



*Aft Drive In-Boom Furling System*

# *Installation Manual*



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### **Quick Tips:**

***The operating angle of the Leisure Furl® boom is 87° to the aft face of the mast.***

***When hoisting, apply moderate tailing tension on the furling line. This line tension ensures the line will collect evenly across the furling spool and prevents the sail from billowing out of the boom. If the sail does billow out, it is critical to stop the hoist and furl the billowed out portion back into the boom. NEVER attempt to hoist a billowed out sail. This will always result in a damaged flexible feeder.***

***When furling, apply moderate tailing tension on the furling line to ensure a tight smooth wrap of the sail onto the mandrel.***

***A mainsail which is properly installed will have a rounded-foot reaching sail shape when fully hoisted. To flatten the sail into a going-to-weather sail shape, simply use the furling line to turn the mandrel 3/4 turn which furls the foot shelf.***

***Each batten in your Leisure Furl main sail is a reef point.***

***When reefing, ensure the batten is alongside the mandrel and never on the flexible feeder. Your Leisure Furl main has a captured boltrope luff and does not require too much halyard tension to remove the sail wrinkles. Excessive halyard tension results in excessive furling line tension and puts unnecessary load strain on your Leisure Furl boom system.***

## IMPORTANT

## Read this first

Installation should only be undertaken by an experienced rigger. Use safety equipment and install during suitable weather conditions.

Follow the instructions in this manual. Each Leisure Furl system is custom manufactured to the unique specifications of this vessel. **If you do not understand a point in this manual, do not guess, request advice.**

We have made every effort to explain the installation process as completely as possible. Nonetheless, it is not possible to anticipate, or address every conceivable problem that might arise during installation. Hence, we cannot accept responsibility for errors or omissions in this manual. These installation guidelines are intended to provide general guidance to an experienced rigger. For specific guidance and technical support, contact the person who sold you the Leisure Furl system. Specific guidance and technical support are fundamental to the installation process.

An experienced rigger should have a thorough knowledge and understanding of general rigging installation principles. These guidelines should be read in conjunction with such other principles. Such principles shall be deemed to supplement these guidelines.

**Installation of the Leisure Furl® system is entirely at your own risk.** We accept no liability for personal injury or property damage resulting from faulty installation. Nor do we accept warranty claims resulting from faulty installation. Do not install a Leisure Furl system except on the boat for which it was specifically designed and manufactured.

**Painted Leisure Furl booms must never be left wrapped in plastic.** This can cause the paint finish to blister, and is not covered by the Warranty on Finishes and Coatings. Immediate unpacking upon delivery is required.

## **The Vang Lug & Sheet Bails**

All vang lugs and sheet bails are shipped loose and should be positioned during the installation process. This allows for the most precise location of these fittings.

**IT IS VERY IMPORTANT THAT THE SAIL COVER BE PULLED TO THE TOP OF THE BOOM PRIOR TO FASTENING THE VANG LUG AND SHEET BAILS. THIS WILL PREVENT DAMAGING THE SAIL COVER DURING THE DRILLING & TAPPING PROCESS.**

To best accommodate reaching points of sail, line controlled vangs like the Forespar<sup>®</sup> Yacht Rod<sup>™</sup> should be setup to raise the boom above the 87° angle when the line is released.

## **Boom vangs & topping lifts**

In-boom furling systems require both a rigid boom vang and a traditional boom topping lift for safety and ease of sail trimming. **When furling or reefing, the boom should be adjusted to the required 87° angle to the mast and held at that angle with the support of the boom vang during the furling process. In heavy weather the boom topping lift should be used to arrest the motion of the boom during furling.**

