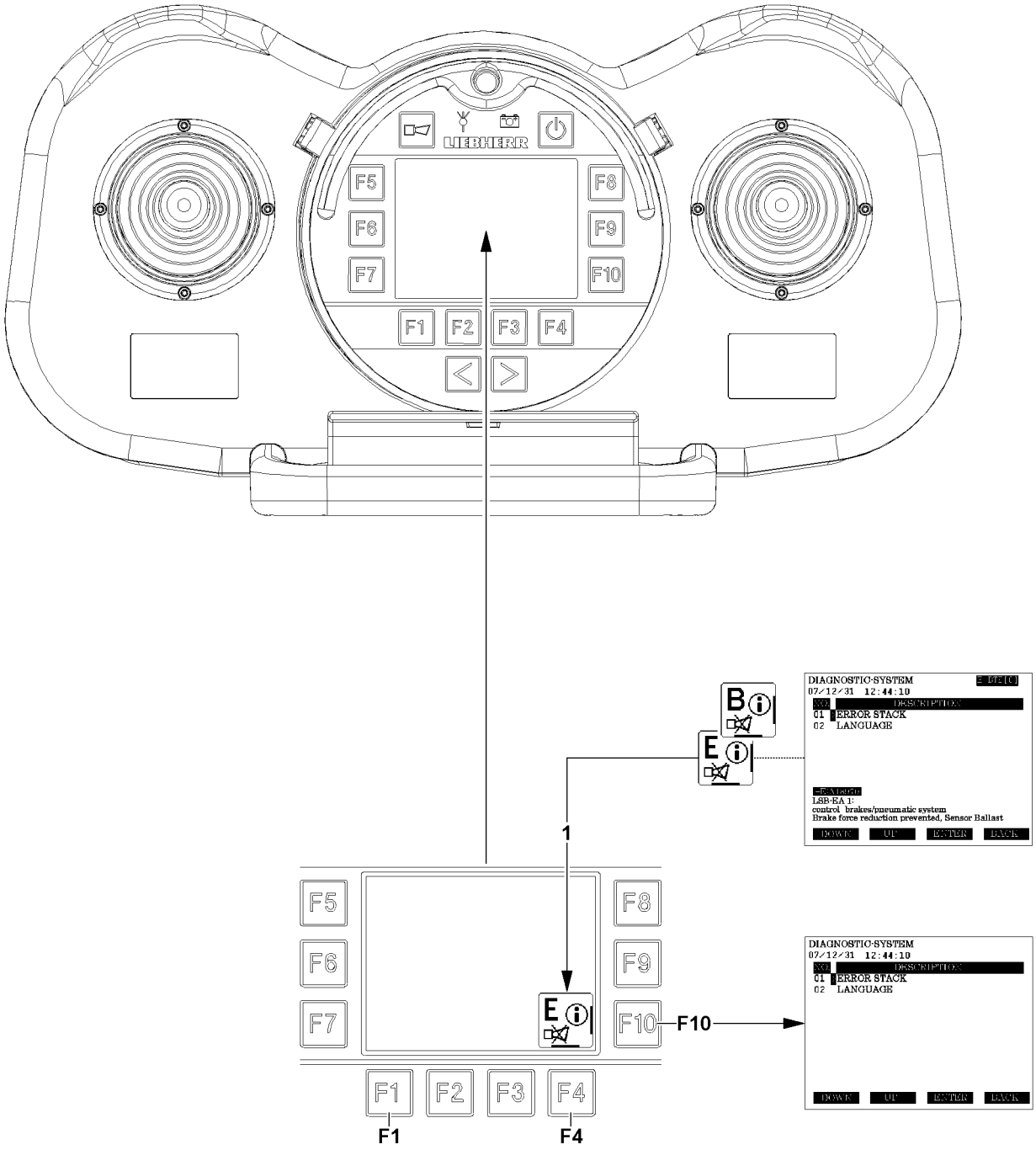
5 Operating mode confirmation
- The letters OK changes to:
  - **Orange, when** the set up configuration on the right LICCON monitor has been confirmed with the function key **F8**, but then no confirmation of the operating mode was made on the BTT with the function key **F7**.
    Note: No crane movement is possible via the radio remote control panel.
  - **Green, when** the set up configuration on the right LICCON monitor has been confirmed with the function key **F8**, and then a confirmation of the operating mode was made on the BTT with the function key **F7**.
    Note: Crane movements are possible via the radio remote control panel.

15.4.6 Test system

The *Test system* icon **6** has an assigned area on the BTT display.

6 Test system
- Notes regarding messages in the test system / error stack are shown, see section “Test system program”.

LWE/LICCON1/918102-01-02/en



LWE/LICCON1/918102-01-02/en

Fig.116729: Test system program

16 *Test system* program

If an error message is issued for the LICCON control:
- a „B“ or „E“ is shown in the information field **1**, see illustration
- an acoustic warning signal of the radio remote control is issued

16.1 Function keys in the *Test system* program

F1 Function key
- Return to selection overview

F4 Function key
- When a note for an error message appears and a horn is shown in the information field **1**:
  Press 1x: acoustic warning signal of the radio remote control, which can be shut off, is shut off in the case of operating / system errors

F10 Function key
- Call up operating level

16.2 Operating the test system

Note
▶ For a detailed description of the test system, see the Diagnostics Manual.

Turn the acoustic warning signal off:

▶ Press the function key **F4**.

Result:

– Acoustic warning signal of the radio remote control, which can be shut off in case of operating / system errors is shut off.

Call up the test system:

▶ Press function key **F10** again.

Result:

– Start page of test system is called up.

LWE/LICCON1/918102-01-02/en

17 *Locking the manual control lever direction of deflection* menu

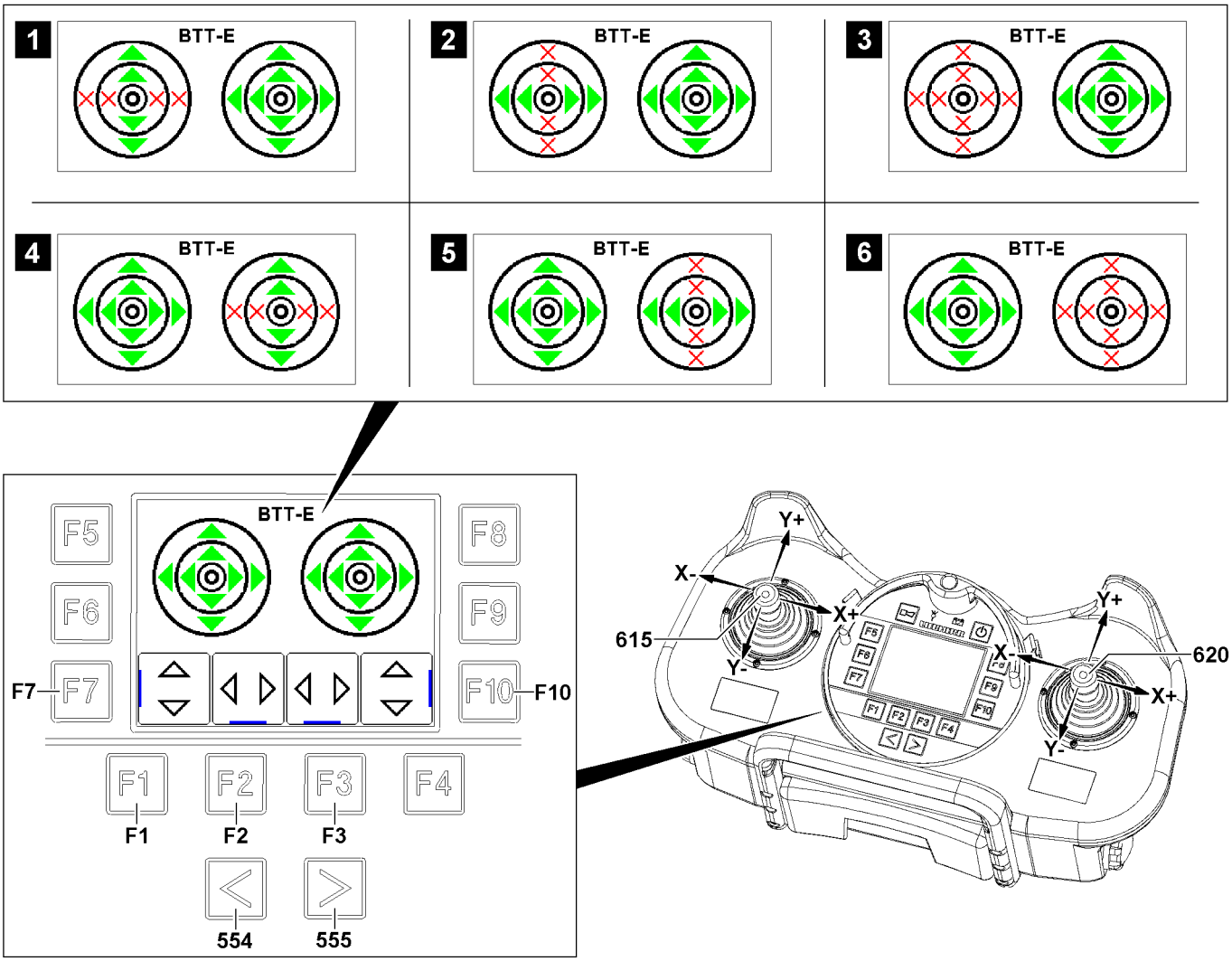


Fig.128624: Locking the manual control lever direction of deflection menu

In order to prevent accidental crane movements, all directions of deflection can be locked individually or combined in the *Locking the manual control lever direction of deflection* menu. As soon as a direction of deflection is locked, the assigned function is no longer carried out. If the manual control level is deflected in a blocked direction, the system automatically switches from the respective operating screen to the *Locking the manual control lever direction of deflection* menu.

Note

▶ The *Locking the manual control lever direction of deflection* menu can be called up from every operating screen, see the *radio operation* function overview.

17.1 Icons in the *Locking the manual control lever direction of deflection* menu

Note

▶ Selected examples are described for every manual control lever. Further combinations of locked and released directions of deflection of the manual control lever are possible.

LWE/LICCON1/918102-01-02/en

1 Illustration
- The manual control lever **615** is locked in direction **X**
- The manual control lever **615** is released / ready for operation in direction **Y**
- The manual control lever **620** is completely released / ready for operation

2 Illustration
- The manual control lever **615** is released / ready for operation in direction **X**
- The manual control lever **615** is locked in direction **Y**
- The manual control lever **620** is completely released / ready for operation

3 Illustration
- The manual control lever **615** is completely locked
- The manual control lever **620** is completely released / ready for operation

4 Illustration
- The manual control lever **615** is completely released / ready for operation
- The manual control lever **620** is locked in direction **X**
- The manual control lever **620** is released / ready for operation in direction **Y**

5 Illustration
- The manual control lever **615** is completely released / ready for operation
- The manual control lever **620** is released / ready for operation in direction **X**
- The manual control lever **620** is locked in direction **Y**

6 Illustration
- The manual control lever **615** is completely released / ready for operation
- The manual control lever **620** is completely locked

17.2 Function keys in the *Locking the manual control lever direction of deflection* menu

554 Change over key
- Call up the *Engine operation* menu

555 Change over key
- Call up last displayed operating screen

F1 Function key
- Back to the *Radio operation* menu overview

F2 Function key
- Manual control lever **615** in direction **X** lock / release

F3 Function key
- Manual control lever **620** in direction **X** lock / release

F7 Function key
- Manual control lever **615** in direction **Y** lock / release

F10 Function key
- Manual control lever **620** in direction **Y** lock / release

17.3 Locking / releasing the direction of deflection of the manual control lever

If the respective direction of deflection of the manual control lever is released:

Lock the manual control lever **615** in direction **X**:
▶ Press the function key **F2**.

Lock the manual control lever **615** in direction **Y**:
▶ Press the function key **F7**.

Lock the manual control lever **620** in direction **X**:
▶ Press the function key **F3**.

Lock the manual control lever **620** in direction **Y**:
▶ Press the function key **F10**.

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If the respective direction of deflection of the manual control lever is locked:

Unlock the Manual control lever **615** in direction **X**:
▶ Press the function key **F2**.

Unlock the Manual control lever **615** in direction **Y**:
▶ Press the function key **F7**.

Unlock the Manual control lever **620** in direction **X**:
▶ Press the function key **F3**.

Unlock the Manual control lever **620** in direction **Y**:
▶ Press the function key **F10**.

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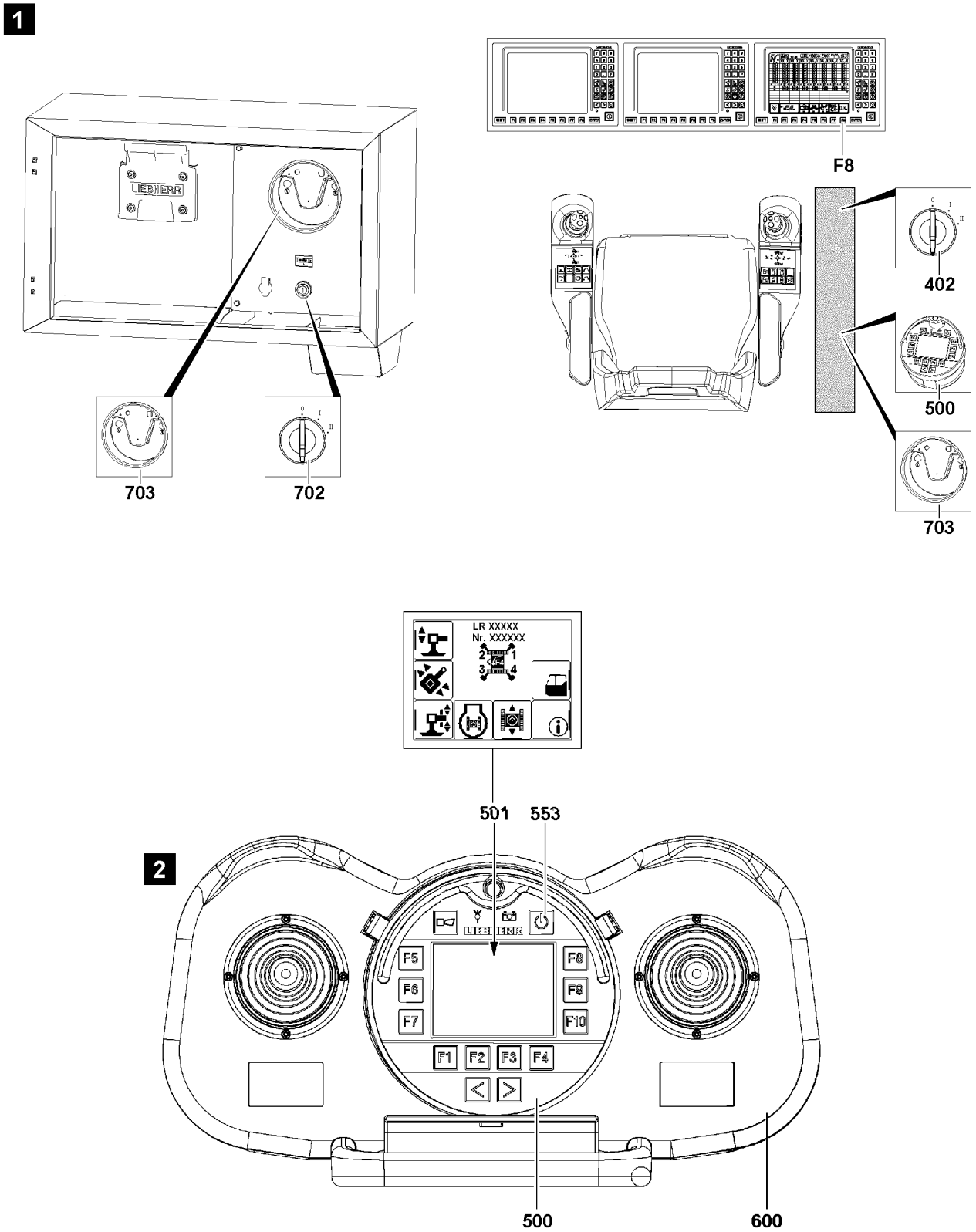

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Fig.126998: Activating the radio remote control

18 Starting up the radio remote control

Make sure that the following prerequisite is met:
– The specifications for crane start-up are observed and adhered to, see Crane operating instructions, chapter 4.03.

18.1 Activating the radio remote control

Make sure that the following prerequisite is met:
– The BTT **500** is in the charging console **703** (crane cab or control cabinet crawler center section), see illustration **1**.

▶ Turn the ignition switch **402** to position “I”.
or
Turn the ignition switch **702** to position “I”.

Result:

– The LICCON computer system is booting up.

As soon as the LICCON computer system has booted up:

▶ Enter the respective operating mode and the set up configuration on the right LICCON monitor and confirm with function key **F8**, see Crane operating instructions, chapter 4.02.

When the BTT **500** is turned off:
▶ Press the button **553**.

Result:

– The BTT **500** turns on.

▶ Pull the turned on BTT **500** from the charging console **703** and insert it into the radio remote control panel **600**.

Result:

– The start menu is shown on the BTT display **501**, see illustration **2**.
– The radio remote control is activated.

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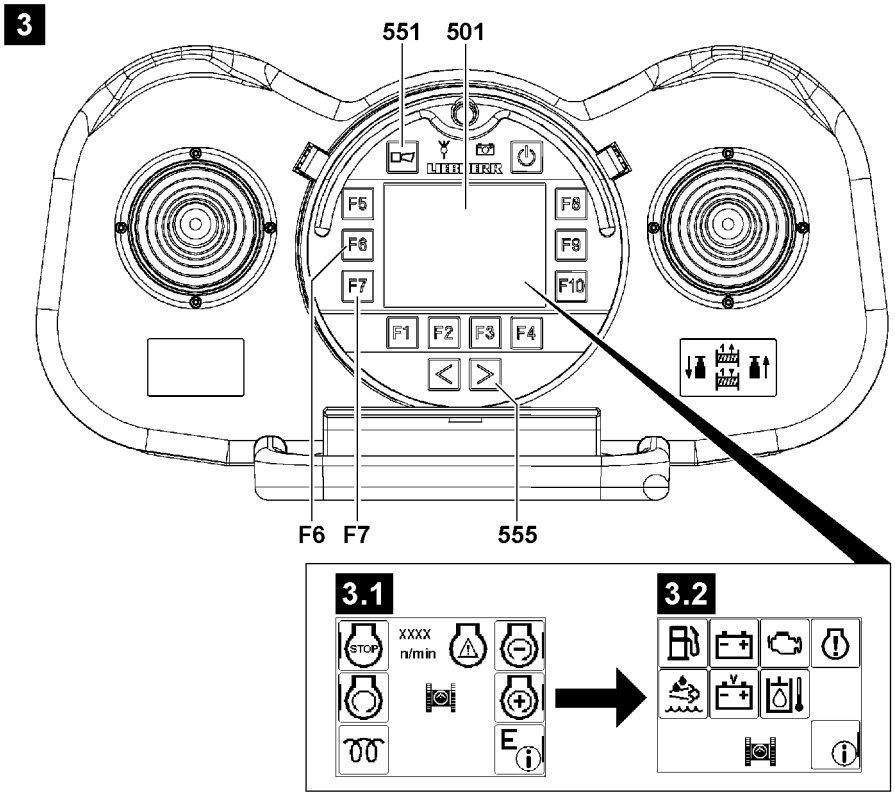

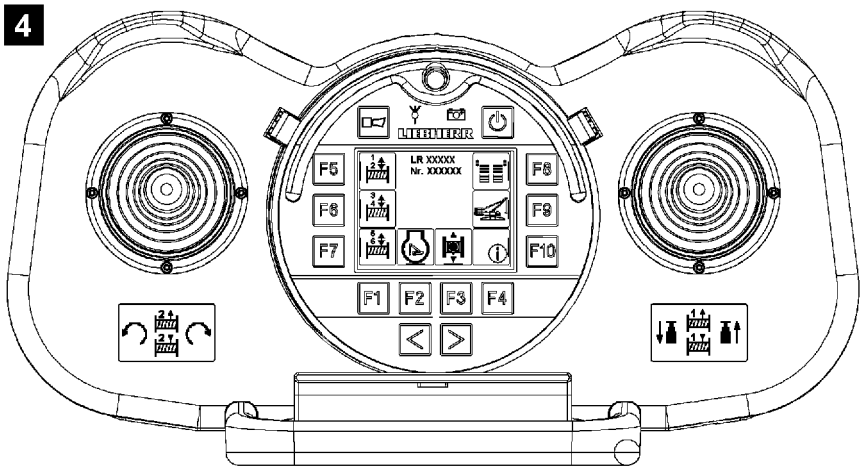

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Fig.127987: Starting the crane with the BTT

18.2 Starting the crane

18.2.1 Starting the crane with the BTT

Make sure that the following prerequisites are met:
- The LICCON computer system is running.
- The LICCON overload protection has been set according to the set up configuration.
- The steps described in section “Activating the radio remote control” have been carried out.

▶ Call up the *Engine operation* menu, see illustration **3.1**.

WARNING
Personnel in the danger zone!
Without a timely warning, personnel in the surrounding area of the crane can be taken by surprise.
▶ Prewarn persons within the surrounding area of the crane, for example by triggering a horn signal (acoustical signal horn **551**: **551**Press the button **551**).

When the icon on the function key **F6** has changed to purple and the preheat icon on the function key **F7** appears green:
▶ Press the function key **F6**.

Result:

– The crane engine starts.

