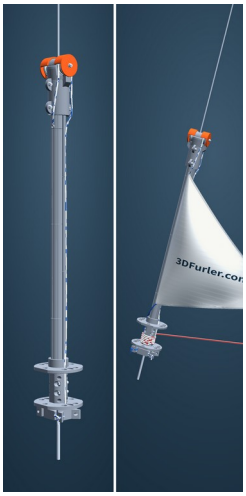
3DFURLER.COM

3D Furler™ Installation & Operation Manual

Version 2.10.0 · Roller furling system for sailing vessels · help@3dfurler.com · 904-600-4105 · Proudly designed and made in the USA



Congratulations on your purchase of the 3D Furler™. Read this manual before you start and keep it aboard.

> TIP **Dry-fit your sail first.** If you are re-using a sail, dry-fit it on the dock before installing. 3DFurler recommends measuring for the sail after the installation; we are not responsible for incorrect sail sizes.

Before you start

- **Tune the rig.** Tension the forestay and tune the rig first (follow the LOOS™ tension guide). A loose forestay can damage any furler.
- **Catch everything.** Tether loose parts to the boat and lay a tarp over the bow. Nothing should go overboard.
- **Tools:** Phillips screwdriver, adjustable wrench, nut driver or socket for ¼-20 nylon nuts, small locking pliers, cable ties or bungees.
- **You supply:** 5/16 in. furling line (about 1.5 × boat length), fairleads and a cleat.

Identify Your Build

Your stay wire size decides the build and the parts in your box. Steps marked **G2 only** do not apply to G3.

Stay wire	Build	Top of stack	Foils and bottom of stack
1/8 to 3/16 in.	G2	Top assembly + Top Transition Foils (2 pieces)	G2 half-foils, End Termination Foils, clamp-on drum
7/32 to 3/8 in.	G3	Top assembly only	G3 half-foils, End Termination Foils, clamp-on drum. **Includes the Assist Lifting Tool**
Larger than 3/8 in.	—	Not available. Do not install; contact us.	

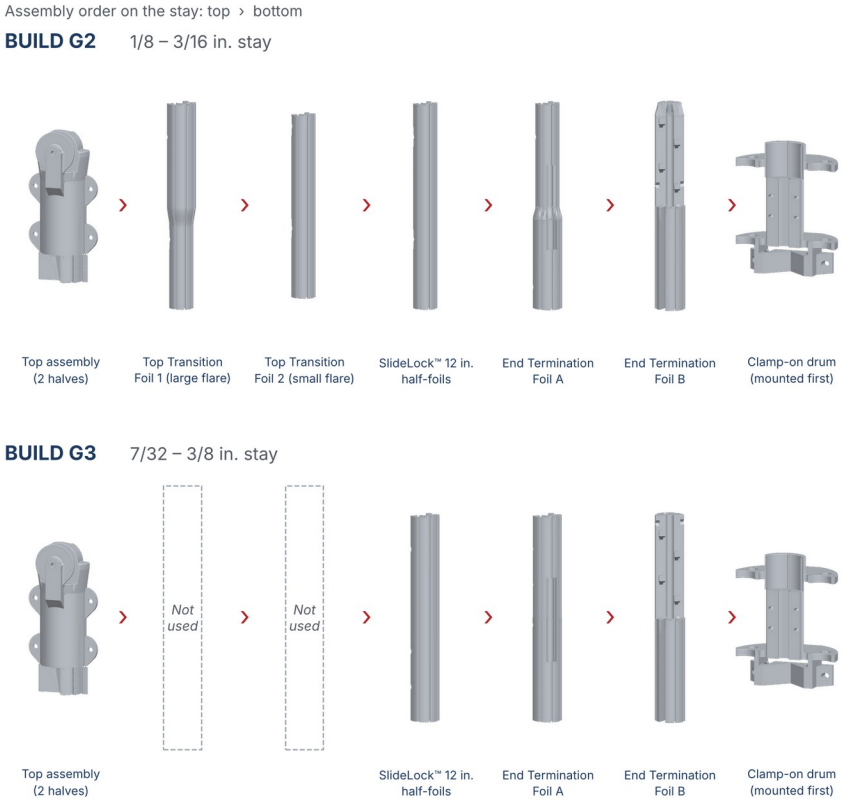


Figure 2 *The two builds, top to bottom on the stay*

Parts Included

Size = furler size in feet (18′ 6″ = 18.5). Top assembly and drum come in Matching Gray.

