

**Your Full-Size  
SPORTS SCALE PLAN**



*John Rutter's done his bit for Battle of Britain 50th Anniversary year! Later mark, we realise, but a Spitfire's still a Spitfire! Have fun.*

# Spitfire MK 22

**Not ANOTHER Spitfire!**

**'fraid so folks. Enjoy John**

**Rutter's delightful little**

**1/12 scale version**

I can hear the groans when readers look at this article, "not ANOTHER Spitfire!" I tend to agree with the sentiment but was nagged into the model by my five year old son who still thinks that everything with camouflage, a prop and roundels is a Spitfire. Mind you, having finally built a Spit, I'm quite pleased because it's a lovely plane to fly and looks very realistic in the air. So what's different about this one then? For a start it's a late mark, which is less often done than the earlier ones (I prefer the looks) and there is very little trouble producing a very accurate outline to the wings, they're simply cut from sheet! I also used only two channel radio gear which keeps costs down as not only don't you need the more expensive R/C gear, you don't need a throttled motor either. Three or four channel gear could be fitted in quite easily should you feel the need, though.

## The big bits!

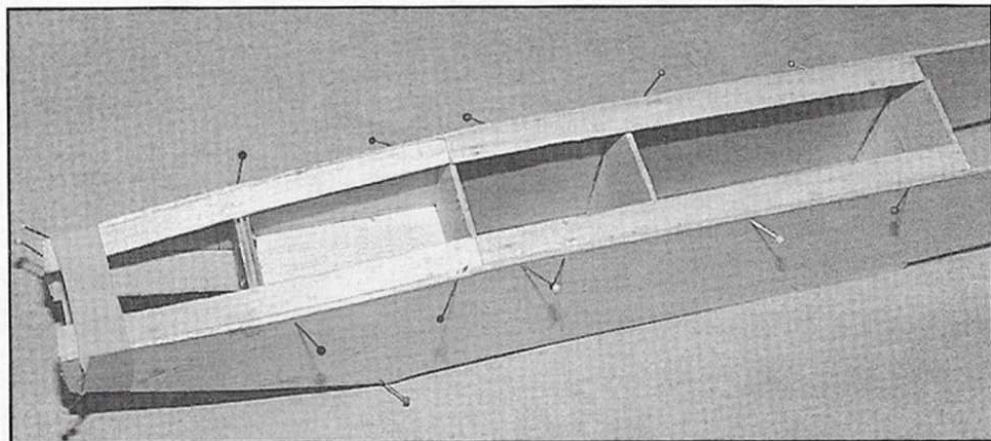
I always like to get the big bits out of the way first so I started the construction with the flying surfaces. Just for a change I'll describe the tail end first. The fin and rudder in my model were a fixed single piece of 3/8in soft balsa, thick to give a more realistic shape as well as a wider rear fuselage and light to keep the noseweight down. Other than cutting out and shaping there isn't a lot to it really. The rudder could be made functional if you felt like it and had four channels to play with. The tailplane was

1/4 sawn (stiff) 1/8in balsa but keep an eye on the weight again. This is cut and shaped as for the fin before cutting away the elevators. I used an internal horn silver soldered to the 1/4 gauge piano wire joiner to keep things neat and avoid having only one half of the elevator rigid. A link to only one elevator half often results in 'screwy' loops; the elevators are centre hinged with strips of mylar after giving the leading edge of the elevators a 'V' shape.

