REX SCOUT D6

R/C Scale Model Instructions

CONTACT INFORMATION

The Rex Scout D6 was designed by
M.K. Bengtson

Manufactured and Distributed by:
Bengtson Company
e-mail: sales@aerodromerc.com
Web Site: www.aerodromerc.com

Rex Scout D6

Thank you for purchasing the REX SCOUT D6 model for electric flight.

THE MODEL

A semi scale adaptation of the REX SCOUT D6, this model is designed to be easy to build and exciting to fly.

POWER SET UP

The model can be set up to be powered by the GWS “D” gearbox and an 11x8 prop. Battery power pack can be 7 or 8 1500maH Nimh

R/C GEAR

A four function mini receiver and four micro servos are all that are required.

Model Specifications:

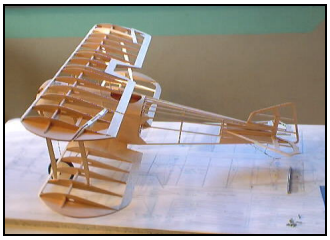
More than 130 laser cut parts

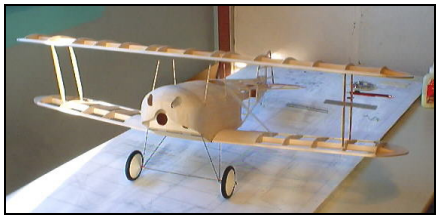
Scale:	~1/9
Channels:	R/E/A/T
Wingspan:	36"
Wing Area:	460
Weight:	25 Oz. ready to fly
Power system:	Designed for GWS 300C “D” gearbox w
Prop:	11x8 prop
Cowl:	Built up balsa
Wheels:	Balsa & plywood, Neoprene foam tires
Decals:	Available on website

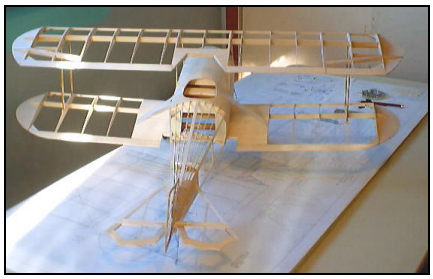
BUILDING THE MODEL

BEFORE STARTING

A note about the photos: The photos were taken of a prototype and the parts in the kit supplied may look slightly different from them. However, the concepts illustrated are the same.

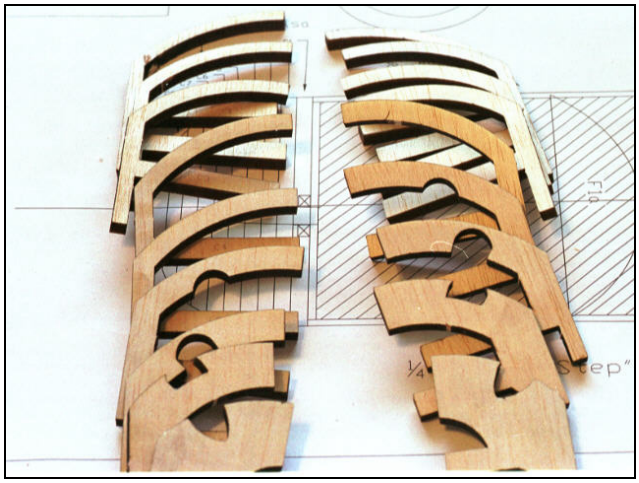


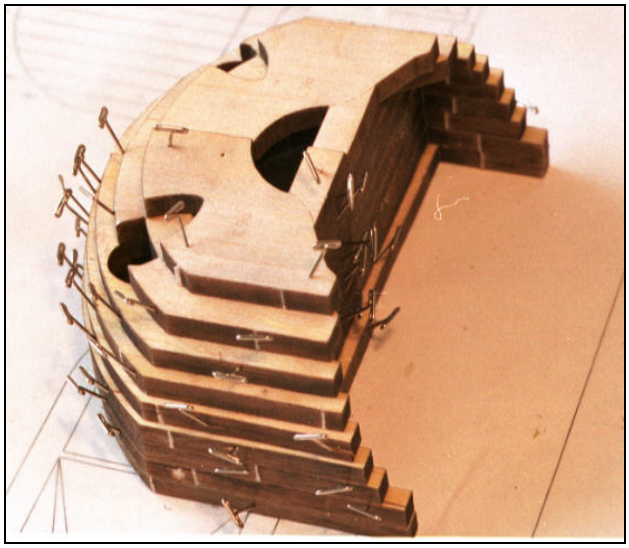




COWLING

The cowling is of built up construction using C1 thru C9.

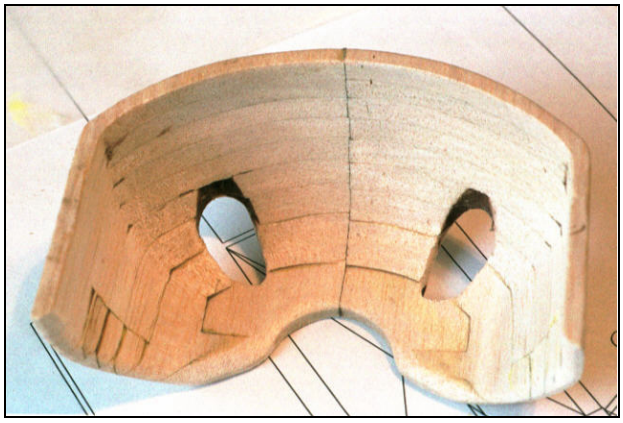




Assemble The Cowling

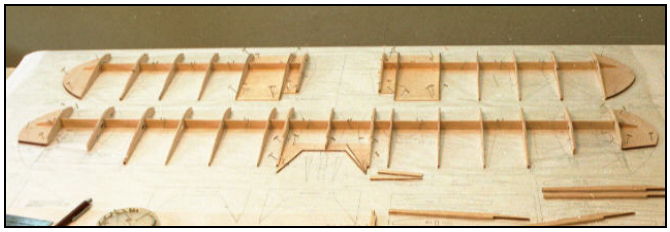
Construct front cowl by gluing 2 C1’s making sure that they are meeting symmetrically. Align the tabs to form a simple plate. The inner surface may be shaved or sanded down after lamination. Glue 2 Cx’s in 9 pairs and laminate together.

