FREE PRO-PLAN!

HARRIER
FROM TONY NIJHUIS DESIGNS

VOL. 67 NO. 12 DECEMBER 2024 www.modelflying.co.uk

RCM&E

RADIO CONTROL MODELS AND ELECTRONICS

ART OF ILLUSION

STAND OFF SCALE WORLD CHAMPS

FIT TO FLY
LMA OVER 25 KG SCHEME

SPLASH DOWN
XFLY TWIN OTTER ON FLOATS

BIG UP THE KIDZ YOUNG PILOTS' FLY-IN **FUTABA T26SZ** 26-CH TX ASSESSED

TOP RC HOBBY

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ASW-28 Motor Glider

2m Span (PNP)

High-quality spring latch for positive and secure canopy retention.

Wire-free wing connection within a tough, plastic root housing.

Spare quick-release winglets included as standard.

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ASW-28 Motor Glider PNP

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Producing high-quality, semi-scale motor gliders with flying characteristics that both excite and inspire is something that Top RC does really rather well. Take this elegant, 2m span, 4S-fuelled ASW-28 for example. Agile, responsive and an entirely practical proposition for transport and storage, the ASW owes its performance to a state-of-the-art hybrid construction comprising an engineered mix of carbon fibre, aluminium, plastic and crisply moulded EPO foam. It's outstandingly well produced, has quality fittings, is neatly decorated and offers a truly desirable blend of thermal soaring prowess and aerobatic performance for year-round flying.

News, tips, videos & more

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JPerkins.com/local

Welcome

Welcome to the December 2024 issue of RCM&E.

Brrr! It's getting a bit nippy out there!

Writing this in real time it's mid-October and the leaves have just started to take on their lovely autumnal hues. But my, it can get a bit chilly first thing, especially when extracting my LiPos from their shedly slumbers. It's not a good idea to use LiPo battery packs (or any other battery chemistries come to that!) when they are stone cold, so I have broken out my LiPo heater box to warm my packs up, both whilst I have my breakfast and also in the car footwell on my way to the flying field. My heater box has a 12V DC input, so I plug it into a mains power supply unit while it's still in the shed and then transfer it to the car, swapping to a cigarette lighter style plug for the outward journey. This works well and means that I can start a flying session with some nicely warmed up packs. At one club I am even lucky enough to be able to plug the box into one of several 12V charging points supplied from large batteries kept topped up by solar panels on the clubhouse roof, which keeps my packs nicely warm right the way through a flying session. Luxury!

Don't worry, I hadn't forgotten that this is the December issue, which should reach most of you by mid-November. But that's still far too early to get in a festive vibe by my reckoning (despite what the high street shops might think!) so I'll save all that until next time.

Okay, it's time to take a quick look at some of the main articles in this month's magazine. It's my pleasure to start things rolling with a look at Futaba's spanking new T26SZ transmitter. Next is Chris Williams, who enjoys another well attended scale glider event from atop White Sheet Hill. Our main show report this month is from the Popham Show courtesy of Mike Freeman; this event got off to a misty start but things soon cheered up and a great display was put on for the assembled spectators. Yours truly

was finally able to try the XFly Twin Otter, reviewed in previous issues, on floats and it took to things like, well... a duck to water! Buying and refurbishing an old model is a popular way to add to a modeller's flying fleet; Roy Thompson specialises in giving Bowman kits a new lease of life so join him as he works his magic on a Miles Magister from the Ipswich based kit company. Our pull-out Pro-Plan this month is the eagerly anticipated Harrier EDF jet designed by Tony Nijhuis and then we join Dave Keen and Steve Holland as they put Dave's big Fw 190 through the LMA Over 25kg Scheme, narrated by Frank Skilbeck. Dave Goodenough has been out and about with his camera to cover a brand-new event, Big Up The Kidz, which was especially aimed at younger R/C pilots. Wrapping things up, Danny Fenton, after winning silver at the control line Scale World Champs, files the second of three reports from Romania, this time concentrating on the F4H stand-off scale class models.

I hope you enjoy reading it all.

Happy Flying!

Kevin Crozier

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POWER & SAILPLANES INTERNATIONAL

SPECIAL ANNOUNCEMENT!!!

Relaunched and re-loaded for 2025

Power & Sailplanes International!

Welcome to the 2025 relaunched and reloaded Power & Sailplanes International.

We have purchased the original company full set up and exclusively own the Intellectual Property Rights to the company along with all the original manufacturing moulds.

We are incredible excited to have unearthed this worldwide renowned and respected model manufacturer of both power models and gliders

Our Vision is to bring you back some of the much loved and original plane and gliders from Power and Sailplanes International. Staying as close as possible to the original designs created by Clifford Nancarrow whilst making some sympathetic changes to the original design to make improvements and bring them into 2025 without compromising the original design.

In 2025 we will be focusing on bringing you back 4 of the most popular classics and then moving forward we will be focusing on bringing back more of the much loved classics.

We hope you are as excited as us for the relaunch of a once much loved player in the RC Market.

Our first 4 models to launch in 2025 are:

The Powersetter MK III

The Osprey 100 MK II

The Sitar Special 83 & 100 MK II

The Delta Dagger MK II

Keep up to date with our latest news by visiting our website:

www.powerandsailplanesinternational.co.uk

and join our Facebook page Sailplanes and Powerplanes international society.

On the cover

Photo: Danny Fenton

Danny Fenton is back with his second report from the 2024 Scale World Champs held in Romania in August, this time concentrating on the F4H stand off scale event. This Albatross CIII flew superbly, piloted by Vladimir Rynes Sr. from the Czech Republic. The Albatross did a bomb drop as one of its tricks.

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Switch on

Our latest round up of model flying news and miscellany

DM YOUNG PILOT SPONSORSHIP

At the recent Popham Model Show, Deluxe Materials were delighted to be able to announce their support of the father and son partnership of Finn and Trevor Hennesey. The combination of Trevor's building skills and top level flying from his 12-year-old son Finn make for a real treat on the display flight-line wherever they go.

Most RCM&E readers will know Deluxe Materials for their modelling glues and finishing products, which Trevor also loves, but perhaps you did not know they are also experts in lubricants. So, at the Popham Show, Trevor and Finn used their PowerModel 2TS, which is a fully synthetic, high detergent two stroke oil. It works at all recommended ratios for two stroke petrol air and water-cooled engines.

If you have been flying petrol powered aircraft for many years you will probably have tried many two stroke oils, from the basic lawn mower variety to high end power sport synthetics. There are a huge range of options out there but, says John Bristow of Deluxe Materials, most are just a compromise when it comes to using them with our R/C engines and the abuse that they often receive. Power Model 2T-S offers many advantages:

- It handles high engine temperatures to prevent engine damage and extend life.
- Special additives help reduce wear in extreme conditions.
- Gives improved throttle response.
- Supplied in an easy to mix bottle with ratio guidance on the pack so is easy to use at the flying field.
- Attractive odour.

At the show Finn flew a Skywing ARS constructed by Trevor. The model is 91" wingspan and is powered by an air-cooled 76 cc, 8 hp Great Power twin cylinder engine lubricated with Power Model 2TS oil. This lubricant was used because it delivers the extra heat protection needed for fully cowled air-cooled engines working in a confined space and being displayed under high loads with constant throttling.

Finn's model's smoke trail was created with PowerModel Smoke Oil, recently released by Deluxe Materials. Features include:

- Available in one and five litre pack sizes.
- Two years in development and testing, backed up by extensive field testing by top European and US pilots.
- A carefully formulated, refined fluid to ensure compliance with health and safety regulations worldwide.
- Negligible emissions of aromatics, sulphur and, of course, odour.
- Lightly coloured red and odourised for easy recognition at the flying field.
- Delivers dramatic white smoke ensuring long lasting white smoke trails in the air.
- Proven in both jet and gasoline engines.

Deluxe Materials products are distributed to the model trade by Ripmax. The pictures of Finn and his model are courtesy of Mike Freeman.

HEATH FARM HOLIDAY WINNER

The winner of the Heath Farm holiday competition featured on page 47 of the August '24 issue of RCM&E has been announced as Stephen Heath from Staffordshire. Steven's prize is for a two-night stay in Hazelnut Cottage at Heath Farm, which has its own model flying strip available to guests between May and September.

Heath Farm Cottages are award winning self-catering cottages situated in the beautiful Oxfordshire Cotswolds between Banbury and Chipping Norton.

Heath Farm
Holiday Cottages

POWER & SAILPLANES INTERNATIONAL RELAUNCH

Long time readers of RCM&E will no doubt remember the models offered by Powerplanes International and Sailplanes International. If you are a fan of either range (or both!) then you'll be pleased to learn that these much-loved kits are being made available once again. In their announcement the new owners say:

Welcome to the 2025 relaunched and reloaded Power & Sailplanes International. We have purchased the original company full set up and exclusively own the Intellectual Property Rights to the company along with all the original manufacturing moulds.

We are incredible excited to have unearthed this worldwide renowned and respected model manufacturer of both power models and gliders. Our vision is to bring you back some of the much loved and original planes and gliders from Power and Sailplanes International, staying as close as possible to the original designs created by Clifford Nancarrow whilst making some sympathetic changes to the original designs to make improvements and bring them into 2025 without compromising the original design.

In 2025 we will be focusing on bringing you back four of the most popular classics and then moving forward we will be focusing on bringing back more of the much-loved classics:

- *Powersetter MK III*
- *Osprey 100 MK II*
- *Sitar Special 88 & 100 MK II*
- *Delta Dagger MK II*

We hope you are as excited as us for the relaunch of a once much-loved player in the R/C market.

The first design to be relaunched will be the Sitar Special II, available in 83-inch and 100-inch wingspan versions. Turn to Counterpoint inside this issue to find out more about this graceful and classic glider.

BOND LOOSE DECALS

John Bristow from Deluxe Materials shows how to reattach loose stickers to a model aircraft

Having trouble with loose or lifted decals? If the decal has lost its adhesive there are not many glues that will do this job. Sealing with a hot iron is also not possible on a foam model. PVA won't dry and super glue (cyanoacrylate) is too brittle, so here is a simple solution:

Press in place and slide to adjust position. FIX 'N' FLEX has tremendous grab but allows easy movement. Remove any excess glue with soapy water.

Remove the decal and spread FIX 'N' FLEX on the underside using a spatula.

Allow to dry and then use FOAM FINISH GLOSS or MATTE on top to seal the edges. Allow to dry. Job done, go fly!

FUTABA T26SZ

After enjoying close to a year's worth of experience with his T16IZS transmitter, the Editor moves up a peg with Futaba's 26-channel air radio

Words & Photos **Kevin Crozier**

I've been using my Futaba T16IZ Super transmitter for almost a year now and I am very pleased with it. It has been used to operate several new models, from scale twins to electric EDF jets, and also my 78-inch span Pilot RC Extra NG. (Which reminds me, I owe you all a flying report on that lovely aerobatic model!) If you want to read more about my conversion to Futaba radios, then please take a look at my report on the T16IZS in the May 2024 issue.

I did promise myself that the T16SZ would probably be sufficient to last me a good few years and I am sure that will still be the case. However, when Graham Ashby sent me a copy of the new J Perkins advert for the August issue of RCM&E, which featured Futaba's shiny new upper mid-range T26SZ transmitter, my knees went a bit wobbly and I just had to take a closer look at one. I had to wait a few weeks for stock to arrive at the JP warehouse but eventually a well-wrapped box arrived for me to delve into.

FIRST IMPRESSIONS

To give it its full name, the 'Futaba T26SZ 26-Channel Air Radio, Multi-Mode, with R7214SB Rx' is another attractive piece of tech from this much respected radio control manufacturer. As the name suggests it comes complete with a Futaba R7214SB receiver, as well as a short manual, a USB-C charging lead, and a screwdriver and Allen key set. This is a 26-channel set, the complete channel allocation for which can be fully utilised using the additional 12 channels offered by the R7214SB's SBus2 outputs.

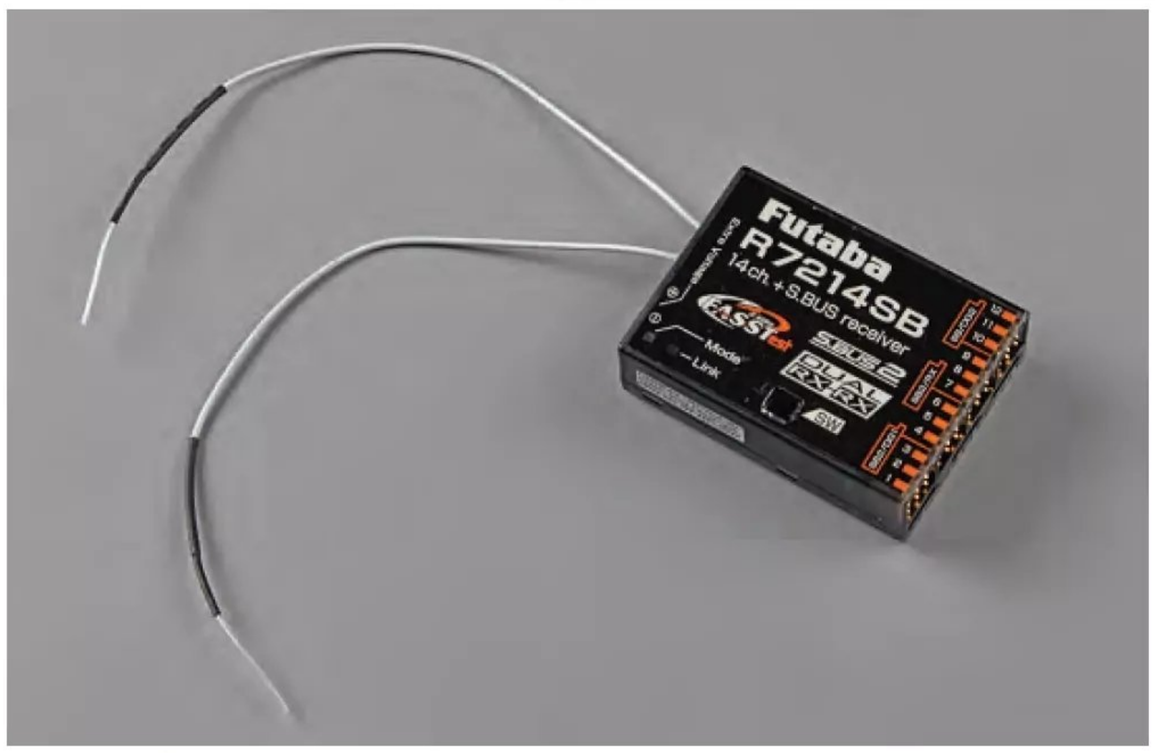
The T26SZ is supplied with a factory fitted 7.4V 2000 mAh Li-Ion battery pack which is charged via a USB-C port located behind a flexible cover underneath the Tx antenna. I would caution pulling the cover back as far as shown in the nearby photograph because when I tried to replace it, it didn't want to sit down flush with the top of the Tx case. However, some gentle massaging and bending the cover in the opposite direction soon had it lying flat again.

If you take a look at my T16IZ report, then you'll note that I did have a bit of a gripe about the neck strap supplied being a bit of a skinny affair. Graham came to my rescue with a much better-quality woven strap, in vivid orange with the Futaba logo printed in white. With the T26SZ I had no such complaint as it comes with one of these high-quality neck straps as standard.

All these bits and bobs, plus the Tx and Rx, are supplied in a cube shaped, gloss black box, safely ensconced in egg box style cardboard inner trays.

Neat display box comes with egg carton style inner packaging so is easy to recycle.

Accessory spread. The short manual is handy to keep in a carry case (not supplied) for quick reference at the field. A full version can be found on the J Perkins website.



Classy T26SZ comes with an equally high-end receiver. The R7214SB is a 14 channel unit with S.Bus2 capability. Using S.Bus2 extends it to 26 channels, thus making full use of the new transmitter.

Battery compartment is at the bottom of the case. Next to the label is the microSD card slot.

Underneath the antenna you will find the USB-C charging port. Best not pull it back this far though!

AROUND THE CASE

As with the T16 transmitter, the T26SZ sports a 'gun metal' front case attached to a black plastic rear panel. The side grips are rubberised and can be removed to gain access to the stick tension adjustment screws. Two more small covers on the back panel cover the throttle ratchet screws, whilst mode changes can be made using two small screws in the corners of the stick bezels. Also inset in the back of the rear case is a Trainer Cord Port and an S-Bus Interface Port, both being covered by a rubber cover.

Further stick personalisation is possible by means of adjusting the stick lengths and also the stick angles, moving them slightly inwards or outwards from the supplied central positions. The stick units move smoothly and freely thanks to hall effect non-contact potentiometers and they promise 'fine, ultra-precise, long-lasting operation' according to the JP website

On both shoulders are the usual selection of user definable switches, with long and short three-position units at the front and a pair of long two-position switches at the rear, the sprung one on the right being momentary. There are four switches on each shoulder, as well as two slider switches on each side of the Tx, just behind each switch bank. Of note here is the fact that the shoulder switches can be replaced or upgraded with your own preferred switches, be they two-position, three-position or momentary types.

At the top of the case, either side of the small 'sub-display' screen, are a pair of knobs which can be used to control the 'volumes' of mixes and their direction of movement. The antenna nestles safely in a neat housing

Antenna must be swung out and swivelled downwards before use to maximise signal strength.

Smooth operation of the main sticks is helped by the use of hall effect non-contact potentiometers.

A rubber cover on the back of the case protects the trainer cord and S-BUS interface connectors.

Shoulder switches can be swapped around or replaced with alternative types to suit personal preference.

Rear mounted slider switches fall easily to hand.

"The microSD card is also used to store the small files used to display colour pictures of models on the main screen"

1900, which will be the first model flown with this Tx.

TWO SCREENS

One of the most noticeable differences between the T16IZS and the T26SZ is the provision of two screens. The main display is a 4.3-inch colour touch screen, whilst up top is a 2.7-inch LCD sub-display.

The main display is used to show a picture of the model, as well as trim positions and two large timer displays. Smaller indicators around the edges of the screen show: Rx battery voltage, Condition name, Tx battery, System mode, RF indicator, System timer, Menu access buttons, Rx to Tx signal reception and, finally, Username. Phew - that's quite a list!

Obviously, some of that information is too small to see at a quick glance so the sub-display offers an alternative (less cluttered!) way to display the timers or telemetry data. However, whilst the timers on the lower screen can be activated using the touch screen, the sub-display in not a touch panel. Along the top of the sub-display are found the Telemetry receiving status, Rx voltage, Extra voltage (sourced from a voltage sensor, typically one attached to a LiPo used to power an electric model) and Tx voltage. Below this information you can call up either a repeat display of the two timers or an alternative display showing three pieces of telemetry data.

POWER UP

Press the main power button and the set wakes up with a beep whilst illuminating the backlights on both screens. A horizontal light-bar in the middle of the switch acts as an RF indicator. If the throttle stick is raised or a switch is in an active position, say gear up, when the radio is switched on this indicator will light up pink to show that RF is off. Closing the throttle or resetting the offending switch will switch RF on and the switch bar will change to blue.

You can also force the Tx to start with RF off by holding the U-menu button down, located under the right-hand stick unit. This is recommended to save battery power, especially when spending a lot of time programming a new model or making experimenting with changes to an existing set up.

PROGRAMMING

Programming the T26SZ is via the touch screen, using the System, Linkage and Model Select

just behind these knobs whilst not in use. It needs to be rotated backwards and then flipped up when flying. As is usual with 2.4 GHz aerials it gives off its highest power to the sides and is lowest at the tip so you should avoid pointing it directly at your model in flight. The best way to do this is to incline it downwards; in fact, there is a convenient 'step' that can be felt at 45 degrees to encourage you to do this.

Under the antenna is the USB-C charge port which also doubles as a PC port. The PC port allows the Tx to be used as a game controller by connecting it to a computer via a USB cable, most likely for use with an R/C simulator.

As previously mentioned, the 2000 mAh Li-ion battery pack is ready fitted and is accessed via a sliding panel on the bottom of the transmitter. This cover also protects a slot for a microSD card (not supplied) which is used for backing up model data as well as for updating the transmitter's software. The microSD card is also used to store the small bitmap (.BMP) files used to display colour pictures of models on the main screen. The manual refers to Windows bitmap files, 24-bit color, sized at 160 x 80 pixels, which concerned me at first because the only computer available to me is a Macbook. But fear not Apple fans, you can bling up your screen too! I simply followed the above instructions to resize a picture of an Epilogue

virtual buttons shown on the left of the Home Screen. As with the T16IZ, I use a stylus pen (not supplied) to access the touch screen as with my sausage fingers it's all too easy to press adjacent screen functions with a misplaced fingertip.

Pictures nearby show many of the options available in each menu and they include all the usual functions that you would expect from a modern radio system, so I won't rewrite the manual with explanations of things like Servo Reverse and Sub-Trim. There are also some Futaba specific functions like DLPH-2 Setting, which relate to the company's Dual (Rx) Link Power Hub. This clever device allows dual receivers and dual batteries to be connected but again this is beyond the scope of this article.

There are also a couple of physical buttons, underneath each stick unit, which can be used to access the Home screen and provide shortcuts. These are the U-menu button to the right and the Exit button on the left. The U-menu (user menu) allows you to call up all your most accessed functions in one place and is accessed by a quick press of this button. A press and hold will bring up the servo monitor display. The Exit button is used to return to either the previous screen or the Home screen; if quick pressed from Home, then it will bring up the Telemetry display but is perhaps more useful when pressed and held, which will then lock the touch screen. Locking the screen is recommended when a model is flown to avoid unintended changes to its set up whilst airborne.

I won't dwell any more on programming this radio, suffice to say that as with the T16IZS, I found it very easy to input all my favourite setups. These include throttle hold, a three-position rate and expo switch using the AFR functions, aerobatic mixes and a voiced countdown timer. If I can do it, then I'm sure you can!

COVER UP

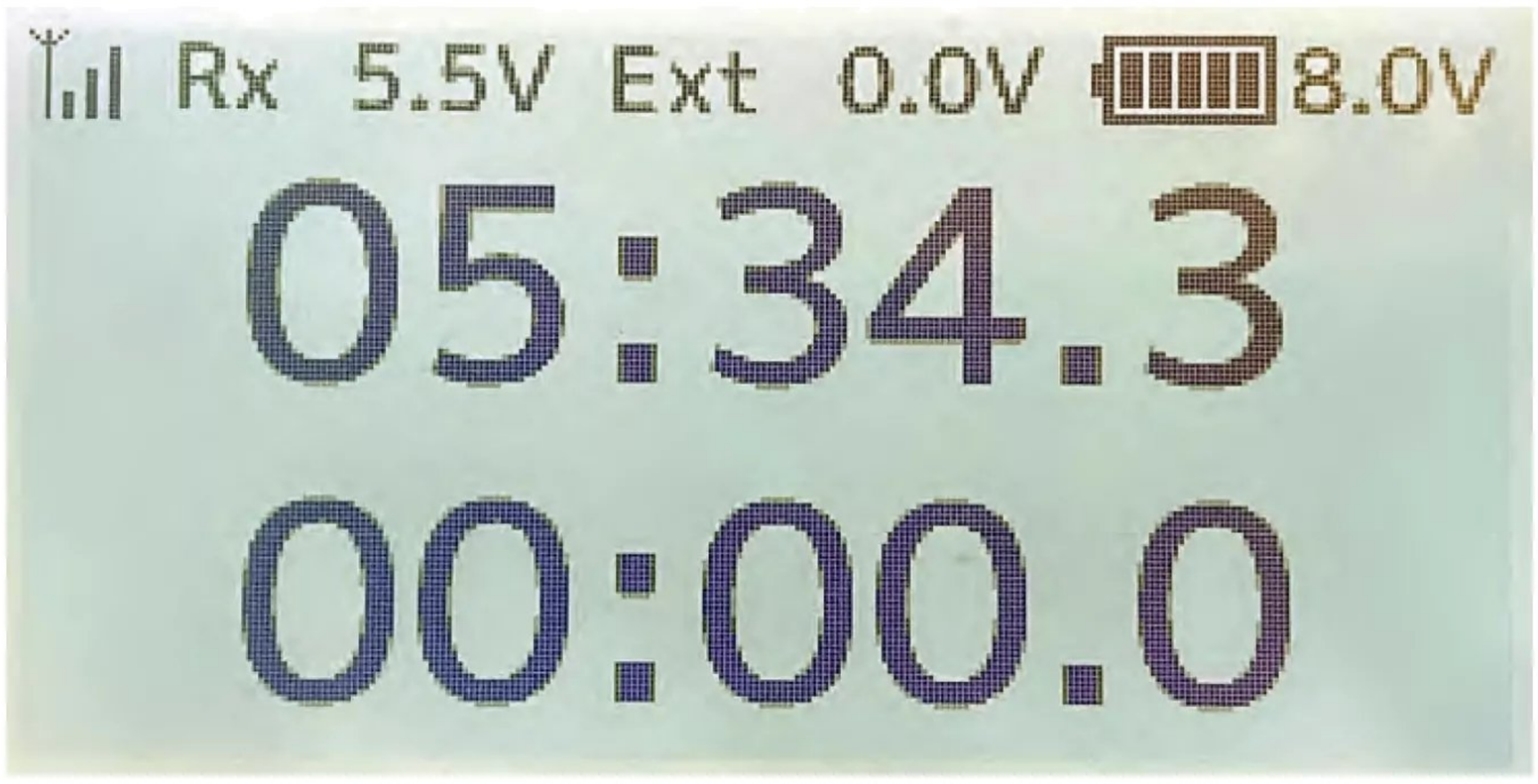
Soon after receiving my T26SZ set, J. Perkins announced a series of Futaba branded Tx cases, so I quickly placed an order for the Large / Soft version. Priced at £39.99, I consider this a worthwhile investment to protect my new pride and joy. It's quite cavernous though, as you can see from the picture, with more than enough room to store all the accessories supplied with the set.

My only gripe is that there's no internal pocket to store the short manual. Instead, I've had to resort to using the external side pocket, which means that it's sure to get a bit dog-eared. Still, hopefully I won't need to refer to it at the field for much longer, after which it can find a long-time home in the bookcase in my office.

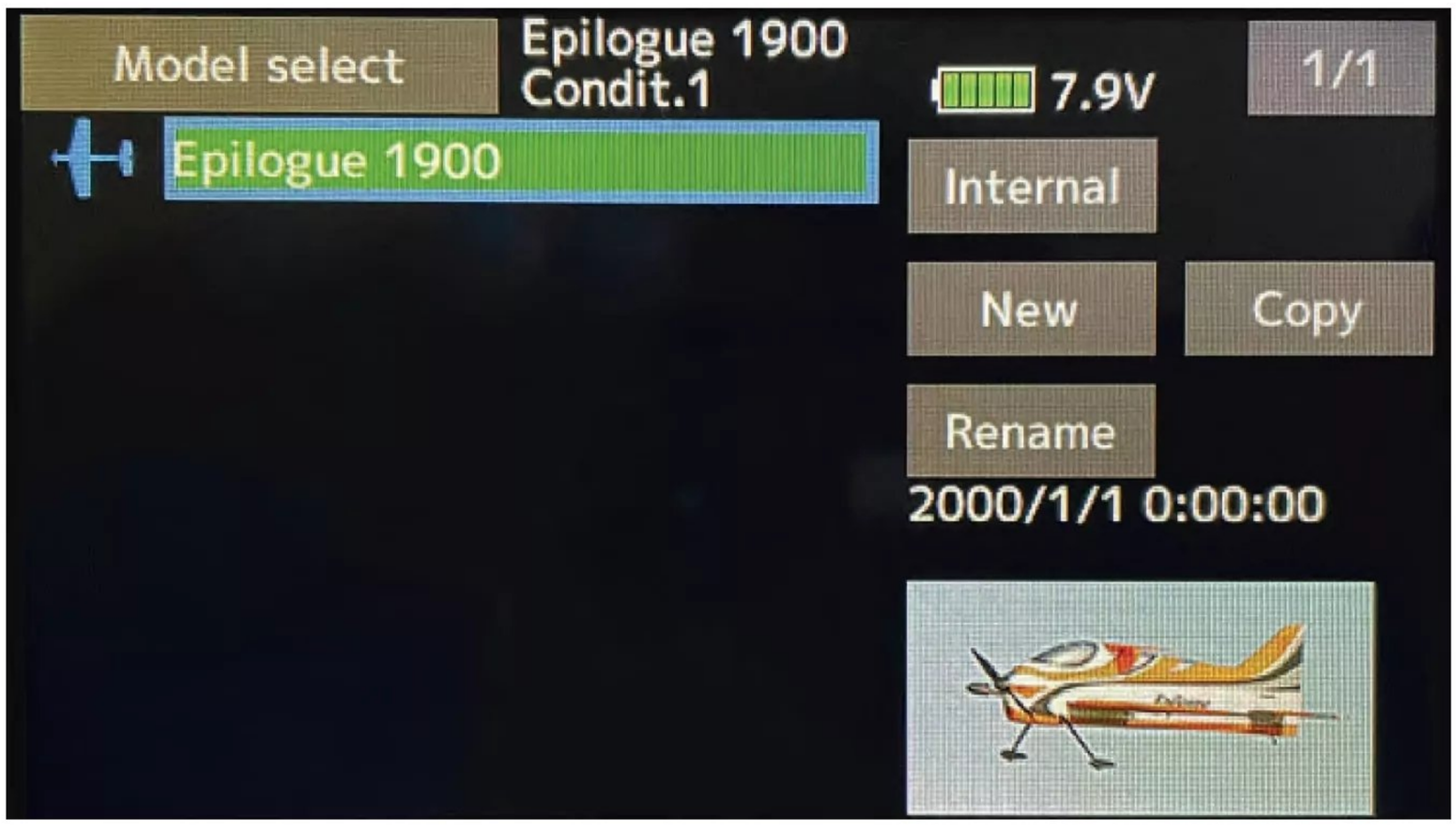
A HELPING HAND

Before I sign off, I would like to express my thanks to my PPMFC clubmate Rob Bennett, who is my 'go to' man for help when performing things like range checks with Futaba radios at the club field. Rob has been using SZ systems for many years and so he knows instantly which buttons to press, whilst it would take me a lot longer whilst rooting

Home screen shows a wealth of information, plus a neat little image of your model using a bitmap file stored on a microSD card.



LCD sub display can be used to either repeat the timer displays or telemetry information sourced from sensors fitted to a model.



Between them, the System, Linkage and Model Select menus offer all the functions you'd expect to find provided by a modern R/C system – plus a bit more!

Examples of Futaba telemetry sensors, with a Vario on top and a Voltage sensor below. Telemetry data can be fed back either on screen or by voice announcements.

Futaba's large soft case offers plenty of space and protection for the T26SZ transmitter and all its accessories. I could probably get a packed lunch in there too!

The carry strap can be fitted either sideways or upright. It's a pity that there's no internal pocket to store the short manual provided with the T26SZ transmitter.

