

Wing Center Assembly:

Summary: The wing center is assembled inverted over the plans. Assembly includes the forward section of the booms.

Begin by installing the flap servo into rib 5. Lay the upper 1/2" x 1" hardwood main spar on the plans. Glue ribs 2 thru 5 to the spar. Verify that both ribs 2 are exactly vertical so that they will mate with the boom sides. Install the lower wing spar and shear webs. Add the leading edge. Install the center flap (see Flap Construction). Sheet the lower surface between the left rib 2 and the right rib 2. Round the lower surface of the leading edge.

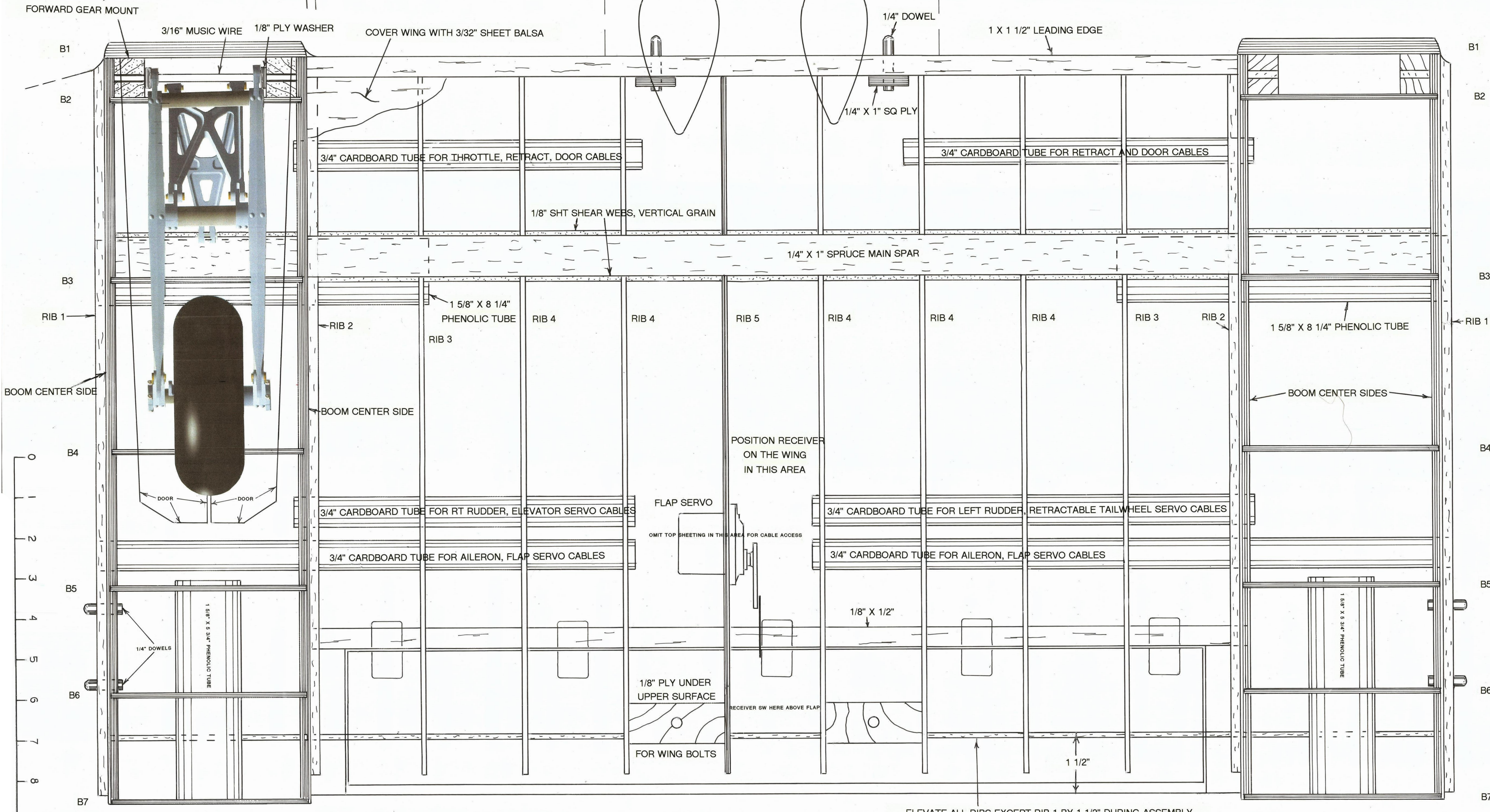
Install the inboard 1/4" ply boom sides by slipping them onto the spars from the side to be against rib 2. Install the boom centers (see Boom Center Assembly). Install the outer boom sides and the boom formers at the same time while the glue is wet so that they will line up. Install the Ziroli phenolic wing tubes with 1/4" extending beyond the outer boom sides for eventual connection to rib 1.