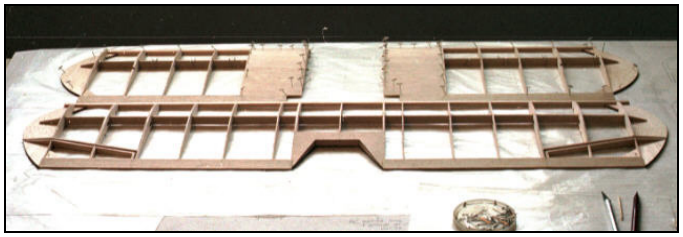
The cowl should now be sealed, sanded and primed until no wood grain is left showing. Baby (Talcum) powder in clear dope makes an excellent balsa sealer. Talcum powder mixed in white glue makes excellent filler for gaps or gouges. Sand down after it dries.



Wing Construction

Pin down, over the plan, the t/e, l/e, spar and wing tip, gluing as required. Making sure that you are using the correct ribs for the wing you are building, glue all the ribs in place. Add the wing tips and align the front tip along the centre of the leading edge. Sand the leading edge stock to be rounded and meet the ribs.



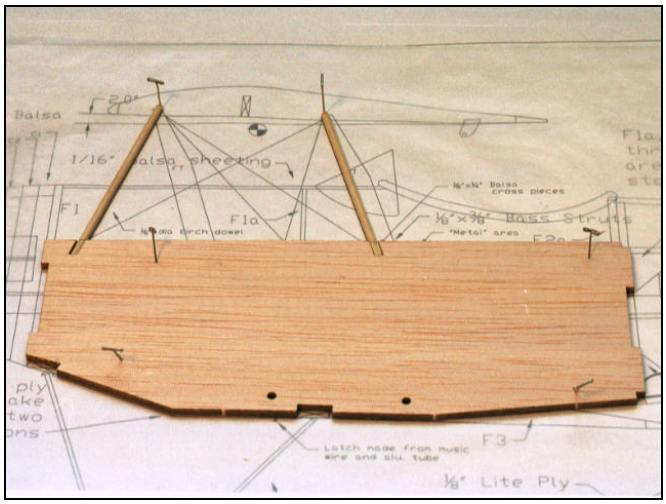


FUSELAGE CONSTRUCTION

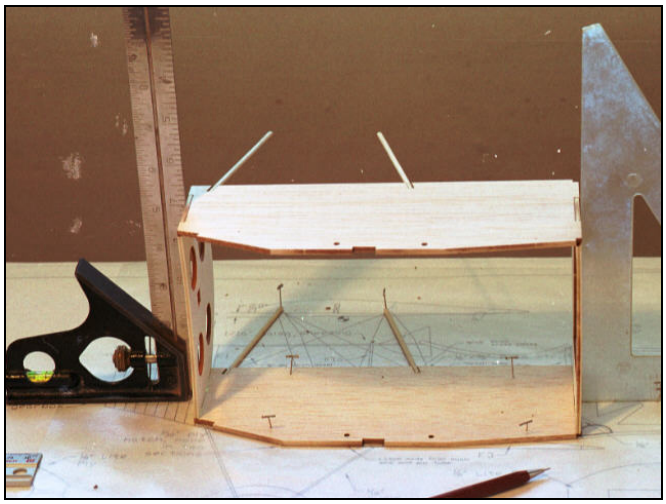
The fuselage is built as a unitized box structure, using pre-cut side frames with pre-cut notches for the formers.

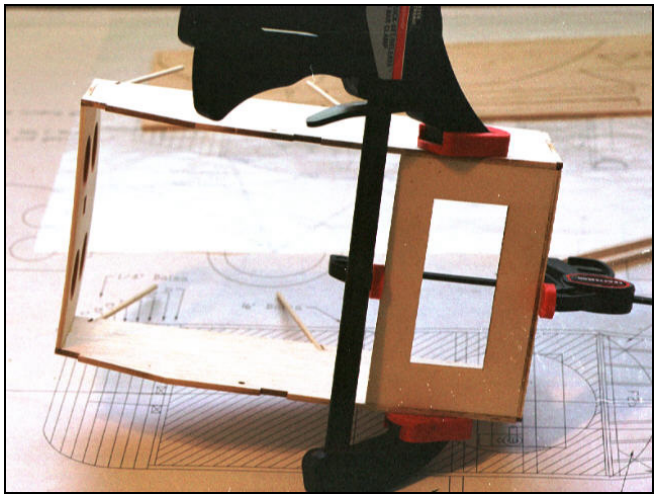
Building Of The Fuselage

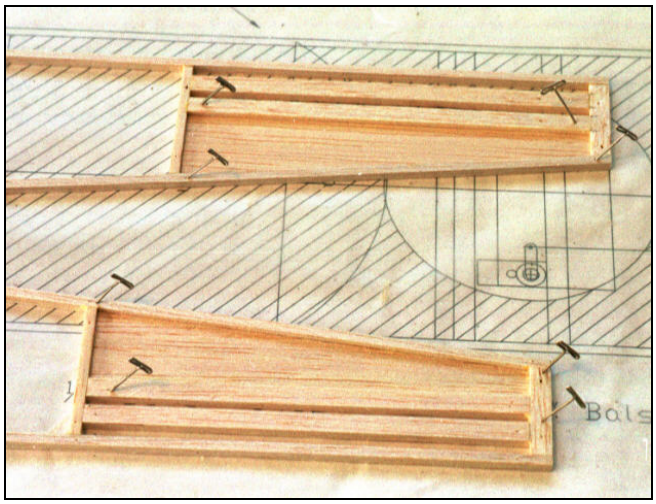
Begin by connecting the fuselage frames and formers over the top view of the fuse on the plan. Connect F1 thru F5 only at this point.

