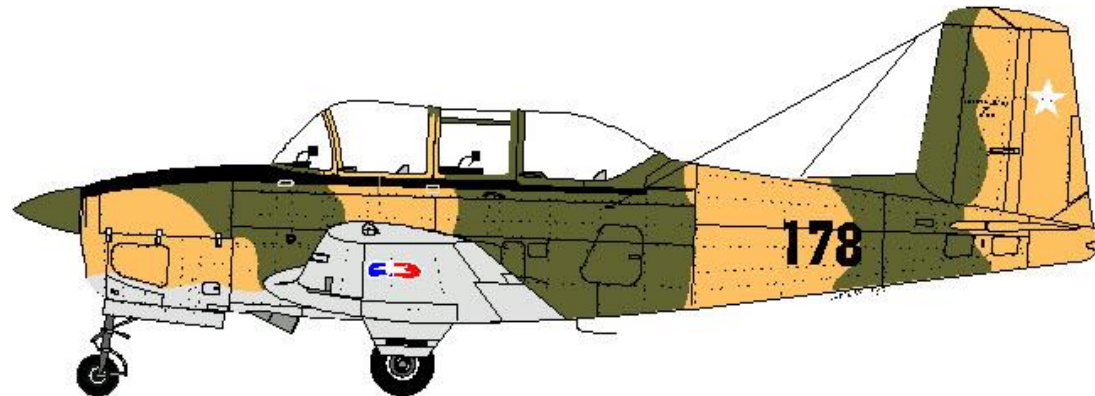




WARBIRDKITS.COM

T-34A/B MENTOR

1:12 Scale - BP-21 Brushless Motor – 33.25 Inch Wingspan – Weight 18-20 ounces



Version 2.0 – 15 November 2008

Materials

This kit contains the following materials:

- This manual (via download)
- Plan sheet
- Laser-cut wood pack
- Plastic canopy
- Plastic cowl (two pieces)

To complete this kit, you will need the following additional materials:

- 3/32" Aluminum tubing, 3"
- 1/16" Music wire, 20"
- 1/16" x 4" x 36" Balsa sheet, 4 each
- 3/16" x 3/8" x 36" Balsa stick, 1 each
- 1/8" x 2" Hardwood dowel
- 1/8" Square balsa stick, 1 each
- 1/8" x 1/4" Balsa stick, 1 each
- 1/4" Balsa triangle, 1 each
- 1ea Wing mounting bolt
- Hinges (ailerons, elevator)
- Miscellaneous servo mounting materials and pushrods
- Covering materials, paint and glue
- Electric power system – BP 21 CD-ROM Outrunner

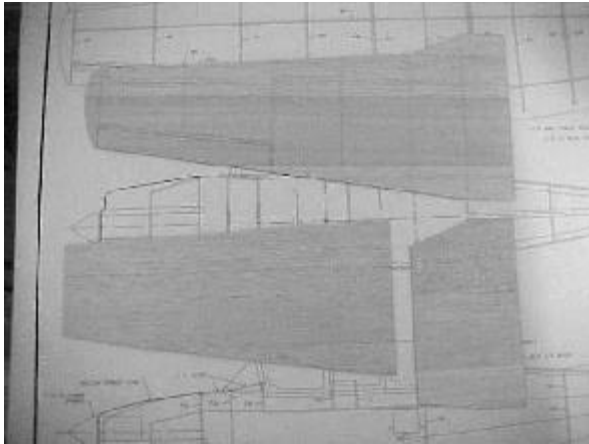
NOTE: We recommend that you read this entire manual before beginning construction.

Please note that this manual is laid out in two columns. All steps are in order from top to bottom, left column first, then right column.

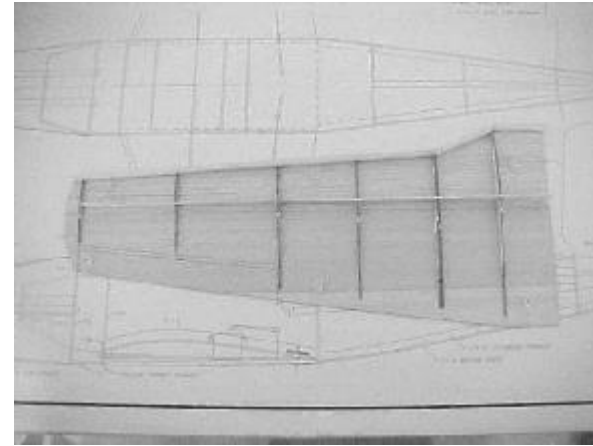
Construction

Wing Skins

- Each wing bottom skin consists of two laser-cut pieces: forward and aft.
- Lay the pieces of a wing skin on a flat board or table, with the outer surface up. Run a length of masking tape along the join lines. Turn the assembled skin over, bend the joints open, and run a bead of aliphatic resin or wood glue down the joints.
- Lay the assembled skin back down on the board – masking tape side down. Then weight it down and keep the weight on the skin until it is completely dry.
- When the skin is dry, remove the masking tape. Sand the skin smooth.
- Follow the same steps to assemble two wing top skins, using your 1/16" x 4" x 36" balsa sheets.
- Lay a bottom skin on a top skin. Trace the shape of the bottom skin onto the top skin, adding a 1/4" margin at the trailing edge. Cut out the top skin.
- Cut each top skin into two pieces along the line between the two W3 ribs.

