KIT WW-12 HALBERSTADT CL.2

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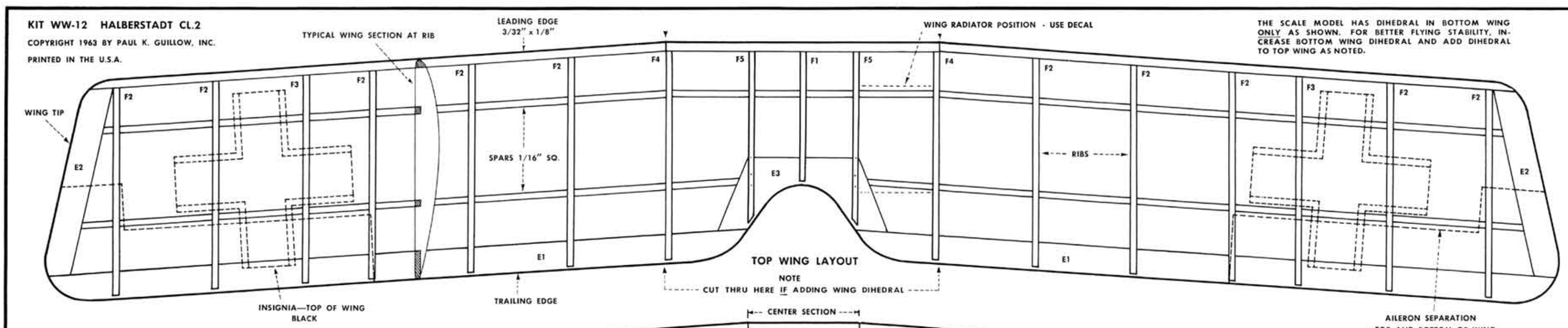
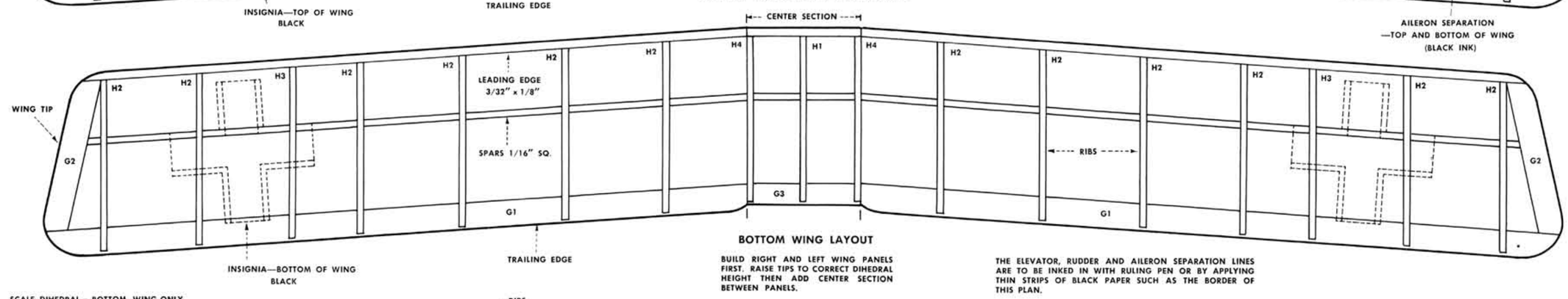
THE SCALE MODEL HAS DIHEDRAL IN BOTTOM WING ONLY AS SHOWN. FOR BETTER FLYING STABILITY, INCREASE BOTTOM WING DIHEDRAL AND ADD DIHEDRAL TO TOP WING AS NOTED.

ADDITIONAL DECALS AVAILABLE AT 25c PER SHEET. SEND STAMPS OR COIN TO PAUL K. GUILLOW, INC., WAKEFIELD, MASS.



