

Skyshark R/C

FANTASY



The Skyshark Fantasy was designed for both beginning low wing pilots and serious sport flyers. It's excellent slow flight abilities and gentle stalls make the Fantasy one of the best low wing trainer kits available today. Heavy duty wing spars and fuselage make for an aircraft that can withstand the mishaps that normally occur with a beginning pilot. Laser cutting and hand selected balsa allows us to keep the weight and building

time to a minimum. If you are an experienced builder, the Fantasy can be built and ready to fly in the same amount of time as many ARFs. For the sport flyer, the Fantasy features, a larger rudder for better aerobatics, swept wing design for speed and a simple, no hassle, engine mounting setup. Engine choices also vary from a simple .46 to a high performance .61. You can even add a tuned pipe for real excitement!

Wingspan	60 inches
Wing Area	593 sq. inches
Overall Length	52 inches
Flying Weight	5.5 - 6.5 lbs
Engine45 - .61 2-stroke .56 - .91 4-stroke
Radio	4 Channel Min.
Building Experience Required . . .	Basic
Flying Experience Required . . .	Trainer
Average Build Time	30 hours



Skyshark R/C Corporation

1924 N. Pima Drive
Lake Havasu City, AZ 86403, U.S.A.
Phone: (928) 854-6100
Toll Free: 1-866-854-6100
Fax: (928) 854-6111

Website: www.skysharkrc.com
email: custserv@skysharkrc.com

Thank you for purchasing the Fantasy from Skyshark R/C. Our goal, through computer technology and state-of-the-art production techniques, is to offer aircraft that are fast and easy to assemble with minimal sanding and shaping.

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.

Engine Options

Engine choices range from .46 to .61 2-strokes, or .56 to .91 4-strokes. The firewall is a limited size so make sure you check you engine mount fit before deciding on a larger engine.

Retract Options

Retract installation is left up to the builder.

Dual Aileron Servos

Dual servos can be added to the wing instead of a single servo torque rod setup without affecting performance. We also leave this up to the builder

General Building Information

The Fantasy can be assembled by a person with little or no building experience. This manual is written for the beginning builder. An advanced builder can build this kit in as little as 20 - 30 hours.

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!

Some hardware including a motor mount is 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.

Decals

The decals provided are made from fuel-proof vinyl so there is no need to clearcoat them. To apply, clean the surface with alcohol and wipe dry. Put a drop or two of soap in a spray bottle filled with water. Shake the mixture and spray onto the surface that you will be applying the decal to. Peel the backing from the decal and apply to the surface without pressing. Using a credit card or other flat item rub the decals onto the surface from the center moving out to the edges. This will force any water from under the decal. Wipe with a clean dry cloth and remove the masking from the decal. If the decal lifts while removing the masking, allow the decal to dry before attempting to remove the masking.

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 shall have no liability whatsoever, implied or expressed, arising out of the intentional or unintentional neglect, consequential damage, misuse, abuse, or abnormal usage of this product. Skyshark R/C 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 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 sport plane on the market!

Kit contents:

Fuselage Side Plan Sheet
Wing Plan Sheet
Laser Cut Wood Pack
1/4" x 3" x 24" Balsa (1)
3/32" x 4" x 36" Sheeting (5)
3/32" x 4" x 24" Sheeting (3)
1/4" sq. x 36" Balsa Sticks (4)
3/16" sq. x 24" Balsa Sticks (5)
1/4" x 1" x 36" Leading Edge (2)
3/8" x 1/2" Wing Spars (4)
3/8" x 1" x 36" T.E. and Aileron Stock (2)
5/8" x 1" x 5-7/8" Balsa (2)
Clear Canopy
Main Landing Gear
Dubro Nose Wheel Gear
Nose Wheel Gear Horn w/5/32" Collar
2-3/4" Dubro Wheels (3)
Dubro Aileron Torque Rods (2)
Sullivan Gold-N-Rods 36" (2)
Sullivan Gold-N-Rods 12" (2)
Sullivan Clevis Adapters (4)
Sullivan Clevises (4)
2-56 Pushrods (4)
Landing Gear Blocks (2)
Gear Anchor Blocks (2)
Wing Mounting Blocks (2)
F-1 Firewall
1/4" Wing Dowel
2 oz. Fiberglass Wing Joining Material
Elevator Connector Wire
Landing Gear Straps (4)
5/32" Wheel Collars (4)
CA Hinges (18)
Dubro Control Horns (1 pk.)
Dubro Easy Connectors (2)
1/4" Nylon Wing Mounting Bolts (2)

Needed to complete kit:

Thin CA Glue
Medium CA Glue
Thick CA Glue
(We use Balsa USA Gold on our prototypes)

RC56 Canopy Glue
5 Minute Epoxy
30 Minute Epoxy
Epoxy Brushes

2 rolls of film or fabric covering 72" x 26" each
8 -14 oz fuel tank (Du-Bro)
Silicon fuel tubing

Engine Mount (with nose wheel attachment)
(We recommend Hayes)
Engine and Mounting Hardware

4 Standard Servos
(Cutouts are sized for Hitec)
4 Channel Radio
Battery
6" Servo Extension

2-1/2" Spinner
Propeller

80, 120 and 240 grit sandpaper
Sanding block or bar
1/4-20 Tap & Drill Set

Balsa Filler
Masking Tape

Taildragger Version Only:

Tail gear
1" Tail wheel

Occasionally we will make reference to the plan in order to clarify the instructions. We have letters down the side and numbers across the bottom of the plans. In brackets [] we will give you the coordinates like a road map to locate the item referred to. Find the letter and number and where they cross will be the location to look.

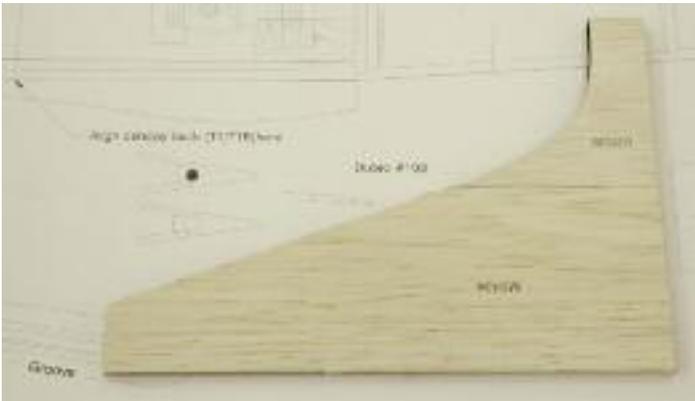
When working over the plan, waxed paper should be used to protect the plan and eliminate other frustrations caused by parts sticking to the paper and the additional sanding involved.

If you plan on building the Taildragger version, please follow the taildragger add-ons listed under the appropriate sections.

Our prototype Tri-gear version required 4 oz. of tail weight with the battery moved to the back of the fuselage servo tray. The plane was setup with a .46 engine and standard muffler. Be sure to account for this when building. The Taildragger version should not require any additional tail weight.