A last look at the Futaba T26SZ showing the switch lit up blue. This gives a clear indication that RF is switched on. If it's pink, then RF is off.

through the short manual or even calling up the full manual, which I have downloaded to my phone.

Rob also recommended that I buy a book on SZ radios called 'Futaba 16/18SZ Programming for Fixed Wing Aircraft' by Malcolm Holt. Although written about earlier iterations of the SZ family this book still contains a wealth of useful information for T16IZ and T26SZ users. Unfortunately, it appears to be out of print, but it is still available to download on Kindle, which is where I purchased my copy. (Readers with long memories may remember that this book has been mentioned before in this magazine, most recently in a letter from Tony Baker in the September 2023 issue. Thanks, Tony!)

> "Locking the screen is recommended when a model is flown to avoid unintended changes to its set up whilst airborne"

FINAL THOUGHT

At a shade under £1,200 this is not a cheap radio but as soon as you pick it up you know that you have a quality bit of kit in your hands. It is advertised as a high-end, future-proof transmitter and I certainly think that's a very fair description. I know I've said it before, but adding this one to my already very capable T16IZ Super trannie should see me well catered for in the R/C department for many years to come. ■

DATAFILE

Name:	T26SZ 26-Channel Air Radio
Manufacturer:	Futaba
UK importer:	J Perkins https://www.jperkins.com/products/FUT05003226-3
RRP:	£1,199.99
Selection of Key Features	
• 26 channels (24+2)	
• FASSTest26, FASSTest18, FASSTest12, S-FHSS & T-FHSS protocols	
• Full colour 4.3" touch screen with model image	
• 2.7" LCD sub display	
• Smooth non-contact stick potentiometers	
• Telemetry system	
• Micro SD card port	
• 2000mAh Li-Ion battery	
• USB-C charging	
• 8 flight conditions	
• 30 pre-programmed mixers	
• 10 free programmable mixers	
• S.BUS I/F enabled	
• Voice, sound and vibration alerts	
• Wireless trainer system	
• 13 fixed wing types	
• 3 fixed wing tail types	
• 2 fixed wing rudder types	
• 8 helicopter swash types	
• Earphone jack	
• Supports 14 telemetry sensor types	

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Fuselage Length: 1720mm (68in)
4 Channel
0-90 2 Stroke
91-120 4 Stroke or 26cc Petrol

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Key Features **£349.99**

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Smart technology compatibility out of the box.
Backlit 3.2", 320x240 resolution display screen with multiple colour palette choices and user customizable colors
Wi-Fi connectivity for easy product registration and firmware update

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1.3m BNF Basic with AS3X and SAFE Select
£464.99

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Wing Area: 50 dm2
Wing Span; 1670 mm
4 Channel Elevator, Ailerons & Throttle

Futaba R3106GF 6-Channel Receiver - T-FHSS Mono HV (P-R3106GF) Combo

£94.99

Supplied complete with the matching R3106GF receiver, this new radio is perfect for almost any application and sure to become a popular sight at airfields and boating lakes around the country.

A wide array of Futaba radios and receivers can be found on our website and in-store!

MANY MORE AVAILABLE!

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£172.89

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CW's new quarter scale Slingsby T.21 sails away from the White Sheet slope's edge. See 'Project Conclusion'.

BARGING AROUND

The spotlight falls on Chris Williams' latest quarter scale glider, plus Chris looks on as another mighty scale glider soars above White Sheet Hill

Words & Photos Chris Williams

After three previous weather-related cancellations, White Sheet Scale Secretary Jim Emptage was finally able to call the club's summer Scale Fly-In on the 14th of July. A forecast promising light winds culled the attendance somewhat, although in the event there was quite a bit more breeze than had been suggested!

The first thing of note was to be the bungee launching of Will Hosie's mighty Arcus, surely a sight to see...? A short length of heavy-duty bungee had been set up on the edge of the slope and after some equally heavy-duty consultation among the launch crew, the hook on the lower part of the fuselage, near the front, was connected up. Then, a rearward march commenced, looking for all the world like the awkward motion of a crab in handcuffs. When the line would stretch no more, the Scale Sec, who had drawn the short

Will Hosie's mighty Schempp-Hirth Arcus is prepared for flight.

Second time does it. The Arcus gets away.

Steve Fraquet displays his PIK 20 before its maiden flight at the White Sheet event.

straw, hung grimly on the base of the fin whilst Will engaged in Holy Communion with his transmitter. Declaring himself satisfied, he gave Jim the nod, the ducted fan roared and the Arcus sped along the ground, parting the grass like a super tanker shrugging off a rough sea. The surly bonds of Earth were not to be overcome on this occasion, however, and the airframe skidded, ground looped and came to rest part way down the hill.

More consultation ensued and a reset was ordered. This time the bungee was reconfigured to give more urge and as Jim grunted and strained against the pull of the fin, he must have been congratulating himself on all those hours usefully spent in the gym. This time the surly bonds did not hold sway and the Arcus committed aviation, climbing away, seemingly with a reasonable amount of power to spare.

This was quite a sight to see, considering that the Arcus spans 6.6 metres and weighs in at 42 lbs! For those with an interest in such matters this model is fully moulded, sports eight ailerons and two flaps. The ducted fan gives 8.9 kg of thrust on two 6500 6S LiPos and the recommended power duration is 30 seconds due to the possibility of overheating.

"…this model is fully moulded, sports eight ailerons and two flaps"

Bill Ebdon gives his all to get the Phoenix K8 away.

FRAQUET RETURNS

The return of a long-time participant to these affairs, but sadly missing since the pandemic, saw Devonian Steve Fraquet once more to be numbered amongst those present. Steve had brought along his recently completed PIK 20 for its maiden flight and between us we spent several tense minutes trying to decide whether or not to add or remove weight from the front. In the event the PIK 20, a model with a long and distinguished pedigree, was thrust into the void with everything set up well from the get-go. It was shame that after such a perfect start she suffered a bout of TFCS (Terra Firma Convergence Syndrome) due to apparent loss of radio signal.

Not to be outdone, Motley Crew had brought along his mighty e-powered K8 from the Phoenix Models stable. When this kit first came out some years ago, it proved popular but suffered from a slight lack of structural integrity in the area of the wings, so we don't see too many of them now, at least not in these here parts. Motley's version had been stripped down and beefed up in a process we came to call 'Getting a Certificate of Mottification', but who was going to pull the short straw when it came to launching the beast? In my view Bill Ebdon's big mistake was once admitting that he was a keen cyclist, thus stamping him as super fit, especially when compared to the rest of us. Therefore, the short straw on these occasions is usually his and thus it was this time around (I believe he's out of therapy now).

During the course of the day Motters handed me the Tx and to see this behemoth cruise by at close quarters whilst being the one to supply the necessary control inputs is a satisfying experience indeed.

Bob Cook had some epic flights with his ASW 22

Author's fifth scale e-powered Bergfalke IV was an obvious choice for the prevailing conditions.

DOWN, DOWN

The Lord, it is said, giveth, and the Lord...

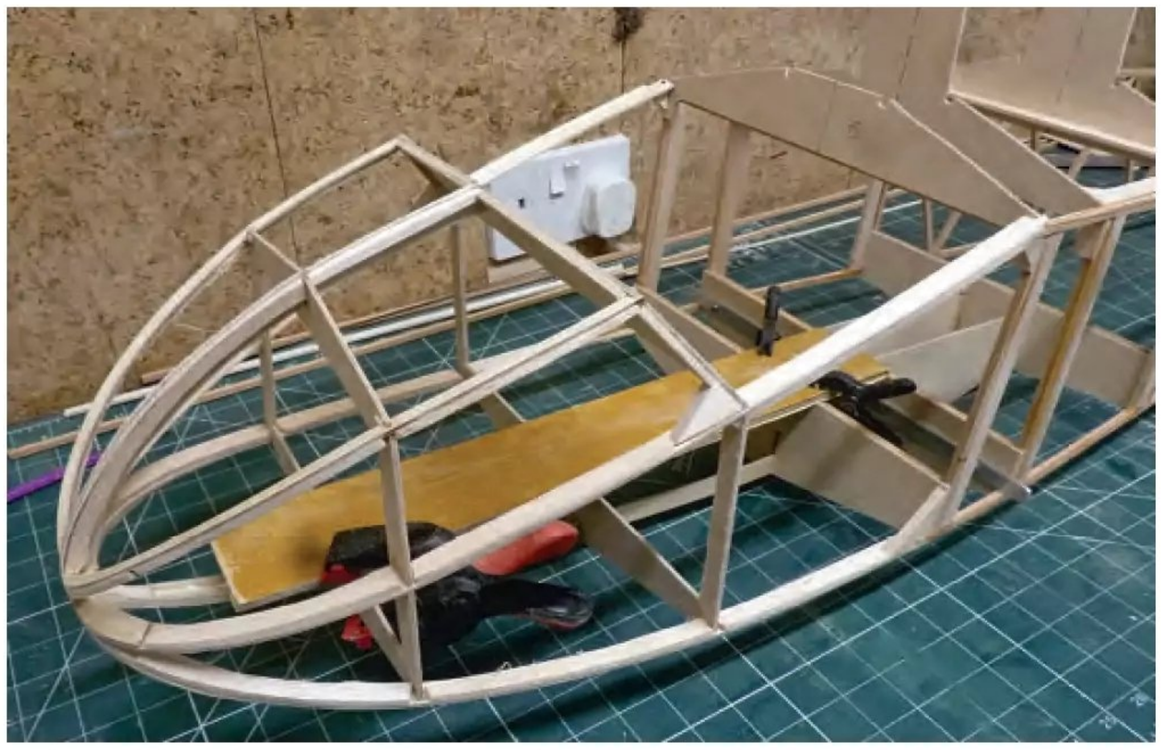
Well, you know the rest, and it has to be said there were occasionally some world class patches of sink and my little Kite 1 became a victim of one during the course of the afternoon. It is definitely a discombobulation when this happens because it's as if an invisible fly fisherman has cleverly hooked on to your rudder and is intent on reeling her in. All forward momentum ceases, as does all control authority, and your glider seems to head in a downward direction at a great rate of knots whilst giving the appearance of still having a normal flying attitude. In hindsight it easy to realise that the only way to regain control is to dive with the utmost alacrity, but a lifetime's strict avoidance of Landing Out always seems

View of the glass glider section in the White Sheet pits.

to gain ascendance and thus it was that the Kite was gracelessly dumped halfway down the hill. (I will pass lightly over the throbbing of my knees when I got home: where are all the super-fit cyclists when you need one?)

This day marked a new chapter in the club's long and illustrious career when it comes to the hosting of these scale gliding events. Of the twenty models present, ten were of the glass persuasion, and ten were woodies, thus reaching parity for the first time!

A classic summer day's flying on the hallowed hill, then, and congratulations to Jim for making the customary financial arrangements with the Weather Gods.



First stage of the T.21's construction.

'Barge' airframe ready to be film covered.

Members of the posse found it a bit challenging to get their fingers around the fat fuselage!

PROJECT CONCLUSION

After the sleekness of the Foka 5 it seemed that it might be a good idea to do something different, which is how it came about that I found myself building a second version of the venerable Slingsby T21, sometimes fondly referred to as the 'Barge'. This time, I thought, 1/4 scale would be a handy size and soon the mouse was scurrying around my desk. Blimey, I thought, as the printer disgorged the first of the print outs, this is bigger than I had imagined! Telling myself that most models look bigger in print form than in reality, I ploughed onward and, before I knew it, it was time to cover the airframe in film.

At this scale the Barge spans a modest 4.1 metres and weighs in at around 12 lbs, but members of the posse found it a bit of a challenge come launching time to get their digits around the fat fuselage!

This, as you might expect, is pussy cat in the air, with no discernible vices and a great deal of atmospheric presence. To see her action Google 'Flying the Barge' and see for yourself.

FAIR WARNING

After a series of well-spaced and random incidents of radio failure over the years, I came to the conclusion that the

The quarter scale T.21 rises on the line during an aerotow meeting.

She is a pussy cat, with no vices, but lots of presence when flying.

At 1/4 scale the Barge spans 4.1 metres and weighs in at around 12 lbs.

"I thought 1/4 scale would be a handy size and soon the mouse was scurrying around my desk"

only constant factor between them was the phone in my pocket. It's not my intention here get into the veracity of the phone/transmitter interference theory, but instead to relate what I tried to do about it.

My initial solution was to print out in large red letters on a sheet of A4 paper the word 'PHONE' and place it in my Tx case on top of the transmitters. This worked well, initially, but after a while I found myself starting to relapse.

Smallpiece, the 'Taranis Whisperer', came up with a jolly good wheeze that I think will definitely do the trick. Now, every time I switch on a tranny, a voice tells me: '*Don't forget to take your phone out of your pocket.*' Brilliant!

Now all I have to do is put another sheet of A4 in my Tx case to remind me to turn the volume up...

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Luke Oliver loves flying his Horizon Hobbies MB339. The colour scheme stood out nicely against the tree lined backdrop.

POPHAM 2024

Mike Freeman heads along the A303 to see lots of fabulous aircraft in action at this now well-established model show

Words & Photos **Mike Freeman**

I always look forward to the Popham Model Show. The flight line is tucked up in one corner of Popham Airfield, with the A303 to the right and a sloping field opposite, with trees along the far side forming a near horizon and a great backdrop for photos. This enclosed nature of the site gives the show an intimate feel and the pilots and visitors always seem to enjoy themselves.

Autumn was definitely in the air on the Saturday. There was a chilly mist and the trees were showing an amber tinge. Sadly, the heavy mist had turned to light fog when I arrived and it was even there during the pilots' briefing but then, miraculously, it lifted enough for the first slot of the day to proceed, which luckily was helicopters, and by the second slot the fog had cleared completely, allowing a full day of flying to go ahead.

Popham Airfield was draped in fog when I arrived.

Glen Davis' nicely detailed Westland Whirlwind kicked the show off as the fog slowly but surely dispersed in the background.

David Smith's Vario Chinook is an ongoing project. He hopes to have it painted and finished in a British Airways Negus scheme for next year's show.

LIFT OFF!

A squadron of six helicopters started the show. They spread themselves out so all the visitors could get a close-up view of at least some of the models on display. I was standing with Glen Davis, who was flying his Westland Whirlwind and David Smith who was flying his 1:11 scale Vario Chinook. David's Chinook is a 'work in progress' project and it is currently flying without its final colour scheme which David plans to have finished for next year's show. One Kontronik Pyro 850-24 240 kV motor drives a first stage synchro shaft via a belt reduction system, then bevel gears drive the 1860 mm diameter rotors in opposite directions at around 1100 rpm. A pair of 6S 5000 mAh LiPo packs are connected in series, making a 12S pack which drive the motor through an ICE HV80 ESC giving around eight minutes of airtime. David told me he has lots of scale details to add and I look forward to tracking him down at next year's show to see the finished model.

Dave Franks puts his F-16 into a high-alpha landing approach, showing us the F-16's intricate undercarriage.

TASTY TURBINES

The bright colour scheme of Luke Oliver's Horizon Hobby's MB339 looked great against the backdrop of trees at Popham, as shown in the first picture of this report. This model is powered by a Kingtech 100 turbine dialled back to give the power of an 80 kN turbine for a more sympathetic flight performance. The kit comes ARTF with the jet pipe and retracts pre-installed, just add a turbine and radio gear. Luke says it's his 'everyday' jet and it flies just like a Wot 4 of the jet world. He certainly seemed to enjoy flying it!

With their relatively high wing loadings jets benefit from a headwind when taking off and landing. It was almost flat calm on the Saturday and I particularly liked Dave Franks' method of slowing down his Jet Legend 2 m wingspan F-16. He executed a perfect high-alpha approach just before touchdown which slowed her up nicely and gave us a glimpse of the intricate workings of the F-16 undercarriage.

Steve Higgs' CARF Models Eurosport Ultimate gets my vote for the most intricate colour scheme at the show. Believe it or not this Richthofen (of Red Baron fame) scheme is a standard colour scheme available from CARF! Steve's model is powered by a Jetmunts 210TS turbine which uses four litres of fuel for around 8-9 minute flights.

Commentator double act Robert Ward on the left and Brett Houghton kept the crowd entertained with facts and figures about the models flying, interspersed with the occasional interview and banter.

The colour scheme on Steve Higgs' CARF Models Eurosport Ultimate comes as standard, although you'll have to pay a bit extra for it!

Luke Oliver (squatting) and dad Gary contemplate the pending display of Luke's distinctive Tomahawk Integral jet turbine.

The Integral has such a distinctive shape. Some love it, some hate it! I thought it looked fabulous.

A look under the canopy of Luke Oliver's Tomahawk Integral showing the large three chamber fuel tank and the other on-board paraphernalia that jet turbines need.

Here is Finn Hennessy's Super Tucano on a low pass along the strip.

STINGRAY

One jet worthy of special attention is Luke Oliver's Tomahawk Aviation Integral. It's definitely a 'love it or hate it' model but I think it looked fabulous showing off its futuristic Stingray-esque curves. Added to the lovely shape, the turbine had a sublime 'blue note' tone to it as it flew past, which sounded just gorgeous! The model is 2.5 m span with a Jet Italia 220 turbine providing 22 kg of thrust and which typically burns through five litres of fuel.

FLYING FINN

Finn Hennessy flew his first ever public display at Popham last year at the ripe old age of 11. He was rather nervous back then but after 12 months experience of flying at other shows he took to the flight line at Popham with plenty of confidence and did some super displays including a formation display with his Basingstoke club mate Dom Mitchell. They were flying a pair of Avios Super Tucano's. These 1.6 m span foamies flew brilliantly on a 4-Max 6S 6000 mAh 60C LiPo. The standard

At just 12 years old Finn Hennessy was the youngest pilot at the show. Finn and Basingstoke clubmate Dom Mitchell gave us a lovely duo display with a pair of Avios Super Tucanos.

Finn also flew some solo slots, including an accomplished 3D display with his 91" Skywing ARS 300.

five-bladed prop on Dom's model produces an awesome prop ring. Sadly, Finn broke his, so his model has a standard two-blader.

Dom Mitchell is well known for the videos on his Essential RC YouTube channel. As well as flying together, Dom has been helping Finn develop his own interest in sharing his R/C adventures on social media. Take a look at Finn's Facebook page - FlyingFinnRC - to see how he's getting on.

Finn also flew several accomplished 3D displays with his Skywing 91" ARS 300 with a GP76 and 24 x 10 Falcon prop up front. Finn was using Deluxe Materials smoke oil to enhance his display.

TUMBLERS

No self-respecting model show would be complete without a host of aerobatic and sports models taking to the strip. I particularly enjoyed Adam Broomhead's aerobatic display with his red 44% scale Pitts Challenger from Skip Model Designs. The DLE120 engine and 27 x 11 prop pulled her effortlessly through a lovely aerobatic display.

Luke Oliver also showed off his 3D skills when flying his Extreme Flight Extra 300 powered by a DA120 engine. Interestingly, Luke's Extra 300 is an older all wood construction version which is lighter than the modern carbon/ply ones and suits Luke's flying style.

At the Clubman end of the spectrum Flex Innovations have an excellent range of wallet friendly ARTF foamies and Gary Sands' Mamba flew well.

WARBIRDS

Only two warbirds appeared at Popham this year. I suspect that most had gone to the Much Marcle LMA show which was over the same weekend.

Peter Anderson was flying his 16-year-old Top Flite P47 Thunderbolt which at nearly 1:6 scale has a wingspan of 85". The engine is a Zenoah 62 cc spinning a 22 x 10 prop. The model has Robart air retracts and is finished with glass cloth and cellulose paint. Peter says she's a joy to fly and he flies her regularly through the summer months.

Adam Broomhead was flying his Pika Kits Mustang in 'Passion Wagon' livery, emulating the full-size version flown by Captain Charles

Adam Broomhead alongside his 44% scale Pitts Challenger.

Adam put his Pitts Challenger through its paces during a lovely aerobatic display.

Luke Oliver's Extreme Flight Extra 300 on an inverted Harrier flypast.

Gary Sands' Flex Innovations Mamba co-ordinates well with the tree lined backdrop.

Peter Anderson brings his Top Flite P-47 Thunderbolt in for a textbook landing.

Adam Broomhead enjoyed making strafing runs along the strip with his Mustang in its 'Passion Wagon' livery.

Weaver of the USAAF in 1944. Adam's model is also 1:6 scale and is powered by a DL50 50 cc engine.

Peter and Adam shared a couple of slots through the day and their models looked fabulous on their low-level scale passes and strafing runs along the strip.

LARGE SCALE

Once again Steve Carr's 55% scale, 4.6 metre span Yak 54 was the largest scale model at the show and Steve gave us another faultless display this year.

Slightly smaller but just as impressive were Adam Broomhead's lovely white Bucker Jungmeister and the RJ Aeroteam's duo pair of clipped wing Piper Cubs, all at 50% scale.

Adam told me the Jörg Wonneberger Modellbau Jungmeister kit arrived in three surprisingly small boxes and the kit was so complete all that was needed to finish it was the glue. It took Adam and his clubmate Dave

Steve Carr is a regular flyer at Popham with his massive 55% scale Yak 54.

Adam Broomhead and Luke Oliver hang on to Adam's gorgeous half scale Bucker Jungmeister during a pre-flight rev up. Tony and Kieran Hill from Bekra Models watch on.

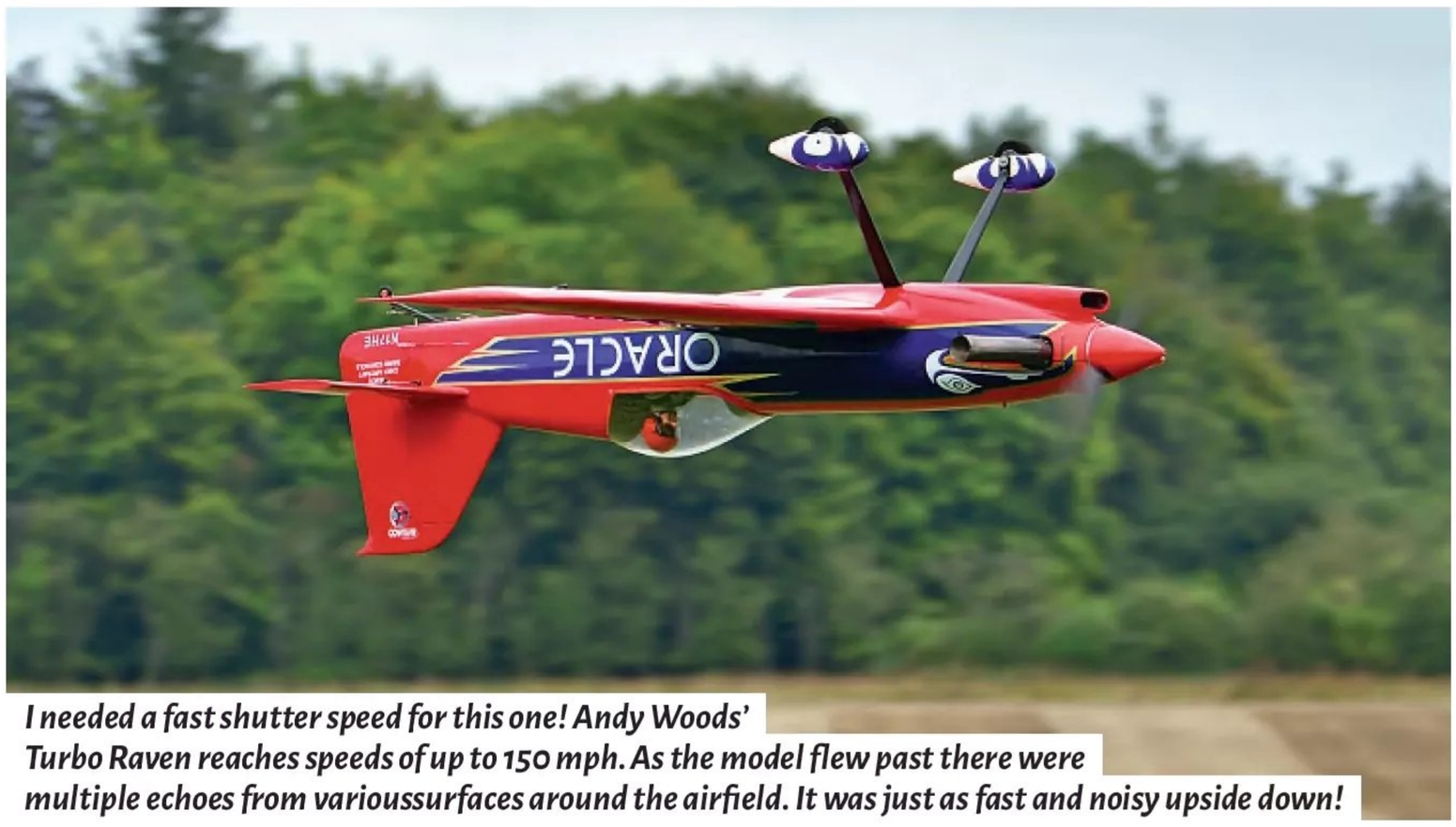
Nick Ashe and Sam Bates from the RJ Aeroteam give some scale to their massive half scale clipped wing Piper Cubs.

The beautifully engineered five-cylinder Valach VM R5-250 radial engine in Adam's Jungmeister sounded lovely.

Nick and Sam performed an impressive mirror flypast, made even more impressive when I learned this was the first time they had tried the manoeuvre! Nick's Cub is upside down.

Parnham several months to build the airframe and it took 35 metres of Oracover to cover it. That gorgeous artwork (it's not vinyl!) was completed by Adam and his dad, Kevin. The pilot is a facsimile of the German pilot who flies the full-size version and was made by Andy Craddock. This impressive model is powered by a gorgeously engineered five-cylinder Valach VM R5-250 radial.

The Cubs were flown by Nick Ashe and Sam Bates from the RJ Aeroteam. Believe it or not these are ARTF kits from Bill Hempel. Nick and Sam gave us a majestic formation display and I found out after the flight this was the first time they had ever flown together! The models are identical with the only distinguishing mark being the registration letters on the fuselage of Sam's model. Nick's Cub is powered by a ZDZ 210 cc engine spinning a 36 x 10 prop whereas Sam's has a DLE170 up front with a 32 x 10 prop. Both weigh around 36 kg so require LMA documentation to fly.



I needed a fast shutter speed for this one! Andy Woods' Turbo Raven reaches speeds of up to 150 mph. As the model flew past there were multiple echoes from varioussurfaces around the airfield. It was just as fast and noisy upside down!

SPEED FIEND

The fastest and certainly the noisiest model at the show was a Turbo Raven belonging to Woodzy (aka Andy Woods) of the RJ Aeroteam. This was hurtling up and down the strip at speeds of up to 150 mph, with the turbine and prop screaming like a banshee. Apparently, the blade tips break the sound barrier, generating the spine-tingling sound. Andy lives and flies in Cornwall. I hope his neighbours live a long way away!

The model is a Mibo Jets kit based on the full-size version flown by Wayne Handley in the 1990s and is powered by a Kingtech K60G4 turboprop turbine turning a 29 x 13 carbon prop at around 7000 rpm. The model has a 12 channel Powersafe receiver and 35 kg MacGregor servos sucking juice out of two 2200 mAh Optipower 2S LiPos. Andy told me his home patch is quite small and he had to split the ailerons in two so he could add crow brakes to slow the model down enough for landing.

GLIDER GUIDERS

Popham Model Show wouldn't be the same without a couple of glider slots. There was a mass launch of F5J powered gliders. I just love the effortless climbs of these models and the subsequent gravity defying descents with their seemingly impossible glide angles.

Simultaneous launch of a flock of F5J powered gliders.

Luke Oliver had some interesting models at the show including this Tomahawk Swift powered glider with a retractable EDF power pod and undercarriage.

At the other end of the spectrum were the RJ Aeroteam boys with their turbine powered Glider-IT Jeemo gliders. Two of these carved up the sky above Popham, performing some colossal high G manoeuvres with no noticeable wing flex thanks to their full carbon layup and 15 mm solid steel wing joiners.

I was quite taken with Luke Oliver's 3.3m span Tomahawk Swift glider with its retractable EDF pod which houses a Jetech E-80 EDF unit running off a 12S LiPo. I was convinced it was a turbine until I saw it close up on the ground! The massive 4.5 kg of thrust from the 80 mm EDF powered the Swift effortlessly skyward and with the EDF pod and U/C tucked away she became a fabulous aerobatic soarer with immense energy retention through manoeuvres.

Close up of the Swift's 80 mm retractable EDF unit which produces a phenomenal 4.5 kg thrust from a 12S LiPo pack. It sounded just like a turbine on full chat.

The Drift Car circuit in the main marquee. It was mesmerising watching the 1:10 scale cars doing four-wheel drifts around the circuit.

BUT THERE'S MORE!

There was a constant queue of gorgeous models lining up for their flying slots and it was hard for me to break away to see what else the show had to offer. Eventually I did manage to get away and there was quite a lot of other stuff going on.

There was a healthy swap meet with some nice-looking models. It's fair to say the trade presence was pretty minimal again this year. I expect most had gone to the Much Marcle show which was over the same weekend. There was a pop-up boating lake for folks to have a go at captaining an R/C boat and several armoured vehicles and tanks trundling around.

I was enthralled by the Drift Car circuit inside the marquee. It was quite mesmerising watching these R/C cars doing four-wheel drifts around the circuit. Chatting to Steve Crossland, who was driving a lovely 1:10 scale RS Escort, he told me there's quite a following for this branch of model cars. Steve's Escort runs on a 2S 4000 mAh LiPo pack which gives over an hour's fun and escapism. The emphasis with these cars isn't out and out racing but more on skill by driving through chicanes or trying to touch various targets around the track.

Steve Crossland's 1:10 scale RS Escort drifts by.

FINAL ANALYSIS

It's fair to say the weather wasn't brilliant. The fog cleared but there was the occasional drizzle shower and we didn't see much sun, but everyone seemed to enjoy their day. There were plenty of gorgeous models to see and a constant turnover of varied flying slots to watch fly. All in all, a great day out!

Can we do it all again next year please! ■

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WATER OTTER

Kevin Crozier completes his review of XFly-Model's 1800 mm Twin Otter by flying it off water

Words **Kevin Crozier**

Photos **Kevin Crozier, Frank Skilbeck**

In the July issue I published my flying report of XFly-Model's 1.8 metre wingspan Twin Otter. Since then, I have flown this good-looking scale foamie many times and I have always been very pleased with its performance operating from my local grass strips. The twin 3541-KV550 brushless motors, fitted with realistic 3-blade 10" x 7" props, provide more than enough urge and it's great fun brushing up on circuits and bumps whilst using the large flaps.

However, one of the main attractions of the Twin Otter for me was that it comes supplied with a pair of large floats, so I was itching to try flying her off water. As has happened far too often this summer my plans were stymied by strong winds blowing crosswind across the fishing lake that we use for float flying but eventually they died down enough to allow float trials to begin.

