

facnor[®]
FURLING SYSTEMS



UK



FR



US



LS
LX
RX

E N R O U L E U R S
REEFING & FURLING SYSTEMS

NOTICE de MONTAGE
INSTALLATION MANUAL



Rev # 2 0 1 6

RACE DEVELOPED TECHNOLOGY
UNE TECHNOLOGIE ISSUE DE LA COURSE

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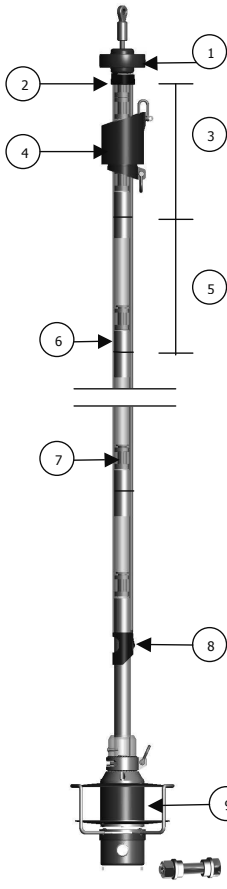
Reliable and easy to use, your Facnor reefing system will bring you satisfaction when cruising or racing. Since 1982 Facnor has been developing its products precisely focussing on Innovation, Sturdiness and Performance.

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Before beginning assembly, we recommend that you read these instructions carefully so as to familiarize yourself with the parts, installation and the use of your Facnor furling and reefing system.

1- ASSEMBLY DRAWING



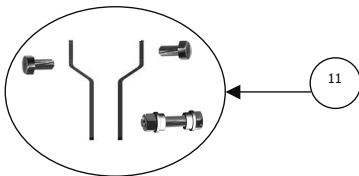
- 1 halyard deflector
- 2 top cap
- 3 top foil section
- 4 halyard swivel
- 5 2-meter-standard section
- 6 connector
- 7 black bushing (split into 2 half bushings)
- 8 sail feeder
- 9 drum

Lower drum fixing : 2 possible assemblies (see p.24)

- 10 pin with nylon bushes

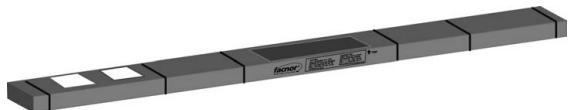
or

- 11 turnbuckle kit (stainless steel curved plates, optional)



2- PACKAGE INVENTORY

The Facnor headsail reefing system comprises:



2.1 BOX CONTENT

2.1.1 Standard components

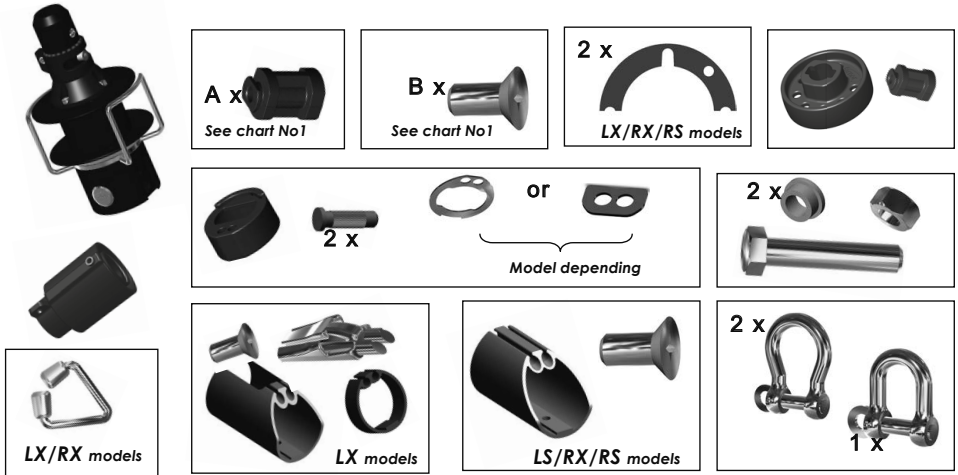


Chart No1

Maximum forestay length	8M30	10M40	12M40	14M40	16M40	18M40	20M40	22M40
A = Number of bushings necessary*	7	8	9	10	11	12	13	14
B = Number of screws necessary *	16	20	24	28	32	36	40	44

