



## Installation Instructions for Reef-Rite Furling Systems

**Congratulations** on the purchase of your new Reef-Rite Furling System! It has been constructed with great care from the finest materials available, and its rugged design will give you years of simple, dependable, and safe service. In order to work as intended, however, the system must be installed carefully. It is not particularly complicated — most boat owners are likely to have the skills and tools required for a successful installation — but care must be taken to do it correctly.

In your Reef-Rite shipping packages you should have received the following items. Please check the shipment contents and contact Desktop Wings Inc. immediately should any item be missing, or you determine that anything is damaged:

In the long PVC package there will be black anodized aluminum Foil Extrusion pieces. Inside each extrusion piece there will be a black plastic “Silencer” tube.

In the second package you will find:

1 - New Forestay cable complete with long swage, toggle, and clevis pins.



1 - Furler bottom drum unit.



1 - Furling line.



3 – Stanchion mount Furling Line guide blocks together with one Pulpit mount line guide.



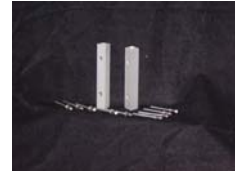
1 – Light, stainless steel Pawl operating cable.



1 - Small aluminum Hyfield Lever assembly together with two copper crimp sleeves and two mounting screws.



A number of square aluminum “connector” pieces together with four monel “Pop” rivets for each connector piece. The number of connectors supplied will be one less than the number of Foil Extrusion pieces supplied.



1 - Stainless steel “Halyard car”.



1 - White plastic “Top Foil Guide”.



1 – Bronze “Rylock” body together with a bronze ferrule and stainless steel “Button”.



In addition to the above, if you ordered “Kiwi Slides”, there will be sufficient slides to convert two headsails.

Before commencing your installation please thoroughly read through this entire manual.

If any of the following procedures are not clear to you, please do not hesitate to contact us for assistance. Our contact information is:

Phone: 215-453-9312

Email: [reefrite@desktopwings.com](mailto:reefrite@desktopwings.com)

Once you have read through these instructions, and have assembled all the materials required, you should be able to complete the installation in a single afternoon.

### **Hand tools required:**

- Hacksaw with a **NEW** 32-tooth **bimetal** blade. You will be cutting the new forestay to length and it is so much easier if you use the above blade.
- Standard pliers.
- Long-nosed pliers.
- Large size Vice-Grip pliers, or a portable vice.
- Fine flat file.
- 8” or 10” adjustable wrench.
- 13mm open-end wrench or 6” adjustable wrench.
- “Pop” rivet gun.
- Medium size Phillips screwdriver.
- Small flathead screwdriver or an Awl.
- Rubber mallet, or small hammer and small block of wood.
- Cordless, or portable, electric drill.
- A 3/16” drill bit if you are installing a 6/40 Reef-Rite system or a 7/32” drill bit for all other models.
- A 1/4” drill bit.
- Tape measure that is at least as long as your original forestay.
- Masking, or electrical, tape.
- Snatch Block. Not required but strongly recommended.
- Good Bosun’s Chair and the ability to be winched to the masthead at least twice.

### **Notes to take note of:**

If any of the following procedures are not clear to you, please do not hesitate to contact us for assistance. Our contact information is:

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Two, metric size, Hex (Allen) keys have been supplied with these instructions. These keys are used for removing/tightening socket head screws in the Drum unit and the Turnbuckle.

The installation of the furler will require someone to go aloft in a Bosun’s Chair to remove the forestay prior to assembly, and to reattach the forestay after assembly. If you are uneasy about going aloft in a Bosun’s Chair or with any other aspect of the assembly process, please seek the assistance of a professional yacht rigger.

You will be removing the original forestay and as you will be at the masthead for some of the time without a forestay, you **MUST** rig a temporary forestay before removing the original.

The Reef-Rite furler is assembled, and installed, as a single unit. All the assembly is done off the boat.

The new Forestay supplied is intentionally longer than required. The Foil extrusions are also supplied longer than will be needed.

