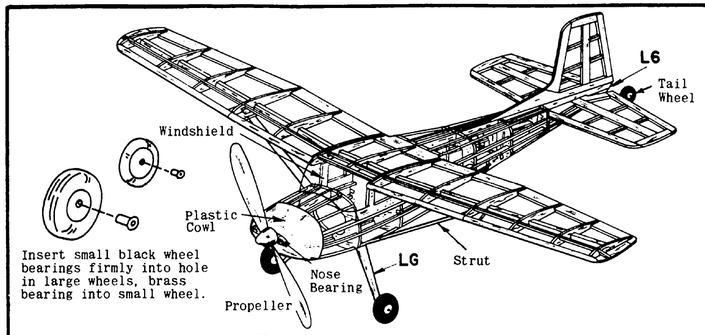
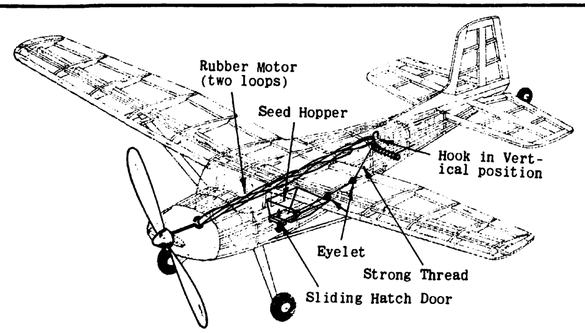
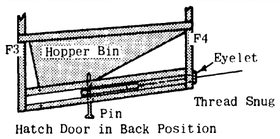
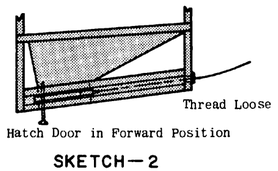






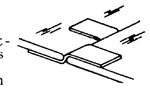
SKETCH—1



SKETCH—2

HINGE DETAIL

Use cloth tape for hinges. Cement only on top and bottom, alternating hinges as shown above. Keep cement out of hinged area between sections.



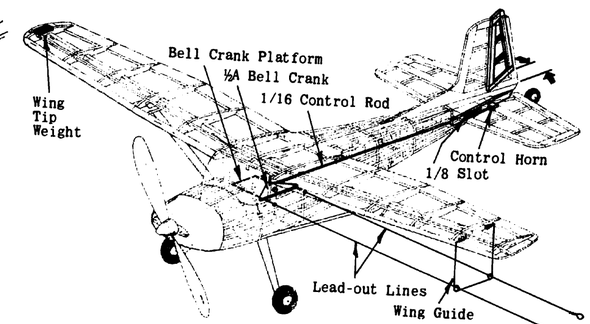
PLYWOOD BELL CRANK PLATFORM

Front

1/8 Hole

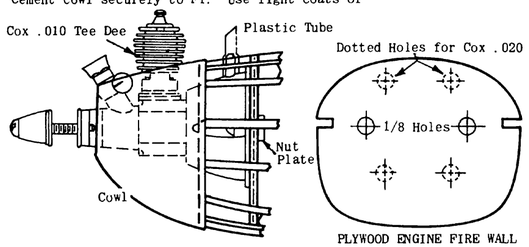
WIRE WING GUIDE

Bend from 1/32 wire using this full size pattern. Cement to rib W7 on left side of wing. Bind to rib with thread. Slit tissue for guide when covering.