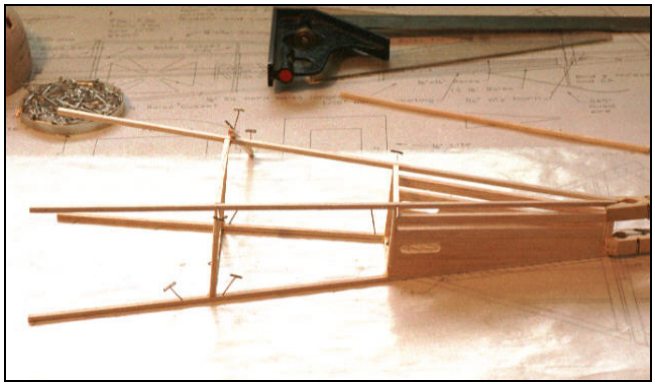


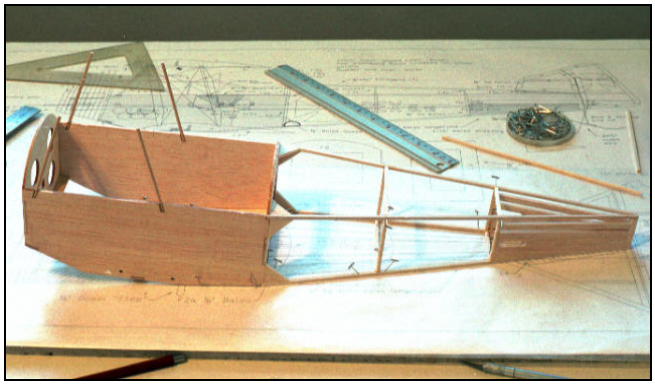
Then turn the fuse on it’s side and add the other fuse side balsa.







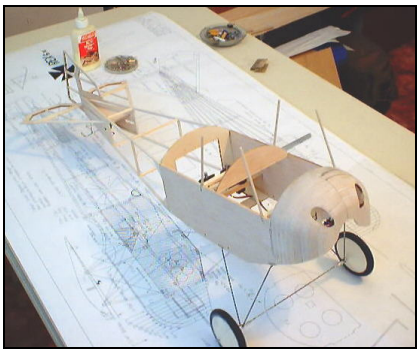




Now it is time to add the other formers and close the fuselage end taking care not to produce a warped or twisted structure. Then add the balsa stringers top and bottom.

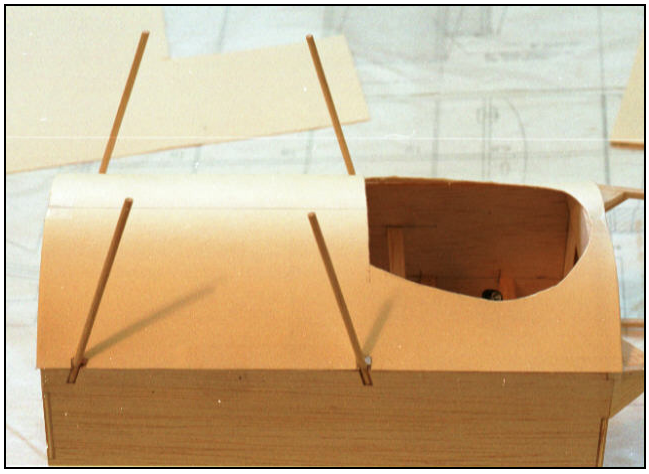
Adding The Undercarriage Plates

Once dry, remove from the board and add the plywood formers crosspieces that serve as u/c plates.

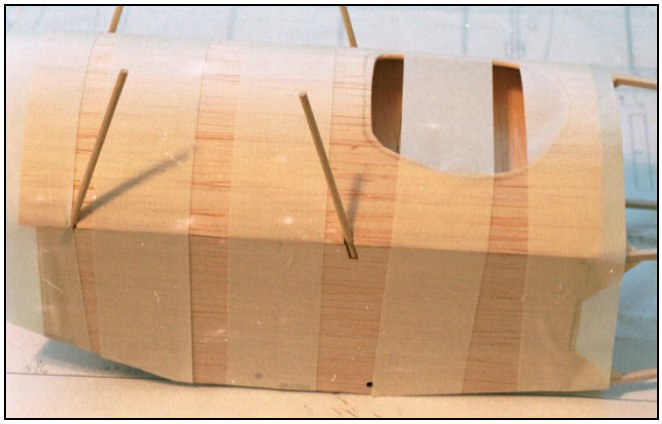


Adding the Decking

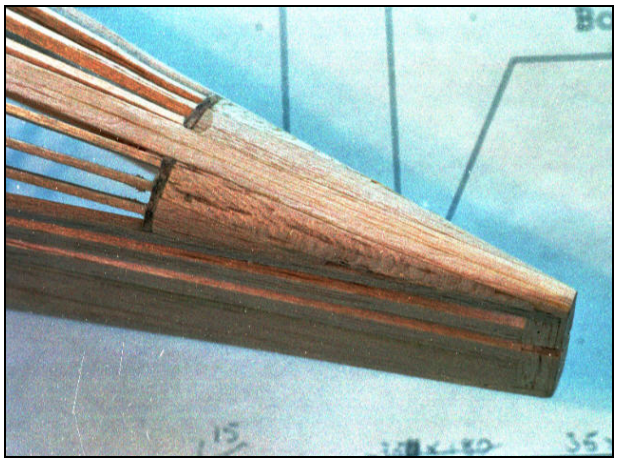
Add all the decking and formers, and carefully trim to size and fit 1/16” sheeting.



