

STAR Kayak Sail Assembly and Installation Instructions

(Specific to Supernova on Hobie Mirage Outback, Others similar)

Thank you for purchasing the highest performing kayak sail kit on the market. No matter which sail you purchased, you will be extremely satisfied. When your sail kit arrives, be sure to check to make certain all pieces are intact. We do our best to package your kit safely and securely, but sometimes customs opens packages and pieces can be misplaced. If you feel any pieces are missing, contact us immediately and we will send you replacements. Welcome to the world of STAR Kayak sails! Congratulations on adding a new dimension to your kayak!



Parts List:

4 pieces PVC Furler Tube (3 pcs. Standard/GT)	1 piece, Main Sheet (black)
4 pieces Aluminum Mast Assembly	2 pieces, cleats (1 right, 1 left)
1 piece, upper Furler Assembly	3 pieces, Pulleys with attachment lines
1 piece, lower Furler Assembly	2 pieces, Sheet Metal Screws with Washers
1 piece, Sail Bag	1 piece, Sail Batten
1 piece, Sail	1 piece, Main Sheet Guide
1 piece, Furling Sheet (red)	3 pieces, Rivets

Needed for Assembly

Rivet Gun	Metal File (optional)
Philips Head Screwdriver	Silicon Spray (optional)
Flat Head Screwdriver	Drill with 1/16" bit (for Sheet Guide and Cleat Installs)

Disclaimer

Always wear a lifejacket. Star Kayak Sails LLC assumes no responsibility for use or misuse of our product. Kayaking and kayak sailing can be hazardous and should be undertaken with caution. Be aware of your surroundings including electrical storms and power lines. Please report any problems with your kit to us for immediate resolution.

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Mast Assembly

- 1- Locate mast pieces. These are often found inside of the furling tubes, so be aware that they may fall out while separating the pieces of the package. The lower section of the mast has the hose clamp attached and consists of several sections of tubing nested within each other.



Figure 1: Aluminum inside of Furler Tubing

- 2- Piece together Mast Sections one and two. These are the lowest two sections of the mast and have the same diameter. Align the marks on the two pieces. Please do not start riveting yet as it is best to 'dry fit' the pieces together before riveting.



Figure 2: Alignment Sections 1 and 2



Figure 3: Lined-up Sections 1 and 2

- 3- Piece together Mast Sections two and three. This is where the diameter starts to be reduced. Section 3 should fit quite snugly with section 2.



Figure 4: Sections 2 and 3



Figure 5: Lined-up Sections 2 and 3

- 4- Now slide section 4 onto section 3. Again, the diameter is reduced and it should be a snug fit. Be sure to align the holes!



Figure 6: Sections 3 and 4



Figure 7: Lined-up Sections 3 and 4

- 5- Now that you have all of the mast pieces in their appropriate locations, it is safe to rivet them together. Do your best to get a nice, firm rivet placement to reduce any wear caused by excessive movement. The rivets should be a tight fit, and may require some finesse to get them in their holes.



Figure 8: Rivet Insertion



Figure 9: Inserted Rivet



Figure 10: Rivet completed

- 6- Notice that the rivet between sections 1 and 2 and sections 2 and 3 are nearly flush with the tubing (they are slightly countersunk). The rivet between sections 3 and 4 sticks out due to the smaller diameter tubing. It is

a good idea to smooth out the edges of this rivet slightly to reduce wear while furling and unfurling the sail. This can be done with a file or other tool.



Figure 11: Rivet sticking out slightly



Figure 12: Smoothing out edges of exposed rivet

7- Congratulations, you now have a mast!



Figure 13: Completed Mast

Sail Assembly

8- Now that you have your mast ready to go, we need to get the sail put together. First, take it out of the storage bag (dog not included).



Figure 14: Folded sail



Figure 15: Sail removed from storage bag

9- Find the batten. You have to remove it from its shipping packaging. **DO THIS WITH EXTREME CAUTION!** There is a lot of potential energy stored in the bent batten and it will pop out and hit you... hard!



Figure 16: Batten stored



Figure 17: Batten straightened

10- Slide the batten into the batten pocket on the upper corner of the sail.

