Sophisticated Lady

INSTRUCTIONS

The SOPHISTICATED LADY is a sailplane design that blends simple straight-forward construction with the elegant styling of a sleek, full-scale soaring machine. The clean lines have not compromised the functionality of this model aircraft, which you will find a delight to fly both in thermals and on the slope And if it's competition you desire, this "Lady" can compete with the best and look great in the winners' circle!

Although a simple two-channel radio meets the minimum requirements for piloting this model, a third channel is more desirable, enabling you to control airborne "power-on/power-off" commands when the electric power pod is installed. The Carl Goldberg Products Electric Power Pod (Item #678) is an optional accessory which provides power assistance for small-field launching, or when the towline is just too much trouble. A small gas engine is also a power option. In addition, your sailplane so may be launched via high start, hand tow, or winch, and, if you live in a hilly or mountainous area, you may wish to simply pitch your glider off the slope. Whichever method you choose, the SOPHISTICATED LADY will provide many hours of enjoyment.

WARNING!

THIS IS NOT A TOY! A radio-controlled model is not a toy and is not intended for persons under 16 years old. Keep this kit out of the reach of younger children, as it contains parts that could be dangerous. A radio-controlled model is capable of causing serious bodily injury and property damage. It is the buyer's responsibility to build this kit correctly and to properly install the motor, radio, and all other equipment. Test and fly the finished model only in the presence and with the assistance of another experienced R/C flyer. The model must always be operated and flown using great care and common sense, as well as in accordance with the safety standards of the Academy of Model Aeronautics (5151 Memorial Drive, Muncie, IN 47302, 1-800-435-9262). We suggest you join the AMA and become properly insured prior to flying this model. Also, consult with the AMA or your local hobby dealer to find an experienced instructor in your area. Per the Federal Communications Commission, you are required to use only those radio frequencies specified "for Model Aircraft."

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Pt. # 2083 1/02

ITEMS NEEDED TO COMPLETE KIT

- ☐ 1 RADIO GUIDANCE SYSTEM (2-CHANNEL MINIMUM)
- ☐ 2 2-OZ. BOTTLE CA GLUE
- ☐ 2 ROLLS OF IRON ON COVERING
- ☐ 1 TUB JET MODEL MATE™ FILLER
- ☐ 1 BOX OF EPOXY
- ☐ 1 BOX #64 RUBBER BANDS

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ADDITIONAL ITEMS FOR REMOVABLE WINGTIP

- ☐ 1/8” x 3” x 18” HARD BALSA SHEET
- ☐ PIECE 3/32” x 12” MUSIC WIRE
- ☐ 3/32 I.D. x 6” BRASS TUBE
- ☐ 3/4” VINYL ELECTRICAL TAPE

OPTIONAL ITEMS

- ☐ 1/2” x 8” x 12” CGM FOAM RUBBER
- ☐ FUEL PROOF PAINT
- ☐ SERVO MOUNTING TAPE
- ☐ CGP SCUFF GUARD
- ☐ TRANSPARENT SPRAY ENAMEL FOR CANOPY

NECESSARY TOOLS AND SUPPLIES

- ☐ MISCELLANEOUS RUBBER BANDS
- ☐ WAXED PAPER
- ☐ MODELING KNIFE AND RAZOR BLADES
- ☐ SANDPAPER (ASSORTED GRITS, INCLUDING MEDIUM (150) AND FINE (220-320)
- ☐ SANDING BLOCK
- ☐ "T" PINS (at least 75)
- ☐ BUILDING BOARD (24" x 60")
- ☐ ELECTRIC DRILL
- ☐ 1/16" ABD 1/8" DRILL BIT
- ☐ ALLEN WRENCH (.050 FOR #4 SOCKET SET SCREW)
- ☐ SMALL SCREWDRIVER (1/8” BLADE TIP)
- ☐ MASKING TAPE
- ☐ SMALL PLIERS
  COVERING IRON (OR SMALL HOUSEHOLD IRON)
- ☐ HEAT GUN (OPTIONAL)
- ☐ 10" 30-60-90 DRAFTING TRIANGLE
- ☐ YARDSTICK
- ☐ FLEXIBLE STRAIGHT-EDGE
- ☐ PENCIL

SELECTING RADIO CONTROL EQUIPMENT

Radio sets are battery powered with either dry cells or the more reliable, rechargeable nickel-cadmium (ni-cad) batteries. Although ni-cad powered units are more expensive, the cost of routinely replacing worn out batteries may be much higher in the long run. Many of the radio systems now available feature "servo reversing" switches which allow you to reverse the response of the servo. This simplifies radio installation and is worth considering. Exponential or dual rates are popular features which, if used properly, can help smooth out the flight of a sensitive model. Your local hobby dealer should be able to help you select the proper radio for your needs and skill level. Consider reliability and service, as well as price. And be sure to get a system designated for aircraft, as only certain frequencies are available for model aircraft.

INTRODUCTION

USING THIS INSTRUCTION MANUAL

Before you start gluing and sanding, take some time becoming familiar with the plans and looking through this entire Instruction Booklet. It is designed to guide you through the construction process step by step, so build in the order given in this book. Building options, as well as balancing, set-up, and flying the model are covered.

Like a full-size airplane, the **SOPHISTICATED LADY** is built from basic structures (stabilizer, fin, wing, etc.), which are then assembled into the complete airplane.

Special procedures or comments will usually be explained before a step, so you will be prepared. If a step begins with a statement like "Note," "Warning," or "Important," it is a good idea to read through the step before doing it.

A check-off box appears at the beginning of each step. Check these boxes as you build, so you can tell at a glance what steps you have completed. Some steps are repeated and must be marked twice, as in the case of the left and right wing panel.

Some of the instructions deal with general procedures. Boxes are not needed for these sections.

HOW TO READ THE PLAN

There is one plan sheet in this kit, showing the Fuselage (Body), the Wing, and the Tail Parts. Everything on the plan is drawn to full-size and shape and shows how the finished parts fit together.

The plan is drawn to show the model completely assembled, but as a result, the areas inside or underneath are covered up, making it hard to understand how these parts fit together. Therefore, for clarity, some parts are drawn with hidden lines, others with breakaway views, and some are entirely removed from the structure and shown separately.

For example, on the fuselage, the left side of the completed model has been removed to show the details inside. Sometimes a surface is broken away to reveal the detail behind or underneath. Dashed lines indicate details that are hidden behind or under another part of the surface.

The model is made from four varieties of wood: balsa, bass, birch, and various plywoods. Each kind of wood has its own characteristic end grain pattern (as viewed from the end) which has been drawn on the plan. You can easily use these end grain patterns to identify what kind of wood is shown for a part, if you are in doubt.

HOW TO USE THE PLAN

The plan is used in several ways. The wings, stabilizer, and fin are assembled directly over the plan. Each wood part is matched over its corresponding location printed on the plan and pinned in place. To prevent ruining your plan from gluing your wings, etc. to it, cover the area you are working on with waxed paper.

The paper the plan is printed on can expand or contract slightly with changes in temperature or humidity. Because of this, a preformed part such as the notched wing trailing edge may not exactly match the plan. This is no problem, as slight deviations in the outline or size will not noticeably affect flight performance.

Because the fuselage plugs together and is self-aligning, it is not built directly over the plan. As you assemble the fuselage, you will find the plan helpful in identifying parts and how things fit together.

The plan also shows the installation of a typical radio, battery and all remaining equipment and hardware needed to complete the model. By referring to the examples shown, you should be able to install your own radio, etc., even if it is not the same as what is shown on the plan.

IDENTIFYING PARTS

Parts for the wing are bundled together; likewise, parts for the tail assembly are also grouped. Die-cut plywood and balsa sheets of common sizes are bundled together, so they are less likely to be damaged during shipping and handling.

The various screws, hinges, and fittings are packaged in plastic bags.

PREPARING FOR ASSEMBLY

Set a flat, warp-free pinning board on your work bench. Any material that accepts pins, such as insulation board, soft plywood, or dry-wall (sheet rock) will work. Important: any warps or bends in the pinning board will result in wings or tail surfaces that are also warped or bent, making your model more difficult to fly. Make sure that the pinning board is flat by laying a straight edge across it. You may be able to correct a warped board by shimming its low areas.

Position the area of the plan (such as the stabilizer) on which you are going to build over the pinning board and tape it in place so the plan lays flat and wrinkle free.

Place a sheet of waxed paper or plastic kitchen wrap over the work area to prevent CA from sticking to your plan and ruining it.

CONSTRUCTION TIPS

In assembling your model, the following tips will prove helpful.

IMPORTANT: ALWAYS READ A FEW STEPS AHEAD. This will alert you to coming instructions and will help you plan accordingly.

You may find it convenient to empty all of the small parts from the hardware bags into a common container, such as a margarine tub. This will help you find items quickly.

When drilling any 1/16" holes in balsa, you may find it easier to twist the drill between your thumb and index finger. This procedure allows more control in positioning the drill on the center mark.

Punch out only the die-cut (D/C) parts you need as you proceed. This will help you keep track of parts, especially the small ones.

Sometimes you will be asked to “tack cement” a piece of wood that will later be taken apart. To provide for easy removal without damage, use only a small drop of glue.

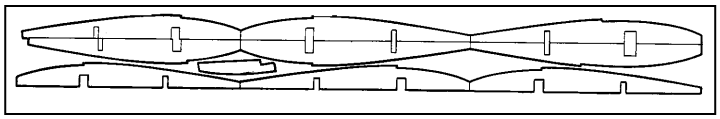
After completing each section of the aircraft, you may want to go back and reglue the joints, just in case some area has been missed. Be careful not to use too little glue, which will leave the model weak, or too much glue, which can make the model heavy. Properly glued joints are important to the overall strength of the model. CA glue is recommended for most parts of the assembly, although epoxy may be used when more time is needed for careful placement.

WOOD PARTS

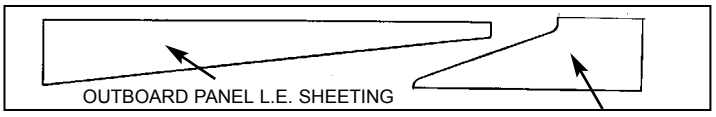
Be careful when removing parts (such as fuselage sides) from the die-cut sheets. Long parts are fragile until Super Jeted into a structural unit. If necessary, use a razor knife or razor saw to assist in the removal of parts from the sheet. Sometimes a little trimming and sanding can improve parts, where desired. Save scrap until the model is completed, in case a part is missing or damaged. Also, scrap is used in some building steps.

ABOUT THE WOOD IN THE KIT

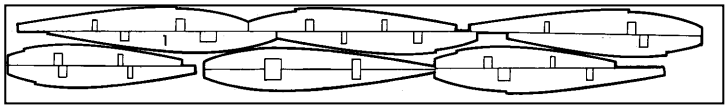
We strive to supply good quality materials in your kit. Wood parts are inspected with regard to the function they will serve. If an imperfection is spotted in a scrap corner of a die-cut sheet and doesn't affect actual parts, the sheet is considered acceptable. Also, internal stresses in wood are relieved as it is cut into parts. These relieved stresses may cause some parts to bow. Bows in wood parts (such as leading edges) readily straighten out as they are glued into a structural unit



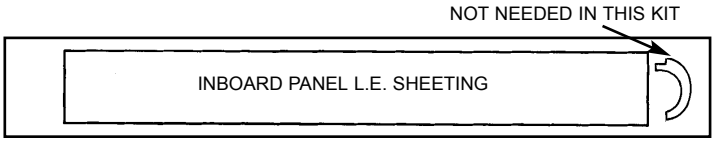
SHEET 4001 WING RIBS 5/64 x 2-7/8 x 24" 2 REQ'D.



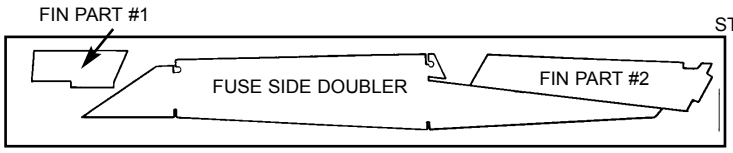
D/C SHT. 4012 1/16 x 3 x 24" 2 REQ'D.



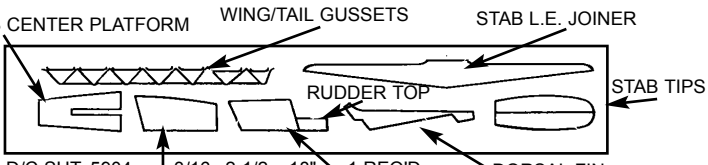
SHEET 4002 WING RIBS 5/64 x 2-7/8 x 24"" 2 REQ'D.



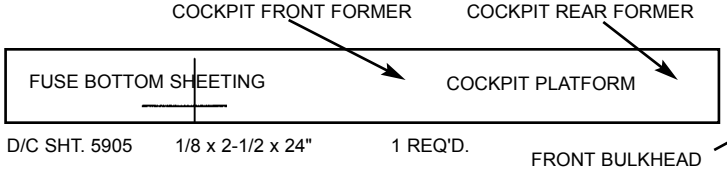
D/C SHT. 4013 1/16 x 3 x 24" 2 REQ'D/



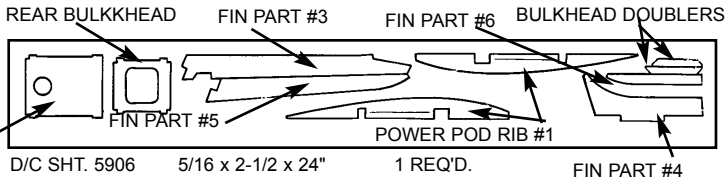
D/C SHT. 5903 5/64 x 3 x 24" 2 REQ'D.



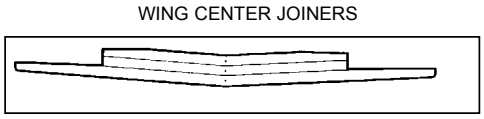
D/C SHT. 5904 3/16 x2-1/2 x 18" 1 REQ'D.



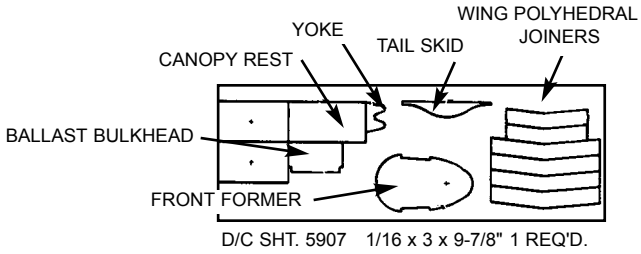
D/C SHT. 5905 1/8 x 2-1/2 x 24" 1 REQ'D.



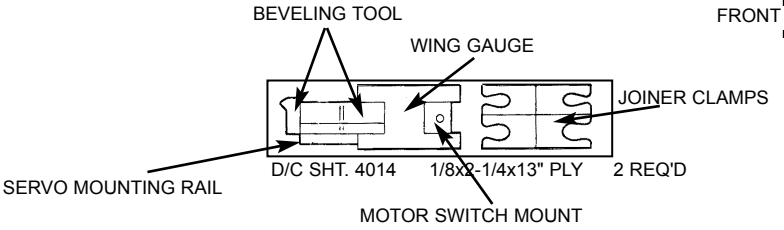
D/C SHT. 5906 5/16 x 2-1/2 x 24" 1 REQ'D.



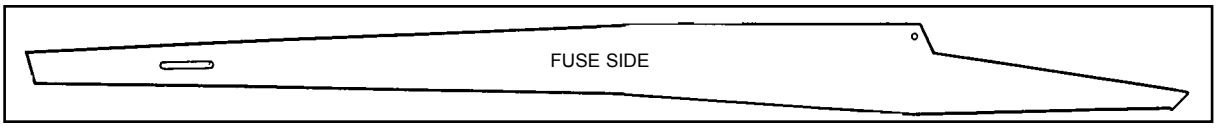
D/C SHT. 4009 1/8 x 2-3/8x17" PLY 1 REQ'D.



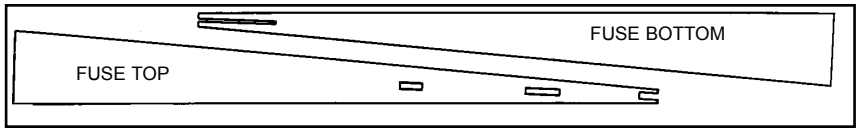
D/C SHT. 5907 1/16 x 3 x 9-7/8" 1 REQ'D.



D/C SHT. 4014 1/8x2-1/4x13" PLY 2 REQ'D

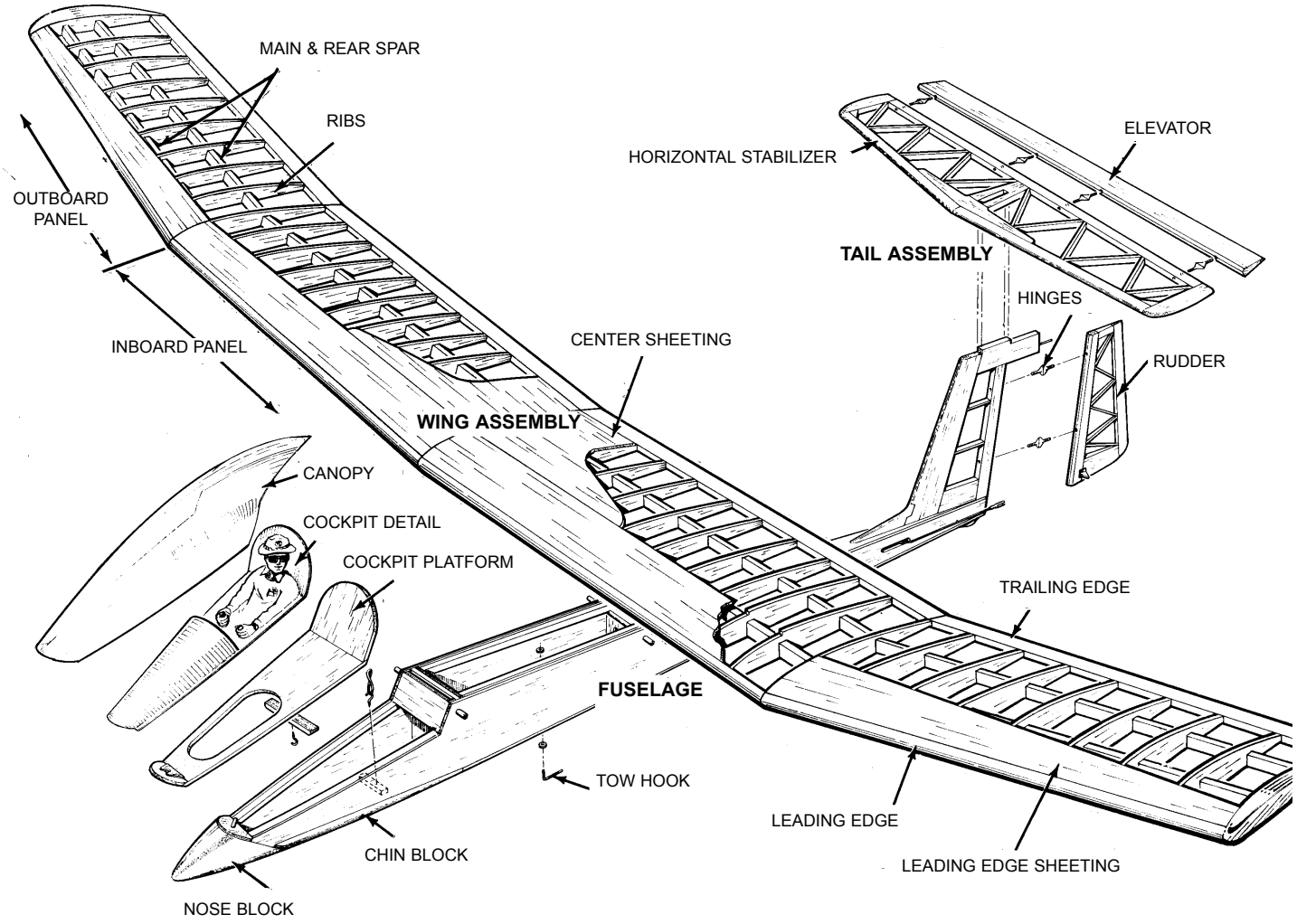


D/C SHT. 5901 5/64 x 3 x36" " 2 REQ'D.



D/CSHEET 5902 5/64 x 2-7/8 x24" 2 REQ'D.

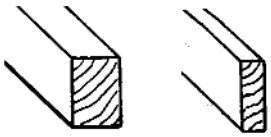
AIRPLANE STRUCTURE



END VIEW OF STRIP WOOD PARTS

BASSWOOD

INBOARD WING SPAR

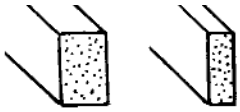


FRONT SPAR 1/4 x 13/32"

REAR SPAR 1/8 x 3/8"

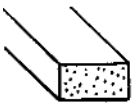
HATCH RAIL 1/8" SQ.

