

AIRCO DH2

1/9th Scale for electric power

- DH2 Type History
- Colour schemes
- Fine-line scale three-views

THE WORLD'S
ONLY RC SCALE
MODEL MAGAZINE

Flying Scale Models

www.flyingscalemodels.com

July 2014. No. 176 £4.20

PHOTO REPORT

INDOOR SCALE NATIONALS



CLUBMAN SCALE MOSQUITO BITE!

Big Mick Reeves
Mossie kit for
electric power

- Mosquito scale drawings
- Warpaint schemes



DETAILING THE FOKKER D.VII

Step by step to a finely
detailed model



PLUS... FOKKER D.VII SKETCHBOOK

ALSO INSIDE...

- SCALE SOARING
- QUIET ZONE
- TECHNO SCALE

FEATURE: ICING ON THE CAKE
COCKPIT DETAILING TECHNIQUE



For Honour. For Glory.



HAN4495
Spitfire Mk IXc 30cc



HAN4760
F4U-1D Corsair 60cc



HAN2790
P-47D-1 Thunderbolt 60



HAN2785
Messerschmitt BF 109 60

Hangar 9 Warbirds Have the Right Mettle

The new Hangar 9[®] Spitfire Mk IXc 30cc ARF warbird captures supremacy and grace in a way that makes the famed RAF weapon of choice come alive. When it comes to making the whole warbird experience great, only Hangar 9 ARF models have the detail, construction and finish to satisfy the most discriminating modeler. All are built with the best balsa and plywood available and covered with a genuine UltraCote™ film trim scheme. Some, like the new Spitfire, feature an exclusive printed UltraCote scheme that rivals an expertly painted finish. Because our attention to detail minimises your assembly time, we hope that you'll be inspired to add further detail. But what truly sets our warbirds apart is the exquisite flight performance. That's because Hangar 9 designers are pilots just like you, and know full-well that impressive looks are only half as satisfying as an impressive flight.

All Hangar 9 Warbirds features:

- True-to-scale accurate representation of the full-scale counterpart
- Outstanding flight performance
- Exceptionally detailed instruction manual
- High level of completion with quality accessories and hardware
- Bolt-on components and concealed switch locations that make the expert scale experience simple

HANGAR 9[®]

For the warbird experience you can feel, visit horizonhobby.co.uk

HORIZON
H O B B Y . U K

horizonhobby.co.uk

Find Your Local Store Online
at horizonhobby.co.uk/shopfinder

SERIOUS FUN![™]

THE ISSUE AHEAD...

FORMATION...

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



20



28



42



ON THE COVER

Ted Cooke's big 100" wingspan 1:6.5 scale De Havilland, created from the Mick Reeves Models kit and electric powered using twin Turnigy Aerodrive 6374 motors fed from two Nanotec 5000 mAh LiPo power packs.

Photo: Alex Whittaker

JULY 2014 NO.176

6 CONTACT

Just for openers

8 FOKKER D.VII PART 3

Concluding the construction article for the 1/6 scale model designed by Peter Rake and built and described by Pat Lynch

14 FOKKER SKETCHBOOK

Details gathered during the restoration of the RAF Museum's D.VII

20 INDOOR SCALE NATIONALS 2014

Alex Whittaker captures all the action on camera

28 MOSQUITO BITE!

Ted Cooke's all-electric Photo Reconnaissance DH Mosquito built from the Mick Reeves Models kit.

34 MOSQUITO SCALE DRAWING

1:60 fine-line three views

36 MOSQUITO FLYING COLOURS

Warpaint for the 'Mossie'

38 SCALE SOARING

Chris Williams reports on the success of his new Kaiser K11 motorglider and tests a new Variometer

FULL-SIZE FREE PLAN FEATURE

42 AIRCO DH2

A 1/9th scale 37.5" (953mm) span sport-scale replica for electric power and rudder, elevator and throttle controls

50 DH2 TYPE HISTORY

A quaint, but effective rebuffer for the German 'Fokker Scourge' of the 1914/15 WW1 period, although its success was short-lived

53 DH2 FLYING COLOURS

Colour schemes for the Airco DH2

56 DH2 SCALE DRAWING

1:50 fine-line three views

58 ICING ON THE CAKE

A guide to the tricky task of cockpit detailing. PART 1

62 QUIET ZONE

Peter Rake describes Pat Lynch's techniques use in replicating the dummy radial engine of his Polikarpov PO-2 that will be a forthcoming Peter Rake plan in FSM.

www.flyingscalemodels.com

Editor: Tony Dowdeswell
Publisher: Alan Harman
Design: Peter Hutchinson
Website: ADH Webteam
Advertisement Sales: Claire Alley
Advertisement Assistant: Joe Brown
Admin Manager: Hannah McLaurie
Office Manager: Paula Gray

FLYING SCALE MODELS is published monthly by ADH Publishing, Doolittle Mill, Doolittle Lane, Totternhoe, Beds, LU6 1QX. Reproduction in part or whole of any text, photograph or illustration without written permission from the publisher is strictly prohibited. While due care is taken to ensure the contents of Flying Scale Models is accurate, the publishers and printers cannot accept liability for errors and omissions. Advertisements are accepted for publication in FLYING SCALE MODELS only upon ADH Publishing's standard terms of acceptance of advertising, copies of which are available from the advertising sales department of FLYING SCALE MODELS.

EDITORIAL ADVERTISEMENT

& CIRCULATION: Doolittle Mill, Doolittle Lane, Totternhoe, Beds, LU6 1QX.
Tel. 01525 222573 Fax. 01525 222574.
Email: 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

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

**(c) Copyright Flying Scale Models
2014 ADH Publishing.**

The paper used on this title is from sustainable forestry

CONTACT

A SERIOUS WOBBLE... BUT BMFA NATIONALS IS ON!

A seismic shockwave was recently delivered to our hobby, when the Commandant at the RAF College, Cranwell (for which neighbouring RAF Barkston Heath is a satellite station) rescinded the model flying licence for the local Grantham & D.M.AC. with immediate effect, also leaving the August BMFA Nationals event in question.

Word is, that the Station Commander is not keen on 'casual use' of his dual airfield charge, but other considerations are having an impact, including, an anticipated increase in RAF weekend flying training, runway usage by the Station Gliding Club and restraints on security resources to guard RAF Barkston Heath - although those of us who have attended the BMFA Nationals, over more years than one might easily recall, (both the Free Flight event over the late-May Holiday weekend and the R/C & Control Line Nats over the later August weekend break), could attest to the fact that security has never been an issue, with minimal RAF presence. BMFA have always been careful to protect the airfield facilities with their own efforts.

Fortunately, this August's R/C & Control Line Nationals is secure, but unless there is a serious turnaround of attitude, that will be the last.

Can anything be done for the future to reverse the abrupt change of attitude? Well, one course of action would be for all to write to the RAF Cranwell Commandant, both at individual and Club level, voicing disappointment. But be sure to BE CONSTRUCTIVE - air mindedness is important to the RAF.

Beyond that, what case is there for some kind of BMFA owned centralised national flying facility? It would be a tough one to bring about. Could it be done?

AND THEN THERE WERE TWO!

For many years, the Battle of Britain Memorial Flight's Avro Lancaster was the sole remaining airworthy example of the type, annually doing the rounds of major summer air shows.

But since 1988, The Canadian Warplane Heritage Museum's example has also been airworthy, flown regularly, and plans are well in hand to bring the 'Canadian Lanc' across the Atlantic to participate alongside the BBMF's example at UK air shows this year from August 14th.

To get here, the CWHM's Lanc will ferry over a four-day period via Labrador, Greenland, and Iceland, finally arriving at BBMF's base at RAF Coningsby for pre show tour maintenance.

Too late, unfortunately for Duxfords 'Flying Legends' show, but... and here's a thought ... could the two Lancaster's be seen in formation with the sole remaining flyable Avro Vulcan.

Now THAT really would be something!



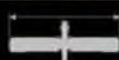
DURAFLY®



Storch 156

plug and fly

**BALSA
SERIES**



1154MM



835MM



865g

The Fieseler Fi 156 Storch was one of the most iconic aircraft to serve in the Luftwaffe, seeing service in every German theatre of conflict during WW2. To this day it is still considered to be one of the best STOL (Short takeoff and landing) designs of all time. The Balsa Series Fieseler Storch from Durafly is simply a beautiful model which captures the essence of this iconic aircraft and is a model that any scale fan would be proud to have in their hangar.



Specification

Wingspan	1154mm	Wing Area	17.3dm ²	Servos	HXT900 9g x 6
Length	835mm	Prop	10x6	ESC	25A Turnigy w/BEC
Flying Weight	865g~880g	Motor	3530 NTM Brushless Outrunner 1100kv		

Available at hobbyking.com

CESSNA 152 FROM SEAGULL MODELS

The Cessna 152 is one of a long line of trainer/private operator aircraft from the Cessna stable.

This very basic two-seater has been widely accepted for the tasks for which it was designed and first introduced in 1977, continuing in production until 2007. By which time variants included the aerobatic-capable Cessna 'Aerobat'.

Seagull's ARTF model spans 2 metres (79") and is designed for 120-size

four-stroke glow engine power or electric equivalent. The kit includes ready-made wheel spats, wing struts, cockpit furnishings and a full-body pilot figure, plus undercarriage with sprung oleo nose leg.

The airframe features a large fuselage underside access panel for the fuel tank or electric-power main battery and the model is designed for five-function radio systems and eight servos.

**Available through J.Perkins
Distribution stockists, price
£219.99**



BIG P-51D MUSTANG FROM HANGAR 9

Designed to suit engines in the 60cc range, Horizon Hobby's latest rendition of this warbird classic is designed around the new Evolution 62cc petrol engine with fuel injection system and spans 89" (2206mm), which equates to 1/5th scale.

The all-wood ARTF basic airframe features all undercarriage doors (outer and auxiliaries for the mains) and tail wheel doors too. The kit also features magnetic sliding bubble cockpit canopy and wing ordnance pylons for optional dummy drop tanks or bombs.

Also featured are fully functioning scale wing flaps and correct sequencing of undercarriage doors.

Optional extras are retracting undercarriage mechanisms that specifically suit the mounts in the underside of the wings, scale wheels, bombs, drop tanks and a full-body pilot figure.

Scale purists will appreciate the correct positioning of the tail wheel too!

**Available from all Horizon Hobby
UK stockists, the basic ARTF kit
costs £774.99.**



GRUMMAN WILDCAT

Grumman's portly looking F4F Wildcat is a WW2 type seriously overlooked by warbird enthusiasts. Perhaps it's not the most elegant shape ever to take to the skies and the awkward main undercarriage, retracting into the fuselage, is a major mechanical exercise. But the Wildcat was the mainstay of US Navy and Marine Corp fighter units during the early years of WW2, serving until the cessation of hostilities in 1945 and also saw service with the Royal Navy.

LX Models is not the most recognisable brand name in our hobby, but their completely ready-to-fly recreation of the Wildcat at 1200mm (47") wingspan is outstanding, featuring fully retracting main undercarriage and wings that fold just as the panels did on the full size aircraft.

The basic airframe is moulded in foam, with panel line detailing and comes complete with eight-function 2.4 GHz radio, 700Kv outrunner motor driving a three-blade 12" x 6" propeller, 50 amp ESC and a 2200 mAh Lipo power pack.

The full airborne radio system, including servos are ready installed, with servos linked up to the control surfaces and the package also comes with 12v power pack charger.

Finally, there's also a choice of two colour schemes, one of them dressing the model in an example of the colourful pre-December 1941 US Navy schemes and another is the mid-grey/light grey scheme of later WW2.

Surrey Models are the source of this excellent offering, priced at £315 for the full RTF version, or £255 in ARTF format. Look it up at www.surreymodels.com.



HIGH PERFORMANCE EDF UNITS

Here's a new range of electric ducted fan power units that revel in the name of *Dr. Mad Thrust*.

The novel feature here is the contra-rotating fans running inside the outer shroud and the range comes in outer shroud diameter sizes from 50mm diameter to 120mm, with differing Kv motors to match.

All versions are supplied ready-assembled, while the range offers high thrust-to-weight ratio, excellent cooling, dynamically balanced fans, and simplicity of fitting.

**Available from Hobbyking UK,
prices vary across the range from
\$31 to \$335.
Look 'em up at
www.hobbyking.co.uk**



Engineered to Adapt



The Spektrum™ DX9 gives you more than precise response and a bulletproof 2.4GHz link. It gives you a powerful suite of software and auxiliary functions that can be adapted to a staggering array of applications.

Want to learn more? Go to spektrumrc.com right now for complete details and to find the Spektrum retailer near you.

Voice Alert System

Its vocabulary of over 300 words, phrases and numbers lets you create voice alerts for just about anything.

On-Board Memory for 250 Setups

Store multiple control setups for all your machines.

Extensive Stick/Switch/Slider Assignment

The function of every stick, dial, switch or slider can be user-defined.

Wireless "Buddy Box"

Enables auxiliary inputs without the need for cables.


SPEKTRUM.
Innovative Spread Spectrum Technology

HORIZON
H O B B Y . U K

horizonhobby.co.uk

Find Your Local Store Online
at horizonhobby.co.uk/shopfinder

SERIOUS FUN.™



Fokker D.VII

PART 3: Concluding the construction article for the 1/6 scale model designed by Peter Rake and built and described by Pat Lynch.

In this final part of the article we take a look at some of the techniques Pat Lynch used to add details to his model. You must, of course realise that individual D.VII from differing manufacturers varied quite a bit in terms of small details, so make sure what precise version you are modelling and make sure you get the correct details.



When I discussed the Fokker design with Pete, I gave him a rather short brief. The cockpit area and the space under the guns should be as clear of structure as possible; the battery hatch should be on top making everything easily accessible (he would have done that anyway) and include the radiator and dummy motor. Also, the wing strut mounting should be designed in a manner so that I could make it look close (ish) to the full size aircraft.

Preservation of the cockpit area clear would give me the incentive to do a bit

more in this area than my previous builds. Plenty of good photos were available and these had inspired me to put as much effort as I could into the cockpit, weapons and the dummy engine as I figured these would be the focus of most folk looking at the model (including myself!)

Peter's designs usually feature a ply box in the front, supporting all the various high-stress connections and this often continues around the cockpit zone. As the cockpit sides of the D.VII were actually the external fabric in real life, the 1/8" liteply in the model was disguised by applying some pale lozenge pattern printed paper to the visible internal

areas so as to look like the inside surface of the fabric. The balsa longerons were hidden under the top panelling and under the floor - great compromise with no loss of rigidity.

FORWARD FUSELAGE

The Fokker D.VII had a steel tube frame and these visible parts in the model were built from various sizes of styrene tube and rod. Together with the seat frame and various brackets for pumps, levers etc, the dummy frame was built as an assembly that could be squeezed up through the still-open lower wing seat. Dummy tensioning wires were fitted where visible in the exposed dummy



Although it looks very complicated, breaking the engine down into simple parts makes for a very realistic finished item. The radiator grille is photo etched.



Hard to tell from the real thing. Only the size of the dust specks indicate that this must be Pat's model and not a real Fokker D.VII.



Plastic and aluminium tube, some beading wire and no small amount of ingenuity make short work of creating a basic fuselage structure to adorn the cockpit area.



It's amazing what can be created from items likely to be found around the home. Leather effect card, strips of roller blind and assorted bits of plastic make a convincing seat.

framing with tiny turnbuckles from thin aluminium tube with ends tapered in my Dremel.

Thin wire, looped at each end for the cable, was fitted in each turnbuckle. The wire was stranded beading wire with a grey plastic coating. Behind the pilot's seat, a fabric panel was usually laced across the fuselage. This was made of textured paper with small holes punched around the edge for the lacing. 'Eyelets' were formed from canopy cement around the holes and painted a brass colour. After the fuselage had been painted, but before fitting the lower wing, the whole cockpit frame was inserted and glued in place.

A cockpit floor of thin, varnished ply was mounted on blocks inside the fuselage. This was pre-assembled with pedals, lower parts of the control column, dummy rudder and elevator cables, boot plates and dirtied-up with graphite powder before fitting in place. The magazine was of litho plate, CA'ed together and complete with embossed

rivets and 'schwurling' (my term) done with a rubber tool in the Dremel.

The lower, barely visible instrument panel is varnished wood with various dials, switches, magneto and fuel controls built from scrap material. The dials were found on the net, resized and punched to fit some plastic tube as were the thin clear lenses. Fuel cocks (and many other parts) were from wire and plastic rod, thickened where necessary with blobs of canopy cement. When painted a brassy colour and dirtied up, they look the part.

The magneto was of plastic scraps, painted flat black and lightly buffed with graphite giving a metallic sheen. Tiny labels were made as decals and applied to aluminium sheet - these were held in place with #00 size brass nails where needed.

With all the basic deep-down detail bits done, the external plastic panels were detailed, painted and glued in place. Details included holes for gun ejector chutes, hinged inspection panels, fuel gauge, filler caps, windscreen, and lots of little 'Fokker Nuts'. Most parts were of styrene sheet and rod with canopy cement screws, rivets etc. Dummy hinges from strip and half-round plastic were made - the half-round section being scored to form the hinge and dummy glue rivets along each side. When finally painted and dirtied up (fuel spills etc), the panels were glued in place and the next layer of detail applied.

The *Williams Bros.* Spandau machine gun kits needed a lot of cleaning up and had extra details added - single action cocking levers and associated gears (old HS55 servo

gears), ejector chutes etc. A spray of flat black and a light brushing over with graphite powder gives a metal look. They sit in mounts from brass strip, plastic tube, and dummy bolts, fastened to the internal dummy framing.

The various major dials are from plastic tube, made larger where required by winding a strip of .005 plastic strip around it until the desired diameter is reached. Recessed fronts and varying diameter bodies can be made this way. Dummy rivets, screws and attachments were applied before painting. Dials and glass were made from punched discs and scaled photos of actual D.VII instruments. I keep a collection of various sizes of brass tube - many of these can be used to punch discs of plastic, photos etc that will fit neatly inside stock diameters of plastic tube - makes instrument cases easy!

The seat is from leather-textured card fixed to a balsa 'cushion' and painted a worn leather colour. The balsa cushion was carved to look like the real thing and brass nail 'buttons' inserted. The harness was made using a measured diagram found on the Net. The webbing belt is a strip from a fabric roller blind with buckles and ends made from plastic sheet and painted black. The ends have a stud and locking pin with chain as per full size. Magnets in the seat back retain the pilot and easily allow his removal to see the open cockpit. The distinctive leather padding on each side of the cockpit is from really thin glove-leather, glued to shaped foam plastic - and fastened to the fuselage with contact cement.

Most detail parts can be simulated with plastic and metal but many parts can be fashioned from odds and ends retired from a previous life! Ball-pens, cigarette lighters, old electronic equipment and a partner with a keen eye for 'something useful' are all assets that can be utilised.

When suitably painted and given a convincing finish, almost any detail is possible - easier at larger scales of course, but by keeping the detail in proportion and to scale, a model can look as good on the ground as it does when flying!

THE ENGINE

Nothing is more attractive to scale modellers than a detailed exposed engine. It is usually the first part closely examined, usually eclipsing even a well-detailed cockpit! The D.VII with its water cooled Mercedes engine is no exception. I wanted to make this replica motor as good as my eyesight and

SPECIFICATIONS

Span: 58"
Weight: 6.5 lb
 Turnigy 4250 motor
 15X8 APCe prop
 4S 3700 LIPO
 60A ESC
 Hitec Aurora tx, Optima 6 Rx
 Loading- 15-16 oz/sq ft

skills would allow and hopefully learn a few new tricks along the way - so as to do better next time!

Plenty of data for the Mercedes engine was available, so there were no excuses for a shoddy job. First - what needed to be modelled? Only the cylinder heads from just below the manifolds were possible as the dummy motor sits on the battery hatch. That leaves the inlet/exhaust manifolds, water pipes, camshaft and rocker boxes, valve gear and some miscellaneous gearboxes, water pump and other sundries - plenty to catch the eye.

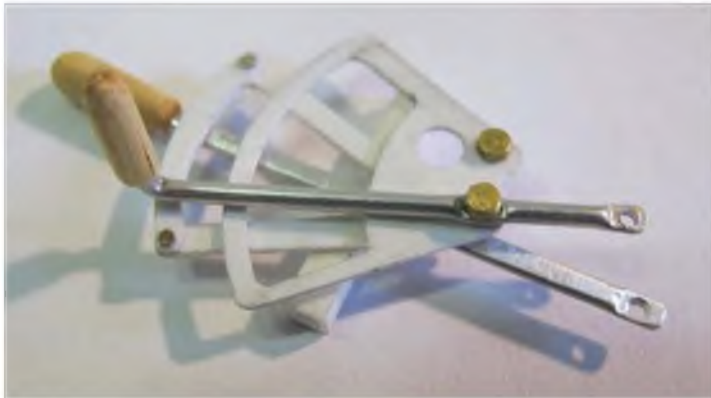
Like any seemingly complex structure, the engine can be broken down into smaller, simple sections. First were the six cylinder heads. These were made by forming some heated styrene sheet with a simple dowel plug. They were joined by a length of styrene tube representing the upper water pipe between cylinders. Each head has short sections of plastic tube added as inlet and exhaust stubs, plus two smaller tubes as the valve guides. All these holes were cut with sharpened heated brass tube and the bits of plastic tube glued in place with styrene glue. The joins were then given a fillet of

medium CA and immediately hit with a spray of CA accelerator. This solidifies the CA and looks like a welded joint.

The rocker boxes were formed using a shaped plug with heated styrene and attached to squares of plastic which in turn sit on pieces of telescopic plastic tube forming a dummy camshaft housing. Again, the rocker boxes had short bits of tube inserted as the bosses for bolts and rocker pivots, filleted with CA as before. And so on! These major assemblies were then attached to each other and the next layer of details added.

Exhaust stubs had plastic flanges glued to them complete with tiny hex bolt heads from *Plastruct* hex rod. The rocker box bolts were made the same way. Valve rocker arms were built up from several tiny bits of sheet plastic and shaped to look like the photos. They were drilled for the pushrod/valve stems and used even smaller hex rod as clamp bolts. Valve springs are from ball-pen springs cut to size and the spring retainers are discs of plastic and tube. All parts were glued in place with CA or plastic cement.

Inlet manifolds were from plastic tube, slit, bent, filled and filed. The



A lick of paint will soon hide the humble origins of the throttle quadrant fitted to Pat's model. Even though buried deep in the cockpit its absence would be obvious.



A typical selection of the simple homemade tools used for forming parts, and some of the parts thus produced.

CUT PARTS SET FOR THE

FOKKER D.VII

Get straight down to construction without delay! This month's full size free plan feature is supported by a laser-cut set of ready-to-use balsa and plywood components. This provides all the parts that, otherwise, you would need to trace out onto the wood before cutting out.

IT DOES NOT INCLUDE STRIP AND SHEET MATERIAL OR SHAPED WIRE PARTS

Price £149.00

plus carriage: £11.50 (UK); Europe £26.00

Order set CUT/FSM489

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.

