

595-982-E
2015-04-17
50 S

FURLEX
SELDÉN


Manual Furlex *50 S*



SELDÉN

1 Introduction

1.1 Instructions

- In order for you to gain the most benefit and enjoyment from your Furlex system, we recommend that you study these instructions thoroughly.
- The manual is divided into a section for ASSEMBLY and a section for OPERATION. Both sections contain references to the other. It is very important that these instructions are read and observed.
- All safety-related information is indicated by the following symbol: 
- The manual applies to Furlex type 50 S.
The model designation can be found on the top of the line drum.
- All dimensions specified in the manual are in millimetres (mm) unless otherwise indicated.



This information must be followed to avoid damage to the system and the risk of personal injury.
The 2 year guarantee on the Furlex-system is only valid if the system is assembled and operated correctly according to the manual.



PLEASE read the entire manual prior to assembly.

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

The guarantee applies only if the Furlex system has been installed, operated and maintained in accordance with this manual and has not been exposed to greater loads than those given in the brochure and instruction material.

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 authorised dealers, the guarantee ceases to be valid.

Contents

	<i>Page</i>		<i>Page</i>
1 Introduction			
1.1 Instructions	2	7.2 Shape of the sail	28
1.2 Product information	4	7.3 Determining the length of the pendant	29
ASSEMBLY		OPERATING INSTRUCTIONS	30
2 Check list		10 Halyard routing	31
2.1 Furlex box	6	10.1 Summary	31
2.2 Foil pack	8	10.2 Halyard sheave box	32
2.3 Tools	8	10.3 Spinnaker halyard	32
3 Assembly preparations		11 Sailing with Furlex	
3.1 Forestay attachment – main principle	9	11.1 Hoisting the sail	33
3.2 Mast attachment	9	11.2 Unfurling the sail	34
3.3 Deck attachment	9	11.3 Furling the sail	35
3.3.1 Measurement table for lower bearing assembly	10	12 Reefing	
3.3.2 Measurement table for upper wire terminal	10	12.1 Luff extrusion	36
3.3.3 Measurement table for toggles	11	12.2 Reefing under sail	36
3.4 Assembly below deck	12	12.3 Reefing with furled sail	36
3.5 Calculation of forestay wire length	13	12.4 Adjustment of sheeting point	36
3.5.1 Calculation table 1: Forestay wire length	13	14 Adjustment of forestay length	37
3.6 Calculating the length of the luff extrusion	14	15 Maintenance of the Furlex system	
3.6.1 Calculation table 2: Length of luff extrusion	14	15.1 Lubrication of lower bearing assembly	38
4 Assembly of the Furlex-system		15.2 When Furlex is off the boat	39
4.1 Assembly of the luff extrusion	16	15.3 Storage	39
4.2 Wire assembly	17	16 Rigging	
4.3 Fitting the line and sail feeder	19	16.1 Rigging on a stepped mast	40
4.4 Fitting the line guard and line guide fitting	20	16.2 Stepping mast with Furlex fitted	41
5 Halyard routing		17 Dismantling	
5.1 Halyard routing	21	17.1 Halyard swivel	42
5.2 Halyard sheave box	22	17.2 Sail feeder	42
5.2.1 Sheave boxes	22	17.3 Line guide	43
5.3 Spinnaker halyard	22	17.4 Forestay	44
5.4 Fitting the halyard leads	23	17.5 Lower bearing assembly	45
6 Arrangement for the furling line		17.6 Luff extrusion system	45
6.1 Functional description	24	18 Trouble Shooting	46
6.2 Loading the line drum	24	19 Check list	
6.3 Furling line routing	25	19.1 Check points before sailing	48
6.4 Assembly of stanchion blocks	26		
7 The sail			
7.1 Adapting the sail to the Furlex system	27		
7.1.1 Measurement table for sail	28		

1.2 Product information

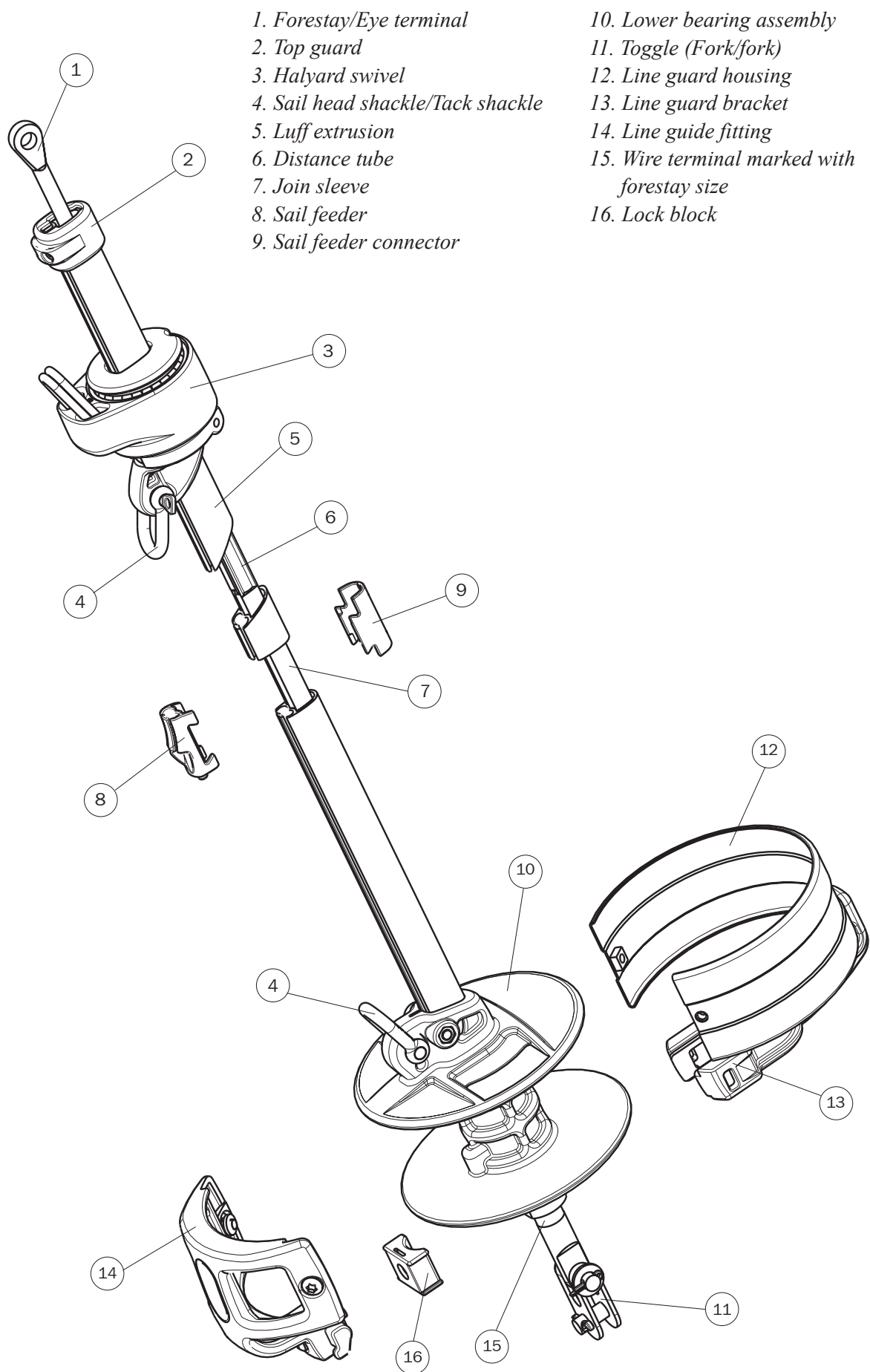
When Furlex was introduced in 1983, it quickly became the market leader, a position it still occupies today. The first systems sold are still functioning well. Providing ample proof of the design's effectiveness and long-term staying power. Our success can also be put down to how we select a system for a specific yacht. First we calculate the boat's righting moment, which is the function of its displacement, ballast, beam and draught. Then we use righting moment in combination with the rig type to calculate its power when sailing, and the likely loads on the Furlex system. In this way, we achieve a correctly dimensioned jib furling system for each individual yacht.

It has always been our intention to retain responsibility for our products through all stages of supply. Furlex is therefore only sold through local, authorised dealers who can satisfy all of our customers' requirements. This includes assistance with assembly, the modification of sails or the production of new sails, as well as service.

- Furlex is supplied as a complete assembly kit containing all the components required.
- The halyard swivel ball bearing system features a load distribution facility. A unique patented system which distributes loads over the entire ball race. This permits smoother furling and considerably reduces wear on the bearings.
- The Furlex-systems luff extrusion has the same size along its whole length. The entire luff is rolled up in an even roll, all the way down to the tack attachment. This allows for a good shape to a reefed sail.
- Furlex is manufactured by Seldén Mast, the world's leading manufacturer of masts and rigging systems. We wish you fine sailing with your Furlex.



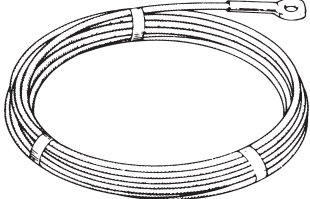
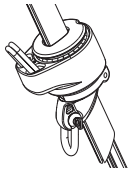
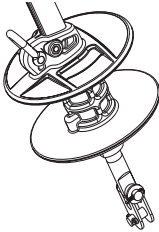
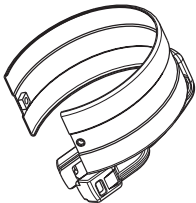


Follow the instructions carefully when assembling the system.

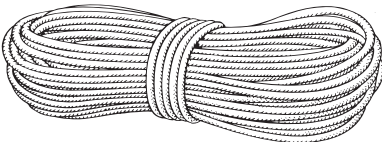


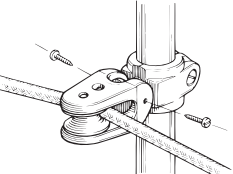


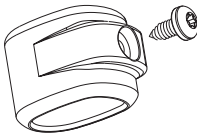



ASSEMBLY

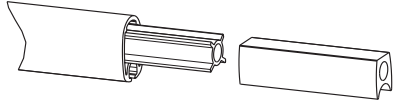
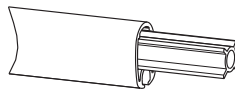
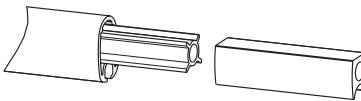
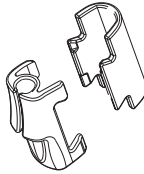
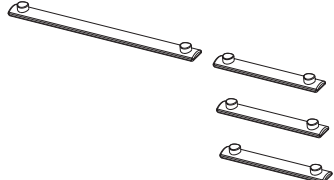
2 Check list

2.1 Furlex box:

<input type="checkbox"/> Forestay wire	
<input type="checkbox"/> Halyard swivel with head shackle	
<input type="checkbox"/> Lower bearing assembly with tack shackle	
<input type="checkbox"/> Line guard unit	
<input type="checkbox"/> Line guide fitting	
<input type="checkbox"/> Lock block	

<input type="checkbox"/> Furling line	
<input type="checkbox"/> 1 guide leads 508-135, incl. 2 screws and insulating washer	
<input type="checkbox"/> Drill bit Ø 5.3 mm	
<input type="checkbox"/> 1 stanchion block	
<input type="checkbox"/> Prefeeder with rope	
<input type="checkbox"/> Locking adhesive <input type="checkbox"/> Grease	
<input type="checkbox"/> Top guard incl. 1 screw	
<input type="checkbox"/> Manual <input type="checkbox"/> Spare parts list <input type="checkbox"/> Certificate of guarantee	

2.2 Foil pack

<input type="checkbox"/> 1 x 600 mm extrusion with join sleeve and distance tube	
<input type="checkbox"/> 1 x 2000 mm extrusion with distance tube	
<input type="checkbox"/> 2–4 x 2400 mm extrusions with distance tube + join sleeve	
<input type="checkbox"/> Sail feeder (Sail feeder + sailfeeder connector)	
<input type="checkbox"/> 1 long connecting plate for the 600 mm extrusion. <input type="checkbox"/> 1 short connecting plate for each 2400 mm extrusion.	

2.3 Tools

Tools needed for assembly:

- Flat blade screwdriver
- Hacksaw
- 2 adjustable spanners
- Polygrip pliers
- Adhesive tape
- File
- Marker pen (water-proof)
- Torx keys T15, T20, T25, T30
- Steel measuring tape (20 m) (100")
- Knife

For the halyard lead:

- Heavy-duty TORX T30 screwdriver
- Drill
- Drill bit Ø 5.3 mm (included in Furlex package)

3 Assembly preparations

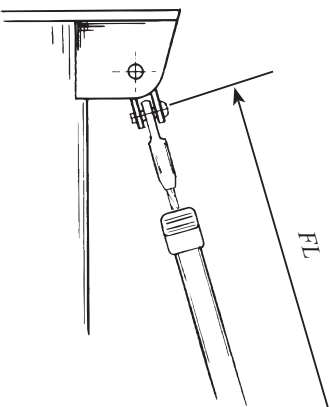
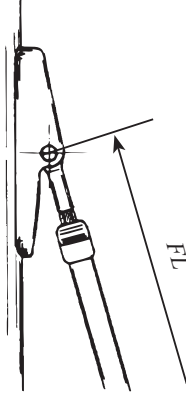
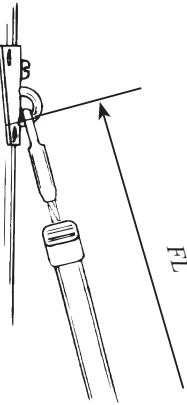
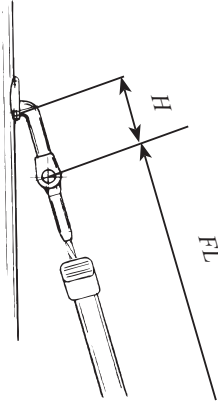
3.1 Forestay attachment – Main rule



The guiding principle is that the forestay connections should allow sufficient articulation in all directions. In most cases a toggle should be fitted between the Furlex stay and the forestay attachment.

