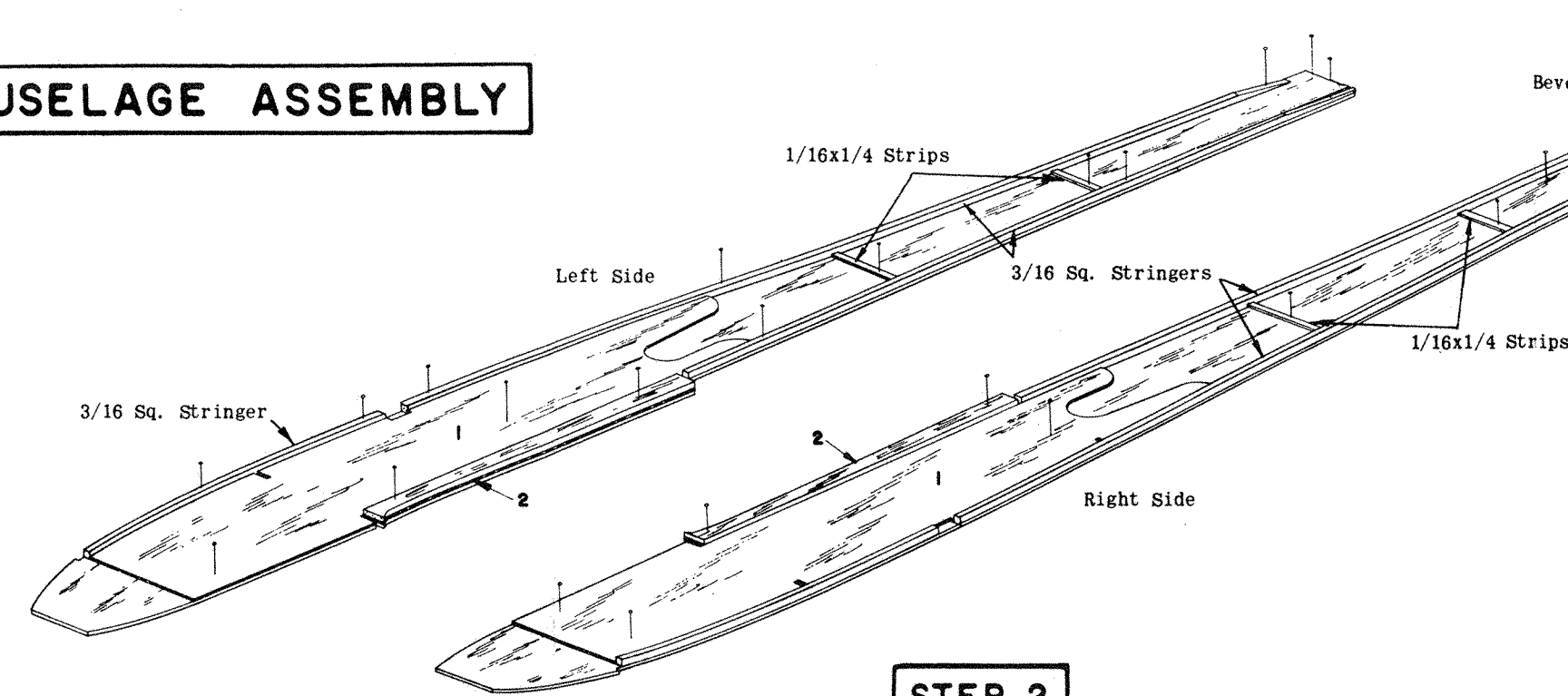


STEP 1

To prevent parts from sticking to Plan, spread saran wrap or wax paper over Plan. For rapid assembly first complete the sub-assembly as 4 & 44, together as shown, and drill out 1/8" holes at the right punch marks on #1. Assemble the multi-layer Rib Unit, by cementing #21 to #28 as shown, followed by #29 and another #21. Illustration shows Left Hand Rib Assembly. Make a Right Hand Assembly in the same manner placing #29 on other side of #28. Assemble Wing Tip by cementing #22 flush with outer edge of #23. Cement #23 to front of #20 as shown. Cement #23a on top of #23.

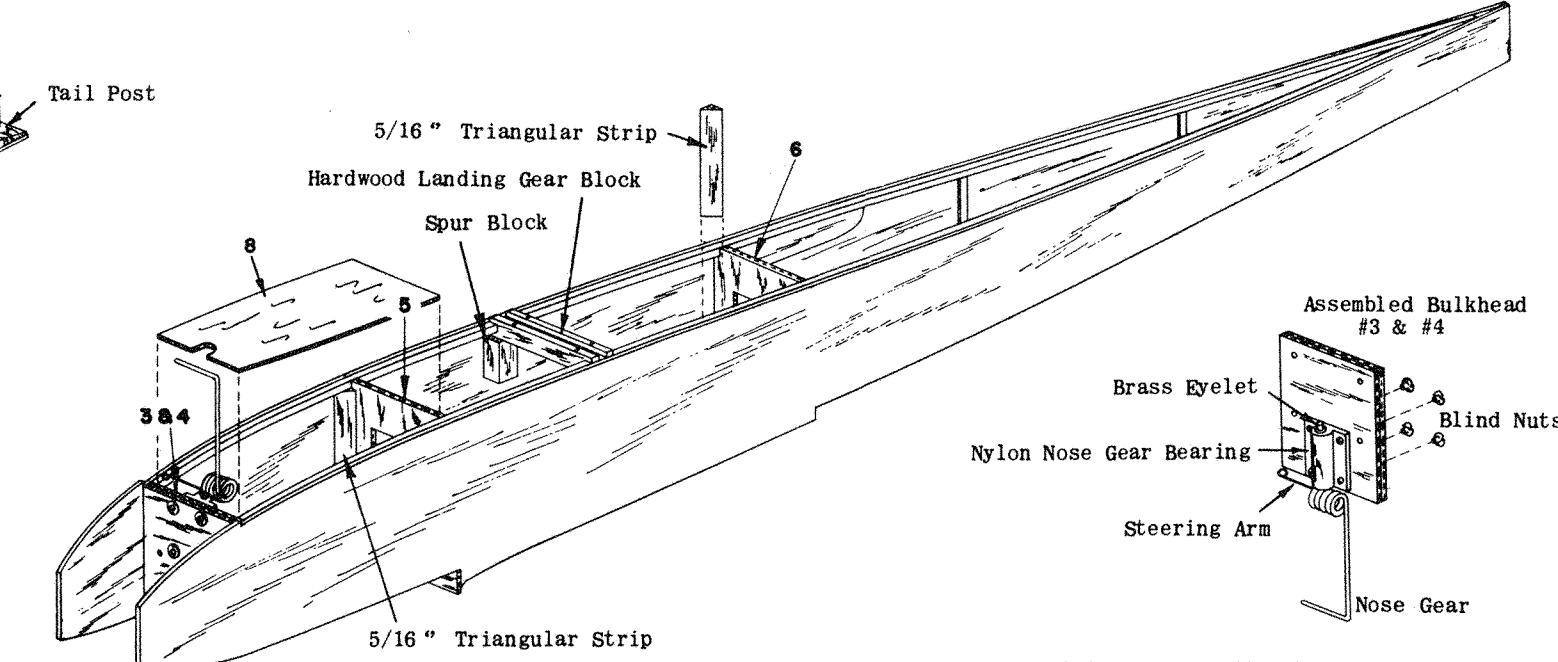
Make Two, Right and Left. Illustration shows Right Hand Tip. Cement #24 & #25 together to form double layer. Cement Fin sections #9 & #10 together. Cement Rudder sections #11 & #12 together. Sand Fin and Rudder smooth, rounding off edges as shown in cross section. After sanding, Rudder is mounted to Fin, see Polyhinge Mounting Detail.

