597-274-E
2019-04-24

FURLEX electric

Supplementary manual

SELDÉN

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:

204S/304S/204TD/304TD (current models)
200S/300S/200TD/300TD (production year 1997-2015)

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:
597-274 Revision 0.0 2017-11-06, Revision 1.0 2019-03-20
The latest version of this manual can be downloaded from www.seldenmast.com

Other Seldén documents referred to in this manual are:

595-104 Furlex 200/300S
597-132 Furlex 204/304S
595-231 Furlex 200/300TD
597-418 Furlex 204TD/304TD
597-275 Power supply & SEL-Bus system

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

-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 website. If there are any questions about selecting the right product, please consult an authorized Seldén dealer. All dealers are listed at www.seldenmast.com and divided in categories describing their competence. For Furlex Electric we recommend authorized Furlex dealers or dealers in the category "Advanced Technical Installations".

Contents

2 Furlex Electric

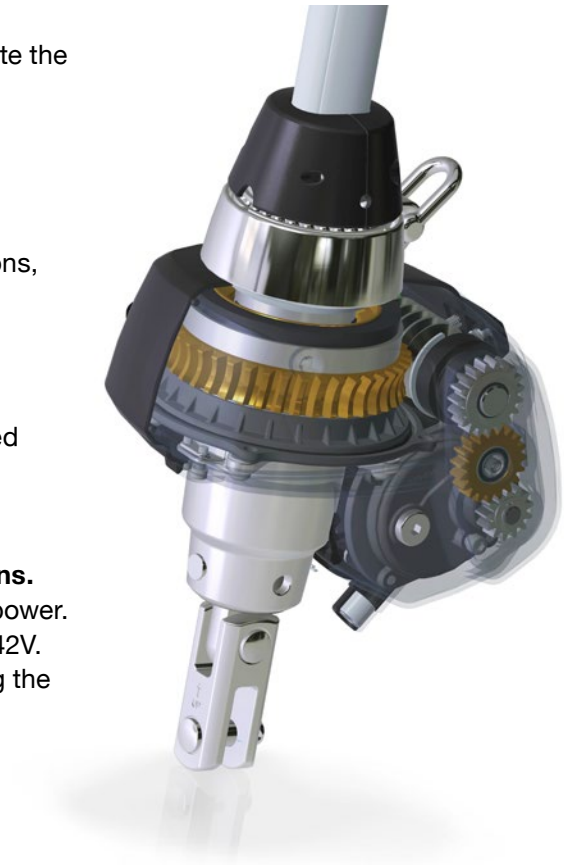
Furlex Electric is available as a complete kit for both on-deck and through-deck installation. The electric system is also available as an upgrade of an existing Furlex by replacing the furling line, drum and line guard assembly with the Furlex Electric Motor unit and related parts in the Furlex Electric 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
Furlex Electric has an outer cover made of an impact- and UV- resistant composite polymer. The worm gear is enclosed in a corrosion resistant aluminum housing. 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

		Furlex 204E	Furlex 304E
Included parts	**Qty**	**549-200-20**	**549-300-20**
Halyard Swivel	1	549-229-01	549-329-01
Lower Swivel	1	549-200-21	549-300-21
Motor Unit	1	549-601-09	549-601-07
Protect. Hose Ø30 mm	1	319-837	319-837
Clip	2	312-213	312-213
Emergency Line drive	1	539-664-01	539-664-01
Top bearing assembly	1	549-226-01	549-326-01
Bearing plug forward	1	549-219	549-319
Bearing plug aft	1	549-220	549-320
Sailfeeder assembly	1	549-223-01	549-323-01
Deck gland kit	1	539-653-01	539-653-01
Locking adhesive	1	312-305	312-305
Halyard U-lead kit	1	508-159-02	508-128-02
Prefeeder Pack	1	505-538-01	505-538-01
Lubricating grease	1	312-501	312-501
Torx bit set	1	592-087	592-087

Furlex Electric Basic pack: Through Deck

		Furlex 204TDE ø6/7	Furlex 204TDE ø8	**Furlex 304TDE**
Included parts	**Qty**	**549-270-18**	**549-270-19**	**549-370-12**
Halyard swivel	1	549-229-01		549-329-01
Lower swivel	1	549-270-11	549-270-13	549-370-13
Motor Unit	1	549-601-16		549-601-17
Torque tube assembly	1	549-272-02		549-372-02
Deck fitting assembly	1	549-257-01		549-357-01
Torque stay with bracket	1	508-657-02		508-657-02
Screw	2	153-006		153-062
Halyard U-lead kit	1	508-159-02		508-128-02
Preefeder pack	1	505-538-01		505-538-01
Torx bit set	1	592-087		592-087
Top bearing assy	1	549-226-01		549-326-01
Low bearing assembly	1	549-238-01		549-338-01
Spring pin	1	166-549		166-552
Sail feeder assembly	1	549-223-01		549-323-01
Locking adhesive	1	312-305		312-305
Template, Deck Collar	1	597-425-E		597-426-E

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 204S/304S (current models)

		204S Electric Retrofit			304S Electric Retrofit	
	Forestay dimension, mm	**Ø6**	**Ø7**	**Ø8**	**Ø8**	**Ø10**
Item	**Qty**	**549-601-250**	**549-601-255**	**549-601-260**	**549-601-265**	**549-601-270**
Motor Unit	1	549-601-09			549-601-07	
Hub	1	549-650			549-609	
Washer	1	164-540			164-543	
Retain. Ring	1	301-563			301-554	
Ball	5	539-034			539-128	
Bearing roller	5	319-935			319-930	
Protective hose	1	319-836			319-836	
Deck gland kit	1	539-653-01			539-653-01	
Clip	2	312-211			312-211	
Toggle	1	539-680-01	539-681-01	539-682-01	539-682-01	539-683-01
Emergency line driver	1	539-664-01			539-664-01	

Furlex Electric Retrofit pack for Furlex 200S/300S (1997-2014)

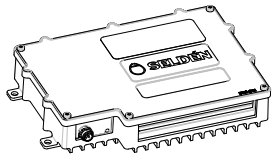
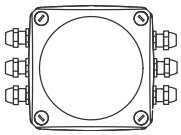
		200S Electric Retrofit			300S Electric Retrofit	
	Forestay dimension, mm	**Ø6**	**Ø7**	**Ø8**	**Ø8**	**Ø10**
Item	**Qty**	**549-601-200**	**549-601-205**	**549-601-210**	**549-601-215**	**549-601-220**
Motor Unit	1	549-601-10			549-601-08	
Carrier	2	549-653			549-631	
Protective hose	1	319-836			319-836	
Deck gland kit	1	539-653-01			539-653-01	
Clip	2	312-211			312-211	
Toggle	1	539-680-01	539-681-01	539-682-01	539-682-01	539-683-01
Emergency line driver	1	539-664-01			539-664-01	

Furlex Electric Retrofit pack for Furlex 200TD/300TD (1997-2017) and 204TD/304TD (current model)

		200TD Electric Retrofit	300TD Electric Retrofit	204TD Electric Retrofit	304TD Electric Retrofit
Item	**Qty**	**549-601-225**	**549-601-240**	**549-601-275**	**549-601-290**
Motor Unit	1	549-601-11	549-601-12	549-601-16	549-601-17
Carrier	2	549-653	549-631	-	-
Hub	1	-	-	549-650	549-609
Screw MC6S 8x16 mm	2	153-006	-	153-006	-
Screw MC6S 10x16 mm	2	-	153-011	-	153-011
Torque stay with bracket	1	508-657-02	508-657-02	508-657-02	508-657-02
Protective hose	1	319-836	319-836	319-836	319-836
Clip	1	312-211	312-211	312-211	312-211
Emergency linedriver	1	539-664-01	539-664-01	539-664-01	539-664-01
Lubricating grease	1	312-501	312-501	312-501	312-501
Locking adhesive	1	312-305	312-305	312-305	312-305

