

SOPWITH CAMEL

R/C Scale Model Instructions



CONTACT INFORMATION

The Sopwith Camel was designed by Peter Rake
And adapted by M.K. Bengtson
Prototype by Steve Galloway

Manufactured and Distributed by:
Bengtson Company
e-mail: sales@aerodromerc.com
Web Site: www.aerodromerc.com

Sopwith Camel

Thank you for purchasing the Sopwith Camel model for electric flight.

THE MODEL

A 50" span, electric powered scale model superbly built and test flown by Steve Galloway from a design by Peter Rake.

Probably the second most famous fighter of WW1, the Camel is only eclipsed by the Fokker Triplane in terms of renown. Despite the fact that the Camel was probably the better fighter aircraft. A type both loved, and feared, by modellers, this little model demonstrates none of the bad habits that earned the full size machine such a reputation for killing novice pilots.

Model Specifications

More than 230 laser cut parts

Scale: ~1/7th

Channels: R/E/A/T

Wingspan: 50"

Wing Area: 740 Sq. in

Weight: 64 Oz.

Power System: Speed 600BB power w 2.3:1 gear box!

Prop: 14x7 prop

Covering: Balsa and Litespan or Polyspan covering

Wheels: Balsa & plywood, Neoprene foam tires

Cowl: Built up balsa and plywood/

Spinner: N/A/

WINGS



The Sopwith Camel has ailerons on all four wing panels, so does this model. Unlike the original, where all four ailerons were operated by a closed loop system of control wires, the model uses two servos let into the bottom wings. It is very important that you use the smallest, thinnest servos you can get, commensurate with the loads to be placed on them. The extension leads are led into the fuselage through the wing roots and the servos operate the bottom ailerons via pushrods. The top ailerons are operated by link rods from

the bottom ailerons. It is also a viable option to fit torque rods to the bottom ailerons, and fit a single servo into the fuselage.



The top wing of your model is attached to the centre section struts using four saddle clamps, bent up from brass or aluminium strip, screwed to the ply plates in the wing. The bottom wing panels use dowels to help locate them at the correct incidence angle, and are securely glued in place. The interplane struts determine the dihedral angle of the bottom wings, but the top wing has NO dihedral at all. A root rib angle of approximately 4.5-5 degrees is required on the bottom wings to allow for the dihedral.

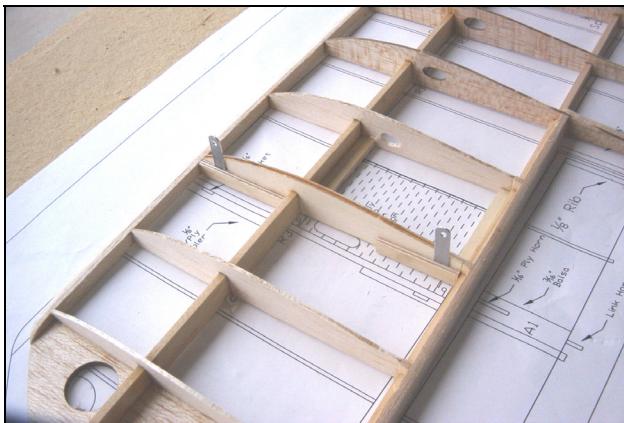
TOP WING



Notch the trailing edge to accept the ribs and pin down the trailing edge, spars, leading edge and wing tip over the plan – glue as required. Add the ply centre braces. Trim the ribs for the aileron area, and glue the ribs in place. This includes the notched and gusseted 1/8 ply ribs that the interplane struts fit into. Measure the position of the notches from the view of the composite rib. Glue the wing cut out pieces in place and glue the balsa false trailing edge against the rear spar and wingtip at the aileron position. Pin in position, but DO NOT GLUE, the aileron leading edge in place against the false trailing edge. Fit the aileron ribs, horn plate and ply wing mount plates before leaving to dry. Now repeat for the opposite wing panel and then join the wings ensuring they align correctly and are FLAT. Once dry, add the centre

section sheeting. Remove from board and trim and sand to shape. Cut the ailerons away from the main panels and round off the leading edge as shown. Fit horns after covering, only link horns being fitted to the top wing ailerons (lower surface).