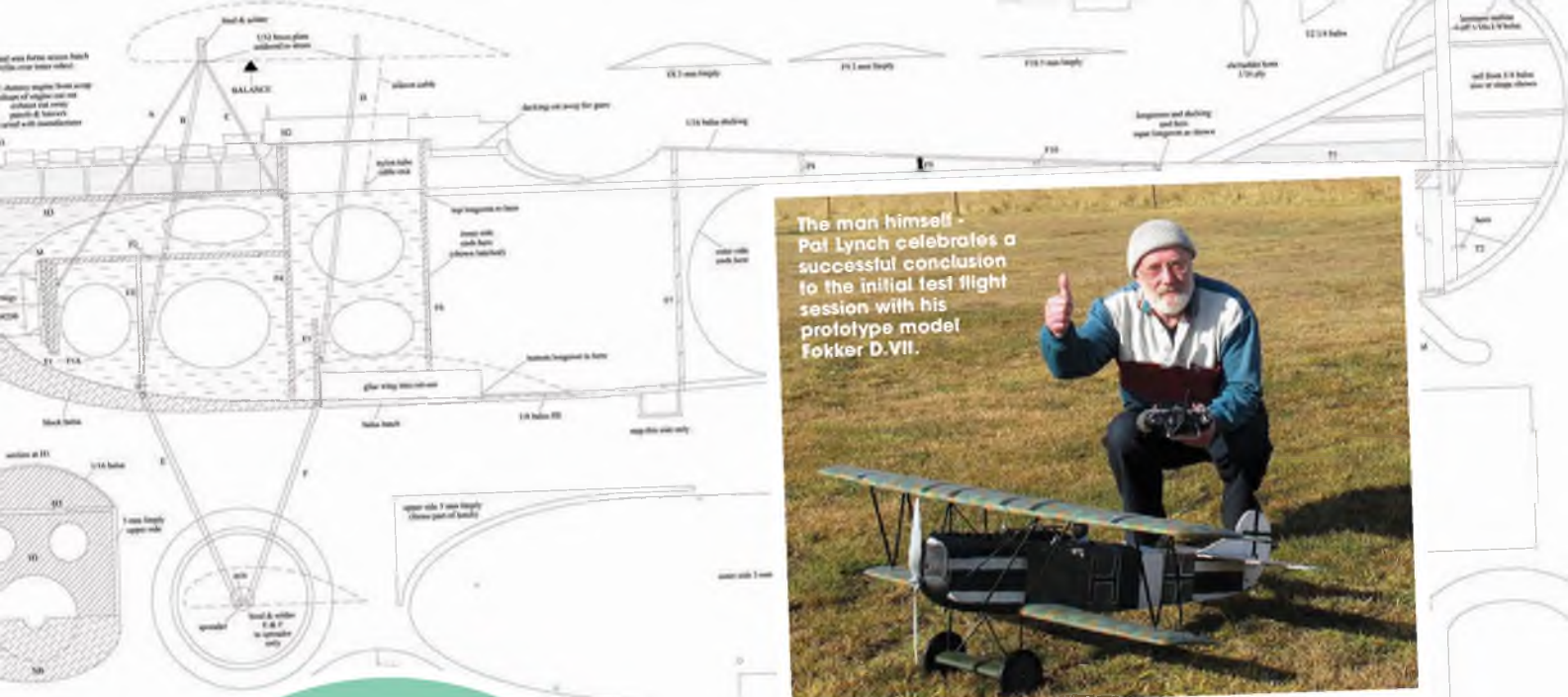
Visit our secure website:

www.flyingscalemodels.com

to order yours



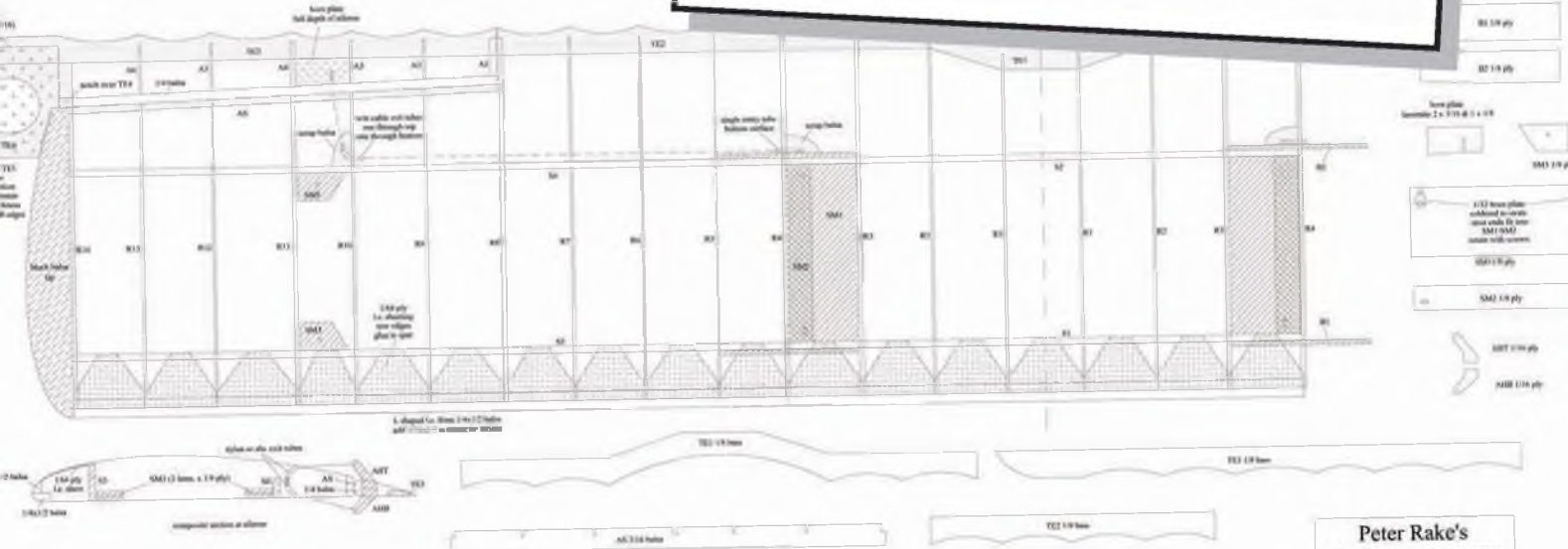
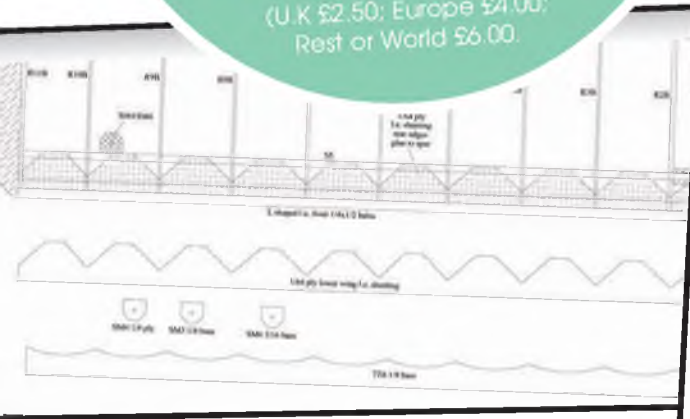
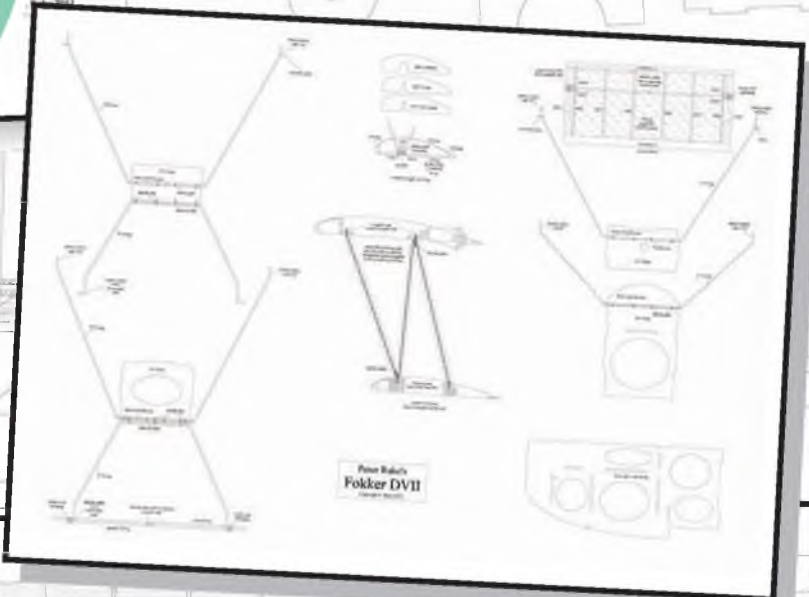
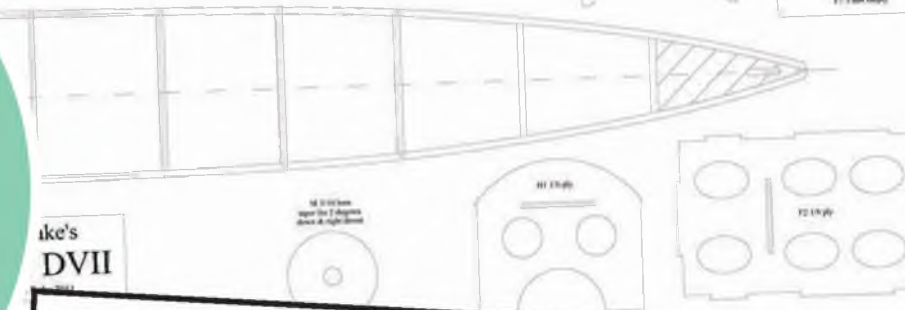
Order direct from:- ADH Publishing, Doolittle Mill, Doolittle Lane, Totterhoe, Bedfordshire, LU6 1QX, UK. Tel: 01525 222573/ enquiries@adhpublishing.com.



The man himself - Pat Lynch celebrates a successful conclusion to the initial test flight session with his prototype model Fokker D.VII.

FOKKER D.VII (PLAN FSM/489)

Full size copies of this FOUR SHEET plan are available from Flying Scale Models Plans Service, ADH Publishing, Doolittle Mill, Doolittle Lane, Totternhoe, Bedfordshire, LU6 1QX. Tel 01525 222573 enquiries@adhpublishing.com
 Price £19.95 plus p&p
 (U.K £2.50; Europe £4.00; Rest of World £6.00.





Once the moulded louvres are glued on and a few access panels made up from sheet plastic the side panels begin to look very DVII like.



How Pat made those castellated manifold nuts he mentioned in the text.



You'll be needing lots of 'Fokker nuts' on this model, but as you can see they're easy enough to make.



Here you see just how effective those manifold nuts look once they're fitted.



The very simple tools used to create the basis of the exhaust, and samples of the moulded result.



Who'd have believed that such simple cylinder heads, created using simple tools, would result in such a realistic dummy engine once a few more bits were added.

tightening rings on the inlet branches are 1mm square strip glued around plastic ring and slipped over the manifold stubs. The rings were made in bulk and sliced off as required - the photos show it better than words! The 'saxophone' exhaust manifold was hot-formed from plastic sheet using a basswood plug and attached to various sizes of tube, fitted with flanges to mate with the engine, then glued in place.

Other engine parts were the camshaft gearbox and front water pump. Again, these were broken down into smaller parts and built up from plastic pressings, tube, rod and sheet. CA was used to form fillets and help to look like castings. The almost-invisible

spark plugs are hex rod, plastic tube and a brass nail head.

With all the bits together and to my satisfaction, all was sprayed flat black. The manifolds were given a coat of semi-gloss black while other items were touched up using very dark grey. Varying the shades of 'colour' gives more interest - I think!

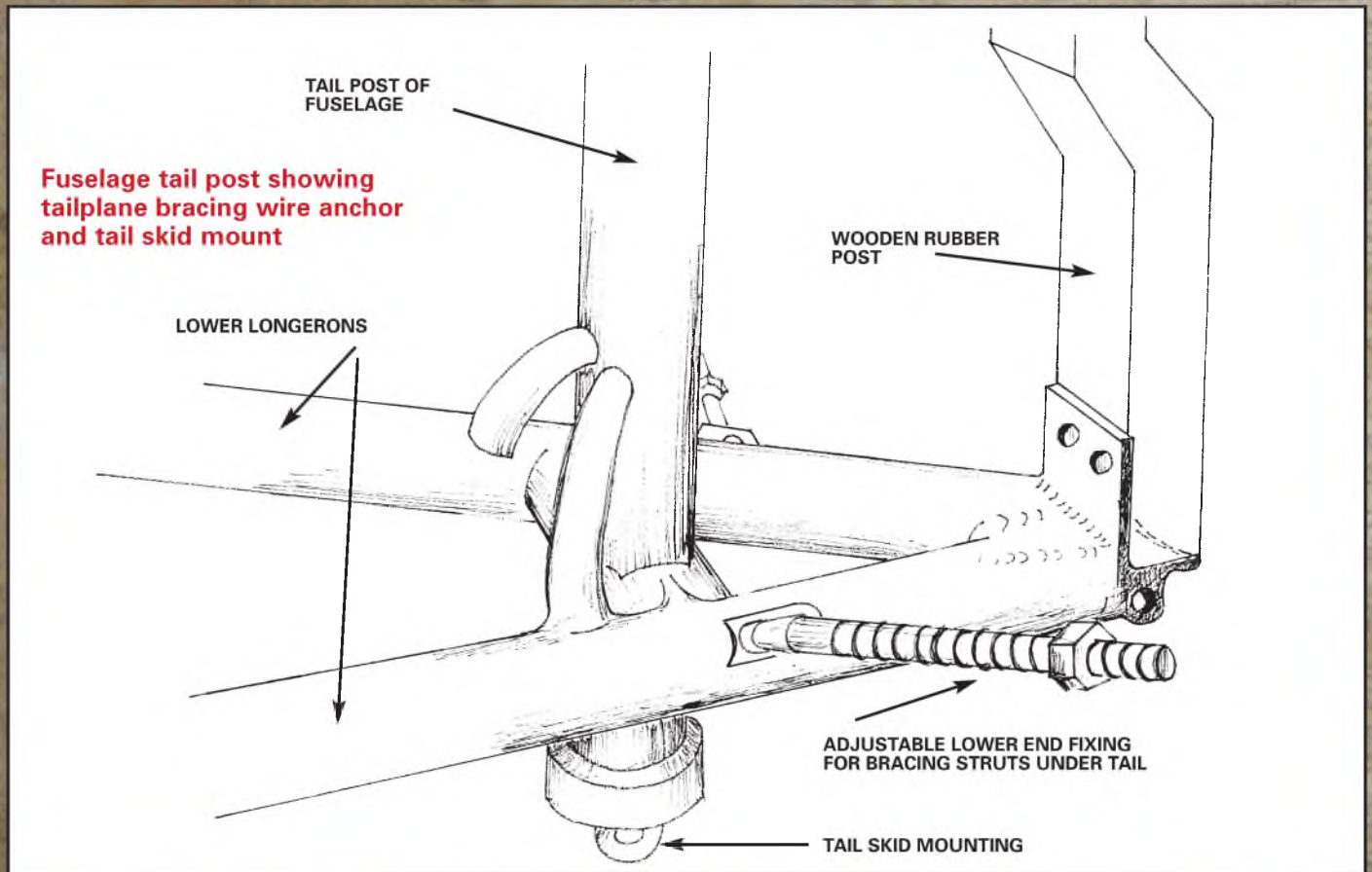
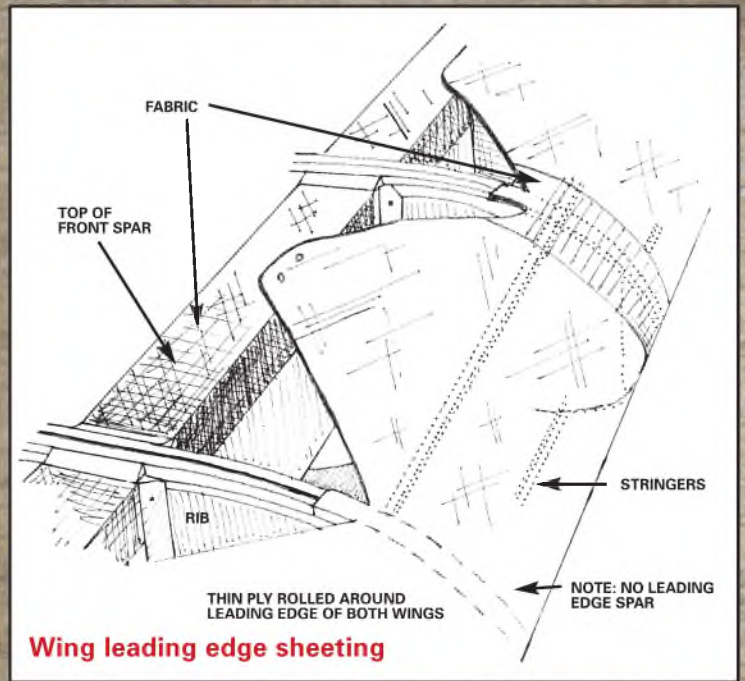
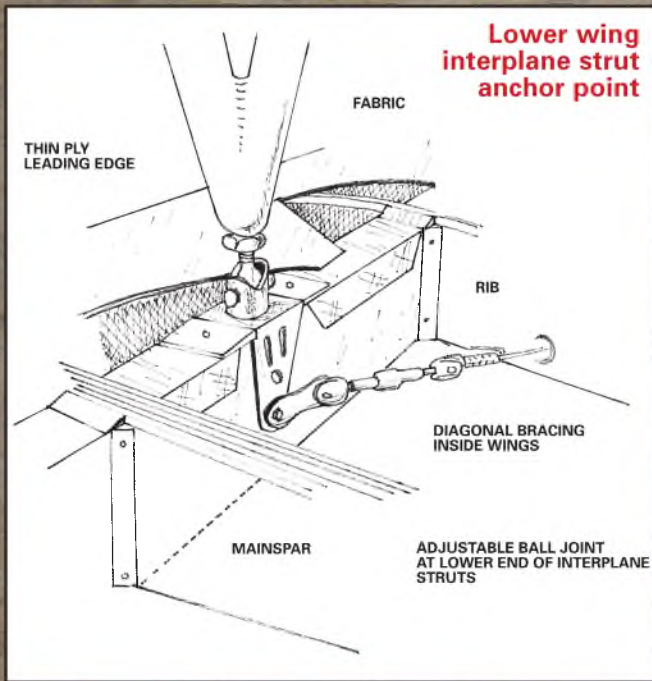
The exhaust stubs and flanges had a light dry-brush with a rust-coloured paint - just enough to look as though it had been hot. Finally, everything was lightly dusted with graphite powder and the larger areas rubbed very lightly with a finger tip or soft cloth. This gives a slight metallic sheen but shouldn't be overdone.

At last, some balsa discs were glued into the cylinder heads bases and the engine glued down to a dark-painted battery hatch. Nothing described here was difficult - just a matter of looking closely at the parts to be modelled and working out what normal materials might be assembled to look like the many references. A very useful tool when detailing was a scale chart giving the scaled sizes of common small dimensions. For instance various hex nuts and bolt heads are often oversized on models - so I scaled up the available hex and round stock to see what it represented at full scale. Saved me from having 2 inch nuts holding exhaust pipes in place!

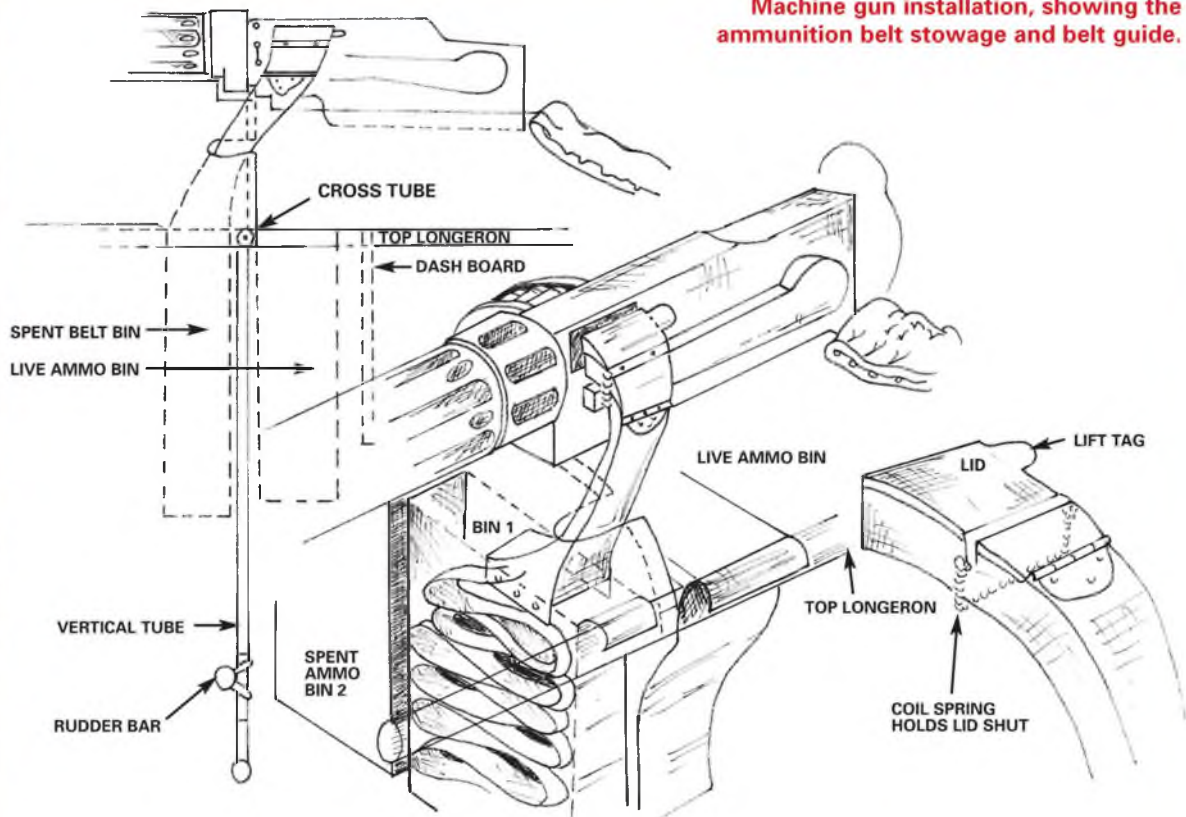


Fokker Sketchbook

Details gathered during the restoration of the RAF Museum's D.VII

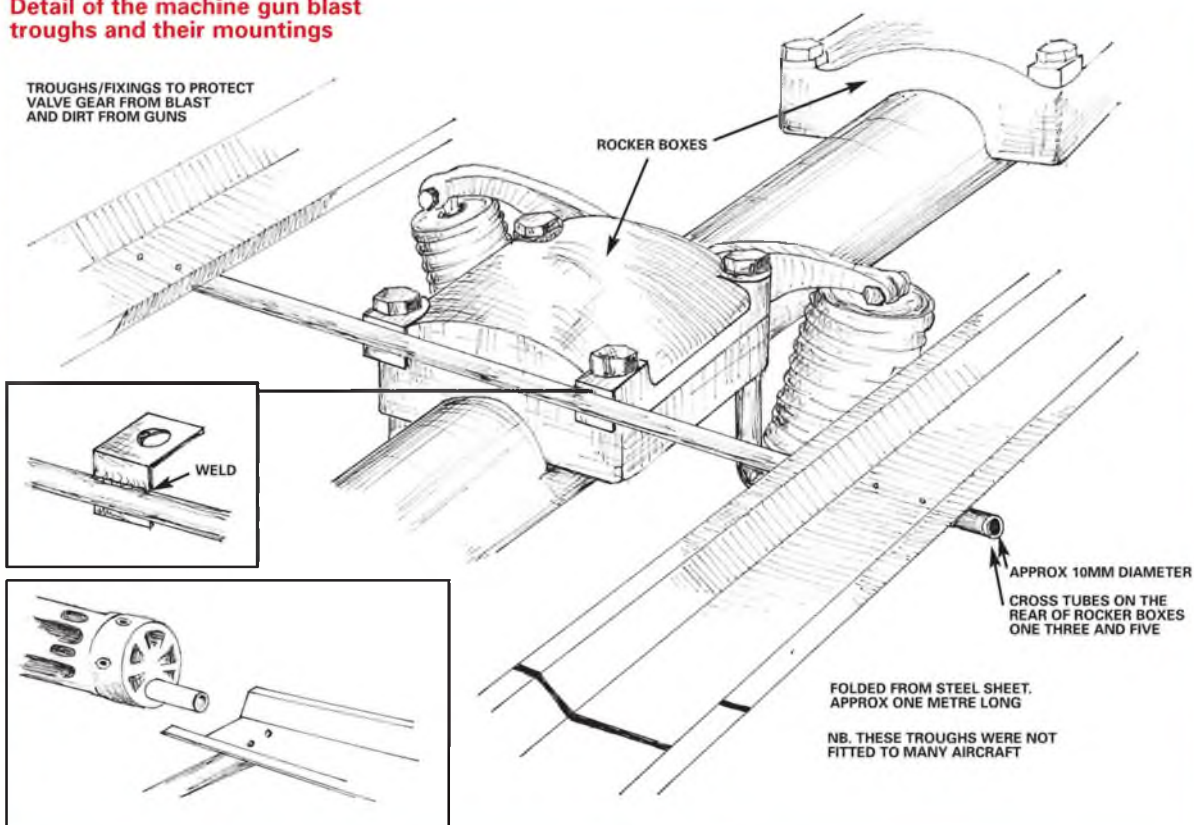


Machine gun installation, showing the ammunition belt stowage and belt guide.