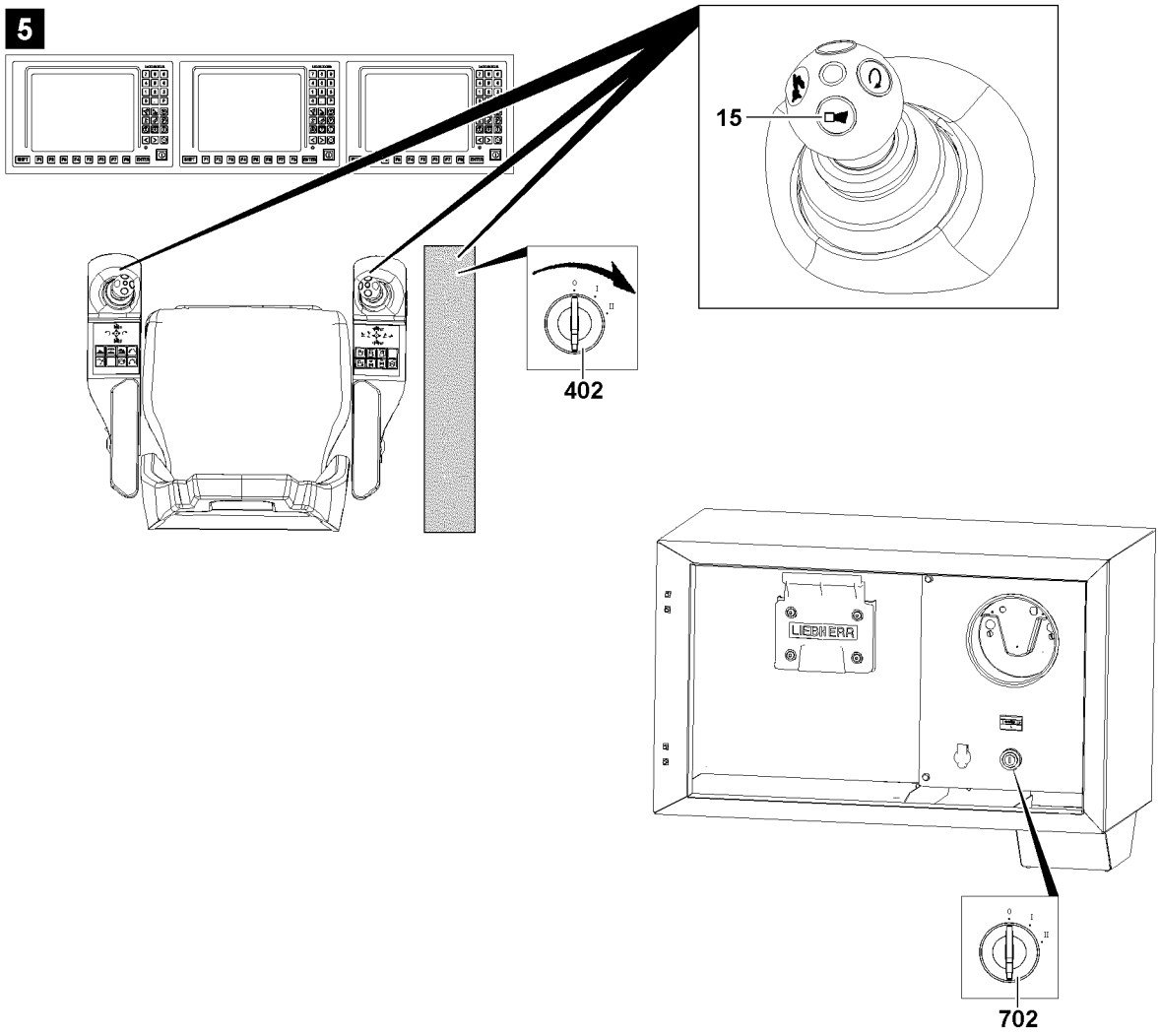
As soon as the crane engine is running:
▶ Actuate the changeover button **555**.

Result:

– The monitoring functions for the engine are shown, see illustration **3.2**.

▶ Check the monitoring functions for the engine, see section “Monitoring functions Engine”.

If the monitoring functions for the engine are OK:
▶ Call up the desired operating screen, see example illustration **4**.



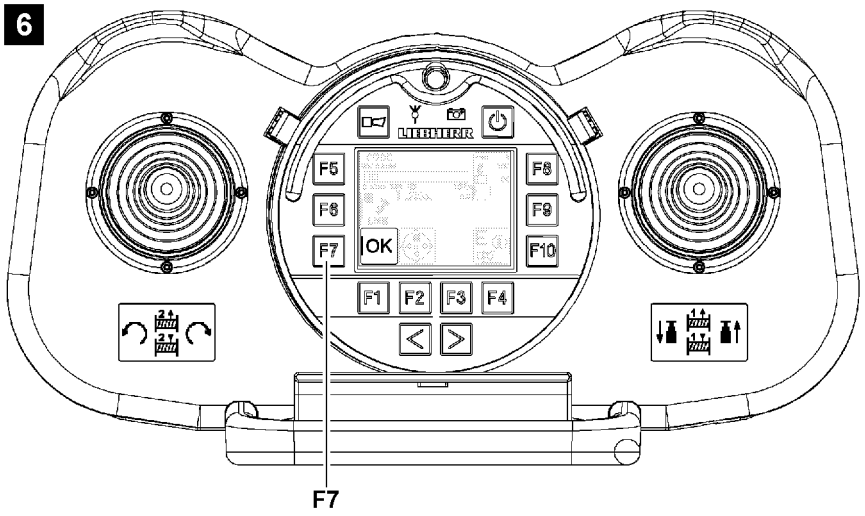


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Fig.126894: Starting the crane with the ignition switch / Confirming the operating mode / set up confi-

guration

18.2.2 Starting the crane with the ignition switch

Make sure that the following prerequisites are met:
– The steps described in section “Activating the radio remote control” have been carried out.
– The LICCON overload protection has been set according to the set up configuration.
– The crane engine is ready to start.

WARNING
Personnel in the danger zone!
Without a timely warning, personnel in the surrounding area of the crane can be taken by surprise.
▶ Prewarn persons within the surrounding area of the crane, for example via a horn signal (acoustical signal **15**: To activate the horn: Press the button **15**).

▶ Turn the ignition switch **402** to position “II”.
or
Turn the ignition switch **702** to position “II”.

Result:

– The crane engine is started.

As soon as the crane engine is running:
▶ Check the monitoring functions for the engine, see section “Monitoring functions Engine”.

18.3 Confirming the operating mode / set up configuration

Some operating screens require a separate confirmation of the operating mode / set up configuration to activate the crane movements via the radio remote control. This can be detected on the *OK* icon next to the function key **F7**.

WARNING
Incorrect set up configuration confirmed!
▶ The operating mode / set up configuration may only be confirmed on the BTT when the actual set up configuration of the crane and the entries and settings in the LICCON computer system correspond with the specifications in the crane documentation.

– The letters OK changes to:

- **Orange, when** the set up configuration on the LICCON monitor has been confirmed, but then no confirmation of the operating mode was made on the BTT with the function key **F7**.
- **Green, when** the set up configuration on the LICCON monitor has been confirmed, and then the operating mode was confirmed on the BTT with the function key **F7**.

The corresponding operating screen is called up:
▶ Press the function key **F7** on the BTT.

Result:

– The lettering in the *OK* icon on the function key **F7** changes from orange to green.
– Crane movements are possible via the radio remote control panel.

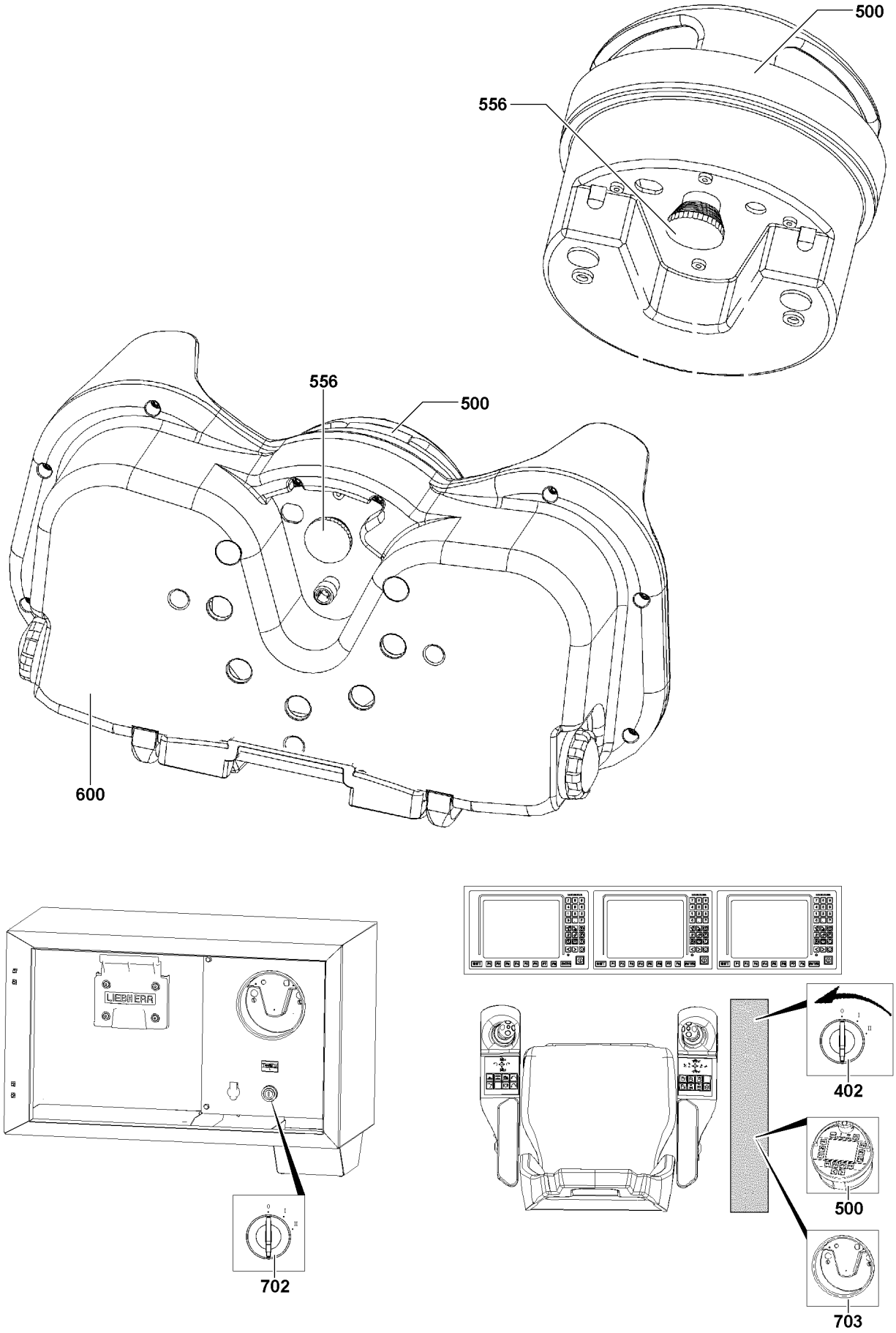

Fig.126895: Carrying out emergency stop in radio operation

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18.4 Carrying out emergency stop in radio operation

The emergency stop switch **556** is located on the rear of the BTT **500**.

The emergency stop switch **556** is also accessible if the BTT **500** is in the radio remote control panel **600**.

WARNING
Abrupt shut off of crane movement!
If an emergency stop is carried out, the crane movements are turned off abruptly and the crane engine is turned off after a short time.
The behavior of load and crane cannot be foreseen in such a case.
Personnel can be killed or seriously injured.
This could result in property damage.
- ▶ Carry out emergency stop only in emergency situations.
- ▶ Using the emergency stop switch other than in emergency situations is prohibited.

▶ Actuate the emergency stop switch **556**.

Result:

– Crane movements are turned off and the crane engine is turned off.

To be able to operate the crane after an emergency stop:

▶ Release the emergency stop switch **556**.
▶ Set the ignition switch **402** to the “0” position.
or
Set the ignition switch **702** to the “0” position.
▶ Remove the BTT **500** from the radio remote control panel **600** and plug it into the charging console **703**.

Result:

– The crane can be put into operation again, see section “Starting up the radio remote control”.

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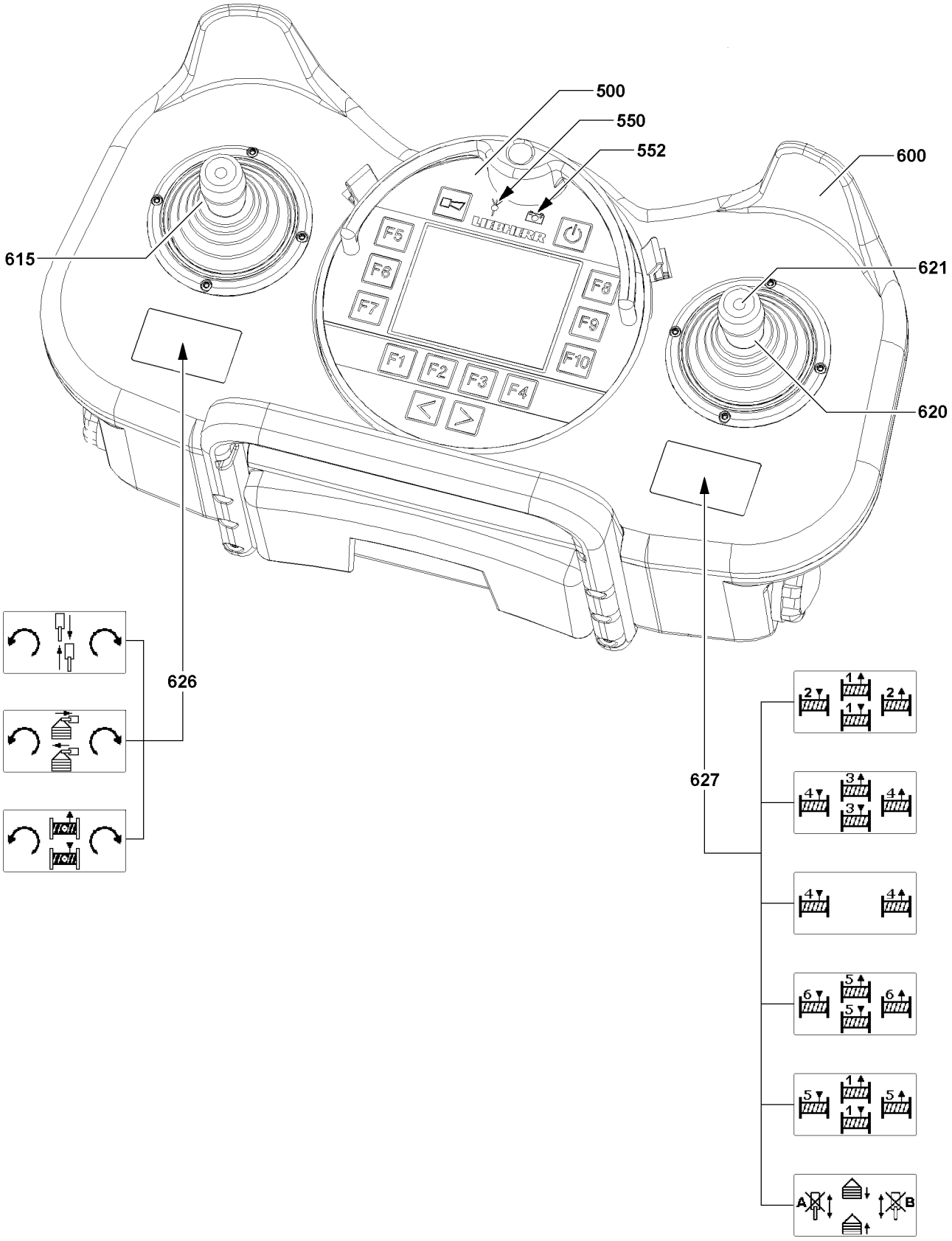

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Fig.149620: Assembly operation with radio remote control

19 Assembly operation with radio remote control

Make sure that the following prerequisites are met:
- If the crane is erected: the LICCON overload protection must be set in accordance with the future set up configuration of the completely erected, operational crane.
- If the crane is dismantled: the LICCON overload protection must remain set in accordance with the set up configuration of the erected and operational crane.
- If the crane is changed to another set up configuration: the LICCON overload protection must remain set in accordance with the set up configuration of the erected and operational crane until all crane components to be disassembled have been removed. As soon as crane components are installed again, the LICCON overload protection must be set in accordance with the future set up configuration of the completely erected, operational crane.
- The radio remote control is ready for operation.
- The crane operator must select a safe location from where the entire working area can be seen.
- The transmission quality of the transmission signal of the radio remote control is good, electric / electronic interfering signals and / or obstacles (such as walls) are not present.
- No personnel is in and on the crane.
- The crane cab is secured to prevent unauthorized access.

WARNING
Danger of accident!
Persons in the danger zone can be surprised by crane movements.
Personnel can be killed or severely injured.
▶ Before initiating a crane movement, make sure that there are no persons or obstacles within the danger zone of the crane.
▶ As a rule, always give a warning signal before initiating a crane movement.

WARNING
Danger of accident!
In assembly operation with the radio remote control, certain shut-offs are automatically bypassed.
▶ The LICCON overload protection must be set according to the specifications of the crane documentation.
▶ The order of the steps must be carried out according to the specifications of the crane documentation.

WARNING
Accidental crane movement!
Accidental crane movements can cause serious accidents.
By locking the manual control lever in time, accidental crane movements can be prevented.

If no crane movement must be performed:
▶ Lock the manual control lever, see section “Locking / releasing the manual control lever”.

As soon as there is danger that the manual control lever can be unintentionally moved:
▶ Lock the manual control lever.

WARNING
Adjustment of the LICCON overload protection by unauthorized personnel!
▶ Make sure that the LICCON overload protection cannot be adjusted by unauthorized personnel during assembly operation with radio remote control.

WARNING
Crane erected inclined!
▶ Unless other specifications are present in the crane documentation, the crane may be inclined maximum 0.3°.

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WARNING
Transmission signal is lost!
If the transmission signal between the radio remote control and the crane is lost, then the crane movements are turned off abruptly and uncontrolled and the actuated crane engine is turned off after a short time.
The behavior of load and crane cannot be foreseen in such a case.
This could result in accidents.
Personnel can be killed or seriously injured.
This could result in property damage.
- ▶ Monitor the indicator light *Transmission signal* **550** for the transmission signal between the radio remote control and the crane.
- ▶ Select the placement location in such a way that the indicator light *Transmission signal* **550** always lights up green.
- ▶ Bypass the radio condition if there are signs of a transmission signal problem, see section “Measures in case of problems”.
- ▶ Monitor the indicator light *Rechargeable battery* **552** for the charge condition of the radio remote control.

Continuously check the following indicator lights:
- Indicator light *Transmission signal* **550** must light up green
- Indicator light *Rechargeable battery* **552** may not light up red

- The function assignment of the manual control lever **615** depends on the set up configuration. The operating screen and the active manual control lever assignment. The function assignment of the manual control lever **615** is shown in the graphic display **626**.
- The function assignment of the manual control lever **620** depends on the set up configuration. The operating screen and the active manual control lever assignment. The function assignment of the manual control lever **620** is shown in the graphic display **627**.
- The speed of the crane movement is controlled via the degree of deflection of the manual control lever **615** and manual control lever **620**.
- If rapid gear (Power plus) crane operation is available, then it can be activated by pressing the button **621** on the manual control lever **620** once.

Note
Rapid gear (Power plus)
- ▶ By pressing the button **621** the rapid gear (power plus) can be switched on / off for individual crane operations.

The effectiveness of the rapid gear (Power plus) function depends on the setting in the Control parameter program, see Crane operating instructions chapter 4.02.
- ▶ If a smaller value is set for the maximum speed, then the rapid gear (Power plus) function is accordingly low.

19.1 Locking / releasing the manual control lever

Note
- ▶ The manual control lever can be locked by cancelling the confirmation of the operating mode.
- ▶ Alternatively, individual directions of deflection of the manual control level can be locked, see section “Locking the manual control lever direction of deflection menu”.

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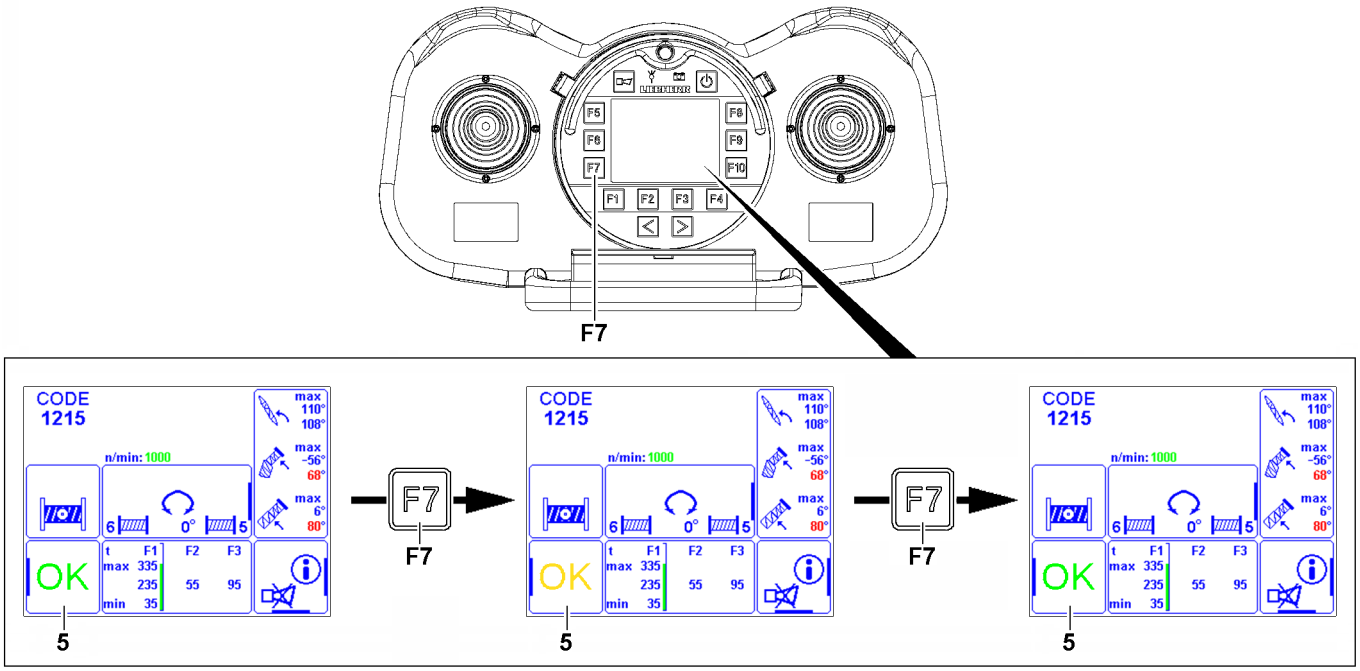

Fig.126992: Example of locking / releasing the manual control lever

WARNING
Accidental crane movement!
Accidental crane movements can cause serious accidents.
By locking the manual control lever in time, accidental crane movements can be prevented.

If no crane movement must be performed:
▶ Lock the manual control lever.

As soon as there is danger that the manual control lever can be unintentionally moved:
▶ Lock the manual control lever.

Unintended crane movements can be prevented in two ways:
– Call up a menu level in which the manual control lever does not have an assigned function
– If the *Operating mode confirmation* icon **5** appears: The manual control levers can be locked.

19.1.1 Locking the manual control lever

If the manual control levers are to be locked:
▶ Press the function key **F7** until the *Operating mode confirmation* icon **5** turns yellow.

19.1.2 Releasing the manual control lever

WARNING
Unchecked set up configuration confirmed!
Releasing the manual control lever takes place by confirming the operating mode, see section “Operating mode / set up configuration confirmation”
▶ The manual control lever may only be released when the actual set up configuration of the crane and the entries and settings in the LICCON computer system correspond with the specifications in the crane documentation.

If the manual control levers are to be released again:
▶ Press the function key **F7** until the *Operating mode confirmation* icon **5** turns green again.