* **NOTE** : the quantity contained in the bag is superior to the number of screws or bushings required

2.1.2 Optional extras (not included in standard kit)

- Internal turnbuckle option



Drum fitted with internal turnbuckle option

- Turnbuckle kit (for installation see p. 24)






- Furling line kit (for installation see p. 26)

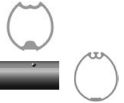


Chart No.2

Length-rope \varnothing	20M x \varnothing 06MM	24M x \varnothing 08MM	24M x \varnothing 10MM
Quantity C	44	4	4
Furl. system model	LS/LX 60-100 RX70-100	LS/LX 130-180 RX130-200	LS/LX 200-290 RX260-300

2.2 TUBE CONTENT

1. one telescopic section (1M40) 
2. external twin-groove sections 
3. connectors 



For OEM furling systems (delivered originally to the shipyard) the top section may be shorter than 2 meters. For those systems, the top section is cut at a specific length.

Example: if you order an FD190 **12M40**, according to the chart below you will receive **five 2-meter sections, one half-length section, the telescopic section and five connectors**.

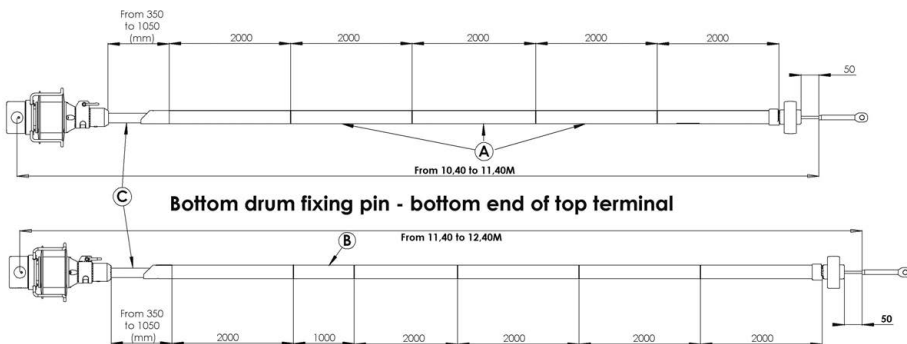
Chart No.3

Forestay max. length	No. of 2m sections	No. of 1m sections	No. of connectors	Telescopic section
7M30	3	0	2	1
8M40	3	1	3	1
10M40	4	1	4	1
12M40	5	1	5	1
14M50	6	1	6	1
16M50	7	1	7	1
18M50	8	1	8	1
20M50	9	1	9	1
22M50	10	1	10	1

2.3 DETERMINING WHICH SECTION LENGTH SHOULD BE USED

The example given is of a LS165 12M40, standard (i.e. not delivered to a shipyard), for a forestay measuring between 10.4 and 12.4 metres. According to the table above, you will receive: 5 two-metre external sections and 1 one-metre external section.

EXAMPLE No1 : your forestay measures between **10.40 and 11.40 metres (fig. A)**, you do not need the 1-metre section.



EXAMPLE No2: your forestay measures between **11.40 and 12.40 metres**, you do need the 1-metre section (**fig. B**); the latter fits above the last section.

In both examples, the exact length will be reached with the telescopic section (fig. C).

3- MAINTENANCE AND PRE-INSTALLATION NOTES

3.1 GENERAL REMARKS WITH REGARD TO FACNOR FURLING SYSTEM:

- **Simple to assemble: no mast unstepping, no section cutting, no drilling**

The FACNOR headsail furling system is one of the easiest to install:

- it does **not require unstepping the mast**
- under most circumstances you **will not need to cut any section on account of the patented Facnor telescopic section.**
- **no drilling** is necessary.

- **Easy maintenance : regular rinsing**

The LS/LX/RX furling systems **do not require any specific maintenance** as the drum and the swivel are fitted with bearings running in grease and protected by seals.

3.2 ELECTRICAL DANGER AND MAST SUPPORT



DO NOT BRING YOUR FURLING SYSTEM IN CONTACT WITH ELECTRIC CABLES OR HIGH TENSION LINES. The headsail reefing system is made from aluminium sections which are highly conductive. Contact by the system with power lines can be fatal.



