

**FURLEX**  
*electric*

**Supplementary manual Furlex 404E**



# 1. Introduction

Congratulations on the purchase of your new Furlex Electric motor unit. This manual covers installation and operating instructions for the electric drive unit only.

Installation of the basic furling systems are described in their respective manuals (see below). The model designation is found on the cover. Part and serial numbers are found on the gearbox, inside the respective covers.

The Furlex Electric motor unit is compatible with the following manually operated Furlex models:

404S/404TD (current models)  
400S/400TD (discontinued models)

The electric furling unit is only to be used together with Seldén's power supply and SEL-Bus system.

We have compiled this manual to help you install and operate your furling system safely and with ease. Please read the entire manual before assembly and use of the product. Follow the instructions carefully to avoid damage to the furling system and to avoid the risk of personal injury. Seldén cannot be held responsible for any problems, damages or personal injuries arising from an improperly installed product. Keep the manual available for future reference.

User Manual Revision history:

597-464 Revision 0.0 2020-03-13

The latest version of this manual can be downloaded from [www.seldenmast.com](http://www.seldenmast.com)

Other Seldén documents referred to in this manual are:

595-116 Furlex 400S  
597-181 Furlex 404S  
595-240 Furlex 400TD  
597-465 Furlex 404TD  
597-275 Power supply & SEL-Bus system

An electric converted 400S will have designation 400E MkII  
and a 400TD will have designation 400TDE MkII .

## Safety Precautions

Carefully pay attention to, and follow the instructions with the following symbols:

ATTENTION



This symbol indicates a critical moment in the assembly or technical advice.

WARNING



This symbol indicates a potentially hazardous situation. If not avoided, this could result in serious personal injury or damage to property.

### **Safety notes regarding the electrical installation for the Furlex Electric:**

-The installation should be done by a person with marine installations skills. You can find your local authorized Furlex dealer at [www.seldenmast.com](http://www.seldenmast.com)

-Furlex electric is intended only for sail furling purposes together with Seldén furling profiles, controlled by Seldén's 42V motor drive system.

-Make sure the system is switched off before performing any installation or service.

-Never modify the electric system of your Furlex or its installation drawings - installation, alterations and maintenance should be performed by a competent marine electrical technician.

-Never alter or modify the rated current amperage of overcurrent protective devices.

-Never leave the craft unattended with the Furlex Electric energized.

### **Choosing the correct version of Furlex Electric for your boat:**

The key to a safe and properly working installation is correct dimensioning in relation to the boat size the products shall be used on. Seldén provides dimensioning guidelines in catalogues, leaflets and on the web-site. If there are any questions about selecting the right product, please consult an authorized Seldén dealer. All dealers are listed at [www.seldenmast.com](http://www.seldenmast.com) and divided in categories describing their competence. For Furlex Electric we recommend dealers in the category "Advanced Technical Installations".

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## 2 Furlex Electric

Furlex Electric is available as a complete kit for both on-deck and through-deck installation. The electric system is also available as an upgrade of an existing Furlex by replacing the furling line, drum and line guard assembly with the Furlex Electric Motor unit and related parts in the Furlex Electric Retrofit pack.

### **Low power consumption**

High efficiency throughout the electric power and control system. A “sleep mode” is activated to save power when not in operation.

### **Powerful enough, but with precise torque limitation.**

The electric motor has a computerised controller that monitors the current draw precisely. As soon as it reaches a pre-set level it cuts out quickly enough to avoid damage to components. The torque level is programmed into a memory chip so that each size of Furlex Electric has the correct setting.

### **Resistant to the marine environment**

The gear house is machined from high grade corrosion resistant aluminium and anodized. All stainless parts in 316 or 316L. The electric motor has its own housing which is completely sealed and individually pressure tested before delivery.

### **Two speed operation**

A double control button makes it possible to operate the furler with great precision in the low speed mode. By pushing both buttons at the same time, high speed is activated.

### **Locks in both directions**

The worm gear is self-locking (40:1) in both directions, which means that the sail can be furled from either the starboard, or the port side of the boat.

### **Emergency operation**

The worm gear has a ½” socket that can be reached from the starboard side. Seldén’s emergency line driver is included in the delivery kit.

### **Compact size -minimised weight and dimensions.**

The electric motor is compact, still giving enough power. This is made possible by raising the voltage up to 42V. Keeping weight and the dimensions in focus during the design has resulted in a small unit.



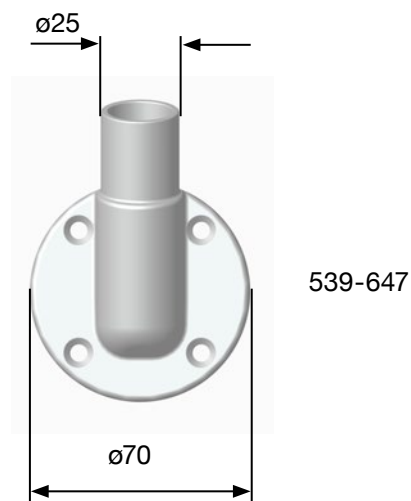
## 2.1 Basic Packs for Furlex Electric complete kit

When Furlex Electric is bought as a complete kit, following Furlex Electric Basic Packs are included instead of the respective Basic Pack for manual drive. The tables below show the included parts in each Furlex Electric Basic Pack.

### Furlex Electric Basic pack: Standard

Included parts	Qty	549-400-20
Halyard swivel	1	549-416-01
Lower swivel	1	549-400-02
Motor unit	1	549-632-01
Protective hose	1	319-836*
Clip	2	312-211*
Emergency line driver	1	539-664-01
Top bearing assy.	1	549-426-01
Lower bearing fwd	1	549-440
Lower bearing aft	1	549-441
Sail feeder assy	1	549-423-01
Deck gland kit	1	539-653-01 *
Locking adhesive	1	312-305
Halyard U-lead kit	1	508-128-02
Pre-feeder pack	1	505-538-01
Grease	1	312-501
Connection box	1	532-487-01

\*) Earlier units use larger gland 539-647, hose 319-837 and clips 312-212. Deck gland kit 539-647-01 is supplied with these kits.



## Furlex Electric Basic pack: Through Deck

		Furlex 404TDE ø12	Furlex 404TDE ø14
Included parts	Qty	549-470-16	549-470-17
Halyard swivel	1	549-416-01	
Lower swivel	1	549-470-12	549-470-13
Motor unit	1	549-632-02	
Protective hose	1	319-836*	
Clip	2	312-211*	
Emergency line driver	1	539-664-01	
Torque tube assembly	1	549-472-02	
Deck fitting assembly	1	549-459-01	
Torque stay with bracket	1	508-657-02	
Screws	2	153-202	
Top bearing assy.	1	549-426-01	
Lower bearing fwd	1	549-440	
Lower bearing aft	1	549-441	
Sail feeder assy	1	549-423-01	
Locking adhesive	1	312-305	
Halyard U-lead kit	1	508-128-02	
Pre-feeder pack	1	505-538-01	
Grease	1	312-501	

\*) Earlier units use larger hose 319-837 (ø30/25)+clips 312-212.

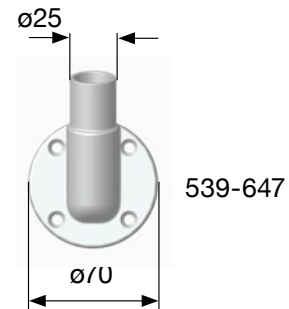
## 2.2 Furlex Electric Retrofit pack

When upgrading an existing Furlex to electric drive, the retrofit pack is bought as an extension of the already existing Furlex system. The tables below show the included parts in the retrofit installation kits for each manually driven Furlex Electric model, respectively.

### Furlex Electric Retrofit pack for Furlex 404S

	Forestay $\varnothing$ (mm)	$\varnothing 12$	$\varnothing 14$
Included parts	Qty	549-632-265	549-632-270
Motor unit	1	549-632-01	
Hub	1	539-791-01	
Washer	2	164-459	
Balls	5	539-128	
Bearing roller	5	319-937	
Retaining ring	1	301-569	
Protective hose	1	319-836*	
Clip	2	312-211*	
Deck gland kit	1	539-653-01*	
Emergency line driver	1	539-664-01	
Toggle	1	539-783-01	539-784-01
Connection box	1	532-487-01	

\*) Earlier units use larger gland 539-64, hose 319-837 and clips 312-212. Deck gland kit 539-647-01 is supplied with these kits.



### Furlex Electric Retrofit pack for Furlex 400S (1997-2014)

	Forestay $\varnothing$ (mm)	$\varnothing 12$	$\varnothing 14$
Included parts	Qty	549-632-215	549-632-220
Motor unit	1	549-632-03	
Carrier	2	539-782	
Protective hose	1	319-836*	
Clip	2	312-211*	
Deck gland kit	1	539-653-01*	
Emergency line driver	1	539-664-01	
Toggle	1	539-783-01	539-784-01
Connection box	1	532-487-01	



**Furlex Electric Retrofit pack for Furlex 400TD (1997-2019) and 404TD (2020-)  
(current model)**

Included parts	Qty	Furlex 400TD	Furlex 404TD
		549-632-240	549-632-290
Motor unit	1	549-632-04	549-632-02
Carrier	2	539-782	-
Hub	1	-	539-791-01
Protective hose	1	319-836*	
Clip	2	312-211*	
Emergency line driver	1	539-664-01	
Screws MC6S 12x20	2	153-020	-
Screws MP6SS 12x25	2	-	153-202
Torque stay with bracket	1	508-657-02	
Locking adhesive	1	312-305	
Grease	1	312-501	

\*) Earlier units use larger hose 319-837 (ø30/25)+clips 312-212.

