Called “Slow But Deadly” and considered obsolete before the outbreak of war, the Douglas SBD Dauntless none-the-less was considered one of the most famous aircraft of World War II. The Dauntless prototype first flew in 1935 but performed poorly. The services of the then new agency, NACA, were employed and the Dauntless design was perfected in the wind tunnel. The SBD went into production and was delivered to the fleet where it served as the Navy’s front line scout and dive bomber. The Dauntless was the first U. S. Aircraft to score against Japanese shipping only three days after the attack on Pearl Harbor. The SBD served with distinction in all the sea battles of the early war period, including the Battle of Midway, Where SBD’s sank four Japanese aircraft carriers and prevented the invasion of Midway Island. Dauntlesses served on all fronts during the war, being phased out of front line service by the Curtis SB2C Helldiver during 1944. The Dauntless continued to serve as a coastal bomber and trainer until war’s end.

The SBD-5 variant had a wingspan of 41 feet 6 inches and an overall length of 33 feet. It was powered by a 1200 horsepower Wright R-1820 Cyclone engine, and had a gross weight of over 10,500 pounds. It had a top speed of 250 mph and a range of over 1100 miles. The crew consisted of two men, the pilot and the radio operator, who also acted as a gunner. Armament consisted of two forward firing .50 caliber machine guns and two .30 caliber machine guns operated by the second crewman. A variety of weapons could be carried by the Dauntless, with either 1000 pound or 500 pound bombs standard for the center hardpoint. The center weapons position used a cradle which would swing the bomb away from the propeller arc when released during a dive. Additionally, 100 pound bombs or drop tanks could be carried on the underwing hardpoints.

Thank you for purchasing the SBD Dauntless from Skyshark R/C Corporation. For the first time, R/C enthusiasts have a choice in scale aircraft designs. Our goal, through computer technology and state-of-the-art production techniques, is to offer aircraft which in the past have not been modeled simply because they weren't popular enough to justify mass production. Our production techniques allow us to produce aircraft which, though not as popular and well known as P-51s and P-47s, still offer historical significance (good or bad!), Good looks and flying characteristics, and a uniqueness that is sure to turn heads wherever you take your airplane!

Your airplane has many unique features in its design:

CAD Design

CAD design allows strength to be built into the airplane without sacrificing weight. Accurate parts design and placement ensures a perfect fit.

CAD Drawn Plans

The plans in this kit are not copied from a master set! They are originals drawn directly from the CAD program where the airplane was designed. We do this because it allows us to use color, which helps you better visualize the various components of the airplane, and we can use better quality paper, which greatly reduces the possibility of shrinkage. Since you're going to build directly on the plans, they ought to be the proper size! Also, parts placement is guaranteed to be accurate, so you can build a better, straighter model.

Laser Cut Parts

The same program that generates the design and plans also drives the laser, so every part is reproduced exactly as it was designed. Laser cutting also allows us to fit more parts on each sheet of wood, reducing the waste, and lowering the cost to you. Since laser cutting does not have the same limitations that mechanical cutters do, small and hard-to-produce parts are simply a computer file away, so you get a more accurate airplane.

Plastic and Fiberglass

The cowl is accurately reproduced in high quality fiberglass. The canopy is accurately reproduced in clear plastic, and is molded in two pieces; tailor-made to show an open canopy! The wing fillets, belly pan, tail cone, and other accessories are molded in plastic to ease the building and finishing chores!

A Word About the Building Options

Engine Options

Many parts of the country (and the world) sit at higher elevations. At 7200 feet, a .40 size airplane will barely fly with a .40 engine. The engine size range of .45 to .61 for this kit is designed to compensate for engine performance loss due to elevation. Below 3500 feet in elevation, a good .45 will fly the Dauntless with authority. Above 3500 feet, a larger engine will help return the airplane to sea level performance.

Electric Options

Electric conversion on a kit this size is very easy and straightforward. You will simply need to plan for a battery hatch in order to save having to remove the wing for battery changes.

Retract Options

Retract installation is shown on the plans and explained in these instructions for Robart Pt. No. 605 Pneumatic Retracts. The unique landing gear arrangement on the SBD limits the retract choices, and if the Robarts are selected, some modifications will need to be made. Don't worry, they're mods that Robart designed into the retract, so follow the explanation in these instructions and they'll work fine!

Flaps

The flaps and dive brakes can be made functional. A linkage arrangement is shown on the plans, explained in this manual, and some required parts are provided. Be advised, however, that with the flaps and dive brakes in their full extended position the drag rise will be so great that the airplane won't maintain level flight. Use them as they were intended, in a dive, and you'll be performing scale-like bomb runs in no time!

General Building Information

The SBD can be built by a person with average building skills. It is designed for someone who has built a trainer or low wing sport plane. No unusual building techniques are required, although more difficult areas are explained in detail where necessary. Certain steps in the building process must be followed as depicted, or you might find yourself digging back into the structure to redo something. These areas are outlined when necessary.

Occasionally hints will be included at certain building steps. These are not required for completion, rather they are tips intended to ease a particular process.

The laser does not cut through the wood, it burns its way through. As a result of this, occasionally there will be scorching on the surface of the wood. This is normal, and is only a surface discoloration, and does not affect the wood in any other way. Similarly, the laser settings are optimized for wood density averages, so occasionally, due to variations even in individual sheets, some areas might not cut through completely. This is apparent mainly with the plywood. Simply use care in removing the parts from the sheets; most of the time, the parts will literally fall out of the sheets!

The Center Wing Section building steps are shown for both Fixed Gear and Retract installation. Decide which gear installation you want to go with, and use the appropriate building section.

Hardware and a motor mount are not included in the kit. There are so many choices for quality hardware that these choices are left to the individual preferences of the builder, rather than include something in the kit that you'll probably throw away anyway. A vibration-dampening motor mount is recommended for use regardless of engine choice, so select a mount suited to your particular engine.

This aircraft is not a toy. It must be flown in a responsible manner according to the rules set forth by the Academy of Model Aeronautics. The builder assumes the responsibility for the proper assembly and operation of this product. Skyshark R/C Corporation shall have no liability whatsoever, implied or expressed, arising out of the intentional or unintentional neglect, misuse, abuse, or abnormal usage of this product. Skyshark R/C Corporation shall have no liability whatsoever arising from the improper or wrongful assembly of the product nor shall it have any liability due to the improper or wrongful use of the assembled product. Skyshark R/C Corporation shall have no liability for any and all additions, alterations, and modifications of this product.

Having said that mouthful, turn the page and start building the best airplane on the market!

Accessories needed to finish the Dauntless:

Sullivan Gold-N-Rods, 48" (Part no. 504) or other appropriate pushrods

Sullivan RST-8 or -10 Fuel Tank or other 8 - 10 ounce fuel tank

Motor mount for appropriate engine

Prop Hub

3" Main Wheels (Robart #133)

1" Tailwheel (Dubro 100TW)

Hinges - We normally use CA hinges for ease.

Control Horns, Clevises, Bolts, Nuts, Screws, etc. (consult our website)

1/9th Scale Pilot Bust Figure

Engine, Muffler, Radio, Covering, Paint, etc.

Electric Conversion:

Brushless Outrunner Motor 400-600Kv
E-flite Power 52

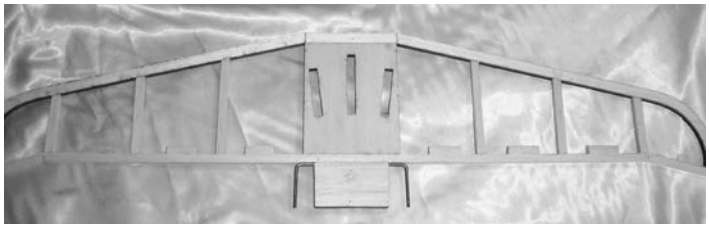
ESC: OS70, Cobra 80 or E-flite 80

Battery: Ulti-Power 5 cell 3300 - 5200

Rare Earth Magnets for battery hatch.

Notes:

Horizontal Tail Assembly



☐ 1. Pin S1, both S2s, and S3 to the board.

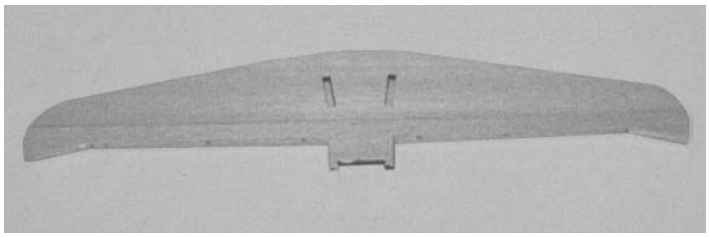
2. Cut the stab trailing edge pieces from ¼ x ¼ balsa stock and pin in place. Glue all the pieces.

3. Cut stab stringers from ¼ x ¼ balsa stock and glue in place.

4. Notch the front of S4 to allow for the elevator joiner wire. Coat the wire with oil, position in place, and glue S4 in place, trapping the wire.

Hint:

Hinges are not provided in the kit because everyone has their own idea of the best hinge. Although not shown, it is a good idea to select hinge points now, before sheeting, and add reinforcements to the hinge attach areas. Cut small pieces of ¼ x ¼ scrap balsa and glue behind the trailing edge to add to the amount of wood the hinges will have to hold on to. Use three evenly spaced hinge points per control surface for best results.



☐ 1. Using 1/16 x 4 x 36 sheets, cut the sheets to size and edge glue where necessary to form the top and bottom sheets. Sheet the top of the stab.

2. Open up the slot for the vertical stabilizer.

3. Sheet the bottom of the stab. Open up the slots for the horizontal stab alignment.

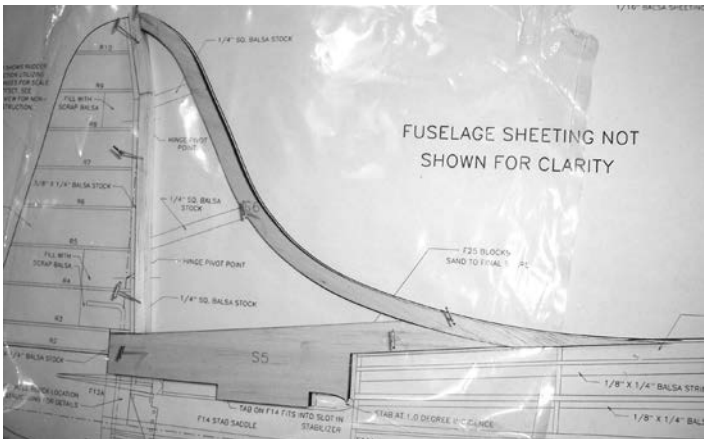
4. Trim and sand the stab edges smooth. Sand the leading edges to shape.

Hint:

Most of the sheeting on the model will require edge gluing several pieces together. A smoother finish will result from gluing the sheets together and sanding smooth prior to placing the sheets on the assemblies. Use wax paper under the sheets while gluing, or you may inadvertently glue the sheets to your work table!

Vertical Stabilizer Assembly (Scale)

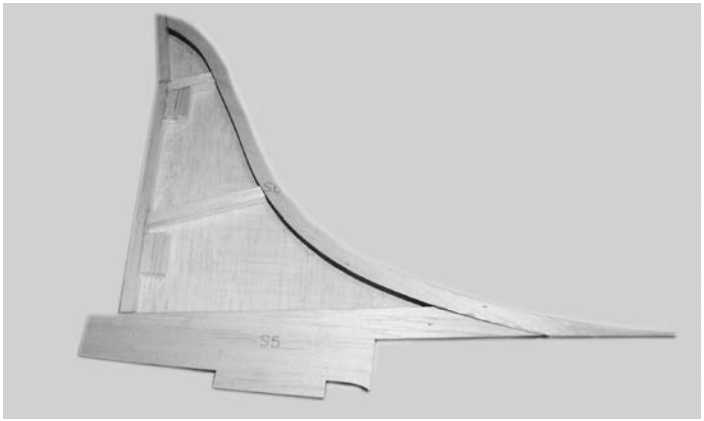
The scale rudder did not pivot at the rudder/stab juncture. Rather, the rudder hinge points were offset from the leading edge to provide for control surface balancing. This scale rudder appearance can be duplicated by using Robart #309/310 Hinge Points. If you do not wish to duplicate this feature, skip steps 1 through 5 in the scale section and build the vertical stab starting at step 1 in the non-scale section.

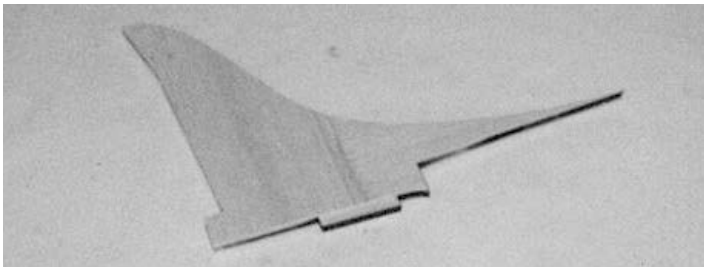


☐ 1. Use the vertical stabilizer depicted as scale on the plans for this step. Pin S5 and S6 to the board.

2. Cut the stab trailing edge and stab stringers from ¼ x ¼ balsa stock. Pin in place. Glue all the pieces.

3. At the hinge points depicted on the plans, use scrap ¼ x ¼ balsa to reinforce the hinge points. Carefully drill or bore holes for the Robart hinges.

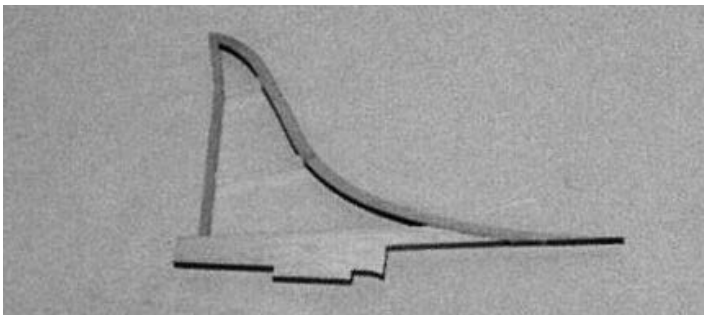




☐ 4. Using 1/16 x 4 x 24 sheets, cut sheets to size and edge glue to form the sheets for the vertical stab.

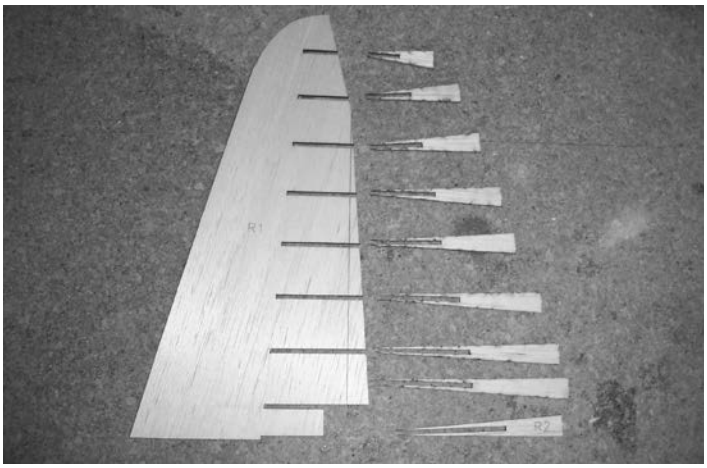
5. Sheet the vertical stab. Do not extend the sheeting to the tab on S5. This tab will slide into the slot in the horizontal stabilizer for alignment purposes. Trim and sand the stab.

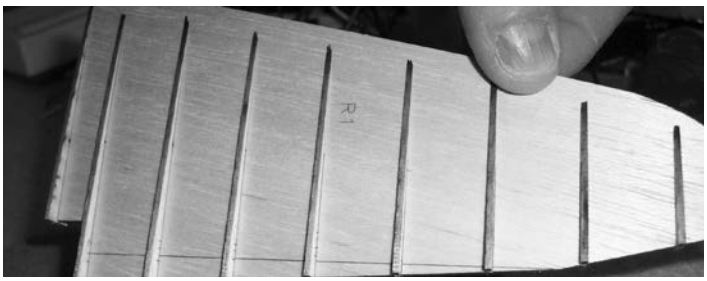
Vertical Stabilizer Assembly (Non-Scale)



- [ ] 1. Use the non-scale stab depiction on the plans to build the vertical stabilizer. Pin S5 and S6 to the board.
2. Cut the stab trailing edge and stab stringers from ¼ x ¼ balsa stock. Pin in place. Glue all the pieces.
3. Using 1/16 x 4 x 24 sheets, cut the sheets for the vertical stab and edge glue. Sheet the vertical stab. Do not sheet the tab on S5.
4. Trim and sand the vertical stab. Sand the leading edge to shape.

