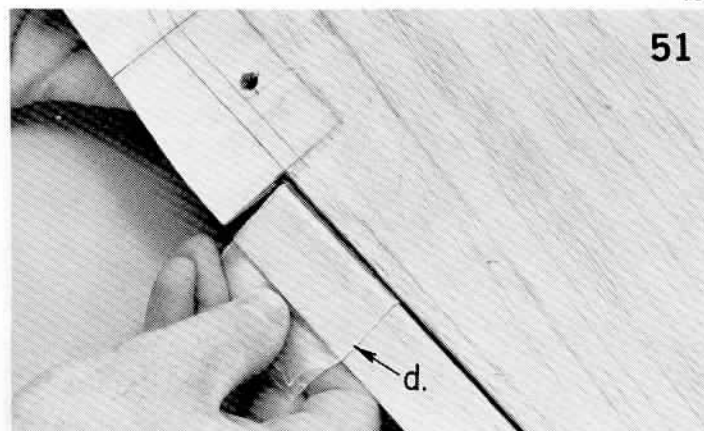
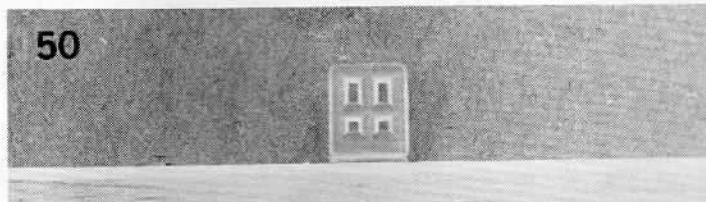


49. a. Cut the ailerons to length. This should be done on the model as a double check on exact length required.
 b. Slot the aileron to receive the aileron horn wire.
 c. Drill a 3/32" hole in the aileron to take the arm of the aileron horn wire.



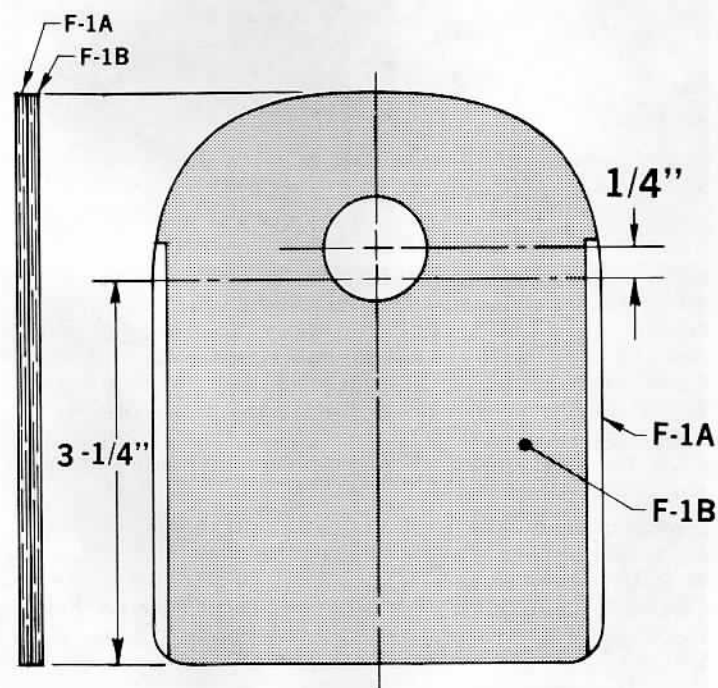
51. a. Glue the hinges into the ailerons and allow the glue to set up. (See "Hinges" box for detailed information on hinging.)
 b. Put a 1-1/2" wide strip of wax paper about 3" long, between the wing and the aileron horn wire to keep the epoxy glue that is put into the slot and hole in the aileron from being squeezed onto the wing during assembly. Then proceed with gluing the aileron hinges into the wing at the same time the horn wire is glued into the aileron.
 c. Check positioning and clearance carefully before the glue sets, making sure the aileron is correctly located.
 d. Just before the glue sets up, pull the ends of the strip of wax paper over the horn wire, squeezing the glue into a rounded shape and forming a skin over the wire.
 e. After the glue stiffens, any excess that is squeezed up over the aileron when the wax paper strip was pulled back over the horn can be picked or trimmed off before it is fully cured.



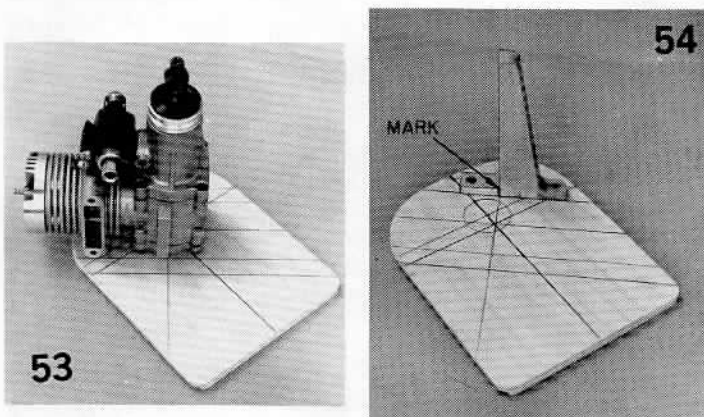
50. Fit the aileron hinges in place but do not glue them in permanently as yet.

At this point it is best to cover both the wing and the ailerons before gluing the ailerons to the wing. This is particularly advisable in the case of plastic film covering so that access to the edges of the parts is open to the iron.

FUSELAGE CONSTRUCTION

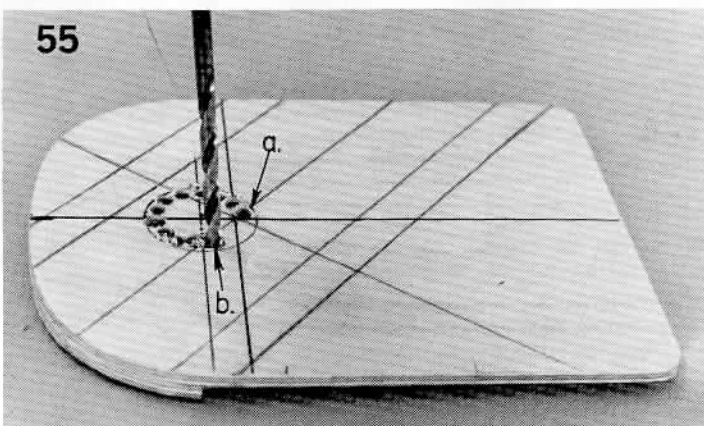


52. a. Smooth and even F-1A and F-1B with the sandpaper block.
 b. Glue them together with epoxy glue as shown in the accompanying drawing to make the firewall. If they should be warped, clamp them together with "C" clamps or put the assembly in a vise while the glue is setting.
 c. Mark the vertical and horizontal lines.



53. Place the motor you will use on the firewall and draw lines as a guide for positioning the aluminum motor mounts. (Different motors have different mounting dimensions.)

54. a. Put a mark on the sides of the mounts so that the top of the mounts can be located on the firewall horizontal line.

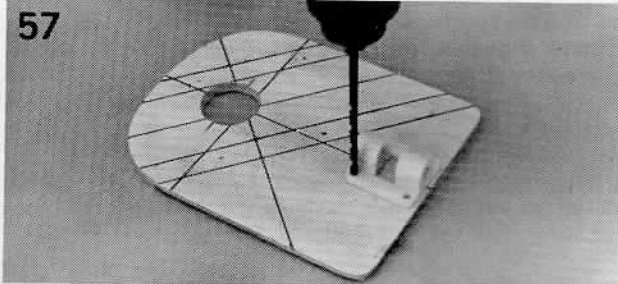
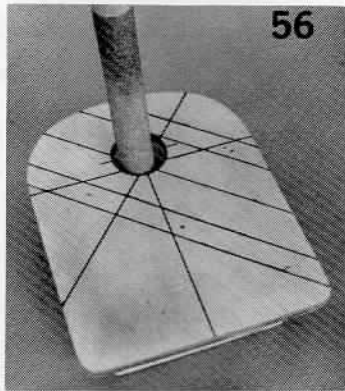


NOTE: READ "TIPS ON TANKS" IN THIS BOOK BEFORE CUTTING OUT A TANK HOLE.

55. a. Locate the center of the tank cap hole and draw a 7/8" circle on the wood.

b. Drill a series of holes on the inside of the circle.

56. Break out the wood and sand the edges smooth with sandpaper wrapped around a dowel.



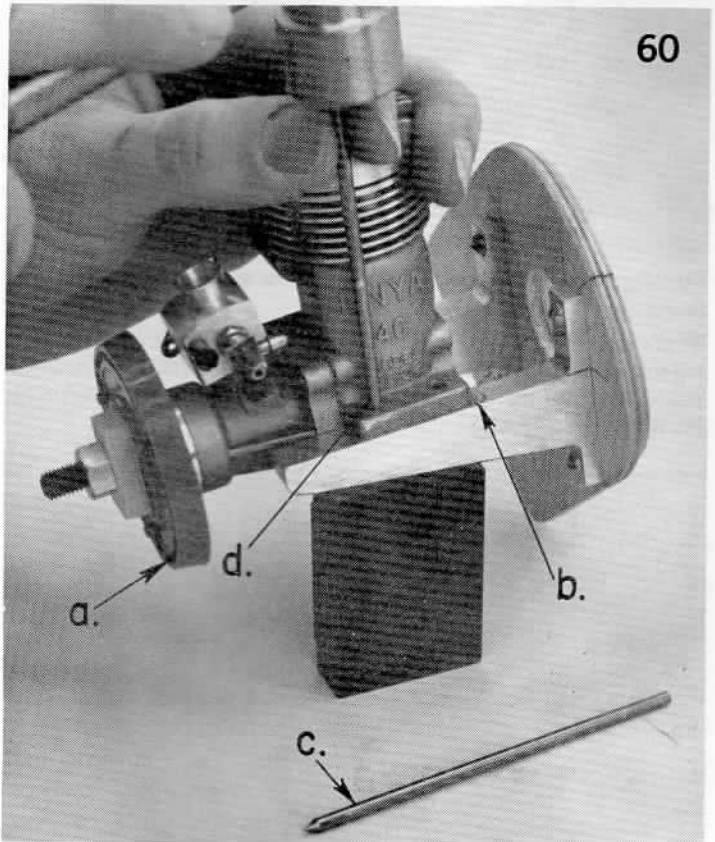
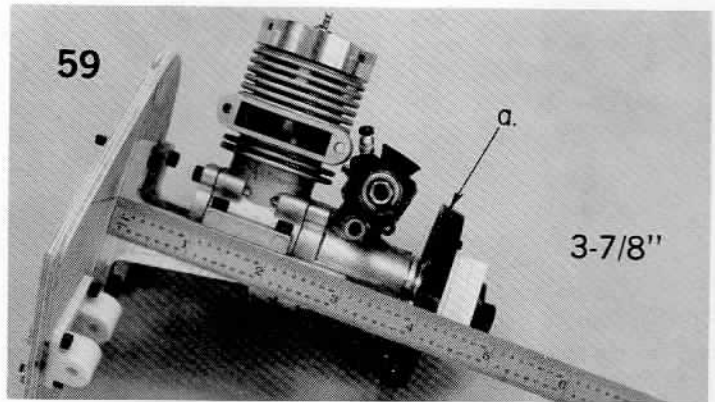
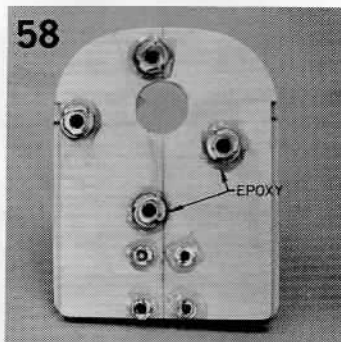
57. a. Position the nylon nose gear bearing on the firewall. Punch the hole positions with an awl or ice pick and drill out with a 7/64" bit to pass the 4-40 bolts.

b. Drill out the motor mount hole positions with a bit to pass the 6-32 bolts.

c. Turn the firewall over and drill out the backs of the 7/64" nose gear bearing holes with a bit to take the shanks of the 4-40 blind nuts. To complete the holes, take a modeling knife and round off the edges on the back of the firewall so that the rounded off part of the blind nut will fit down into the hole when it is pulled tight against the firewall.

d. Drill out the backs of the motor mount holes with a bit to take the shanks of the 6-32 blind nuts.