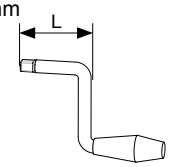
2.3 Control Pack

The Control Pack includes the parts that connect the Furlex motor unit to the Seldén Power Supply and SEL-Bus system. The included parts are presented in the table below:

		Furlex Electric 200/204		Furlex Electric 300/304	
		Genoa	Cutter	Genoa	Cutter
Included parts	**Qty**	**532-815-90**	**532-815-91**	**532-815-92**	**532-815-93**
Motor Control Unit 	1	532-815-20		532-815-21	
Connection Box 	1	532-487-01		532-487-01	
Control Buttons GENOA 	1	540-459-16		540-459-16	
Control Buttons CUTTER 	1		540-459-19		540-459-19
Connection cable Orange	3m	531-045		531-045	
Connection cable Grey	3m	531-046		531-046	
Connection cable Brown	3m	531-047		531-047	

2.4 Optional parts

Parts that adapt your installation to your individual boat.

Item	Art. No.	Furlex 204E	Furlex 304E	Furlex 204TDE/304TDE	Furlex 200E	Furlex 300E	Furlex 200TDE	Furlex 300TDE
Forestay wire 6-7 mm, eye/ fork extension link, L=90 mm 	517-115-01	x			x			
Forestay wire 8-10 mm, Eye/ fork extension link, L=130 mm	517-116-01		x			x		
Shims for toggle, forestay ø 6-8 mm 	164-516	x			x			
Shims for toggle, forestay ø 10 mm	164-519		x			x		
Short crank, emergency, L=100 mm 	533-922	x	x	x	x	x	x	x
Long crank, emergency, L=325 mm	533-923	x	x	x	x	x	x	x
SEL-Bus Converter (for custom control buttons)	532-827-01	x	x	x	x	x	x	x
Panel, 1 push button 	540-461-01	x	x	x	x	x	x	x
Panel, 2 push buttons 	540-462-01	x	x	x	x	x	x	x

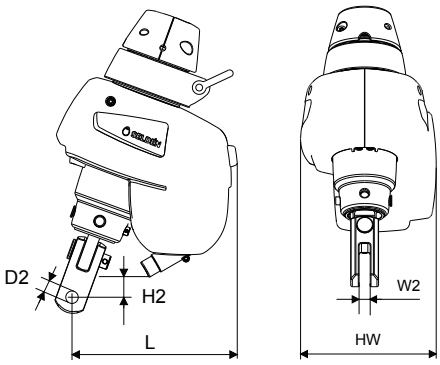
2.5 Technical specification

Electrical specification

	Furlex Electric 200/204	Furlex Electric 300/304
Input Voltage to motor control unit	42V	
Peak Torque	60Nm	90Nm
Peak Current Consumption [42V]	18A	26A
Total Gear Ratio	122:1	
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^2	
Weight, Motor Unit	approx 7 kg	approx 7 kg
Weight, Motor Control Unit	approx 1 kg	approx 1 kg

Main dimensions, above deck installation:

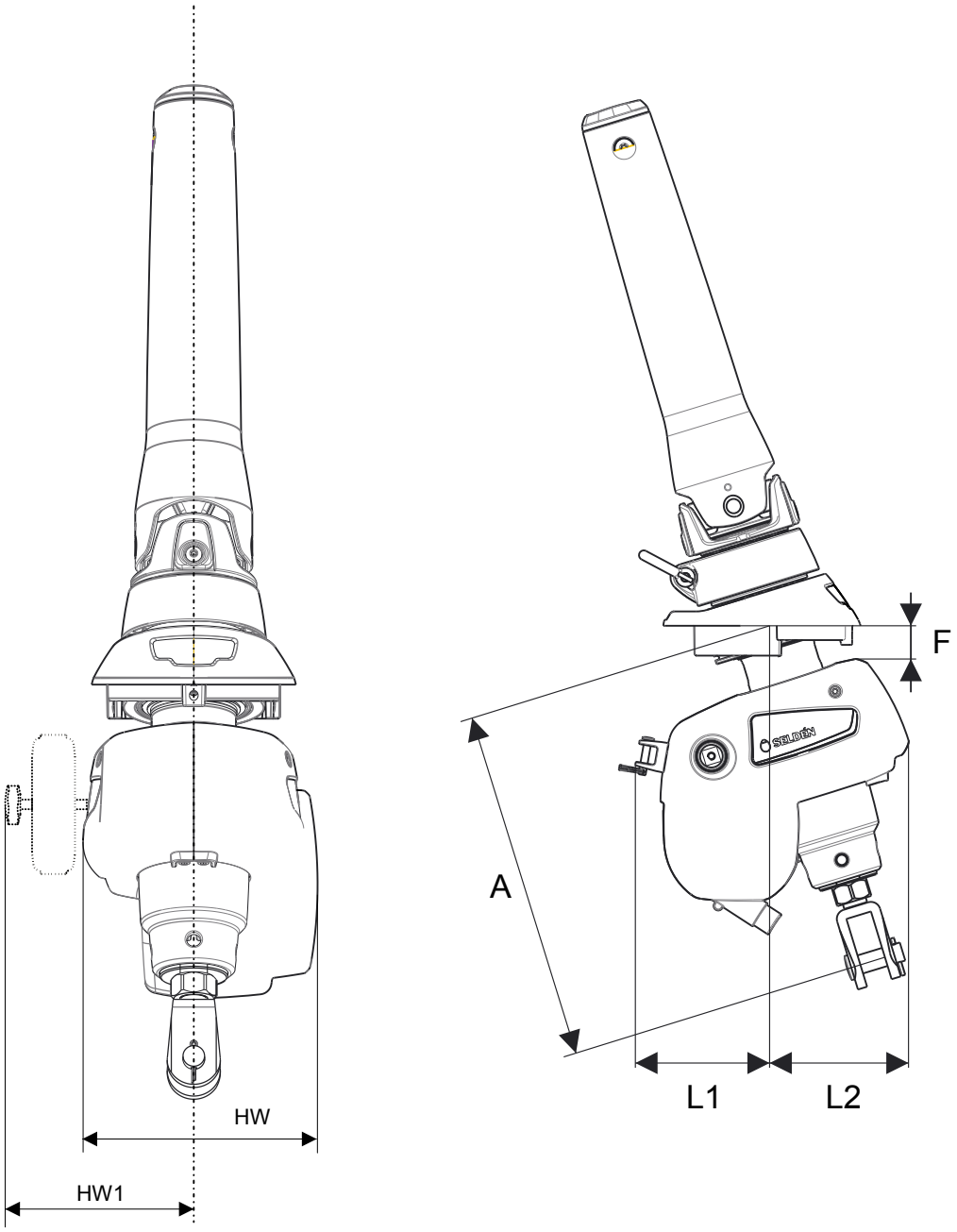
Type	Forestay diameter mm	L mm	HW mm	W2 mm	D2 mm	H2 mm
204E	Ø 6	180	175	12	Ø 10,5	-16
	Ø 7	180	175	14	Ø 12,5	-16
	Ø 8	183	175	14	Ø 14,5	-7
304E	Ø 8	192	175	14	Ø 14,5	23
	Ø 10	191	175	16	Ø 16,5	21,5



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	A mm	F mm	L1 mm	L2 mm	HW mm	HW1 mm
200TD	290-450	20	115	114	175	170
204TD	250-415	20	115	114	175	170
300TD	330-490	18	116	113	175	170
304TD	300-500	30	110	120	175	170



3 Motor Unit installation

3.1 Installation preparations Furlex Electric (above deck)

Space requirements

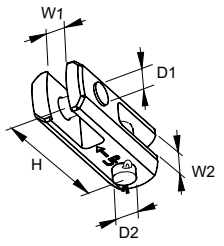
Please check so that there is enough space for the installation. The dimensions are given in the section ”*2.5 Technical Specification”*.