FUSELAGE ASSEMBLY



STEP 2

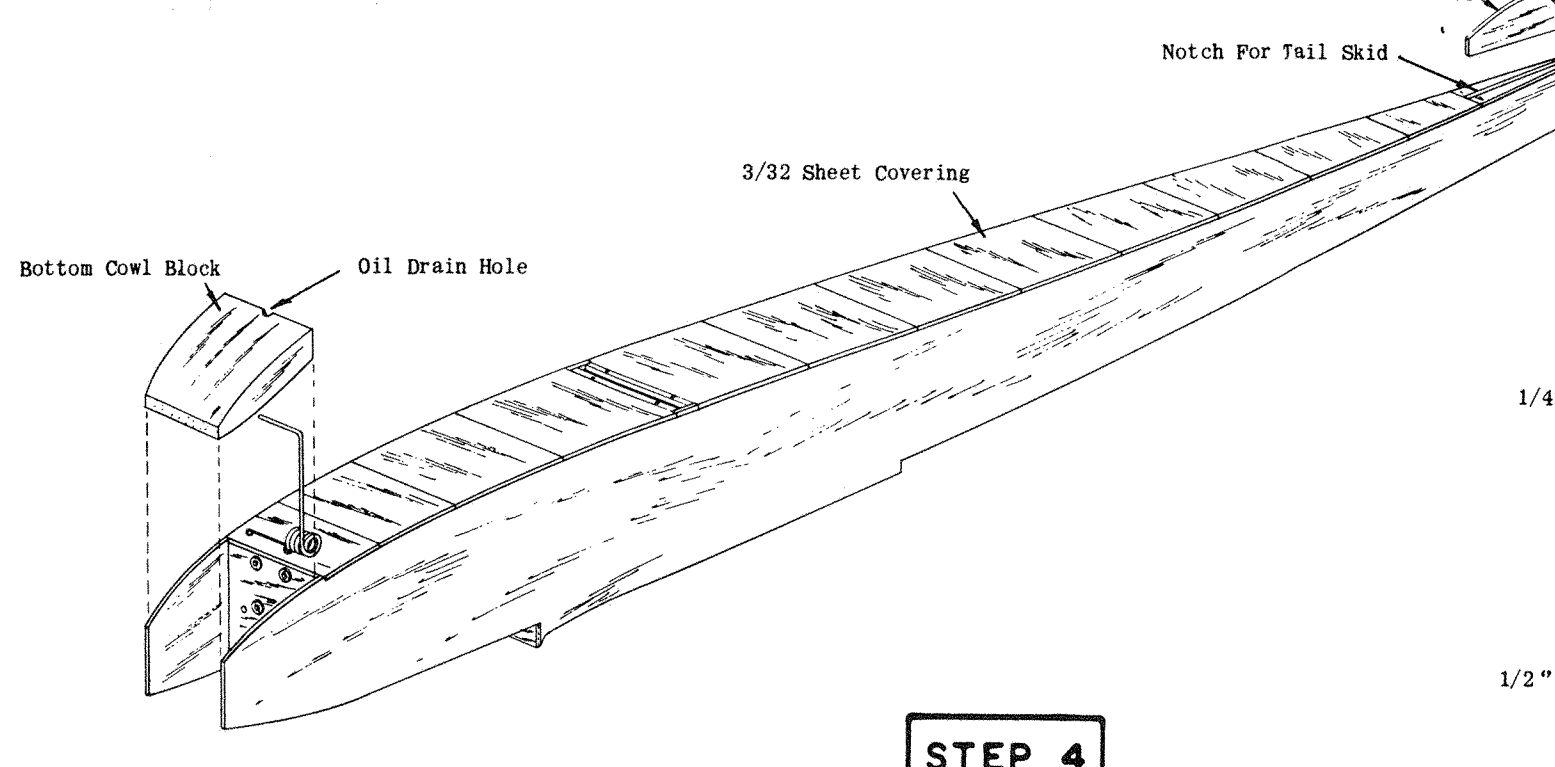
Sketches show (and be sure you make) a right hand and a left hand Fuselage side. Cement Plywood Doubler #1 to Fuselage sides, lining up with Bulkhead notches as shown and flush with top. Cement #2 flush with top of #1, between notches as shown. Cement Tailpost on one side flush with rear and bottom, then pin and cement 3/16" Sq. corner Strippers in place as shown. Cut 4 strip stiffeners to proper lengths, (see side view) using 1/16x1/4 material provided, and cement in place. Be certain you have made a left and a right hand side.



STEP 3

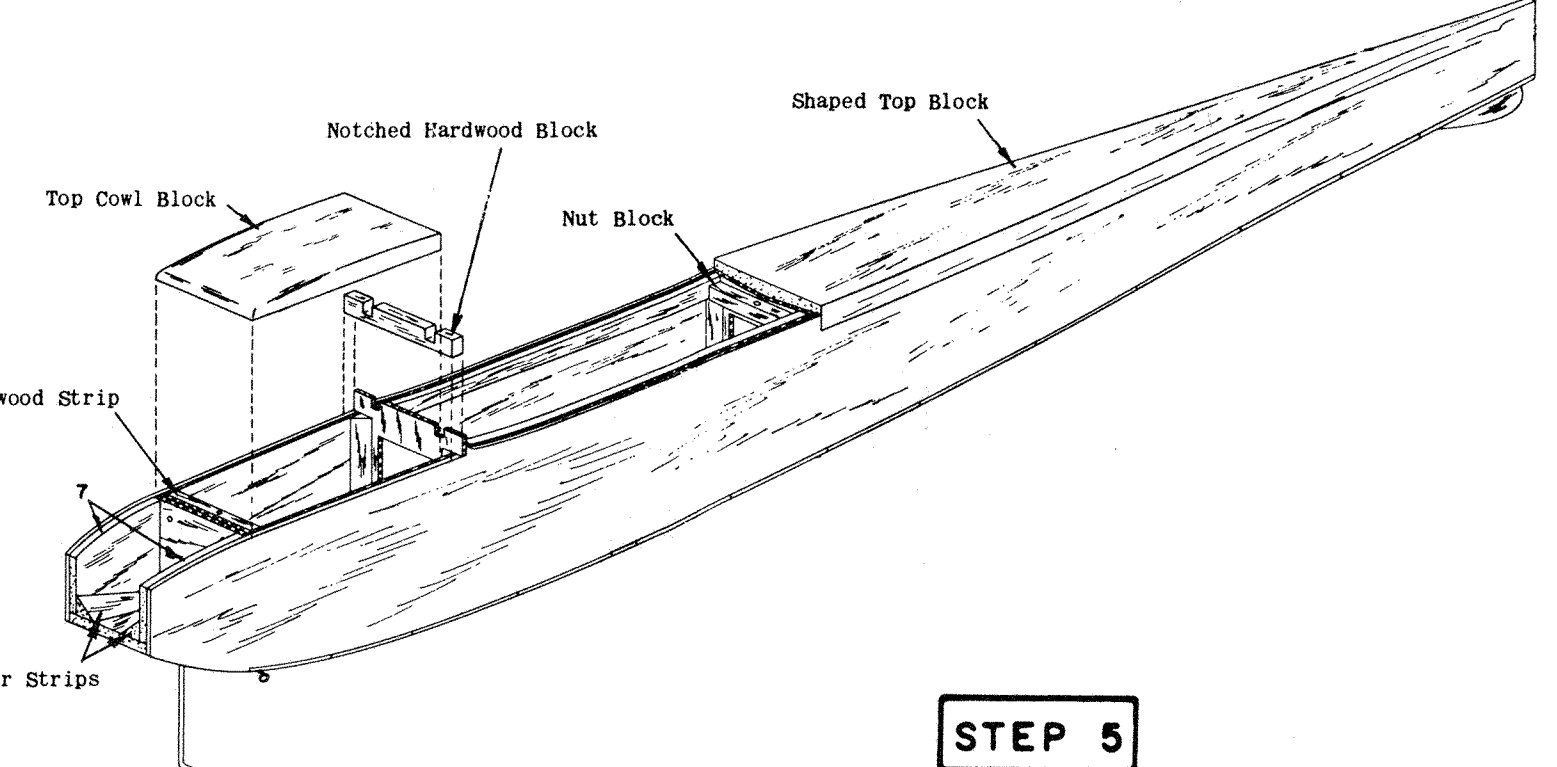
Modeler must now decide whether he wishes to construct his as a tri-axle, (in which case the Nose Gear is installed) or a Tail Dragger (in which case the Nose Gear is omitted). To assemble Nose Gear, solder Steering Arm in place, locating it at top of Cowl and in line with Axle, when viewed from top. Slip Nylon Nose Gear Bearing in place, then solder brass Bristle in place, (flange down) leaving just enough clearance for free movement using 4/60 Hole and Blind Mounting Nuts as shown. Blind Nuts are installed by inserting screw through Bulkhead hole then running Nut up until prongs engage and sink into Bulkhead. Apply several coats of cement, then remove Screw. Nut is now permanently secured to Bulkhead so that screw can be inserted and removed without nut turning. Fuselage sides are now assembled. Bevel the 3/16" Sq. Strippers at rear permitting sides to be cemented together at the Tailpost. Check top view for level

STEERABLE NOSE GEAR ASSEMBLY



STEP 4

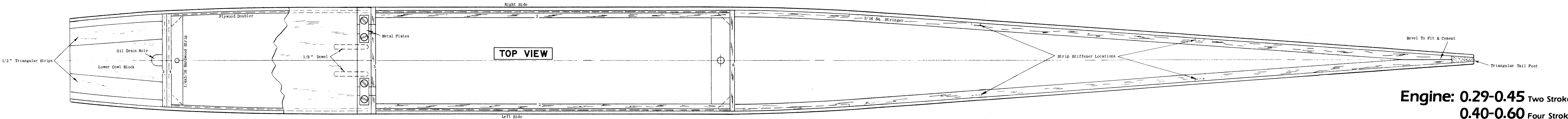
Cut Oil Drain Hole in bottom Cowl block and cement in place as shown. Flush with sides, then cover remainder of Fuselage with 3/32x36 sheet provided, grain running across Fuselage. Notch out where necessary. Note that Landing Gear Block is flush with sheet covering and top surface remains exposed as shown. Notch out rear Skin covering for Tail Skid #43 and securely cement it into place in notch as shown on sketch and side view.



