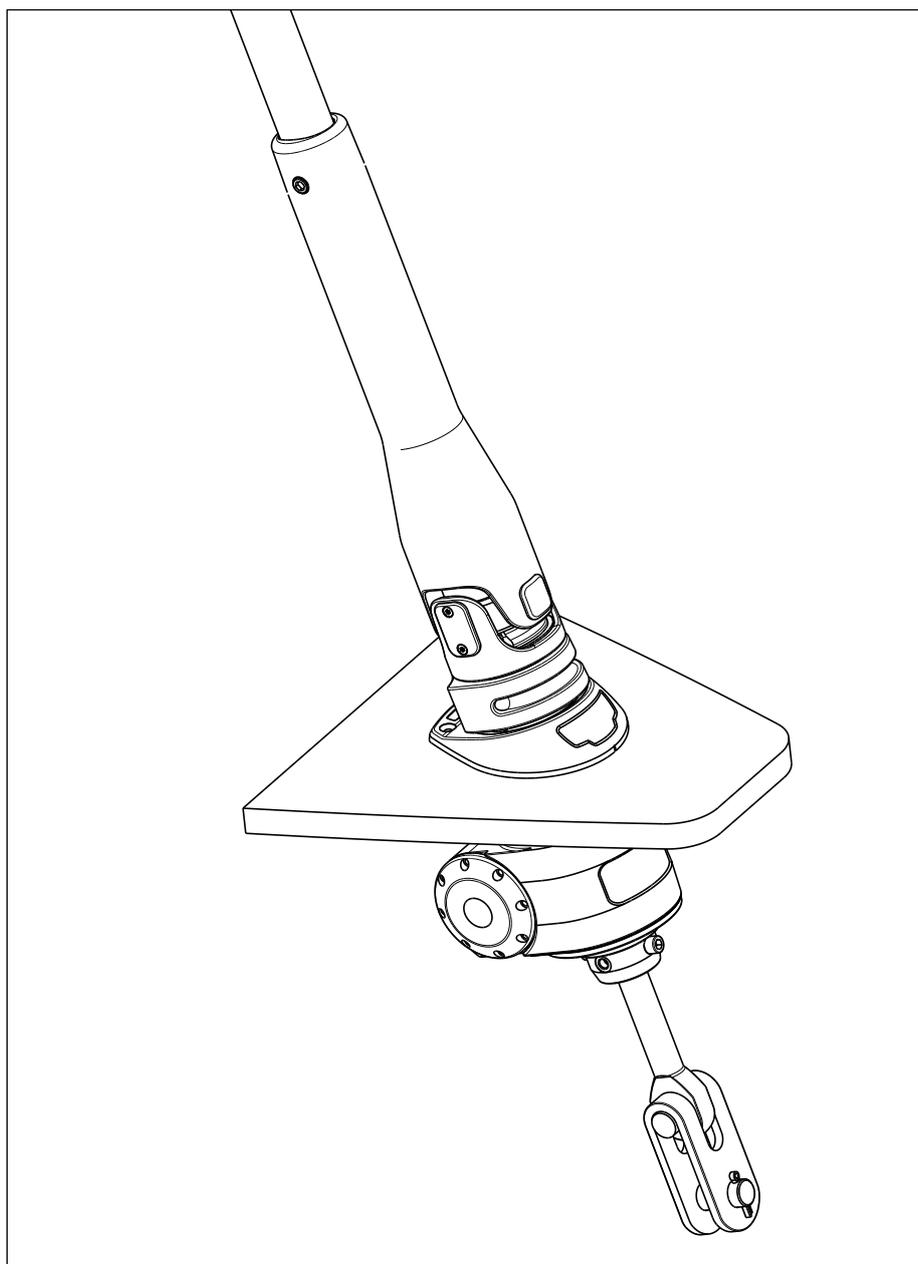


# FURLEX

 SELDÉN

## Manual *500TDH*



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# 1 Introduction

Congratulations on the purchase of your new Furlex TD jib furling system. Furlex has been engineered and manufactured by Seldén Mast since 1983 and gradually developed to improve function and reliability.

## 1.1 Key features

### Maximized luff length

Tacking the sail at deck level allows for a longer luff length of your foresail. You will improve sailing performance without compromising the convenience of the jib furling system. The bow will also be less cluttered as the drive unit is hidden below the deck.

### Tack swivel

The "free turn" of the tack ring allows for the luff to be furled one turn before the tack. This makes for a flatter and more efficient sail shape when the sail is reefed. Reduced tack ring diameter in combination with a soft shackle reduces the furling resistance.

### Fore stay options and termination.

Furlex 500TDH uses a short adjuster with a 100mm stroke. The adjuster is designed for Seldén rod seats in dimensions -40/-48 and -60.

The adjuster is integrated in the torque tube and does not affect the tack height of the sail.

## 1.2 What's included?

### Basic pack

The Furlex TD-system includes a basic pack with:

- Lower swivel with toggle terminal.
- Halyard swivel
- Motor unit
- Through deck fitting with template
- Torque tube
- Adjuster
- Two 5/16" rigging screws for torque handlig.
- Emergency line driver
- Manual

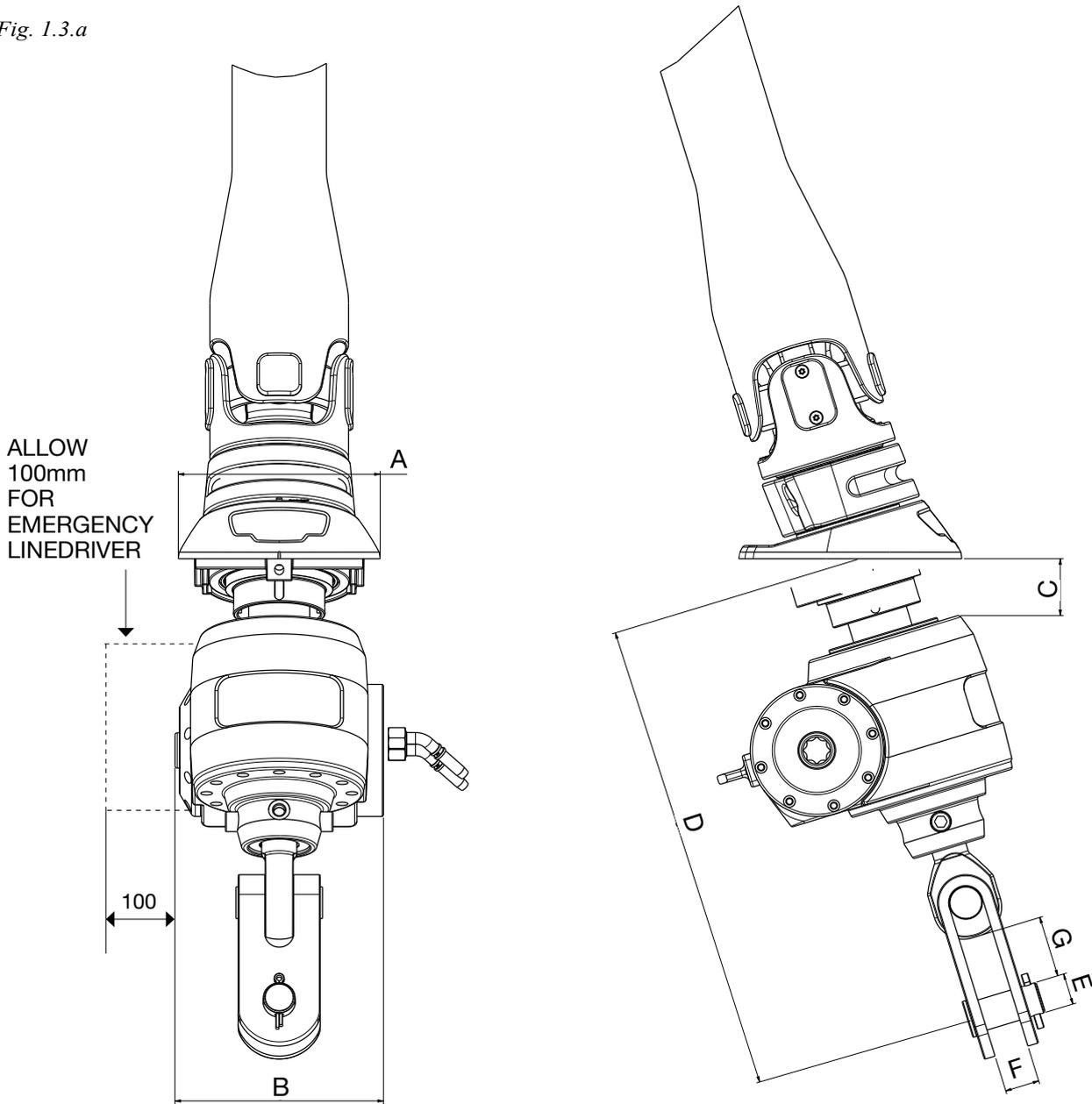
### Foil pack and stay pack

The system also includes foil packs with luff extrusion and connecting plate. Quantity dependent on fore stay length. The corresponding quantity of joining sleeves and rod seat chosen are sent to the rod manufacturer prior to heading.

### 1.3 Main dimensions

All dimensions are given in millimeters.

Fig. 1.3.a



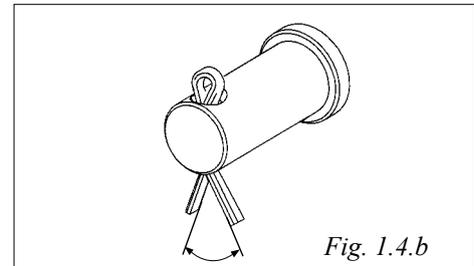
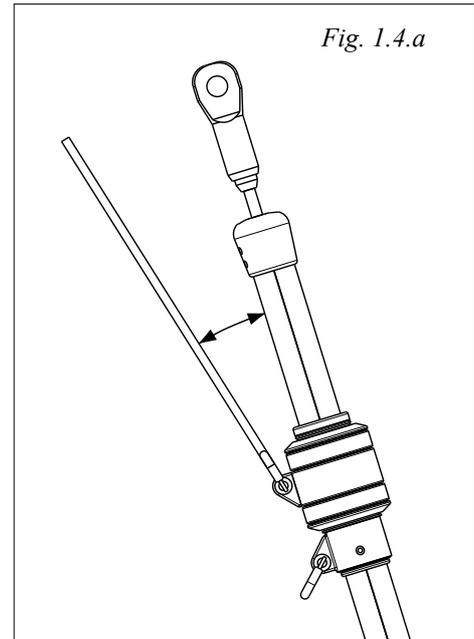
Furlex model	A	B	C	D	E	F	G
Furlex 500TDH	182	190	52	430-560	ø28.6 (1 1/8")	31	55

## 1.4 Safety precautions

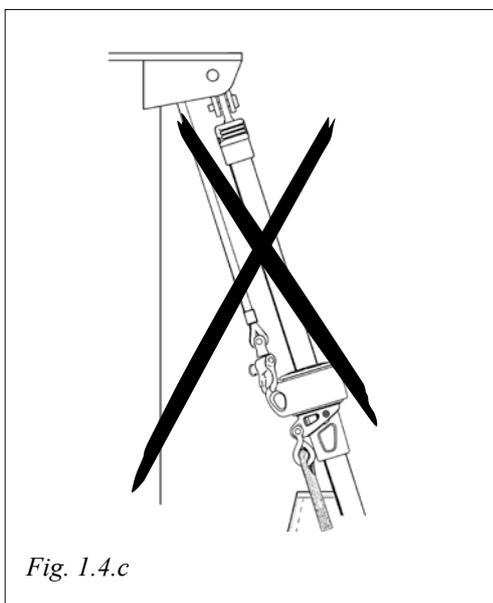
The information in this manual must be followed carefully to avoid damage to the system and to avoid the risk of personal injury. The warranty is only valid if the system is assembled and operated according to this manual.

Please read the entire manual before assembly!