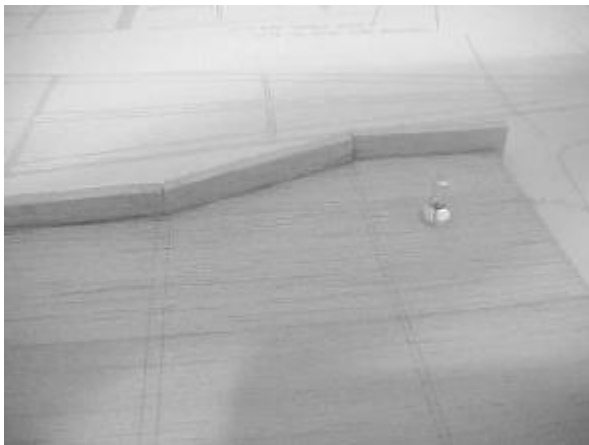


- Glue W3 and W3A ribs together.
- Assemble W2 through W7 ribs to the W8 spar. Glue the ribs and spar to the lower skin.

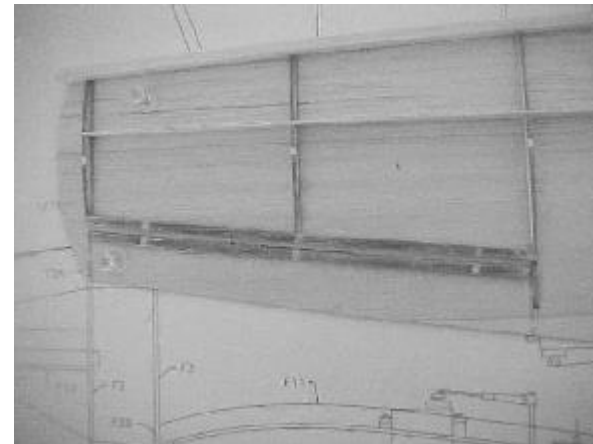


Wing Panels

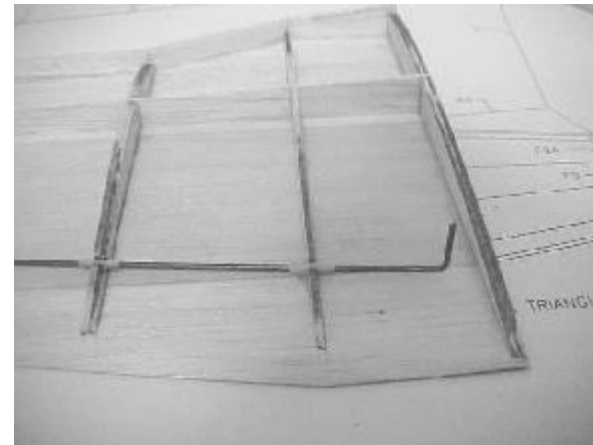
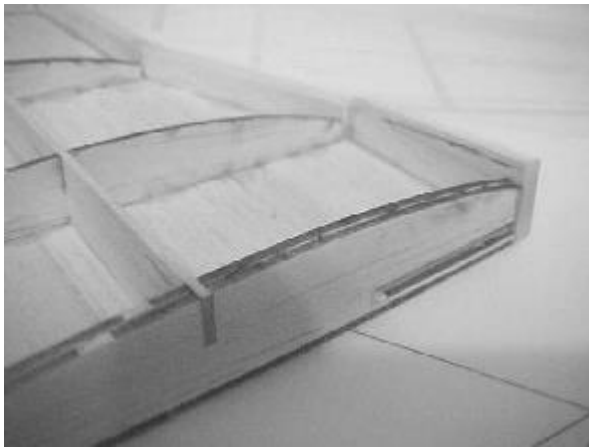
- Pin the left bottom skin to your building board (over a sheet of wax paper).
- Glue the 3/16 x 3/8 balsa leading edge against the front edge of the left bottom wing skin.



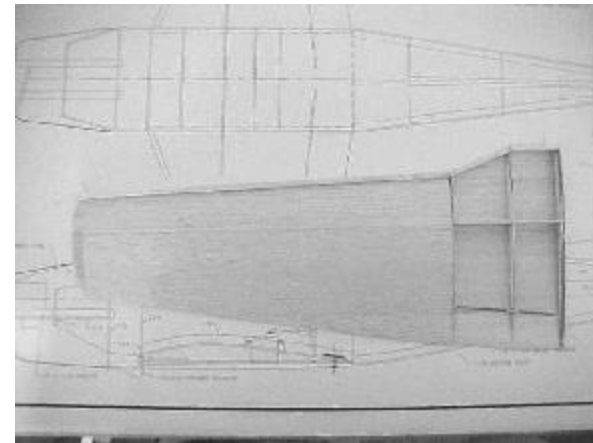
- Glue the W9 aileron spar and W10 aileron leading edge in place.



- Glue W1 and W1A ribs together. Note that W1 rib goes toward the centerline of the aircraft.
- Glue the W1 rib assembly to the bottom sheet and the spar. The notch in the spar is cut at an angle to set the dihedral.
- Glue a scrap of 3/16 balsa to the top of the leading edge between W1 and W2.

