

# VAMOOSE!



## Specifications

Wing Span:	40.0 in.
Wing Area:	312 sq. in.
Length:	39.0 in.
Motor:	AXI 2808 or similar.
Propeller:	APC9070 - APC1080
Batteries:	3s - 2100-2500 Lipoly
Channels:	4
Weight:	25 oz.
Wing Loading:	11.5 oz./sq.ft.

VAMOOSE ASSEMBLY INSTRUCTIONS

Version 1.0

(Check web page for updates)

[www.cl-i-max.com](http://www.cl-i-max.com)

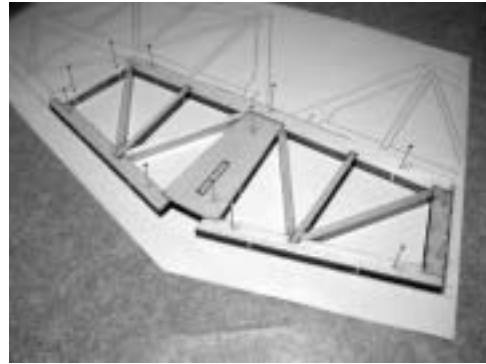
<p><b>Kit Contents:</b></p> <p>1 - 1/16" Laser Cut Balsa Parts Sheet #1  1 - 1/16" Laser Cut Balsa Parts Sheet #2  1 - 3/32" Laser Cut Balsa Parts Sheet #3  1 - 3/32" Laser Cut Balsa Parts Sheet #4  1 - 3/32" Laser Cut Balsa Parts Sheet #5  1 - 3/32" Laser Cut Balsa Parts Sheet #6  1 - 3/32" Laser Cut Balsa Parts Sheet #7  1 - 1/8" Laser Cut Lite-Ply Parts Sheet #9  1 - 1/16" Laser Cut Plywood Parts Sheet #8</p> <p>1 - 3" x 3/16" Hardwood Dowel  1 - 4-1/2" x 3/8" x 3/8" Basswood Stick  3 - 1/8" x 1/8" x 3/6" Basswood Stick  1 - 24" x .080 Piano Wire  1 - 24" x .035 Piano Wire  2 - 20" x .060 Carbon Rods  1 - 10-32 x 2" Nylon Screw  1 - 10-32 Tee Nut  1 - Instruction Manual</p> <p><b>Suggested Radio Gear:</b></p> <p>4 Channel Transmitter  4 - Sub Micro Servos  1 - Micro Receiver  1 - ESC (Electronic Speed Controller) Rated for your motor</p>	<p><b>Other Items Required to Complete this Kit:</b></p> <p>Motor: AXI 2808, Himaxx 2025-4200 or similar  Propeller: 9 x 7, 10 x 8  Batteries: 3x2100-2500 Lipoly or Similar  2 - 2-1/4" Lite Wheels  1 - Roll of Solar Film or So-lite Covering Material  4 - Dubro Mini E/Z Connectors #845  4 - Dubro Mini E/Z Links #855</p> <p><b>Items Required for Building:</b></p> <p>Thin Cyanoacrylate Adhesive  White Glue or ProBond Adhesive  Straight Pins  Building Board  Wax Paper  Razor Blade or X-Acto Knife  Fine and Medium Grit Sand Paper  Small Flat File</p>
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## Before you begin

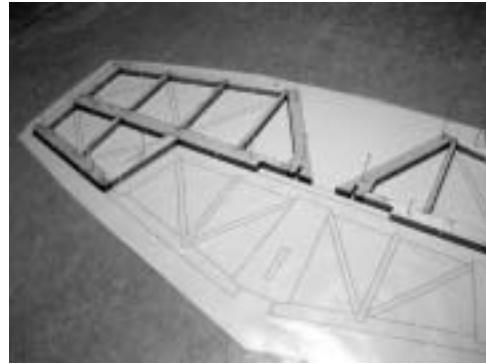
- Before you begin construction please read instructions fully.
- Remove only those parts from their carrier sheet that are required at any one-time.
- Remove all remnants of tabs used to secure parts to their carrier sheets from surfaces that are to be glued.
- Always test fit parts before gluing.

## Tail Surface Assembly

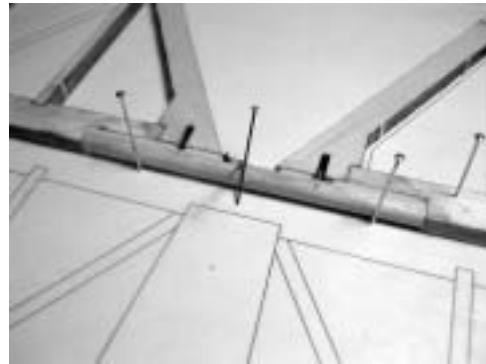
- **Horizontal Stabilizer assembly.** Assemble as shown and glue joints with thin Cyanoacrylate adhesive. *A piece of wax paper placed underneath will prevent the assembly from bonding to the plan sheet and/or building surface.*



- **Elevator assembly.** Assemble as shown and glue joints with thin Cyanoacrylate adhesive.



- Join the two elevator halves with a 3-inch piece of 3/16-inch diameter hardwood dowel.



- Sand a 1/16" chamfer along the top and bottom edges of the elevator hinge line.

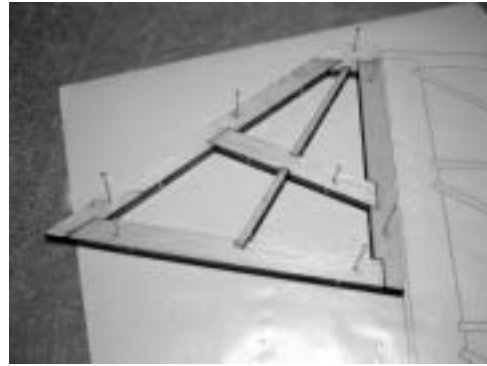
**Picture...**

Hinge prep....

Picture...

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**Vertical stabilizer assembly.** Assemble as shown and glue joints with thin Cyanoacrylate adhesive.



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**Rudder assembly.** Assemble as shown and glue joints with thin Cyanoacrylate adhesive.