The wings are a little bit more complicated to make than the other surfaces but not too bad. Obviously they are too wide



*All-sheet protagonists; Focke-Wulf 190 will be along shortly!*

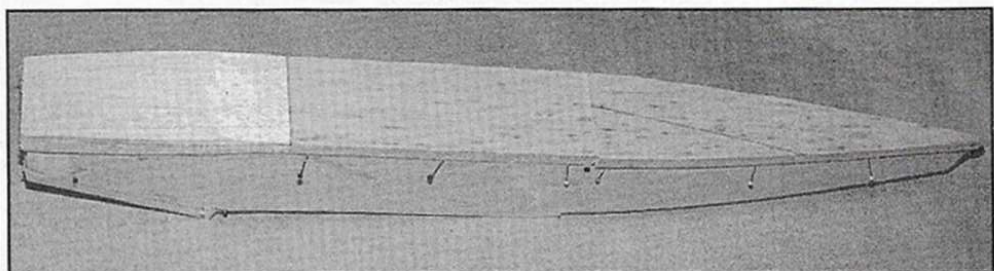


Fuselage construction gets under way; formers, 1/16 ply doublers, 1/8 balsa sides and 1/2 triangular section strip are all visible.

to make from one piece of wood and the steep forward rake of the ailerons means that grain of the rear half has to be swept forward too. Just to be awkward the wing fillet really cries out for yet another different grain direction to keep good strength though you may get away without this if you have a decent bit of wood. The wings use quite a lot of wood so don't make it all rock hard or you'll have a very heavy model – medium to soft is all that is needed really.

Start by cutting out the various bits and gluing them together, smoothing the outlines only. To avoid a tip stall I carved washout into the last 8in of the underside of the tips before forming the leading edge and most of the rest of the trailing edge. Don't attempt to take the trailing edge any further inboard than the aileron root at this stage as the underside of the wing is shaped to fit the fuselage later. Cut the ailerons away and the root fillets along the aileron line if you didn't use the separate bits. Sand and slightly chamfer the wing roots so that they will join very neatly when one tip is chocked up 4in for dihedral. Join with either epoxy or cyano and leave to set.

While you are waiting 'V' the leading edge of the ailerons for centre hinging with mylar and carefully scoop away a slot on the



And when you've done all that, the fuselage sheeting can go into position.

dowel in place and reinforce it with either thin glass cloth (wing covering type) or nylon. Don't reinforce the wing join just yet.

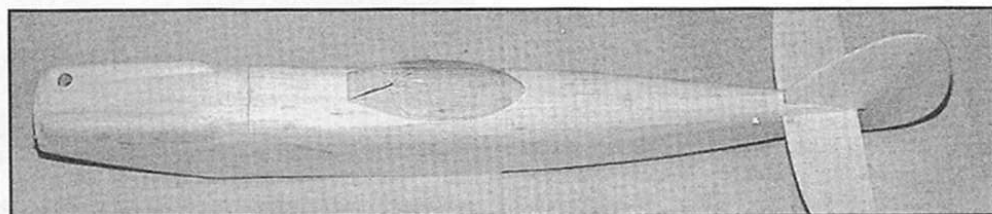
## On with the fuselage

The fuselage is the usual all sheet type construction, the sides can be fairly hard but try to keep the thick top and bottom (dorsal

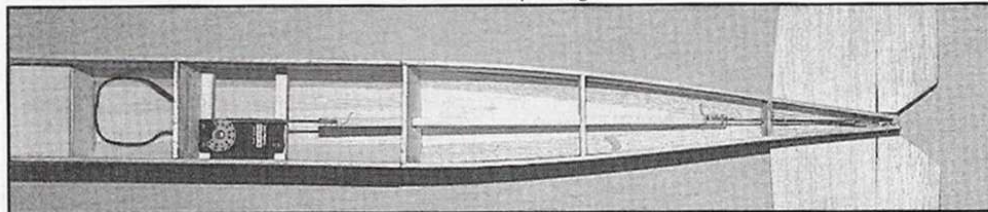
With one side flat on the bench glue formers F2-5 inclusive in place and leave to set. Be careful to incorporate the downthrust needed on F2. F2 should have blind nuts for the engine mount fitted before it's glued to the fuselage. When set, glue the other side to this assembly checking that it really is parallel and square. When set, pull in the tail end and glue the remaining formers in place. I always line up the fuselage over a straight line on the board to avoid the 'banana' effect. Glue the 1/2 triangular to the centre section of the fuselage and leave to set. Now using a slow setting glue, glue and pin the forward 1/2in triangular in place and pull in the nose with tape, bands, bench vice or whatever and allow to set. Add the top rear triangular pieces and, when they are set, carefully trim the tops of everything so that the sheet will

sit flat when glued in place. When you're happy, add the nose sheeting and the top decking. Trim the sheet to be level with the sides but leave it square just for now. (Makes it easier to mark out accurately).

