DOGFIGHT DOUBLE

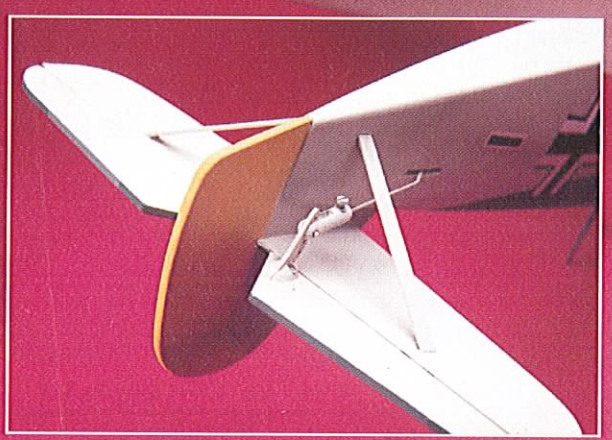
TONY NIJHUIS KICKS OFF A SERIES OF SIMPLE FUN-FILLED PERMAX-400 POWERED FIGHTER DESIGNS WITH THE MOST FAMOUS PAIRING OF ALL

The above title heralds an association which most modellers will apply to the Spitfire and Me109... and generally you'll be right, as the term 'Dog Fight Double' has been used several times in the past to describe that exact combination. But don't be fooled, this is just the start of a cunning set of free 'double' pull-out plans that will follow the theme of the dog fighter throughout the ages and across the spectrum. The one thing they have in common is that the ubiquitous 400-size electric motor and Gunther prop will power them all.

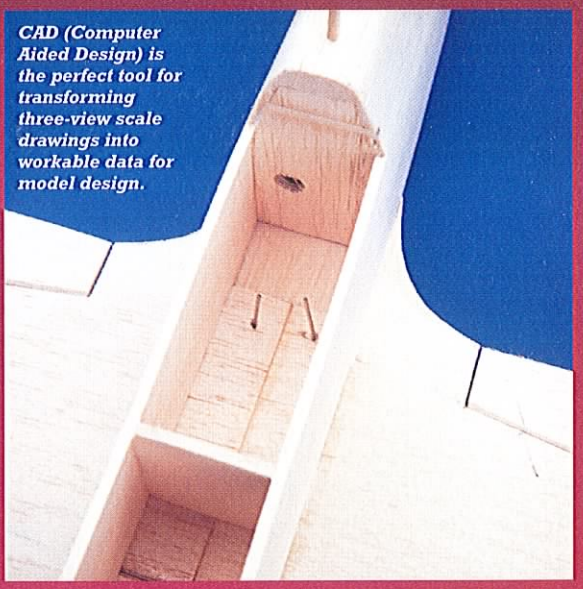
INTO THE ARENA

OK so the scene is set... enter the Spitfire and Me109, two models designed for direct drive 400, each spanning 30" and each topping the scales at 20oz a piece. For designing scale models I generally use a reference book with three-view scale drawings, scan and import the selected drawing into Autocad and then trace around the drawing outline. The imported drawing is only an image, which is later deleted to reveal just the traced outline. There you have it - one perfect scale copy ready for incorporation into a plan. With this method, no matter what size, the plan starts as a true scale set of views. From here on in it's only the models' design constraints that will force changes. If the aim is to produce a scale design, I really can't see the point in making a cartoon version when achieving a true scale profile is just as easy.

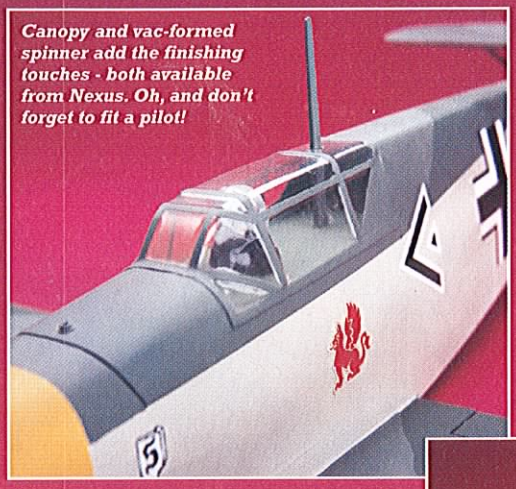
Having said that, trying to fly a true scale model of 30" span isn't going to be easy. The main problem is trying to achieve sufficient wing area to cope with a hand-launch and to be able to slow the model down without fear of stalling. With this type of model there's a maximum wing loading you can safely reach before hand-launching becomes a real problem. Unfortunately, the first Me109 prototype, which had the right scale wing area, simply wouldn't respond to this method of launching. The moment it left the hand the air



Tail struts add to the authenticity of the '109 - standard pushrods make the connection between servo and elevator.