OUTBOARD WING SPAR

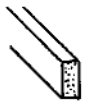


FRONT SPAR 1/4 x 3/8"

REAR SPAR 1/8 x 3/8"

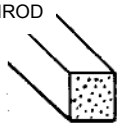


ELEVATOR L.E. 3/16 x 3/8"



ELEVATOR TRUSS 5/64 x 3/16"

PUSHROD



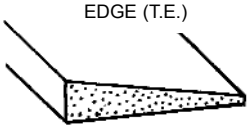
1/4" SQUARE 17-7/8"

BALSA

WING LEADING EDE (L.E.)

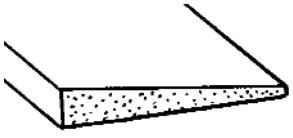
INBOARD L.E. = 20-3/4" LONG
OUTBOARD L.E. = 17-5/8" LONG

WING TRAILING EDGE (T.E.)



INBOARD T.E. = 20-3/4" LONG
OUTBOARD T.E. = 17-1/2" LONG

RUDDER T.E. 8-1/4" LONG

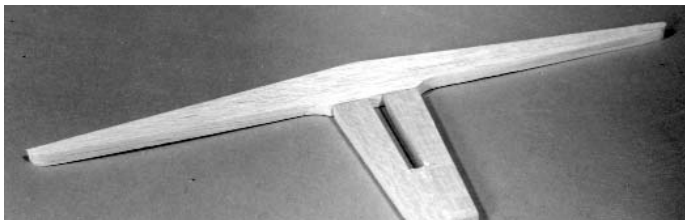


ELEVATOR. 20-3/4" LONG

TAIL CONSTRUCTION

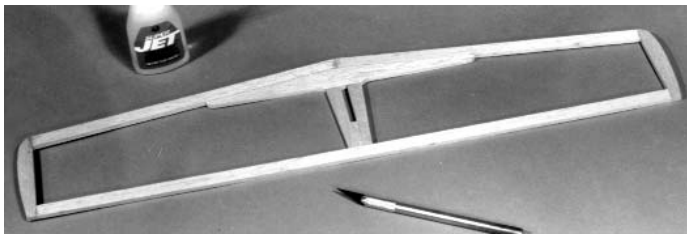
1. ☐ Collect the following items.

(4)	3/16 x 3/8 x21” BALSA	PT. #4853
(1)	1-3/4 SQ. x 21” BALSA	PT. #4696
(3)	5/64 X 3/16 X 24” BALSA	PT. #4698
(1)	1/2” SQ. x 8-1/4” BALSA	PT. #4701
(1)	CENTERLINE MARKER	PT. #1425
(7)	SMALL FLEX-POINT HINGE	PT. #1448
(1)	FIN HINGE POST	PT. #4560
(1)	.034 ID / .064 OD x 36" TUBING	PT. #5682
(2)	D/C SHEET 5903 BALSA containing fin parts #1 and #2	PT. #3403
(1)	D/C SHEET 5904 BALSA containing: fin bottom, rudder, dorsal fin, stap tips, stab L.E. joiner gussets, stab center platform	PT. #3404
(1)	D/C SHEET 5907	PT. #3407
(1)	D/C SHEET 5906 BALSA containing: fin parts #3, #4, #5, #6	PT. #3406
(2)	D/C SHEET 4014 PLY	PT. #3614



2. ☐ Lay the horizontal stabilizer portion of the plan over the building board and cover with waxed paper.

☐ Buidling over the plan, pin in position and glue the leading edge joiner to the center platform.

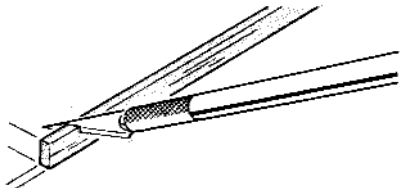


3. ☐ Carefully cut two 3/16 X 3/8” balsa sticks to form the stabilizer leading edge. Make sure to exactly match the plan from the center mark to the tips.

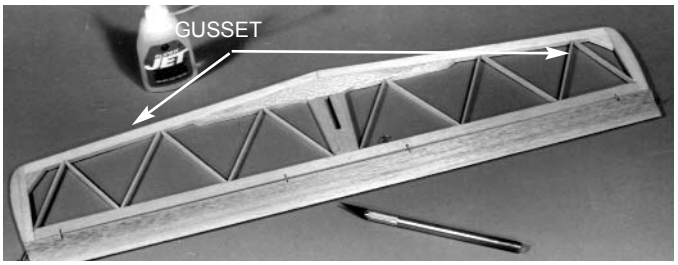
IMPORTANT! SAVE SCRAP MATERIAL FOR USE IN CONSTRUCTING THE FUSELAGE.

☐ Pin the pieces in position and glue at the center joint.

4. ☐ Using additional 3/16 x 3/8” balsa sticks, continue building the stab outline by pinning and gluing the trailing edge and stab tips in place, as shown above.

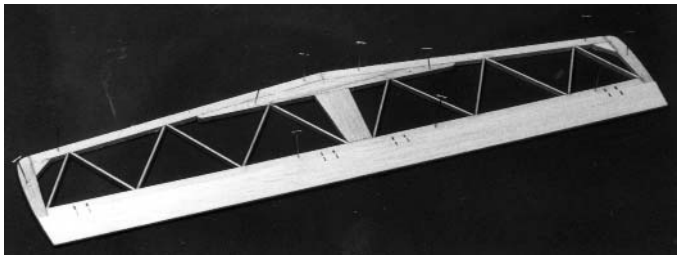


5. ☐ Still working over the plan, and using the technique shown above, cut 5/64 x 3/16” balsa sticks to form stab trussing. Trim carefully to size, so that each truss fits in place without forcing. **SAVE THE SCRAP MATERIAL!**



6. ☐ When satisfied with the fit, glue in place.

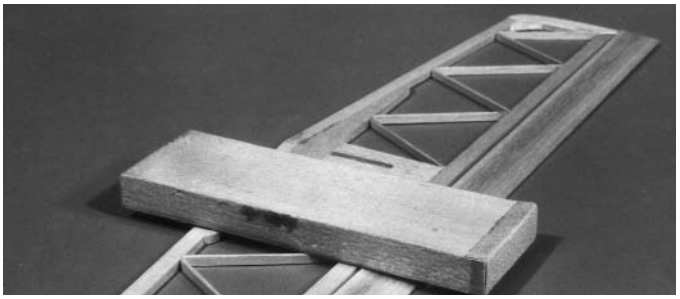
☐ Glue the gussets in place and allow the entire stab to dry thoroughly.



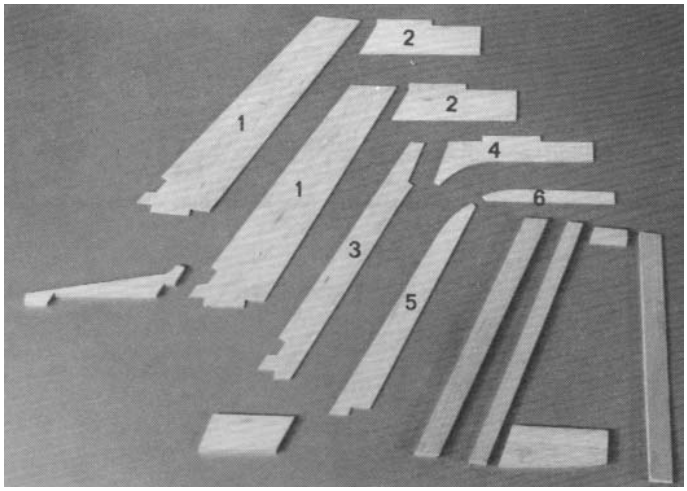
7. ☐ Referring to the plan, mark the hinge locations on the top of the trailing edge with a soft pencil.

☐ Using 3 or 4 drops of Super Jet™, tack-cement the elevator to the stab.

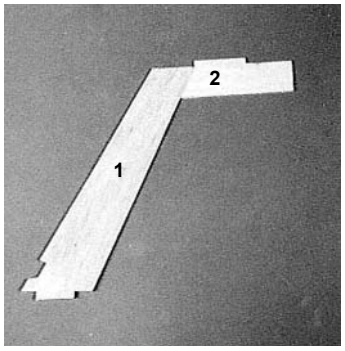
☐ Carefully transfer the hinge location marks onto the elevator.

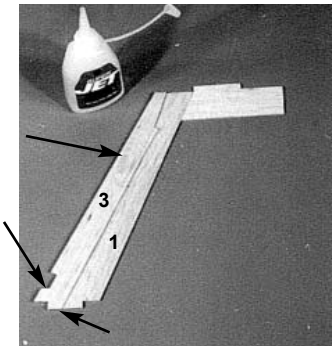


8. ☐ Using a sanding block, flat sand the stab and round the outer edges. Sand the elevator tips to blend with the stab.



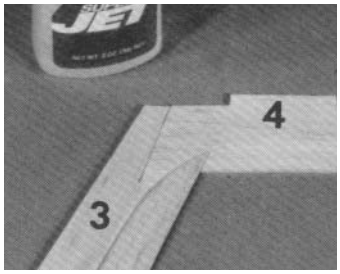
9. ☐ Carefully remove the die cut fin parts and lightly sand any rough edges.

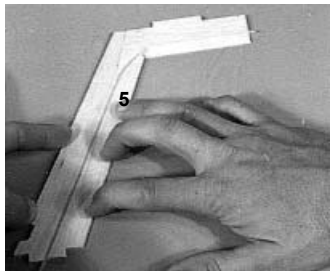




10. ☐ Building over the plan, glue part #1 to part #2.

☐ Place part #3 on top of part #1, making sure that the notches are aligned and the leading edges are flush. When the parts are aligned, glue in place.





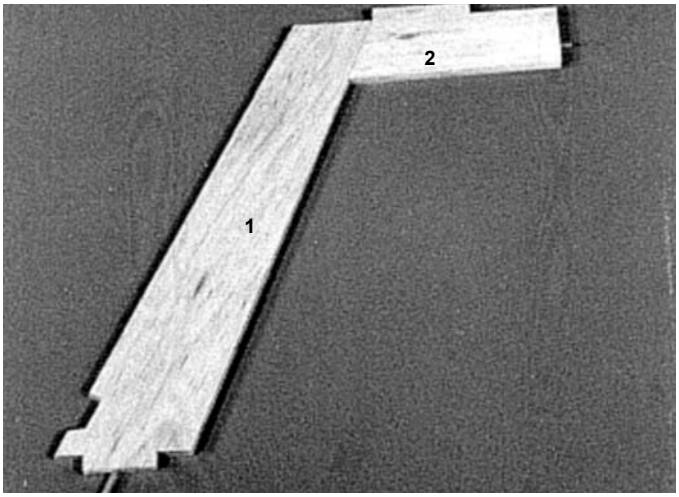
11. ☐ Position part #4 on top of part #2, as shown. Then glue in place.

12. ☐ Add part #5 to the assembly, sandwiching the 1/16" outside diameter nylon tube in place between part #3 and part #5.

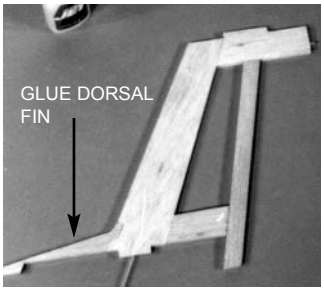
☐ Make sure the tube lies flat and that it extends 1/8" past the trailing edge (T.E.) of the fin.

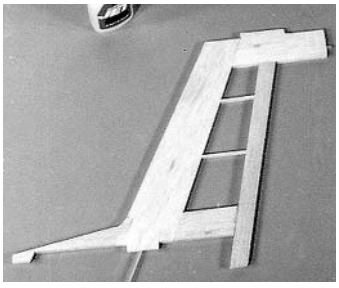
☐ Glue part #5 in place.

13. ☐ Glue part #6 in place, sandwiching the remainder of the tube into the fin assembly.



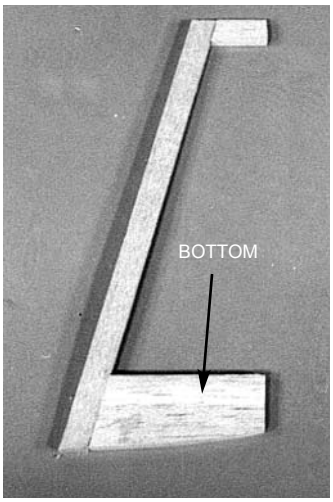
14. ☐ Glue the remaining parts #1 and #2 to the fin assembly and trim the nylon tube flush with the trailing edge of part #2.

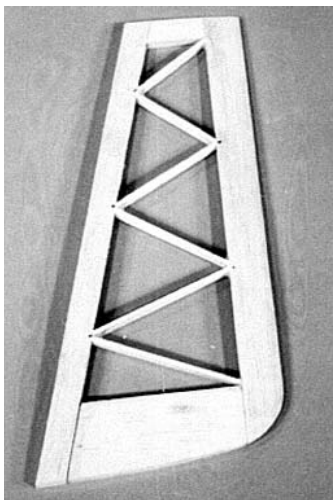




15. ☐ Glue the 3/16" D/C fin bottom and 3/16 x 1/2" balsa hinge post to the fin assembly.

16. ☐ Cut the fin ribs from 5/64 x 3/16" strip balsa and glue in place, as shown above right.





17. ☐ Glue the 3/16 D/C balsa top and bottom to the 3/16 x 3/8" rudder hinge post. Then glue the shaped T.E. in place.

18. ☐ From 5/64 x 3/16" balsa, cut all trusses to size and glue in place.

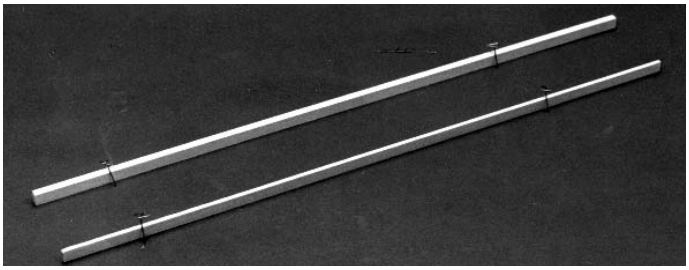
19. ☐ Flat sand the rudder/fin assembly, rounding the fin L.E. and blending the rudder bottom with the T.E.

WING CONSTRUCTION

IMPORTANT: YOU WILL BE BUILDING A RIGHT AND THEN A LEFT WING. FOLLOW THE STEPS CAREFULLY TO AVOID CONFUSION.

1. ☐ Collect the following items:

(2)	D/C SHT. 4001 (5/64" Balsa) Contains: WING RIBS	PT. #3601
(2)	D/C SHT. 4002 (5/64" Balsa) Contains: WING RIBS	PT. #3602
(1)	D/C SHT. 4009 (1/8" Ply) Contains: WING CENTER JOINERS	PT. #3609
(2)	D/C SHT. 4012 (1/16" Balsa) Contains: WING SHEETING	PT. #3612
(2)	D/C SHT. 4013 (1/16" Balsa) Contains: INBOARD PANEL L.E. WING SHEETING	PT. #3613
(2)	D/C SHT. 4014 (1/8" Ply) Contains: GAUGES & CLAMPS	PT. #3614
(4)	BALSA SHEET 1/16x3x12"	PT. #4600
(2)	INBOARD T.E.LONG	PT. #4688
(2)	OUTBOARD T.E.SHORT	PT. #4689
(2)	INBOARD L.E. LONG	PT. #4690
(2)	OUTBOARD L.E. SHORT	PT. #4691
(2)	INBOARD MAIN SPAR Bass	PT. #4692
(2)	OUTBOARD MAIN SPAR	PT. #4694
(2)	INBOARD REAR SPAR Bass	PT. #4855
(2)	OUTBOARD REAR SPAR balsa	PT. #4874
(1)	3/4 X 38" NYLON FABRIC	PT. #9524
(1)	1 x 6" ALUMINUM STRIP	PT. #1390

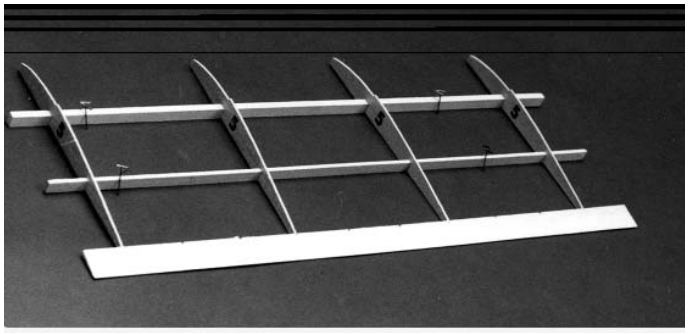


2. ☐ Working over the **RIGHT INBOARD PANEL** of the plan, place a 1/4" x 13/32" basswood spar main spar so that the spar end is aligned with the wing center on the plan.

NOTE: If building the second half of the wing, you will be working over the LEFT INBOARD PANEL. DO NOT BUILD TWO RIGHT WINGS!

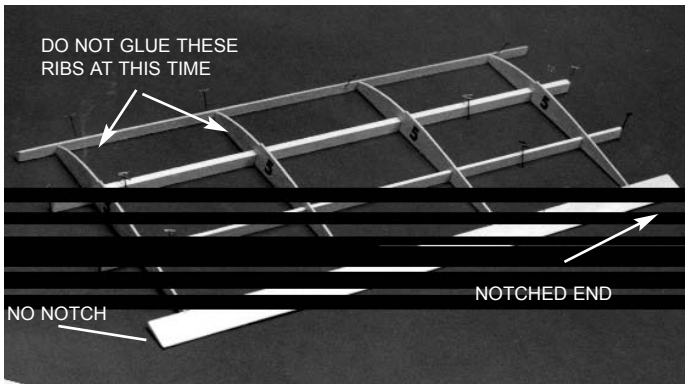
☐ Hold the spar in place by cross-pinning between the ribs at the circle locations shown on the plan.

☐ Using no pins, position the rear spar on the plan.



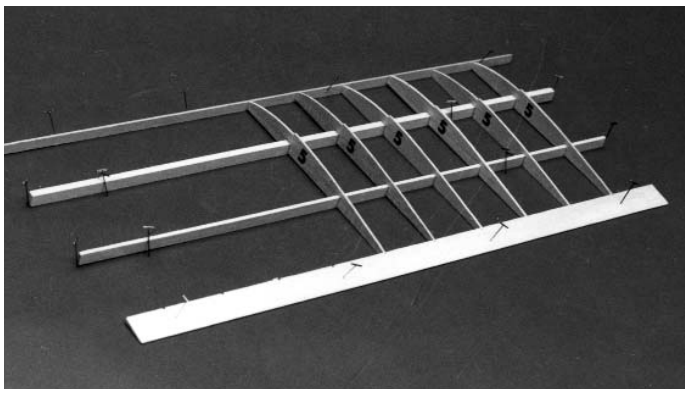
3. ☐ Align the notches in the wing trailing edge (T.E) with those shown on the plan.

☐ Using no glue, position the four #5 ribs as shown above. Hook each rib over the main spar and then over the rear spar, as you go.



4. ☐ Position the wing leading edge (L.E.) in place over the plan and pin.

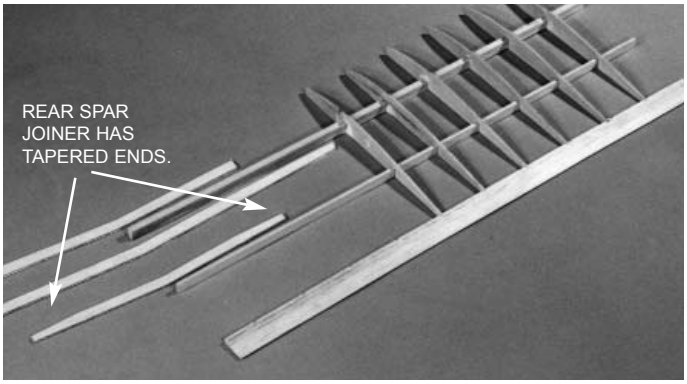
☐ Secure the ends of both spars with pins, as shown.

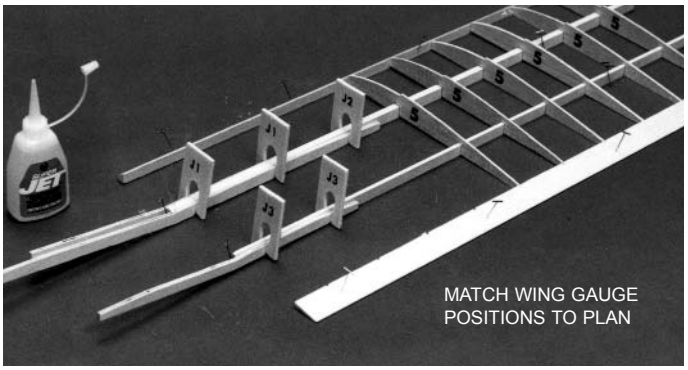


5. ☐ Remove the two #5 ribs nearest the wing center.

