

Fast Freddie's Polecat Aeroplane Works

They fly like stink!

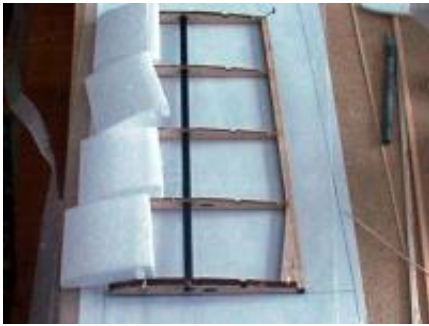
Kit Assembly

Center Panel

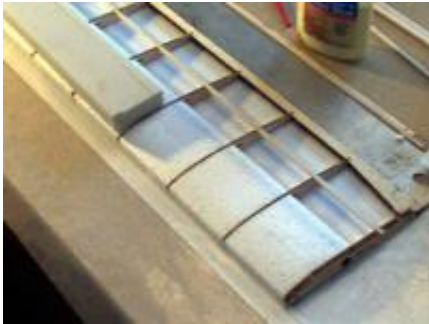
1. String the large CF spar with the 3 plywood center ribs (the sequence of these is important, left /center/right), 5 thin ribs on either side and the 1/4 inch ribs on the outside.
2. Pin the sub trailing edge over the plan with a straight edge along the trailing edge to keep the panel straight.
3. Put the spar with ribs attached in place on the drawing and fit the rib trailing edges into the slots in the trailing edge.



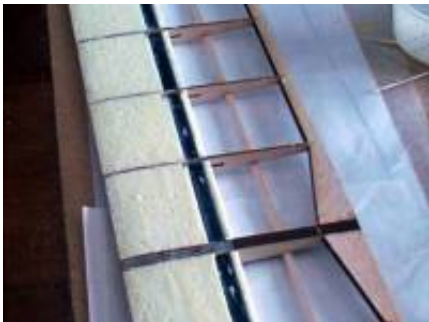
4. Insert the foam into the front bays to hold spacing (do not glue them yet).
5. Fit the 3/32 x 3/16 support strip into the upper rear slot of the ribs.
6. When everything is square, glue the rear of the ribs, the center ribs and the support strips.
7. One at a time remove the foam and then glue the spar to each rib being careful not to change the alignment.



8. Let the assembly dry. Remember, uncured regular CA glue will dissolve foam. Do not let the foam touch any uncured CA (Foam-safe or Odorless CA is best for use around foam).
9. Using a brush, paint white carpenter's glue onto the sides of each foam piece and then insert them into their bays. Make sure that the foam is even with the front edge of the ribs. Wipe off any excess glue from the ribs. Weight the assembly to keep it flat on the building board, and let it dry for about an hour.
10. Sand the foam to match the rib tops with a sanding block. I found that a Perma-Grit sanding bars works well since it doesn't load up like regular sand paper. The dark laser burns help to show when the foam is even with the ribs.



11. The top sheeting is added next. The ribs and foam are covered with a thin film of carpenter's glue. Weight the assembly on the building board to assure good adhesion. Masking tape stretched over the leading edge helps to keep the sheeting tight to the ribs / foam.



12. After the top sheeting is dry, the bottom of the foam is sanded and sheeted in the same fashion.
13. The foam along the leading edge is sanded flush with the ribs and the leading edge is applied with carpenter's glue. Tape applied across the face holds it until it dries.



Mid Panel

1. This is constructed the same way as the center panel except that $\frac{3}{32}$ of an inch of washout should be added. A $\frac{3}{32}$ inch shim should be placed under the trailing edge at the tip while applying the upper and lower sheeting.
2. For the Polyhedral configuration the outer mid-rib is removed and the thicker $\frac{3}{16}$ inch rib is substituted. The inner face of the removed rib becomes the parting line between the panels. The foam in the outer rib bay will need to be trimmed to fit the reduced width of the bay. The trailing edge must also be cut into two sections and the rib slot must be widened to fit the thicker rib.



Tip Panel

1. The tip spar has been determined by Mark Drela to be useless as far as wing integrity is concerned. And, it added unnecessary tip weight. Since the spar was eliminated for the tip panel, alignment is maintained by the foam blocks and building over the panel drawing.
2. The tip panel is built the in the same manner as the mid panel but no washout. The laser cut tips are applied per the drawing.
3. Polyhedral: The $\frac{3}{16}$ inch rib is added to the inboard edge. The foam block must be trimmed for the inboard bay and the slot in the trailing edge stock must be widened for the thicker rib.

Final Wing Assembly

1. Poly Version – Before the tapered trailing edges are applied to the mid and tip panels they must be cut as shown on the plan. Once glued to the panels, the assemblies are then sanded to agree with the rib diagrams in the plan.
2. Panel ends are sanded at angles (each mating surface is beveled to half of the indicated

angle) to match the dihedral or polyhedral angle as noted on the plans.

3. To make the joint between the center panel and the mid panel, put the wing joiner in it's respective position in the tip (you have already sanded the correct angle in the root ribs). Push a tiny piece of foam or such in the center spar to form a dam for the epoxy. Be sure that you can block up the tip to the correct angle. Put just enough thickened 5-minute epoxy in the center spar to hold the joiner but not push out and glue the tip to the center (this sounds a little tricky but actually goes very well). Block up the tip in the correct position and allow the epoxy to set up. Carefully slide the tip off the joiner and you can then fill the void around the joiner with more thickened epoxy.
4. The Poly version's tip panels are glued to the mid panels with epoxy and blocked to the angle shown.
5. Laser cut wire guides are glued against the center plywood ribs and against the back edge of the foam/sheeting. They are a simple framework for the servo wire to exit the wing. On the flapped poly version you need only one on the side with the servo, but on the full house version you will use both.
6. A pin added near the end of the trailing edge of the center panel that extends into an alignment socket in the outer panel will help maintain alignment. A 1-inch piece of 0.060 carbon fiber rod or wire is glued into the center panel just behind the 1/4-inch rib, parallel to the main wing joiner. It would only need to stick out 3/8 of an inch. A piece of aluminum tubing would then be added to the tip panel as an alignment socket.

Good luck and enjoy flying your WindDancer!