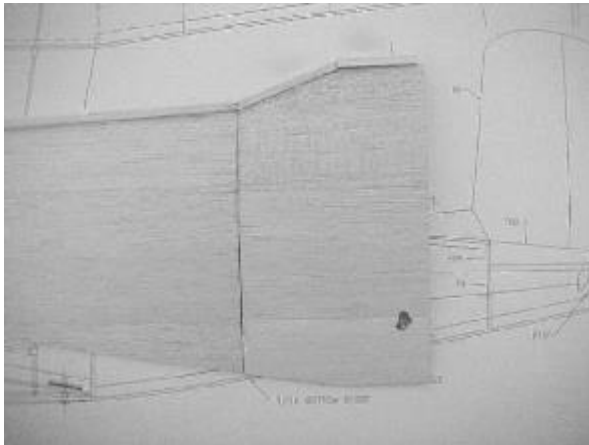


- Sheet the outer portion of the wing panel from W3A to W7.

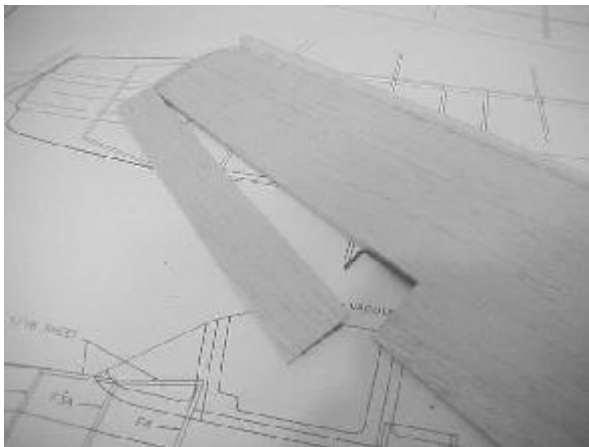


- Make an aileron torque rod from 1/16 music wire and 3/32 aluminum tube. Install the torque rod and glue only the aluminum tube bearings in place.

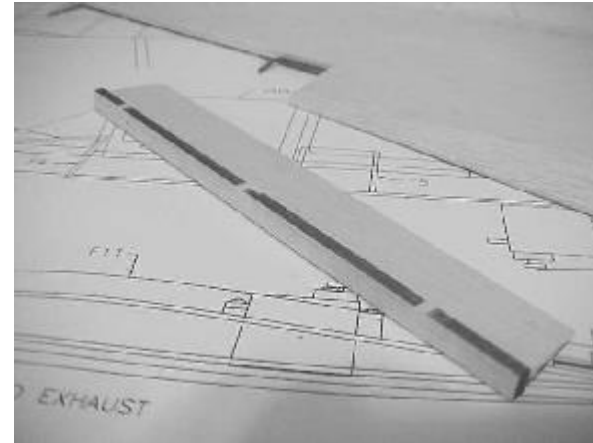
- Sheet the inner portion of the wing panel from W3 to W1.



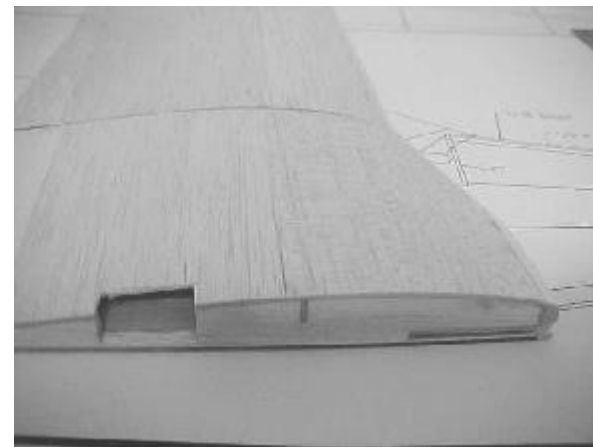
- Cut the aileron free from the wing using the laser-cut guide lines on the underside of the wing.



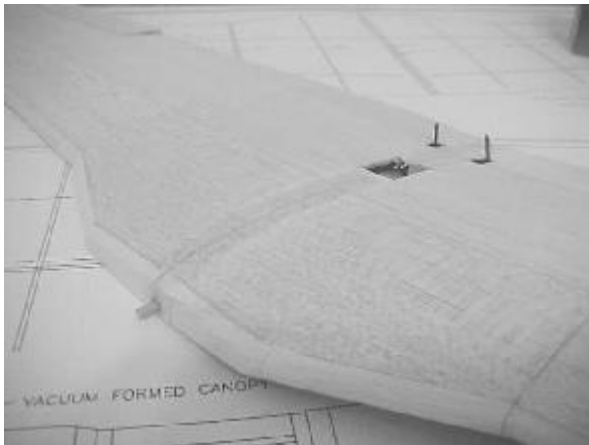
- Sand the front of the aileron flat. Glue W11 aileron leading edge in place. Drill a hole in W11 for the aileron torque rod.



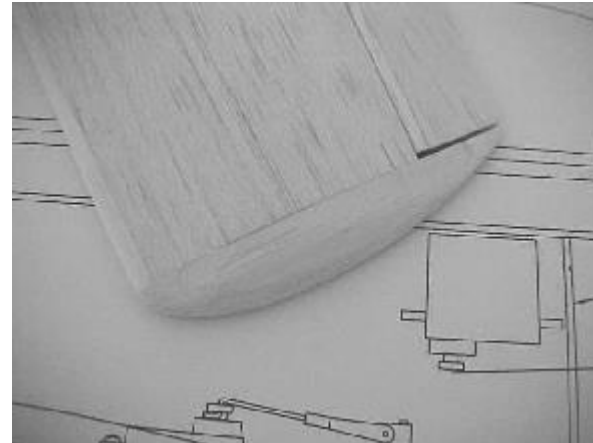
- Bevel W11 along the hinge line. Install the hinges.
- Open up the aileron servo cutout in the W1 ribs and upper sheeting.



