Primo 60 Build Instructions



The new Primo60 is here! This is one agile, capable bird! Recommended for advanced 3d pilots wanting every ounce of performance they can wring out of a .60 size profile plane. Super clean knife edge, upright and inverted harriers, rolling harriers, hovering and torque rolls are all part of the Primo flight envelope. Spins are outta this world and waterfalls are awesome!

Designed off the Mojo platform, the Primo has more tail surface area and the rudder is pushed back behind the elevator for an even more effective tail. The fuselage is longer and the wing is 20% thinner. 3D pilots have been telling me what they want and I've been listening! The Primo is the culmination of that effort. Thank you for checking out the Primo, you won't be disappointed....

I welcome feedback. If you have any questions at all, don't hesitate to drop me an email at PaulSwany@Swanyshouse.com ***or post a question on*** www.theProBros.com ***and I'll answer it as fast as I can. Don't forget to visit me at*** www.Swanyshouse.com … ***You never know what I might be cookin' up!***

Thanks again and have fun building and flying your Primo!!!

Primo 60 Build Instructions

Build the Motor Mount Assembly:

1.____Retrieve the two 1/16" ply doublers, the 1/2" balsa core, the 3/8" x 1/2" maple and the ply LG blocks for the motor mount. Glue the LG block reinforcement and the maple bearers into the balsa core with epoxy or wood glue. Sandwich the balsa core with the ply doublers with epoxy or wood glue. Clamp assembly or use weights for a good bond. Make sure the holes line up in the assembly. Allow to properly cure. See fig 1 and 2.

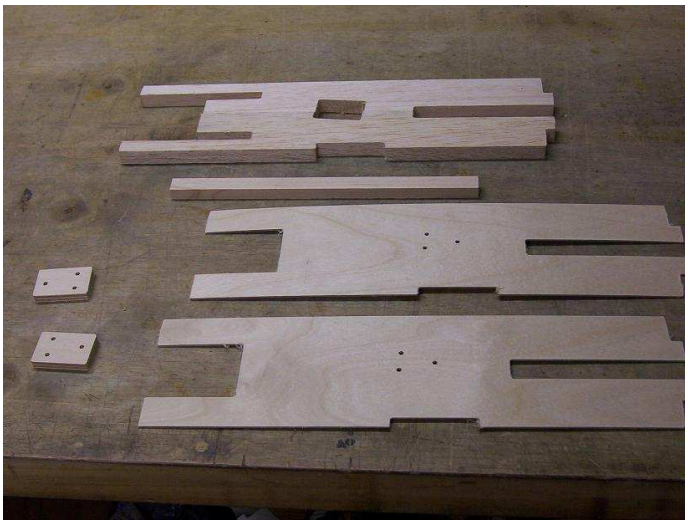


Fig. 1

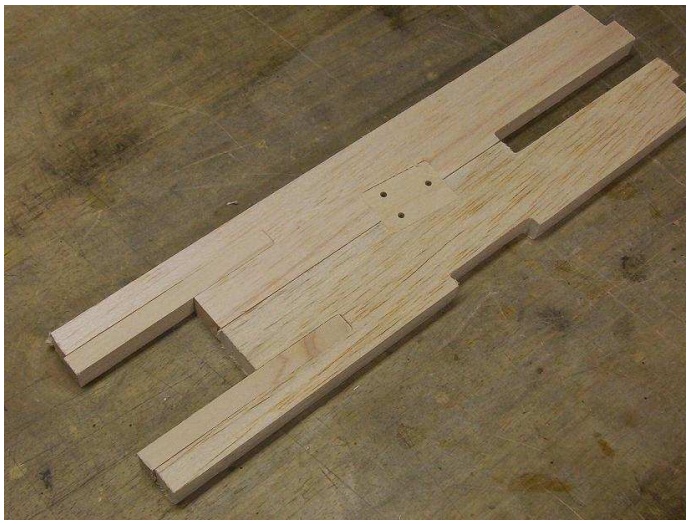


Fig. 2

Build the Main Spar Assembly:

1.____Retrieve two pieces of 5/16" sq. balsa and cut to 29" long. Line up these pieces on the plans over the section marked "spar layout" on the tapered line. This will give the spar the correct angle to fit the taper of the ribs on the wing. Join the spars with medium CA. Repeat for the second spar. See fig. 2.

2.____Glue on a 12" piece of 5/16" CF strip centered over the joint. See fig. 3.

3.____Glue on a 12" piece of 5/16" x 1/8" hardwood centered over the joint while maintaining the correct angle. See fig. 4

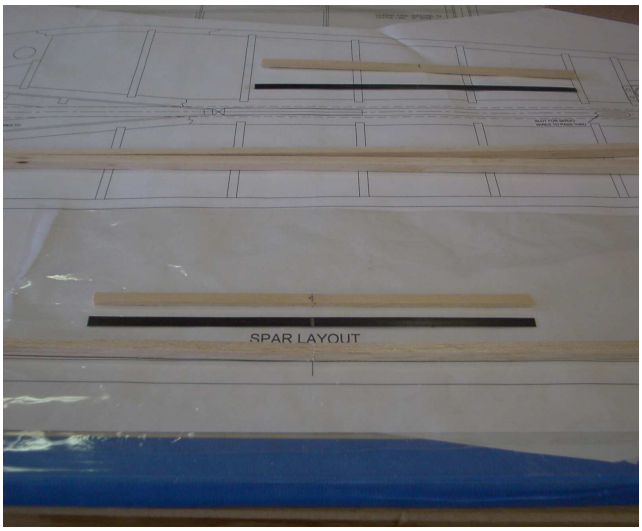


Fig 3.



Fig 4.

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Building the Center Rib Assembly:

1.____*In this step you will build the center rib assembly.* Retrieve the 1/2" balsa half ribs. See fig. 5 and 6.

2.____Retrieve the two center ribs. They are the largest of the set and have a hole in the middle and servo rail notches in the top edge. Lay one of them on a piece of wax paper or Rumple wrap. Position the motor mount assembly over the rib. See Fig. 7 and 8

3.____Position the half ribs over the center rib so that the front edge butts up against the motor mount and the bottom edge butts up against the tube. Glue the half ribs to the center rib with some medium CA or wood glue. ***SURGEON GENERAL'S WARNING:*** *Do not glue to the motor mount assembly. The motor mount assembly is not glued to anything until FINAL ASSEMBLY.* See Fig. 8.