Fitting the supplied float set and flying off water was the icing on the cake for me when completing this review.

"If you haven't been paying attention it's about now that you realise that the floats are handed"

Dolphin graphics on the outside of each float help stop you from mounting them on the wrong side!

Port float features a large water rudder attached to an integral servo.

FLOATS FIT

First things first though and that was to fit those long foam flotation devices! Obviously, you will need to hold the fuselage upside down while fitting the floats. I used a foam model cradle.

This is a simple and quick job, starting by removing the steerable nose leg assembly and its attached servo. This does leave a large hole in the underside of the aeroplane, which is not a good thing for a floatplane! Unfortunately, XFly do not supply a matching blanking plate but this was easily solved by cutting a matching panel from a recycled white plastic margarine tub and taping it in place, making sure all the gaps were well sealed.

Next, the main landing gear is removed and swapped for the rear float legs where the pre-bent wire is secured using the same mounting plate. The front float leg wire fits under a plastic panel just aft of the now covered over nose wheel bay. It's wise to keep the front and rear mounting plates loose for now, allowing for some fine adjustments when the floats are put in place.

The legs are a tight push fit into 'chocolate block' style terminal strips attached fore and aft of each float, where they are secured with countersunk hex headed screws. Again, the screws are best left a little bit loose to allow for squaring / lining up the floats. The second of each pair of terminal blocks is used to fit a pair of finer gauge spreader bars.

When assembly of the float set is finished the model can be turned upright again and the floats tweaked for square before nipping up each of the countersunk screws. If you haven't been paying attention it's about now that you realise that the floats are handed, with long dolphin graphics attached on each of their outer sides! Thankfully I was wide awake whilst assembling this float set, but I have been guilty of getting floats the wrong way around in the past.

The port float is pre-fitted with a large water rudder and an internal servo, the lead for which feeds through a hole in the rear mounting plate and up into the fuselage where it connects with the now vacant nose leg steering extension lead. I taped the lead to the side of the nearby wire leg and I also ran some tape over the above mentioned hole to seal it.

The floats were now fitted but something didn't look quite right...

FAIRED OFF

After a short while it dawned on me. When operated from land the main undercarriage legs come fitted with distinctive fairings which are wider at the top and taper down towards the wheel hubs. But the rear float legs are missing these fairings, leaving the float set looking distinctly spindly, especially at the rear.

At first, I wondered if I could unclip the fairings from the wheel set and clip them back onto the float legs. But closer inspection revealed that they were probably glued or heat sealed on in some way, so once taken off there was no guarantee that they would clip back on securely. Regrettably the leg fairings are not available as separate spare parts, but spare faired wheel sets are obtainable from XFly's distributor, CML. This does seem a bit of an extravagant way to get hold of a few bits of plastic but in the interests of finding out how the fairings work I did just that. With a bit of firm pressure on each side of the fairing it will pop off but there are no signs of any clips,

nor any glue for that matter. So, I think they must be heat bonded in some way.

Offering up the fairings to the 'nude' rear float legs I pondered how to fix them on. The obvious answer is to glue them in place using a waterproof adhesive such as epoxy, taping them together while the glue sets. But hold on, what about the water rudder servo wire? This would need taping to the fairing so why not just tape the whole thing together anyway, trapping the rudder wire as I went along. Two bands of white electrician's tape did a neat job, replicated on the other leg to secure that fairing in place too. If I want to revert to the landplane then the tape can be taken off and the fairings retaped back onto the wheeled legs. Simple!

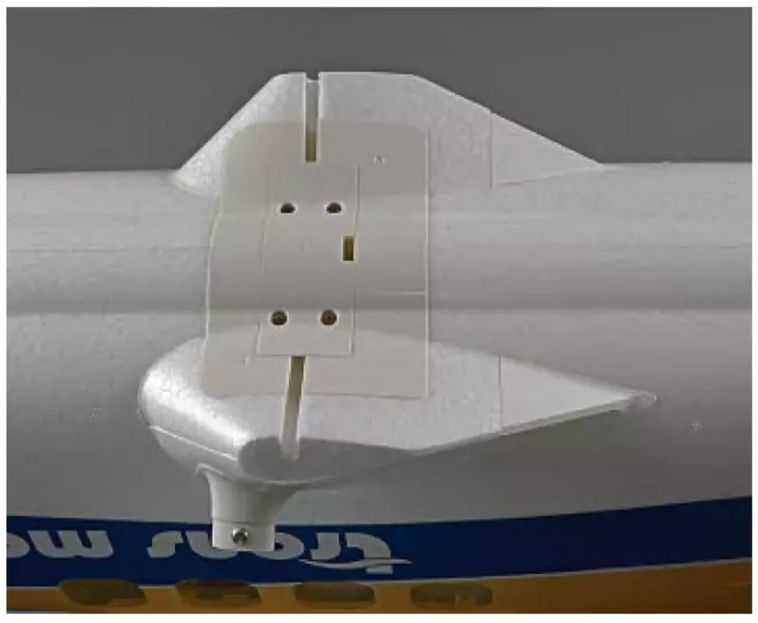
(Of course, I don't need to do that as I still have the original faired wheel set. If you want to keep your original main gear and sacrifice another to obtain another set of fairings then the part number is XF116-19.)

SPLASH PROOF

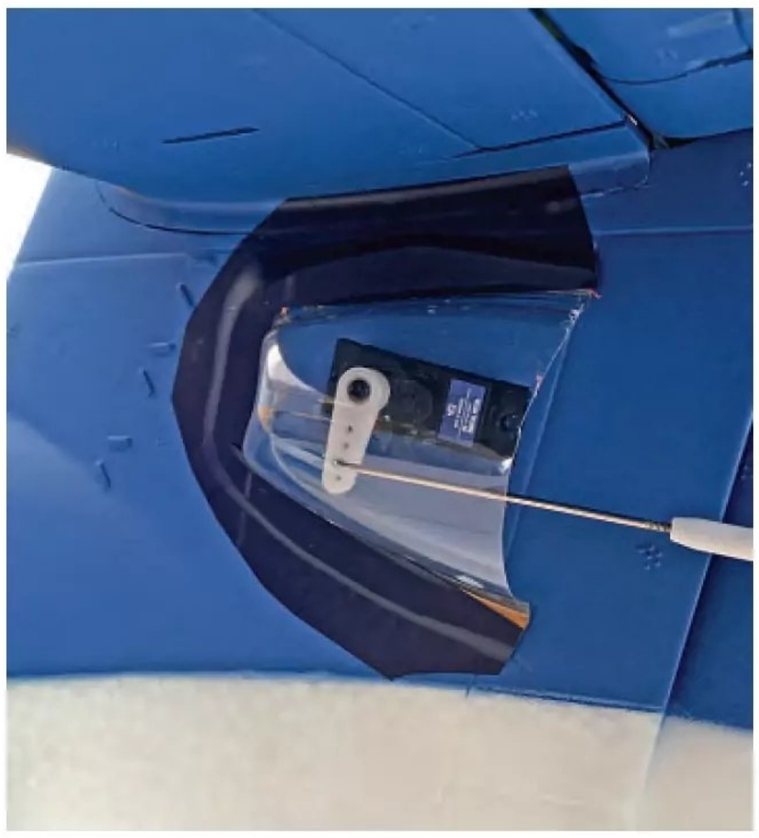
I couldn't find any indication that the 9G digital metal geared servos fitted to the Twin Otter are waterproof so it's probably best to assume that they are splashproof at best and so take precautions to stop them from getting dripping wet.

With my other ARTF foam floatplanes I have done this by cutting down suitably shaped recycled packaging to make see through blisters that are taped over the top of any visible servos. You can see an example of this in a nearby photo. The rear end is left exposed to allow any water that does find its way in to drain away and for air to circulate to dry off any remaining moisture before putting the model back into storage.

Both the elevator and rudder servos were given improvised covers, but the wing servos



After taking off the main wheel set the rear float legs are secured with the same plastic plate. The water rudder servo wire feeds through the hole in the middle.



My improvised covers were a bit of a last minute bodge job but they did a good job of keeping spray off the tail servos.

Additional leg fairings are not supplied which is a shame as the float set looks too spindly without them. But you can pop the fairings off the main wheel set and tape them in place.

Another mod was to use a round lolly stick to back up the magnets holding the nose in place. It pushes fully home but is easily pulled back out using fingernails under the screw head.

Twin Otter lakeside and ready for her first flights off water.

KC, in stylish flying garb (cough!), tests the water steering for the first time. All good but a little more throw was added for the final flight of the day.

Take offs are smoother and create less spray without using the flaps.

An early take off, with water pouring off the floats, showing the steep climb out at half flap.

"I cannot find any indication that the 9G digital metal geared servos fitted to the Twin Otter are waterproof"

are integral and already covered over so I did not need to worry about covering them.

A final modification was to secure the magnetically mounted nose cone with a wooden peg to stop any chance of it coming off whilst in the middle of the lake! This is probably overkill as the magnets hold the nose securely in place but better safe than sorry. I used a pointed lolly stick to ream out a hole through the side of the nose cone, through the foam mount inside and out through the other side until the point just started to break the surface. The stick was then cut to length and a small screw inserted in its end to give me something to pull on with my fingernails. This allows the stick to be easily removed and the nose cone put safely away for storage.

LAKE SIDE

I started this article by bemoaning the weather (sorry, it's a well-known British trait!), not helped by the fact that my local lake is orientated pretty much north south. So calm days with the wind lined up the length of the water are all too rare. But patience is a virtue they say and eventually the forecast swung in our favour and arrangements were made to meet my float flying buddy, Frank Skilbeck who came equipped with his camera, not forgetting a couple of aeroplanes too! Another local pilot, Tim, joined in the fun.

Typically, the weather had other ideas and by the time we arrived the wind had picked up and was blowing across the water. This lake is tree lined on two sides and they were acting as a bit of a windbreak, leaving areas of calm water for us to fly from. The temptation to abort loomed large in my mind but after waiting so long for a lakeside session we decided to give it a go, which turned out to be a good decision as we all ended up having several good flights.

Frank went first with his flying boat while I took a few lakeside pictures. Then it was the Twin Otter's turn on the water. With the water level being quite low I was able to take advantage of a narrow 'beach' from which to launch the Otter. With the wind blowing across the lake, I was a tad worried that the water rudder might have difficulty overcoming the model's natural tendency to weathercock into wind, especially with that large fin acting as a sail. I also wondered if some differential throttle to aid steering might be beneficial, but my fears were groundless and the water handling using just the water rudder proved to be very good. So, I powered the model up the lake, selected half flap and took a wide turn to line her up as best I could into wind and opened the throttle. For a few seconds all went well but then she

Once I had my eye in the Twin Otter rewarded me with some lovely landings.

Whilst flaps are not needed for take-off, half flap is a blessing to slow this large foam model down for a safe arrival.

> "As when flying from land, half flap is really all it needs and I rarely use full flap in either configuration"

hit the swell created by taxying fast downwind and promptly disappeared in a large ball of water and spray. I wasn't expecting that (to put it mildly!) so I quickly shut the throttle and waited for her to reappear from the mist. Water can be very 'hard' when hit in unexpected ways (remember those belly flops as a child!) so I was relieved to see she had survived this encounter unscathed. Frank actually managed to take a pretty decent picture of this incident, which you can see if you turn to the Parting Shot page at the back of the last issue.

For the next take-off I was careful to make a slower downwind pass, so causing much less disturbance to the surface of the water. This time all went well and the Twin Otter lifted off, trailing droplets of water from the backs of her floats. However, the climb out was much steeper than I was anticipating, not helped by the large amount of elevator that was needed to help her unstick. Did I also detect a nod back towards the water at the moment of lift off, or was I imagining that?

In the air the Twin Otter seemed just as pleasant to fly as always, if a little tail heavy. I made a mental note to try moving the 6S LiPo forward a small amount for the next flight. As with flying from land, I kept half flap on during the circuit, lining the model up for an approach over the field adjacent to the lake. Juggling the throttle to maintain a steady glide path, she passed the threshold, at which point I eased back the throttle, but did so a little too quickly and she dropped heavily onto the water. It was not my best landing but she was down and safe, so I lined her up for another take off and circuit, this time performing a much better landing. After another couple of splashdowns, it was time to bring her back to the edge of the lake to check the battery's capacity. Over 50% remaining, so there was plenty of juice left in that pack.

FLAP OR NO FLAP

By the time my second flight had finished I had come to a couple of conclusions. Moving the large LiPo forward had indeed all but eliminated that tail heavy feeling (not exhibited in landplane format at the recommended CG, by the way) but a little bit more forward movement would probably be wise.

I had also come to the conclusion that selecting zero flap on take-off was beneficial as the Twin Otter planed more smoothly without it, sitting more level on the water. At half flap the nose would rise quickly and the rear of the floats would settle deeply in the water creating more of a wake and lots more spray – I was glad I had fitted those servo covers at the back! Tim had also spotted that momentary dip towards the water as soon as the model lifted off but that disappeared as soon as I cleaned up the wing before making a take-off run.

On the flip side, on a couple of approaches I forgot to select my usual half flap and the now slightly heavier aeroplane, in its float configuration, zoomed over the edge of the lake, carrying far too much speed for a safe landing. So, to my mind half flap is a must to slow her down for a safe water landing. As when flying from land, half flap is really all it needs and I rarely use full flap in either configuration.

From my notes, made at the side of the lake that day, the only other thing I should mention is that despite my earlier comments regarding the effectiveness of the water rudder, I did increase the throw on low rates from the nose wheel setting of 55% to 70% as it did turn a little too slowly for my liking during one gusty phase. But on a calm day I don't think that would be necessary.

SUMMING UP

When the XFly-Model Twin Otter was offered for review I must admit that it was that big float set that really caught my eye. Flying off water on a warm summer's day is a truly fabulous way to go flying.

This model proved to be a bit of a pussycat when flown from grass and with half flap selected for both take offs and landings. She proved a little bit more demanding when first flown off water but after making some small adjustments, detailed above, I now have her back to flying just as well as before. All I need to do is to tuck a clear note in that big battery bay to remind me to take the balance point a bit further forward and to leave those large flaps retracted when taking off from water. Other than that, all I can say is to repeat my final words from the original flying review...

What a lovely model aeroplane! ■

Cruising back after another successful scheduled flight. Not quite the Maldives though!

DATAFILE

Model:	1800mm Twin Otter
Model type:	ARTF scale twin
Manufacturer:	XFly-Model
UK importer:	CML Distribution https://www.cmldistribution.co.uk
RRP:	£439.99 (no floats) or £499.99 (with floats)
Length:	57.4" (1.46 m)
Wingspan:	70.9" (1.8 m)
Flying weight:	8.82 lb (4 kg)
Wing loading:	87.5 g/dm²
Wing area:	620 sq. in. (40 dm²)
Motor size:	3541-KV550 x 2
ESC:	40A x 2
Props:	3-blade 10" x 7"
Servos:	13 g & 9 g digital MG x 5 (plus 1 in float set)
Functions (servos):	Ailerons, elevator, throttle, rudder/steering, flaps
CG:	61 mm from leading edge
LiPo:	6S 5000 - 6000 mAh

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The Bowman Models Magister is from their range of classic scale models of the 1980s. It's a simple to build model with a wingspan of 85 inches.

MILES MAGISTER

Roy Thompson adds another Bowman's model to his expanding collection

Words & Photos **Roy Thompson**

It is always the way when you're least expecting to get involved with a new project that one comes along that's too good to pass up. I was browsing an online marketplace when I came across my first Miles Magister. It was an old, very tatty but well-built model, with severely split veneers, looking for a new home. The Bowman Miles Magister wasn't really on my radar, so I wasn't sold on the amount of work that would be needed to repair it considering the toll the years had taken.

Then up popped a second example, this time an incomplete kit with a part-built fuselage from a family's house clearance. The family thought that they had cleared their late father's model collection a few years earlier but after their mother passed, they discovered another large stash, including the Magister kit. Unfortunately, the instructions, plans and some plastic parts were missing, along with the remainder of the wood stock. But, importantly, the wing panels, glass fibre cowl and spats were untouched.

Okay, I was interested now. Looking at the pair as a whole, there were enough parts to pull together a complete model. Not content with just resurrecting this aeroplane it would also need to withstand a conversion to electric power to make it a more practical model for me.

Fully restored and back in the air.

Two second hand models were used in this restoration.

Model number one looking a bit worse for wear.

KIT INTRODUCTION

Let me introduce this particular Bowman Models kit. It's from their range of classic scale models of the 1980s, designed by Dave Banham in 1979. It's a simple to build scale model at a scale of 2.5 inches to the foot (20.8%). This gives it a wingspan of 85 inches (216 cm) with a recommended maximum weight of 11lbs! (5 kg).

The construction uses foam core wings and a built-up fuselage and tailplane. It was designed for a .61 size two stroke engine, although 1.20 size four-strokes were also a popular choice for it at the time. These simple scale models were designed to be fast and straightforward to build, leaving the amount of scale detail up to the skill of the builder.

The full-size Miles Magister was an important training aircraft in World War II and being the first low wing monoplane trainer for the RAF it helped train many Battle of Britain pilots. The Miles Magister M.14 first flew on March 20, 1937, being an evolution of the Miles Hawk series of aircraft built at Woodley near Reading. Early issues with spin recovery were addressed with the addition of anti-spin fairings and a new larger rudder, along with other mods, giving it the M.14a designation.

The Magister went on to carry out many different roles during the war. One notable one was the Maggi Bomber for which the addition of bomb racks was trialled, carrying

8 x 25 lb bombs when invasion of the UK was looking likely. Fortunately, the operational need for this never arose. Magister variants also saw service with many countries.

After the war the Magisters were put up for disposal and they quickly became popular with flying schools, clubs and private operators as the Hawk Trainer. All this means that there are plenty of different aircraft and colour schemes that can be modelled for this aeroplane.

MY PAIR

Getting back to my two examples, it appeared there would be four main things to consider during this restoration:

1. The badly split wing veneers. Do I repair or replace the veneer, or make a new set of wings using the other kit?
2. I needed to replace the tatty fibre glass cowl.
3. The conversion to electric power. Motor and battery selection, fitting out and access thereof.
4. Repairs and refinishing the fuselage. From the pictures, description and conversation I'd had, it was obvious the first model was well built, but there was no way of telling if there was any substantial fuel damage or how many other repairs would be needed.

Having purchased both kits unseen, I made two separate trips around the M25 to collect them. I knew the wingspan was 85 inches (88" on my example?) but you just don't appreciate how long that is until you try to fit a one-piece wing into the back of your car. I've always had estate cars for just this reason, but this one was still a bit of a challenge!

Having got them both home, I laid them out in the garden to see exactly what I had bought.

INSPECTING KIT NUMBER ONE

The first model, as expected, had indeed been built by a skilled modeller. Had it not been for the large amount of delaminating on the wings it could have had an engine and radio fitted, and although dirty and very tatty it would have been ready to fly again.

The areas around the firewall and tank bay had all been painted with a coat of epoxy so any worries about fuel damage were unfounded. However, the 390 grams of lead attached to the firewall was a worry.

All the flying controls were hinged with sewn fabric hinges and apart from the rudder they were in perfect condition. However, the fuselage was showing its age, with many cracks, chips and other blemishes. Both windscreens were broken and discoloured, and the latex pilots had disintegrated.

The instrument panels were grubby but nicely done. Although something wasn't quite wright, it took me a while to realise that they were in fact Tiger Moth panels, probably because they were easily available at the time.

Some things that impressed me were the rolled ply top deck instead of using planked balsa, making it more akin to the real thing. The undercarriage legs and struts were nicely modelled on this un-spatted example, and the insignia was also nicely hand painted.

INSPECTING KIT NUMBER TWO

Turning to the other kit, as advertised the cowl, spats and outer wing panels were untouched. Unfortunately, the centre wing section had been fitted to the fuselage and the veneer had suffered badly from years of being left out of the box, which meant making up the new wing wouldn't be quite as easy as first thought.

Cockpit instruments were found to be Tiger Moth panels.

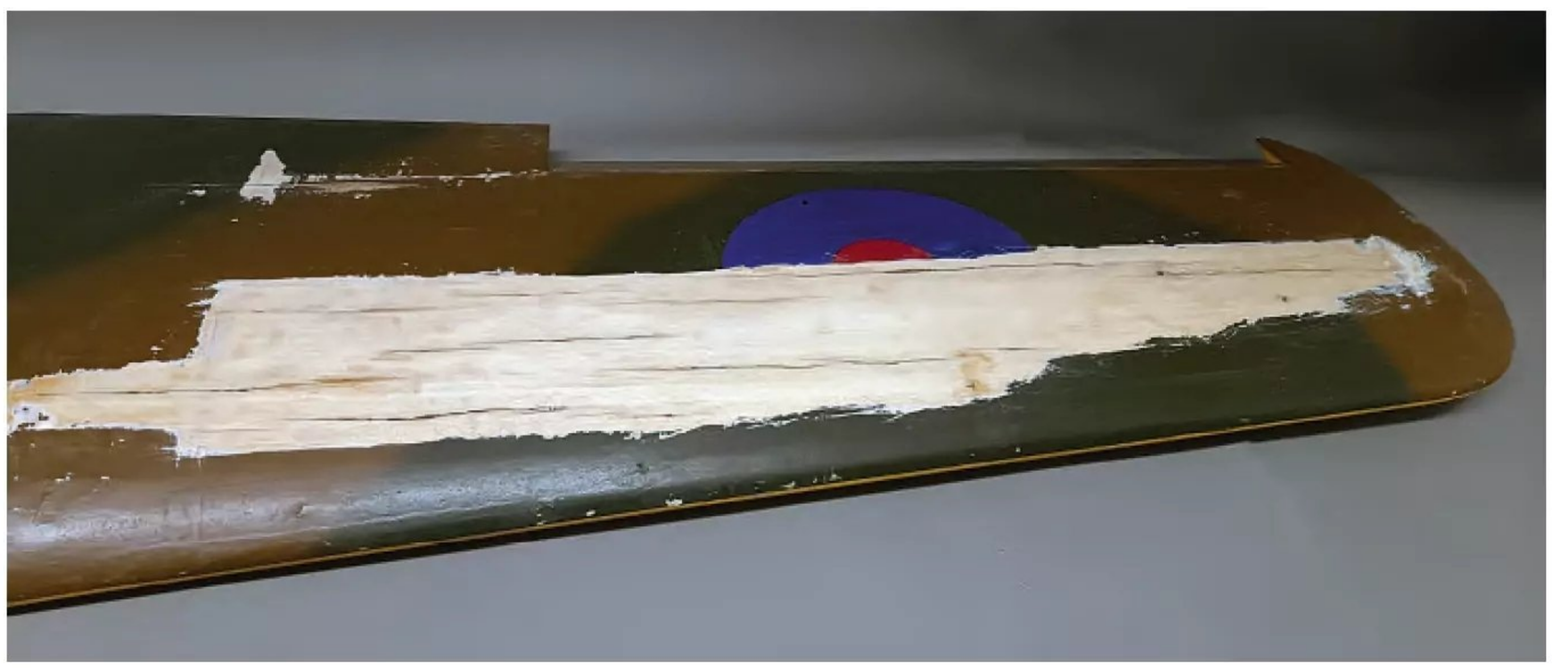
Model number two offered several unused parts but the wing centre section was badly split.

Cleaning out the splits in the veneer.

Super 'Phatic! glue was carefully applied directly into each split.

Each repaired area was taped up and left to dry out overnight with a hefty weight on top!

Weighing down multiple repairs using whatever comes to hand!



The finished veneer repairs rubbed back and ready for covering and painting.

A crushed section of leading edge was cut out and new wood spliced in.

The closer I inspected the part-built fuselage the more damage and issues I found, meaning a lot of it would need stripping back and redoing. On the upside, a bag with some of the hardware was still in the box, along with the tail part of the plan. This had obviously been used to build the missing tail.

GETTING DOWN TO WORK

Looking at all the parts now filling my workshop it was time to draw up a plan of action.

I decided to keep the fuselage from the first model as it only needed cosmetic repairs and no structural work. The wings were far more of a dilemma and it took a lot longer to make a decision; I would attempt to repair and re-bond the existing veneers, although quite how I hadn't yet figured out! The complete wing was the obvious place to start as this was where the most damage and unknowns lurked.

Looking around for sheets of obeche, the largest I could find at the time was only four inches wide. There was an alternative, poplar, and this is available to buy in large sheets, although it's not a type of wood veneer I'd heard of before.

My biggest concern about replacing the veneers was not damaging the foam cores when stripping off the old veneers and wing bandage. Then there was the question of how to bond the new veneers without distorting the cores. In the end, I started experimenting and, touch wood, it seemed to work. But it wasn't going to be quick because of the areas of damage that needed to be tackled individually. My process goes like this:

- Open up the cracks and clean out any dirt or debris.
- Wick in fresh glue. Deluxe Materials Super Phatic or Aliphatic works well for this.
- Pull the split together with tape.
- Clean up any overspill.
- Lay packing on top to add extra pressure to the split area for a smooth surface.
- Leave for at least a day for the glue to set.

With the veneer repaired the old tissue finish could be sanded back to the bare veneer ready for recovering. It is time consuming, but seems to work well, even on large splits. Just make sure that you get all the voids glued down.

There was a lump of car filler in the wing root leading edge to tackle as well. Fortunately, this came away easily, revealing a three-inch length of crushed leading-edge strip. Splicing in new wood, covered with a little lightweight filler and sanded back made for a quick repair.

BODY WORK

With the wing repairs well underway it was time to tackle the fuselage. Getting it back to bare wood by stripping and sanding the tissue covering was by far the worst job to tackle. It was very messy and a job for sunny days in the garden. Way too often my flying fleet has got a thick covering of dust from the sander getting in to everything, so I try my best now not to do it in the workshop anymore.

The rudder was the one control surface that needed attention as the Solartex fabric used for the covering and sewn hinge had started coming away. The easy solution was to cut it off, then strip it back to bare wood and start again,

Repair work is well underway. Next time Roy discusses the electric conversion.

The rudder was controlled by a closed loop in a scale like manner and is seen here stripped back and ready to recover.

recovering the rudder with new Solartex and fitting pin hinges.

The Solartex covering on the horizontal stab and elevators was still in good condition, so this area was left untouched, except for some fresh paint. There is no point making yourself any more work than you already have...

The control system was just one more of those little jobs that needed tackling. The rudder had been set up with a scale like closed loop system. I removed this temporarily to make life easier during the refurb. Near to the end of this project I was given a copy of the original instructions and this is what it said re the rudder:

Scale details - the scale drawings enclosed with the kit make it possible to complete this model to a very high standard as far as detail is concerned. You will note the full-size aircraft had wire 'close loop' controls on the tail surfaces and this could be included if desired during construction.

The elevator uses a heavy-duty plastic snake, which appeared to be in good condition from the little part of it you can see in the radio bay. They are not my favourite as over a long session on a hot or cold day I find that they can expand and contract, affecting the trim. I wanted to remove the snake, if for no other reason than to inspect that it was in good condition. However, there is no access at all to the rear fuselage. I did consider cutting an inspection hole under the tail but, in the end, I decided to trust in the workmanship of the original builder.

The servos in the fuselage were all missing, as was the removable mounting plate. Not a big problem as it would have had to come out and be redone any way. A new plate was fashioned from a fresh piece of ply to take the new servos. The wing was built with twin aileron servos, cut into the outer panels, replacing the original design's single central servo and bowden cables. Surprisingly, the original Futaba 147s were still in the wing and working, but for good measure all new standard size servos were going to be fitted.

The good thing about a model this size is that you are spoilt for choice as to where to fit the receiver and satellite Rx, well away from the power system components.

With all the remedial and prep work out of the way, a final sanding was given before the wing and fuselage were recovered with Deluxe Materials glass cloth and Eze Kote, ready for priming and painting.

Next time we move on to the whys and wherefores of the electric conversion. ■

Pilots' Pictorial

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BRISTOL BEAUFIGHTER

This is my 70-inch span Bristol Beaufighter built from the Tony Nijhuis plans and is my first plan build. Before this I have built a Galaxy Magician and a Top Flite Sea Fury. It was built with the wood kit and nacelles from Sarik Hobbies. It is covered in brown paper and painted with tester pots of emulsion, using markings from Pyramid Models. The model was weathered using techniques from Richard Wills at Warbird Replicas. I am just waiting to balance it, then I need some decent weather for the first flight.

I wanted to show that even someone with limited experience can build something that they'll be proud of and encourage others to give it a go.

Chris Meek

B&Q SPITFIRE

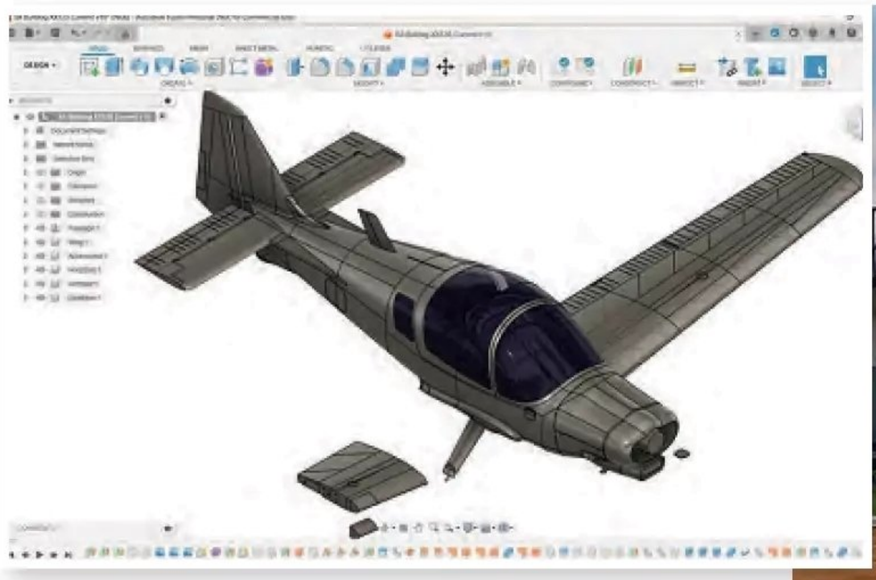
Here are a few pictures of my 1:6 scale foam Spitfire. It was built during the second lock-down from 3 and 6 mm B&Q XPS foam, plus strategic plywood. Inspiration and tips came from blogs by 'Eflightray' and 'Electriflier'.

AUW is 3 lbs. 7oz. with two 4S 3300 mAh packs. It is fitted with flaps and plenty of washout so has quite realistic take-off and landing speeds - not overly powerful but enough. It also has twin G.T. Power sound systems which are fairly effective.

I covered it in heavy weight tissue with water-based polyurethane paint (WBPU) but have subsequently found that lightweight glass cloth and WBPU weighs about the same, gives a much more resilient finish and is easier to apply as it doesn't wrinkle as much.