CAD (Computer Aided Design) is the perfect tool for transforming three-view scale drawings into workable data for model design.



Canopy and vac-formed spinner add the finishing touches - both available from Nexus. Oh, and don't forget to fit a pilot!

The wings are profiled from 6mm sheet balsa and the fuselage is a simple box-type construction. Using 3mm, 6mm and 9mm balsa the construction relies on the healthy use of a razor plane to achieve those flowing curves, and with an average of only 20 parts each, these models really are quick to build. A canopy is available from Nexus along with a vac-formed scale spinner designed to fit over the Gunther prop.

speed was insufficient and so it tumbled to the ground. The prototype Spitfire, on the other hand, had a significantly larger wing area and subsequently had no such problem. Curing the '109 was a simple matter of increasing the surface areas to match the Spitfire. So even though some 'designers licence' has been employed here, I hope you agree that these two models really do capture the essence of the real thing. Even our dear editor let his guard down and is now the proud owner of Spitfire prototype No.1 (and very well it flies too - Ed.).

PURE & SIMPLE

Both models have been designed with the minimum number of parts possible.

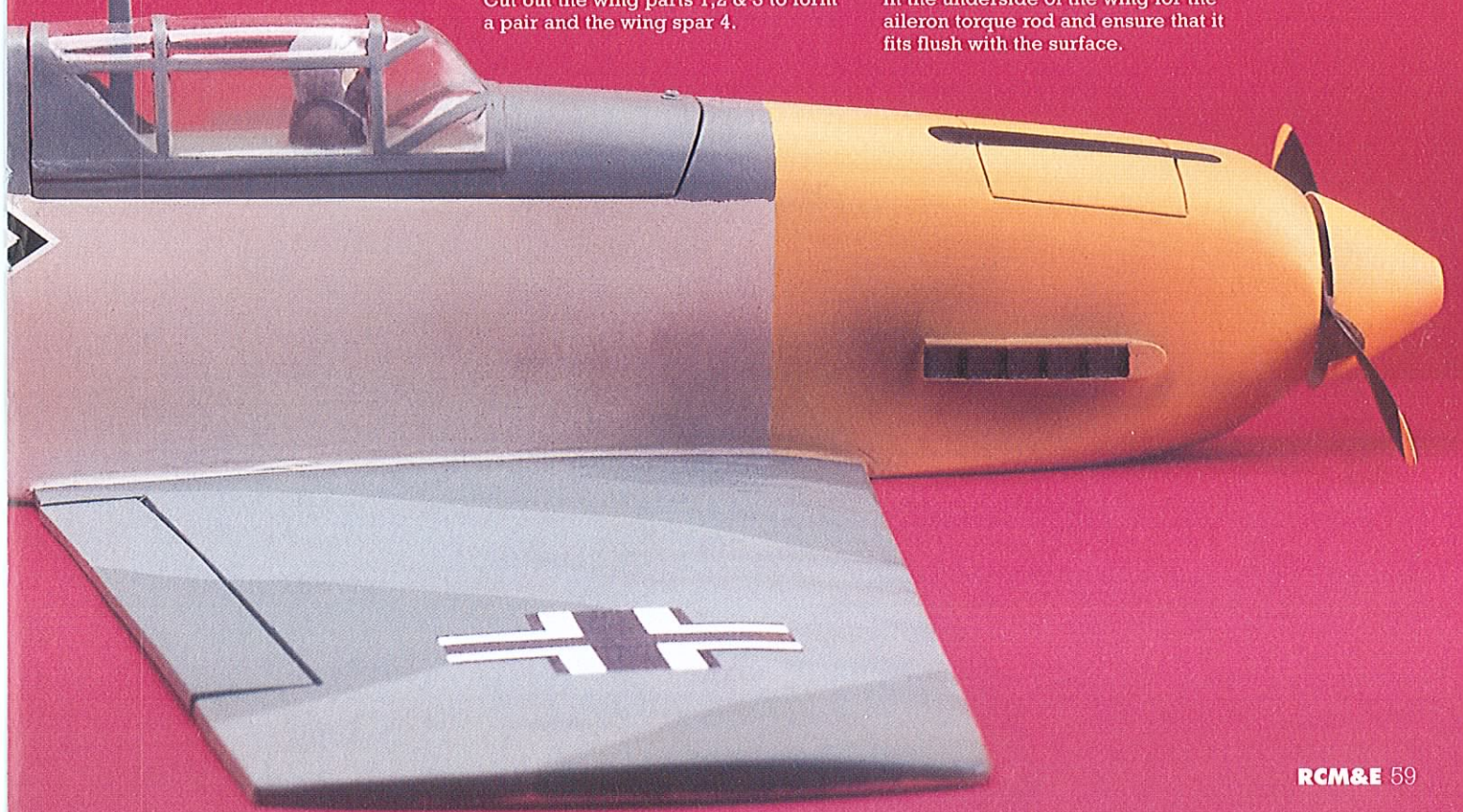
So, on with the building... Both models are almost identical in the way they're constructed so the following bits will read true whichever model you intend to build.

