3D FURLER INSTALLATION GUIDE

Welcome

NOTE

If you are using an existing sail, we highly recommend doing a dry fit on the ground or dock before the actual Installation.
This will save you time and trouble if your sail does not fit.

SEE SECTION 5 Step 3 for Placement Instructions

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Version 8

Contents

3D Furler™ Installation Manual

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Introduction

Congratulations on your 3D Furler Purchase. The 3D Furler is designed for long-lasting, trouble-free performance with simple operation.

Parts Included

Top Assembly Parts A & B
Friction Bar
Standard Foils
2 Luff Foils
Insert Lock Pins – 1 per foil
Pulleys (2)
Drum Halves (2)
4 ¼ - 20 x 1.5 Inch Round Head Stainless Steel Bolts and Nylon Nuts). (DRUM)
2 ¼ - 20 x 3/4 Inch Stainless Steel Bolts and Nylon Nuts for Top Assembly
2 ¼ - 20 x 2 1/2 Inch Stainless Steel Bolts and Nylon Nuts for Top Assembly.

Tools and Materials Required

- Philips Screwdriver to fit ¼ - 20 bolts and 8/32.
- Adjustable Wrench
- Nut Driver or Socket to fit ¼ - 20 Nylon Nuts and #8-32 Nuts.
- Small Vice Grips
- 1 / 4" Halyard Line twice the stay length + 3 feet.
- 5/16 Control Line 1.5 times the vessel length.
- Fair Leads for the Control Line and Cleat.
- 10-to-12-inch Nylon Ties or Carabiner Bungee cords to secure parts while working around water.

Preparation for Installation

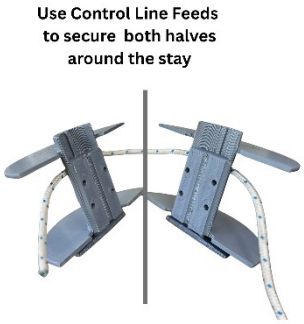
PREVENT OVERBOARD PARTS – We suggest tethering all loose parts to a line that is secured to the vessel and using a base tarp as a catch – all. (An umbrella works too!)
Lay a tarp down over the bow, so you won't lose parts if they "jump" overboard.

- Tension the forestay and ensure the rigging is tuned before attempting installation. Installing any roller furler on a loose forestay can result in damage to the furler. Follow the LOOS™ tension guides for tuning.

Step 1

Preparing the Drum

The Drum comes shipped assembled. Disassemble Carefully. Use care and read the following before re-assembling.

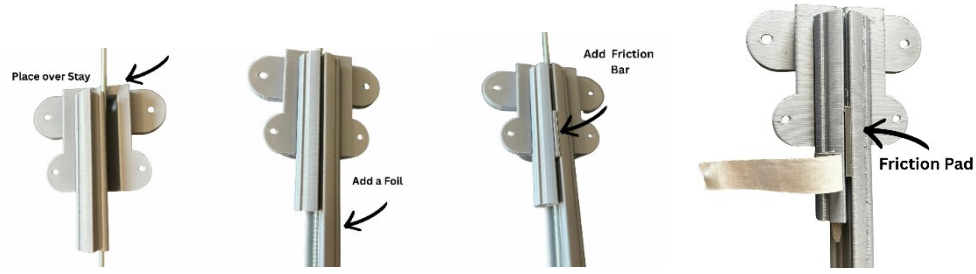


1. Secure the two Drum halves together on the stay to prevent dropping overboard.
2. Connect 4 bolts through the Drum and leave loose letting the drum rest on the swage shoulder. The drum will serve as support for the foils as you install.

Step 2

Top Assembly

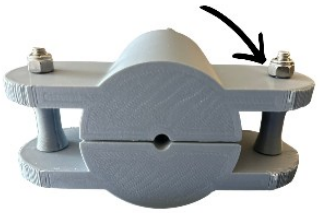
1. Secure both Top Halves together around the stay to prevent dropping overboard.