It is still flying and has proved to be quite reliable after a couple of strengthening exercises on the U/C and also moving the balance point.

Martin Hughes



3D BULLDOG

Here is another 3D printed model from my ever growing collection. Back in 1986, I was lucky enough to get to fly solo in a Scottish Aviation Bulldog. I've always wanted to model the plane I flew back then and now seemed the perfect opportunity to 3D print a model of XX535.

For this build there were no commercially available models or files to buy so I had to set about designing the model as a scratch build. Starting with a basic 3-view drawing the plane was modelled in Autodesk Fusion. Four months and a lot of head scratching later it was finally printed and flown. It flies quite well and now has a couple of dozen 'solos' under its wings!

Nick Walker

ANOTHER HARRIER!

Seeing Tony Nijhuis' Harrier in last month's mag prompted me to send you some pics of an ongoing Kestrel / Harrier project.

The airframe is mostly from Graupner Vector Board with some balsa and a touch of ply. She uses a single angled 30 mm fan in the rear of the belly on 2S and has great performance. With a slight headwind a vertical landing is easy. A vertical take-off is not possible, but a very short one is. The undercart is off at the moment so a slight push into wind and she is away.

It is a joint project between Alan Kirtley of U -Build Models and myself, and has lots of potential.

Phil Worth

THIRD FROM FLAIR

Here's another for your Flair photograph collection - and my third SE5a - all from Flair. This one is electric using an Overlander 5347 800 kV motor running on three cells. It is pictured at our local patch on Bembridge Airport, Isle of Wight.

Maurice Dyer

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47 Baldslow Down, St Leonards, TN37 7NJ

HARRIER GR7

Tony Nijhuis is back with another easy to build hand launch EDF model, this time modelling the classic British jump jet

Words **Tony Nijhuis**

Photos **Tony Nijhuis, David Ashby**

For those of you who have seen my exploits over the last few years when trying to get a model Harrier to successfully VTOL, you may be a little disappointed that this offering doesn't have the VOTL features. However, I would stress that you really won't be disappointed building and flying this little beauty as it is an absolute peach of a model and performs faultlessly.

So, putting aside the complexities of my early VTOL Harrier exploits, it was time to concentrate on a much more simplified and conventional hand launch version. Now, I thought to myself, how hard can this be? Well, it did prove a little more difficult than I had imagined and, unfortunately, I had a few disasters along the way, but you'll be glad to hear that I did eventually achieve success.

The VTOL Harrier took 13 attempts to get the model to hover and fly successfully and the final lucky number 13, I still own and demonstrate today.

The all-important flying characteristics of that 13th VTOL Harrier have been used to develop this latest offering, but as I'm about to share it still wasn't all plain sailing. In fact, it took a further four prototypes to get the model to be stable enough when attempting to hand launch. I have to say there is a true sense of British madness that if you keep failing, then keep going as every crash is a defined learning experience - well, that's what I kept telling myself! It was more pig headedness and not wanting to be beaten.

Although requiring several prototypes to get right, Tony is now very pleased with his Harrier and reports that it is 'an absolute peach of a model'.

Reducing the anhedral, adding fences and straights to the leading edges, and reverting to a single 70 mm EDF unit transformed the handling of the Harrier.

TRIAL & ERROR

So why was the Harrier such a difficult model to master. Well, strangely enough it was when I met a retired Harrier pilot that the penny finally dropped. The full-size Harrier, very simply, could not take off conventionally. It was inherently unstable until it achieved flying speed. If you watch a Harrier seemingly doing a conventional runway take-off, it's not... The nozzles are rotated downward slightly and it simply 'hovers' into the air! Very clever, but if you didn't know this then building and expecting a non-VTOL model of a Harrier to ROG will end in disaster, as I had found out to my cost.

My early tests, using a fixed undercarriage and racing down the runway, ended with the model flicking on to its back, almost instantly, without any chance of correction. Thinking about it now, a bungee launch may have been the answer but, hey, I had spent time building a lovely scale undercarriage and I wasn't going to waste it.

So, moving on to this latest design. Since it adopts 80% of the features used in my successful VTOL version, I knew the model would fly okay, but I was mindful of the take-off issues, especially for hand launch, which is still my preferred way of getting an undercarriage-less model away cleanly and easily.

For the first prototype I decided to use a pair of 50 mm 4S EDF units, but the design complexity of installing the thrust tubes out the side of the fuselage soon rendered it obsolete. It did, however, prove an invaluable test bed for mastering the hand launch! This early prototype would see the model, when hand launched, swing either to the left or to the right. Trying to correct it proved difficult, with little or no aileron response available. This proved fatal on two occasions, but it did confirm my original fears of the tendency to flick, or in this case, 'dig into' an uncontrolled tight turn.

This issue was finally overcome by reducing the anhedral, adding wing straights to the leading edge of the wing and adding some fences (anti stall devises) to the wing tips. I was starting to understand why no one else was silly enough to think about designing a conventional flying Harrier! I just carried on and took some more 'stupid pills'.

When the fourth and final prototype was built, incorporating these changes and with the installation of a single 70 mm 4S EDF unit, it was a changed model and, I have to say, a joy to fly.

> "I had spent time building a lovely scale undercarriage and I wasn't going to waste it"

BUILT UP WING

Now, I did say four prototypes were tried and those of you who have followed my previous EDF designs will have noticed that this model has a built-up wing. Prototype No. 3 did have a sheet wing, but it proved to be both a handful to launch and had very odd flying characteristics. So, it was consigned to the Harrier balsa scrap heap which, I can confirm, kept the wood burner going all winter!

One of the key elements I really wanted to achieve on this model was to keep the wing loading down to less than 23 oz. / sq. ft. and less than 3 lbs All Up Weight.

The new Harrier was tested using the 4S PowerFun 70 mm fan unit, which gives around 1.4 kg of thrust and is available from 4-Max.co.uk. These units will give another 200 g or so of thrust over other 4S fan versions and are cheaper too. I only recommend this fan unit, principally because they have excellent static thrust and will accelerate the Harrier to flying speed with no 'sink' on launch.

After the Harrier, and just to whet your appetite, a swing-wing Tornado has now been tested and is almost ready to go. Now, that really is two models in one!

To assist the builder, I have once again made available a VAC set and CNC / wood pack to make the building process a little easier and quicker. These parts will ONLY be available through Tony Nijhuis Designs Ltd (TND) and not via Mortons. The plan itself will only be available in this edition of RCM&E, with future copies only being available through TND Ltd.

The battery used in the prototype was a 4S 3300 mAh 60C LiPo. The servos were metal geared 6 g, 1 kg. / cm. torque for the ailerons and 8 g, 1.2 kg. / cm. servos for each elevator. For the ESC a 60-amp 4S controller was used. Make sure you set the timing to High, which will suit the EDF unit.

Lastly, and possibly the most important, a photographic build log is available as a free download to print out from www.tonynijhuisdesigns.co.uk. These photos will be invaluable and I would suggest downloading these so you can familiarise yourself with the build before you start.

“The sequence detailed should be followed closely to avoid construction difficulties”

WING BUILD

The wings are of traditional ‘built up’ construction and are made over the plan. The sequence detailed below should be followed closely to avoid construction difficulties.

Begin by taking the 5 mm x 3 mm obeche lower forward spar and pinning this over the plan. Now fit all of the wing ribs, remembering to use the angle template against the outside face of W1. The top obeche front and rear spars can now be glued into position. Note that the rear spar fits between W1 and W6.

Fit the inner leading edge made from 3 mm sheet balsa. Make up the trailing edge using 5 mm sheet balsa that fits between W6 and W10.

Using 1.6 mm sheet balsa begin to sheet the wing panel from the leading edge back. Roughly trim the sheeting against W1, W10 and the leading / trailing edges. Mark on the sheeting the line of the trailing edge between W1 and W6.

Remove from the plan and glue the bottom rear 5 mm x 3 mm obeche spar into position. Using a straight edge, cut the sheet trailing edge to the line marked earlier.

Now make up the opposite wing panel to the same standard.

Before sheeting the underside remove the jig tabs from the underside of each rib and sand smooth. Make up the servo support mounts and fit the servo wiring. When done, the wing sheeting can be applied in the same sequence as the top sheeting.

Trim the sheeting flush to the finished wing perimeter and join the wings. Do this upside down to take account of the wing anhedral. If you have used the anhedral template against W1 you will have the correct anhedral and will not need to check the distance under each wing tip. Using 12.5 mm sheet balsa make up the anti-stall wing tips and glue these into position.

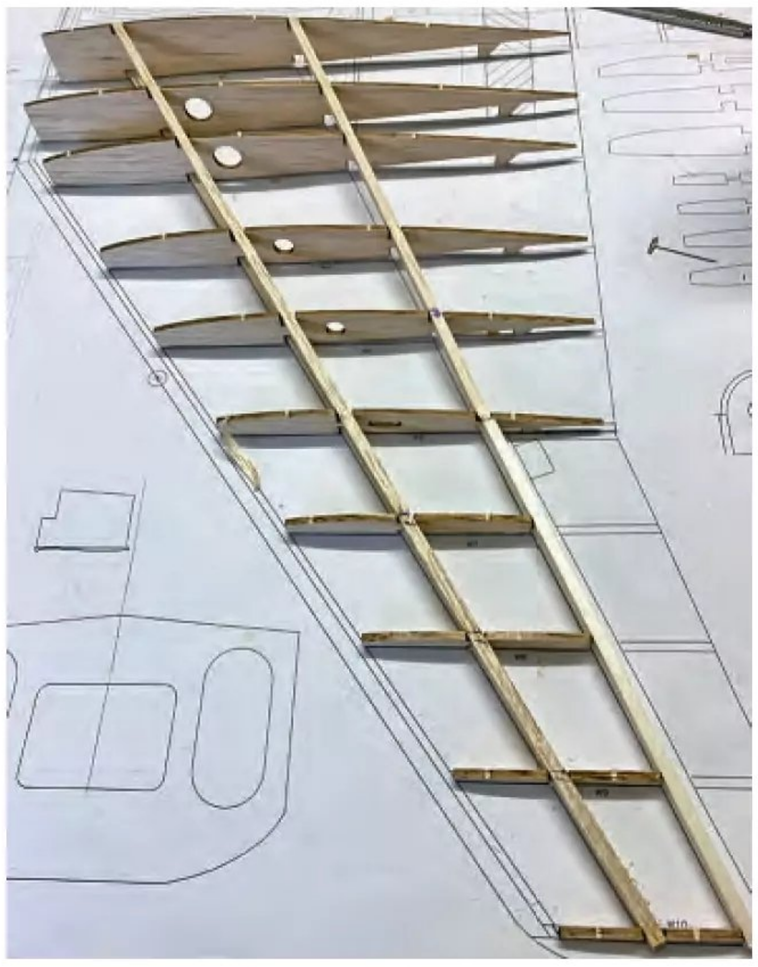
Now make up each aileron. Start by cutting to shape the bottom skin. Trim and fit the leading edges made from 5 mm sheet balsa. Fit the riblets and the control horn support block. Trim the leading edge flush with the angle of the riblets. Finally, enclose with the top skin and trim to shape.

Using 20 mm wide strips of 1.6 mm and 5 mm from balsa sheet make up a 6.6 mm thick outer leading edge and glue this onto the inner leading edge. This can now be profiled, using a razor plane and sanding block, to a smooth flowing curve.

To add a little more strength to the wing joint cut a 25 mm wide strip of wing tape and apply this to the joint, securing with either PVA or epoxy resin.

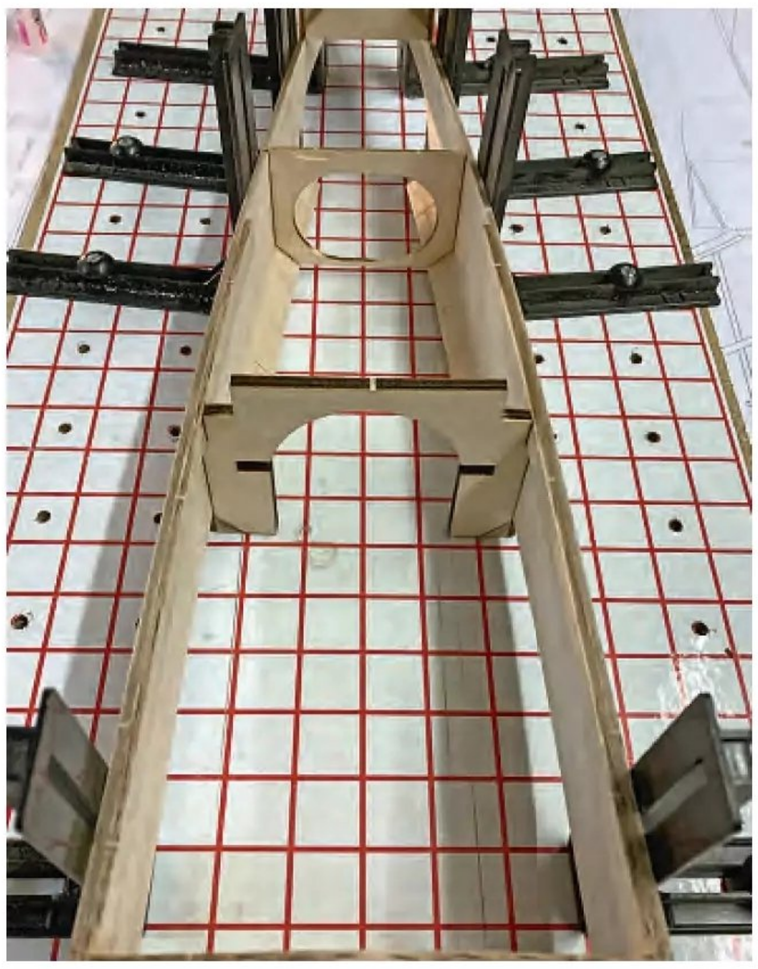
REAR FUSELAGE

Assuming that you have bought the CNC pack, number all the parts to avoid any confusion later.

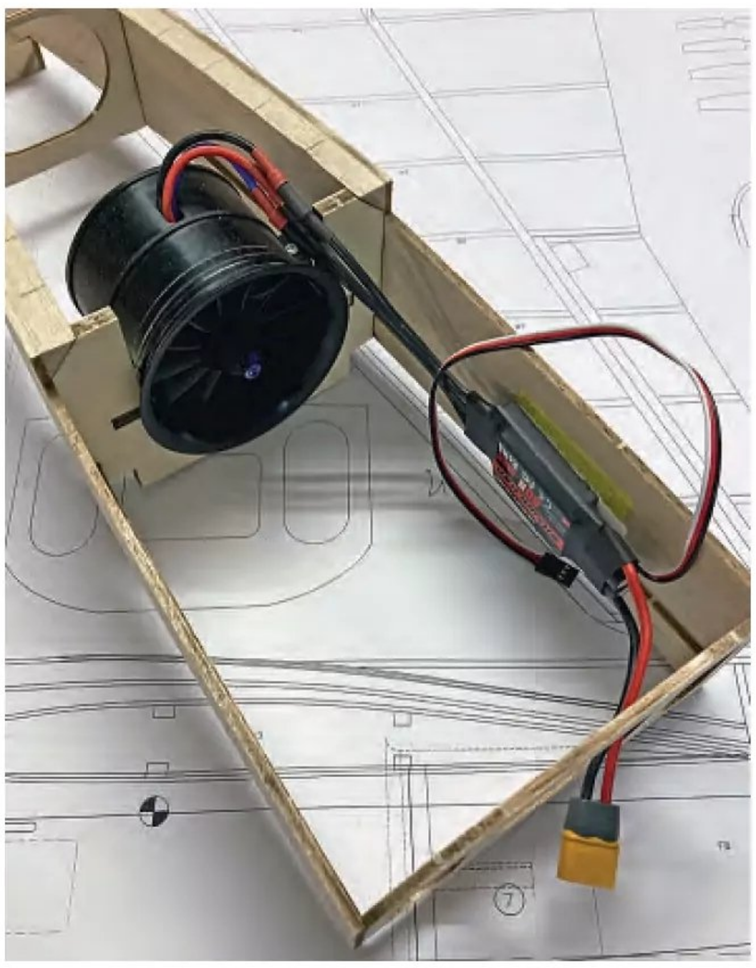


The wings are of traditional built-up construction.

Aileron servos are fixed directly to their covers.



A building jig is recommended when assembling the front and rear fuselages, starting with the rear section.

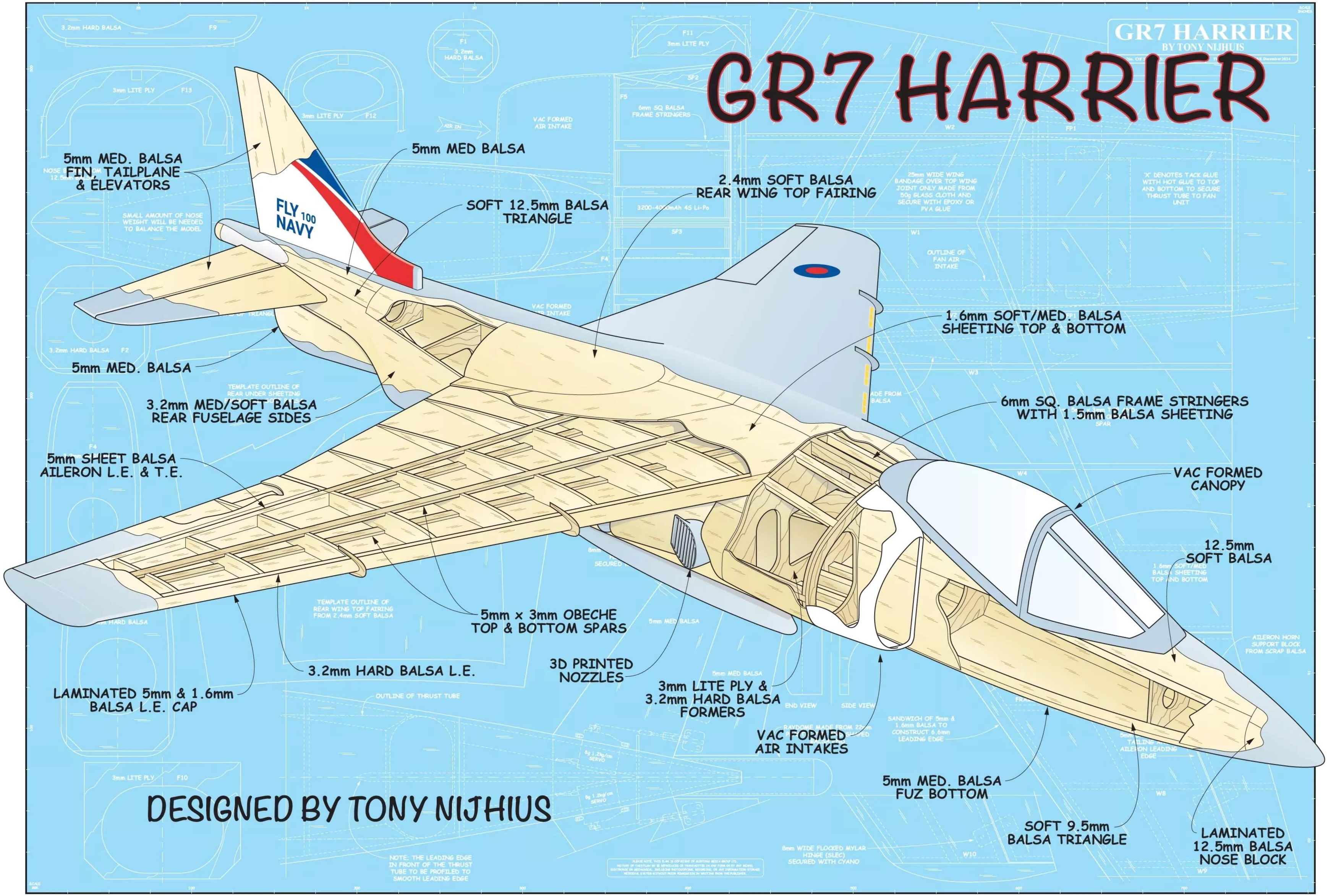


Testing the 70 mm PowerFun 4S EDF unit for correct rotation using a 60A ESC.

When making the rolled bottom fuselage sides you may need to wet the wood’s surface to assist bending it around the corner of F9.

Installing the thrust tube.

GR7 HARRIER



DESIGNED BY TONY NIJHUIS

Building jig back in action, this time being used to assemble the front fuselage.

Mark the vertical positions of the formers onto the fuselage sides. Glue on the wing seat, WS1, and the lower 12.5 mm triangle piece between F6 and the rear, making a left and right-hand side. Add a small length of 12.5 mm triangle to the top inside edge of the fuselage between F11 and the tail.

Using a SLEC building jig begin assembling the fuselage, adding F7 and F8, checking the squareness as you proceed. Dry fit formers F10 and F11 and chamfer the top rear triangle to allow the fuselage sides to pull in and join at the rear. When happy, glue the two formers in position and the rear vertical fuselage edges.

Remove from the jig and add the fan mounting plates, FP1. Position the fan unit and mount this to the plates with two retaining screws. Install the ESC and check that the fan rotates in the correct direction.

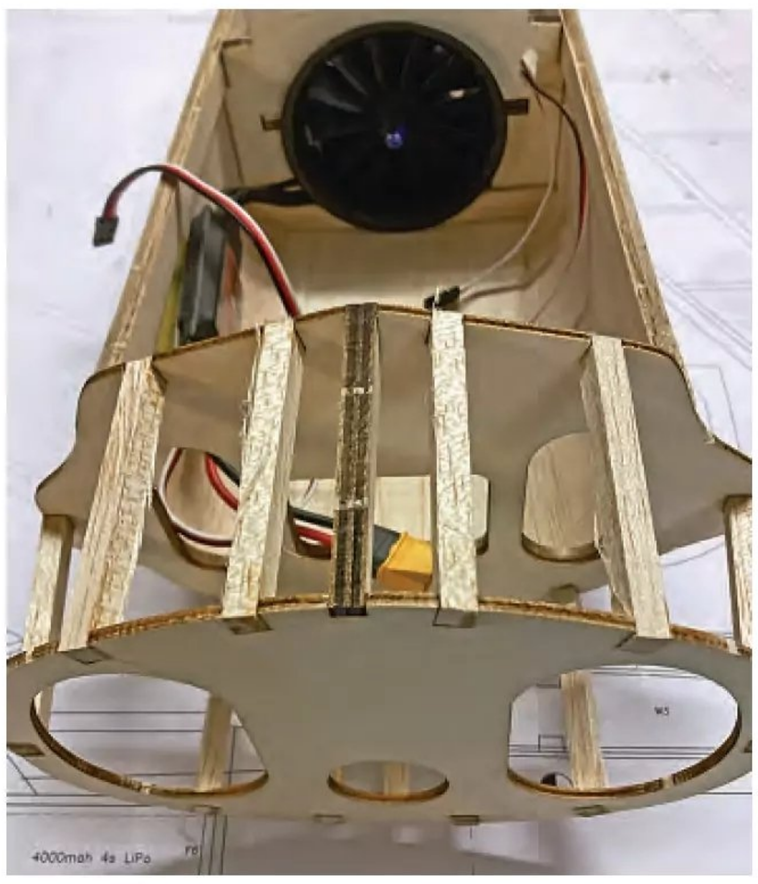
Make up the under-sheeting from two pieces of 75 mm wide sheet balsa and butt glue together. The plan has a template for this. You can either make this in one or two separate pieces, with the join line along F8. If making two pieces, glue the rear sheeting into position and in line with the front edge of F8. Now fit former F9 and add the forward under-sheeting, up to F7.

Using 2.4 mm soft balsa sheet make up the rolled bottom fuselage sides. You may need to wet the wood surface to assist bending around the corner of F9.

Now make up the thrust tube, using the template shown on the plan, from an A3 sheet of 140-micron thick acetate, which is normally available from a stationery supplier or eBay.

Add F12 and the rear under sheeting from 3.2 mm sheet balsa. Again, there is a template on the plan for this. Begin shaping the bottom sheeting and trim the thrust tube outlet to the side profile of the fuselage.

Add former F13 and the 6 mm sq. stringer, spanning between F12 and F13. Using 2.4 mm soft balsa sheet, make up the rolled top fuselage sheeting and glue in two halves with the join along the top of the square stringer. At



Adding the short stringers between F5 and F6.

this point it may be worth adding the elevator servo extension leads and taping these to the servo outlet holes.

Now add the top rear fuselage sheeting, made from 5 mm balsa. Shape the rear fuselage using a razor plane and sanding block.

FRONT INTAKE CHEEKS

Glue in F6 using the openings in this former to line it up against F7. Now glue in SP1, SP2 and SP3. Glue F5 into position and add the short 6 mm sq. stringers between F5 and F6.

Using scrap 3 mm lite ply make up the battery tray and secure this using scrap 12.5 mm triangle against F5 and F6.

Using 1.6 mm soft balsa sheet across the F5-F6 opening, using the stringers to join the sheet sections. Trim away any 1.6 mm sheet overhang flush against F5 and F6. Finally, make up the small fairings that fit behind F6.

FRONT FUSELAGE

Make up the front fuselage sides and line the bottom edges with 9.5 mm triangular balsa. Saw cuts will have to be made to aid bending of the fuselage sides.

Using the SLEC building jig begin assembling the fuselage, adding F2 and F3 first, checking squareness as you proceed. Add F1 and F4. Now slide in the top 9.5 mm triangle in the position shown on the plan.

Remove the fuselage from the jig and finish gluing the top parts of F3 and F4 to the fuselage sides. Trim the top 9.5 mm triangle flush with the fuselage sides around the cockpit area and add the top front decking using 12.5 mm soft balsa.

Add the bottom decking using 5 mm sheet balsa and make up the nose block using a sandwich of 12.5 mm sheet balsa and fix this to F1. Add the rear top decking using 3.2 mm sheet and, using a razor plane and sanding block, profile the front fuselage to its finished shape. Attach the front and rear fuselage sections together, using the hole in former F4 and F5 to act as an alignment.

Finally, using a sanding block, blend in the front and rear fuselages.

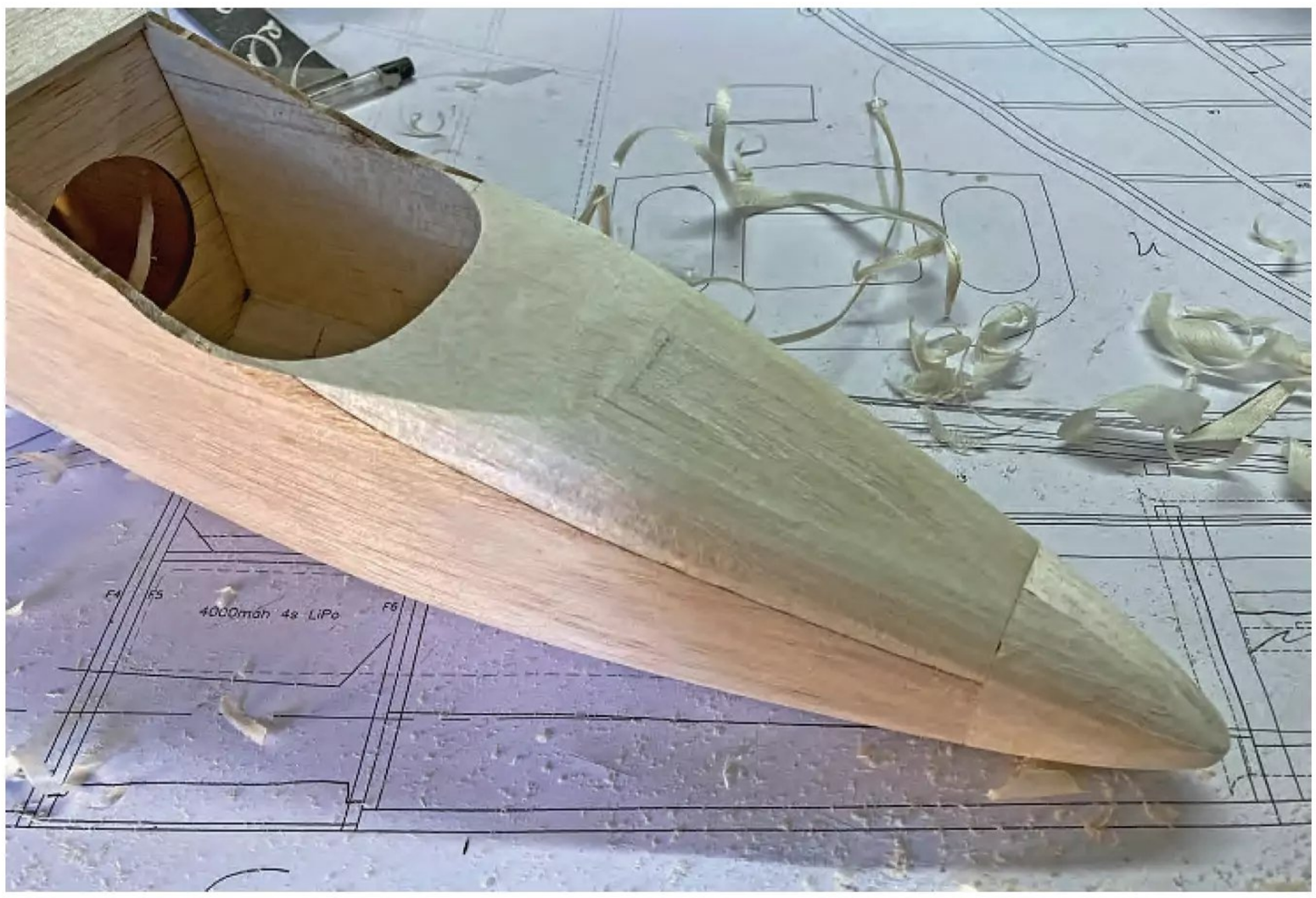
FIN & TAILPLANE

Make up the fin parts. Glue them together and profile the fin leading and rudder trailing edges. Put the fin aside and only glue it into position once the model is nearing completion.

Make up the tailplane and elevator parts. Round off the tailplane leading edge and chamfer the elevator leading edge ready for the hinges to be fitted. The tailplane has 10 degrees of anhedral so lightly sand the fuselage tailplane slot, using a flat file, at the approximate angle. Using the anhedral template on the plan, position and glue the tailplane halves to the fuselage at the correct angle.

FINISHING OFF

The wings can now be glued into position. A little fettling maybe needed to get them to fit properly onto the wing seat and between F6 and F13. Note that F8 extends into the wing



Use a razor plane and sanding block to profile the front fuselage to its finished shape.

Two dummy rocket launching pods on either side of the battery hatch give a good grip when hand launching.

Be sure to chamfer and smooth the trailing edge of the fan vent to allow smooth air entry to the fan.

A peek inside the battery bay.

under sheeting so a 6 mm strip of sheeting, between W2 on each wing, needs to be removed to sit the wing correctly.

