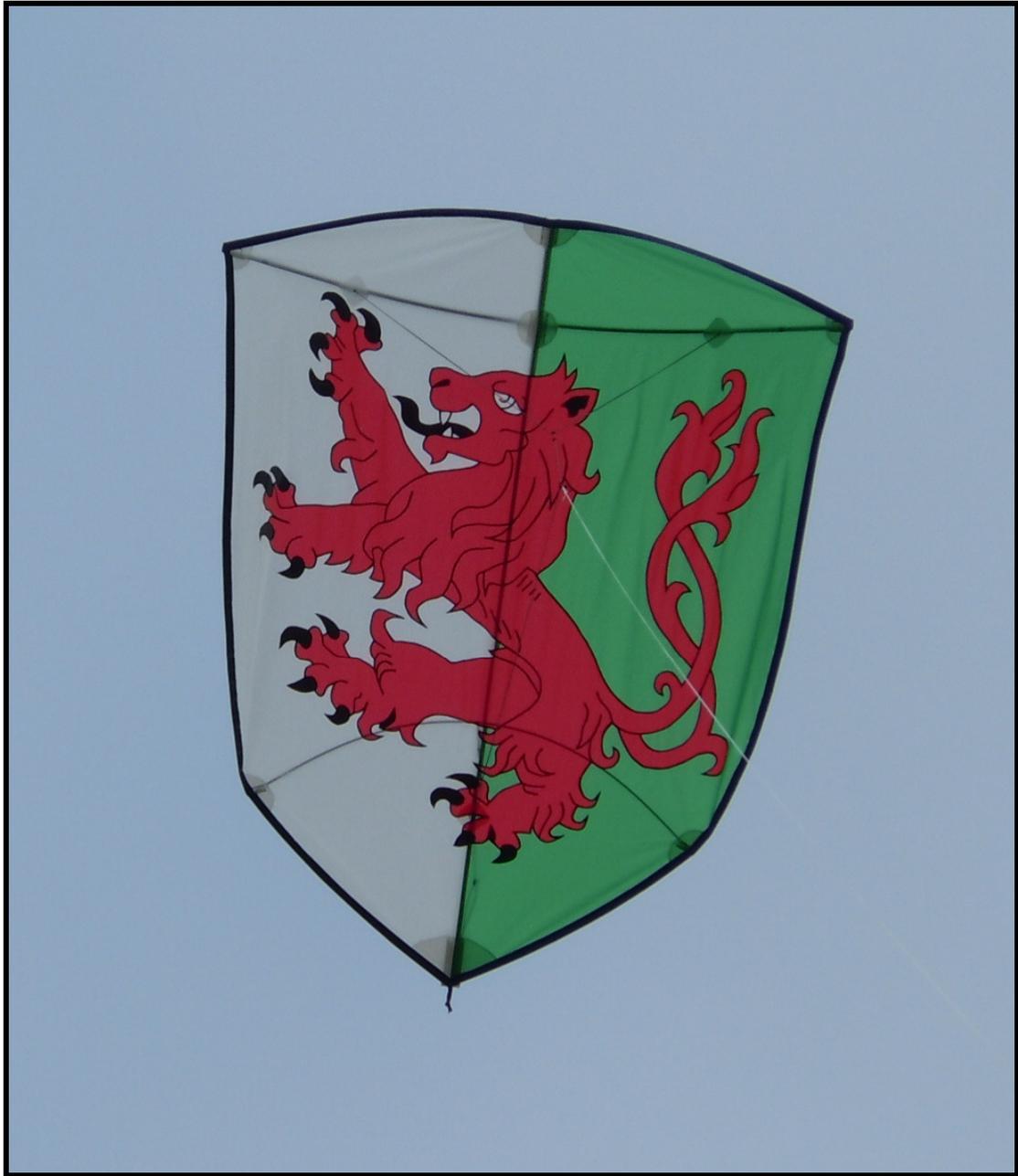


Shield Kite



By Sam & Cari King

Oregon Kitemaker's Retreat 2013

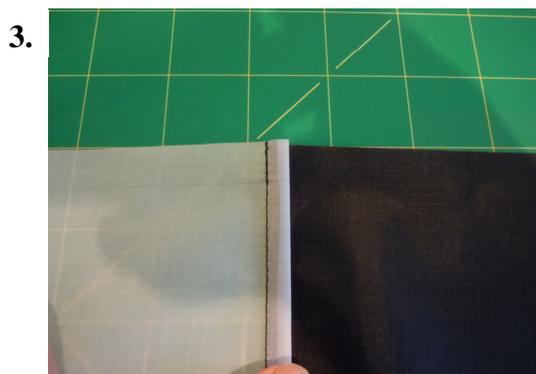
SAIL ASSEMBLY

Your pre-cut sail pieces include half-inch seam allowances. This provides enough material to complete a 1/4 inch double rolled (aka French) seam. To complete a seam:

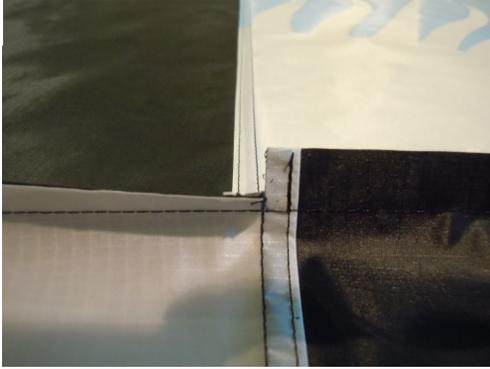
1. Place two pieces of fabric with fronts together.
2. Sew down the marked line with a straight stitch. (Photo 1)
3. Trim slightly more than half of the **DARKER** fabric in the seam excess away. (Photo 2)
4. Fold the edge of the lighter fabric in the seam to the line of stitching. (Photo 3)
5. Open the fabric so that the front of the kite is facing down and the sail is flat. The seam excess should be folded and sticking up in the middle of the piece. Fold the folded edge towards the darker side and sew down with a straight stitch. (Photo 4)

If you are constructing a ‘Quarters’ layout, there is a nifty trick when it comes to sewing down the seam excess on the second seam. If you were to merely cut and fold in one direction, half of the seam allowance would be behind the darker fabric, and the other half would be behind the lighter fabric, and therefore visible from the front of the kite. To avoid this:

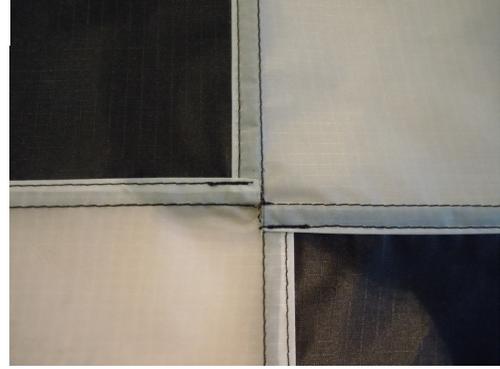
- **Read this, and then see me if you have any questions. Check twice, cut once**
1. After you have sewn the seam by sewing down the marked line, open the sail with the front facing down and with the seam allowance sticking up.
 2. Cut perpendicular to the edge of the seam allowance in the middle of the seam. (Photo 5 next page)
 3. Half will fold towards the dark side on the right, the other half towards the dark side on the left.
 4. Remove slightly more than half of the **DARKER** fabric on each side.
 5. Fold the edge of the lighter fabric in the seam allowance towards the stitching on each side (these folds should be in opposite directions)
 6. Fold the folded edge towards the darker side and sew down with a straight stitch. (Photo 6 next page)



5.