DO NOT INSTALL YOUR REEFING SYSTEM WHEN STORMY WEATHER HAS BEEN FORECAST. A lightning striking the mast can travel down the system. Death could result from shocks induced from touching the reefing system.



MAKE SURE THE MAST IS SECURED BEFORE REMOVING THE BOTTOM FIXING PIN OF THE FORESTAY. Facnor reefing system can be assembled with the forestay in place. Kit components will be fed over the bottom of the forestay. Therefore, the bottom fixing pin will have to be removed. Before operating, support the front mast with a Spinnaker or Genoa halyard. **DO NOT USE A SNAP SHACKLE OR SHACKLE HALYARD BUT LASH IT.**



We recommend that you change your forestay if it is too old. You may contact one of our dealers. For information about the nearest Facnor retailer, contact us at +33 (0)2 33 88 50 22 or visit our web site : www.facnor.com .

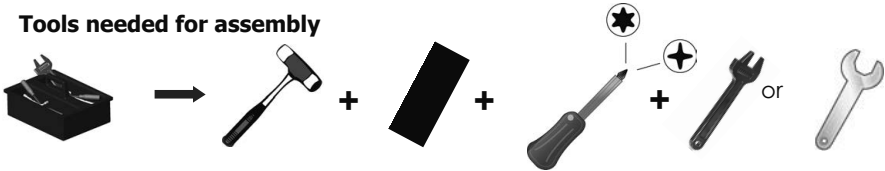
The services of a professional yacht rigger or sailmaker could end up saving you time and should you improperly install the furler or encounter an unusual rigging problem.

3.3- PREPARING FOR ASSEMBLY:

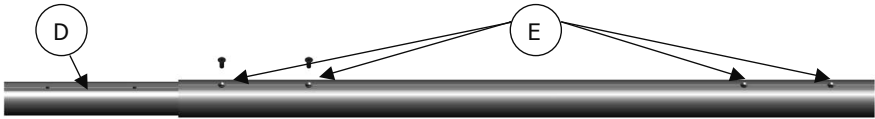
▪ Protecting the components

During assembly, we recommend you protect both the sections and the other items of the furling system, as rough ground may damage them.

▪ Tools needed for assembly



▪ Preparing foil sections



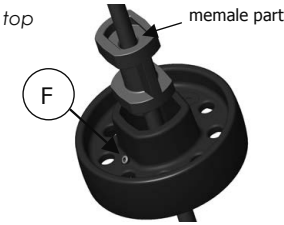
We recommend you prepare the sections before assembly. This involves fixing a connector (fig. D) to all of the twin-groove sections apart from one. The latter will be the top section. All of the external sections, **including the top section***, have symmetrical holes at each end (fig. E).

** For furling systems installed for the first time, delivered to the shipyard, the top section may be shorter than 2 metres. For these reefing systems, the top section is cut to length. Therefore, there is no hole on the upper end of the top section, on which the top cap will be fixed.*

⚠ **Do not tighten screws at this stage, leave a play.**

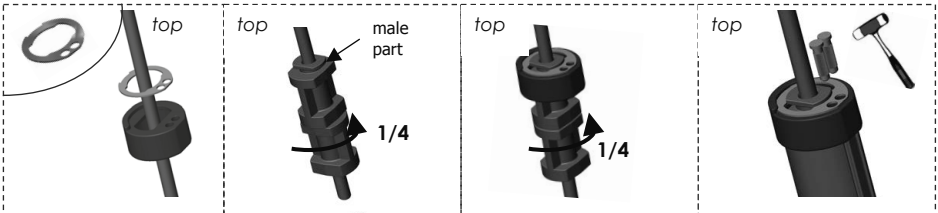
4- ASSEMBLY STAGES :

4.1 – ASSEMBLY OF THE HALYARD DEFLECTOR*



Slip the disk around the forestay, screw pointing up. Assemble the two half bushings **above** the deflector disk and around the forestay, the "female" part pointing up. Fit the bushing into the halyard deflector. Then tighten the screw (fig. F), which will fix the bushing in place.