Fit former F14 against F13. This will act as a guide rail for the top wing fairing. Using 2.4 mm soft balsa make up the rear wing fairing using the template shown on the plan. The fairing will need a little fettling and wetting of the surface to aid bending.

The fin slot can now be cut into the rear fuselage top deck and the fin installed.

The battery access hatch and underside fan vent opening are shown on the plan and can now be marked and cut out. Material removed can then be cut down to make a smaller square hatch, hinged at the front using covering film. The hatch does not require a latch as it stays nicely closed when the fan is in operation. Make sure to chamfer and smooth the trailing edge of the hatch to allow smooth air entry to the fan.

Two dummy rocket launch pods are made from scrap 12.5 mm balsa and glued either side of the battery hatch. This allows for a good grip when hand launching.

The vac formed intake vents need to be trimmed and F15 fitted to strengthen the opening edge. These can be glued into position and the 1.6 mm sheeting blended into the plastic edge using a sanding block.

COVERING

The prototype was covered using light grey Oracover. The vac formed intakes were painted in matching Orapaint. Allow the Oracover to cover the vac formed joint by 3 mm to allow a smooth contrast between the film and painted surfaces.

Fit all control surfaces with flat flock hinges, secured with glue. Fit all the servos and control horns. I made control horns out of 2 mm birch ply and slotted these into the control surfaces.

The C of G position should be achieved with just the positioning of a 4S 3300 mAh LiPo and a small amount of nose weight. Do not be tempted to move the C of G back from the stated position or this model will bite! The battery is secured using self-adhesive Velcro and a securing strap.

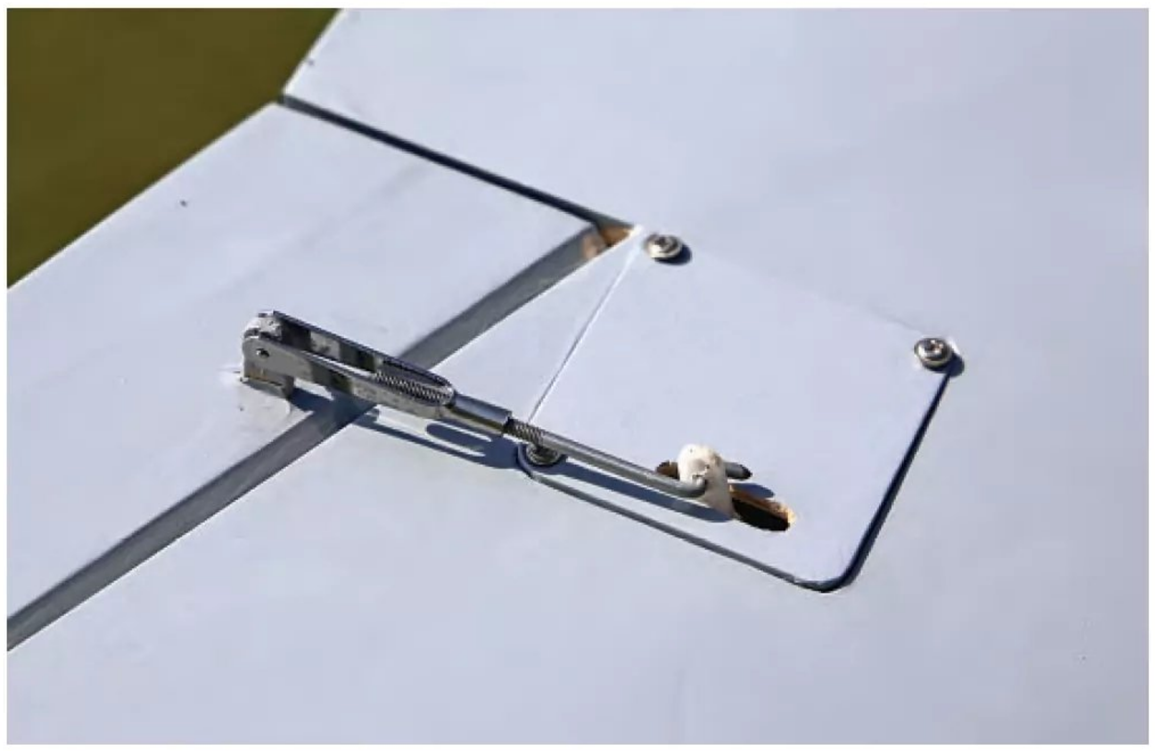
The canopy can either be fitted before or after covering. I prefer to detail the cockpit, fit the canopy and then cover the model around the canopy, but it's up to you.

FLYING

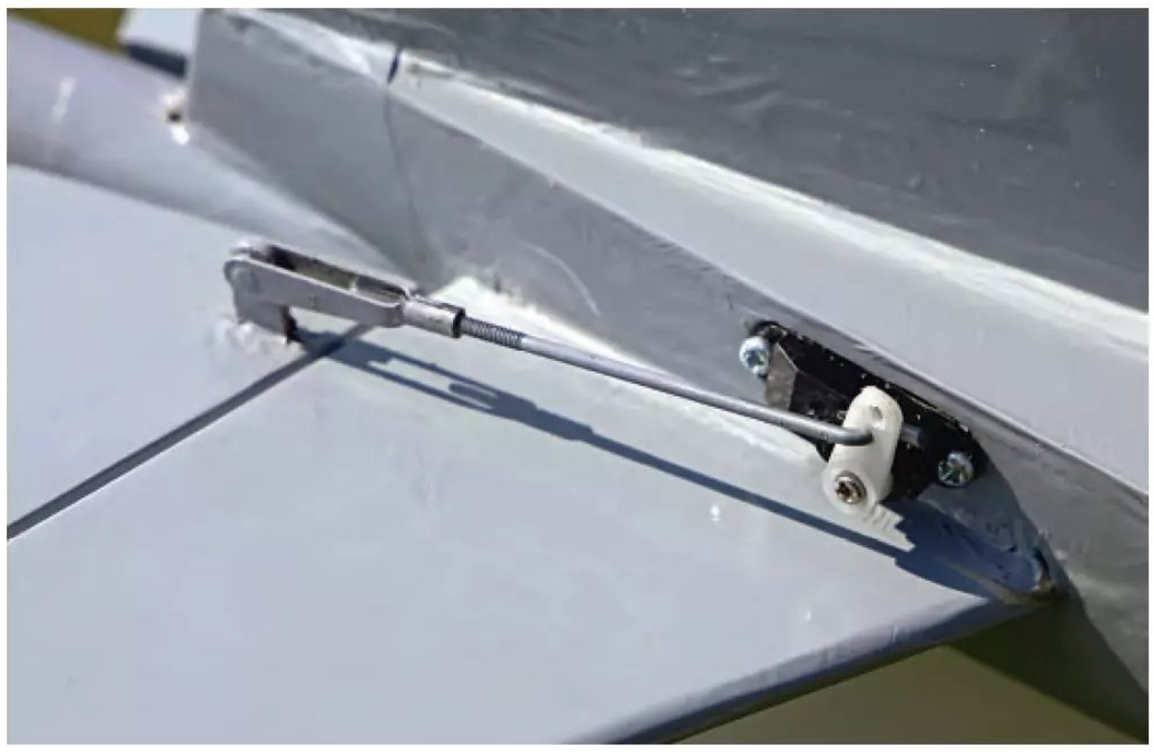
The first thing to note with the Harrier is that the wing loading is quite low at only 22 oz. / sq. ft. so hand launching is very easy.

For years I have launched my own models using the overhead 'glider' type launch. This is all very well but the speed of launch is limited. It always resulted in the model sinking and then a sudden rush to get your fingers back on the elevator stick.

As I mentioned earlier, following the early issues with the Harrier's launch speed, I decided to try the javelin launch technique. What a revelation! As a result, you get a more powerful throw and the projection of the model upwards too, giving you time to get those fingers back onto the controls. Why has it only taken me 40 years to work this out...



Aileron linkages are short and direct – little chance of any slop here!



Elevator linkage connected to one of the control horns made from 2 mm birch ply.

The Harrier's distinctive but non-functional nozzles are replicated by plastic parts available from TND.

Rear end view showing the end of the thrust tube.

A vac form canopy and moulded pilot are also available from TND.

The wing fences and straight leading edges are key to making this model Harrier fly so well.

Using this technique the Harrier will climb away with gusto and once trimmed you can almost let it climb away without any control input - it is that steady in the air! However, for its maiden flight I suggest you get a trusted helper to launch the model for you. It is remarkably strong and if it doesn't get away first time it should survive.

Once the hand launch is mastered and the Harrier is trimmed for flight the model will get away with little fuss and very little control input. Even on calmer days the Harrier will get away cleanly.

When airborne you will notice how nippy the model is. Once the initial climb out has been executed you can easily pull back the throttle to around half stick and enjoy what is a very scale flying performance. You'll find the model simply grooves and flies on rails, especially on a calm day. However, if you fly on a windy day, the model will be thrown around a little so be prepared to fly with more throttle. Don't be tempted to 'bank and yank' the Harrier as the swept anhedral wings have a habit of air-braking it and dropping the nose. So be warned!

All the classic jet manoeuvres can be done but you will need full throttle and speed on some, as the Harrier doesn't have the momentum to carry through manoeuvres such as big loops etc. Just remember to keep the routine smooth and keep what little momentum it has going. Landings are

It's a long aeroplane!

A firm javelin launch is the best way to get the Harrier airborne.

The Harrier grooves and flies as if on rails, especially on calm days.

"I decided to try the javelin launch technique. What a revelation!"

very straightforward and generally you will run out of elevator control before the model will stall.

Don't be tempted to adjust the C of G. This model has been thoroughly tested and where it is shown on the plan is exactly where it needs to be!

The 4S 11 blade PowerFun EDF unit does give an amazing punch and flight times are surprisingly good. So, expect a good five minutes depending on throttle use.

CONCLUSIONS

I have to say the Harrier was a challenge to design and get right, but what a lovely flying model it has turned out to be. It has far outweighed my expectations and, dare I say it, it is one of the best

On approach for another straightforward landing.

The Harrier is small enough to sit in the back of the car when fully assembled but it looks, feels and flies like a turbine model.

models in my collection. It is small enough to sit in the back of the car, ready to go, but it looks, feels and flies like a turbine model.

So, all in all, this 70 mm EDF Harrier is a cracking little model and flies incredibly well. I think it will be a popular as it is such an iconic aircraft. You really will enjoy flying this one! ■

Addition plans, vac-form set, combined CNC / wood pack, pilots and decal sets are available from:
www.tonynijhuisdesigns.co.uk
Email: sales@tonynijhuisdesigns.co.uk
Tel: 07563 518159 (9 am to 4 pm)

Scan this QR code for construction shots and views of the TND Harrier GR7.

DATAFILE

Name:	Harrier GR7
Model type:	Hand launch EDF jet
Designed by:	Tony Nijhuis
Wingspan:	35" (895 mm)
Length;	42.5" (1093 mm)
Weight:	46 oz (1.3 kg)
Wing loading:	22 oz / sq ft (6.4 kg /sq m)
Functions (servos):	Ailerons (2), Elevator (2), Throttle (ESC)
EDF unit:	4S PowerFun 70 mm
ESC:	60A
LiPo:	4S 3300 mAh 60c

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The Electric Flight Specialists

Performance EDF's at Affordable Prices

These EDF units are a new generation of performance EDF units at an affordable price.
The prices include a brushless outrunner specifically designed and developed to work with these units. All of the fans are dynamically balanced at the factory and are therefore vibration free and very efficient. All fans have either 11 or 12 blades which gives them a great "turbine" like sound which adds to the experience of owning a "jet" model.
The 50mm FMS and 70mm PowerFun fans are those as used in the Tony Nijhuis "Mini and Midi Jet" series, as recently published in the RCM&E.

Diameter	Part Number	Thrust	Price
50mm	PowerFun 4900kv (3S LiPo)	605g	£27.49
50mm	FMS 5400kv (3S LiPo)	620g	£41.58
50mm	PowerFun 5400kv (3S LiPo) - HIGH POWER	640g	£37.79
50mm	PowerFun 4300kv (4S LiPo)	765g	£37.79
50mm	FMS 4500kv (4S LiPo)	1,086g	£41.58
64mm	PowerFun 3900kv (3S LiPo)	872g	£39.20
64mm	FMS 3900kv (3S LiPo)	TBA	£53.99
64mm	PowerFun 3500kv (4S LiPo)	1,072g	£39.20
64mm	FMS 3150kv (4S LiPo)	1,162g	£53.99
70mm	FMS 2750kv (4S LiPo)	1,253g	£70.20
70mm	PowerFun 3400kv (4S LiPo)	1,435g	£47.50
70mm	PowerFun 2300kv (6S LiPo)	1,816g	£53.49
70mm	FMS 1900kv (6S LiPo)	TBA	£75.59
80mm	V3 FMS 2000kv (6S LiPo)	TBA	£129.99
90mm	PowerFun 1450kv (6S LiPo)	2,924g	£95.00
90mm	FMS 1850kv (6S LiPo Metal Case, Inrunner)	4,000g	£172.99
90mm	PowerFun 1100kv (8S LiPo)	3,360g	£95.00
90mm	FMS 1500kv (8S LiPo Metal Case, Inrunner)	4,800g	£183.59

Complete Electrical Setup For GR7 Harrier by Tony Nijhuis

Description	RRP
PowerFun 70mm, 4S EDF Unit with motor	£47.50
4M-HESC60A35V2 Brushless ESC and Programming Card	£59.94
2x EMAX ES9052MD, 5.5g Metal Geared Digital Servo 2x EMAX ES08MA 12g Metal Geared Analog Servo	£44.36
PP-HATCH-LATCH-A - Hatch Latch/Catch	£1.99
4S, 14.8V, 60C, 3,300mAh LiPo Battery	£49.00
4S, 14.8V, 60C, 3,700mAh LiPo Battery	£55.00
4S, 14.8V, 60C, 4,500mAh LiPo Battery	£70.00

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2S 4000mAh LiPo Battery for Spektrum Transmitters

Purple Power Professional LiPo's (JST-XH)

PPL-25C2S-0350	25C/50C, 2S (7.4V) 350mAh	£4.50
PPL-60C2S-0450	60C/120C, 2S (7.4V) 450mAh	£4.70
PPL-60C2S-0800	60C/120C, 2S (7.4V) 800mAh	£8.50
PPL-60C2S-1000	60C/120C, 2S (7.4V) 1000mAh	£9.25
PPL-60C2S-1300	60C/120C, 2S (7.4V) 1300mAh	£11.00
PPL-40C2S-1800	40C/80C, 2S (7.4V) 1800mAh	£14.50
PPL-60C2S-2200	60C/120C, 2S (7.4V) 2200mAh	£18.25
PPL-40C2S-2600	40C/80C, 2S (7.4V) 2600mAh	£20.00
PPL-40C2S-3300	40C/80C, 2S (7.4V) 3300mAh	£25.00
PPL-25C3S-0350	25C/50C, 3S (11.1V) 350mAh	£8.50
PPL-60C3S-0450	60C/120C, 3S (11.1V) 450mAh	£9.50
PPL-60C3S-0800	60C/120C, 3S (11.1V) 800mAh	£12.00
PPL-60C3S-1000	60C/120C, 3S (11.1V) 1000mAh	£15.00
PPL-60C3S-1300	60C/120C, 3S (11.1V) 1300mAh	£17.00
PPL-60C3S-1800	60C/120C, 3S (11.1V) 1800mAh	£21.75
PPL-60C3S-2200	60C/120C, 3S (11.1V) 2200mAh	£24.00
PPL-60C3S-2600	60C/120C, 3S (11.1V) 2600mAh	£30.00
PPL-60C3S-3300	60C/120C, 3S (11.1V) 3300mAh	£38.00
PPL-60C3S-3700	60C/120C, 3S (11.1V) 3700mAh	£43.00
PPL-60C3S-4500	60C/120C, 3S (11.1V) 4500mAh	£55.50
PPL-40C3S-5000	40C/80C, 3S (11.1V) 5000mAh	£56.50
PPL-60C3S-6000	60C/120C, 3S (11.1V) 6000mAh	£70.00
PPL-60C4S-1800	60C/120C, 4S (14.8V) 1800mAh	£30.00
PPL-60C4S-2200	60C/120C, 4S (14.8V) 2200mAh	£33.50
PPL-60C4S-2600	60C/120C, 4S (14.8V) 2600mAh	£39.50
PPL-60C4S-3300	60C/120C, 4S (14.8V) 3300mAh	£49.00
PPL-60C4S-3700	60C/120C, 4S (14.8V) 3700mAh	£55.00
PPL-60C4S-4500	60C/120C, 4S (14.8V) 4500mAh	£70.00
PPL-60C4S-5000	60C/120C, 4S (14.8V) 5000mAh	£78.50
PPL-60C4S-6000	60C/120C, 4S (14.8V) 6000mAh	£96.00
PPL-60C5S-3300	60C/120C, 5S (18.5V) 3300mAh	£63.00
PPL-60C5S-3700	60C/120C, 5S (18.5V) 3700mAh	£71.00
PPL-60C5S-4500	60C/120C, 5S (18.5V) 4500mAh	£86.50
PPL-60C5S-5000	60C/120C, 5S (18.5V) 5000mAh	£96.00
PPL-60C5S-6000	60C/120C, 5S (18.5V) 6000mAh	£118.00
PPL-60C6S-3300	60C/120C, 6S (22.2V) 3300mAh	£79.00
PPL-60C6S-3700	60C/120C, 6S (22.2V) 3700mAh	£85.00
PPL-60C6S-4500	60C/120C, 6S (22.2V) 4500mAh	£103.00
PPL-60C6S-5000	60C/120C, 6S (22.2V) 5000mAh	£115.00
PPL-60C6S-6000	60C/120C, 6S (22.2V) 6000mAh	£139.00

Prop Drivers/Adapters

PP-PDRV20-30	For 2.0mm shafts	£3.49
PP-PDRV23-47	For 2.3mm shafts	£2.50
PP-PDRV30-50	For 3.0mm shafts	£2.75
PP-PDRV32-50	For 3.2mm shafts	£2.75
PP-PDRV40-50	For 4.0mm shafts	£2.95
PP-PDRV50-80	For 5.0mm shafts	£3.95
PP-PDRV60-60	For 6.0mm shafts	£4.75
PP-PDRV80-12	For 8.0mm shafts	£5.95
PP-PDRV10-12	For 10.0mm shafts	£7.95

Brushless Electronic Speed Controllers

4M-HESC15AV2*	15A, Burst 20A, 5V 2A BEC	£17.99
4M-HESC20AV2*	20A, Burst 30A, 5V 1A BEC	£19.99
4M-HESC30AV2*	30A, Burst 40A, 5V 5A BEC	£22.99
4M-HESC40AV2*	40A, Burst 50A, 5V 5A BEC	£31.95
4M-HESC50AV2*	50A, Burst 70A, 5V 5A BEC	£45.95
4M-HESC60A35V2*	60A, Burst 80A, 5V 7A BEC	£47.95
4M-HESC60A40V2*	60A, Burst 80A, 5V 7A BEC	£47.95
4M-HESC80AV2**	80A, Burst 100A, 5V 5A BEC	£62.00
Fly Fun 110A HV	110A, Burst 140A, OPTO, 6-14 LiPo	£129.99
Fly Fun 130A HV	130A, Burst 160A, OPTO, 6-14 LiPo	£141.99
Fly Fun 160A HV	160A, Burst 200A, OPTO, 6-14 LiPo	£189.99

* XT60, ** XT90 on battery side

UBEC's (Voltage Stabilisers/Regulators)

4M-UBEC5A	5A UBEC, 7A Peak, 6-29.4V I/P	£14.99
4M-UBEC-7A	7A UBEC, 7.5A Peak, 6-29.4V I/P	£19.99
4M-UBEC-15A	15A UBEC, 28A Peak, 9-51V I/P	£29.99
HW-UBEC25A	25A UBEC, 50A Peak, 3-75.6V I/P	£64.99
5A UBEC	With Switch and Digital Display	£16.99
15A UBEC	With Switch and Digital Display	£29.99

This New Series of Professional Outrunners are of the highest quality and are comparable to the well known quality brands but at a fraction of the price as we get them straight from the factory, there is no middle man mark up. All motors are dynamically balanced in the factory to ensure super smooth and vibration free operation, along with longer bearing life. They also feature larger diameter shafts for superior strength. A standard rear mounting kit comes with all motors which includes the "X" mount and bolt on prop driver and screws.

Outrunners - Professional Black Series

PO-2826-	920kv, 1040kv, 1290kv, 1420kv, 2200kv	£22.99
PO-2830-	980kv, 1210kv, **1350kv**, 2150kv, 2700kv	£25.49
PO-2834-	910kv, 1020kv, 1160kv, 1680kv, 2100kv	£27.49
PO-3535-	870kv, 1090kv, 1390kv	£28.99
PO-3541-	810kv, 920kv, **1070kv**, 1270kv	£33.49
PO-3547-	700kv, 800kv, 960kv, 1190kv	£35.99
PO-5055-	500kv, 595kv	£61.00
PO-5065-	360kv, 420kv	£75.50
PO-6366-	230kv	£99.99

Part numbers in RED are approved by the BMFA for their Payload and Egg Challenges

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Great Value Quality Servos From £3.28

	Part Number	Type	Torque / Speed	Price
	4M-037AH-0045	Analog Sub Micro 3.7g	0.45Kg @ 4.8V - 0.10sec/60° 0.55Kg @ 6.0V - 0.08sec/60°	1pcs £6.84ea 5pcs £6.16ea
	4M-045DH-005	Digital Sub Micro 4.5g	0.5Kg @ 4.8V - 0.10sec/60° 0.6Kg @ 6.0V - 0.08sec/60°	1pcs £4.72ea 5pcs £4.25ea
	4M-056DHVMG-009 (High Voltage)	Digital Metal Geared Only 8mm Thick - 5.6g	0.90Kg @ 4.8V - 0.14sec/60° 1.05Kg @ 6.0V - 0.12sec/60° 1.20Kg @ 7.4V - 0.10sec/60°	1pcs £9.94ea 5pcs £8.95ea
	4M-094DMGB-014	Digital Metal Geared Ball Raced Wing Servo	1.4Kg @ 4.8V - 0.12sec/60° 1.9Kg @ 6.0V - 0.10sec/60°	1pcs £11.54ea 5pcs £10.39ea
	4M-090AH-017	Micro Analog 9g	1.7Kg @ 4.8V - 0.09sec/60° 1.9Kg @ 6.0V - 0.07sec/60°	1pcs £3.99ea 5pcs £3.59ea
	4M-100AMG-022	Micro Analog Metal Geared - 10g	2.2Kg @ 4.8V - 0.12sec/60° 2.5Kg @ 6.0V - 0.10sec/60°	1pcs £7.49ea 5pcs £6.74ea
	4M-100DMG-022	Micro Digital Metal Geared - 10g	2.2Kg @ 4.8V - 0.12sec/60° 2.5Kg @ 6.0V - 0.10sec/60°	1pcs £9.05ea 5pcs £8.15ea
	4M-094DHVMG-026 (High Voltage)	Digital Metal Geared - 9.4g Ball Raced, 8mm Thick	2.0Kg @ 6.0V - 0.09sec/60° 2.6Kg @ 7.4V - 0.07sec/60°	1pcs £14.99ea 5pcs £14.17ea
	4M-160AH-027	Mini Analog 16g	2.7Kg @ 4.8V - 0.13sec/60° 3.0Kg @ 6.0V - 0.11sec/60°	1pcs £6.29ea 5pcs £5.66ea
	4M-175AMG-030	Mini Analog Metal Geared - 17.5g	3.0Kg @ 4.8V - 0.13sec/60° 3.5Kg @ 6.0V - 0.11sec/60°	1pcs £8.73ea 5pcs £7.86ea
	4M-175DMG-030	Mini Digital Metal Geared - 17.5g	3.0Kg @ 4.8V - 0.13sec/60° 3.5Kg @ 6.0V - 0.11sec/60°	1pcs £9.99ea 5pcs £8.99ea
	4M-253AB-028	Standard/Mini Size Ball raced - 25.3g	2.8Kg @ 4.8V - 0.12sec/60° 3.3Kg @ 6.0V - 0.10sec/60°	1pcs £6.79ea 5pcs £6.11ea
	4M-410ABH-052	Standard Analog 41g	5.2Kg @ 4.8V - 0.20sec/60° 6.5Kg @ 6.0V - 0.16sec/60°	1pcs £4.73ea 5pcs £4.26ea
	4M-455AH-033	Standard Analog 45.5g	3.3Kg @ 4.8V - 0.15sec/60° 4.0Kg @ 6.0V - 0.12sec/60°	1pcs £6.99ea 5pcs £6.29ea
	4M-556AMG-087	Standard Analog Metal Geared - 55.6g	8.7Kg @ 4.8V - 0.15sec/60° 9.4Kg @ 6.0V - 0.13sec/60°	1pcs £12.59ea 5pcs £11.33ea
	4M-556DMG-087	Standard Digital Metal Geared - 55.6g	8.7Kg @ 4.8V - 0.15sec/60° 9.4Kg @ 6.0V - 0.13sec/60°	1pcs £15.74ea 5pcs £14.17ea
	4M-620DHVMG-112 (High Voltage)	Digital HV Metal Geared Dual Ball Raced 62g	9.35Kg @ 6.0V - 0.15sec/60° 11.2Kg @ 7.4V - 0.13sec/60°	1pcs £18.89ea 5pcs £17.00ea
	4M-556AMG-118	Standard Analog Metal Geared - 55.6g	11.8Kg @ 4.8V - 0.20sec/60° 13.2Kg @ 6.0V - 0.18sec/60°	1pcs £14.69ea 5pcs £13.22ea
	4M-556DMG-173	Standard Digital Metal Geared - 55.6g	17.3Kg @ 4.8V - 0.18sec/60° 20.4Kg @ 6.0V - 0.16sec/60°	1pcs £17.84ea 5pcs £16.06ea

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VALUEPLANES

£424.99

Fokker DVII
Wingspan 2100mm/83” Weight 6000g/13.2lbs
Battery 6S 5000mAh (Supplied Separately)

£439.99

Miles 2.H Hawk Major
Wingspan 2480mm/98” Weight 9300g/20.5lbs
Battery 10S 5000mAh (Supplied Separately)

£109.99

Cloud Clipper
Wingspan 1800mm/71” Weight 1800g/4lbs
Battery 3S 2200mAh (Supplied Separately)

£99.99

Cloud Walker
Wingspan 1650mm/65” Weight 1250g/2.75lbs
Battery 3S 2200mAh (Supplied Separately)

£169.99

Lippisch G108
Wingspan 2750mm/108.25” Weight 1700g/3.75lbs
Battery 3S 2200mAh - 3S 3700mAh (Supplied Separately)

£139.99

Super Sinbad
Wingspan 2500mm/98” Weight 1900g/4.2lbs
Battery 3S 2200mAh - 3S 3700mAh (Supplied Separately)

£49.99

Micro Sinbad
Wingspan 1230mm/48.4” Weight 190g/6.7oz
Battery 2S 350mAh (Supplied Separately)

£169.99

Leprechaun
Wingspan 2600mm/102” Weight 1650g/3.6lbs
Battery 3S 2200mAh - 3S 3700mAh (Supplied Separately)

£49.99

Micro Leprechaun
Wingspan 1200mm/27.25” Weight 350g/12.3oz
Battery 2S 450mAh (Supplied Separately)

£169.99 Kit
£299.99 ARTF

VP2600 Glider
Wingspan 2600mm/102” Weight 850g/1.9lbs
Battery 3S 2200mAh (Supplied Separately)

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Package	Supplied Prop	Static Thrust @11.1V	Est. Speed
1000kv	10x6	515g/ 1.14lbs	35MPH
1200kv	9x5	635g/ 1.40lbs	42MPH
1400kv	8x6	810g/ 1.79lbs	55MPH
1800kv	7x3.5	490g/ 1.08lbs	52MPH
2200kv	6x3.5	470g/ 1.04lbs	59MPH

Each Power Pack consists of ....

1x Brushless Outrunner Motor
1x Rear Mounting Kit
1x Prop Driver/Adapter
1x 30A Brushless ESC
2x Suitable props and adapters
3x Tower Pro SG90 Servos

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Chargers, Wattmeters, Servo Testers and Power Supplies

HOTA D6 Pro - Dual I/P, Dual O/P 650W Charger

The D6 Pro is a dual I/P (AC & DC) and dual O/P high quality charger with each output capable of charging . It can Charge between 2S - 6S LiPo, LiHV, LiFe and Li-ion batteries, Eneloop, Ni-Cd, Ni-MH, Ni-Zn. It also features wireless charging so you can charge your phone at the field. Great Value for just.

New

£109.99

HOTA F6+ - Dual I/P, Quad O/P 1000W Charger

The F6+ features dual I/P (100VAC - 240VAC & 6.5VDC - 30VDC) and has 4 high powered outputs each can charge up to 250W. It can charge between 2S - 6S LiPo, LiHV, LiFe and Li-ion batteries, each up to 15A.
1S - 12S Eneloop, Ni-Cd, Ni-MH, Ni-Zn.
Brilliant Value for just.

New

£199.99

HOTA H6 Pro - Dual I/P, 700W Charger

The H6 Pro Smart Charger features dual I/P (100VAC - 240VAC & 6.5VDC - 30VDC) and can deliver up to 700W, 200W on AC (max 26A). This is the charger when you need large packs charged quickly. Balance current 2A Fantastic Value for just.

New

£79.99

HOTA S6 - Dual I/P, Dual O/P 650W Charger

The S6 is a high quality dual I/P (AC & DC) and dual O/P high quality charger with each output capable of charging . It can charge between 2S - 6S LiPo, LiHV, LiFe and Li-ion batteries, Eneloop, Ni-Cd, Ni-MH, Ni-Zn.
Outstanding Value for just.

New

£169.99

ToolKitRC Q6AC - 1000W, Dual I/P, Quad O/P

The ToolkitRC Q6AC is a Dual Input, Quad Output Smart Charger. 2-6S LiPo, LiHV, LiFe, Lion and 1-16S NiMh.
The charging power output on AC is up to 400W, on DC with a suitable power supply up to 1000W.The high power quad O/P charger.

New

£175.99

ToolKitRC Q4AC - 200W, Dual I/P, Quad O/P

The ToolkitRC Q4AC is a Dual Input, Quad Output Smart Charger. 1-4S LiPo, LiHV, LiFe, Lion and 1-10S NiMh.
The charging power output on AC is up to 100W, on DC with a suitable power supply up to 200W.The Q4AC has intuitive menus.

New

£69.99

ToolKitRC M7AC - Multifunctional Dual I/P, 350W Charger

The M7ACs core function is being a single channel battery charger. 100W O/P when powered by AC and 300W when powered by DC. It is compatible with the main battery chemistries and supports direct connection with both XT60 and XT30 batteries.