While the new Turnbuckle has a large range of adjustment, it is strongly recommended that you take care when measuring and cutting the new forestay, and extrusions, to length, as any error may be beyond the adjustment range of the turnbuckle. If you make the parts too long, you will have to trim them further. **If you cut them too short, you will have to postpone the installation until you can obtain replacement parts.** **MEASURE CAREFULLY.**

You will find thick-walled plastic tubing (the Silencer Tube) inside each piece of Foil extrusion. This tubing serves to center and isolate the Forestay in the extrusion, preventing metal-to-metal contact. With the exception of the top tube, the Silencer tubes are pre-cut to the correct length.

The Reef-Rite Furler installation process can be broken down into eight major steps:

1. Rig Temporary Forestay and remove Original Forestay.
2. Assemble Foil Extrusions.
3. Measure and cut New Forestay and Foil Assembly to correct length.
4. Assemble Furler.
5. Measure Maximum Sail Luff Length.
6. Mount Furler.
7. Mount Furling Line guide blocks.
8. Install Locking Pawl Cable and Hyfield Lever.

Each of these major steps is broken down further into separate tasks. These tasks are marked with a checkbox --  -- so you can keep track of your progress. Do not move on to the next task until you have completed the prior one.

Installation typically takes three to four hours dependent on any difficulties encountered at the masthead.

1.  **Rig a Temporary Forestay and remove Original Forestay.**

**A serious note about safety.**

**Electrical hazards.**

The Reef-Rite furler is manufactured from Aluminum Extrusions and Stainless Steel components, all of which are highly conductive

**DO NOT** bring the system close to or in contact with electrical cables or high-tension lines. Serious injury or death could result from shocks induced by contact with power lines.

**DO NOT** assemble and install in unstable weather conditions where lightning is present or imminent. Lightning striking a sailboat mast is likely to travel down the furler system. Contact with the system could be fatal.

**Working Aloft:**

**DO NOT** treat the job of going up the mast lightly.

Use a heavy duty Bosun's Chair in good condition, which provides good support and security. Large, deep tool pockets are handy.

**Never** attach a snap shackle directly to the Bosun's Chair. Always bypass the shackle and **tie** the halyard to the chair.

**Always** use a safety line.

**Never** allow anyone to stand directly under the person working aloft. Any tool or rigging pin accidentally dropped from aloft could be a lethal weapon.

## **PLEASE BE CAREFUL.**

If you have a spinnaker halyard or second jib halyard available, either of these will be sufficient as a temporary Forestay. Just attach to the Stemhead fitting (bow strap) and tension as tight as possible using the halyard winch. If neither is available, attach a block to the masthead crane and rig a temporary Forestay using a suitable length of line.

Mark the position of the existing forestay Turnbuckle by placing tape on the threaded studs where they enter the Turnbuckle body. Slacken off, and remove, the forestay Turnbuckle.

Remove the toggle from the new Forestay and take this to the masthead with you when you are going to remove the top Forestay clevis pin. While it is preferable to use the new toggle, there are some situations where this is not possible and the original must be re-used.

If your Forestay attaches to a toggle that mounts inside the masthead crane, check that the new toggle will actually fit inside the crane and onto the toggle-crane clevis pin. If it will, check that you can actually remove the clevis pin attaching the original toggle to the crane. In some cases this pin is frozen in place and cannot be removed without unstepping the mast.

Assuming the toggle will fit, and the crane clevis pin is not frozen, remove the pin, releasing the Forestay complete with Toggle. Otherwise you will have to discard the new toggle and attach the new Forestay to the original toggle. In that case remove the clevis pin attaching the original Forestay to the toggle.

Either attach a long line to the Forestay and lower it to deck level or attach the Forestay to the boson's chair and bring it down with you when you descend the mast.

2.  **Assemble the Foil Extrusions:**

All Extrusion sections are pre-drilled for the Connector Rivets.

Locate the bottom extrusion section. You can tell this from the other sections because it has an offset hole each side at one end. If you are using Kiwi Slides, it will also have the gray anodized Downloader Gate. If you are not using Kiwi Slides there will be a scalloped area at the luff slots. The end with the offset holes is the lower end of the bottom extrusion section (see fig.); later, you will fit it into the drum unit.



The bottom extrusion piece, and its Silencer Tube/s, have been cut to length at the factory.