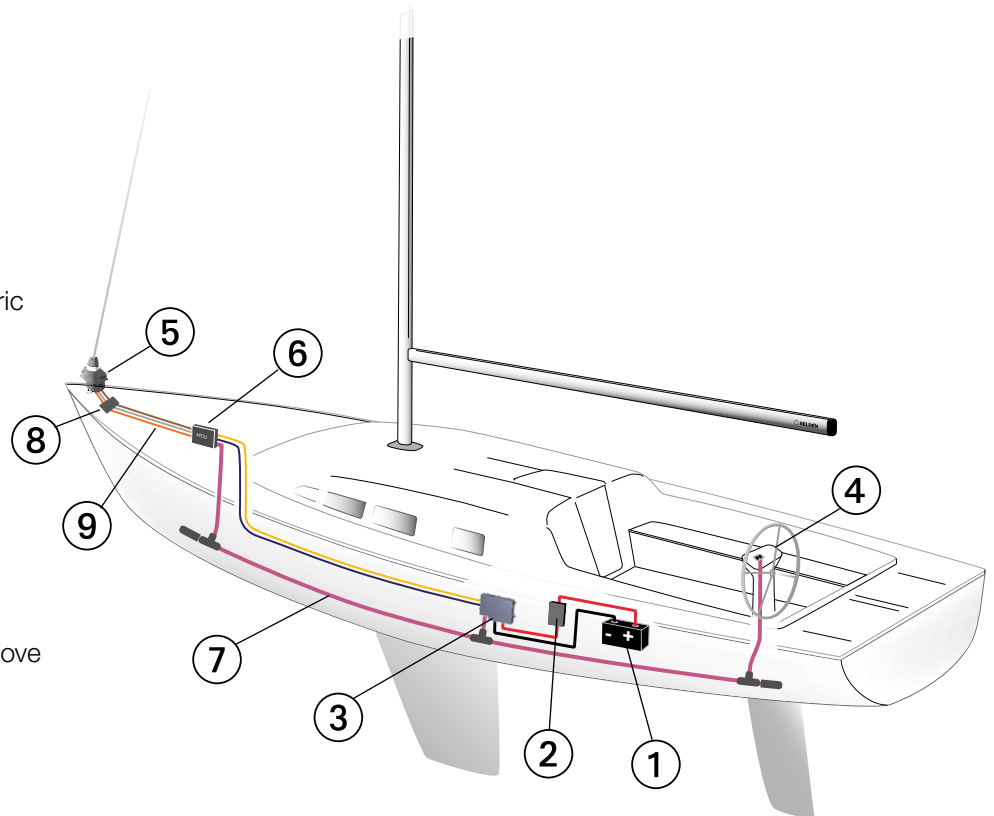
## 2.3 Control Pack

Furlex Electric is used together with the Seldén Power supply and SEL-Bus system. The drive unit is connected to a motor control unit (MCU), which enables communication with the power supply unit and the OUT/IN push buttons. All power supply and SEL-Bus system parts are sold separately. Parts and packages are described in Seldén Power Supply and SEL-Bus system: Order guide 597-283-E. For installation of the Power Supply and SEL-Bus system, see installation guide 597-275-E.

### System illustration

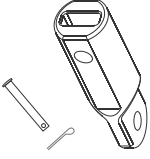

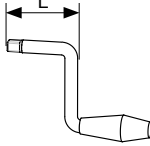


The illustration shows an example of a Furlex Electric network installation. The complete Power Supply and SEL-Bus system of each customer will vary and can include additional units and functions.

1. Battery (not sold by Seldén)
2. Main switch/fuse
3. Power supply unit (PSU)  
Converts 12/24V to 42V
4. Push buttons for Furlex Electric
5. Furlex Electric drive unit
6. Motor Control Unit (MCU),  
Furlex Electric
7. SEL-Bus backbone cables  
and connections
- (8.) Connection box  
(included in Furlex Electric above  
deck only)
9. Connection cables, 3x5m  
(Delivered with drive unit)



## 2.4 Optional parts

Parts that adapt your installation to your individual boat.

Item	Art. No.	Furlex 404E	Furlex 404TDE	Furlex 400E MkII	Furlex 400TDE MkII
Extension link forestay $\varnothing 12$ L=190mm 	517-117-01	X		X	
Extension link forestay $\varnothing 14$ L=190mm	517-118-01	X		X	
Shims for toggle, forestay $\varnothing 12$ mm 	164-523	X		X	
Shims for toggle, forestay $\varnothing 14$ mm	164-524	X		X	
Short crank, emergency, L=100 mm 	533-922	X	X	X	X
Long crank, emergency, L=325 mm	533-923	X	X	X	X
SEL-Bus Converter (for custom control buttons)	532-827-01	X	X	X	X
Panel, 1 push button 	540-461-01	X	X	X	X
Panel, 2 push buttons 	540-462-01	X	X	X	X
Connection box/ cable glands (included by default in Furlex E above deck)	532-487-01		X		X

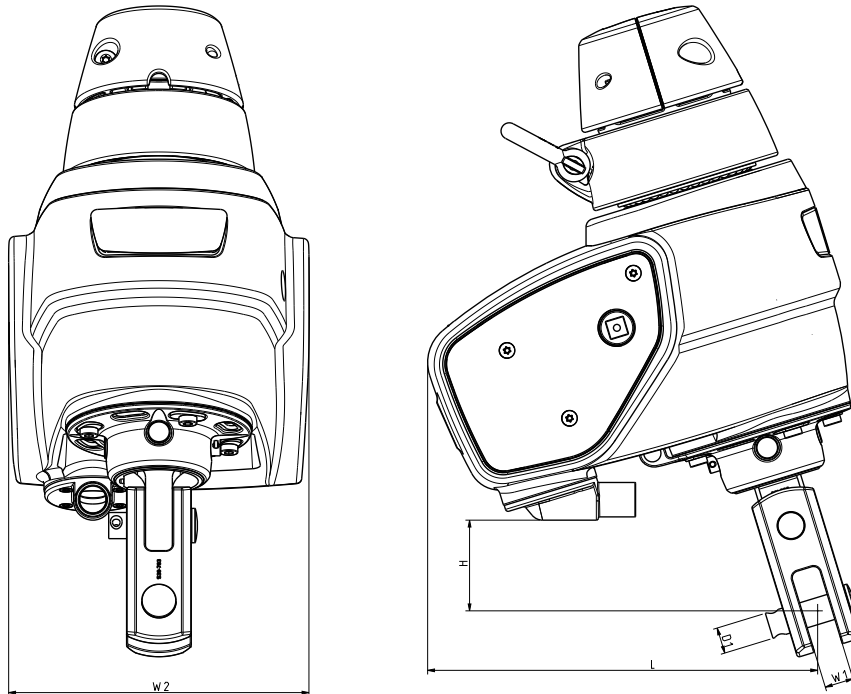
## 2.5 Technical specification

### Electrical specification

Input Voltage to motor control unit	42V
Peak Torque	135Nm
Peak Current Consumption. Measured @12V battery.	95A
Total Gear Ratio	218:1
Low Speed (unloaded)	30 rpm
High Speed (unloaded)	50 rpm
Efficiency (Motor Control Unit + Drive Unit)	30%
Cable Size Motor Control Unit - Motor	6 mm <sup>2</sup>

### Main dimensions, above deck installation:

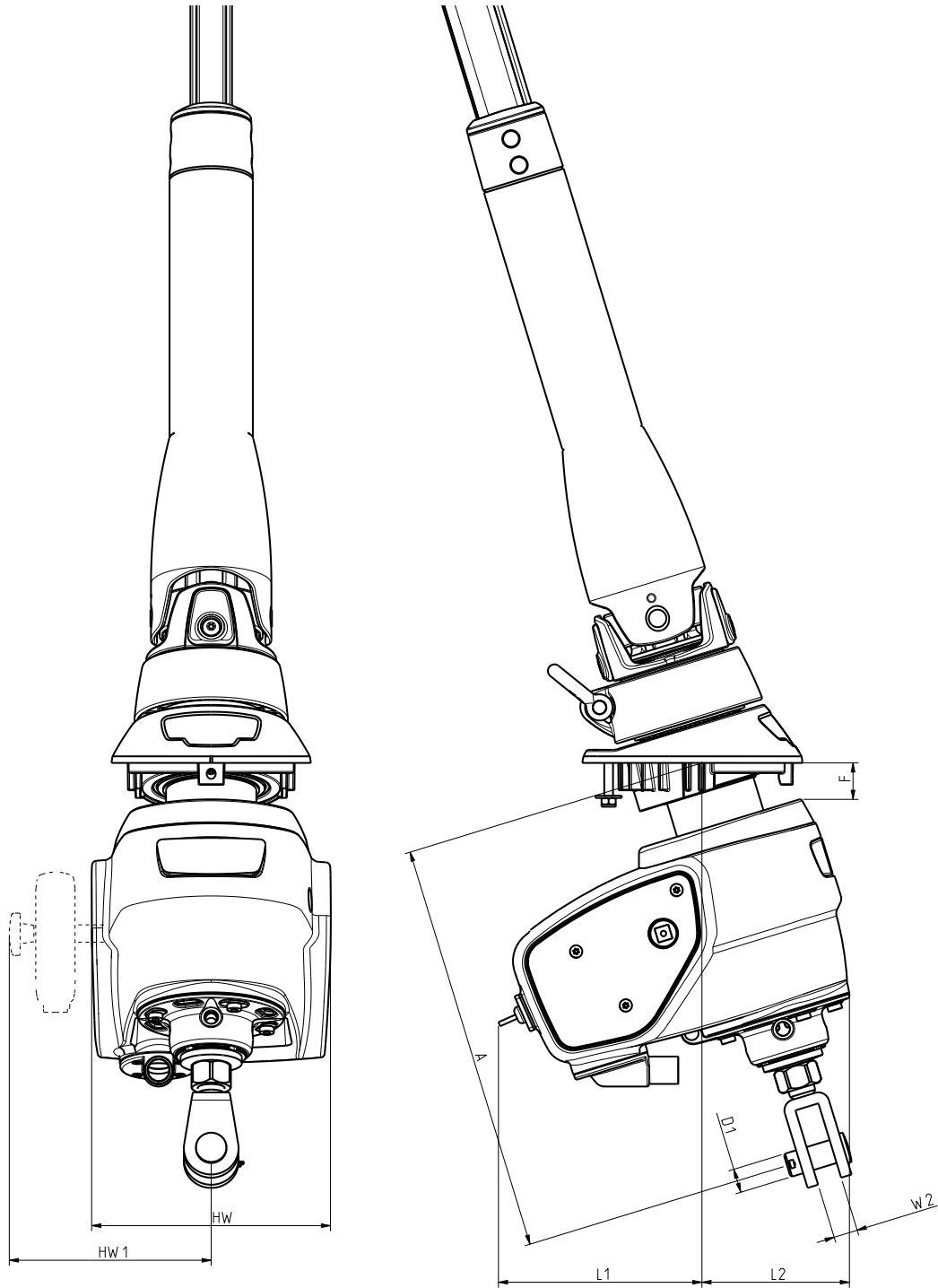
Type	Forestay ø	L	W2	H	W1	D1
404E	12	285	220	65	21	19
	14	290	220	85	23	22



Extension links are available if necessary to provide clearance below the unit, as listed in chapter "2.4 Optional parts".

**Main dimensions, below deck installation:**

Type	Forestay Ø	A	F	L1	L2	HW	HW1	W2	D1
404TDE	12	375-540	33	185	135	220	185	22	19
	14								22
400TDE MkII	12	440-630	33	185	135	220	185	22	19
	14								19



# 3 Motor Unit installation

## 3.1 Installation preparations Furlex Electric (above deck)

### Space requirements

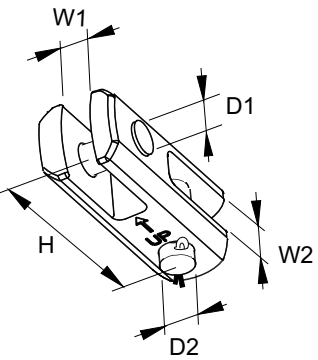
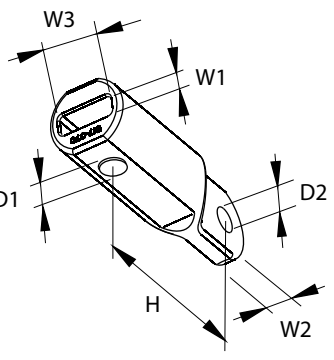
Please check so that there is enough space for the installation. The dimensions are given in the section "2.5 Technical Specification".

