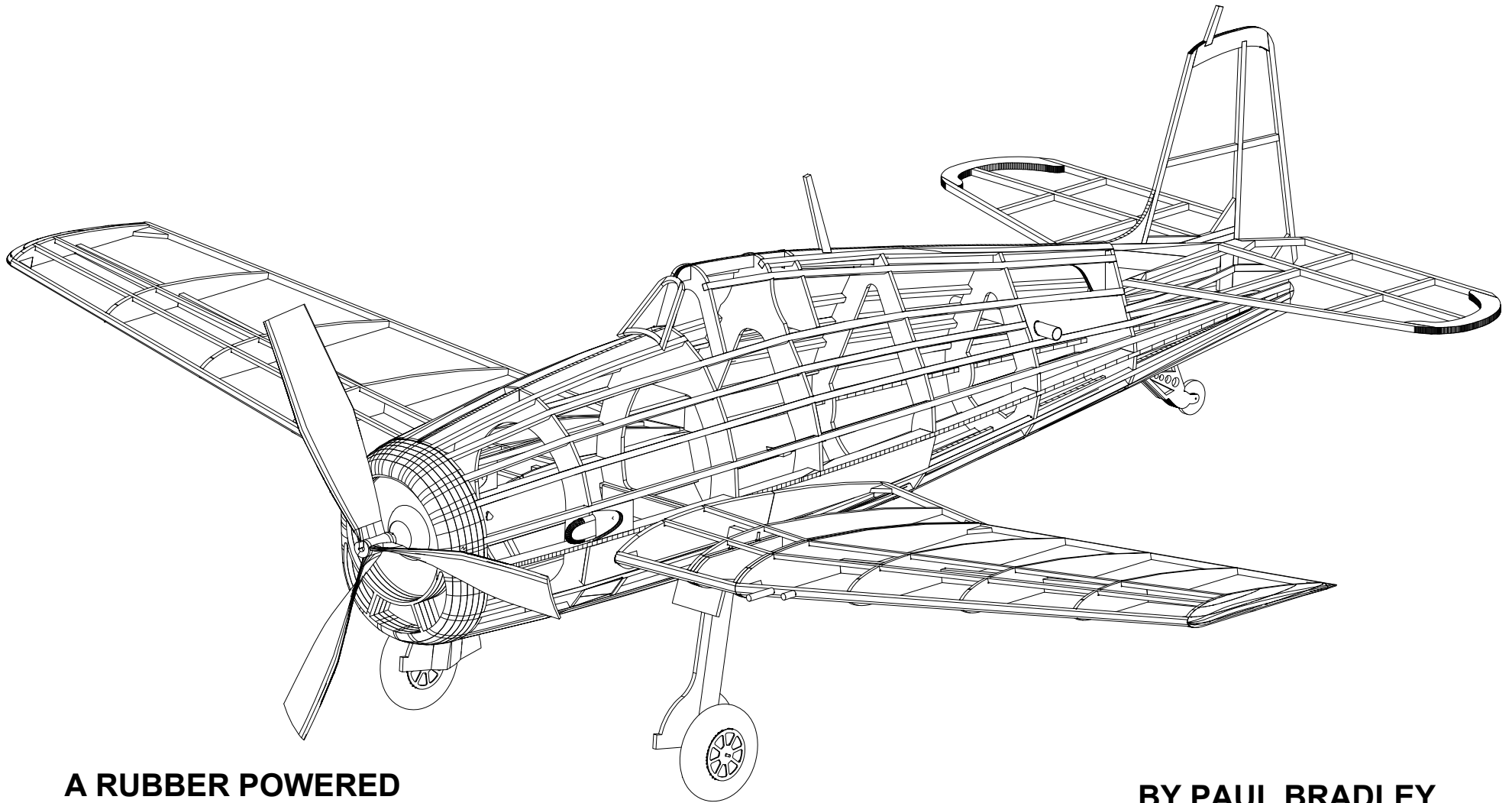


# COMET 24" HELLCAT REPRODUCTION



**A RUBBER POWERED  
24" WING SPAN MODEL**

**BY PAUL BRADLEY**

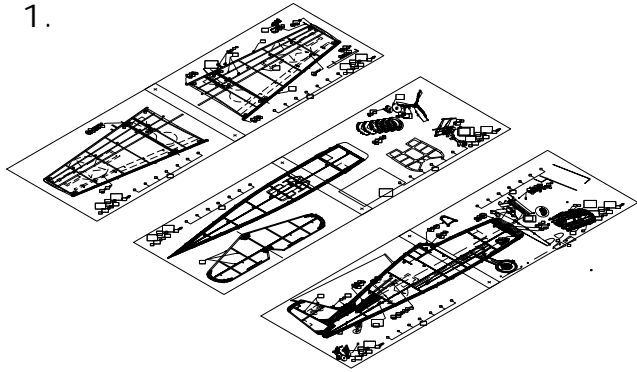
**ASSEMBLY GUIDE  
AUGUST 2016**

# CHANGES MADE TO THE ORIGINAL

The following changes were made to the original Comet kit structural design. Most of the original kit design has been retained. The changes made are intended to improve strength, make it easier to wind the model in a winding stoooge, and in general take advantage of techniques commonly used when building current day models.

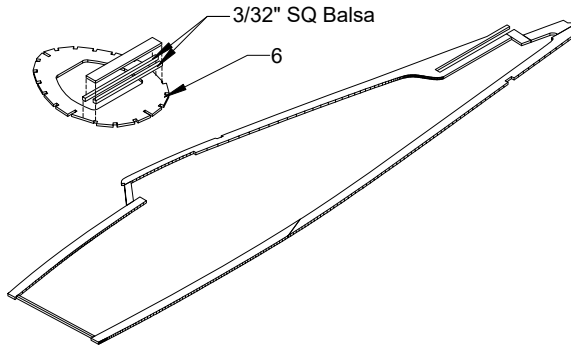
1. The fuselage formers have been lightened by removing internal material. This also provides much better clearance for the rubber motor.
2. The shape of the fuselage formers have been adjusted to better reflect the cross sections of the full scale aircraft.
3. Stringer notches in the fuselage formers have been adjusted to allow straight stringer runs from nose to tail.
4. The nose block has been set up for stretch winding the rubber motor. It has also been drawn to be made from 3/32" balsa laminations rather than a single piece of balsa.
5. A spar box has been added to fuselage former 6 to improve the strength of the wing installation.
6. The fuselage wing mount plate has been modified to include openings for the wing leading and trailing edges. This makes alignment of the wing panels more accurate.