Item	G2	G3	Notes
Top assembly, 2 halves, with halyard sheave set	1	1	Ships assembled with ear bolts and the Diamond Insert Lock
Safety Orange Top Assembly Shields	1 set	1 set	Always Safety Orange
Top Transition Foils (2 pieces)	1 set	—	G2 only. Replace the first two half-foils
SlideLock™ universal 12" half-foils	2 × size − 4	2 × size − 2	Each half-foil adds 6 in. to the stack
End Termination Foils (Foil A + Foil B)	1 set	1 set	Luff feeds and Stay Inspection Port
Assist Lifting Tool	—	1	G3 only (7/32 in. and up)
Hex foil joiner pins	1 per half-foil	1 per half-foil	One at each foil joint
Clamp-on drum (2 halves), fits the selected wire	1	1	2 fixed cam cleats per half
Drum insert sleeves, set of 8 sizes (1/8 to 3/8 in.)	1 set	1 set	Size engraved on each insert
External halyard line	2 × size + 5 ft	2 × size + 5 ft	Trim to suit
Stainless hardware kit: 4 × ¼-20 × 1½ in. round-head bolts (drum), 4 × ¼-20 × 1¼ in. ear bolts and 2 × ¼-20 × 1¾ in. sheave screws (fitted), nylon nuts	1	1	No washers needed
Installation guide and parts check list	1 each	1 each	

BEFORE STEP 1

Mount the Drum First

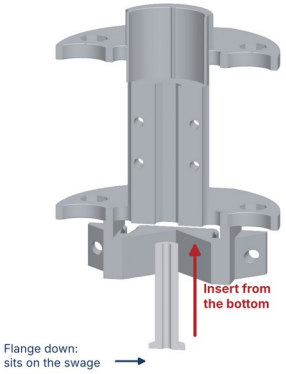


Figure 3 *Drum insert sleeve, inserted from the bottom*

1. Pick the insert pair engraved with your wire size from the set of 8.
2. Slide one insert into each drum half **from the bottom**, flange down, before attaching the drum to the stay. If needed, secure each insert with a small piece of **double-sided mounting tape** so it does not slide out.
3. Close the two drum halves around the stay with the insert flange on the swage.
4. Fit the 4 drum bolts (¼-20 × 1½ in.) and nylon nuts, but **do not tighten all the way yet**. Let the drum rest on the swage shoulder.
5. The drum can support the stack if you need a break.

STEP 1

Install the Top Assembly

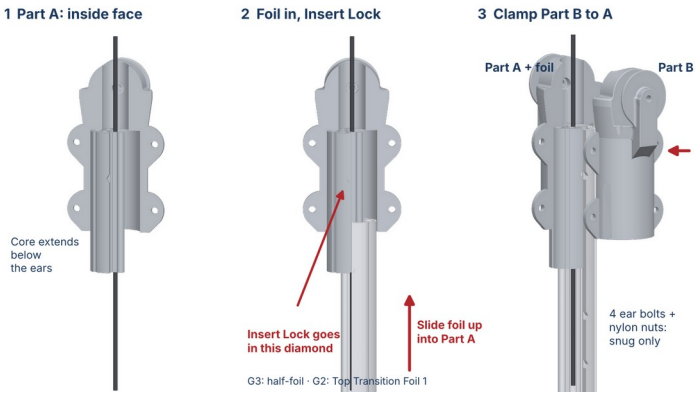


Figure 4 *Part A inside face; foil in and Insert Lock; clamp Part B*

1. The unit comes fully assembled. **Unbolt the halves and tether them for safety.** Leave the sheaves and shields on.
2. Place **Part A** (core extends below the ears) on the wire.
3. Slide the first piece up into Part A. **G3:** any half-foil. **G2:** Top Transition Foil 1, large flare up (Step 2).
4. Press the **Diamond Insert Lock** into the diamond. Required on every build.
5. Clamp **Part B** to Part A with the 4 ear bolts (¼-20 × 1¼ in.) and nylon nuts. **Snug only:** do not crush the ears; both sheaves must spin freely.