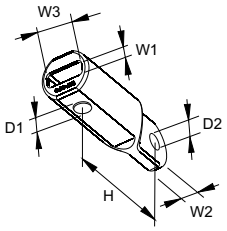
Consider space for an anchor. Extension links are available if more space is needed below the furler, listed in section ”*2.4 Optional parts”*.

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:

		Forestay Dimension, mm			
Toggle		**Ø6**	**Ø7**	**Ø8**	**Ø10**
	Art No	539-680-01	539-681-01	539-682-01	539-683-01
	Length (H)	45	45	55	55
	Ø Clevis pin (D1)	12	12	14	16
	Fork Width (W1)	10,7	10,7	14,2	14,2
	Ø Clevis pin (D2)	10	12	14	16
	Fork Width (W2)	12	14	14	16

		Forestay Dimension, mm			
Extension link		**Ø6**	**Ø7**	**Ø8**	**Ø10**
	Art No	517-115-01	517-115-01	517-116-01	517-116-01
	Length (H)	90	90	130	130
	Ø Clevis pin (D1)	12	12	16	16
	Fork Width (W1)	10,2	10,2	13,7	13,7
	Eye (D2)	12,5	12,5	16,5	16,5
	Thickness (W2)	10	10	13,5	13,5

3.2 Installation preparation for Furlex TD Electric (Through 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”*.

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 204/304 systems, please see:

Above deck installation: User manual 597-132 “Furlex 204S&304S”
Below deck installation: User manual 597-418 “Furlex 204TD/304TD”

For retrofit installation on Furlex 200/300 systems, please see:

Above deck installation: User manual 595-104 “Furlex 200S&300S”
Below deck installation: User manual 595-231 “Furlex 200TD&300TD”

3.4 Step by step assembly 204E/304E

Prior to installation, follow steps in chapter 1.4-3.5 in manual 597-132. 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.

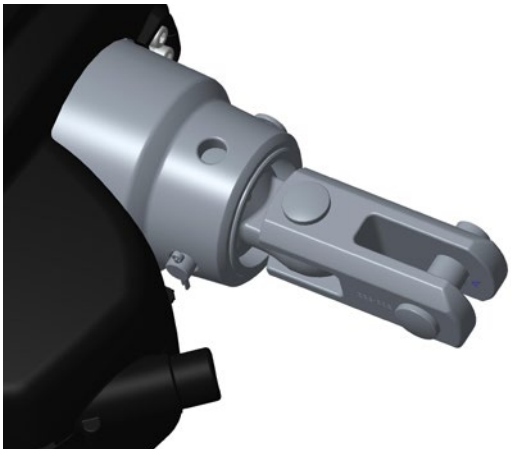
597-132-E

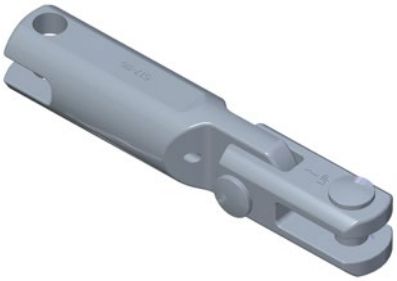
1. Slide the swivel over the terminal. Fit the adaptor halves and connect the luff extrusion according to point 4-5 in chapter 3.5, manual 597-132.	
2. Remove the clevis pin and split pin from the motor unit and fit the motor unit over the hub so that the bronze gear engages with the carriers in the 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 597-132.

3.5 Step by step assembly 204TDE/304TDE

Prior to installation, follow steps in chapter 1.4-3.2 and chapter 4 in manual 597-418. 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.

597-418-E

1.

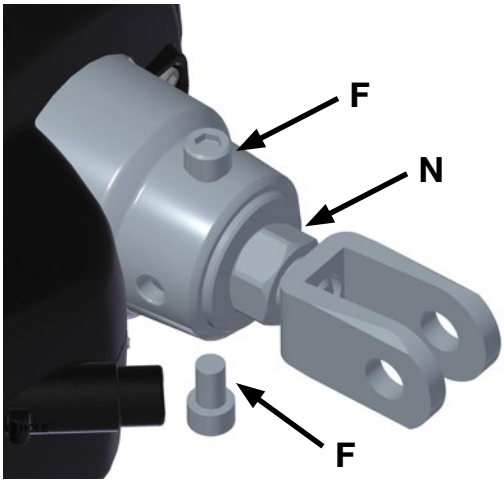
Check that motor unit fits over hub.

Check that the two locking screws (F) fit.

Note that motor unit can be turned 90° depending on the direction of the forestay fitting in the boat. Verifying what holes are to be used at this point will help facilitate assembly in the boat.

Finer adjustment can be made by loosening the locking nut (N) of the fork terminal and turning the fork. This adjustment also affects the distance between deck and forestay attachment - see point 2.

Remove screws and motor unit.



2.

Fit the swivel in the boat without the motor unit to control 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, follow the instructions in chapter 3.2, manual 597-418

b) The position of the motor unit relative to the fork, which determines the position of the motor unit in the boat.

Example: if the motor unit is turned towards portside, access to the emergency socket will improve.

3.

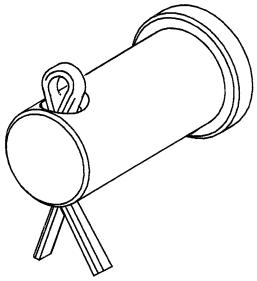
Fit the swivel through the deck fitting and motor unit.

Check that the emergency line driver can be fitted.

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

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.

Clean and key the surface. 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 ø6.5mm hole for the clevis pin

Cut-off excess length of the torque stay leaving => 10mm material to the ø6.5mm hole.

Round any sharp edges and assemble the torque stay.

New generation 204TDE/304TDE has no torque handling capacity and a torque stay is therefore essential for these models.

A

Maximum working load on torque bracket:
Furlex 204TDE: 2100N
Furlex 304TDE: 3600N

6.

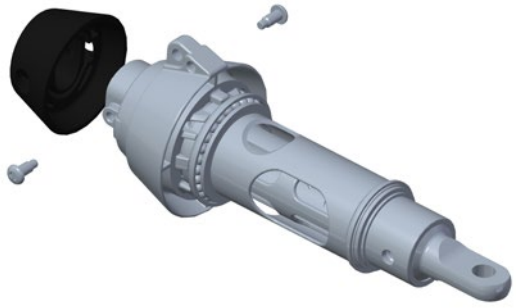
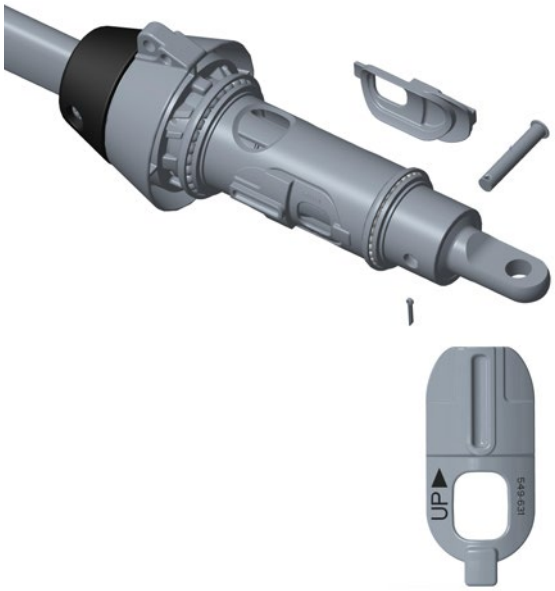
Attach the Furlex Electric system to the boat by following the steps 6-9 in chapter 5.1 “Rigging”, manual 597-418.