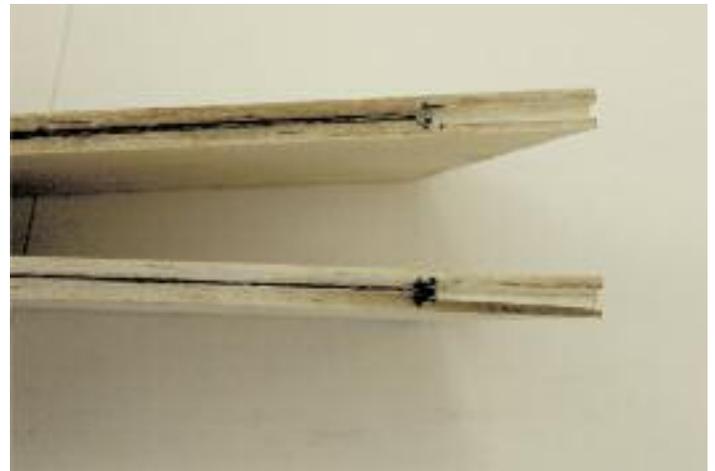
Tail Surfaces

- 1. Find vertical fin (MS401, MS404), elevators (MS403), horizontal stab (MS405) and rudder (MS402) parts.
- 2. Over the plans, join MS405 to the 1/4" x 3" x 24" balsa sheet with thin or medium CA.

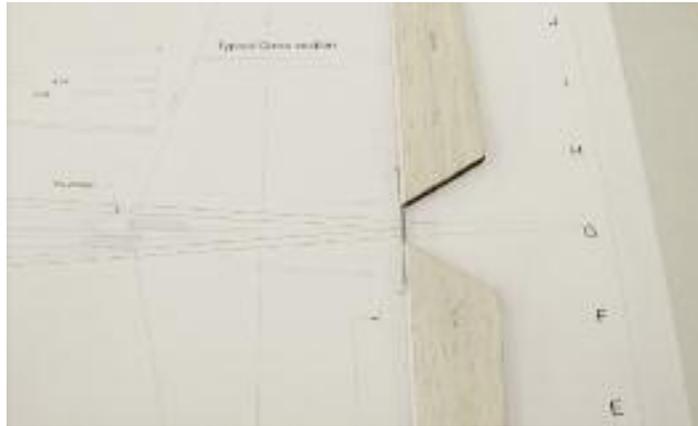


- 3. Join MS401 to MS404 so they align with the plans. Use thin or medium CA.

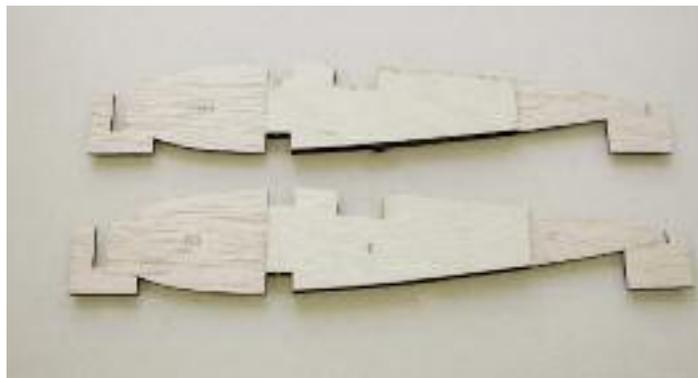
- 4. Remove above pieces from the plan and mark a center line on the leading edge of both elevators (MS403) and rudder (MS402). Do the same on the trailing edge of the fin and stab assembly.
- 5. Place a mark on these center lines indicating where the hinges and elevator joiner wire are to be located. See plan [B24 & P24].
- 6. With a 3/32" drill bit, drill a hole in each elevator (MS403) half approximately 3/4" deep to accept the elevator joiner rod. Cut a groove from these holes on the front edge to the inner end of each elevator half to allow the joiner rod to fit flush with the elevators. Put a few drops of thin CA in the drilled hole and re-drill with the 3/32" bit once dry. This will strengthen the hole.



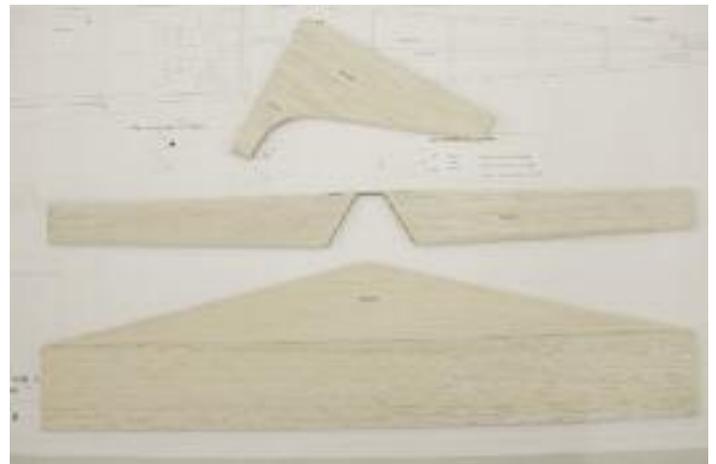
- 7. Where you have marked for the hinge locations on all tail group pieces, carefully cut hinge slots with a #11 blade.
- 8. Bevel the front only of two MS403 [J24] and MS402 [O24].
- 9. To provide clearance for the elevator joiner wire, cut a 1/4" half round in the leading edge of MS402. See photo.



- 11. Trial fit all hinges to assure proper alignment. Do not glue hinges at this time.
- 12. Bevel leading edge of all control surfaces so they move at the proper deflections. Sand to marked line and round all outside edges of the tail group. Do not sand areas that will be inside the fuse and rudder tail blocks.



- 10. Pin two MS403 down on the plan and trial fit the elevator joiner wire. It should slip in easily. Apply 5 minute epoxy to the joiner holes and groove and slide the joiner wire in place. Let cure and remove from board.



Wing Assembly

- 13. Start the wing assembly by removing the balsa ribs and 1/8" ply doublers (3 & 4) from the laser sheets.

Taildragger Only:
Use ply doublers 3T and 4T

- 14. Glue the appropriate ply doublers to both sides of R3 and R4. Align these carefully as these set the angle of and re-enforce your landing gear

15. The wing is sheeted from the leading edge to the middle of the spar. These sheets should be made up now while your work area is clear. Locate (4) 3/32" x 4" x 36" Balsa sheets and cut them to 30". With sand paper or 36" steel rule and a hobby knife, true on 30" long edge of each sheet. Over waxed paper, lay 2 sheets, trued edges together and adjust until there is no gap between the sheets. When you have a good match, pin them down. Wick thin CA along the joint. Unpin when dry and join the other 2 sheets the same way. Lightly block sand both sides of the joined sheets in order to smooth out the glue line.