7. Two 1/16" square sub spars have been added to the top of the wing to improve strength and to help reduce tissue sag between the ribs.
8. The wing dihedral joint has been simplified to be a simple glue joint. The addition of the top sub spars makes this practical.
9. The wing tips have been modified to be formed from laminated blocks. This produces a stronger and more realistic looking tip.
10. The original glued in place landing gear have been modified to allow for plug in landing gear.
11. The stab and fin sheet balsa parts are set up for 3/32" sheet rather than the original 1/16" sheet. This matches the 3/32" square strip stock.
12. A platform as been added to the stab slot to improve tissue attachment under the stab and to help the accuracy of the stab alignment.
13. The area below the fin and above the stab has been filled with laminated balsa blocks. This allows for added strength of the stab mount and makes it easier to cover the rear of the fuselage.
14. A motor peg has been used to anchor the rear end of the rubber motor as opposed to the method shown on the original kit plan. Sheet balsa motor peg supports have been added.

1.



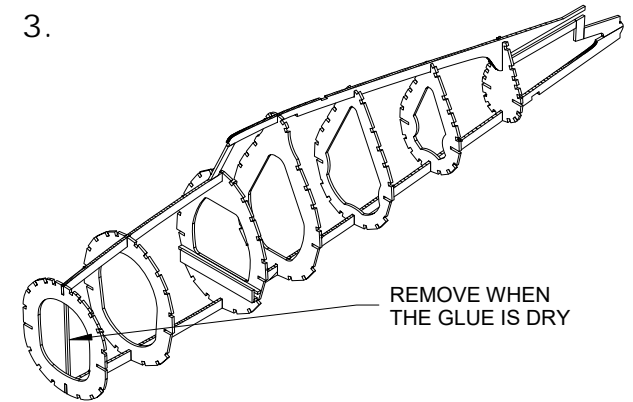
Tape the six plan pages together to form three building plan pages. Use the "+" marks for alignment of the pages.