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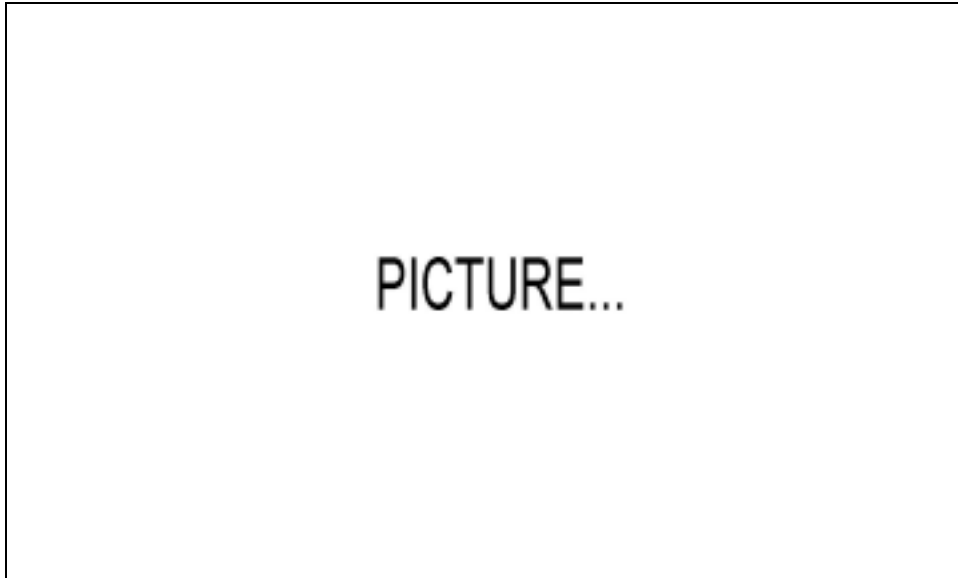
Sand a 1/16" chamfer along the left and right edges of the rudder hinge line.

Picture...

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Hinge prep....

Picture...



*Fig. 1*

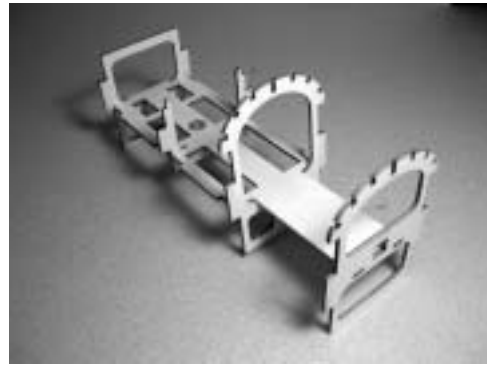
- Using a hammer, install the 10-32 Tee Nut in the top of the Battery/Servo Plate.



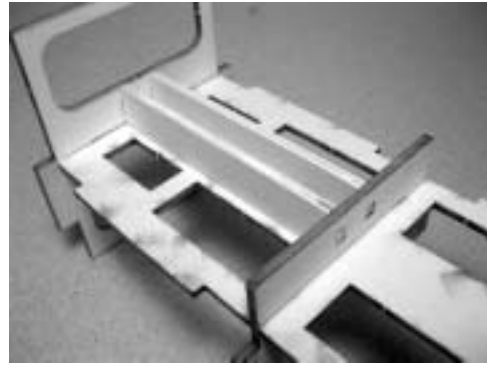
- The Tee Nut will protrude from the bottom face of the Battery/Servo Plate. A couple of scrap pieces of wood can be used to allow for this protrusion when installing the Tee Nut.



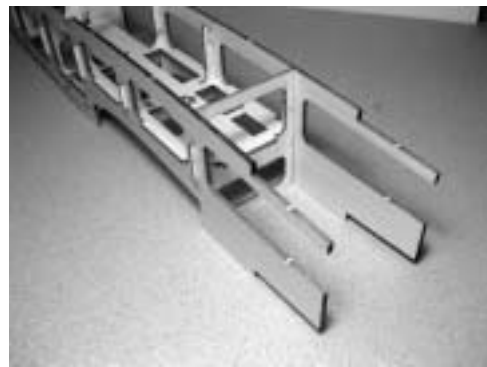
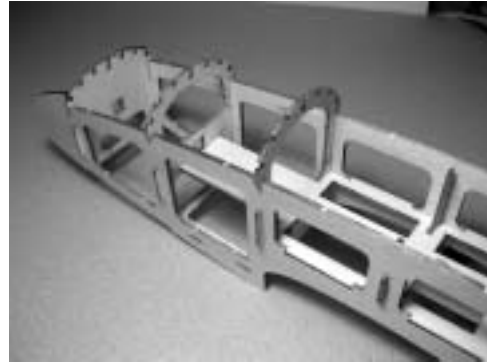
- 
- Assemble, without gluing, bulkheads B2, B3, B4 and B5, to the Battery/Servo Plate. Gluing of the pieces will be done after the Fuselage Sides have been added.



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- Bottom of above assembly showing the Support Rails added between bulkheads B4 and B5.



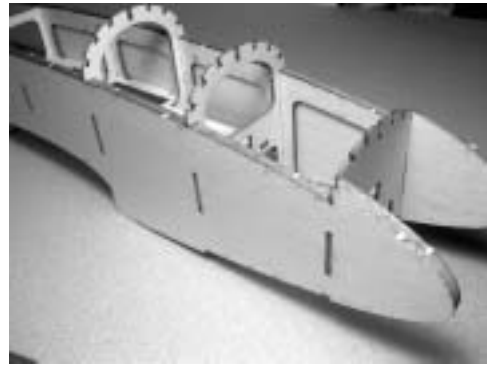
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- Attach left and right Fuselage Doublers. When attaching the two fuselage doublers, install the Hatch Plate. See step below.



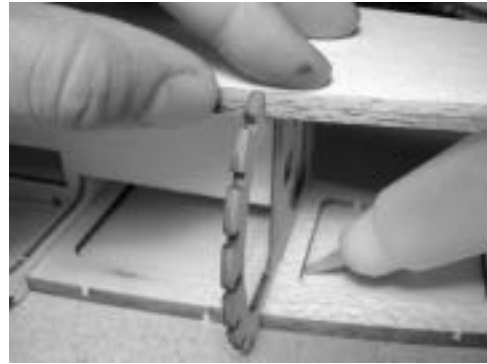
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- Fuselage Hatch Plate installation.



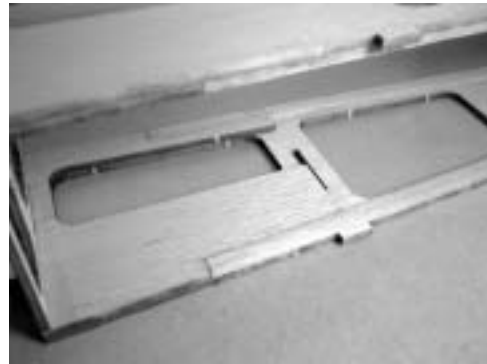
- 
- Add the Fuselage sides.