Using file folder material for a template.



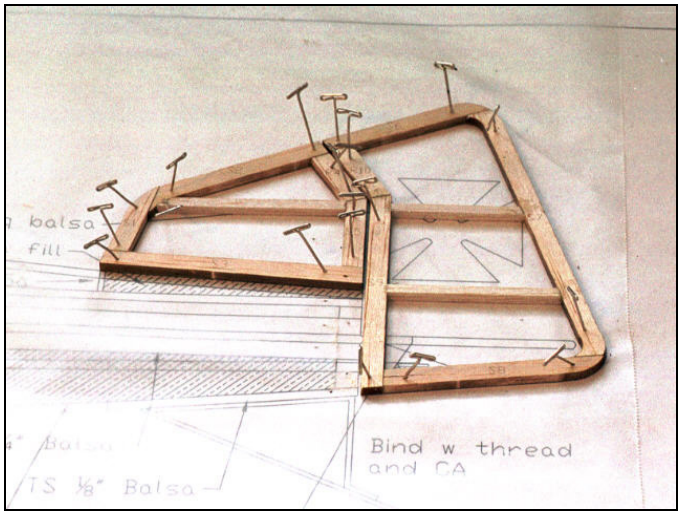
Using Masking tape to hold the decking in place during drying.

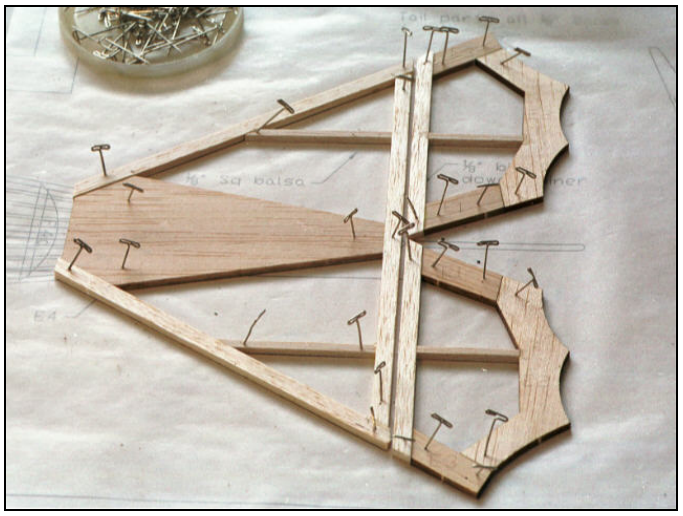


Soft balsa fill finishes the tail.

TAIL SURFACES

Lay out and glue parts of the tail surfaces on the plans.





Join the elevators with the 1/8” dowel joiner. Alternatively, use a piece of 1/16” dia. music wire bent into a U shape. Sand the tail parts, rounding off all edges. Don’t add the horns or hinge the surfaces until after covering is complete.

COVERING

Any lightweight covering material can be used. Polyspan makes a good choice Litespan is also popular. The prototype was covered with Polyspan sealed with Minwax PolyCrylic and painted with Krylon spray paint.