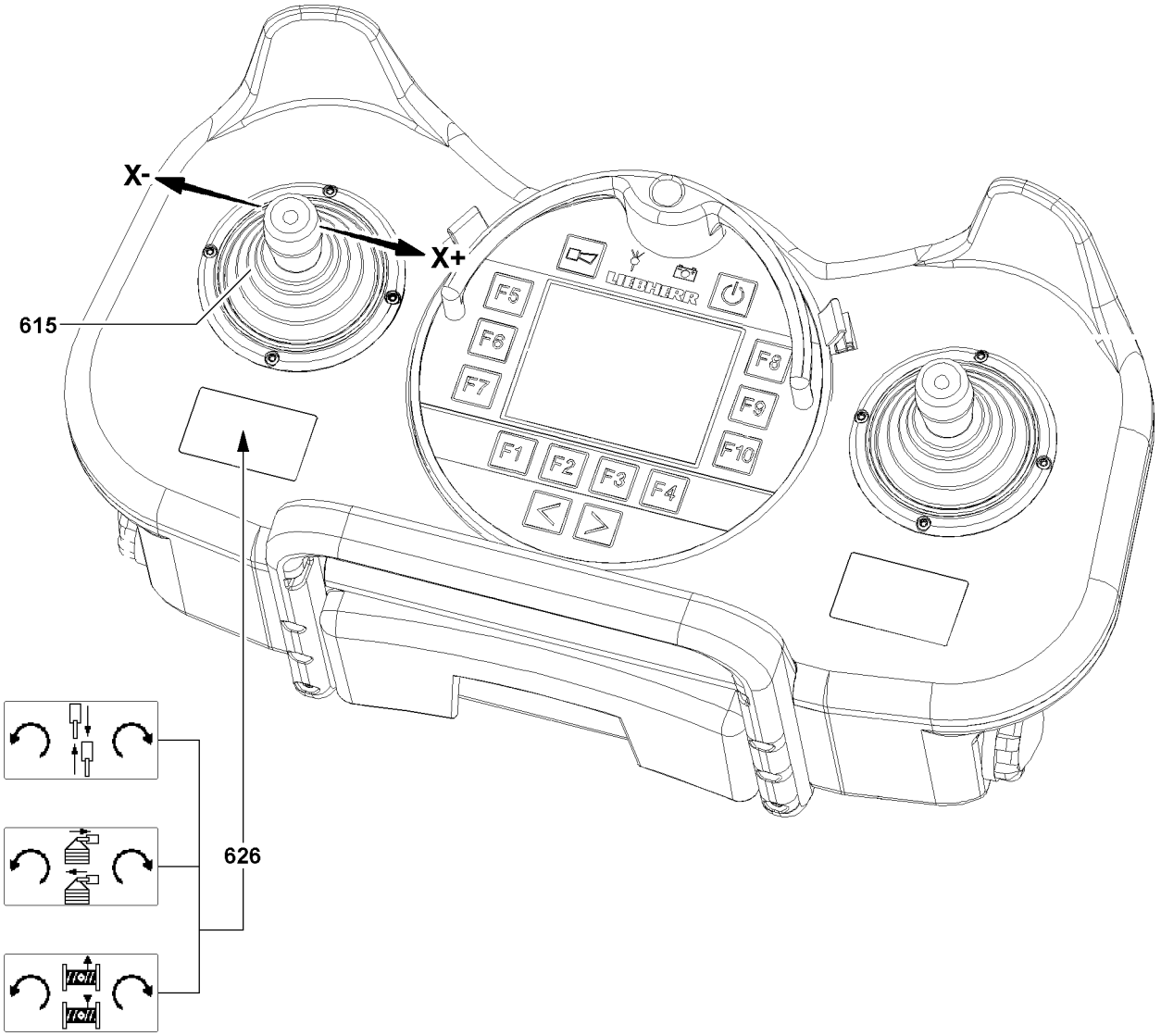

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Fig.126897: Crane movement Turning the crane superstructure

19.2 Turning the crane superstructure

WARNING
Slewing speed of crane superstructure too high!
Loads could swing.
The boom system of the crane can swing up.
Toppling crane, failure of crane structure.
Death, severe bodily injuries, property damage.
- ▶ Adhere to the permissible slewing speed in the crane documentation.
- ▶ When selecting the slewing speed, take the actual operating conditions also into account.
- ▶ Longer boom and larger load: Operate the crane with a lower slewing speed.
- ▶ Initiate and slow down a turning movement extremely sensitively.

WARNING
Persons or obstacles within the danger zone!
If there are any persons or obstacles on the crane chassis during turning or in any other danger zone of the crane, then these persons can be killed or severely injured.
- ▶ It is prohibited for personnel to remain in the danger zone.
- ▶ Make sure that there are no obstacles within the working area of the crane.
- ▶ Give a short warning signal before starting a crane movement.

Make sure that the following prerequisites are met:
- The maximum permissible slewing speed is set in the LICCON computer system, see the Crane operating instructions, chapter 4.02.
- The graphic display **626** of manual control lever **615** shows the function assignment *turn crane superstructure*, see illustration.

▶ Move the manual control lever **615** in direction **X+** (to the right).

Result:

– The crane superstructure turns to the right (in clockwise direction).

▶ Move the manual control lever **615** in direction **X-** (to the left).

Result:

– The crane superstructure turns to the left (in counterclockwise direction).

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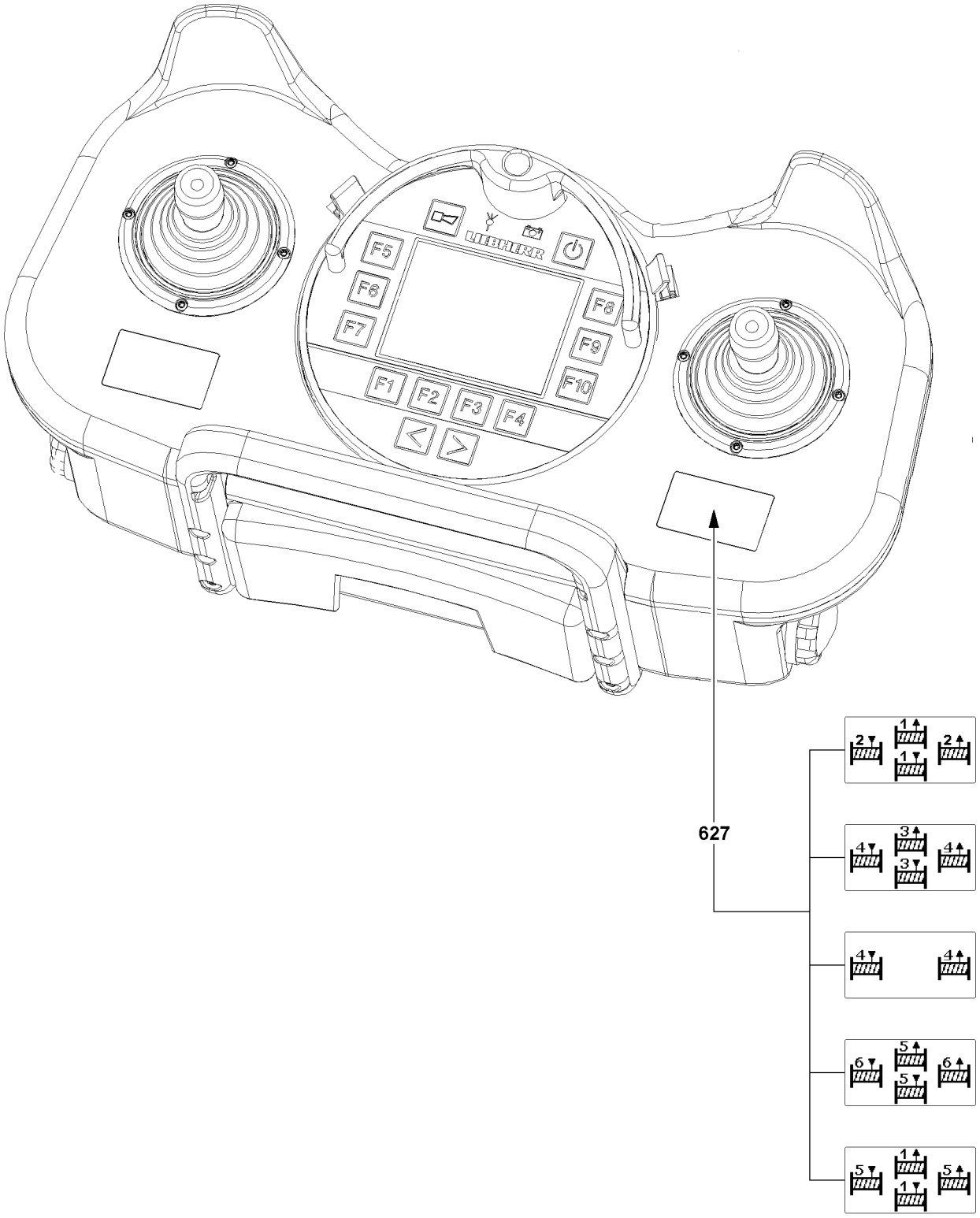

Fig.149621: Crane movement Spooling the winches up / out

19.3 Spooling the winches up / out

– The winch number of the controllable winch is shown on the graphic display **627**.

WARNING
Impermissible crane movements!
Only assembly tasks according to the crane documentation are permitted via the radio remote control.
Lifting the hook block via the radio remote control is prohibited.
Lifting the derrick ballast via the radio remote control is prohibited.
This could result in serious accidents.
▶ Carry out exclusively permissible assembly tasks with the radio remote control.

WARNING
Overload of crane!
When picking up a load on a hook by means of a luffing movement of the boom, the crane can be overloaded.
This could result in serious accidents.
▶ Taking up a load via a luffing movement is prohibited.

NOTICE
Danger of collision within the boom system!
If individual angles of the boom system are adjusted, then this can have an influence on the entire boom system. For example, the hook (load hook / hook block) can be pulled closer to the pulley head.
▶ Always monitor the boom system as a whole for collisions.

NOTICE
Danger of rope damage!
Due to slack rope formation, the rope of a winch can be damaged significantly.
▶ When spooling the rope up or out, always make sure that it is tensioned sufficiently.
▶ When spooling an untensioned rope up / out, be especially cautious to avoid any damage.

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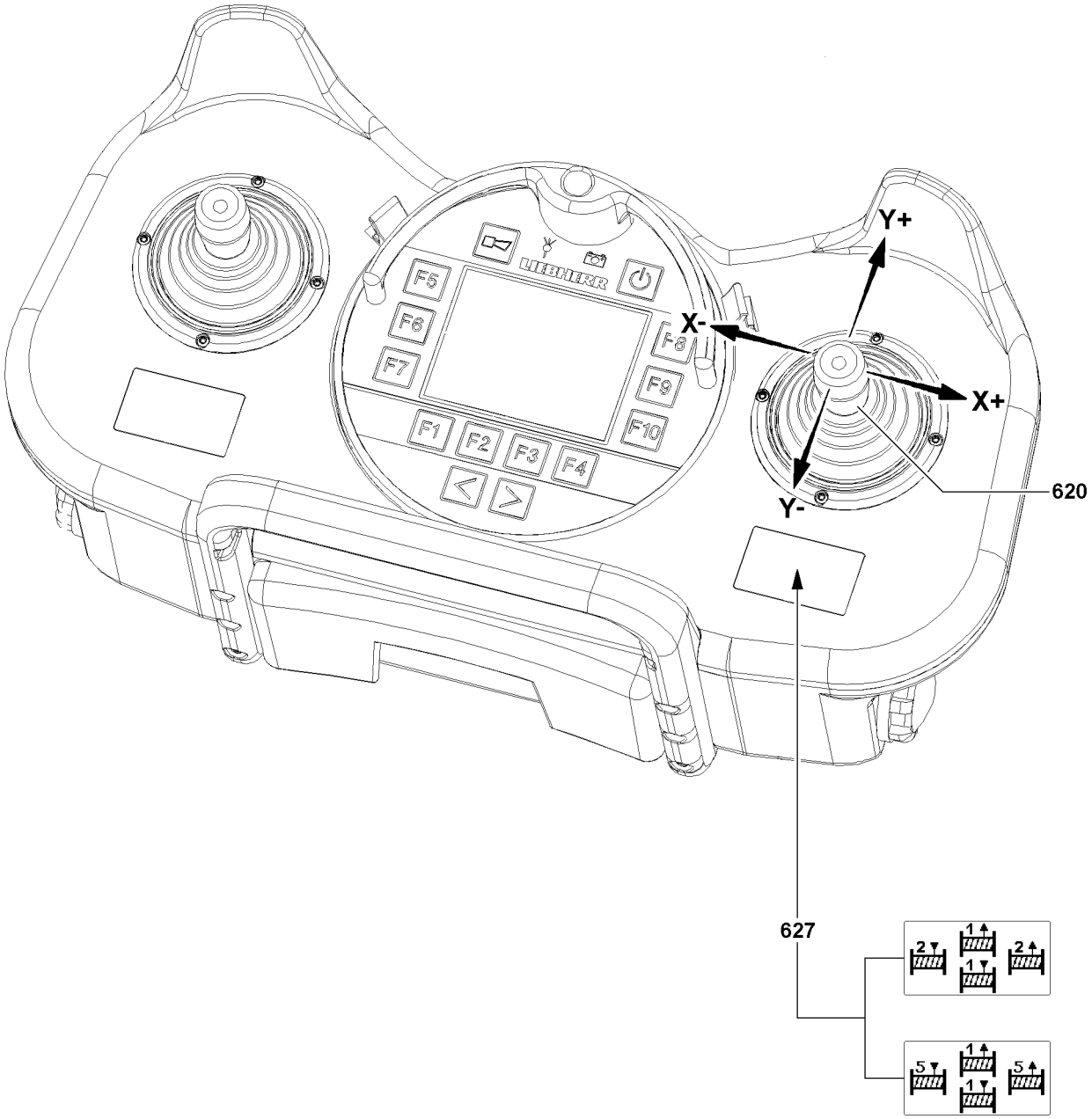

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Fig.149622: Crane movement Spooling winch 1 and winch 2 up / out

19.3.1 Spooling winch 1 up / out

Make sure that the following prerequisite is met:
- The graphic display **627** of manual control lever **620** shows the function assignment *spool winch 1 up / out*, see illustration.

▶ Move the manual control lever **620** in direction **Y+** (to the front).

Result:

– Winch 1 spools out.

▶ Move the manual control lever **620** in direction **Y-** (to the rear).

Result:

– Winch 1 spools up.

19.3.2 Spooling winch 2 up / out

Make sure that the following prerequisite is met:
- The graphic display **627** of manual control lever **620** shows the function assignment *spool winch 2 up / out*, see illustration.

▶ Move the manual control lever **620** in direction **X+** (to the right).

Result:

– Winch 2 spools out.

▶ Move the manual control lever **620** in direction **X-** (to the left).

Result:

– Winch 2 spools up.

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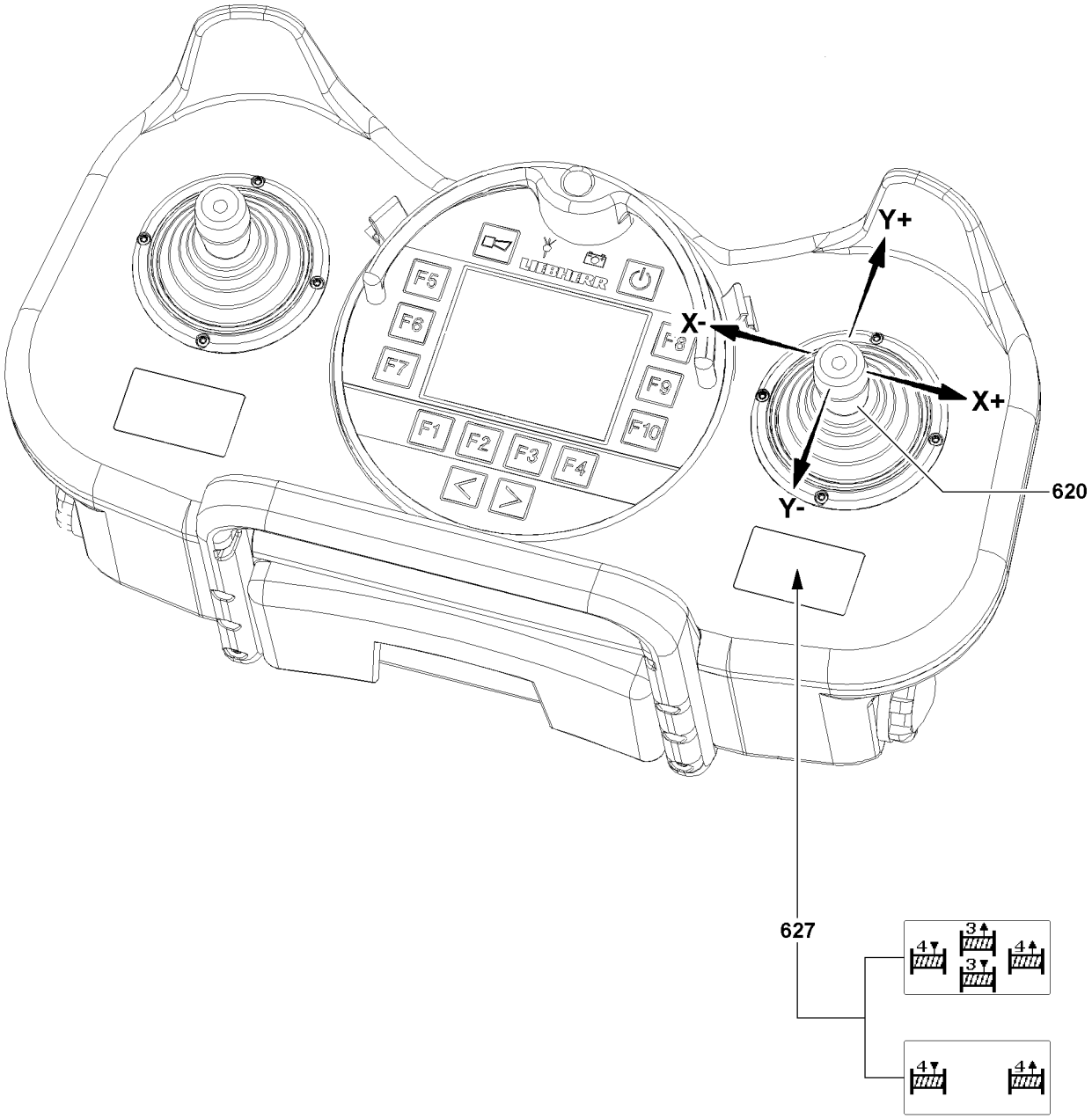

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Fig.126899: Crane movement Spooling winch 3 and winch 4 up / out

19.3.3 Spooling winch 3 up / out

Make sure that the following prerequisite is met:
- The graphic display **627** of manual control lever **620** shows the function assignment *spool winch 3 up / out*, see illustration.

▶ Move the manual control lever **620** in direction **Y+** (to the front).

Result:

– Winch 3 spools out.

▶ Move the manual control lever **620** in direction **Y-** (to the rear).

Result:

– Winch 3 spools up.

19.3.4 Spooling winch 4 up / out

Make sure that the following prerequisite is met:
- The graphic display **627** of manual control lever **620** shows the function assignment *spool winch 4 up / out*, see illustration.

▶ Move the manual control lever **620** in direction **X+** (to the right).

Result:

– Winch 4 spools out.

▶ Move the manual control lever **620** in direction **X-** (to the left).

Result:

– Winch 4 spools up.

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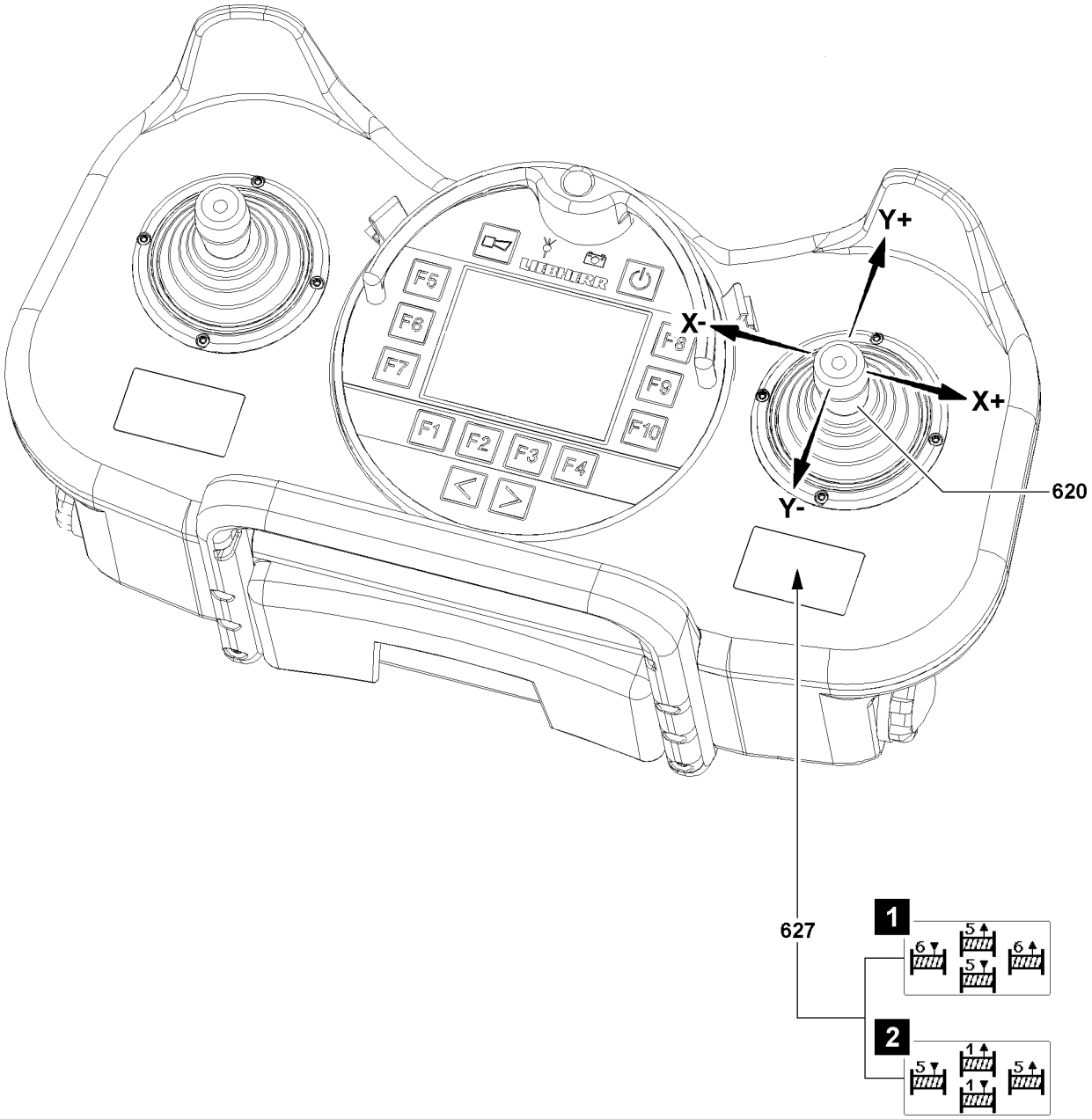

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Fig.149623: Spooling winch 5 up / out crane movement

19.3.5 Spooling winch 5 up / out

Note
The correct direction of deflection of the manual control lever **620** in order to spool winch 5 up / out depends on the selected operating screen.
▶ Observe the display on the graphic display **627**.

