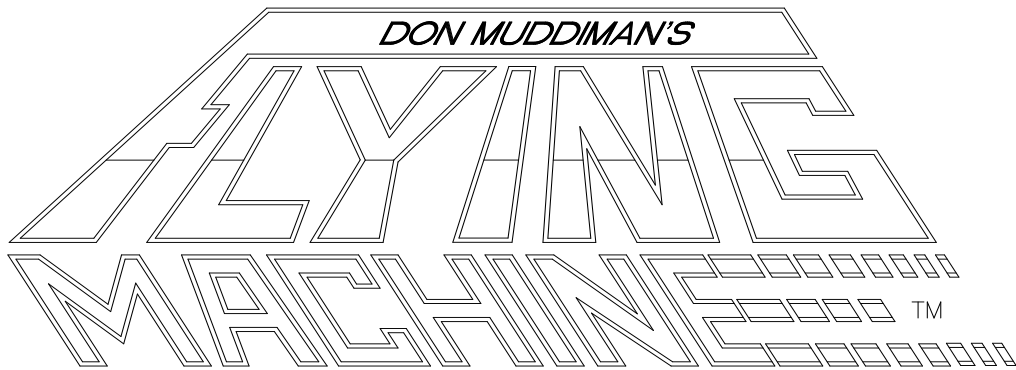


Don Muddiman's Incredible



Designed By:
Don Muddiman
551 SW Hammock Hill Circle
Lake City, FL 32024
407-301-6080
donmuddiman@gmail.com
www.eagle-i.us/fm

INTRODUCTION

Thank you for purchasing the Flying Machine Plans.

In 1983 Don Muddiman of the Cloud Dancers Air Show Team was looking for an aircraft that would push him to his limits. That dream became reality when he designed the Incredible Flying Machine.

If you've ever seen the Cloud Dancers International Air Show Team perform, then you've seen the amazing, unreal, aerial magic of Don Muddiman and his incredible Flying Machine! Designed to "Push the Envelope", this machine will fulfill anyone's need for pure aerobatic excitement! Don knew that most of his flying would be with a lot of control throw, and with sticks in the corners, so he designed this ship to "Take a licking and keep on ticking"! The strong, yet lightweight design can take a lot of abuse. Imagine entering a high-speed vertical dive, at full power, then throwing the sticks into the corners! Most planes would self-destruct! But the Flying Machine will perform a series of snaps so fast that it will appear to be a blur, then recover instantly as you enjoy the "oohs" and "ahhs" of the crowd that you now have the full attention of. For the typical Sunday Flyer, reducing the control throws will turn the Flying Machine into a well behaved sport flyer. Either way, you'll never be bored!

The competitor, let's get this straight.

I have heard many times the Flying Machine looks like the "Hots" a model Midwest models produced in the 80's. Well in fact the Flying Machine was designed in 1983 prior to the "Hots" coming into existence.

Dan B. Santich designed the "Hots" sometime in 1984 or there after and had the good fortune of getting Midwest models to produce the kit. The only thing the both aircraft have in common is a similar profile outline. Other than that the "Hots" cannot compete with the flight envelope and high speed aerobatic of the Flying Machine.

It's a flying experience you cannot get from any other model on the market.

WARNING! THIS IS NOT A TOY!

THIS IS NOT A BEGINNER'S AIRPLANE!

This R/C aircraft model is not a toy! It is capable of serious bodily harm and property damage. IT IS YOUR RESPONSIBILITY AND YOURS ALONE — to build this kit correctly, properly install all R/C components and flying gear (engine, tank, push rods, etc.). Test the model only with experienced, competent help, using common sense and in accordance with all safety standards as set down in the Academy of Model Aeronautics Safety Code. It is suggested that you join the AMA and become properly insured before you attempt to fly this model.

IF YOU ARE JUST STARTING R/C MODELING, CONSULT YOUR LOCAL HOBBY SHOP OR WRITE TO THE ACADEMY OF MODEL AERONAUTICS TO FIND AN EXPERIENCED INSTRUCTOR IN YOUR AREA.

NOTE: This is not a beginner's airplane! While the FLYING MACHINE is easy to build and flies great we must discourage you from selecting this as your first R/C airplane. It is highly maneuverable, and lacks the self-recovery characteristics of a good basic trainer. On the other hand, if you have already learned the basics of R/C flying and you are able to safely handle an "aileron trainer" airplane, the FLYING MACHINE is an excellent choice.

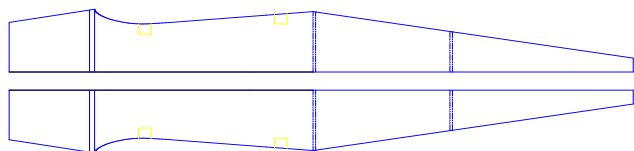
PRECAUTIONS

1. You must build the plane according to the plans and instructions. Do not alter or modify the model, as doing so may result in an unsafe or un-flyable model. In a few cases the plans and instructions may differ slightly from the photos. In those instances you should assume the plans and written instructions are correct.
2. You must take time to build straight, true and strong.
3. You must use a proper R/C radio that is in first class condition, the correct sized engine and correct components (Fuel tank, wheels, etc.) throughout your building process.
4. You must properly install all R/C and other components so that the model operates properly on the ground and in the air.
5. You must test the operation of the model before the first and each successive flight to insure that all equipment is operating, and you must make certain that the model has remained structurally sound. Be sure to check the nylon clevises often, and replace if they show signs of wear.
6. You must fly the model only with the competent help of a well experienced R/C pilot if you are not already an experienced and knowledgeable R/C pilot at this time.

Note: As a designer I can provide you with a top quality plans and great instructions, but ultimately the quality and fly-ability of your finished model depends on how you build it. Therefore, I cannot in any way guarantee the performance of your completed model, and no representations are expressed or implied as to the performance or safety of your completed model.

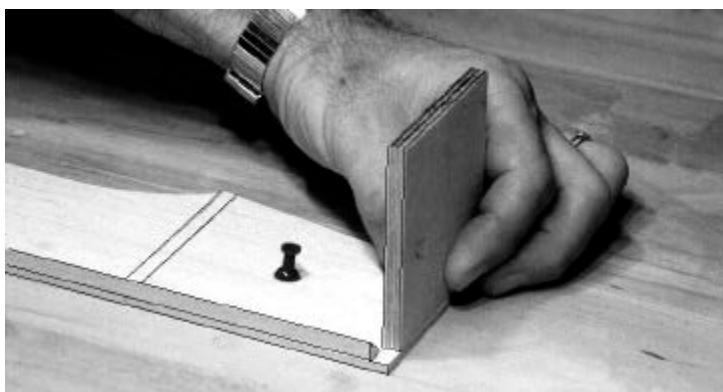
Remember: Take your time and follow directions to end up with a well-built model that is straight and true.

Start Construction by studying the plans and construction steps. The use of Cyanoacrylate (CA) is recommended. Do not add any additional beeping up as the Flying Machine is very strong and you would only be adding additional weight.

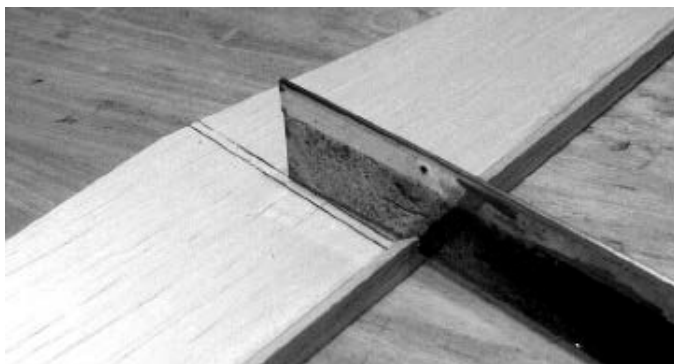


Fuselage

□ 1. Mark the location of the 1/4" sq. balsa vertical support, #1 bulkhead, #2 bulkhead and the locations of the wing mount blocks on the (inner) side of the fuselage sides. Be sure to make a left and right fuselage side.