Second halyard (optional)

Your 3DFurler is designed with two luff feeds and luff channels. If you plan to use a 2nd sail, add the halyard now.

1. Feed the external halyard line up under the right-hand shield, over the sheave and back down. Taping the end and turning the sheave helps.
2. Mark the end nearest the foil as the **uphaul line** and secure it to the deck. The other end travels up with the Top Assembly.

STEP 2 · G2 ONLY (1/8–3/16 in.)

Install the Top Transition Foils

NOTE **G3 (7/32–3/8 in.): skip this step.** Your first half-foil is already in the top assembly.



Figure 5 *Order on the wire. Flared ends up; each fits only one way.*

1. **Top Transition Foil 1** (large flare, flare up) goes into Part A with the Diamond Insert Lock, before Part B is clamped (Step 1).
2. Insert **Top Transition Foil 2** (small flare, flare up) into the bottom of Top Transition Foil 1.
3. Insert the first G2 half-foil into the bottom of Top Transition Foil 2. If a piece does not slide in easily, turn it around. Do not force it.

STEP 3

Install the SlideLock™ Half-Foils

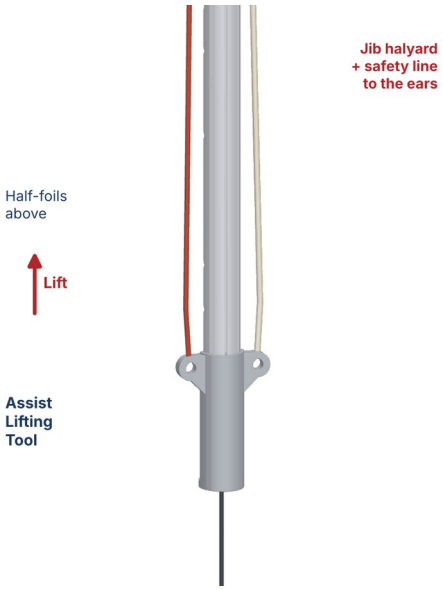


Figure 6 *Assist Lifting Tool (G3)*

- Set the End Termination Foils aside.
- Slide each 12 in. half-foil on, post into hole, one after another. Rotate the system left and right as you go so the halyard lines do not twist.
- Press a **hex foil joiner pin** into the diamond at each foil joint as you go.
- **Two people:** one installs, one passes up half-foils. **Alone:** to take a break, rest the half-foils on the drum turned 90° so they do not drop into the shoe.

Assist Lifting Tool · G3 only (7/32 in. and up)

Need a break from lifting? Clip the tool below any set of half-foils, before the End Termination Foils go on. Tie the ship's **jib halyard** and a **safety line** to its two ears, and lift with the jib halyard as needed.

CAUTION **Long break?** Install End Termination Foils A and B first. Wrap the wire with sail tape, clamp flat locking pliers on it, and let the system rest on the pliers.