- Notch the wing leading edge for a 1/8" dowel.
- Sand the wing leading edge to shape.
- Repeat these steps for the right-hand panel.
- Glue the wing panels together. Reinforce the join with 1/2" fiberglass tape and epoxy.
- Install the 1/8" dowel in the leading edge. The dowel should project about 1/4" forward of the wing.



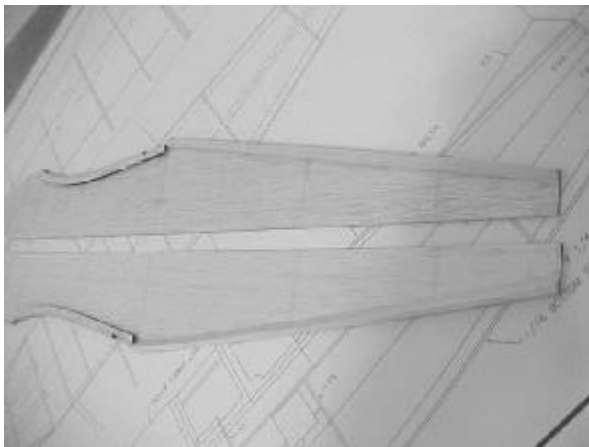
- Glue the wingtip parts WT together – two for each side. Glue the wingtips to the wings, then sand them to shape.



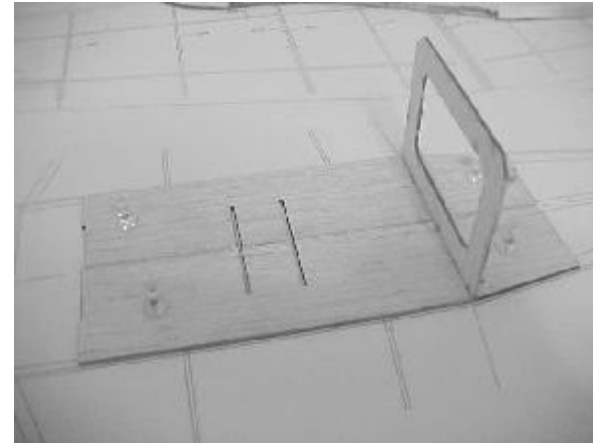
- Cover the wing as desired.

Fuselage

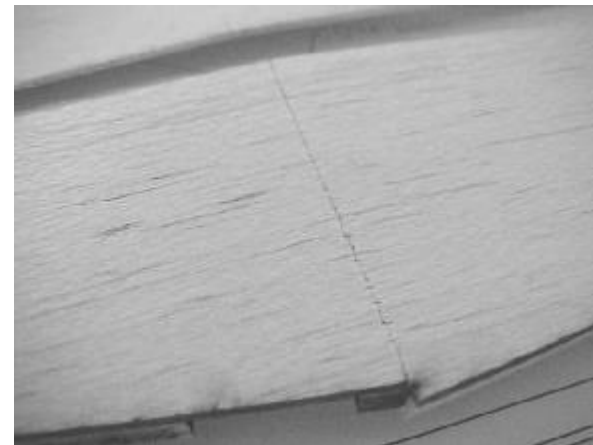
- Glue the F11 wing saddle doublers to the fuselage sides. Be sure to make a left side and a right side!
- Glue 1/4" balsa triangle sticks to the bottom inside edge of the fuselage sides, from the rear of the wing saddle to the tail.



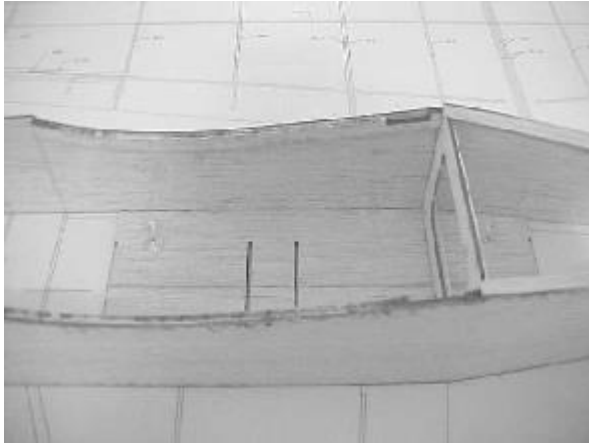
- Glue 1/8" square balsa reinforcements to F2, F3, F6 and F8 formers.
- Pin F14 cockpit floor in place over the plan.
- Glue F6 former to F14 cockpit floor. (Note that you are building the fuselage upside down.)