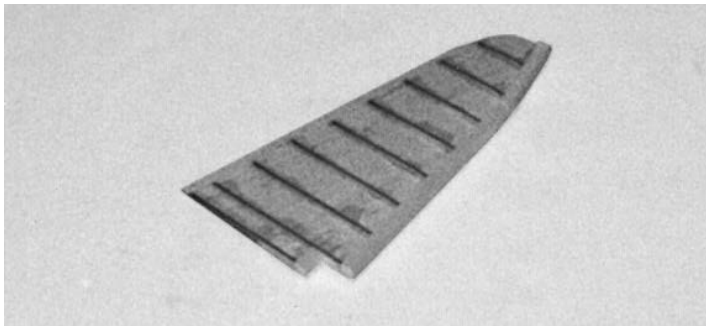
Rudder Assembly (Scale)





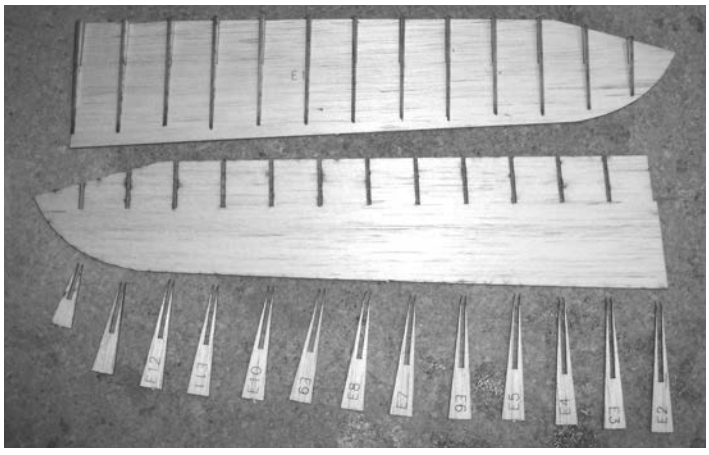
- [ ] 1. Slide R3 thru R8 into the slots in R1.
2. Cut the longer rudder leading edge piece from ¼ x 3/8 balsa stock. Align this with R1 and the ribs and glue.
3. Slide R9 and R10 into the slots in R1.
4. Cut the shorter rudder leading edge piece from ¼ x 3/8 balsa stock. Align with R1 and the ribs and glue.
5. Slide R2 into the slot in the bottom of R1. Cut the remaining rudder piece from ¼ x 3/8 balsa stock, align, and glue.
6. Mark the areas where the hinges will be located. Fill these open bays with scrap balsa and sand to match the rib taper. Be sure the filled areas allow for the depth of the hinge line plus at least ½ inch for hinge support. See Figure 6.

Rudder Assembly (Non-Scale)



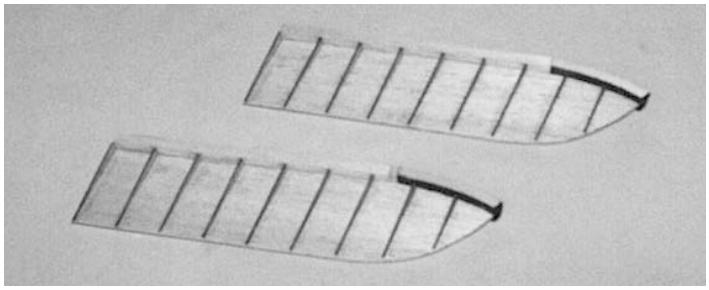
- [ ] 1. Carefully cut R1 along the scribed marks. Slide R3 thru R8 into the slots in R1. Mark the ribs at the new edge of R1 and trim to fit.
2. Cut the longer rudder trailing edge piece from ¼ x 3/8 balsa stock. Align this piece with R1 and the ribs and glue.
3. Slide R9 and R10 into the slots in R1. Cut the shorter rudder trailing edge piece from ¼ x 3/8 balsa stock, align, and glue in place.
4. Slide R2 into the slot in the bottom of R1. Cut the remaining piece from ¼ x 3/8 balsa stock, align and glue in place.

Elevator Assembly



- [ ] 1. Slide E2 thru E12 into slots in E1.
2. Cut the longer elevator leading edge piece from ¼ x 3/8 balsa stock. Align this piece with E1 and the ribs and glue.
3. Slide E13 and E14 into the slots in E1.
4. Cut the shorter elevator leading edge piece from ¼ x 3/8 balsa stock. Align with E1 and the ribs and glue.
5. Repeat for the remaining elevator. Set the assemblies aside for now.

Aileron Assembly



☐ 1. Glue 3 A2s together, making a stack ¾ inch tall.

2. Cut the aileron leading edge from ¼ x ¾ balsa stock. Glue the A2 assembly to this piece.

3. Slide A3 thru A11 into the slots in A1.

4. Align the leading edge assembly with A1 and the ribs and glue.

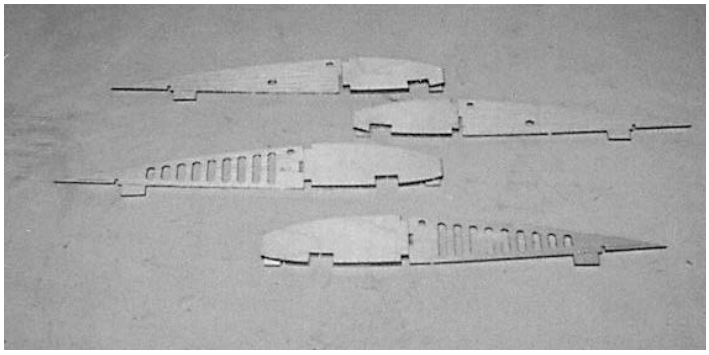
5. Trim and sand the aileron to shape. See Figure 9.

6. Repeat for the remaining aileron. Set the assemblies aside for now.

Wing Assembly
Center Wing Panel

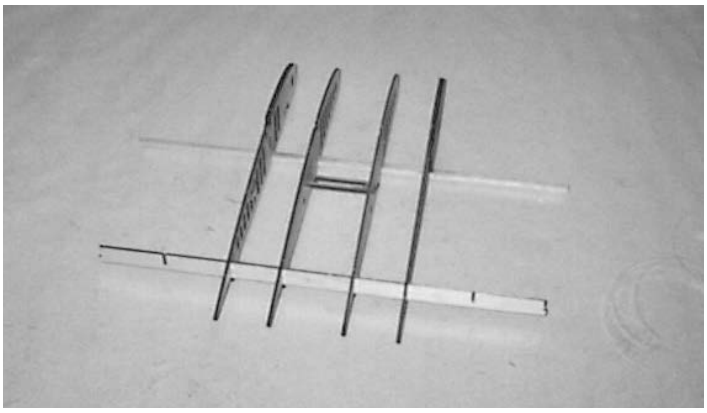
You must decide on fixed gear or retract installation before building the wing. Both installation procedures are detailed. If you install retracts, it is recommended that you read the instructions provided with the retracts at this time to familiarize yourself with the process, and to aid in adapting your retracts into this wing. Fixed gear installation is shown first, followed by Retract installation. Either procedure will build the center wing panel, so you don't have to jump back and forth.

Fixed Gear Installation



☐ 1. Epoxy W2A Ply Gear Support to W2. Make a left and right side (double-check yourself here - it's easy to make two left sides!).

2. Epoxy W4A Ply Gear Support to W4. Make a left and right side. Repeat the double-check procedure!

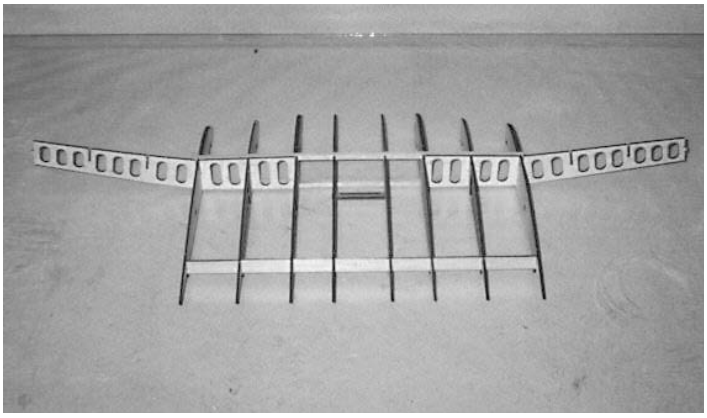


☐ 3. Cut the bottom spar from ¼ x ¼ x 36 balsa stock and lay on the plans. Position W13 in place on the plans. Align both W1s on the plans and pin in place.

4. Using slight upward pressure, seat the spar into the slots in the W1s and glue. Seat W13 into the slots and glue in place.

5. Slide W16 Aileron Servo Tray into the slots in W1 and glue in place.

6. Pin W2s in place, making sure that the Ply Gear supports face outward. Using slight upward pressure, seat the spar into the slots in W2 and glue in place. Glue W2s to W13.

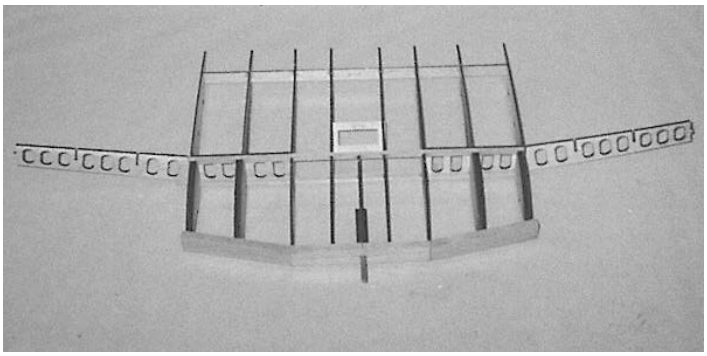


☐ 7. Slide W12 Ply Spar into the slot in W2. Repeat for the other side.

8. Slide W3s into the slot in W12 and W13. Seat the spar into the slot in W3 and glue. Glue W3 to W12 and W13.

9. Slide W4s into the slot in W12 and W13, making sure that the Ply Gear Support faces inward. Seat the spar and glue. Glue W4s to W12 and W13.

10. Cut the upper spar from ¼ x ¼ balsa stock and glue in place.



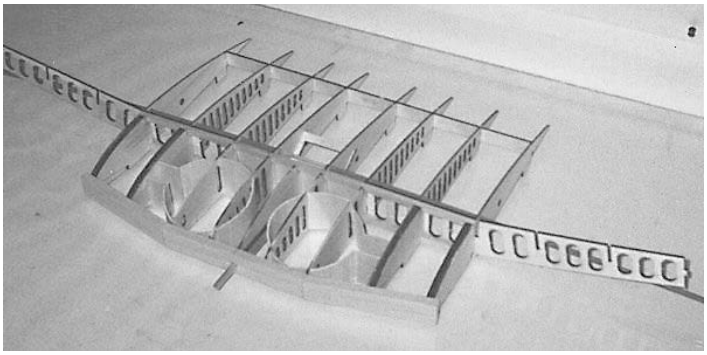
☐ 11. Glue a W15A to both sides of W15, aligning the slots. Glue W15Bs to the W15As to create a pocket for the dowel to slide into.

12. Glue W15 in place.

13. Cut the 3/8 x 1 x 18 balsa leading edge to size. Place the center leading edge in place and mark the position for the dowel hole. Drill or bore the hole and slide the dowel in place. Position the leading edge over the dowel and glue in place, but do not glue the dowel at this time.

14. Cut the remaining center wing section leading edge pieces to fit and glue in place.

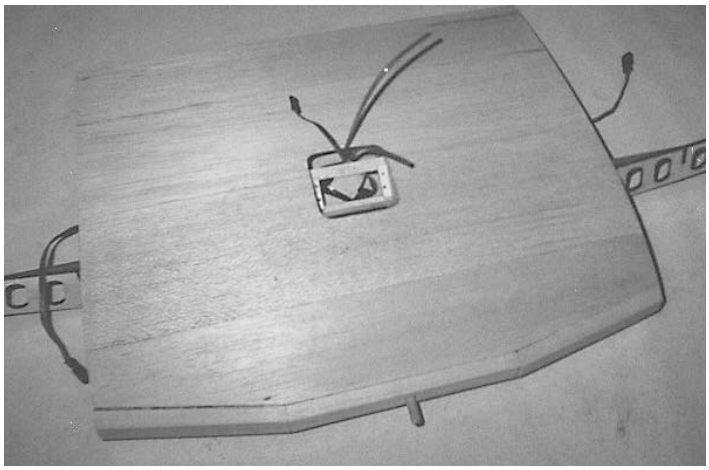
15. Cut shear webs from 1/16" sheet and glue in place between W1 and W2.



☐ 16. Glue ¼ x ¼ blocks to W16 Aileron Servo Tray as supports for the aileron servo. Trial fit the servo.

Note: *You may use any type of aileron linkage setup you desire. Pushrod installation as explained next uses Sullivan Gold-N-Rods and a Dubro Aileron Ball-Link Connector.*

17. Cut one red 48" pushrod housing into two 17" lengths. Cut one 48" yellow pushrod into two 19" lengths. Assemble the pushrods, aileron ball-link connector, and two 2-56 studs into one continuous pushrod. Slide this assembly through the pushrod holes behind the spar, centering the aileron connector between the W1s. Slide the pushrod housings over the pushrods so the ends stop at W1. Glue the pushrod housings at all the holes except at W1. Leave these free-floating.



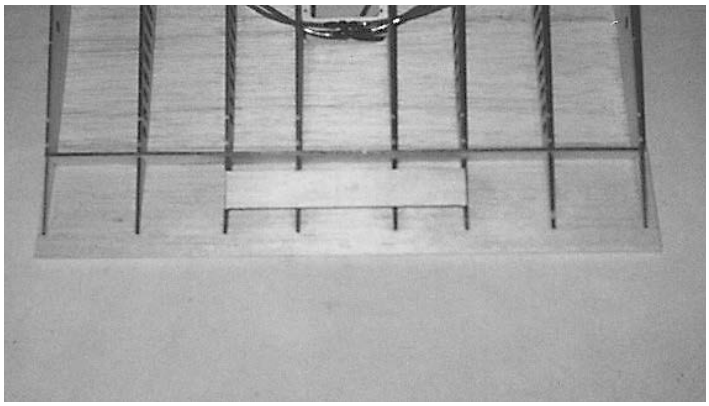
☐ 18. Lightly sand the tops of the ribs and spars to eliminate any high spots.

19. Cut three 1/16 x 4 x 36 balsa sheets and one 1/16 x 3 x 36 balsa sheet into 16" lengths. Edge glue three 4" sheets and one 3" sheet to make the top sheeting. Edge glue the remaining sheets to form the bottom sheeting.

20. Trim the sheeting leading edge to match the Center Wing Section leading edge, and sheet the top of the Center Wing Section.

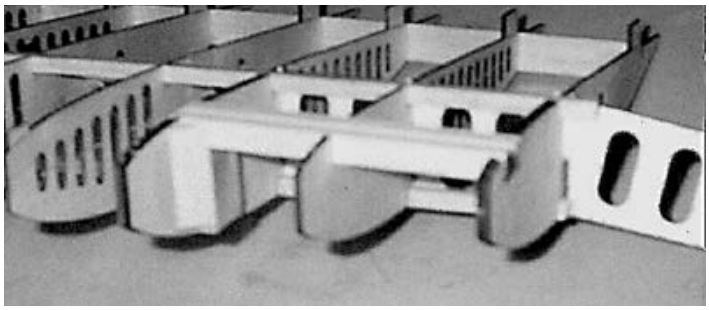
21. Sand the sheeting flush with W4s.

22. Cut a hole in the top sheeting to expose the aileron servo.



☐ 23. Remove the rib tabs and sand. Sand the tabs from W12 Ply Spar.