☐ Position and glue all remaining #5 ribs, as shown on the plan.

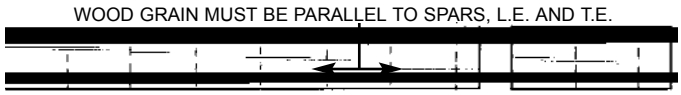
IMPORTANT! IF BUILDING THE LEFT WING, PROCEED DIRECTLY TO STEP 10.



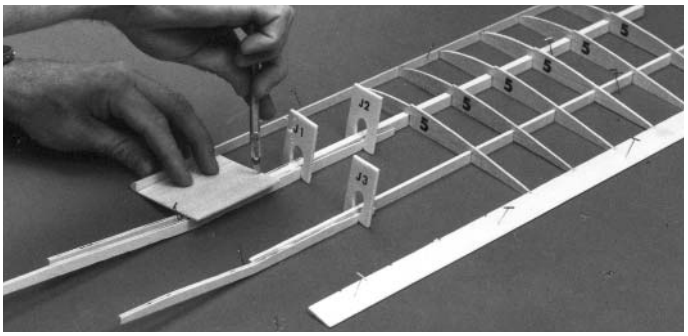


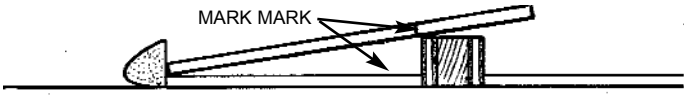
6. ☐ Noting that the rear spar joiner has a tapered end, fit the front and rear spar joiners into position as shown.

☐ Glue the joiners to the spars and, referring to the plan, hold in place with the gauges. Allow to dry.



7. ☐ Taking care to make sure that the grain of the sheeting will run parrallel to the spars, L.E. and T.E., cut three 3-1/4" pieces from a 1/16 x 3 x 24" balsa sheet.

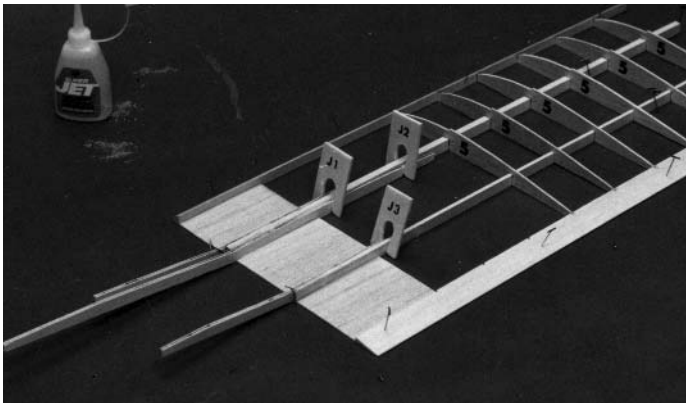




8. ☐ Slide one piece of sheeting forward until it just touches the L.E. Gently holding the sheet in position, mark the spar location on both of the rear corners of the sheet.

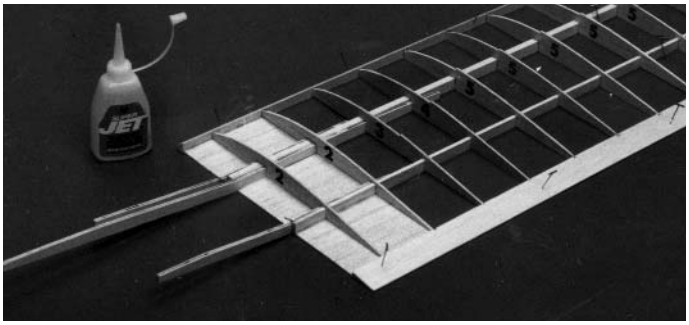
☐ Remove the sheet from the wing and, using a metal straight edge, carefully trim the sheeting so that, when the piece is laid flat, it <u>just fits</u> between the L.E. and the spar.

☐ Following the same procedure, trim and fit two more sheeting pieces for the bottom center section.



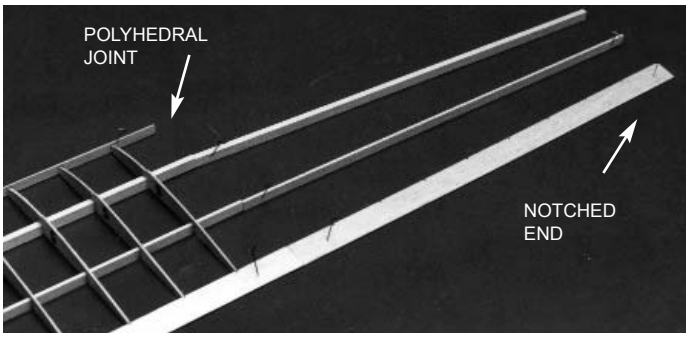
☐ Fit the first sheeting piece between the spars and, holding it flat to the building board, Super Jet the edges to the spars.

☐ Install the other two sheeting pieces in the same manner.



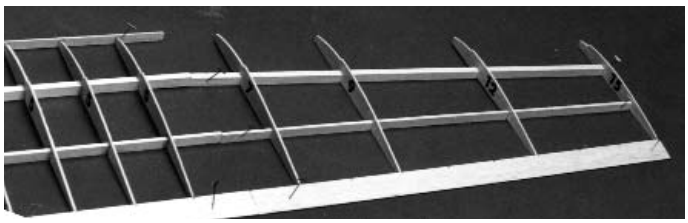
9. ☐ Position ribs #2, 3, and 4, making sure to align the rib fronts over the front guide lines on the plan.

☐ When satisfied with the alignment, glue to the L.E., the bottom sheeting, the spars, and the T.E.



10. ☐ Pin the outboard main spar in place over the plan. Then set the rear spar and the T.E. in place.

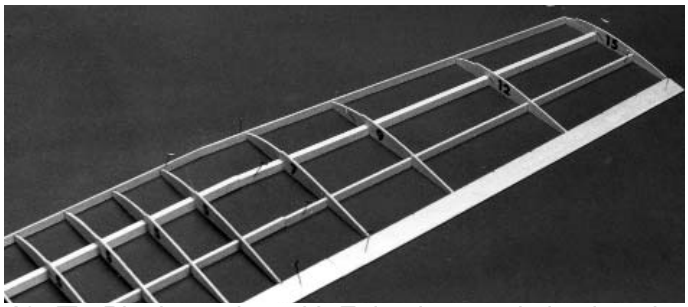
IMPORTANT! The outboard T.E. has no notch at one end. This unnotched end must be at the polyhedral joint, as shown.



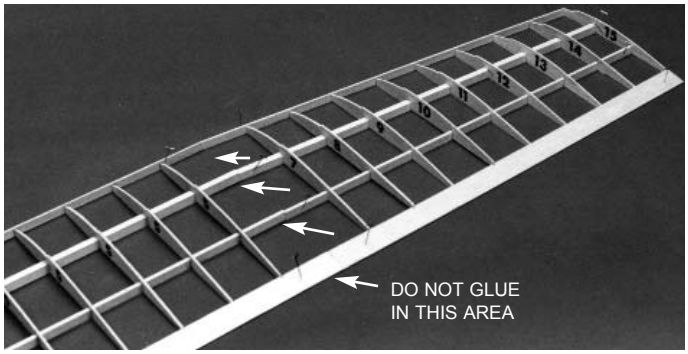
11. ☐ Using no glue, set ribs #7, 9,12, and 15 in their respective T.E. notches, hooking them over the spars as you go.

☐ Making sure the T.E. and the ribs are correctly aligned over the plan, pin in place.

☐ Glue the ribs to the spars and the T.E.



12. ☐ Pin the outboard L.E. in place and glue it to the ribs.



13. ☐ One at a time, position and then glue the remaining ribs #8 through #14 in place. Let dry thoroughly.

NOTE: IF YOU ARE CONSTRUCTING A ONE-PIECE WING, CONTINUE AT STEP 14. IF YOU WISH TO BE ABLE TO REMOVE THE WING TIP, REFER TO THE FOLLOWING OPTIONAL INSTRUCTIONS.

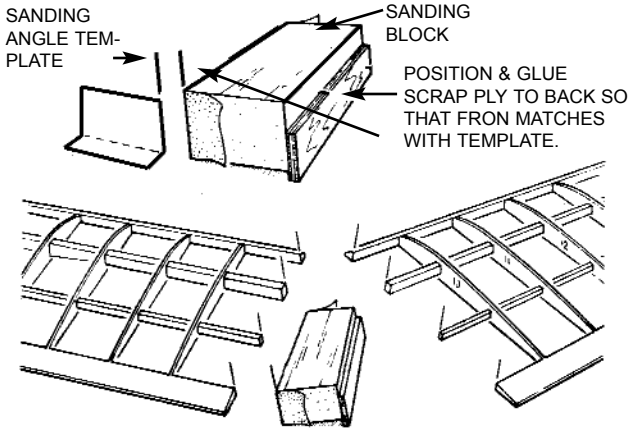
REMOVABLE TIP OPTION

NOTE: The materials needed to make the wing tip removable are NOT INCLUDED in your kit. Necessary templates for this option are found in the upper right corner of the *wing half* of the plan.

Follow these steps ONLY IF YOU WANT TO BE ABLE TO REMOVE THE WING TIPS. Otherwise, continue at Step 14.

A. ☐ Collect the following items:

1/8" x 3" x 18" HARD BALSA SHEET
3/32" x 12" MUSIC WIRE
3/32 I.D. x 6" BRASS TUBE
3/34" VINYL ELECTRICAL TAPE

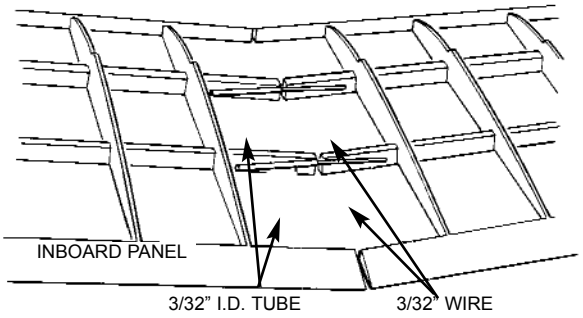


B. ☐ Make a sanding block from 1/8" scrap plywood, using the SANDING ANGLE TEMPLATE from the plan. Make sure to establish tthe proper sanding block angle, as show above.

C. ☐ From the 1/8" hard balsa sheet, **cut four NEW #6 ribs. DO NOT USE THE #6 die cut ribs that are included with your kit.**

D. ☐ Remove the pins from the inboard panel and use the sanding block to gently sand the poly-hedral ends of the spars, the L.E., and the T.E. to insure uniform vertical surfaces.

E. ☐ Referring to Step 14 for correct use of the die-cut wing gauges, raise the inboard wing panel, as shown.



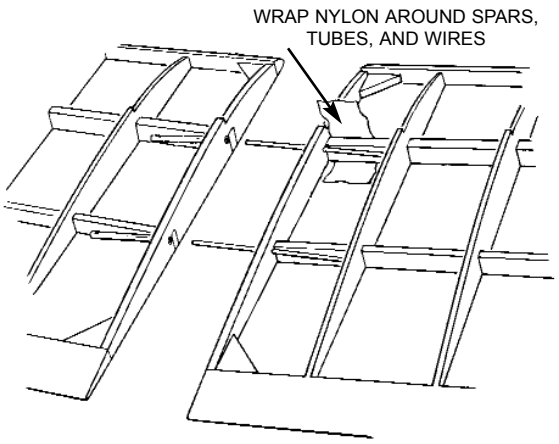
F. ☐ Position the 3/32 x 3" wire on the back of the spars, as shown.

- ☐ Referring to the TIP OPTION on the plan, carefully groove the spars for the wire and for the brass tube.

G. ☐ Tack-glue the WIRE to the OUTBOARD SPAR and the BRASS TUBE to the INBROARD SPAR.

- ☐ Plug the wing panels together and make certain the wing structures butt evenly at the polyhedral joint. If adjustments are needed, take the panels apart and rework the grooves slightly.

- ☐ When satisfied with the fit of the joint, glue the metal parts in place.



H. ☐ With the wing panels plugged together, position the new #6 ribs at the polyhedral joint. The ribs should be tilted slightly toward the outboard panel, so that they match the spar angle.

- ☐ TAKING CARE TO NOT GLUE THE WING PANELS TOGETHER, carefully glue the ribs to their respective wing panels.

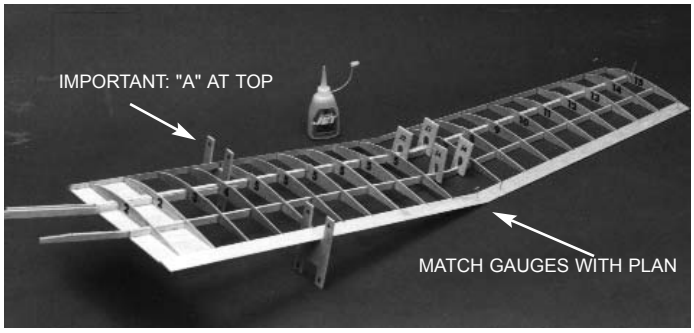
I. ☐ Unplug the wing panels. Then, working on first the inboard panel and then the outboard panel, wrap a about 2" of 3/4" wide nylon fabric (included in your kit) around each of the spars to secure the wire and brass tubing.

- ☐ Saturate the nylon fabric with Super Jet or Jet Epoxy, to create a sturdy bond.

J. ☐ Add gussets (D/C Sht. 4006) at the L.E. and T.E., as shown above.

NOTE: This completes the removable tip option construction for the first wing half. When working on the second wing half, you again will follow the above instructions. After the wing parts are covered, the removable panels are fastened to the inboard wing sections using vinyl electrical tape. This tape holds firmly, yet can be removed without damaging the covering material.

NOW PROCEED DIRECTLY TO STEP 19.



14. ☐ With the outboard panel still pinned down, raise the inboard panel and support it with the wing dihedral gauges under the first rib #5 location, as shown on the plan.

IMPORTANT: The end of the gauge stamped "A" must be up. Hold the gauges firmly in place by tack-cementing, clothespins, etc.

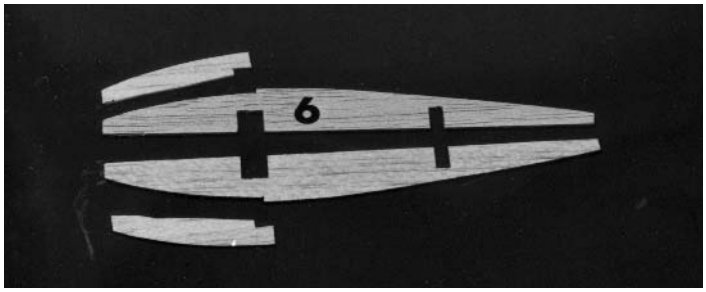
- ☐ Carefully inspect the panel joint to make sure all of the end pieces of the inboard panel fit tightly to those of the outboard panel. If one part protrudes too much, sand slightly for a better fit. WARNING: always sand just a little at a time, so that you do not remove too much wood. You may find it helpful to use the sanding tool described in the removable tip option.

15. ☐ TEMPORARILY install the diihedral joiners on each side of the spars. Use die-cut clampls to hold in place.

- ☐ When satisfied with the fit of the inboard and outboard panels, pin in place, as shown above.

16. ☐ Remove the dihedral joiners and apply a liberal bead of Super Jet to all joints of the L.E., spars, and T.E.

- ☐ Quickly apply glue to the joiners and immediately reinstall. Use the clamps again to hold both joiners tight to the spars. Allow to dry.

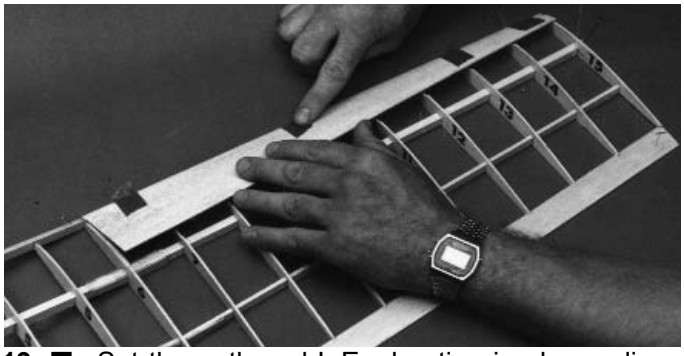


17. ☐ Lay out two #6 ribs, and two doublers, as shown.

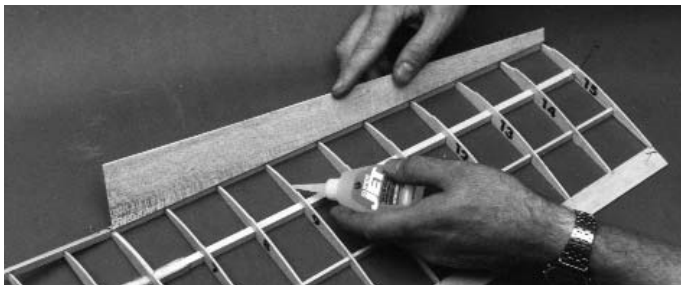
- ☐ Glue rib doubler #6a to each rib, taking care to make on left and one right rib.

18. ☐ Position rib #6 so that it aligns with the joints in the L.E., the spars, and the T.E. Make sure that the doubler is facing out, toward the outboard pannel. When satisfied with the fit, glue in place.

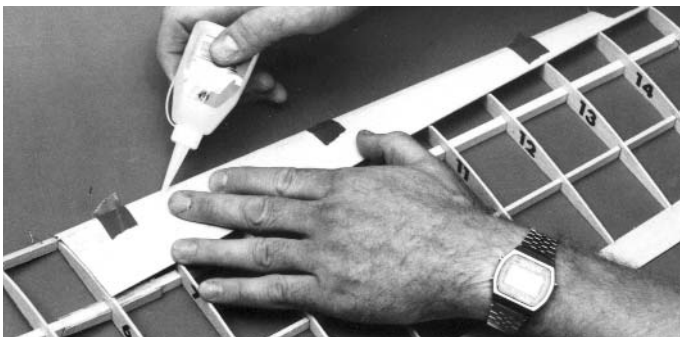
- ☐ Referring to the plan for location, glue gussets to rib #6, the L.E., and the T.E.



19. ☐ Set the outboard L.E. sheeting in place, aligning the inboard edge of the sheet with the joint between rib #6 and the #6a doubler. When correctly positioned, tape the sheeting to the L.E.



☐ Lift the sheeting, as shown, and apply Super Jet™ along the top of each rib where it will contact the sheeting.



☐ Fold the sheeting back down over the ribs and hold in place until dry.

☐ Apply a bead of glue to the L.E./sheeting joint, in the areas between the tape. Allow to dry.

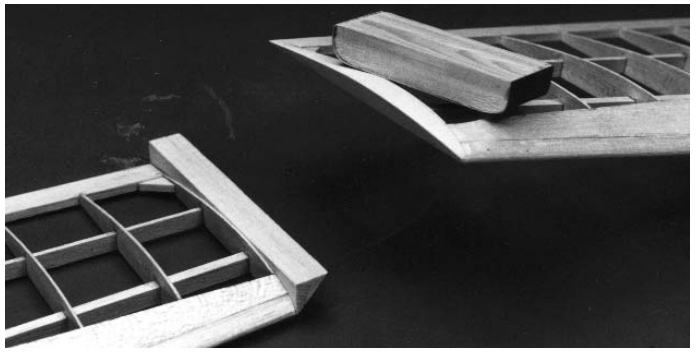
HINT: Using Jet Set™ accelerant speeds this (and many other) gluing processes.

☐ When the joint is firm, remove the tape and apply glue to the remaining unglued areas of the joint.

If this is your first wing half, set it aside and begin building the left half of the wing.

MAKE SURE YOU WORK OVER THE <u>LEFT</u> WING PORTION OF THE PLAN. DO ONLY STEPS 1 THROUGH 5 AND 10 THROUGH 19 FOR THE LEFT INBOARD PANEL.

