RECKMANN

INSTRUCTIONS FOR USE

BFE-100, BFE-125 and BFE-165

Electric Boom Furling System



RECKMANN

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1 Packing list

Date: _____ Order number: _____

Dealer: _____ Customer: _____

Designation	Quantity	Remarks
Boom drive unit	_____	BFE – _____
Drive flange	_____	
Control unit	_____	
2-button control panel	_____	For BFE-100
3-button control panel	_____	For BFE-125 and BFE-165
Mast cable	_____	Length: _____ m
Control panel cable(s)	_____	Lengths: 5 / 10 / 20 / ___ m
Winch sensor	_____	
Winch sensor cable(s)	_____	Lengths: 5 / 10 / 15 / ___ m
Remote control kit	_____	
Versions label	_____	
Quick operations guide	_____	
Additional parts:		

Compiled by: _____

On: _____

Signature: _____

2 About this manual

2.1 Introduction

This manual is intended for owners of electric boom furling systems as well as anyone involved in their assembly, operation or maintenance.

Read this manual carefully before using the electric boom furling system or carrying out any assembly, disassembly or maintenance work.

Assembly and repair work may only be carried out by qualified professionals.

2.2 Typographical conventions

Important safety information and warnings are highlighted as follows:

⚠ Warning

'Warning' is used to mark instructions which are likely to lead to serious injury or death if not followed.

⚠ Caution

'Caution' is used to mark instructions which may lead to minor to moderate injury if not followed.

Notice

'Notice' is used to indicate the possibility of material damage.

3 Safety

3.1 Intended use

The Reckmann BFE is an advanced electric boom furling system for use with mainsails on Bermuda-rigged sailing yachts.

It is designed to rotate a mandrel onto which the mainsail is furled. This controlled rotation enables the mainsail to be either fully furled or partially furled (reefed). The system includes a locking mechanism that secures the mandrel, allowing to sail with the mainsail partially furled.

It is also designed to absorb the loads generated by the sail’s tack lashing and transmit both these loads and the furling torque to the mast via the fork connection and universal joint.

3.2 Safety instructions

- Read this manual carefully before operating or performing any work on the boom furling system.
- Keep the manual with the boom furling system to allow quick access if needed.
- In addition to this manual, the yacht owner's manual and the manuals for other onboard equipment must also be followed.

⚠ Warning

Hazards arising from improper use

- Do not carry out any conversions or modifications on the boom furling system.
- Do not use the boom furling system:
  - for racing,
  - for furling, attaching or securing anything other than a mainsail.

Risk of injury due to improper assembly, maintenance or use of the furling system

- Use of the system requires appropriate qualifications. Unsupervised access by untrained persons (including children) must be avoided.
- The boom furling system must be clearly visible from the position where it is switched on. Only activate the system once it is confirmed that no one is in the immediate vicinity.
- Controls for activating the electric drive must be non-latching (momentary) pushbuttons. Switches that remain in the 'on' position, such as toggle or latching types, are not permitted.
- Assembly and repair work must be carried out by qualified personnel using appropriate tools and facilities.
- Only perform the repairs described in this manual. For all other repairs, contact an authorised service station.
- Carry out all maintenance at the intervals specified in this manual.
- Inspect the boom furling system for visible damage before each use. Do not use the system if any damage is found.

Notice

Risk of damage and malfunction

- **Material pairing and galvanic corrosion:** Avoid direct contact between carbon components and anodised aluminium. Ensure the mandrel includes internal glass fibre layers. Use an insulating plastic ring or apply a suitable anti-seize compound (e.g. *Tef-Gel*) between the mandrel and the crown. When connecting stainless steel to aluminium, always use plastic washers or apply anti-seize to prevent corrosion.
- **Cleaning off salt water**: After contact with saltwater, rinse the boom drive unit and all connectors thoroughly with fresh water. While aluminium is corrosion-resistant under normal conditions, regular cleaning is essential in marine environments.
- **Flooding:** Adjust the boom level to prevent water from entering the boom. Ensure adequate drainage holes and check that the setup allows water to drain away effectively.
- **Inspection and maintenance:** Check electrical connections regularly, especially at the mast base. Clean and grease connections with appropriate electrical contact grease at least once per month. Inspect all seals for signs of wear, corrosion or potential short circuits.
- **Control unit:** Regularly check the control unit for signs of condensation or water ingress. Ensure the unit is mounted in a way that prevents water from accumulating.

4 Design and function

4.1 Function

The electric boom furling system consists of a drive unit which is installed inside the mandrel.

The drive unit enables furling and reefing of the mainsail by turning the mandrel. An integrated locking mechanism secures the mandrel in any position while sailing reefed.

The drive unit is controlled by an electronic control unit, which is installed below deck. It must be connected to the yacht's power supply and manages all control signals and safety functions. A display on the control unit shows system status and error messages.

The control panel allows direct operation of the furling system and provides feedback on the current function as well as the status of the locking mechanism. The panel features backlit buttons to improve usability at night.

In case of power failure, the mandrel can be operated manually using the emergency wheel. The locking mechanism may also be released manually.

4.2 Component overview



1	Boom drive unit	4	Mast cable
2	Control panel cable	5	Control panel
3	Drive flange	6	Control unit

Optional equipment includes a remote control kit, winch sensor and cable, and a second control panel with cable. For detailed system drawings, refer to S*ection 15.2.*

4.3 Optional equipment

Various optional components are available to extend the functionality or flexibility of the system. This section provides an overview of the most commonly used optional equipment.

4.3.1 Remote control kit

An optional remote control kit is available for operating the system from a distance. It provides the same basic functions as the control panel and allows flexible handling during furling and reefing. See *Section 5.7* for installation and setup details.

Important: Only either a remote control or a second control panel can be connected to the system. If both are required, a custom distribution wiring harness for the control panels must be installed.

The remote control kit includes the following components.



1	External antenna	3	Handheld remote controller
2	Wall bracket for handheld unit	4	Receiver with cable and plug

4.3.2 Winch sensor



Winch sensor box (shown without cover)

The optional winch sensor detects the current draw of the mainsail halyard winch to enable synchronised unfurling. When the unfurl mode is activated, the boom drive actively follows the winch speed to ensure coordinated sail deployment. The sensor must be installed in the power line of the winch used for hoisting. For installation details, see *Section 5.8.*

Note for systems delivered from 2025 onwards, or older systems updated to firmware version V2.00 or later:

These systems default to passive unfurling, where the drive unit switches to freewheel. In this mode, the mainsail is hoisted entirely by winch, without synchronisation. A winch sensor is no longer required. This setup is considered safer and more reliable, as it avoids synchronisation errors and allows the use of any suitable winch for unfurling.

Notice

- When using a winch sensor, only the connected winch may be used for unfurling. Other winches are not detected and must not be used for this purpose.
- Use of the winch sensor and synchronised unfurling is only recommended for specific cases where the user is fully aware of the function and its requirements. The mode must be activated in the service menu and be adjusted strictly following the procedure described in this manual.
- The setup may require periodic readjustment to maintain good and safe performance.

4.3.3 Other available optional parts

The following components are also available as optional equipment:

- Clevis pin and nut
- Additional control panel (for dual-station setups)
- Replacement handheld remote control
- Mast cable extension 2.2 m or custom lengths
- Control panel connecting cables in various lengths (5 m, 10 m, 20 m)
- Winch sensor connecting cables (5 m, 10 m, 15 m)
- Emergency reefing line (75 m long, 15 m of which is tapered to 4 mm Dyneema)
- Mandrel drilling template for drive unit installation, also available for rent

5 Assembly

Notice

- Before installing the system, check each component for damage due to transport.
- Verify that all parts are present and match the packing list.
- Installation must be carried out by qualified personnel in accordance with this manual. Improper assembly may result in malfunction or damage to the system.

The drive unit and control system are delivered preconfigured and plug-and-play. Installation requires mounting the individual components and connecting the supplied cables.

Each component's installation is described in a dedicated subsection. For electrical connection details, see *Section 6 Electrical wiring and power supply.*

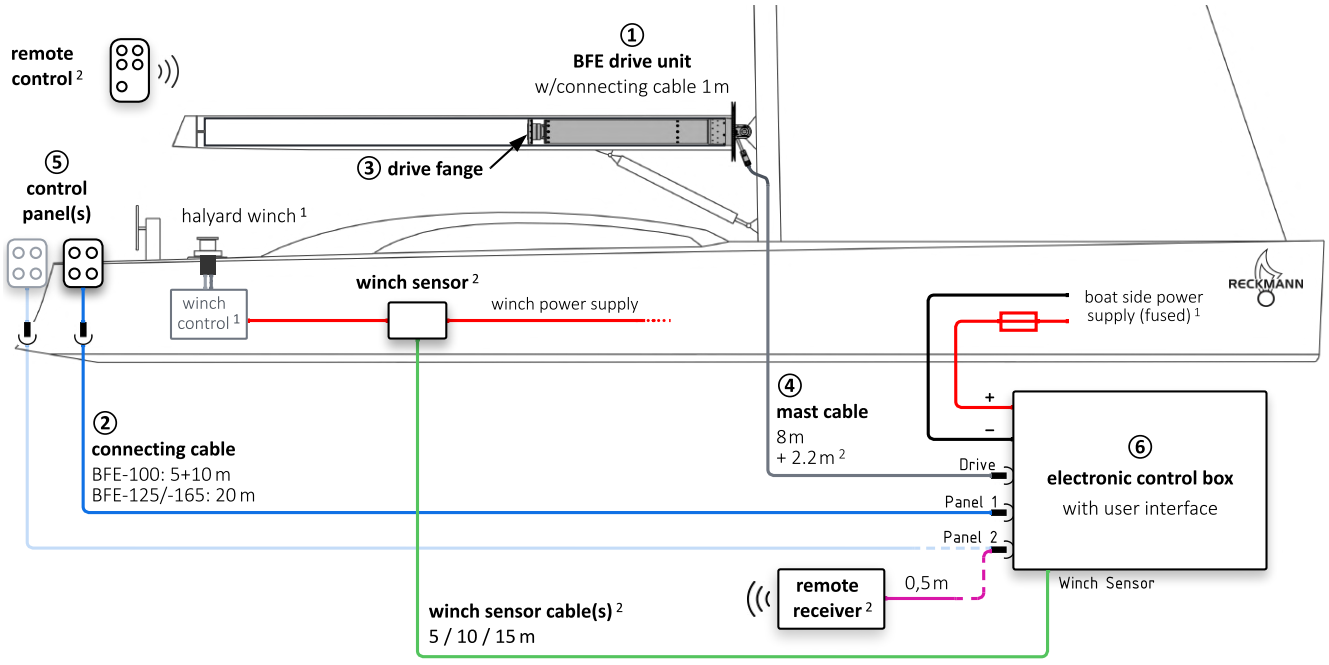
For all questions concerning the boom itself, including mandrel installation and structural details, contact the boom manufacturer or shipyard.

5.1 Installation scheme

The following schematic shows the complete system layout in a typical onboard installation.

All supplied components and their interconnections are illustrated, including power supply and control wiring.

This overview is intended as a general reference to support orientation during installation. The actual layout may vary depending on vessel configuration.



Notes: [1] not supplied, [2] optional equipment

5.2 Boom drive unit

⚠ Caution – Risk of crushing fingers

Keep fingers clear of gaps when assembling components to avoid crushing.

Notice

To prevent galvanic corrosion and ensure proper material compatibility:

- The mandrel must include internal glass fibre layers to prevent direct contact between carbon and aluminium components.
- Use an insulating plastic ring or an anti-seize compound (e.g. *Tef-Gel*) between the mandrel and the crown/drive flange.
- Make sure all cable connectors are protected with the provided covers when disconnected. The inside of the plugs **must not** be permanently exposed to weather.
- If in doubt about material compatibility or corrosion protection, contact Reckmann or a qualified technician.

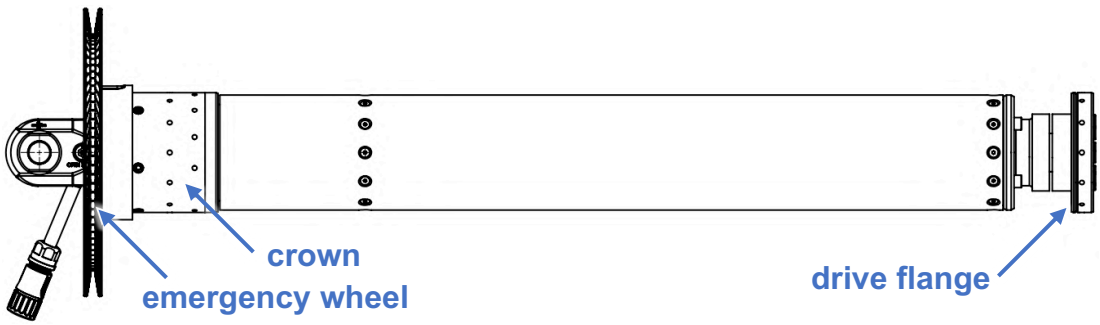
Before installation, three bolt circles must be drilled into the mandrel:

- The two forward bolt circles are used to fasten the crown of the drive unit (which also carries the tack lashing point for the sail).
- The rear bolt circle is used to secure the drive flange.

A Reckmann drilling template is available on request. Alternatively, the exact hole dimensions are shown in the technical drawings at the end of this manual, allowing you to create your own template.

Installation steps

1. Drill the bolt holes in the mandrel according to the specifications for your drive unit.
2. Install the drive flange at the rear position using the supplied bolts and thread adhesive (e.g. *Loctite*).
3. Insert the drive unit into the mandrel.
4. Manually release the locking mechanism (see Chapter 11) to allow the crown to rotate freely. Align the crown so that the tack lashing point is correctly positioned relative to the clew lashing point.
5. Secure the crown to the mandrel using the forward bolt holes and thread adhesive.
6. Insert the mandrel into the boom and connect the fork of the unit to the gooseneck fitting/universal joint.
7. Route the motor cable out of the boom for connection to the mast cable.