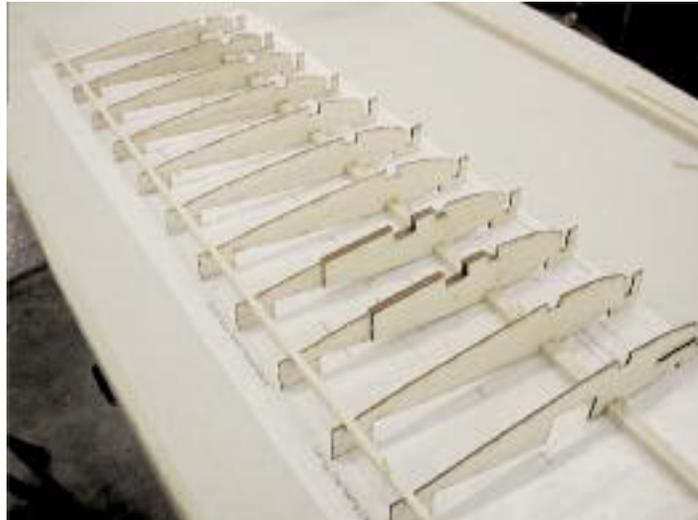
17. Start with the right panel. Align and pin the 3/8" x 1/2" x 36" main spar over the plan.

16. Take the two 8" wide sheets from previous step and trim each sheet to 5-3/4" wide. Make a mark 1-3/4" down from the upper left corner and 1-3/4" up from the bottom right corner. With a 36" steel rule, carefully join the two marks and cut along the line. Set these sheets aside for use later.



18. Locate two R1 ribs and glue on R1A balsa wing dowel block on the outboard side of each R1 rib as shown on the plan. Make sure you have a right and left.

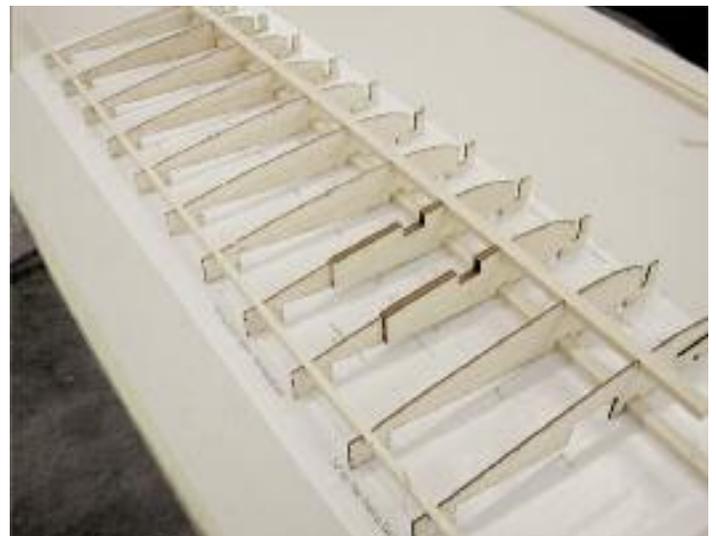
- 19. Using thin CA, reinforce the thin area of the tabs on the front of ribs R10 and R11. This will insure the tabs will stay on the ribs while you are building the wing.



- 20. Lay R1 thru R11 over the spar in their proper location on the plan. Place the 1/4" sq. trailing edge stick against the back of the ribs in the slot provided. Starting with R1 and working thru R11, lay a small triangle next to the rib to stand them 90 degrees to the building surface and verify proper location over the plan. When satisfied, glue to the main spar and trailing edge with CA. Be sure to glue only the back of the ribs to the 1/4" trailing edge. the tab will be removed later.

Note: An easy way to insure the ribs are aligned and evenly spaces is to check them with SW1 thru SW10 shear webs. DO NOT glue the shear webs at this time.

- 21. Carefully fit the top spar into all rib slots and glue. Make sure that all ribs remain at 90 degrees from the building surface.



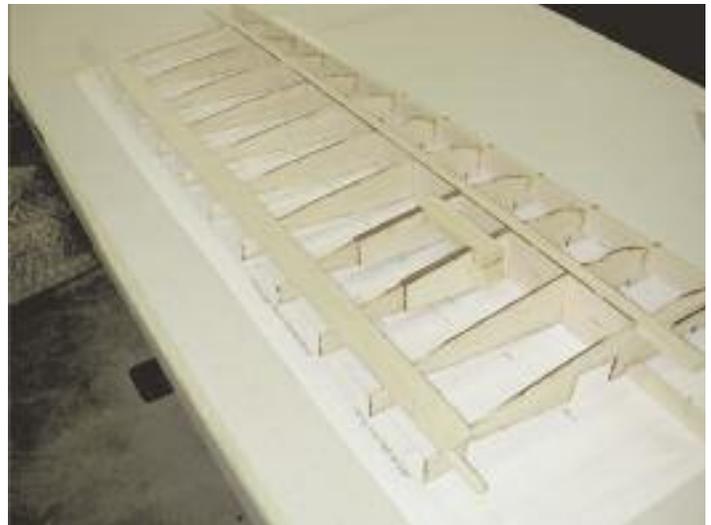
- 22. Place the 1/4" x 1" x 36" leading edge piece in the slots provide on the front of each rib and glue. Glue the leading edge to the front of each rib only. The tabs will be broken off and discarded later.

- 23. Locate and glue shear webs SW1 thru SW10 in place on the rear of the main spar as show on the plan. Sand the shear webs as needed to fit. Insure that the grain is running vertical.



- 24. Break off the rear tab that holds the 1/4" sq. trailing edge piece and sand the trailing edge to match the taper of the ribs. Make sure to leave the bottom part of the tab attached to rib. This sets the correct washout for the wing.

- 25. Using thick CA glue a 3/32" x 1" x 30" sheet to the trailing edge of the wing flush with the 1/4" sq. trailing edge.

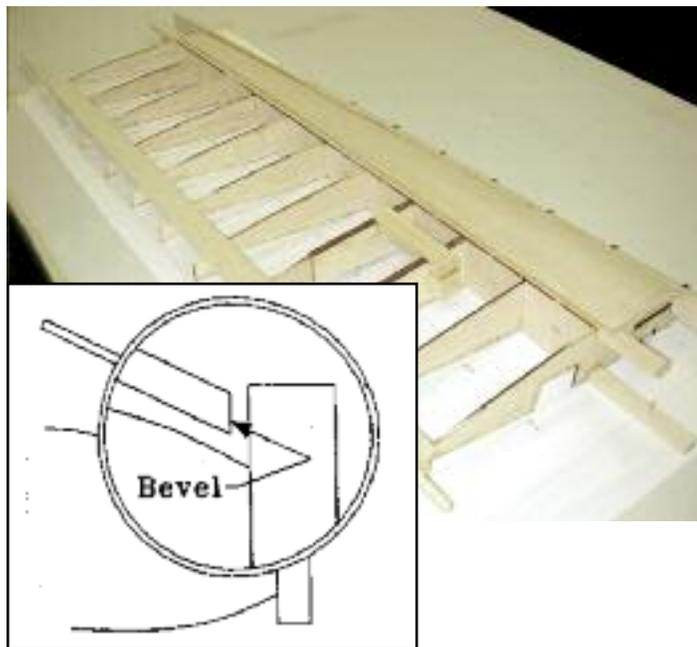


- 26. Locate grooved landing gear blocks (1/2" x 7/8" x 3-7/8") and drill a 5/32" hole at 90 degrees in the bottom of the landing gear block groove 3/8" from the end.

