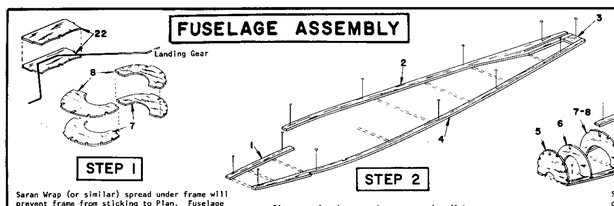
FUSELAGE ASSEMBLY

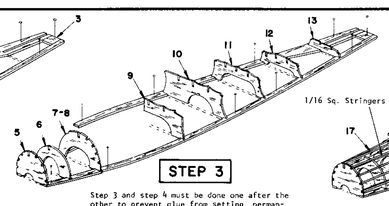


STEP 1

Saran Wrap (or similar) spread under frame will prevent frame from sticking to Plan. Fuselage is built on flat surface directly on Plan. Make a left and right cabin side assembly: Pin 14's in place. Cut and cement 1/16 sq. strip braces in place on both units. Cement 1/16 by 3/32 (flat) in place on right side only. Cement Bulkheads 7 to 8, froming double layer, making a left and right as shown. Cement Bulkheads #22 together (creases on inside) sandwhiching landing gear into creases, between them.

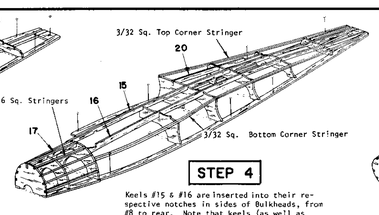
STEP 2

Pin parts in place as shown, cementing #3 between #2 and #4, flush with rear.



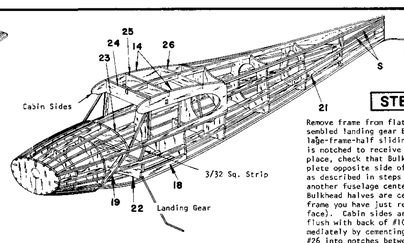
STEP 3

Step 3 and step 4 must be done one after the other to prevent glue from setting permanently. Cement all Bulkhead halves from #5 thru #13 vertically in place, being certain that #8 on double Bulkhead faces rear.



STEP 4

Keels #15 & #16 are inserted into their respective notches in sides of Bulkheads, from #8 to rear. Note that keels (as well as stringers that will be installed) are in many cases past edge of Bulkhead, as shown on Sketches and typical cross section drawing. Cement #17 into center notch from #5 to #7. Cement #20 into notches between #10 and #12. Cement 3/32 sq. bottom corner stringer, below #16, from 8 to rear; Top Corner Stringer from #10 to rear. Cement 1/16 Stringers in remaining notches from #5 to #7. Allow to dry thoroughly.

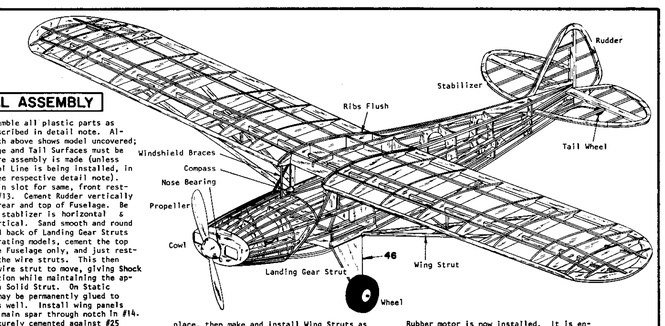


STEP 5

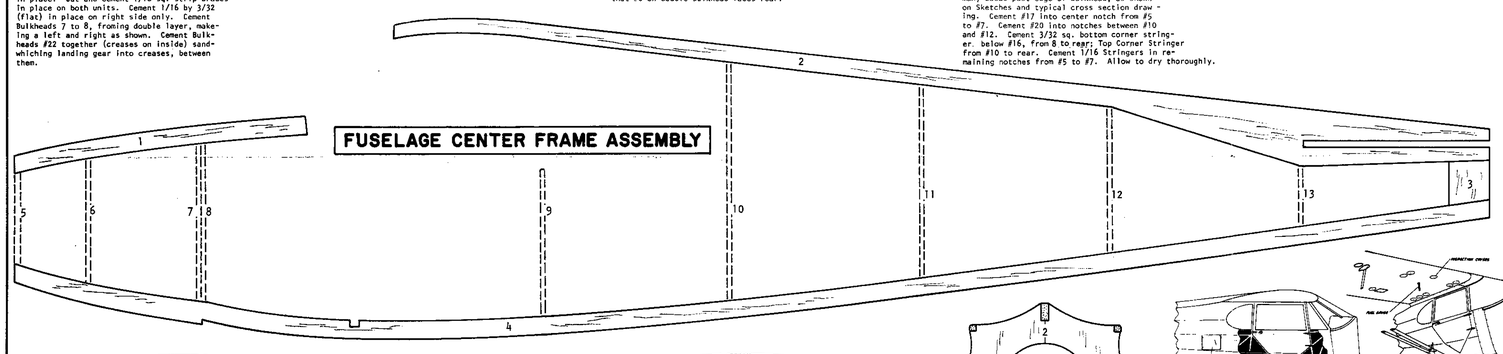
Remove frame from flat surface and cement assembled landing gear Bulkhead #22 into fuselage frame-half sliding into notch in #4. #22 is notched to receive #16. After sliding in place, check that Bulkhead is vertical. Complete opposite side of fuselage in same manner as described in steps #3 & #4 (do not make another fuselage center frame assembly. These Bulkhead halves are cemented to the fuselage frame you have just removed from the flat surface). Cabin sides are cemented to #15, rear flush with back of #10. This is followed immediately by cementing roof braces #24, #25 & #26 into notches between top of cabin sides as shown. Cement #18 (both sides) between #22 & #9, followed by #19. Cement 3/32 sq. strip between #15 & #16, flush with inside, from #22 to cabin brace. Cement #21's on each side at rear of #12, flush with outside of side keels. Cement the four triangular 5's to top and botton of stab cut out in #2 making platform for stabilizer. This is clearly shown on full size side view. Cement Bulkhead #23 against #1, botton rests on top of 15's and front of cabin sides. Cement 1/16 sq. stringer from front of #7 to #5. Note that stringer is cemented into notch in #5 & #7 and merely rest on #6 where it is also cemented in place. Cement the remaining 6 stringers in same into notches from #5 to #23. Note that stringers are flush in notches at #5 & #23 but rest on top of #6 & #7. 3/32 sq. bottom stringer is installed on both sides between corner and center keel. Front fits flush in notch in 8, remainder of stringer rests on Bulkheads at crease marks; back to #11. Bend Tail Gear as shown on detail and cement securely into the fuselage as shown in sketch and side view.