□ 2. Bond the 1/4" triangle balsa stringers to the bottom inside of the fuselage sides. Don't forget to offset the stringers 1/4" from the front to allow for bonding of the firewall. **Again make sure you make a left and right side.**

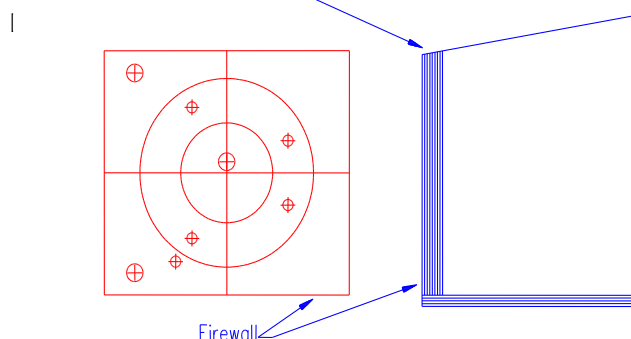


□ 3. Notch 1/4" triangle balsa stringers just behind bulkhead #2 to help relieve the stress when the fuselage sides are pulled together at the rear.

□ 4. Mark the fore/aft center line on the 1/8" plywood bottom and balsa bottom. Make sure the ends are square.

□

Cut Angle of Firewall to match Fuselage Sides.



□ 5. Mark the 1/4" plywood firewall horizontal and vertical **engine center lines**. Cut the angle at the top of firewall to match the angle of the fuselage sides.

□ 6. Draw at least a 36" straight reference line on a **Flat working surface**.



□ 7. Lay the 1/8" plywood fuselage bottom over this reference line, aligning the center line of the plywood bottom with the reference line on the work surface. Using small brads, nail the plywood bottom to the work surface. Leave enough of brad exposed to remove later. Lay the 1/8" balsa fuselage bottom in place on the work surface and align the center line with the work surface reference line. Pin in position using push pins and bond together.

□ 8. Bond the firewall to the plywood bottom.

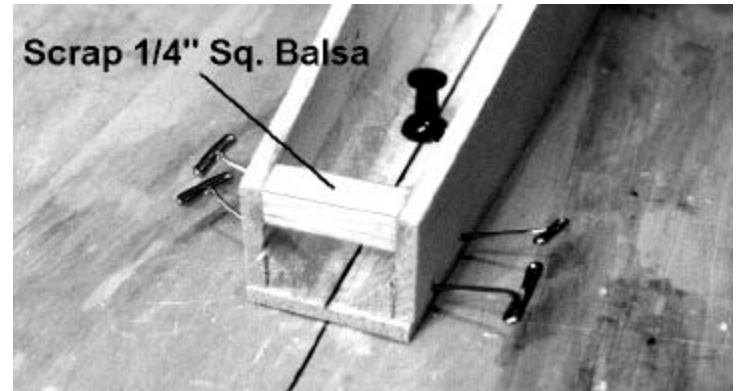
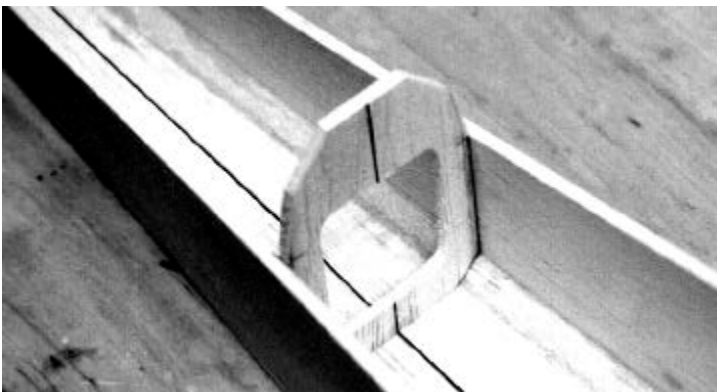
The firewall should be flush with the front edge of plywood bottom. Using a square be absolutely certain the vertical center line of the firewall is aligned with the center line on the 1/8" plywood bottom ply and the firewall is vertical.

□ 9. Bond the #1 bulkhead in position aligning the center line of the bulkhead with the center of the fuselage balsa bottom. The bulkhead must be square with the balsa fuselage bottom.



□ 10. Bond the fuselage sides to the firewall, bulkhead #1, the 1/8" plywood bottom and to the 1/8" balsa bottom of the fuselage up to bulkhead #1. Be sure the 1/4" triangle balsa stringers are flush against the fuselage bottom.

□ 11. After bonding the fuselage sides between the firewall and bulkhead #1, pull in the rear of the fuselage sides one at a time. Bond it to the 1/8" balsa bottom. Locate bulkhead #2 and check the fit. Because of the wood thickness variation and cutting accuracy, the bulkhead may not fit. Shim or trim the vertical sides of the bulkhead as required to fit at its designated location. Be sure the fuselage sides are vertical and the bulkhead is centered before bonding. Bond bulkhead #2 in position.



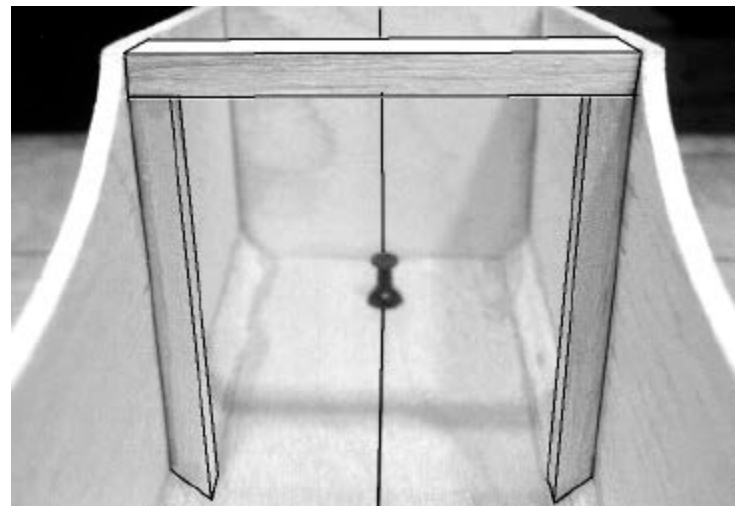
□ 12.

******* NOTE *******

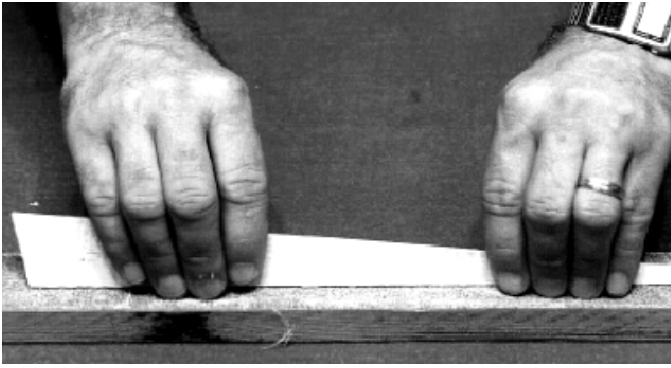
THE AFT END OF THE FUSELAGE BOTTOM HAS NOW PULLED UP FROM THE WORK SURFACE. THE AFT END MUST BE PINNED DOWN AND HELD IN POSITION AGAINST THE WORK SURFACE PRIOR TO BONDING THE TURTLE DECK (TD) SHEETING OR CORRECTION WILL NOT BE POSSIBLE AFTER THE TD SHEETING IS BONDED.

□ 13. Bond a 1/4" square scrap piece of balsa at the top aft of fuselage sides.

