

### Additional Parts Required

(4) or more channel radio with 7-8 servos.  
.91 - 2.2 two stroke or  
1.20 - 1.84 four stroke engine  
Appropriate Master Airscrew prop and Hayes  
mount for your engine.

3" Tru-Turn spinner and adapter  
Slimline Muffler

16 oz Sullivan tank

3 rolls Monokote covering

(1) pack medium fuel tubing (Dubro #222)

Tail wheel assembly (Ohio size M)

(2) 3" Skylite Wheels

(2) 5/32" x 2" axles (Dubro #248)

(4) 5/32" Wheel collars (Dubro #140)

Throttle Cable (Dubro #165)

(1) EZ connector (Dubro #121)

(4) pairs control horns (Dubro #716)

(1) pair fiberglass control rods (Dave Brown  
#PRDS-5400)

(2) Sullivan Pull-Pull Cables (Sullivan #507)

(2) 2-1/2" Nylon tape (Goldberg #451)

(1) 3/4" Nylon tape (Goldberg #450)

(16) Kwik hinges (Dubro #537)

(12) Hinge points (Robart #308)

(32) #2 Screws (Dubro #381)

(24) #2 Washers (Dubro #321)

(6) 2-56 x 3/4" screws (Dubro #311)

(6) 2-56 nuts (Dubro #168)

(4) #4 Screws (Dubro #383)

(6) 4-40 x 3/8 Socket head screws (Dubro #570)

(12) 4-40 x 1/2 Socket head screws (Dubro #571)

(22) #4 washers (Dubro #323)

(6) 4-40 Nylon lock nuts (Dubro #170)

(12) 4-40 blind nuts (Dubro #606)

(2) 6-32 x 3/4 Socket head screws (Dubro #576)

(2) #6 Washers (Dubro #325)

(2) 6-32 Blind nuts (Dubro #136)

(6) 8-32 Blind nuts (Dubro #347)

(10) #8 Washers (Dubro #327)

(10) 8-32 x 1-1/4" Socket head screws (Dubro  
#319)

(2) 1/4-20 x 1" bolts (Dubro #645)

(2) 1/4 washers (Dubro #650)

(2) 1/4-20 Nylon lock nuts (Dubro #652)

(8) 4-40 Clevis (Sullivan #526)

(12) Solder links (Dubro #604)

(4) Kwik links (Dubro #122)

(8) 4-40 control rods (Dubro #144)

(8) 2-56 control rods (Dubro #172)

### Glue

Pink Zap

Green Zap

30 Minute Z-poxy

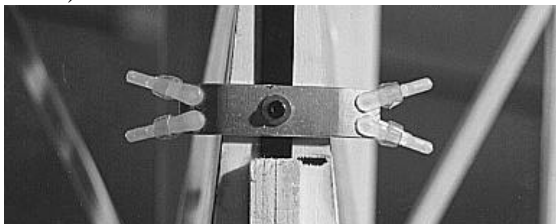
Formula 560 or Zap-a-Dap-a-Goo for mounting  
canopy

Z-42 thread locker

Solder and iron



7. Install the tail brace wires on the tail of the plane using the modified solder links (as shown on plans) (Dubro #604), (6) 2-56 x  $\frac{3}{4}$  screws (Dubro #311), (6) 2-56 nuts (Dubro #168), and 2-56 rods (Dubro #172) on the fin and horizontal portion of the plane, and with the threaded portion on the bottom tied into the tail wheel assembly with (4) kwik links (Dubro #122).



Assemble the nylon links and aluminum strip as illustrated.

8. Cut a  $\frac{1}{4}$ ' piece of fuel tubing (Dubro #222) to fit over each plastic clevis and install the metal retaining clips on each metal clevis.
9. Assemble your fuel tank as per the manufacturers instructions. Install the fuel tank in the inside of the engine box and cushion it with latex foam. Install an appropriate fuel line to the tank, carburetor and pressure lines.
10. If desired, install a pilot of your choice in the cockpit, and finish the cockpit to look as you want.
11. Trim the canopy along the lines scribed in the part, then glue in place with Zap canopy cement or goo. Run a piece of striping tape around the edge of the canopy.
12. Install an appropriate balanced Master Airscrew prop and spinner on your engine.

13. Install your battery and receiver, wrapped in foam, in the inside of the fuse.
14. Install both the upper and lower wings with the appropriate fasteners and servo connectors.
15. Check the balance of the plane. It should balance at  $\frac{1}{2}$  behind the leading edge of the bottom wing. Shift the receiver and battery in the fuselage to help balance the plane.
16. Fasten the battery and receiver inside the fuse with rubber bands or nylon zip ties to hold them in place.

### Control throws for initial flights

Recommended control throws for your Ultimate Pitts are measured from the point furthest from the hinge line of the surface.

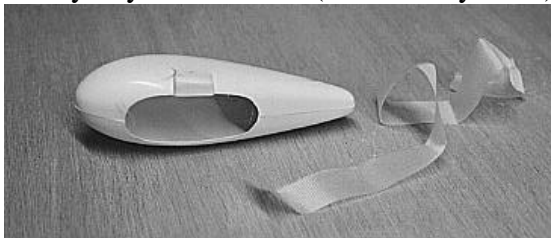
Rudder: Low rate - 3- $\frac{1}{4}$ " each way  
High rate - all you can get

Elevator: Low rate - 1- $\frac{3}{8}$ " each way  
High rate - 2- $\frac{1}{4}$ " each way

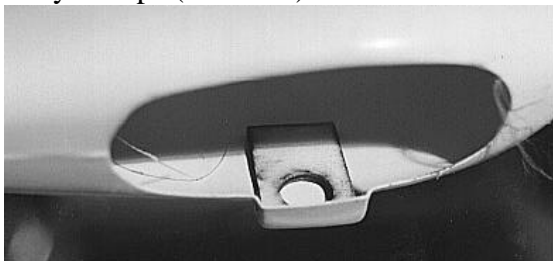
Ailerons: Low rate -  $\frac{1}{2}$ " each way  
High rate -  $\frac{3}{4}$ " each way

The initial CG point is  $\frac{1}{2}$  behind the leading edge of the lower wing. You may wish to adjust this later to suit your flying style.

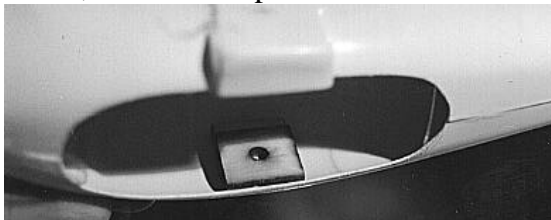
17. Using a Dremel tool with a sanding drum, trim a more exact opening in the wheel pants to closely fit your 3" wheels (Sullivan Skylite 3")



18. Reinforce the joint between the two halves with  $\frac{3}{4}$ " nylon tape (CG #450) and CA.



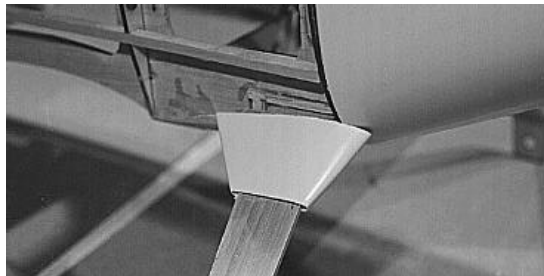
19. Glue the axle mounting blocks in place with CA on both sides of the pants. Glue the inboard block in place first, reinforce it with nylon tape and CA, then trim the plastic from the axle hole.



Use the outer hole and the axle to help position the outer block, then install it in the same manner. Trim the axle (Dubro #248) to fit in the wheel pants with a hacksaw or a Dremel tool and cut off wheel.

20. Trial fit the pants on the landing gear, then mark and drill a  $\frac{1}{8}$ " hole about  $\frac{1}{4}$ " above the axle through the landing gear and into the pants, keeping the pants properly aligned. Insert a 4-40 blind nut (Dubro #606) in the hole, inside the wheel pants, and hole in place on the landing gear with a 4-40 x  $\frac{1}{2}$ " cap head screw (Dubro #571) and #4 washer (Dubro #323). Center the wheel in the pants using (2)  $\frac{5}{32}$ " wheel collars (Dubro #140) on each axle.

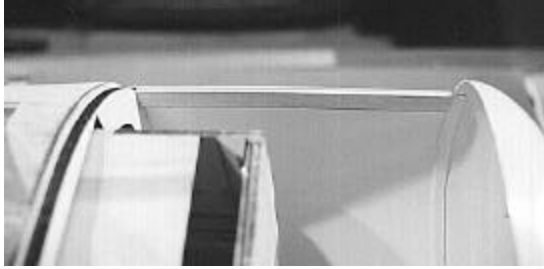
21. Sand the joints of wheel pants and on the cowl as smooth as possible, then fill in any voids with Bondo or similar filler material.



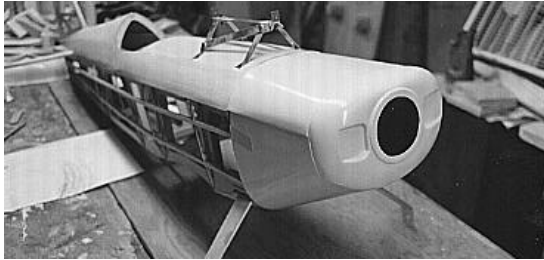
22. Trial fit the landing gear fairings on the landing gear against the fuselage sides. Trim the inside edges to match the contour of the fuselage with a Dremel tool and sanding drum.

### Covering and assembly

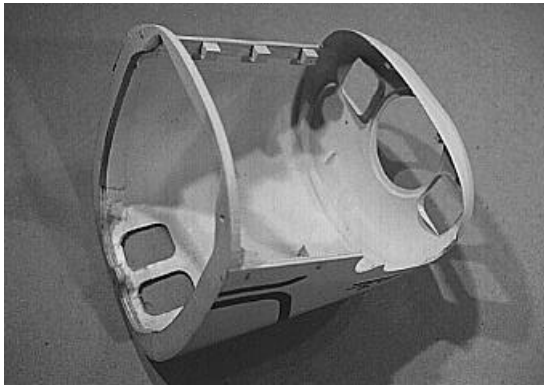
1. Cover your Ultimate Pitts per the instructions included with your covering. You will need at least 3 rolls of covering to do the entire plane.
2. Paint the wheel pants, fairing and cowl to match your covering with a model paint compatible with ABS.
3. You may want to apply a strip of 2-1/2" nylon tape (Goldberg #451) across the firewall and onto the former A to reinforce the engine box. Glue the tape in place with CA.
4. Fuel proof any exposed wood with fuel proof paint or clear polyurethane. Make sure you fuel proof the wood on the cowl parts, around the landing gear, and any edges of the covering on the former A.
5. Reinstall your engine, muffler, and radio equipment that may have been removed.
6. Install the cowl, landing gear, fairing (held in place with a dab of silicone or goo), wheels, pants, and tail wheel assembly.



7. Test fit, then glue the CR3 cowl side strips and CR4 reinforcements on the insides of the cowl.



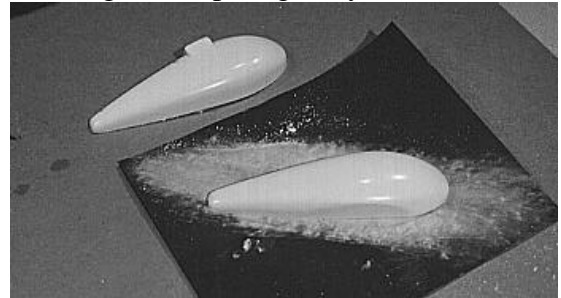
8. Trim and position the cowl top hatch on the cowl already in position. Tape in position on the cowl when satisfied with the fit.
9. Remove the cowl from the fuselage, leaving the top hatch taped to the cowl. Carefully glue the CR2 hatch plate to the cowl top hatch with CA and plastic kicker, without gluing the hatch to the cowl.



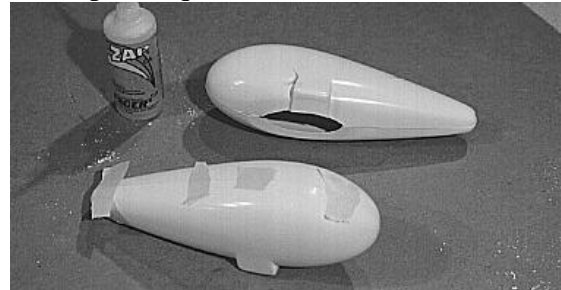
10. Glue the (8) cowl screw blocks in place as indicate on the plans. Some of the blocks may be eliminated if they interfere with the engine.
11. Using CA and 2-1/2" nylon tape (Goldberg #451) reinforce all the joints and junctions of the plastic, and the plastic to wood, inside the cowl. Also reinforce the back side of the cowl hatch where the screws will go through to hold the hatch to the cowl.
12. Locate the cowl back on the fuselage and tape in position again. Using (4) #4 cap head sheet

metal screws (Dubro #383), and (4) #4 washers (Dubro #323), attach the cowl to the former A. Position (2) screws about 1/2" down from the side edge of the cowl, and (2) from the back side, from inside the landing gear area into the cowl ring CR1.

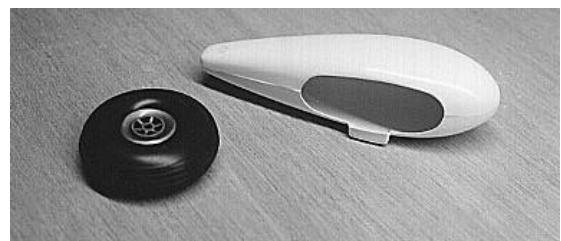
13. Reinstall the cowl top hatch and drill 1/16" pilot holes for the (8) #2 screws (Dubro #381) and (8) #2 washers (Dubro #321) that hold the hatch in place, then trial fit the screws and hatch.
14. Reinstall your engine and muffler to aid in the trimming of the opening for your muffler.



15. Lay a full sheet of 200 grit sandpaper on your building surface and sand all the edges of the wheel pants square.



16. Tape the mating halves together with masking tape, then glue together with thin CA. Open the bottom of the pants by cutting a rough hole with an x-acto knife.



