

FURLEX

 **SELDÉN**

Manual and Spare parts list **Furlex 404TD**



 **SELDÉN**

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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 furlingsystem. The bow will also be less cluttered as the line drum is hidden below the deck.

Load distributor in the tack swivel

The patented load distribution technology of the Furlex system distributes loads over the entire ball race. This reduces friction, provides smoother furling and considerably reduces wear on the bearings.

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 short shackle – or an optional soft shackle – reduces the furling resistance.

Prepared for soft-shackle

The tack ring and halyard swivel eyes are prepared for using Dyneema® soft shackles. All surfaces are smooth and nicely rounded.

Aero grooves

Similar to the dimples on a golf ball, the Furlex AERO groove system reduces drag and creates better aero dynamic flow around the luff extrusion.

Roller bearing

A roller bearing between the main ball bearings of the drum unit distributes the load from the furling line over a large bearing area. This makes for lower resistance when furling.

Floating connectors

The 316 stainless steel connectors are subjected to vertical loads only and no torsional loads. Torsional loads are taken by the join pieces alone which leaves the connectors "floating" inside the join thus reducing wear inside the joins.

Air gaps

Every join in the system is made with a nominal gap which means the extrusion ends will never get in contact with each other. This way there will be minimum chafe and no aluminum deposits staining on your new sail.

Jaw lock

Double screws through the rope and locking jaws ensure a bullet proof locking of the furling line.

Detachable swivels

Both the halyard swivel and the drum unit can be easily removed from the foil for off-season storage. This facilitates storing the foil with the mast and makes handling easier.

Three options for wire termination

Furlex 404TD can be delivered with three wire terminals. The standard version is a Sta-lok wire eye terminal. An alternative is a Sta-lok wire terminal fitted to a rigging screw for adjustability of the forestay length. The stroke is 100 mm. The rigging screw is integrated in the torque tube and does not affect the tack height of the sail. A third alternative is a swaged stud terminal – a common solution for large volume OEM deliveries.

Small drum diameter

The diameter of the line drum is small to allow for an installation as far forward as required. For genoas with large LP-measurements, the Furlex S-series line drum and line guide assembly can be used in case the standard TD-series drum does not accommodate enough length of furling line. This requires more room below deck.

1.2 What's included?

Basic pack / Extended pack

The Furlex TD-system includes a basic pack with drum unit, torque tube, deck fitting, halyard swivel, sail feeder, bearing halves, top guard and furling line. In addition, the extended pack also includes halyard leads, stanchion blocks and pre-feeder pack.

Foil pack, wire pack and wire terminal

The system also includes a foil pack with luff extrusions, distance tubes and connectors. A complete forestay wire is also supplied with every Furlex and an eye terminal is swaged to its upper end. For the lower end, there are three alternative terminals available:

1. Swaged terminal with eye (no adjustment).
2. Sta-lok terminal with eye (no adjustment).
3. Sta-lok terminal with rigging screw.

All three alternatives are used for 1x19 strand wire, but alternative 2 and 3 can also be used with rod, and compact wire (Dyform). Rod forestays are always provided by the manufacturer of the rod.

For rod option supplementary manual 597-184-E "Luff assembly for rod stay" is needed.

Basic pack / Extended pack		Foil pack	Wire pack with terminal
<ul style="list-style-type: none"> • Lower bearing assembly • Halyard swivel • Furling line • Bearing halves • Topguard • Sail feeder • Manual 	In addition, the extended pack includes halyard leads, stanchion blocks, pre-feeder and Torx bits.	<ul style="list-style-type: none"> • Luff extrusions • Distance tubes • Joining sleeves • Connecting plates 	<ul style="list-style-type: none"> • Wire with swaged eye • Eye terminal with required type of terminal (with or without rigging screw)

1.3 Main dimensions

All dimensions are given in millimeters.

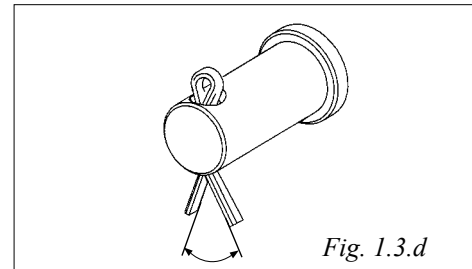
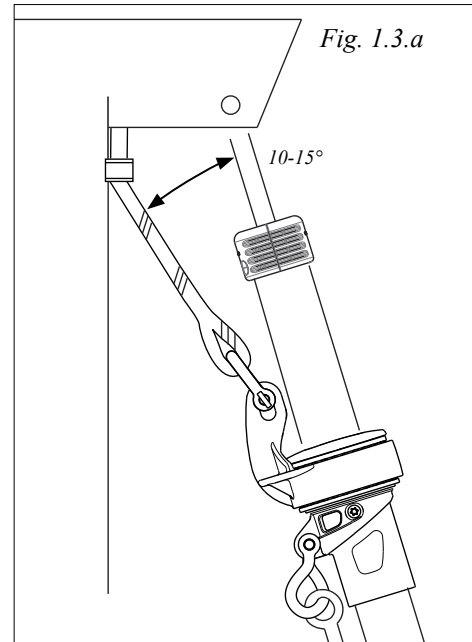
<p>Fig. 1.4.a</p>								<p>Fig. 1.4.b</p>			
Furlex model	A	B	C	D	E	F	G	Wire dim.	Pin	TED	TET
404TD Ø12. Rod-30	182	210	40	375-540	Ø19	22	35	Ø12	Ø19	Ø19.5	16
404TD Ø14. Rod -40					Ø22	22	35	Ø14	Ø22	Ø23	17

1.4 Safety precautions

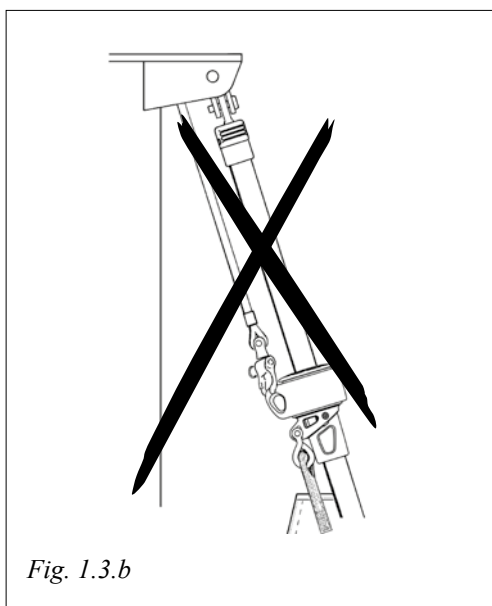
The information in this manual must be followed carefully to avoid damage to the system and to avoid the risk of personal injury. The warranty is only valid if the system is assembled and operated according to this manual.

Please read the entire manual before assembly!

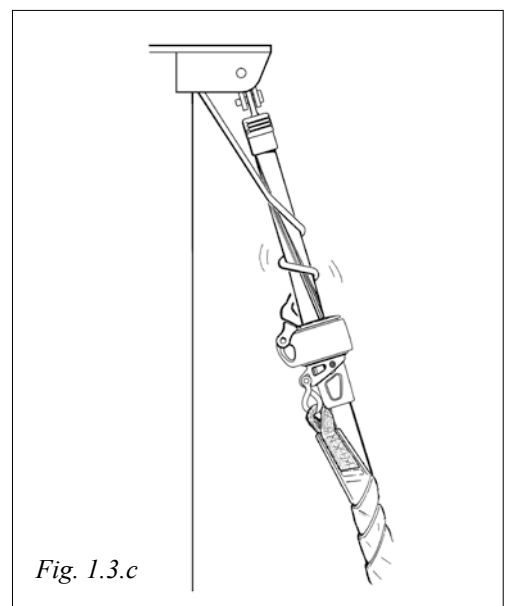
- Be very careful when you open the wire coil! It may spring open and cause damage and/or personal injury.
- Never use a snap shackle to secure the standing rigging, not even temporarily. When installing the system on a rigged boat, always use a strong screw pin shackle or tie the spinnaker halyard to 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°.
- If using a winch for the furling line, first check that there is no obstruction which may interrupt the furling operation and possibly cause damage.
- A common example is no furling line left on the line drum. When furling the sail in heavy wind, the sail is packed tighter and requires more furling line to be pulled than when furling in light wind.
- 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

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.

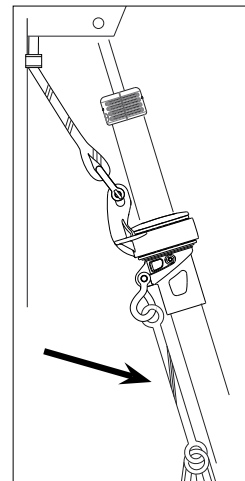


Fig. 1.5.a

Furlex type	404TD
Head deduction F	630 (25")
Tack deduction E (Any additional pendant to the tack must be added to E)	115 (4 1/2")
Cutback CB	80 (3 5/32")
Internal diameter of luff groove DLG	Ø8 (5/16")
Width of luff groove WLG	3.0 (1/8")
Overall luff extrusion dimensions	52x38 (2"x1 1/2")

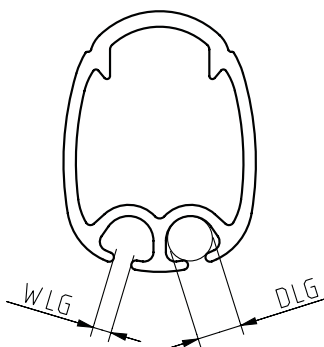


Fig. 1.5.b

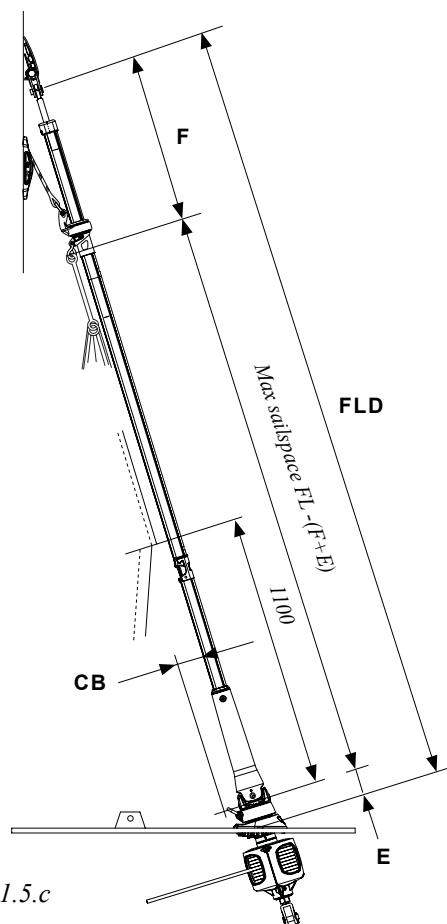


Fig. 1.5.c

2 Assembly preparations

2.1. Tools

Before starting with the assembly, make sure you have the following tools available:

- Hack saw
- Torx bits and bit holder
- Measuring tape
- Knife
- Hammer
- Pencil

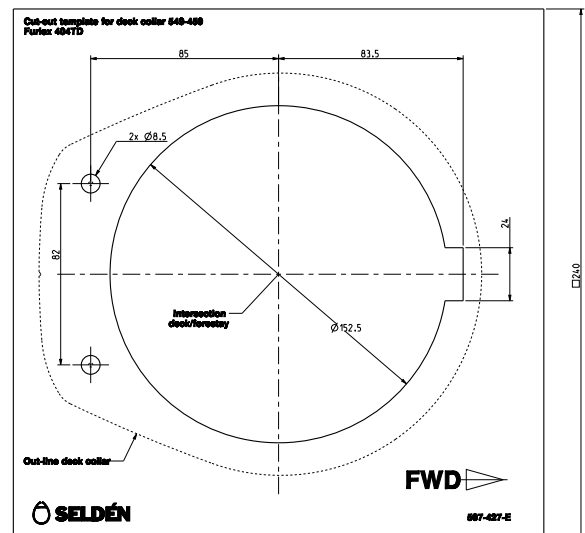
If Sta-lok is to be fitted you will also need:

- Small slotted screw driver
- Two adjustable spanners
- Pair of pliers
- Tape
- File
- Locking adhesive (included in the eye fitting pack)

Tools needed for making the hole in deck:

- Template (1:1) (included in kit)
- Hole saw (see table) or jig saw
- Drill bit (see table)

Furlex model	Hole saw Ø	Drill bit Ø
404TD	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.

