

Dragon Seaplane

KIT # K-304

Assembly Instructions



WARRANTY

Alien Aircraft Corp. guarantees this kit to be free from defects in both material and workmanship at the date of purchase. This warranty does not cover any component parts damaged by use or modification. In no case shall Alien Aircraft Corp.'s liability exceed the original cost of the purchased kit. Further, Alien Aircraft Corp. reserves the right to change or modify this warranty without notice. The quality and flyability of your finished model depends on how you build it; therefore, we cannot in any way guarantee the performance of your completed model, and no representations are expressed or implied as to the performance or safety of your completed model.

In that Alien Aircraft Corp. has no control over the final assembly or material used for final assembly, no liability shall be assumed nor accepted for any damage resulting from the use by the user of the final user-assembled product. By the act of using the user-assembled product, the user accepts all resulting liability. If the buyer is not prepared to accept the liability associated with the use of this product, the buyer is advised to return this kit immediately in new and unused condition to the place of purchase.

WARNING!!!

Failure to follow these safety precautions may result in severe injury to yourself and others.

Use safety glasses when running the motor. Do not run the motor in an area of loose gravel or sand; the propeller may throw such material in your face or eyes. Keep your face and body as well as all spectators away from the plane of rotation of the propeller as you run the motor. Keep these items away from the prop: loose clothing, shirt sleeves, ties, scarfs, long hair or loose objects such as pencils or screwdrivers that may fall out of shirt or jacket pockets into the prop. Always remove the LiPo battery from the plane before charging. Always use a charger designed to charge LiPo batteries for charging the LiPo flight battery. Never leave the LiPo battery unattended while charging. If the battery becomes more than just warm, discontinue charging.



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Notes about the laser cut parts

- 1...The first thing that you need to do is to identify and mark the part numbers on the laser cut parts using the drawings on the following pages as a guide.
- 2...It is possible that several of the laser cut parts may not be completely cut through. If this is the case you can free the part from the sheet quickly using an X-acto knife.
- 3...The slight discoloration on the edges of the laser cut parts may be removed by lightly sanding the edges with 400 grit sandpaper.

Kit Contents:

Your kit contains the following parts. Please check your kit for any missing or damaged parts before starting construction.

Wood Bag:

| Qty. | Name | Description |
|------|-------------------------------------|---------------------------------------|
| 1 | LC-304-01 | .1/16" X 4" X 24" Laser Cut BALSA |
| 1 | LC-304-02 | .1/16" X 4" X 24" Laser Cut BALSA |
| 1 | LC-304-03 | .1/16" X 4" X 24" Laser Cut BALSA |
| 1 | LC-304-04 | .1/16" X 4" X 24" Laser Cut BALSA |
| 1 | LC-304-05 | .1/16" X 4" X 24" Laser Cut BALSA |
| 1 | LC-304-06 | .1/16" X 4" X 24" Laser Cut BALSA |
| 1 | LC-304-07 | .1/16" X 4" X 24" Laser Cut BALSA |
| 1 | LC-304-08 | .1/16" X 4" X 24" Laser Cut BALSA |
| 1 | LC-304-09 | .1/16" X 4" X 24" Laser Cut BALSA |
| 1 | LC-304-10 | .3/32" X 4" X 24" Laser Cut BALSA |
| 1 | LC-304-11 | .3/32" X 4" X 24" Laser Cut BALSA |
| 1 | LC-304-12 | .3/32" X 4" X 24" Laser Cut BALSA |
| 1 | LC-304-13 | .3mm X 4" X 24" Laser Cut POPLAR PLY |
| 1 | LC-304-14 | .1/16" X 3" X 12" Laser Cut Birch Ply |
| 1 | LC-304-15 | .1/16" X 3" X 12" Laser Cut Birch Ply |
| 1 | LC-304-16 | .3/32" X 4" X 8" Laser Cut BALSA |
| 1 | LC-304-17 | .1/16" X 3" X 12" Laser Cut BALSA |
| 2 | Wing Center Section Sheet | .1/16" X 3" X 12" BALSA |
| 1 | Nose & tip float block | .1/4" X 2" X 6" BALSA |
| 1 | K-304 PLAN A | |
| 1 | K-304 PLAN B | |
| 4 | Main Wing Spars | .3/32" X 1/4" X 24" BALSA |
| 2 | Center Wing Spars | .3/32" X 1/4" X 6" BALSA |
| 2 | Wing Leading Edges | .1/4" sq. X 24" BALSA |
| 5 | Stringer Spars / Fuselage Stringers | .3/32" sq. X 24" BALSA |

Hardware Bag

| Qty. | Name | Description |
|------|-------------------------------|-------------------------------|
| 4 | Blind Nuts | 4-40 Blind Nuts |
| 2 | Elevator Joiner & Wing Dowels | .1/8" x 3" Birch Dowel |
| 2 | Wing Bolts | .8-32 x 1" Nylon Screw |
| 2 | Blind Nuts | .8-32 Blind Nuts |
| 4 | Control Horn | Control Horns |
| 4 | Sig EZ Hinge | Hinges |
| 8 | Aileron Servo Screws | # 2 X 1/2" Sheet Metal Screws |

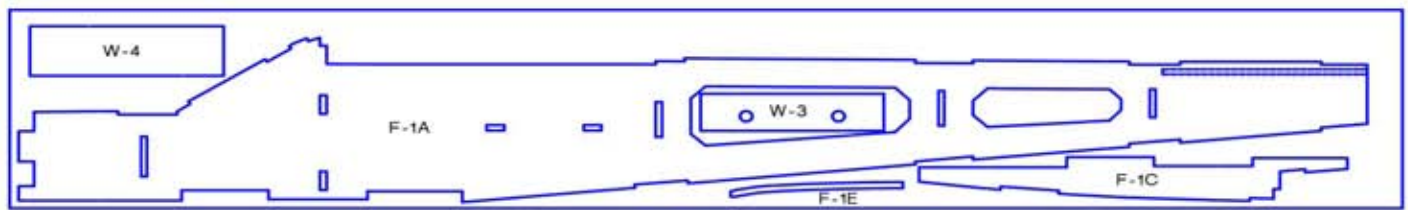
Misc. Loose Parts

| Qty. | Name | Description |
|------|-----------------------|-------------|
| 1 | K-304 Plastic Cowl | |
| 1 | K-304 Plastic Nacelle | |

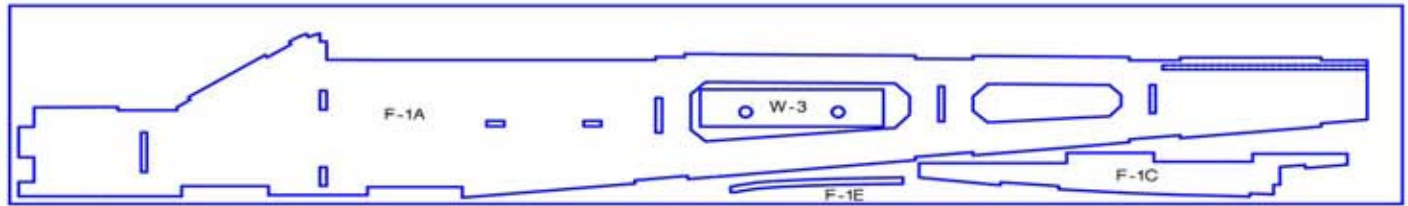
Additional Items Required (Not Included in Kit)

Note: These are parts that we have used and are familiar with. There are many other brands available and you may substitute other items that you are more comfortable with or have on hand.

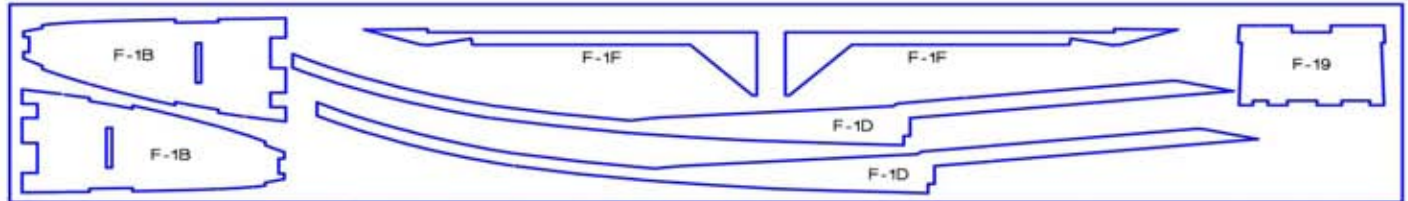
| Qty. | Name | Description |
|------|----------------------|---|
| 1 | Motor | ..Himax HC2808-1160 Brushless Motor (Alien Aircraft P/N: AE-018) |
| 1 | Speed Control | ..Castle Creation Thunderbird-18 Electronic Speed Control (Alien Aircraft P/N: AE-019) with connectors matching motor & battery |
| 1 | Battery Connector | ..Male Deans Ultra connector (Alien Aircraft P/N: AE-027) |
| 1 | Heat Shrink Tube | ..3/16" Heat Shrink Tube (Alien Aircraft P/N: AE-029) |
| 2 | Tail Pushrods | ..Dubro Micro Pushrod Set (Alien Aircraft P/N: AH-001) |
| 2 | Aileron Pushrods | ..Alien Aircraft 5" pushrod set (Alien Aircraft P/N: AH-012) |
| 1 | Propeller | ..APC 7X4 SF Propeller (Alien Aircraft P/N: AE-023) |
| 1 | Velcro | ..6" Velcro (Alien Aircraft P/N: AE-012) |
| 1 | Motor Mount Hardware | ..2808 Motor Mount Hardware (Alien Aircraft P/N: AE-022) |
| 1 | Battery | ..3 Cell 1250Mah Lipo Battery |
| 1 | Covering Material | ..1 Roll Light Weight Covering Material Plus Trim Colors |
| 1 | Radio | ..4 Channel Radio with 4 micro servos & Receiver with one "Y" connector and servo extensions if required. |



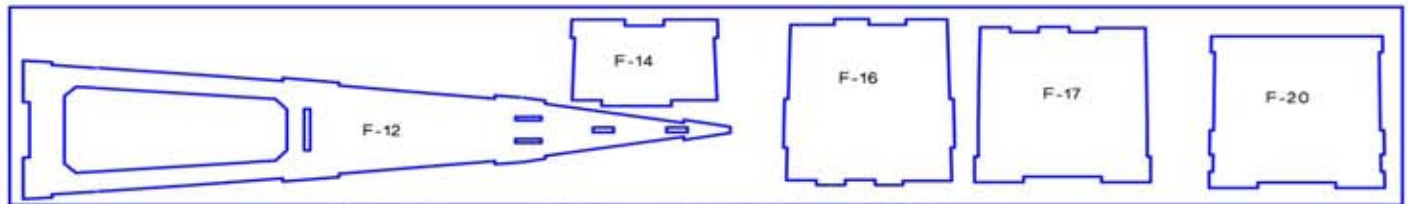
LC-304-01 1/16" X 4" X 24" BALSA 1 REQD.