FINAL ASSEMBLY

Wing, tail and fuselage are now covered as described in Silkspan Tissue Note before proceeding. Cement wing securely to top of cabin. Center rib W1 lines up with L2, trailing edge is against front of F4, flush with top. Ribs must rest on top of cabin for proper incidence, OTHERWISE MODEL MAY NOT FLY! It is necessary to have access to rear hook for rubber motor. Cut out tissue and stringer above L5 between F5 and F6. Fit a piece of 1/16 balsa into space. Cement cloth tape to top (half over door and half over fuselage) to act as hinge. Cement a strip of 1/16 square to L5 to act as door stop, to keep door flush with surface. Hold bottom in place with Scotch Tape. Cement stabilizer horizontally in place. Cement L6 over center of stabilizer. Front fits into notch in F7, rear is centered over end of fuselage. Cement rudder to top of L6. ALIGNMENT OF WING AND TAIL SURFACES IS NOW CHECKED. Tips are equal distance from flat surface when model is at rest, and rudder is vertical. Cut tail fairing from stiff paper using pattern provided and cement in place on each side, from stabilizer to bottom of rudder, from F7 to rear. Round off landing gear struts LG's to cross section shown and make groove (with pencil point) for wire struts at location shown on side view. Cement LG's securely in place, wrapping with silkspan for maximum strength. Install cowl. Trim excess material carefully to edge of cowl and sand smooth. Cowl may be placed on bulkhead F1 for support while sanding. Use pencil to punch out center hole for nose bearing. Cement cowl securely to F1. Use light coats of cement, applied sparingly. If necessary, use more than one coat, BUT DO NOT APPLY A THICK COAT AT ANY TIME. For powered models, cowl and nut plates are installed as described in Engine Installation. Make and paint struts as described in detail note, they are installed after model is painted. Model is now painted. For scale colors see three view drawings or box top. 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 F2. Cement windshield in place, wrapping around sides of fuselage and front of wing. Hold in place with pins until dry. Outlines of scale control surfaces may be drawn in place with India Ink. Insert bearings into wheels and place on axles. Hold wheels with drop of cement or solder, or by bending end of axles up. Insert straight end of propeller shaft to rear of nose bearing. Slip on two washers and insert shaft through rear of propeller. Bend front of shaft to "U" shape as shown on side view and cement securely to propeller. Make two loops of rubber. Insert rubber through trap door and engage on rear hook. Slip remainder of rubber into fuselage and shake down towards nose. Bend hook on piece of wire. Slip wire through nose bearing hole in cowl and capture rubber. Pull through and attach to prop shaft. Nose bearing fits into cowl. Your Cessna 180 Cloud Seeder is now complete. See Flight Instructions before flying. GOOD LUCK AND HAPPY LANDINGS!!!



ENGINE INSTALLATION

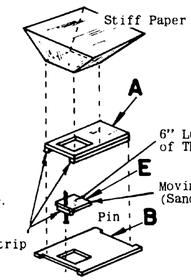
Engine is used, if model is being built for control line or free flight flying. Engine and installation material is not provided in kit. Drawing shows the installation of a Cox .010 Tee Dee engine which is suitable for both control line and free flight. The .020 Pee Wee and similar size engines can be used for control line only if more power is desired. Fuselage should be covered at least back to F4 with 1/32 or 1/16 sheet balsa. Obtain a piece of 1/16 plywood and cut out engine fire wall, using full size drawing, drilling holes indicated. Note center holes are for Cox .010 engine, other four holes for Cox .020 engine. Mount engine to fire wall with #2 nuts and bolts, tightening 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. Engine fire wall is installed in the fuselage 3/8" behind rear of F1. Slip in place over stringers and cement securely to balsa covering and all other frame with at least two generous coats of cement for maximum strength. Enlarge hole in F1 so that engine can be passed through. Engine is then installed after model has been painted. Add a 3/4" length of 1/16 I.D. plastic tubing to fuel tank fill and overflow tubes. Cut top of tubing at angle facing forward for easy admission of air stream. If needle valve extension is necessary, force a length of 1/8 I.D. plastic fuel tubing over head of needle valve, then insert a length of 1/8 dowel into end of tubing. Dowel should protrude at least 1/2" past side of fuselage. Engine is then installed. 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 Bulkhead F1 which will recieve tiny wood screws through cowl.

PLASTIC COWL

Sketch above shows how plastic cowl looks trimmed and ready for installation in Final Assembly Note.

AUTOMATIC CLOUD SEEDING

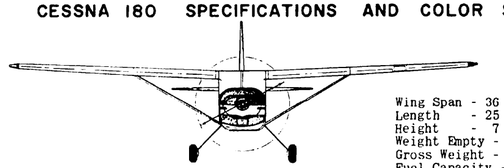
Automatic cloud seeding in flight operates on rubber powered models only. Installation is simple and action is positive, if instructions are followed carefully. Make hole and cement eyelets in bottom of bulkheads F4 and F5, against right side of center keel. Insert thread from rear of hatch door through eyelets in bulkheads. Move hatch door back until pin is against rear of opening, then tie thread to rear hook while hook is in vertical position as shown above. Thread must be snug when hatch door is in this position as shown in Sketch #1. Coat knot with cement. This completes mechanism. To operate: Wind rubber motor. This will pull rear hook forward to a horizontal position, loosening thread. Turn model over and pour small granules (chop up balsa 1/16 squares into small cubes, or use fine flakes such as oats, rice, etc.). When hopper is loaded, loose thread permits the moving of hatch door forward, closing off hopper as shown in Sketch #2. Model is now released, and towards end of flight when motor unwinds, rear hook pulls back into vertical position. This tightens the line, pulling hatch door open, permitting cloud seeding material to pour out.



