FREE PRO-PLAN

AEROMODELLER'S AIRBRUSH
IWATA HI-LINE REVIEWED

QUICKIE GHOST
DUAL PURPOSE R/C MODEL

RCM&E

VOL.63 NO.11 NOVEMBER 2020 www.modelflying.co.uk

BARKSTON BEAUTIES
ON THE SCALE FLIGHT LINE AT THE NATS

LOS TO FPV
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WELCOME

Editor: Kevin Crozier. MyTimeMedia Ltd. Suite 25S, Eden House, Enterprise Way, Edenbridge, Kent, TN8 6HF
kevin.crozier@mytimemedia.com

Well, it looks like we've seen the last of a pretty fine Indian summer here in the UK. I've already started donning my Wellies every time I go flying and no doubt I'll be transitioning from T-shirts and maybe the odd lightweight jumper to a warm fleece - and probably my thick flying coat - sometime soon. But, hey, this is the November issue after all, so it's only to be expected.

Pretty soon I'll need to start thinking about which models I am going to fly over the winter, especially when the grass gets a bit long to operate any of my aerobatic models fitted with spats. For quite a while now a fair number of my flying buddies have been overcoming less than perfect ground conditions by turning to bush style models fitted with over-large wheels, so last winter I thought I should give one a go and see what I was missing. My steed of choice is the FMS Kingfisher, and a fine example of the type it is too. But I have to say that by the time I got my act together earlier this year we had missed most of the worst of the winter flying conditions and apart from splashing through a few soggy bits of grass the Kingfisher didn't really get much of an outing. And no disrespect to her, and those of her ilk, but she's not really cut out for much in the way of aerobatic flying, so I'll be supplementing her with one of my smaller aerobats that I can hand launch, and probably a foamy for ease of wiping down after a muddy flying session.

Another type of aircraft that has been sadly missing from my regular flying fleet recently are R/C helicopters. Carpal tunnel surgery to both hands a couple of years back meant that although I was soon able to fly my aeroplanes quite comfortably, the then restricted movement from my left thumb meant that operating the rudder/tail rotor stick of my transmitter was severely compromised. And whilst you can fly an aeroplane okay on just ailerons and partial rudder, it's a different story with a heli, where good tail management is a must for getting the model safely into the hover - and back down again!

So, my poor rotary machines have been gathering dust of late, but there's really no excuse now and I really must get at least one flying again. I tend to favour small electric models for my heli fix as they can easily be slid into the back of my estate car without taking up any of the room that I need for the obligatory two fixed wing models that I take to my local flying fields.

Wish me (or my left thumb!) luck. I think I'll need it after such a long lay-off!

With the onset of the colder weather many modellers' thoughts turn to decamping to their sheds, garages and spare rooms to start their winter building projects. In this issue we are following up the building room theme with another selection of readers' workshops, which starts on page 83.

If you are looking for a simple project to get you started then how about pinning out our free Pro-Plan for this month, the Quickie Ghost? This easy to build, classically styled high winger is perfect for some simple, relaxing fun flying on three channels - or wait until the December issue to find out how you can equip her with some real retro style radio in the form of a Galloping Ghost actuator!

Model Magic this month details Martin Fardell's glamourous Empire era Shorts Syrinx airliner, and we also have two other scale model roundups for you to enjoy of two completely different aircraft - an all too rarely modelled Westland Whirlwind twin fighter and an even rarer replica PIK-5C training glider.

Other features in this issue include charger, airbrush and EDF jet reviews. Plus, we have some well proven advice on how to take your first tentative steps into the eye-popping world of First Person View flying. I also dip in with my own recollections about a pair of well flown models - but do I keep them or is it time to pass them on?

All this, plus reports from several of your favourite columnists should, I hope, make for a very entertaining read. Until next time...

Happy Flying!

Kevin Crozier

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STAFF PICK

This months staff pick is the Seagull 80 inch wingspan De Havilland Chipmunk

Seagulls model comes in either a RCAF Trainer Scheme or Army Air Corps Camouflage.

At £344.99 its great value for 80 inches, and is sure to turn heads at any scale day!

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CONTENTS

RCM&E
RADIO CONTROL MODELS & ELECTRONICS | VOLUME 63 ISSUE 11

ON THE COVER

Photo: Alex Whittaker

Alex, our roving reporter, still finds himself in lockdown and without any of the usual shows and model flying events to visit he consoles us with his ringside view of all the comings and goings at an imaginary Scale Nationals competition, which is held is normal times at RAF Barkston Heath.

regulars

reviews

features

free pro-plan

columns

SWITCH ON

TUNDRA & SCOUT

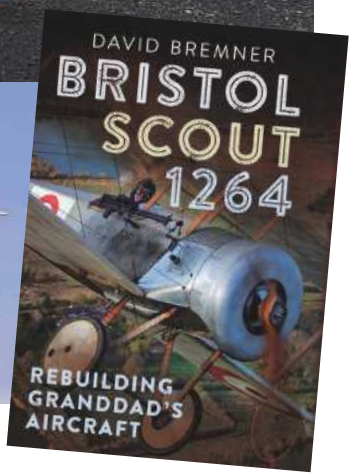
David Bremner sent in the following message, but when we checked his pictures we realised that the 'larger models' that he refers to are full size aircraft! We also remembered that the Bristol Scout is a TV star...

We'll let David start from the beginning:

"I am an infrequent model flyer but enjoy flying foamies when I can. Most of my aviation is done on larger models like the Sherwood Scout - and the attached photos show why I had to buy a Durafly Tundra. Each has a trick up its sleeve. The Tundra can reverse, which the Scout can't, but the Scout can fold its wings, which the Tundra can't!

Incidentally, the other aircraft I fly is my Grandfather's Bristol Scout, which he flew in 1916. We found the stick, rudder bar and magneto in his workshop after he died, and we've rebuilt an exact reproduction around those three parts. She is the only airworthy example of a Bristol Scout Type C in existence."

Kev Gregory / Shutterstock.com



Some readers will recognise the WW1 biplane as the subject of a very watchable documentary called 'Bristol Scout: Rebuilding History', which follows David and his team's 14 year journey to build a replica Scout based around just those three original parts, and which culminates at the site in Greece from which the orginal flew during the Gallipoli campaign over 100 years ago.

The film is still available to purchase on DVD or to stream via Vimeo:
www.asa-uk.tv/films/bristol-scout-rebuilding-history/

David has also written a book about his aircraft, 'Bristol Scout 1264, Rebuilding Granddad's Aircraft', which comes with a rather special bookmark!

"I have a book which, if you buy it from me, comes signed and with a bookmark from a piece of the original linen covering, complete with castor oil! The linen had to be replaced after only four years as it had become brittle due to UV degradation. I have one modeller friend who has taken a larger piece and is threatening to use it to cover part of his 1/4 scale model...

The book can be bought on Amazon (without the bookmark), but the copies I sell are a bit more special and we charge £25 plus P&P.

I also have digital copies of a set of drawings of the Scout, which I can let modellers have. They are based on the original manufacturer's drawings, so are much more accurate than most."

If you are interested in buying either a signed book or would like to take up David's kind offer of copies of the Scout drawings, perhaps for building your own model, then you can contact him at:
david.s.bremner@gmail.com

CAA EXEMPTION REPLACED

Faced with the ongoing issues raised by Covid it may have slipped many UK readers minds that CAA General Exemption E4972 expired at the end of June. This enabled members of the UK's model aircraft associations, namely the BMFA, SAA, LMA and FPV UK, who hold appropriate achievement certificates (such as the BMFA 'A' and 'B' certificates), to be exempt from the need to pass the Civil Aviation Authority's online Competency Test. Holders of the BMFA Registration Competency Certificate were also exempt.

E4972 has now been replaced by ES5094, which expires at the end of December 2020. It contains exactly the same exemptions but with the requirement that 'remote pilots' must carry copies of the relevant documents when 'making use of this exemption', i.e. when they are flying. To fully comply you need to carry copies of your membership and award certificates, plus a copy of ES5094, which you can view (and copy) here: **http://publicapps.caa.co.uk/docs/33/ORS4No1395.pdf**

It does not say whether paper or electronic copies are necessary but the easiest way to do this, if you have one, would be to have copies available in an easily accessible place on a smartphone. However, if you are in any way unsure then the best thing to do would be to carry paper copies when you are flying.

After discussing this issue with the BMFA we understand that the guidance which the CAA provided to the Police included images of the Association's membership cards and the BMFA membership certificates, all of which carry evidence of members' competencies. So, a copy of ES5094 and production of your BMFA membership certificate or Vectis card should suffice.

Get in touch...
kevin.crozier@mytimemedia.com

BALSA SUPPLIES

As the demand for green energy increases one of the staple materials used by aeromodellers the world over has come under threat - balsa wood

Besides model aircraft, our favourite lightweight wood is widely used in the construction of wind turbine blades, the composite construction of which may contain large quantities of balsa.

Although the increasing demand for balsa wood from the wind turbine industry has been known for some time, the topic was highlighted again recently when Ian Hull, a Director of SLEC, one of the UK's most popular suppliers of balsa and other modelling woods, placed an update on the situation, as it affects their company, on the SLEC website:

Important information regarding future balsawood supplies

The Papua New Guinea mill that we have been buying from for over 30 years has new owners and at the moment there is no agreement for future supplies.

Since being aware of these changes I've been in touch with all the plantations and mills around the world that I know of for fresh supplies, unfortunately the Chinese have beaten me to it offering greatly increased prices over market value to meet the big demand in core or end grain production that's used in the building of wind farm blades.

The few suppliers that have answered my enquiry are quoting prices that would increase the balsa raw materials by around 150%.

We still have some balsa raw material in stock but mostly in a harder grade.

You can read Ian's statement in full here:

https://www.slecuk.com/important-information

But please note that it may be subject to change at any time.

RCM&E MODELS

SLEC also supply two model companies who make wood packs using plans published in RCM&E, Tony Nijhuis Designs and Sarik Hobbies. We asked both companies for their comments:

Tom Stephenson of Sarik said, "*I've been aware for a few weeks now and we have about a month's worth on some sizes and more on others but I'm liaising with all sorts of suppliers from the US to China.*"

Tony Nijhuis told us, "*Currently our products are unaffected, and we have sufficient balsa supplies to see us through October and into November. Beyond this stage we will concentrate more on the laser cut CNC packs and, in particular, the plywood parts, which are unaffected. Moving forward into the future, we are confident the balsa wood supply chain will stabilise, albeit prices will rise significantly. We also believe that modellers will want to continue building balsa wood kits and scratch-built models irrespective of the price but appreciate that building a model will become more of a luxury rather than the norm. However, we'll still be here and carrying on serving the modelling fraternity, no matter what.*"

Tony also offered this general view of the situation, "*The future supply of balsa wood supplies to the modelling industry is unclear at the moment but we are in a situation of demand outstripping supply. The short-term effect of this will inevitably push the price of wood up as supply becomes scarce. However, we would hope the producers will meet the demands accordingly, but this is likely to take some time. Notwithstanding, there will always be a supply of balsa wood to aeromodellers in some form or another, so my advice is to keep calm and carry on building - and enjoy this great hobby of ours!*"

GOING PLACES

Due to the continued disruption caused by the Coronavirus many model flying events have been cancelled, so this month's Going Places listing is even more truncated than in the past few months, especially as there are less indoor meetings to visit now due to Covid restrictions.

If you do intend to visit any of the events listed below then please check with the organisers before travelling in case of any last-minute changes or cancellations.

OCTOBER 2020

October 24

Jacobs Well Swapmeet at Jacobs Well Village Hall, Jacobs Well Road, Guildford, GU4 7PD. Hall opens for sellers 8:15am, start time 9am. Tables must be booked in advance. Tables £7 each to include one entry. Buyers £2 per person. Please contact Martin Thompson on 07401914341 or email Jacobswellswapmeet@hotmail.com

NOVEMBER 2020

November 1

Wessex Soaring Association Slope Fly-In, first Saturday or Sunday of the month. Various slopes approx. five miles east of Shaftesbury. Non-powered gliders and e-soarers permitted. All welcome but must have BMFA insurance. Contact Pete Carpenter for more details, email pete.carpenter12@gmail.com or call 07919 903742.

DECEMBER 2020

December 6

Wessex Soaring Association Slope Fly-In, first Saturday or Sunday of the month. Various slopes approx. five miles east of Shaftesbury. Non-powered gliders and e-soarers permitted. All welcome but must have BMFA insurance. Contact Pete Carpenter for more details, email pete.carpenter12@gmail.com or call 07919 903742.

MARCH 2021

March 14

Horam Swapmeet at Horam Village Hall, Horam, East Sussex, TN21 0JE. Hall open for sellers at 8:15am. Start time 9am. Tables must be booked in advance. Tables £7 each to include one entry. Buyers £3 per person. Please contact Martin Thompson on 07401 914341 or email horamswapmeet@hotmail.com

March 21

Southern Counties Spring Swapmeet, Mountbatten School, Romsey, Hampshire, SO51 5SY. From 8:30am till noon with over 50 tables. 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. More details at hmfa.bmfa.org

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All of our Overlander LiPo batteries are designed with optimal performance in mind. We always work to maintain the longevity and reliability of our products.

Our LiPo batteries are manufactured using the superior stacking method; this provides dependable capacity and consistent power. They come equipped with high quality silicone leads that are able to minimise resistance and sustain high currents. Great value without the loss of performance!

All Overlander pack cells are fully matched in internal resistance, voltage and weight before assembly. This stringent matching process makes for exceptional results both competitively and professionally. All our LiPo packs are fitted with JST-XH balance plugs for keeping your batteries healthy and charged correctly, and select packs are now fitted with Deans, EC3 or XT60 type plugs for instant use with popular wiring setups and models.

ENELOOPS

Our Panasonic Eneloop receiver and transmitter packs are the obvious choice for your RC model.

Alongside economic benefits, with their recyclable and environmentally friendly design, they also have low self-discharge, higher voltage levels, and can operate in low temperatures. They retain 70% of their even after 5 years and are provided pre-charged, with energy taken from renewable energy sources. All of our Eneloop battery packs are constructed to Overlander's high standards by trained UK operatives. longer flight time and superior performance.

CHARGERS

Never find yourself without power with the Overlander charger collection!

We have chargers that are adapted to a full range of chemistries (LiPo, LiHV, LiFe, LiIon, NiMH, NiCd and Lead Acid) making them suitable for practically any battery type. From the simple RC-3S and NX-20, to the more complex RC-D100 V2, we can provide for enthusiasts new or experienced. All of our chargers are fully compliant with the requirements of the European health, safety and environmental protection legislation, and meet all of the RoHS requirements.

MOTORS

Built specifically to optimise the performance and power of your aerodynamic applications.

Built using only the highest quality components, from Neodym magnets, to special high temperature wire for windings, these motors are designed to Overlander's stringent and demanding standards. With the use of advanced CNC machine tools, our manufacturers have been able to achieve the unique Overlander motor design that offers minimum weight and enhanced heat dissipation. They are unmatched in quality and value, and the performance speaks for itself!

GET IN TOUCH

www.overlander.co.uk

support@overlander.co.uk

RC-D100V2

AC/DC DUAL BALANCE CHARGER, DISCHARGER & POWER SUPPLY

CHARGE RATE 10A

DC POWER 100W x2

AC POWER 100W

The RC-D100V2, is adapted to a full range of chemistries (LiPo, LiFe, LiIon, NiMH, NiCd and PB) and comes with a comprehensive set of leads making it fully-prepared for practically any battery type. It is capable of operating as a power supply, with the maximum output of 100W to help hobbyists power their DC equipment.

The RC-D100V2 comes with a power lead for mains, two XH balance boards, two charging cables, two XT60 charging cables and a power cord for AC. It has been created with automated safety precautions, including a charging current limit, capacity limit, temperature threshold and processing time limit.

This charger is also compatible with both iOS and Android smart phones via a built in Bluetooth, making operation easier than ever. While this charger is specially designed to cater for the higher end user, with the aid of a simple-to-use interface and a complete set of instructions, this charger is by no means limited to experts.

COMPATIBLE WITH:

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Discharge Current Range	0.1-2A x 2	
Current Drain for Balancing	Max. 300mA/cell	
Trickle Charge Current	50mA-300mA & OFF	
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LiPo/LiFe/Li-Ion/LiHV Cell Range	1-6S	
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"The Short Syrinx comes from the days of Empire, elegant foreign travel, and the era of the flying boat"

IMPERIAL ELEGANCE

Alex Whittaker looks back on a majestic BMFA Scale Nats competitor, the Short L.17 'Syrinx'

words & photos » Alex Whittaker

In this modern era, it is hard to think that one day the British had an Empire that spanned the globe. It is also difficult to imagine how the British extended their communications with the technology available to them. However, they did.

The Short L.17 comes from the days of Empire, elegant foreign travel, and the era of the flying boat. Her immediate forerunner was the Short S.17 Kent. This British four-engine, 15 seat biplane was designed as a luxury flying-boat airliner. She was intended to meet the Imperial Airways requirement for a type with a greater range than the existing Scipio Class Short Calcutta. With this bloodline the Kent was essentially an enlarged Calcutta, with four engines. In turn, the Short L.17 all-metal biplane airliner was based on the Kent, but was a land plane, and her capacity was far greater, at 39 seats. Her main function was to supplement the Imperial Airways HP 42 fleet and she was designated for scheduled flights from Paris to London.

Two examples of the class were built, Scylla and Syrinx. They were built side-by-side in

A luxurious trip to Paris in the 1930s might have involved a jaunt in this beauty.

This is the closest you and I will get to seeing a real one in the air.

Short's seaplane works at Rochester. Shorts had concentrated on seaplanes, so there was no airport at their works. This meant that the completed aircraft had to be stripped down, transported by land to Rochester Aerodrome, and laboriously reassembled out in the open, there being no building big enough to accommodate it. This work took place over the winter, so one can imagine the hardship inflicted on the assembly staff.

The prototype first flew on the 26 March 1934. The L.17 required four crew to support her 39 passengers. Her wingspan was 113 feet and she was powered by four Bristol Jupiter air-cooled radials, each developing

Syrinx looks absolutely amazing in the air.

Syrinx is impressively fussy from every angle. Character by the yard, charm by the bucketload.

555 hp. Later power plants included the fitting of four Pegasus XC engines. They were designed for economical cruising in some luxury, rather than record-breaking speed. In service Syrinx was blown over by a side wind at Brussells and needed extensive refurbishment. Her sister was written off in a gale in Scotland and later Syrinx was sent to scrap. These were the last of the large biplane airliners operated by Imperial Airways, and both had left service by 1940.

THE MODEL

Noted Lord of Scale, Martin Fardell is one of our very finest aeromodellers, with an eye for the unusual and the quirky. Martin also has a wry sense of humour, which I think can be detected in many of his flying scale models. Readers may remember one of his earlier models that had a neatly munched ham-sandwich on the Navigator's desk. Maintaining scale accuracy to the last, one could note the scale outline of the Nav's gnashers, clearly visible in the white bread. Even the accompanying mug of coffee was still half full. So, when it comes to Martin's magnificent Syrinx, we can guess that she has been chosen as a much for her playfulness as her good looks.

Left: Martin chose electric power. Four E-max motors draw about 300 watts each on 10" x 8" electric props.

"This is a scale model aircraft that makes a bold statement"

Pure 1930s kitsch.

The first thing to note is the sheer presence of this opulent model. This is a scale model aircraft that makes a bold statement. Like the real thing, she is pure theatre. In her own way she is as grand, elegant and glorious as an Elizabethan flagship. A substantial scratch-built scale model, built to 1/12th scale, and with a wingspan of 113 inches, she has a certain luxurious style. This makes her a very large scale biplane indeed. She weighs 22 lbs and is electric powered. Martin usually selects internal combustion power, but he pointed out to me that choosing electric power drastically reduced Syrinx's building time. In particular, it made the power installation much easier than four glow engines. In fact, Martin fitted Four E-Max motors, each drawing about 300W on their 10"x 8" props. On the ground her unique looks win high praise and in the air she looked utterly gorgeous. Syrinx, as he originally propped her, had a mind of her own and at the Scale Nats she was hard to keep tidy in the air. The rest of us were blissfully unaware of this struggle and we thought she looked magnificent. Martin developed a solution to the problem, but that was sometime later.

The original was an all-metal airframe employing corrugated alloy sheeting.

DOCUMENTATION & PLAN

Martin based his research and documentation on lots of vintage photos sourced from the internet.

He scratch-built the model to his own plan, based on what he engagingly terms 'a scrappy three-view off the internet'.

Fuselage corrugations were achieved using Martin's innovative balsa strip and Balsaloc iron-on process.

The engine nacelles are set very high. Martin home-moulded all 36 cylinders.

Electric power obviated the need for bulky, hard to hide and hard to make engine silencers.

Left: Syrinx has a homebrew telescopic undercarriage based on B&Q ali tube.

Below: The prototype had four crew - look at that crew entrance door. Some runway rash is evident under the nose block.

CONSTRUCTION

The whole construction is traditional, with the copious use of balsa, plywood and spruce. Martin also moulded some key scale components from glass reinforced plastic.

This 1930s version of a wide-bodied fuselage is essentially rendered as a balsa box. Cleverly, Martin has represented the complex corrugated aluminium skin by strips of 1/16th balsa. He then simply ironed them on with Balsaloc adhesive!

The wings are all traditional, built up structures with spruce spars and balsa ribs. The tail is a built-up open structure, as per the wings.

Martin made his own wheels, as well as the undercarriage.

MOTORS, ENGINE NACELLES & PROPS

Martin departed from his previous internal combustion power to explore electric propulsion. Four E-Max motors, each giving about 300W on 10" x 8" props, were chosen. The 12" props initially fitted proved to be problematical. Martin used a separate 4S LiPo for each motor (3300 mAh), which delivered a comfortable 12 to 15 minutes of gentle cruising.

Martin home-moulded the nacelles in glass fibre. The dummy engines have cylinders moulded in polyurethane resin. Moulding them was a wise move since 36 cylinders were required in total!

EXHAUST

None. "*Thank goodness...*", says Martin.

Wonderfully involved tail treatment with outboard trim tab.

The prototype luxury airliner could carry 39 passengers, their downward view unobstructed by wings.

Rear under-fuselage is sharply raked to give clearance at rotation, due to the high set wing and engine.

"Legends and decals are a mixture of hand painting and spraying with masking tape"

Built to 1/12th scale, Syrinx weighs 22lbs.

UNDERCARRIAGE

Mostly home fabricated from B&Q aluminium tube. Martin used homemade wheels and introduced springs into the oleos.

COVERING, PAINTING & DECALS

Covering is silk on tissue. Martin says this is light and tough and gives the right look to the finished covering.

She is painted in cellulose, with a light spray of Mick Reeves clear satin epoxy over the silver.

Legends and decals are a mixture of hand painting and spraying with masking tape.

SCALE DETAILS

Struts are all made using very light aluminium tube with balsa fairings. Most rigging wires are fishing trace, with some Mick Reeves flat wire rigging. Adjustable ends are used at the centre section.

MARTIN'S FLYING NOTES

"Very disappointing initially, as we saw at the 2015 Nationals. It wouldn't fly slowly and was very reluctant to turn nicely. I eventually worked out the cause of the troubles, but sadly too late for the Nats.

The original 12" props just reached to the level of the underside of the top wing, putting high speed air over the lower surface of much of the top wing. This destroyed the lift over that area, as there was no corresponding high-speed air over the top surface. Changing to 10" props has transformed the model. The top wing is now generating its proper lift contribution and Syrinx now flies quite nice and slowly. Not at scale speed though - the full-size speed of 137mph equates to about 11mph for the model!"

Syrinx on a low pass. That's a lot of rigging flying in close formation.

Martin almost catches a crab as the ruthless Barkston crosswind side-swipes Syrinx.

Martin has captured the Syrinx's blend of elegance and slightly off-the-wall 1930s styling.

DATAFILE

Model Name:	Short L.17 'Syrinx'
Plan:	Martin Fardell own design
Scale:	1/12th
Wingspan:	113 inches
Weight:	22 lbs
Motors:	Four E-Max motors, each giving about 300W on 10" x 8" props.

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My Fury resplendent in the sunshine.

FURY'S PROGRESS

Danny Fenton continues to add the finishing touches to his Hawker Fury biplane.

words & photos » Danny Fenton

These last few weeks seem to have whistled by. The loss of my mojo has long been forgotten amidst the buzz of a project nearing conclusion.

I hope regulars will not mind the diversion away from the smaller models; with venues still closed this is a good opportunity to get a few projects completed.

So back to my Dennis Bryant Hawker Fury Mk I. The banner shot pretty much sums up where we got to over the last coffee. The airframe is pretty much complete. What I have not yet shown you is the rigging, what I used and how I used it.

TAIL RIGGING

But first the tailplane rigging was messed about with. I say this because no matter what I do back here it looks wrong. The fittings are nothing like the full size and the way they mount makes it exceedingly difficult to do something creative. So, I resigned myself to the fact that I could only try and make the fittings as unobtrusive as possible.

The strut work underneath the tailplane was easier to make more convincing, though Philips head screws are not particularly scale. The rods are alloy tube from K&S Supplies, I think around 4.5 mm. I flattened the tubing slightly to give a more oval shape, again trying to give the illusion of scale.

The screws on the tailplane pass right through and form the anchors for the upper wires and anchor plates; for this long screws and nuts work. Against the fuselage we are again stuck with self-tapping screws, into hardwood blocks, let into the fuselage.

WING RIGGING

I had been avoiding the rigging, as had many of the members of the modelflying.co.uk Masterclass building their Fury's. I think they were all waiting for me to lead the way. The plan simply calls for regular clevises soldered to 18 SWG piano wire. The problem with this is you must disconnect a clevis to adjust it, then refit, then adjust another. By the time you have adjusted the four on one side, the first will be slack and you must go around the exercise again - extremely time consuming. Eric Robson, one of the Masterclass participants, came up with a really neat solution, which I wish I had thought of.

Rigging wire at 1/6th scale is always hard to replicate.

K&S Tubing, slightly flattened, serves to re-create the tailplane underside rigging.

Mick Reeves rigging is a joy to use. The fittings are attached to the anchor point by a single screw. Loosen to remove.

This strut needed to be lengthened by about 3 mm.

I cut the strut and added more material in an overlap.

Eric solders one end of the clevis to a traditional fitting, but on the other end he uses just the clevis, passing the piano wire through it and soldering a small section of brass tubing to stop the wire pulling back through. This has the benefit of allowing adjustment without having to remove the clevis. You do need to make sure you are using an anchor nut at the adjustable end, but you would anyway.

All this aside, I went for the Mick Reeves rigging wire fittings. These are each little works of art. They come in a pair; one end is adjustable, along some threaded studding whilst the other end is cleverly reversed so the studding passes through an unthreaded fitting and the head stops it pulling through, much like Eric's solution above.

So, for the Mick Reeves fittings you silver solder the rigging to the threaded section of the screw at one end, and the head of the screw at the other. The fittings are attached to the model using a tiny screw. I have already lost one and gnarled the head of another, so be careful and order spares if you go down this route.

The upside is they are a joy to work with and really easy to fit and adjust. You have to get the size pretty close as you will only get around 6 mm of adjustment travel. The downside is that they are a little expensive. Nothing against Mick, these are beautifully made, and I am sure are not cheap to manufacture. Here, quality really is worth it.

A LONGER STRUT

If, like me, you haven't much experience with biplanes, especially ones with functional rigging. If you encounter a problem where something built to the plan doesn't fit, you have to think carefully about how to proceed. If the plan is accurate perhaps your model is not?

The rigging struts are a case in point here. As you can see in the attached picture, one of the struts is not reaching the locating notch in the wing.

So, what do you do? Well you have two choices; you could tighten the rigging and pull everything to close the gap, or you lengthen the strut. Let us look at what happens with the first. Your wings are built straight and are not warped, but they could be slightly askew, with the leading edge of one wing just a mm ahead of the other. If you pull the rigging to make this fit, you will have taken your nicely straight wings and warped them. Not good!

Isn't the join between the panels atrocious? Just like the full size!

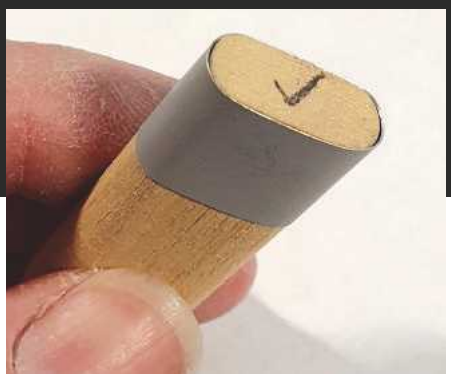
If, on the other hand, your wings are warped in the first place, then tightening the rigging may actually straighten the wings. I would suggest that is highly unlikely.

