

**GREAT LAKES TRAINER**

Built this American classic. 53.5" span for electric power

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MODEL MAGAZINE

# Flying Scale Models

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August 2014, No. 177 £4.20

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REPORT**

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ROYAL AIR FORCE  
ANNUAL SCALE  
BASH

**CONSTRUCTION  
FEATURE**

**CLIPPED WING  
PIPER  
CUB**

Construction feature from  
Phil Kent, 1/16th scale, for  
electric power



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**SPITFIRE  
NINE**

Stunning Warbird  
from the Mick  
Reeves Spitfire  
Mk.IX kit

- Scale three-views
- Combat colours
- In-Detail photo study
- Mk.IX Type History



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THE ISSUE AHEAD...

# FORMATION...

FLYING SCALE MODELS - THE WORLD'S ONLY MAGAZINE FOR SCALE MODEL FLYERS



## ON THE COVER

The bigger they are - the better they fly - and better also for piling on the detail. Malcom Harle's baseline was the Mick Reeves Models 1/4 scale kit. He powered it with a DA-85, 85cc engine and the finished model tips the scales at 42 lbs. Judge the detail on Malcom's model for yourself in the review this issue, page 24.

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**& CIRCULATION:** Doolittle Mill, Doolittle Lane, Totternhoe, Beds, LU6 1QX.  
Tel. 01525 222573 Fax. 01525 222574.  
Email: [enquiries@adhpublishing.com](mailto:enquiries@adhpublishing.com)

#### CIRCULATION TRADE ENQUIRIES:

Seymour Distribution, 2 East Poultry Avenue, London, EC1A 9PT  
020 7429 4000.

**NEWSTRADE:** Select Publisher Services, 3 East Avenue, Bournemouth, BH3 7BW.  
01202 586848  
Email: [tim@selectps.com](mailto:tim@selectps.com)

**SUBSCRIPTIONS:** Doolittle Mill, Doolittle Lane, Totternhoe, Beds, LU6 1QX.  
Tel. 01525 222573. Fax. 01525 222574.

**PRINTING:** Symbian Print Intelligence, Calverley House, 45 Dane Street, Bishop's Stortford, Herts, CM23 3BT.  
Tel: 0870 870 1670; Fax: 0870 870 1675

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# CONTACT

**H**ow many of us have either never modelled, or perhaps even never contemplated modelling the Supermarine Spitfire? Not that many I would have thought!

However, I might almost be classed in that minority - except that as a schoolboy, I was much taken by the Keil Kraft 18" wingspan rubber powered Spitfire and built at least five. Fight performances were very variable and not helped by heavy hand painted 'sand-and-spinach' green/brown colour schemes, brushed on full strength - but at that age, I knew no different!

Later, at the end of the 1960s, I started scratch building a Spitfire Mk.1, drawn up from *SuperScale* three-views. At that time, when 10cc (.60 cu.in.) engines were the maximum allowed, I selected a wingspan of 60" (1525mm), a bit small even by the standards then, but I never progressed it beyond the fuselage/tailplane construction stage.

The review in this issue of Malcolm Harle's Spitfire Mk.IX, built from the *Mick Reeves Models* kit, prompted back-up features, including an extensive In-Detail study, together with a wide range of Richard Caruana colour schemes (you can't get any better than that), plus super-detailed scale three-views that first appeared in *Aeromodeller*.

That drawing brought back vivid memories of my first day in editorial work on the staff of *Aeromodeller* back on October 3rd 1960, perhaps most memorable in that since that day, I've never had a 'proper' job - it's been extended hobby ever since! On that day, the December 1960 issue was in production. Editor Ron Moulton sat me down and left me to check the accuracy of that scale three-view against photographic references. It took me hours to pluck up the courage to raise a few detail issues - after all those who had produced the drawing were real experts - who was I to pick holes!

My first up-close face-to-face encounter with a Spitfire - and a Mk.IX at that - was at RAF Hawkinge during the mid-1950s when, along with five or six other Air Training Corps members, I went there for a week-long Glider Course. It was mid-January, freezing cold and there was heavy overnight snow. The hangar housing the gliders partially collapsed, damaging the gliders.

On day two, the snow thawed, turning the dipped centre of the grass airfield into a lake, which then froze overnight, turning the centre of the airfield into an ice rink.

They sent us all home and I never had the chance of another Gliding Course while in the ATC, but I've never forgotten that first encounter with a Spitfire - the very one seen below, in exactly that colour scheme, but without the keep-fit ladies in the foreground.

If I've bored you with this reminiscence, please excuse, but I think maybe all scale modellers should have at least one Spitfire in their lives. I have a blow-up of the Mk.IX appearing in this issue, enlarged to 1:5.5 scale that's been stashed away in my loft for at least a couple of years now - maybe it's time to dig it out.

**TONY DOWDESWELL**





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## 1:5.5 SCALE SPITFIRE MK.IX

**L**atest offering from the constant pipeline of new ARTF scale kits from **Hangar 9** is an 81" (2057mm) wingspan rendition of the **Supermarine Spitfire Mk.XIc**, which nicely co-incides with the features on the type in this issue of FSM. Designed for powerplants in the 30cc range and specifically tailored around Hangar 9's 30cc petrol engine, or corresponding

electric power, the kit features matte finish camouflage film covering in the mid-to-late WW2 RAF scheme of dark green/mid-grey upper surfaces/ Sky undersides and comes in the markings of top scoring ace 'Johnnie' Johnson aircraft.

The airframe is built to allow the option of installing E-flite electrically driven retracting main undercarriage units, with mounting blocks, which exactly fit these units.

**Price will be £574.99.**



## 10CC SIZE OUTRUNNER MOTOR

**F**or anyone who has spent most of a modelling lifetime (like yours truly) gauging appropriate power loadings for their models by the swept volume of their internal combustion engines, the matching of engine capacity to electric motor power seems a bit of a mystery. So it's nice to find a supplier who calls a spade a shovel, by saying that their offering directly substitutes - say - a 10cc glow engine.

That's exactly what **Turnigy** say about their **G60 Outrunner** motor, which is appropriate substitute 'urge' for models in the .46-.60 glow engine range (remember: internal combustions are 'engines', electrics are 'motors').

The Turnigy G60 requires a 5-7 cell power pack (18.5-25.9v), takes a maximum current of 40A, weighs 359g and has overall dimensions of 81 x 50mm.

It needs a 60Amp ESC, a 14 x8 - 16x10.

**HobbyKing are the suppliers, price \$54.02.**



## BIG 'BUTCHER BIRD'

**E**qually appropriate to this issue of FSM, since it was the fighter that directly prompted the rapid development of the Spitfire Mk.IX, show above, is the announcement of **GreatPlanes/Top Flite's** 1:4.5 scale 86.4" (2195mm) wingspan **Focke-Wulf Fw 190A**.

This ARFT kit, intended for 50-55cc engines, features matte finish camouflage covering, matte painted glass fibre moulded radial engine, spinner and scale cowl fan unit, wheels, motor mount, cockpit furniture and instrument panel.

Wings are ready prepared for installation of Robart retracting main undercarriage (either electrically or air driven and the wings also come with split flaps installed as per the full size).

One of the vital features in creating the correct appearance of the FW 190 is the correct length of that long stalk main undercarriage, not always done - but this one really look right.

**UK supplier for the Top Flite range is Hobbico UK (Hobbico.co.uk), and the suggested retail price is £568.75.**



## WARBIRD PAINT RANGE

**B**ack in the late 1970s/early 80s, there was an American range of paints in military colours produced specifically for scale modellers, which provided that authentic semi-matt/satin finish. It was quite different from the 'normal' cellulose and enamel paints, it was thinned with the likes of white spirit and covered the prepared airframe surface superbly, with a minimum of paint volume - but it seems to have long disappeared from the radar.

Judging by the description and specification, something that is very similar is now available from **Kings Lynn Model Shop**. Called the **Hobby Flight Warbirds & Gloss range**, there are a total of 43 military colours supplied in 125ml cans, for spray gun/airbrush application, priced at £5.84.

**Look it up at  
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# Great Lakes Trainer

**PART 1:** A 53.5" span electric powered model designed by Peter Rake, with the prototype model built and described by Pat Lynch.

**T**his model was originally drawn up at the request of Marion Crowder, a model builder who has previously done sterling work prototyping other of my designs. Unfortunately, Marion suffered fairly major health issues and was unable to start the build.

The design had languished on my computer for a while, with me unwilling to offer it to anyone else until had I heard from Marion. Pat Lynch found himself in need of something to build and decided

he liked the look of this particular model. Since there had been no word from Marion for a time, Pat agreed to help me out and the result is the rather attractive model you see here.

Although the Great Lakes Trainer is a somewhat larger, and more chunky model than will usually fit into free plan format, by making it a three-part feature you, the reader, benefit from getting a larger plan than would otherwise be possible. Yes, it does also mean you need to buy all three issues of the magazine,

but I'm sure you would have done that anyway. Additionally, as you'll see, the Great Lakes Trainer makes a very nice everyday sort of model that looks good without the need for masses of intricate detail that will always be at risk of getting knocked of.

The full size aircraft was available in various forms, which has the added advantage of making the model nicely versatile with only relatively minor alterations to the design presented here. Even the hard work of cutting out all the

Cruising smoothly overhead, the Great Lakes Trainer shows off her attractive lines.





Swooping in for a low pass. Definitely not a shot that Pat took while flying the model.



parts for a rounded fuselage biplane can be avoided because the publisher is offering the option to purchase a set of laser cut parts is indicated at the end of this article.

In case you ever wondered about those laser cut parts, and how well they will, or won't fit, let me say here that when I draw up a plan, I invariably trace all the parts (all done in CAD of course) directly off the plan. This is the set of parts used to build the prototype model. As the build progresses, to prove the design of the structure and the fit of the component parts, it sometimes turns

out that I missed parts from the cut file, or generally just got something wrong (thinking in 3D and drawing in 2D). The prototype build highlights these errors and allows me to correct them on both the plan and the cut file as they arise. Therefore, by the time a plan appears in print and your laser cut parts arrive on your doorstep, there's a very good chance that you will be able to build the model without having to 'tweak' things to get it to work out correctly and fly well. Everything that can be done to ensure they are as accurate as I can get them has

been done already. When you take into account that using CAD means measuring within 0.001", that's pretty darned accurate. Sometimes, of course, I do actually manage to get it right first time around. This does, as you can imagine, prevent my name being slandered by the prototype builder - sometimes.

So, with my little introduction out of the way, I'll hand you over to Pat to detail how he built and finished his model.

**PETER RAKE**

**A**fter a very long build of a Fokker D.VII for Peter (Featured in FSM May, June and July issues - PR), I asked Peter if there was anything he'd recommend as a quick build, tough, day-to-day sort of model. He presented me with a long list of model designs still awaiting a prototype build and fly. I'd never taken notice of the Great Lakes Trainer (GLT) and had no idea what it looked like. I immediately liked the chunky, robust looking civilian biplane and obtained the plans from Pete. A set of basic laser-cut parts were ordered and when they were received, a fast build began.

The model itself looked a fairly straightforward build, only the swept top wing and the built-up balsa cowl offering any complications. A basic box fuselage

with sheet forward and 'stick' back-end, simple flat tailplane/elevators and fin/rudder plus an easy-to-build set of wings with ailerons in the bottom wing only, promised few headaches or sticky problems to solve.

### CONSTRUCTION

The first items made, because I don't like making them, were all the laminated balsa outlines for wing tips and tail surfaces. Quarter-inch strips were sliced from a sheet of soft 1/16" balsa and soaked in soapy water for a few minutes to soften the wood. The strips were bundled, six for the tail parts, and eight for the main tips and pinned around some foam forms traced from the plan and allowed to dry.

Each strip was glued to its neighbour using an easily sanded glue (I used

Titebond) and returned to the foam forms. When dry, they were set aside, ready for use when the need arose.

*(When laminating outlines, and to prevent the pins leaving those annoying little grooves in the parts, I like to use scrap bits of wood to hold the strips against the forms. Pin the bits of wood to the board as you pull the laminated strips around the form. Maintaining tension in the strips as you pull them into place helps avoid creasing on tight bends. PR)*

The fuselage started by laminating some 1/16" balsa sheet to 1/8" liteply sides. These were then mated to 3/16" sq. hard balsa longerons (hard last longer in my clumsy mitts!), and the various verticals and back end sheet parts glued in place. The second side was built directly over the first (remembering to make a left and right) and when dry, given a sanding to



The dreaded laminated outlines drying around their Depron forms. A bit of a pain it but results in strong, light outlines.



The basic fuselage side frames, along with firewall, strut plate, wing strap mount and a simple former. Just visible are the tabs on the inner side pieces.

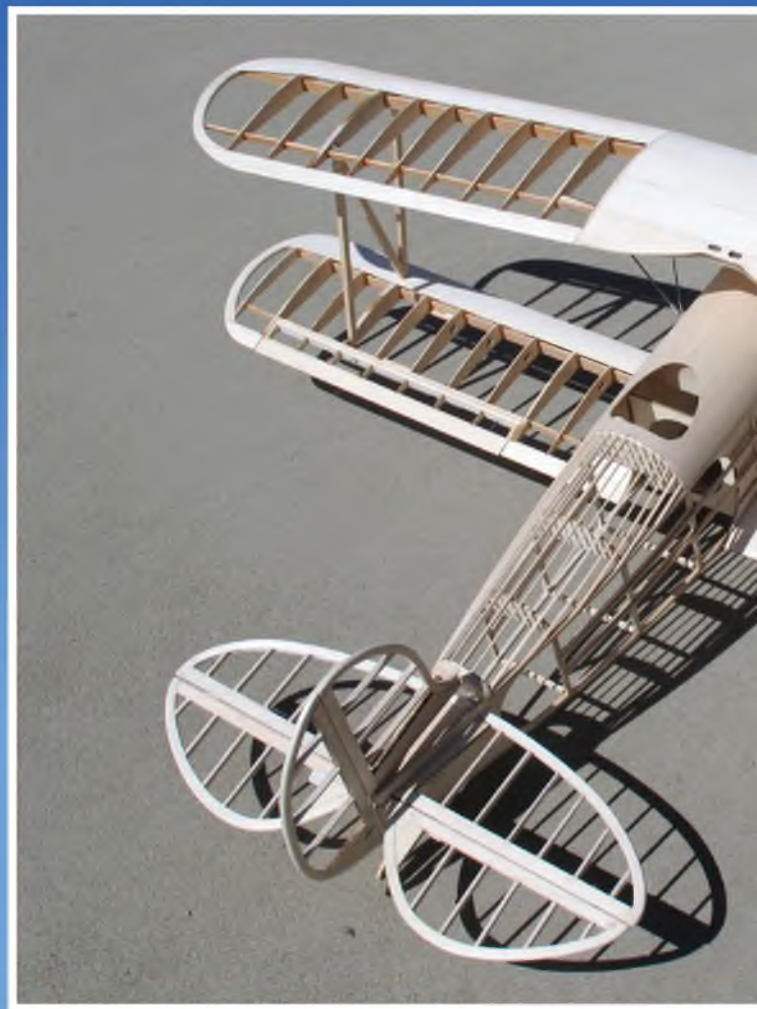




With the tail joined, remaining formers added and that 'interesting' stringer arrangement it starts to look like a fuselage.



Once the sheeting and side stringers are on the basic fuselage is almost complete. Not the strut and u/c tubes yet to be trimmed flush.



You just can't have a construction article without a naked model shot. As you see, it's all pretty basic aeromodelling.

remove any lumps and bumps.

The two sides were then assembled onto the main ply firewall along with other formers, and mounting plates for centre section struts, undercarriage and the

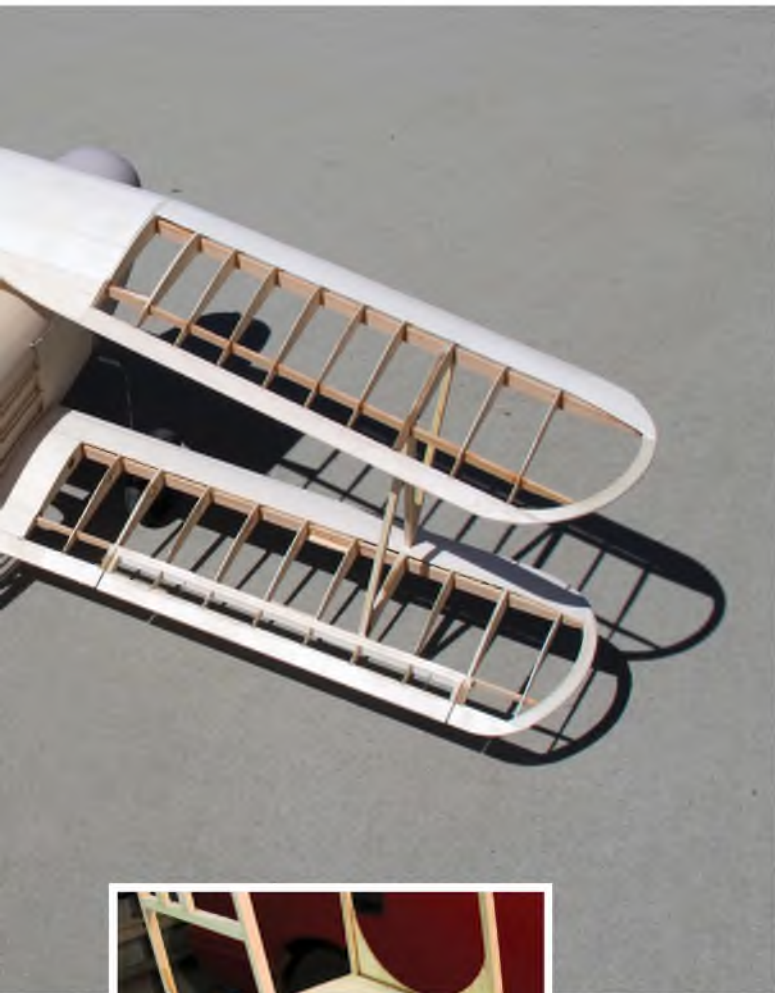
lower wing fixing plate. I assembled this vertically as the parts were mostly self-aligning. Medium CA was used (as in the rest of the build) and everything was clamped, checked for alignment

and allowed to cure. The square fuselage was then pinned over the plan and the rear end brought together and clamped, while the rear cross pieces and tailskid plate were added. Finally,

**A colourful scheme to aid orientation, a far from difficult build and just enough detail to add interest. What more could you ask of a model?**







How those parts go together, with the tabs on the inner sides locating in firewall slots and the wing strap part trapped in the inner sides.

the rear ends were lightly chamfered and glued, checking that the rudder hinge line was centred over the plan and vertical.