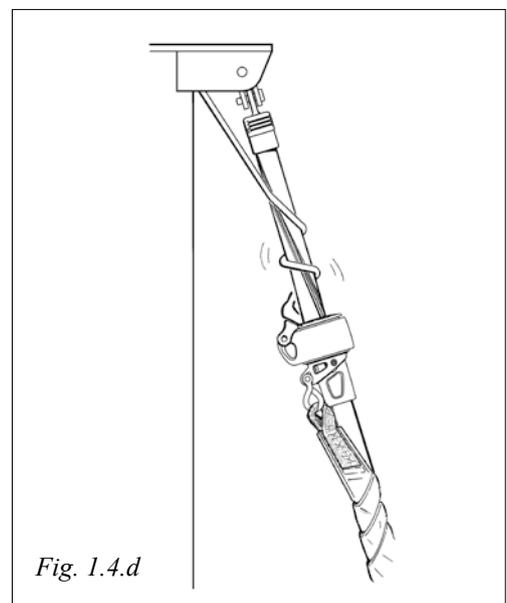
- Be very careful when you open the coiled fore stay! It may spring open and cause damage and/or personal injury.
- Never use a snap shackle to secure the standing rigging, not even temporarily. When installing the system on a rigged boat, always use a strong screw pin shackle or tie the spinnaker halyard to a strong point on the boat before removing the existing forestay.
- Incorrect halyard routing can result in "halyard wrap" which may cause severe damage to the forestay, and put the entire rig at risk. The angle between the halyard and the forestay must never be less than 10°.
- Take care to ensure that all split pins are secured properly after installation.



**Incorrect halyard routing can result in "halyard wrap" which may cause severe damage to the forestay, and put the entire rig at risk. The angle between the halyard and the forestay must never be less than 10°!**



**May lead to**



## 1.5 Sail measurements

Your sailmaker has all the necessary information through the Seldén Sailmakers Guide. The Sailmakers Guide can be downloaded from [www.seldenmast.com](http://www.seldenmast.com)

Note that if you want to use an existing sail, it will need some modifications.

- The luff length needs to be adjusted.
- A luff tape is required. The luff tape must be compatible with the Furlex luff extrusion geometry.
- Use webbing loops at the sail head and tack instead of grommets (cringles). The sail will then form tightly round the luff extrusion when furling, and achieve a better shape when reefed.

It is most important that the halyard swivel is located so that the halyard satisfies the 10–15° angle requirement. If the sail prevents the swivel from reaching the correct position, the luff length needs to be adjusted.

IF THE SAIL IS TOO LONG: Shorten the sail, e.g. in conjunction with changing to a luff tape compatible with Furlex.

IF THE SAIL IS TOO SHORT: Lengthen the sail by means of a HMPE or wire pendant fitted to the head of the sail. Attach the pendant directly to the sail to prevent unintentional removal, loss or exchange.

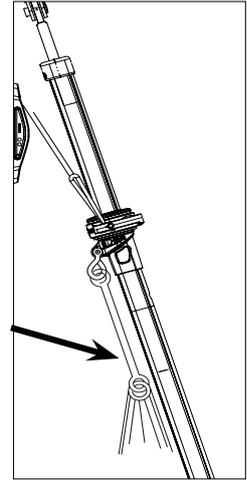


Fig. 1.5.a

Furlex type	500TDH
Head deduction F	670
Tack deduction E (Any additional pendant to the tack must be added to E)	162
Cutback CB	100
Internal diameter of luff groove DLG	ø9.2
Width of luff groove WLG	3.25
Overall luff extrusion dimensions	60x46

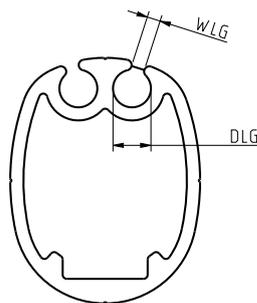


Fig. 1.5.b

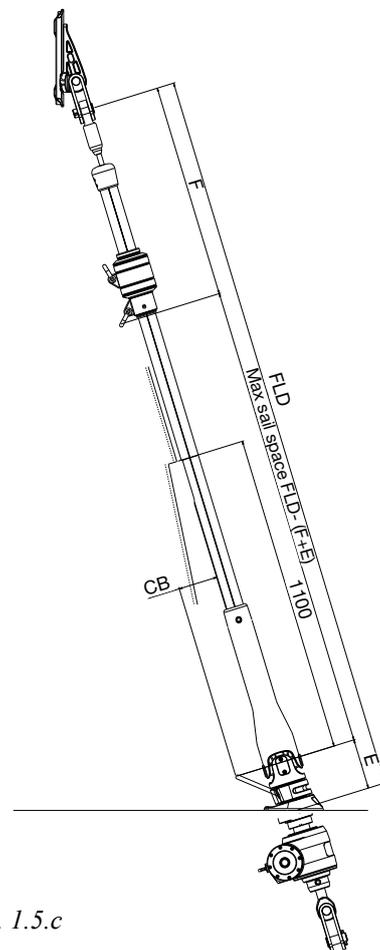


Fig. 1.5.c

## 2 Assembly preparations

### 2.1. Tools

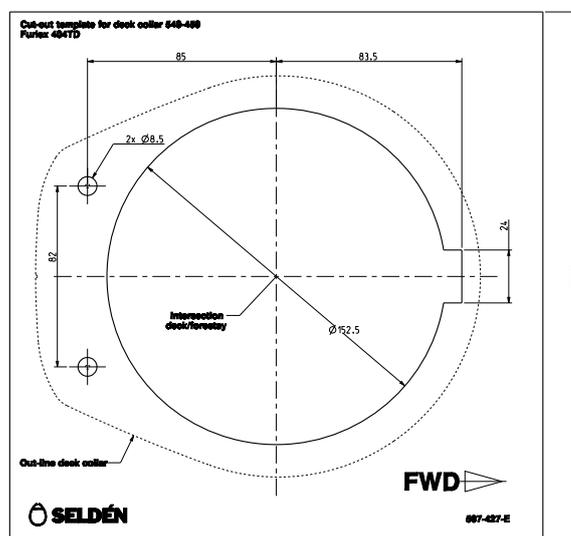
No special tools are needed for the assembly. Examples of tools needed:

- Socket set.
- Set of spanners (or adjustable).
- Set of Hex(Allen) keys
- Set of Torx keys.
- Knife
- File
- Pliers.
- Equipment for marking and cutting the luff extrusion.
- Locking adhesive.

Tools needed for making the hole in deck:

- Template (1:1) (included in kit) Note that 500TDH uses same template as 404TD.
- Hole saw (see table) or jig saw.
- Drill bit (see table).

Furlex model	Hole saw Ø	Drill bit Ø
500TDH	152	8,5



### 2.2 Mast attachment

Always make sure that the forestay can articulate in all directions in the top. Toggles must be used in most cases to ensure sufficient articulation.

Fig. 2.2.a

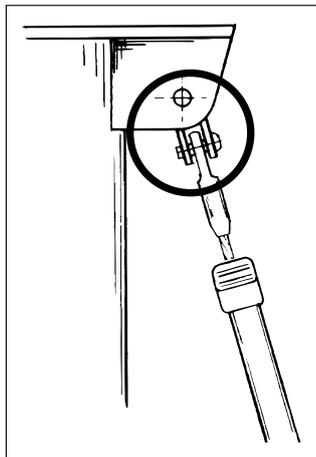


Fig. 2.2.b

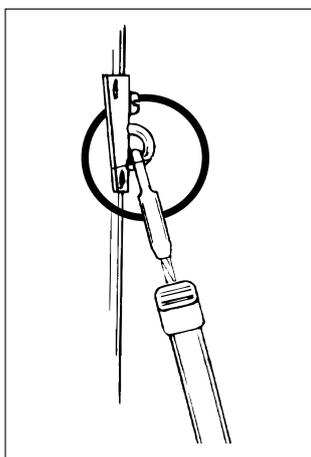
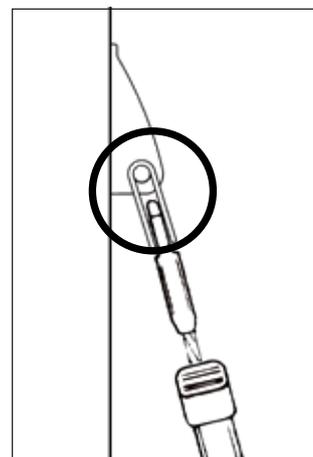


Fig. 2.2.c

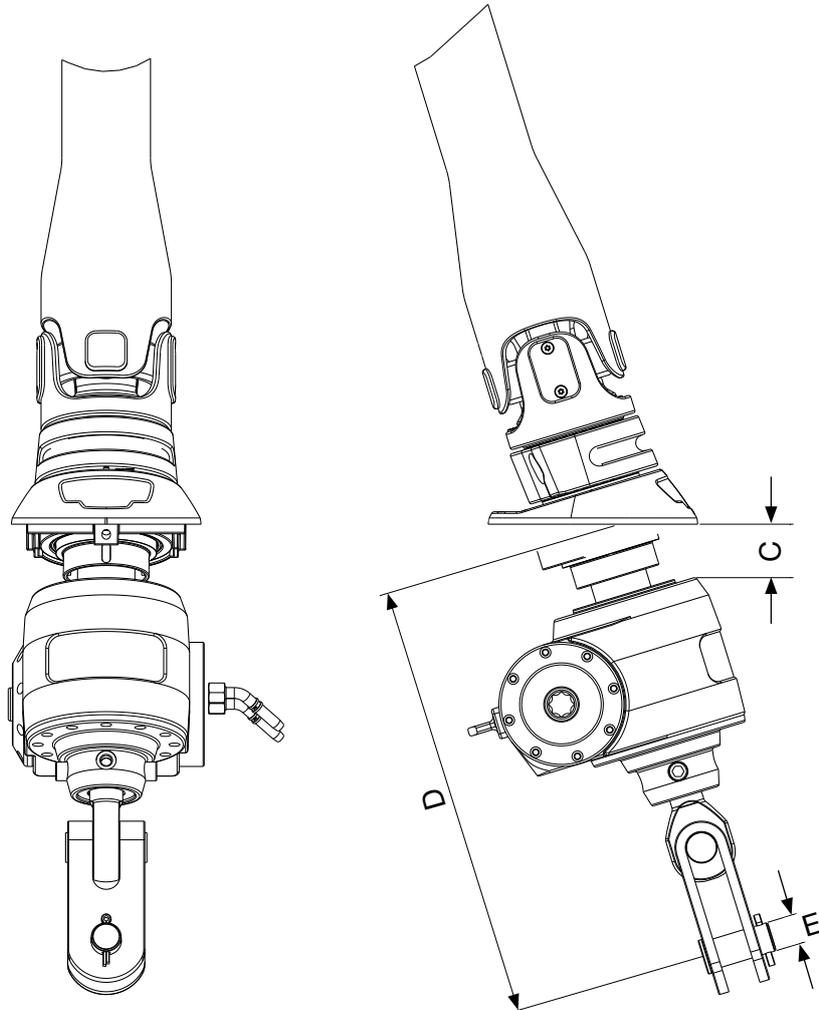


## 2.3 Hull attachment

The lower bearing assembly of the Furlex TD system is to be considered as an extension of the forestay fitting inside the hull. As it is locked horizontally at deck level, there is a toggle fitted between the lower bearing assembly and the forestay/luff section. This toggle, together with the universal joint function of the torque tube, will create the required articulation.

Check that the through-deck fitting does not interfere pulpit, navigation lights or other deck fittings.

Check that the anchor well drains freely. Make sure that the forestay fitting in the anchor well is designed and constructed to take the full forestay load.



For dimensions - see page 4.

The dimension C is nominal. In this area the thickness of the deck should not exceed 40 mm. If the deck is thicker than 40 mm, it should be possible to reduce this with a cavity. This will allow the clearance for the forward part of the drive unit. If the deck is of sandwich construction, ensure that water cannot enter the core material and cause structural damage.

Furlex TD incorporates an adjustable fork terminal for fine adjustment of the under deck dimension "D". For larger gaps: use a custom made stainless steel bar or rod stay. Short wire pendants are not recommended as the forestay load may not be distributed evenly.