Consider space for an anchor. Extension links are available if more space is needed below the furler, listed in section "2.4 Optional parts".

### Strength of the forestay attachment

Furlex Electric above deck uses a reinforced toggle capable of handling the torque load.

The forestay attachment needs to have sufficient strength to handle the torque loads, with dimensions according to the table below:

Toggle type	Forestay Dimension		
	Ø 12	Ø 14	
	Art. no.	539-783-01	539-784-01
	Length (H)	65	80
	Ø Clevis pin (D1)	19	22
	Fork width (W1)	20	21
	Ø Clevis pin (D2)	19	22
	Fork width (W2)	21	23
	Art. no.	517-072-01	517-073-01
	Length (H)	190	190
	Ø Clevis pin (D1)	19	22
	Fork width (W1)	20	21
	Eye (D2)	19.5	22.5
	Thickness (W2)	19.2	20.2
	Internal width (W3)	38	44.3

## 3.2 Installation preparation for Furlex TD Electric (Through deck)

### Space requirements

Please check that there is enough space for the installation. The dimensions are given in the section “2.5 Technical Specification”.

Make sure that there is space for the emergency line driver.

### Torque bracket installation

When reefed or under full sail, the furling profile is exposed to a twisting load from the sail. The forestay attachment of the Furlex TDE is not designed to handle this torque load.

For this reason, the Furlex TDE has a bracket at the rear part of the housing. A torque stay shall be fitted from this bracket to the side of the hull.



Without the torque stay the forestay fitting may break, possibly resulting in rig failure.

## 3.3 Installation of the furling system excluding the electric motor unit

For complete or retrofit installation on Furlex 404 systems, please see:

Above deck installation: User manual 597-181 ”Furlex 404S”

Below deck installation: User manual 597-465 ”Furlex 404TD”

For retrofit installation on Furlex 400 systems, please see:

Above deck installation: User manual 595-116 ”Furlex 400S”

Below deck installation: User manual 595-240 ”Furlex 400TD”

### 3.4 Step by step assembly 404E

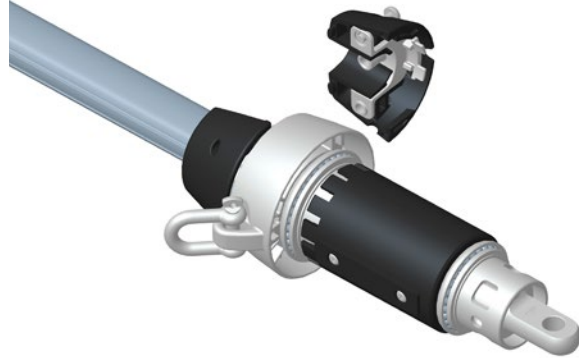
Prior to installation, follow steps in chapter 1.4-3.5 in manual 597-181. Note that more references are made to this manual during the assembly. Protect the drum unit and motor unit by working on a clean and soft surface.



597-181-E

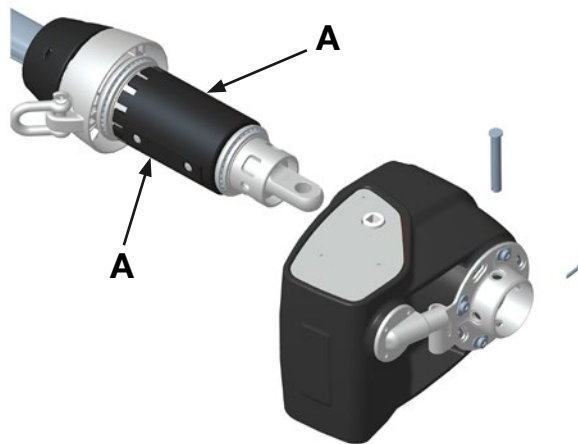
#### 1.

Slide the swivel over the terminal. Fit the adaptor halves and connect the luff extrusion according to point 4-5 in chapter 3.5, manual 597-181.



#### 2.

Remove the clevis pin and split pin from the motor unit and fit the motor unit over the hub so that the bronze gear engages with the carriers (A) in the hub.

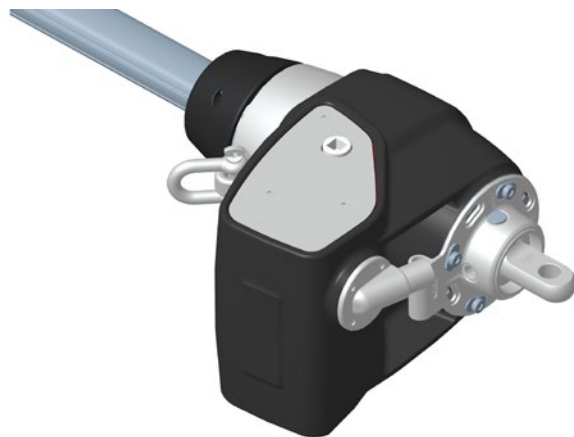


#### 3.

Note that the motor unit can be turned 90° depending on the direction of the forestay fitting in the boat.

Align the holes in the terminal, shaft and holder.


Fit the clevis pin and split pin.

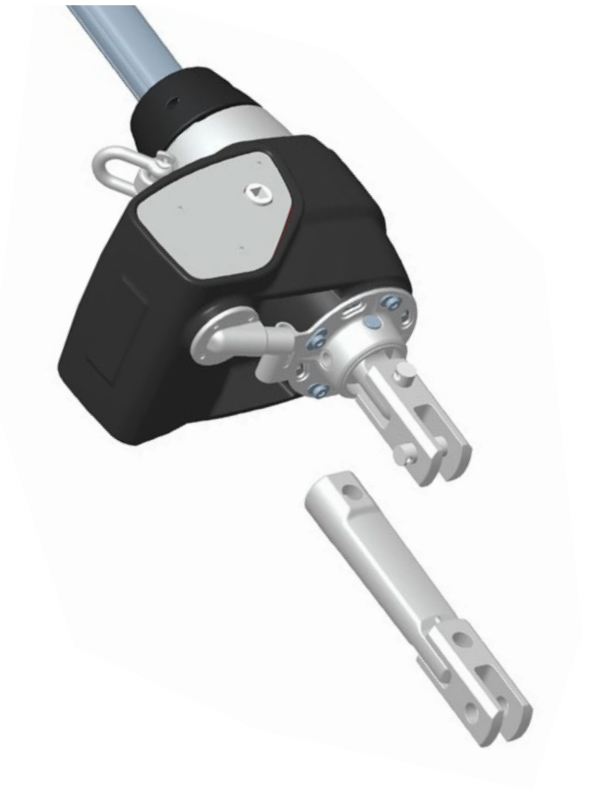




## 4.

Fit the toggle and, if required, the optional extension link.

 Use only Furlex Electric torque toggle and optional extension link.



## 5.

Attach the Furlex Electric system to the boat by following the steps in chapter 4.3 (stepped mast) or 4.4 (un-stepped mast), manual 597-181.

### 3.5 Step by step assembly 404TDE



Prior to installation, follow steps in chapter 1.4-3.2 and chapter 4 in manual 597-465. Length adjustment of the lower swivel follows the same procedures as on the manual 404TD but 404TDE does not have a locking nut (N). Note that more references are made to 597-465-E this manual during the assembly.

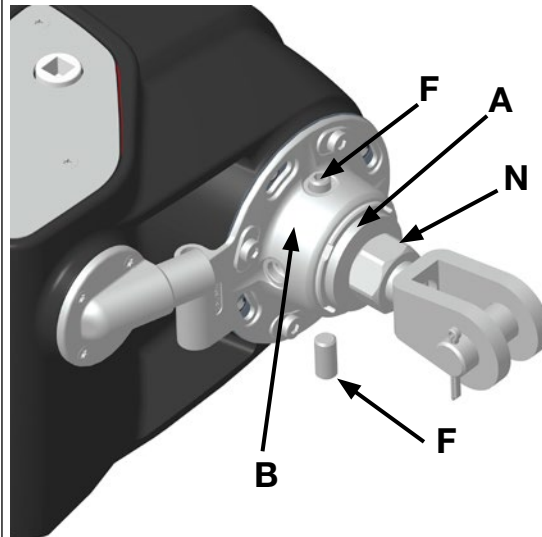
Protect the drive unit and motor unit by working on a clean and soft surface.

#### 1.

Check that motor unit fits over hub.

Turn the center shaft (A) by turning the toggle at the upper end of the swivel so that the holes in the shaft aligns with any of four holes in the holder (B). Check that the two locking screws (F) fit.

Remove screws and motor unit.



#### 2.

Fit the swivel in the boat without the motor unit. Fit the clevis pin but not the split pin. Check the following points:

a) Distance between forestay fitting and deck. The distance between tack ring and deck fitting should be approx. 5mm at the front when the eye of tack-ring is pulled upwards. If the distance needs to be adjusted, turn the shaft by turning the toggle to raise or lower the swivel.

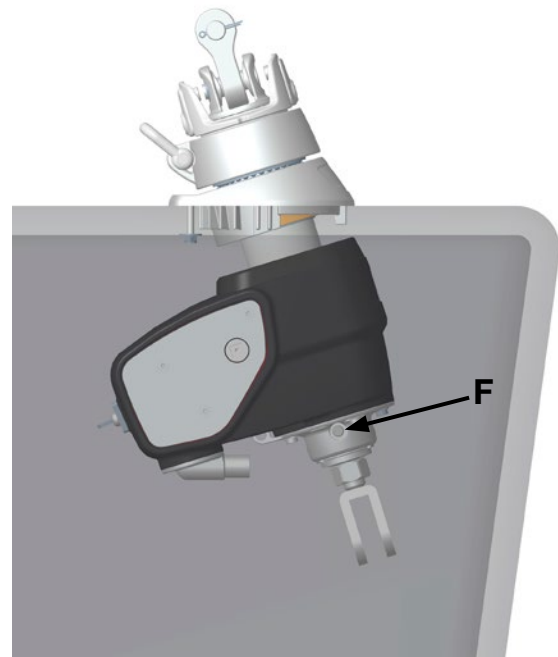


### 3.

Fit the swivel through the deck fitting and motor unit. Support the motor unit from below or by securing it with a rope or strap.

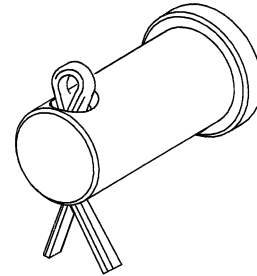
Align the holes and fit the two locking screws (F). Use locking adhesive.

If position or height of motor unit is not satisfactory, remove motor unit and swivel from the boat and repeat steps under point 1 and 2.



### 4.

Fit clevis pin and split pin.



## 5.

Determine the position of the torque bracket. Bracket should be perpendicular to the drive unit and fitted to the port side. Remove the torque stay.