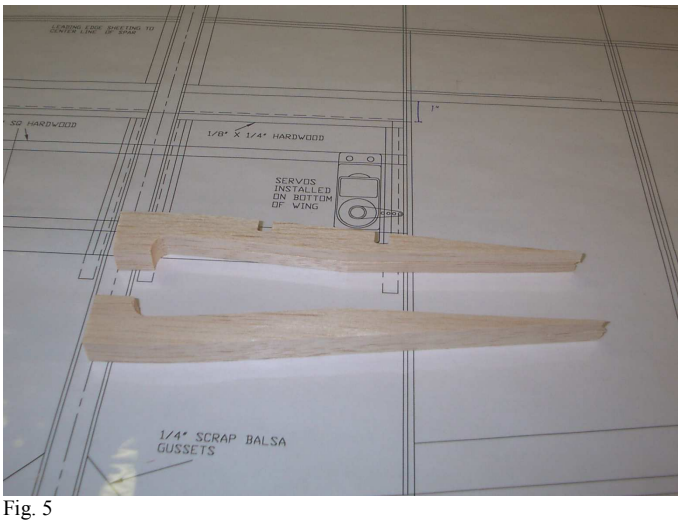


Fig. 5

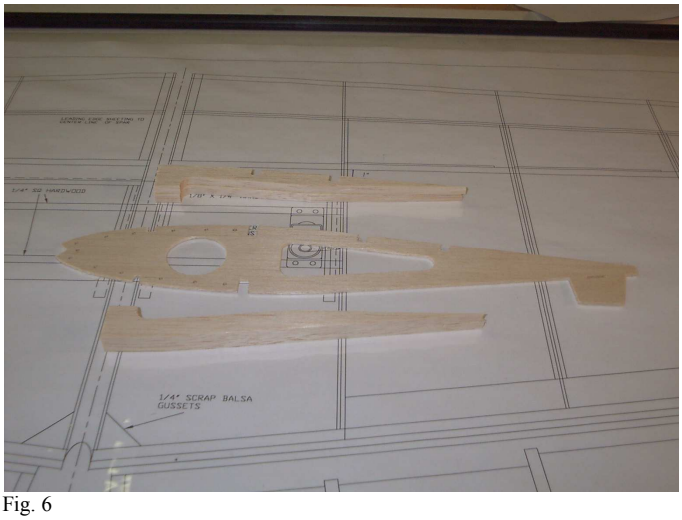


Fig. 6

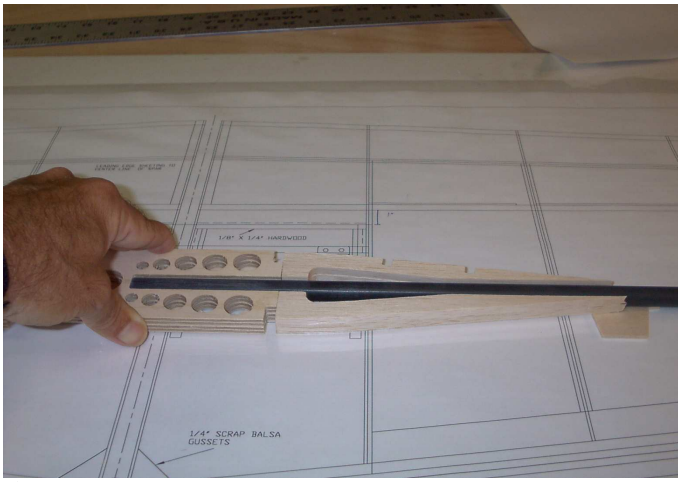
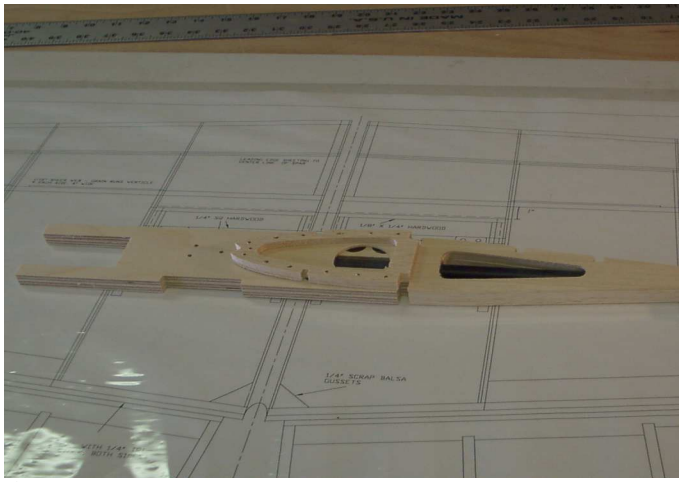


Fig. 7


Fig. 8

4.____Now position the second center rib on top of the assembly aligning it on the spar slot. ***Surgeon General's Warning:*** *DO NOT GLUE THE MOTOR MOUNT ASSEMBLY AT THIS TIME.* Tack the rib on with some thin CA. Slide out the motor mount and finish the job with some more thin.

5.____Glue on the leading edge half ribs on both sides. Be careful to align them on the spar slots. See fig 8.

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Building the Wing:

1.____The first step is to lay out the plans on your building board. Cover with wax paper or Rumple Wrap. Now pin some scrap balsa blocks to the plans on the inside line of each rib. One will be needed for each rib tab, so take a minute to find the tab placement on the ribs and where they fall on the plans. See fig 10.

2.____Fit one of the spar assemblies to the center rib. Check that the spar is square and that it seats fully into the center rib. Adjust as necessary. See fig 9 and 10.

3.____Position the spar over the plans (Do Not Pin) making sure the spar and the center rib line up. Apply some thin CA. There is no need to shim or block up the spar. The spar alignment is set in the rib slots. See fig 10.

4.____Now pin the tip rib to the plans making sure it is square to the board and that the spar is fully seated in the rib. Apply some thin CA when the alignment is good. See fig 11.

