

S.E.5A

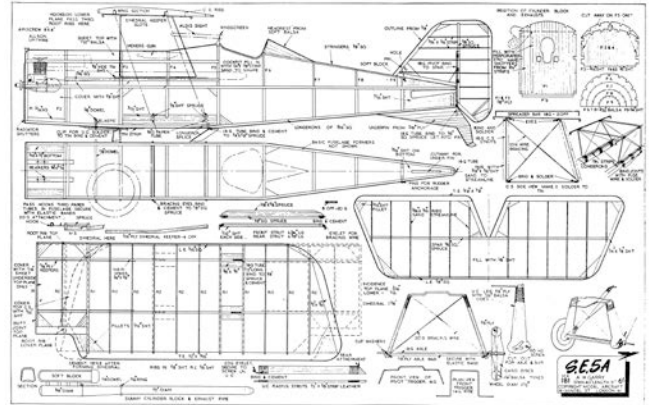


Scout Experimental A.W. Garry designed this model of the famous World War One S.E.5A, for 1 - 1.5 c.c. motors.

Needing little introduction, the S.E.5A was one of the most formidable "fighting scouts" designed during the Great War. Many a famous "Ace" piled up his grim score on the "5A", and it may justly be termed "The Spitfire of World War One."

Build the basic box fuselage first, and add formers 1 and 2. Cut, drill, and fit—but do not cement— motor bearers. Test-lit motor to ensure that correct side thrust is obtainable, then cement the bearers rigidly in place. Add all coaming formers and stringers, but not the center section longeron marked X. Now make two center section strut units over plan from 18g. wire, add the 20g. bracing wires, with their top ends formed into 1/16 in. eyelets, and fair off the struts with 3/8 in. X 1/16 in. each side. Cut two lengths of tin strip 3/16 in. wide and 5 1/2 in. long, cement to longeron X as plan, and bind on the strut units with fuse wire. Do not wider yet. Now cement X firmly into place in formers. Cover top decking from II to cockpit, with 1 3/2 in. hard balsa. The center section unit may now be assembled, binding all joints with fuse wire. Now check from front for "squareness," i.e. making sure that one wing will not be lower than the other, seen from the front. Finally, solder the front cross bracing wires in. The rear ones are omitted for simplicity.

Make two undercarriage clips from 18g. wire, solder to strip tin 3/16 in. X 4 in., and firmly bind and cement to bottom longerons. Cement in 3/16 in. X 1/2 in. hard balsa nose reinforcements in bottom of fuselage



between A and B. The fuselage may now be sheeted in with 1/8 in. balsa, at all points marked Y, and also fuselage bottom from B to D formers. Cut out tube carriers from 3/16 in. sheet, and cement in place. Fit two strong paper or paxolin tubes across fuselage, and also bracing eyes (pins formed into eyes and bound to 1/8 in. sq. spruce). Strongly cement 1/8 in. X 1/4 in. spruce strip between bottom longerons at W, and bind and cement 18g. tube to it, to form rear U/C leg anchorage.

Mainplanes (Upper): Build in the usual manner, but do not (a) cement in leading edge at center section. This should be left until dihedral angle is being made. (b) do not cement trailing edge at X for the same reason. The center section ribs are cut short at the trailing edge, but not yet faired off. Half inch lengths of brass tube are bound with fuse wire to 1/8 in. sq. spruce strips, and cemented between ribs as shown. This will necessitate cutting away the underside of the main-spars (on top wings only) to accommodate these lube fittings. Reinforcing strips 3/8 in. X 1/8 in. should be cemented each side of the tube fittings. When wing panel is finished, crack main spars at dihedral points marked, insert plenty of cement at joints, add plywood dihedral "keepers", and whilst cement is still wet, pin down center section (using greaseproof paper underneath) prop up wing tips to 1 7/8 in. and making sure that this cannot alter, leave to set overnight. When dry, sand both panels as usual, and strongly cement and butt-join both wing panels. Pin down center section again, raise both wing tips, to correct dihedral angle of 1 7/8 in. Now the L.E. may be cemented in and fillets also. Now cement 1/2 in. X 3/16 in. strip on top of center section trailing edge, and fair off ribs to match. The top center section may

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now be filled in with 1/32 in. sheet, and the bottom outer bay with in. sheet to provide platform for the G/S wing runners. Finally, sand off the complete wing unit, and make certain that all center section and dihedral joints are strongly cemented.

Lower Mainplane: Build as top mainplanes, but no dihedral "keepers" used. Strongly fillet and cement dihedral joints. The interplane strut wire fittings on each plane, should stand just slightly "proud" of the covering. For the lower wing attachments, bind 4 in. lengths of 20g. wire to 1/8 in. sq. spruce strip, and after passing wire through root rib as shown, firmly cement the strip to mainspar, the end of the wire lengths being now bent into hooks just fitting inside paper tubes on fuselage. The dihedral on both mainplanes are the same, i.e. 1 7/8 in. at tips.

Undercarriage: Make two legs from 1/8 in. sheet ply and four from in. balsa. Make front "trigger" pivot from 14g. and rear pivot (which clips into clips on longerons) from 16g. Bind pivots to legs, test fit in U/C clips until very slight forward rake is obtained, and then firmly cement the bindings. Cut axle spreader from 1/8 in. plywood, groove to take 16g. axle, and cement between legs. Add 1/16 in. balsa legs and sand to streamline shape. The 20g. cross bracing wires may now be soldered in, the lower ends passing through axle spreader bar, and being turned over into hooks to form elastic band anchorage for shock absorbing axle. Rear undercarriage legs are cut from 1/2 in. X 1/8 in. strip leather, the front end being attached by a small wood-screw to U/C legs, and the rear having 18g. fitting to engage in tube at W. Wheels are made from 1/8 in. plywood blanks 3 1/2 in. diameter. Fit 16g. axle bushes, and cement on tyres cut from 1/4 in. balsa. The wheel discs are made from thin card, which should be cemented on after axle has been passed through legs and retaining washers soldered on. A strong elastic band can now be wound over axle and round hook to form shock absorbing attachment.