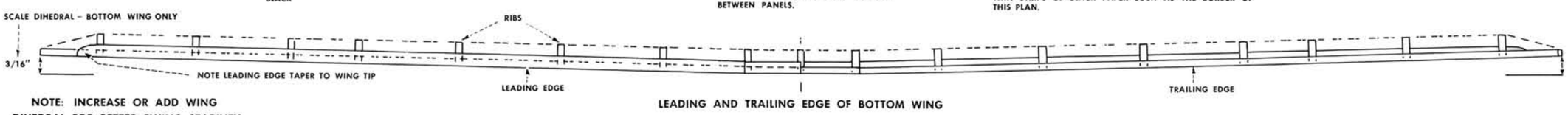
TOP WING LAYOUT



BOTTOM WING LAYOUT

BUILD RIGHT AND LEFT WING PANELS FIRST. RAISE TIPS TO CORRECT DIHEDRAL HEIGHT THEN ADD CENTER SECTION BETWEEN PANELS.

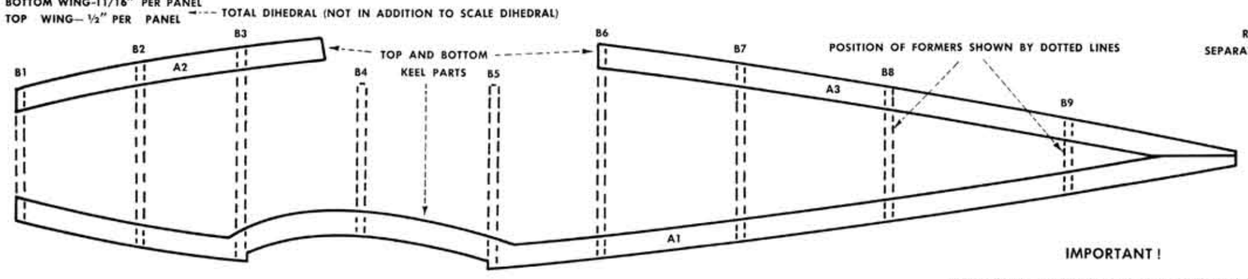
THE ELEVATOR, RUDDER AND AILERON SEPARATION LINES ARE TO BE INKED IN WITH RULING PEN OR BY APPLYING THIN STRIPS OF BLACK PAPER SUCH AS THE BORDER OF THIS PLAN.



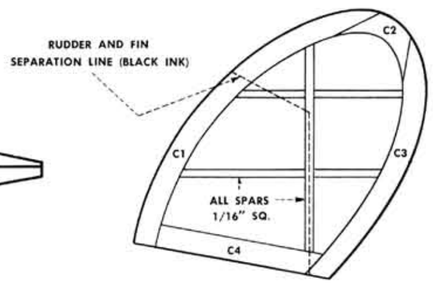
LEADING AND TRAILING EDGE OF BOTTOM WING

NOTE: INCREASE OR ADD WING DIHEDRAL FOR BETTER FLYING STABILITY

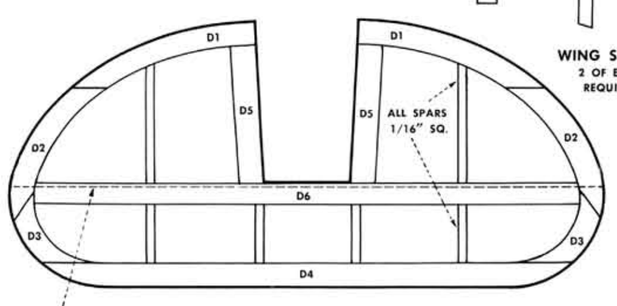
BOTTOM WING-11/16" PER PANEL
TOP WING— ½" PER PANEL — TOTAL DIHEDRAL (NOT IN ADDITION TO SCALE DIHEDRAL)



FUSELAGE LAYOUT

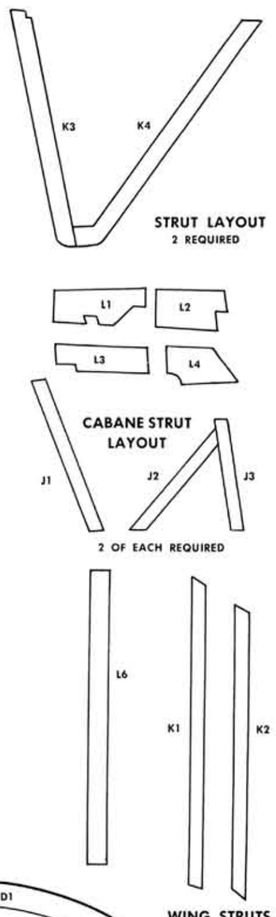


RUDDER LAYOUT



ELEVATOR AND STABILIZER SEPARATION LINE (BLACK INK)