24. Trim the bottoms of W1 and W2 to accept W17 Ply Holddown Plate. Glue W17 in place.

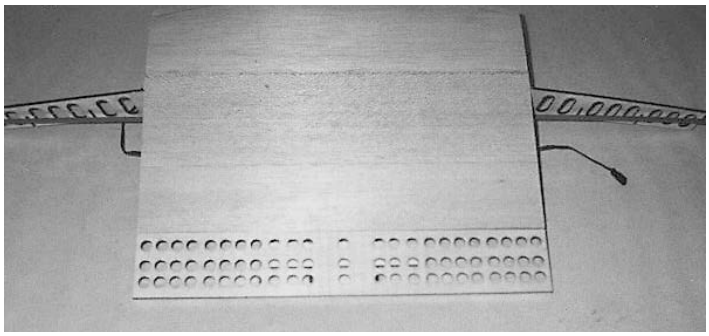


☐ 25. Epoxy W19 Maple Gear Block into the slots in W2, W3 and W4.

26. Epoxy W20 Gear Anchor to W19 and W2, making sure the slot in W20 faces W2.

27. Glue Tri-stock to the W20 for additional support as shown on the plans.

28. Using a 5/32 drill bit, CAREFULLY drill a hole in W19 to match the slot in W20. Do not get over-zealous while drilling the hole or you'll wind up drilling through the top sheeting! (I've NEVER done



☐ 29. If you wish to make the flaps functional, locate the points for flap hinges and add flap hinge supports now to W14. Place a servo Y-harness into position now, making sure the ends are accessible through W4 and the center servo hole.

30. Lightly sand the bottom of the Center Wing Section smooth.

31. Using the sheet made earlier, trim to match the leading edge and sheet the bottom of the Center Wing Section.

32. Trim and sand the sheeting at W4 and W14. Sand the leading edge to shape. Glue the dowel in place.

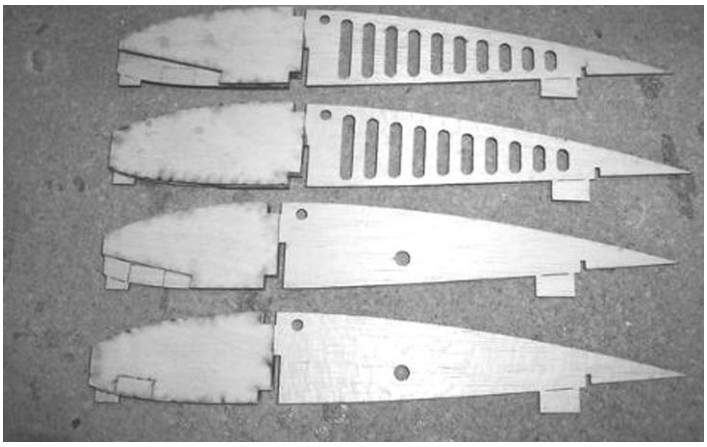
33. Bevel the trailing edge of the Center Flap Section.

34. Place the flap into position and trim the top sheeting trailing edge to match. Bevel the sheeting to fit to the flap.

35. The flap sections are cut slightly long; trim to fit. If you do not want operational flaps, glue the center flap in place now. Note that the proper position is with the single row of holes towards the front.

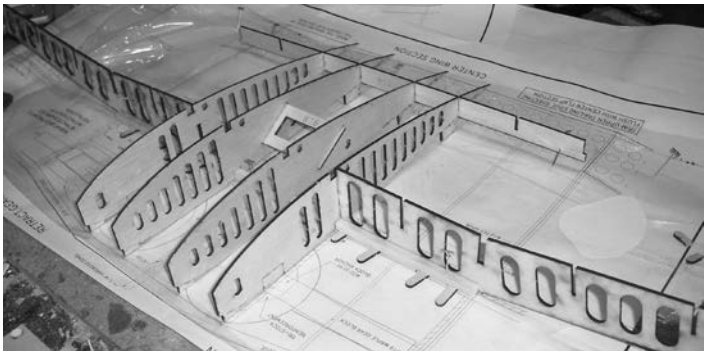
Retract Installation

This section is for retract installation. If you installed fixed gear, skip this entire section and continue with building the Right Wing Panel. The following shows installation for the Robart Pneumatic Retracts.



☐ 1R. Epoxy W3A Ply Gear Support to W3. Epoxy W3R to W3A, aligning the upper edges. Make a left and right side. (Double-check yourself here, it's easy to make two left sides!)

2R. Epoxy W4A Ply Gear Support to W4. Epoxy W4R to W4A, aligning the upper edges. Make a left and right side. Repeat the Double-check procedure!



☐ 3R. Cut the bottom spar from ¼ x ¼ balsa stock and lay on the plans. Position W13 in place on the plans. Align both W1s on the plans and pin in place.

4R. Using slight upward pressure, seat the spar into the slots in the W1s and glue. Seat W13 into the slots and glue in place.

5R. Slide W16 Aileron Servo Tray into the slots in W1 and glue in place.

6R. Pin W2s in place. Using slight upward pressure, seat the spar into the slots and glue. Glue W2s to W13.

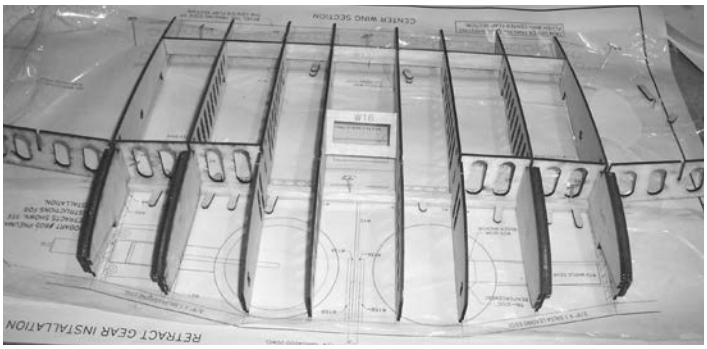
7R. Slide W12 Ply Spar into the slot in W2. Repeat for the other side.

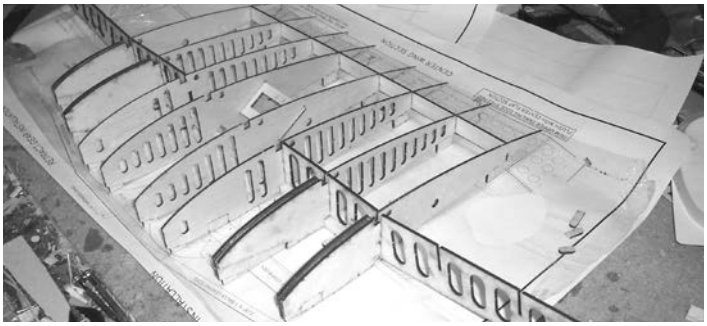
8R. Slide W3s into the slots in W12 and W13, making sure that the gear supports face outward. Seat the spar into the slot in W2 and glue. Glue W13 to W3s.

9R. Slide W4s into the slots in W12 and W13, making sure that the ply gear supports face inward. Seat the spar and glue. Glue W4s to W12 and W13.

10R. Cut the upper spar from ¼ x ¼ balsa stock and glue in place.

11R. Glue a W15A to both sides of W15, aligning the slots. Glue W15Bs to the W15As to create a pocket for the dowel to slide into.





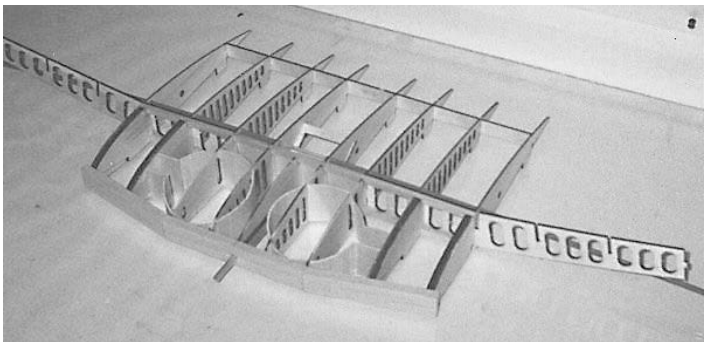
☐ 12R. Glue W15 in place.

13R. Cut the 3/8 x 1 leading edge to size. Place the center leading edge in place and mark the position for the dowel hole. Drill or bore the hole and slide the dowel in place. Position the leading edge over the dowel and glue in place, but do not glue the dowel at this time.

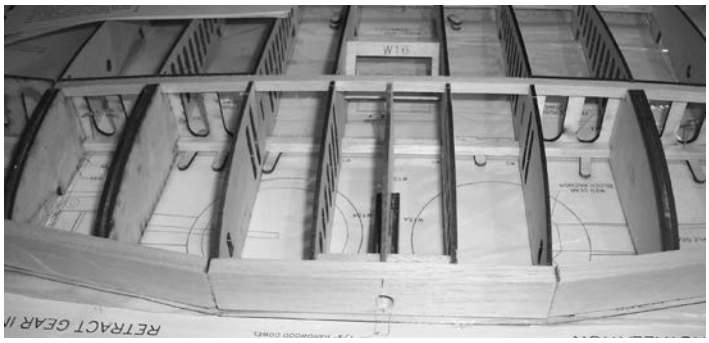
14R. Cut the remaining center wing section leading edge pieces to fit and glue in place.

15R. Cut shear webs from 1/16" balsa sheet and glue in place between W1 and W2.

This step will show how to install scale-like wheel wells. If you do not wish to do this, install the wheel wells of your choice.



☐ 16R. Using spare 1/16" balsa sheet, insert panels vertically about 1/16" inside the blue gear door outline shown on the plans. The panels should rest on the plans and extend slightly above the height of the ribs. Work carefully - try for a snug fit - care here will result in a good looking wheel well when you're finished. Leave the ribs intact and work around them. When complete, carefully sand the tops of the wheel wells flush with the ribs.



☐ 17R. Glue ¼ x ¼ blocks to W16 Aileron Servo Tray as supports for the aileron servo. Trial fit the servo.

Note: *You may use any type of aileron linkage setup you desire. Pushrod installation as explained next uses Sullivan Gold-N-Rods and a Dubro Aileron Ball-Link Connector.*

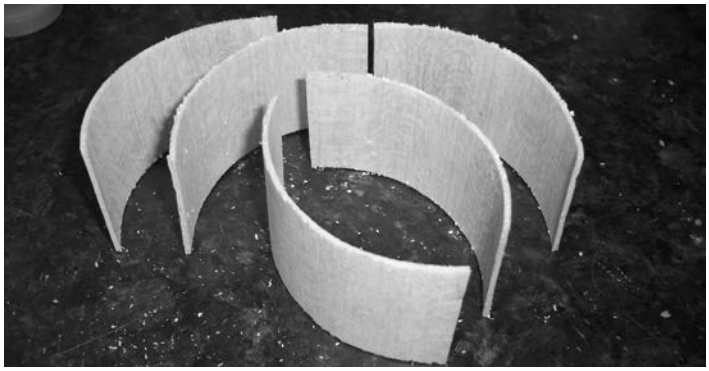
18R. Cut one red 48" pushrod housing into two 17" lengths. Cut one 48" yellow pushrod into two 19" lengths. Assemble the pushrods, aileron ball-link connector, and two 2-56 studs into one continuous pushrod. Slide this assembly through the pushrod holes behind the spar, centering the aileron connector between the W1s. Slide the pushrod housings over the pushrods so the ends stop at W1. Glue the pushrod housings at all the holes except at W1. Leave these free floating.

19R. Cut three 1/16 x 4 x 36 balsa sheets and one 1/16 x 3 x 36 balsa sheet into 16" lengths. Edge glue three 4" sheets and one 3" sheet to make the top sheeting. Edge glue the remaining sheets to form the bottom sheeting.

20R. Lightly sand the tops of the ribs and spars to eliminate any high spots. Trim the sheeting leading edge to match the Center Wing Section leading edge, and sheet the top of the Center Wing Section.

21R. Sand the sheeting flush with W4s.

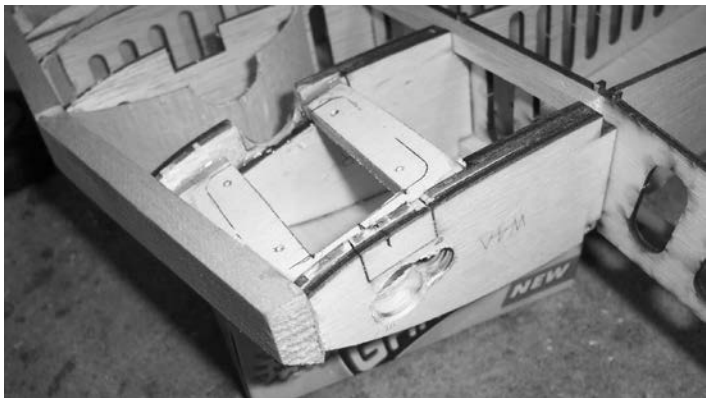
22R. Cut a hole in the top sheeting to expose the aileron servo.

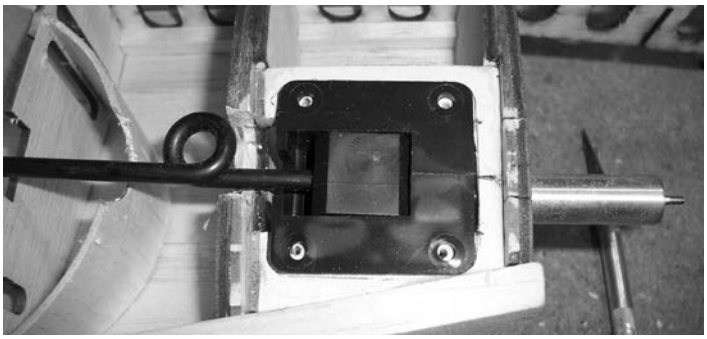


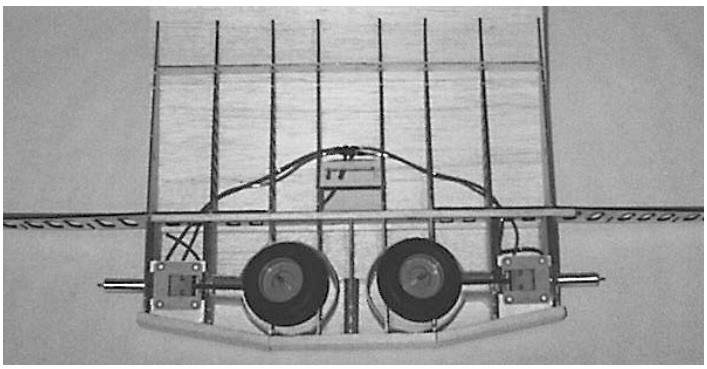
☐ 23R. Remove the rib tabs and sand. Sand the tabs from W12 ply Spar. Carefully sand the wheel wells flush with the rib bottoms.

24R. For the Robart Retract installation, disassemble the retract body by removing the five screws holding the two halves together. Remove the air cylinder and reverse it, placing the cylinder in the hole on the opposite side. Reassemble the retract unit, taking care to not over-tighten the screws. (Don't worry, Robart approves of this procedure)

25R. Place W21 in the cradle formed by W3 and W4. Test fit the retract unit to this and mark its position. Cut W21 to fit. Cut a hole in W4, W4A and W4R to allow the retract cylinder to pass through. Cut a slot in W3 for the gear leg.



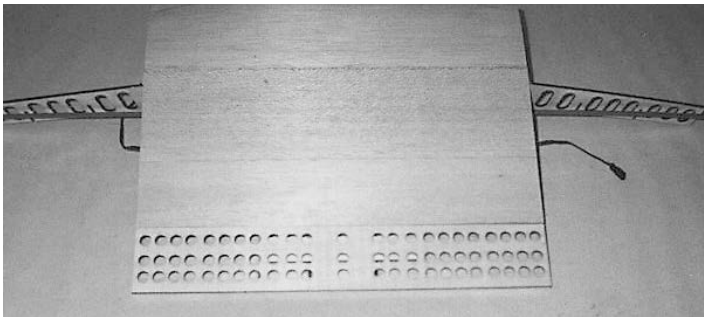




☐ 26R. Run the air lines for the retracts. Mount the retracts, gear wires, and wheels to test fit. When satisfied, Epoxy the mounts made from W21 in place. Use tri-stock behind and underneath for extra support.

☐ 27R. Trim the bottoms of W1 and W2 to accept W17 Ply Holddown Plate. Glue W17 in place.