3.2 Mast attachment - Main principle

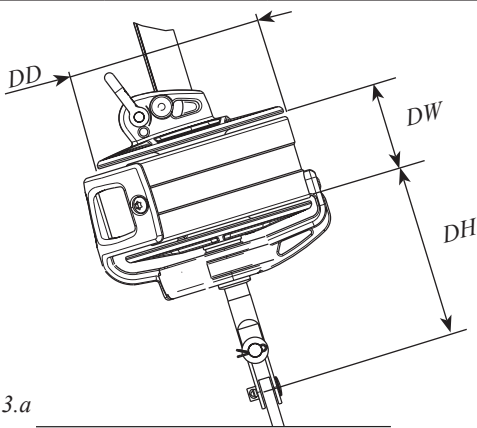
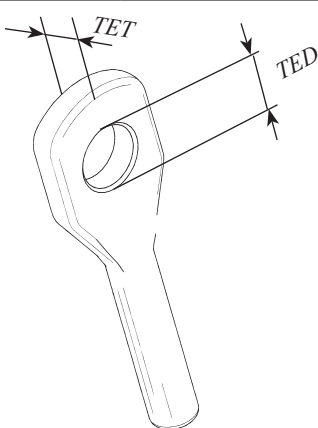
Some of Seldén's forestay attachments are shown below, they illustrate rules and exceptions. For information concerning H-measurement, see table 3.3.3.


<p><i>Fig. 3.2.a</i></p>  <p>Forestay attachment on top fitting with masthead rig: Always connect via a toggle, to give sufficient transverse flexibility.</p>	<p><i>Fig. 3.2.b</i></p>  <p>Forestay attachment on a fractional rig of type Seldén triple combi: 505-011; Ø 4 & Ø 5 mm wire: Connected directly to the fitting.</p>
<p><i>Fig. 3.2.c</i></p>  <p>Forestay attachment type Seldén 0-22 (517-904). Connection directly to the fitting provides sufficient flexibility</p>	<p><i>Fig. 3.2.d</i></p>  <p>Forestay attachment type "T-terminal" Intermediate connection with T/fork toggle. (See table 3.3.3.)</p>


3.3 Deck attachment

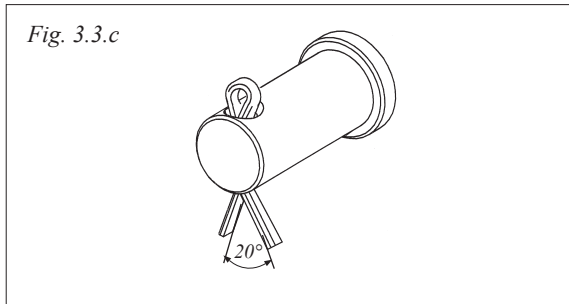
The lower end of the Furlex system is fitted as standard with a fork toggle. This can normally be connected directly to the boat's forestay fitting.

Check that the lower bearing assembly and line guide do not collide with the pulpit, lights or other deck fittings.

3.3.1 Measurement table for lower bearing assembly				3.3.2 Measurement table for upper wire terminal	
 <p>Fig. 3.3.a</p>				 <p>Fig. 3.3.b</p>	
Wire dim.	DD	DH	DW	TED	TET
Ø 4	Ø 120	~ 100	60	Ø 8.2	4
Ø 5		~ 100		Ø 10.2	4.5

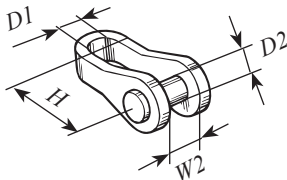
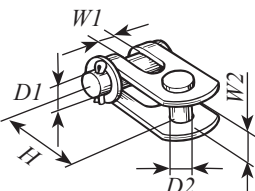
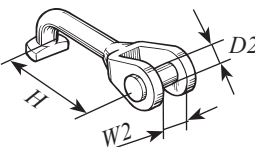
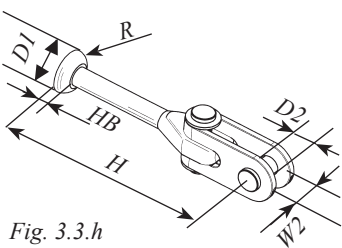
 **An extended link/toggle does not give the required flexibility. It must always be connected to the boat's forestay fitting via a toggle.**

 **Make sure that the toggles' split pins are secure after installation, see fig. 3.3.c.**



3.3.3 Measurement table for toggles

(Toggles can be supplied by a Furlex dealer)

Toggle type	Forestay Dimension		
	Ø 4	Ø 5	
<p>Eye / fork toggle</p>  <p><i>Fig. 3.3.e</i></p>	Part no.	174-102	174-103
	Length (H)	25	35
	Ø Eye (D1)	8	10
	Ø Clevis pin (D2)	8	9.5
	Fork width (W2)	8	10
<p>Fork / fork toggle</p>  <p><i>Fig. 3.3.f</i></p>	Part no.	517-056-02	517-054-02
	Length (H)	25	30
	Ø Clevis pin (D1)	8	10
	Fork width (W1)	7.5	10
	Ø Clevis pin (D2)	8	10
	Fork width (W2)	8.5	11
<p>T / fork toggle</p>  <p><i>Fig. 3.3.g</i></p>	Part no.	174-127	174-128
	Length (H)	60	70
	Ø Clevis pin (D2)	8	9.5
	Fork width (W2)	8	10
<p>Stem ball / Eye toggle + fork/fork toggle.</p>  <p><i>Fig. 3.3.h</i></p>	Part no.	-	517-065-01
	Length (H)	-	138
	Ø Stem ball (D1)	-	26
	Height (HB)	-	8.5
	Radius (R)	-	10
	Ø Clevis pin (D2)	-	10
	Fork width (W2)	-	11

3.4 Assembly below deck

The lower bearing assembly can be mounted in an anchor well below deck.

The advantage is that the sail's luff length is maximized and the access around the forestay is improved.

The disadvantage is that routing of the furling line is more complicated, which increases friction when furling and unfurling. A few different installation sketches are shown below.

- There must be at least 250 mm to the furling line's first turning, to ensure that the line is rolled up evenly on the line drum.
- The sail tack should be as close to the deck as possible.
- There must always be some space between the Furlex system and the cut-out in the deck, independent of which alternative is chosen.
- It is best to use ball bearing blocks with large sheaves to reduce frictional losses.
- The anchor well must be effectively drained.



The Furlex system must never touch the edge of the deck cut-out during sailing. This is to avoid damage to the boat and the Furlex system.

Line drum upper edge at deck level.

Requires a cut out in the deck for the entire line drum. The furling line is lead aft via lead blocks and a deck sheave box.

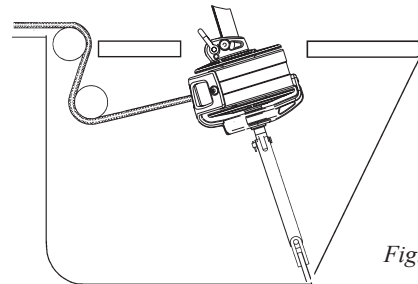


Fig. 3.4.a

Sail tack at deck level.

Requires a smaller cut out in the deck. The furling line is lead first forward via a deck sheave box, or alternately aft via a block + a deck sheave box.

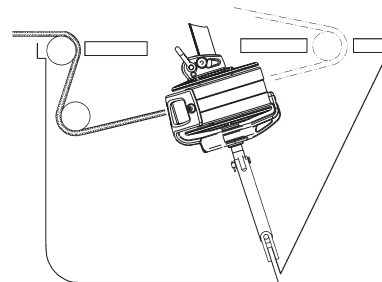


Fig. 3.4.b

Lower bearing assembly mounted at bottom of anchor box. Extended webbing band with loop around the extrusion.

Can expose the luff extrusion to excessive stresses.

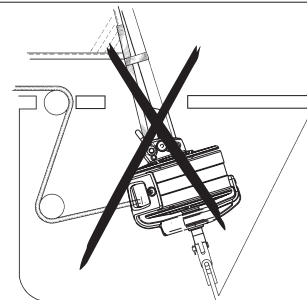


Fig. 3.4.c

Lower bearing assembly mounted above the deck forestay attachment in the anchor box.

For large distances, make a special stay from stainless strip or rod. Always connect to the boat's forestay attachment via a fork/fork toggle. Short wire pendants are not recommended since they can distribute the forestay forces unevenly due to the different cable strands. Also, wires are not suitable for withstanding the torque that can be produced.

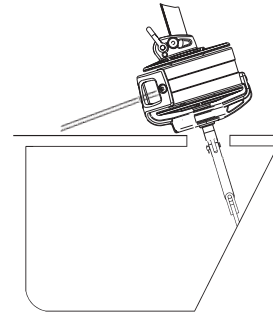


Fig. 3.4.d.

3.5 Calculation of forestay wire length

1. Determine the rake of the mast with the fore-/backstay tensioned
2. Slacken the **backstay**. The setting of any forestay rigging screw should not be adjusted. If the forestay rigging screw has to be adjusted, measure the length or mark the original setting with tape before adjusting.
3. 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.



Always use a strong “D” shackle or tie the halyard!

4. Take down the forestay. (If the rigging screw was adjusted, return it to its original setting.)
5. Measure the forestay length (FL) **with just enough tension to keep it straight**.
6. Enter the measurement in “**Calculation Table 1**” below, under the heading “Your forestay”, on the row marked FL.
7. Calculate the new wire length WL in “**Calculation Table 1**”. Refer to the column marked “example” to see how this is done.

3.5.1 Calculation Table 1: Forestay wire length		Your stay	Example Ø 5
FL	Existing forestay length (FL) without preload, incl. any rigging screw (See fig. 3.5.a)		9,675
T	Deduction for lower wire terminal: 4 mm Ø wire: – 45 mm 5 mm Ø wire: – 55 mm	-	- 55
H	If a link or extra toggles are to be used, their length (H) should be subtracted from FL.	-	-
WL	Cutting length. The new forestay wire <u>is marked</u> at this measurement.	=	= 9,620

3.6 Calculating the length of the luff extrusion

1. Insert the length of the new wire forestay (WL) as calculated in “Calculation Table 1” in “Calculation Table 2”, in the row marked WL.
2. Calculate the number of full-length extrusions and the length of the top extrusion.

3.6.1 Calculation Table 2: Length of luff extrusion		Your extrusion	Example Ø5
WL	New forestay wire length (according to “Calculation table 1”)		9,620
A+B	Fixed deduction (A+B): 4 mm Ø wire: – 855 mm 5 mm Ø wire: – 855 mm	-	- 855
C+D	C+D=	=	= 8,765
C	Max. number of 2400 mm (94 1/2”) extrusions which together are shorter than C+D: [..... x 2400 = C]	C=	(3 extrusions) - 7,200
D	Length of top extrusion = The top extrusion is normally cut from the 2000 mm (78 3/4”) extrusion. Round the edges of the cut end using a file. <div style="border: 1px solid black; padding: 5px; margin-top: 10px;">If the top extrusion is shorter than 400 mm (15 3/4”), the joint will be too near the top. In this case replace the uppermost full-length 2400 mm extrusion with the 2000 mm (78 3/4”) extrusion. In this way the joint is moved 400 mm. Adjust the C and D measurements as follows: <ul style="list-style-type: none">• Reduce the C-measurement by 400 mm.• Increase the D-measurement by 400 mm.</div>	=	= 1,565
E	Cut the distance tube for the top extrusion in accordance with the following fixed deduction: 4 mm Ø wire: E = D – 120 mm 5 mm Ø wire: E = D – 120 mm		
	Deduction:	-	- 120
	Length of distance tube E =	=	= 1,445

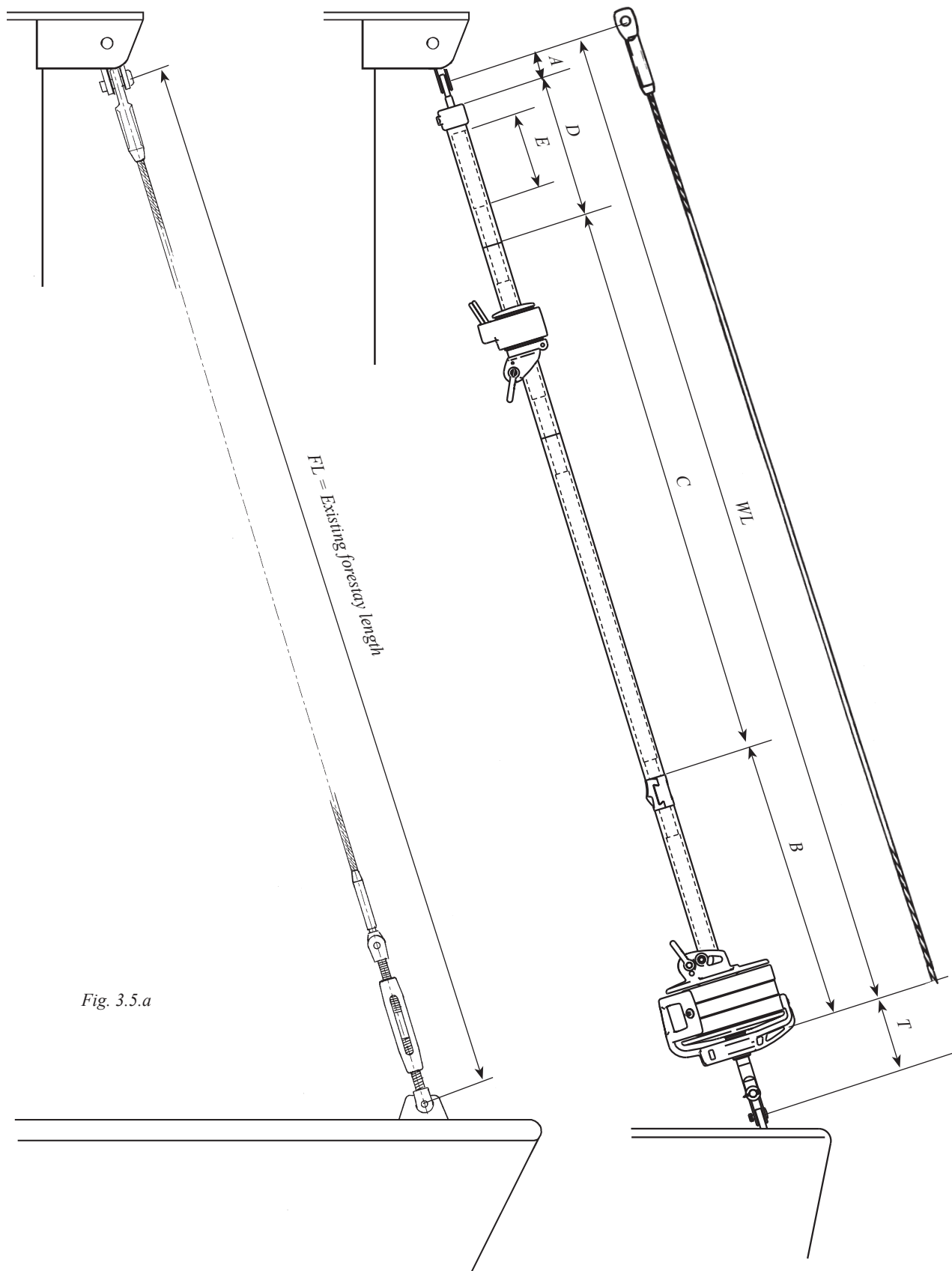


Fig. 3.5.a

4 Assembly of the Furlex-system

4.1 Assembly of the luff extrusion

Assembly should be carried out on a horizontal surface.