HOPPER ASSEMBLY DETAIL

Cut hopper from stiff paper, using pattern provided. Fold on dotted lines and cement together at glue flap. Cement a length of 1/16 square flush with both sides of A as shown. Sand moving hatch door E smooth and slightly thinner than thickness of 1/16 sq. strips on A. Cement 1/4" length of 1/16 square across door, 1/16" from front. When dry, insert pin through center of strip as shown, with head on bottom. Cement securely in place, clipping off top of pin so that 1/4" is above and also below door. Pin acts as handle and door stop. Make pin hole 1/8 from rear then tie a 6" length of thread through hole. Cement in place and allow to dry. Cement slide assembly together by sandwiching E between A and B. E must move up and back freely and easily; if not, sand thinner until it does. When dry, hopper and slide unit are installed as described in Fuselage Step 4. Be certain hopper slide is also cemented to bottom of paper hopper.

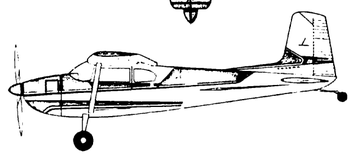
CESSNA 180 SPECIFICATIONS AND COLOR SCHEME



Wing Span - 36 Ft. 2 In.
Length - 25 Ft. 6 In.
Height - 7 Ft. 6 In.
Weight Empty - 1515 Lbs.
Gross Weight - 2650 Lbs.
Fuel Capacity - 65 or 84 Gal.
Engine - Continental O-470-R
230 H.P. at 2600 RPM.
Maximum Speed - 170 M.P.H.
Cruising Speed - 162 M.P.H.
Landing Speed - 57 M.P.H.
Service Ceiling - 21,500 Ft.
Maximum Range - 1215 Miles

COLOR SCHEME

In our opinion, Cessna Aircraft Co., Wichita, Kansas has the "wildest" paint jobs we've ever seen. Box top and three views show two different versions. Decals supplied as box top. Write Cessna for colored catalog showing many others.



This beautiful and versatile 4-passenger personal aircraft is adapted for use as a cloud seeder to produce rain! This model in perfect scale SEEDS CLOUDS dramatically, with amazing likeness.

INSTRUMENT PANEL

Cut from plans, cement to F2

CAUTION:

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

CONTROL LINE INSTALLATION

Materials required for control line installation are not provided in kit. INSTALL CONTROLS AFTER FUSELAGE STEP 4 HAS BEEN COMPLETED. Obtain 1/16 plywood and cut out bell crank platform, using drawing provided, drilling hole indicated. Cover area between bulkhead F7 and rear of fuselage from side keel L5 and stringer above it. When dry, cut 1/8 slot for control rod to come through as shown. Cut corresponding holes in left side of bulkheads F6 and F7 for control rod. Mount 1/2A bell crank to plywood platform as described in instructions that come with bell crank. Cut two 15" lengths of lead-out lines and fasten them to bell crank. Cement platform securely in fuselage against front of F3 and on top of L5's. Lead-out lines come through fuselage at holes made in cabin sides directly under windows. Use cement generously, applying at least two coats on entire installation. Cover fuselage with tissue as described in detail note. Cut stabilizer in half through wide main spar as shown by dotted lines on full size drawing. Round edges and install control horn at location shown on drawing, then join together with cloth hinges shown. Cement stabilizer horizontally to top rear of fuselage. Tape elevators in neutral position (in line with stabilizer, neither up or down). Obtain a piece of 1/16 music wire at least 12" long for control rod, and bend 1/4" of one end at right angle. Loosen bell crank and insert rod from bottom, with spur vertical, then secure bell crank. Rod rests on plywood platform and should be in line with elevator horn; if not, bend accordingly so that rod slides through slot freely. Make a right angle bend at rear end of rod at the exact location of hole in elevator horn, with bell crank in neutral position as shown. Clip off excess wire and insert into horn. Solder washer on end to prevent rod from coming off. Controls are now in neutral position. Remove tape from elevator and check that controls work freely and easily. Cut rudder in half through wide rudder post as shown by dotted lines on full size drawing. Cement together with rudder angled 1/2" to right side as shown above. Cement rudder vertically to top of stabilizer. Cement wing to fuselage as described in Final Assembly Detail. Make wing guide from 1/32 wire as described in detail note. Cement securely to bottom of wing under rib W7. Reinforce holes in fuselage 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. CAUTION: MODEL MUST BALANCE (OR BE SLIGHTLY NOSE DOWN) AT POINT SHOWN ON SIDE VIEW FOR CONTROL LINE! If necessary, add weight. Use regular 1/2A control lines and handle when flying your Cessna 180 Cloud Seeder. GOOD LUCK AND GOOD FLYING!!!

