

## MAKING A WINCH LINE PARACHUTE

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**MAAC 204L**

As part of my preparation for the 2003 sailplane flying season, and after having built a winch during the winter, I decided to build my own parachute for the winch line rather than use a commercially available 'chute (a decision I'm still not sure was the correct one!!) Anyone with access to a sewing machine (preferably operated by a wife or girl friend) should be able to make a functional 'chute. The attached sketches and the description below outline the processes I followed, to end up with a six-panel parachute about 12" in open diameter.

The parachute material I used was ripstop nylon obtained from a Fabric Land store, and appears to be about the weight used in light backpacking tents. I believe a slightly lighter ripstop material such as that used in the making of spinnaker sails for sailboats might be a better choice, obtainable from marine supply stores that handle sailmaking materials.

The pattern for cutting the panels is shown in Figure 1. (The pattern dimensions include appropriate allowances for the seams on all four sides). Six panels are required, of alternating and contrasting colours if you are looking for better visibility. Cutting the panels with a sharp blade is easy if you first make up a cutting template of light aluminum, plastic or other hard material. To prevent fraying, I passed the cut edges of each panel quickly through a flame to seal the edge fibers. Cutting the panels with a hot knife might be a good (and safer) method.

The first sewing task is to create a double-folded seam on the upper and lower edges of each panel, as shown in Figure 3. The material can be hard to handle when trying to keep the double fold in place to sew the seam. It is easier if you glue at least the first fold, and possibly both folds, with glue stick before sewing the seam.

The panel side seams form a tube through which the shroud lines will be passed, as shown in Figure 4. Once the first seam is made to join the two panels together, I wrapped the joined material around a length of 1/8" dia. aluminum tubing, and ran the second seam as close to the tubing as possible. Then a shroud line can be passed through the tubing, and the tubing removed and used to form the next side seam. The shroud lines used were three 5-foot lengths of multifilament winch line (Figure 2), each of which was passed up through one seam, through the tow ring, and down through the seam on the diametrically-opposite side of the 'chute, forming two shrouds from each length of line.

The final step is to gather the six shrouds together at the bottom and apply tension to the assembly. While under tension, lash the shrouds together just under the tow ring using lighter nylon line, and mark the position of the bottom of the chute on each line at the same distance from the ring. Then the shrouds can be anchored to the parachute at **the bottom of each shroud seam only**, hand stitching with a stronger thread such as Button and Canvas thread. The lower end of the shrouds can now be tied to a swivel or other hardware for fastening to the winch line.

The resultant parachute is strong and durable, quite suitable for F3J and other larger sailplanes. A big advantage is the ability to change shroud lines periodically. Simply by undoing the hand stitching tying each shroud to the 'chute at the bottom, the shrouds can be removed, the aluminum tubing re-inserted into each seam in turn, and new shrouds can be installed.

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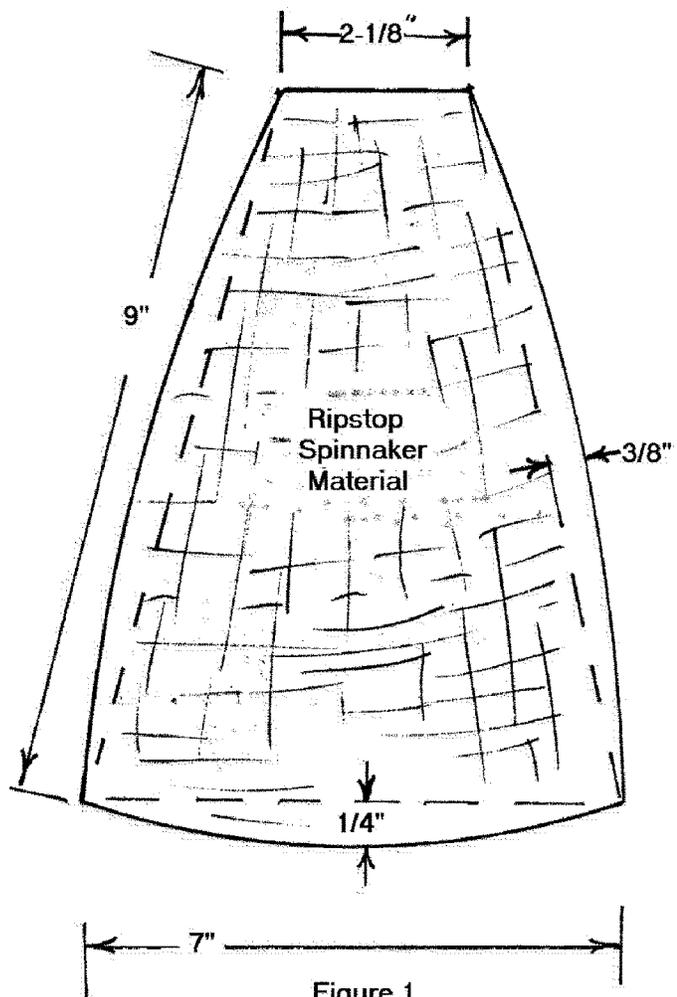