When the basic fuselage frame was done, the many brass tubes that support the lower wing dowels, the undercarriage legs and centre section (CS) struts were added. Where required, they were bound in place with thin copper wire and given a blob of epoxy to hold them in place. The half-round formers were fitted along the fuselage top, followed by the rather odd arrangement of rear deck stringers - the plan shows how they fit; they just need

chamfering where they are glued to the upper longeron. (Yes, it is a rather strange arrangement for the stringers, but that is how the three-view drawings show them to be. PR).

The area around and forward of the cockpit was skinned with fairly soft 1/16" sheet and side stringers of spruce or bass were fitted as shown. Two sheet balsa side cheeks were added behind the firewall - I used firm to hard sheet here after accidentally damaging the soft ones I'd fitted earlier. This completed the fuselage aft of the firewall so it was given a careful sanding, glue joints inspected and put aside. ■

# CUT PARTS SET FOR THE

## GREAT LAKES TRAINER

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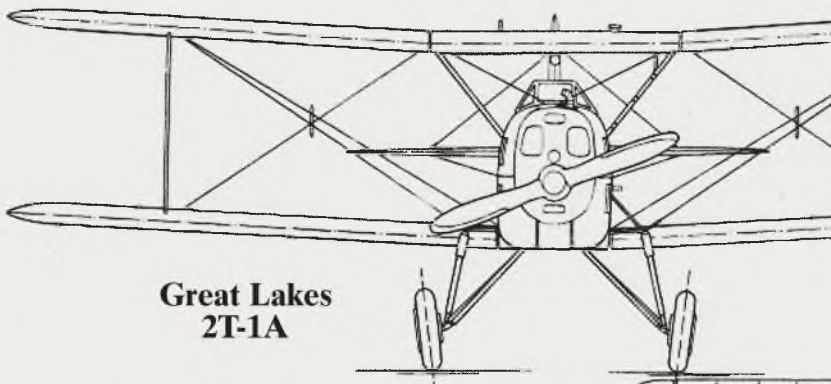
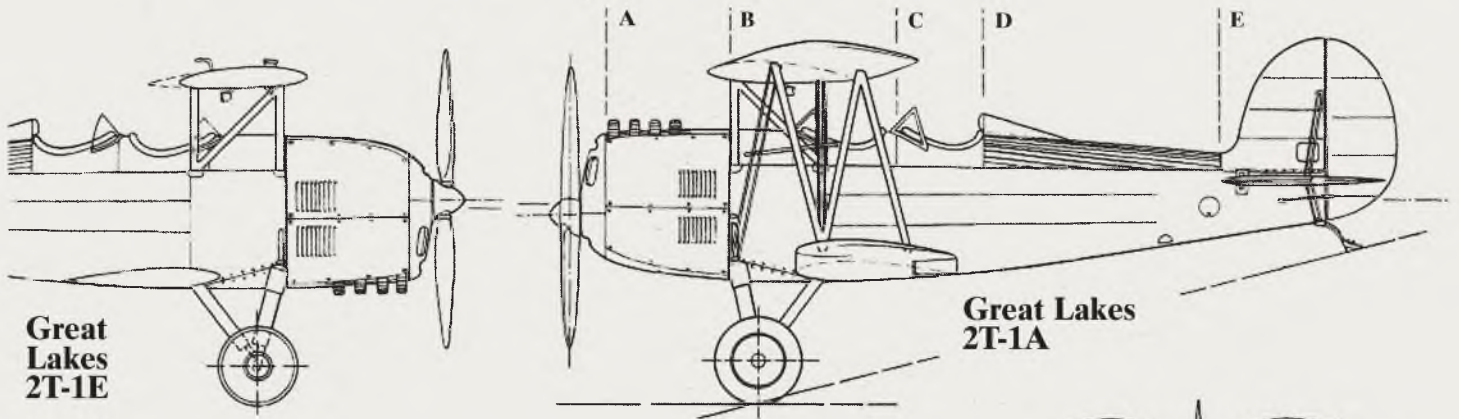
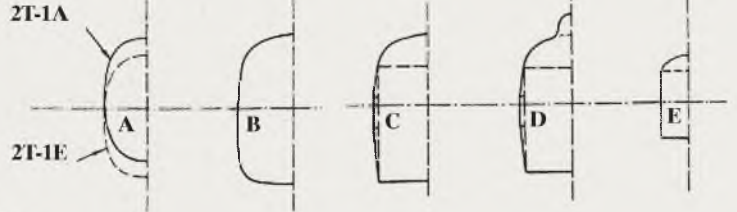
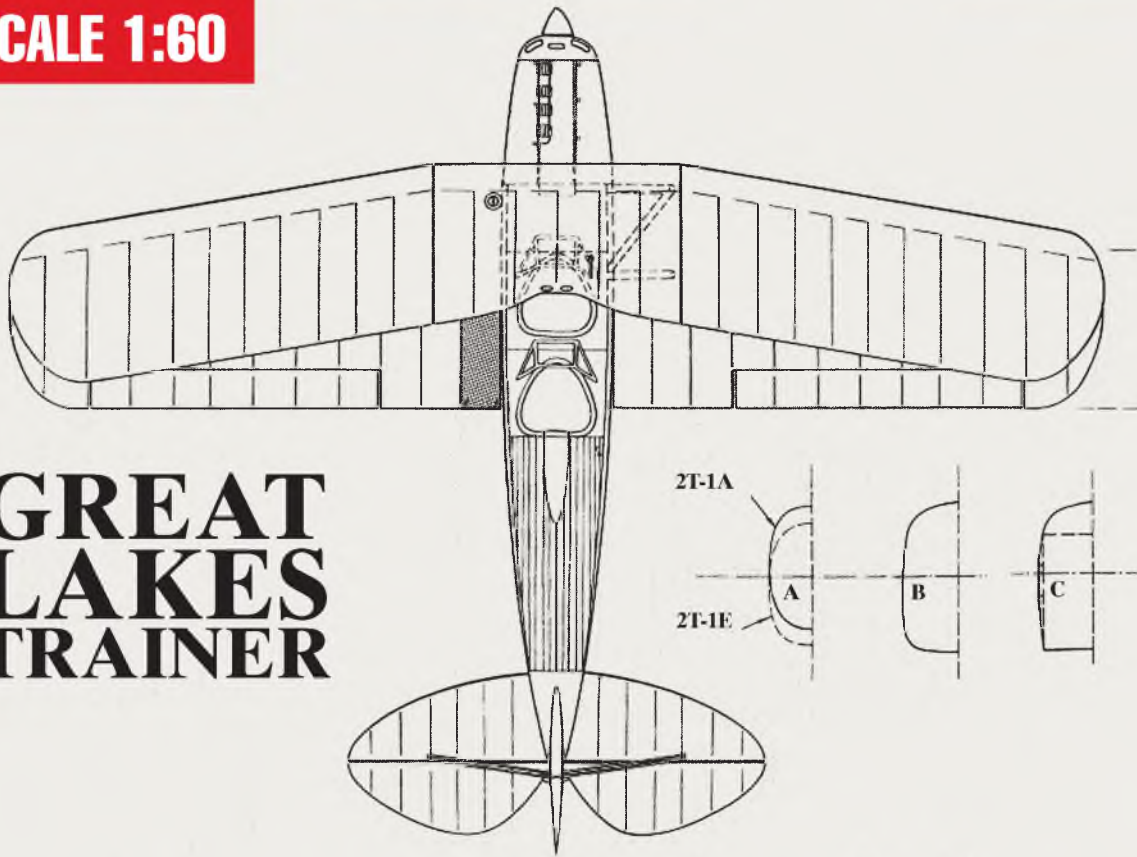


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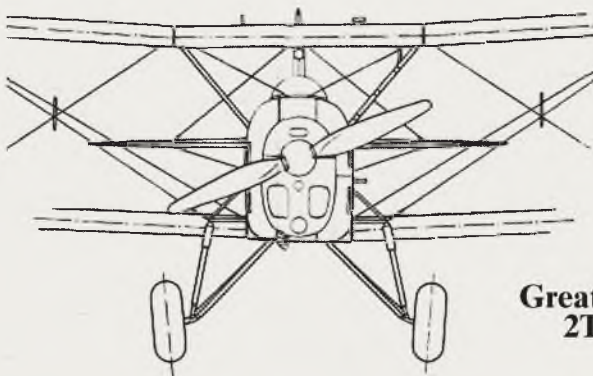


**SCALE 1:60**

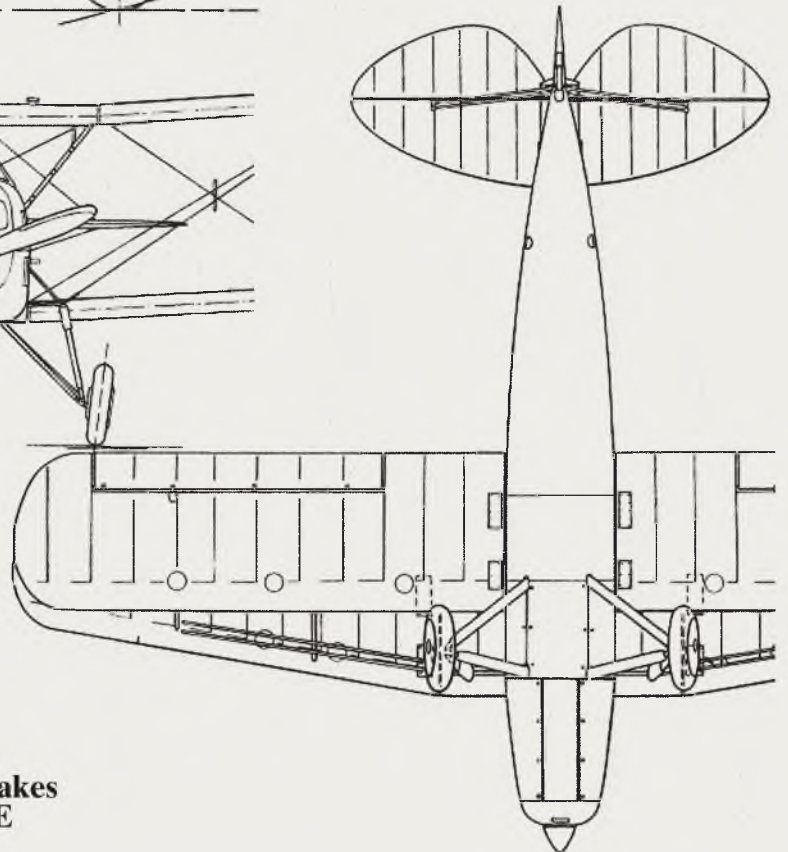
# GREAT LAKES TRAINER



**Great Lakes  
2T-1A**



**Great Lakes  
2T-1E**





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# RAFMIAA SCALE 2014

Alex Whittaker attends the Royal Air Force Model Aircraft Association scale bash





**T**he Royal Air Force Model Aircraft Association (RAFMAA) was founded in 1949 and encompasses everything from control-line and free flight, to radio control. In 2012, to offset reducing Service Personnel membership, and to better utilize its flying sites, RAFMAA opened its doors to non-MOD individuals.

I have been lucky enough to be 'adopted' by RAFMAA, and each year they ask me to attend their Invitational Scale Event. This time it was held at RAF Wittering, near Peterborough, right on the A1. It took me about five hours to get there towing The Command Module from North Wales, but I travelled hopefully, with a gleam in my eye.

**Weather, weather, everywhere**  
I arrived after dark on Friday night to a very wet and murky RAF Wittering.

Having cleared the checks at the guardhouse, I promptly managed to get lost in the gloom. A deserted, foggy, weekend RAF base is a surprisingly intimidating place when you can't see any further than your headlamps. Finally, I ended up at the RAFMAA contingent's rather soggy encampment. Side-stepping the deluge, I didn't even bother unhitching. It rained heavily all night.

I felt sorry for the RAFMAA lads in their nylon tents. By morning the sky was a bit overcast, but at least it was not raining. The only fly in the ointment was the stiff wind which was across the hallowed RAF tarmac. Between you, me and the control tower, it made things a bit awkward.

First to fly was young Jordan Pearce, the son of a keen RAFMMite. Jordan was aided by his younger bother Joshua, so it was family affair. Jordan's little electric SE5a shrugged off the

buffeting wind, and soon I heard a number of meaty petrol engines being run up in the pits. The event really was underway.

### Fieseler Storch

Chris Harle's large and well-detailed Fieseler Storch was one of the first Class 1-scale models to greet the aether. In the sharp breeze, and with the more-than-adequate-power available, she fairly leapt into the air. It was satisfying to note that the Storch climbed at an appropriately steep angle - all those flaps and slats performing a small aerodynamic miracle.

After the long winter break it felt very good to see such a well-built model flying so convincingly. It was easy to imagine Skorzeny and his hard-knocks using this Storch to spring Mussolini from his mountain captivity.

### Blohm und Voss Bv 141

Staying with the Third Reich, RC Model



**Chris Harle's Fieseler Storch handling the boundary turbulence very well.**



Chris Peers, Dave Gents, Chris Woodhead and a few other nutters flew these super foam / electric Parkzone Wildcats in far too much wind. No breakages.



Flyer Editor Ken Sheppard was continuing his love affair with offbeat German WW2 aerodynes. In this case a surprisingly aerobatic own-design BV 141. This decidedly oddball, offset-fuselage beast flew very well indeed. However, there was a petite problemette with the undercarriage, forcing a sensible out-landing on the grass.

These days Ken seems to be specializing in arcane late-WWII German designs, since he also brought a new own-design electric-powered Blohm und Voss P-170. This triple engined creation probably never flew in real life, but Ken's rendition is extremely interesting to those of us of the scale persuasion. Ken is using electric power, and the airframe is complete, but

still in the primer. He was doing power tests at RAFMAA, and the model was then yet to maiden. I hope to get flying shots and full details of this ambitious new scale project in due course.

**Me 109G**

Noted warbird event organizer Dickie Scarborough arrive with a large and



Chilli expert Chris Woodhead's starts his 3W 60 petrol on a 24"x8" wooden prop, Chris Peers holds on for dear life.



Jordan Pearce was the first to fly at RAFMAA 2014 with his foam electric Parkzone SE5a. Both he and the model shrugged off the wild wind.



Ken Sheppard's next asymmetric aerodyne 'in the primer', an impressive electric powered Blohm und Voss P-170.



Dennis Richardson's trademark fine scale finish is evident on on this Hellcat.



The RAFMAA lads looked after us excellently all weekend.



Three of RAFMAA's finest, L to R, Mike Matthias, Jamie Oakley, and Colin Pearce.





Sheila and Ken Sheppard rolling out their BV 141.



The Blohm und Voss Bv 141 just after rotation. Looks almost normal from this angle.



Pilot on the nacelle of the asymmetric BV 1412.



RAFMAA Member Ian Nelson's and his YT International P-40 Warhawk.



RAFMAA Member Ian Nelson's nicely schemed P-40 Warhawk on a low pass.



Ian Nelson had this interesting hook-up for his hatchback.

impressive Me 109G. This was built a while back by none other than Scale maestro Ivor Jordan. It looked every inch a Luftwaffe fighter. On fast strafing runs, Richard flew swift and clean, so she really did look aggressive. The crosswind conditions required careful approaches, but Richard treated it all like landing a trainer. Later, between dull grey patches, as the sun came out, I managed to get a full photo walk around of this impressive model, so watch this space.

### In-Hub suspension

Whilst chatting to Graeme Illsley in the pits,

he showed me his own-design rendition of the famous Dowty System wheel, complete with suspension within the hub. He has made the wheel for his forthcoming Gloster Gladiator. If you look at the photos, you will see that on the inside face of the wheel, there is a metal slide with a square boss to take the wheel axle (the axle is retained by a grub screw).

The metal slide is internally sprung to take the weight of the model. Inside the wheels there are two sets of bearings - very clever indeed. I will see if I can get Graeme to strip down the wheel to its

component parts for the camera when next we meet.

### Phantom maiden

You would not have thought that a blustery day with an annoying crosswind component was the ideal time to maiden a new gas turbine powered model. However, noted scale man Gary Pope was determined to fly his new and exciting 88" span *Fei Bao* McDonnell F-4 Phantom. Under the cirrus, this displayed real courage, and just a touch of showmanship. Gary had already made the calculation that the endless length of

Early season reality: the sun came out but the wind was cross!





**Gary Pope's triumphant first flight with his new Fei Bao F4J Phantom. 59" span, PBS TJ20 gas turbine power, weighs 40 lbs.**



the RAF tarmac balanced-out the hazards of a blustery crosswind take-off. Said take-off was swift and decisive, accompanied by that superb gas turbine whine.

The maiden flight went really well. It even included a bravado-fuelled low buzz of the area where I was snapping away, although Gary confessed to me later that he was shaking on the sticks. He then elected for a smartish crosswind landing, straight down the runway and we all held

our breath. There was severe buffeting as the large Phantom entered the area of disturbed air downwind of the boundary trees, but Gary chose a sound but steep approach and set the Phantom down firmly, with no bounces.

### Electric interlude

A trend that started some years ago at UK warbirds events has now become well established. I refer to the practice of flying small ARTF foam / electric warbirds over

the lunch break. During this interval, the Langar Warbirds contingent flew a number of *Parkzone* F4F Wildcats up to extreme dot-on-your-sunglasses heights. Then they dived at terminal velocity to pull out savagely at about head height! They repeated this frankly mad manoeuvre for a number of cycles and I can report that at no time did any of these little foamies shed their wings, which surprised the hell out of me.

I will also just note that all these Langar



RAFMAA's Squadron Leader Dempster Hamilton's Me 109E on a wheels-down low pass for the camera.



Dickie Scarborough's superb and aggressive Me 109G.



Jordan Pearce with his little ARTF Me 109 electric foamie.



Radio compartment on Dempster Hamilton's Me 109E. Note aerosol-style tank for air retracts reservoir.



Dickie Scarborough's impressive Me 109G, originally built by Ivor Jordan. More details soon.



Jordan Pearce's little Dynam Me 109 ARTF electric foamie on short finals. Flew well, and looked like good value to me, though I am no 'leccy expert.





