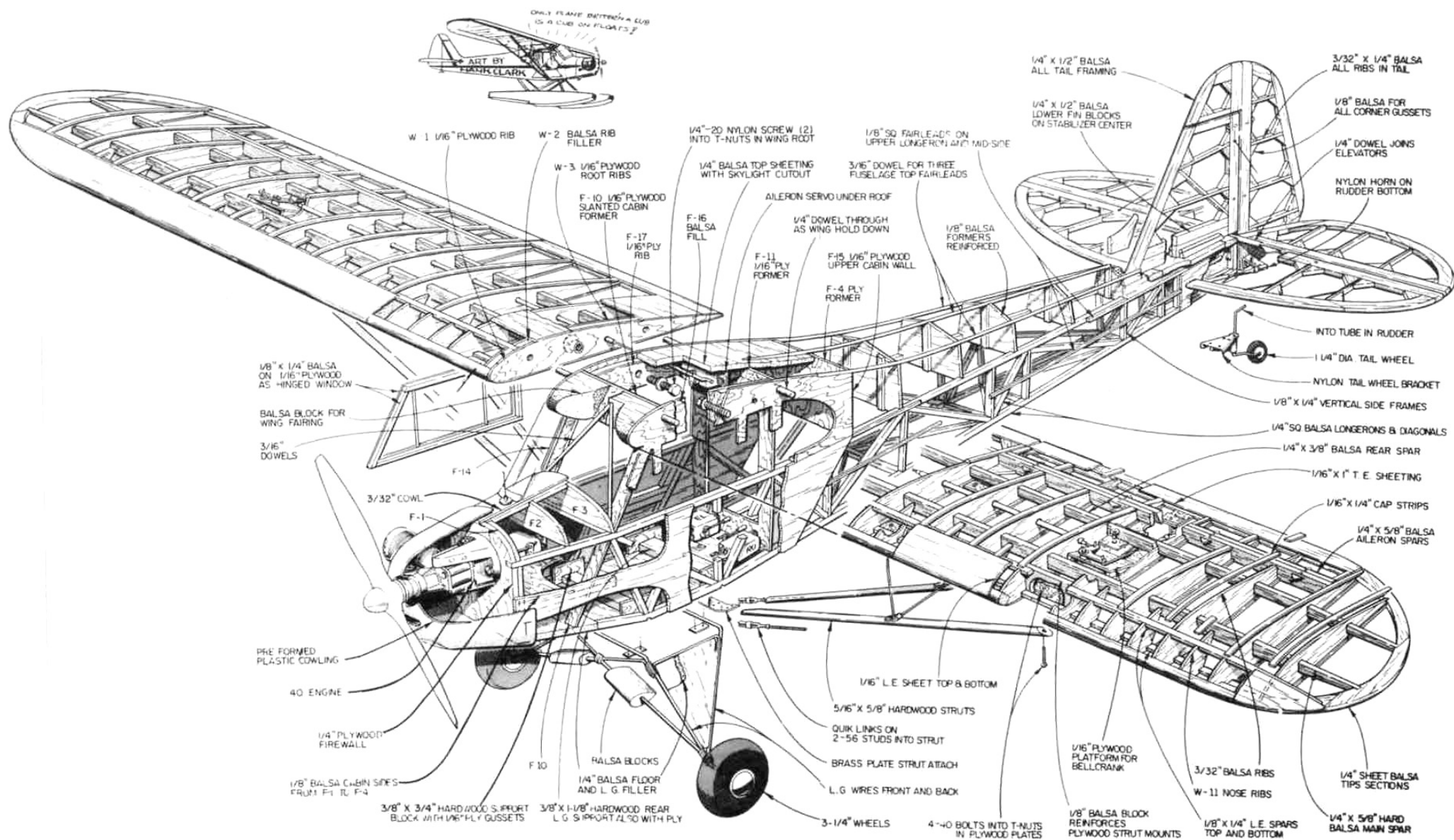


BUILDING THE PIPER J-3 CUB



TOP FLITE MODELS INC.

1901 NORTH NARRAGANSETT AVENUE • CHICAGO, ILLINOIS 60639



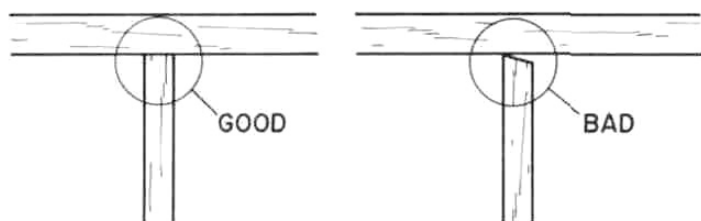
INTRODUCTION

Top Flite is proud to present it's large, scale version of the legendary J-3 PIPER CUB. Few aircraft in the history of aviation have had the overall appeal of this rugged, good-looking little airplane. "Cubs" have been used in a wide variety of roles including; trainer, bush plane, ranch work, crop duster, float plane, military and just for all-around fun. The gentle "lightly-loaded" flying characteristics of the original J-3 Cub have been faithfully reproduced for you with this kit.

In the "clipped wing" configuration, your Cub takes on a somewhat more acrobatic nature. The full scale "clipped wing" Cub has been the star performer of many an airshow and some of this country's best-known acrobatic pilots such as Bevo Howard, Pappy Spinks, Charlie Hillard, Pete Meyers, etc....started their acrobatic careers in "clipped wing" Cubs.

Our kit offers you the choice of building either the full-span J-3 or the "clipped wing" variant. The only changes needed to build the "clipped wing" version is to shorten the wing as shown on the plans and to shorten the length and mounting angle of the struts. With either version, your Cub will be an outstanding scale model of the real thing, with flight characteristics to match. When your Cub is covered with Top Flite's PIPER YELLOW FABRIKOTE, no additional finishing will be necessary. Even the one piece molded cowl has been color-coordinated to the FabriKote and it, too, is ready-to-use without the need of paint. FabriKote will also give your Cub a tremendous amount of structural integrity by virtue of it's ability to shrink drum-tight and stay that way.

The construction of the Cub is straight-forward and only requires attention to both the plans and this instruction manual. Since the Cub contains so much open structure to duplicate the original, techniques such as accurate joints and complete glueing are very important.



GLUE JOINTS

Our prototypes were built using a variety of adhesives - aliphatic resin, cyanoacrylate and 5-minute epoxy. We recommend that you use any or all of these as you require.

The tools required to build the Cub are those found in the average modeler's workshop. You should have a work surface that is large enough to accommodate an airplane of this size, and it must be flat! "Beaver board" or Celotex is an excellent surface to work on as it readily accepts pins. Sharp, single edge razor blades, an X-acto knife, a power drill and bits, T-pins, a good metal straight-edge, soldering iron, hobby saws, sanding blocks and a variety of sandpaper grades will be used in construction.

When removing the die-cut parts from their sheets, always keep an X-acto knife handy. Do not force these parts from the sheet, use the knife to carefully cut on the outline of the part and then gently remove them. Remove only the parts that you require for a particular construction sequence, leave the others in place until needed. Touch-up sand any of the parts that may need it and always trial-fit the parts in place before glueing, some trimming may be required. The technique of double glueing all joints, especially in an airplane of this size is advisable

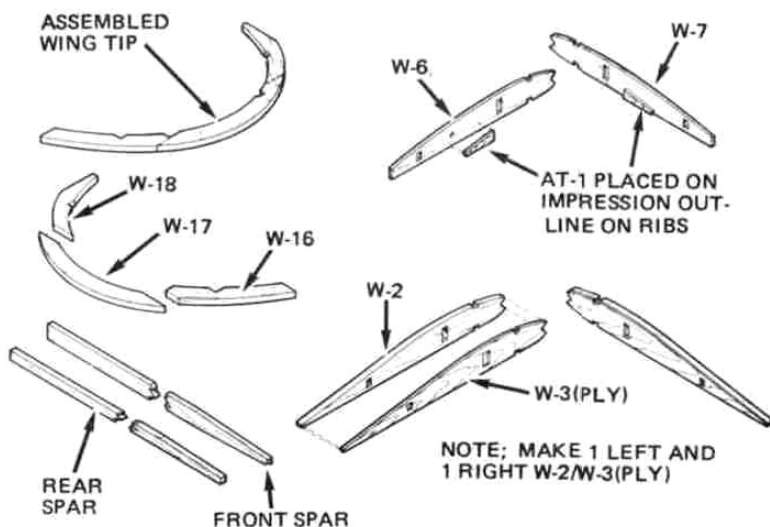
The construction sequence in the instruction manual has been proven to provide quick and accurate assembly. Do not deviate from the instruction manual. Read through the manual first while reviewing the plans **BEFORE** starting actual construction. Often this will clear-up questions that might not be understood during construction.

Our production prototypes of the J-3 Cub used standard front-rotor .40 engines with mufflers. Props used were Top Flite 11-4 Power Props. Radios were standard 4-channel types with medium output servos. Our airplanes were covered completely with Top Flite's PIPER YELLOW FabriKote (see box label). Calculated data on our prototypes is as follows:

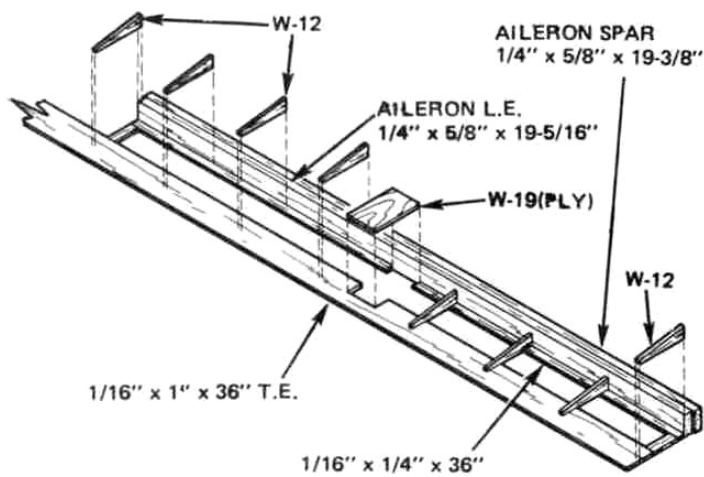
	STANDARD SPAN J-3	"CLIPPED-WING"
Wing Area	795 Sq. Ins.	595 Sq. Ins.
Weight	76 Ozs.	72 Ozs.
Wing Loading	13.77 Ozs./Sq. Ft.	17.43 Ozs./Sq. Ft.

WING

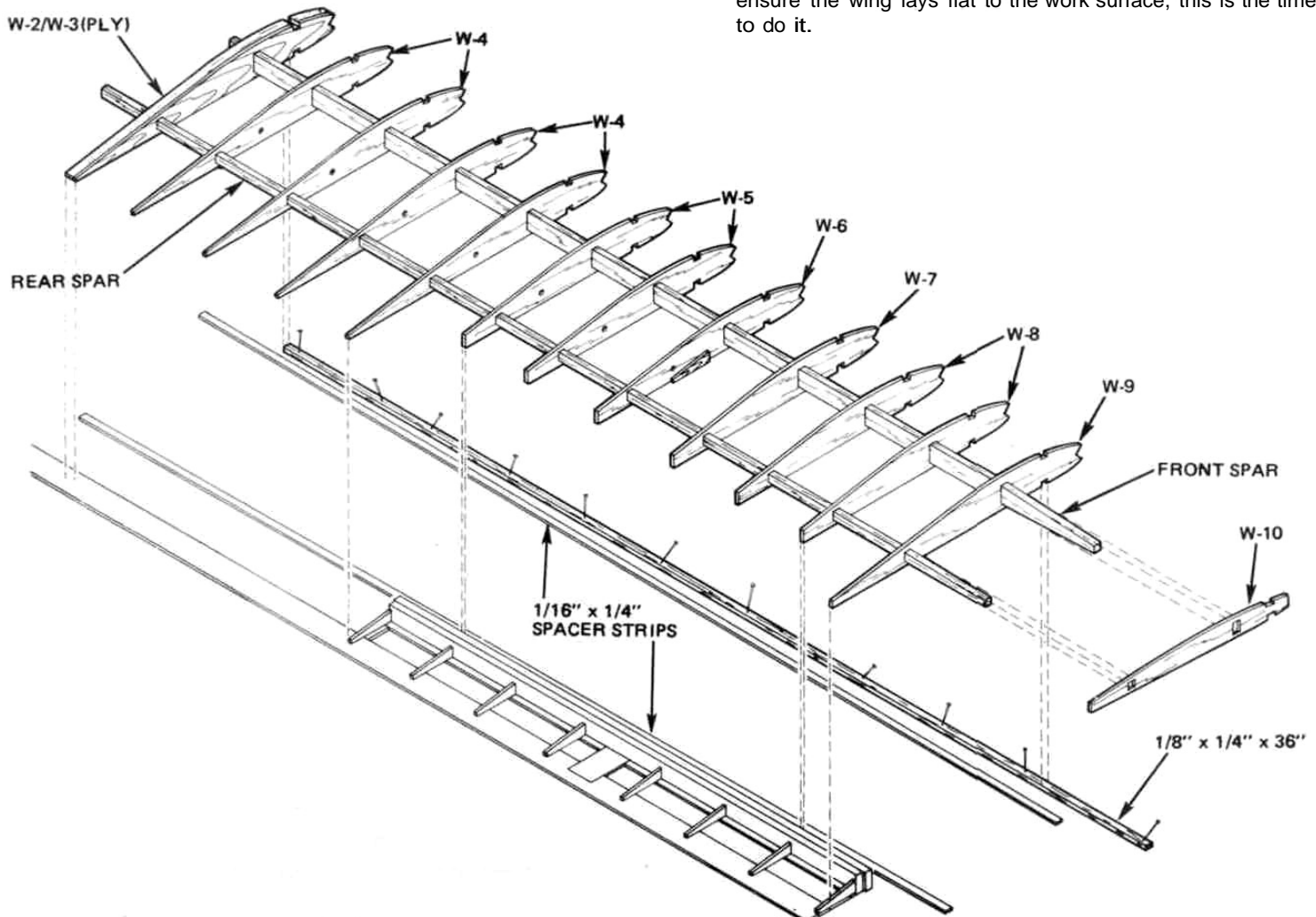
These instructions apply to both the "clipped wing" and full-span wings. The "clipped wing" version requires that W-1/W-2/W-3 root rib lamination be moved outboard to the position shown on the plans, sheeting applied like the root section shown, the inter-plane eyelets be moved outboard on the W-13's and the struts shortened accordingly. The instructions assume that you will build both wing panels simultaneously.