Clean and key the bonding surfaces of the bracket and hull. Bond the torque-bracket to the hull. Use a structural adhesive.

After curing, assemble the torque stay to the bracket in the hull.

Turn the motor unit to the desired position. Turning it to port side will make more space for the emergency line driver.

Mark the torque stay at (A)

Remove stay and drill  $\varnothing 6.5\text{mm}$  hole for the clevis pin

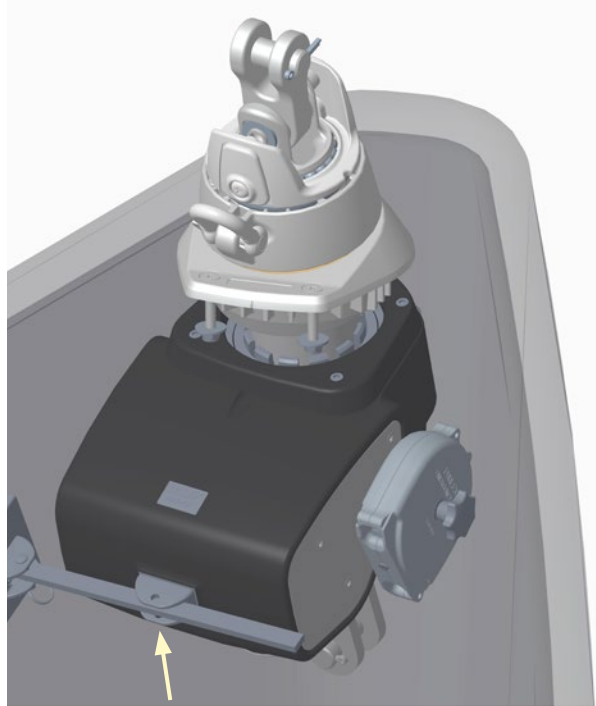
Cut-off excess length of the torque stay leaving  $\Rightarrow$  10mm material to the  $\varnothing 6.5\text{mm}$  hole.

Attach torque stay between hull bracket and drive unit.

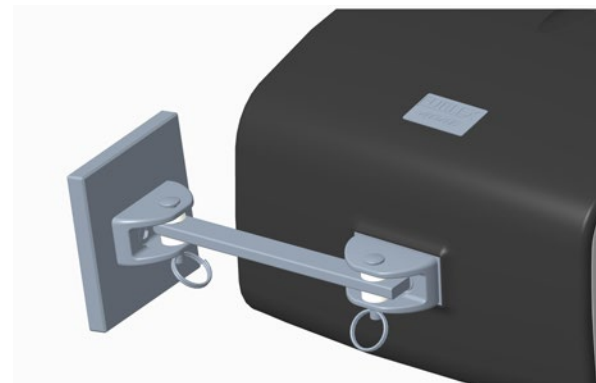
Round any sharp edges and assemble the torque stay.



New generation 404TDE has no torque handling capacity and a torque stay is therefore a demand for these models.



**A**



Maximum working load on torque bracket:  
Furlex 404TDE: 3800N

## 6.

Attach the Furlex system to the boat by following the steps 6-9 in chapter 5.1 "Rigging", manual 597-418.

### 3.6 Step by step assembly 400S Retrofit

Prior to installation, read chapter 17.3-17.4 in manual 595-116. Note that more references are made to this manual during the assembly. Removing the Furlex system from the boat will facilitate the conversion.



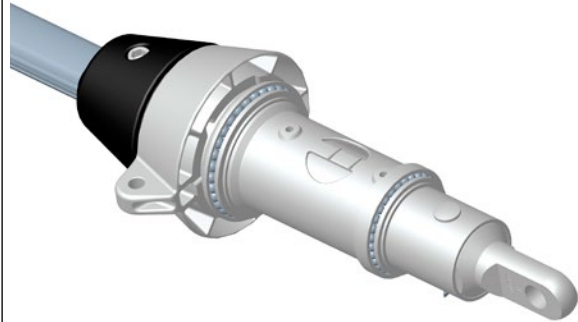
595-116-E



Attach the halyard to a strong deck fitting using a screw pin shackle or tie the halyard. For safety reasons, do not use snap shackles.

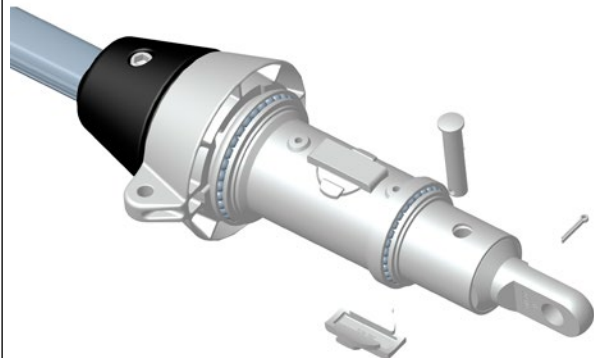
**1.**

Remove the furling line, line guard, line drum and toggle/extension link. Clean swivel and lubricate bearings according to chapter 15 in manual 595-116.



**2.**

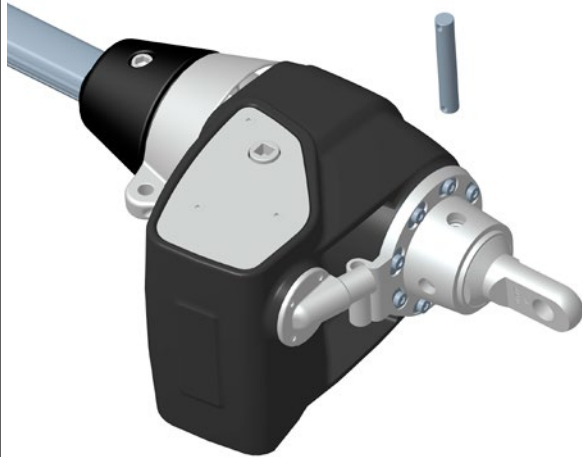
Remove clevis pin and split pin. Fit the two carriers.



### 3.


Slide the motor unit over the swivel.  
Fit the shaft and split pins. Choose holes depending on the direction of the forestay fitting in the boat.

Protect the motor unit by working on a clean and soft surface.



### 4.

Fit the toggle and optional extension link.

 Use only Furlex Electric torque toggle and optional extension link.



### 6.

The Furlex system can now be attached to the boat, by following the instructions in chapter 16 “Rigging”, in manual 595-116.

### 3.7 Step by step assembly 400TD Retrofit

Prior to installation, read chapter 17.3-17.4 in 595-240. Read also chapter 16 “Rigging” for instructions how to remove the torque tube and de-attaching the forestay. Note that more references are made to this manual during the assembly.



595-240-E



Attach the halyard to a strong deck fitting using a screw pin shackle or tie the halyard. For safety reasons, do not use snap shackles.

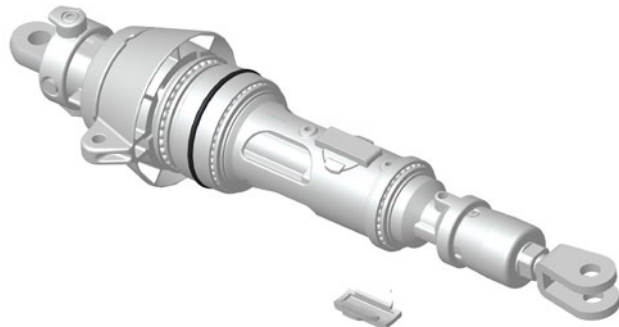
**1.**

Remove line guard and line drum. Remove swivel from the boat. Clean swivel and lubricate bearings according to chapter 15, manual 595-240.



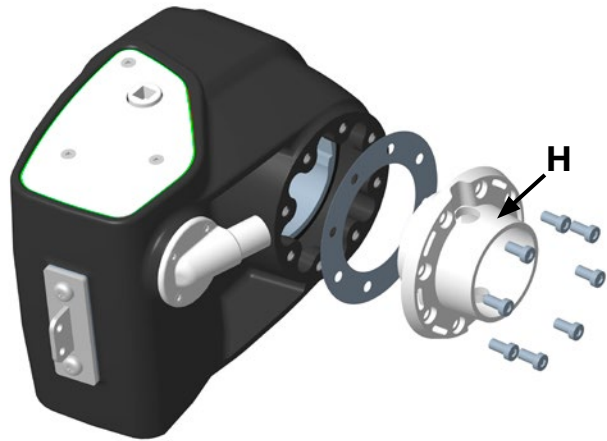
**2.**

Fit the two carriers.



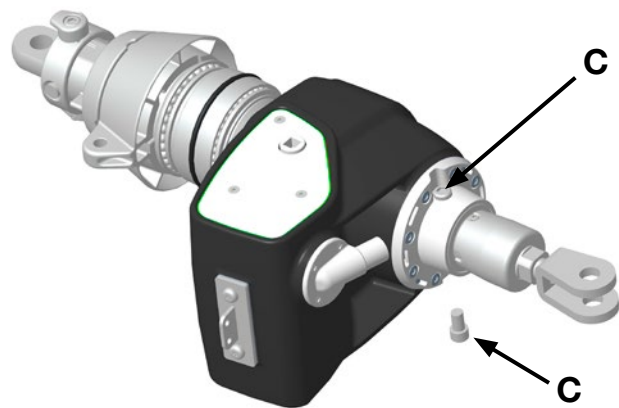
### 3.

Attach the holder H and the insulator.  
Check the direction of the forestay fitting  
in the boat and turn the holder accordingly.  
Note that a 45°. fitting of the the motor unit  
is possible if desired.  
After position of holder is verified, apply  
locking adhesive at all eight screws and  
tighten hard.



### 4.

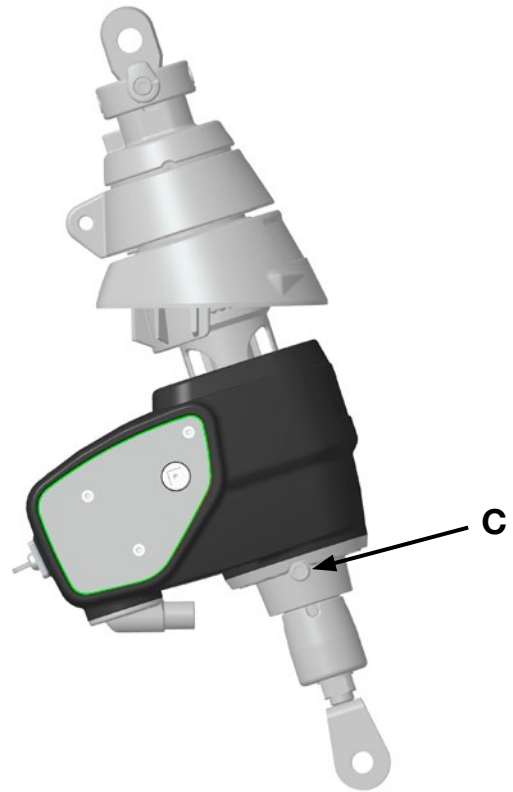
Check that the two locking screws (C) fit.  
Remove the screws.  
Remove the motor unit.