**Dennis Richardson's Fairey Battle, a rarely modelled British military scale subject. More details soon.**



**Graeme Illsley's own-design version of the Dowty System in-hub suspension wheel.**



**The obverse of Graeme Illsley's clever Dowty System wheel.**



**Chef de Barbecue par excellence, Dave Gents fettling his ARTF Thunderbolt.**

Lads possess pukka 'thousand-hour' scale masterpieces besides these foamie toys, so this is not a foamie ARTF take-over, merely an interesting prandial interlude.

### Hellcat

This is a bit of scale Stop-Press really. Just as I was leaving RAFMAA, my dear old friend Dennis Richardson showed me a very fine red Grumman F6F Hellcat he was finishing for a friend. The enclosed photo will give you some idea. Later in the season when she is fully complete - and



**Nose art on Dickie Scarborough's Red Hot Moma.**

has flown her maiden - I will get back to you with more details. Watch this space.

### The verdict

Matt Holmes and the hard-working RAFMAA Team made us all feel very welcome. Nothing was too much trouble for their visitors. True, there were one or two amusing issues, like when we all discovered on arrival that our toilet block had been demolished the previous week! Unflustered, the RAFMAA Team just ferried us back and forth to the ablutions in the



**Chris Harle's Fieseler Storch is a very impressive Class 1 scale model.**

Mess in a big flatbed lorry! This was typical of the military 'Can-Do' mentality, and it was really refreshing.

We civilians also mucked in, and there was a general barbecue / wine sampling each evening. Scale man Steve Woodhead's 'Weapons Grade' Chilli was impressive, and keen warbirder Dave Gents' Barbecue Platter will long be remembered for its sheer sophistication.

In summary, RAFMAA Scale 2014, despite the slightly dodgy early-season weather, was a great success. ■



**Dickie Scarborough's Red Hot Moma. about to touch down.**



# PLANS AND PARTS

BE READY TO START BUILDING AS SOON AS YOU UNFOLD THE PLANS WITH THESE LASER-CUT PARTS SETS

## Peter Rake Series



### Ponnier 1913 Racer

Model designed by Peter Rake for electric power of the pioneer era racing plane 50" wingspan. Published in FSM December 2006 and January 2007 issues 85 and 86 4 sheet plan.

**Plan:** £24.95  
**Cut Parts:** £50.00

PLAN384

## Peter Rake Series



### White Monoplane 1919

Peter Rake's simple to build sport scale model for 3 channel RC and geared 400 electric motor power wingspan 40.5". Published in FSM December 2002 issue 37 2 sheet plan.

**Plan:** £14.95  
**Cut Parts:** £125.00

PLAN420

## Peter Rake Series



### Bristol Scout Model 'C'

A 26.1/2" wingspan, sport scale model designed by Peter Rake for IPS electric power, LiPo batteries and three-function control. Published in FSM September 2010 issue 130 2 sheet plan

**Plan:** £19.95  
**Cut Parts:** £50.00

PLAN352

## Peter Rake Series



### Pfalz EIII

A 30" scale model of the early WWI Scout aircraft. Designed for electric power by Peter Rake. Published in FSM October 2011 issue 143.

**Plan:** £9.95  
**Cut Parts:** £35.00

PLAN347

## Peter Rake Series



### Sperry Messenger

A 30" span, 1/8th scale model designed by Peter Rake for electric power. Published in FSM December 2009 issue 121 2 sheet plan.

**Plan:** £14.95  
**Cut Parts:** £50.00

PLAN359

## Peter Rake Series



### Rumpler Taube

Two sheet plan of the 30" Rumpler Taube by Peter Rake for electric power published in September 2012 (issue 154).

**Plan:** £9.95  
**Cut Parts:** £39.00

PLAN336

HOW TO ORDER: [www.adhpublishing.com/shop](http://www.adhpublishing.com/shop)



## WHAT DO THE CUT-PARTS SETS CONTAIN?

The components, in balsa and ply that you would otherwise have to trace off the plan onto the wood and then tediously cut out prior to commencing building! Basic strip and sheet wood not included. Be ready to start building as soon as you unfold the plans!

**WE CAN ARRANGE A CUT PARTS SET FOR ANY MODEL IN THE PLANS SERVICE RANGE. SO IF YOU ARE ABOUT TO EMBARK ON A NEW SCALE MODELLING PROJECT FOR OUR PLANS RANGE AND WANT TO GET A HEADSTART ON THE BUILDING PROCESS, JUST CALL TO ENQUIRE AND WE'LL DO THE REST!**

**PLANS POSTAGE:** UK: £2.50. EUROPE: £4.00. WORLD £6.00

**CARRIAGE CHARGE FOR LASER-CUT COMPONENTS SETS:** UK £9.50. Europe £26.00

Shipping Note: For shipping to destinations outside the UK and Europe, you will be charged our standard flat-rate price of £49.

This covers most destinations and secures your order with us. However, we will contact you accordingly with an accurate total shipping charge prior to dispatch and either issue a refund or a PayPal money request for the balance.

### RC Scale IC Power



CUT PARTS

#### Dornier D.1

Dr Mike Hawkins 38" span 1:6 .86 sport-scale model of a little known German WW1 fighter, for .40-.60 cu.in engines and four-function RC. Published in FSM October and September 2006 issues 82 and 83 4 sheet plan

**Plan:** £24.95

**Cut Parts:** £50.00

**PLAN386**

### RC Scale IC Power



CUT PARTS

#### Sopwith Dove

An easy to build 49" wingspan for .25 to .29 cu. Engines and three function RC by Norman Holme. Published in FSM January and February 2006 issues 74 and 75 3 sheet plan

**Plan:** £19.95

**Cut Parts:** £50.00

**PLAN390**

### RC Scale IC Power



CUT PARTS

#### Bowers Fly Baby Biplane

A 54" (1372 mm) wingspan sport-scale RC version of the Pete Bowers home build biplane for .61-.91 cu.in engines. Published in FSM November 2012 issue 156.

**Plan:** £29.95

**Cut Parts:** £135.00

**PLANMF51**

### RC Scale IC Power



CUT PARTS

#### Chilton DW 1a

This 1/3rd scale version comes from the expert design board of Phil S.Kent and has been built in several sizes. This 96" (2438mm) version features flaps as per the fullsize, suits 1.5 to 1.8 cu.in. four stroke engines, and five function R/C systems. 2 sheet plan

**Plan:** £22.50

**Cut Parts:** £125.00

**PLAN303**

### RC Scale IC Power



CUT PARTS

#### Corben Super Ace

A 50" (1270mm) sport-scale model of the delightful American homebuilt aircraft, 1/6th scale replica suits .26-.30 four stroke engines, or .20-.25 cu.in. two strokes. Four function radio systems required

**Plan:** £19.50

**Cut Parts:** £65.00

**PLAN275**

### RC Scale IC Power



CUT PARTS

#### Curtiss Hawk P-6E

A replica of the flamboyant 1930s American biplane fighter aircraft with a very elegant shape. 1:6.4 scale model spans 57" (1450mm) and suits .50-.60 size engines. Conventional wood construction throughout and requires four function radio control. Two-sheet plan

**Plan:** £19.50

**Cut Parts:** £90.00

**PLAN226**

**TEL: 01525 222573 FAX: 01525 222574**



# Techno Scale

Mike Evatt

**R**etro RC's mission is to design, manufacture and sell high-quality model aircraft kits which will appeal to newcomers and old hands alike. They specialize in retro-looking designs and recreations of classic models from the golden age of modelling, the 1930s & 40s.

All their kits are full laser-cut kits, not short kits. They contain all wood necessary, and a complete hardware package, as well as a high quality photo-illustrated construction manual. You will have to provide the covering material of your choice, radio gear, motor, battery and speed controller. On their website at <http://retrorc.us.com> you will find a delightful 1913 Eastbourne Monoplane & Dummy Anzani Engine.

Next is a website that has been put together with the aim of providing modellers with historical information appertaining to large-scale models.

Log-on to [www.bigscalemodels.com](http://www.bigscalemodels.com) to access this amazing resource, which contains interesting information and excellent photographs just waiting for your next scratch-built project.

screen-shot shows the Fokker Dr.1 of which Baron von Richthofen supposing said: "It's as manoeuvrable as the Devil and climbs like a monkey."

**Rocky Top Models** is a web-based cottage industry with a URL of [www.rockytopmodels.com](http://www.rockytopmodels.com). This company offers laser-cut scale free flight kits with hand-selected wood, Esaki tissue and a complete hardware package. They are proud of their kits and their goal is to make these some of the best available. RockyTop Models relies on top notch products for their exceptional laser cutting. Top Notch Products is located near them in central Tennessee, allowing them to closely monitor the laser cutting. Their CAD generated patterns are directly fed into the laser cutter as 'cut files' making the process complete with Computer Aided Manufacturing (CAM) on the laser. This true CAD/CAM process ensures all parts fit each other and match the plans.

**Hobby Specialties** at <http://hobbyspecialties.com> focus on hard-to-find items for the Scale and Free Flight modellers - quality balsa strip wood, carved balsa propellers and fine

spoked wheels to name a few. Produced by an aeromodeller for aeromodellers, NS Wheels are made in the traditional manner with 36 spokes of fine silk thread woven into balsa wood rims and tires. The hubs are aluminum tubing and together, the components produce a very lightweight, strong wheel capable of supporting an axle weight of over 1 pound. The tyres are painted with Floquil paint and look more like rubber than rubber itself. They also offer foam tyred versions for R/C Electric and Park Flyers and Custom spoked wheels up to 3" diameter that are available upon request.

**Paul K. Guillow, Inc.** has been one source for balsa wood airplane kits and flying toys since 1926. From the Fokker triplane to the Sopwith Camel of WWI to the P-51 Mustang and P-38 Lightning of WWII to the modern day F-15 Eagle fighter jet, you will find that their balsa airplane models appeal to both the young and the young-at-heart. Their 48 inch span B-24 Liberator certainly evokes the age of its design. Over 18,000 Liberators were built during the WWII. They featured the revolutionary



A delightful 1913 Eastbourne Monoplane & Dummy Anzani Engine.



This website aims provide modellers with historical information.



Rocky Top Models offers laser cut scale free flight kits such as the Albatros D111.



Scale Wheels from Hobby Specialties.



Guillow's 48 inch span B-24 Liberator certainly evokes the age of its design.



Wine Country Flyers Radio Controlled Model Airplane Club host excellent photo galleries.



## refines the search for more TechnoScale Topics...

Davis wing design that enabled the B-24 to carry the same payload as its rival the Boeing B-17 Flying Fortress but at a much greater speed and range. Check it out on their website at

[www.guillow.com](http://www.guillow.com)

**Wine Country Flyers Radio Controlled Model Airplane Club** has been promoting model aviation in Sonoma country since ~1989. They moved to their current private flying site on the grounds of Trentadue Wineries in December 2008. Their mission is to:

- Provide a safe, convenient flying site at a reasonable cost.
- Provide help and training to new R/C enthusiasts.
- Be open to any person willing to comply with WCF rules.
- Last and most important, help members enjoy their hobby!

On their webpages at

[www.wcflyers.com](http://www.wcflyers.com) you will find excellent photo galleries as evidenced by the screen-shot

Scale Sailplanes from the Pat Teakle collection - available NOW! Distributed in association with John Hall and may be viewed at

[www.patteaklegliders.co.uk](http://www.patteaklegliders.co.uk) They are providing a choice of Epoxy or Polyester resin fuselages together with three wing build finishes and 6 different wings sections. The quality may be seen in the screen-shot and the superb on-line photo galleries.

**Airworld Modellbau** is a German company based at Rodgau near Frankfurt. It is always a joy to visit their website at [www.airworld.online.de](http://www.airworld.online.de) as there is always something new to see. One of their latest offerings is a Hawker Sea Fury designed to a scale of 1:4.5 from original documents. All relevant detail is faithfully reproduced from the sliding canopy that reveals views of the cockpit with seat, instrument panel and interior trim to the tiny detail of rivets, hinges and locks. The retractable landing gear is perfectly incorporated in the wing. The Hawker Sea Fury was a British fighter aircraft. It was developed in 1945 by Hawker. The Sea Fury was the last and fastest piston engine-powered fighter aircraft, used by the Royal Navy.

**Quick UK Limited** of Pewsey, Wiltshire, UK maintains a web presence at [www.quickuk.eu](http://www.quickuk.eu) Here you will find

Roban Model - Super Scale Airwolf. This 800 size Super Scale machine is a complete scale kit not just a scale body for you to retrofit. The model comes with a very high level of detail as standard, the fuselage is pre-painted, windows installed, all structural bulkheads installed. The mechanics are pre-built and only require a suitable motor, servos and flybarless controller to be fitted before final installation.

**MTW** manufacture and sell magnificent silencer systems. Take a peek at their wares at [www.mtw-daempfer.de](http://www.mtw-daempfer.de) They not only sell complete systems to suit most of the major kit manufacturers but also provide all the components, materials and accessories that you need to complete your own custom unit. As you might expect with such quality products they only make to order.

And finally! **Scale Rockets!** Whether they are aircraft or not is a debate best left for another time. However, they are certainly are Flying Scale Models. So if you fancy a German V-2 model - 7.5" diameter by 65" tall - powered by an H-K motor then log-on to [www.scalerockets.com](http://www.scalerockets.com)



Scale Sailplanes from the Pat Teakle collection.



A superb Hawker Sea Fury from Airworld Modellbau.



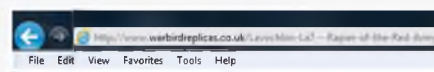
This 800 size Super Scale machine is a complete scale kit.



MTW manufacture and sell magnificent silencer systems.



A German V-2 model - 7.5" diameter by 65" tall powered by an H-K motor.



That's all there is time for from me this month so light up that screen and if you find something out there of interest that might be good to share, email me at:

[mikeevatt@hotmail.com](mailto:mikeevatt@hotmail.com)



# STUNNING

# SPITFIRE

**Alex Whittaker examines Malcolm Harle's superb Mk IX from the Mick Reeves kit**

In 1941 the introduction of the German Focke Wulf 190A sent shock waves throughout the RAF. Here was a Luftwaffe aircraft that could out-perform the current Spitfire Mk.V, and the British knew they were precious months away from developing their upgraded new Mk VIII to meet the challenge. Into this gap stepped the Spitfire Mk IX. The Mk IX employed the same Merlin 60/70 series engines as the Mk VIII, but used a modified Mk Vc fuselage. This was the key to this new 'stop-gap' Spitfire's rapid development.

Fitted with a Merlin 61 engine, the Mk IX first flew on 26th February 1942.

The Mk IX had a top speed of

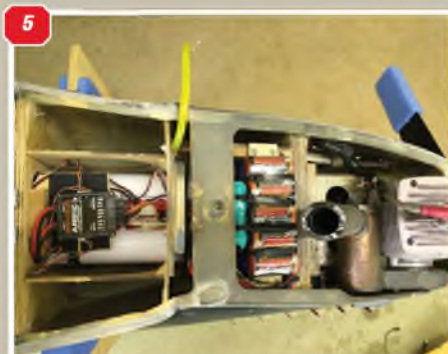
409 mph at 28,000 feet, a very useful 40 mph increase on its predecessor. Its ceiling rose from 36,200 feet to 43,000. Most importantly for an interceptor, it could climb at 4,000 feet per minute. Once in production there were three main variants of the Mk IX, though most used the standard 'C' wing. It was ordered into immediate production and was a great success. Indeed, in late 1944 a Mk IX Spitfire brought down an Me 262 jet.

#### The Model

Malcolm Harle is a well known scale builder on the UK warbird circuit. He has been flying



# NINE



## MALCOLM HARLE'S BUILD PHOTOS:

**1:** Malcolm's shot of the masking and spraying the roundels. **2:** Malcolm's shot of the fitting and checking the operation of the retracts. **3:** Detail of the aluminium engine spacer-mount before fitting the petrol engine. **4:** The finely fabricated metal rear-view mirror. Note canopy frame and screw-heads. **5:** Front fuselage with receiver, batteries, engine and exhaust.



7



6



8



## MALCOLM HARLE'S BUILD PHOTOS CONT..:

- 6:** The engine and spacer / mount arrangement. Note throttle servo.  
**7:** The Mick Reeves fibreglass fuselage mated up with the metal spinner.  
**8:** Split flap arrangements.

and perfecting this particular Mk IX for the past three years. The Mick Reeves Mk. IX 2008 Version plan (and kit) from which it is built is seen by many as an exceedingly accurate airframe. Add to this, the care and attention which Malcolm has given to the whole model and the result is an utterly convincing Mk IX.

### The Kit

The 2008 Version Mick Reeves kit has a moulded epoxy fuselage and cowl, and for the most part, the rest of the construction is traditional balsa and ply. The fuselage cleverly incorporates the centre section of the wing,

which takes the plug-in outer panels. Tabbed CNC ribs and wing components help jig the wing whilst building. Mick estimates that the fuselage moulding has 10,000 rivets, as well as all the panel lines. As is usual with Mick Reeves Models, Mick and son Jim supply lots of additional items including scale detailing, wheels, retracts, and so forth. Readers may also remember that Mick and Jim Reeves have developed an electric version of the Mk IX kit which we covered the year before last.

### Plan

Mick Reeves plan as supplied with the full kit

### Documentation

Malcolm did his own research and settled on the well known preserved Spitfire Mk IX Mylecraigne.

### Engine

Malcolm chose a Desert Aircraft two-

stroke petrol engine, a DA85. Malcolm has fitted the engine on a substantial home made aluminium spacer mount.

### Prop

26"x10" carbon

### Exhaust

Malcolm fabricated his own Pitts style silencer to fit within the cowl.

### Undercarriage / Retract

Belair supplied the wheels and retractable undercarriage.

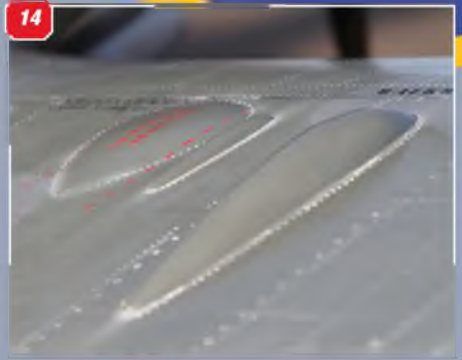
### Covering

Wings and tail are covered in Solartex.