The solution is to use an incidence gauge to see whether your wings are accurate in the first place and the incidence correct. If they are and the strut is too short, lengthen it. The struts are used to transfer the loads between the two wings and lock everything together. They are not there to correct issues.

So, in the example above the wings were indeed very slightly askew. The leading edge of the upper wing was just 1mm further forwards than the lower panel. The problem was in a fractionally too long wing joining rod. This eased the issue, but not entirely. As I knew the incidences of the wings was correct simply lengthening the strut was a straightforward fix. Both the forward and rear lengths were adjusted. Only a couple of millimetres was all it took. Interestingly, the other side was spot on.

DUXFORD GAP

Talking about the joint between the wing panels... People assumed that the reason I had redrawn the plan to split each wing into three pieces was for transport. That is not completely wrong as that is an advantage. But my main reason was to end up with the pronounced gap that I have. It looks terrible, however look at the full size when you are next at Duxford..!



This hardwood former was used to shape the exhaust stubs. The tick indicates the end to be used.

After removing the cutting template, I was left with raw holes. Not very satisfactory...

EXHAUST STUBS

Next up for my attention were the exhausts. I was pondering this one for some time. The solution is quite simple and quick to make, and not as far off scale as you would think.

I made a template using paint masking material and stuck it to the side of the cowl, aligning it carefully. This then allowed me to Dremel holes matching the rounded slots of the exhausts.

I then made a form out of some hardwood, slightly smaller than the holes. Around the former I wrapped 0.16 lithoplate, to form an exhaust tube. They overlap at the bottom, but do not glue this yet. Insert the tube into the hole in the fuselage, adjust the angle etc. and once you are happy clamp the overlap together and add a drop of CA to lock the loop.

Once they are all fitted, gently use a long flat sanding block to sand all the tubes at once until they protrude evenly. You must do this slowly and carefully. If you snag an exhaust you could wreck it.

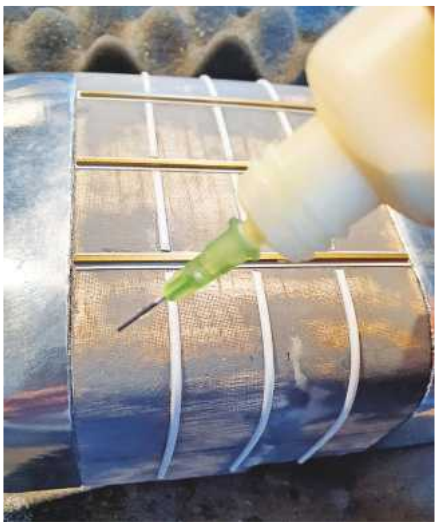
The stubs in place. Quite effective, I think.

RADIATOR

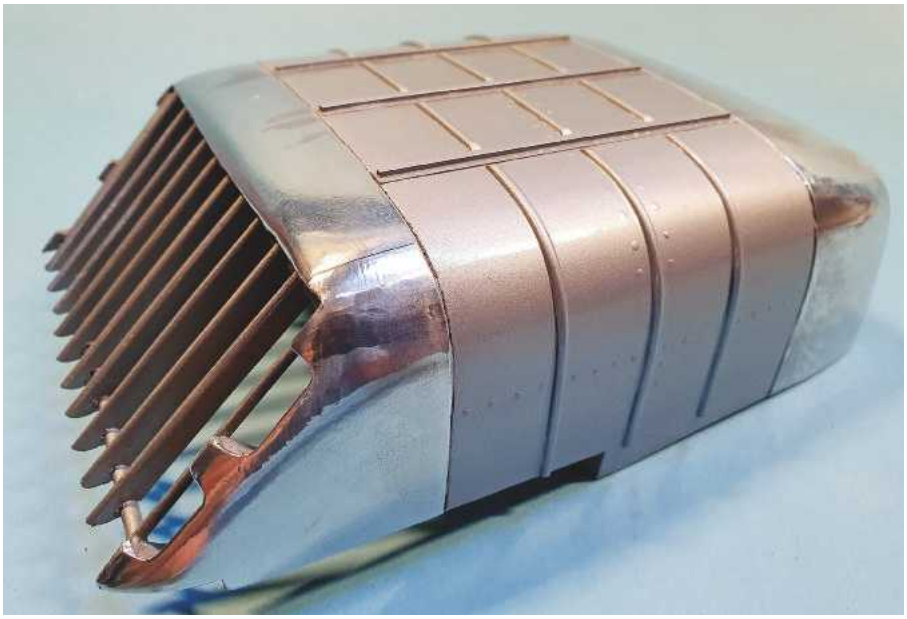
Moving to the radiator next, I had already added some styrene section, so a few glue dot rivet heads were in order. A splash of Klass Kote silver and it's looking good.

This is my first encounter with the silver, and I must say it is lovely paint to spray. Not just the silver, but as you will see later, the other Klass Kote colours spray equally well.

My weapon of choice is an Iwata Revolution TR2. This is fitted with a 0.5 mm nozzle and needle, and sprays beautifully at around 20 psi. The water trap also acts as a handy grip. It's not cheap but quality never is.



A green glue needle, ground off flat, is my weapon of choice for simulating rivets.



A coat of silver Klass Kote made all the difference.

Slightly old but still in excellent nick, my IWATA TR2.

My 3D spinner after a rub down with wet and dry and a couple of coats of primer.

Same spinner following a coat of epoxy silver paint. Looks great. I just hope it survives flight testing!

I used a lightweight tissue to simulate the rib taping on the fuselage. It does show through but is a bit feint through the silver.

3D SPINNER

My good friend, Chris Bott rose to the challenge of designing and printing a 3D spinner for me. Although the finish was presentable, we wondered how far you can go. So, some filler primer and wet and dry, (used very wet, I might add) and we have something very usable. After a coat of Klass Kote silver epoxy you wouldn't know it was a 3D print.

Please be careful going down this route and test that the spinner remains intact. If in any doubt, do not use it, and certainly not for IC. I run my motors at low rpm, and this has been tested at speeds far higher than I will be using and nothing untoward has happened.

SPRAY TIME

I was getting ever closer to laying down primer on the fuselage. As an experiment I tried a lighter tissue for the rib tapes here than on the wings. Each strip was cut using a scalpel and blade before being added wet and then doped down. Once three coats of dope had been applied the whole area was lightly dry sanded, primed and then dry sanded again, ready for the silver.

I sprayed the centre section first, and what a joy this paint is to use. I went for 1:1:1 paint, catalyst, thinner. This was sprayed with the .5mm Iwata.

The rear portion of the fuselage and the tail surfaces also were sprayed at this time. For this I used the larger top feed gun that I recently purchased, with a 0.8 mm nozzle. Actually, it was too much for the top-coat and most ended up as overspray. But it's a particularly good gun for high build primer

The centre section came up well, with the heavier tapes nicely visible.

Fuselage in silver. The elevator is covered in nylon with torn Solartex tapes.

Wings drying in the garage workshop.

My new 0.8 mm spray gun will be good for applying primer.

The wings were up next. In the background you can make out my very 'Heath Robinson' air extraction/filtration system. Paint booth filter mesh is wrapped over a portable fan. From the filter colour you can see it does a great job.

COCKPIT COAMING

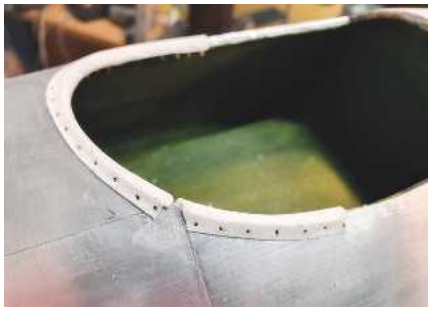
Next on my radar was the padded coaming around the top front of the cockpit. It is actually square in section on the full size, which is interesting and in a dark blue; I presume it is leather.

I simulated this using a product that many of you may not have heard about. I did use it on my Grumman indoor model in the July edition of RCM&E, but you may not immediately recognise it.

The material is Vector Board. It was made by Graupner, though Graupner has sadly gone and there are discussions about getting Vector Board supplied from source.

I used the very thin material 0.5 mm for the wrap, and the thinner 1 mm for the square section internally. The sections are glued using 3M 77 glue. This glue is exceptional good with foam but, again, it is pricey. You can get away with POR or other contact adhesives. This material was then wrapped over the padding and stuck down onto the inside of the cockpit.

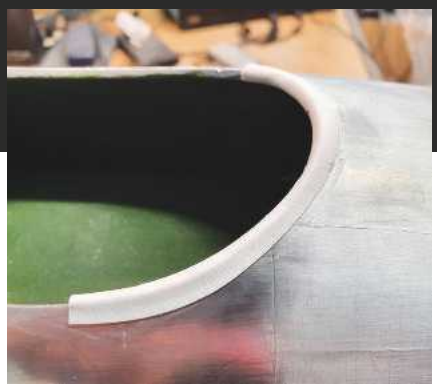
1 mm Vector Board glued to the cockpit surround, then covered with 0.5 mm board, wrapped over and inside.



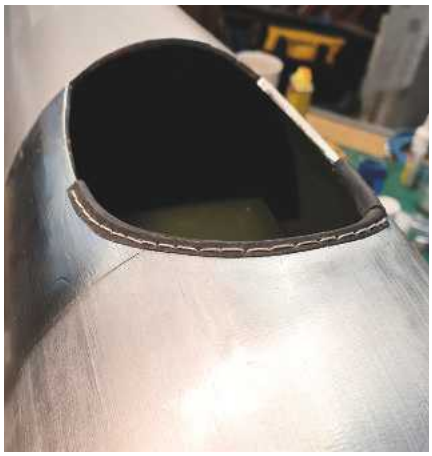
The perimeter is drilled to accept the simulated lacing.

The perimeter was drilled with a small drill bit in the hand and then painted with Tamiya Gunship Grey. This looks remarkably like the blue leather on the full size. Once the paint was dry, I used crochet thread to lace the edges.

I made a windscreen base out of hardwood, holding it against some upturned sandpaper taped to the fuselage; I slid it backwards and forwards to get a close fit. Not perfect but it gives the idea. I later stained it with a wood stain.



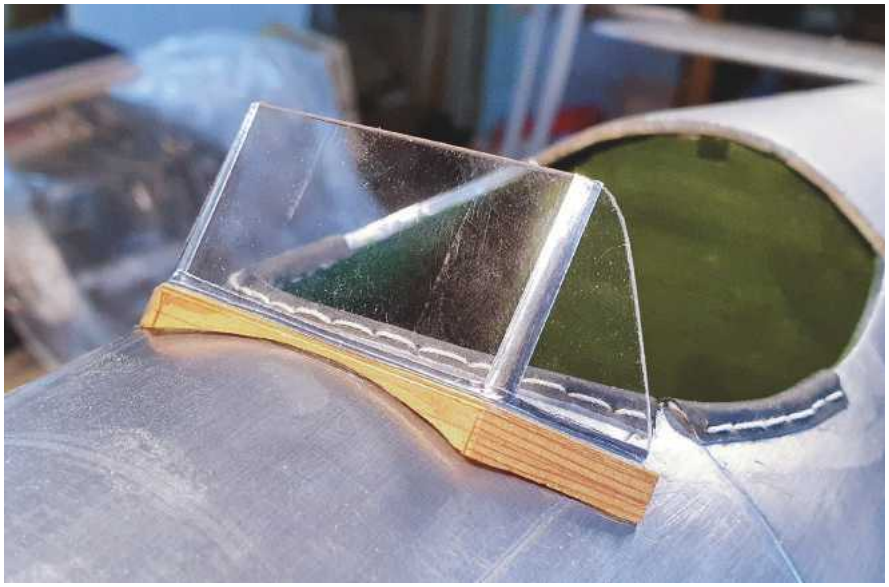
Vector Board after tucking inside and glued with 3M Super 77.



Once the lacing is added over the German grey, I think it looks pretty effective.

I think that just about wraps it up from me for another session.

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



To finish the cockpit off a windscreen was made from a chunk of PETG, folded cold and with a hardwood base.

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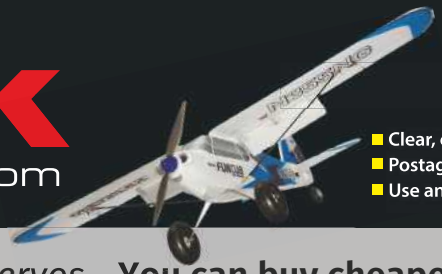

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Mini Size
20 Gram
Analogue
Metal Gear
4.8-6.0v
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Mini Size
27 Gram
Analogue
Metal Gear
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"The name Quickie Ghost comes from the control method this plane was designed for - Galloping Ghost"

QUICKIE GHOST

Shaun Garrity describes a simple to build high winger - with a twist!

words & photos » Shaun Garrity | model design » Tobe Källner

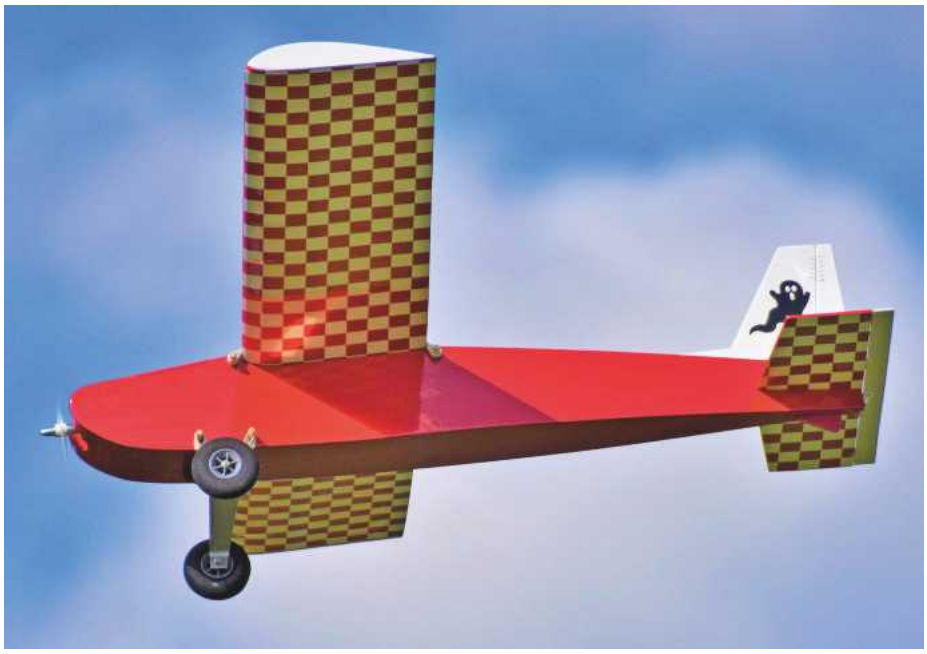
Something that's truly different is a rarity in the model aviation world. Over the years we've had a few examples - helicopters, steam powered, solar, VTOL and gas turbine R/C models, not forgetting - love 'em or hate 'em - multicopters. At the time they were revolutionary and generated substantial interest, with helicopters, gas turbines and multicopters going from strength to strength and becoming a mainstream part of today's hobby.

So 'what's this got to do with the price of fish', as the saying goes, and what appears to be at first glance a three-channel, high wing, vanilla styled model? Read on!

DESIGNER BIO

Quickie Ghost was designed by my good friend Tobe Källner, who lives in Sweden. Tobe has a lifetime of experience in full-size aviation, flying over 15,000 hours in everything from his homebuilt plane to corporate jets, with many thousands of hours instructing. He also found time, when living in the USA, to design model aircraft for a number of kit manufacturers so it's fair to say he knows a thing or two about getting skyward.

The name Quickie Ghost comes from the control method this plane was designed for -



Quickie Ghost sits well in the air and transitions between powered and gliding flight without any unwanted trim changes.

New and old Galloping Ghost actuators. From the left: Tobe's Rand replica, original Rand, Tobe's Ghost replica and an original Controlaire Ghost.

Galloping Ghost - a method popularised in the 1960s and 70s. Just so I don't lose the crowd, QG can also be flown very successfully with regular servos and updated to a four-function model at a later date, as experience is gained, making it a great ab-initio trainer. Part two of this article (next month) shows how to do this and also how to make a 3D printed Galloping Ghost actuator, along with the necessary electronics for a full retro experience.

I'll let Tobe explain (I wish my Swedish was 1/100th as good as his English!)

WHAT IS GALLOPING GHOST?

"Quickie Ghost (QG) is the result of a study in Galloping Ghost (GG) and how to make GG available again in a modern environment. I am not sure how many of you know what GG is, or more accurately, was, but consider it an early attempt in the 1960s to emulate proportional control with relative simplicity and low cost. GG is a 'flapping' system and works amazingly well despite its continuous flapping, as the average of the actions gives the wanted input/control. It has to be mentioned that the classic single GG actuator, which is up to three channels in one unit/one motor has interactions between its functions that always have to be taken in consideration when building a model for it, especially how it's installed, i.e. the position of control horns and the smoothness of linkages.

This project began some years ago when Shaun started convincing (actually, pestering the life out of – SG) *his friend Phil Green to create a re-coder (the electronics necessary to produce the control signals when using modern gear) so he could fly an airplane donated to him with the original old Rand LR3 actuator and modern equipment. After some creative thinking Phil came up with the first version of his GG re-coder and everything else is now history. When I heard about it, I got nostalgic, having learned to fly in the late 60s with, first, single channel and then three channel GG. It also started a wish within me to recreate those old actuators, which are not only quite rare to find in usable condition at a sensible cost, but they are also not fully compatible with modern equipment due to voltage requirements.*

With Phil's re-coder in my hand a process started to allow me to recreate a compatible actuator with the original Rand LR3 and so the GG-Tobe was born. It must be said here that the Rand LR3 was not the only available GG actuator in the old days, but it was probably the most sophisticated. Thus, the suggested DIY actuator is more like the old 'Controlaire'.

Back to the project for the model, I can't say the QG is a new and fully original project but rather it is a combination of many ideas to create a good flying, easy to build model and also to be a good platform for experimentation as it can easily be outfitted in several different configurations. Not even the name can be considered fully original as Quickie comes up in the name of many simple and quick to build models, like Quickie 500, and Ghost appears in at least as many models with names like Ghost Rider etc.

QG, as mentioned earlier, can be outfitted in a few different configurations, not only as GG, but she will fly perfectly well with just two regular servos. However, this requires a slightly larger rudder and elevator; the narrow rudder and elevator is a requirement for GG due to the aforementioned control interaction.

For this aeroplane I have designed a simple actuator that can be easily built and assembled if you have access to a 3D-printer as all the required hardware is readily available on-line. The 3D data files for the actuator and Arduino program files etc. will be available on ***www.mode-zero.uk*** *. Alternatively, we are hoping that preprinted actuator parts will also be available and details of this will be covered next time.*

If doing so you will have the option for one single combination actuator or a dual pack with two separate actuators for rudder and elevator - the choice is yours. Dual pack eliminates the slight control interaction. Most originals were combination actuators with pulse-controlled rudder and rate elevator, and all this was included in one unit, with the drawback of an interaction between rudder and elevator, i.e. at rudder input there was a slight elevator up action."

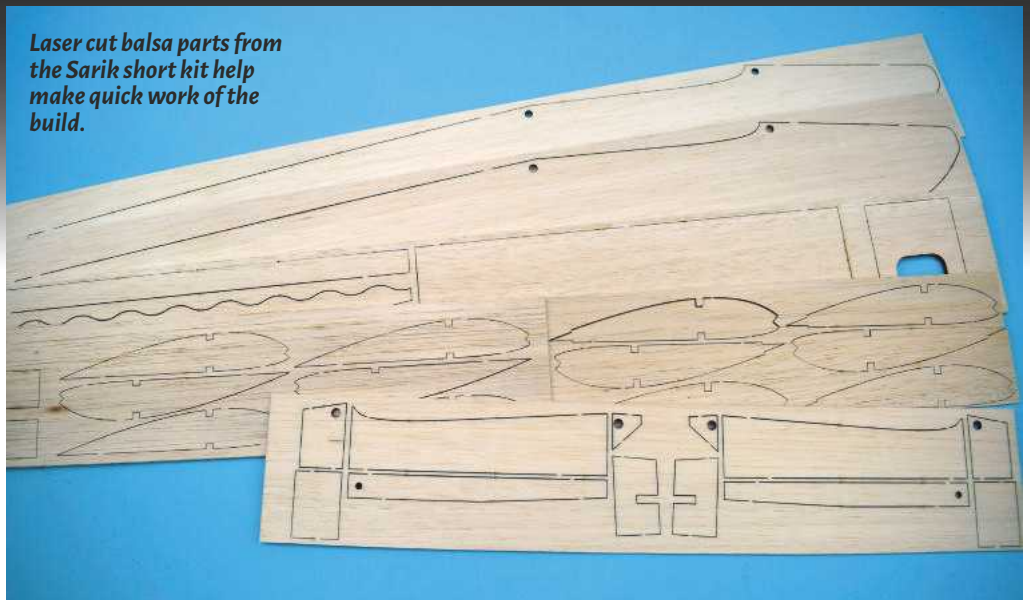
CAREFUL SET UP

"Back again to the QG, the building per se is extremely simple and conventional. So, if you have a few builds behind you there shouldn't be any issues as it's basically a square box with all its parts and components kept to a minimum. However, there's a but... (like most things in life!)

When building the model for Galloping Ghost, QG needs more attention and care to have a properly set Centre of Gravity, Angle of Incidence and Motor Thrust Line than most modern models due to the fact that Galloping Ghost, with its interactions, doesn't allow for any major trim inputs from the transmitter. It should be mentioned here that the position of the elevator's control horn is only decided by the kind of actuators employed because for Galloping Ghost elevator cannot be reversed from the transmitter, and this is especially true if you are going for a conventional single actuator.

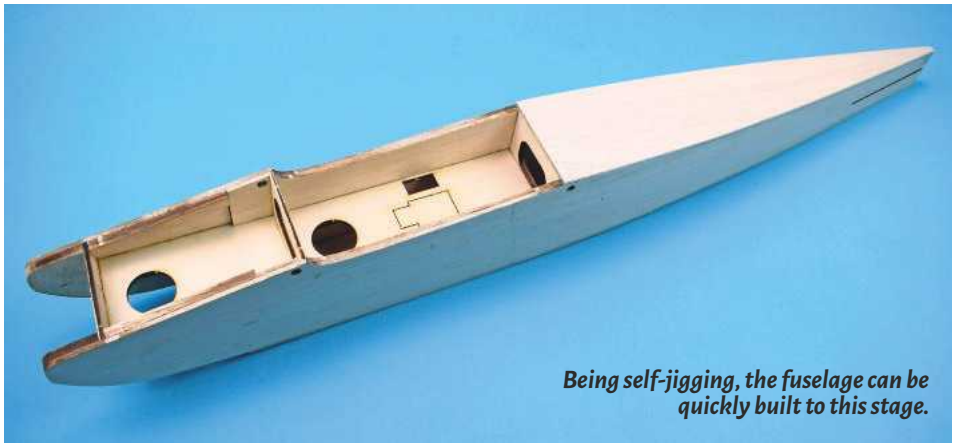
Any trim input on a properly set up model will have the following impact: rudder trim will automatically have a secondary effect on elevator up and elevator trim will have a secondary effect on rudder throws but not as noticeable, up trim increase and down trim decrease. A dual actuator setup will not be as sensitive to this as the single actuator but at the same time you are removing some of the fascination of flying real GG.

With all this in mind it is time to start building by making small pieces from large pieces of balsa and get your fingers dirty with glue."



Laser cut balsa parts from the Sarik short kit help make quick work of the build.

"...if you have a few builds behind you there shouldn't be any issues as it's basically a square box"



Being self-jigging, the fuselage can be quickly built to this stage.

BUILDING THE GHOST

If you're a time poor modeller, good news - Sarik Hobbies has produced a comprehensive laser cut wood pack for the model. You'll only need to find a few additional parts, such as square stock for the spars and leading edge, 1/8" and 1/16" balsa sheet, and the Dural undercarriage. Sarik can also supply the additional wood.

QG has been designed with some unique features; essentially you only need a straight line on the building board and a square (at a push I've used a cereal box - no names but they contain flakes made from corn) to construct the fuselage because it's effectively self-jigging, as are the wings, but a plan is included.

Also, the wings are nearly symmetrical but require no leading edge or trailing edge packing when building due to the flat section on the underside of each rib.

FUSELAGE

Make sure you have the lite ply servo plate correctly oriented as this is shaped to give the necessary right thrust for the motor former F1. Also note that the front right-hand side doublers are different lengths to the left-hand side, but as long as you position the servo plate correctly everything will align.

Start with the right side, gluing F3 in position and checking it's square. Next, add the upper fuselage wing seat doubler, lite ply servo plate, F2 and the remaining right side upper and lower doublers, except the one forward of F1. When dry, glue the left fuselage side in position using the wing and undercarriage dowels as jigging pegs - but do not glue them in yet. Once dry flip over, adding all the remaining doublers (not forgetting the tailplane ones), F1 and nose doublers. I use a combination of spots of cyano and aliphatic when building; the cyano effectively pins everything instantly in place while the aliphatic sets.

Wait until dry, then we can draw the fuselage sides together at the rear. Start by positioning the fuselage over the plan and weigh it down so it doesn't move (not an issue if you are using a building jig), then evenly pull it together, gluing in place and clamping until set. Ensure you haven't introduced any twist.

We are nearly there now. Just the 3mm balsa top and bottom sheeting and the ply for the undercarriage mount to do. You will have noticed there is no upper part to former F2. This is intentional to allow maximum space for the LiPo; however, you will need to eventually glue the front wing dowel in place as this imparts significant strength and stops the fuselage from flexing.

Cut out the battery hatch, give it an overall sand with fine glass paper and the job's done, ready to cover.

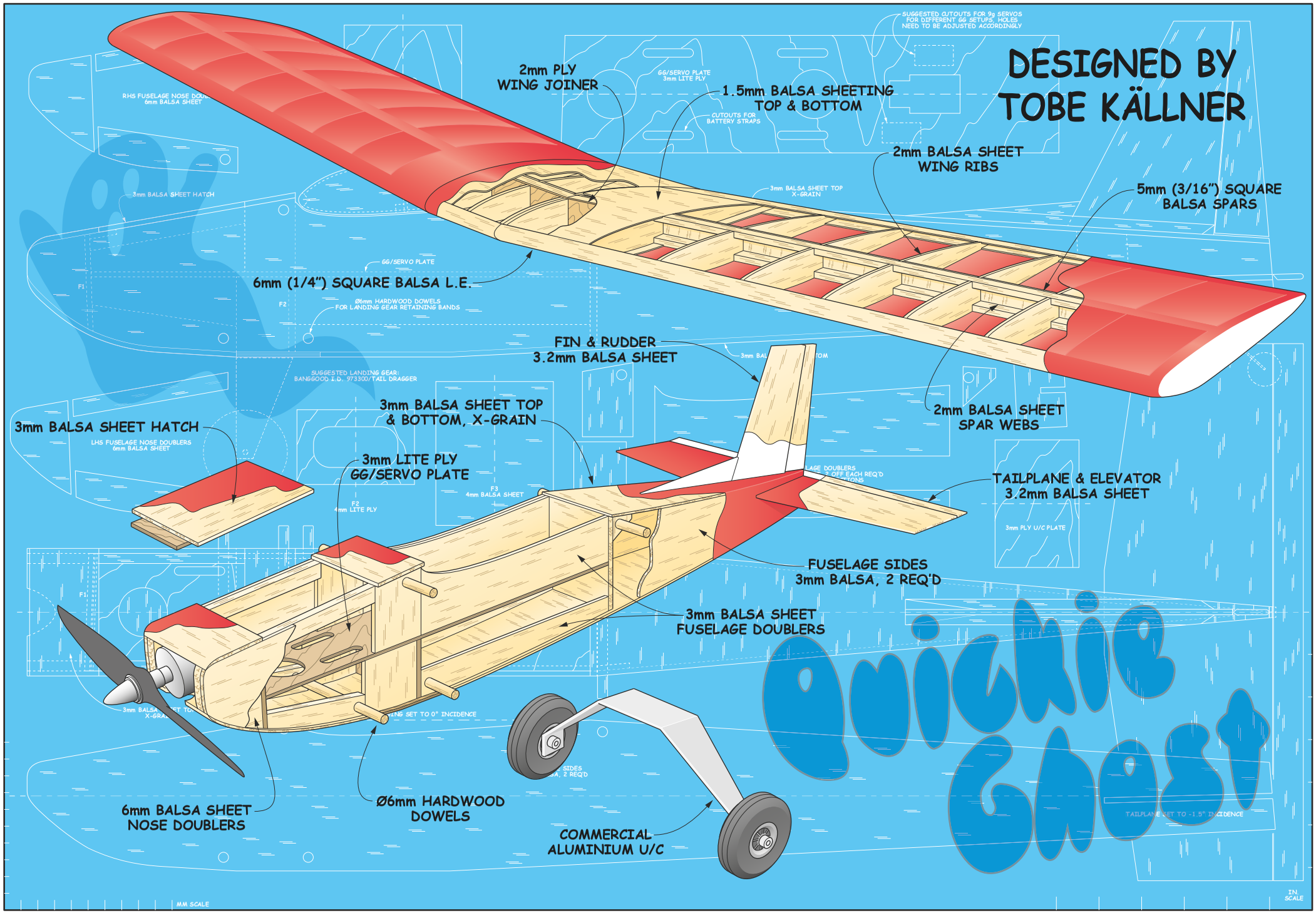
WINGS

Again, these are simple to build, self-jigging like the fuselage and can be constructed without a plan. First cut out all the W1 & W2 ribs and W3, W4, W5 & W6 shear webs, along with the 1/16" trailing edge strips and lower sheet (that locates between the two W2 ribs). Use a wax candle to rub over all the points where glue will be used to stop the wing sticking to the plan.