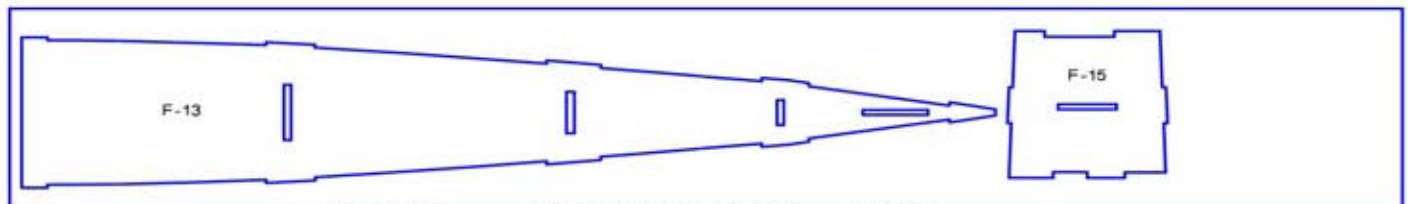
LC-304-02 1/16" X 4" X 24" BALSA 1 REQD.



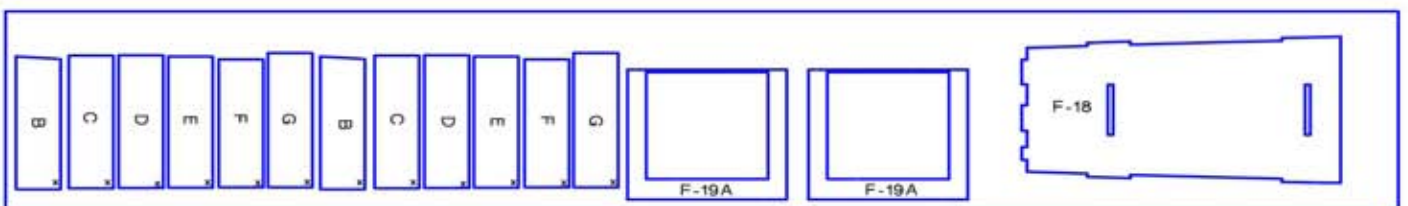
LC-304-03 1/16" X 4" X 24" BALSA 1 REQD.



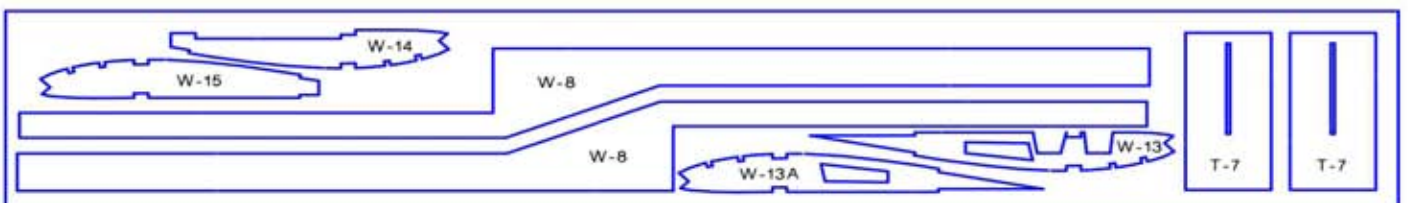
LC-304-04 1/16" X 4" X 24" BALSA 1 REQD.



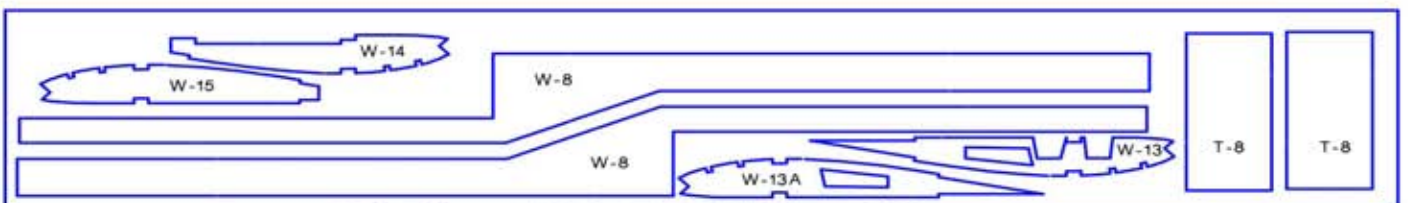
LC-304-05 1/16" X 4" X 24" BALSA 1 REQD.



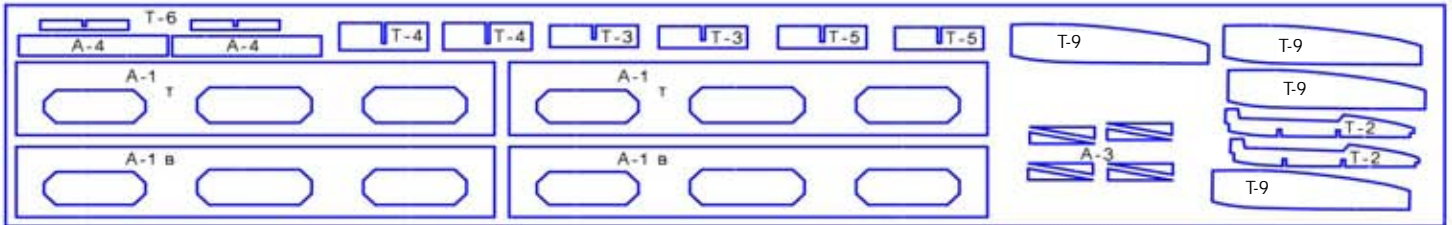
LC-304-06 1/16" X 4" X 24" BALSA 2 REQD.



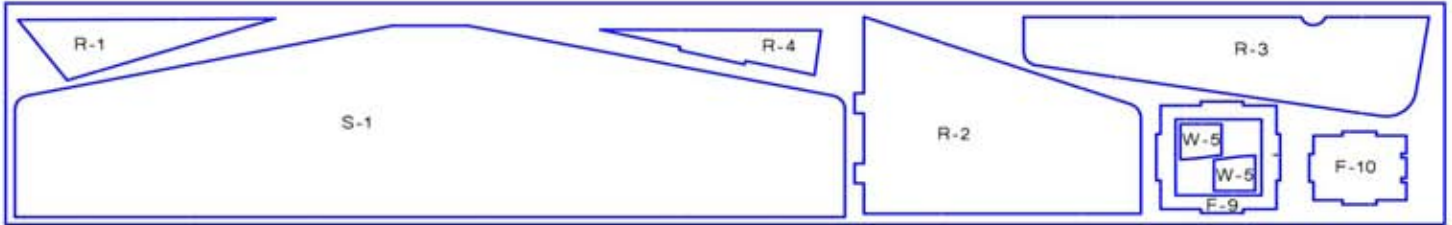
LC-304-07 1/16" X 4" X 24" BALSA 1 REQD.



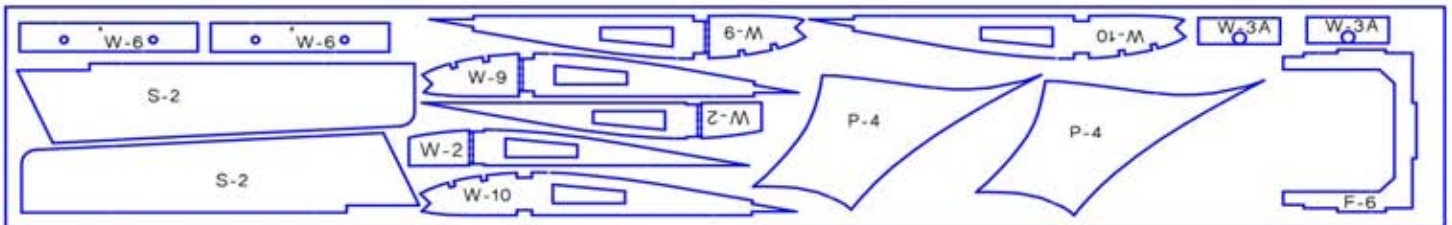
LC-304-08 1/16" X 4" X 24" BALSA 1 REQD.



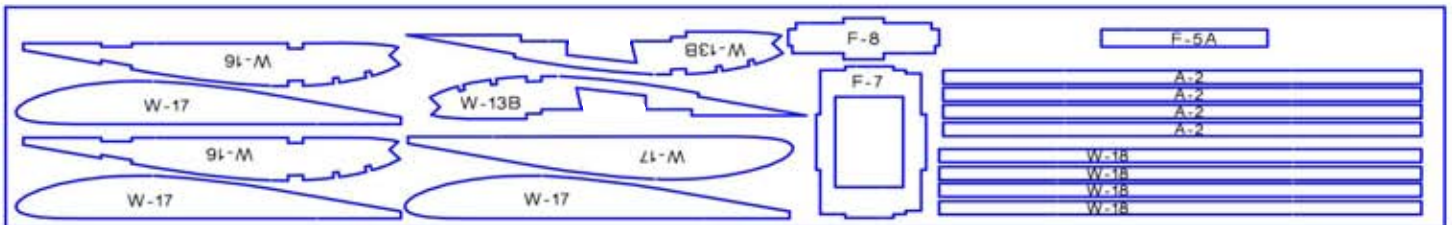
LC-303-09 1/16" X 4" X 24" Balsa 1 REQD.



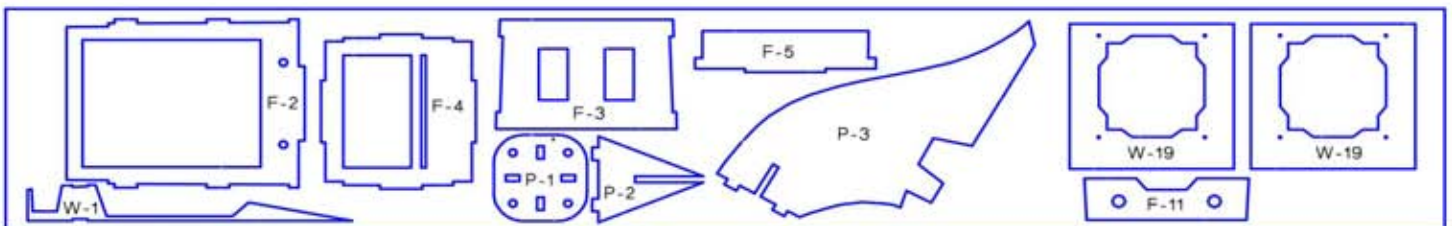
LC-304-10 3/32" X 4" X 24" Balsa 1 REQD.