4.2- ASSEMBLY OF THE TOP CAP AND THE TOP SECTION



4.2.1

4.2.2

4.2.3

4.2.4

Slip the stainless steel plate and then the top cap around the forestay. Position the plate by slipping it into the notches on the cap, designed for this purpose.


Around the forestay, assemble a first bushing, then a second one, the "male" part pointing up. Fit the bushing together, and give the bottom bushing a quarter turn.

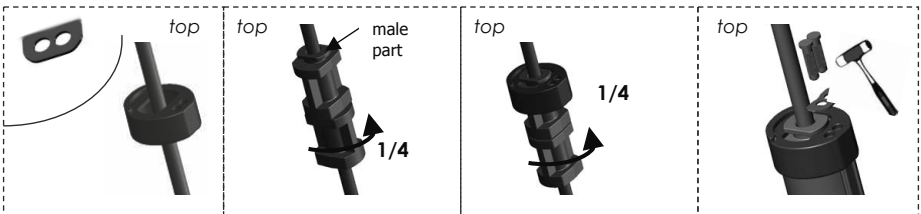
Put the bushing set into the cap, give another quarter turn to the bushings.


Take the top section and fix it snugly into the top cap. If assembly is not possible, give the bushings a half turn in the cap.

Place the two pins into the holes in the top cap and the stainless steel plate. Then, tap them into the section groove with a mallet.

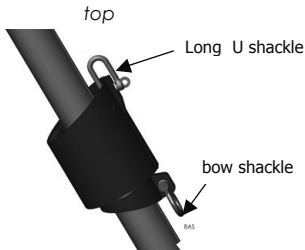
Doing this ensures that the bushings are fixed in place in the top.

Those two bushings are now joined. 



 **The pins are simply used to fix the cap. Therefore, do not hit too hard or you may damage the cap.**

4.3- FITTING THE HALYARD SWIVEL



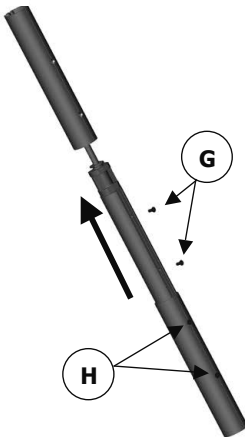
Ensure you fit the halyard swivel the right way up. Fix the two shackles. In order to raise the sections as high as possible, we recommend that you fit the halyard swivel and raise everything by way of a halyard.



Be sure to attach a down haul line to the halyard swivel so as to be able to recover it later.

4.4- ASSEMBLING FOIL SECTIONS

top



The top section is in place. Assemble a bushing around the forestay. Slip the next section, already assembled (see preparing the sections p.4), with the connector pointing towards the top of the forestay. With the help of the connector, push the bushing all the way up into the top section until the connector holes coincide with those of the top section.

Fit both screws (fig. G), then, slowly and firmly tighten the 4 screws (fig. G+H).

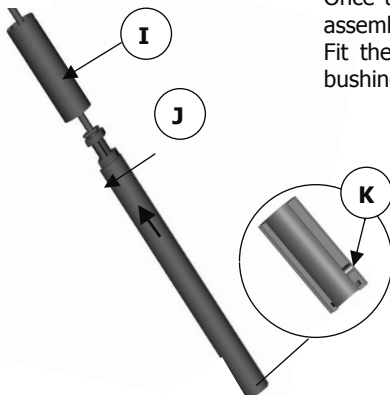
Repeat the operation until you reach the last section. DO NOT FIX ANYTHING TO THE LAST SECTION.



If your forestay requires the use of a 1-meter section, fit it above the lowest 2-meter section.

4.5- FITTING THE TELESCOPIC SECTION

top



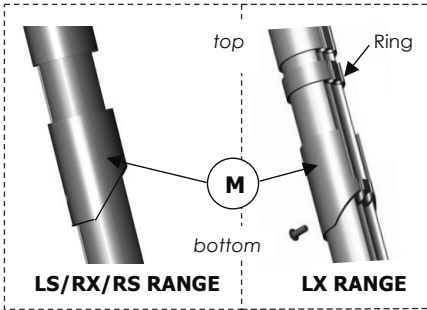
Once the sections have been hoisted as high as possible, assemble a bushing around the forestay.

