

VOL. 69 NO. 02 FEBRUARY 2026

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RCM&E

RADIO CONTROL MODELS AND ELECTRONICS

MICRO SCRAPPY

E-FLITE'S MINI BUSH PLANE REVIEWED



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Welcome

Welcome to the February 2026 issue of RCM&E.

It could be just me, but although winter has well and truly settled in, bringing with it the usual dank and dreary conditions, there have been quite a few fine flying days to enjoy too. Dare I say, they could soon even begin to outnumber the number of good flying days we enjoyed last summer, too many of which were spoilt by gusty, bumpy conditions even when the sun was shining.

On one such fine winter's day my clubmates and I gathered to inspect the newly laid gravel track down to our local flying patch. This had been torn up during autumn by some heavy farm machinery, leaving the already rutted road in a very poor state. But on this day the newly surfaced track was declared open for business. It was so new in fact that the machine laying it was just leaving the entrance gate as I arrived!

Although I had taken a model to fly, after having a natter over a sandwich and indulging in a free mince pie (thanks, Roger!) I decided to return to base to catch up on some much-needed jobs. Upon pulling up at home I glanced at my phone and saw several missed calls from my flying buddy, John, who has almost completed the VQ Tiger Moth review model that I unboxed for a recent RTFM article. John needed a large capacity 3S LiPo for the Tiggie, which I had recently purchased especially for use in the biplane. John lives close to the local flying field I had just returned from and was now at home, so could I drop the battery in to him?

This was all the weak excuse I needed to return to the flying field and use up the three fully charged LiPo packs that were still in my car, as was the Sukhoi aerobat that I had intended to fly earlier. I was so glad I did as conditions were perfect, with barely any wind and the lovely golden winter sun reflecting off the small plane's surfaces as I put it through its paces. *"It doesn't get any better than this!"*, I said to myself, especially at this time of year—lovely!

Each day since the wind has blown, accompanied by copious amounts of drizzle, so I'm so glad that I made the decision to turn around and go flying on such a perfect day. We've got to take them while we can!

So, what's in store in this, the second issue of 2026?



Our Iberian correspondent, Arnaldo Correia makes a welcome return to RCM&E as he takes a close look at a third scale Nieuport Triplane built by Mário Vilaça. Next, we continue the WW1 theme as Mats Johansson describes his lightweight FE2b for Indoor Open Scale. We are also very pleased to welcome Logic RC, distributor of Horizon Hobby products, back into the RCM&E fold, starting a bunch of new reviews with a look at E-flite's diminutive Micro Scrappy bush plane. Next, Alan Williams transports us to Wales for Lleyn Model Aero Club's annual 'Bring & Fly' fly-in. Then it's over to Steve Nash's workbench to take a look at a couple of simple building aids. Chris Williams (Scale Gliding) reports from the last White Sheet Scale Day of 2025 and then we hand over to Tony Nijhuis as he introduces our pull-out Pro-Plan for his latest EDF jet, the swing wing GR6 Tornado.

The second half starts with Thorsten Häs as he concludes his report from the 'Segelflugmesse 2025' (Glider Fair) held in Schwabmünchen, southern Germany. Dick van Mourik keeps things continental as he looks at the origins of a famous German kit, the Robbe Mäxi. Finally, our second regular column for this issue falls to Dave Goodenough (One Man & His Shed) who adds a pair of second-hand models to his already expansive flying fleet.

I hope you enjoy reading it all.
Happy Flying!

Kevin Crozier

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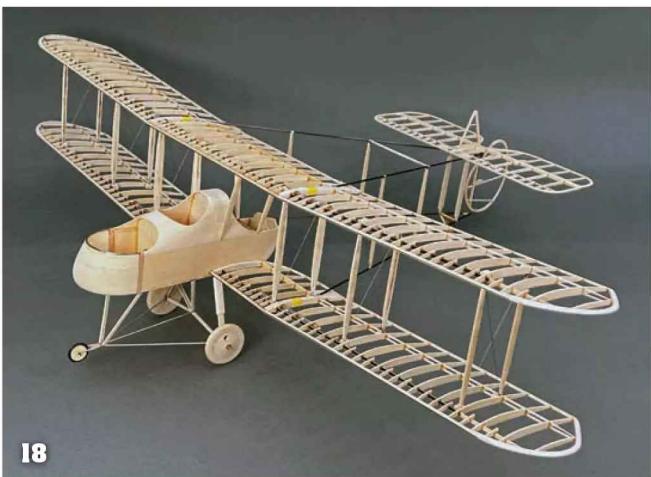
The Spitfire Flying Club



SCAN
ME!