Connect the extrusions after each other starting with the lower bearing assembly.

1.

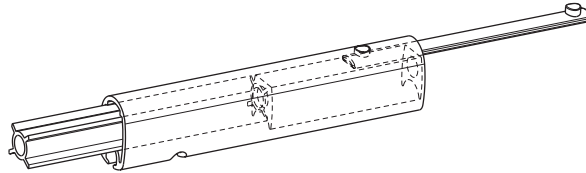


Fig. 4.1.a

Fit the long connecting plate (L=80 mm) in the 600 mm extrusion together with the join sleeve and distance tube.

2.

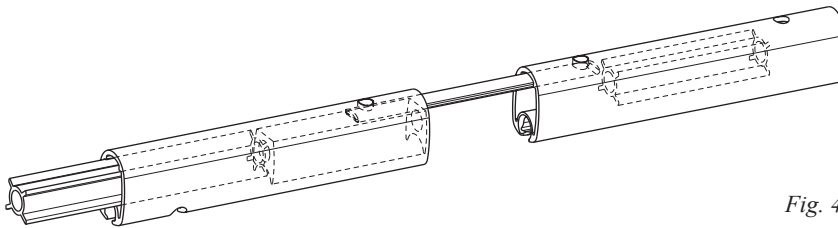


Fig. 4.1.b

Remove the join sleeve from a 2400 mm extrusion (this joining sleeve will later on be used for the top extrusion). Connect a 2400 mm extrusion to the connecting plate in the 600 mm profile. Push the distance tube fully into the 600 mm extrusion so that the join sleeve enters the 2400 mm extrusion. See fig. 4.1.c.

3.

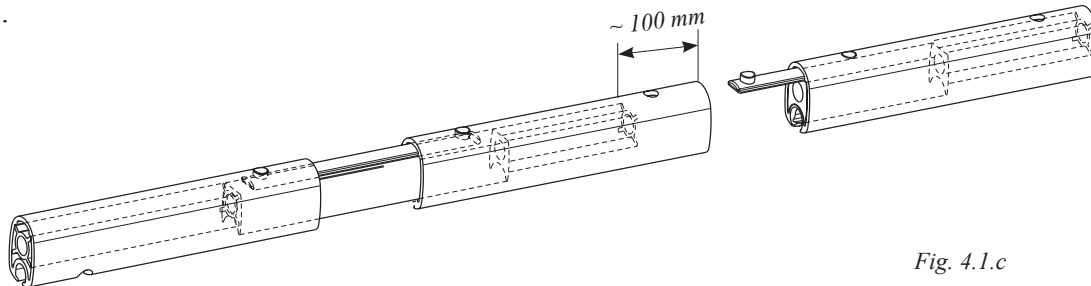


Fig. 4.1.c

Connect the remaining extrusions according to table 3.6.1. Check with a join sleeve that the distance tube is pushed about 100 mm (half the length of the join sleeve) into the extrusion. The distance tube (E) in the top profile (D) should be pressed in about 20 mm.

4.

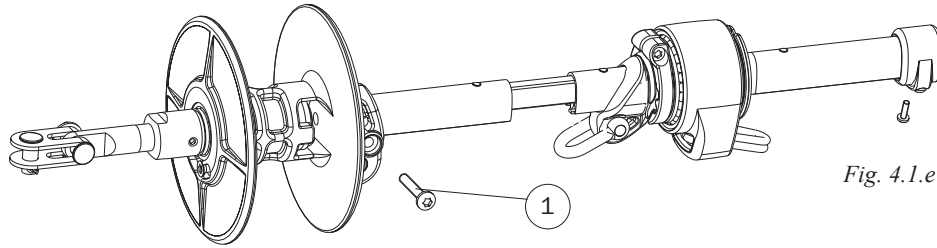


Fig. 4.1.e

Push the lower bearing assembly onto the extrusion and assemble the screw ① through the recess of the extrusion. Tighten the screw ① so that the extrusion is clamped in place. Push the halyard swivel all the way down to the sail feeder area. Secure it in this position with adhesive tape. Feed the top guard onto the top extrusion and fix it with the prefitted screw. Tighten the screw until it bottom, but do not over-tighten.

4.2 Wire assembly

1. Stretch the Furlex wire out by hand, on a flat surface.
Take care, since the roll of wire can spring apart when it is opened.



NOTE! Take care when opening the roll of wire!

2. Measure the wire from the middle of the hole in the end. Mark the cutting size WL on the wire accurately, with a marker pen. (the WL measurement was calculated in "Calculation table 1", see chap. 3.5.1.)
3. The wire has a burnt, conical cut which simplifies later assembly into the extrusion. **So do not cut the wire yet.**

4.

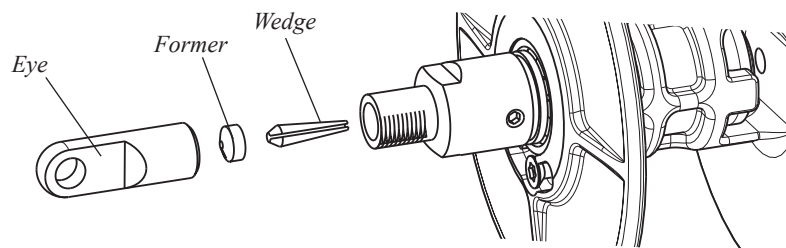


Fig. 4.2.a

Unscrew the eye, wedge and former from the terminal.

5. Thread the wire through the luff extrusion from the upper end until the wire termination eye stops against the extrusion top guard. If the wire jams inside the extrusion, turn it clockwise past the obstacle. Temporarily hold top eye in place with tape.
6. Apply tape on both sides of the cutting mark, to simplify cutting. Check that the measurement between the cutting mark and terminal is ~ 40 mm
7. Cut the wire. Deburr the end with a file.

8.

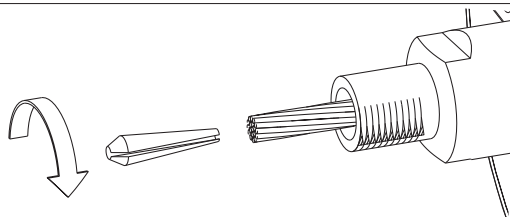


Fig. 4.2.c

Turn the strands of the wire (clockwise seen from below) and insert the wedge.

9.

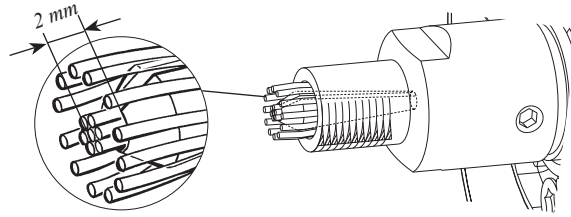


Fig. 4.2.d

The strands of the wire should protrude approx 2 mm from the wedge. Spread the outer strands of the wire evenly around the wedge. Press the wire/wedge into the fixed part, so that the strands are held in place. Tap lightly on the wire so that the outer strands are wedged firmly in place.



NOTE! Make sure there is no strand of the wire in the slot of the wedge!

10. Bend the outer strands outwards slightly. Use polygrip pliers or tap the strands with a small hammer. In the latter case, a counterhold is required e.g. a wooden block that will not damage the terminal threads.

11.

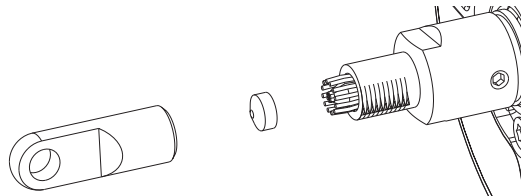


Fig. 4.2.e

Fit the former in the threaded hole of the eye. Lubricate the socket's thread with a long bead of locking adhesive. Then screw on the terminal part and tighten carefully with adjustable spanners so that the wire is forced into the socket and the outer strands are bent inwards by the wedge.

12.

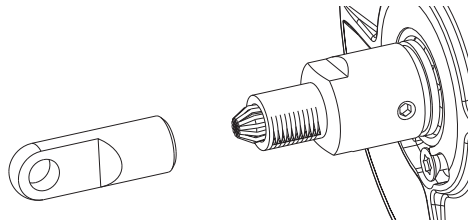


Fig. 4.2.f

Unscrew and check that the outer strands are evenly spread around the cone. If one strand lies over another, bend it back in place.



NOTE! Make sure there is no strand of the wire in the slot of the wedge!

13. If the assembly has not succeeded and must be repeated, See **"Dismantling of Furlex"**, chap. 17 in suitable parts.

14.

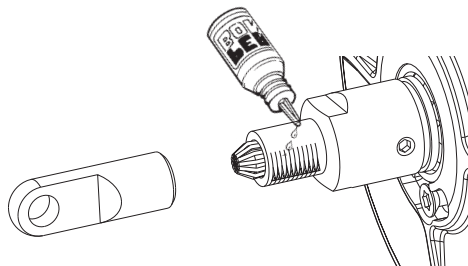


Fig. 4.2.g

Apply 2-3 drops of locking adhesive on the thread and screw the terminal together again. Tighten it securely. This is now permanently locked. Remove the tape holding the top eye.

Assembly of sail feeder:

15.

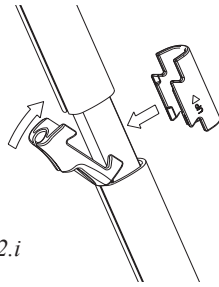


Fig. 4.2.i

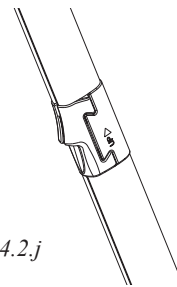


Fig. 4.2.j

Hook the lower edge of the sail feeder in the extrusion and push it up against the joint sleeve. Press the connecting piece on from the front. NOTE, the marking "UP" on the connecting piece.

16. We recommend fitting the Furlex system onto the boat at this stage. See chapter 16 "**Rigging**".

4.3 Fitting the line

1.

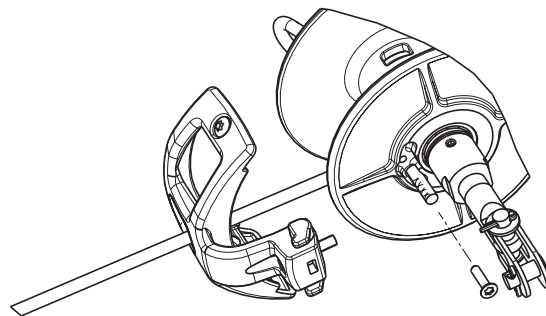


Fig. 4.3.a

Feed the furling line through the hole in the line guide fitting and then through the hole in the line drum's lower flange. Undo the self-tapping screw.

2.

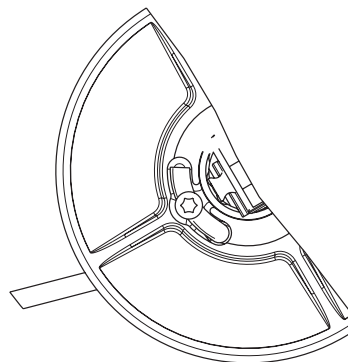
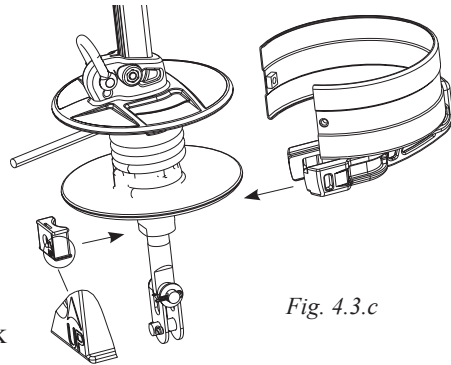


Fig. 4.3.b

Place the end of the line in the recess on the underside of the drum. Tighten the screw through the line and into the drum. The head of the screw should be at the same level as the drum.

4.4 Fitting the line guard and line guide fitting

1.



Put the line guard over the wire terminal and position the locking block from the opposite side. Note the “UP” mark on the locking block.

Fig. 4.3.c

2.

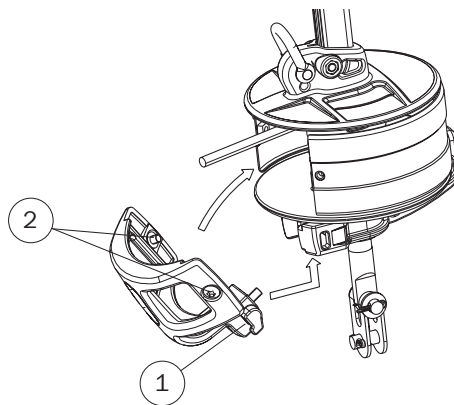


Fig. 4.3.d

Undo screw ① a few turns. Fasten the line guide fitting in the line guard and bring up toward the stainless housing. Tighten the screws ②. Tighten the screw ① loosely against the locking block.

3.