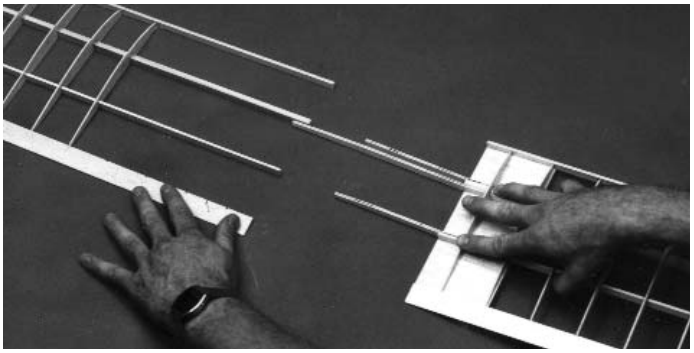
When both halves are complete to this point, continue with Step 20.

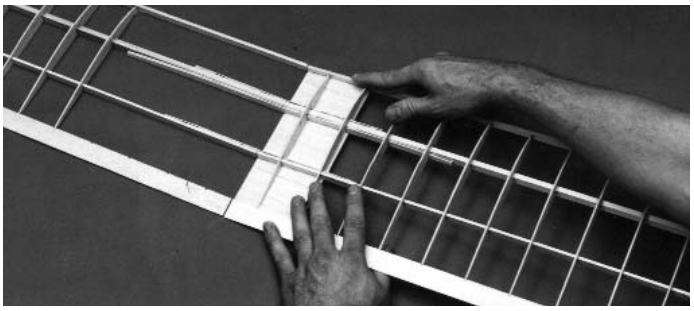


20. ☐ Trim off excess spar material extending beyond the #15 ribs (wing tip ribs)

21. ☐ Glue trip strip to the #15 ribs, as shown.

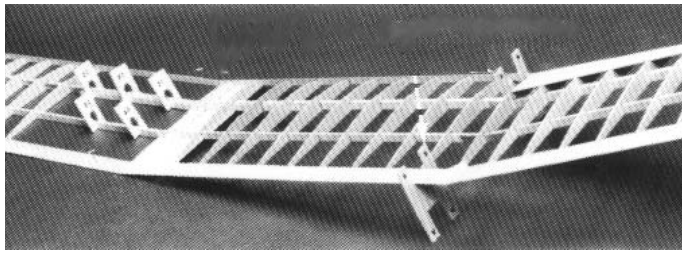
☐ Carve and sand balsa tri-strips, so that they match the top contour of the wing tip ribs.





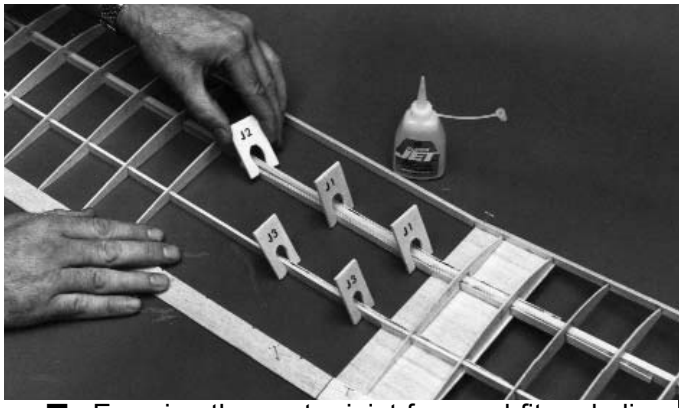
22. ☐ Still working over the plan, pin down the left inboard panel.

☐ Slide the right inboard panel up tight next to the left inboard panel, engaging the joiners with the spars, as shown above.

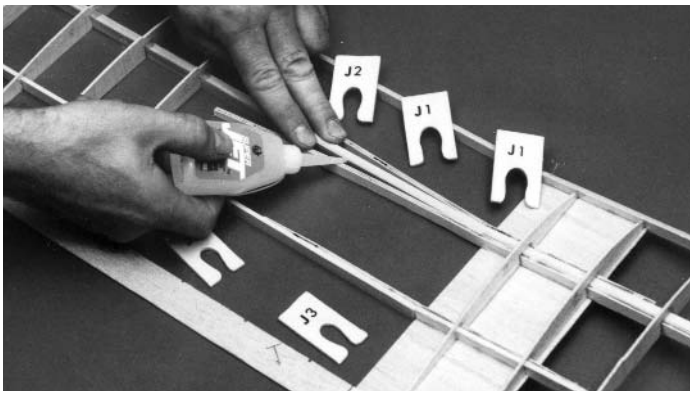


23. ☐ Raise up the right inboard panel, supporting it with the dihedral gauges at the <u>outermost</u> rib #5 position.

IMPORTANT! The ends stamped “B” must be up.

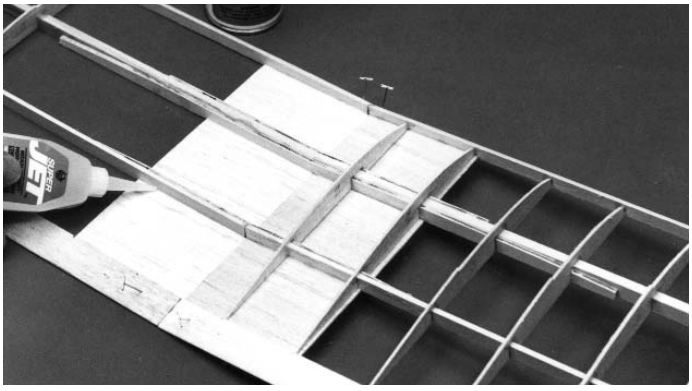


- ☐ Examine the center joint for good fit and alignment of the L.E., the spars, the joiners, and the T.E. Adjust as necessary, sanding slightly to make the pieces fit together.
- ☐ Temporarily install the clamps to hold the joiners tight on the spars.
- ☐ When satisfied with the fit, pin the wings together.



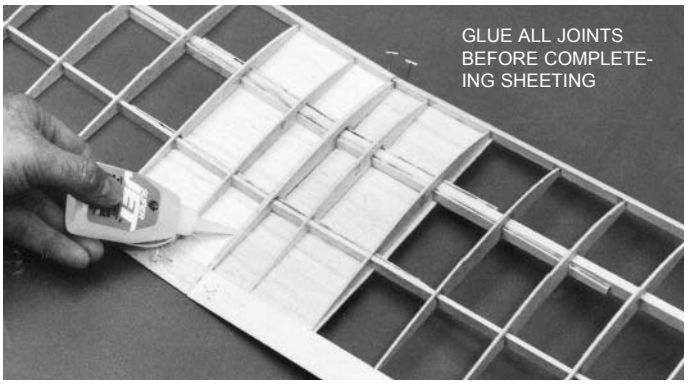
24. ☐ Remove the clamps and insert pins between the spars and the joiners.

- ☐ Apply Super Jet™ between the parts and then remove the pins, allowing the pieces to come back together. Immediately replace the clamps to hold the joiners tight on the spars. Let dry thoroughly.



25. ☐ When the glue has dried, remove all clamps from the spars.

- ☐ Cut three 3-1/4" pieces of bottom sheeting from the remainder of the 1/16" balsa sheeting.
- ☐ Trim to fit between the spars, just as was done in Step 7. When satisfied with the fit, glue in place.
- ☐ Glue the L.E., the bottom sheets, and the T.E. together at the center joint.

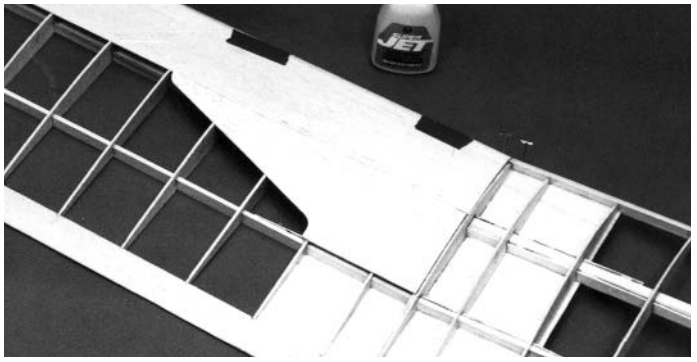


26. ☐ Glue the remaining ribs #2, #3, and #4 in place.

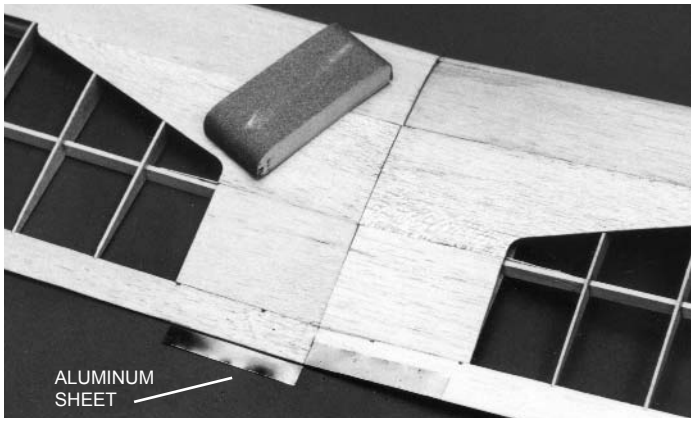
- ☐ Glue together two #1 ribs to make a single, double-thickness rib.
- ☐ Position this doubled #1 rib at the center joint, making sure it aligns with the spar center joint, the L.E., the bottom sheeting, and the T.E. Glue in place.

NOTE: Make sure all joints are well-glued before completing the center sheeting.

27. ☐ Following the same procedure used in Step 19, install the inboard L.E. sheeting.



- ☐ When the L.E. sheeting is dry, install the die-cut, tapered center sheeting.
- ☐ From plain 1/16 x3 x 12" balsa, cut and fit the remaining rear sheeting piece.
- ☐ Remove all pins and gauges and complete the sheeting of the right wing.



28. ☐ Using 240 grit (fine) sandpaper, flat sand the entire wing to blend the surfaces and remove high spots. Take care not to sand too much, or the sheeting will be thin and weak.

☐ Cut the 1 x6" aluminum strip into two 3" pieces and sand lightly for better glue adherence.

☐ Apply a bead of Super Jet™ to one half of one of the aluminum pieces and glue it to the bottom of the wing, as shown above.

☐ When dry, apply glue to the other half of the strip and wrap it around the T.E.

☐ Repeat this procedure for the other aluminum piece.

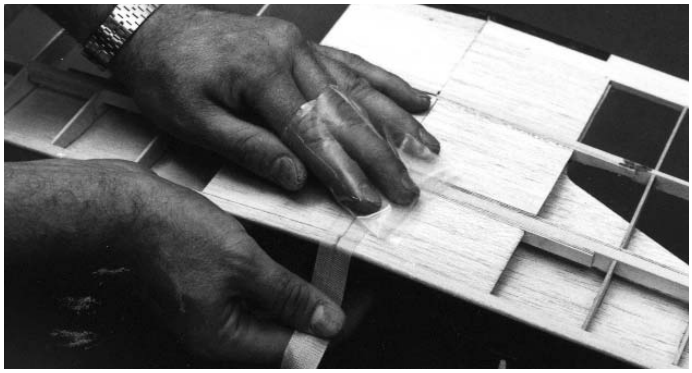
IMPORTANT!

The following procedure must be done in a WELL-VENTILATED AREA.

29. ☐ Cut a piece of 3/4" wide nylon long enough to wrap completely around the wing with a small overlap.

☐ Apply a spot of Super Jet™ on the wing bottom at the center joint.

☐ Immediately stick one end of the nylon strip to the wing and let dry until it is firmly glued to the balsa.

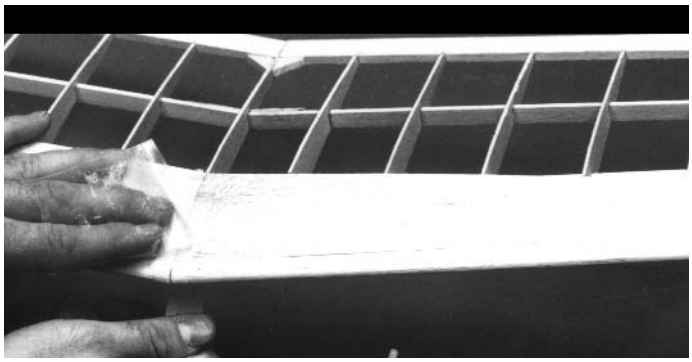


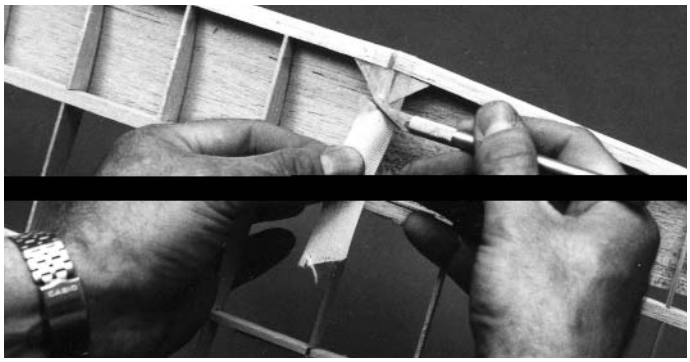
☐ Before continueing, protect fingers with a plastic bag or plastic wrap.

☐ Starting with the bottom of the wing, apply a squiggle of glue along the wing joint and lay the nylon strip over it.

☐ Rub the glue thoroughly into the nylon strip.

☐ Continue applying the nylon strip around the L.E., across the top of the wing, around the T.E., and finally overlapping where you started on the wing bottom.

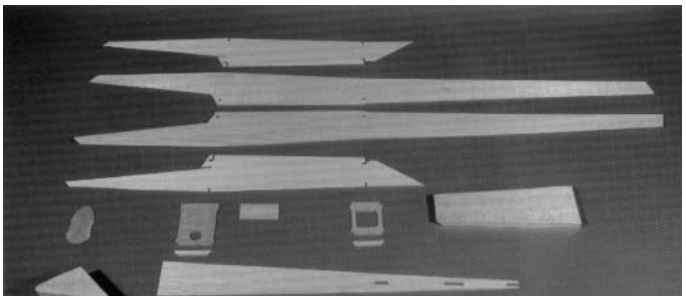




☐ Unless you have made the removable wing tip option, repeat the above procedure, installing nylon fabric at the polyhedral sheeting joints.

THIS COMPLETES THE WING ASSEMBLY. SET ASIDE UNTIL IT IS TIME TO COVER.

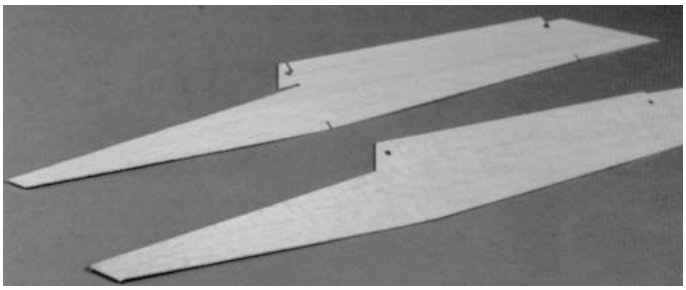
FUSELAGE CONSTRUCTION

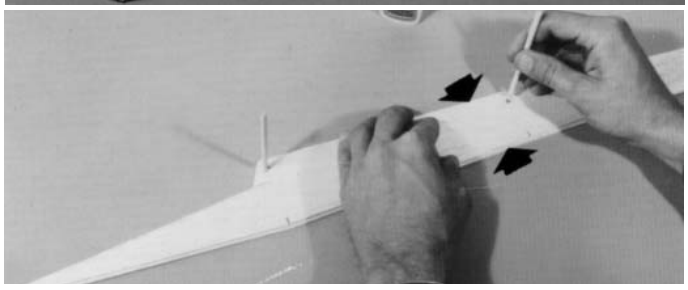


1. ☐ Collect the following items:

(2)	D/C SHT. 5901 FUSELAGE SIDE	PT. #3401
(1)	BALSA CHIN BLOCK	PT. #4568
(1)	BALSA NOSE BLOCK	PT. #4569
(5)	1/8” SQ. x 36” BALSA STICK	PT. #4705
(1)	D/C SHEET 5902 Contains:Fuse top and Fuse bottom	PT. #3402
(2)	D/C SHEET 5903 Contains: Fuse Doubler	PT. #3403
(1)	D/C SHEET 5905 Contains Formers & fuse bottom	PT. #3405
(2)	D/C SHEET 4014	PT. #3614
(1)	D/C SHEET 5907 FORMERS	PT. #3407
(1)	1/8 x1/4 BALSA STICK	PT. #4561
(2)	SCREW EYES	PT. #1194
(1)	1/8 x7/8" DOWEL	PT. #1736
(2)	3/16 x 3-7/16 DOWEL	PT. #1748
(1)	HATCH HOLD DOWN	PT. #4570
(1)	TOWHOOK	PT. #5811
(1)	CANOPY	PT. #1569
(1)	COCKPIT INSERT	PT. #1570

☐ Carefully remove the die-cut pieces and lightly sand any rough edges before beginning assembly.

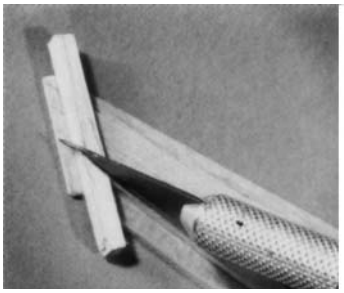


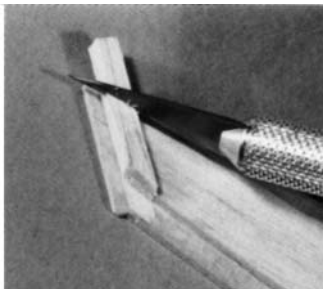


2. ☐ Place the fuse side and fuse side doubler together, using the 3/16" diameter dowel to align the two pieces correctly.

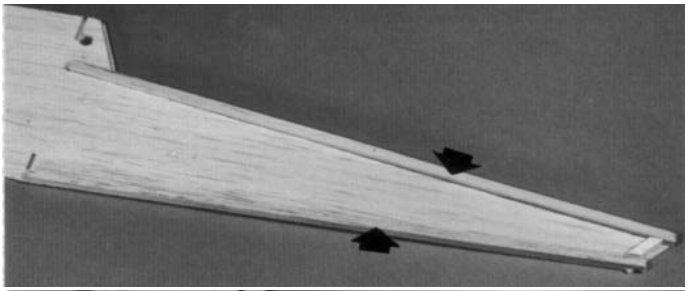
☐ When satisfied with the fit, glue the pieces together.

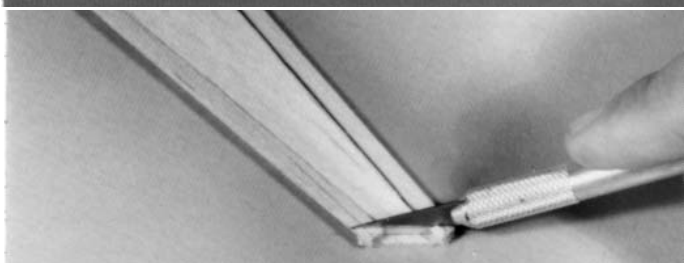
3. ☐ Glue an 1/8" sq. balsa stick to the front of the fuse side assembly.





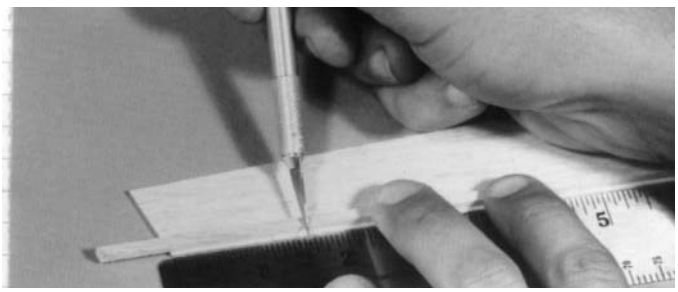
☐ Trim the stick flush with the edges of the doubler, as shown above.





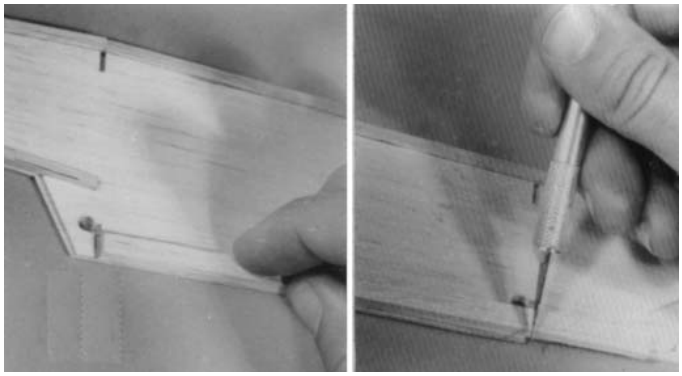
4. ☐ Again using 1/8" sq. balsa sticks, fit and glue to the top and bottom of the fuselage side. **Do NOT GLUE at rear of fuse.**

☐ Trim the 1/8" balsa pieces flush with the fuse front.