- 27. Fit the grooved landing gear block into the notches in R3 and R4. It should have a 1/2" overhang on the end with the hole. Insure this block fits flush with the top edge of the ribs. When satisfied, remove block and use 30 minute epoxy to glue in place along with the 1/2" x 7/8" x 1" vertical gear block as shown in photo.

Taildragger Version:

The gear blocks will be forward of the main spar.



- 28. Using the 3/32" tapered leading edge sheets made previously in step 15, bevel the angle to match where the ribs meet the leading edge. Check for proper fit - there should be no gaps between the sheeting and the leading edge. Sand if necessary.
- 29. Pin or weight the trailing edge of the wing to the building surface. The wing must remain flat when sheeting the front portion.
- 30. Apply thick CA to the tops of all ribs. Working quickly, align the front of the sheeting to the rear of the leading edge piece and glue with thin CA. Once dry, roll the sheeting to the rear down on top of the spars and add weight to hold flat against the ribs. Glue the rear edge of the sheeting to the top spar using thin CA.

- 31. Using the 3/32" x 4" x 24" sheet provided, cut two pieces 9-1/2" long. Glue these in place over R1 thru R4, keeping one end flush with R1. Cut and fit a piece to fill into the gap left between the center section sheeting and the trailing edge sheeting. Glue in place.

Option: If desired for looks, the rounded corners shown on plan can be cut from scrap 3/32" sheet and added.



- 32. Using scrap 3/32" sheeting, cut 1/4" wide cap strips to fit the remaining seven ribs left exposed. Glue these on ribs R5 thru R10 centered on rib.



- 33. Glue cap strip to R11 flush with the outside of the rib. You will be adding a wingtip to this rib later.

- 35. Remove the wing from your building surface. Check all glue joints and re-glue as necessary. Pay particular attention to the shear webs.

- 36. Run a 5/32" drill thru the vertical gear block and sheeting. This will allow you to locate the landing gear groove later.

- 37. Break off the tabs on the front and back of R1 thru R11. Lightly sand any imperfections left in those areas.

- 38. Turn wing upside down. Place a 1" tall block under the trailing edge at R1 and a 1/2" block under the trailing edge at R11. this will maintain the correct washout. You can also cut a block to fit under R6 to insure the trailing edge doesn't flex while sheeting the wing. Pin the wing to these blocks and to the building surface.



- 39. Taper the 1/4" sq. trailing edge piece to match the wing taper and glue a 3/32" x 1" x 30" sheet in place as was done in step 25.

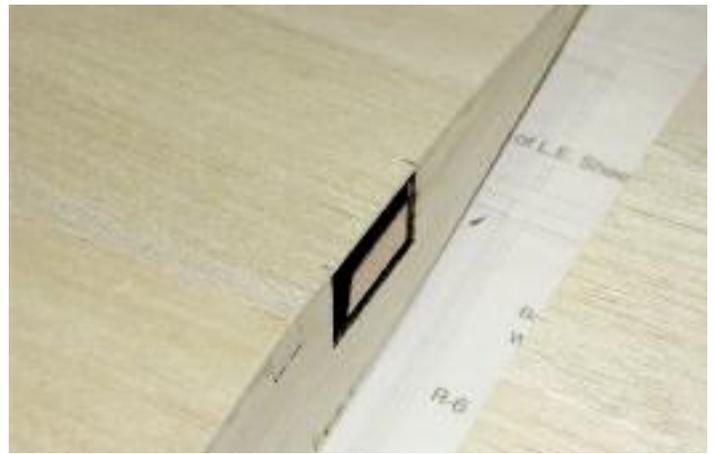
- 40. Fit and glue tapered LE sheet in place as was done in steps 28, 29 and 30.

- 41. Sheet the center section from R1 thru R4 as was done in step 31.

- 42. Cap strip as was done in step 32.

Repeat steps 17 thru 42 to construct left wing panel.

- 43. On both wing panels, trim and sand flush the root, tip and trailing edge. On the top of the center sheeting, mark the location of the aileron servo cutout.



- 44. On both wing panels, carve and sand the leading edge to blend with the contour of the LE sheeting, then sand the front edge round. See cross section [R2] and [R10] on the plan.

Note: Do not sand the leading edge to a sharp or pointed shape. The blunt contour is what allows the Fantasy to perform well at very low speeds.

- 45. Find the two pieces of 3/8" x 1" x 36" tapered aileron stock. Cut each in three pieces to the length shown on the plan for inner and outer trailing edge and aileron.

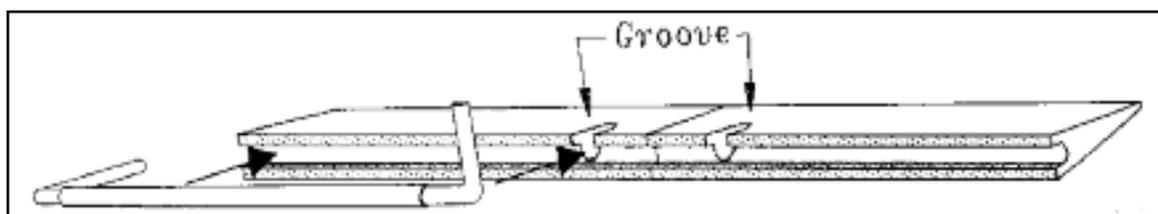


- 46. Take the two 2-5/8" pieces and groove the fronts. Also groove the wing trailing edge to accept the tubing on the aileron torque rod.



- 47. Lay the two 2-5/8" pieces end to end and measure 1/2" from the center line in each direction. At these points cut a groove in each 2-5/8" piece and the trailing edge for the vertical arm to move back and forth.

- 48. Cut a slot in the trailing edge of the wing 2-1/2" from the inboard end of the wing for the torque rod hinge. Check everything for fit and use epoxy to glue hinge into the slot.



49. Draw a center line on each aileron and lay out location of the hinges and aft facing torque rod end. Drill a 3/32" hole and cut a groove for the torque rod as was done on the elevator halves. Cut the slots for hinges in the ailerons and wing trailing edge. Install aileron hinges and aileron. *Do not glue hinges or torque rod until covering is completed.*



51. Glue two 1" tapered trailing edge pieces to the outboard end of the wing trailing edge with medium CA.
52. Block sand aileron and trailing edge pieces to blend smoothly with wing sheeting.
- Note:** To make sanding the aileron easier, tack it to the wing TE with a couple drops of thin CA.
53. Remove ailerons and bevel aileron leading edge as shown on plan.

50. Using medium CA, glue 2-5/8" blocks to the inboard end of the trailing edge as shown on plan. Insure you don't get any glue on the torque rod assembly.

Note: You can use a light coat of oil on the torque rod assembly to keep any excess CA from sticking.



54. Align and glue WT wingtip blocks in place flat against R11 using medium CA.

- 55. Sand WT to match the airfoil of the wing.