Make sure that the following prerequisite is met:
– The graphic display **627** of manual control lever **620** shows the function assignment *spool winch 5 up / out*, see illustration.

Manual control lever function assignment according to illustration **1**:
▶ Move the manual control lever **620** in direction **Y+** (to the front).

Result:

– Winch 5 spools out.

Manual control lever function assignment according to illustration **1**:
▶ Move the manual control lever **620** in direction **Y-** (to the rear).

Result:

– Winch 5 spools up.

Manual control lever function assignment according to illustration **2**:
▶ Move the manual control lever **620** in direction **X+** (to the right).

Result:

– Winch 5 spools out.

Manual control lever function assignment according to illustration **2**:
▶ Move the manual control lever **620** in direction **X-** (to the left).

Result:

– Winch 5 spools up.

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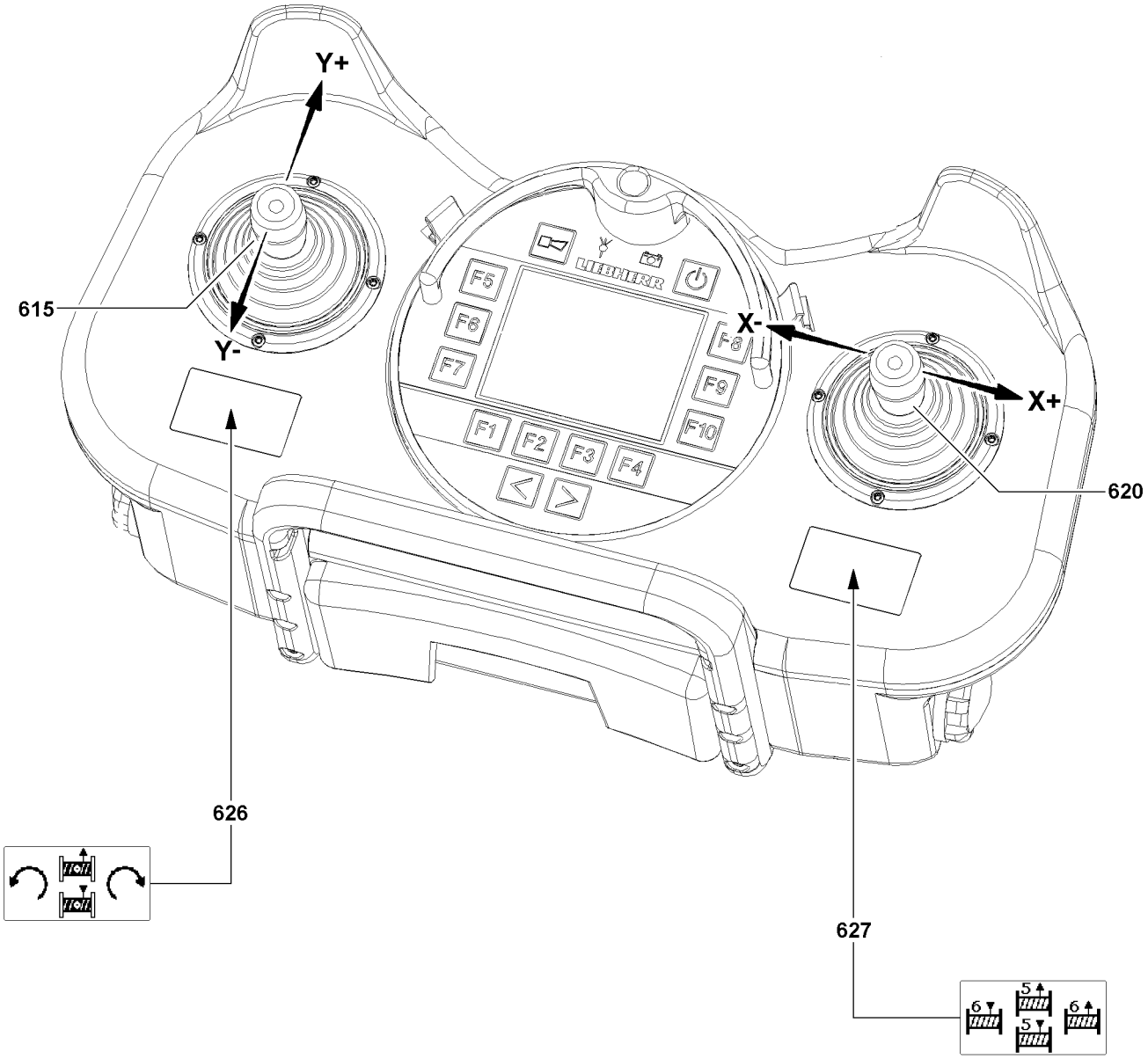

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Fig.149624: Spooling winch 6 and assembly winch up / out crane movement

19.3.6 Spooling winch 6 up / out

Make sure that the following prerequisite is met:
- The graphic display **627** of manual control lever **620** shows the function assignment *spool winch 6 up / out*, see illustration.

▶ Move the manual control lever **620** in direction **X+** (to the right).

Result:

– Winch 6 spools out.

▶ Move the manual control lever **620** in direction **X-** (to the left).

Result:

– Winch 6 spools up.

19.3.7 Spooling the assembly winch up / out

Make sure that the following prerequisite is met:
- The graphic display **626** of manual control lever **615** shows the function assignment *spool assembly winch up / out*, see illustration.

▶ Move the manual control lever **615** in direction **Y+** (to the front).

Result:

– The assembly winch spools out.

▶ Move the manual control lever **615** in direction **Y-** (to the rear).

Result:

– The assembly winch spools up.

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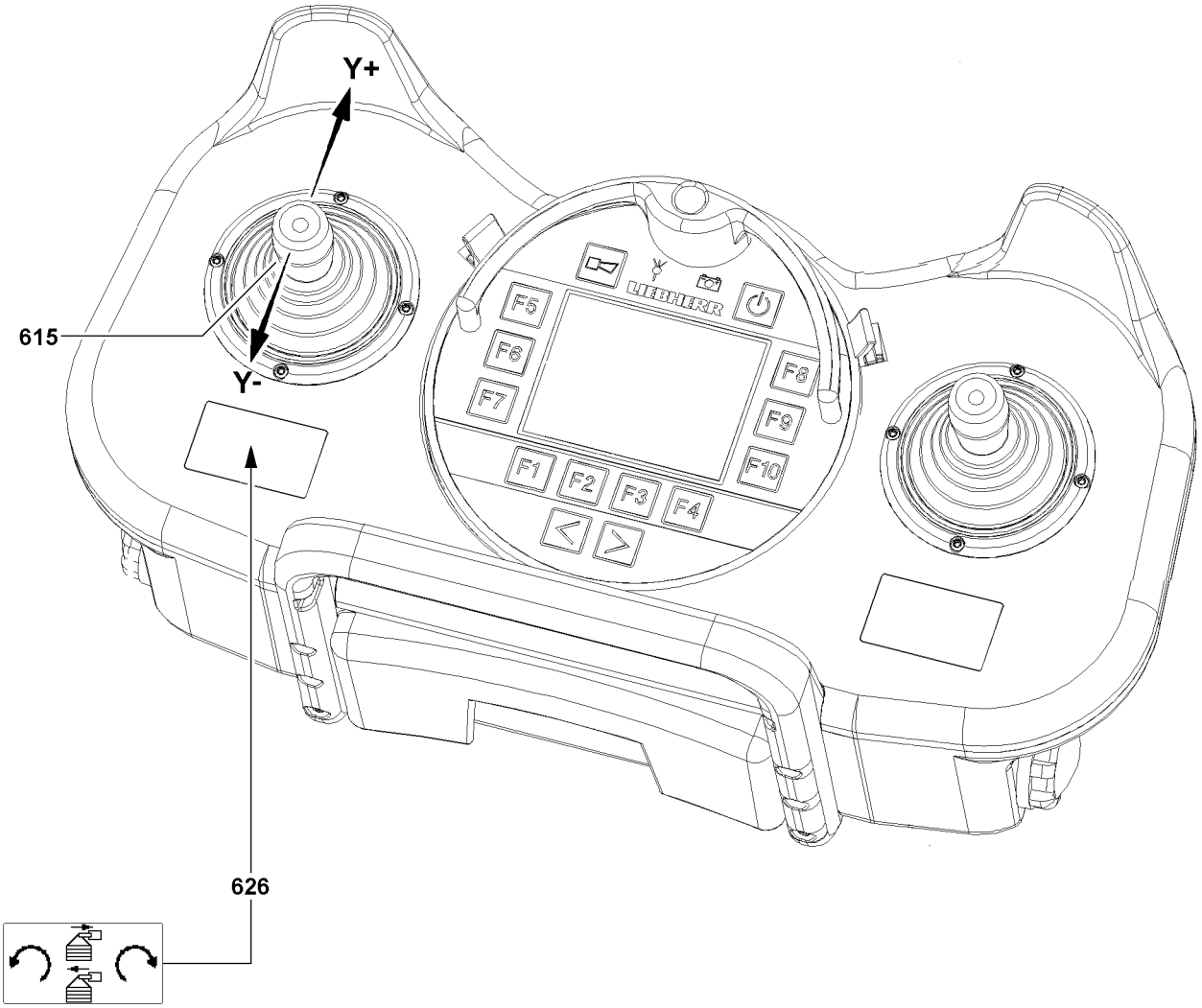

LWE/LICCON1/918102-01-02/en

Fig.149633: Extending / retracting the derrick ballast guide crane movement

19.4 Extending / retracting the derrick ballast guide

Make sure that the following prerequisites are met:
- The graphic display **626** of manual control lever **615** shows the *Extending / retracting the derrick ballast guide* function assignment, see illustration.
- The derrick ballast guide (suspended ballast or ballast trailer) is correctly installed and connected

▶ Move the manual control lever **615** in direction **Y+** (to the front).

Result:

– The derrick ballast guide retracts.

▶ Move the manual control lever **615** in direction **Y-** (to the rear).

Result:

– The derrick ballast guide extends.

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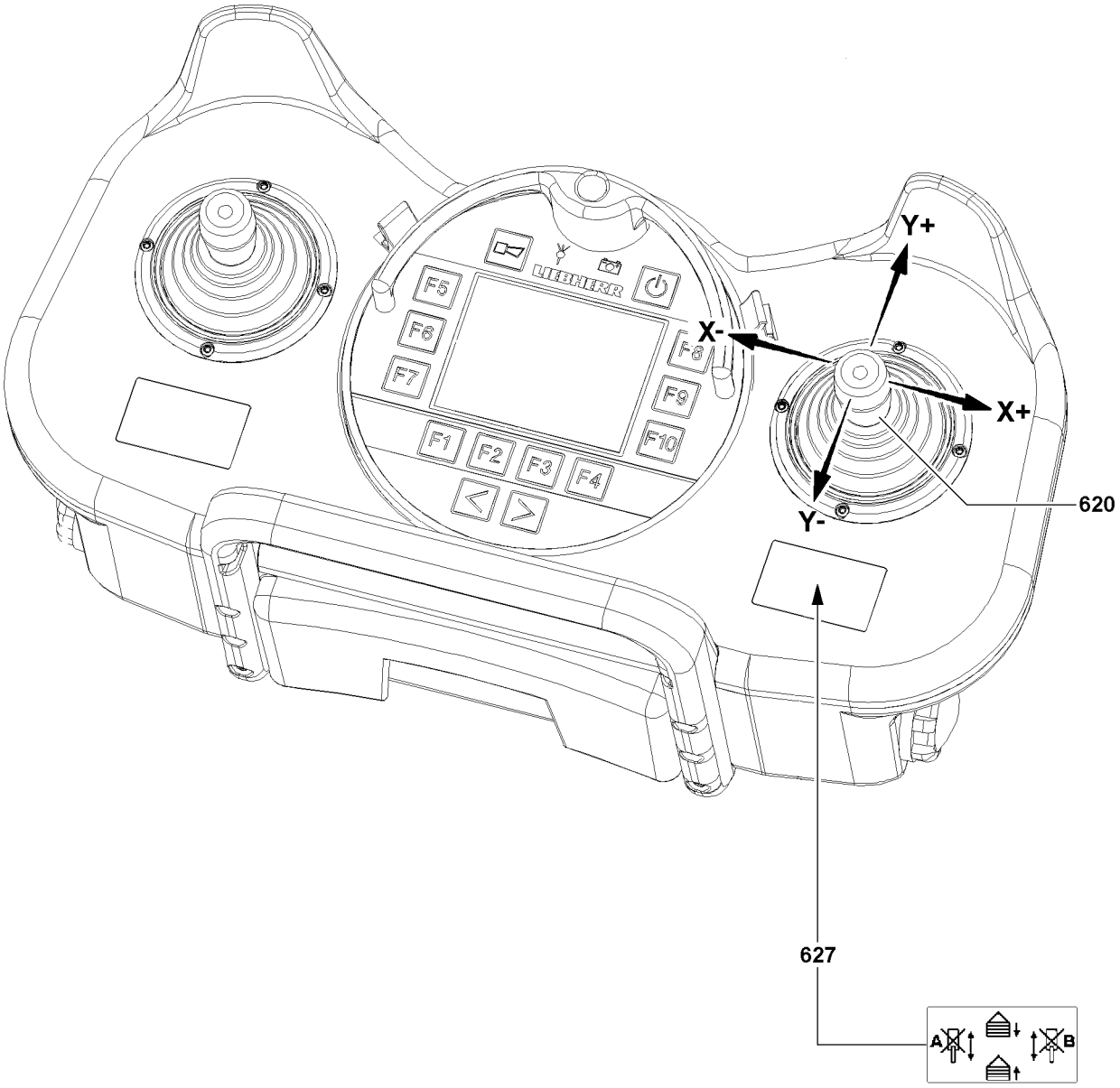

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Fig.149634: Extending / retracting / locking the pull cylinder crane movement

19.5 Extending / retracting / locking the pull cylinder

Make sure that the following prerequisites are met:
- The graphic display **627** of the manual control lever **620** shows the *extend / retract / lock the pull cylinder* function assignment, see illustration.
- The pull cylinders are correctly installed and connected.

▶ Move the manual control lever **620** in direction **Y+** (to the front).

Result:

– Both pull cylinders extend together.

▶ Move the manual control lever **620** in direction **Y-** (to the rear).

Result:

– Both pull cylinders retract together.

▶ Move the manual control lever **620** in direction **X+Y+** (combined front / right).

Result:

– Pull cylinder A extends and pull cylinder B is locked.

▶ Move the manual control lever **620** in direction **X-Y+** (combined front / left).

Result:

– Pull cylinder B extends and pull cylinder A is locked.

▶ Move the manual control lever **620** in direction **X+Y-** (combined rear / right).

Result:

– Pull cylinder A retracts and pull cylinder B is locked.

▶ Move the manual control lever **620** in direction **X-Y-** (combined rear / left).

Result:

– Pull cylinder B retracts and pull cylinder A is locked.

Note

▶ If the manual control lever **620** is moved exactly in direction **X+** (to the right) or in direction **X-** (to the left), the pull cylinder is not moved. There must always be a simultaneous movement in the direction **Y+** (to the front) or in direction **Ý-** (to the rear).

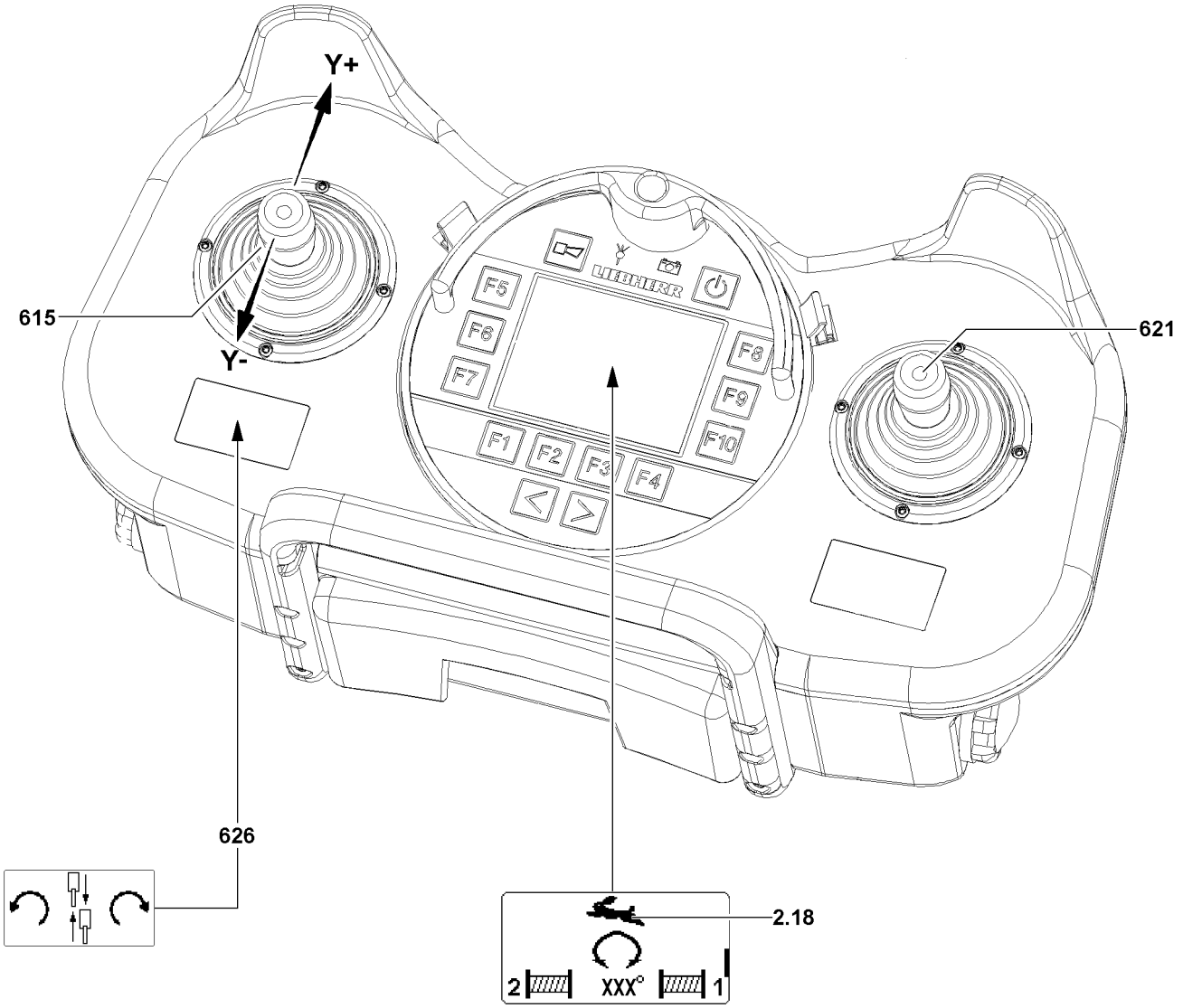

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Fig.126902: Extending / retracting the assembly cylinder / Turning the rapid gear on / off

19.6 Extending / retracting the assembly cylinder

Make sure that the following prerequisite is met:
- The graphic display **626** of manual control lever **615** shows the function assignment *extend / retract the assembly cylinder*, see illustration.

▶ Move the manual control lever **615** in direction **Y+** (to the front).

Result:

– The assembly cylinder moves out.

▶ Move the manual control lever **615** in direction **Y-** (to the rear).

Result:

– The assembly cylinder moves in.

19.7 Turning the rapid gear (Power plus) on / off

Note
Operating screen dependent function.
▶ The rapid gear (Power plus) is not always available.

▶ Press the button **621** and turn the rapid gear (Power plus) on / off.

Result:

– Rapid gear (Power plus) switched on: The icon **2.18** is shown in the respective icon of the selected operating screen.
– Rapid gear (Power plus) switched off: The icon **2.18** is **not** shown in the respective icon of the selected operating screen.

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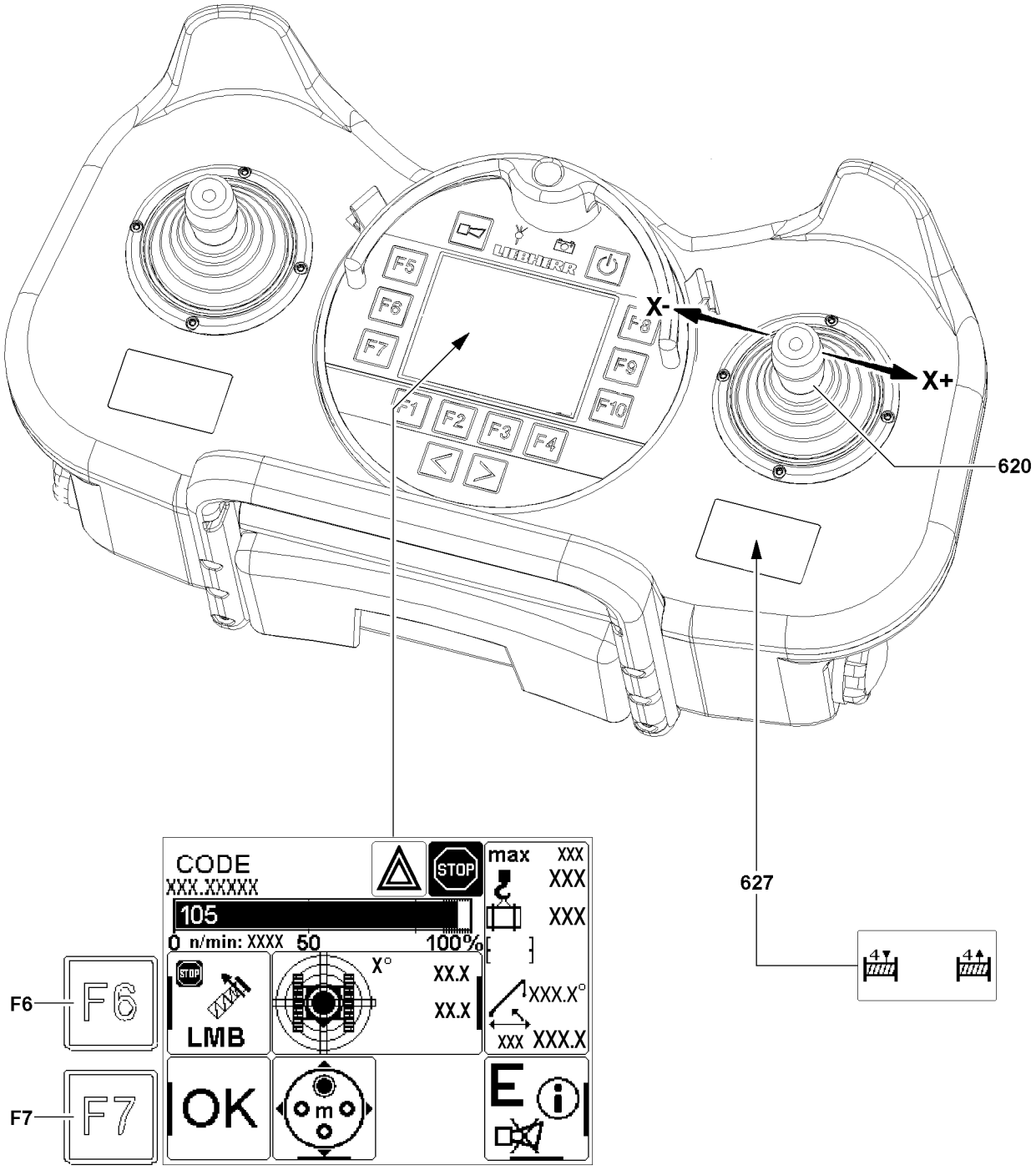

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Fig.119586: Luffing in with suspended load function

19.8 *Luffing in with suspended load* function

WARNING
Overload of crane!
By diverting the function *Luffing in with suspended load* from its intended use, the crane can be overloaded and topple over.
This could result in serious accidents.
- ▶ Use the function *Luffing in with suspended load* exclusively for load moment reducing crane movements.
- ▶ Use the function *Luffing in with suspended load* exclusively for freely suspended load.