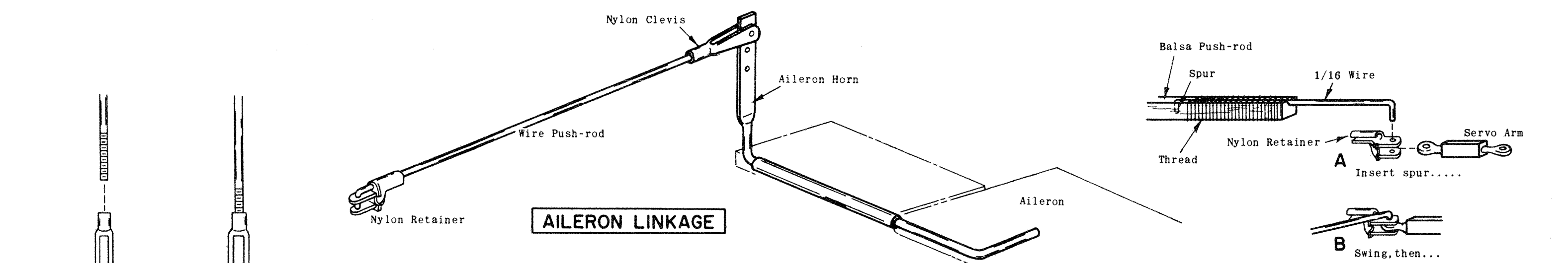
STEP 5

Cement front Balsa Doublers #7's in place on each side against bottom block and Bulkhead #3. Cement 3" Triangular stock into both bottom corners as shown. Cement Fuselage top block in place.

Nut Block (hardwood block with threaded hole in it) is cemented against Bulkhead #6, and top of triangular doublers as shown. Use at least three heavy coats of cement on this installation to insure maximum strength and do likewise with notched hardwood block which goes against #4 flush with top. Drill 1/8" hole in center of strip as shown, then install Blind Nut on bottom. Front Cowl Block is temporarily tacked glued in place as shown against front of notched block. When blocks are dry, they are trimmed and sanded to shape of Bulkheads, front rounded off as shown in Final Assembly sketch and side view.



TOP VIEW



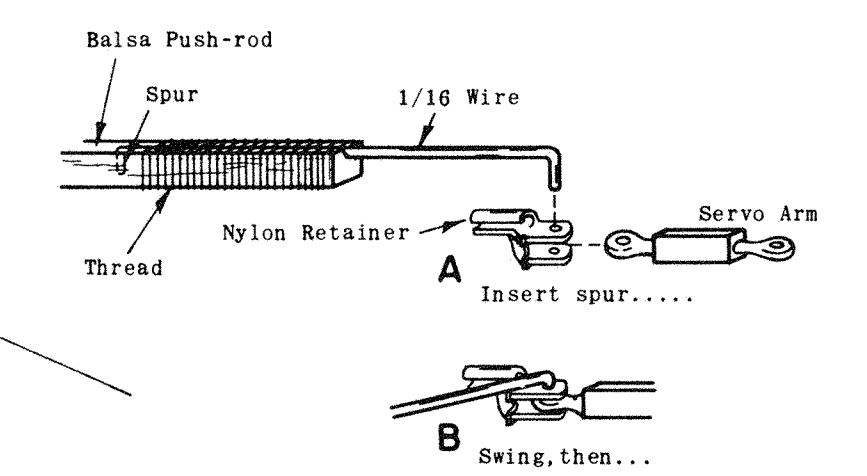
AILERON LINKAGE

CLEVIS DETAIL

Break off pin and insert thru holes. Push until locking rings snap in place. Screw Clevis on threaded shaft.

LINKAGE DETAIL

Sketches show the various typical linkage connections using the special Nylon and Steel R/C fittings provided in kit. Nose gear sketch shows how Push-rod is bent, covered with plastic tubing and engaged in clevising arm. Aileron linkage sketch shows how Push-rod retainer is engaged in servo arm. Opposite end shows clevis engaged in Aileron horn. Push-rod sketch shows how 90 degree bends are made in 1/16 wire on both ends. One end is pushed into 1/4 Sq. Balsa Push-rod, where it is bonded with cement. The other end is inserted in Push-rod Retainer as shown. In Steps A-B-C, engage servo arm, opposite end of Push-rod has threaded rod provided, which is cut to proper length, untarnished end bent and bound to balsa rod, and clevis screwed on to threaded end which is then ready to be engaged in control horn.



PUSHROD LINKAGE

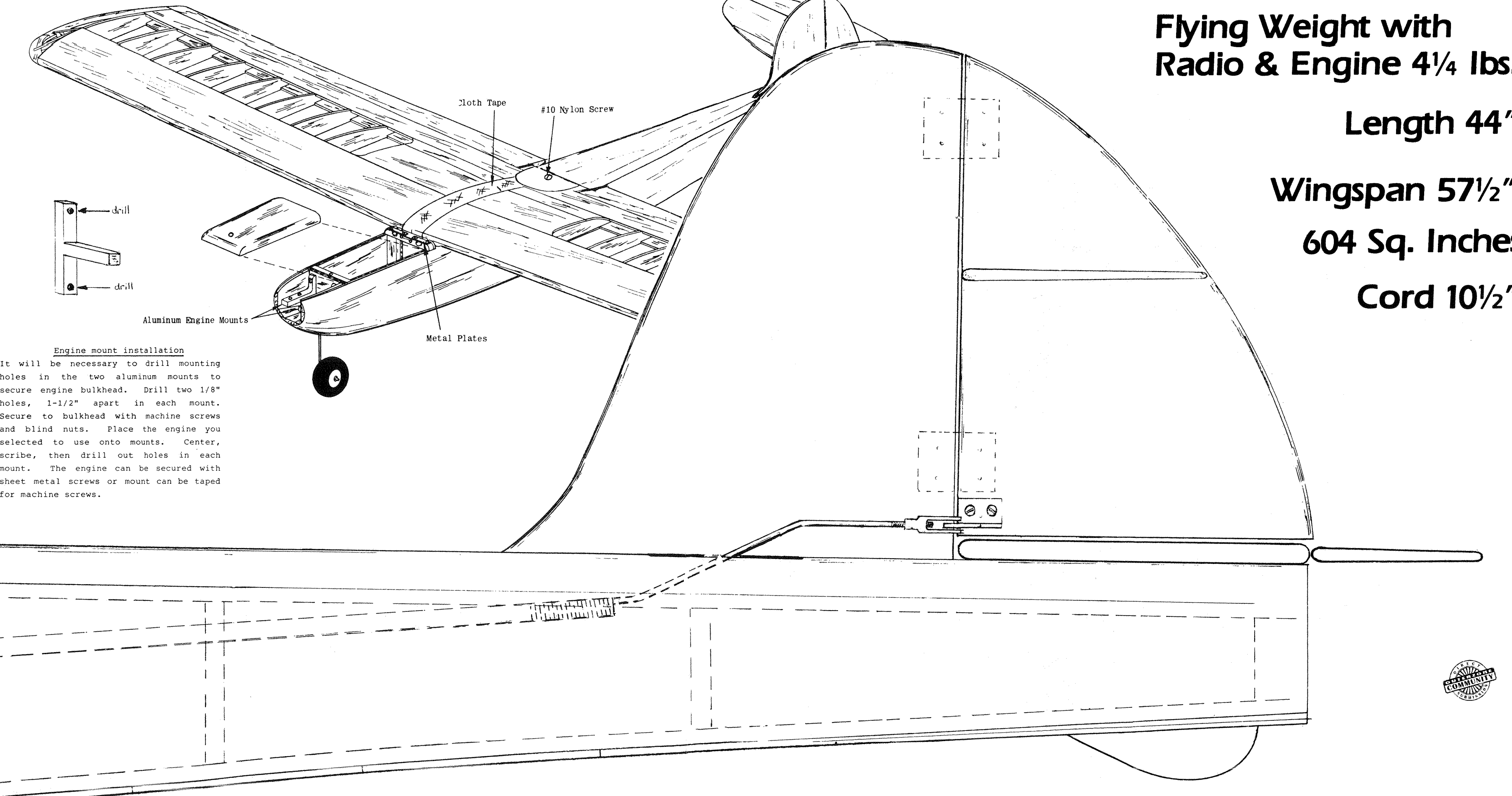
FINAL ASSEMBLY

Install Aluminum Engine Mounts using 4/40x3 Machine Screws, then Bolt Clamps in place with Pin and Spinner. Original design used 2" diameter Spinner. This may vary to suit kit holder, as long as Nose can be trimmed to fit Spinner. Rudder Fuselage is now sanded smooth as shown in sketch and typical cross section. Top of Fuselage should be rounded gracefully into sides, and all corners rounded off to pleasing shape. Nose should flow smoothly into round Spinner shape shown. Cement Slab securely to Fuselage. Pin is cemented.