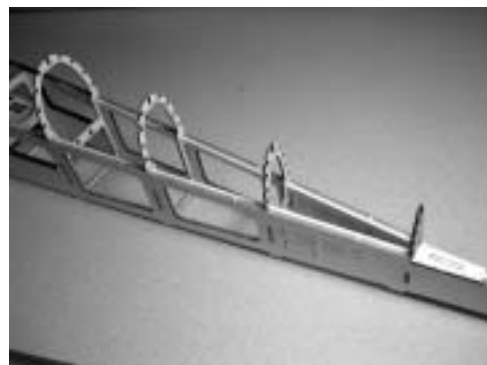
- 
- Gluing can now begin. Holding the fuse down on a flat clean surface, wick all joints with thin Cyanoacrylate adhesive. Make sure all joints are properly aligned while gluing. After the one side has been glued, flip the assembly over and glue the remaining side.



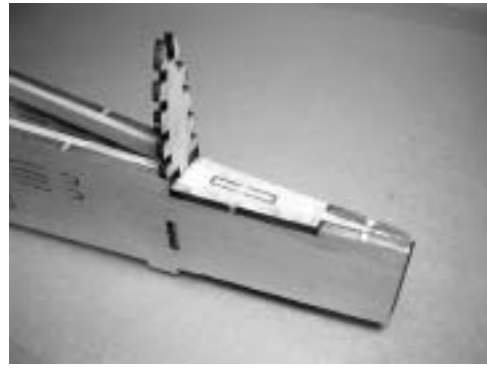
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- Install 1/8" x 1/4" Longerons along the top and bottom of each Fuselage Side. They run from the recess in the Fuselage Doublers to the backside of Bulkhead B8.



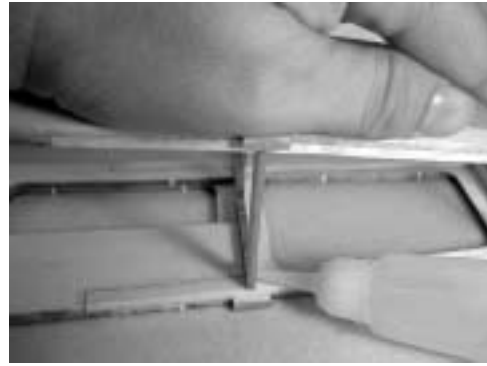
- 
- Install the remaining Bulkheads, B5, B6, B7, B8 and the Horizontal Stabilizer Saddle.



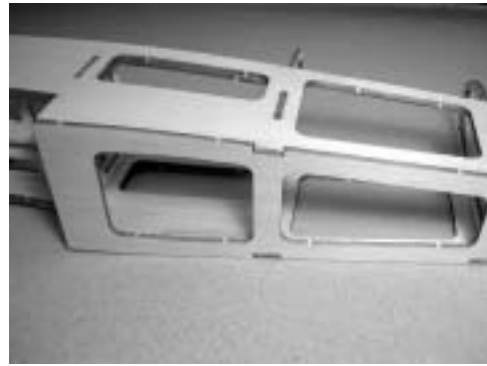
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- The Horizontal Stabilizer Saddle acts as a key locking and aligning the two Fuselage sides together at the back end. Glue Saddle and Bulkhead B9 in position.



- 
- Glue the remaining bulkheads B6, B7 and B8. The fuselage tail from bulkhead B6 to the end is straight allowing it to be held down on a flat surface for gluing similar to the front. The bulkheads need to be positioned so that the pushrod holes are orientated with the higher of the holes on the left-hand side of the fuselage. See picture on page 12.



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- Install and glue the fuselage bottom.



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- Install the front 1/8" balsa fuselage spine.



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- Install the rear 1/8" balsa fuselage spine. Bevel the bottom edge of the upper B5 bulkhead at an angle so that its bottom surface lies flat against the top edge of the lower section of B5.



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- Install the 4 fuselage nose doublers, two per side.



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- Sheet the fuselage bottom between bulkheads B1 and B2 with 1/8" balsa.



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- Open the holes for the elevated and rudder control rods. The top one on the left side and the lower holes on the right side.



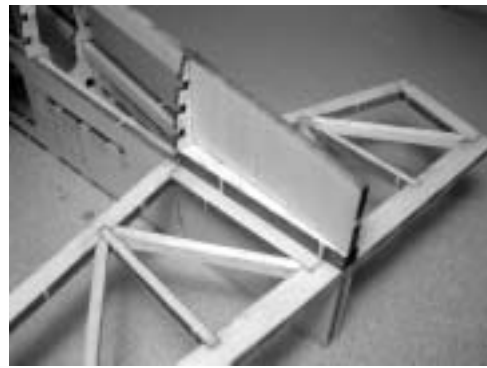
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- Assemble the three pieces of the rear fuselage.



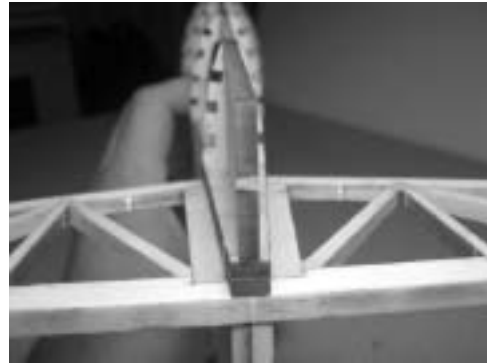
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- Position the Horizontal Stabilizer on the rear of the Fuselage.



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- Install the fuselage section.



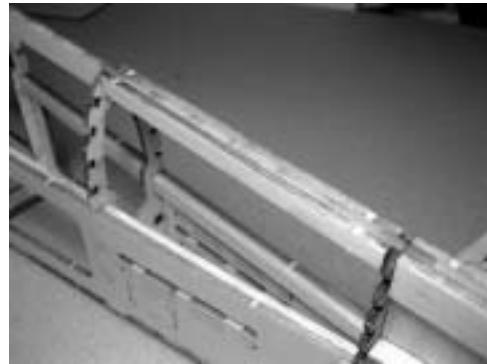
- 
- Check alignment and using thin Cyanoacrylate glue in place.



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- Glue doublers to tail.



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- Glue doublers along the sides of the rear fuselage spine between B8 and B9. These provide surface for the covering to bond to around the Vertical Stabilizer.



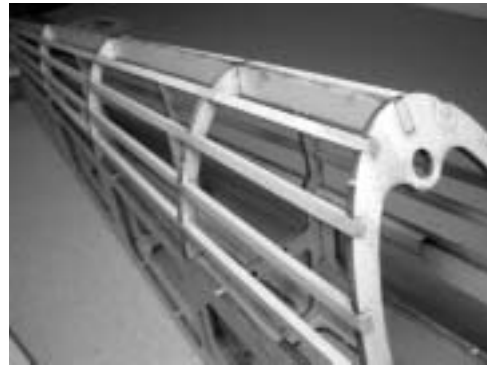
- 
- Glue the 1/8" x 1/8" basswood stringers. Keep the tail bottom down on a flat surface when installing the stringers. This helps avoid any twisting of the tail during installation.



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- Some of the stringer notches in B5 will require filing so they line up with the stringers.