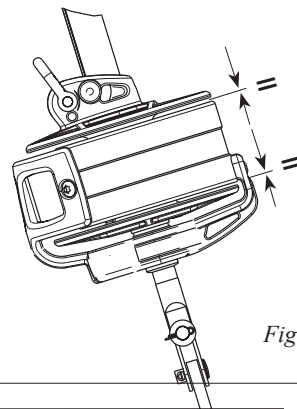


Fig. 4.3.e

Adjust the line guard vertically so that it is midway between the line drum flanges. If the casing or line guard come into contact with the line drum flanges, unnecessary friction will be caused.

4.

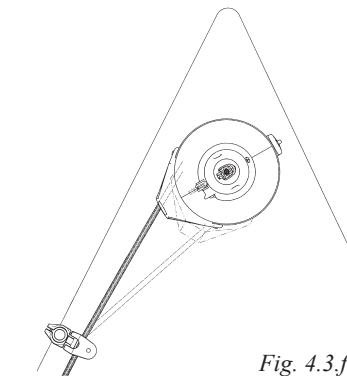


Fig. 4.3.f

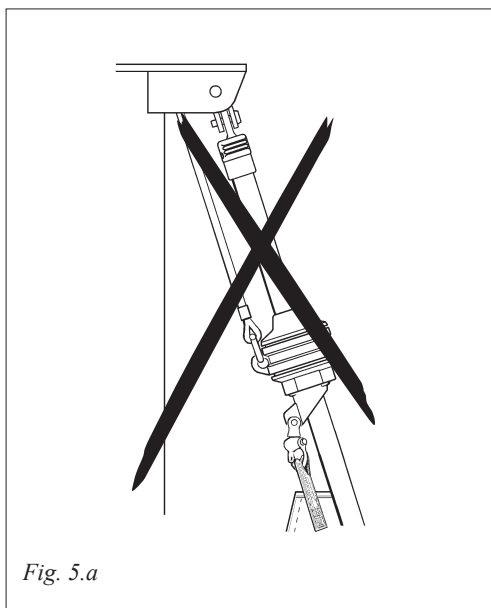
Adjust the alignment of the line guide towards the lead block and tighten screw ①. (See also “**Furling line arrangement**”, chap. 6.3.)

5 Halyard routing

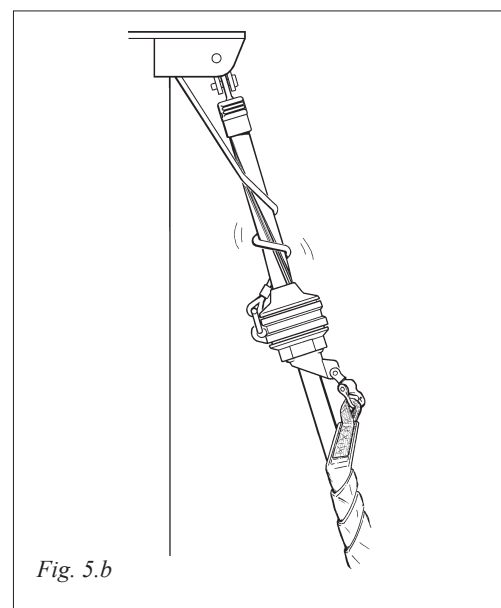
The halyard routing is one of the most important details to take into consideration for correct assembly. The angle between the halyard and forestay should be 5–10°. See fig. 5.4.c. If the angle is less, the halyard may rotate around the extrusion when the sail is furled. Damage may occur to the halyard and luff extrusion. If the crew do not observe what is happening, the forestay wire can also be damaged.



Incorrect halyard routing can promote "Halyard wrap" which may cause severe damage to the forestay, and put the entire rig at risk. If the sail is furled with the aid of a winch, take great care. It can be difficult to control the tension of the furling line.



Can lead to



5.1 Halyard leads

To avoid halyard wrap, 1 halyard lead is included in the Furlex kit. This is easy to fit and are suitable for all makes of mast. When sailing, movement occurs between the halyard and the halyard leads. To prevent wear occurring on the halyard wire, the leads are made from bronze. Bronze is "softer" than a wire halyard, so the lead will wear before the wire. The halyard leads should be inspected once a year, and any sharp edges smoothed with a file. The lead should be replaced when wear reaches 50%. The halyard lead are not covered by the 2 year Furlex guarantee.

5.2 Halyard sheave box

A sheave box can be fitted in the mast to achieve the 5–10° requirement. A sheave box is easier on the wire and is not worn by it either. The assembly work is more complicated but it eliminates future work involved in replacing halyard lead, as mentioned above.

When manufacturing Seldén masts, a sheave box is, (when suitable) incorporated if a Furlex is to be used. Sheave box kits with fitting instructions are available from all Furlex dealers.

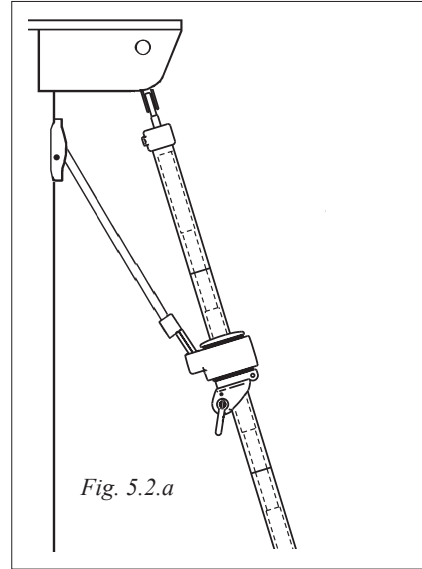


Fig. 5.2.a

5.2.1 Sheave boxes

Halyard wire	Ø 3	Ø 4	Ø 4
Max. rope	Ø 8	Ø 12	Ø 12
Sheave box	C-35	AL-45	C-45
Part no.	505-061-02	505-004-10	505-072-03
Sheave width	10 mm	13 mm	13 mm



Fig. 5.2.b

5.3 Spinnaker halyard

If the boat is equipped with a spinnaker halyard, this must be kept clear of the Furlex system to avoid halyard wrap. A very effective solution is to lead the halyard around the top shroud and then down aft of the spreaders.



Stowing a spinnaker halyard parallel with a Furlex stay is not recommended!

5.4 Fitting the halyard leads

The Furlex kit contains 1 halyard lead. If the mast is fitted with 2 genoa halyards, each halyard should be fed through its own lead. The leads can be mounted beside each other or moved round the side of the mast if there is a lack of space.

Spare halyard leads are available at your Furlex dealer. (Art.no. 508-159-03).

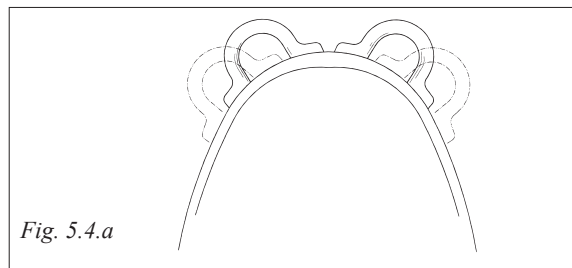


Fig. 5.4.a

The leads are supplied with self-adhesive insulating washers. It is important that these are fitted between the leads and the mast. Otherwise the leads, which are made from bronze, can cause galvanic corrosion damage to the mast.

Figs. 5.4.c–5.4.e show the mounting dimensions for Seldén masts. The dimensions can often be used on other makes of masts, but the angle must be checked carefully. Too large an angle can cause unnecessary friction and wear on the halyard leads.



For the halyard routing to work properly, the halyard swivel must be in the correct position to achieve the required angle of 5–10°.

If the sail does not have the required luff length, this needs to be adjusted. (see “The sail” chap. 7.1).

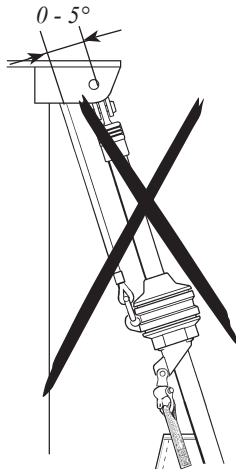


Fig. 5.4.b

10° Halyard angle. No requirement for leads.

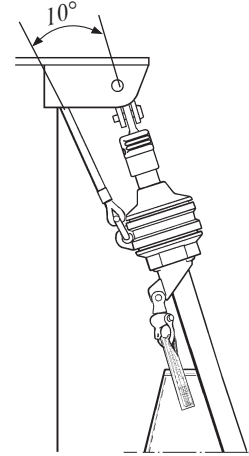


Fig. 5.4.c

“Masthead rigging” with leads.

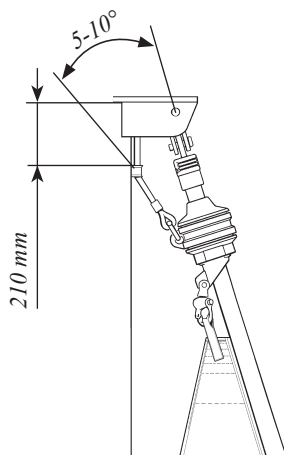


Fig. 5.4.d

“Triple combi” -forestay fitting (fractional rigging) with leads.

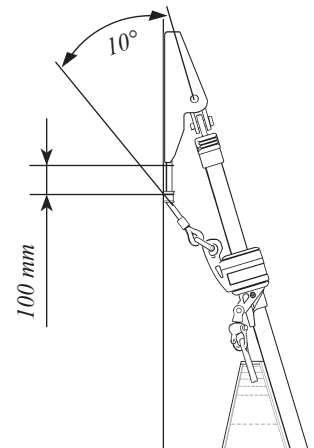


Fig. 5.4.e

Leads mounted:

1. Measure where the lead is to be placed. Mark the position with the self-adhesive insulating washer.
2. Drill with the included $\text{Ø } 5.3 \text{ mm}$ drill bit, using the lead as a template. Drilling is easiest before the Furlex stay has been fitted.
3. Fit the lead “over” their halyards as it is not possible to feed it through from above with shackles or hooks in place.
4. Lubricate the screws with grease and screw the lead in place. The screws are self-tapping M6 screws that can be screwed directly into the $\text{Ø } 5.3 \text{ mm}$ holes. The grease eases fitting and prevents corrosion.

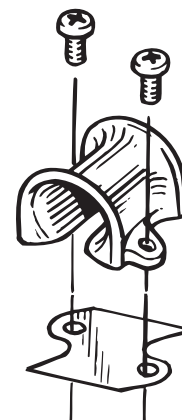


Fig. 5.4.f

6 Arrangement for the furling line

6.1 Functional description

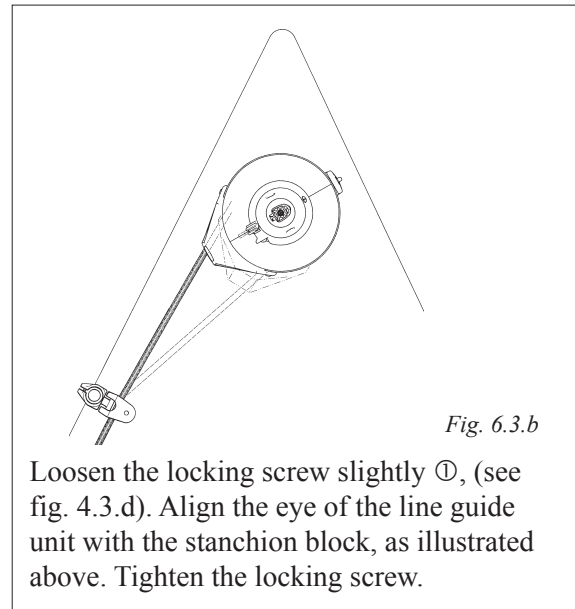
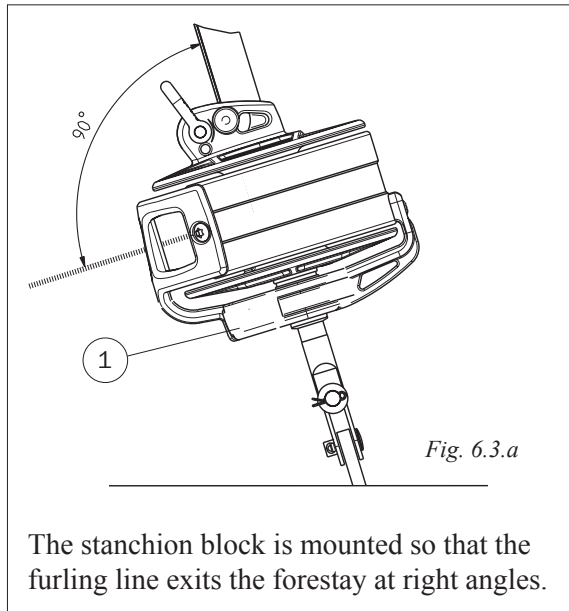
When unfurling the sail, the furling line is rolled up on the line drum. It is guided towards the centre of the line drum through the hole in the line guide fitting. The line guide fitting has a stainless ferrule that reduces friction and wear on the line.

6.2 Loading the line drum

- Roll up about 25 turns of the furling line on the line drum, by turning the extrusion by hand.
 - If the sail's UV protection is on the *starboard side*, then the line should run out on the port side of the line drum. Turn the extrusion *clockwise*.
 - If the UV protection is on the *port side* turn the extrusion *anti-clockwise*. The line will run out on the starboard side.

6.3 Furling line routing

The line shall be lead back to the cockpit using a stanchion block included in the Furlex kit. The stanchion block is fitted to a guard rail stanchion or pulpit. Assembly instructions, see fig. 6.4.a–6.4.f.

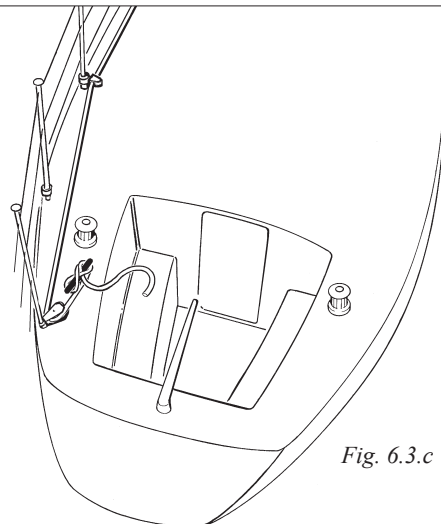


The final block is not included in the Furlex kit.

The choice of final block by the cockpit will depend on the fixing point, chosen line arrangement and even to match other blocks used on the boat.