Top of Fuselage, Rudder #11 is sanded to tapered section shown on side view, then mounted to Pin and Fuselage with Poly Hinges (see detail). To locate hole in rear of Wing for mounting Bolt, run Nylon Screw into Nut Block. Place carbon paper between Wing and Nylon Bolt and press firmly, thus leaving an impression. Remove Wing and drill a slightly oversized 3/16" hole at mark as Screw passes through freely. Remove Screw, then re-mount Wing to check hole location. Front of Wing is secured by installing metal plates across notch in hardwood block over each Wing dowel as shown in sketch and full size top view. Use #4x3/8 Tap Screws. Drill small holes for Tap Screws to prevent wood from splitting. Be certain Screws are tightened down securely. This method of securing Wing to Fuselage is excellent, since Wing cannot shift as does happen if rubber bands are used. Under hard impact, #10 Nylon Screw will shear and pins will pull out of notched block. It is advisable to keep a few #10 Nylon Screws in your tool box as replacements. Remove Wing, then drill two 1/8" holes through notched hardwood block, into rear of Front Cowl. Location of holes can be seen on full size top view. Front Cowl Block, which was temporarily

tacked glued in place, is now removed and 1/8" Cowl is secured into hole drilled in rear. Locate and drill 1/8" hole in front of Cowl as shown, directly over hole in hardwood strip. Cowl is now installed by inserting 1/8" Dowels into holes drilled for them in notched block. Front is secured with 4/40x1 Machine Screw, engaged in Blind Nut. Model is now covered with material of your choice (not included in kit) and painted to suit individual taste.

Install Landing Gear as described in detail note. Wheels and radio equipment (not included in kit) are now installed in accordance with manufacturer's instructions. Typical position of radio equipment is shown on Plan, as is the Control Linkage. Linkage (see detail) uses 1/4 Sq. 1/8" Balsa strips provided for Pushrods with 1/16" Wire Spur cemented to front, and threaded Clevis shaft for rear so that Nylon Clevis can be installed and adjusted. Side view shows location and installation of 6 or 8 Nylon Servo and Fuel Tank. Any similar tank that fits may be used. Battery pack is located under Fuel Tank as shown. Entire compartment is stuffed with foam. IT IS IMPORTANT THAT WHEEL BALANCE AT POINT SHOWN ON SIDE VIEW. Radio components may be shifted forward or aft to achieve balance at that point. IF NECESSARY, ADD WEIGHT TO FRONT OR BACK. SINCE MODEL MUST NOT BE PLUM INTO THIS BALANCE IS ACHIEVED! Main Wheels are 3" and Nose Wheel (if used) is 2". Sizes are optional, however relative sizes should be maintained.



Engine: 0.29-0.45 Two Stroke
0.40-0.60 Four Stroke

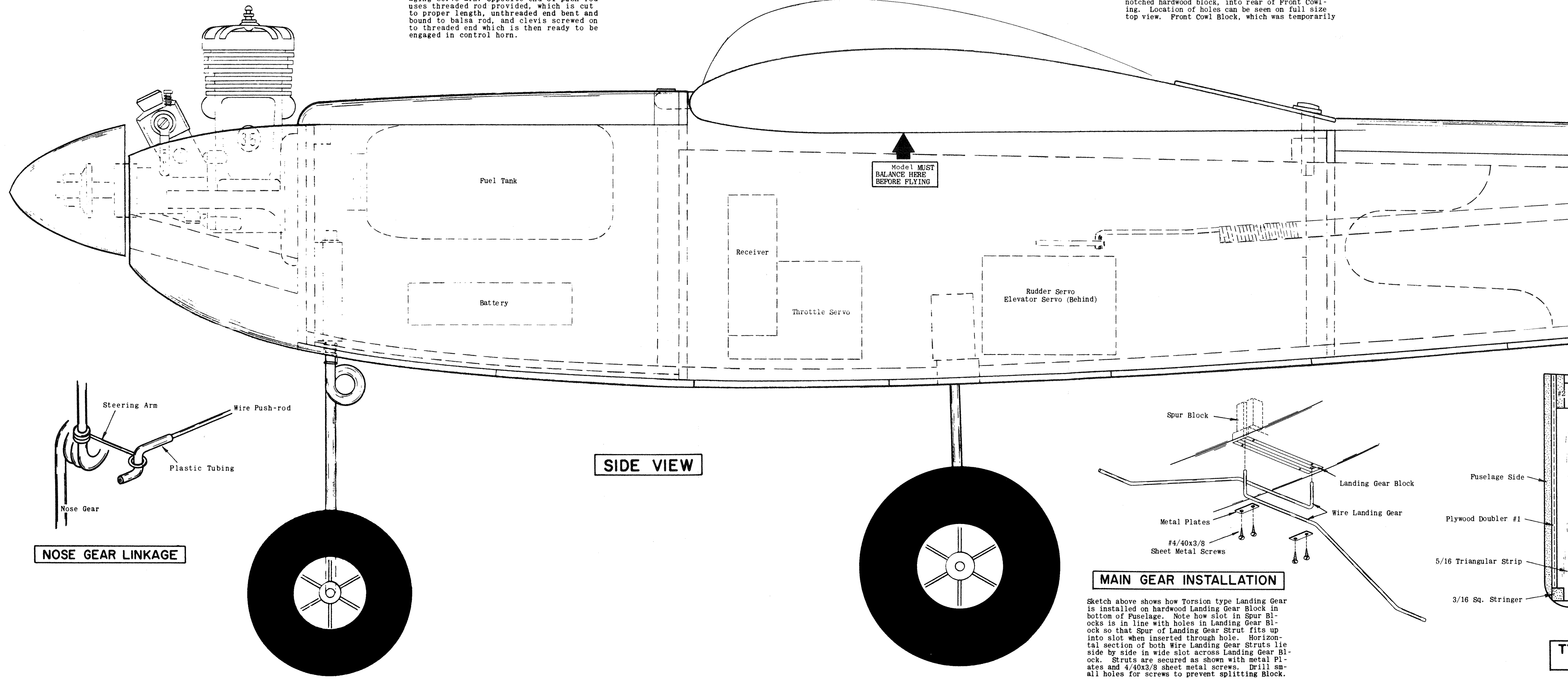
Flying Weight with Radio & Engine 4 1/4 lbs.

Length 44"

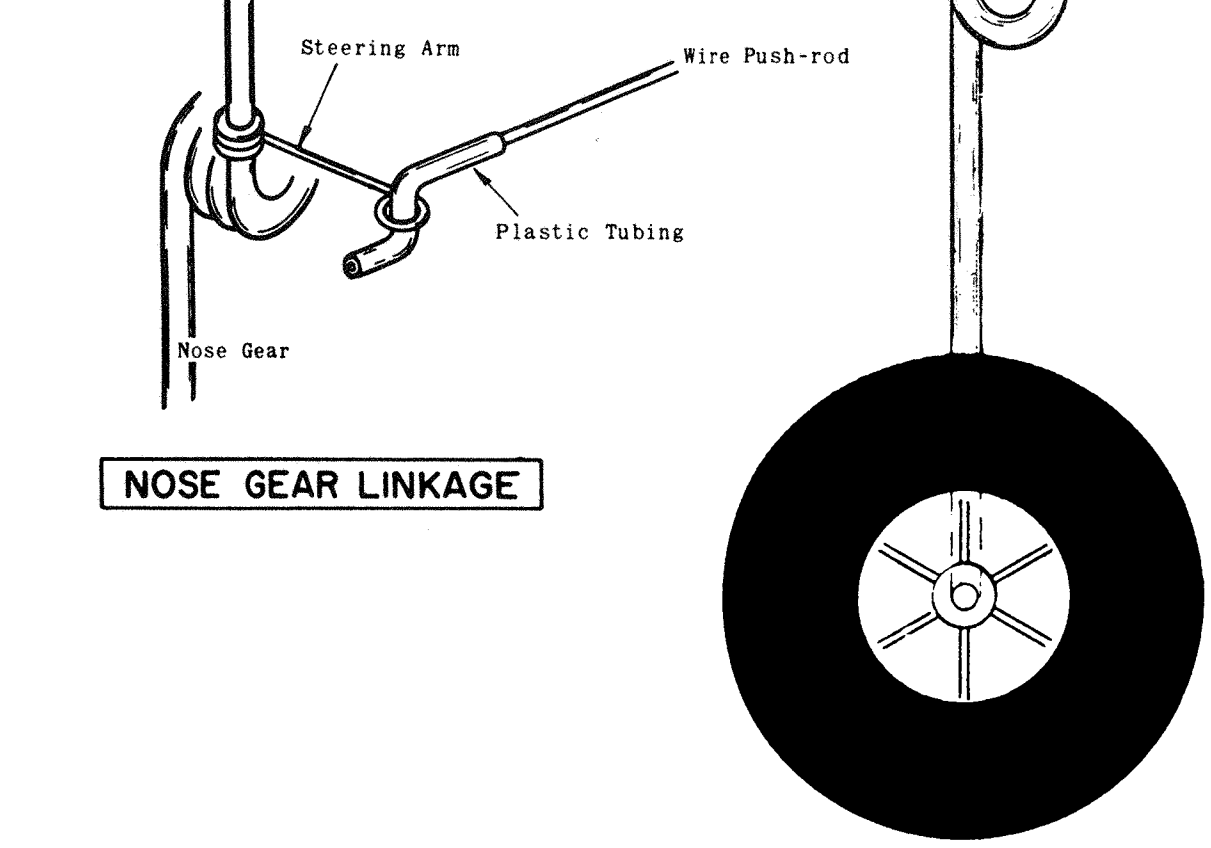
Wingspan 57 1/2"