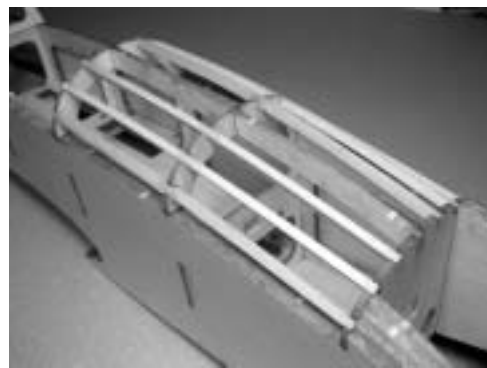
- 
- Completed stringer installation.



- 
- Finished tail construction. Notice the orientation of the control rod holes in B6 and B8.

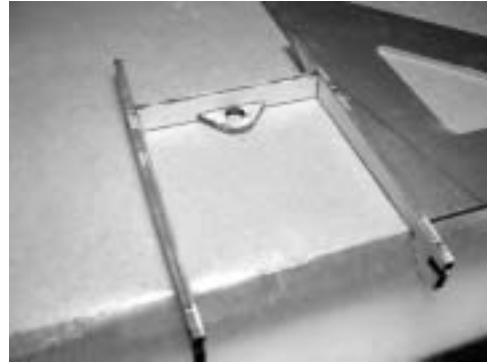


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- Install the front 1/8" x 1/8" basswood fuselage stringers.



## Fuselage Hatch

- Begin the fuselage hatch by gluing the rear cross member perpendicular to one of the frame sides. Glue the remaining sidepiece to the cross member. The magnet bracket can then be added to the cross member.



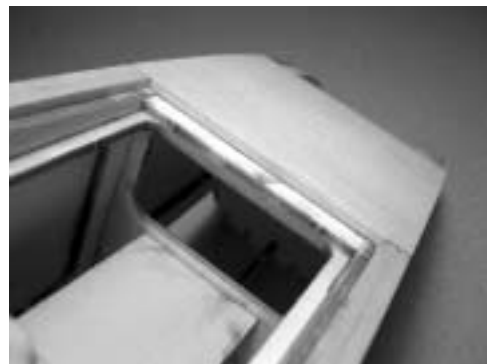
- Assembly with final frame piece.



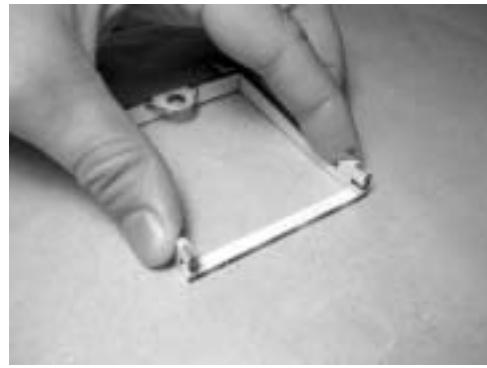
- Insert the frame into the fuselage.



- Custom fit the front cross member while frame is in the fuselage. It should be a nice snug fit.



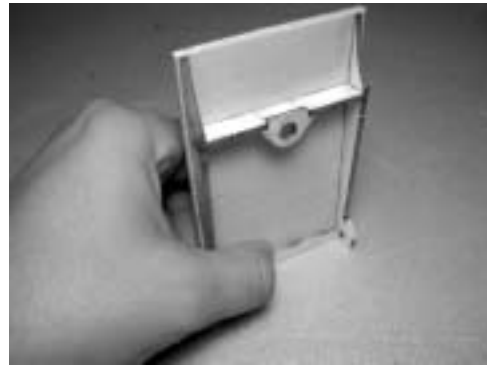
- Hold the frame as shown and glue the front cross member to both of the sidepieces.



- Finished frame.



- Sheet hatch with 1/8" balsa.



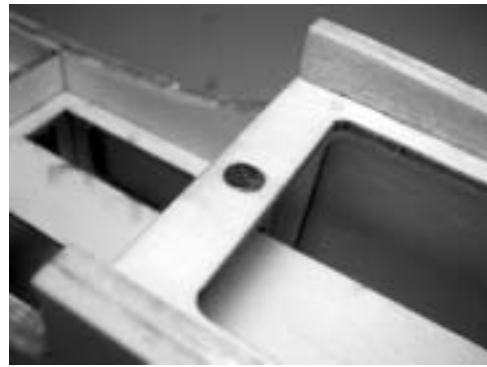
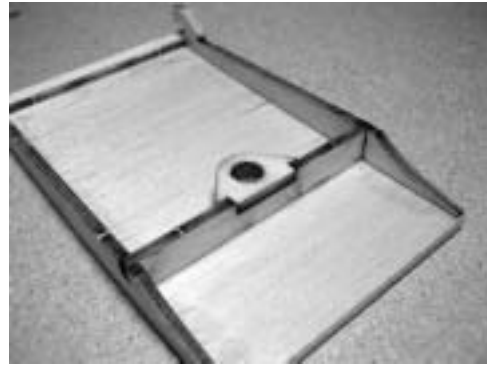
- Sand sheeting flush with frame sidepieces.



- Check fit of hatch in fuselage.



- Install the 1/4" x 1/8" magnets both in the hatch and fuselage. Glue in place with thin Cyanoacrylate.



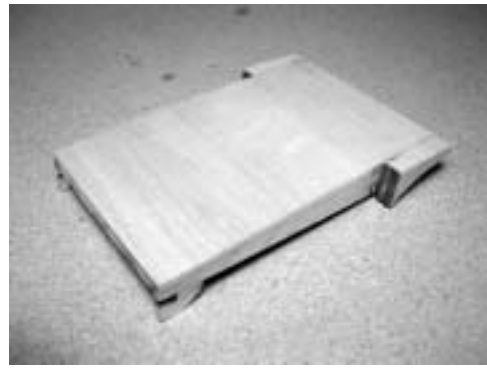
- Check fit.



- Install the 1/8" thick balsa gussets.



View showing opposite side.



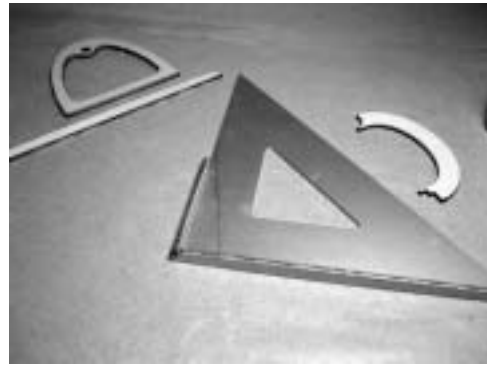
Final fit check.