Downloadable decal outlines are available at www.aerodromeRC.com

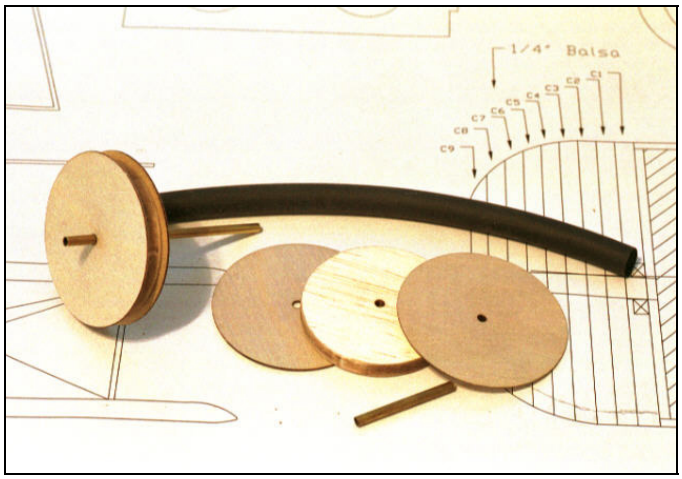
WHEELS

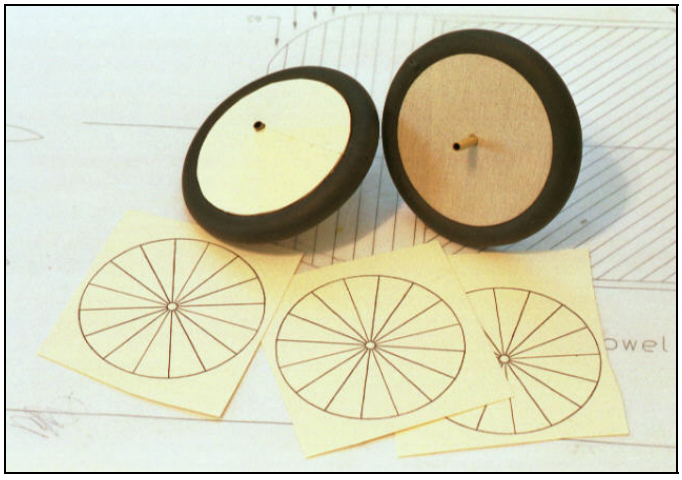
Gluing the ply sides on the ¼ “balsa core makes the basis for the wheels. Use the brass hub for alignment. Epoxy the hubs in place and add a sufficient amount of epoxy around the base of the hub to reinforce the connection of the hub to the ply. Plywood reinforcing hubs are provided that are to slip over the brass tubing as shown. Alternatively, gluing an additional ½” square piece of scrap 1/8” balsa with a hole drilled in the center can be substituted. Next, CA glue the neoprene cording together to from a “tire”. Use thin CA sparingly as the CA bonds very aggressively to the rubber.

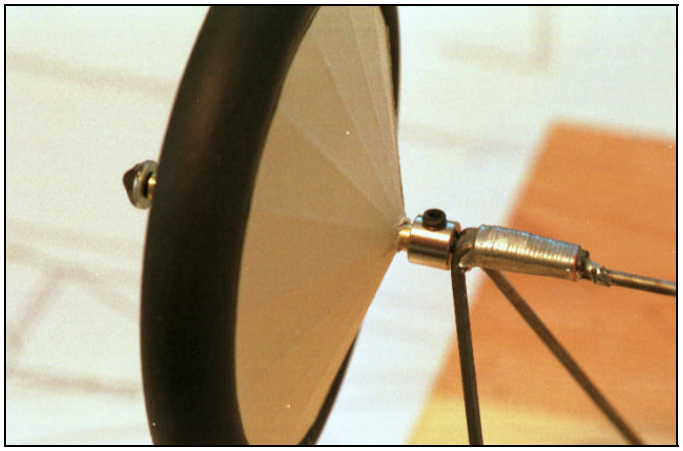
Press the CA wetted ends together for an instant bond. The best way to align the ends is to glue them while they are in place on the wheel. Then attach the tires to the wheels and CA in place. A thin bead of CA around the rim makes for a secure tire.

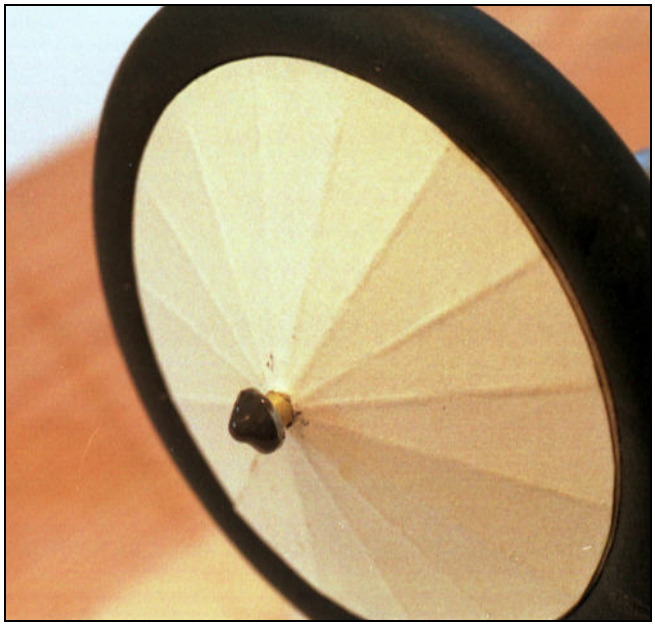
Paper cones are cut out. Use a ball point pen to score each line on the back to make an impression of “spokes” It is helpful to do this operation on a paper tablet so that the pen makes a good crease. Fold the paper along the crease lines to exaggerate the raised lines. One of the sections forming a wedge is cut out. Make cuts to the center of the circle along a pair of the spokes. Close the paper cut-out to form a cone and tape the joint inside the cone.

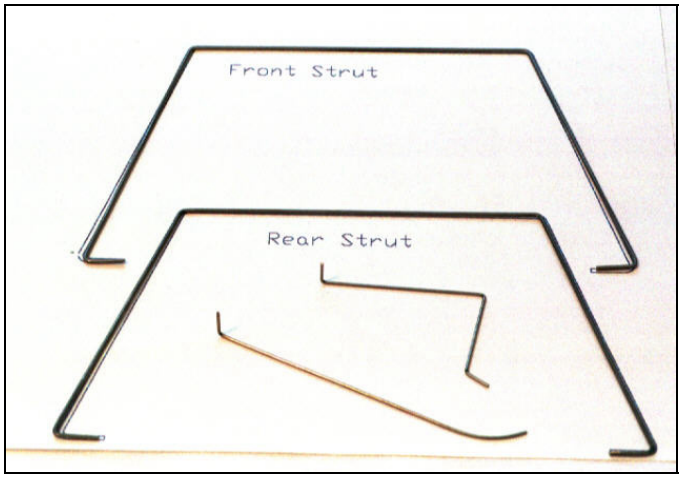
The inside cones may now be attached to the wheels. The outside cones may be attached at this point if wheel collars are to be used. Alternatively, after installing the wheels on the landing gear, a washer may be soldered to hold the wheel in place and then the cone is attached. This method makes a very nice scale appearance.