- Using a Dubro throttle control cable (Dubro #165) and an EZ connector (Dubro #121), hook you throttle servo to the carburetor of your engine.
- Remove what radio components you need that will interfere with the covering of your plane. Tape a piece of string through each wing to be used to pull the aileron servo cables through the wing after it is covered.

### Cowl and Wheel pant assembly

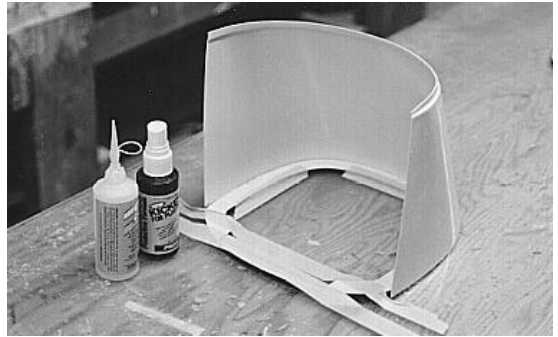
- Trim the (3) cowl part to the lines scribed on parts. Sand the edges smooth with 200 grit sandpaper.



- Cut the section out of the front portion of the cowl as indicated in the photo above with a sharp xacto knife. Sand the edges smooth with 200 grit sand paper or a dremel tool and sanding drum.



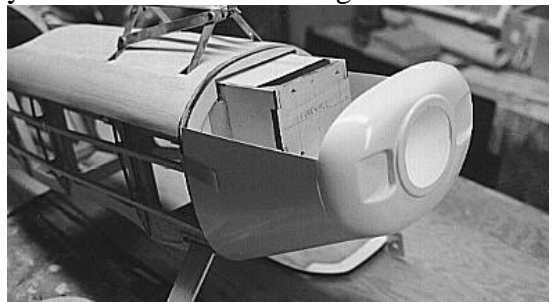
- Tape the CR1 cowl ring to your building surface with masking tape. Align the bottom cowl part to the alignment marks on the cowl ring. Check to make sure the sides are 90° to the building surface.



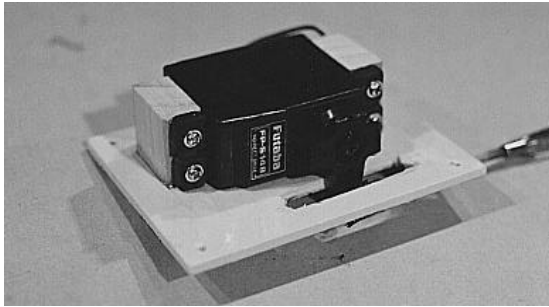
- When you are satisfied with the alignment, glue the plastic to the ring with CA and kicker for plastic.



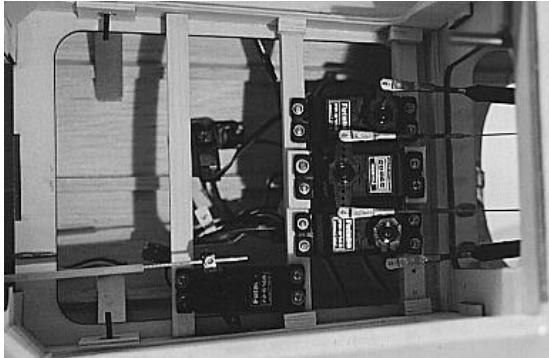
- Position and tape the front of the cowl on the lip of the lower cowl part. Measure from the inside of the hole cut for the engine to the building surface to make sure the distances are the same, adjust if needed. CA in place when you are satisfied with the alignment.



- Test fit the cowl on the fuselage. You may need to trim some of the 1/2 triangle stock away from the engine box to fit the cowl ring flush with the former A. Tape in position when you are satisfied with the fit.

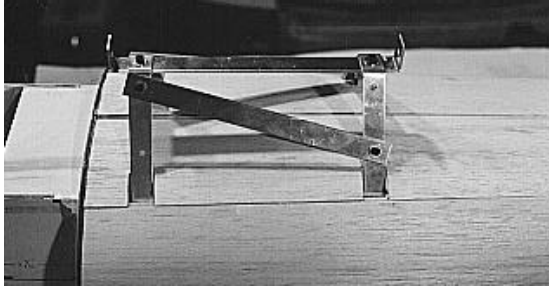


5. Use your servos as guides to locate the (8) 3/8" x 3/4 x 1" plywood servo blocks, and glue in place with 30 minute z-poxy.
6. When the z-poxy has cured, use the hardware included with your servos to screw them in place, then replace the plates back in the wings.

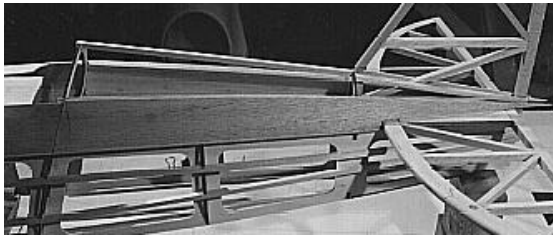


7. Locate the 3/8" square hardwood and cut (3) pieces to fit between the fuselage sides as shown above. Glue in place, spacing to fit your servos.
8. Cut (2) pieces of 3/8" square hardwood and glue it in the center of the two rear servo rails to raise the rudder servo above the elevator servos.
9. Space your servos apart so you have no interference from the control horns and mark their locations on the rails with a pencil. Drill pilot holes for the servo screws, then screw the servos down using their included hardware.
10. Temporarily install the control surfaces (4 ailerons, 2 elevator halves, and the rudder) with the hinge locations shown on the plans. The ailerons use kwik hinges (Dubro #537) and the elevator and rudder with small hinge points (Robart #308). **DO NOT GLUE THE HINGES YET!**

11. Examine the plans for the location of the (4) aileron control horns and the (4) elevator and rudder control horns (all are Dubro #716). Install the aileron control horn in place on the plywood plates, each with (2) #2 x 1/2 screws (Dubro # 381). Install the elevator control horns with their included hardware. For the rudder control horns, butt the two horn together and mark the location of one sides holes on the bottom of the other horn. Drill the marked holes with a 1/16" drill, and also drill the rudder for the same holes at the control horn location. Using the included 2-56 screws, screw the first control horn to the rudder, then thread the second control horn onto the screws using the holes you drilled previously.
12. Using an appropriate horn on the rudder servo, install the (2) rudder control cables (Sullivan #507) using the cable and hardware only, don't worry about using the yellow outer tube. Solder the couplers to the cable for a strong joint. The cables should have a small amount of flex, you don't want them too tight.
13. Install the elevator push rods (Dave Brown #PRDS-5400) with 4-40 control rods (Dubro #144) and (4) 4-40 clevis (Sullivan #526). Use loctite on the threads to keep the clevis in place. Use (2) push rods if you are using two elevator servos, or use (1) push rod and the "Y" connector if you use one elevator servo (*if you use only one elevator servo you must use a ball bearing high torque servo with at least 70 oz of torque.*)
14. Install the (4) 4-40 aileron control rods (Dubro #144) between the ailerons servos and control horns. Use (4) 4-40 clevis (Sullivan #526) on the control horn end, and z bends on the servo ends of the control rods. *Expert tip: instead of using z bends, you can use 4-40 links soldered on the servo end of the control rods.*



68. Using another piece of 1/16" x 3" x 24" balsa sheet, slide it under the wing center support and up against the former A. Slide the sheet down against the center support and mark the location of the (2) struts. Trim the balsa sheet to fit around the struts and butt against the lower balsa sheet, then trim to fit halfway across the center stringer. Also trim the sheet to a length of 18", then glue in place. Repeat for the other side.



69. As was done on the front of the fuselage, the rear is sheeted in the same manner. Carefully trim a piece of 1/16" x 3" x 24" balsa sheet to fit from former D2, to the rear of the fuselage, from the fuselage top, to the middle stringer. Trim a 3/8" notch in the sheet to clear the horizontal stabilizer and taper the sheet to the back of the tail. Glue in place, then repeat for the other side.



70. Now trim another piece of 1/16" x 3" x 24" balsa sheet to fit from former D2 to the rear of the fuselage, from the middle stringer to the center stringer. You may need to dampen the balsa sheet with water on one side to aid in bending it over the formers. Notch the sheet

to clear the fin, and fit it so it only covers half of the center stringer. Glue in place, then repeat for the other side.



71. Using 1/16" x 3/8" balsa cap strip, cut (2) pieces to fit on the base of the fin, against the fuselage sheeting. This will give you an area to attach covering on the base of the fin. Sand the front to the radius profile of the fin LE
72. Lightly sand the balsa joints over the stringers and fill in any gaps with balsa filler.

### Radio Installation

Follow the manufacturer instructions on the installation of servos and other hardware.

1. Locate the (4) aileron servo plates and hold them in position on the wings with masking tape.
2. Glue (4) 1/2 x 1/2 x 3/4 plywood blocks in the (4) corners of each aileron plate, being careful to only glue the blocks to the ribs and not the aileron plates.
3. Using a 1/16" drill bit, drill (4) holes into each aileron plate, in the corners over the plywood blocks. Using (16) #2 x 1/8 screws (Dubro #381) and (16) #2 washers (Dubro #321), screw each plate to the wing.
4. Label each plate for location, then remove the plates from the wings.



it to fit former D2 later. Glue in place. Cut (2) 1/4' sqr. balsa stringers to span from formers D2 to the rear of the fin. Sand the rear 4-5" of the (2) stringers to a taper, then glue in place.

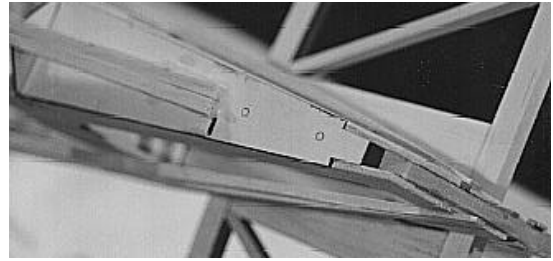
63. Cut (2) 1/4' sqr. balsa stringers to fit along the edges of the fuselage top between formers D2 and F2, then glue in place.



64. Cut (2) small pieces of 1/4' sqr. balsa stringers to the length between the rear of the fin and the back of former F2. Sand the stringer to a taper and to match the curve of former F2, then glue in place. Cut (2) more short pieces to fill in between the former F2 and the rear of the fuselage along the top of the horizontal stabilizer.



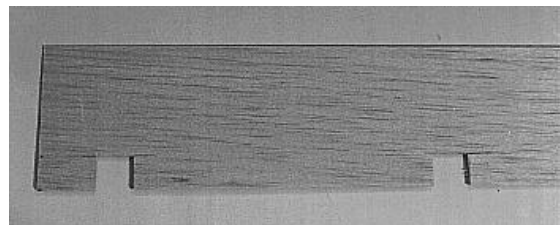
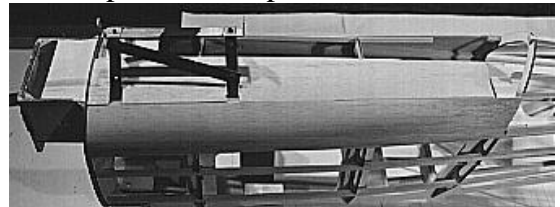
65. Locate the (4) 1/4' x 42" sqr. balsa stringers and trim them to the approximate length of the fuselage, then glue in place in the (4) sets of notches on the fuselage sides. Glue the rear of the stringers as shown, pulling the lower stringer to the upper one, then sand them flush with the rear of the fuselage, and taper the last 4-5".



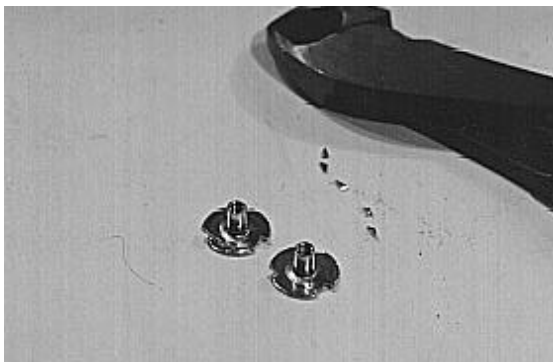
66. Temporarily install your tail wheel assembly (Ohio size M) on the tail plate. Mark and drill (2) 1/8" holes, using the tail wheel assembly as a guide, then install with (2) 4-40 x 1/2 screws (Dubro #571), (2) #4 washers (Dubro #323) and (2) blind nuts (Dubro #606) in the fuselage. Remove the tail assembly until the plane is covered later.



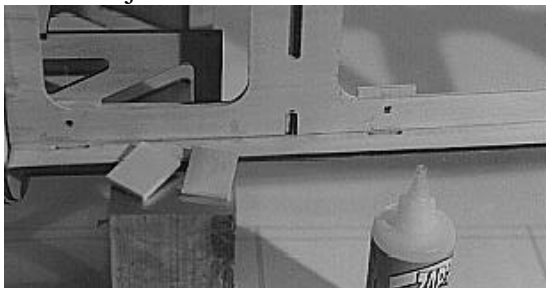
67. Using a piece of 1/16" x 3" x 24" balsa sheet, carefully measure, trim, and fit a piece to sheet between the balsa stringers on top of the fuselage and the next stringer up, from former A back to D2 as shown in the photo. (You may want to trace the part onto another piece of balsa for use on the opposite side of the fuselage before you glue it in place) Glue in place, then repeat for the other side.







55. Using a pair of wire cutters or a dremel tool and sanding drum, remove about half of the 3 spikes on (2) 6-32 blind nuts (Dubro #136). You want just enough teeth on the blind nut to keep it from turning.
56. Thread the modified blind nuts onto the 6-32 upper wing bolts, then tighten the bolts to set the blind nuts. Put a drop of CA on each blind nut to secure it in place.
57. With both wings in place, check that both wings cords are parallel to each other, and that they are both at 0° incidence to the fuselage top. An incidence meter would be good here, but a ruler will do. Measuring from the center of the LE and TE of both wings and the top of the fuselage, each measurement should be the same. Adjust if needed.



58. With the top wing aligned properly, mark the (4) holes in the bottom of the upper wing center support on the fuselage sides. Locate the (4) plywood wing support reinforcements W3 and glue them inside the fuselage sides, directly behind the mark for the wing center support.
59. Remove the wings and the center support, then drill (4) 1/8" holes at the marks made for the center support.