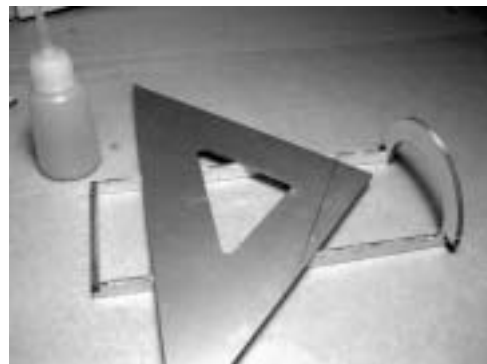
PICTURE...

*Fig. 1*

- On a flat surface, glue the rear cross member perpendicular to one of the sidepieces.



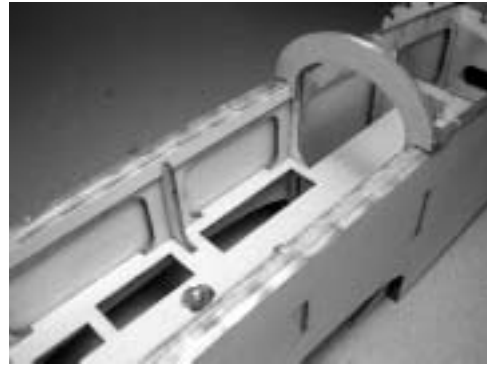
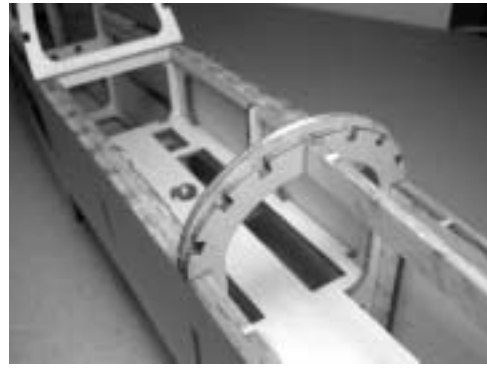
- Glue the cross member to the other sidepiece. The front canopy bulkhead can be used to space the front ends of the sidepieces to the proper distance.



- Glue the front bulkhead to the two sidepieces. It should be perpendicular to the sidepieces.



- 
- Check fit of frame in fuselage.



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- The rear bulkhead is now added.
  - The bottom surface of the bulkhead needs to be sanded so that it is flush with the top face of the rear cross member. Hold it against the top section of B5 and make a line from the front corner parallel to the top surface of the rear cross member.



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- On the back surface continue the line along the entire surface.



- 
- Using the line as a guide, sand a bevel from the front corner to the marked line.



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- When the rear frame bulkhead is properly positioned the back edge will be flush with the top surface of the tail spine.



- 
- Tack glue the bulkhead to the frame being careful not to bond the frame to the fuselage.



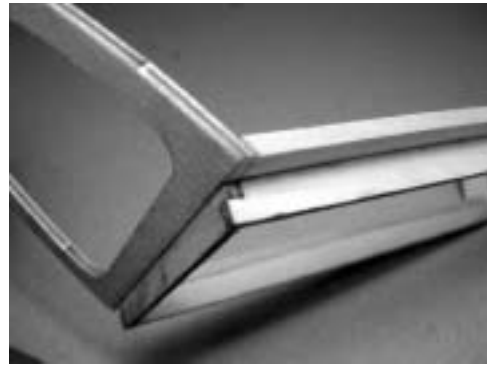
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- Remove the frame from the fuselage and reinforce the glue bonds.



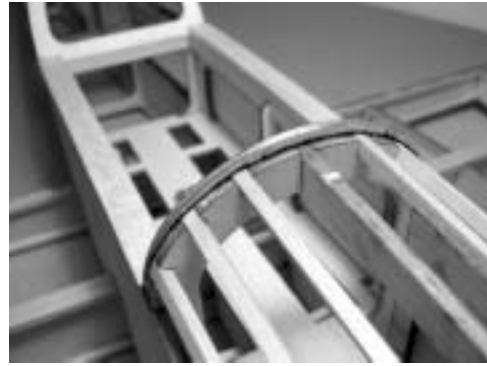
- 
- Using 1/8" x 3/8" balsa stock add side rails to the canopy frame. The inside surface of the rails are aligned with the inside surface of the frame sidepieces. Any rail material that over hangs the fuselage side will be sanded flush before the canopy is attached.



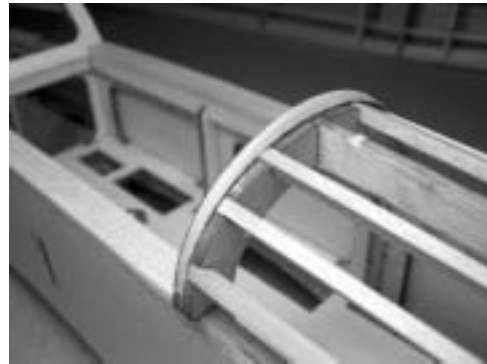
- 
- View of canopy frame. Note how the side rail is beveled flush with the rear bulkhead.



- 
- Place the canopy frame in the fuselage and mark a line on the surface of the forward canopy bulkhead along the edge of fuselage bulkhead B3.



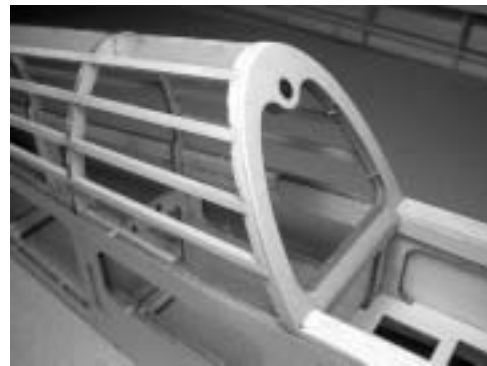
- 
- Sand the front canopy bulkhead creating a surface from the existing back edge and the marked line.

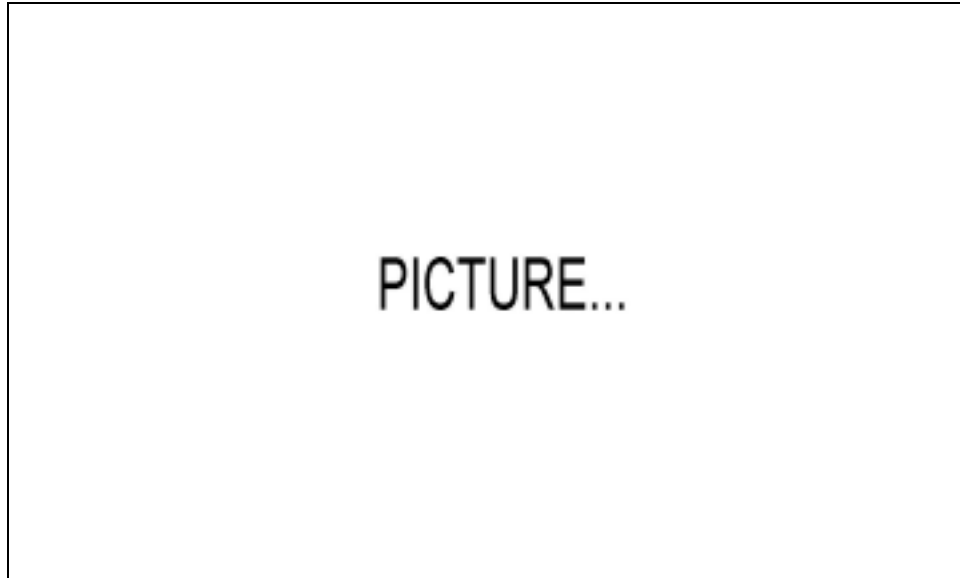


- 
- Install the 1/4" x 1/8" magnets both in the canopy frame and fuselage. Glue in place with thin Cyanoacrylate.