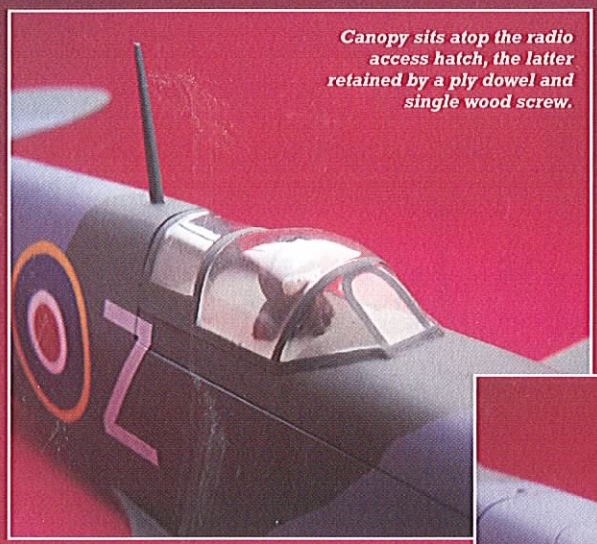
WING

Cut out the wing parts 1,2 & 3 to form a pair and the wing spar 4.

Weigh the individual parts and interchange them in order to achieve an equally balanced wing. Glue the parts together, remembering to fit the 6mm x 1.5mm spacer strip between 1 and 2. Where indicated on the plan, take a pen and highlight the location of the area of balsa to be removed. With the panels flat on the building board use a razor plane to profile the wing to the first stage of completion as shown on the plan. Now, either continue with a plane or use a sanding block to begin the second stage of profiling. Use one of the fuselage sides to achieve the correct profile at the wing root. When happy, use a medium to fine grade abrasive paper to finish both wing panels to a smooth flowing profile. Now cut out the ailerons. Channel a slot (using the threaded end of a pushrod as a file) in the underside of the wing for the aileron torque rod and ensure that it fits flush with the surface.

A combination of Solarfilm and enamel paint provide covering and detail; lettering is computer generated onto sticky-back paper.





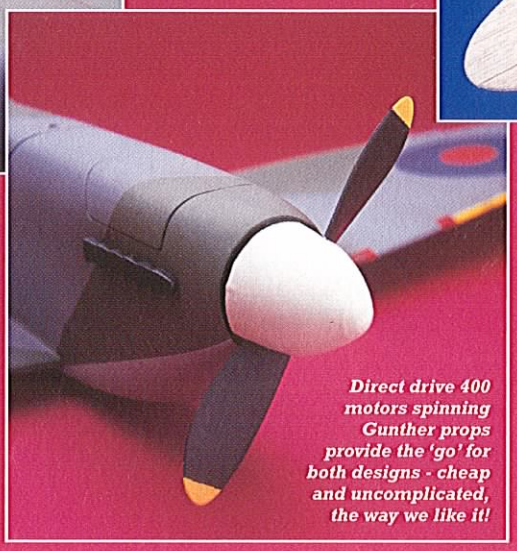
Canopy sits atop the radio access hatch, the latter retained by a ply dowel and single wood screw.

FUSELAGE

Cut out a pair of fuselage sides (No.9), the cowl cheeks (No.10) and all the formers. Butt-glue the cowl cheeks to the angled front edge of the fuselage sides, remembering to make right and left-handed sides. Now glue lengths of 9mm triangle to the front top and bottom fuselage sides where indicated on the plan. Feather the rear edge of the fuselage to 1.5mm, where the fin butts against it, so that when the sides are pulled together the fin will sit flush.