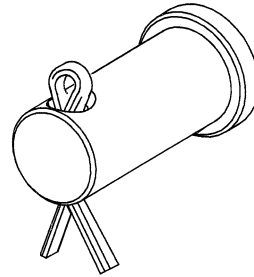
## 5.

Fit the swivel through the deck fitting and motor unit. Support the motor unit from below or by securing it with a rope or strap. Fit the two locking screws (C). Use locking adhesive.



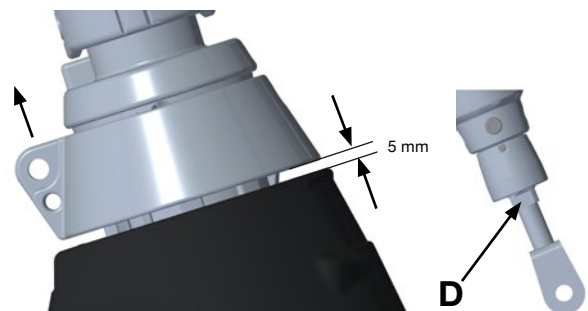
## 6.

Fit clevis pin and split pin.



## 7.

Adjust the distance between tack-ring and deck fitting if necessary by turning the bronze nut. (D). This distance should be approx. 5 mm at the front when eye of tack-ring is pulled upwards.



## 8.

Determine the position of the torque bracket. Bracket should be perpendicular to the drive unit and fitted to the port side.

Remove the torque stay.

Clean and key the bonding surfaces of the bracket and hull. Bond the torque-bracket to the hull. Use a structural adhesive.

After curing, assemble the torque stay to the bracket in the hull.

Turn the drive unit side to side to find the neutral position.

Mark the torque stay at (A)

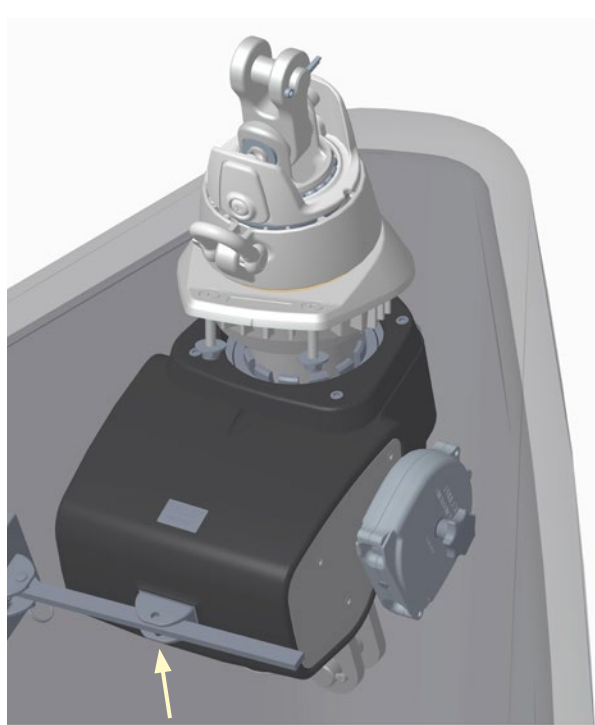
Remove stay and drill  $\varnothing 6.5\text{mm}$  hole for the clevis pin

Cut-off excess length of the torque stay leaving  $\Rightarrow 10\text{mm}$  material to the  $\varnothing 6.5\text{mm}$  hole.

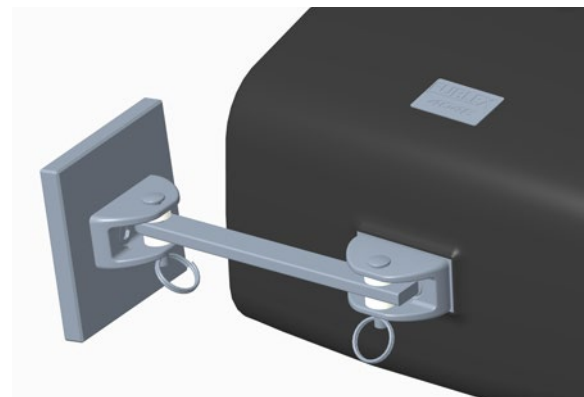
Round any sharp edges and assemble the torque stay.



Maximum working load on torque bracket:  
Furlex 400TDE: 3800N



**A**



## 9.

Attach the Furlex Electric system to the boat by following the steps 7-8 in chapter 16 "Rigging", in manual 595-240.

### 3.8 Step by step assembly 404S Retrofit

Prior to installation, read chapter 6.4.2-6.4.4 in manual 597-181. Note that more references are made to this manual during the assembly. The drum unit has to be removed from the forestay prior to conversion. Protect the drum unit and motor unit by working on a clean and soft surface.



597-181-E



Always secure the mast with a halyard before detaching the forestay.

**1.**

Clean drum unit if necessary.

Remove circlip, washer (including any shim), balls and ball bearing ring.



Do not lift the line drum as this will cause top main bearing (A) to open up.



Do not re-use circlip. A new circlip is included in the retrofit kit.



## 2.

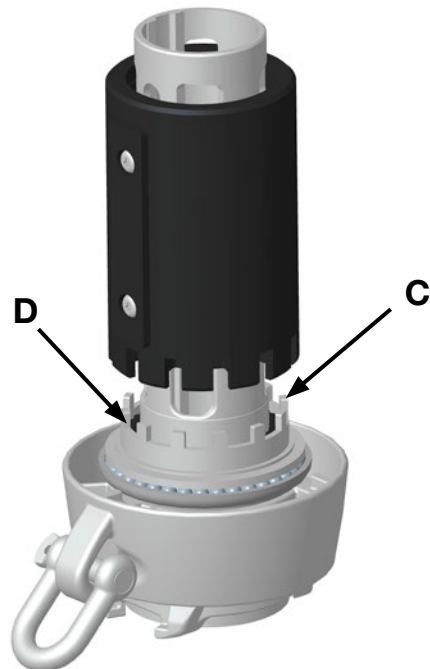
With a firm grip of the tack ring (B), wiggle and lift the line drum.



## 3.

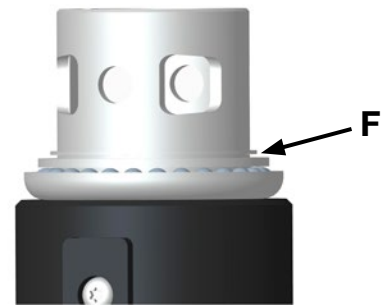
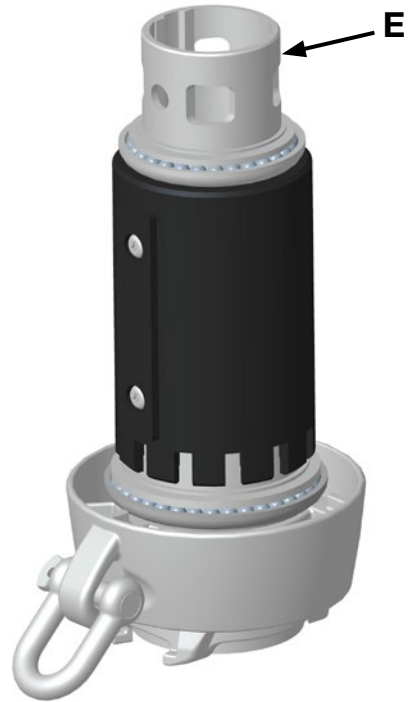
Apply a small amount of grease to the rollers (C) if dry.

Slide the new hub over the shaft until it engages with the teeth in the hub (D).



## 4.

Fit ball bearing ring, balls, washer and new circlip. Before fitting circlip, lift the shaft (E) and estimate axial play. If axial play exceeds 0.5mm fit shim 164-459 (F) between washer and circlip.

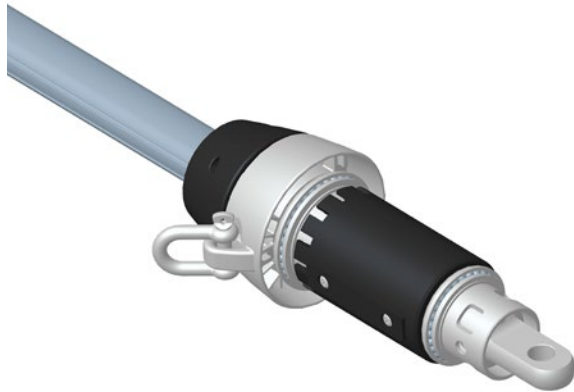


## 5.

Apply grease to bearings according to chapter 6.2 "Service" in manual 597-181.

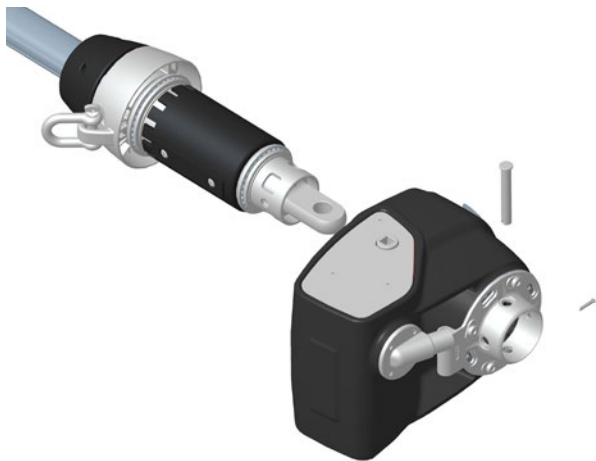
## 6.

Slide the swivel over the terminal. Fit the adaptor halves and connect the luff extrusion according to points 4-5 in chapter 3.5, manual 597-181.



## 7.

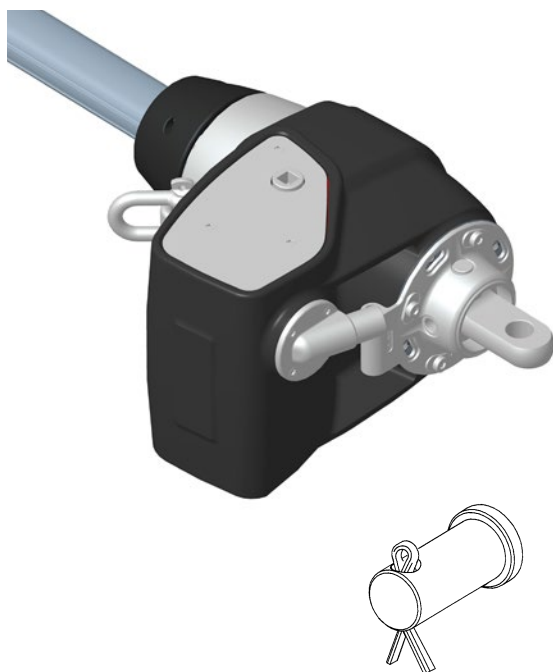
Remove the clevis pin and split pin from the motor unit and fit the motor unit over the hub so that the bronze gear engages with the carriers in the hub.