2. Place the Top A Assembly on the wire (use a tether).
3. Add a Full-Size Foil. (Not a LUFF FEED Foil)
4. Press in the Friction Bar to hold the Foil from sliding. Note: The Friction Bar is used to lock the first Foil.

5. With the Top A Assembly facing you with the longest foil on the right side, add the Top Cover B Plate, Bolts, Pulleys and gently snug the nylon nuts on the Small Ears first. The bolts and pulleys on the Large Ears should be gently snugged but loose enough so the pully can spin freely.
6. **DO NOT OVERTIGHTEN LARGE EARS.**

Tighten but Bolts must Spin



Add Halyard(s) Before Adding Foils

7. Add the External Halyard Line TO THE RIGHT SIDE WITH THE FIRST FULL FOIL. The External Halyard line that is closest to the Foil is the UPHAUL line that will be attached to the Sail. Mark it NOW to not mix the bitter ends up and tie it to the Bow Rail beside or behind you.
8. The remaining line needs to be free to uncoil as it follows the Top Assembly up during Foil Installation.

Step 3

Install Foils & Luff Feed

Method A for 2 Persons

Separate the Luff Feed Foil(s) and Short Foil and put them to one side. 1st person installs with the 2nd person passing the 12 Inch foils to them, slide the foils (Post into Hole) one after the other until complete. Alternate rotating the system left and right as you add foils, ensuring that the Halyards remain untwisted. Adding Temporary Friction Bars to all foils other than the Top A is optional and will consume time for the installation. Add them only if you wish.

Method B for 1 Person

Separate the Luff Feed and final short Foil(s) and put them to one side where you can reach them. Keep the remaining Foils near you.

Slide the foils one after the other optionally using the Friction Bars add foils. If you need to take a break, gently support the Foils on the drum in a 90 ° turn, so it does not go into the shoe.

1. NOTE: Only the first Friction Bar inside the Top Assembly is permanent. The others will fall out in time. They are temporary.

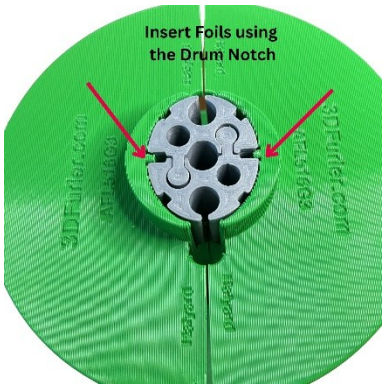
9. Once the foils are all in position: On systems up to & including 3/16" wires you will have 2 x 6-Inch LUFF FEED FOILs to add as the final FOIL depending on which side of the system you place the halyard. On larger systems ¼" and higher, you will have 2 x Full Size Luff Feed Foils for use on either or both sides, with the last 6 Inch Foil as a regular.

CAUTION – Stopping Work for Long Periods

If you need to take a long break, always add the last Short Foil to complete the unfinished system. Place flat Vice Grips on the wire (use a piece of sail tape to cover the wire first) and let the system rest on the Vice-Grips.

10. Check to make sure that the Last Foils are even lengths as they rest on the Drum Opening.

Insert Foils into Drum



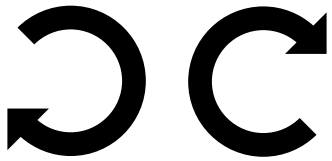
1. Position the foil gap to align with the Drum Notch
2. Tighten the bolts evenly until they just stop and no more 2 ft. lbs.
3. Do a final tightening until the bolts stop. The gap should close in equally between both halves leaving just a slight curvature.

Step 4

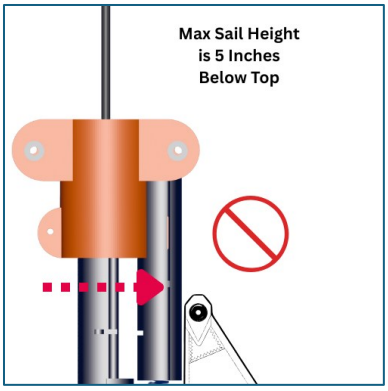
Final Checks

2. **Ensure all Drum bolts are snug but not overtightened. (max. 2 ft. lbs.)**

3. **Confirm the system rotates freely. NOTE: Only the first Friction Bar inside the Top Assembly is permanent. The others may fall out in time. Do not worry about them.**