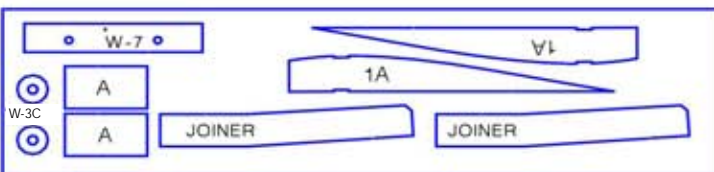
LC-304-11 3/32" X 4" X 24" Balsa 1 REQD.



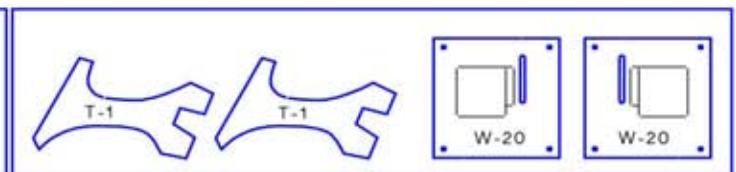
LC-304-12 3/32" X 4" X 24" Balsa 1 REQD.



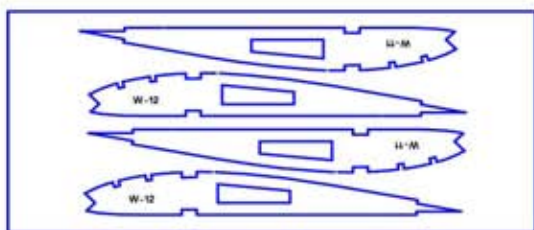
LC-303-13 3mm X 4" X 24" POPLAR PLY 1 REQD.



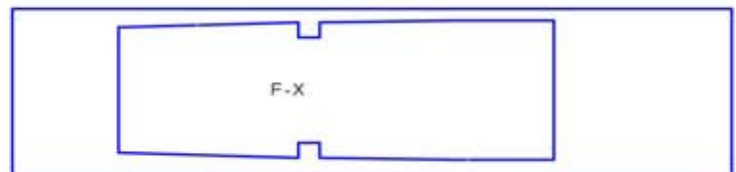
LC-304-14 1/16" x 3" X 12" Birch Ply 1 REQD.



LC-304-15 1/16" X 3" X 12" Birch Ply 1 REQD.



LC-304-16 3/32" X 4" X 8" Balsa 1 REQD.



LC-304-17 1/16" X 3" X 12" Balsa 1 REQD.

Building Instructions:

General Note: Cover the plans with wax paper before assembling your model to prevent the parts from sticking to the plan.

Building the Tail Surfaces:

1... Glue R-1 and R-2 together. Bevel the front edge of R-3 as shown on the plan, and sand the other edges round.

Mark the hinge locations and cut the hinge slots in R-2, R-3 and R-4. Temporarily install the hinges without glue. Sand the outside front edge of R-1/ R-2 and R-4 round. Leave the other edges square.



2...Sand the 1/8" x 3" dowel to 3/32" diameter. Join the elevators (S-2) using this dowel. Use the stabilizer as a guide. Trim the dowel if required to achieve the proper length.

Bevel the front edge of the S-2's as shown on the plan, and sand the other edges round.

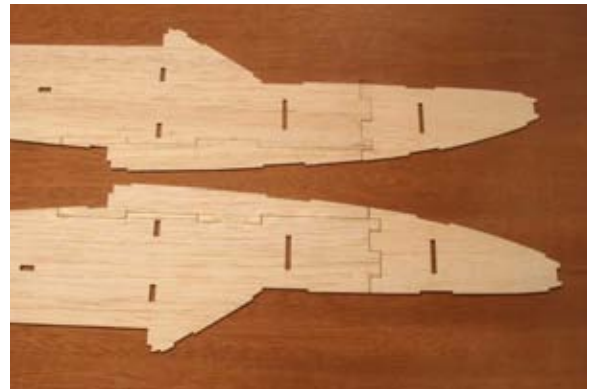
Sand the front and ends of the stabilizer round. Leave the back edge square.

Mark the hinge locations and cut the hinge slots. Temporarily install the hinges without glue.



Building the Fuselage:

3...Assemble the fuselage sides using parts F-1A, F-1B and F-1C.



4...Glue the F1D, F-1E and F-1F doublers to the inside of the fuselage sides. **Be sure to make a right hand and a left hand side.** Use the drawing on the plan to properly locate the doublers on the fuselage sides including the proper positioning of the front ends of F-1D and F-1E.



5...Press the two 8-32 blind nuts into F-11. Use a small drop of thin C/A to secure them in place.

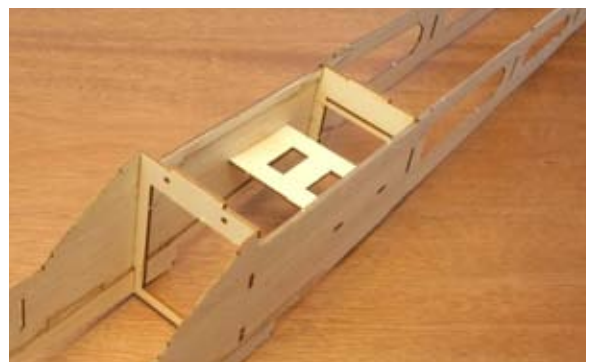
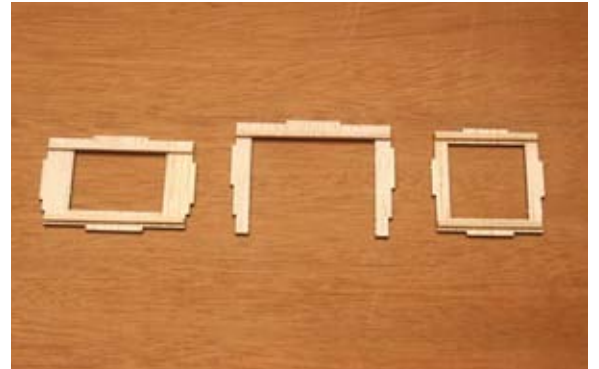
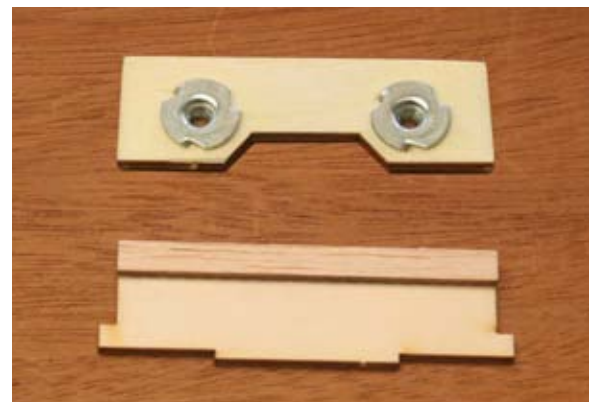
Glue F-5A to F-5.

6...Glue 3/32" sq. braces to the front of F-6, F-7 and F-9. Cut the braces from one of the 3/32" sq. x 24" strips. The location for these braces are marked on the formers with dashed lines.

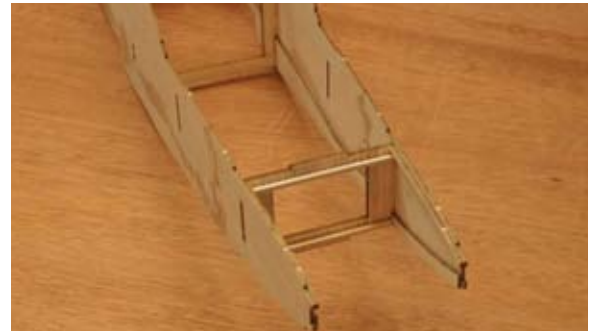
7...Lightly tack glue formers F-2 , F-4 , and servo tray F-3 into position on the right fuselage side. The narrow end of F-3 is at the back.

8...Place the left fuselage side into position and square up the fuselage. Glue the left fuselage to the formers. Make sure that the fuselage is square and completely glue the formers to the fuselage sides.

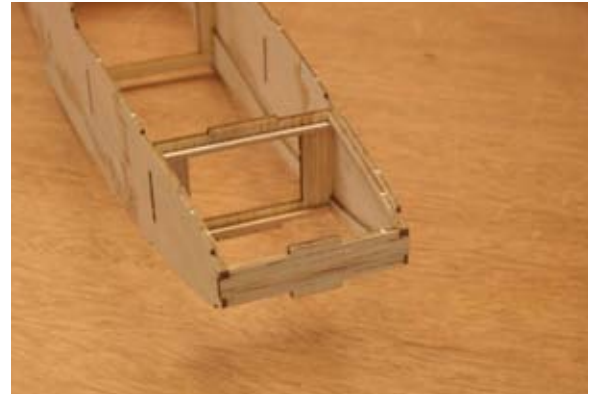
9...Place F-11 into place. Glue securely into position.



10...Gently squeeze the front of the fuselage sides together and glue F-7 into position.



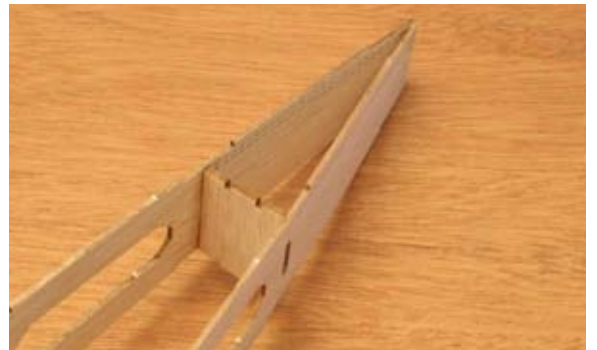
11...Place F-8 into position. Squeeze the fuselage sides into contact with F-8 and glue in place.



12...Carefully glue F-6 into position..