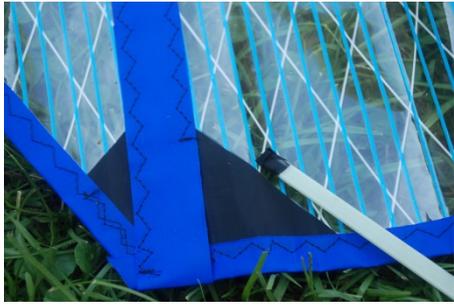


Figure 18: Batten and Pocket



Figure 19: Batten insertion



Figure 20: Batten tucked into Pocket

11- Tie the Main Sheet (black line) to the loop at the sail's clew (Lower corner of the sail). I typically use a Bowline Knot for this.



Figure 21: Tying Bowline



Figure 22: Bowline to sail's clew

12- Now your sail is ready!



Figure 23: Sail completed

Furler and Final Assembly

13- First, we are going to assemble the 'Furler Tube' which means putting those pieces of PVC pipe together. Here for the Supernova, we have four pieces of PVC to assemble, three long pieces and one short section. The order of the pieces is not so important so long as you make sure there are not joints at either termination of the PVC. Simply slide them together. Do not use glue if you ever want to disassemble.



Figure 24: Furling tubes and furler unassembled



Figure 25: Furling tubes fitted together (next to mast)

14- Next, we need to assemble the actual furling device for the sail. This is the PVC/Aluminum/Wood assembly you have been staring at since you started putting your sail together. First, unscrew the hose clamp at the base of the aluminum mast.



Figure 25: Hose clamp, lower end of furler, and aluminum collar (stop) on mast

15- Slide the lower end of the furling device onto the lower end of the mast. Once you have this in place (it should go all the way up to the aluminum stop on the mast). Slide the hose clamp back on the mast and tighten it up against the wooden base of the furler. (NOTE: New models have a layer of electric tape between the Stainless Hose Clamp and the Aluminum mast. This is to prevent any possible cathodic action)



Figure 26: Tightened hose clamp against base of lower end of furler

16- Now it is time to assemble the upper portion of the furler assembly. Notice the three holes drilled in it. For this, we will need the sail nearby as well as the furling sheet (red rope). You will need to tie a knot in one end of the furling sheet. I like to use a figure 8 knot for this. Then run the furling sheet from the inside of the furler, thru one of the holes at the top of the furler. Pull it all the way till the knot stops you.

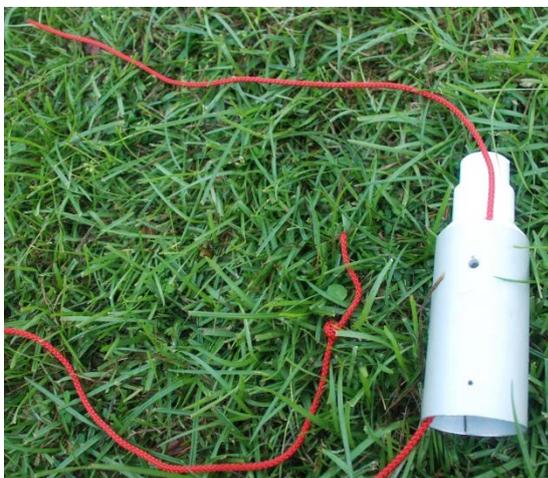


Figure 27: Furler line run thru furler



Figure 28: Furler line run thru

17- Next, we need to start combining some components. You need to insert the furler tube, which we put together in step 13, into the sail sleeve.



Figure 29: Sleeve of Sail



Figure 30: Sliding furler tube into sail sleeve

18- Run the furling line thru the nylon loop at the bottom of the sail, then back thru the upper furler assembly. Then run the line thru the lower hole in the side of the furler assembly. This holds the sail down tight to the furling assembly and the mast.

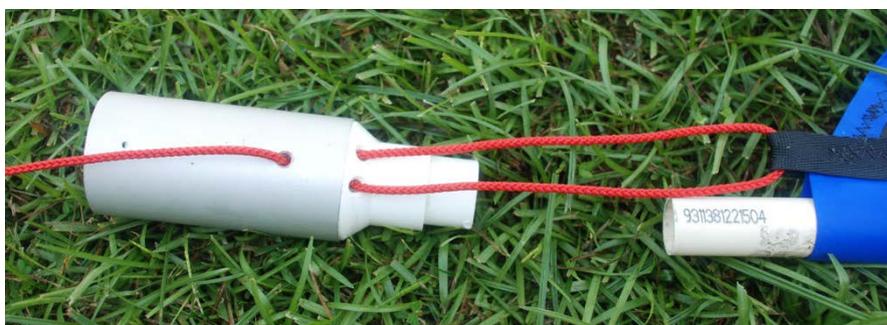


Figure 31: Completed running of furling line

19- Pressure fit the furler to the furling tube.