STEP 4

Install the End Termination Foils

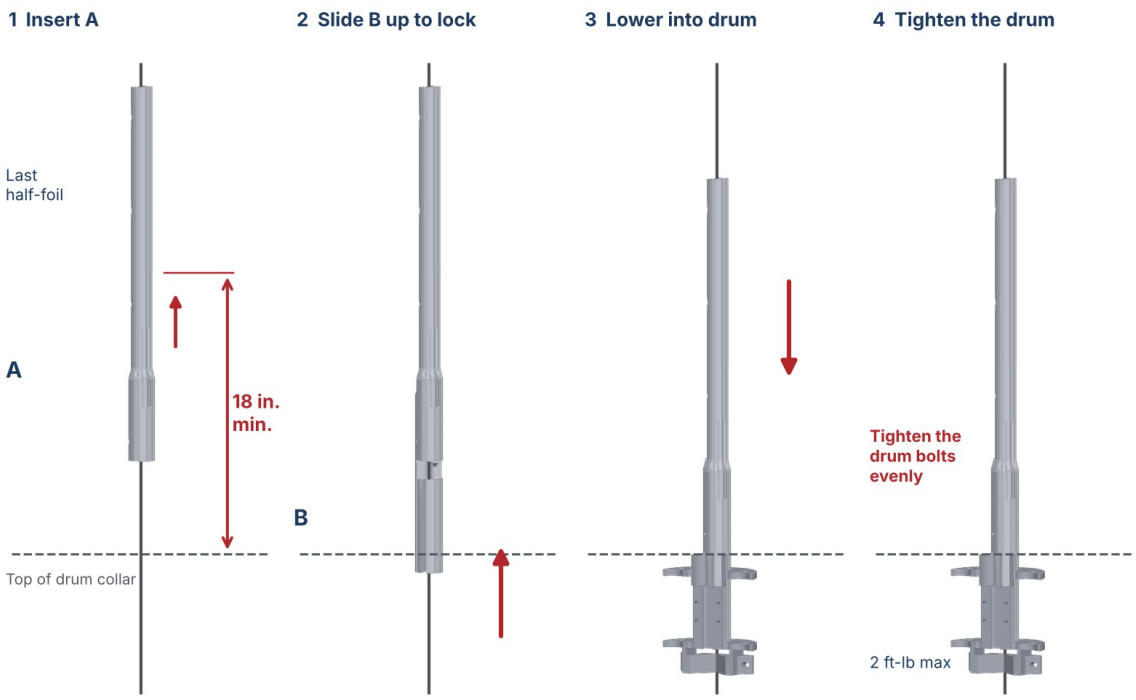


Figure 7 *Insert Foil A, lock Foil B onto it, lower into the drum and tighten. G2 shown; G3 is the same.*

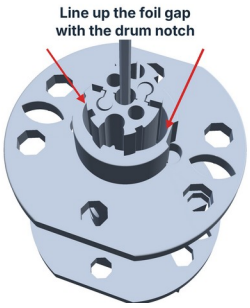


Figure 8 *Foil gap to drum notch*

1. Lift the system until it bumps the mast top. Fit the last half-foil. **You need at least 18 in. of clear wire between it and the top of the drum collar.** Too little: remove a half-foil. Too much: add a half-foil. **Never cut foils.**
2. **G3:** remove the Assist Lifting Tool. Insert **End Termination Foil A** into the last half-foil. It fits only one way.
3. Hold **End Termination Foil B** beside Foil A, a little lower. Engage its keylock slides in A's holes and **slide B up until it locks**. The seam should be even, with no gap.
4. Lower the pair so B's round lower section drops into the drum. Line up the foil gap with the drum notch.
5. Tighten the drum bolts evenly until they just stop (**2 ft-lb maximum**). The gap closes equally on both halves, with a slight curve.

The open cut-out in End Termination Foil B is the **Stay Inspection Port**: use it to inspect the stay. Salt water is not a concern; rain water flushes it out.

STEP 5

Final Checks

- ☐ G2: both Top Transition Foils sit between the top assembly and the first half-foil.
- ☐ End Termination Foils A and B are locked together. G3: the Assist Lifting Tool is removed.
- ☐ Drum inserts are in place; drum bolts snug, 2 ft-lb maximum.
- ☐ The whole system turns freely both ways, and both sheaves spin freely.

STEP 6

Add the Sail and Trim the Halyard

Rig the halyard as an **endless loop** (both ends tied to the sail head, so the sail can come down without re-attaching) or a **cut halyard** (cut after hoisting; keep the spare length to re-attach later).

IMPORTANT **Attach the halyard correctly.** Otherwise the uphaul line runs to the top and you will have to re-install or go aloft.