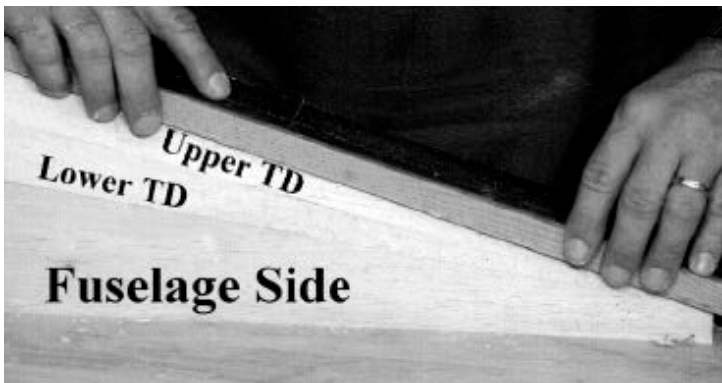
□ 14. Bond 1/4" triangle scrap stock into both inside corners of the firewall.



□ 15. Bond the 1/4" sq. x 3" balsa horizontal support to the fuselage sides at the leading edge of the wing saddle. Bond the 1/4" sq. balsa vertical supports in position on the fuselage sides.



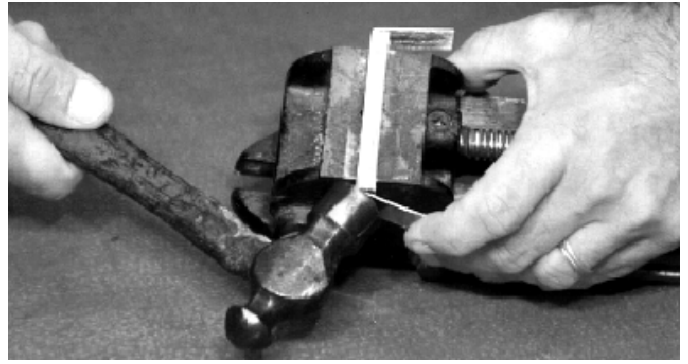
□ 16. Sand the edges of the lower turtle deck (TD) sheeting as required to mate to the fuselage sides. When satisfied with the fit bond (from the inside of the fuselage) the lower TD sheeting in position. Repeat for upper TD sheeting.



□ 17. Before sanding the upper TD sheeting flush with the top of the bulkheads bond in position the 1/4" sq. balsa sanding supports. This will support the upper TD sheeting sides from flexing in when sanding. Sand the upper TD sheeting flush with the tops of the bulkheads.

□ 18. Bond the top TD sheeting in position. Do not remove the fuselage from the work surface at this point.

□ 19. Cut the 5/8"x 13 1/2" .020 aluminum strap into two pieces measuring 7 1/2" for the front wing strap and 6" for the aft strap.



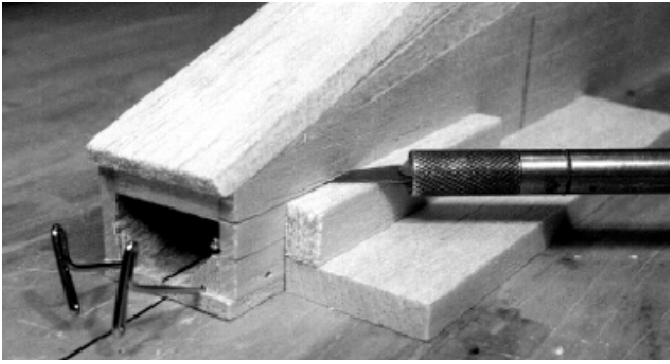
□ 20. Sand each aluminum strap in the areas to be bonded to the plywood wing block. Assemble and bond the plywood wing mount blocks to the .020 aluminum straps. Notch front and aft .020 aluminum wing block hold down straps.

******* Warning *******

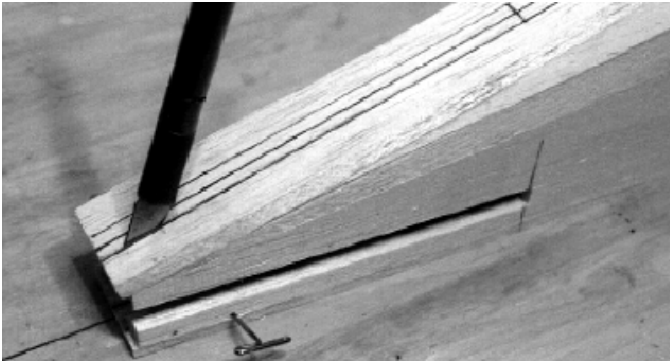
FAILURE TO SAND AND NOTCH THE ALUMINUM STRAPS COULD RESULT IN THE WING SEPARATING FROM THE FUSELAGE.



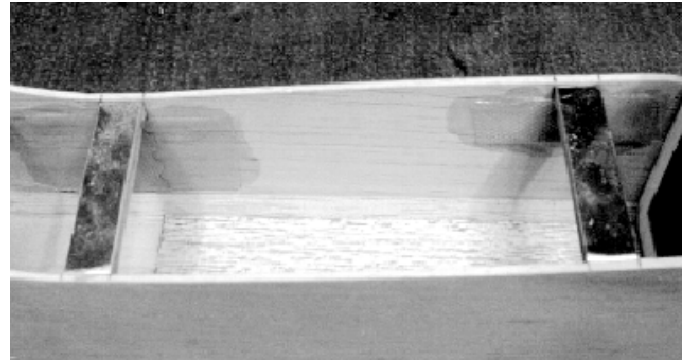
□ 21. Bond the wing mount assembly in position using CA making sure the wing block mount surface is flush with the wing saddle and square with the fuselage.



- 22. With the fuselage still pinned in position use an X-acto knife and a 5/8" spacer as a guide on the working surface to cut the upper side of the horizontal stab slots on both sides of the fuselage. Repeat the same procedure for the lower side of the stab slot using a 3/8" spacer.



- 23. Using a triangle aligned with the aft end of the fuselage and with the straight reference line on the work surface, find and mark the center line on the top TD sheeting. Using the center line on the top of the TD sheeting as a reference, mark and cut out the slot for the vertical fin.
- 24. The fuselage may now be removed from the work surface.
- 25. Sand the turtle deck to shape using a 24"x3" sanding block.
- 26. Block sand the tank area 3/8" balsa block flush with the firewall and fuselage sides.



- 27. Glass the wing block mounting assemblies to the sides of the fuselage using 30 minute epoxy. After the epoxy has cured bond the 1/4" sq. balsa wing saddle supports in position.

WING ASSEMBLY

- 1. Make 17 ribs from 1/16" balsa and mark the top side of all the ribs.
- 2. Tape the drawing of the wing onto a flat working surface.
- 3. Cover the wing drawing with wax paper to prevent the adhesive from bonding to the drawing.
- 4. Pin the bottom 1/4"x1/4"x 42" spruce spar in position on the drawing. Make sure that the spar is straight.
- 5. Assemble and bond the ribs onto the bottom spar. Make sure all ribs are vertical and that the marking on the ribs are up.
- 6. Cut and/or sand one continuous 42" piece or two 21" pieces for the trailing edge sub-stock. Refer to drawing for correct shape and length. Pre-fit the sub-stock and identify the top side. Bond in position at the aft end of all the ribs. Use t-pins to hold the sub-trailing edge down in position.
- 7. Bond the 1/4"x1/4"x48" balsa leading edge in position at the front of the ribs. Slightly bevel the edges to match the rib contour.
- 8. Position the top 1/4"x1/4"x42" spruce spar in position and bond in place.

❑ 9. Cut and fit the 1/16" balsa sheeting prior to bonding in position. The first sheeting joint should be at the center of the main spar. Sheet one half of the top of the wing at a time.