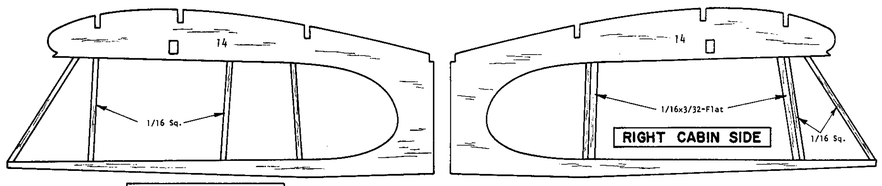
FINAL ASSEMBLY

Trim and assemble all plastic parts as shown and described in detail note. Although sketch above shows model uncovered; Wing, Fuselage and Tail Surfaces must be covered before assembly is made (unless R/C or Control Line is being installed, in which case see respective detail note). Cement Stab in slot for same, front resting against #13. Cement Rudder vertically in place to rear and top of Fuselage. Be certain that stabilizer is horizontal & Rudder is vertical. Sand smooth and round off front and back of Landing Gear Struts #46. On operating models, cement the top of #46 to the fuselage only, and just resting against the wire struts. This then permits the wire strut to move, giving Shock absorbing action while maintaining the appearance of a Solid Strut. On Static models, #46 may be permanently glued to Wire Strut as well. Install wing panels by inserting main spar through notch in #14. Spars are securely cemented against #25 inside of fuselage, and panels are pinned and cemented tightly against #14 so that they assume proper Dihedral angle. Care must be taken that ribs are perfectly flush with top of #14 to assure proper angle of incidence. Set model on flat surface and check that both tips are the same height and Stab is horizontal. Allow to dry thoroughly before moving. Cowl is now cemented to front of fuselage on Bulkhead #5. Use pencil to punch out center hole for nose bearing. Use light coats of cement applied sparingly.If necessary, use more than 1 coat BUT DO NOT APPLY A THICK COAT AT ANYTIME. For powered models, Cowl and Nut Plates are installed as described in Engine Installation. Cut 2 lengths of 1/16 dowel for cabin windshield braces and cement them from 14's to center keel #1 at location shown on sketch and side view. Cement compass in place, then make and install Wing Struts as shown and described in detail note. Model is now painted. Scale color scheme as shown in picture on kit box is, Red and Cream. For best flight performance use a minimum of color dope. Apply Decals by dipping in water and sliding off into position. Cut Instrument Panel from plan and cement to #23. Cut compass face from plan and cement to flat side of compass. Make windshield as described in detail note then cement in place, wrapping around sides of fuselage and over top of wing. Hold in place with pins until dry. Outlines of Scale Control surfaces may be drawn in place with India ink. Slip Wheels on Axle and hold in place with drop of cement or solder. Insert straight end of Propeller shaft through rear of nose bearing. Slip on two washers and Insert Shaft through rear of propeller, then bend front of Shaft to "U" shape as shown on Side View. Rubber motor is now installed. It is engaged on 1/8 dowel (that cross through #21's at rear of fuselage by dropping rubber into fuselage from nose, far enough so that dowel can be inserted through one 21 through Rubber Loop and then into opposite 21. Tie a length of thread or make a hook in a piece of wire, to lower the loop of rubber into the Fuselage. After engaging it on dowel, pull rubber through cowling and engage on propeller shaft. Nose bearing fits into cowling. Cement the spinner securely to propeller making sure it is centered and in line when viewed from side. Installation of rigging,movable controls, and other detail scale installations are optional and described in Scale note. Installation for Control Line and R/C are described in respective notes. This completes your Piper Cub Super Cruiser PA-12. See Flight Instructions before flying model. GOOD LUCK !! HAPPY LANDINGS !!



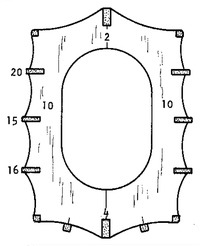
FUSELAGE CENTER FRAME ASSEMBLY





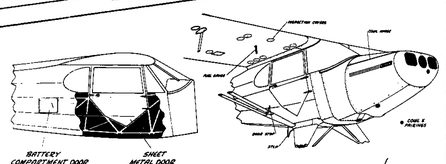
LEFT CABIN SIDE

RIGHT CABIN SIDE



FUSELAGE CROSS SECTION

Fuselage Cross-Section above is at Bulkhead #10. Note that there is only one Fuselage Frame Assembly in center. Bulkhead halves are cemented directly to it. See Step #4.