Fit the telescopic section and push it up. That way, the bushing (fig. J) goes into the lowest foil section (Rep. I).



Fit the telescopic section to the forestay as indicated (fig. k). the side with only one hole must be pointing down.

4.6- FITTING THE FEEDER

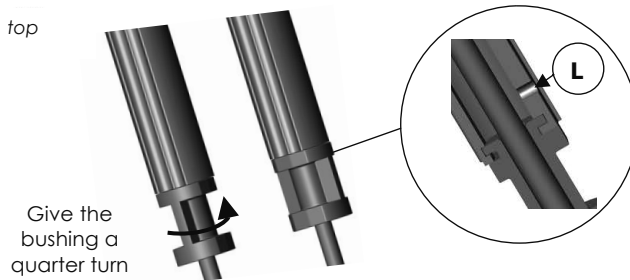


First fit the sail feeder (fig. M) to the telescopic section as indicated.

For LX models, before slipping the feeder, slip the ring. It is not necessary to fix the stainless steel part at this stage (see 4.11).

Fix the feeder to the telescopic section with the screw provided, tighten until fixed (see 4.11).

4.7- FITTING THE BUSHING INTO THE TELESCOPIC SECTION

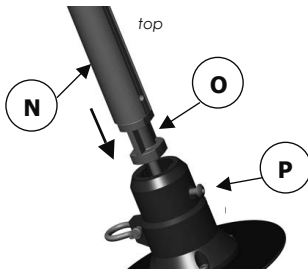


Assemble one bushing beneath the telescopic section, the male side pointing up. Fit the bushing to the telescopic section and give it a quarter turn.

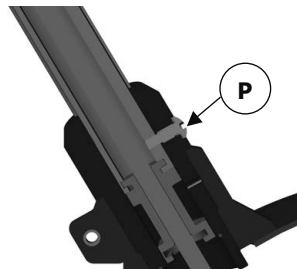


The bushing is fixed in place at the bottom of the telescopic section (fig. L).

4.8- FIXING THE TELESCOPIC SECTION IN THE DRUM



4.8.1



4.8.2

4.8.1- Slip the drum around the forestay. Loosen the screw (fig. P) slightly but sufficiently so that the telescopic section can slide inside the nose of the drum. Lower the telescopic section (fig. N), with its bushing (fig. O), until the bushing fits in snugly.

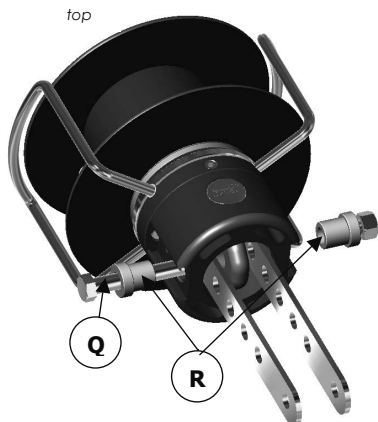
4.8.2- Tighten the locking screw (fig. P), which will join the drum to the telescopic section. This screw is greased at the factory. However, it is recommended to grease it every year.

4.9- FIXING THE BOTTOM OF THE DRUM

There are two kinds of assembly for the lower fitting of the drum:

4.9.1- STANDARD ASSEMBLY:

FORESTAY BOTTOM TERMINAL / EYE+LINK PLATES



Fit the two drilled plates to the lower part of the drum.

Bolt together with the pin (fig. Q), after inserting the nylon bushes (fig. R).



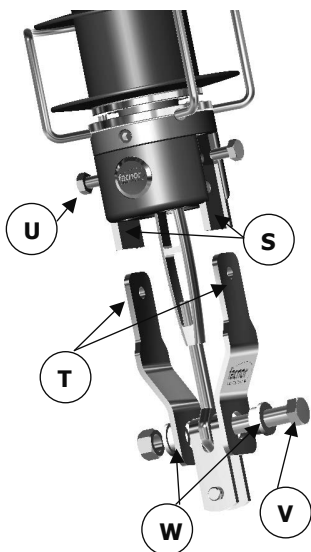
if the plates are too long, cut them as shown in the diagram.