Masthead attachment with standard toggle

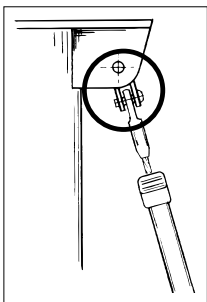


Fig. 2.2.a

O-fitting

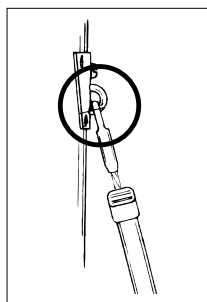


Fig. 2.2.b

Nose fitting with fork - fork toggle

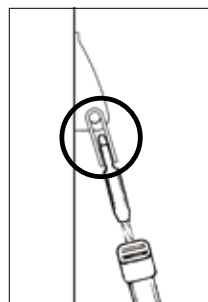


Fig. 2.2.c

Combi box with eye - fork toggle

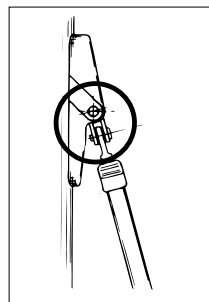


Fig. 2.2.d

T - fork toggle

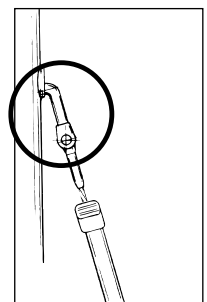


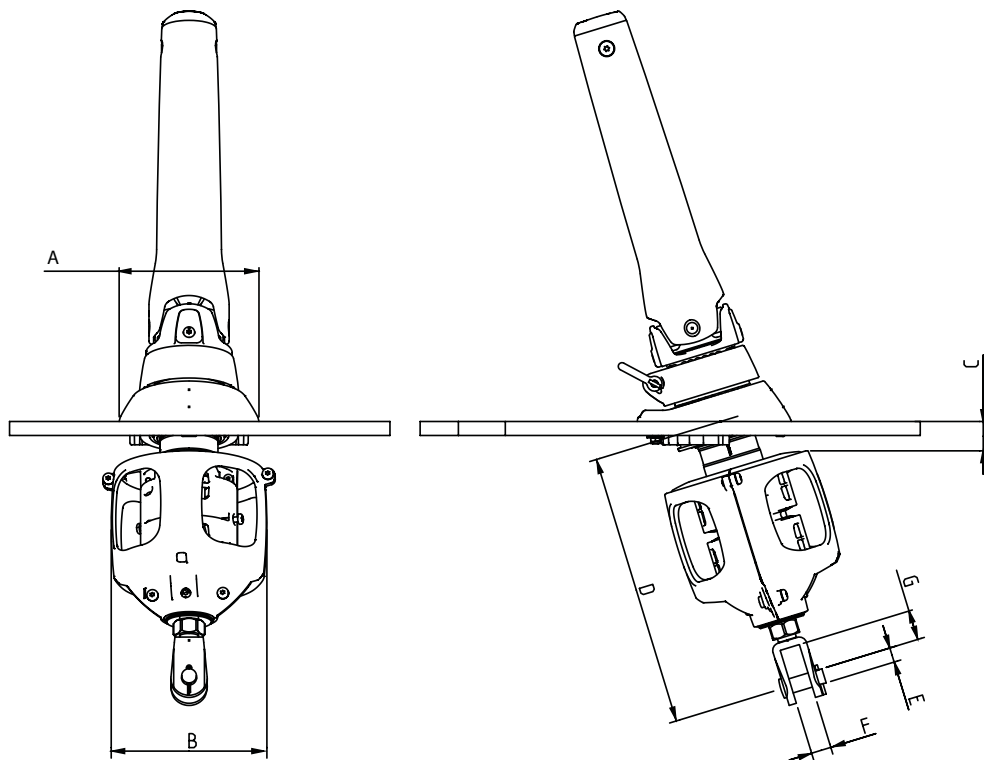
Fig. 2.2.e

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 adapter tube, will create the required articulation as per the guiding principle, item 3.1.

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 30 mm. If the deck is thicker than 30 mm, it should be possible to reduce this with a cavity. This will allow the clearance for the top forward drum edge. If the deck is of sandwich construction, ensure that water cannot enter the core material and cause structural damage.

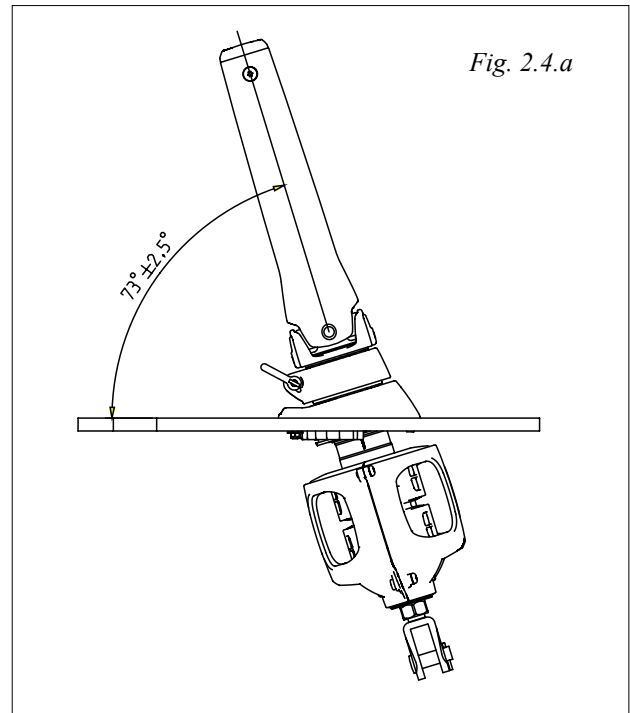
Furlex TD incorporates an adjustable fork terminal for fine adjustment of the under deck dimension "D". For larger gaps: use a custom made stainless steel bar or rod stay. Short wire pendants are not recommended as the forestay load may not be distributed evenly.



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

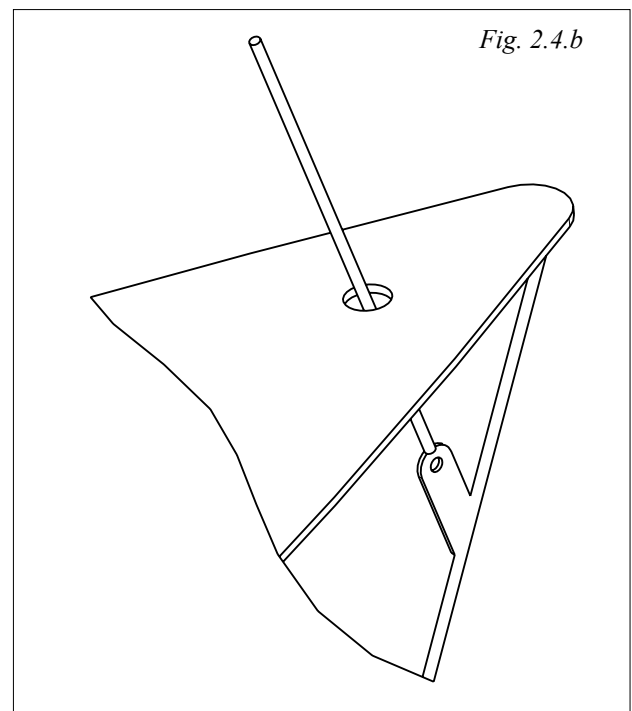
2.4 Location of the through-deck hole

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.



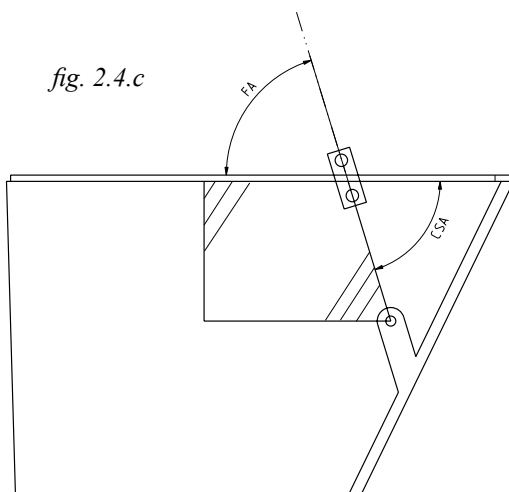
How to decide the intersection point of the forestay on the deck.

The by far best method is to stay the mast using a forestay which extends through a smaller hole in the deck (See fig. 3.5.b). Below two different methods to decide the intersection point are listed. For both methods, it is assumed that the deck is of uniform thickness.



2.4.1 Mast is not stepped

1. Establish the forestay angle. Use an accurate drawing, which shows details of the area of the deck where the Furlex will be attached (see fig. 2.4.c).
2. Transfer this angle to a cardboard jig.
3. Press the jig against the underside of the deck and move it longitudinally until the edge representing the forestay line intersects the hole in the forestay fitting in the anchor well. Mark the intersection point on the underside of the deck and drill a 6.5 mm hole through the deck.



2.4.2 Mast is stepped using a forestay attached to the final forestay chainplate

1. Make a jig which represents the forestay angle (FA) above deck (See fig. 2.4c)
2. Using this jig, mark the angle CSA between the forestay fitting in the anchor well and the forestay intersection point
3. If these angles are equal, the existing forestay fitting is correctly located. If the angles are not equal the forestay angle FA must be used also below deck to decide the intersection point. Press the jig against the underside of the deck and move it longitudinally until the edge representing the forestay line intersects the hole in the forestay fitting in the anchor well. Mark the intersection point in the fore and aft direction accurately on the underside of the deck.
9. Remove the forestay. The recommended procedure is to firstly slacken the backstay. Pull the mast-head forward using the genoa halyard. Secure the halyard using a "D"- shackle or tie to a strong deck fitting. For safety reasons do not use the halyard snap shackle. NOTE. If the forestay is to be used to decide the forestay length FLD (see page 13), the setting of any rigging screw must not be changed
10. Measure the distance CH (see page 13) of the chainplate and enter the measurement in the table at page 11.
11. Remove the forestay fitting from the deck.
12. Mark the intersection point on the underside of the deck by drawing a line along the longitudinal centreline of the boat and using earlier marking as per item 3.
13. Drill a 6.5 mm hole at the intersection point.

For further fitting work see item 3.1



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

2.5 Calculating the length of the forestay wire.

(The following is valid for a yacht with the mast stepped.)

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 Furllex is supplied with a fixed-length forestay, with a swaged eye on one end and a swaged stud in the other end, skip this part and go directly to 2.6. The same apply for rod stays.

If a stud-terminated stay is to be manufactured by a local rigger it is important to note that WL in this case equals the length of the finished stay, from eye to end of stud, see page 13. WL is calculated in table 1.

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. If the mast is not stepped, you can jump directly to step 4 stepped, you can jump directly to step 4.

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". The forestay setting should not be adjusted. If there is insufficient adjustment in the backstay, and the forestay rigging screw must be adjusted to allow removal, first mark its thread with adhesive tape.
2. Pull the masthead forward using the genoa halyard. Secure the halyard using a "D" shackle or tie it to a strong deck fitting. For safety reasons, do not use the halyard snap shackle. Secure the opposite end of the halyard properly.
3. Go up the mast. Connect a free halyard to the forestay. Then detach the forestay and lower it using the free halyard. Bring the stay down and place it on a flat surface. If the forestay rigging screw was slackened, adjust it back to the tape mark
4. Measure the forestay length (FL) with just enough tension to keep the forestay straight on the ground
Forestay length (FL) is the distance between the hole in the swaged top terminal and the hole in whatever lower part that was attached directly to the hole in the chain plate. Enter the measurement into "Table 2" below, in the row marked FL

Table 2. Calculation of forestay wire length		Your forestay	Example 404TD 12mm with rigging screw 50% extended
FL	Existing forestay length including rigging screw, no tension.		16070
CH	Add the distance between the hole in the chainplate and deck level, along the direction of the forestay.		40
FLD	$FLD=FL+CH$		16110
TDH	Fixed deduction deck level/forestay attachment: 200 mm		200
NFL	New forestay length $NFL=FLD-TDH$		$16110-200=15910$
T	Deduction for wire terminal		210
	Without rigging screw:	With rigging screw:	
	75mm	210mm	
WL	Cutting measurement.. $WL=NFL-T$ The new forestay wire is to be marked at this point (For forestays with swaged stud, WL equals the length of the finished stay from the upper eye terminal to end of stud. See fig 2.6.1 page 13.		$15910-210=15700$

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 560 mm luff extrusion connected to the drum unit and extending up to the sail feeder. Then, from the sail feeder and up there are a number of full length luff extrusions (L=2400 mm) and finally there is a 1700 mm top extrusion that has to be cut to length to suite the actual forestay length.