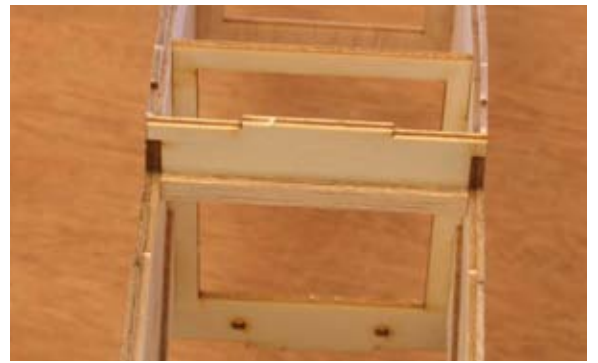
13...Place former F-10 into position and pull the rear of the fuselage sides together. Adjust the back end until the fuselage is straight and square. Glue the fuselage sides together and glue the former in place.



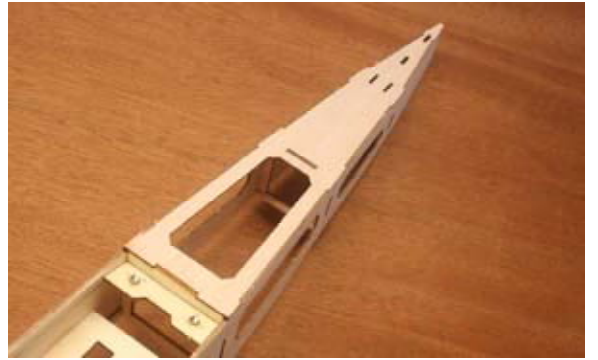
14...Place former F-9 into position and glue in place.



15...Place F-5 into position. F-5A should be on the back side. Pull the fuselage sides into contact with F-5 and glue into place.



16...Glue F-12 into position on the top rear of the fuselage. Spread and squeeze the sides as required to get F-12 to fit in the proper position.



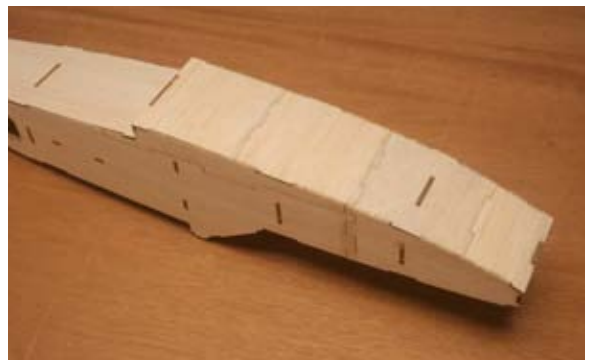
17...Glue F-13 into position on the bottom of the fuselage.



18...Glue F-14, F-15, F-16 and F-17 together to make the forward fuselage bottom.



19...Glue the forward bottom fuselage into position.



20...Glue part F-X to the inside bottom of the fuselage. It should be centered left to right and centered between formers F-2 and F-7.



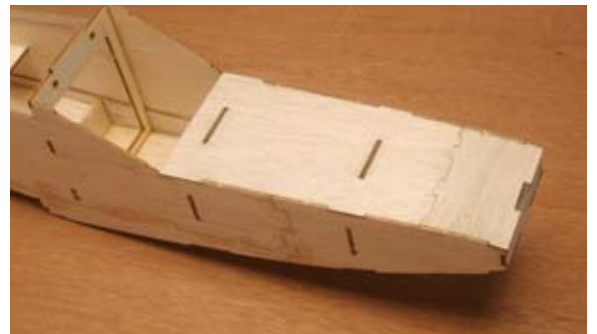
21...Glue two strips of velcro on top of part F-X to secure the battery pack.



21...Glue F-19 to the front of F-18.



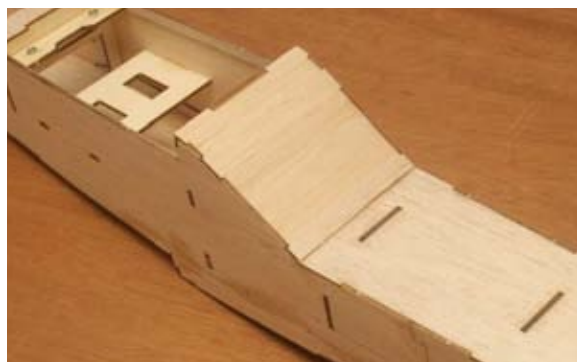
22...Glue F-18 into position on the top front of the fuselage.



23...Sand a bevel on the bottom front edge of F-20. Test fit on the fuselage to assure the proper fit against F-19.



24...Glue F-20 into position on the fuselage. Be sure to press the top edge of F-20 tightly into contact with the top edge of F-2.



25...Use a sanding block to sand the top and bottom fuselage sheeting flush with the front face of F-8.



26...Cut a $2 \frac{5}{8}$ " x 2" piece from one end of the $\frac{1}{4}$ " x 2" x 6" balsa sheet. Cut this piece in half to make two $\frac{1}{4}$ " x $2 \frac{5}{8}$ " x 1" pieces.



27...Glue these pieces onto the front of F-8. Center them top to bottom and left to right.



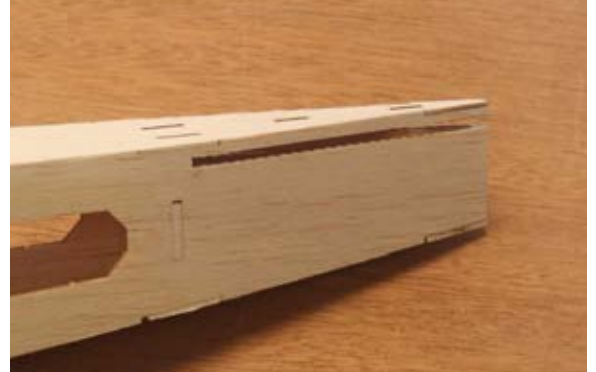
28...Sand these nose blocks to match the angles of the top and bottom of the fuselage.



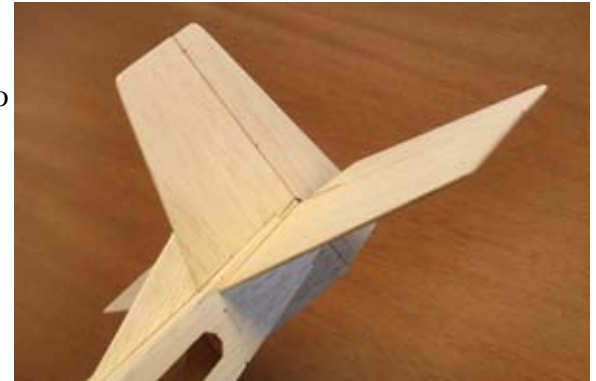
29...Sand the nose block round and then sand the ends flush with the fuselage sides.



32...Cut on the dashed lines to remove the wood from the stabilizer slots on the fuselage sides.



33...Test fit the tail surfaces on the fuselage. Sand or trim if required to obtain the proper fit.



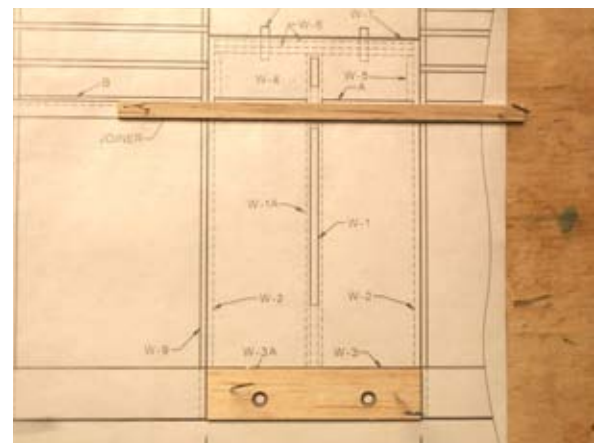
Building the Wing:

34...Cover the center section wing plan with wax paper to prevent the parts from sticking to the plan.



Building the Center Section:

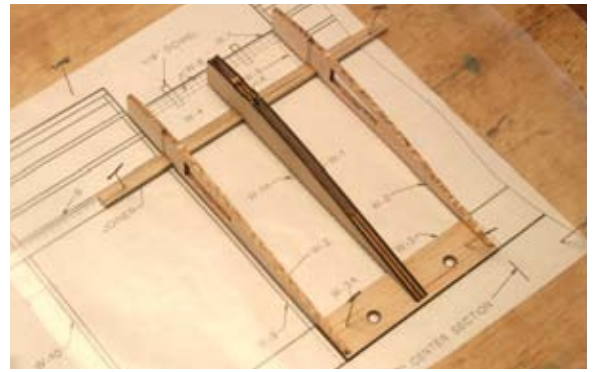
35...Glue the two W-1A ribs to each side of the W-1 rib.



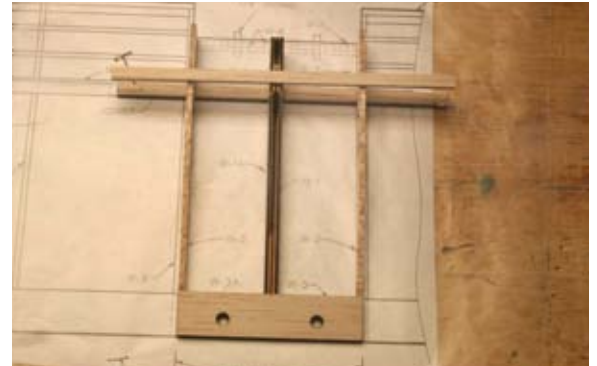
36...Pin the lower 3/32" x 1/4" x 6" lower main spar to the plan. The ends will extend past the W-2 ribs.

Pin one of the W-3's into position on the plan.

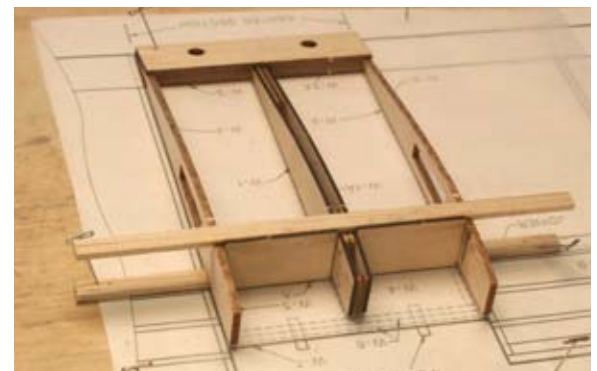
37...Glue ribs W-1 and W-2 into position 90 degrees to the building board.