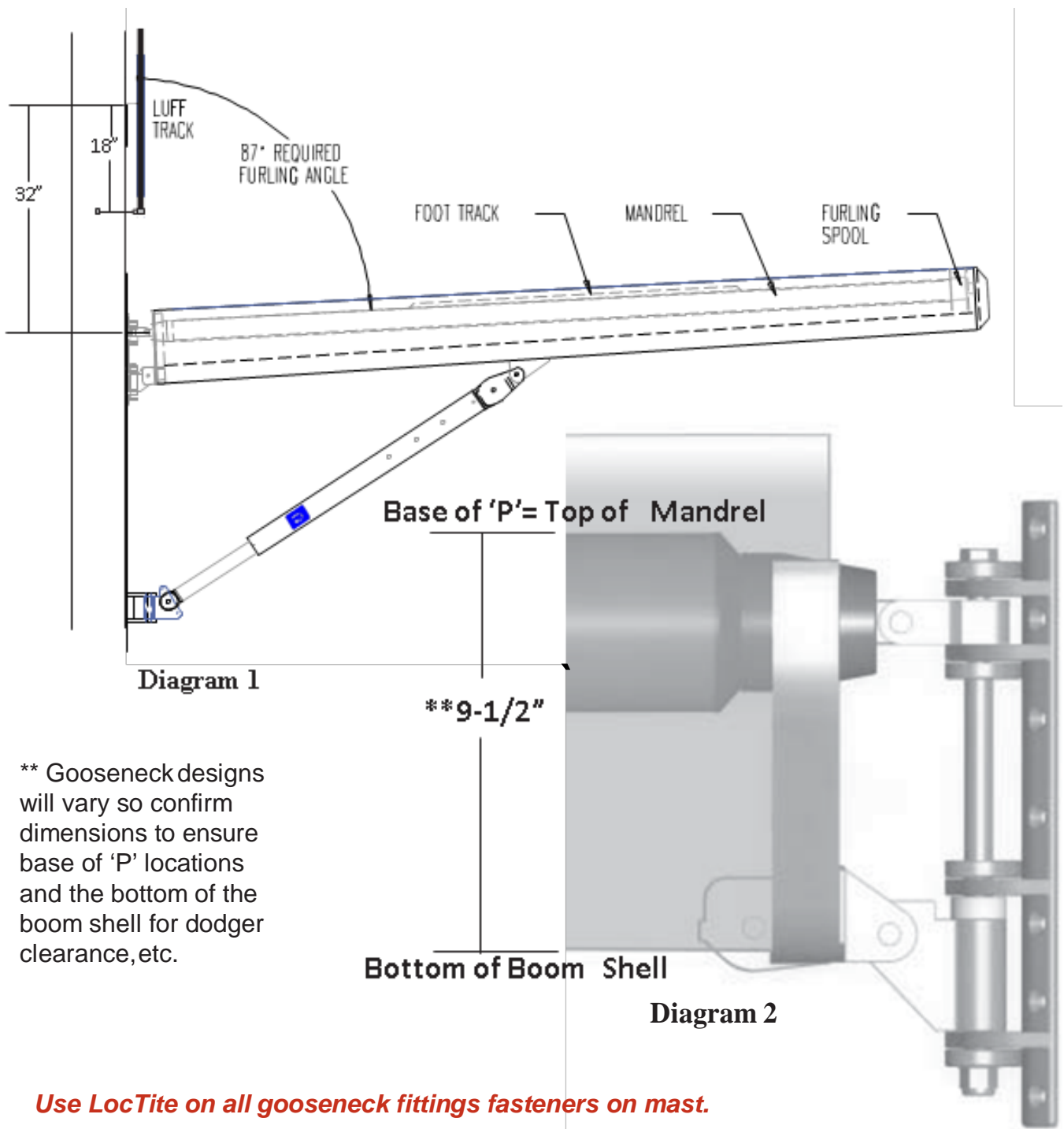
When the boat is moored a boom topping lift will extend the life of your boom vang, no matter what type: spring, pneumatic, hydraulic or electric.