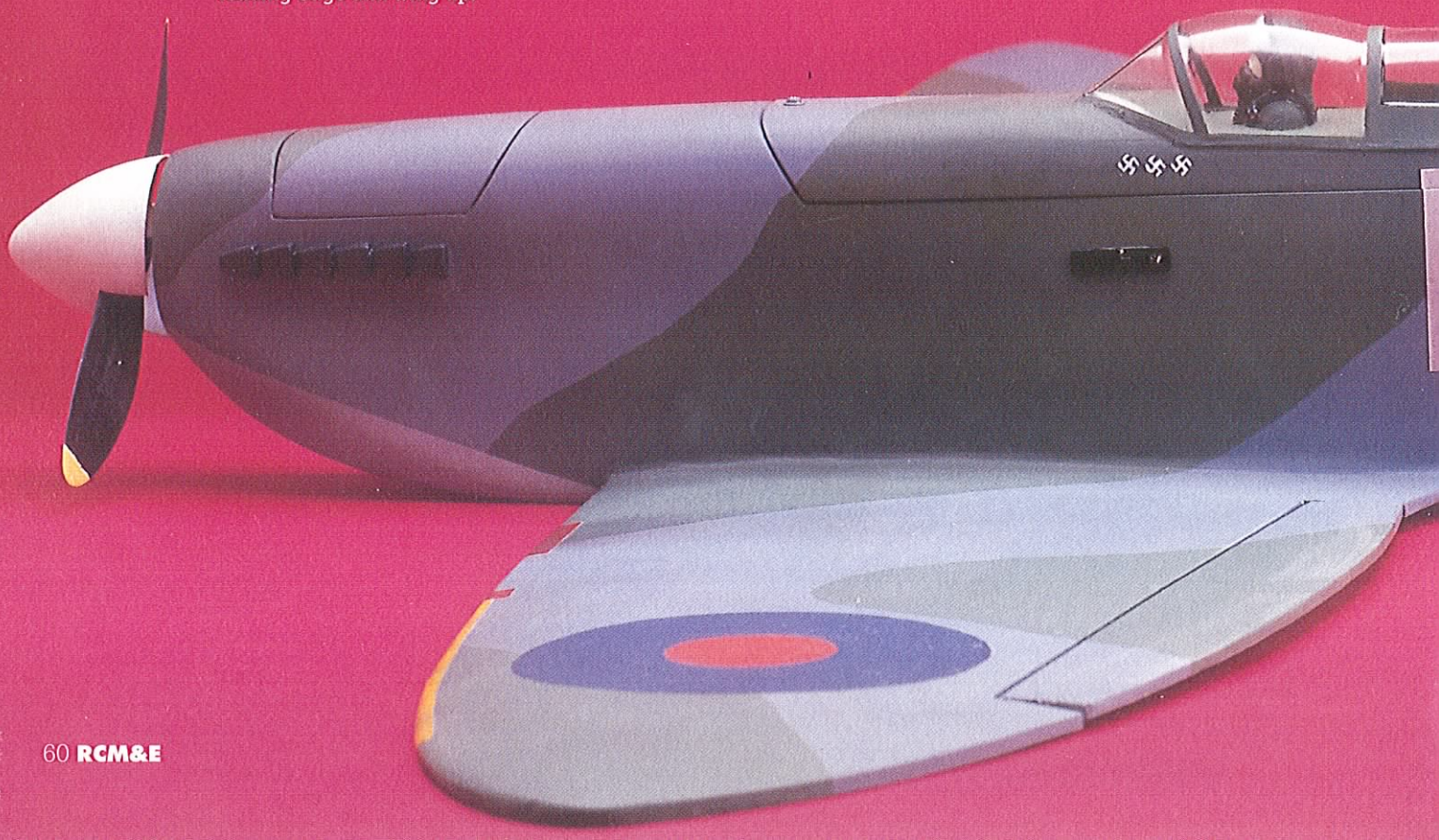
With one fuselage side placed flat on the building board, fit the formers 11,12, and 13. Add the other fuselage side and check alignment before gluing. Pull the fuselage in at the rear and glue, then fit the final former 14 and pull the top of the fuselage together. Now fit the top rear decking, making sure the upper fuselage edges aren't 'bulging' between formers. If building the Spitfire, you'll also need to chamfer the rear bottom face in order to achieve a parallel slot for the tailplane to slot in. Now shape the top decking to the finished profile. For both models, cut the slot for the fin. Fit the forward underside decking between the wing cut-out and the nose and the upper forward decking between the cockpit and the nose. Fabricate a ply nose ring as a motor mount, remembering to cut some cooling holes. Trim the nose flush and test-fit the nose ring with the motor attached.