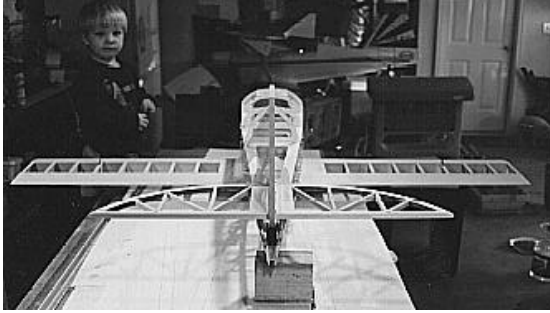
60. Reinstall the center support and bolt in place using (4) 4-40 x 1/2 socket head cap screws (Dubro #571), (4) #4 washers (Dubro #323), and (4) 4-40 blind nuts (Dubro #606). Use loctite on the threads.



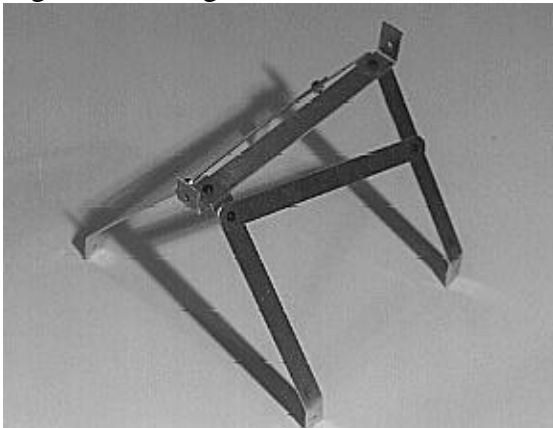
61. Locate the 1/4" x 36" sqr. balsa stringers. Cut (1) to a length of 14" and glue in place in the center notches of former B2, C2, and butted against A. Cut (2) lengths of 1/4" balsa sqr. to 16" and glue to the (2) notches closest to the center of the formers B2, C2 and butted against A. These stringers go on the outside of the center wing support. Cut (2) more 1/4" balsa stringers to a length of 18-3/4" and trial fit, then glue in the remaining notches of the formers B2, C2, butted against A, and along the edge of the fuselage top, all the way back to former D2. Sand the stringers level with the formers.



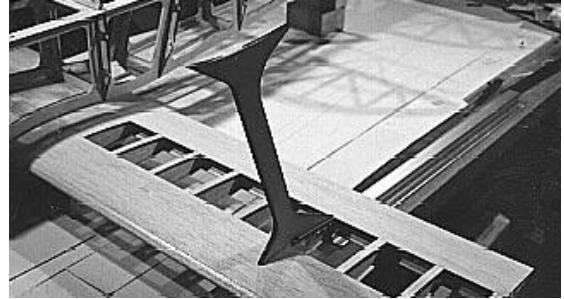
62. Using the same 1/4" x 36" sqr. balsa stringers, and using one of the harder pieces, cut a piece to fit the distance between the center notch of D2 and where the former F intersects with the fin. Cut the piece a little long, as you can trim



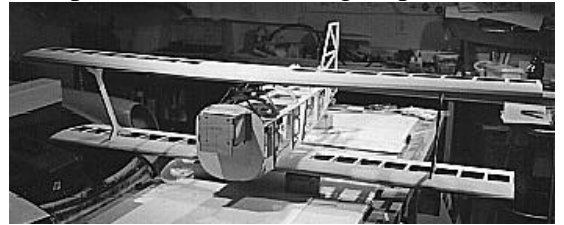
49. After the horizontal stabilizer has set, locate the vertical fin and trial fit it in place with the tail post in the slot between the fuselage sides. Align the fin with the center line of the horizontal stabilizer and check with a square that it is 90° to the stabilizer. Mark the position of the fin, then glue in place with 30 minute z-poxy. Make sure it maintains alignment as the glue cures.



50. Assemble the upper wing center support with (6) 4-40 x 3/8 socket head cap screws (Dubro #570), (6) #4 washers (Dubro #323) and (6) 4-40 nylon lock nuts (Dubro #170), as illustrated above and on the plans. The "V" shaped parts are identical, so orientation does not matter. The front will be the end with the side braces closest to the top "U" shaped support. Also note that the "U" shaped support is attached from the under side of the "V" shaped part.



51. Install the previously assembled wing struts on the lower wing with (2) 4-40 x 1/2 socket head cap screws (Dubro #571), (2) #4 washers (Dubro #323), and (2) 4-40 blind nuts (Dubro #606). Mark the holes to be drilled in the struts by placing the struts on the R-4 tab, then mark through the hole with a pencil, then drill with a 7/64" drill bit. Install so the blind nuts are pulled into the R-4 rib tab in the wing. You may wish to install the blind nuts into the tab first with just the screw and washer, then re-install the strut afterwards.
52. Insert the upper wing center support into the slots provided on the fuselage top.



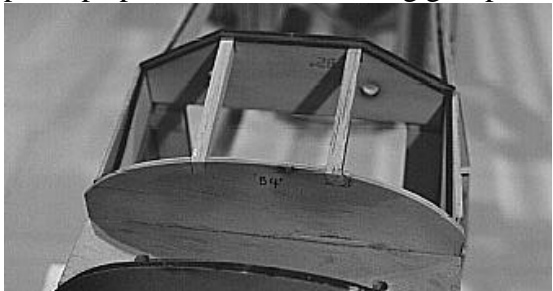
53. Install the top wing on the wing struts and install (2) 4-40 x 1/2 socket head cap screws (Dubro #571), (2) #4 washers (Dubro #323), and (2) 4-40 blind nuts (Dubro #606) as was installed on the lower wing.
54. Insert (2) 6-32 x 3/4 socket head cap screws (Dubro #576) and (2) #6 washers (Dubro #325) through the holes in the "U" shaped center support and into the holes in the upper wing support tabs.



43. Center the landing gear on the landing gear plate and push it against the former A. Using a pencil, mark the (2) 1/4" holes in the landing gear on the plate. Remove the gear, then drill (2) 1/4" holes on the marks. Place the landing gear back on the fuselage and pin in place with the (2) 1/4"-20 x 1" bolts (Dubro #645), (2) 1/4" 20 nylon lock nuts (Dubro #652) and (2) 1/4" washers (Dubro #650).



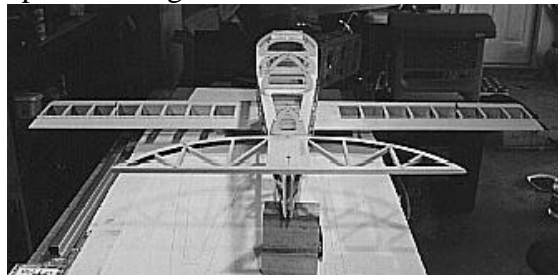
44. Locate the former B4 and test fit behind the landing gear on the landing gear plate. Space the former B4 back from the landing gear with piece of 1/16" scrap. Glue the former B4 in place, perpendicular to the landing gear plate.



45. Using scrap 1/4" sqr. balsa, cut (2) pieces to fit between formers B2 and B4 in the laser cut notches. Trim them flush against the B4 former, then glue in place.

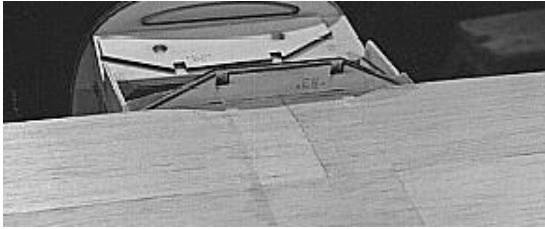


46. Using scrap 1/16" x 3 balsa sheeting, cut (3) pieces to cover the area between formers B2 and B4. Glue the sheeting in place, blending the sheet into the fuselage sides.
47. Turn the fuselage over on your work bench, leaving the lower wing attached, and block it up so the wings are level with the work bench.

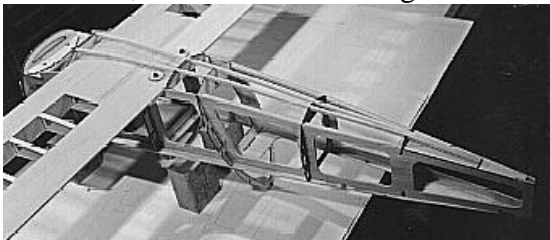


48. Locate the horizontal stabilizer and mark a center line on it, from LE to TE. Examine the plans and detail A on the location of the horizontal stabilizer. Position the stabilizer on the fuselage, centered and aligned at the rear edge of the fuselage top, leaving the 1/2" gap between the fuse sides open. With a ruler or a tape measure, measure the distance "C" and "D" on detail "A", then adjust the stabilizer until they are equal and it is centered on the fuselage. Also measure from the outer edges of the stabilizer, down to your work bench to make sure it is level and parallel to the lower wing. Mark all these alignments, then glue the stabilizer in place with 30 minute z-poxy.

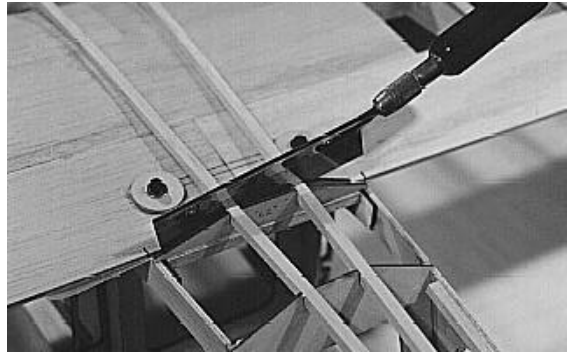
37. Install the wing on the fuselage with the wing bolts, and keep it blocked level upside down on your workbench. Locate the liteply C2 and C3. Carefully glue the C2 former to the wing block on the fuselage 90° to your workbench and with 1/16" space from the TE of the wing. Glue the C3 former on the TE of the wing parallel to the former C2 and maintaining the 1/16" space. Use some scrap 1/16" balsa as a spacer if needed.



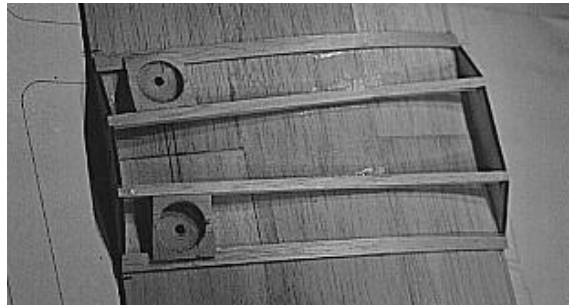
38. Locate the liteply B3 former and trial fit it in the LE-Fuselage joint. Sand the mating edge of the former until it sits flush with the top of the former B with about 1/32" clearance between the two. Carefully tack glue the B3 former in place while not gluing the wing to the fuselage. Remove the wing from the fuselage and re-glue the B3 and C3 formers to the wing with CA and kicker, then re-install the wing.



39. Starting from former B3, insert (2) 1/4" sq. x 36" balsa stringers into the notches along the bottom of the fuselage. Squeeze both stringers into the notch in former F. **DO NOT GLUE YET.** Measure back from the tail end of the fuselage 3-1/2" and mark the 1/4" stringers. Using a razor saw trim the (2) stringers at this point. Now glue the (2) stringers in place on the wing and fuselage, being careful to not glue the stringers to the B former. Sand the tail end of the stringers to the profile shown on the plans.



40. Using a razor saw, cut the stringers between the C2 and C3 formers.



41. Using 1/16" x 3/8" balsa, cut (2) strips the width of the wing, then glue in place aligned with fuselage sides on the opposite side of the wing. Laminate (2) pairs of W2 3/16" wing filler blocks with CA, then glue in place over the wing bolts. Sand the blocks down to the profile between the stringers and the 1/16" strips.



42. Locate the former B2 and with the wing still in place, glue in place on the front of former B. Be careful to not get any glue on the wing dowels.

is aligned, mark the wing with (2) marks where the TE of the wing meets the fuselage sides.



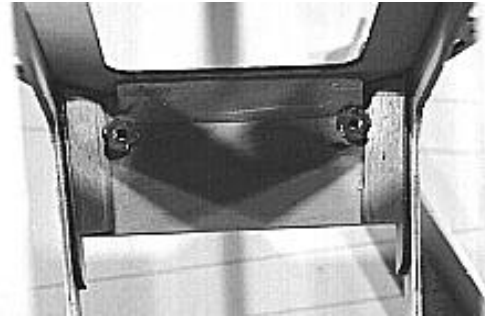
33. From the TE of the wing, measure forward 1-5/16" and draw a line about the width of the fuselage. From the center line of the wing, measure out both ways 1-5/8" and make a mark on the line you drew previously. These two marks are where you will drill the holes for the 8-32 wing bolts (Dubro #319).



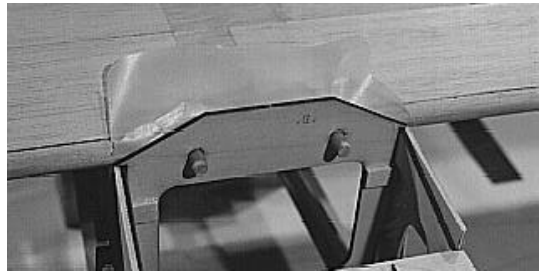
Drilling perpendicular to the sheeting on the wing, drill (2) 5/32" holes through the wing and through the wing block in the fuselage. Drill carefully as to not move the alignment of the wing and the fuselage, clamp if needed.



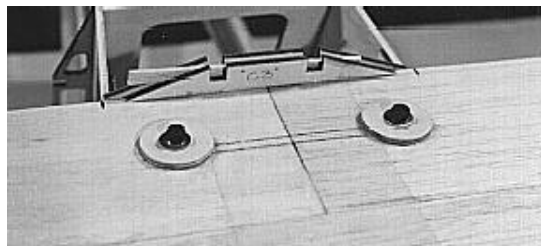
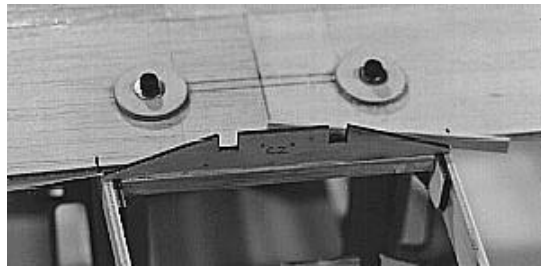
34. Remove the wing, then enlarge the holes in the wing with a 7/32" drill. Replace the wing on the fuse. Insert the 8-32 wing bolts, #8 washers (Dubro #327) and the aircraft ply washers W1 into the holes in the wing and into the fuselage. Glue the ply washer in place with CA, being careful to not glue the bolt in place.