Make sure that the following prerequisites are met:
- – The load is freely suspended and is not in contact with the ground.
- – The maximum load torque of 100 % was exceeded and the crane movements were turned off by the overload protection.

Note
- ▶ The function key **F6** must remain actuated for the entire duration of luffing in.

If it is luffed out of the load chart:

- ▶ Press and hold the function key **F6**.
- ▶ Luff the SA-frame up: Move the manual control lever **620** in direction **X-** (to the left).

Result:

- – The *Luffing in with suspended load* function is carried out.

19.9 Bypassing the hoist limit switch

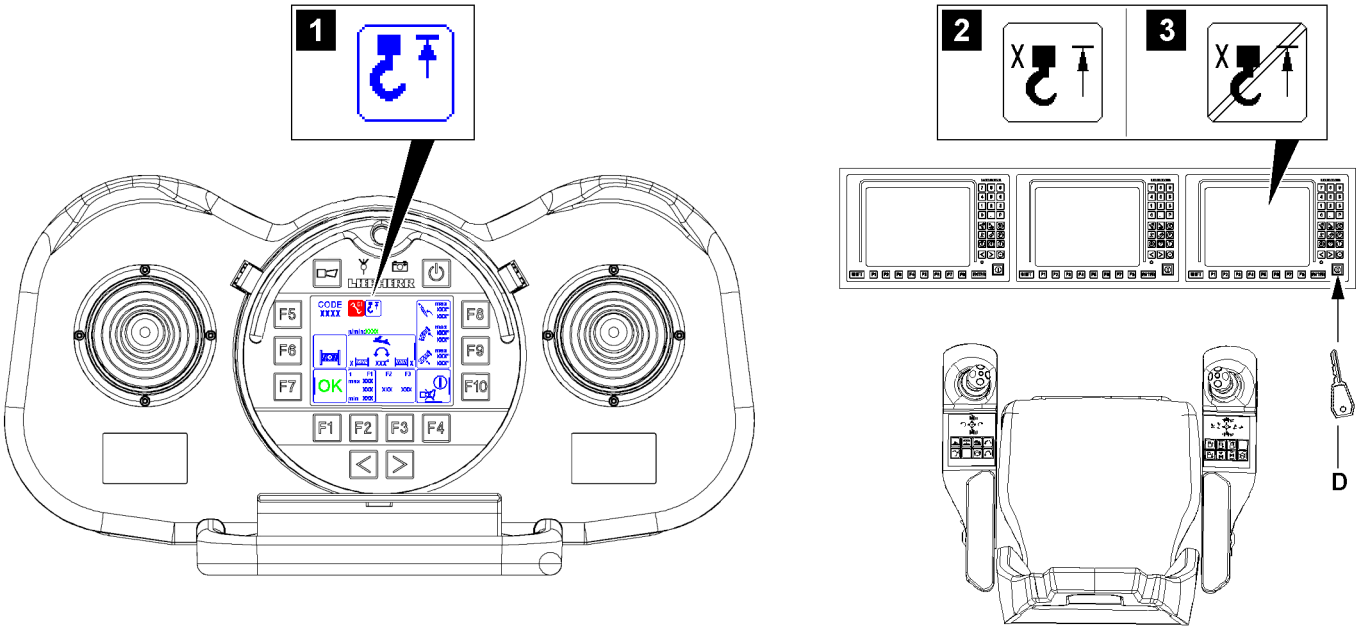

Fig.148680: Bypassing the hoist top shut-off function from the crane operator's cab

There is no automatic hoist limit switch bypass in assembly operation with the radio remote control.

If a hoist limit switch was triggered, a corresponding display appears, see illustration **1** and illustration **2**. The selected crane movements are shut off.

It is only possible to bypass the hoist limit switch (see illustration **3**) from inside the crane operator's cab, see the Crane operating instructions, chapter 4.20.

19.10 Changing the set up configuration

WARNING
Incorrect set up configuration confirmed!
▶ The operating mode / set up configuration may only be confirmed when the actual set up configuration of the crane and the entries and settings in the LICCON computer system correspond with the specifications in the crane documentation.

If the set up configuration of the crane is to be changed, the crane operation / assembly operation must cease for the duration of the change.

While entering the new set up parameters, all functions of the radio remote control are blocked. After the new set up configuration is confirmed, the radio remote control can be activated again.

Make sure that the following prerequisite is met:
– There is no load on the hook.

▶ Enter the new set up configuration in the LICCON computer system and confirm, see the Crane operating instructions, chapter 4.02.
▶ Operate the radio remote control with the new set up configuration, see section “Starting up the radio remote control”.

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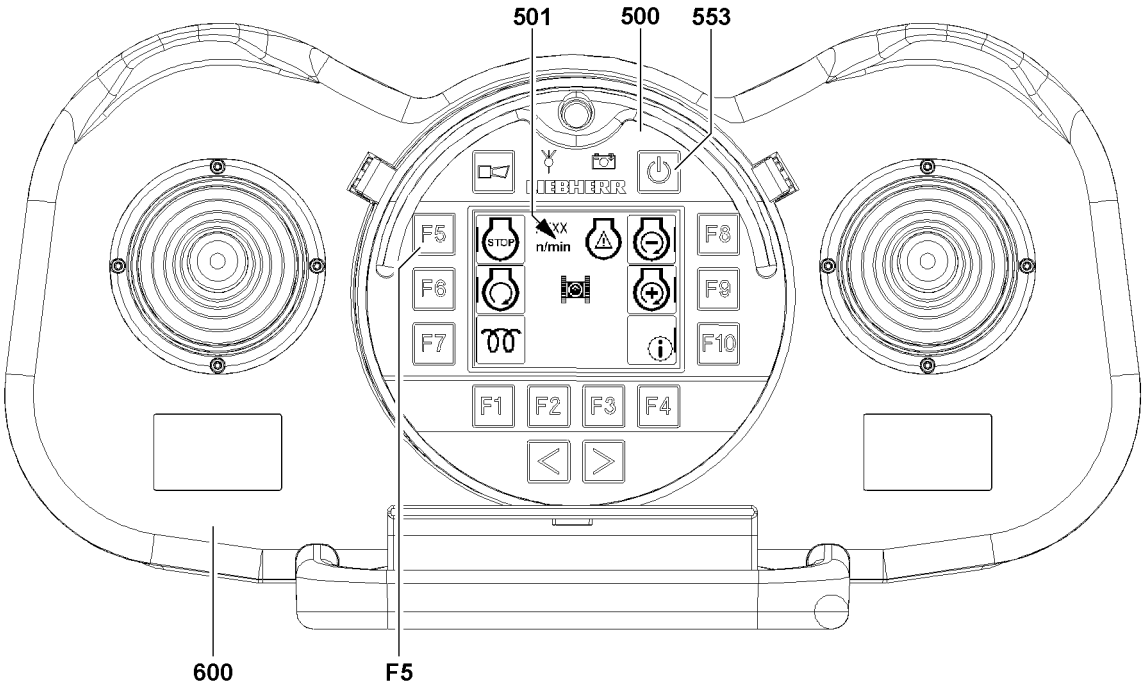

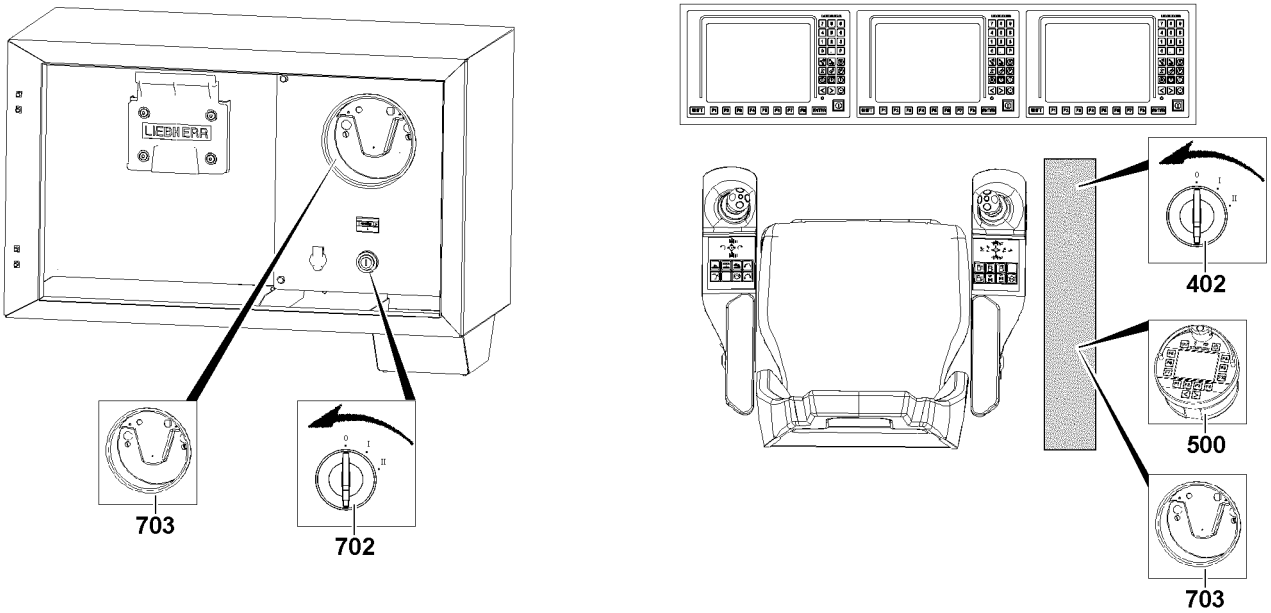

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Fig.126904: Turning the crane engine off / ending radio operation

19.11 Turning the crane engine off

NOTICE
Operating error!
If the transmission signal between the radio remote control and the crane is interrupted, the crane engine turns off after a short time. An operating error is issued.
By turning the crane engine off, functions can be malfunctioning.
▶ Do not turn the crane engine off by interrupting the transmission signal.

19.11.1 Turning the crane engine off with the BTT

▶ Call up the *Engine operation* menu, see illustration.

If the icon on the function key **F5** changes to purple:
▶ Press the function key **F5**.

Result:

– The crane engine is turned off.
– The display value for the engine rpm goes down to 0 on the BTT display **501**.

19.11.2 Turning the crane engine off with the ignition switch

▶ Set the ignition switch **402** to the “0” position.
or
Set the ignition switch **702** to the “0” position.

Result:

– The crane engine is turned off.
– Power Save Mode is shown on the LICCON monitor, see Crane operating instructions, chapter 4.02.

When the LICCON computer system is to remain active:
▶ Turn the ignition switch **402** within 8 seconds to position “I”.

19.12 Ending radio operation

19.12.1 Ending with the BTT

▶ Pull the BTT **500** from the radio remote control panel **600**.

Result:

– The radio operation is turned off.

▶ Insert the BTT **500** into the charging console **703**.

NOTICE
Operating error!
If the BTT is turned off to end radio operation (button **553** is pressed), then the crane engine turns off after a short time. An operating error is issued.
By turning the crane engine off, functions can be malfunctioning.
▶ To end radio operation, do not use the button **553**.

▶ Store the radio remote control panel **600**.

Note
Crane types with several ignition switches.
▶ The crane must always be taken out of operation with the ignition switch, which was also used to put it in operation.

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If the crane and the radio remote control were put into operation via the ignition switch **402**:

▶ Turn the ignition switch **402** to position “0”.

or

If the crane and the radio remote control were put into operation via the ignition switch **702**:

Turn the ignition switch **702** to position “0”.

Result:

– The ignition is turned off.
– The radio operation is ended.
– The crane engine is turned off.

When the LICCON computer system is to remain active:

▶ Turn the ignition switch within 8 seconds to position “I”.

20 Travel operation with radio remote control

WARNING
Danger of accident!
The travel operation with the radio remote control is a supplement for driving from the crane cab.

▶ All specifications and rules for driving from the crane cab also have to be observed and used for travel operation with the radio remote control, see Crane operating instructions, chapter 4.10.

WARNING
Uncoordinated procedure for crane driving!
If the involved personnel are not familiar with the course of action, there is a danger of accident.

▶ Before driving the crane determine the course of action.
▶ Agree on the course of action with all involved personnel
▶ In the case of unforeseen events, stop the course of action and agree on the new situation with all involved personnel.

WARNING
The crane is not horizontally aligned with the crawler travel gear!
The crane can topple over.
Death, severe bodily injuries, property damage.

If not otherwise specified in the crane documentation:

▶ The crane may be inclined maximum 0.3° or 0.5 %.

WARNING
Additional limitations when controlling the crane with the radio remote control!

▶ The retraction and extension on longitudinally tilted travel routes that exceed 0.3° is only permitted when driving from the crane cab.
▶ Driving the crane with a suspended ballast is prohibited.
▶ Turning the crane superstructure with a suspended ballast is prohibited.
▶ Driving the crane with a load on the hook is prohibited.
▶ Turning the crane superstructure with a load on the hook is prohibited.

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WARNING
The crane can topple over!
Driving on inclines is not monitored by the LICCON computer system.
If the crane operator does not pay attention, the crane can be maneuvered into an impermissible incline range and topple over.
Personnel can be severely injured or killed.
- ▶ It is not permissible to drive on unknown ground inclinations. Before driving, the angle of the longitudinal incline and of the lateral incline must be determined and checked for permissibility.
- ▶ Before driving, establish the set up configuration according to the driving chart, see the “Driving with the equipment in place” operating instructions.
- ▶ The crane driver must monitor the incline of the crane constantly when driving the crawler.

WARNING
The crane can topple over!
If the permissible incline of the crane is exceeded, the crane can topple over.
In impermissible inclines, the LICCON computer system does **not** turn the travel operation off.
The crane driver carries the sole responsibility for possible risks or dangers when working with impermissible inclines.
- ▶ Do not exceed the permissible incline from the load chart.
- ▶ Do not exceed the permissible incline for driving the crane.
- ▶ While driving the crane, constantly monitor the incline display in the BTT display.

WARNING
Toppling crane when driving with boom!
If, when driving with the boom, the conditions of the charts for driving with the equipment in place (short driving charts) are not met, then the crane can topple over.
If the turntable is not secured in the specified position to prevent it from turning, then it can turn uncontrolled when driving the crane.
Turning the turntable while driving, can cause the crane to topple over.
Personnel can be severely injured or killed.
- ▶ Observe the operating instructions “Driving with the equipment in place”.
- ▶ Establish the set up configuration according to the driving charts.
- ▶ Observe the Crane operating instructions, chapter 4.10.
- ▶ Make sure that the turntable is secured in the specified position to prevent it from turning.

WARNING
Danger of accident when driving without exact crane incline values!
If an incline sensor is defective, then the exact incline cannot be shown.
If the crane is inclined further than can be shown, then a *larger than* icon is shown before the display value.
The exact incline can then no longer be read.
If the exact incline is not known, there is the danger that the crane reaches an impermissible incline and topples over.
- ▶ The crane can only be driven with existing, exact incline values.
- ▶ If necessary, the incline value must be monitored another way.

WARNING
Unauthorized crane access!
- ▶ The operating and control instruments in the crane cab must be secured against unauthorized access.

WARNING
Crane set down on the crawler travel gear under incorrect conditions!
If the crane sets down on the crawler travel gear, the load charts for crane operation on supports become invalid. The crane on the crawler travel gear is not a valid support base for load charts for crane operation on supports.
There is a very high danger of accident during crane operation without a valid load chart.
- ▶ If the crane sets down on the crawler travel gear, the turntable must be in the 0° or 180° position and be secured.
- ▶ If the crane sets down on the crawler travel gear, the turntable may not be turned.
- ▶ If the crane sets down on the crawler travel gear, there may not be any load on the hook.
- ▶ If the crane sets down on the crawler travel gear, no derrick ballast may be installed.
- ▶ In the case of load charts for crane operation on supports, the crane must be properly supported and horizontally aligned.

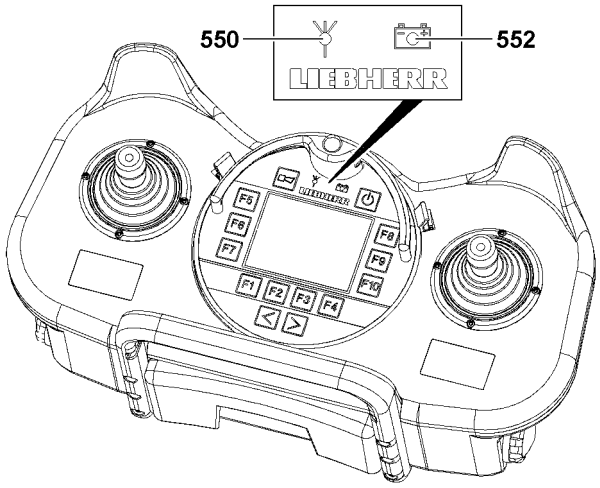

Fig.128666: Transmission signal and rechargeable battery indicator light

WARNING
No transmission signal!
If the distance or the disturbances between the radio remote control and crane are too large, the transmission signal can break down.
If the radio remote control's rechargeable battery is not charged enough, the transmission signal cannot be maintained.
Crane movements / travel movements and the crane engine are turned off uncontrolled.
The crane and load can no longer be controlled.
- ▶ Continuously check the *transmission signal* indicator light **550** and *rechargeable battery* indicator light **552**.
- ▶ Select a location where a good transmission signal is ensured.
- ▶ Make sure the rechargeable battery in the radio remote control is charged sufficiently.

Make sure that the following prerequisites are met:
- The set up configuration is set in the LICCON computer system according to the specifications in the crane documentation.
- The radio remote control is ready for operation.
- The *transmission signal* indicator light **550** turns green.
- The *rechargeable battery* indicator light **552** turns green.
- The crane operator must select a safe location from where the travel range can be seen.
- The transmission quality of the transmission signal of the radio remote control is good, electric / electronic interfering signals and / or obstacles (such as walls) are not present.
- There are no persons or objects in the danger zone.
- No unauthorized persons are in and on the crane.
- All involved personnel have been comprehensively informed about the course of action.
- The crane cab is secured to prevent unauthorized access.

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- No suspended ballast is installed on the crane.
- Retraction and extension on longitudinally tilted travel routes that exceed 0.3° is not necessary.
- There is no load on the hook.
- The specifications for driving the crane are observed and adhered to, see the Crane operating instructions, chapter 4.10.

Note
Bad transmission signal
▶ The transmission signal between the radio remote control and the crane can also be established via a cable, see section “Bypassing the radio connection”.

20.1 Setting the operating mode for driving with the equipment in place

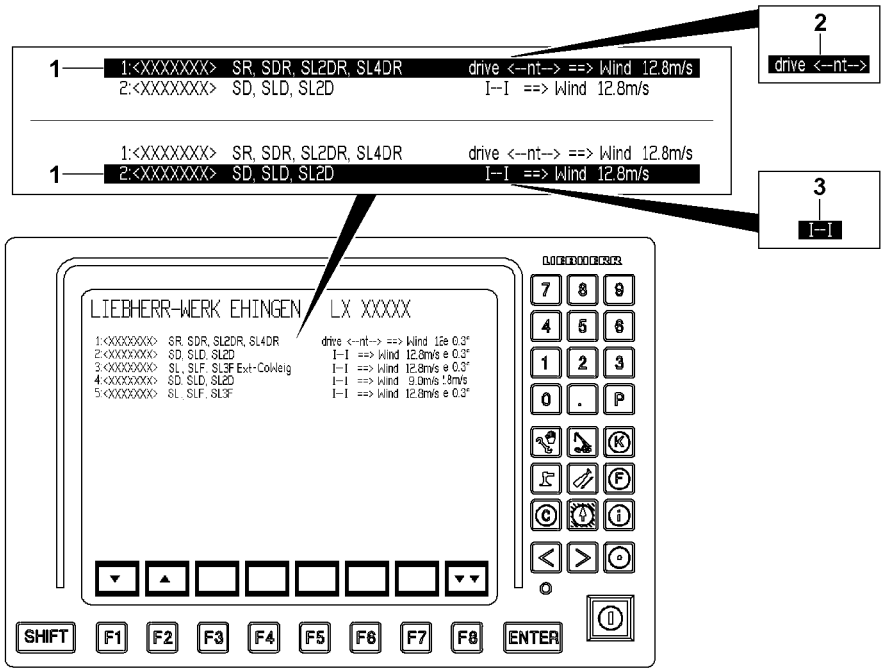

Fig.148697: Example: Operating mode selection on the LICCON Monitor

The operating mode is set in the operating mode preselection. The operating mode preselection appears temporarily after starting the LICCON computer system.

The set operating mode is highlighted with a black field **1**.

- *On crawler with returned boom set up* operating mode
  - Operating modes on the narrow track crawler travel gear are described with the text **2**.
  - The designation of the operating modes *on crawler with a returned boom set up normally end with the letter R, for example SR, SDR, SL2DR, SL4DR.*
  - In operating modes on the narrow track crawler travel gear, it is necessary to drive with the crane lowered on the crawler travel gear and with the boom installed. A driving chart must be present for this. Driving chart, see the operating instructions “Driving with the equipment in place”.
- Operating mode *on supports*
  - Operating modes on supports (crane support) are described with the character string **3**.
  - In certain operating modes *on supports* it is possible to lower the crane on the crawler travel gear and drive with the boom installed. A driving chart must be present for this. Driving chart, see the operating instructions “Driving with the equipment in place”.