604 Sq. Inches

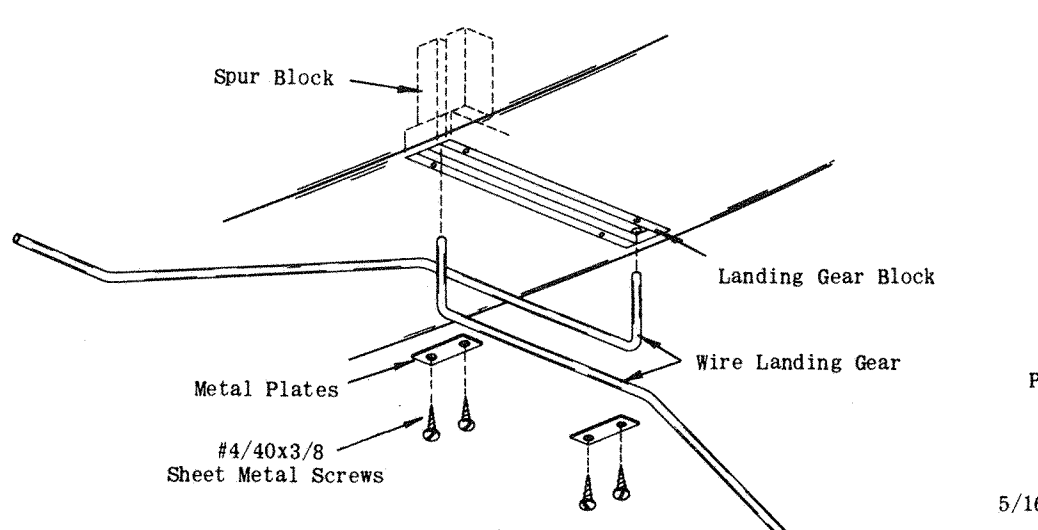
Cord 10 1/2"



SIDE VIEW

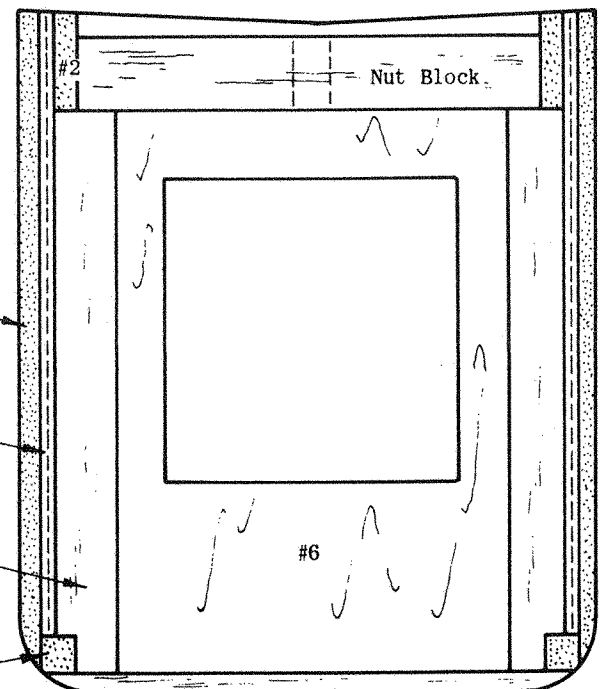


NOSE GEAR LINKAGE

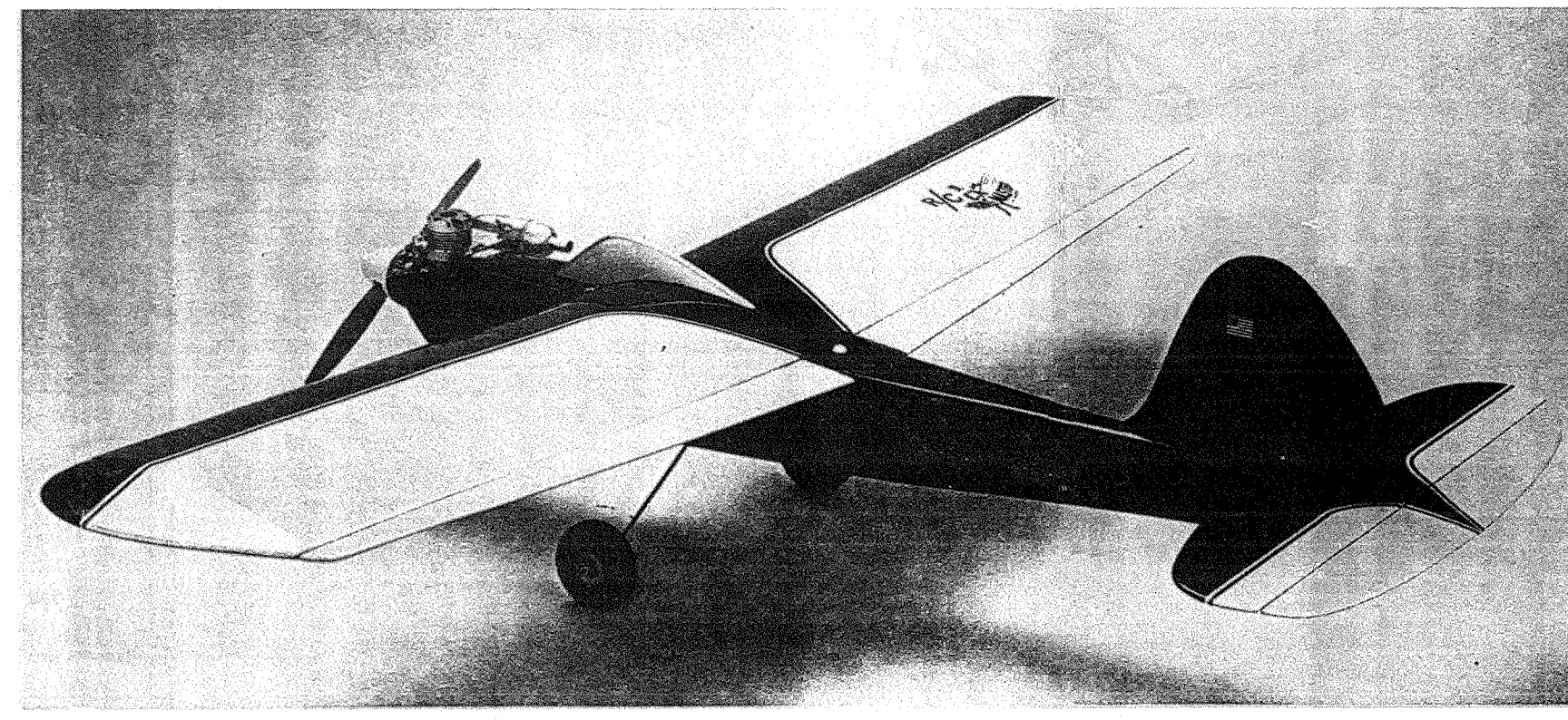


MAIN GEAR INSTALLATION

Sketch above shows how Torsion type Landing Gear is installed on hardwood Landing Gear Block in bottom of Fuselage. Note how slot in Spur Blocks is in line with holes in Landing Gear Block so that Spur of Landing Gear Block fits up into slot when inserted through hole. Horizontal section of both Wire Landing Gear Struts is by side in wide slot across Landing Gear Block. Struts are secured as shown with Metal Plates and 4/40x3/8 sheet metal screws. Drill small holes for screws to prevent splitting Block.



