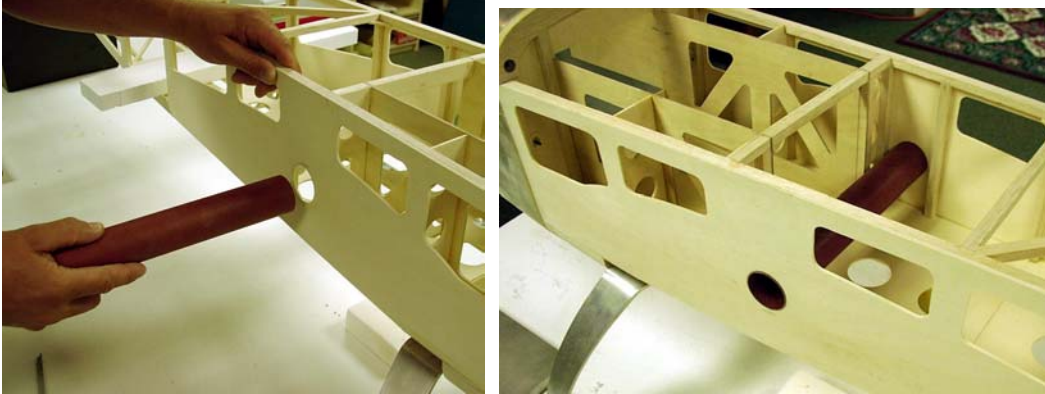


For exacting results, the following adjustments are made before the control surfaces are cut from the wings or stabs. Follow the same procedure for both the wing and stab. The stab alignment is referenced from the centerline of F3.

Fitting the Tube Socket

Project Extra uses a phenolic wing tube socket glued into the fuselage so the first order of business is to set that socket into the fuselage and get it aligned both perpendicularly and horizontally. We cut the socket to about 10-1/8 inches and fit it into the fuselage, sanding it flush to the sides (but don't glue it in at this time).



To fit the tube horizontally, the best method would be to flip the fuselage on its back using a perfectly flat table and take measurements from the tabletop to the wing tips. We didn't have a perfect table so Erik used a spare wing tube clamped to the top of the fuselage and took measurements at the tips.

The wings were then placed on the tube and an eight-foot piece of angle aluminum was used to measure the wings. We made tiny adjustments by sanding the fuse slightly to adjust the socket then remeasuring until the horizontal angle was perfect. You can use a small wedge or a toothpick to hold the adjustments until you are ready to glue.

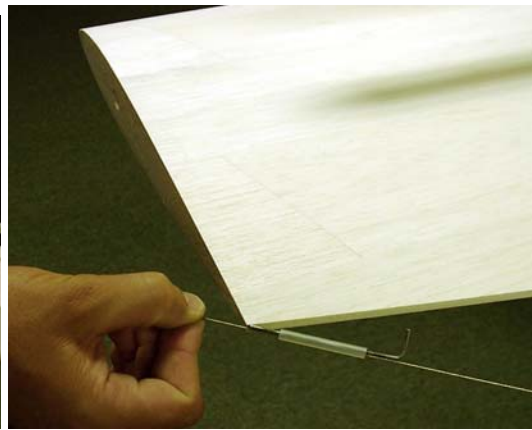
Wing Alignment (Trammeling)





Next, we check the fore and aft alignment of the wings to ensure that they are square to the fuselage centerline. To do that Erik made up a nice little device from a steel cable. A piece of string is largely inaccurate at the distance we have with an airplane this size because it will stretch.