FLIGHT INSTRUCTIONS

When model has been completed, it must balance at point shown on side view, when held at wing tips. DO NOT ATTEMPT TO FLY MODEL UNTIL BALANCE HAS BEEN ACHIEVED, add weight if necessary. Model is now ready. Pick a calm day for test flying. Wind propeller clock-wise about 100 to 150 turns and launch into any prevailing wind (slightly nose down) at a point on the ground about 50 feet ahead of you. DO NOT THROW MODEL, but push gently into the air after first allowing propeller to spin for a second or two. If model noses up, then falls off and stalls (AFTER MODEL WAS BALANCED), then bend elevators down slightly, using breath in same manner as steam, described in Covering Note. If model dives, bend elevators up. If model veers too much to one side, bend rudder to opposite side.

Take-offs require more power and therefore more turns in rubber motor. For longer flights and contest flying, it is recommended that the loops of rubber be lubricated with model lubricant (available at some hobby shops) or Castor Oil. Apply sparingly AND KEEP IT OFF KNOT OR IT WILL COME UN-DONE! Use winder, which you can buy at hobby shop or can make by tightening hook into hand drill. To store winds in motor, slowly stretch rubber out three to five times original length, then proceed to wind, moving slowly back to model. Feel rubber from time to time to be certain it doesn't get too taut so it breaks. Upon reaching the nose, motor should be completely wound. When replacing rubber motor, purchase contest grade T56 Brown Rubber at your hobby shop. Engine powered free flight models are tested and flown in same basic manner as above, with engine at lowest possible speed until model is adjusted to fly properly. If model glides well but stalls under power, point front of engine down (down thrust) by placing washers behind top of tank or where necessary. Engine speed then can be slowly increased. GOOD LUCK AND GOOD FLYING!!!