We recommend a swivel block that is free to self align.

The maximum working load capacity of the block should not be less than 2500 N. (575lb.)



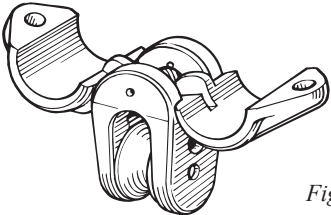
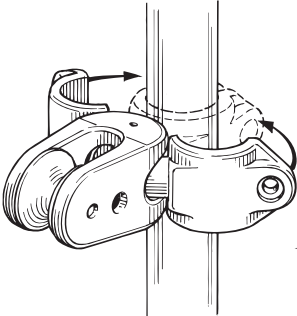
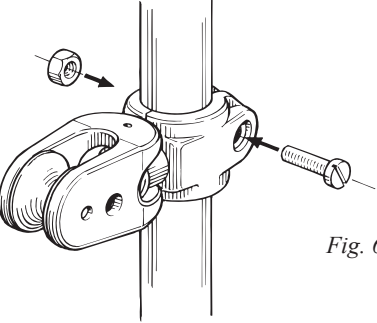
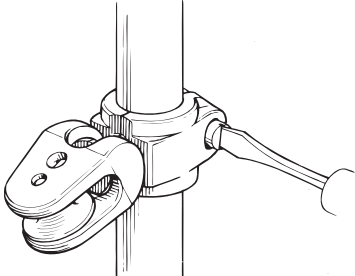
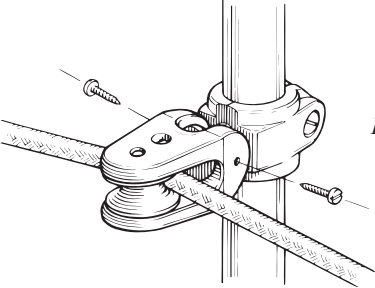
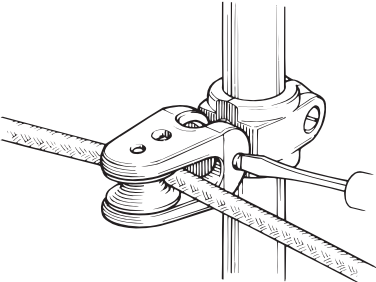
It must be possible to belay the furling line securely. A block with a Cam-cleat block works well when securing a reef, but is unreliable if the boat is to be left unattended. The line should then be secured on a normal cleat for safety reasons. We recommend a single turning block in combination with a cleat.



If the furling line is accidentally released, the sail may unfurl and flap without control in a strong wind. It could be damaged beyond repair!

6.4 Assembly of stanchion block

The Furlex kit contains 1 stanchion block for mounting on 25 mm guard rail stanchion or pulpit. The block has a ball joint and is therefore adjustable in all directions.

<p>1.</p>  <p><i>Fig. 6.4.a</i></p>	<p>2.</p>  <p><i>Fig. 6.4.b</i></p>
<p>Fit the clamp halves to the block, as illustrated.</p> <p>3.</p>  <p><i>Fig. 6.4.c</i></p>	<p>Squeeze the clamps together around a stanchion.</p> <p>4.</p>  <p><i>Fig. 6.4.d</i></p>
<p>Screw the clamp halves together with the included M6 screw and nut. Tighten the screw lightly.</p> <p>5.</p>  <p><i>Fig. 6.4.e</i></p>	<p>Align the block in the desired direction and tighten the M6 screw.</p> <p>6.</p>  <p><i>Fig. 6.4.f</i></p>

Thread the furling line through and check the setting. Finally, lock the block in position ...

... with the supplied self-tapping screws.

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 7.1.1 and fig. 7.1.b. FL-(F+E), (existing forestay length as shown in table 3.5.1 – head deduction -tack deduction).



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 must be adjusted.

SAIL TOO LONG: Shorten the sail, e.g. at the same time as changing to a Furlexadapted luff tape.

SAIL TOO SHORT: Lengthen the sail by means of a wire pendant fitted to the head of the sail. Attach the pendant directly in the sail by way of a talurite splice to prevent unintentional removal, loss or exchange. All the boat's foresails must be adjusted to the correct length, (see chap. 7.3). There should be a distance of at least 20 mm (3/4") between the top of the halyard swivel and the top guard when the sail is fully tensioned.

- "Cutback" for the tack, see table 7.1.1.
- The luff tape is adapted to Furlex extrusion according to the extrusion size in table 7.1.1.
- Use webbing loops in the sail' head and tack instead of eyelets. The sail will then form tightly around the luff extrusion when furling and achieve a better shape when reefed.

7.1.1 Measurement table for sails

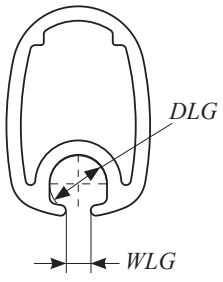
	50 S	
Head deduction F	360	
Tack deduction E (Any additional toggle or link must be added to E)	215	
Cutback CB	25	
Internal diameter of luff groove DLG	6	
Width of luff groove WLG	2.6	
Overall extrusion dimensions	22x15	

Fig. 7.1.a

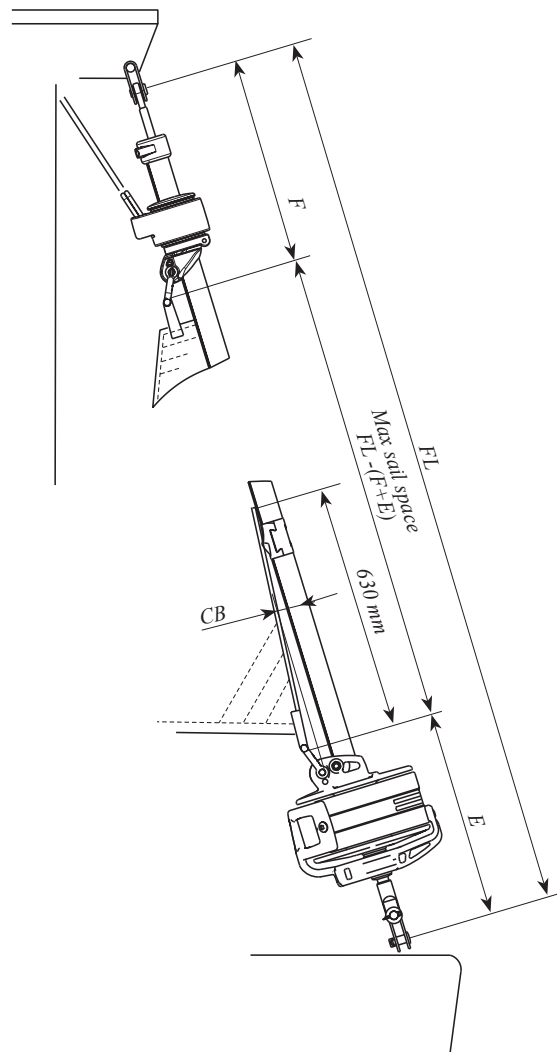


Fig. 7.1.b

7.2 Shape of the sail

The design of the sail can vary depending on its intended use and the desired performance.

The clew of the sail can be high or low.

A genoa usually has a low clew, with the foot sweeping as close to the deck as possible. To obtain the best trim when reefing, you must be prepared to adjust the sheeting position as required.

Small sails, such as a cruising (working) jib will have a higher clew. This gives better visibility under the sail. It also provides easier passage over the guard rail and less exposure to waves breaking over the foredeck in hard weather. This type of sail often requires less adjustment of the sheeting position when reefed. (See “**Reefing**”, chap. 12.)

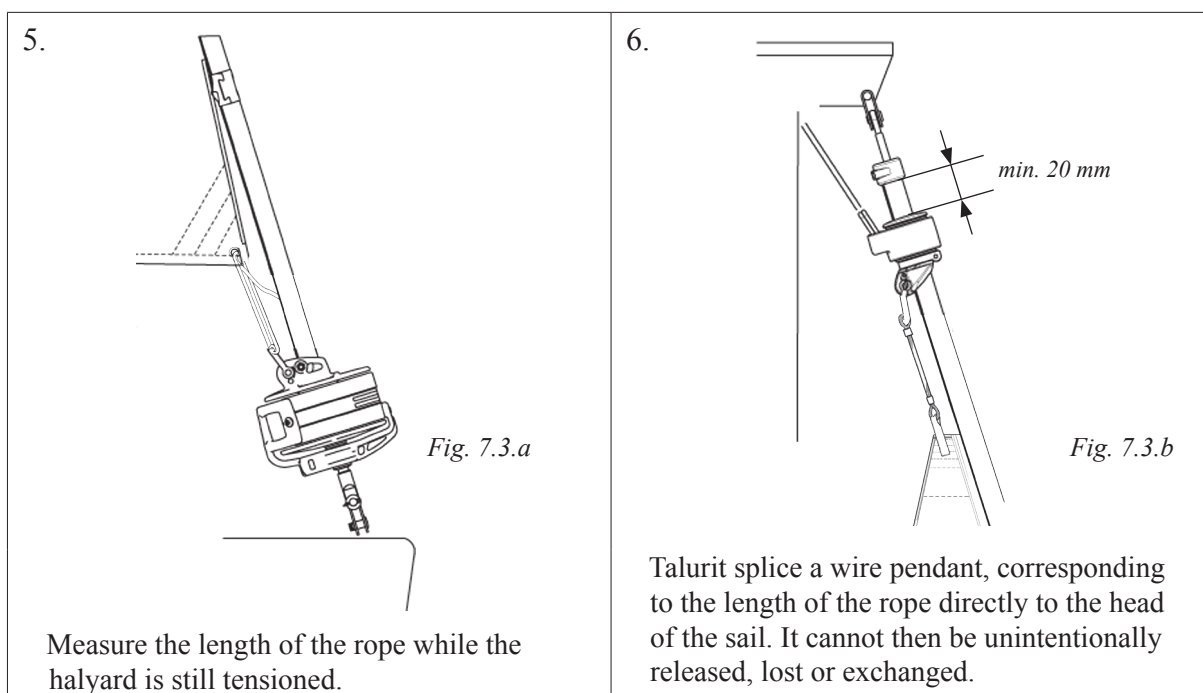
A furling genoa is usually a compromise between optimum performance and a more practical sail. The sail is designed for both light and strong winds and is cut with less draft. This gives a flatter shape when reefed.

Several methods have been developed to improve the shape of a reefed sail. Many sailmakers use foam as a filling along the luff of the sail. The foam is tailored to match the cut of the sail and increases the diameter of the sail roll when reefed. A larger diameter sail roll gathers in more sailcloth per turn and the draft is reduced by varying amounts along the luff extrusion.

7.3 Determining the length of the pendant

To hoist the sail, see the description in chap. 11.1.

1. Attach the head of the sail directly to the halyard swivel.
2. Tack the sail at deck level with a piece of rope between the sail tack and the tack snap shackle on the lower bearing assembly.
3. Hoist the sail (See “**To hoist the sail**”, chap. 11.1). Adjust the rope length at the tack so that the halyard swivel attains its top position, i.e. the 5–10° requirement is fulfilled when the halyard is fully tensioned.
4. There should never be less than 20 mm (3/4”) clearance between the top of the halyard swivel and the top guard when the sail is fully tensioned.



7. All the boat’s foresails must be adapted to the correct luff length.



For the halyard routing to work properly, the halyard swivel must be in the correct position to achieve the required 5–10° halyard angle.

OPERATING MANUAL

In order for you to gain the most benefit and enjoyment from your Furlex system we recommend that you study these operating instructions thoroughly.

All safety-related information is indicated by the following symbol:



This information must be followed to avoid damage to the system and the risk of personal injury.

The 2 year guarantee on the Furlex-system is only valid if the system is assembled and operated according to these instructions.

Unless you are fitting the Furlex system yourself, you do not need to read the entire assembly manual. However, there are references in the operating manual to certain sections of the assembly manual. It is very important to read and note these cross references.

Any additional fittings recommended in the manual are obtainable from your Furlex dealer.

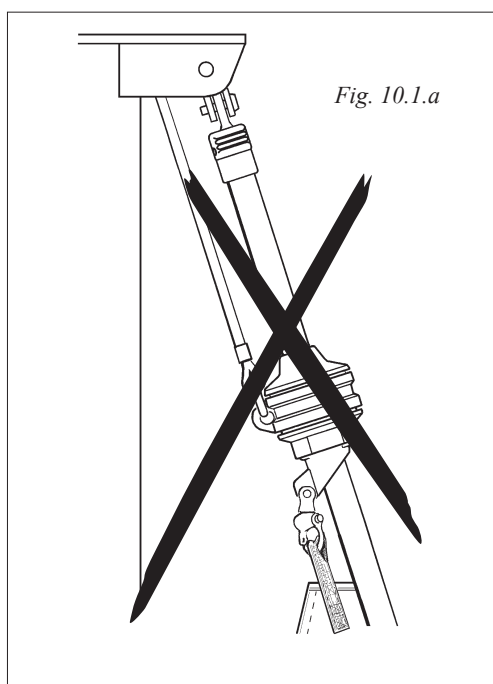
10 Halyard routing



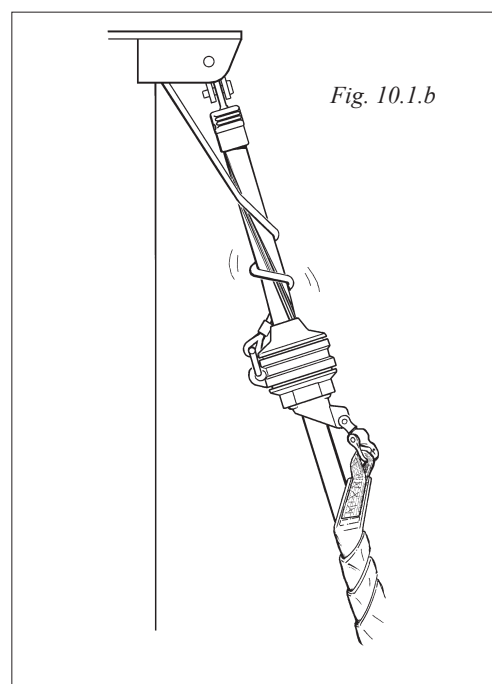
10.1 Summary

IMPORTANT POINTS!