Install the Ziroli cardboard cable tubes. Turn the wing over and sheet the entire upper surface between the booms. Round the upper surface of the leading edge. Add ribs 1 to the outer boom sides by slipping them over the phenolic wing tubes and gluing them to the boom sides. Add fillets to the boom sides at rib 1 using microballons and epoxy or packing compound.

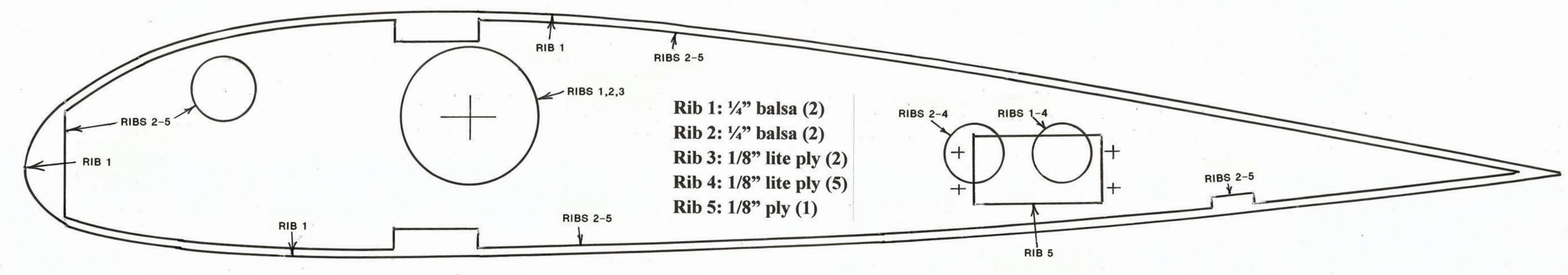
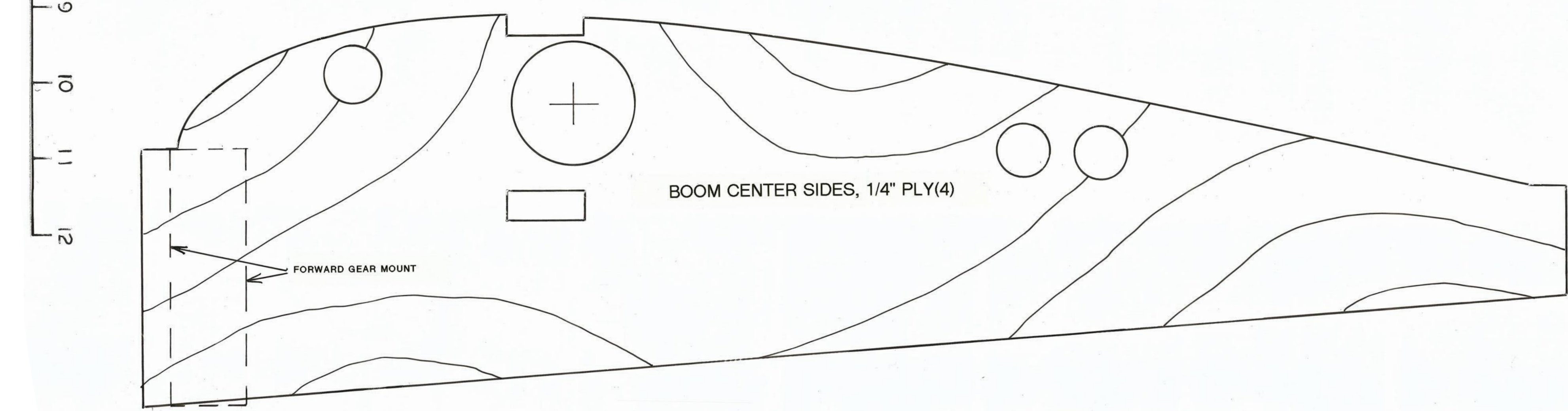
Put the fuselage in place and drill 1/4" holes in the leading edge using fuselage formers F1 and F1A as a guide. Remove the fuselage and install 1/4" dowels in the leading edge. Reinstall the fuselage and drill and tap the trailing edge wing bolts. Note how the fuselage can be removed by accessing the wing bolts when the flap is lowered.

With the fuselage in place on the wing, you may now complete the lower front fairing of the wing.