35. Inside the fuselage, thread (2) 8-32 blind nuts (Dubro #347) on the wing bolts, then tighten with an allen wrench to pull the blind nuts into the wing block. Unbolt the wing, then put some CA on the blind nuts to help hold them in place, being careful to not get any glue on the threads.



36. Using 30 minute z-poxy, glue the (2) wing dowels into the lower wing. Clean up any excess z-poxy with a paper towel and alcohol, then replace the wing on the fuselage to keep the dowels aligned properly. You can place a piece of wax paper between the wing and fuselage to keep them from being glued to each other.





26. Cut (6) pieces of  $\frac{1}{2}$  triangle stock 1- $\frac{1}{4}$ " long and glue them behind the A former and to the engine box as illustrated.



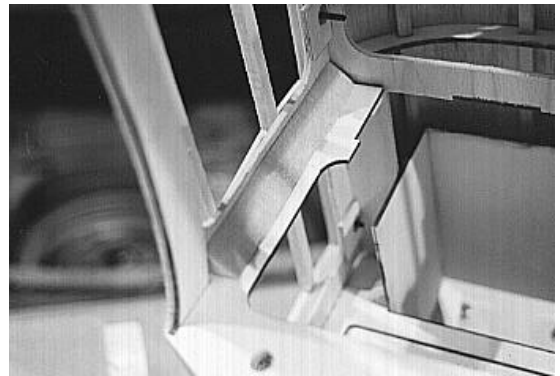
27. Cut (2) 3" pieces of  $\frac{1}{2}$  triangle stock and glue them to the joint between the A former and the fuselage sides. Cut (2) 2" long and (1) 4" long pieces of  $\frac{1}{2}$  triangle stock and glue them to the inside perimeter of the landing gear plate.



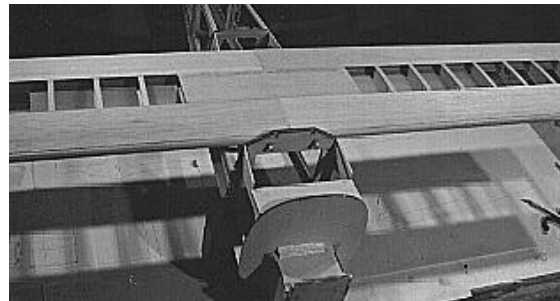
28. Cut (2) 2" pieces of  $\frac{1}{2}$  triangle stock and glue them to the joint between the fuselage sides and the wing holding plate. Also cut and glue (1) piece 3- $\frac{1}{2}$ " long and glue it to the C former and the wing holding plate.



29. Cut (2) 4" pieces of  $\frac{1}{2}$  triangle balsa and glue in place in the joint between the fuselage sides and former B.

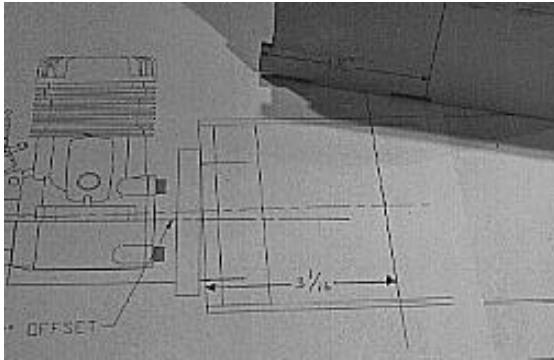


30. Cut (2) 3" pieces of  $\frac{1}{2}$  triangle balsa and glue in place between the fuselage sides and the fuselage top at the rear of the fuselage where the horizontal stabilizer is attached.

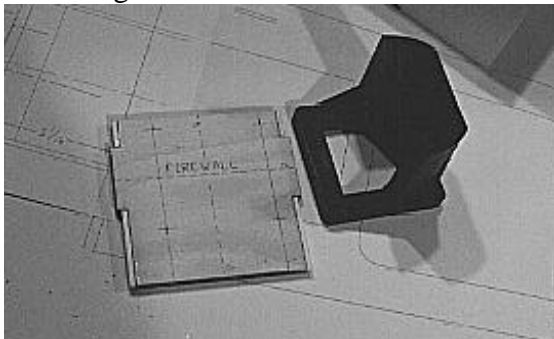


31. Locate the  $\frac{3}{8}$ " x 7- $\frac{1}{2}$ " dowel and cut it with a razor saw into (2) 3- $\frac{3}{4}$ " pieces. Test fit the dowels in the holes in the lower wing, then test fit in the saddle of the fuselage. Block the fuselage upside down on your work bench to aid in this step.
32. Using detail A on the plans sheet #1 as a guide and a long ruler, make sure measurements A and B are equal, and the wing is centered. Adjust the holes for the dowels if necessary to make sure it sits in the saddle. When the wing

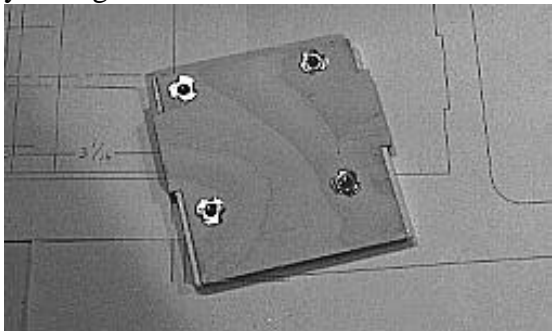




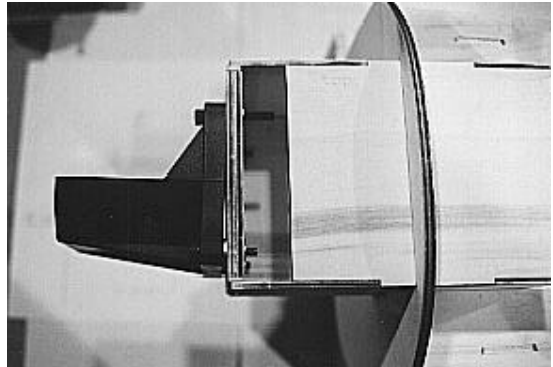
Measure the distance from the mark to the illustrated A1 former on the plans. This distance is how far the engine box will extend from the A1 former. Write it down, or mark it on the engine box.



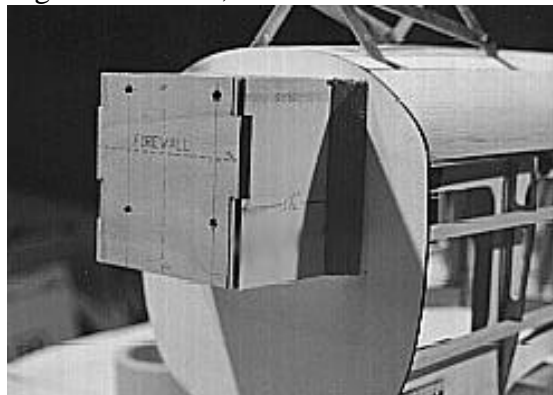
21. The dotted line laser marked on the firewall is the horizontal center line of the firewall. Using this line and the left and right marks you previously make on the firewall, mark then drill (4) 7/32" holes following the hole pattern of your engine mount.



22. Install (4) 8-32 blind nuts (Dubro #347) in the holes on the rear of the firewall. Test fit, then glue the firewall to the engine box with 30 minute z-poxy. Align the top of the firewall to the top side of the engine box, leaving a 1/2 gap for fuel lines.



23. After the z-poxy has cured, test fit your engine mount to the engine box using (4) 8-32 x 1-1/4" socket head cap screws (Dubro #319). Add washers behind the left side of the motor mount (viewed from the cockpit) to adjust to your required amount of right thrust (2° for a 2 stroke, 3-4° for a 4 cycle). When you are satisfied with the engine alignment, remove the engine and mount, then set it aside.

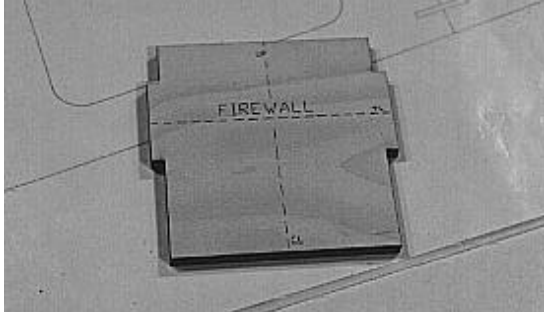


24. Using the measurement you took from the plans earlier, mark all (4) sides of the engine box that distance from the firewall and slide it into the fuselage. With all (4) marks visible and the firewall parallel to the former A, glue the engine box in place with CA.

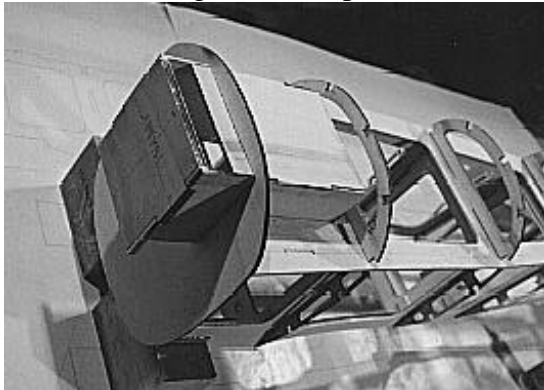
25. Locate the 1/2 balsa triangle stock and cut (3) 3" pieces. Glue these on the sides and bottom of the engine box where it meets the A former, but leaving a 3/4 space from the top of the engine box. Also cut (3) 3" pieces and glue them inside the engine box to the firewall. See plans and above.



18. Locate and assemble the engine box (top, bottom and (2) sides) as shown on the plans and above. Use a square to hold the sides up while gluing the sides to the bottom, then glue the top in place. When dry, trial fit in the opening on the former A1. Adjust if necessary, but do NOT glue yet! The box will be glued in place on the fuselage later.



19. Locate and laminate the two aircraft ply firewalls FW together, both parts are identical.

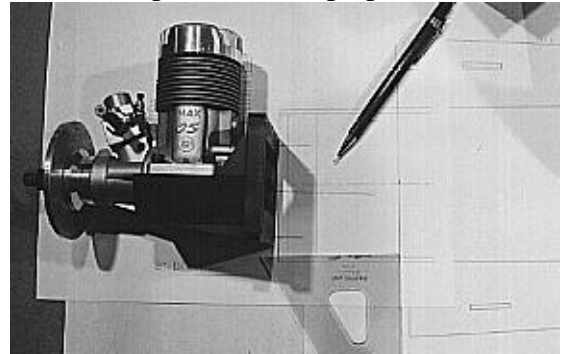


Trial fit on the engine box, But do not glue yet.

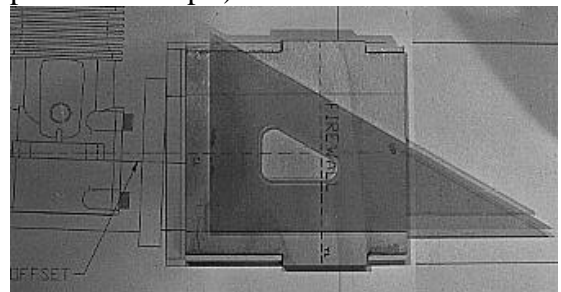


20. Using the plans as a guide, mount your engine to your engine mount, mark then drill 4 1/8" holes, then tap with the 8-32 tap. Mount the engine with (4) 8-32 x 1-1/4" bolts (Dubro #319) and (4) #8 washers (Dubro #327)

Install your spinner back plate on the engine and hold in place with the prop nut.

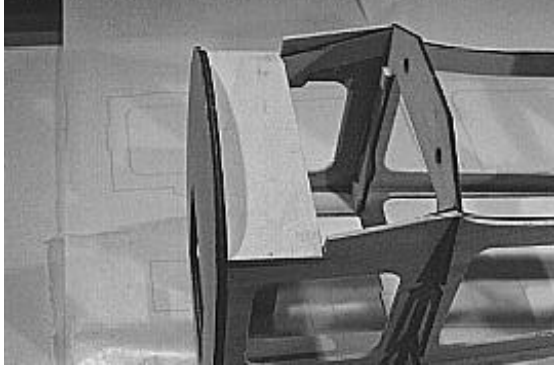


Carefully align the engine over the plans so the spinner backplate is centered and has about 1/16" to 1/8" clearance from the illustrated cowl. Keeping the spinner backplate in place, turn the engine on the center line of the plane until you set 2° of right thrust for a two stroke engine, or 3°-4° for a four stroke engine. Place the laminated firewall against the rear of the engine mount, keeping it perpendicular to the centerline of the fuselage, also keeping it centered on the illustrated engine box (see plans for example).

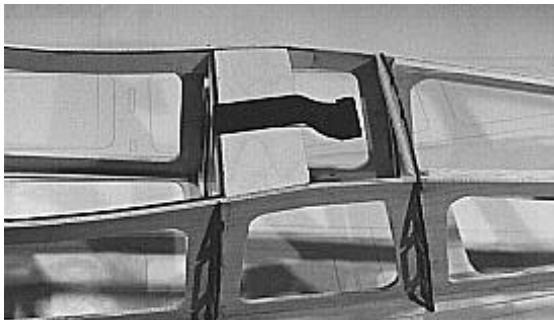


Use a pencil to mark the firewall for left and right locations for mounting bolts on the firewall. Also draw a line on the plans at the front edge of the firewall.

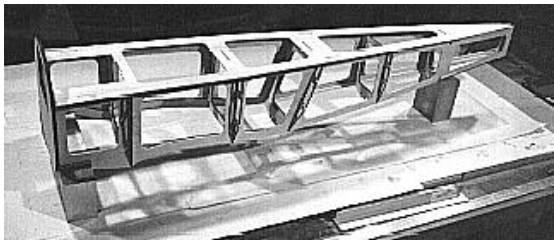
A2 former facing up. Trial fit, then glue the fuselage assembly to the A2 former. Make sure you assemble the former with the hole for the engine box toward the top side of the fuselage. When dry, re-glue with CA to ensure a good bond.