STABILIZER LAYOUT



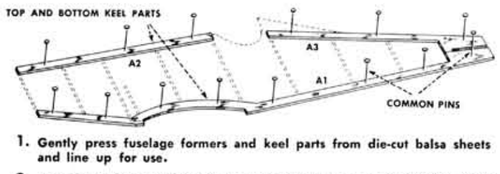
IMPORTANT!

COVER ALL LAYOUTS WITH WAX PAPER BEFORE STARTING FRAME CONSTRUCTION. THIS WILL PREVENT PARTS FROM STICKING TO PLAN AFTER CEMENTING FRAMES TOGETHER.

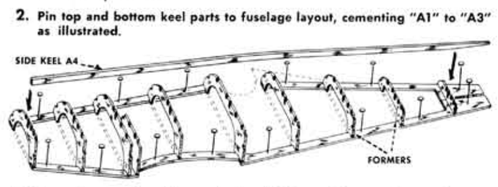
MR. MODEL BUILDER:

The construction details shown below are those of the SE-5A. This may not be the model you are building but the method of construction is exactly the same in most respects.

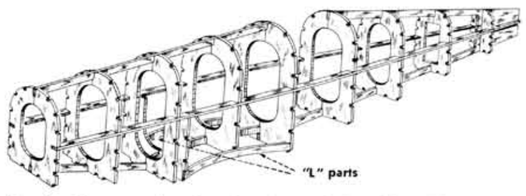
BUILDING THE FUSELAGE FRAME



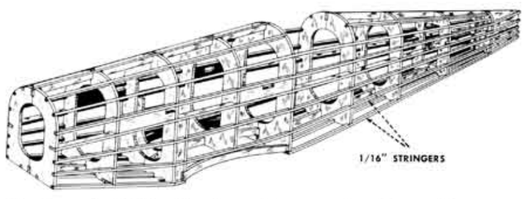
1. Gently press fuselage formers and keel parts from die-cut balsa sheets and line up for use.
2. Pin top and bottom keel parts to fuselage layout, cementing "A1" to "A3" as illustrated.



3. Cement one each of former halves "B" in position as shown—be sure formers are at right angles to keel.
4. Cement side keel "A4" into deep notches in formers "B".

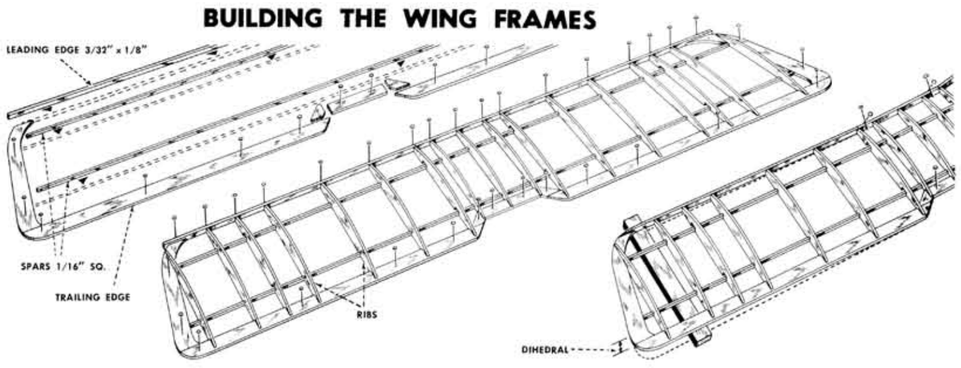


5. When dry, remove frame from plan. Cement duplicate halves of formers "B" in place against keel and formers.
6. Cement duplicate side keel "A4" into position. Cement "L" part in place.



7. Cement the 1/16" sq. side stringers in former notches. Refer to side view of plan as an aid to stringer location.
8. Add other 1/16" sq. stringers, then cement remaining "L" parts in place. Lightly sandpaper completed fuselage to remove balsa fuzz and any excess cement. Make and add stiff paper cockpit covering.