After glassing and painting, install the radio gear on the upper surface of the wing and inside the fuselage.



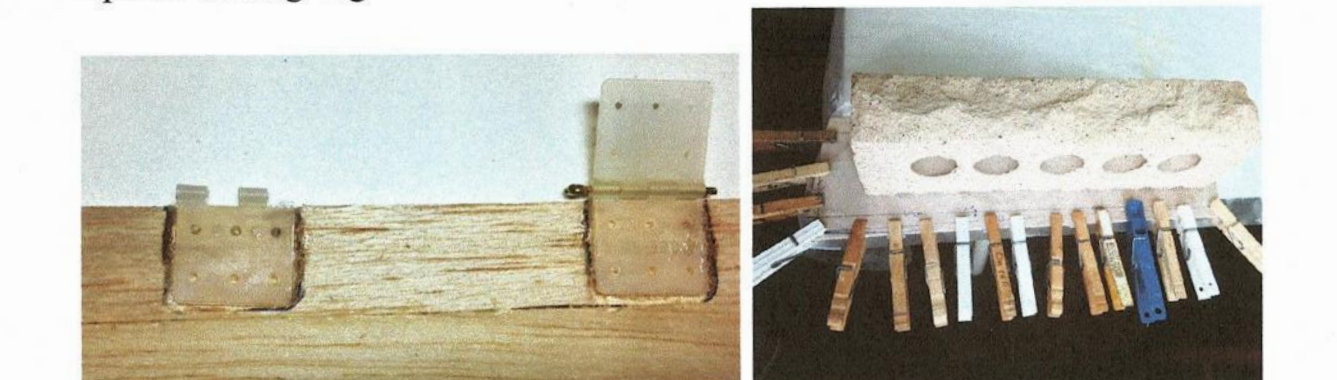
ELEVATE ALL RIBS EXCEPT RIB 1 BY 1 1/2" DURING ASSEMBLY
USE Balsa STICK 1/8" X 1 1/2" X 33"



Flap Construction:

The flaps are Roy Maynard style construction: 1/16" sheet balsa between two layers of 1/64" ply. This method has proven to be sturdy, light weight and warp-free.

Begin by cutting all pieces per the patterns on the plans. Note that the upper surface of each flap is 1/8" shorter in chord than the lower surface in order to have tapered trailing edges. Then...

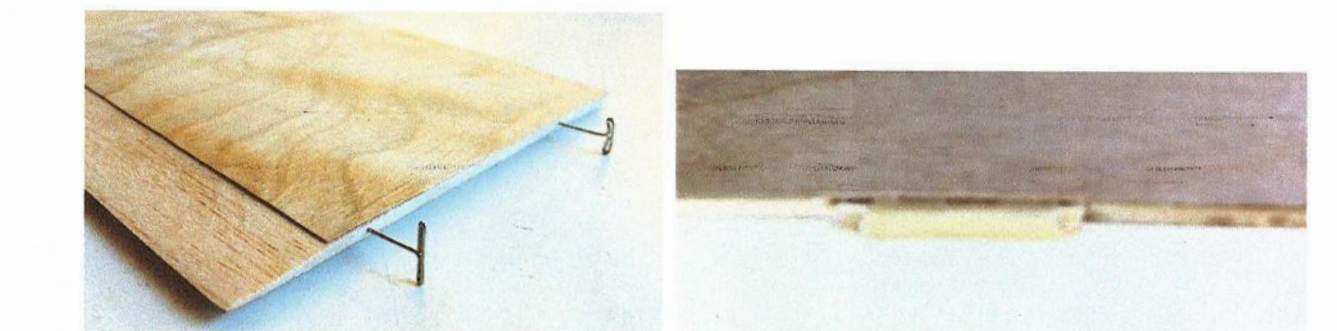


Using a small router bit in a router or drill press, rout recesses in the lower surface of the balsa sheet equal to the thickness (1/32") of the hinges and at the hinge locations shown on the plans. Glue at least half of the each hinge in position. (Installing only half of each hinge now simplifies removing unwanted glue or paint from the hinge in the event that some gets into the hinge cylinders.)