28R. If you wish to make the flaps functional, locate the points for flap hinges and add flap hinge supports now to W13. Place a servo Y-harness into position now, making sure the ends are accessible through W4 and the center servo hole.

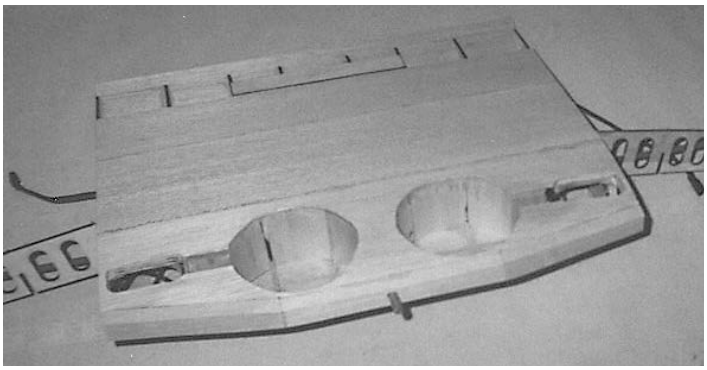


☐ 29R. Lightly sand the bottom of the Center Wing Section smooth.

30R. Using the sheet made earlier, trim to match the leading edge and sheet the bottom of the Center Wing Section.

31R. Trim and sand the sheeting at W4 and W14. Sand the leading edge so shape. Glue the dowel in place.

32R. Bevel the trailing edge of the center flap section.

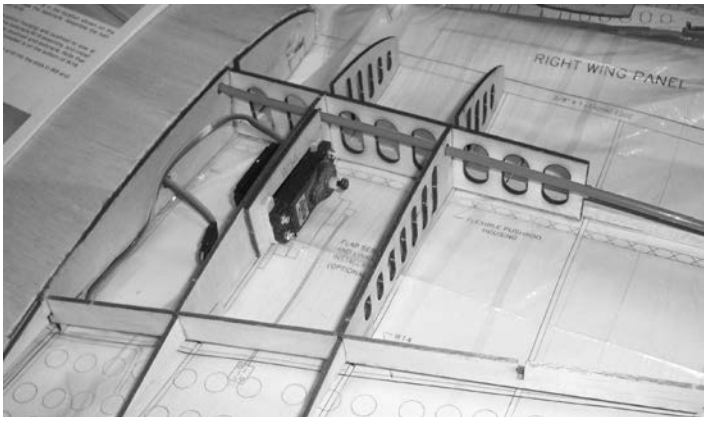


☐ 33R. Place the flap into position and trim the top sheeting trailing edge to match. Bevel the sheeting to fit to the flap.

34R. The flap sections are cut slightly long; trim to fit. If you do not want operational flaps, glue the center flap in place now. Note that the proper position is with the single row of holes towards the front.

35R. Open up the retract wells and wheel wells. Carefully trim the ribs in the wheel wells for wheel clearance. You may leave some of the rib intact for support and realism.

Right Wing Panel Assembly



☐ 1. Cut the bottom spar from ¼ x ¼ balsa stock. Align the spar with W12 and glue.

2. Cut away the balsa surrounding the pushrod hole in W4A, enough to slide W4A next to W4. Align W4A with W4 (they're the same size) and glue in place.

3. If you wish to add functional flaps, glue W5A to W5 and cut the balsa from the hole in W5A to open it up. Glue ¼ x ¼ supports in place for the servo and mount the servo.

4. Slide W5 over W12, align with the plans and glue to W12 and the spar.

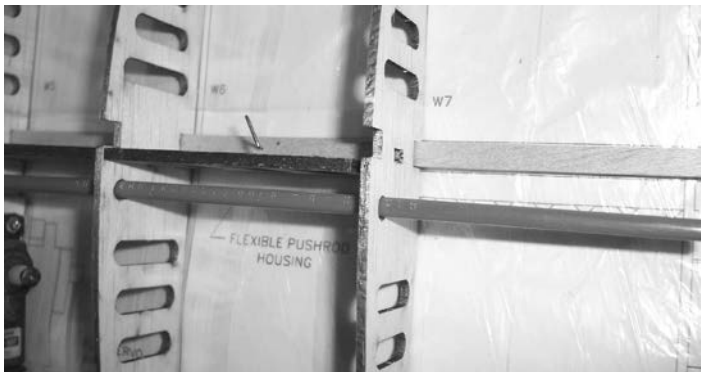
5. Slide W14 in place and glue.

☐ 6. Slide W6 over W12, align with the plans and W14, and glue.

7. Align W7 with W12, W14 and the plans, and glue in place.

8. Align W8 with W14 and the plans and glue.

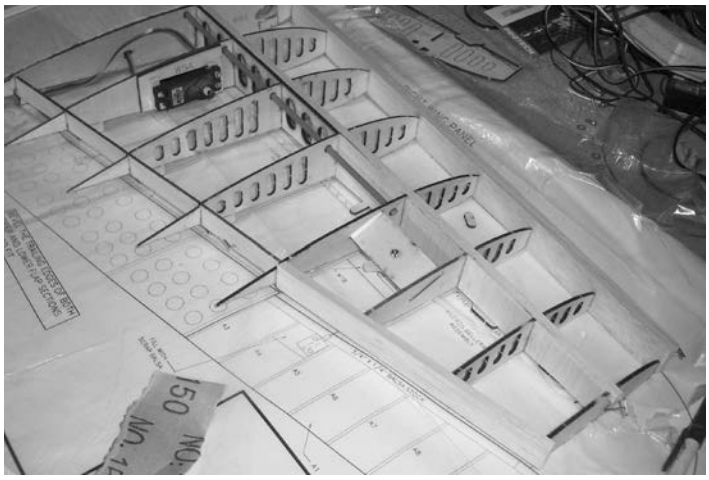
9. Drill a hole in W18 in the location shown in the plans to locate the bellcrank. Assemble the bellcrank on W24.



☐ 10. Drill a hole in W18 in the location shown on the plans to locate the bellcrank. Assemble the bellcrank on W18.

11. Cut the pushrod housing and pushrod to size at W8. Trial fit the bellcrank/W18 assembly, and install the clevis to the pushrod and bellcrank. Note that the bellcrank as installed is on the bottom of W18.

12. Glue W9 in place Slide w18 into the slots in W8 and W9, center, and glue.



☐ 13. Glue W10 and W11 in place.

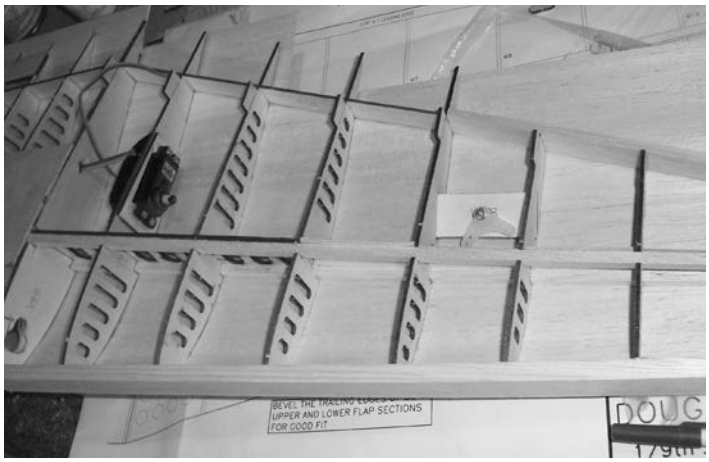
14. Cut the top spar from ¼ x ¼ balsa stock and glue in place.

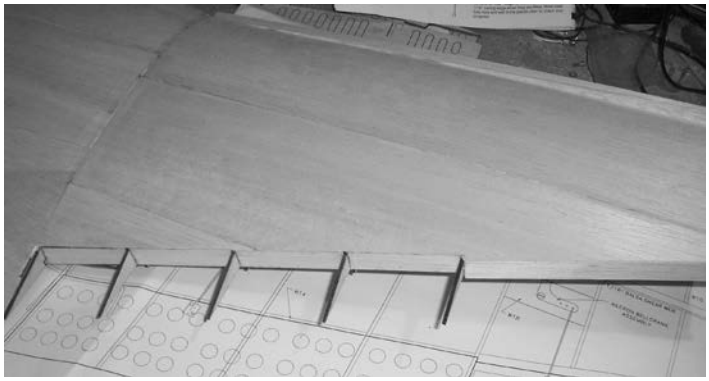
15. Cut the leading edge from 3/8 x 1 balsa stock and glue in place.

16. Cut the aileron brace from ¼ x ¾ balsa stock, trim to fit, and glue in place.

17. Cut shear webs from 1/16" balsa sheet and glue in place outboard from W7.

18. Sand the aileron brace and W14 to match the rib camber. Lightly sand the ribs and spar.



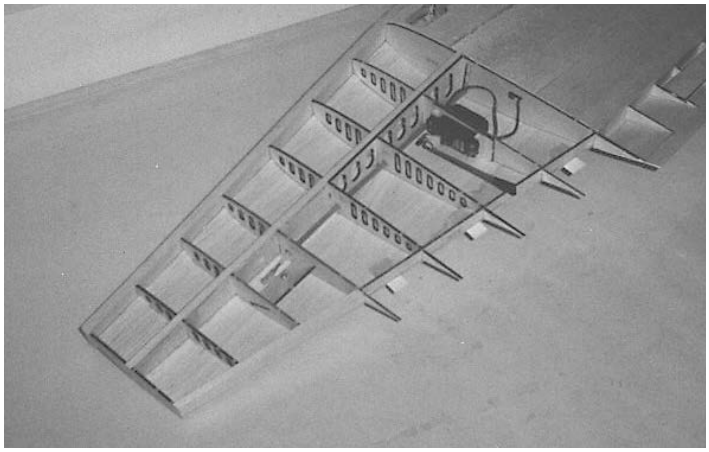


☐ 19. Cut two 1/16 x 4 x 36 balsa sheets and one 1/16 x 3 x 36 balsa sheet to 18". Edge glue two 4" sheets and one 3" sheet to form the Right Wing panel top sheeting. Edge glue the remaining sheets to form the bottom sheeting.

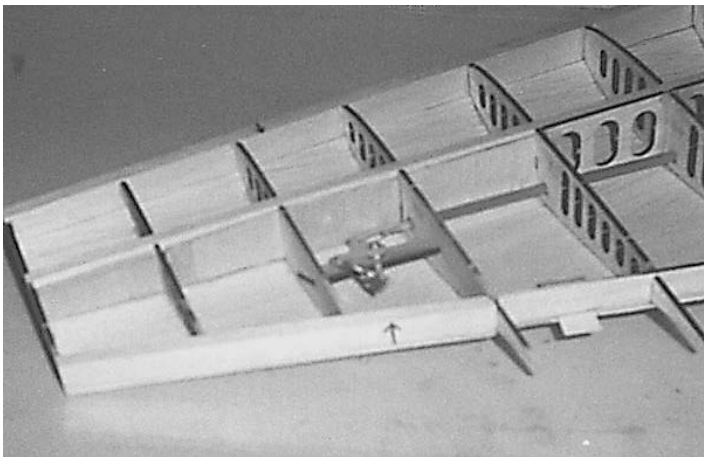
20. Trim the sheet to match the leading edge angle and the contour of the center section.

21. Sheet the top of the Right Wing Panel.

22. Trim the sheeting at W14, W11 and the aileron brace.

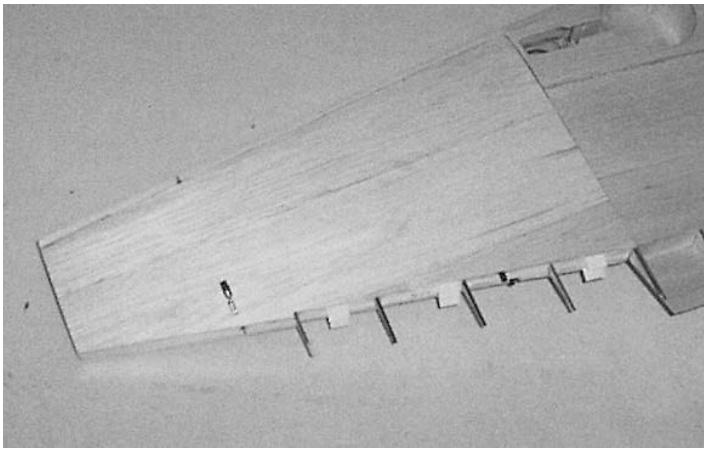


☐ 23. If you are adding functional flaps and dive brakes, locate the hinge points and add hinge supports behind W14 now. Install the flap/dive brake linkages at this time. A linkage setup which will operate both flaps and dive brakes from the same servo is shown on the plans. The linkage will allow, if your radio has a three position flap switch, the actuation of flaps only at the first position and full extension of both flaps and dive brakes at the second extension. For two position flap switches, only fully closed or fully open is possible.



☐ 24. Remove the rib tabs from the ribs and sand smooth. Sand off the tabs on W12. Sand any rough spots on the bottom of the wing smooth.

25. Make a Z-bend in the 2-56 pushrod and install on the bellcrank. Check for smooth motion. Align the pushrod perpendicular to the wing as shown and mark the leading and trailing edges as shown. This will help locate the position for the pushrod hole in the bottom sheeting.



☐ 26. Sand the aileron brace and W14 to the rib camber.

27. For flap installation, supports for a hatch cover for the flap servo should be added now.

28. Sheet the bottom of the wing.

29. Trim and sand the sheeting flush with W14, W11 and the aileron brace.

30. Using the marks made previously, locate and cut the hole for the pushrod exit.

31. Place the flap and dive brake into position and trim to size (the pieces are cut slightly oversize). Bevel the trailing edges of the flap and dive brake. Try to achieve a 1/32" edge on each piece to allow a 1/16" trailing edge when they are fitted. Work carefully here and test fit the pieces often to check your progress.

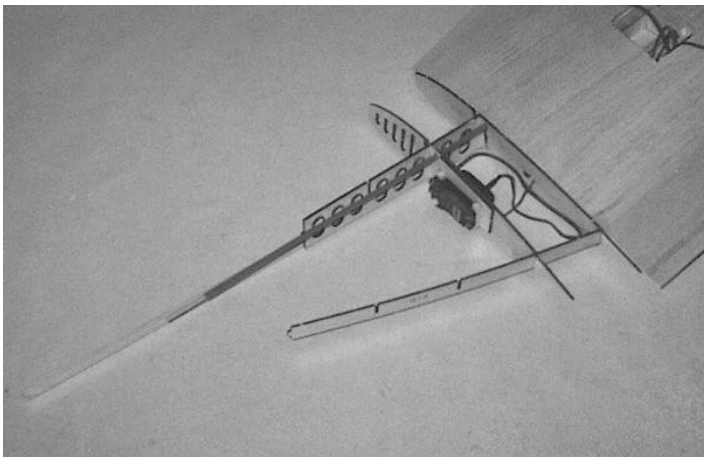
32. For fixed flap/dive brakes, glue the flap and dive brake into position. Note that for proper positioning, the single row of holes is positioned forward.

33. For operational flaps/dive brakes, bevel the leading edge of each piece to allow for opening, and set the flaps and dive brakes aside until final assembly.

34. Glue on the wingtip. Use the aileron as a guide for proper wingtip positioning; notice that the leading edge will have to be sanded slightly to match the contour of the wingtip.

35. Sand the wingtip to shape. Sand the leading edge to shape.

Left Wing Panel



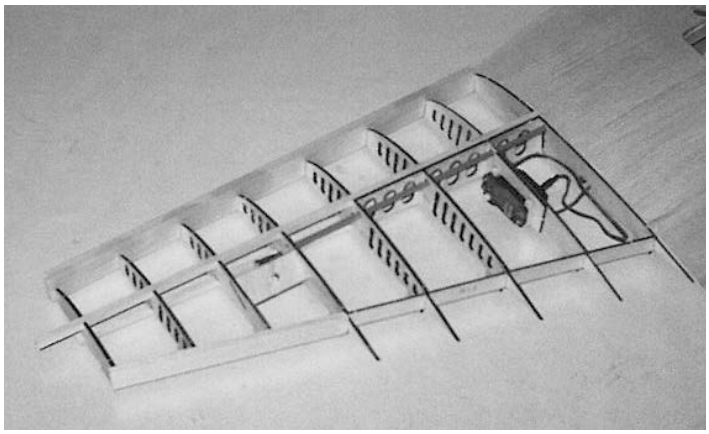
☐ 1. Cut the bottom spar from ¼ x ¼ balsa stock. Align the spar with W12 and glue.