1. a. Glue wingtip pieces W-16, W-17 and W-18 together and allow to dry.
b. Glue aileron bellcrank tray supports AT-1 to ribs W-6 and W-7. Note these parts face each other in the rib bay between ribs W-6 and W-7.
c. Glue the 1/16" thick W-3 (PLY) rib to the inside of the 1/4" balsa W-2 rib. Note there is a right and a left W-2/W-3 laminate, one for each wing panel.
d. Trim the wingtip ends of both 1/4" x 5/8" x 36" main spars and both 1/4" x 3/8" x 36" rear spars as shown on plans.
2. Using the 4 pieces of 1/4" x 5/8" x 21" balsa provided, cut 2 aileron spars as shown on the plans — these are 19-3/8" long. Pin these directly to the plan, between rib location W-4 and W-9. The 2 remaining pieces will become the aileron leading edges. Trim these to 19-5/16" long. Using a few "dots" of glue, tack glue these pieces directly to the back of the aileron spar already in place and secure with pins. (Refer to the rib/aileron cross-section on plans.)



3. Using the $1/16" \times 1/4" \times 36"$ cap strip stock provided, glue a $19-5/16"$ length directly to the rear, bottom of the aileron leading edge, flat against the plans.
4. Position and pin the bottom $1/16" \times 1" \times 36"$ trailing edge (T.E.) stock to the plans. Note this material ends at the outboard W-12 aileron riblet location — let the excess extend in-board past the W-1. W-2. W-3 location as it will be trimmed later.
5. Using the $1/16" \times 1/4" \times 36"$ cap strip material provided, measure, cut and glue in place the bottom outboard and in-board aileron cap strips, between the T.E. and the aileron L.E. cap strip. Note: do not add the other bottom aileron cap strips at this time.



6. With a razor blade, carefully cut away the **T.E.** sheeting and aileron cap strip to accept the $1/16"$ ply aileron horn plate — W-19 (PLY). Glue W-19 (PLY) in place.
7. Locate and remove all W-12 aileron riblets from their die cut sheets. Glue all W-12 riblets in place directly to the aileron L.E., the aileron L.E. cap strip and the bottom T.E. sheeting, using the plan for location and spacing. Be sure these are installed 90° upright and square with plan.
8. Develop Wing Construction Spacing:
 - a. Pin the bottom, forward $1/8" \times 1/4" \times 36"$ sheeting spar directly to the plans — locate accurately.
 - b. Directly behind this spar, lay a piece of the $1/16" \times 1/4" \times 36"$ cap strip stock to serve as the forward rib spacer — it is not necessary to pin this in place.
 - c. Directly forward of the aileron spar, lay a piece of the same cap strip material. This will serve as the rear rib spacer.
9. Locate and carefully remove all remaining wing ribs from their die-cut sheets. Carefully remove the die-cut spar cut-outs (this is most easily done with the use of an X-acto knife with a No. 11 blade). "Thread" each rib, in their appropriate order, over forward $1/4" \times 5/8" \times 36"$ main spar and the $1/4" \times 3/8" \times 36"$ rear spar, making sure that the trimmed wingtip ends of each spar are at the wingtip and are turned up on the correct side. Space the ribs approximately as shown on the plans.
10. Once all the ribs are in place over the plans, the assembly should be carefully inspected to make sure that each part that is to contact another, does so. If any trimming is required to ensure the wing lays flat to the work surface, this is the time to do it.

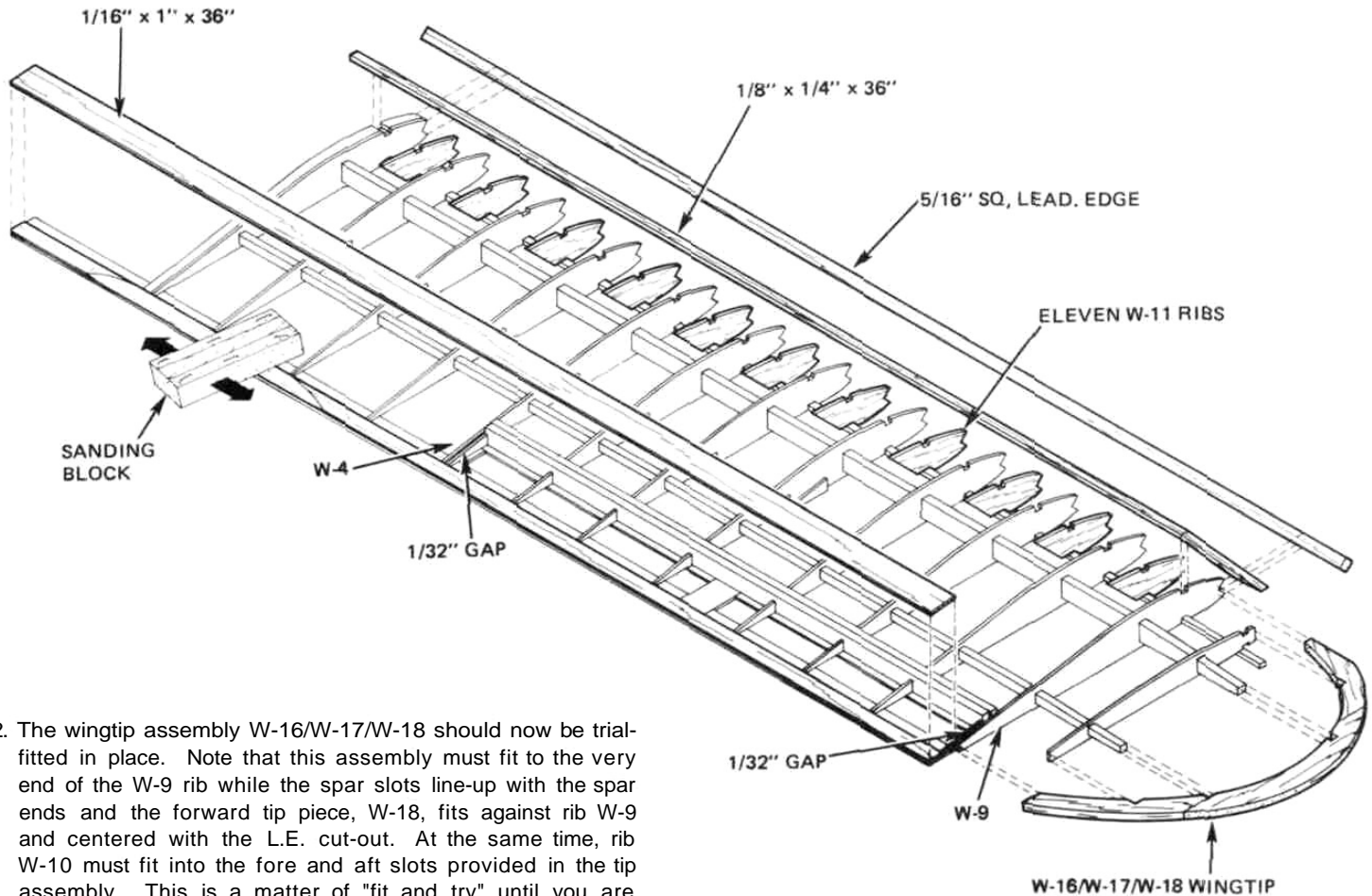
11. Glue the bottom end of each full rib (W-2/W-3 (PLY), and all W-4's to the 1/16" x 1" x 36" bottom T.E. sheeting. The outboard W-4 rib is also glued to the inboard end of the aileron spar, BUT NOT the aileron L.E. Notice the 1/32" resulting gap between the inboard W-12 aileron riblet and the outboard end of the W-4 rib. This is the correct spacing for the wing/aileron relationship.

Glue each of the remaining partial ribs (W-5, W-5, W-6, W-7, W-8 and W-8) to the aileron spar — remember that the AT-1's on W-6 and W-7 must face each other.

Glue rib W-9 to the outboard end of the aileron spar — not the aileron L.E.

The W-10 rib is left loose on the spars for the time being.

16. Prepare the top forward 1/8" x 1/4" x 36" sheeting spar for installation by first trial fitting it into place into the rib slots — relieve any rib slot that might force this spar out of true. Score the spar just outboard of rib W-9 and lightly "crack" it downward. Bevel the tip end of the spar to mate flush with the wingtip as shown on the plans. Glue the spar in place, into each rib and to the wingtip. Secure with pins and allow to dry.
17. Remove all of the W-11 "false ribs" from their die-cut sheets. These can now be glued in place onto the 5/16" sq. L.E. and into the top (only) 1/8" x 1/4" sheeting spar. These ribs should be aligned with the plans and held securely with pins until dry.



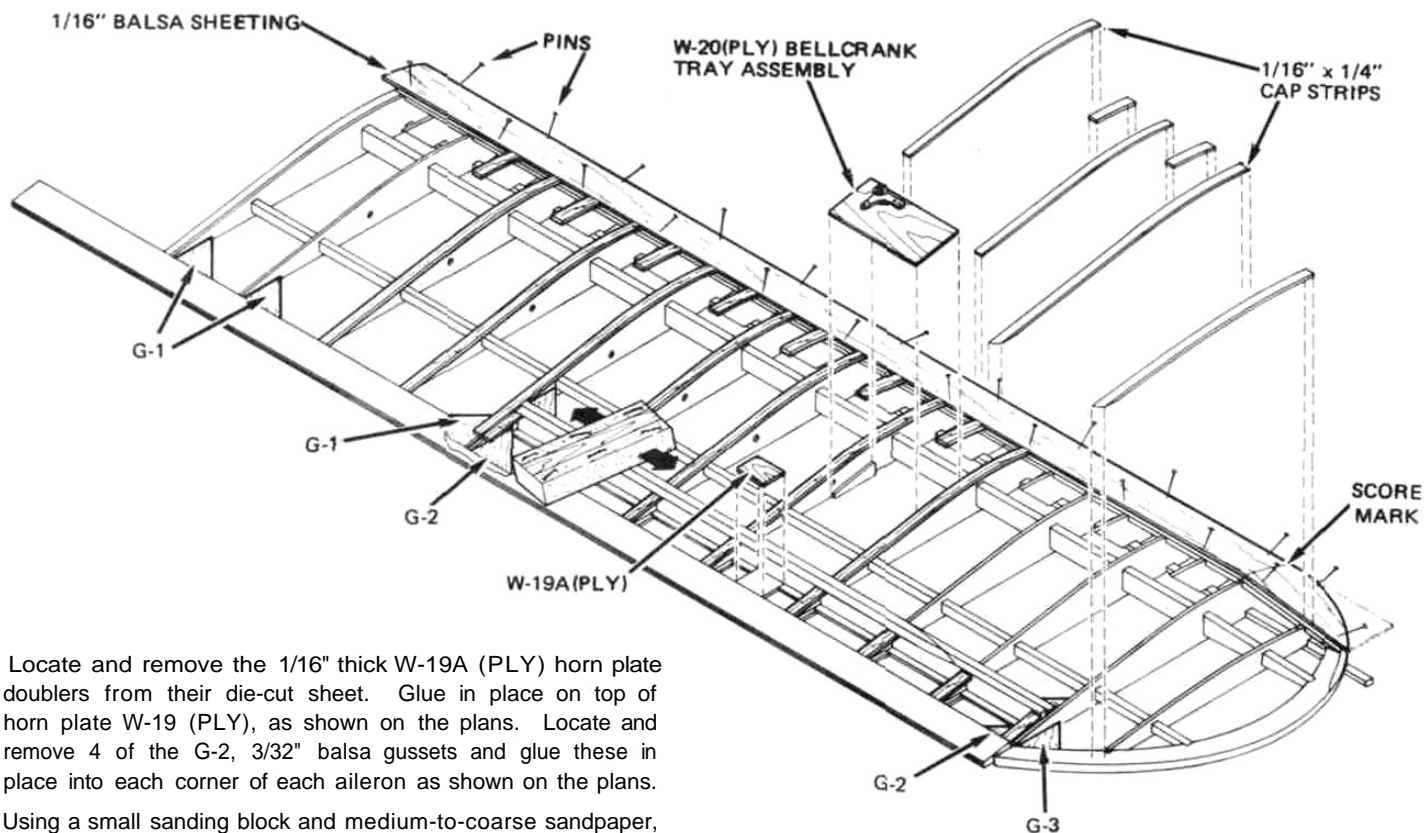
12. The wingtip assembly W-16/W-17/W-18 should now be trial-fitted in place. Note that this assembly must fit to the very end of the W-9 rib while the spar slots line-up with the spar ends and the forward tip piece, W-18, fits against rib W-9 and centered with the L.E. cut-out. At the same time, rib W-10 must fit into the fore and aft slots provided in the tip assembly. This is a matter of "fit and try" until you are satisfied. Once the fit is correct, glue and pin the tip assembly in place as described above. Glue rib W-10 in place in the slots provided. Allow this assembly to dry completely.