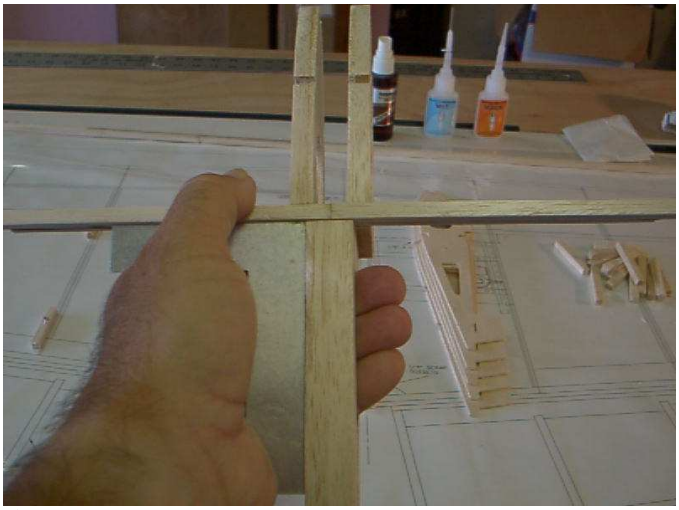


Fig. 9

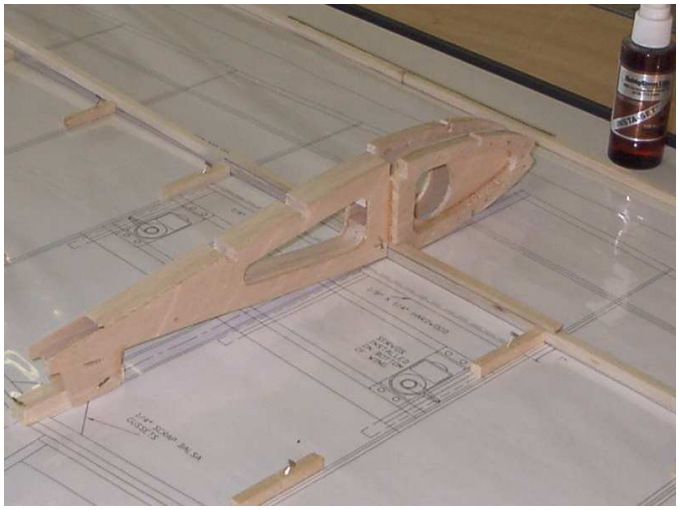


Fig. 10



Fig. 11



Fig. 12

5.____Lay out and pin the rest of the ribs on the wing and align each one to the plans. See fig. 12.

6.____Align and attach the top spar with thin CA. Make sure that the spar seats flush in each rib slot. See fig 13 - 14.

7.____Attach the 5/16" Trailing Edge. Fig. 13 and 14.

8.____Attach the 5/16" sq. Leading Edge. Fig. 13 and 14.

9.____Attach the 1/4" sub spars to the front of the wing. Fig. 13 and 14.

10.____Install ¼" square hardwood servo rails in the center section of the wing. ***Remember, this wing is built upside down. You are now working on the bottom of the wing! See Fig. 13 and 14.


Fig. 13


Fig. 14

11.____*Sheer Webs* – Locate 3 pieces of 1/16" x 4" balsa. Cut 2 sheer webs from each sheet, with the grain running vertical, which will give you a total of 6 sheer webs. Use your rib bays to measure as in fig 15. Glue to the spars with Medium CA. The last rib bay does not get sheer webs. See fig. 15 and 16.

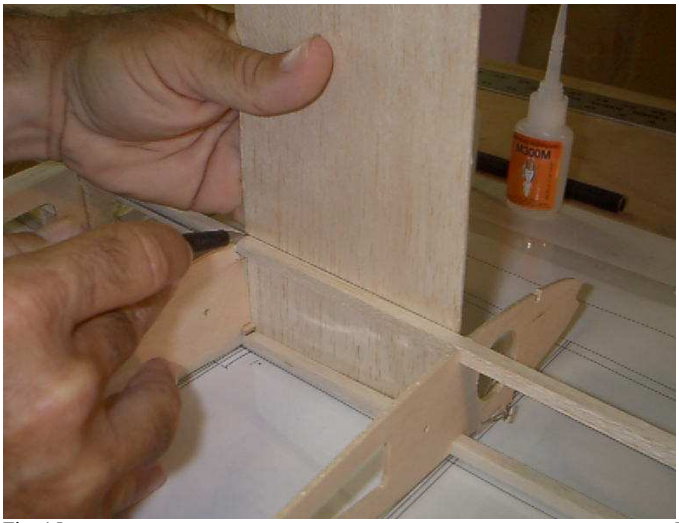

Fig. 15


Fig. 16

12.____It is now time to attach the leading edge sheeting. Locate the Leading Edge Sheeting diagram in Fig. 17.

13.____Locate the 3 pieces of 1/16 x 4 balsa left over from doing the shear webs and 1 additional piece of 1/16" x 4" x 36". From the Left side measure up 3".

14.____Now measure over 28" and then up 2 1/8" as shown in fig. 17. Join these two points on the diagonal with a straight edge and pencil. Before you cut anything, your markings should look like Fig. 19. Cut the sheeting at the line.

15.____Cut 4 pieces like this. Save the long piece of scrap for the center section sheeting and

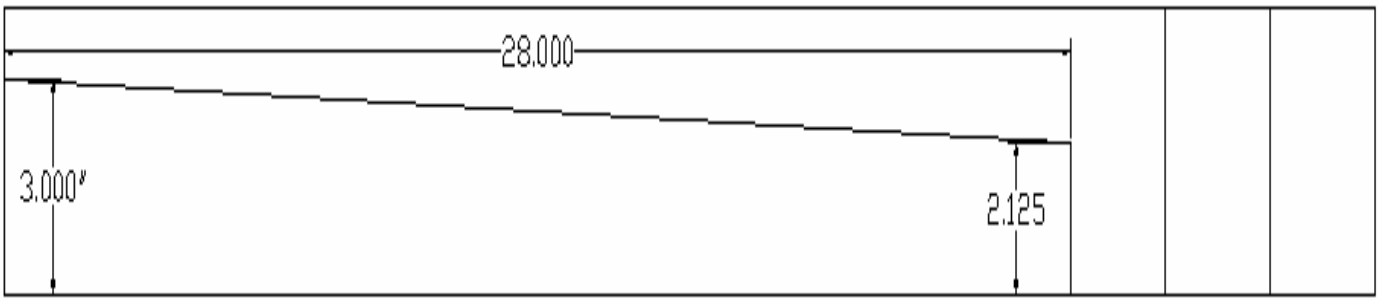


Fig. 17 (not to scale)

16.____ Make one final check of the 1/4" sub spars, center rib doublers and the 5/16" leading edge. Fix any high spots in preparation for attaching the LE sheeting.

17.____ Fit the leading edge sheeting to the wing. In most cases, water will not be needed, but if after test fitting, the sheeting does not bend freely, moisten the sheet and it will conform.

18.____ After you are satisfied with the trial fit of the sheeting, lay down your adhesive. Note: The LE sheeting can be applied totally with Medium CA. However, I have found that using Medium on the sub-spar and ***Wood Glue*** on the ribs and the leading edge gives far more working time and a better end result. Fig. 19 illustrates.