14. Locate and install the  $\frac{1}{4}$ " x  $1\text{-}5/8$ " x  $6\ \frac{1}{2}$ " landing gear block (Don't use the  $\frac{1}{4}$ " x 2" x 5" wing hold down plate). Trial fit, then glue in place with 30 minute epoxy, making sure you glue the block to the former A2 and the fuse sides.

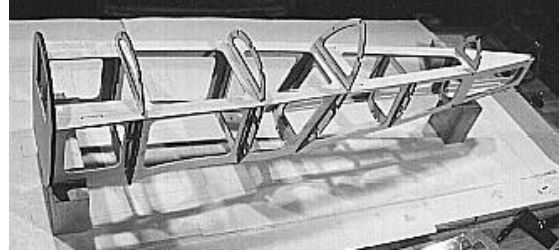


15. Locate and install the  $\frac{1}{4}$ " x  $2\text{-}3/16$ " x  $5\text{-}3/16$ " wing hold down plate. Trial fit, then glue in place with 30 minute epoxy, making sure you glue the block to the former C and the fuse sides.

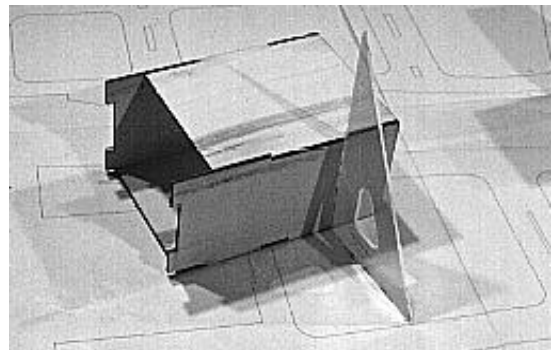
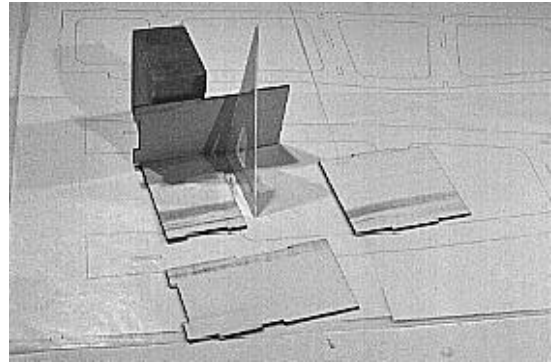


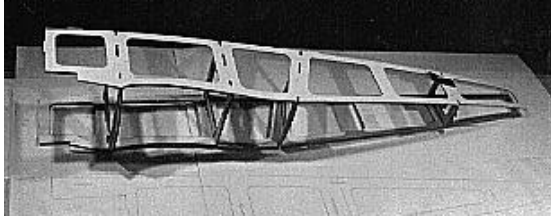
16. Turn the fuselage over and set it in place over the plans with blocks to keep it level. Small sections (6" or so) of good square 2" x 4"

work well. Try to get the fuselage top level with your workbench top, and line the formers A up over the plans.

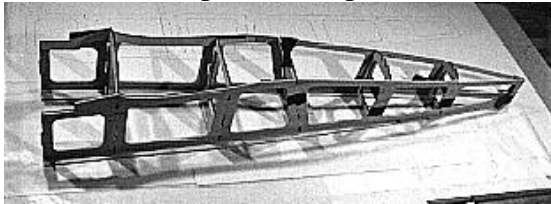


17. Locate and install the upper formers B6, C5, D3, and F2 on top of the fuse using CA. The formers B6, C5, and F2 are glued  $90^\circ$  to the fuse top, while the former D3 is glued at an angle of  $72^\circ$  to be parallel with the former D1 below it.

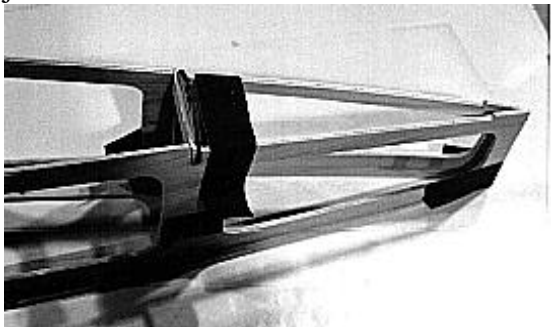




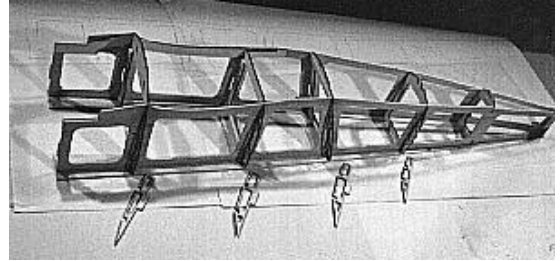
7. Turn the fuselage side with the formers over and place it on top of the opposite fuselage side, fitting and taping the formers in place as was done in the previous step.



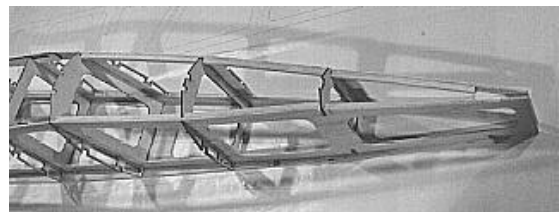
8. Lay the router cut fuselage top on the plans, over the fuselage top view. Position the fuselage sides on the fuselage top, aligning and inserting the tabs to align the entire assembly. Slide the E1 former in place between the D1 and F1 formers, as indicated on the plans. Use a square to check the alignment of the fuselage sides and make any necessary adjustments, then glue all joints with CA. When this is dry, go over all the joints again with CA or slow CA to reinforce all of the joints.



9. The sides of the fuse need to be pulled together on the F1 former. Using masking tape, clamp the fuse sides together as shown above, then glue with CA and kicker. Remove the tape when cured.



10. Locate the fuse side formers pairs B5, C4, D3, and E2. Trial fit then glue in place in the slots in the fuse sides. You may need to round the edges of the former tabs to fit in the slots. Install on both sides of the fuse.



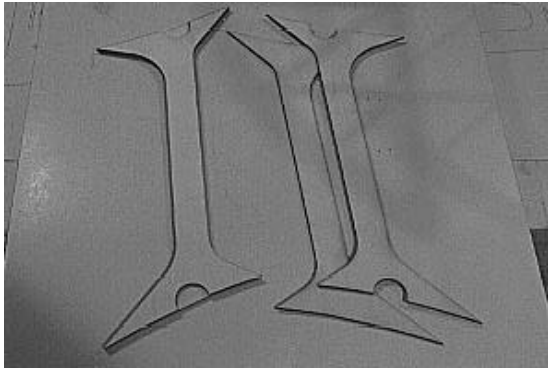
11. Locate the 1/4" square balsa, and install (6) pieces along the bottom rear of the fuse sides as indicated on the plans. Install the balsa inside the fuse, flush with the bottom edge of the liteply. Make sure the balsa extends the full length between the formers D1, E1, F1 and to the point 2" from the rear of the fuse.



12. Install the tail wheel ply plate TP at the rear bottom of the fuse with CA as illustrated above.



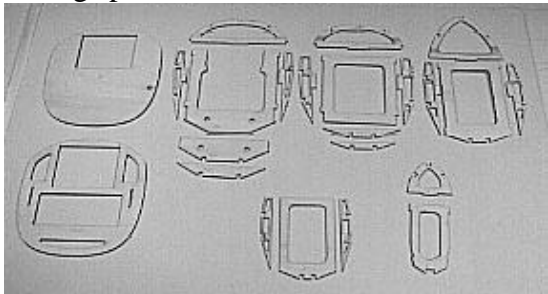
13. Locate the previously laminated A1 & A2 formers and lay it on your workbench with the



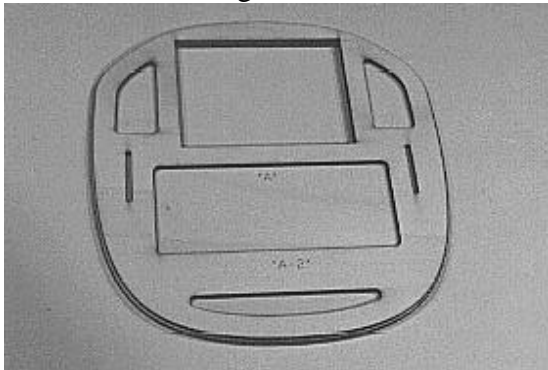
1. Locate the (2) pairs of wing struts (ST1 and ST2) and lay them out as shown above, to make sure you have a left and right strut.
2. Laminate the pair of struts, aligning the outer edges of the struts.

### Fuselage Construction

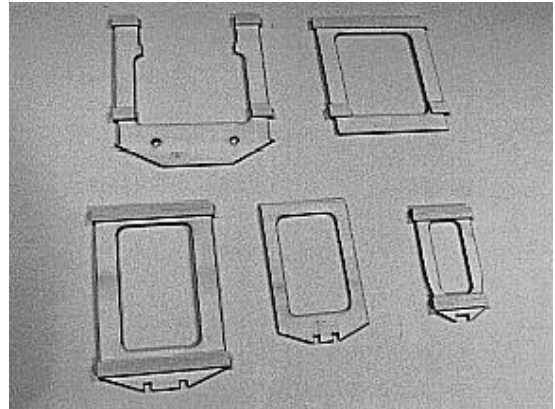
1. Lay wax paper over the overhead view of the fuselage plans.



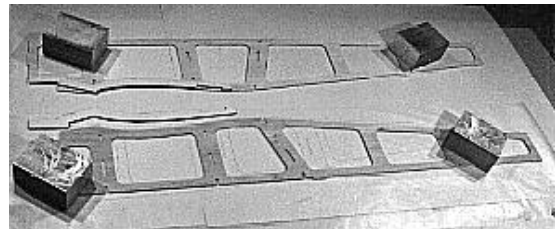
2. Locate and lay out all the fuselage formers A1, 2, B 1,2,3,4,5, C 1,2,3,4, D 1,2, E1,2, F 1, also the fuse sides and top. Sand off any tabs left on from trimming.



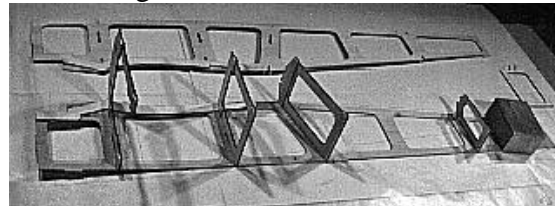
3. Laminate the A1 and A2 formers together aligning them by the rectangular hole for the engine box.



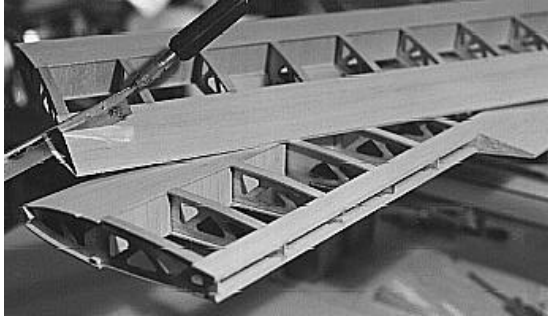
4. Using 1/2 x 1/8" balsa, trim, then glue doublers on the formers B1, C1, D1, and F1, on the locations indicated on the parts by the dotted lines.



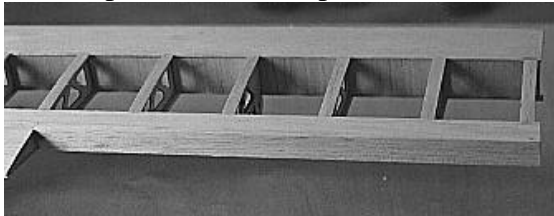
5. Lay the fuselage sided down on your building board and position the wing saddle areas facing each other and tail together to ensure you build a left and right fuselage side. Locate and trim the (2) wing saddle doublers FD, then glue them in place on the fuselage sides, aligning the landing gear block and the curve for the wing.



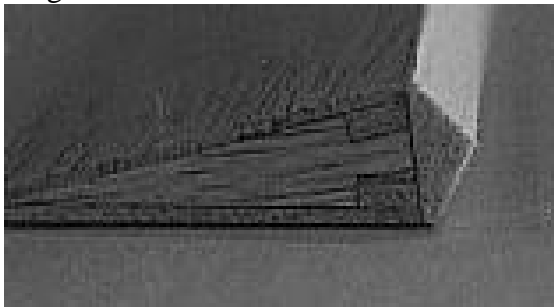
6. Using the plans as a guide, position the formers B, C, D, and F in position on one of the fuselage sides and hold in position with masking tape. You will need to sand the edges of the formers to match the rounded corners in the fuselage slots.



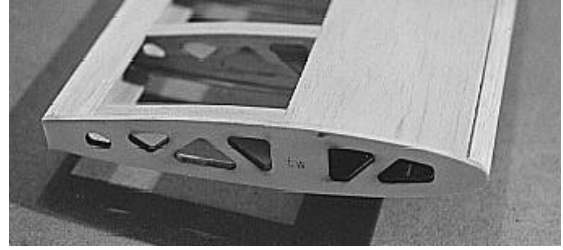
1. Examine the outline of the ailerons on the plans and transfer the lines to the wing. Using a straight edge, draw a pencil line along the outer edge of the outer most R2 ribs to locate the first R5 rib and the 1/16" space between them. Using a razor was as shown, cut the 1/16" sheeting and the R3 ribs up to the R2 rib. Now cut in the 1/16" space between the aileron R5 rib and R2 rib to free the aileron. Trim all four ailerons this way. Sand both the wing sheet and the aileron sheet flush against the TE spars and aileron spars.