- 56. The wing will be joined with its top side flat against the building surface, laying on the spar. Check the fit of ribs R1 without gluing. If necessary sand for a good fit top to bottom and leading edge to trailing edge.
- 57. Over waxed paper, apply 30 minute epoxy to both R1 ribs and join the wing halves. Top surface down, align the airfoil shape of each panel. When satisfied with alignment, hold together with tape and pins until cured.

- 58. Sand a flat (2-7/8" long) area on the front center of the wing leading edge. This should be parallel to the trailing edge and vertical when viewed from the side. Glue LE1 dowel plate to this flat area. Sand to blend with the contour of the wing.

- 59. Starting at the top trailing edge and working forward, secure one end of the fiberglass tape to the wing center section. Wrap it tightly around the wing providing openings for the aileron torque rods. Brush with 30 minute epoxy, insuring that all parts of the cloth are saturated. You can also attach the cloth with thin CA.

Note: If you use epoxy, you can use a small amount of denatured alcohol to thin it and make it easier to spread.



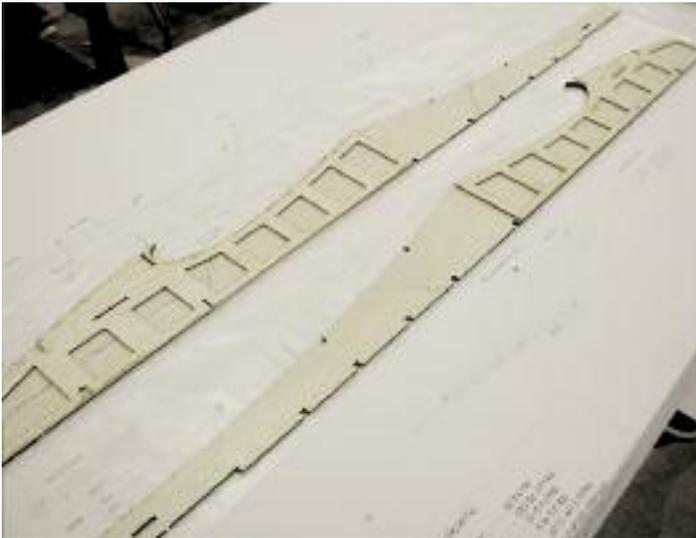
- 60. When epoxy or CA is cured, place SP on the marks that you made previously for the servo cutout. Trace around the inside and cut a hole for the servo in the wing sheeting. Use medium CA to glue SP to the wing
- 61. Locate the holes in the bottom sheeting for the landing gear. Carefully cut the sheeting toward the wing tip exposing the groove in the landing gear block. Open this area to provide a 5/32" x 3-1/4" slot. Mark areas for the landing gear straps and remove the sheeting under the straps so they sit flush with the hardwood gear blocks.



Set wing aside for now. The wing dowel hole will be cut later.

Fuselage Assembly

- 1. Locate MS406B-L, MS406B-R, MS406A(2 ea.), and MS407(2ea.).
- 2. Align and pin MS406B-R, one MS406A and one MS407 over plan. Glue with thin CA. This will be your right side.
- 3. Repeat for the left side using the other MS406A, MS407 and MS406B-L.
- 4. Sand both side smooth.



- 5. Locate 2 ea. FD1 ply fuse doublers. Align with the fuse sides made in the previous steps. The front, top and wing saddles should line up perfectly.

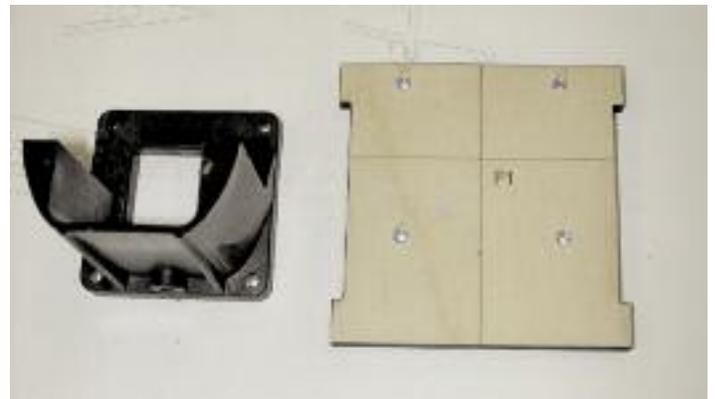
Note: Make sure you have a right and left side. The ply doublers face inward when the sides are standing vertical.

- 6. Remove the doublers and apply a thin layer of 30 minute epoxy to each FD1. Re-align with the fuse sides and allow to cure. Make sure you wipe any excess epoxy from the slots in FD1. You will use these slots for alignment of the bulkheads later.

- 7. Locate F1 Firewall and align your engine mount with the scribed lines on firewall. Drill holes and install motor mount as instructed by the mount manufacturer.
- 8. Using the steering arm as a guide, mark the location of the steering cable exit. Drill two holes for the fuel line and one hole for the engine throttle. If you have a long drill bit, you can also drill these holes later.

Taildragger Version:

Don't drill any holes for the steering cable.



- 9. Add a piece of 1/4" sq. balsa to the bottom of F1 and sand even with all sides. This will allow you to contour the firewall to the bottom of the fuselage easier.

- 10. Locate B1B and B1A. Glue B1A to B1B with thick CA or 5 minute epoxy. Use a 1/4" dowel to insure the holes in each piece align.

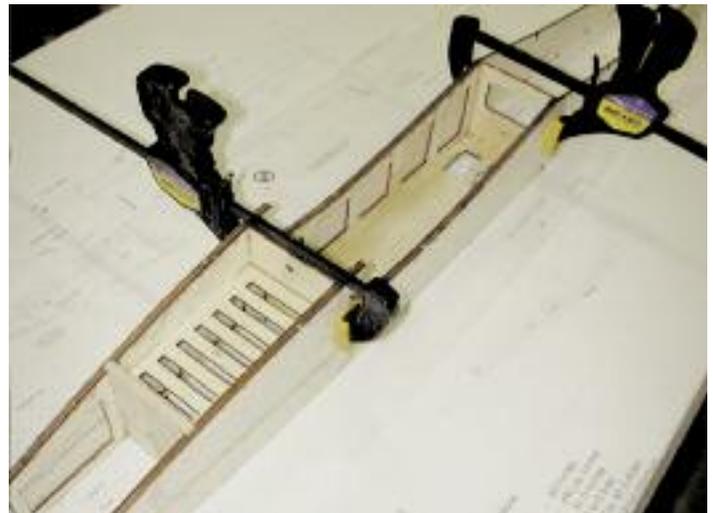


- 11. Locate B2, B3, and C1. Take left side on fuselage and insert F1 and B1A/B assembly into the tabs as shown on the plan. Next, insert B3 into the appropriate slot. Make sure the wide end is butting up against B1B and resting below B1A. Remember the fuselage is built upside down, so make sure the firewall is facing the correct way.

- 12. Place C1 on the plan and pin in place with the scribed lines facing down. Align the left fuselage assembly with C1 and place B2 in the location shown on the plan.

Note: If you are using the supplied flexible pushrods, insure the 2 round holes in B2 are closest to C1. If you are making control rods from dowels, turn B2 so the rectangle cutout is closest to C1.