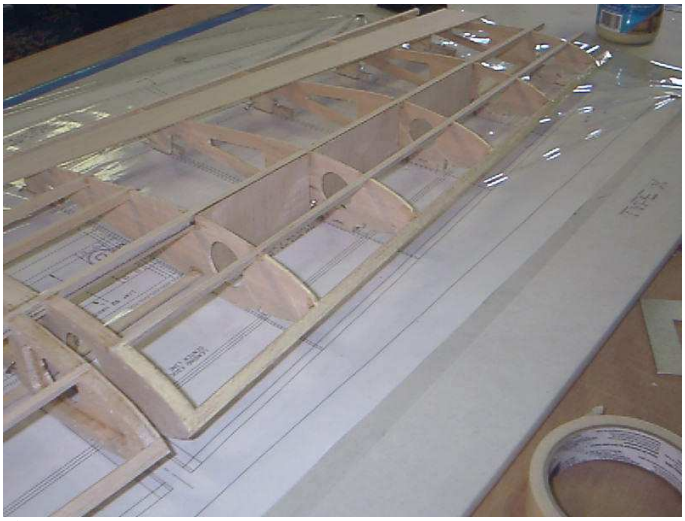


Fig. 18



Fig 19

19.____Run a bead of Medium CA down the 1/4" sub spar and some wood glue on the tops of the ribs and the leading edge. When you are ready, place the sheeting on the CENTER LINE of the 1/4" sub spar and gently press until the CA flashes off. Now starting from the root rib and using masking tape, pull the sheeting down and into the wood glue on the leading edge. Use the MAIN SPAR as an anchor point and run the tape underneath the 5/16" LE. Work your way down the leading edge and out to the tip rib. Check the entire length of the Leading Edge to see if the sheeting is fully seated. Add tape where necessary. See Fig. 19

20.____Repeat the process for the other side. See Fig 20.


Fig. 20


Fig 21

21.____Shape the trailing edge with a razor plane to match the airfoil shape and fix any high spots that there may be on the main spar, See Fig 21.

22.____ *Trailing Edge Sheeting* – Locate 2 pieces of 1/16" x 4" balsa and cut 7 ½" off the end. Save this piece for making the hatches later. Cut 4 pieces of trailing edge sheeting 2" wide from the sheets. Glue the trailing edge sheeting to the top of the wing. You'll use the other two pieces when we flip the wing. See fig 22.

23.____*Center Section Sheeting* – I like to edge glue all of my sheeting before attaching it to the wing. Cut 3 pieces of 1/16"x 4" and one piece of left over LE scrap to overhang the center section by 1/8" on each side. This should be about 12", but always check what you have on the board. Lay the pieces on some wax paper and ensure you have a good butt joint. Tape the joints together using some masking tape. Turn over the sheeting assembly and open the joint 90 degrees. Apply some medium CA *sparingly* to the open joints; close the joint and lay face down on the wax paper. Now use a long sanding block to clean up the joints a little.



Fig 22.

24.____ Shape the center section sheeting to fit between the leading edge sheeting and the trailing edge sheeting. Take your time to ensure you have a good fit. Use a small piece of 1/16" balsa scrap under the trailing edge sheeting to provide a lip to support the center section sheeting.

25.____Dry fit the center section sheeting to the wing. The front edge should mate up with the angle of the leading edge sheeting and the back edge should mate up with the trailing edge sheeting. Once satisfied with the fit, apply Medium CA or Wood Glue and attach the sheeting. If wood glue is used, make sure to tape it down with masking tape while it dries. See fig 22 for the end result.

26.____Now is also a good time to mark and cut-out the aileron servo locations and trim the center section sheeting. See fig 23.



Fig. 23 (note: TE sheeting shown terminates at center section- builders choice)

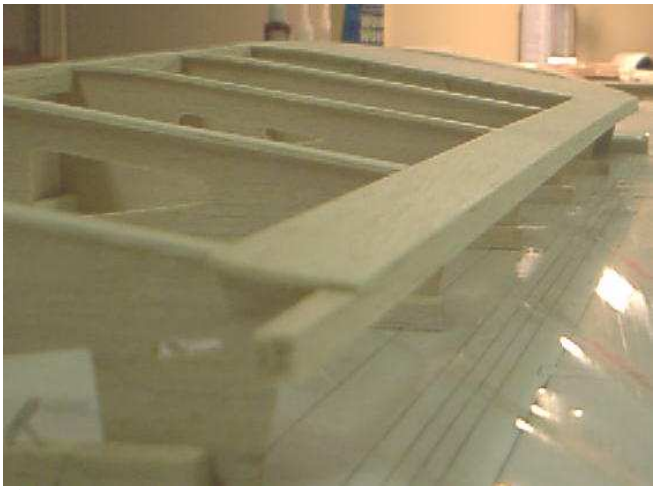


Fig. 24

27.____Cap strip each rib from the leading edge sheeting to the trailing edge sheeting. Also cap the main spar between the rib caps. See fig 24

28.____Once everything has cured UNPIN the wing. Turn it over and pin it back to the board. The trailing edges should be pined up using some scrap ¼" x 1" or whatever is available. I have some pieces of ½" x 1" x 25" that I use just for wings. The tips of the wing should be blocked up 3/8' - 7/16" on each end to level the wing. See fig 25 and 26.

29.____Cut and glue in the 1/4" sub spars with thin CA. See fig 18.

30.____Repeat the Leading edge sheeting process you did in steps 12 – 20 of *Building the Wing*.



Fig. 25

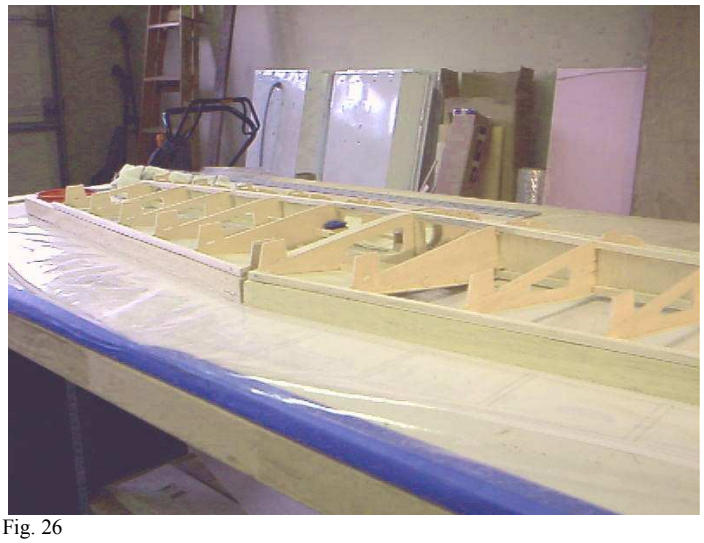


Fig. 26

31.____Cutt off all the tabs now and sand the rib contour smooth. See fig 27.