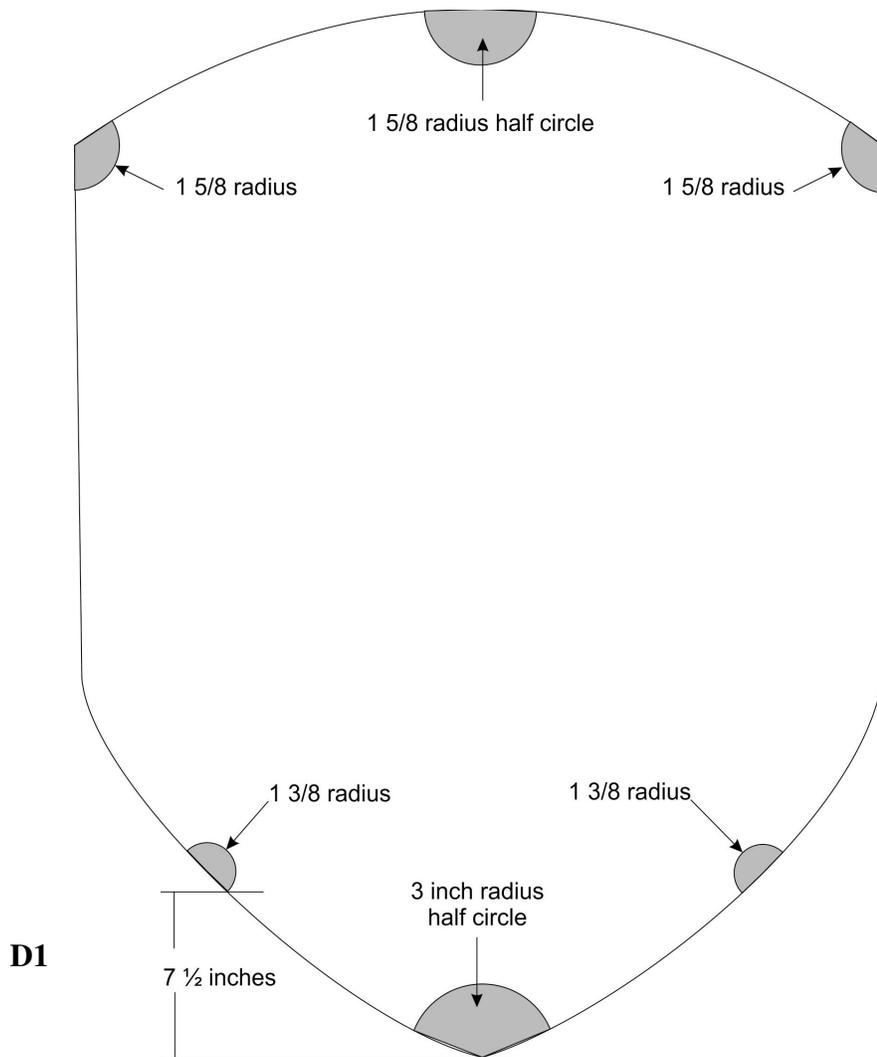


6.



REINFORCEMENTS

Using Diagram 1 as a guide, sew down the white Dacron reinforcements in their corresponding locations on the back side of the sail. Sew only the outside arc. I like a small zig-zag for this. I use either scotch or masking tape to tape the pieces in place. Remove the tape as the needle gets to that portion. When done, you should have six reinforcements sewn to the back of the kite.



EDGE BINDING

There is a pack of pre-folded nylon strip with which to edge bind your kite. There is approximately 12 inches of excess, so proceed accordingly. Do one long edge, then the other, then the top. Hot cut the excess along the kite edge to seal the ends.

