



## SPAD XIII

by Belair Kits

### Belair Small Electric Scale Range

*The SPAD XIII proved to be the most successful French fighter aircraft of WW1. Well armed, extremely tough and a match for most German types it provided the mount of choice for many French, Italian and American aces.*

### FUSELAGE

The fuselage is built in the traditional way, using two identical side frames that are joined by formers. The front portion of the side frames is sheet balsa, to tie together all the stressed areas, while the rear is the usual box girder affair. The whole being rounded out with formers, balsa sheet and stringers. DO NOT omit the tapered 1/8 sq. tail seat pieces when building the side frames.

Before starting the actual drill UC and UCA for the bindings that retain the landing gear wires and decide how you intend to retain the removable nose section. I would suggest short dowels to locate it and rare earth magnets to hold it in place, but it can just be spot glued in position.

Begin by assembling F1, F2, M, parts MA and BT. Ensure it is completely square and allow to dry before continuing. I would not recommend CA for assembling what is the most highly stressed part of the fuselage.

Although I would fit the centre section struts to the sheet sides at this point, they may be left until the fuselage is almost complete if you have any doubts about fitting the sheeting and nose block around them. Now, ensuring everything aligns correctly (if it doesn't, nor will your c/s struts), glue the side frames to the previous assembly and fit UC, UCA and F3.

Pull in and join the tail, fit all the remaining formers and glue in place the 1/16x1/8 stringers. Sheet the nose area, add the nose blocks (temporarily) and the 1/16 sheet side stringers before planing and sanding the whole thing to shape.

The doublers shown on the plan fit outside the basic frames but are best left until you have the bottom wings to ensure they fit correctly against them. To do this it will be necessary to cut away the side sheeting and S1 to allow the wing panels to butt cleanly against the FS sides.

### TAIL SURFACES

These are simply built over the plan using the laser cut parts and strip wood of the sizes shown. Allow to dry, drill and groove the elevators for the wire joiner and sand overall, rounding off the edges. Epoxy the joiner into the elevators, ensuring they remain the correct distance apart and level with each other.

Please note that there were no external linkages to the elevators on the full size aircraft so an internal horn and pushrod is shown. Don't forget to solder the horn to the joiner BEFORE gluing the elevators in place.

### WINGS

Assembly of both upper and lower wing panels is essentially the same and is pretty much self explanatory if you study the plans. Neither upper or lower wings have any dihedral and the top wing spar and leading edge should be one piece, full span items. Use very hard balsa (or bass) for the spars.

Fit your aileron servos into ribs TWR9 before gluing the ribs in place. This ensures that they will actually fit the ribs and that you don't have to struggle to get them into a fully built wing panel. Extend the servo leads so they reach into the fuselage with enough slack to enable them to be easily plugged into the receiver. There was a trunking on the full size machine that ran from top

wing centre section to the fuselage. This is a good place to hide the servo leads. Set up the ailerons with 30% differential (more up than down) to avoid adverse yaw.

## ASSEMBLY

I would suggest you cover and finish the individual components before assembling the model, but some people are able to cover a fully assembled model.

Begin by gluing the top wing to the c/s struts using 30 minute epoxy. This allows time to feed the servo leads into the fuselage and to ensure the wing is correctly bedded down onto the struts.

Trim the covering from where the lower wings butt against the fuselage, install the locating dowels and glue the lower wings in place again using 30 minute epoxy. This allows time to fit the interplane struts which will set up the lower wing panels. Check that the wings align correctly and that the lower panels fit snugly against the fuselage sides before allowing the glue to set.

The locating dowels are not load bearing, they simply ensure that both lower wings go on at the correct incidence angle.

Now glue in place the ready hinged tail surfaces, once again checking for accurate alignment. You will have to carefully feed in the elevator pushrod as you go.

Bind and solder the u/c wires in place, removing the lower nose block and access hatch and then add the scrap balsa fairings. Groove and glue back in place the lower nose block and groove the hatch before reinstalling it using what ever type of fixing you prefer.

Make up and fit the wheels and glue in place the tail skid.

How much, or how little detail you add is again up to you. However, I would suggest at least pilot, rocker covers, guns and exhausts. That said, versions of this model have been built, and successfully flown, with far more detail than that. Just don't make it too heavy.

## FLYING

As intimated, the model is not difficult to fly, but it is not a trainer by any means.

Ensure the model balances slightly nose down (very slightly) when supported at the point indicated on the plan.

A 2S battery pack is more than enough for this model, so don't be tempted to try more cells. All you will achieve is to make the model heavier and more difficult to control. It may be a fighter, but it isn't supposed to fly at the speed of an F-16.

When taking off, don't be tempted to rush the model into the air. Deliberately hold it on the ground until plenty of speed has built up and then, once you stop holding it down, it should lift off of its' own accord.

Loops, lazy rolls and stall-turns are all well within the scope of this model, so once airborne you have no excuse not to go Fokker hunting.

Please note these instructions are our way of building the model, each modeller will have their own preferred methods and techniques and should not feel that the above is the only method. Our model is covered in Solite film and sprayed with automotive paints. We used a 2205/22 brushless motor with a 25amp ESC and 1200mAh 2 cell Lipoly battery. 7 x 4 inch wooden prop. Use your favourite servos that will fit the cut outs in tray and wing.

## Bill of Materials

- 2 lengths of music wire 14 swg
- 4 off 1/8 x 3/8 basswood spars
- 2 off 1/8 x 1/4 balsa
- 5 off 1/8" sq balsa - med/hard
- 1 off 3/16" sq med balsa
- 2 off 3/16 x 1/4" med balsa
- 2 off 3/16 x 1/4" med balsa
- 10 off 1/8 x 1/16 hard balsa
- small amount of block for scale details and cowl area
- 6 inch length of 1/8 dia ramin dowel