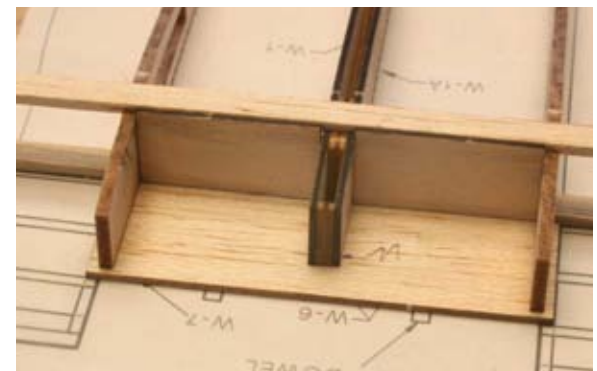
38...Glue the upper 3/32" x 1/4" main spar into place. Make sure the ribs maintain 90 degrees to the building board. Glue the other W-3 on top at the trailing edge of the ribs.



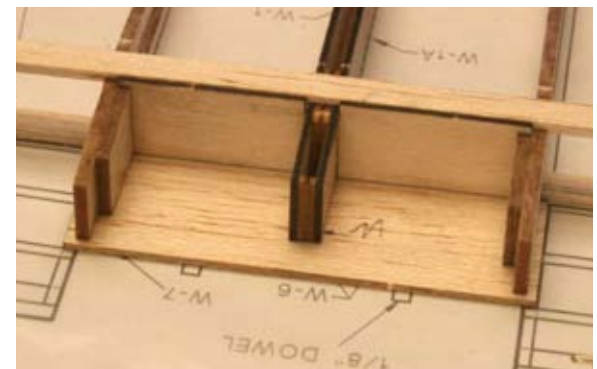
39...Glue the shear webs "A" into position on the front of the spars. Also glue them to the ribs.



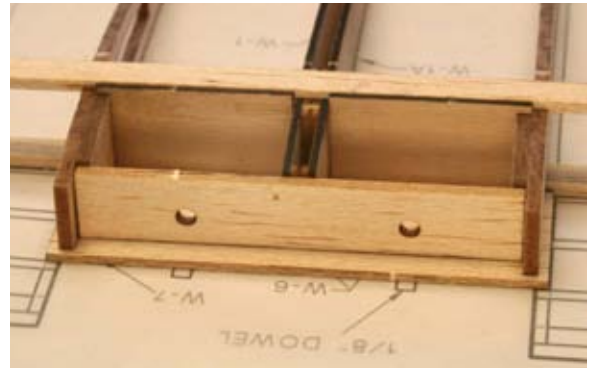
40...Slide part W-4 into position under the ribs. It should fit tight against the shear webs and be centered left and right. It is slightly oversize. When properly positioned, glue it in place.



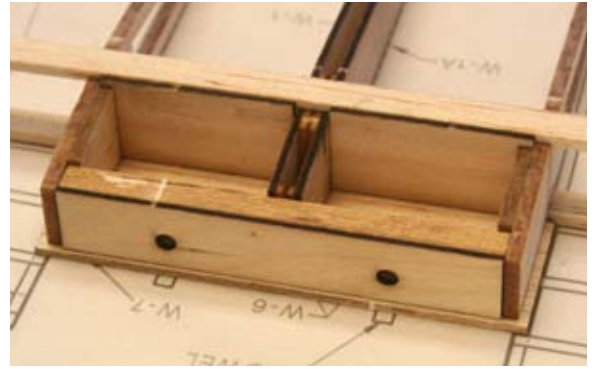
41...Put parts W-5 into position on the inside of the W-2 ribs. They should be tight against the shear webs and the curve on top should match the curve on the ribs. Glue them in the proper position.



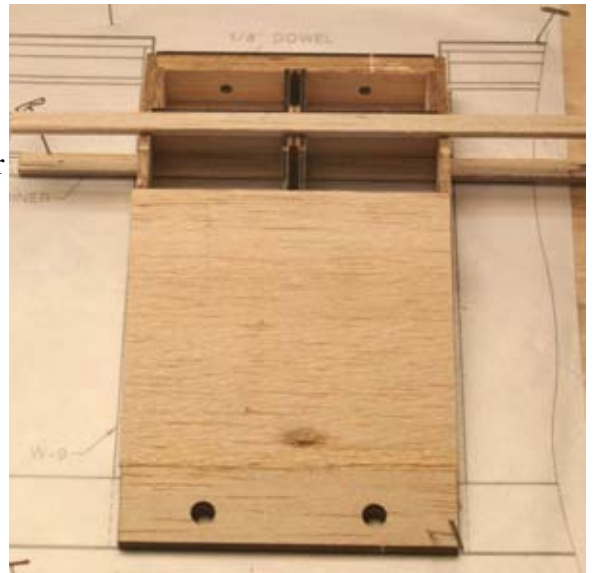
42...Place one W-6 into position. The small "X" should be near the top. The holes should be closer to the bottom than the top. It should be in full contact with the W-5's, W-1 and W-4. When properly positioned, glue it in place.



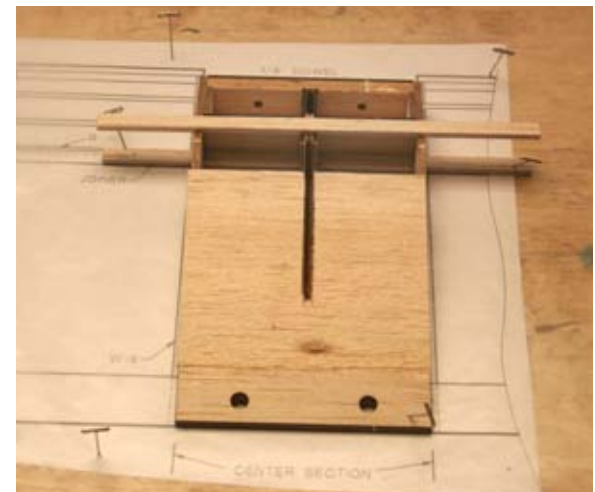
43...Glue the other W-6 into position on the front of the first. Then glue W-7 into position on the front of the W-6's.



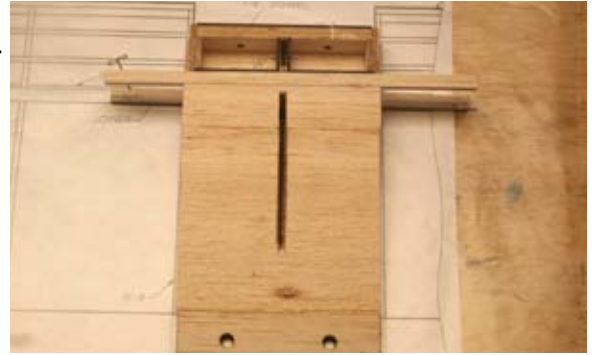
44...Cut a piece of 3" x 1/16" sheet and glue it to the top of the center section as shown. It should be placed to the rear against W-3.



45...Cut out the slot for the motor pylon from the sheet between the two W-1A ribs.



46...Cut a piece of 3" x 1/16" sheet and glue it to the top of the center section between the first sheet and the top spar. When the glue is dry, cut the pylon slot in this sheet.



47...Cut a piece of 3" x 1/16" sheet and glue it to the top of the center section between the top spar and the front of W-7. When the glue is dry, cut the pylon slot in this sheet.



48...Sand a taper on the two W-3A's as shown. Slide them between the two W-3.s to fill the gap. The holes should line up. Glue them in place.



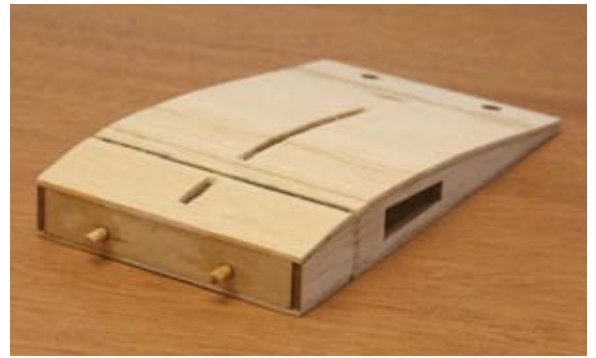
49...Cut, fit and glue the remaining 1/16" x 3" sheet to the bottom of the center section as you did the top sheet.



50...Trim and sand the spars and sheet flush with the W-2 ribs. Sand the bottom sheet smooth. Do not sand the top sheet at this time. Sand the top and bottom sheet flush with the front of W-7.



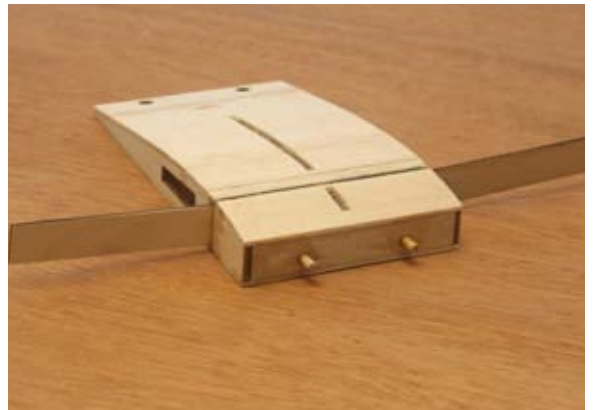
51...Cut two pieces of 1/8" dowel to a length of approximately 3/4". Insert them into the holes in W-7. They should stick out 1/4". Securely glue the dowels into position.



52...Cut open the 1/16" wide slots in the W-2 ribs between the dashed lines.

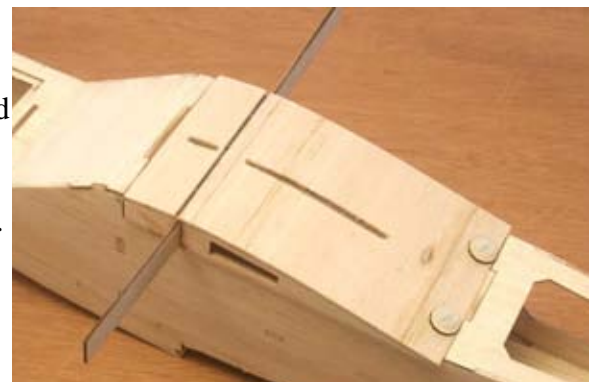


53...Slide the two joiners into the slots in the W-2 ribs. The outboard ends of the joiners should angle up. The top outboard corner of the joiners is cut off at a 45 degree angle. Securely glue the joiners to the top and bottom spars, shear webs "A" and the W-2 ribs.



54...Test fit the wing center section onto the fuselage. You can adjust the holes in F-2 if required for a good fit. Sand the back end if required to fit tightly down into the step in the fuselage.

Place the W-3B discs onto the nylon screws and thread them into place. Glue the W-3B's to the top of the center section.