58. Be sure and epoxy the blind nuts to the back of the firewall so they will not come out later when it may be necessary to take off the mounts. Don't get epoxy into the threads of the bolts. Pull the blind nut points tight into the wood with the bolts before the glue sets up. With the mounts and nose gear bracket in place, cut off the mounting bolts for both flush with the face of the blind nuts on the back of the firewall. This is to prevent any chance of the bolt ends puncturing the tank or rubbing on the batteries.



60. With a punch or sharpened piece of 1/8" wire, center punch the motor mounting holes. (Hint: If you are not used to doing this sort of job, don't try to punch and drill all 4 holes at once. Punch and drill only one hole. Then put the motor back on the mounts, secured by the first bolt. Punch and drill a 2nd hole, repeat the procedure, then a third hole, etc. With this process you are much less likely to make a drilling mistake that will ruin the mounts.) Drilling our mounts will not be a problem if a good quality high-speed drill bit is used, operated at neither too fast or too slow a speed and with moderate pressure.

Important: If you are going to tap a hole in the mounts for mounting the engine, you will need a No. 35 drill. Tap out this hole with 6-32 tap. Be very careful, aluminum galls the tap easily, it may jam and break the tap. Back it out frequently and clean the fragments out of the tap threads. Use a special aluminum tapping fluid or kerosene to lubricate. Sig SH-109 6-32 x 1" socket head bolts are recommended for mounting the motor. They are not furnished because some builders may not have a tap. If you do not have access to a tap, then drill out a hole large enough to pass a 6-32 bolt and use bolts long enough to go completely through the mount. Fasten them with nuts and lock washers. It helps with this method to file a flat place on the tapered bottom of the mount so that the nut and lock washer will seat square with the bolt.

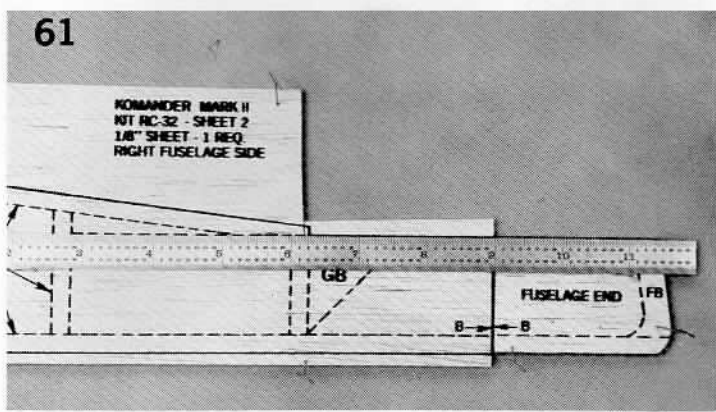
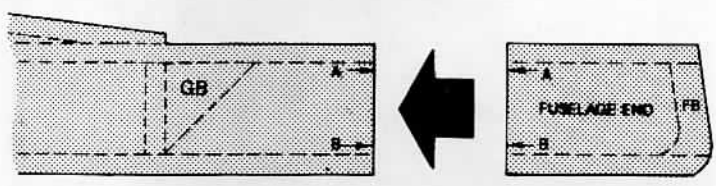
STOP! It is best to fit the cowling to the engine-firewall unit at this time, when they are easier to handle. Refer to the Cowling section further on in the instructions.

59. a. Put the spinner backplate that will be used on the motor. (Note: Some backplates have a recess in the back as does this Goldberg spinner used on the prototype Komander Mark II. This is why the measurement must be taken from the spinner backplate itself and not the prop drive washer on the motor. We recommend the Goldberg spinner because its lines blend so smoothly with the Komander cowling. A Goldberg was used on the red Komander on the label.

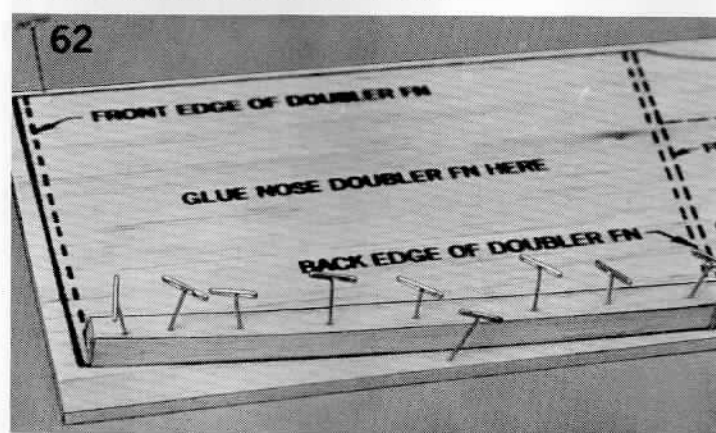
NOTE: If the fuselage sizes are bowed or warped, it will not be a problem. Pinning them down to a flat building board and gluing on the structure will flatten them out.

- b. Note the gap left for installation of Former F-2.
- c. Glue part WS in place.

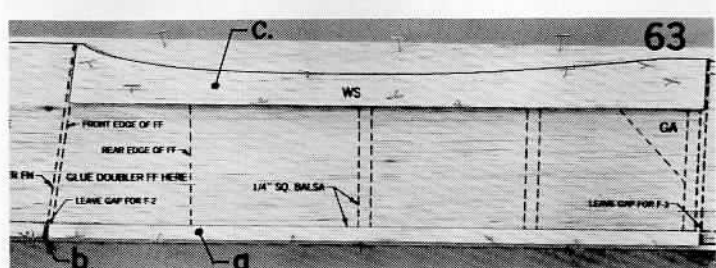
CUT OUT FUSELAGE END PIECE AND GLUE TO FUSELAGE SIDE.



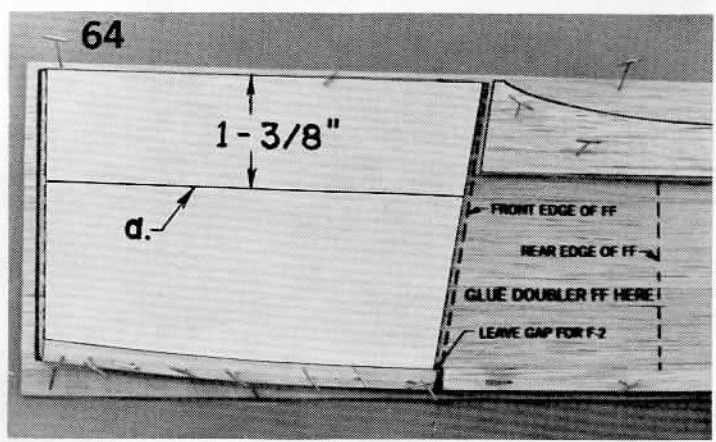
- 61.** a. Cut out the fuselage ends that are printed on the fuselage side sheets.
 b. Trim off the fuselage sheet even with the back end of the main fuselage side.
 c. Glue the fuselage end piece of the fuselage side. Use a ruler to make certain it is lined up with the fuselage.



- 62.** a. Cut a piece of 1/4" square for the bottom of the fuselage sides at the front. Glue and pin it in place. Since it must be curved to conform it to the shape of the fuselage, soak the piece in water to aid the process. If it is still too stiff to be curved satisfactorily, cut a series of slits in the inside of the curve. Put glue in the slits just before bending and pinning the piece in place on the fuselage side.

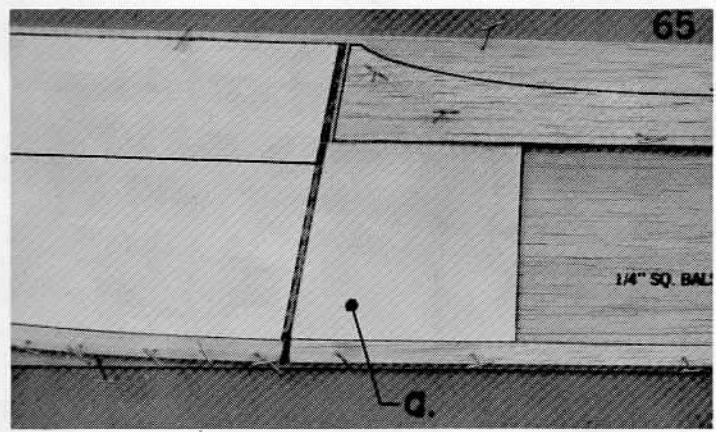


- 63.** a. Continue on down the fuselage, gluing on the next piece of 1/4" stock.

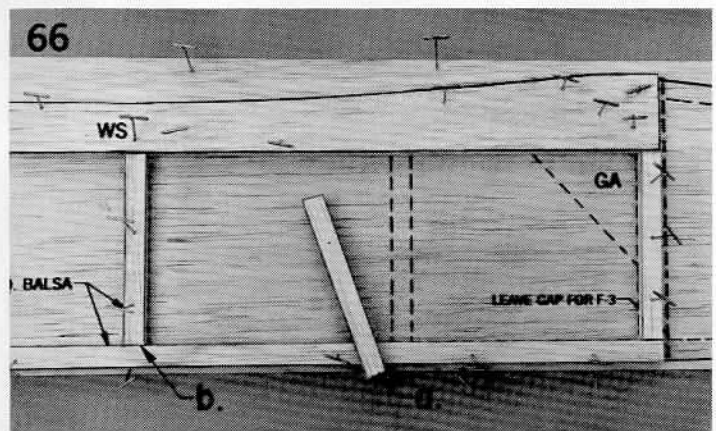


- 64.** a. Draw a reference line on FN that will later be used for the tank floor installation. The drawing shows the measurements for locating the line.
 b. Glue Lite-Ply doubler FN in place.

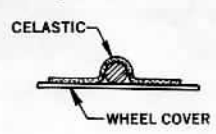
CAUTION: Epoxy is recommended for FN. Water base glues such as Sig Bond, Tite Bond, Elmer's etc. may cause curling because of the large area being glued. Spread a thin film of epoxy with a paddle. Don't use a large amount of glue — it will add unnecessary weight to the model.



- 65.** a. Add Lite-Ply doubler FF.

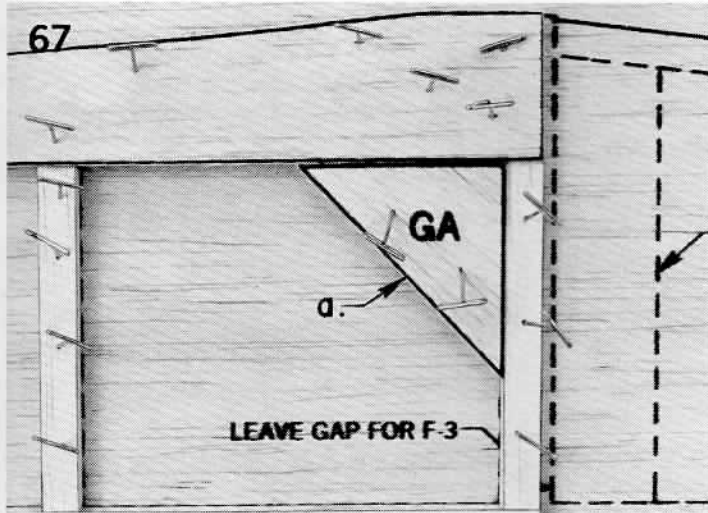


- 66.** a. Cut 1/4" sq. pieces to fit between WS and the bottom 1/4" sq. stringer. b. Glue and pin them in place.