### Painting

Malcolm use car paint, plus some Humbrol lacquer. This was then finished and sealed with 2 pack matt lacquer.





**9:** The rear fuselage of a Spitfire is surprisingly slender, and the fin and tail are not huge. Note trim tab details. **10:** Convincing large wing fillet, due to clever fuselage design. **11:** Awaiting the order to run-up. Fine cockpit and pilot from Al's Hobbies. Note fabricated rear-view mirror. **12:** Nicely weathered exhaust stacks. **13:** All the legending came to Malcolm's order from Flightline Graphics. The roundels are painted. **14:** Wing blisters, rivets and legends all present.

IT IS FROM THIS ANGLE THAT THE FAITHFULNESS OF THE MICK REEVES NEW FUSELAGE ARRANGEMENT BECOMES APPARENT.

#### Legending / Decals

All the decals and stencils were supplied by Flightline Graphics.

#### Scale Details

The cockpit interior came was made up

from an *Adfa Models* kit. The pilot was supplied by *Al's Hobbies*.

#### Fit and Finish

The surface patina that Malcolm has achieved with his Spitfire which makes her







**15:** Distinctive and elegant Spitfire air intake is finely mounded. **16:** Undercarriage and doors are crisply modelled. Robart wheels are used. **17:** The correct spinner is very important for any scale model but for a Spitfire, absolute accuracy is essential. **18:** Stencils, lettering, and rivets all build the illusion. **19:** The brush script and the kills are beautifully done, but the underlying panelling and rivet lining seals the authenticity.

**THIS IS WHY PEOPLE BUILD MICK REEVES R/C SPITFIRES:  
PARKED OUT ON RAF TARMAC SHE LOOKS THE REAL DEAL.**







**20:** An example of the exquisite rivet detail on the Spitfire. **21:** All stencils present and correct. **22:** Various rivet types are employed on the fin and rudder.

really stand out from the crowd. He has managed to impart that much-coveted but understated "in-service" look to the aircraft.

**Flying Notes**

Like all Mick Reeves Mk IXs, she

looks utterly correct in the air, with that appropriate "sit". Malcolm reports that she is very pleasant to fly: stable with no surprises. However, landing benefits from applying the correct amount of flap. ■

**MODEL SPECIFICATION**

**Mick Reeves Models Spitfire Mk IX**

<b>Scale:</b>	1/4
<b>Wingspan:</b>	110"
<b>Weight:</b>	42 lbs
<b>Engine:</b>	DA-85 85cc
<b>Prop:</b>	26"x10" carbon





# VICKERS SUPERMARINE SPITFIRE

Never intended to be anything other than a temporary expedient to counter a specific threat, the Mk. IX was the most powerful than any other variant in a series that eventually ran all the way to Mk.24

**D**uring fighter sweeps over northern France in early Autumn 1941, the R.A.F.'s Spitfire Vs were finding it difficult to combat a hitherto unencountered Luftwaffe aircraft that exhibited a performance notably superior to the Spitfire Mk.V which was RAF Fighter Command's front-line fighter. Given that there had been no prior warning of a new German fighter entering service, the initial explanation suggested by RAF Intelligence Officers was that these radial engine aircraft were probably ex-Armee de L'Aire Curtiss Hawk 75 aircraft, pressed into service by the Luftwaffe after the fall of France in June 1940.

However, the Hawk 75 (export version of the Curtiss P-36) and ordered by the French in 1939 to bolster their air defences, was no Spitfire-class adversary, so for the RAF pilots who had to tangle with this unidentified type, such an easy explanation seemed pretty much unlikely.

The new German type, first encountered during September '41, began to appear in ever increasing numbers. Accurately identified as the Focke-Wulf 190a, there was an obvious imperative to produce a Spitfire of increased performance as quickly as possible. Meantime, RAF losses to the Fw 190 became crucial, so that between November 1941 and February 1942, offensive operations over northern France were temporarily suspended.

A more powerful engine has the obvious answer and fortunately, Rolls Royce had been

well pro-active with development of improved variants of their Merlin, the Type 60 and Type 61. Spitfire Mk.V airframe AB 505 was modified by Rolls Royce at their Hucknall base and in April 1942, the re-engined Spitfire was approved by the Air Fighting Development Unit at Duxford. It was basically a strengthened Mk.Vc airframe fitted with a two-speed, two-stage Rolls-Royce Merlin 60 series engine, the installation of which dictated a lengthened nose section that increased the overall length from 29 ft. 11 ins. to 31 ft. 1 in.)

Radiator installation was also changed from the asymmetrical arrangement of earlier Marks, with one Morris QCP coolant radiator in each wing plus a QCR intercoolant (starboard) and a QCQ oil cooler (port), and it was this double, or symmetrical radiator installation, plus the longer nose, modified cockpit cover, and four blade airscrew which were the obvious identification points.

The resulting aircraft was the Spitfire Mk.IX. Although it was by no means vastly superior to the Fw 190, it had at first the slight tactical advantage of being almost indistinguishable from the Mk. Vs and provided enough performance enhancement to counter the 'Butcher Bird' threat.

For some time the new mark was known as the Spitfire ?? or 'Blotto'. Captain Eddie Rickenbacker had revealed in Washington that "*The new Spitfire IX is a great improvement over the previous type of fighter which saved the day in the Battle of Britain*", but the highest Mk. number known at that time was the Vc and a jump to IX seemed sequentially illogical.

Yet such was true for it was intended as an interim type developed as an answer to a temporary emergency, and the specialist Mk. VI, VII, and VIII high altitude and tropicalised types were to follow later.



**ARINE**

# MIK.IX

.IX was eventually produced in greater numbers







**ABOVE:** Sergeant Chatsworthy, from Plymouth, chats with his ground crew on an airfield in Corsica, during the Allied push into southern France during August 1944.  
**BELOW:** Typical Mk.IX example is camouflage and markings that date it prior to June 1944, and with the original rounded rudder shape.



No. 64 Squadron was first to receive the Mk.IX, in July 1942, carrying code letters SH, followed by No. 611 (West Lancashire Sqdn.) based at Biggin Hill, who took delivery of their Mk.IXs in August '42 and were the subject of the first press visit for

release of the new mark. Distinguished, when seen from the ground by the blanked cannon stubs which were first thought to be recoil chamber covers for a new gun, the Mk.IX also introduced a new type of Spitfire wing, the 'C' with two

Hispano 20 mm. cannon (120 rounds) and four Browning 303 in. machine guns with 350 rounds. As our drawing shows, the 'C' wing was universal, and could also be used to mount eight Brownings or four Hispanos though such arrangements were rare.

Later, the Mk.IX had the 'E' wing using two 0.5 Brownings in place of the four 0.303s (see detail of the LF IXB and LF XVIII cannon installation).

When the Mk. IX was replaced in the front line fighter role, it was relegated to ground support and attack having two 150 or 250 lb. H.E. or smoke bombs under the wings and 500 lb. bomb or 30 gall. drop tank under the fuselage. In this form it had the 'E' wing with clipped tips and was chiefly used prior to D-day to soften up the German coastal defences. It then preceded the advance through France, the low countries, and Germany.

### The 'Workhorse' Spitfire

Although it was only intended as an interim type, the Spitfire IX was produced in greater numbers than any other single Mark, 5,665 being produced in all. A few of these were produced with floats and modified ventral fin area.

From 1942 through to late 1944, the Mk.IX became a mainstay of RAF Fighter Command, participating in many major actions, including the abortive Dieppe Raid in August 1942; North African and Italian Campaigns during 1943/44 (tropicalised version); the 'Anti-Diver' operations over southern England in mid-1944 to counter the pilotless V-1 attacks; and the thrust through northern France and the low-countries in support of Allied ground forces after the successful D-Day invasion in June 1944.

To increase the range of the type which had originally been designed as a metropolitan defence fighter, 30, 45, 90 or 170 gall. drop tanks could be fitted. Later a 50 gall. streamlined type was fitted on pylons. It is interesting to note that 300,000 drop tanks were produced for all marks of



**Express Brewery!** Some cheer for the troops soon after the D-Day Landings in Normandy. Beer barrels shackled to the underwing positions that normally carried 250 lbs bombs.





A textbook 'Finger Four' formation of Spitfire Mk.IXs just after breaking cloud. The official caption, in typical 'period' typewriter type face stuck to the back of this photo, identifies the date of the picture as December 11th 1942.

Spitfire throughout the war, many thousands of which were used during the combat 'sweeps' over France.

The basic Spitfire Mk.IX was produced in several different variants depending on the altitude rating of the appropriate Merlin engine. These were:-

**F.IX:** Merlin 60, 63 or 63a with 'C' wing as already noted.

**LF IX:** Merlin 66 armed as F.IX (often had clipped wings).

**LF IXc:** Merlin 66, two 20 mm. cannon with 120 rounds and two .5 in. Browning machine guns with 250 rounds, clipped wings.

**HF IX:** Merlin 70, armed as F.IX (some aircraft

had larger span wings but these were later changed to standard). HF IXe, Merlin 70, armed as LF IXe.

Since the parts of the Rolls Royce/Packard Merlin 60 series engines were not interchangeable with their British counterparts, so they were redesignated Merlin 260 series. Spitfire IXs fitted with these engines were redesignated Mk.XVI, the sub types were the same as those for the IX although the vast majority of these were produced as LF XVIe (later these had cut down rear fuselages and rear vision hoods. The total number of Mk.XVIs built, was 1,054. Early production aircraft had short carburettor intakes; later aircraft and all Mk. XVIs had Vokes filters with large intakes.



Restored Spitfire Mk.IX taxis back to its parking spot during The Flying Legends air show. 'Tail-Rider' keeps the rear end firmly on the ground.

## SPECIFICATION

### DIMENSIONS

**Wing span:** 36ft 10in. or 32ft 7in. area 242 or 231sq. ft.

**Length:** 31ft. lin. or 31ft. 4.5in. (later rudder)

**Tail span:** 10ft. 6in.

**Tail Area:** 31.46sq.ft.

**Fin and rudder area:** 12.73 sq. ft. or 14.5 sq. ft.

**Height:** 11ft 5.5in.

**Height tail down:** 12ft 7.75in.

**Prop dia.:** 10ft. 9in.

**Wheel track:** 5ft. 8.5in.

### PERFORMANCE

**Max. level speed at 25,000 ft:** 408 m.p.h.

**Max. level (sea level):** 312 m.p.h.

**Normal Cruising speed:** (20,000 ft.) 324 m.p.h.

**Rate of climb:** 3,950 ft. min.

**Climb to 20,000 ft:** 5.7 min.

**Service ceiling:** 43,000 ft.

**Stall speed (clean):** 86 m.p.h.

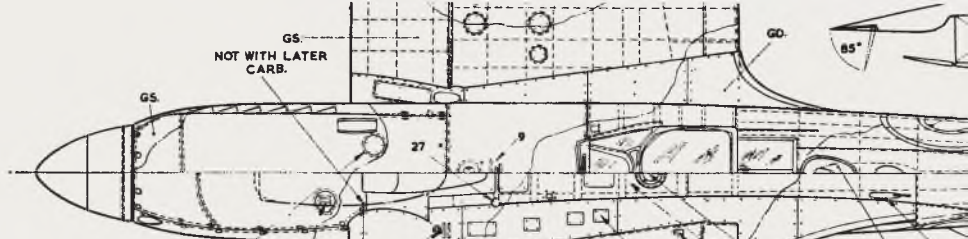








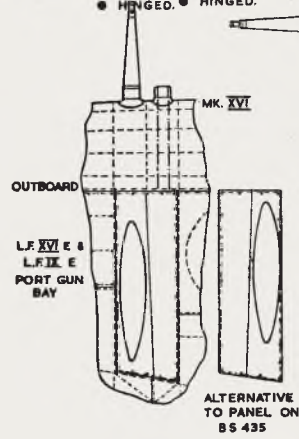




NOTES:-

A/C ARE MATT OVER ALL THEN WAX POLISHED.  
 ALL CAMOUFLAGE DIVISION SPRAYED.  
 ENTIRE UNDERSIDE U/C & U/C WELLS GM  
 611 SQDN CODE LETTERING GI.  
 SERIAL B.  
 A/C OFTEN OILY & SHOWING BARE METAL THRO' DOPE IN PLACES.  
 X PORT ONLY.  
 © ST'BD. =

\* HINGED & SPRUNG.  
 ● HINGED. ● HINGED.



X 8 WITH EARLY CARB. 6

GM 13 ©

30

4.

30

5.

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©

5.

5.

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X

Y L.E. STRIPE

GD.

GS.

GD.

GS.

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3.

A' LIGHT

X & © OTHER PANELS © ONLY.

28 X

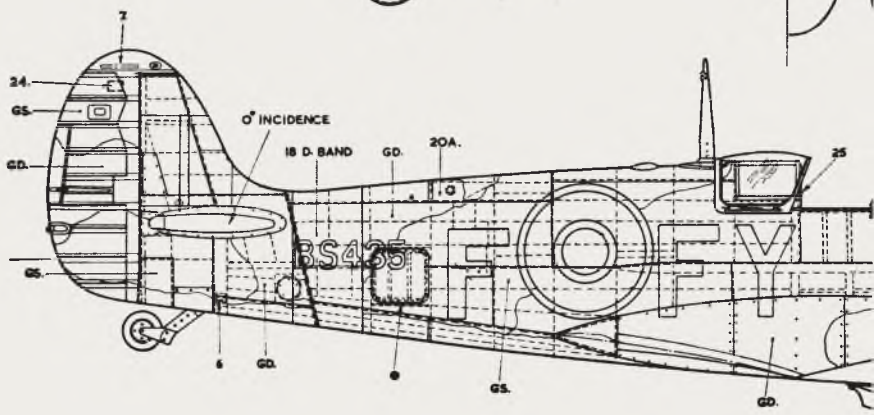
X WINGROOT

BR.18.

X.5

27.

(A) (B)









**1** View from the rear shows how the rear fuselage top deck tapers to an almost 'razor-back' shape just ahead of the fin.

# SUPERMARINE SPITFIRE MK.IX

CLOSE-UP SURFACE DETAIL IS WHAT MAKES A MODEL SPECIAL

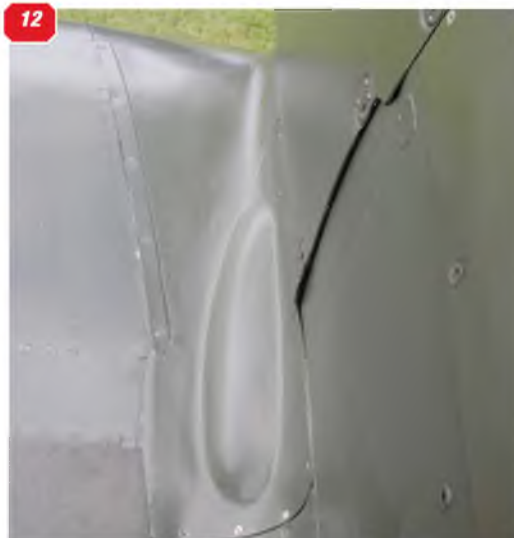


**2 & 3:** Two further views of the fuselage rear top deck that illustrate the razor-back apex as it tapers to the fin leading edge. Note also the surface skin overlaps - panels not butt-edged. **4:** Much of the fuselage panel rivetting on the Spitfire is dome-head type.





**5:** Centre-line air scoop under the engine cowl. **6 & 7:** The concave curvature of the wing-to-fuselage fairing underside is an important feature to replicate in a model. **8:** The wide sweep of the wing-to-fuselage fairing. **9:** The Spitfire Mk.IX was the first of the series to use a symmetrical arrangement of air intakes under the left and right wing panels. **10 & 11:** Surface bulges and fairings on the wings. The inner one accommodates the retracted mainwheel, the outer one fairs over the 20mm Hispano cannon. **12:** Bulge on the wing root fairing at about 20% wing chord.







**13 & 14:** The outward retracting main undercarriage leg and wheel well fairing, also showing the outer face of the main undercarriage wheel.

**15:** Inner face of the main undercarriage wheel.

**16, 17 & 18:** The non-retracting tailwheel unit. The bottom edge of the rudder seems not to follow an uninterrupted curve, but that may be the effect of fabric covering.

**19, 20 & 21:** The exhaust manifold and surrounding surface panels.

**22:** View of the engine cowl underside, also showing the four blade propeller. The spinner shape is more pointed and longer than that of the early Marks of Spitfire and is a distinctive part of the Mk.IX's fuselage profile.





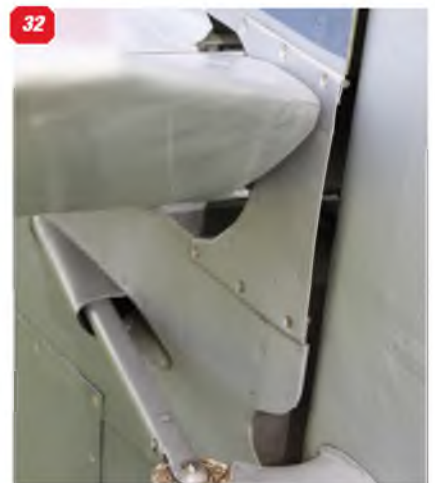
**23 & 24:** Two views showing panel line details on the nose section ahead of the cockpit. Note that panels overlap each other.

**25:** Fuel filler cap on the top of the cowl, ahead of the cockpit windscreen.

**26:** Hatch to electric charge point on the rear left side wing-to-fuselage fairing.



**27:** Complete fin and rudder, showing trim tab linkage and tail light. **28:** Rudder linkage and control horn, left side of rudder. **29:** The shape of the aerodynamic balance at the tailplane tip identify this aircraft as a late example of the Mk.IX. See scale drawing elsewhere in this issue for comparison. **30:** Aerodynamic balance at the top of the rudder. **31:** Trim tab linkage and fairing on the upper face of the elevator. **32:** This view shows the gap in the fuselage skin through which passes the elevator joiner.







**33 & 34:** Two views of the pressed metal tailplane fairing cuff. **35:** Close-up of the rudder trim tab and the tail light. **36:** An even closer look at the rear tail light. **37:** "Watch you Six"! The Rear-view mirror, also showing the cockpit winscreen framing.