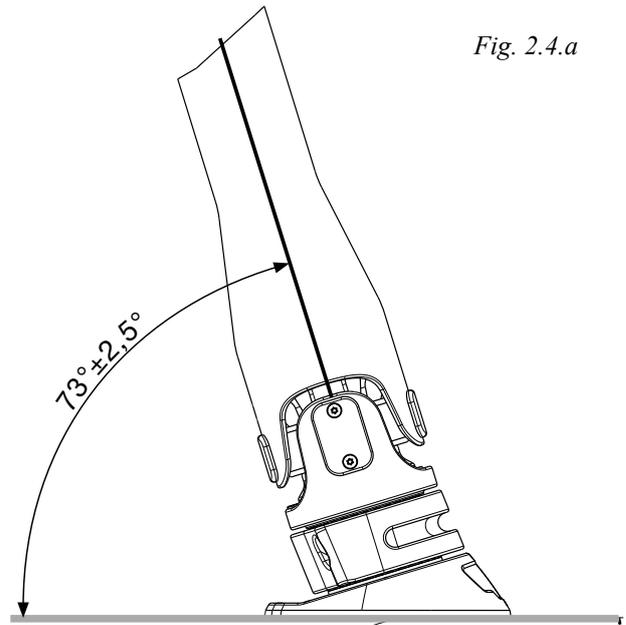


**Attachment point at pin "E" must be fixed in all directions.**

## 2.4 Location of the through-deck hole

The bearing of the through-deck fitting has a spherical surface which compensates for smaller angle discrepancies between forestay and through-deck fitting. However, it is important to minimize the discrepancies to achieve maximum furling performance.

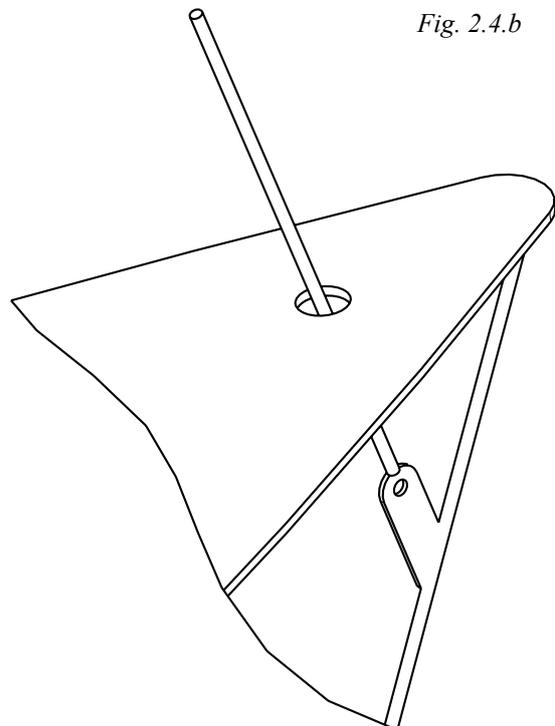
The angle between the forestay and deck must be between  $70,5^\circ$  and  $75,5^\circ$ . If the angle exceeds these limits, spacers must be added between the through deck fitting and the deck, so that the conditions are fulfilled.



*Fig. 2.4.a*

### Intersection point forestay/deck

Locate the intersection point before placing the cut-out template. In-correct positioning of hole will result in lateral forces that could cause damage to the Furlex system and boat. See chapter 3 for details.



*Fig. 2.4.b*

## 2.5 Calculating the length of the forestay

If a Sta-lok terminal (with or without rigging screw) is included, the wire is supplied over-length.

The wire has a swaged eye terminal on one end while the other end is open (= without terminal).

If your Furlex is supplied with a rod forestay (supplied by the rod manufacturer complete with joining sleeves and end terminals) -go directly to chapt. 2.6.

Before assembly, an over-length wire (for Sta-lok) must be marked and finally cut to the correct length to fit the boat's actual forestay length. To find out the correct measurement, follow the steps below.

Table 2. Calculation of forestay length		Your forestay	Example 500THD -60 Adjuster 50% extended.
<b>FLD</b>			27930
<b>TDH</b>	Fixed deduction deck level/forestay attachment: 244 mm		244
<b>NFL</b>	New forestay length $NFL = FLD - TDH$		$27930 - 244 = 27686$
<b>T</b>	Deduction for adjuster: 290mm		290
<b>WL</b>	Cutting measurement.. $WL = NFL - T$ The forestay wire will be marked at this point. For rod forestays WL is the dimension from center hole in top eye terminal to cold heading at lower end.		$27686 - 290 = 27396$

## 2.6 Calculating the length of the luff extrusion

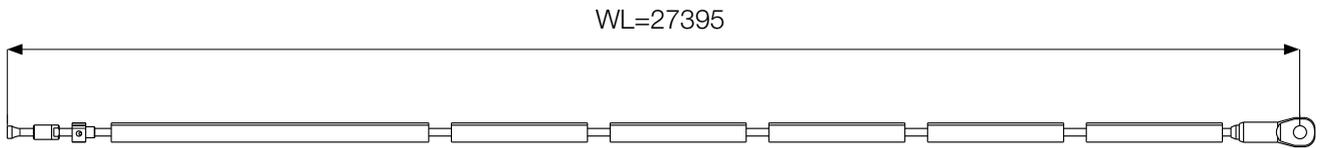
The Furlex luff extrusion consists of a number of shorter sections. Starting from the bottom there is a 580 mm luff extrusion connected to the lower. This extrusion has a sail inlet at the upper end. Then, from the sail feeder and up there are a number of full length luff extrusions (L=4800 mm) and finally there is a 2000 mm top extrusion that has to be cut to length to suite the actual forestay length.



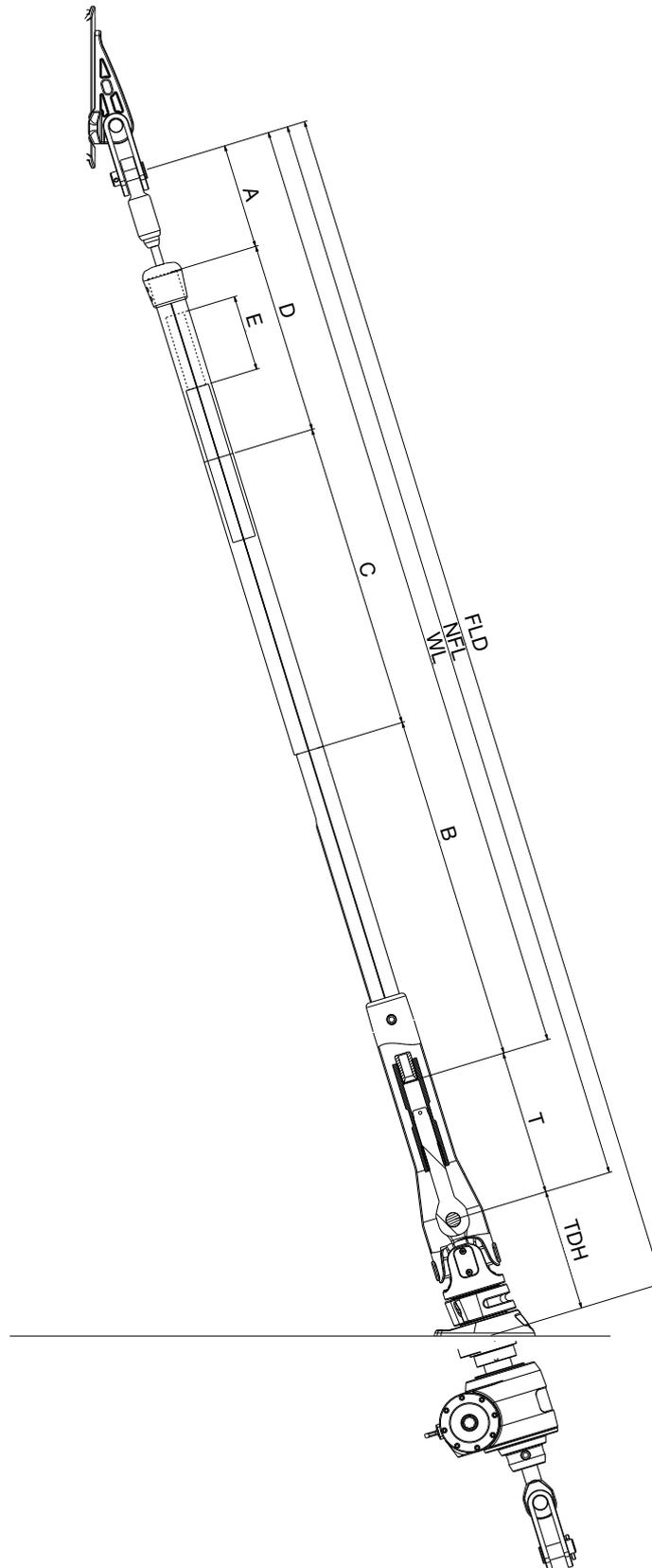
**If D is longer than 2000 mm;  
cut the top section from a 4800 mm extrusion.**  
**If D is between 1000 and 2000 mm;  
cut the top section from a 2000 mm extrusion.**  
**If D is shorter than 1000 mm;  
replace the topmost 4800 mm extrusion with a 2000 mm extrusion. (See C).**  
**The join will then be moved down 2800 mm. Also adjust C and D as follows:  
Reduce measurement C by 2800 mm. Increase the D measurement by 2800 mm. Cut the top section from a 4800 mm extrusion.**

To find out the cutting length of the top extrusion (D) and the length of the top distance tube (E), start with the length of the forestay wire (WL) that was calculated in table 2. Then follow the steps in table 3 below. On rod forestays, verify WL by measuring from center hole in top eye terminal to heading at lower end.

Table 2. Calculation of top luff extrusion length and top distance tube length		Your forestay	Example 500TDH -60 Adjuster 50% extended.
<b>WL</b>	Length of the new forestay wire (as per Table 2).		27396
<b>A+B</b>	Rod: 966mm Wire:		966
<b>N</b>	Number of full length extrusions to be used: $N = (WL - (A+B)) / 4800$		$(27396-966) / 4800=5.5$ N=5
<b>C</b>	Total length of the number of full length extrusions (2400 mm) to be used: $C = N \times 4800$		$5 \times 4800=24000$
<b>D*</b>	Length of top luff extrusion: $D = WL - (A+B) - C$		$27396-966-24000=2430$
<b>X</b>	Fixed deduction: 150mm		150
<b>E*</b>	Length of the top distance tube: $E=D-X$		$2430-150=2280$



Finished rod forestay. Note that the quantity of short joining sleeves is equal to the number of 4800mm extrusions. Lower bearing and rod seat at lower end.

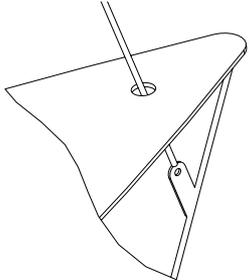
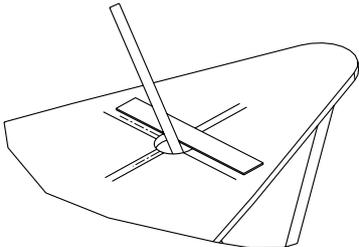
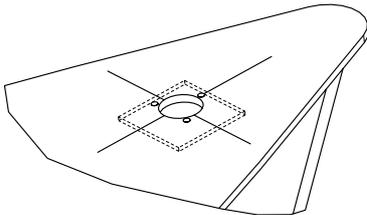
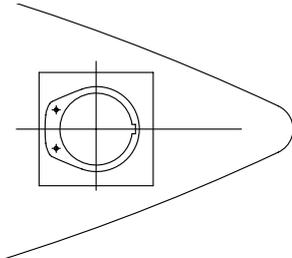


*Fig. 2.6.a*

# 3 Assembly of the Furlex system

## 3.1 Making deck hole and fitting of through-deck fitting

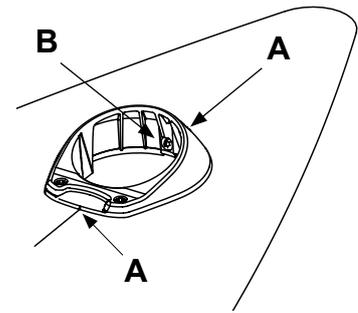
The best way to decide the location of the through-deck fitting is to step the mast with a forestay, which passes through a smaller hole in the deck.

<p>1. Find the approx. location of the intersection point. Cut a ~ø50mm hole.</p>	
<p>2. Step the mast and use a genoa halyard (the one intended for the Furlex) as forestay. Lead the halyard through the hole in the deck and attach it to the hole in the forestay fitting. Attach the halyard with a D-shackle fitted to the halyard with a knot. If the halyard is fitted with a snap shackle this should not be used for safety reasons.</p>	
<p> <b>NOTE! Always use a strong "D"-shackle or tie the halyard!</b></p>	
<p>3. Mark the position of the halyard on the edge of the 50 mm hole longitudinally as well as laterally.</p>	
<p>4. Take the tension off the genoa halyard, using another halyard. Disconnect the first genoa halyard.</p>	
<p>5. Fit a sheet of wood, plywood or similar, using 3 screws as per fig. 4.1.c. underneath the deck. Locate the holes close to the hole edge to provide clearance for the saw/hole saw. Note: To make the markings more precise, the 50 mm hole should be filled with a piece of wood and fixed with "quick curing" filler.</p>	
<p>6. Put the enclosed hole jig on top of the hole: Check that the jig reference lines coincide with the deck markings. Secure the jig with adhesive tape.</p>	
<p>7. Cut the large hole using a hole saw or jigsaw. Do not make the hole too big. File if required. Also drill the holes the fitting screws (see page 7).</p>	

8. Fit the through deck fitting. The markings (A), fore and aft of the fitting, will help to center the fitting in the longitudinal direction. The deck fitting has a compartment for sealing compound which can be used if required.