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20.1.1 Setting the operating mode *on crawler, with boom set up set back*

Make sure that the following prerequisites are met:
- The required driving chart is available.
- The conditions for the selected driving chart are met, see operating instructions “Driving with the equipment in place”.
- The conditions in the Crane operating instructions, chapter 4.10 are fulfilled.
- The boom system is returned to the original set up accordingly.
- There is no load on the hook or the hook block is removed and the hoist rope secured.
- The turntable is secured to prevent it from turning.
- The support plates and the track pads are positioned for driving the crane.

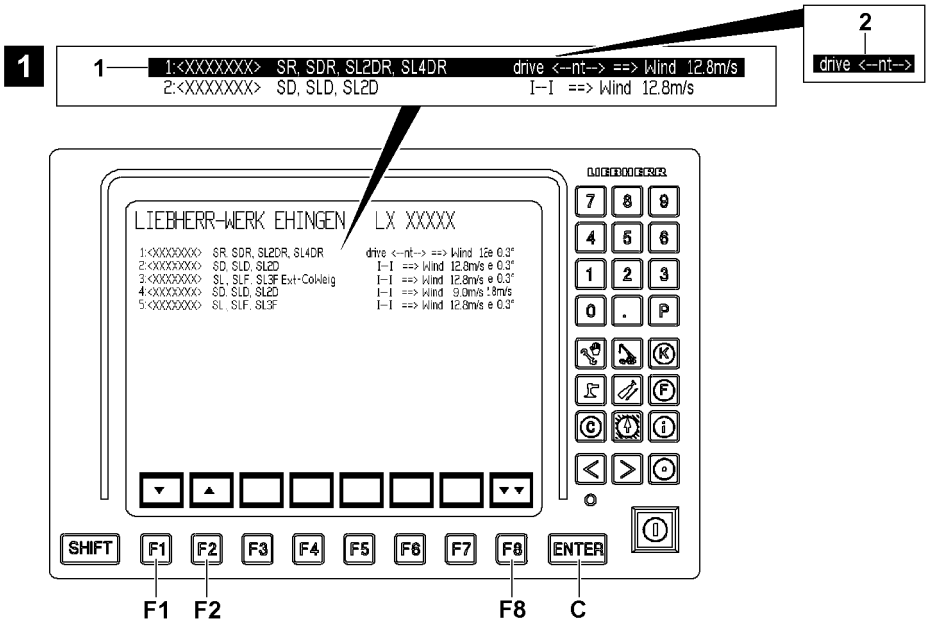

Fig.148698: Example: Operating mode selection on the LICCON Monitor

▶ Start the LICCON computer system.

If the operating mode preselection screen is shown on the LICCON monitor, see illustration **1**.

▶ Press the function key **F1** or the function key **F2** within three seconds and select the corresponding operating mode with Text **2**, see the example.

▶ Confirm the selected operating mode with the function key **F8**.

Result:

– The set up screen is shown on the LICCON monitor.

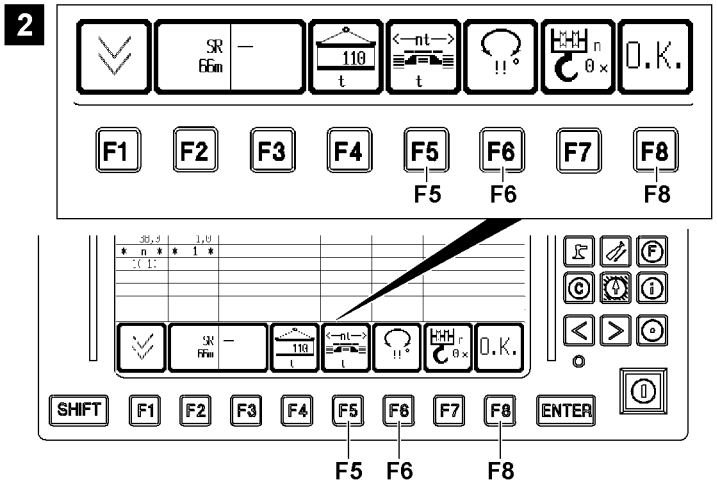

Fig.148693: Example: Checking or adjusting the settings in the set up program

Note
- ▶ The *on narrow track crawler* icon (above function key **F5**) is shown.
- ▶ The *working range* icon (over the function key **F6**) shows "!!": The turntable may not be turned.

▶ Check or adjust settings in the set up program, see the example in the illustration **2**.

When the settings in the set up program are correct:
▶ Press the function key **F8**.

Result:

– The operating mode is confirmed.
– The operating screen is shown on the LICCON monitor.
– The crane may be driven according to the crane documentation without a load.

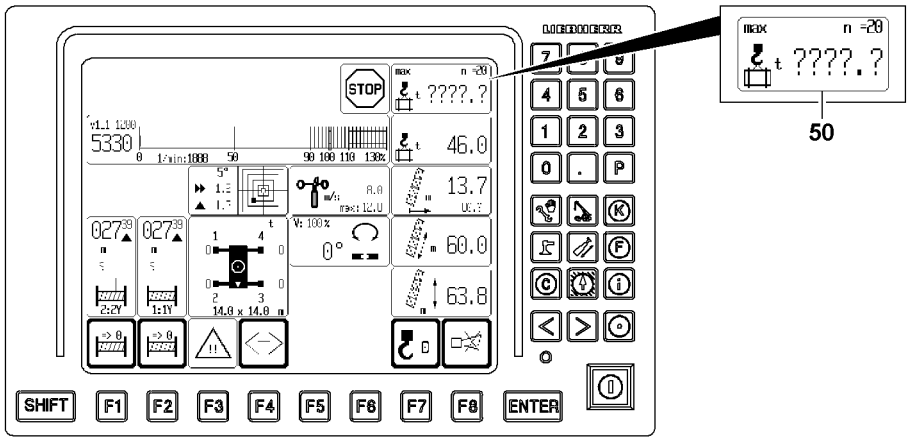

Fig.148694: Example: No maximum load available

▶ If the crane sets down on the crawler travel gear, there may not be any load on the hook. No maximum load capacity value is shown in the icon **50**.

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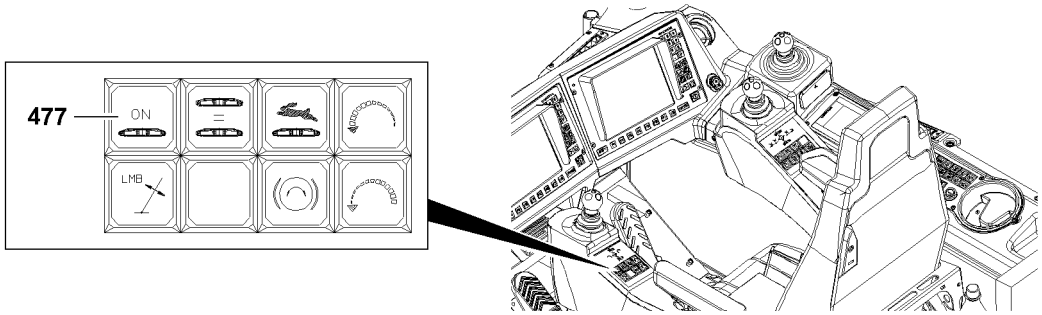

Fig.149618: Crawler operation on button (crane cab)

Note

▶ If crawler operation is activated with the radio remote control, crawler operation may not also be activated in the crane cab. Otherwise, an error message would appear on the LICCON monitor.

▶ In the case of crawler operation with the radio remote control, the *Crawler operation on* button **477** (crane cab) must be turned off.

20.1.2 Setting the operating mode *on supports*

Note

▶ In certain operating modes *on supports* it is possible to lower the crane on the crawler travel gear and drive with the boom installed.

Make sure that the following prerequisites are met:
- An operating mode *on supports* is selected, in which the crane with installed boom may be driven.
- The required driving chart is available.
- The conditions for the selected driving chart are met, see operating instructions “Driving with the equipment in place”.
- The conditions in the Crane operating instructions, chapter 4.10 are fulfilled.
- The turntable is secured to prevent it from turning.
- There is no load on the hook.
- The support plates and the track pads are positioned for driving the crane.
- The operating screen is shown on the LICCON monitor, see illustration.
- On the BTT, the menu *Crawler operation* is selected, see illustration.

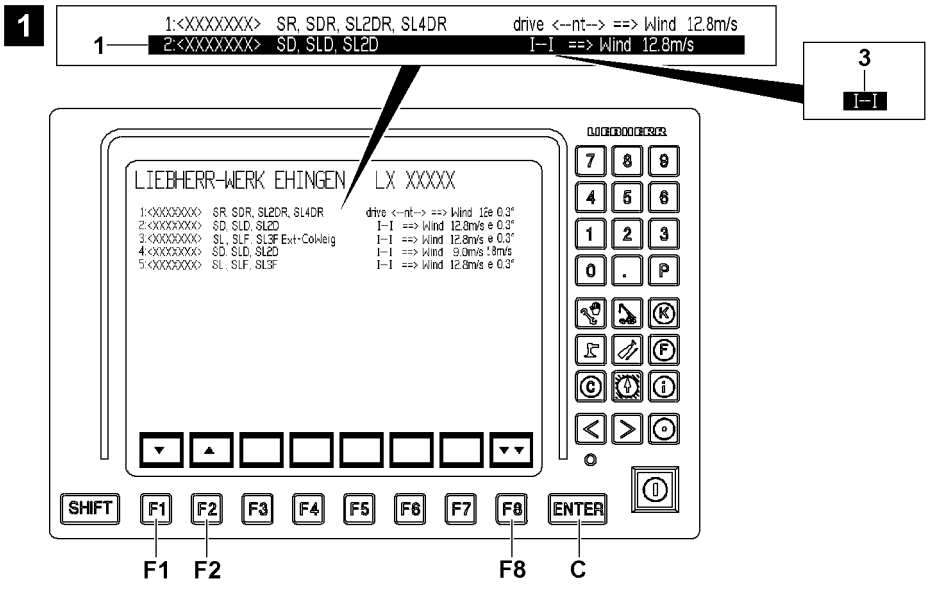

Fig.148699: Example: Setting the operating mode on supports

▶ Start the LICCON computer system.

If the operating mode preselection screen is shown on the LICCON monitor, see illustration **1**.

▶ Press the function key **F1** or the function key **F2** within three seconds and select the corresponding operating mode with character string **3** (on supports), see the example.

▶ Confirm the selected operating mode with the function key **F8**.

Result:

– The set up screen is shown on the LICCON monitor.

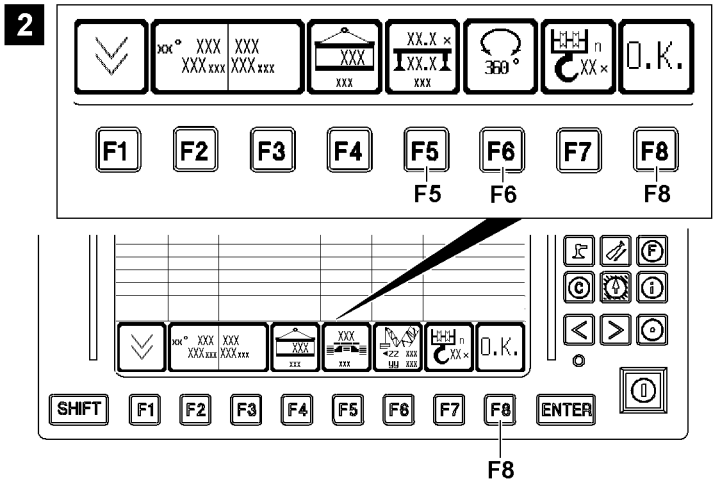

Fig.148700: Example: Setting the operating mode on supports

Note

▶ The icon *on supports* (above function key **F5**) is shown.

WARNING

Independently of the display of the turning range above the function key **F6**, it is prohibited to turn the turntable to the side!

▶ The permissible deviation of the turntable to the longitudinal axis is ±5°!

▶ Check or adjust settings in the set up program, see the example in the illustration **2**.

When the settings in the set up program are correct:

▶ Press the function key **F8**.

Result:

– The operating mode is confirmed.
– The operating screen is shown on the LICCON monitor.
– The crane may be driven according to the crane documentation without a load.

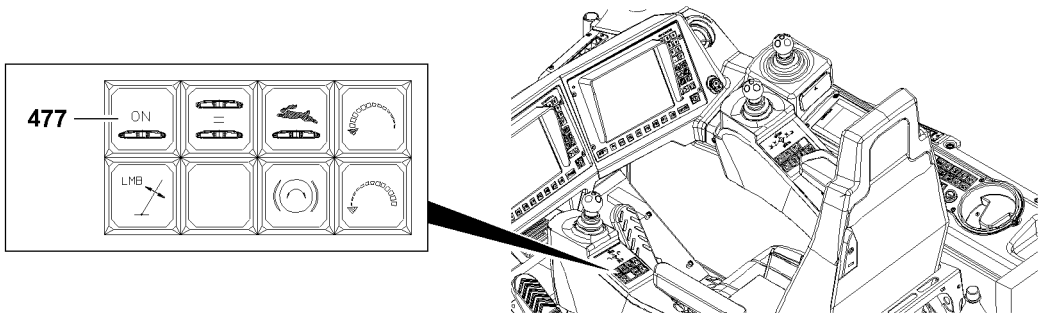

Fig.149618: Crawler operation on button (crane cab)

Note

▶ If crawler operation is activated with the radio remote control, crawler operation may not also be activated in the crane cab. Otherwise, an error message would appear on the LICCON monitor.

▶ In the case of crawler operation with the radio remote control, the *Crawler operation on* button **477** (crane cab) must be turned off.

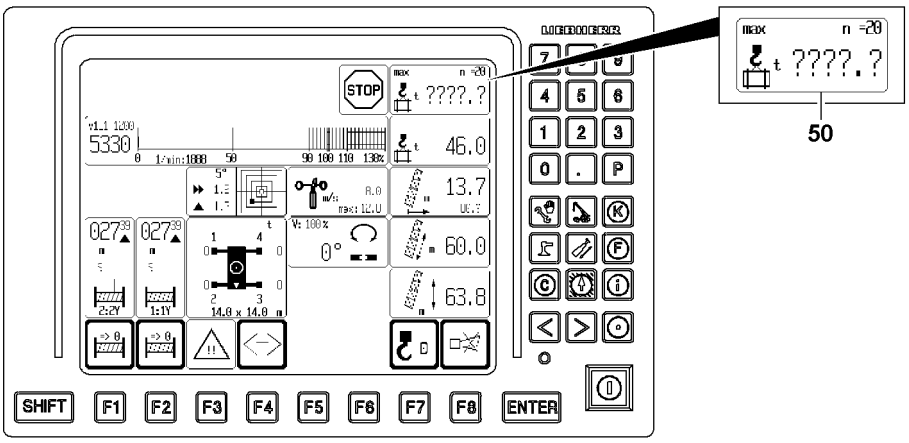

Fig.148694: Example: No maximum load available

▶ As soon as crawler operation is activated:

Result:

– Crawler operation is activated.
– No maximum load capacity value is shown in the icon **50**.
– The flashlight on the crane operator's cab blinks.
– The crane may be driven according to the crane documentation.

20.2 Preparing for crawler operation

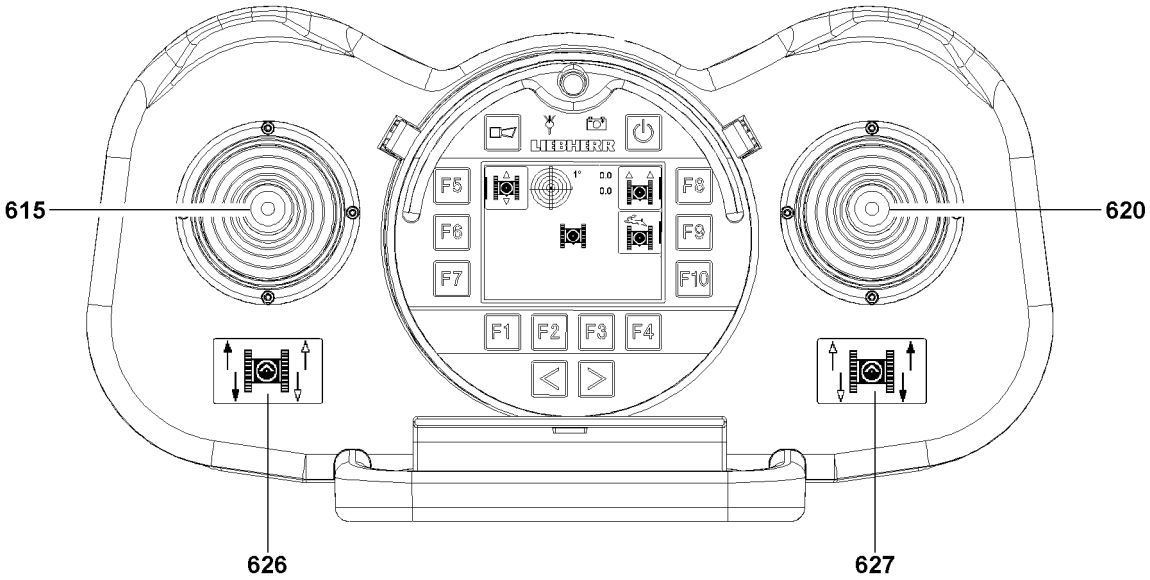

Fig.148681: Preparing for crawler operation

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Make sure that the following prerequisites are met:
- The crane engine is running.
- The set up configuration is set in the LICCON computer system according to the specifications in the crane documentation.

For “Driving with the equipment in place” also make sure that the following prerequisites are met:
- The driving chart operating mode has been established and confirmed in the LICCON computer system.
- The set up configuration of the driving chart is established.
- The specifications from the operating instructions “Driving with the equipment in place” are observed and adhered to.
- The turntable is secured with the slewing gear brake: The ball valve on the slewing gear is closed.
- The LICCON monitor is **not** in standby mode.

▶ Call up the *Crawler operation* menu.

Result:

– On the graphic display **626**, the master switch assignment for the master switch **615** is shown.
– On the graphic display **627**, the master switch assignment for the master switch **620** is shown.

20.3 Driving the crawler

WARNING
The crane can topple over!
If the following instructions are not observed, the crane can topple over. Personnel can be severely injured or killed.
▶ Before driving the crane with the equipment in place, the optimum boom position must be determined with the aid of the LICCON job planner to obtain as even a ground pressure as possible.
▶ When driving crawler cranes, make sure that the ground can absorb the ground pressures safely over the entire travel route.
▶ Driving with a load on the hook is **prohibited**.
▶ The incline of the crane must be monitored constantly while driving.
▶ Monitor the entire travel route for any obstacles or persons.
▶ Initiate, carry out and end the steering movements and travel movements always sensitively.
▶ When driving with the equipment in place, the angle range of the driving chart must be adhered to.
▶ The supporting beams must be installed and set to support base 14 m x 14 m . The track pads must be close to the ground.
▶ The position of the base plate must be monitored constantly while driving.

WARNING
The crane can topple over!
If the crane is driving too fast, then the crane can topple over.
Personnel can be severely injured or killed.
▶ Observe the permissible highest speeds for driving the crawler crane, see Crane operating instructions, chapter 4.10.
▶ Driving the crane in the rapid gear is only permissible if the boom is oriented in the travel direction or against the travel direction (crane superstructure position 0° or 180°).

WARNING
Crane out of control!
Jerky crane movements / steering movements can cause accidents.
Excessive acceleration / deceleration of the travel movement can lead to accidents.
▶ Slowly and evenly start, carry out and end crane movements / steering movements.
▶ Slowly and evenly accelerate and decelerate travel movements.
▶ Do not abruptly operate or release the manual control lever.

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WARNING
High side acceleration of the boom system!
- ▶ In order to avoid excessive side acceleration of the boom system, steering movements may only be carried out without the rapid gear, with the lowest speed.
- ▶ Acceleration, steering movement and deceleration must be performed with utmost caution.

WARNING
Incorrect travel movement of the crane!
If the assignment of the manual control levers is incorrectly interpreted for a travel movement, then there is a danger of accident.
- ▶ Pay attention to the assignment of the manual control levers to the respective travel movement.
- ▶ First move the manual control lever very carefully and observe if the crane starts to move in the desired direction.

Take the following into account after a turntable slewing movement:
- ▶ The crane updates the assignment of the manual control lever only when both manual control levers are in a non-actuated position.

WARNING
Danger of accident for associated personnel!
For all persons which are part of the crawler crane driving procedure, the following applies:
If the visual or audio connection between the associated persons is lost, there is a danger of accidents.
- ▶ All associated persons must be **constantly** in visual and audio connection with each other.

NOTICE
Uneven ground!
If the chain sags on uneven ground, then the centering cams of the track pads can no longer be centered in the track rollers. The centering cams will be damaged or the chain can jump out of its guide.
- ▶ If the chain sags on uneven ground, adjust the steering movement.
- ▶ If the chain sags on uneven ground, drive straight until all centering cams are centered.

NOTICE
Increased wear on the crawler travel gear!
When steering in small radii, high friction forces are created that lead to increased wear.
- ▶ If possible, always drive in curves with large radii.
- ▶ Avoid turning over a stationary track, if possible.
- ▶ Avoid turning on the spot, if possible.

Make sure that the following prerequisites are met:
- – The radio remote control is ready for operation.
- – The crane operator has selected a location from where he can see and monitor the travel route and the crane completely.
- – No personnel is in and on the crane.
- – There are no persons or obstacles on the travel route.
- – The manual control lever is in a non-actuated position.

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20.3.1 Selecting the crawler operation modes

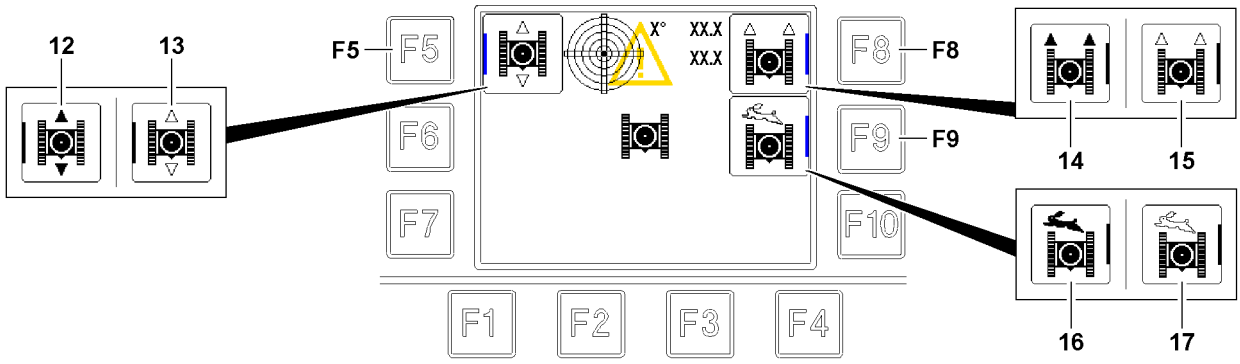

Fig.148682: Selecting the crawler operation modes

The crawler crane can be driven with various crawler operating modes:
– Normal travel crawler operation.
  • Classic crawler operation, every track is controlled via a separate manual control lever
– Parallel travel crawler operation
  • The travel direction is controlled by the same manual control lever

To obtain a higher travel speed, the rapid gear crawler operation can be activated.