**37**





**38-41:** Cockpit frame, also showing the recessed runner for the rearward opening canopy.

**42:** Further close-up of the windscreen frame.

**43:** Lower edge of the cockpit canopy frame.

**44:** Pilot's eye view of the rear-view mirror and the rear windscreen frame.

**45:** Cockpit instrument panel and right front cockpit side. Plenty of detail to replicate here!

**46:** More detail of the cockpit right hand side.

**47:** Bottom right of the cockpit well. Note rudder control pedal.

**48:** Pilot's eye-view of the cockpit frame showing the internal frame housing for the armoured windscreen panel.

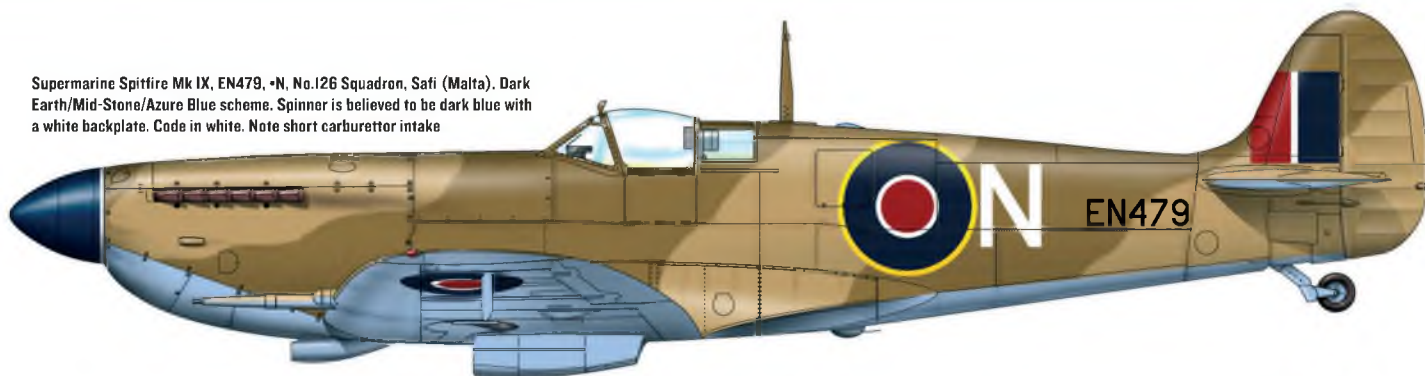
**49:** Cockpit rear, showing the pilot's headrest.





# SPITFIRE MK.IX FLYING COLOURS

Supermarine Spitfire Mk IX, EN479, +N, No.126 Squadron, Safi (Malta). Dark Earth/Mid-Stone/Azure Blue scheme. Spinner is believed to be dark blue with a white backplate. Code in white. Note short carburettor intake

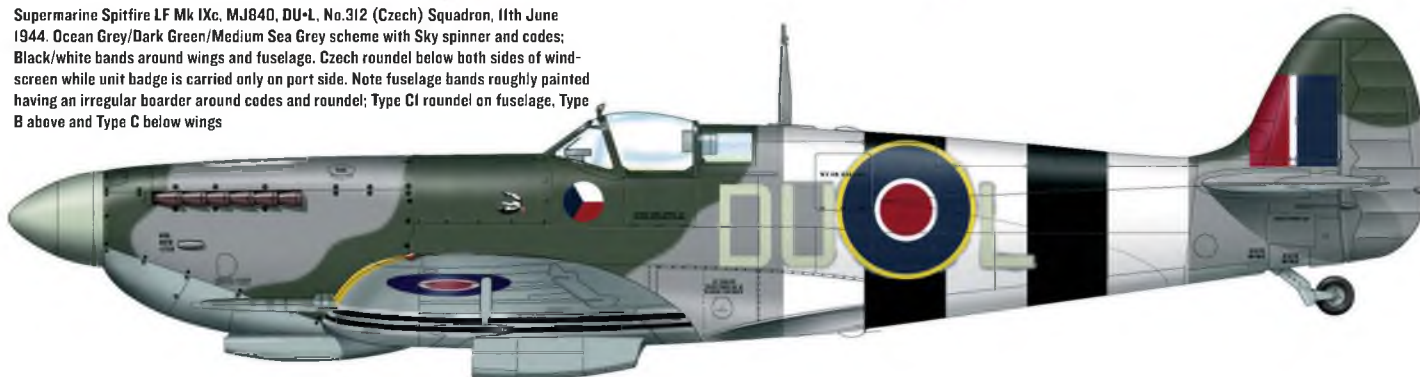


Supermarine Spitfire Mk IX, FU-Z, No.453 Squadron, Ford, June 1944. Ocean Grey/Dark Green/Medium Sea Grey scheme with black/white stripes around wings and fuselage; Sky spinner, codes (those on bands thinly outlined in black) and rear fuselage band



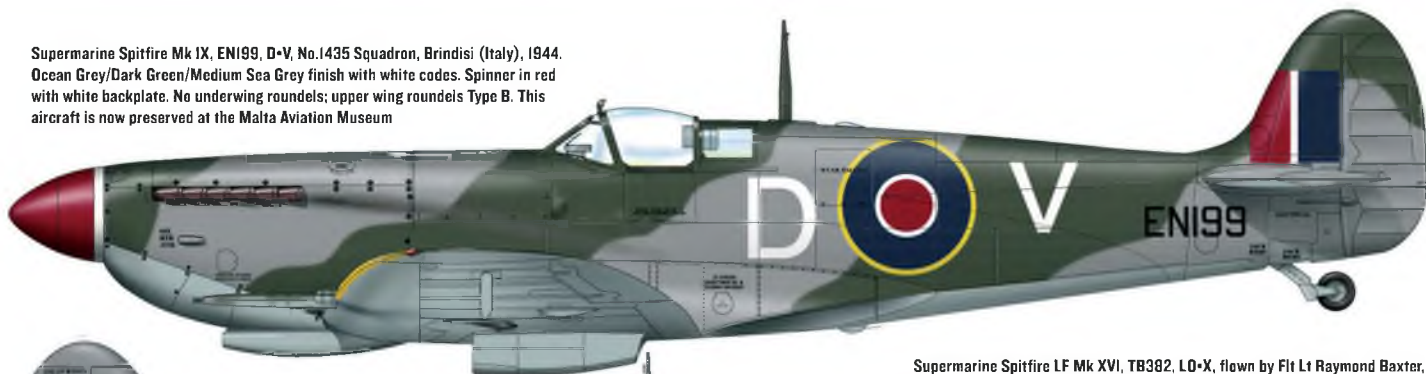
Left: Typical upper and lower surface colours and markings for Spitfires Mk IX/XVI, including D-Day white bands around the fuselage and wings; note yellow wingtip leading edges

Supermarine Spitfire LF Mk IXc, MJ840, DU-L, No.312 (Czech) Squadron, 11th June 1944. Ocean Grey/Dark Green/Medium Sea Grey scheme with Sky spinner and codes; Black/white bands around wings and fuselage. Czech roundel below both sides of wind-screen while unit badge is carried only on port side. Note fuselage bands roughly painted having an irregular boarder around codes and roundel; Type CI roundel on fuselage, Type B above and Type C below wings





Supermarine Spitfire Mk IX, EN199, D-V, No.1435 Squadron, Brindisi (Italy), 1944. Ocean Grey/Dark Green/Medium Sea Grey finish with white codes. Spinner in red with white backplate. No underwing roundels; upper wing roundels Type B. This aircraft is now preserved at the Malta Aviation Museum



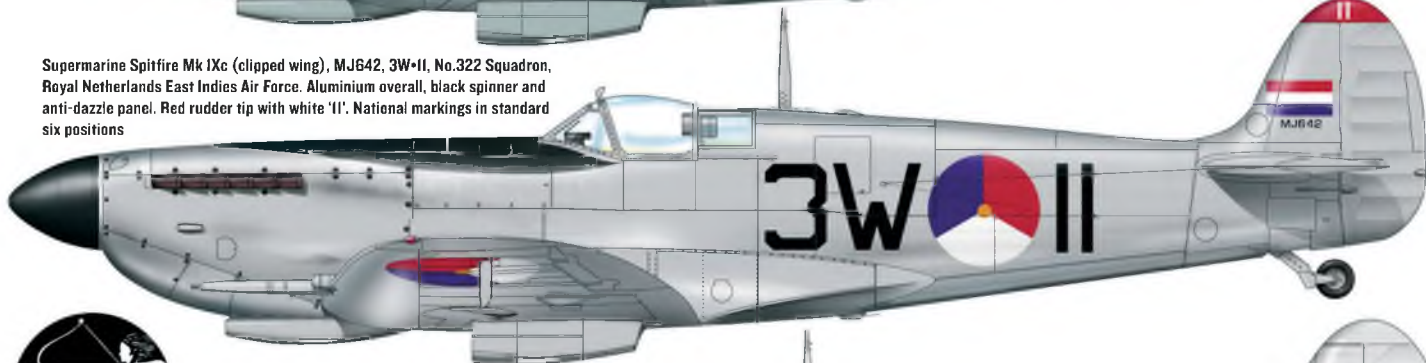
Supermarine Spitfire LF Mk XVI, TB382, LO-X, flown by Flt Lt Raymond Baxter, A Flight, No.602 Squadron, 1944. Ocean Grey/Dark Green/Medium Sea Grey finish with Sky codes, spinner and rear fuselage band; Night serials



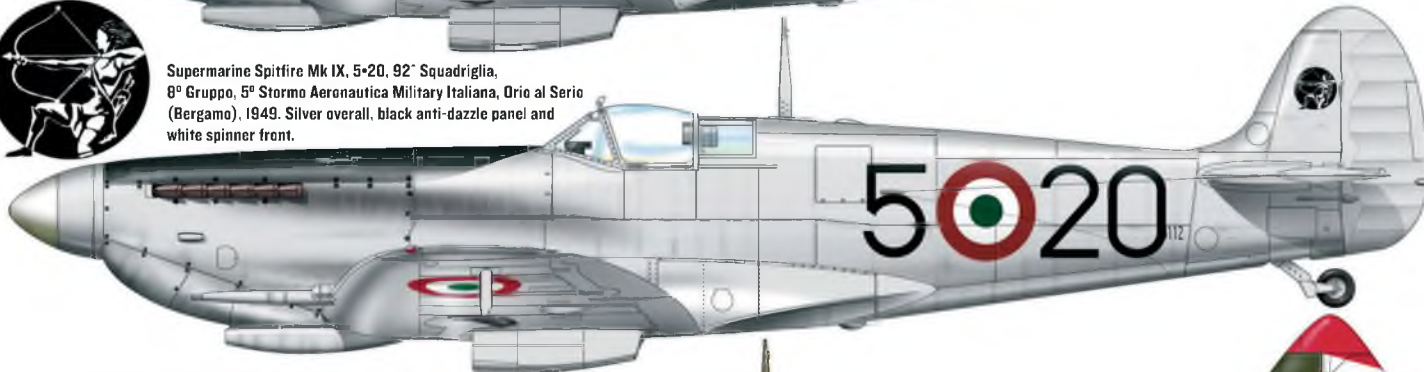
Supermarine Spitfire Mk XVI, TB991, GE-L, No.349 'Liege' Squadron, Aviation Militaire (Belgian Air Force). Ocean Grey/Dark Green/Medium Sea Grey finish with red spinner; Sky codes and Night serial. Roundels in six positions; 'Liege' in white on engine cowling



Supermarine Spitfire Mk IXc (clipped wing), MJ642, 3W-II, No.322 Squadron, Royal Netherlands East Indies Air Force. Aluminium overall, black spinner and anti-dazzle panel. Red rudder tip with white 'II'. National markings in standard six positions



Supermarine Spitfire Mk IX, 5-20, 92<sup>a</sup> Squadriglia, 8<sup>o</sup> Gruppo, 5<sup>a</sup> Stormo Aeronautica Militare Italiana, Orio al Serio (Bergamo), 1949. Silver overall, black anti-dazzle panel and white spinner front.



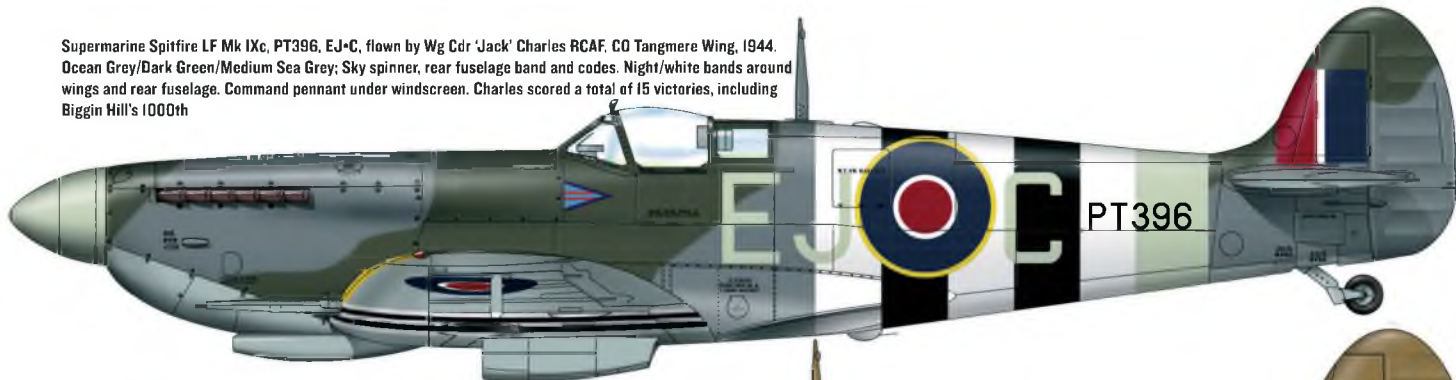
Supermarine Spitfire LF Mk IX, 2013, -18, No.101 Squadron, Heyl Ha'Avir (Israeli Air Defence Force), flown by Ezer Weizman, early 1950. Dark Earth/Dark Green/Light Grey finish with national markings in six positions; white code, black serial





# SPITFIRE MK.IX FLYING COLOURS

Supermarine Spitfire LF Mk IXc, PT396, EJ-C, flown by Wg Cdr 'Jack' Charles RCAF, CO Tangmere Wing, 1944. Ocean Grey/Dark Green/Medium Sea Grey; Sky spinner, rear fuselage band and codes. Night/white bands around wings and rear fuselage. Command pennant under windscreen. Charles scored a total of 15 victories, including Biggin Hill's 1000th



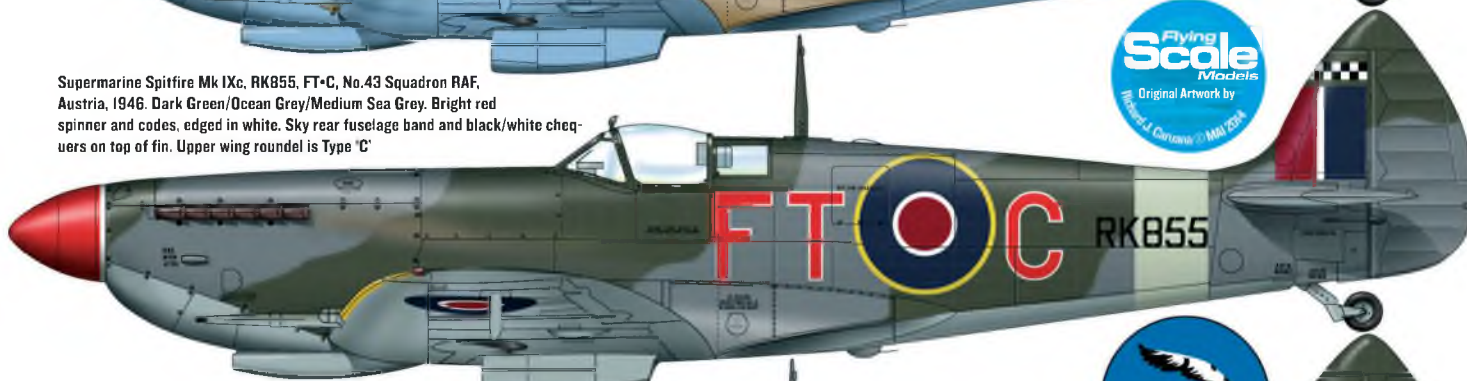
Supermarine Spitfire Mk IXc, EN315, ZX-6, No.145 Squadron RAF, flown by Sqn Ldr S. Skalski. Dark Earth/Mid-Stone/Azure Blue. Red spinner, red codes outlined white; Polish flag (reversed) and five white 'kills' below windscreen



Supermarine Spitfire Mk IXc, EN199, HT-U, flown by Flt Sgt E. Artus, No.154 Squadron, Ta' Qali (Malta), July 1943. Dark Earth/Mid-Stone/Azure Blue. Night spinner, white codes. Artus was credited with a Bf 109 and a probable on 17 July 1943



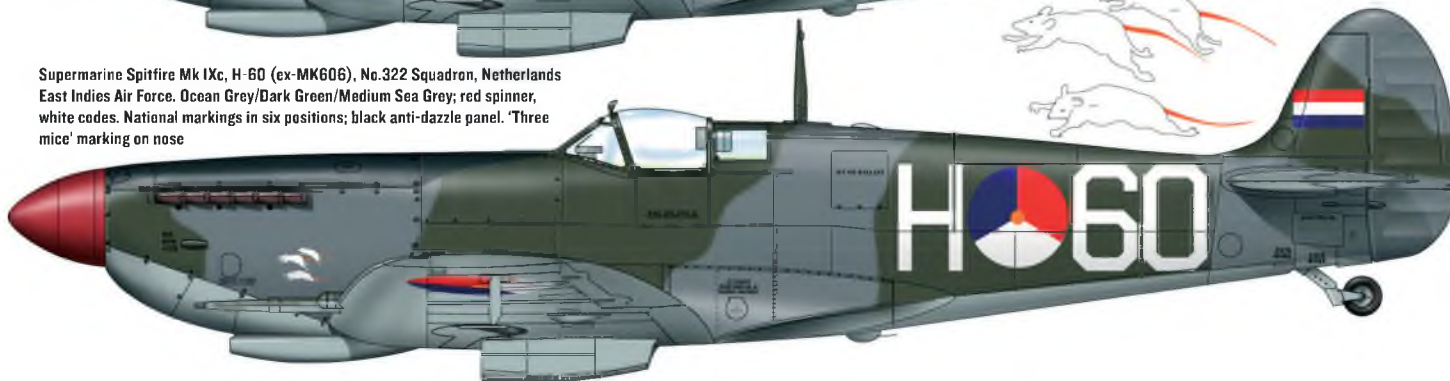
Supermarine Spitfire Mk IXc, RK855, FT-C, No.43 Squadron RAF, Austria, 1946. Dark Green/Ocean Grey/Medium Sea Grey. Bright red spinner and codes, edged in white. Sky rear fuselage band and black/white chequers on top of fin. Upper wing roundel is Type 'C'



Supermarine Spitfire Mk IXc, MK694, RY-E, No.312 Squadron RAF. Ocean Grey/Dark Green/Medium Sea Grey; Medium Sea Grey codes, Sky spinner and rear fuselage band. Czech roundel below windscreen and unit badge on engine cowling



Supermarine Spitfire Mk IXc, H-60 (ex-MK606), No.322 Squadron, Netherlands East Indies Air Force. Ocean Grey/Dark Green/Medium Sea Grey; red spinner, white codes. National markings in six positions; black anti-dazzle panel. 'Three mice' marking on nose



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# *Clipped Wing* **Piper Cub**

A 1/6th scale (plus 5%) electric powered model of the aerobatic version, designed by PHILLIP S. KENT







Over the years, like many other modellers I have admired the cute little Piper Cub. I was first drawn to the aircraft in my early radio days by the two excellent 1/6th scale kits manufactured by the American Sig Company. At that time, a 1/6th scale model was a popular size for a scale model of this type of aircraft.