Build time is kept to a minimum thanks to a small component count.



Direct drive 400 motors spinning Gunther props provide the 'go' for both designs - cheap and uncomplicated, the way we like it!

Bend the torque rod to shape and coat the bearing surface of the rod with thin oil or grease before fitting. Fit the rod into the channel. To secure the aileron in place, cyano a thin strip of 0.8mm ply over the top of the channel. When the glue is dry, the torque rod can be worked free to effect a perfect bearing surface. Repeat this process for the other wing. Make the necessary holes and slots in each aileron, locate them in position and check for free movement. Trim the root of each wing panel to achieve the correct dihedral, then fit the dihedral brace to one panel and join the wings together. To finish use fine abrasive paper to round off the leading edge and wing tip.

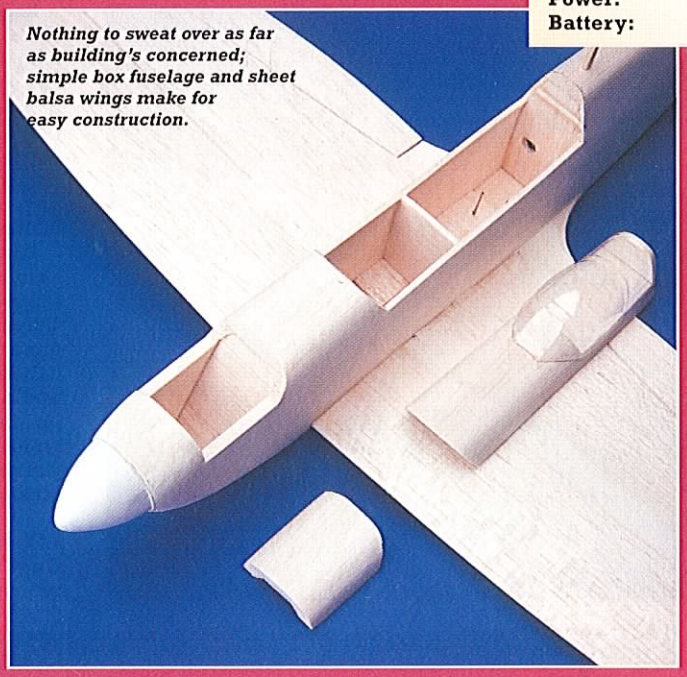


Now mark the position, remove the motor and fit the nose ring. Install the cockpit floor and add the canopy rear former to it. Leave a gap enough for a hacksaw blade to fit between this former and former 13, then sand and plane the fuselage to the finished profile.

Add the two servo support rails to suit your choice of servo; a micro or high torque Naro will be needed, as anything larger will cause a problem with the aileron connections. Offer the wings to the fuselage, checking alignment before gluing into position. Make sure the wing leading edge butts hard against the lower forward decking. Using a hacksaw blade cut both the main access and motor access hatches. Fit the locating pin and retaining plate to the main hatch and refit into position. You may find that the fuselage sides will bulge out slightly by a millimetre or two where the hatch has been removed, if so just sand the fuselage side flush again with the hatch sides. The motor hatch is glued into position after covering. At this point I would suggest running a bead of glue along the wing / fuselage joint on the inside of the model to strengthen it. Finally fit the tailplane, though in the case of the '109, don't fit the tailplane support struts until after covering.

Prior to fitting the rear underside decking, make up the elevator pushrod and check it has unobstructed movement. Then add said decking and fit the wing belly plate, planing flush with both forward and rear decking. Give the whole model a final sanding ready for covering.