Boom drive unit (view of the front and the manual back up wheel)



Boom drive unit (view of the claw coupling)



Drive flange

5.3 Mast cable



Mast cable with plug cover

Notice

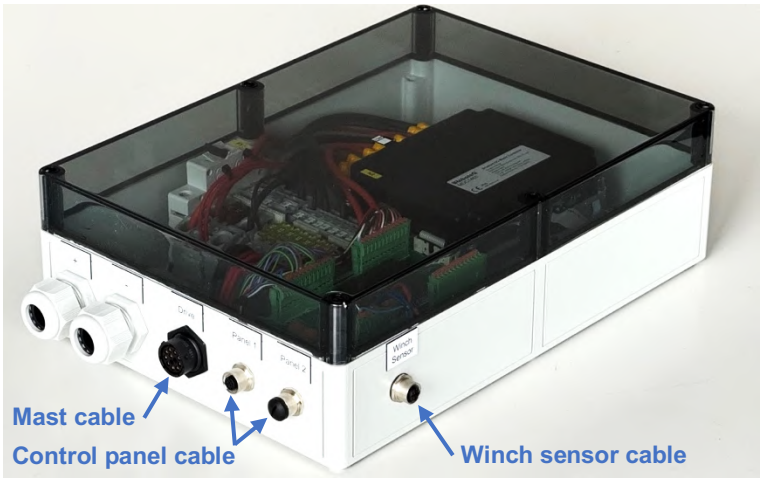
- The mast cable must be disconnected when de-rigging the mast. Therefore, the routing below deck should avoid unnecessarily complex cable runs.
- If the mast cable is stored outdoors, e.g., with the cable installed in a stored mast, all plugs must be protected using the supplied covers. The interior of the plugs **must not** be exposed to the weather.
- Always ensure that enough cable length remains between mast and boom to allow unrestricted boom movement under all sailing conditions. The cable must never be under tension or at risk of being crushed or pinched.

The mast cable connects the boom drive unit to the control unit. It is supplied with a fixed length of 8 m unless otherwise specified. An extension cable (2.2 m) is available on request for installations where the cable must be disconnected below deck.

The following steps are necessary to install the mast cable:

1. Drill a hole near the gooseneck to route the mast cable into the mast.
   - Relevant dimensions: plug Ø 31 mm, for the cable Ø 15 mm
   - Note: The cable can be supplied with the plug depinned for easier installation.
2. Feed the cable into the mast from above deck. Route the cable down the mast to the below-deck area where the control unit is installed.
3. Secure the upper cable outlet at the mast (e.g. with a strain relief fitting or gland) to fix the position of the cable and avoid unwanted movement.
4. Plan the cable length emerging from the mast so that it can be cleanly and safely connected to the boom drive unit. Make sure the cable allows full movement of the boom in all operating positions without causing strain or bending on the connector.
5. Connect the cable to the boom drive unit at the gooseneck. The connector uses a bayonet coupling and must be inserted by hand only. Push together and twist to lock. **Do not use tools or excessive force, as this may damage the coupling.**

5.4 Control unit



Control unit with wiring connections

The control unit is installed below deck and manages all system functions and signals.

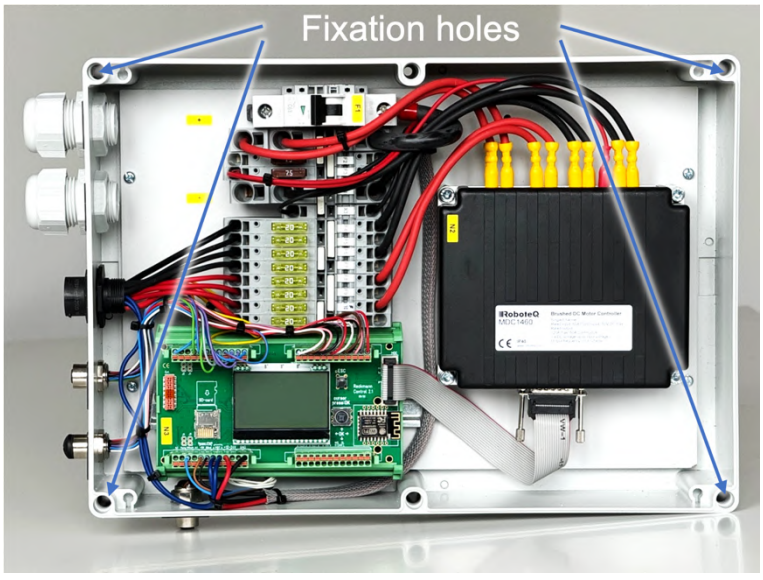
Installation remarks

- Mount the control unit below deck, near the mast and close to the power supply.
- Install it so that the display is readable, the cover remains accessible, and the cable entries point downward to minimise water ingress.
- Secure the unit to a solid surface using appropriate screws, inserting them only through the designated corner mounting holes, see picture below.
- Prepare cable routing (mast cable, control panel cable, winch sensor, power supply).
- Use strain relief and drip loops on all cables to protect against moisture and tension.

Note: Electrical connection details are provided in *Section 6.1*.

Notice

Do not drill into the housing under any circumstances. This will compromise the waterproof integrity of the enclosure. Use only the designated **fixation holes**, as shown below.



5.5 Control panel and cable



BFE-100: Control panel with 2 pushbuttons and a control light



BFE-125 and BFE-165: Control panel with 3 pushbuttons and a control light

For safe and efficient operation, the panel should always be within easy reach of the halyard winch operator. If the winch is accessible from the helm, the panel may be mounted there. Otherwise, hoisting requires a second person or an autopilot, see *Chapter 8 Operation.*

Ensure proper sealing of the panel and mounting plate to maintain ingress protection.

If a second control panel is used, refer to *Section 7.4 Panel 2 Mode* for setup.

For BFE-125 and BFE-165, the pushbuttons from the supplied control panel can be removed and installed into a custom or boat-specific panel. This allows integration with an existing control station. See *Section 6.3 Installing pushbuttons in custom panels* for instructions.



Control panel connecting cable (for all BFE types)

The control panel is connected to the control unit using the supplied connecting cable(s).

Standard cable lengths are:

- BFE-100: 5 m and 10 m
- BFE-125 and BFE-165: 20 m

The cables are plug-and-play and may be routed according to installation needs.

These cables can be freely combined and extended. Extension cables are available from Reckmann and can be added at any point to increase the total length as needed.

They are standard 12-pin M12 A-coded cables, commonly available on the market. While third-party cables may be used, correct pin configuration and high-quality manufacturing must be ensured.

5.6 Attachment of the mainsail

The mainsail shall be fully hoisted before it is furled for the first time. It is not recommended to roll the sail into the boom from a position on deck, as this may lead to misalignment/damage.

Preparation

- Place the folded sail on deck next to the boom.
- Prepare all necessary lashings.
- Rotate the mandrel so that the tack lashing point (crown's eye) faces upward.

Mandrel positioning

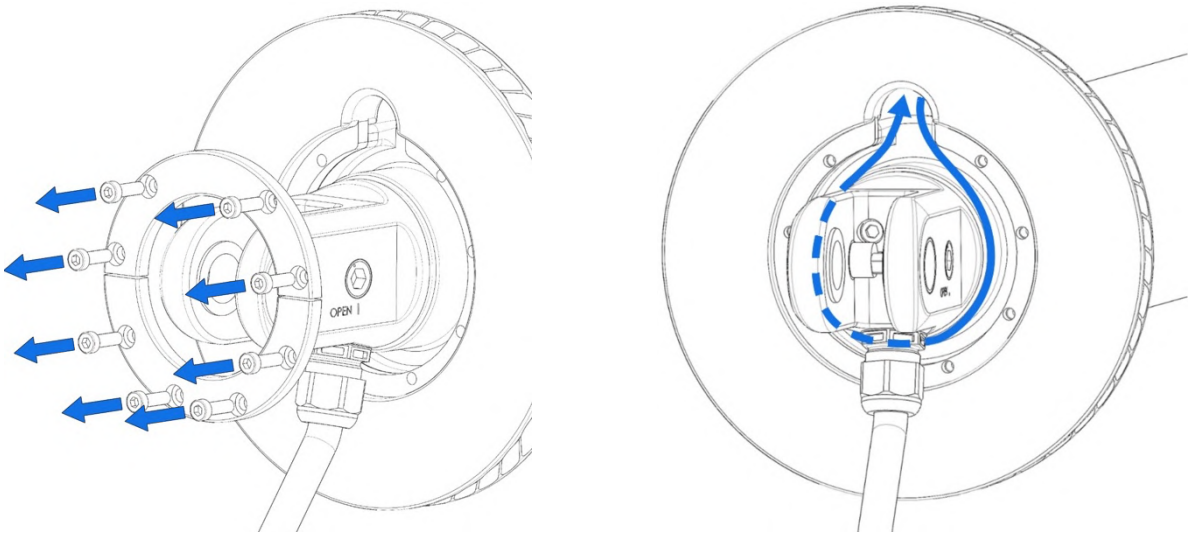
- Press the ***furl*** button until the tack lashing point faces upward.
- For slow and precise movement, or to rotate in the opposite direction:
  Press and hold ***unfurl*** until the locking mechanism is fully open (***lock open*** steadily illuminated). While still holding ***unfurl***, briefly press ***furl*** to position the mandrel.
  Important: This function is for positioning only. It must not be used for hoisting.

Tack lashing

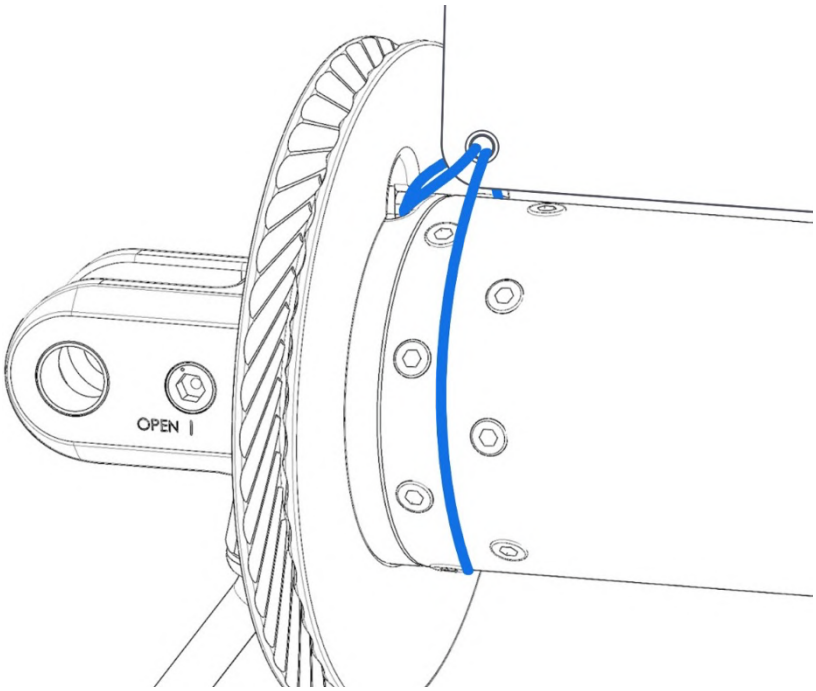
The tack of the sail must be securely lashed to the tack point on the crown. An additional lashing should be routed around the mandrel to absorb furling loads and minimise strain on the tack attachment.

The exact method of lashing slightly differs depending on the model:

- On **BFE-100 systems**, the tack must be lashed around the crown, which is enclosed by the emergency handwheel. To allow access, it may be necessary to remove the handwheel's retaining ring before installation. The lashing is then passed through the centre of the wheel and securely wrapped around the crown.

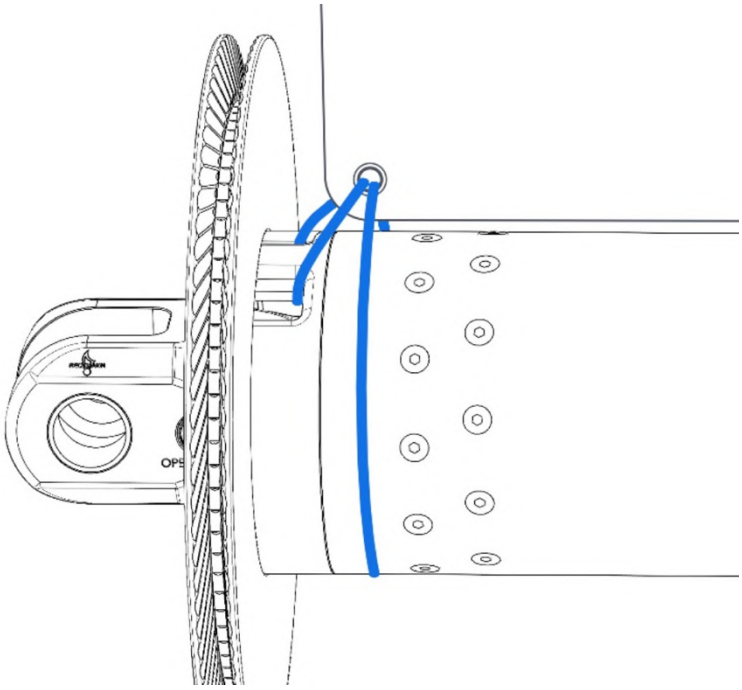


BFE-100 removal of the handwheel's retaining ring and routing of the tack



BFE-100 tack lashing

- On **BFE-125 and BFE-165 systems**, the tack is lashed directly around the dedicated crossbar on the crown, which serves as the tack attachment point.



BFE-125 and BFE-165 tack lashing

Clew lashing

The clew must be lashed according to the boom manufacturer's specifications. Typically, one lashing passes through the clew ring, and a second lashing is wrapped around the mandrel.

Luff

Feed the luff tape through the feeder and into the mast track.

First hoist

Attach the halyard to the headboard and carefully hoist the sail to its full height.
Check all lashings and readjust if necessary to ensure a clean and even sail shape.

Furl the sail using the boom drive, following the procedure described in *Chapter 8 Operation.*

This process should be carried out slowly and under observation, ensuring that the sail furls smoothly. Any resistance or misalignment must be corrected immediately before continuing.

⚠ Caution

- The mainsail must only be hoisted under appropriate weather and wind conditions.
- The vessel should be positioned head to wind, and the hoist must be carried out in a controlled and safe manner. Pay attention to crew safety.

5.7 Remote control

1. Mount the receiver unit in a dry and protected location within 0.5 m of the control unit.
2. Connect the receiver to the ***Panel 2*** socket using the supplied 0.5 m cable.



3. The handheld remote is delivered preconfigured and ready to use, with batteries already installed. No pairing or setup is required. If the batteries need to be replaced, use two **AAA (LR03) 1.5 V batteries**.



4. Install the wall bracket at a suitable location to stow the handheld when not in use.
5. After installation, switch on the system and check the display on the control unit. An encircled lightning symbol appears next to each function (unfurl, flatten, furl) when the handheld is switched on (press ***START***). When a button on the remote is pressed, the symbol next to the corresponding function becomes highlighted:



Remote detected, standby mode



Remote input active

The receiver includes a built-in antenna suitable for most installations. If the signal is insufficient, the included external antenna can be connected. For installation instructions, please refer to the separate manual provided with the remote control kit.