Check that the through deck fitting rests against the aft edge of the hole when the the screws are tightened.

If the deck thickness admits, an additional screw can be fitted as per B. If the deck is thin it can be necessary to increase its thickness locally for the screws to sit firmly.



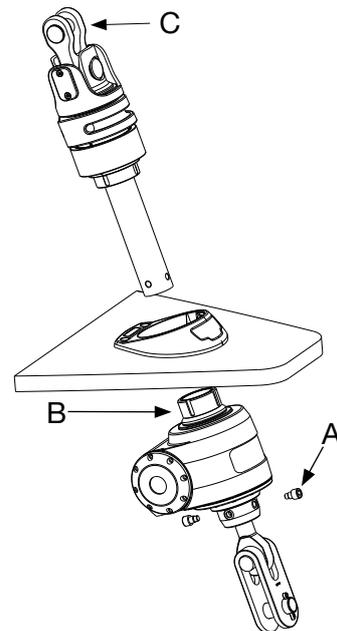
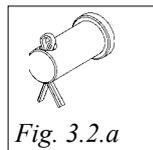
### 3.2 Fitting of the lower bearing assembly and drive unit to the boat.

1. Apply a thin bead of rigging screw oil to the eye/toggle terminal thread and attach it to the stemhead fitting in the boat. Secure the clevis pin with the split pin.

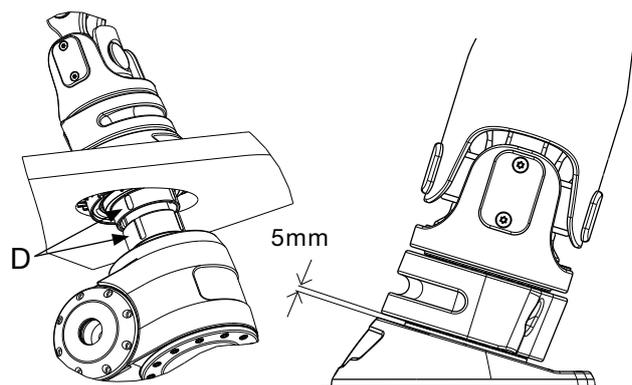
2. Remove the screws (A) from the motor unit. Apply a thin layer of grease to the drive shaft at (B). Fit the motor unit over the terminal. Take caution not damaging the bearings inside the drive shaft.

3. Let one person support the motor unit while the bearing assembly is inserted from above.

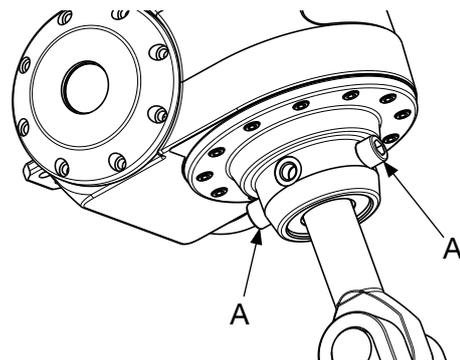
4. When the terminal thread enters the thread in the bearing assembly-start turning the toggle (C) to engage the thread.



5. Continue turning the toggle. Take caution when the torque transfer keys and grooves (D) engage. Continue turning until there is a gap of ~5mm between the tack ring and deck fitting.



6. Lift and turn the motor unit until two of the holes in the carrier aligns with two holes in the center shaft. apply locking adhesive to the screws (A) and tighten firmly.



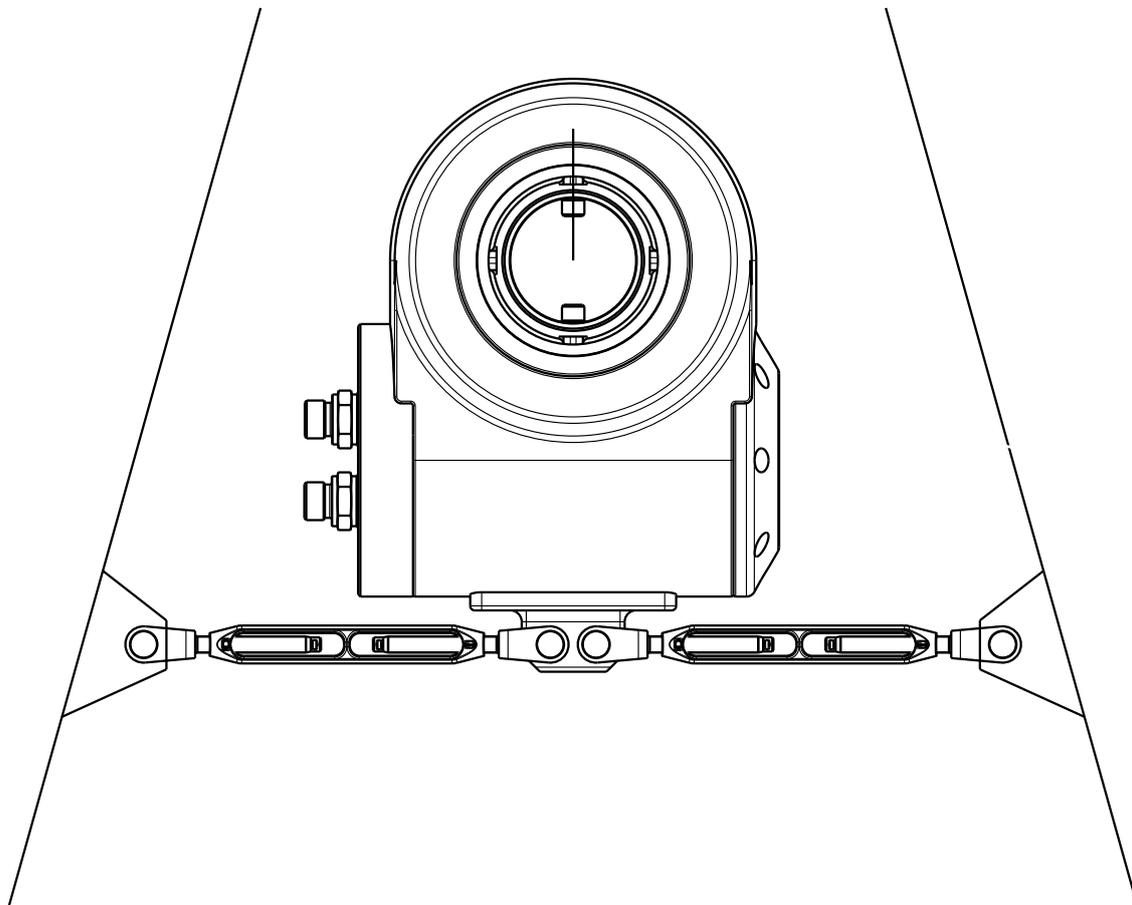
7. Pull the tack ring shackle upwards ensuring there is a gap to the deck fitting and that tack ring turns freely. Note that adjustments can still be made by turning the toggle but the whole drive unit will turn provided there is enough space. Otherwise-remove the screws and turn the toggle (C) acc. to point 5.

### 3.3 Fitting the torque support

To handle the torque a torque stay is mandatory. The torque stay is attached to the bracket on the aft face of the motor unit and then attached to a structure in the boat. Two rigging screws are included in the kit. The adjustability in the rigging screws facilitates installation. The solution also allows some vertical and longitudinal movement. As the sail is furled on the starboard side of the foil the starboard rigging screw will be handling pulling force. The portside rigging screw will act as support.

A custom solution is possible as long as it allows for some movement as described.

All attachment points in the boat must have a safe working load of 5 kN and a required breaking load of 10kN.



# 4 Assembly

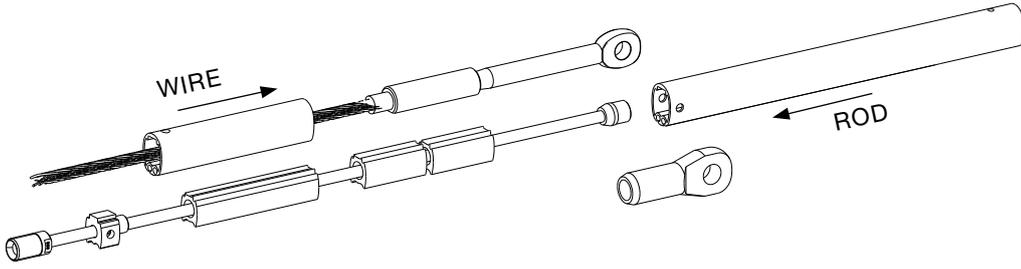
Prior to the assembly of the luff extrusion, the top extrusion and the top distance tube shall be cut according to table 2.

## 4.1 Assembly of the luff section

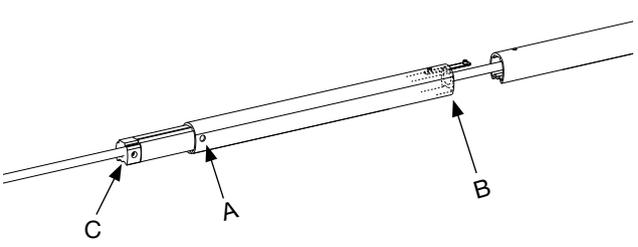
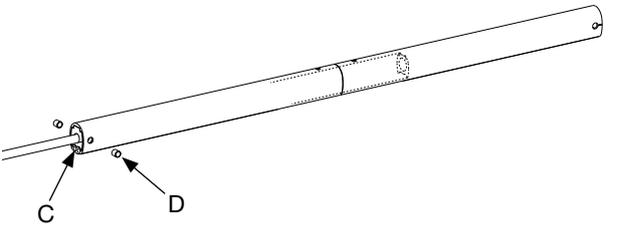
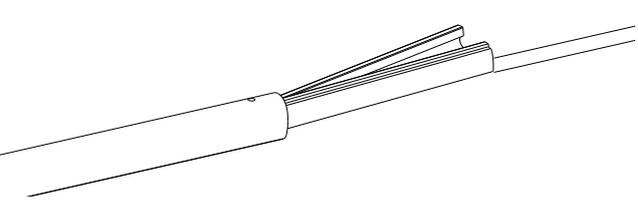
Luff assembly should be carried out on a clean, flat surface. Make sure there is enough space for the entire forestay length to be stretched out.



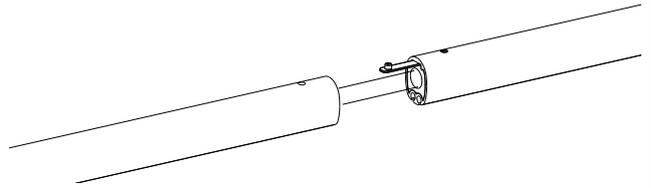
**On wire forestays with swaged eye terminal-the luff extrusion are fed on the forestay starting with the top extrusion. On rod forestays-the luff extrusions are fed from the top starting with the bottom extrusion.**



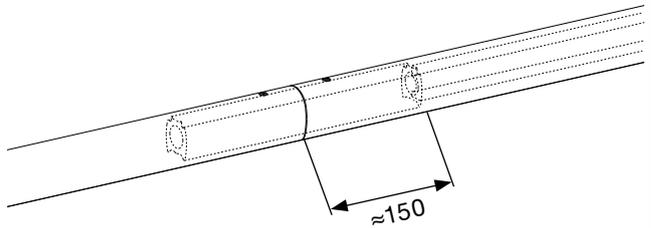
### 4.1.1 Assembly of the luff section-Rod forestay

1. Stretch out the forestay on a flat, clean surface. Protect any terminal threads with tape.	
2. Start by feeding the lower 580mm extrusion from the top. Note orientation of the holes(A). Fit a connecting plate in the lower extrusion and push up the long joining sleeve to lock it. The top end of the lower extrusion and the long joining sleeve to be flush(B).	
3. Connect a 4800mm extrusion to the connecting plate. Push up the long joining sleeve and bearing plug(C) until flush with lower end of extrusion. Press in the bushes (D).	
4. Insert the distance tube halves	

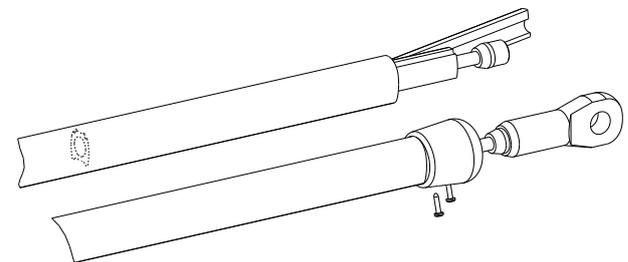
5. Release a short joining sleeve and move down to the first extrusion. Add the next 4800mm extrusion and fit a connecting plate.