Note! If the calculation gives a top extrusion length (D) that is shorter than 700 mm, the calculation must be reworked by exchanging one of the 2400 mm extrusions with the uncut 1700 mm top extrusion. By doing so the top extrusion will be cut from a 2400 mm length and its length will then exceed 700 mm. If the calculation gives a top extrusion length (D) that exceeds 1700 mm, the top extrusion must be cut from one of the 2400 mm extrusions. In this case the 1700 mm extrusion will not be used.

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 fixed length forestays (incl. rod stays), verify WL by measuring the stay length from centre of eye to end of stud (wire) or end of rod head.

Table 2. Calculation of top luff extrusion length and top distance tube length		Your forestay	Example (404TD 12mm) With rigging screw 50% extended	
WL	Length of the new forestay wire (as per Table 2).		15700	
A+B	Wire		930	
	Without rigging screw:			With rigging screw 50% extended:
	Ø12: 1040mm Ø14: 1085mm			Ø12: 930mm Ø14: 980mm
	Rod			
Without rigging screw:	With rigging screw 50% extended:			
	-22: 1060mm -30: 1060mm -40: 1080mm	-22: 965mm -30: 965mm -40: 970mm		
N	Number of full length extrusions to be used: $N = (WL - (A+B)) / 2400$		$(15700 - 930) / 2400 = 6.15$ → N=6	
C	Total length of the number of full length extrusions (2400 mm) to be used: $C = N \times 2400$		$6 \times 2400 = 14400$	
D*	Length of top luff extrusion: $D = WL - (A+B) - C$		$15700 - 930 - 14400 = 370$	
X	Fixed deduction: 300mm		300	
E*	Length of the top distance tube: $E = D - X$		$370 - 300 = 70$	

*If, as in our example, D becomes less than 700 mm it is necessary to recalculate as below and cut one of the **full length luff extrusions** according to D_{new} and one of the full length distance tubes according to E_{new} . Note that the original top luff extrusion and the original top distance tube will now be used as intermediate extrusions.

Tabell 2B: Recalculation if $D < 400$ mm		Your forestay	Example
N_{new}	Reduce the number of full length extrusions by one. $N_{new} = N - 1$		$N = 5$
C_{new}	$C_{new} = N_{ny} \times 2400 + 1700$		$5 \times 2400 + 1700 = 13700$
D_{new}	$D_{new} = D + 700$		$370 + 700 = 1070$
E_{new}	$E_{new} = E + 700$		$70 + 700 = 770$

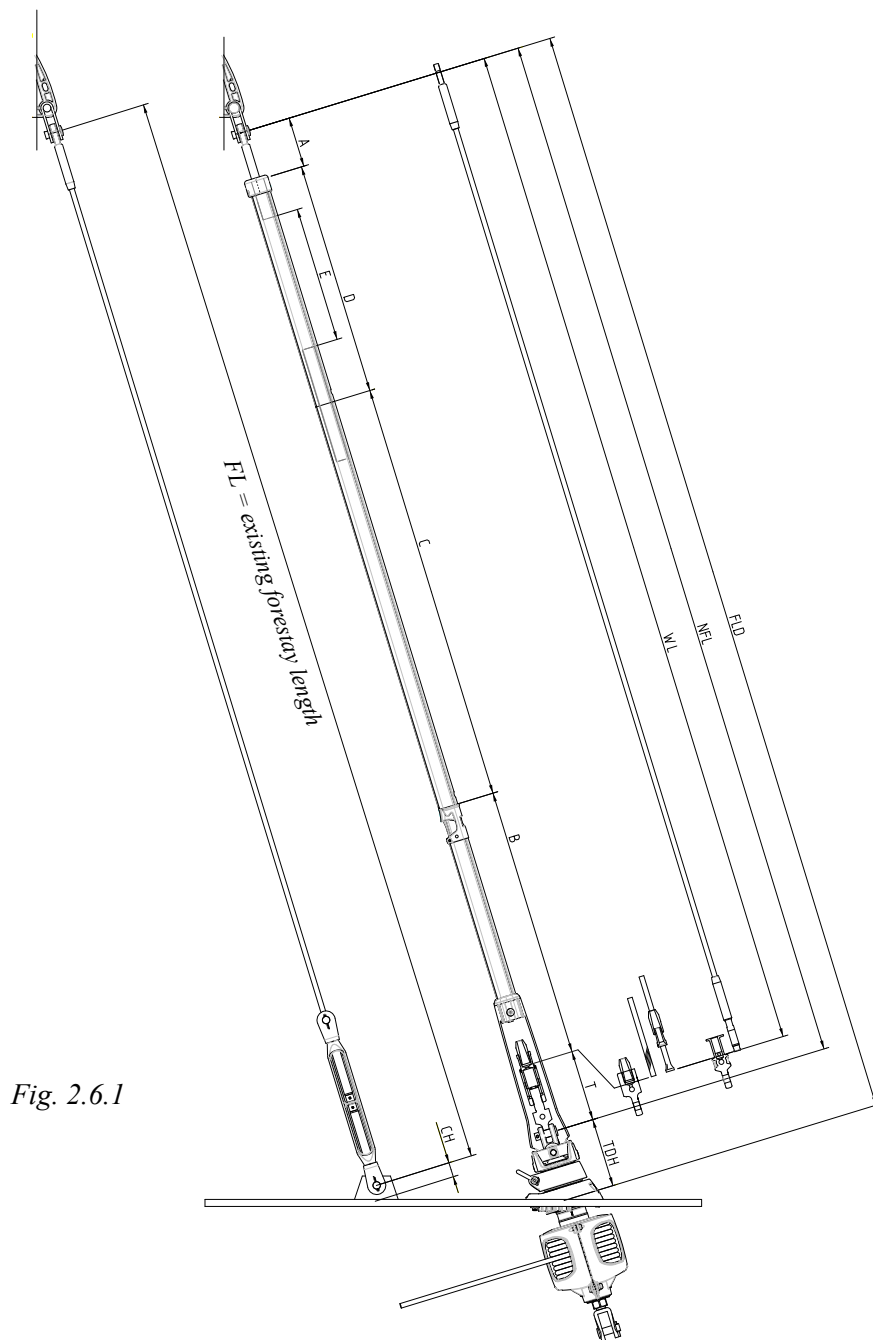


Fig. 2.6.1

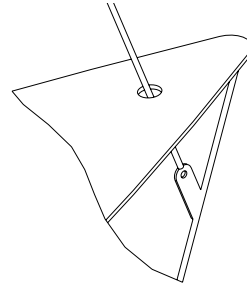
3 Assembly of the Furlex system

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. If using this procedure follow the instruction starting at item 1. If making the hole for the through deck fitting is the first step, start at item 5.

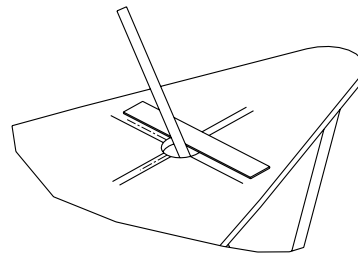
1. Using the 6.5 mm hole at the intersection point (see 3.5.3) as its centre, cut a 50 mm hole in the deck

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.



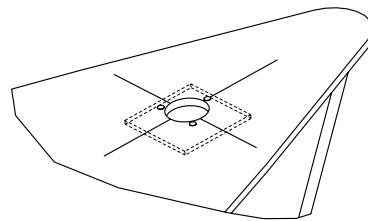
NOTE! Always use a strong "D"-shackle or tie the halyard!

3. Mark the position of the halyard on the edge of the 50 mm hole longitudinally as well as laterally.

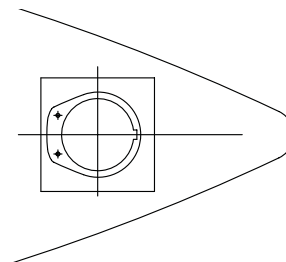


4. Take the tension off the genoa halyard, using another halyard. Disconnect the first genoa halyard.

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.

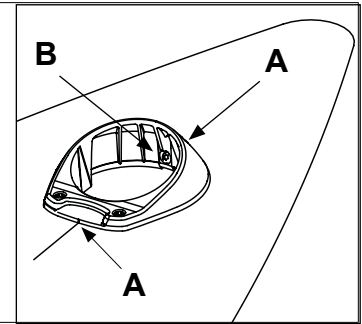


6. Put the enclosed hole jig on top of the hole: Check that the jig reference lines coincide with the deck markings. Secure the jig with adhesive tape.



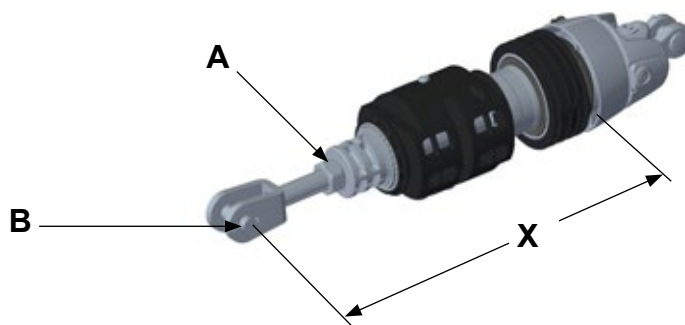
7. Cut the large hole using a hole saw or jigsaw. Do not make the hole too big. File if required. Also drill the holes for the fitting screws (see page 7).

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 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.

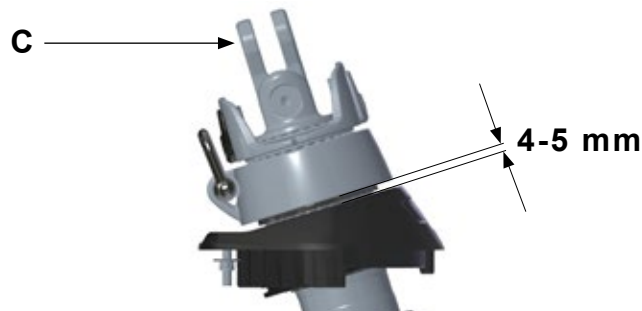


3.2 Fitting of the lower bearing assembly to the boat.

1. Measure the distance between the upper edge of the through deck collar and down to the hole of the chain plate in the bow. Unscrew the fork terminal so that measurement (X) corresponds to this measurement + ~10mm. Unscrew and back off the nut (A) so that there is ~15mm between the nut and the face of the shaft.



2. Remove the clevis pin (B) and lower the bearing assembly through the deck collar. Attach the fork to the chain plate. Fit the clevis pin but do not secure it with the split pin yet. Adjust the length of the bearing assembly by turning the toggle (C). Adjust until the lower edge of the tack ring is about 4-5 mm from the throughdeck collar. Lift the tack shackle upwards and rotate the tack ring. Check that the tack ring does not touch the through deck collar at any point. The tack ring will tilt a little when under load which is normal.



3. Remove the clevis pin and lift up the lower bearing assembly. For electric systems this concludes the adjustment, do not tighten the nut (A). For manual systems continue as follows: Unscrew the fork terminal at least 5 turns, Note! count the turns. Apply a bead of locking adhesive to the thread (D) and screw the terminal back to its original position (counting the turns). Tighten the locking nut firmly while clamping the toggle in a vise if possible, or locking it with a screw driver or similar (E). This is a permanent setting of the length of the lower bearing assembly, ensure the nut is tight.

Lower the bearing assembly through the deck fitting again. Fit the clevis pin and the split pin connecting the fork to the chain plate. Lift the tack shackle upwards and rotate the tack ring ensuring the gap to the through deck collar is still satisfactory.



Never adjust the swivel length with the forestay attached.