13. Glue the 5/16" sq. x 36" leading edge in place. Secure firmly against each rib and the cut-out provided in the leading edge of the wingtip — allow to dry.

14. Using a scrap glue stick, carefully and completely apply glue (preferably a white glue or an aliphatic resin type) to each rib/spar joint. NOTE: it is not necessary to apply a large amount of glue but rather to be sure that each joint is completely covered with adhesive, on both sides and **top** of the joint.

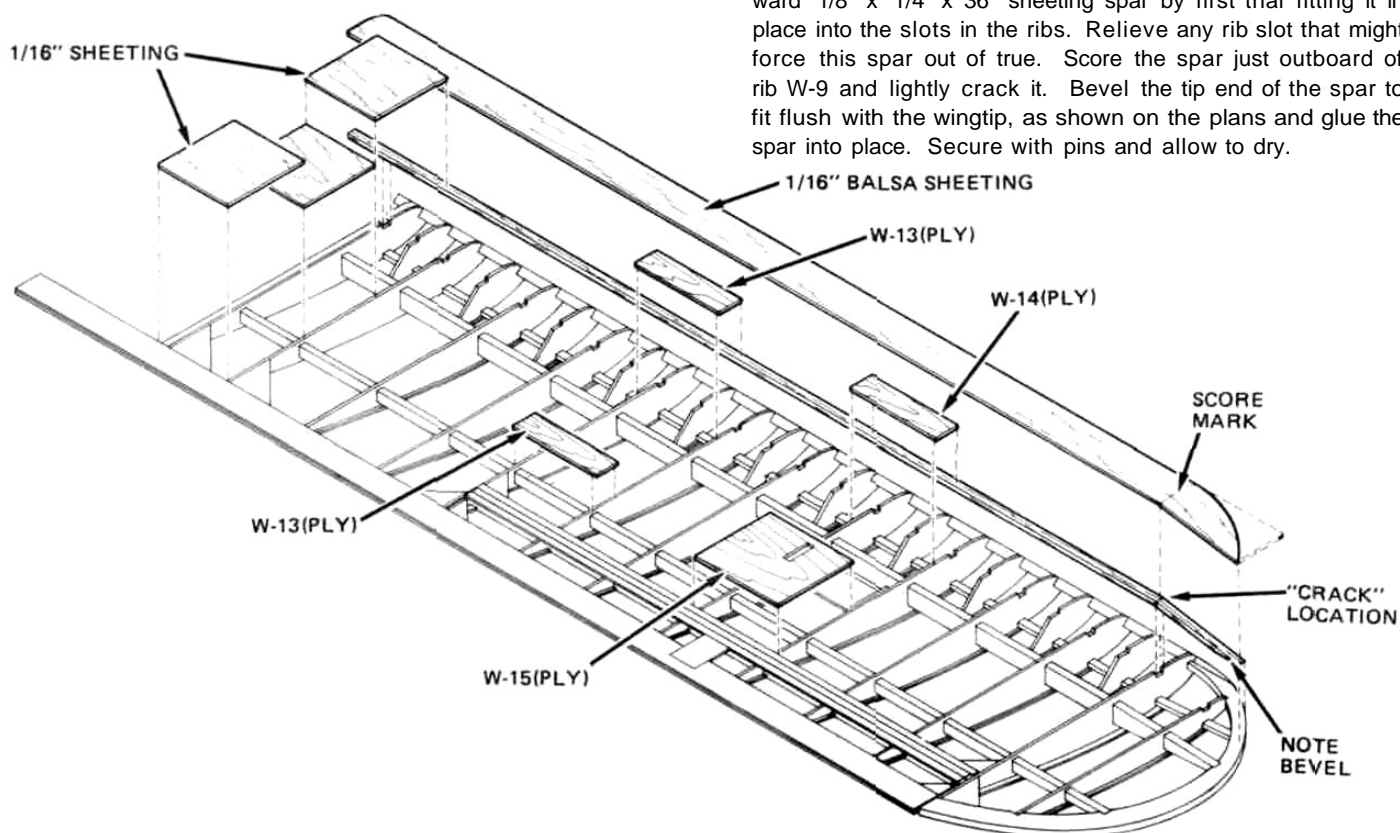
15. Glue and pin the 3/32" x 1/2" x 36" trailing edge laminate stock in place on the 1/16" x 1" bottom T.E., directly behind the ends of each rib and aileron riblet. Like the bottom T.E. sheet, this stock runs from the outboard W-12 riblet, inboard past the W-2/W-3 (PLY) ribs. The excess will be trimmed later.

18. Use a small sanding block and coarse sandpaper to bevel the 3/32" x 1/2" x 36" T.E. laminate to the shape shown in the plans. Bevel the laminate only, do not sand into the 1/16" T.E. bottom sheeting.
19. Glue the 1/16" x 1" x 36" top T.E. sheeting in place. Pin securely and allow to dry.
20. Prepare the forward wingtip for sheeting by sanding a bevel into it from the 1/8" x 1/4" top L.E. spar, forward thru the 5/16" sq. L.E., to provide seating for the 1/16" sheeting.
21. Glue and pin the 1/16" balsa top sheeting in place. It is helpful to lightly score the sheeting just outboard of W-9 to facilitate the slight compound curve required. Let this assembly dry completely.
22. Glue all top 1/16" x 1/4" cap strips in place on all ribs, W-12 aileron riblets and W-11 false ribs with the exception of the W-2/W-3 (PLY) ribs, the inner-most W-11 false rib and the first inboard W-4 rib. This section will be sheeted later.

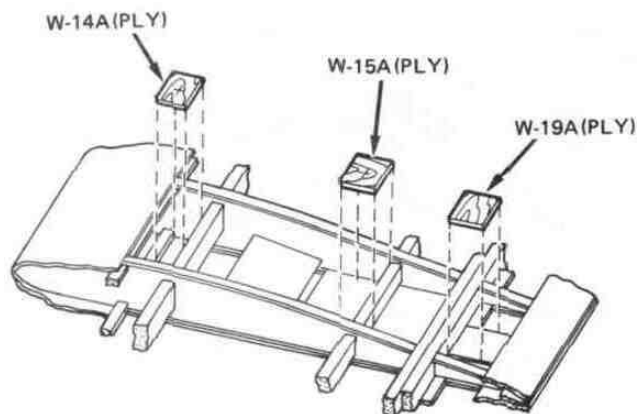


23. Locate and remove the 1/16" thick W-19A (PLY) horn plate doublers from their die-cut sheet. Glue in place on top of horn plate W-19 (PLY), as shown on the plans. Locate and remove 4 of the G-2, 3/32" balsa gussets and glue these in place into each corner of each aileron as shown on the plans.
24. Using a small sanding block and medium-to-coarse sandpaper, lightly sand the protruding tops of the aileron spar and aileron L.E. stock down to the airfoil level of the wing. These should blend with the cap strips to create the finished airfoil (refer to wing/aileron cross-section on the plans).
25. Prepare the aileron bellcrank mounting trays W-20 (PLY) by first drilling them per the dimensions given on the plans with a No. 45 (.082") drill bit. Mount the 90° aileron bellcranks to the trays as shown on the plans. These should work freely but without "slop". Epoxy the trays into place on the AT-1 supports in the W-6/W-7 rib bay.

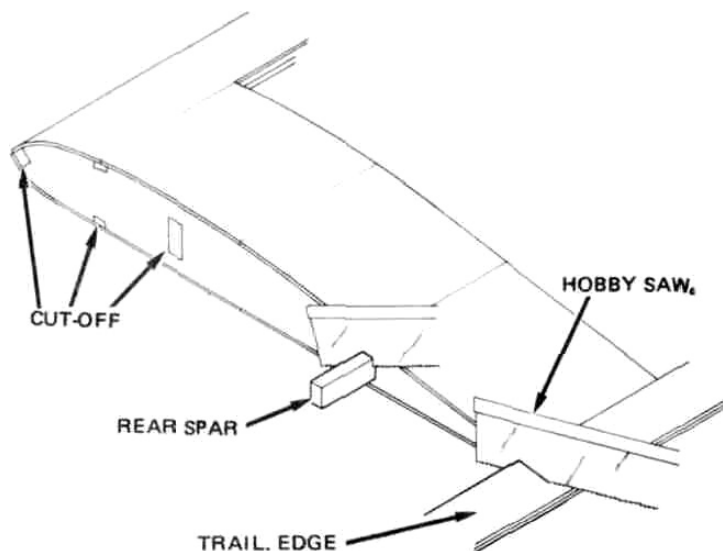
26. Remove wing panels from the building board. Inspect each panel carefully to be sure of good glue joints, etc. Now is the time to clean-up each panel to prepare them for finishing. Glue all the remaining gussets, G-1, G-2 and G-3 in place as shown.
27. Carefully block-up each panel upside down on the building board. Be sure that the panels are firmly pinned and blocked in place and that they are truly flat. Prepare the bottom forward 1/8" x 1/4" x 36" sheeting spar by first trial fitting it in place into the slots in the ribs. Relieve any rib slot that might force this spar out of true. Score the spar just outboard of rib W-9 and lightly crack it. Bevel the tip end of the spar to fit flush with the wingtip, as shown on the plans and glue the spar into place. Secure with pins and allow to dry.



28. Using a sanding block, bevel the wingtip from the 1/8" x 1/4" sheeting spar, forward thru the 5/16" sq. L.E. to provide seating for the 1/16" balsa L.E. bottom sheeting. Glue and pin the L.E. sheet in place. Note that it is advisable to lightly score the sheeting just outboard of the W-9 rib to facilitate the slight compound curve required. Let this assembly dry.
29. Locate and glue 1/16" thick parts W-15 (PLY), W-14 (PLY) and both W-13 (PLY)'s in place per the plan. NOTE: be sure to glue the W-15 (PLY) parts in place correctly to provide exit of the threaded aileron pushrods from the bellcrank end.



30. Using the 1/16" balsa sheet provided, sheet the wing root from the inboard W-4 rib thru the W-2/W-3 (PLY) rib noting grain direction on plans. Glue all remaining wing and aileron cap strips in place and allow to dry.
31. Remove the wing panels from the work surface. As before, inspect them, remove any glue runs and make sure all joints are properly glued. The panels can now be lightly sanded to final shape with the exception of rounding the leading edges to final shape. This will be done later. Locate and glue the 1/16" thick ply strut plate doublers W-15A (PLY) and W-14A (PLY) in place on top of W-14 (PLY) and W-15 (PLY).



32. Use a razor or hobby saw to remove the excess sheeting, L.E., T.E. and spar stock from the root of each wing panel. LIGHTLY sand the balance of this material flush with the face of root rib W-2. Be careful to sand ONLY to the face of this rib, not into it.

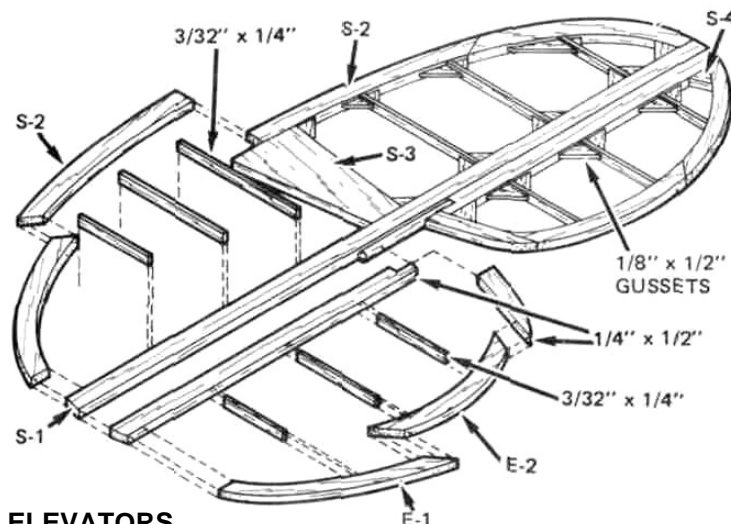
With a few exceptions, your wing panels are now complete. Proceed to the next construction phase of these instructions.