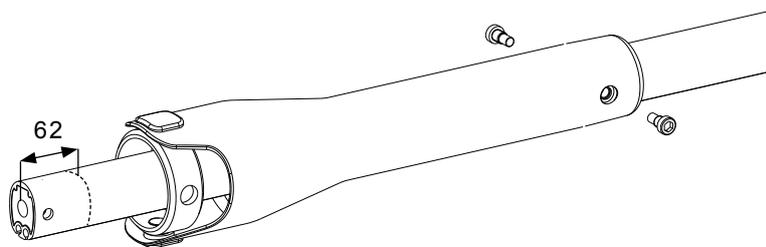
6. Insert distance tube halves in the second extrusion. Use the next short joining sleeve to push in the distance tube halves. The joining sleeve should be pushed in approximately half its length (150mm). This will ensure correct location of the joining sleeve in the join below.



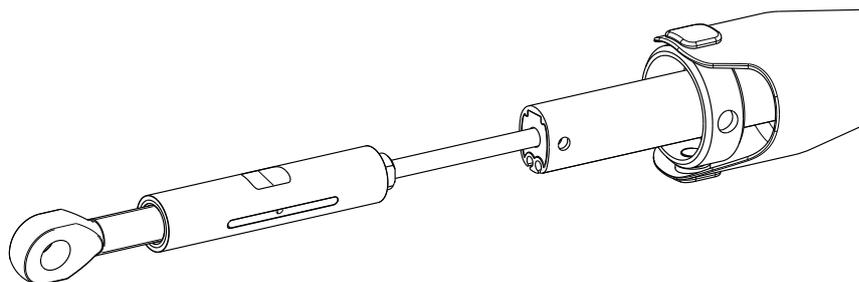
7. Connect the rest of the luff extrusions in the same manor. Check that distance tube halves area flush with end of top extrusion. Fit the top guard and eye terminal. Use locking adhesive on grub screw.



8. Remove the luff screws from the torque tube and feed the torque tube on to the luff section. Protect the luff section and the torque tube with paper or plastic. Secure the torque tube with tape before rigging. Mark the luff section 62 mm from the edge of the luff section to help aligning the screws with the holes in the luff section at a later stage. Use a permanent marker pen.



9. Fit the adjuster. Use locking adhesive on rod bush thread.



# 5 Rigging

The Furlex system is best transported and rigged together with the mast.

## 5.1 Fitting the Furlex on a stepped mast

1. Slacken the backstay as much as possible, but make sure that any rigging screw is not unscrewed so far that the threads are no longer visible "on the inside".

2. Pull the masthead forward using the genoa halyard. Secure the halyard using a "D" shackle or tie it to a strong deck fitting. Do not use the halyard snap shackle for safety reasons.



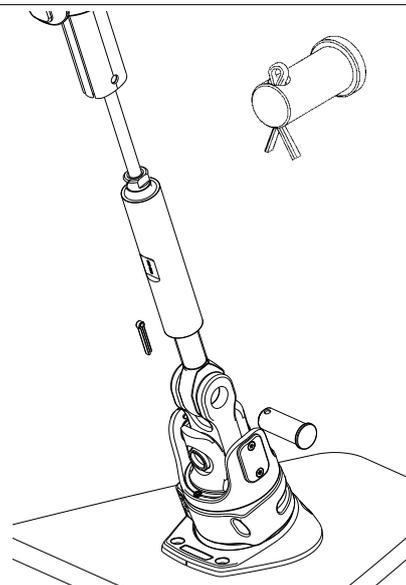
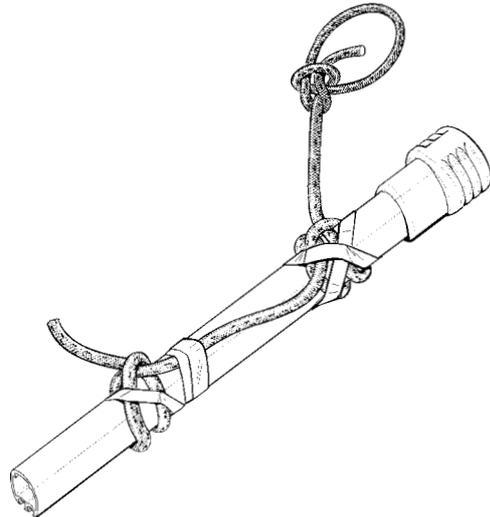
**Before disconnecting the forestay from the lower bearing assembly, the rig must first be secured by a halyard as a substitute for the forestay. Always use a strong "D"-shackle or tie the halyard.**

3. Tie a strong, flexible line around the luff extrusion. Make two clove hitches, the upper approx. 1 m from the top, taping over the knots so that they cannot slide.

4. Hoist the stay using a spare halyard.

5. "Go aloft" and attach the top end of the Furlex system to the forestay attachment. Always use a proper bosun's chair. If there are no free headsail halyards use the main halyard. For further information, see Seldén Mast AB's "Hints and Advice" on "Working aloft" or contact your Furlex dealer.

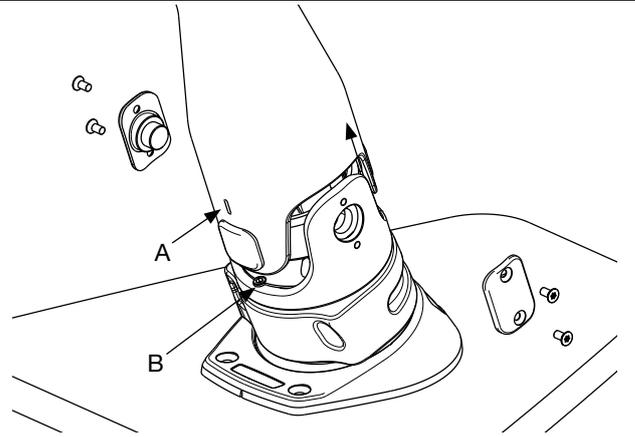
6. Attach the stay to the headbox and then to lower bearing assembly. The split pin for the clevis pin should be opened by ~ 20°. Support the weight of the stay by maintaining tension in the halyard



**For further information, see Seldén Mast AB's "Hints and Advice" or contact your Furlex dealer.**

7.

Remove the locking plates from the lower bearing bearing assembly. Slide the torque tube down and fit it to the lower bearing assembly. Align the marking (A) on the torque tube with the allen screw (B) on the bearing assembly. Apply locking adhesive to the screws and fit the locking plates attaching the torque tube to the bearing assembly. Tighten hard.



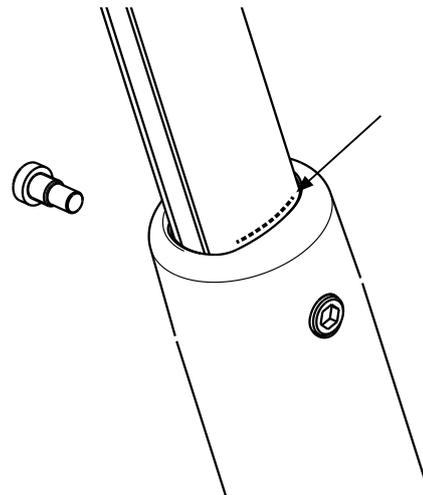
8.

Adjust the luff section until the marking aligns with the upper edge of the adapter (No. 8, page 17). The holes in the torque will now align with corresponding holes in the luff section.

Apply locking adhesive to the screws and tighten them firmly.



**If a screw is obstructed-do not force the screw into the hole. Loosen and investigate before re-fitting the screw.**



9.

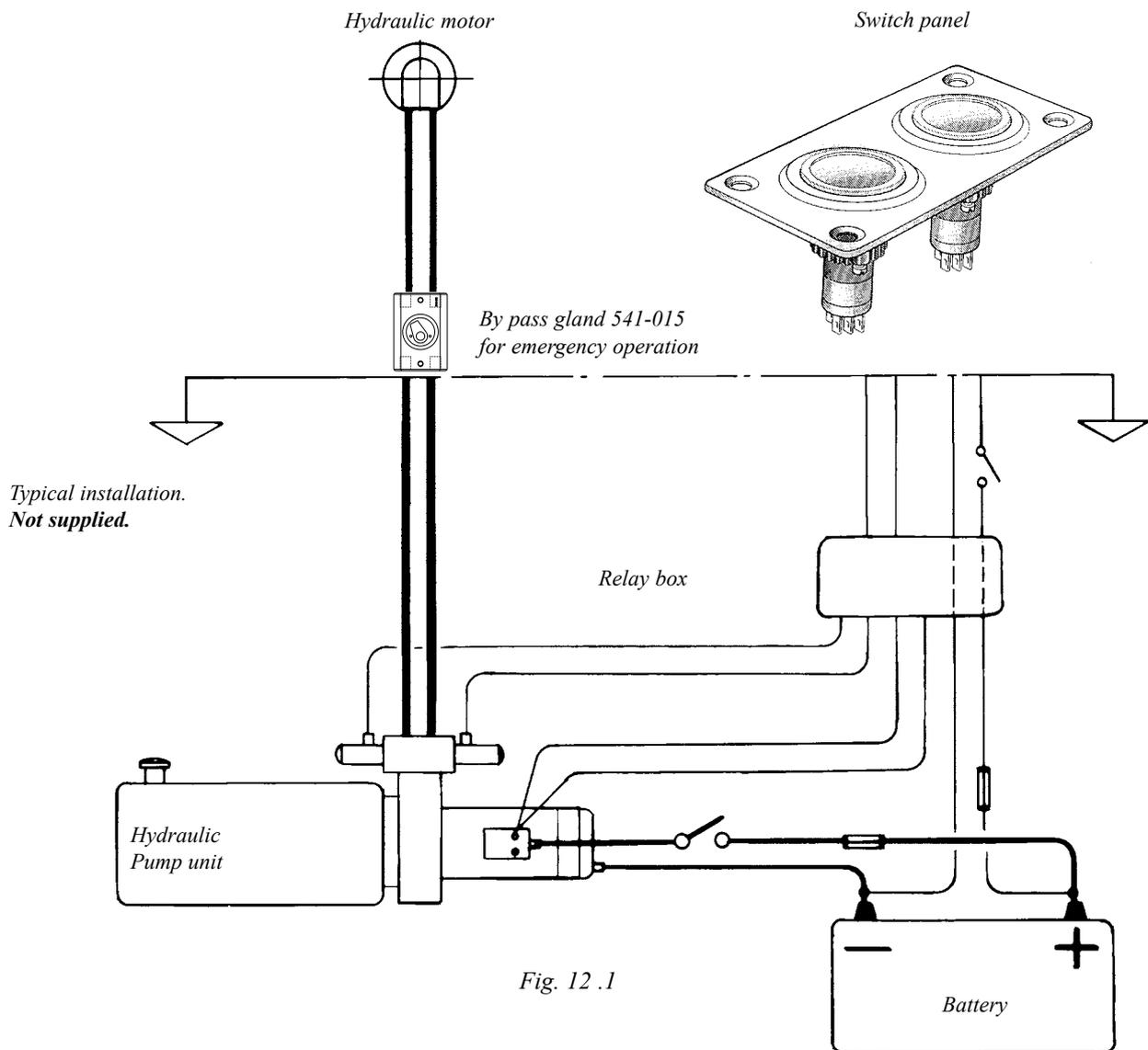
Tension the forestay to 20% of the wire's breaking load. As the tension on the forestay cannot be measured easily when it is encased in the luff extrusion, this can be done using the backstay. Owing to the difference in the angle of these stays relative to the mast, this is on a Masthead rig equivalent to approx. 15% of the backstay's breaking load, assuming that it is the same diameter as the forestay. (Forestay tension = approx. 1.25 x backstay tension.)