Carefully cut the slot for the fin and trim the slot for the tail so that they can be trial fitted in place. Remove them and temporarily



Starting to look good; canopy is available from RM as RMCAN 381, price £2.50, including postage.



Two-channel standard gear guides the prototype; elevator (seen here) and aileron are all you need.

front edge of the fillets for half the diameter of the brass tube used for the torque rod pivot; the other half is carved into the rear of the wing so that the tube is buried apart from a couple of slots to enable you to solder the torque arms in place. If the wing is set, then this lot can be carefully glued in place making sure that the torque rods can pivot freely. The aileron servo is screwed to a couple of bits of pine or similar that are glued into slots going through the wing. Put everything together to check that it will all work alright but don't finally glue the ailerons yet – it's easier to paint them and the wing separately before fixing them permanently. Epoxy the 1/4in wing retaining

and ventral?) sheeting light at the back and harder at the front. This will reduce the noseweight needed and keep the strength at the bit that hits the ground first! Speaking of strength, I reinforced the nose with 1/64in ply to the inside of the triangular strips (avoids the problem of hard stripes in the finish) but it's not worth going overboard on this with say, 1/16in ply which would need the formers redrawn. I showed the motor at 54° on F2 even though it's pretty obvious from the photos that I side-mounted my motor. This is because I assumed that most prospective builders would use a side exhaust glow motor where I really wanted to use a rear exhaust diesel.

tack the piece of wood removed for the fin back in place. Carve and sand the fuselage to shape; the rocker box blisters on my model were not added material, they were carved from the wood already there. Remove that scrap piece from the fin slot and glue the tail in place taking care that it's square to everything and central. Put the elevators and fin in place and check that you can get at least the amount of movement shown – you will probably have to hollow out a bit of the front edge of the fin. Fit the servo(s) on its bearers into the fuselage and make up a pushrod. I used a metal quicklink on threaded rod at the tail end and just bent the wire into the servo arm. This allows adjustment but won't unwind itself. Once you've got it all working you can glue the elevators and fin in place.

Back to the wing for a little while. Check that the dowel will fit into the hole in F2 properly then put the wing in place, checking that it sits square and that it hasn't got more dihedral on one side than the other. Drill a 3/16in hole through it and the retaining mount in the fuselage. Remove the

wing and redrill the hole in the retaining mount 1/4in. Fit a SLEC 2BA wing bolt blind nut; a drop of cyano will stop it from falling out again. Bolt the wing in place again and push the 1/64in ply fillet backing pieces in the gap (marking a line 1/8in from their straight edges tells you when they are far enough in), run a little cyano along the gap or if in a bit less of a hurry, a spot of white glue and leave to set. Remove the wing again. Use a lightweight filler to mould a smooth fillet and then reinforce with a patch of either doped nylon or, better yet, thin GRP cloth. Screw the wing back on again and fit the underside sheeting. Carve and sand the remaining sheeting and wing underside so that they blend smoothly together, then, when satisfied, the wing can