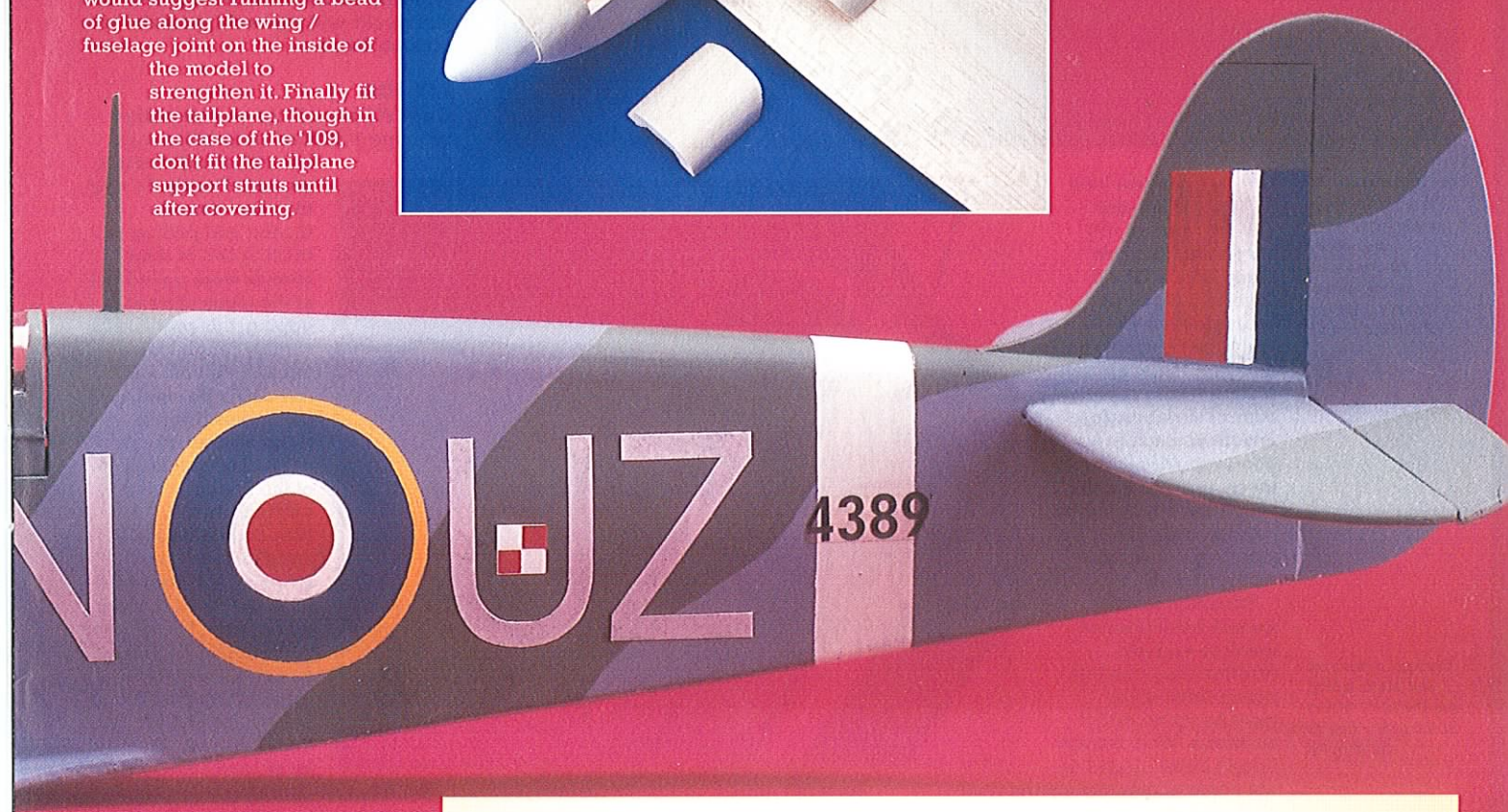
That's it for now folks, the exciting bits - covering, finishing and flying - come next month. Grab yourself some wood, order those mouldings and by the time you've built the airframe, the next issue will have hit the streets!



Nothing to sweat over as far as building's concerned; simple box fuselage and sheet balsa wings make for easy construction.

DATAFILE

Name:	Spitfire & Me109
Designed by:	Tony Nijhuis
Aircraft type:	Electric semi-scale fun-fighters
Wingspan:	30"
Wing area:	Spitfire - 170sq. in. Me109 - 160sq. in
C of G:	Spitfire 60 - 65mm from l.e. Me109 - 60 - 65mm from l.e.
Weight:	18oz
Wing loading:	Spitfire - 15oz / sq. ft. Me109 - 16oz / sq. ft
Fuselage length:	Spitfire - 27" Me109 - 24"
Power:	Permax 400 electric
Battery:	8 cell 800AR