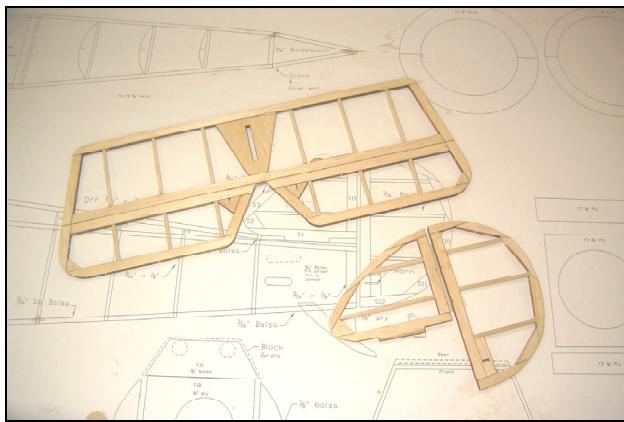
BOTTOM WINGS



Although basically the same procedure as for the top wings is used, the root rib must be angled for dihedral, and servo hatch blocks fitted. These should be fitted in such a way that the servo hatch will sit flush with the lower surface of the wing. The bottom wing ailerons have both a control horn (lower surface) and a link horn (upper surface).

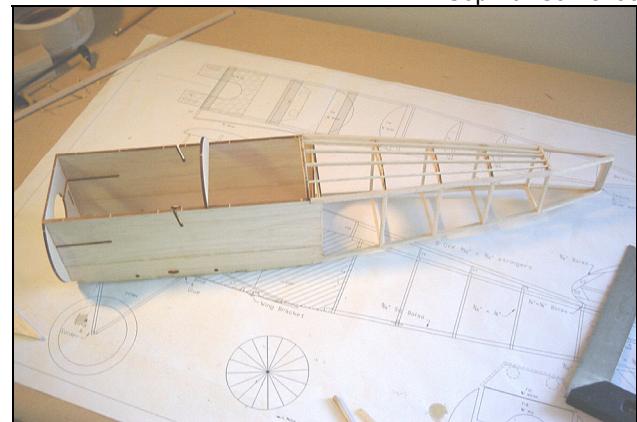
TAIL SURFACES

Tail surfaces are built over the plan using 1/8 balsa sheet and strip. Allow to dry thoroughly before sanding overall and rounding off all edges. Drill and groove the elevators for the wire joiner and glue the joiner firmly in place. Once again, control horns are fitted after covering.



FUSELAGE

The fuselage is constructed as two separate box structures, the front, sheet one, and the rear, built up one. These are then joined over the plan before any decking formers are added. Although this deviates from scale slightly, it does assist with building a straight fuselage.



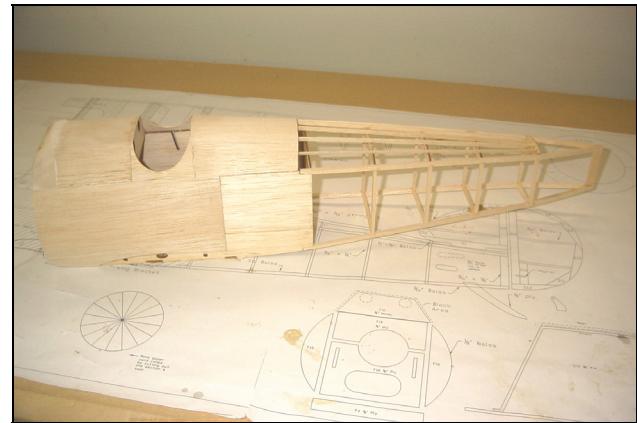
REAR BOX

Build two identical side frames over the plan using balsa strip and allow to dry completely. Score each frame on the inside, at the point indicated, and crack. Make sure you produce one right and one left side. Join the sides, over the plan, with the cross braces and tail skid plate. Work plenty of glue into the cracked areas and join the tail. Check that the assembly is straight and square before allowing to dry. Then glue in place the tail bay fill pieces, paying particular attention to the glue joint at the rear upright immediately in front of the crack. Set the assembly to one side.

FRONT BOX

Bind and epoxy the centre section strut wires to F1B and F2. Although both wires are the same size, only the front one has a bend rearwards. Join the sides using formers F1A,F1B, F2, F3, F4 and F5. Check that the structure is square and that the centre section struts are correctly aligned before allowing to dry. Glue in place motor mount parts M1 and M2, and the cockpit floor.