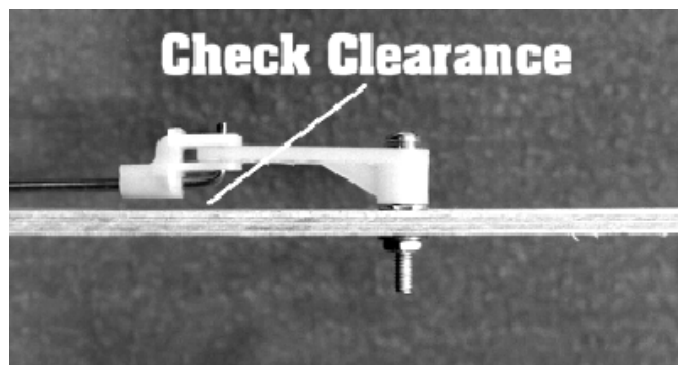
❑ 10. A slow set cyanoacrylate can be used to bond the sheeting in place.

❑ 11. After sheeting the top of the wing remove the wing from the working surface and pin down the sheeted side of the wing to the working surface.

❑ 12. Cut two 1" sq. hard balsa wing hold down blocks. Sand or cut the ends to match the rib contour. Bond the blocks in position to the main spars and to the ribs.

❑ 13. Cut the 1/16" balsa webbing and bond in position to the top and bottom main spars.

❑ 14. Cut and drill two (2) 1/8" plywood bellcrank platforms per drawing and assemble the bellcranks onto the platforms.



❑ 15. Bond the bellcrank platforms in position. NOTE: Offset the bellcrank pivot point as shown on drawing. Reinforce the 1/8" plywood bellcrank platform bond joint with 1/4" sq. spruce braces. (SEE DRAWING)

❑ 16. Bend one end of the 1/16" music wire to accommodate a Goldberg Snap R Keeper.

❑ 17. Slide the music wire into music wire holes in the ribs. Stop at the aileron servo area and install a Du Bro E Z Connector onto music wire.

❑ 18. Cut and bend the remaining end of music wire to correct length and cut to accept a Snap R Keeper. NOTE: Make sure the bellcranks are parallel to each other.

❑ 19. Install the music wire into the outermost hole of bellcrank arms. (See Drawings)

❑ 20. Fasten the Snap R Keepers and check freedom of movement.

❑ 21. Drill the outermost hole of the bellcrank arms with a .076" drill to accommodate the larger diameter of the aileron control rods. Check fit.

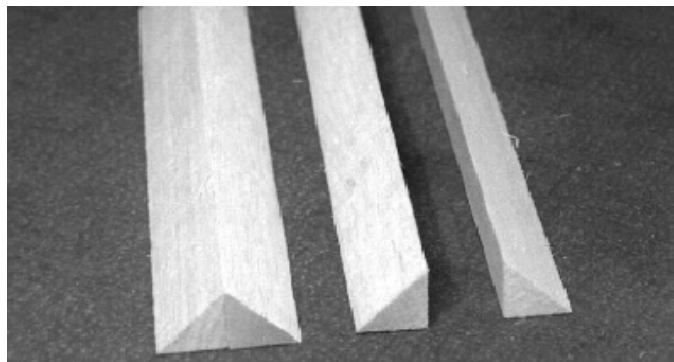
❑ 22. Sheet the bottom of wing using steps 9 and 10.

❑ 23. Trim the excess sheeting from the ends of the wing and sand it flush with the end ribs. Sand the sheeting flush with the trailing edge and leading edge, check for straightness.

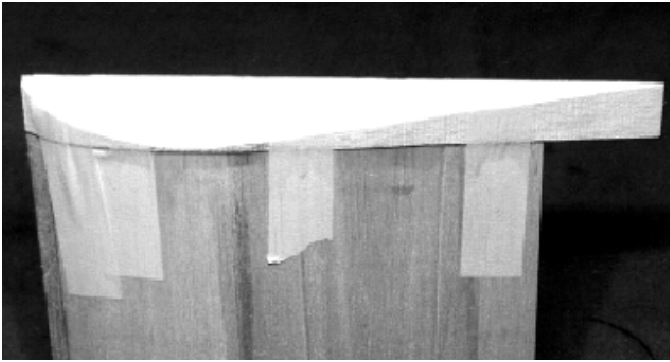
❑ 24. Cut 1 1/2" trailing edge stock to length. Mark the center of trailing edge and the center of wing. Place the wing on wax paper with the bottom side of the wing on the work surface. Align and center the trailing edge and bond in position.

❑ 25. Cut the ailerons from 1 1/2" trailing edge stock to length.

❑ 26. Make a fore/aft center line on each end of the wing ribs for wing tip center line position.



❑ 27. Cut four (4) pieces of 1" triangle stock 10 1/2" long. Bond two pieces to create one (1) large triangle for each wing tip. (See Drawing)



☐ 28. Bond wing tips in place, aligning the marks on leading and trailing edge with the joints on triangle stock.

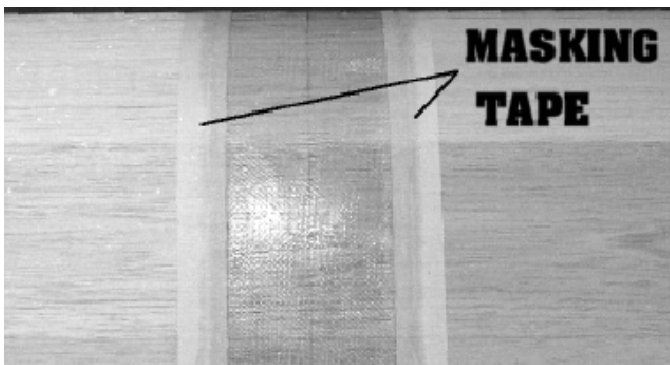
☐ 28. Bond wing tips in place, aligning the marks on leading and trailing edge with the joints on triangle stock. 29. Tack the ailerons in place (only to withstand pressure of sanding) and sand and shape the wing tips to match airfoil of wing.

☐ 29 .Pre-fit the leading edge to the wing saddle to make sure contour is correct.

CAUTION IF THE WING IS NOT FULLY SEATED AGAINST THE FRONT OF THE WING SADDLE INCIDENCE SETTING MAY BE INCORRECT.

INCORRECT INCIDENCE WILL CAUSE UP TRIM IN THE ELEVATOR.!!!!

☐ 30. Using plans, mark the location of the servo cavity and bellcrank control exits. Carefully using a sharp X Acto blade cut out the openings.



☐ 31. Using 4" inch wide, 6 to 8 ounce fiberglass reinforcing cloth at the center of the wing, tack the cloth at trailing edge, wrap around the leading edge of the wing and tack in place at the trailing edge.

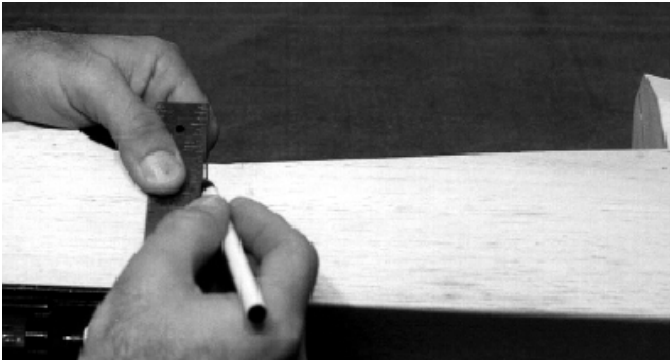
☐ 32. Use Zpoxxy finishing resin to wet out the glass cloth. Apply only enough resin to fill the weave of the glass cloth. Masking tape can be used to feather the edges of the resin to reduce sanding.

EXCESSIVE RESIN WILL CAUSE WING SEATING PROBLEMS AND EXCESSIVE WEIGHT.

☐ 33. After the resin has cured, final sand the wing.

☐ 34. Remove the ailerons. Cut or sand a 35 degree bevel for the hinge point.

☐ 35. Deflect the bellcranks to their maximum position for visual site of bellcrank arm and install the aileron control rod with a Snap R Keeper.