## **PACKING LIST**

Leisure Furl® Voyager™ boom  
Furling mandrel  
Gooseneck bracket assembly  
Luff track base extrusions  
Bolt rope foil sections  
Threaded luff slugs  
Feeder assembly  
Luff track sheave  
1/4-20 machine screws  
Vang lug  
Mainsheet bails  
Sail cover  
Furling line  
Owner's Manual  
Sailmaker's Instructions (unless sent to sailmaker by Forespar®)

## **TOOLS REQUIRED**

1/4-20 taps  
Drill bits sizes #7 or 3/16", 9/64"  
Hack saw  
Screwdriver(Phillips)  
Measuring tape  
Center punch  
Tap wrench  
Electric drill motor  
Electric grinder 4" (to remove the existing gooseneck bracket and fair the area)  
Winch handle  
Boatswain's chair  
Lanocote™ or similar anti-corrosion compound  
LocTite



**Use Loctite on all gooseneck fittings fasteners on mast.**

Note that Diagram 1 shows the location of the base extrusion 32" above the Datum point which is the center of the furling mandrel. The flexible feeder portion of the sail track extends 18" below the end of the base extrusion (refer to page 9 for Flex Feeder details). The lower base of the 'P' dimension is the top of the furling mandrel, 2" above Datum.

Refer to Diagram 2 for the vertical dimensional relationship between the gooseneck bracket, datum and the bottom of the boom. When replacing a standard boom, the Leisure Furl® gooseneck does not need to be located where the original fitting was.

Considerations for desired boom location are sail hoist 'P' dimension, vang angle, dodger and head clearance. Remember when sailing to weather, the boom can be sheeted below the 87° required furling angle.

*For installation to a new vessel, the positioning of the gooseneck will be determined per the information below. It is wise to measure “P” from the top of “P” to the bottom of “P”. This will confirm the gooseneck position as per Diagram 1.*

*In all instances it would be preferable to check the preferred position with the owner because of the greater depth of the boom.*

### INSTALLATION INSTRUCTIONS – fitting the track base, track slugs

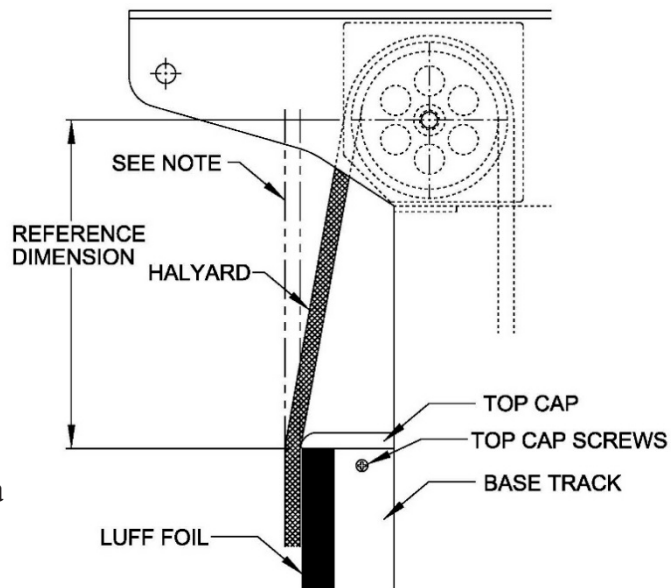
1. After confirming the gooseneck position, make a reference mark for the position datum which is the center of the furling mandrel.
2. Measure and mark a position 32” above datum that the base extrusion will finish at. (See Diagram 1)
3. **Luff track and track base must be installed before any other fittings are attached to the aft face of the mast.**
4. Insert 18 or more mounting slugs into the mast luff slot, raise to a convenient waist level and place a piece of masking tape across slot to hold up the slugs.
5. Hold the 6’ track base that has the fairing cap attached against the back of the mast and thread one of the 1/4-20 machine screws through the base into the top slug.
6. While pushing the track base upward as you work, engage a slug for each hole in the base.
7. When the first set of slugs are installed, send the first base section to the person at the masthead for tightening in place while the second track base is being prepared below. Position this first section of track at the top of the mast, with the top of the track 10.5” (267mm) below the main halyard sheave centerline - see Diagram 3a. However, if the main halyard sheave extends approx 2” from the aft face of the mast, the base track can go all the way up to the black band (full hoist).