TAIL SURFACES

Accurate joints, complete glueing and a flat work surface are essential to strong tail surfaces. Cover stabilizer and rudder area of plan sheet 1 with Monokote backing material or Saran Wrap before beginning construction of these parts.

STABILIZER

1. Glue and pin in place all die-cut S-1's, S-2's, S-3, S-4's and the 1/4" x 1/2" balsa trailing edge. Using the 3/32" x 1/4" stock provided, cut to size and glue in place the "ribs". Do not glue the 1/8" x 1/2" gussets in place yet.

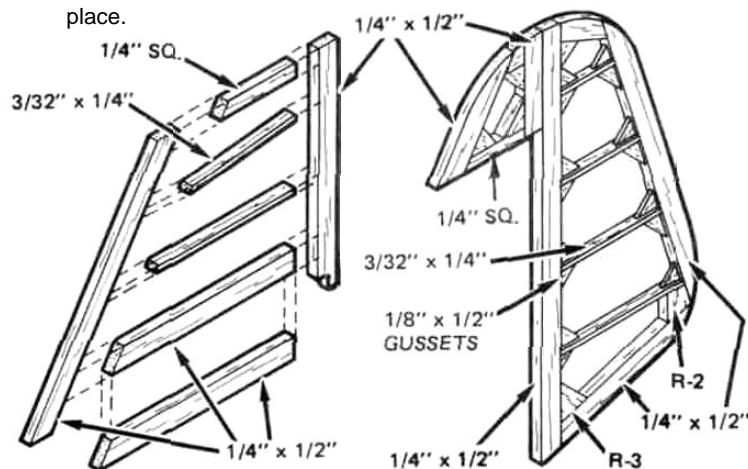


ELEVATORS

1. Glue and pin in place all die-cut E-1's, E-2's, E-3's, E-4's and the 1/4" x 1/2" leading and trailing edges from the stock provided. Cut and glue in place the 3/32" x 1/4" "ribs". Cut off a 3" length of 1/4" diameter dowel and epoxy in place between the two elevator halves as shown on the plans.
2. When the stabilizer and elevator assemblies have dried, remove them from the work surface. Inspect and clean-up each of the glue joints. Using the 1/8" x 1/2" stock provided, carefully make and install each of the gusset joint reinforcements, as shown on the plans. Fit these to each joint, noting grain direction and center them between the upper and lower surfaces.

FIN

1. Glue and pin in place die-cut parts R-1, R-4 and the 1/4" x 1/2" outline stock. Note on the plans that the bottom, trailing edge piece of 1/4" x 1/2" wood has an "extension" cut into it's shape. This area is shown as cross-hatched (////). Also note that 1/4" square balsa is used at the top of the fin to complete it's outline. Glue the 3/32" x 1/4" "ribs" in place.



RUDDER

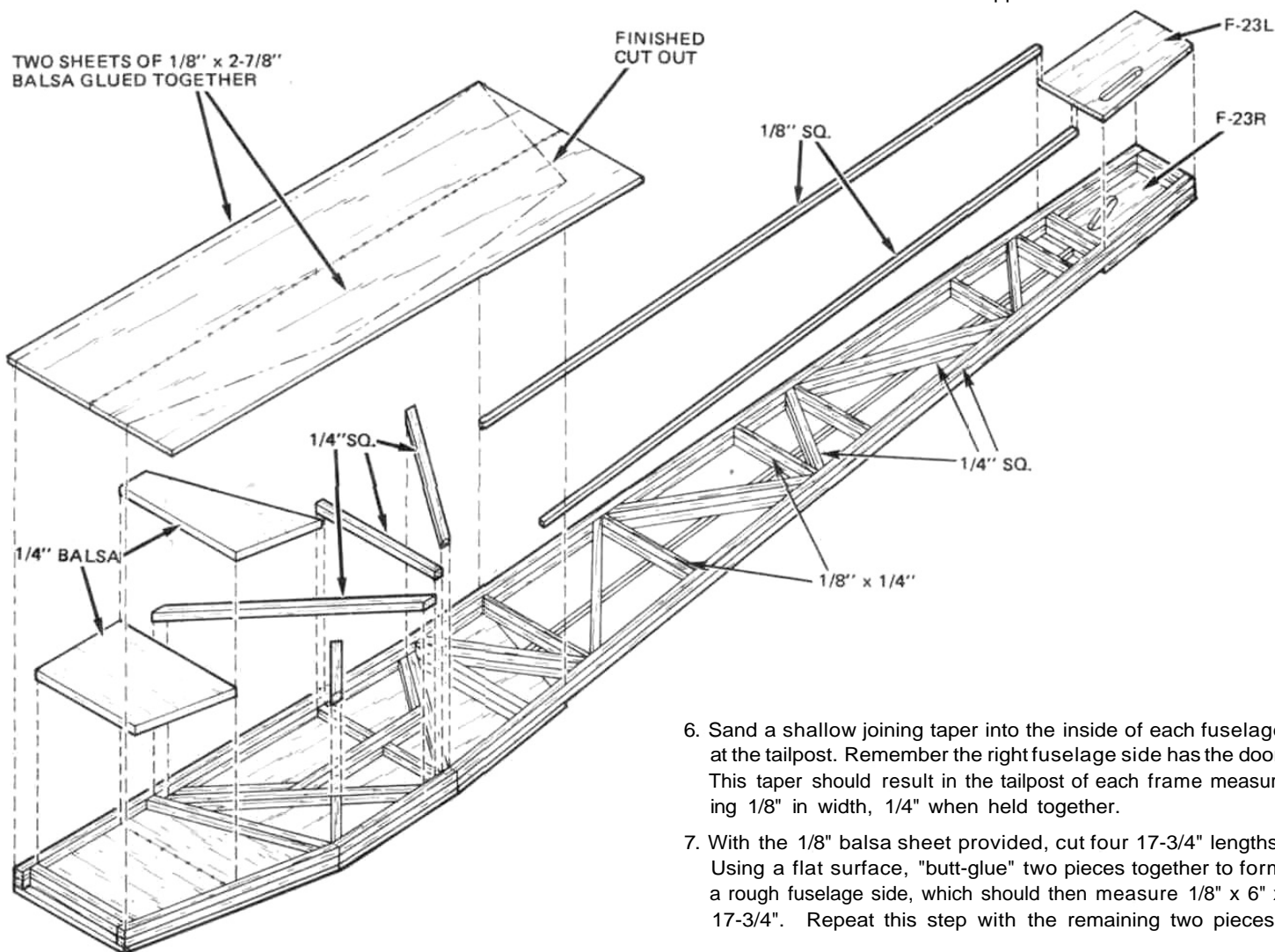
1. Glue and pin in place die-cut parts R-2, R-3 and the 1/4" x 1/2" outline stock. As with the fin, note the piece of 1/4" sq. stock used to complete the outline, just above the top of the fin. Glue the 3/32" x 1/4" "ribs" in place.
2. When the fin and rudder assemblies are dry, remove them from the work surface. Inspect and clean-up the joints. Like the stabilizer and elevator assemblies, install the gussets, centered between the outside surfaces.

Use a sanding block to sand the tail surfaces to the final outline shape shown on the plans. Sand the surfaces to remove any high spots. Finally, sand the final rounded cross-section shapes of each surface. Note that the R-1 piece on the front of the fin must blend into the 3/16" diameter dowel used for the "spine" stringer on the fuselage. Each surface should now be slotted for hinges and set aside for covering and assembly.

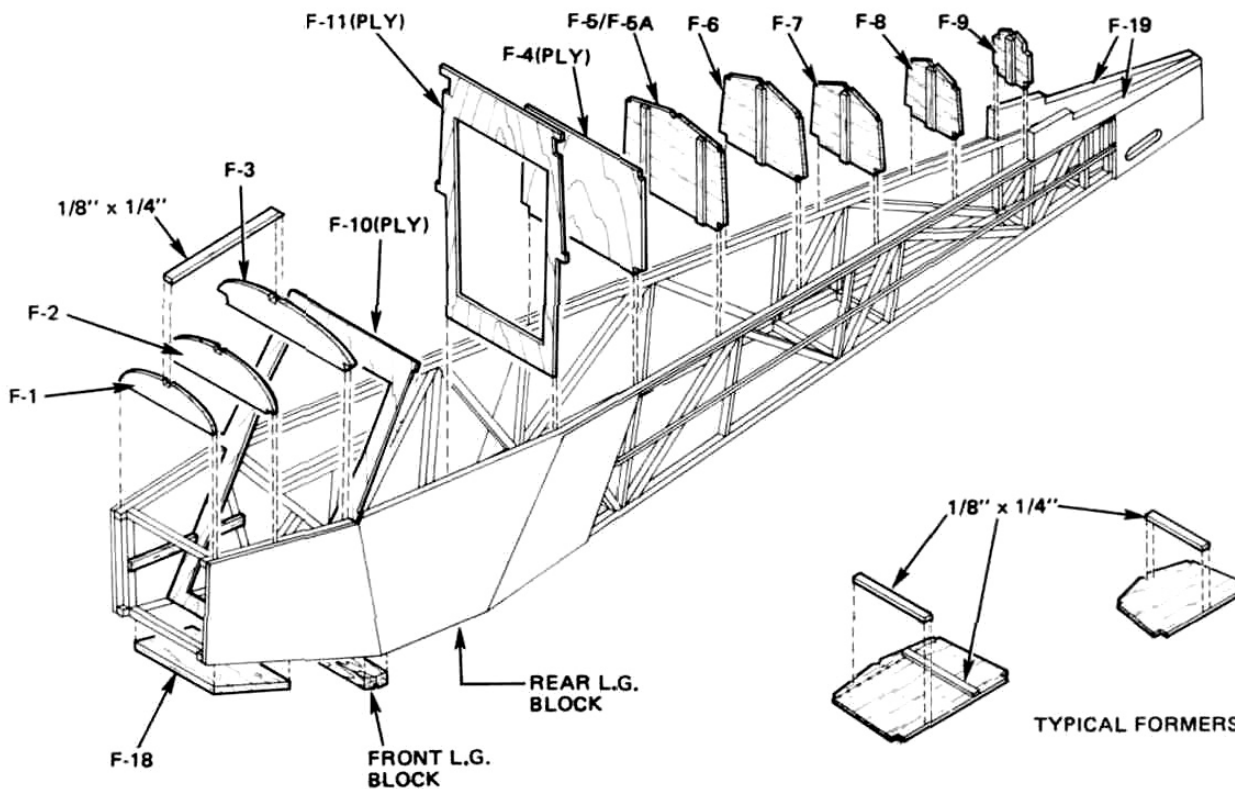
FUSELAGE CONSTRUCTION SEQUENCE

Carefully position and tape plan sheets No.'s 1 and 2 together, using the dashed lines. The two fuselage sides will be constructed one over the other to assure uniformity. These two sides are identical except that the right side will have the lower access door built into it. The instructions take this into consideration. To further insure uniformity we advise that two each of brace, upright and longeron be cut at the same time, when building the first side. Cover plan with Monokote backing or Saran Wrap before starting.

1. Start the right side by pinning and glueing the two-piece 1/4" square upper longeron in place. The forward piece is from the front of the firewall to F-11 position. The rear piece is from F-11 to rudder hinge line.
2. Pin and glue the three piece 1/4" square lower longeron in place. The forward piece is from the front of the firewall to the center of front landing gear block. The center piece from the center of front L.G. block to center of rear L.G. block. The rear piece runs from the center of the rear L.G. block back to the rudder hinge line.
3. Using the 1/4" square and 1/8" x 1/4" balsa provided, accurately cut, glue and pin all uprights in place. Note that the front, bottom and rear 1/4" square door outline should not be glued to the 1/4" square door frame. Maintain a slight gap all the way around the frame as the door will be cut free later. Also note that the forward-most nose upright is recessed back 1/4" to allow the firewall to key in place. With the 1/4" x 3" x 12" balsa provided, measure, **cut and glue** the fillers into the front of the fuselage.
4. Allow to dry and remove pins. With a sanding block, lightly smooth the frame. Cover frame with Monokote backing or Saran Wrap and repeat steps 1, 2 and 3 — deleting the door outline, building the left frame directly over the right one.
5. When dry remove both frames from the work surfaces. Inspect and clean-up the joints. We suggest double-glueing these joints. Lay the sides back over the plans and with a soft pencil, mark the location of formers F-2, F-10 (mark the location of this former on the INSIDE of each frame), F-11, F-4, F-5, F-6, F-7, F-8 and F-9. Last, mark the location of the 1/8" x 1/4" tank shelf supports at the nose.