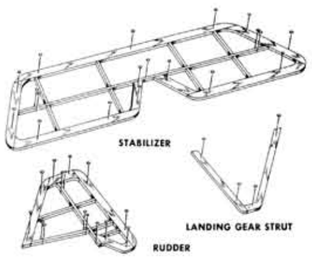
BUILDING THE WING FRAMES



1. Gently press wing frame parts (ribs and trailing edges) from die-cut balsa sheets
2. Pin to wing layout and cement respectively to each other all "E" parts of top wing.
3. Cement leading edge and spars in place.
4. Cement all ribs "F" into position between leading and trailing edge parts. Be sure ribs are at right angle to "E" parts.
5. The wings of models with scale dihedral should be cracked at ribs shown on front view of wing plan. Raise wing tips to height shown and then cement cracked joints—leave in position until dry. Refer to special note on plan for increased dihedral as an aid to better lateral stability in flying.
6. Follow the same procedure in assembling the bottom wing—pin and cement parts "G" in place then add the wing ribs.
7. When dry, remove wing frames from plan. Carve and sandpaper leading edges to shape and then gently round all other edges.

BUILDING THE TAIL SURFACES

AND OTHER FRAMES



The stabilizer and rudder are built directly over their respective layouts as illustrated. Lightly sandpaper the completed frames smooth.

Landing gear struts, N or V cabane and wing struts are assembled over their respective layouts.

for a rubber motor replacement, ask for
T-56 Rubber Thread
available in various sizes at your local hobby shop

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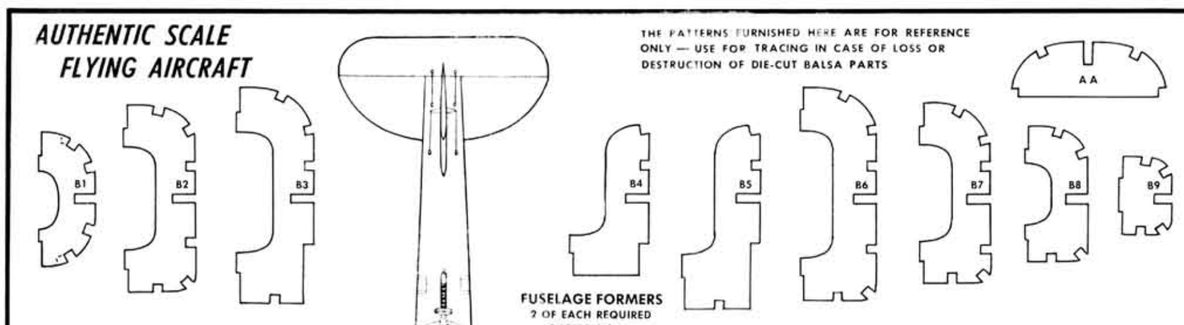
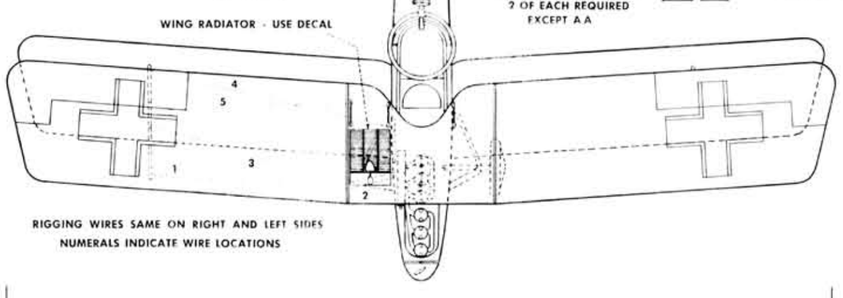
AUTHENTIC SCALE FLYING AIRCRAFT

THE PATTERNS FURNISHED HERE ARE FOR REFERENCE ONLY — USE FOR TRACING IN CASE OF LOSS OR DESTRUCTION OF DIE-CUT BALSA PARTS