2. Cut away the balsa surrounding the pushrod hole in W4A, enough to slide W4A next to W4. Align W4A with W4 (they're the same size) and glue in place.

3. If you wish to add functional flaps, glue W5A to W5 and cut the balsa from the hole in W5A to open it up. Glue ¼ x ¼ supports in place for the servo and mount the servo.

4. Slide W5 over W12, align with the plans and glue to W12 and the spar.

5. Slide W14 in place and glue.

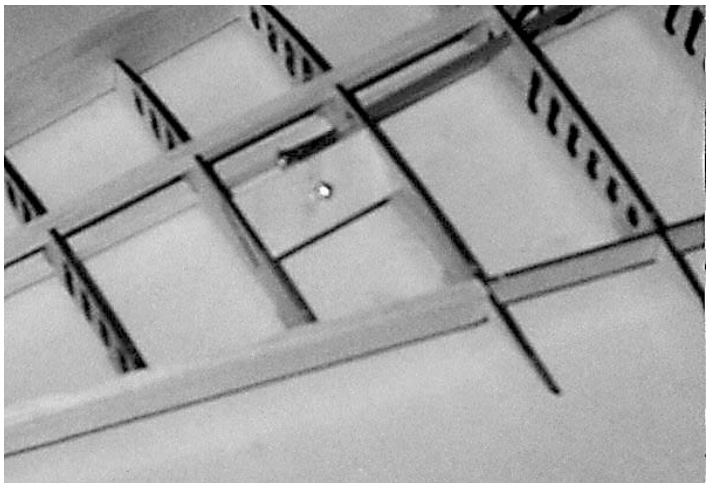


☐ 6. Slide W6 over W12, align with the plans and W14, and glue.

7. Align W7 with W12, W14 and the plans, and glue in place.

8. Align W8 with W14 and the plans and glue.

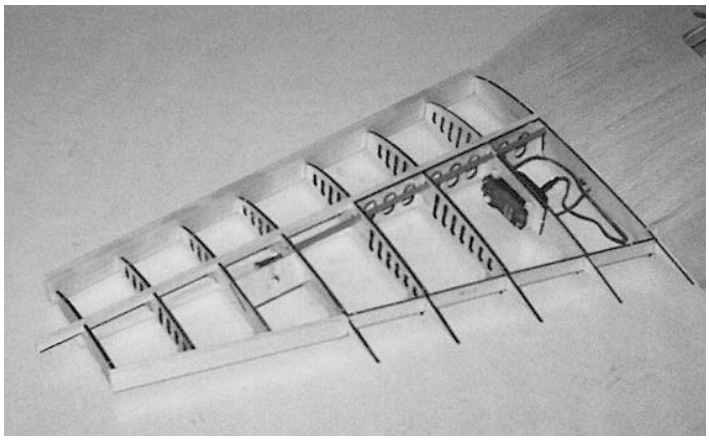
9. Drill a hole in W18 in the location shown in the plans to locate the bellcrank. Assemble the bellcrank on W24.



☐ 10. Drill a hole in W18 in the location shown on the plans to locate the bellcrank. Assemble the bellcrank on W18.

11. Cut the pushrod housing and pushrod to size at W8. Trial fit the bellcrank/W18 assembly, and install the clevis to the pushrod and bellcrank. Note that the bellcrank as installed is on the bottom of W18.

12. Glue W9 in place Slide w18 into the slots in W8 and W9, center, and glue.



☐ 13. Glue W10 and W11 in place.

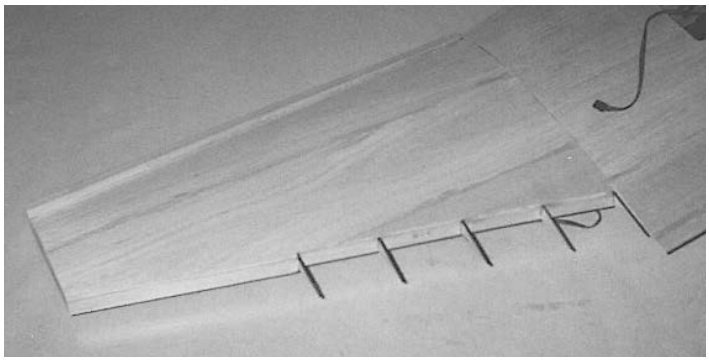
14. Cut the top spar from ¼ x ¼ balsa stock and glue in place.

15. Cut the leading edge from 3/8 x 1 balsa stock and glue in place.

16. Cut the aileron brace from ¼ x ¾ balsa stock, trim to fit, and glue in place.

17. Cut shear webs from 1/16" balsa sheet and glue in place outboard from W7.

18. Sand the aileron brace and W14 to match the rib camber. Lightly sand the ribs and spar.



26. Sand the aileron brace and W14 to the rib camber.

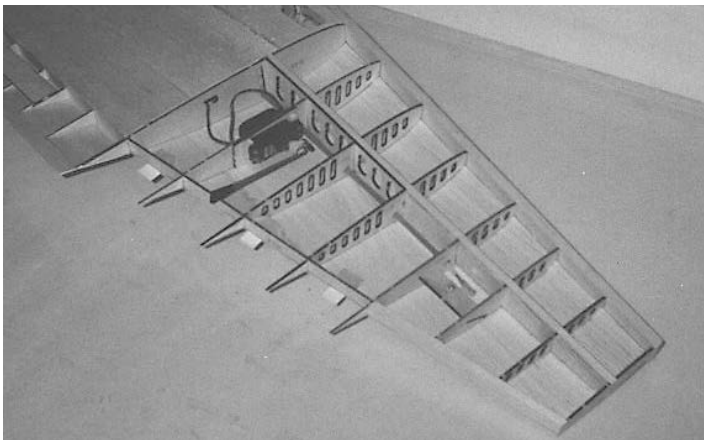
27. For flap installation, supports for a hatch cover for the flap servo should be added now.

☐ 28. Sheet the bottom of the wing.

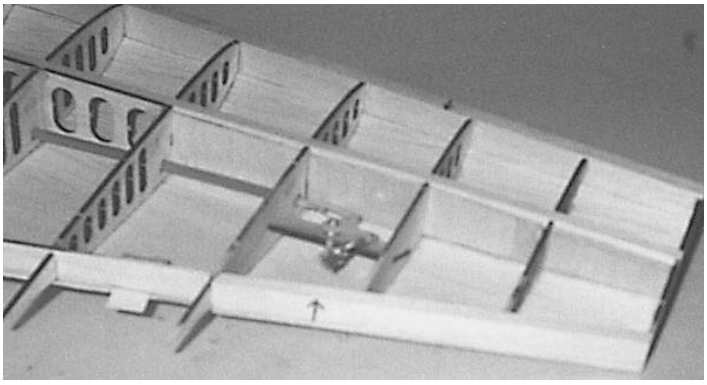
29. Trim and sand the sheeting flush with W14, W11 and the aileron brace.

30. Using the marks made previously, locate and cut the hole for the pushrod exit.

31. Place the flap and dive brake into position and trim to size (the pieces are cut slightly oversize). Bevel the trailing edges of the flap and dive brake. Try to achieve a 1/32" edge on each piece to allow a 1/16" trailing edge when they are fitted. Work carefully here and test fit the pieces often to check your progress.

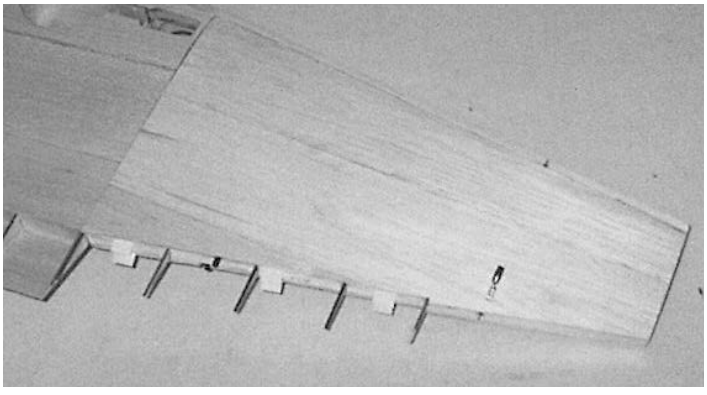


☐ 23. If you are adding functional flaps and dive brakes, locate the hinge points and add hinge supports behind W14 now. Install the flap/dive brake linkages at this time. A linkage setup which will operate both flaps and dive brakes from the same servo is shown on the plans. The linkage will allow, if your radio has a three position flap switch, the actuation of flaps only at the first position and full extension of both flaps and dive brakes at the second extension. For two position flap switches, only fully closed or fully open is possible.



☐ 24. Remove the rib tabs from the ribs and sand smooth. Sand off the tabs on W12. Sand any rough spots on the bottom of the wing smooth.

25. Make a Z-bend in the 2-56 pushrod and install on the bellcrank. Check for smooth motion. Align the pushrod perpendicular to the wing as shown and mark the leading and trailing edges as shown. This will help locate the position for the pushrod hole in the bottom sheeting.



☐ 26. Sand the aileron brace and W14 to the rib camber.

27. For flap installation, supports for a hatch cover for the flap servo should be added now.

28. Sheet the bottom of the wing.

29. Trim and sand the sheeting flush with W14, W11 and the aileron brace.

30. Using the marks made previously, locate and cut the hole for the pushrod exit. See Figure 44.31. Place the flap and dive brake into position and trim to size (the pieces are cut slightly oversize). Bevel the trailing edges of the flap and dive brake. Try to achieve a 1/32" edge on each piece to allow a 1/16" trailing edge when they are fitted. Work carefully here and test fit the pieces often to check your progress.

32. For fixed flap/dive brakes, glue the flap and dive brake into position. Note that for proper positioning, the single row of holes is positioned forward.

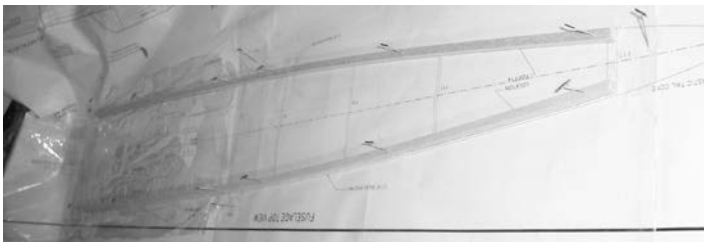
33. For operational flaps/dive brakes, bevel the leading edge of each piece to allow for opening, and set the flaps and dive brakes aside until final assembly.

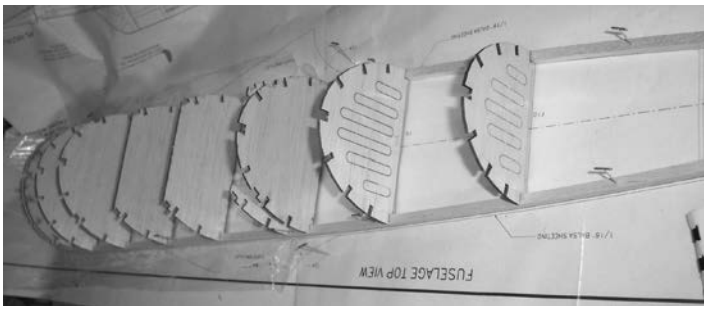
34. Glue on the wingtip. Use the aileron as a guide for proper wingtip positioning; notice that the leading edge will have to be sanded slightly to match the contour of the wingtip.

35. Sand the wingtip to shape. Sand the leading edge to shape.

Fuselage Assembly

Note: *The top half of the fuselage is built first, using the plans as a guide. The bottom half is built over the top.*





☐ 1. Pin ¼ x ¼ x 36 balsa sticks in place on the Fuselage Top View.

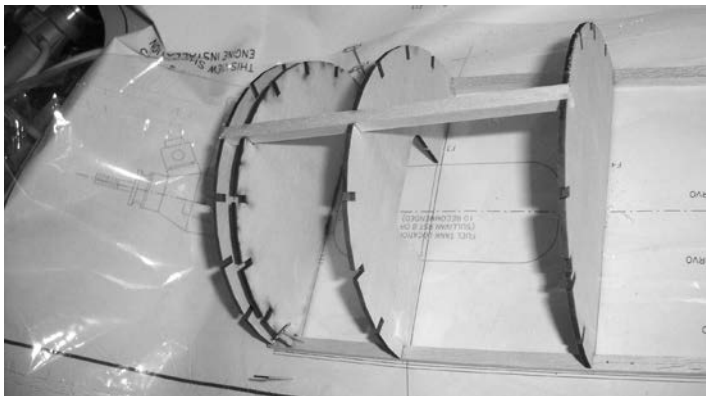
2. Glue F1A balsa former in place.

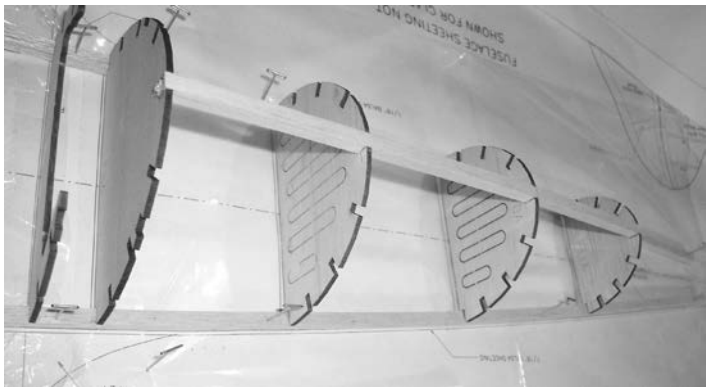
3. Glue F2 A Ply Firewall in place.

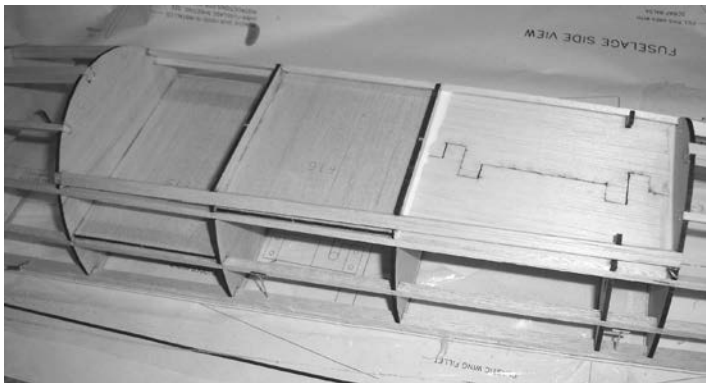
4. Glue F3A through F10A formers in place.

5. Glue ¼ x ¼ balsa stock in the notches from F1A to F4A.

6. Glue ¼ x ¼ balsa stock in the notches from F8A to F11A.





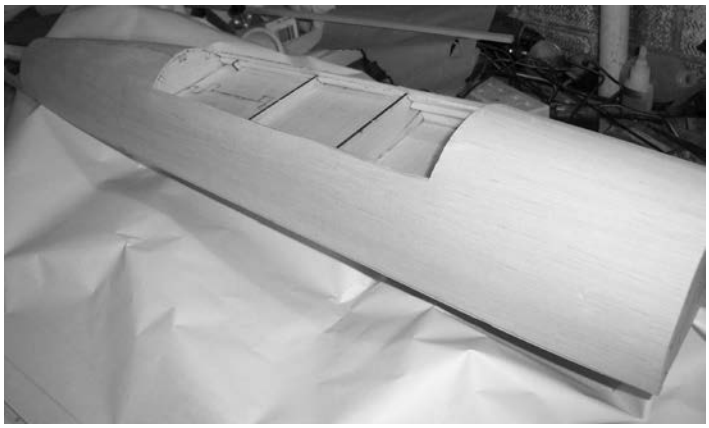


☐ 7. Working alternately side to side (this will help keep the fuselage straight), glue 1/8 x ¼ balsa stringers in the notches along the formers. Do not place the former at the top of F4A through F8A yet.