### **SAIL TRACK TOP CAP REFERENCE DIMENSION**

10.5” [267mm]

Note: If the main halyard sheave extends at least 2” [50mm] from the aft face of the mast such that the halyard lead is nearly vertical, the base track can go all the way up to the black band (full hoist).

**Diagram 3a**



- 7A. Alternately, if you are working alone, once you have raised this first section to the top of the mast and fixed it in place, you can install successive sections pushing them up the mast as you progress. It would be helpful to have a 4-foot and a 6-foot length of wood or electrical conduit to prop up the sections as you work. The base weighs .49 lbs./ft., or 25 lbs./50 ft.
8. Introduce more slugs into the mast luff slot as needed. Progressively add track base sections until there is no more than 6 feet left to the bottom track mark. Tighten all these sections in place, making sure each joint is well aligned. **Ensure that there is a gap of .020" (0.5mm) between base track sections to allow for some mast bend.**
9. Cut the bottom base track to length so the lower end is 32" above datum as previously marked, and tighten in place.

#### LUFF TRACK ASSEMBLY

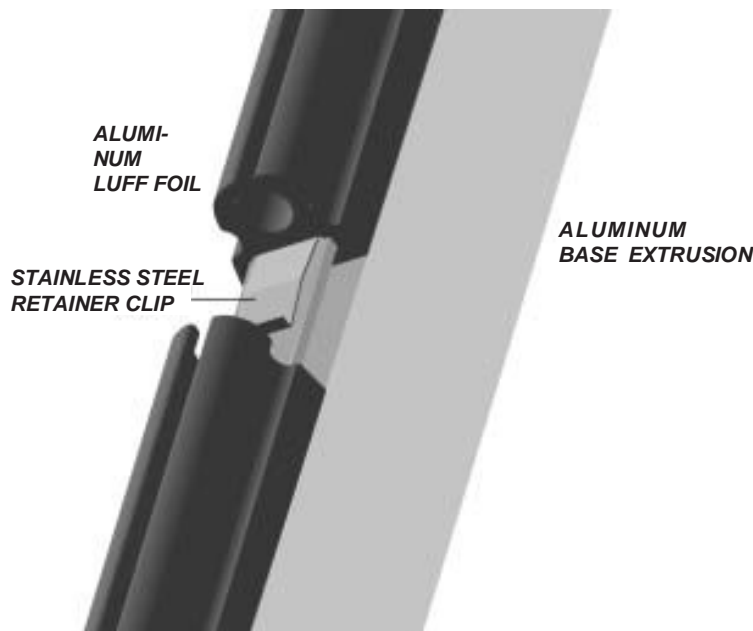


Diagram 3b

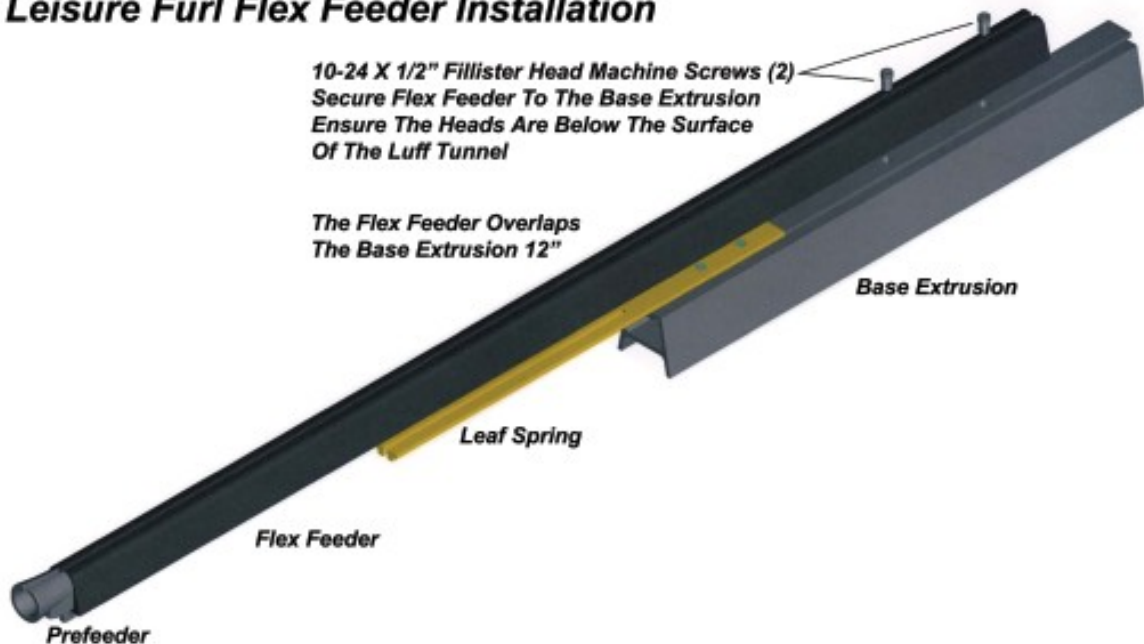
10. **The aluminum luff foil system is 12" shorter than the base extrusion system. The "cut length" of foil is the piece which goes at the top, and the cut end must be at the very top of the foil system.** This placement ensures that the sail will never be in contact with a cut end of foil. Slide the cut length of foil to the top of the base extrusion and push a stainless steel retainer clip (See Diagram 3b) into the bottom.

**The luff foil sections must have smooth and fair edges.** Inspect all luff foil ends during installation and smooth as necessary using fine grit emery cloth.

Continue sliding 6' lengths of foil onto the base extrusion, placing a stainless steel retainer clip into the bottom of each length. These retainer clips help hold the foil lengths in place during installation and establish a .020 gap between each length of foil. The .020 gaps in the base extrusion joints and luff foil joints allow for modest mast bend without crushing the ends of the extrusions.