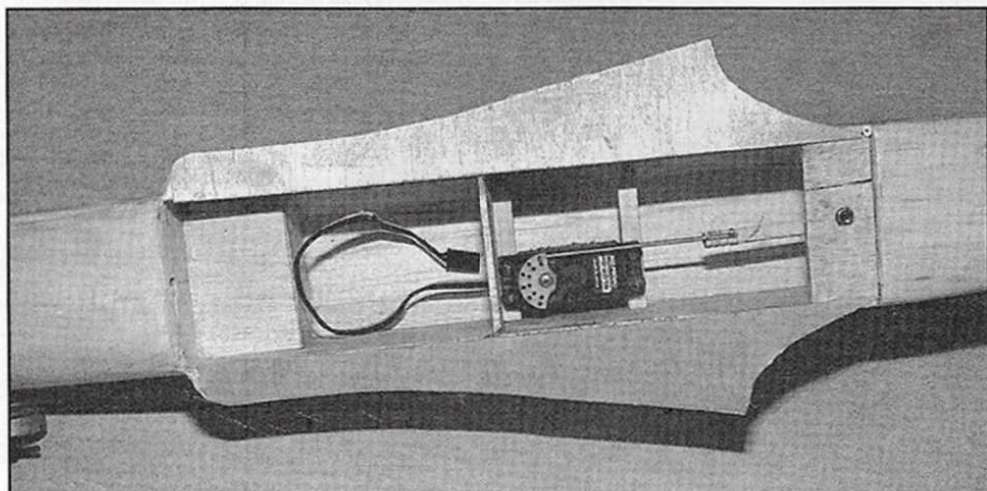
down a little. Apparently there is no matt Clearcote. I might be wrong, so might the various model shops I tried. Of course I was going to do the thing properly with lining pens and airbrush, but what the heck, you can't see that lot from 20 feet away at 60 m.p.h. so I didn't bother and went and flew the thing instead!

### Airborne!

You will probably have to add lead to the inside of the nose bay to balance at the point shown which is really the aft limit. The throws given may not seem much but any more will make the model frighteningly twitchy and not very smooth to fly. Single-handed launches are easy with a light model like this and landings on the nose skid

but it doesn't slow down a lot when pointed up. Just a touch of down was needed for inverted flight and loops could be large or very tight. The glide on mine was a surprise – I kept overshooting the damned strip until I got used to it. It glides quite fast but very flat. If you slow down too much in the glide though you will probably run out of aileron response. The stall appears to be a non-event with all that washout and you have plenty of warning as you will run out of aileron first as already mentioned.

What more can I say? It's quickly and easily built, I took longer to paint mine than



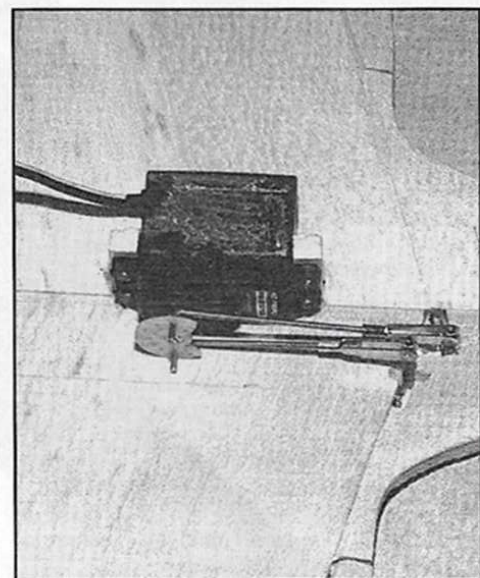
Close-up of the elevator servo installation; model will take four-channels but watch the weight.

be removed once more and the root join reinforced with a bit of thin GRP cloth.