Note: By default, the control unit is configured for use with a remote control on Panel 2. If the unit is set to operate with a second control panel, this setting must be changed. Adjust the software configuration as described in *Section 7.4 – Subtopic Panel 2 mode.*

5.8 Winch sensor

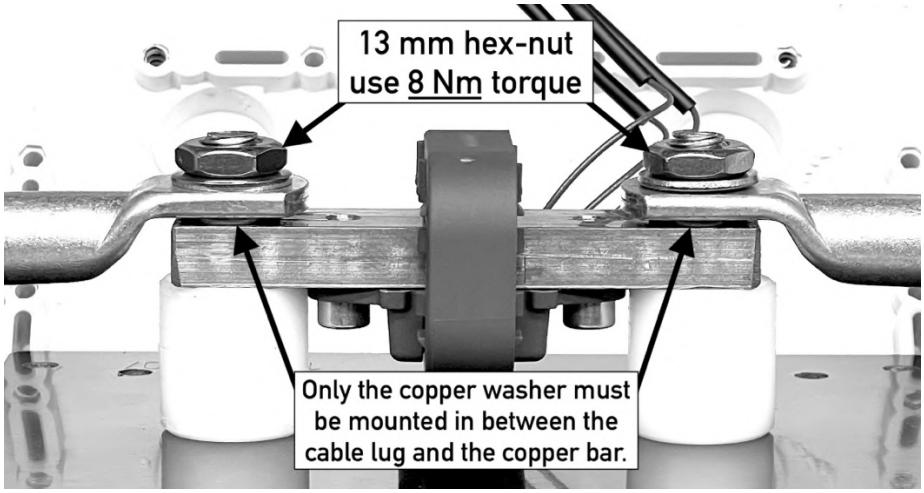
The optional winch sensor is used to detect the operation and load of the mainsail halyard winch. It enables synchronised unfurling when the system settings are set up for this.

Specifications

- Suitable cable diameter: 9–17 mm (corresponds to approx. 16–70 mm² cross-section)
- Terminal bolts inside the sensor box: M8
- Maximum continuous current: 250 A

Installation

1. Mount the sensor box close to the halyard winch power cable. This can be either the positive or negative cable, as long as it carries only the current for the mainsail halyard winch. The current direction does not affect functionality.
2. Use the supplied mounting brackets for secure installation of the sensor hosuing.
3. Route the cable through the cable glands and connect it to the internal terminals.
4. Mount the cable terminals directly onto the copper busbar, using only the supplied copper washer in between. Tighten the nut to 8 Nm torque to ensure reliable electrical contact. See photo below for correct setup.
5. Tighten both cable glands firmly to prevent water ingress into the sensor housing.
6. Connect the winch sensor cable (available in 5 m, 10 m, or 15 m lengths) from the sensor box to the port labelled “Winch Sensor” on the control unit. For connection details, refer to *Section 5.1 Installation* and *Section 15.3 Wiring diagrams.*
7. After installation, switch on the system and check the main screen to confirm that the sensor is recognised, see *Section 7.2.* For retrofit installations, the system must be configured to use the sensor via the service menu, contact a Reckmann technician.



Example of proper terminal connection to copper bar with washer and nut

Notice

- The sensor must be installed in the power line of the mainsail halyard winch.
- Do not install the sensor in a cable that also supplies other equipment.
- Avoid routing the sensor cable close to high-current cables to minimise interference.

6 Electrical wiring and power supply

To ensure safe and reliable operation of the BFE system, the electrical power supply must meet the following requirements. Wiring and fusing must comply with marine electrical standards. The wiring scheme in *Section 5.1* shows an overview of the complete system including the optional winch sensor. See also the wiring diagrams in *Section 15.3*.

6.1 Power connection of the control unit

⚠ Caution – Risk of fire and burns

- Switch off the main circuit breaker or disconnect the battery negative pole before working on the electrical system.
- The power supply cable must be properly dimensioned to prevent overheating, excessive voltage drop, and to ensure safe and reliable operation of the system.
- Do not connect or disconnect cables while the system is powered.
- Install a suitable boat-side fuse, rated according to the maximum system current. Incorrect wiring, undersized cables, or missing fuses may result in fire or overheating.

Notice

- Take protective measures to prevent electrostatic discharge during all work on the control unit in order to protect sensitive electronic components from being damaged.
- Do not work at the control unit while under power. Connecting or disconnecting cables or sockets of the circuit board may damage it.

6.1.1 Power supply requirements

- Nominal supply voltage: 24 V DC (48 V on request)
- Operating voltage range: 20–30 V DC (40–60 V DC for 48 V systems)
- Boat-side fuse: Must match the maximum current draw of the respective model, use slow-blow marine-grade fuses
- Refer to *Section 15 Technical data* for information on current draw and power requirements specific to each model.

For installations based on 12 V systems, a suitable DC-DC converter is required. Ensure appropriate wire sizing and consider efficiency losses.

6.1.2 Cable sizing, lengths and routing

Notice

- The controller regulates the output power by switching the power to the motor on and off at high frequencies. At these high frequencies, wire inductance can cause issues. Therefore, avoid long connection between the control unit and the power source. Install positive and negative cables closely paired or twisted to reduce inductive interference, especially for BFE-165.
- The system must be protected from voltage fluctuations and spikes, which may damage the control unit.

Power cables must be dimensioned to avoid overheating, ensure low voltage drop, and maintain stable operation. Route cables as short and directly as possible, and always install an appropriately rated fuse close to the power source.

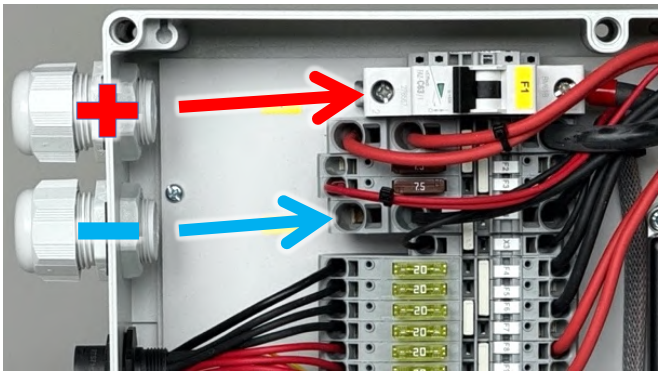
6.1.3 Electrical connection

Notice

Ensure correct polarity. Reversed connection will damage the control board.

1. Route the positive and negative power cables through the cable glands of the control unit housing. Cable glands fit cable diameters of 9–17 mm.
2. Connect the cables to the internal screw terminals as follows, also see picture below:
   - **F1 = + (positive)**
   - **X1 = – (negative)**

   The terminals accept cable cross-sections up to 25 mm² for both positive and negative connections.
3. Tighten the cable glands securely to ensure a watertight seal.



Power supply terminals inside the control unit

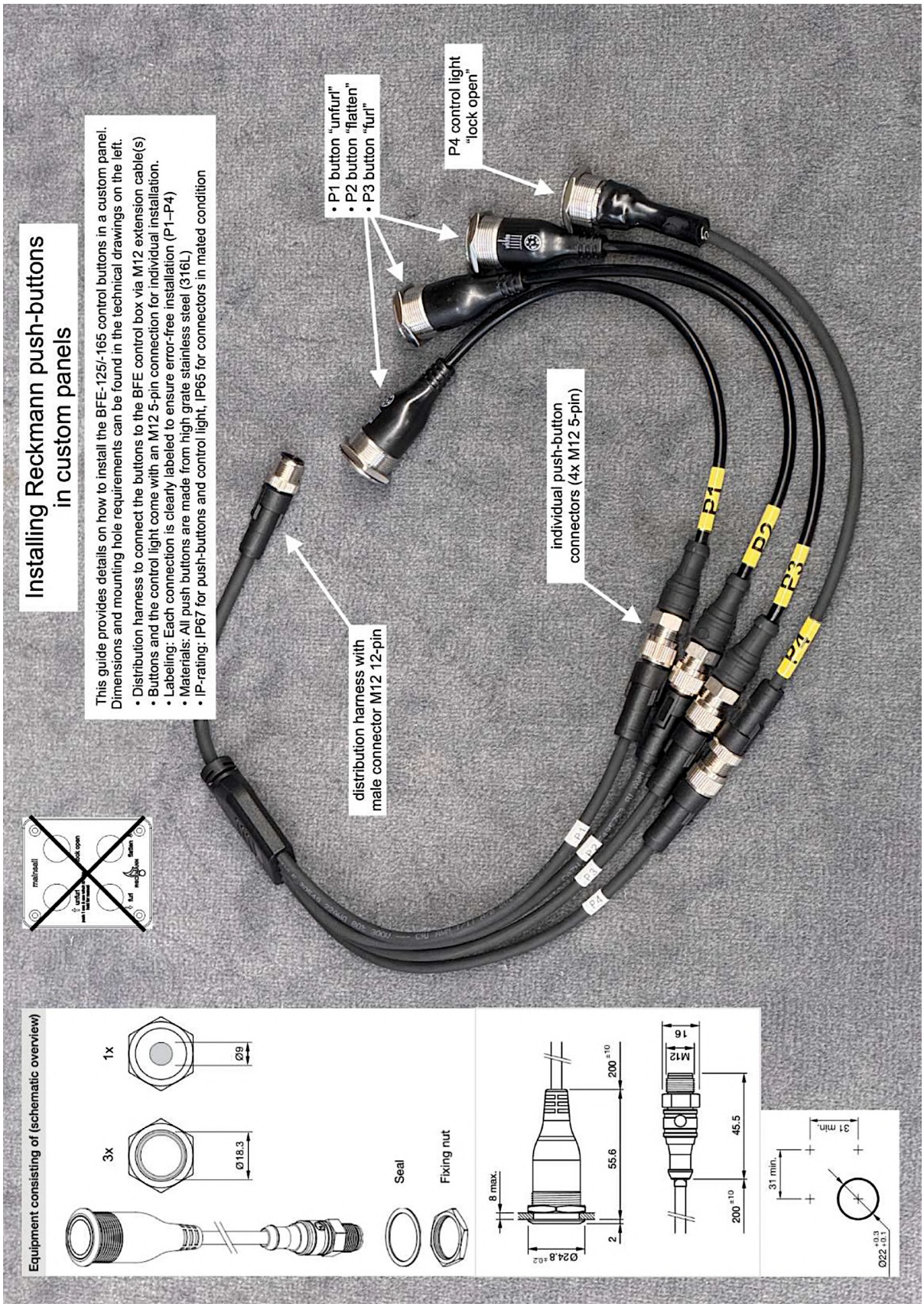
6.2 Wiring of the plug connections

Notice

- Supplied cables must not be cut or lengthened. Doing so voids the warranty.
- Never use tools or excessive force to fasten the mast cable bayonet connector.

1. Connect the mast cable and control panel cable to the corresponding labelled sockets on the control unit.
2. If used, connect the winch sensor cable between the sensor box and the designated "Winch Sensor" port on the control unit.

6.3 Installing pushbuttons in custom panels



7 System setup and configuration

The control unit serves as the central control and monitoring system. It processes all signals, controls motor and locking functions, and provides real-time feedback via the built-in display. The display continuously shows system parameters such as motor current, speed, voltage, temperature and elapsed time.

System settings can be accessed and adjusted directly using the onboard menu.

7.1 Initial power-up

Before operating the system for the first time, the control unit and connected components must be checked for correct function. The following steps ensure a successful start-up:

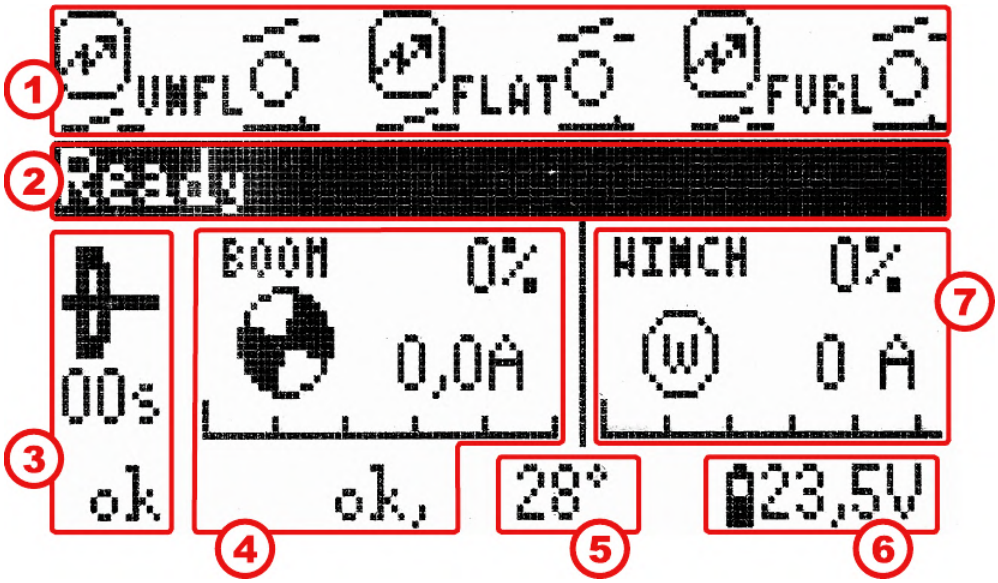
1. Switch on the system by turning on the main circuit breaker the battery.
2. The control unit display will light up and show the boot sequence, including the system logo and version number
3. During start-up, verify the following that the system starts without error messages. Once started, the system enters the main screen showing current operating status.

If needed, film the boot screen with a smartphone to capture the version number, which appears only briefly.

7.2 Main screen

The main screen provides real-time information about the system's status, components, and operating conditions.

Each section of the display corresponds to a specific function or system component, described below. A symbol table follows this section and explains the visual indicators in detail, including their meanings and possible display states.



① Control button indicator

The top line of the display shows the input status for ***unfurl***, ***flatten*** and ***furl.*** The circles show whether a button is pressed, including the status of its NO/NC contacts and whether illumination is active. When a remote control is connected, a lightning symbol will appear and indicate when a remote button is pressed.

② System status information

The status bar provides information on system operations and error messages.

③ Locking Mechanism

The clutch symbol indicates the status of the electrically actuated locking mechanism.

The countdown timer runs when a button is briefly released during an operation where the locking mechanism is open. The lock does not engage immediately but only after the timer has counted down.

Below the timer, a short status message describes the current state of the locking mechanism:

ok – The locking mechanism is in the correct position and functioning as expected.

move – The mechanism is actively engaging or disengaging.

break – Electrical connection fault.

timeout – The actuator did not respond as expected within the given time frame.