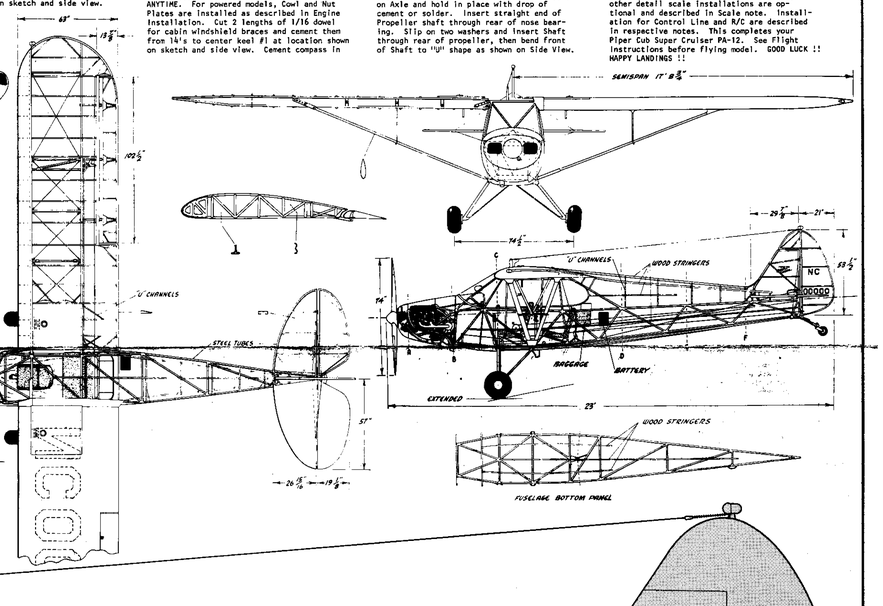


PIPER CUB SUPER CRUISER PA-12: LEGENDARY FACTS

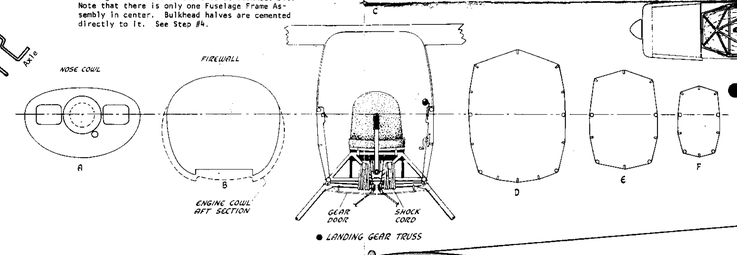
The Name Piper coupled with Cub are inextricably linked together not only with private flying in America, but throughout the world. In 1937 William T. Piper took over the Taylor Aircraft Company that was in financial straits, and formed the Piper Aircraft Corporation, moving the facility to Lock Haven, Pa.

The energetic and hard driving Bill Piper put in new capital and new management into the company, then redesigned the old Taylor Cub into the J-2 Cub Sport. In 1938, the very first year of production, a total of 737 Piper Cubs were delivered, a remarkable feat by a remarkable man. During World War 2, Piper Cubs were pressed into service in many categories. During those years Piper delivered 5,941 Cubs to help the war effort.

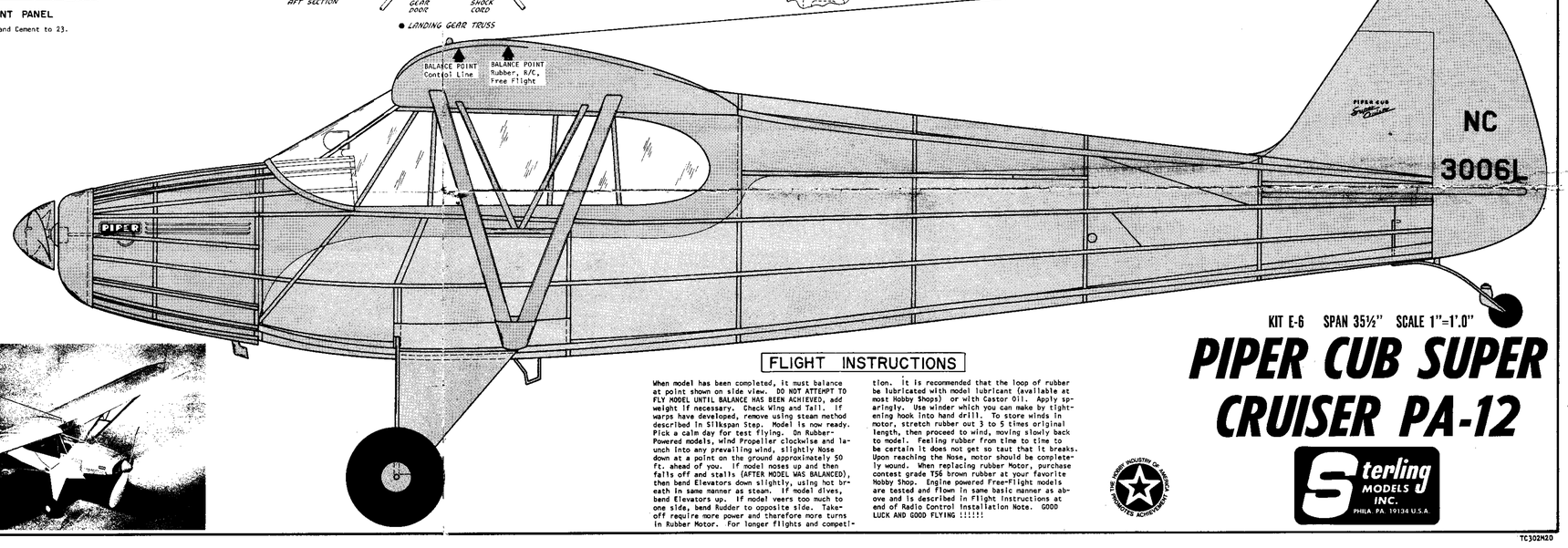
In 1947, the terrifically successful PA-1 Piper Super Cruiser, which our kit reproduces, was born. Using the good-old wing and fuselage Jigs and Dies, that had been turning out their metal ribs and welded steel tubing fuselages for a decade, Piper produced the terrifically successful PA-12 Piper Super Cruiser. Resourceful engineering squeezed a second passenger into the rear seat to make it a 3-place Cub. Powered by a Lycoming O-235-C engine, Top Speed was 110 MPH; Wing Span 35'5½"; Length 23'. Still a beautiful airplane to this day the fully cowled Super Cruiser marks an outstanding era of American aviation.



CROSS SECTIONS

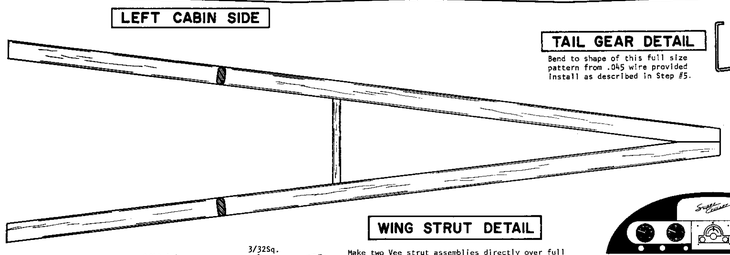


LANDING GEAR TRUSS

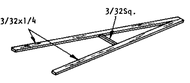


TAIL GEAR DETAIL

Bend to shape of this full size pattern from .045 wire provided Install as described in Step #5.