6. Sand a shallow joining taper into the inside of each fuselage at the tailpost. Remember the right fuselage side has the door. This taper should result in the tailpost of each frame measuring 1/8" in width, 1/4" when held together.
7. With the 1/8" balsa sheet provided, cut four 17-3/4" lengths. Using a flat surface, "butt-glue" two pieces together to form a rough fuselage side, which should then measure 1/8" x 6" x 17-3/4". Repeat this step with the remaining two pieces.



Cut two fuselage sides. Note that at the furthest aft point the fuselage side ends at F-4 on the top and angles forward to the bottom as shown on the plans. At the nose, the sides extend past the first upright to the ends of the top and bottom longeron. The firewall fits inside of the fuselage sides.

With the fuselage side frames laying face down on the work surface, remember that the right side contains the door, glue the 1/8" sheet fuselage sides to the right and left fuselage frames. Pin in place. Glue die-cut pushrod exit sheets **F-23R** (for right side) and **F-23L** at the end of each fuselage frame. Pin in place. Glue the 1/8" square top longeron doubler in place between the end of the fuselage side and the front edges of **F-23R** and **F-23L**. Locate position of, and glue the "center" 1/8" square stringer in place along fuselage framing between fuselage sheeting and **F-23R** and **F-23L**.

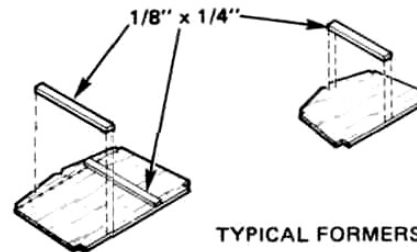
When the fuselage side assemblies are dry, place them accurately together and sand their edges with a sanding block to assure uniformity.

With a hobby saw or a razor blade, score the longerons of each fuselage side just behind the second 1/4" square upright, both the top and bottom. Turn the fuselage sides over and score the 1/8" sheeting along the same line represented by the back edge of the second fuselage upright. Do not cut all the way through but enough to allow the fuselage sides to be "cracked" inward along the scored lines. Place the fuselage sides down on the edge of a table, longeron side down, with the scored line just above the table edge. Carefully press down on the section ahead of the scored line and crack it. Do the same for the opposite fuselage side.

8. Glue **F-5A** to **F-5B** to form former **F-5**. Glue all 1/8" x 1/4" braces to **F-5**, **F-6**, **F-7**, **F-8** and **F-9**. Allow to dry.

Cover bottom view of plans with Monokote backing or Saran Wrap. Carefully cut, glue and pin all bottom 1/4" square and 1/8" x 1/4" cross-pieces and diagonals over plan.

Position rear landing gear block over plan with the slot facing down and the widest area of the block toward the rear. Secure with pins.



9. Pin and glue the right and left fuselage sides over the plans and to the cross-pieces, diagonals, the rear landing gear block and to each other at the rear tail-post. Use a triangle to keep the sides at 90° to the work surface.

Glue, position and pin formers **F-4 (PLY)**, **F-5**, **F-6**, **F-7**, **F-8** and **F-9** to top rear of fuselage sides using the pencil marks made earlier for location. NOTE: these formers do not sit at 90° to the top of the fuselage longerons, they "lean" slightly toward the rear of the fuselage as shown on the plans. Allow glue to dry.

Bevel the ends of the forward landing gear block to match those shown on the plans. Glue forward landing gear block in place, slot down. Note that the edges of this block will be beveled later to match the fuselage bottom.

Trim notches of former **F-3** slightly to allow it to sit at the angle shown on the plans. Glue former **F-3** in place.

Trial-fit former **F-11 (PLY)** in place, referring to Section D-D on plans. **F-11 (PLY)** must fit between the two 1/4" square uprights in this section and directly on top of the 1/4" square top longerons. Trim if necessary to fit and epoxy in place, centered on the uprights.

Using the location marks made earlier, trial-fit forward former **F-10 (PLY)** in place. Note that the installation of **F-10 (PLY)** requires that the bottom nose area of the fuselage be pulled in slightly. Glue the 1/8" x 1/4" tank supports in place using earlier marks. Epoxy **F-10 (PLY)** in place and **secure** with tape until dry.

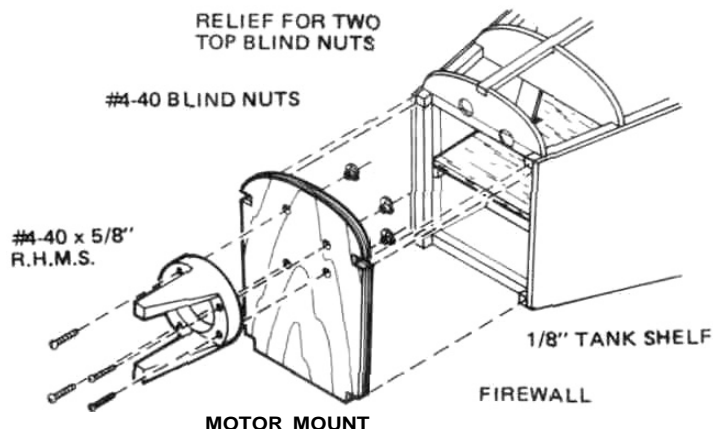
Glue **F-19** stabilizer supports in place at the rear of the fuselage. They glue to the top of the longerons, against **F-9** with the outer surface flush with the top 1/8" stringer — see Sections J-J and K-K on plans.

Cut and glue 1/4" square nose cross braces in place between top and bottom longerons. Glue the last two nose formers **F-1** and **F-2** in place. Glue the top center length of 1/8" x 1/4" stringer in place in slots in **F-1**, **F-2** and **F-3**.

When dry, remove fuselage from the building surface, inspect joints, clean them up as required, double glue if necessary and proceed to next step.

10. NOTE: This step assumes that you will be mounting your engine to the right side as shown on the plans.

Carefully cut-out the firewall template provided on plan sheet No. 2 and lightly glue it to the 1/4" plywood firewall. Drill four 3/16" diameter holes in the firewall using the template as a guide. Using the No. 4-40 x 5/8" bolts and the No. 4-40 blind mounting nuts provided, install the motor mount to the firewall. Tighten the bolts enough to force the blind nuts into the back of the firewall. Carefully remove the bolts and epoxy the blind nuts to the back of the firewall — DO NOT get any epoxy into the holes of the nuts but apply epoxy around the edges to retain them in place.

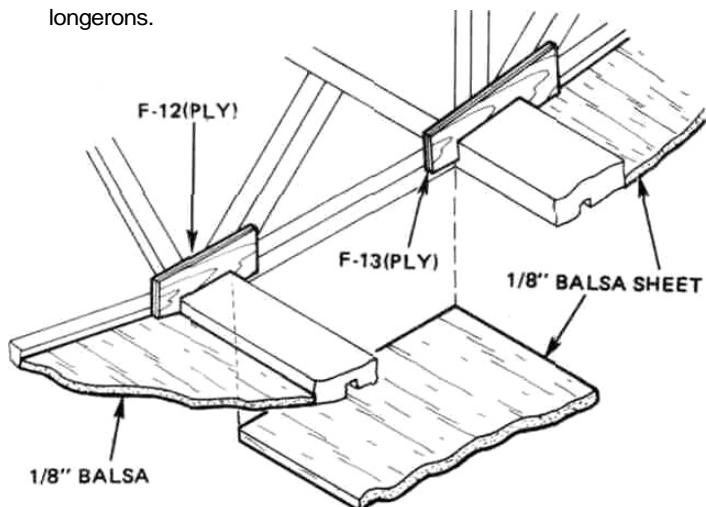


Trial-fit the firewall into the nose of the fuselage. You will note that it will be necessary to slightly relieve the top fuselage cross-brace and the face of F-1 to allow the firewall to fit flush. It may also be necessary to trim the firewall slightly to fit properly.

Using the remainder of the 1/8" sheeting used for the fuselage sides, cut, trim and fit two pieces of this stock, cross-grained as shown on the plans, to become the fuel tank tray. This is most easily done by making one piece to fit ahead of F-10 (PLY) and a second to fit behind it. DO NOT cut into F-10 (PLY) to fit these pieces. Work around it. Glue the tank tray pieces in place on the 1/8" x 1/4" supports.

Epoxy firewall in place against uprights, cross-braces, F-1 and tank tray.

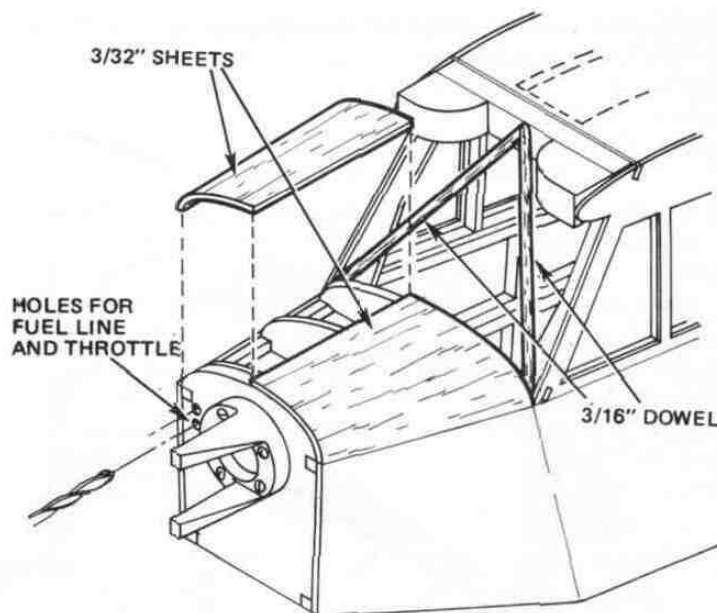
11. Fit and glue 1/4" die-cut bottom nose sheet F-18 in place. This part fits flush with the bottom longerons. With the remaining 1/8" sheet balsa, fill in the bottom of the fuselage, cross-grained, from the back of F-18 to the front landing gear block, between the front and rear landing gear blocks and from the rear landing gear block to the first 1/4" square bottom cross-brace. This sheeting fits flush with the bottom longerons.



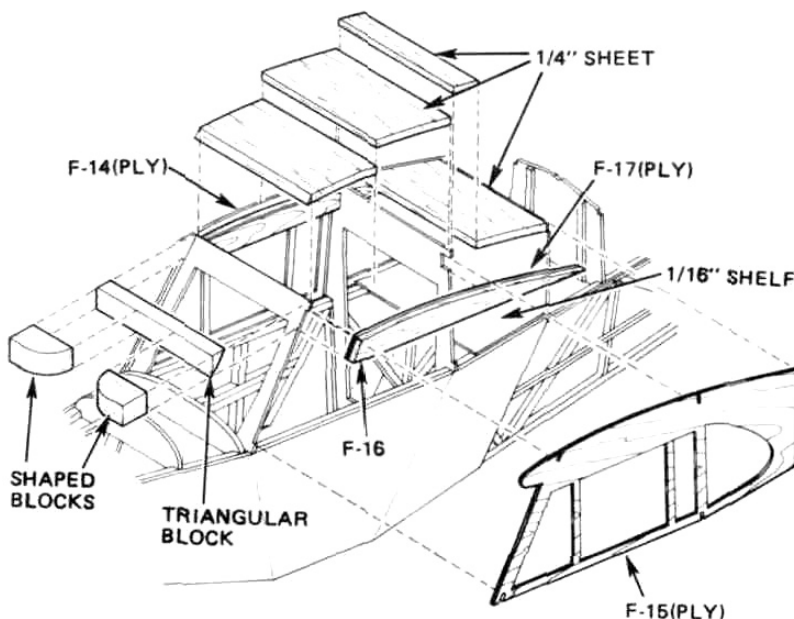
Epoxy both F-12 (PLY) forward landing gear block supports in place on the inside of the fuselage. Also epoxy both F-13 (PLY) rear supports in place.

Using two 5" lengths of the 1/4" x 3" x 24" balsa provided, cover the bottom of the nose area from the forward landing gear block to firewall — see side view. Trim the excess flush with the outer fuselage sides.

With the 3/32" sheet provided, plank the top nose area from F-3 forward to firewall. This is done with two pieces with the joining seam on top of the 1/8" x 1/4" balsa stringer. Sand flush with rear face of F-3 and front of firewall.



12. Carefully remove the two plywood cabin frames, F-14 (PLY) and F-15 (PLY), from their die-cut sheets. Remove the window cut-outs from the frames. Note that F-14 (PLY) is the right side cabin frame as it contains the upper door half. Remove this door section from F-14 (PLY) and set it aside along with the window cut-outs. Clean-up all of the inside window frame edges with a sanding block as required.