- Halyard routing is one of the most important aspects of system assembly for safe, trouble-free sailing with a jib-furling reefing system.
- The angle between the halyard and forestay should be 5–10°. See fig. 5.4.b. If the angle is less, the halyard may wrap around the luff section when the sail is furled. Damage may occur to the halyard and luff extrusion. Failure to observe what is happening in this situation may even result in damage to the forestay wire.
- "Halyard wrap" may cause severe damage to the forestay and put the entire rig at risk. If the sail is furled with the aid of a winch, take great care. It can be difficult to control the tension in the furling line.
- If the 5–10°-requirement is not satisfied, halyard leads or a sheave box must be fitted to avoid halyard wrap.
- 1 halyard lead is included in the Furlex kit. Check that is mounted.
- See also under heading "**Halyard routing**", chap. 5.



Can lead to



During sailing, there is a certain amount of movement between the halyard and the halyard leads.

To prevent wear occurring on the wire, the leads are made from bronze.

The bronze is softer than the stainless wire, and will therefore take the wear and preserve the wire.

The halyard leads should be inspected on an yearly basis and any sharp edges filed off.

When 50% of the material has been worn down, the lead should be replaced.

The halyard leads are not covered by the 2 year Furlex guarantee.

10.2 Halyard sheave box

A sheave box can also be fitted to the mast to meet the 5–10° requirement. A sheave box will not damage the halyard nor is it worn by it either. Installation is more complicated but the box will eliminate the need to replace halyard leads in the future, as mentioned above.

When manufacturing Seldén masts, a sheave box is, (when suitable) incorporated if a Furlex is to be used. Sheave box kits with fitting instructions are available from all Furlex dealers.

See also table 5.2.1 and fig. 5.2.a for further information.

10.3 Spinnaker halyard

If the boat is equipped with a spinnaker halyard this must be kept clear of the Furlex system to avoid halyard wrap. An effective solution is to lead the halyard around the upper shroud and then down aft of the spreaders.



Stowing a spinnaker halyard parallel with a Furlex stay is not recommended!

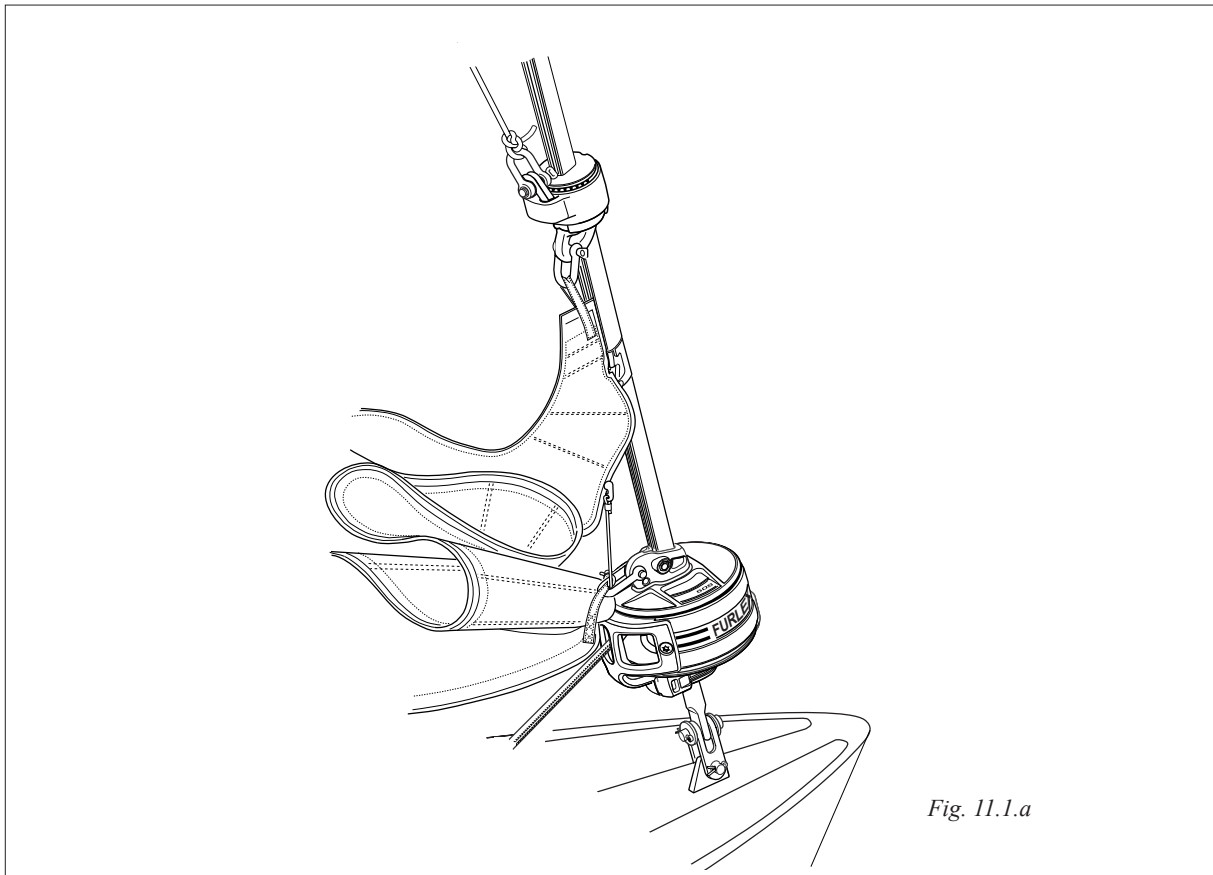
11 Sailing with Furlex

11.1 Hoisting the sail



The forestay must be properly tensioned every time the sail is hoisted. Therefore tension the backstay and any back stays before hoisting the sail.

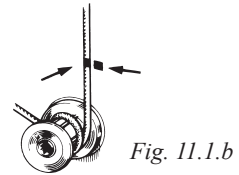
1. Tension the forestay for hard close-reach sailing **before** the sail is hoisted. If the sail is hoisted and firmly tensioned before the forestay, it may put excess strain on the halyard, halyard swivel and sail when the forestay is tensioned afterwards.
2. Lay the sail out on the deck. It should be carefully flaked down with the tack turned forward.
3. Tie the pre-feeders line in the tack shackle or a suitable place, see included instructions.
4. Attach the tack of the sail in the tack shackle.



5. Attach the sheet to the clew. Take the sheet through the lead block and then to the cockpit. Put a “figure of eight” in the ends.
6. Guide the sail luff tape through the pre-feeder and fasten the head of the sail to the halyard swivel shackle.
7. Attach the halyard to the rope lashing of the halyard swivel.

8. Feed the sail's luff tape into the groove through the sail feeder.
9. Hoist the sail. The prefeeder assists the luff tape feed by steering the sail towards the luff extrusion and sail feeder at a small angle. Tension the halyard until a vertical crease appears in the luff of the sail. Then slacken until the crease disappears. Belay the halyard.
10. Remove the prefeeder.
11. Furl the sail on the Furlex luff extrusion by pulling on the furling line. Let the windward sheet run free. Keep some tension on the leeward sheet, e.g. by placing a turn around a winch. It is important to furl the sail tightly and evenly. A sail that is too loosely furled can blow out in strong winds. If the boat is left unattended, the sail can be damaged by flapping. A sail that is too loosely furled can also cause unnecessary wear when the sail rocks back and forth in the wind.
12. Check the number of turns of the furling line remaining on the line drum. When the largest sail is fully furled, there should be 3–5 turns left. If the number of turns is to be adjusted, this is done by removing the sheet and turning the Furlex luff extrusion by hand until the correct number of turns are on the drum.
When furling in heavy winds, the sail will roll more tightly. This requires more turns on the line drum meaning that more line will be needed. Make sure you have sufficient turns of line on the drum.
13. Check that the halyard swivel is at least 20 mm (3/4") from the top guard and that **halyard angle satisfies the 5–10° requirement**.

14. Once all these points agree, mark the halyard as illustrated. This will prevent over-tensioning the halyard or stretching the halyard too far before the forestay/backstay are tensioned.
Also mark the maximum tension of the backstay adjuster.



15. The forestay tension can now be adjusted without putting too much strain on the halyard.



WARNING ! Never tension the halyard when the sail is reefed or furled.

11.2 Unfurling the sail

(Partial unfurling; see “Reefing”, chap. 12)

1. Release the furling line and the windward genoa sheet. Allow these to run freely while the sail is being unfurled.
2. For the furling line to be properly packed on the drum, place a turn of the furling line around a winch or a half-turn around a cleat. This provides some drag, which is especially useful in strong winds.
3. Place a turn of the leeward genoa sheet around a winch. Unfurl the sail by pulling on 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 adjust the sail to the desired shape.

11.3 Furling the sail

1. Release the windward sheet and ensure that it can run freely.
2. Furl the sail on the Furlex luff extrusion by pulling on the furling line. Release the leeward sheet. Keep a little tension on the sheet, e.g. by placing a turn around a winch. It is important to furl the sail tightly and evenly. A sail that is too loosely furled can blow out in hard winds. If the boat is left unattended, the sail can flap apart. A sail that is too loosely furled can also cause unnecessary wear when the sail rocks 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 unchecked in strong winds. If left for any length of time, it could be damaged irreparably!

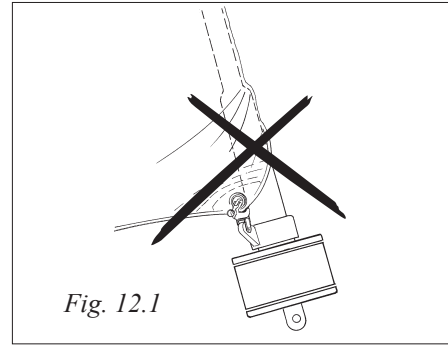
If the boat is to be left for a long period, it is a good idea to take down the sail and stow it below deck. It is then protected from UV radiation and dirt. Alternatively, a sail cover ("furling tube") can be used to protect the sail.

12 Reefing

The size of the working sail area is infinitely variable with a jib furling and reefing system. Even if the sail is designed as a furling sail incorporating foam etc. a reefed sail can never achieve the same efficiency as an unreefed sail of the same size.

12.1 Luff extrusion

The Furlex-systems luff extrusion has **the same size along its whole length**. The entire luff is furled in an even roll, **all the way down to the attachment tack**. This is a condition for a good shape on the reefed sail.



12.2 Reefing under sail

- In strong winds it may be necessary to reef the sail. It is important to furl the sail tightly. This both preserves the sail and gives it a better shape.
- 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 a winch is used for the furling line, first check that there is no obstruction which may interrupt the furling operation and possibly cause damage.

1. Slacken off the leeward sheet until the sail just starts to flap along the luff.
2. Pull on the furling line so that the sail is furled and flattened out. Belay the furling line.
3. Repeat the procedure as required to obtain the required sail area.



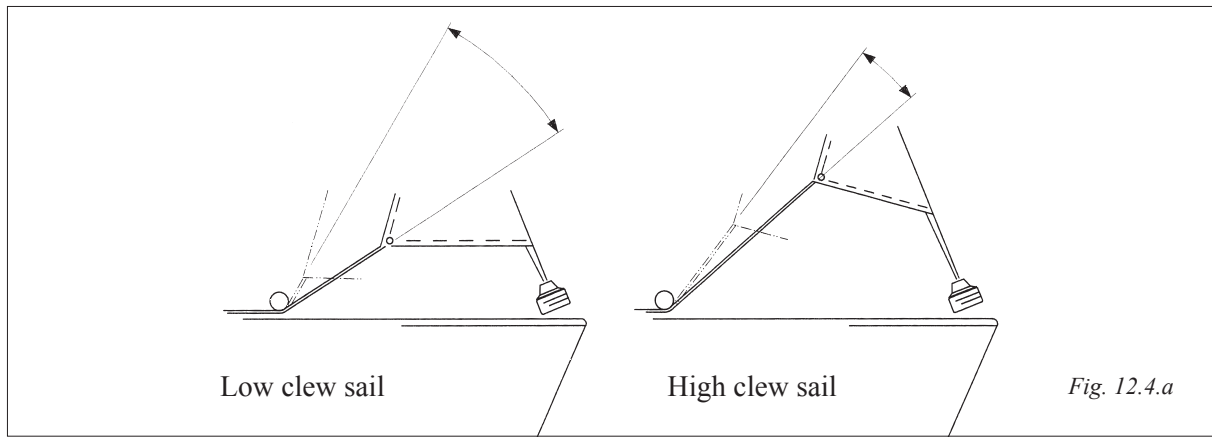
If a winch is used for the furling line, first check that there is no obstruction which may interrupt the furling operation and possibly cause damage.

12.3 Reefing with furled sail

- You will achieve the best sail shape by first unfurling the sail completely and then reefing down to the appropriate size. Pull in the furling line and keep the sheet well tensioned. The sail will then form a tight roll and its shape will be improved.
- If the wind is very strong or there are other reasons for not wanting to unfurl the sail completely, it can be set to the required reefed size from the furled position. The sail should then be furled relatively tightly. The sail cannot be expected to have as good a shape as the method above. Wear on the sail is also increased.

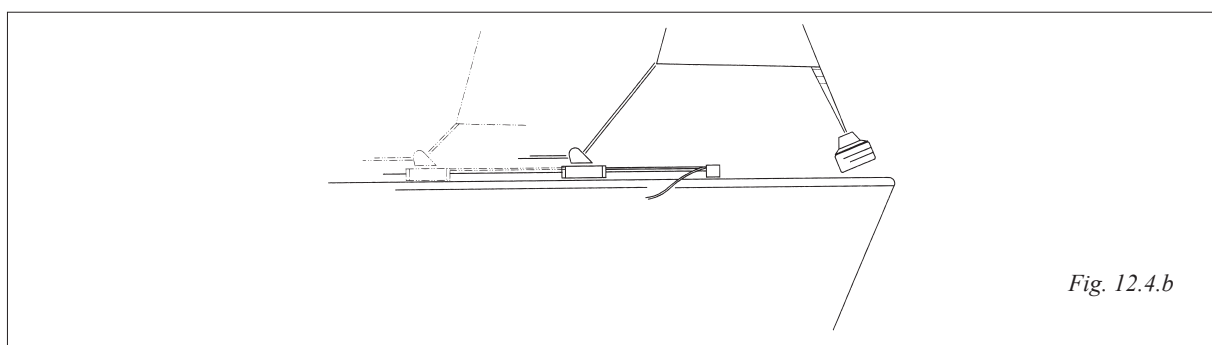
12.4 Adjustment of sheeting point

When the sail is reefed, it may be necessary to adjust the sheeting point. For a sail with a low clew, the sheeting point must be adjusted even when the sail is slightly reefed, while a sail with a high clew is more “forgiving”. See fig. 12.4.a. However, as a rule, you must be prepared **to adjust the sheeting point to give the best sail trim**.