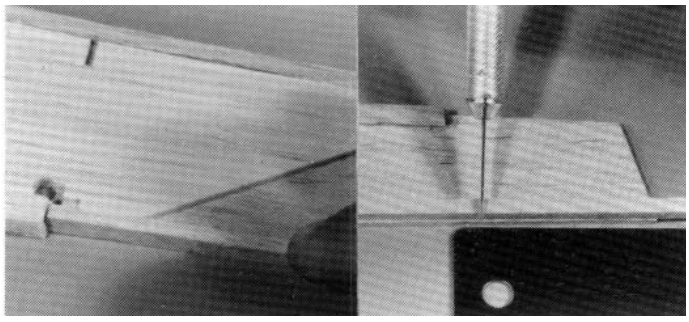
5. ☐ Measure 1-1/2" back from the read end of the fuse side and make a mark. Trim the 1/8" square balsa stick to this point and then glue the stick in place.

☐ Glue the cut stick in place.



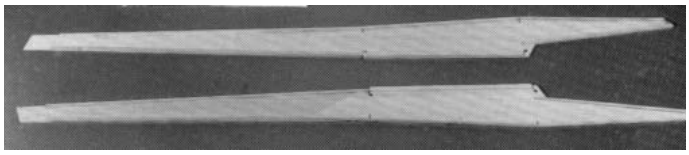
6. ☐ From the wood parts bag, take the 1/8 x 1/4" balsa wing rest and place it flush with the front bulkhead notch, as shown above.

☐ Making sure it is flush with the top of the fuse side, glue in place.

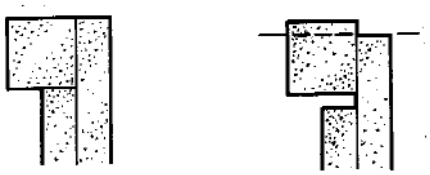


7. ☐ Using a piece of 1/8" sq. balsa, butt the end into the wing rest.

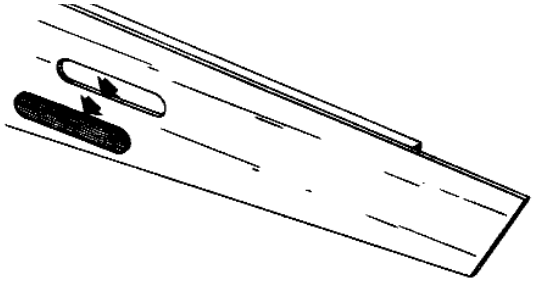
☐ Measuring 1-1/2" in from the end of the fuse side, trim the 1/8" balsa stick and glue in place.



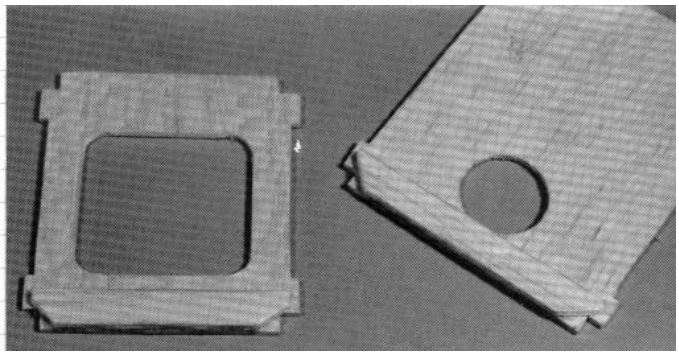
8. ☐ Repeat the above steps to contruct a second fuse side. **Be sure you build a right and a left side.**



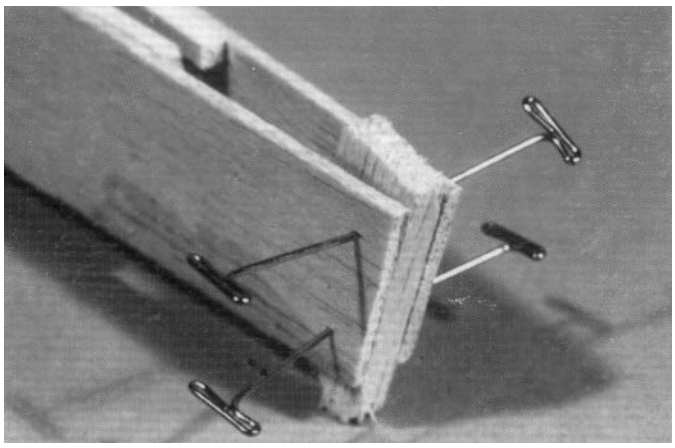
NOTE: Before moving on, make sure all joints are flush and the 1/8" strips are flush with the edges of the fuse side, all around. Sand if necessary.



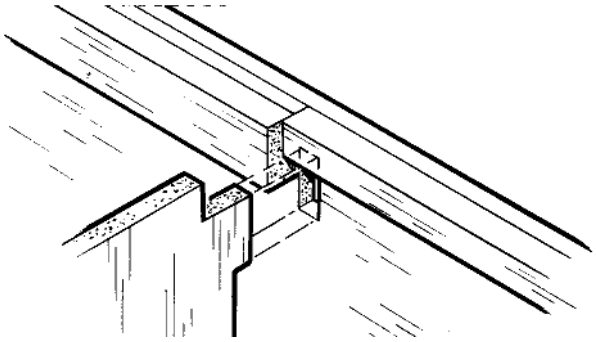
9. ☐ Take the **left fuse side only** and punch out the exit hole, as shown.



10. ☐ Glue the D/C bulkhead doubler to the bulkhead.

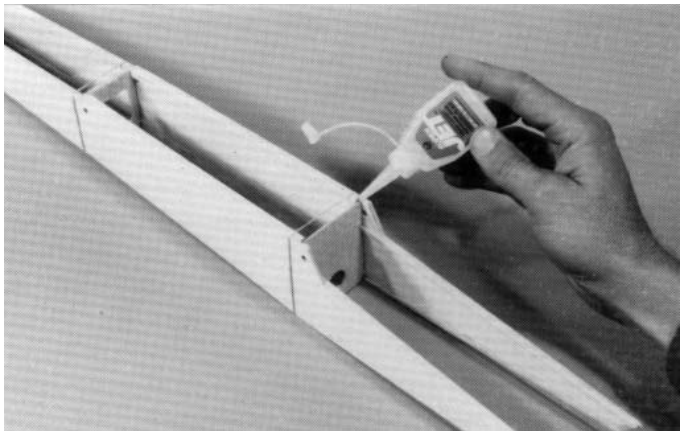


11. ☐ With the fuse sides together, **doublers to the inside,** pin a piece of 3/16" balsa scrap between the sides at the back end of the fuse.



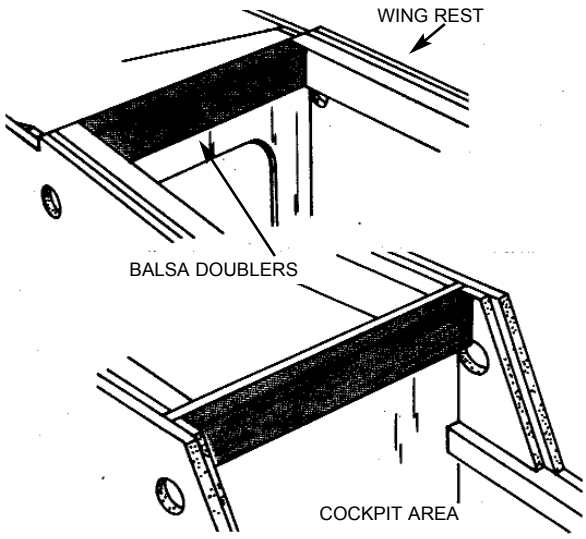
12. ☐ Spread the fuse sides and insert bulkhead tabs into the locating slots in the fuse.

NOTE: Make sure doublers face aft.



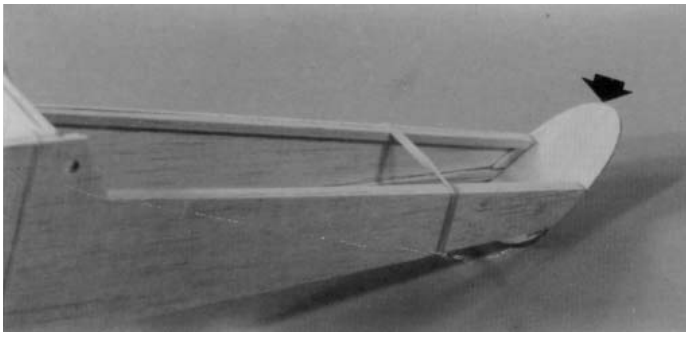
13. ☐ Hold assembly together with rubber bands. Make sure the fuse is perfectly straight.

☐ When you are satisfied with the alignment, glue as shown.



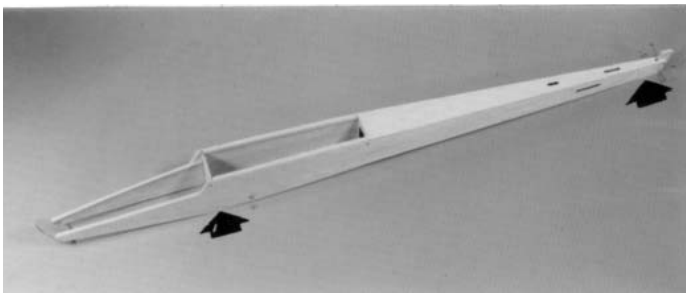
14. ☐ Trim two 1/8 x 1/4" balsa sticks to fit along the top of the formers, acting as doublers.

☐ When satisfied with the fit, glue these balsa doublers in place, as shown.



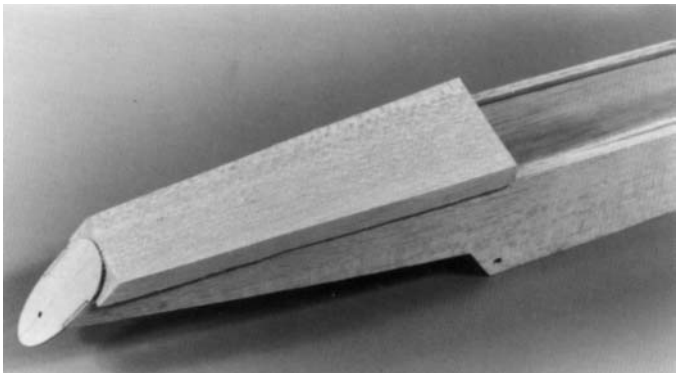
15. ☐ Position the 1/16" plywood nose former, using a rubber band to hold it in place.

☐ Glue securely in place.



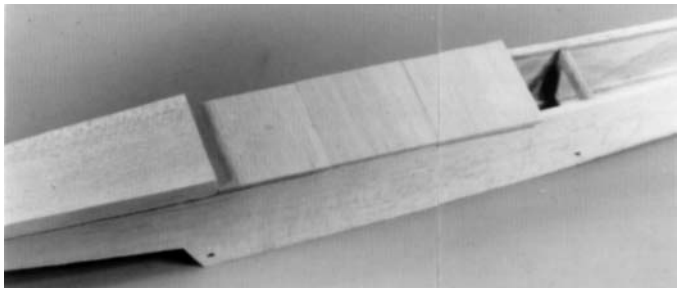
16. ☐ Using the plan, if necessary, pin the fuse to the building board, making sure the alignment is straight and correct.

☐ When satisfied with the alignment, glue the 1/16" rear top sheeting in place. Allow to dry.

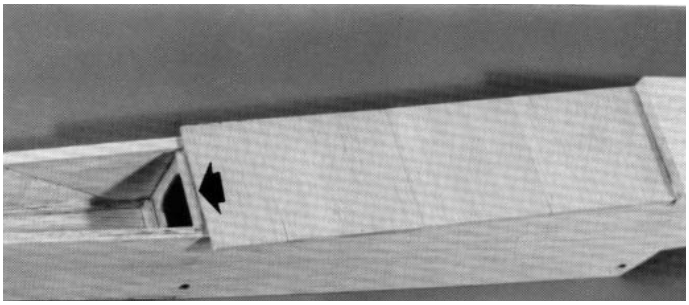


17. ☐ Unpin the fuse from the building board and turn it over, so that it is bottom side up.

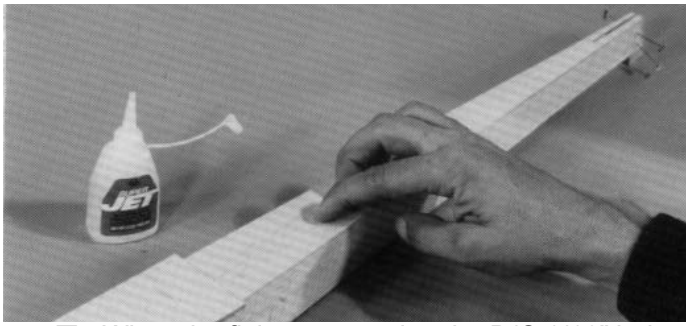
☐ Glue the 1/2" balsa chin block to the bottom of the fuse, fitting it to the nose former as shown.



18 ☐ Next, glue the 1/8" D/C balsa bottom sheeting in place.

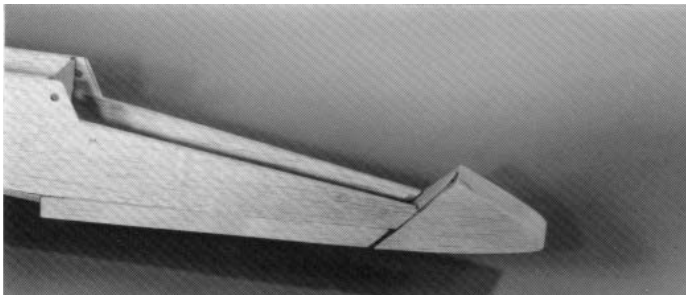


19. ☐ Trimming as necessary, fit the remaining D/C 1/8" balsa sheeting in place, making sure the sheeting is even with the center of the bulkhead.

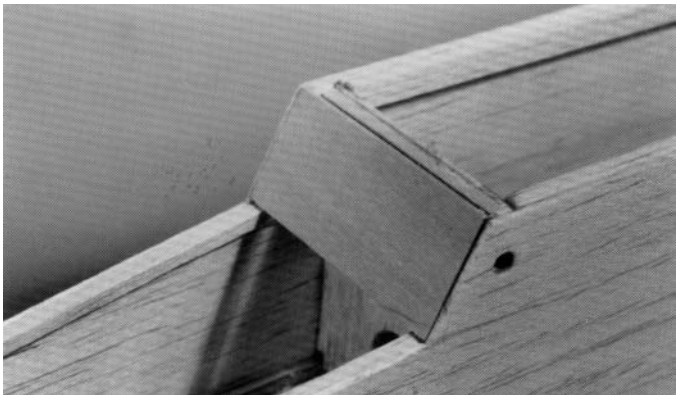


☐ When the fit is correct, glue the D/C 1/16" balsa bottom sheeting in place and hold until dry.

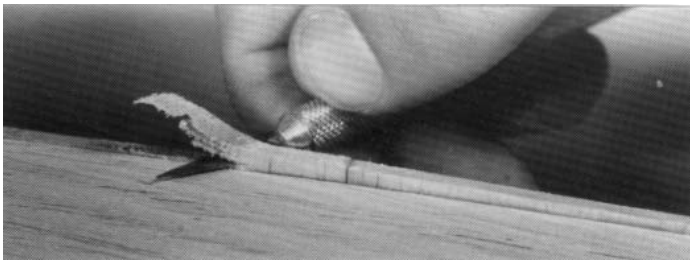
IMPORTANT! Do not allow the fuselage to twist. Pin down, if necessary.

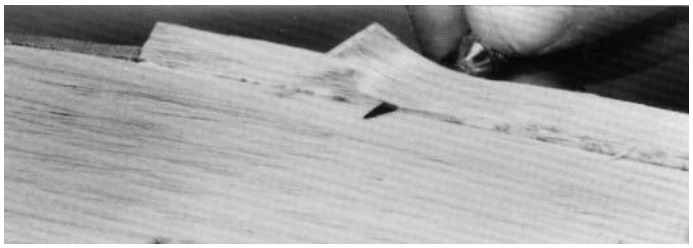


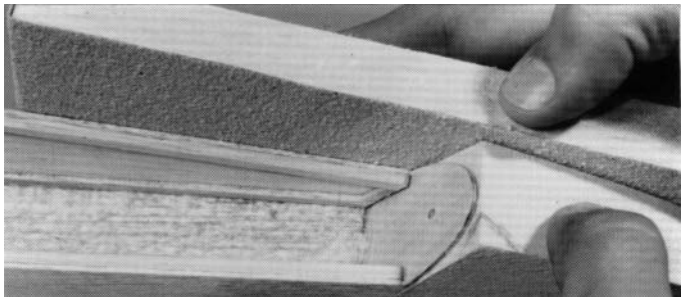
20. ☐ When the sheeting has dried, glue the nose block to the plywood nose former, as shown.



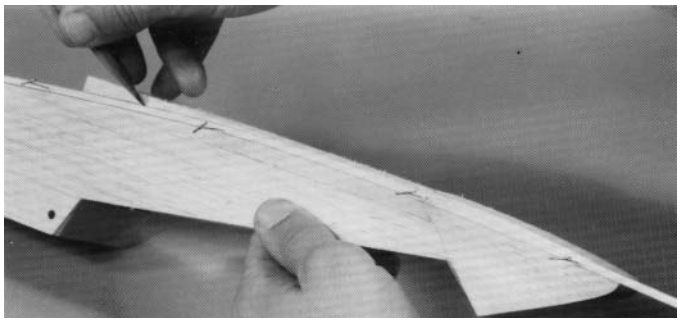
21. ☐ Turning the fuse right side up, fit the 1/16" plywood canopy rest in place and glue.







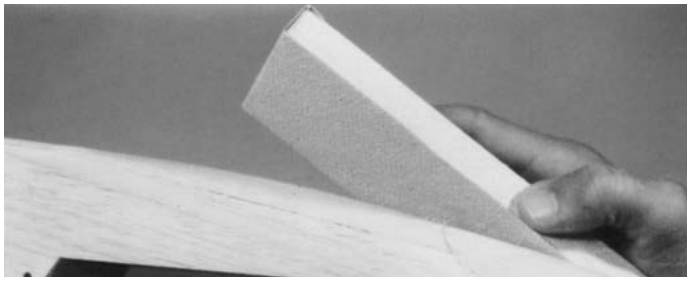
22. ☐ Taking off small amounts at a time, carefully shape the front of the fuse to fit the top view profile shown on the plans.



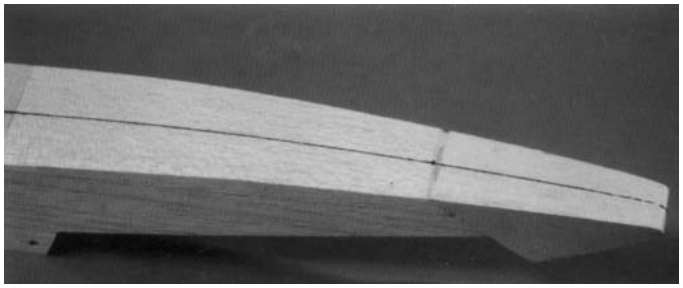
23. ☐ Pin an 1/8" sq. balsa strip to the bottom edge of the outer fuse side, following the curve of the fuse bottom, as shown.

☐ Remove the excess wood from the chin block, so that it matches the fuse bottom sheeting.

☐ Draw a line along the pinned balsa strip, marking its location.

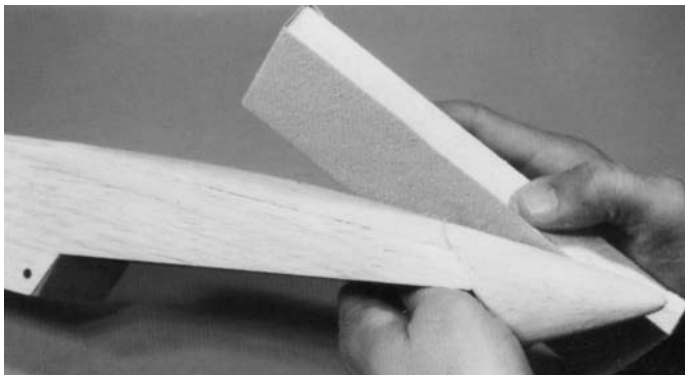


☐ Remove the balsa strip and sand to the line.

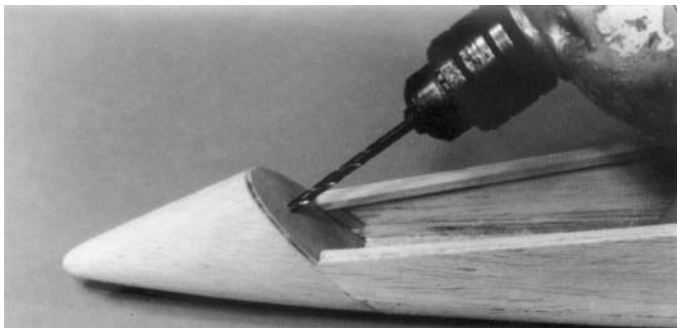


24. ☐ Draw a centerline lengthwise along the bottom of the fuse.