If possible, keep a hole available above the one you intend to use in case of further adjustment.



4.9.2- ASSEMBLY WITH TURNBUCKLE KIT :

BOTTOM FORESTAY TERMINAL / TURNBUCKLE+ ARTICULATED JAW OR EYE + JAW



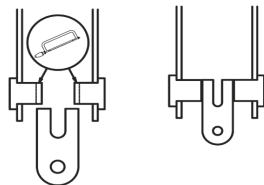
Slip the two flexible plastic strips (fig. S) into the slots situated on either side of the drum's base.

Fix the top of the stainless steel link plates (fig. T), found in the «Facnor turnbuckle kit», to the drum with the screws provided (fig. U). **Lightly grease both threads before fixing.**

Then, fix the bottom of the plates to the turnbuckle with the pin (fig. V), being careful to correctly position the nylon bushes (fig. W).



The fitting pin (fig. V) must ALWAYS be fixed to the upper section of the jaw.



In order to reach the optimum articulation of the forestay fitted with a furling system, it is absolutely necessary to have a toggle at the top end of the forestay. Furthermore, concerning the bottom terminal, it is recommended to have also a toggle.

4.10- ADJUSTING SECTIONS

Tighten the backstay to put some tension onto the forestay.

Leave the feeder piece resting on the drum.

Raise all of the sections together until they touch the top terminal of the forestay. Insert a screw into one of the lower holes of the last section.

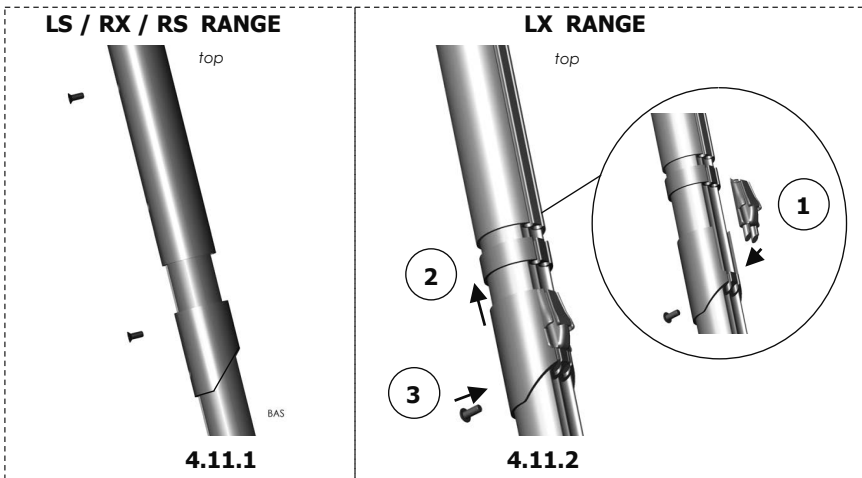
⚠ BEWARE: *DO NOT OVERTIGHTEN IT.* Press the screw with your thumb and let the sections slowly descend until a hole coincides with the first of the threads on the telescopic section.



⚠ IMPORTANT :

- **Make sure that sections have descended at least 50mm before the screw slots into place. Otherwise, proceed to the next hole, 100mm below.**
- **Leave a margin of 40-139 mm between the halyard deflector and the bottom of the forestay top terminal.**
- **The ideal position of the feeder is between 600 and 800 mm above the drum shackle.**

4.11- FIXING THE SAIL FEEDER



4.11.1- For the «LS», «RX» and «RS» range, aligns holes in the telescopic section with holes in the feeder. Then, screw down the feeder with the screw provided.

4.11.2- For the «LX» range, first, put the stainless steel feeder into its support. Then, align holes of the telescopic section and the feeder. Finally, screw down the feeder with screw provided.