33.____Glue in ¼" gussets from the provided material at the trailing edge-center section of the wing. Make sure the grain runs with the hypotenuse (the longest side). See fig 28.

32.____ Repeat the trailing edge and center section sheeting you did on the bottom of the wing in 22 - 25

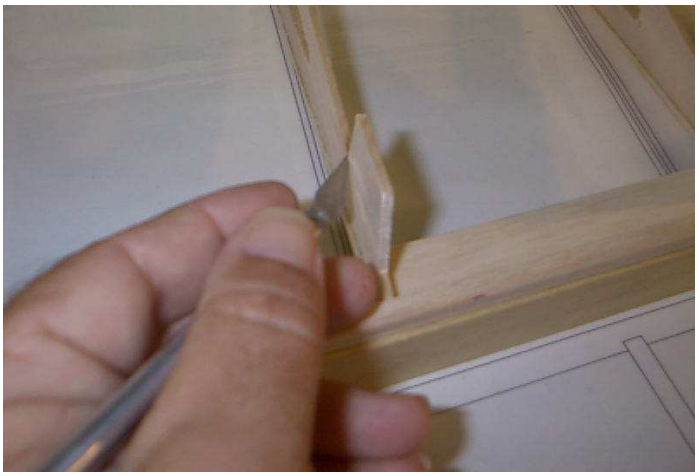


Fig. 27



Fig. 28

36.____Mark your hatches per the plans on the center section sheeting and cut out using a straight edge and a hobby knife. See fig 29.

37.____Cut and glue hatch supports from 2 pieces of 1/8" x 5/16" basswood for the top and 4 from 1/16" x 3/8" balsa. See fig 30.



Fig 29

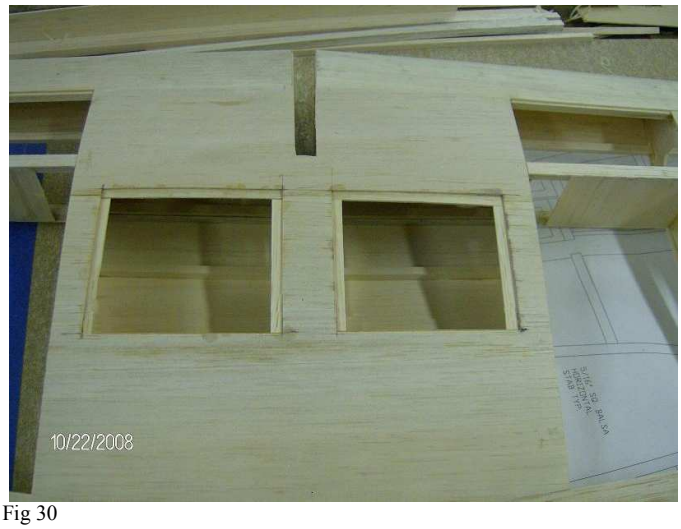


Fig 30

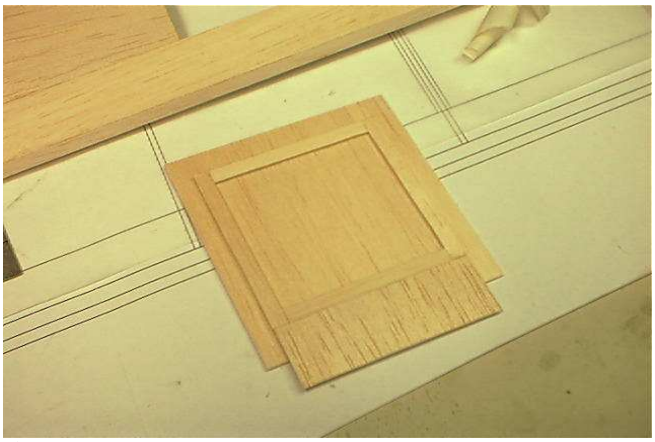


Fig 31

40.____Construct two hatches per plans or to match the openings left during construction of the top center section sheeting.

41.____Install antenna tube in left wing panel and Un-pin the wing.

42.____Trim the spars flush with the tip rib and clean up with some sand paper.

43.____Clean up the trailing edge and apply ¼" tri-stock.

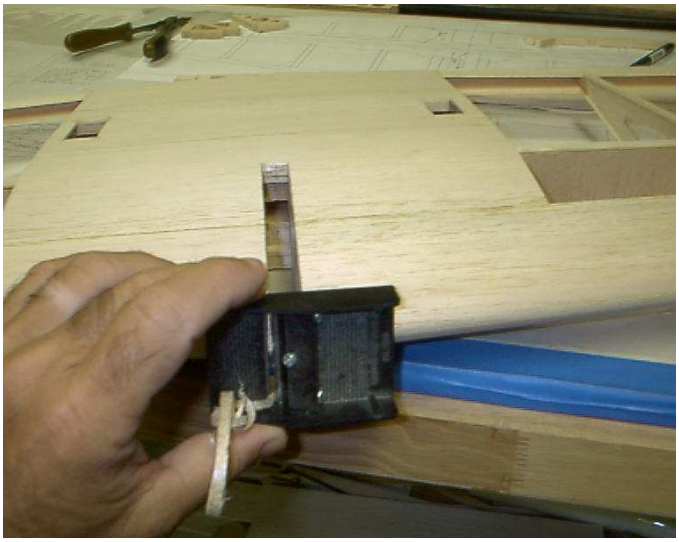
44.____It's time to shape the Leading edge. Locate the cross section of the wing on the plans. Study the shape of the LE. Now locate one of the 3/32" balsa tip rib caps and place it on the tip rib. ***Surgeon General's Warning:*** *Do not glue yet!* Slide the rib back just enough to "see" the outline of the LE shape desired and mark with a pencil. See fig 32 and 33.

45.____Using a razor plane and a long sanding block, shape the leading edge according to the guide made on the tip ribs. Use the razor plane sparingly! You can always take more off, but you can never put it back on. See fig 33.

