



CONSTRUCTION

By Pat Tittle



S.E.5a Scout

An easy-to-build WWI frontline fighter

The S.E.5a Scout had much better performance than the Sopwith Camel, but was plagued with problems from the underdeveloped Hispano Suiza-powered H-S 8B engine. However, together with the Camel, the S.E.5a was instrumental in maintaining British air superiority from mid-1917 and throughout the rest of World War 1. It had a wingspan of 26 feet 7-inches and was 20 feet 11-inches long with a gross weight 1,988 pounds. It had a maximum speed of 138mph and a service ceiling of 17,000 feet.

THE MODEL

The S.E.5 is a perfect platform for a mid-sized, electric-powered park flyer and makes for a terrific first WWI fighter. Its simple, all-wood design has few complex curves lending itself well to novice builders. The fuselage and tail group are of typical old-school "stick frame" construction, while the wings feature "egg-crate" assembly style to speed up

and simplify construction. Using a simple centerline top wing alignment jig and lower wing tip jigs 9 (shown on the plans) wing alignment is just about foolproof. The model also has functional scale rigging that keeps the weight down.

The model is set up for 400-size brushless outrunner power and a 2S LiPo battery. A 4-channel radio is required using one servo each for the rudder and elevator, and a servo in each lower wing to control the bottom wing ailerons. The top wing ailerons are connected to the bottom ones using a simple link rod arrangement.

Before beginning, gather up the materials and then cut out all the parts using the full-size patterns provided on the plans. The templates can be laid over the wood sheets and cut through the patterns. Once all the parts are cut out, construction can get underway. For the complete and detailed construction article go to ModelAirplaneNews.com/SE5a.

TAIL SECTION

Begin with the vertical and horizontal tail surfaces. Lay out the assemblies over the plans, pin in place and glue together. Once the basic parts are complete, remove them from the board and sand to shape. Cut the hinge slots and dry fit the hinges in place, but don't glue them in until after the parts are covered. The rudder control horn is made from a round wood toothpick cut to length, centered in the rudder, but don't glue it in until the frames have been covered.

WING CONSTRUCTION

The wing panels are assembled over the plans as well. Start by pinning the lower hard-point balsa strips in place and then fit the ribs onto the main spar and pin the assembly in place over the plans. Fit the aileron hinge spar in place and then tack glue each contact point with a drop of thin CA glue. Use the rib angle gauge (shown on plans) to align and glue the root rib in place, followed by the leading and trailing edges. Build up the wingtips using the assembly drawing provided. Align the tip assembly with the main spar and aileron hinge spars and glue in place against the leading and trailing edges. The ailerons are best built in place on the wing assembly.

After both wing panels are completed, build up the Center Section directly over the plans. With the basic assembly completed, fit the wing panels in place and block them up at the location shown on the plans. Glue the panels in place followed by the four cabane strut doublers. Now remove the wing assembly from the board and sand it to shape. Once the wing is sanded to rough shape, cut the ailerons free of the wing and finish sand the entire assembly. Cut the hinges slots, but don't glue the hinges in until after the wing is covered.

The bottom wings build much like the top, with the exception of the servo mounts and the location of the interplane strut mounting points. Be sure to make right and left hand assemblies. Cut the alignment dowels to length and glue them into the root ribs. Align and glue the interplane strut hard points, and the servo mount braces in place. As before, assemble the ailerons on the wing assembly with the only exception being the slave rod hard point sheeting, which should be glued in flush with the top surface.

FUSELAGE ASSEMBLY

Begin by pinning the lower wing- and stabilizer-alignment parts in place over the fuselage frame assembly drawing and add all of the remaining parts using the plans as a guide. Build the two side frames, adding the pushrod guide flush with the outside edge of the right frame assembly. Glue the landing gear support doublers in place then build up the cabane strut mounts and set them aside until later.