3.6 Step by step assembly 200S/300S Retrofit

Prior to installation, read chapter 17.3-17.4 in manual 595-104. Note that more references are made to this manual during the assembly. Removing the Furlex system from the boat will facilitate the conversion.

595-104-E

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

1. Remove the furling line, line guard, line drum and toggle/extension link. Clean swivel and lubricate bearings according to chapter 15 in manual 595-104.	
2. Remove clevis pin and split pin. Fit the two carriers. Note direction of carriers (marked “UP”).	
3. Secure carriers with a piece of tape.	

4.

Remove clevis pin and split pin from motor unit and slide the motor unit over the swivel.

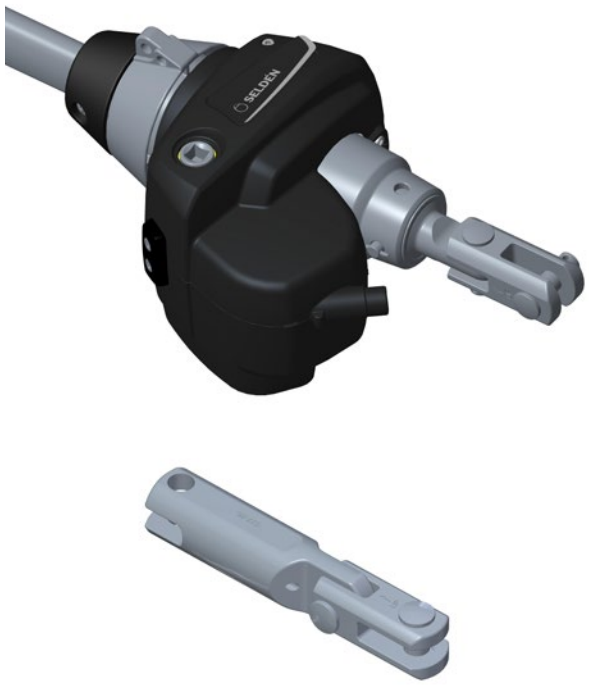
Protect the motor unit by working on a clean and soft surface.

5.

Fit clevis pin and split pin.
Note that motor unit can be turned 90° depending on the direction of the forestay fitting in the boat.

Fit the toggle and optional extension link.

Use only Furlex Electric torque toggle and optional extension link.



6.

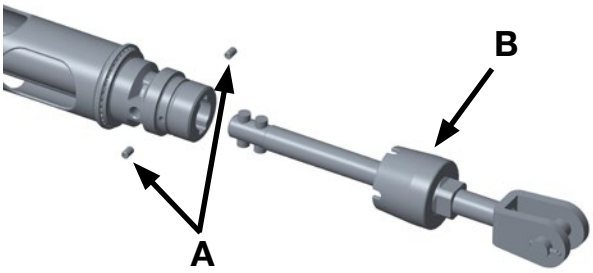
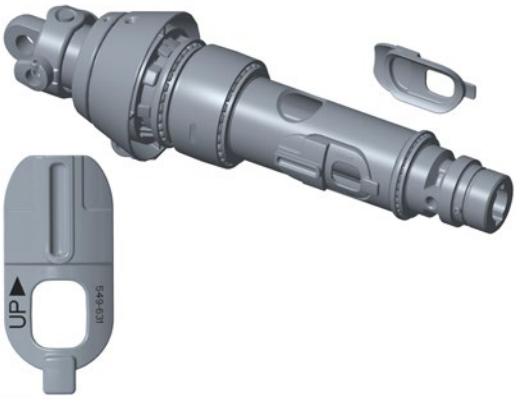
The Furlex system can now be attached to the boat, by following the instructions in chapter 16 “Rigging”, in manual 595-104.

3.7 Step by step assembly 200TD/300TD Retrofit

Prior to installation, read chapter 17.4-17.5 in 595-231. 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.

595-231-E

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

1. Remove line guard and line drum. Remove swivel from the boat. Clean swivel and lubricate bearings according to chapter 15, manual 595-231.	
2. Remove the two grub screws (A). These screws are secured by locking adhesive, so heating might be necessary. Un-screw the fork terminal by turning the cap (B).	
3. Fit the two carriers. Note direction of carriers (marked “UP”).	
4. Secure carriers with a piece of tape.	

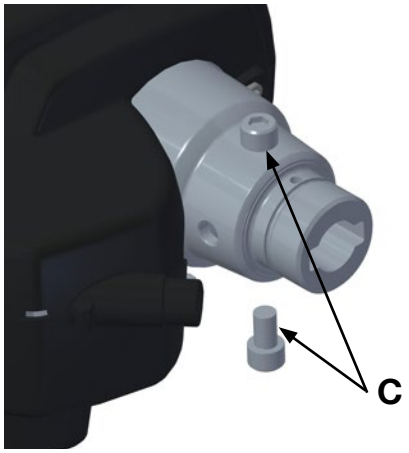
5.

Check that motor unit fits over hub.

Check that the two locking screws (C) fit.

Note that motor unit can be turned 90° depending on the direction of the forestay fitting in the boat. Verifying what holes to be used at this point will facilitate assembly in the boat.

Remove screws and motor unit.



6.

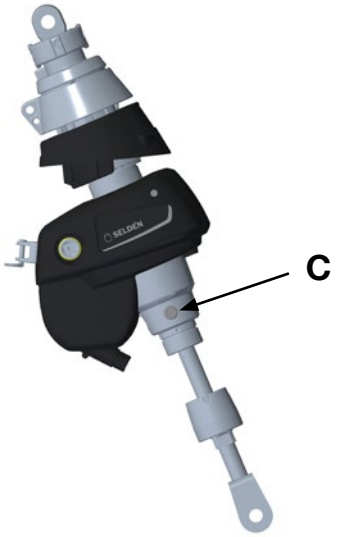
Attach the fork terminal to the forestay fitting.

Fit the clevis pin but do not fit the split pin at this point.

Support the motor unit temporarily by running a thin rope or band under the unit and through the deck fitting.

7.

Fit the swivel through the deck fitting and motor unit. Fit the two locking screws (C). Use locking adhesive.



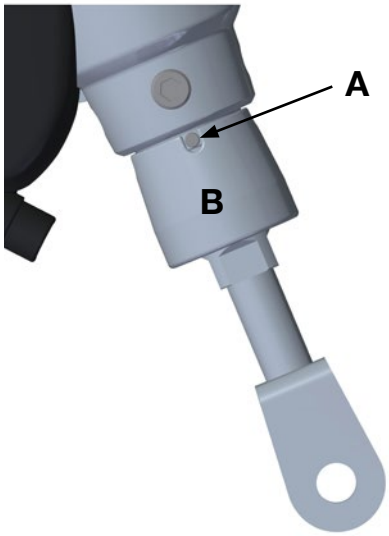
8.

Screw the cap back (B) on fully.

Release approx. 1/4 turn until the recesses in the cap aligns with the locking screws above.