**Ensure that the bottom end of the aluminum luff foil is 12" above the bottom of the base extrusion. This is an important dimension to allow sufficient overlap between the flex feeder and the base extrusion.**

### **Leisure Furl<sup>®</sup> Flex Feeder Installation**



## **INSTALLING THE 30" POLYMER FLEX FEEDER**

Now slide the 30" polymer flex feeder onto the base extrusion and secured using the two provided 10-24 X 1/2" fillister head machine screws. Drill using a 9/64" bit. Carefully use the flex feeder as a drill guide to locate the fasteners on the base extrusion. **DO NOT** drill the base extrusion through the flex feeder. This action could result in the holes in the flex feeder being elongated. It is the shear strength of these screws that holds the flex feeder in place. Apply LocTite and tighten them, making sure their heads are below the inside surface of the flex feeder.

## INSTALLATION INSTRUCTIONS – Flexible feeder limit line fitting instructions

The limit line assembly consists of two stainless steel termination blocks and a fixed length of Spectra™ line, which passes through the eye on the forward face of the luff feeder.

To install the limit line termination blocks on the mast, position the port and starboard blocks at an equal distance from the aft face of the mast. **The limit line should be loose enough to allow the track to flex port and starboard but not aft.** With that in mind, the termination blocks should be installed on the mast sides as shown in Diagrams 4 & 5.

The termination blocks are installed using the 1/4-20 FHMS provided - use an F or 3/16" drill. The knot in each end of the limit line must be pushed out of the termination block to expose the fastener hole. This will allow marking of the mast for drilling and tapping, as well as installing and tightening the screw. This may require flexing the track forward to install the second termination block. A piece of light line tied around the mast and luff track may be handy here to hold the track in the forward flexed position.

Each installation is a little different, and the desired amount of flex has to be determined by hoisting and furling the sail. The furling operation should be done several times, with eyes on the luff of the sail. Ensure that the 87° boom angle is correct, then watch as the sail rolls into the boom. Furling should be checked at different angles to the wind, since this is the true test of the flexible feeder setup.