WING STRUT DETAIL



Make two Vee strut assemblies directly over full size plan above. Main struts are 3/32 x 1/4 balsa. Cut to length and bevel. Round edges to cross section and cement together over plan. Add 3/32 sq. balsa cross strut. Make two of these Assemblies. When model has been completed, bevel top to fit against 46 on bottom of wing and bevel bottom to fit against lower stringer at location shown on side view. Paint same color as top of body and install after model is painted.

INSTRUMENT PANEL

Cut from Plan and Cement to 23.

DANGER

RULES FOR SAFE FLYING

All equipment must be checked before each flight to make sure it is in good operating condition.

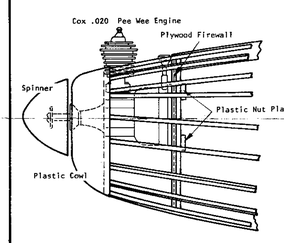
Fly only in a clear unobstructed area.

Model must never be flown in the vicinity of high tension lines or any electrical lines.

Model should never be flown when thunder and lightning storms are in the area.

Precautions should be taken to insure the safety of all spectators, modeler and property.

Sterling Models, Inc.
Phila., Pa., 19134, U.S.A.

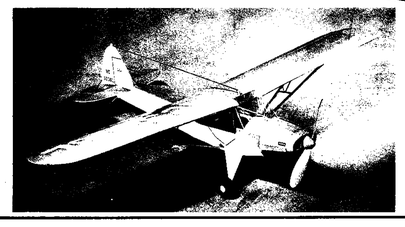


ENGINE INSTALLATION

Engine is used if model is being built for R/C, Control Line or Free Flight Flying. Engine is not provided in kit. Drawing shows the installation of a Cox .020 Pee Wee engine. Hole in 5 is now enlarged to permit passage of engine through front. Remove 1 back to 6. Mount engine to fire wall with #2 nuts and bolts (not provided) and tighten nuts securely. Cut plastic nut plates from molded sheet, trim to 1/8" around nut itself to provide gluing surface, then cement to back of fire wall over nuts, drilling hole through so that bolts can protrude. Use cement generously. Nut plate keeps nuts from turning so that engine can be removed by just unscrewing bolts. When dry, remove engine. Fuselage should be covered at least back to 9 with 1/32 or 1/16 sheet balsa. Engine is then installed after model has been painted. Cut out front and top of cowl for engine clearance. Cowl can either be cemented in place, breaking glue joint each time engine is removed, or it can be made removable by cementing small blocks to 5, which receive tiny wood screws (not provided) through cowl.

PLASTIC PARTS DETAIL

For best results, follow instructions carefully. COWL: Cut from sheet leaving about 1/16 of material for trim. Excess material may be trimmed with knife or razor blade and then sanded with fine sandpaper. Engine cowl is placed on bulkhead 5 for support while sanding. SPINNER: Cut from sheet leaving 1/16 excess material. Sand and trim off excess very carefully. Cut out for propeller at Scribe Line, then cement spinner to propeller after propeller is in plane. COMPASS: Cut from plastic sheet, trim, then make base from scrap balsa using full size layout above. Cement base to compass. After compass is mounted and model is painted as described in final assembly, cut instrument face from plan and cement to front of compass. NUT PLATES: Cut from sheet right along trim line and install as described in Engine Installation. PAINTING: Regular plastic model paint or enamel can be used. Model airplane dope can be used only if applied if LIGHT spray coats, allowing paint to dry thoroughly between coats. Excessive use of dope may deform plastic. Parts may be used as provided, or if painting parts, apply a light coat of silver, followed by a light coat of white before painting final color. Darker paints may be applied directly to plastic. When cementing parts in place on model, use light coats of cement applied sparingly. If necessary, use more than one coat, but DO NOT APPLY A THICK COAT AT ANY TIME !



FLIGHT INSTRUCTIONS

When model has been completed, it must balance at point shown on side view. DO NOT ATTEMPT TO FLY MODEL UNTIL BALANCE HAS BEEN ACHIEVED, add weight if necessary. Check Wing and Tail, if warps have developed, remove using steam method described in Silkspan Step. Model is now ready. Pick a calm day for test flying. On Rubber-Powered models, wind Propeller clockwise and launch into any prevailing wind, slightly Nose down at a point on the ground approximately 50 ft. ahead of you. If model noses up and then falls off and stalls (AFTER MODEL WAS BALANCED), then bend Elevators down slightly, using hot breath in same manner as steam. If model dives, bend Elevators up. If model veers too much to one side, bend Rudder to opposite side. Take-off require more power and therefore more turns in Rubber Motor. For longer flights and competition. It is recommended that the loop of rubber be lubricated with model lubricant (available at most Hobby Shops) or with Castor Oil. Apply sparingly. Use winder which you can make by tightening hook into hand drill. To store winds in motor, stretch rubber out 3 to 5 times original length, then proceed to wind, moving slowly back to model. Feeling rubber from time to time to be certain it does not get so taut that it breaks. Upon reaching the Nose, motor should be completely wound. When replacing rubber Motor, purchase contest grade TSG brown rubber at your favorite Hobby Shop. Engine powered Free-Flight models are tested and flown in same basic manner as above and is described in Flight Instructions at end of Radio Control Installation Note. GOOD LUCK AND GOOD FLYING !!!!!!

KIT E-6 SPAN 35½" SCALE 1"=1'.0"

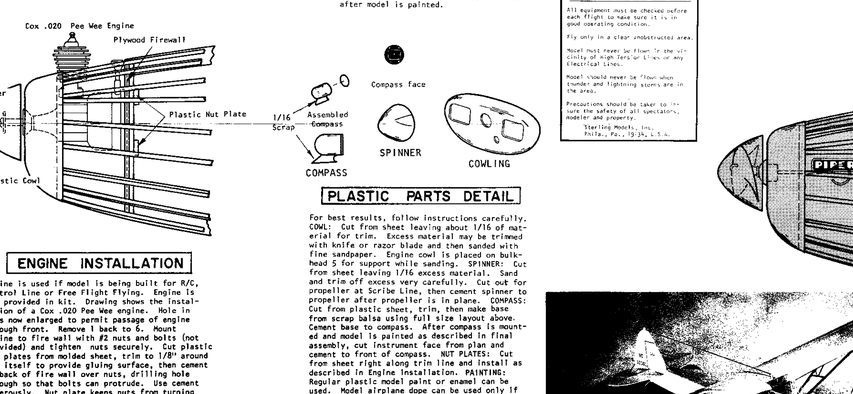
PIPER CUB SUPER CRUISER PA-12

Sterling MODELS INC. PHILA PA 19134 U.S.A.