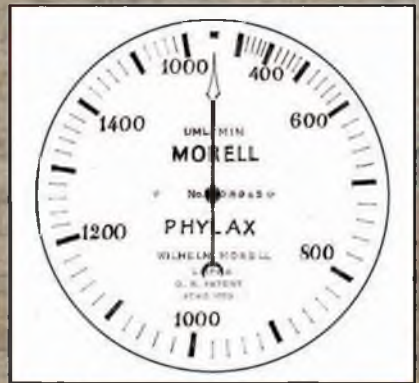
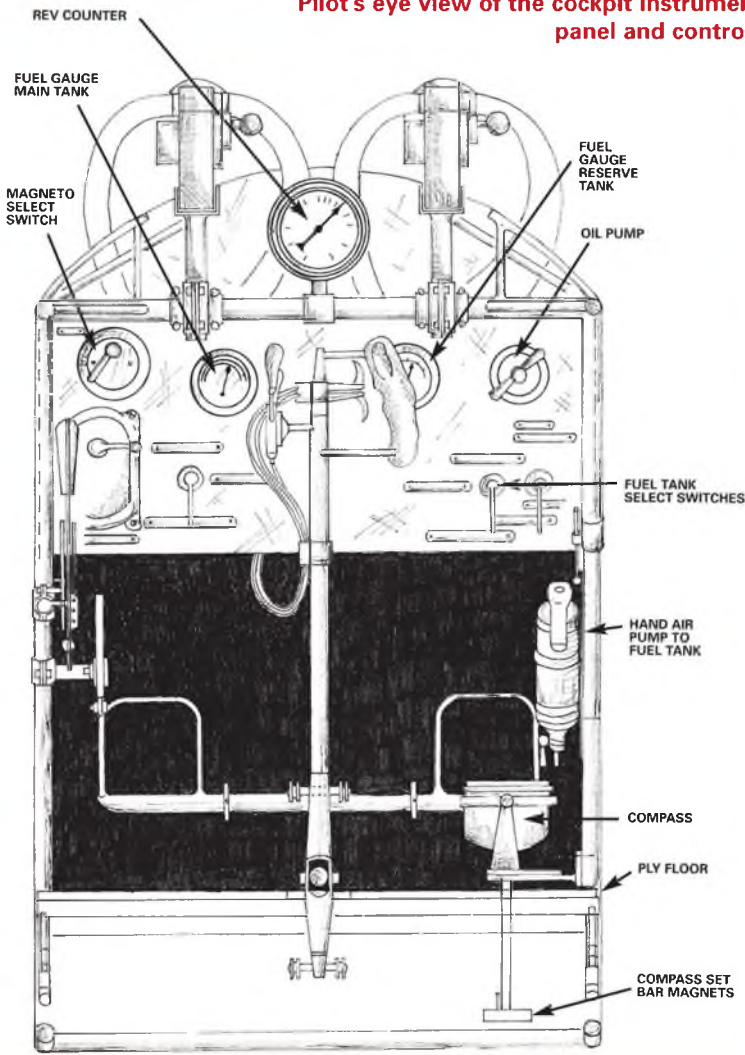


Detail of the machine gun blast troughs and their mountings

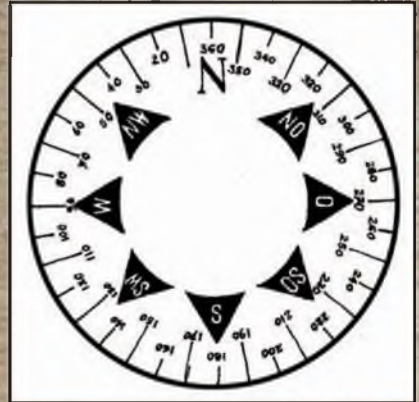
TROUGHS/FIXINGS TO PROTECT VALVE GEAR FROM BLAST AND DIRT FROM GUNS



Pilot's eye view of the cockpit instrument panel and controls



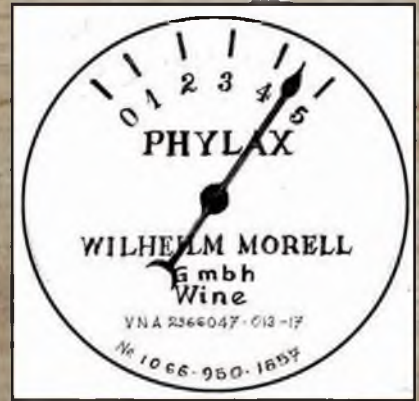
Rev-counter Dial



Compass Dial



Main Fuel Gauge



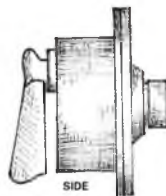
Aux. Fuel Gauge

Bosch magneto unit that fits into the left hand side of the instrument panel

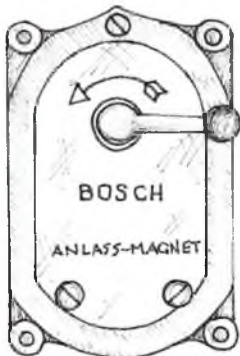


MAGNETO SELECT SWITCH

FACE

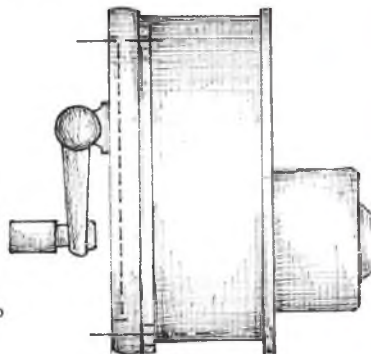


SIDE

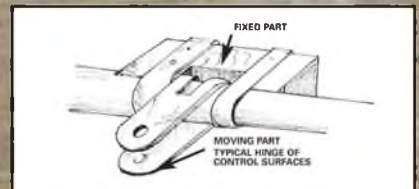


HAND CRANKED STARTING MAGNETO

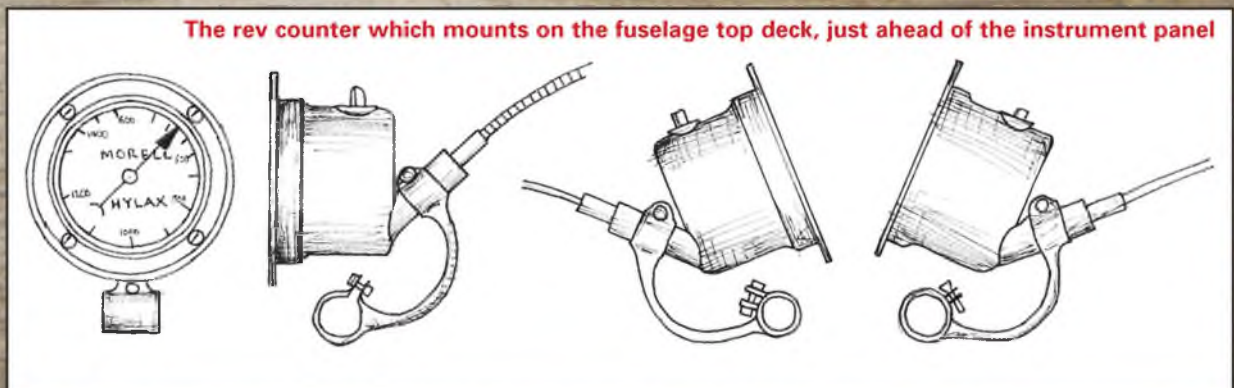
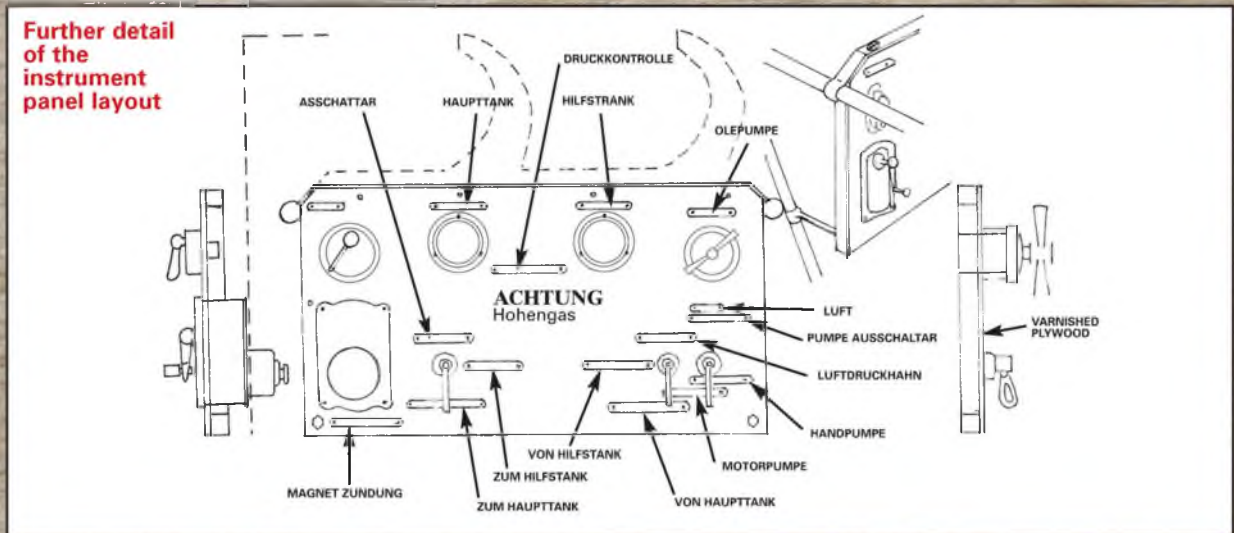
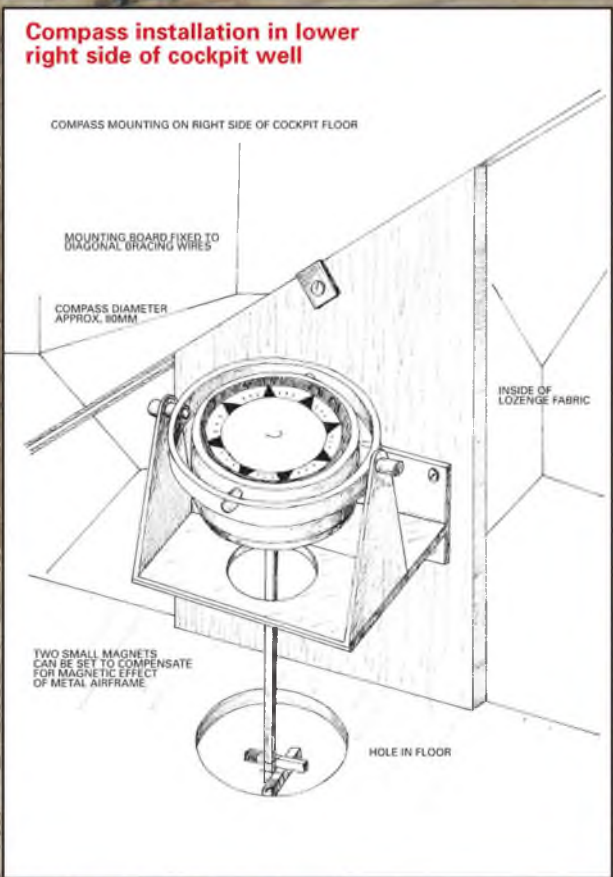
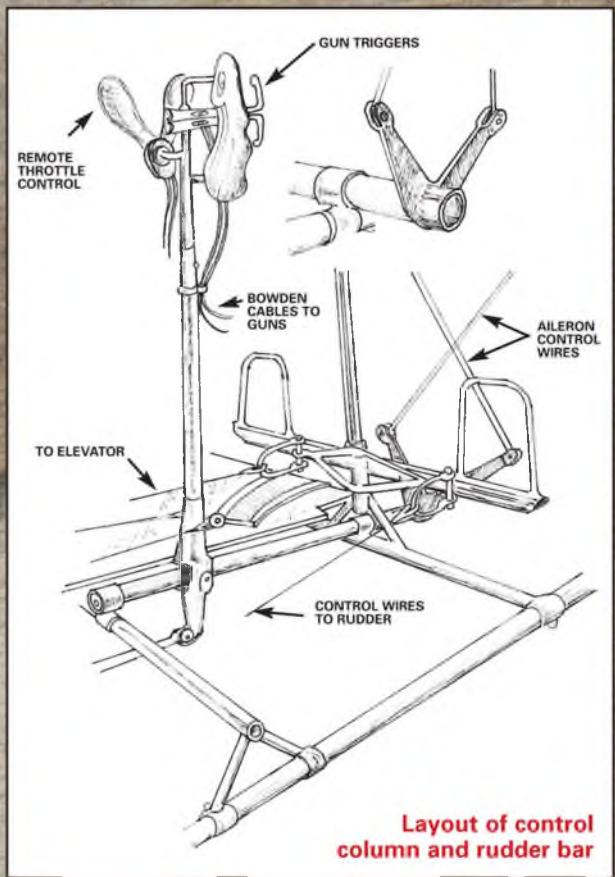
FACE



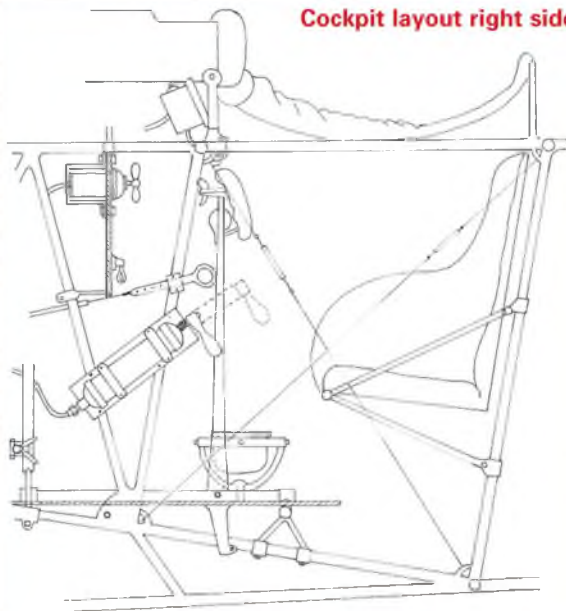
SIDE



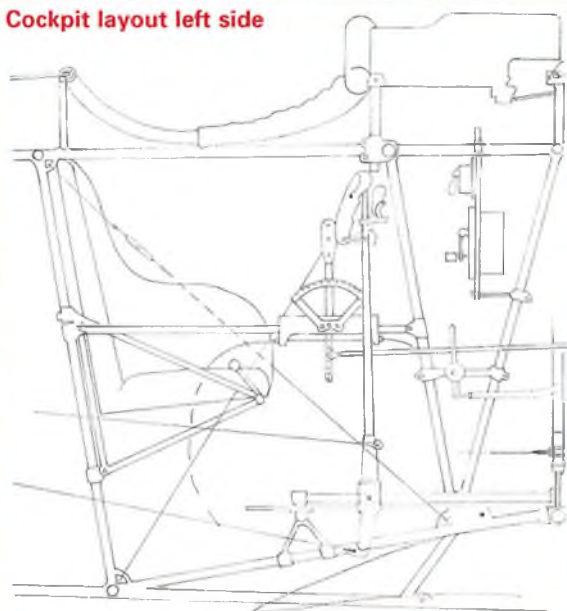
Typical control surface hinge



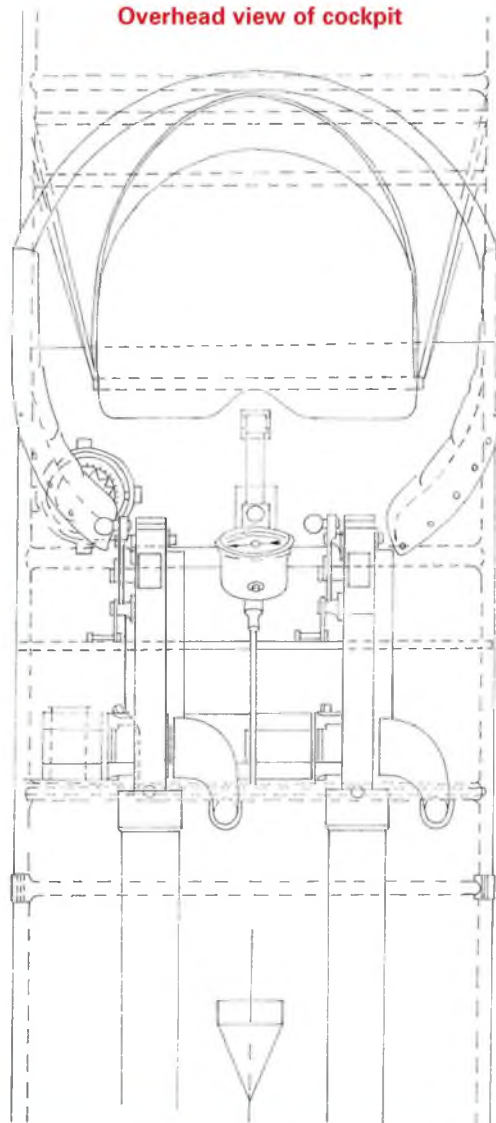
Cockpit layout right side



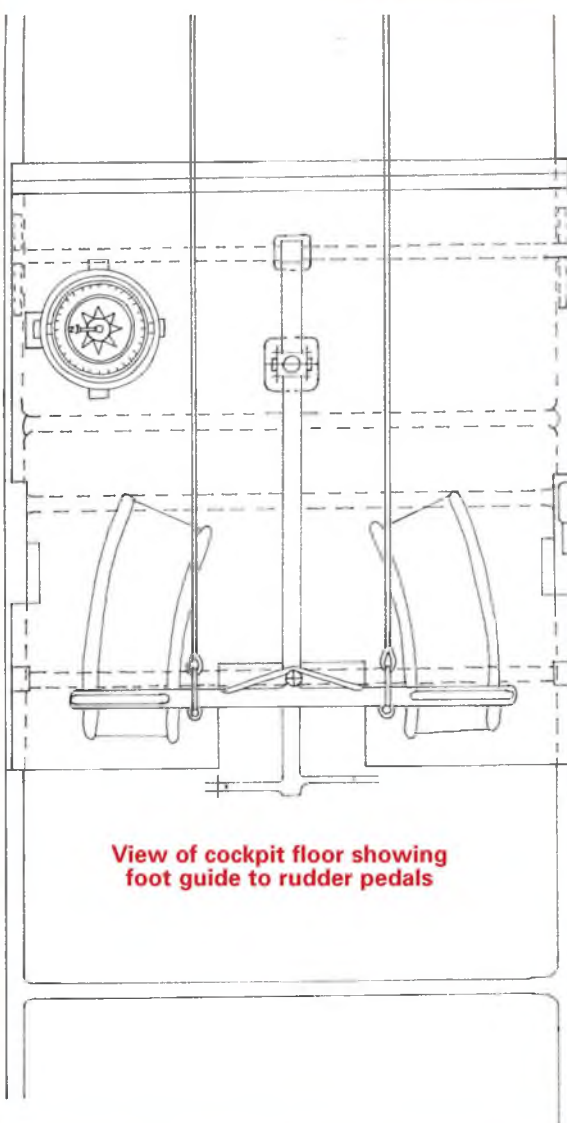
Cockpit layout left side



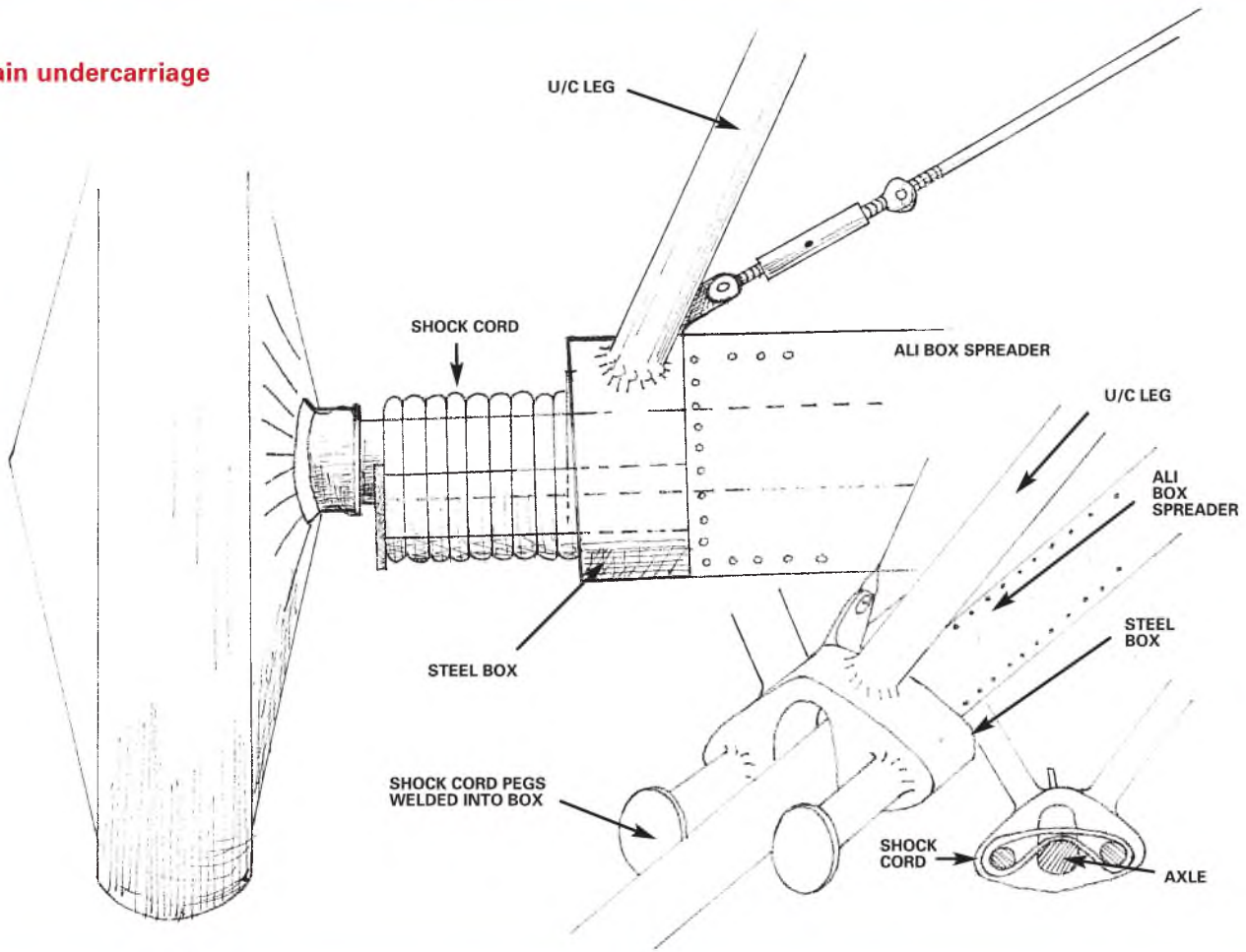
Overhead view of cockpit



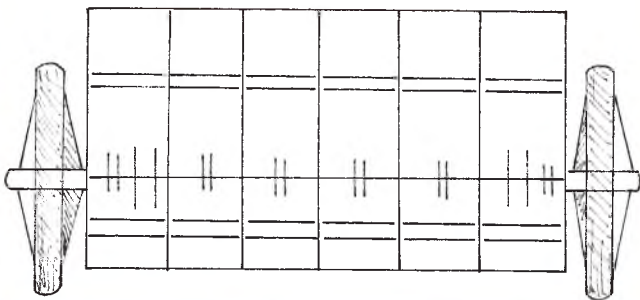
View of cockpit floor showing foot guide to rudder pedals



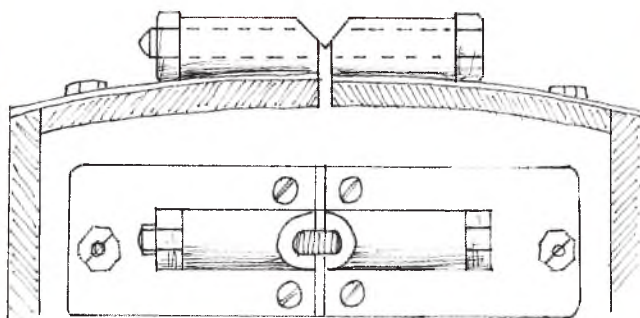
Main undercarriage



Detail of the undercarriage 'stub wing' which separates fore/aft along axle line



Retainer bolts that clamp the two stub-wing parts



BRAINCUBE AEROMODELS
Professional LED Model Lighting

NEW

20W Intelligent LED Controller and Regulator

1W+ Power LED Modules
2,000 Foot Daylight Visibility
Designed Specifically For Flying Models

Chosen by
National Scale Champions
and International Show Pilots

www.braincube-aero.com

BIMFA FREE FLIGHT SCALE INDOOR NA

ALEX WHITTAKER TAKES HIS CAMERAS INDOORS TO THE



A



NATS 2014

THE NOTTS NATS



By now you will have heard that continued flying at RAF Barkston Heath is in some doubt. At the time of writing, the BMFA Power Nats in August looks assured for this year, but the wobble was bad for the nerves. To make matters worse for those of us who love scale models, the 2014 BMFA Free Flight Scale Indoor Nats had a bit of a blip too.

You see, just a week or two before the meeting, entries received were a bit sparse, and the event was reduced from two days to one. Andy Sephton rallied the troops, and in the end, the turnout of competitors and spectators appeared as good as ever, but the new R/C Indoor Scale component was dropped.

New model display area

This year the BMFA Free Flight Scale Technical Committee set out the upstairs Judging Room as a public model display area. Competitors' models were exhibited on tables, with their owner's names alongside. This was superb, since Joe Public could peruse all the models at very close quarters at leisure, then walk next door to the mezzanine deck and watch the models in flight from above. Full marks to the Tech Committee bods! A great idea smartly executed.

Some models of note

In addition to the enclosed Photo Report I must remark on one or two models that caught the eye:

Dornier Do X flying boat

Well, what can one say when confronted with such scale ambition and excellence in one package? Paul Briggs' huge white-hulled free flight Dornier was astounding. It sports six KP 01 electric motors, six double-ended drive shafts, twelve props, and an utterly convincing appearance. A delight to behold.

Messerschmitt Me P1101

Scale maestro Peter Iliffe astounds us every season with the sheer quality of his models. He



Bill Dennis's Kit Scale Class rubber powered Puss Moth from the West Wings kit.



Ray Goodenough's rubber powered Piper family Cruiser from the beloved Keil Kraft kit.



Lionel Haines rubber powered Sea Mew from the Veron kit.