Assemble the next Extrusion section by sliding a connector piece into the upper end of the bottom extrusion section and fasten with two of the supplied "Pop" rivets (see fig.).



**NOTE:** Make certain that the head of each rivet is seated down fully. Any rivets standing proud of the Extrusion face will prevent the Halyard Car from sliding smoothly along the foil assembly.

Slide the next Extrusion piece over the connector and rivet in place. Again, make sure that each rivet is seated down fully.

Slide a Silencer Tube into the Extrusion piece just fitted.

Repeat these last three tasks with the remaining extrusion sections until the foil assembly is complete.

The Drum unit has an offset cross-hole near the top. Slacken off the two screws going into this cross-hole and remove the pin located between the screws. **WARNING:** the pin will easily drop out of the hole. Be very careful that you do not lose this pin.

Fit the bottom Extrusion section into the Drum unit and push the cross pin in place through the offset holes in the bottom extrusion. The pin locks the extrusion to the drum (see fig.).



Tighten down the previously loosened screws to secure the pin.

NOTE: the pin fits between the screws, the screws ***do not*** tighten against the pin.

3.  **Measure and cut New Forestay and Foil Assembly to correct length:**

3(a)  **Prepare Forestays:**

Assemble the Turnbuckle and bottom stud to the original Forestay and position the Turnbuckle so the ends touch the tape previously applied to the studs. This ensures the original Forestay is now at its normal fitted length.

Lay the original and new Forestays out straight on the dock, top swages together.

If you are able to use the new top Forestay toggle, assemble the toggle back onto the new Forestay, then using a suitable line, tie the toggles of both forestays together and anchor to a fixed item on the dock (e.g. a dock cleat, or piling).

If you are **NOT** able to use the new toggle, tie the swage eyes together (see fig.) and anchor to a fixed item on the dock.



Using suitable lines, attach the bottom end of the Forestays to another fixed point and place sufficient tension on each cable such that all slack is removed and there are no obvious kinks. NOTE: You may find a Rolling Hitch as a handy way to attach a line to the bottom end of the new forestay.



3(b)  **Measure and cut Foil Extrusion assembly:**

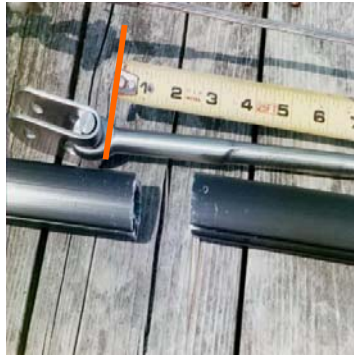
Lay the Foil and Drum assembly alongside the Forestays with the clevis pin hole of the new bottom toggle aligned with the clevis pin hole of the original forestay bottom toggle. Be precise with this alignment as it determines the actual length of the final assembly.

Measure down from the bottom of the new Forestay top swage eye, using the following dimension for your Reef-Rite model (see table), and mark the top Extrusion section.

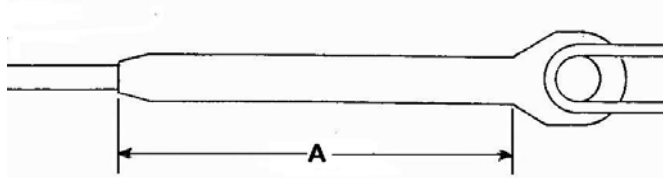
6/40	2 5/8"
8/60	3 5/8"
9/70	4 3/16"
12/90	4 3/4"



Slide the remaining Silencer Tube into the extrusion and cut through the top extrusion and Silencer Tube at this mark (see fig.).

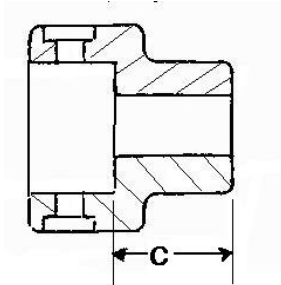


On the new Forestay, measure the distance from the bottom of the swage eye to the bottom of the swage (see fig.). This is dimension “A”.



Add 1/2” to “A”. This is dimension “B”.

On the Top Foil Guide, measure the distance from the inside flange to the top face (smallest diameter, see fig.). This dimension is “C”.