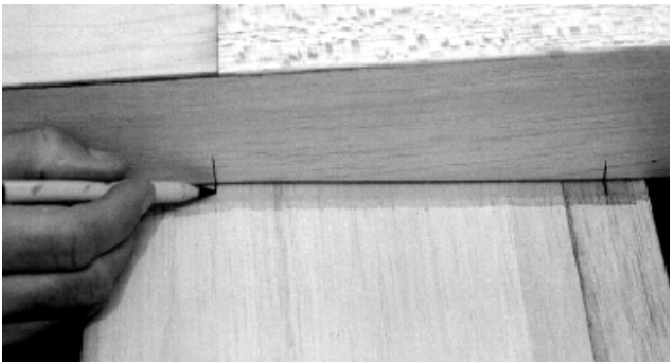


□ 1. Mark a center line on each wing mount block and continue the drawing of the center lines onto the outside of the fuselage sides.

□ 2. Find and mark the fore/aft center line on the top of the wing.

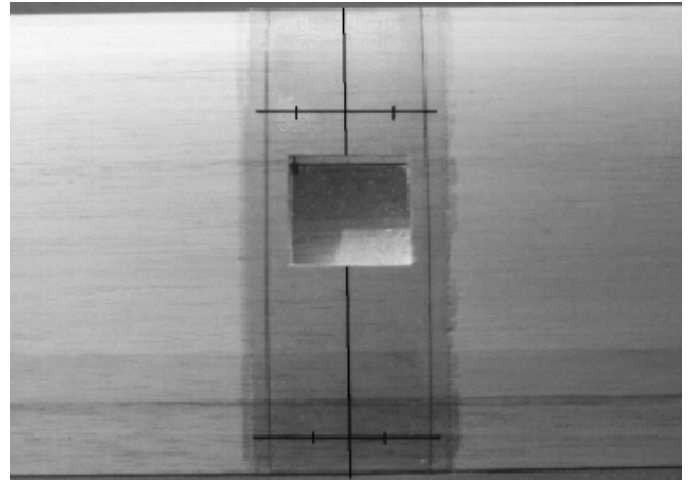
□ 3. Place the wing on the fuselage making sure the wing is fully seated against the front of the wing saddle. Align the top center line on the wing with the center line of the fuselage. Measure from each wing tip to the fuselage center line at the firewall, the measurement must be same from each tip.

□ 4. C-clamp the trailing edge of the wing to the aft wing mount block. This will hold the wing in position.



□ 5. Mark the position of the fuselage sides on the bottom of the wing.

□ 6. Mark the position of the center of the wing mounting blocks on the bottom of the wing.

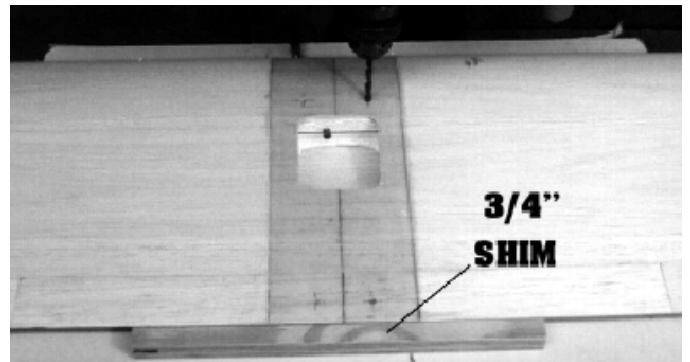


□ 7. Remove the wing and draw a center line on the bottom of the wing between the fuselage side marks.

□ 8. Complete the drawing of the center line of the wing mounting blocks on the wing bottom.

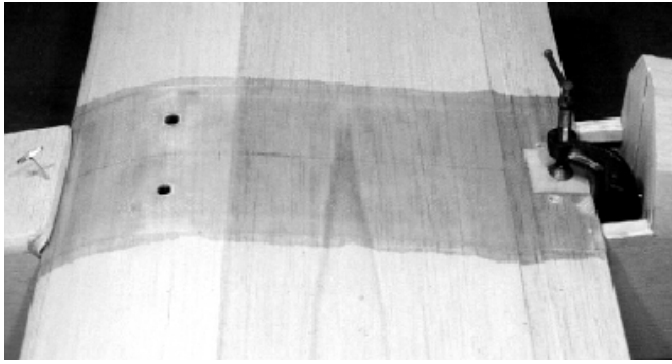
□ 9. Mark the position of the front wing mount holes 1" each side of the center line on the wing bottom.

□ 10. Mark the position of the aft wing mount holes 3/4" each side of the center line on the wing bottom.

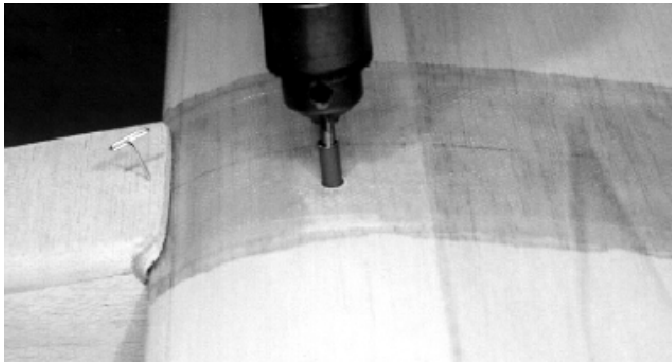


□ 11. Using the marked positions of the wing mount holes, drill a 13/64" hole at a right angle to the bottom of the wing. Drill all four holes. Drill out the front wing holes using a 9/32 drill bit to accept the arrow shaft compression tubes.

□ 12. Pre-fit and install 1/4" I.D. arrow shaft compression tubes into the front wing mount holes using epoxy and sand flush with the wing.

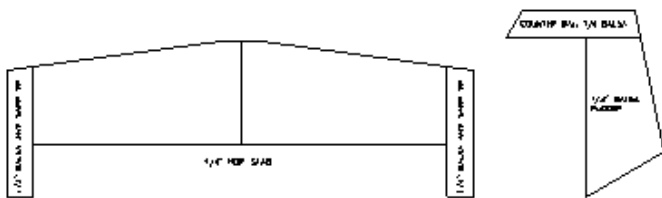


- 13. Align the wing in position on the fuselage using the marked positions from the previous steps. T-pin the leading edge of the wing in position and C-clamp the trailing edge of the wing to the aft wing mount block.



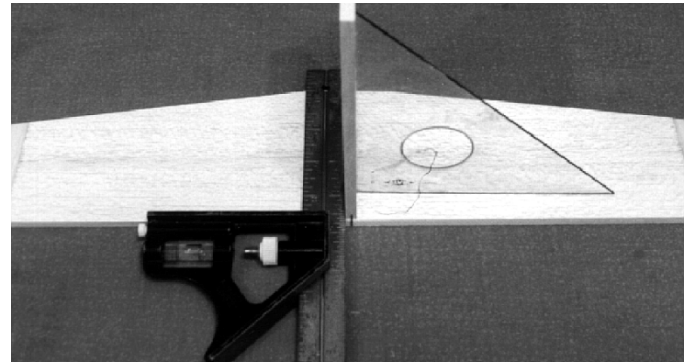
- 14. Using the wing as a drill guide, drill four 13/64" holes into the wing mounting blocks. Smaller telescopic tubing can be used inside the compression tubes for a drill guide.
- 15. Tap the wing mount block holes for 1/4-20 bolts.
- 16. Drill out aft wing holes to 1/4" to accommodate 1/4-20 wing bolts.

Horizontal Stab & Vertical Fin

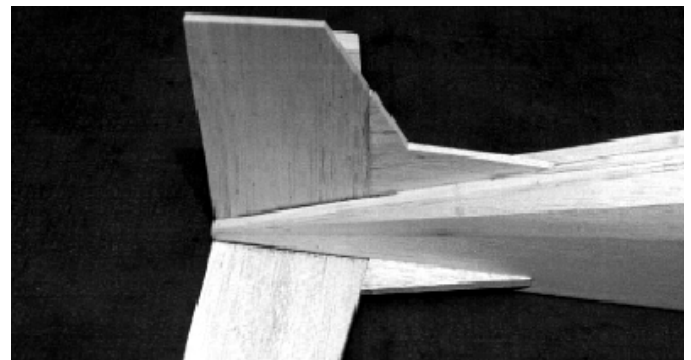


- 1. Bond the 1/4" balsa counter balance to rudder.
- 2. Bond the 1/4" balsa anti-warp tips to the horizontal stabilizer.