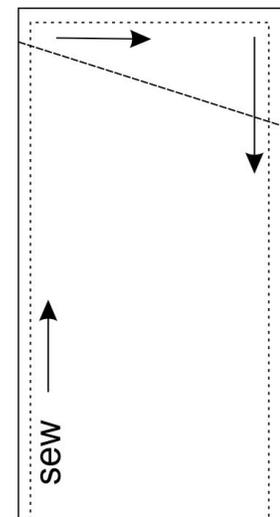
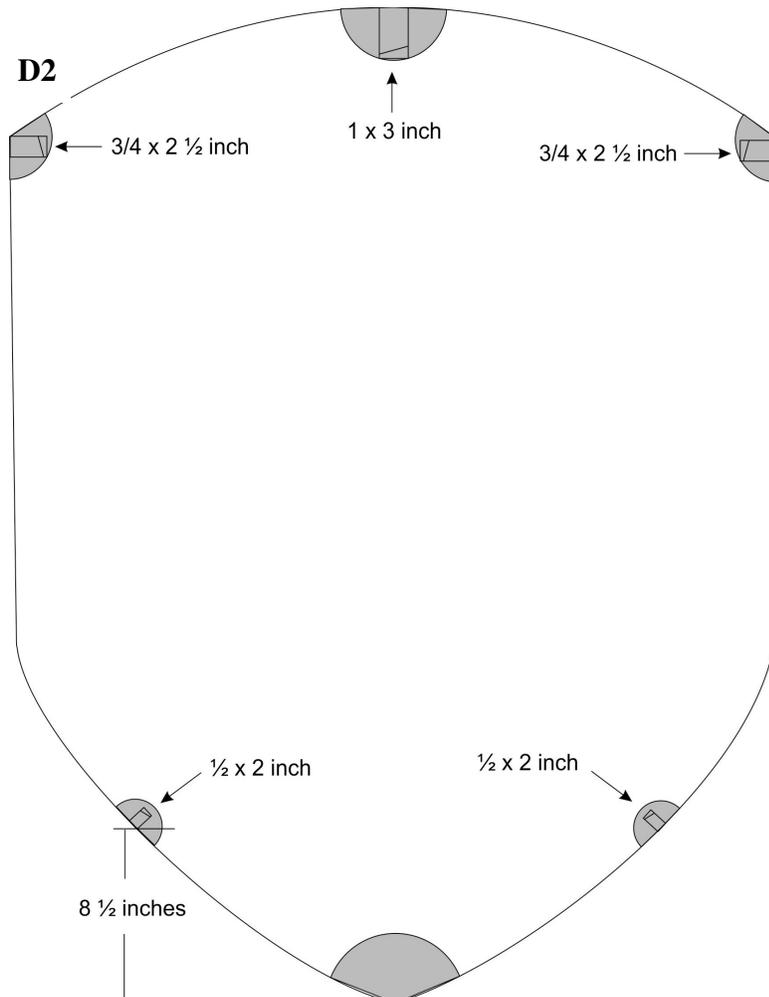
For the curves on the bottom half of the kite, remember that a very small length of each curve is merely a straight line. Go slow, stitching down an inch or two at a time. Try to keep the sail flat on your table and allow the binding to pucker as necessary (it will flatten out as the kite is tensioned). I use a wider zig-zag for this, which helps the fabric ease a bit [for Pfaff users, the standard 3.0/2.0 zig-zag works well here]

Pointed Top: Repeat the process for the top edges.

Rounded Top: Rather than sewing one large arc, start in the middle and sew towards each end, this is a little easier and helps keep the fabric flat.

POCKETS

Fold the Dacron pocket pieces in half and tape in place according to diagram 2 below. Sew as indicated in diagram 3 to attach the pockets to the kite. Tack each end. I also run back and forth a couple of times at the edges of the angled bit to tack that down well.



D3

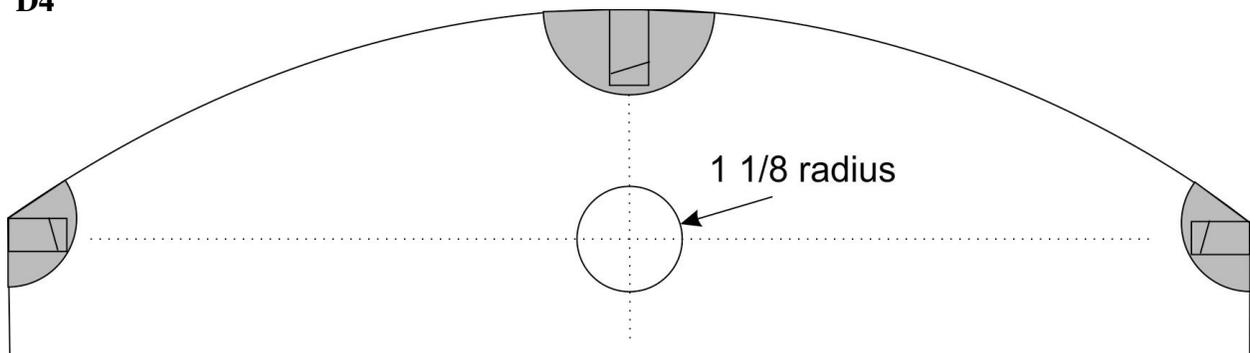
SPAR CROSS CHANNEL

Center the 1 1/8 Dacron circle on the top corner pockets and on the pocket at the top of the kite. Sew the circle to the sail with a small zig-zag stitch. See Diagram 4.