Mock Assembly: The completed airframe should now be assembled to see that all parts "click" together. Fit U/C, pass elastic band over dowel rod and "trigger". Attach tail units with bands stretched over pins embedded in longerons and spacers. Pass elastic

bands through tubes on a wire hook and attach lower planes. Top plane is held by elastic bands over runners. Now make dummy struts from soft wire, and test and cut, until gap between mainplanes is constant. Note carefully the dimensions of these dummy struts. On the author's model, the front strut was 6 3/4 in. long and the rear 6 7/8 in., but this may vary very slightly, on different models. Having now obtained correct length from dummy struts, cut 1/8 in. X 1/8 in. spruce strips 1/6 in. longer than these. Bind the 20g. wire fittings to each end, and then cement to 3/8 in. X 1/8 in. hard balsa strip, with the wire fitting sandwiched between them. Finally sand off the struts to streamline shape. Having ascertained that the struts fit, the airframe may now be covered with heavy Modelspan. Do not stretch the covering too tightly over flying surfaces, as it has a tendency to contract over a long period. Give one coat of clear dope, and then one coat of thin banana oil. This acts as a "filler" and enables coloured dope to take more easily and requires less coats.

Assembly and Rigging: Make four bracing hooks from 20g. wire 1 1/2 in. long. Bend small hook at one end and 1/6 in. eyelet at the other. Pass the hook ends through eyelets in cross bracing wires on center section, and pass two elastic bands over each hook across the fuselage. These form the tensioning "cables" for the bracing wires. Now assemble the tail unit, the undercarriage with two stout elastic bands over the dowel rod, and the "trigger". Fit mainplanes and struts. Bracing is very simple and effective. Aileron, drift, and tail- wires are omitted for simplicity. Attach one end of carpet thread to front bracing eye on tube carrier, bring up and through eyelet on front strut, down to rear strut, and up to rear eyelet on "tensioner". Pull on thread, so that tension is fully extended, and knot tightly. Cut off loose end and attach other three bracing wires similarly. The mainplanes will now be seen to be braced rigidly for flight purposes, but capable of "giving" under impact.

The motor is fitted through the hatchway at top of fuselage, and 1 1/2 in. or 2 in. 8B.A. bolts used. It will be found much easier to fit motor, if the bolts are fitted with the head on top, and the nuts fitted up from underneath. The needle should be fitted with an 18g. extension to reach just clear of the fuselage. The

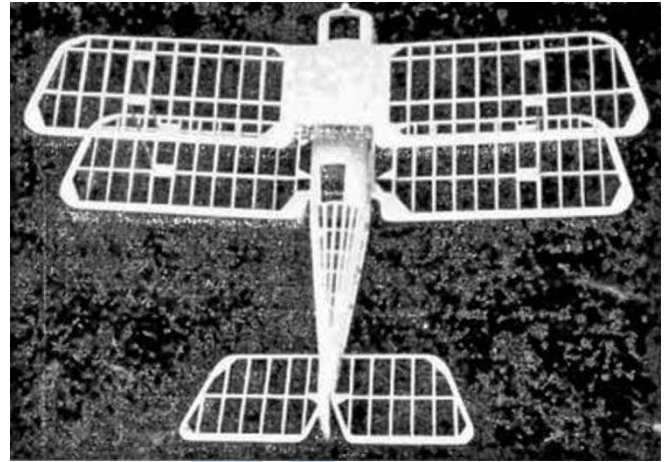
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motor is fitted with a thin washer under each rear bolt to give slight down thrust. This will vary very slightly with each model. The completely rigged machine should be very slightly nose-heavy at a point $2\frac{3}{4}$ in. back from L.E. of top plane, but this is **not** critical.

Test Flying: Both the usual 8 X 4 or 9 $\frac{1}{2}$ X 4 $\frac{3}{4}$ Truflex airscrews should be tried. The S.E. is capable of a very smooth flat glide, simply by accurate adjustment of tailplane incidence, and this glide should be obtained over long grass, before power flight is attempted. Start off with tailplane at bottom of slot, and rudder central. Holding model by axle and tail skid launch it smartly, slightly nose down. If machine stalls, as it probably will, add strips of $\frac{1}{32}$ in. hard balsa under leading edge of tail-plane, until the best possible glide is obtained. This incidence, once obtained, **should be made permanent, and all subsequent flight adjustments obtained by varying motor side and down thrust.**

Power flight tests may now be made. Launch smartly as before, with motor running $\frac{2}{3}$ peak revs., and note flight path. It will probably turn to either direction and this may be corrected by not more than in. movement of fin. Should this not correct undue turning, alter side thrust very slightly according to direction of turn. Now increase motor revs, to maximum, and note flight path once more. If model stalls, and falls off into a spin, add a further washer between motor lug and rear bolts. If machine flies nose down, and refuses to climb, remove washer from rear engine bolt, and cut out down thrust. The natural flight path of the S.E.5A, is a long flat banking climb to the left under torque and a straight or very slightly right-handed glide.

The author will be pleased to answer any questions if a stamped addressed envelope is enclosed.



The complete airframe before covering.