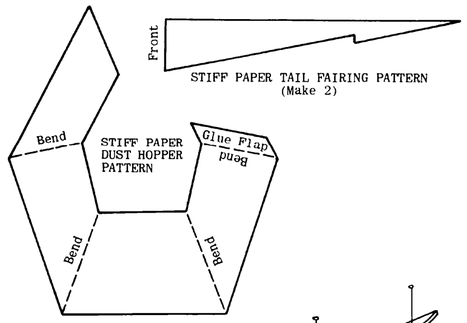
SEEDS CLOUDS ***AUTOMATICALLY !***

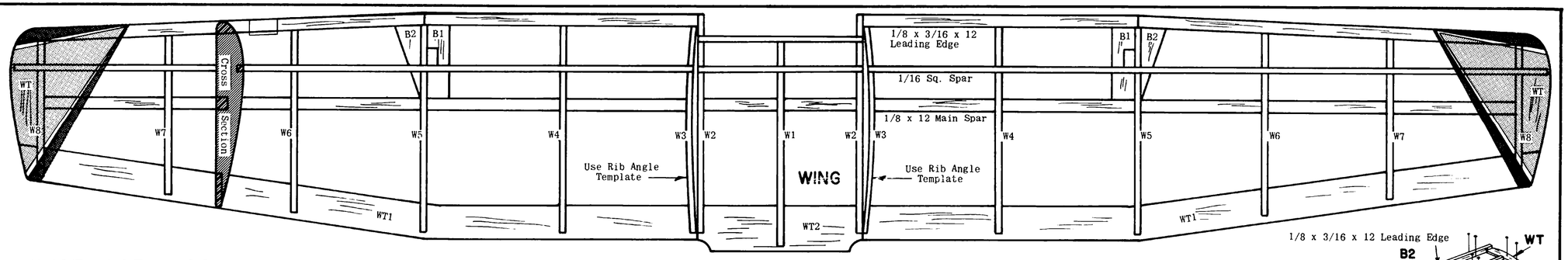
CESSNA 180

Sterling MODELS
PHILA.PA.USA

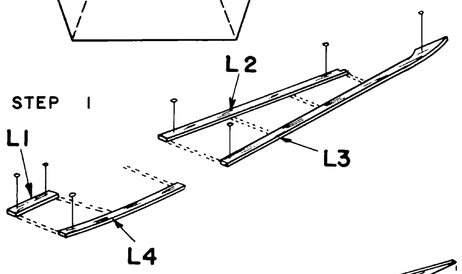
KIT A11
WING SPAN 17"

N6AJ4



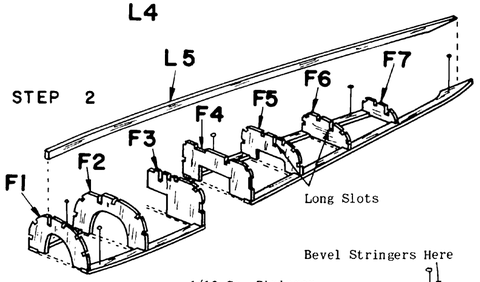


FUSELAGE ASSEMBLY



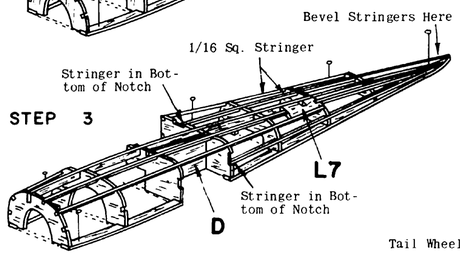
STEP 1

Build fuselage directly on plan. Pin L parts in place as shown.



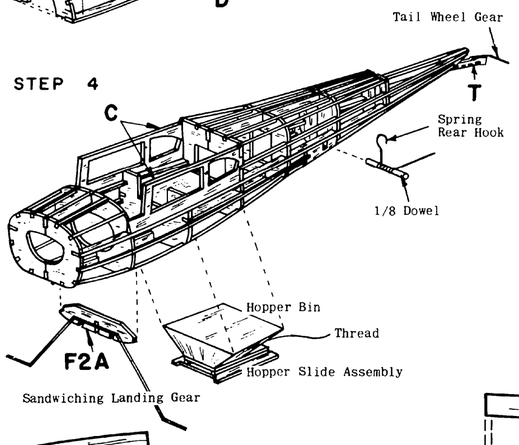
STEP 2

Cement bulkhead halves from F1 to F7, vertically in place as shown. Insert and cement L5 into long slots in center of bulkheads, cementing rear of L5 to L3.



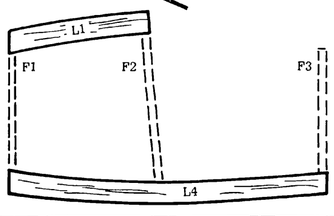
STEP 3

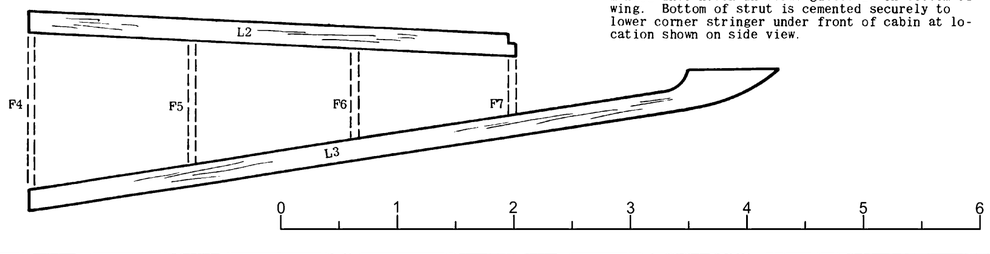
Cement D into notches in F3 and F4, flush with cut-out in bulkheads. Cement L7 against F6, notch up, as shown. Cement 1/16 strip (stringers) into notches for same as shown, except bottom stringer back to F4 which is omitted at this time, bevelling at rear to knife edge. Be certain that stringer above L5 at cabin is at bottom of notch in F4. Stringers not visible can be seen in Step 4 Sketch. Bottom stringer at F4 is placed at bottom of notch as shown. Allow frame to dry overnight to prevent warping. Wing or tail can be started meanwhile.