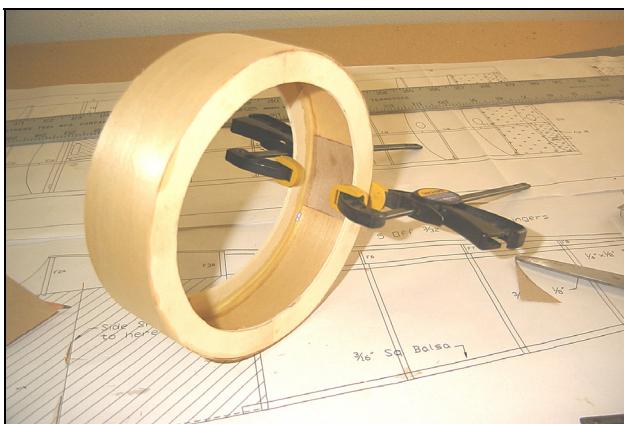
WHOLE FUSELAGE



Join the front and rear fuselage assemblies over the plan as a guide to alignment, check for square and allow to dry. Fit formers F1C,F2A and F3A, followed by the balsa decking, and fit the section of block balsa that makes up the front of the 'hump'. Because of the changes in section of the decking,

it is best fitted in three steps. Fit each side piece first, cut pieces to cover the centre areas and use those as a guide for trimming the side pieces, prior to gluing on the centres. Trim the cockpit opening to shape once the sheeting is dry. Now fit Formers F1D and the side sheeting. Once dry, use the bottom wing panels to mark out the area that needs to be removed to allow the wings to seat against the fuselage sides. Fit the lower sheet fill pieces between the sides, followed by the rear formers and stringers. Use an accurately aligned cowl former to mark out the shape that the block area needs to be, then trim and sand the fuselage. Do not be too enthusiastic on the block area, that can be finished sanded once you have a cowl in place.

COWL



Wrap the 1/32 ply strip around one former C1, gluing as you proceed and then add the other C1. Glue in place the C2 laminations and allow to dry. Trim the rear of the cowl as indicated on the plan, trim and sand the front of the cowl and then seal and sand very smooth ready for painting.



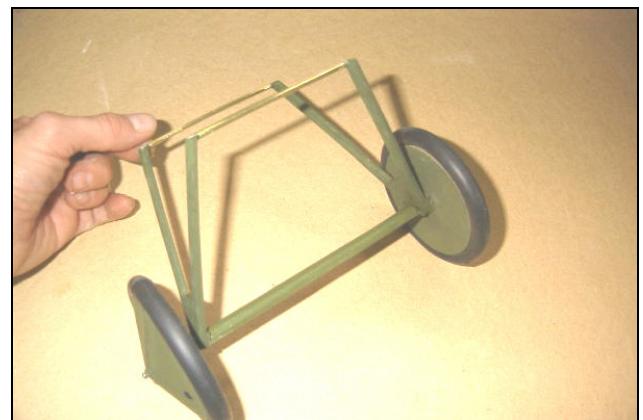
A simple cowl fixing may be made by making two L shaped brackets from scrap material. The top of the rearmost C1 hooks into them, and two small screws retain the bottom. Screwdriver access is through the open front of the cowl.

U/C



Bind the undercarriage wires to formers F4 and F5, bind and solder the wires to the axle and then glue the top bindings. Alternatively, the u/c may be retained using saddle clamps and screws

If desired, a more scale like appearance may be achieved by adding scrap balsa fairings to the wires and then wrapping with covering material prior to painting.



COVERING AND FINISHING

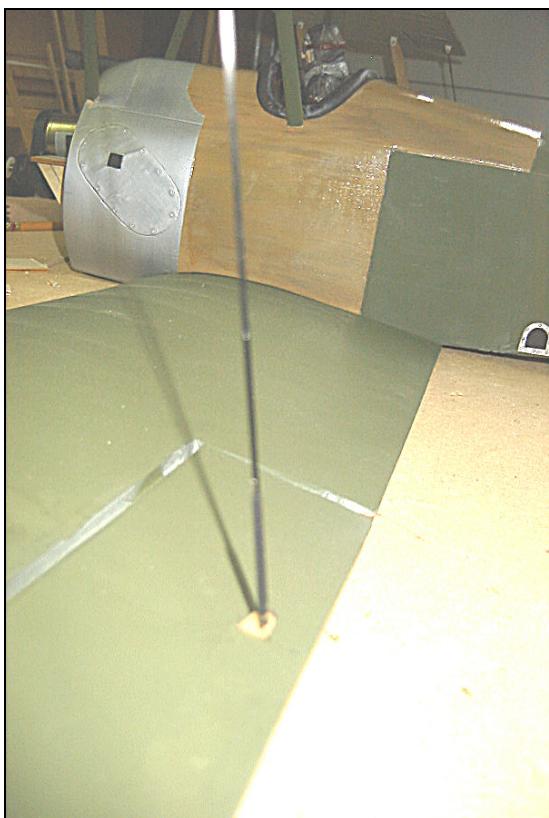
Any of the lightweight coverings such as Litespan or doped Polyspan are ideal for this model. The nose areas are covered with a chrome finish film that has been rubbed down with fine sand paper and steel wool to give it a burnished metal appearance.