ORDER LIST

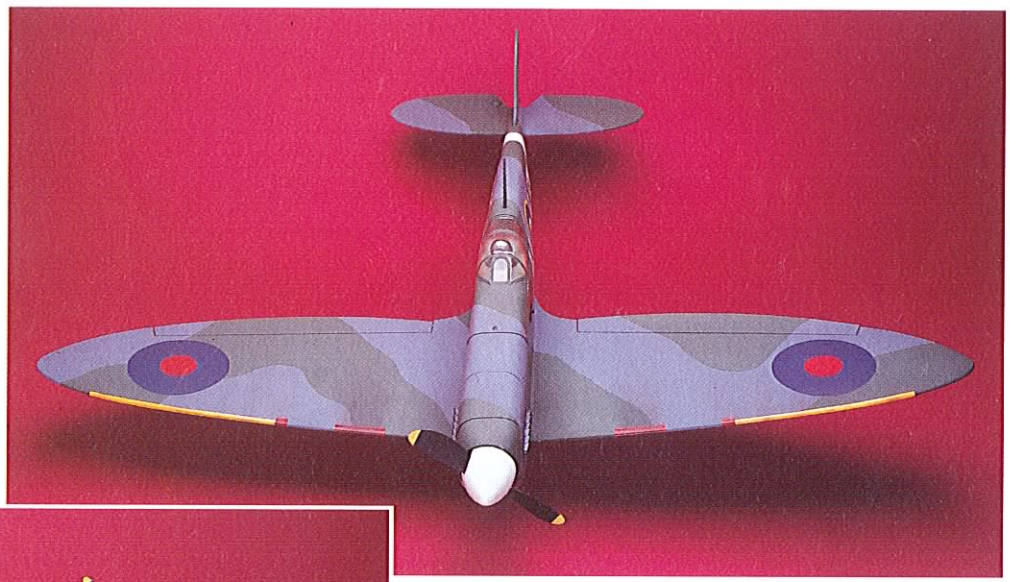
Item	Code	Price
Spitfire - canopy & spinner	CAN RC1898 / SP RC1898	To be agreed, please call
Me109 - canopy & spinner	CAN RC1897 / SP RC1897	To be agreed, please call

To order the items listed above, simply telephone the Nexus Plans Department on 01322 660070.

DOGFIGHT DOUBLE

ENTHUSED BY LAST MONTH'S SPEED 400 FIGHTER COLLECTION? THEN TUNE IN AS TONY NIJHUIS REVEALS THOSE ALL-IMPORTANT FLYING NOTES

I hope you were taken by our Spitfire and Messerschmitt free plans published in the last issue. If so, you'll doubtless have started building, and will be eagerly awaiting the covering, finishing and flying notes.



COVERING

Both prototypes were covered in silver Solarfilm, which was then given a coat of Primol (Solarfilm etching primer) prior to painting with Humbrol enamels. One of the nice things about electric models is that the paint job won't be ruined by fuel; nevertheless, I still like to seal the painted surface with a matt spray varnish. (Note: I have it on good authority that hair spray does the job too!).

FINISHING

Roundels were painted on the prototype, and computer-generated lettering printed onto sticky-backed paper. Exhaust stacks add a touch more realism, these having been made from balsa and then painted black. Do fit a pilot prior to sealing the canopy.

J. Perkins sell a small NATO jet jockey and although not the right era, he's the correct scale, and does finish the model off nicely.

If you plan to use the vac-formed spinner supplied as part of the canopy set, you'll first need to make a spinner disc, with a central hole that fits over the black hub of a Gunther prop. For this, I used a hole cutter of approximately the same diameter as the spinner. The disc must be trimmed to achieve the correct fit of the spinner against the nose ring; when done, the disc can be glued to the prop spinner using contact adhesive, and adjusted so it runs true.

When the glue has dried, the vac-formed spinner can be glued into

Where's the plan? If you missed it, get a back issue of the August RCM&E.

Both aircraft were made very close to scale, and it shows. Bf 109 airframe.

On its first flight, the '109 didn't fancy it at all. Problem turned out to be the small, scale wing. Now similar in area to the Spit, it helps the model to fly in superb fashion.

"She flew as if on rails" is a cliche, but a good one to use when describing the Spit's performance.

position, again checking alignment carefully before allowing to dry. Finally, paint the spinner to suit.

SCRAMBLE!

Now then, I must say a big 'hello' to those readers who have skipped all the above just to find out how the Spitfire and Bf 109 flew. Well, I wasn't disappointed with either of them - eventually! My prototypes are always test-flown prior to covering, mainly because in truth, I'm as impatient as the next modeller.