Subtract dimension “C” from “B”. This calculation gives you the amount by which you have to shorten the top Silencer Tube. Cut the tube to length and slide it back into the Extrusion section, cut end first. The uncut end is countersunk to facilitate insertion of the Forestay.

3(c)  **Measure and cut Forestay:**

Remove the Foil assembly from the Drum unit by removing the cross pin.

Remove the Drum Top Cover and Top Flange by removing the four socket-head screws.

This will uncover the threaded bronze center section of the drum (see fig.). The new Forestay is to be cut flush with the top of this threaded section.



Again align the clevis pin hole of the Drum unit bottom toggle with the clevis pin hole of the original forestay bottom toggle.

If, on your model, the threaded section stands proud of the top drum face, place a piece of tape around the new Forestay such that the center of the tape is in line with the top of the threaded center section of the drum. Otherwise, measure the distance from the drum face to the top of the threaded section, mark the forestay in line with the drum face and add the distance from the face to the threaded section. Mark the forestay at the new dimension and place tape over this point.

**DOUBLE check this placement and the drum unit alignment with the original bottom toggle before proceeding.**



Remove all lines from both Forestays.

Using Vice-Grip pliers or a portable vice, if you have one available, clamp the new Forestay onto a solid item (e.g. dock cleat, or dock side) and using the hacksaw, cut through the tape and Forestay at the center of the tape.

NOTE: Using the tape prevents the Forestay cable from unlaying as you cut and makes the cutting cleaner and easier.

4.  **Assemble the Reef-Rite furler:**

Place the Top Foil Guide onto the Foil Extrusion assembly and tighten the two screws against the extrusion. Slacken off the screws and remove the guide. Drill through each side of the extrusion, at the marks made by the screws, using a 3/16" drill bit for the 6/40 Reef-Rite model or a 7/32" drill bit for all other Reef-Rite models.

Fit the Top Foil Guide and fully tighten down the two screws.

Remove the remaining tape from the new Forestay and, from the top, slide the Forestay down through the Foil assembly. It may be a bit difficult to start, but once you align the cable and the top Silencer Tube the Forestay should easily slide all the way down the assembly.

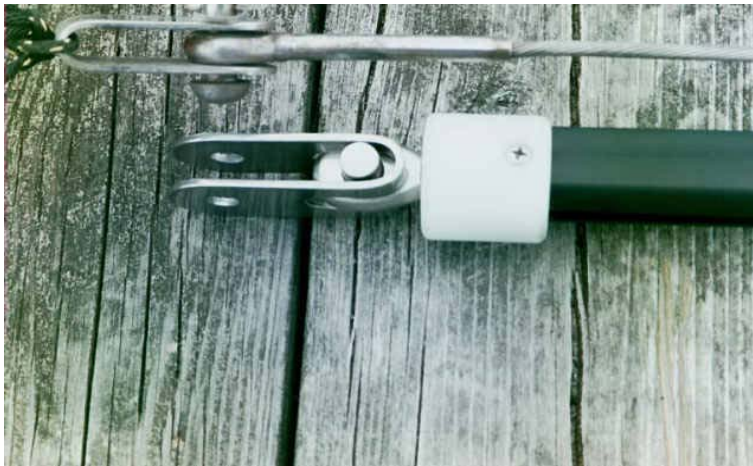
NOTE: Should you encounter any difficulty further down the assembly it means one, or more, of the rivets has not fully seated/pulled up. You should determine which rivet is causing the problem, remove it and fit a new rivet correctly.

Slide the Halyard Car onto the bottom section of the Foil assembly, large diameter to the top, followed by the Drum Top Cover and then the Drum Top Flange (see fig.).



Slide the bottom Extrusion Silencer Tube over the Forestay and into the Extrusion.

From the top, push the Forestay fully down into the Foil assembly and secure it in that position (see fig.).



Slide the Rylock Body over the Forestay, threaded end down.

Unlay the outer 12 strands of the Forestay cable using a small screwdriver or awl (see fig.).

NOTE: Do **NOT** bend any of the outer wires, just unlay them.