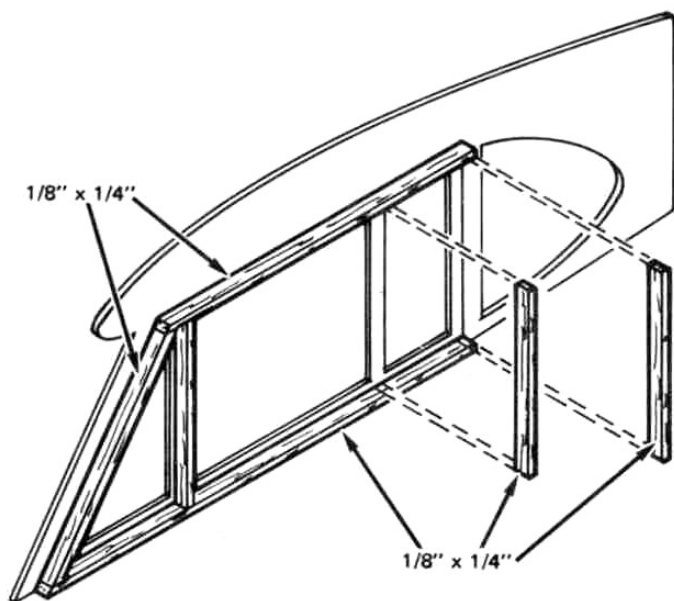


Epoxy F-14 (PLY) and F-15 (PLY) in place, on top of the fuselage longerons, against formers F-10 (PLY), F-11 (PLY) and F-4 (PLY) and keyed into the tabs on F-10 (PLY) and F-11 (PLY). Tape this assembly securely in place and allow glue to dry completely.

Laminate and glue F-17 (PLY) to F-16 (1/4" balsa). Make a similar second part but make it just the opposite so that you have a right and left F-16/F-17 (PLY) assembly.

Glue these two assemblies in place against the insides of F-14 (PLY) and F-15 (PLY) with the F-17 (PLY) facing each other in the cabin. Align and firmly clamp these assemblies until completely dry.

13. With the 1/16" sheet balsa provided, cut and fit the "shelf" that sits on the fuselage top longerons just in front of F-4 (PLY). Glue in place.

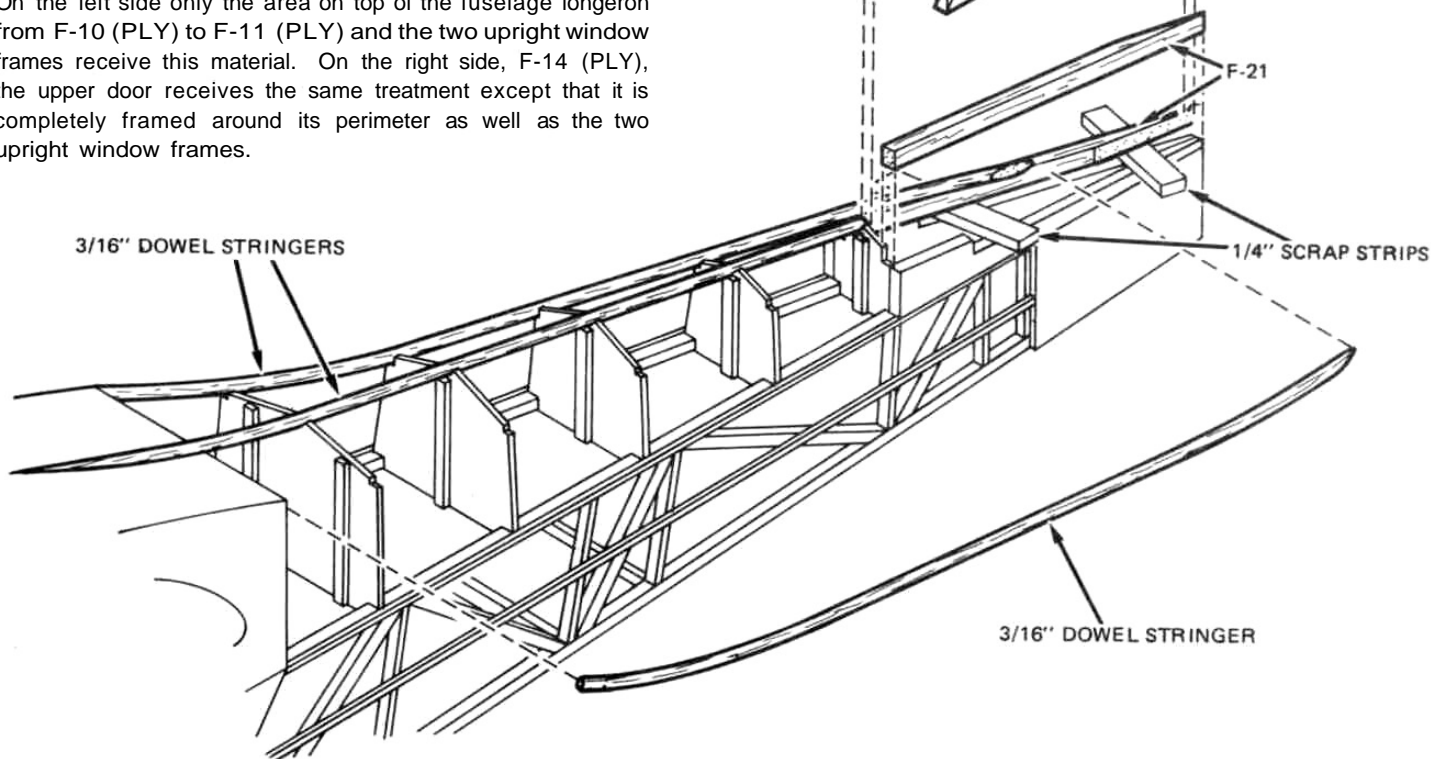
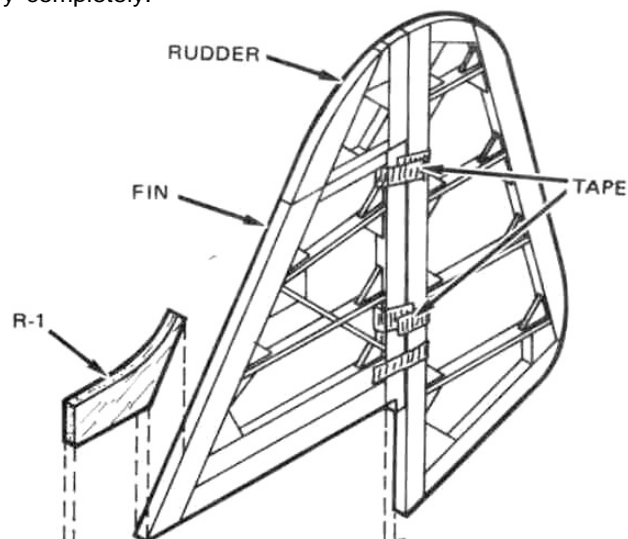


Frame the left cabin side F-15 (PLY) windows with 1/8" x 1/4" stock provided. The 1/8" side fits against the plywood. On the left side only the area on top of the fuselage longeron from F-10 (PLY) to F-11 (PLY) and the two upright window frames receive this material. On the right side, F-14 (PLY), the upper door receives the same treatment except that it is completely framed around its perimeter as well as the two upright window frames.

With the 1/4" balsa sheet provided, accurately measure, cut and fit the top cabin sheeting in place from the back of F-10 (PLY) to the front of F-4 (PLY). Note cross-grain direction. THE PIECES MUST FIT ACCURATELY TO ACHIEVE THE MAXIMUM STRENGTH. Once satisfied with the fit, epoxy these parts in place and allow to dry.

Carefully trim and fit the triangular cross-piece block that sits on the front of F-10 (PLY) and between the F-14 (PLY) and F-15 (PLY) cabin sides — see side view. Glue this block in place. Next, we have provided one block with two radiused ends. Using the top view on plan sheet No. 2, cut two top forward wing blocks. Epoxy these two blocks in place against the triangular block and F-14 (PLY) and F-15 (PLY). They will be final shaped later.

14. Use a piece of scrap 1/4" sheet to rest on top of the two F-19 stabilizer supports, to fill the stabilizer slot. Trial-fit the fin in place as shown on the plans. Note that when properly in place, R-1 contacts F-9 and the trailing edge of the fin lines up with vertical end of the fuselage. Once satisfied, glue the fin in place against F-9 at the front and at the rear, the small cross-hatched area of the fin trailing edge on top of the F-19's (see side view of plans). Use pins and tape to assure the fin is truly vertical to the fuselage. Allow to dry completely.

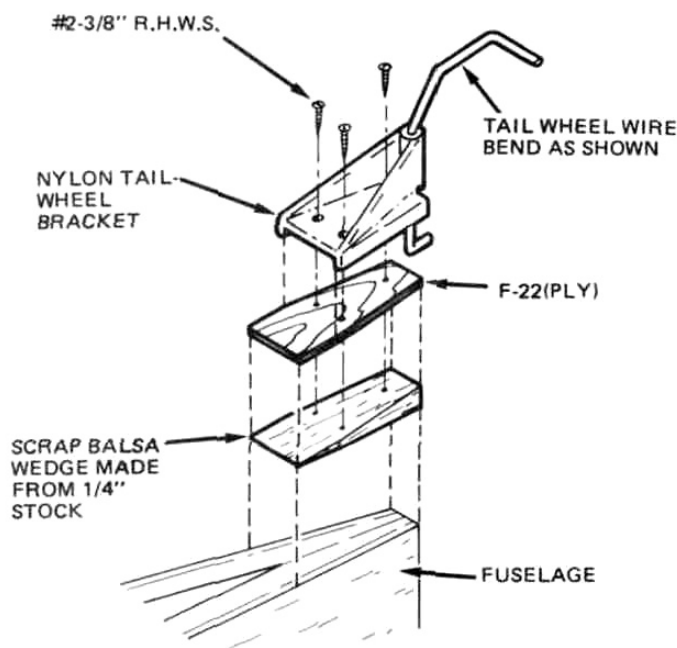


Remove the 1/4" die-cut F-21 fin supports from their sheet. Note that these fit in place in the notches provided on each side of F-9, back to the trailing edges of the fin. Bevel the inside edge of each F-21 to fit flush with the fin and glue in place. Allow to dry.

15. Note that notches have been provided in all formers from F-4 (PLY) thru F-9. These are to support the three 3/16" dia. stringer dowels. The two side dowels are to blend smoothly with F-21 at the tail. The center dowel is to blend with the roof line as shown on the top view of the plans and at the tail it "carries thru" the fin shape at R-1. Sand and trim the dowels as required. Fit them in place, relieving any former that might force them out of true. Glue dowels in place and secure with tape until dry. Remove the 1/4" scrap filler from the stabilizer slot.

Using a sanding block and medium paper, sand the F-19, F-21 and the stringer dowels to the cross-section shapes shown on the plans.

16. Trim F-22 (PLY) tailwheel mount to fit inside of the tailwheel bracket. As shown on the plans, epoxy a wedge of 1/4" balsa to F-22 (PLY), sand to shape and epoxy to the bottom of the fuselage at the tailpost. When dry, mount the tailwheel bracket to the F-22 (PLY) base with the No. 2 screws provided. Do not overtighten screws. Bend the tailwheel wire to the shape shown WITHOUT the "L" bend at the top. Insert the wire into the nylon bracket and then bend the 90° "L" bend that goes into the rudder. Drill a pilot hole in the rudder for the small length of brass tube provided and epoxy this tube in place. Make a slot below the tubing to clear the tailwheel wire in the rudder. Remove the tailwheel assembly from the fuselage.

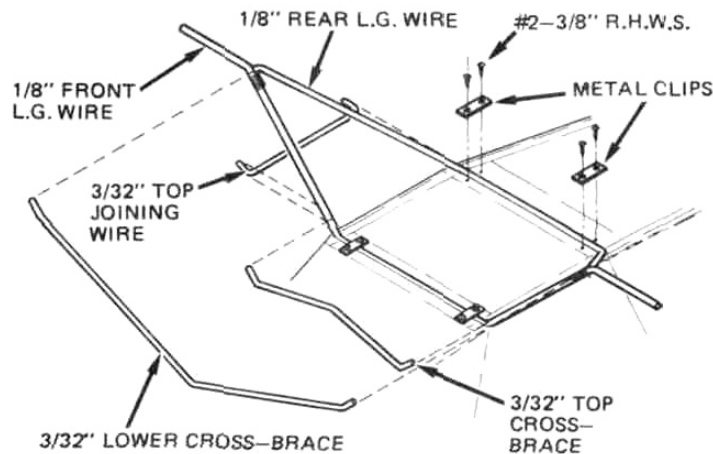


17. Sand entire fuselage to final shape. Take this time to inspect joints, double-glue as needed. Do any filling that might be required. The shaped blocks ahead of the cabin carry thru the leading edge shape of the wing. It is advised that these be rough-carved to shape and final sanded only when the wing panels are mounted to the fuselage.
18. If you are planning to install a top observation window over the cabin (window material not supplied), take the measurements for its size and location from the plans and cut it out of the 1/4" cabin sheet. Our prototypes used .020" butyrate for this detail.