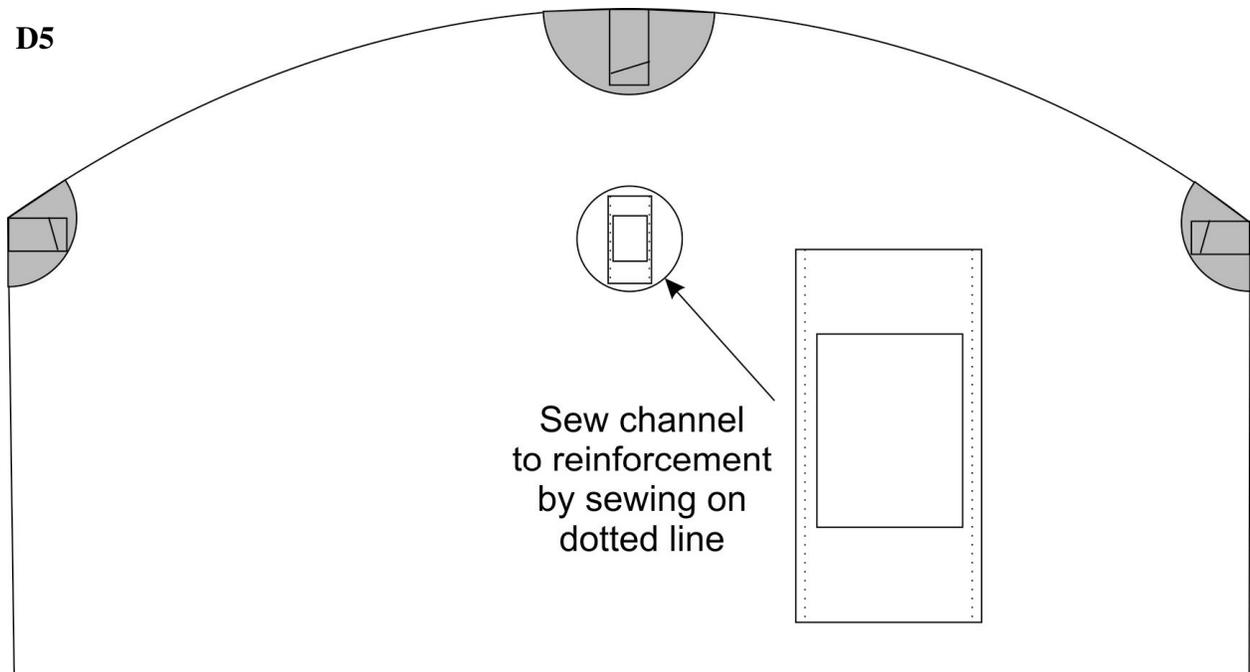
Construct the channel by centering the 7/8 x 1 1/8 Dacron rectangle on the 1 x 1 3/4 Dacron rectangle. The short ends of each face top and bottom. Sew the smaller rectangle to the larger by sewing along **ONLY** the top and bottom edges with a straight stitch.

Sew this assembly, with the smaller rectangle facing up, in the center of the 1 1/8 Dacron circle. Sew only along the left and right edges of the larger rectangle. **WARNING** : Do not sew across the smaller rectangle. (See Diagram 5)

D4



D5



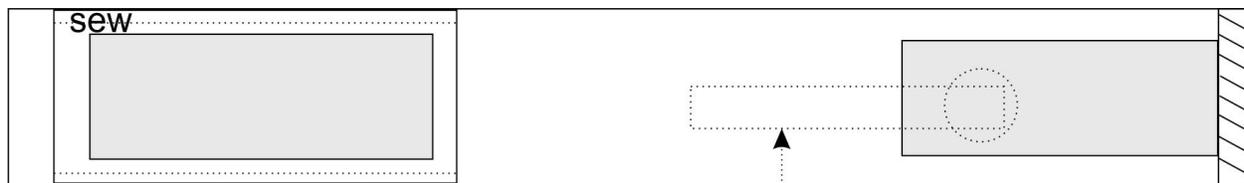
SPINE TENSIONING POCKET

- Fold a shy 1/4 inch of one end of the 1x6 Dacron rectangle over and sew down (creating the diagonally shaded portion). See Diagram 6.
- Sew down the loop Velcro on that end of the 1x6 Dacron rectangle. See Diagram 6.
- Sew the hook Velcro centered on the 1x2 Dacron rectangle. See Diagram 6.
- Sew the 1x2 Dacron rectangle (with attached hook Velcro) onto the 1x6 Dacron Rectangle by sewing only the long sides of the rectangle to create a channel. See Diagram 7
- If you would like a tail attachment point, sew the flat webbing with knot on the back of the 1x6 Dacron rectangle with the unknotted end adjacent to the hook Velcro reinforcement. See Diagram 7