**A firmly tensioned stay offers the least furling resistance.**

## 6 Installation

### Hydraulic motor

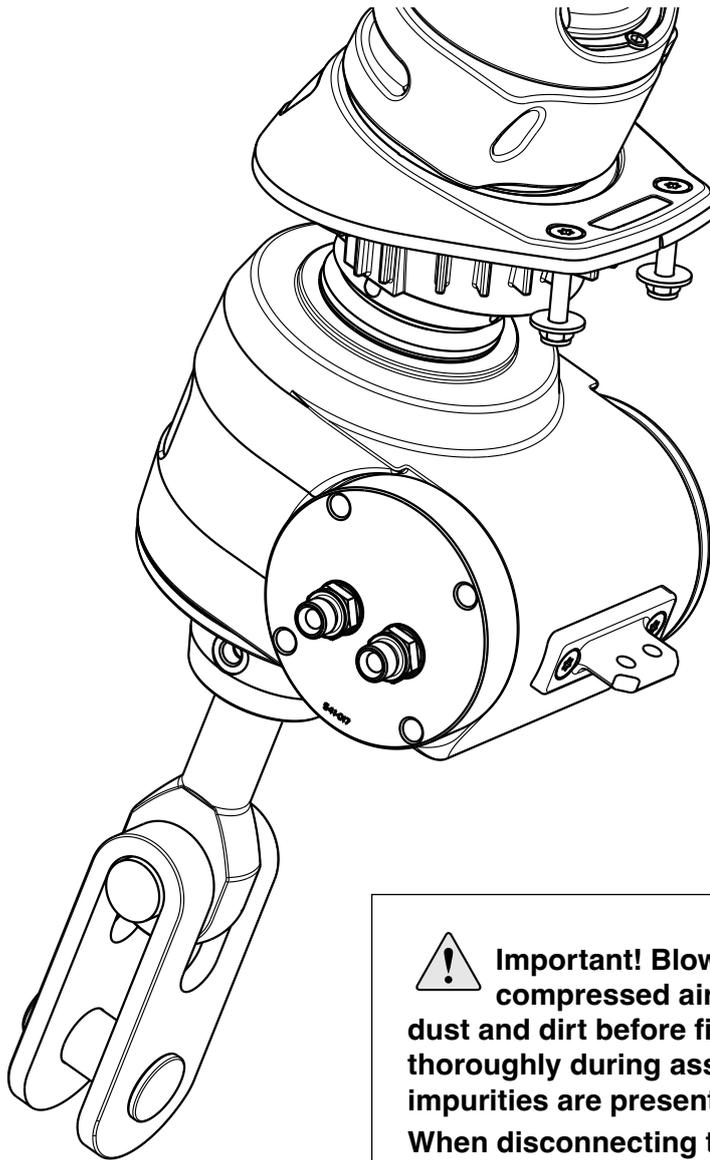
- The drive unit and hydraulic motor are tested before delivery.
- The hydraulic motor is a Danfoss OMM 20 cm<sup>3</sup>/revolution. Maximum recommended pressure,  $p=140$  bar.
- The oil flow,  $Q=20$  litres/min. gives a nominal speed  $n=40$  rpm.  
The normal working load when reefing or unfurling is  $p=40$  bar when  $Q$  is 19 litres/min.
- A 24-volt hydraulic pump unit with an effect of  $P=3$  kW is usually sufficient.



**Important! Blow through all new hoses with compressed air to clean them from possible dust and dirt before fitting. Check the system very thoroughly during assembly to ensure that no impurities are present.**  
**When disconnecting the quick coupling, always apply the protective covers and sleeves supplied.**

## Hydraulic hoses

1. Hydraulic hoses for installation below deck are not supplied. (See fig. 12.1).
2. Connecting threads are G 3/8". (See fig. 11.1).
3. Use hydraulic hoses of good quality corresponding so SAE 100R7/-ISO3949. Minimum dimension 1/2". Minimum working pressure 140 bar. Minimum recommended bending radius 150 mm (6").



**Important! Blow through all new hoses with compressed air to clean them from possible dust and dirt before fitting. Check the system very thoroughly during assembly to ensure that no impurities are present.**

**When disconnecting the quick coupling, always apply the protective covers and sleeves supplied.**

# 7 The sail

## 7.1 Adapting the sail to the Furlex system

To fit the Furlex system, an existing sail may need a number of modifications. The maximum luff length is calculated as shown in Table 1 page 6 FLD-(F+E). Existing forestay length FLD as per Table 2, page 11.



**It is most important that the halyard swivel is located so that the halyard satisfies the 5–10° angle requirement. If the sail prevents the swivel from reaching the correct position, the luff length needs to be adjusted.**

**IF THE SAIL IS TOO LONG:** Shorten the sail, e.g. in conjunction with changing to a luff tape compatible with Furlex.

**IF THE SAIL IS TOO SHORT:** Lengthen the sail by means of a wire pendant fitted to the head of the sail. Attach the pendant directly to the sail by a talurit splice to prevent unintentional removal, loss or exchange. All the boat's foresails should be adjusted to the correct luff length. See 1.5 page 6 (There must be a minimum distance of 50 mm between the top of the halyard swivel and the top guard when the sail is fully tensioned.

"Cutback" for tack see table 1 page 6.

The luff tape must be compatible with the Furlex luff extrusion. See luff extrusion measurements in table 1.

If the sail is to be fitted with UV protection, this is best placed on the starboard side. The tack of the sail will then be in line with the luff grooves of the luff section when unrolled (see Chapter 6.4.2, "Hoisting the sail"). If the sail already has UV protection on the port side, the tack will be turned slightly to starboard. The free turn of the tack ring will function equally well.

Use webbing loops at the sail head and tack instead of eyes (cringles). The sail will then form tightly round the luff extrusion when furling, and achieve a better shape when reefed.

## 7.2 Adjusting the forestay length

The Furlex system is supplied with a simple adjuster Stroke is +-50mm.

The adjuster is only for adjusting the forestay length. Tensioning the forestay, is done by tensioning the cap shrouds and/or the backstay, and not by tensioning the forestay adjuster.

The sail must be removed or unfurled and halyard slackened before the forestay length can be adjusted. Release the tension in the forestay by slacken the backstay. Pull the mast forward using a spare halyard attached to a cleat if necessary. Then follow the steps below:

1. Support the luff section before the two luff screws (1) are loosened to prevent the luff section from dropping onto the adjuster. To support the section, a halyard can be tied around the luff section just below the sail feeder and tensioned.
2. With the luff section supported, remove the bushings (2).
3. Slide the torque tube up along the luff section and secure it with tape.
5. Remove the locking screw (3). Adjust forestay length by turning the body (4). Check that the rod bushing (5) does not come loose and that it turns together with the body when body is turned clockwise (lengthening the forestay) Use a spanner around the rod bushing as well if necessary.

When shortening the forestay (body turned counter clockwise the rod bushing cannot come loose.

After adjustment-lock the terminal with the locking screw (3).



**Do not remove the clevis pins that connect the forestay to the boat!**

Fig. 7.2.a

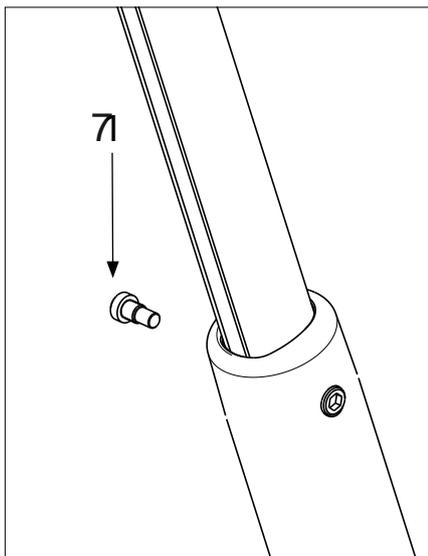
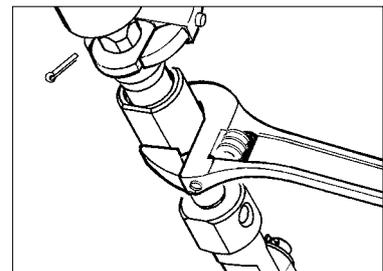


Fig. 7.2.b

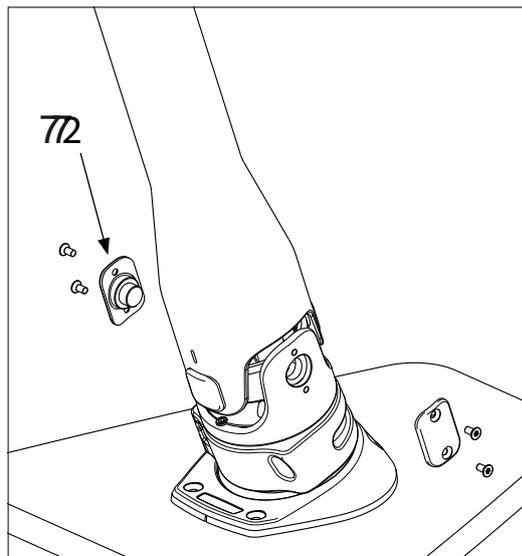


Fig. 7.2.c

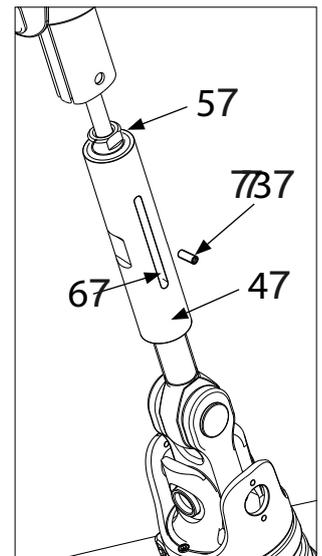


Fig. 7.2.d



**When lengthening the forestay-check that the end of the terminal with the locking screw hole is visible in the slot (6) ensuring the adjuster is not coming apart.**

### 7.3 Checklist

Go through the checklist below and make sure that all the important steps have been carried out. This will ensure that the Furlex system functions safely and reliably for many years and in all conditions.

- Check that the angle between the halyard and forestay is 10–15° when the sail is hoisted.
- Check that the clearance between the halyard swivel and the top guard is at least 50 mm.
- Check that all the sails used, have the sufficient luff length or an extension pendant fitted so that the 10-15° requirement is satisfied.
- Check that no halyards can get caught in the halyard swivel or wrapped around the luff extrusion.
- Check that the luff extrusion rotates one turn before the tack ring starts to rotate.
- Check that the forestay articulates freely at the upper and lower attachments.
- Check that all split pins are secured properly by a 20° separation.

### 7.4 Hoisting the sail

1. Lay the sail out on deck. It should be carefully flaked down with the tack turned forward.
2. Turn the tack ring counter-clockwise until stop to furl the sail on the starboard side of the luff extrusion.
3. Attach the tack of the sail to the tack shackle.
4. Attach the sheet to the clew.
5. If included, tie the pre-feeder to the tack shackle or the deck and insert the luff rope in the pre-feeder.
6. Attach the halyard to the upper eye of the halyard swivel.
7. Hoist the sail in the starboard groove through the sail feeder.
8. Apply maximum tension to the backstay.
9. Hoist the sail. The pre-feeder helps guide the sail in towards the sail feeder at a small angle. If the pre-feeder is not included, then feed the sail manually through the sail feeder.
10. Tension the halyard until a vertical crease appears in the luff of the sail, then slacken off until the crease disappears..
11. After hoisting the sail, remove the pre-feeder completely.
12. Furl the sail. Let the windward sheet run freely but keep some tension in the leeward sheet, for example by placing a turn around a winch. It is important to furl the sail tightly and evenly, as a sail that is furled too loosely may partly blow out in strong winds.
13. When the sail is hoisted, check that the halyard swivel is at least 50 mm below the top guard and that the halyard angle satisfies the 10–15° requirement.
14. Finally, mark the halyard as shown to prevent overtensioning. This is very important! Also mark the maximum tension position of any backstay adjuster. The forestay/backstay tension can now

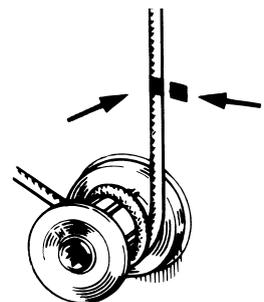


Fig. 6.4.a

## 7.5 Unfurling the sail

Haul in on the sheet while pressing the unfurling switch. By doing this, the sail will not flap and be subjected to excessive wear.