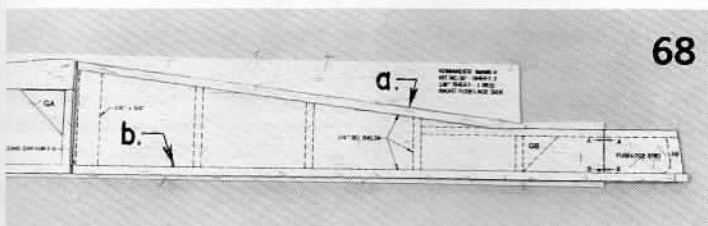


WHEEL COVER NOTE:

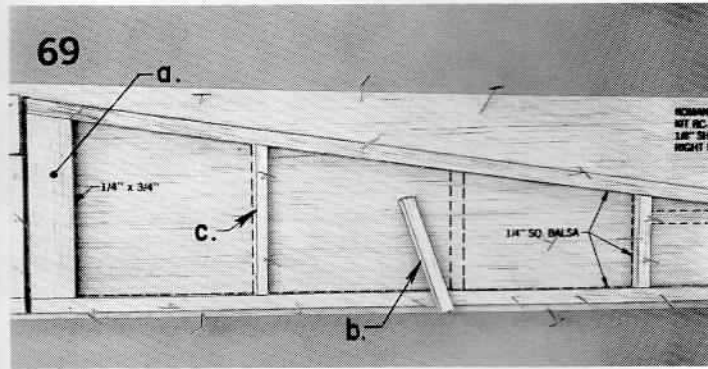
The stiff, grayish material included in the kit is Celastic for fastening the plastic gear cover to the landing gear wire. To apply, first sandpaper the wire to a clean, bright finish. Cut a 1" x 6" strip of Celastic and dip it in acetone or butyrate dope thinner. It will become pliable. Form the Celastic strip over the landing gear wire and against the plastic cover, pressing the Celastic in place.



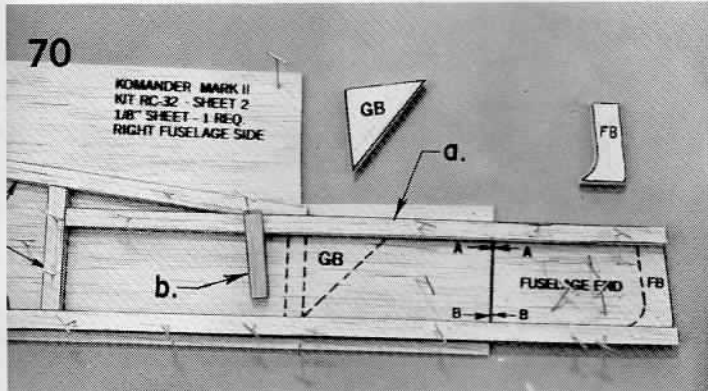
67. a. Glue and pin gusset GA in place.



68. a. Glue a piece of 1/4" sq. to the top of the fuselage rear section.
b. Glue another piece of 1/4" sq. on the bottom.

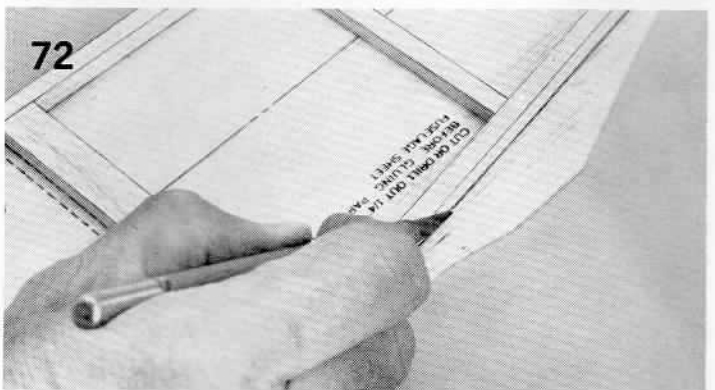
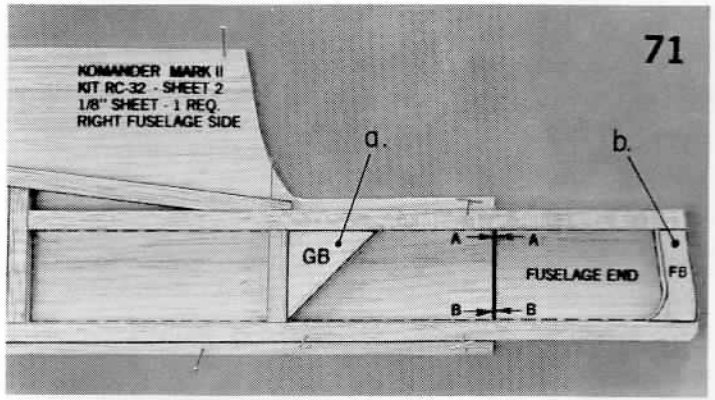


69. a. Glue a piece of 1/4" x 3/4" scrap from the leading edge to the fuselage side as shown.
b. Cut pieces of 1/4" sq. to fit.
c. Pin and glue them in place.

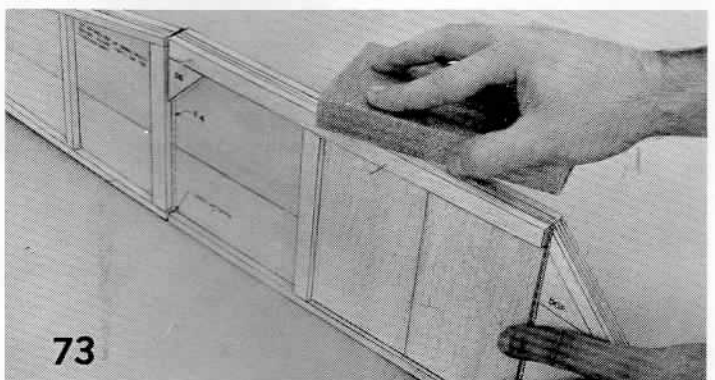


70. a. Glue on the 1/4" sq. piece that is on the top of the fuselage side at the rear.
b. Add the 1/4" sq. upright.

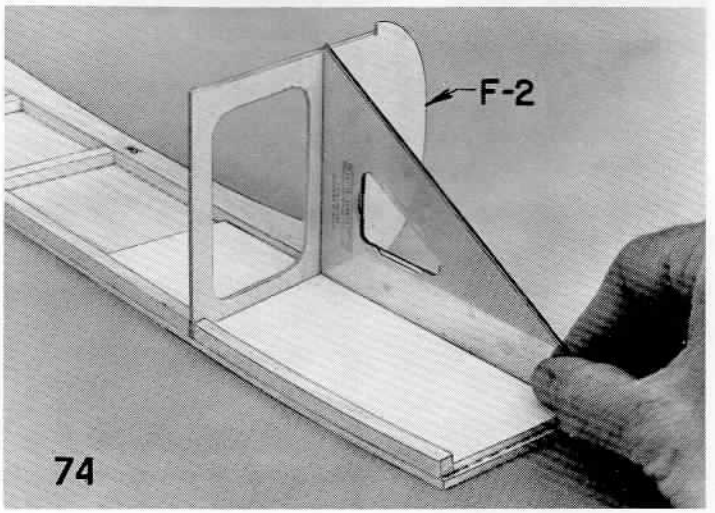
71. a. Glue gusset GB in place.
b. Add part FB



72. Cut the fuselage sides from the sheet with a modeling knife. Don't cut too close, leave a bit for sanding, cutting too close can result in too deep a cut that is harder to fix than taking down the side a little with the sanding block.



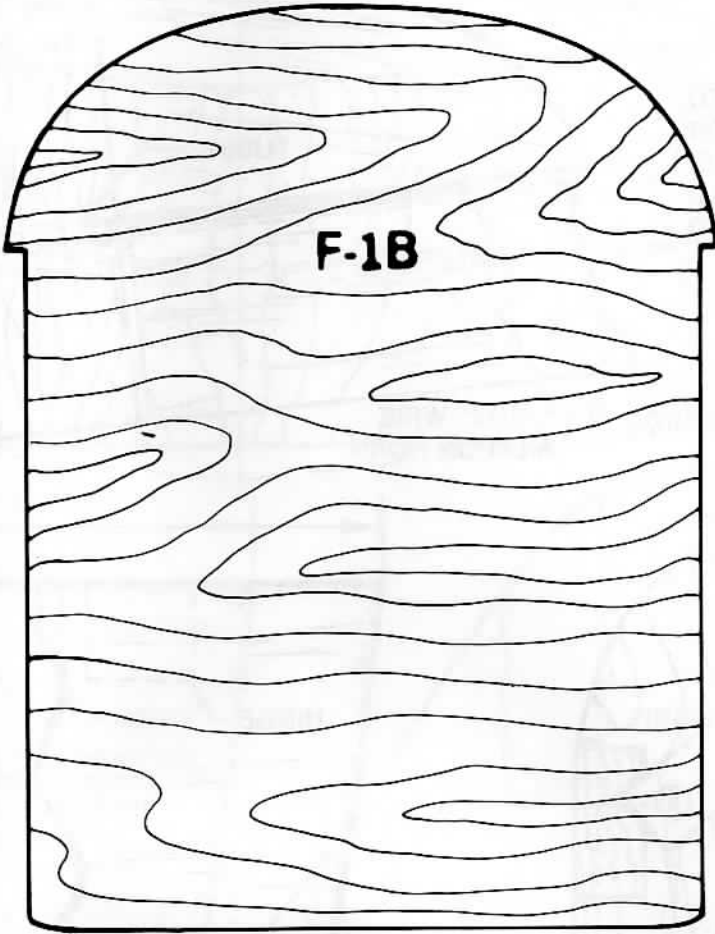
73. Finish the side to exact contour by use of the sanding block. Place the two sides together and match them by sanding as required to make the duplicates.