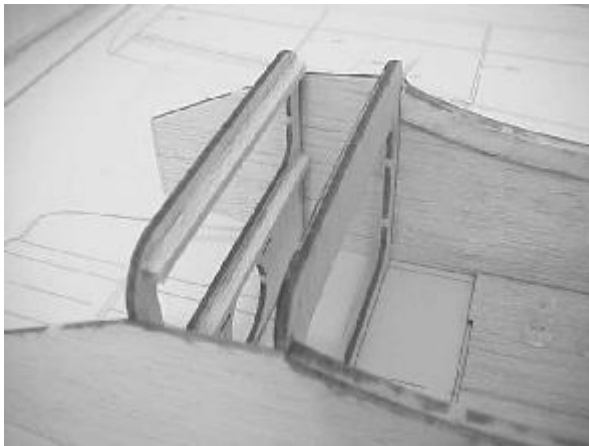
- Score the outside of the fuselage sides in line with the aft edge of the F6 former location. Repeat at the forward edge of the F2 former location. This will let you pull the fuselage sides together at a later step.



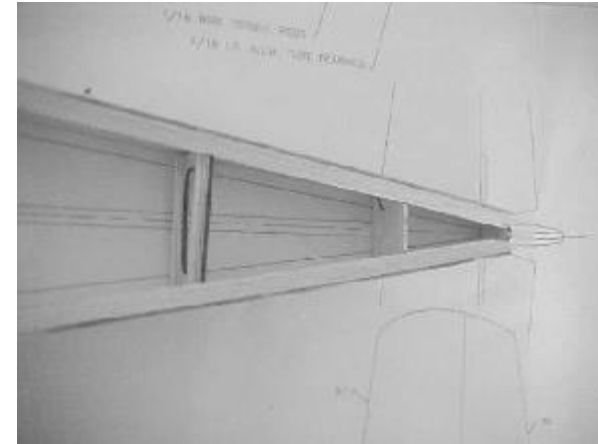
- Glue the two fuselage sides to F14 and F6.



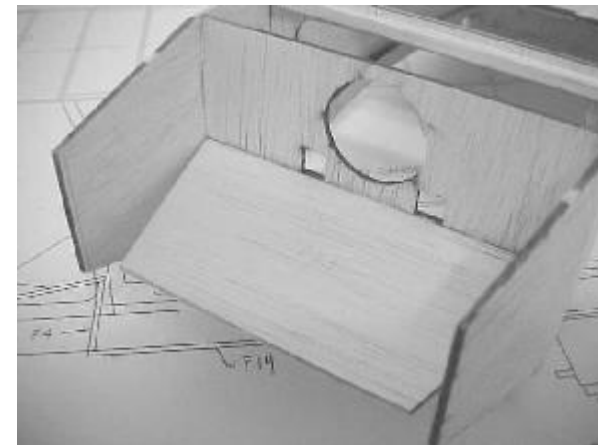
- Glue F3 and F2 formers in place.



- Glue F8, F9 and F10 formers in place.

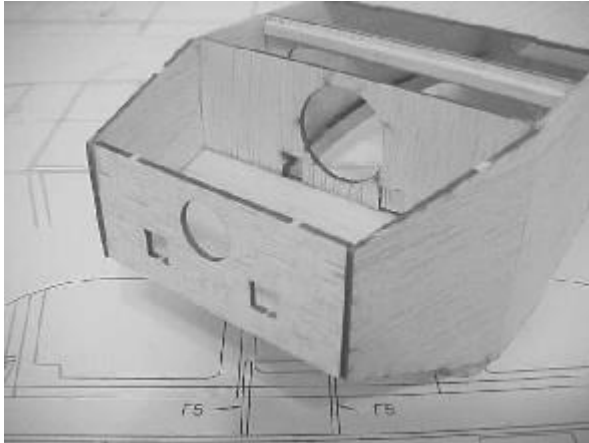


- Glue the two F1 formers together. Make sure that the motor mount holes line up, and that they fit your choice of motor.
- Glue F12 to F2.

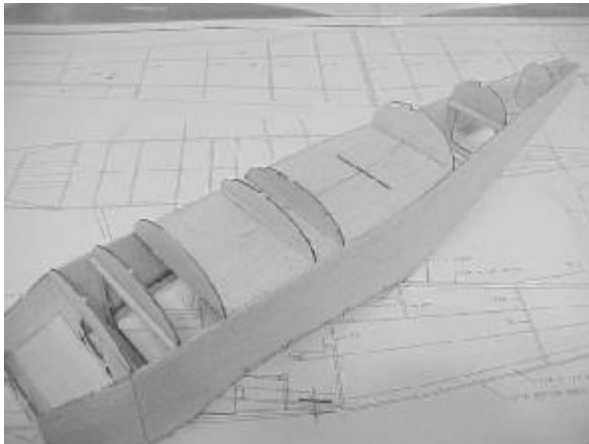


- Pull the front fuselage sides together and glue to F12.

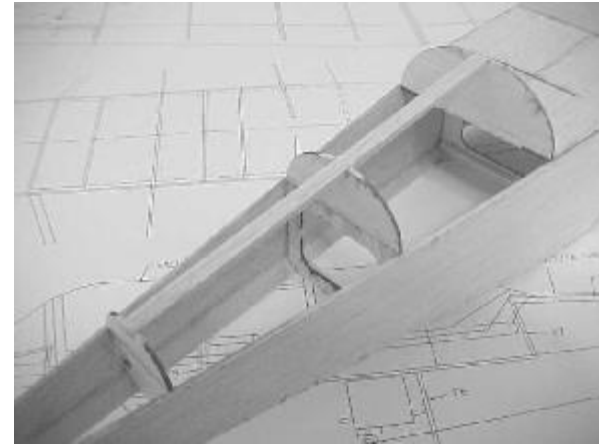
- Glue F1 in place.