Once the termination blocks have been installed on the mast, the only way to affect the amount of flex in the unsupported portion of the luff track is to change the length of the limit line. If less flex is deemed necessary, the line can be shortened. If a longer line is required for additional flex, Spectra™ line can be purchased from your local chandlery. Use a figure eight stopper knot in each end, then trim the ends as necessary.

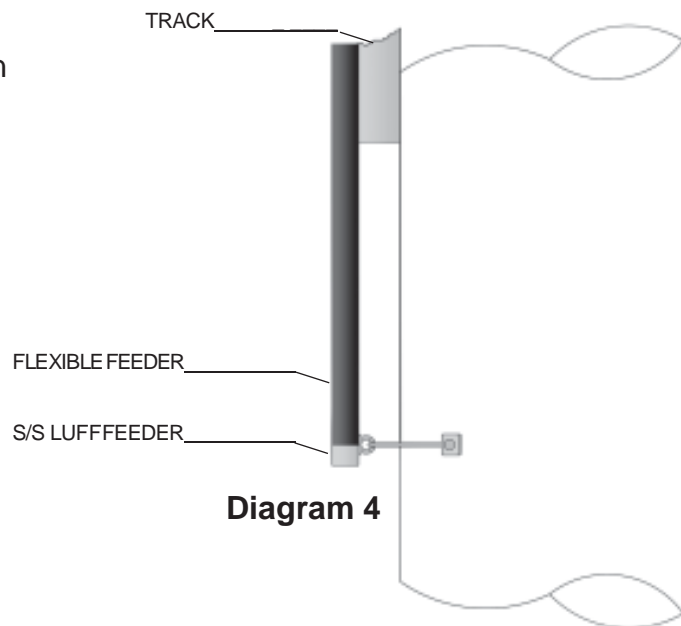


Diagram 4

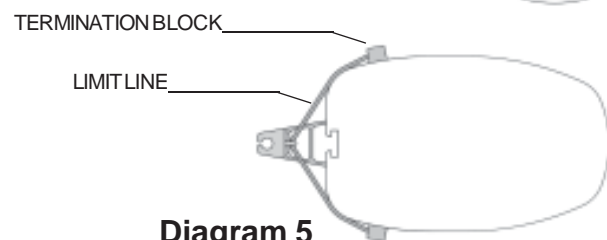


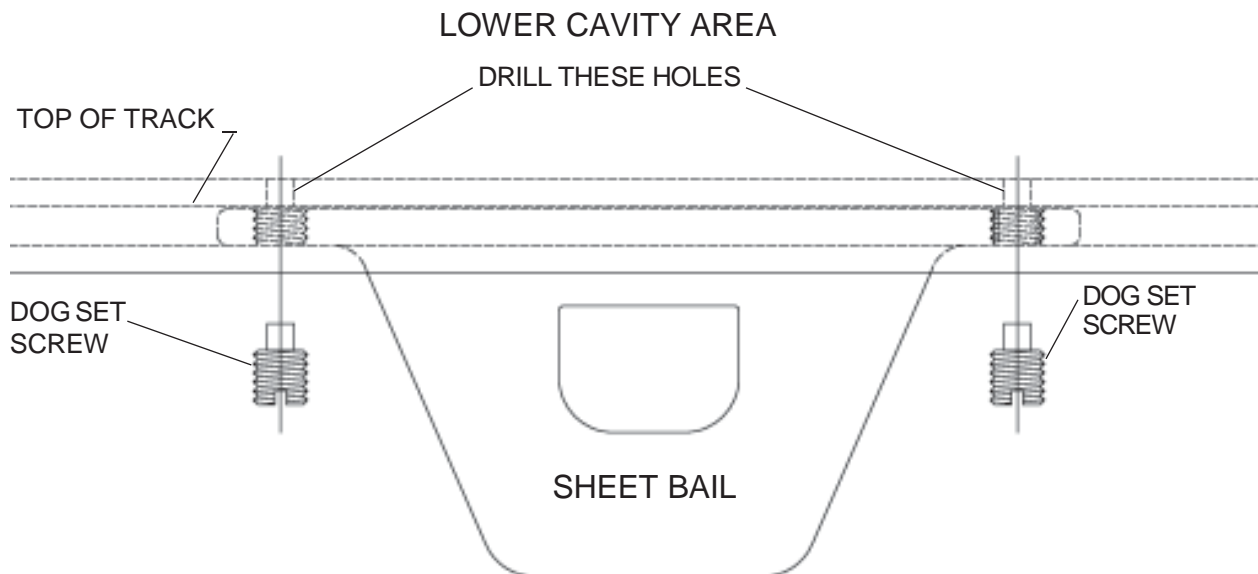
Diagram 5

## Main Sheet and Vang Bail fitting instructions

### BAIL FITTING

When fitting the mainsheet and vang bails in the track, the bails must be secured using the special dog set screws that have been provided. Be sure to pull the sail cover to the top of the boom to prevent damage from drilling into the lower cavity.

1. Position the bail in the track.
2. Tighten the pointed dog set screw (provided) to mark the location for drilling.
3. Slide the bail out of the way, and drill a 9/64" hole through the top of the track.
4. Position the bail using a standard dog set screw in the first hole then mark and drill the next hole as in steps 2 & 3.
5. When all the holes have been drilled for the bail, use Loc-Tite on the dog and the threads of each set screw and tighten. The dog set screws must be used at every threaded fastening point of the bail.
6. When tight, the set screws force the bail tight against the underside of the track. The dogs lock into the drilled holes, which secures the bail against the thrust loads, preventing the bail from sliding in the track.
7. All bail set screws must remain tight. Checking these screws should be a part of the regular preventative maintenance inspections on your Leisure Furl® boom.



## INITIAL CHECK

*Ensure the furling mandrel rotates freely. Ensure that boom is at correct 87 degree angle.*

## SAIL FITTING

1. First attach the tack to the furling mandrel, leaving around 1" between the tack web and tack ring.
2. Now lash the clew to the outhaul padeye on the mandrel. ***Do not pull the foot out tight***, leave fullness in the foot for efficient downwind sailing. The built-in sail foot controls will generate outhaul tension..