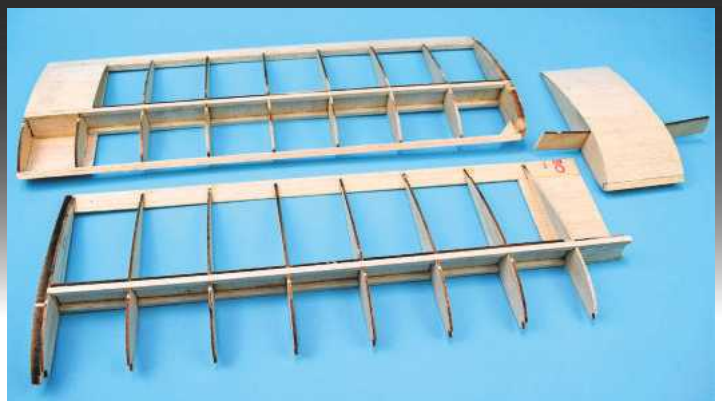
Starting with the port wing, position the lower wing spar and trailing edge on the plan. Then, beginning at the tip, glue the seven W1 ribs in place. Add the top spar and six W6 vertical grained shear web pieces. Next, glue the lower 1/16" wing sheet in place, 1/4" leading edge and slide in the remaining W2 ribs and W4 and W5 shear webs. Note that the W4 shear web angles the inner rib to give the correct dihedral. Do not glue the top sheet in place yet as you have to trim the two W2 ribs to accommodate the dihedral brace, but you can add the sheet tip at this point and upper 1/16" trailing edge. When dry, put to one side and then do it all again for the starboard wing.

Next, make the centre section, trimming the three W2 ribs for the dihedral brace. Again, the W3 shear webbing sets the outer two ribs to give the correct dihedral angle. You can then assemble the wing propping up the tips to the dihedral indicated on the plan and ensuring that you haven't introduced any twist in the outer panels.

When dry add the remaining top sheeting, give a light overall sanding to remove any high points and shape the leading edge to match the ribs. Be careful not to change the profile of the ribs.


DESIGNED BY
TOBE KÄLLNER
2mm PLY
WING JOINER
1.5mm BALSA SHEETING
TOP & BOTTOM
2mm BALSA SHEET
WING RIBS
5mm (3/16") SQUARE
BALSA SPARS
6mm (1/4") SQUARE BALSA L.E.
2mm BALSA SHEET
SPAR WEBS
FIN & RUDDER
3.2mm BALSA SHEET
3mm BALSA SHEET HATCH
3mm BALSA SHEET TOP
& BOTTOM, X-GRAIN
3mm LITE PLY
GG/SERVO PLATE
TAILPLANE & ELEVATOR
3.2mm BALSA SHEET
FUSELAGE SIDES
3mm BALSA, 2 REQ'D
3mm BALSA SHEET
FUSELAGE DOUBLERS
6mm BALSA SHEET
NOSE DOUBLERS
Ø6mm HARDWOOD
DOWELS
COMMERCIAL
ALUMINIUM U/C
Quickie
Ghost
SUGGESTED CUTOUTS FOR 9g SERVOS FOR DIFFERENT GG SETUPS. HOLES NEED TO BE ADJUSTED ACCORDINGLY
GG/SERVO PLATE 3mm LITE PLY
CUTOUTS FOR BATTERY STRAPS
RHS FUSELAGE NOSE DOUBLERS 6mm BALSA SHEET
3mm BALSA SHEET HATCH
3mm BALSA SHEET TOP X-GRAIN
GG/SERVO PLATE
Ø6mm HARDWOOD DOWELS FOR LANDING GEAR RETAINING BANDS
SUGGESTED LANDING GEAR: BANGGOOD I.D. 973300/TAIL DRAGGER
LHS FUSELAGE NOSE DOUBLERS 6mm BALSA SHEET
4mm BALSA SHEET
4mm LITE PLY
3mm PLY U/C PLATE
TAILPLANE SET TO -1.5° INCIDENCE
WING SET TO 0° INCIDENCE
MM SCALE
IN SCALE

Like the fuselage, the wing also is easy to construct.



Almost ready to assemble. You'll be at this stage in next to no time

TAIL GROUP

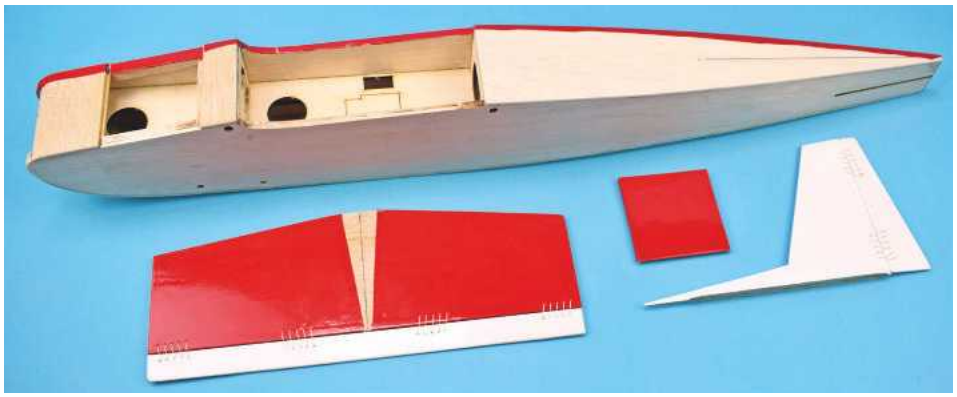
Easily and quickly made from 1/8" medium hard balsa, you'll have the tail parts finished in no time. For Galloping Ghost make the elevator and rudder as shown on the plan, but for proportional gear they can be extended by 1/4" in width if you want to liven things up a tad.

The fin has two triangular doublers to increase the gluing area onto the fuselage. Please don't omit.

COVERING UP

Heat shrink film is the ideal material for this model. Cover the fuselage first, remembering to remove a strip of film where the fin glues in position. For the dowels you could heat up a brass tube of the correct diameter and use this to cut and melt a neat hole, not forgetting to remove the film for the tailplane slot. You will have this finished in next to no time as it's a very simple job, with no difficult compound curves.

Next, temporarily place the tailplane into the fuselage and mark out where the film will need removing to achieve a good glue join, then cover along with the fin, rudder and elevator. Hinging at this point is easier than when on the plane. Stitched hinges give a bind free solution and are perfect for a Galloping Ghost installation; the furry Mylar types that are glued in with cyano are a good proposition for regular servos.



Covering the tail group prior to gluing them in place makes the job easier. Don't forget to remove the film on the glue joints to the fuselage.

Quickie Ghost's simple lines belie its aerobatic ability.

Above: With regular servos tube in tube control rods are the easiest solution but traditional pushrods must be used for Galloping Ghost. Stitched hinges cost nothing and work exceptionally well - try them.

Right: For the elevator you must have the control horn on the upper side when using Tobe's ghost actuator. It doesn't matter when using servos.

Any motor system that gives around 200 watts on a 3S LiPo and a 7" to 8" diameter propeller will be perfect.

If you can't source a suitable Dural undercarriage, then fashion one from piano wire.

The wing is about as easy as it gets so cover the underside first, getting the film as tight as possible, but don't heat-shrink it yet. Cover the small upper centre section, then each panel and shrink carefully so as not to induce any warps.

RADIO & POWER

Although Tobe would love to see every QG model flying in its Galloping Ghost guise, he appreciates a large percentage of the models will have regular 9g analogue servos fitted. But you need to make a decision now...

If you are contemplating updating the propo version to GG at later date, then you must use pushrods. Tube in tube isn't recommended due to the continual movement of the surfaces. This could cause excessive heat and unwanted friction. I've built two dedicated fuselage versions, so I used plastic outers with piano wire inners for the propo version and pushrods for the ghost version.

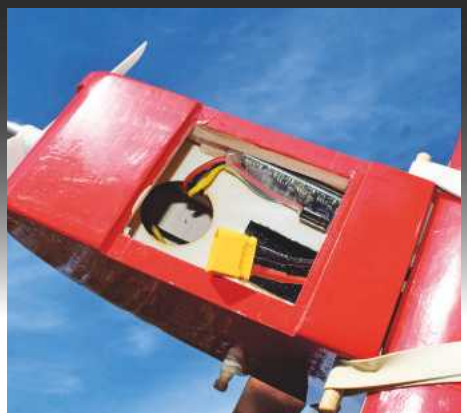
Any motor system that delivers around 200 watts on a 7–8" propeller will be sufficient, but I had a word with George at 4-Max who recommended the following set up:

Motor - 2826-1290
ESC - 30 amp
Propeller - APC 8 x 4 propeller
LiPo - 1300mAh 3S 40C

Positions for the various parts are shown in the relevant photos of my prototype.

BITS & PIECES

The undercarriage is optional, but I would recommend it; it's hard to do touch and goes without one. A simple piano wire version would do as an alternative to the Dural one shown, fixed in place with rubber bands or saddle clamps screwed into the ply plate. Velcro straps are used to hold the LiPo down or, alternatively, use a pad of Velcro stuck to the servo plate. I always seal the ply or balsa with thin cyano or dope so that the Velcro sticks firmly in place.



My ESC was located on the fuselage side as shown but there's plenty of space in the front section to position it elsewhere.

If you go with the Sarik parts pack, then the servo/ghost actuator mounting holes are pre cut. Whether you use tube in tube or pushrods ensure nothing binds.

Modern receivers are so miniscule it's never a problem finding a suitable location for them.

I should have made the battery hatch larger on the prototype model. It's a bit of a fiddle getting the LiPo in and out.

Check the C of G and that the controls move as expected and are bind free. For propo set up the rudder at 20 degrees throw and the elevator at 15 degrees throw each way for both surfaces. You can adjust them after you've had a few flights to suit your flying style.

Quickie Ghost leapt skyward like a homesick angel on the test flight.

The next instalment of Quickie Ghost will detail the 3D printed actuator and electronics for a different flight experience.

TIME TO FLY

This is always my favourite part - the test flight. Every designer would like to think their models flew straight off the board with no trimming necessary. Well, Quickie Ghost did exactly that, proving that Tobe had his calculations one hundred percent correct.

Due to the motor system I used being a little more powerful than recommended it could possibly benefit from a degree or two of down thrust, but that's down to me, not the designer.

Predictable and capable of aerobatics, Quickie Ghost is a fun model to steer around the sky. Landings are simple; just line it up and it will almost put itself back down on terra firma with little pilot interference. It would probably fly free flight as its manners are so refined.

Next time I'll include plans for the aileron wing modifications and show how to construct the 3D printed Galloping Ghost actuator and electronics so that you can experience a different mode of control and flying style not seen since the 1960s.

"It would probably fly free flight as its manners are so refined"

It genuinely flew off the board with no trim required. As I overpowered mine a tad it would possibly benefit from a degree or two of down thrust.

Vinyl decals finish off the model. Vinyl cutters are not expensive and are a useful addition to the modellers tool kit.

The transmitter gives scale to the model. Fully assembled it will fit in most cars ready for an instant flying fix.

DATAFILE

Model Name:	Quickie Ghost
Type:	Sports
Designed by:	Tobe Källner
Span:	39.25" (997mm)
Length:	30" (762mm)
Weight:	18.5 ozs (524g)
Motor:	4-Max 2826 1290
ESC:	30A
LiPo:	3S 1300 mAh
Propeller:	8" x 4"
Controls:	Galloping Ghost or Propo (2 x 9g servos)

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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 fans are those as used in the Tony Nijhuis "Mini Jet" series, as recently published in the RCM&E.

Diameter	Part Number	Thrust	Price
50mm	PowerFun 4900kv (3S LiPo)	605g	£24.99
50mm	FMS 5400kv (3S LiPo)	620g	£38.50
50mm	PowerFun 5400kv (3S LiPo) - NEW	640g	£34.99
50mm	PowerFun 4430kv (4S LiPo)	765g	£29.99
50mm	FMS 4500kv (4S LiPo)	1,086g	£38.50
64mm	PowerFun 3900kv (3S LiPo)	872g	£32.99
64mm	PowerFun 3500kv (4S LiPo)	1,072g	£32.99
64mm	FMS 3150kv (4S LiPo) - New	1,162g	£49.99
70mm	FMS 2750kv (4S LiPo)	1,253g	£64.99
70mm	PowerFun 3400kv (4S LiPo)	1,435g	£39.99
70mm	PowerFun 2300kv (6S LiPo)	1,816g	£39.99
70mm	FMS 1900kv (6S LiPo) - New	TBA	£64.99
90mm	PowerFun 1450kv (6S LiPo)	2,924g	£79.99
90mm	PowerFun 1100kv (8S LiPo)	3,360g	£79.99
90mm	FMS 1500kv (8S LiPo) - New	4,800g	£169.99

Complete Electrical Setup For Quickie Ghost by Tobe Källner

Part No.	Description	RRP
PO-2826-1290	28mm Brushless Outrunner Motor	£22.99
4M-ESC30A	30A Brushless ESC + Programming Card	£27.45
APCE 8x4	APC Electric 8" x 4" Prop	£3.00
2x 4M-100AMG-022	2x 10g Digital Metal Gear Servo 2.2Kg	£9.98
PPL-40C3S-1300	11.1, 40C, 3S, 1300mAh LiPo Battery	£15.75
2 Part Alloy U/C	40 Size Alloy Undercarriage	£7.99
2.5" Rubber Wheels	Pair of 2.5" Rubber Wheels	£2.25
4mm Stub Axels	Pair of 4mm Stub Axels	£3.99
"Quickie Ghost" Stickers	"Quickie Ghost" Sticker Set	£9.99

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2S 4000mAh LiPo Battery for Spektrum DX6 (New) DX6e, DX7 (New), DX7S, DX8, DX8 Gen 2 and DX9 Transmitters

Approved by The BMFA for the Payload and Egg Challenges

Purple Power Professional LiPo's (JST-XH)

PPL-25C1S-0220	25C/50C, 1S (3.7V) 220mAh	£1.99
PPL-25C2S-0350	25C/50C, 2S (7.4V) 350mAh	£3.83
PPL-25C2S-0450	25C/50C, 2S (7.4V) 450mAh	£4.42
PPL-40C2S-0800	40C/80C, 2S (7.4V) 800mAh	£7.42
PPL-40C2S-1000	40C/80C, 2S (7.4V) 1000mAh	£8.97
PPL-40C2S-1300	40C/80C, 2S (7.4V) 1300mAh	£10.67
PPL-40C2S-1800	40C/80C, 2S (7.4V) 1800mAh	£14.23
PPL-40C2S-2200	40C/80C, 2S (7.4V) 2200mAh	£16.13
PPL-40C2S-2600	40C/80C, 2S (7.4V) 2600mAh	£19.45
PPL-40C2S-3300	40C/80C, 2S (7.4V) 3300mAh	£24.60
PPL-25C3S-0350	25C/50C, 3S (11.1V) 350mAh	£5.70
PPL-25C3S-0450	25C/50C, 3S (11.1V) 450mAh	£6.59
PPL-40C3S-0800	40C/80C, 3S (11.1V) 800mAh	£10.57
PPL-40C3S-1000	40C/80C, 3S (11.1V) 1000mAh	£13.20
PPL-40C3S-1300	40C/80C, 3S (11.1V) 1300mAh	£15.75
PPL-40C3S-1800	40C/80C, 3S (11.1V) 1800mAh	£21.10
PPL-40C3S-2200	40C/80C, 3S (11.1V) 2200mAh	£22.50
PPL-40C3S-2600	40C/80C, 3S (11.1V) 2600mAh	£28.77
PPL-40C3S-3300	40C/80C, 3S (11.1V) 3300mAh	£36.50
PPL-40C3S-3700	40C/80C, 3S (11.1V) 3700mAh	£41.42
PPL-40C3S-4500	40C/80C, 3S (11.1V) 4500mAh	£51.01
PPL-40C3S-5000	40C/80C, 3S (11.1V) 5000mAh	£56.49
PPL-40C3S-6000	40C/80C, 3S (11.1V) 6000mAh	£67.49
PPL-40C4S-1800	40C/80C, 4S (14.8V) 1800mAh	£28.14
PPL-40C4S-2200	40C/80C, 4S (14.8V) 2200mAh	£31.49
PPL-40C4S-2600	40C/80C, 4S (14.8V) 2600mAh	£37.91
PPL-40C4S-3300	40C/80C, 4S (14.8V) 3300mAh	£46.80
PPL-40C4S-3700	40C/80C, 4S (14.8V) 3700mAh	£53.40
PPL-40C4S-4500	40C/80C, 4S (14.8V) 4500mAh	£67.49
PPL-40C4S-5000	40C/80C, 4S (14.8V) 5000mAh	£74.79
PPL-40C4S-6000	40C/80C, 4S (14.8V) 6000mAh	£89.49
PPL-40C5S-3300	40C/80C, 5S (18.5V) 3300mAh	£60.62
PPL-40C5S-3700	40C/80C, 5S (18.5V) 3700mAh	£68.64
PPL-40C5S-4500	40C/80C, 5S (18.5V) 4500mAh	£83.99
PPL-40C5S-5000	40C/80C, 5S (18.5V) 5000mAh	£92.99
PPL-40C5S-6000	40C/80C, 5S (18.5V) 6000mAh	£112.00
PPL-40C6S-3300	40C/80C, 6S (22.2V) 3300mAh	£72.99
PPL-40C6S-3700	40C/80C, 6S (22.2V) 3700mAh	£82.49
PPL-40C6S-4500	40C/80C, 6S (22.2V) 4500mAh	£99.99
PPL-40C6S-5000	40C/80C, 6S (22.2V) 5000mAh	£111.50
PPL-40C6S-6000	40C/80C, 6S (22.2V) 6000mAh	£134.00

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-PDRV50-60	For 5.0mm shafts	£3.95
PP-PDRV60-60	For 6.0mm shafts	£4.75
PP-PDRV80-80	For 8.0mm shafts	£5.95
PP-PDRV10-12	For 10.0mm shafts	£7.95

Brushless Electronic Speed Controllers (32 Bit)

4M-ESC6A	6A, Burst 10A, 5.5V 1.5A BEC, 2 LiPo	£ 9.99
4M-ESC12A35	12A, Burst 15A, 5.5V 2A BEC, 2-3 LiPo	£13.95
4M-ESC20A	20A, Burst 23A, 5.5V 4A BEC, 2-4 LiPo	£14.95
4M-ESC30A	30A, Burst 35A, 5.5V 4A BEC, 2-4 LiPo	£17.95
4M-ESC40A	40A, Burst 50A, 5.5V 5A BEC, 2-6 LiPo	£28.95
4M-ESC50A	50A, Burst 60A, 5.5V 5A BEC, 2-6 LiPo	£39.95
4M-ESC60A35	60A, Burst 70A, 5.5V 5A BEC, 2-6 LiPo	£44.95
4M-ESC60A40	60A, Burst 70A, 5.5V 5A BEC, 2-6 LiPo	£44.95
4M-ESC70A	70A, Burst 80A, 5.5V 5A BEC, 2-6 LiPo	£49.95
PP-TESC80AU	80A, Burst 90A, 5.5V 5A BEC, 2-6 LiPo	£55.00
4M-ESC90A	90A, Burst 100A, 5.5V 5A BEC, 2-6 LiPo	£57.50
PP-TESC90HVAU	90A, Burst 100A, OPTO, 5-12 LiPo	£89.99
PP-TESC120HVAU	120A, Burst 140A, OPTO, 5-12 LiPo	£99.99

UBEC's (Voltage Stabilisers/Regulators)

PP-UBEC4A	4A UBEC, 5A Peak, 8-22V I/P	£10.34
PP-UBEC5A	5A UBEC, 6A Peak, 9-33V I/P	£11.28
PP-UBEC6A	6A UBEC, 7A Peak, 6-25V I/P	£18.62
PP-UBEC20A	20A UBEC, 22A Peak, 9-50V I/P	£24.99
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	£27.49
PO-3535-	870kv, 1090kv, 1390kv	£28.99
PO-3541-	920kv, **1070kv**, 1270kv	£33.99
PO-3547-	700kv, 800kv, 960kv, 1190kv	£35.99
PO-5055-	500kv, 595kv	£61.00
PO-5065-	360kv, 420kv	£75.50
PO-6366-	230kv	£97.75

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

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The Electric Flight Specialists

Great Value Quality Servos From £2.42

	Part Number	Type	Torque / Speed	Price
	4M-045DH-005	Digital Sub Micro 4.5g	0.5Kg @ 4.8V - 0.10sec/60° 0.6Kg @ 6.0V - 0.08sec/60°	1pcs £4.49ea 5pcs £4.04ea
	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 £8.99ea 5pcs £8.09ea
	4M-094DMGB-014	Digital Metal Geared Ballraced Wing Servo Only 8mm Thick - 9.4g	1.4Kg @ 4.8V - 0.12sec/60° 1.9Kg @ 6.0V - 0.10sec/60°	1pcs £10.99ea 5pcs £9.89ea
	4M-090AH-017	Micro Analog 9g	1.7Kg @ 4.8V - 0.09sec/60° 1.9Kg @ 6.0V - 0.07sec/60°	1pcs £2.69ea 5pcs £2.42ea
	4M-100AMG-022	Micro Analog Metal Geared - 10g	2.2Kg @ 4.8V - 0.12sec/60° 2.5Kg @ 6.0V - 0.10sec/60°	1pcs £4.99ea 5pcs £4.49ea
	4M-100DMG-022	Micro Digital Metal Geared - 10g	2.2Kg @ 4.8V - 0.12sec/60° 2.5Kg @ 6.0V - 0.10sec/60°	1pcs £6.49ea 5pcs £5.84ea
	4M-094DHVMG-026 (High Voltage)	Digital Metal Geared - 9.4g Ball Raced Only 8mm	2.0Kg @ 6.0V - 0.09sec/60° 2.6Kg @ 7.4V - 0.07sec/60°	1pcs £14.99ea 5pcs £13.49ea
	4M-160AH-027	Mini Analog 16g	2.7Kg @ 4.8V - 0.13sec/60° 3.0Kg @ 6.0V - 0.11sec/60°	1pcs £5.99ea 5pcs £5.39ea
	4M-175DMG-030	Mini Digital Metal Geared - 17.5g	3.0Kg @ 4.8V - 0.13sec/60° 3.5Kg @ 6.0V - 0.11sec/60°	1pcs £7.49ea 5pcs £6.74ea
	4M-253AB-028	Standard/Mini Size Ballraced - 25.3g	2.8Kg @ 4.8V - 0.12sec/60° 3.3Kg @ 6.0V - 0.10sec/60°	1pcs £5.99ea 5pcs £5.39ea
	4M-410ABH-052	Standard Analog Ballraced - 41g	5.2Kg @ 4.8V - 0.20sec/60° 6.5Kg @ 6.0V - 0.16sec/60°	1pcs £4.50ea 5pcs £4.05ea
	4M-455AH-033	Standard Analog 45.5g	3.3Kg @ 4.8V - 0.15sec/60° 4.0Kg @ 6.0V - 0.12sec/60°	1pcs £6.12ea 5pcs £5.51ea
	4M-556AMG-087	Standard Analog Metal Geared - 55.6g	8.7Kg @ 4.8V - 0.15sec/60° 9.4Kg @ 6.0V - 0.13sec/60°	1pcs £11.99ea 5pcs £10.79ea
	4M-556DMG-087	Standard Digital Metal Geared - 55.6g	8.7Kg @ 4.8V - 0.15sec/60° 9.4Kg @ 6.0V - 0.13sec/60°	1pcs £14.99ea 5pcs £13.49ea
	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 £17.99ea 5pcs £16.19ea
	4M-556AMG-118	Standard Analog Metal Geared - 55.6g	11.8Kg @ 4.8V - 0.20sec/60° 13.2Kg @ 6.0V - 0.18sec/60°	1pcs £13.99ea 5pcs £12.59ea
	4M-556DMG-173	Standard Digital Metal Geared - 55.6g	17.3Kg @ 4.8V - 0.18sec/60° 20.4Kg @ 6.0V - 0.16sec/60°	1pcs £16.99ea 5pcs £15.29ea

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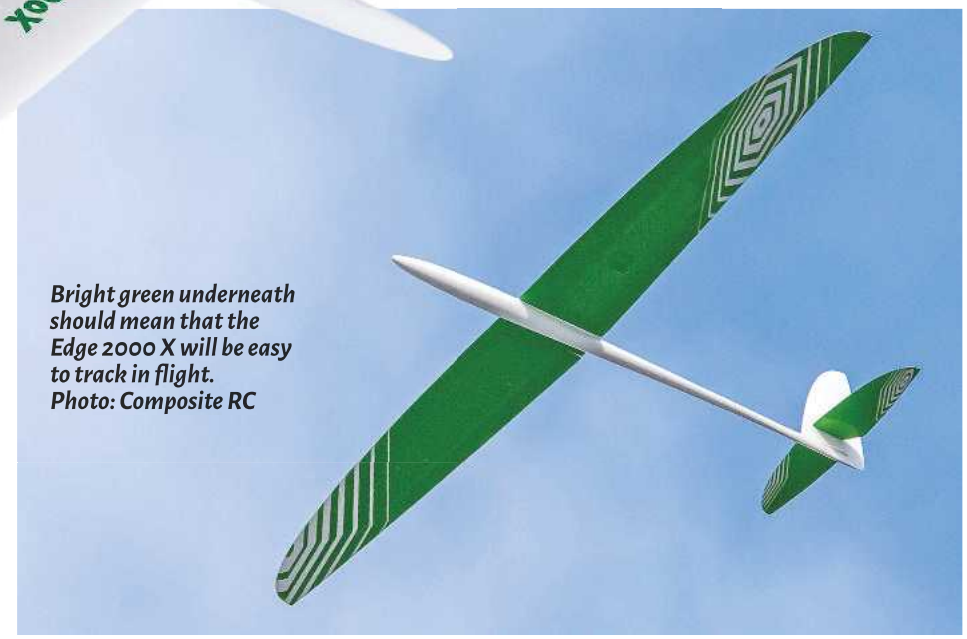
EDGE 2000 X

Looking for his next project plane, the Editor's eyes fell upon a sleek two-metre moulded slope soarer

words » Kevin Crozier | photos » Kevin Crozier & Composite R/C



Bright green underneath should mean that the Edge 2000 X will be easy to track in flight. Photo: Composite RC

Spurred on by the successful completion of the Infinity Pro F5J thermal soarer, which I have been describing over the past few issues, I thought I would continue to expand my composite model building skills by tackling another glider, this time a slope soarer. In time I hope to have enough confidence to tackle a high level composite F3A model or maybe even a moulded jet... Well, you can but dream!

INTRODUCING COMPOSITE RC

The Edge 2000 X is just one of a series of impressive sport and scale moulded soarers being produced by Composite RC Gliders in Germany.

Take a look at their website **composite-rc-gliders.com/en/** and you can't help but be struck by the number of gorgeous models on offer. I had to wrench myself away from their sleek, white scale models as what I really needed was a relatively compact aerobatic slope soarer that I could walk with to the top of the local hill without weighing myself down too much and aggravating a recently diagnosed dodgy hip. (Hmm... flat field flying one of their scale lovelies with a FES could be the way out of that one; maybe I'll add it to my wish list!)

After comparing notes on the wide range of possible slope candidates, I settled on the near 2M wingspan Edge, which is also available in 1.5M format. The Edge 2000 X is described as, "

A spread of the main airframe parts - all top-notch!

Accessories are also of good quality. Mrs. C and I enjoyed sharing the gummy sweets!

PART 1

"I had to wrench myself away from their sleek, white scale models"

A fast slope glider that will give you the ultimate adrenaline rush!"

Although fast and highly manoeuvrable, the description also claims that the Edge can be landed very slowly - an attractive trait considering the restricted landing areas on some parts of my local hill.