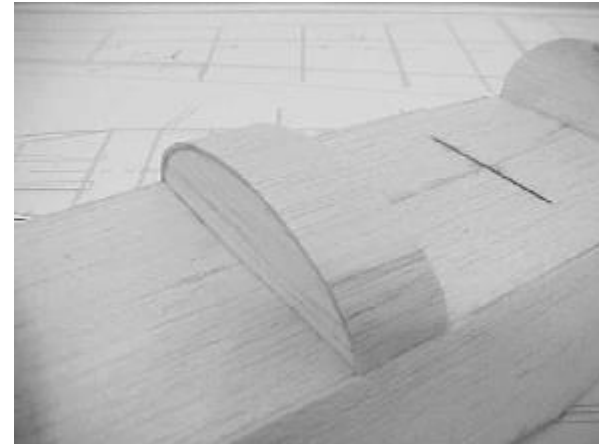
- Glue F2A, F3A, F4, F5 (2 each), F7A, F8A and F9A in place.



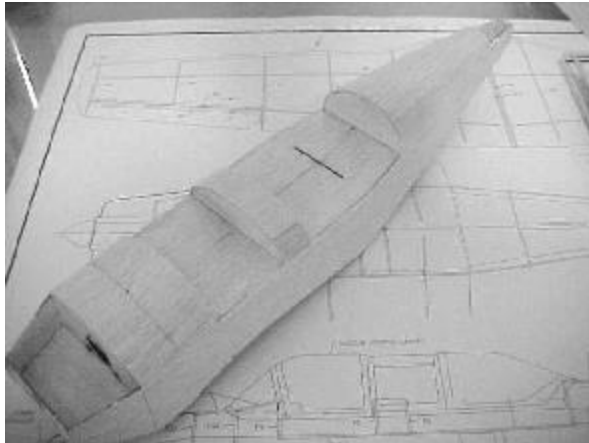
- Glue a 1/8" x 1/4" stick in place between F7 and F9A.



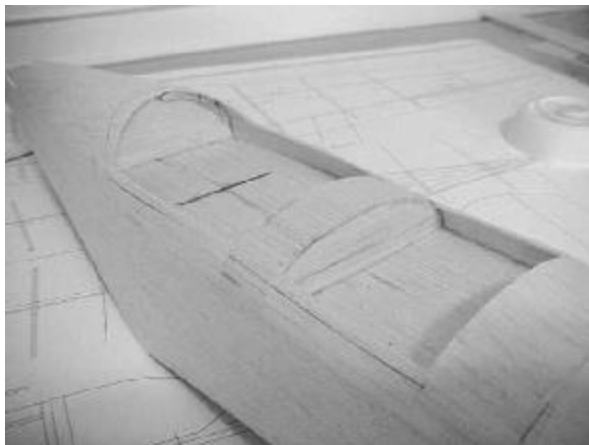
- Sheet between the two F5 formers with 1/16" balsa.



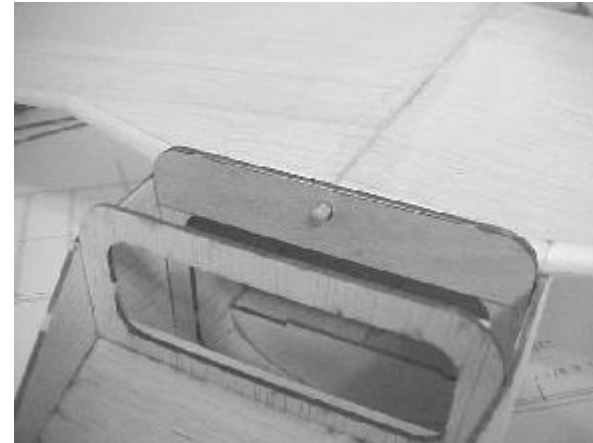
- Sheet the top of the fuselage between F2A and F3A, then between F3A and F4, and finally between F7 and F9A.



- Cut and glue 1/2" wide strips of 1/16" sheet along the cockpit sides. Alternatively, glue in 1/4" X 1/2" balsa sticks and sand to shape.



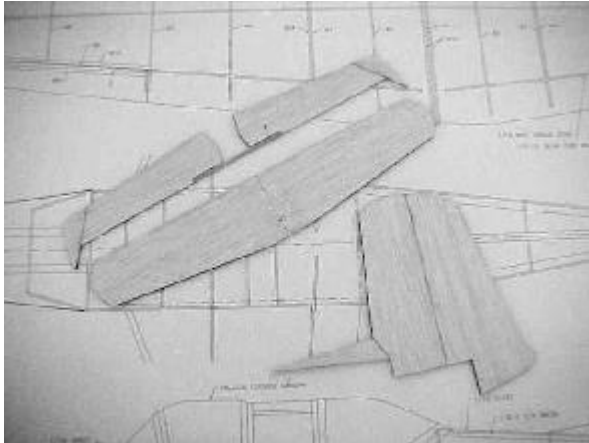
- Put the wing in place on the fuselage and adjust the hole in F3 until the wing fits correctly. Glue the F3B ply doubler in place, but don't glue it to the dowel.



- Sheet the fuselage bottom between F2 and F3 with 1/16" balsa.