£84.99

ToolKitRC M7 - is the worlds smallest 200W charger/ servo tester/cell checker with a colour screen!

Same size as the popular M6 but with 33% more power! With a 200W, 10A charger at its heart the M7 also has a servo tester, cell checker, a wattmeter, PWM/PPM/Sbus input testers and output generator along with a variable voltage and current DC output control. All of these features at an fantastic low price of

£49.99

ToolKitRC M9 - Dual I/P & Dual O/P, 700W

So many functions in a small charger! Battery internal resistance checker, wattmeter, servo tester, (Can output PWM/PPM/SBUS standard signal, accuracy up to 1µs) LiPo balancer.
It also charges all the main types of recharge-able cell up to 25A. USB type A & C outputs

£79.99

ToolKitRC M4Q - 200W Quad Out Charger

The M4Q is a 4 in1 charger that has 4x 50W charging circuits when powered by DC (4x 25W when powered by AC). Allowing you to balance charge 4 batteries at the same time. It features an internal power supply so you can just plug it into your nearest mains socket. It can also be powered by DC when at the field.

£84.99

ToolKitRC M4 Pocket - 80W O/P Charger

The ToolkitRC M4 Pocket is a small but power-ful ~80W charger featuring dual input (USB Type-C / XT60) and dual output (XT60 / XT30). The charger can charge up to 4S LiPo/LiHV/ LiFe batteries. It can also be used to charge USB mobile devices with a USB-C socket.
It features a 1.54" Wide angle colour display

£24.99

SKY High Power Discharger -

Fed up at how long it takes you to discharge your unused batteries ? Then this is the discharger you have been waiting for. This can discharge your batteries up to 35A! (max 250W). Just set the discharge current and the end voltage you require and push the button, simple as that. We recom-mend that you just finish the storage process off on your charger.

£119.99

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Counterpoint

A selection of new gadgets, kits and bits for you to buy

OVERLANDER RC-S100NEO CHARGER

£49.99 I www.overlander.co.uk

Measuring just 115 x 112 x 55 mm and weighing 320 g, the Overlander S100neo is a compact yet powerful 100W AC charger equipped with an integrated 100 – 240 V AC input that eliminates the need for an external power supply. With a 10 A maximum charging current it delivers fast and efficient charging for LiPo, Li-Ion, LiHV, LiFe, NiMH, NiCd and Pb battery types (with balance charging for LiPo, Li-Ion, LiFe and LiHV). Several specialised charging modes, including Fast Charge, Storage Charge and Discharge, are also included. A clear LCD screen provides real-time data regarding charging status and battery health, whilst an intuitive menu system allows easy navigation through the settings. Automatic cell-type detection and safety protection against overcurrent, overvoltage, short circuit and reverse polarity complete the feature set of this versatile charger that's ideal for both home and field use.

SC 52 TWO-STROKE

£108.99 I www.jperkins.com

With the popularity of electric and petrol power you'd be forgiven for thinking that two-stroke engines, the staple powerplant for many club flyers over the years, were being consigned to history. Thankfully, that's not the case - SC two-strokes are back, and better than ever. The new SC 52 boasts a beautifully cast matt-finished crankcase with twin phenolic bearings, a sturdy, single billet crankshaft and twin needle carb with rear-mounted main mixture adjustment. Power, performance, longevity and just a little nostalgia.

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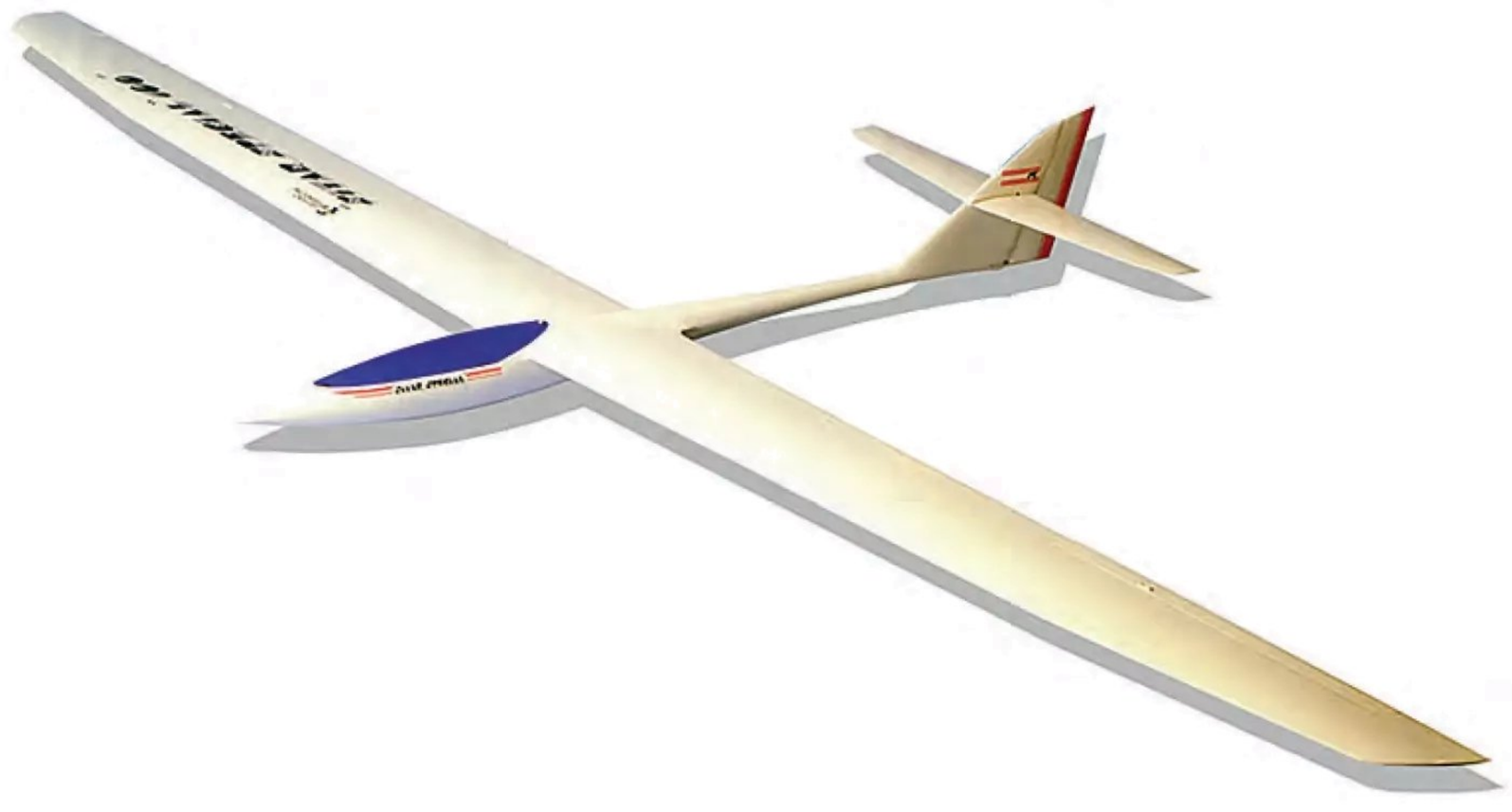



Dave started construction of his Fw 190 in late 2019.

FOCKE-WULF FW 190

Frank Skilbeck describes a masterful large warbird constructed from the Vailly Aviation plans by Dave Keen

Words **Frank Skilbeck**

Photos **Frank Skilbeck, Dave Keen**


Construction is all conventional. You just need a big workbench!

The Focke-Wulf Fw 190, when introduced by the Luftwaffe in WW2 in August 1941, caused quite a shock to the allies, being superior to the Spitfire Mk. V, which was the RAF's main front-line fighter. Parity wasn't restored until late 1942 with the introduction of the Spitfire Mk. IX. Spanning 10.51 metres and powered by a 14-cylinder twin row BMW radial, the Fw 190 had a top speed of over 400 mph and a range of 540 nautical miles. Armed with four cannons and two machine guns it was a formidable foe. The wide spaced undercarriage made ground handling and landings less fraught than with the Messerschmitt Bf 109 and it was well liked by its pilots.

These characteristics also make the Fw 190 a good WW2 scale subject and one that club mate Dave Keen had admired for many years. Dave is a keen builder and he has built many scale aircraft before including a quarter scale Fokker Dr.1 triplane, a Sopwith Pup, Tiger Moth and a sixth scale Mitsubishi Zero. His family were looking for a suitable 'big birthday' present and knowing Dave's love of building they bought him the Vailly Aviation plan, cut parts, cowl and canopy for the 28% scale Fw 190 for 150 cc plus engines, leaving Dave to source the remaining items.

More traditional workmanship, this time showing one of the wing panels.

Trial assembly gives a good indication of scale. Dave looks pleased with the results of his efforts so far.

Camouflage was free-hand sprayed, with large insignia constructed using masking tape.

CONSTRUCTION

Building started in earnest in late 2019 after Dave had acquired a low hours Moki 215 cc five-cylinder radial at the Large Model Association static show at Gaydon. Construction of the model is all conventional, from spruce, ply and balsa, and the plan is basically a 25% enlargement of Vailly Aviation's standard 90" span version. Sadly, shortly after starting the build, Dave's wife of over 40 years, Barbara, passed away just before the Covid pandemic struck, so the 190 build helped to provide some distraction from his isolation during the lockdown period.

The cut parts all came from Belair and the basic airframe went together quickly, which Dave glass clothed and sprayed using mainly Chroma aerosol paints. Other parts, including, retracts, cockpit interior, decals and paint masks all came from specialist suppliers and are summarised below.

Based on Dave's other builds it was clear that the finished model would weigh over 25 kg and so it was registered with the Large Model Association to be built and test flown under their 'Over 25 kg Scheme'.

SCALE LIVERY

The Fw 190 A2, as flown by Hauptmann Hans 'Assi' Hahn of the Stab III./JG 2 group based in Theville, France in 1942, was selected. While the main markings were all painted using standard masking tape, the cowl logo paint mask and detailed decals were provided by AB Military, the paint mask being developed from images we had provided.

Panel lines and the thousands of rivets were simulated by panel and rivet tape applied between paint coats and removed before the final top coat to leave a realistic interpretation of the full size.

Final weathering was applied by Dave's son, Spencer, who is a dab hand with an airbrush.

"…the plan is basically a 25% enlargement of Vailly Aviation's standard 90" span version"

Since the model is glassed the surface finish involved a lot of rubbing down.

COCKPIT

The scale cockpit was supplied by Aerocockpit in the Czech Republic. It is their standard quarter scale set with the facia slightly enlarged. The set includes the main dash and side panels, complete with all instruments and switches, the gun sight, seat, joystick, rudder pedals and seat, all very realistically finished.

Dave decided that he would like the sliding canopy to be actuated and to do this pivoting runners were made to slot into the fixed angled runners, just like the full size. Initially a sail winch was used to operate the canopy via a closed loop system, but this was very difficult to set up and adjust and was prone to failing. Searching a robotics forum we found an R/C controlled linear proportional actuator with

Scale cockpit parts from Aerocockpit.

The detailed instrument panel finishes off the cockpit nicely.

sufficient travel which allowed the end points to be adjusted - a much better solution.

A quarter scale pilot in suitable regalia was sourced from Tailored Pilots and this really finishes off the cockpit

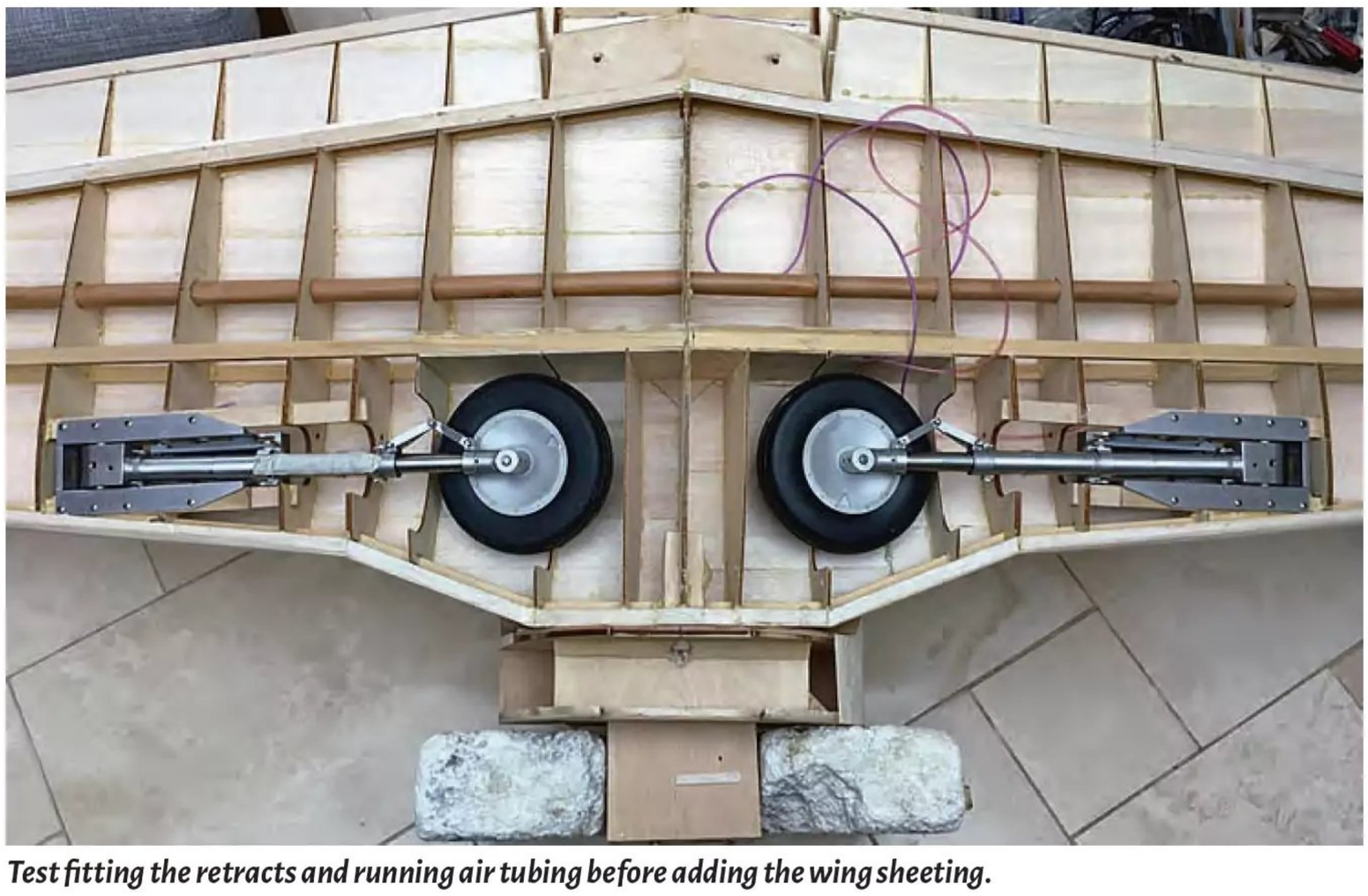
UNDERCARRIAGE

The main retracts and retractable tailwheel are from Giant Sierra and are specific for this model, being ordered direct from the USA. All the units are air up and down and the main units lock in either position. A Jetronics air solenoid valve, sourced from Nexus Modelling Supplies, is used to provide air for the operation from dual air tanks situated just behind the wing. The air valve has the option to isolate the air to the retracts after operation and depressurise the lines to conserve air in case of any seepage past the seals. This worked great on the main wheels but not the tailwheel, which needs constant pressure to keep it in position. Fortunately, it's possible to reconfigure the valve to maintain pressure in the selected position. For security, we added a Powerbox air pressure telemetry sensor (again from Nexus), configured to talk to the Multiplex M Link radio being used. In operation the air tanks are pumped up to around 7.5 barg and a low-pressure alarm sounds at 3 barg; this gives around three cycles of the undercarriage.

The main wheel undercarriage inner doors are operated by dedicated servos. These are

Close up on a canopy slider with its pivoting guide.

Open and shut case! A powered sliding canopy really adds to the scale effect. Note the antenna pulley system.



Test fitting the retracts and running air tubing before adding the wing sheeting.

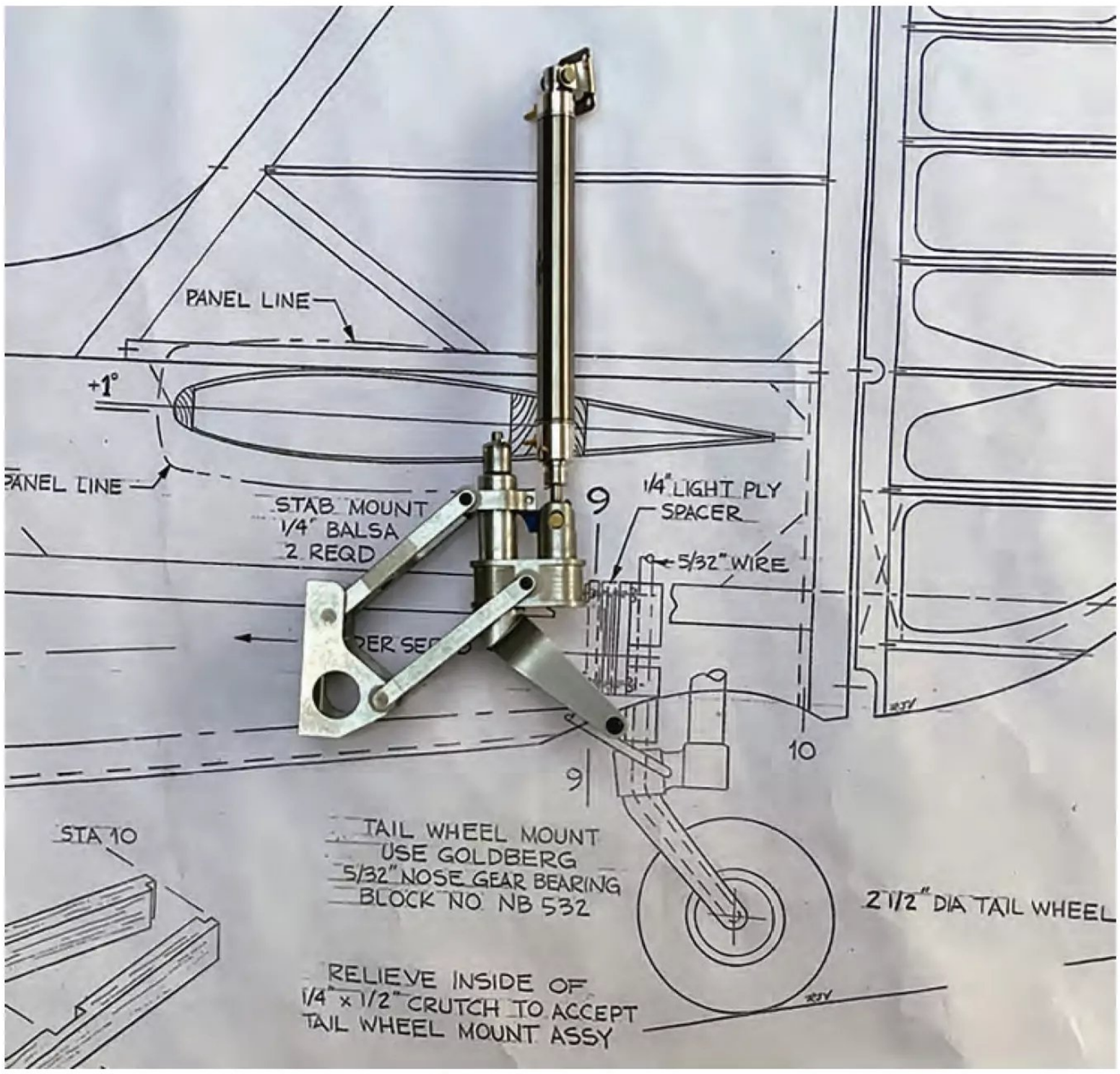
Scale sprung retracts are robust enough for the 30 kg model.

sequenced to the air valve using servo curves and a slow feature so that the doors open before the wheels lower and vice versa. Retract operation is via a three-position switch, where position one is wheels up, doors closed, position two is wheels up, doors open and position three is wheels down with doors open.

ELECTRONICS

As noted above Multiplex radio control was used, with a Royal Sx16 channel transmitter and a 16 channel DR Pro receiver, with a nine channel DR receiver in diversity mode, giving a total of four receiving circuits. Receiver power is by dual 2S Molicel P45B Lithium-Ion packs through a Multiplex safety switch with telemetry battery voltage monitoring. All main servos are Savox high voltage, 20 kg plus torque units on the ailerons, flaps, dual elevators, rudder and tail wheel steering, with lower torque servos used on the undercarriage doors, throttle and choke. Including the navigation light controller, canopy actuator, air valve and remote ignition switch, all 16 channels on the radio are employed.

Various telemetry sensors were used as follows:



Checking the tail wheel installation over the plan.

- Receiver battery voltages – dual voltage sensor monitoring voltage of each receiver battery and alarming at low voltages.
- Air pressure sensor – monitoring pressure of the retract air tanks, with low pressure alarming.
- Temperature sensor – dual temperature probes are attached to two cylinders on the Moki radial

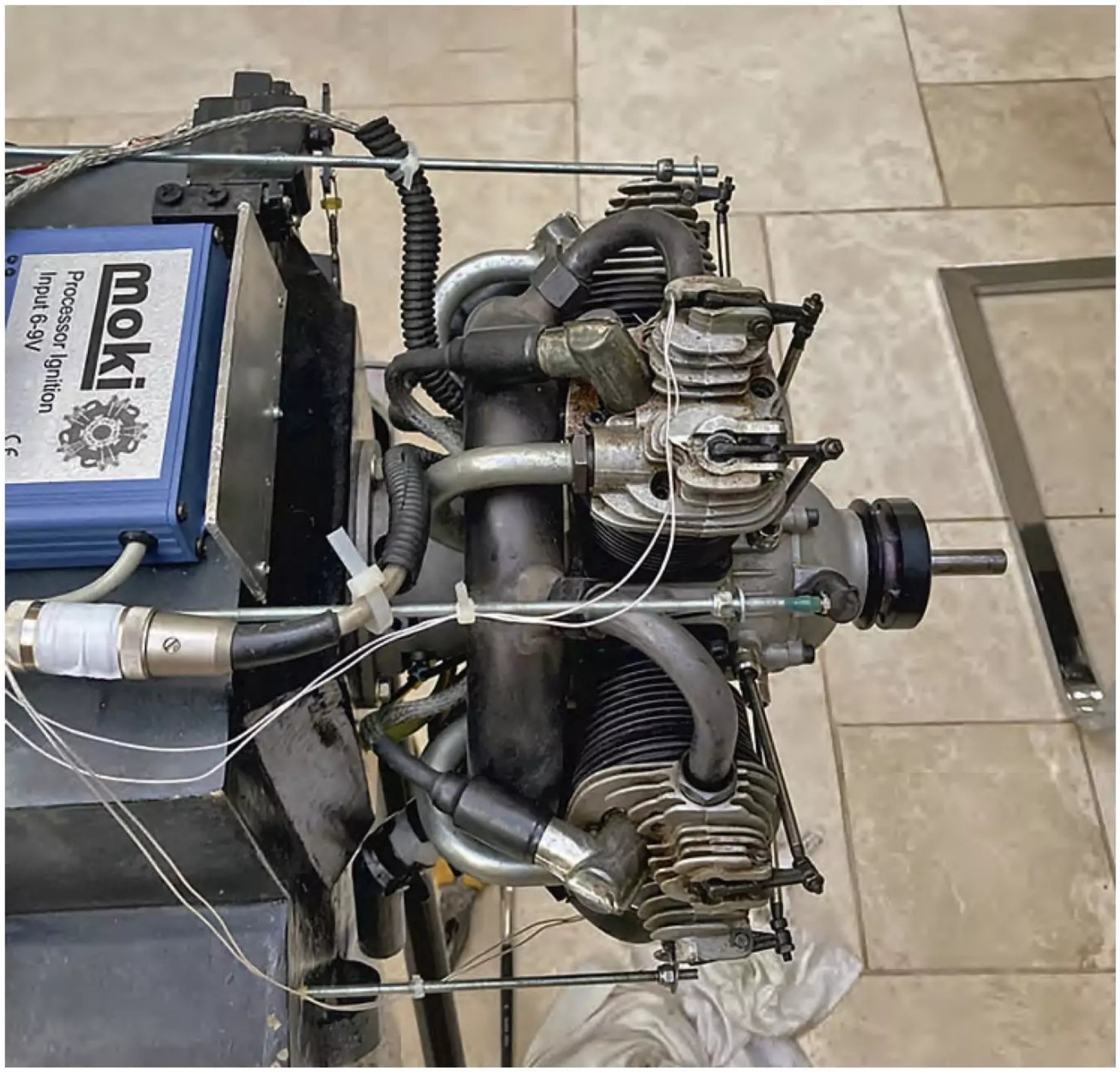
Plus, the receivers also report link quality and operating voltage.

In addition, the 'Over 25 kg Scheme' now requires large models to be fitted with a GPS sensor recording speed, height, position and date. An SM Modelbau GPS logger was used

> "…the 'Over 25 kg Scheme' now requires large models to be fitted with a GPS sensor recording speed, height, position and date"

As with the main retracts the retractable tailwheel is from Giant Sierra in the USA.

Inner wheel doors operate using separate servos and are sequenced to the retracts on the transmitter.



Moki sound generator! The white wires are temperature sensors.

The Moki is tightly cowled and baffled to ensure that cooling air flows over the cylinders.

for this, and as this is also telemetry compatible, speed and height data are available at the transmitter.

POWERPLANT

Motive power is provided by a Moki 215 cc radial driving a 32 x 14 three bladed propeller. Unfortunately, by the time the model was ready for the spinner Vailly Aviation had ceased trading and their plans were acquired by Ziroli, who had discontinued the large version of the 190 and associated parts, so it was not possible to buy a scale spinner from them. Dave had his other son, Scott, turn up a mould from hardwood, with the intention of making a fibreglass spinner to fit on an aluminium back plate which Dave had machined by a local retired machinist. As it was intended to display the model at the LMA Cosford static show, and there wasn't time to make a glass fibre spinner, Sarik Hobbies vacuum formed a couple from ABS and one of these was used for the initial flights, but it eventually failed and a replacement carbon fibre one was made by Kingfisher Aviation using the original plug.

The Moki had been successfully run on Kingfisher Aviation's test stand two years previously, but when installed in the plane the engine refused to keep running at anything less than half choke. Thinking that the diaphragms in the Walbro carb had failed, the engine was stripped out and taken to Kingfisher where Paul Dudley did a full carb service and we ran the engine on the test stand again. However, back in the model the previous problem persisted.

The tank position made it quite difficult to see the fuel feed tube routing, but we eventually discerned that the feed line was kinking when the tank was pushed into place, restricting the fuel flow. When this was rectified, the engine purred into life and turned the 32 x14 prop at over 4,000 rpm, generating some serious thrust.

The finished model was weighed at around 27 kg, but the Centre of Gravity was behind that shown on the plan. As a separate check I ran the model through the CG calculator on E-Calc and this broadly agreed with the plan, so weighing the model on each wheel we calculated that we needed 2.5 kg at the front of the cowl and substantially more if the weight was attached to the firewall. So, Dave made up a mould to replicate the groove at the front of the cowl and cast 2.5 kg of lead ring to fit, bringing the all-up-weight to just under 30 kg.

SHAKE DOWN

It was time for the trials and tribulations of flight testing and obtaining CAA approval. With the model signed off as being ready for test flying by the LMA it needed to be taken to a suitable location. Not having a van, Dave built a trailer which he could tow behind his vintage Morris Minor.

With all the time and effort going into the build, not to mention the cost, Dave decided it was best to entrust the flying to an experienced large model pilot and so he asked Steve Holland if he would assist, which he kindly agreed to.

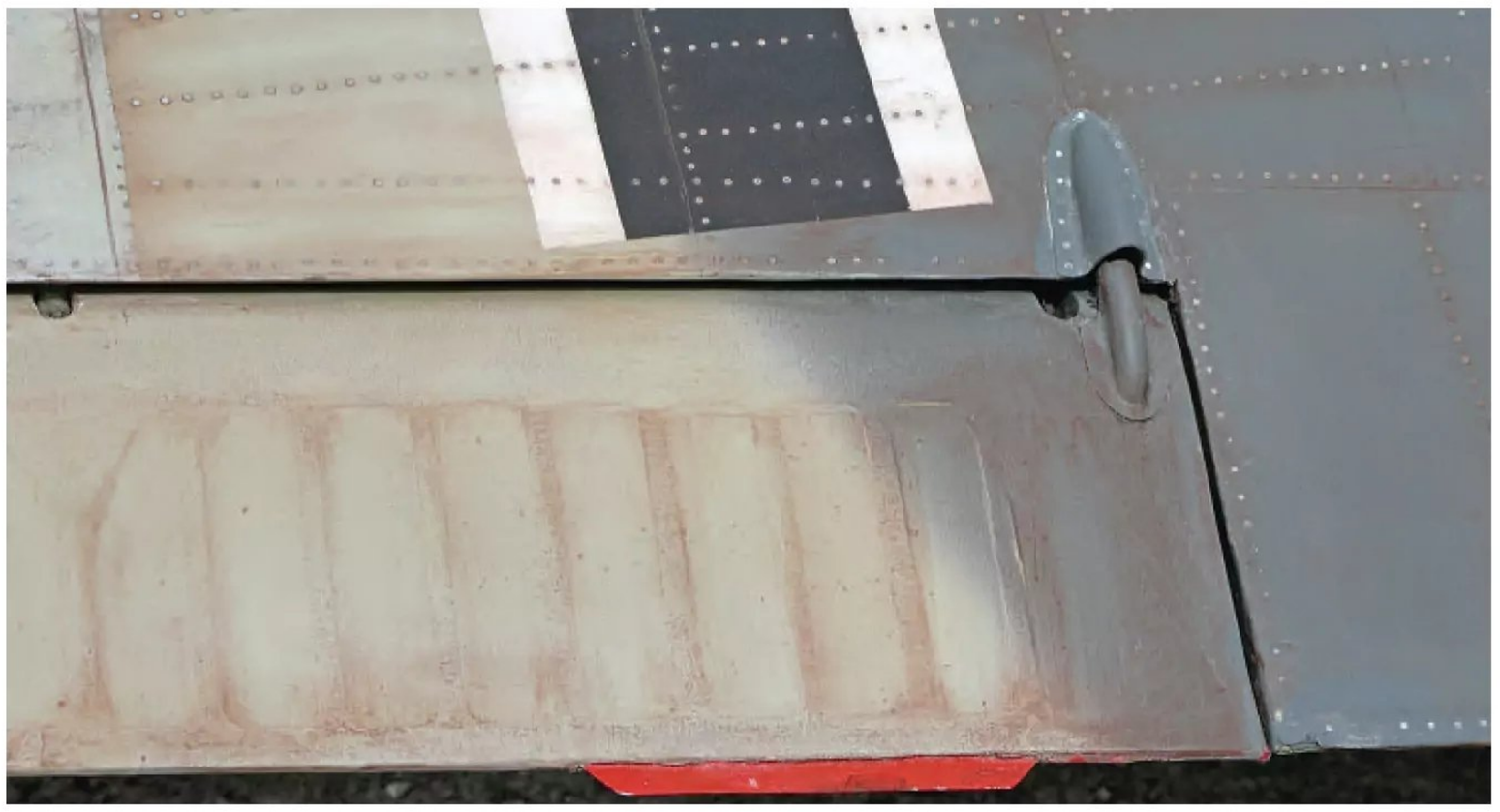
For the model to be fully approved by the LMA/CAA it needed to have undertaken six flights, with a total flight time of one hour, all witnessed by an accredited LMA member.