It is available as a pure glider with a narrow fuselage and ballast tube, or as an electric model with sufficient space for the motor, ESC and LiPo, but no ballast tube.

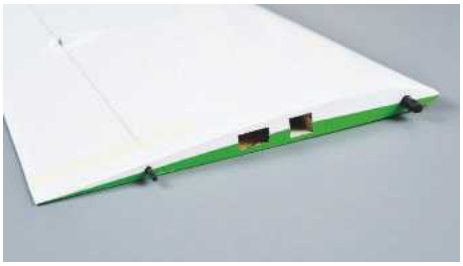
MATERIALS & VERSIONS

The Edge is moulded from two types of composite material - woven glass cloth with various carbon reinforcements, and full carbon. The fuselage nose sheath, which covers the receiver, is made entirely with glass fibre for better signal reception.

Composite RC offer this model in four different versions:

- Standard Kit: All standard parts including a wiring harness
- Full Build Kit (Glider): Standard kit plus servo set, battery and magnetic switch
- Full Build Kit (Electro): Standard kit plus servo set, spinner, propeller, motor, gearbox, ESC and LiPo
- Read to Fly: As per the Full Build Kit, but fully assembled and RTF

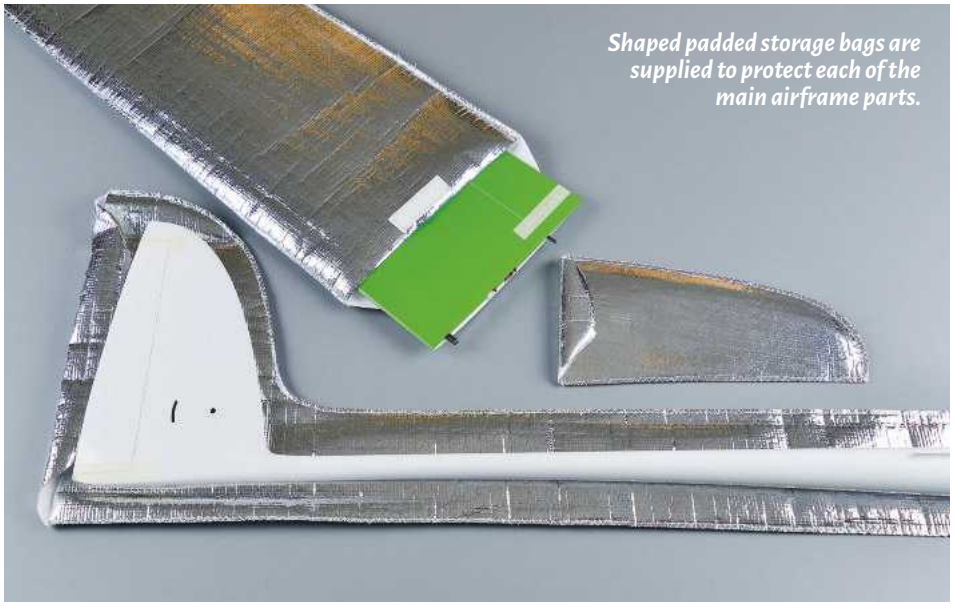
I chose the Full Build Kit (Glider), which includes four KST X08H Plus servos for the wings and two KST X12-508 servos to operate the rudder and elevator. It also comes with a 7.4V 3350 mAh Li-ion flight battery and a magnetic switch. I also ordered the optional foil style decal sheets to replicate the smart decals shown on the model featured on the website.



The wings are made to a very high quality. Note the factory fitted incidence pegs.

Distinctive 'open motor' KST X08H Plus servos are supplied for the ailerons and flaps, whilst a pair of KST X12-508s operate the tail surfaces.

Full Build Kit even includes a radio battery in the shape of this 7.4V 3350 mAh Lilo pack. A slim magnetic switch is also supplied.



Shaped padded storage bags are supplied to protect each of the main airframe parts.

WINGS & TAIL

Delivered quickly by courier, the kit arrived in a plain but sturdy cardboard box. Inside, the airframe parts are held secure in transit with copious amounts of polystyrene foam sheet offcuts. Each main component is further protected by a shaped padded bag; there's even one for the fuselage! The material used is a thin reflective material, similar to that used behind radiators, so it should help with keeping those minor bangs and scrapes at bay when getting them in and out of the car.

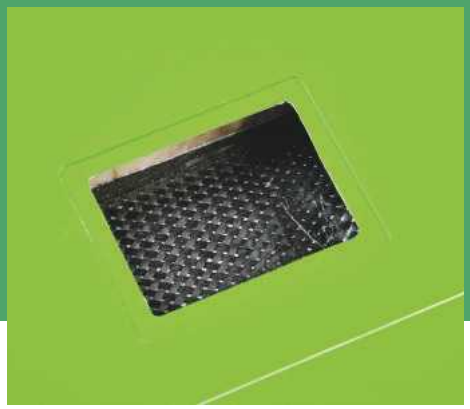
Being bright white on top and vivid green underneath should ensure good visibility when flying at a distance.

On sunny days it would pay to take the wing and tail bags up the slope with you so that you can cover the model up when not flying and deflect the sun's rays a bit; however, the top colour is white so this is not so critical as, say, with a black carbon finish.

The wings are of a swept elliptical design and they help the Edge to look fast even when it's standing still! Each panel is made

"Each main component is further protected by a shaped padded bag"

The tail joiner rod needs sanding down to be an interference fit within the larger tailplane pivot tube.



Moulded servo bay ready for gluing in the KST servo mounts.

from glass fibre and carbon, with carbon inlays at highly stressed points, all laid up using high strength gel coat. Whilst some carbon wings can seem a bit thin to the touch, the skins on these ones are reassuringly rigid and you can give them a good squeeze without cracking them. If you are prone to be a bit heavy handed when handling/assembling a model (like me!) then this is very welcome!

The wing and tail panels are painted in their moulds, with the top sides in white and the bottom sides in bright green - I don't think the Edge will be difficult to track on a fast speed run!

The carbon wing joiner is also nice and sturdy, but you can order an optional 252g steel joiner if you want to supplement the fuselage mounted ballast. The all-moving-tail joiner is also from carbon, this time a rod, but it will need sanding down a tad to fit the tail tubes. When I queried this with Composite RC, they confirmed that this would be necessary but did not say why; I guess that it enables an interference fit between the rod and tail tubes so that friction keeps the tail halves safely in place. If you overdo it then a smear from a glue stick should do the trick, which is a common way of keeping AMT tails in place.

Small bulges on the top surfaces of the ailerons, flaps and trailing edges help smooth the airflow over the pushrods and control horns.

The kit comes with a full set of servo mounts that need to be glued to the top wing skins, inside the open servo bays. Matching covers are provided to seal the servo hatches. An aileron/flap wiring harness is supplied for each wing, fitted with a Multiplex style green connector that needs to be bonded to the wing root.

Whilst at the wing roots mention should also be made of the pre-fitted carbon rod incidence pegs, using a larger diameter at the front and a smaller rod at the rear of the JH 6/8 wing section.

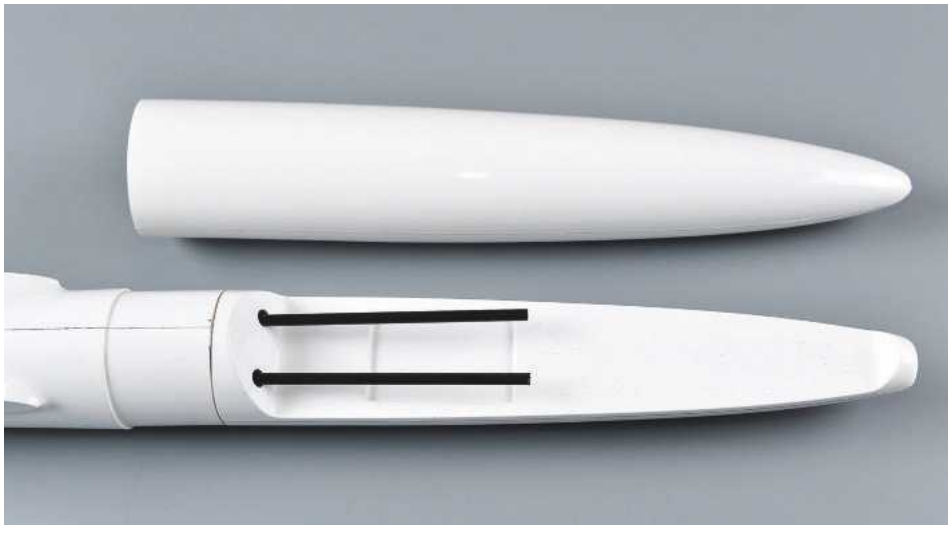
The overall impression of each wing and tail panel is of high quality and great strength. They are extremely well finished, and the flaps and ailerons are finely cut and close fitting. Each control surface is fitted with a full span aerodynamic seal along their leading edges.

FUSELAGE

Like the flying surfaces, the fuselage is made from high strength gel coat and glass/carbon composites, with carbon inlays added at highly stressed points. It is painted white in the mould.

Wing wiring harness connected to its matching fuselage wires. The green connectors will need bonding to the fuselage sides and the wing roots.

As previously mentioned, the nose sheath is made entirely from glass fibre, without any carbon, for better signal reception. Pulling off the nose reveals an inner radio tray with a moulded area that needs cutting out to suit your preferred servos. The forward area is flat but may also need cutting out to suit your R/C battery and receiver, depending on their size. I'll be using Composite RC's own battery pack, which, while not huge, will almost certainly need dropping into a hole up front that I will need to Dremel and file out.



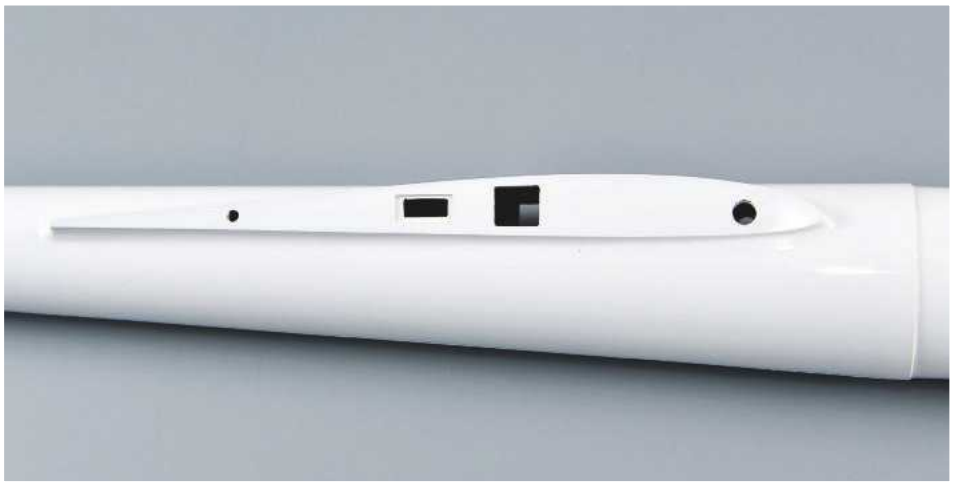
Nose sheath is all glass fibre to stop it from shielding the Rx aerials. The radio tray needs cutting out to accept the servos and battery pack.

Neatly moulded tail fin showing the pivot hole and rear movement arc of the ready fitted AMT bell-crank.

Above: Ballast tube access hole is covered by the nose sheath in flight.

"...the overall impression is one of high strength and great quality"

Below: Wing root moulding. The smaller rectangular hole is pre-cut to accept the green connector fitted to the servo wiring harness.



Carbon pushrods are installed, ready for equipping at the nose end with the threaded studs and spring steel clevises supplied. At the back end the pushrods are already connected up to their respective control surfaces, using a compact epoxy glass horn and metal clevis at the rudder, whilst the other is linked up to the bell-crank for the all-moving-tailplane.

Turn the fuz over and you will see the pre-fitted ballast tube (glider version only) into which you can slide up to ten 19mm dia. x 33mm long ballast slugs.

As with the wings and tail the overall impression is one of high strength and great quality. The only very minor negative comment I have is that the join line between the two halves of the body is quite prominent and ever so slightly raised. Although the body colour is white, this line shows up black where the carbon shows through, so it looks like a fine black key-line. It's very consistent though so to my eyes is not unattractive - it would be though if I tried to disguise it! But if such join lines between mouldings offend you then you could easily rub it down and respray the fuselage. Personally, I don't think it's worth the trouble and it looks fine as it is.

You can see the Edge in action at this dramatic flying site. Visit YouTube and search for: Edge 2000 X Configuration Tests. Photo: Composite RC

NEXT TIME

In part two I will be making a start on assembling the wings and fitting out the fuselage.

DATAFILE

Wingspan:	1.998 mm
Wing area:	32 sq. dm.
Flight weight:	1470g
Wing loading:	45.9 g/dm. sq.
Airfoil:	JH 6/8
Fuselage ballast:	19mm dia. x 33mm (x10)
Wing ballast:	Optional 252g steel joiner
Controls:	Elevator, Rudder, Ailerons, Flaps
Electric version:	
Motor mount:	34 mm
Spinner:	35 mm
Motor:	A20-12XL
ESC:	Hacker X-30-pro
Battery:	3S 2400 mAh LiPo
Propeller:	11" x 6"

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THE POWER AND THE GLORY

Still in lockdown, Whittaker takes us on a virtual visit to the BMFA Scale Nationals

words & photos » Alex Whittaker

Last week I should have got the Command Module out of storage. I should have checked the Calor gas, replenished the water tanks and loaded up the tinned provisions. Early on the Friday morning Crash Parry should have been laying in the fresh food and the many boxes of licensed victuals. I should have been pumping diesel into Big Suzy's tanks and checking the towing connections to the Command Module. The night before I would have charged up all my camera batteries and put the Honda mains generator into the car. Instead - nothing! Just a dull, long weekend of Bank Holiday blues.

This endless and unendurable 2020 lockdown thingy is taking its toll. But instead of allowing myself to be a stay-at-home victim, I decided to take a virtual trip to The Power Nats. I took my camera with me, too, as you can see.

FRIDAY

In a normal year, when we pull our road-train onto Blessed Barkston Heath, my first task is to unhitch the Command Module. I then hare off to get even more fresh water. Mind you, these days it is more of a leisurely tortoise.

There's much activity in the scale pits.

Martin Fardell's fine 1/5th scale Ryan Brougham, finished in Sig Koverall.

Above: Mick Henderson's DH9 really is exquisite. Right: Mick Henderson assures himself that his latest DH9 is on the glide path.

Dave Knott's 2017 BMFA F4C Scale Nats winning Hawker Hurricane Mk I.

Above: Richard Crapp's amazing 1/5th scale, 15 kg Westland Wessex.

On the walk back from the standpipe I always meet dear old friends for a chinwag. Oddly enough these are mostly RCM&E readers, whom I only know from The Power Nats. We need water because we drink a lot of tea and so do our many visitors. Mind you all our boozy hack pals from the mag drink much more alcohol than tea. This is why The Command Module has its own Bar.

This means that by the time I return, Crash Parry has already sorted out the savoury nibbles and the chilled gins and tonic. Parry and I then hold our celebrated Friday Night literary salon in The Command Module.

None of our scribbler pals can walk past an uncorked bottle, so the soiree lasts well into the night. So long in fact that it is almost too late for Parry and I to eat. We throw out the thirsty hacks and Parry rustles up something extravagant, which we wolf down.

Normally at this point my oldest flying mate, Roger James arrives from Geordieland. He is always late, but he prefers beer. Since we are now quorate, we repair to the famous Nats Coolers Bar. In ye olden days this was pitched in the vast RAF hangar. One of the great aeromodelling experiences was to walk across in the pitch-dark, tripping over tent pegs, and then to enter the noise, light, and warmth of the hangar. It used to be abuzz with kids making balsa models, indoor 'leccy flyers behind tall nets and, best of all, the aforesaid Coolers Bar. All my reprobate mates would be there, propping up the Bar, and trying to cadge a round.

"This endless and unendurable 2020 lockdown thingy is taking its toll"

Left: John Carpenter's Howard 'Pete' on the Barkston tarmac.

David Fisher with his appealing Cirrus SR22T. Weighs 17 lbs.

Terry Manley's Blackburn Blackburn flying in Stand Off Scale.

The BMFA Nats provides the occasion for some old-fashioned flag waving.

Jim Currie's 35-year-old DH Tiger Moth.

"None of our scribbler pals can walk past an uncorked bottle, so the soiree lasts well into the night"

Mick Reeves and his MR Models Sopwith 1.1/2 Strutter.

Steve Jackson's magisterial Avro 504K.

Since we scribblers only all met up just this once per year, happy hours would pass as we talked about magazine stuff. In the old days there would be photographers and writers from five or six UK model magazines, plus a few continental titles, all represented around the Bar. We mostly discussed model kit reviews, engine tests, cover shots and, of course, the latest office gossip.

Mick Henderson's 1/4 scale Airco DH9A wafts majestically through the ether.

Chris Allen, Contest Director and BMFA Scale Tech Committee member, consults Alan Glover with the mic.

John Carpenter's exceedingly cute, Pobjoy engined, scratch built Comper Swift. Laser 180 powered.

Mike Sollitt triumphed in Flying Only in 2015 with his Hangar 9 Mustang.

Jim Reeves' Bristol M1C from the MRM Models kit. This example is electric powered.

Some Callers and Pilots use a simple 'aide memoire' to list their manoeuvres.

SATURDAY

We always have an early start on Nats Saturday because the Barkston weather is so fickle. You can't camp out at The Nats and go home with nothing to show for the magazine after four days! If you are a scribbler/photographer covering the Scale Nats then most of the time you fret about the weather, the wind and, most of all, the light. Even if the light is right, the wrong wind direction can put too much distance between your camera and the model, making flying shots rather fraught. A good bright, but not too windy Saturday is a godsend, but rarely do those particular stars align. At any rate, after a full day on the flight line, you get back to The Command Module tired and either sun or wind burnt. Maybe both.

A slap-up Weatherspoons dinner in beautiful downtown Grantham revives one, as well as a small libation just before bo-bos. You charge your batteries and roll into your sleeping bag hoping for blues skies, calm winds and fluffy clouds.

SUNDAY

At about five AM the rain hammering on the Command Module roof presages a difficult photographic day. Parry and I have our usual breakfast of porridge oats and honey, plus a round of toast, with coffee. We then set off back to the Scale Line. The mood on the scale line is as gloomy as the weather. I have chosen an eclectic mix of international attire against the biting wind and rain. French neoprene wellies, comforting US parka, a sturdy British fleece, plus two wheelie bags of cameras and a folding seat. By lunchtime there have been only a few flights, causing me to check my notes and review yesterday's shots. I need to narrow down the scale contenders I have missed. These now go on my Hit List. I must get those missing models at all costs. Disappointingly, the afternoon is rained off and wind rattles all the tents in the Trade Village. I can even see some caravans leaving early. Parry and I go back to the Command Module for a late lunch. The whole of The Nats

Jeff Harnoll's superb 1:4.5 scale Tachikawa Ki 19. Allied recognition name: Spruce.

Above: David Osborne's 1/5th scale electric Bronco. Twin Axi 2328 out-runners driving 17" x 12" props.

Below: Davie Fisher's beautifully finished Boeing Stearman from the Flair kit.

"The happy mood continues, and Parry and I break camp at teatime"

is put on hold. Soon friends arrive, sodden but unbowed. The mood lightens after a few bottles of fat Tesco Bordeaux. The weather gets worse, so we order in a vast Chinese meal. It is only fitting that we send the only Methodist amongst us to Grantham to pick it all up. After that we battle through the rain to the reviving Coolers Bar. We chat about model aircraft into the wee sma' hours.

MONDAY

Miraculously, Bank Holiday Monday is fresh and bright. The Scale Line starts early. I have a very satisfying day's shooting, crossing-off the scale models that the previous bad weather had hidden for my camera.

Lunchtime and I realise that I now have just about enough flying shots. I relax a bit, rattle off a few crowd shots, a few trade shots and a few more model walk-arounds. I even get a few nice shots in the Judging Tent. I am starting to feel good. I will not, after all, have to make excuses for the weather to my Editor. The happy mood continues, and Parry and I break camp at teatime and start the long roll home to Wales. Job done.

Peter Fullard's modded ARTF Westland Wyvern.

Alistair Foot and his 1.5m span EDF foamie DH Venom. Weighs 2.9 kgs.







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OVERLANDER RC-D100 V2

Andrew James tries out a smartphone friendly, plug-in battery charger

words & photos » **Andrew James**

Since I prefer to charge all my flight packs at home before a flying session, I have a preference for plug-in AC mains powered chargers. Last year (RCM&E, Dec 19) I reviewed Overlander's RC-S65 single output AC charger and found it to be an excellent small footprint device for charging up to 4S LiPo packs. I usually use either a two or four output charger to prepare sufficient packs for a session, and this little unit is small enough to use alongside in my charging cabinet, and so helps speed things up when charging multiple packs. Its small size and unobtrusive cooling fan also means that it is perfect for taking indoors to charge my Tx NiMH batteries too.

When the Editor subsequently offered me the RC-S65's big sister to take a look at, I was intrigued to see what extra facilities it would offer. The headline features that caught my eye were Scan To Go and Voice Guide, as well as the twin outputs for up to six lithium cells.

Using the Charge Tracker app with the RC-D100 V2 makes setting up fast and easy.

SPECIAL FEATURES

Here are just a few of the Special Features of the Overlander RC-D100 V2 highlighted in the manual:

Colourful flip top box.

It's worth keeping the D100 in its foam lined box for added protection when not in use.

Twin Channel Charger - twin outputs allow you to charge two packs completely independently. They can be of differing capacities and chemistry types.

Dual Input & Power Distribution - I favour the AC 100 - 240V input, using the three pin UK power lead supplied, but a DC 11 - 18V input is also provided via an XT-60 female connector. The DC connector can also be used to output 13.8V so the RC-D100 can double up as a DC power supply too.

In DC mode the power of each channel is 100W, but in AC mode you can distribute the power as required between each channel and the DC power supply.

Optimised Operating Software - the AUTO function sets the optimal current during charging or discharging. However, all the

Box contents includes two XH balance boards, two XT-60 conversion leads and two tinned leads for fitting your own choice of connector.

The extra leads are fitted with 4mm banana plugs, moulded together at the correct spacing to fit the charger's outputs.

If you want to set things up manually then these buttons will be familiar to those with previous experience of most Chinese made chargers.

settings can be configured manually if preferred.

Voice Guide - this is meant to make using the charger more intuitive and user friendly but if you don't like it you can turn it off (the default setting). When changing settings my fingers work faster than the voice, so things can get a bit garbled. But when you work slowly and allow it to catch up the information given comes over loud and clear. For me the most useful thing it does is to tell you straight away if there is a connection problem.

Battery Memory - store up to ten different charge or discharge profiles.

Terminal Voltage Control - allows you to change the end voltage. This is set to 4.2V for a LiPo, but you could set it a bit higher if you want to really push things to the limit. I'm very happy to leave it at the factory settings to protect my precious battery packs.

PC Control Software - If you visit the RC-D100 V2 page on Overlander's website you can freely download the Overlander Charge Tracker PC Software to control the charger from your computer via the micro USB connector in the middle of the front panel: **https://www.overlander.co.uk/overlander-d100-v2-ac-dc-dual-balance-charger-discharger-power-supply.html**

Smartphone Control - From previous experience with other chargers I can tell you that the PC software mentioned above is very useful, if you have room at your charging station to accommodate a laptop. But with the D100 V2 it's almost redundant as you can also control the charger via the 'Charge Tracker V2' app on your phone or tablet, via Bluetooth. The app is available for both iOS and Android devices.

SCAN TO GO - Using the Charge Tracker app you can input the settings for a particular battery type and then create a unique QR code for it. This can then be printed out onto labels and stuck to each pack that you have of that particular type. Charge Tracker can then be used to scan each battery and charging will start automatically. Of course, the battery needs to be connected to the charger beforehand for this to happen!

Re-Peak Mode - found in the NiCd and NiMH modes, this feature will be a favourite with all of those who like to 'top up' their packs before going flying.

Cyclic Charging/Discharging - programme between one to five charge/discharge cycles (or discharge/charge if you prefer to do things the other way around!)

Battery Meter - use the D100 V2 like a hand-held battery monitor to check the voltage of individual cells, and their internal resistances too. The total IR of the pack can also be displayed. As each LiPo pack ages its IR will increase so this is a good way of monitoring the health of your valuable battery packs.

Temperature Threshold - You can monitor the temperature of a battery pack being charged by holding it against an optional temperature probe. When a set temperature limit is reached the charge process will be stopped.

RC-D100's output ports are fitted with 4mm sockets and 6S XH balance connectors. Temperature probe inputs, USB output and a Micro USB connector are in-between.

CONNECTIONS

A peculiarity of the RC-S65 was the XT-60 connector used at the output. This meant that I couldn't use my usual charge leads fitted with 4mm banana plugs, although I did find alternative ways to connect packs without too much trouble; I was chuffed to find that my most numerous EC3 packs could be plugged straight in...

But this is not a problem with the D100 V2 as both outputs are equipped with 4mm gold sockets. Underneath is the usual XH balance connector for up to 6S packs, and two matching XH balance boards are also supplied.

Large vents and a decent fan provide good cooling and quiet running.

Rear view showing the AC input and DC input/output via an XT-60 connector.

If you have packs with other types of balance connectors then you'll need to use a matching balance board, but chances are that you'll have those already.

Next to each balance connector are the temperature probe inputs, and between those are a 5V USB output and the Micro USB connector for linking up a PC.

At the rear are the AC input and a DC input/output in the form of an XT-60 connector. An LED lamp lights up to show when you are using DC power.

IN USE

If you have used previous generations of chargers, such as the RC-65S reviewed last time, then using the clear backlit LCD display and its four buttons to set up the common types of model battery packs will be very familiar to you. The only difference is an extra button on the far left, which is used to swap between the two channels, and the Voice Guide.

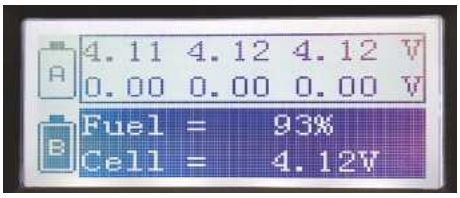
However, with the SCAN TO GO software and the matching Charge Tracker app on your phone those buttons soon become a bit redundant. After downloading the iOS version of the app to my iPhone I was keen to try it all out.

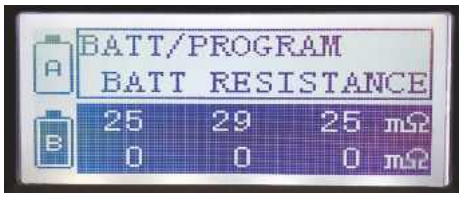
At the top of the home screen you can select the charging channel you want to use. Below that are three rotating menus that allow you to scroll through and set up the battery type - LiPo, Li-ion (shortened to Lilo), LiFe, LiHV, NiMH, NiCD and Pb, then the number of cells - Lithium 1 - 6, Nickel 1 - 15, and Pb 2 - 20V. The final 'wheel' selects the Operation Mode; for LiPo these are Balance Charge, Charge, Discharge, Storage and Fast Charge, but the choice of modes will change to those most applicable to the battery chemistry you have chosen.

After selecting the required settings pressing NEXT brings up a page that confirms the Battery Type, Battery Cells and Operation Mode that you selected, plus a further 'wheel' where you can select the Charge Current. I usually charge LiPos at 1C, so for a 3S 2200mAh pack I would set this to 2.2A.

You can then press the green START button to begin charging, but before you do it's worth checking the System screen, selected at the bottom of the screen. This

Backlit LCD screen clearly shows the status of both charging channels.



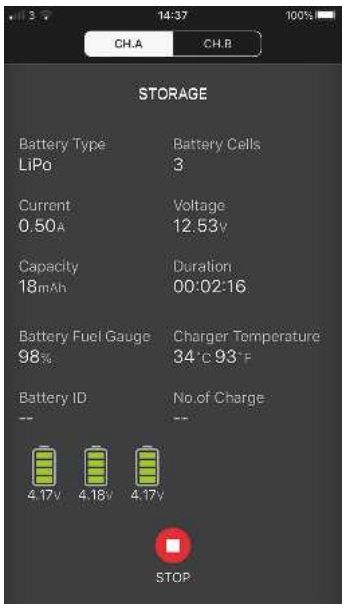


Sample views in both Battery Meter and Battery Internal Resistance modes.