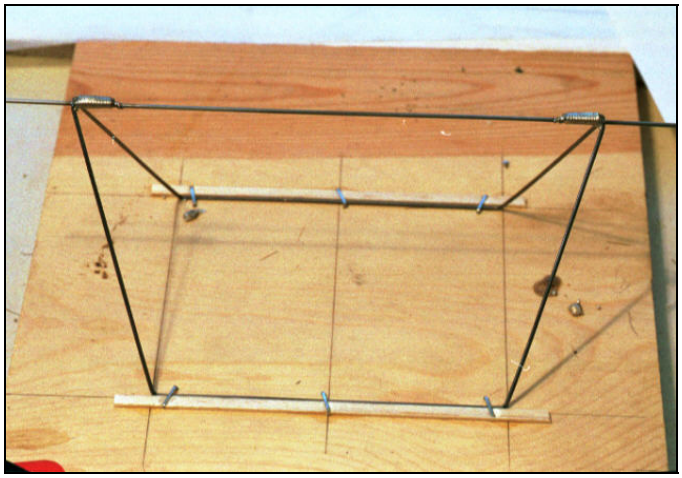


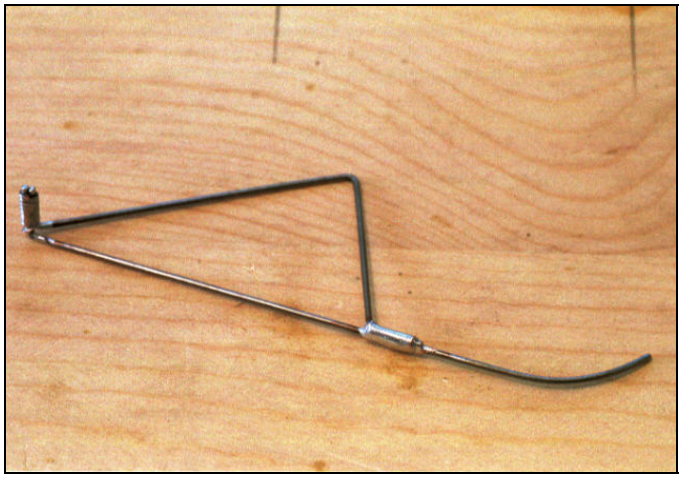


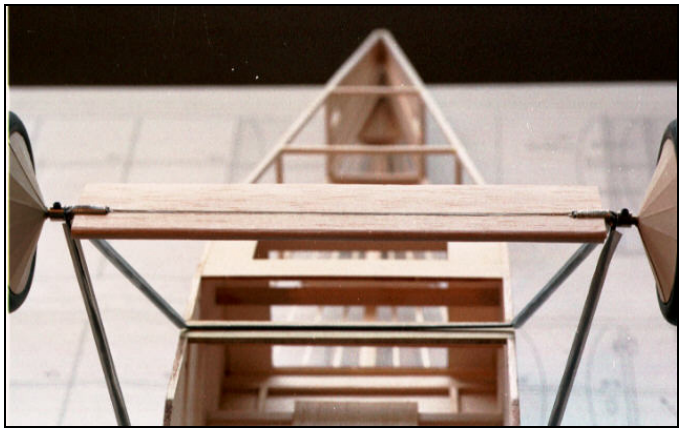








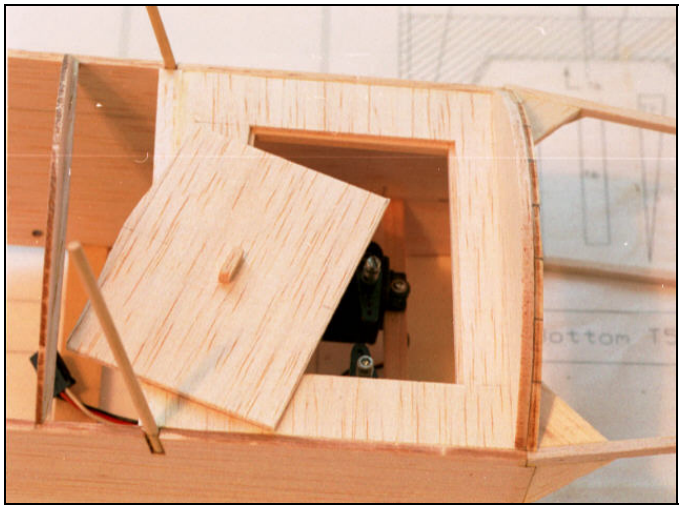


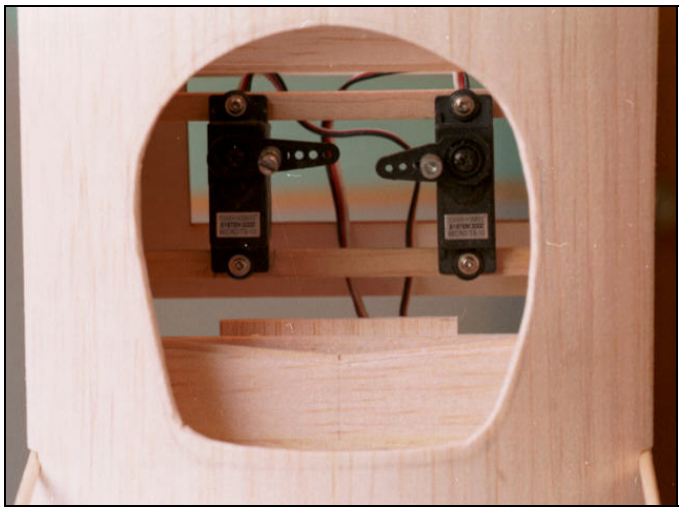


INSTALLING THE RADIO CONTROL GEAR

Servo Bay

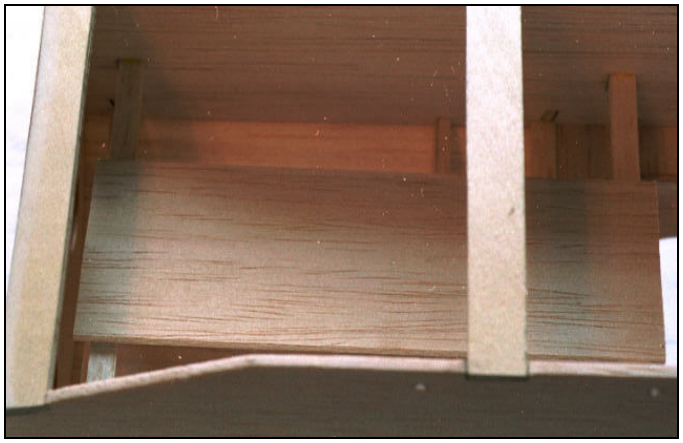
It is as well to get the bulk of your R/C gear fitted at this stage, and also the motor. Move the gear as far forward as possible. This model tends toward tail heavy. In the photo below, this is the prototype stage, later, it was later moved further forward.





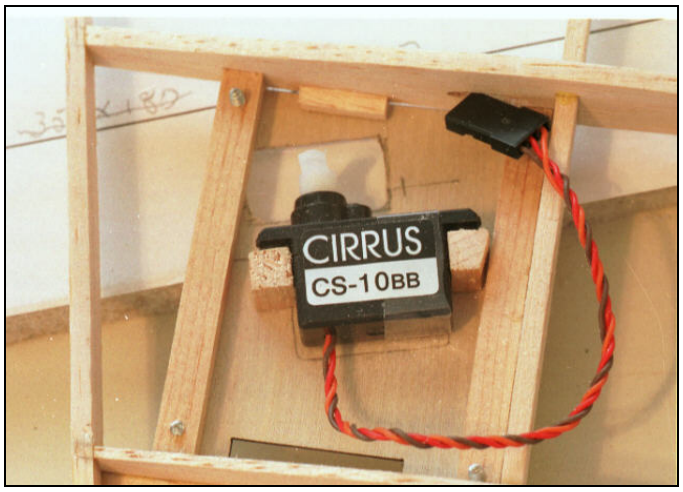