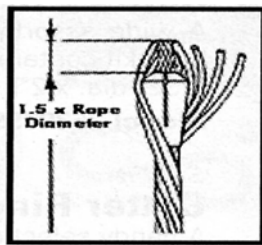


File any burrs off the end of the inner core.

Slide the bronze Rylock Ferrule over the inner core, large diameter down, and position it such that the bottom end is 1 1/2 times the Forestay diameter above the end of the core.

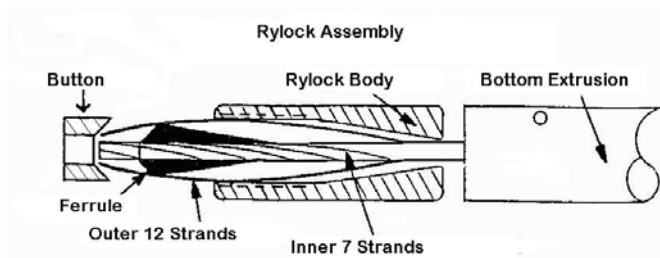
NOTE: The Ferrule may have to be forced over the core.

Re-lay the outer 12 strands back over the Ferrule, being careful to not have any crossed strands (see fig.).

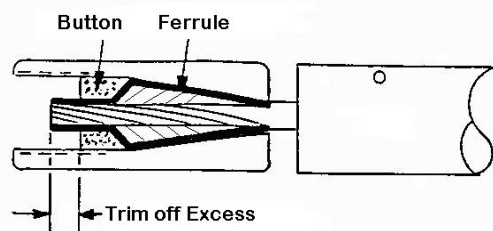


File any burrs off the ends of the outer strands.

Tap the Rylock Button over the Forestay cable (see fig.).



Push the Rylock Body down the cable and tap the Button into the body such that at least 3 threads are visible inside the body (see fig.).



NOTE: Be careful not to damage any threads.

Screw the Drum unit into the Rylock Body and half tighten down, using a wrench on the Rylock Body, to hold it steady, and another on the bottom toggle to turn the drum unit.

Remove the Drum unit; tap the Rylock body up the Forestay to uncover the cable end.

NOTE: Use a rubber mallet, or a block of wood if using a hammer, so as to not damage the Rylock Body.

Trim off any Forestay cable that is extending past the Button face, as shown in prior fig.

Screw the Drum unit back into the Rylock Body and fully tighten down (see fig.).



Bolt the Drum Top Flange and Top Cover onto the Drum Unit.

NOTE: The bolts are not equally spaced.

Slide the Extrusion assembly into the Drum unit and lock it in place with the cross pin.

Tighten down the pin retaining screws.

NOTE: The pin fits between the screws. The screws ***DO NOT*** tighten against the pin.

The Reef-Rite unit is now ready for mounting on your boat.

5.  **Measure maximum Sail Luff Length.**

Slide the Halyard Car up the Foil assembly to within 4” of the Foil Top Guide.

Measure the distance from the Drum unit shackle to the bottom shackle on the Halyard Car.

This measurement is the **MAXIMUM**, fully tensioned, Sail Luff length you can use.

6.  **Mount the Furler:**

Remove the four Turnbuckle locking screws and unscrew the Turnbuckle until you have three or four threads engaged in the Turnbuckle at each end.

If you have a snatch block, mount it on the temporary Forestay and attach it to the Halyard car.

Attach the Jib halyard to the Halyard car.

Haul the furler assembly up to the masthead.

You will have a certain amount of bend in the foil assembly during this process. This is normal and will not damage the unit.

Attach the unit to either the masthead crane or top toggle, whichever method you have been able to use. Make sure you have the cotter pin open end formed such that it can not work its way loose.

Attach the bottom toggle to the Stemhead fitting. Make sure you have the cotter pin open end formed such that it can not work its way loose.

Tighten the Turnbuckle until the mast is in its normal fore/aft position.

Align the Turnbuckle locking screw holes with the slot in the top and bottom studs and fit the locking screws. Tighten the screws down and lock them in place with the 13mm lock nuts.

Remove the temporary Forestay.