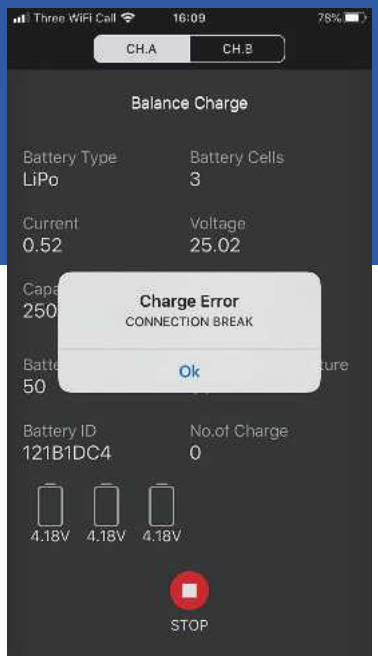
Charge Tracker app is free to download and very easy to use. Use the Home screen to select Battery Type, Number of Cells and Operation Mode.

The Next screen confirms the battery set up and allows you to change the Charge Current. Press Start to begin charging.

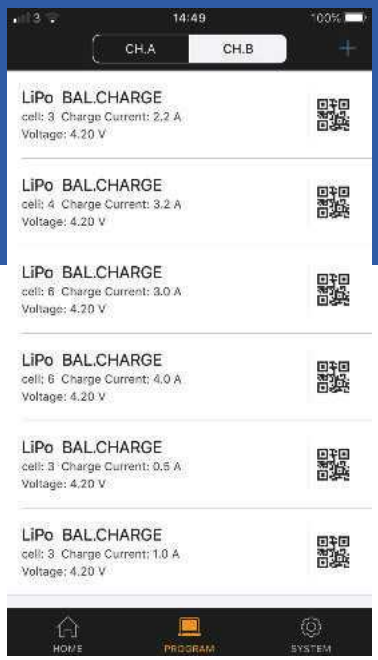
Settings screen shows everything you would expect from the System Settings menu of the charger.



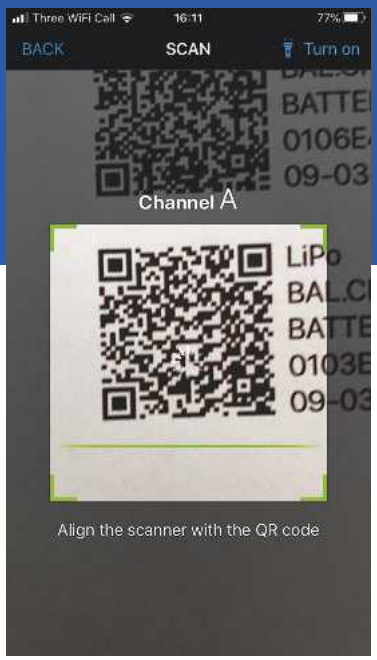
When charging starts you get a clear display of the charge/discharge status. This time we are in Storage mode.



If the Voice function is activated, then it will warn you when a 'Battery Is Not Detected'.



The Program section stores all your battery set-ups and matching QR codes.



Reading a QR code takes mere seconds, after which the charger will automatically start.

Print off the labels and fix to your batteries to get best use of the SCAN TO GO function.

shows you the system settings, most of which you will be familiar with from the menu of the same name when accessed directly by the charger's own buttons, such as Safety Timer and Temperature Cut-Off. I usually leave these settings well alone but the one I do find useful is Capacity Cut-Off, which I usually set at half the pack's capacity. The reason for this is that I usually store my LiPos at between 50 - 70%, so I don't want the charger to input any more than half capacity. The charging process should automatically shut off when the pack reaches full capacity, but just in case it doesn't it is reassuring to know that the Cut-Off has been set so that it can't keep charging ad infinitum.

SCAN TO GO

Below the battery settings is the SCAN TO GO button, but first you need to generate a QR code. Pressing the PROGRAM button at the bottom of the phone's screen takes you to the list of QR codes that you may have already generated, but to generate a new one you simply press the + icon, which brings up the now familiar rotating wheels showing Battery Type, Battery Cells and Operation Mode. When you have aligned all of them to suit, press OK. The next screen shows the Charge or Discharge Current and the Voltage Cut-Off; you may wish to change the former to the C value that you prefer, but it's wise to leave the Voltage Cut-Off well alone unless you really know what you are doing. When happy press SAVE and it will store the settings and generate a matching QR code to add to the list that you can see when first pressing the PROGRAM button. Alongside each QR code is a description of the battery and the parameters you have set.

The idea of SCAN TO GO is to print off each QR code as a label and to attach them to all the packs that you own of that particular type. To do this press the QR code and you will get the option to Print, Save or Cancel. Pressing Print assumes that your phone or tablet is paired with a compatible printer but if not you can simply press Save and the label will be stored as a picture in your Camera Roll, which you can then forward to your computer to print off as labels.

To scan a QR code simply return to the Home page of the app and press the SCAN TO GO icon, then select the channel that you wish to use. A QR reader will appear which you need to hover over the QR code. When the app reads the code, the charger will automatically start charging - it's like magic when you first see it working!

If, like me, you are no good at getting label sheets to line up correctly in a printer then don't despair. Simply call up the QR Code list by pressing the PROGRAM button, then click on the description of the battery type that you wish to charge (or discharge/storage). A Start button will then appear and you can start the charge from there - easy!

SUMMARY

By reducing the setting up of a charger to just scanning a QR code, we couldn't really ask for anything much better or easier. So Overlander's RC-D100 V2 gets a big thumbs up from me for just being able to do that.

It's also a very capable charger in its own right, the AC power, dual outputs and 6S capability making it a great choice for lots of modellers.

In my last review I also praised the small footprint of the RC-65S, which meant that I could get it inside my charging cabinet alongside my main quad charger. Well, the RC-D100 V2 is not much larger and it fits nicely in there too. Match that with a competitive price of £92.99 and its 'plug in, connect up, scan and charge' capability and I have to say that I'm mightily impressed.

Anything missing? The only thing I would like to see is the ability to change the Storage Charge cut-off voltage. It is currently set for the long-term storage of LiPos, but I'd like to be able to select a higher voltage for my regularly used packs so that I can stop it in the region of 60 - 70% capacity.

I can't wait to see what's next in Overlander's RC series of chargers. If they can give us this functionality and four outputs too, that would be the icing on the cake.

DATAFILE

Product name:	RC-D100 V2
Product type:	AC/DC Balance Charger, Discharger & Power Supply
Distributed by:	Overlander Batteries www.overlander.co.uk
RRP:	£92.99
AC input voltage:	100 - 240V
DC input voltage:	11 - 18V
DC PSU output:	13.8V, max. 100W
Battery types:	LiPo, LiHV, LiFe, Li-ion (1-6 cells), NiMH, NiCd (1 - 15 cells), Pb (2 - 20V)
Capacity range:	100 - 50000mAh
Charge power:	2 x 100W
Discharge power:	2 x 10W
Balance connector:	2 - 6 cells
Output connector:	2 pairs, 4 mm sockets

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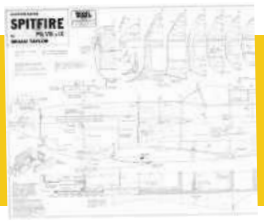

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"Flying using a 'pilot's eye view' can open up a whole new aspect of the hobby"

LOS TO FPV

Are you interested in transitioning from Line Of Sight to First Person View flying? Lee Schofield offers some guidance words & photos » Lee Schofield

Almost every single fixed wing line of sight (LOS) pilot I know who has tried first person view (FPV) flying has loved it. Sadly, FPV is seen by many clubs as part of the multirotor hobby and as a result isn't looked on favourably. Flying using a 'pilot's eye view' can open up a whole new aspect of the hobby, even if you've been flying for years - or decades!

Last year I helped a number of pilots transition from LOS to FPV flying and have refined my short series of lessons. I am sharing them here for pilots who have been thinking about trying it but didn't know where to start. This isn't about the technology; it is more on how you can get into FPV and be successful.

A FEW SAFETY TIPS

To make the following lessons go as smoothly as possible use a model that you know well and flies nicely. Remember to use a spotter who can keep an eye on the model when flying FPV and agree a common language before you fly; having them tell you 'It is going left' isn't helpful in the heat of the moment!

Always try and fly in the same place when you're learning. One of the tricky things is

Foam pusher models make ideal FPV conversions. Some, like the one in the foreground, come camera ready.

As your experience grows you can adapt more agile models to FPV. Again, foam models provide a ready source of airframes.

"Ask the pilot to fly calmly and set your goggles to the right channel"

Good quality FPV googles are easy to source. Photo: FatShark

learning what your regular flying spot looks like from the air. Use a stabiliser in the aeroplane and, if possible, add a GPS Return to Home (RTH) to it too for extra safety, so you have a way to 'rescue' the model in case of a problem.

Decent FPV goggles can be bought cheaply now so check out my regular column in RCM&E on the latest technology to find what is new. If you can find a local FPV pilot who is patient and willing to help you with these steps, buy them a drink and rope them into helping you!

Finally, make sure you know how to set up and use a buddy box system, for the main steps; it is the same process as learning to fly LOS. Some of these steps will need your spotter to have a radio in their hands to help too.

LESSON 1: GET USED TO A PILOT'S EYE VIEW

The biggest problem I see with pilots wanting to try FPV is a lack of confidence. As LOS pilots we are used to getting all of the information we need to fly the model from the fact that we are looking at it. Height, speed, direction and attitude are all received unconsciously by looking at the model as it flies. With FPV you'll lose this feedback from looking at the model, but all of it is there in the image.

Before you pop on some goggles at the field 'for real' it is worth watching videos on places like YouTube for recordings of fixed wing FPV flights. If you have already invested in goggles then connect them to the computer (most now connect using HDMI cables, just like your TV) and you can see what it's like to enjoy that view and get used to seeing the image that way.

Take notice of how the horizon moves and imagine you're flying the plane in the video. For some pilots wearing the goggles may make you feel a little travel sick at first. With practice that usually passes. Watching videos with calmer flying helps. Just stop when you've had enough and try again later.

Take the time to make sure your goggles fit comfortably. Many can be fitted with corrective lenses for spectacle wearers.

LESSON 2: GOING ALONG FOR THE RIDE

Now you've watched some footage and are starting to get more comfortable with the goggles (if you have them at this point) use them to watch an FPV pilot fly at the field. Ask the pilot to fly calmly and set your goggles to the right channel, then pop them on and follow along.

For the first time you'll see the local field from a completely different point of view. Enjoy the view and again imagine that you're flying the model, which will to help start to make those connections for the next step where you'll have the radio in your hands.

For now, just enjoy the ride, get used to what the local surroundings look like and use this step to make sure that you're not feeling too dizzy when wearing the goggles. Use a camping chair in case the dizziness gets too much and you can watch whilst sitting down.

For some this is enough of a buzz, but for most pilots it's time to progress to flying the model.

LESSON 3: TAKING CONTROL

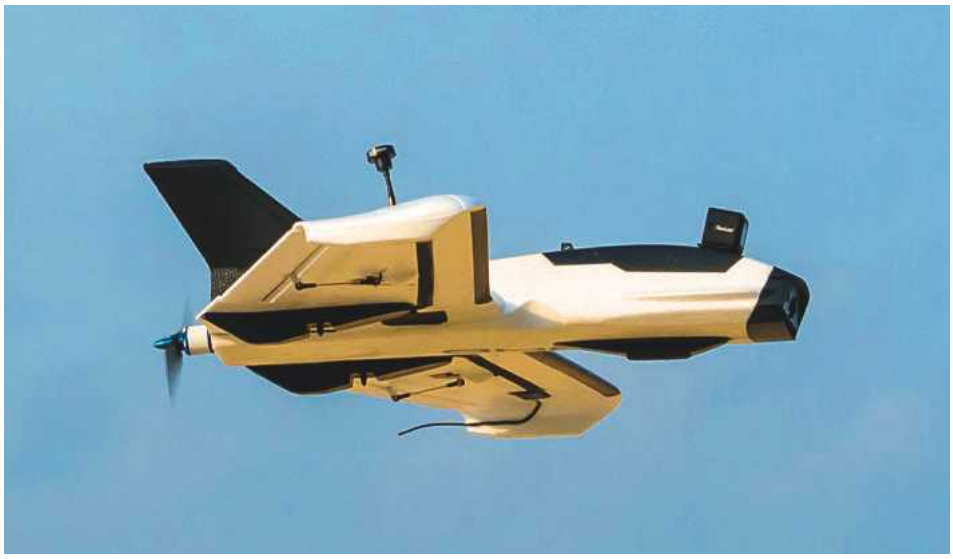
The first flights are very similar to how you may have learnt to fly LOS, with an instructor on the master radio and you on the student radio. The instructor flies the model to a height of a couple of hundred feet, so there is time to take back control and recover the model in case of a hiccup, then they can pass control to you when you have the goggles on and ready.

Initially this will feel very strange, but you'll be used to the view and what the local area looks like from the air, and the instructor can let you know if you're losing or gaining too much height as you fly.

Don't try too much on the first few flights is my advice, but as you get happier then start to fly the model in a circuit around the field and focus on the horizon in the turns, so that you use a little up elevator to maintain the pitch angle.

FPV cameras are small so can be easily fitted to an existing model. Photo: RunCam

A wide range of purpose designed FPV models are available.



For your first FPV flights buddy up with an experienced pilot and ask them to fly the model as smoothly as they can. Photo: ZHOD - Dart XL

"Always be aware of the national and local laws and legislation for flying FPV"

If it gets too much let the instructor take back control. I would then land as normal using LOS. Keep at it until you realise that you've forgotten you're looking through the goggles and are just focussing on flying well. Most of the pilots I've worked with need a few tries at this to feel happy, but when you are you're at that point when you are ready to take full control!

LESSON 4: INTO THE DRIVER'S SEAT

This is almost exactly the same as the previous lesson with a few major differences.

The first is that you now have the master radio and the instructor or spotter is on the student radio, in case you get into trouble or loose the FPV image. The second is that you are now taking off the model and gaining altitude, and then pulling the goggles down over your eyes.

For this step think of it as a regular LOS flight with the plane, but you're switching to FPV for the middle bit. Make sure you still have the spotter to help with height and distance detail so you can fine tune your estimations of both using just the FPV video. Make sure you record the flights in the goggles so you can watch them back and share them with the other pilots at the field.

One of the most fun things you can do at this stage is to follow another model around the sky. Get a pilot you trust to fly laps of the field and follow when using your FPV goggles. They will enjoy watching the FPV footage back too!

The final step of this lesson is to try without that extra student radio connected, so that it's all you. I'd still recommend to take off in LOS, fly in FPV and land LOS for ease.

That is until the final step...

LESSON 5: TAKE OFF & LANDING

The real cream on the coffee is to be able to take off and land using just the goggles. It's not necessary but many pilots I know start to prefer to take off and land like this as it's so much easier with a little practice.

Keeping that tail straight on the runway as you pick up speed is a piece of cake when you see exactly how the nose is wandering. Many pilots use flying wings for FPV and modern flight controllers allow for 'auto take-off' modes where you just throw them, then they start the motor and climb.

FPV landings are usually the last hurdle. By this point you'll be very comfortable with all of the other elements so this will not be as daunting as you think. For any scale models

RIght: After gaining some confidence you will be ready to fly a dedicated FPV plane like this Nano Talon. Photo: ZHOD

Below: Add a stabiliser, like this KoPilot Lite, to help smooth out your flying. Photo: ZHOD

with landing gear I'd still consider landing LOS to protect the undercarriage, but still record that part of the flight in the goggles so you can see what it looks like. For belly landers come in at tree top height and point the nose at the end of the runway, then as you get to about six to eight feet, level off and sink down until you kiss the grass and skid to a stop.

LESSON 6: WHAT IF YOU CAN'T FIND AN FPV BUDDY?

With a lot of the previous steps the need for another capable LOS pilot or FPV buddy is a requirement. For some I've helped it was more for morale support, for others it was to support with the technical side too.

If you can't find a local buddy who'll help, and it's legal to do so, you then you can use technology to get some of that support back into the lessons.

Using a stabiliser like the ZOHD KoPilot Lite will provide a more stable model and limit pitch and roll too. In addition, it will also add a GPS powered Return to Home function that can be used when you get into trouble. You can also use the GPS RTH feature to circle the model in the sky above the take off position after you launch to give you time to adjust the goggles and get ready to fly.

Fly in very open areas on calm days to limit the chance that you'll accidently drop too low and hit a tree, or that a gust of wind will blow you off course and confuse you.

I'd still recommend using a friend or family member to support you when you fly. The first few flights will have your heart pounding and having someone with you to share that exhilaration is a fun way to finish the flight.

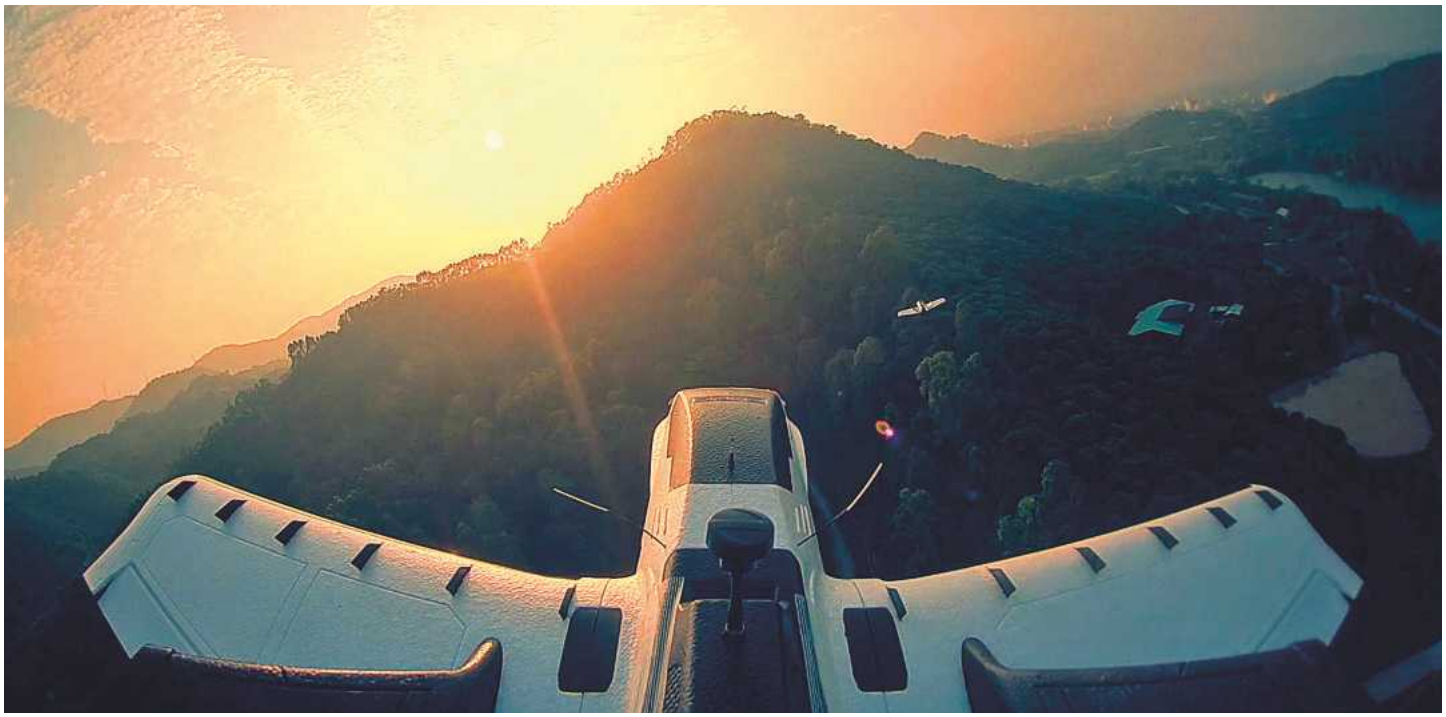
SUMMARY

Every pilot has their own speed at which they can run though these steps. For one very mature pilot I know, he took off, flew and landed the model all in FPV his first time out. That is rare. Most pilots will need a few tries at each step, and some will need many to be comfortable enough to progress to the next lesson.

Always be aware of the national and local laws and legislation for flying FPV. In many places in the world a LOS spotter for the flight is needed alongside the FPV pilot.

For me, part of the fun of the hobby is learning something new. If you are the same then FPV can be a new, fun thing to try. As I mentioned at the start almost every fixed wing pilot I know who has tried it has loved the experience - you may too!

If you do decide to try it out, then best of luck with your FPV adventure and, as always, Happy Flying!



Following a friend's model is a fun way to fly FPV. Photo: ZHOD

COUNTERPOINT

F4U CORSAIR

£579.99 I www.cmldistribution.co.uk

Hot from the FMS production line this 66.9" (1700m) span, highly detailed ARTF interpretation of Vought's evocative gull-wing fighter is a fine facsimile of the full-size that proved extremely potent in both WWII and the Korean War thanks to its high speed and climb rate, survivability and firepower. In the Pacific theatre it achieved an amazing 11:1 kill-to-loss ratio.

At the heart of the model is a 6S power system comprising of 5060 brushless motor, 18" x 11" four-blade prop and a 80A ESC which, along with your choice of LiPo, affords adrenaline-pumping speeds through an extensive flight envelope that includes trainer-like slow speed performance. The F4U is also equipped with automatic stabilisation by way of the 'Reflex' system that's switchable between three modes – Stabilised, Optimised and Off.

Highly detailed, the screw-together airframe assembles quickly and sports a host of scale detail that includes pitot tubes, missile racks, an aux fuel tank, aerials, exhaust, pilot figure, plus nav and landing lights. Shock absorbing rotating metal retracts (with slow speed retracting doors) and bearing equipped wheels make operation from grass strips a breeze, ably assisted by three position flaps. Check out CML's website for more info.

ARROWS VIPER

£129.99 I www.jperkins.com

Sleek, powerful and perfectly formed, the 30.5" (774mm) span Arrows Hobby Viper will be something of an eye-opener to anyone who still thinks that EDF jets have some catching up to do; indeed, nothing could be further from the truth. Packing a jet-like 50mm 11-blade fan driven by a precision 2627 4500kV brushless motor, this 3S-fuelled sport jet will find favour with pilots who seek performance throughout the speed range – from fast, smooth, flowing aerobatics to exceptional low speed handling, Viper is extremely capable. It's also small enough to transport in one piece, is retract free and enticingly budget friendly. All this grace and performance from a 3S LiPo will almost certainly have you reassessing your EDF spend!

GT POWER SD4-III CHARGER

£27.99 I www.jperkins.com

Given that most R/C cars, aircraft and boats rarely use anything larger than a 4S LiPo, and since most of us prefer not to 'top up' at the field, track or lake, this neat single output 50W balance charger is likely to be the perfect workshop accessory, especially as it also supports LiFe, LiHV, NiMH and NiCd chemistries. Supplied with an AC power cable and a Deans / HCT charge lead, the SD4-III uses a simple two-button interface to charge anything from 2 to 4S LiXX and 4 to 8S NiXX packs, whilst an LED display and LED status light keep you abreast of the input and charge process. Dead easy to use, this compact unit offers selectable charge currents in multiples of 0.5A, right up to 4A.

THERMAL TAKER INFINITY F5K

€749 - €1499 I www.composite-rc-gliders.com

Designed to current F5K regulations, this 59" (1500mm) span glider is ideal not only for those chasing competition success but also the sports pilot keen to extract maximum performance from the smallest of thermals. Extensive use of carbon fibre throughout the top-quality airframe means the TT Infinity can absorb the rough-and-tumble of everyday flying, and thanks to a clever wing design the model de-rigs to a very comfortable size that will sit happily in the back of most cars. Complete with an accessory pack that includes connectors, horns and servo frame, this excellent model is available in a variety of completion levels, from standard kit through fully-built 2S electric and ready to fly – check out Composite's website for full pricing. 4+ channel R/C required for rudder, elevator, aileron & flap.

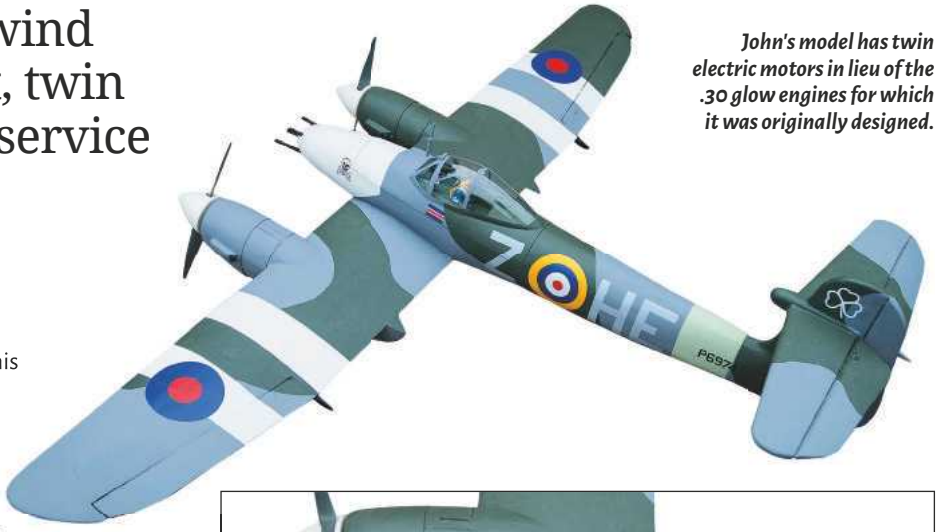
WESTLAND WHIRLWIND

John Hurdle describes his replica of a rarely modelled twin fighter words & photos » John Hurdle

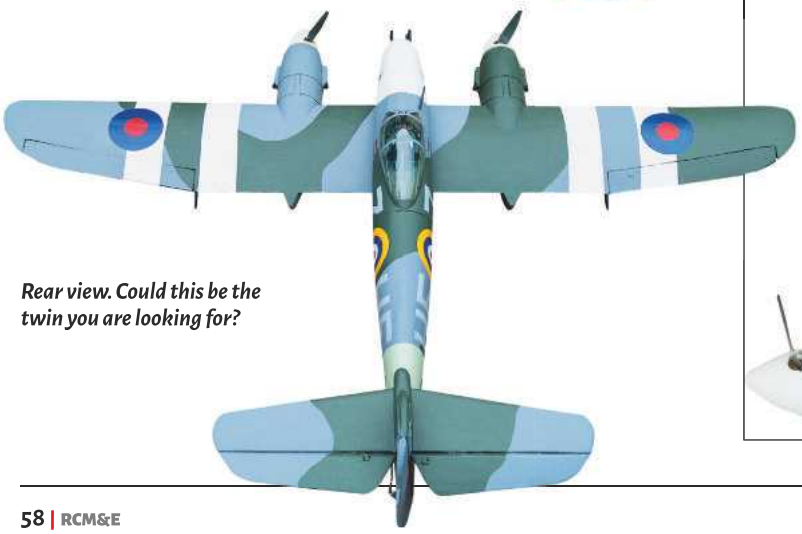
"...the Westland Whirlwind was the first single seat, twin engine fighter to enter service with the RAF"

A very distinctive aeroplane, the Westland Whirlwind was the first single seat, twin engine, cannon equipped fighter to enter service with the RAF. John Hurdle chose to build his version using the Radio Modeller plan (RM111) and his elegant model sports twin electric motors in lieu of the .30 glow engines for which it was originally designed by Messrs. Cronin and Hollandby.

John takes up the story...



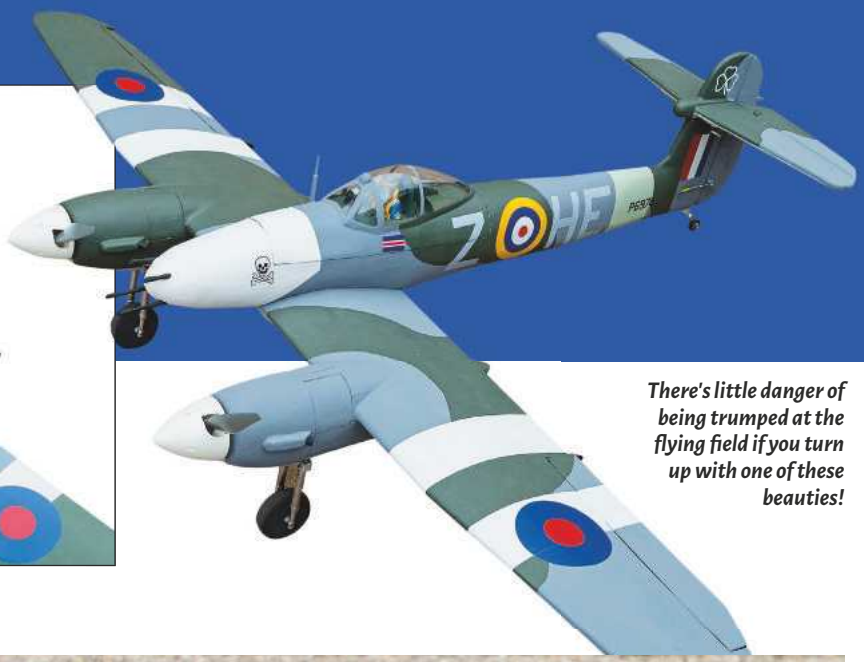
John's model has twin electric motors in lieu of the .30 glow engines for which it was originally designed.