All contributions subject to availability



On the cover

Photo: Barry Atkinson

E-flite's Micro Scrappy is an eye-catching little thing and it's rare to fly an aeroplane that has garnered quite so much praise on the walk out to the flightline. Quite remarkable really for a small model that spans just over 800 mm. Perhaps it's the format as who doesn't love a bush plane? It's a scale model to boot, being an officially licensed scale replica of Mike Patey's backcountry aircraft complete with jumbo sized flaps and ailerons, and a full suite of navigation and landing lights.



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50 YEARS OF CHRIS FOSS KITS



This year Chris Foss is marking 50 years of making kits! It only happened because Chris was made redundant in 1975. The architectural practice he was with needed to slim down their workforce due to a slump in the building industry. Living with his parents in their bungalow in Shoreham at the time gave him breathing space to reassess the future.

Having become an established name in the hobby as a designer and successful competition flyer he had a nice sideline in selling plans of his range of 'Phase' slope and thermal soarers. The obvious way forward was to turn his designs into kits, combining quality, style and performance! Within six months the Middle Phase had been designed and comprehensively flight tested. A simple,

attractive rudder and elevator slope soarer with optional ailerons, the Middle Phase was aimed at the novice and intermediate flyer.

The facilities at Chris' disposal were minimal - a drawing board in his bedroom and a spare room for his modelling! A good friend nearby kindly made half of his garage available for storage and did Chris need it! Initially all the parts were supplied cut by Solarbo, the main balsa specialists at the time who were conveniently just along the coast in Lancing. Chris designed and produced all the artwork for the instructions and the box label. To say the first kit was a steep learning curve would be an understatement!

The Middle Phase was launched at the first Sandown Park Symposium. 100 kits were taken and all sold!

A year later Chris moved into a small, terraced house and had a large workshop built in the back garden. The famous Wot 4 kit arrived soon after and the range continued to expand. In 1986 Chris bought a 600 sq.ft. unit, still in Shoreham, and when that reached capacity another 400 sq.ft. was added. And that is where Chris is to this very day, still producing kits 50 years later!



The legendary WOT 4 kit. All Chris Foss kits produced in 2026 will contain a unique anniversary sticker, as shown above.



One of Chris' personal WOT 4 models.



Chris at work in his factory in Shoreham-by-Sea, West Sussex, home of Chris Foss kits since 1986.



Unmistakable front-end view of a WOT 4 showing the archetypal thick wing section. All factory & model images courtesy of David Ashby.



Developed in the mid-1990s, the WOT 4 Mark Three has a tapered wing.

ADVANCED PRECISION AEROBATICS EDITION 3

Advanced Precision Aerobatics Edition 3

A Guide to Flying the FAI A27 and P27 Schedules

Kevin Caton & Peter J Jenkins



Peter Jenkins has published the third edition of his excellent series 'Model Aircraft Precision Aerobatics', updated to cover the revised F3A Schedules but still with basic guidance on trimming, in particular, and dealing with wind. Kevin Caton has co-authored it and should need no introduction here.

Just because you don't fly modern full-fat FAI/£5,000 in the air aerobatics (I don't), do not imagine that there's nothing in this book for club fliers; there is. Peter has a methodical approach and an erudite style which, combined with sensible pagination (every paragraph is numbered, making cross-referencing a doddle), makes a highly technical topic an easy read.

The outcome, for me at least as an erstwhile Classic F3A aspirant who has just scraped a B Certificate, is that even though I still fly indifferently, I now have clues where to look, items to rule out and a jolly good start to flying accurately in cross and headwinds. Practice flights have purpose beyond simply "fly, don't crash when landing". Admittedly, and a declaration, I sub-edited it but it enabled me to read it cover to cover and I commend it to any pilot wishing to improve their skills.

Bruce Collinson

ADMFC GOLDEN JUBILEE

Last year saw Aberystwyth and District Model Flying Club celebrating our Golden Jubilee year following 50 years since the club's formation. Normally keen to just enjoy the business of model flying, with few if any extraneous business interruptions, it nevertheless fell to a few of the members to ensure the 50th anniversary was suitably noted. A major installation to mark the occasion was to be the provision of a new shed, the existing club shed having been moved about the general site purposefully and accidentally several times and now showing its dilapidation. In addition to club funds, generous donations were made by members for continued enjoyment of their hobby and the shed duly appeared, erected on site in October.