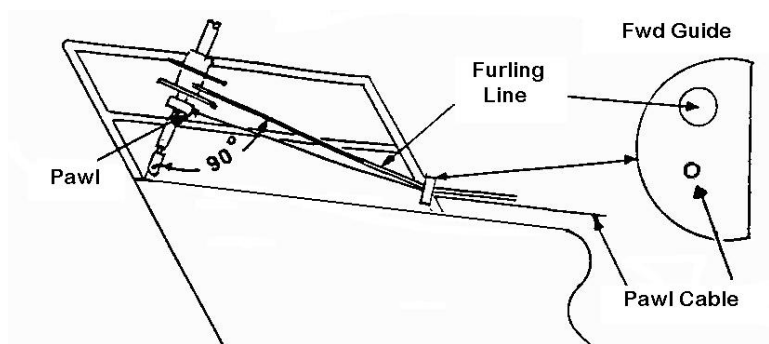
7.  **Mount Furling Line Guide blocks.**

First, decide which side of the boat you want the Furling Line to run.

7(a)  **Position first Line Guide.**

The first Line Guide is a “bolt through” type and is mounted on the aft leg of the Pulpit.

This is positioned such that the run of the Furling Line from the Drum to the Guide is perpendicular to the Drum axis (see fig.).



Thread one end of the Furling Line through the Drum Cage opening and up through the hole in the Drum Top Flange. Tie a figure eight stopper knot in the end.

Use the line to determine the first Guide position.

Drill a 1/4" hole through the Pulpit leg and mount the Guide.

NOTE: The Guide has two holes, the smaller of which is for the Locking Pawl cable and should be below the Furling Line hole.

Mount the guide.

Thread the Furling Line through the guide and pull tight.

If the Furling Line is rubbing on either of the vertical side bars of the Drum cage, the cage will have to be re-positioned.

**7(b)**  **Position Drum Cage opening.**

Remove the four screws from the underside of the Drum unit.

Position the Cage so the Furling Line just clears the right-hand side of the Cage.

Replace the four screws and tighten securely.

NOTE: The hole spacing in the Cage and the Drum are such that a "micrometer" effect results. There will be four holes matching. You may find it helpful if you use a mirror to locate these holes.

Position the remaining Line Guides on appropriate Lifeline Stanchions and thread the Furling Line through to the cockpit area.

**8.**  **Install Locking Pawl cable and Hyfield lever.**

Included in the Installation Kit are a thin stainless steel cable, two oval copper crimp sleeves, and a small Hyfield Lever. These items are assembled to form the control cable for the Furler Locking Pawl.

**8(a)**  **Locking Pawl Cable:**

Thread the supplied cable through the small (bottom) hole in the Line Guides.

At the Furler end, place a crimp sleeve over the cable and thread the cable through the hole in the Locking Pawl shaft on the under side of the Drum Unit.

Form a loop in the cable by passing the end back through the crimp sleeve (see fig.). Crimp the sleeve **tightly** using Vice-Grip pliers, or a crimp tool if one is available.



8(b)  **Hyfield Lever.**

The Hyfield lever is used to operate the Locking Pawl.

Select a position to mount the Hyfield lever which is convenient to the helmsperson or sail trimmer.

NOTE: The lever will only lock open correctly if the pivot point is at, or above the run of the cable from the last Guide Block, providing an “over-center” action. To achieve this action, you may have to mount the lever assembly on a small block of wood.

Mount the Hyfield lever such that the open side of the handle is facing up when the lever is opened (moved aft) (see fig.).



Place the remaining crimp sleeve over the cable and thread the cable behind and over the adjustable screw in the Lever handle.

Form a loop in the cable by passing the end back through the crimp sleeve.



Adjust the cable length so that the Locking Pawl is fully disengaged when the lever is opened (moved aft) and is fully engaged when the lever is closed (moved forward).



Crimp the sleeve **tightly** using Vice-Grip pliers, or a crimp tool if one is available.

Trim off the excess cable.



## **Final Comments:**

If you are using Kiwi Slides be sure to provide the included information sheet to your sailmaker.

The Reef-Rite Furler furls the sail in a counter-clockwise direction. Therefore the Ultra Violet cover to be fitted must be installed on the starboard side of the sail.

Before you mount the sail in the furler, make sure you have wound as much Furling Line on the drum as it will hold (wind on in a clockwise direction with the Locking Pawl disengaged).