TC302M20

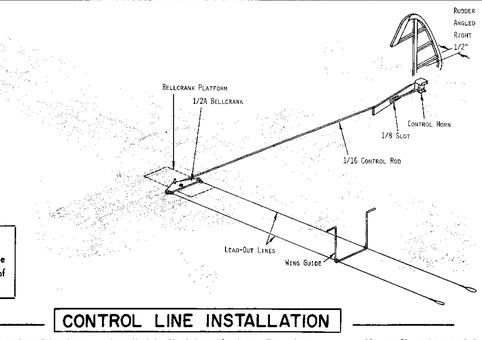
CONTROL LINE INSTALLATION

Install controls after Fuselage Step 5 has been completed. Fill in area from 13 to rear with scrap 1/16 sheet balsa, flush with outside of frame; between 15 and 16, cut 1/8 slot for control rod as shown. Cut two 22" lengths of lead-out lines (not provided in kit) and fasten them to bell crank. Mount bell crank on plywood platform as shown in Detail Sketch. Lead-out lines come through fuselage at holes drilled for then as shown. Cover fuselage with tissue as described in Detail Note. Cut stabilizer through wide main spars, as indicated by dotted lines on full size drawings. Round edges and install control horn and joiner at location shown on drawing, then join together with cloth hinges shown. Cement stabilizer to fuselage as described in Final Assembly Note. Tape elevators in neutral position (in line with stabilizer, neither up nor down). Bend 1/4" of one end of 1/16 wire for control rod at right angle. Loosen bell crank and insert rod from bottom with spur vertical, then secure bell crank. Control rod should be in line with elevator horn; if not, bend accordingly so that rod slips through slot freely. Make a right angle bend at rear end of rod at precisely the location of hole in elevator horn, with bell crank in neutral position as shown. Clip off excess and insert into horn. Solder washer on end to prevent rod from coming off. Controls are now in neutral position and must work freely and easily. Cut rudder apart on dotted lines, cement fin in place. Cement rudder to fin and rear of fuselage, angled 1/2" to outside of circle flown, as shown. Assemble wing to fuselage as described in Final assembly Detail. Make wing guide from .045 wire as shown in Detail. Cement securely to wing at strut Plates #5 & #6, as shown. Reinforce fuselage holes with washers or eyelets. Thread lines through holes in wing guide and tie loops in end of lines at least 2" past wing tip. Lines must be of equal length when elevator is in neutral position. Control system must operate freely and easily. CAUTION: Model must balance (or slightly nose down) at point where front control line comes out of the fuselage. If necessary, add weight. Use regular 1/2A control lines when flying your Piper Cub Super Cruiser GOOD LUCK AND GOOD FLYING !



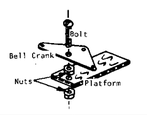
SILKSPAN TISSUE COVERING

The finest grade wet strength Silkspan Tissue provided in this kit permits covering of most compound curves without wrinkling when moistened with water before applying to frame. Tissue shrinks when dry, to a tight smooth surface. Follow directions for a smoothly covered, warp-free flying model. Use clear dope to attach Tissue as follows: Apply a light coat to the outside edges of area to be covered, and allow it to dry. Cut Tissue to shape needed, plus 1/4" over size. Place Tissue on flat surface and dampen with moistened cloth. Apply a second coat of clear dope on frame, then place moistened Tissue on frame. Pull Tissue Gently with fingers, working out all wrinkles. WHEN COVERING WINGS AND TAIL SURFACES, PIN FRAMEWORK TO FLAT SURFACE TO PREVENT WARPS AS TISSUE DRIES. Cut out any wrinkled areas (bound by nearest framework) and re-cover. If model is being built as Non-Flying Scale, see detail note before covering is started. COVER WING FIRST: If model is being built for Control Line, be sure weight is added to Wing Tip (see Control Line Detail). COVER top and bottom with one piece each. If any problem is encountered with wrinkles on the Tips, USE a separate piece of Tissue. Cover STABILIZER AND RUDDER NEXT: Cover both sides of each in one piece. COVER FUSELAGE NEXT: Cover sides from #8 to rear with 1 piece. Cover bottom from #8 to rear with 1 piece. Cover top of Cowl in 2 pieces joining over center, ending at #15, cover sides then bottom,top with 1 piece each. Apply four coats of thinned dope (3/4 dope, 1/4 thinner) to all Tissue covering, holding surfaces flat to prevent warpage while dope is drying. Company models required two additional coats of straight dope to fill pores before color dope was applied. Check Wing and Tail Surfaces for warps before assembly. Warps can be removed by holding over steam (from boiling kettle) and twisting gently in opposite direction. Check again when cool.



CAUTION:

Do not fly control line models in the vicinity of electric power lines!

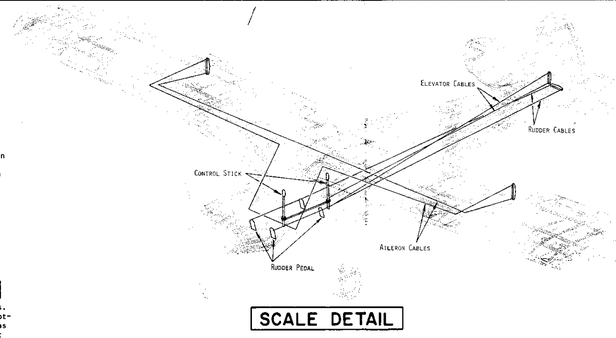


CONTROL ASSEMBLY

Drill 1/8" hole thru Plywood Platform. Insert Bolt thru Bellcrank and run Nut up Bolt till Bellcrank has just enough room to swing freely closed face of Nut down. Insert thru Platform and install bottom Nut closed face up. Tighten Nut towards each other leaving Bellcrank to pivot freely. Secure Nuts with solder or glue.