55...Sand the top of the center section and F-20 smooth, blending them for a smooth transition between them. Remove the center section from the fuselage. Sand the fuselage smooth all over. Round the corners on the top of the fuselage. Leave the corners square on the bottom of the fuselage.



56...Cut openings in the bottom sheet for the aileron servo wires as shown here and on the plan.



Building the Left Wing:

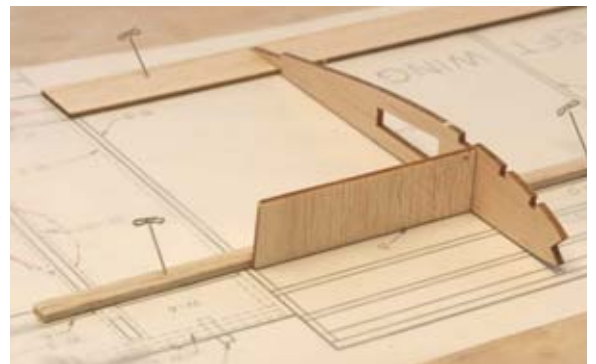
57...Cover the left wing plan with wax paper to prevent the parts from sticking to the plan.



58...Pin the lower $\frac{3}{32}$ " x $\frac{1}{4}$ " x 24" lower main spar to the plan. Let the ends extend past the W-9 ribs and the wing tip. Pin the W-8 trailing edge to the plan. Align the trailing edge at the inboard end of the aileron cutout. The trailing edge will be slightly long at the W-9 rib and the wing tip,



59...Pin and glue rib W-10 into position on the bottom spar 90 degrees to the building board.

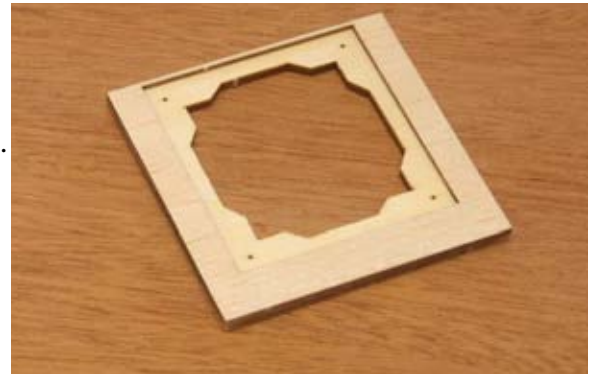


60...Glue shear web "B" into position against the front face of the lower spar and rib W-10 as shown on the plan. The small "X" on the shear web marks the top outboard corners of the shear webs.



61...Pin and glue rib W-9 into position. The top of the rib should angle slightly toward the wing tip and be in full contact with the shear web.

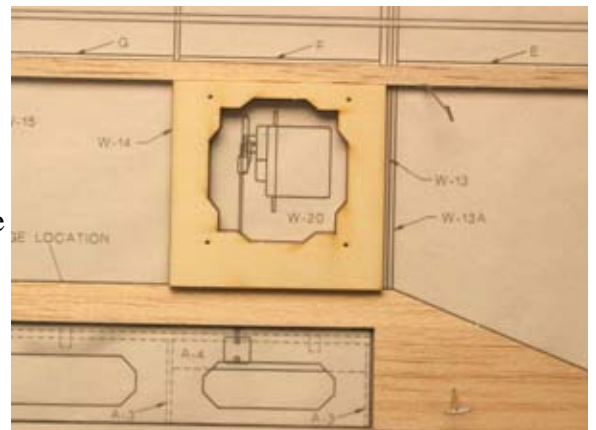
62...Glue W-19A to W-19. The outside edges should be flush all around. The wide edge of W-19A should be on the wide edge of W-19.



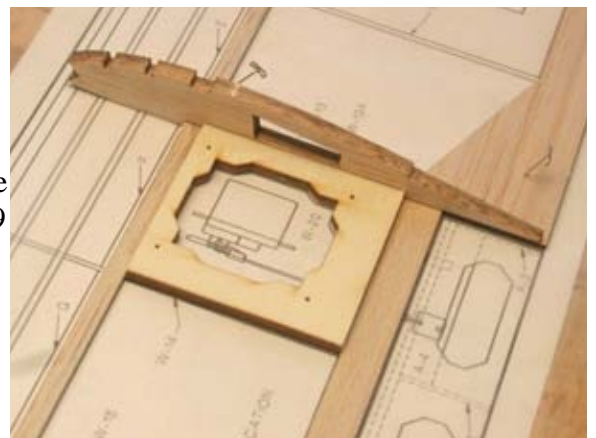
63...Glue W-13A to the inboard face of W-13. Glue W-13B to the outboard face of W-13. Be sure to make a right hand version when you build the opposite wing. This photo shows the buildup for the left wing.



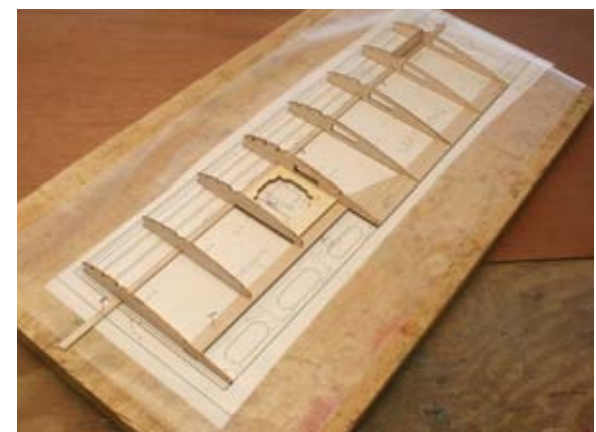
63...Place W-19 in position between the main spar and the trailing edge. W-19A should be on the bottom. The outboard edge should be flush with the outboard edge of rib W-14. The inboard edge should be flush with the inboard edge of W-13B. When properly positioned, glue it to the spar and trailing edge.



64...Place W-13 into position. W-19 should fit into the cutout in W-13B so W-13B sits on top of W-19. The back end should be flush with the edge of the aileron cutout. The rib should be 90 degrees to the building board. When properly positioned, glue to the main spar, W-19 and the trailing edge.



65...Pin and glue ribs W-11, W-12, W14, W-15 and W-16 into position. They should be 90 degrees to the building board.



66...Glue the 3/32" x 1/4" top spar into position. Glue the 1/4" sq. leading edge into position in the notches in the front of the ribs.



67...Glue two W-18's together. Put into position and glue to the ribs and bottom trailing edge sheet between ribs W-13 and W-16.



68...Place the top trailing edge sheet into position and glue into place.



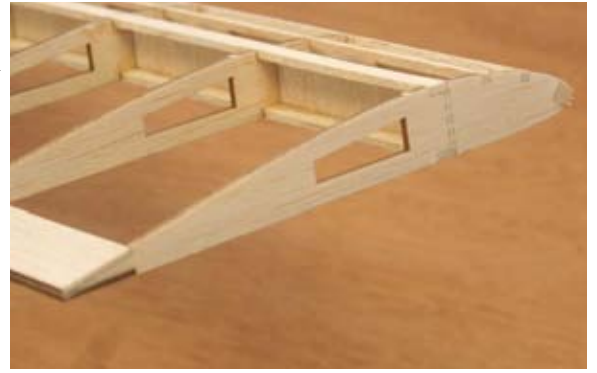
69...Glue the remaining shear webs (C thru G) into position. Trim the ends to get the proper fit if needed.



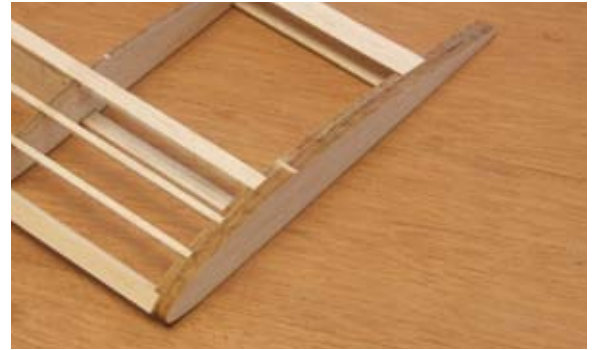
70...Glue the 3/32" sq. stringer spars into position.



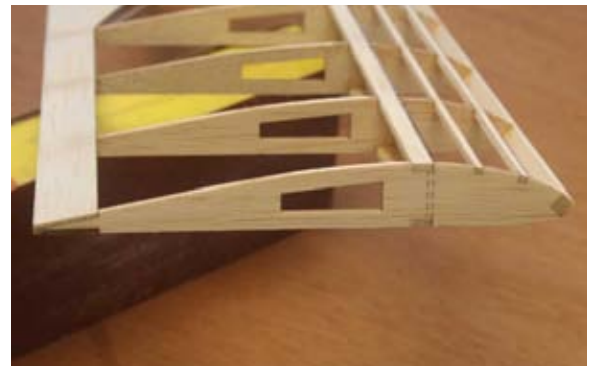
71...Remove the wing from the plan. Trim the spars, leading edge and trailing edge flush with each end of the wing.



72...Glue the two W-17 ribs to W-16, making the wingtip.



73...Sand the leading edge of the wing round to match the profile shown on the plan. Sand the trailing edge and the edges of the wing tip round. Leave the edges of the aileron cutout square. Now sand the wing smooth all over.



Repeat steps 57 thru 73 to build the right wing.

Building the ailerons:

Build the left aileron.

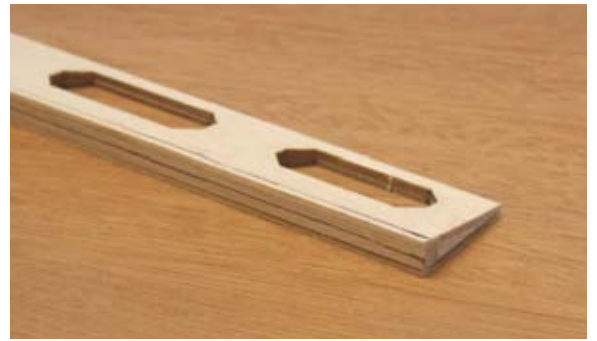
74...Glue two A-2's together. Glue the A-2 onto and flush with the front of A-1B. Glue the A-3's into position. Glue A-4 between the two A-3's on the inboard end of the aileron.



75...Trim an angle on the top of the A-2's to match the angle on the top of the A-3's.