2.



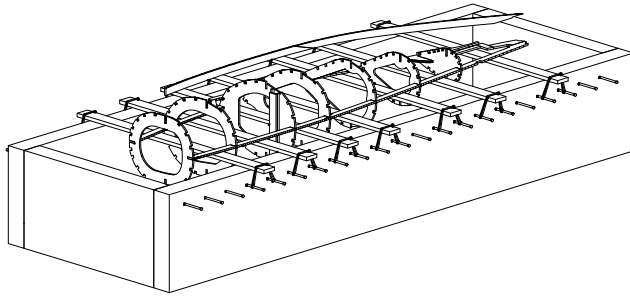
Glue keel parts together including the temporary 1/16" square piece at the nose. Assemble and glue the spar box to the forward face of fuselage former 6. Mark the former locations on the keel. Lay the side longeron pieces on the plan and mark the former locations.

3.



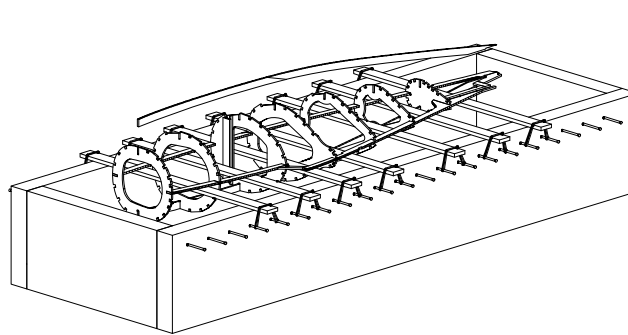
Glue the main fuselage formers to the keel using the marks on the keel as a location guide. Do not glue former 4 to the temporary 1/16" piece. Remove the temporary 1/16" square piece once the glue is dry.

4.



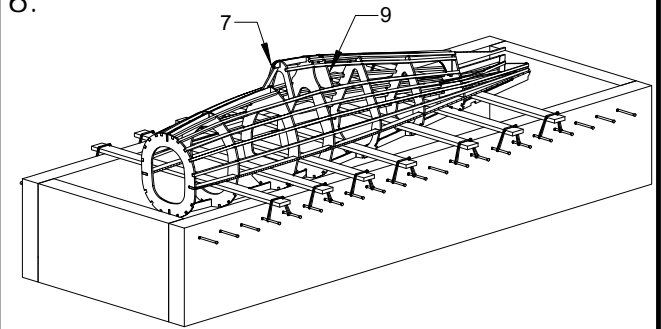
If you don't already have a fuselage assembly fixture, build one like the one shown in the sketch. The cross pieces are held in place with rubber bands. Place the fuselage on the fixture and insert one of the side longerons in the formers. When everything is in place and square, glue the longeron.

5.



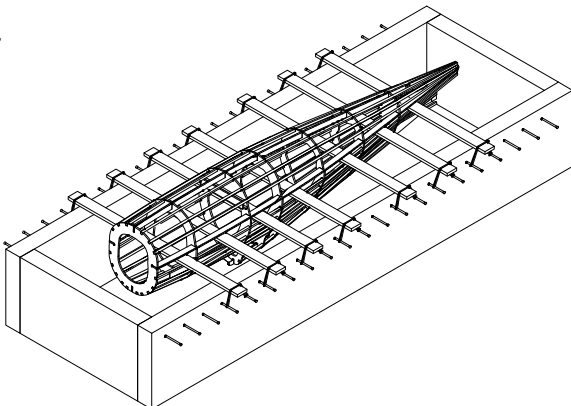
Repeat step 4 for the the other fuselage side longeron. The support strips will have to be removed and slipped between the previously installed longeron and the keel.

6.