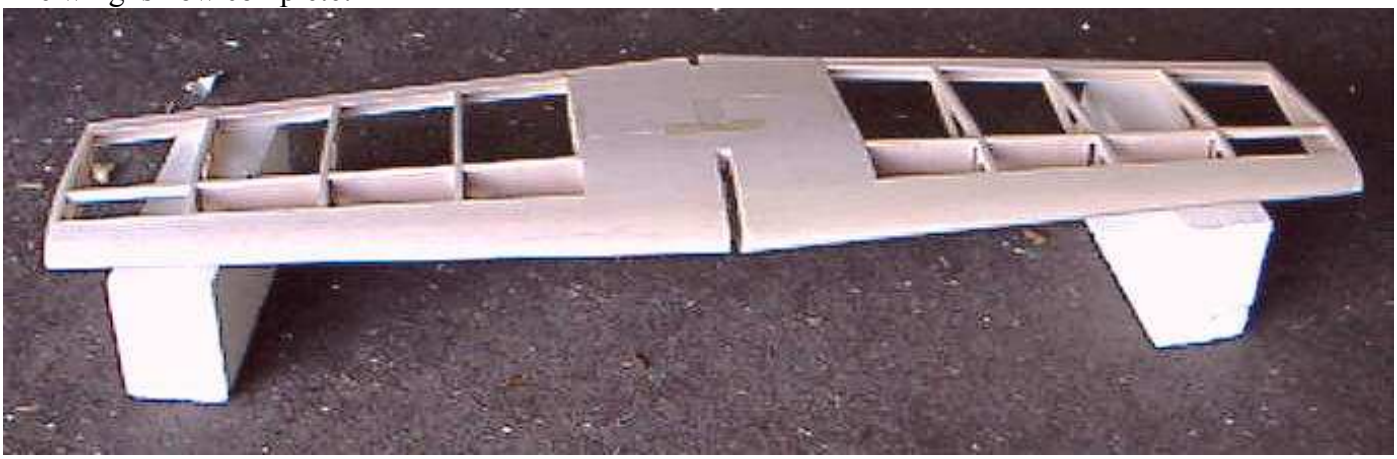
46.____After 2 or 3 runs with the razor plane take a sanding block and smooth out the entire leading edge. Check often to see how you are doing against the outline you marked on the tip rib. Use long even strokes for this in order to get a uniform shape.

47.____Once the desired shape has been achieved, glue on the tip rib caps with medium CA and sand flush.


Fig. 32


Fig. 33

The wing is now complete!



Fuselage and Vertical Stab Construction:

1.____There is a channel for the tube in the fuselage. When pinning down the parts, it is a good idea here to use the tube and motor mount assembly to fit the parts to over the plans. ***Surgeon General's Warning:*** *Take care not to glue the mount to the fuse though!*

2.____Position and pin the machined pieces over the plans and wick in some thin CA.

3.____Now cut 5/16" x 1/2" balsa to fit the inside vertical bracing and wick in some thin CA. For the servo rails on the tail servo's. use 1/4" square balsa and cap with 1/4" hardwood. Make sure that the hardwood is on the side you intend the servo screws to be!

4.____Glue the top piece of the vertical stab into place but do not install the stab onto the fuselage. It is much easier to mount after covering and during final assembly.

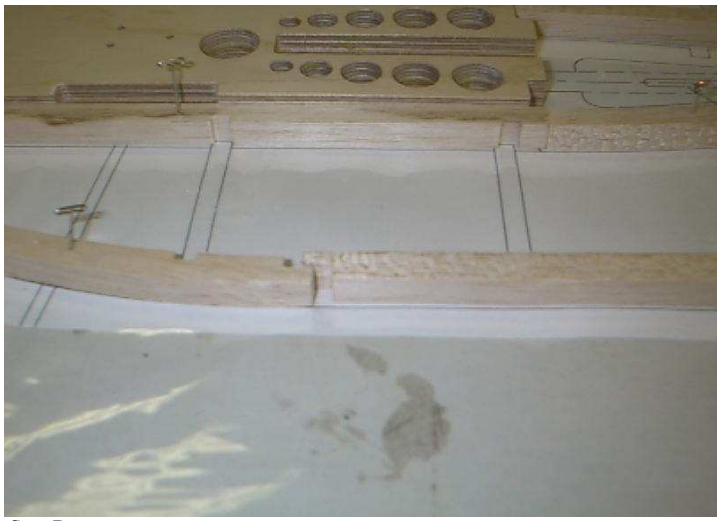
5.____Build the rudder over the plans using the machined pieces and filling in with 5/16" square stock.

6.____Remove the assemblies from the board and cap with tri-stock. Cut a small step in the end of the bottom of the fuselage per the plans. Install a piece of scrap ply for the tail wheel mount.

Builder Note: The bottom piece of the fuselage is 3/8"x 1/2". You'll need to lengthen it using a scarf joint per the plans. It mates up with a curved chin piece with a notch in it. It will be necessary to cut a notch in the 3/8" stock. Follow steps A and B Below and it will be cake!



Step A



Step B

The Fuselage is now Complete!!



Primo 60 Build Instructions

Horizontal Stab and Elevator Construction:

1.____Locate the machined leading edge, center section, trailing edge and 3/16" carbon tube for the horizontal stab.

2.____Roughen up the 3/16" tubing with sandpaper and glue inside of the machined trailing edge with poly glue. Cap both sides with 1/16" balsa cut 3/16" wide from scrap. Clamp the assembly to your building board and allow to dry.. See fig 34, 35, 36.

3.____Glue a piece of thin carbon to the machined leading edge.

4.____Pin the parts to the board per the plans and wick in some thin CA.