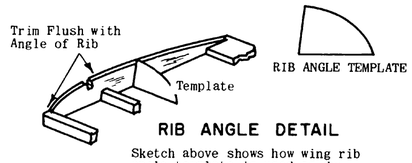


STEP 4

Pull out pins and remove frame from flat surface, then cement opposite halves of bulkheads in place followed by L5. Cement L7 in place, then all 1/16 sq. stringers in same manner as opposite side. Cement both die cut cabin sides C in place as shown, fitting into notch at F4 and against sides of F2. Sandwich landing gear between F2 and F2A as shown. On engine powered models, it is recommended that landing gear be duplicated from 1/16 music wire. Make hopper assembly as shown and described in detail note. Cement bin to bottom of D applying cement liberally around all sides where it contacts bulkheads. Securely cement hopper slide assembly in place, making sure E slides freely and easily. There should be at least 6" of thread hanging from rear of slide door. Cement bottom front 1/16 sq. stringers in place. Insert 1/8 dowel through coil of spring rear hook. (Omit rear hook on engine powered models.) Bend hook part half the distance to opposite side so that hook is in center of fuselage (top view) when installed. Slip unit into fuselage, inserting ends of dowel into notch in L7's and cement securely. Straight end of spring rear hook is securely cemented to side keel L5. Only straight end of hook is fastened, leaving coil free for spring movement. Straighten top of tail wheel gear. Make pin hole on angle through L3 as shown on side view and insert straight end, then bend 1/8 spur. Pull back into place and cement securely as shown on side view. Groove center of Tee with pencil and cement to tail gear. Frame is now complete. Allow to dry thoroughly, then sand lightly to present a smooth surface for tissue covering, which is described in its detail note. Sand front of cabin sides C to match curve of F2 as shown. If model is to be engine powered, see Engine or Control Line Note BEFORE COVERING FUSELAGE.







RIB ANGLE DETAIL

Sketch above shows how wing rib angle template is used as described in Wing Step 2.

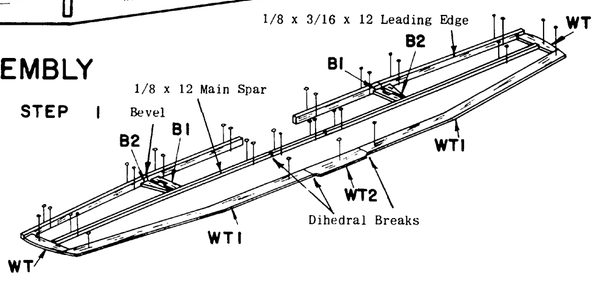
SILKSPAN TISSUE COVERING

The finest grade wet strength silkspan tissue provided in this kit, permits covering of compound curves without wrinkling WHEN FIRST MOISTENED WITH WATER BEFORE APPLYING TO FRAME. Tissue shrinks when dry, to tight smooth surface. Use clear dope to attach tissue to frame as follows: Apply a coat to the outside edges of area to be covered. When dry, cut tissue to shape needed, about 1/4" larger on all sides. Place tissue on flat surface and dampen with moistened cloth. Apply a second coat of clear dope to frame, then place moistened tissue in place. Pull tissue gently with fingers, working out all wrinkles. WHEN COVERING WING AND TAIL SURFACES, PIN FRAMEWORK TO FLAT SURFACE TO PREVENT WARPS AS TISSUE DRIES. Cut out any area that wrinkles (bounded by nearest framework) and re-cover section in same manner. Apply two coats of clear dope, thinned 50-50 with thinner, on wing and tail surfaces before assembling to model. COVER WING FIRST: Cover top of flat center section with one piece. Cover outer panels from dihedral breaks to tip ribs W8 with one piece on each side, then cover tips with small separate pieces. Bottom of center section is left un-covered. Cover bottom of both sides with one piece each. COVER TAIL SURFACES NEXT: Cover both sides of rudder and stabilizer with one piece each. COVER FUSELAGE NEXT: Cover sides of fuselage (from front to back) with one piece, starting with corner stringer at cabin top down to lower corner stringer. Step down to next lower stringer at bulkhead F6. Cover top front in one piece, then cover top rear in one piece. Cover bottom front between F1 and F2 in one piece. Cover remainder of bottom in one piece, slitting for landing gear and notching out for sliding hopper door. Apply four coats of thinned dope to tissue covering on fuselage. Trim out tissue from notches in strut gussets B1 on bottom of wing. Check wings and tail surfaces for warps before assembling. Warps are removed by holding over steam (from boiling kettle) and twisting gently in opposite direction. Finished model must be warp-free if successful flights are to be obtained.