Stop the reefing gear when the sail is fully open and the luff extrusion has a suitable angle to the apparent wind.

If you continue to press the unfurling switch, the sail will start to furl again, but in the wrong direction.

## 7.6 Furling the sail

Furl the sail on the starboard side of the luff extrusion.

Press the reefing switch (See fig. 13.1) while at the same time giving after on the sheet. The amount of counter-pressure you apply to the sheet will decide how tightly the sail is rolled.

Continue to roll some of the sheet over the sail when the sail is fully furled.

## 7.7 Reefing

Furlex Hydraulic is equipped with a tack-ring which is free to rotate about one revolution in relation to the luff extrusion. This helps to flatten the sail when reefed, as the tack does not start to roll in until the centre of the sail has been rolled in by that amount. god förutsättning för ett plant revat segel.



### **Remember!**

**Always roll in at least 2–3 revolutions.**

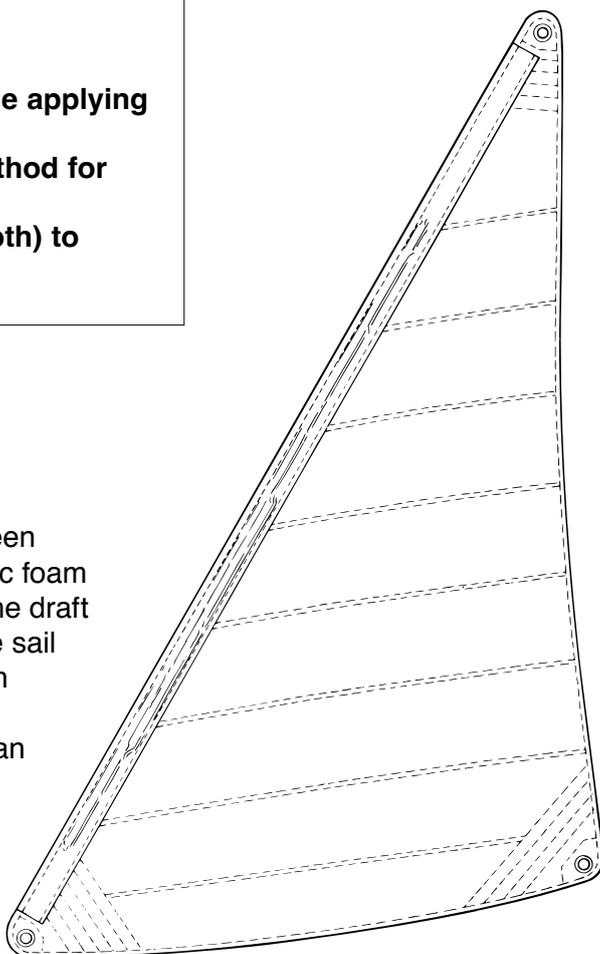
**Pay out the sheet from the winch drum while applying some resistance.**

**Experiment in order to find out the best method for just your sail.**

**Do not subject a light wind sail (light sailcloth) to heavy winds.**

### **Sail shape when reefed can be improved**

Various methods of improving reefed sail shape have been developed. Most sailmakers apply a cloth covered plastic foam ("Luff foam") along the luff. This material is tailored for the draft depth of the sail, and counter-acts draft increases as the sail is rolled in. One can also sew a "sleeve" along the luff. In this one can place lines of different dimensions for draft compensation. The advantage of this method is that it can be varied to suit the sail with the passage of time. It is therefore a suitable method to use if an old sail is being altered to suit your Furlex. Ask your sailmaker what method is the most suited to your requirements.

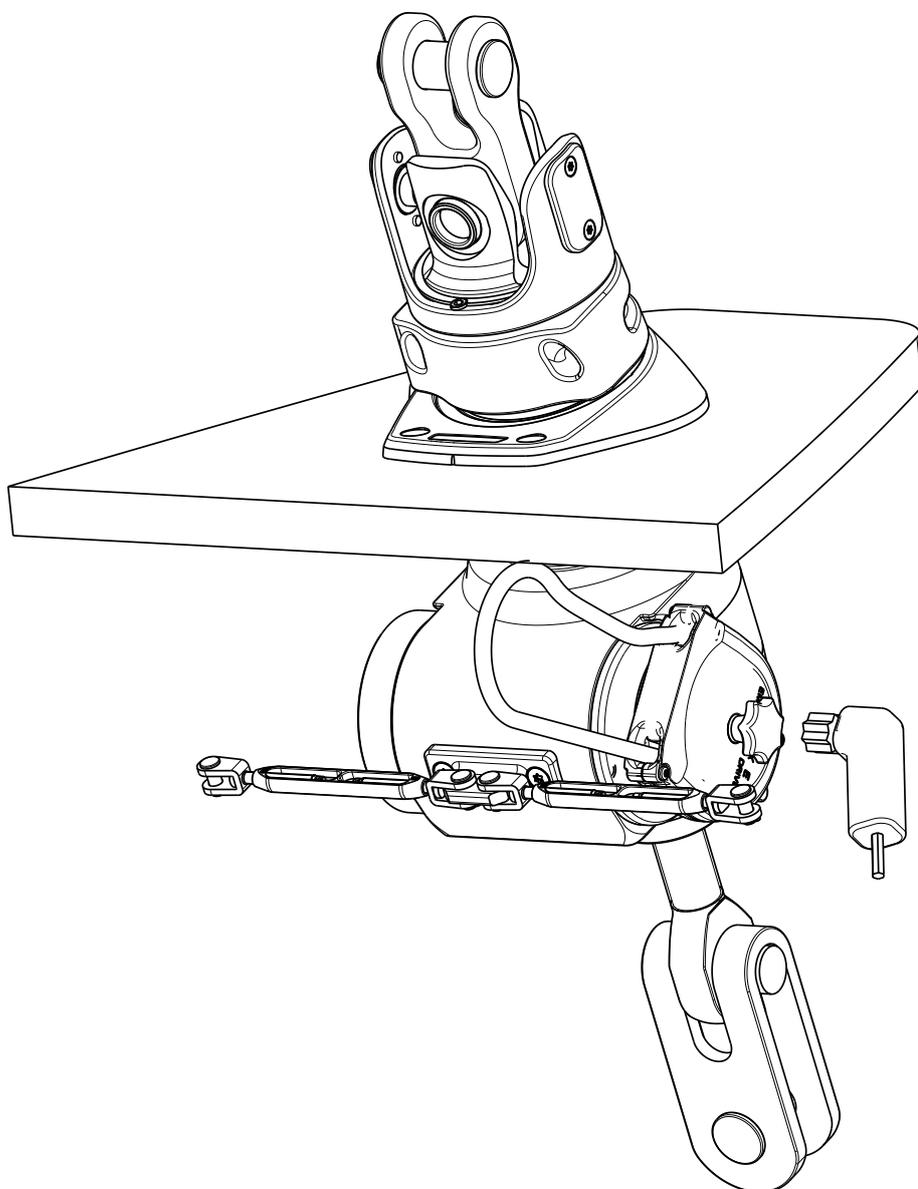


## 7.8 Racing

The Furlex system can be converted from a furling system to a twin-groove racing headfoil by lowering the halyard swivel below the sailfeeder. The twin grooves now makes swift sail changes possible.

## 7.9 Emergency operation

If power is lost the system can be manually operated using the emergency line driver supplied with the system. Prior to this the by-pass valve needs to be opened so that the oil can flow freely. Due to the high gear ratio in the worm gear, manual furling will take a long time. Its therefore recommended to use a cordless power drill with a 1 1/16" /17.5mm) adaptor. Due to limited space around the drive unit, an angle driver between the power drill and the socket might me necessary.



# 8 Maintenance

## 8.1 Inspection

- To ensure that the system rotates easily and functions satisfactorily year after year, regular inspection and maintenance should be carried out once a year. Maintenance is simple, even with the Furlex rigged on the boat.
- Check for damages on the luff extrusion. If the sail grooves are damaged this may cause damage to the sail.
- Check that all rotating parts turn freely and that all bearings are greased. Lubricate with water resistant Furlex grease if bearings seem dry.
- Halyard leads should be inspected once a year and any sharp edges smoothed with a file. A halyard lead should be replaced, at the latest, when wear exceeds 50%.

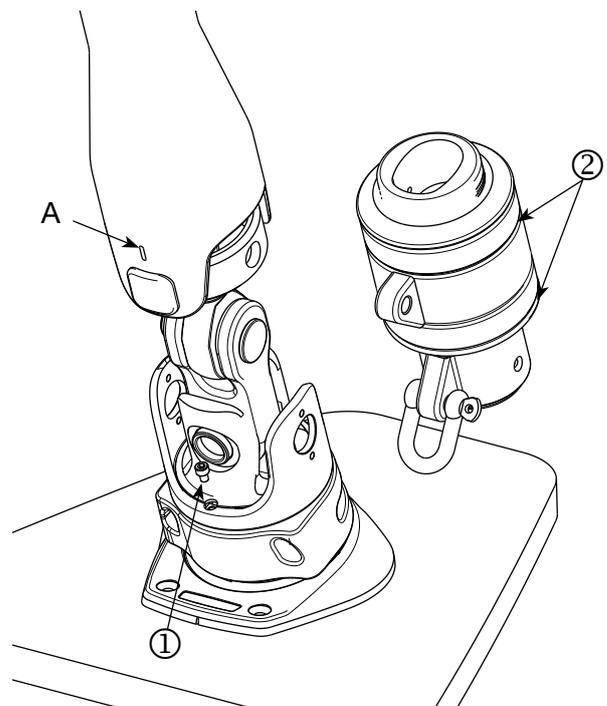
## 8.2 Service

Wash and rinse the entire Furlex-system with fresh water and a mild detergent to remove dirt and salt. Note! Some detergents contain substances which can cause aluminium to corrode, so it is important to rinse all detergent off thoroughly.

When the parts have dried, the anodized surfaces of the luff extrusions can be treated with a silicon free boat polish or wax. This offers good protection and prevents particles of dirt from adhering and then soiling the sail. The stainless steel components can be treated with a suitable polish. Always protect black plastic when polishing stainless components.

### Lubricating points:

- Lower unit:  
Remove the allen screw ① to access main bearing.  
Press in grease.  
Rotate system half a turn and press in some more grease.  
Use water resistant bearing grease.
- Note that marking (A) on the torque tube must align with the allen screw(1) when refitting the torque tube
- Halyard swivel:  
Bring the halyard swivel down to the sail feeder and lubricate both ball bearings ② with water resistant grease.

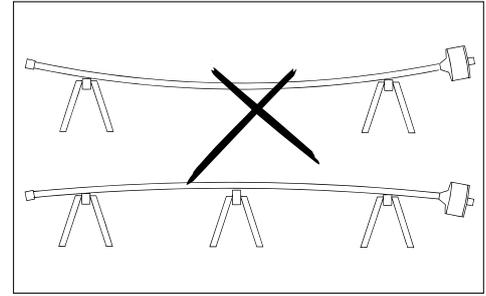


### 8.3 Storage

The stay is preferably stored with the mast when the mast is down. Make sure that no aluminium surfaces are in contact with steel parts.

Under no circumstances should an unwashed or damp Furlex system be wrapped in plastic or any other impervious material.

In areas where frost can occur, the Furlex should be stored in a dry place or with its centre extrusions raised. This is to avoid ice damage to luff extrusions at subzero temperatures.



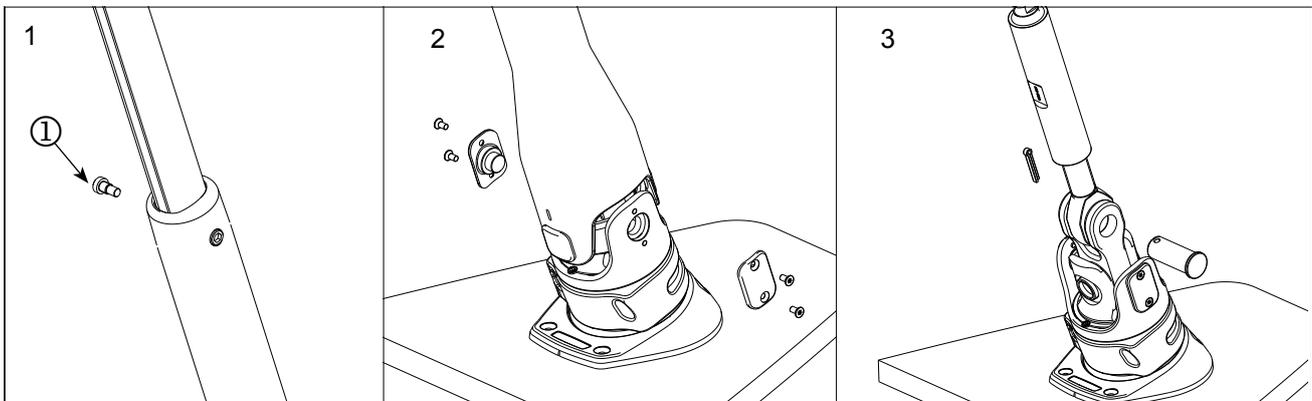
### 8.4 Disconnecting the forestay

1. Support the luff section before the luff screws(1) are loosened to prevent the luff section from dropping onto the terminal or rigging screw. To support the section, a halyard can be tied around the luff section just below the sail feeder and tensioned. Lower the luff section carefully after all screws are removed.