HINGE DETAIL

Use cloth tape for Hinges. Cement only on top and botton, alternating Hinges as shown above. Keep cement out of Hinged area between sections.



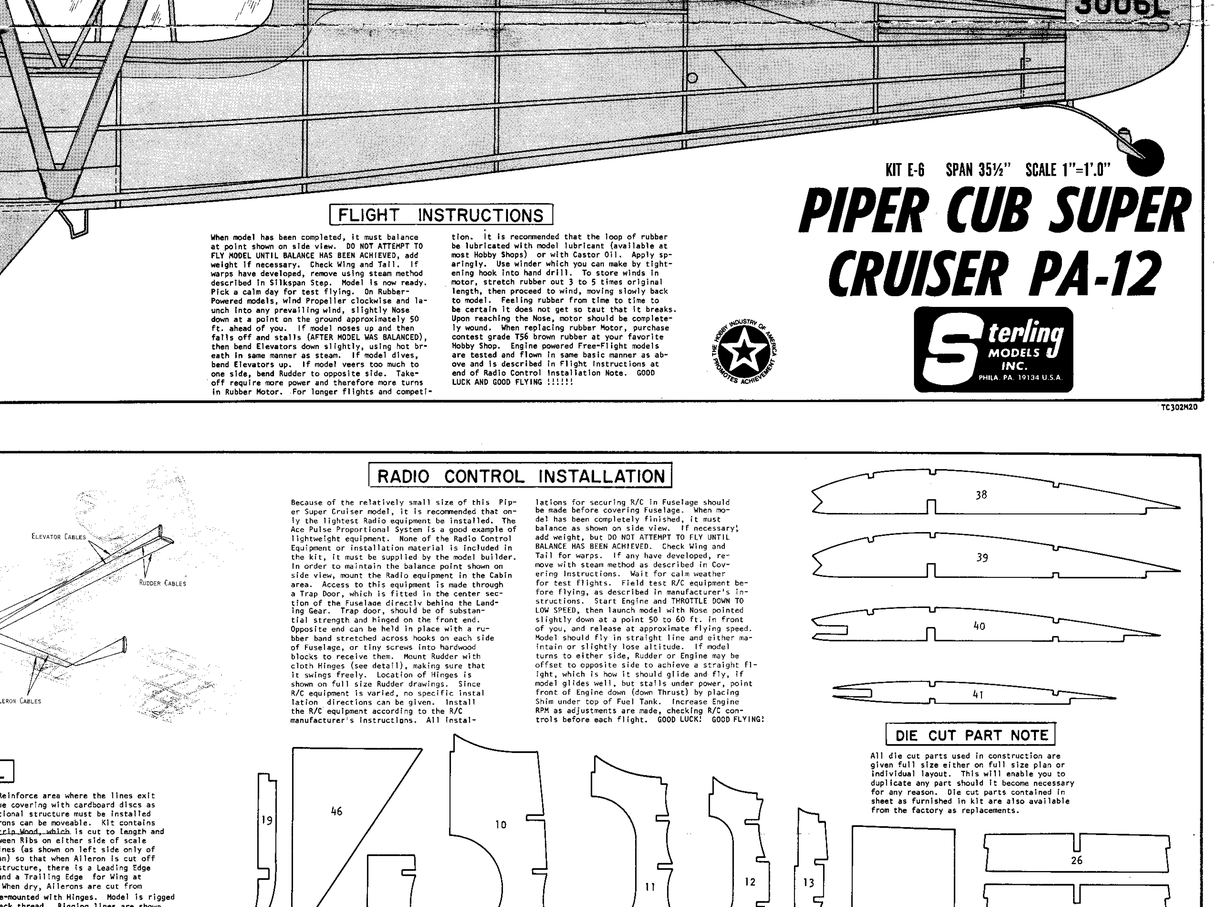
RADIO CONTROL INSTALLATION

Because of the relatively small size of this Piper Super Cruiser model, it is recommended that only the lightest Radio equipment be installed. The Ace Pulse Proportional System is a good example of lightweight equipment. None of the Radio Control Equipment or installation material is included in the kit, it must be supplied by the model builder. In order to maintain the balance point shown on side view, mount the Radio equipment in the Cabin area. Access to this equipment is made through a Trap Door, which is fitted in the center section of the Fuselage directly behind the Landing Gear. Trap door, should be of substantial strength and hinged on the front end. Opposite end can be held in place with a rubber band stretched across hooks on each side of Fuselage, or tiny screws into hardwood blocks to receive them. Mount Rudder with cloth Hinges (see detail), making sure that it swings freely. Location of Hinges is shown on full size Rudder drawings. Since R/C equipment is varied, no specific instal lation directions can be given. Install the R/C equipment according to the R/C manufacturer's instructions. All installations for securing R/C in Fuselage should be made before covering Fuselage. When model has been completely finished, it must balance as shown on side view. If necessary, add weight, but DO NOT ATTEMPT TO FLY UNTIL BALANCE HAS BEEN ACHIEVED. Check Wing and Tail for warps. If any have developed, remove with steam method as described in Covering Instructions. Wait for calm weather for test Flights. Field test R/C equipment before flying, as described in manufacturer's instructions. Start Engine and THROTTLE DOWN TO LOW SPEED, then launch model with Nose pointed slightly down at a point 50 to 60 ft. in front of you, and release at approximate flying speed. Model should fly in straight line and either maintain or slightly lose altitude. If model turns to either side, Rudder or Engine may be offset to opposite side to achieve a straight flight, which is how it should glide and fly, if model glides well, but stalls under power, point front of Engine down (down Thrust) by placing Shim under top of Fuel Tank. Increase Engine RPM as adjustments are made, checking R/C controls before each Flight. GOOD LUCK! GOOD FLYING!