3.3 Fitting the furling line

Feed the furling line through the line guide cover half with the screws. Feed the rope through the two "channels" in the drum. Fit the first screw through the rope approximately 25 mm from the rope end. Then tighten up the rope and push it into the jaw-slot before fitting the second screw. Do not overtighten the screws! If the sail's ultraviolet (UV) protection is fitted on the starboard side, the furling line shall exit on the port side of the line drum and if the UV protection is fitted on the port side the line shall exit on the starboard side.



3.4 Fitting the brims and the line cover

1. Fit the four brims.



2. Fit the line-cover halves. Tighten the upper screws (B). Do not over-tighten.

Tighten the lower screws (A) moderately. Fine adjustment of the cover will be made after feeding the line on to the drum.



3. Feed approximately 30 turns of furling line on to the drum by turning the toggle clockwise if the line shall exit on portside of the drum, anti-clockwise if it shall exit to starboard. Fine tuning of the drum is described in chapter 5.3.

4 Assembly

Prior to the assembly of the luff extrusion, the top extrusion and the top distance tube shall be cut according to table 3.

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.



Note that the luff extrusions are fitted onto the forestay, whereas on previous models the wire was fitted as a last step. Also note that the luff is assembled from top down as opposed to older Furlex systems. (Systems mounted on rod stay are assembled the opposite way. Please refer to separate instruction 597-184-E).

1. Stretch out the wire on a flat, clean surface. On stays with swaged lower terminal, be careful not to damage the terminal thread. The thread can be protected with tape or similar.

2. Start by feeding the top luff extrusion and the top distance tube onto the forestay wire. The distance tubes are welded shut but are easily opened by hand. Note the correct orientation of the distance tube - hinge to be sideways.



3. Add a short joining sleeve (300mm) and use it to push the distance tube up into the top luff extrusion. The distance tube should be pushed in approximately half the length of a joining sleeve.



4. On Sta-lok terminated systems, the halyard swivel and the top guard can be fitted at this point, see below. On stud terminated systems, the top guard must be fitted after the sail feeder has been mounted.

5. Add another luff extrusion and another distance tube. Make sure the distance tube is oriented correctly. Also add another short joining sleeve.

6. Fit a short connecting plate into the second luff extrusion as shown. Push the first joining sleeve down into the second luff extrusion to lock the connector.



7. Connect the two luff extrusions.



8. Push the first joining sleeve back up into the first luff extrusion to lock the join. Use the second joining sleeve to push on the second distance tube. The second distance tube should be pushed in approximately half the length of a joining sleeve. This will ensure correct location of the first joining sleeve.



9. Repeat for the remaining 2400 mm luff extrusions. Use short joining sleeves only.

10. Fit the long joining sleeve (785mm) onto the wire with four-hole end oriented downwards. Then fit the short (560mm) luff extrusion, four-hole end oriented as shown. Fit the long connecting plate in the 560mm extrusion and push the long joining sleeve upwards to hold it in position. Connect to the upper extrusion and push up the joining sleeve. Make sure the four holes in the lower end of extrusion are aligned with the holes in the joining sleeve.

Fig. 4.1.f



11. Fit the two grub screws in the connecting plate with locking adhesive. This will lock the distance tube in position. Make sure that the holes in the lower part of extrusion/joining sleeve are aligned and tighten the screws firmly.

12. Snap on the sail feeder connector and put the sail feeder in position. Secure with the screw and tighten moderately.

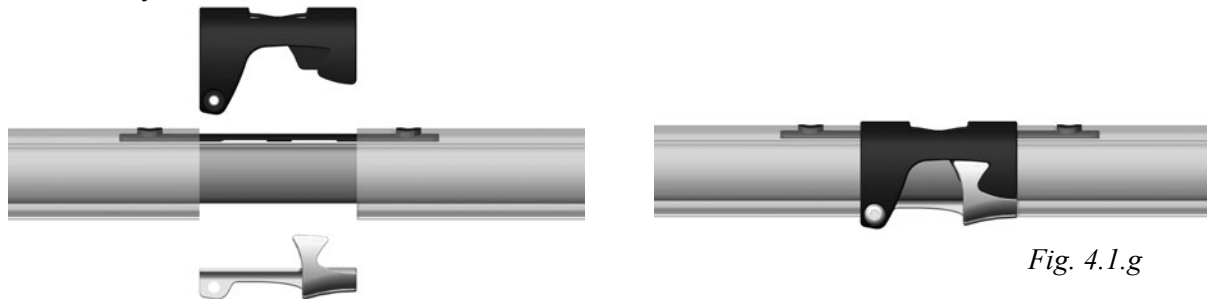


Fig. 4.1.g

13. Fit the halyard swivel from the top and slide it down until it stops on top of the sail feeder. Then fit the top guard and push it into the top luff extrusion until it stops. Secure it with the four pre-fitted screws. Tighten the screws until they bottom, but do not over-tighten.



Fig. 4.1.h

14. Fit the bearing plug halves and push them up into the long joining sleeve.



Fig. 4.1.i

This completes the luff assembly. Next step is to fit the lower eye terminal to the stay. There are two types of eye terminals; Stud/Eye terminal and Sta-lok eye terminal (with or without rigging screw).



NOTE! Compact-wire (Dyform®) requires a Sta-lok wedge made for this type of wire. Seldén attaches a Compact wedge to the Compact wire pack.

- Loosen the screws of the torque tube somewhat 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 67 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.



Fig. 4.1.j

4.2 Fitting the Sta-lok eye terminal (with or without rigging screw).

Note! For systems with swaged stud terminal, skip this part and go directly to 4.3.

- Before cutting the wire, measure the wire from the centre of the hole in the top swaged eye terminal. Mark the measurement WL carefully on the wire using a marker pen. (The WL measurement was calculated in "Table 2", (Chapter 2.5).

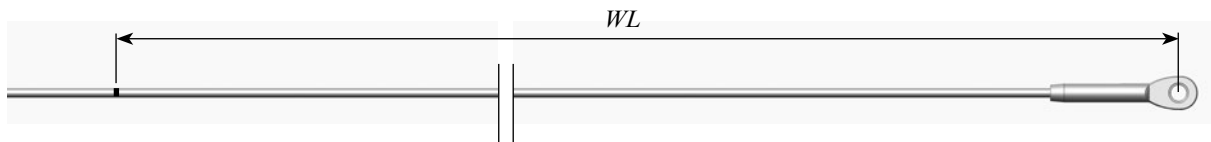


Fig. 4.2.a

- Put adhesive tape around the wire on both sides of the cutting mark to assist cutting. Carefully cut the wire using a hacksaw.

- Unscrew the socket, wedge and former from the terminal part (or Furlex rigging screw). Note! Remove locking tube from rigging screw and slide it over the lower luff extrusion. Secure it temporarily with a piece of tape.

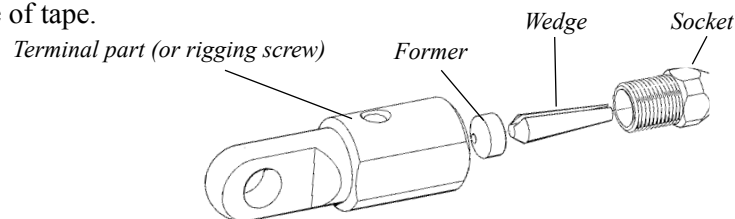


Fig. 4.2.b

- Thread the socket onto the wire.

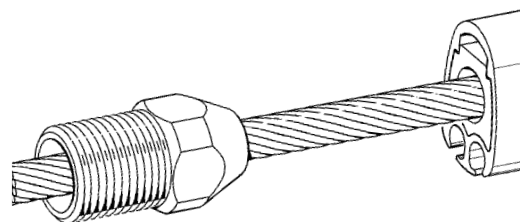


Fig. 4.2.c

- Slide the wedge over the core (7 strands) of the wire. The core of the wire should protrude approx. 2 mm from the wedge.

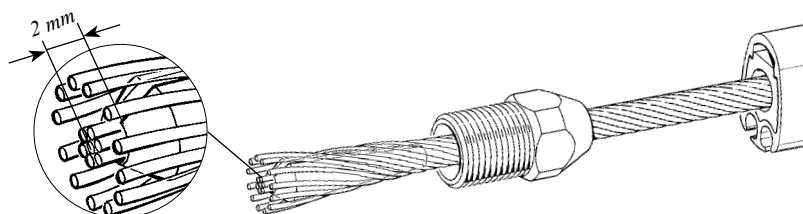
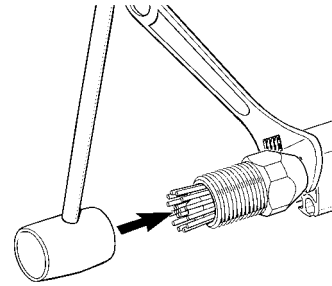


Fig. 4.2.d

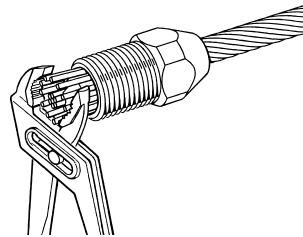
6. Space the outer strands of the wire evenly around the wedge and bring down the socket so that the strands are held in place. Hold an adjustable spanner between the 700 mm extrusion and the socket.

Tapping the core of the wire, locate it firmly in the socket. Check that the core of the wire protrudes approx. 2 mm from the wedge. See fig. 3.2.d



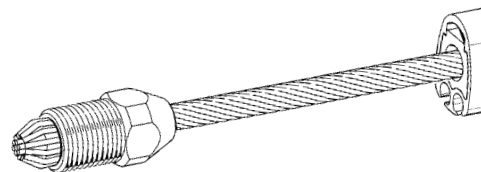
NOTE! Check that no strands slip into the slot of the wedge

7. Bend the outer strands inwards a little using a pair of pliers, or tap the strands with a small hammer. In the latter case, rest the socket's thread on a soft surface (wood or similar) to prevent damage.



8. Insert the former into the threaded hole of the terminal part. Lubricate the socket's thread with a long bead of locking adhesive. Screw the terminal part onto the socket and tighten carefully, forcing the wire further into the terminal.

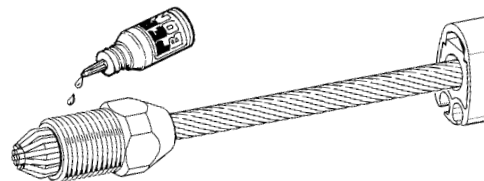
9. Unscrew and check that the outer strands are evenly distributed around the wedge. If some strands are crossed, correct their positions.



NOTE! Check that no strand has slipped into the slot of the wedge!

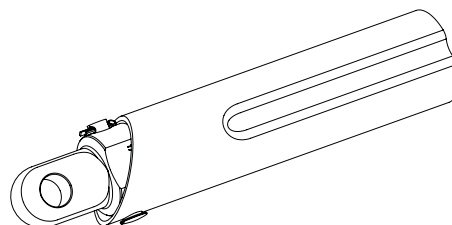
10. If assembly is unsuccessful and needs to be repeated, refer to the relevant sections of Chapter 7.4, "Dismantling the Furlex".

11. Apply another 2 or 3 drops of the locking adhesive to the thread and screw the terminal together, tightening it firmly. The terminal is now permanently locked.



12. Fit the stainless locking tube back onto the rigging screw, if applicable.

Check that the length of the luff section corresponds to the NFL measurement, table 2 page 11. If it does, the luff section is now ready to be rigged.



4.3 Fitting eye terminal to swaged stud (Stud/Eye)

1. Screw the eye terminal part onto the stud terminal until the holes in stud and eye align.



2. Fit the spirol spring pin using a hammer to permanently lock the terminal.

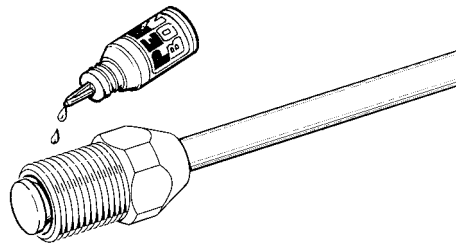


3. Check that the length of the luff section corresponds to the NFL measurement, table 2 page 11. If it does, the luff section is now ready to be rigged.