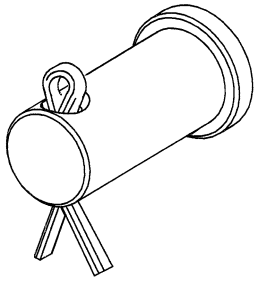
Fit the two grub screws (A). Use locking adhesive.

De-attaching the fork terminal from the forestay fitting might facilitate this step.



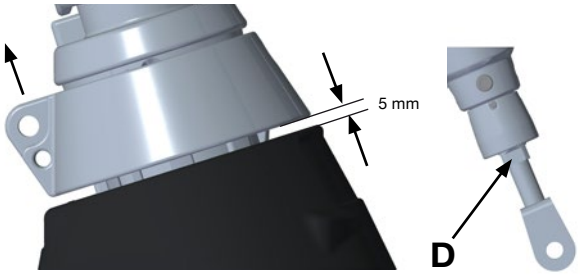
9.

Fit clevis pin and split pin.



10.

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.



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 surface. Bond the torque-bracket to the hull. Use a structural adhesive.

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

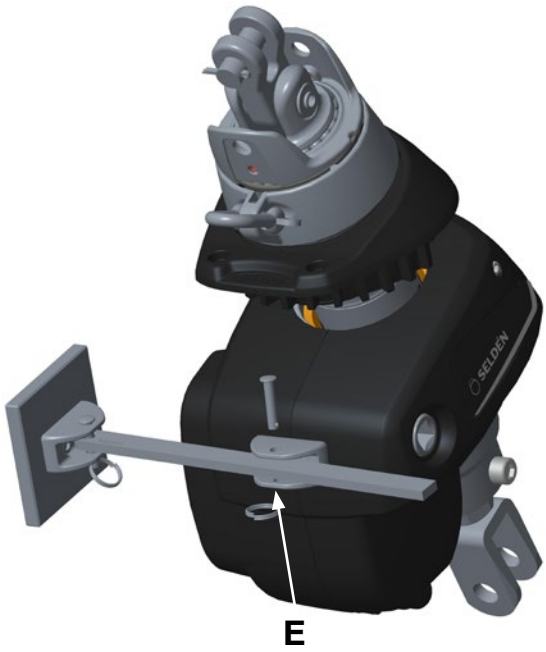
Turn the drive unit side to side to find the neutral position.

Mark the torque stay at (E)

Remove stay and drill ø6.5mm hole for the clevis pin

Cut-off excess length of the torque stay leaving => 10mm material to the ø6.5mm hole.

Round any sharp edges and assemble the torque stay.



Maximum working load on torque bracket:

Furlex 200TDE: 2000N
Furlex 300TDE: 3600N

12.

Attach the Furlex Electric system to the boat by following the steps 7-8 in chapter 16 ”Rigging”, in manual 595-231.

3.8 Step by step assembly 204S/304S Retrofit

Prior to installation, read chapter 6.4.2-6.4.4 in manual 597-132. 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.

597-132-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.

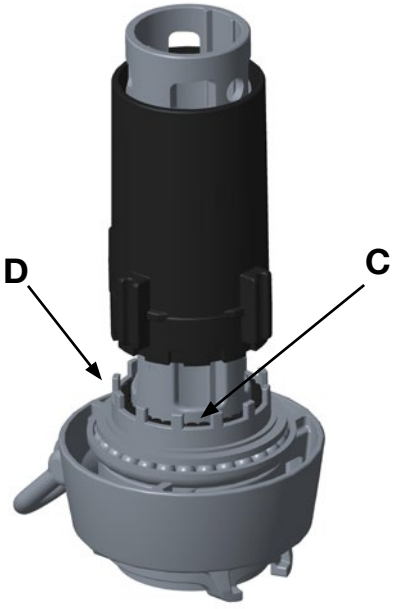
2.

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 164-543 (F) between washer and circlip.

5.

Apply grease to bearings according to chapter 6.2 “Service” in manual 597-132.

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 597-132.

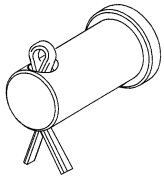
7.

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.

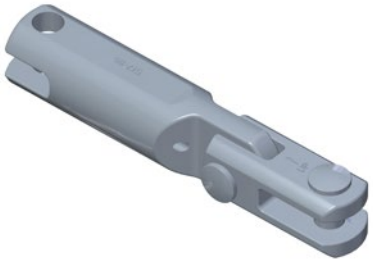
Align the holes in the terminal, shaft and holder. Fit the clevis pin and split pin.



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 597-132.

3.9 Step by step assembly 204TD/304TD Retrofit

597-418-E

Prior to installation, read chapter 7.4.2-7.4.5 in 597-418. 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.

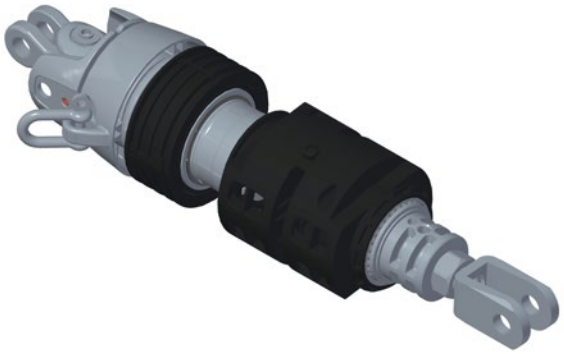
Always secure the mast with a halyard before detaching the forestay from the swivel.

1.

Remove furling line, line guard and brims.

Remove swivel from the boat.

Clean swivel if necessary.



2.

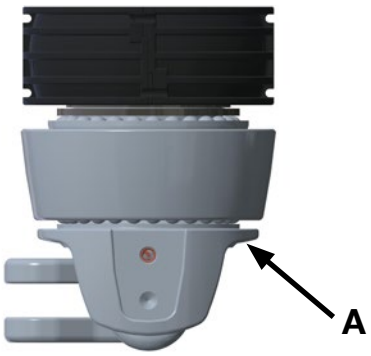
Turn swivel upside down and place it on a flat surface.

Arrange a support to prevent it from tipping over.

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

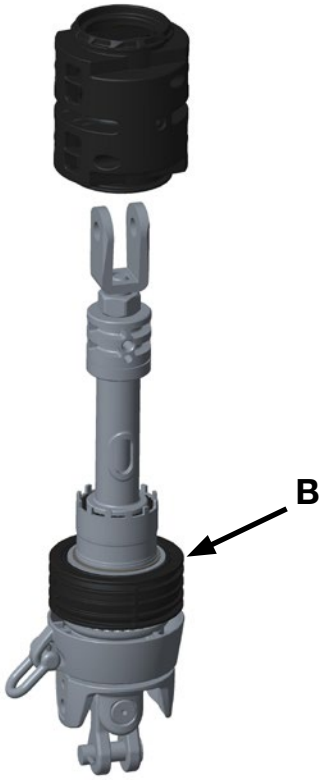
Do not lift the line drum as this will cause top main bearing (A) to open.

Do not re-use circlip.



3.