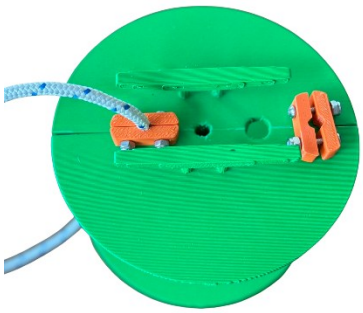
Step 5 – Add the Sail & Trim Halyard Line



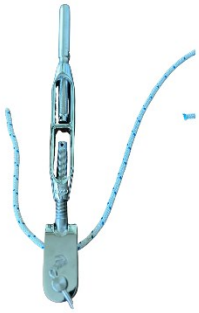
Attaching the Halyard Line & Sail Tack

1. **ATTACH THE Jib SHEETS NOW.**
2. Feed the sail through the luff feed and start slowly hauling it upwards until the Sail Tack is above the Drum Top by at least a few inches. DO NOT ATTEMPT to stretch the sail luff or add excessive tension to the line.
3. If the Sail Tack is too low, then add more foils or re-size the Sail. NOTE: The Sail Top does not have to reach all the way to the Top. Performance loss is negligible.
4. Place the "uphaul" line that you pulled down to carry the sail up, through the hub channel on the same side of the Drum Top and Bottom.

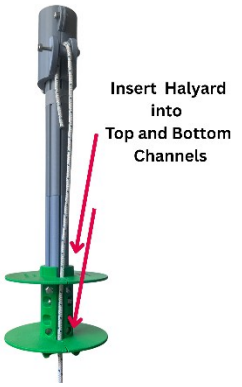
Under Drum Clamps



Temporarily Secure Halyard



5. Secure the Halyard by using the Cleats under the bottom Flange. Optionally use the Rope Clamps provided.
6. Once the Halyard is secured, trim the excess line to a short enough length that you can attach the two pieces in order to remove the sail without losing the halyard line. Store the excess line somewhere easy to access.
7. Rotate the entire 3DFurler (Clockwise for Starboard Fair Leads) until the Jib Sheets are wrapped a couple of times around the Furled Sail.



FURLING LINE – Drum Angle and Fair Leads

The Drum contains Top and Lower Control Access. Depending on where your Fair Leads are mounted, it will determine which one you use.

The control line must be as close to 90° to the Drum Hub as possible.

Tip: If Top or Lower is not good for your setup, then you can run a small line into the Top and exit at the Lower to form a loop that will center itself.

1. Most vessels use about 1.5 times the vessel length of Furling Line.

5/16" Control Line Capacity on 150 r

Layer	Effective Diameter (mm)	Rotations This Layer	Cumulative Rotations	Rope Length This Layer (ft)	Cumulative Rope Length (ft)
1	60.0	10	10	6.2	6.2
2	75.9	10	20	7.8	14.0
3	91.8	10	30	9.5	23.5
4	107.6	10	30	11.1	34.6
5	123.5	10	40	11.1	47.4
6	139.4	10	50	12.8	47.4
6	139.4	10	60	14.4	61.7
Total Capacity: ≈ 62 feet of 5/16" Rope			60 Total Rotations ≈ 61.7 feet Total		

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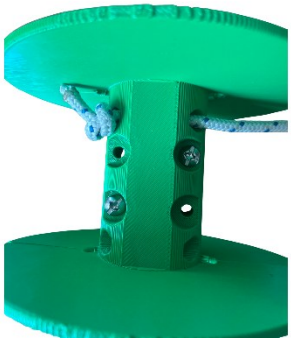
Feed the Furling Line into the Access Point and exit on the other side of the drum. Tie a knot and secure.



Step 6 – Loading the Sail

The best time to load the sail is when you can control the direction of wind to on the bow. This is best accomplished by anchoring somewhere safe and installing the sail.

Rotate the entire Furler and roll up the sail in the direction that you want it to UNFURL until you have at least 3 wraps of Jib Sheets around the foils.