☐ Rough shape the front of the fuse, using the centerline as a reference of symmetry.

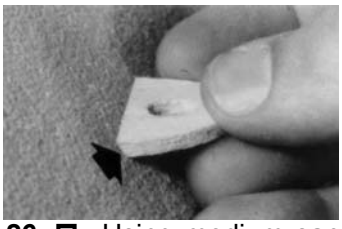


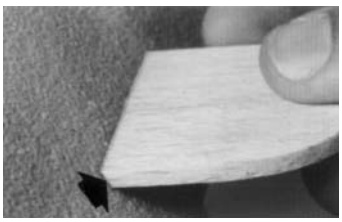
☐ Sand to a finished shape.



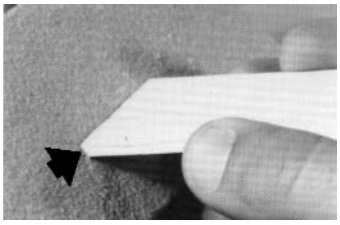
25. ☐ Drill a 1/8" diameter hole about 3/4" deep at the D/C drill point. **???**

☐ Insert the 1/8" diameter dowel in the hole, leaving 1/4" exposed, and glue in place.

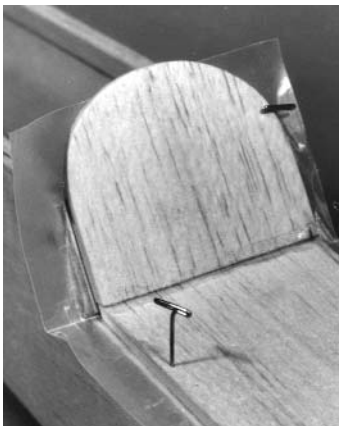


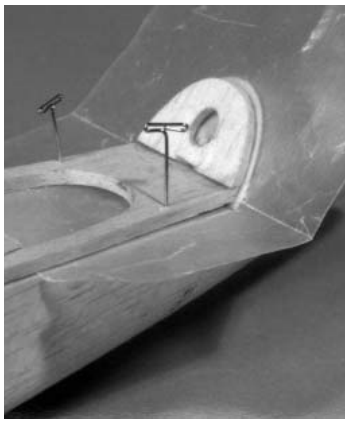


26. ☐ Using medium sandpaper, bevel the edges of the cockpit platform so that it fits into the fuse.



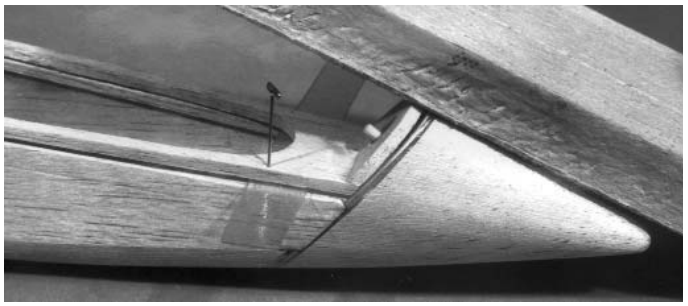
☐ Next, bevel the front and rear formers so that they lie against the fuse and flat on the cockpit platform.





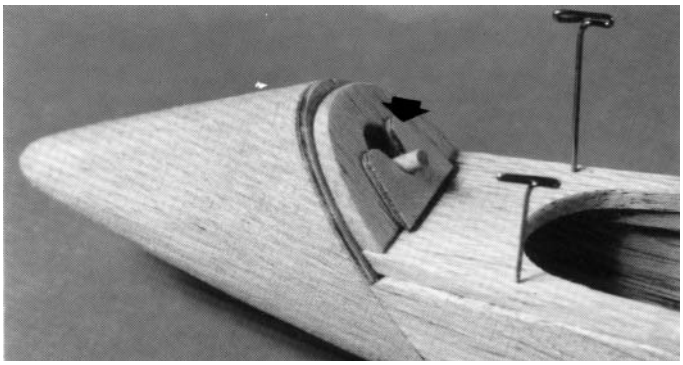
27. ☐ Place waxed paper behind the cockpit platform joints and then pin the platform onto the fuse.

☐ Glue the formers onto the platform, as shown.

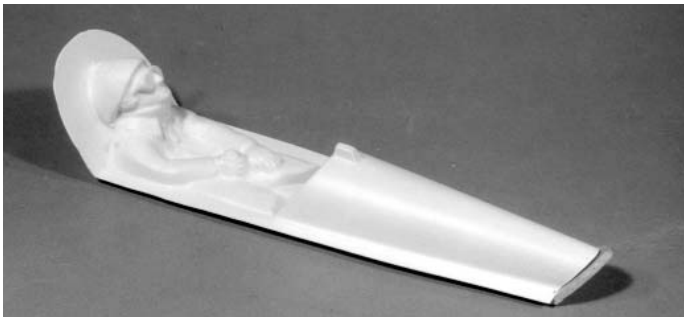


28. ☐ **Making sure you remove only <u>scrap</u> plastic,** cut two pieces of plastic from the canopy excess and place them between the fuse and the canopy platform. This will raise the platform to allow for the thickness of the canopy.

☐ Sand the front former flush with the nose block. When satisfied with the fit of the pieces, remove the plastic scraps.

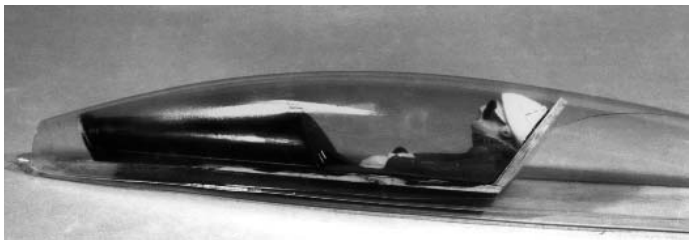


29. ☐ Position the 1/16" D/C plywood yoke snugly under the hatch pin and glue in place.



30 ☐ Trim the plastic cockpit detail to fit onto the platform.

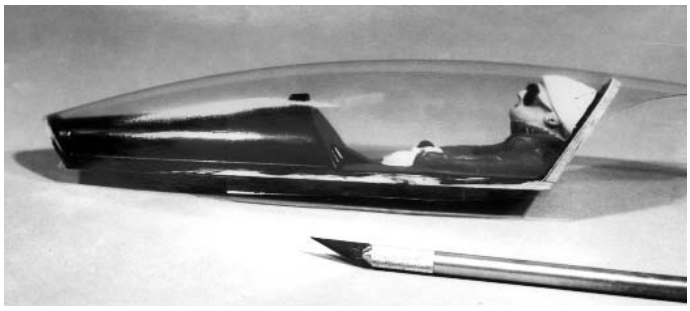
☐ Glue the plastic detail in place and trim any excess flush with the platform edges.



31. ☐ Apply the instrument panel decal (see decal instructions in Final Assembly section.)

☐ Fit the canopy in place, rough trimming it to size.

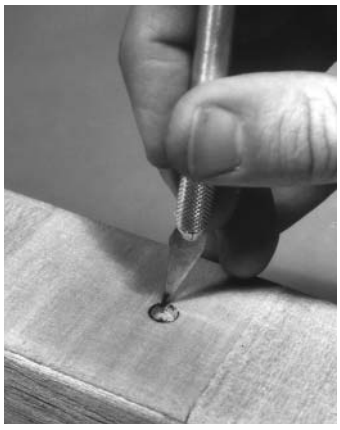
☐ Making sure the platform remains flat, glue the canopy to the platform.



☐ Trim excess plastic flush with the platform bottom and front. Trial fit the back of the canopy onto the wing. The final fitting will occur when the wing is mounted on the fuse.

32. ☐ Glue the two 1/16" D/C plywood tow hook mounting plates together.

☐ Fit the laminated mount in place, as shown on the plan.

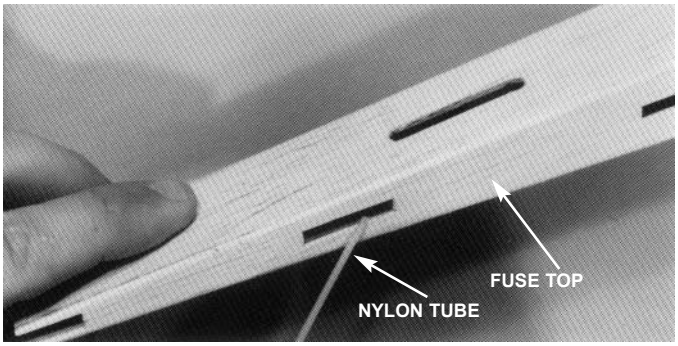


33. ☐ With the punch marks facing up, drill a 3/32" diameter hole through the plywood mount and the balsa fuse bottom.

☐ Trace the tow hook washer on the fuse bottom and cut in the washer clearance, as shown. Be sure to go through the balsa and down to the plywood layer.

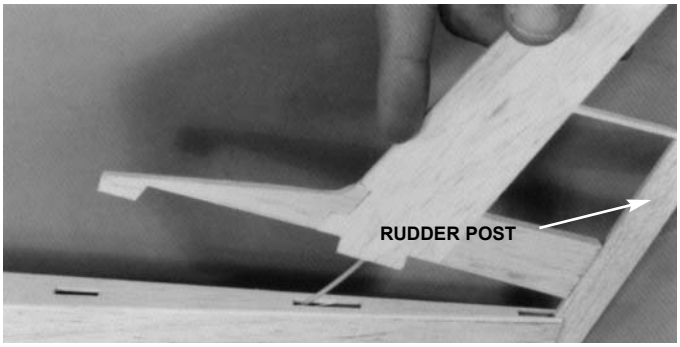
COVERING & FINAL ASSEMBLY

ASSEMBLING FIN TO FUSELAGE

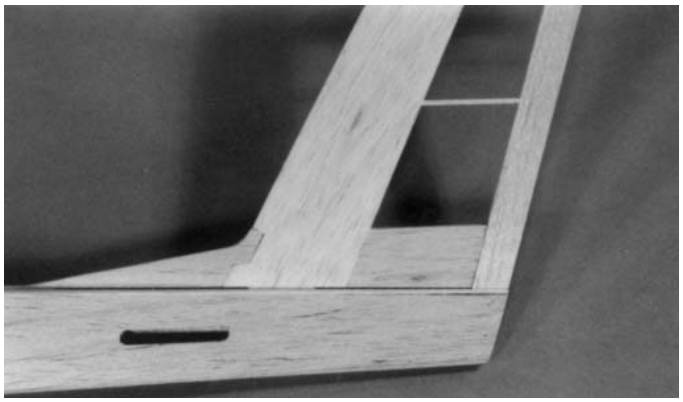


1. ☐ Remove the 3/16" balsa spacer from the rear end of of the fuse.

☐ Insert the nylon guide tube attached to the fin into the middle slot on the rear top of the fuse, and guide it completely through the fuse.



2. ☐ Slide the fin down, inserting the rudder post into the slot at the end of the fuse.



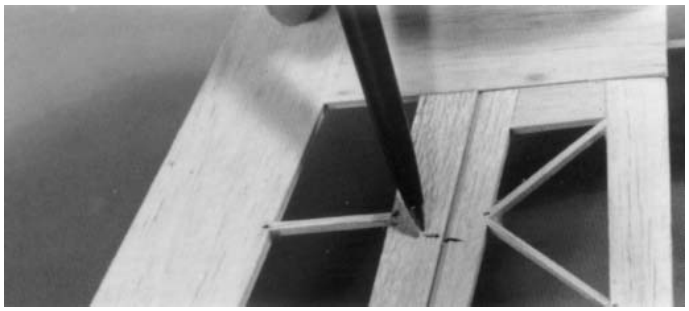
3. ☐ Tilt assembly forward and snap the two fin tabs into the remaining slot.

☐ If satisfied with the fit, apply glue to tabs and the top of the fuse and glue the fin in place.

☐ Lay the fuse over the plan and check for correct alignment between the wing rest and the top of the fin. Trim to match, if necessary.

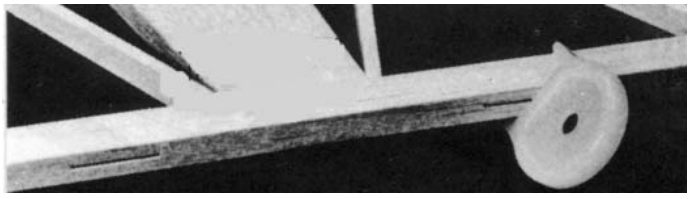
4. ☐ Slide the 1/16" D/C ply tailskid into the slot on the bottom of the fuse and glue in place.

CUTTING HINGE SLOTS



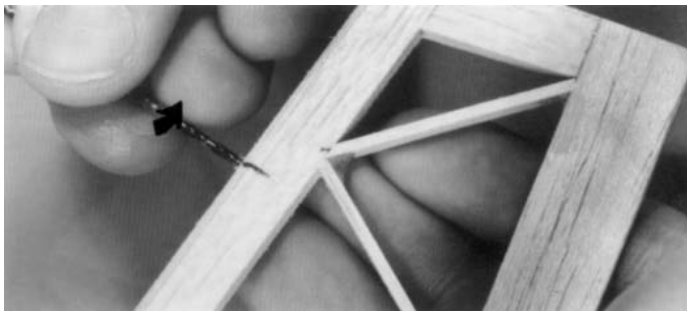
1. ☐ Take the tack-glued stabilizer assembly and separate the elevator from the stab.

☐ Place the pieces on the plan and mark the hinge locations onto the stab, the elevator, the rudder and the fin.

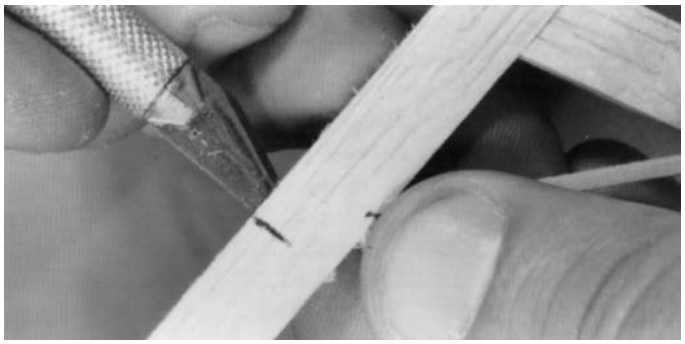


2. ☐ Using a CGM centerline marker, mark a center line along the entire length of the elevator and the rudder.

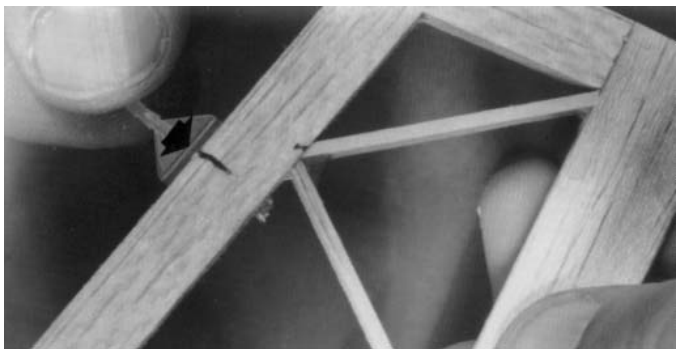
☐ Next, mark a centerline at the hinge locations on the fin and the stab.



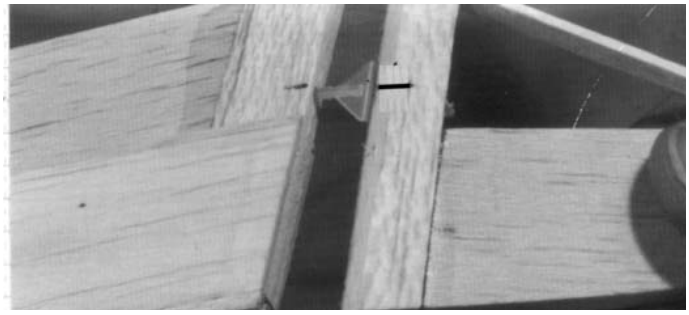
3. ☐ Using a 1/16" diameter drill bit, bore through at the hinge marks.



4. ☐ Slot each side of the hole for hinge clearance. Test fit the hinge, so as to not cut too much. The hinge fit should be snug.



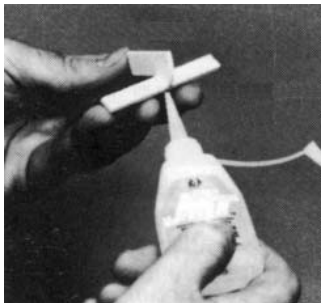
5. ☐ Slide the hinge in, but do not glue at this time.

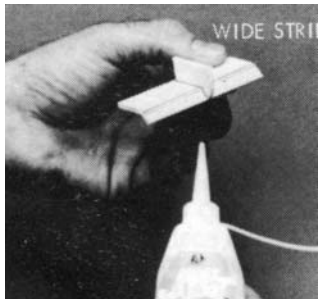


6. ☐ Attach the rudder to the fin and the elevator to the stab and check the fit. Then disassemble and remove the hinges.

BEVELING RUDDER & ELEVATOR

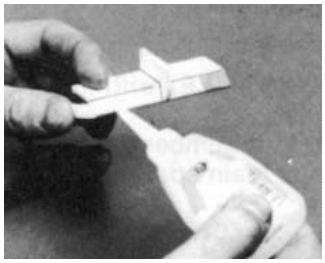
NOTE: This kit contains D/C ply parts for two tools, but only one is used to construct the aircraft.

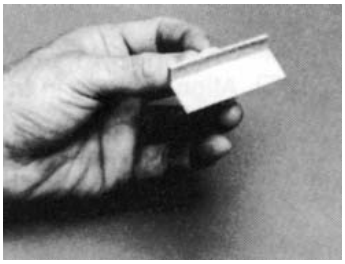




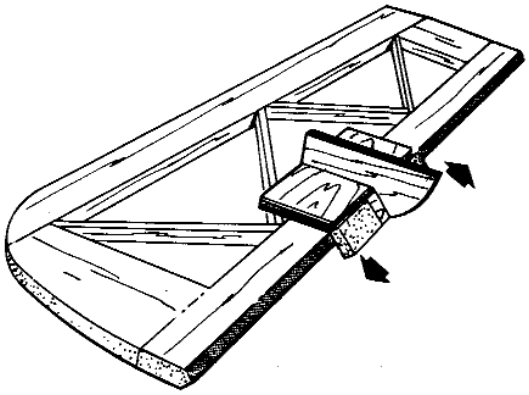
1. ☐ First glue the narrow strip to the handle. keeping it square, as shown below.

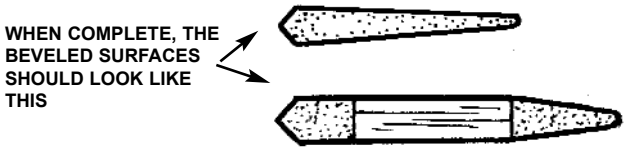
☐ Then, glue a wide strip to the handle and the narrow strip, again keeping things square.





2. ☐ Cut a strip of 100-200 grit sandpaper to fit tool and tack-glue in place, as shown above.





3. ☐ Tape the trailing edge of the elevator and the rudder to the work surface.

☐ Using the beveling tool as shown, sand the leading edges to the center line.

☐ Turn the parts over and repeat the beveling on the other side of the leading edges.

COVERING THE AIRCRAFT

INTRODUCTION

There are several ways to cover the frame of a model airplane. Years ago, the open framework of most airplanes was covered with a combination of tissue (or silk) and dope; the solid structures were painted. Today, most models are covered with polyester films that resemble either a painted finish or a fabric finish. These films are easy to apply and actually increase the strength of the aircraft. The easiest way to finish your model is to cover it in one color, but as you become more proficient, you will devise fancier trim schemes.

The following instructions describe the general procedure for covering a model. However, **it is important to carefully read the instructions that come with the film, as different products are applied in somewhat different ways.**

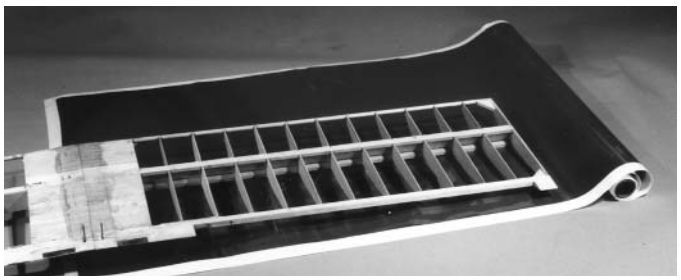
PREPARATION

Any irregularities in the wood surface will show on the covering, so a good covering job MUST be preceded by careful sanding, filling of nicks and dents (we recommend *JET* Model Mate™ balsa filler), and then more sanding. For the final sanding, use fine sandpaper (240-320 grade) and a sanding block.