Over the years models have grown, in fact my first Cub was a quarter scale, clipped wing Super Cub powered by a Laser V-twin. I then built a 1/6th scale Clipped Wing Cub for an O.S. 40 four-stroke five or six years ago. More recently I have built a full span 1/6th scale model powered by an O.S. 30 four-stroke. So why build another small clipped wing model of the Cub? Here is the answer.

During the past few years, electric powered models have made significant advances in performance. This has been due to improved motors and batteries and it was because of these changes that I decided to build another model of the Clipped Wing Cub. This time it would be electric powered and slightly bigger, in fact just big enough to fit in my current car, a Volvo C30.

The new drawings have included some modifications that I thought were needed to make the model more accurate and to accommodate the electric motor, speed controller and battery. I decided to use the same blue and white sunburst colour scheme as before, since I had the photographs of the full size aircraft and, believe it or not, enough blue and white cellulose to finish the model, left over from the earlier machine.

The model uses standard model aircraft construction techniques and materials. The fuselage is a basic box with formers and stringers added above the basic box. A semi sprung undercarriage is used along with a steerable tail wheel. The wings are in two pieces that plug into the fuselage using piano wire dowels and brass tubes. The wing section is flat bottomed and the wings are built directly over the plan. The tailplane is also in two pieces and uses, like the fin and rudder, the very practical core method of construction. The wing struts and tailplane rigging are functional items due to the model having a two-piece wing and tail. These items are from 16swg piano wire faired with balsa. They should not present a problem since once the model is assembled it will fit into most modellers cars without de-rigging. Access to the battery and radio gear is through the opening doors.

I like to get all the parts cut out first when building a model from a plan. My own preferred method is to trace out the individual parts on tracing paper and then prick through onto the balsa or plywood sheet.

There are not too many different parts for this model and producing them in this way is not an arduous task. *(Of course you can avoid this initial task by buying the laser-cut wood parts set offered with this article).* The wing ribs for the model were cut using a





plywood template, again an evening's work should see them all cut out and that includes the riblets. I always use a sheet of thin polythene, the backing from *Solartex* is ideal, over the drawing to avoid gluing parts and structures to it.

### Tail Unit

I like to start work on the tail unit as I can soon see something from my labours. The core method of construction is used along with a laminated outline. Cut the cores to shape, that is 3/16" smaller than the outline shape. Add the spars and ribs to one side with the core pinned to the board. Turn over and repeat the operation and then add the laminated leading edge from 3/16"x 1/16" balsa. Use soft 1/16th sheet balsa for the strip outline and use cyano as your adhesive, gluing on one strip at a time. A good result can be achieved using this method but if you are not convinced, use the three laminations glued with PVA and pin in place until dry.

When complete, sand the leading edges to a half round section. The elevator and rudder should be tapered towards the trailing edge with a rounded edge. Add the aluminium tubes to the leading and trailing edges of the tailplane using epoxy as the adhesive. The joining tubes will be fitted later to the fuselage. It is possible to use a less complicated one-piece tail plane that fits into a slot in the fuselage if you don't want to use the two-piece unit. I like to make a piano wire and brass sheet elevator horn silver soldered together, but a commercial unit can be used. Finally add the thin ply reinforcing pieces where the bracing wires are fitted.

### Wings

The wings are built directly over the plan. Pin the sheet trailing edge and the aileron spars, down onto the board. Slide the ribs into the correct position on the two spars and pin in

place on the trailing edge and aileron spar. 1/16" sheet balsa packing pieces are needed under the ribs at the front spar and under the ribs that fit up to the aileron spar.

The aileron can be built at this stage in the construction and when finished can be removed from the board. Again pack up the ribs where they attach to the laminated front spar.

Getting back to the wing structure construction, fit the front top spar into position and cyano in place. Pin the false leading edge in place and then, using cyano, glue the ribs in place. Next fit and glue the riblets in place on the false leading edge and top spar. The wing tip sheet balsa pieces should now be fitted.

Remove from the building board and complete the laminated tip using soft 1/16" sheet balsa. Add the bottom front spar and before returning the wing to the board. With the wing pinned to the board sheet the leading edge. Fit the aileron shroud noting the direction of the grain. Add the capping strips and top part of the sheet balsa trailing edge inboard of the aileron.

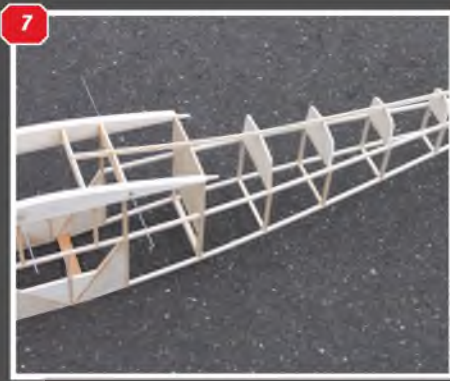
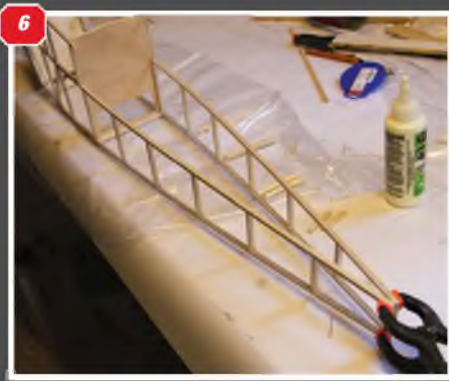
Remove from the board and add the bottom leading edge and capping pieces before sanding to the correct section. Add to the aileron the scrap balsa blocks for the hinges. Note how the hinges fit and where the centre is. The aileron horns are made from GRP sheet. Fit in the position shown to get the correct movement from the individual wing mounted servos. Aluminium tube could be used to extend the Frise type aileron hinges if needed. Fit the ailerons making sure the work correctly and that they don't foul the shroud. Shape the leading edge and finally sand it to the indicated shape. Add the plywood pads that carry the strut attachment screws and the jury struts. Fit the wire dowels and finish the root sheeting, top and bottom. Finally sand down and add the root facing plywood rib and ply inside doubler for the wing retaining bolt. The inside doubler needs drilling and tapping out for the wing bolt after fitting the wing to the fuselage.

### Fuselage

Build two fuselage sides over the drawing using hard 3/16" square

**1:** First step of the fin construction, adding rib strips over the balsa centreline core. Component then turned over to add ribs on the other side. **2:** The first step of rudder construction is the same. **3:** Laminated balsa strip outline now glued and pinned in place. **4:** The finished, uncovered fin and rudder unit. **5:** Rudder horn, epoxy glued in place on the rudder leading edge, together with the steerable tailwheel control bracket, made from brass. **6:** Basic strip balsa fuselage sides, drawn together with the front fuselage formers and clipped together at the rudder post. **7:** Further view of the basic fuselage, one stage further on, with the rear top-deck formers in place, together with the cabin/wing rib facings. **8:** Hardwood undercarriage mounting blocks in the bottom of the fuselage at the cabin area. **9:** Completed fuselage detail at the cabin area showing the boxed in roof and facing ribs. Note the scale bracing struts just behind the windscreen position. **10:** Front and rear main undercarriage wire struts are faired-in with balsa in-fill, as are the cabin sides between the diagonal fuselage side spacers. **11:** Scale cabin access door on the right (starboard) fuselage side. **12:** Another view of the uncovered fuselage at the cabin area, showing the wing rib shaped end plates that butt to the wing panels when the latter are mounted to the fuselage.





balsa. Note that the opening door is on the right hand side and that the cabin frame for the door and the door frames are from spruce. Fit former F4 in place, join at the stern post and then add the rest of the cross pieces to complete the basic box. Fit the remaining formers and stringers making sure that the fuselage remains true. Note that the top central stringer is a lamination of two 1/8" square strips of hard balsa.

Fit the beech undercarriage mounting blocks and the brackets for the struts and tail rigging. The undercarriage is from

piano wire and the drawing gives the actual lengths. Fit the wires into the grooved pieces of beech and then bind with copper wire and soft solder. The 1/16" ply bottom plate holds the undercarriage in place. Make up the battery box from liteply and birch ply. Fit former F1 to the box and then fit the unit into the fuselage. The outrunner motor on my model was front mounted on a plywood ring that was epoxied to former F1, but the suggested O.S. engine is rear mounted. Note the motor thrust line on the drawing. This gives the required amount of down thrust that is

needed and the motor should be fitted accordingly. The model also has some right side thrust, try 2° to start off with.

The cowl was made up from two pieces of Litho plate. Fit two spruce or bass mounting strips between F1 and F2. A block balsa nose was used on the prototype model. A simple dummy engine was fitted. There are details on the drawing but look at photographs of the full size aircraft too. The rocker covers were moulded from plastic, see the photographs.

The wing mounting tubes should be fit-

12









**13, 14 & 15:** Three views of the steerable tailwheel unit, linked to the rudder by shaped brass filler arm and coil springs. Latter help to ease shock loads to the rudder servo. **16:** The first lamination of the horizontal tailplane leading edge being added to the structure. Water-soaked strip is eased into curvature used a more substantial balsa strip. **17:** All leading edge laminations added and rounded to profile. **18:** Tailplane, built over sheet balsa centre core. **19 & 20:** The engine top cowl panel on the prototype model was shaped from litho plate, complete with dummy engine cylinder covers. **21, 22 & 23:** The dummy engine rocker box covers on the prototype were moulded in plastic sheet by the 'Plunge' method using a former and plug. The heated plastic sheet is forced through the shaped hole in the plywood former by the shaped plug. **24, 25 & 26:** A strip of moulded rocker box covers which are finally painted and then separated from the strip.

ted using the wing wires as a template. Epoxy them in place in spruce joiners after making sure that the wings are set at the same angle of incidence. The two aluminium cabin tubes should be fitted as shown in the cabin area and glued with epoxy. Note the shape of the wing root blocks that are attached to the inside of the fuselage root ribs. The opening doors are essential for this two-piece wing model. The wing retaining bolts can be accessed through the doors as can the battery that powers the model. Construct the doors as shown on the drawing. I used small Robart hinges for the top and bottom parts with small magnetic hinges to hold them closed.

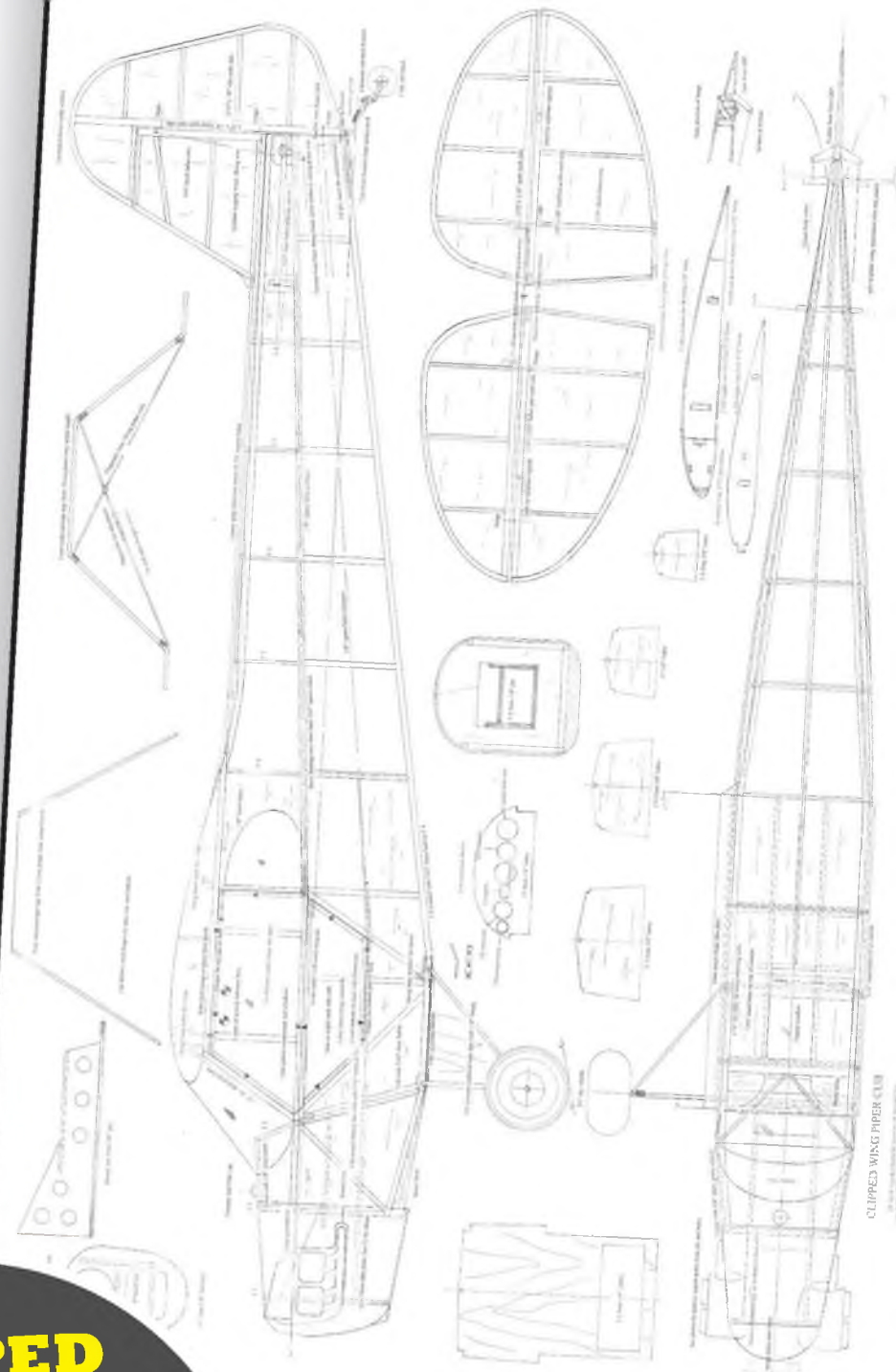
### Finishing

The radio gear should be installed before covering the airframe. The servos for the rudder, elevator and throttle were fitted at the rear of the cabin with the receiver forward of them. Individual servos were fitted in the wings for the ailerons.

The elevator and rudder are driven by pushrods that actuate cranks for the elevator reversing push rod and rudder closed loop system. The battery fits into a purpose built box that enables the speed controller to fit above it. I hold the battery in place with a block balsa retainer and a cap head bolt that is easy to fit and remove.

Information is supplied on the drawing for an instrument panel. Obtain a kit of dial faces to the approximate size. Cut the panel from thin ply or plasticard and cut the holes to suit the dials. Give the dash a coat of matt black paint and then attach a clear plastic sheet behind. Next fit the individual dial faces held in place with masking tape. The dash board can then be permanently fixed in place. A dummy pilot and seat will finish the interior of the cockpit off.

The model was covered in natural *Solartex* and finished with a coat of clear shrinking dope before adding the tissue rib tapes. The tapes do add a little more realism to the model but they are



## CLIPPED WING PIPER CUB (PLAN FSM/493)

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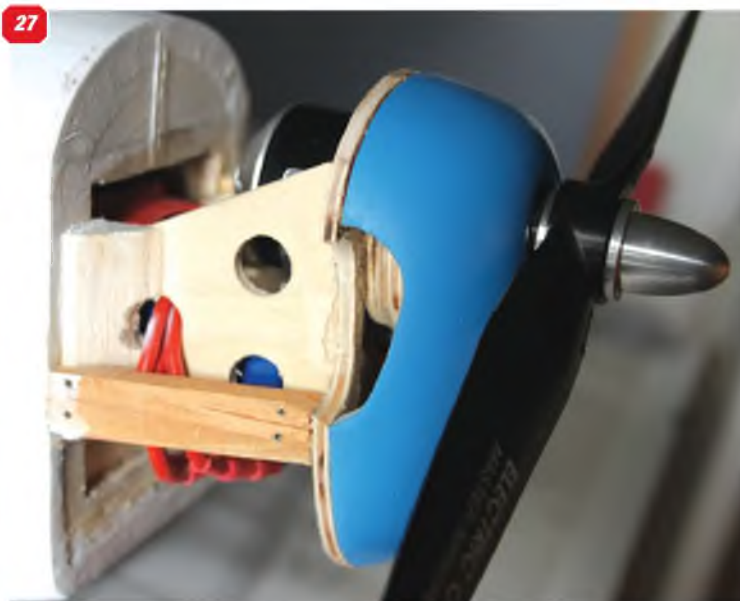
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27



28



29



not necessary; put them on if you wish, it's up to you.

A second coat of dope was added before the model was sprayed with white cellulose paint. The sunburst pattern was masked off in stages and again sprayed using cellulose. The struts are from piano wire with brass tubes for adjustment. The full size Piper Cub has about 2° of washout on the wings. Use the struts to incorporate this. After final fitting they are covered with balsa and sanded to an aerofoil section.

Jury struts should be fitted and they should be soldered to the struts and plugged in to the ply plates in the underside of the wing. The tail plane rigging is from 18swg wire with flattened and bent brass tube ends. 12BA nuts and bolts hold them in place.