Mount the sail, tension the luff and furl the sail, keeping tension on the sail to ensure a tight wind.

Ideally you should have two, or three full turns of Furling Line still on the drum. If necessary, turn the furler one way or the other to achieve this.

Remember, the Locking Pawl ***MUST*** be disengaged when letting the sail out and should never be left in the disengaged position.

Because you now have a new Forestay which may initially stretch slightly, you must check two items after the initial 200 miles of use.

### **1. Check the Rylock body for tightness.**

To access the Rylock body, remove the sail; remove the top cover Cross Pin; remove the four screws in the top cover; slide the top cover, top flange and foil assembly up the forestay. After you re-tighten the Rylock body (bronze), assemble the above in reverse order. Don't forget that the screws in the top cover are not equally spaced and that the Cross Pin fits **between** the two retaining screws.

### **2. Tension the Forestay.**

Slacken off the turnbuckle locking screws and see if you can apply more tension to the forestay. Make sure the locking screws, and nuts, are re-tightened.

During initial use, the Locking Pawl cable loops will flatten out slightly and you may not be able to disengage the Locking Pawl. If this should happen, move the cable pin in the Hyfield Lever toward the lever open end by one hole. This will be sufficient to correctly tension the cable.

Enjoy the safety and convenience of your Reef-Rite Furler.

## **Operating your Headsail Furler**

### **To unfurl sail**

1. Place furling line around a winch and take the load off the pawl.
2. Flip Hyfield Lever back to locked position to disengage pawl.
3. Unfurl sail by pulling on jib sheet, controlling the speed of unfurling with furling line.
4. Once fully unfurled to desired position, release Hyfield Lever to engage pawl.

### **To reef sail**

1. Place furling line around winch.
2. While easing the jib sheet wind in furling line until sail reaches desired position.
3. Ease furling line slowly until pawl takes load and furling line becomes slack.
4. Sheet sail on.

### **To furl sail away**

- Follow steps 1 and 2 of “To reef sail”

### **Points to note:**

- Never engage pawl while the sail is unfurling. Always make sure the furling unit is stationary when engaging the pawl. (The pawl is a mechanical lock not a brake)
- To achieve a tight roll when furling it is necessary to winch the furling line against some sheet loading. If you ease the sheet completely you get an easy furl but a loose roll.

### **Maintenance:**

Due to the sealed construction method of the Reef-Rite furler, the only maintenance required is –

1. Regular washing of the furling unit with fresh water and a light spray of a silicone based protectant
2. Twice a year clean the 4 drain holes in rope drum body and spray in protectant, (This is to prevent water sitting on bearing seals). If your boat is kept on a swing mooring 3 to 4 times a year is recommended.
3. Twice a year remove the 4 capscrews and 2 machine screws in the top cover one at a time and re-coat with a suitable protectant, (waterproof grease / duralac / lanacote).

## Sailmaker's Instructions for the use of Kiwi Slides

Kiwi Slides are designed to replace both jib hanks and luff tapes. The Kiwi Slide has the advantage in always having a contained luff. There are four sizes of Kiwi Slide each of which corresponds to one of the furling system models: 6/40, 7/50, 8/60 and 9/70.

Use the largest size Kiwi Slide that will fit the foil groove. The Kiwi Slides supplied with your furling system are the correct size for your installation.

### **SPACINGS for Kiwi Slides**

Sail Area (Sq. Ft.)	< 450	< 550	< 650	< 750	< 860	< 970
Furler Model	Spacing of KIWI SLIDES – (inches)					
6/40	31.5	29.5	27.5	25.5	23.5	21.5
7/50	31.5	31.5	29.5	27.5	25.5	23.5
8/60	31.5	31.5	31.5	31.5	29.5	27.5
9/70	31.5	31.5	31.5	31.5	31.5	31.5
12/90 TBA						

Position Kiwi Slides such that there is a 3/8" – 1/2" space between the slug and the luff edge.

**DO NOT** place a Kiwi Slide in the following area above the tack grommet.  
(measured from inside bottom of grommet)

Furler Model	Between	and
6/40	28"	32"
7/50	28"	32"
8/60	31"	35"
9/70	31"	35"
12/90	31"	35"