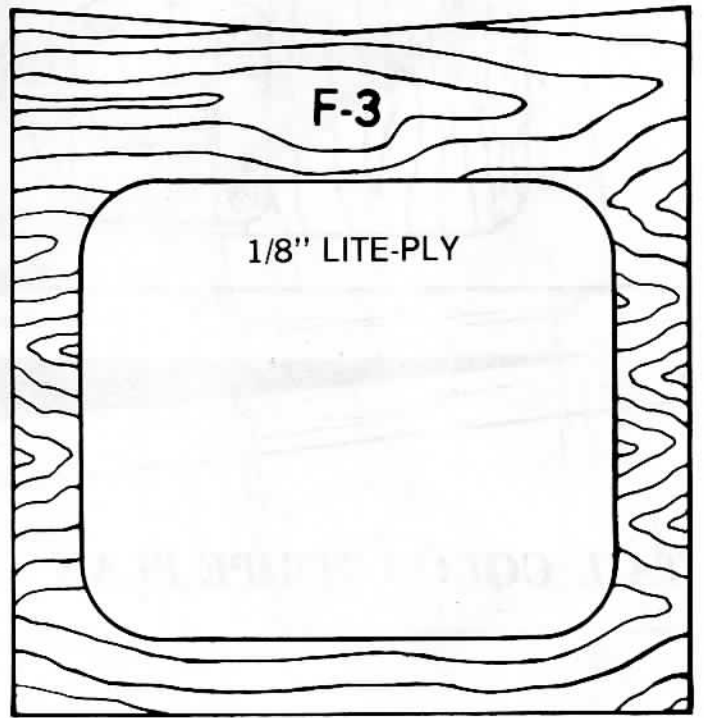
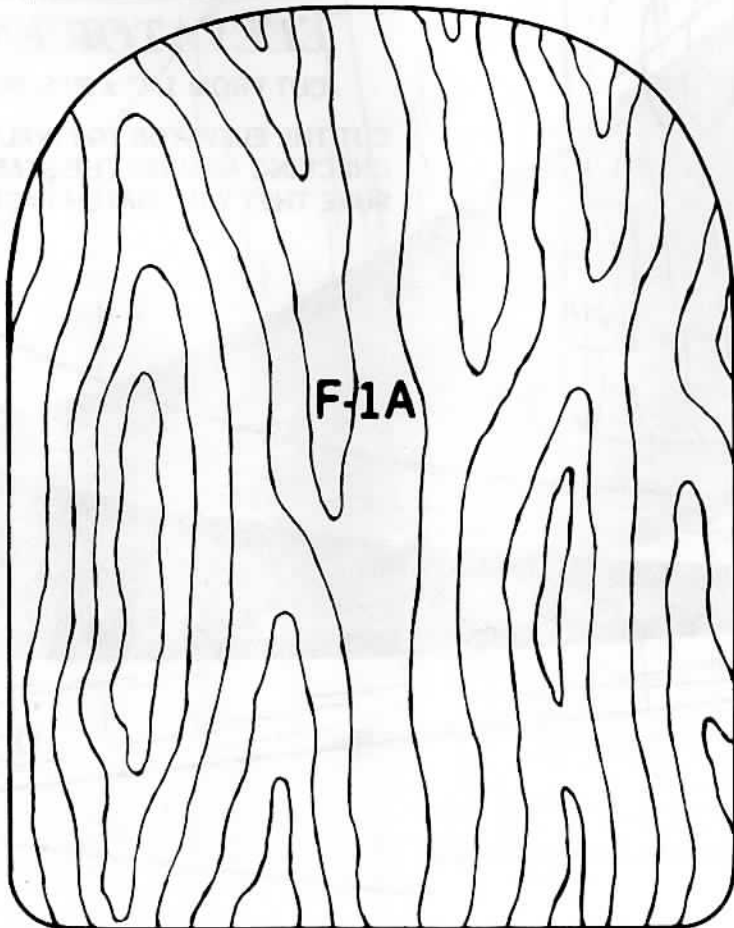
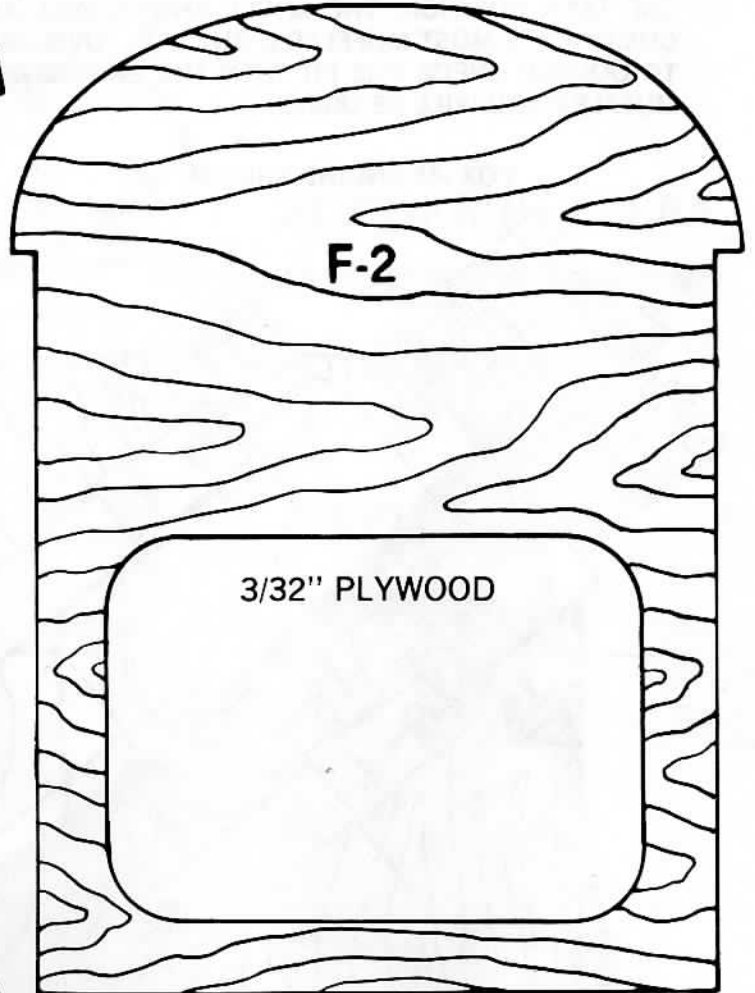
74

PLYWOOD PARTS

PATTERNS FOR DIE-CUT PARTS ARE SHOWN FOR THE CONVENIENCE OF THE BUILDER IN CASE REPAIRS SHOULD BE NECESSARY.



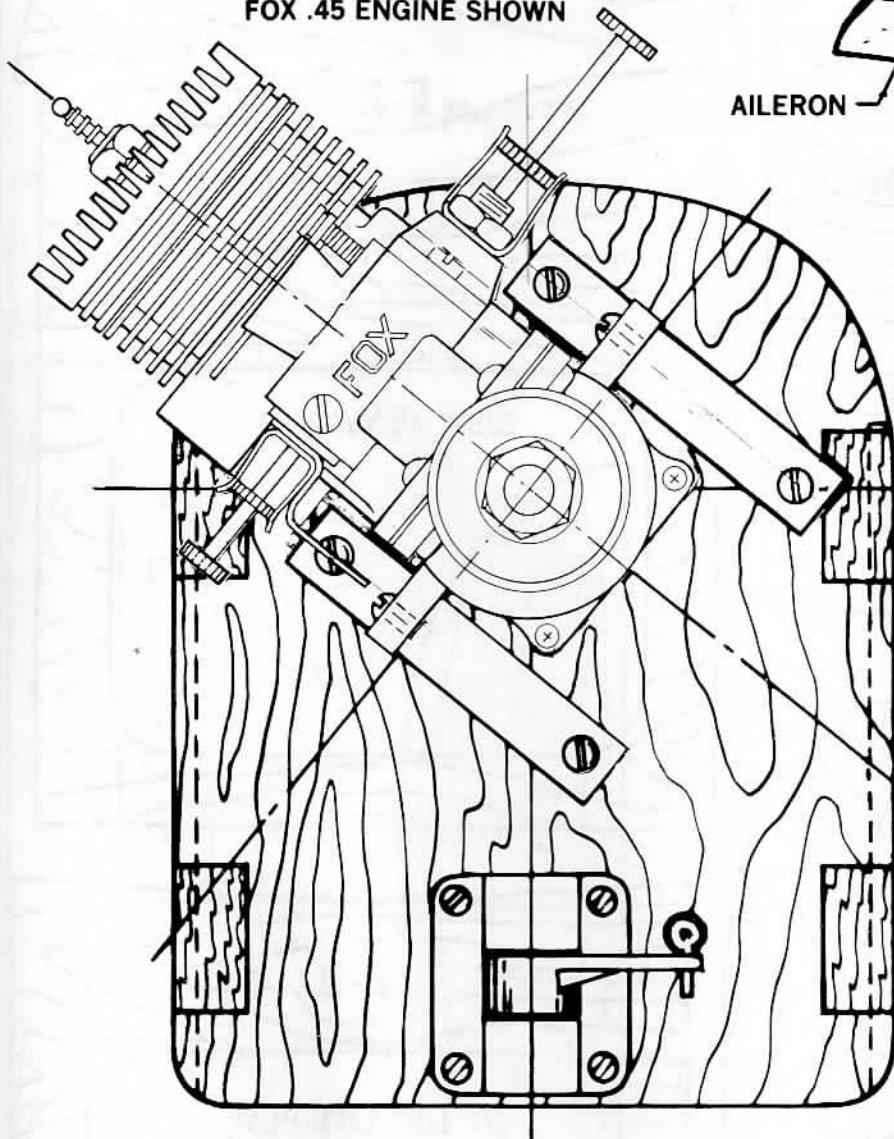
3/32" PLYWOOD



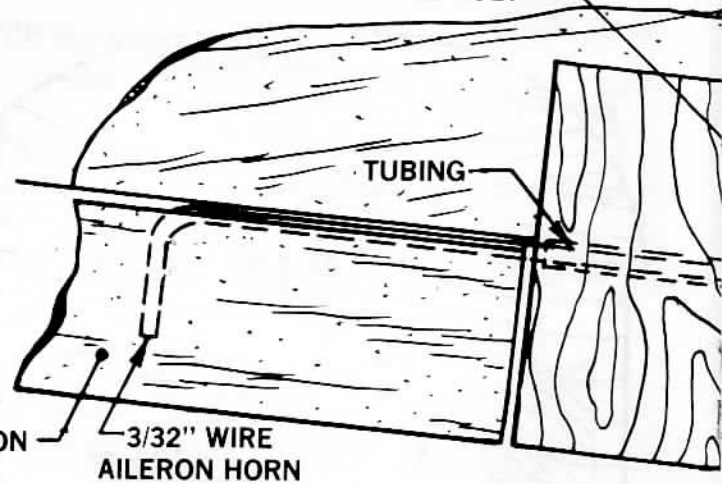
TYPICAL ANGLED ENGINE INSTALLATION

UPRIGHT INSTALLATION IS NOT RECOMMENDED SINCE NEEDLE VALVE LOCATION WILL BE HIGH FOR THE TANK POSITION. THE ANGLE SHOWN WILL ACCOMMODATE MOST MUFFLERS, BUT IT IS ADVISABLE TO DOUBLE CHECK THE FIT WITH THE ENGINE AND MUFFLER YOU WILL BE USING.

FOX .45 ENGINE SHOWN

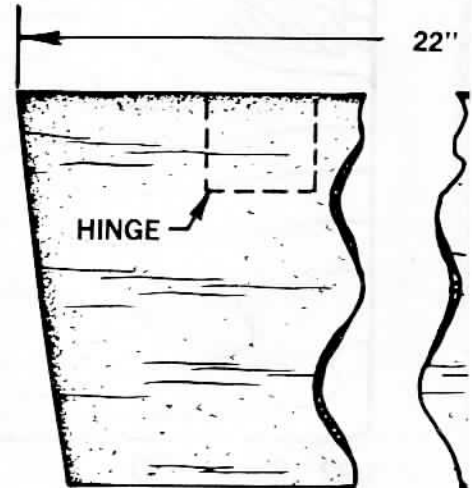


1/4" HOLE FOR WING BOLT



AILERON
3/32" WIRE
AILERON HORN

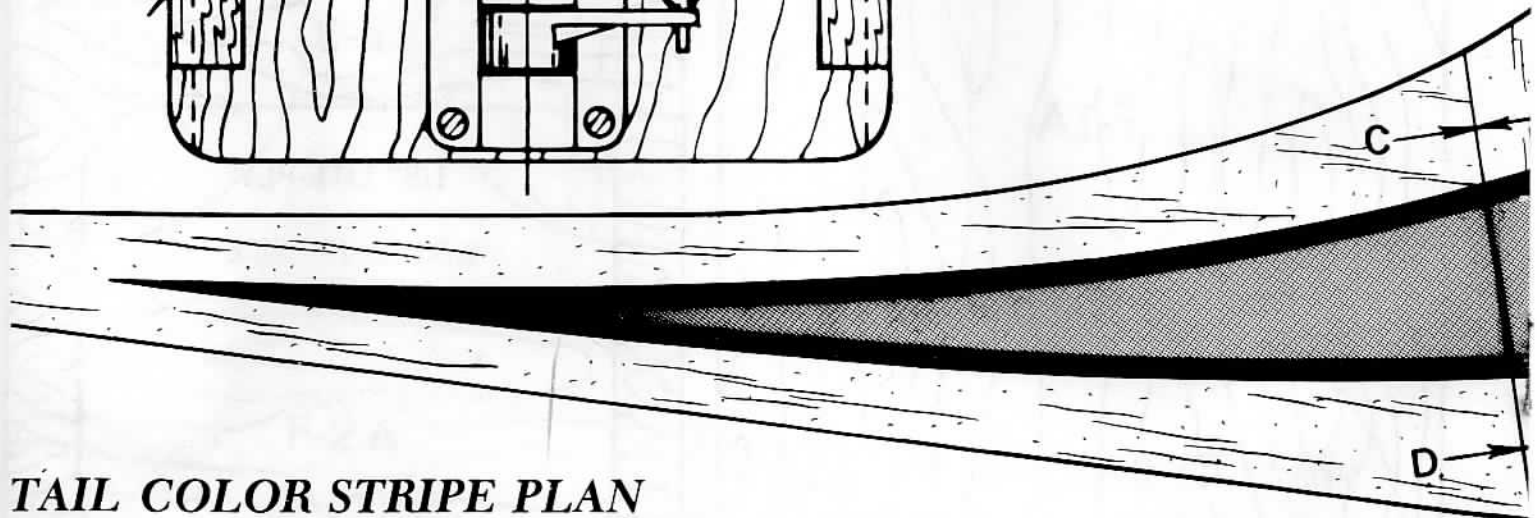
22"