Turning crawler operation normal travel on / off

The normal travel crawler operation is the prerequisite to drive the crane and must generally be added.

Make sure that the following prerequisite is met:
– The *Crawler operation* menu is called up.

▶ Press the function key **F5** and add / turn off normal travel crawler operation.

Result:

– Normal travel crawler operation added: The icon **12** appears.
– Normal travel crawler operation turned off: The icon **13** appears.

Turning crawler operation parallel travel on / off

Make sure that the following prerequisites are met:
– Normal travel crawler operation is activated.
– The tracks are at a standstill.

▶ Press the function key **F5** and add / turn off parallel travel crawler operation.

Result:

– Parallel travel crawler operation added: The icon **14** appears.
– Parallel travel crawler operation turned off: The icon **15** appears.

Turning crawler operation rapid gear on / off

WARNING
Danger of accident!
▶ Driving the crane in the rapid gear is only permissible if the boom is oriented in the travel direction or against the travel direction (crane superstructure position 0° or 180°).

Note
▶ The rapid gear crawler operation is not always available.

Make sure that the following prerequisites are met:
- Normal travel crawler operation is activated.
- The boom is oriented in the travel direction or against the travel direction (crane superstructure position 0° or 180°).

▶ Press the function key **F9**.

Result:

- Rapid gear crawler operation is added: The icon **16** appears.
- Rapid gear crawler operation is turned off: The icon **17** appears.

20.3.2 Driving the crawler crane in normal travel: Straight forward driving

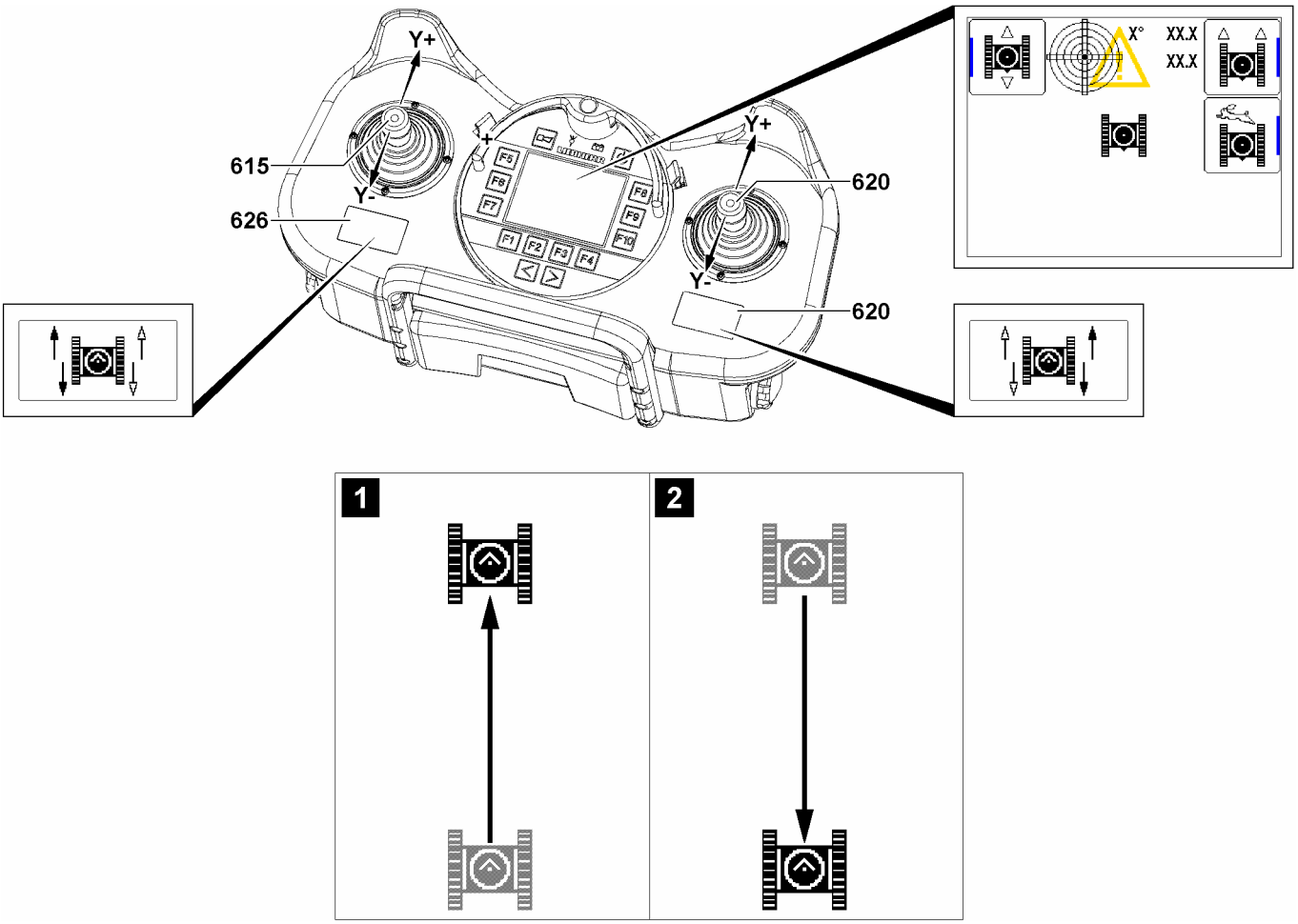

Fig.148683: Driving the crawler crane in normal travel: Straight forward driving

Make sure that the following prerequisites are met:
- A travel direction change may only be done from the standstill.
- The desired rpm of the crane engine is set.
- Normal travel crawler operation is selected.
- Graphic display **626** and graphic display **627** show the function assignment *crawler operation*, see illustration.

Driving forward

See illustration **1**.

▶ Deflect the manual control lever **615** and the manual control lever **620** synchronously in direction **Y +** (to the front).

Result:

– The crane drives forward in reference to the direction of view *to the front from the crane cab*.
– The further the manual control lever is deflected, the faster the crane movement.

Driving in reverse

See illustration **2**.

▶ Deflect the manual control lever **615** and the manual control lever **620** synchronously in direction **Y-** (to the rear).

Result:

– The crane drives in reverse in reference to the direction of view *to the front from the crane cab*.
– The further the manual control lever is deflected, the faster the crane movement.

20.3.3 Driving the crawler crane in normal travel: Steering the crawler

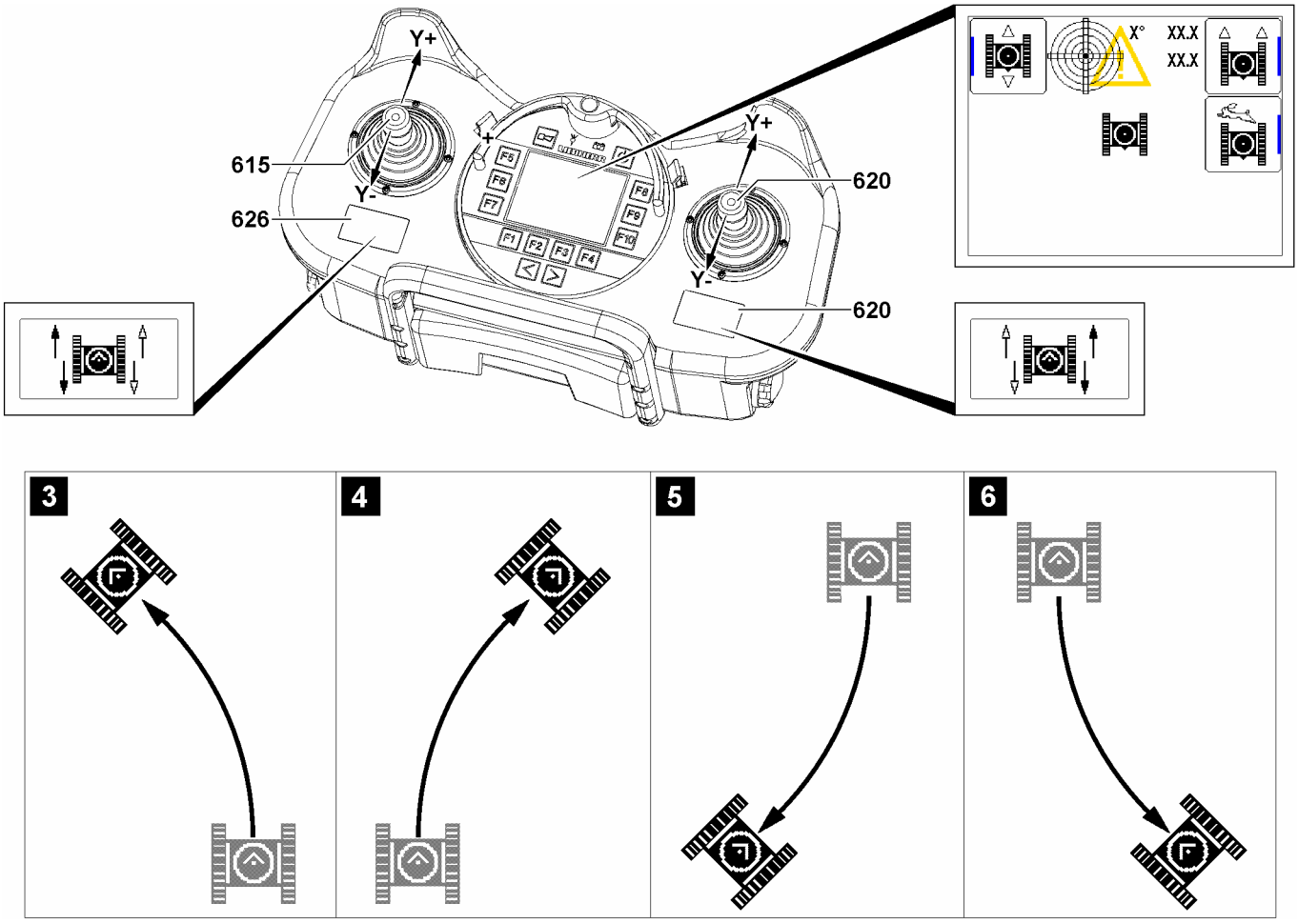

Fig.148684: Driving the crawler crane in normal travel: Steering the crawler

Driving in curves forward to the left

See illustration **3**.

▶ Manual control lever **615** reduced direction **Y+** (to the front) and manual control lever **620** stronger in direction **Y+**

Result:

– The crane drives a curve forward to the left in reference to the direction of view *to the front from the crane cab*.

– The further the manual control lever is deflected, the faster the crane movement.

Driving in curves forward to the right

See illustration **4**.

▶ Deflect the manual control lever **615** stronger direction **Y+** (to the front) and the manual control lever **620** reduced in direction **Y+** (to the front).

Result:

– The crane drives a curve forward to the right in reference to the direction of view *to the front from the crane cab*.
– The further the manual control lever is deflected, the faster the crane movement.

Driving in curves in reverse to the left

See illustration **5**.

▶ Deflect the manual control lever **615** reduced in direction **Y-** (to the rear) and the manual control lever **620** stronger in direction **Y-** (to the rear).

Result:

– The crane drives a curve in reverse to the left in reference to the direction of view *to the front from the crane cab*.
– The further the manual control lever is deflected, the faster the crane movement.

Driving in curves reverse to the right

See illustration **6**.

▶ Deflect the manual control lever **615** stronger in direction **Y-** (to the rear) and the manual control lever **620** reduced in direction **Y-** (to the rear).

Result:

– The crane drives a curve in reverse to the right in reference to the direction of view *to the front from the crane cab*.
– The further the manual control lever is deflected, the faster the crane movement.

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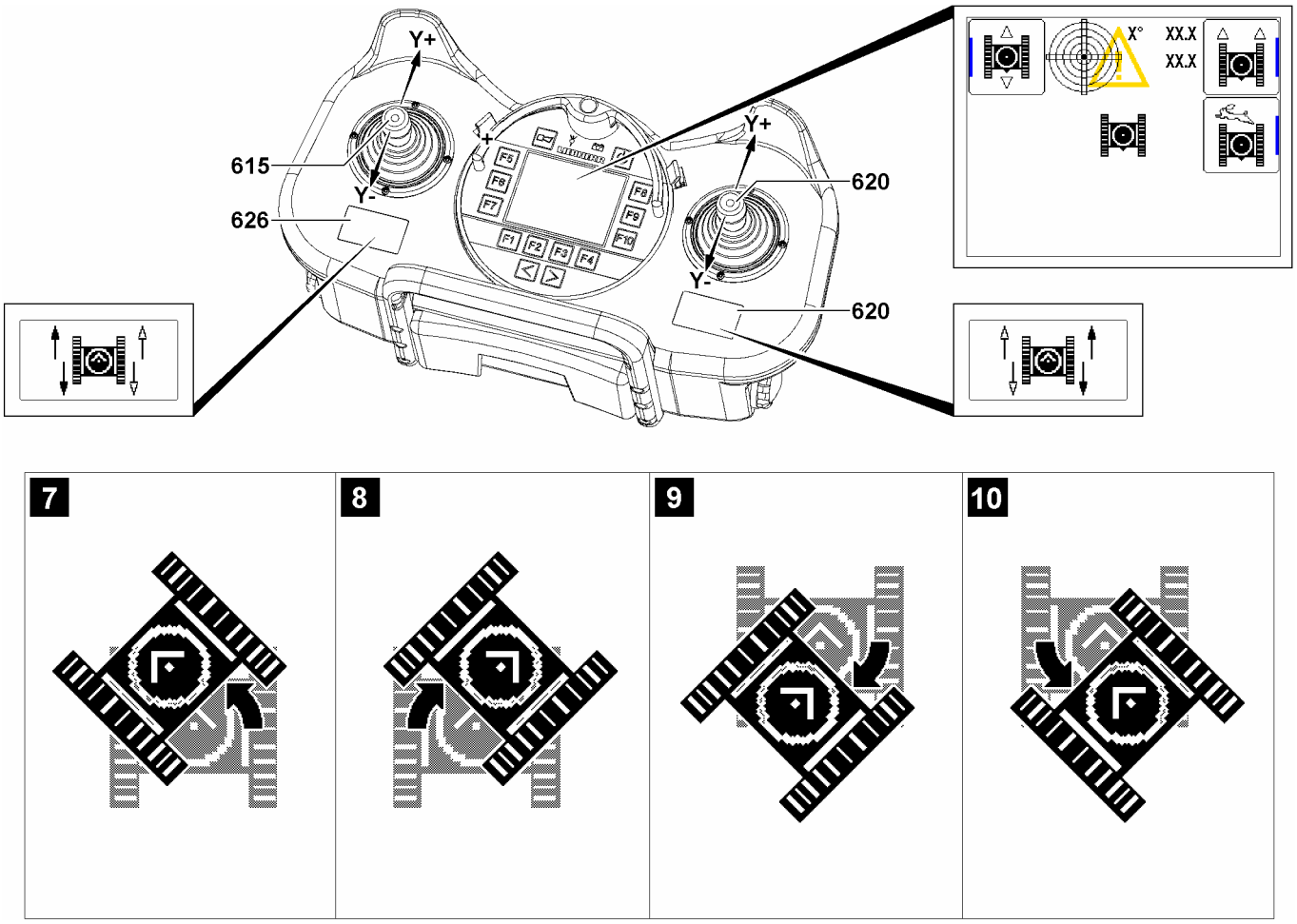

Fig.148685: Turning the crawler crane over a stationary chain

Turning forward to the left

See illustration **7**.

▶ Deflect the manual control lever **620** in direction **Y+** (to the front).

Result:

– The crane is turned to the direction of view *to the front from the crane cab* forward to the left.
– The further the manual control lever is deflected, the faster the crane movement.

Turning forward to the right

See illustration **8**.

▶ Deflect the manual control lever **615** in direction **Y+** (to the front).

Result:

– The crane is turned to the direction of view *to the front from the crane cab* forward to the right.
– The further the manual control lever is deflected, the faster the crane movement.

Turning backward to the left

See illustration **9**.

▶ Deflect the manual control lever **620** in direction **Y-** (to the rear).

Result:

– The crane is turned to the direction of view *to the front from the crane cab* in reverse to the left.
– The further the manual control lever is deflected, the faster the crane movement.

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Turning backward to the right

See illustration **10**.

▶ Deflect the manual control lever **615** in direction **Y-** (to the rear).

Result:

– The crane is turned to the direction of view *to the front from the crane cab* in reverse to the right.
– The further the manual control lever is deflected, the faster the crane movement.

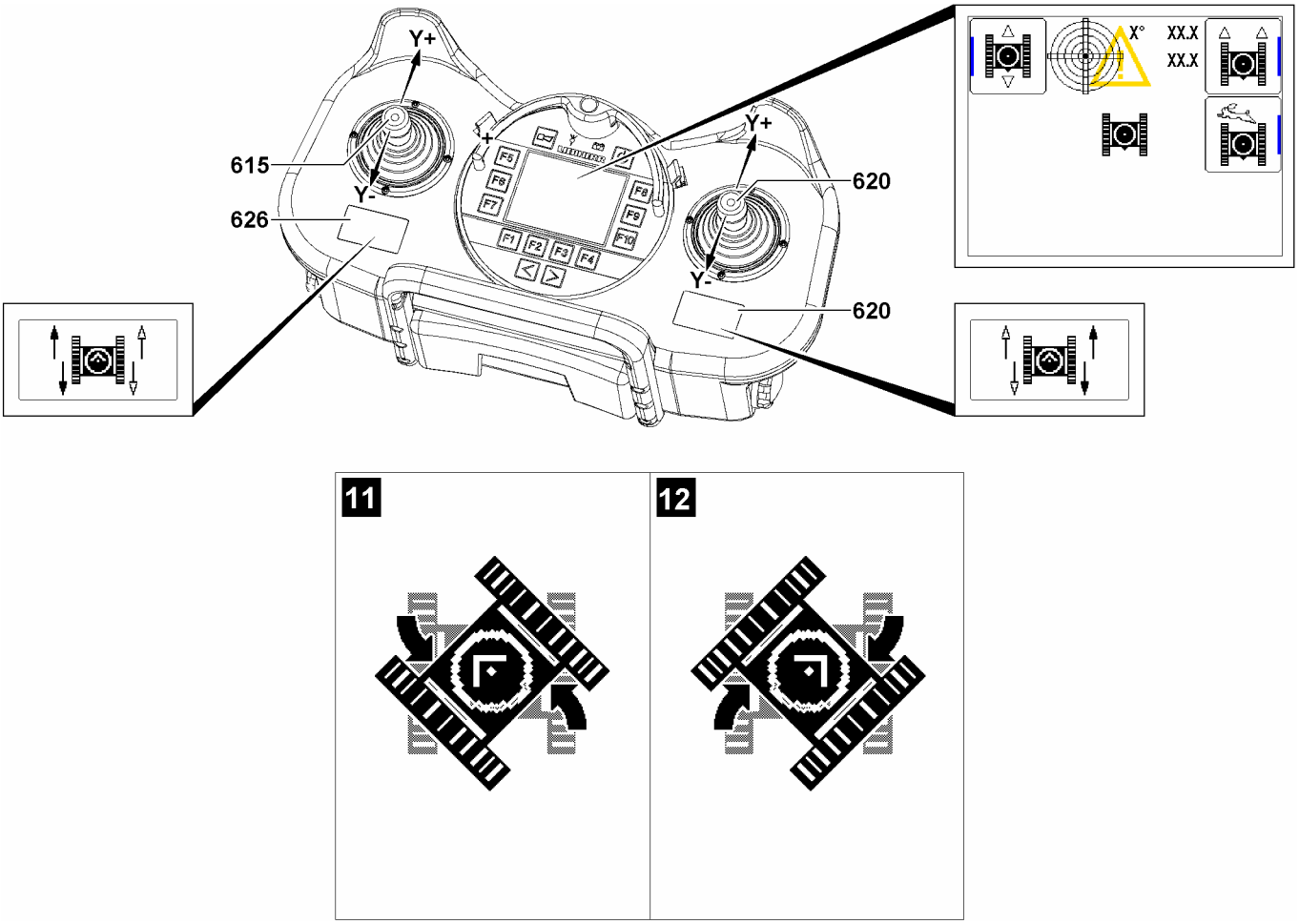

Fig.148686: Turning on the spot of the crawler crane

Turning on the spot to the left (counterclockwise direction)

See illustration **11**.

▶ Deflect the manual control lever **615** in direction **Y-** (to the rear) and the manual control lever **620** in direction **Y+** (to the front).

Result:

– The crane is counterrotated to the left.
– The further the manual control lever is deflected, the faster the crane movement.

Turning on the spot to the right (clockwise direction)

See illustration **12**.

▶ Deflect the manual control lever **615** in direction **Y+** (to the front) and the manual control lever **620** in direction **Y-** (to the rear).

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Result:

– The crane is counterrotated to the right.
– The further the manual control lever is deflected, the faster the crane movement.