④ Motor Status

Displays motor current draw and speed as a percentage of the maximum possible control input. The corresponding rotational speed values are listed in *Chapter 15 Technical data*. The disc symbol visually represents motor rotation and indicates its direction.

⑤ Motor controller temperature

Shows the temperature of the motor controller.

⑥ System Voltage

Shows the current system supply voltage.

⑦ Winch sensor information

Displays data for the connected winch

- Current winch load (in %)
- Winch current draw (in Amps)

If no winch is connected or detected, the field displays "no winch". A list of the most common display symbols and their meaning is shown in the symbol reference table below.

Control panel signals

System	Symbol	Mode
Control button indicator		Normal state / no interaction
		Button is illuminated
		Button is pressed and illuminated
Remote control button indicator Note: If none of these appear, the system is not set up for use with a remote control		Remote off
		Remote control is on, button not pressed
		Button pressed

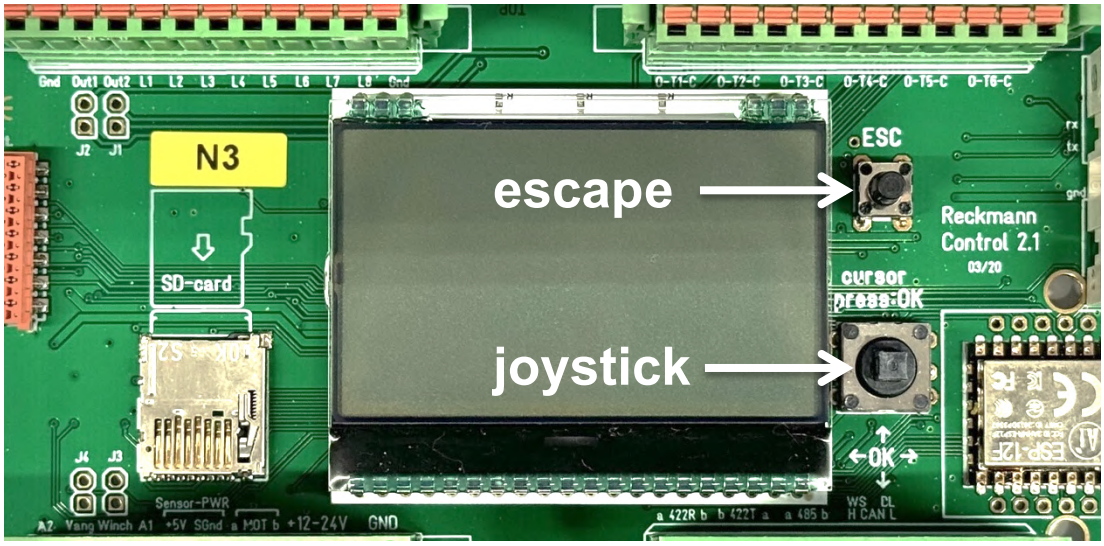
Drive unit status

System	Symbol	Mode
Locking mechanism		Closed
		Open
	 [in motion]	Opening / closing in process
	 [flashing]	Lock error
Electric motor		Motor not powered The motor contacts are closed, creating a braking effect that restricts movement.
		The motor is supplied with electrical power to drive the mandrel. *Example: 75% speed @ 21.4 Amps*
		Motor freewheeling The motor contacts are open, allowing the mandrel to rotate freely.

7.3 User input and navigation

The control unit features an integrated joystick (cursor control) button for navigating the display menu. Use the joystick to navigate through the menu by moving it **up**, **down**, **left** and **right**. Press the cursor straight in for ***OK***.

Above the cursor stick is another button for ***escape*** (ESC). Press the ESC-button for to go one level back in the menu.



7.4 User settings

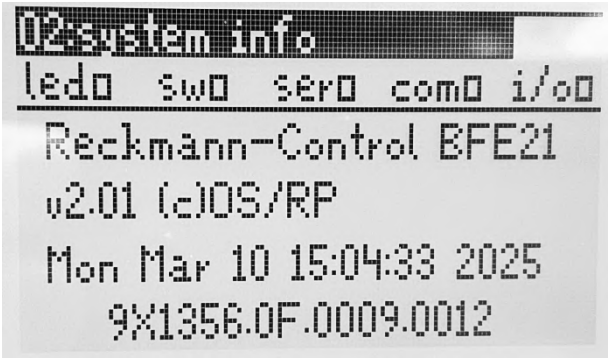
The following settings can be accessed via the user menu of the control unit. These parameters allow the user to adapt the system to individual preferences and the onboard environment.

Press the cursor **OK** to enter the control unit's user menu.

- system info
- open/close lock
- set furl speed
- set furl slow speed
- set flatten speed
- learn winch
- set winch idle amp
- set winch max amp
- set winch gain
- panel 2 mode
- set LED brightness
- view log
- save log to card
- <service> (locked manufacturer's menu, see *Section 7.5 Service menu*)

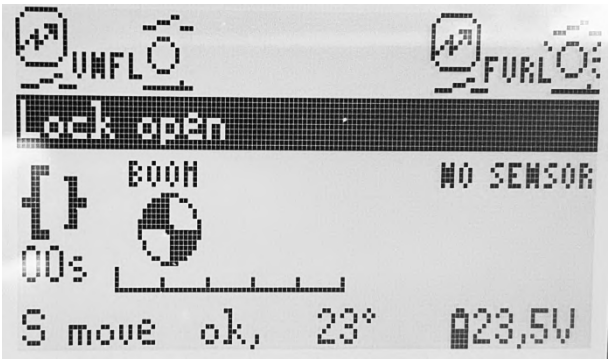
System info

Press ***ok*** in the main menu when ***system info*** is highlighted. Display shows the software version and the status of the drive.



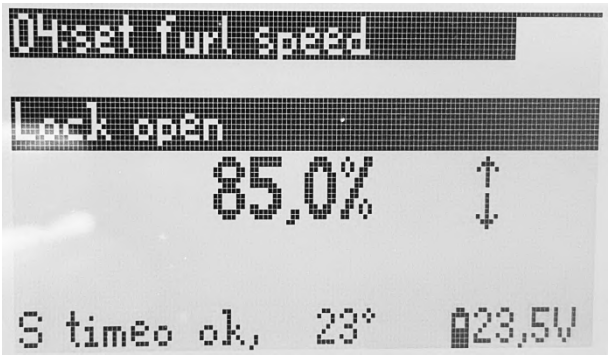
Open/close lock

Press ***ok*** in the main menu when ***open/close lock*** is highlighted. The boom drive opens or closes the locking mechanism (clutch). Please always use this function when you manually want to turn the mandrel. For example, to attach the main sail. Only open the locking mechanism with the screw in emergency situations as described in *Section 11.1.*



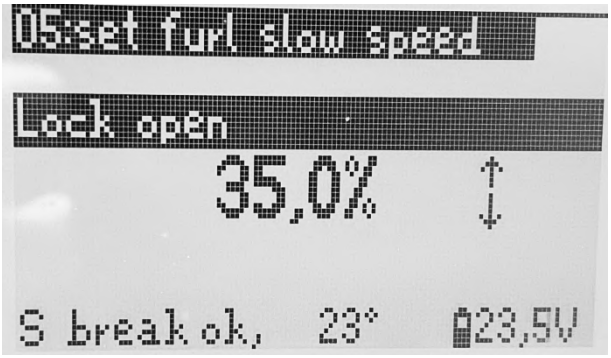
Set furl speed

Press ***ok*** in the main menu when ***set furl speed*** is highlighted. The furl speed sub-menu opens and you can adjust the percentage of possible motor revolutions. Press the cursor down to minimize and up to raise the percentage up to 100%.



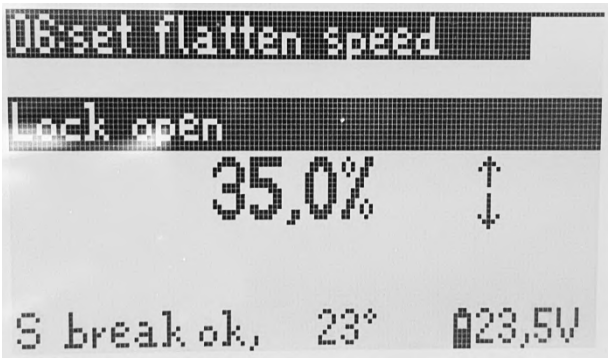
Set furl slow speed

Press ***ok*** in the main menu when ***set furl slow speed*** is highlighted. The slow furl speed sub-menu opens and you can adjust the percentage of the slow speed revolutions. Press the cursor down to minimize and up to raise the percentage up to 100 %. We recommend leaving the percentage between 30 % and 50 %. The slow speed adjusts the furl/unfurl speed when operating the slow speed mode, see *Section 8.2.4 Slow speed* function (only for BFE-125 and BFE-165).



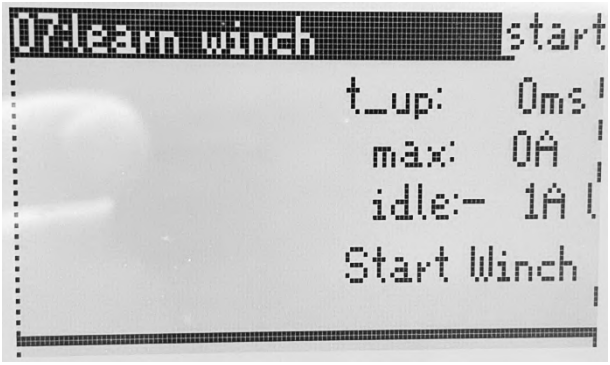
Set flatten speed

Press ***ok*** in the main menu when ***set flatten speed*** is highlighted. The set flatten speed sub-menu opens and you can adjust the percentage of possible motor revolutions in the flatten mode. The flatten luff function is used to tension the mainsail's luff, enabling you to achieve a precise sail trim.



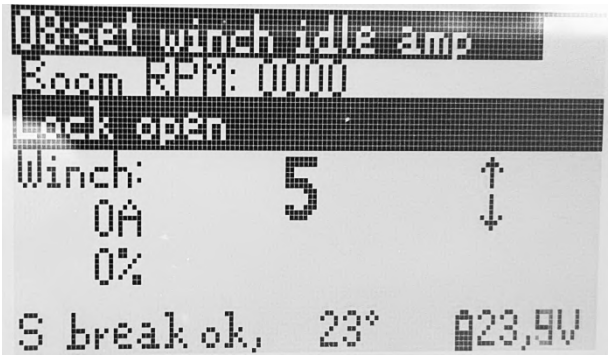
Learn winch

Follow *Section 7.7 Winch sensor calibration* for further instructions.



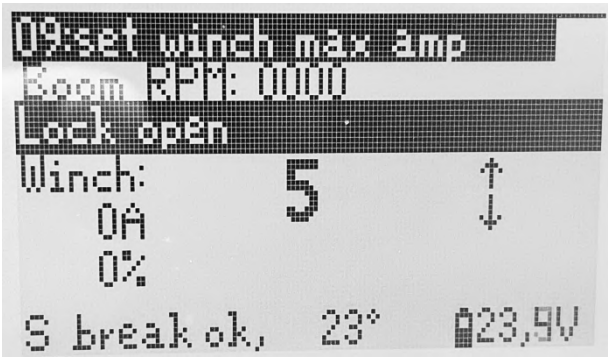
Set winch idle amp

Press **ok** in the main menu when **set winch idle amp** is highlighted. This parameter was saved during the learn winch process. You can adjust this parameter to optimize the boom drive function or to avoid dysfunction. See more information in *Section 7.7 Winch sensor calibration.*



Set winch max amp

Press ***ok*** in the main menu when ***set winch max amp*** is highlighted. The parameter here was saved during the learn winch process. You can adjust this parameter to optimize the boom drive function or to avoid dysfunction. See more information in *Section 7.7 Winch sensor calibration.*



Set winch gain

Press ***ok*** in the main menu when ***set winch gain*** is highlighted. The parameter here was saved during the learn winch process. You can adjust this parameter to optimize the boom drive function or to avoid dysfunction. See more information in *section 7.7 Winch sensor calibration.*

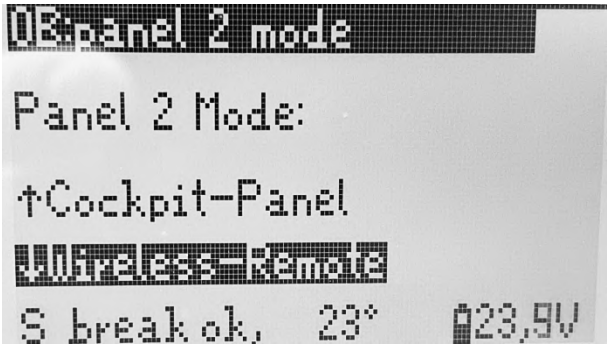


Panel 2 mode

The Panel 2 socket on the control unit can be used for either a second control panel or a wireless remote control. By default, the system is set to Remote Control mode.

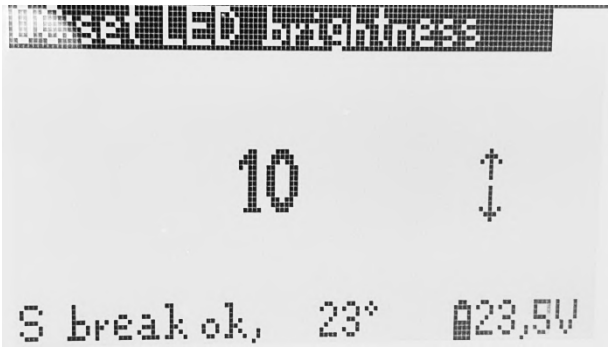
If you plan to connect a second control panel instead, you must change the configuration in the menu:

Press ***ok*** in the main menu when ***panel 2 mode*** is highlighted. Select ***Cockpit-Panel*** and confirm if you want to add a second control panel or select ***Wireless-Remote*** and confirm if you want to add a remote control. Return to the main screen by pressing the ***escape*** button. If a remote control is selected and correctly connected, the main display will show additional remote signal indicators as shown in *Section 7.2*.



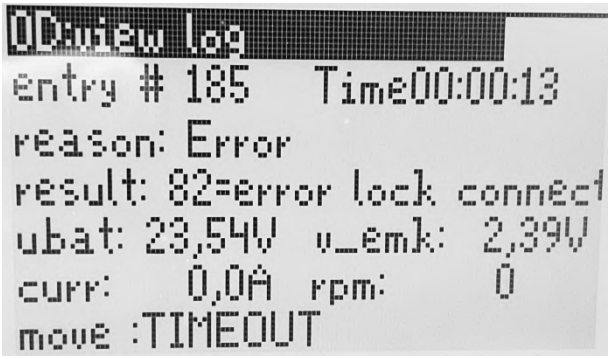
Set LED brightness

Press ***ok*** in the main menu when ***set LED brightness*** is highlighted. This sub-menu allows you to adjust the brightness of the built-in LEDs. The LED-brightness can be adjusted from Range: 0 to 10, factory setting: 2.