Figure 32: Furler fit onto furling tube

20- Now slide the aluminum mast assembly into the furler and furling tube.



Figure 33: Mast to insert into furler tube



Figure 34: Upper and lower furler meet

21- Take out the screws from the sides of the lower furler assembly. Slide the lower furler assembly into the upper furler assembly, align the screw holes (sometimes this must be rotated 180 degrees to align), and insert and tighten screws.



Figure 35: Aligned screw holes



Figure 36: Upper and lower furler screwed together

22- You now have an assembled Sail! Time to go find a boat!



Figure 37: Fully assembled furler, mast, and sail

Boat Installation

23- There are many ways to install your STAR sail on your boat. This shows the install on a Hobie Outback kayak. A Hobie Revolution can be done similarly but must use a smaller diameter furler (make sure you let us know when you place your order that you are using your sail for a Hobie Mirage Revolution!). This shows my no-drill install on a Hobie Mirage Outback which works, but does not utilize cleats.

24- Run the longest of the three pulley loops thru the rear eye of the boat. Loop and cinch it in place. This will take the main sheet.

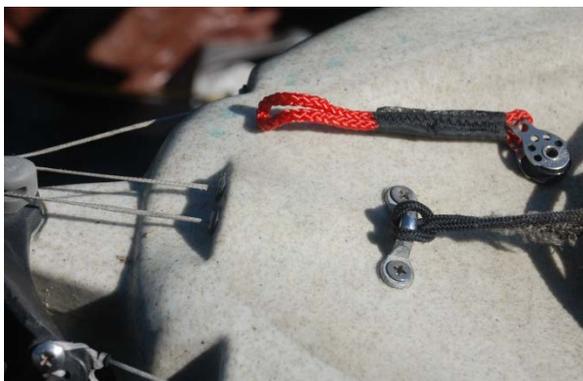


Figure 38: Pulley and rear lifting eye



Figure 39: Loop cinched down on rear lifting eye

25- Find the two other pulley loops. These will be for the turning pulley of the main sheet and to run the furling sheet. We will use existing hardware on the boat to install these. For the furling pulley, remove the forward of the two screws for the steering pulley. Place the screw thru the pulley loop and reinstall.



Figure 40: Furling Pulley



Figure 41: Furling line run from furler to pulley

26- Now for the sheet control pulley, remove the screw holding down the cover for the forward starboard rod holder. Insert this screw thru the pulley loop, and reinstall.



Figure 42: Main sheet control pulley



Figure 43: Main sheet control pulley (Ronstan cleat not included)

27- It is a good idea to install the stainless eye to run the main sheet thru. On this boat, it had previously had an anchor trolley installed and the existing eye is used for the install. You can also use the hardware included in the kit in the same location. Here, the eye is installed just below the rear starboard paddle holder. It is always a good idea to use waterproof silicon on all hardware penetrating the hull.



Figure 44: Main sheet guide on starboard side

- 28- At this point, you can install the two cleats included in the kit, but they are not necessary. It is a good idea to install at least the furling cleat to allow fast adjustment of sail area if winds become unfavorable. My suggestion is that you take your boat out for a trial run and then decide on convenient cleat placement.
- 29- When you install the mast into your sail receiver, always be sure to 'lock' the mast down to the boat. In the event of capsizing, you do not want to right the boat and have your sail disappear. The bungee loop connected to the pipe clamp below the furler serves this purpose. On the Hobie Mirage Kayak line, there is a location to lock the mast down utilizing the bungee loop. ALWAYS SECURE YOUR MAST!



Figure 45: Bungee connected to boat

Storing Your Sail

- 30- You have made the investment of time and money to have this amazing sail, it is a good idea to take care of it so that it lasts as long as possible. In addition to the occasional application of silicon spray to the aluminum mast to ease furling, you have a durable storage bag included in your kit! First, furl the sail tightly, then wrap the sheets (main and furling) around the furled sail and secure them.



Figure 46: Rolled sail, ready to store

- 31- Slide your wrapped-up mast into the storage bag. Store out of the sun and extreme environments and it will last as long as your boat!



Figure 47: Sail in storage bag



Figure 48: Sail stored with kayak on trailer