- 13. Align the right fuselage side with F1, B1B, B2, B3 and C1. Once everything is square with C1 and the plan, clamp and glue all joints from F1 to B2 with medium CA or 5 minute epoxy.



14. Carefully align wing in saddle. Using 1/4" dowel hole in B1A/B as a guide, drill a 1/4" hole into the front of the wing. Remove wing and epoxy the dowel into the wing leaving 5/8" protruding. Set wing aside.



15. At the back of B2, score the balsa sides about half way through on the inside. This will allow you to bend the fuselage easier.

16. Wet the outside and bring the fuse side into alignment with the plan. Glue with medium CA at the tail.



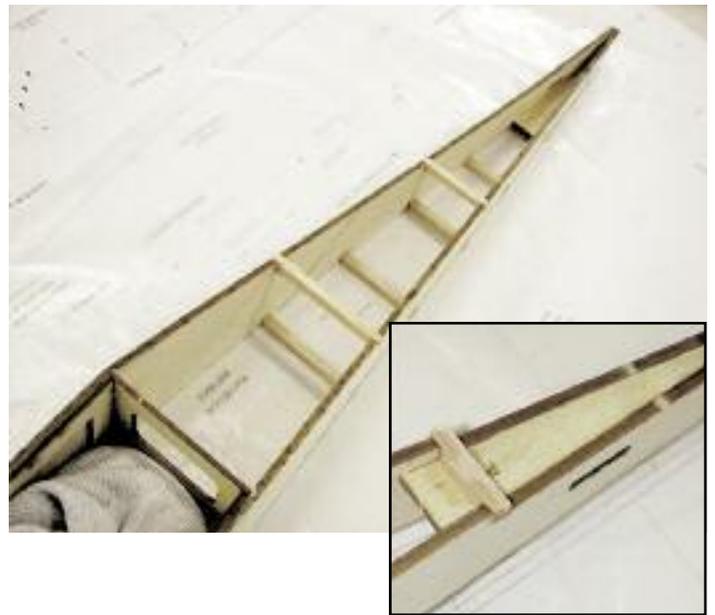
17. Locate and glue with 5 min epoxy PW so that it fits flush with the top of the cut-out for the horizontal stab. This can be done while the fuselage is pinned to the building surface or you can unpin the fuselage and turn it over as show in the photo.

18. Using the 1/4" sq. x 36" balsa sticks, cut and sand fuselage cross pieces to match the plans for the top and bottom of the fuselage sides.



19. Insert the 1/4" sq. pieces into the slots on the fuselage sides and align so they are flush. Glue with thin CA. Glue rear 1/4" piece as shown on plans and in the inset photo.

Note: If you removed the fuselage from the building surface during step 17. Make sure it is pinned down and aligned with the plans for step 19.



20. Cut and fit 1/4" sq. vertical pieces and glue to B2 and fuselage sides.

21. Using 3/32" balsa sheet pieces, sheet the fuse bottom from B2 back to the tail. Insure the grain is running crossways.

Taildragger Version:

Using scrap 1/8" ply, place on the bottom of the fuselage at the very rear, mark shape and sand to fit. Glue in place for tail wheel mount.

22. Once all pieces are glued and trimmed, sand flush with sides. Remove fuse from building surface.



23. Locate the two 7/8" x 1/2" x 1-5/8" wing hold down blocks. Bevel each block so it will fit flush with B2 and parallel with wing saddle.
24. When satisfied with fit, use 5 minute epoxy to glue blocks in place 1/32" below wing saddle and flush with B2. Let dry.

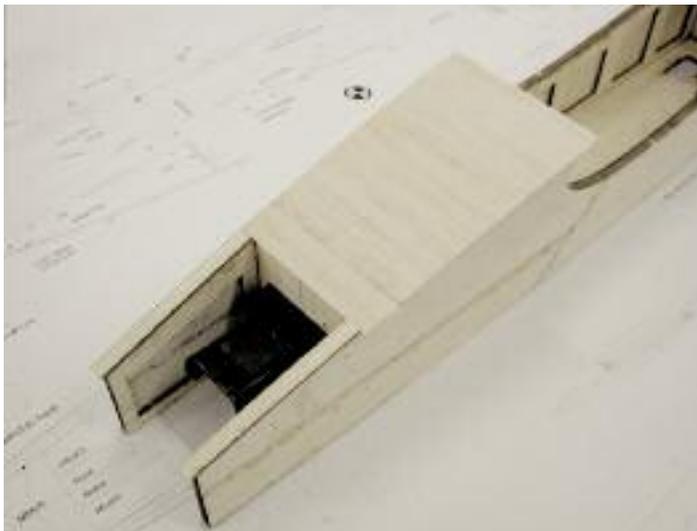
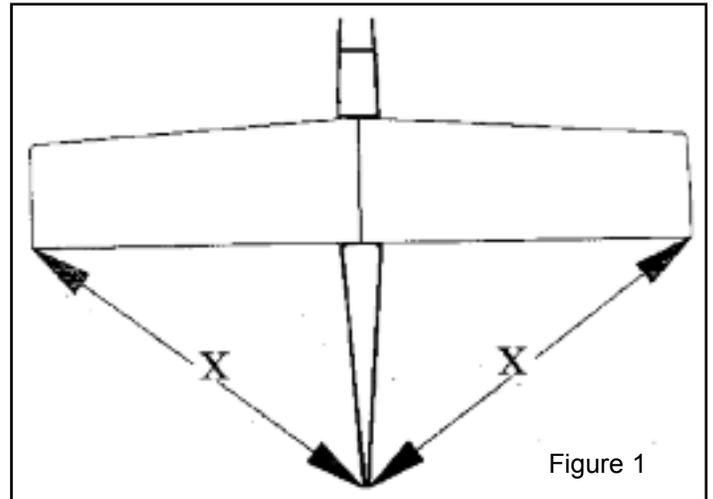
25. Place wing onto fuselage. The wing dowel will align the front and the wing joint should align with the center of the fuselage. To be very sure, you can use the method shown in figure 1.

26. Once you have the wing centered, mark where shown on the plan and drill two wing bolt holes. Use a #7 numbered or 13/64" fractional drill bit. If you do not have these drill sizes you can use a 3/16", but you will have to be careful tapping the smaller hole.

27. Remove the wing and drill the wing only to 1/4".

28. Using a 1/4-20 tap, tap the wing blocks.

Note: After tapping, clean the treads and apply thin CA. Allow plenty of time to cure and re-tap. This will give you good, strong threads.



29. Sand the balsa filler on the bottom of F1 so it is flush with the fuselage sides.

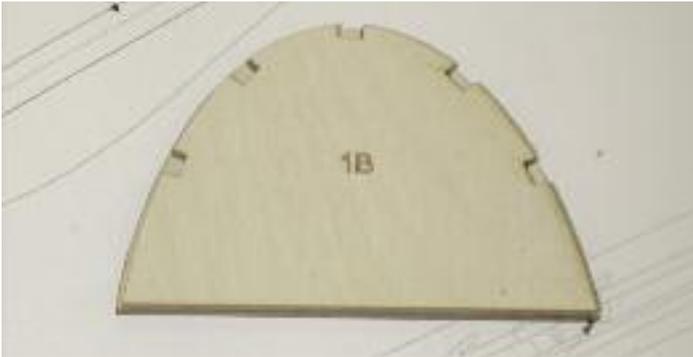
30. Sheet the bottom of the fuselage from the wing saddle to F1 as shown in photo.