ELEVATOR END

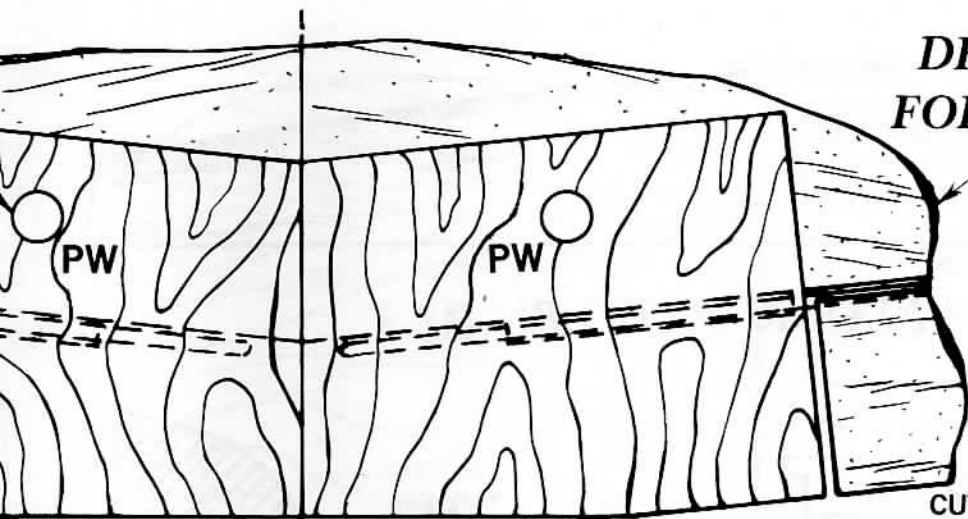
CUT FROM 1/4" x 2" SHAPED B

CUT THE ELEVATOR TO FINAL SHAP
CHECKING AGAINST THE STABILIZER
SURE THEY WILL MATCH EACH OTHER



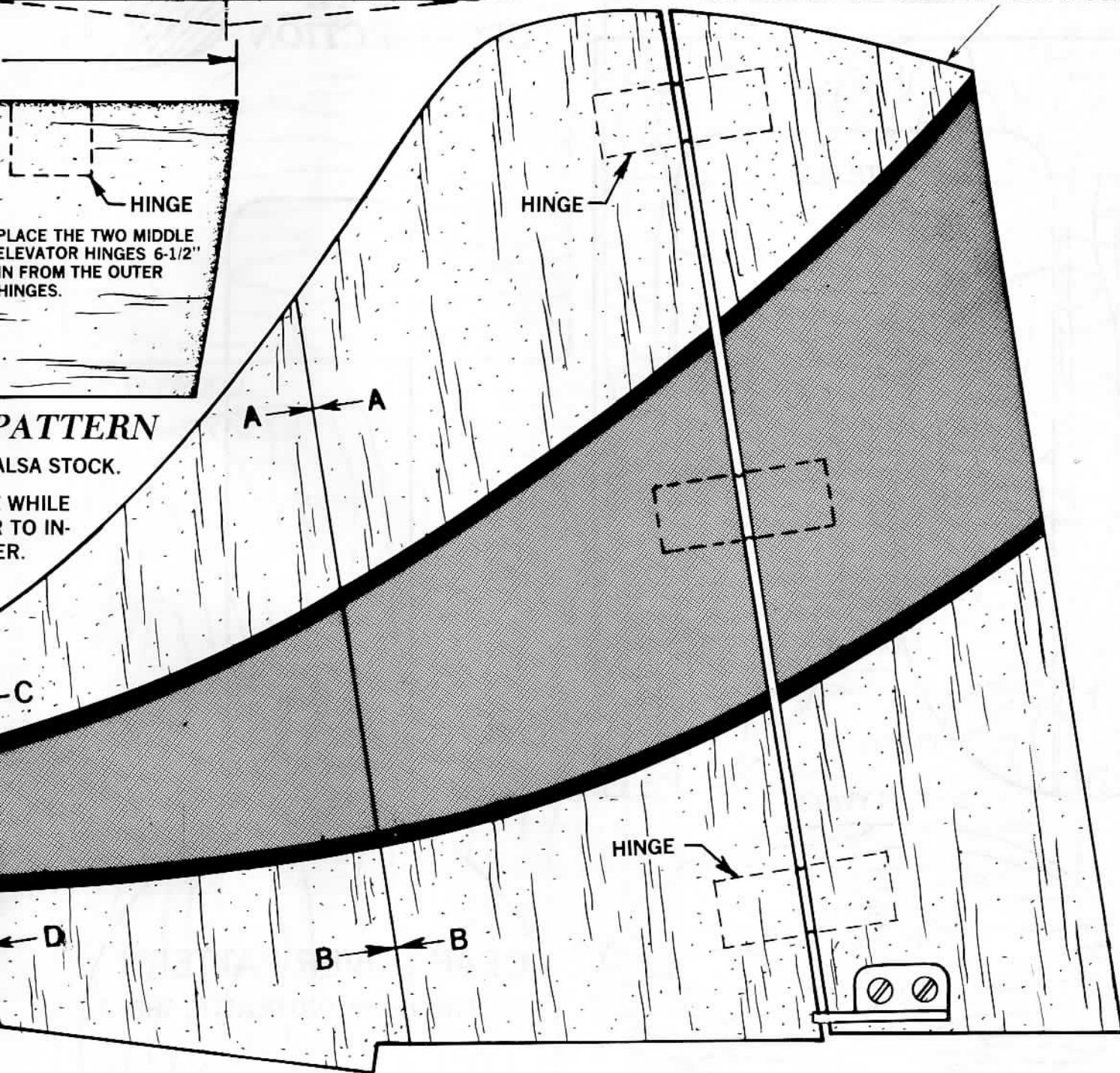
TAIL COLOR STRIPE PLAN

DETAIL AND PATTERN FOR PLYWOOD PART PW



RUDDER PATTERN

CUT FROM 1/4" x 2" SHAPED Balsa Stock.



PLACE THE TWO MIDDLE ELEVATOR HINGES 6-1/2" IN FROM THE OUTER HINGES.

PATTERN

Balsa Stock.

WHILE TO IN-ER.

-C

D

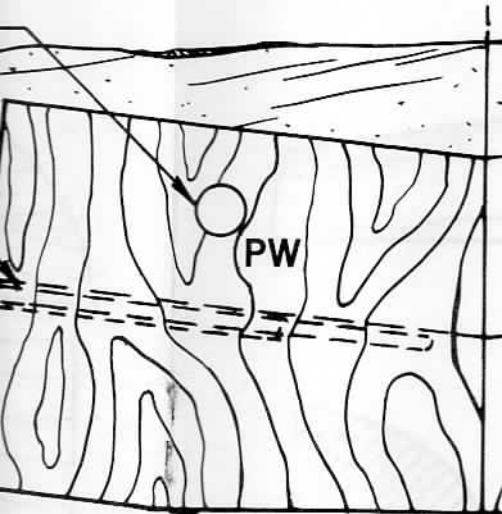
B

HINGE

HINGE

HINGE





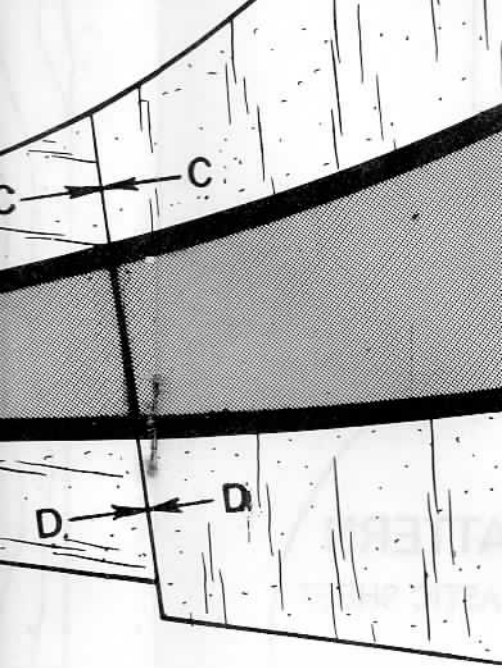
22"



R END PATTERN

" SHAPED BALSA STOCK.

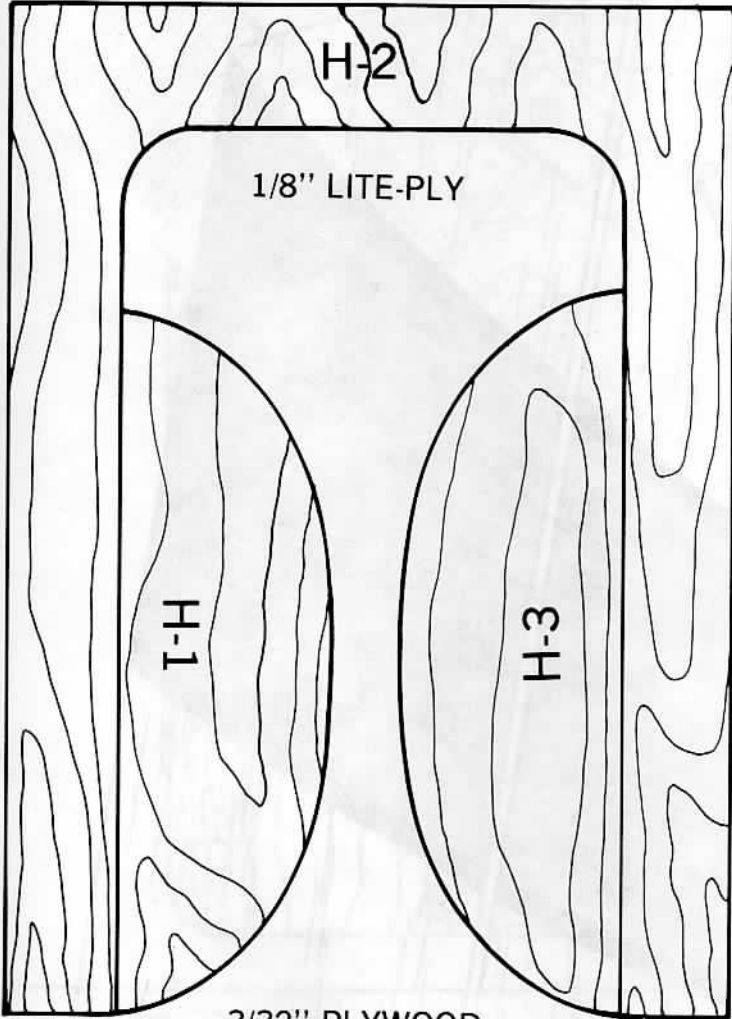
FINAL SHAPE WHILE
E STABILIZER TO IN-
H EACH OTHER.