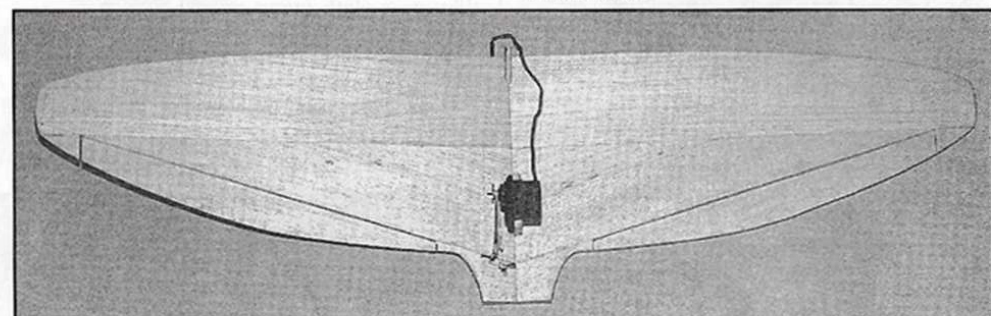
### Last jobs

The last things to be done are on the fuselage. Cut away just enough of the nose to get the engine mount in place and the engine fitted to it. It might even have been better to have built the mount in place before fitting the top and bottom sheet so that you only have to cut away enough wood to get the motor in place. Check that the spinner will fit along with the prop you are going to use. You'll probably have to sand the end of the fuselage a bit flatter, but you can then add F1 and finish sanding the nose to shape. Make a cutout in the top decking just big enough to get the tank into the tank bay. Everyone seems to have their own favourite ways of holding hatches in place; if you've got one, use it. I'm still using my 'temporary' method (pins). Drill holes for fuel pipes, etc., then remove everything again and fuel-proof the nose interior and tank bay. Finally, trim the canopy to fit (I vacformed my own) and add a bit of wood in the cockpit area to represent the radio. Don't glue the canopy in place until you've painted the cockpit area. A pilot would look nice too.

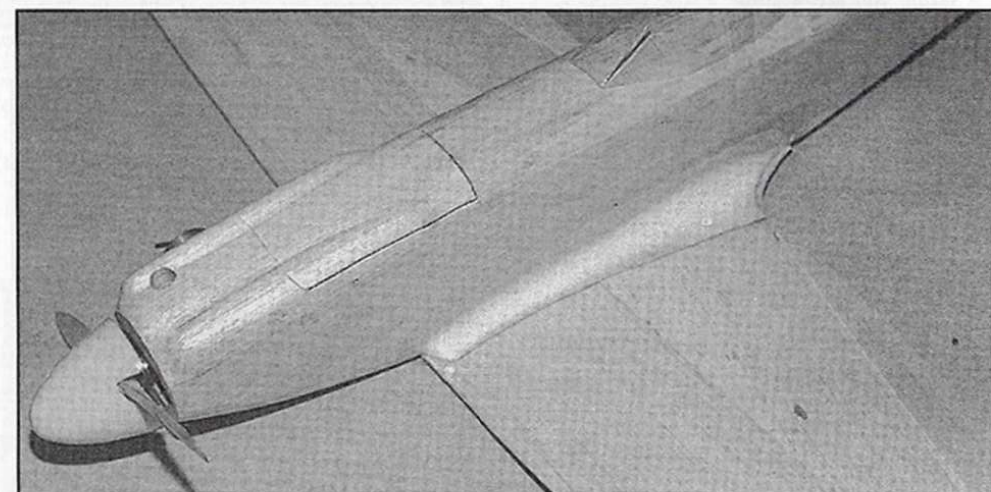
When it comes to finishing this sort of model, I don't think that there is much alternative to tissue, dope and paint – there is never likely to be any camouflage pattern Solarfilm! All the information for the colouring etc., of my particular model was taken from a *Scale Models* publication of a couple of years ago depicting Spitfire Mk 22 PK624. The roundels were scaled up from this and cut from Solarfilm before ironing in place (Solartrim might be ideal for this if the right colours are available) and the whole model was sprayed with Clearcote to which I'd added a bit of talc to matt the finish



Aileron servo sits mid-wing giving virtual direct drive.



Overall view of the wing; note aileron lines and important grain direction.



Root fairing is formed from lightweight filler with twin g.r.p. cloth on top.

easier than with wheels on grass. Don't fill the tank for the first flight unless you have a throttle, you probably never will if you use a diesel as a 4oz tank could last about 40 mins! The model should fly quite fast and smoothly under power; mine weighed 2.1/2lb and climbed just like the real one, not quite enough power to go full vertical continuously

I did to construct it, it doesn't cost much to either build or run and it really looks the part in the air as the outline is pretty accurate. I've no doubt that a more patient modeller than I would also make a more detailed and even prettier job of it. Just beware the 'Hun in the Sun' and don't fly straight and level for any length of time!