31. Locate CS1 balsa strips and cap strip the bottom of each fuselage side in front of F1 so they become flush with the bottom sheeting.

32. Locate C3 (2 ea.) servo mounting backup plates and glue with medium CA to each side of the servo mounting holes in C1. You can glue them to either side of C1.



33. Run the flexible control rods from the holes in the rear of the fuselage to the holes in B2. Glue in place with medium CA.



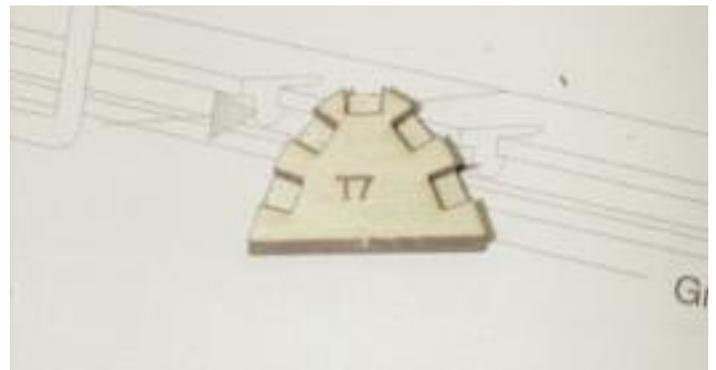
34. Locate turtle formers 1A and 1B. Place 1B on top of 1A. Using 3/16" balsa stringers as spacers center both pieces. Mark location and glue.



35. Bevel bottom of 1A/1B assembly. Center and glue TG backrest flush with bottom.

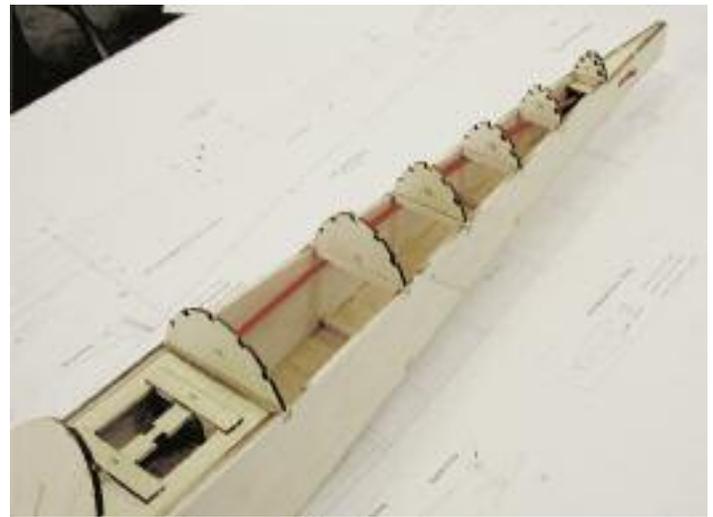


36. Align the front of TG to the scribed line in C2. Adjust the length of TG to fit around C3. Glue in place with medium CA.



37. Remove turtle formers 2,3,4,5,6, 7A & 7B from 1/8" ply sheet. Glue 7A and 7B together so they align with each other.

38. Glue formers 2 thru 7 in place (see plan). Make sure they are centered with the stringers and the fuselage sides. Also insure that they stand at 90 degrees from the fuselage side.



39. Locate five 3/16" sq. stringers. Cut and sand to fit in the notches of turtles 1 thru 7.
40. Starting with the top stringer, use thin CA to glue each stringer in place. Use 5 min epoxy to reinforce the stringers to turtle 7.

Note: For a more finished look and increased strength, you can also sheet the turtledeck with 1/16" balsa.

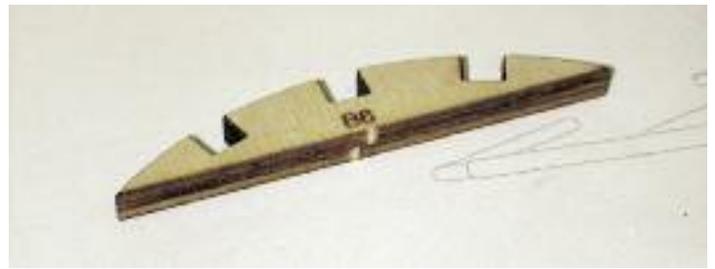
41. Install the flexible pushrods for the steering and throttle cable at this time.



42. Now you are ready to install the fuel tank. Assemble fuel tank and set tank into the tank compartment. Determine necessary foam padding to hold tank in the center so that it will be even with the engine carburetor. Run fuel lines through the firewall.

Note: The fuel tank should have foam on the bottom and sides to prevent fuel foaming and a poor running engine.

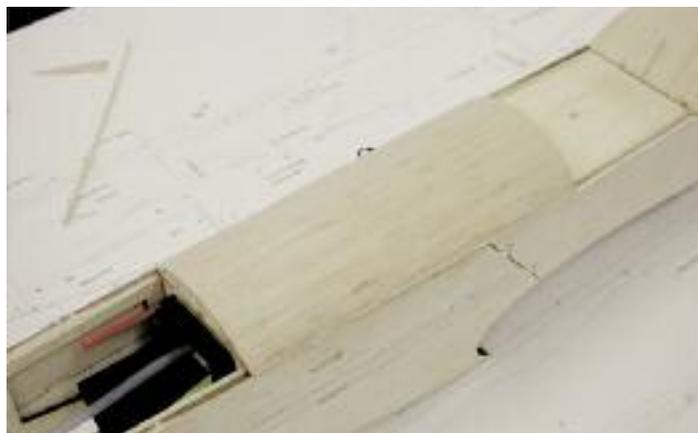
43. Locate two B6 cowl formers. Align and glue them to each other as shown.



44. Align B4 with the scribed line on C1 and sand the bottom of B4 so it will match the angle shown on the plan [8L]. Glue B4 to C1 aligning it with the scribed line. Test fit B5 4" back from F1 and glue in place. *You may need to cut part of B5 so the fuel tank will fit.* Align and glue the B6 assembly on top of F1.

45. Locate a 1/4" sq. x 36" stringer and cut to fit between B4 and B6. Align and sand so the stringers are flush with the top edge of B4. Glue stringers to B4, B5 and B6 with medium CA.

46. Sand stringers flush with the curve in B4 thru B6.



47. Cut 3/32" sheeting to fit over the cowl stringers and flush with the fuselage sides. Bevel the edges of the 3/32" sheeting so they will fit flat on the fuselage sides. Apply medium CA to the stringers and fuselage sides and press the sheeting in place.

Note: You may need to use water or window cleaner on the outside of the sheeting so that it will curve around the formers.