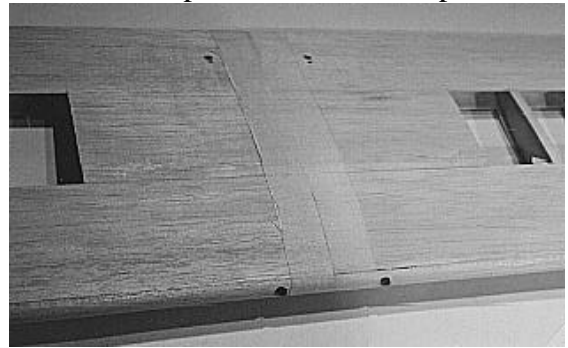
2. Cut (4) pieces of 1" x 1/4" balsa to the length of the ailerons of the upper wing, then glue in place. Repeat this for the ailerons for the lower wing.



Sand the 1/4" balsa flush with the sheeting, then sand the "V" profile on the ailerons to match the profile on the plans.



3. Locate the (4) R6 liteply wing tip ribs and the (4) R7 aileron tips, then glue them on the tips of both wings and all (4) ailerons. Using a razor plane and a 24" sanding tee, sand the LE 1/2 balsa to the profile shown on the plans.



4. Using 2-1/2" nylon glass tape (Goldberg #451) and CA, reinforce the wing joints. For the lower wing, cut (1) piece of glass tape long enough to wrap completely around the wing center and over lap about 1/2". Next, lightly spray the glass cloth with 3M Super 77 spray adhesive and press in place on the wing joint. CA in place with medium Zap, being careful to work out any bubbles with your finger in a plastic bag, and that the entire tape is wet. **Do this in a well ventilated room or go outside!** Repeat this for the two joints on the upper wing.

### Assembly of wing struts

24. Trim (2) 1/4" x 1/8" balsa TE spars to the length indicated on the plans, then glue in place.



25. Locate the 1/16" aileron R5 ribs, align them with the wing ribs, then glue in place.



Using a piece of 1/16" scrap, space the (2) inboard aileron ribs out 1/16" before gluing in place.

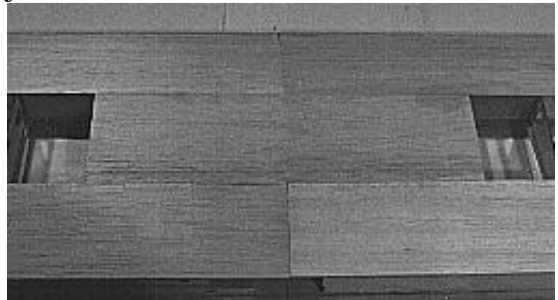


26. Trim (2) 1/4" x 1/8" balsa aileron spars to the length indicated on the plans, then glue in place using the plans as a guide, trim a 2" space in the previously attached 1/4" x 1/8" aileron spar for the (2) control horn attachment plates AP. Glue the plate in place.

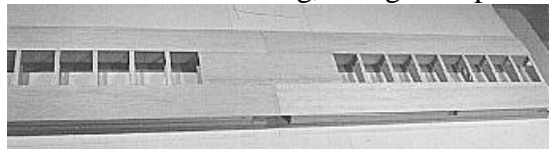


27. Trim (18) pieces of 1/16" x 3" balsa sheet to 1 1/4" to make sheer webbing. Trim 1/4" off one end of web for fit. Glue in place between the ribs on the hardwood spars.

28. Trim (2) 1/16" balsa TE sheets to the length indicated on the plans, then glue in place, aligning the rear edges and center joints.



29. Trim a piece of 1/16" x 4" balsa sheet to a length of 12". Trial fit and trim to fit to the center section of the wing, then glue in place.

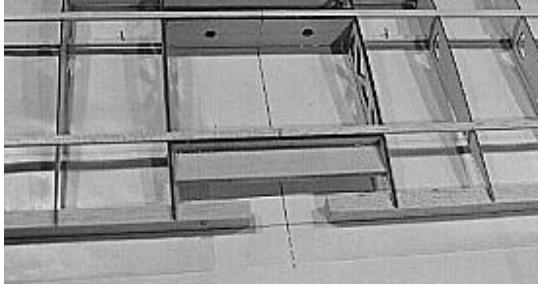


30. Locate the 1/16" x 3/8" balsa cap strip and cut (8) pieces for each wing panel, then glue all in place.

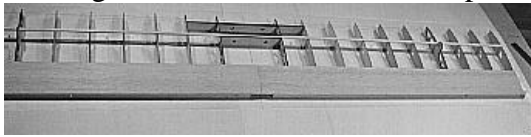
31. Trim the outer edges of the wing tips flush with the outer ribs and sand them smooth.

### Ailerons/Finishing Wings





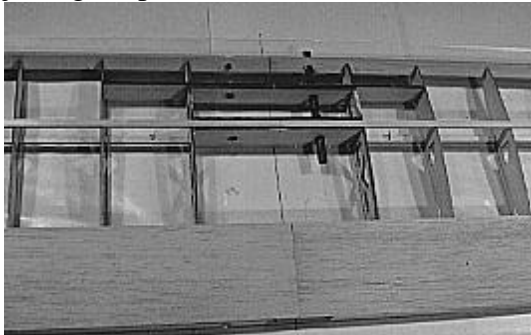
14. Locate the 3/8"x 1"x 6" hardwood wing bolt block and check the fit, adjust if necessary. Glue the block in place with 30 minute Z-poxy.
15. Cut (2) pieces of 1/4"x 1/8" balsa to a length of 6" and glue in Place between the TE spars.



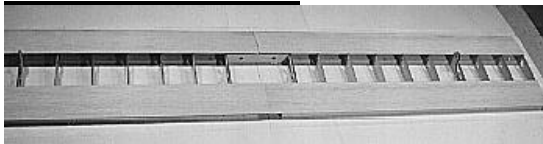
16. Trim (2) pieces of 1/16"x 3" balsa sheeting to the length indicated on the TE of the plans and glue in place on the rear of the wing, aligning the rear of the sheeting and the rear of the ribs.



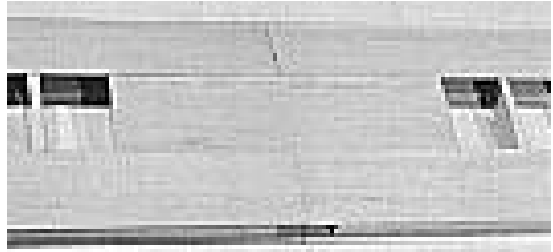
17. Trim (2) pieces of 1/2 square balsa for the length of the LE. Glue the LE's in place, joining the pieces in the center.



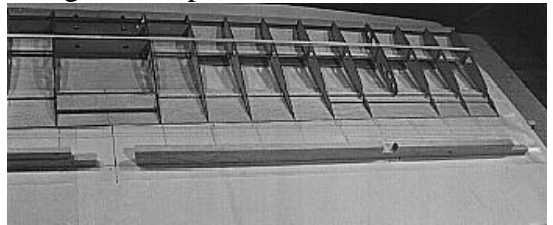
18. Using a 1/4" drill bit, insert it the holes in the wing braces as shown in the photo, then twist through the 1/2 LE by hand. Repeat with a 3/8" drill bit, then trial fit the wing hold down pins. **DO NOT GLUE YET!**



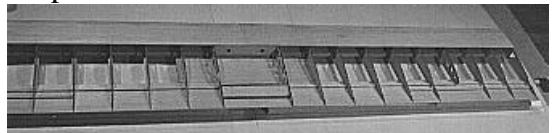
19. Trim (2) pieces of 1/16"x 3" balsa sheeting for the LE. Bevel the front edge of sheet and trial fit. Trim a notch in the sheet to clear the tab on the ribs R4. Glue the sheet in place.



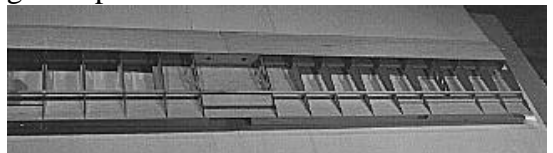
20. Trim (1) piece of 1/16" x 4" balsa to a length of 12". Trial fit and trim to fit to the center section of the wing then glue in place.
21. Locate the 1/16" x 3/8" balsa cap strip and cut (8) pieces for each wing panel. Trim the cap strip that covers the rib R4 with a slot in the middle to surround both sides of the tab, then glue all in place.



22. Remove any pins you still have holding the wing down and remove the wing from the board. Add (2) 1/2 square balsa shims to the TE shims and pin in place. Reposition the turned over wing over the plans. Use some weights to hold the wing flat and in place over the plans.



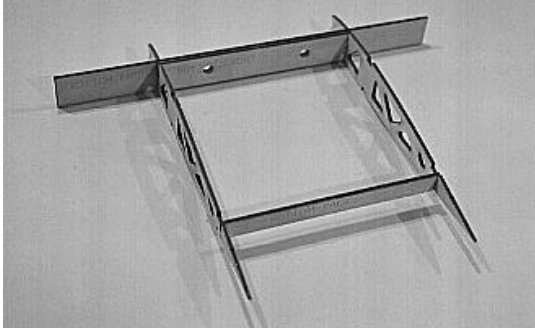
23. Trim (2) 1/16"x 3" balsa sheets to the correct length and square the center joint. Bevel the front edge of the sheet to match the LE, then glue in place.



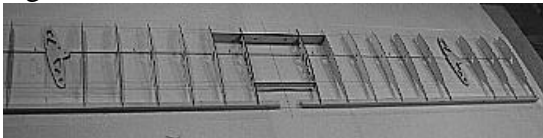


# LANIER - *Ultimate Pitts* - INSTRUCTIONS

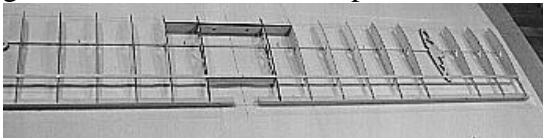
3. Pin (2) 1/2 square balsa TE shims on the locations indicated on the plans.
4. Locate and trim (8) R3, (8) R2, and (2) R4 ribs. Position the ribs in the proper positions over the spars, at 90 degree positions.



5. Locate and trim the lower wing braces (LWB) 1, 2, 3, and (2) light ply ribs R1. Laminate the front brace LWB 1 and 2 with CA. Assemble the braces with the R1 ribs then press the assembly down on your workbench to square it up. When square, glue the brace assembly together with CA.



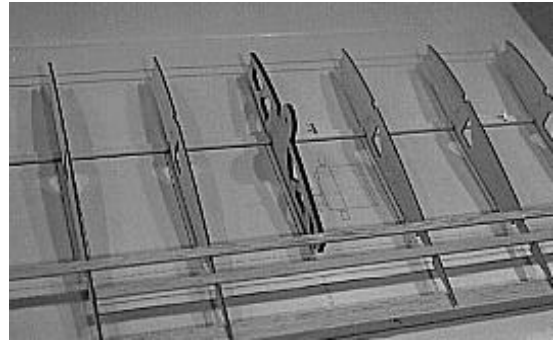
6. Position the center brace assembly in position over the plans, then glue in place.
7. Carefully glue the ribs R2 and R3, waiting to glue the R4 ribs for a few steps.



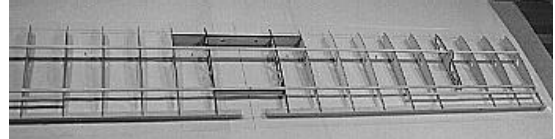
8. Trim (2) 1/4' x 1/8'' balsa TE spars to length, then carefully glue in place, keeping the ribs pressed against the 1/2 TE shim.



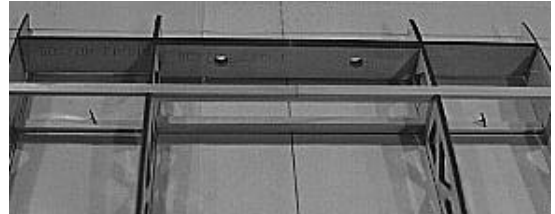
9. Trim (2) 1/4' x 1/8'' balsa aileron spars to the length specified on the plans and glue in place.



10. Align the R4 ribs 90degrees to the spars and in position against the rear spar. Glue in place.



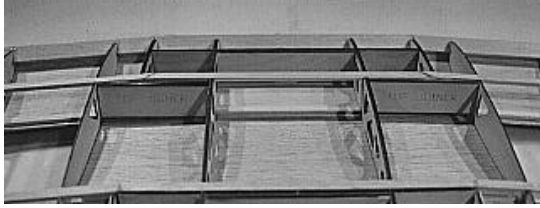
11. Trim (2) 1/4' x 1/8'' hardwood wing spars to the same length as the lower spars, then glue in place.



12. Cut (2) 1/4' x 1/8'' hardwood pieces to a length of 5 5/8''. Glue in place with CA and clamp in place.



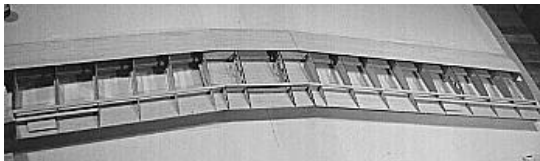
13. Locate the (2) LWB 5 and trim any tabs off the edges. Trial fit then glue the two braces in place, with 30 minute Z-poxy, keeping them aligned with the wing spars, clamping in place until the Z-poxy has cured.



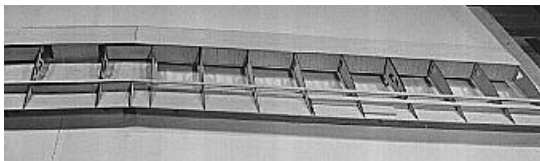
29. Using 30 minute Z-poxy, glue in the (2) plywood wing joint braces, WB1 in place at the spar joints.



30. As was done with the previous sides sheeting, trim the 1/16" x 3" center LE sheeting to fit between the R1.2 ribs.



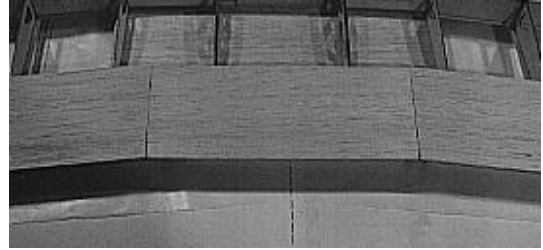
31. Install the left and right panel LE 1/16" balsa sheeting in the same manner as the other side, trimming the angle to match the center section and beveling the front edge to attach to the 1/2 LE stock.