Figure 1  
Panel Pattern  
(6 Requ'd)

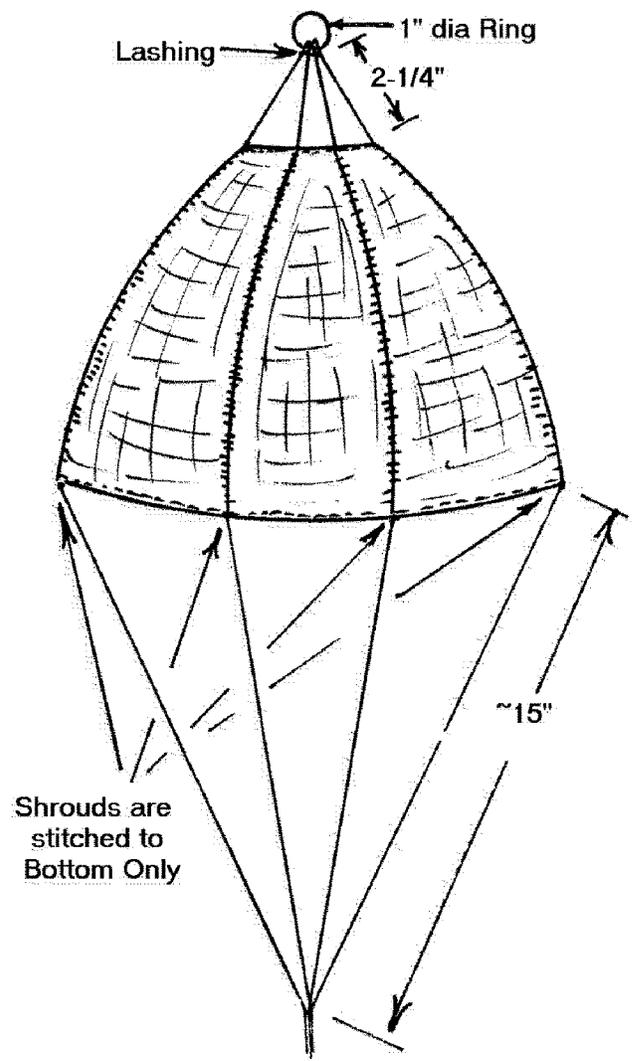


Figure 2

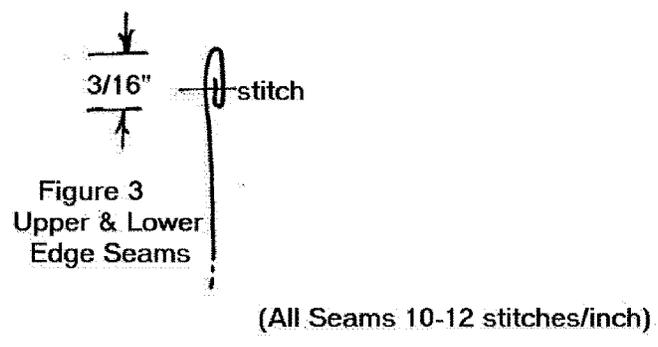


Figure 3  
Upper & Lower  
Edge Seams

(All Seams 10-12 stitches/inch)

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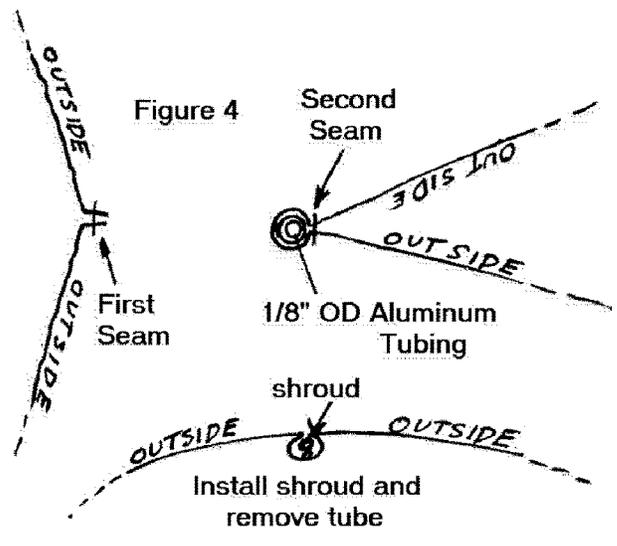


Figure 4