Paul Briggs' lovely Avro G. On display, but not in the competition.



Amazingly, Paul Briggs' rubber powered Nieuport is now 26 years old and still flies well.



Gerard Binks' rubber powered Stinson Junior. Superior fit and finish.

is also a well-known scale truffle hound able to seek out arcane scale subjects overlooked by the mere hoi polloi. This time Peter has turned his considerable powers to the late-WWII Nazi weapons of the Gotterdammerung. In this case, the fabled Messerschmitt Me P1101 jet; fabled because some doubt it ever flew. Peter's version does fly. It is electric powered, with a Delta V 1180 motor, the

urge being delivered via a 28mm Ducted Fan unit. The 13.75kV motor turns over at an amazing 86000 rpm on its 2S / 200 Lipo.

North American AT-6 Harvard

Andrew Darby entered Kit Scale with his wonderfully well-built and finished Veron Harvard. I have never seen one this side of the old magazine ads before, so it was a special moment. It was a bit bigger than I

expected, but every inch a Harvard. A really well-developed fuselage shape captured with surprisingly few stringers and longerons.

Isaacs Fury 2

The real Isaacs Fury home-built is the aircraft equivalent of a fond quotation, referring back to the original masterpiece: the Hawker Fury. I can't think of a sleeker

Gerard Brinks' Reggiane climbing out steeply from take-off.



Fine Bucker Jungmann from gifted Mike Hadland.



classic biplane. Scale maestro Derek Knight's model is wonderfully crisp in execution. I loved the chequer-boarded fuselage and the trademark, almost embryonic spinner. How Derek gets this level of finish is beyond me.

Short Sea Mew

Less is often more in kit scale models. Lionel Haines' rendition of the venerable Veron Short Sea Mew also had a superior finish, this time in clear-doped coloured

tissue. I looked at this apparently simple model with wonder. The economy of line of many classic Veron kits still seems remarkable to me after all these years. Again I ask, how can a few strips of balsa wood take on the convincing form of well-loved aeroplane? The answer is 'artistry'.

Curtiss Hawk P-6E

Now this was a treat. Mike Stuart's beautifully modelled example of one of

the most colourful of the 'tween-the-wars Yankee Pursuit Planes. Look at those wheel spats. Admire the fit and finish. Marvel at the exuberant scheme. Try to decide how Mike made those exhaust stubs look so convincing. I can't manage that with forty-sized models.

Curtis Goshawk

In a similar American vein, Alasdair Deas' exquisite Curtis Goshawk open rubber class model was a little masterpiece. I



Peter Smart's Junkers Ju88A, twin rubber motor power. Huge by indoor standards!



Paul Brigg's ambitious F/F electric powered Domier DoX. Six KP 01 motors driving twelve props on extended double-ended drive shafts.



Graham Banham's Cessna C-37 built to 1/18th scale. Own design based on the Paul Matt scale drawings.



Richard Crossley's well-known and much applauded 1/26th scale Brewster Bermuda.



Peter Boys' rubber powered Waco YKS7, scratch-built to 1/25th scale, weighs 26 grams.



Derek Knight's own-design Open Rubber Class Isaac's Fury built to 1:11.5 scale.



Divs Masters SE5a in unusual early Chilean markings.

spent ages admiring the workmanship on the radial engine and the variable pitch prop unit. In total this midget gem weighs just 44 grams.

Waco YKS7

I defy you, gentle reader, to remind me of a prettier biplane than the Waco. Its friendly exterior reminds me of a

well-loved working dog: faithful, lovable, and capable. It is the classic design with 'two wings and a round engine', and it all blends together so harmoniously. Peter Boys obviously felt the same way and his 1/25th scale scratch-built own-design is a little smasher. Built to 1/25th scale, she weighs 26 grams. Nice fresh colour scheme too.

Cessna C-37 Airmaster

Graham Banham was campaigning his nifty new Cessna C-37. I have always thought that the Airmaster had a wonderfully clean, uncluttered, classic look. This own design rubber powered model is built to 1/8th scale. Graham used the *Paul Matt* scale drawing to



Mike Sanderson's rubber powered DHC Beaver from the famed Guillows kit.



Steven Haines' rubber powered Hawker Hurricane from the Comet Kit. 16" span.



Chris Blanch's Pre-WWI rubber powered Sablatnig SB 4 from the Ikara kit.



Peter Fardell's pretty rubber powered Albatros DIII from the Aerographics kit. Looks very good in the air.



Andrew Deas' T-34 Mentor from the Dumas kit. Very attractive little model.



Utterly smashing Curtiss Hawk P-6E from Mike Stuart.



Alasdair Deas' exquisite Curtiss Goshawk Open Rubber model.



Top view of Alasdair Deas' Curtiss Goshawk. She weighs 44 grams.



Peter Illiffe's own design Me P1101jet. 17" span, R/C with three servos, built to 1/20th scale.



Andrew Darby's immaculate rubber powered NA Harvard from the Veron kit.



Russell Lister's fine DPC Models Sopwith Triplane.



Mike Hadland's truly immaculate Stampe SV4C, entered the Open Rubber class.

inform his own plan. He damaged the wing slightly at the comp, but made emergency running repairs out of light card.

Nieuport Old Timer

Paul Briggs was displaying one of his older F/F scale indoor rubber powered models. It was a Nieuport monoplane, with smart spoked wheels. I was

gobsmacked when he told me it was 26 years old!

The Verdict

It turned out to be a very good comp,



Nick Peppiat's very rarely modelled BAT Baboon scraping the ratters.



Mike Stuart's Curtiss P-6E Hawk on a low fly by.



Mike Hadland's accurate and superbly finished Stampe SC4C, placed Second in Open Rubber.

with lots of new models and some close fought comps. I did miss the new r/c events, but the only fly in the ointment was the lack of proper catering, due to a blip by the University. I lunched on a Cadbury's Cream Egg of uncertain vintage, but survived.

Acknowledgement

The BMFA Scale Technical Committee as usual delivered a very slick scale event. Hard working Andy Sephton had to think on his feet and he responded effectively to an uncertain situation. Thanks also to Gordon Warburton for his prompt Results service. ■

BMFA

Official Results:

BMFA SCALE INDOOR NATIONALS - 13th April 2014.

Open Rubber

	Name	Model
1	Richard Crossley	Bermuda
2	Mike Hadland	Stampe SV4C
3	Chris Blanch	Grumman Hellcat

CO2/Electric

	Name	Model
1	Richard Crossley	Flying Flea
2	Derek Knight	De H 82 Tiger Moth
3	Divs Masters	SE 5 A

Peanut Scale

	Name	Model
1	Richard Crossley	Stuka
2	Mike Hadland	Bucker Jungmann
3	Nick Peppiatt	Blackburn Bluebird

Pistachio Scale

	Name	Model
1	Roel Lucassan	Navy Wright NW-1
2	Gert Brendell	Eastbourne Mono
3	Nick Peppiatt	Bat Baboon

Glider

	Name
1	Peter Smart
2	Peter Fardell
3	Russell Lister

Kit Scale

	Name	Model
1	Graham Banham	Tri Pacer
2	Laurence Marks	Vagabond
3	Larry Kirby	Auster Arrow



Gary Flack's rubber powered Peanut scale Fw 190 Butcher Bird climbing to the attack.

DURAFLY®



Retro

JUNIOR

Plug and Fly

Modern

History



EPO

The Durafly Junior perfectly captures the essence of vintage flight and design.

A classic design is timeless, but that doesn't mean they can't be improved upon using modern techniques.



Specifications

Wingspan : 1100 mm / 43.3 in.	Battery : 11.1V 1300 mAh Li-poly
Length : 785 mm / 30.1 in.	ESC : 20A Brushless
Weight : 695 g / 24.5 oz	Motor : DST-1100
Propeller : 8x6(Two blade propeller)	Servo : 9g x 4
Recommended radio system : 4CH	



Available at hobbyking.com

South African

PRU Mozzie

Alex Whittaker looks at Ted Cooke's all-electric Photo Reconnaissance DH Mosquito

Photo flash bombs loaded, MM3566 awaits her next PRU mission.



It is a little known fact of WWII aviation history that there was an operational De Havilland Mosquito PRU Squadron based in South Africa. This was 60 Squadron SAAF, founded in 1941, whose motto was 'Accipimus Et Damus' ('We take and we give'). It is said that Field Marshal Montgomery himself insisted that 60 Squadron be re-equipped with state-of-the-art Mosquitos, since they had previously operated a BA Double Eagle, and then Martin Marylands.

Initially based at Swartkop, they were later based at Bloemfontein. However, in the intervening period the Squadron was moved to North Africa and thence to Italy for ever-more demanding missions. Indeed their reconnaissance tasks eventually included missions over the Alps and deep into Axis

held territory.

In 1944 60 Squadron Mosquitos gained their invasion stripes. In the same year they gathered the first photographic evidence of Nazi Extermination Camps. The Mosquitos had been sent to survey the synthetic rubber plant at Auschwitz, but when analysed, the photos showed the true grim purpose of the death camps.

Immediately after WW2, 60 Squadron assisted in an RAF survey of Greece, before returning home to Bloemfontein in August 1945. Sadly, the Mosquito fleet was grounded in 1947 after a flying accident attributed to high humidity affecting the wood-and-glue Mosquito airframe.

The Model

Ted Cooke is a well-respected flying scale

modeller, best known for his display flights at LMA shows. He is an ambitious builder and when he first got wind of the new Mick Reeves Mosquito kit, he promptly ordered the electric version. This was a new departure for Ted, an erstwhile glow and petrol man. The last Mosquito Ted built was a diesel-powered control liner, over forty years ago. Ted attributes the lengthy gap to worries about one-engine-out performance.

Plan and Kit

The Mosquito is built from the Mick Reeves Models plan and kit, so accuracy was assured. The plan runs to three sheets, plus notes. The MRM Mosquito is designed for 15-25cc internal combustion power, or electric propulsion. The kit costs around





1: Amazingly slim tail and slender fin and tailplane. Note rib detail. **2:** Ted's model may have lost a couple of exhaust stacks in action, but the panel detailing is neatly done. **3:** Nacelle and door details all present. **4:** Distinctive engine nacelles, which had been extended on the DH prototype to counter tail buffeting. **5:** Side view of retracts and oleo. **6:** Retracts with oleo detailing. Note tyres showing weight of two Merlins!

£760 plus postage and packing and in true MRM fashion, many scale items and accessories to complete the model are also available.

Documentation

Ted conducted his scale research via the medium of the Internet, settling on the highly unusual blue and yellow 60 squadron SAAF example.

Incidentally MM386 is the sole example

of a SAAF Mosquito with full invasion wing-stripes. The others just had white tail bands.

Construction

The model is constructed in the traditional way in terms of the balsa wing panels and tail. However, the rest of the model is built-up around five epoxy mouldings, supported by laser-cut plywood parts. These are supplied with accurate full

panel detail already moulded in. Conveniently, the rear fuselage detaches at the scale joining position, while the outer wings are designed to un-plug for transport and storage, so this is a practical large-scale twin that disassembles into convenient size major airframe components for transport. The horizontal tailplane and the fin are built in the traditional way, with ribs and stringers.

Ted's preferred method of covering is



with *Proskin*. This is a hard fibreglass sheet, which requires less sanding that would be the case with treated wood surface skin, and delivers an excellent surface for paint. The outer wing panels were finished in the same way.

The rear section of the fuselage is secured by four M4 cap head bolts which are accessed through the cockpit. This area is quite large and the batteries can be inserted through this aperture, thus getting the weight exactly where you need it for the designated fore/aft balance point (CG if you really must use an incorrect term). Ted found that when installing the radio in this area, the CG came out in exactly the correct position without the need for any added weight.

Motors, Batteries, and ESCs

The motors chosen were Turnigy Aerodrive 63/74s. The speed controllers are Jeti 90s. The model is running on 12s lipos for each motor, achieved via two Turnigy 6s Nanotec Lipo 5000 mAh batteries per side.

Props

Ted chose two 16"x10" Master Airscrew (left and right rotation) three-blade props, which reach 8,000 rpm. This draws 40 Amps per motor. He reports that these electric motors proved more than enough for the job.

Engine Nacelles

Ted knew that building the two engine pods was going to be the longest task so he decided that, because of the amount of equipment in them, he would make them detachable. This turned out to be a good decision because he had to take them off many times during the build!

Spinners

Accurate prop spinners are an essential part of the authentic Mosquito look. Mick Reeves Models supply an accurate set of 5" spinners at £80 per pair, which Ted used.

Undercarriage

Mick Reeves 6" main wheels which cost £30 per pair were used, and the MR tailwheel which cost a fiver. Mick Reeves Models also offer a handsome practical (air-operated) retract set for the Mosquito. The mechanical parts cost £175 a pair, and the Robart Air Cylinders are £60 per pair. In addition, pipes, and valves have to be sourced.

Cockpit details

The cockpit instrument pane is Ted's own from scratch. However, the MRM Spitfire panel kit may be modified to use in the Mosquito. Cockpit canopies and blisters are all these are supplied in the kit, including two types of canopy and four types of blister.

Painting and Finishing

Ted says he selected this scheme "...because it stands out in the sky and it also makes it easy for us old guys to see...". He used shop-mixed acrylic car base-coat paint which he sprayed on, and leaving out the gloss top coat. No fuel proofer is needed, of course.



7: The basic glass fibre fuselage/centre section moulding. **8:** Basic outer wing panel, mated to moulded engine pod. **9 & 10:** Deep inside the fuselage, the radio and power panel trays. **11:** Moulded glass fibre components and outer wing panels now assembled. **12:** Man at Work! Ted delves into the forward fuselage via the cockpit well. **13:** One of the engine nacelle installation trays, that houses the rearward retracting main undercarriage leg and the electric motor.



Just after take-off with undercarriage down and doors still opened. The DH prototype used rubber bungees to close the doors.

Surface markings

All markings were painted on by Ted using masks made on an A3 plotter, joint-owned with his modeller mate Brian King. Again, shop-mixed acrylic automotive base coat were used.

Flying Notes

Since this was a new form of propulsion for Ted, he spent a while on taxiing trials, assuring himself that there really was

enough urge to get the model airborne safely. When he opened her up she tracked straight, which he attributes to the opposite rotating propellers. Acceleration was good and the lift-off was smooth and uneventful.

The model needed only two clicks of aileron to achieve perfect flying trim and all was well. Indeed, Ted says she is a joy to fly. However, on the first flight he did not lower the flaps, but it was still a smooth

and easy landing.

Overall, Ted is very pleased with the kit and he has explored a new form of scale propulsion. ■

Mick Reeves Models

www.mickreevesmodels.co.uk

SAAF website

<http://www.saairforce.co.za/>

Still startling after all these years. Has humble plywood ever looked so wonderful?





MM366 lifting off on a gloomy day in Yorkshire, yellow-tipped prop discs to the fore.

MODEL SPECIFICATION

Mick Reeves Models DH Mosquito
Designed for electric power, or
two 15-25cc internal combustion
engines.

Scale: 1:6.5

Span: 100" (2.54 metres)

Weight: 24lbs (11kgs)

Motors: Turnigy Aerodrive 6374s

Props: 16"x10" (left and right rotation)
three-blade props

ESCs: 2 x Jeti 90

(motors draw 34A each)

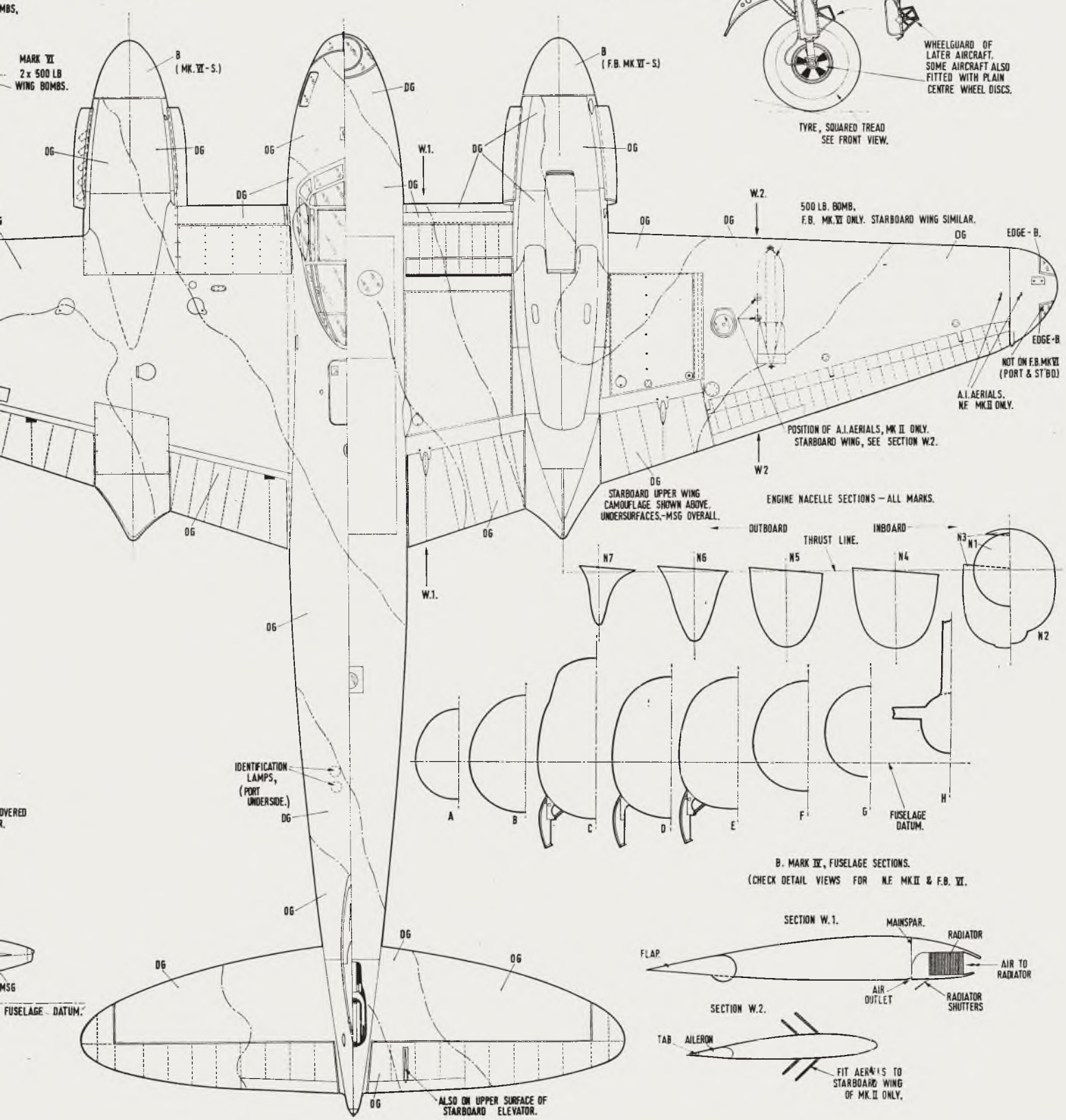
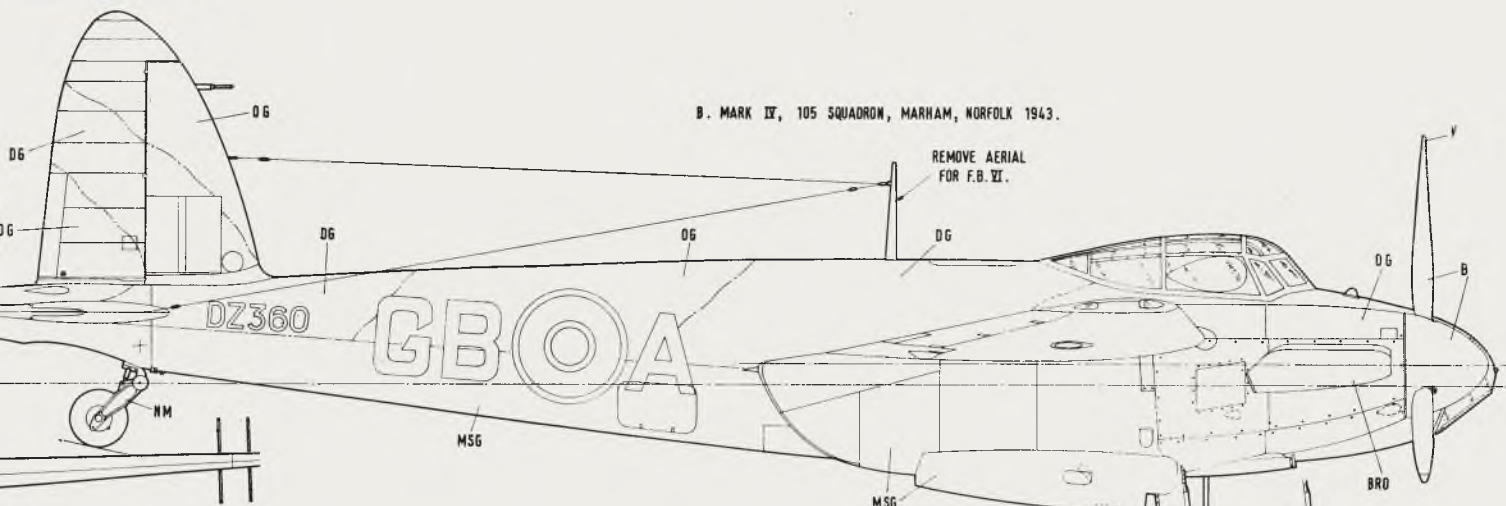
Batteries: 2 x Turnigy 6s Nanotec Lipo
5000 mAh batteries per side.



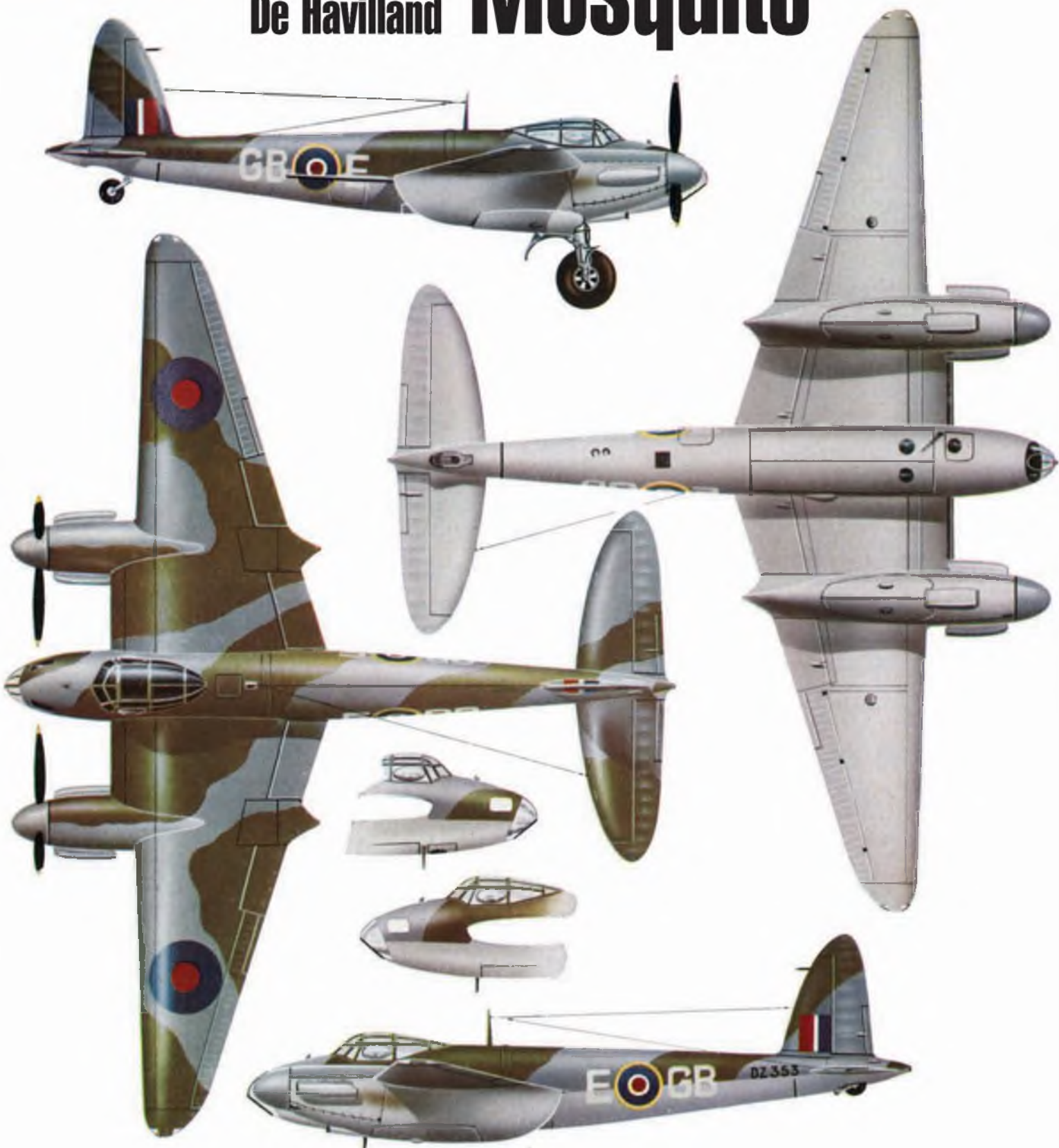
MM366 returning from a Photo Reconnaissance mission over darkest Yorkshire.