IMPORTANT: Before starting, it's a good idea to do a lay out of the covering pieces you will need to cut from the covering rolls, so that you make efficient use of your material. **BE SURE TO LEAVE EXTRA MATERIAL** (1½" to several inches) around all pieces, so you will have plenty of covering to go around the edges of each section.

Generally, one first covers the wing, then the tail, and finally the fuselage. Other small parts (such as the hatch) are covered separately.

Set the covering iron to the proper temperature. Test it by laying a small strip of covering over a scrap piece of balsa and firmly pressing with the iron. Make sure the iron is hot enough to activate the adhesive, but not so hot that it burns the covering.



COVERING THE WING

Using a fresh model knife blade or razor blade, cut a piece of covering material at least 1" larger than one-half of the inboard wing bottom panel.

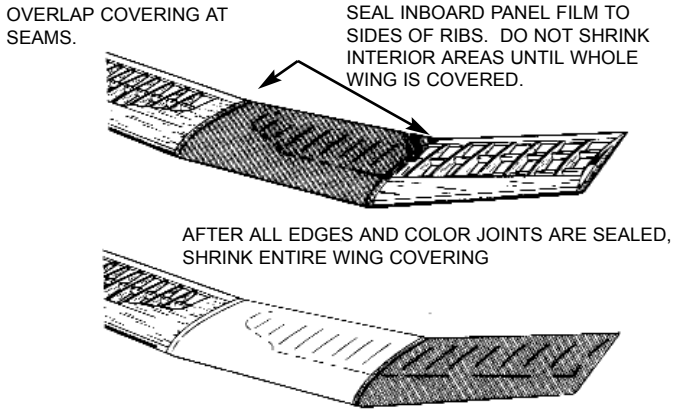
Remove the protective backing paper and lay the covering over the **bottom** of the wing, making sure there is enough excess material for wrap-around at the L.E., T.E., and wing tip.

HINT: Leave a minimum of 3" excess at the wing tip.

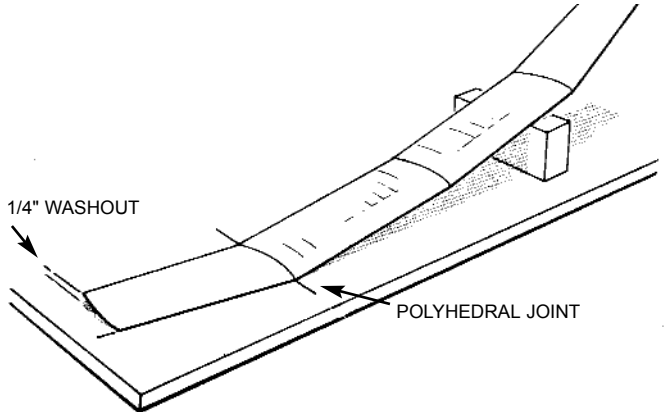
For inside corners, follow the instruction that come with your covering, as different materials may require slightly different techniques.

Using your iron, secure the covering to the wing. Shrink the covering tight according to instructions. Neatly trim off any surplus.

Following the same procedure, cover the remainder of the wing bottom and then cover the wing top. Be sure to overlap all seams adequately, as there must be sufficient overlap to allow for the shrinkage.



TRUING THE WING & SETTING WASHOUT



IMPORTANT: After the wing has been covered, you must check to make sure it is free of warps. **This is a very critical step and should not be rushed or omitted.**

To detect warp,.set each section of the wing on a flat surface and make certain the panel sits flat. To counter any warp, twist panel slightly in the direction opposite to the warp and hold this position while gliding the iron over the covering to re-tension the structure. Repeat process until the panel is true. NOTE: The T.E. of the wing tip will rise up about 1/4" from the flat surface.

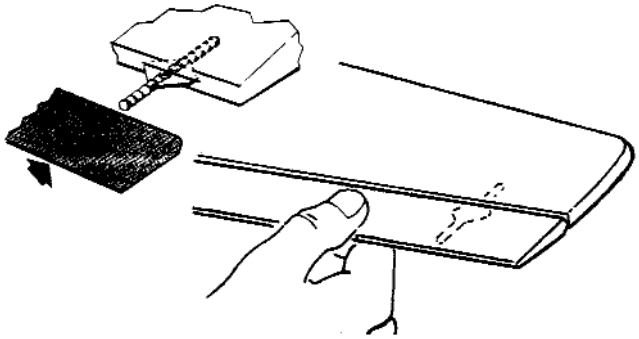
COVERING THE TAIL & FUSELAGE

Cover all tail components (the stabilizer, the elevator, the fin, and the rudder), following the same procedure as with the wing. The component pieces should each be covered separately, before assembly. Then, the covering should be carefully removed from the areas to be glued, so that a strong WOOD-SURFACE-TO-WOOD-SURFACE adhesion is achieved.

Cover the fuse bottom, sides, and finally the top, again, making sure the pieces are large enough to allow for overlap.

IMPORTANT: Once the tail sections have been covered, and while the hinge locations are still fresh in your memory, **IMMEDIATELY slit the covering to open up the hinge slots.** (Refer to the plan for help in locating the hinge slots.)

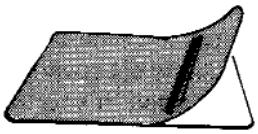
INSTALLING HINGES



After locating and opening the hinge slots, insert and glue a hinge into each of the stab slots. Let the glue wick into the slots and allow to dry. Then, attach the elevators by inserting the other half of each hinge into the elevator slots. Again, glue and allow to dry. Repeat this procedure to attach the rudder to the fin.

When the glue has dried, firmly pull at each hinge location to make sure the bond is secure. FAILURE TO FIRMLY INSTALL HINGES CAN LEAD TO LOSS OF CONTROLL AND A CRASH. Periodically check control surfaces to make sure the bond has not weakened.

APPLYING DECALS

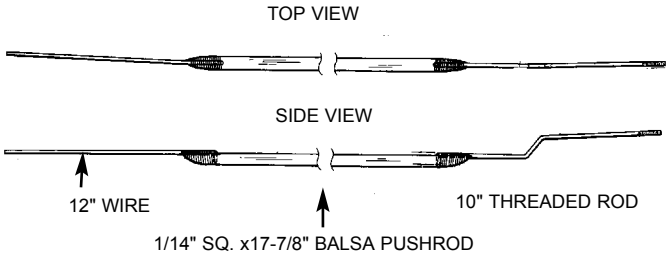


Clean the model surfaces thoroughly before applying decals.

Cut the decal sheet into sections, as needed. Fold the decal in half, front to rear. Then open at the fold and lay the decal out flat. The protective backing will bubble away from the decal at the fold location.Using a scissors, cut the backing along the bubble, removing about a 1” wide strip of backing. Carefully position the decal on the model and, working from the center out, rub the decal down while peeling off the backing.

It is also possible to make custom decals. Special cutting machines, hooked up to computers, allow one to create almost any design for application on the model.

CONSTRUCTING THE RUDDER PUSHROD

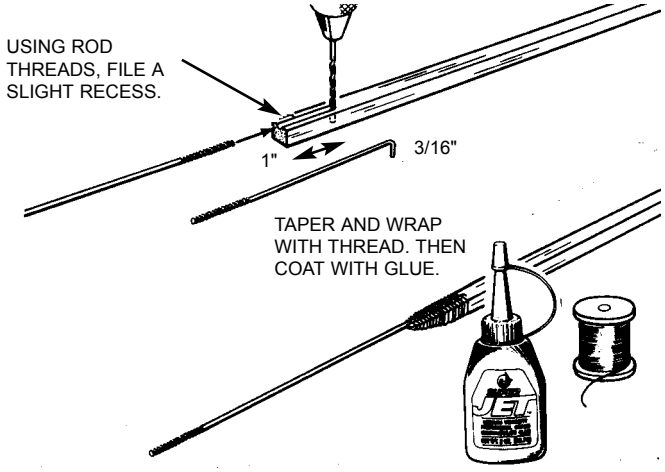


1. ☐ To construct the rudder pushrod, place the 10” threaded rod over the plan, with the threads on the snap link location.

☐ Following the drawing on the fuse, bend to the shape shown.

☐ Next, carefully bend the non-threaded end at a right angle and cut off the excess, leaving about 3/16" which will fit into the wood.

2. ☐ Taking the 1/16 x12" wire, measure 3/16" from one end and again make a right angle bend.



3. ☐ Place a 1/4" square balsa pushrod over the plan and trim to size. if necessary.

☐ Make a pencil mark 1" from each end.

☐ Using a 1/16" drill, make a 3/16" deep hole at each mark.

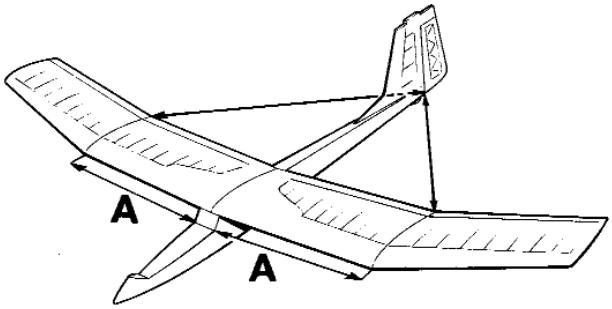
4. ☐ Using the threaded end of the 10" wire, make grooves in both ends of the balsa rod, so that the wire can be recessed into the wood.

5. ☐ Insert the bent end of each wire into the drilled holes each end of the balsa pushrod.. Then, glue the two wires in place.

6. ☐ When the glue has dried, use sandpaper to round the corners and taper both ends of the balsa pushrod.

☐ Referring to the above drawings, bind the wires to the wood with strong thread and re-glue the entire area.

WING/FUSE ALIGNMENT



1. ☐ Position wing dowels so that they protrude equally out of both sides of the fuse and glue in place.

2. ☐ Using #64 rubber bands, mount the wing on the fuse. Then, measure carefully from the fuse sides out to the polyhedral breaks (arrows "A"), making sure that the wing is centered.

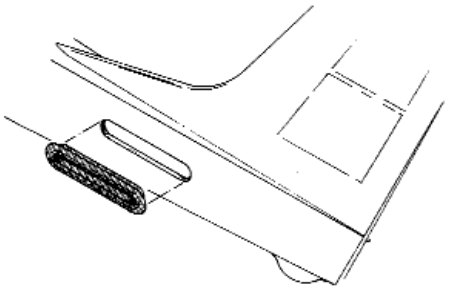
   ☐ Next, measure from the polyhedral breaks to the back end of the fuse. Mark the wing and the fuse with matching line-up points (colored tape or washable marker).

3. ☐ Fit the stab onto the top of the fin, making sure the alignment is square.

   ☐ Trace the area where the stab meets the fin and carefully remove the covering on the inside of the trace lines and on the top of the fin. **Do not cut into the wood and keep 1/8" inside the trace lines.** Then epoxy the stab to the fin.

4. ☐ Reinforce the structure by gluing 5/16" triangle stock under the stab, on each side of the fin.

INSTALLING PUSHROD



1. ☐ Cut the covering at the pushrod exit location on the left side of the fuse. Install the nylon pushrod exit guide and glue in place.

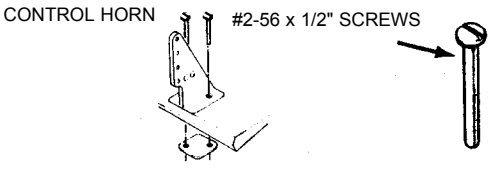
2. ☐ Referring to the plan, mark the location of the rudder control horn.

   ☐ Without attaching the snap links, Insert the pushrod into the fuse at the wing rest area and going back to the rudder. Make sure the threaded rod heads straight to the control horn location. If it does not, make any necessary adjustments.

   ☐ Move the pushrod back and forth to simulate the servo action. Remove the pushrod for adjustment, if necessary, to achieve a smooth operation.

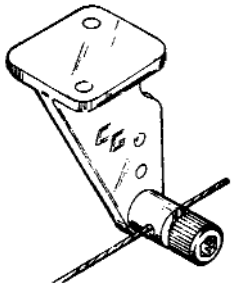
TO OPEN, INSERT BLADE OF SCREW DRIVER AND TWIST.

3. ☐ When satisfied with the installation of the pushrod, install the mini-snap link onto the threaded end of the pushrod. Use a screw driver blade to open the link. Holding the pushrod wire with a pliers, twist a mini-snap onto the threaded rod, so that the rod can be seen in the center of the snap link.



4. ☐ Again referring to the previously marked control horn location, install the control horn on the rudder.

   ☐ Adjust the pushrod, as necessary, and connect the mini-snap to the 2nd closest hole to the hinge.



5. ☐ Referring to the plan, mark the location of the elevator control horn on the elevator.

6. ☐ Snap a pushrod connector body on the last hole of the elevator control horn.

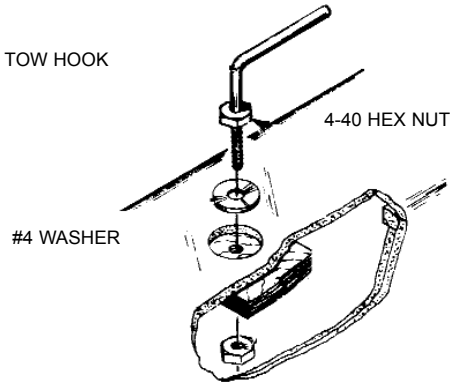
☐ Slide the stranded brass cable through the nylon guide tube and through the hole in the connector body, as shown above.

7. ☐ Tighten the set screw with the cable extending through about 1/4" past the connector body.

8. ☐ Return the control horn to the previously marked spot on the elevator and screw in place.

☐ Grasp the servo end of the cable and work it back and forth, making sure that the movement is smooth.

INSTALLATION OF THE TOW HOOK & CANOPY HOLD-DOWN

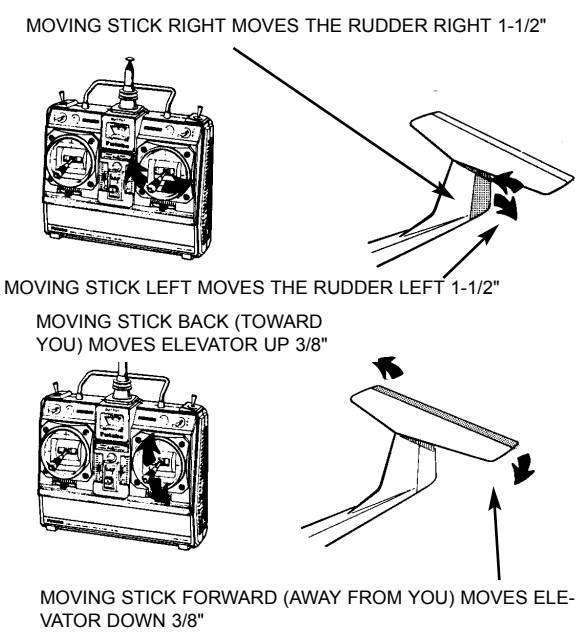


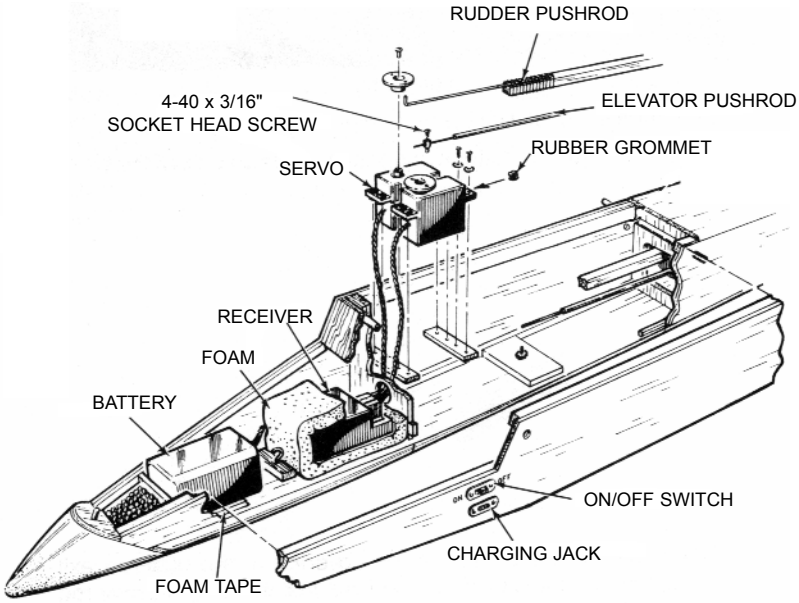
1. ☐ Install the tow hook, as shown above.

2. ☐ Glue a brass screweye mount to the canopy platform and fuselage bottom.

☐ Install the screweyes and rubber band for canopy hold-down.

RADIO INSTALLATION





NOTE: Before installing the radio, read and follow the instructions included with your radio. Also make sure the batteries are fully charged and the pushrods are in place and connected to the control horns. The wires at the front end of the pushrods should have excess length, reaching close to former #2.

ASSEMBLE & TEST THE RADIO BEFORE INSTALLATION

1. ☐ Move the control stick from side to side. Apply tape (on which you can write) to the receiver plug which goes to the servo that moves. Mark this wire "RUD." (If your receiver doesn't have separate plugs coming from it, but does have places for the servos to plug in, apply the tape nearby, so that you can mark "R" opposite the appropriate plug-in location.

2. ☐ Move the control stick up and down (away from you and towards you). Mark the appropriate plug or plug-in location "ELEV" or "E."

Note that the servo functions are determined by where they are plugged into the receiver. Be sure to assemble them the same way each time, so that the servos give you the proper responses.

INSTALLING THE RADIO

1. ☐ With the pushrods installed, tape the pushrod-wires beneath the wing rest strip, so they will be out of the way.

☐ Insert the soft rubber grommets supplied with the radio into the mounting holes of the servos.

☐ Measure from the bottom of the servo to the underside of a grommet and add 3/16" to this measurement. The total is the height from the fuse floor to the top of the servo rail.

2. ☐ Mark the inner sides of the fuselage at the correct location for the servo rails.

3. ☐ Notch one of the rails so that the cables will clear the area as they exit from the servo. This will be the forward rail.

☐ Using either Super Jet or Jet epoxy, glue the forward rail in place.

4. ☐ Placing one servo on the forward rail, determine the location for the back rail, allowing approximately 1/16" clearance, so that the servo can be removed easily.

☐ Glue the rear rail in place.

5. ☐ Place both servos in position, with approximately 1/16" between them, and mark through the grommets for the location of the servo mounting screws. Remove the servos.

☐ Using a 1/16" drill bit, drill holes though the rails for the servo screws.

6. ☐ Determine which is the elevator servo and which is the rudder servo. Locate the rudder servo on the left and the elevator servo on the right, as shown on the plans.

☐ Gently fasten the servos to the servo rails with #2x3/8" sheet metal screws.

7. ☐ Untape the pushrod wires from the fuselage sides and hook them up to the appropriate servos.

8. ☐ Mount the battery pack (which is the heaviest piece of equipment) as far forward as possible. Secure it to the floor of the fuse with foam-backed servo mounting tape, making sure the final battery position does not interfere with the canopy fit.

NOTE:YOU MUST ALWAYS USE FRESH DRY CELLS OR FULLY CHARGED NICADS FOR FLYING.

9. ☐ Wrap the radio receiver carefully in foam rubber, making sure the antenna wires extend outside the foam. **Do not cut the antenna wires.**

☐ Place the receiver just to the rear of the battery pack.

☐ Drill a small hole in the bulkhead and thread the antenna further back, under the wing rest rails and through the fuse.

☐ Drill a small exit hole in either side of the of the fuse, just before the rear former, and thread the antenna out through it.

☐ Lead the antenna to the top of the fin and scotch tape in place.

10. ☐ Referring to the plan and the radio installation diagram at the beginning of this secion, mark the side of the fuse for the switch location.

☐ Cut a hole in the fuse side, making sure it is long enough to permit the switch button to move freely to both the “On” and “Off” positions.

☐ After determining which is the “On” position, mount the switch with the “On” setting forward. Install with the switch screws.

☐ On the outside of the fuselage, clearly mark which is the “On” and the “Off” setting with the decals provided in this kit.

11. ☐ Mount the charging jack in the fuse side, using the same method as was used with the switch.

12. ☐ Gather all excess wires and cables together behind the receiver and store by holding down with foam.