- 
- Sand the rear canopy bulkhead and fuselage bulkhead B5, blending them with the contours of the fuselage.





*Fig 2 – Bottom View of Wing*

Build wing on a clean flat surface. The following assembly procedure is designed for the use of thin Cyanoacrylate glue. If you plan to use a different type of glue you may need to alter this procedure. When removing the wing ribs from the carrier sheets be careful not remove the jig tabs. If a jig tab should break away from the rib it can be reattached with a small amount of glue until assembly is complete.

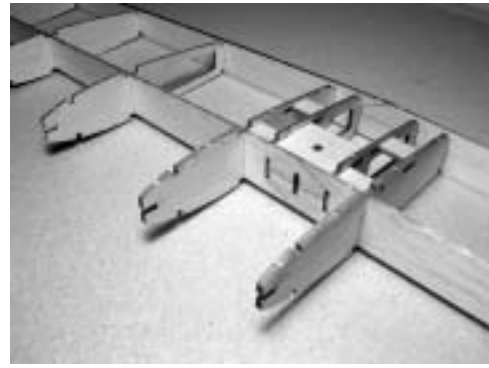
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- Joint the two halves of the main and rear wing spars. A straight edge can be used to insure straightness.



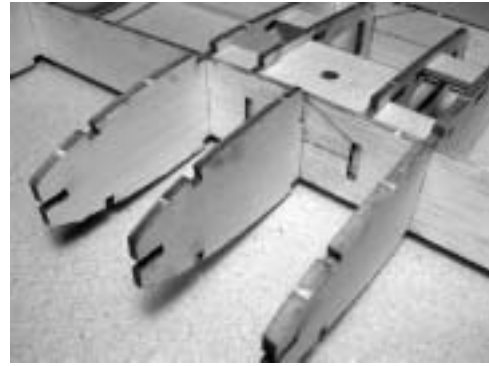
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- Assemble without gluing, the two inner plywood ribs, plywood bolt plate, four plywood servo plates and the 1/8" R1 balsa wing ribs.



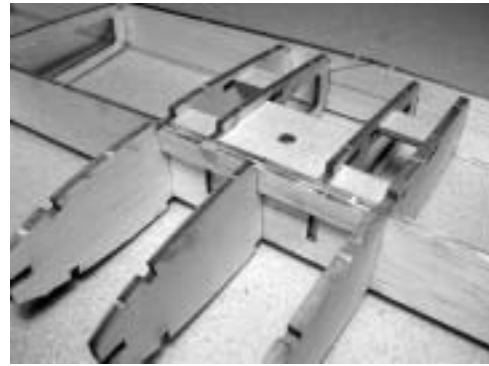
- 
- Slide this assemble onto the main wing spar. Add all the remaining ribs and install the rear spar on the back end of the ribs.



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- Install the plywood center rib. Locate the notch in the up position for the spar joiner added in the next step.



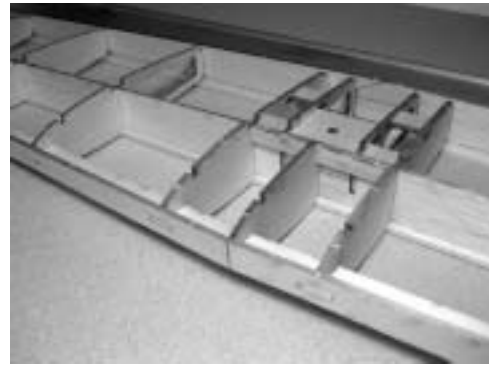
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- Install the spar joiner.



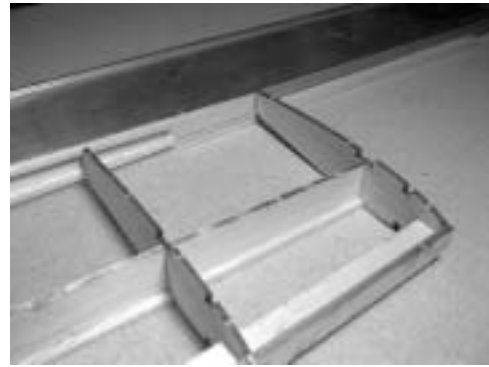
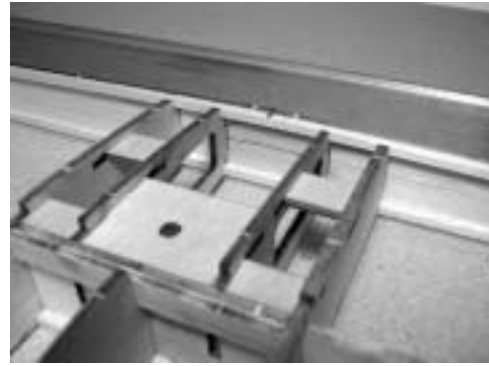
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- Spar Caps: Lengthen the 1/8" x 3/8" balsa Spar Caps to the required 40" by adding a small section to one of the ends.



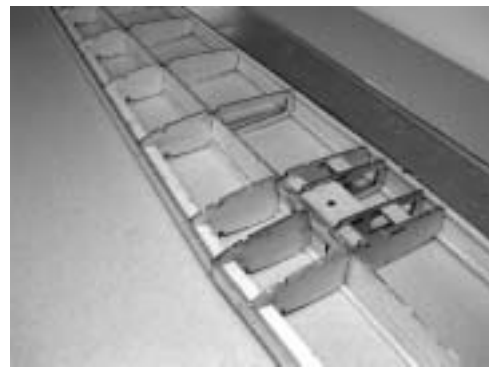
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- Lay the top wing Spar Cap on a flat surface and place the wing assembly on top of it. Add the leading edge rails and leading edge pieces.