The angular variation of the sheet relative to the deck is less for a high-clew sail. The comparison is based on the same number of furled revolutions.

The adjustment is eased considerably if a floating sheet point arrangement is used. The traveller position is adjusted with a line that runs through a block at the front of the track. The line is best routed to the cockpit where it is secured. The traveller position can also be adjusted under heavy load with the aid of a winch.



Many furling foresails have markings in the foot for different reefing positions. Using these markings as references, suitable sheeting points can be marked on the track. In this way, one can test for good combinations of sail area and sheeting point.

14 Adjustment of forestay length

The Furlex system can be extended by mounting additional toggles (See table 3.3.3). Several toggles are usually required to change the mast rake noticeably. These can be fitted at the upper or lower end of the system. On a Furlex with \varnothing 5 mm forestay of nominal length (10600 mm), the masthead is moved 125 mm aft, if the forestay is extended with one standard toggle ($H=35$ mm).

To shorten the Furlex system, the forestay wire and the luff extrusion must be shortened. See “Dismantling”, chap. 17 and “Assembling the Furlex System”, chap. 4.



NOTE! Never shorten the system by removing the lower Furlex toggle.
(See “Attachment to deck”, chap. 3.3.)

15 Maintenance of the Furlex system

In order for your Furlex system to rotate easily, year after year, a certain amount of system maintenance is required on a regular basis. Maintenance of the Furlex system is simple, even when the system is rigged on a boat. Halyard leads shall be inspected once per year and any sharp edges filed away. When 50% of the material has been worn down, the lead should be replaced.

15.1 Lubrication of bearings

Lubricate all ball bearings according to the description below, using the grease included in the Furlex kit. For the best results, remove the sail and empty the furling line from the drum. Flush the system with freshwater and let it dry.

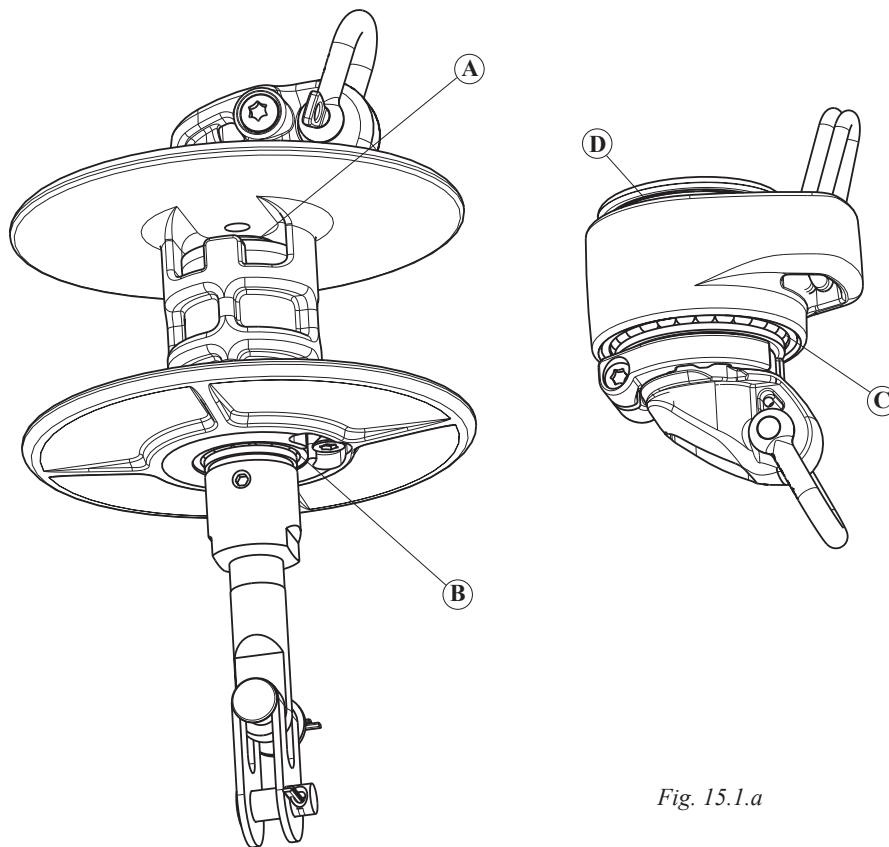


Fig. 15.1.a

Lower bearing assembly:

Apply a suitable amount of grease at (A) and (B) by using a brush.

Halyard swivel:

Apply a suitable amount of grease at (C) and (D) by using a brush.

15.2 When the Furlex is off the boat

Wash and flush the entire Furlex system with freshwater and mild detergent, so that dirt and salt crystals are dispersed.

NOTE! Certain washing liquids contain substances that can corrode aluminium. It is therefore important that you flush away all detergent thoroughly.

When the parts have dried, the anodised surfaces of the luff extrusion can be treated with silicon-free boat polish or wax. This offers good protection and prevents particles of dirt from fastening and soiling the sail. The stainless steel components can be treated with a suitable polish.

15.3 Storage

The Furlex system can preferably be stored together with the mast.



An unwashed or damp Furlex system must never be wrapped in plastic or other impervious material.

In areas where frost can occur, the Furlex system should be stored dry if it is stored horizontally. A luff section that has filled with rainwater can otherwise be ruptured at sub-zero temperatures. If the system is stored with the centre section higher than the ends, the risk for frost damage is eliminated.

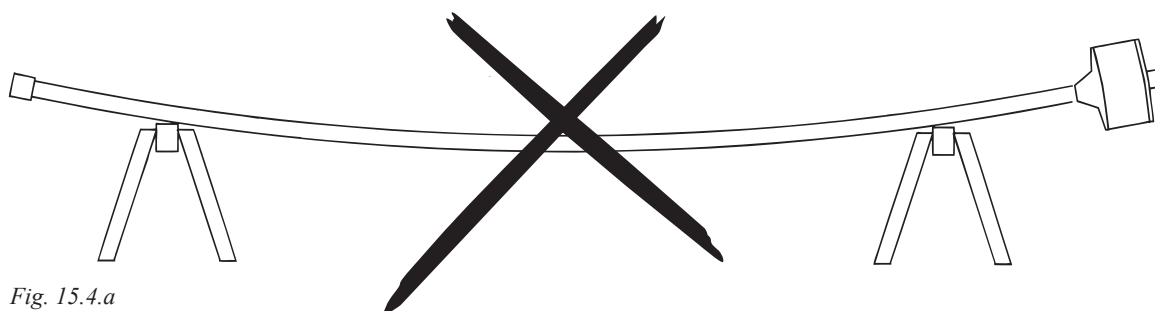


Fig. 15.4.a

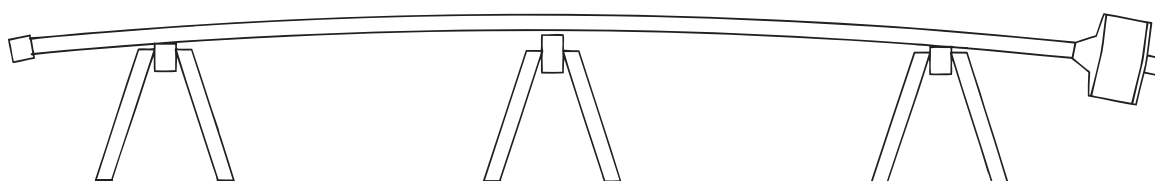


Fig. 15.4.b

16 Rigging

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

16.1 Rigging on a stepped mast

1. Slacken the backstay.
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.



Always use a strong “D” shackle or tie the halyard!

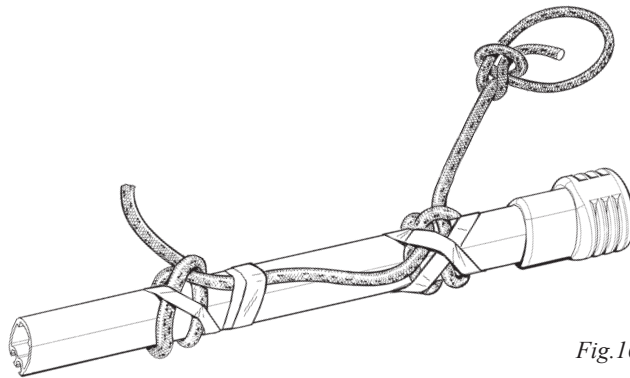


Fig.16.1.a

3. Tie a strong flexible line around the Furlex luff extrusion. Make two clove hitches, the upper one about 1 m from the top. Tape over the knots so that they cannot slip.
4. Hoist the sail 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 “**Working aloft**” in Seldén Mast’s rigging instructions, or contact your Furlex dealer.

6. When the stay is connected to the headbox, attach it to the deck fitting. The split pin for the clevis pin should be opened $\approx 20^\circ$. It will then retain its shape and can be used again.

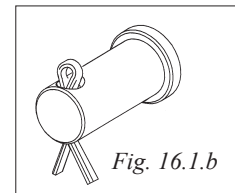


Fig. 16.1.b

7. Tension the forestay to 20% of the wire’s breaking strain. Since the tension in the forestay cannot be measured easily when it is encased in the luff extrusion, this must be done on the backstay. Due to the angular difference between these two stays, this corresponds to about 15% of the backstays breaking strain on a Masthead rig, assuming it has the same dimensions as the forestay.
(Forestay tension = about 1.25 x backstay tension.)

A firmly tensioned stay offers the least furling resistance.

For further information, see Seldén Mast’s rigging instructions, or contact your Furlex dealer.

16.2 Stepping the mast with Furlex fitted

1. Lay the mast with the front uppermost.
2. Connect the top end of the Furlex system to the forestay attachment.
3. Lift the mast. Let the Furlex system lay on the leading edge of the mast.
4. Have a person watching the Furlex system so that it does not get caught when lifting the mast. Keep the end of the stay outside the deck area in order to avoid “stepping the mast on the stay”.
5. Attach the stay to the boat as described in chap. 16.1, point 6–8.

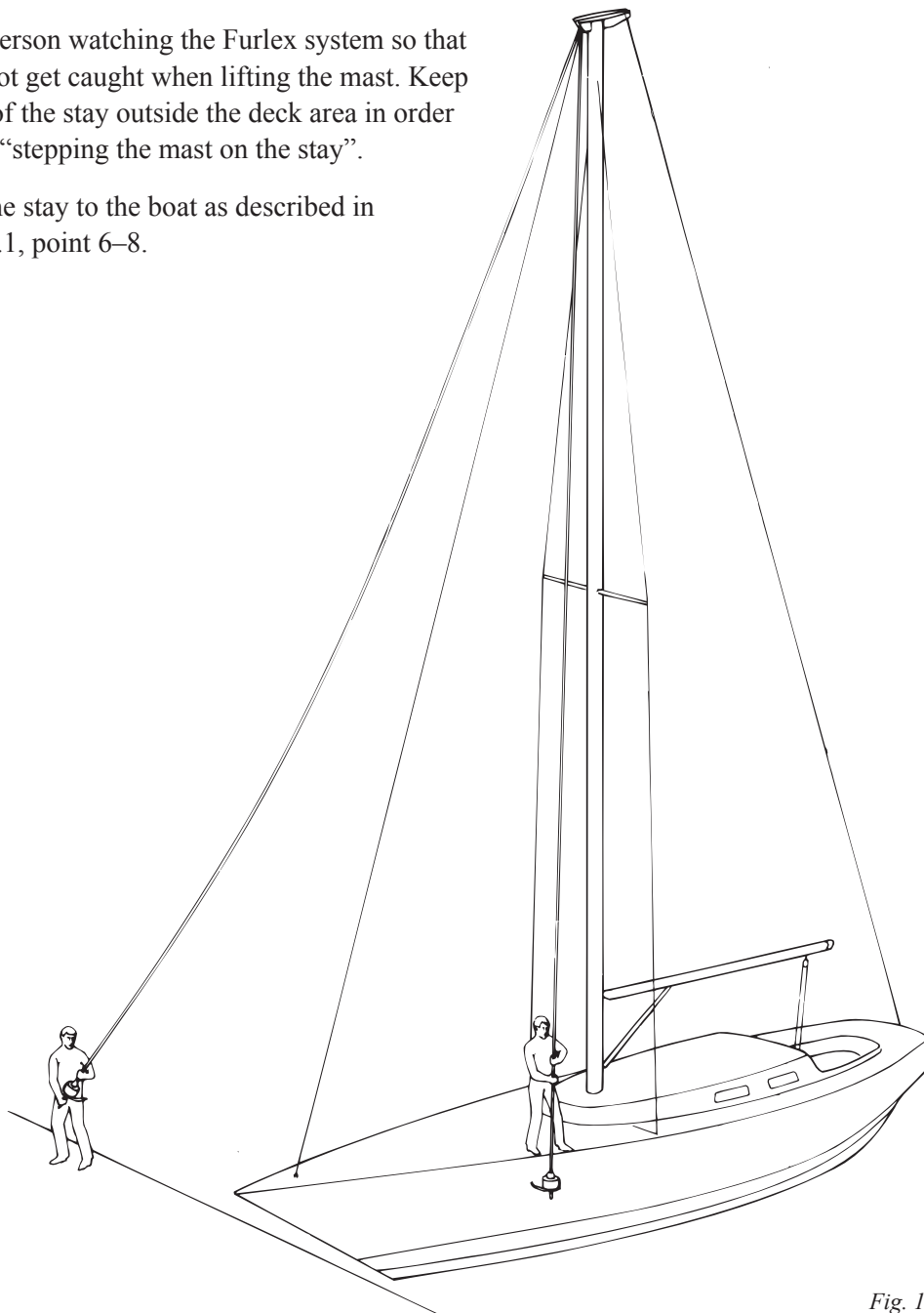


Fig. 16.2.a

17 Dismantling



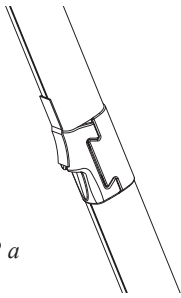
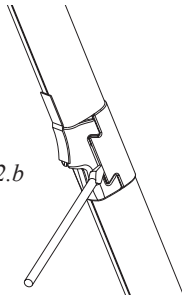
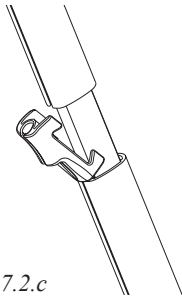
NOTE! Do not dismantle the halyard swivel or lower bearing assembly. It can be difficult to reassemble them correctly. The bearings are uncaged, with loose ball races. Contact your Furlex dealer if you need help with service.