D6



D7

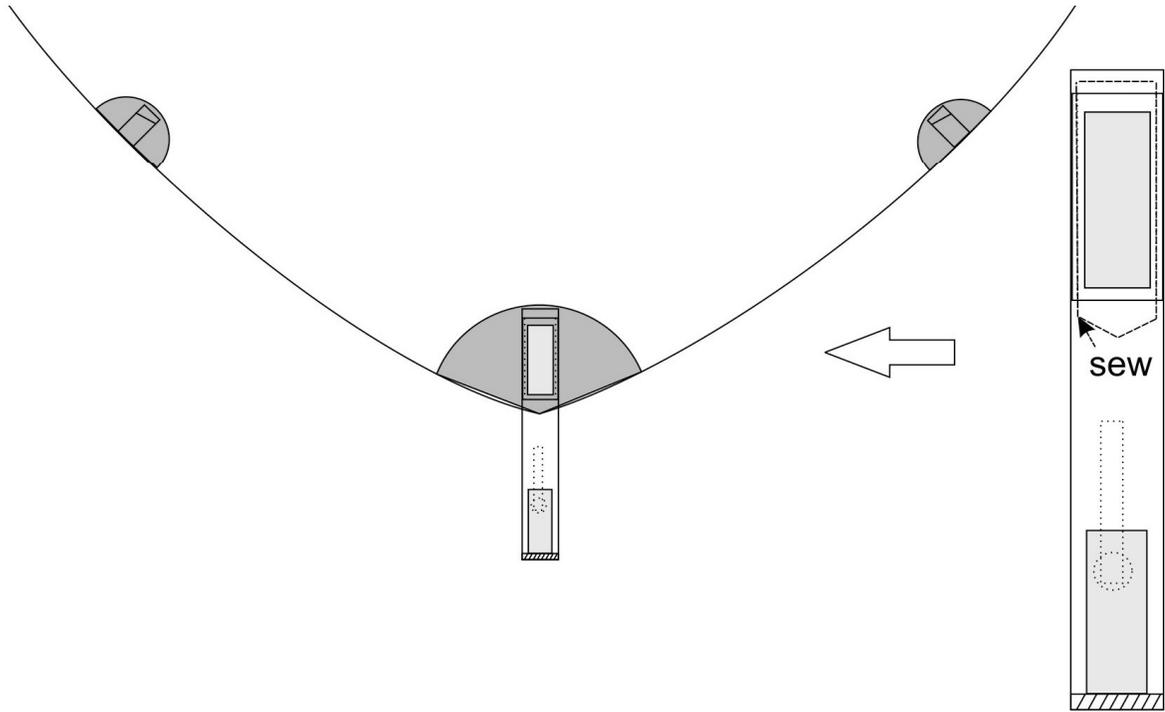


Tail attachment on reverse

SPINE TENSIONING POCKET ONTO SAIL

Align the completed spine tensioning pocket on the sail as indicated. The tail attachment webbing, if present, should extend off the bottom of the kite. Sew down by following the dotted line path. The pointed end of the path should be on the bottom of the kite, approximately 1/4 inch from the edge of the sail (mid-way across the edge binding). See Diagram 8.