View log

Press ***ok*** in the main menu when ***view log*** is highlighted. This sub-menu shows the log of the last 250 operations used and errors occurred.



Save log to card

Press ***ok*** in the main menu when ***save log to card*** is highlighted to save all log data to a micro-SD-card, which needs to be placed in the card reader slot.



7.5 Service menu

Notice

The service menu allows access to advanced configuration parameters that affect the core behaviour of the system. Incorrect settings may impair function or safety and must not be changed without proper knowledge. Configuration changes in the service menu must be carried out under the guidance of a Reckmann technician only.

The ***<service>*** menu includes:

- Activation of winch sensor synchronisation unfurl mode
- Definition of furling direction (CW / CCW)
- Adjustment of current limits / furling torque
- Reset to factory defaults
- Options for testing and diagnosis

7.6 Factory settings

The following user settings were made by Reckmann as factory settings.

Reckmann BFE model type	BFE-100	BFE-125	BFE-165	Adjustable range
set furl speed	85 %	75 %	90 %	1 – 100 %
set furl slow speed	—[1]	35 %	35 %	1 – 100 %
Set flatten speed	—[1]	35 %	35 %	3 – 40 %

[1] *The values for furl slow speed and flatten can be set in the menu of the BFE-100 model but are obsolete, as these functions cannot be activated due to the mechanical design of the drive unit and the absence of the **flatten** button.*

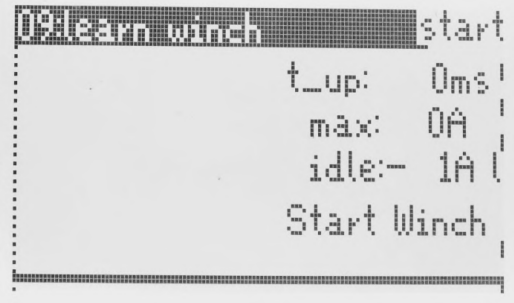
The parameters for the winch are determined during the ***learn winch*** process. They may also be manually adjusted.

	Range	Step size	Factory setting
set winch idle amp	1 – 100 A	1 A	5 A (must be adjusted)
set winch max amp	1 – 200 A	1 A	5 A (must be adjusted)
set winch gain	5 – 100	5	60

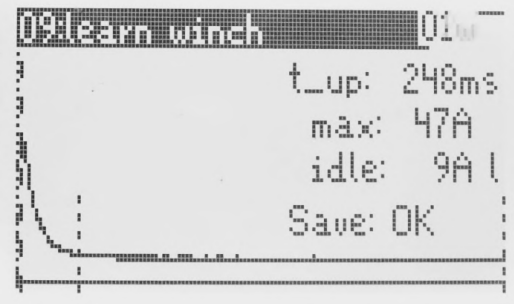
7.7 Winch sensor calibration

If the winch sensor is installed and synchronised unfurl mode shall be used, the system must be calibrated to the characteristics of the mainsail halyard winch. The Learn Winch process allows the control unit to record the idle and maximum current draw of the winch. This enables the drive to synchronise its speed with the winch during unfurling. The mainsail is not involved in this process. Only operate the empty main halyard winch. On multi-speed winches, use the speed you want to use for unfurling, usually the greater speed.

1. Make sure that the winch sensor is connected in line of the power supply from the winch for the main halyard, as described in *Section 5.8.*
2. Turn on the power switch ***F1*** of the control unit. Press the joystick down ***OK*** to enter the main menu of the control unit.
3. Choose ***learn winch*** by moving the joystick up or down and pressing ***OK*** to select.
4. The control unit is now in learn winch mode. The lights of the control panel indicate this by alternating flashing of the ***unfurl*** and ***furl*** pushbuttons.



5. Take all ropes off the winch, it has to be completely clear and able to run freely.
6. Continuously run the winch until the lights of the control panel stop flashing. This only takes 1–3 seconds. The learn winch process was successful when the ***unfurl*** and ***furl*** lights remain illuminated, while the ***flatten*** light (found only on the BFE-125 and BFE-165 models) keeps blinking.
7. Go back to the control unit. The display shows a graph like the one in the following image when the process was successful.



8. Press and hold the joystick ***OK*** until the ***learn winch*** dialogue is terminated.
9. The screen now shows the main menu or main screen, meaning that the parameters are saved.

Troubleshooting guide

If there are any problems during the ***learn winch*** process, please consult the following troubleshooting guide or contact Reckmann.

Fault / Observation	Cause/ Explanation	Remedy
The boom drive starts turning without halyard tension.	Winch idle amp is too low. It's the idle current the winch needs to rotate without any halyard forces.	Raise the ***winch idle amp*** by 1–2 A and test again. Repeat if problem persists.
The boom drive does not start turning in winch sync mode.	Winch idle amp is too high.	Reduce the ***winch idle amp*** by 1–2 A and test again. Repeat if problem persists.
Oscillation of the boom drive.	Winch gain is too high. Winch gain describes how the boom drive reacts to the halyard winch.	Reduce **winch gain** in steps of 10 or 20. Test after each adjustment.
The sail unfurls quicker than the winch can pull it up, leaving the sail loose during operation.	Winch gain is too high.	Reduce **winch gain** in small steps. Test after each adjustment.
The mandrel overturns and furls the sail on the wrong side before it is fully hoisted.	Winch gain is too high.	Reduce **winch gain** in steps of 10 or 20. Test after each adjustment.
Slow reaction of the boom drive. The luff tension or overall sailcloth tension is too high.	Winch gain is too low.	Raise **winch gain** in small steps. Test after each adjustment.
The boom drive is too slow and winch gain is already set high. The winch is struggling/slow to get the sail up.	Winch max amp is too high.	Reduce ***winch max amp*** in small steps and test the function. Repeat if problem persists. You may also reduce ***winch idle amp.***
No graph is displayed during the optional ***learn winch*** process	1. The winch sensor might not be connected to the power supply of the correct winch. 2. The winch sensor could be incorrectly connected to the control unit. 3. The winch button might not have been stopped when the control panel lights stopped flashing.	1. Ensure the winch sensor is properly connected to the power supply of the correct winch. 2. Verify that the winch sensor is correctly connected to the control unit. 3. Stop pressing the winch button after the control panel lights stop flashing (after 1–3 s).

8 Operation

Before initial operation, check that the unlocking screw and the mechanical lock inside the boom drive are closed as explained in *Chapter 11 Emergency* .

For each operation, ensure that the boom is in a condition suitable for the specific operation. In particular, this involves the angle of the boom to the mast, the angle of the boat to the wind, the tension on the mainsheet and the vang.

For easy handling, a quick guide has been supplied with your boom drive, which can also be downloaded from our website.

8.1 Duty cycle

⚠ Warning

Exceeding the specified duty cycle limits may result in overheating, reduced efficiency or system malfunctions. Prolonged operation beyond these limits can cause electrical failures, short circuits or severe damage to wiring and components, posing a fire risk. To ensure safe and reliable operation, always adhere to the recommended duty cycle parameters.

The duty cycle defines the permissible operating time under load to ensure reliable performance and avoid overheating. The system must be operated according to the following duty cycle classifications:

- **S2 – Short-term operation:** Maximum 5 minutes of continuous operation at full load, followed by an extended cooling period.
- **S3 – Intermittent operation (10% duty cycle**): Maximum 3 minutes of operation at full load within 30 minutes, with adequate cooling intervals.

If the system is operated at partial load, the maximum operating time may be extended or the required cooling period between cycles may be reduced accordingly.

8.2 Control panel operation

The boom drives are equipped with two different control panels. The BFE-100 features two buttons for unfurling and furling, along with a control lamp to indicate the lock status. Whereas, the BFE-125 and BFE-165 include an additional button for the flatten function. The two different control panels are shown in the following two pictures.



Control Panel for BFE-100



Control Panel for BFE-125 and BFE-165

8.2.1 Unfurling

Notice

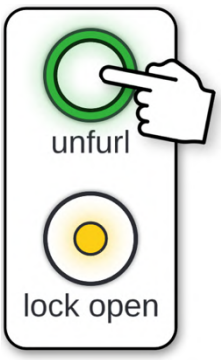
- The boom furler can rotate at the following maximum speeds:
  31 rpm (BFE-100), 37 rpm (BFE-125), and 27 rpm (BFE-165).
  Excessive winch speed may exceed these limits and cause damage to the system.
- The permissible halyard line speed during unfurling depends on the current diameter of the furled sail. A useful approximation for **BFE-100 and -125** is:
  Allowable line speed (m/min) ≈ Diameter of the sail roll (cm)
  For **BFE-165**, the allowable line speed is lower and can be approximated as:
  Allowable line speed (m/min) ≈ 0.85 × Diameter of the sail roll (cm)
- Adjust the winch gear accordingly to maintain the line speed within the recommended range.

The unfurling function unlocks the boom drive to hoist the sail with the halyard.

It is recommended to put clearly visible hoist-marks on the halyard to find the exact hoist position and the different reefing positions.

8.2.1.1 Passive unfurling – Standard mode

Short press



1. Press the ***unfurl*** button briefly until the yellow control light starts blinking. This indicates the boom lock is opening.
2. The lock is fully open when both the ***unfurl*** button and ***control light*** stay on. Hoist the sail with the halyard.
3. To lock the boom drive, briefly press ***unfurl*** again (or any other button). The blinking control light shows the lock is closing.

Once all lights turn off, the lock is fully closed. The boom drive is now ready to handle sail forces. Use the halyard to adjust the luff tension if needed.

Press and hold

Alternatively press and hold ***unfurl***. The boom stays unlocked and in freewheel mode as long as the button is pressed. Releasing the button re-engages the lock shortly after.

8.2.1.2 Synchronised unfurling with optional winch sensor

The second option is synchronized unfurling. It is only activated if the system contains the optional winch sensor. The operation is the same as for passive unfurling in standard mode, as described before in *Section 8.2.1.1.*

The only thing to be aware of is to use the winch with the sensor is installed and which was trained during the learn winch process as described in *Section 7.7.*

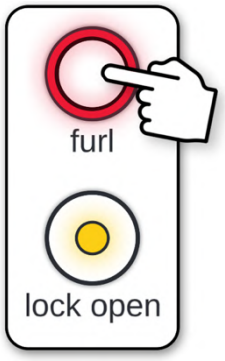
If no winch sensor is detected, the system automatically switches to the passive unfurling in standard mode. This also applies if the winch sensor is disconnected or lost during operation.

8.2.2 Furling and reefing

Notice

- The halyard tension needs to be reduced **before** and may be re-adjusted **after** the operation.
- The mandrel cannot unlock when there is too much luff tension

The furling function rolls the mainsail onto the mandrel for storage or reefing.



1. Press and hold the ***furl*** button. The yellow control light blinks as the lock opens, which takes about 3 seconds.
2. Once the control light is steady, the furling begins. Ease the halyard and adjust its tension to control the furling process.
3. Release the ***furl*** button to stop. The system briefly waits before the lock closes, allowing furling to continue if needed. As all lights turn off, the lock is closed.

Slow speed function: While holding the ***furl*** button, additionally press ***flatten*** to reduce the furling speed. Release ***flatten*** to return to normal speed (Not for BFE-100).

Consider that reefing is recommended at certain positions. Each reef is a position where a sail batten is just furled onto the mandrel, ideally on its bottom side. A mark for each reefing position on the sail's luff tape or the halyard will facilitate the procedure. Enquire your sailmaker for appropriate markings.

8.2.3 Flatten luff (only for BFE-125 and BFE-165)

Notice

- The flatten function is **NOT** to be used for furling the main sail.
- The operation of the flatten function is electronically **limited to 5 seconds** per time.

The flatten luff function is used to tension the luff or make minor adjustments to the sail height, such as positioning the sail precisely at a reef. It instantly furls the sail without the usual delay in opening the locking mechanism. By running over the teeth of the ratchet wheel, it is possible to furl the sail a few centimetres back in.



1. Press the ***flatten*** button to tighten or pull down the luff.
2. A clicking sound from the boom will be heard; this is normal.

The difference between *Flatten* and *Furl*

In general, the flatten function also furl's the sail, but there are some key differences compared to the furl function:

- The operation begins immediately, unlike furl or unfurl, where the rotation is delayed to allow the mandrel to unlock first.
- Since the internal lock isn't released, the mandrel moves over a ratchet wheel, producing a loud click noise, which is normal.
- The mandrel rotates more slowly, and the motor applies more torque compared to furl.
- The flatten mode should be used for **no more than 5 seconds.**

This mode is specifically designed to flatten or trim the luff of the sail, similar to the Cunningham on a conventional sail. It can also be used to fine-tune the furling position of the sail, such as during reefing.

8.2.4 Slow speed function (only for BFE-125 and BFE-165)

It is possible to reduce the furl speed during the operation of the boom drive unit.

Therefore, keep the ***furl*** or ***unfurl*** button pressed and additionally press the ***flatten*** button. The boom drive reduces its speed using the pre-set furl slow speed parameter. It is possible to change this parameter in the main menu under *set furl slow speed*.

8.3 Remote control operation

The remote control provides the same functionality as the control panel described in *Section 8.2* enabling operation of the furling system from a distance.



Operation procedure:

1. **Activate:** Press the green ***START*** button before use.
2. **Operation:** Press the corresponding button for the desired function.
3. **Deactivate:** Press the red ***STOP*** button after use to prevent accidental activation.

Key differences compared to the control panel:

- The remote switches off automatically after **2 minutes** of inactivity. Reactivation is done by pressing the ***START*** button.
- The buttons are backlit but have no visual feedback when pressed.

9 Maintenance

9.1 Prior to each use

- Inspect all mechanical connections. Ensure that the pins connecting the drive unit to the mast are properly seated and secured, with no signs of wear or loosening.
- Check all ropes and lashings for wear or damage.
- Inspect the boom furling system for any visible signs of external damage.

9.2 After each use

Notice

Do not use a pressure washer on electrical components such as buttons, cables, plugs, cable ducts, etc.

Rinse the boom drive unit and connectors with fresh water after exposure to saltwater.

9.3 Regular maintenance

- Check all electrical connections regularly. In particular, the plug connector of the mast cable near the gooseneck should be opened, cleaned, and greased with electrical contact grease at least once per month to maintain reliable conductivity.
- Inspect the control unit for signs of moisture, condensation or water ingress.
- Check the front section of the drive unit for any signs of corrosion. Remove or fully unfurl the sail to expose the forward aluminium components. Corrosion may occur here, especially if a saltwater-soaked sail has been furled for an extended period.
- Inspect the drainage holes of the boom to ensure that water can drain freely. Blocked or missing drainage may result in standing water inside the boom, potentially submerging the drive unit and increasing the risk of damage or corrosion.