TYPICAL CROSS-SECTION AT BULKHEAD 6



For The Sport Flier And Especially The Newcomer To Radio Control Flying

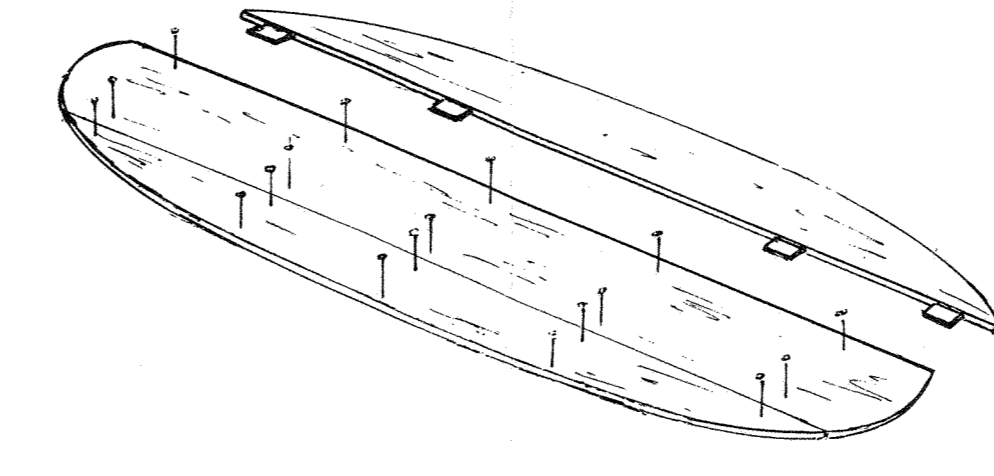
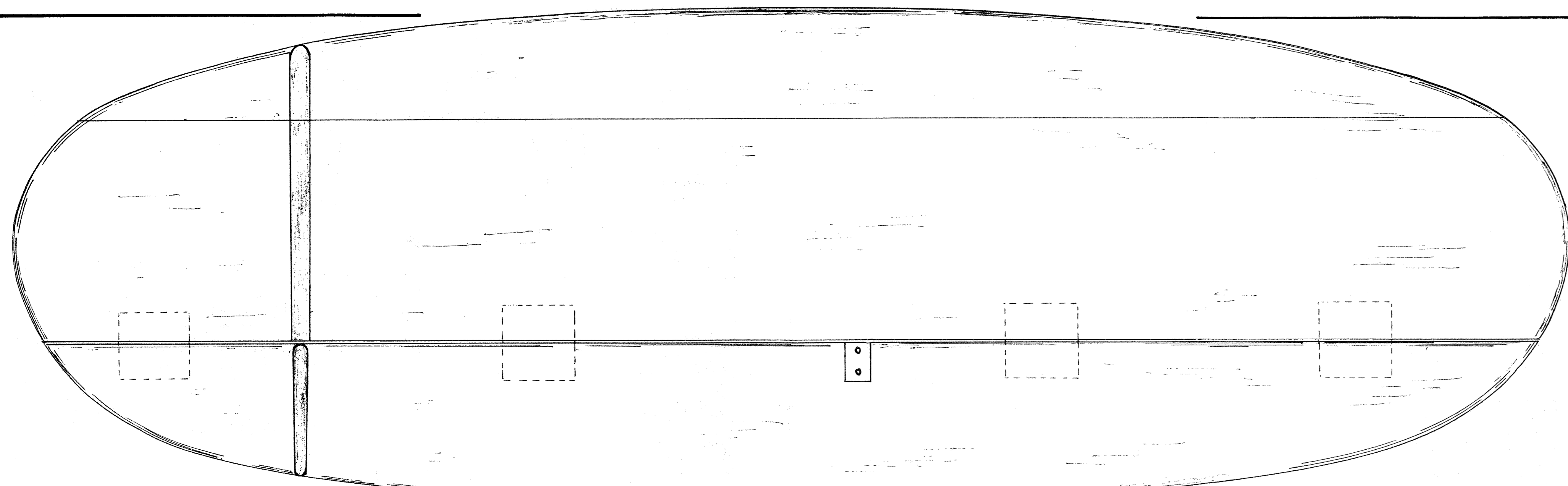
R/C Ringmaster

Novice - Intermediate Sport Flyer

Kit FS-40

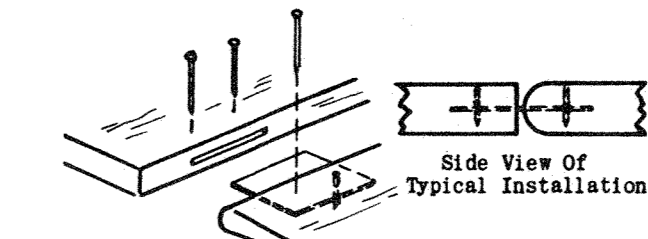


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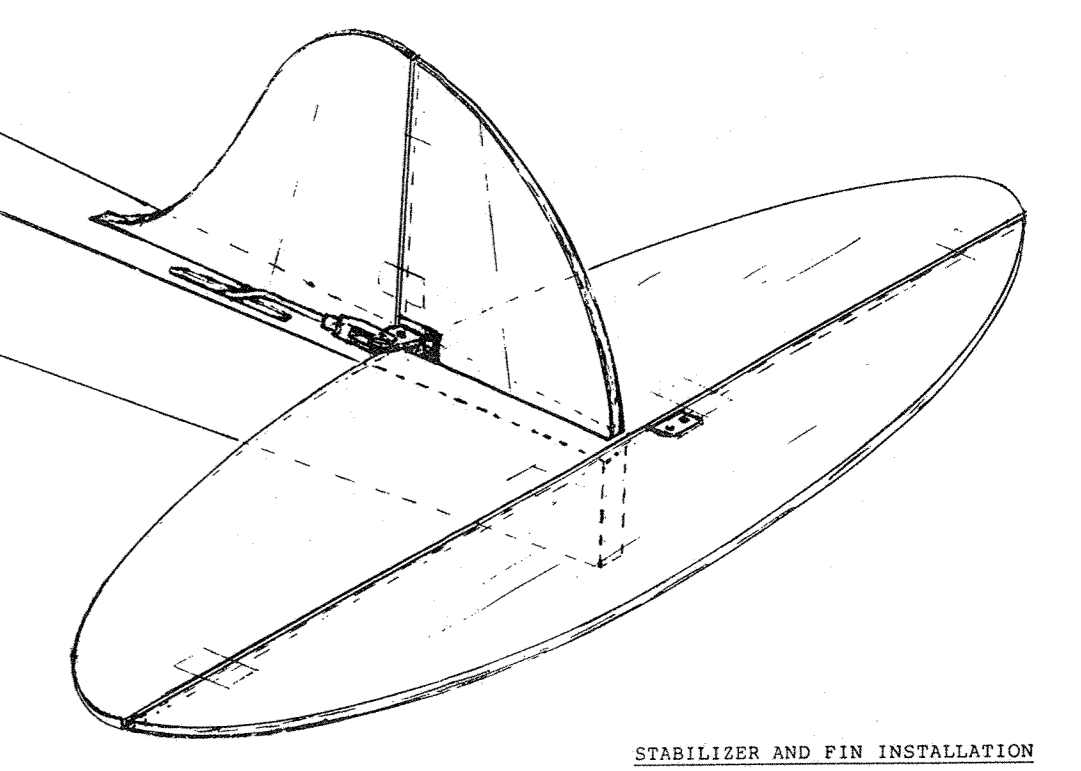
STABILIZER ASSEMBLY

Stabilizer is built directly over Plan, using parts #13 & #14. Sand smooth, rounding edges as shown in Cross Section. Elevator is sanded smooth and rounded off as shown in Cross Section. Join to Stabilizer with Poly Hinge (See Detail).



POLY HINGE INSTALLATION

The use of Polypropylene as a hinge is now wide spread commercially & industrially because this miraculous plastic actually gets stronger with each bend, set it in so flexible, that hinged surfaces move freely & easily. Believe it or not this Poly Hinge has a ten-million-bend life expectancy. You can test its fantastic strength by trying to tear it on the hinge (crease) line.
TO INSTALL: Split surfaces to be joined as shown (in center of thickness). Epoxy hinge into slots, (hinge line in center between surfaces) leaving enough space for free movement. Secure hinge by pushing straight pins through wood AND HINGE as shown. Pins are clipped flush.