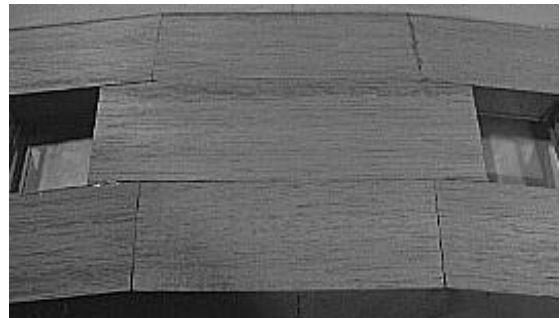
32. Using another sheet of 1/16" x 3" balsa sheeting, cut (17) 1 1/4" shear webs. Glue each web between each rib against the hard wood spars.



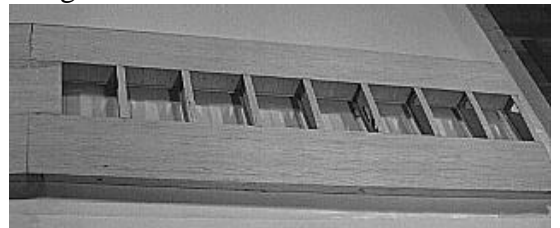
33. Install the TE 1/16" balsa sheeting in the same manner as the other side, matching the center section angle, gluing from the rib R1.3 out, and align the sheeting rear edges.



34. Install the TE center 1/16" sheeting in the same manner as the other side, fitting between the other TE sheet.



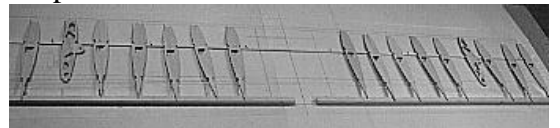
35. Sheet the center section with 1/16" x 4" x 36" balsa, trimming the front edge corners, and filling the back edges with scrap 1/16" wedges.



36. Locate the 1/16" x 3/8" balsa cap strip and cut (8) pieces for each wing panel and glue in place.
37. Trim the outer edges of the wing tips flush with the outer ribs, and sand them smooth.

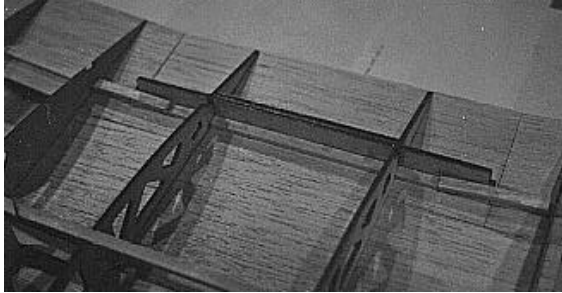
### Lower Wing

1. Lay wax paper over the lower wing portion of the plans.

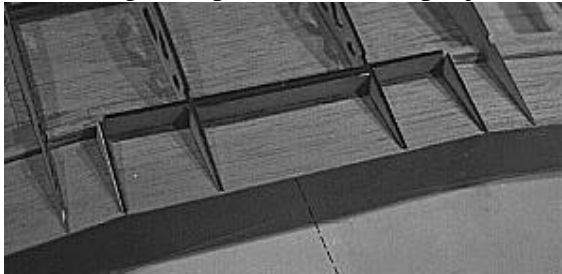


2. Trim (4) 1/4" x 1/8" hardwood wing spars to the length indicated on the plans, then pin the spars down on the plans.

**turned** over and 1-1/4" back from the LE. Use some weights to hold the wing flat and in place over the plans.



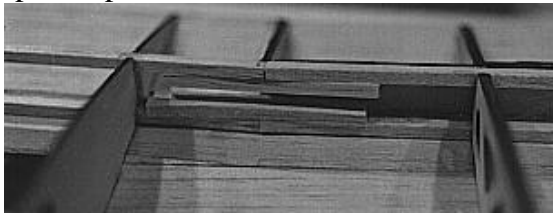
22. Trim (2) pieces of 1/4" x 1/8" balsa to a length of 2" and glue in place on the TE spar joint.



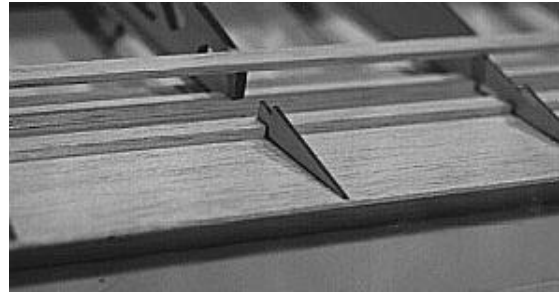
23. Locate the (2) light ply ribs R1.3 and trim from the sheet. Trim off any tabs left on the part, then glue in place on the TE sheet joint.



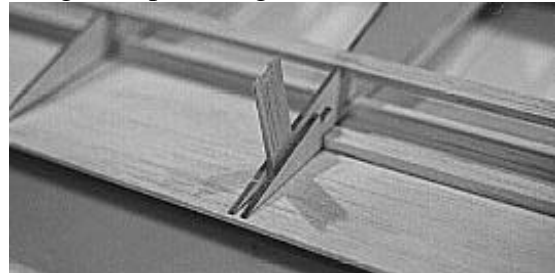
24. Locate another (2) 1/4" X 1/8" BALSA TE spars and trim to length. Glue the (2) outer spars in place.



25. Then trim another piece of 1/4" x 1/8" balsa to fit between the two previously installed TE spars. Trim another (2) 2" pieces of 1/4" x 1/8" balsa and glue in place under the TE spar joint.



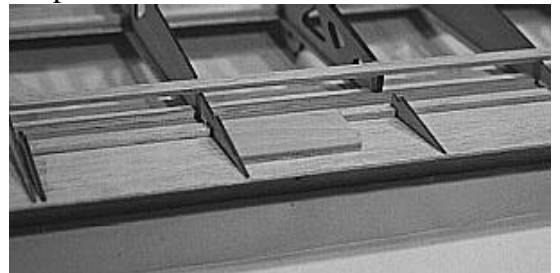
26. Locate the 1/16" balsa aileron ribs R5, trim and glue in place, aligned behind the other ribs.



Using a piece of 1/16" balsa scrap as a spacer, glue an R5 rib in place at the in board side of the ailerons.



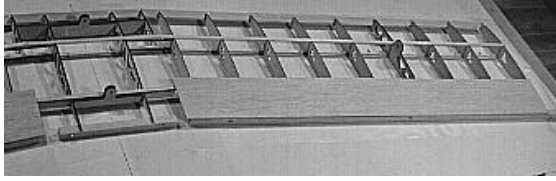
27. Trim a 2" section of the aileron balsa spar off of the sheeting , from the location indicated on the plans.



Using the plans as a guide, glue in the (2) plywood aileron horn plate (AP).

28. Using 1/4" x 1/8" balsa, trim to length and glue in place the next (2) aileron spars.

# LANIER - *Ultimate Pitts* - INSTRUCTIONS



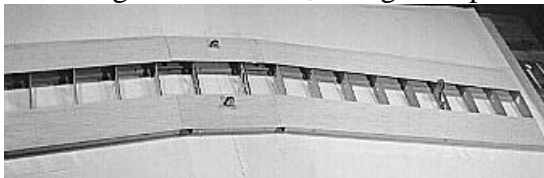
15. Trim the ends of (2) 1/16" x 3" sheets to match the angle of the center section. Remove any pins holding the TE of the ribs in position. Glue in place on both panels with medium or slow CA, aligning the back edge of the sheet with the back tips of the ribs.



16. Trim a piece of 1/16" x 3" sheet to length, to fit snugly between the (2) TE sheets already installed. Carefully trim a hole in the sheet for the wing attachment tab.

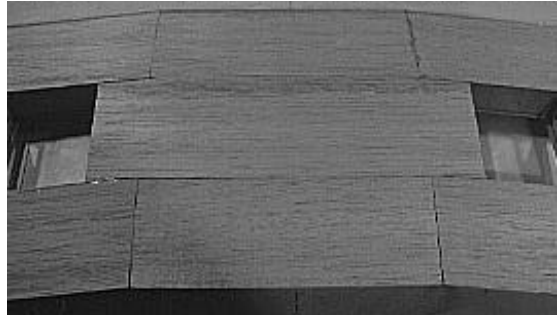


17. As was done in the previous step, trim a piece of 1/16" x 3" sheet for the LE center section to fit midway across the ribs R1.2. (It is important to leave an edge to glue the other LE sheet.) Carefully trim a hole in the sheet for the front wing attachment tab, then glue in place.



18. Trim (2) sheets of 1/16" x 3" balsa for the LE sheeting in the same manner the TE sheet was done, matching the angle of the center section. You may want to sand a small angle on the

front of the sheet to better fit against the 1/2 LE. Test fit the sheets in place, trimming a small notch for clearance of the tabs on the R4 ribs. Glue the LE sheet in place.



19. Trim a piece of 1/16" x 4" x 36" sheeting to a length of 10 7/8" for the center sheeting. Trim the corners to match the LE and TE sheeting, then glue in place.



20. Locate the 1/16" x 3/8" balsa cap strip and cut (8) pieces for each wing panel.



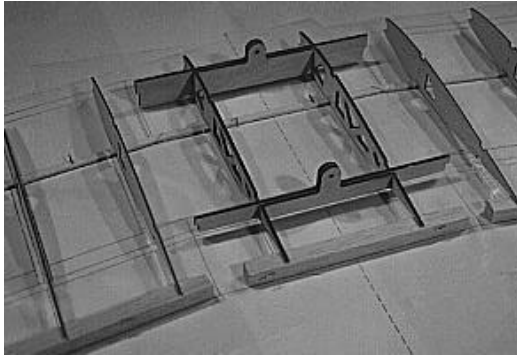
Trim the cap strip that covers the rib R4 with a slot in the middle to surround both sides of the tab.



21. Remove any pins holding the wing down, and remove the wing from the building board. Add another section of 1/2 square balsa to the TE shim sides only (not the center section) and pin in place. Reposition the wing over the plans,

# LANIER - *Ultimate Pitts* - INSTRUCTIONS

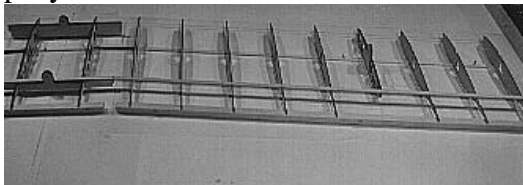
are UWB 1, 2, 3, 4 and (2) R1's. Laminate the UWB 1 and UWB 2 braces together in the same manner. Slide the braces into the slots in the R1's as shown above. Align the assembly squarely by pressing the braces down on your building table. When square, glue the joints with CA.



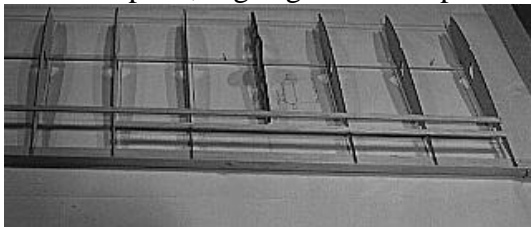
7. Locate and glue the center section brace on the spar pinned on the plans.



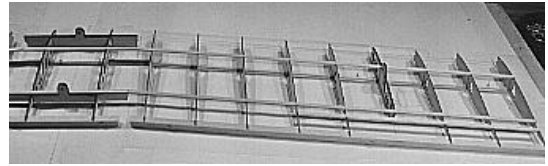
8. Trim (2) WJ1 joiner from the light ply. Trial fit the joiners in place then glue with 30 minute Z-poxy.



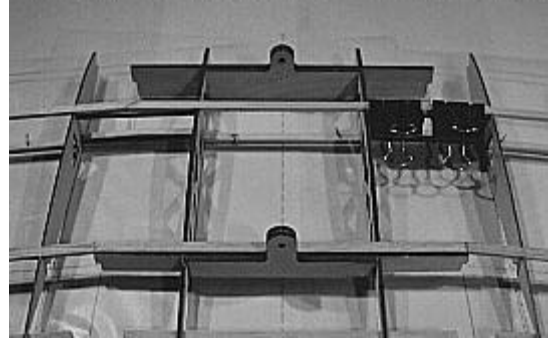
9. Trim, then glue the 1/8" x 1/4" balsa TE spars as indicated on the plans. Now glue the (2) R4 ribs in place, aligning with both spars.



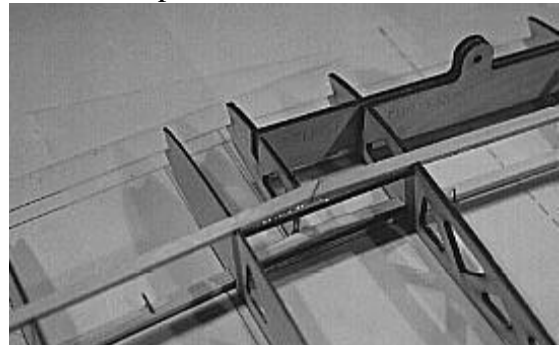
10. Trim, then glue the (2) 1/8" x 1/4" balsa aileron sub spars in place.



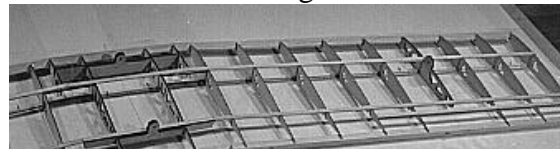
11. Using the 2<sup>nd</sup> hardwood spar that was trimmed earlier, position and glue the center spar, then the (2) outer spars. Keep the ribs perpendicular to the spars.



12. Trim (2) more WJ1 wing joiners and trial fit the joint of the upper spars. When satisfied with the fit, glue with 30 minute Z-poxy. Clamp with clothes pins or similar.