Rear view. Could this be the twin you are looking for?

Canopy hatch removed to reveal the radio and battery bay.

The ESCs are fitted behind the second bulkheads, with cooling air entering via the wheel bays.



There's little danger of being trumped at the flying field if you turn up with one of these beauties!

Resting on Langar's historic tarmac prior to the first flights.

RADIO MODELLER PLAN

"This Westland Whirlwind model has been built to plans by Dave Cronin and Ed Hollandby. It first appeared in an article published in Radio Modeller dated June 1973. The plans, two sheets in total, are still available. At 65" wingspan this is a nice build for an experienced modeller. It is not small, but the construction is well thought out.

Initially designed for glow engines, I chose to make my version electric powered, with all the control surfaces operational. This led me away from the plan design in several areas, e.g. the cockpit, tail and engine bays. Additionally, I added a set of retracts and a steerable tail wheel. To save a little weight I planked the fuselage and tail in 1/16" balsa, in contrast to the plan which calls for 3/32" sheet in general.

For the engine nacelles I again went away from the plan by removing the forward bulkheads. I fitted the ESCs behind the second bulkheads.

Cooling air is via the wheel bay. I created a mould and produced a pair of forward engine covers, which again worked into the design very well. The paint finish deviates slightly from true squadron colours but looks the part.

"The paint finish deviates slightly from true squadron colours but looks the part"

John's Whirlwind dives in for a low pass.

John and team visited BMFA Buckminster for the Westland's first sortie of 2020.

Final checks before impressing others on the flight line at Buckminster.

Both of the test flights were undertaken by Steve Green of the Langar Model Aircraft Club, to whom I am very grateful.

For its second flight, in July 2019, we took the aircraft to RAF Langar for a post adjustment flight of minor items discovered after the maiden flight. All went surprisingly well, and we returned with the aircraft in one piece. I just needed to adjust the port undercarriage assembly, which was giving a little trouble on landing.

The plane flew very well, and we tested it for loops and left and right-hand rolls etc. which it performed very well. Finally, we ran a stall test, taking the a/c up in a high climb; she finally rolled off the top to the right. Nothing violent, as we were anticipating, just a slowish roll to starboard and recovery. So, all was well there.

The final job was to varnish the outer surfaces with a light coat of water-based varnish, and we were ready to go."

A LONG WAIT

Well, it's been a funny old year and most of us had to put our flying on hold for a bit. For John it was a longer wait than most and it wasn't until 10th September that he had a chance to fly his Whirlwind again:

"Hi Kevin,

You recently asked if the Whirlwind had been flown again. Well the answer is now emphatically, yes! I've attached some further photographs from today's flying. After a quick pre-flight check-out, the aircraft made a copybook take off and immediately grabbed the attention of all present; we received quite a few positive comments on what is a not often seen type. The retracts operated successfully so the plane was flown clean.

Our aircraft was taken to the BMFA flying ground at Buckminster and we enjoyed three successful take-offs and landings, all under the control of Steve Green, the flying instructor at Langar Model Aircraft Club. Steve is an excellent pilot and says he enjoys flying the more unusual aircraft that we build.

Also, for the first time, my son John took the controls for a couple of circuits."

PLAN DETAILS

Copies of plan RM111, Westland Whirlwind are still available from Sarik Hobbies **www.sarikhobbies.com/product/rm111-westland-whirlwind/**

"The retracts operated successfully so the plane was flown clean"

Looking good on a fast flypast.

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VIPER 50MM

David Ashby flies an affordable little jet and the perfect starting point for those keen to try an Electric Ducted Fan words & photos » David Ashby

"It's an attractive machine and one that always seems to fly well in model form"

For years flying ducted fan jets, both IC and electric powered, were specialist pursuits. If you had the time, patience and money then success would come but the factors determining that success were often very slim. Then, ten years ago, the first wave of foamy, ready to fly (RTF) electric ducted fan (EDF) jets appeared. They were usually made using brittle EPS foam and power system components were pushed to the limit in order to deliver modest flight performance and duration. RTF EDF gained a few new followers, but they weren't quite 'there' and interest ebbed.

The present 'age' started about four years ago and shows no sign of stopping. EPO foam is now the norm and 11 to 13 blade fan units have replaced the trademark screech with the jet-like whoosh we've always wanted. ESC reliability has improved, battery C-ratings have increased, and reliable digital metal gear servos are usually fitted. Such small incremental improvements have combined to extend duration and improve reliability, so the days when you'd land and lift the canopy to find a smoky ESC and a red hot LiPo are long gone.

Above: Arrows' second jet offering, Viper 50mm is a good introduction to the ducted fan genre.
Right: The strong plastic tail finlets won't be troubled by a belly landing and reflect the thought that's gone into the design.

The 4500kV brushless outrunner and 11 blade fan are surprisingly quiet.

Finger holds on the underside mean solo launches should be straightforward. That's a cheater hole, just aft.

Protective covers over the servo arms are another nice touch.

VIPER

The Viper jet has become a popular turbine and EDF design, but many don't realise that it's a scale subject too; a homebuilt machine and the product of Viper Aircraft in the US where seven examples have been registered with the FAA. It's an attractive machine and one of those that always seems to fly well in model form, so little surprise that Arrows took it as the subject of their latest release.

EPO foam is the main medium and the quality of the moulded sections is very crisp. Thought has gone into it, so the hardened nose and plastic tail fillets won't be troubled by belly landing. There are convenient finger holds on the underside to help launching and the large canopy hatch is retained by strong magnets.

This is an uncomplicated, easy-to-live-with model. There are no retracts or flaps, nor an active rudder; ailerons, elevator, throttle is all there is and all that's needed. Assembly is a five-minute job and the illustrated manual has all the information needed, from assembly through to flying.

- Although CA glue is suggested, I used UHU Por glue to fix the horizontal stab and wing finlets. It works just as well and doesn't have the same potential to make a mess in my clumsy hands.
- The ESC lead has an extra wire and single pin plug. It's probably a programming line but isn't needed and can be ignored and tucked out of the way inside the fuselage.
- My elevator push rod clevises didn't quite reach the horns without leaving insufficient grip on the push rod wires. That's fixed by releasing the quick release grub screw at the servo arm and extending the reach from there.

PRE-FLIGHT

Balancing is straightforward; the same applies to the control deflections that will need reducing from their defaults. Don't be tempted to add exponential before you fly this one. I don't think it needs any if your C of G is in the right range and doing so could induce a stodgy feel at the sticks. I balanced my model at the front end of the C of G range suggested but found I was adding up trim as soon as the model was away. It's a very benign thing, with no snappy tendencies and a wide speed range, so I suggest you aim to balance it at the midway point - 65mm back from the wing leading edge root. It makes sense to mark the

This is a 1300mAh 3S LiPo but there's room for bigger batteries.

> "...the quality of the moulded sections is very crisp"

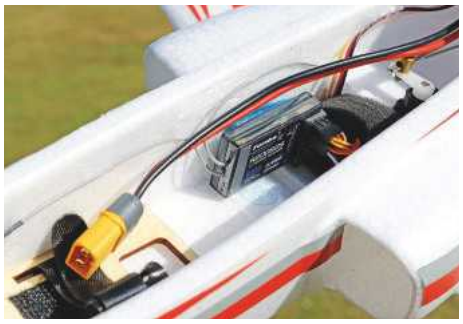
battery position in the fuselage after a few flights when you've established the sweet spot.

My best 3S 1300mAh packs, those in the 40-50C range, measure 200W and 19A peak on the wattmeter, around 200W/lb and the sort of number you'd expect for this type of model.

WHISPER JET

Underarm or overarm, it doesn't really matter as 200W/lb means there's plenty of power to get away and the rate of climb at full throttle is impressive. What immediately struck me was the absence of noise at anything other than full power while the jet-like whoosh is a reminder how fan blade technology has improved over the last few years.

The UK distributor, J. Perkins, tells me they've tested the model with a 3S 2200mAh LiPo battery and say, going easy on the throttle, flight times approaching ten minutes can be had. Two points here though; firstly, the larger battery must sit further back to keep the



Thought must be given to Rx placement if larger LiPos are used.

Hard plastic helps protect the sharp end.

Right: All you need for a lot of fun. This is a great grab 'n' go model.

I'm going to paint the canopy frame post review.

C of G happy, so it's important to fit an extra Velcro strap to hold it in place. Secondly, you'll need to site the Rx on the fuselage side, where it won't get in the way of a rearward battery.

I've flown mine using my 1400mAh 3S 30-50C quadcopter packs, along with a slightly heavier 30C 1800mAh 3S. Flight times vary according to throttle use and pack weight, but I set the timer for four minutes and usually have enough for approaching five minutes of flying from the 1800.

FUN JET

Composed and predictable, and with a positive response to commands, it flies really well. There's plenty of power to climb effortlessly or pull a nice big loop from horizontal flight and although the absence of rudder does reduce the aerobatic repertoire a little, rolls, reversals and chandelles can be executed easily.

Forcing a stall elicits a mushy nod, followed by a lethargic wing drop, so there's nothing to be frightened of at the lower end of the speed range. Inverted flight feels composed and I particularly like the way it tracks through turns where there's little sign that the nose wants to dig in, the relatively short coupled layout and wing tip fins perhaps helping here.

Landing just needs the usual balance of throttle and elevator to bring it home and, in the final moments, you can lean on elevator to raise the nose and kill speed without fear of a sudden wing drop.

JET SET

A model that's difficult to criticise, this is a release for those who quite fancy dipping a toe into EDF but can't quite justify the cost of an elaborate model where retracts and flaps must be managed. Intermediate and experienced EDF jocks will love it too, especially the refreshing grab 'n' go simplicity. It was made for your 3S quadcopter packs and you can pop the power system in a Nijhuis mini jet when the airframe approaches retirement.

I'm sure some will be tempted to try a 4S LiPo - there's always one - but I really can't see the point. Faster isn't always better and, besides, it's nippy enough anyway. Just the thing for a fuss free fan fix.

Viper tracks well through tight turns, the nose resisting the urge to dig in.

It's composed any way up.

In the circuit for landing the nose can be raised to kill speed without the risk of a wing drop.

"...this is a release for those who quite fancy dipping a toe into EDF"

DATAFILE

Name:	Viper 50mm
Model type:	RTF EDF jet
Manufactured by:	Arrows Hobby
UK distribution:	J.Perkins Distribution www.jperkins.com
RRP:	£129.99
Wingspan:	773.5mm (30.5")
Fuselage length:	696mm (27.4")
Wing area:	159.65 sq.in.
All-up weight:	470g (16.5oz)
Wing loading:	15oz/sq.ft.
Power system:	2627-size 4500kV outrunner, 30A ESC, 50mm 11-blade fan
Battery:	3S 1300mAh - 2200mAh LiPo
Functions (servos):	Ailerons (2), elevator (1), throttle (ESC)
Required to fly:	Receiver, 3S 1300mAh -2200mAh 30C+ LiPo

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IWATA HI-LINE HP-TH

John Daniels casts his eye over a high-quality Japanese airbrush fitted with a wide fan nozzle for broad paint coverage words & photos » John Daniels

In the March issue Shaun Garrity introduced us to Iwata's 'Five Ways to Spray' classification system. Shaun used this to select an Eclipse CS brush from Category 3, All-Star Versatility, which he paired with an Iwata Smart Jet Pro compressor that he described in a follow-up review in the August issue. As a beginner to airbrushing this gave him a very nice set up for painting his R/C models, with a 0.35mm nozzle and a useful 7ml (0.24oz) paint cup.

The Iwata Hi-Line HP-TH brush I am describing here is listed under Category 2, Total Control. It can be used for painting fine details or applying broad sweeps of paint. Thanks to its fan cap, large capacity 15ml (0.50oz) paint cup and pistol trigger it's a great choice for painting large areas of a model aeroplane.

TOTAL CONTROL

This category includes Iwata's Hi-Line series of airbrushes, which are of a similar design to the original HP Series that artists, creatives and hobbyists have been using for over 50 years. Additionally, Hi-Line brushes feature a Micro Air Control (MAC) valve that can be used to create stipple effects.

Iwata say that Hi-Lines offer 'total control for fine detail to medium spraying' although the product packaging says it covers Wide spray patterns too. They also feature larger diameter threads on the nozzle than the old HP brushes, making it stronger when tightened up and it centres the nozzle better as well.

SPRAY PATTERNS

The HP-TH comes with two styles of spray caps at the front end, in round and fan patterns. As the names suggest the round one paints lines varying from 0.3 - 50mm in width, whilst the fan cap allows for much broader strokes of between 25 - 63mm. So, you can see that it is quite a versatile airbrush and whilst it's the broad stroke capability that will probably be of most use to an R/C modeller, the round cone will be quite useful for painting finer details too.

Talking of spray patterns, the Micro Air Control situated directly underneath the paint cup can indeed help to produce stipple effects, although in our hobby it may be of limited use. The only thing I can think of is for painting

The round cap paints lines varying from 0.3 - 50mm in width, whilst the fan cap allows for much broader strokes of between 25 - 63mm.

Hi-Line brushes feature a Micro Air Control (MAC) valve that can be used to create stipple effects.

The pistol trigger will be appreciated by anyone suffering from problems with their hands.

Above: Iwata airbrushes come in a nice presentation box.

Right: Dense foam holds the airbrush and accessories in place.

walkways on scale model wings. However, it has another use too and that is, when fully opened, it allows for quick cleaning during colour changes, as well as assisting the spraying of wide brush strokes.

Quick and efficient cleaning (a must do if you want to keep any airbrush in tip top condition) is also aided by the quick flush, pre-set handle. Simply unscrew the rear cover of the handle and you will see the needle chucking nut, which can be pulled back to get maximum flow through the airbrush when flushing through with cleaner.

At the back of the handle is the pre-set control, which can be rotated to a position to stop the backwards pull on the trigger. In this way you can pull back on the trigger and always be sure of getting the same amount of paint, which helps stop flooding too much paint on the workpiece.

PISTOL TRIGGER

You will also notice that the HP-TH has a pistol style trigger rather than a top mounted, button style trigger. I certainly prefer it for applying those large sweeps of paint when use the fan cone to cover large areas. I have nerve damage in my hands and holding down this style of trigger for long periods when covering large areas is much easier for me.

This airbrush is of the dual action type, so the first squeeze of the trigger turns on the air, then pulling it back further allows the paint to start flowing.

LASTING IMPRESSIONS

I confess to having a bit of a liking for Japanese made products. They are usually of very high quality and engineering, and the long-lived brand of Iwata airbrushes is no exception.

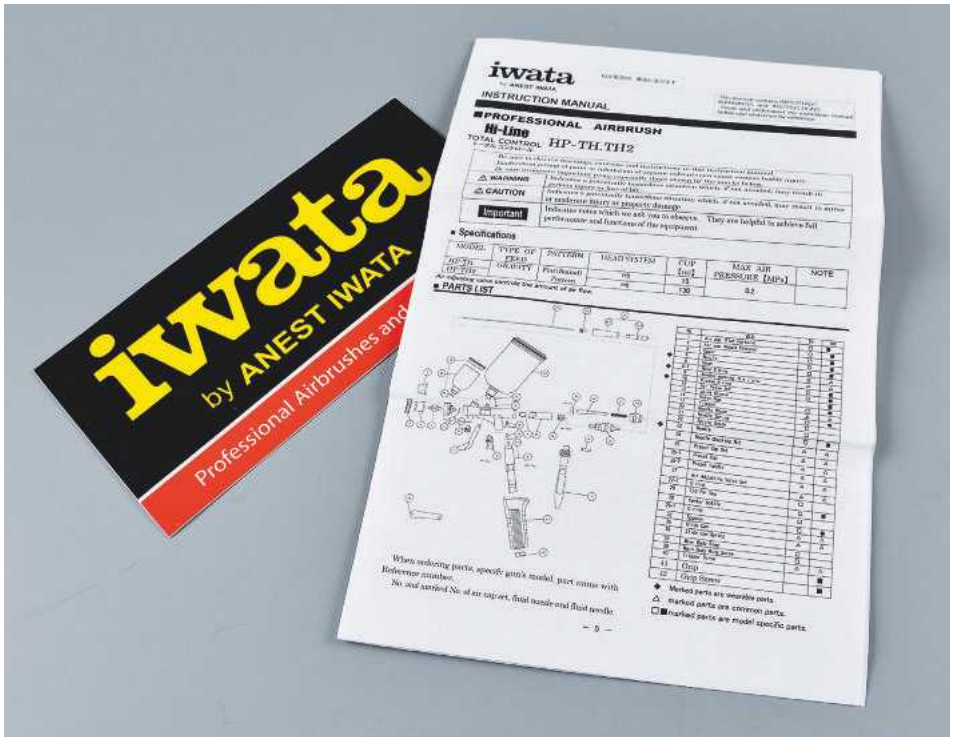
The Hi-Line HP-TH is presented in a nicely made storage box, with the airbrush and accessories neatly laid out in protective, dense purple foam. The fan cone is pre-fitted, but you also get a round cone, a nozzle spanner, a tube of lubricant to keep the needle and lever mechanisms operating smoothly, and that nice, big 15ml gravity fed paint cup.

A tube of lube and a nozzle spanner are included for regular maintenance.

Such fine workmanship doesn't come cheap and so the HP-TH retails at £285. However, that's likely to be a once in a lifetime payment as it's sure to give you reliable service for many years if properly cleaned and maintained. Iwata help maintain confidence in this regard by offering a 5-year warranty, but the brand's UK distributor, The Airbrush Company, are so confident of the quality of Iwata airbrushes that they double this to 10 years - an admirable vote of confidence in the products that they sell.

To benefit from this generous extended warranty, it is important that you only buy from an authorised UK retailer. If you see a new Iwata airbrush for sale at a 'too good to be true' price, then it is likely to be a grey import and the official Iwata warranty will only be valid in the country that the dealer imported it from and it will have to be returned there for any repairs. Buyer beware!

Finally, do have a look at The Airbrush Company website, which is a goldmine of information an Iwata and other brands of airbrushes, as well as compressors and airbrushing accessories:
www.airbrushes.com



As well as the original instructions and parts diagrams, the Airbrush Company include a sheet of their own useful advice. Well worth reading.

All Write

Get in touch...

Kevin.Crozier@mytimemedia.com

TOP LETTER

For his letter this month Colin Walsh wins a very popular LiPo and low self-discharge receiver pack combo courtesy of Overlander Batteries - **www.overlander.co.uk**

BUILDING BAR FLEA

When I heard of RCM&E magazine's 60th anniversary I decided I would build a new model for the occasion. When I looked through my collection of mags, I came across an issue from 1970, which was the magazine's 10th Anniversary Special.

So, from my 50-year-old magazine, which still had the unused plans within, I built the 40" span Mini Bar Flea. It is covered in Solarfilm and powered by a 40-year-old OS Max 20, but with modern 2.4 GHz radio and metal geared mini servos.

The model has turned out very attractive and light weight. It just proves that there is a vast supply of vintage and modern designs available in the magazines for experienced and new modellers.

Regards
Colin Walsh

Nice work, Colin. If any other readers would like to build their own Bar Flea (RC1072), which John Knight scaled down from Phil Kraft's original Bar Fli aerobatic design, then plans are still available from Sarik Hobbies. They can also supply plans for the larger model too; RC950 is the plan number for that one. ***KC***

PARTS LISTS

Having just received my latest edition of RCM&E (August 2020) I decided that I would like to build the Avro Avian from the 'Free Pro Plan'.

Upon removing the plan from the magazine and opening it up I was faced with the task of trying to decipher what materials would be needed for the build. As I now no longer have a local hobby shop to be able to just drop in as I need items, and no doubt I would not be alone in this, I must order everything online. Many shops offer discounts on postage if you order a certain amount at one time, so I wanted to order all, or at least as much as I could, from what was in stock to help bring the overall cost down.

I recall many years ago that, I think it was the RCM magazine, offered its free plans with a small space allocated to list all the materials, except common hardware such as pushrods hinges and the like, that would be needed for the build of that model. Is this something that your magazine and plan provider might be able to consider as an inclusion for future plans?

Dave Pinchbeck

Parts lists were a common feature on magazine plans in the past, the Bar Fli described elsewhere being a typical example. I am not sure why they fell out of favour, but I suspect that it may have had something to do with metrification and the editorial teams (just me now!) not having the time nor resources to offer well checked imperial and metric parts lists, and the inevitable confusion that some items would throw up. For instance, a plan might call up 4-inch wheels, but you would never be able to find 101.6mm wheels, so 100mm types would need to be listed instead. More importantly, wood sizes do not fall into convenient sizes either.

However, if a model designer did take the time to provide such a list, in either metric or imperial sizes according to his or her regional preference, then I wouldn't hesitate to include it, either on the plan or with the article. ***KC***

DINOS EN MASSE?

Isn't that 'Terry-Saur' (Pro-Plan, September issue) a peach. A very clever model indeed, it's just got to be a shoo-in for the next winter mass build. What about a flock of these on the slope, eh? Mind blowing!

By the way, shouldn't those main spar booms be, like the leading edge, laminated too? 1/4" square balsa can be a pig to curve at times and the superimposed pair make them doubly so. Otherwise, super!

Philip R E Williams

TEAM THANKS

I am not given to praise unless something is really deserving of it. In this case RCM&E deserves special mention of how well it has been produced and presented over these horrible last few months.

I have just re-read the June issue Welcome page in which you outlined the ways in which the magazine would try to respond to Covid and I believe you and your team of contributors have achieved all you set out to do.

Dare I say that I have found these issues at least as good and often better than before. Although a team effort it would be churlish not to express special thanks to Alex W for what seems a particularly heroic effort to ensure articles in many spheres of interest appeared in these pages, so please pass my thanks to him and the other stalwarts of your team.

Anthony Baker

Many thanks for your kind words, Anthony. Normally I would be a bit hesitant to publish such a letter as I wouldn't want to be seen to be patting myself on the back by doing so. But as you rightly say putting together RCM&E each month is a team effort and your letter gives me a chance to say thank you to everyone, both MyTime staff and all the contributors, especially the regulars, for putting up with the inevitable changes, cuts and restrictions behind the scenes that have been caused by Covid, especially during the main lockdown and the recent local ones. Thank you all. ***KC***

VENERABLE BEDE

I made John Rutters Bede back in the day, so I was pleased to see it resurrected (centre fold plan, September issue). Mine was built using a 27MHz set and full-size servos, which limited performance to nothing.

Fast forward to the late nineties/early noughties and I flew a Pacer designed by Owen Kampen. This was published in the 1968 Aeromodeller Annual and was originally designed for Cox TD 051 power and unaffordable miniature radio from Cannon. This flew extremely well with the small, affordable servos and receivers available at that later time, although I used a PAW 06 and a 06 Wasp instead of the TD 051 in my planes.

Being a fan of these smaller planes can I recommend or suggest resurrecting this design for a future issue? I'm sure your readers will enjoy its retro pattern style but just smaller.

I have since converted mine to electric with a 1300 3S battery but is now a little rough round the edges but still manages to put a smile on my face.

John Beeston

Thanks for your suggestion for a centre fold plan, John. These small models are very popular and most of the updated retro versions are provided for us by Shaun Garrity. Almost inevitably, when we check with Shaun, he already has them on his long 'To Do' list, so watch this space!

New small designs would also be very welcome. ***KC***

LET'S SHOP LOCALLY

In reply to Paul Blakeborough's letter: Let Us Browse (All Write, Sept 20). Yes, we all like to browse (I know I do), to see and touch the products we're interested in and to perhaps spot something useful that we hadn't thought of or knew that it existed. However, in order to keep experiencing such pleasures, as well as having access to a wealth of knowledge and wisdom, we have to frequent and support our model shops. We all love a bargain, but sadly the use of online purchasing is forcing more and more of them to trade in this way. It's just the same with my other hobbies - photography, astronomy and books.

Online shopping is a necessary evil of our modern world. It's not practical for any shop to keep copious stock of every little thing we might wish to buy on the off chance that someone might pop in and buy one pack, one piece of wood, a tin of dope, etc. Sometimes our local shop might not have what we want; perhaps they can order it (sometimes not). But we need it yesterday and so we use another model shop, but if there isn't one within reasonable distance and the one that has what we need is at the other end of the country (or out of it!) then we have no choice but to go online.

However, I would say that if what you need is local, then buy it local. Yes, it might cost more, but the more we use our local model shops, then there's more chance of them being there when you want to browse. The more of us that do that, the more these shops will survive, because none of them are going to get particularly well off from my little purchases.

Recently, I purchased 10 packs of M4 nylon bolts. That's 20 bolts for around £12 - a fellow club member buys them on eBay 50 for £5! It's not hard to see the temptation, but that's money not spent in your local shop and they simply cannot compete.

Now I'm lucky where I live. I have Slough Radio Control Models and Mantua Models close by, and West London Models isn't too far. All three places are friendly (indeed I treat the guys at SRCM as friends) and they are always very helpful. You can't browse everything at SRCM (they have a large warehouse area behind their counter) but you can browse the smaller sundries you most frequently use. Mantua models is very small (only allowing one customer in at a time, presently), but you can browse pretty much everything. WLM is similar - small and easily browsable.

Most times when I've seen other customers in SRCM, they've been from the R/C car fraternity; I can't remember the last time I spoke with a fellow aero modeller while browsing. Mantua Models told me that if it were not for boat modellers they'd be out of business! Clearly, then, if we wish any of our hobby shops to survive in their present, browsable form, we have to physically grace them with our presence.

Colin Anderson, LRPS

AFFORDABLE VULCAN

I served in the Royal Air Force and had several years working on and flying in the Avro Vulcan, visiting many places round the World such as Malta, Canada, Cyprus, and America.

I love the Vulcan and read with great interest the articles you published regarding the building of a model. I think there are now several fit for flight. The first one I saw was many years ago at Royal Air Force Halton, which was propelled by at least two glow engines in the back with pusher props.

The reason I was compelled to drop you a line was to query why Dave Batchelor felt it was necessary to install LED afterburners to 'add to the effect', when none of the Vulcans were fitted with an afterburner. Hence it is not scale and completely spoils it for me and probably other lovers of the great Vulcan.

Jim Waddington
Vulcan Crew Chief rtd.

Interesting. I only put them on because TN specified them. Goes to show, I should have researched it a bit more. But then again it does look good and no-one else has mentioned it. Jim won't like the big hole in the back of the ECM either, but doesn't seem to mind having pusher props! ***DB***

HALOGEN DISCHARGE

Yes, these days even cheap chargers have a discharge capability but the cheaper they are the lower their discharge capacity is - some as low as 10W, maybe even 5W if they are old ones. There is another way to discharge them though - use halogen 12V/50W lamps.

Sometime ago such a system was described in RCM&E. The main virtue of the lamp system is that you can add lamps to adapt the load to the batteries you want to discharge. Three lamps in parallel are good enough for up to 3S batteries and, being in parallel, they offer a useful 150W consumption. In a few minutes the ubiquitous 2200mAh battery is empty. One gets the best results by incorporating a wattmeter into the circuit to monitor the discharging process and prevent over-discharging of the batteries.

But what if one uses 4S or 6S batteries, or maybe larger? For up to 6S just connect two halogen lamps in series; add another lamp in series and you should be good for up to 8S. So, with (for instance) 2 x 3 lamps, you'd be able to discharge an 6S pack at 150W. Most of us don't go over 6S anyway.

The author of said article made a nice wooden box to house the lamps. Mind you, they do get hot! But having no pets or small children, I simply rest the lamps over some tiles.

BTW: my system predates the RCM&E article by a few months. I could not keep from smiling when I saw it in print though, 'Great minds think alike' and all that...

Arnaldo Correia

Long time deputy-ed and editor of RCM&E, David Ashby has retired from the hot seat!

"...our beloved RCM&E has had three Editors recently in short order"

THE CHANGING OF THE GUARD

Whittaker takes an insider's look at the recent succession of Editors at RCM&E

words & photos » Alex Whittaker

Reading RCM&E every month, as I have since the late Sixties, is like being a member of a select Club. We RCM&E readers are The People of The Book. We radio modellers are also ancestor worshippers. We venerate a whole line of designers, authors, columnists and editors. We have our own values, often in contra-distinction to the mad universe around us. We have our own traditions, legends and heroes. These are very different from the dross we now see in so many walks of public life.

We have different values to the modern instant gratification/throwaway world. We quite prefer the deferred gratification of building a kit, fixing a glow engine or following a plan. We enjoy the careful process of thinking through and fitting an engine, tank and radio system. We delight in finishing, painting and fuel-proofing our tubby, overweight, own-design models.