## 8.

Note that the motor unit can be turned 90° depending on the direction of the forestay fitting in the boat.

Align the holes in the terminal, shaft and holder. Fit the clevis pin and split pin.

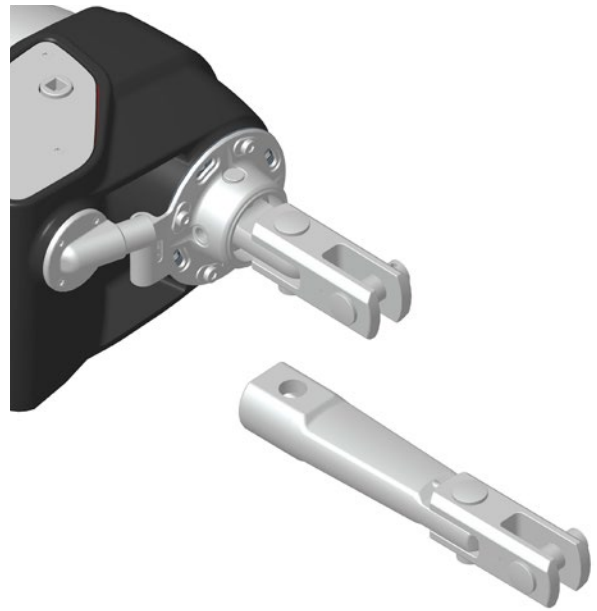


## 9.

Fit the toggle and, if required, the optional extension link.



Use only Furlex Electric torque toggle and optional extension link.



## 10.

Attach the Furlex Electric system to the boat by following the steps in chapter 4.3 stepped mast or 4.4 unstepped mast in manual 597-181.

### 3.9 Step by step assembly 404TD Retrofit



597-465-E

Prior to installation, read chapter 7.4.2-7.4.5 in 597-465. Note that more references are made to this manual during the assembly. Protect the drum unit and motor unit by working on a clean and soft surface.



Attach the halyard to a strong deck fitting using a screw pin shackle or tie the halyard. For safety reasons, do not use snap shackles.

#### 1.

Remove furling line, line guard and brims.

Remove swivel from the boat.

Clean swivel if necessary.





#### 2.

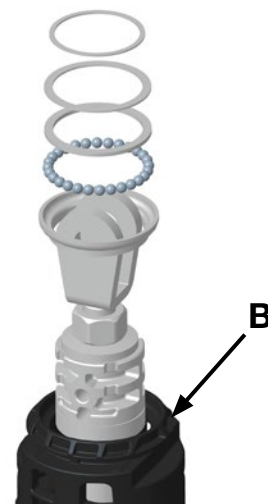
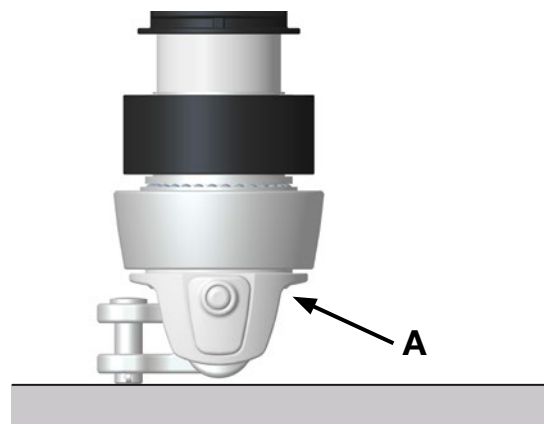
Turn swivel upside down and place it on a flat surface.

Arrange a support to prevent it from tipping over.

Remove circlip, washer (including any shim), balls and ball bearing ring.

 Do not lift the line drum (B) as this will cause top main bearing (A) to open.

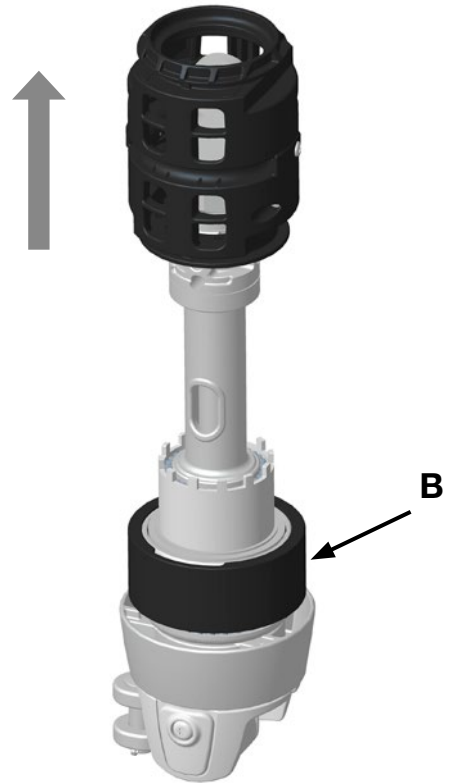
 Do not re-use circlip.





### 3.

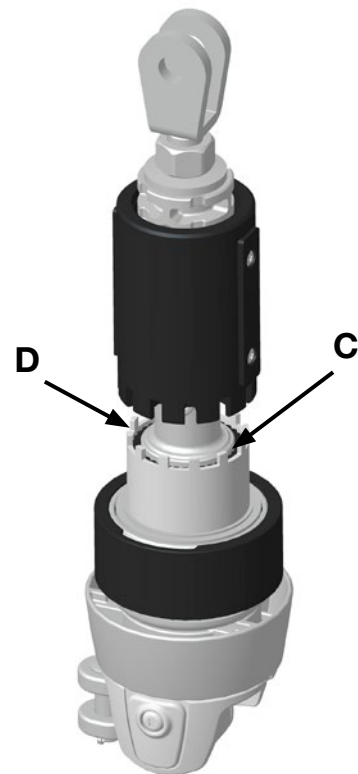
With a firm grip of hub assembly (B), wiggle and lift the line drum.



### 4.

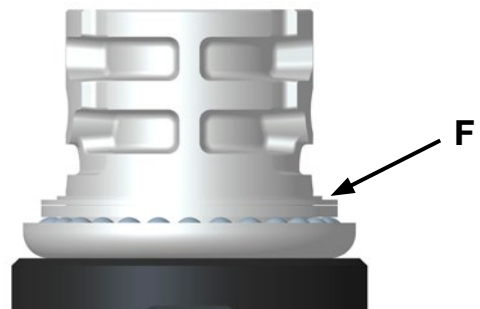
Apply a small amount of grease to the rollers (C) if dry.

Slide the new hub over the shaft until it engages with the teeth in the hub (D).



## 5.

Apply a bead of grease in the ball bearing ring. Assemble the ball bearing ring, balls and washer. Before fitting the new circlip, lift the fork and estimate axial play. If axial play exceeds 0.5mm, fit 0.5mm shim 164-459 (F) between washer and circlip. Check that circlip enters the groove properly.



## 6.

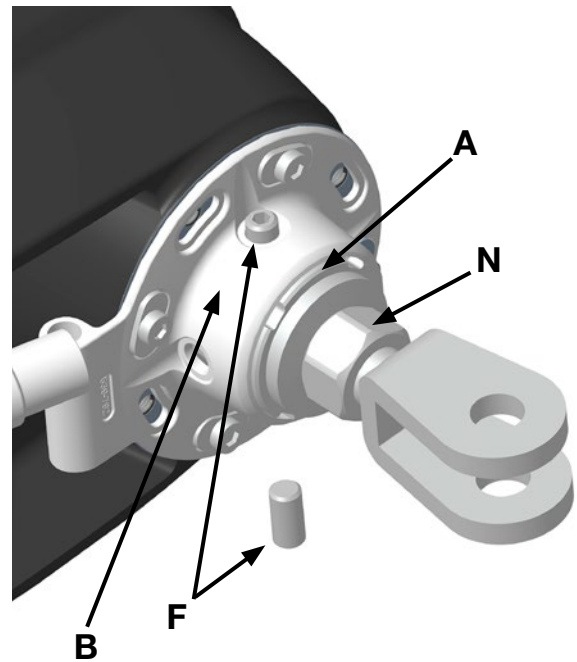
Apply grease to bearings according to chapter 7.2 "Service" in manual 597-465.

## 7.

Check that the motor unit fits over hub.

Turn the center shaft (A) by turning the toggle at the upper end of the swivel so that the holes in the shaft aligns with any of four holes in the holder (B). Check that the two locking screws (F) fit.

Remove screws and motor unit.  
Loosen the locking nut (N) a couple of turns.



## 8.

Fit the swivel in the boat without the motor unit. Fit the clevis pin but not the split pin. Control following points:

**a)** Distance between forestay and deck.  
The distance between tack ring and deck fitting should be approx. 5mm at the front when eye of tack-ring is pulled upwards. If the distance needs to be adjusted, turn the shaft by turning the toggle at top of swivel to raise or lower the swivel.

Remove the swivel.

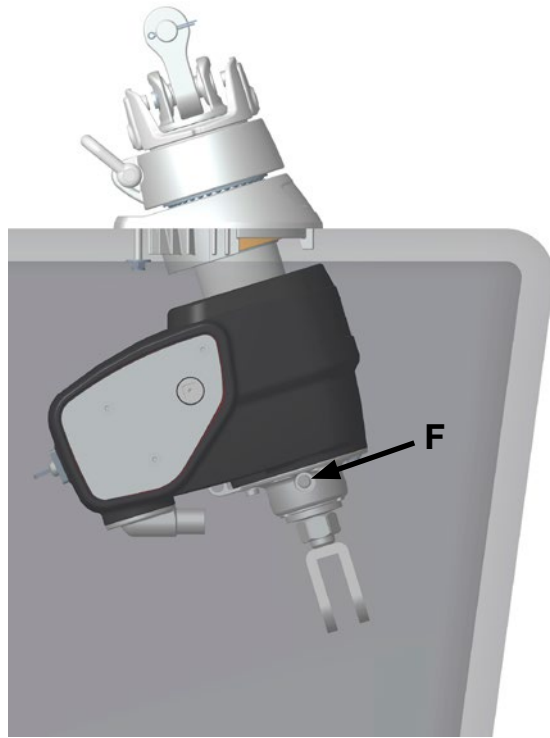


## 9.

Fit the swivel through the deck fitting and motor unit.

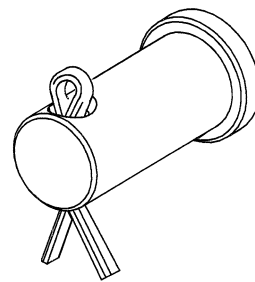
Support the motor unit from below or by securing it with a rope or strap.

Fit the two locking screws (F).  
Use locking adhesive.



## 10.

Fit clevis pin and split pin.



## 11.

Determine the position of the torque bracket. Bracket should be perpendicular to the drive unit and fitted to the port side.

Clean and key the bonding surfaces of the bracket and hull. Bond the torque-bracket to the hull. Use a structural adhesive.

After curing, assemble the torque stay to the bracket in the hull.

Turn the motor unit to the desired position. Turning it to port side will make more space for the emergency line driver.