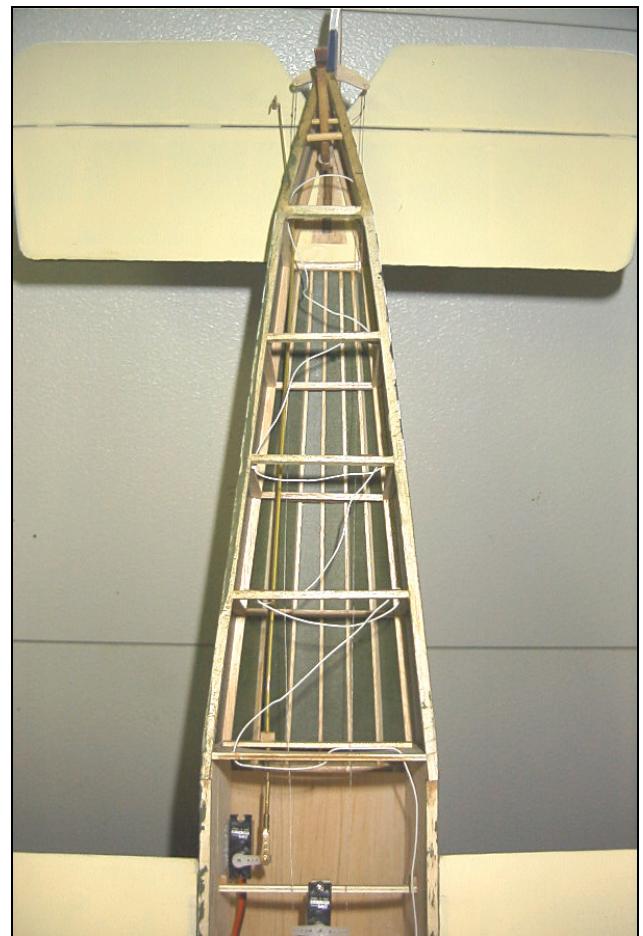
Details such as the pilot and dummy engine, which does not actually rotate with the prop, are simply printed images stuck to light support frames. They do, however, look most effective.

ASSEMBLY

First accurately align the fuselage, upside down over the top wing, and mark the saddle clamp screw positions. Drill the holes and clamp the top wing to the centre section struts. Fit the bottom wing panels next, using the locating dowels and interplane struts to set both incidence and dihedral. Also ensure that they align accurately with the fuselage/top wing before allowing to dry. Use this assembly as a guide to accuracy while gluing in place the ready hinged tail surfaces. Ensure that the covering has been trimmed away in all glue joint areas.



INSTALLATION



The motor unit, a Graupner S600BB, 2.33:1, is simply screwed to the motor plate. Closed loop linkage for the rudder, not shown on the plan but essential for scale effect is used. The weight saving over a pushrod is obvious. With the radio gear thus positioned, the model balanced almost perfectly at the point indicated, thereby allowing the battery pack, 8x1950 cells, to be placed below the balance point. A very useful situation if you want to use more than one style and size of pack.



FLYING

The model flies well. The ailerons work well, with a 70/30 differential, but adding in some rudder makes turns that much smoother – just as with most biplanes of this style.



Let the model gain altitude slowly off the runway. Applying too much up elevator at slow speeds asks for a stall. Make your turns gently as tight turns risk tip stalling in any model. Don't expect the elevator to make the model climb. Think of the elevator as a device to change the attitude of the model. The wing and airspeed ultimately make the model climb. Often down elevator applied at stalling can avoid a major crash. The most important details for proper flight operations are:

- 1) CG location. Tail-heavy models never fly well or at all.
- 2) Down and right thrust
- 3) Straight and non-warped wings.
- 4) Be sure you assemble and lube the gearbox so that it is not binding. A binding gearbox will rob most of your batteries power.

CONTACT INFORMATION

Distributed by:
Bengtson Company
e-mail: sales@AerodromeRC.com
Web Site: www.AerodromeRC.com