Horizontal Stab & Vertical Fin Installation

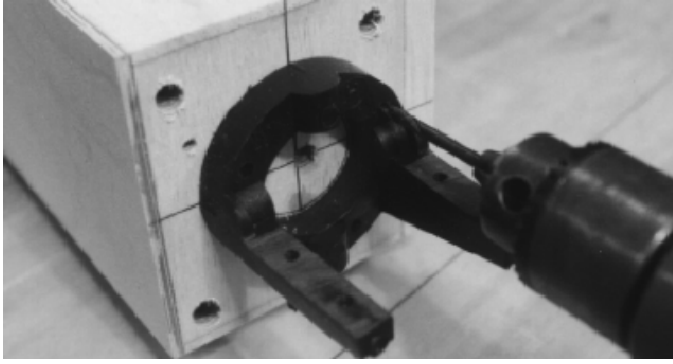


- 1. Mark a fore and aft center line on the horizontal stab. Bond the vertical fin onto the horizontal stab. Make sure the vertical fin is centered and perpendicular to horizontal stab.
- 2. Slide the stab assembly into the cutout in the fuselage. Make sure the horizontal stab is centered with the center line of the fuselage.
- 3. Measure from each horizontal stab tip to fuselage center line at the firewall. The measurement must be same from each tip. With the wing mounted in position observe from the front end of the fuselage the parallel relationship of the horizontal stab and the wing. Sand or cut the horizontal stab slot if necessary for correction.
- 4. When satisfied with the position, bond the assembly in place.



- 5. Bond the dorsal fins to vertical fin and horizontal stab and sand.

Engine Mount & Cowling



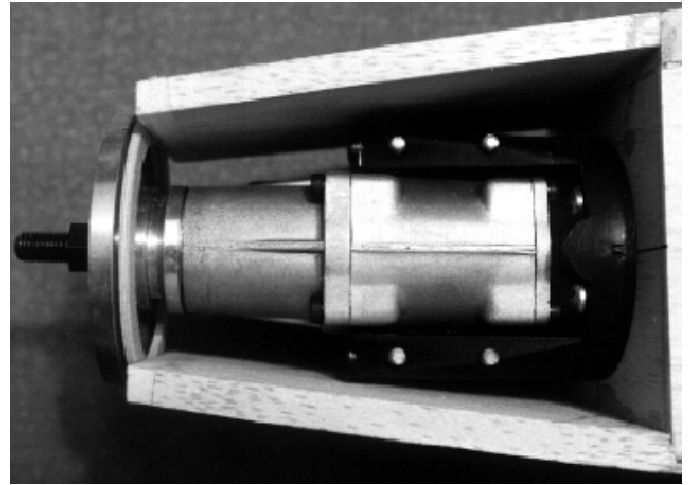
□ 1. Align the engine mount to be side mounted with the previous center lines marked on the firewall. Side mounting of the engine provides correct carburetor to fuel relationship. With the engine mount placed in position tack it in place using CA and drill out the mounting hole locations. Mark the location of the throttle cable and fuel line holes. Remove mount and drill the remaining holes.

□ 2. Install the engine mount on the firewall using 6-32 blind nuts and screws.

□ 3. With engine aligned and mounted on the firewall, slide the 1/16" plywood spinner ring onto the engine crankshaft bearing support area.

□ 4. Mount a 2 1/4" spinner onto the engine shaft. This will be used for alignment of the 1/16" plywood spinner ring.

□ 5. Angle the ends of the 1/4" balsa top cowling block to provide a mating surface for bonding to the spinner ring and fuselage. Added length may be needed depending on spinner used.



□ 6. Tack bond the 1/4" balsa bottom cowling block in place. Make sure you have a continuous 1/16" gap around the circumference of the spinner.

□ 7. Using the upper and lower cowling blocks as a reference fit the left side (port side) of the cowling and tack in position.

□ 8. Remove the engine and complete the bonding of the inside of the cowling.



□ 9. Bond 3/8" triangle stock at the inside corners of the cowling.

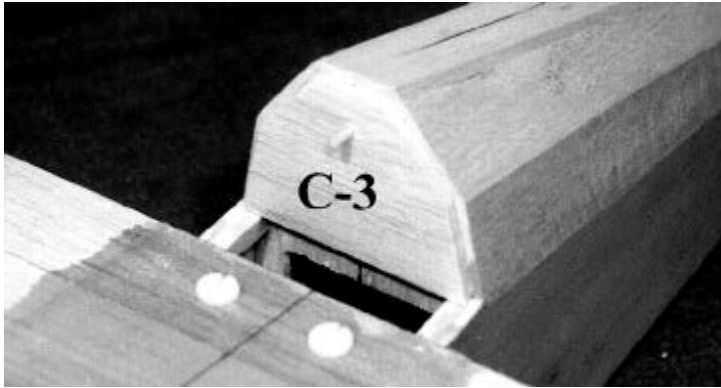
□ 10. Cut off the excessive balsa and sand the cowling and tank area 3/8" balsa block to shape.

□ 11. Remount the engine for proper fit and allow clearance for the tuned pipe/muffler, needle valve and fuel line removal on the carb.

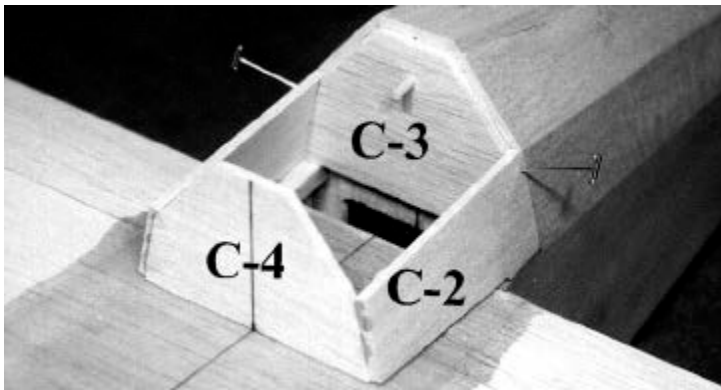
□ 12. Remove the engine and the mount. Seal the engine compartment with several coats of dope or one coat of polyester resin.

Canopy Construction & Mounting

- 1. Mount the wing to the fuselage with 1/4-20 wing bolts.



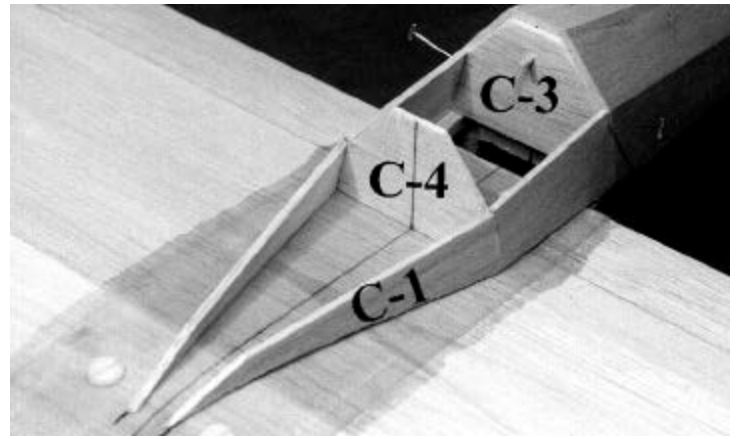
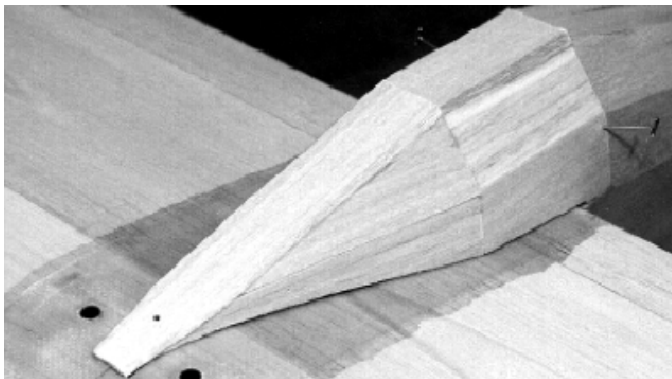
- 2. Place canopy part C-3 against bulkhead #1. Align and hold C-3 in place using the 1/8 dowel rod.