SCALE DETAIL

Multiple view drawings and construction sketches of the actual Piper Super Cruiser reveal a wealth of information, which can be built into the model, if desired by the modeler. There are definite limitations on details if model is being built to fly; otherwise without the factor of weight involvement, etc., modeler can construct his model as detailed as he wishes. Basically, the scale outline of the full size craft has been followed accurately. Model has been built with half the scale number of Ribs. If modeler desires, add a Rib between each of those shown in model construction. Scale outline of Fuselage, Wings and Tail are true and modeler can make whatever changes desired in the structure before covering. Leading Edges of Wing, which was covered with Plywood in the full size craft, may be duplicated with light cardboard provided in the kit, likewise the Forward Cowl back to #7 Plastic Parts and Decals are authentic and correct. Special overlay sketch shows installation of moveable controls from the Cockpit. Parts are mostly made from scrap Balsa and Nylon thread. Improvisation at this point by the modeler is a necessity. Reinforce area where the lines exit through Tissue covering with cardboard discs as shown. Additional structure must be installed so that Ailerons can be moveable. Kit contains 1/16 x 1/8 Strip Wood, which is cut to length and cemented between Ribs on either side of scale Aileron outlines (as shown on left side only of full size Plan) so that when Aileron is cut off of the Wing structure, there is a Leading Edge for Aileron and a Trailing Edge for Wing at that point. When dry, Ailerons are cut from Wing, then remounted with Hinges. Model is rigged with thin black thread. Rigging lines are shown on drawings of full size craft, as well as photograph of model on box. A loop made in thin Wire and installed at the proper location will guide Aileron Control Lines from Wing into Fuselage. Be sure when Installing Controls, that when stick and Rudder pedals are in neutral position, the Control surfaces are likewise. Propeller is painted natural wood color with cream tips. Your comments and photographs will be welcome. Write to Sterling Models, Inc. Bellfield Ave. & Wister St., Philadelphia, Pa. 19144, U.S.A.

Photo Shows simple yet sturdy construction

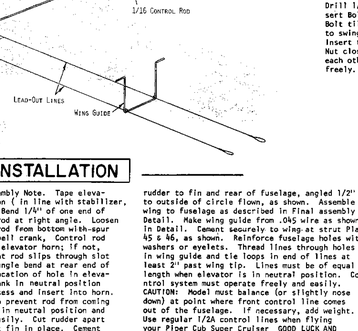


DIE CUT PART NOTE

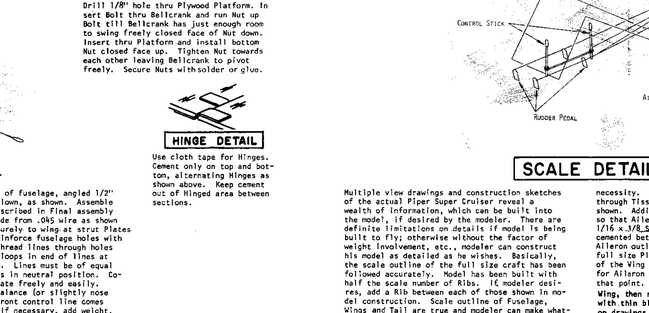
All die cut parts used in construction are given full size either on full size plan or individual layout. This will enable you to duplicate any part should it become necessary for any reason. Die cut parts contained in sheet as furnished in kit are also available from the factory as replacements.