B. MARK IX, 105 SQUADRON, MARHAM, NORFOLK 1943.



De Havilland Mosquito



MOSQUITO Mk.IV, DZ353, of No. 105 (B) Squadron, Horsham St. Faith and Marham, 1943.



Prototype Mosquito, November 1940.



Colour variations of Sky Type S/Duck Egg Blue undersurface.



Mosquito B.IV, No. 139 (Jamaica) Squadron, Marham, Norfolk, U.K., 1942-43.



Mosquito P.R. Mk. I, No. 1 P.R.U. Benson, U.K., 1942.

Prototype Mosquito N.F.II, overall black night fighter finish, A.I. Mk. IV radar in nose.



B.O.A.C. Mosquito converted from B. Mk. IV DZ411. Flew the Leuchars-Stockholm route with diplomatic mail and passengers, returning with ball-bearings in the bomb-bay.



Mosquito T.III Trainer.



Mosquito T.III Trainer, Royal Navy, R.N.A.S., Brawdy, U.K.



Mosquito T.III Trainer, Turkish Air Force.

On Silent Wings by Chris Williams

SCALE SOARING

The last time around (May issue), I was at the finishing stages of the construction of my 1/3rd scale version of the Kaiser K11 motorglider. Just to recap a little, the K11 was a one-off machine

from which was developed the more successful and better-known K14, of which many model examples have been built. To my mind, the K11 is much prettier, and the 1/4 scale version I built originally was such a sweet flier that it was a no-brainer to see what a 1/3rd scale version would be like.

As a newcomer to electric flight, the only experience I had to draw on were the smaller K11, and the 1/4 scale Fournier RF-5b, to which I have previously referred. So, motor choice was the next size up from the Fournier:

thus the E-Max BL5335 was fitted, along with 120 Amp opto ESC and room for two 5s Lipos.

With the cowl made from balsa, it was a pretty tight fit, a fact which led to a particular decision later on. With the Lipos over the wheel, the CG seemed pretty good, and when the Big Day dawned, the K11 was assembled at the pristine site of the County Model Flying club near the Wiltshire/Dorset border.

The K11 leapt straight into the air as though it was a mere foamie, the two reasons for this being a: the motor was very powerful, and b: the CG was too far back! To add to my woes, the motor soon started to emit a nasty grinding noise and, almost as bad, a bank of fog rolled in and tried to obliterate her.

Not a good start, then, although the

model was still perfectly controllable, and my trusty flying companion, Smallpiece, managed to get some flying shots in the can. Back at base, it became obvious that some of the motor's magnets had migrated rearwards and were fouling the backplate, so following some advice on t'Interweb, I re-glued the magnets back in place with some penetrating cyano.

Next time out, with Lipos as far forward as they would go, the K11 was transformed into a perfect lady, with a climb rate that saw her at 300' in around fifteen seconds at half throttle. Power off, flight is slow and scale-like and at lower altitudes on a calm day you can hear the wonderful threnody of the air passing over the flying surfaces as she circles, a song that is different and individual to every

Peter Balcombe's 1/4 scale Socian from the Jilles Smits plan.



model glider I have ever flown. Alas, after a few flights came the sound of magnets migrating south for the winter.

What to do? Buy another identical motor, or something more expensive? One of benefits of the E-max range for model designers is that not only can you find all the relevant dimensions on their website, but you can download a drawing, too, which makes the design process that much simpler, and also allow for a snug fit within the cowl. A trawl online showed little in the way of such information from other manufacturers, with the exception of one, who at least showed the motor's diameter, too big alas, for the job in hand. (I should point out at this stage that I had exactly the same problem with the Fournier)

In the end, I bit the bullet and replaced the motor with an identical one, albeit from a different supplier. So far, fingers crossed, all is well, and flying takes place at half-throttle, still with a quiet and sprightly performance. As I may have mentioned before, a motorglider combines the best of two worlds: you can fly one up and down the patch like an ordinary scale model combining scale-like flight with mild aerobatics, then you can power-off and fly a glider instead, using your cunning to sustain flight by finding rising air and staying with it. Better still, with a light wing loading, mistakes at low speed are less liable to lead to Unplanned-Terra-Firma-Convergence-Syndrome... (Too see the K11 in action, Google: K11 BIG BROTHER)

TARANIS CONTINUED...

One other aspect of flying a motorglider is that you get an opportunity to try out new telemetry systems without having to drag a tug pilot out of his nice, warm bed. Even the top-of-the-range variometer from FrSky retails at an impressive £22, and I related last time around how Smallpiece had managed to slave a vario to a retract for automatic operation. With both the Fournier and the big K11, I recently had the opportunity to thermal soar with these units, and I can report that they seem to do everything it says on the bag, not that it says anything much. Once you have realised that with the X8R telemetry



Pat Teakle's ASK 18 at Woodspring Wings.



Bob Blackmore's 1/4 scale Slingsby T21 from author's plan.



Terry Holland's Farmhand tug, designed to weigh under the 7Kg limit.

receiver you have to simply connect the device to the smart port and bin the remaining two leads, it really is fit-and-forget. The vario tones work pretty much the same as any of the old standalone units, and the voice communications are as effective as many varios costing up to fourteen times the price. The advantages are numerous, and worth recording...

1: At the price, it's possible to have a vario in every model, thus avoiding all that panicked racing about when you get the front of the glider queue at an aerotow, and realise that the vario is in another model.

2: Ditto for the vario receiver that is

required with a standalone unit. The FrSky telemetry information comes from the transmitter to your ear, and you won't need a transmitter for every model as the Taranis has sixty model memories.

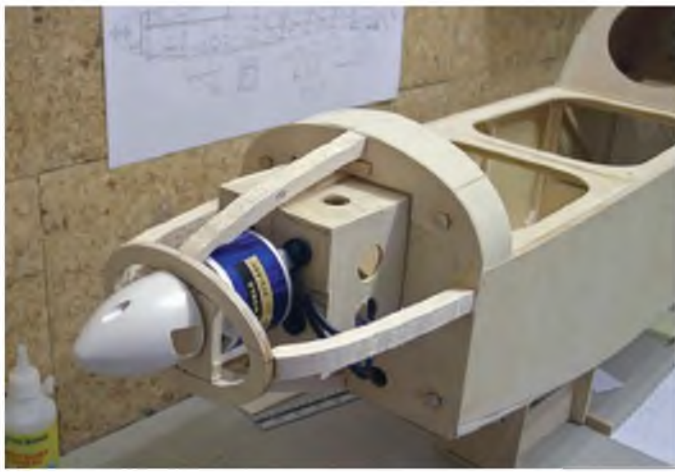
3: The volume of the vario can be controlled via a rotary knob on the transmitter, an analogue volume control no less...!

4: If your fellow flyers are annoyed by the beeping tones, or you want to keep the lift you have found a secret, then you can connect an earpiece to the transmitter.

5: It should be perfectly possible to set the tow release to let go at a pre-set



Glider queue at the Woodsprings aerotow.



Tight fit in the wooden cowl for the electric motor.



The K11 cowl finished, ready for sealing and painting.

altitude, or alternatively for an electric model a motor cut-off.

6: I have the tow release on my gliders slaved to the vario so that when I release I get an altitude reading. You can, of course, get an altitude reading via the same switch, preferably after you have released!

On the slope, the Taranis suffers from two minor drawbacks. When self-launching a large glider, the Tx needs to be held with the palm of the hand and just a couple of fingers. The Tx case is not optimised for such a procedure, and care is need to hang on to it; also, inadvertent pressing of buttons is quite a possibility. (I'm probably in quite a minority here)

The other problem is that when TX and Rx come in close proximity, this engenders the failsafe mode, and at first it was quite disconcerting to see the airbrakes come up on a model just as I was launching it. (Needless to say, as soon as a few feet of separation are gained, things return immediately to normal.

As an aside, with factory settings, every time this happens a verbal warning of 'telemetry lost, telemetry recovered'

sounds repetitively, which can be quite irritating; fortunately this can be turned off. So far, at least, the Taranis system seems like excellent value-for-money, and I look forward to getting to know it better...

WOODSPRING WINGS AEROTOW APRIL 12th 2014

By the time this event, organised by Cliff Evans, came around, three consecutive White Sheet event dates had already been decimated by the weather, so as this one coincided with a near perfect weather forecast of sunshine and light winds, hopes were very high. Alas, the Michael Fish effect once again came into play, not exactly a hurricane, but a strong and gusty wind meant that most glider flights consisted of a few circles going rapidly downwind, followed by an approach over a fence and a canal just to liven things up a bit. Nevertheless, after the winter we had just experienced, most of the attendees were simply glad to be out in the sunshine, and not getting wet! Alas, the crew and myself arrived just too late to see the maiden flight of the 1/4

scale Bocian, the construction of which we had been following over the winter months via the offices of the SSUK forum. A sticky airbrake led to a heavy landing, and the model had to be retired for the rest of the day. This Bocian is in the vanguard of what is possible in the digital age: it was designed in a 3D CAD programme by Australian modeller Jilles Smits, fired over the Interweb to the SSUK website where it was made available as a free plan. From there it wended its way to event organiser Cliff Evans and submitted to his laser cutting machine whence it became commercially available to any interested parties. Peter Balcombe was the interested party in this case, and a fine job he made of it too. If you visit said website, you will find a whole range of free plans, for many of which Cliff can provide a laser kit. Apart from that there is an eye-watering amount of documentation and info on the subject of scale gliders and motorgliders, not forgetting tugs, too.

(www.scalesoaring.co.uk)

It was interesting indeed to see Terry Holland's Farmhand tug in action. This was

Author prior to the maiden flight.





The 1/3rd scale K11 in action at the WMAC's Cashmoor site (Geoff Crew pic).



More K11 action (Geoff Crew pic).



The FrSky Variometer as tested by the author - hardly makes any great demand on fuselage installation space!

designed to weigh in under the 7Kg limit, a critical factor at some flying sites. Despite its diminutive size compared to Steve Vine's Z62 powered Titan, the farmhand saw a great deal of action during the day, even as the wind grew in strength and nastiness. By mid-afternoon, even the veteran, grizzled tug pilots had thrown in the towel, so it was time to pack up and wend our way homewards.

Despite the conditions, an enjoyable time was had by most of us, and thanks must go to Cliff, the Woodspring Wings hosts, and the tireless tug pilots for making it happen...

IT CAN ONLY GET BETTER

Since the events previously described, we have seen yet another White Sheet event rained off, and also the first of the TVSA

aerotows at Siege Cross farm. One can't help but feel some sympathy for the White Sheet Scale organiser, Steve Fraquet. Since the last successfully held fly in, he has suffered around seven or eight cancellations due to the weather. Surely, it can only get better...? ■

c_williams30@sky.com



Joe Spiers HW-4 Flamingo gets airborne at Woodspring Wings.



Airco

DH2



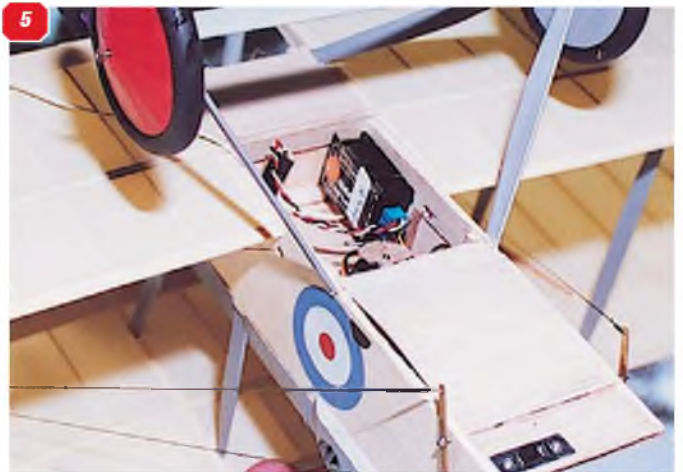
MIKE ROACH presents plans for a 1/9th scale 37.5" (953mm) span sport-scale replica for electric power and rudder, elevator and throttle controls

It was 'Uncle Roger', whose column on the back inside page of *Flight International* magazine, that I always used to turn to back then, and whose love of de Havilland aircraft obviously infected me. He used to caption his pictures of D.H.Moth aircraft with the sigh of "...aaah - de Havilland...". However, I don't think that he would have had quite the same to say about the Airco DH2, a single seat fighter of 1915.

In fact the DH2 had a certain logical neatness in its design (unlike its contemporary, the FE8 - to my mind a truly horrible looking aeroplane), but perhaps none of the elegance that Uncle

Roger so admired in de Havilland's later aircraft shapes. Its open cockpit, pusher engine and blizzard of struts, bracing and control wires are certainly a challenge to produce in 1/9th scale for electric power. The prototype model back when first built, used a geared 400 motor and seven cells, but for a more modern alternative one might consider something like an e-Flite ...10 with a 3S LiPo pack or equivalent as a benchmark.

There are some advantages to the pusher layout of course. For example, the battery and servos can be at the front and are easily accessible (and well out of the way of the propeller, which is safe



1: Upper and lower wing panels mated to the open form tailboom. **2:** One stage further on, with the basic components of the fuselage pod in place. **3:** The complete uncovered basic airframe. **4:** Tyres for the main undercarriage wheels were mad from closed cell sponge rubber for the prorotype model. **5:** Fuselage pod underside showing the main undercarriage struts and the access to the receiver. **6 & 7:** Two views of the tail-cone showing the mounting to the fuselage rear boom. **8 & 9:** Wing interplane struts. This is a one-piece model, so struts are glued permanently in place. **10:** Detail of the tail boom showing the anchor points on the wing amd inter-boom vertical spacers. **11:** 'Pilot Pete' in his drafty perch.

from damage and can be a nice wooden one) and the *Pete's Pilot* figure can play his full part in making the model look realistic.

Although the aircraft looks complicated, there is only one really tricky bit and that is the final assembly of what is, inevitably, a one-piece model, which is somewhat unconventional. The remainder of the structure is remarkably easy. Of course, the elevator and rudder require external control wires in 'real' locations, but this is now normal modelling practice, even at this scale.

This 1/9th model is to what might be called 'cartoon scale' - a true scale replica would have 1 mm diameter tail booms. It is very closely based on the constructional principles of Peter Rake's designs - build light and fly carefully - but although I modified his Sopwith Pup into a Triplane and a Tabloid, I have not had the courage to use a wooden prop just yet!

In full-size life, the DH2 was designed for just one purpose - to defeat the 'Fokker scourge' in 1915/16. Apart from the Germans, no one had at that stage of the

War designed a reliable interrupter gear, to permit a machine gun to be fired straight ahead without shooting off the propeller, so a number of British manufacturers produced 'pusher' aircraft, which gave a superb view and field of fire, at the cost of certain handling difficulties and despite being

quickly outclassed by the early versions of Albatros biplane fighters (D.I & D.II), the DH2 remained in service until 1917 and until 1918 in the Middle East. I have used a number of information sources for this model. The plan was enlarged from the scale three-views first published in *Aeromodeller* magazine and which are reproduced with this feature

this month. The colour scheme was taken from the *Squadron/Signal Publication No 171*. I also had help from the long-out-of-print Harleyford *'Aircraft Camouflage and Markings 1907 - 1954'* (which I was given as a birthday present in way back in 1954 - age 10); it had a very clear photo and a three-view).

Now, I am not a good pilot - I prefer

research, drawing and building and my weekends are taken up with sailing or windsurfing, so I never get to the shows, but the DH 2 presented here does fly, the motor has plenty of power and it looks good on the ground and in the air. All you W.W.I enthusiasts have just got to have a go!

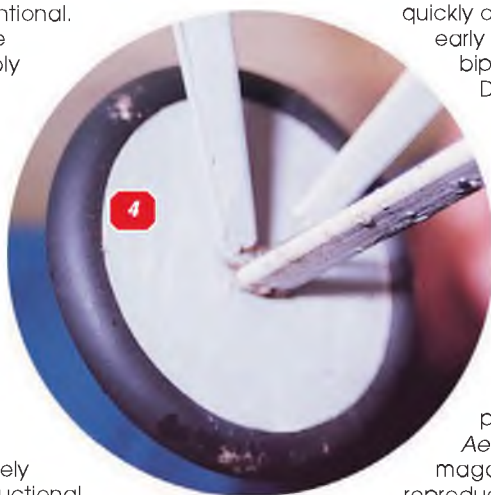
CONSTRUCTION

As you can see from the photograph of the naked airframe, the fuselage is a very simple box structure with integral struts, motor mounting plate and battery floor. The tail group is easy, light and non load-bearing. The wings are standard single-spar structures without ailerons, using diagonal housings to accept the boom, which is made of 1/8" (3mm) square spruce longerons epoxied to hard 1/8" (3mm) balsa uprights and may be rigged with button thread. In fact the whole model could be rigged to give a more scale effect - but life's too short!

The building and assembly sequence is critical in that nearly all the covering and finishing can take place before the major components are glued in place. This does demand accuracy and it may be better to make card jigs for wing incidence rather than rely on your eyeball as I did. Apart from the wing spars and the boom components, all balsa can be medium or light stock. All dimensions are in millimeters

FUSELAGE

Make two sides from 3 mm sheet with 3





x 3mm former supports. Make the cabane struts from two laminations of 0.8mm ply and don't worry if they seem thin and bendy as you make them: the glue adds considerable strength and rigidity. Use them as a pattern to cut out their slots in the sides and glue them in over the plan to ensure early accuracy to your project. When dry, add the 0.8mm ply patches to reinforce the joint. Fit and glue the lower formers, battery and motor plates to one side, then, when all is square and dry, add the other side and the top halves of the formers.

Now's the time to do some painting and decorating to the cockpit area, make up the instrument panels and give Pete-the-Pilot his first fitting. The full-size was only 24" (610mm) wide, so must have been quite a squeeze in flying kit and two layers of Long Johns!

The top of the fuselage is simply a wrap of 0.4mm ply. I made a thin card pattern first, which appears on the plan - but you may have to do a little trimming to get a perfect fit. The large cockpit opening leaves room for the battery to be loaded without the need for hatches, but you may find the pilot needs very personal surgery to get him in the right place, but fortunately you can leave this to the very last moment. The front cowling was made from alloy in 1915, but you can use block balsa, foam or a moulding, whichever is easiest. Just follow the very obvious panel lines on the three-view for a scale effect. Install the motor (I used an SP 400 with 2.33:1 gearbox) and all the rest of the hardware, including the distinctive elevator crank. This is a simple wire-and-squashed-tube affair running in tube bearings on each side of the fuselage. A nice hot soldering iron is all you need. The elevator servo is

taped onto a small ply plate, glued to the side of the fuselage. I didn't fit the rudder servo until quite late in the building process, but the plan shows the location and geometry needed for correct rudder movement.

I did all my painting and decorating at this stage. I like sanding sealer, dope and tissue, but *Lifespan* is just as good on the fuselage sides. All the plywood and fittings can be painted mid-grey with as much weathering as you like. I do not think the DH2 was a clean aircraft. Fuel spills from the dorsal fairing, mud on the step, blood on the carpet...

UNDERCARRIAGE

If you make up the undercarriage now, the front legs can be sewn to F2B and epoxied to F2A, but the rear mounting must be left undone until the lower wing is fitted. I made the wheels to Peter Rake's techniques but for the tyres I used 10mm dia. closed cell sponge rubber cord

BOOM AND TAIL

Build the boom sides and when

completely dry, join over the plan. Build the tail group (note that all the outlines are from three laminations of 1 x 3 mm balsa), cover and decorate, then glue the tailplane and fin onto the boom. I left the

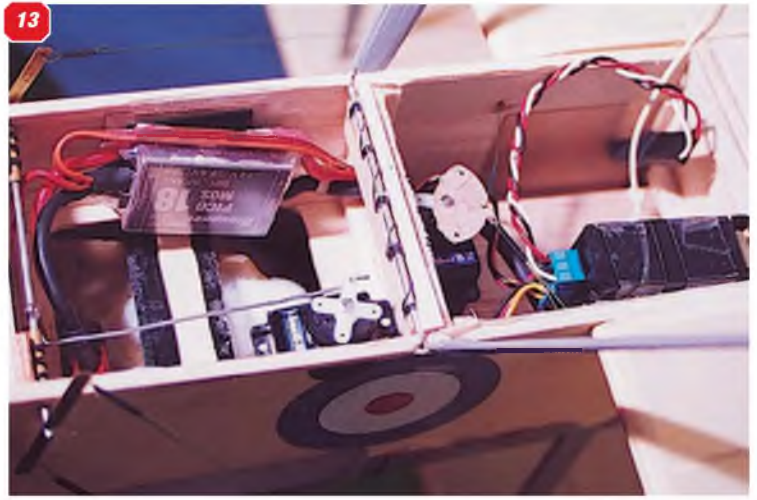
undersurface of the tailplane centre section uncovered to ensure a good joint. The boom group should (must!) fit into the receiving slots in the lower wings, but you can do a number of dry run assemblies and adjust the fit of components as necessary. The flexibility of the hardwood boom arms means that it is

easy to do this at any stage of the building process.

WINGS

Build the wings and top centre section, ensuring that the ribs that are to receive the struts are reinforced with ply patches and are correctly angled so that stresses are not built in during assembly. I let the ribs into the wing trailing edge: butt joints and small fillets may be just as strong. The tips are made up from four laminations of wetted and pre-glued 1 x 4 x 320 mm strips, formed





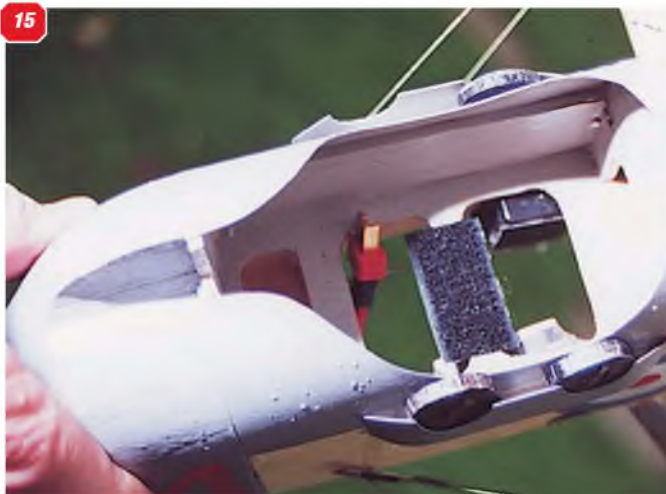
12: The dummy rotary engine hangs out in the breeze and really needs to be there for realism's sake. **13:** Another view of the fuselage pod underside with access hatch removed to reveal the full radio and battery installation. **14:** The forward fuselage pod, showing the dummy ammunition box on the cockpit rim with ammo drums in place. **15:** The pilot figure sits comfortably on a Velcro type strip.



14



15



round a line of pins on the plan while they are still wet from the water and glue.

Pack up the lamination as shown on the plan to get a good-looking curve at the tip section. The boom housings are pre-assembled before fitting to the wing and then the back half of the ordinary ribs is fitted over the top, for scale effect. Join the top wing panels to the centre section using the dihedral braces (but measuring the dihedral accurately at each tip rib) and the lower wing panels to the spar/dihedral brace (there is no lower centre section).

COVERING AND DECORATION

I used cream *Litespan* to cover all flying surfaces, matt side out and cut across the grain of the material. For newcomers, *Litespan* has a grain running along its longest side - covering an open-structure wing with cross-grained pieces produces more sag between the ribs; using pieces cut along the grain gives a flatter, tauter covering. It also has a 'satin' side (next to the protective polythene) and a matt side.

Experiment, then chose a side and a grain direction and stick with it for the whole aircraft, or you'll have a patchwork. I also find it helps greatly in the covering process to use a Gluestick to wipe round the outline. This gives the covering something to grip onto while you get it in exactly the right position, and does not affect the *Balsaloc* at all. I made the roundels and letters from painted *Solartrim*, which works well on flat surfaces but is less happy on complex curves such as the upper wing. Much better to paint directly onto the *Litespan* before actually covering the wing - something I will do next time!

LAST LAP

Now you can glue the lower wing into the fuselage. The dihedral brace just slots into the pre-cut sides, up against F3 and the end ribs should fit snugly against the fuselage. Jig carefully for correct incidence and dihedral.

Next, sew the rear undercarriage legs to F4A and epoxy this to F4. Make and paint the struts and make sure that they are an accurate and tight fit into their respective ribs, which must not be twisted out of alignment by them. The



CUT PARTS
SET FOR THE

AIRCO DH2

Get straight down to construction without delay! This month's full size free plan feature is supported by a laser-cut set of ready-to-use balsa and plywood components. This provides all the parts that, otherwise, you would need to trace out onto the wood before cutting out.

**IT DOES NOT INCLUDE STRIP
AND SHEET MATERIAL OR
SHAPED WIRE PARTS**

Price £59.00

plus carriage: £11.50 (UK); Europe £26.00

Order set CUT/FSM3

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.