20.3.4 Driving the crawler crane in parallel travel

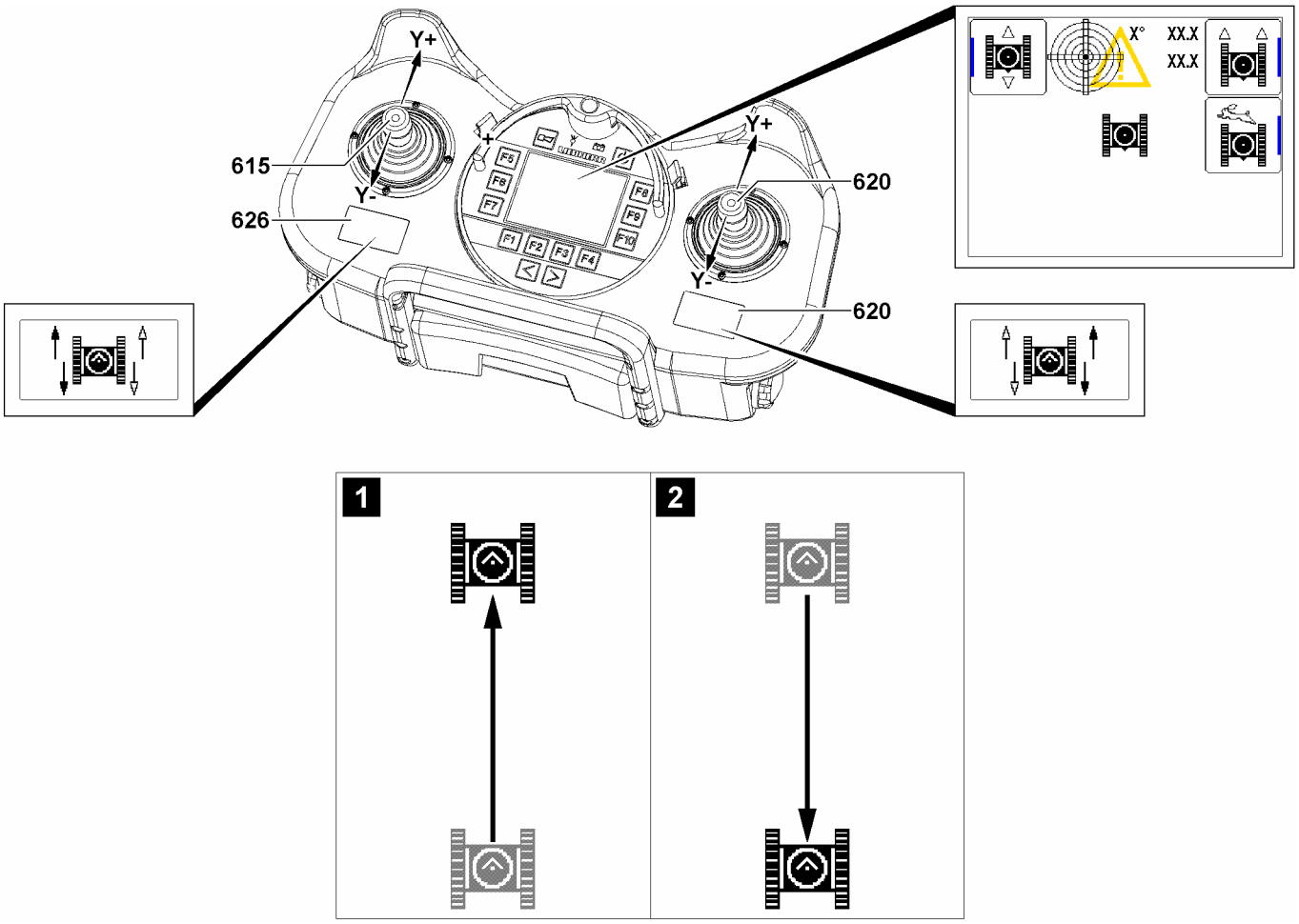

Fig.148687: Driving the crawler crane in parallel travel

Note

▶ During parallel travel, both crawlers can be steered at the same time with one manual control lever.

Make sure that the following prerequisites are met:
– The desired rpm of the crane engine is set.
– The parallel travel crawler operation is selected.

Driving forward

See illustration **1**.

▶ Move the manual control lever **620** in direction **Y+** (to the front).
or
Move the manual control lever **615** in direction **Y+** (to the front).

Result:

– Both crawlers drive forward in reference to the direction of view *to the front from the crane cab*.
– The further the manual control lever is deflected, the faster the crane movement.

Driving in reverse

See illustration **2**.

▶ Move the manual control lever **620** in direction **Y-** (to the rear).
or
Move the manual control lever **615** in direction **Y-** (to the rear).

Result:

– Both crawlers drive in reverse in reference to the direction of view *to the front from the crane cab*.
– The further the manual control lever is deflected, the faster the crane movement.

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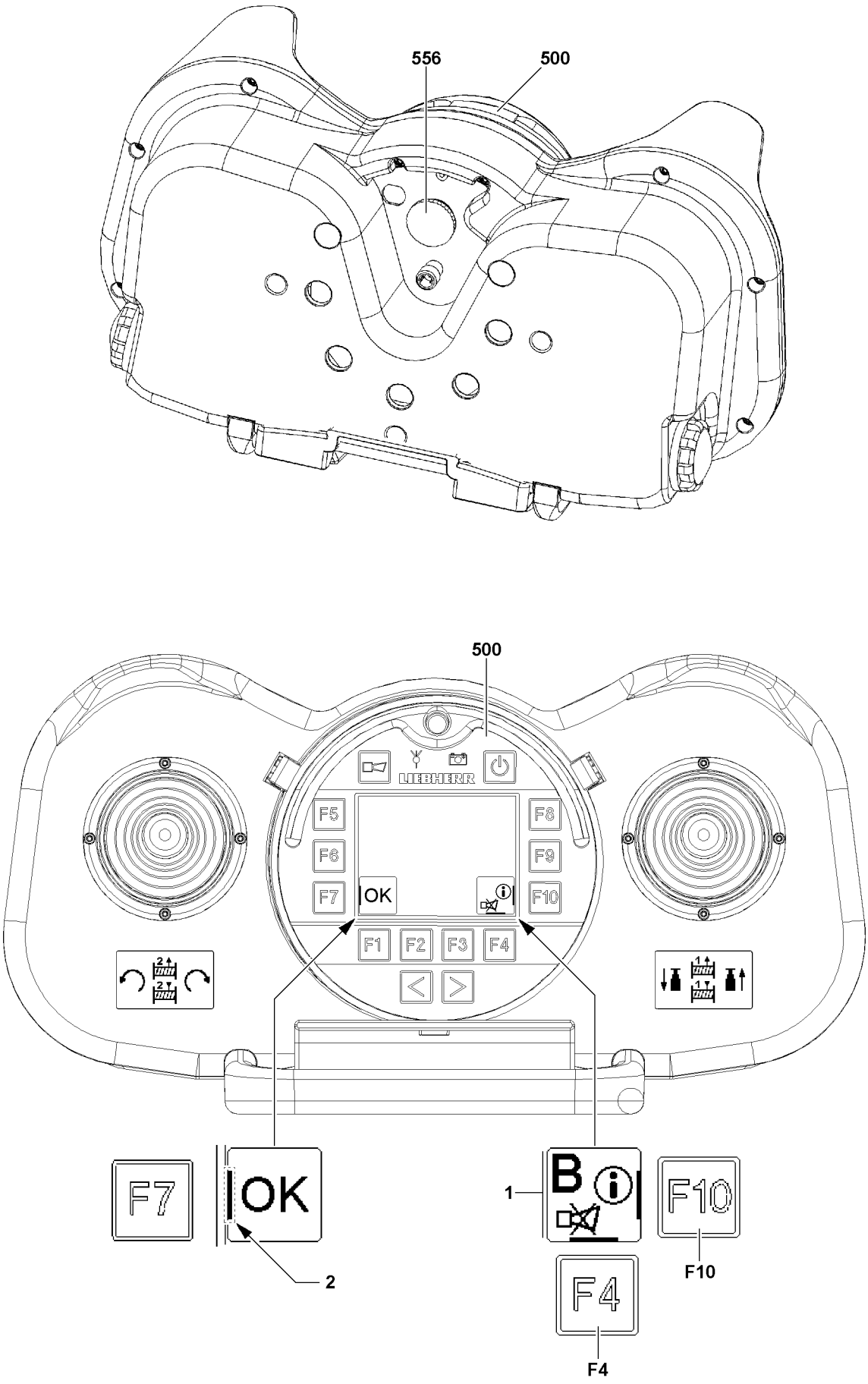

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Fig.119596: Error message is issued

21 Measures in case of problems

WARNING
Danger of accident!
- ▶ If the crane operator changes it placement location, then crane operation / assembly operation via radio remote control must be interrupted. Deactivate the radio remote control - no crane movement may be possible via the manual control lever or function keys.
- ▶ Never place the radio remote control down unsupervised.
- ▶ In case of an emergency, in case of all problems in the working range of the crane or in case of a technical defect of the radio remote control, take the system out of operation immediately by actuating the emergency stop switch **556** on the rear of the BTT **500**.

Note
- ▶ Icons are assigned to the individual function keys. A small bar **2** marks the assigned button, see example of illustration for function key **F7**.

21.1 An error message occurs

If an event occurs that leads to the display of an error message, a “B” or “E” is shown on the icon **1**, see illustration.

WARNING
Danger of accident!
If the displayed errors in the icon **1** are ignored, there is a danger of accidents.
- ▶ Take the crane out of operation and remedy the cause of the error.
- ▶ Do not put the crane back into operation before the cause of the error has been remedied.

▶ Press the function key **F4**.

Result:

– Acoustic warning signal of the radio remote control, which can be shut off in case of operating / system errors is shut off.

Note
- ▶ For severe errors, the acoustic warning signal of the radio remote control can be turned off after a waiting period (up to six seconds).

▶ Press the function key **F10**.

Result:

– The *Test system* program (error determination screen) is called up.

Note
- ▶ To be able to find the cause of the problem, the error or errors must be read in the error determination screen / error stack of the BTT **500**, see Diagnostics manual.

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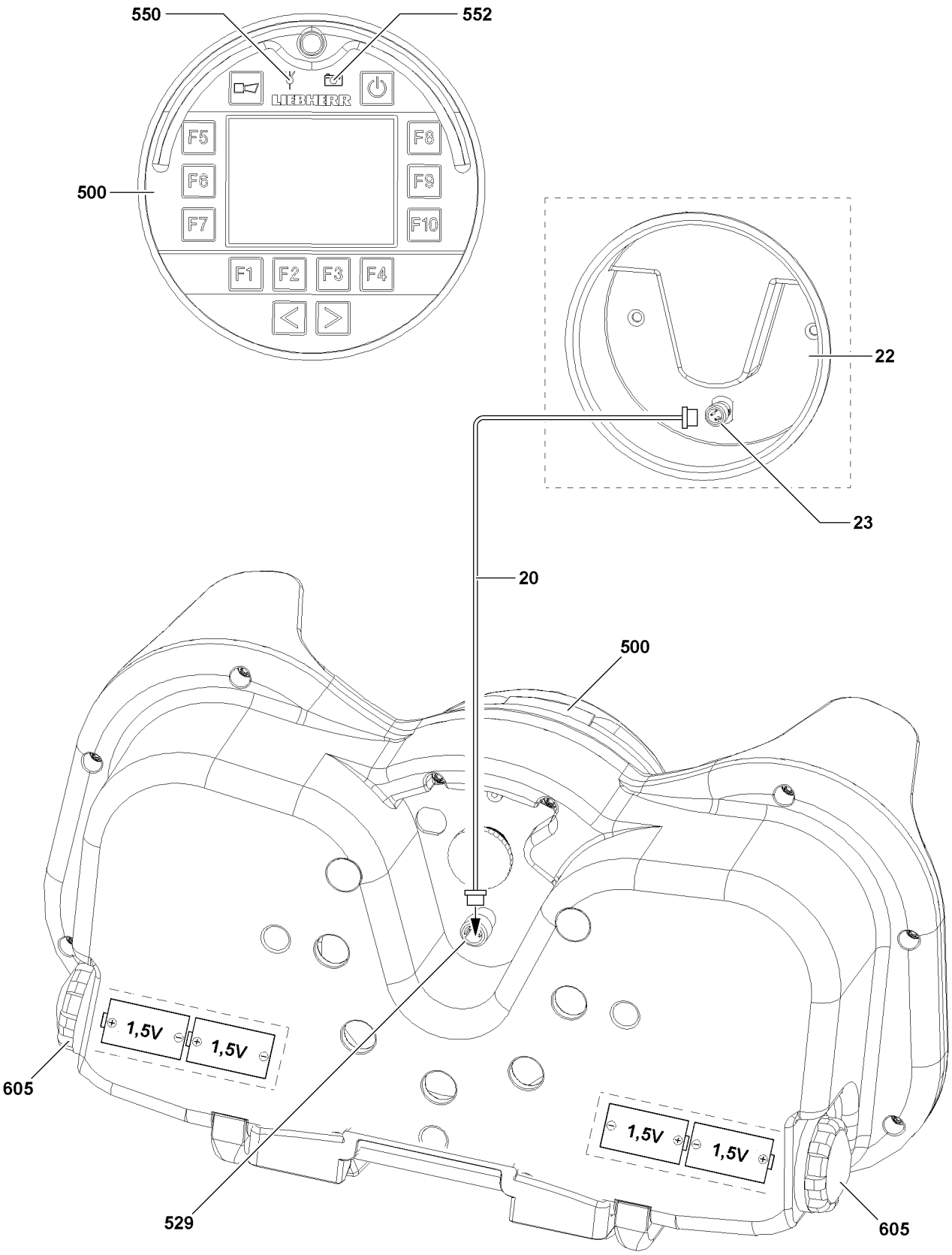

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Fig.113381: Measures in case of problems

21.2 The display remains dark

Note

▶ The LED **552** shows the charge condition of the BTT **500** and thereby the radio remote control.

If the LED **552** does not light up after turning the BTT **500** on:

▶ Insert the BTT **500** into the charging console **22**.
or
Place four charged batteries into the battery compartments **605**, see illustration.

NOTICE

Defective batteries!
Acid can emerge from defective batteries.
Emerging acid can cause damage on the radio remote control.

▶ Remove the batteries in time.

▶ Remove the batteries as soon as the supply of the radio remote control can be handled again via the BTT **500**.

Note

Usable batteries

▶ Four commercially available 1.5 Volt batteries (“Type C” or “Baby” or “L14/LR14”).
▶ Dimensions: Diameter 27 mm , height 50 mm.

If the LED **552** does not light up after inserting the BTT **500** into the charging console **22** or after inserting the batteries into the battery compartments **605**:

▶ Contact Liebherr Service to determine the cause of the problem and further procedure.

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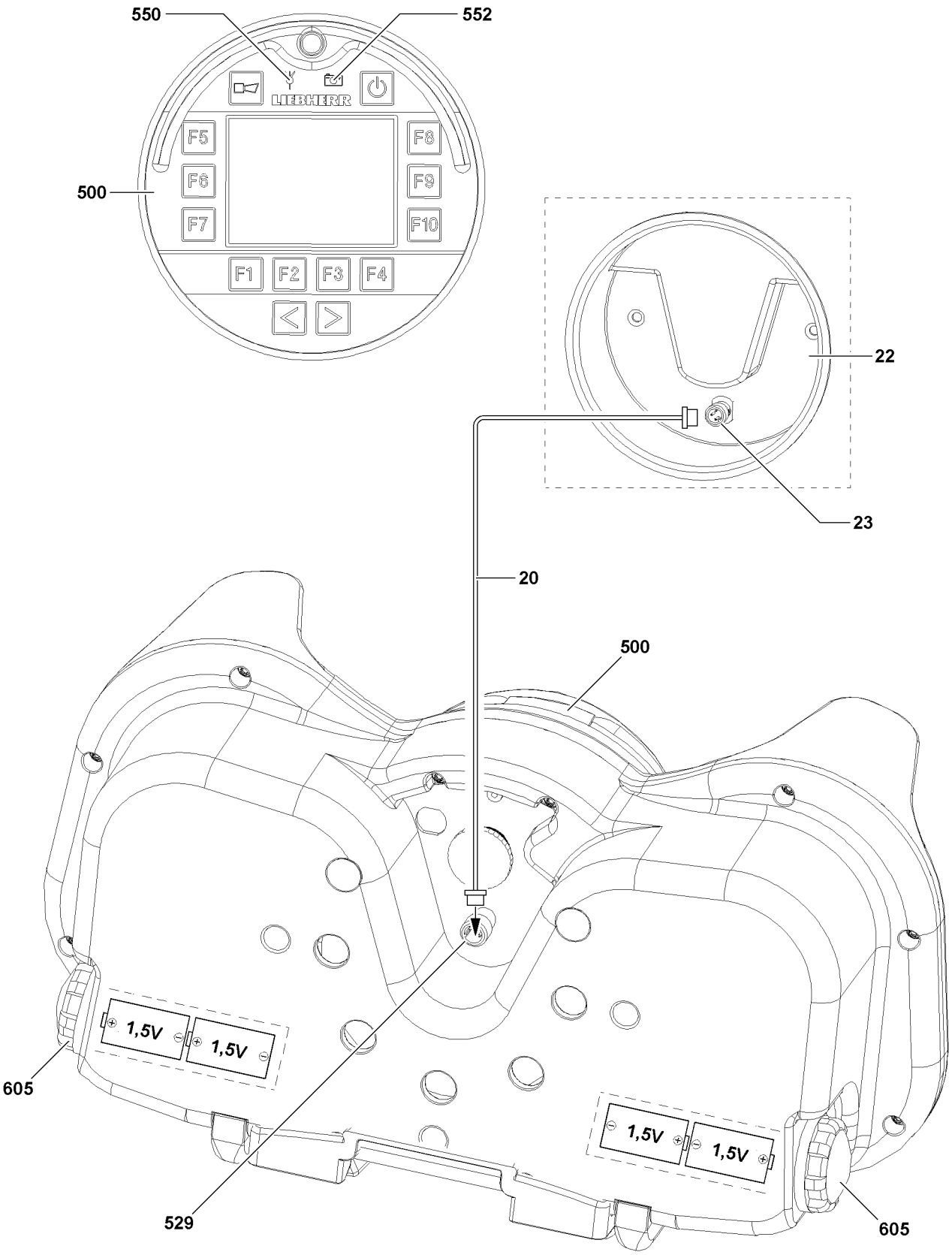

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Fig.113381: Measures in case of problems

21.3 Is the radio connection faulty

If the radio connection to the Rechargeable battery **500** is faulty or interrupted (Indicator light *Transmission signal* **550** lights up red), then it can be bypassed with line **20**, see section “Bypassing the radio connection”.

The radio connection to the BTT **500** can become faulty or interrupted through the following occurrences:

- Through electric / electronic interference signals and / or obstacles (such as interference signals from a close-by radio transmitter and / or walls).
- The radio module on the BTT **500** or on the BTB is defective.
- The rechargeable battery in the BTT **500** is discharged.
- Due to bad selection of the placement location by the operator.

21.4 Bypassing the radio connection

Make sure that the following prerequisites are met:

- The line **20** to bypass the radio connection is on hand.
- The BTT **500** is turned on.
- The caps on the plug connection **23** and the plug connection **529** have been removed.

▶ Screw the line **20** in the charging console **22** onto the plug connection **23**.
▶ Screw the line **20** on the BTT **500** onto the plug connection **529**.

Result:

– The radio connection is bypassed.

Note
If the radio connection cannot be bypassed, even though the BTT is connected via the line **20** with the charging console **22** then there is an error.
▶ Contact Liebherr Service to determine the cause of the problem and further procedure.

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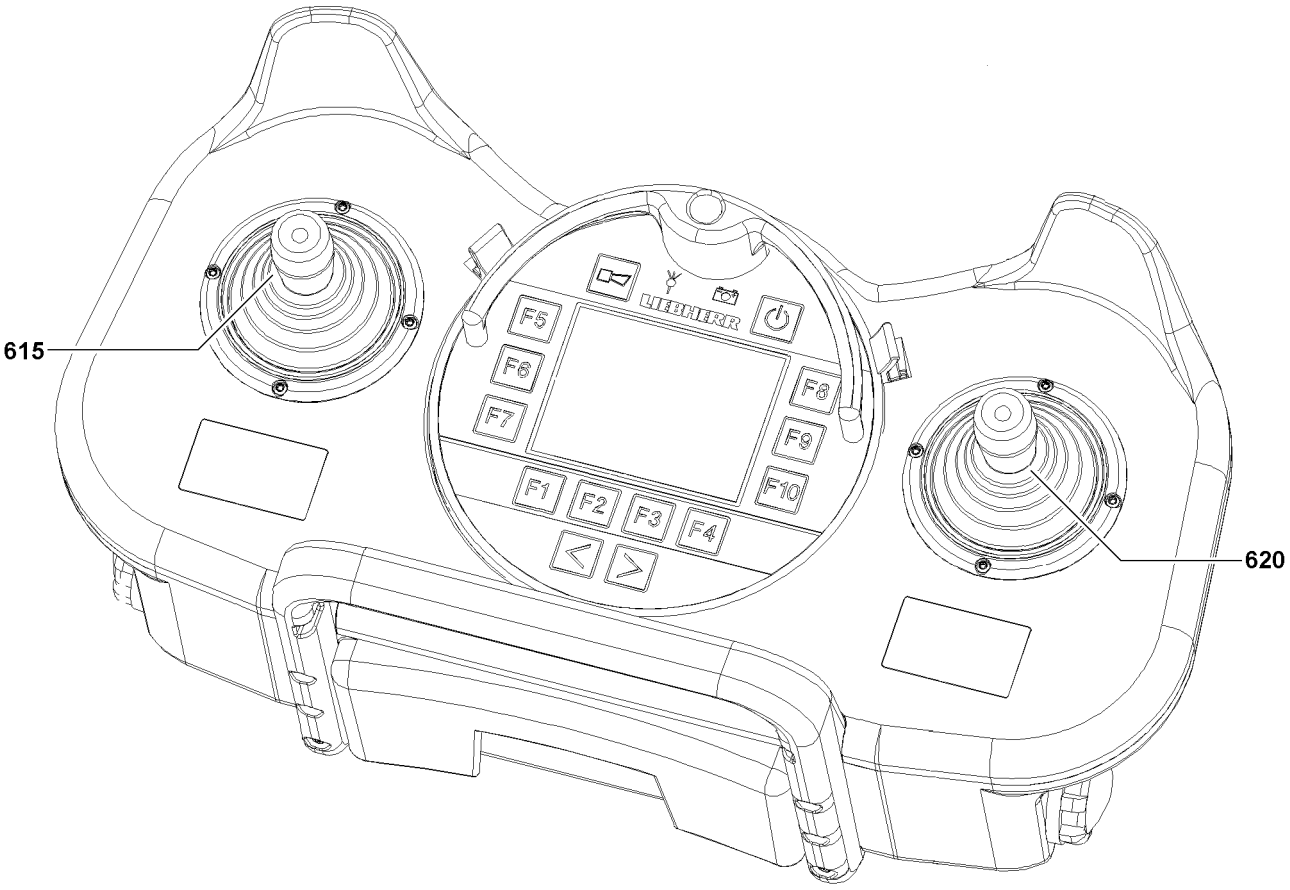

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Fig.119597: Inspection and maintenance

22 Inspection and maintenance

22.1 Inspecting the radio remote control

WARNING
Erroneous functions on the radio remote control!
Erroneous functions on the radio remote control can cause accidents.
Personnel can be killed or seriously injured.
This could result in property damage.
▶ Check the radio remote control for functionality before starting crane operation / assembly operation.

▶ Before starting crane operation / assembly operation, run through all crane movements individually without a load.

22.2 Maintenance instructions for radio remote control

– Protect the radio remote control panel against moisture.
– Never clean the radio remote control using a water jet or steam jet cleaner.
– From time to time, check the dust covers on the manual control levers for leaks.
– If cracks occur on the bellows, replace them immediately. Dirt and moisture can infiltrate through cracks and cause damage on the manual control levers **615, 620**.

WARNING
Danger of accident!
▶ Never work with a defective radio remote control system.
▶ The repair of a defective radio remote control system may only be made by expert personnel, and only by using original spare parts from Liebherr-Werk Ehingen.
▶ If this is not observed, the **license for the radio remote control becomes invalid** and the required operational safety is no longer ensured.
▶ If this is not done, warranty claims will be void.

– In case of a technical defect, shut down the radio remote control system every time until the problem has been rectified.

▶ Turn the radio remote control off.
▶ Have the radio remote control system repaired properly in case of a defect.

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