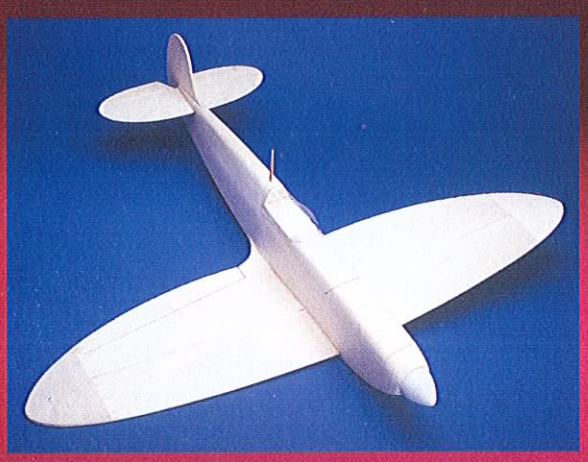
Still, calm winter days were available for test flying both models. The Spitfire was first away; following a fairly hefty throw, she sank slightly before levelling out and then, with elevator applied, performed a climb-out with great authority. Within the space of a few seconds, I knew this model was right.

A slight trim change was made to the elevator, and the Spitfire flew as if on rails. The 800AR pack and 400 6V combination has proved to be an excellent set-up, with enough power to carry out most manoeuvres, borne out by the fact that the throttle stick wasn't buried in the top of the transmitter when in flight. (Note: the motor and battery combination suggested requires no ballast to achieve the correct C of G. As there's little scope for moving the NiCad pack back and forth, if you do use lighter cells, e.g. 500AR's or 1300NiMH's, be prepared to add weight in the motor compartment.)

After about six minutes or so I decided to land and give the 109 a go. With plenty of power left, the Spit was slowed up (not even the slightest sniff of a stall) to make a near three-point landing... well, it would have been if the thing had an undercarriage!

So, now for the '109. If you're one of the few that read the opening lines of this article first, you'll recall that trying to achieve a near true-scale model was my first priority; what happened next typifies the problem model designers face in trying to replicate this.

As with the Spitfire, a good hefty throw was called for. There wasn't a breath of wind, and as the model left my hand, she flicked



If you've been following our letters column, you cannot have missed the 'Spitfire: Good or Bad?' debate. Whatever the answer, she certainly was - and still is - a fine looking piece of kit. With the model performing well from a very near-scale drawing, the suspicion must be that R. J. Mitchell's design was, at least, a very fine performer in the air.

straight into the ground. "Must have been my launching technique" I thought. Fortunately, the model wasn't damaged (good start!) so I proceeded to re-launch... she flicked in again, but this time the wings detached and the fuselage split along both sides.

Back in the workshop there didn't seem any particular reason why the '109 should perform differently to the Spitfire. However, in trying to produce a true / near scale model, the '109 had been made with quite small wings; therefore, the loading was higher. Critically, the model needs to travel faster than the Spit to achieve flying speed.

You're probably ahead of me here - that hefty throw in calm conditions wasn't enough to achieve the required speed, and therefore she fell out of the sky. This was confirmed by a re-measure of the wing areas on both models, which revealed the 109 has 30% less than the Spitfire.

So, a completely new prototype was built, sporting an oversized wing to match the area of the Spit.

In hindsight, the weather prevailing for that first test flight was a blessing; if it had been the usual breezy day we're all used to, the problem may not have been noticed.

Wanting to prove the theory, I had to wait a few weeks for some calm weather to appear. Fortunately, when it did, it was almost identical to that experienced when the crash occured - so, with tranny in one hand, the model was dispatched from the other with a firm throw. Straight and reasonably level, then... guess what? She sank slightly, levelled out and shot away with the same authority as the Spitfire. The Me109 is just as much fun to fly as the Spit, but not as nimble, just like the full-size.

Don't forget to add a pilot - the Perkins 'jet jockey' is ideal, if a little late for historical accuracy.

OVER & OUT

So, which one flies better? Well, it's a split decision...in such a dilemma you tend to weigh in favour of the prettier, so there's no prizes for guessing! Whichever you build (why not both?) you'll be rewarded with a budget-conscious, good-looking model that goes together quickly and flies well.

What pairing will appear under the 'Dog-Fight Duo' banner next time? You'll just have to wait and see!

To order the items listed above, simply telephone our Nexus Plans Department on 01322 660070.

ORDER LIST

Item	Code	Price
Spitfire canopy & spinner	CAN RC1898 / SP RC1898	£4.99 plus £2.75 p&p
Me 109 canopy & spinner	CAN RC1897 / SP RC1897	£4.99 plus £2.75 p&p

What on earth will the prolific Mr. Nijhuis come up with next? Look out for more Dog-fight Doubles coming soon in RCM&E.