Visit our secure website:

www.flyingscalemodels.com

to order yours



Order direct from:- ADH Publishing, Doolittle Mill, Doolittle Lane,
Totternhoe, Bedfordshire, LU6 1QX, UK. Tel: 01525 222573/
enquiries@adhpublishing.com.



exceptions are the rear inner struts, which, because they lie at the intersection of rib, housing and boom, must be butt jointed at the top and can only be slightly let in to the bottom wing. I have to admit this is a weak

point of the model's design, but epoxy and reinforcing fillets have held together so far!

ASSEMBLY

Glue the upper wing to the cabane struts, and eyeball or jig for correct incidence and 'squareness' to the fuselage and lower wing. When this is completely dry, fit and glue the boom group into both wings. Re-check the incidence and squareness of the assembly while you have the chance! The wings are flexible enough for you to epoxy in all of the interplane struts (except the inner rear ones), then check again for squareness and incidence.

If the top boom longeron is level with the underside of the top wing and the wing are square and parallel, all will be well. If you want to add rigging, this is the time to do some of it. Glue in the inner rear interplane struts (which must include the rudder and elevator cable guides) and their reinforcements.

I cannot think of a better way of fixing these struts, since they really should 'bolt' onto the boom arms, but at this scale that seems to be too difficult. Fix and forget! Finally, install external control runs and test for free movement.

Test fly at a design weight of no more than 1 lb 10 oz. (780

grams). The prototype weighed 1 lb 7 oz (650 grams). Here you will discover that the model must take off from your grass or farmac - I didn't dare try to hand launch!

Add the Lewis gun and the dummy engine (which, on the prototype models bolted directly onto the Graupner gearbox using the existing bolts) and any other lightweight detail. The real engine would have rotated with the propeller, but spinning a balsa dummy at 7,000 rpm is asking for trouble, in my view! I used Revell silver to paint both items, then dry-brushed matt and gloss black to give 'life' to them. If they look like metal, you've done well. Humbrol do a metallic black enamel that does much the same job in a tenth the time.

FLYING

Storms and rain delayed my test flight until a mild and gentle day finally appeared. As I said, you cannot hand-launch this model, but even on roughly-cut damp grass, she lifted off smoothly and flew 'straight off the building board' into a 10-knot breeze. My friends in Christchurch & District MAC will not be surprised that the landing was a wheels and nose affair, but this remarkably attractive model flies just as well as more conventional aircraft. It needs all the rudder movement you can give it, but only the usual amount of elevator, especially with power on.

If you build the DH2, you will enjoy a rarely modelled, but very rewarding aircraft and a unique shape in your sky. ■

LX F-4F Wildcat 1.2m

NEW!!

Available in Blue or Yellow/Silver

RTF (READY TO FLY) £315.00

ARF (ALMOST READY TO FLY)

£255.00



Features:

- 6 CH 2.4GHz Radio Controlled (Aileron, Elevator, Rudder, Throttle, Retracts)
- EPO Flex Foam for excellent impact resistance
- Available: In Blue or Yellow/Silver
- High simulation appearance
- High scale electric retracts
- Hand-actuated folding wings
- Reliable high performance 17g digital metal gear servos
- Stable inverted flight
- Excellent hedgehopping performance
- Excellent stability of nosing up and down



Available from your local model shop or you can order direct. Free delivery within UK Mainland.

Tel: 01276 857107 Email: sales@surreymodels.co.uk

Check out our High Scale Jets and Warbirds at our New Website:

www.surreymodels.com



RC
SURREY MODELS

SURREY MODELS, Unit 8, Bournside Industrial Estate,
Station Road, Chobham, Woking, Surrey, GU24 8AS UK.

SURREY MODELS UK Sole Distributor for LX Models



1



Airco

DH2

A quaint, but effective rebuff for the German 'Fokker Scourge' of the 1914/15 WW1 period, although its success was short-lived

Necessity is deemed to be the mother of invention and, in the case of aircraft design, it is the design specification and the envisaged task that dictates shape. Thus, when considering modern-day airliners that proliferate in twin and four-engine configuration, all with engines slung under the wings, it's tricky to know which is which!

Designed in early 1915, the Aircraft Manufacturing Company's DH2, designed by Geoffrey de Havilland, was the Royal

Flying Corps' first single seat fighting scout aircraft.

During the opening stages of WW1 over the 1914-15 period, it was the Fokker monoplanes that gained the upper hand, for all sorts of reasons, not all entirely to do with aircraft performance. For example during the very formative stages of the British Royal Flying Corps, aerobatics were either frowned upon or actively discouraged, so that aircrew were hardly experienced in the art of aerial combat maneuvering.

But one of the greatest assets of the Fokker Monoplanes was their Interrupter gear that synchronized the forward firing machine gun, to the propeller speed, allowing the machine gun to fire through the propeller arc without blasting off the propeller blades. Thus, in air combat, the whole aircraft could be pointed directly at the enemy aircraft, obviating the necessity for the pilot (of a single-seater scout) to manoeuvre his aircraft into a position from which a flexibly mounted gun could be man-handled into a free-of-

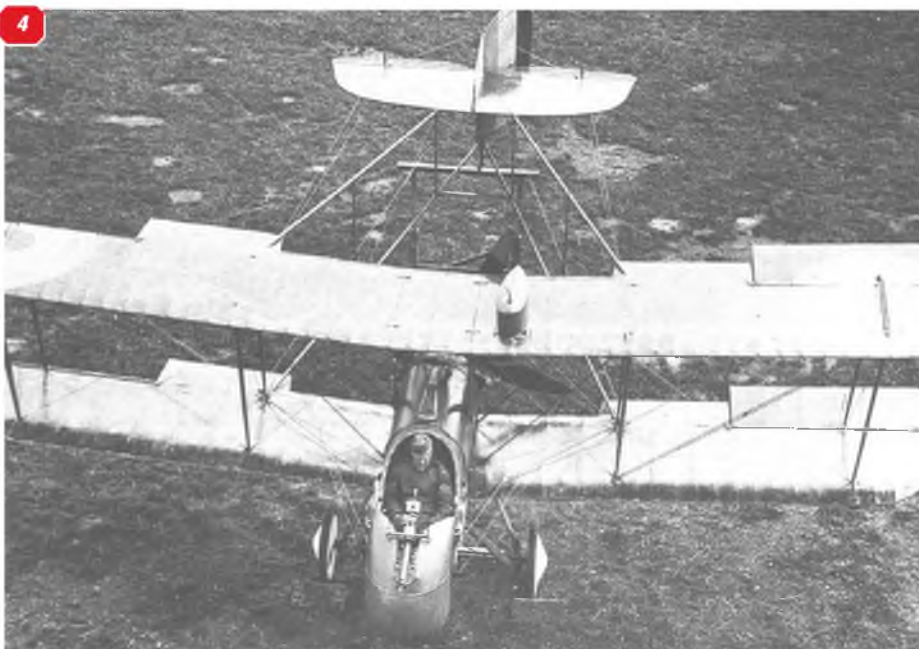


1 "One of our aircraft is missing". German pilots examine the the first Airco DH2 sent to France for tests in 1915 and lost after couple of weeks of operations. German ace Oswald Bloelke is the man in the cockpit.

2 A production DH2 from the first batch with gravity fuel tank mouned under the left upper wing.

3 First prorotype DH2. The nose and windscreen differ from the production example above.

4 This view illustrated the wide spread of the fuselage booms and the tight width of the cockpit. Fuel tank here is mounted above the upper left wing.



obstruction aiming position while still flying the aircraft.

The Germans, for their part, fully appreciated the advantage of their Interrupter gear and were careful not to give combat over the Allied side of the lines, to prevent the Fokker Monoplanes falling into Allied hands, and thus revealing their technology advantage.

Thus, when developing a counter to the Fokkers in early 1915, and with no equivalent interrupter unit, the definitive answer came in the form of a pod-and-boom airframe with pusher engine mounted at the rear of a fuselage pod behind the pilot positioned well forward of the wing leading edge and the rear flying surfaces linked the wing and fuselage pod by an open-Vee framework spread wide enough at the front to clear the propeller. Thus was borne the Airco DH2.

Geoffrey de Havilland had prior experience of the pusher layout dating back to his first ever design, his DH1 (not to be confused with the Airco DH1 that preceded the DH2). That original DH1 design was flown by him personally in 1909, being a fully open-framework airframe with the engine behind the wing.

The Airco DH 2 was developed from the two-seat scout/reconnaissance Airco



5: The machine gun mount in the cockpit. Note also the rudder control bar. **6:** Another early example of the Airco DH2. It has a four-blade propeller here, but most really early examples had only two blades. **7:** After being outclassed on the Western Front in France in late 1916/early 1917, Airco DH2 aircraft were sent further afield to the Middle East where the type continued to do useful service.

DH1 and was the Royal Flying Corps' first single-seat fighter type and proved to be an effective counter to the Fokker E.III, which had, hitherto, been the scourge of allied reconnaissance aircraft.

The Airco DH2 entered service in France when No.24 Squadron RFC began operating the type from February 1916. Earlier, in mid 1915, the prototype DH 2 had been sent to France to be operated in combat conditions by No.5 Squadron. However after only two weeks in the combat zone, it was lost on the German side of the lines while being flown by the Squadron commanding officer. On that eventful sortie, the aircraft attracted ineffective anti-aircraft fire, which, in turn, drew the attention of a two-seat German Albatros recce aircraft, which engaged the DH 2, whose pilot received a fatal head wound. Though mortally wounded, Captain Maxwell-Pike landed the aircraft with sufficient skill that only superficial damage was incurred.

Thus presented with an intact airframe, the Germans easily rebuilt the aircraft, but seem to have been unaware of its significance as a new type and they

never tested it. However, in view of the prototype DH2's significance at the time, one might be forgiven for wondering where those responsible for allowing a valuable prototype aircraft to be placed in such jeopardy, might have been when brains were handed out!

The layout of the DH2, which positioned the pilot way out in front of the wing, offered excellent visibility but in arctic operating conditions during winter months, the pilot met the full force of the airstream at 12-13,000 ft with only a superficial apology for a windscreen as protection. Heavily bundled against the elements, it must have been a tight fit in the cockpit which was not much wider than a couple of feet.

Although outclassed by the end of 1916, the DH 2 continued to be used on the Western front well into the following year and during that time was operated by such 'aces' as Major Lanoe Hawker, killed in the type on November 1916, in combat with Manfred Von Richthofen in an Albatros D.II. Major James McCudden also operated the type and commented on the extreme cold experienced at

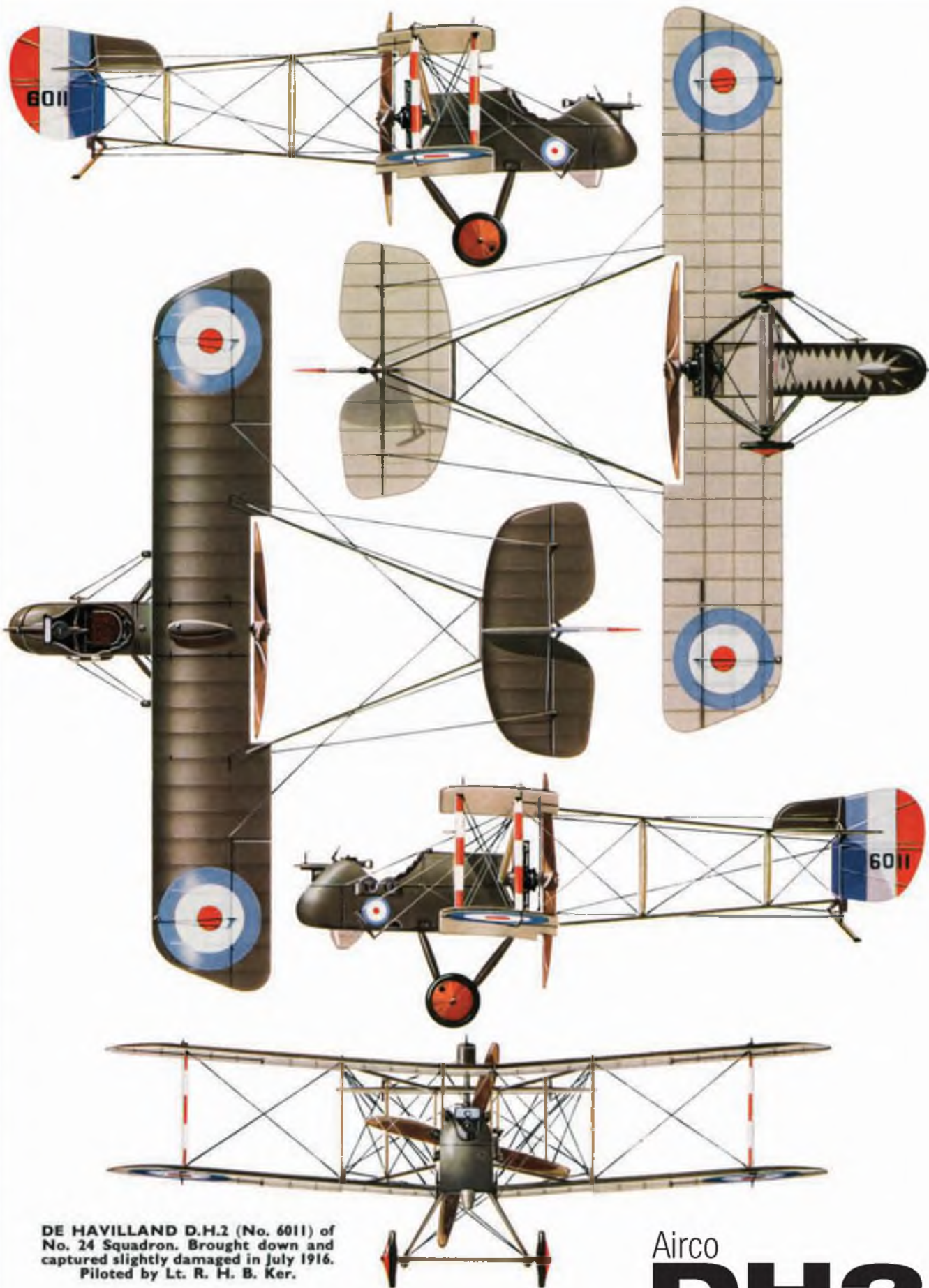
operational altitude during the winter of 1916/17, while Major L.W.B. Rees gained a Victoria Cross for an action in his DH 2 when he took on ten German aircraft.

Withdrawn from operations on the Western Front by mid-1917, the DH 2 continued to be used as a trainer and remained as a combat type further afield in the Middle East until much later.

Allied aircraft of WW1 normally lacked the distinctive individualistic colour schemes quite common among aircraft of the German Imperial Air Service and the DH2 was, universally, among the more plain of the 'Plain Janes' of the era - probably due to the lack of fuselage side area with which to be creative. Early production aircraft emerged with plain-doped fabric and grey painted fuselage upper decking and tail-boom members.

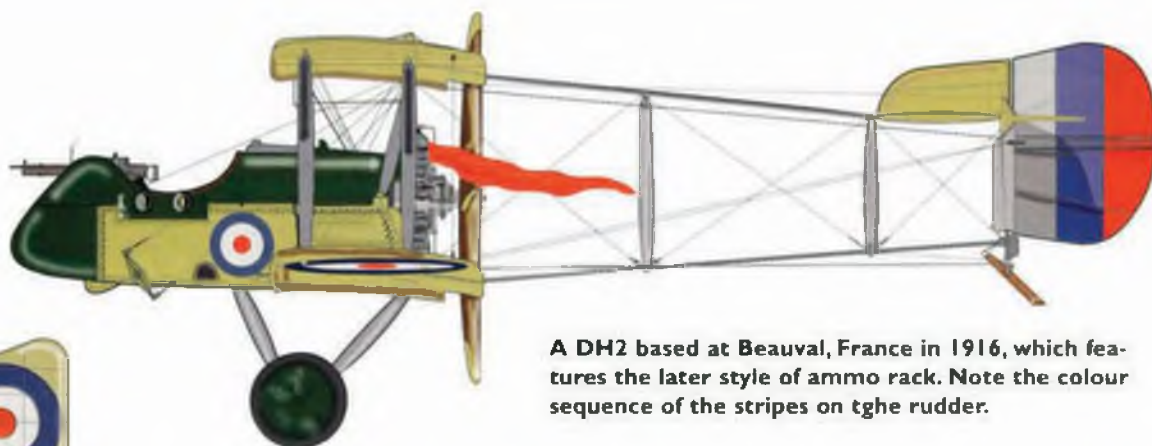
Later machines featured PC10 Khaki/Green wing and tailplane upper surfaces sometimes with grey upper fuselage and tail booms, others with PC10 coloured fuselage pods. ■



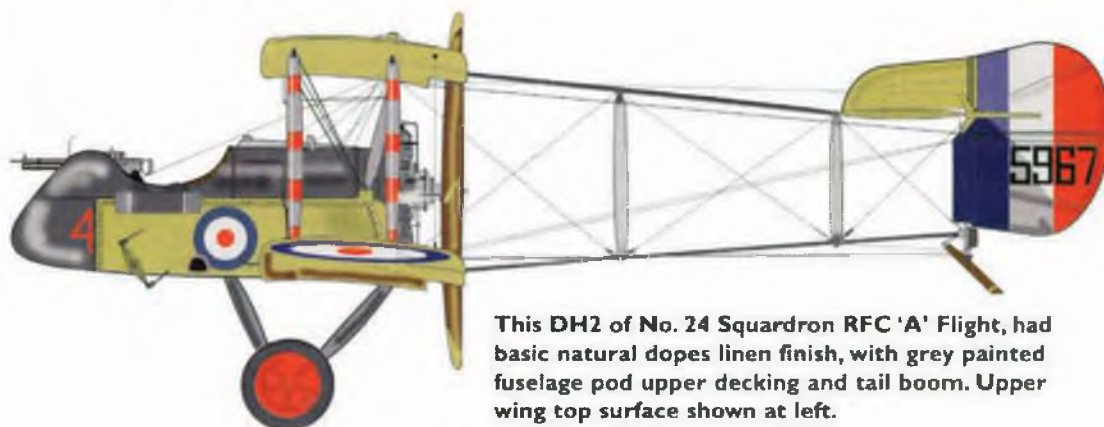


DE HAVILLAND D.H.2 (No. 6011) of No. 24 Squadron. Brought down and captured slightly damaged in July 1916. Piloted by Lt. R. H. B. Ker.

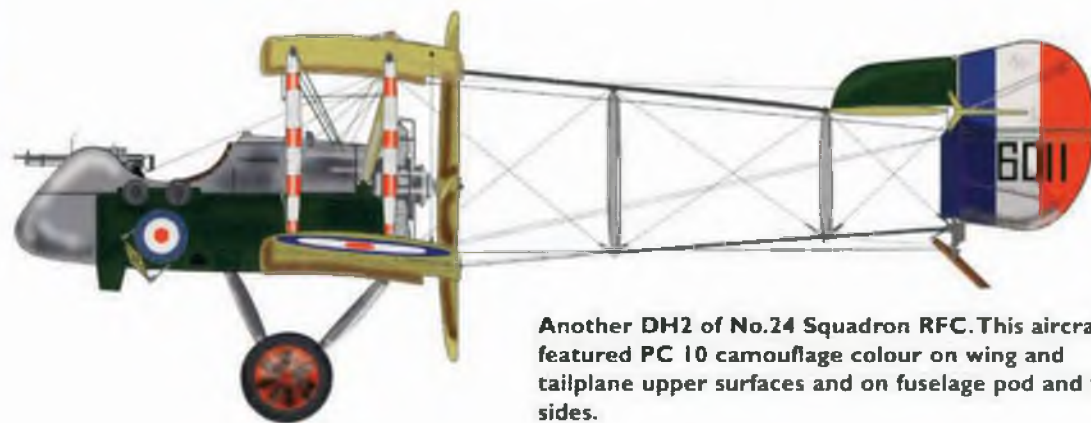
Airco
DH2



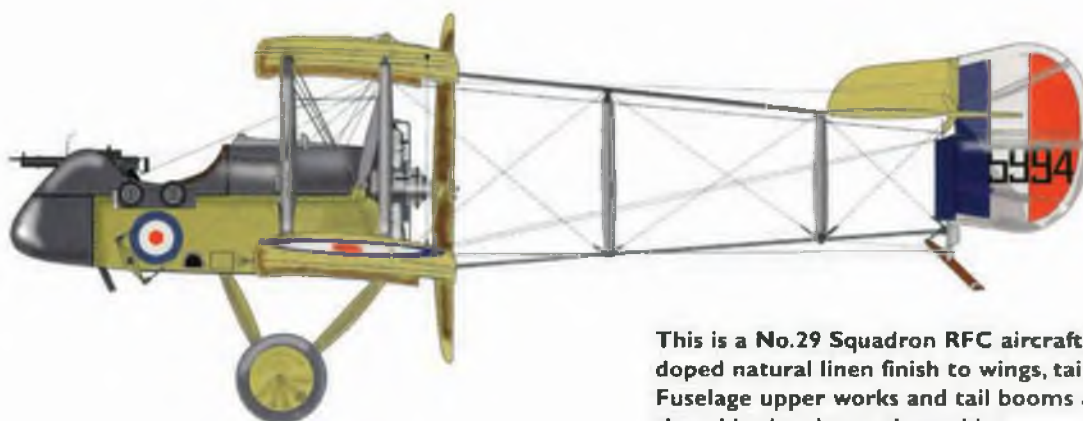
A DH2 based at Beauval, France in 1916, which features the later style of ammo rack. Note the colour sequence of the stripes on the rudder.



This DH2 of No. 24 Squadron RFC 'A' Flight, had basic natural doped linen finish, with grey painted fuselage pod upper decking and tail boom. Upper wing top surface shown at left.



Another DH2 of No.24 Squadron RFC. This aircraft featured PC 10 camouflage colour on wing and tailplane upper surfaces and on fuselage pod and fin sides.



This is a No.29 Squadron RFC aircraft, with clear doped natural linen finish to wings, tailplane and fin. Fuselage upper works and tail booms are grey. Note the white border to the rudder.



D.H.2 Prototype in original scheme.



D.H.2 Prototype in later scheme.



Upper wing detail,
note central position of roundel.



D.H.2 in early standard scheme.



D.H.2 of second production
batch in standard scheme.



D.H.2, No. 24 Squadron,
R.F.C., serial unknown.

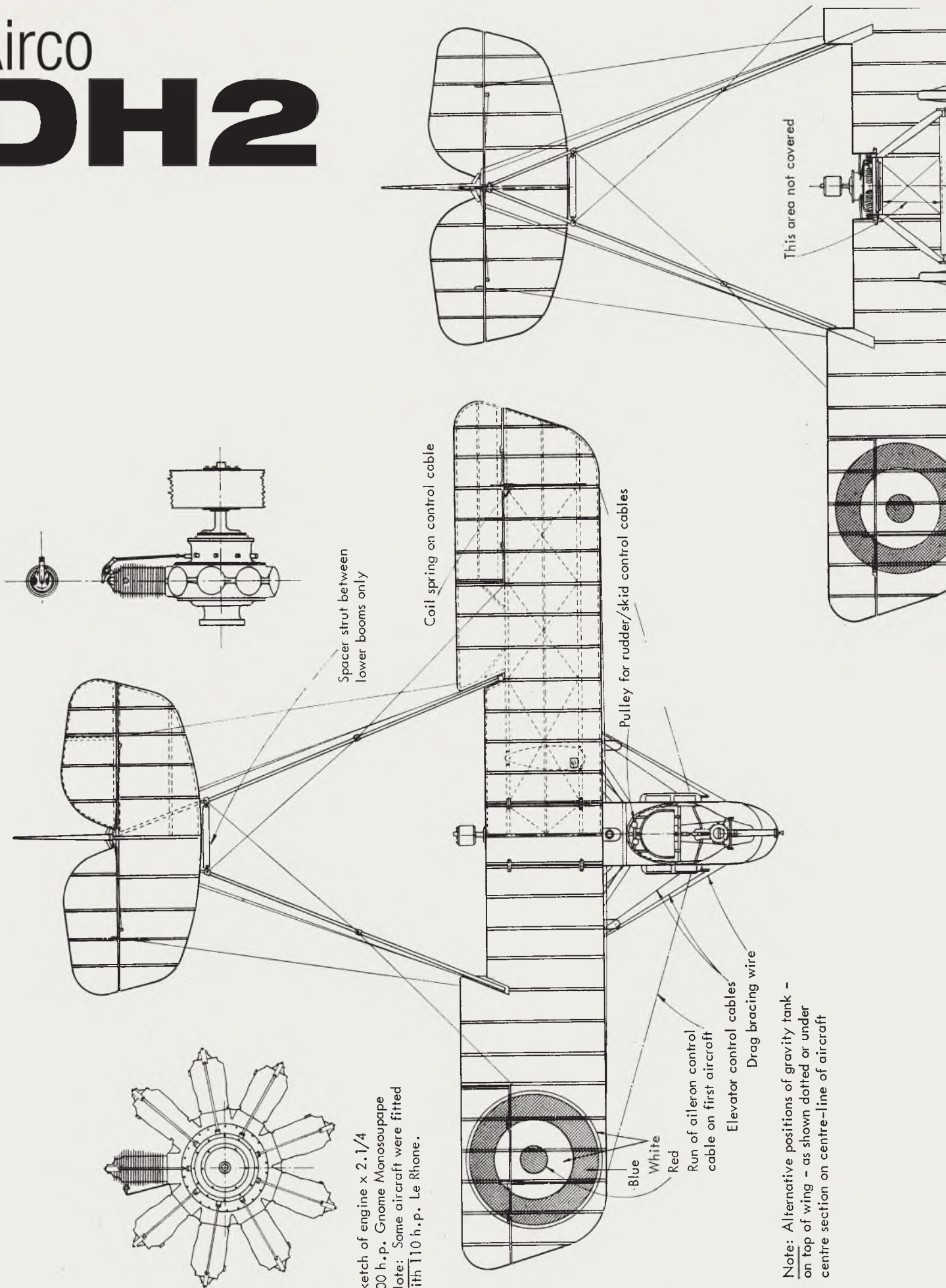


D.H.2 with non-standard rudder stripes,
Fourth Army aircraft park, Beauval,
France, 1916.