A steerable tail wheel was made for the model using spring steel with a bearing for the swivelling wheel assembly. The photographs give an idea of how it was done.

All the glazing was done in

clear plastic sheet. I used discarded packaging and it worked well. A paper pattern should be made for the windscreen before cutting the clear plastic one. When the correct shape is obtained hold the windscreen in place with masking tape after applying a thin coating of epoxy to the cabin top part and the sides. When dry mask off the lower part of the screen and apply a fillet of epoxy and filler using a finger dipped in cellulose thinners to smooth it out.

I chose the Hazel Sig Cub colour scheme because I knew that I could get decals and photographs of the aircraft. Don't worry about the size no one will know that the decals are slightly small. If you want a decal set try *Pegasus Models*, they might have photographs too.

## Wheels

There are commercial scale Piper Cub wheels available for 1/5th scale, 1/4 scale and 1/3rd scale models. I have not been able to find any to suit a model of 1/6th

**27, 28 & 29:** Three views of the electric motor in its mount. Prototype model used an OS MG 9530 motor controlled from a Turnigy 60A BEC speed controller, drawing power from a three or four cell lipo pack.

**30 & 31:** For the prototype model, designer Phil Kent dressed the instrument panel using the Panel Kit offered by Scale Aviation.





30



31







scale or near. In the end I decided to have a go at making some. The hubs are from aluminium with the tyres made from neoprene foam. Obviously a lathe is required for the hubs but the tyres could be spun in a drill.

#### Power train

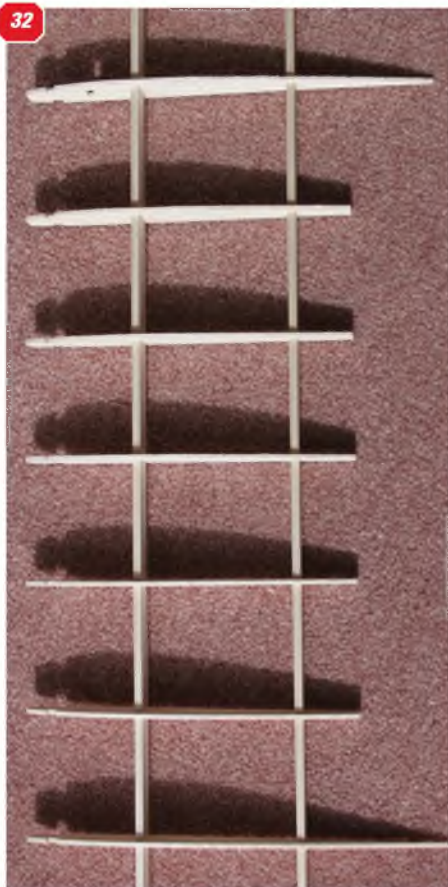
I used the following:

**Motor:** OS MG 9530, OMA 3825-750,  
**Speed Controller:** Turnigy 60A BEC  
**Power supply:** 3 or 4 cell Lipo Battery

#### Flying

The model made its first flight July 2013. I only had to add some right rudder trim and two notches of down elevator to get the model just about right. During the late

summer I have had more time to explore the flight capabilities and have been more than satisfied with the performance, in fact I consider it to be one of the best flying models that I have designed and flown in recent times. For a small model it is easy to fly, handles a decent breeze and it goes where you put it. It also has a very good aerobatic capability, as you









## TECHNIQUE

Inevitably, the cockpits of aircraft from the earlier periods of aviation have fewer instruments and items of cockpit furniture.

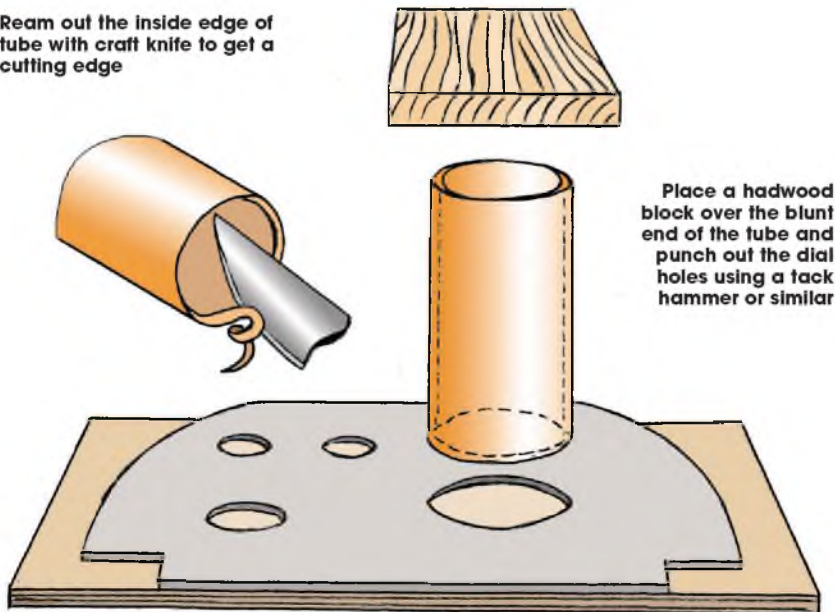


# ICING ON THE CAKE... COCKPIT DETAILING

## A GUIDE TO TECHNIQUES FOR COCKPIT DETAILING: PART 2

Fig. B

Ream out the inside edge of tube with craft knife to get a cutting edge



Place a hardwood block over the blunt end of the tube and punch out the dial holes using a tack hammer or similar

### Scrap box treasures

Fabrication of cockpit components can be greatly aided by an enormous scrap box. Never pass up a broken household item like a wall plug, a ballpoint pen spring, or anything else mechanical that includes small components. Other people's junk can be the perfect starting point for a cockpit item, or any surface detail for that matter. As a last resort, you could actually buy things - a browse through well stocked hardware stores can be very rewarding - those racks of small pre-packed items can be a great starting point when creating an individual cockpit item, if you can allow your imagination to flow ... you'll only know it, when you see it!

Simple objects, when taken out of their normal context, can be very promising. A cut-down toothpaste tube cap, for example, can be fashioned into an excellent knurled trim control.

Old cigar tubes, plastic 'bubble' packaging, card, scraperboard, cocktail sticks, silica rubber, celluloid from new shirts (moulds very easily with a little heat), aluminium and brass tube of all sizes, can all be useful.

Black card makes very good panels and electrical 'switch' boxes. It needs no





Although partially obscured due to photography through the cockpit canopy, the crisply detailed instrument panel on this Beach T-34 Mentor benefits from large scale.



Another example of an open cockpit type, this 1/4 scale Fairchild PT-19 features a realistic cockpit coaming and tubular steel airframe members in the cockpit sides are replicated to good effect.

preparation or painting, but needs backing with balsa or foam plastic to prevent warping.

### Dials and knobs

When one thinks of cockpit detail, one immediately thinks of the instrument panel, which tends to be the most important and impressive part of a cockpit and very much a focal point.

'Depth' is what produces the right effect. Nothing looks less realistic than dial images that have simply been stuck flat to the front of a black panel.

The black card mentioned can be as good a place to start as any, because it is so easy to work with. From there, it's back to the bits box for steel and brass tubing from 0.25" to 1" diameter. A broken transmitter aerial can be very useful here because it yields tube of various diameters.

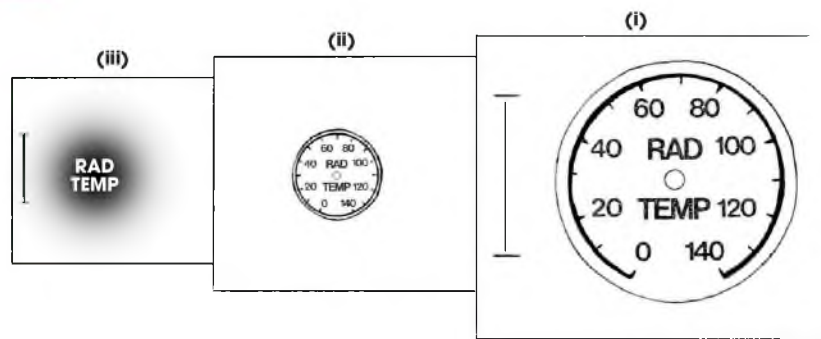
Start by making a punch for each of the holes for the instrument bezels. You'll need a range to suit the diameters of the individual dials. Sharpen the tube ends with a craft knife as shown in Fig. B, carving the inside edge with a slicing action. Even steel tube can be sharpened with a knife used this way, then finished with a fine file, on the outside face.

To hole the card, place it over a piece of scrap ply, put a wood block over the top, and administer a smart tap with a hammer. The result should be a neat, crisp hole. If at first you don't succeed - practise! The technique is just as effective with thin ply and even light gauge aluminium or litho plate. (Fig. B). For balsa, a twisting action gives a cleaner cut.

One method of producing dial faces to finished size is to scribe them directly onto scraperboard with a needle. However this is by no means a very good technique. A better effect can be achieved by scribing onto the scraper board (buy it from art shops) at several times the required size and then reducing to size by photography or desktop scanning.

Better still, is to draw enlarged dial images, in black ink onto white card, using an ordinary pen and various sizes of draughtman's pens. The drawings can then be photographed (or scanned). A reversed negative is then made and from this, reduced prints to the desired size are made. It is much easier to work in ink on the white card than it is on scraperboard. Freehand letters and numbers can be difficult to

Fig. C.



- (i): draw the basic instrument dial 3 times final size onto card.
- (ii): reverse negative to final size - black and white areas same as the original drawing (i).
- (iii): black and white areas are reversed out to give final effect.

Fig. D.



One example of a cockpit placard. Edges should be silver.



Draw letters with pen on aluminium - make dots initially and then joint up.

Fig. E.

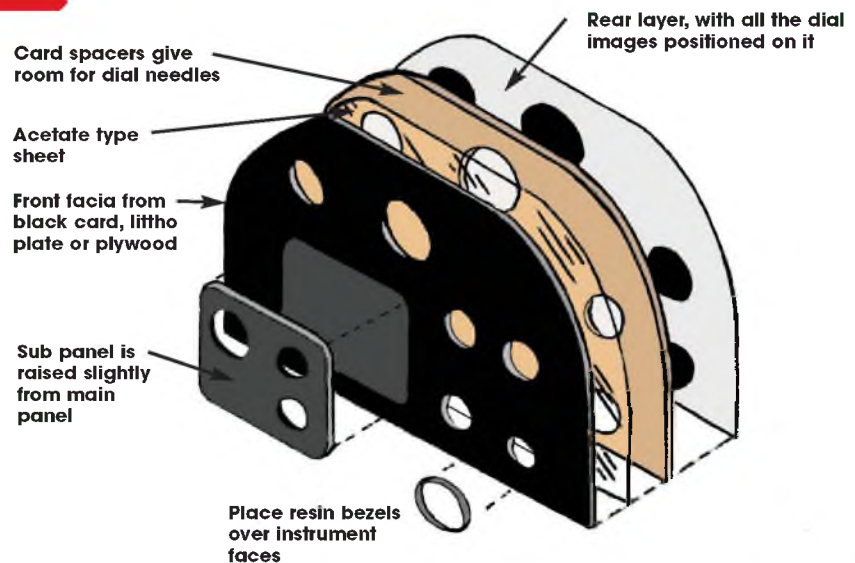




Fig. F.

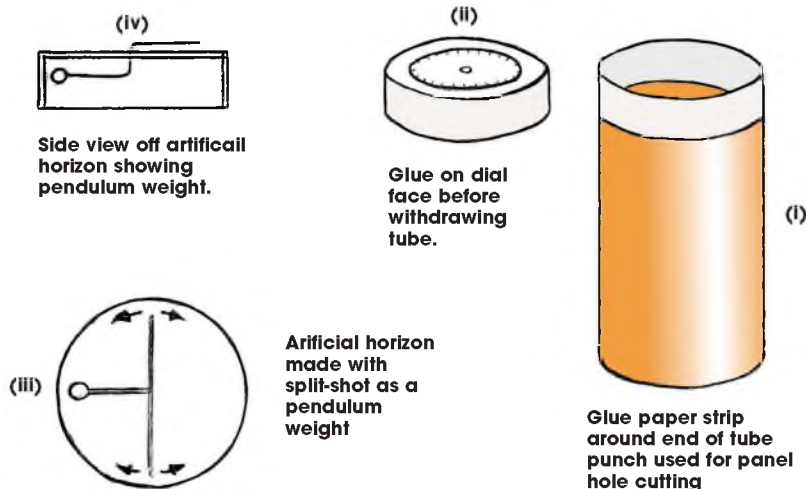
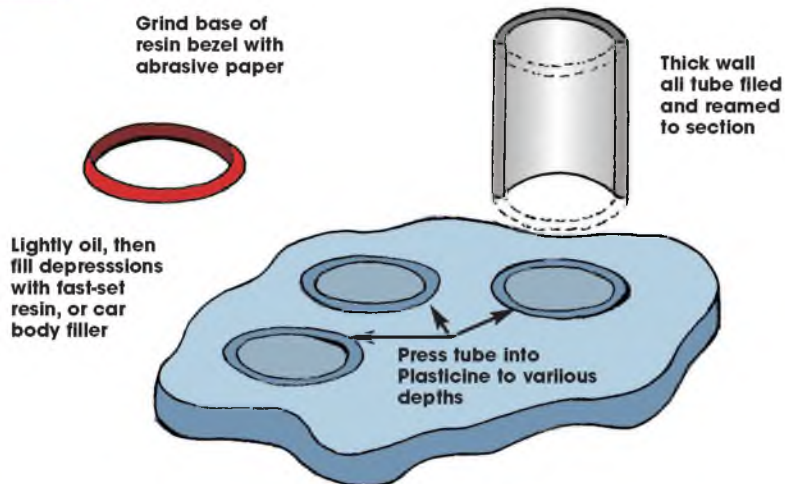


Fig. G.



make uniform and need some practise, but any imperfections will be minimised when the drawing is reduced to the required size. (Fig. C).

### Placards and notice panels

The cockpits of many aircraft carry various warning panels and information prompts to assist the pilot. These can be made in the same manner as the instrument dials. Such panels are often in black and silver, which can be replicated with thin aluminium, drawing the lettering in with a mapping pen. These have to be done actual size and, instead of using pen strokes, the letters may be applied in a series of dots. This seems to give a lot more control over the letter shapes. (Fig. D).

The dial images can now be mounted behind the black face panel, either singly or all on a single backing card. A spacer, suitably punched, is interposed between the front panel and the clear acetate sheet that forms the glass faces of the dials. This imparts the effect of depth and will be needed if you wish to apply the effect of 'working' instruments, for which the needles or pointers can be made from the white edges of your prints, litho plate, aluminium, or wire.

Prior to final assembly, check which dials are coloured. Some have red or yellow segments and some have phosphorescent green and the effect can be reproduced by drawing over the entire dial with a green spirit marker (not a water-based marker, those fade), and wiping off the surplus quickly with a damp cloth. The result can be very lifelike. (Fig. D).

'Working' instruments demand special innovation. Small pendulums from split shot or Plasticine, can impart a magical flicker of lifelike movement. The back of the instrument will be needed to be slightly deeper to accommodate the pendulum, and such instruments are better mounted individually than with the rest. (Fig. E).

### Panel fronts and bezels

These can be the most difficult features to



Military Types, even when they are just basic trainers like this CAC Winjeel by Noel Whitehead of Australia, tend to have much more complicated cockpits that civil aircraft of similar size. A vast amount of effort has clearly gone into this one - a real achievement.





Sometimes, cockpit detail is not actually in the cockpit! This is the rear-view mirror on the 1/3rd scale Bucker Jungmeister of many-times World R/C Scale Champion, Andreas Luthi of Switzerland.

make. Card, cut with the sharpened tubes is not effective. Nor do rings, cut from the ends of metal tubes by hand, give the correct effect. A small lathe is the answer, but the right effect can be achieved without recourse to a lathe using quickset resin.

Try this. Make a flat plate in Plasticine about 1/2" thick. Then, ream out a piece of thick-walled alloy tube of the correct diameter, to the correct cross-section.

Apply a film of oil to the sharpened end to act as a release agent for the resin and lightly press the tube end into the Plasticine (Fig. G). Do two or three impressions for each bezel, making these of varying depths. Into the impressions administer drops of fast setting resin, which will run around the groove and fill it just right. The resin may be coloured before application if you like.

Some light civil aircraft have nice simple instrument panels - like this Culver Cadet, but platinum blonde dolly birds tend to spoil the effect.

An alternative material that may be tried is car body filler. This needs to be worked into the grooves carefully to avoid bubbles, because it is too thick to pour. After the material has set, the rings are then placed, base down, on a sheet of glass paper and ground down to the required thickness, before colouring and then sticking in place. (See Fig. H).

#### No pins, please

The humble pin, by itself, is not much of an aid in replicating a cockpit in miniature. Where used, these tend to look just what they are. A possible exception are those pins that come with new shirts, which have moulded-on oval heads and can be quite passable.

However, pins can be the base or skeleton of an item in certain instances, by applying a small blob of filler compound on the

pinhead and then shaping with a file or sandpaper. Large knobs or switches can be done this way. (Fig. I).

For those seeking the ultimate detail, a working compass is a possibility. (Fig. J).

#### Lighting up

Working lights are amusing to make and some effective systems have been seen at World Championships and events like Top Gun. Proprietary systems are obtainable.

Cockpit lighting is another extreme of realism, and can be achieved, but also can only be observed when the model is on the ground. Landing lights can be activated in the same manner as low throttle glow-plug boosters, when low throttle and/or flaps are lowered.

#### Fiddly stuff

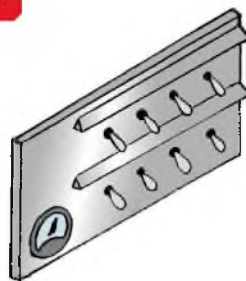
Fine pendant chain will simulate the chains

Fig. H.

In some cases, instruments pull out of instrument panel fascia and have mounting flanges as shown here. Round bezel is glued to an acetate square, then painted black before mounting.



Fig. I.



Typical dial knob - for positional switches like fuel tank dials

Cockpit side panels often feature banks of electrical switches. Panels can be formed with black card over balsa wood. Toggles etc. can be formed with cocktail sticks, plastic strip or suitably dressed up pins.