8. Slide F15 and F16 Cockpit Floors into place, resting the edges on the stringers. Glue in place.

9. Place the two pieces of F17 Cockpit Floor into position. Align and glue.

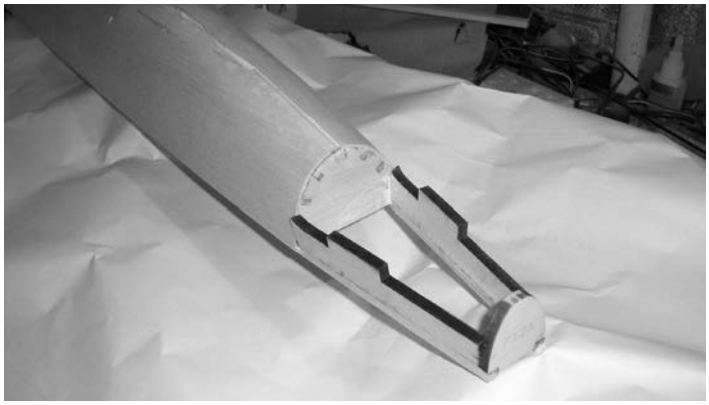
10. The top stringer between F4A and F8A is placed sideways relative to the other stringers. Cut this stringer from 1/8 x ¼ balsa stock and glue in place.



☐ 11. Cut short pieces of scrap 1/8 x ¼ balsa and place against the side of the fuselage. This will leave 1/8" spacing for the top and bottom sheeting.

12. Using 1/16 x 4 x 36 balsa sheet, sand the edge of the sheeting to allow it to lay flush with the spacers and conform to the curvature of the fuselage. Make two sheets.

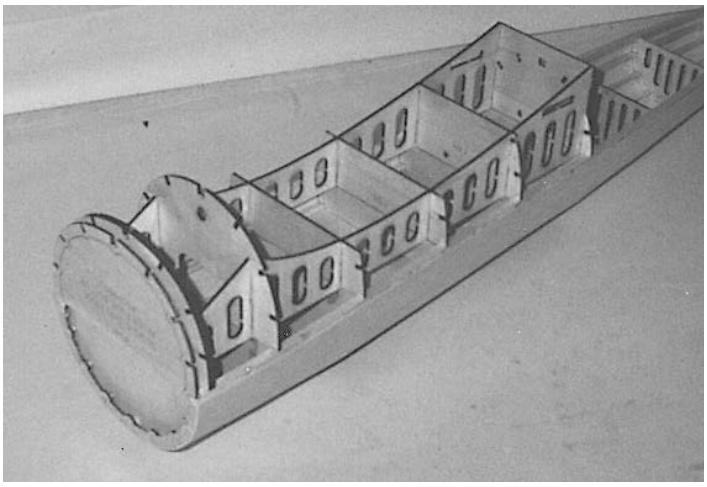
13. Glue both sheets to the bottom of the fuselage side. Working alternately side to side, glue the sheeting to the stringers and formers one section at a time, starting in the middle then working to the back and front. Work up the fuselage until the sheet will no longer easily follow the curvature. Now carefully cut the rough shape of the cockpit area away from the sheeting. This will relieve the stresses in the sheeting and will allow you to continue to the top. Using this method will require little if any wetting of the sheets to make the curve.



☐ 14. Trim and sand the sheeting at F1A, the cockpit area, and F11A.

15. Glue F12A in place.

16. Glue F14 Stab Saddles in place. It is helpful to use the stab as a guide to ensure proper alignment of the tabs on F14.

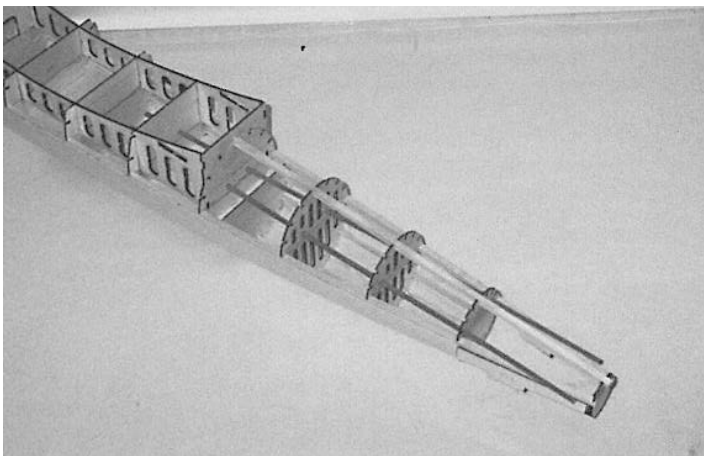


☐ 17. Epoxy F13 Firewall in place against F2A. Note that F13 is notched at the stringer locations to allow it to slide into place.

18. Epoxy F2B against F13 and F2A.

19. Align and glue F1B in place.

20. Position F20 Ply Wing Saddles in the notches in F2B. Slide F3B through F7B into place and align . Glue in place.

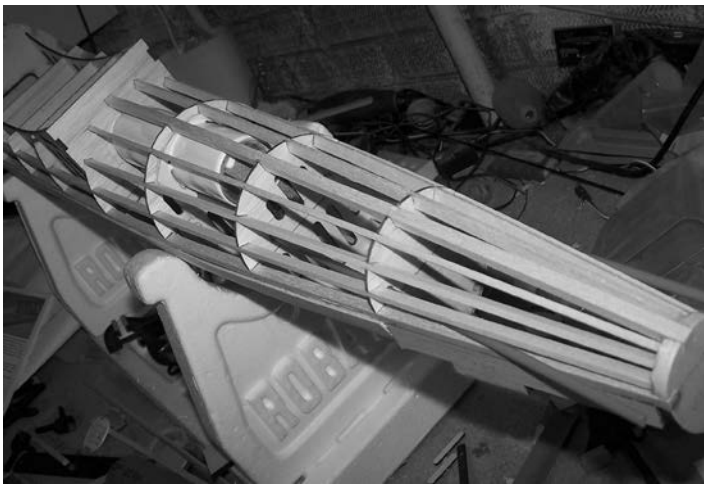


☐ 21. (For Retract installation only) The best place to locate the air cylinder is the space aft of F7B. Relieve the area necessary in F9B to mount the air tank. Figure 51 shows the air tank as mounted.

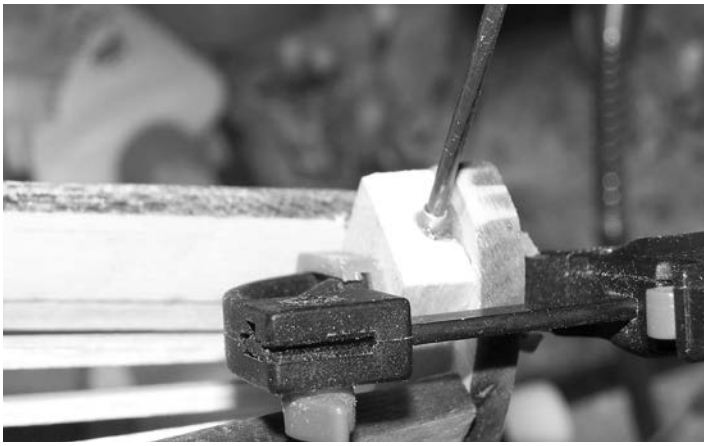
22. Align and glue formers F9B through F12B.

23. Cut the keel from ¼ x ¼ balsa stock. Slide the keel through the slot in F7B and into the notches in the formers. Glue in place. Glue a keel in the slots in F1B through F3B.

24. Cut the pushrod housings to size and slide into the holes in the formers. Glue in place.



☐ 25. Working alternately side to side, lay 1/8 x ¼ balsa stringers into the slots in F7B and the notches in the formers. Glue flush with F12B. You may need to relieve the stringers at the pushrod locations.

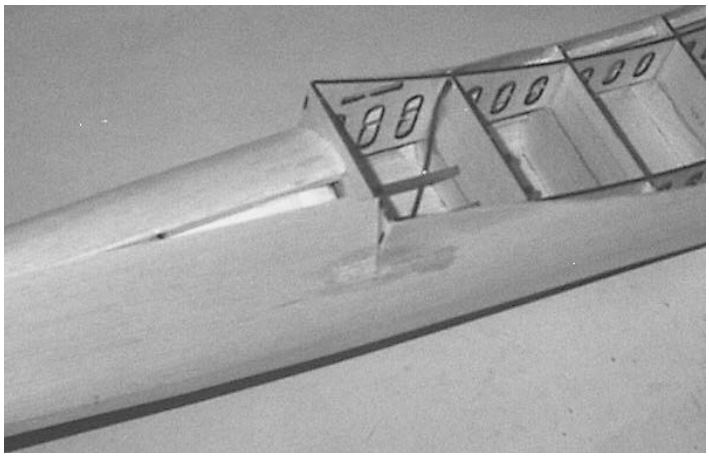


☐ 26. Slide a steering arm onto the tailwheel wire. Align the steering arm with the pushrod housing. Relieve any areas that will interfere with the steering arm motion.

27. Drill a hole in the ¼ x ¼ keel where the tailwheel wire will pass through.

28. Bend the wire in a 90 degree bend where the wire will join the rudder. Refer to the plans for clarity. Coat the wire with oil or petroleum jelly and epoxy the Tail Gear block in place. Check for binding with the steering arm.

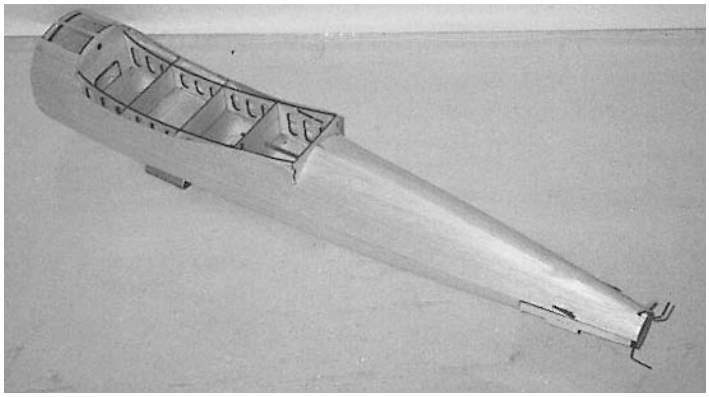
29. Use scrap balsa to block up the pushrods at their exit locations. Align with the steering arm and the elevator control arm location.



☐ 30. Using 1/16 x 4 x 36 balsa sheets, sheet the bottom of the fuselage in the same manner as the top. At the second stringer, cut the sheeting at F7B as shown and sheet the forward portion of the fuselage. At F1B, F2B/F13, and F3B, sheet only to the last stringer for now - leave an opening for wing alignment.

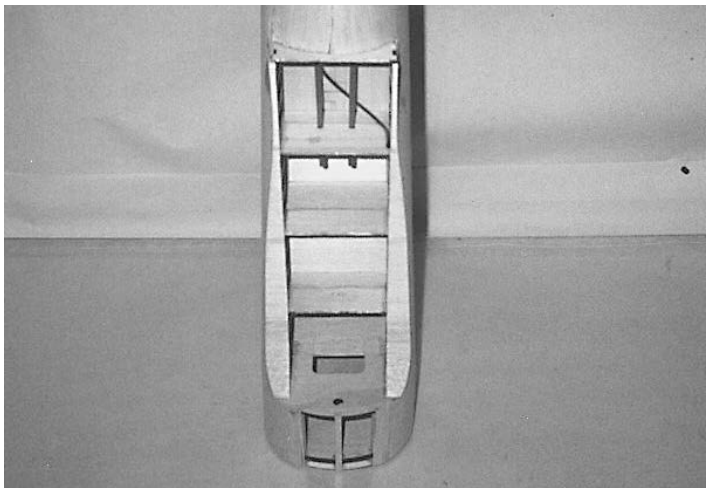
31. Carefully sand the edge of the rear fuselage sheeting at F7B so that it lays against the back of F7B. Continue sheeting the aft portion of the fuselage.

32. Trim and sand the sheeting. Remove the excess pieces of F1A and F1B.



☐ 33. Sand the sheeting even with the wing saddle. Use a straight edge or ruler to check your progress.

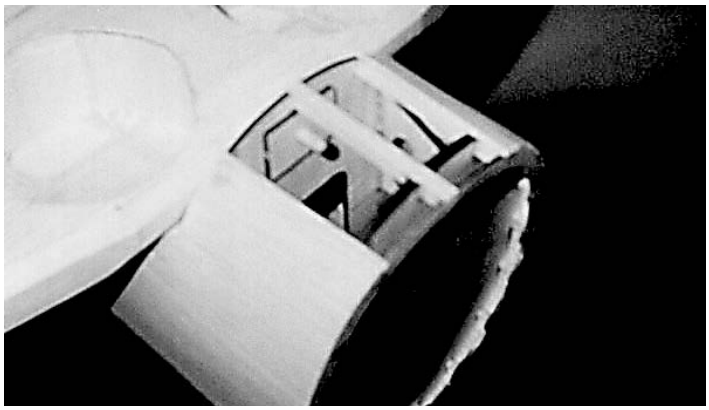
34. Cut the sheeting to open up the slot in F20 for the F22 Ply Holddown Plate. Slide F22 through the slot and epoxy in place. See Figure 54. (Note the opening in the sheeting at the forward part of the fuselage; this will be sheeted shortly)



☐ 35. Using short sections of 1/16” sheeting, sheet the wing saddle.

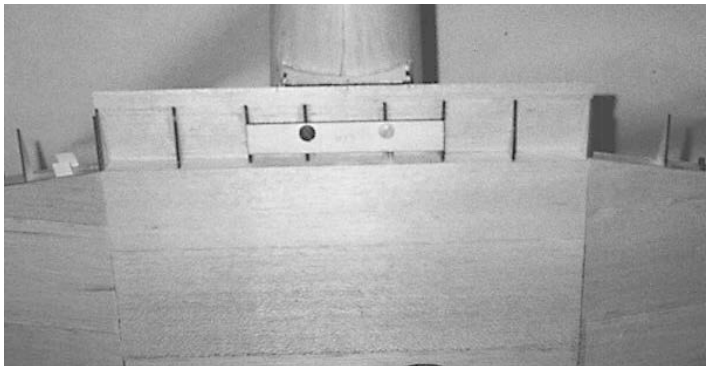
36. Trim and sand the sheeting at the wing saddle and fuselage sheeting.

37. Mount the wing in the saddle and trim and sand the sheeting for a good fit.

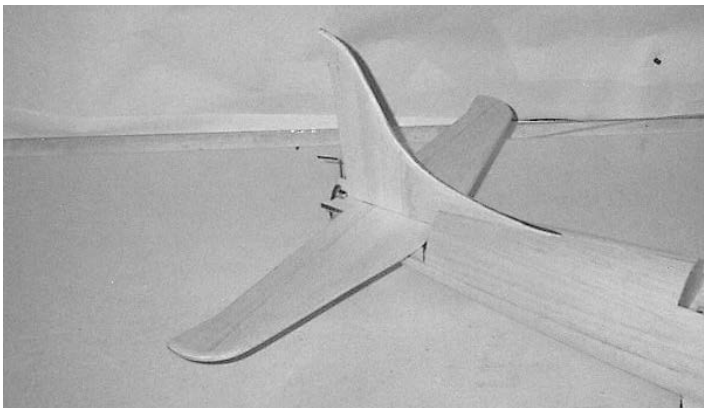


☐ 38. Align and center the wing. Mark its location. Note that the hole in F3B is cut oversize. This is to allow you to move the wing to center it. When you’re satisfied with the wing location, slide F21 over the wing dowel and epoxy F21 to F3B. Your wing is halfway aligned already!

39. Sheet the open portion of the fuselage.



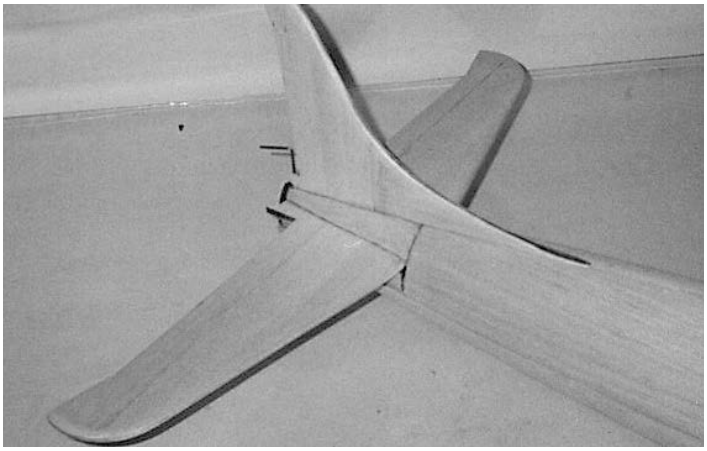
☐ 40. Remount the wing and recheck your alignment marks. When satisfied, Drill pilot holes through W17 and through F22. Open up these holes for the wing holddown bolts.