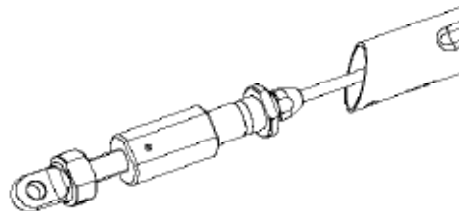
4.4 Fitting lower eye terminal to rod stay

1. Screw out the socket on the lower terminal part or rigging screw and remove the wedge and the former. These three parts are not to be used in rod application.

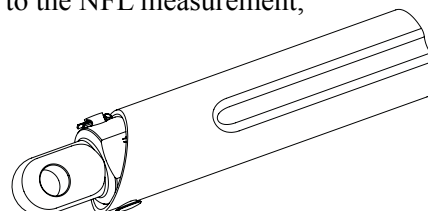
2. Add 2-3 drops of locking adhesive on the thread and screw the terminal together. Check that the rod head sits correctly in the seat and that the seat sits correctly in the socket.



3. Tighten firmly for permanent locking.



4. Slide the stainless locking tube down over the rigging screw and secure it with the clevis pin. Check that the length of the luff section corresponds to the NFL measurement, table 2 page 11. If it does, the luff section is now ready to be rigged.



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.

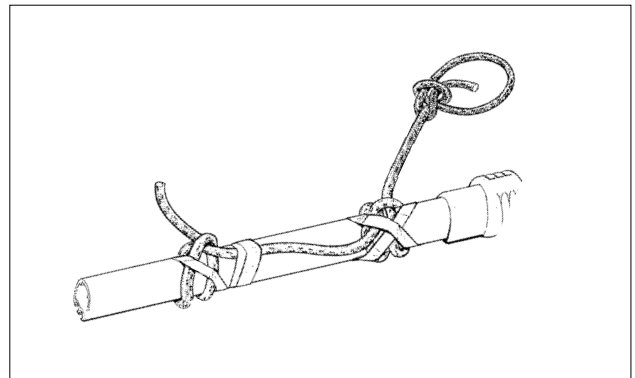


Fig. 5.1.a

6. Attach the stay to the headbox and then to lower bearing assembly. The split pin for the clevis pin should be opened by $\sim 20^\circ$. It will then retain its shape on dismantling, enabling it to be used again.

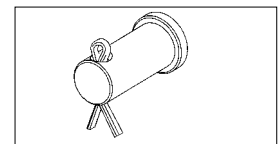


Fig. 5.1.b



Fig. 5.1.c

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

- Slide the torque tube down and fit it to the lower bearing assembly. Align the marking on the torque tube with corresponding mark on the bearing assembly, fig 5.1.d. Apply locking adhesive to the screws and fit the bushings attaching the torque tube to the bearing assembly. Tighten hard.

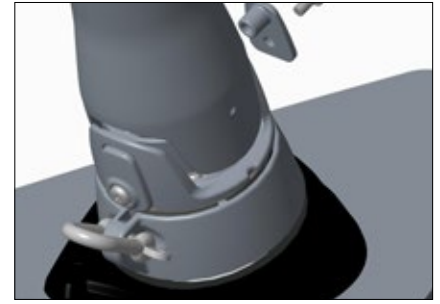


Fig. 5.1.d

- Apply locking adhesive to one of the upper screws. Lift up the luff section until the marking align with the upper edge of the adapter (fig. 4.1.j page 19). The holes in the torque will now align with corresponding holes in the luff section. Tighten the screw lightly. Apply locking adhesive to the other screws. Tighten all screws firmly.
Note! if a screw is obstructed-do not force the screw into the hole. Loosen and investigate before re-fitting the screw.

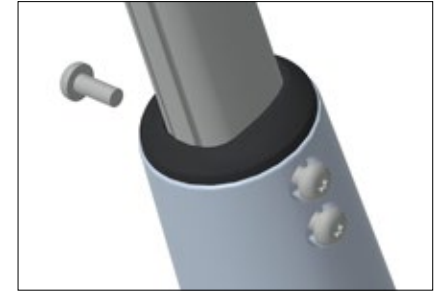


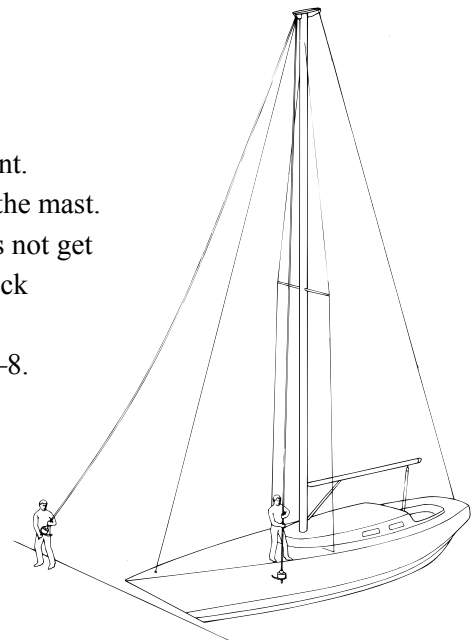
Fig. 5.1.e

- 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.

5.2 Stepping the mast with Furlex fitted

- Lay the mast with the front uppermost.
- Connect the top end of the Furlex system to the forestay attachment.
- Lift the mast with the Furlex system lying on the leading edge of the mast.
- Have one person watching the Furlex system to ensure that it does not get caught when lifting the mast. Keep the end of the stay outside the deck area in order to avoid damage.
- Attach the stay to the boat as described in Chapter 16.1, section 6–8.



5.3 3 Routing the furling line

The illustration below shows of principal arrangement of furling line routing inside a anchor well to achieve maximum furling performance. The turning block inside the anchor well and the sheave box required to lead the line through the deck are not included in the Furlex package as these parts must be individually adopted for each boat.

- The furling line must enter the line drum perpendicular to the forestay. There must be at least 300 mm from the drum to the first tuning point of the line to make the line furl evenly on the drum
- Blocks with large sheaves on roller bearings are recommended to minimize friction losses.
- Strength requirement. To cope with the loads for which the Furlex system is designed, the turning block below deck and through deck passage sheave house must have a safe working load of not less than. 404TD ø12: 12kN
404TD ø14: 18kN.
- Push the line cover upwards and adjust it so that the furling line enters the drum without chafing the cover. Tighten the screws (A) fully to lock cover from rotating. Do not over-tighten. (See Chapter 3.4).

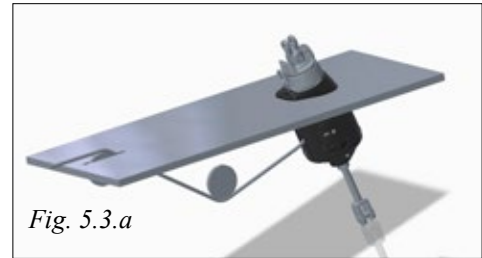


Fig. 5.3.a



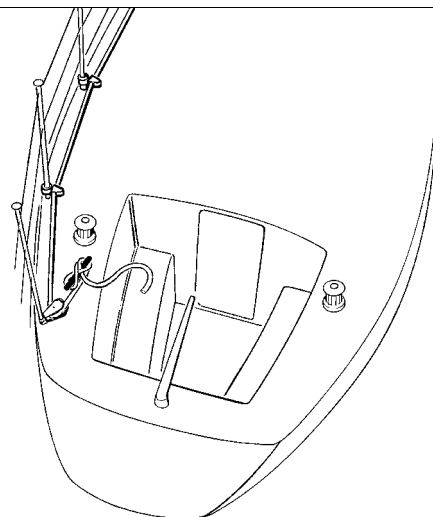
Fig. 5.3.b

The line should be led aft to the cockpit via the lead blocks included in the Furlex package.

The lead blocks are mounted on stanchions and the pulpit. See fig. 5.4.a.

The final turning block by the cockpit is not included in the Furlex kit. This needs to be matched individually to each boat depending on the attachment points, the line arrangement chosen and possibly also the type of other blocks on the boat. We recommend a swivel block which is free to self align. The maximum working load of the block should not be less than:

404TD ø12: 17kN
404TD ø14: 25kN



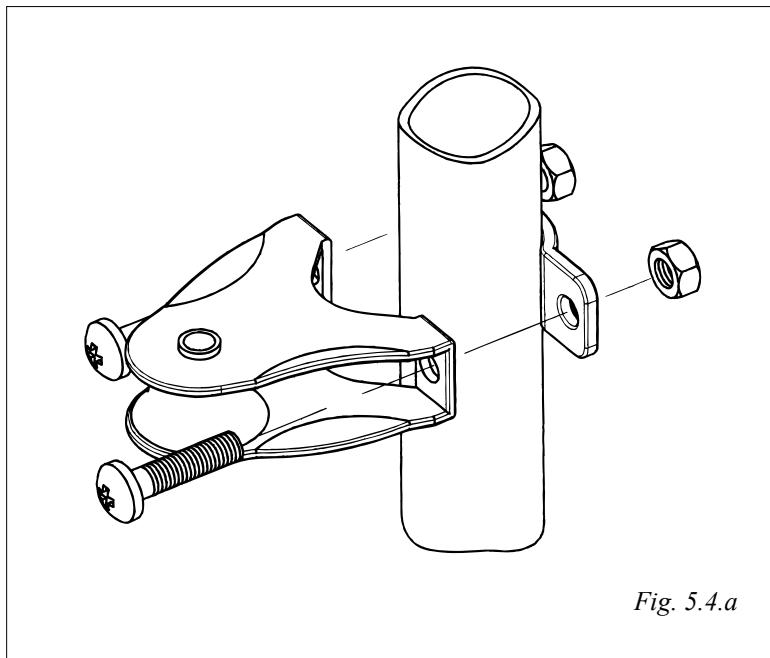
It must be possible to belay the furling line securely. A block with a Cam-cleat works well when securing a reef, but is unreliable if the boat is left unattended. The line should then be secured on a normal cleat for safety reasons. We recommend a single turning block in combination with a cleat. If the furling line is accidentally released, the sail may unfurl and flap out of control. This will cause damages beyond repair.

5.4 Fitting the stanchion blocks

The Furlex kit contains 6 fixed stanchion blocks for fitting on a Ø25 mm (63/64") stanchion. The fixed blocks can also be fitted on Ø30 mm (1 3/16") stanchions, but the standard screws must be replaced by M6x25 mm screws.

Assembly:

The blocks are fitted on the stanchions as shown in fig. 5.4.a. The screw heads should be turned in towards the boat.



6 The sail

6.1 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.

6.2 Adjusting the forestay length

The Furlex system may be supplied with or without an integrated rigging screw.

With an integral rigging screw, the forestay length can be easily adjusted. Tensioning the forestay however, is done by tensioning the cap shrouds and/or the backstay, and not by tensioning the forestay rigging screw.

The sail must be removed or unfurled and halyard slackened before the forestay length can be adjusted. Then follow the steps below:

1. Loosen the two upper screws. (1). Support the luff section before the lower screws are loosened to prevent the luff section from dropping onto the rigging screw. 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.
 4. Remove the clevis pin (3) and split pin and slide the locking tube up along the luff foil. Secure with tape.
 5. Adjust the rigging screw by holding the terminal part and by turning the bronze rigging screw body until the desired forestay length is achieved. **Do not turn the wire terminal (upper wrench)!**
- Reassemble in reverse order. See page 23.

Note that the flat faces of the rigging screw must align before locking tube is lowered over the rigging screw.