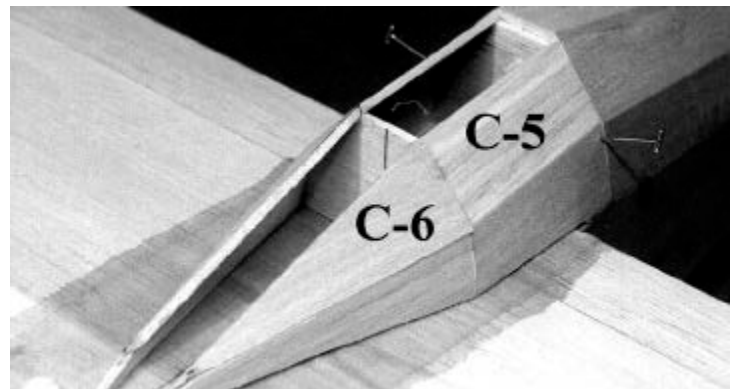
- 3. Mark a center line on canopy part C-4. Using canopy parts C-2 as an alignment tool, tack bond it in position onto the wing.

- 4. Tack bond part C-4 in position on the wing.

- 5. Bond part C-2 to C-3 and C-4.



- 6. Pre-fit and tack bond C-1 to the wing and to C-4. (SEE DRAWING FOR C-1 TIP SPACING.)



- 7. Bevel the edge of the C-5. Pre-fit to mate against C-2 and bond in position.

- 8. Repeat previous C-5 steps for C-6 parts.

- 9. Sand the top edges of the canopy to accept the 1/8" balsa canopy top sheeting.

- 10. Bond the top sides of the canopy in position. Sand the canopy sides and top to mate flush with the turtle deck (TD).

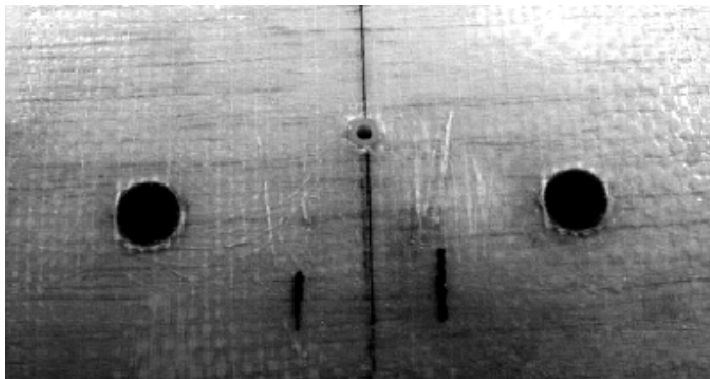


- 11. Drill a 1/6" hole through the front of the canopy and wing for indexing the canopy hold down screw. (SEE DRAWING FOR LOCATION)

- ❑ 12. Remove the canopy and complete the bonding.

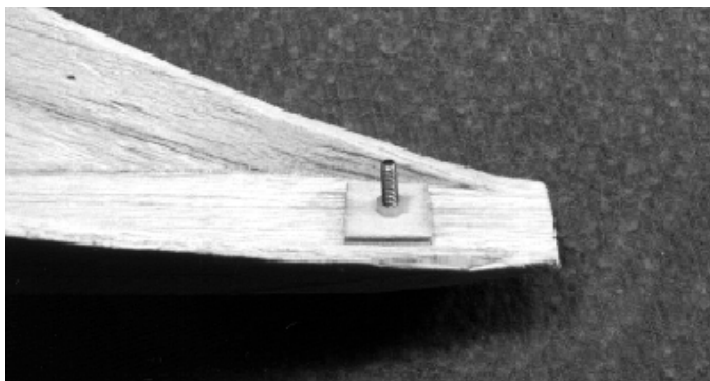
- ❑ 13. Bond the 1/8" dowel rod in the canopy part

C-3.



- ❑ 14. Drill out the 1/16" canopy hold down hole in the wing to 1/8". Use epoxy and bond a 1/2" long inner section nyrod into the 1/8" hole. Sand the nyrod prior to bonding.

- ❑ 15. Bond a 1/16" thick piece of plywood on the underside of the balsa canopy screw mounting hole.



- ❑ 16. Use a 2-56 machine screw for the canopy hold down screw. (Place the screw into the canopy hole and use a thin section of inner nyrod on the inside of the canopy to retain the screw from being lost.) Mount the canopy and check the fit.

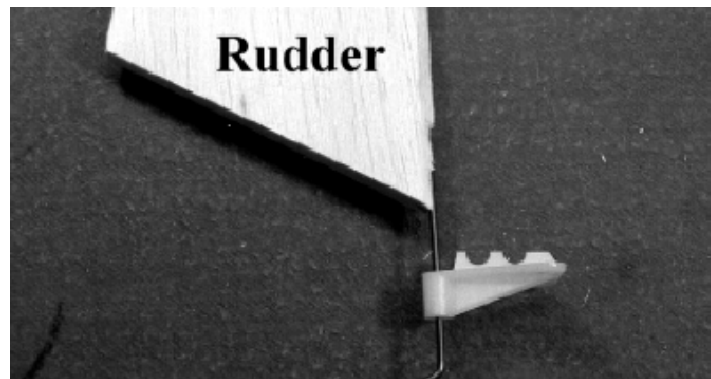
Control Surfaces & Hinging

- ❑ 1. All control surfaces should be beveled at the leading edge as indicated on the drawing. Beveled amount should allow surface to move about 30 to 45 degrees either side of center.

- ❑ 2. Prior to installing the rudder for hinging, drill a

1/16" hole into the rudder on the hinge line to accept the music wire for the tail wheel.

(SEE DRAWING FOR LOCATION)



- ❑ 3. Assemble the tail wheel bracket onto the tail music wire. Using the plans, measure and bend the music wire at a right angle to insert into the rudder. Using the tail wheel wire assembly, notch the rudder to enable the music wire to be flush with the hinge line.

- ❑ 4. Notch the elevator at the center for clearance of the tail wheel music wire.

- ❑ 5. The use of CA bonded Mylar hinges is recommended. This type of hinge will keep hinge gap to a minimum. Do not allow wide hinge gaps especially on the aileron and elevator. Use at least four hinges for the elevator, three per aileron and rudder. Install hinges after covering

LANDING GEAR AND

TAIL WHEEL

□ 1. Cut a notch in the fuselage to accept the tail wheel bracket. Trim the bracket to height and bond in place and install a 3/4" tail wheel.

□ 2. Mark the hole locations for the landing gear and drill them out using a 13/64" drill bit. Tap the holes with a 1/4-20 tap. Secure the landing gear to fuselage with two 1/4-20 nylon bolts. Use 2-1/4" tires on the main gear.

Radio Installation & CG

The Flying Machine will accept three servos mounted side by side on rails. Use a servo side mount bracket to mount the aileron servo. Set CG as indicated on plans. Do not allow CG limits to vary more than plus or minus 1/4" Slightly forward is acceptable. Position the battery (battery may be placed behind bulkhead #1), servos (etc.) fore and aft to obtain the balance point. Remember to check CG with all accessories installed. Wrap the receiver in foam and install it in receiver-servo area. Use a flex cable for the engine throttle hook up.

**DO NOT USE NYROD FOR THE
RUDDER AND ELEVATOR
CONTROL.**

USE PUSHRODS ONLY !!!!!