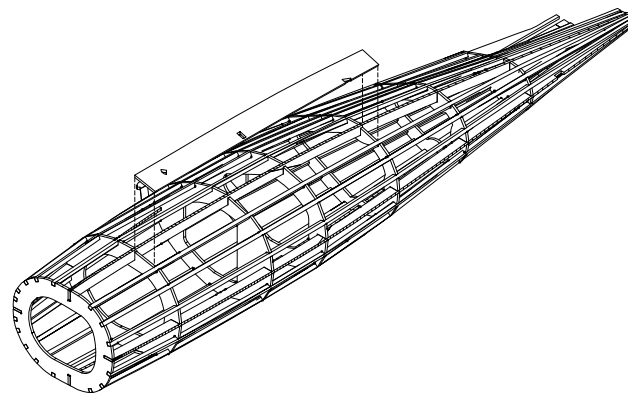
Remove the support strips and orient the fuselage as shown by slipping the strips under the longerons. Pin the longerons to the support strips. Install the upper 3/32" balsa stringers. Work from the longerons up. Install formers 7 and 9 before the top two stringers. The top stringer will be sanded to shape later.

7.



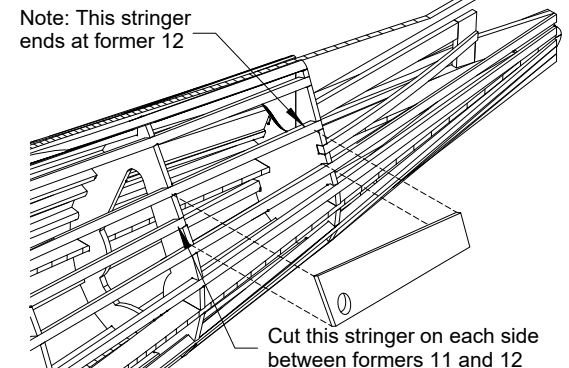
Remove the support strips and rotate the fuselage so the bottom is up. Slip the support strips under the longerons. Pin the longerons to the support strips. Install the bottom half stringers.

8.



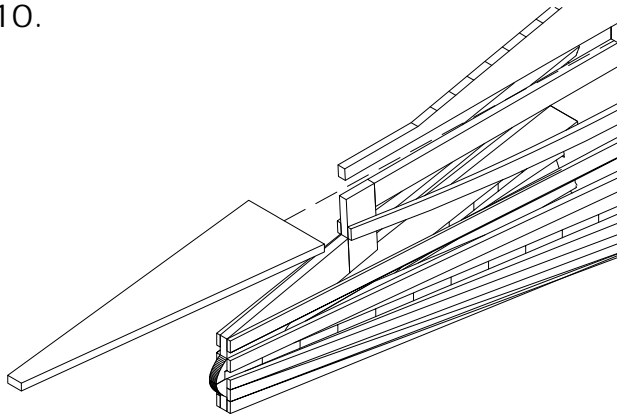
Install the wing base plates. Sand the edges to match the taper of the stringers.

9.



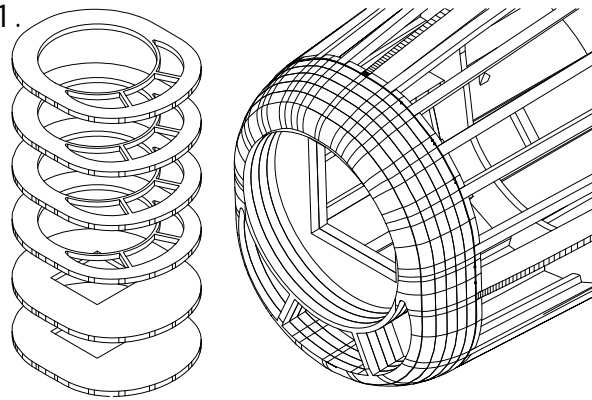
Cut the stringers shown between formers 11 and 12. Install the motor peg plates. Use a piece of 3/16" tubing that has been sharpened on one end to adjust the holes for the slant of the plates.

10.