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

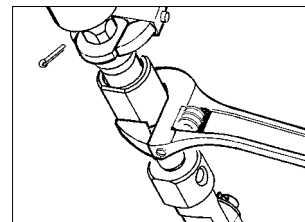


Fig. 6.2.a

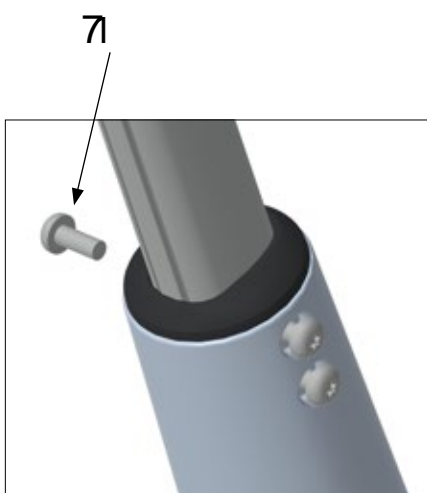


Fig. 6.2.b

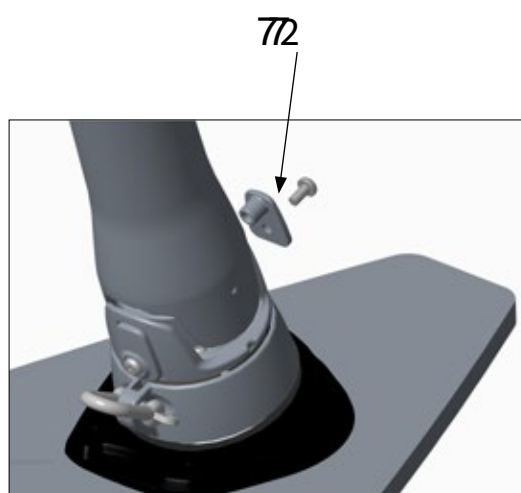


Fig. 6.2.c

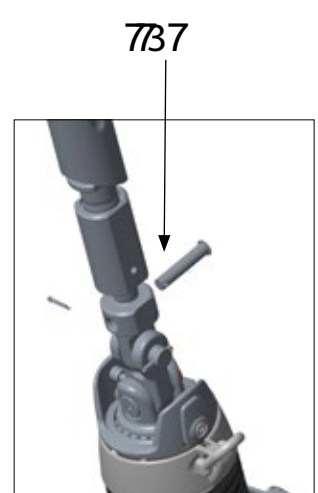


Fig. 6.2.d



The rigging screw has a stop at the maximum position to which it can be unscrewed. Do not overload this stop by trying to unscrew the rigging screw further.

6.3 Checklist

Go through the checklist below and make sure that all the important steps have been carried out. This will ensure that the Furler 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 routing of the furling line is optimized below deck to reduce friction and wear.
- Check that the luff extrusion rotates one turn before the tack ring starts to rotate.
- Check that the drum cover does not come in contact with the brims of the line drum when furling.
- Check that the forestay articulates freely at the upper and lower attachments.
- Check that all split pins are secured properly by a 20° separation

6.4 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 if the furling line exits on the port side of the drum, or clockwise if it exits on the starboard side. Doing this right is important as it ensures that the free-turn function works properly and the sail shape is kept flat when reefed.
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 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 correct groove through the sail feeder. If the furling line exits on the port side of the line drum, the sail should be hoisted in the starboard groove and vice versa. Hoisting the sail in the "right" groove reduces initial resistance when furling the sail.
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 by pulling on the furling line. 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. Check the number of turns of the furling line remaining on the line drum when the sail is fully furled. There should be at least 3–5 turns left. To adjust the number of turns, furl the sail and detach the sheets. Then turn the luff extrusion by hand until 3–5 turns are left on the drum and re-attach the sheets. When furling in strong winds, the sail will roll more tightly, requiring more turns left on the line drum. Therefore make sure to always have sufficient turns left on the drum.

14. 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.
15. 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 be adjusted without putting too much strain on the halyard.

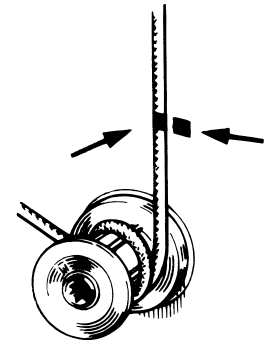


Fig. 6.4.a

6.5 Unfurling the sail

1. Release the furling line and the windward genoa sheet. Allow these to run freely while the sail is being unfurled.
2. For a controlled unfurling manoeuvre, it is best to place a turn of the furling line around a winch or a half-turn around a cleat. This induces some drag, which is particularly useful in stronger winds.
3. Place a turn of the leeward genoa sheet around a winch and unfurl the sail by pulling in the sheet. Once the wind catches the sail it will unfurl more easily. The best point of sail for unfurling is between close reach and beam reach, as the wind will then fill the sail quickly.
4. Place a few more turns of the sheet around the winch and sheet the sail in to the desired trim.

6.6 Furling the sail

1. Release the windward sheet and ensure that it can run freely.
2. Furl the sail by pulling the furling line. Release the leeward sheet but keep a little tension on it, for example by placing a turn around a winch. It is important to furl the sail tightly and evenly, as a sail which is furled too loosely can blow out a little in strong winds. If the boat is left unattended, the sail may flap until it tears. A very loosely furled sail may also cause unnecessary wear, as the sail roll will swing back and forth in the wind.
3. Belay the furling line carefully. If the boat is left unattended, the furling line should be belayed on a cleat for safety.



If the furling line is accidentally released, the sail may unfurl and flap without control in strong winds. If left for any length of time, it will be damaged beyond repair!

If the boat is left for a long period of time, it is a good idea to take down the sail and stow it below deck. It is then protected from UV radiation and dirt. Alternatively, a sail cover ("furling sock") can be used to protect the sail.

6.7 Reefing

Furlex is provided with a tack attachment which rotates in relation to the luff extrusion. When furling and simultaneously applying a limited countertension in the sheet, the luff extrusion makes approximately one revolution before the tack fitting starts rotating as well. The part of the sail with the biggest draft will in this way be flattened. This makes the sail flat as the furling is continued. This function is referred to as the "Free turn".

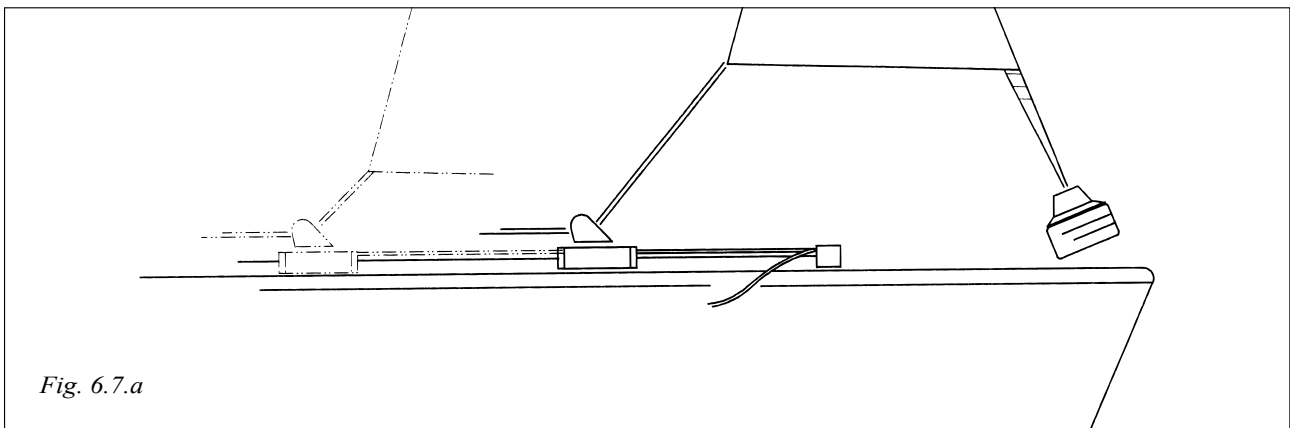
The best point of sail for reefing is on a close reach to beam reach. The wind will then partly fill the sail and help to improve its shape when reefed.

If using a winch for the furling line, first check that there is no obstruction which may interrupt the furling operation and possibly cause damage.

How to reef:

1. Slacken off the leeward sheet until the sail just begins to flap along the luff.
2. Pull in the furling line so that the sail is furled and flattened out. Gradually slacken the sheet when furling.
3. Belay the furling line.

When the sail is reefed, it may be necessary to adjust the sheeting position.



6.8 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. To remove the sailfeeder see chapter 7.4.1. Lower the halyard swivel to the torque tube and refit the sail feeder.

The twin grooves now makes swift sail changes possible.

7 Maintenance

7.1 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%.

7.2 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:

- Lubricate all four ball bearings in the lower bearing assembly with water resistant grease.
 - ① Main upper bearing. ② Lower main bearing.
 - ③ Tack ring bearings.
- Bring the halyard swivel down to the sail feeder and lubricate both ball bearings ④ with water resistant grease.

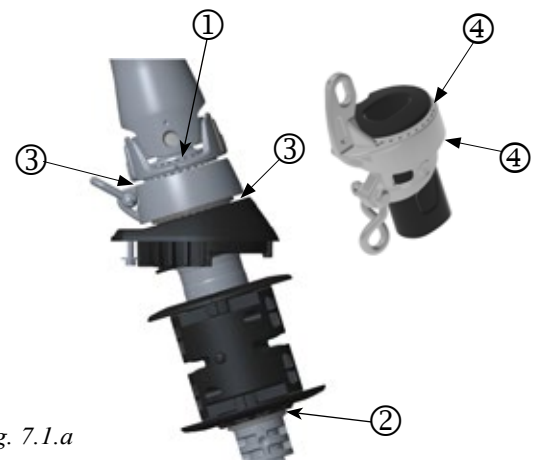


Fig. 7.1.a

7.3 Storage

The Furlex-system 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.

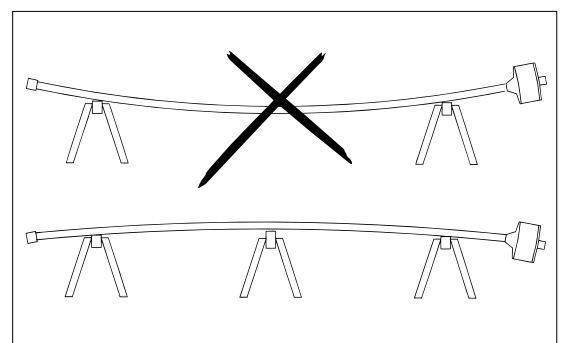





Fig. 7.1.b

7.4 Dismantling




Never take the halyard swivel or the drum unit apart as you will find it difficult to re-assemble them correctly. (The ball-bearings are loose and difficult to refit!). Contact your Furlex dealer if service is required.

7.4.1 Sail feeder

<p>1</p>  <p><i>Fig. 7.4.1.a</i></p>	<p>2</p>  <p><i>Fig. 7.4.1.b</i></p>	<p>3</p>  <p><i>Fig. 7.4.1.c</i></p>
<p>Remove the screw.</p>	<p>Bend open the connector slightly and pull out the sail feeder - lower end first.</p>	<p>Bend the connector open and remove it.</p>

7.4.2 Line cover

1. Loosen the lower screws (A) and collect the screws and the insulation washers.
2. Loosen the upper screws (B). Do it with care and the screws and plastic locking washers will remain on the line cover.
3. Remove the cover

<p>1.</p>  <p><i>Fig. 7.4.2.a</i></p>	<p>2.</p>  <p><i>Fig. 7.4.2.b</i></p>	<p>3.</p>  <p><i>Fig. 7.4.2.c</i></p>
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7.4.3 Furling line

Loosen the two screws and pull out the line.

Fig. 7.4.3.a



7.4.4 Brims

Loosen the two screws little by little and pull the brims apart gradually. This way the screws and plastic locking washers will remain on the brims.



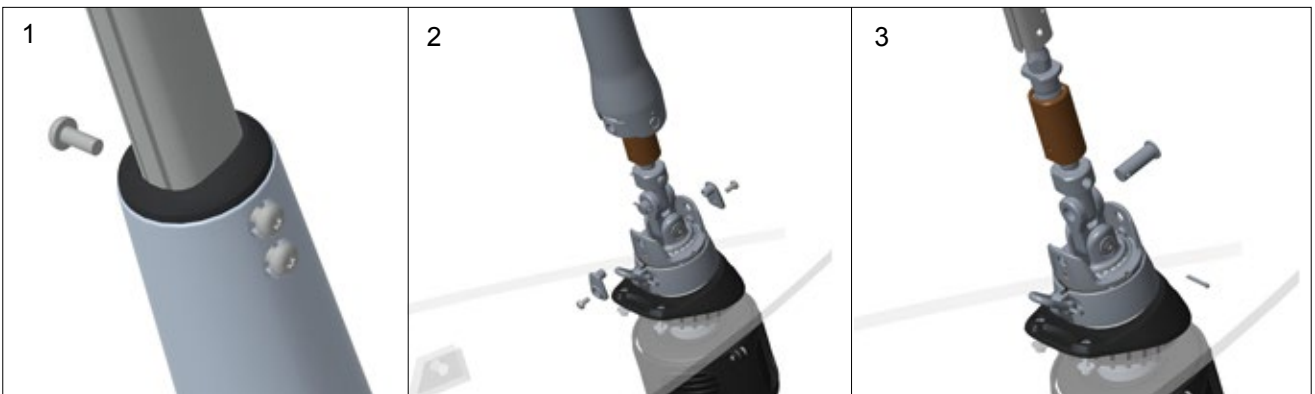
7.4.5 Disconnecting the forestay

1. Loosen the upper screws. (1). Support the luff section before the lower screws 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 loosened.
2. With the luff section standing on the top of the rigging screw, remove the bushing (2). Slide the torque tube up along the luff section and secure it with tape.