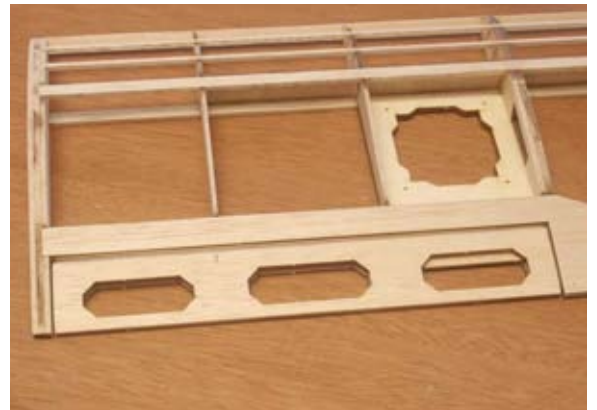
76...Glue A-1T onto the top of the aileron. Sand the ends, front, top and rear of the aileron flush. Draw a line centered on the front of the aileron. Draw a line 1/8" back from the leading edge on the top and bottom of the aileron.



77...Use these lines as a guide to trim or sand the proper angles on the front of the aileron as shown on the plan.



78...Mark a line centered on the back of the aileron spar (W-18). Mark the hinge locations and cut slots for the hinges. Temporarily install the hinges and check the aileron for proper fit on the wing. Do not glue the hinges at this time.

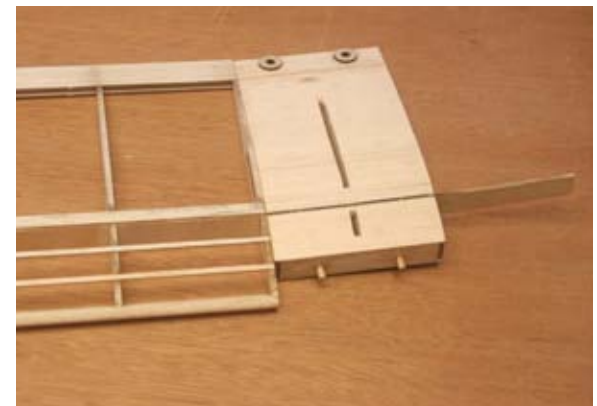


79...Repeat steps 74 thru 78 to build the right aileron.

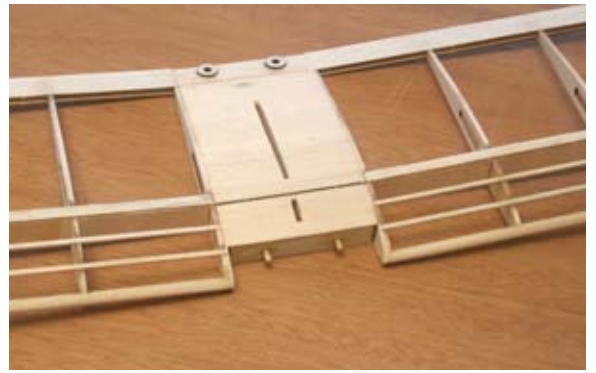
80...Cut slots in both W-9 ribs at the dashed lines to accept the wing joiner.



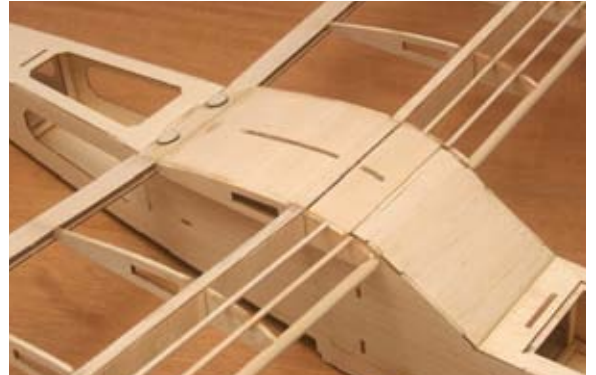
81...Slide the wing joiner on the center section into position in the right wing. Position it tightly between the spars and forward against the shear web and glue the right wing to the center section. Glue the joiner to the shear web and the top and bottom spars and glue the rib to the center section.



82...Slide the wing joiner on the center section into position in the left wing. Position it tightly between the spars and forward against the shear web and glue the left wing to the center section.



83...Sand the joint between the wings and the center section. Test fit the wing onto the fuselage and sand the wing as required to produce a good fit if needed.



84...At this point there should be gaps between the fuselage sides and the wing leading edges.



85...Use 1/16" sheet glued to the end of the W-9 ribs to fill these gaps. Sand the sheet so there is about a 1/32" gap between the ribs and the fuselage. This small gap is needed to allow for the thickness of the covering material.



Building the Tip Floats:

86...Glue T-1 and T-2 together.



87...Glue T-3, T-4, T-5 and T-6 to T-2. Make sure that these parts are straight and square to T-2.



88...Slide T-7 down over T-1. Pull the back end of T-7 down and glue it to T-6. Pull the front of T-7 into contact with T-3. Now glue T-7 to T-3, T-4, T-5 and T-2.



89...Glue T-8 to the bottom of the tip float.



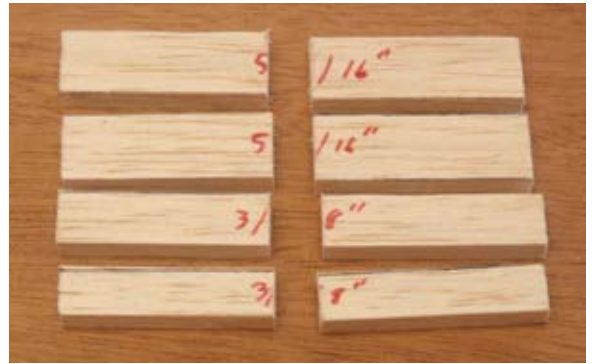
90...Glue the T-9's to each side of the floats. The T-9's will be a little oversize so just center them front to back and top to bottom. Trim or sand the T-9's flush with the top, bottom, front and back of the float.



91...Cut two 5/16" wide strips from the remaining 1/4" balsa sheet. Cut the remaining piece in half to make two 3/8" wide strips.



92...Cut these strips in half as shown.



93...Glue two of the 5/16" pieces to the front of each float. Glue two of the 3/8" pieces to the back of each float.



94...Sand the front and rear of the tip floats to the shape shown on the plan. Then sand the sides flush.



95...Test fit the tip floats into the W-13 ribs.



Building the Motor Pylon:

96...Press the four 4-40 blind nuts into the holes in the firewall (P-1). Secure them with a small drop of thin C/A glue.



97...Slide P-2 into the slot in P-3. Place P-1 on the front of P-2 / P-3 and glue securely into place. Glue the P-4's to the side of P-3.



98...Sand the front and back edges of the P-4's round. Test fit the pylon onto the wing. It should sit down tightly against the top of the wing.



Covering:

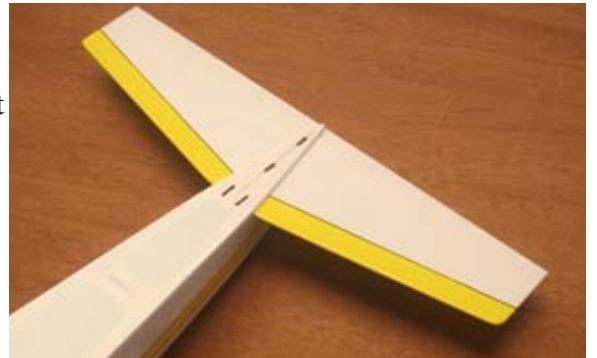
99...Sand all parts smooth with 400 grit sandpaper. Feed strings from the aileron servo mounts to the center section. You will use these strings to pull the servo wires thru the wing after the model is covered. Cover the model with a light weight iron on covering material.

Note: After the model is covered you must check the tail surfaces and wings for warps or twists. If there are any they can be removed by twisting the parts straight and heating the covering.

Final Assembly:

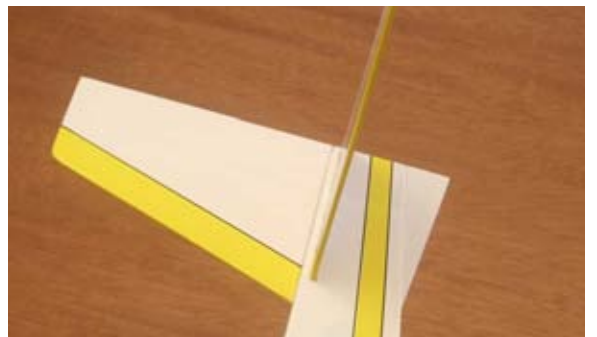
100...Cut the covering away from the stabilizer slot in the fuselage. Cut the covering away from the stabilizer in the area that makes contact with the fuselage.

Place the stabilizer into position in the fuselage. Make sure that it is straight and square and then glue it into position.

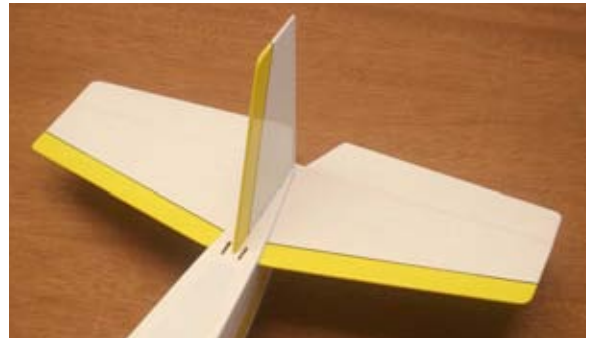


NOTE: The photos in the following steps are of an early prototype and the dorsal fin (F-1) is not shown in the photos. It will be on your model.

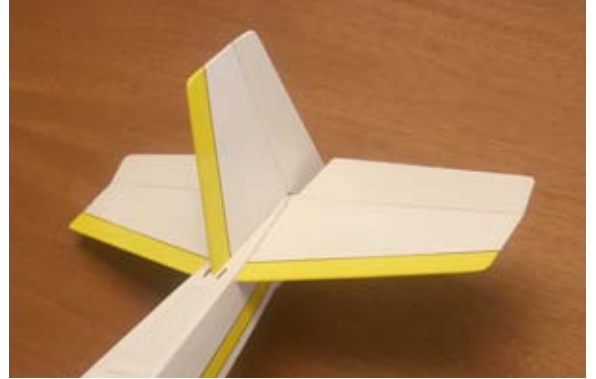
101...Carefully cut the covering away from areas on the fin that will make contact with the fuselage. Place the fin into position and make sure that it is straight and square. Glue the fin into position.