Mark the torque stay at (A)

Remove stay and drill  $\varnothing$  6.5mm hole for the clevis pin.

Cut-off excess length of the torque stay leaving  $\Rightarrow$  10mm material to the  $\varnothing$ 6.5mm hole.

Round any sharp edges and assemble the torque stay.

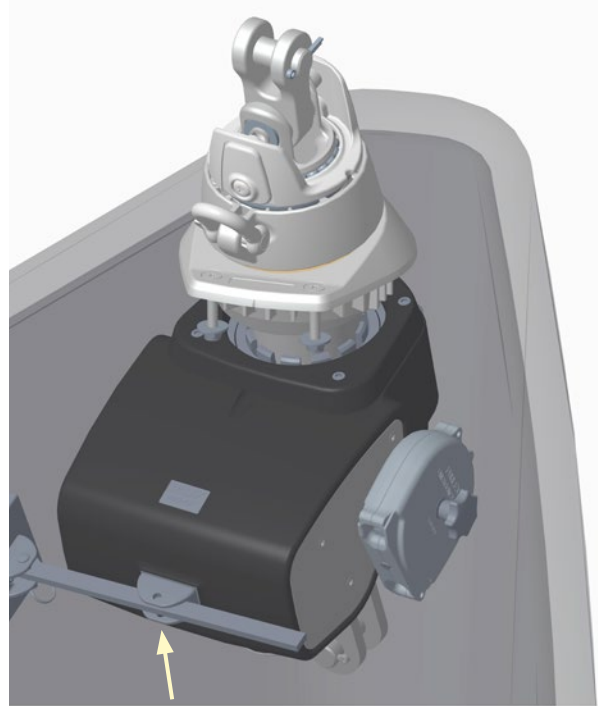


New generation 404TD has no torque handling capacity and a torque stay is therefore a demand for these models.

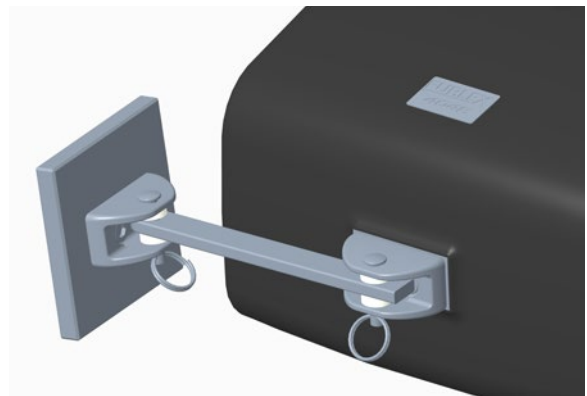


Maximum working load on torque bracket:

Furlex 404TD: 3800N



A



## 12.

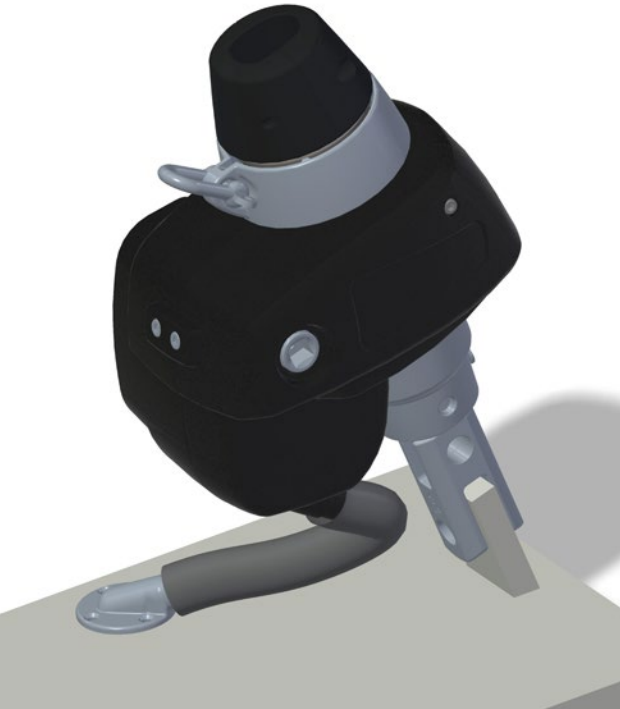
Attach the Furlex Electric system to the boat by following the steps 6-9 in chapter 5 "*Rigging*, manual 597-465".

# 4 Electrical Installation

## 4.1 Installation of deck gland and connection box

The connection box makes it easier to disconnect the Furlex from the boat. It is usually placed in the anchor box. It has sealing inserts prepared for three cables on each side. Position it as high as possible.

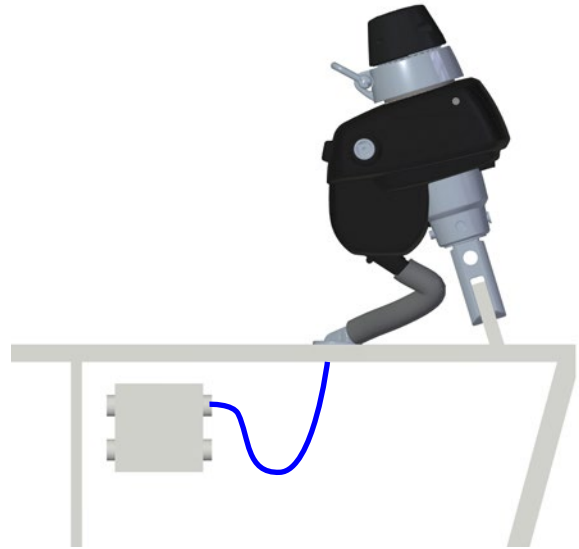
### Installation of Furlex Electric above deck

<p><b>1.</b></p> <p>Find a suitable position and direction for the deck gland.</p> <p>Feed the cables through the protective hose and attach the hose to the drive unit temporarily. Mark the cutting point on the hose.</p> <p>Make sure the hose and cables do not stretch when drive unit moves side to side.</p> <p>Remove hose and cut it.</p> <p>Drill a <math>\varnothing 20-30\text{mm}</math> hole in the deck. Smoothen any sharp edges.</p> <p>Apply sealant in the groove and fasten the deck gland using the self-tapping screws supplied in the kit.</p>	
<p><b>2.</b></p> <p>Feed the cables through the hose and attach the hose to the drive unit with a hose clamp. Do not over-tighten.</p>	
<p><b>3.</b></p> <p>Feed the cables through the deck gland and attach the hose to the deck gland with a hose clamp.</p>	

## 4.

Position the connection as high as possible in the anchor box.

Adjust the length of the cables so that a loop is formed as shown. This will create a lowest point of the cables preventing water from running towards the connection box.



## 5.

Cut the cables and feed them through the cable gland nut and the rubber seal insert.

Strip the cable ends and connect them in pairs to the screw terminals.

Tighten the nut, compressing the seal around the cables.

See Assembly instructions 597-919-E included in the connection box.



## 6.

Repeat steps under point 5 for cables to be connected to the MCU inside the boat.

## Installation of Furlex Electric TD (through deck)

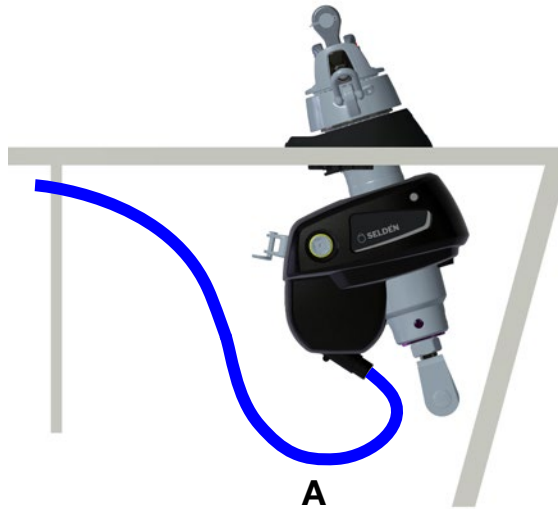
### 1.

Feed the cables through the protective hose and attach the hose to the drive unit temporarily. Adjust the length of the cables so that a loop is formed as shown.

Mark the cutting point on the sleeve and cables. Also mark the lowest point (A).

Ensure hose and cables do not stretch when drive unit moves side-to-side.

Remove hose and cut it. Drill a  $\varnothing 8\text{mm}$  drain hole at A.



### 2.

Feed the cables through the hose and attach the hose to the drive unit with a hose clamp.

Do not over-tighten.

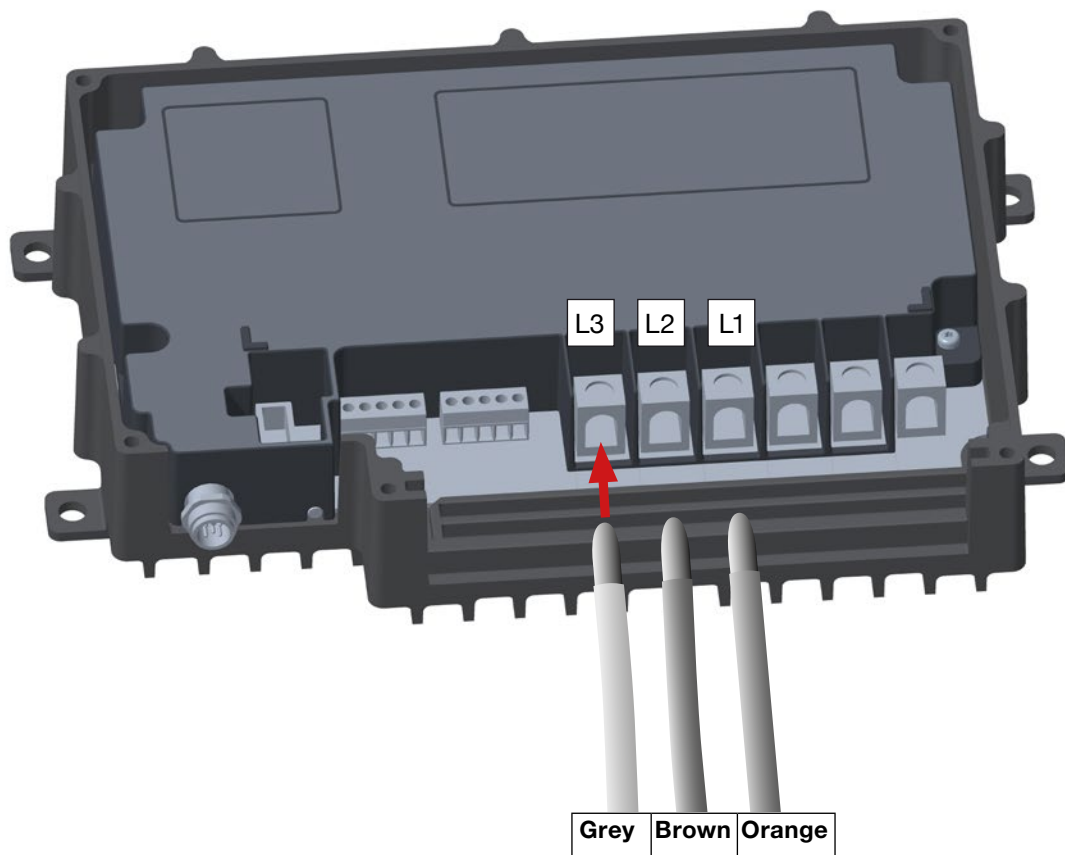


## 4.2 Connection to Seldén Power supply and SEL-Bus system



597-275-E

Connect the cables from the connection box to the Furlex Electric Motor Control Unit contacts marked L1, L2, and L3 as shown in the picture below. This will result in standard anti-clockwise furling direction. For correct positioning of the Motor Control Unit and installation of the complete Power supply and SEL-Bus system, see separate manual 597-275.