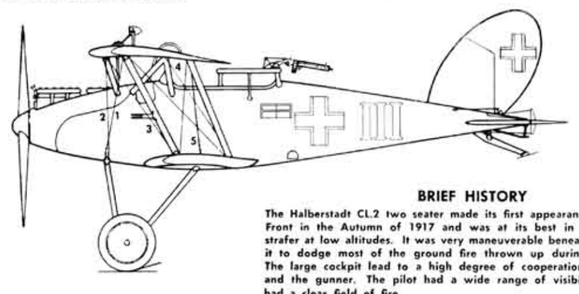


SPECIFICATIONS

ENGINE	180 H.P. MERCEDES
MAXIMUM SPEED	97 M.P.H.
CEILING	13,500 FT.
PURPOSE	2 SEAT FIGHTER GROUND ATTACK AND RECONNAISSANCE

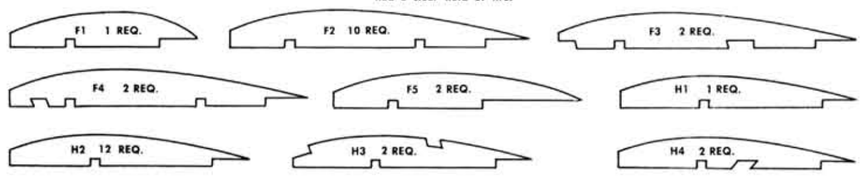
COLOR SCHEME

CAMOUFLAGED IN LARGE PATCHES OF LIGHT AND DARK DULLED GREEN OVER A BACKGROUND OF LIGHT EARTH BROWN

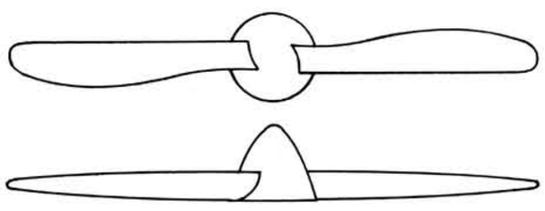


BRIEF HISTORY

The Halberstadt CL.2 two seater made its first appearance over the Western Front in the Autumn of 1917 and was at its best in the role of ground-strafer at low altitudes. It was very maneuverable beneath 1000 ft., enabling it to dodge most of the ground fire thrown up during a strafing attack. The large cockpit lead to a high degree of cooperation between the pilot and the gunner. The pilot had a wide range of visibility and the gunner had a clear field of fire.



WING RIBS



FULL SIZE SCALE PROPELLER
MATERIAL NOT FURNISHED IN KIT

STIFF PAPER COCKPIT PATTERN
TRACE ON WHITE BOND PAPER AND CUT TO SHAPE

IMPORTANT NOTE ON PAINTS AND ADHESIVES

DO NOT USE REGULAR CLEAR DOPE OVER DECALS BECAUSE IT WILL DAMAGE THEM. USE 410 M CLEAR PLASTIC PAINT WHICH WILL ALSO FUEL-PROOF — AVAILABLE AT YOUR DEALERS. WE ALSO RECOMMEND THE USE OF AMBROID PLASTIC CEMENT FOR BONDING PLASTIC TO PLASTIC AND PLASTIC TO WOOD. USE REGULAR MODEL CEMENT FOR BONDING WOOD PARTS TOGETHER.

COVERING THE FRAMES

When attaching the tissue covering to the frames, it is best to use thinned out clear dope as an adhesive instead of cement or full strength dope. Mix thinner and dope about 50-50 for proper consistency. Only apply dope to *outside* edges of areas being covered — do not apply dope to frame work within area covered by section of tissue.
FUSELAGE: First cover any flat surfaces such as sides and bottom of frame. Cover curved areas of fuselage in separate sections — vertically between formers. Dry fit tissue over curved sections to see how much of an area can be covered with one piece of tissue without wrinkling. Cut tissue slightly larger than area to be covered then trim off excess after attaching to frame.
WINGS: Cover bottom of wings with single pieces of tissue. Cover top of wings between center section and tip ribs with one piece of tissue. Cover center section and tips with separate pieces of tissue.
TAIL SURFACES: Cover both sides of rudder and top and bottom of stabilizer with single pieces of tissue.
DOPING THE COVERED PARTS: After covering is completed and all excess tissue is trimmed off, spray tissue with water from an atomizer and let dry until covering becomes smooth and taut. For best flying performance, the model should be kept light and it is suggested that only one coat of clear dope be applied to the surfaces. (If model is to be used for display only, it can be given several coats of clear dope then finished up with colored dope.) Lightly sandpaper remaining balsa parts and apply one coat of dope to all surfaces.