So, when it comes to RCM&E magazine in particular, we like our scribblers and editors to

Ex-editor, Graham Ashby burning my petrol in the Irish Sea.

David Ashby in his element - an editor and an everyday model flyer.

The Ashby Dynasty: David, Dad Maurice and Graham.

Below: Social distancing still feels very odd. This and subsequent pics were taken at the DMFC Lockdown Scale Day 2020.

possess a certain gravitas. Not for us that modern shallowness of spirit. We want someone at the helm who knows the deep pain of a crashed maiden flight, a dodgy carburettor and a burst fuel tank. In short, we like our Editors to be like us.

ENTER MR. CROZIER

Now it so happens that our beloved RCM&E has had three Editors recently in short order. Significantly, all three have served as editor at least twice, which must be some sort of record. A few readers have asked me to comment on the succession. So, we recently welcomed a 'new' editor in the form of Kevin Crozier. But, of course, Our Kev has form. He and RCM&E Editor Emeritus, Graham Ashby have been friends and colleagues for many years. I have known Kevin since the glory days when there were at least four competing UK radio magazines (he was editing RC Model World back then). Aye, and all fielding rival photographers on The Nats flight line, jostling for the best flying shot. It is a sign of the times that these days I am usually alone. However, never forget that

Kev was also Editor of RCM&E many moons ago. Aye, when I was still at school. *(Err... not quite, Alex - the early 90s to be precise. Still seems a long time ago, though! - KC)*

Now this form of literary incest is a recurring theme in RCM&E Editorship. Like a medieval kingdom, only a few great families get a crack at the RCM&E throne. Indeed, Graham Ashby has edited this magazine twice, and so has his brother David. However, although I was able to chronicle Graham Ashby's reign, brother David's recent departure from the throne has been rather overtaken with all this Covid brouhaha. I wanted to put that right.

You see, I have worked happily with both Ashby brothers for over two decades and have learned to admire each of them individually.

Paul Drew's underwing signwriting says it all for 2020!

Topside of Paul's modified Aggressor soarer.

"David had a brainwave. He invited Club newsletter editors to send in copies for his column"

Above and above right: Roger Edge with bits of Alan Ryder's foamie Me 109. Fixed and flew later!

Mainly because they kept a firm grip on my collar! Of course, it's not possible for a scribbler to love any editor, no matter how charming. That would be like the lamp post loving the dog. However, whilst I do have genuine respect for all three editors, I would not want any of them to marry my daughter. But I certainly did not wish the ending of David's stint with the red ink to pass unmarked. Nor, indeed, did I wish the end of the Ashby Ascendancy to go un-praised. I am an avid RCM&E reader first, and a scribbler second, so I take a keen interest in who is at the helm.

LOOKING BACK

David Ashby started R/C flying at 16, just after his first wage packet arrived. David's Dad, Maurice is well known to these pages as a designer and traditional aeromodeller. However, he hadn't let young David fly his models, deeming them too valuable to risk. David also built R/C boats through the late 1980s and his first published article was in 1989 for *Marine Modelling* magazine. Brother Graham quickly became 'photographer' for all their subsequent boat articles and reviews, the start of a long partnership. David started flying again in 1991 (Graham hadn't stopped). Then Graham joined the editorial staff of Nexus in 1995 and became RCM&E Editor in 1996.

(Graham was a clubmate and friend of mine at Maidstone Model Flying Club. When I left in 1991 to relocate to Hertfordshire to join the staff editing RCM&E and Aeromodeller, he stayed in contact and showed regular interest in joining me at the magazine, if and when a suitable role opened up. I was delighted to have him join me as Assistant Editor before my own new horizons opened up and I moved to MacGregor Industries. Little did I know at that time of the powerful impact that the Ashby Brothers would have on RCM&E - KC)

At this point David suggested the need for a club and sport flyer column, *Just For Fun*, which began in approximately 1997. Around about this time David had a brainwave. He invited Club newsletter editors to send in copies for his column. This is where I enter the story. At the time I was a full-time salary slave, but inspecting schools left little time for magazine writing. So, I was cobbling together bits and pieces here and there in my spare time. I was also editing and printing our Delyn Club magazine 'Flightline'. Our Club mag was very high tech for the time; I was using the Aldus Pagemaker program on an Apple Mac computer and churning out the copies on an Apple Laserwriter II. The magazine was printed in wonderfully sharp black and white, but I was able to print the colour covers separately on my home printer. Anyhow, I duly sent a copy in to RCM&E and, to my amazement, The Ashby's actually liked it.

At this point David suggested to Graham that they take me on board, especially since David's own 9-5 career as a Bank Manager allowed little time for his *Just For Fun* column. In effect the Ashbys ear-marked me as David's successor. The *Just For Fun* column transmogrified into *Weekenders* soon after.

Dave and Karen Norwood, plus Lighting. We normally all get together at The Nats - but not this year.

Throughout, David continued on the team, writing and reviewing for many years, as his banking career allowed. In 2006 a new company, Magicalia assumed ownership of RCM&E after Highbury went into administration. However, Magicalia created a 13th issue of RCM&E, in the form of an annual Special Issue, and they asked David to be Editor. He duly continued to edit these stand-alone Specials for many years until 2015, when Dave Roberts stepped in for three years. David Ashby duly returned for the 2018 and 2019 specials.

Paul Drew gets his brother Phil's Hellcat away nicely.

Phil Drew's Hellcat looked good in the air.

Phil enjoyed flying in the gusty weather.

About turn! Thanks to Covid, friends have gotta stay apart!

DMFC's Singing Kettle International Field is still 'under Covid measures'.

In February 2007, David decided to say cheerio to the big corporate career and joined RCM&E as Deputy Editor and also website Editor, incidentally, a job I feel that he has handled extremely well. Under David, our beloved modelflying.co.uk has not suffered the excesses, pettiness and bad temper of other similar forums and on-line presences - David just would not have it! However, fate intervened, and a big change ensued. Three days before he was due to start as Deputy Editor, David suffered a mini stroke. Thankfully there were no lasting ill effects and, as David said to me at the time, he was lucky. Graham stepped in and supported his brother. As David confided:

"Shock was the biggest effect, and Graham gently nudged me away from the introspection and self-absorption that can easily follow such an event."

A steep learning curve in magazine production know-how followed where, unsurprisingly, David found that there's a lot more to making a print title than most people realise. A publishing career followed for the next 11 years with little demarcation between work and play, even at David's own club field.

Quote David:

"People assume that it's a dream job, and it certainly has its upside, but it was all consuming at times. Annual holiday entitlement was rarely all used. Graham's quality focus rubbed off on me. We had always been photographers but shooting for a magazine calls for a new approach. Throw in that horrible old editorial phrase, 'You're only as good as your last issue' - and a little sibling rivalry too - and you have a recipe for restless improvement that served both publisher and reader well for many years."

STEPPING UP

Anyway, the story moves on when, in 2015, Graham departed the Editorship of RCM&E to take up a role at J Perkins and David was asked to step up to greatness. In truth this was a very challenging time for David since it was clear that he wouldn't have a Deputy Editor working alongside him. It was down to David alone. Added to this the office was downsized, a new designer was introduced, and David had to work from home.

At the same time regular columnist Peter Lowe, of blessed memory, died suddenly, leaving a big gap. David had to draw on the sort of managerial training he had received as a Bank Manager - plain-speaking, honesty, encouraging, motivating, and cutting away unnecessary processes. He also focused on getting some new blood in to fill the regular content that previously David had written as Deputy Ed.

More contributors were needed, so David quickly persuaded Tim Hooper to step in and fill Peter Lowe's shoes with his *Bench Blog* column, something Tim did very well. David was always been keen to test new writers and has introduced:

Danny Fenton
Arnaldo Correia
Lee Schofield
Steve Hargreaves
Chris Bott
Steve Sales
and Dave Burton... among others.

TIGHT SHIP

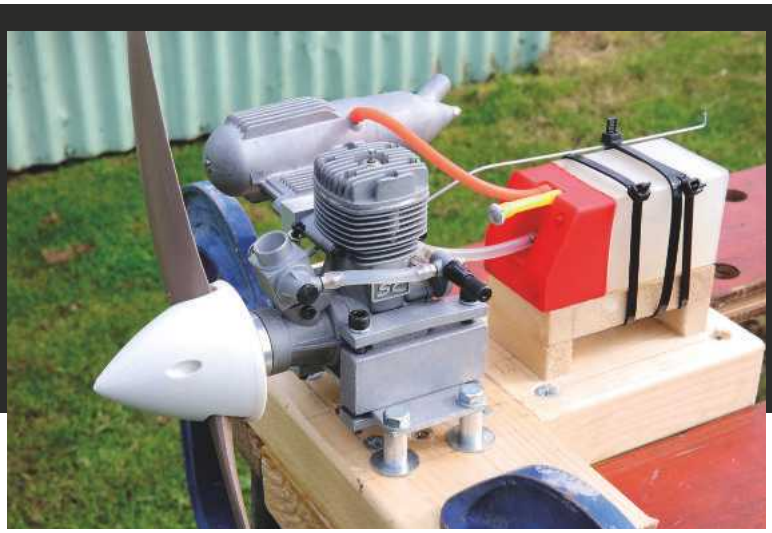
If working with Graham seemed busy, then David reports that working as a sole Editor to produce a magazine can only be described as a lifestyle career. A deadline every four weeks rarely left him time to stop and, most important of all, think. However, speaking as punter, I think it is a matter of record that David did not let quality levels falter.

David also reports that there were difficult decisions and he did not have time to indulge some contributors in the way they had become accustomed. However, most contributors and family rallied round in

Another form of social distancing. Towline FF glider at The Kettle Field!

Derek May's FF towline glider DT's on the line! All was well.

A Workmate (or clone) makes a good engine test stand.



Brand new SC .46 bolted down on the test stand.

"...some authorities differ on the best way to run in a new engine"

support during a difficult early period as David had to restructure alone behind the scenes. Indeed, his wife, Jane proved to be an excellent proof-reader.

Just when things were under full control, in 2018 David had a suspected second mini stroke. Luckily, and thankfully, this proved not to be the case, but it did make David re-assess his priorities. Although he had made lifetime friends while working for and contributing to the magazine, and had learned an incredible amount, the time had come to take stock. He stepped down from the hot seat.

THE FUNNY SIDS

To complete the story of RCM&E's recent succession, Graham Ashby returned to fill the chair for a year, until Kevin returned as Editor, when Graham left to return to J. Perkins.

Before we finish this brief chronicle, here are a few funny instances David recalls from his days at the helm:

- A reader calling to insist that we had more foamies in the mag. He was deadly serious.
- A reader phoning to say he'd no longer subscribe as he didn't like one particular print font we used.
- A reader accusing David of promoting animal cruelty after publishing Mike Bell's *Hangar Monkey* design (the name has historic ties in the North East).
- Coming home from the Nuremburg Trade Fair by train and aiming for Brussels but ending up in Paris!
- A model builder asking for a refund as the plan he'd bought 20 years ago had some errors.

RUNNING IN

And, finally, now for something completely different...

The Wu Flu restrictions are still warping our club life. We can get to the field and fly under Welsh social distancing, but it all feels - and is - a bit odd. However, some things gladden the trad Brit modeller's heart, because they never change.

You see, it was a cool autumn Saturday morning up at the field. A leaden sky, annoying gusts and the threat of rain. However, one hardy soul was having none of that. A Clubmate was setting up his engine test bench. He was assembling his starter gear, checking his fuel and assessing his assemblage of test props. It was the time to run in a new a new SC .46 glow engine. Neither hail, pestilence nor irritating Covid restrictions were going to get in this sturdy glow owner's way. My brilliant Clubmate, David Gresty was the chap in question. He was following the time-honoured pursuit of running in his glow engine. Now some authorities - and assorted internet jerks - differ on the best way to run in a new engine...

Traditionally we used to run in a new glow engine on a slightly larger prop than the target flying size. This would theoretically give easier starting, with a bigger prop as a flywheel to whap over, and the bigger diameter would also keep top end revs safely depressed. That, at least, was the theory. We also used to use 5% nitro fuel for the first few easy starts. Using a chicken stick or 'finger in glove' was deemed better than 'leccy starting.

Once started, we never leaned out the engine fully, except for short bursts, and always ran the engine slobberingly rich. The idea was to run bouts of slow and medium revs when rich, with a quick blast of leaned out, sub-max higher throttle. After about 45 minutes to an hour of ground running it was generally deemed enough to put the engine into the model and fly it. These dictums went back to the sort of metallurgy that earlier glow engines possessed.

However, being a bit of a savage, and except for a few witheringly expensive multis, I have usually cut to the chase. I usually bolt my brand-new engine into its intended model, ground run it for a tank or so, then commit it to the air. I do so slightly rich, to let the flying run it in. No screaming about and prolonged vertical climbs, mind you. Well, not until the engine gets that lovely wet bounce over top-dead-centre.

Oddly enough there have been no disasters over the years, and none of my new engines broken-in this way have ever failed.

So, you pay yer money and take yer choice. However, running in a brand-new engine on a test stand and checking out props, fuel and plugs remains a deeply rewarding traditional ritual. These days I often do it just for the hell of it.

Mind you, for the past few years I have thought it prudent to refrain from doing so in my own back garden...

Running-in takes patience but is great fun. A simple throttle pushrod helps you change the revs.

PILOTS' PICTORIAL

Get your planes in print!

To commemorate the 80th anniversary of the Battle of Britain we are dedicating this issue's readers' gallery to models of aeroplanes that fought in the famous aerial campaign of 1940.

Get in touch...
kevin.crozier@mytimemedia.com

A SPITFIRE TO START

Apologies to Hawker Hurricane enthusiasts but when starting any feature on the Battle of Britain it is the Supermarine Spitfire that inevitably comes to the fore. Here, Neil Diment describes the mods made to his ParkZone Spitfire:

"The PZ started life as a grey camo schemed Mk.9 but I've done my best to make it look like an early 1940 spec Mk.1 or 2. I didn't fancy chopping the nose about so I limited attention to some Dremilling and filling of the Mk.9 exhaust stacks. Numerous washes portray the coppering, blueing, grime and rust of hard service.

The cannons were cut off, but the mounting plates were retained.

Vallejo Air paints were used on the top surfaces and the underside was done via automotive paints. On the foam parts a coat of plastic bumper primer was used protect them, then sprayed with BMW Alpine White and Volkswagen Black - ironically...

Gun tapes were cut from red wing tape and bullet holes made by heating a 1.5 mm drill then quickly plunging it in and out of the wing, through the tape.

Panel lines on white surfaces were highlighted with a pencil, with weathering and gun streaks by airbrush. The whole plane was given two coats of interior varnish, satin finish."

You may just be able to pick out the lack of canopy glazing, which Neil removed so that he could fit an FPV camera. He says:

"I know, for true 1940 I should have painted the spinner black. But any in-balance there would result in 'jello' on the FPV video footage - and you can't see the spinner from the cockpit!"

The pictures were taken by Al Morrow, who has also provided the Parting Shot picture at the end of this issue.

HURRICANE NEXT

Well, it had to be the venerable Hawker fighter that we feature next. Here's Steve Dunne with his 82" wingspan Hurricane built from from the YT International kit, which Steve fitted with a Laser 180 four stoke engine. Steve reports:

"Although heavy the Hurricane flies a very good schedule of show aerobatics. It is now six years old and despite an entanglement with fencing wires on one take-off it is still in very good condition."

The pictures of Steve's Hurricane were taken by Nigel Castle.

DIVE BOMBER

Built almost four years ago, John Beckinsale has kept his Stuka in first class condition. John says this about an earlier flying session:

"A fellow modeller, Terry Thirlaway was there with his 'bird watching' camera. He took these pictures of it flying and I have been looking for them for ages. Today, I decided to have a good clear up and found a disc peeping out from under a cupboard. Aha, the missing pictures! You will note the aerial is missing; I hadn't glued it in, and it fell out in flight!

I'm sure it was a Black Horse model. Mine is powered by an OS 120 four stroke converted to petrol. Wingspan is 76 inches, with six channel radio and nine servos. It is an absolute 'pussy cat' to fly."

OFF COLOUR

Although the third group of Jagdgeschwader 27 (a Luftwaffe fighter wing) did fight in the Battle of Britain, JG 27 is best known as the 'Afrika' fighter wing for serving in the North African Campaign. This explains the desert colour scheme that Dan Lester has chosen for his Messerschmitt Bf109E:

"This is my JG 27 Bf109E fun fighter which first flew in 2010, powered by an SC 25 and with Hitec radio gear. It is tissue and Poly C covered and finished with Humbrol enamels and Spectrum matt clear. Modifications include a larger fuel tank, bulkhead moved back to prevent an overlong nose, cowling line raised, canopy lowered, and aerodynamic horns fitted to the elevators. I added some scale details, namely a scratch-built gunsight, tropical filter, cowling machine guns, instrument panel and latex pilot. It flies superbly with a wide speed range and flights of more than 20 minutes are possible.

Many thanks to my brother Steve for the flying shots and his excellent hand launching over the years."

STEVE'S SPITFIRE

Here's another fine model from Steve Dunne, who obviously likes his warbirds:

"The Spitfire is from a Hangar 9 ARTF kit built in 2017. It is powered by another Laser 180 four stroke and is a well-balanced show flyer, with a good range of aerobatic capabilities. It is always carefully watched by club members and visitors whenever it flies and now has a substantial log of flights under its belt."

ANOTHER SUPERMARINE

As if to cement its place as our readers' favourite BoB fighter, here's another Spitfire, this time built from the Flightline kit by Grahame Pearson:

"Gradually moving towards large IC warbirds, I had vowed not to buy any more 'foamies'. That was until I read the review of Flightline RC's 1200mm Spitfire in RCM&E. Two days later a large box arrived courtesy of Motion RC. The model was assembled in the afternoon and maidened in the evening at the Sussex Radio Flying Club's superb flying site on the South Downs, overlooking the English Channel - what better backdrop for a Spitfire! The plane flew every bit as well as the review promised and looks incredibly realistic in the air. The photo was taken by SRFC clubmate, David Banting."

PUSHING THE BOUNDARIES

After a bit of research, we can't say for sure that the Fairey Albacore served in the Battle of Britain, but it may well have done as many Fleet Air Arm squadrons were used by Coastal Command to assist in maritime operations at the time. The Albacore's sibling, the Fairey Fulmar is however listed as a BoB aircraft, as used by No.808 Naval Air Squadron.

Anyway, we digress, so over to Jon Laughton to describe his model:

"This is a photo of the Blackhorse Fairey Albacore that I finished towards the end of last year. I bought it as a present to myself for passing an MSc in UAV Technologies and whilst I am really a pattern flyer, I do like WWII scale models. My original plan was to fit an OS 75AX but in the end I chose the 95AX as that easily fitted inside the large radial cowl and the extra power would come in handy!

I swapped out the supplied pilot figure for one that was more realistic, and I also added some suitable graffiti to the Torpedo. The reference to a former Fleet Air Arm serviceman is in honour of one of my flying buddy's relatives who worked on Albacores.

Radio gear is Futaba all round and the build was straight forward, apart from setting the strut locators into the wing at the right height. In the end some intelligent guessing was required and it seems to have worked!"

DEPRON DIET

Finally, we hand over to Joe Collicutt to describe his interesting interpretation of the much-loved Brian Taylor Spitfire plan:

"After many years of building and flying scale models I have come to realise recently that Depron will allow smallish scale models to fly much more slowly and therefore realistically than balsa ones. Buoyed by my success last year to build a Dennis Bryant Chipmunk, and inspired by the Silver Spitfire's Longest Flight, I decided to attempt a Brian Taylor spitfire, converted for Depron and electric flight.

As one of the appealing features of the Spitfire is the sound of the Merlin engine, I could not resist installing a sound system. The construction follows the plan, apart from substituting Depron for balsa (except for the spars) and lite ply for ply. The net result is a saving of over seven pounds in AUW."

PIK-5C

Keen aerotow enthusiast, Frank Skilbeck describes his and Roger Spragg's vintage glider build project from last winter words & photos » Frank Skilbeck

Being keen on aerotowing, and especially vintage scale gliders, as a winter build project in our club room, Roger Spragg and myself were looking for a glider which hadn't been modelled before when Roger (pictured above) came across the PIK-5B. Our interest was heightened when he found a set of photos of a PIK-5C, OH-188, finished in varnished ply. The original PIK-5 series of training gliders were built in Finland, with the prototype flying in 1946 and the 5C version being built from 1952, with a wingspan of 12.4m. This made a third scale version a manageable 4.13m wingspan. So, using the details from Martin Simons' 'Vintage Sailplanes' handbook, we scaled up the plan and side view to 1/3rd scale and set about designing our own model of this full-size pod and boom glider.

Fuselage pod showing the ply skins that were ironed onto the underlying framework.

CAD WING

The wing was designed with a HQ 3.5 wing section using the devWing CAD app to plot out all the ribs and space the spars etc. However, using devFus for the fuselage was less successful and we resorted to pencil and ruler to draw this out.

The wing followed the normal construction of a D-box wing with cap strips and a rectangular steel wing joiner. Initially, we had planned to finish the leading edge by rolling round thin ply to replicate the full-size construction. Some trials with this showed that whilst possible, this was quite time consuming to get a good finish and we decided to build a conventional balsa sheeted leading edge covered with birch veneer to simulate the full-size ply. This worked very well, and the finish is very effective.

"...using the details from Martin Simons' 'Vintage Sailplanes' handbook, we scaled up the plan and side view"

Pod raised up to show the landing skid, wheel and rigging details.

Above: All finished but no-where to fly. Cancelled aerotow meets mean that the first flights have been postponed until 2021.

"The fuselage was constructed in two sections, the forward pod and the boom and rudder"

The front of the nose was built up with car body filler and covered in litho-plate.

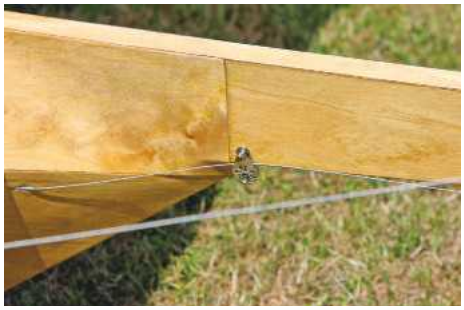
Small but neatly formed spoilers.

Rigging wires extend from the fin to each wing panel.

FUZ FACTS

The fuselage was constructed in two sections, the forward pod and the boom and rudder, bringing the two parts together after construction. The pod was built by drawing up formers over the plan and assembling these over a keel designed to accommodate the wheel and skid supports, with stringers to provide the overall framework. These were covered by 1.8mm ply sections cut to simulate the full-size construction. To attach these to the formers and stringers we used the iron on method; the formers and ply sections were given a coating of PVA, which was allowed to dry, and then using a hot iron the panels were ironed in place by melting the glue.

The nose section was built up with car body filler and covered in litho-plate. The cockpit was made separately to allow access to the electronics and held in place with magnets. The period pilot was supplied by Real Model Pilots.



Control runs pass over neatly formed pulleys.

Focus on the scale wing rigging and strut attachment points.

Tailplane bracing and protective tail skid in detail.

Deep in concentration, the period pilot was supplied by Real Model Pilots.

"...unfortunately all the aerotows we usually attend were cancelled"

The boom/rudder is built from 6mm square spruce longerons overlaid with 1.8mm ply. The boom is quite thin, being only 17mm wide. Elevator operation is via a push rod inside the boom acting on a sliding brass square section into which the elevator piano wire control 'horn' slots when the tailplane is bolted in position.

TAIL END

The elevators and rudder are of a conventional structure and the rudder is operated by a closed loop control running down the outside of the boom, like the full size, complete with model boat pulleys.

RIGGING & COVERING

Like the full size the model uses flying wires for additional rigidity. Metal brackets were fabricated for these and the wing struts, and they were incorporated during the build in the scale positions. The fuselage and boom were glass clothed to strengthen the structure.

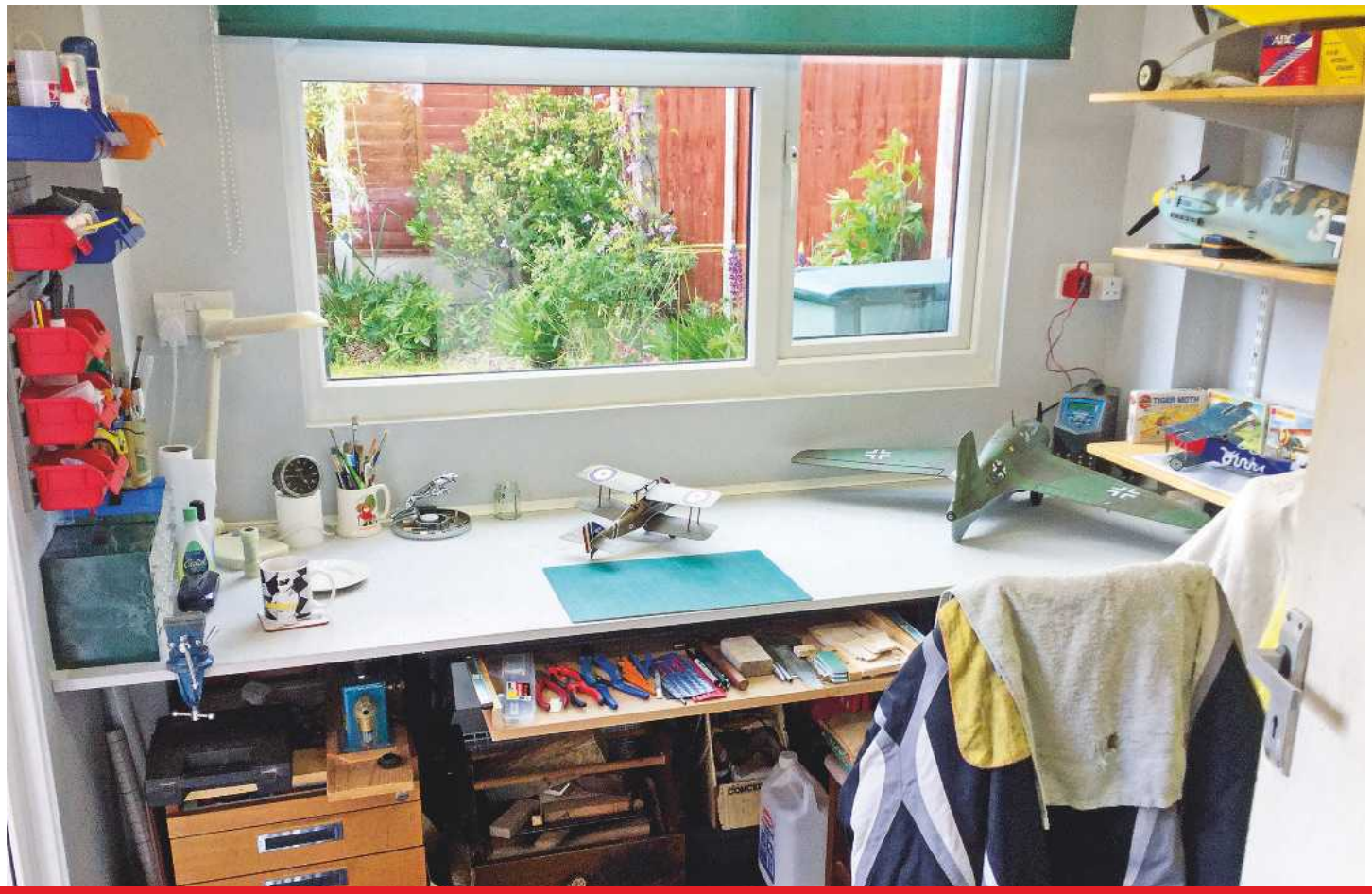
The open sections - the rudder, horizontal stabiliser and elevator - were covered in Diacov and the whole model finished in two-part polyurethane yacht varnish.

READY TO FLY

The model was finished during the initial Covid-19 lockdown and the original intention was to test fly the model at one of the aerotow meetings this year, but unfortunately all the aerotows we usually attend were cancelled. So not having access to suitable tug, tug pilot or flying site, and not wanting to take our chances on the slope, we have decided to hold off the maiden flight until normal service is resumed in 2021 (fingers crossed). We will make sure the flight is videoed and will post this on the modelflying.co.uk forum, so keep an eye out for that.

Conventional balsa sheeted leading edges are covered with birch veneer to simulate the full-size ply.

At one third scale the model has a manageable 4.13m wingspan.



