



by Ray Malmström

SUPERMARINE SPITFIRE VB FLYING MODEL FOR INDOOR USE!

THIS MODEL of that immortal British fighter—the Supermarine Spitfire—was designed for flying around a pole indoors, but tests proved that is equally at home flying outdoors (on a calm day of course). So when you have built this little semi-scale job you will possess a two-purpose model. If you are not familiar with indoor round-the-pole flying—not to worry—you will find all the information you need in this feature and on the plan.

A note before starting construction. If you intend to camouflage your model (dark green and brown), colour the various parts flat, *before* assembly. We used the new oil-pastels (small box from any art dealer). Apply the pastel to the balsa sheet and then rub lightly with a soft rag to spread the colour evenly. Simple, no weight—and the effect is excellent.

Construction

Cut a length of $\frac{3}{8}$ in. balsa sheet as shown and soak in warm water for 20 mins. Wipe off excess water and wrap around a suitable broom handle or dowel rod. ($\frac{3}{8}$ in. diam. approx.) Hold in position with thread. Do *NOT* use any cement at this stage, otherwise you will not be able to slide the tube off the handle when dry! When absolutely dry remove the tube from the handle. Cut out the formers F1, 2, 3. Open out the tube as shown, and carefully insert the formers in position cementing well. Run cement along the tube join and close. Hold with sellotape until dry. Then cut out and add the top and bottom fuselage pieces A.B.C.D. down the centre lines of the tube. Before cementing part B in position make sure you have traced the wing rib position on *both* sides of part B. This will help you to line up the wing panels later on. Bore 2 small $\frac{1}{8}$ in. diam. holes for the rear rubber anchorage dowel ($\frac{1}{8}$ in. diam.) Reinforce the holes with small squares of brown paper. Carefully chamfer former F1A and cement to F1 (this is important). Construct the propeller nose block and prop. bearing shaft as shown. You can use a 3 bladed K.K. plastic propeller (from your model shop) or a K.K. 2 bladed propeller (5 in. diam.), the tips being removed to give $4\frac{1}{2}$ in. diameter. The completed propeller assembly when fitted into the front of the model (F1, F1A) **MUST** point **DOWNWARDS** as shown. Cut tailplane and fin from $\frac{1}{2}$ in. sheet. Note reinforcing strips on underside of tailplane. Assemble fin *after* tailplane. Cement engine cylinders and tailwheel in position.

Cut out wing panels ($\frac{3}{8}$ sht) and wing ribs ($\frac{1}{8}$ sht). Curve the wing panels to the shape of the wing ribs and hold in place with pins until cement has set. Look along wings from tip to root to see the wing

panel is not twisted. If so remove the ribs quickly and start again. Note, especially that the root rib on each wing panel is sloped to make the wings slope upwards to the tip when cemented in position. This is called "wing-dihedral". You should use the root-jig (X) in the way shown in the sketch to get the root rib at the right angle. Take care and it's easy! Bend the undercarriage wire (one for each wing) as shown. Fit the balsa wheels (retain on axles with a small piece of close-fitting electrical tubing or blob of cement) and covers. Cement the undercarriage legs in position, reinforcing with small squares of tissue paper cemented in position. Assemble wing panels to either side of piece B using the traced wing rib position to guide you. Check for *equal* dihedral (tilt) on both panels. This completes your "Spitfire".

Flying

Make up a loop of $\frac{1}{8}$ in. strip rubber 14 in. long and rub on some rubber lubricant (strip rubber and tube of lubricant from your model shop). Install the rubber motor on propeller shaft hook and rear dowel rod. Suspend model from balance point. It must hang *level*. You may need to add a tiny amount of plasticine to either nose or tail. Our original model (the one in the photos) did not need any extra nose or tail weight. This balancing procedure is very important, so do not skip it! Choose a calm day, and long grass for outdoor flight tests. From a gentle shoulder-high launch your model should glide straight and land about 20 ft. away. You can then wind on about 150 turns and try a power-flight. If your model dives, bend up the rear edges of the tailplane about $\frac{1}{8}$ in. - $\frac{1}{4}$ in. If it climbs steeply, and then dives in (stalls) add a $\frac{1}{2}$ - $\frac{1}{4}$ piece of sheet balsa to the top of the noseblock. Turns are corrected by gently warping the rear part of the fin in the *opposite* direction to the turn. No other trimming should be necessary.

For indoor flying (and this is great fun in the winter, or when the weather stops outdoor flying) make up a pole as shown. Possibly you could build one in your woodwork lessons at school. The line length can be anything from about 5-8 ft according to space available. A large room, your youth hut, or best of all, the school hall (with permission of course!) are all suitable. Wind up the model, and then, attach the line hook to the loop on the wing of your model and let go! If the model will not take off bend the rear edges of the tailplane up about $\frac{1}{2}$ - $\frac{1}{4}$ in. If it stalls, add about $\frac{1}{8}$ in. sheet balsa to the top between the prop. block, and F1A.

Do not
dope
this
model

Soak in
warm water

Broom

1/16 Dowel

Blue
White
Red

Thread

Sellotape

F1

F2

F3

A

D

C

F1

D. 1/32 sheet

Brown paper

Light green

Cut out

F3

USOJ

C. 1/32 sheet

Join

N.B.
Trace and reverse
for port wing panel

1/16 sheet

Wing panels
1/32 sheet

Tissue
2 layers

Under surface

Rib-jig X

Wing assembly

Leading edge

Markings of No.56
Sqn. R.A.F.

Fin
1/32 sheet.

Blue

Red

Mark with
ball pen

R3

Top

Dim
1.

X
To rib To wing

**SUPERMARINE
SPITFIRE V B**

DESIGNED BY RAY MALMSTRÖM

F3

Ball pen

1/32 sheet

Tailplan 1/32 sheet.

Ribs 1/16 sheet

All parts
full size

R2