The model required its own trailer for transport, here with Dave and his 'Moggy'.

The trailer also doubles as protective storage for the model.

Ready for the off. It could be northern France in 1942.

Dummy exhaust outlets and louvres are both used to vent hot air from the Moki.



Each aileron has a scale trim tab and are actuated with a hidden linkage.

Rudder incorporates a working navigation light.

It was decided to do a shake down test before starting the formal flight approvals. As Steve is a member of the Cotswold Radio Control Society, which is reasonably local to us, it was decided to do the initial flights at their site, so on a slightly windy, overcast and not very warm day we congregated at Aston Down. The model was assembled, Steve checked it over and declared he was good to proceed. The engine was started, warmed up and checked over, and the Fw 190 was finally ready for the first flight.

> "Dave had put the wing on top of his car and the following morning he had driven off with it still on top!"

Lined up into wind the throttle was opened and the model soared away, Steve noting that the elevator was a bit sensitive. After a few photography passes for the gathering of clubmates and family, Steve brought it in for a flapless landing. On flare out it dropped quite suddenly but with no damage. Steve noted that the elevator travel needed to be reduced and that the tail wheel steering was not effective.

For the next flight the elevator travel was reduced and Steve declared that it was much better. This time he gave the model a more thorough check out, including a loop and a roll, and also checking the flaps. The flaps proved to be very effective and gave the model a significant pitch down that was easily held on the elevator. Landing was undertaken with full flap and this proved to be much more effective.

By now the weather was deteriorating and we were all getting cold, so it was decided to stop while we were ahead.

Back at the workshop the tailwheel steering was modified to be more positive and, on Steve's recommendation, a larger tank was fitted. It was then that disaster struck; while working on the model in his garage, Dave had put the wing on top of his car and the following morning he had driven off with it still on top! The wing was recovered (but that's another saga!) and fortunately it had only suffered some damage to the wing tip, which was easily repaired.

The big Moki powers the 190 effortlessly away. It could be the full size.

Dave's Fw 190 shows up well in the sky.

Full flap landing. The wide spaced undercarriage makes for easy ground handling.

Lining up for a low pass. Just image the sound of that gorgeous five-cylinder radial!

Builder Dave Keen with test pilot Steve Holland.

FORMAL FLIGHT TESTS

For the start of the formal flight testing, we reconvened at Aston Down but found that the new tank had inadvertently been installed upside down which made filling the model difficult. However, we eventually got in two of the required observed test flights.

The final four test flights were undertaken at a large grass airfield near Cheddar, where the model performed well and was signed off. The only trait was a tendency for the model to roll upright at the top of a loop, which apparently the full size was also noted to do.

With the paperwork all sent off and formal CAA approval issued it was intended to display the model at the LMA Marcle Show. However, on the Friday, during its test flight, the Moki dropped onto four cylinders and after landing it was found to have lost an exhaust valve rocker arm and spindle, the pushrod being found in the cowl, curtailing the chance to display the model that weekend

Using the flight path from the flight logger, Dave went back with a metal detector after the show and found the rocker! But not the spindle. New parts, ordered from Germany, arrived shortly after and the Moki was soon running sweetly again. As I said, trials and tribulations!

ACKNOWLEDGEMENTS

Dave would like to thank those that have helped him build the model, including the many suppliers who have made bespoke parts. Special thanks go to Paul Dudley from Kingfisher Aviation, who not only helped with the Moki but was also the assigned LMA construction inspector, and Steve Holland, who very competently undertook all the flight testing and is the nominated pilot for the model. ■

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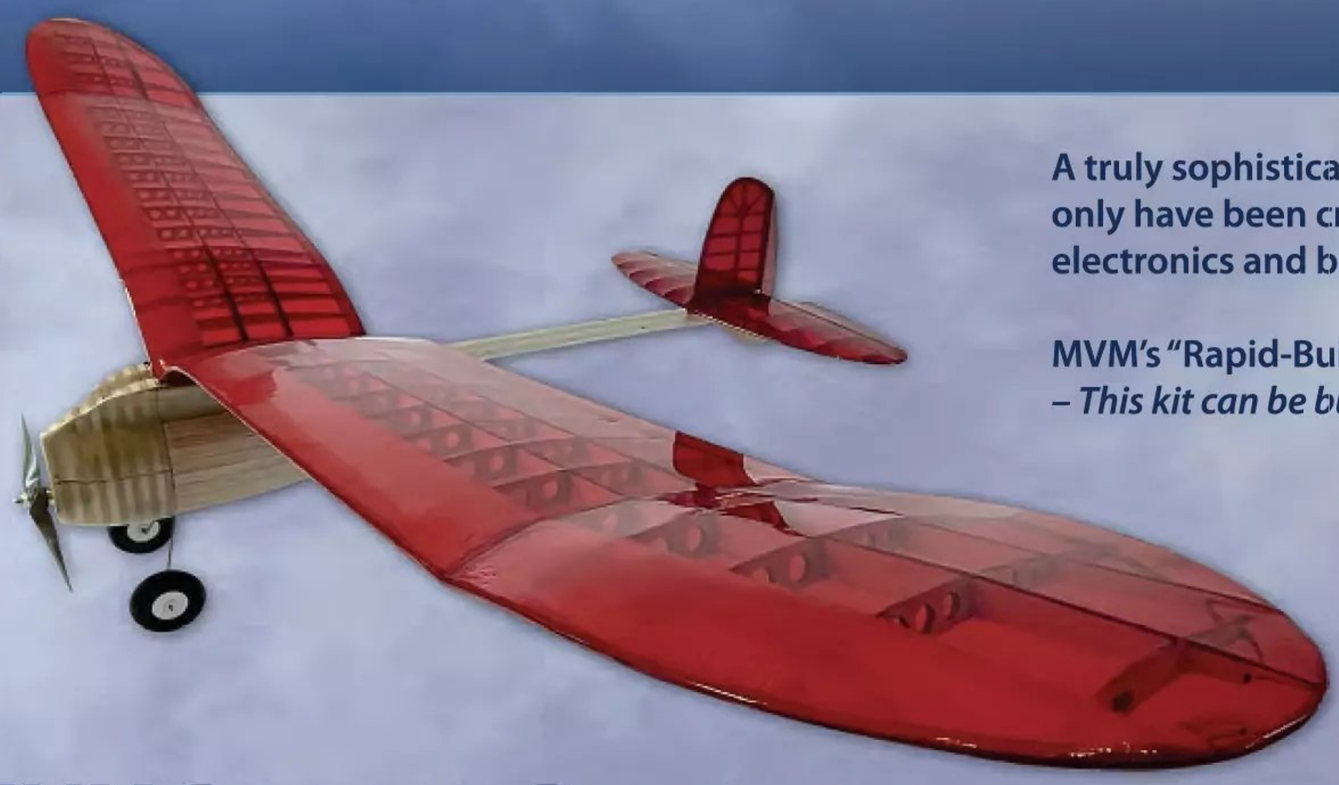

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Joe Hampson hides behind his incredible 3D Edge 540 V3.

BIG UP THE KIDZ

Dave Goodenough joins the party at a fly-in especially arranged for young pilots

Words **Dave Goodenough**

Photos **Dave Goodenough, Matt Takhar**

I've long been an advocate of supporting young people wanting to become involved in this super hobby and had recently been e-poked to see if I was aware of an event being planned near Nottingham specifically aimed at giving up to twenty youngsters a place to 'strut their stuff' at a safe and fully supported club flying site, the Langar MFC runway.

Dan Hampson was the man leading the charge, with an able bunch of worthies supporting the enterprise, either through sponsorship (of which there was much) or lending a hand to run the event. I was asked to join in and wave the camera, take names and soak up the atmosphere of a meeting specifically aimed at young pilots.

So, what did the memsahib and I find as we passed through the airfield's southern portal?

BEDLAM!

The first surprise was that this was no simple club meet. The cluster of caravans, motorhomes and big panel vans spoke of a very well-attended event, as did the array of dozens of models. From the humblest of well-abused little foamies to the all-moulded jet jobs, of which there were several, just about anything you can imagine could fly was spread over the tarmac or spilling from various vehicles.

The same could be said of the 'tin-and-plastic-on-wheels' village: children, teens, parents, older folks and pets were all part of this model jamboree and tumbling in, out and about the camping area.

Add the sound of a howling engine dragging an unseen projectile around the sky at near warp speed and you're beginning to get an idea of the mayhem we walked into - it was wonderful!

The pilots' briefing was an object lesson in Brownian physics: how to bring objects in random motion into a central point and hold them there. Dan began the very thorough

All waiting for the off. Just a few of the varied models thrown across the sky over the weekend.

"All the young pilots had their own named T-shirts and bags of donated generosity from the many sponsors"

briefing, supported by Matt Takhar and Gary Oliver. The rules were laid out and no ambiguity was allowed; the same controls applied to all, young and old.

Just after there was a dive for the goodie bags! All the young pilots had their own named T-shirts and bags of donated generosity from the many sponsors supporting the event. Our very own publication provided magazines, plus a subscription to be awarded to the worthiest young pilot. Father and son duo, Daryn and Troy Busa, not only part sponsored the event but laid out their stall too. It was there that I espied an angular foamboard oddity, one of a couple on the day. Surprisingly, they appeared to be the only 'built kit' models of the day, unless I missed something.

JET JOCKEYS

At the tiniest end of the scale foamies was Teddy Williams, rocketing his little 'Red Arrows' Hawk EDF jobbie around the sky with aplomb. He must have the eyes of a raptor as on some wide circuits we could only hear the scream of the fan - I couldn't even find it with the telephoto! This young lad was careful to 'check the circuit' before acting as his own 'fetchemite'. He was later found towing his garden truck full of models to and from the pilot's box. At the other end of the jet scale was Alex Ladell, flying one of the several impressive jet turbine models at the event, the Aviation Jet Armee de l'Air Dassault 'Rafale'. The flight I witnessed was immaculate and well-mannered, copying the pattern of a full-size airshow aircraft perfectly. He was later involved in thoroughly testing the airframe integrity of yet another model victim; it took off level, the only time we saw it thus until it landed. The flight pattern was never less than frantic, always in some wayward motion and using all axes to their utmost as Alex whacked the sticks about and did things that would have had any full-size pilot throwing up or baling out! I'm pretty sure that I'd heard him mention that he'd been flying for just three years. He's one of the elder statesmen of the young pilots, an ancient 17 years old!

You want a dancing jet? Do you want smoke with that? The hugely capable Tomahawk Aviation 'Futura', in grey/yellow plumage flown by Sonny Milgate gave us a sparkling display of just what a large powerful and light jet can achieve when the taps are opened, the vectored tailpipe is waggled and the smoke is 'on'. A case of 'don't try this at home' manoeuvres and tie the smoke trail in knots flying ensued. How about an inverted flat spin right down to 'get the shovel' altitude? What's that you say - you want to see it vertical and close to scraping the tailpipe, mixed with more

All those involved with the event, young and old, wore their T-shirts with pride.

Angular foamboard twin spotted on the iActiveRC stand.

Daryn and Troy Busa set up their pitch as one of the sponsors. Their support was magnificent.

All the young pilots received sponsored goodie bags. These youngsters seem very pleased with their bounty.

Teddy Williams acts as his own 'fetchermite' after first ensuring the circuit is clear. I wish I could move that fast!

Teddy ferries his mixed bag of models to the flight line.

smoke and a bit of a skirt-tossing twirl, before accelerating vertically? Been there, did all that, then tore about the sky again before deploying those 'barn door' flaps and passing slow along the runway like a trainer. The flight was simply mesmerising.

Not to be outdone, Azza Stevens threw his own grey/blue finished version through its own tortuous flight regime. Luke Oliver joined in and flew his very distinctive and elegant Tomahawk 'Integral' curved wing, humped cockpit beauty through high speed, high stress aerobatics.

BACK TO BASICS?

One young lady was seen/heard browbeating at Olympic level, *'Come on Dad, I want to fly!'* Dan Hampson, the event organiser, succumbed to familial pressure and brought daughter Ruby to the pilots' box, fettled her foam Cessna 182, made certain that the buddy box was all connected and working, then told the little aviatrix to fire up and fly - and fly she did! True, he was muttering instructions and may have given the occasional nudge to the buddy sticks, but serious-faced Ruby of the 'concentration

Sonny Milgate's gorgeous Futura flat spins from the overcast during a stint of aerial mayhem.

Azza Stevens opens the taps with his Futura and goes for it!

squint' did most of the wing waggling. After bringing the model back, slightly assisted, her brother Joe, already a very accomplished pilot, did the fetching for her. He was later found throwing his big 3D 'Edge' around the sky - he'd recently been competing in a 3D competition in Spain.

Also wielding a Cessna foamie, albeit an older '170' design from the 'Spam Can' manufacturer, was Caitlin McInness. Her Flex Innovations model was a step away from the usual suspects and looked very nice indeed, despite the slightly 'used' condition. Flown in a very sedate way it looked every bit the training aircraft doing 'circuits and bumps' but I later saw a discussion in the pits about its lack of power. An afternoon inter-event WhatsApp text had her asking for circlip pliers - I wonder what the problem was? Despite the model conundrum she passed her 'A' certificate on the Sunday. One doesn't usually ask a lady's age but they both let me in on their secret - Caitlin is a stately 16, whilst Ruby is just 5 years old.

I love scale models, especially when flown 'as per' their normal routines and Oliver Allcock was on flight duty with his AT-6 Harvard to do just that. From take-off to final arrival, Oliver flew the old trainer about like a WW2 tyro given carte blanche to enjoy his solo flight privileges. Mild stunts and fast/slow passes showcased the nature of this well-loved training aircraft, Oliver providing

the action with studied accuracy. Many a club pilot of my acquaintance could learn a lot from this accomplished young pilot. He and his dad Michael were later found wresting with a Hangar 9 Sopwith Camel on a prep table. The motor appeared to be having a bit of a hissy-fit but the eventual roar and cloud of smoke proved that something was alive 'under the bonnet'.

Rolled out by club member David Parnham from the waiting queue by the pilots' box was a rather pretty Flex Innovations Vans RV-8. From take-off to landing this very able model flew at the low end of the velocity scale; despite the low wind speed over the runway, it wafted past at just above the stall, almost stationary at times. With the huge flaps hard down and ailerons wiggling, tortured aerodynamics held this impressive foam model steady, just a few feet above the runway and oblivion.

KEEP IT IN THE FAMILY?

Supporting your children and encouraging them with their nascent interest in flying was a common theme seen throughout the time spent at the 'Kidz' event. There was no 'pushy parent' attitude shown at all, just mums and dads nurturing their offsprings yearn to fly.

A random trawl through both pits throng and flying queue saw the Lawrence family being interviewed by Matt Takhar, with mum Kerry keeping an eye on the three pilots – dad Karl, Will and little Lewis, another 5-year-old. All proved to be very able pilots, even if Lewis needed the buddy box as a safety net with his Wot 4.

The family McAulay were a tad younger, yet no less enthusiastic. Clayton was enjoying the stick waving with his Yak 54 and a ubiquitous Cub, with sister Georgie waving a much battered and 'rescue' painted TwinStar. Brother Tristian hefted his balsa chuck glider; he has to start somewhere, after all.

In fact, family, flying and fun was the theme for the whole event. No question from one of the youngsters was ever deemed 'silly' and all those more knowledgeable souls, young

Despite model trouble at one point, Caitlin McInness proved her ability by passing her 'A' certificate over the weekend.

"Despite the large and expensive models on show the onus was on supporting the young pilots at every opportunity"

What an incredible shape! Luke Oliver rockets the Tomahawk 'Integral' past the pits before ripping up the sky with high 'G' aerobatics.

Ruby Hampson gives 100% concentration to piloting her Cessna 182. Dad is ready on the buddy box, but only as back-up.

Joe Hampson, already an international 3D pilot, brings sister Ruby's model back to the pits.

Hacking through at speed, Oliver Allcock's AT-6 was flown through a superb scale flight regime.

Allcock duo, Oliver and dad Michael, tussle with a reluctant engine in their Hangar 9 Sopwith Camel. It fired up eventually.

The mini-McAulays flaunt their wares. Never mind the models' battle scars, it was all about flying fun!

David Parnham's Vans RV-8 does its party piece. With flaps down and the motor whiffling it almost hovers. Superb control of this very pretty model.

and old alike, gave assistance wherever it was needed. Despite the large and expensive models on show the onus was on supporting the young pilots at every opportunity. Believe me when I say that it gladdened the heart to see such magnanimity and unselfish behaviour. Older pilots gave up the chance of flying to sort what to them were incidental issues, yet for the younger souls were sometimes huge hurdles. My wife and boss, Pat, said that she was utterly amazed at seeing such selflessness shown by all the adults involved. She looks with a different set of eyes than I and has seen the rampant 'me, me, me!' attitude of some club pilots. There was none of that seen at Langar.

LUNCHTIME ARRIVAL

Langar airfield is the base for 'Skydive Langar', a parachute and skydiving centre that can take anyone from first time test drops to fully experienced skydiving. As part of the festivities, they arranged for a quartet of skydivers to 'drop in', immediately alongside the flight line. You can imagine the excitement of many youngsters when the call was made to 'clear the runway!' and retreat to the pits area. Down they came, one flying the Union Jack, with two 'stacking' as they approached the grassed area right in front of the pits. Some of the kids were literally hopping up and down! With all safe and parachutes bundled they called in the patient crowd to wander over and have a chat about their sport and equipment. Needless to say, the youngsters led the charge! One skydiver was later seen peering into Azza Steven's big Tomahawk Aviation Red Arrows Hawk; he was as impressed with the model as we were with his drop.

Ali Wood plied us with her delicious cakes during the afternoon and a raffle was held later in the day, with a large amount of extremely generous prizes donated by the sponsors handed out to the sometimes-amazed youngsters. The support was incredible as was the quality of the gifts.

As the day eased into evening out came the 'night fliers' and mayhem commenced. Many have said that flying in the dark with just LED strips to orient you is simply asking for trouble and calling for instant re-kitting of the models involved. Nobody told the pilots, who simply got on with having a whale of a time! A total lack of fear, lightning quick reflexes and a huge sense of fun prevailed.

Just dropping in for a chat. We had a demo visit by four jumpers from the skydiving school.

Where would we have been without Ali Woods' delicious baking? Super sustenance, served with a smile.

Getting set for night flying mayhem. Great fun for all involved.

'Eeny, meeny, miny, moe...' Which ones do we fly next?

Winners all. The raffle prizes were varied and impressive.

COUNTING HEADS

Although it would have been simpler to just detail the young pilots and what they flew, I've taken the overview route to this incredible event. There were so many more pilots that I've not included and I can only apologise for not detailing more of them and their achievements. All deserved recognition but it would take most of the magazine to cover everyone's details in full. One common observation of ALL the young pilots involved was their confidence. Piloting a model, regardless of their ages, engendered total focus and a sense of purpose not always seen in the young.

SMOKETRAIL

The real story of this event is not what I've scribbled here but the satisfaction in seeing young pilots of all ages and ability flourishing under the assistance and generosity of all concerned in making the event the roaring success that it was. Whatever photos our editor uses from the event they can only show a fraction of the enthusiasm and energy we experienced. The final 'cherry on the cake' was learning that of the twenty invited young pilots (some already 'B' certificated fliers) three qualified on the day for their 'A' certificate and one for their 'B' rating. How's that for 'Bigging Up The Kidz!'

'Big Up The Kidz' Facebook page
#bigupthekidsfunfly2024 ■

YOUNG PILOTS ROLL-CALL

Joe Hampson	B cert.
Ruby Hampson	No cert.
William Lawrence	B cert.
Lewis Lawrence	n/a – not advised
Oliver Alcock	n/a
Teddy Millgate	A cert.
Teddy Ron Williams	A cert.
Michael Bull	n/a
Harrison Bull	n/a
Finn Hennessy	B cert.
Clayton Mcaulay	A cert.
Georgie Mcaulay	No cert.
Harrison Collins	B cert.
Caitlin McInnes	A cert.
Alex Ladell	B cert.
Alfie Sands	B cert.
Kai Seabrook	n/a
Kade Huggett	n/a
Alfie Haynes	A cert.

Top letter

For his letter this month Mike Roach wins a compact e455 multi chemistry AC input charger courtesy of Overlander Batteries: www.overlander.co.uk

LUCKY DIP

Getting a new issue of RCM&E is like a lucky dip: there are nearly always surprises waiting inside. September '24 was no different because in Dave Goodenough's 'Keep on Truckin' article there was one of my models! It remained anonymous, merely an example of how varnished plywood might have looked in the early 1930s. So, what is it?

There was a free plan by Kurt Schnittke in the 1958 Aeromodeller Annual of a little motor glider he called the 'Rossiten AS' that appealed to the 12-year-old version of me. 47 years later I used the plan as the basis for a 48" span R/C model that was published in Dave Boddington's AMI magazine and, more recently, a 72" enlargement that is still flying on sunny days. It is in fact the Gruse BG15/1, a German prototype designed and built by the inventive Herr Gruse. The plan and build details of both the 48" and 72" versions are available on my RC Groups/Forums/Mike Roach/Free Plans pages and although the boom of the pod and boom fuselage is no longer made of 1/32" sheet it follows the schoolboy-era plan pretty closely. The larger model flies on a 3S 1300 and has occasionally caught a thermal, much to my astonishment.

As for Dave G's experiments with replicating the Golden Age look, I much prefer to use a wood stain on bare balsa to get that pale honey-coloured look, or just the thinnest ply, clear varnished.

The photos were taken by Alan Butterworth.

Mike Roach

The little Rossiten I built was indeed from that AMI plan. My 'problem' in flying/crashing it was self-induced - not enough power and flying in the wrong conditions. The model, whilst a tad delicate, is a little gem and perfect for low power/minimal breeze conditions, although I will increase the rudder area and deflection a bit when I rebuild it.

Despite my own piloting mistakes, the model certainly raised quite a bit of interest, enough to make me want to repair the broken bird. Another to add to the winter repair session, methinks. Thanks for a somewhat 'different' model, Mike - more power to your drawing board!

Dave Goodenough

kcrozier@mortons.co.uk

LIPO KILLER

I would like to first take this opportunity to congratulate you and all the contributors for the excellent magazine that the RCM&E is to this day. My Dad bought the first copy. I read it in about 1960 and I still have an annual subscription.

The safe disposal of LiPo batteries is a subject that concerns me. There appear to be no commercially available dischargers available that will take the voltage down through the operational 3-volt operating minimum to the 0-volts value to make it safe for disposal and recycling.

I am fully aware of DIY car light bulb set ups but compared to the rest of the available R/C hobby equipment I find this method amateurish and potentially dangerous. Also, using the method of putting the battery in a bucket of salt water is frowned upon on as being dangerous, harmful to the environment and ineffective.

I find it strange that such an important issue isn't catered for by the R/C equipment electronic industry.

Chris Hodges

Thank you for your message, Chris.

Such devices are widely available, but most seem to be sold by drone specialists. They go under the rather charming name of 'LiPo Killers' so if you type that phrase into your favourite search engine then you should see a wide number of retailers selling them. Many sellers are also linked to eBay.

Most LiPo Killers appear to come equipped with XT plugs but adapters for other common LiPo connectors are widely available. EC type sockets fitted to LiPos can also be plugged into the XT plugs fitted to these devices.

I haven't tried using a LiPo Killer myself so I will publish your message in our All Write letters pages so that we can ask our readers for their experiences with them.

You'll also see LiPo StoreSafe Dischargers in the same search but these will simply drop your pack down to a safe storage voltage so care should be taken when ordering to make sure that you buy the correct device depending on your needs.

KC

Thank you very much for your speedy reply.

I was aware of the LiPo Killer and have checked it out online. It appears to be an XT60 connector soldered to a small printed circuit board which will be the discharge circuitry. My reservation to this unit is that it appears to have no means of monitoring the discharge process e.g. current and voltage state of the LiPo being discharged.

The reason for my concern about this aspect is the fact that there is a large range of LiPo batteries with regard to voltage and current ratings that will at some point require making safe and recycling properly. I look forward to seeing what other R/C modellers and drone operators think on this subject.

Chris Hodges

Well, what do you think, dear readers? If you have tried a LiPo Killer, then please let us know of your experiences and if it did the job. Like most LiPo related tasks this one is best done outside in dry conditions away from property. Some of these units appear to have a heatsink and some do not, so care needs to be taken not to leave them on a heat sensitive surface.

KC

BoB FILM MODELS

I attach three pages of info regarding the request in the All Write pages of October's magazine.

I used to frequent Mick Charles Models in the 1970s and Mick came down to the Isle of Wight as our Guest of Honour at a flying event my club organised. Many years later, in 1999, I interviewed Mick and wrote a piece about him and the first Scale World Champs which took place in 1970. The article was published in the now discontinued RC Model World.

Mick showed me a magazine article, probably RCM&E, from July 1967 and I copied the relevant pages which are attached. I hope it's useful to Mr. Siddall.

Maurice Dyer

Thank you for this information, Maurice, and the copies of the article which I have forwarded to Daniel. For any readers who may be interested in taking a deep dive into their back issues, I can confirm that the article in question, Battle of Britain Film Models, was indeed published in RCM&E in the July 1967 issue, page number 330. Back then the magazine was numbered by volume, not per issue, hence the apparently high number of pages.

KC

DUMAS LYSANDER

I saw on page eight of the October edition (Switch On) an article about the VMC Lysander. However, it isn't the first kit since the Keil Kraft series in the 1950s. Dumas still produce one and I built it around 2004. You can now get them from Sussex Model Centre.

Ian Nelson

Thank you for the reminder about Dumas kits, Ian. Distribution to model shops of that brand, including our friends at SMC, is done by J Perkins and I can see that the Lysander is listed on their website: **https://www.jperkins.com/products/5500836**

*At 559 mm wingspan the VMC kit (RRP £34.99) is slightly larger than the Dumas one (RRP £31.99) at 445 mm. Visit h***ttps://www.vintagemodelcompany.com/westland-lysander-22-balsa-kit** *and if you call them up side-by-side on screen then you can compare the two. You pays your money and takes your choice!*

KC

MORE FLYING WITH BIRDS

I have flown models on slopes over many years and have not yet seen any bird attack a model or even show much interest. However, as a full-size sailplane pilot I have seen many birds, some at quite close quarters, when slope soaring. They are most especially watchful in late Spring. Commonly they are buzzards which here in Northern Scotland often nest in the upslope areas of the hills.

They will escort a sailplane and if it comes too close to what they view as their nesting territory they will attack, typically by aiming for the point just behind the canopy where the shoulders of a real bird would be. They don't usually strike, tending to veer away at the last moment. As soon as the sailplane moves away, they will return to their normal behaviour of cruising alongside and watching our soaring, no doubt with a little scorn at our amateurish flying! The rest of the year they will happily soar with us, occasionally even slope soaring our wings, so I don't think they are much bothered, either by models or the full-size machines.

John Bisset

A couple of decades ago I was on holiday in Cornwall and one evening I found a suitable ridge facing the sea and the wind to fly from. Within a few minutes four seagulls were in formation with my model, two on each wing tip. This went on for several minutes, following my every move. A sublime moment!

I love to watch gulls in their natural habitat.

John Thompson

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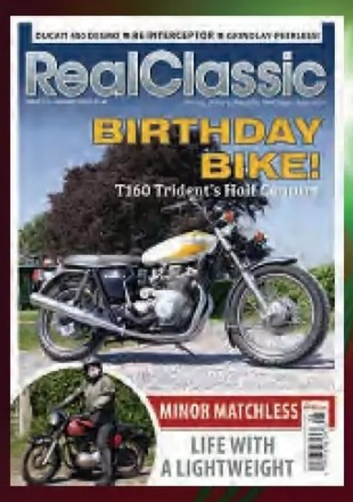

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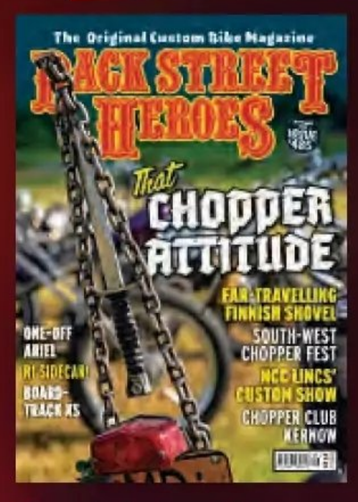

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Reto Senn from Switzerland flew and eventually won F4H with this absolutely stunning Vampire.

FAI SCALE WORLD CHAMPIONSHIPS – PART 2

Danny Fenton is back with his second report from the 2024 Scale World Champs, this time concentrating on the F4H class event

Words & Photos: **Danny Fenton**

The latest FAI Scale World Championships took place in Ploiesti, Romania from August 11 - 17, 2024.

BIENNIAL CHAMPS

It has been a few weeks since I returned from the FAI Scale World Championships in Romania and it is wonderful that even such a short period of time has managed to elevate the highs and almost erase the lows. So, I thought I had better jot down my thoughts before my dodgy memory deleted them!

I covered a fair bit of the logistical issues, with our models being delayed by customs, in my report in the last issue on the control line (F4B) event, so I won't go into that in any detail. Needless to say, we were forced to wait six days for our models to be released, but fortunately released they were and we were able to compete.

Robin DR400/180 of Matthias Hausmann on approach.

Lovely engine detail on Mika Jylha's Gloster Gamecock.

Demarchi Gianluca from San Marino was flying his Alenia M346-B.

From Spain we had Carlos Molina Navarro and his Goodyear FG-1D Corsair.

"Rumours were rife that several nations want to be at the British event to be held at Buckminster in 2026"

The Scale World Champs are held every two years and although they are often held in Europe that need not be the case. The USA has hosted three times in 1974, 1982 and 1992, Canada twice in 1976 and 1980, and South Africa in 1998. I do hope that the rumours of another trip to the USA come to fruition. The logistics of getting judges, officials, competitors (and their models) to attend from outside of the European continent is a problem and has meant that the event doesn't regularly frequent more distant shores.