If opposite furling direction is desired (e.g. due to position of UV-protection in sail), this can be done by changing the position of orange cable to connector L2, and brown cable to connector L1.

# 5 Operation

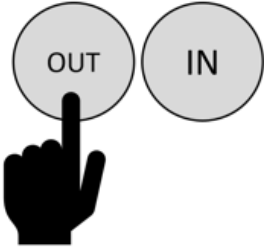
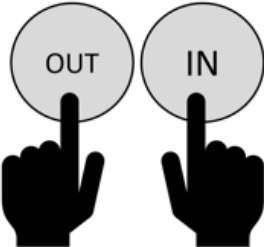
## 5.1 Normal operation

All operation modes except “emergency” require that the control current is turned on.



Always observe the furling process and ensure that nothing can interfere with the sail or its sheeting lines.

Furlex Electric operates with high or low speed.

<h3>Low speed</h3> <p>Push either IN or OUT depending on which direction is required.</p>	
<h3>High speed</h3> <p>Whilst holding down the first button, depress the second button to increase to high speed.</p>	

## 5.2 Unfurling

1. Release the windward genoa sheet. Allow it to run freely while the sail is being unfurled.
2. Place the leeward sheet with one turn around a winch and tension by hand.
3. Push the OUT-button and gradually tension the sheet. The sail will unfurl at low speed. For high speed, press the IN button simultaneously. Activate low speed when the sail is almost completely unfurled and then release the OUT-button. Holding the boat close hauled will ensure the best wind angle for unfurling.
4. Add more turns of the sheet around the winch and sheet the sail to the desired trim.

## 5.3 Furling

It is important to ensure a tight and even furl on the sail. A loosely furled sail can result in the sail flogging in heavy winds, causing wear and damage. If leaving the boat unattended it is recommended to use a Furling Jib Cover, which can be hoisted over the jib providing protection from UV degradation and prevent the fore-mentioned issues.

### **How to furl**

1. Release the windward sheet and ensure that it can run freely. Holding the boat close hauled will ensure the best wind angle for furling.
2. Release the leeward sheet but keep a little tension on it by keeping one turn around the winch.
3. Furl the sail by pushing the control button. Let it furl while keeping light resistance in the sheet.

## **5.4 Reducing sail area**

The best point of sail for reducing sail is close hauled. The wind will then partly fill the sail and help to improve its shape whilst being reduced.

### **How to reef**

1. Slacken off the leeward sheet until the sail just begins to flap along the luff.
2. Push the control button so that the sail begins to furl. Gradually slacken the sheet when furling. When the sail area is reduced, it may be necessary to adjust the sheeting position.

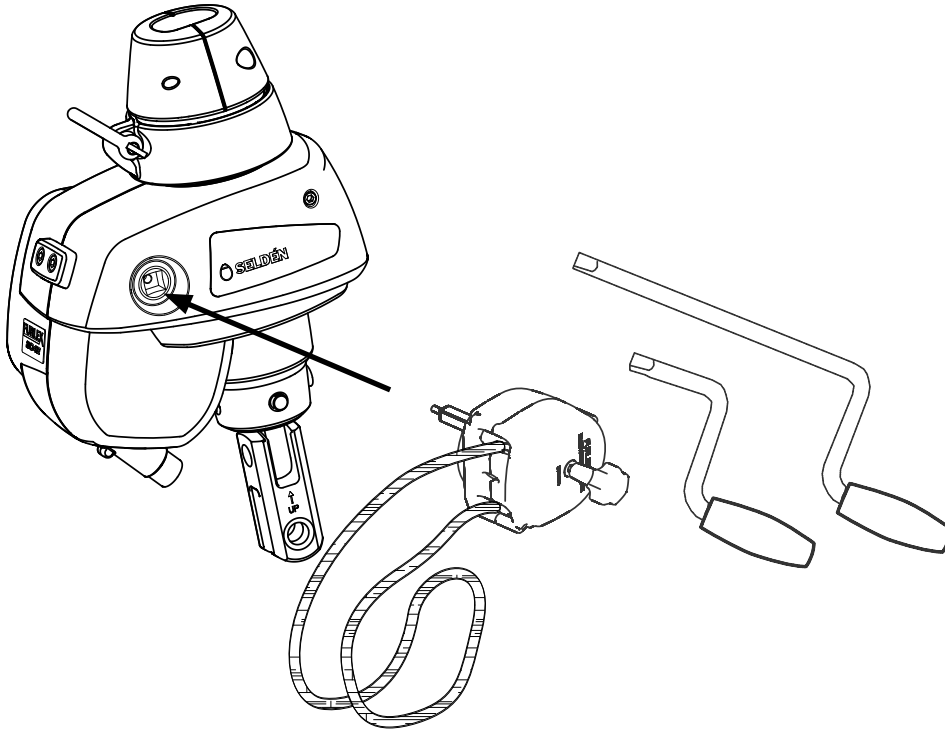


Never use Furlex Electric for sheeting.

## 5.5 Emergency furling

If the electrical furling does not work, an emergency furling operation is possible.

On the starboard side, the drive unit features a 1/2" female socket for the emergency line driver. This device consists of a linedriver with an endless furling line. Insert the male socket into the drive unit and fix it with the central screw.



### How to emergency furl

1. Switch electric power off
2. Insert the linedriver and fix it by turning the knob clockwise.
3. Pull the linedriver's endless line to rotate the furler in the desired direction. Alternatively use a handle, see chapter "2.4 Optional Parts".
4. Remove linedriver or handle when the emergency furl is finished



Before turning on power to the electrical system again, make sure that the linedriver or handle is not connected to the socket, as it will rotate rapidly during normal operation.

## 6 Trouble shooting

Problem	Probable Cause	Action
Furlex not operating.	Electric failure or bad connection.	<p>After furling the sail using the emergency linedriver:</p> <ol style="list-style-type: none"> <li>1. Troubleshoot the electric system. See manual 597-275</li> <li>2. Look for corroded or loose wires in the connection box.</li> </ol>
Furlex stops when heavily loaded.	Overload.	<ol style="list-style-type: none"> <li>1. Ease load and check if operation is OK.</li> <li>2. See operating instructions, the motor controller will limit the torque by cutting current supply to the motor, if overloaded.</li> <li>3. Check the furling system for excessive friction by using the hand operated emergency winding system.</li> </ol>
Excessive friction in the furling system.	Salt, dirt, and lack of grease.	<ol style="list-style-type: none"> <li>1. Rinse with freshwater, clean and lubricate. Please see the manuals for the standard furling systems.</li> </ol>
Furlex runs in wrong direction.	The wires have not been properly installed.	<ol style="list-style-type: none"> <li>1. Connect the cables according to the colour codes stated in the manual.</li> <li>2. If opposite furling direction is wanted: Choose any two of the three motor cables and swap their positions on the connecting box terminal.</li> </ol>
Motor runs but luff extrusion does not turn.	Belt worn or broken.	<ol style="list-style-type: none"> <li>1. Dismantle port cover and inspect belt.</li> <li>2. Replace belt.</li> </ol>
Oil leakage	Defective seals in motor unit, or broken housing.	<ol style="list-style-type: none"> <li>1. Contact your Seldén representative for service instructions.</li> </ol>

# 7 Service and Maintenance

In order for your Furlex Electric system to function both mechanically and electrically, year after year, a certain amount of system maintenance is required on a regular basis. Maintenance is simple, even with the Furlex rigged on the boat.

## 7.1 Frequent maintenance

- Wash and rinse the entire Furlex-system with fresh water to remove dirt and salt residue. This also applies to a Furlex TDE located in the anchor box. Also check that the anchor box drainage functions satisfactorily.
- The stainless-steel components can be treated with a suitable polish. Always protect black plastic when polishing stainless components.



Some detergents contain substances which can cause aluminium to corrode, so it is important to rinse all detergent off thoroughly.

## 7.2 Yearly Inspection points and maintenance

- Check that lower swivel turns freely. Use emergency winch handle to check the worm gear function.
- Check lower part of unit for leaks of oil or grease.
- Rinse with fresh water to remove dirt and salt if necessary. Bronze surfaces can be protected by an anti-corrosion spray.
- Lubricate swivel bearings. See Chapter 6 in manual 597-181.
- Inspect the protective sleeve, connection box and cables between the Furlex Electric unit and the connection box. Damaged protective sleeves and defective hose clamps must be replaced. If the connection box is damaged by the anchor chain or similar, it must be replaced.

## 7.3 Every 5th year

Under normal use, the motor-unit should be left to an authorized Seldén dealer for service at a maximum of 5-year intervals. Such a service includes cleaning, replacement of seals etc. and re-greasing of the reduction gear and bearings. For boats that are used for chartering, long-distance sailing etc., the unit should be serviced more frequently.



## 8 Technical Information

The Seldén Power Supply and SEL-Bus system, which has been tested according to standard EN 61800-3, meets the EMC directive 2014/30/EU. This product has also been tested according to standard EN 60945 and meets the limits of emissions for maritime equipment when in standby mode.

## 9 Disposal

The crossed out wheelie bin symbol on the product or product package means that used electrical and electronic equipment (WEEE) should not be mixed with general household waste. For proper treatment, recovery and recycling, please take this product(s) to designated collection points where it will be accepted free of charge. Alternatively, in some countries, you may be able to return your products to your local retailer upon purchase of an equivalent new product.

Disposing of this product correctly will help save valuable resources and prevent any potential negative effects on human health and the environment, which could otherwise arise from inappropriate waste handling.

Please contact your local authority for further details of your nearest designated collection point.



## 10 Warranty

Seldén Mast AB guarantees Furlex Electric for 2 years. The guarantee covers faults arising from defective design, materials or workmanship.

The guarantee is only valid if the Furlex Electric is assembled, operated and maintained in accordance with this manual and is not subjected to loads in excess of those indicated in the brochure and instructions.

Complete shipment and warranty conditions are to be found on Seldén's website [www.seldenmast.com](http://www.seldenmast.com).

See Resources/Partners information/General information/General conditions of sale (595-546-E).

If the system is repaired or modified by anyone other than Seldén Mast AB or one of our authorized dealers, the guarantee ceases to be valid.

Seldén Mast AB reserves the right to alter the content and design without prior warning.











[www.seldenmast.com](http://www.seldenmast.com)