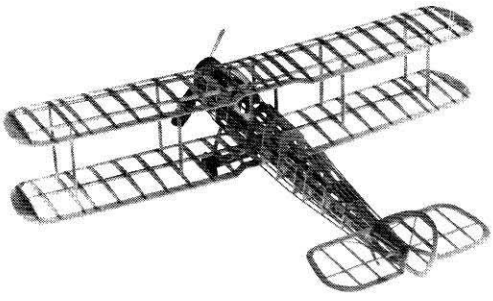
Guillow's

KIT 205

DeHAVILLAND 4

Balsa flies BETTER

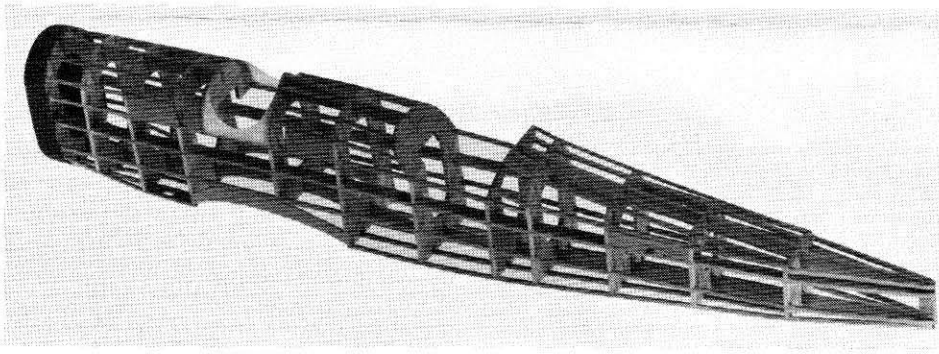
Manufactured by Paul K. Guillow, Inc., Wakefield, Mass., U.S.A.



Before starting construction of your model, study the plan and construction procedure carefully so that you will have a complete understanding of the step-by-step method of building this airplane. Guillow engineering has provided you with the most up-to-date method for building a real scale flying model but only careful attention to detail will insure the success of your efforts.

Most prize winning scale models are the result of patience and careful workmanship. You too can achieve success by following the example of champion model builders — by working SLOWLY and CAREFULLY at all times.

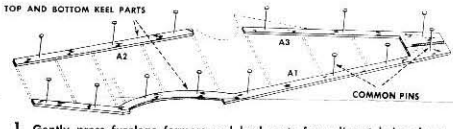
The frame photographs shown on this instruction sheet are actual pictures of the model you are about to build. The line drawings under each photo show the method of frame construction but are not actual illustrations of the model you are making. In other words, refer to the line drawings for construction procedure — refer to the photos for construction details of your model.



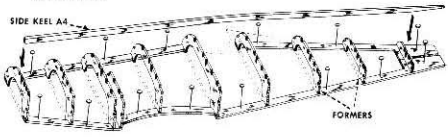
BUILDING THE FUSELAGE FRAME

MR. MODEL BUILDER:

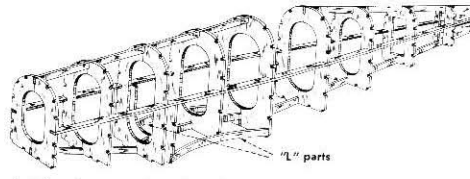
The construction details shown are those of the SE-5A. This is <u>not</u> the model you are building but the method of construction is exactly the same in most respects.



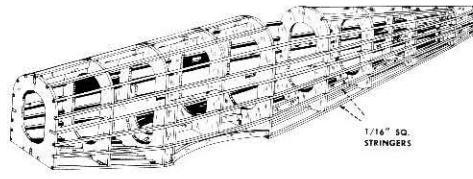
1. Gently press fuselage formers and keel parts from die-cut balsa sheets and line up for use.
2. Pin top and bottom keel parts to fuselage layout, cementing "A1" to "A3" as illustrated.



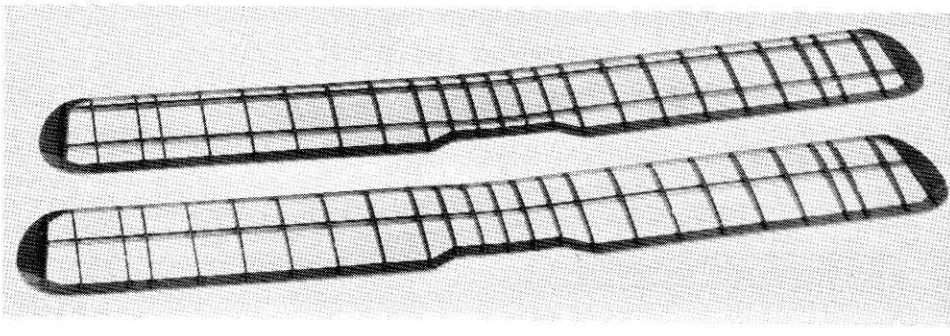
3. Cement one each of former halves "B" in position as shown—be sure formers are at right angles to keel.
4. Cement side keel "A4" into deep notches in formers "B".