9.4 Service intervals

To maintain optimal performance and safety, the system should be inspected periodically. The recommended inspection timeframe depends on usage and operating conditions:

- **Regular use:** Inspection is recommended after approximately 5 years.
- **Light use:** Inspection should take place at least every 10 years.
- If **malfunctions or irregularities occur**, the system should be inspected immediately.

If an inspection is required, the system must be sent to an authorised service station. A list of authorised service centres is available at www.reckmann.com. For instructions on disassembly, refer to *Chapter 12 Disassembly*.

10 Troubleshooting and support

10.1 Troubleshooting guide

In case of problems with your boom furling system, please visually check the system and its components for damages, go through the points in the following troubleshooting guide or contact Reckmann.

Fault / Observation	Cause	Remedy
The sail slowly unfurls when reefed. The boom furler does not seem to be locked after operation.	**Manual emergency unlock engaged** The manual emergency unlock may be activated. This mechanism mechanically overrides the electrical system.	Check the position of the emergency unlocking mechanism, as described in *Chapter 11* Emergency procedures. Turn the unlocking bolt so that its engraved dot is 180° away from the **OPEN** mark to restore normal operation.
	Unfurl mode active ***unfurl*** and ***lock open*** are continuously illuminated.	Exit the unfurl mode by pressing ***unfurl*** or any other button. ***lock open*** will blink while the actuator engages the lock. The system is fully locked when all lights are off.
	Actuator error There may be an issue with the actuator preventing the locking mechanism from closing. Possible causes include: • Faulty wiring • A defective actuator • A control system error • Other electrical or mechanical malfunctions	Check the main screen for error messages, verify the lock status (*Section 7.2*). Open and close the lock using the menu option *open/close lock*, while monitoring the lock symbol on the display to confirm the actuator's position. Inspect the mast cable: Open the plug connectors, check for corrosion on pins. If the issue persists, contact a Reckmann technician for further assistance.

Fault / Observation	Cause	Remedy
The furler does not respond to any command, and no buttons illuminate when pressed.	**No electrical power** Power supply is off or not connected.	Check power cables, fuses inside the control unit, battery connection, and battery charge level.
	Pushbutton panel not connected Or faulty wiring of custom wired panels.	Check the control button indicator symbols in the main screen (*Section 7.2*). Symbols must show correct states. Check wiring.
The furler does not respond to any command, but the buttons do illuminate when pressed.	**Furler connection issue** There is likely a connection issue between the control unit and the furler. The system receives input but cannot communicate with or power the drive.	Check the main screen for error messages. Check the mast cable plug connectors. Check the 20 A fuses inside the control unit. If one fuse is intact and the others are blown, the issue is in the power line corresponding to the intact fuse
	Luff tension too high: If the luff tension is too tight, it may prevent the lock from disengaging. Additionally, a blocked halyard could hinder the release before operating the boom furler.	Release luff or halyard.
System exits synchronised unfurl mode during process	The halyard winch is too fast on the sail that the resulting tension induces current in the furler motor, which the system interprets as back-driving.	Adjust the winch settings as described in *Section 7.7 Winch sensor calibration*
Very tight luff during unfurling	Synchronised unfurl mode not active. Wrong winch used	Press unfurl for 1 second so that the button and the control light are illuminated. Use the connected winch

10.2 Technical support

Reckmann provides comprehensive support.

Online support

You can access technical support via:

https://www.reckmann.com/en/54/prod/8/bfe.html

Telephone support

Reckmann is happy to assist you:

Reckmann Yacht Equipment GmbH

Siemensstraße 37-39

25462 Rellingen

Germany

Phone: +49 4101 3849-0

Email: info@reckmann.com

Website: reckmann.com

Important Information for support requests

When contacting us for service or to report a fault, please have the following details ready:

- Boat type and hull / build number
- Boom furler serial number
- Software version number

How to find the software version number on your Reckmann boom furling system

Switch the system off and on again. During start-up, the software version is briefly displayed. We recommend recording this moment (e.g., with a mobile phone) to note the version number afterwards. Alternatively, the software version can be found in the main menu under *System Info*.

10.3 Meaning of the control panel lights



Signal	Cause	Remedy
Flashing of ***unfurl***, ***furl*** and ***lock open***.	The control unit has just been switched on and is in the start-up process.	No action needed. The flashing will stop withing a few seconds.
unfurl and ***lock open*** are continuously illuminated.	The system is set to unfurl mode, and the lights indicate that it is latched in this state.	No issue. This is just a system status indication. The mode is deactivated by pressing any button or will automatically exit after 5 minutes of no input.
While operating ***furl***: The ***furl*** button starts blinking.	The furler experiences high resistance or a blockage, reaching the pre-set current limit. This indicates that the system is operating at maximum torque.	This is not a critical issue, simply an indication of maximum power output. Ease the mainsail halyard more quickly to reduce resistance.
While operating ***flatten***: ***unfurl*** and ***furl*** buttons flash synchronously.	The time limit for the flatten luff function has been reached.	Press ***flatten*** again to restart. The flatten function is intentionally limited to avoid continuous operation.
Alternating flashing of ***unfurl*** and ***furl.***	The control unit is in the optional learn winch mode.	Please calibrate the winch sensor as described in *Section 7.7.*

With the remote control the control panel behaves exactly the same way as if the buttons were pressed on the panel itself.

Meaning of the control light *lock open*

- **Illuminated:** The mandrel is unlocked for operation. This applies during all furling or unfurling procedures. Note that the lock does not open while operating ***flatten***.
- **Flashing:** The mandrel lock is momentarily engaging respectively disengaging.
- **Off:** The mandrel is locked; ready to sail.

10.4 Software update

The user can update the control unit. All you need is a micro-SD-card, which is FAT formatted. If there is a software update, we will send you the newest program via e-mail. Simply save the file on your micro-SD-card.

How you update your control unit:

1. Switch off the main fuse in the control unit.
2. Put the card into the card reader-slot on the control unit.
3. Press the cursor button (middle down) while switching the fuse on.
4. As soon as the display shows that you are in the update mode stop pushing the cursor. The display should show the saved file now.
5. Choose the newest software version with the cursor and press for loading it.

10.5 Boom furling system version

To identify the version of the boom furling system (BFE-100, BFE-125 or BFE-165), check the buttons on the control panel. Only the BFE-125 and BFE-165 have a dedicated ***flatten*** button. As a rough indication, boats above 50 feet generally have BFE-125 models and boats above 70 feet generally have BFE-165 models.

11 Emergency procedures

If the boom drive malfunctions and the mainsail needs to be lowered immediately, we recommend dropping and securing the sail on deck.

If conditions allow for a controlled manual furl and an immediate sail drop is not required, the sail can be manually rolled onto the mandrel following the procedure outlined below.

11.1 General information

The manual override is intended for emergency use only. It should not be part of regular operation.

Notice

- This is an emergency-only procedure. It is not part of standard use and may damage the drive if performed regularly.
- Familiarise yourself with the procedure regularly and before long passages.
- Manually turning the mandrel can be challenging due to friction in the mandrel bearings and the gearbox inside the boom drive unit. It requires considerable effort to lower the sail manually, and using a winch is essential.
- The manual backup wheel features aggressive toothing ensuring a secure grip of the emergency line within the wheel. This will cause significant wear on the line.
- Always disconnect the furler cable before emergency procedures.
- If the gearbox is heavily damaged, it may completely block the drive unit, rendering manual operation impossible. In this case, the sail must be lowered on deck.

Manual unlock

The manual emergency unlock allows to unlock the boom drive's internal locking mechanism. Use an 8 mm Allen key to turn the unlocking bolt at the front of the drive unit.

Manual emergency backup wheel

The manual backup wheel allows the mandrel to be rotated using a rope. The wheel features a toothed profile, into which a suitably sized rope can be laid. This toothing grips the rope and transfers the pulling force directly to the drive.
Recommended rope diameter: 10 mm, usable range: 8–12 mm

Due to the internal resistance from the gearbox and bearings, turning the drive manually requires significant force. It is recommended to lead the rope to a winch for controlled operation. Depending on the geometry of the installation, a snatch block or deflection pulley may be needed to guide the rope to a suitable winch position.

Furling direction

Always rotate in the same furling direction as used during electric operation. The correct direction is easily recognised: the emergency wheel's toothing provides much stronger grip when pulled in the proper direction.

11.1.1 BFE-100

If the boom drive fails and the mainsail must be rolled away manually, proceed as follows:

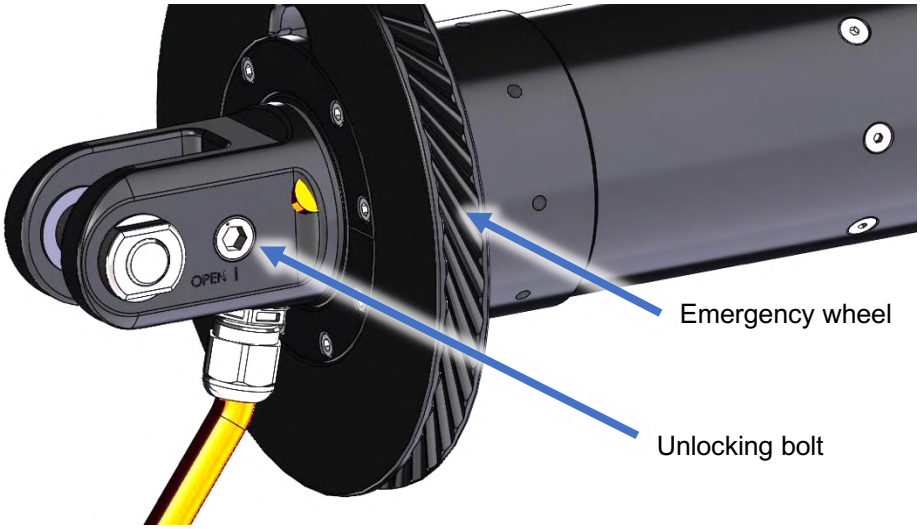
1. **Disconnect the power cable** at the gooseneck, or switch off power to the unit.
   → Unplug the connection between the boom drive unit and the mast cable.
2. **Wrap a line around the emergency wheel** on the front of the drive unit.
   → Lead the line to a winch or cleat it off temporarily to keep tension for safety.
3. **Manually unlock the drive unit**:
   Use an 8 mm Allen key to turn the eccentric unlocking bolt 180° in either direction.
   → The engraved dot must align with the “OPEN” mark.
4. **Manually furl the sail** by pulling the rope (e.g. using a winch) to rotate the mandrel.

If the rope runs out during the process:

5. Re-engage the locking mechanism temporarily to prevent the sail from unrolling.
6. Reset the line and continue.

Always return the unlocking bolt to the closed position after the emergency procedure.

Follow step 1 and 3 to unfurl the sail. Hoist the sail as usually.

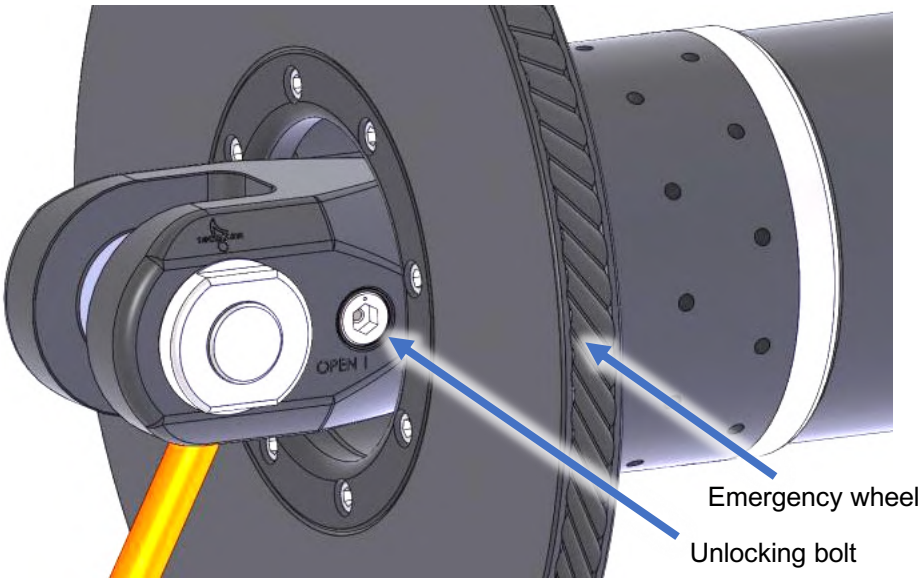


11.1.2 BFE-125 and BFE-165

If the boom drive fails and the mainsail must be furled manually, proceed as follows:

1. **Disconnect the power cable** at the gooseneck, or switch off power to the unit.
   → Unplug the connection between the boom drive unit and the mast cable.
2. **Wrap a line** around the emergency wheel on the front of the drive unit.
3. **Lead the line to a winch** and begin furling the sail by rotating the mandrel manually. You will hear a loud clicking sound as the internal ratchet engages. This is normal and confirms the locking mechanism is active.

Note: You can always furl the sail manually without unlocking the drive, as the ratchet of the locking mechanism allows rotation in furling direction.
If the resistance feels too high, you may unlock the drive manually to make turning easier. However, if the lock is open and you need to reset the line during furling, re-engage the lock to prevent the sail from unfurling uncontrollably.



12 Disassembly

⚠ Warning

Falling and vibrating components

Parts that are improperly secured may cause serious injury.

- The boom furling system may only be disassembled by qualified staff, such as a mast builder.
- Wear protective clothing, including safety helmet and work boots.
- Prior to disassembly, use appropriate means to secure any parts that may fall or vibrate.

⚠ Warning

Risk of crushing and shearing

Never stick your finger into a threaded hole.

First, remove the mainsail following the procedure outlined in *Section 5.6* in reverse order.

12.1 Disassembly of the mast cable

Notice

- Make sure all cable connectors are protected with the provided covers when disconnected. The inside of the plugs **must not** be permanently exposed to weather.
- Do not use tools or force to fasten the mast cable connectors, otherwise the bayonet coupling will be damaged.

The mast cable is connected using a bayonet coupling. The plugs are connected and disconnected by pushing them together and turning them in opposite directions.

The following steps are necessary to disassemble the mast cable:

1. Disconnect the mast cable from the control unit below deck
2. Pull the cable out of the mast.
3. Disconnect the mast cable from the boom drive unit.