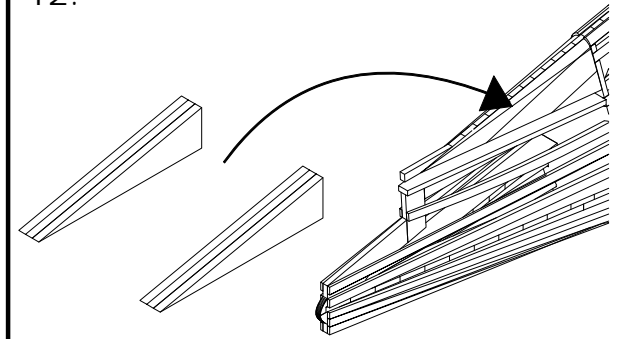
Glue the stab support plate into the rear slot in the keel. Make sure it is square using the lines on former 12 as a guide.

11.



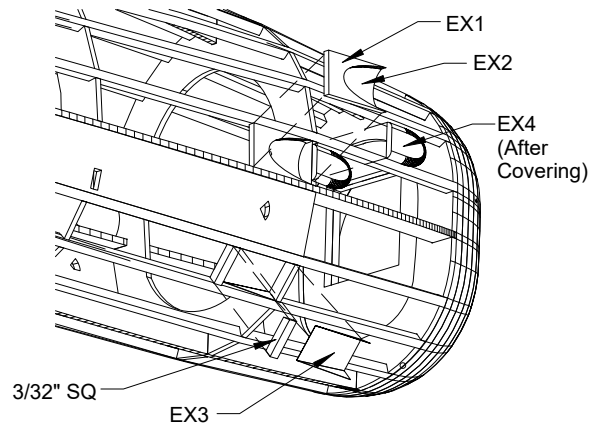
Glue the nose block laminations together. Rough shape the nose block when the glue is dry. Glue the nose block to the fuselage and finish the shaping.

12.



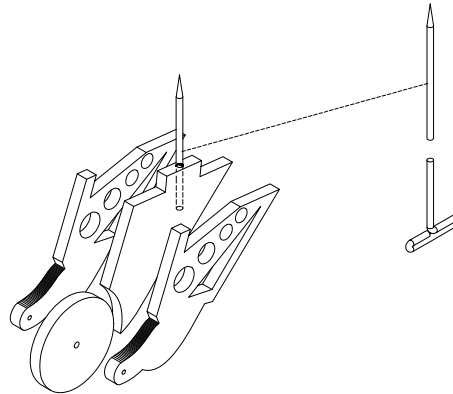
Make up two fin filler blocks by laminating three of the 3/32" balsa fin filler pieces together for each block. Glue a fin filler block to each side of the keel. Make sure they are even with the top of the stab slot. Sand to shape when the glue is dry. Also sand the top fuselage stringer to shape.

13.



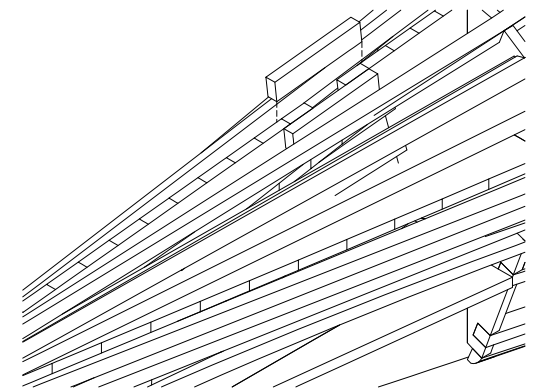
Glue the engine exhaust parts to the fuselage with the exception of EX4. That part is glued in place after covering the fuselage.

14.



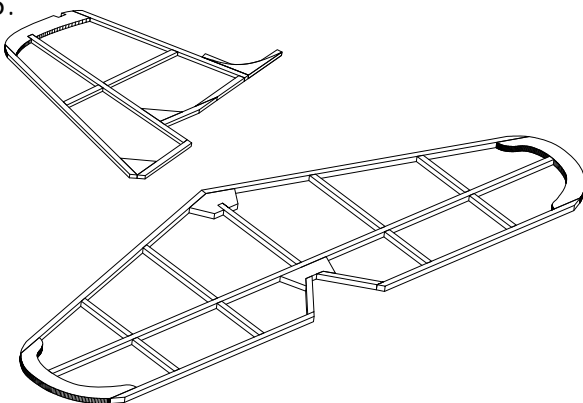
Build the tail wheel assembly. If this will be removable for flying, cut off a length of straight pin, or T-pin, and glue it to the assembly as shown.