Under safe conditions, pull the appropriate jib sheet outwards, while maintaining a little tension on the Control Line.

The Control Line will start to feed the Drum. Adjust your Reefing to your liking.

To Reef or Furl the Furler, point the vessel into wind to reduce pressure on the sail, then slowly & simultaneously pull the control line in and pay out the Jib Sheet Lines.

Operating the 3D Furler

Always operate the furler in safe conditions. Avoid deploying or reefing the sail in dangerous wind or stormy weather.
Be aware of other vessels and waterway traffic. Ensure the area is clear before operating the furler or adjusting sails.
Do not attempt installation or operation in high winds. Wait for calm weather to prevent injury or equipment damage.
Keep hands, clothing, and equipment clear of moving parts during operation.
Regularly inspect all bolts, nuts, and connections for security. Do not overtighten but ensure nothing is loose.
If the furler does not operate smoothly, stop and troubleshoot before continuing.

The 3D Furler is constructed using advanced 3D printing techniques for optimal strength and durability.

Do not cut, drill, or modify any of the 3D printed components. Altering the parts may compromise their structural integrity and lead to equipment failure or unsafe operation.

Do not lubricate with any acetone-based products.

If adjustments or replacements are needed, contact 904-600-4105 for support.

Liability Waiver Statement

The 3D Furler and all related components are designed for safe and reliable operation when installed and used according to the instructions provided. 3DFURLER.COM and its affiliates assume no responsibility or liability for any injury, damage, or loss resulting from improper installation, modification, misuse, or operation of this product. Users accept all risks associated with installation and use, including but not limited to risks arising from adverse weather conditions, failure to follow safety guidelines, or unauthorized alterations to any 3D printed parts.

By installing and operating the American Furler, you acknowledge and agree to these terms. If you have any questions or concerns, contact Help@3DFURLER.COM before proceeding.

Tips to give you the best and safest performance possible.

Unfurling –

Always deploy with the vessel's bow pointing into the wind. This will reduce the pressure on your sail, sheets, furler and crew.

Prepare the appropriate jib sheet for use and ensure the windward sheet is also free and take up any slack. Reduce Power to Idle.

Prepare the control line (wrap around a winch if possible) and ensure that there is tension on it. The control line is used to CONTROL the SPEED of the Sail as it unfurls and prevent drum entanglement.

Unfurling should be steady and should not be freewheeled as any excess rope will tangle itself on the drum.

Visually watch the Drum as you unfurl and stop if you see any misalignment as the Drum is being loaded.

Be aware of wind factors beyond your vessel's safety limits as well as your own skill level.

Reefing

The best time to set a reef is when you deploy the sail. If the wind forecasts are to increase during your passage, then reefing early is safe and wise. Remember it is less disruptive to let out the control line than to bring it in.

If you do need to reef mid passage, then you will need to steer into wind to reduce pressure and maintain tension on the control line as you pull in and /or let out the sheets to reduce pressure.

Remember that every "doubling" of wind speed is "quadrupling" of wind pressure.

Reefing at night without light in winds will still require a deviation of course.

Furling – Full Stop Point the vessel to wind and if necessary, use the engine power to prevent tacking of the vessel.

Loosen the sail sheets and bring in the control line. Secure the control line.

Trouble Shooting

Problem	Possible Cause	Solution
Drum does not turn smoothly	Control line angle.	Reset the Fair Leads
Same	Incorrect Opening	Re-Feed Control through different opening.
System not rotating	Top Assembly jamming on the mast.	Remove one set of A & B Foils.
Sail not going to the Top	Incorrectly Sized Sail Halyard Line Crossed	Check Measurements Remove sail and uncross
Control Line Fouling over Drum	Over Speed during Deployment	Add more Tension to the Control Line
Hard to Reef in High Winds	Excessive Air Pressure	Steer into Wind
Drum is dropping below Swage	Incorrect wire size	Re-confirm wire size and contact help@3dfurler.com
Foils are too tight on the wire	Incorrect wire size	Re-confirm wire size and contact help@3dfurler.com