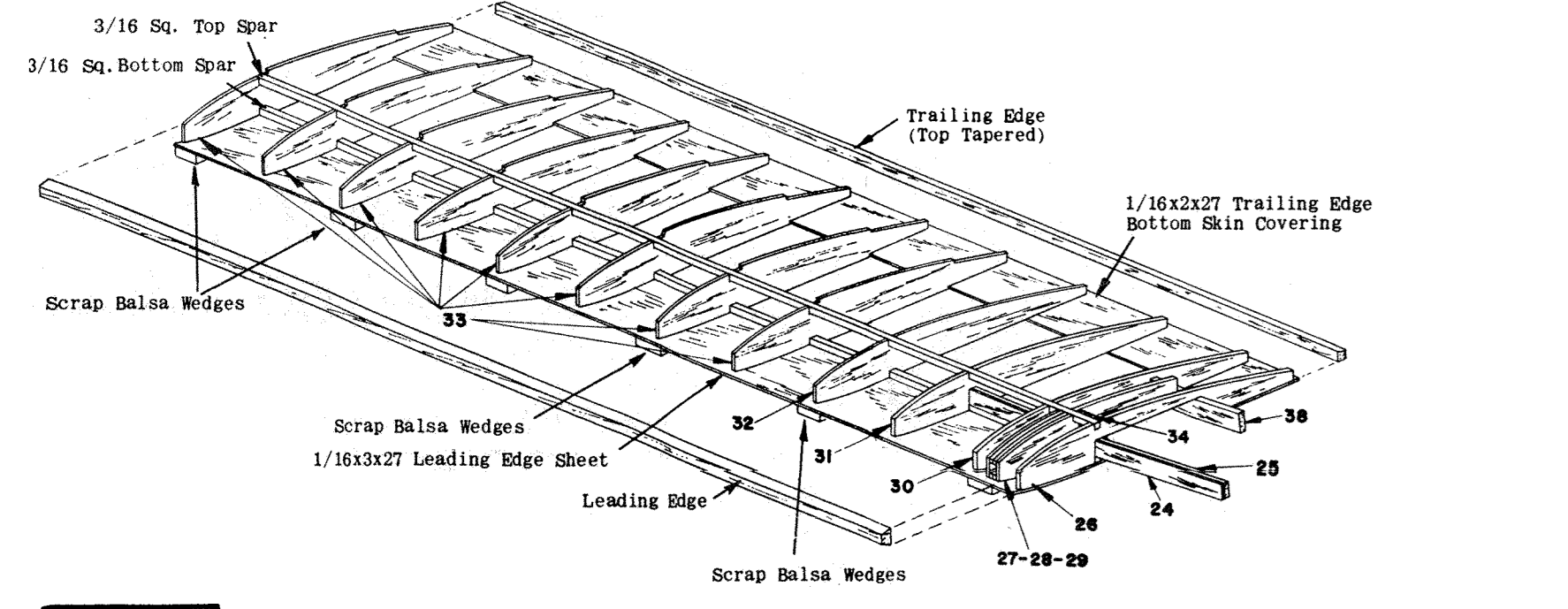


STABILIZER AND FIN INSTALLATION

Align and cement the Stabilizer onto the Top of the Fuselage allowing entire Elevator to clear the rear edge. Test fit the Vertical Fin on the Top of the Fuselage putting the Rear Edge against the Front Edge of the Stabilizer. The Rudder should move freely, if it drags, sand until there is a minimum of 1/16" clearance above the Stabilizer. After satisfied with fit, cement Vertical Fin in place.

STEP 1

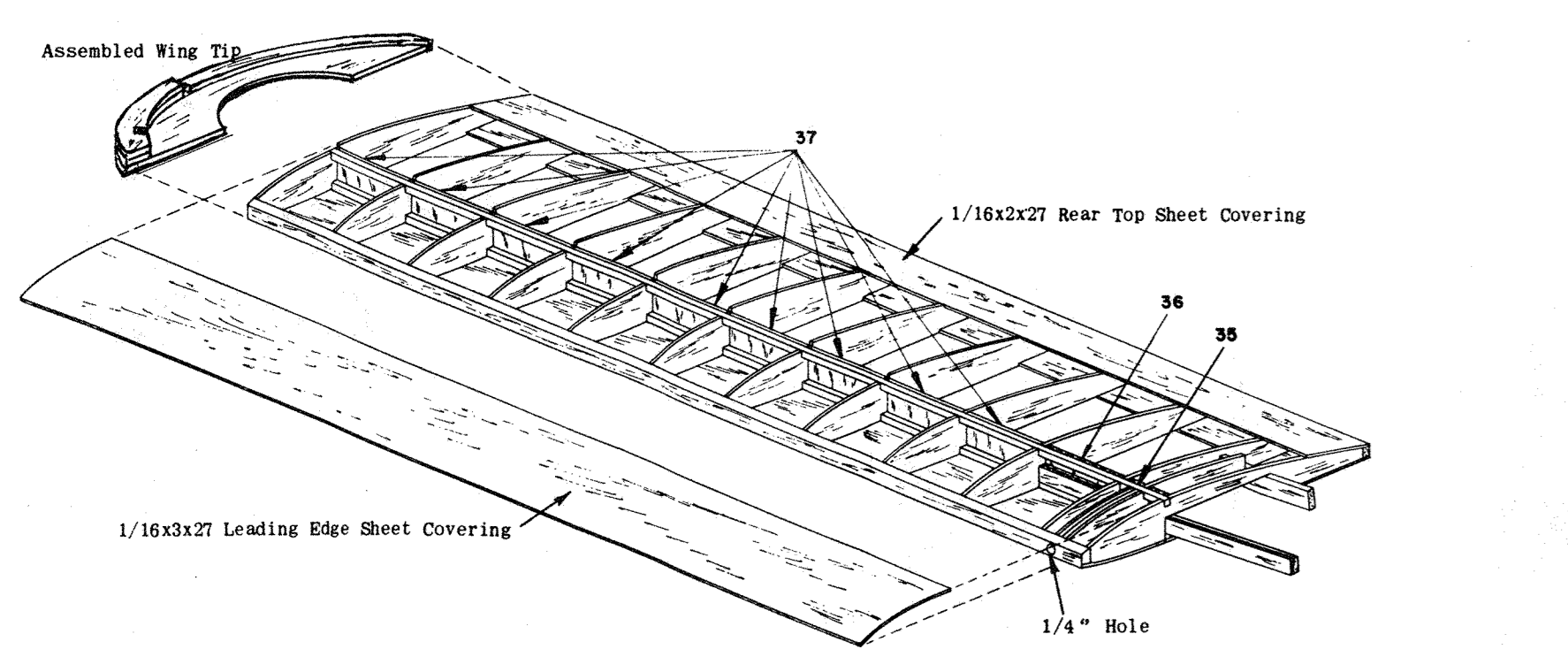
WING ASSEMBLY



STEP 1

Select a flat building surface, to insure a non-warped wing. Sketch shows assembly of right Wing Panel. Wing is built directly over Plan. Pin 1/16x2x27 Trailing Edge bottom Skin Covering in place over Plan. Pin 1/16x2x27 Leading Edge sheet in place. Cement 3/16 Sq. x27 Bottom Spar to Leading Edge sheet, 1/16" from rear as shown on full size Wing Plan. This provides cementing surface for vertical ribs. Cement all ribs in place by the number shown, followed by top 3/16 Sq. Spar. Rib #26 is angled for dihedral. Angle is set by cementing vertical Web #34 in place between #26 & #28, then #26 is pinned and connected to it, top leading in towards tip. Front of sheet covering (which should be clear of pins, etc.) is now cemented to bottom of ribs. Sheet is held up against bottom of ribs with wedges of scrap Balsa as shown. Cement trailing edge in place to top of sheet covering and rear of ribs as shown. Tapered top in line with curve of ribs. Leading Edge is cemented in place in same manner. Side assembled Spar #24 & #25 through notches in ribs and securely cement it to Bottom Spar and other connecting joints as shown. Insert rear Spar #38 across notches in ribs and securely cement in place.