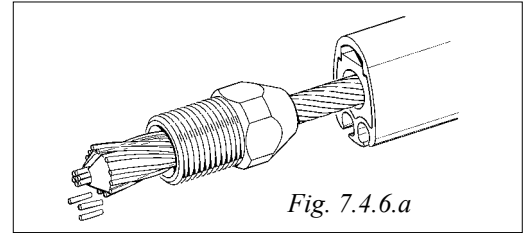
Before disconnecting the forestay from the lower bearing assembly, the rig must first be secured by a halyard as a substitute for the forestay. NOTE! Always use a strong "D"-shackle or tie the halyard!

3. Remove clevis pin and split pin.



7.4.6 Sta-lok-terminal

1. To remove the Sta-lok eye, heat up the threads to release the locking adhesive.
2. Remove the terminal part (or rigging screw) from the socket.
3. Remove the former from the bottom of the terminal part.
4. Fit the terminal part, then loosen it 2 turns.
5. Tap the end of the terminal part (or rigging screw) so that the socket is pushed up along the wire. If possible, fix the wire in a vice or use a large pipe wrench or similar tool. There should be at least 10 mm of free wire between the top of the socket and the jaws of the vice. Protect the wire against damage by the vice or wrench jaws.
6. Unscrew the terminal part again.
7. Cut all wire strands protruding outside the wedge at the bend by approx. 5 mm.
8. Prise the wedge apart slightly by inserting a small screwdriver into the slot and turning. Tap on the screwdriver so that the wedge slides off the wire.
9. Twist the wire strands into the correct positions around the core (counter-clockwise when seen from underneath) and remove the socket.
10. The wire can now be pulled out of the luff extrusion.

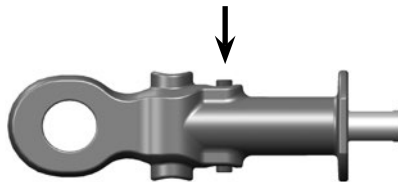


Prior to reassembly of the Sta-lok wire terminal:

1. Replace the used wedge with a new.
2. Cut the wire core flush with the outer strands. Remove any burrs with a file.

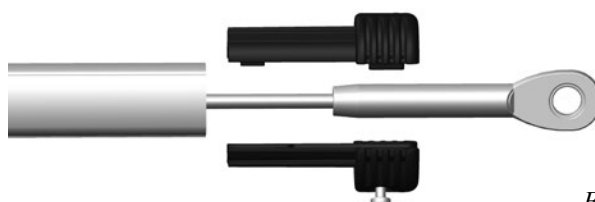
7.4.7 Stud/eye terminal

1. Remove the screws.
2. Unscrew the eye terminal from the stud terminal.



7.4.8 Top guard

1. Remove the screws.
2. Pull out the top guard halves.



7.4.9 Halyard swivel

The halyard swivel is removed from the system by sliding it downwards in conjunction with dismantling the sail feeder and removing the drum unit. Alternatively, the halyard swivel can be slid up after the top guard has been removed.

In both cases the stay needs to be detached from the boat.



Fig. 7.4.9.a



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.

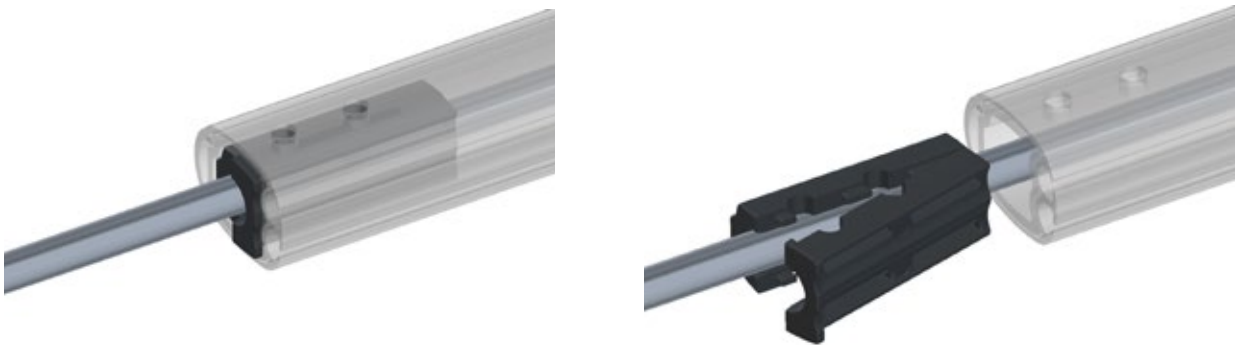
Always use a strong "D"-shackle or tie the halyard!

7.4.10 Luff extrusion

The wire terminal must be removed before the luff section can be dismantled (See chapter 7.4.6).

1. Place the Furlex on a flat surface and make sure that the luff extrusion is kept straight..
2. Remove the sail feeder and the top guard.
3. Push out the bearing halves with a screw driver or a similar tool.
Be careful not damaging the holes in the luff section.

Fig. 7.4.10.a



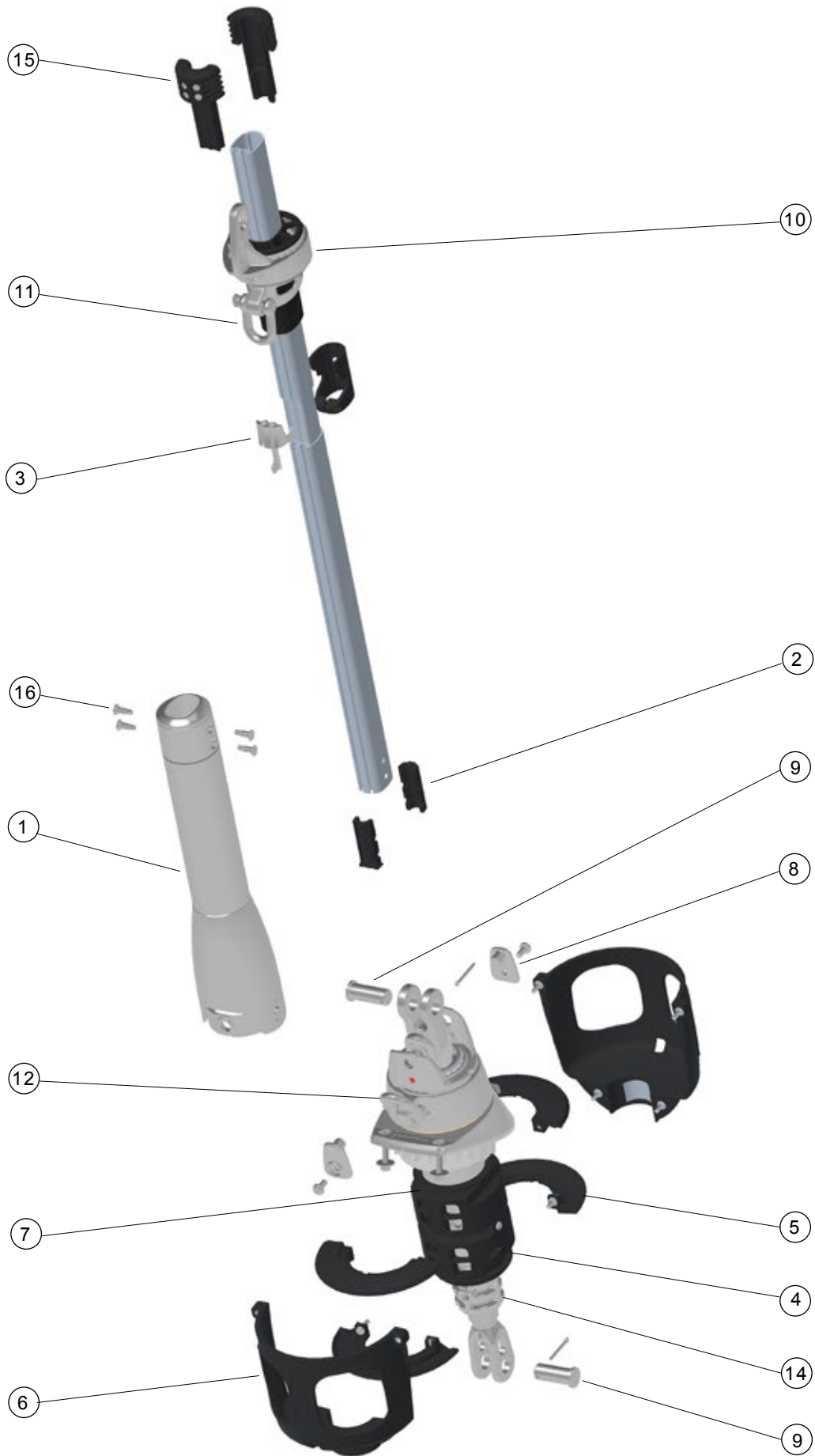
4. Loosen the grub screws in the long connecting plate (at sail feeder). Slide the lower joining sleeve down to disengage the two lower extrusions from each other.
5. Use the removed joining sleeve to push up all remaining distance tubes and joining sleeves until all joints are loose. Hold the luff section straight and firmly when knocking the joining sleeve with a hammer. Use a piece of wood to protect the joining sleeve.
6. Collect the connection plates at each joint.

7.5 Trouble shooting

	Problem	Probable cause	Action
7.5.1	”The sail will not unfurl or will only partly unfurl.”	• The jib halyard is wrapped around the luff extrusion.	• Ease the halyard slightly and try to reverse the system.
		• Another halyard is wrapped around the luff extrusion.	• Furl the system. Free the halyard.
		• The furling line is not free to run or has become tangled.	• Slacken or free the furling line.
		• The forestay is too slack.	• Tension the forestay, first of all by tensioning the backstay adjuster or backstays. If this doesn't help, decrease the length of the Furlex system.
		• Dirt and salt in the bearings.	• Rinse the bearings with fresh water and lubricate with Furlex grease.
		• Too much strain on the halyard.	• Ease the halyard off.
7.5.2	”The sail will not furl, is hard to furl or can only be partly furled”	• The jib halyard is wrapped around the luff extrusion.	• Ease the halyard slightly and try to reverse the system. Refer to the Assembly and Operating manual, Chapter 4.1.1.
		• Another halyard is wrapped around the luff extrusion.	• Unfurl the system. Free the halyard.
		• There is no line left on the drum.	• Unfurl the sail. Take it down and wind more line on the drum. Alternatively, loosen the sheet, gather the sail around the system with a rope, wind more line on the drum.
		• The forestay is too slack.	• Increase forestay tension.
		• Excessive wind pressure on the sail.	• Let the leeward sheet off more.
		• Windward sheet is not released.	• Release the sheet.
		• The sheet has become tangled.	• Sort out the sheet.
		• The free turn is not functioning.	• Rinse the bearings with fresh water and lubricate with Furlex grease.
		• Large turning angles in the furling line route which increase friction.	• Re-route the furling line, avoiding large turning angles.
		• Dirt and salt in the bearings.	• Unfurl the sail. Ease the halyard. Disconnect the tack and turn the tack ring according to 6.4.2 page 28. Attach the tack.
		• The furling line has become tangled on the drum.	• Unfurl the sail and take it down. Rewind the furling line. Unfurl with slight drag on the furling line in future and avoid having too much line on the drum.
		• The line guide fitting chafes against the drum.	• Loosen the fastening screws below the drum and adjust the fitting.
		• The halyard swivel is upside down.	• Fit the halyard swivel correctly.
• Too much strain on the halyard.	• Ease the halyard off a little.		
7.5.3	”The system ‘wobbles’ when furling and unfurling”	• The forestay is too loose.	• Tension the backstay and/or the cap shrouds. This will tension the forestay.
7.5.4	”The sail unfurls after reefing or furling”	• The sail is not furled tightly enough.	• Furl with some drag on the line.
		• The furling line is not belayed.	• Furl and belay the furling line