15.



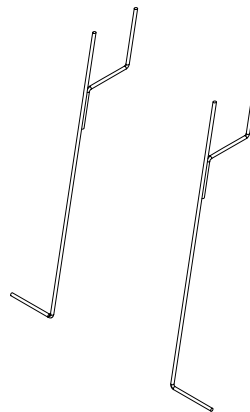
For a removable tail wheel, glue scraps of 1/16" balsa to each side of the tail wheel notch in the bottom fuselage keel.

16.



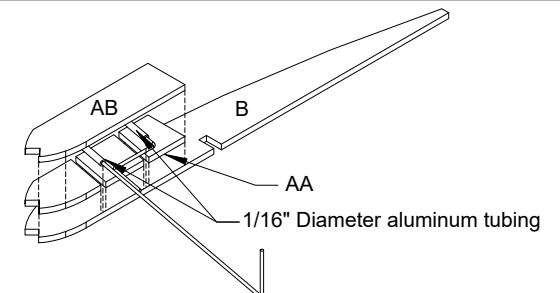
Build the stab and fin. Sand the stab and fin to a symmetrical airfoil shape (not shown in these illustrations).

17.



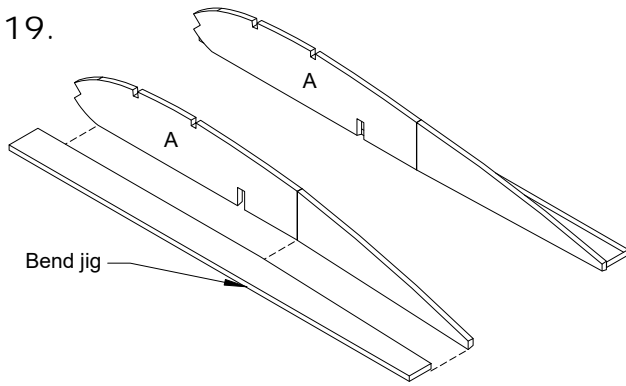
Bend the 1/32" piano wire landing gear leg parts. Assemble a right and left landing gear leg.

18.



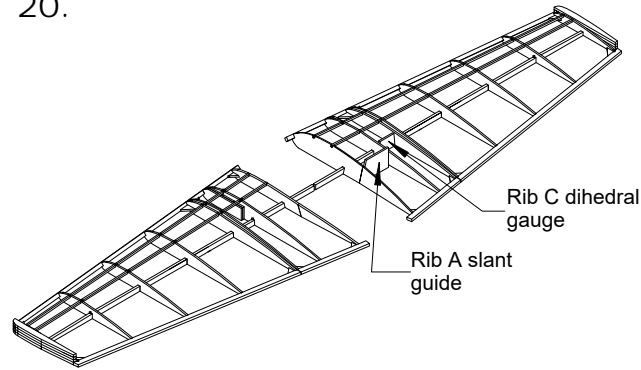
If removable landing gear will be used, glue the forward piece of AA to rib B. Slide a length of 1/16" diameter aluminum tubing on each of landing gear leg pins. Use each landing gear assembly to locate the aluminum tubing sockets. Using an air dry glue, glue each aluminum tube to the B ribs. Once the glue is dry, remove the legs. Add some CA to the aluminum tube joints. Glue the remaining parts to rib B. Be sure the left and right gear legs are used for the respective left and right B rib assemblies.

19.



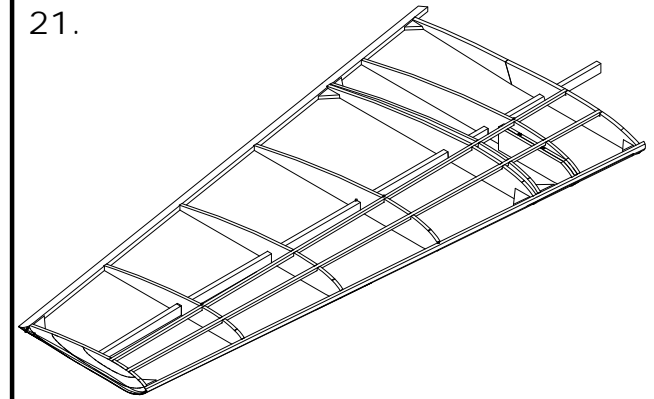
Cut each rib A half way through along the line on the rib. Using the bend jig piece, bend each rib and glue along the cut line. **DO NOT GLUE THE BEND JIG TO THE RIB.** Make a right and left rib.