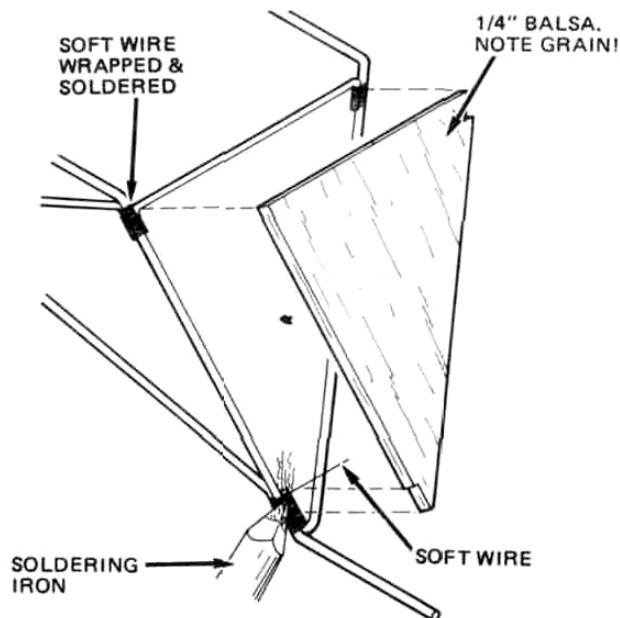
LANDING GEAR

Note that the landing gear wires have been essentially pre-bent to shape. It may be necessary to slightly correct some of these bends during assembly with pliers or a vise. Take the time to be sure that these wires fit well with one another. Before assembly, clean off the wires with a degreasing agent, such as alcohol, acetone, etc. A good technique is to sand these wires with No. 400 sandpaper around the areas that are to be soldered before assembly.

1. Turn the fuselage over on its back and position the front L.G. wire (1/8" dia.) into the forward landing gear block. Be sure it is centered from side to side. Position the rear landing gear wire — also 1/8" dia. — into the rear L.G. block. Using the plans for reference, fit the rear wire to the forward one at the axles and temporarily hold in place with a small piece of tape. Now fit the LOWER 3/32" diameter cross-brace wire in place and correct as needed for proper fit. Carefully wrap the three wires together at each axle as shown, with soft copper wire. Solder these joints.
2. With the landing gear still in place **on** the fuselage, fit the two 3/32" dia. top joining wires in place as shown. Wrap the joints carefully with wire and apply just enough solder to each of the four joints to keep the wires from shifting. Carefully remove the landing gear assembly from the fuselage and complete the soldering of these joints.



3. Fit the top cross-brace wire in place, directly over the lower wire. They should line-up when viewing from the side. Wrap the two joints required with soft wire and solder.



4. Clean-up each of the solder joints with a wire brush and make sure that the joints are strong. With the 1/4" sheet provided, make two inserts to fill the triangle created by the front and rear main wires. Epoxy these in place, centering them on the front and rear wires. When dry, sand them to shape using the front and rear wires as the "leading and trailing" edges. Slip your wheels in place and secure with wheel collars (not furnished). Cut off the excess axle wire and except for covering the fillers, the landing gear is ready for use.
5. Again place the landing gear assembly on the fuselage. Locate and drill 1/16" guide holes for the four metal landing gear clips (see plan for position). Leave the landing gear in position and make the two wing strut supports as shown on the plans from the material provided. With the two rear landing gear clips in position, drill the guide holes for these supports. Remove all hardware from the fuselage and set aside for final assembly.
7. Slightly enlarge the hole in the W-1 (PLY)/W-2/W-3 (PLY) wing roots to accept the outer diameter of the 1/4"-20 blind mounting nut that will serve as the wing bolt attach point. Epoxy these nuts in place as shown on the plans. Keep epoxy away from the threads, but use enough to keep the nut from coming loose.
8. With the 1/16" balsa sheet provided, cover the top center section of each wing panel and allow to dry. Trim the excess outer nyrod tube flush with W-1 (PLY).
9. Join the two wing panels together on the work surface using some scrap 1/4" dia. dowels at the W-1 (PLY)'s for alignment. Use a sanding block to final sand the leading edges to the finished shape. Once satisfied that the panels have the same leading edge shape, sand the rest of the panels to final shape, including the wing tips.
10. Drill the 1/16" guide holes in each aileron horn mounting plate, W-19 (PLY). Mount aileron horns with No. 2 screws provided. As shown on the plans, bend to correct length and install the aileron pushrod — provided — to the 90° aileron bellcrank. Since the ailerons have not yet been cut free from the wing, neutral is easy to achieve. Turn the wing panels over and epoxy the bellcrank nut to the bellcrank tray W-20 (PLY). Remove the aileron horns from the ailerons and set aside for assembly after covering.

FINAL ASSEMBLY

1. Remove both W-1 (PLY) "cap" ribs from their sheet. Remove the four (4) holes stamped on their surface. An X-acto knife does this best. Accurately tack-glue these two ribs together. Use a sanding block to "match" their outlines — they must be identical. Use a 1/4" dia. drill bit to "match" the four holes. These too, must be the same. Once satisfied, separate the two ribs and clean off any dried glue with a sanding block.
2. Tack-glue each W-1 (PLY) to each side of the fuselage, matching the top of the rib to the same edge as the cabin. This must be accurate to insure proper wing/fuselage mating. "Eyeball" the two holes at each end of the W-1 (PLY)'s to be sure that the 1/4" dowel holes you are about to drill will clear F-10 (PLY) and F-11 (PLY) as shown on the plans. Use an electric drill and a 1/4" dia. bit to drill the four holes into each fuselage side, using the W-1 (PLY)'s as a template. NOTE: drill these holes at right angles to the fuselage sides and all the way through the inner F-17 (PLY)'s. Use a pencil to mark the left W-1 (PLY) "L" and the right one "R". Remove them from the fuselage.
3. Cut two 6-1/4" lengths of 1/4" dia. dowel provided. Slightly round their ends and insert them in place through the fuselage. Center them as shown on the plans. These are the forward and aft wing panel supports and will NOT be epoxied in place until after the fuselage is covered. Leave them in place for now for positioning wing panels.
4. Thread the outer nyrod tube through the wing ribs to just inside the W-6 rib as shown on the plans. Leave the excess sticking out of the root rib W-2. Epoxy these tubes in place on each rib. Make the "L-bend" linkage for the inner nyrod tube to connect the 90° bellcrank to the inner pushrod.
5. Drill holes for, and press in place, the wing strut blind mounting nuts (No. 4-40 provided) into W-14A (PLY) and W-15A (PLY), as shown on the plans. Drill holes for the interplane strut eyelets in the W-13 (PLY)'s. DO NOT glue eyelets in place until after the wings are covered.
6. Place the wing panels on a FLAT surface, using weights to keep them that way. Epoxy the W-1 (PLY) "cap" rib, that you makred "L", to the left wing panel root, over the nyrod tube and flat against W-2 rib. Both the W-1 (PLY) rib and the wing panel must be flat against a common surface for alignment. Repeat this step with the right panel. When these assemblies are dry, use the drill and 1/4" bit to drill all four holes in W-1 (PLY) through the wing root W-2/W-3(PLY) laminate. Like the fuselage, drill these holes at accurate right angles to the wing root surface.
11. Carefully cut ailerons free from wing at the inboard trailing edge. Break free the tack-glued joint between the aileron spar and the aileron leading edge. Lightly sand the leading edge of each aileron to the cross-section shown in Section B-B on the plans, using a flat sanding block and medium paper. Cut the hinge slots in each wing panel and aileron and trial-fit. The ailerons and panels are now ready for covering.
12. The bottom door on the right side of the fuselage can now be cut free. Pin holes made from the inside at each corner of the door between the 1/4" square frames will mark it's location accurately. Once the door is free from the fuselage, use a sanding block to smooth it's edges. Set aside for covering.
13. Remove the 1/4" spacer that is between the F-19 and **F-21** pieces at the tail of the fuselage. When the fuselage and fin are covered, remove the material from around the stabilizer slot and cut-away the small piece of wood at the tailpost to facilitate installing the stabilizer. The stabilizer should be first covered separately, trial-fitted in place and then have the fabric removed from the center-section where it contacts the upper F-21's and lower F-19's to create a good glue joint. Only then should it be glued in place. Then the covered elevators are hinged to the stabilizer followed by hinging the covered rudder over the tailwheel steering wire to the fin.
14. The top and bottom access doors are meant to be fully functional and provide access to the radio equipment as well as the nylon 1/4"-20 wing attach bolts. Therefore provisions for hinging these doors as well as being able to "lock" them in place should now be considered. On plan sheet No. 2 we show a scale-like method of being able to open and lock these two doors. This is the method we used on our prototype and it works well. We hinged our doors with regular model aircraft hinges. If this method does not appeal to you, we suggest hinging the doors with yellow Super Monokote strips and using tape or Trim Monokote at the center to keep the doors closed.
15. The aileron, rudder and elevator servos should now be installed. The installation shown on the plans is exactly what we used on our prototypes and works very well. Install the rudder and elevator nyrods as shown. Be sure to anchor the outer nyrods in place at various points in the fuselage to pre-

vent "snaking". The location of the rudder and elevator horns should be established, the holes drilled but not installed until after covering. The aileron servo should be first mounted to the manufacturer's aileron servo tray. The tray is then mounted to a 1/16" plywood plate that has been cut to size. The plate is then epoxied in the correct position to the inside roof of the cabin. The flexible inner nyrod ends that connect the ailerons to the servo can accomodate virtually any servo type and output arm available. Make sure the servo installation works smoothly before covering. The throttle servo is installed after the plane is covered and the engine installed.

STRUTS

IMPORTANT NOTE: THE WING STRUTS ON YOUR J-3 CUB ARE FULLY FUNCTIONAL AND ARE ABSOLUTELY REQUIRED FOR FLIGHT. THEIR ASSEMBLY, FIT AND ATTACHMENT ARE CRITICAL. DO NOT DEVIATE FROM ANY OF THE FOLLOWING INSTRUCTIONS:

1. The wing struts provided (4) are 9/32" x 11/16" x 27" hardwood, preshaped. Very little sanding should be required to smooth their surface. Extra length has been provided to allow a mistake or two achieving the correct angles. Beveling these parts to fit flush with the bottom of the wing is important and should be done carefully. Note that none of the wing struts are interchangeable. There must be a left-front, left-rear, right-front and right-rear. In order to avoid confusion it is suggested that you make a front and rear strut for one panel, mark them as such, set them aside and proceed to the opposite set.
2. Start by assembling the right and left wing panels to the fuselage and securing with the 1/4"-20 nylon bolts provided. Attach the brass strut plates to the bottom of the fuselage as shown on the plans. Set the assembled airplane upside down on a flat surface — linoleum floors work well — with a 1/4" spacer between the top of the fuselage and the flat surface. This will impart a slight amount of dihedral to the wings as in the full scale Cub.
3. As mentioned in No. 1 above, start with either the right or left side, beginning with the FORWARD strut. Prop up one strut, on edge, directly over the front view of the wing/strut joint on plan sheet No. 2. Remember there is a left and right strut. Using a razor saw, carefully saw off the end of the strut at the angle shown on the plans. Next, take this strut over to your inverted model and, holding the cut angle against the forward outboard strut plate, make sure that the inboard end of the strut is at approximately the right location to encounter the brass strut plate. Note that the strut at this point is too long. It will be cut to length shortly. If the angle at the end of the strut is not quite right, use a sanding block to bring it to true. Using a 7/64" dia. drill bit, drill the outboard strut-attach hole through the end of the strut as shown on the plans, at a right angle to the bottom of the wing. This hole is for clearance of the No. 4-40 machine screw that mounts the strut to the wing. Slip one of the No. 4-40 machine screws provided through the hole you've just drilled and into the blind mounting nut in the wing. Tighten this screw just enough to create an impression of the screw head in the wood. Remove the screw. With a grinder, knife or sanding block, create a small "flat" around the hole to allow the head of the screw to sit flush to the wood when in place. As shown on the plans, epoxy one of the No. 4 steel washers provided, to the strut, over the attach-hole. When dry, attach the strut to the wing.
4. The inboard end of the strut is simply cut to length as shown on the plans. Remove the strut from the wing. With a 1/16" dia. drill bit, drill the guide hole for the No. 2-56 x 1"

threaded stud that is to be tapped 1/2" into the inboard end of the strut. Do not drill this hole any deeper than 9/16". Tape off 1/2" of the No. 2-56 x 1" stud with masking tape, dip the exposed end into 5-minute epoxy and "screw" this end into the hole in the end of the strut to the depth of the masking tape. Pliers can be used to hold the stud during this operation. Wipe off any excess epoxy. Remove tape and allow to dry. Thread one of the clevises provided onto the exposed end of the stud and attach to the brass plate, in the forward hole. Reattach the strut to the wing and fuselage and proceed to make the rear strut. Follow the same procedure as above. Note that rear inboard end of the forward strut must be trimmed as is shown on the plans to allow the rear strut to fit closely to it.