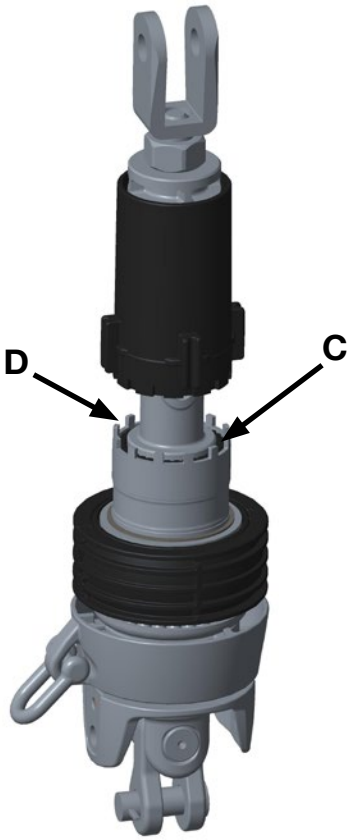
With a firm grip of deck bearing (B), wiggle and lift the line drum.



4.

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

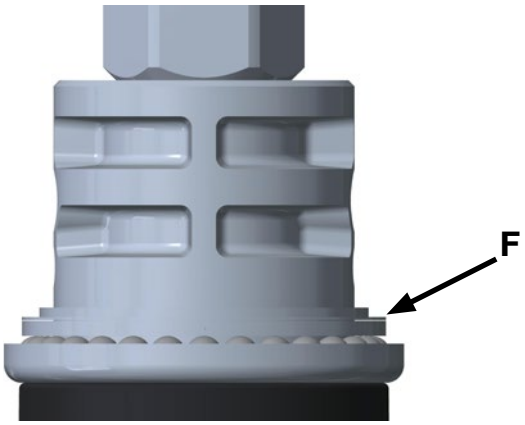
Slide the new hub over the shaft until it engages with the teeth in the hub (D).



5.

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

Shim
204TDE: 164-540
304TDE: 164-543



6.

Apply grease to bearings according to chapter *7.2 “Service”* in manual 597-418.

7.

Check that the motor unit fits over hub.

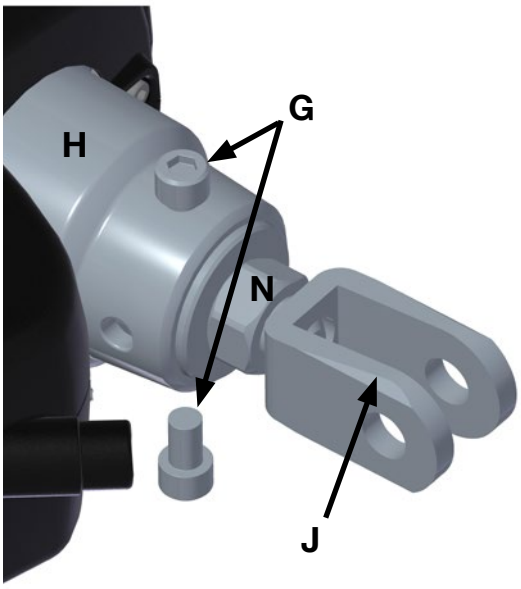
Check that the two locking screws (G) fit.

Note that motor unit can be turned 90° depending on the direction of the forestay fitting in the boat. Verifying what holes are to be used at this point will help facilitate assembly in the boat.

Finer adjustment can be made by loosening the locking nut (N) of the fork terminal and turning the fork. This adjustment also affects the distance between deck and forestay attachment - see point 8.

Remove screws and motor unit.

If holder (H) cannot pass the fork, adding chamfers on fork might be necessary. Use a file and add approx. 3x45° chamfers at four places (J). Do not remove more material than necessary.



8.

Fit the swivel in the boat without the motor unit, to 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, follow the instructions in chapter 3.2, manual 597-418

b) The position of the motor unit relative to the fork, which determines the position of the motor unit in the boat.

Example: if motor unit is turned slightly clock-wise, access to the emergency socket will improve.

9.

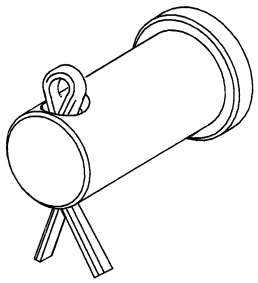
Fit the swivel through the deck fitting and motor unit.

Check that emergency drive can be fitted.

Fit the two locking screws (G).
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 surface. 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.

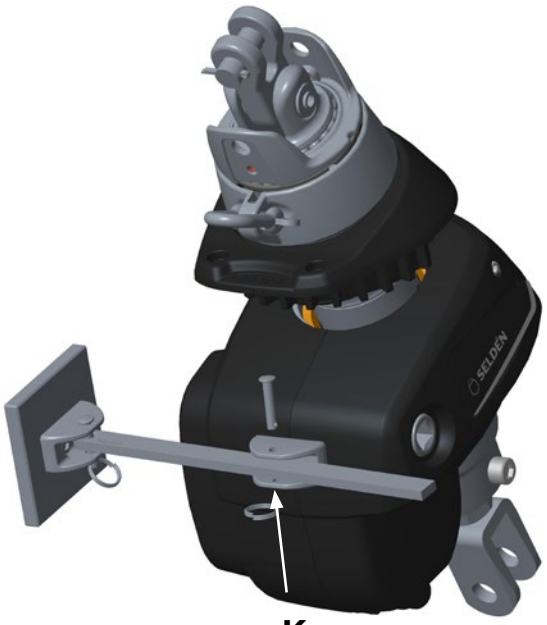
Mark the torque stay at (K)

Remove stay and drill ø 6.5mm hole for the clevis pin.

Cut-off excess length of the torque stay leaving => 10mm material to the ø6.5mm hole.

Round any sharp edges and assemble the torque stay.

New generation 304TD has no torque handling capacity and a torque stay is therefore a demand for these models.



Maximum working load on torque bracket:

Furlex 204TDE: 2100N
Furlex 304TDE: 3600N

12.

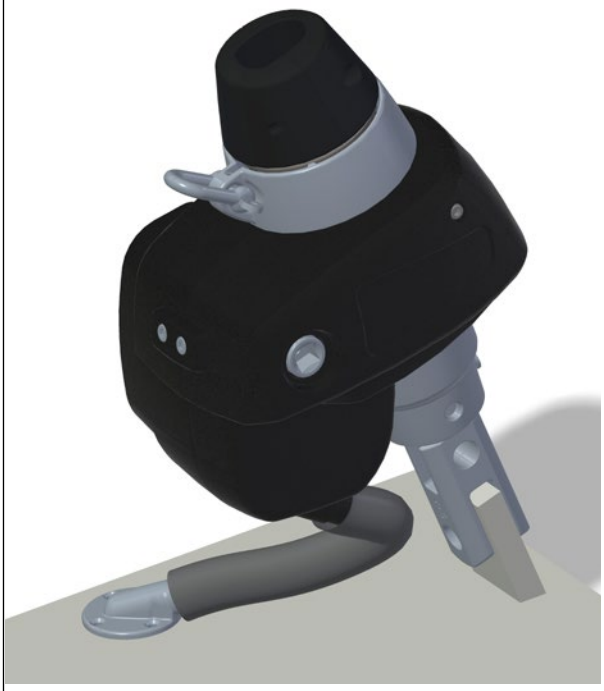
Attach the Furlex Electric system to the boat by following the steps 6-9 in chapter *5 “Rigging,* manual 597-418”.

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.