20.



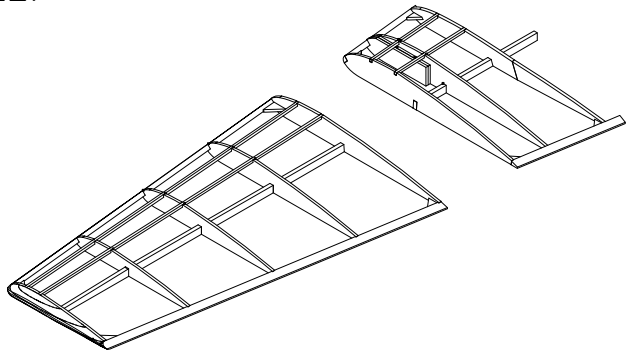
Build the wing panels over the plan. Use the rib A slant guide to set the angle of rib A and the dihedral gauge to set the angles of ribs C.

21.



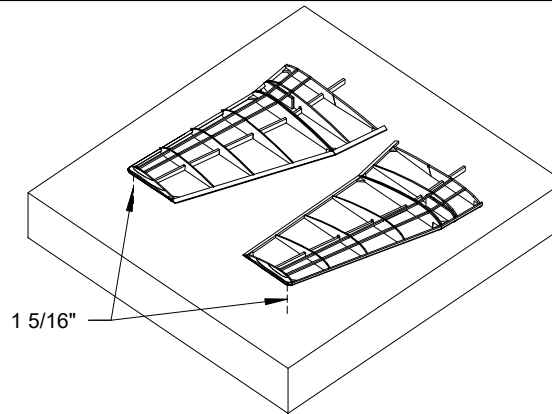
Remove the wing panels from the plan when the glue is dry. Shape the LE, TE, and tips.

22.



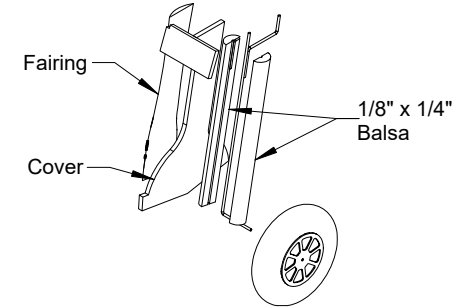
Cut the wing panels apart at the dihedral break. Trim the LE, TE, and spars so they are flush with ribs C.

23.



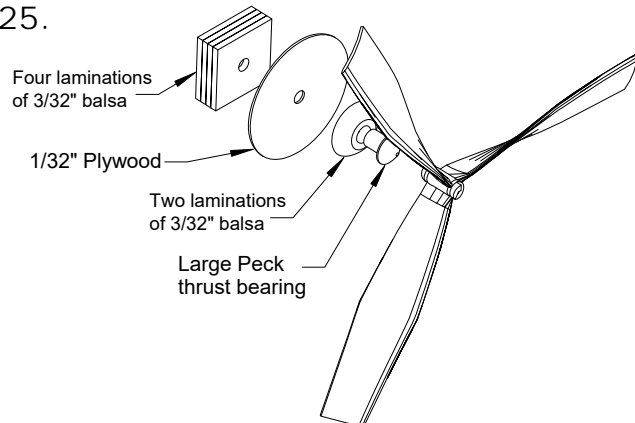
Glue each outer wing panel to its corresponding center section panel. There should be  $1 \frac{5}{16}$ " under each wing tip when the center section panels are flat on the building surface.

24.