3. ***The clew lashing must take multiple wraps around the furling mandrel to eliminate the up-load on the padeye.***
4. Hoist the sail up the mast.
5. Roll the sail onto the port side of the mandrel. (We recommend two people assist by pulling either the luff or leech so as to ensure the bolt rope remains in the area between the boom edge and the mast as the sail is being furled).

## FURLING LINE

Lead the furling line down to a large, smooth running deck block directly below the boom gooseneck sheave. Lead the furling line aft beside the main halyard so they can be operated from the cockpit clutches.

# *Leisure® Furl VOYAGER™* **Installation Notes**

## **Serial number**

Forespar® keeps a file on all Leisure Furl® systems based on the 6 digit serial number. The serial number is located on the aft inside bulkhead at the back of the LF boom. Please record it here for future reference:

Serial Number \_\_\_\_\_

## **Your Installation Notes**

## *Leisure Furl® VOYAGER™*

### *Important information for both installers and owners.*

- *Do not raise the boom with the topping lift or vang more than 2 feet from the normal operating angle, as the mandrel will bottom out on the boom aft end plate and cause damage. If it is essential to do this, the mandrel must be disconnected from the universal.*
- *If the boom is dropped down to the deck for any reason, ensure that the mandrel has not dropped off the aft end spigot before raising the boom again with the vang or topping lift.*
- *If only a topping lift is being used to support the boom, tie a knot in the topping lift line aft of the rope clutch or cleat to ensure that if someone accidentally releases the topping lift cleat the boom doesn't crash down and cause damage or injury.*
- *Ensure all track joints are smooth and radiused. The track entrance from the sail feeder is particularly important.*
- *Ensure that there is nothing on the mast in the area that the sail rolls that could possibly cause sail chafe. This includes fittings around the side of the mast and trysail tracks.*
- *The 87 degree operation angle is important. Hoisting and furling the main must only be done with the mast/boom angle at 87 degrees.*