Airco
DH2

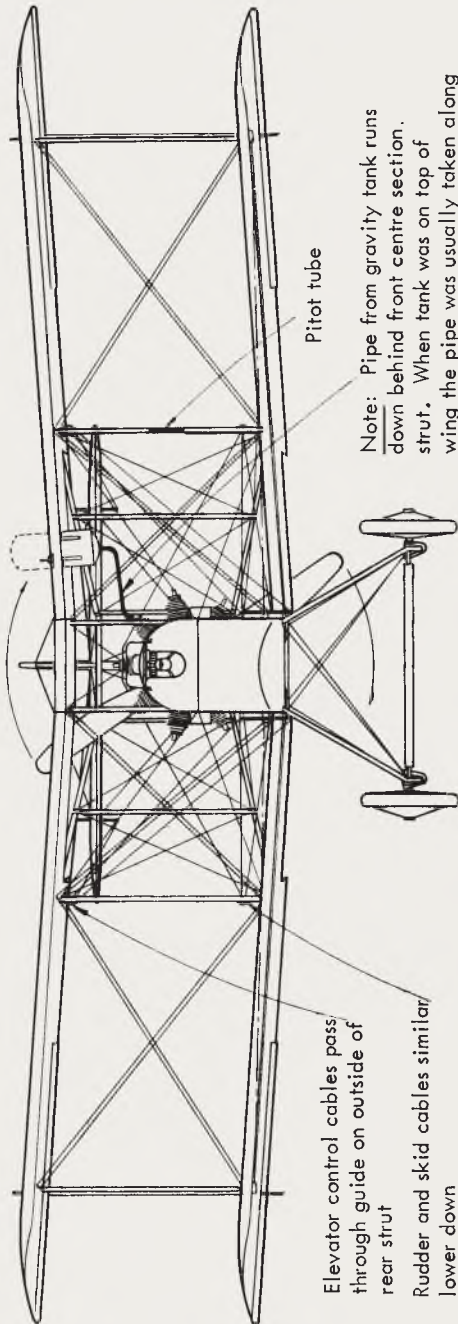
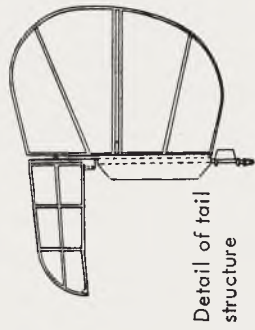
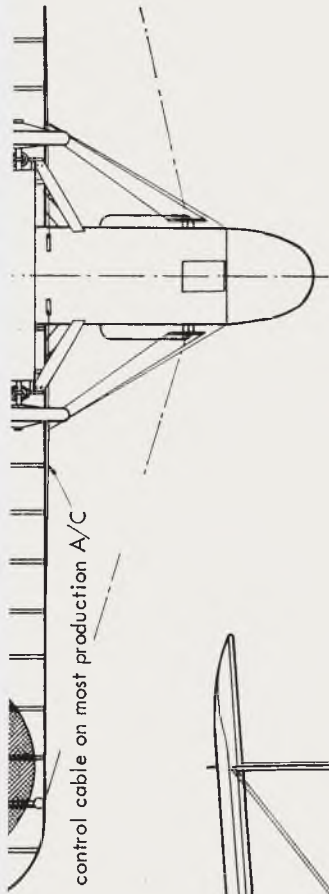
SCALE 1:50

Airco DH2



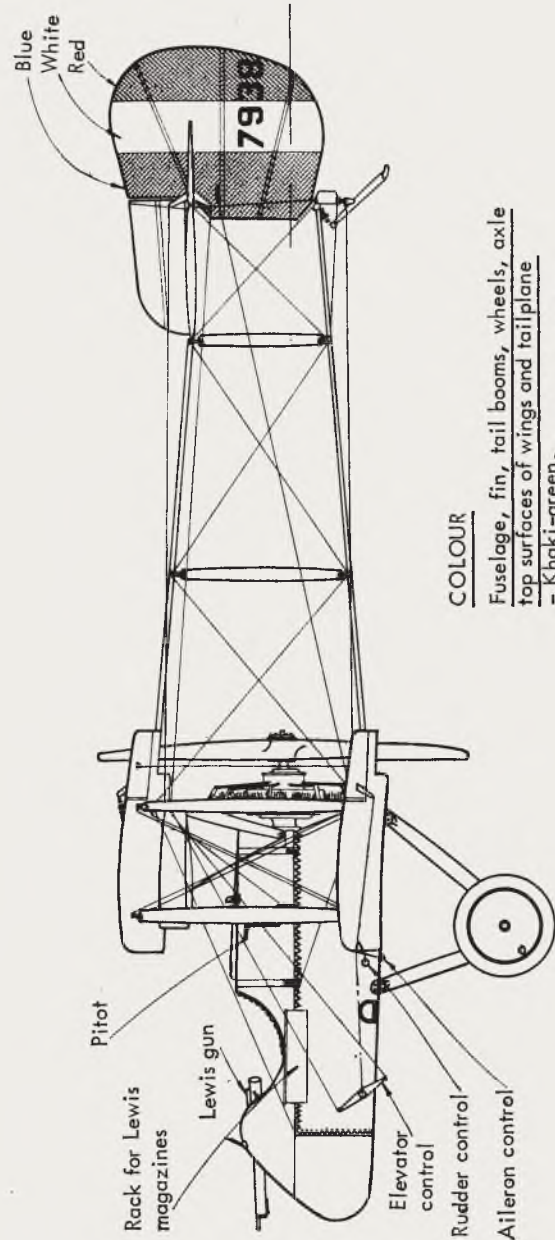
Sketch of engine x 2.1/4
100 h.p. Gnome Monosoupape
Note: Some aircraft were fitted
with 110 h.p. Le Rhone.

Note: Alternative positions of gravity tank -
on top of wing - as shown dotted or under
centre section on centre-line of aircraft



Note: Pipe from gravity tank runs down behind front centre section. When tank was on top of wing the pipe was usually taken along the underside of the leading edge and then down strut.

Note: Flying wires were double and bound together thus appearing wide when seen from side



COLOUR

- Fuselage, fin, tail booms, wheels, axle
- top surfaces of wings and tailplane
- Khaki-green.
- Under surfaces of wings and tailplane
- clear doped, light buff
- Struts - polished wood

Pilot figures are almost a separate art entirely. Well made cockpit seats are also a major contribution to realism.



ICING ON THE CAKE... COCKPIT DETAILING

A GUIDE TO THE TRICKY TASK OF COCKPIT DETAILING: PART 1

The final touch to any scale model has to be a fully detailed cockpit. In terms of the flight performance, one might consider such detail to be unnecessary, impractical and time-consuming, and inevitably absorbs time that could be spent at the flying field, or maybe on another scale project.

On the other hand, there has to be a heightened sense of satisfaction in the realism achieved if you are prepared to go to these lengths and the minor weight

can be offset by careful choice of materials elsewhere in the airframe.

When and where to start?

Some top scale modellers prefer to furnish the cockpit right down to the last detail at some convenient stage before the model is complete and painted. Others leave it as the final task, while such additional effort may even be left until after tests flights have proven the model.

There's no firm rule, but it is important to consider what surface damage might be

done if cockpit work is left until after the external final finish stage.

Almost any cockpit, even some of the 'offices' of very early aircraft can look complicated. However, provided that pictorial and diagrammatic detail can be amassed before commencement of the task, it is usually possible to break down the furnishing of the cockpit well into convenient sections and units which, taken one at a time, can be individually created and, finally, fitted into place.

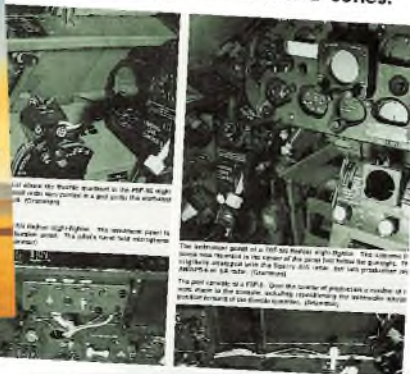
Collecting the detail

Acquisition of good information is often the difficult bit. Even if you obtain access to the full size subject, perhaps parked on an airfield, cockpits, particularly enclosed ones, are difficult to photograph without maximum co-operation from the person in charge of the machine. Often, enclosed cockpits of full size aircraft are locked. Even in the case of open cockpit types, it will often be necessary to use a step ladder to get a camera into the right position and expert use of flash equipment will be necessary to avoid the cockpit well showing up in photographs as little more than a dark dungeon.

Provided you can get the necessary



Good example of detail info source, the Squadron/Signal 'Walk Around' series.





A little bit of fine dust around the instrument panel produces a convincing effect.



WW2 warbird types feature a lot of interior side-panel detail - like this Messerschmitt Me 109G



The Squaron/Signal 'Walk Around' series delve deep into the colose up detail of an aircraft.

access, one option is to take notes and make sketches of as much detail as possible. Take measurements wherever you can to make sure that, when cockpit furniture is scaled down to the desired size, an accurate 'fit' is achieved.

Obtain as much detail as you possibly can, indulge in what you might consider to be overkill. You can never have too many pictures, sketches and drawings to confirm shapes and positions when you get down to detailing that cockpit - or any other part of a scale model for that matter.

Remember to go for angles not normally expected - upward at the cockpit roof, seats, views behind the seats if you can get there - and also the cockpit floor (flash gear usually very important here).

Detail in print

The more rare and obscure the aircraft type, the more difficult it may be to ferret out the cockpit detail you need. On the other hand, in the case of obscure types - who could argue with your interpretation!

Such considerations, and the level of cockpit detail you want to apply, may have a bearing on the scale subject you choose.

Fortunately, these days, as book and monograph publishers seek to expand their ranges to obtain new business, more and more obscure aircraft are 'getting the treatment'

and there is probably a good chance of finding what you are looking for - just ask such questions before you embark on the project!

Some of the best sources include:-
Albatros Productions: they specialise in WW1 types and have a very substantial range of monographs, which go into great detail. You can find them at 10, Long View, Chiltern Park Estate, Berkhamsted, Herts, HP4 1BY, Great Britain.

Squadron Signal Publications: their *Walk Around* series of extensive picture profiles each delves heavily into the kind of detail that modellers want. These all have more pages than their *'In Action'* series which are also very useful.

In UK you get them via ADH Publications, Doolittle Mill, Doolittle Lane, Totternhoe, Beds, LU6 1QX

The Aviation Bookshop: another mail order house with a wide range. (33 Vale Rd., Royal Tunbridge Wells, Tunbridge, Kent, TN1 1BS. tel: 01892 539284).

Pilots Notes: an extensive range of pilots' handling notes have been reprinted for sale. These are a very good source of cockpit and other details, and the **RAF Museum** at Hendon and Cosford offers an extensive range.

Browse at the shows: mail order is fine, as long as you really know what you are getting when you order. An alternative, if you can wait, is to attend shows and events where aviation booksellers trade.



JUST HOW DETAILED DO YOU WANT TO GO? These are some of the individual cockpit furniture items that Master scale modeller Peter McDermott applied to his De Havilland DH9. Items prepared individually ready for installation



Fully furnished cockpit of Peter McDermott's DH9 - all those individual instruments and fittings in place.



The Albatros Productions range is an excellent detail source for WW1 era aircraft types

The annual IPMS show each October (usually at Telford) has most of them. Likewise, the outdoor airshows, like those at IWM Duxford and the Shuttleworth Collection at Old Warden

Are you ready, let's begin

The preferable time to start creating the cockpit is at the design stage, because the cockpit construction may well dictate how you construct the fuselage in order to permit realistic cockpit side walls. Even when building from a kit, it should be possible to make suitable modifications to achieve the desired result. The same applies if you build from plans and should influence

In addition to detail info, many publications provide fascination insight into aircraft type histories.

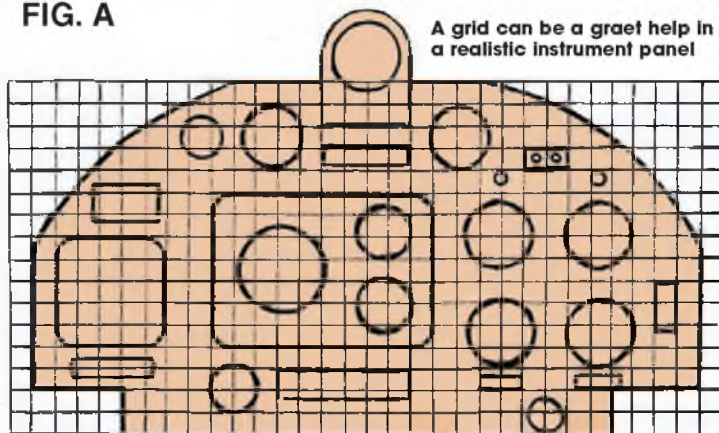
the structural layout if you 'roll your own'.

In most cases, complex internal structures that form the cockpit side walls for example, will simply be dummy embellishments imposed in such a manner to achieve the desired effect. These should go in at quite an early stage or it may be impossible to fit these in later.

The same is true for much of the basic painting, so seal and sand as you go along. Filling the grain of balsa or ply and sanding to an even, fine finish can be difficult in a confined area.

One material that ideally gives the aluminium effect is printers' Litho plate.

FIG. A



A grid can be a great help in preparing a realistic instrument panel



ABOVE LEFT: There's no hiding the open cockpits of WW1 aircraft types. There are fewer instruments than for later types of the WW2 era, but that actually demands at least as much precision - and then there's those exposed machine guns. **ABOVE RIGHT:** A lice touch of individuality! Shattered windscreen on this Fokker E.III Eindecker.



In cases where an open cockpit type reveals significant internal structure in the cockpit area, as with this Chilton DW1 single seater, there is a real need to replicate this in order to achieve a convincing effect. This is a good example of the need for planning the model's airframe structure at an early stage to avoid having to work around any no-scale structural members in the model.

There are several thicknesses used, depending on the size of the printing press. The thinnest (and thus the most workable for our purposes) is the grade used on the small presses of jobbing printers who specialise in printing letterheads, leaflets and other small print jobs. Just use your *Yellow Pages* to find one who will co-operate by handing over a few used, discarded plates.

Paint difficult corners while you can get at them. In the case of an old and battered military type with the usual cockpit interior green, it is worth spraying a general base coat after which, fade, dirt and peeling effects can be finally applied. In service, constant use produces 'wear' on all the items inside the cockpit with which the pilot and the ground crews come into contact.

Some of it is very subtle - dust accumulation in corners and in the crevices of instrument panels, while more obvious 'wear', from feet and hands, climbing into and out of the cockpit can, in time leave a rather battered effect. In such cases as much bare aluminium as paint may be visible in parts!

The prospective list of suitable materials is almost endless - anything that can be worked to achieve the desired, convincing effect. *K&S* metal strip, *Plastruct* extruded strips and *Plasticard* are all items available from model shops, while a browse around the local craft shop can also yield some inspirations.

The painting of the outside of the model will not affect any of your cockpit work if you take time to mask the entire area off when the time comes.

Cushey number

Cockpits of civil aircraft are often far more comfortably appointed than military types. These bring a fresh set of challenges and an extended variety of materials may be needed.

Vinyl wallpaper can be useful. If the vinyl layer is peeled away from its paper backing so that it can be used to simulate leather or similar coverings. The vinyl is quite flexible and can be stretched around considerable curvatures, side panels, seats and even instrument panels and when painted, the result can be just right.

A planned approach

It is important to develop the cockpit in a manner that will allow the individual components to be installed without having to be then removed to fit something else. This requires planning and time spent studying the cockpit layout and components, after which an installation order can be developed, listed and the components made in that order. Always have your reference illustrations to hand and refer to them constantly.

The actual detail work of instruments, controls, seats and so on can usually be divided into tidy units that can be tackled at intervals during the making of the rest of the model as a little light relief. They can then be stored in a box until needed and in this way, you will find that one day it is all ready to be assembled, resulting in one of the most rewarding weekend's work on the whole model.

Creating the individual components to the right size is a matter of fine judgement. If you have been able to get access to the cockpit of an example of the aircraft you are modelling, any measurements you have been able to take will be very useful, because by the process of comparison, known component measurements and educated eyeball engineering may be used to extrapolate the dimensions of other bits and pieces. An image of the pilot, drawn to the appropriate scale, can be a useful benchmark in determining the size of components.

As a check, you can then imagine yourself as the pilot, make a reasonable guess at how large the object is at full size, and scale the size down again to confirm your first calculation. Graph paper can also be useful, for example when rough-drafting seats and instrument panels. ■



Sometimes, instruments go beyond the cockpit - as with this Fokker Eindekker wish compass set in the wing roof.



The more an openly visible the cockpit area is, the more essential it is to comprehensively detail the interior as with this Northrop P-61 Black Widow.



Careful photography will help in recording all the detail of the cockpit frame and other internal bracing, as with this Swiss C3603.



Next month we'll begin the task of furnishing the cockpit in earnest!

**THE
QUIET
ZONE**

**R/C SCALE ELECTRICS WITH
PETER RAKE**

Okay then, off we go again with another round of electric flight doings. As threatened last time, this month we will be taking another look at plan articles you can expect to see over the coming months.

Elsewhere in this issue, we are rounding out the 1/6th scale Fokker D.VII with some real gems on super-detail technique from Pat Lynch and in August issue, barring accidents, our beloved editor will start the presentation of my Great Lakes Trainer - that true classic of the 1930s era.

When you write these things months in advance you sometimes tend to lose track of what's likely to appear when.

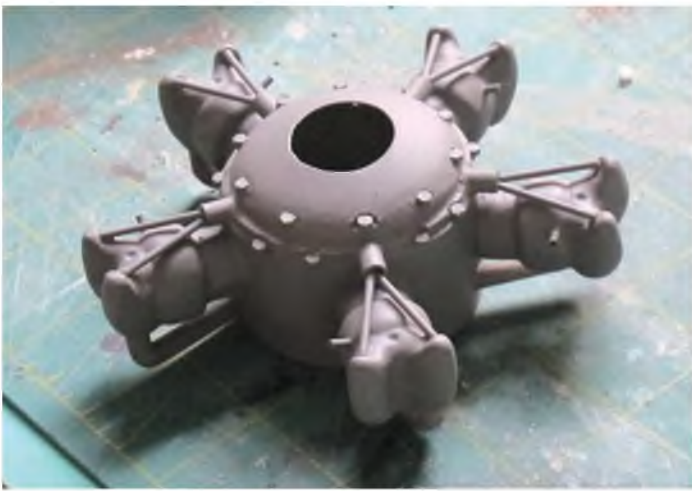
Anyway, never mind when it will appear, let's see what will be appearing in the months to come. Last month we looked at some of the models you can expect to see plans for (probably free plans at that) over the coming months. Well I just have two left to talk about and then I suppose I'll have to think of something new to write for you.

AN UPDATE

As regular readers will recall (I'm sure there must be at least one of you out there somewhere), my very latest design is of the Polikarpov PO-2. This model was an entry for an on-line design/build competition and a joint effort between Pat Lynch and myself. I did the designing and Pat, as usual, did a great job of actually building the model.

**DISPLAYING HER NEW ENGINE FOR ALL TO SEE
'POLLY' MAKES A SLOW PASS FOR THE CAMERA.**





The original, vac-formed engine Pat used while test flying. Nice, but not exactly outstanding.



You see, you don't need lots of technical equipment to do your own vac-forming.



Pat's homemade plug and one of the crankcase mouldings he made from it. Good enough, but still just a bit basic for Pat.



Once a few bits of sheet plastic, plastic tube and slices of hex rod have been added, the crankcase starts to come to life.

When I left the model last month, you may recall, Pat still had some work to do to get it completely finished. The most obvious of these jobs involved the dummy engine. As it stood at the time he was using a vac-formed engine while he completed the flight testing, but that was simply not what had drawn him to the type. Pat enjoys making dummy engines and a big old radial engine slapped on the front was one of the reasons he'd suggested the type for our latest collaboration.

This being so, once all the bothersome test flying was completed and with a district competition win under 'Polly's' belt, he set about making a somewhat more accurate representation of the full size aircraft's engine. As usual with these things, Pat considers it to be '*that-looks-about-right*' scale, while the rest of us marvel at the time and dedication he invested in it. Since it's such a prominent feature of the model, not to mention the full-size aircraft, the least we can do is spend a little time looking more closely at how he made it. I ask you, does it get any better than this? Not only do you get a sneak preview of forthcoming plans, you also get some construction details for one of them. Don't you dare say I don't give you value for money.

HOW IT'S DONE

The crankcase itself, despite looking quite complicated, is really pretty basic modelling. The basis is a vac-formed item

that Pat produced, onto which he's added various bits and pieces of plastic.

Pat stresses that for basic vac-forming you don't really need masses of specialised equipment. Yes, proper vac-forming gear is nice, but far from essential. He uses a normal vacuum cleaner to pull the plastic onto the form, a camping gas stove to actually heat the plastic until it becomes floppy and a vacuum box with lots of small holes drilled into the plate onto which you mount the form/plug.

The important part is ensuring the vacuum box doesn't leak and that you get a good seal between the plastic sheet and the box. The rest is all down to experimentation and practice. Even so, it took Pat several attempts, using different thicknesses of plastic, before he got some crankcases he was happy with. He works on the theory that it's always worth making more than one while you do have things right. Then, you have a ready-to-use spare should the worst happen while flying the model. In this instance, 1 mm sheet gave the results he wanted.

So, with the basic item formed, it was then time to start to dress it up so that it looked more like the Shvetsov M-11 radial engine it's supposed to represent. First the camshaft covers are added using laminated plastic sheet cut into half moon shapes. Cam follower/pushrod guides are made up from plastic tube, and glued to the cam covers. These are then followed by the addition of the cylinder

bases/flanges made from more sheet and tube plastic.

As you see, although the overall impression is of a very complicated arrangement of bits and pieces, breaking it down into individual bits to be applied simplifies the whole process. I'm not saying it makes it any quicker, but it does allow you to decide which parts you want to include on your particular dummy engine, and work out the best way to represent them. You work out what size things need to be to look right, not always exactly the size they really should be, and create accordingly. Bolt heads, for example, made from slices of 1.5 mm hex rod equates to 3/4" bolt heads. That may not be the precise size they were, but it looks right on the model. The *impression* of scale often gives better results than sticking religiously to exact scale measurements. If it looks right to you, the likelihood is that it will appear stunning to anyone else, after all, it is only a sport-scale model we're talking about here. Nobody is actually going to start measuring bolt heads. Pat has the balance pretty well perfect. Pick out the areas that define what it is you're supposed to be modelling and emphasise them. They will draw the eye away from the stuff you didn't include and its omission won't be noticed. Yes, it is all a bit sneaky, isn't it?

FINS, FINS AND MORE FINS

Right then, now we have the crankcase



Adding the top fins and filling in pushrod clearance and spark plug positions all add realism to the basic cylinders.

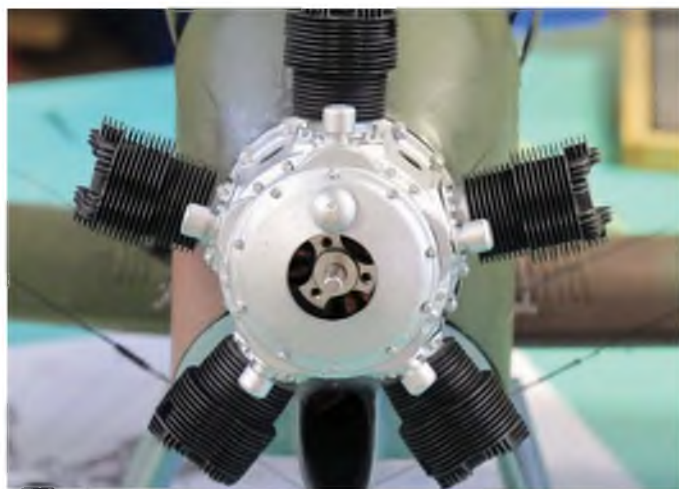
sorted out, we can move onto the part most of us dread; making the dummy cylinders. Although most of us dread this part of making dummy engines, it seems to be one of the parts Pat revels in. Well, it's either that, or he is heavily into masochism because he's certainly done enough of it.