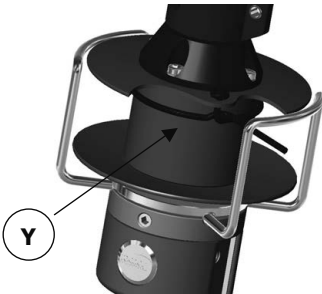
5- INSTALLATION OF THE REEFING LINE



5.1 Positioning the front deck block



The furling line should be installed as shown. The furling line should run off at 90° to the forestay and through the stainless steel guide (fig. X). *(If the line does not run within the guide, please see paragraph 6.1 below).* Fit the front deck as far as possible from the drum. The furling line should run at 90° to the foil sections with the line situated at mid-height round the drum as shown.



5.2 Setting the reefing line up

⚠ IMPORTANT: First half hitch the furling line (fig. Y) around the body of the drum. Then, feed the line through the hole in the top plate and tie a figure eight knot as shown.



Furl a few extra turns around the drum and end with a half hitch. When the sail is furled up, there should be always a few turns remaining around the drum.

6- ADJUSTING THE FURLING LINE GUIDE (LS RANGE)



6.1 Slightly loosen the screw (fig. Z) so that the guide can rotate.

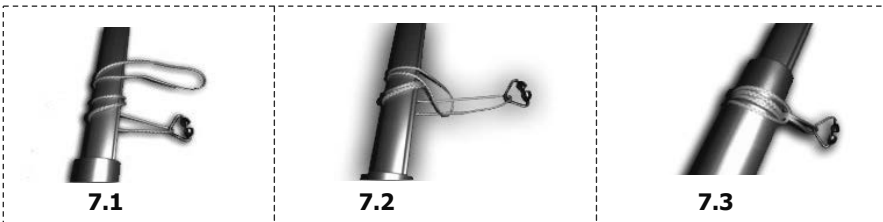
⚠ Do not remove the screw.

6.2 Orientate the guide by pulling the furling line up.

NOTE: For RX/LX ranges, adjust the furling line guide when tightening the two lower screws of the drum (see Rep C' on page 14)

7- FITTING THE PRE-FEEDER (LX/RX RANGES)

For the LX/RX ranges, we supply one pre-feeder that helps to guide the sail while hoisting.



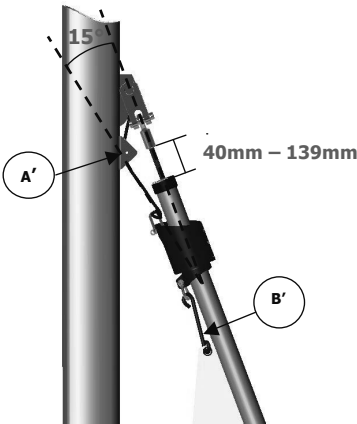
7.1- Wind the « vectran » loop twice round the telescopic section.

7.2- Pass the pre-feeder through the loop as shown.

7.3- Position the pre-feeder at the suitable height and pull tight. Once the sail is fitted, loosen the loop and remove the pre-feeder. Store for future use.

8- SPECIFIC INSTALLATIONS

Installation without deflector wheel or when using a sail with shorter luff:



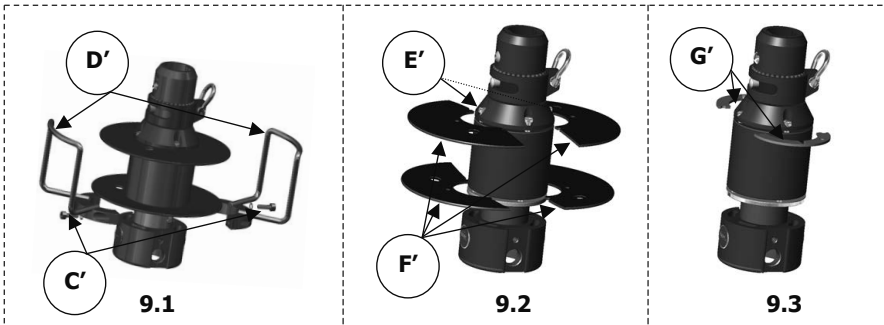
- Without deflector wheel:

If the halyard swivel is not used, fix a block on the mast (fig. A'); so that the halyard runs off at 15° to the forestay. Also insure that the top cap is positioned between 40mm and 139mm from the bottom end of the forestay terminal.