Battery Tray

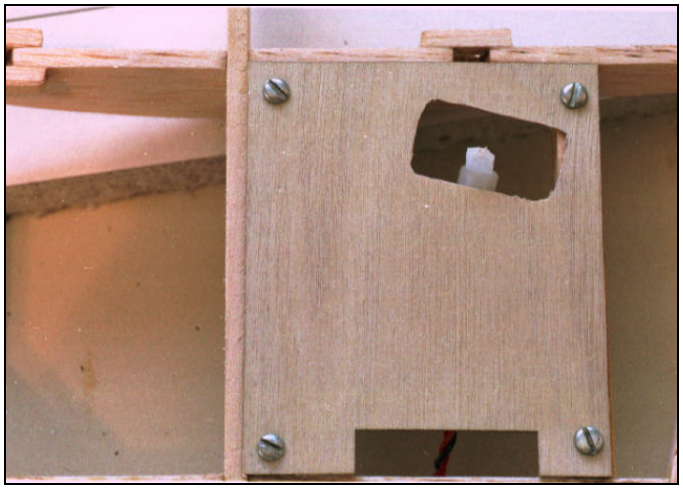
After all the above has been placed, mount the battery tray and use the battery position to balance the model as shown.

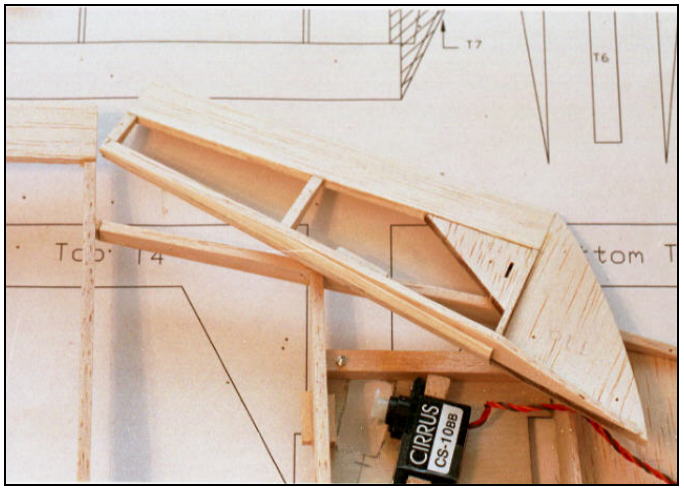


ASSEMBLY

Aileron Servos







Wing

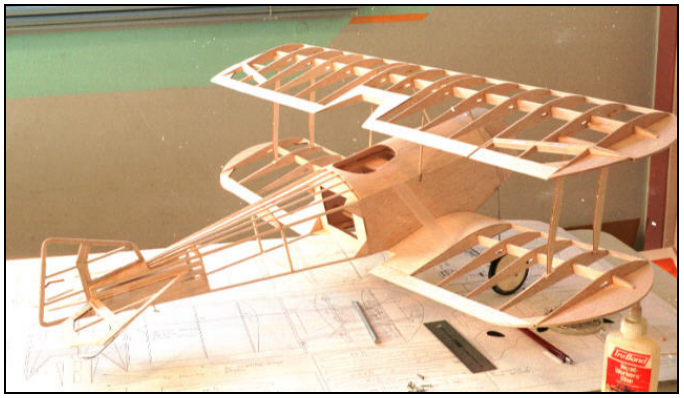
The first task is to epoxy the top wing accurately onto the fuselage. Use 5-minute epoxy for this task. After the top wing is attached, the struts are inserted and the model is turned upside down. The lower wings are added and the locating dowels are inserted into the fuselage.