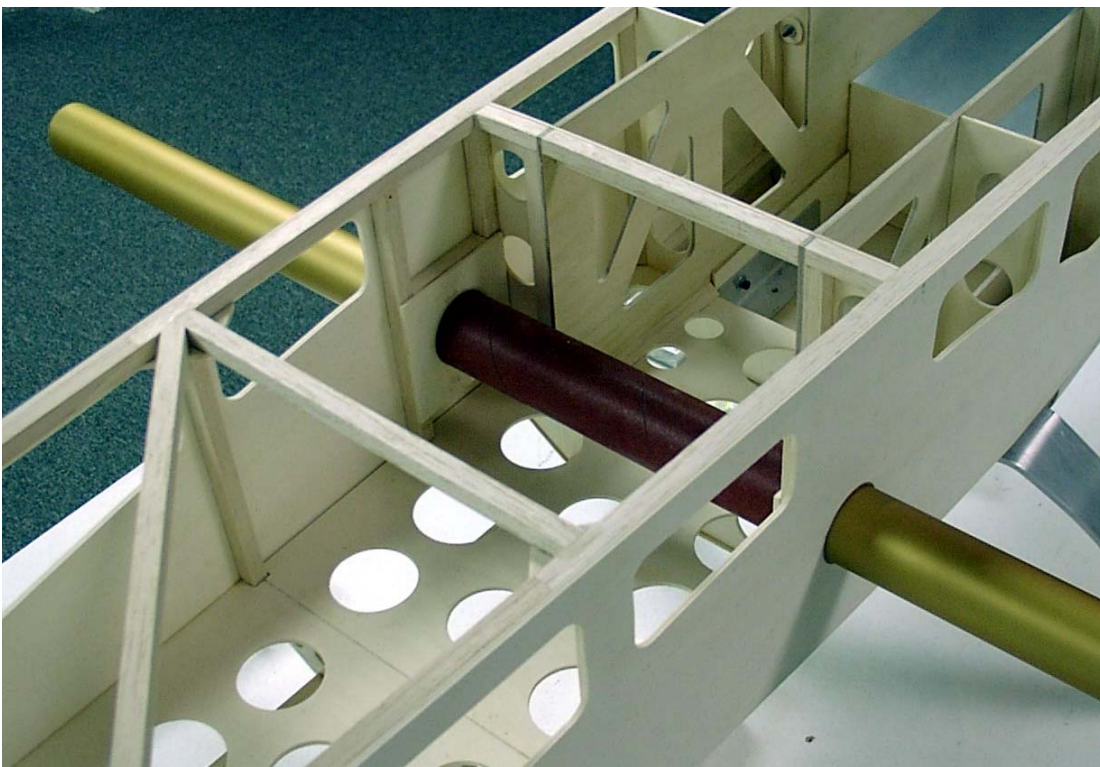
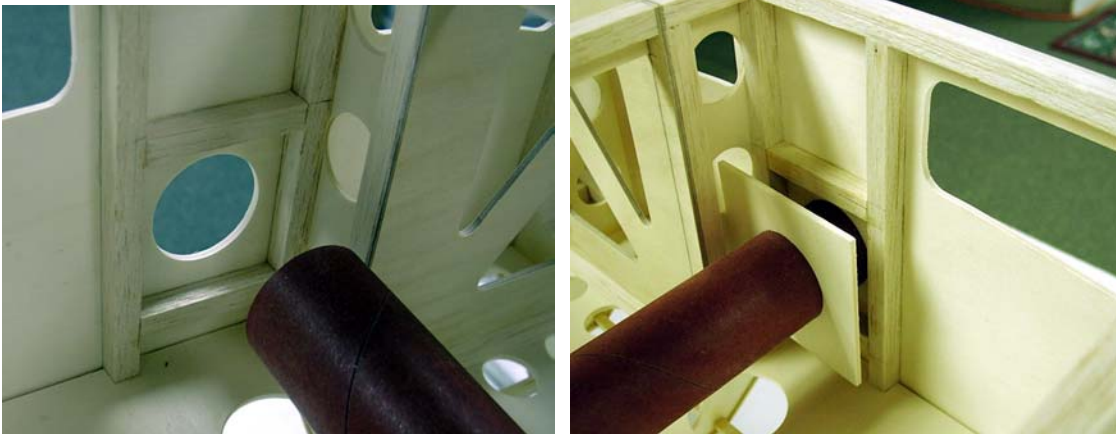
On one end there is a loop for pinning to the fuselage and on the cable he used a piece of fuel line and an Allen wrench for a pointer. Pin the loop of the cable to the rear former centerline on the top of the fuselage then slide the pointer to the trailing edge tip of the wing. Walk to the other side of the airplane and check the other wing. Again, adjust the fuselage tube socket until the trammel (wing alignment) is perfect.



Out of 1/8-inch light ply make a pair of three-inch square tube socket doublers with a 1.610-inch diameter hole at the center. It may help to make the hole slightly undersized and sand it until you get a snug fit on the phenolic; the doublers need to have a good tight fit.

Box in the area where the doubler fits to the fuselage with two pieces of 3/8-inch square balsa. Fit the socket into the fuselage with the doublers in place then square the tube to alignment using any wedges you may have made to keep the socket in place. Do a final check to see that the socket is where you want it and then tack glue it to the fuselage with CyA.

Once satisfied with the placement of the socket, you can final glue the socket to the fuselage sides and slide the doublers over and glue them in place to the 3/8-inch balsa framework and the socket.



After the tube socket is finished you can now add the last diagonal brace into the fuse.

Follow the same procedure with the stab tube socket except it does not utilize an inside doubler. However, a circular doubler may be used glued directly to the inside of the fuselage sides if a large adjustment is necessary to bring the tube into alignment. Make sure that the horizontal alignment of the stab is adjusted to the top line of the wing or the wing tube even if it is slightly askew from the fuselage.

The head-on photo shows the relationship of the stab to the wing. Since the stab has no dihedral, the centerline of the leading edge should be on the same plane as the top line of the wing.