ASSEMBLING THE MODEL

1. With a sharp razor, remove tissue from around notches in wing ribs that receive the wing and cabane struts. Also remove tissue from notches in parts "L" of fuselage.
2. Cement bottom wing to the fuselage. NOTE: Some models have short stringers between the formers at the bottom wing center section. Insert these stringers at this time; cover section with tissue and dope.
3. Cement stabilizer and rudder to fuselage. Align carefully before cement dries hard.
4. Cement cabane struts into prepared notches in fuselage.
5. Cement wing struts in notches in bottom wing.
6. Cement top wing to all struts — line up carefully before cement dries hard.
7. Cement landing gear into notches in fuselage and bottom of wing.
8. Cement fixed sub-wing panel between bottom of landing gear struts. Cement tail skid "K" in place.
9. Cut wheel axle to length then force through right and left landing gear struts beneath the sub-wing — cement solidly in place.
10. Slip wheels on axles and bend up ends with a pair of needle nose pliers.
11. Cut celluloid windbreaker to shape and cement in position in front of cockpit. (Pattern furnished on plan).
12. At this time, balance model at point shown on plan by placing softened clay inside the front and bottom of fuselage behind the front former. Press firmly in place so that it will not become dislodged during flights.
13. Bead edges of plastic nose cowl with cement — attach to nose of fuselage — line up carefully before cement dries hard.
14. Assemble propeller, prop hook, head and nose bearing as shown on plan. Install rubber motor as follows: insert one end in fuselage and fasten in place by sliding rear motor mount (cut from excess axle wire) through loop and "L" parts. Attach other end of rubber loop over prop hook and slip propeller unit into hole in plastic nose cowl.

ADJUSTING AND FLYING THE MODEL

1. Check wings for possible warps. If warped, correct by holding the warped section over steam from a boiling kettle and twisting gently in the opposite direction until wing is straightened — be careful and don't get scalded!
2. Test glide model over grassy area by gently thrusting model forward from shoulder height. Adjust model for level flight by gently bending stabilizer either up or down to compensate for a dive or climbing stall. ("up" stabilizer for dive — "down" stabilizer for stall). If model veers right or left, adjust for straight glide by bending rudder in opposite direction of curved flight.
3. Wind propeller 100 turns (clockwise when facing nose of model) and gently thrust into prevailing wind. If model climbs too rapidly or goes into a stall, correct flight by bending rudder slightly to the right to give a climbing right turn. Longer flights can be made after initial tests by winding propeller motor up to 200 turns.