- Sail with shorter luff (i.e. Storm Sails and Working Jibs): The halyard swivel virtually eliminates halyard wrap ; however, when using a shorter sail, rig a short strop (fig. B') between the head of your sail to allow the top of the halyard swivel to be positioned around 50mm from the top section cap, when your sail is fully hoisted.

9- CHANGING FURLING SYSTEM INTO HEADFOIL (LX/RX REMOVABLE DRUMS)

Changing your LX/RX furling system into headfoil allows lowering the tack point and therefore gaining length in the luff. You can then use a sail with a longer luff than your cruising Genoa. This easy operation can be sequenced in 3 steps :



9.1- Dismantling the furling line guides :

Remove the guides (fig. D') after removing the two screws (fig. C').

9.2- Removing half plates :

Remove the two screws (fig. E') that go through the half plates. Slightly loosen the two other screws in order to release the four half plates (fig. F').

9.3- Installing the half protection rings :

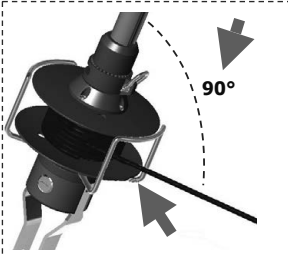
Slip the two half protection rings (fig. G'), then tighten the four screws back (fig. E').

Follow the steps the other way round to come back to your original furling systems.

10- POST-INSTALLATION CHECK LIST



 **The furling line has been half hitched round the drum**

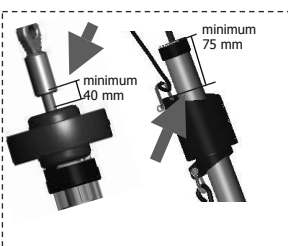


 **The furling line runs at 90° to the foil sections**
(when the furling line is positioned at mid-height around the drum)

 **The furling line runs through the stainless steel guide**
(If not, see p28, "adjusting the furling line guide")



 **The bottom pin of the forestay is correctly bolted, at least one thread is showed beyond the bolt**
(If the furling system is fitted with link plates, check the upper fixing screws – if toggle, fixation on top pin as shown against)



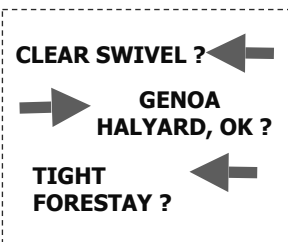
When the sail is hoisted and the halyard is tensioned correctly :

 **distance between halyard deflector & bottom end of the top forestay terminal = 40mm minimum – 139mm maximum**

 **distance between halyard swivel & top cap = 75mm minimum – 150 mm maximum***

Recommended datas (may vary according to rigging fitting)

** space to allow for change in luff length of Genoa. The bigger is the distance between the top swivel and the top cap, the more important is the risk for the halyard to twist round the forestay. Make sure that the halyard/forestay angle is bigger than 15° (if not, see page 29)*



 **The swivel is clear of any halyard**

 **The Genoa halyard is correctly tensioned**

 **The forestay is sufficiently tight**

11- FURLING TIPS

- When you reef, check the Genoa car to ensure the correct tension on the leach and foot.
- Keep the Genoa halyard tight when furling in and out. Do not tight excessively the halyard; stop tightening as soon as the folds in the sail have disappeared.
- Before leaving your boat, make sure that the sail is tightly furled and that the jib sheets are wrapped around the furled sail two or three times, and the reefing line is secured.
- When reefing in light airs, maintain some tension on the jib sheets to ensure the sail is properly rolled up.
- Slack the halyard at the harbour.
- Regarding maintenance, please see page 21.
- In case of difficult rotation, check that no halyard (Spinnaker halyard for instance) is interfering.



DO NOT FORCE the reefing system. Check for reasons if the sail is difficult to furl and contact your agent.



Please do not hesitate to contact our experienced sales team or the FACNOR dealers whose list is available on our web site : www.facnor.com and discover the wide range of FACNOR products.

ENJOY YOUR SAILING !

www.facnor.com

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FACSLIDE+ BATTEN CARS SYSTEMS
CHARIOTS GV FACSLIDE+

WIRE FURLERS / STOCKEURS

EF ELECTRIC FURLING & REEFING SYSTEMS
ENROULEURS ÉLECTRIQUES EF

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