☐ 41. Mount the horizontal stabilizer onto the fuselage and check the alignment. Now would be a good time to re-check the rudder/tailwheel linkages also.

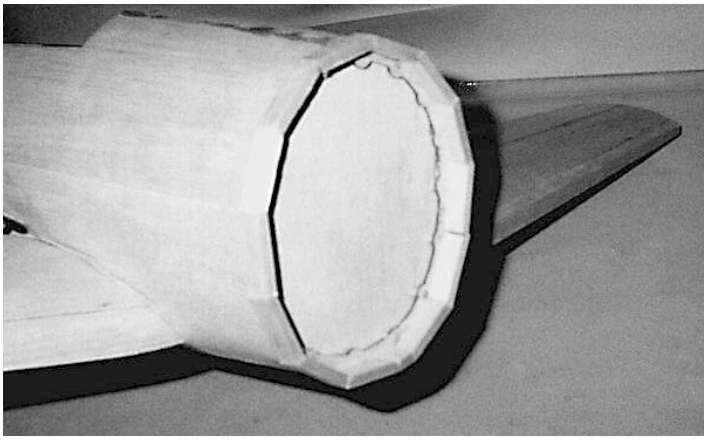
42. Epoxy the stab to the fuselage.

43. Slide the vertical stabilizer into the slot in the horizontal stabilizer, align, and epoxy in place.

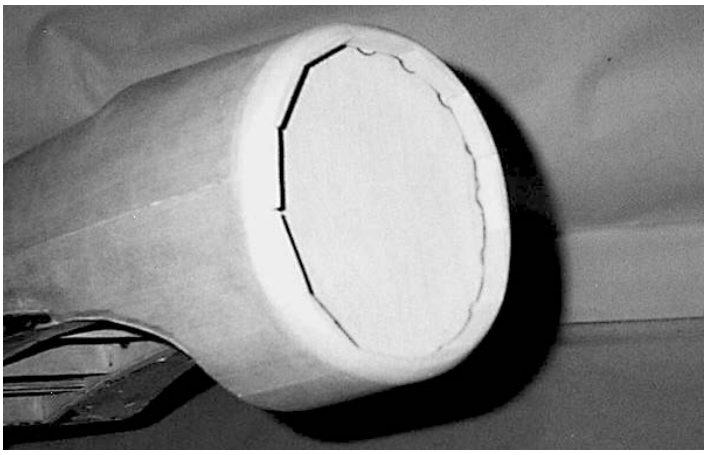


☐ 44. Shape the F25 blocks to fit the vertical stab/horizontal stab juncture. Glue in place and sand to shape.

45. Fill and contour the areas around the stabilizers and fuselage with lightweight putty and sand to shape.

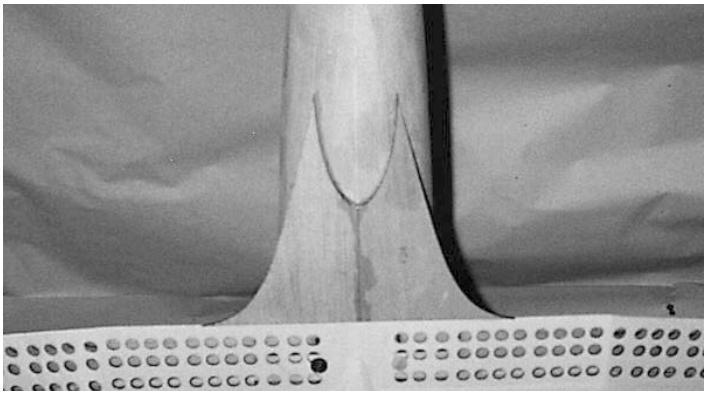


☐ 46. Cut short sections from ½ x ½ balsa stock and glue these segments around the fuselage front at F1A and F1B.

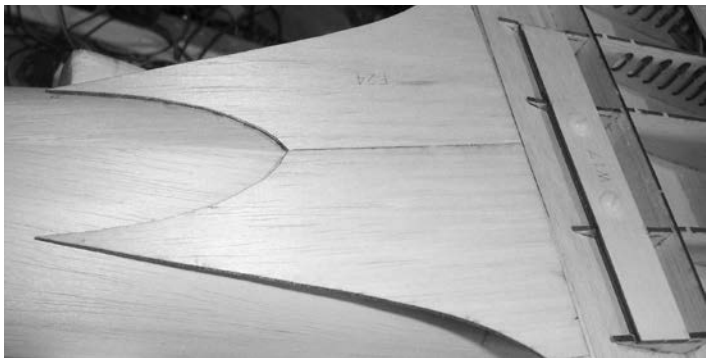


☐ 47. Sand the Cowl Ring flush with the fuselage sheeting and sand the front to a radius as shown on the plans.

☐ 48. Cut the tailcone halves from the plastic sheet. Glue the halves together and glue the tailcone to the aft fuselage. (Temporarily mounting the rudder will aid in alignment)

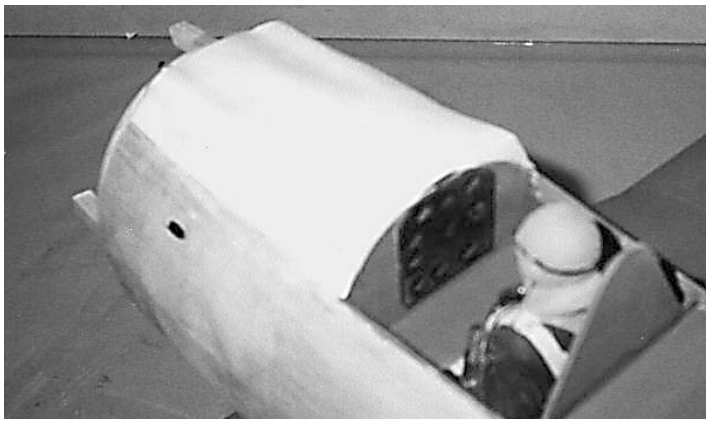


☐ 49. Glue the F24s together. Glue this assembly to the lower fuselage, aligning the front edge with the trailing edge of the wing.



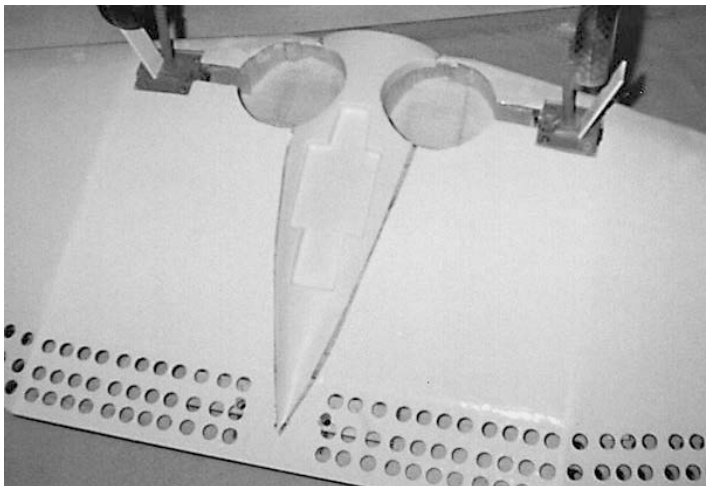
☐ 50. Place the wing fillets on the fuselage and align with |F24 and the wing surface. Glue the wing fillet to the fuselage side and F24. Blend the fillet to the fuselage using filler.

Note: You may reinforce the wing fillet by adding glue or fiberglass resin to the inside of the fillet and F24.



☐ 51. Mount the gun hood on the upper forward fuselage and glue in place.

Note: The gun hood may be re-inforced by coating the inside of the plastic with epoxy or fiberglass resin.



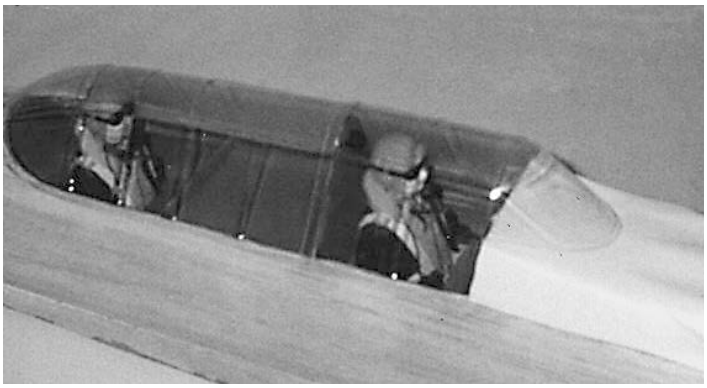
☐ 52. Mount the wing to the fuselage. Lay the belly pan on the wing, align and glue.

Note: You may wish to cover the airplane prior to finishing the cockpit and installing the canopy. Use this step when you decide to finish the cockpit/canopy area.

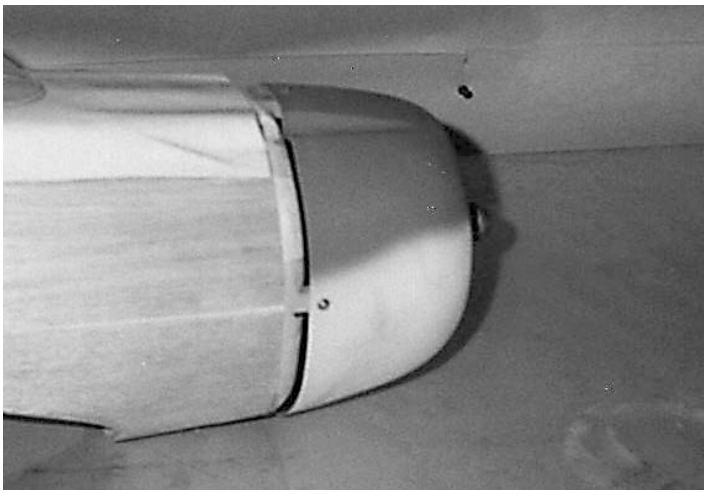
☐ 53. Paint the pre-cut instrument panel flat black; Glue the instrument face from the 3-views to the panel. Glue the panel toe the forward cockpit bulkhead. Install the F18 Backrest and F19 Headrest. Add pilot figures and any other cockpit items you wish.

54. Fill the area around the aft cockpit sheeting to match the canopy fit.

55. Place the rear canopy on the fuselage. Place the front canopy on the fuselage and align the two pieces. The rear canopy can be positioned fore or aft to fit, and the front canopy fits over the rear. Mark the position of the rear canopy and glue in place.



☐ 56. Carefully glue the front canopy in place using CA or RJ56 canopy glue.



☐ 57. Cut the cowl mounts from 3/8 x 3/8 maple and glue in place.

58. Mount the cowl. Note that the cowl edge is even with the cowl ring front, leaving a gap all the way around.

Hint:
To greatly extend the cowl's life, cut 1" squares from thin aluminum or carbon fiber. Glue these squares to the inside of the cowl at the screw hole locations. No more cracks at the screw holes!

Final Assembly

The remainder of the construction consists of attaching the rest of the components to the airplane. Most of this is builder's choice, and individual tastes, styles, and component selection, so any detailed descriptions would be impossible. The remainder of assembly is described in general terms only.

Engine installation:

Measure and mark the center horizontally and vertically of the firewall. From this point measure 0.1 inches to the right. Mark this point; this will be the centerpoint for motor mount installation. (This allows for the right thrust built in and will center the prop shaft at the cowl opening) Install the motor mount and engine of your choice. A word about the location: Most .45s can be hidden completely in the cowl, and the gap at the cowl rear should allow enough airflow for adequate cooling. A .61 engine cannot be hidden, as with 4-stroke engines - the cowl is just not wide enough. The photos of the airplane are shown with a .45 installed, completely enclosed. Use of a Pitts-style muffler will allow the exhaust to be routed out the bottom of the cowl, and will enhance scale appearance.

Servo and Receiver installation:

3/8" maple blocks are provided for servo rails. Mount these as shown on the plans and mount the servos. Mount the receiver and connect the components. The battery may be mounted in a location that will aid in balancing the airplane. Covering: Cover the airplane with the covering of your choice. The covering choices are too numerous to mention, but the airplane shown in the photos was covered with film, painted, and clear-coated. It is recommended that the airplane and control surfaces be covered separately.

Control Surfaces:

Locate the control arm positions. Fill the open bays in the control surfaces with scrap balsa to provide support for the control arms, and sand to shape. Final sand the control surfaces. Locate the hinge points (hinges and other hardware are not provided in the kit because everyone has his own preferences. Rather than put in stuff that most of you will throw away, we left it out to keep the kit price down) and install the hinges and control surfaces. Use at least three hinges per control surface for best results. Connect and adjust the pushrods.

Flaps:

After covering, install the hinges and mount the flap sections. Use 1/2A control arms for the flaps and dive brakes. Connect the pushrods and check the operation. Connect the center flap section to the outboard sections by the use of a U-shaped linkage as shown on the plans. Mount the "U" solidly to the outboard flaps and build a box container from scrap ply to trap the "U" to the center flap. This will allow the "U" to float and allow for the difference in actuation angles between the center and outboard flaps.

Fuel Tank and Throttle Cable:

After deciding which direction the engine will point (up, down, or sideways) drill holes for and install the throttle cable. Mount the fuel tank of your choice, and connect the lines.

Landing Gear (Fixed):

Insert the main gear into the slots in the wings, secure with straps, and mount the wheels of your choice. The ply gear doors may be installed at this time. Note that the gear doors do not mount directly to the gear legs; rather, they mount at an angle outboard from the wing to a point approximately 3/8" away from the tire.

Landing Gear (Retracts):

Bend the gear wire so as to place the wheel in line with the wire (P-51 style). This is an unfortunate requirement due to the unusual gear arrangement of the SBD. (Anyone who can think of a better mount than this, please let me know!) Insert the gear wire into the retracts, and trial mount. Align the gear legs and wheels, remove the mounts, and tighten the gear legs to the retracts. Connect the air lines and mount the retract units. Install the remainder of the retract components as per the retract instructions.

Center of Gravity:

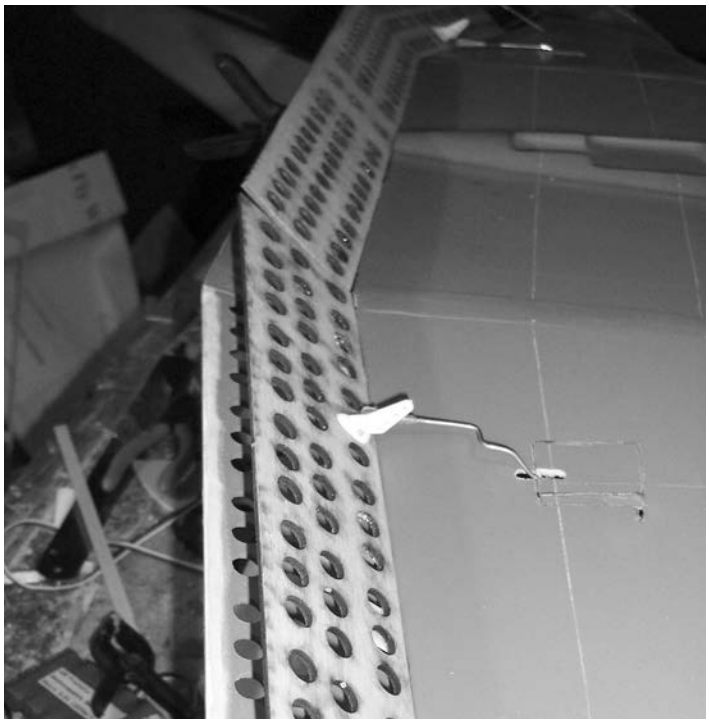
The CG is measured with the aircraft UPSIDE DOWN 4-3/4" back for the wing leading edge, where the wing meets the fuselage.