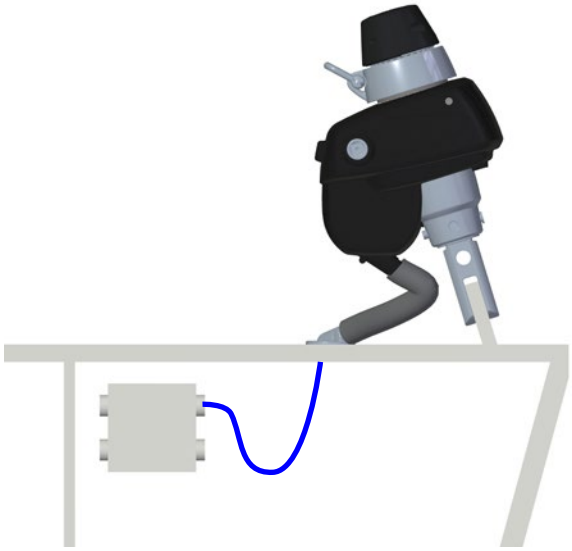
Installation of Furlex Electric above deck

1. Find a suitable position and direction for the deck gland. Feed the cables through the protective hose and attach the hose to the drive unit temporarily. Mark the cutting point on the hose. Make sure the hose and cables do not stretch when drive unit moves side to side. Remove hose and cut it. Drill a ø20-30mm hole in the deck. Smooth any sharp edges. Apply sealant in the groove and fasten the deck gland using the self-tapping screws supplied in the kit.	
2. Feed the cables through the hose and attach the hose to the drive unit with a hose clamp. Do not over-tighten.	
3. Feed the cables through the deck gland and attach the hose to the deck gland with a hose clamp.	

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.

Seal insert

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.

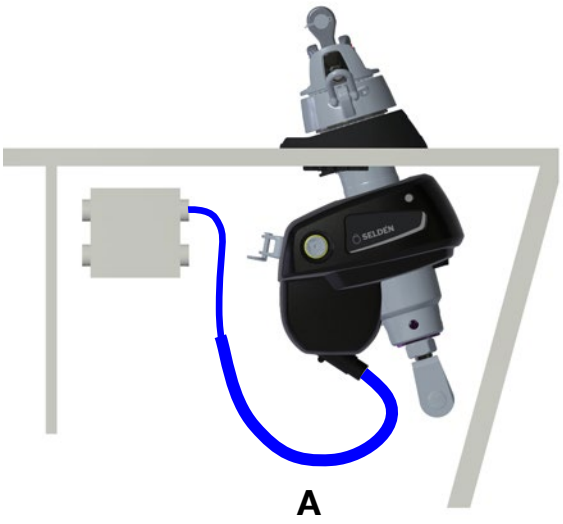
Position the connection box as high as possible in the anchor box.

Feed the cables through the protective hose and attach the hose to the drive unit temporarily. Adjust the length of the cables.

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 ø8mm 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.

3.

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.

Seal insert

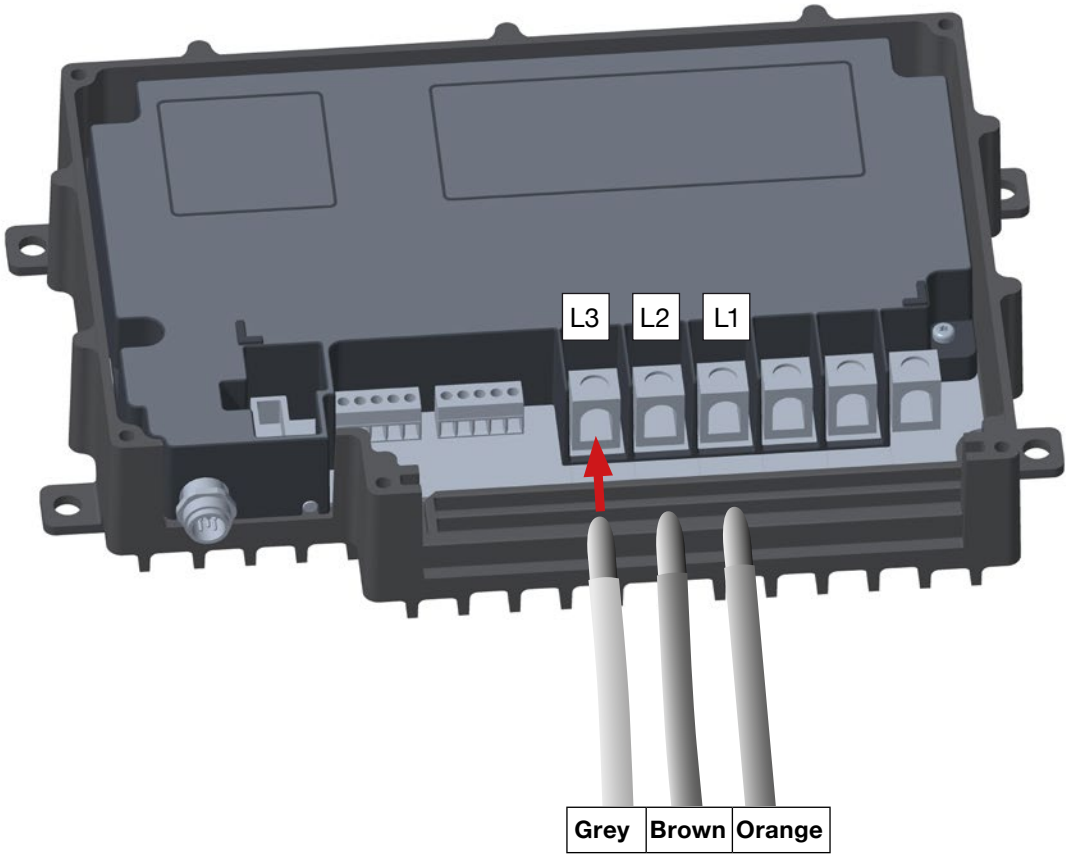
4.

Repeat steps under point 3 for cables to be connected to the MCU inside the boat.

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.

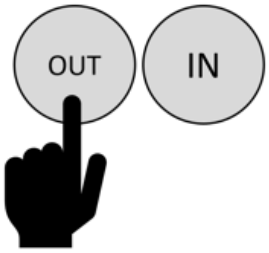
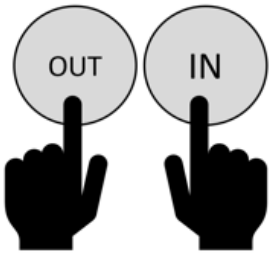
5 Operation

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.

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

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.

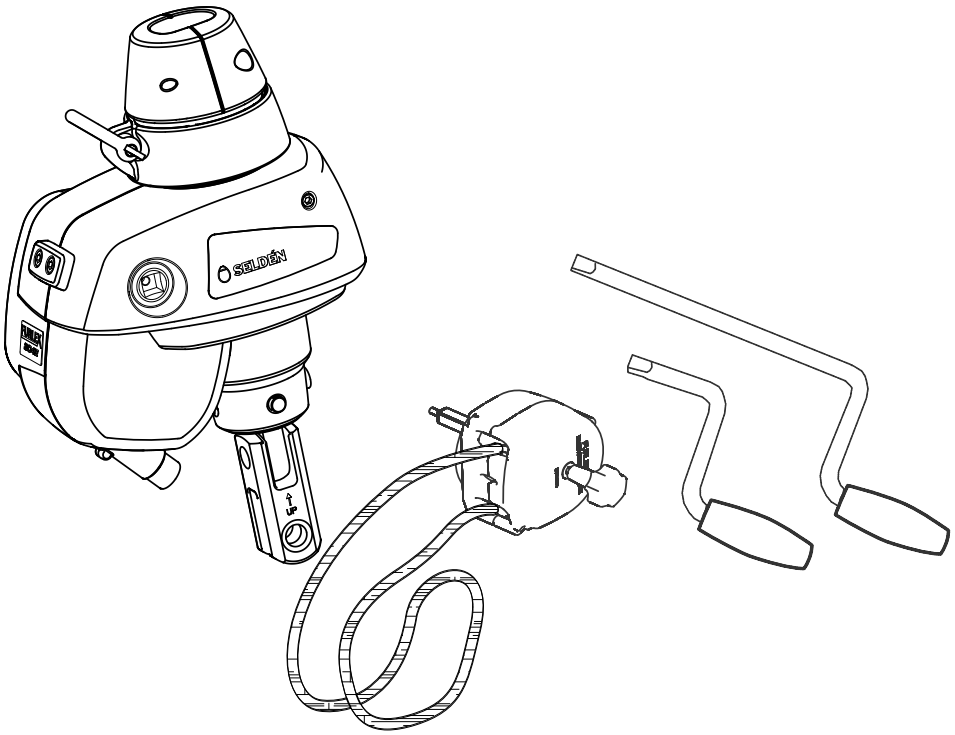
2. Push the control button so that the sail begins to furl. Gradually slacken the sheet when furling. When the sail area is reduced, it may be necessary to adjust the sheeting position.