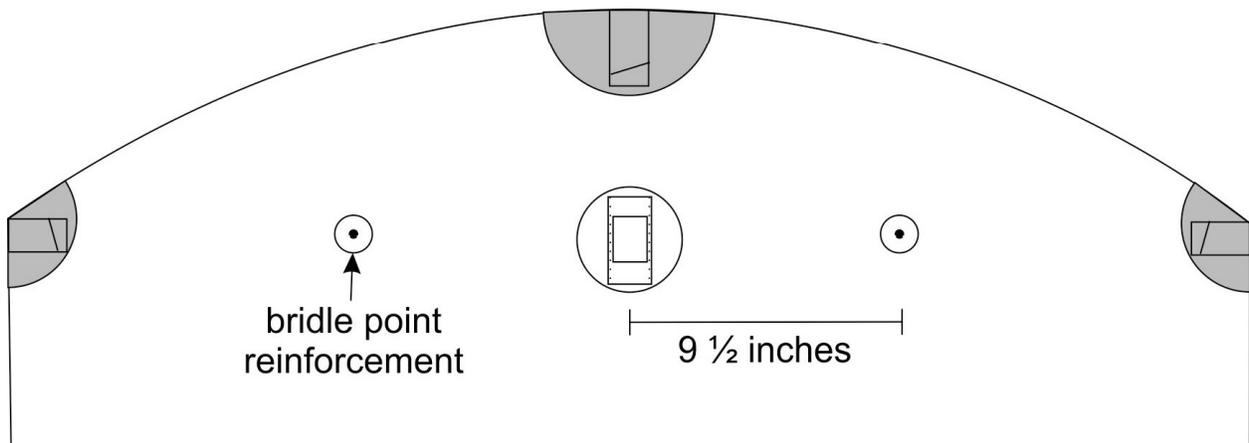
D8



BRIDLE ATTACHMENT REINFORCEMENT AND POINTS

The top two bridle points are centered on the top side pockets, 9 1/2 inches from the center of the kite. Trim the corners of the adhesive backed Dacron squares. Center one of these on each bridle point and stick to the back of the kite. Hot cut a hole at the bridle points indicated.

The bottom bridle point is centered on the kite approximately 8 to 10 inches from the bottom of the kite. The exact position is not critical so adjustments can be made to fit your sail design. Hot cut two holes about 1/2 inch apart centered on the spine in the middle of this reinforcement.



STICKS

The spine is .220 carbon tube. Slip a medium end cap on one end and put that end into the top pocket. Tension the kite and mark the spar at the bottom of the kite. Cut on your mark and slip on the second medium end cap. **Do not put into kite yet.**

The cross spar is .230 carbon reinforced fiberglass tube (You can see the three carbon tracers that run the length of the tube if you look at the end. Kinda cool stuff - still flexible like fiberglass, but a bit tougher thanks to the carbon) Slip a large end cap on one end and put that end into one of the top corner pockets. Tension the kite and mark approximately 1/8 inch from the end of the opposite pocket. Cut on the mark and slip on the second large end cap. **Double check if you have questions. Measure Twice - Cut once. Do not put into kite yet.**

The bottom tensioning spar is .010 solid fiberglass cut at 28 3/4 inches. Slip a small end cap on each end. **Do not put into kite yet.**

STRINGS

The top bowline is 58 inches long. Fold 10 inches over at one end and tie a loop using a figure of 8 knot. Repeat this process at the other end of the string. You'll end up with a 16 inch length in the middle with a 10 inch loop at each end. Using a prussic knot, attach one loop onto one end of the cross spar. Slide the cross spar through the horizontal portion of the cross spar channel and then tie the other loop onto the opposite end of the spar with a prussic knot. Now you can install the spar in the pockets. This will take some effort, but this spar does not come out of the kite, so you only have to do it once.

The shortest length of string is for the bottom tensioning spar line. Tie a small 2-3 inch loop in one end. Using a double larks head knot, tie this to the bottom tensioning spar. Install the spar into the kite. Run the free end of the line through the spine tensioning channel then towards the front of the kite through a hot cut hole. Run the free end to the back of the kite through the second hot cut hole and back through the spine tensioning channel. Tie this end to the downward portion of the line using a Trucker's hitch (sliding) knot. You can control the amount of tension the bottom spar exerts on the outside of the kite skin by tensioning this knot.

Install the spine and tension the kite.

This kite utilizes a T shaped bridle. Take one bridle leg and run it from the front of the kite, through the hot cut hole in the reinforcement at one of the top bridle points and tie to the cross spar using an Overhand Slider knot. Repeat this process to tie the other end of this line through the opposite top bridle point.

In the remaining Bridle line, tie a small 3-4 inch loop in one end. Attach this to the top bridle point using a double Lark's Head knot. Center this knot on the top bridle leg. Run the other end of this line towards the back of the kite through one of the holes at the bottom bridle point, around the spine, and then back towards the front of the kite through the other hole. Tie a Bowline knot, leaving a healthy loop as this will allow you a bigger loop to slip the spine through when you assemble the kite.

Add a pig tail and you're ready to fly!