7.5.5	”The sail is hard to hoist”	• The luff tape is too thick.	• Return the sail to the sailmaker and refer to this manual.
		• The sail is caught on something or is not sufficiently loose on the foredeck.	• Arrange the sail better on the foredeck.
		• Fault in halyard routing.	• Check the sheaves, winch etc.
		• Dirt and salt in the luff groove.	• Clean the luff groove.
7.5.6	”The luff cannot be tensioned”	• The halyard swivel comes into contact with the top guard.	• The luff of the sail is too long. Have the sail shortened by the sailmaker.
		• The angle between the forestay and the halyard is too great.	• Shorten the sail or move the halyard lead up.
7.5.7	”The sail cannot be taken down”	• The halyard is wrapped around the top of the luff extrusion.	• Ease the halyard off and try to reverse the system.
		• The halyard wraps around the luff extrusion as the sail is coming down.	• Tension the halyard manually keeping a slight drag on it while taking the sail down.
		• The halyard is stuck.	• Check the halyard routing (sheaves, stoppers etc).
7.5.8	”The sail’s UV protection is on the inside of the furled sail”	• The furling line is wound on the drum in the wrong direction.	• Remove the sheet from the furled sail and gather the sail around the Furlex system with a rope. Pull on the line until the drum is empty. Wind a couple of turns on the drum by hand in the right direction. Unfurl the sail. Furl again, checking the number of turns of furling line on the drum.
7.5.9	”The sail is wrinkled at the tack”	• The tack ring was turned in the wrong direction before tacking the sail.	• Unfurl the sail and ease off the halyard. Undo the tack snap shackle. Rotate the tack ring ”around the system” and retack the sail. Furl slowly and check that the furling of the tack is retarded by one revolution in relation to the luff extrusion.
		• The sail is old or incorrectly cut.	• Consult your sailmaker.
7.5.10	”The leach flogs despite sheeting hard”	• Incorrect sheeting point.	• Move the sheeting point forward.
		• Incorrectly tensioned leach line.	• Adjust the leach line (Consult your sailmaker).
		• The sail is old or incorrectly cut.	• Consult your sailmaker.
7.5.11	”The leach closes (bends inwards)”	• Incorrect sheeting point.	• Move the sheeting point backwards.
		• The sail is old or incorrectly cut.	• Consult your sailmaker.

8 Spare parts and accessories



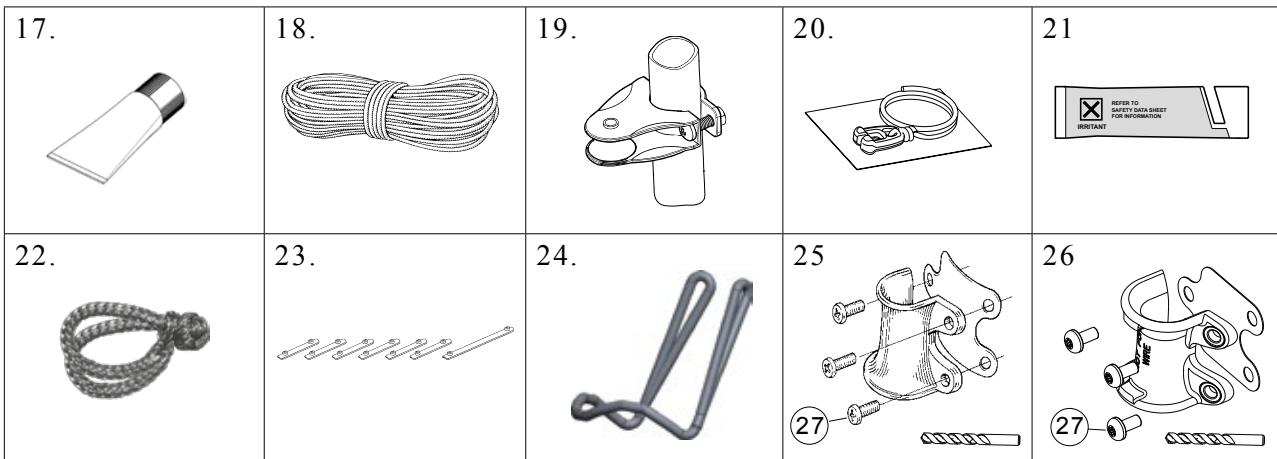
8.1 Spare parts and accessories

Item	Description	Dimension	Forestay wire size	
			Ø12/Rod-30	Ø14/Rod-40
1	Torque tube	Ø110x507	549-472-02R	
2	Lower bearing	L=70	549-438-02R	
3	Sail feeder	L=75	549-423-01R	
4	Line drum replacement kit	Ø122	549-403-10R	
5	Brim	Ø182	549-478-01R	
6	Line cover	Ø203	549-477-01R	
7	Deck fitting	Ø182	549-459-01R	
8	Bushings	53x42	549-476-01R	
9	Clevis pin and split pin	Ø19x54	168-018-01R	-
		Ø22x54	-	168-024-01R
10	Halyard swivel	404TD	549-442-01R	
11	Schackle	Ø12x24x41	307-004R	
12	Screw kit	404TD	155-825-01R	
13	Lower bearing assembly	404TD	549-470-10R	549-470-11R
14	Top bearing	Ø65	549-425-01R	
15	Connecting plate kit	404TD	549-421-10R	
16	Luff screws	M8x25 (4pcs)	162-083	



Serie 404TD					
				Forestay wire size	
Description	Dimension	Qty	Ø12 mm	Ø14 mm	
17	Furlex grease	~100g	1	312-501	312-501
18	Furling line	Ø12 L=40000	1	612-036-01	612-036-01
19	Stanchion block	For Ø25/30	1	538-210-02R	538-210-02R
20	Pre-feeder pack	-	1	505-538-01R	505-538-01R
21	Locking adhesive	~1g	1	312-305	312-305
22	Soft shackle	8 (5 mm)	1	614-523R	614-523R
23	Connecting plate kit	1 long + 7 short	1	549-421-10R	549-421-10R
24	HMPE strop ¹⁾	-w	1	613-053-20R	613-053-20R
25	Halyard lead set -brass ²⁾	-	1	508-128-03R	508-128-03R
26	Halyard lead set -stainless steel ³⁾	-	1	558-081-03R	558-081-03R
27	Self-tapping screw	MRT TT 6x12	1	155-703	155-703

¹⁾ Mk1 swivel only. ²⁾ Wire halyards only. ³⁾ Not for wire halyards.



Wire pack & eye fitting pack

		404TD			
				Forestay wire size	
	Description	Dimension	Qty	Ø12	Ø14
-	Forestay wire pack	L=20100	1	601-009-61	-
		L=22500	1	601-009-62	601-010-62
		L=24900	1	601-009-63	601-010-63
-	Forestay compact wire pack	L=20100	1	601-058-71	-
		L=22500	1	601-058-72	601-062-72
		L=24900	1	601-058-73	601-062-73
1	Rigging screw pack	-	1	174-570-14	174-571-14
2	Eye pack stud	-	1	301-660-14	301-661-14
3	Eye pack-Sta-Lok	-	1	301-668-14	301-669-14



Luff extrusion pack 404TD

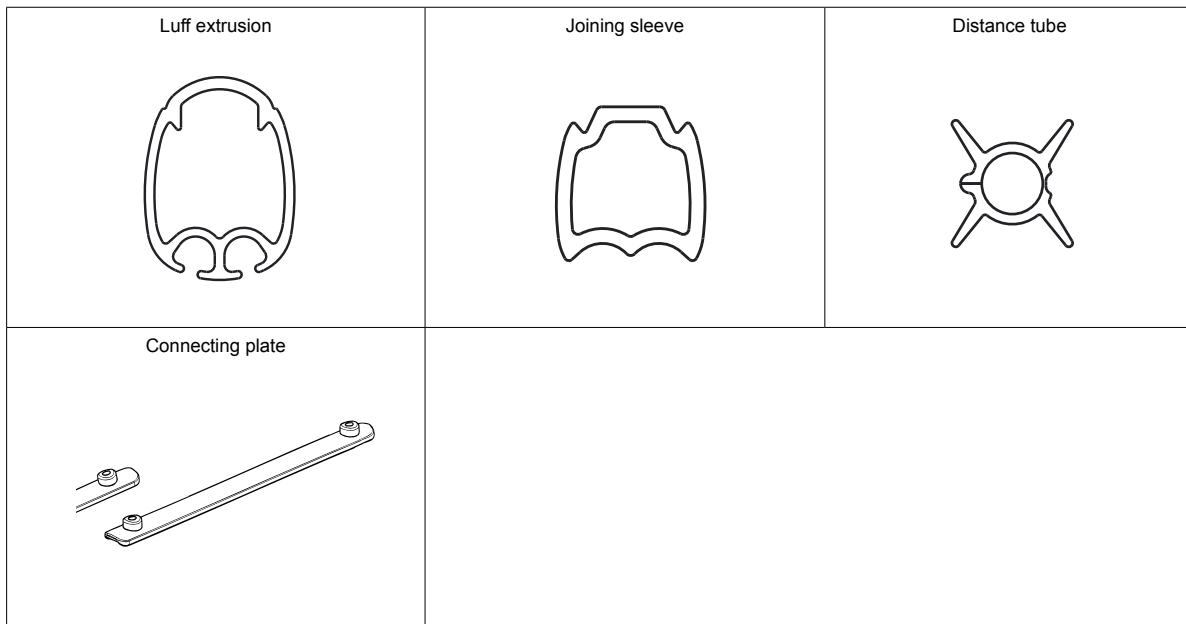
Including luff extrusions, joining sleeves, distance tubes and connecting plates for forestay lengths according to table.

Description	Dimension (FLD max)	Qty	Art. No.
Luff extrusion pack	14980	1	549-432-32

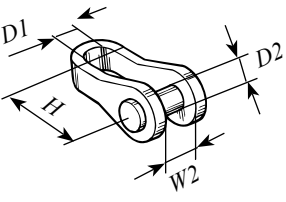
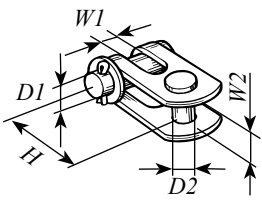
Single luff extrusion pack 404TD

Including 1 pcs luff extrusion, 1 pcs joining sleeve, 1 pcs distance tube and 1 pcs connecting plate.

Description	Qty	Art. No	Luff extrusion	Joining sleeve	Distance tube	Conn. plate
Single luff extrusion pack	1	549-480-01	L=560	L=785	-	L=144
Single luff extrusion pack	1	549-431-01	L=1700	L=300	L=1400	L=70
Single luff extrusion pack	1	549-432-06	L=2400	L=300	L=2100	L=70



8.2 Toggles (Forestay mast attachment only)

Toggle type		Forestay Dimensions	
		Ø 12	Ø 14
<p>Eye/fork toggle</p> 	Article No.	174-134-01	174-135-01
	Length (H)	90	90
	Ø Eye (D1)	22	22
	Ø Clevis pin (D2)	19	22
	Fork width (W2)	22	22
<p>Fork/Fork toggle</p> 	Article No.	517-052-02	517-053-02
	Length (H)	65	80
	Ø Clevis pin (D1)	19	22
	Fork width (W1)	20.5	20.5
	Ø Clevis pin (D2)	19	22
	Fork width (W2)	21	23

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. 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.

DINGHIESKEELBOATSYACHTS

Seldén Mast AB, Sweden
Tel +46 (0)31 69 69 00
e-mail info@seldenmast.com

Seldén Mast Limited, UK
Tel +44 (0) 1329 504000
e-mail info@seldenmast.co.uk

Seldén Mast Inc., USA
Tel +1 843-760-6278
e-mail info@seldenus.com

Seldén Mast A/S, DK
Tel +45 39 18 44 00
e-mail info@seldenmast.dk

Seldén Mid Europe B.V., NL
Tel +31 (0) 111-698 120
e-mail info@seldenmast.nl

Seldén Mast SAS, FR
Tel +33 (0) 251 362 110
e-mail info@seldenmast.fr

www.seldenmast.com

Dealer:

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Our well known brands are Seldén and Furlex. The worldwide 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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