GEAR USED

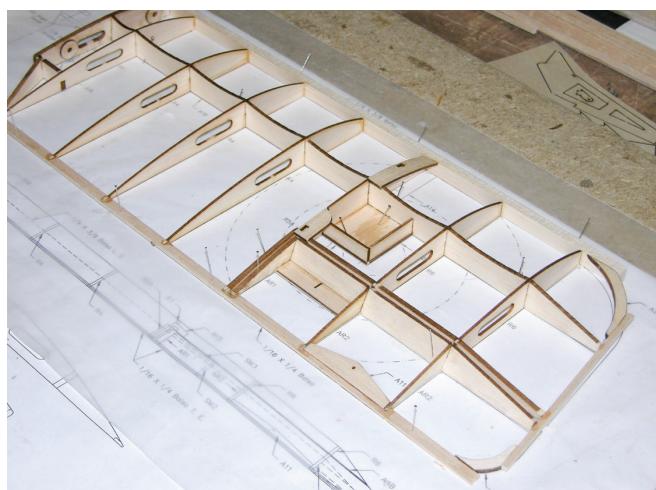
Radio: 4-channel transmitter with micro receiver and four 8g sub-micro servos
Motor: Supro 2212/13T or E-Flite 920KV Park 400 Outrunner
Speed control: 18-20A w/BEC
Propeller: APC 9-6 SF
Battery: 2S 7.4V 1320mAh Sky LiPo

Before joining the side frames, build the landing gear mount beams then pin them to the Top View with their notches facing down. Gently crack the longerons at former station 3 so that the sides angle inward toward the tail. Now fit the fuselage sides over the beams, align them vertically and glue them to the beams. Build the motor mount and former 1 then glue them in place. Add the cross-pieces and the cabane strut mount assemblies. Pull the tail posts together then align and glue together followed by the rest of the formers and the remaining cross pieces. Adding the balsa stringers completes the basic fuselage assembly. Build up tail skid and radiator assemblies using the part numbers shown then glue all of the louvers in place and fit the cowl onto the fuselage and sand to final shape.

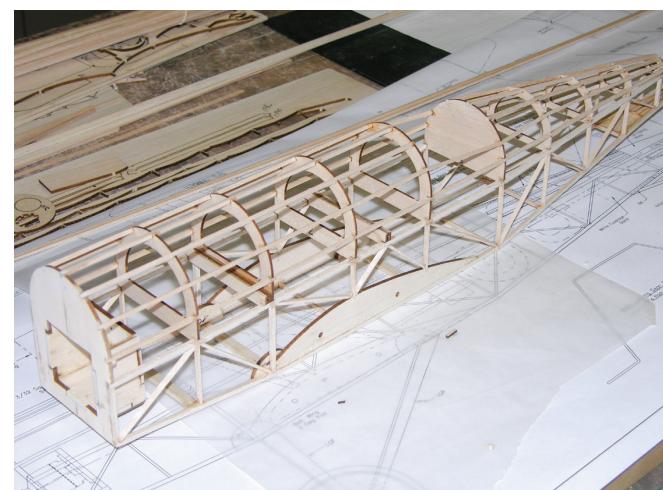
BENDING WIRE

Patterns are provided for bending the Landing Gear and Cabane Stut components as well as the assembly drawing to build up the Landing Gear Spreader which offers some shock absorbing quality to the landing gear.

Bend all of the landing gear components to shape then tape the struts in place on the fuselage frame and solder the front and rear struts together. Slip the short section of the spreader wire into the brass tube and solder it in place. Then slip the long section into the tube and solder the assembly in place on the gear. Be careful not to solder the long wire into the tube or the slip joint won't work and you'll end up with a rigid gear after all. Then after all the joints are soldered, wrap all of the junctions with fine copper wire and re-solder all the joints. Now you can add the Fairings LGF and LGR, and then remove the



The bottom wing is assembled over the plans with the only major difference between the top and bottom wing panels being the servo mount.



The fuselage is completed with the addition of all the formers, cross pieces, stringers cabane mounts and tail skid mount assembly.



In-flight shots of the model on the maiden flight.



CONSTRUCTION S.E.5A SCOUT



The servos are installed on balsa beams in the cockpit area for easy access. The rudder servo is mounted on center to accommodate the pull/pull cable system. The cockpit fairing was made from file folder paper and glued in place after the servos were mounted.

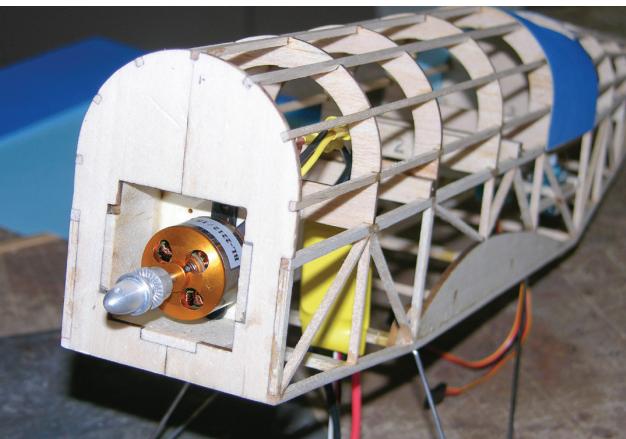
Landing Gear Assembly from the Fuselage and set it aside until Final Assembly.