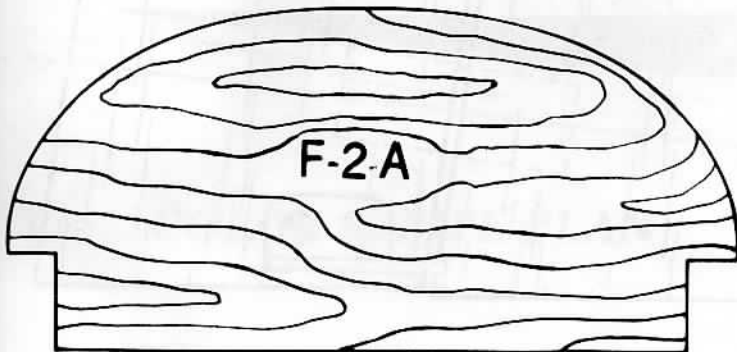


WING TIP BLOCK PATTERN

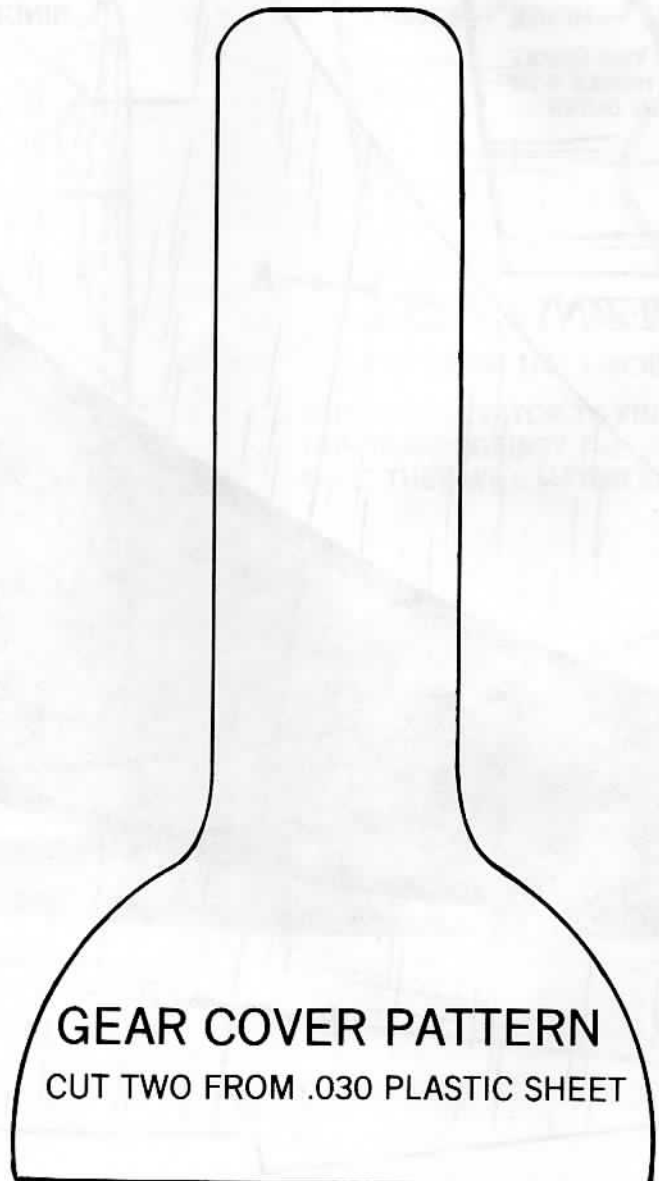
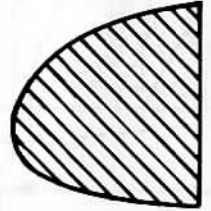
PLYWOOD PARTS



3/32" PLYWOOD



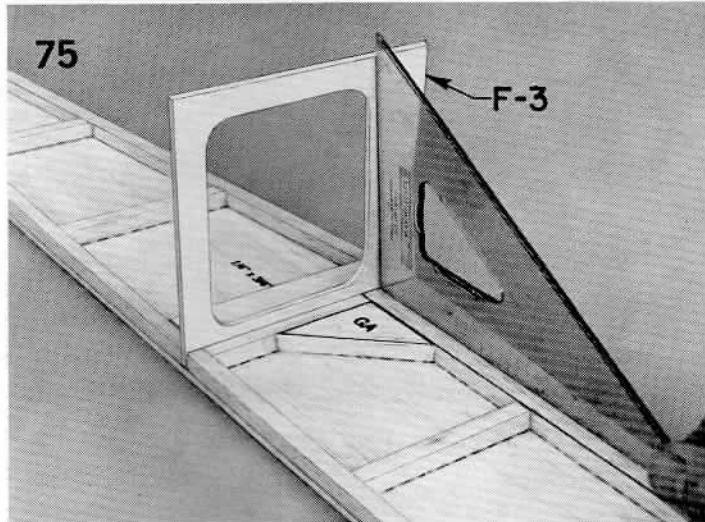
**WING TIP
CROSS-SECTION**



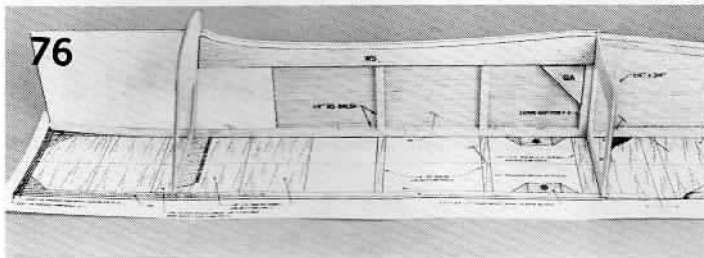
GEAR COVER PATTERN

CUT TWO FROM .030 PLASTIC SHEET

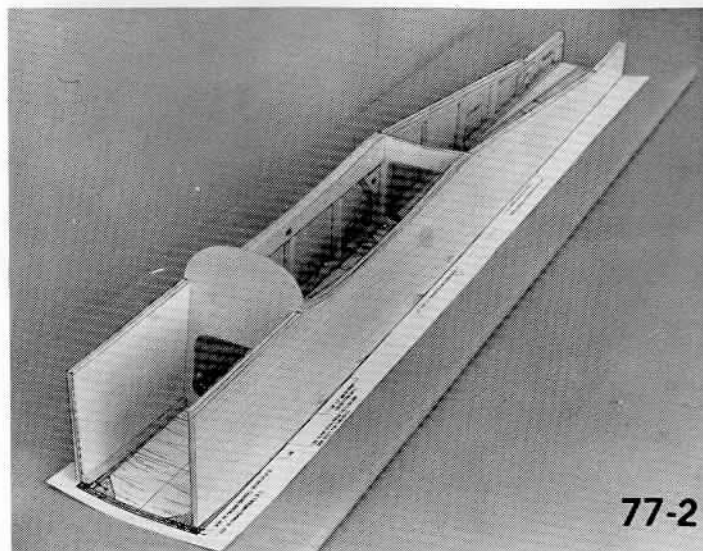
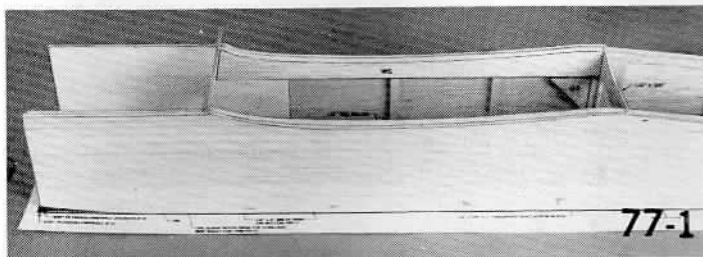
74. Put 5 minute epoxy on F-2 and glue in place on one of the sides. As the glue sets up, use a triangle to get F2 exactly perpendicular. Other glue can be used if you secure the former in place while it is drying.



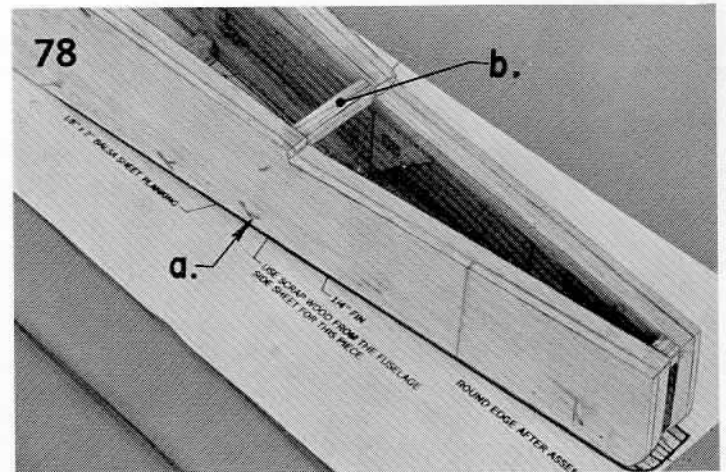
75. Repeat the procedure with F-3.



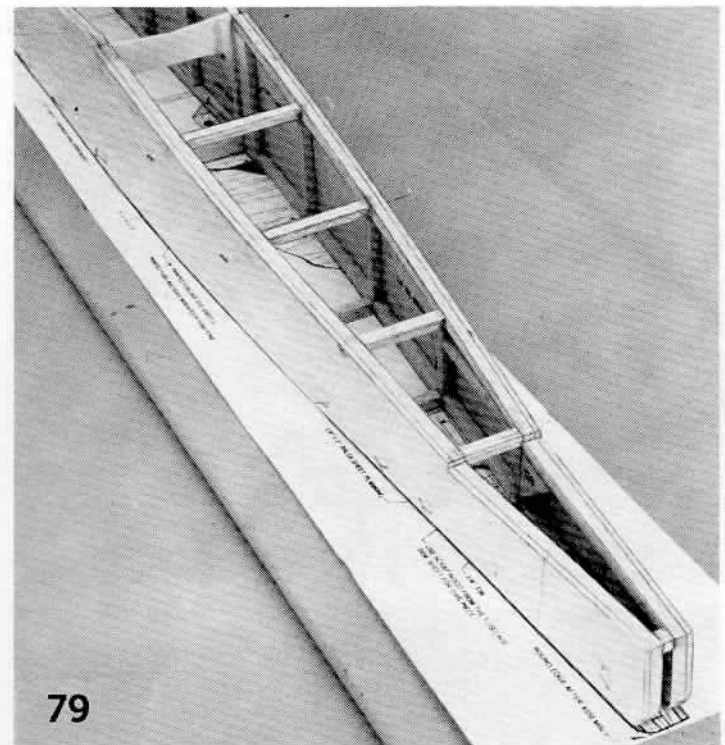
76. Pin the fuselage side to the top view plan. At this time only put the pins forward of F-3.



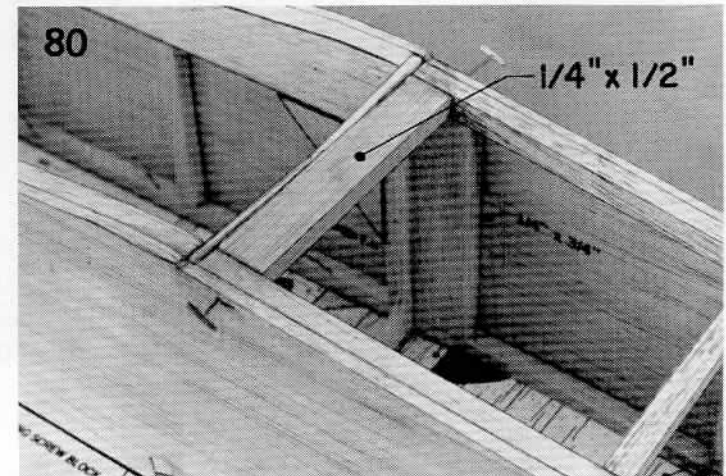
77. Epoxy glue the remaining side to F-2 and F-3. Pin in place forward of F-3 and check for square with a triangle.



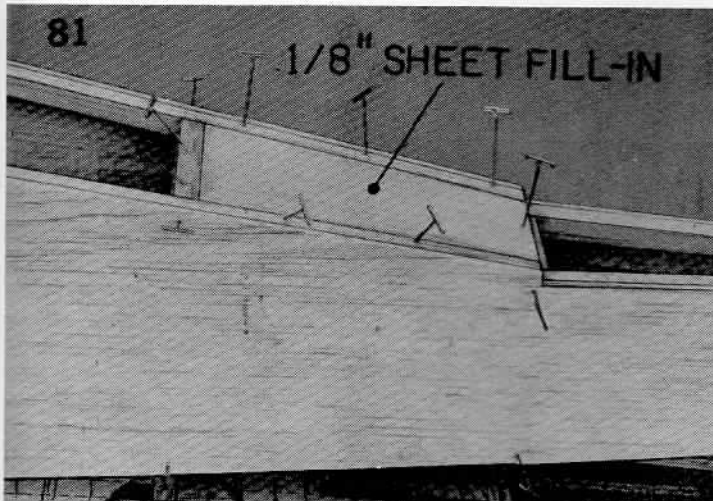
78. a. Pull the two sides together at the rear and pin in place on the plan.
b. Connect the sides with crosspieces of 1/4" sq. balsa.