- 48. Sand sheeting flush with B4 and B6.
- 49. You can use the 1/4" B7 pieces to taper the front of the cowl if you desire.
- 50. Glue two pieces of (one on each side) 1/4" sq. x 5-1/2" on the top ends of C1 between B4 and turtle 1 to form the cockpit sides.



- 51. Re-mount the wing on the fuse. Place the horizontal stab on the fuse. Sight from the rear and make certain the horizontal stab is parallel with the top of the wing. This is important for straight flight. Carefully sand the stab saddle so the horizontal stab sits level.

- 52. Remove horizontal stab and align TS2 (90 degrees) on TS1 along the scribed line so they form a T shape.

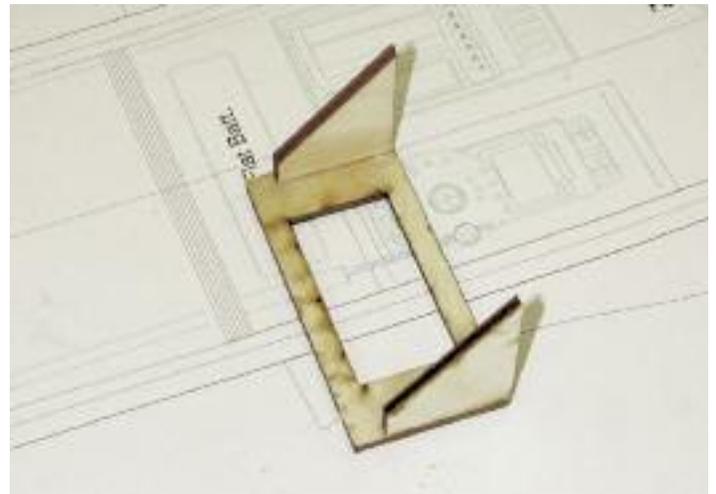


- 53. Place the spacer assembly on the stab saddle and center it at the front and rear of the saddle. When perfectly centered, pin the rear and front ends to the fuse.

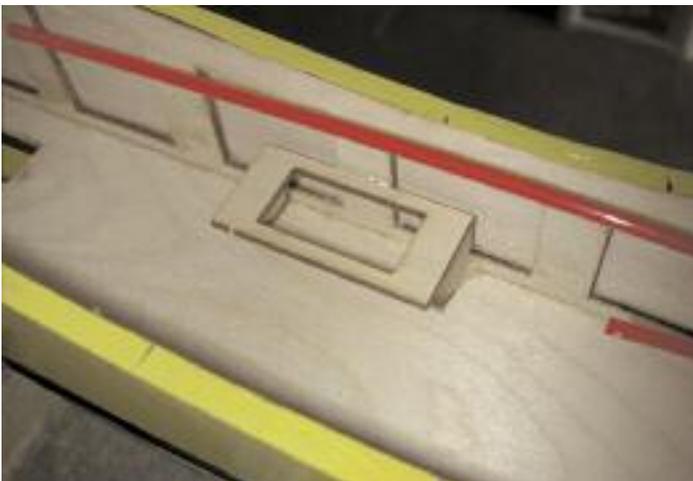
54. Locate the two faring blocks (5/8" x 1" x 5-7/8"). Place them on both sides of the spacer and flush with the back of turtle 7. Glue the blocks to turtle 7 ONLY. Sand to match the contour of turtle 7 and the angle of the stringers. These blocks will hold your vertical and horizontal stab in place.



55. Once the blocks are sanded to shape, remove and discard the spacer. The blocks should now have a taper that matches the stringer angle as shown in photo. Sand the rear of the blocks to match the fuselage length.



56. Remove the 1/8" ply triangles and servo plate from the laser cut sheet. Assemble them as shown in the photo (use medium CA). This assembly can be glued to the fuselage side and used to mount your throttle servo.



Finishing and final assembly

- 1. Sand the entire model to a smooth surface. Carefully remove all sanding dust to allow proper adhesion of your covering material.
- 2. Cover your Fantasy with your choice of covering. Follow the manufacturer's instructions for the covering used.
- 3. In order to fuel proof the engine compartment, it is easier to use a painted or epoxy finish rather than applying film. You can use a coat of 30 minute epoxy thinned with denatured alcohol or any fuel-proof paint to seal the wood.
- 4. Remove the covering on top and bottom of the stab and bottom of the fin where they are to be glued to the fuse. Note: Be very careful not to score the wood as it may cause failure of that surface in flight.
- 5. Use 30 minute epoxy to glue stab and fin in their proper location. Before the epoxy cures, sight across the rear of the stab to insure it is parallel with the wing. Verify the fin is 90 degrees to the stab. Use masking tape to hold the stab and fin in place.
- 6. Install rudder and elevator control horns where shown on plan.
- 7. Hinge the elevator first using the provided hinges. With a hobby knife, slit the film covering where each hinge slot is located. Install one hinge in each slot of the stab (halfway). Slide the elevator into position. When fully seated, deflect the elevator to the maximum throw you will be using and put 3 or 4 drops of thin CA on each hinge. Hold the elevator in the deflected position until dry. Next turn aircraft upside down and deflect the elevator in the opposite direction. Add 3 or 4 more drops of thin CA to that side of the hinge and allow to dry.
- 8. Install the rudder using the same process as in step 7.
- 9. Install the ailerons using the same method used in step 7. In addition, put a small amount of epoxy in the aileron torque rod hole in order to secure it and keep it from wearing the balsa on the aileron.
- 10. Install radio equipment where shown on the plan. Be sure to follow the radio manufacturer's instructions. Wrap the receiver and battery in 1/4" or 1/2" foam rubber to protect them from vibration. We use Hitec 475BB standard ball bearing servos and standard Hitec 8 channel receiver in our prototype. There is no need to use hi-torque servos in this aircraft.
- 11. Cut a hole in the side of the fuselage opposite the exhaust for the on/off switch and charger jack.
- 12. Install the rudder and elevator pushrods and clevises. Make sure the control surfaces and servos are in a neutral position when the radio is turned on.
- 13. Install the throttle cable and nose gear cable.
- 14. Install the aileron pushrods as described in the manufacturer's instructions.
- 15. Cut out the canopy and fit it over the cockpit area. Trim as necessary for a good fit. Use a few small pieces of masking tape to hold the canopy tight to the fuselage and go around the canopy edge with RC-56 glue. Keep an eye out for drips until the glue has thickened. Once the glue has dried completely, you can use trim tape around the edge of the canopy for a finished look.
- 16. Install landing gear wires, using landing gear straps for mains and wheel collar/steering arm for nose gear. Attach wheels.
- 17. Install engine, balanced prop and spinner.
- 18. Set the deflection of your control surfaces to the measurements shown on the fuselage plan.
- 19. Balance the aircraft. The plane should be turned upside down at balanced where the fuselage meets the wings 7-1/2" in front of the trailing edge (5" back from the leading edge). Do not attempt to fly a plane that is not balanced withing the points shown on the plans.

We hope that you enjoyed building your laser-cut Fantasy because the best is yet to come! Your input on the instruction, plans and flight is very valuable to us and would be greatly appreciated.