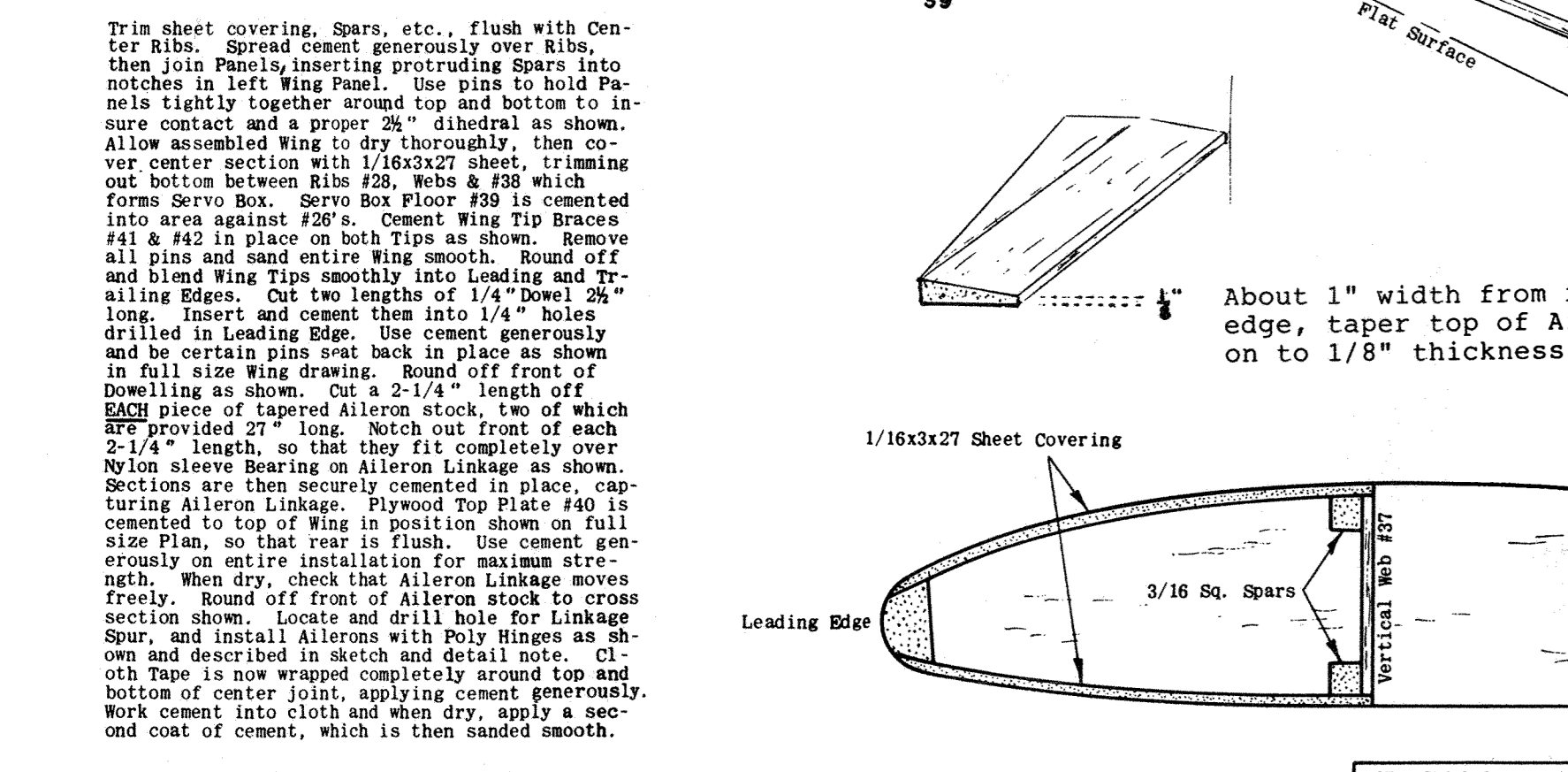
STEP 2



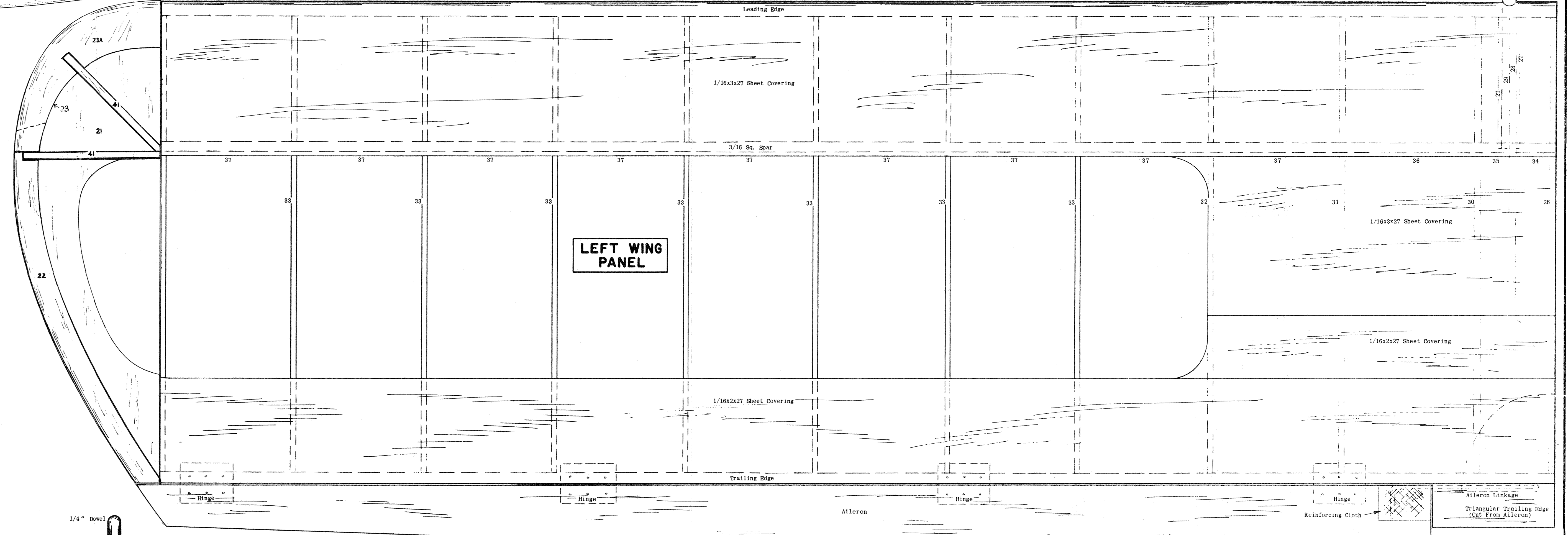
STEP 2

Drill 1/4" hole for Wing Dowel Pin in Leading Edge. Hole is in center of Leading Edge and directly in line with box formed by assembled ribs #27-28-29 as shown in Step 1 sketch. Cement 1/16x2x27 rear top sheet in place. Cement vertical Web #35, #36 & #37 in place against back of top and bottom spars as shown, resting on sheet covering extending past Bottom Spar. Cement 1/16x2x27 Leading Edge sheet in place. Cement assembled Wing Tip against Top Rib #25 as shown, using cement generously. Opposite Panel is built in same manner, except for Center Spar, which are obviously omitted, and allow to dry thoroughly before removing from flat surface.

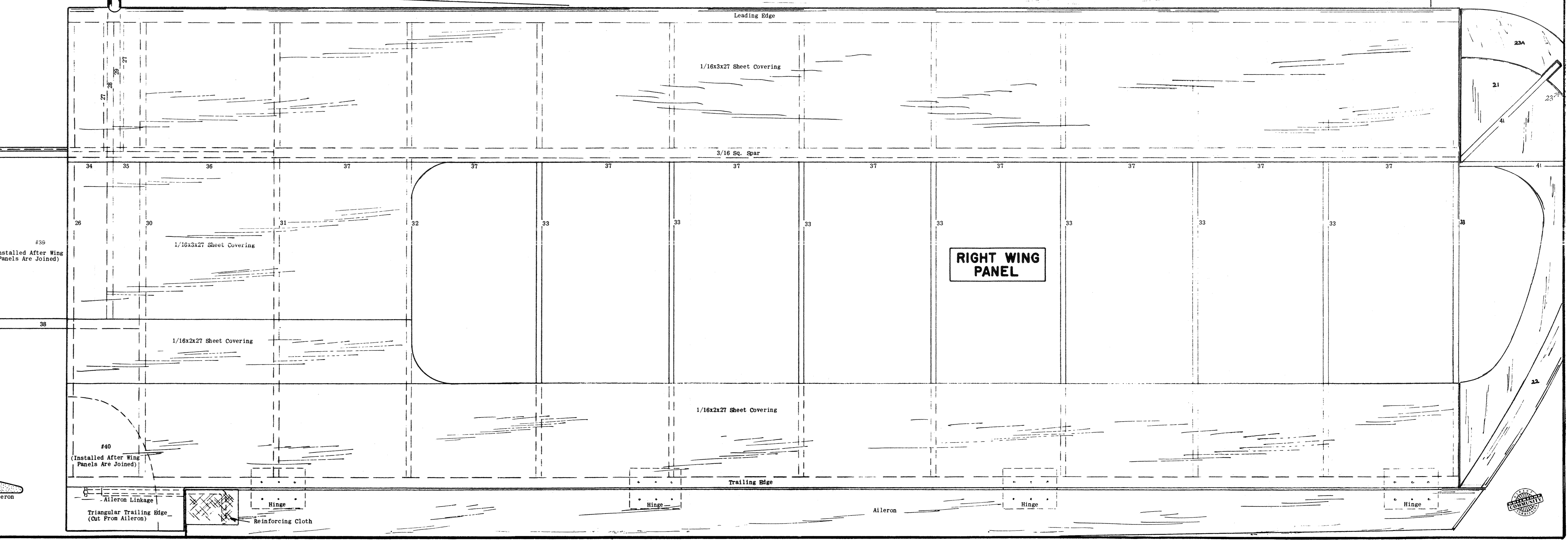
STEP 3



TYPICAL WING CROSS SECTION



LEFT WING PANEL



RIGHT WING PANEL

Trim sheet covering, spars, etc., flush with Center ribs. Spread cement generously over ribs, then join Panels, inserting protruding spars into notches in left Wing Panel. Use pins to hold Panels tightly together around top and bottom to insure contact and a proper 26" dihedral as shown. Allow assembled wing to dry thoroughly, then cover center section with 1/16x2x27 sheet, trimming out bottom between ribs #26, ribs #38 which forms Servo Box. Servo Box Floor #39 is cemented into area against #26's. Cement Wing Tip Braces #41 & #42 in place on both tips as shown. Remove all pins and sand entire wing smooth. Round off and blend Wing Tip smoothly into Leading and Trailing Edges. Cut two lengths of 1/4" Dowel 26" long. Insert and cement them into 1/4" holes drilled in Leading Edge. Use cement generously and be certain pins seat back in place as shown. In full size Wing drawing. Round off front of Doweling as shown. Cut a 2-1/4" length of 800 pieces of tapered Aileron stock, two of which are provided 27" long. Match out front of each 2-1/4" length, so that they fit completely over Nylon sleeve Bearings on Aileron Linkage as shown. Sections are then securely cemented in place, capturing Aileron Linkage. Flawed Top Plate #40 is cemented to top of Wing in position shown on full size Plan, so that rear is flush. Use cement generously on entire installation for maximum strength. When dry, check that Aileron Linkage moves freely. Round off front of Aileron with Poly Hinges as shown and described in sketch and note. Cloth Tape is now wrapped completely around top and bottom of center joint, applying cement generously. Work cement into cloth and when dry, apply a second coat of cement, which is then sanded smooth.