2. With the luff section standing on the top of the adjuster, remove the locking plates (2). Slide the torque tube up along the luff section and secure it with tape.



**Before disconnecting the forestay from the lower bearing assembly, the rig must first be secured by a halyard as a substitute for the forestay. NOTE! Always use a strong "D"-shackle or tie the halyard!**



3. Remove clevis pin and split pin.

### 8.5 Halyard swivel

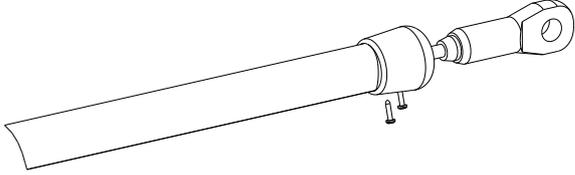
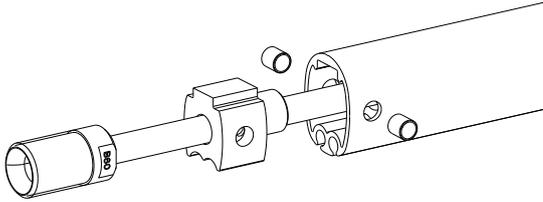
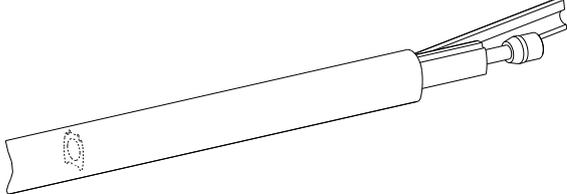
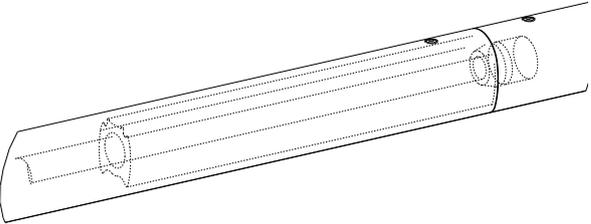
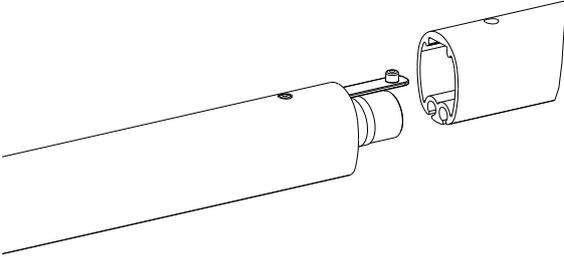
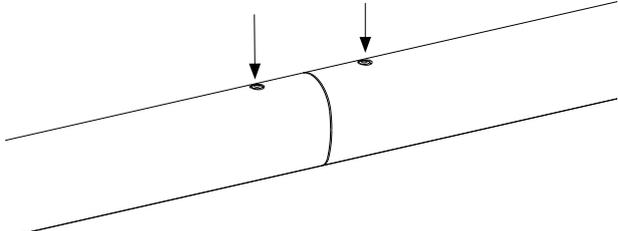
The halyard swivel is removed from the system by sliding it downwards in conjunction with dismantling the adjuster.



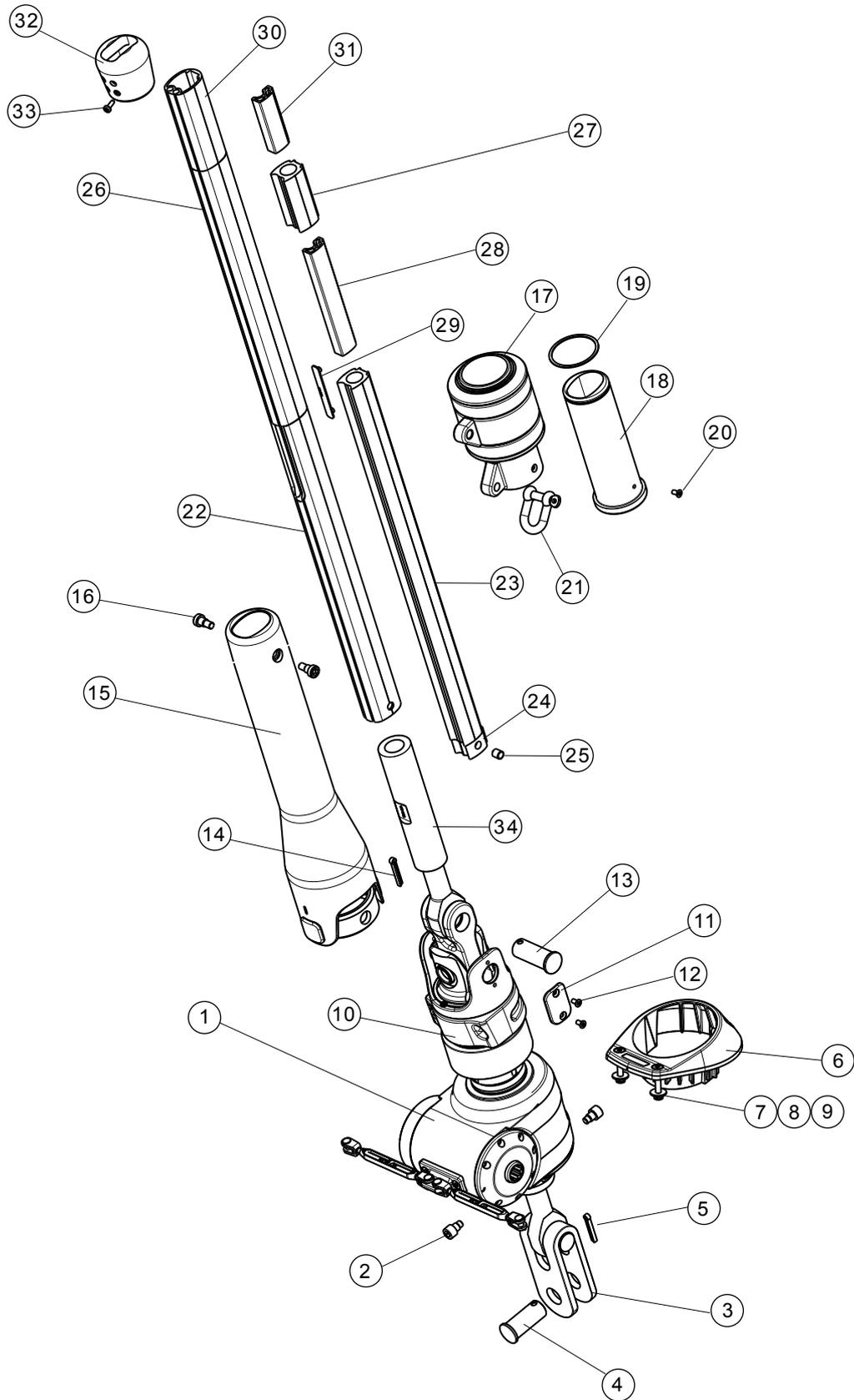
**If the halyard swivel is to be removed, the rig must first be secured safely using a halyard as a substitute for the forestay before proceeding.**

**Always use a strong "D"-shackle or tie the halyard!**

## 8.6 Luff extrusion

<p>1. Place the stay on a flat surface and make sure that the luff extrusion is kept straight.</p>	
<p>2. Remove the top guard and top eye terminal.</p>	
<p>3. Pry out the bushings from the lower bearing with a screw driver or a similar tool. Be careful not damaging the holes in the luff section.</p>	
<p>4. Pull out the distance tube halves from the top extrusion</p>	
<p>5. Pull the stay until the top terminal bush stops against the joining sleeve at the top joint. Mark the stay at the bottom and pull ~150mm (half the length of a joining sleeve).</p>	
<p>5. Top extrusion can now be disconnected. This operation will move the joining sleeves at all the joints. Pull out the long joining sleeve from the lower extrusion. The lower extrusion can now be disconnected.</p> <p>Continue pulling the stay to separate the luff extrusions and the distance tube halves from the stay.</p>	
<p>On older systems moving the joining sleeves might not be possible. In this case the connecting plates can be drilled out and be replaced by new ones. Use a ø8.5mm drill bit.</p>	

# 9 Spare parts and accessories



## 9.1 Spare parts list

Motor unit				
Item	Description	Dimension	Qty	
		Assembly number->	539-822-11	
1	Motor unit	500TDH	1	539-822-11
2	Locking screws		2	153-208

Toggle terminal				
Item	Description	Dimension	Qty	
		Assembly number->	308-627-01	
3	Toggle terminal	1 ¼" RH	1	308-627-01
4	Clevis pin	Ø1 1/8"	1	165-592
5	Split pin	Ø5.9x41	1	301-058

Deck fitting				
Item	Description	Dimension	Qty	
		Assembly number->	549-459-01	
6	Deck fitting	500TD	1	549-459
7	Screw	MFT M8x50	2	162-045
8	Washer	Ø24/8.4-2	2	164-514
9	Nut	M8	2	158-006

Lower bearing assembly				
Item	Description	Dimension	Qty	
		Assembly number->	549-500-01	
10	Lower bearing assy.	500TD	1	549-500-01
11	Locking plate	62x40	2	549-503
12	Screw	MFT 6X12	2	162-030
13	Clevis pin	1 1/8"x72	1	165-599
14	Split pin	Ø5.9x41	1	301-058

Torque tube assembly				
Item	Description	Dimension	Qty	
		Assembly number->	549-505-02	
15	Torque tube	500TD	1	549-505-01
16	Luff screw	M12x24 spec.	2	153-209

Halyard swivel assembly				
Item	Description	Dimension	Qty	
		Assembly number->	539-401-01	
17	Halyard swivel assy.	500TD	1	539-401-01
18	Sliding sleeve	Ø70x221	1	539-409
19	Circlip	WST-275	1	301-502
20	Screw	MFT6x12	2	162-030
21	Shackle	Ø12x24x41	1	307-004

*continues...*

<b>Luff extrusion lower (sail feeder)</b>				
Item	Description	Dimension	Qty	
		Assembly number->	549-509-01	
22	Luff extrusion	L=580	1	549-509
23	Joint sleeve	L=700	1	549-510
24	Bearing plug	50x40	1	539-193
25	Bush	ø12/10-12	2	306-562

<b>Luff extrusion 4800mm</b>				
Item	Description	Dimension	Qty	
		Assembly number->	539-423-01	
26	Luff extrusion	L=4800	1	539-423
27	Joint sleeve	L=300	1	539-427
28	Distance tube half	L=4500	2	535-676
29	Connecting plate	100x14	1	539-410

<b>Luff extrusion 2000mm</b>				
Item	Description	Dimension	Qty	
		Assembly number->	539-426-01	
30	Luff extrusion	L=2000	1	539-426
27	Joint sleeve	L=300	1	539-427
31	Distance tube half	L=1700	2	535-677
29	Connecting plate	100x14	1	539-410

<b>Top guard assembly</b>				
Item	Description	Dimension	Qty	
		Assembly number->	539-408-01	
32	Top guard	Ø80x80	1	539-408
33	Screw	ST 5.5x16	4	171-033

<b>General parts</b>				
Item	Description	Dimension	Qty	
34	Adjuster	1 1/4"	1	539-861-01
35	Rigging screw	5/16" Fork-Fork	2	174-322-01

## 7 Warranty

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

The guarantee is only valid if the Furlex-system 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 Seldéns 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 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.

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Dealer:

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Our well known brands are Seldén and Furlex. The world-wide success of Furlex has enabled us to build a network of over 750 authorised dealers covering the world's marine markets. So wherever you sail, you can be sure of fast access to our service, spare parts and know-how.

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