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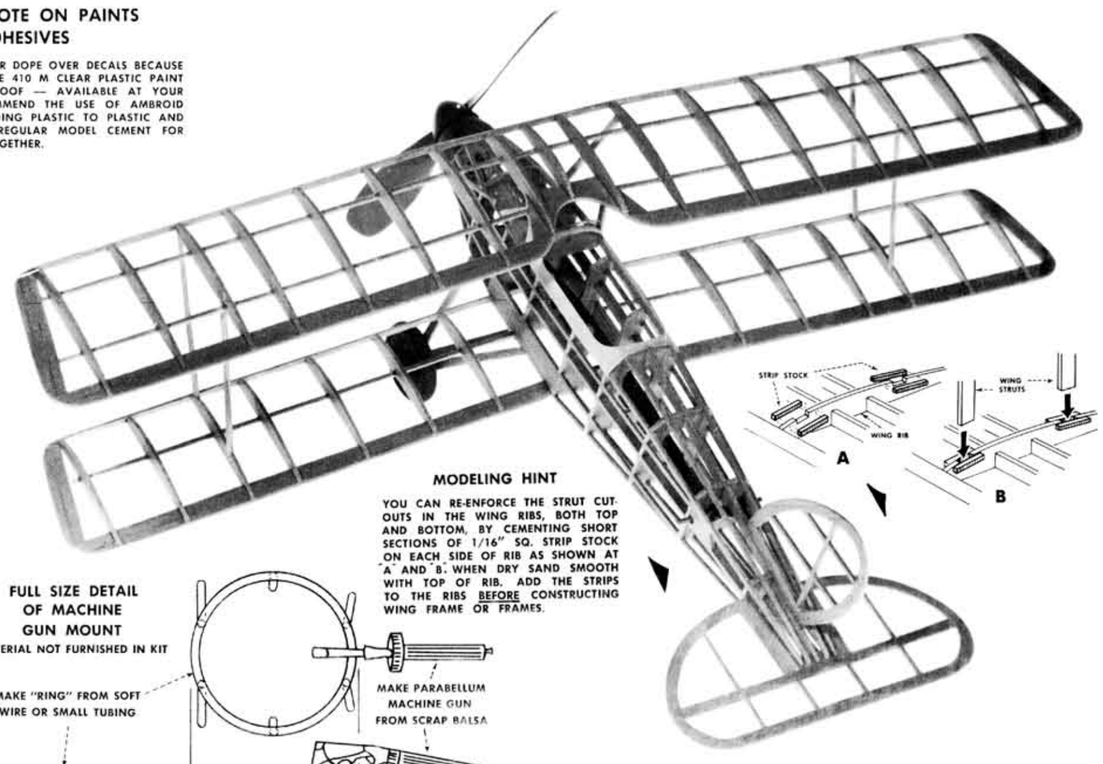
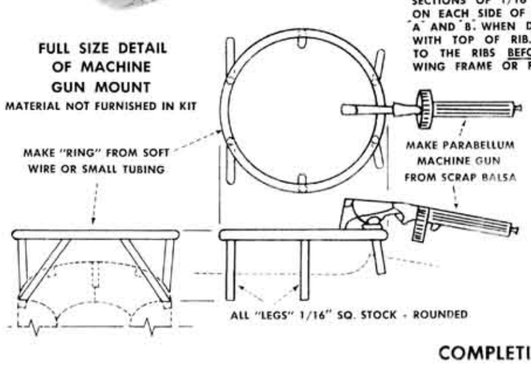


MODELING HINT

YOU CAN RE-ENFORCE THE STRUT CUT-OUTS IN THE WING RIBS, BOTH TOP AND BOTTOM, BY CEMENTING SHORT SECTIONS OF 1/16" SQ. STRIP STOCK ON EACH SIDE OF RIB AS SHOWN AT "A" AND "B". WHEN DRY SAND SMOOTH WITH TOP OF RIB. ADD THE STRIPS TO THE RIBS BEFORE CONSTRUCTING WING FRAME OR FRAMES.

FULL SIZE DETAIL OF MACHINE GUN MOUNT
MATERIAL NOT FURNISHED IN KIT



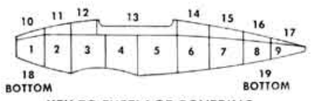
Balsa flies BETTER

NOTE: ALL FRAMES ARE COVERED WITH TISSUE BEFORE ASSEMBLY

FOR A SUPER LIGHT FLYING MODEL, DO NOT USE COLORED DOPE. APPLY ONE COAT OF CLEAR DOPE OVER TISSUE THEN ADD DECALS.