IN YOUR WORKSHOP

Following on from the collection of readers' workshop pictures in the June issue here's another selection of shed and garage interiors to inspire (or comfort) you if you are seeking to transform your own model building area. words & photos » RCM&E Readers

BIKE OUT, MODELS IN

Starting us off this time is Dan Lester, who has evicted his motorbike to make way for his modelling den:

"Here is my workshop that has been developed from motorcycle storage to model building room. It is nine feet square with a fairly low ceiling, so model storage has to be carefully thought through; nine flyable models seems to be the critical mass, mostly stored wings off.

I fitted a full width MDF worktop and adapted a computer pull out shelf to store frequently used tools. The tool cabinet has a drawer dedicated to the current micro build so that it can be put away to free up the worktop for maintenance on the big stuff, and the cabinet can be rolled into the middle of the floor for working on assembled aircraft. I also have a small folding table for that purpose.

The Marauder sits on a map of the world that I charted the flight of the Silver Spitfire on and time keeping is via a vintage Jaeger car clock that currently sits on a toilet roll - very high tech."

GRAND TOUR

Richard Bayliss is obviously very proud of his model making areas and is blessed with a very tolerant wife, so he has been able to spread into other parts of the house. He was kind enough to take lots of pictures, but we only have space to show a few, starting with the model storage room:

"Fortunately, I have lots of space. This used to be a recreation room, but our children have long left the nest and the grandchildren are of college age.

Back to the workshop, first of all, in this climate (Canada) it's not sheds. The weather gets cold. Today it is -16 degrees C outside, and the wind makes it feel like -27C. So, I have my workshop in the basement, next to the furnace/laundry room - toasty warm.

The pictures show how I have organised my workspace over the years. In summary I follow what my dear mother used to say, many years ago:

'A place for everything and everything in its place.' During periods of building or repairing I stop every now and then to put things away.

Immediately to the left of my workbench (not shown) is a wooden partition wall with a power outlet and a wooden shelf, with small hooks in the edge for hanging small parts whilst the paint dries. Below the shelf are 'C' clamps plus some drawing instruments.

On a second bench, over cupboards, are my power tools - drill press, rotary disc sander, mini lathe (under cover), mini milling machine and a fret saw. At the back of the bench is a small storage cabinet with plastic drawers in which are tools for the lathe and milling, plus small electrical items such as fuses etc. On the bench are cylinders for a dummy Bristol Jupiter engine.

To the right, various items in plastic packs are thumb tacked to the wooden partition wall, along with spanners (labelled sizes) resting on pairs of nails, a wooden shelf with holes for screwdrivers, more tools hanging from nails and another shelf with various small hand tools (e.g. wire strippers), a jar of pencils and a jar of small paint brushes etc.

On the top shelf of the metal rack are engine boxes (mostly empty as they are in models), fuel tanks, and more boxes containing engine mounts, spinners and mufflers. Glues and paints below.

To the right, the propellers on long nails are sorted according to diameter."

Thanks for taking us on a tour of your busy workshop, Richard. The partition wall, covered in tools on hooks and nails, some shadow marked, is worth noting and means that you can quickly find any tool that you require, with no rooting around in a cluttered tool draw. Writing the spanner sizes next to each tool is also a wise move.

VINTAGE STUFF

Next up is actually quite an inspiring picture courtesy of Roger Brown, who is also PRO for SAM35:

"I read the article about model rooms in the June edition of RCM&E with interest and felt that as a modeller of around 65 years my accumulation of really useful stuff should be shown to the modelling 'youngsters' of today!"

What we like about Roger's workspace is that you really feel that you could sit down and start building, with all the most useful tools falling readily to hand. Sure, it's busy in there but not so much that tools and storage boxes are obscured, thus preventing easy access. Note the magnetic tool strip above his bench, plus copious use of small hooks and nails in the edges of shelves to hang things on.

ORGANISED CHAOS

Ever had that feeling that one or two of your models and kit boxes are getting in the way? We suspect that Steve Stephens feels that way on quite a regular basis, but there again it's amazing just how you can work around things if needs be. We suspect that we wouldn't know where to start if offered a building session in his den, but Steve can probably find things just fine.

"I enclose a few pictures of my workshop. Careful examination will show that it is a little less organised than some of that you have illustrated. Amazingly it does sometimes function."

> "Ever had that feeling that one or two of your models and kit boxes are getting in the way?"

KIWI'S KINGDOM

Howie Walsh, who hails from the South Island of New Zealand, likes to get comfortable in his light and airy garage workspace. But an armchair like that one would be a dangerous addition, we think - it looks far too comfortable!

"In the lockdown we have at present I spend quite a bit of time in the workshop. I had the cupboards and benches custom built about six years ago and I use them for the storage of engines, electric gear, spare parts, balsa and all the other paraphernalia needed to build the planes you see.

I share the garage with one of the family cars so the space can be limited at times. I have a bench with the pedestal drill, sander, grinder and vice all bolted down and I use the desk for cutting out and the bench between for assembly."

Thanks, Howie. We particularly like the large island with the Mosquito on top. If you have space, then one of these is invaluable for providing all round access when assembling and fitting out an R/C model.

Seven years old and still looking fresh, E-flite's Splendor has seen a new lease of life recently.

FLY IT OR FLOG IT?

Kevin Crozier looks back at some past review models, with a view to thinning out his model fleet

words » Kevin Crozier | photos » Kevin Crozier & Ray Whittaker

Much smaller but a cracking little aerobat, the E-flite 540QQ.

Throughout my time as the editor of various model magazines I've been fortunate to have been able to review a wide range of R/C aircraft kits. When doing so I've always been conscious of that fact that it would be a bit rude to the suppliers sell on the models shortly afterwards and, besides, most models on sale these days are usually pretty well sorted so I've been happy to fly them for quite a while. My interests are pretty broad, so I've tested all sorts of models, but it's mostly clubman sports fare that gets sent in for review.

When I first edited RCM&E back in the early 1990s the ARTF era was just starting, but for the most part the models were still built up balsa and ply kits. If they came from America then they usually had built up wings, but foam wings were more likely with British kits. The American kits always impressed, with their well-presented plans and instructions. British models tended to be more 'cottage industry' in style, but often resulted in a nice flying model aeroplane.

Sometimes models made from more exotic materials came along and I well remember the Yoshioka 'On Air', a 1.7 metre span electric glider (for NiCads back then) with impressively thin moulded foam wings. Top of the tree were Pilot kits, but just one came the magazine's way during my time, a Mystic 30 pattern ship designed by Hanno Prettner. This is one of the few I have sold, but only recently, and it is now getting regular outings with its new

owner, Martin, who is the Chairman of a local club.

Power wise, apart from early electric gliders, the urge to fly was largely provided by glow motors. Four strokes were becoming more affordable, but for magazine work two stokes were the standard powerplants.

INTO DISTRIBUTION

A 15-year spell in model distribution helped me to see things from the other side of the fence, and this only served to stiffen my resolve that review models should be flown and enjoyed, for a few months at least. You can imagine my frustration, then, after passing over a relatively expensive model helicopter for review, which was followed shortly afterwards by an upgrade kit that I also wanted tested, only to find that the aircraft had been sold immediately after the magazine had gone to print!

During this time the model trade enjoyed a surge in products from far eastern countries, not just Japan but others like Vietnam and Taiwan too. These countries provided a ready source of built up wooden ARTF kits, with colourful printed coverings, although the wood used in their construction was sometimes a bit questionable. Most, however, flew well and the range of model types, especially scale subjects, provided the opportunity for many modellers to own an aeroplane that otherwise they would be unlikely to build for themselves.

During the 90s another source of model kits was slowly developing and establishing a reputation for their high quality of design and use of good materials, including a high degree of composite construction. These came from the former Soviet Bloc countries, led by the Czech Republic.

For a while, at trade shows like the famous Nuremberg Toy Fair, before it was dominated by drones, all eyes were on products from this region, whilst still ordering container loads of products from the Far East. But in the side halls a new force was developing...

ENTER THE DRAGON

I can still clearly remember seeing the first Chinese R/C models, hanging from a series of small stands in Nuremberg, in a section dedicated to Chinese toy producers. They were invariably boxy beasts, covered in broad sweeps of primary coloured film and nothing like the colourful, scale like aeroplanes that their neighbours in Vietnam were producing.

Then, quite quickly, everything changed. With the clout and assistance of the big US distributors, the Chinese started to turn out some very nice ARTF models indeed, often much lighter and bigger than we were accustomed to from other countries close by.

And alongside those big ARTFs another revolution was happening, led by companies like Multiplex in Germany, who had also teamed up with Chinese producers, but this time to make smaller, but tough, crash resistant airframes from injection moulded foam. The foamie era had arrived!

At just over 54-inches wingspan the Splendor is quite large for a foam model.

FOAM PARTY

When I re-joined the ranks of the modelling press just under ten years ago it was foam models all the way. Built up ARTFs were still available but in most instances all the big model distributors wanted to promote via magazine reviews were the latest round of foam kits.

Hence, I make no apologies for the fact that the most recent models that I present to you in this occasional series are made from foam with electric motors. But as I work my way back to the far wall of the storage unit where I keep my models, we should start uncovering some of the other construction types fitted with IC engines. I know they are there as I can see their tails and wingtips - I just can't reach 'em!

So, foam it is, to start with at least...

E-FLITE SPLENDOR

Released in early 2013, E-flite's Splendor is aptly named, although I have to admit that it has taken me a good few years to fully appreciate it. For a foam model it is quite large and chunky, with a wingspan of 54.5 inches. It utilises Carbon-Z construction, which allows a large foam aeroplane to be made as rigid as a conventional all wooden airframe yet be lightweight too. And it works, because I've been throwing this model around for quite some time now, especially recently, and it never seems to age. Apart from the odd ding in the foam here and there she still looks as good as she did when I extracted her from a very large box all those years ago.

Control is courtesy of four E-flite 26g digital metal gear mini servos, via a Spektrum AR635 6-channel AS3X Sport receiver. The motor is a 525kV brushless outrunner coupled to a 60A Pro Switch-Mode ESC. The recommended battery is a 6S 3200mAh LiPo but as I only have two of those, I often take along some 6S 2900mAh packs to top up my flight numbers in any one session; all give a good six minutes of aerobatics. I have marked the inside of the battery bay to show where each type needs to go to maintain the C of G, the 2900's being slightly lighter.

The receiver is paired to a Spektrum DX8 transmitter (not supplied) and comes fully set up for this particular model, so it really earns its Bind 'N' Fly moniker.

ASSEMBLY

As with most E-flite kits assembly is super-fast:

Fix the undercarriage with clamps and clip-on the landing gear covers.

Slide the tailplane halves over the carbon tail tube and fix to the fuselage using small screws and matching lugs. The elevator joiner is a rectangular moulding and slides one half into the other for slop free pitch control.

As with the tail halves, the wings sit in moulded cavities on each side of the fuselage and are retained with good quality socket head screws into lugs extending from the fuselage sides.

Ground level view shows the fuselage curves off to good effect.

Right: With plenty of power on hand take offs are no problem from a neatly mown patch.

Prolonged inverted and knife edge is no problem for this highly competent machine.

Underwing stripes help with orientation during aeros.

The aileron servo leads need to be pulled through before finally attaching the wings otherwise they can get trapped. A simple Y-lead is used to connect them to the receiver. For a short while I promised myself that I would sort out individual channels for each aileron, but this model flies so well 'out of the box' that I have never bothered to do this. I suspect that it's highly likely that I wouldn't improve the flight characteristics even if I did - probably the reverse!

AS3X

I've flown several AS3X gyro stabilised aircraft and by and large they appear to be set up very well straight from the factory, although there have been a couple that have needed a closer look. But the Splendor is not one of those.

It comes equipped with an AR635 receiver with an integral AS3X system. The instructions show how to set things up for various Spektrum radios, along with Quique Somenzini's recommended settings. Quique designed the Spendor and is a top F3A aerobatic pilot and past FAI World Champion so he knows his stuff. Who am I to argue with such a pedigree, so I followed his advice.

When first switched on the control surfaces are capable of moving to an alarming degree but this is all part of the AS3X set up and is nothing to worry about. It all calms down in the air quite nicely.

There are two AS3X settings, operated by a two-position switch: F3A and 3D. F3A is used for medium to high speed flight and for flying precision aerobatic manoeuvres, whilst 3D is for low speed, controlled flying, sometimes flying 'beyond-the stall', as the instructions eloquently put it. When in 3D mode you have to remember not to fly too fast as this can cause oscillations if the gyro gain is too high.

IN FLIGHT

To be honest with you I'm not a great exponent of 3D flying so after hooning around in 3D mode for a few flights prior to writing my review, I flicked the switch into F3A mode, and it has stayed there ever since. In fact, I had forgotten that it even had a 3D mode at all until I started to write this article!

That sleek, fish shaped fuselage and tapered wings say just one thing to me - F3A style turnaround aerobatics. If I wanted to fly a 3D ship it would have short, stubby wings and huge control surfaces and whilst the Splendor is not short of control authority it's definitely not of that breed. So, for me, F3A mode is perfect.

As usual with Horizon Hobby kits the instructions give settings for High and Low Rates. I use the right-hand shoulder three position switch for Flight Modes, so I have set up an interim set of rates too. However, for my preferred style of smooth aerobatics I rarely need to come out of low rates, even for rudder dominant manoeuvres like Knife Edge and Stall Turns.

FLY IT OR FLOG IT?

It's crunch time! I am fortunate to have some 50 size pattern ships in my lock up at the local storage company and all are slightly larger and of the lighter, built up variety. So, the Spendor, being smaller and chubbier, really shouldn't be able to compete. But those ladies are in danger of becoming hangar queens as I really don't fly them as much as I should, instead reaching for the Splendor in preference.

The main reason is the loss of my old flying site, on the marshes close to the River Severn. Being totally flat, with just low hedges and the odd tree to avoid, it was perfect for turnaround flying. But issues with the farmer put paid to that and so my built-up beauties have been hangar bound ever since. My other local club sites are fine but are more suited to smaller models as they all have no-fly restrictions of some sort that cramp your style when flying turnaround manoeuvres.

So, fly it or flog it? I have decided to try to stop pampering my other pattern ships and to unwrap them from the proverbial 'cotton wool' that I have subconsciously swathed them in. Once I have them back in the air, I will revisit whether or not I really need to keep the Splendor as back up. So, for now at least, it's 'Fly It'.

Splendor keeps her long held spot in KC's storage unit - for now...

READER REVIEW

Bob Cotsford had a Splendor but decided it wasn't a keeper:

"I had a Splendor (second-hand) and didn't like it. It seemed overweight and I flew a Crescent Tornado at the time for comparison. It flew okay, but when I say that I stripped the electrics out to use in another models it really sums up my opinion of the Splendor."

Small but perfectly formed, E-flite's Extra 540QQ.

The benefits of changing the stock bendy prop have only recently been discovered, reduced noise being the big gain.

EXTRA 540QQ

Our second Quique Somenzini designed model this month is the much smaller Edge 540QQ 280. Spanning just 26 inches (660mm) this two-foot plus aerobat is powered by a 1800kV BL280 outrunner. A 3S 450mAh LiPo provides plenty of urge via a 10A ESC and the little plane comes equipped with an AR6310 Nanolite Rx and three 3.5g digital servos.

ASSEMBLY

The tail is pre-fitted so all this one needs is to have its wing panels slid onto the wing tube and to connect the aileron servo leads to the Y-harness inside the fuselage. Two small screws retain the wings.

Alternatively, for finer aileron control and flaperon programming you can connect the ailerons to the AIL and AUX1 ports instead.

The Extra comes with a fully spatted and faired undercarriage but if flying over rough ground or long grass it can be removed and the aircraft belly landed. I would lay some clear tape along the fuselage bottom if doing this, just to deflect the worst of any stones or spikey undergrowth etc.

Underside livery is very different and essential for such a manoeuvrable miniature!

Power wise you'll need some slim 3S 450mAh packs fitted with red JST connectors. This model dates back to the end of 2012 and capacities have increased a bit since then. Come 2017 and I was flying her on 600mAh packs of the same size, but I've also used 400 and 850 size packs too, the latter being about the biggest that will fit in the battery bay.

IN FLIGHT

This is another Horizon Hobby kit, so it benefits from excellent instructions, which include High and Low rate settings. My model was set as per the book, with an additional setting in between. Now, if I tell you that low rate on aileron is just +/-15mm and elevator a miserly +/- 8mm you'll probably be thinking that couldn't possibly be enough for anything other than stooging around? Well, although that doesn't look like much in practice it's plenty and this little pocket rocket can do the book - and more - on just those tiddly control deflections alone. Switch in the high rates and she twinkles, not just in the rolls but through any other manoeuvre you can think of. The only problem then is keeping a mental note of which way up she is but, boy, is she fun to fly!

I made the mistake early on of keeping her as a light breeze model, but I've found out

Recommended 3S 450mAh LiPo. Same size, larger capacity packs are now freely available.

Left: Take off from short grass is no problem, but if the turf is too long then an underhand lob soon gets her airborne.

lately, when flying her for this feature, that she will tolerate quite a stiff wind. Landings in particular benefit from a bit of a blow as without it she runs out of elevator during the flare and can nose over. But with some air over the tail she can be motored in for a nice three-point landing. I hesitate to recommend switching in higher rates for landing as things could get a little bit too twitchy, just when you don't need it!

Take offs from short grass are easy but when it gets a bit long for those tiny spats, she can easily be given an underhand lob, holding her gently just in front of the canopy.

One thing that is worth doing is to replace that bendy propeller with something a little more robust. Doing so won't affect the performance too much but it will quieten the little Extra down quite a bit. After changing to a more rigid e-prop recently I am kicking myself for not doing this much earlier!

Powerful tailplane comes ready fitted to the fuselage.

FLY IT OR FLOG IT?

Being so small she isn't really getting in the way. And she flies so well that it seems daft to part with her, especially as she's the ideal size for a B-model - one to take along for a few chilled flights between sorties with my main model for the day. So, it's a 'Fly It' for the foreseeable future.

Above: Being so small the Edge 540QQ hardly takes up any storage space. It's a long-term keeper, even after almost eight years!

In flight pics were taken during experiments with a stiffer replacement prop. The spinner needed cutting to suit and has now been refitted.

READER REVIEW

Like me, Julian Thacker loves his little Edge and provides some useful tips for swapping servos:

"I purchased my Edge 540QQ around seven years ago and it remains one of my favourite models. I did find the servos somewhat delicate and one died after about a year. I purchased two spares, in spite of the exorbitant cost, to give me another spare but before long that was used as well. I advertised in BMFA Classifieds for a second-hand model and found one which had some damage to the tail but was complete with all hardware. Its owner had not really got on with the model, so I bought this for a tad over the cost of one replacement E-flite servo. The repair was easy, so I had - and still have - the spare airframe, motor, ESC and Rx.

As time went on, I killed more servos; I fly this model hard and it does get the occasional knock. I then looked at cheaper alternative micro servos. I had a number of Supertec Titch44 servos (4.4g) from my Icarus Shockie days, so I steadily began to use them as the E-flite servos expired. Unfortunately, my first attempt at replacement failed dismally with a burned-out servo. I then realised that Spektrum use a non-standard wiring sequence on the Rx, swapping the +ve and -ve wires, so the sequence is live/ground/signal rather than ground/live/signal, hence my burned servo. Their extension leads, which plug into the Rx, swap the wire order back to standard for the servo connector. As the connectors were also non-standard, I switched to a Futaba Rx to save repeated switching of wires.

I still fly this model regularly, even on windy days when it is great fun to throw around - and get thrown around!

Pluses:

- *No gyro, which makes it a very 'pure' flying experience*
- *Extremely robust (it usually bounces rather than breaks) and easy to repair with foam safe cyano, kicker and micropore surgical tape*
- *It can harrier land on grass in spite of its small wheels, and likewise taxi and ROG. In fact, ground handling is amazing*
- *It tips the scales at just under 250g!*
- *Stock servos are fast and have accurate centering*
- *Its roll rate has to be seen to be believed*
- *It absolutely requires your full attention and WILL put a smile on your face*

Minuses:

- *Stock servos are a bit fragile. Supertecs are sturdier (I have yet to break one), equally accurate but fractionally slower*
- *Some may miss a gyro, especially in a model this small"*

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SUPER TIGRE 3000 30cc glow engine, little use, comes with Pitts style silencer. Single ring piston gives excellent compression. Complete with R/C carb - £100. 07989 190971 (Northants).

AM 25 MK2, circa 1961, never run, in original box. Offers invited. Call Garth on 01827 65854 (Staffs).

MEGA 16 EDF motor, 3370kV, with Kyosho T-33 fan unit - £50. Call Nick on 02882 242810 or 07899 963907 (N.Ireland).

CORSAIR F4U by Arrows Hobby, flown once - £100. WOT4 ARTF with Irvine .46 engine - £100. Both models just need your receiver. Collection only. Call Mike on 07800 570582 (Liverpool).

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SAM SPEAKS magazines, all bound in official binders. From 1982 to 2019 - £25. Buyer to collect. Call Roger on 01604 890925 (Northants).

MOKI 135 with silencer, MOK1 and Just Engines notes. Little use, bought for unstarted project - £60 inc. P&P. Call Geoff on 07952 724437 (Manchester).

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FUTABA 2DR-AM27 (27MHz) receiver with two servos. Suitable for boats or cars - £20. 01923 283905 (Herts).

DYNAM CATALINA, Ripmax Stargazer slope soarer, HobbyKing Junior, ST Models DG-1000 glider - £20 each, buyer to collect. 0208 4550977 (N.London).

CESSNA 180 ARTF by Staufenbiel, 68" span, complete with six servos, new and never flown. Cost £185 - yours for £150. Or £220 with fitted Enya .53 four-stroke engine. Collection only. 01747 823168 (North Dorset).

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MORE VINTAGE ENGINES. B.M.P (Barton Model Products) Mini Tiger .3cc, new in box - £195. Spitfire .049 radial glow engine made by Spitfire Products Inc. USA, boxed and believed to be unused - £45. Quickstart Dart .5cc Special (gold head), bench run only - £95. Call Peter on 07810 000567 (N.London).

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AM10 diesel engine. Please call Keith on 01692 582868 (Norfolk).

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NEXT ISSUE

BAC HAWK

It's been almost year since we last featured a free Pro-Plan from Tony Nijhuis' mini jet series, the last being the F4 Phantom in the March issue. Tony reports that all four of the last series have been incredibly successful, with the Jet Provost being the most popular, followed closely by the Gnat. Over the next few months we will be following them up with three more TN mini jets, starting with the BAC Hawk. Tony says, "*I'm not putting bets on whether these next three are going to pip them to the post but I have a feeling that the Hawk will give the Provost a pretty good run for its money - everyone loves a Red Arrows Hawk!*"

LMC GNATTY

When Lindsay Todd first started flying in the 1980s most sport models were quite traditional. However, Leicester Model Centre (LMC) changed all that with the release of several fibreglass fuselage and foam wing jet designs that were prop driven. One, called the 'Gnatty', caught Lindsay's eye, being loosely based on the Folland Gnat, so he bought one and flew it for a long time. Roll forward many years and he describes how he managed to buy another, original Super Gnatty kit and spare parts online for just £20 - a true bargain buy!

RCM&E
December 2020 issue on sale 27th November

LLC SOLARWING

At their club meetings in late 2019 talk between members of the LLC (Aviation Club Leiden) in The Netherlands included discussions about what to do for their yearly winter project. Previous years had covered traditional builds but now they wanted something that many modellers wouldn't likely start on their own. A father and son in the club had been experimenting with a solar glider and they came up with the idea to make a model with a span of roughly 7 ft in the style of an F5E class glider. Alfred Vink describes the build of his own Solarwing.

BLINK DELTA

One positive outcome of our recent troubles has been a noticeable increase in model building. Richard Harris celebrates this renewed interest in traditional modelling by constructing a neat little built up model from Angel Wing Designs. Blink is a small high performance 600mm wingspan delta with a clever interlocking egg box type construction that produces a light and rigid airframe. It can be built off any hard, flat surface, making it an ideal introduction for an experienced pilot who fancies dipping their toe into building for the first time.

RCM&E

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PARTING SHOT

THE RIVALS

To end this issue, we have this fabulous in-flight formation shot of two foam warbirds taken by Al Morrow. In the foreground is an FMS 1400mm Me Bf 109 flown by Neil Diment, whilst stalking the German fighter is an E-Flite 1200mm P-51 flown by Simon McNeill. It took a few goes to get the shot, as Neil relates: *"Si and I certainly flew a number of tight formation circuits for Al to try and get the right pic."*

Well done to the photographer and pilots for persevering. It was worth the effort to get such an impressive image.

Photo: *Al Morrow*
Camera: *Nikon D5300*
Aperture: *f/8*
Focal length: *86mm*
Shutter speed: *1/2000*
Lens: *70-300mm f/4.0-5.6*
ISO: *400*

Pilot NEW ARRIVALS

EXTRA NG

A brand new design, built from a classic. In 2019 Extra Acrobatic Aircraft unveiled their latest masterpiece, and now in 2020 Pilot-RC are unveiling theirs.

The Extra NG is the latest version of the Extra family, each version becoming more precise and more agile than ever before, and this feeds down all the way through our models.

AVAILABLE SIZES:

78IN | 90IN | 103IN

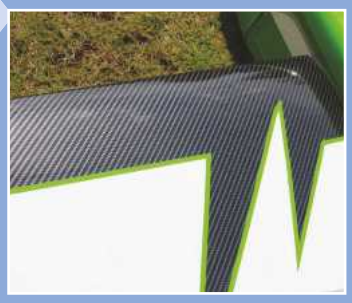
Red/Blue/White - Scheme 01

78IN | 90IN | 103IN

Green/Black/White - Scheme 02

78IN

Purple/Orange/White - Scheme 03



Scheme 02 features Carbon effect covering

SLICK

67IN | 74IN

Red/Yellow/Black - Scheme 01

67IN | 74IN

Blue/Green - Scheme 02

Pilot RC already surprised everyone with a new level of precision and agility with our extremely popular Laser. We have now taken all these great features and grown them into our new Slick.

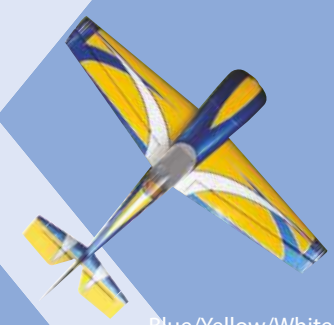
All the crazy agility and manoeuvrability of the Laser, while keeping the friendly flying characteristics of Pilot RC planes, the new Slick offers an even further improvement in precision and aero musical performance, feeling like a larger plane, a larger plane that can go nuts!

LASER

67IN

Red/Black/White - Scheme 01

67IN



Blue/Yellow/White - Scheme 06

EDGE 540V3

67IN | 92IN

Hamilton - Scheme 08

67IN

Red/Black/White - Scheme 13

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French Resistance

DESIGNED BY THE FRENCH DASSAULT COMPANY, THE RAFALE IS A HIGHLY MANOEUVRABLE DELTA-WINGED FIGHTER WITH A FULL-FLYING CANARD.

NEW!

SEE IT IN ACTION!

2 YEARS IN THE MAKING, INTRODUCING THE 80MM FMS RAFALE

Like its full-scale counterpart, the FMS 80mm Rafale features an attractive trim scheme, excellent scale details and fully functional canards - allowing the aircraft to be truly unique when compared to other 80mm EDF aircraft on the market today. Developed to replicate both the looks and performance of the real aircraft, FMS has dedicated it's decades long experience into designing the 80mm Rafale. Details such as the pilot, cockpit interior, panels, removable armaments, auxiliary fuel tanks, refuelling probe, targeting sensor etc; dynamic features such as functional LED navigation and landing lights, CNC shock-absorbing electric retracts, functional canards and flaps etc.

Rafale

FEATURES:

- 3280-1200KV platinum edition inrunner motor with a high-performance 100A ESC
- Delta wing design with full flying canards and functional flaps
- CNC metal shock-absorbing landing gear
- Functional navigation and landing lights
- Central function controller
- Functional and static details lovingly replicated
- Water based vibrant trim scheme

reflex

FEATURES REFLEX ONBOARD FLIGHT STABILIZATION SYSTEM - A TRUSTY CO-PILOT, PERFECT FOR PILOTS OF ANY SKILL LEVEL.

SPEC CHECK:

- Power System: In runner Brushless 3280 KV2100 motor
- Wingspan: 874mm/38.3 in
- Length: 1409mm/55.5 in
- Flying Weight: Around 3280g
- Fan: 80mm, 12 bladed
- Servos: 13g x 7pcs
- Speed Control: 100A
- Assembly Time: 5 minutes
- Wing Load: 85.2 g/dm² (0.17oz/in²)
- Wing Area: 38.5 dm² (596.6 sq.in)
- Experience Level: Intermediate/high

Please Note: This is sold in ARTF format and requires 6 Channel Radio System, Battery, Charger and AA batteries.

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FMS

E&OE

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