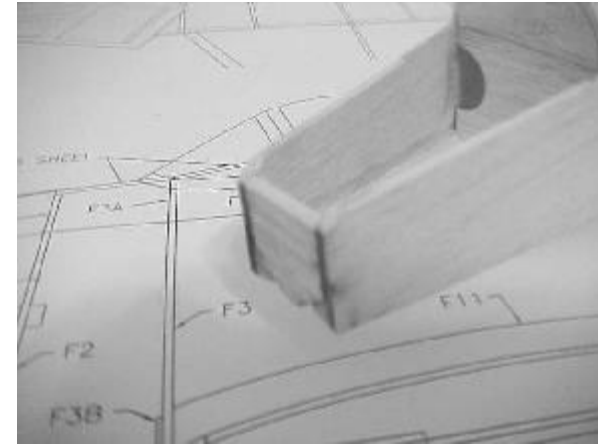
- Build the tail surfaces over the plan.



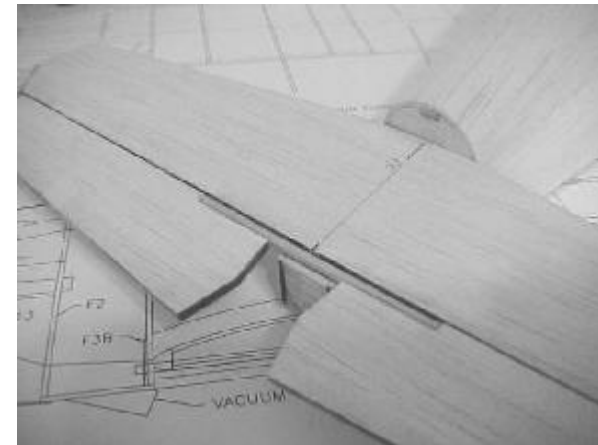
- Glue the tail blocks TB1 and TB2 together, making two pairs.



- Bevel the top edge of F10 so that the elevator will not bind when it moves down.



- Mark a centerline on the stabilizer and pin it in place.



- Pin the fin in place.

- Glue tail blocks TB2 in place. Glue them to the fuselage only.



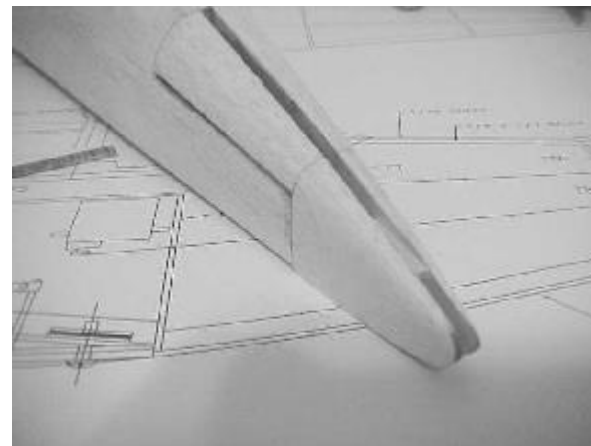
- Remove the stabilizer and fin. Insert temporary 1/8" balsa spacers to hold the blocks in place. Shape the tail blocks as shown, and sand them flush with F10.



- Put the fin back in place. Glue tail blocks TB1 to the fuselage and tail blocks TB2 only. TB1 should hang down 1/16" to match up with the bottom sheeting.



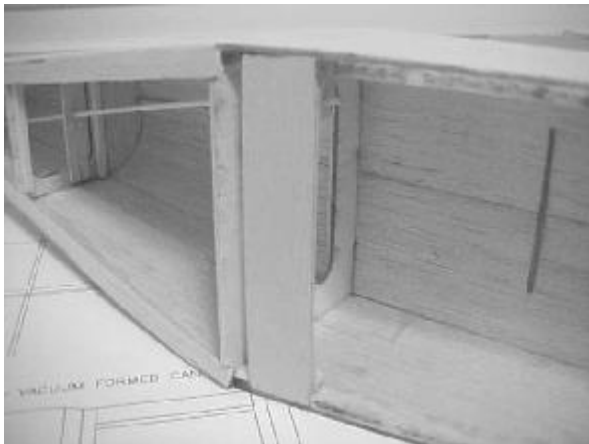
- Remove the fin. Install a temporary 1/8" balsa spacer between the tail blocks TB2. Shape the tail blocks as shown.



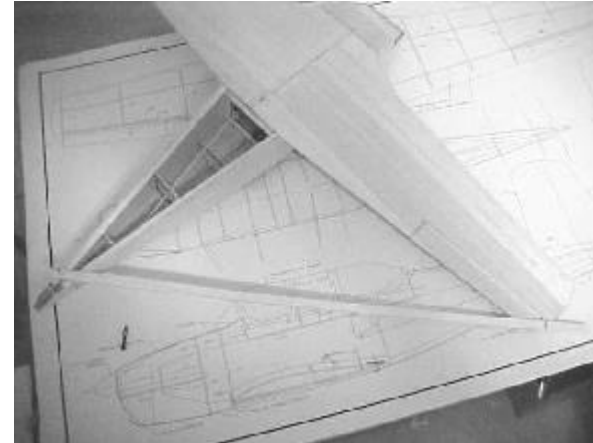
- Cut a slot in the elevator and glue the elevator horn in place. Install the elevator pushrod.