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 ½" 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.	After furling the sail using the emergency linedriver: 1. Troubleshoot the electric system. 2. Look for corroded or loose wires in the connection box.
Furlex stops when heavily loaded.	Overload.	1. Ease load and check if operation is OK. 2. See operating instructions, the motor controller will limit the torque by cutting current supply to the motor, if overloaded. 3. Check the furling system for excessive friction by using the hand operated emergency winding system.
Excessive friction in the furling system.	Salt, dirt, and lack of grease.	1. Rinse with freshwater, clean and lubricate. Please see the manuals for the standard furling systems.
Furlex runs in wrong direction.	The wires have not been properly installed.	1. Connect the cables according to the colour codes stated in the manual. 2. If opposite furling direction is wanted: Choose any two of the three motor cables and swap their positions on the connecting box terminal.
Noise when operating the Furlex.	Worn gears or mechanical problem inside the transmission.	1. Dismantle covers and inspect the three gears under the port cover. 2. If condition is OK, reapply grease and assemble. 3. Hand wind with the emergency socket to check if low speed rotation is without excessive friction or noise. 4. Contact your Seldén representative for service instructions.
Oil leakage	Defective seals in motor unit, or broken housing.	1. Dismantle and inspect 2. Contact your Seldén representative for service instructions.
Grease leakage	Defective seals in worm gear transmission, or broken housing.	1. Dismantle and inspect 2. Contact your Seldén representative for service instructions.

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.

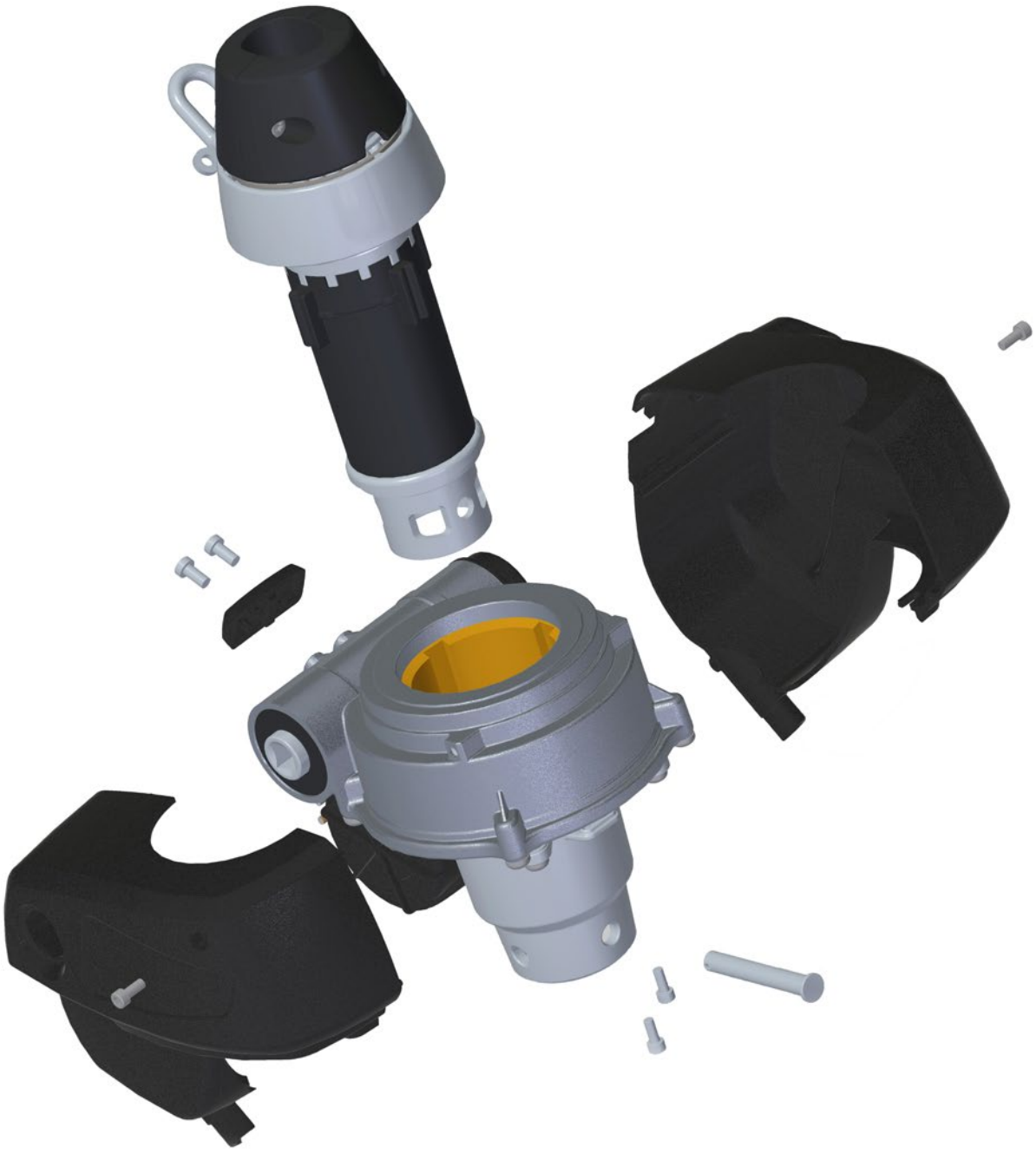
Some detergents contain substances which can cause aluminium to corrode, so it is important to rinse all detergent off thoroughly.

7.2 Yearly Inspection points and maintenance

- Check that lower unit turns freely. Use emergency winch handle to check the worm gear function.
- Remove covers and inspect the motor unit. Check for leaks of oil or grease.
- Rinse with fresh water to remove dirt and salt if necessary. Aluminium and bronze surfaces can be protected by an anti-corrosion spray.
- Lubricate bearings with water resistant Furlex grease.
- 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

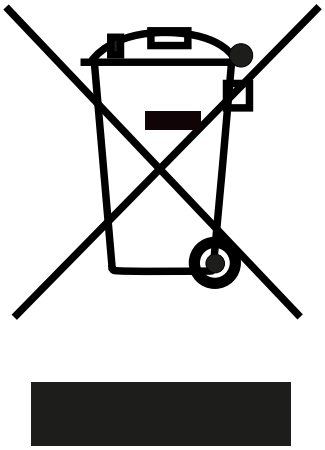
Under normal use, the motor-unit should be left to an authorized Seldén dealer for service at a maximum of 5-year intervals. Such a service includes cleaning, replacement of seals etc. and re-greasing of the reduction gear and bearings. For boats that are used for chartering, long-distance sailing, etc.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

Notes

597-274-E Printed in Sweden

SELDÉN

www.seldenmast.com