**DO NOT Z-BEND THE WIRE PUSH ROD
ENDS !!!!!**

Finishing

The recommended finish for the aircraft is Monokote.

This type of finish will not add much weight and is second to none in ease of repair and durability. Prior

to covering, vacuum the fuselage. Use medium heat to apply the Monokote. Seal all the edges around the firewall and the cowling with CA and or dope.

ENGINE AND TUNED PIPE

Recommended engines for the Flying Machine

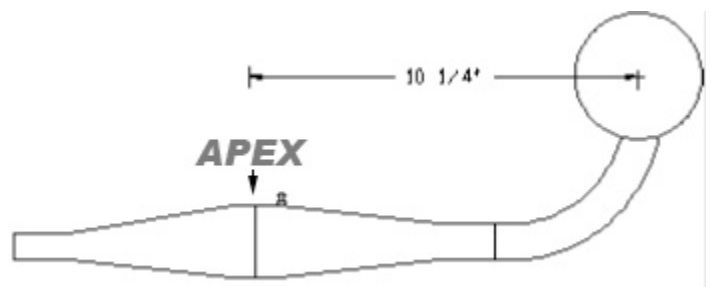
1) O.S.Max .40 S.F., Master Airscrew 9 x 6 prop and a MAC 7.5cc tuned pipe with a MAC header. At sea level and up to 5000 ft. we have found the optimum pipe length of 10-1/4" from the center of the glow plug to the center of the tuned pipe apex.

2) O.S.Max .46AX, Master Airscrew 9 1/2 x 6 prop and a MAC 7.5cc tuned pipe with a MAC header. At sea level and up to 5000 ft. we have found the optimum pipe length of

10-1/4" from the center of the glow plug to the center of the tuned pipe apex.

Mount the 8-32 pressure tap at the beginning of the tuned pipe apex.

Length is measured from a straight line back.



Flying

The FLYING MACHINE is extremely responsive. Initially set up the following control surface movements for test flight:

Elevator : 3/8" up and down

Aileron : 3/8" up and down

Rudder : 3/4" right and left

Center of Gravity is 3" aft of the leading edge.

After the first flight or two I recommended and use the following procedure for setting up the FLYING MACHINE and all the models that you fly.

Maximum Flight Control Performance.

Setting up the elevator throws:

Prior to flight make sure the rudder is trimmed at center. During flight trim the aircraft for level flight at wide open throttle into the wind. Pull full up elevator and watch the aircraft carefully, it should track true through a complete loop. If the aircraft starts to waiver or snaps in the loop, you have too much up elevator deflection. Decrease the up elevator throw slightly and repeat the above steps until the aircraft can complete this successfully. Apply the reverse of this procedure if during the first test loop the aircraft completes it. You want to maximize the elevator throw for the aircraft. Use the same procedure for setting up the down elevator throw.

Using this procedure for setting the elevator provides for a wide speed envelope allowing you to apply full elevator in a tight situation (If you know what I mean!) knowing the aircraft will not snap. I have seen many aircraft crash because of not properly setting up the elevator throws.

Set the ailerons surface movements to suit your individual preference. Start out with "soft" controls and then increase the throw until you can't stand it. I never use maximum aileron control, You just can't keep up with the rolls.

The rudder, well all I can say is hang on and be careful on takeoff !!. I set the FLYING MACHINE to MAX rudder. A setting of 45 to 50 degree deflection is required to provide those "ohho" and "ahhs".

Knife edge maneuvers require a small amount of rudder throw.

You will find the FLYING MACHINE to be one of the most positive, responsive and fun aircraft you have ever flown. The only limits with the FLYING MACHINE are the pilots flying ability.

My Setup/Equipment

The Flying Machine I perform with has the following equipment:

O.S. MAX 46AX engine, turning a Master Airscrew 9 1/2 x 6 prop.

(The engine RPMS are approximately 17,500 static.)

Mac 7.5 unmuffled tuned pipe and header.

Tru-Turn Spinner 2 1/4"

The fuel is 10% Byron Premium Sport fuel

Kraft 8 oz. fuel tank

Rossi #6 glow plug.

J.R. 347 radio using DS811 servos and a 600 ma. battery pack.

The aircraft weighs approximately 4lbs. 4 oz.

FLYING MACHINE MATERIALS BALSA KIT

FUSELAGE*

Qty.	SIZE	MATERIAL	DESCRIPTION
4	1/8 X 4" X 36"	BALSA	FUSE TOP,SIDES,BULKHEADS
2	1/4 X 4" X 36"	BALSA	HOR.& VER. STAB,ENG.COWL
1	3/8 X 6" X 12"	BALSA	FUEL HATCH TOP
1	3/8" TRIANGLE Stock	BALSA	ENG.COWL
1	1/4 X 2"TRAILING EDGE	BALSA	ELEV.
1	1/16 X 6" X 12"	PLY	SPINNER RING
1	1/8 X 6" X 12"	PLY	FUSE BOTTOM,L.G. MOUNT,BELLCRANKS
1	1/4 X 6" X 12"	PLY	FIREWALL
1	1/4 X 1/4 X 36"	BALSA	FUSE BOTTOM STRINGERS

WING*

Qty.	SIZE	MATERIAL	DESCRIPTION
2	1/4 X 1/2 X 48"	BALSA	SUB TRAILING EDGE
2	1/4 X 1/4 X 48"	BALSA	LEADING EDGE
8	1/16 X 4 X 48"	BALSA	SHEETING,(2 SHEETS FOR 17 RIBS)
1	3/4 x 36" TRIANGLE	BALSA	WING TIPS
2	3/8 X 1"1/2 X 36"	BALSA	TRAILING EDGE, AILERONS
1	1 X 1 X 6"	BALSA	WING SPACER MOUNT BLOCKS (WING)
2	1/4 X 1/4 X 48"	SPRUCE	MAIN SPARS
1	1/4 x 1/4 x 36"	SPRUCE	PUSH RODS

HARDWARE*

Qty.	BRAND	DESCRIPTION
4	GOLDBERG	LARGE SNAPLINKS/RODS (Push rod Elev/Rud)
1 PKG.	GOLDBERG	SNAP'R KEEPERS (Aileron Servo)
1 PKG.	DUBRO	THROTTLE CABLE (Fuse)
1	HAYES	ENGINE MOUNT (Fuse)
2 PKG.	GOLDBERG	SMALL CONTROL HORNS (Aile/Rud/Elev)
1	Great Planes	Great Planes Dural Landing Gear .40 LXJ922 (Fuse)
1 PKG.	Great Planes	Great Planes Bolt-On Axle 1-1/4x1/8" (2) LK176 (Fuse L.G.)
1 PKG.	DUBRO	1/4 20 X2" NYLON BOLTS (WING)
1 PKG.	GOLDBERG	1/16 WHEEL COLLARS (Tail Wheel)
2	***	1/16 MUSIC WIRE (Wing Bellcranks)
1	GOLDBERG	TAIL WHEEL MOUNT (Fuse)
1	HAYES	8 OZ. SQ. FUEL TANK (Fuse)
4 FT.	***	MED. FUEL LINE (Fuse)
1	WILLIAMS BROS.	3/4" TAIL WHEEL (Fuse Tail Wheel)
1 PKG.	DUBRO	6/32 BLIND NUTS (Fuse Motor Mounts)
1	Tru-Turn	Tru Turn 2-1/4" Standard 2-Blade Spinner (Fuse)
1 PKG.	***	CYANOACRYLATE BONDED MYLAR HINGES (Aile/Rud/Elev)
1 TUBE	K&S TUBING	1/4" I.D. X 12" BRASS OR ALUM. TUBE (Wing)
2	***	2 1/4" WHEELS (Fuse L.G.)
1 PKG.	SIG	1/4 20 X 1" NYLON BOLTS (Fuse L.G.)
2 FT.	***	6 oz.GLASS CLOTH (Wing Center Section)