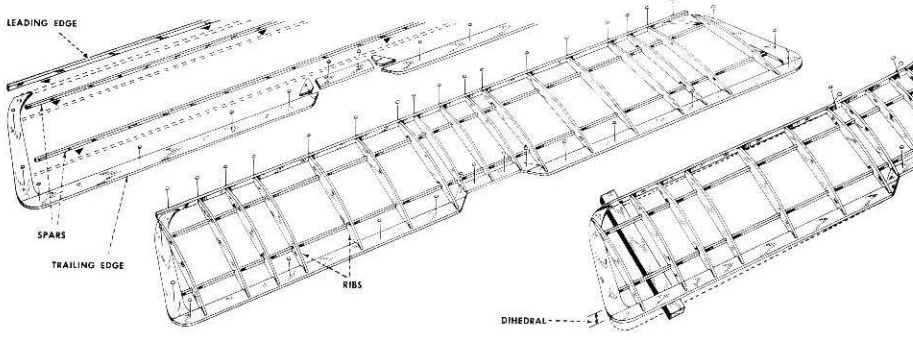
5. When dry, remove frame from plan. Cement duplicate halves of formers "B" in place against keel and formers.
6. Cement duplicate side keel "A4" into position. Cement "L" part in place.



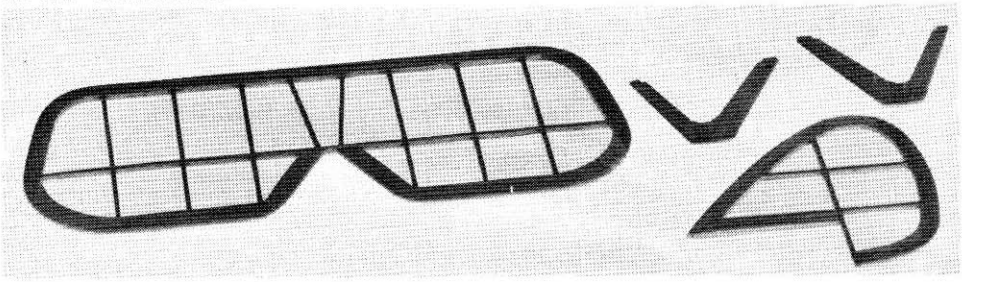
7. Cement the 1/16" sq. side stringers in former notches. Refer to side view of plan as an aid to stringer location.
8. Add other 1/16" sq. stringers, then cement remaining "L" parts in place. Lightly sandpaper completed fuselage to remove balsa fuzz and any excess cement. Make and add stiff paper cockpit 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.
6. Follow the same procedure in assembling the bottom wing—pin and cement parts "G" in place then add the wing ribs.
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.
7. When dry, remove wing frames from plan. Carve and sandpaper leading edges to shape and then gently round all other edges.



BUILDING TAIL SURFACES AND OTHER FRAMES

1. Pin to plan, and cement respectively to each other, all rudder parts "C". Cut 1/16" sq. members to size and cement in position.
2. Build stabilizer frame in a similar manner using parts "D" and 1/16" sq. members.
3. Remove frames from plan and sandpaper lightly, rounding all edges.
4. Pin landing gear parts "K" to strut layout after cementing pieces together.
5. For models with N or V cabane struts, assemble parts "J" over layout. For models with N or V wing struts, assemble parts "K" over layout.

COVERING THE FRAMES

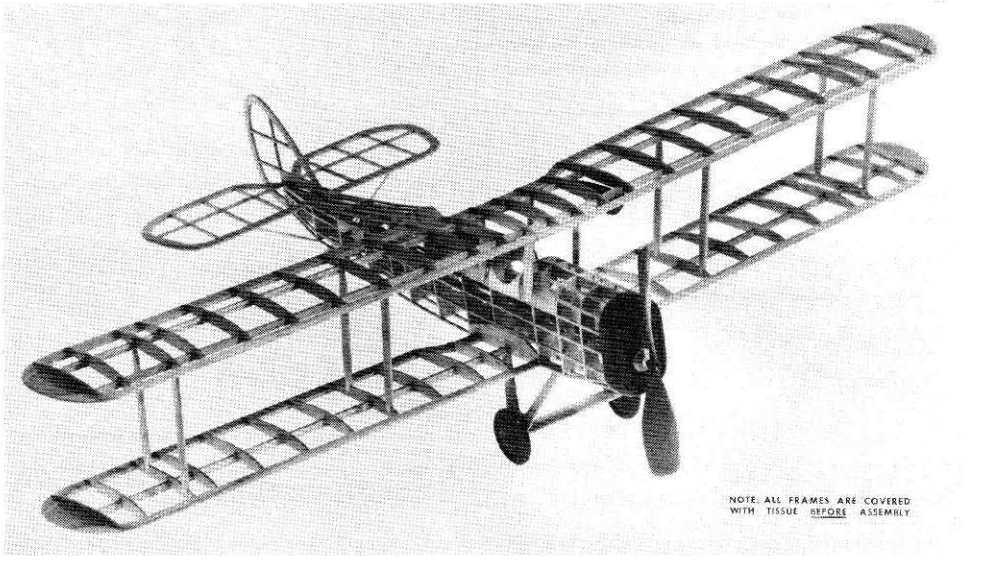
When attaching the tissue covering to the frames, it is best to use thinned out clear dope as an adhesive instead of cement or full strength dope. Mix thinner and dope about 50-50 for proper consistency. Only apply dope to *outside* edges of areas being covered — do not apply dope to frame work within 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 sections 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. Trim plastic nose cowl to shape and slip over nose of fuselage — bead all around edges with cement.
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.

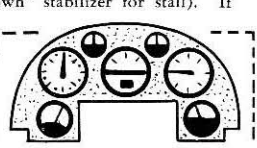
COMPLETING THE MODEL

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.

ADJUSTING AND FLYING THE MODEL [rubber powered]

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.

INSTRUMENT PANEL
—CEMENT TO FORMER AA
— DO NOT CUT OUT UNTIL NEEDED!



If, during the building of this model, you need some word of explanation to solve a particular construction problem, just drop us a line and we will answer your inquiry by return mail. We welcome your questions or suggestions since it is our intent to furnish you, the model builder, with the finest scale flying model kits available. Good luck and good flying!