Rumours were rife that several nations, not recently present, including Brazil, want to be at the British event to be held at the BMFA National Centre at Buckminster in 2026. While we were networking with the other teams, everyone was very excited to make the trip to the UK in 2026 and spots on all the teams will be very hard fought for. We were bombarded with questions about the facilities and what the weather would be like - that was a tough one...

I have had three modellers approach me, discussing building models for the British F4B team.

A COSTLY EXPERIENCE

Several countries present in Romania fielded full teams, with three pilots in F4B, F4H and the prestigious F4C, as well as a Team Manager to deal with the day-to-day running of the team. Sending a 10-person team is a very expensive undertaking and requires careful planning and co-ordination, not to mention fund raising to help offset the costs. We are very grateful to RCM&E for supplying our team polo shirts; they really were very smart and helped bond the team.

Although an honour to be asked to be part of a national team it is not a free holiday. Entry is around 650 Euros, add on to that the costs of flights, car hire, food and, the biggest of all, model shipping costs. We were fortunate that the BMFA paid the entry fees but the rest was funded by the competitors.

It is also worth stating that the event is very costly to run. Judges must be flown in from around the world, housed, fed and watered for around 10 days. This perhaps goes some way to explain the six hundred Euro entry fee. As a team member you can expect to pay around £2K to take part and this cost will vary with the distance; Romania is 1700 miles each way from the UK. Saying that, it was worth every penny.

STATIC JUDGING

There were 37 pilots in F4H, 25 pilots in F4C and 13 in F4B. That's 75 aircraft to be static judged

Janusz Malarski from Poland was flying a lovely SAAB T17 Supporter.

Also from Poland was Radoslaw Oleksy's Fokker Dr.1.

This lovely Piper PA-22 Colt was flown by Martin Erhardt.

over the course of the week, some being judged after their first-round flights.

In F4H and F4B the models are static judged from five metres, according to published 3-views and a set of five photographs. These are assembled by the competitor into a documentation set, typically in A3 format.

For F4C the competitor presents 3-views and as many photos of the full size as they like, trying to highlight areas that have been well replicated. Judging distance is three metres and the model is inspected up close for realism, surface finish and texture.

The judges will favour pictures over three views and often, if something isn't shown in a photograph, you won't get any credit for it.

TESTING TIMES

Friday afternoon saw many modellers take the time to run their engines and make test flights to make sure everything was in order. Team GB were obviously without their models so we could just watch and soak up the atmosphere.

The weather was very hot, with temperatures in the mid 30 degrees Celsius. The wind was very light and almost thermal in the way it alternated in direction.

Once out on the flightline with my camera it was interesting to see the different styles that competitors adopted. Some flew close in and others far away, some high, some low. All were seeking to find what the judges favoured. There are five flight judges and the highest and lowest scores for a manoeuvre are discarded. Each competitor gets three flights and the flight score is the average of the best two flights. This is added to the static score in a 1:1 ratio in F4C and a 2:1 ratio in F4H and F4B, favouring flying.

Registration opened on Saturday at 10am with an opening ceremony scheduled for 4pm. Some practice continued into the evening after this. The organisers were thrown a curve ball in that the previously agreed airfield access had been reduced and rather than have free use of the airfield from 10am we couldn't use the site until after midday each day. This made things difficult.

It was wonderful to be present and watch some of the world's finest modellers ironing out wrinkles in their schedules and making last minute manoeuvre substitutions based on the environment and runway dimensions. Some of the early types had hoped for the option of a grass runway, which was not the case. The

Ben Andrus from the USA flew this wonderful Grumman G164 AG CAT. Somebody likened it to something built from the parts bin, but it has bags of character.

Team GB's Nigel Nixon took no prisoners when interviewing pilots. His 'Nigel's Nuggets' were great fun. Seek them out on YouTube.

This colourful Pilatus Porter PC-6/B2-H4 was flown by Gody Fischer from the Swiss team.

Jirí Brand's lovely Aero Ae-145 flew superbly and featured an excellent sound system using transducers to resonate the airframe to generate the engines' sound.

An interesting subject, a Procaer F-15 'Picchio' flown by Italian pilot Dimitri Meazza.

Gunther Markus flew this nicely detailed Mitsubishi A6M5 Zero-sen.

grassed areas were strewn with holes and the ground was very uneven.

Most competitors made slight alterations to their engine settings due to the high ambient temperatures and the slightly different fuel provided by the organisers. Fuel is provided at cost and you must request the type you use when you enter the competition.

"In F4H the level of detail is less but it was sometimes very difficult to tell them apart from the F4C models."

For electric models, flight batteries, up to 100 Watt hours, are permitted as cabin baggage and so I took my 2 x 4000 mAh 4S cells in my camera bag. Our two F4H pilots, Nigel Nixon and Mat Dawson, ordered new cells to be delivered to Romania to avoid any issues as their packs were larger than the limit.

A FULL ROUND

A complete round of F4H was flown, which is unusual as it is often split into half a round of F4H, then a half round of F4C.

Lovely Yak 50 flown by German pilot Thomas Heimes.

Another unusual subject, the Arado 96 from Norwegian pilot Jan Lodner.

Jack Buckley from Team USA flew this lovely Fairchild 24R. He had an aileron fail, so he flew it with just one. His teammates joked that it flew so much better without one servo that Jack should disconnect the other one as well!

Thomas Heimes from Germany flew this impressive Yak 50.

Alessandro Frisoli from Italy flew this MB-339 P.A.N.

This CAP 21 was flown by French pilot Eric Decoulaevre.

The very sad demise of the Spanish team's Sopwith Pup.

Mike Barbee from the USA flew his 1/4 scale Hawker Fury based on the Jerry Bates drawings.

Melissa Law from Australia flew this lovely Decathlon.

With no models available to the GB Team, I put my RCM&E hat on and spent many happy hours networking, taking pictures and spending time with competitors and many of the support crews. I particularly enjoyed my time spent with Pascal of 'Pascal Pictures', who was supporting the Spanish team. We whiled away the hours, swapping notes and generally enjoying the lovely weather.

All the models were exquisite. In F4H the level of detail is less, but it was sometimes very difficult to tell them apart from the F4C models. The standard was incredibly high.

It was clear to me from my first walk around the hangar that Reto Senn from Switzerland was a very strong contender; his Vampire was stunning.

The other model that really caught my eye was the Albatross CIII from Vladimír Rynes Sr. of the Czech Republic. In fact, all three Czech F4H models were eye-catching. Completing the team was Vladimír Rynes Jr. with a scrummy Vans RV-7 and, finally, there was a simply beautiful Aero Ae-145 from Jirí Brand.

In F4C, David Law had made a new canopy for his Pitts Special, since the last event in Norway, where it had melted while his shipping crate sat on the apron in the Dubai sun! Andreas Luhti was flying his faithful Jungmann and Marc Levy was present with his ever-reliable Fouga Magister. Thomas Höchsmann was campaigning a stunning Pilatus PC-21 and Jan Doubrava flew a glorious T-28. The Stampe of German flyer Marcus Hausmann was delightful too. In fact, they were all stunning.

The finish on this Vans RV-7 was stunning, flown by Vladimir Rynes Jr. from the Czech Republic.

This picture epitomises the spirit of this event. Mika, the sole pilot from Finland, called for USA pilot Ben and vice versa. At one point Mika said to Ben, 'You realise we are competing against each other!' They just laughed and carried on. Two of the nicest competitors, they helped the GB Team as well. Both hope to be in the UK in 2026.

A regular visitor to the UK, Pierre Delrieu flew his Fi 156 Fieseler Storch with his usual aplomb.

This Albatross CIII flew superbly, piloted by Vladimir Rynes Sr. from the Czech Republic.

The Swiss team used this cunning device to blank out the setting sun.

The Albatross did a bomb drop as one of its tricks.

Team GB's Nigel Nixon flew his RAF Tucano.

Mat Dawson of Team GB flew his Blackburn Firecrest with gusto.

TEAM GB

Great Britain's F4H team consisted of Mat Dawson flying a nice Blackburn Firecrest. This aircraft is a small test model to work out the wrinkles before building a larger version. Our other team member was Nigel Nixon flying an RAF Tucano. Nigel's aircraft is based on the Phoenix Models 2.5 metre Tucano (Brazilian type) but he had to make a new cowl and change a fair bit before adding a plethora of detailing. Nigel is one of our best flyers and his calm and professional approach was a great asset to the team. It was a shame that Team GB didn't have an F4C presence but those modellers that qualified weren't available to attend.

The British team had chosen to stay in a wonderful hotel just North of Ploiesti. This was far cheaper than the ones being offered by the organisers and it was attached to a fabulous restaurant which cooked amazing ribs. I was in heaven - scale models to photograph all day, then great food and a nice Romanian beer in the evening to share with my teammates. We had some terrific evenings sat around eating, drinking and helping our Team Manager, Brian, complete his daily reports back to the BMFA. Life doesn't get any better than that!

F4H RESULTS

Nigel Nixon finished 17th and Mat Dawson 24th. This was out of a field of 37 pilots. Bearing in mind that Mat and Nigel only got two flights and no practice due to their models not being released until after the competition had started, it was an amazing achievement.

Unfortunately, I wasn't able to get pictures of many of the F4C models. This was because I was competing myself and I couldn't be in two places at once. However, I will finish off this saga with a quick look at the prestigious F4C class next month and show you some of the pictures I did manage to take.

As always if you want to drop me an e-mail, I can be reached at **cammnut@gmail.com** ■

Team GB manager Brian Seymour grabs a ride behind Pål Lindèn Anthonisen, the Contest Director.

CLASS F4H RESULTS

1.	Reto Senn	Switzerland	Vampire
2.	Alexis Levy	France	Dalotel
3.	Vladimír Rynes Jr.	Czech Republic	Vans RV-7
4.	Jirí Brand	Czech Republic	Aero Ae-145
5.	Demarchi Gianluca	San Marino	Alenia M346-B

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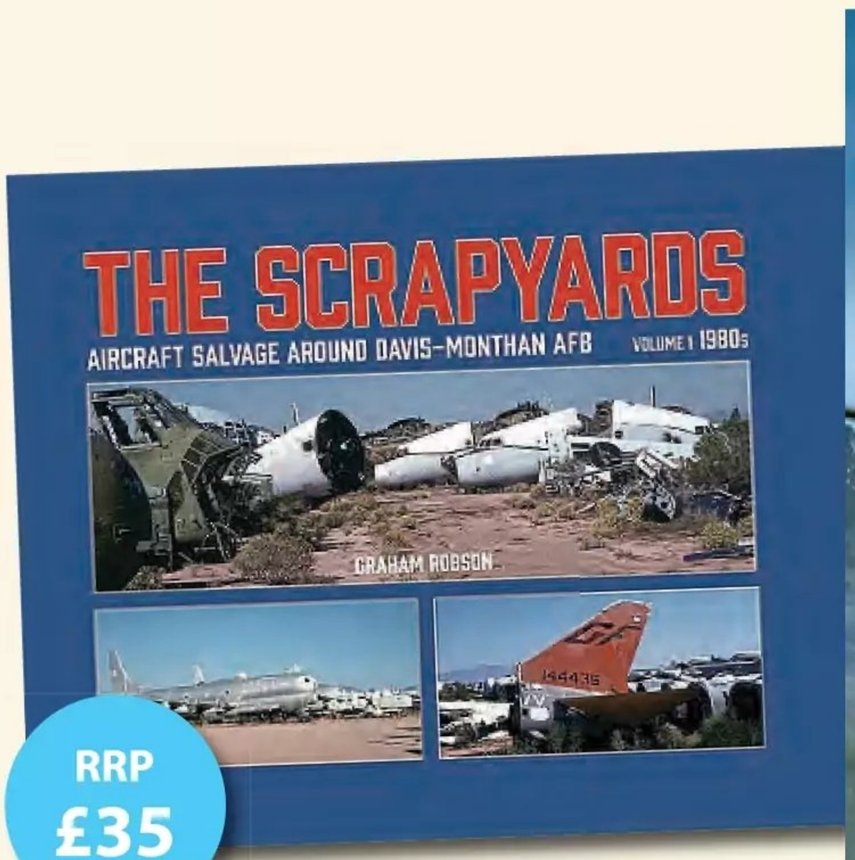

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Diary dates for the coming season

If you are planning an aeromodelling event over the next few months, then please send details - **up to 100 words maximum** - to Beth Ashby at: **Beth.Ashby@artichokehq.com**.
If you intend to visit any events listed, then please check with the organisers before travelling in case of any last-minute changes.

NOVEMBER

Nov 2 - 3

Wessex Soaring Association Slope Fly-in, held on first Saturday or Sunday of the month. Slopes approx. 5 miles east of Shaftesbury. Non-powered gliders and e-soarers welcome. BMFA insurance required. Contact Pete for more info at pete.carpenter12@gmail.com or call 07919 903742.

Nov 3

Retford Winter Swapmeet at Carlton-in-Lindrick Civic Centre, Oakham Drive, Carlton-in-Lindrick, Worsop, Notts, S81 9RE (what3words: blog.otherwise.nurse). Table setup from 8:30am till 9:15am, tables supplied. Pre-booked tables £7. On the day £8. Admission £3. Doors open 9:30 till 11:45am. Hot sandwiches, tea, coffee available. For further information and bookings contact Lee Davies on 07900 156803 or email lee.davies5@btinternet.com or visit www.rmfc.bmfa.uk

Nov 9

Tonbridge Gassers and Rubber Fanciers Indoor Flying at Kings Sport Centre, 601 Maidstone Road, Rochester, ME1 3QJ. From 6:30pm until 10:00pm. Free flight, Lightweight RC and 3D RC timed flying sessions throughout the evening. Contact Steve on 0208 942 5000 or Eric on 07763 398 416

Nov 17

Horam Swap Meeting at Horam Village Hall, A267, Horam, East Sussex TN21 0JE. Doors open to sellers 8.00am. Tables and one seller £8. Buyers' entry from 9.00am and £3. Refreshment including our famous Bacon Butties. For bookings (essential) contact Robert Richardson at rob.richardson@talktalk.net. What3Words: self.planting.brave.

Nov 24

Southern Counties Autumn Swapmeet, Mountbatten School, Romsey, Hampshire, SO51 5SY. One of the largest swapmeets in Southern England with over 50 tables. Please note revised times: sellers with a booking admitted from 8:00am. Buyers from 8:30am onwards. Noon finish. Admission only £4, under 16s free. First table costs £9 (including one admission), additional tables cost £5 each. Refreshments will be available. To pre-book tables only call Mike Stokes on 07702 742647 or for more details visit hmfa.bmfa.org/

DECEMBER

Dec 7 - 8

Wessex Soaring Association Slope Fly-in, held on first Saturday or Sunday of the month. Slopes approx. 5 miles east of Shaftesbury. Non-powered gliders and e-soarers welcome. BMFA insurance required. Contact Pete for more info at pete.carpenter12@gmail.com or call 07919 903742.

2025

JANUARY

Jan 11

Tonbridge Gassers and Rubber Fanciers Indoor Flying at Kings Sport Centre, 601 Maidstone Road, Rochester, ME1 3QJ. From 6:30pm until 10:00pm. Free flight, Lightweight R/C and 3D R/C timed flying sessions throughout the evening. Contact Steve on 0208 942 5000 or Eric on 07763 398 416.

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KEIL KRAFT GAUCHO powered glider, 44" wingspan - £40. Contest Kits Empress, 72" wingspan - £45. Buyer to collect. 01789 293209 (Stratford-on-Avon).

JUNKERS F13 ARTF KIT, 48" wingspan, electric, no Rx - £90. USKY 40 ARTF kit, American trainer colours - £45. Great Planes Nieuport XI, 36" wingspan, electric - £90. SC40 new and boxed - £30. Call Richard on 01793 694675. (Wilts).

TIGER MOTH DH85A from Premier Balsa products. Deluxe kit, 66" wingspan - £120. Guillows Spitfire, 27" wingspan. R/C, C/L or rubber - £35. Buyer to collect. 01789 293209 (Stratford-on-Avon).

AIRSALE AUSTER AOP9 airframe - £100. Isaacs Fury from Flying Scale with OS40, both unused - £100. Bernard French Fighter prototype with OS engine, unflown - £200. ASP70 four stroke engine - £100. Call Geoff on 01483 283268 (Surrey).

SPITFIRE 65" wingspan, motor, speed controller, all servos and retracts - £100. 07964441912 (Worcs).

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RCM&E

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Next issue

HAWKER FURY
Our pull-out Pro-Plan for the January issue is by Lorenz Müller, for a 48" stand-off scale electric biplane.
When Lindsay Todd's Skywriter was published in 2013 the thought of a semi scale biplane for everyday use tempted Lorenz, but he wanted his version to closely resemble a full-size aeroplane. So, he set out to draw a stand-off scale Hawker Fury based closely on the aerodynamics and construction of the Skywriter which turned out to be about 1/8th scale.
Lorenz decided on the Spanish version mainly because it has a simple undercarriage that can be approximated by a strip of aluminium, plus it has an attractive paint scheme. The Fury is of conventional mixed wood construction.

BEST OF THE BEST
Next issue sees the final part of Danny Fenton's story from Romania reporting on the Scale World Championships. Danny shows some of the models from the F4C class, which is the pinnacle of scale radio control modelling. Modellers are required to build perfect scale replicas of full-size aircraft, keeping to a 15 kg limit (less fuel). The models are judged by a panel of three judges at three metres. The aircraft is compared to three view drawings and photographs of the full size. Each model can take up to an hour to judge at this level. There were 25 competitors in the F4C class and all the models were stunning, as you would expect at this level of competition.

MARVELLOUS MODELAIR
There's something undefinable about Old Warden airfield and The Shuttleworth Collection and like so many others Dave Goodenough wishes he could put his finger on it. Driving in through the 'new' entrance and the long access road lifts the spirits, increases the heart rate and the day seems that much brighter. Arriving on a fine late July day and parking close by the R/C runway entrance, Dave stumbled around the sea of cars disgorging many objects of aerial beauty. So, what did he see, who did he trip over and what modelling delights blessed his camera? Tune in next time to find out.

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SPEC CHECK:

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24

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3mm LITE PLY F13

3mm LITE PLY

NOSE BLOCK FROM
12.5mm BALSA

SMALL AMOUNT OF NOSE
WEIGHT WILL BE NEEDED
TO BALANCE THE MODEL

F1

F2

SAW CUTS AT REGULAR
INTERVALS TO AID
BENDING OF TRIANGLE

3.2mm HARD BALSA F2

300

F4

3.2mm HARD BALSA

TEMPLATE OUTLINE OF
REAR UNDER SHEETING
FROM 3.2mm SOFT BALSA

20

16

F1

3.2mm
HARD BALSA

F11

3mm LITE PLY

F12

AIR IN

VAC FORMED
AIR INTAKE

SP2

F5

6mm SQ BALSA
FRAME STRINGERS

3200-4000mAh 4S Li-Po

SP3

F3

F4

AIR IN

VAC FORMED
AIR INTAKE

F15

SP2

3.2mm HARD BALSA

F1

16

12

F11

3mm LITE PLY

SP2

6mm SQ BALSA
FRAME STRINGERS

3200-4000mAh 4S Li-Po

SP3

F7

F6

SP2

.2mm HARD BALSA

F14

W3

W2

25mm WIDE WING
BANDAGE OVER TOP WING
JOINT ONLY MADE FROM
50g GLASS CLOTH AND
SECURE WITH EPOXY OR
PVA GLUE

W1

OUTLINE OF
FAN AIR
INTAKE

W2

W3

FAIRING MADE FROM
12.5mm BALSA

BALA

SCALE
INCHES

GR7 HARRIER

BY TONY NIJHUIS

No. OF SHEETS: 1 OF 2

First published in RCM&E December 2024

FP1

F9

F8

'X' DENOTES TACK GLUE WITH HOT GLUE TO TOP AND BOTTOM TO SECURE THRUST TUBE TO FAN UNIT

F14

F13

FP1

5mm x 3mm TOP AND BOTTOM OBECHE SPAR

W4

F4

3.2mm HARD BALSA

F3

3.2mm HARD BALSA

3mm LITE PLY F10

CUT OUTLINE FOR
THRUST TUBES MADE
FROM A3 SHEET
140-MICRON THICK
ACETATE

TEMPLATE OUTL
REAR WING TOP
FROM 2.4mm SOF

SCALE
MM

100

200

3.2mm HARD BALSA

F1

8mm WIDE FLOCKED MYLAR
HINGE (SLEC)
SECURED WITH CYANO

LINE OF
FAIRING
FT BALSA

5mm MED BALSA

OUTLINE OF THRUST TUBE

F11

F12

8g 1.2kg/cm
SERVO

8g 1.2kg/cm
SERVO

NOTE; THE LEADING EDGE
IN FRONT OF THE THRUST
TUBE TO BE PROFILED TO
SMOOTH LEADING EDGE

300

400

.2mm HARD BALSA F14

BALANCE POINT
195mm

OCKED MYLAR
(SLEC)
ITH CYANO

5mm MED BALSA

5mm MED BALSA

FRONT VENT FAIRING
MADE FROM 12.5mm
BALSA

END VIEW

SIDE VIEW

3.2mm HARD BAL
LEADING EDGE

SANDWICH OF 5mm &
1.6mm BALSA TO
CONSTRUCT 6.6mm
LEADING EDGE

RAYDOME MADE FROM 22mm
PLASTIC PIPE AND SHAPED
BALSA END

8mm WIDE FLOCKED MYLAR
HINGE (SLEC)
SECURED WITH CYANO

W10

400

500

5mm x 3mm TOP AND
BOTTOM OBECHE
SPAR

W4

5mm x 3mm TOP AND
BOTTOM OBECHE
SPAR

W5

1.6mm SOFT/MED
BALSA SHEETING
TOP AND BOTTOM

W6

W6A

AILERON HORN
SUPPORT BLOCK
FROM SCRAP BALSA

6g 1kg/cm
SERVO

5mm x 3mm SERVO
TRAY SUPPORT
FRAMEWORK

W7

5mm SHEET BALSA
TRAILING AND
AILERON LEADING
EDGE

W8

W9

12

16

20

600

700

VAC FORMED CA

WOOD STOCK

STRIP
12.5mm SOFT BALSA TRIANGLE, 1 OFF
9.5mm SOFT BALSA TRIANGLE, 2 OFF
5mm x 3mm OBECHE, 4 OFF
6.5mm HARD BALSA STRIP, 1 OFF

SHEET
1.6mm - 100 x 900 SOFT BALSA, 7 OFF
2.4mm - 100 x 900 SOFT BALSA, 1 OFF
5mm - 75 x 900 SOFT BALSA, 2 OFF
12.5mm - 75 x 450 SOFT BALSA, 1 OFF

CNC PACK, 1 OFF

20

16

NOPY

TOP SHEETING FROM
SCRAP 3.2mm BALSA

SP3

3mm LITE PLY BATTERY
SUPPORT. BATTERY
SECURED WITH VELCRO
STRAP

FS2
3.2mm MED/SOFT BALSA
TO △

F4

F5

AIR IN

F3

SP2

FS1
O/SOFT BALSA
TO ▲

3250-4000mAh 4S Li-Po

FAIRING MADE FROM
12.5mm BALSA-SEE
DETAIL

BALSA TRIANGLE

SP1

5mm MED BALSA

m HARD BALSA
G RIBS

W10

W9

EXTERNAL
SOLARFILM
HINGE

W8

W7

W6

W6A

GR7 H

BY TO

No. OF SHEETS: 2 OF 2

16 12

ETING FROM
.2mm BALSA

SP3

3mm LITE PLY BATTERY SUPPORT. BATTERY SECURED WITH VELCRO STRAP

F6

F7

MICRO
3 CH RX

60-80A ESC

W2

SHADED AREA INDICATES FS2
3.2mm MED/SOFT BALSA
REAR FUSELAGE SIDES

SP2

3250-4000mAh 4S Li-Po

3D PRINTED
VENTS

FS3

FAIRING MADE FROM
12.5mm BALSA-SEE
DETAIL

SP1

AIR IN

AIR IN

EXTERNAL
SOLARFILM
HINGE

HINGED BATTERY ACCESS
HATCH KEPT CLOSED
UNDER SUCTION PRESSURE
FROM FAN

W7

V6

HORNIER WING TIPS MADE
FROM 12mm BALSA

SOFT 12.5mm BALSA
TRIANGLE

GR7 HARRIER

BY TONY NIJHUIS

No. OF SHEETS: 2 OF 2

First published in RCM&E December 2024

SCALE
INCHES

REAR WING TOP FAIRING
FROM 2.4mm SOFT BALSA

2.4mm SOFT SHEET BALSA

F14

F13

VS1

PROTOTYPE DESIGN USED-
POWERFUN 70mm 4S
DUCTED FAN UNIT AND
60A ESC

FP1

3D PRINTED
VENTS

F8

SOFT 12.5mm BALSA
TRIANGLE

F9

5mm MED BALSA

DUMMY ROCKET LAUNCH
PODS, SHAPED FROM
12.5mm BALSA

FIN PARTS FROM
5mm MED BALSA

80°

ANHEDRAL ANGLE
TEMPLATE FOR
TAILPLANE

W1

TEMPLATE OUTLINE OF
UNDER SHEETING FROM F6
BACK TO F12 FROM 5mm
BALSA

ANHEDRAL ANGLE
TEMPLATE AGAINST
OUTSIDE FACE OF
W1

86°

ANHEDRAL TAILPLANE
BRACE FROM 1.5mm BIRCH
PLY

F15

3mm LITE PLY
INTAKE RING
SUPPORT

F4

CUT OPENING ON
FRONT FACE OF
VAC FORM AIR
INTAKE

F8

6mm LITE P

SCALE
MM

100

200

W6A

GR7 B
BY TO

No. OF SHEETS: 2 OF 2

SPECIFICATION:

MOVEMENTS - ELEVATOR 15mm - 20% EXPO
AILERON 10mm - 20% EXPO
WEIGHT - 46oz (1.3kg)
WING SPAN - 35" (895mm)
LENGTH - 42.5" (1093mm)
WING LOADING - 22oz/ft² (6.4kg/m²)
3 FUNCTION MICRO RADIO
POWER - 4S 3200-4000mAh LI-PO
FAN UNIT - 70mm 4S EDF

VAC SET, CNC/WOOD PACKS, PILOT AND SCALE VENTS AVAILABLE FROM www.tonynijhuisdesigns.co.uk

WING SEAT WS1 FROM 3.2mm HARD BALSA

12.5mm BALSA TRIANGLE BATTERY PLATE SUPPORT

F7 3.2mm HARD BALSA

PLY

300

400

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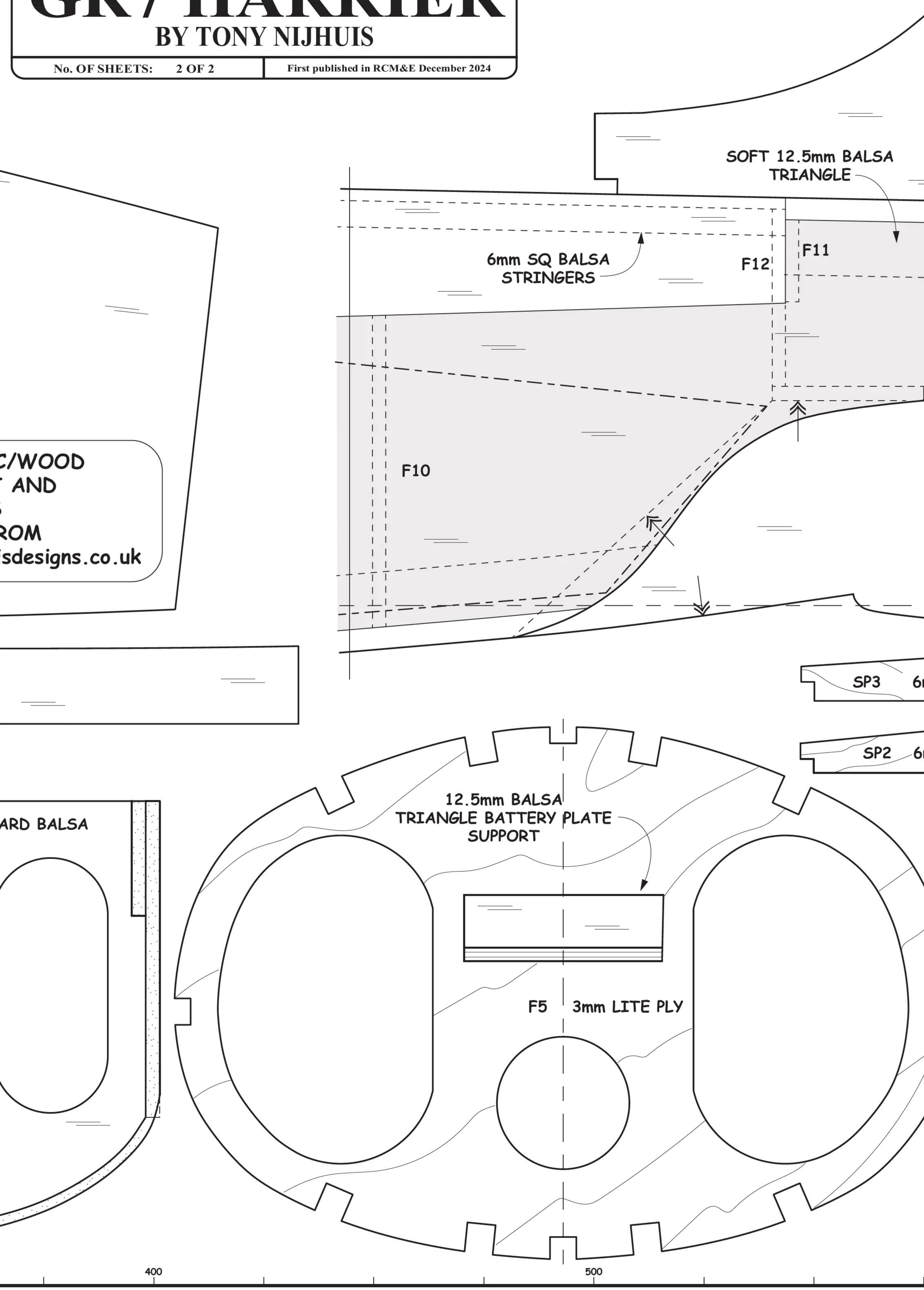

5mm MED BALSA

80°

ANHEDRAL ANGLE
TEMPLATE FOR
TAILPLANE

5mm MED BALSA

SERVO

SEE TEMPLATE OUTLINE
OF REAR UNDER SHEETING
FROM 3.2mm SOFT BALSA

SIDE PROFILE FUSELAGE
SHEETING FROM 5mm
BALSA TO

FP1
6mm LITE PLY

SP1 6mm LITE PLY

mm LITE PLY

mm LITE PLY

F6 3mm LITE PLY

12

16

20

600

700