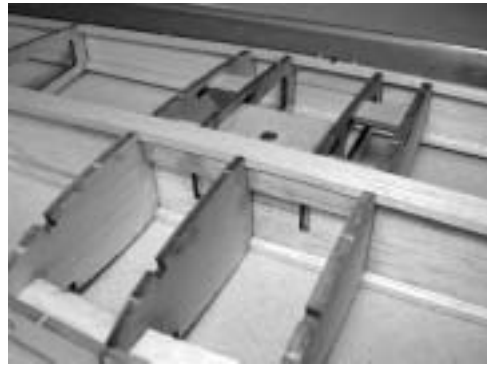
- 
- Add the rear 1/8" x 1/8" spar caps. They are centered on the wing, which will leave a short gap at either end near the wing tip. This gap will be filled in a later step. Alternatively the spar caps can be offset to one end so there is only one gap at one end to be filled.



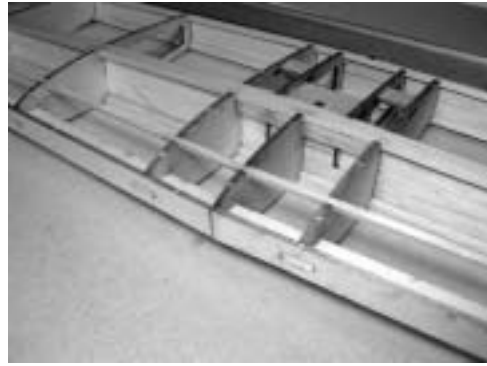
- 
- **The assembly can now be glued.** Position the rear spar against a straight edge while gluing. *Do not glue the rear servo mounting plate until you've positioned it to fit your servos.* Be careful not to bond the rear jig tabs to the rear spar by filling the gap between the two with glue. If bonding occurs the jig tabs can be sanded off later. You may want to bond the top rear spar cap when the wing is flip over for final assembly.



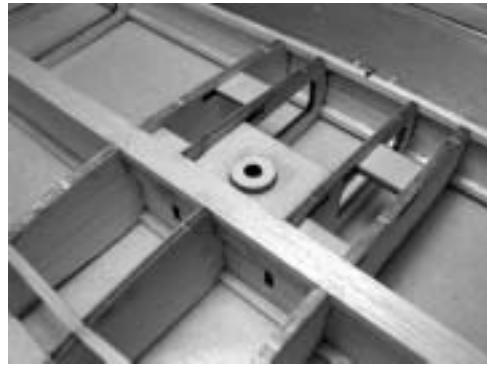
- 
- Add and glue, at every rib, the bottom wing spar cap. The remaining bond will be done when the wing is flipped over. The bottom spar cap can be added as a single piece or split in the center. Splitting it makes it a little easier to install but if split make sure the ends are bonded well to the plywood spar joiner and to each other.



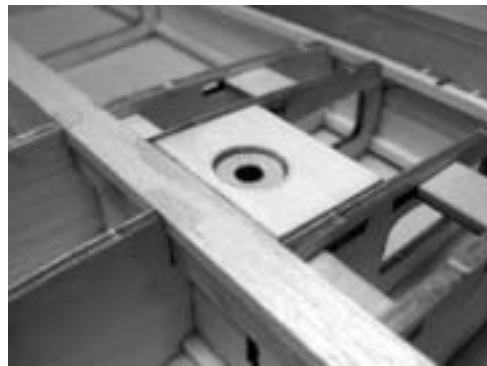
- 
- Install and glue the 1/8" basswood stringers to the leading edge.



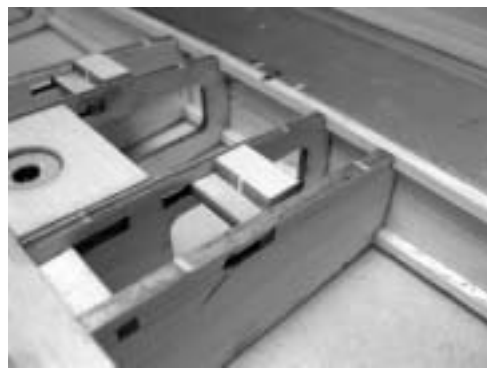
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- Add and glue the plywood wing bolt washer.



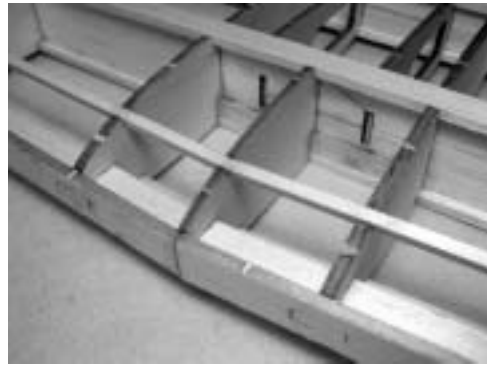
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- Install the 1/8" balsa piece around the washer. It is angled forward slightly so that the front edge is flush with the wing spar. It will be sanded flush with the surround



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- Add the servo plate covering tabs.



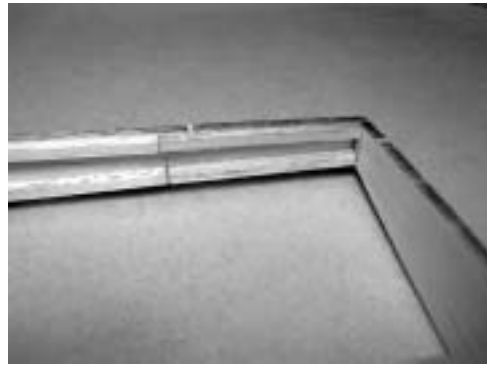
- 
- Install and glue the 1/8" basswood stringers to the leading edge.



- 
- The wing jig tabs can now be removed. Check and finish gluing all joints.



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- Add the remaining rear spar cap pieces.



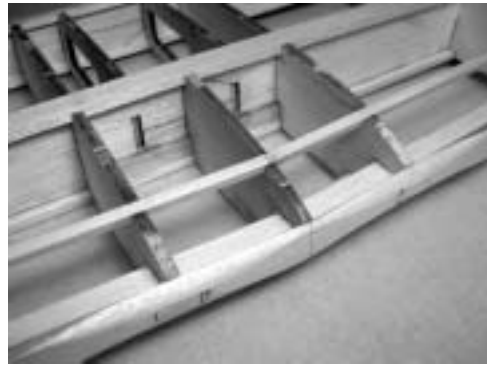
- 
- Install the wing bolt plate support.



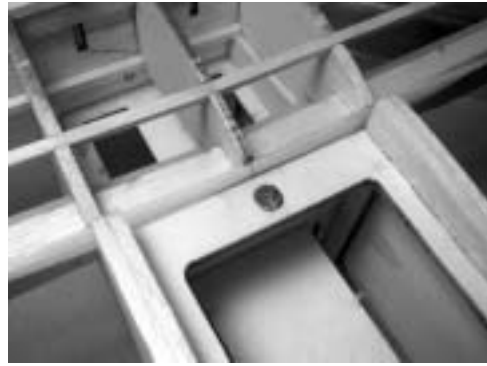
- 
- Position wing in the fuselage and mark the inside edges of the fuselage sides on the wings leading edge.