5. The "interplane" struts are made from the two pieces of .072" dia. x 12" wire provided. Their shape is depicted on plan sheet No. 3, in Section A-A. Note: do not bend these to shape until the two nylon mounting clips are first slipped in place with their ends facing inboard, toward the fuselage and flat against the front and rear struts. The ends of the interplate strut fit into the eyelets provided in the wing. Note that in the front view, the interplane struts exit the wing at right angles to the bottom of the wing and are held in place by the nylon fittings which are attached to the spars with the No. 2 x 1/4" wood screws provided also. The ends of these struts ride free in the eyelets for removal.
6. We strongly recommend that you cover your struts with Fabrikote. This will further strengthen these struts and, if you are using Fabrikote to cover the rest of your Cub, they will be color coordinated and ready to use. If you are planning to use any other covering, we recommend that you fiberglass the struts and paint to match.

COVERING AND FINISH

The full-scale J-3 Cub is almost completely fabric covered. This covering kept the weight down and added strength. Your Cub, being an accurate scale model not just in outline but in construction sense as well, requires the same considerations. Top Flite's FABRIKOTE is the perfect covering material for your Cub. It is extremely light, woven aircraft fabric that is very strong and is pre-finished and ready-to-use. The PIPER YELLOW color in FABRIKOTE will yield a perfectly finished J-3 PIPER CUB. On plan sheet No. 1 you will find the Fabrikote cutting layout. Note that this layout is approximate and your covering techniques may increase or decrease some of the dimensions shown.

All of the individual parts of our prototypes were covered separately; ailerons, doors, stabilizer, rudder, elevators, struts, wing panels and the fuselage. Only after covering did we hinge the surfaces, add the windshield and windows, the window support dowels (3/16" dia. provided), install the cowlings and add any of the details.

The one piece cowl is matched to the Fabrikote PIPER YELLOW color and requires no additional finishing. If you wish to paint the cowl we suggest using an epoxy-type paint, color mixed to match, after first sanding with No. 600 paper, wet. Note that we have provided an accurate, correct scale 3-view drawing of the 4 cylinder Lycoming engine used in many of the full scale Cubs. These details can be added using plastic, metal, wood and a little craftsmanship.

The 3-sheet set of mylar decals will complete your Cub. The location for these decals are called-out on the plan sheets.

Be sure to give the firewall area of the fuselage a liberal coat of polyester resin or epoxy glue to fuel proof it and to seal the nose. Be careful not to get any resin or glue into the cowl mounting block screw holes.

If, for any reason, you choose not to use Fabrikote for covering your Cub, we recommend that you use some kind of fabric covering, such as silk and dope. CLOTH COVERING IS RECOMMENDED ON THIS MODEL.

ENGINE AND COWL MOUNTING

1. Use a few drops of cyanoacrylate glue to mount your engine temporarily to the motor mount, in the approximate position shown on the plans. Turn the fuselage so that the firewall is pointing straight up. Set the engine and mount on the firewall about where it is shown on the plans, except turn the cylinder head of the engine so that it is inverted instead of side-mounted. Slip the cowl over the engine and on the fuselage. On some types of engines, it may be necessary to remove the needle valve.

If the engine is sticking too far out of the cowl opening or is not sticking out far enough, remove the cowl and reposition the engine on the mount to correct. Once you have the engine on the mount where you want it and the cowl down over the nose of the fuselage where it will finally fit, remove the cowl and use the engine's position on the mount to mark hole locations for mounting the engine to the motor mount. Remove the engine.

2. The typical .40 engine requires the use of No. 4 x 5/8" sheet metal screws (not furnished) to mount the engine to the motor mount. Use a 3/32" dia. drill bit and accurately drill the motor mount with four guide holes. Next it will be necessary to pre-tap these holes with a No. 4 x 5/8" sheet metal screw. Use some oil on the screw and in the holes to assist in the thread cutting.
3. Bolt the motor mount, without engine, in place on the firewall. If you are using a muffler, attach it to the engine at this time along with the needle valve, and anything else that might be left off. Using the plans as a rough guide, CAREFULLY begin to cut-out the right side of the cowl. The use of a hand held grinder is the quickest way to do this. Enlarge this hole gradually until you can fit your engine through the cowl and set it on the motor mount while the cowl is held in place with tape or by hand. Once you are satisfied that the hole is adequate and enough clearance is left around the engine, the edges of the cut-out can be cleaned-up and smoothed with light sandpaper. Remove the cowl from the fuselage.
4. Three (3) 1/2" x 1/2" x 1/2" hardwood cowl-mounting blocks are provided. These must now be epoxied in place on the firewall as shown on the plans. Different engine set-ups may require that these be moved to other locations. This is no problem, as long as they roughly represent a triangular mounting for the cowl. It is important that these blocks be epoxied in place at the edge of the fuselage sides at the firewall. Too far inside the edge will allow the mounting screws to distort the cowl when they are tightened in place.

Slip the cowl over the front of the fuselage and then temporarily mount the engine with at least two screws so that it is flat against the mount arms. Position the cowl on the fuselage so that it is properly clearing the engine and drive washer and is square, both from the side view and the top view. Use masking tape to hold the cowl firmly in position.

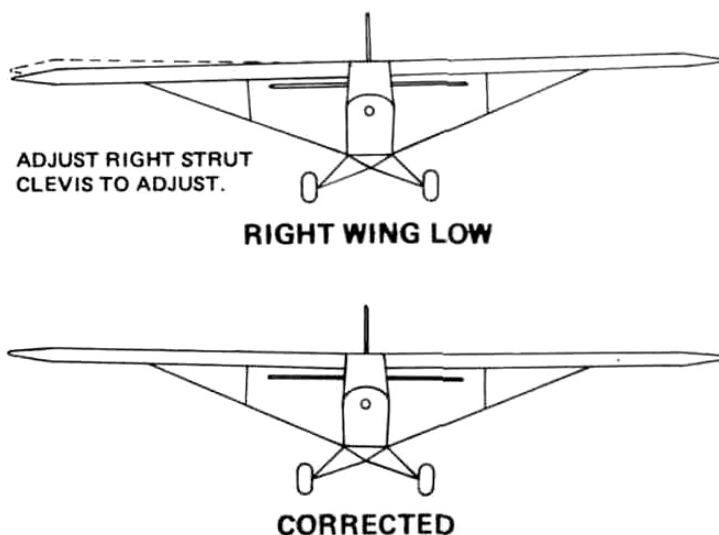
Hold the nose of the fuselage to a light source, such as a bare light bulb and the mounting blocks can be clearly seen thru the light yellow plastic. With a pencil, mark a hole location directly over each mounting block, in the approximate center of it. With a nail or other sharp object, mark and pre-punch each of the three pencil marks on the cowl. With a 1/16" dia. bit, drill each of the three mounting holes through the cowl

and mounting blocks. Screw the three No. 2 x 1/2" cowl mounting screws in place and remove the tape holding the cowl to the fuselage. Slip the engine in place to be sure the cowl is correctly in place. If tightening the cowl mounting screws tends to force the cowl inward (distortion), that particular mounting block should be shimmed with a scrap piece of plywood to close the gap.

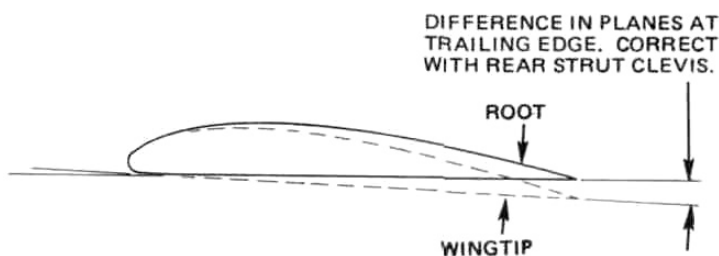
5. With the cowl removed and the engine in place, mark the fuel line and throttle line holes. Remove the engine and drill these holes.
6. The throttle servo can now be installed in the fuselage. The location of this servo can vary as long as the access to it is maintained and it's action does not interfere with the fuel lines or the tank itself.
7. The fuel tank and fuel lines should be installed carefully to ensure correct fuel feed. The tank itself should be surrounded by foam rubber to keep it from "foaming" and to keep it in place on the tank tray.

PRE-FLIGHT ADJUSTMENT AND RIGGING

Attach the wing panels and struts to the fuselage. It is NOT necessary to overtighten the wing bolts, just snug them in place. With everything attached, stand back and view the airplane head-on. If one wing appears to be low, adjust the strut clevises (both) to correct. Once the wing panels appear the same and are square with the stabilizer and rudder, proceed to the next step (see diagram below).



Now turn the airplane so that you can view it from the side. Sight down the wing panel facing you to determine if the bottom of the wing at the tip is on the same plane as the bottom of the wing at the fuselage. Initially, you should adjust either the forward or rear strut (they act independently) to achieve the same plane with both the inboard and outboard wing sections (see diagram below).



Repeat this step on the opposite wing panel. Once you are satisfied that the wing panel are aligned properly with both the fin and stab and each other, "lock" all four strut clevises in place by tightening the No. 2-56 nut firmly against the back of the clevises as shown on the plans. DO NOT forget to use small lengths of fuel tubing over each of the clevises when they are in place on your airplane. Without these fuel line lengths in place, a clevis could, under high loads, become "unpinned", leaving the wing without proper support.

BALANCING

The C.G. range (Center of Gravity) shown on the plans is the ideal location. DO NOT exceed the rearward limit shown on the plans. Our prototypes did not require any additional weights to achieve correct balance. Always balance your aircraft "dry". That is: all equipment in place, ready to fly, but WITHOUT fuel.

For initial flights it is best if the airplane is slightly nose heavy. This condition keeps the airplane naturally stable with less chance of stalling or snap-rolling. A slightly forward C.G. also makes the controls somewhat less sensitive and lessens the chance of over-controlling. As flight time and familiarity build up, you may wish to re-balance your Cub with a more rearward C.G. to increase it's acrobatic ability. Do this gradually and check control response at a good altitude.

ENGINE AND RADIO

The engine used in your **Cub** should be completely broken-in and have the ability to idle reliably. Be sure that your fuel tank is properly installed and that the fuel lines are feeding properly. We have found that running the tank with "manifold pressure" — a pressure tap nipple, tapped into the muffler with the overflow fuel line connected to it — greatly enhances fuel feed at all attitudes — the plane may go through — loops, rolls, etc.

Your radio installation should be neat with all connections absolutely secure. Do not fly without fuel line safety tubes over clevises, as shown on the plans. Set the aileron, elevator and rudder movements to those shown on the plans. These surface throws will give you positive control of the airplane without making it over-sensitive. Later, when you are more familiar with the airplane, these throws can be changed to suit your flying style.

Your radio equipment **MUST** be reliable. DO NOT attempt to fly with a radio that is suspect in any way.

FLYING

If you are a newcomer to radio control, we do not recommend that you fly your Cub without the help of an experienced R/C pilot. Hobby shops in your area can direct you to an organized R/C club. These clubs can offer the beginner much assistance and advice and they usually have a flying site that is suitable for radio controlled aircraft.

We would suggest that for test flights, a calm day be chosen. Test flying in strong winds can be done but it is more difficult. Although the Cub can be operated out of a relatively small area, a sanctioned R/C flying site, with plenty of area, free of obstructions is much more desirable. Your Cub can be flown off either asphalt or a cut-grass field. Hand launching an aircraft of this size is not recommended.

With a full tank and the engine idling reliably, point the plane directly into the wind, advance the throttle slowly and correct for torque with a small amount of right rudder. The Cub should be airborne in just a few feet. Don't let the nose come up too sharply and use both aileron and rudder to keep the wings level during the climb out. Climb to a comfortable altitude making all turns gently. You will find that a medium throttle setting on the average .40 engine is all that is required for normal flight speeds. Make all trim adjustments at a good altitude. Use the transmitter trim levers to obtain straight and level flight.

Once you are comfortable with the flying characteristics, throttle back, while still at altitude and check stall behavior. It should be gentle and straight without falling off on one wing or another.

Landing approach is best done under about 1/4 throttle (depending on wind conditions), keeping the wings level. As you approach the threshold of the runway, you should be about 10 feet in the air. At threshold, chop the throttle to full idle and settle the airplane down gently on the main gear and allow the airplane to roll to a full stop. The Cub by it's nature, has a great deal of parasitic drag — struts, landing gear, wheels, wires, etc. This drag can fool you into making overly long low throttle approaches usually terminating short of the runway. Try to remember to use a bit more throttle on approach and with practice spot landings of considerable accuracy can be made almost every time.

Good Flying . . .

SPECS/PERFORMANCE

WING SPAN.....	35'-2.5"
LENGTH.....	22'-4.5"
WING AREA.....	178.5 SQ. Ft.
EMPTY WEIGHT.....	680 Lbs
USEFUL LOAD.....	540 Lbs
TOP SPEED.....	87 m.p.h.
CRUISE SPEED.....	73 m.p.h.
RANGE.....	220 miles
CEILING.....	11,500 Ft.

SCALE IN FEET