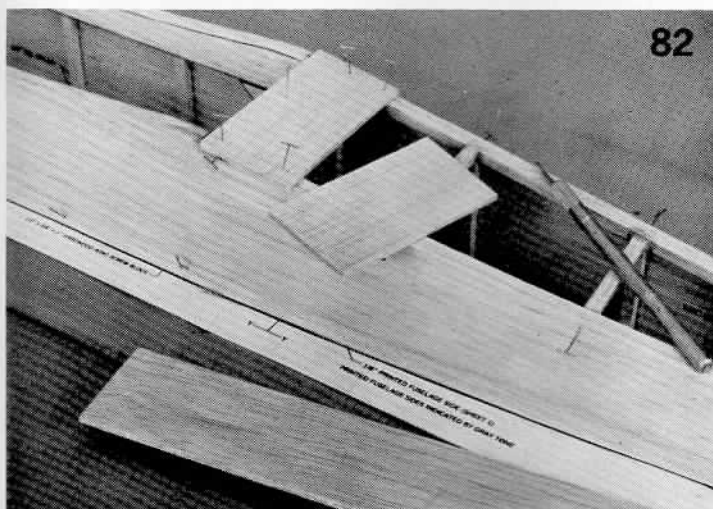
79. Complete the joining of the sides by adding the remaining 1/4" sq. crosspieces between F-3 and the rear of the fuselage.



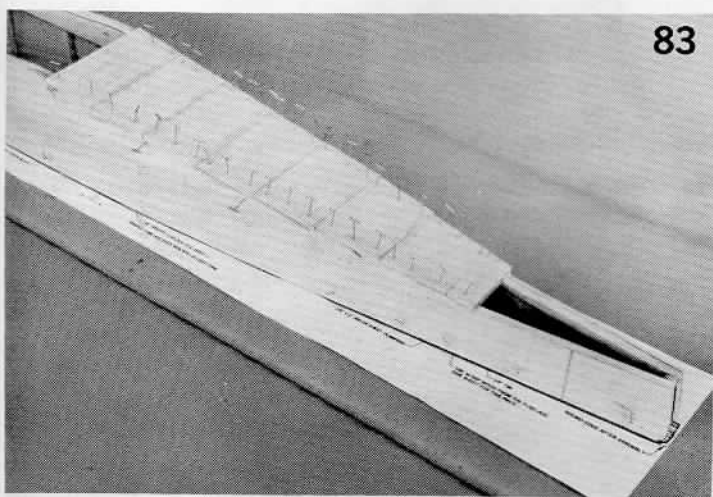
80. Glue a 1/4" x 1/2" crosspiece against F-3.



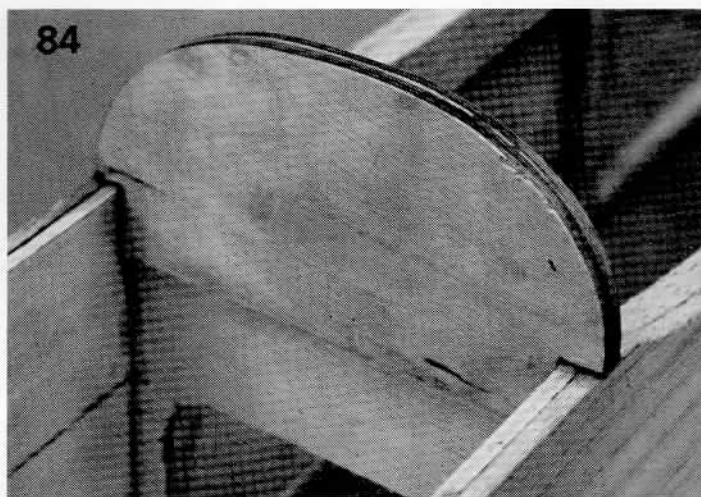
81. Fill in the section just ahead of the stabilizer with 1/8" sheet balsa. This provides a strengthened area for the tab on the fin.



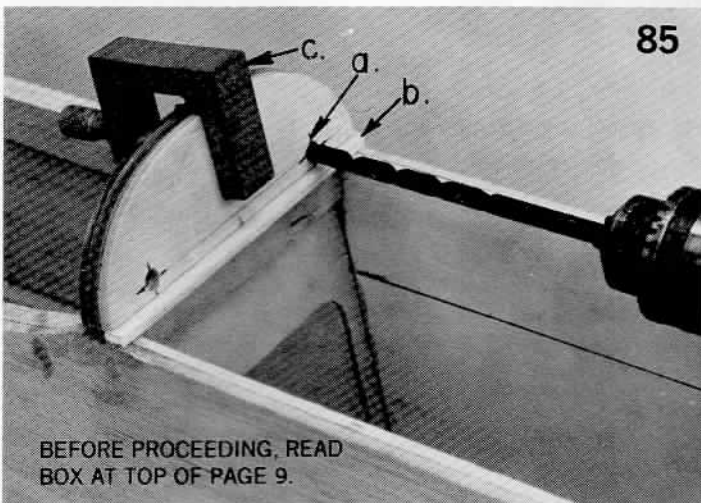
82. Plank the top of the fuselage with pieces of 1/8" x 2" sheet.



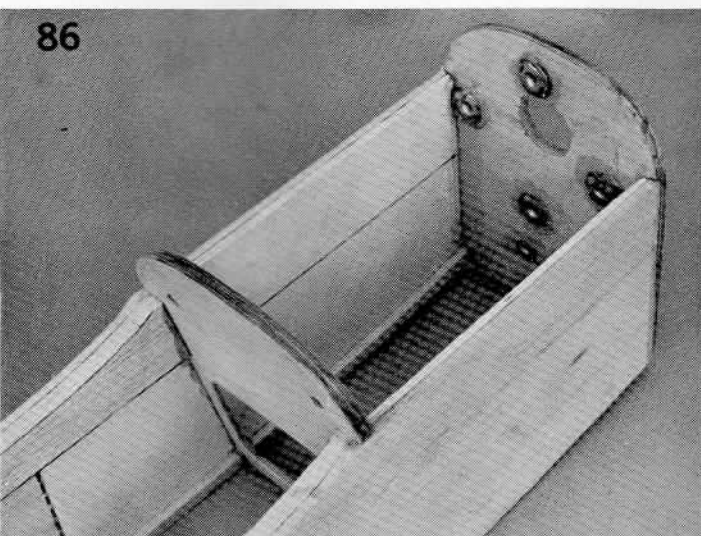
83. After the planking is dry, remove the pins and trim the pieces even with the fuselage sides.



84. Glue F-2A in place on the front of F-2.

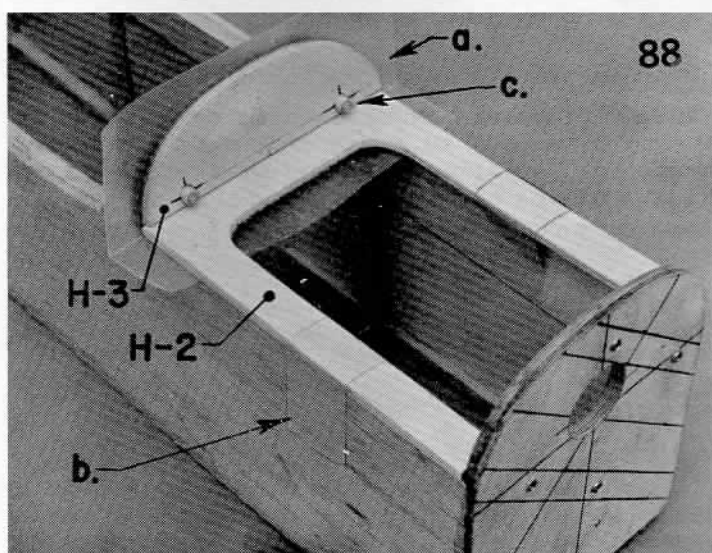
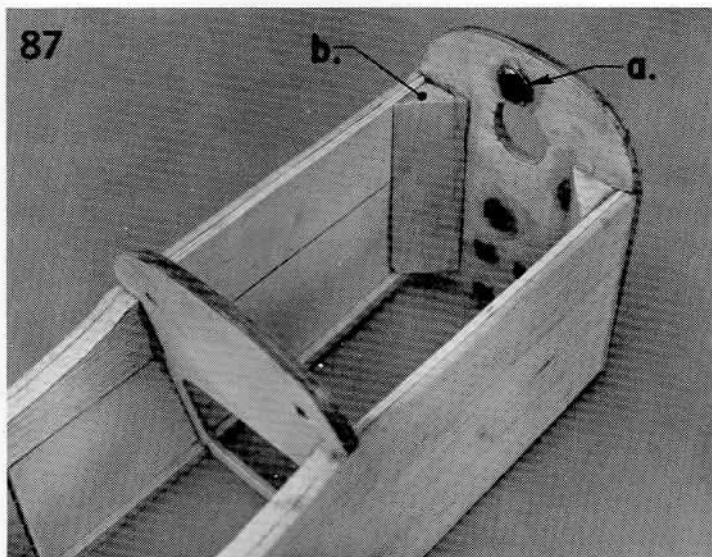


85. a. Mark and drill holes in H-3.
 b. Put a scrap piece of 1/8" Lite Ply across the top of the fuselage as a spacer.
 c. Clamp H-3 in place against F-2A.
 d. Drill the holes in H-3 on through F-2A.

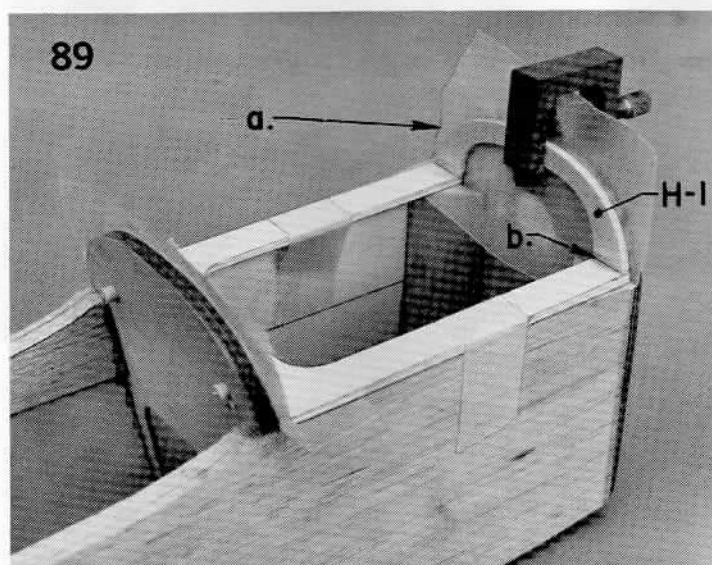


86. Glue the firewall assembly F-1A and F-1B in place on the front of the fuselage.

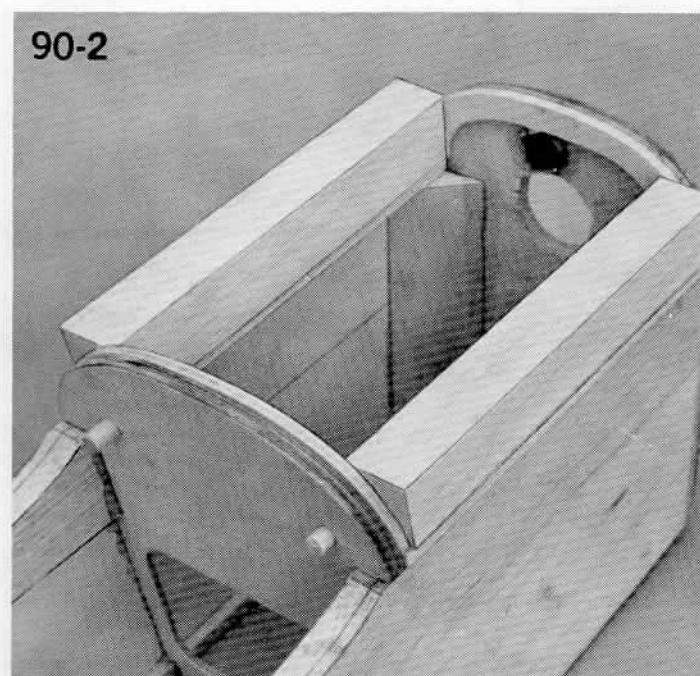
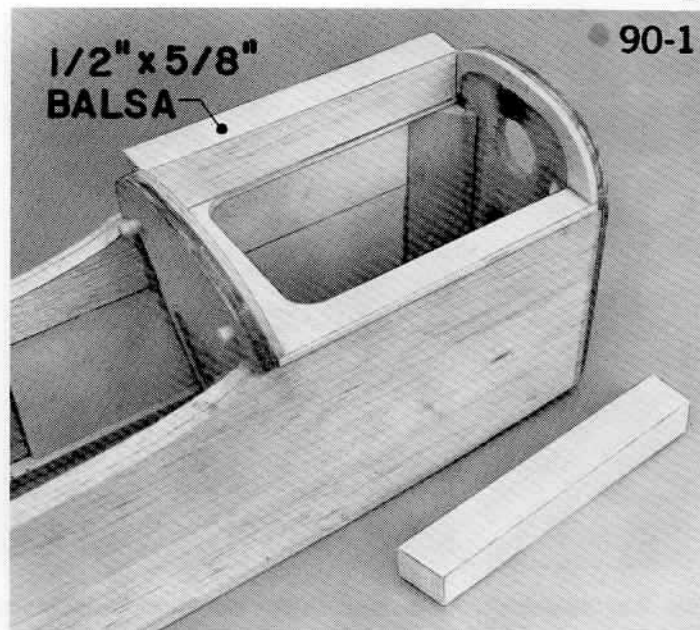
87. a. Cover the blind nut holes with pieces of tape to keep glue out of them.
 b. Epoxy glue in pieces of 3/4" balsa triangle stock to brace the firewall.