13. Trim (2) light ply ribs R1,2, and glue in place on both sides of the wing center brace.



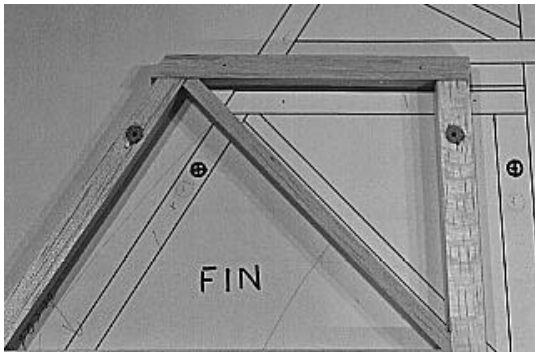
14. Trim the 1/2 square balsa LE to length of the center section, then glue in place. Trim (2) pieces of 1/2 square balsa LE to the length of the outer panels, sanding the joints very closely. Glue in place, being careful to keep the wing straight.



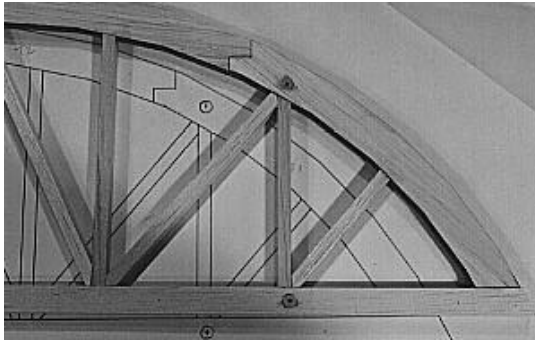
6. When the glue has dried, remove the pins, then sand both sides of the fin flat with the sanding tee with 80 grit sand paper.
7. Make two identical elevator halves.

### Tail Brace Plugs

1. At the location indicated on the plans, drill the (6) 1/4" holes in the stabilizer surfaces for the tail brace wires. Next, cut (6) 3/8" long sections of 1/4" hardwood dowel and glue (1) in each hole.



2. Do the same for the horizontal stabilizer.



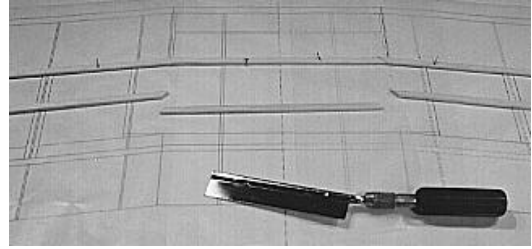
3. Drill a 1/16" hole through the center of each dowel.

### Finishing the tail surfaces

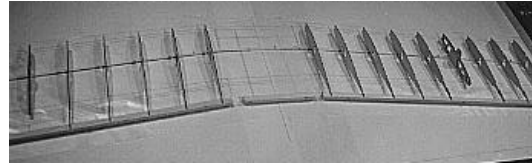
Sand the edges of the tail parts to the profile indicated on the plans. The leading edge (LE) of the fin and horizontal stabilizer is rounded and the TE are square. The LE of the elevator halves and rudder (except the balance tab which is rounded) is shaped to a "V", and the TE is rounded.

### Upper Wing

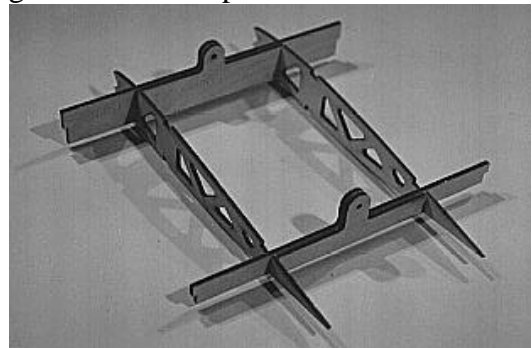
1. Lay wax paper over the upper wing portion of the plans.



2. Cut, with a razor saw, the 1/4" x 1/8" hardwood spars to the shape indicated on the plans and the photo above. Place extra care in cutting and sanding the angles on the spar joints, these need to be as tight as possible. Cut (2) sets of these spars, 1 for the top and 1 for the bottom of the upper wing.
3. Pin and glue the first set of spars on the indicated position on the plans.



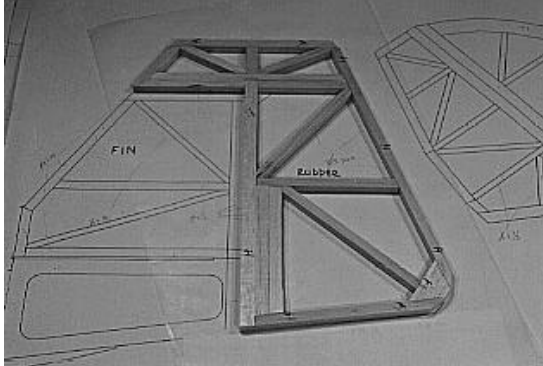
4. Cut an 8" piece of 1/2" square balsa and pin in position for the center section of the TE shim. Pin (2) more pieces of 1/2" square balsa on the plans as indicated for the rest of the TE shim.
5. Trim (8)R2, (8)R3, and (2) R4 ribs from the 1/16" balsa sheet and 1/8" Aircraft ply using a razor blade. Sand any tabs flush with the ribs. Locate the ribs R2 and R3 in the positions indicated on the plans. Glue them perpendicular to the spars. Place, but do not glue the R4 rib in position.



6. Trim the upper wing center section parts from the light ply with a razor or X-acto knife. Parts

hinge post down first, then glue the two lower pieces of balsa to it.

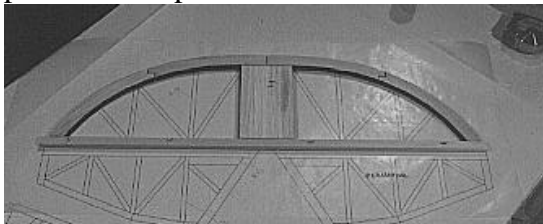
3. Glue the two rearward pieces together, then pin in place. Also pin the upper piece in place.



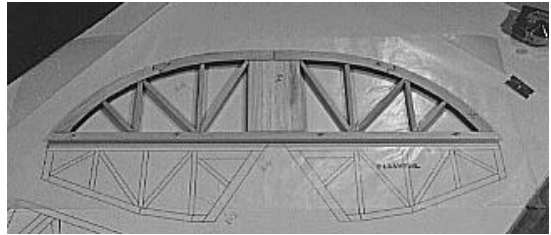
4. Cut the 3/8" square balsa stock to the size indicated on the plans, then pin and glue in place.
5. Cut the 3/8" square balsa stringers as indicated on the plans, then glue in place.
6. When the glue has dried, remove the pins, then sand both sides of the fin flat with the sanding tee with 80 grit sand paper.

### Horizontal Stabilizer

1. Lay wax paper over the horizontal stabilizer portion of the plans.



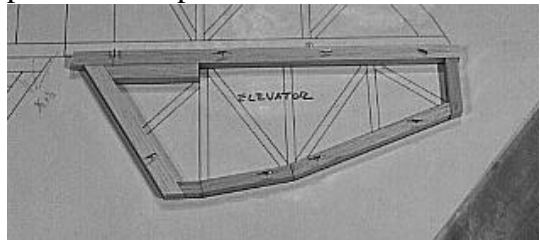
2. Locate the laser cut 3/16" balsa tail parts, T1 (4), T2 (4), and T3 (2). Trim the parts out with a razor and sand any tabs off.
3. Laminate two pairs of T1's and T2's, and the two T3's together with CA.
4. Cut a piece of 3/8" x 1/2" balsa to the length indicated on the plans, then pin in place.
5. Pin then glue the previously laminated parts in their positions indicated on the plans.



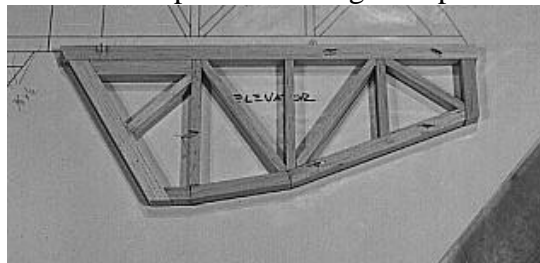
6. Cut a piece of 3/8" x 1/4" balsa to the sizes indicated on the plans for the stabilizer stringers. Pin and glue the pieces perpendicular to the 3/8" x 1/2" trailing edge (TE) first, then glue the diagonal pieces in place.
7. When the glue has dried, remove the pins, then sand both sides of the fin flat with the sanding tee with 80 grit sand paper.

### Elevator Halves

1. Lay wax paper over the elevator halves portion of the plans.



2. Cut the 3/8" x 1/2" balsa to the size indicated on the plans, then pin and glue in place.
3. Cut the 3/8" square balsa to the perimeter shown on the plans. Pin and glue in place.



4. Cut the 3/8" x 1/4" balsa to the shape of the perpendicular parts indicated on the plans. Pin then glue in place.
5. Cut the 3/8" x 1/4" balsa to the diagonal shapes indicated on the plans. Glue in place.



Before starting to build this kit, we urge you to read through these instruction while reviewing the plans. They contain some important building sequences as well as instructions and warnings concerning the assembly and use of the model.

We expect that you have some building experience to take on a built-up model. However, every minute detail is not covered. This is not a basic trainer. The plans and instructions together with the laser cut parts, and the simplicity of this kit will allow you to produce a first class Ultimate Pitts.

### BUILDING SUPPLIES NEEDED

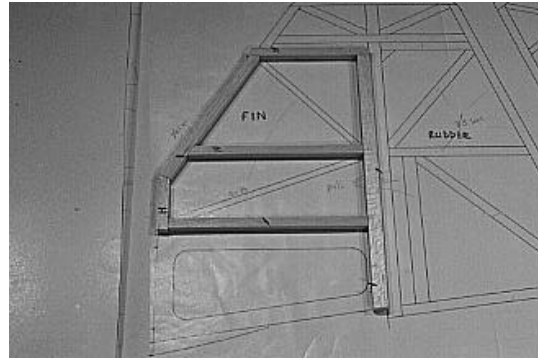
Single edge razor blades  
24" Sanding Tee w/ 80 grit paper  
12" Sanding Tee w/200 grit paper  
Exacto knife w/ #11 blade  
Razor Saw  
Small Clamps (clothes pins)  
Thin Zap CA  
Medium Zap CA  
Slow - Thick Zap CA  
Zip Kicker/Kicker for plastic  
30 Minute Z-poxy  
Thread Lock (Loctite)  
Tee pins  
Wax paper  
Wire cutters  
Pliers  
8-32 tap and handle  
Drill with bits: 1/16", 1/8", 1/4", 5/32", 3/8"

**See the list at the end of the instruction book for a list of additional R/C equipment you will need to complete the Ultimate Pitts.**

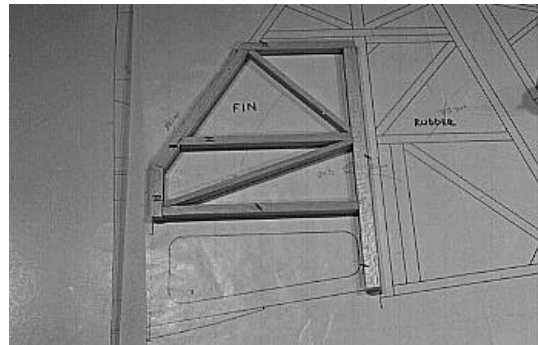
\*Use medium CA (Green Zap) on all steps, unless otherwise instructed.

### Fin

1. Lay wax paper over the fin portion of the plans.



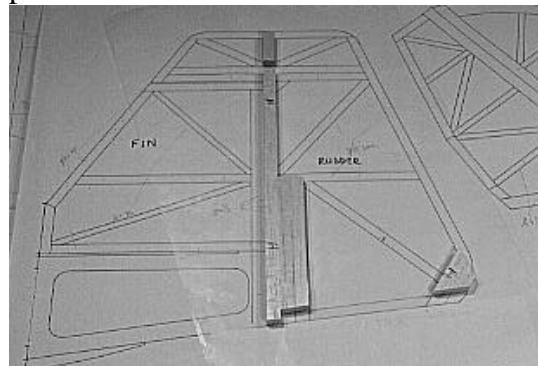
2. Cut the 3/8" x 1/2" balsa stock to the size indicated on the plans. Pin in place.
3. Cut the 3/8" square balsa stock to the size shown on the plans. Pin, then glue in place with CA.



4. Cut the 3/8" x 1/4" balsa stock to the size indicated on the plans. Pin, then glue in place.
5. When the glue has dried, remove the pins, then sand both sides of the fin flat with the sanding tee with 80 grit sand paper.

### Rudder

1. Lay wax paper over the rudder portion of the plans.



2. Cut the 3/8" x 1/2" balsa stock to the size indicated on the plans. Pin the long rudder

*Lanier R/C*

# ***Ultimate Pitts***

*Designed and Instructions*

*by John Helgesen*

**WARNING! THIS IS NOT A TOY!**

**THIS IS NOT A BEGINNERS AIRPLANE**

**This R/C kit and the model you will build from it is not a toy! It is capable of serious bodily harm and property damage. It is your responsibility, and yours alone - to build this kit correctly, properly install all R/C components and flying gear (engine, tank, radio, pushrods, etc. and to test the model and fly it only with experienced, competent help, using commonsense and in accordance with all safety standards as set forth in the Academy of Model Aeronautics Safety Code. It is suggested that you join the AMA and become properly insured before attempting to fly this model. If you are just starting R/C modeling, consult your local hobby dealer or write to the Academy of Model Aeronautics to find an experienced instructor in your area.**

Write to: Academy of Model Aeronautics, 5151 Memorial Dr. Muncie, IN 47302

## LIMITED WARRANTY

Lanier R/C is proud of the care and attention that goes into the manufacture of parts for its model kits. The company warrants that for a period of 30 days, it will replace, at the buyers request, any part or material shown to the company's satisfaction to have been defective in workmanship or material at the time of purchase.

No other warranty of any kind, expressed or implied, is made with respect to the merchandise sold by the company. The buyer acknowledges and understands that he is purchasing only a component kit from which the buyer will himself construct a finished flying model airplane. The company is neither the manufacturer of such a flying model airplane, nor a seller of it. The buyer hereby assumes the risk and all liability for personal or property damage or injury arising out of the buyers use of the components or the finished flying model airplane, whenever any such damage or injury shall occur.

Any action brought forth against the company, based on the breach of the contract of sale to the buyer, or on any alleged warranty thereunder, must be brought within one year of the date of such sale, or there after be barred. This one year limitation is imposed by agreement of the parties as permitted by the laws of the state of Georgia.