Bend the Front Cabane Struts per the Bending Patterns and set aside. For the rear cabanes, make only the bottom bent, then slip all four struts into the mounts and position them as shown on the side view. Now that you can visualize the compound angle at the top of the rear struts, make the

bends so that the struts protrude vertically so the bends at the top of all four struts are parallel and perpendicular.

COVERING AND FINAL ASSEMBLY

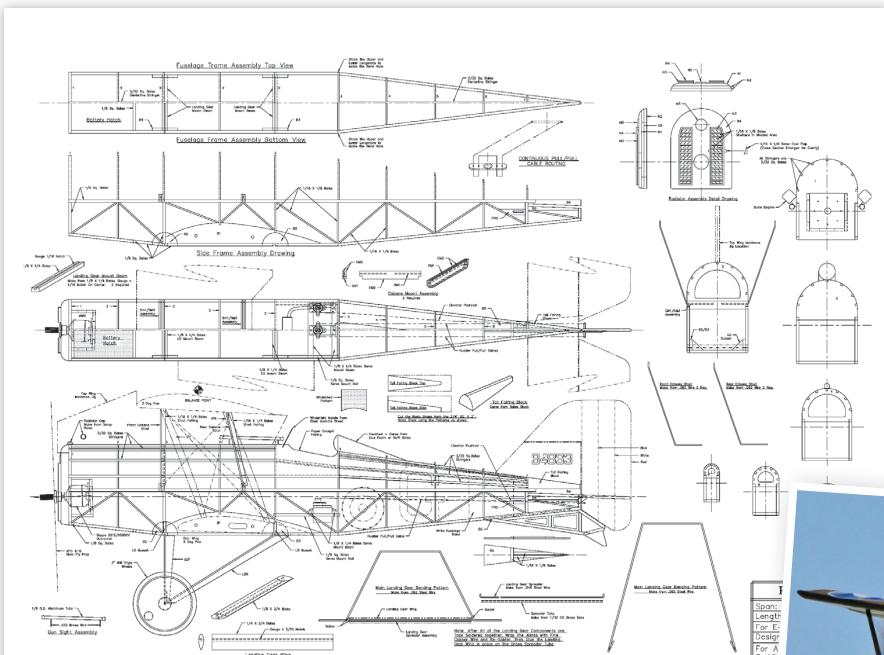
Cover all of the frames, except, for the bottom of the fuselage. Cover your model with lightweight iron-on film such as Coverite Microlite, Coverlite, or Nelson



The Supro 2212 outrunner motor is mounted in the motor box with the speed control positioned in the top former cutouts to prevent interference with the battery in the somewhat limited space available.

Litefilm. I covered my model with Dark Green Microlite on top and Cream on the bottom, then painted the top with Testors Model Master Field Drab enamel using an Airbrush. Decals for the S.E.5a are available from Callie Graphics (callie-graphics.com) in just about any scheme you can find. Once covered, all of the hinges can be glued in place using Pacer's Formula 560 canopy glue (zapglue.com.)

Assembly of the finished parts is made easy with the Bottom Wingtip Jigs and Top Wing Incidence Jigs cut from artists foam board shown on the plans. Locate the fuselage flat on the building board and then support the wings with the jigs placed under the outer-most ribs. Glue the wings in place with Canopy 560 glue and allow to dry. Slip the cabane struts into their mounts, then slip the top wing onto the struts supported by the Top Wing Incidence Jig. Then plug in the Interplane struts into the upper and lower wings. With the wings nice and straight, tack glue each point of contact with a drop of thin CA. Then lift the model from the board and



S.E.5a WW1 Scout | K1114A

Designed by Pat Tittle, the R.A.F. SE5a Scout is the perfect first WWI biplane for someone who wants to build a park flyer. Construction is CAD designed using a lightweight "stick and former" layout. Laser-cut wood parts are available from the author. Wingspan: 36 in.; Length: 28 in.; Power: E-flite Power 480 Brushless motor; LD: 2; 3 sheets; \$27.95.



To order the full-size plan, visit AirAgeStore.com