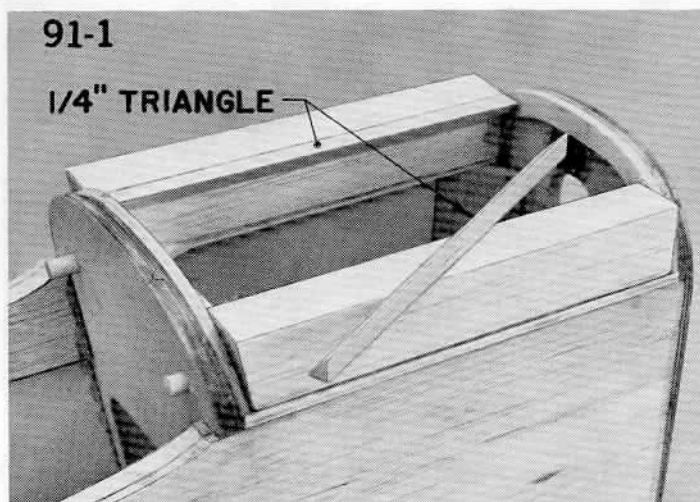
88. a. Place a piece of wax paper up against F-2A.
 b. Tape H-2 in place.
 c. Glue H-3 to H-2, using pieces of dowel to hold it keyed in place.



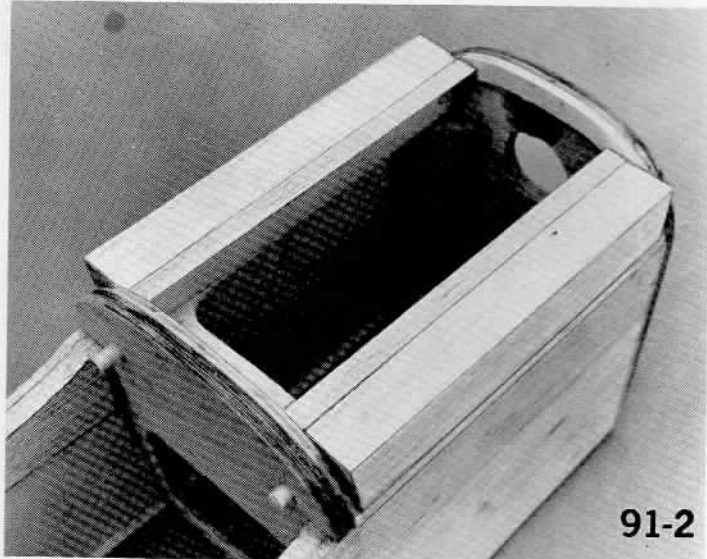
89. a. Slip a piece of wax paper under H-2 and against the back of F-1B.
 b. Glue H-1 to H-2.



90. Remove the tape. Fit the 1/2" x 7/8" balsa blocks into the hatch between H-1 and H-3.

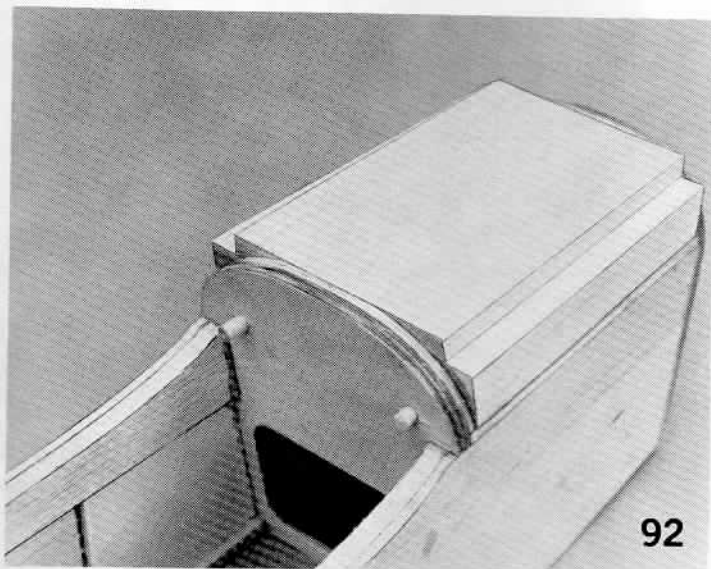


- 91-1. a. Slip a piece of wax paper under H-2 and against the back of F-1B.
 b. Glue H-1 to H-2.



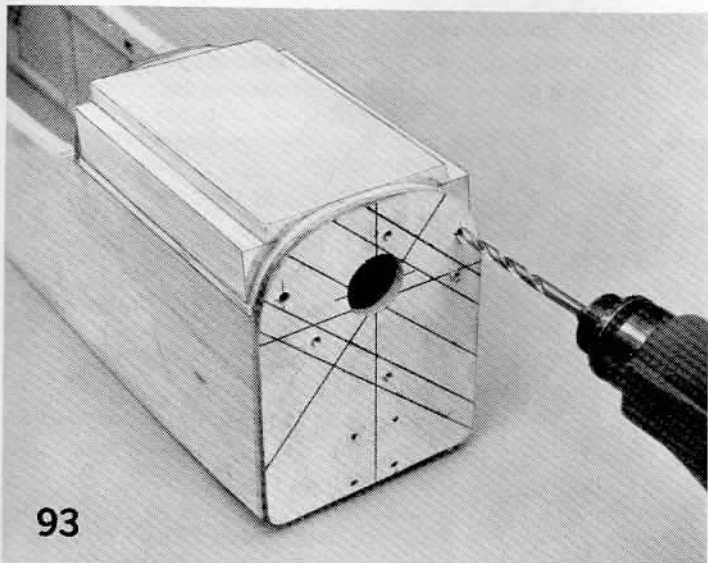
91-2

91. Add the pieces of 3/8" triangular stock. (See Hatch Cross-Section Drawing.)



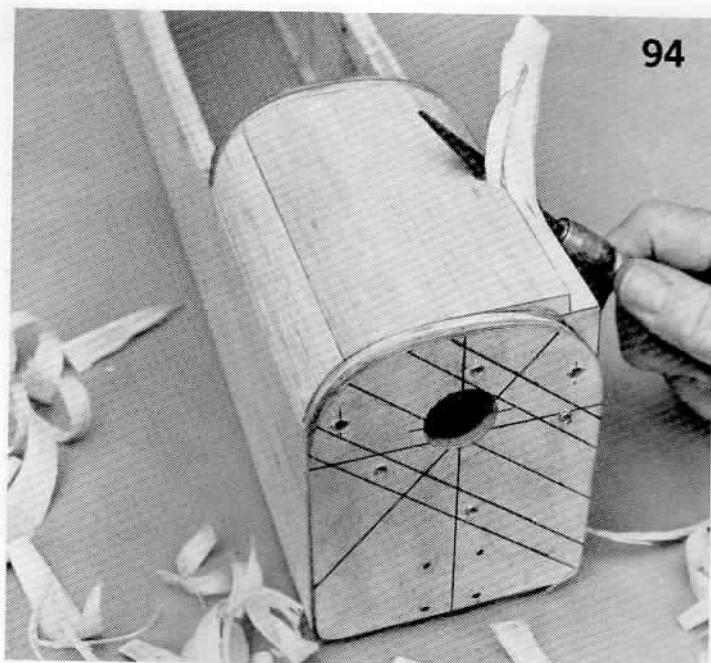
92

92. Fit and glue the piece of 5/16" x 3" x 5-3/8" balsa sheet to the top of the hatch assembly.



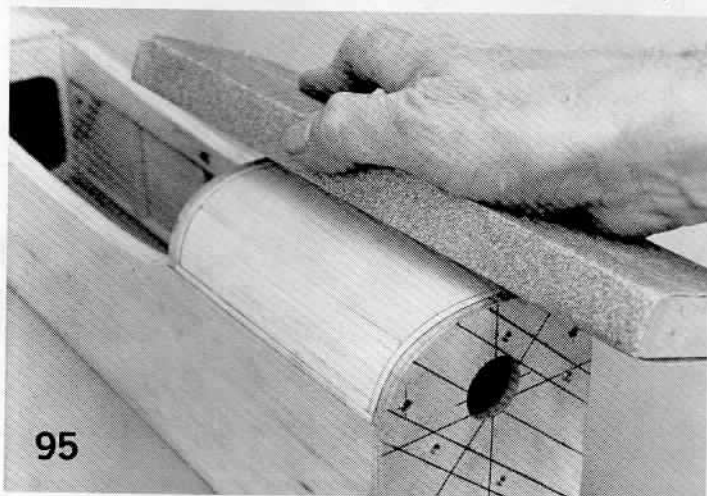
93

93. Mark and drill the 1/8" dia. hatch dowel holes through the firewall and on into the hatch.



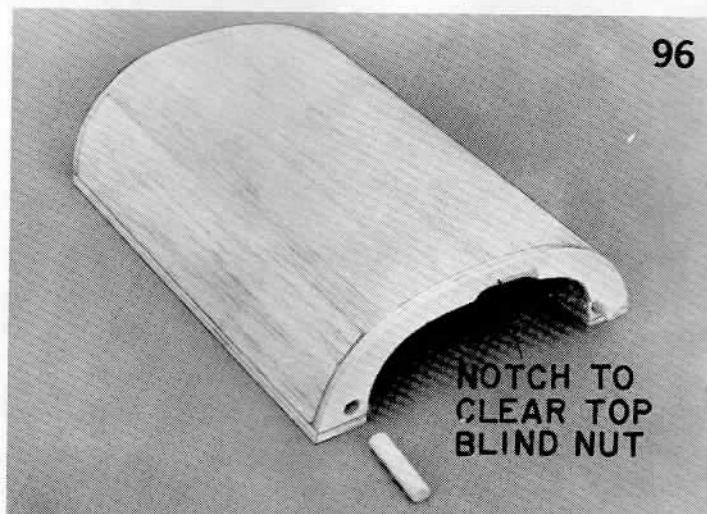
94

94. Carve the hatch top to contour between F-2 and F-1. (Although the assembly in the picture sat in place solidly enough that it wasn't necessary, it still would be a good idea to put dowels into the holes to key the hatch to the fuselage during the carving and sanding process.)



95

95. Sand the hatch smooth with the sanding block.



96

NOTCH TO
CLEAR TOP
BLIND NUT

96. Remove the hatch from the fuselage. Epoxy glue the dowels into the holes in the front of the hatch. Allow them to protrude from H-1 about 3/16".