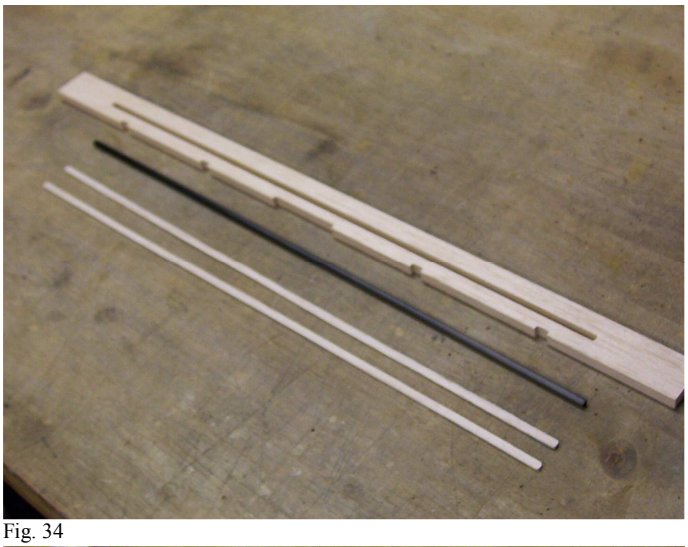


Fig. 34

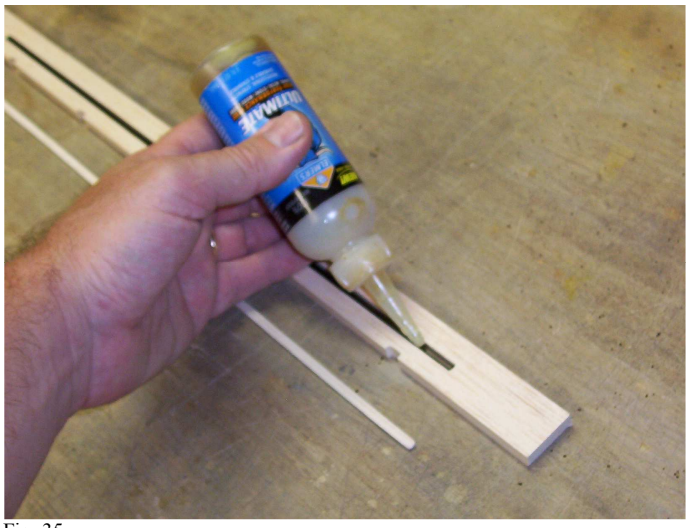


Fig. 35



Fig. 36

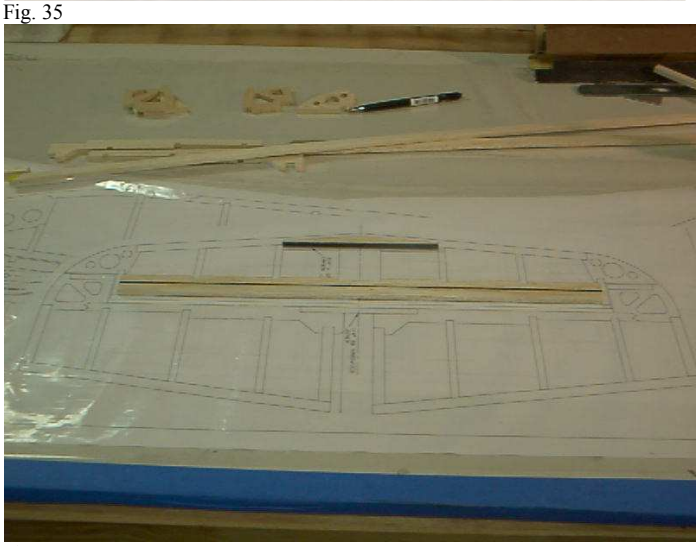


Fig 37

4.____Remove from the plans and cap the hinge line of both assemblies with ¼" tri-stock.

5.____Mark the centerline of the stab assembly using a ruler and a square. Measure ¼" on each side of the line and make a mark parallel to the center line. Glue a piece of tri-stock on both lines. This will create a channel for the tube to pass through during final assembly and help to strengthen and align the stab assembly.

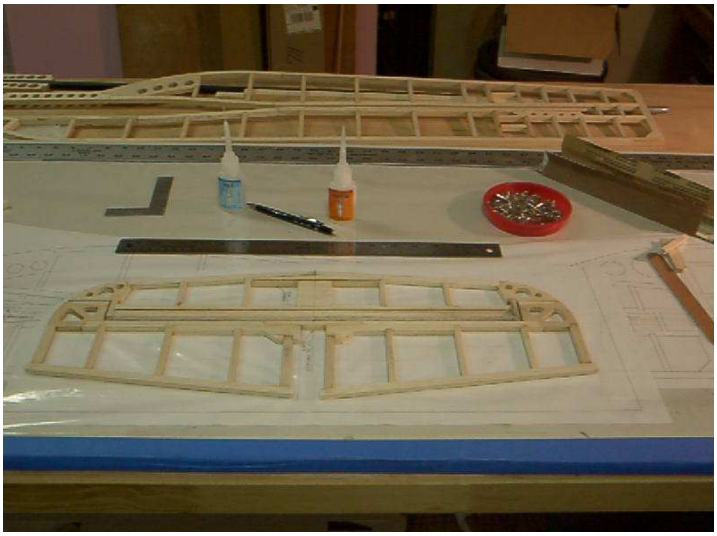
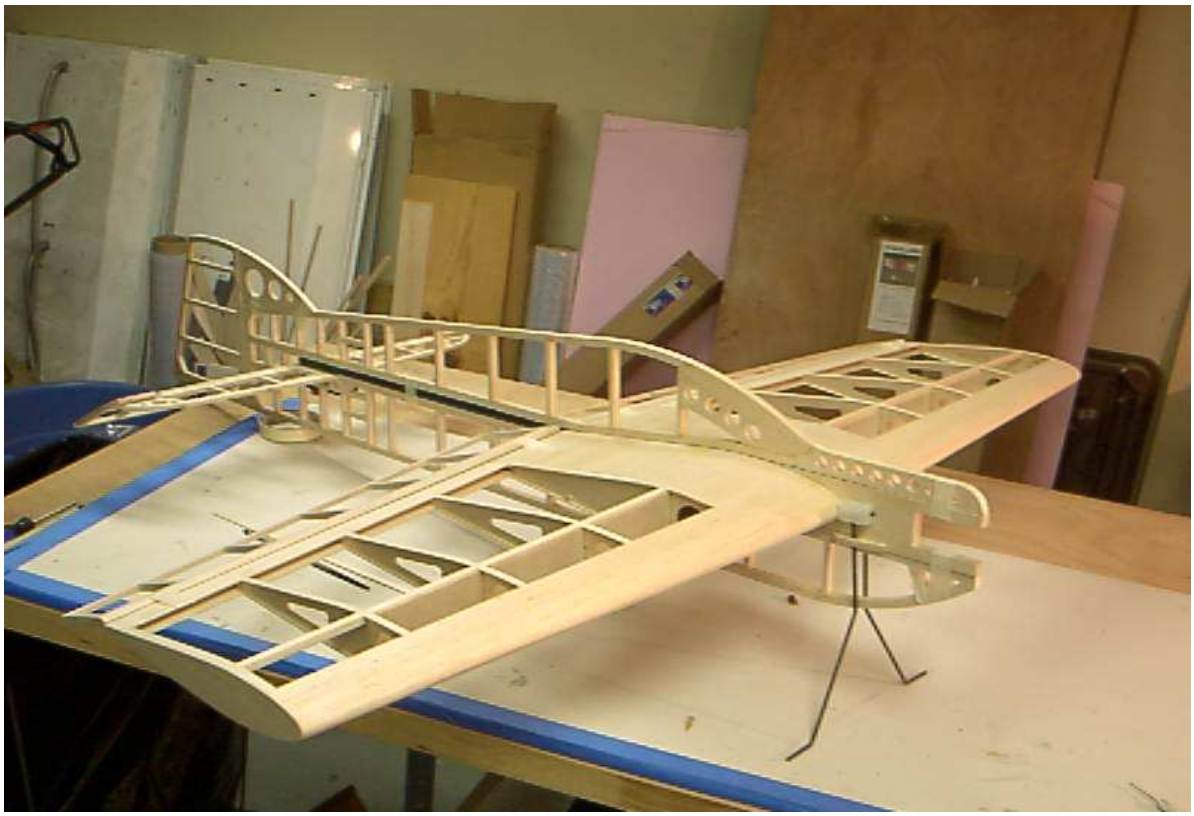


Fig. 38

6.____For the Primo you may also use tri-stock on the bottom of the stab for additional support and assistance during the final assembly process. Remember that you are matching up to a 3/8" piece of the fuselage on the bottom though, so the measurement from the center line will be 3/16" on each side. This will give you a 3/8" channel to fit the machined fuselage piece.