17.1 Halyard swivel


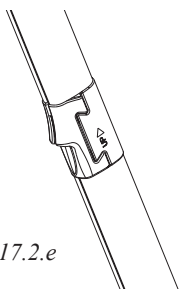
The halyard swivel can be removed from the system by removing the top guard and sliding it over the end of the forestay wire. The stay must also be removed from the mast.

17.2 Sail feeder

Removing the sail feeder.

<p>1.</p>  <p><i>Fig. 17.2 a</i></p> <p>Secure the stainless sail feeder with a piece of tape so that it does not fall overboard during removal.</p>	<p>2.</p>  <p><i>Fig. 17.2.b</i></p> <p>Insert a screwdriver between the sail feeder and the connection piece, then lift away the connection piece.</p>	<p>3.</p>  <p><i>Fig. 17.2.c</i></p> <p>Lift out the sail feeder.</p>
--	---	---

Refitting the sail feeder:

<p>4.</p>  <p><i>Fig. 17.2.d</i></p>  <p><i>Fig. 17.2.e</i></p> <p>Hook the lower edge of the sail feeder in the extrusion push it against the joint. Press the connecting piece on from the front. NOTE, the "UP" mark on the connecting piece.</p>
--

17.3 Line guide

1. Roll off all the line from the line drum. Note the number of turns for reassembly.

2.

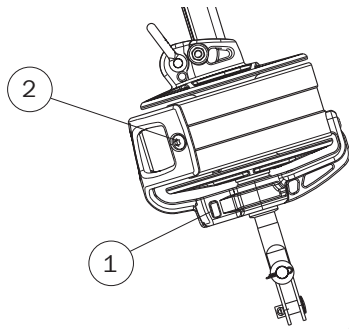


Fig. 17.3.a

Loosen the screw ① a few turns.
Loosen the screws ② completely. Press lightly on the casing so that the screws loosen completely from it but are still attached to the line guide fitting.

3.

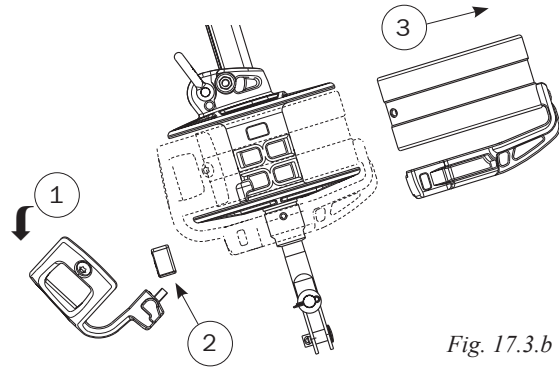


Fig. 17.3.b

Remove the line guide fitting ① downwards.
Save the locking block ②.
Remove the line guard ③.

17.4 Forestay

In order to understand the following text, we recommend that you first read the assembly instruction in chap. 4.1.

1. Remove the toggle from the wire terminal.
2. Remove the eye part of the terminal.
The thread is locked with locking adhesive. If it cannot be turned, heat the eye part to 100° C and then unscrew the parts while they are hot.
3. Remove the former from the bottom of the eye's threaded hole.

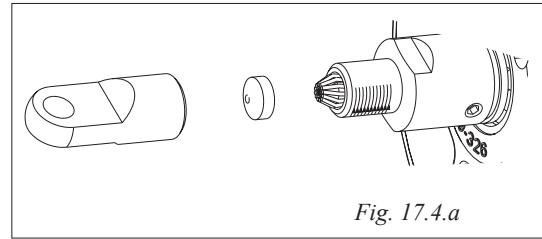


Fig. 17.4.a

4. Screw the eye part back on, at least 3 turns.
5. Hit the top of the eye **hard** along the line of the forestay. Use a heavy hammer.
The wire will then leave its coned seat. Unscrew the eye again.

NOTE! The stay must not be fixed anywhere during this operation.

6. Cut all wire strands that protrude outside the wedge, at the bend. (About 5 mm in on the wire).
See fig. 17.4.b.

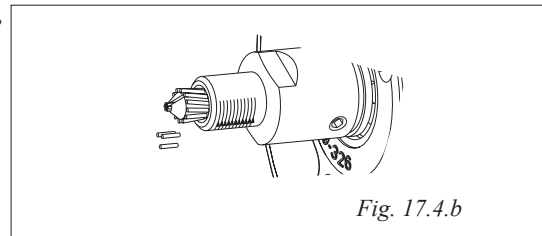


Fig. 17.4.b

7. Price the wedge apart slightly by inserting a small screwdriver in the slot and twisting. Tap on the screwdriver so that the wedge slides off the wire.
8. Twist the wire strands into the correct position around the core (anti-clockwise seen from below).
9. The wire can now be pulled out of the luff extrusion.

Prior to reassembly of the forestay:

Obtain a new Stalok wedge, correctly sized for the wire. We do not recommend re-using the existing wedge.

Cut the wire core flush with the outer strands. Deburr the end with a file.

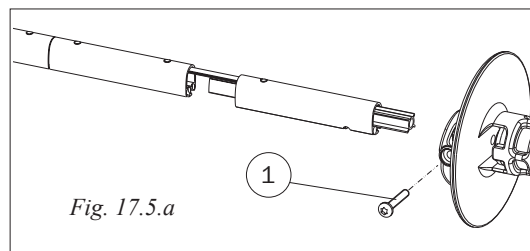
The decrease in forestay length which results has very little effect on the mast rake. A 5 mm decrease of forestay length moves the masthead forwards 11 mm on a 10600 mm forestay.

The reduction in length can also be compensated for by increasing the forestay tension by 5% of the wire's breaking strain, compared with previously. (However, the permanent tension must not exceed 20% of the wire's breaking strain.) If this decrease is unacceptable, the total decrease can be made equal to a toggle length. The reduced length is then compensated for by adding an eye/fork toggle (see table 3.3.3).

The luff extrusion and possibly the sail should in this case also be shortened accordingly.

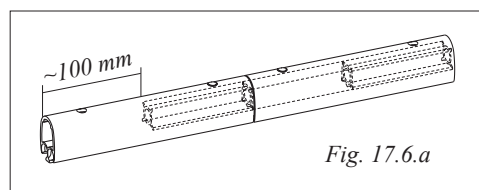
17.5 Lower bearing assembly

1. Make sure the luff extrusion system is laying straight on a flat surface.
2. Undo the screw ① and pull off the lower bearing assembly.
Refit the screw.
3. Undo the sail feeder. See "**Sail feeder**", chap. 17.2.



17.6 Luff extrusion system

Push the distance tube in the 600 mm extrusion up about 100 mm. Then pull the distance tube back and out of the extrusion. This is done most easily with a steel wire with a hook in the end. The inner diameter of the distance tube is about 6 mm.



The 600 mm extrusion can now be unhooked.

Pull out the joint sleeve and distance tube from the next extrusion and unhook these.

Reassembling the luff extrusion.

1. Check all corners, edges and holes to see that they are not damaged, file down any burrs if required.
2. Clean the wire and luff extrusion system with freshwater.
3. Reassembly is carried out according to the assembly instructions, **Assembling the Furlex system**, chap. 4.

18 Trouble shooting

Problem	Probably cause	Action
18.1 ”The sail cannot be unfurled, completely or partially.”	<ul style="list-style-type: none"> • The jib halyard is wrapped around the luff extrusion. • Another halyard is wrapped around the luff extrusion. • The furling line is not free or has become entangled. • The forestay is too slack. • Dirt and salt in the ball bearings. • Too much strain on the halyard. 	<ul style="list-style-type: none"> • Ease the halyard slightly and try to roll back the system. See the assembly and operating manual, “Halyard routing”, chap 5 & 10. • Furl the system. Free the halyard. • Slacken or free the furling line. • Tension the forestay. firstly by tensioning the backstay adjuster or backstays. If this does not help, shorten the Furlex system. See operating instructions, “Adjusting the forestay”, chap. 14. • Flush the ball bearings with freshwater and lubricate with Furlex grease. • Ease off the halyard.
18.2 ”The sail will not furl, is hard to furl or can only be partly furled.”	<ul style="list-style-type: none"> • The jib halyard is wrapped around the luff extrusion. • Another halyard is wrapped around the luff extrusion. • There is no line left on the drum. • The forestay is too slack. • Excessive wind pressure on the sail. • The windward sheet has not released. • One of the sheets has become entangled. • The furling line routing has large angles that increase friction. • Dirt and salt in the ball bearings. 	<ul style="list-style-type: none"> • Ease the halyard slightly and try to roll back the system. See operating instructions, “Halyard routing”, chap 5 & 10. • Unfurl the system. Free the halyard. • Disconnect the sheets and turn the extrusion by hand, adding more line to the drum. There should be at least 5 turns left on the drum when sail is fully furled. • Increase the forestay tension. • Let the leeward sheet off more. • Release the windward sheet. • Sort out the sheet. • Re-route the furling line avoiding large angles. • Flush the ball bearings with freshwater and lubricate with Furlex grease.
18.3 ”The system “wobbles” when unfurling!”	<ul style="list-style-type: none"> • The forestay is too loose. 	<ul style="list-style-type: none"> • Tension the forestay and/or backstay.
18.4 ”The sail unfurls after reefing or furling!”	<ul style="list-style-type: none"> • The sail is not furled tightly enough. • The furling line is not belayed. 	<ul style="list-style-type: none"> • Furl with some drag on the sheet. • Furl and belay the furling line.
18.5 ”The sail is hard to hoist!”	<ul style="list-style-type: none"> • The luff tape is too thick. • The sail is caught on something or is not sufficiently loose on the foredeck. • Fault in halyard routing. • Dirt and salt in the luff groove. 	<ul style="list-style-type: none"> • Return the sail to the sailmaker and refer to Furlex instructions, point 7.1.1 “Measurement table for sail” • Arrange the sail better on the foredeck. • Check the sheaves, winch, etc. • Clean the luff groove.

Problem		Probably cause	Action
18.6	"The luff cannot be tensioned!"	<ul style="list-style-type: none"> • The halyard swivel is contacting the top guard. • The angle between the forestay and the halyard is too great. 	<ul style="list-style-type: none"> • The sail's luff is too long. Let a sailmaker shorten the sail. • Shorten the sail or move the halyard lead up.
18.7	"The sail cannot be taken down!"	<ul style="list-style-type: none"> • The halyard is wrapped around the top of the luff extrusion. • The halyard wraps around the luff extrusion as the sail is coming down. • The halyard is stuck. 	<ul style="list-style-type: none"> • Ease the halyard slightly and try to roll back the system. See the assembly and operating manual, "Halyard routing", chap 5 & 10 . • Tension the halyard manually with a little drag while taking down the sail. • Check the routing of the halyard. (sheaves, stoppers, etc..)
18.8	"The sail's UV protection is on the inside of the furled sail!"	<ul style="list-style-type: none"> • The furling line is wound on the drum in the wrong direction. 	<ul style="list-style-type: none"> • Remove the sheet from the 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 and count the number of turns of furling line on the drum.
18.9	"The leach flogs despite sheeting hard!"	<ul style="list-style-type: none"> • Incorrect sheeting point. • Incorrectly tensioned leach line. • The sail is old or incorrectly cut. 	<ul style="list-style-type: none"> • Move the sheeting point forward. • Adjust the leach line. (Consult your sailmaker). • Consult your sailmaker.
18.10	"The leach closes (bends inwards)."	<ul style="list-style-type: none"> • Incorrect sheeting point. • The sail is old or incorrectly cut. 	<ul style="list-style-type: none"> • Move the sheeting point aft. • Consult your sailmaker.

19 Check list

Go through the checklist below and make sure that all the important instructions have been carried out. This will ensure that the Furlex system functions safely and reliably under all conditions.

19.1 Check points before sailing	See chapter
<input type="checkbox"/> Check that the angle between the halyard and forestay is 5–10° when the sail is hoisted.	5
<input type="checkbox"/> Check that the distance between the halyard swivel and the top guard is not less than 20 mm.	7.1
<input type="checkbox"/> Do all the sails used have the maximum luff length or an extension pendant?	7.1
<input type="checkbox"/> Check that no halyard can get caught in the halyard swivel or wrapped around the luff extrusion.	5.3
<input type="checkbox"/> Check that the line guide does not deflect the furling line too much, as this causes extra friction and wear.	6.3
<input type="checkbox"/> Check that the line guide fitting does not contact the line drum flanges.	4.3
<input type="checkbox"/> Check that the Furlex stay articulates freely at the upper and lower attachment.	3.1
<input type="checkbox"/> Check that the split pins are secured.	3.3

*We are convinced that your Furlex will give
you many years of enjoyment
and wish you and your crew happy sailing.*



www.seldenmast.com

Sweden: Seldén Mast AB • Tel: +46 (0)31 69 69 00 • info@seldenmast.com
UK: Seldén Mast Ltd. • Tel: +44 (0)1329 50 40 00 • info@seldenmast.co.uk
USA: Seldén Mast Inc. • Tel: +1 843-760-6278 • info@seldenus.com

Denmark: Seldén Mast A/S • Tel: +45 39 18 44 00 • info@seldenmast.dk
the Netherlands: Seldén Mid Europe B.V. • Tel: +31 (0)111-698 120 • info@seldenmast.nl
France: Seldén Mast SAS • Tel: 33 (0) 251 362 110 • info@seldenmast.fr