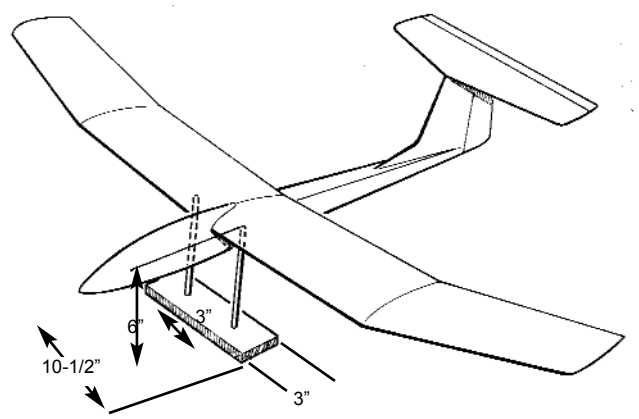
13. ☐ Switch on the radio system and set the control surfaces as follows.

☐ With the elevator trim tab on the transmitter set in the center position, adjust the elevator mini-snap until the top of the elevator is flat with the top of the stab.

☐ With the rudder trim tab set in the center position, adjust the rudder mini-snap until the rudder points dead straight ahead.

BALANCING THE AIRCRAFT

IMPORTANT: NEVER NEGLECT THIS STEP WITH ANY AIRPLANE. If you try to fly a plane with the balance point behind the recommended range, you run the risk of having an unstable aircraft and the strong likelihood of a crash. **TAKE THE TIME TO PROPERLY BALANCE YOUR MODEL!**



1. ☐ Refering to the plan, locate a point about 1/3 of the way back from the leading edge of the wing. This is the center of gravity (C.G.). When all equipment is installed, your model must balance at this point.

DO NOT ATTEMPT TO FLY YOUR AIRCRAFT UNTIL YOU HAVE BALANCED IT CORRECTLY.

☐ Although it is possible to balance a model by perching it on the thumb and forefinger of your left hand while steadying it with your right hand, a much better way to to set us a balancing stand as shown above.

2. ☐ Use two 1/4” dowels with rounded tops, spaced far enough apart to clear the fuselage. Mark the C.G. on the underside of the wing and set the model on the dowels at that location.

3. ☐ Referring to the plan, slide the 1/16” ballast bulkhead (former) forward until it is snug and glue in place.

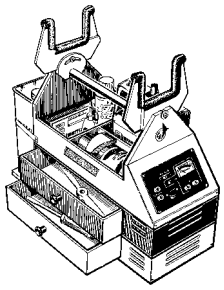
☐ Add lead weight in the nose area shown until the fuselage is parallel to the base of the balancing fixture.

☐ Mix some epoxy and pour it over the lead. When hardened, it will secure the ballast permanently.

FLYING YOUR SOPHISTICATED LADY

LEARNING TO FLY

Flying R/C is both fun and challenging. As with other portions of this book, the following section is meant to introduce you to the basics. Read carefully before taking your model out to the field and attempting first flights. And remember, becoming an R/C pilot takes time and patience, but the rewards are well worth the effort.



Equipment Checklist

- ❑ Flight batteries, fully charged
- ❑ Extra battery packs
- ❑ Radio transmitter
- ❑ Battery charger
- ❑ Tools for tightening any parts that can vibrate and loosen
- ❑ Extra #64 rubber bands
- ❑ Bottle of **Super Jet™**

CHECK YOUR EQUIPMENT

Prior to going to the flying field, with radio batteries fully charged, turn on both receiver (Rx) and transmitter (Tx) and actuate all controls many times until you are satisfied with all functions.

Before beginning each day's flying, make a range check of your equipment in accordance with the manufacturer's instructions. In general, with transmitter antenna collapsed to 6"-8", you should have an at least 100 foot range on the ground. To check this, turn on both the transmitter and the receiver switches, set the model heading away from you, and walk away while transmitting signals to move the control surfaces. Watch to see that no signals are missed until you are at least 100 feet away. Only if the equipment works perfectly should any flights be attempted. Again, **be careful to not use your transmitter when anyone else at the field is flying or testing on the same frequency!**

After the range check, stand behind the model and make sure the control responses are correct. Moving the control stick to the right should give right rudder (on a 3-channel set-up) . Moving the stick back or down on the Tx should move the elevator up, and vice versa. Finally, make sure that everything on your aircraft is neatly and firmly in place-motor fastened down, servos snugged down, receiver and battery wrapped in foam rubber, etc. The receiver antenna must be extended, not coiled up inside the model. Nothing should be loose, or unfinished, or unchecked.

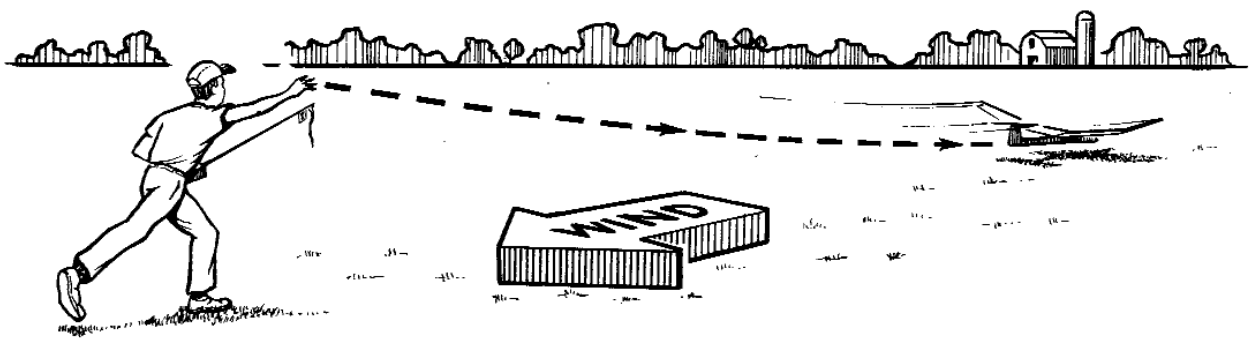
With transmitter and receiver switched on, hand launch the model directly into the wind. Gently correct the flight path as necessary. If any adjustments are needed to maintain straight and level flight, get experienced help to move the clevises.

In flight control. most of the beginner's trouble comes from over-controlling or holding a signal too long. It is better to operate your transmitter slowly and smoothly.

A troublesome tendency is letting the model get downwind. New flyers should try to keep the model upwind at all times prior to the landing approach.

If you are a novice, seek the help of an experienced flyer. Do not hesitate to ask one of the better flyers at the field for help. Usually, they are glad to spend a little time to get somebody started right, and they very likely were helped in the same manner themselves.

An experienced R/C flight instructor is strongly recommended for learning how to fly.



WHERE TO FLY

Fly only in areas sanctioned for R/C and known to be free of radio interference. Ask your hobby dealer or other modelers if there is an R/C flying field that is used by a local R/C club. This is the ideal place to fly. If you don't know of an R/C club nearby, contact the Academy of Model Aeronautics (AMA), at the address on the front of this booklet, for information on a club in your area. Remember: R/C flying fields need to have rules to help prevent accidents, so ask about them before you turn on any of your equipment! **DO NOT TEST your transmitter in the parking lot or anywhere nearby until you are sure no one else is using your radio frequency. This could cause another flyer to crash and make you very unpopular!**

If there is no club or other R/C flying site available, locate a square area (preferably a grassy field), at least **four or five football fields long**, which is free of power lines, trees, poles, houses, busy streets and other obstructions. It must be at least three miles away from any areas where other R/C models, such as boats or cars, are operated. It should also have a relatively smooth surface, as it will take practice to learn precision landings. If you find a suitable location, turn your receiver on for 2 or 3 minutes to check that no one in the vicinity is operating an R/C device which could affect your receiver and cause your plane to crash.

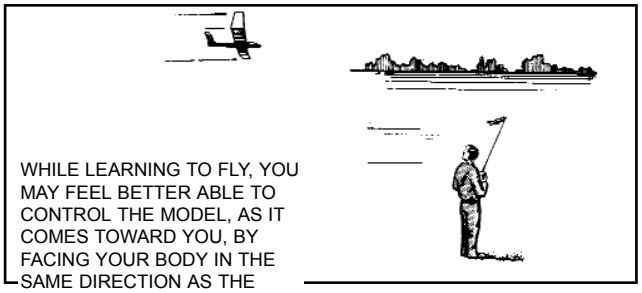
THERMAL FLYING

Thermal soaring is a very popular activity which you can enjoy with your **Sophisticated Lady**. But before you start launching, let's take a few moments to discuss what a thermal is and how to use it.

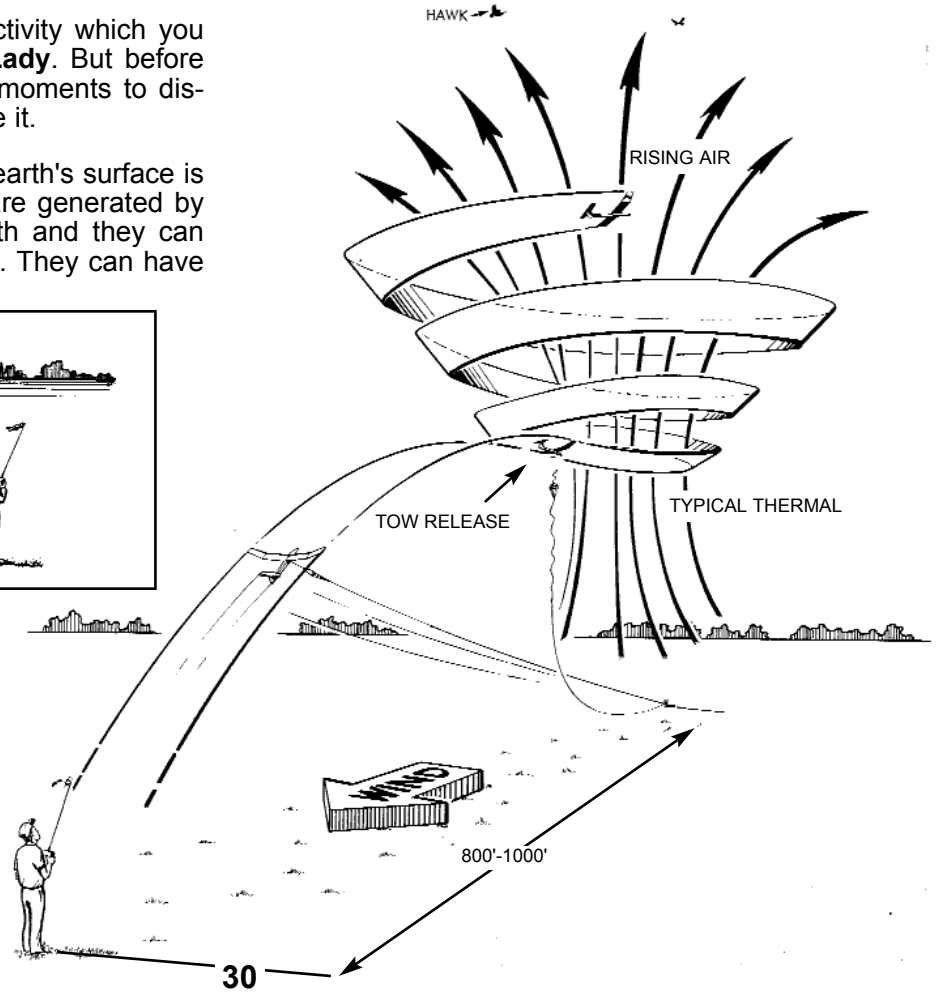
A column of warm air rising from the earth's surface is known as a thermal. Such columns are generated by the sun's uneven heating of the earth and they can reach altitudes in excess of 4000 feet. They can have a diameter of as much as 1000 feet. Thermals tend to originate at fixed locations, such as plowed fields, parking lots, or paved road - anywhere that the temperature of the surface is likely to vary from the temperature of surrounding areas. Thermals are also known to be cyclic and, depending on the conditions, can be generated fairly regularly. It is appears that the time between the hours of 10:00 a.m. and 2:00 p.m., when the sun is at its highest angle, are the most productive. Keep all of this in mind while flying at your particular flying site.

Thermals can achieve very fast rates of climb. Coupling this fact with the potentially large diameter, it is easy to see how one might find it difficult to escape the clutches of a real "boomer."

The strategy for thermal flying is basic. Launch your **Sophisticated Lady** via a high-start, winch, or hand-tow and start searching for a thermal in areas likely to be a good thermal generator. Watch your model for signs of vertical movement or buoyancy. Keep flying in this area, using a series of large flat turns to find where the thermal is the strongest. Once you've located the center, circle tighter to keep your model in the fastest rate of climb. If there is any wind, drift downwind with the thermal, but since you will be climbing and going downwind simultaneously, don't get carried away! With luck and a good battery pack, you can stay up for hours, using new thermals to extend your flight time. When you've had enough, simply point the nose upwind and slightly down and fly out of the thermal.



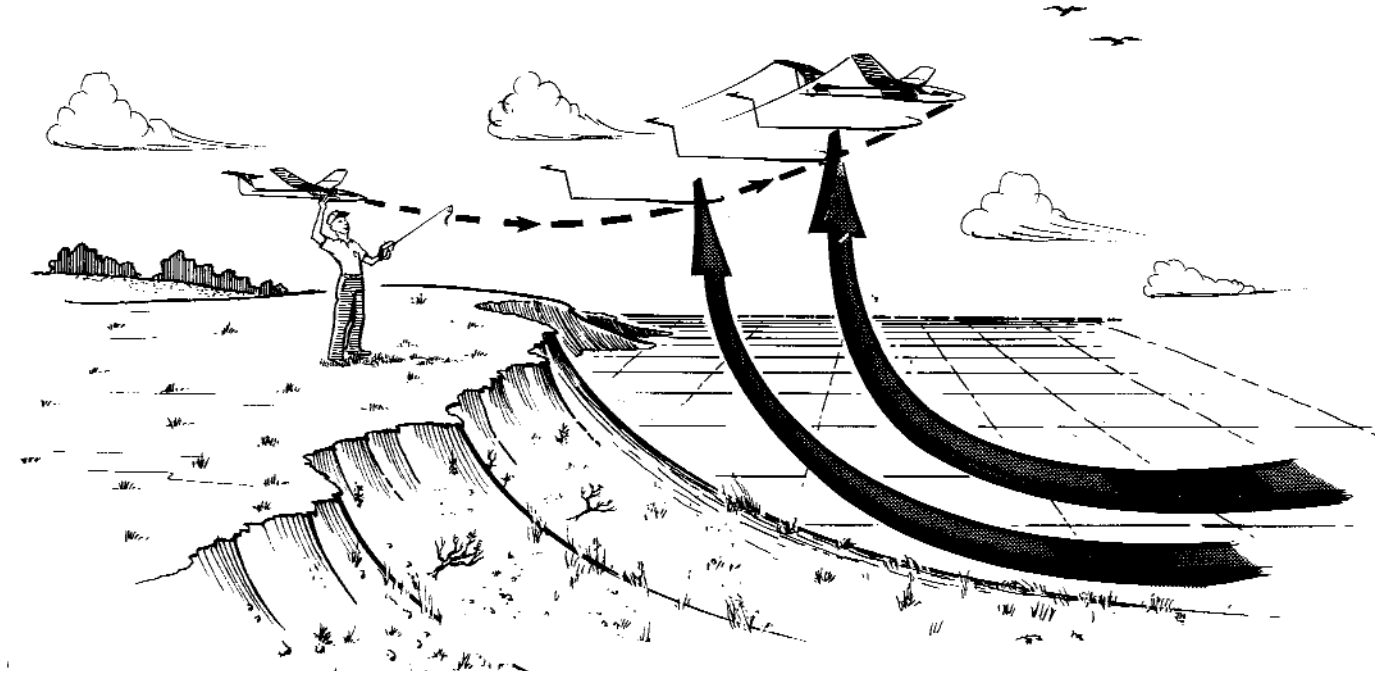
WHILE LEARNING TO FLY, YOU MAY FEEL BETTER ABLE TO CONTROL THE MODEL, AS IT COMES TOWARD YOU, BY FACING YOUR BODY IN THE SAME DIRECTION AS THE MODEL IS FLYING AND LOOKING OVER YOUR SHOULDER.

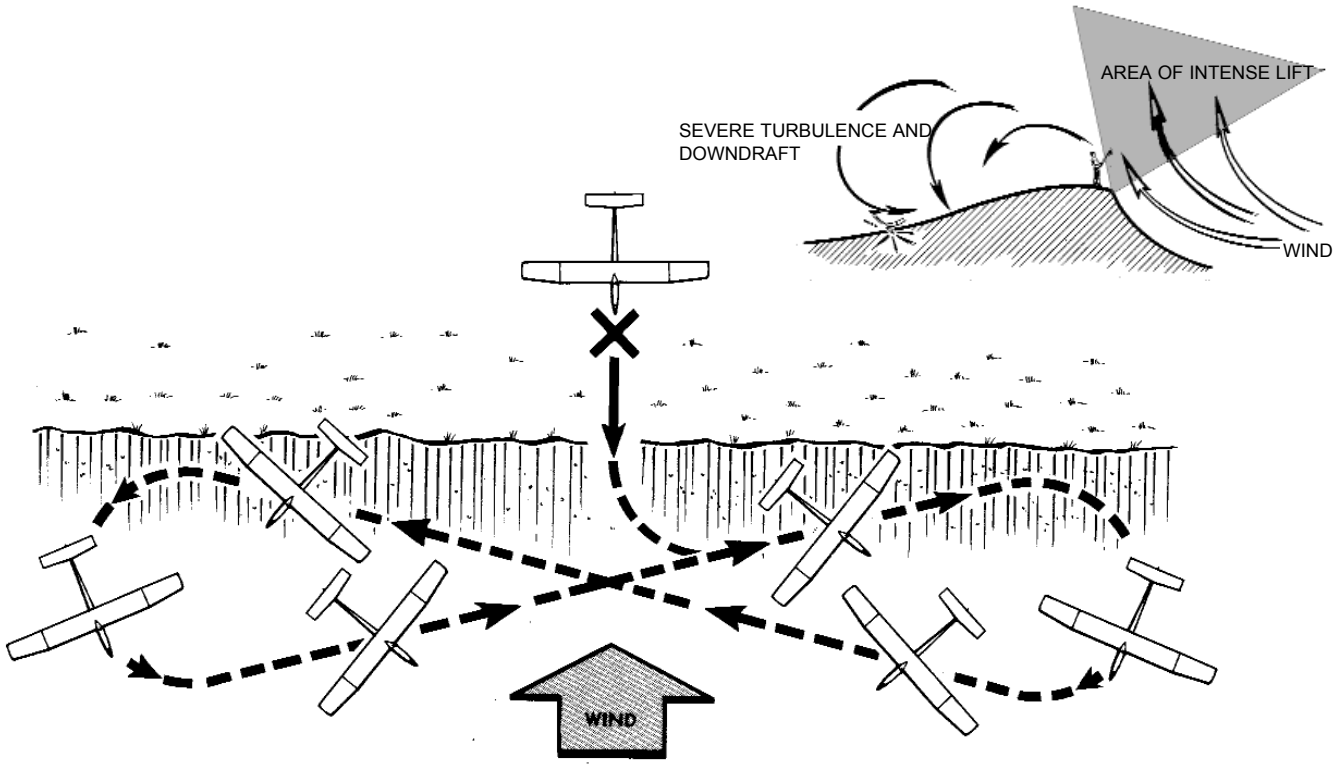


SLOPE FLYING

Slope soaring is a nice divergence from thermal flying. For a slope to be effective, the wind should, for the most part, blow directly into the face of the slope. Wind velocity is not as critical, but there should be some wind. Also, it is not necessary to be atop Mt. Everest to have slope effect. You can get some pretty good effects from areas that may surprise you, so it pays to try out even a small elevation in your area.

With the wind in your face, throw your model down the slope into the wind. Once it is out into the slope lift, the model will rise and seem to maintain a consistent altitude. Fly back and forth parallel to the face of the slope, always making turns away from the slope face. This will ensure that your model will not be blown behind the slope, where the air is very turbulent and may cause the plane to crash.





GENERAL FLYING TIPS & LANDINGS

While flying your pattern, try to maintain shall turns. Remember that the wind will tend to blow your plane further downwind. To compensate for the the wind, make upwind (flying into the wind) turns shallow and downwind turns a little steeper. It is more difficult to fly a model when it is downwind and if a mistake is made, it will be more difficult to fly back to the field.

You may wish to add ballast to your model for better wind penetration. If so, add the weight (perhaps starting with 6-8 ounces) at the center of gravity, making sure the weight is securely attached inside the model. Loose ballanst can destroy a modle in rough conditions.

Landings can be a little tricky at first, but with experience can be mastered. Make your approach from either side, keeping the nose of the model parallel to the wind. Bring the model gently up to the slope. When it is hovering 1 to 2 feet from the ground, apply down elevator to slow the model down and land. This is a little different than a normal type of landing, where you let the model float onto the gound.