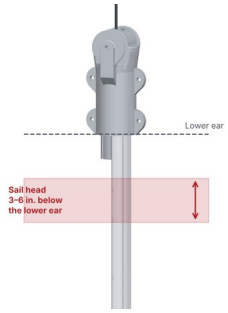


Figure 9 *Sail head: 3–6 in. below the lower ear*



Figure 10 *Halyard through the channels*

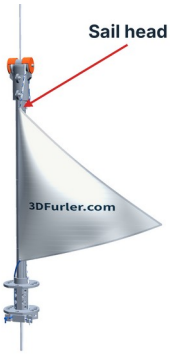


Figure 11 *Sail head position*

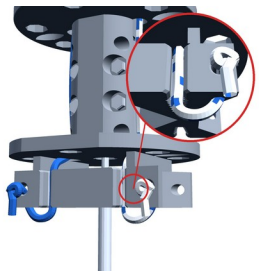


Figure 12 *Tie in the fixed cam cleat*

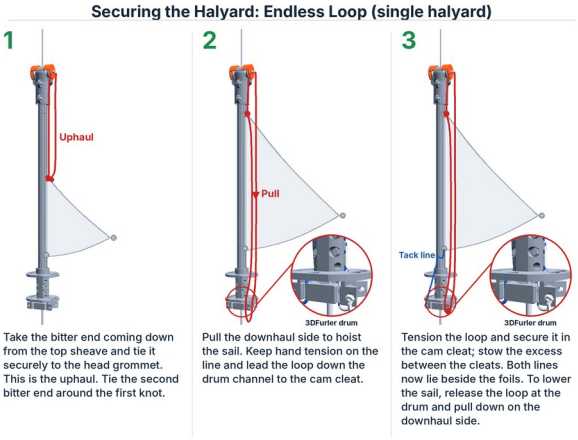


Figure 13 *Securing the halyard with an endless loop*

1. Attach the jib sheets. Feed the sail into the luff feed and haul it up. The **sail head** sits 3–6 in. below the top assembly's lower ear, and the **tack** 3–6 in. above the drum's top flange. Do not stretch the luff. If the tack sits too low, add foils or have the sail re-sized.
2. Run the uphaul line through the hub channel on the same side, top and bottom, and secure it in the cleats under the bottom flange.
3. **Do not attach the furling line yet.** Rotate the whole furler (clockwise for starboard fairleads) until the jib sheets wrap a couple of times around the sail.

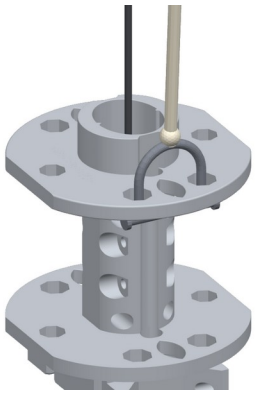


Figure 14 *Second halyard bitter end, shackled through a hole in each drum half*

Second halyard (optional)

Only the **bitter end** of the second halyard comes down to the drum; the other end holds up the second sail. Secure the bitter end through the **two facing holes in the top flange, one in each drum half** (either side of the seam), using one of these:

- a **shackle** large enough to pass through both holes,
- a **tensioner**, or
- the line **tied** through both holes.

Furling Line

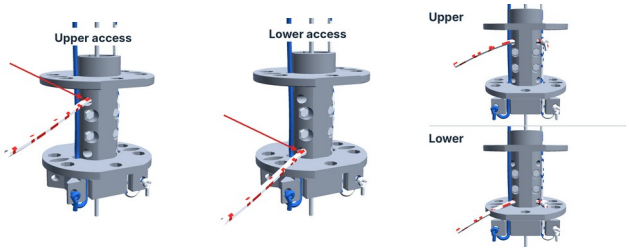


Figure 15 *Upper and lower access points; furling line knotted*

1. Use **one** access point, upper or lower, whichever lets the line meet the drum hub at close to **90°** from your fairleads.
2. Feed the line in and out the other side of the drum, tie a stopper knot and secure it.
3. Length: about 1.5 × boat length. Calculator: 3dfurler.com/learn/specifications

STEP 7

Load the Sail



Figure 16 *Extra wraps before the furling line*

Load the sail with the wind on the bow; anchoring somewhere safe is easiest.