12.2 Disassembly of the boom drive unit

Notice

- Do not unscrew the drive flange from the mandrel! The claw coupling enables the boom drive unit to be separated from the mandrel without the need to remove the flange.

1. Pull the drive cable into the boom.
2. Remove the nut from the pin to free the fork. Take out the pin to remove the mandrel with the boom drive unit from the boom.
3. Unscrew the bolts of the two front rows securing the mandrel to the boom drive unit.
4. Remove the boom drive unit from the mandrel.

13 Transport and storage

13.1 Transport

Pack the boom drive unit and other components, if necessary, in a cushioned box for transport.

13.2 Storage

Notice

Make sure all cable connectors are protected with the provided covers when disconnected. The inside of the plugs must not be permanently exposed to weather.

For extended periods of disuse, we recommend storing the boom drive unit or the entire boom, indoors to protect it from weather conditions.

14 Disposal

Notice

Risk of damage to the environment

The boom drive unit contains gear oil which can cause severe environmental damage. Dispose of the boom furling system parts in an environmentally friendly manner in accordance with local requirements.

When the end of life has been reached the boom furling system can be sent to a service station or returned to the manufacturer.

Sort the boom furling system parts and dispose them in accordance with the applicable local requirements.

15 Technical data

15.1 Performance characteristics

The following values were determined under typical application conditions. Actual performance may vary depending on prior system load, environmental influences or fluctuations in power supply. Prolonged high loads or extreme conditions may cause deviations. The system must be operated within the specified duty cycle limits to prevent overheating and excessive wear, see *Section 8.1.*

Reckmann BFE model type	BFE-100	BFE-125	BFE-165
Furl direction [1]	both	CW or CCW	CW or CCW
Flatten luff function	no	yes	yes
Furling torque	120 Nm	250 Nm	500 Nm
Flatten luff torque	n/a	250 Nm	500 Nm
Holding torque	1600 Nm	2200 Nm	6000 Nm
Max. rotational speed [2]	31 rpm	37 rpm	27 rpm
Rotational speed as per factory setup [2]	27 rpm	27 rpm	24 rpm
Nominal supply voltage (optional) [3]	24 VDC (48 VDC) [3]		
Operating voltage range	20–30 VDC (40–60 VDC) [3]		
Max. power consumption	700 W	1680 W	2000 W
Max. current draw	25 A (14 A) [3]	60 A (34 A) [3]	80 A (45 A) [3]
Standby current draw	< 100 mA (< 50 mA) [3]		
Standby power consumption	< 2,2 W		
Operating temperature (min. / max.)	-20 °C / +50 °C		

Notes.

[1] CW = clockwise, CCW = counter clockwise. The BFE-100 system can be programmed to furl in either direction. The BFE-125 and BFE-165 drive units feature a ratchet for the internal locking mechanism, mechanically determining the furling direction.

[2] The specified speed values apply to a system voltage of 28 V. The actual speed is proportional to the supply voltage, which may vary due to battery charge level, battery type, and charging or discharging state.

[3] Values for the 48V system. Note that the 24V and 48V versions have different control units, which are not interchangeable and must only be operated with their specified input voltage.

15.1.1 Geometric characteristics of the drive unit

Reckmann BFE model type	BFE-100	BFE-125	BFE-165
Inside diameter of the mandrel	100 mm	125 mm	165 mm
Outside diameter of the mandrel connection	110 mm	140 mm	195 mm
Total length	1042,5 mm	1190 mm	1445 mm
Gap of the forward-end fork	22 mm	28 mm	66 mm
Gooseneck pin diameter	20 mm	30 mm	40 mm
E-length (approx.)	< 7 m	7 – 9 m	9 – 11 m
Weight	13 kg	30 kg	74 kg

[3] *All relevant measurements in drawings in Section 15.2*

15.1.2 Protection classes

The following ingress protection (IP) ratings apply only when components are correctly installed, precisely when:

- All connectors are fully mated and securely fastened
- Cable glands are properly tightened
- No components are damaged or modified in a way that compromises sealing (e. g., by unauthorised drilling)

Proper installation of all components ensures compliance with the specified IP protection ratings. Please refer to *Section 5* Assembly.

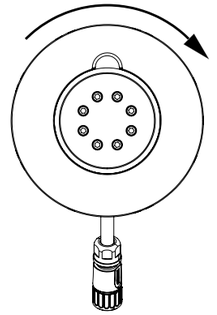
Part(s)	Ingress Protection	Practical meaning for onboard use
Control unit, winch sensor, remote receiver, control panel back side and wiring harness	IP 65	Protected against rain, splashes and spray
Remote handheld, drive unit	IP 66	Resistant to heavy rain, hose cleaning or wave impact on deck
Control panel front	IP 67	Resistant to heavy wave impact or temporary submersion
Drive unit wiring harness	IP 67 & IP 69K	Resistant to temporary high-pressure cleaning (still not recommended)

15.2 Drawings

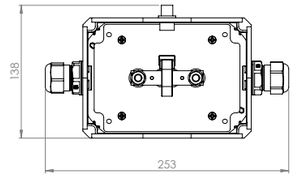
15.2.1 BFE-100



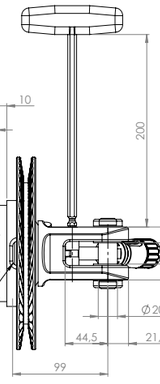
furl direction looking from aft to bow

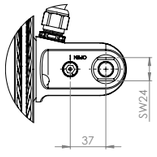


sensor box for electronically controlled winch-synchronised unfurling*

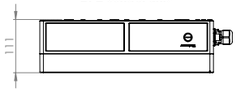


8mm hex key for emergency unlock*

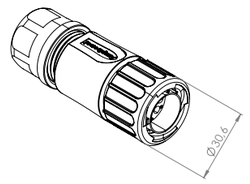


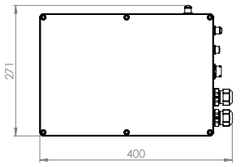


BFE control unit

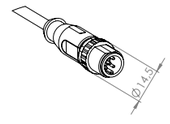


mast cable connector

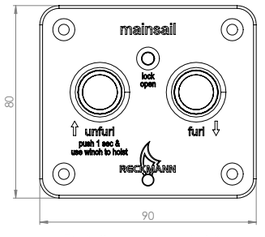




push button connector 12-pin M12

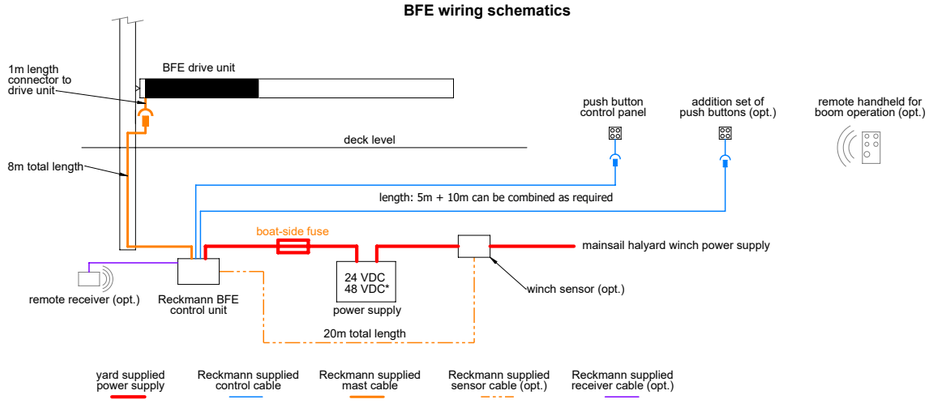


pushbuttons (and labelled panel)*
installation depth = 60 mm



The buttons can also be installed individually without the panel (plug and play).

BFE wiring schematics



*... optional parts (opt.)

Reckmann electric boom furler BFE-100 cw

mandrel inner diameter:	100 mm
furling speed:	30 rpm
furling torque:	120 Nm
holding torque:	1600 Nm
electrical requirement:	25 A @ 24 VDC
alternativ on request:	13 A @ 48 VDC
weight (drive unit):	13 kg
furl(in)-direction:	CLOCKWISE

Bemerkung:

Size ISO 14405 E

Artikelnummer: 67539

Maße ohne Toleranzangabe nach DIN ISO 2768 -mK - E

Über	Bis		Über	Bis	
0,5	6	± 0,1	120	400	± 0,5
6	30	± 0,2	400	1000	± 0,8
30	120	± 0,3	1000	2000	± 1,2

Form- und Lagetoleranzen nach DIN EN ISO 1101 | Unbemaßte Kanten nach ISO 13715

	Datum	Name
Ersteller	12.05.20	A. Konrad
Freigabe	12.05.20	A. Konrad
Norm.		
Entw.		

Reckmann Yacht Equipment
Siemensstr. 37-39
D-25462 Rellingen

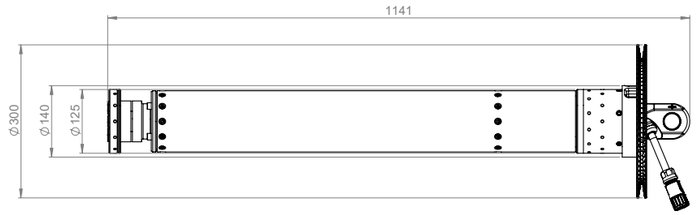
Zustand: FREIGEGEBEN | Ersatz für: 66571 | Ersetzt durch:

Drawing remains property of Reckmann, no copy or use without approval by Reckmann

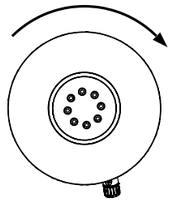
Ver	Änderung	Name	Datum
-		A. Konrad	12.05.20

Maßstab. 2:5
Werkstoff:
Benennung: BFE-100 elektrischer Rollbaumantrieb (iUzs) mit Notrad BFE-100
Zeichnungsnummer: 90-01-01-925 -
Format DIN A: A1
Blatt 1 von 1

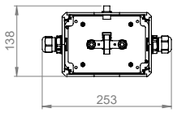
15.2.2 BFE-125



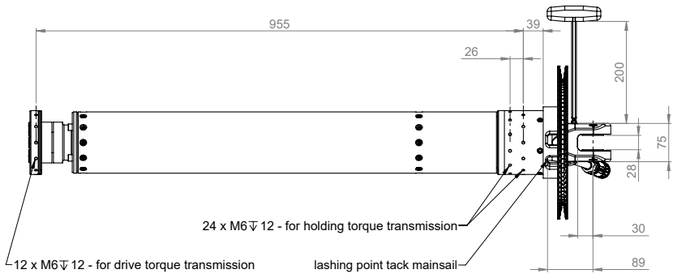
furl direction seen from aft looking to bow



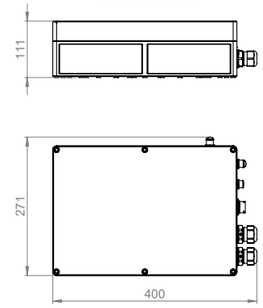
sensor box for electronically controlled winch-synchronised unfurling*

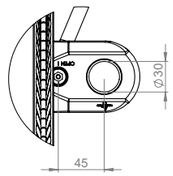


8mm hex key for emergency unlock*

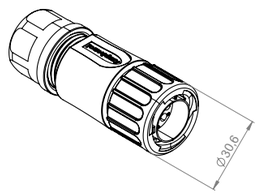


BFE control unit

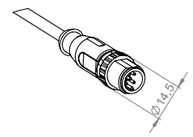




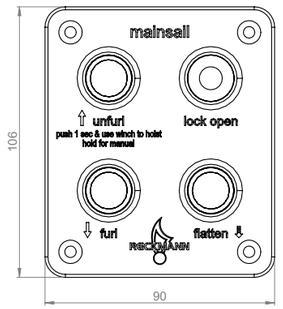
mast cable connector



push button connector 12-pin M12

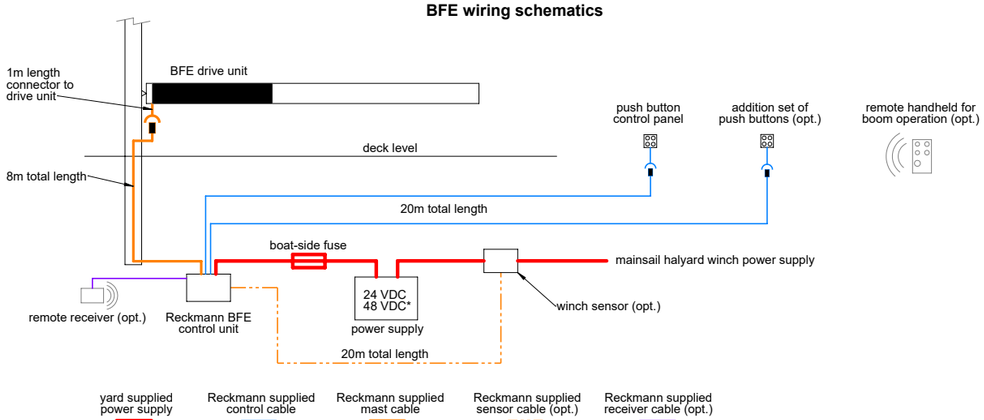


pushbuttons (and labelled panel)*
installation depth = 60 mm



The buttons can also be installed individually without the panel (plug and play).

BFE wiring schematics



*... optional parts (opt.)

Reckmann electric boom furler BFE-125 cw

mandrel inner diameter:	125 mm
furling speed:	30 rpm
furling torque:	250 Nm
flatten luff torque:	250 Nm
holding torque:	2200 Nm
electrical requirement:	60 A @ 24 VDC
alternative on request:	30 A @ 48 VDC
weight (drive unit):	30 kg
furl(in)-direction:	CLOCKWISE

Bemerkung:

Size ISO 14405 E

Artikelnummer: 67591

Maße ohne Toleranzangabe nach DIN ISO 2768 -mK- E

	Datum	Name
Ersteller	14.05.20	A. Konrad
Freigabe	14.05.20	A. Konrad
Norm.		
Entw.		