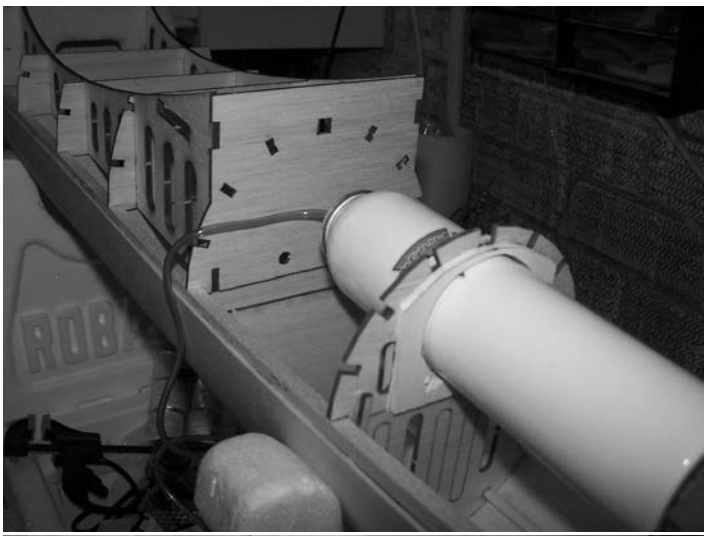
Control Throws:

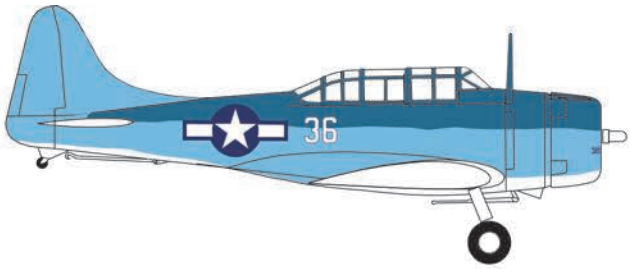
Ailerons: 1/2" up & down
Elevator: 7/16" up & 3/8" down
Flaps: 1-1/4" down
Rudder: 3/4" left & right

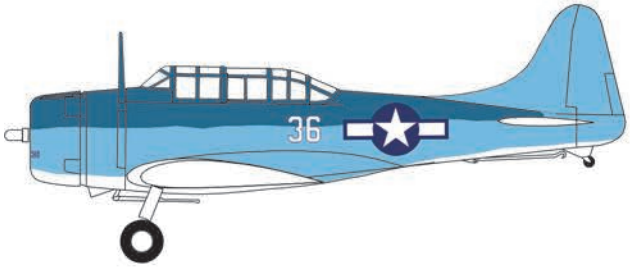
The rest is up to you! Fly and enjoy!

Misc Photos






36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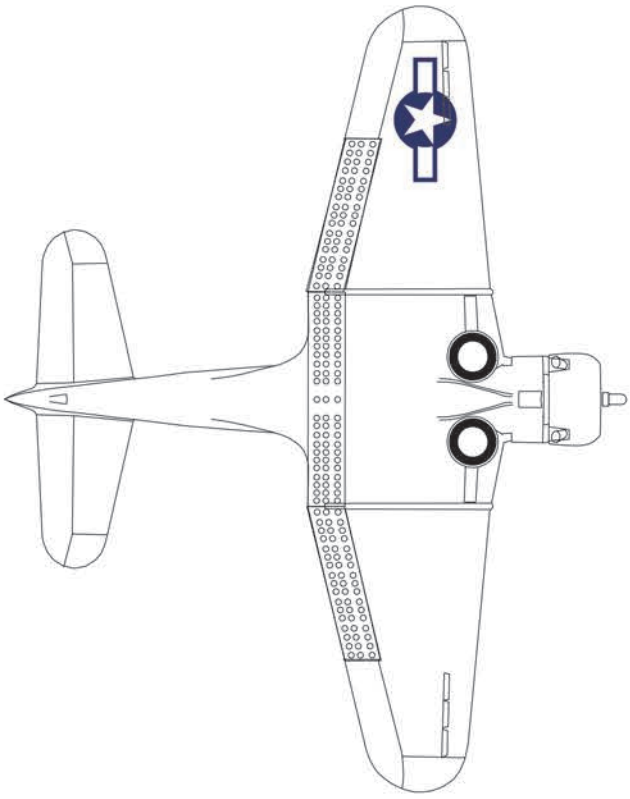
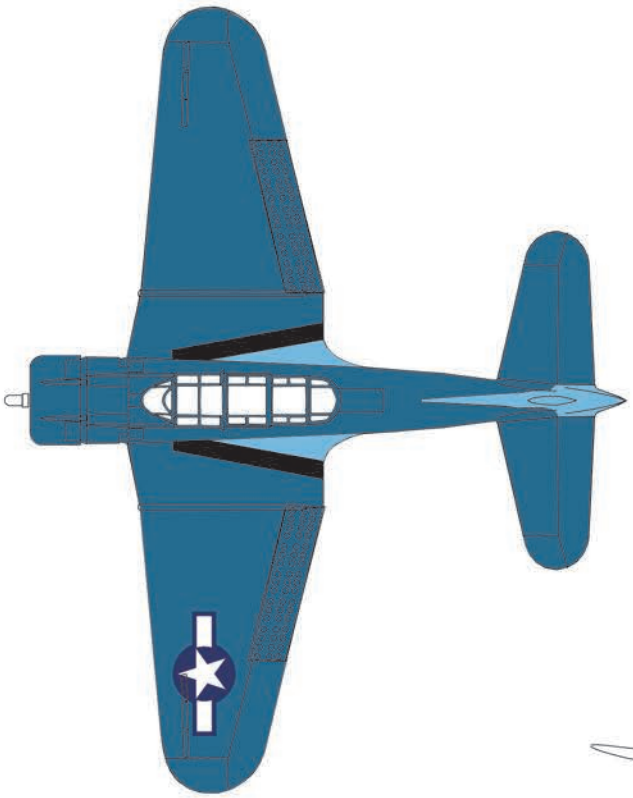
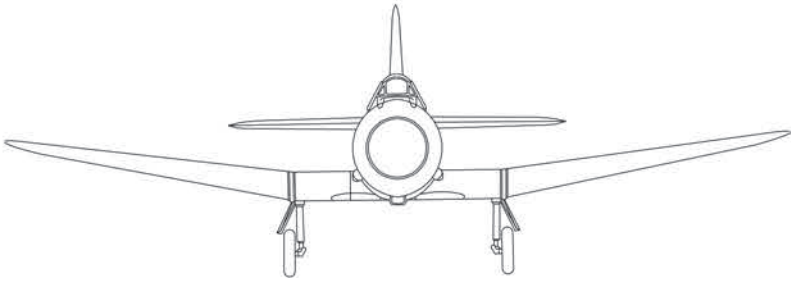
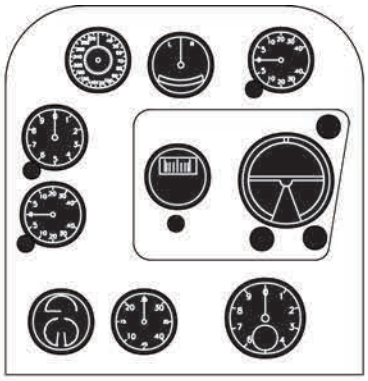
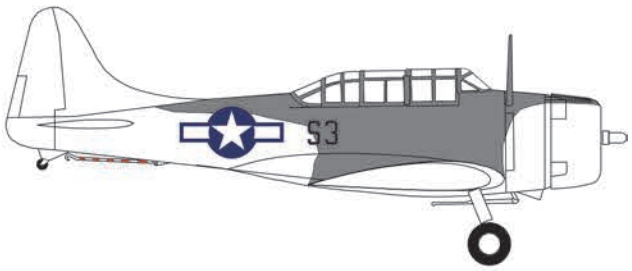
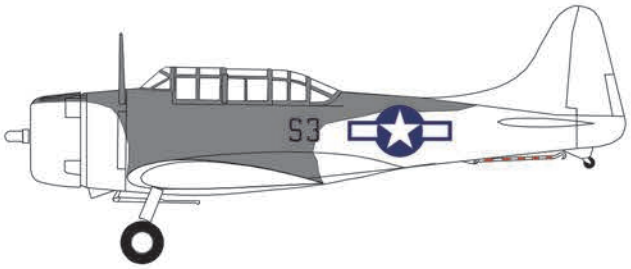









S3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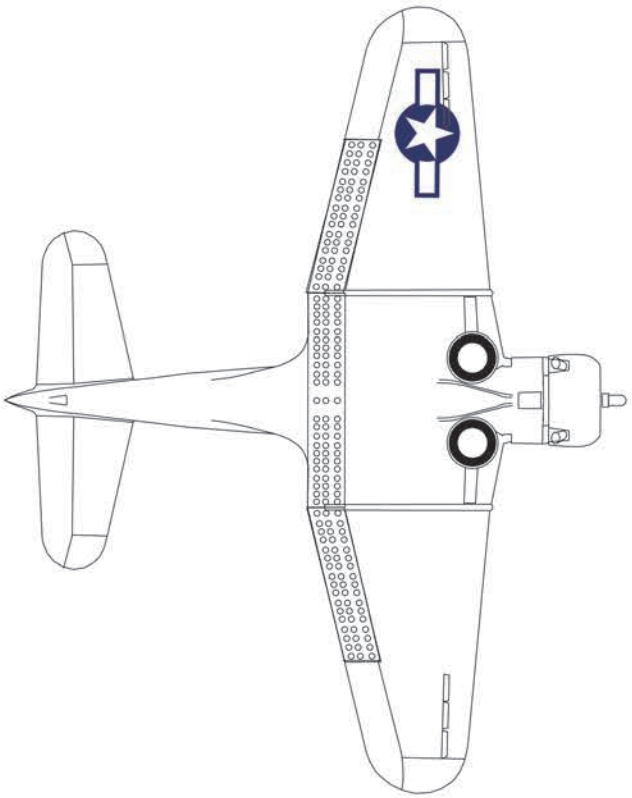
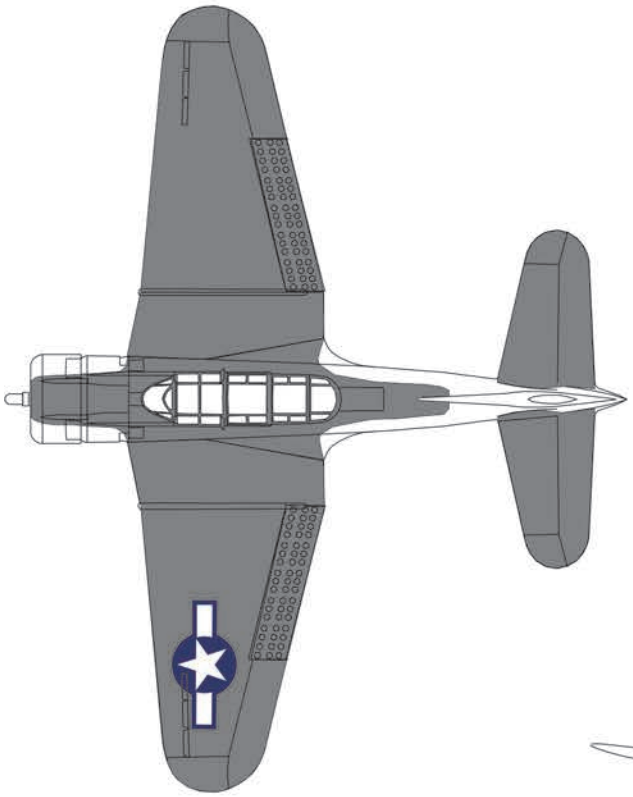
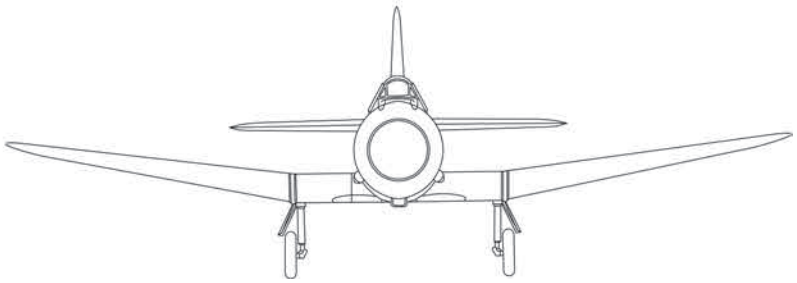
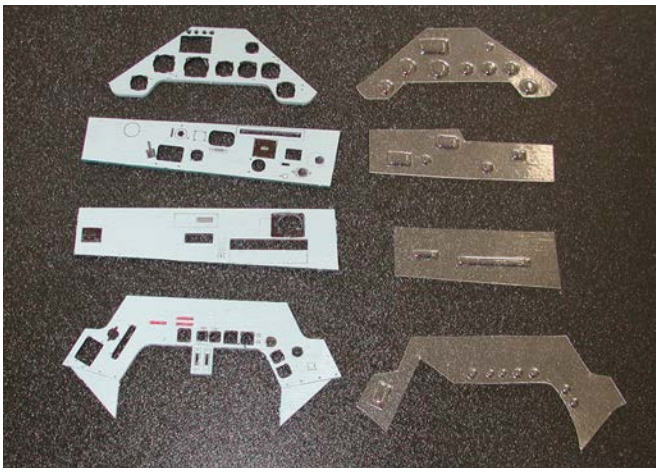


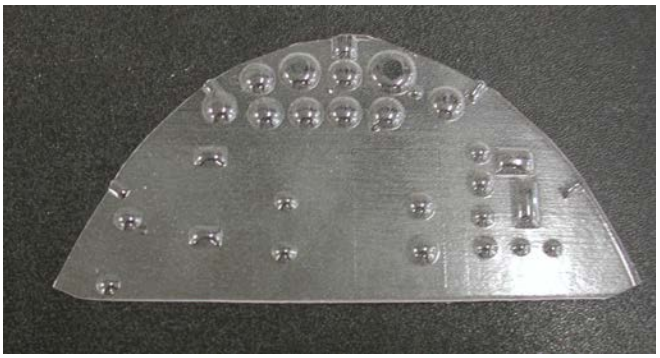




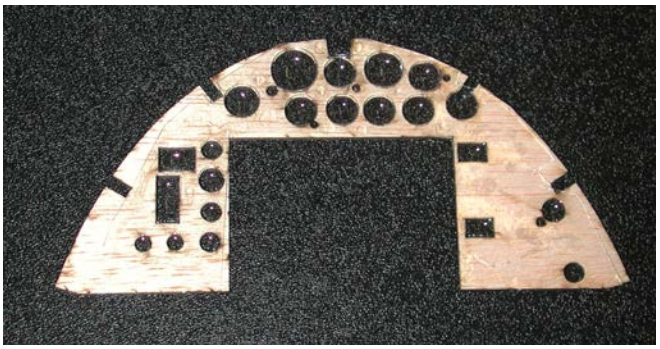
Skyshark R/C
Gauge Face Assembly Instructions

Paper gauge faces are located on the 3-view drawing that are included with the instruction manual.

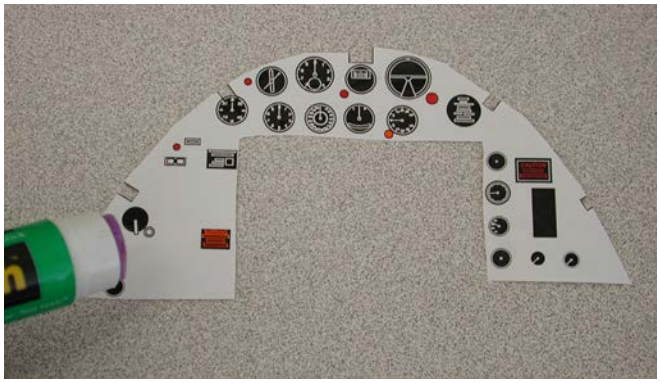




1. After painting the laser-cut cockpit parts, cut the clear plastic gauge inserts to size. Be sure to cut away any areas where stringers will attach or notches where levers will be inserted.



2. Using a small amount of medium CA, attach the clear gauge insert to the back of the panel so the protruding lenses fit into the laser cut holes.



3. Color any necessary parts of the paper gauge panel and apply glue to the front of the paper. **DO NOT USE CA** for this step (the fumes from the CA will cloud the gauges). We use a Scotch glue stick for our prototypes.

4. Apply the paper to the back of the panel so the gauges line up with the laser-cut holes and allow to dry.

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S336

S3
S3

Print these markings on adhesive backed
or water slide decal paper and apply