WING STRUT DETAIL

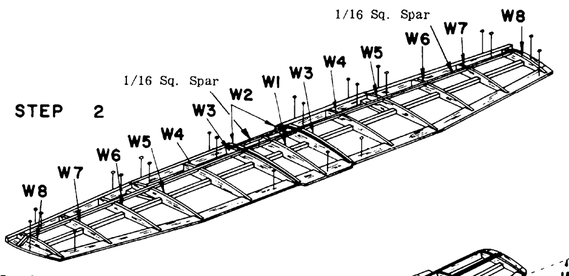
Make two wing struts from 1/16 x 5/32 strips, rounded to cross section shown. Cut to length and bevel ends. Paint same color as fuselage and install after model has been painted. Top of strut is cemented into notch in strut gusset B1 on bottom of wing. Bottom of strut is cemented securely to lower corner stringer under front of cabin at location shown on side view.

WING ASSEMBLY



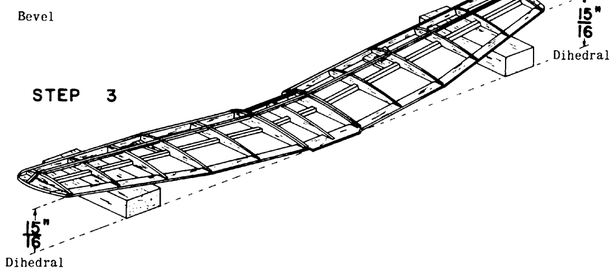
STEP 1

Build wing on flat surface directly on plan. Pin all WT parts in place, cementing WT to WT1. Cut 1/8 square x 12 main spars to proper length. Pin in place, joining over dihedral breaks in center, and cement to WT's. Cut 1/8 x 3/16 x 12 leading edges to length and pin in place, bevelling for good fit where they join at B1 - B2 location. Cement together at bevelled joint and to front of WT's. Cement B1 and B2 in place between leading edge and main spar as shown. Use cement liberally in this step.



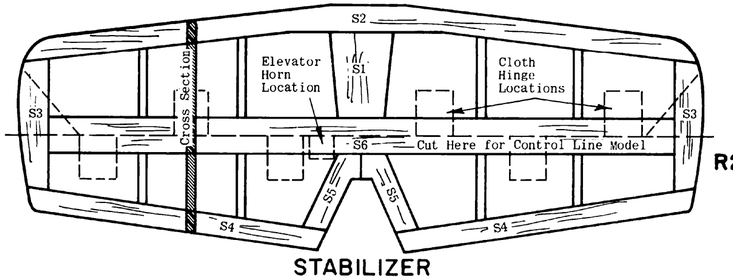
STEP 2

Cement ribs W1 to W8 in place as shown. Ribs W3 are set at angle using rib angle template as shown in detail sketch. This insures proper dihedral angle. Do not cement against ribs W2 since panels are separated for dihedral angle in next step. All other ribs, including W2's, are vertical. Cement 1/16 sq. spars into notches along tops of ribs and also short spar in center section between W2's. Spars crack at W8 and are bevelled on bottom where they are cemented to WT as shown. Allow frame to dry thoroughly before removing from flat surface.