Form- und Lage-toleranzen nach DIN EN ISO 1101 | Unbemaßte Kanten nach ISO 13715

Reckmann Yacht Equipment Siemensstr. 37-39 D-25462 Rellingen

Zustand: FREIGEGEBEN

Ver.	Änderung	Name	Datum
-		A. Konrad	14.05.20

Maßstab: 1:5

Werkstoff:

Benennung: BFE-125 elektrischer Rollbaumantrieb (iUzs) mit Notrad
BFE-125, Furlerboom

Zeichnungsnummer: 90-01-03-935 -

Format DIN A: A1

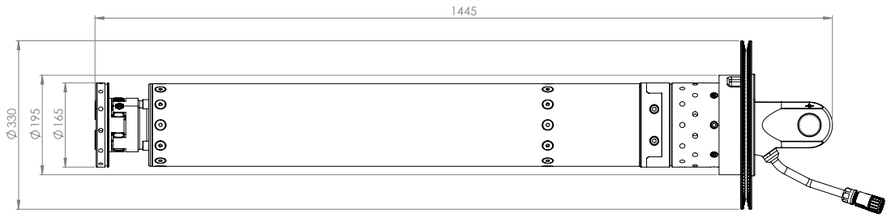
Ersatz für: 66150

Ersetzt durch:

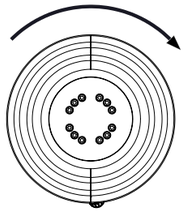
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Blatt 1 von 1

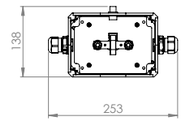
15.2.3 BFE-165



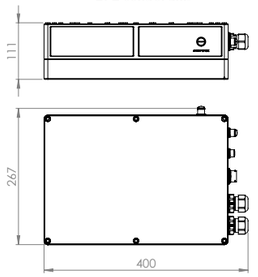
furl direction looking from aft to bow

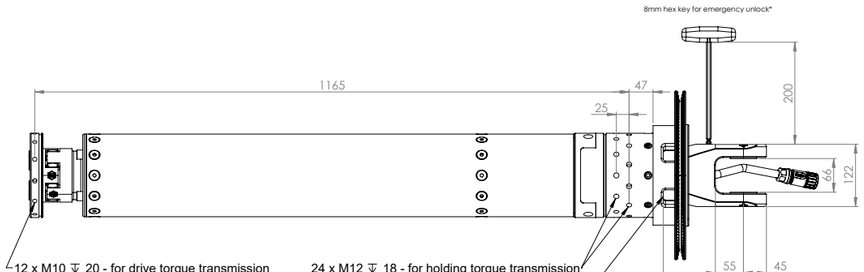


sensor box for electronically controlled winch-synchronised unfurling*

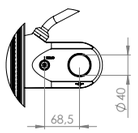


BFE control unit

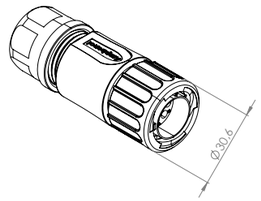




mast cable connector

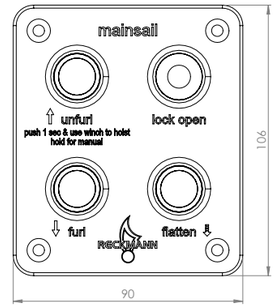


push button connector
12-pin M12



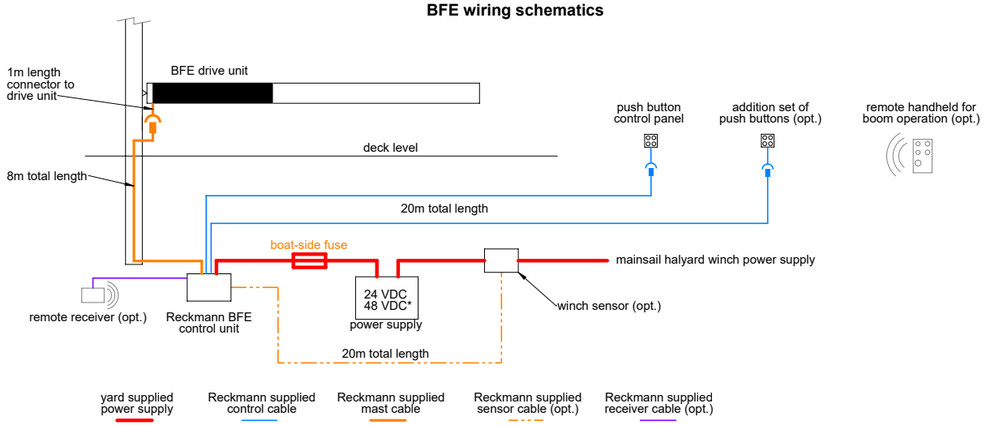


pushbuttons (and control plate)*
installation depth = 60mm



The buttons can also be installed individually without the panel (plug and play)

BFE wiring schematics



*... optional parts (opt.)

Reckmann electric boom furler
BFE-165 cw

mandrel inner diameter:	165 mm
furling speed:	23 rpm
furling torque:	500 Nm
flatten luff torque:	500 Nm
holding torque:	6000 Nm
electrical requirement:	80 A @ 24 VDC
alternative on request:	40 A @ 48 VDC
weight (drive unit):	74 kg
furl(in)-direction:	CLOCKWISE

Bemerkung:

Size ISO 14405 E

Maße ohne Toleranzangabe nach DIN ISO 2768 -mK- E

Über	Bis	±
0,5	6	0,1
6	30	0,2
30	120	0,3
120	400	0,5
400	1000	0,8
1000	2000	1,2

Form- und Lagetoleranzen nach DIN EN ISO 1101 | Unbemaßte Kanten nach ISO 13715

RECKMANN

Artikelnummer: 76604

	Datum	Name
Ersteller	15.07.24	S.Häring
Freigabe	25.02.25	S.Häring
Norm.		
Entw.		

Reckmann Yacht Equipment
Siemensstr. 37-39
D-25462 Rellingen

Zustand: FREIGEGEBEN

Ver	Änderung	Name	Datum
a	Verschraubung geändert	S.Häring	25.02.25
-		S.Häring	16.08.24

Maßstab: 1:5

Werkstoff:

Benennung: elektrischer Rollbaumantrieb (iUzs)
BFE-165 - mit Notrad

Zeichnungsnummer: 90-01-05-905 a

Format DIN A: A1

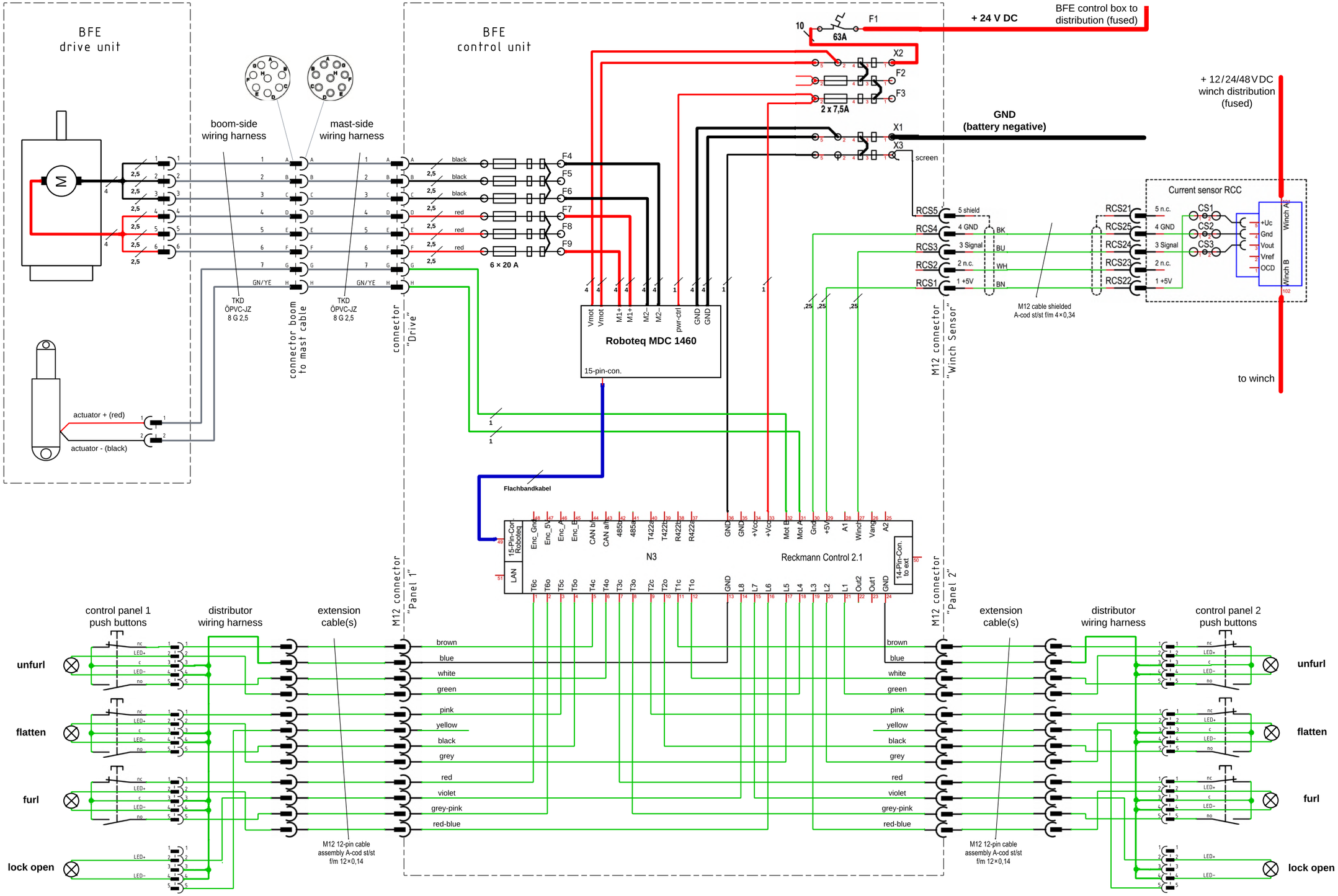
Ersatz für: | Ersetzt durch:

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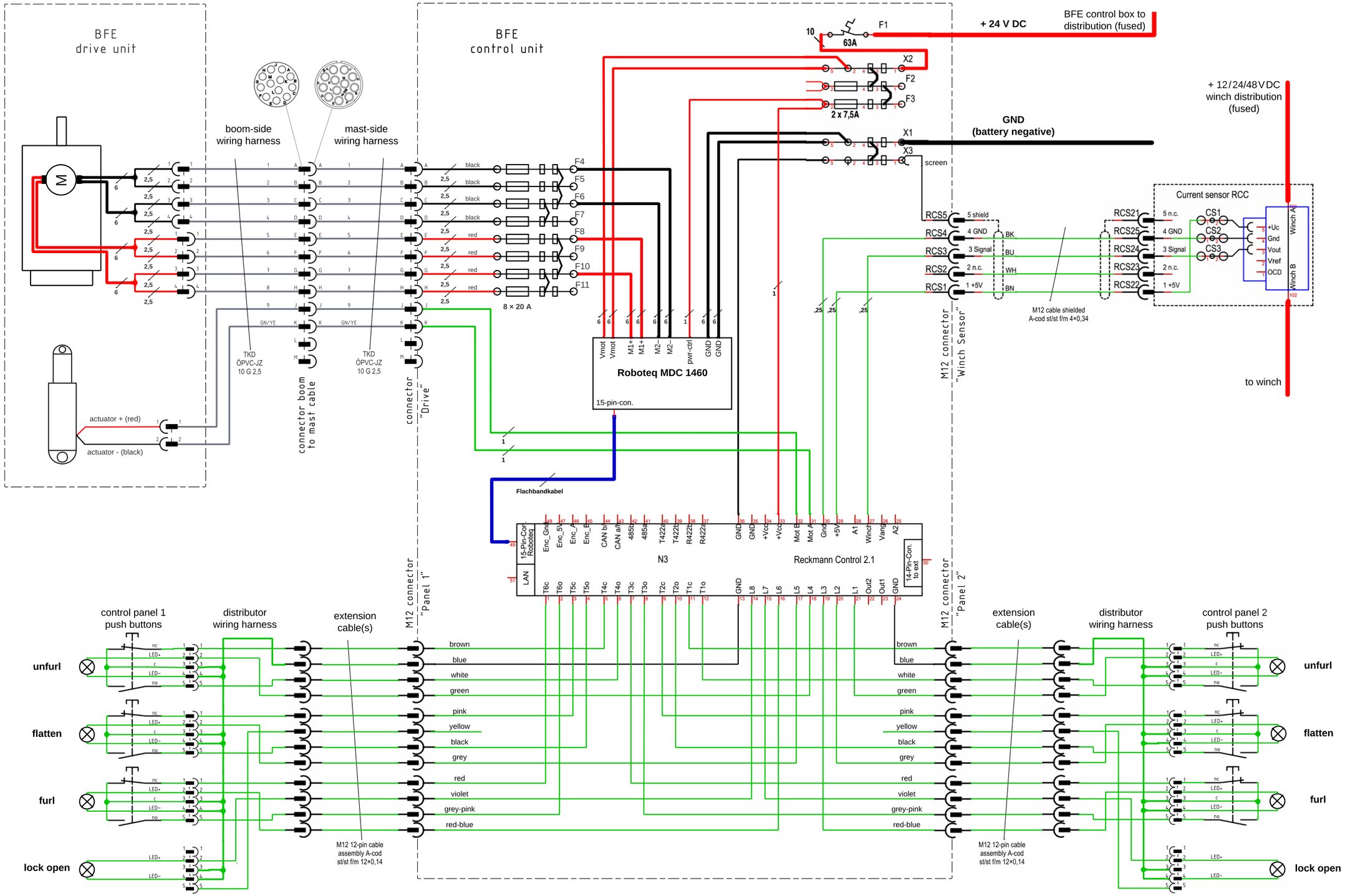
Blatt 1 von 1

15.3 Wiring diagrams

15.3.1 BFE-100 and BFE-125



15.3.2 BFE-165


BFE
drive unit
BFE
control unit
boom-side
wiring harness
mast-side
wiring harness
actuator + (red)
actuator - (black)
TKD
ÖPVC-JZ
10 G 2,5
connector boom
to mast cable
connector
"Drive"
8 × 20 A
F1
63A
F2
F3
2 x 7,5A
F4
F5
F6
F7
F8
F9
F10
F11
+ 24 V DC
BFE control box to
distribution (fused)
GND
(battery negative)
+ 12/24/48 V DC
winch distribution
(fused)
to winch
screen
Roboteq MDC 1460
15-pin-con.
Flachbandkabel
N3
Reckmann Control 2.1
M12 connector
"Winch Sensor"
M12 cable shielded
A-cod st/st f/m 4×0,34
Current sensor RCC
Winch A
Winch B
control panel 1
push buttons
distributor
wiring harness
extension
cable(s)
M12 connector
"Panel 1"
M12 connector
"Panel 2"
M12 12-pin cable
assembly A-cod
st/st f/m 12×0,14
control panel 2
push buttons
unfurl
flatten
furl
lock open
brown
blue
white
green
pink
yellow
black
grey
red
violet
grey-pink
red-blue

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