1. Rotate the furler to roll the sail in the direction you want it to **unfurl**, until there are at least 3 wraps of jib sheet. Then attach the furling line.
2. In safe conditions, pull the jib sheet out while keeping a little tension on the furling line. The line winds onto the drum.
3. To reef or furl, point into the wind and pull in the furling line while easing the sheets.

Operating and Care

	Do this
Safety	Operate only in safe conditions; never install or operate in high winds. Keep clear of moving parts and other traffic. If the furler does not run smoothly, stop and troubleshoot.
Unfurling	Bow into the wind. Clear the windward sheet, keep tension on the furling line (a wrap on a winch helps) and unfurl steadily. Never let the drum freewheel. A loose stay can bind the foils under load.
Reefing	Reef early: it is easier to let line out than to bring it in. Steer into the wind, keep tension on the furling line as you pull it in and ease the sheets. Doubling the wind speed quadruples the pressure.
Furling	Point into the wind (use the engine if needed so you do not tack), ease the sheets, bring in the furling line and secure it.
Care	Inspect bolts and nuts regularly: snug, never overtightened. Check the stay through the Stay Inspection Port. Do not cut, drill or modify any printed part. No acetone-based lubricants. Parts: help@3dfurler.com, 904-600-4105.

Replacing a Sheave or Shield

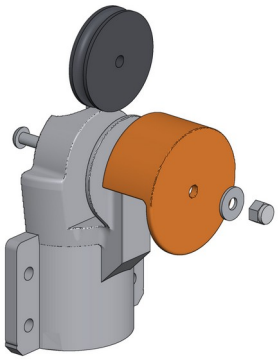


Figure 17 *Part B shown*

Work over a tarp or with the furler lowered, and tether every loose part.

1. Take the halyard off the sheave. Remove the 4 ear bolts and separate Part A and Part B (Step 1).
2. Remove the sheave's nylon nut and lift off the shield.
3. Push the round-head screw out toward the wire side and slide the sheave out of its slot.
4. Fit the new sheave, push the screw back in from the inner side (head in its recess, clear of the wire bore).
5. Refit the shield (tabs either side of the rib) and a **new** nylon nut. Snug only: the sheave must turn freely.
6. Remount the top assembly and feed the halyard back over the sheave.

Troubleshooting

Problem	Cause	Solution
Drum does not turn smoothly	Furling line angle or wrong opening	Reset fairleads for close to 90°; try the other access point.
System does not rotate	Top assembly jamming on the mast	Remove a half-foil.
Top Transition Foil will not go in	Wrong piece or upside down	Top Transition Foil 1 (large flare) first, flared end up. Do not force it.
Sail does not reach the top	Sail size, or halyard lines crossed	Check the sail measurements; uncross the lines.
Sheave does not turn	Nut overtightened or sheave worn	Back the nut off; replace the sheave if it still binds.
Furling line fouls on the drum	Over-speed when unfurling	Keep more tension on the furling line.
Hard to reef in high wind	Wind pressure	Steer into the wind.
Drum drops below the swage	Wrong insert size	Re-check the wire size; fit the matching insert pair from the set.
Foils too tight on the wire	Stay tension or wire size	Check tension and wire size; then call 904-600-4105.

Liability waiver. The 3D Furler is designed for safe, reliable operation when installed and used as described here. 3DFurler.com, its owners and affiliates accept no responsibility or liability for injury, damage or loss resulting from improper installation, modification, misuse or operation, including risks from adverse weather, failure to follow safety guidelines, or unauthorized alteration of any 3D-printed part. We are not responsible for incorrect sail sizes for any reason; always measure after installation before ordering or cutting a sail. By installing and operating the 3D Furler you accept these terms. Questions: help@3dfurler.com before proceeding.