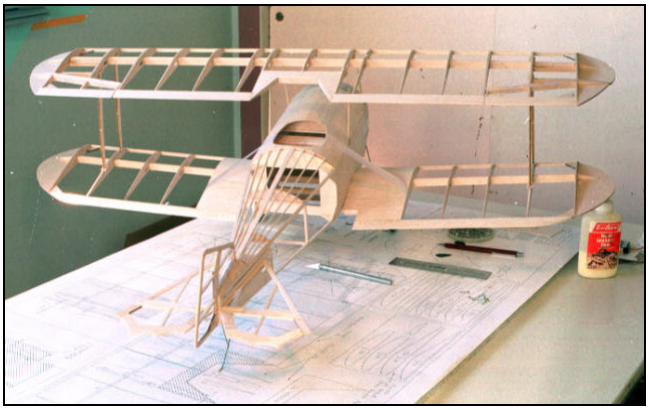
Using Locating Dowels And Aligning Wing Panels

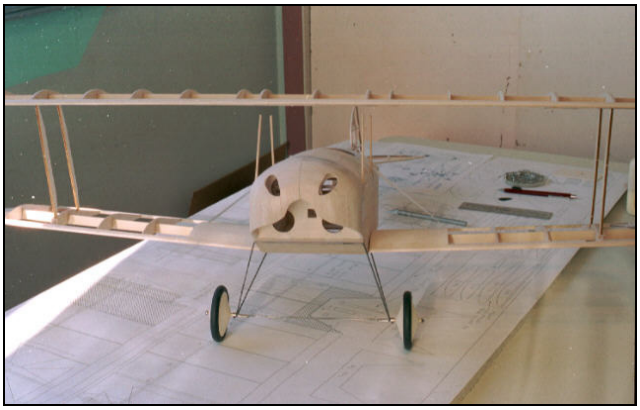
Apply epoxy to the wing rib that meets the fuselage. Attach the wings to the fuselage. Use the locating dowels to assist with aligning the wing panels. Allow epoxy to set.

Adding Detail Of Control Horns On The Pushrod Ends

Slip the control horns onto the wire pushrod ends and, with both the servos and the control surfaces centered, glue the horns into their slots. Keep the pushrods as light as possible. Alternatively, use Pull-Pull closed loop control.







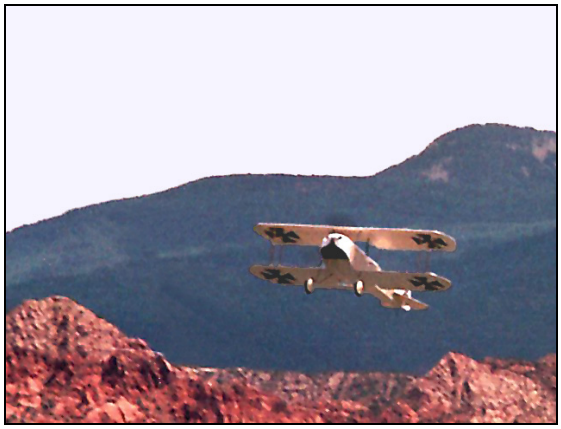
Fitting the Rigging posts and guy wires.

Use strong thread or Kevlar fishing line to simulate rigging wires. Use small screws, fishing hook eyes, straight pinheads or small eyelets to attach the lines to the mounting crosspieces placed in the wing during assembly. While not technically required these wires can add a degree of strength to your model

Balancing The Model

Note: the rigging shown is incorrect. The wires should cross at the center of the inner struts.
Balance the model at the point shown. It is best to position the battery to do this operation.

FLYING



Prototype builder, Larry Nagel, reports: “It left the ground after a short roll of maybe 10 or 15 feet and climbed into the air. No trim was required.

Like most tail dragger's it can be a little squirrelly on the ground roll so you have to stay on the rudder. But the rudder is very effective once the tail is up and there's no problem keeping it straight. I didn't try the rudder in the air. It turned exceptionally well with just the ailerons, with little or no adverse yaw. Since I went to the closed loop control I have a little more elevator deflection, about 5/8", than I am used to. After a little practice I shouldn't have a problem with 'over control' in pitch.:)

I flew today with the original power set-up, the GWS 300C motor with D gearing and an 11x8 prop. I also used the 7 cell, 1500mah, 7+ ounce NIMH battery pack. All up weight was 25 ounces even. This is definitely the minimum power system you would want to use. Flight was quite scale-like. The climb-angle was shallow and the airplane was slow. I would estimate that at max power it flies at about twice stall speed. It gets pretty slow before it stalls. A 400 motor probably wouldn't increase the speed all that much because of the drag, but it should give it a better climb rate.

I didn't try any aerobatics. My thumbs were shaking too much. :) However, I’m sure that any vertical manoeuvres like loops and stall turns would require diving to gain airspeed first. I am also sure that the ailerons are effective enough to do a wing over and even a nice barrel roll with adequate
speed.

My conclusion - Very nice airplane indeed.”

Let the model gain altitude slowly off the runway. Applying too much up elevator at slow speeds asks for a stall. Make your turns gently as tight turns risk tip stalling in any model. Don’t expect the elevator to make the model climb. Think of the elevator as a device to change the attitude of the model. The wing and airspeed ultimately make the model climb. Often down elevator applied at stalling can avoid a major crash. The most important details for proper flight operations are:

1) CG location. Tail-heavy models never fly well or at all.
2) Down and right thrust
3) Straight and non-warped wings.
4) Be sure you assemble and lube the gearbox so that it is not binding. A binding gearbox will rob most of your batteries power.

CONTACT INFORMATION

Distributed by:
Bengtson Company
e-mail: sales@AerodromeRC.com
Web Site: www.AerodromeRC.com