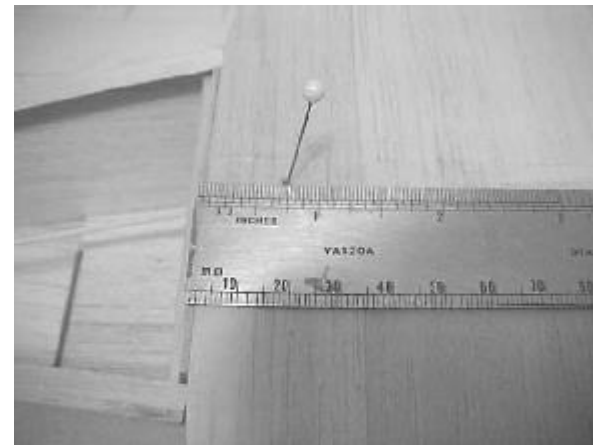
- Glue the two ply wing mount pieces together. Then glue them into the slots in the wing mount doublers. Reinforce the inside corners with scrap 1/4" balsa triangle stock.



- Put the wing in place on the fuselage. Make sure it's square by measuring from the tail to each wingtip.



- Measure forward 3/4" from the wing trailing edge and mark the wing bolt location.



- Drill through the wing and wing mount. Tap the wing mount for your chosen wing bolt.



- Sheet the bottom of the fuselage from F6 to F10 with 1/16" balsa.



Cowling

- Trim the top and bottom cowl sections to the trim line.



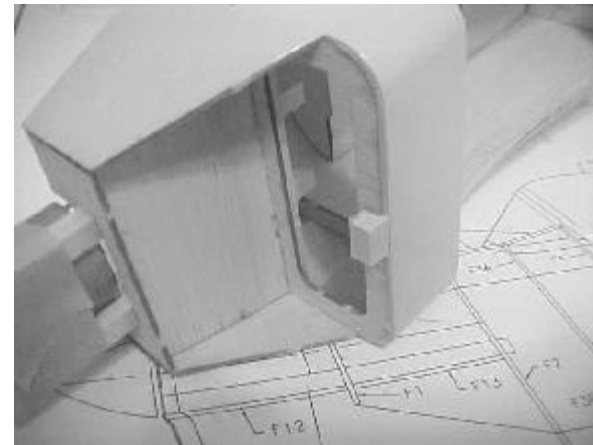
- Tape the cowl sections together with cloth first aid tape. When the fit is correct, saturate the cloth tape with thin CA.



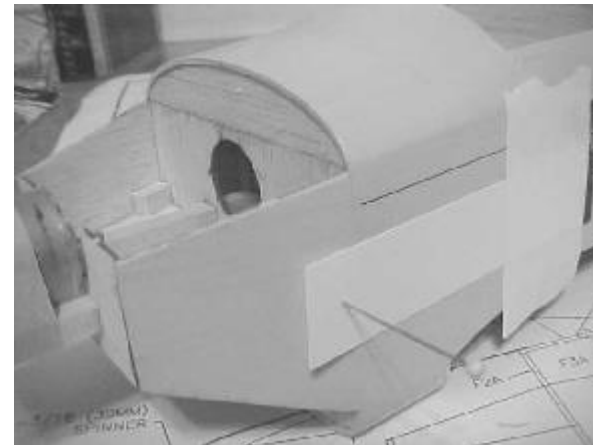
- Cut the openings in the front of the cowl.



- Cut three cowl mounting blocks from hardwood stock. Glue one block to each inside corner where F2 meets F12 as shown. Glue one block to the bottom of F2 as shown.

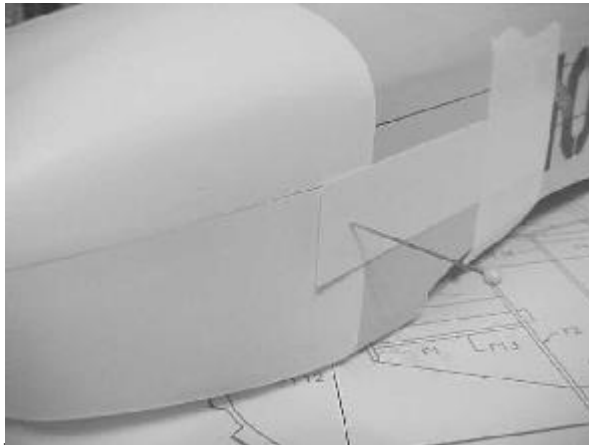


- Tape strips of light cardboard over all mounting blocks and poke a pin through as shown.



- Install the motor.
- Slip the cowl onto the fuselage. Install the spinner and prop. Adjust the cowl until it is lined up with the spinner.

- Push a pin through the cardboard templates and the cowl as shown.



- Attach the cowl to the fuselage using small screws.

Tail Surfaces

- Cover the fin, rudder, stabilizer and elevators as desired.
- Hinge the elevators to the stabilizer.
- Glue the stabilizer assembly in place on the fuselage.
- Glue the fin in place on the stabilizer.

Flying Setup

- The T-34 should balance at the point shown on the plan: approximately 2-5/16" from the wing leading edge at the center. For the first few flights, you may want to move the balance point slightly forward.
- Set the high-rate control throws to:
Elevator: 1/2" up – 1/2" down
Ailerons: 3/8" up – 1/4" down

HELP!

If you have questions or need help with assembly of the kit, drop an email to tom@warbirdkits.com.