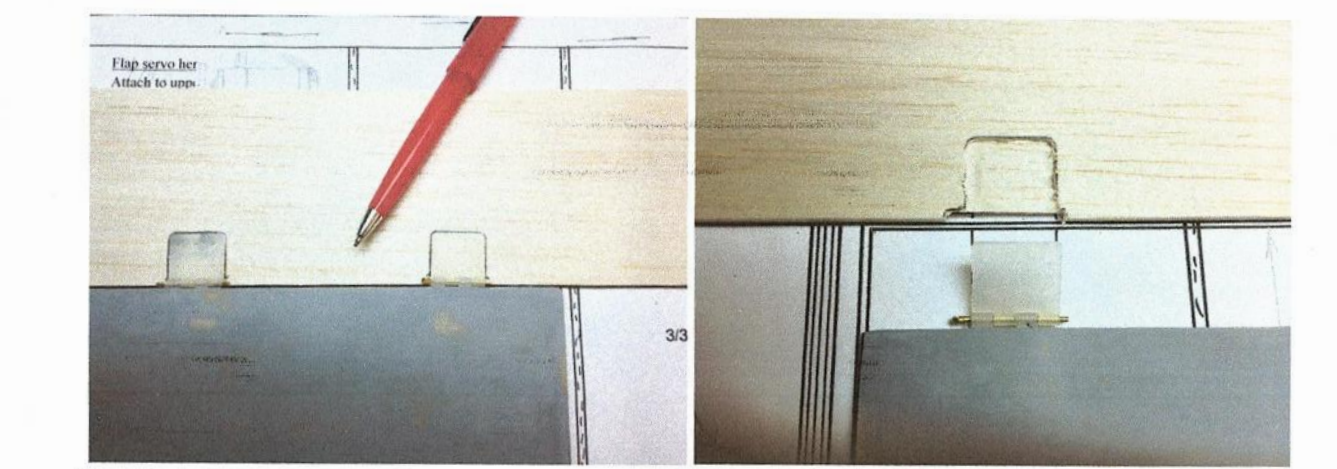
Smear SIG-BOND or other white glue on the surface being careful to not get glue in the hinge openings. Quickly spread it uniformly with an old credit card or similar squeegee and apply the lower ply surface. Weight and clamp the result to a flat surface to dry. Let cure over night.



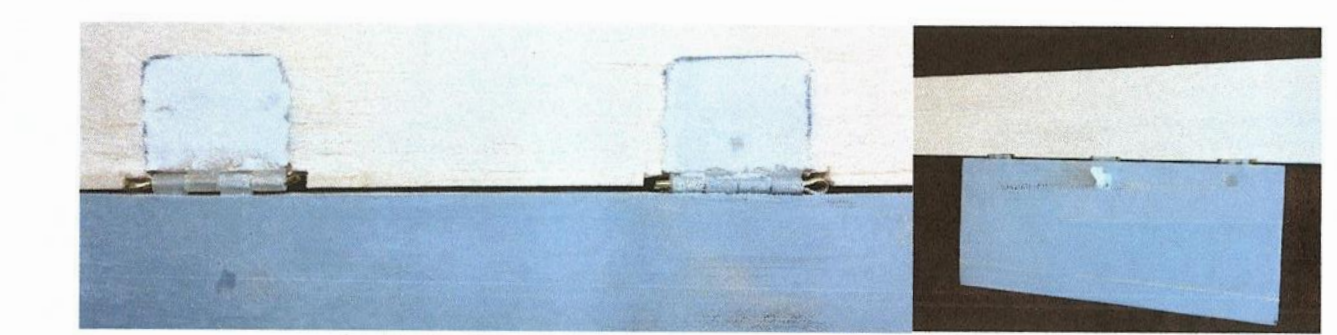
Turn upright and draw a line 1/2" from the trailing edge. Bevel the trailing edge with a razor plane and sanding block. Apply white glue to the upper surface 1/64" ply and apply the ply to the upper surface. Weight and clamp the result and let dry overnight. The trailing edge will be tapered as shown above.



Apply T-pins to the edges as shown above, two on one edge and one on the opposite edge. This allows primer to be applied to both sides simultaneously. It saves time and paint and allows both sides to dry simultaneously to prevent warping. b) Protect the hinges with masking tape and apply primer. Then sand smooth.



Next, we attach the flap to a section of 3/32" balsa wing sheeting. Begin by positioning the sheeting and flap on the plans and trace the location of the hinges on the sheeting. Rout a 1/32" pocket plus a small notch at each hinge location on the sheeting. Epoxy the hinges to the sheeting. Weight in position until the epoxy sets.



Squeegee epoxy thickened with micro balloons over each hinge and block-sand them flush with the sheeting. This strengthens the bond to the wood below and to the fiberglass cloth above. Bolt the flap servo horn over the middle hinge. The sheeting is now ready to be attached to the wing.

A center section flap is shown above. Use the same procedure for the outer panel flaps.

The full-size FW189's take-off setting on the inboard section was 15°, on the outboard section 8.5°. The FW189 landed with 60° inboard, 40° outboard.