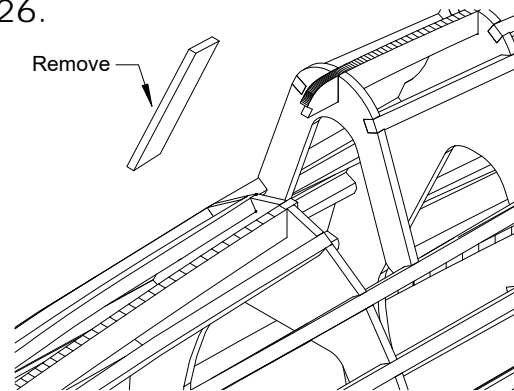
Assemble the plug in landing gear. The landing gear legs are made from two pieces of  $1/8" \times 1/4"$  balsa strips. The strips sandwich the piano wire legs. After the glue dries shape the balsa legs so they are round. The plug in landing gear is just for displaying the model so the level of detail can be simple.

25.



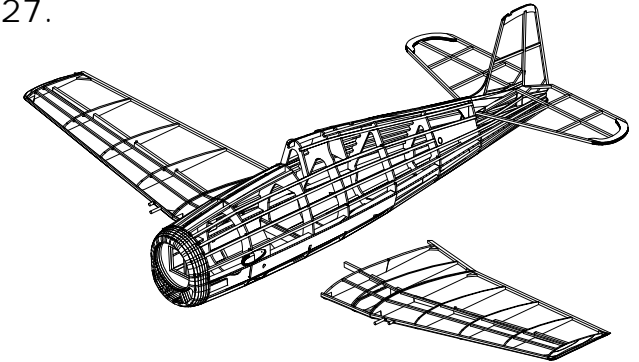
Make up the removable nose button as shown. This assembly is removed for winding the rubber motor.

26.



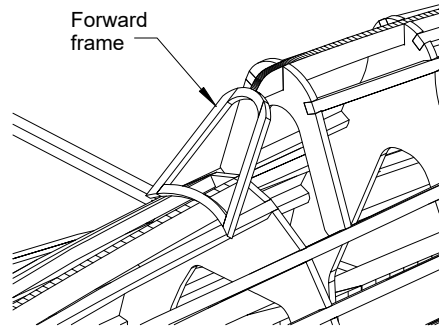
Remove the temporary piece at the forward face of the cockpit. Cover all of the model components with tissue paper. Water shrink and add dope to seal the tissue.

27.



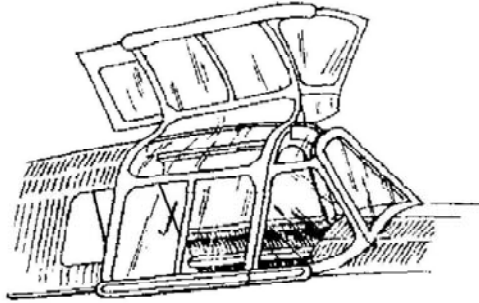
Assemble the model. The wing spar is inserted in the spar box on fuselage former 6. The wing LE and TE extensions fit in the corresponding openings in the wing plate on the fuselage. Covering is not shown in this and subsequent illustrations.

28.



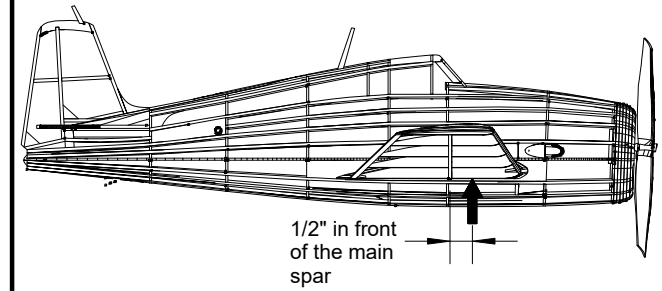
Build the forward cockpit frame over the plan using the provided pattern. Glue the cockpit frame to the forward end of the upper fuselage keel where it ends in the cockpit. Also glue the frame to the fuselage stringers. Refer to the plan.

29.



Using the supplied pattern, cut the canopy out of a piece of clear plastic. Something in the .007" thickness range. After cutting out the clear plastic canopy, glue it in place using a suitable glue like Formula 560 Canopy Glue.

30.



1/2" in front  
of the main  
spar

The original kit did not show where the Center of Gravity (CG) should be placed. A suggested starting location is shown here. The landing gear are not shown since they are removed for flying.