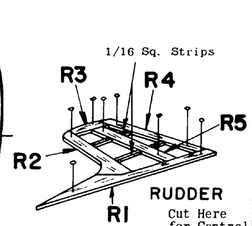


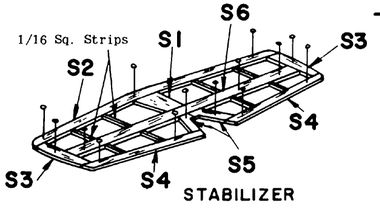
STEP 3

Pull out pins and remove frame from flat surface. Separate panels and trim & sand leading edge to shape shown on wing cross section. Round off tips and trailing edge as shown, to blend smoothly into each other. Trim off leading edge, spar and trailing edge; flush to angle of ribs W3, then cement sections together on flat surface, blocking up each side 15/16" as shown. Center section should be pinned on flat surface. Use cement generously and allow to dry thoroughly. When dry, sand frame smooth to prepare for tissue covering.



STABILIZER

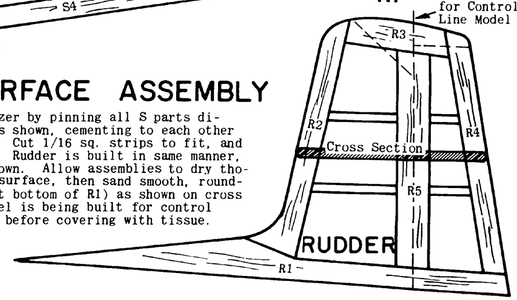


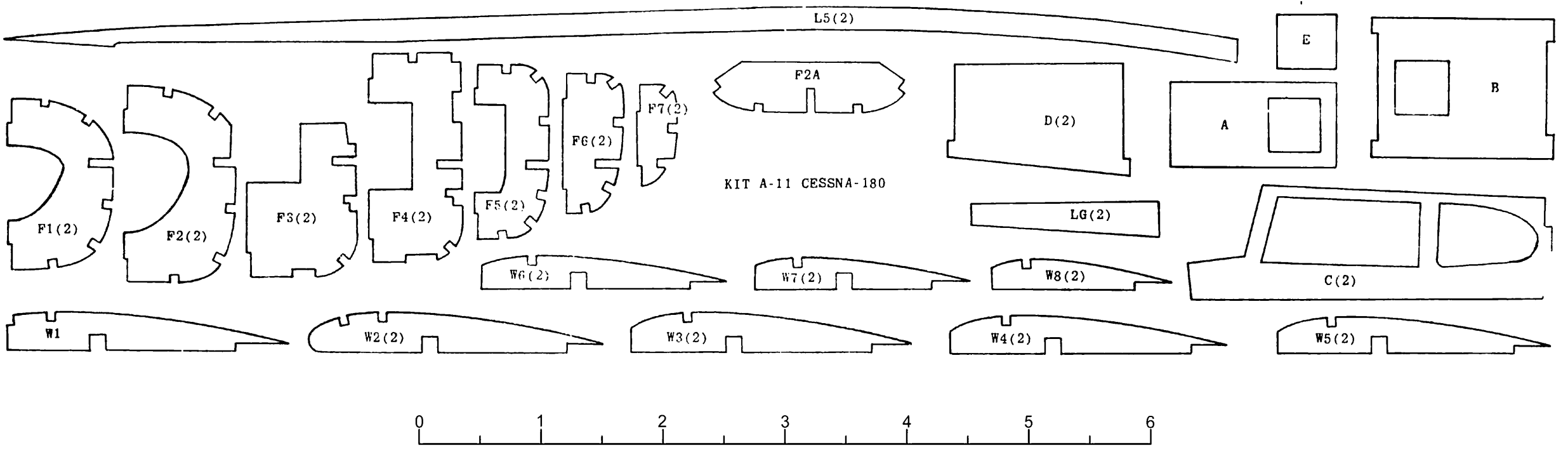


STABILIZER

TAIL SURFACE ASSEMBLY

Assemble stabilizer by pinning all S parts directly on plan as shown, cementing to each other where they join. Cut 1/16 sq. strips to fit, and cement in place. Rudder is built in same manner, using R parts shown. Allow assemblies to dry thoroughly on flat surface, then sand smooth, rounding edges (except bottom of R1) as shown on cross section. If model is being built for control line, check note before covering with tissue.




L5(2)
E
B
F2A
D(2)
A
F7(2)
F6(2)
F5(2)
F4(2)
F3(2)
F2(2)
F1(2)
KIT A-11 CESSNA-180
LG(2)
W6(2)
W7(2)
W8(2)
C(2)
W1
W2(2)
W3(2)
W4(2)
W5(2)
0
1
2
3
4
5
6