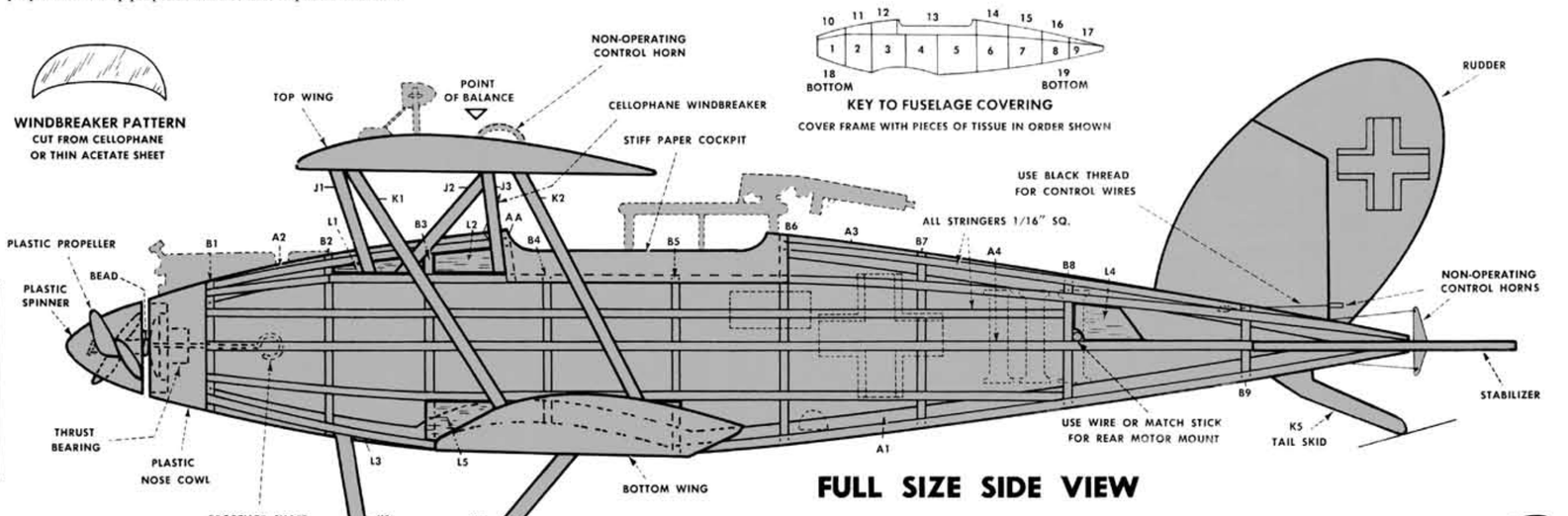
COMPLETING THE MODEL

1. Use black thread to simulate rigging wires. Refer to small three view plan for location of all wires.
2. Full scale details of guns, motors, non-flying scale prop, etc., are furnished on plan. No material is furnished in the kit for these parts but they can be made from pieces of scrap balsa or similar material. Only add these parts if an exhibition model is desired — their extra weight will cut down the flight endurance of a flying model.
3. Finally add the insignia as per instructions on reverse side of decal.



KEY TO FUSELAGE COVERING
COVER FRAME WITH PIECES OF TISSUE IN ORDER SHOWN

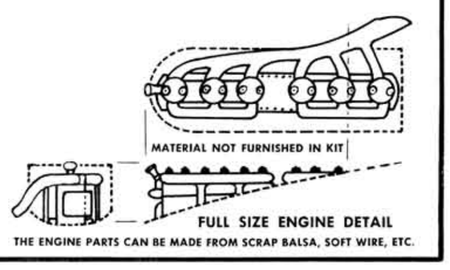
WINDBREAKER PATTERN
CUT FROM CELLOPHANE OR THIN ACETATE SHEET



FULL SIZE SIDE VIEW

MODELING HINT

WHEN ASSEMBLING MODEL, THE USE OF A PAIR OF TWEEZERS WILL BE FOUND HELPFUL FOR HANDLING SMALL OR DELICATE PARTS.



FULL SIZE ENGINE DETAIL
THE ENGINE PARTS CAN BE MADE FROM SCRAP BALSA, SOFT WIRE, ETC.

PRE-WORK INSTRUCTIONS

Prepare for building your model by accumulating necessary tools and materials such as pins, cement, single edge razor blade or modelers knife, wax paper, common pins, fine sandpaper, dope, brush, etc. All frames are built on the opposite side of plan. Lay plan on a workboard and pin wax paper over layouts to prevent parts from sticking to plan during assembly. Carefully remove all parts from the die-cut sheets and lay on workboard with the identifying letters face up.

Guillow's

KIT WW-12
HALBERSTADT CL.2

WING SPAN—18" App. Scale 5/8" = 1'-0" LENGTH—12½"

PAUL K. GUILLOW, INC., WAKEFIELD, MASS.