Finishing and Final Assembly:



1.____Sand all assemblies lightly. Just knock off the high spots.

2.____Cover all of the assemblies being careful not to cover any of the gluing surfaces.

3.____Take the motor mount / tube assembly and lay over the plans one more time. Mark the locations of each servo wire cut-out with a sharpie. Using a dremel-tool cut out these holes. Use some sandpaper or a small file to dull the edges of the holes. You don't want them damaging your servo leads!

4.____Glue on the landing gear plate to the bottom of the motor mount. It's the sort of triangular shaped piece with the two holes in it. The "forks" face forward. Use wood glue or epoxy. Make sure it is flush with the motor mount. Sand flush if necessary.

5.____Hinge the elevator to the Horizontal stab with CA hinges and lightly tack to fuse with thin CA.

6.____Test fit the motor mount assembly into the wing. Once satisfied with the fit, install using some wood glue, epoxy or poly glue. Make sure that the mount bottoms out against the wing spars. Make sure you roughen up the tube where it will mate with the fuse the entire length. That glue has to have something to bite to.

7.____ Dry fit the fuse assembly to the wing assembly.

8.____Once you are satisfied with the fit, remove and set the fuse aside for a moment.

Note: ***There may be other ways to conduct final assembly. This seems to be the most efficient use of time and require the least amount of assistance. However, if after close study you feel there is a better way, please feel free to give it a go! Let me know the results, maybe your method will go into the next revision of the manual.***

Prep: It's a good idea to have a small spray bottle with alcohol in it and a roll of paper towels handy whenever working with epoxy!

9.____Mix up some 30 min. epoxy with micro balloons. If you don't have micro balloons, Corn Starch or Baking Soda can substitute.

10.____Block up the wing on some Styrofoam or two shoe boxes. Lay a small bead of epoxy from the tip of the motor mount to the trailing edge of the wing on both the top and bottom of the wing.

11.____Put a *very light* layer of epoxy with your finger on the tube channel in the fuse. ONLY THE CHANNEL. Remember there is already epoxy on the center section of the wing. It is not necessary to go over board here. Using too much will cause you more clean-up work later!

12.____Now carefully slide the fuse assembly over the wing. This should be done slightly to the rear so that the end of the tube is in front of the leading edge of the stab. As you get the fuse next to the tube, gently spread the fuse open and push the tube in from the side. Now you can push the fuse forward to line up with the end of the motor mount. In the rear, it will slide right between the tri-stock on the stab. Use masking tape to secure at the upper and lower portions of the motor mount.

13.____About 2" – 3" from the TE of the wing, wrap the entire fuse assembly with a piece of masking tape to "clamp" the top and bottom fuse pieces to the tube. Repeat as necessary down the length of the fuse toward the tail. Make sure you get a good clamping to the tube.

14.____At this point, use the alcohol and paper towels to clean up along the top and bottom of the center section and the motor mount. Check along the tube for any places where epoxy may have spooged out and clean thoroughly with alcohol.

15.____Now while this assembly cures, check the stab/elevator assembly for square. If you used tri-stock on the bottom, it should be dead on. Wick in some thin CA.

16.____Keep an eye on things for a few minutes and clean where necessary. Once everything has cured, you can put an epoxy and micro balloon fillet between the tube and the fuse to fill in the gap.

17.____Glue on the vertical stab. It may be necessary to remove a little covering if you forgot during the covering process. Take care to ensure that the tri-stock on the stab lines up with the tri-stock on the fuse. Use medium CA here.

18.____Hinge the ailerons and the rudder. Use CA hinges.

19.____Mount the elevator and rudder servo's in the tail.

20.____Run the elevator and rudder servo extensions through the tube. The connectors may need to be taken off. I can stagger them and get them through now without removing them. 24" or greater extensions are required here.

21.____Mount the throttle servo. I used a micro with a little mount I made out of 1/16" ply and hardwood. Fashion the mount so the servo is on it's side. The mount then screws onto the servo rails in the right side of the wing.

22.____Run the throttle push rod out the leading edge of the wing for a straight shot to the carb linkage.

23.____Install the control horns and linkages of your choice on all surfaces.

24.____Mount the engine. Use two washers under the front motor lugs or thrust plates for right thrust ~ 3 degrees. The motor can be moved fore or aft to achieve proper balance.

25.____Install the fuel tank. I used an 10 oz. Hayes. Drill two 1/16" holes centered above and below the tank. Bend a little hook on a piece of scrap control rod and run the rod through the hole. Bend a 90 degree in the other side. Attach the tank with rubber bands on these two hooks. Make sure to put a layer of foam under the tank. Don't wrap the tank down too tight or it will cause fuel foaming.

26.____Install the wire gear with the pre-bent wire and the mounting blocks. Attach with 6-32 x 2" socket head cap screws, washers and nylocks.

27.____Use wheels and wheel collars of your choice.

28.____Load your RX, switch and battery. Start with the battery in the leading edge.

29.____Run the antenna out the left wing through the antenna tube. Just let it hang out the end.

30.____Install the tail wheel of your choice.

31.____Double check your CG per plans. It should be between 5 3/8" - 7 1/2".

32.____You're ready to fly!!! Control throws should be set for 45 to 50 degrees deflection on high rates and about 1" in either direction for low rates. Use less if you are new to 3D flying. Run enough expo to feel comfortable but not so much as to be chasing the inputs you just made…….Feel free to

experiment with flaperon and spoileron mixing as you get comfortable with your new bird! Now go have a Primo time at the field!

I sincerely appreciate my customers for taking the time to build and fly one of my designs. It is something that I truly love and it means a tremendous amount to me when a customer enjoys the experience of one of my kits. Please let me hear from you. If you need help or just want to comment, I welcome all customer communications. If you will send me pictures of your completed bird I will put them in the Primo Gallery on my web page www.swanyshouse.com.

Blue Skies and Thank You!