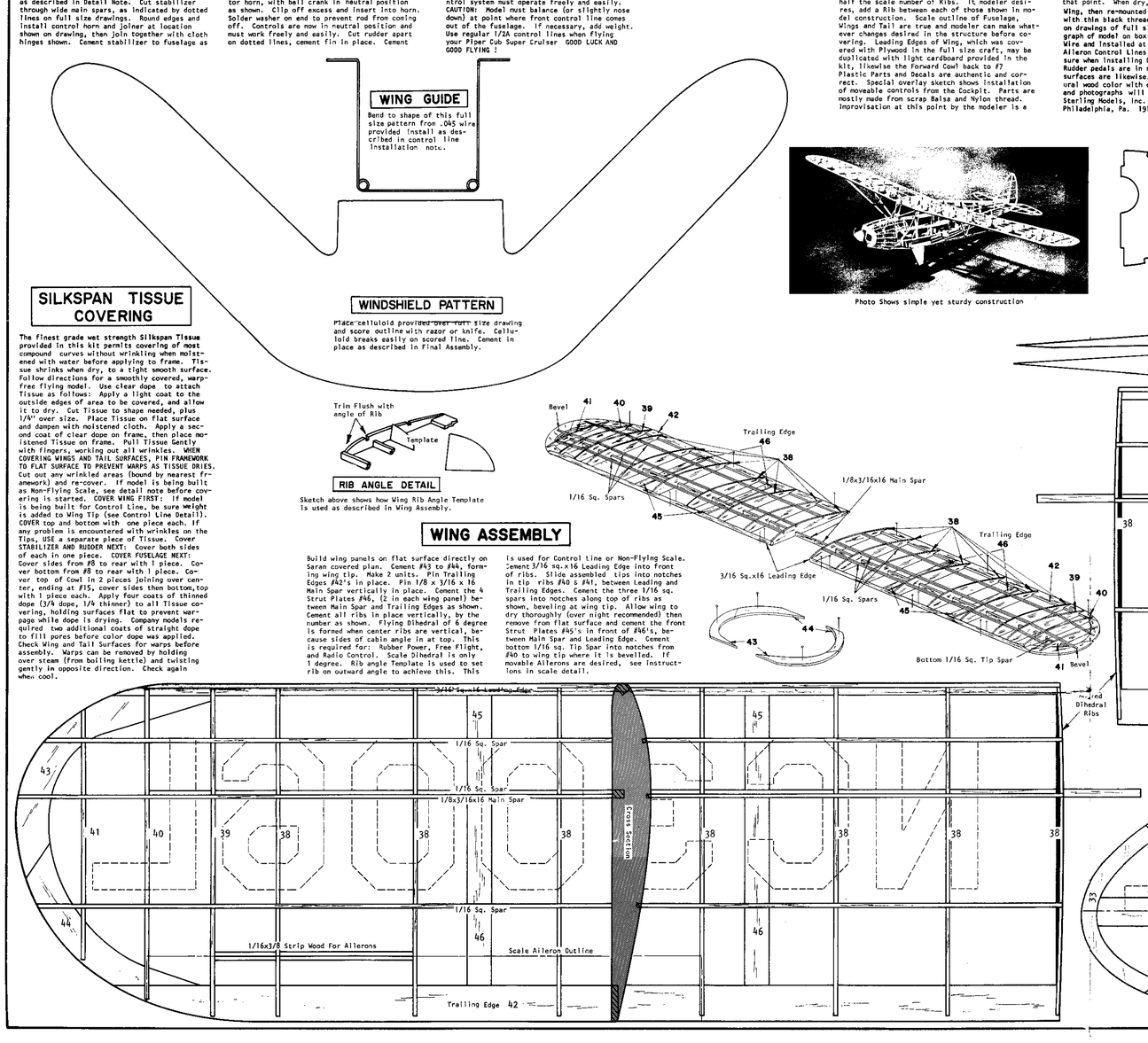
WING ASSEMBLY

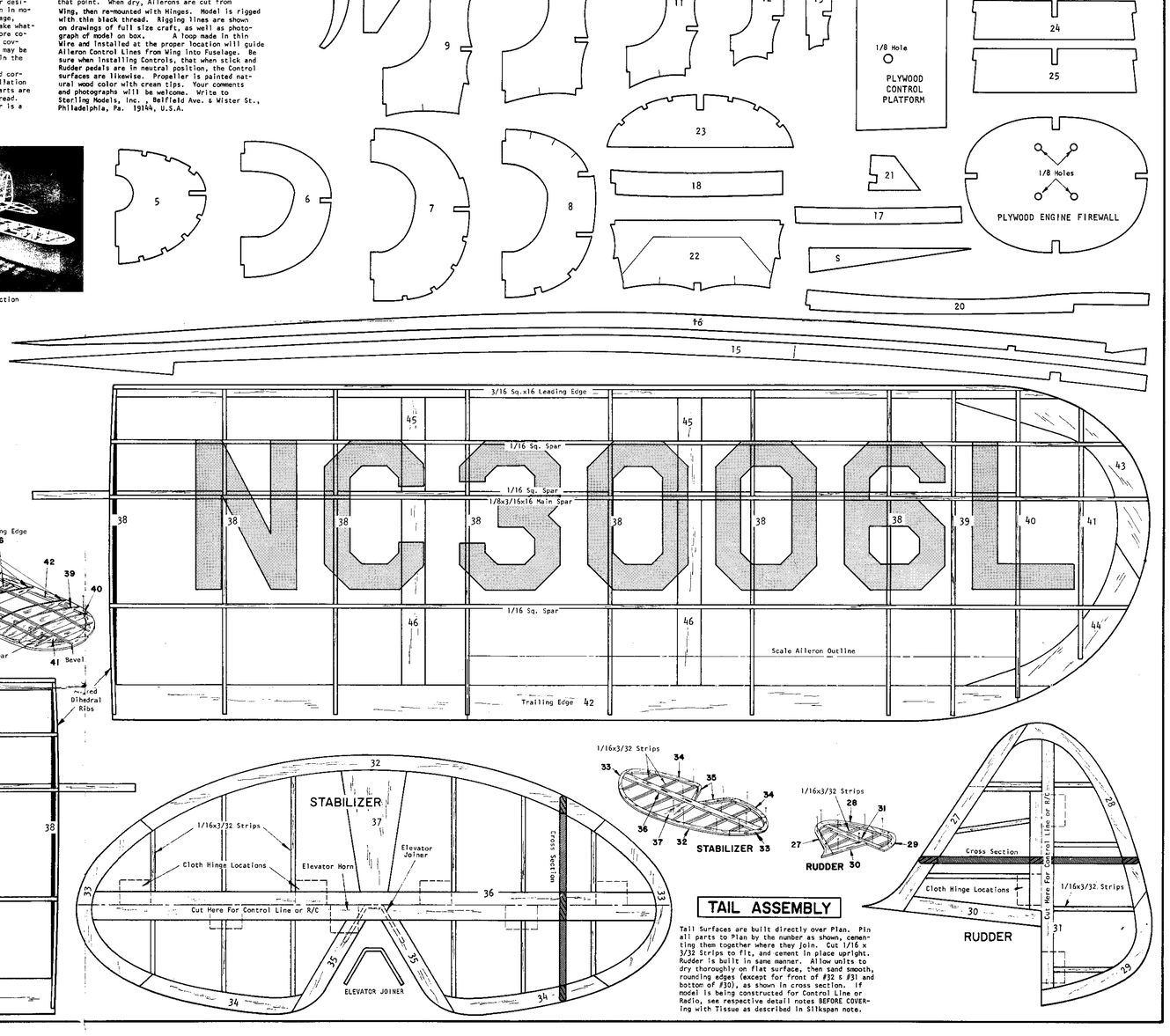
Build wing panels on flat surface directly on Saran covered plan. Cement #43 to #44, forming wing tip. Make 2 units. Pin Trailing Edges #42's in place. Pin 1/8 x 3/16 x 16 Main Spar vertically in place. Cement the 4 Strut Plates #46, (2 in each wing panel) between Main Spar and Trailing Edges as shown. Cement all ribs in place vertically, by the number as shown. Flying Dihedral of 6 degree is formed when center ribs are vertical, because sides of cabin angle in at top. This is required for: Rubber Power, Free Flight, and Radio Control. Scale Dihedral is only 1 degree. Rib angle Template is used to set rib on outward angle to achieve this. This is used for Control line or Non-Flying Scale. Cement 3/16 sq.x16 Leading Edge into front of ribs. Slide assembled tips into notches in tip ribs #40 & #41, between Leading and Trailing Edges. Cement the three 1/16 sq. spars into notches along top of ribs as shown, bevelling at wing tip. Allow wing to dry thoroughly (over night recommended) then remove from flat surface and cement the front Strut Plates #45's in front of #46's, between Main Spar and Leading Edge. Cement bottom 1/16 sq. Tip Spar into notches from #40 to wing tip where it is bevelled. If movable Ailerons are desired, see instructions in scale detail.



Sketch above shows how Wing Rib Angle Template is used as described in Wing Assembly.







TAIL ASSEMBLY

Tail Surfaces are built directly over Plan. Pin all parts to Plan by the number as shown, cementing them together where they join. Cut 1/16 x 3/32 Strips to fit, and cement in place upright. Rudder is built in same manner. Allow units to dry thoroughly on flat surface, then sand smooth, rounding edges (except for front of #32 & #31 and bottom of #30), as shown in cross section. If model is being constructed for Control Line or Radio, see respective detail notes BEFORE COVERing with Tissue as described in Silkspan note.