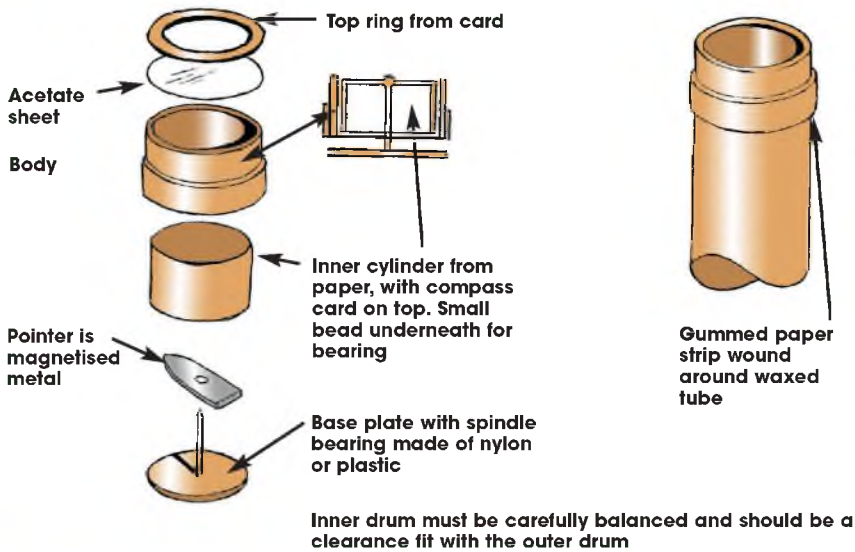
Pins, by themselves are not very convincing, but by applying car body filler, or resin/microballoon paste to the heads, realistic dummy toggles can be created.





Fig. J.

Operating compass



The modern homebuilt aircraft movement have produced a generation of small light aircraft that are all cockpit! The example here is the MCR 01 Club of Leon Capiod, with a gaping cockpit well that demands proper detail.

and use clear contact adhesive to glue it together. Then apply clear dope or banana oil all over, before giving it a coat of silver cellulose. The final application is an oil paint of the correct final colour, which can then be worked to simulate the scratching and wear of service use. A little fine dirt and a few oil stains, delicately done, complete the job.

The trick here is to use cellulose silver under the oil paint. Cockpit green can be made by adding a little matt black to matt yellow. Scratch the paint off with coarse glass paper and a sharp blade. (Fig. K).

Seats for civil aircraft types with their leather covered padding and cushions need a different approach. Blue foam carves and sands well. A layer of P.V.A. glue seals the foam after shaping. It is then sanded lightly and given a second coat. After that, the item can be painted without the paint attacking the foam. If in doubt, a layer of tissue helps to seal, and give a more dent-resistant surface.

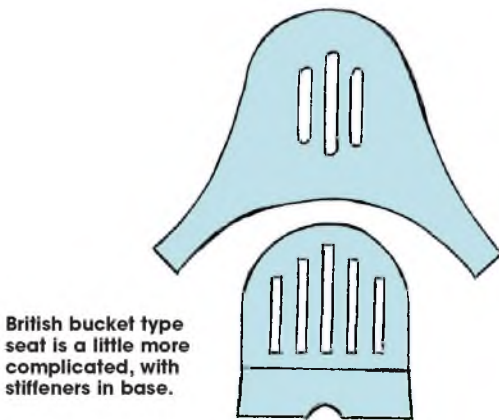
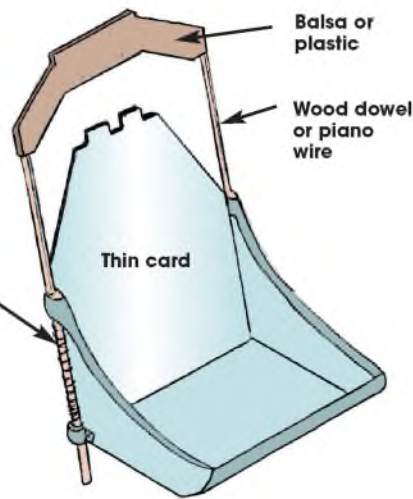
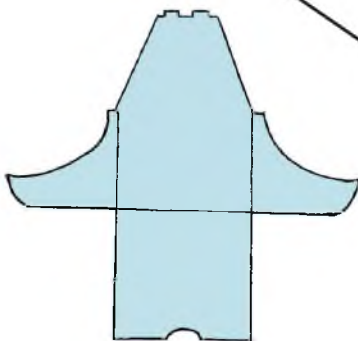
Matt or glass varnish overall imparts the effect of a leather finish and piping along seams and edges is done in twine or thin plastic strip. (Fig. K).

Seats for civil aircraft types with their leather covered padding and cushions need a different approach. Blue foam carves and sands well. A layer of PVA glue seals the foam after shaping. It is then

Fig. K.

Some military type bucket seats to USA design can be shaped from a single piece of card

Fine spring if appropriate to style of seat



British bucket type seat is a little more complicated, with stiffeners in base.

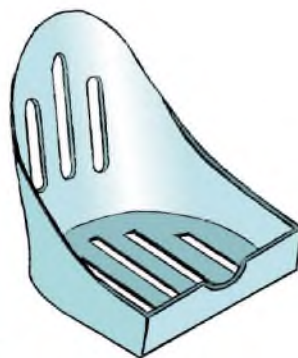
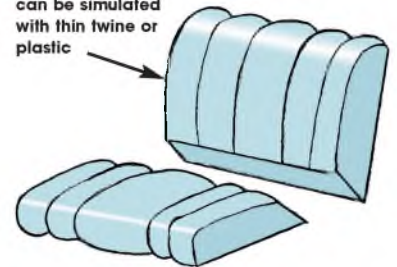


Fig. L.

Decorative piping can be simulated with thin twine or plastic



Civil aircraft type bench seat, made from blocks of foam. Carve and sand to shape, then coat with white glue and tissue to seal before painting.

used to secure certain items in the cockpit such as flare gun caps.

Zips on first-aid packs and such can be simulated by running two clock gears in close parallel lines on a piece of foil or soft plastic. The strip is then cut out and stuck behind the slit in the fabric so that the lines show. The tag is a piece of aluminium; drill the small hole, if there is one, before cutting

the tag. It will look real enough to pull!

### Are you sitting comfortably?

Seats are prominent fixtures in cockpits. Here, plain card is a good base material for the seats of military aircraft, in which the pilot sits on his parachute. A satisfactory metal finish can be achieved as follows.

Cut the seat pattern from thin, glossy card

sanded lightly and given a second PVA coat, after which, the item can be painted without the paint attaching the foam. If in doubt, a layer of tissue helps to seal the surface and give a more dent-resistant surface.

Matt Gloss varnish overall imparts the effect of leather finish and piping along seams and edges is done with twine or thin plastic strip (Fig.L).



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# THE QUIET ZONE

R/C SCALE ELECTRICS WITH  
PETER RAKE

**Y**es, that man is back again. All set to bother you with more electric flight ramblings. Anyway, after wandering slightly off course last time (a not totally unknown event), this month we definitely will be completing our look at future plan designs you can expect to see in these

hallowed pages. However, since there aren't that many more of them, I'll also probably end up rambling on about some of my new toys.

Toys? What am I saying? They are wonderful little electric powered scale models. Well, something along those lines at any rate. I tend to think of them more

as the light entertainment part of the hobby, but they are still worth investigating.

So, now you know what you can expect, albeit somewhat swathed in mystery, let's get the waffle out of the way. Has anyone else noticed how, after a nice mild winter with many suitable flying days, the weather has suddenly decided to take a turn for the worse? There I was, all prepared to get in lots of flying with my small models when the wind picked up to levels that prevent even much larger types taking to the air. Well, they'd take to the air well enough, even before you switch anything on and start the motors. All things considered, a definite incentive to stay in the warm and dry and get on with some building.

Now, although you may not actually be able to build these particular models (because you don't have the plans yet), they may just provide the inspiration for you to get on finishing off the models you are currently working on. Therefore, without further delay (Who said it was about time? Come on, own up.) Off we go into the realms of future plan articles.

## AT LONG LAST

Almost every time I asked for ideas of what to draw up next, there would be this little voice (figuratively speaking, since it was an on-line discussion) that kept piping up about a type well outside my normal comfort zone. Any of my regular readers will be only too well aware that my favourite area of interest ends not long after 1918, although I have been known to draw up more modern types from the 1920s.

The type Craig Johnston was requesting saw service in the Spanish Civil War, before being relegated to the roll of advanced trainer after being outclassed

**CRAIG'S MODEL SHOWS OFF THE PUGNACIOUS NATURE OF THE HE-51, AND JUST ONE OF THE ATTRACTIVE COLOUR SCHEMES USED ON THE TYPE.**





A very substantial looking model, Craig's He-51 sweeps by in a low pass.



by the opposing types. As you can see, definitely an aircraft of the 1930s, and much later than my personal era of interest. Almost invariably I work on the basis that I actually have to be interested in a type before I feel I'll do an adequate job of designing a model of said prototype. When you add in the fact that this particular prototype had a rounded fuselage, strange shaped nose and lots of fuselage stringers it isn't too surprising that I attempted to ignore Craig's requests at every opportunity. Well, Craig was nothing if not persistent and eventually I relented and agreed to draw up his 'dream' model for him.

By now you must be aware of how these things work. I agree to design a given prototype at the size and complexity that the prospective builder requests on the condition that he builds the prototype model, photographs the build and supplies me with some form of build notes upon which to base a construction article. Whilst this usually works out quite well in so much as the modeller ends up with the specific model he wanted and I get yet another plan feature out of it, it doesn't always go quite according to plan. Most requests are totally genuine and result in completed models for me to foist upon you, but just occasionally I draw a plan, send the plan files to the prospective builder and then never hear from them again. Oh well,

such is life. The plans are still there for when some kind soul does volunteer to build them. They cost me nothing other than time and usually get built eventually.

Anyway, enough of my woes, Craig was one of the good guys, who actually did a great job with his build, photographing the build and supplying notes in the form of an almost ready to use construction article. As a result, I've been able to add the Heinkel He51 (a pugnacious looking little biplane fighter) to the models you can expect to see in a future edition of your favourite modelling magazine. Well, I say little, but it isn't really that small at 54" wingspan. However, with a little playing around with the drawings (it's quite a chunky model) I've been able to arrange it onto six free plan size sheets. Yes, that does mean you'll need to buy three copies of FSM to get the entire plan and construction article, but I know you'd do that anyway so it's no hardship. Just think how much more it would cost you if you had to actually pay for the plans.

As I say, this is quite a chunky model, but an extremely interesting looking type. There are lots of colour schemes available and more than enough reference material around for you to be able to produce a really worthwhile model. There's certainly no denying that Craig did an excellent job of doing just that. The structure is quite intricate, with lots of interlocking parts and my usual 'shell' style

of construction used on rounded types. However, since I'm quite sure the publishers will be offering a nice set of laser cut parts to build from, none of that should be an issue. It may be intricate, and there may be laser cut parts available but none of that is to say you can't cut the parts by hand. I know 1/8" ply isn't the nicest stuff to cut but it's nothing a coping saw and a little patience won't get done. Similarly, although specifically designed for electric power (would I design anything else), there's nothing to prevent the more ingenious amongst us from converting the model to wet and smelly power systems. Those interlocking ply parts certainly make for a front end sturdy enough to withstand the starting stresses and vibration.

As the model is designed, Craig says she flies nicely and isn't short of power. Control response is nicely progressive and landings are good. At 25% expo the ailerons seemed a bit twitchy, but upping that to 40% smoothed things out nicely. He also used 40% on rudder and elevator.

Right at the outset Craig had asked if he could modify the bottom wings to include flaps, but he says that flight testing has proved they aren't needed.

#### **YET ANOTHER MOSKA**

There's just something about the Moska MB bis that really appeals to me. It's quite a quirky looking little aircraft with some





Here you see the 'shell' style fuselage in its' early stages. Upper and lower halves can be almost completed before they are joined.



Yes, there is rather a lot of wood in there. Not, perhaps, a model to be undertaken lightly - but well worth the effort.

really interesting features. For a start it doesn't quite seem to be able to make up its' mind if it's a parasol or a shoulder wing type since the wings are mounted on very short struts. Add in that strange shaped tailplane and twin rudders and it's definitely something out of the usual run of WW1 fighters.

I built a 36" version of this type several years ago and it flew really nicely. The small rudders proved more than adequate without the need for enlargement and it was a stable, pleasant to fly little model. So, when I was searching around for a simple to build, inexpensive model to equip, I really didn't take too much persuading to enlarge the Moska drawings to 45" span.

As is often the case when I draw up something on a whim, the completed plan then spent some time languishing in the bowels of my computer. An on-line request for prototype builders, accompanied by a list of available designs, prompted Clancy Klein to

volunteer to build the model for me. Darned handy, this interweb thingy.

The model itself is far from difficult to build (remember, I designed it with the intention that I might build it myself so simple is good), being all pretty straightforward modelling. Controls are restricted to the basic three channels of rudder, elevator and throttle but there's no real reason why the more enterprising amongst us (which lets me out) shouldn't be able to arrange wing warping too. Not, I hasten to add, that I've ever found it to be a particularly effective means of control, but it does add that extra dimension of interest.

Clancy stuck with the original arrangement, but had initial issues with test flying the model. As he soon discovered, with this type of model there must be absolutely no hint of tail heaviness - unless you are particularly fond of 'interesting' flights. With another ounce of ballast added to the nose the model has proved to be all I hoped for.

Stable enough to be trimmed for hands-off flight, but still capable of the odd loop or two should the mood take you. You only have to look at the type to see that aerobatics is never going to be its' roll in

life. Therefore, circuits, figure-eights, stall turns and the occasional loop seem to be totally in keeping with the prototype.

Just as an aside, I was tempted to draw yet another Moska MB bis, but this time at just 30" wingspan. Pat Lynch built this version to get him back into modelling after a house move. Get him back into modelling, and give him an excuse to unload some of his modelling tools from the multitude of packing cases filling his future workshop.

Unfortunately for you lot, this particular design will already have appeared by now, in our sister magazine R/C Model Flyer. However, at least you know about it now and I'm sure back issues are still available.

#### IS IT A BIRD? IS IT A PLANE?

No, it's a flying egg whisk. Oh, all right then, it's a flippin' helicopter. As some of you may recall, those that haven't been driven totally insane by years of my old waffle, from time to time I get the urge to fly helicopters. In the past we've looked at some small co-axial types, but I've moved on a bit since then. I haven't gotten any better at flying them, but have given up buzzing around the lounge, annoying the wife and pruning her houseplants. Co-axial helicopters are absolutely great for getting people interested in flying because they are so easy to fly. However, most are pretty limited in what they can

**OKAY, I FILCHED THIS ONE FROM FLYER; IT'S ACTUALLY THE 30" MOSKA BUILT BY PAT LYNCH.**





do, and how they do it. Most also have the disadvantage of being IR control, making them utterly useless outdoors. Add to that the fact that even those that aren't IR are pretty hopeless in anything more than a slight breeze and you begin to see how limiting they can be.

All that is now a thing of the past however. My latest toys (and there are several of them - helicopters are notoriously addictive) are still quite small, are still electric powered and are still scale (ish) models. Where they differ from those we've looked at previously is that they're all 2.4 GHz controlled (vaguely controlled in my hands), fixed pitch helicopters.

Personally, like fixed pitch helicopters. Their controls remain pretty much the same as fixed wing, with the exception of throttle replacing elevator, they're relatively easy to fly (even for me) and they are straightforward to repair should the need arise. Oh yes, I almost forgot, most of them are pretty cheap too. Come on now, you just knew cost was going to feature in this somewhere. I may be a rubbish helicopter pilot but I'm world class at being mean.

So, where is all this leading? Well, the particular helicopter I want to take a look at seems to me to be a natural follow on from those small co-axial types I mentioned earlier. It's a fixed pitch helicopter, but unlike most of them it's only three channel and the controls work exactly the same as on a three channel co-axial model. The model in question is the Double Horse (a stupid name if ever I heard one) 9113 Cobra. The name may be stupid, but there's nothing stupid about the helicopter. That is a very nice little piece of kit indeed.

Moulded in a nicely understated metallic blue, the markings are equally in keeping with a scale model. They are pretty much what you'd expect to see on a real helicopter, without the model being plastered with labels proclaiming it to be a helicopter. We already know that, without labels telling us so. No, the overall impression is good. It looks sturdy, has an aggressive appearance and somehow manages to look fast even before it starts to move.

How does the three channel thing work? Well, just like the co-axial types, the controls are forwards/backwards, left/right yaw and altitude controlled with throttle. Unlike a more conventional fixed pitch helicopter there is no bank control at all. The swashplate looks normal, and the linkage is there but it just doesn't do anything. As such, there is a slight sideways drift, but it's only slight and doesn't manifest itself once the helicopter



As you can see, there really is nothing complicated about the bigger Moska built by Clancy Klein.



Clancy's model all set for another sortie. All those roundels certainly aid orientation.

starts moving. If you really dislike it, it can always be trimmed out by adjusting the pushrod but so far I haven't found that it causes any problems. Mine certainly flies well enough.

Considering you can buy this helicopter for very little more than the cost of a decent co-axial that's IR controlled, it seemed well worth a try to me. I parted with the princely sum of around £27 without a clue how it would work out but was more than happy with what I got for my money. Yaw is good, the gyro effective and forward speed a marked improvement on any co-axial I've flown. The one downside I have found involves backwards flight. Basically, it just digs its tail in and revolves around it. Maybe that could be countered with yaw control, but I'm not that clever. Anyway, who wants to fly a heavily armed attack helicopter

backwards?

Where this model really starts to pick up speed is during forward moving turns. Okay, not very scale-like since it's probably travelling at almost the speed of a jet fighter, but it is rather exciting to watch it sweep through the turn at high speed. It looks good, flies well and has proven admirably durable. It also performs well outdoors as long as you aren't trying to fly the poor little thing into the teeth of a gale. Then again, who wants to be out trying to fly a tiny helicopter in anything more than a slight breeze? After all, this modelling lark is supposed to be fun, not hard work.

If you'd like to contact me, you'll find me at the usual place, [PETERRAKE@aol.com](mailto:PETERRAKE@aol.com)



Once balanced correctly the 45" Moska has proved a stable, easy to fly model that is still capable of mild aerobatics.



A very nicely, and not overdone, finished model. The Double Horse 9113 Cobra is interesting in that it only uses three channel control.



Yes, I know that looks like a conventional swashplate, but the bank part of it is locked rather than connected to a servo. Model still flies well.



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