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- The leading edge is sanded flat between the two marks made in the previous step. The leading edge and top surface of the rear spar that is covered by the fuselage can be shaped at this time to allow test fitting the wing in the fuselage.



- 
- Check fit.



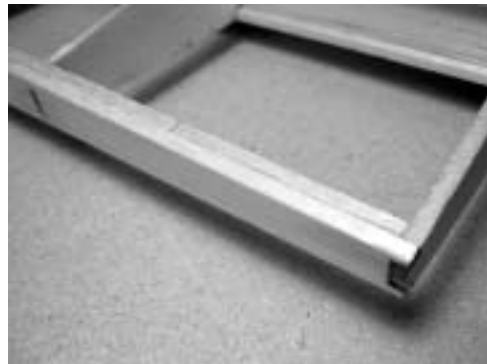
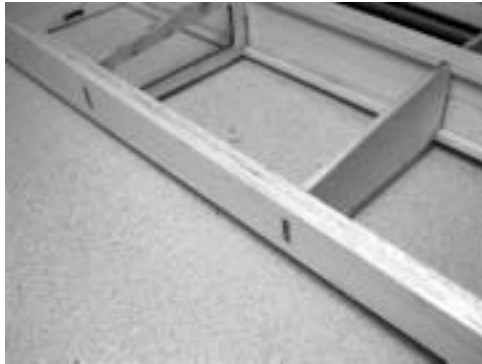
- 
- Add the 3/8" x 1/16" balsa to the leading edge of the wing. They are centered on the front face of the leading edge spanning the distance from the marks made previously made, to the wing tips.



- 
- Shape the wings leading edge.



- 
- Shape the top and bottom surfaces of the rear wing spar.



- 
- Shape the wing bolt plate cover and servo covering tabs.



- 
- **Wing Key Installation:** Bolt the wing to the fuselage making sure it is centered on the fuselage. Position the wing key and tack glue it to the rear wing spar along the exposed top edge. Remove the wing from the fuselage and finish bonding it to the rear spar.



## Landing Gear

- Bend .078" diameter wire into landing gear shapes. See Appendix A.

Picture...

- 
- Glue ribs R2A and R2B to the inside face of R2 separated by the wire landing gear. *White glue recommended.*

Picture...

- 
- Glue Rib R2C to ribs R2A and R2B over top of landing gear. *White glue recommended.*

Picture...

- 
- Optional:** Glue balsa extensions on either side of the landing gear assembly. They provide more surface area for covering to adhere too.



## Aileron Assembly

- Slide ribs into trailing edge.



- Insert rib tabs into the aileron leading edge with the longer slots.



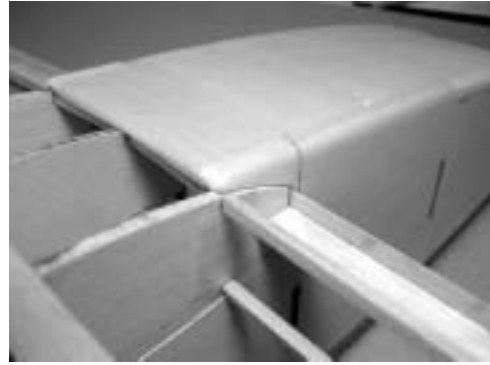
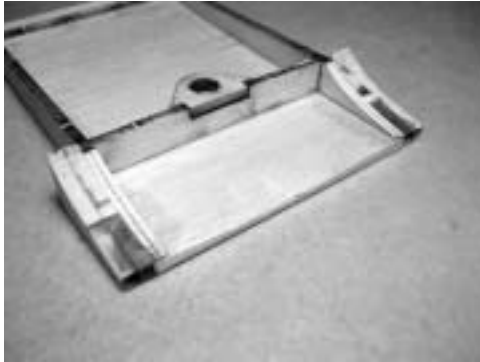
- Add remaining leading edge piece.



- Hold tightly together at each rib location and glue the rib to each part of the leading edge with some thin Cyanoacrylate. Bond the rest of the joints between the leading edge pieces. Glue trailing edge to ribs. Sand both leading edge pieces, to follow the contour of the airfoil cross section.



Fuselage Hatch:



Fuselage Nose:



Sanding tail section, bottom

**Picture...**

---

Sanding vertical stab area...

**Picture...**

---

Vertical Fin installation:

**Picture...**

---

**Vertical Stabilizer Installation:**

**Picture...**

---

**Aileron Installation:** Attach each aileron to the wing with 3 CA hinges. Alternately you can use a tape or covering hinge. Install control rods as shown.

**Picture...**

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- Battery installation:** Place the hook side of the Velcro in the battery compartment and the loop side on your battery. The battery compartment can accept up to a 3x1200 Lipoy pack, or 6 AAA's. If your power configuration requires you to mount the battery in the forward compartment it is recommended that you use an additional belt around the battery plate to secure your battery.

Picture...

- 
- Rudder and Elevator Installation:** Install elevator and rudder control horns. Attach elevator to horizontal stabilizer using 4, CA hinges. (CA Hinges are thin plastic hinges fastened with Cyanoacrylate glue). Install the rudder on the vertical stabilizer with 3, CA hinges. Install control rods as shown.

Picture...

- 
- Motor Mount Installation:** Slide the motor mount into position. The back end should be flush with the backside of bulkhead B3. Determine the length required for your motor/gearbox. Remove from fuselage and cut to length. Slide back into the fuselage and fasten to the battery plate with two screws installed through the two precut holes.

Picture...

- 
- The fuselage can now be sanded in preparation for covering and before installing the horizontal and vertical stabilizers. Leave the center former at the tail flat along the top. The vertical stab mounts to this surface.

Picture...

- Sand entire model in preparation for covering. A smooth balsa surface will yield a smooth finished model.
- Covering:** Cover the wings first, then the fuselage. The elevator, rudder and ailerons are covered before mounting them to the fuselage and wings.
- Control Throws:** Trim all control surfaces level. The maximum travel should be set for +/-40 degrees on all surfaces. If you set your controls up for flaperons, you can mix your flaps to move with the elevator but in the reverse direction, i.e. elevator goes up, the flaps go down. The amount of flap movement should be set to a percentage of the elevator travel, 50% is a good place to start.
- Center of Gravity Location:** For your first flights the plane should balance between 1.6" and 2.0" behind the wing leading edge. For increased maneuverability you can experiment and move the center of gravity rearward. Be careful not to move the C.G. back too far or else it will become unstable and difficult to control.
- Happy Flying.