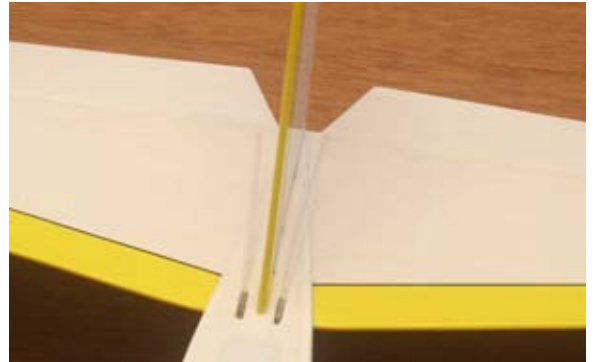
102...Attach the elevators with the hinges and glue in place.



103.....Attach the rudder with the hinges and glue in place.



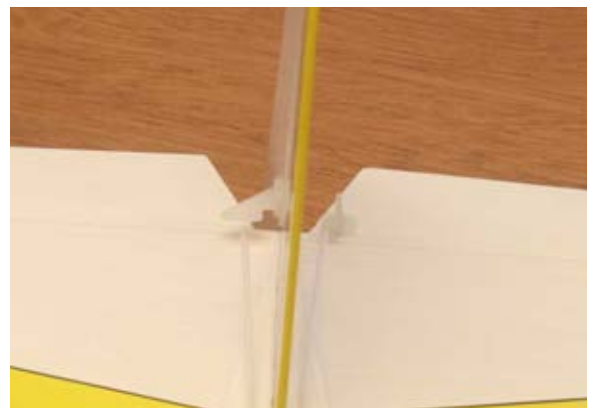
104...Insert the pushrod housings into the exit slots in the back of the fuselage. They should extend out about 2" from the fuselage top.



The front ends of the pushrod housings should pass thru the slot in former F-4. Glue the housings to the rear exits. Do not glue the front ends to the former at this time.



105...Glue the rudder and elevator control horns into position. Drill 1/16" holes for the pins to pass thru. When the glue is dry, cut off the excess pins flush.



106...Screw the servos to the servo tray.



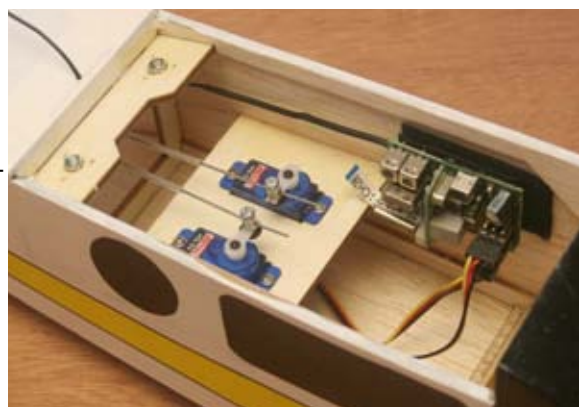
107...Install the pushrods into the housings. Secure the rear of the pushrods with Mini E/Z Links.



The front ends of the pushrods are attached to the servos with Mini E/Z Connectors. Glue the pushrod housings to former F-4.



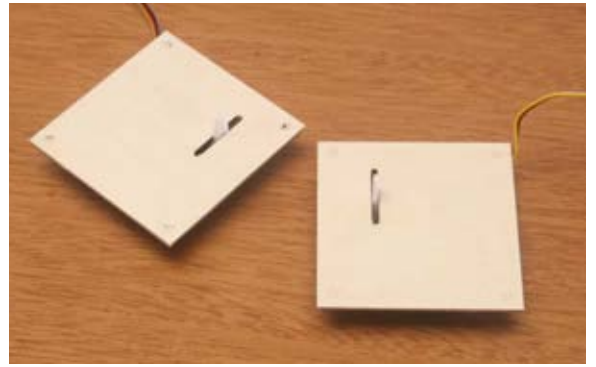
108...Secure the receiver to the fuselage with velcro. Plug the servos into the receiver. Run the antenna out thru a hole in the top of the fuselage just behind the wing. Secure the rear of the antenna to the top of the fin.



109...Glue the servos into position on the W-20 mounting plates. The servo arms should be angled 90 degrees to the plate when the servo is in neutral. Be sure to make a left and a right hand assembly.



The servo arms should be centered in the slots in the plate when the servo is in neutral.



110...Screw the servo mount plates to the W-19's. The servo arms should be forward and inboard as shown. Use the strings in the wing to feed the servo wires through the wing and out the center section.



111...Attach the ailerons to the wing with the hinges and glue in place.



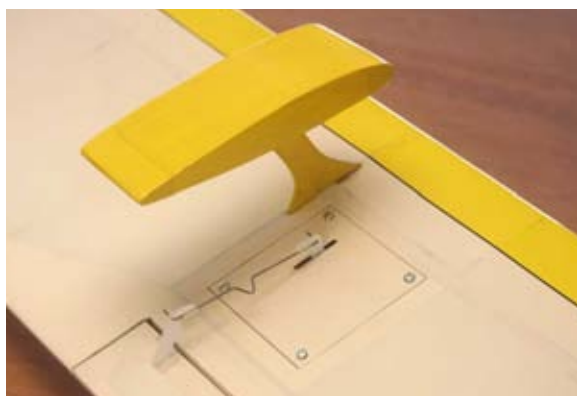
112...Glue the aileron control horns to the bottom of the ailerons in the position shown on the plan. Drill 1/16" holes for the pins to fit into.



113...Bend the aileron pushrods to the shape shown on the plan. Install the pushrods and attach to the servos and control horns with Mini E/Z Links.



114...Glue the tip floats to wing.



115...Trim the nacelle on the trim lines as shown. The bottom edge is 1/16" shorter than the top edge.



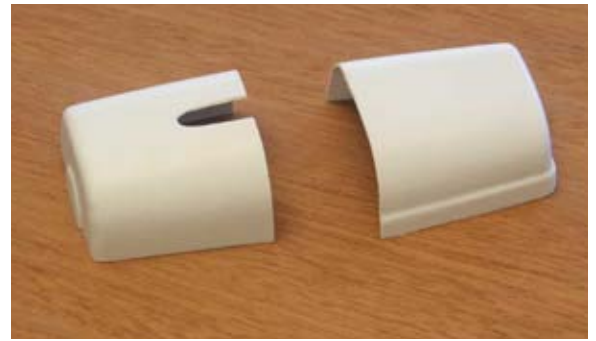
116...Glue the nacelle sides to the pylon. The plastic pieces should be centered on P-3 on top. The bottom edge is down against P-3 and not on top of P-4.



117...Trim the cowl halves on the lines as shown.



118...Tape the cowl halves together with the bottom piece inside the top. Test fit to the pylon to make sure the cowl slips over the nacelle. Glue the upper and lower cowl halves together. Trim the prop shaft opening in the front.



119...Attach the metal motor mount to the motor. Bolt the motor to the firewall with 4-40 screws and aluminum tube spacers. Use a thread locker on all of these screws.



120...Fit the cowl onto the pylon. Center the prop shaft in the front and make sure the cowl is far enough back to allow propeller clearance. Secure the cowl to the nacelle with 4 Small drops of thick C/A. You can cut it free with an xacto knife if access is needed in the future.



121...Securely glue the pylon to the wing.



122...Cut a hole in the top and bottom wing sheet for the motor wires. Pull the wires from the speed control up thru the bottom of the wing and attach them to the motor wires. Seal the wires in hole with silicon rubber.



123...Let the speed control hang from the wires when attaching the wing to the fuselage. Plug the aileron servos in to receiver.

124...WITH THE PROPELLER REMOVED...Turn the transmitter on. Place the throttle stick in the low position. Plug the battery into the speed controller. Attach the wing to model. Check the motor for proper operation and direction of rotation. Follow the instructions with the speed controller to make any adjustments.

125...Check the servos for proper operation and direction. Adjust the control throws to the values shown on the plan. Now disconnect the battery and then turn off the transmitter.

126...Place the battery in the nose of the model. Attach the propeller. Attach the wing onto the fuselage.

127...Check the balance of the model. It should balance at the position shown on the plan. Move the battery forward or aft to achieve the proper balance. Use velcro to secure the battery in the model in this position. Note: If moving the battery will not achieve the proper balance, you will have to add weight to the nose or tail. Glue any weight securely to the model.

128...Your model is now ready to fly. Fully charge the transmitter and airborne battery before attempting to fly the model. Always range check and do a thorough pre-flight of the model before every flight. Always follow established safety guidelines while operating the motor, radio and flying your model.

LIPO BATTERY SAFETY ALERT

Lithium Battery Fires

Lithium batteries are becoming very popular for powering the control and power systems in our models. This is true because of their very high energy density (amp-hrs/wt. ratio) compared to NiCd's or other batteries. With high energy comes increased risk in their use. The principal risk is FIRE which can result from improper charging, crash damage, or shorting the batteries. All vendors of these batteries warn their customers of this danger and recommend extreme caution in their use. In spite of this, many fires have occurred as a result of the use of Lithium Polymer batteries resulting in loss of models, automobiles, and other property. Homes and garages and workshops have also burned. A lithium battery fire is very hot (several thousand degrees) and is an excellent initiator for ancillary (resulting) fires. Fire occurs due to contact between Lithium and oxygen in the air. It does not need any other source of ignition, or fuel to start, and burns almost explosively. These batteries must be used in a manner that precludes ancillary fire. The following is recommended:

1. Store, and charge, in a fireproof container; never in your model.
2. Charge in a protected area devoid of combustibles. Always stand watch over the charging process. Never leave the charging process unattended
3. In the event of damage from crashes, etc, carefully remove to a safe place for at least a half hour to observe. Physically damaged cells could erupt into flame and after sufficient time to ensure safety, should be discarded in accordance with the instructions which came with the batteries. Never attempt to charge a cell with physical damage, regardless of how slight.

4. Always use chargers designed for the specific purpose, preferably having a fixed setting for your particular pack. Many fires occur in using selectable/adjustable chargers improperly set. Never attempt to charge Lithium cells with a charger which is not specifically designed for charging Lithium cells. Never use chargers designed for Nickel Cadmium batteries.
 5. Use charging systems that monitor and control the charge state of each cell in the pack. Unbalanced cells can lead to disaster if it permits overcharge of a single cell in the pack. If the batteries show any sign of swelling, discontinue charging and remove them to a safe place outside as they could erupt into flames.
 6. Most important: NEVER PLUG IN A BATTERY AND LEAVE IT TO CHARGE UNATTENDED OVERNIGHT. Serious fires have resulted from this practice.
 7. Do not attempt to make your own battery packs from individual cells.
- These batteries CANNOT be handled and charged casually such as has been the practice for years with other types of batteries. The consequence of this practice can be very serious resulting in major property damage and/or personal harm.