Once again, it's all a case of breaking it down into sections. As before, it doesn't make it quicker, but at least each stage becomes less daunting. Initially Pat thought of using alternating discs of balsa and ply to make the cylinders but, when clamped up, the balsa tended to squash slightly. As you can imagine, this could lead to some decidedly strange looking cylinders, so all ply discs were what he settled for. Simple rectangles of 0.4 mm and 0.6 mm ply, each with the corners hacked off and a centre hole drilled. These were then clamped onto a mandrel, spun up in the lathe and sanded to circular section of the correct size. Yes, it is nice if you have a lathe, but even an electric drill in a vice will do the job. I know it works because I've made

cowlings that way.

So, with dozens of little discs of ply at hand, they were then assembled into basic cylinders. Once the glue was dry, it was back to the lathe for a final truing-up sand. Some sections of each cylinder were then filed away for such things as pushrod clearance and spark-plug mounting and the assemblies given a couple of coats of dope to seal them, before moving onto the technical stuff.

Okay, you probably could use them exactly as they are, but it would be a pretty basic looking dummy engine. It seems such a shame to go to all that trouble only to end up with a dummy engine that has less detail than the vac-formed one that involves far less effort to produce. Of course, Pat being Pat, that simply wouldn't do at all. He actually enjoys these tasks, so wanted to make a thorough job of it. To this end a small block of wood, some sexily shaped upright fins and sections of horizontal fins were added to the top of each basic cylinder to get the top end looking the part just as much as the rest of the



Very convincing once they are fitted to the crankcase, the cylinders are painted matt black and highlighted with graphite powder.

engine. As you can see from the photo (I hope I have enough room to illustrate all this) those small sections of fins were created exactly as were the main cylinders, and simply cut to size - two sections from each stack of discs. As I've said throughout this, it's that breaking things down into manageable chunks that simplifies producing such complex looking overall assemblies. There's nothing that we've looked at so far that can't be done using ordinary tools and with patience. It's the sorting out how to replicate each individual component, and which ones are worth replicating that are the important factors - oh yes, and having the skill to actually do it well. Pat considers it to be very 'stand off' scale, but it all looks pretty good to me.

THE OTHER BITS

As you might have noticed by now, this column isn't turning out quite the way I envisaged at the beginning but you can't have everything. I'd only intended this to be a brief look at the updated model, but thought you might be interested to see in detail how those alterations were accomplished. Having got this far it would seem churlish not to continue along the same lines for the rest of the engine. That being the case, let's see how Pat finished off his dummy engine.

As it stands now we have a nicely detailed crankcase that fits over, and completely hides the electric motor, with five nice looking but basic cylinders attached to it. Now it's time to start adding the twiddly bits that help bring the whole thing to life.

The inlet pipes were made from thick walled (very thick walled) aluminium tubing, which enabled Pat to bend them fairly sharply where they enter the cylinders. Thinner walled tubing is more likely to kink than to provide a smooth bend. Spark plugs are nothing more technical than small nails sleeved with plastic tube and hex rod and provided with fine electrical wire leads. With those simple parts attached it was time to start thinking about the exhaust system.

EXHAUSTING WORK

Now, for those not in the know, the version of the PO-2 that Pat chose to model has a rather strange exhaust system. The top cylinder, and cylinder number two



Now, with valve gear and the first section of exhaust fitted, the dummy engine starts to look the business. Matt aluminium spray paint used on crankcase.

ing stub on the port side. Numbers three and four have their own individual long exhausts routed each side of the lower nose (the hatch on the model) and these include the carb heating manifolds. Cylinder five, by contrast, has a simple stubby exhaust on the starboard side. This arrangement, it would seem, is what gives the PO-2 its characteristic exhaust note. Now the model may be electric powered, and not have any exhaust note at all, but we still want it to look right.

Starting with the potentially most difficult section, the part between cylinders one and two, Pat annealed a length of streamline section aluminium tube and curved it around a tin of the correct size. To this he added a stub of larger streamlined aluminium tube to provide the outlet and short lengths of plastic tube to represent the cylinder stubs. A little body putty was applied around the joins, everything sanded smooth and the whole thing painted.

The two lower exhaust pipes are relatively simple to bend from aluminium tube, but complicated by those carb heating manifolds. This whole assembly is further complicated by the fact that you need to remove the hatch for battery access. With this in mind, Pat simplified it slightly. It is possible to remove the hatch with the exhausts in place, but it takes care. Bearing in mind potential problems, Pat intended to arrange these pipes to plug into the cylinders with the rear ends supported by brackets under the hatch, but that seems not to have been required. It is a worthwhile idea though since he managed to nose over on landing once, promptly removing the lower exhausts and one cylinder's valve gear.

The final exhaust pipe is simplicity



Once you see it all in place on the model the dummy engine becomes a real focal point and is worth the effort.

personified compared to the others, a bent stub of tube sticking out of the cylinder. All are finished using a variety of paint colours (including some 'rust') and a light rub over with some graphite powder to impart a suitably dirty metallic appearance.

VALVE GEAR

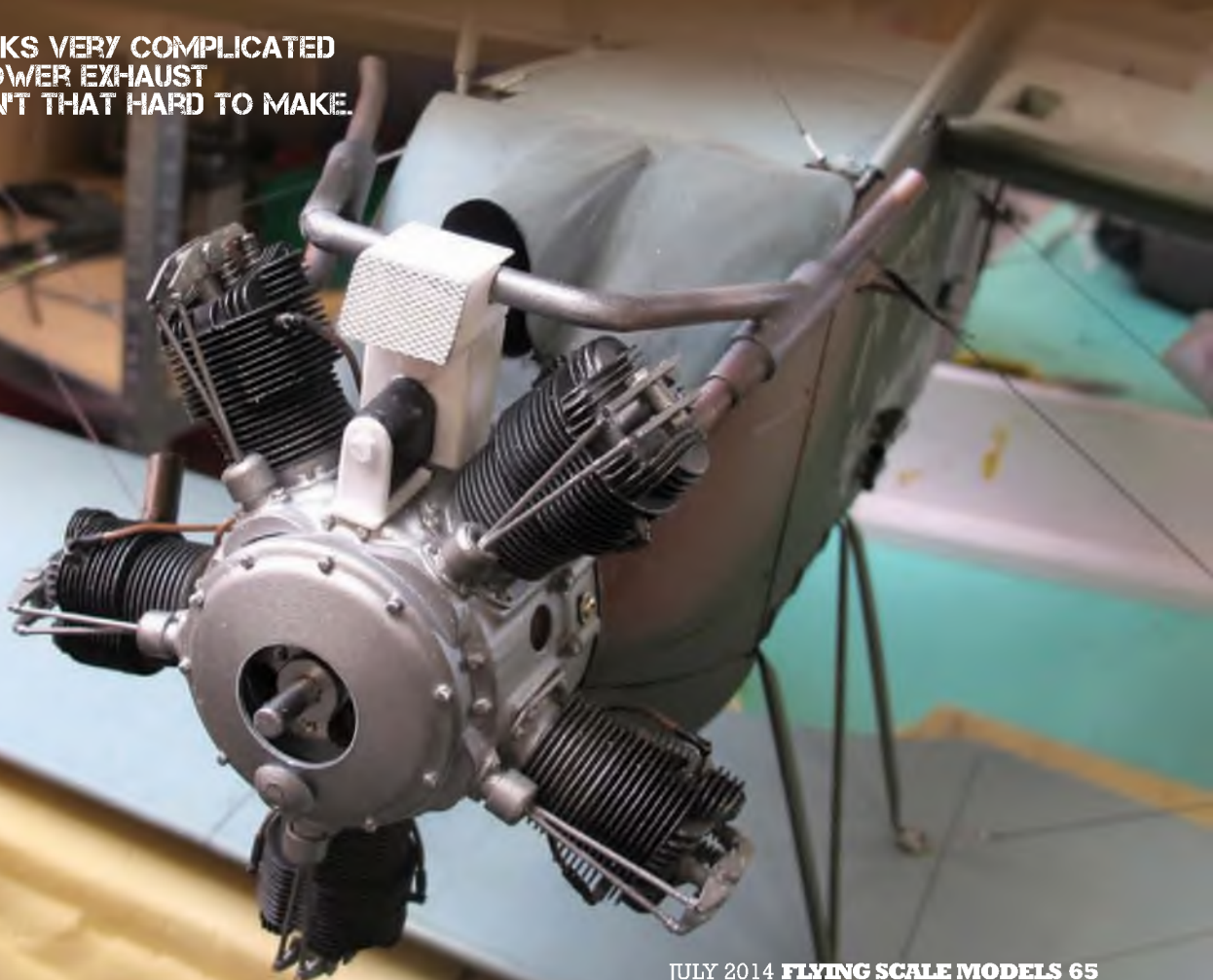
Compared with the exhaust system the valve gear is pretty simple. Pushrods are plastic rod, rockers are cut from plastic sheet and the valve springs are (funny enough) sections from the springs from those little throw away lighters. A very useful piece of kit those lighters. Often

found discarded, but very cheaply available in packs from various discount outlets. A pack is going to provide an awful lot of valve springs on models of this size.

So, there you have it. Not exactly the column I had in mind, but still one I hope you've found helpful and inspiring. Now you have no excuse not to provide your own models with nicely detailed dummy engines. If you'd like to contact me for any reason, except abuse or begging letters (sending them is my job), you'll find me at the usual place -

PETERRAKE@aol.com

ALTHOUGH IT LOOKS VERY COMPLICATED THE SIMPLIFIED LOWER EXHAUST ARRANGEMENT ISN'T THAT HARD TO MAKE.



Classifieds



For Sale

1940s USA, O.K SUPER
60, 10cc spark ignition
petrol engine, in very nice
condition, great patination.
Good compression, runs
well, complete with period
ignition components and
wooden prop. £125.

Contact David Tel:
07707235646.

Soviet Aircraft and Aviation
1917-1941, by Lennart
Andersson (Putnam 1994).
Very good condition.

Price: £20 inc., postage.
Contact 01484 711406

ENGINES -
E.D.Bee, paw 1.49, Am
25 and cox texaco 0.049,
All £25

Co2 motors -
Cox 0.49 With co2
conversion £25. New model
teknik gm-300t twin with r/c
throttle £60

Gasperin g-24 (new) £25
Brown campus a-23 (new)
£30. 2 Telco co2 motors £15
each. Ceto micro receiver
& 4 servo to work with
futaba transmitter £50
13 Scale aircrafts 18-28 inch
spans suitable for rubber or
co2 power - £50 the lot
All items collectable or plus
p&p

Contact: Malcolm wallis
01262 420611 (east yorkshire)

Model aircraft, Hi Boy 62.5"
wingspan with engine
and servos, concept 3D
helicopter with engine, servos

and gyro. PCM high quality
5 channel radio model Net
J35P electric engine starter,
purpose made spares
tray, control panel, fuel
pump used very little and
in excellent condition. New
batteries needed.

Price: £350 ono.
Contact: 01787 228133.

Wanted

Model of Dornier 17-Z.
74" span by Chas Maund
with or without engines,
part built considered.

Contact: Brian on
01922 445616.

Spinners for the Dennis
Bryant plans of the Bristol
Bulldog and the Hawker
Fury. Good price paid for
items in good condition.

Contact: Tel Sam on
01748 824702 or e mail
westonsam12@aol.com

Fuel pellets, gasket super
seal silicon II wick, for the
Jetx 50cc.

Write to: Vervloedt, Marc
Brouwerystraat 33, 8560
Wevelsem, Belgium, Europe.

adhbooks.com



ADH
PUBLISHING
Squadron Signal

A unique reader
service, send us a good
colour picture of your
model and we will
print it with your
description at no cost.
Alternatively have your
free private lineage
classified featured in
FLYING SCALE MODELS.
Just send it to one of
these options:



EMAIL:
peter@adhpublishing.com



TELEPHONE: 01525 222573
FAX: 01525 222574



ADDRESS:
ADH Publishing, Doolittle Mill,
Doolittle Lane, Totternhoe, Beds. LU6 1QX

High quality glasses designed for RC use

from **Flying Scale Models**

The world's ONLY sunglasses exclusively designed and manufactured for RC use.

Designed by experienced modellers, Model Glasses are the ultimate RC accessory.

TEN REASONS WHY RC MODEL SUNGLASSES MAKE SENSE:

- The range has been specifically designed and manufactured for RC use by dedicated and experienced modellers
- All types come with four sets of de-centred, scratch-resistant lenses (Cat 0, Cat 2, Cat 3 mirror & Cat 4) as standard, including a light-enhancing set for dull days, plus a quality carry case, a neck-strap and a cleaning cloth at an affordable price
- The superb quality of our frames and lenses matches those of far more expensive 'fashion house' products - and unlike those guys, we don't charge separately for the extra lenses. With prices starting at just £38.50 (UK RRP), affordability, style, quality and practicality meet up to give you great value for money
- All of our sunglasses offer 100% UVA / UVB protection, and conform to British and European Safety Standards, plus US ANSI Z80.3 - these sunglasses will help to protect your eyes from flying debris should you crash. Our glasses are impact-tested at the factory
- Lightweight, polycarbonate construction
- Comfortable fit - rubber nose pieces and side-arm inserts, plus good flex in the frames, ensure you'll feel great wearing them
- Wrap-around styling offers protection from the effects of light and wind right around your eyes
- Prescription stand-alone frames with interchangeable bring all of the above benefits to spectacle wearers
- Polarised Nimbus and Innovation Plus sunglasses have not one but two sets of polarised interchangeables, a light-enhancing set and smoked Cat 4's, all for an amazing £44.99 UK RRP (See the next page for more information on polarisation)
- Worn by many of today's top pilots, including 3D Helicopter Champion Dominik Haegele, plus F3A legends Wolfgang and Roland Matt, and Sebastiano Silvestri



ACE

Ace sunglasses have been specifically designed and manufactured for radio controlled modellers, with interchangeable lenses for different light conditions

£54.99



BREEZE

Fashionable and highly effective design, packed with features and quality at a very reasonable cost. The addition of vented lenses, plus Rapid Eyewear's Frostech technology, have already made Breeze a firm favourite.

£49.50 Red or White



EXPERT

The Expert design makes for a very nice looking pair of RC sunglasses - and they pack a high specification too.

£49.50 Black or Orange



FLITEMASTER

Enjoy the benefits of light enhancement on a cloudy day, whilst the two polarised lens sets ensure optimum, glare-free vision when it's brighter.

£49.50



INNOVATION

Innovation Plus bring all the benefits of our standard Modelglasses, including the interchangeable lenses, to spectacle wearers.

£49.50



NIMBUS

The Nimbus polarised RC sunglasses set enjoys a superb specification. Nimbus sunglasses have been specifically designed and manufactured for radio controlled modellers

£49.50 Silver Grey or Black

Plus postage UK
£2.00 Euro £4.00
World £6.00

Powered by
Rapid
eyewear



ORDER ONLINE

AVAILABLE FROM: ADH Publishing, Doolittle Mill, Doolittle Lane, Totternhoe, Beds, LU6 1QX.
Tel. 01525 222573 Fax. 01525 222574.

www.flyingscalemodels.com

**ABSOLUTELY THE HIGHEST QUALITY BALSA
AT THE LOWEST PRICES AVAILABLE
ANYWHERE! WE USE ONLY TRIPLE AAA
MODEL GRADE BALSA NOT THE
CHEAPEST, BUT ALWAYS THE BEST!**



www.balsausa.com

24" Sheets

960	1/32 x 3	0.73
961	1/16 x 3	0.73
962	3/32 x 3	0.86
963	1/8 x 3	1.06
964	3/16 x 3	1.29
965	1/4 x 3	1.62
966	5/16 x 3	1.89
967	3/8 x 3	2.07
968	1/2 x 3	2.57
969	3/4 x 3	3.88
970	1/32 x 4	1.62
971	1/16 x 4	1.47
972	3/32 x 4	1.80
973	1/8 x 4	2.03
974	3/16 x 4	2.50
975	1/4 x 4	2.91
976	5/16 x 4	3.68
977	3/8 x 4	4.58
978	1/2 x 4	5.40

30" Sheets

062	1/32 x 3	1.02
063	1/16 x 3	1.02
064	3/32 x 3	1.20
065	1/8 x 3	1.43
066	3/16 x 3	1.76
067	1/4 x 3	2.14
068	3/8 x 3	2.70
069	1/32 x 4	1.65
070	1/16 x 4	1.65
071	3/32 x 4	1.91
072	1/8 x 4	2.34
073	3/16 x 4	2.77
074	1/4 x 4	3.12
075	3/8 x 4	4.85

36" Sheets

001	1/32 x 2	1.02
002	1/16 x 2	1.02
003	3/32 x 2	1.18
004	1/8 x 2	1.35
005	3/16 x 2	1.59
006	1/4 x 2	1.90
007	5/16 x 2	1.99
008	3/8 x 2	2.38
009	1/2 x 2	2.93
012	1/32 x 3	1.18
013	1/16 x 3	1.18
014	3/32 x 3	1.35
015	1/8 x 3	1.76
016	3/16 x 3	2.06
017	1/4 x 3	2.61
018	5/16 x 3	3.02
019	3/8 x 3	3.09
020	1/2 x 3	4.13
021	3/4 x 3	6.10
025	1/32 x 4	2.00
026	1/16 x 4	2.00
027	3/32 x 4	2.43
028	1/8 x 4	2.77
029	3/16 x 4	3.30
030	1/4 x 4	4.58
031	5/16 x 4	5.37
032	3/8 x 4	6.31
033	1/2 x 4	8.50

42" Sheets

080	1/32 x 3	1.35
081	1/16 x 3	1.43
082	3/32 x 3	1.66
083	1/8 x 3	1.99
084	3/16 x 3	2.38
085	1/4 x 3	3.02
086	3/8 x 3	3.72
087	1/32 x 4	2.34
088	1/16 x 4	2.34
089	3/32 x 4	3.12
090	1/8 x 4	3.20
091	3/16 x 4	3.99
092	1/4 x 4	4.85
093	3/8 x 4	6.93

48" Sheets

037	1/32 x 3	1.80
038	1/16 x 3	1.80
039	3/32 x 3	2.16
040	1/8 x 3	2.71
041	3/16 x 3	3.24
042	1/4 x 3	3.97
043	5/16 x 3	4.78
044	3/8 x 3	4.88
045	1/2 x 3	6.32
046	3/4 x 3	9.47
050	1/32 x 4	4.52
051	1/16 x 4	3.52
052	3/32 x 4	4.42
053	1/8 x 4	4.97
054	3/16 x 4	5.96
055	1/4 x 4	6.94
056	5/16 x 4	8.94
057	3/8 x 4	11.09
058	1/2 x 4	12.99

6" Wide Sheets - 36" Length

185	1/16 x 6	3.39
186	3/32 x 6	3.71
187	1/8 x 6	4.05
188	3/16 x 6	4.62
189	1/4 x 6	5.70
190	3/8 x 6	7.76
191	1/2 x 6	10.32

6" Wide Sheets - 48" Length

265	1/16 x 6	5.07
266	3/32 x 6	5.54
267	1/8 x 6	6.10
268	3/16 x 6	7.05
269	1/4 x 6	8.54

36" Triangles

105	1/4 x 1/4	0.83
106	3/8 x 3/8	0.91
107	1/2 x 1/2	1.15
108	3/4 x 3/4	1.57
109	1 x 1	1.99
110	1-1/2 x 1-1/2	3.71
111	2 x 2	6.20

36" Sticks

124	1/16 x 1/16	0.24
123	1/16 x 1/8	0.24
831	1/16 x 3/16	0.31
125	1/16 x 1/4	0.35
126	1/16 x 3/8	0.39
832	1/16 x 1/2	0.48
833	1/16 x 3/4	0.55
834	1/16 x 1	0.71
835	3/32 x 3/32	0.31
836	3/32 x 1/8	0.31
837	3/32 x 3/16	0.39
127	3/32 x 1/4	0.41
128	3/32 x 3/8	0.44
838	3/32 x 1/2	0.48
839	3/32 x 3/4	0.71
840	3/32 x 1	0.79
129	1/8 x 1/8	0.31
841	1/8 x 3/16	0.35
130	1/8 x 1/4	0.39
131	1/8 x 3/8	0.41
132	1/8 x 1/2	0.55
842	1/8 x 3/4	0.71
843	1/8 x 1	0.95
133	3/16 x 3/16	0.39
844	3/16 x 1/4	0.48
134	3/16 x 3/8	0.55
135	3/16 x 1/2	0.63
845	3/16 x 3/4	0.79
846	3/16 x 1	1.02
136	1/4 x 1/4	0.55
137	1/4 x 3/8	0.71
138	1/4 x 1/2	0.79
139	1/4 x 3/4	1.12
140	1/4 x 1	1.35
141	5/16 x 5/16	0.71
847	5/16 x 3/8	0.79
848	5/16 x 1/2	1.02
849	5/16 x 3/4	1.21
850	5/16 x 1	1.51
142	3/8 x 3/8	0.95
143	3/8 x 1/2	1.02
144	3/8 x 3/4	1.43
851	3/8 x 1	1.82
145	1/2 x 1/2	1.27
146	1/2 x 3/4	1.59
147	1/2 x 1	1.99
852	5/8 x 5/8	1.51
853	5/8 x 1	2.29
854	3/4 x 3/4	1.99
855	3/4 x 1	2.54

48" Sticks

856	1/8 x 1/8	0.41
160	1/8 x 1/4	0.55
161	1/8 x 3/8	0.63
162	1/8 x 1/2	0.81
163	3/16 x 3/16	0.63
164	3/16 x 3/8	0.81
165	3/16 x 1/2	0.99
857	3/16 x 3/4	1.16
166	1/4 x 1/4	0.91
167	1/4 x 3/8	0.99
168	1/4 x 1/2	1.16
169	1/4 x 3/4	1.71
170	1/4 x 1	2.25
171	5/16 x 5/16	1.08
172	3/8 x 3/8	1.36
173	3/8 x 1/2	1.71
174	3/8 x 3/4	2.07
175	1/2 x 1/2	1.89
176	1/2 x 3/4	2.60
177	1/2 x 1	2.98

36" Trailing Edges

100	3/16 x 3/4	0.91
099	1/8 x 1/2	0.83
101	3/16 x 1/2	0.83
103	1/4 x 5/8	0.99
118	1/4 x 1	1.08
102	5/16 x 3/4	0.99
119	5/16 x 1-1/4	1.24
120	3/8 x 1-1/2	1.57
121	1/2 x 2	2.48

90 Degree Tapered Aileron & Elevator Stock - 36" Lengths

224	1/4 x 1	1.65
225	1/4 x 1-1/4	1.90
226	1/4 x 1-1/2	2.06
227	1/4 x 2	2.31
211	5/16 x 1-1/4	1.32
228	5/16 x 1-1/2	2.14
229	5/16 x 2	2.39
212	3/8 x 1-1/4	1.57
230	3/8 x 1-1/2	2.39
231	3/8 x 2	2.73
232	3/8 x 2-1/2	2.90
213	1/2 x 1-1/2	1.65
214	1/2 x 2	2.48

48" Lengths

236	1/4 x 1	2.62
237	1/4 x 1-1/4	2.92
238	1/4 x 1-1/2	3.28
239	1/4 x 2	4.01
215	5/16 x 1-1/4	3.28
240	5/16 x 1-1/2	3.38
241	5/16 x 2	3.86
216	3/8 x 1-1/4	3.67
242	3/8 x 1-1/2	3.67
243	3/8 x 2	4.22
244	3/8 x 2-1/2	4.60
217	1/2 x 1-1/2	3.75
218	1/2 x 2	4.79

Miscellaneous Assorted Wood

598	Bag-A-Balsa Sheets & Sticks	8.08
698	Bag-A-Blocks (when available)	9.24
699	"Seconds" Wood Box (when available)	41.95

ORDERS ONLY!
(NO Tech Calls Accepted)
1-800-BALSA US
1-800-225-7287
Fax 1-906-863-5878

Customer Service & Tech Support: 1-906-863-6421
or tech@balsausa.com
Business Hours:
8:00 to 5:00 CST M-F

Email Address:
balsausa@balsausa.com
P.O. Box 164
Marinette, WI 54143



Please visit your local hobby store for more of our fine products. If they are not a Balsa USA dealer, have them contact us to become one!

We accept Visa, MasterCard, Discover and personal checks. Mich. residents add 6% sales tax. Handling charge is \$15.95 for orders up to \$100.00, \$18.95 for orders \$100.01-\$300.00, actual freight for orders \$300.01 and up. Express shipments, APO, FPO, Canada & Foreign orders pay \$4.00 per box handling fee plus actual freight. ** Orders including these sizes will pay actual shipping charges. We recommend credit card payment for any orders that are subject to special shipping terms to avoid over or underpayment. **Prices subject to change without notice.** 15% Restocking Fee on ALL returned items.