Some few weeks prior to this one of our younger members, Jack Prosser, bagged the title of British Drone Racing Champion. Jack had been on site at Bont Goch on several occasions, flying his incredibly small and fast racing drones around his practice circuit and the Club applauded his efforts.

Within a few days of the new shed erection an evening dinner was organised locally in Aberystwyth and it was noteworthy that among the attendees were some of the founder members.

Our British Drone Racing Champion, Jack, was off to South Korea at this time, representing his country and we like to think the ADMFC, competing in the DFL (Drone Formula League) International Drone Racing where he finished 20th.

The ADMFC flies weather permitting, at Bont Goch near Aberystwyth. Winter indoor flying takes place in Borth sports hall on Sunday evenings during Greenwich mean time.

Further information is available on the club's Facebook page or by contacting Rob Ireland (Secretary) on robertmowatireland@googlemail.com or Bob Cook (Treasurer) at roberthenrycook@hotmail.co.uk

Rob Ireland



The new ADMFC clubhouse.



A typical laid-back flying session.



Jack Prosser, ADMFC member and British Drone Racing Champion.



NIEUPORT TRIPLANE

Arnaldo Correia takes a close look at Mário Vilaça's third scale model of Nieuport's experimental staggerwing fighter

Words & Photos: **Arnaldo Correia**

Your first reaction when seeing this model might well be, "What on God's Earth!" Well, at least that would be a printable one! The 'young in mind', like yours truly, will remember the opening sequences of 'Those Magnificent Men in their Flying Machines' where some bizarre

contraptions, a few of them multi-planes, appeared. Aviation was in its infancy, many avenues were tried, with the least successful ones being discarded along the way.

I'm sure you all know of the Sopwith Triplane and some will have been lucky enough to see the 'late production' aircraft flying at Old

Warden. Nieuport, a contemporary of Sopwith, was one of the better known and successful French aircraft manufacturers during WWI and afterwards, up until the early 1930s, specialising mainly in fighter aircraft. As far as the pre-war era and WWI are concerned there are interesting similarities between Sopwith's



The fact that A6686 was based on a Ni 17 fuselage helped very much as Ni 17 info is widely available online.

path and Nieuport's. Like Sopwith, before the war Nieuport had made racing aircraft and one of these, designed for the cancelled 1914 Gordon Bennett Trophy race, was developed into the Nieuport 10, which was used both as a scout (reconnaissance) and as a single seater fighter during the early years of WWI. A sesquiplane, with a one and a half wing layout, was chosen to give a better downwards view. This was Nieuport's trademark, from the 10 up to and including the 27, the last development of the well-known Ni 17. But that did not prevent Nieuport from investigating other layouts. In fact, their first triplane, using a Ni 10 fuselage as a basis, dates from 1915.

The DH.2, Nieuport 11 and, to a lesser extent, F.E.8, were instrumental in ending the infamous 'Fokker Scourge' in early 1916. The pusher DH.2 and F.E.8 had exceptional visibility, both forward and upwards, but their pusher layout was less efficient than a tractor one, in part due to those nightmarish struts supporting the tail surfaces. After the 1915 prototype the next Nieuport Triplane tried to emulate the good forward and upwards visibility of earlier pushers, in much the same way that Captain Geoffrey de Havilland

did with his rearwards staggered DH.5. Unfortunately, the DH.5 was not a success and neither were the 1916-17 Nieuport Triplanes with their strange (did someone say weird!) wing layout.

Besides the French Aviation Militaire, both the RFC and RNAS tried Nieuport Triplanes, the RFC getting A6686, this one being based on a Ni 17 fuselage. All three services were less than impressed with them, an RFC report stating that A6686 was 'extraordinarily unstable', especially fore and aft, and 'heavy to land'. So, the Nieuport Triplanes were considered to be 'lemons', whereas the Sopwith was a pleasant aircraft to fly. The old 'if it looks right, it flies right' adage comes to mind, doesn't it.

A DIFFICULT SUBJECT

Why then would someone choose such a potentially difficult aircraft to model? When I asked Mário Vilaça, he said, "I had a Glenn Torrance third scale Fokker Dr.1 and was delighted with the way it flew, as well as by its peculiarities, especially whilst landing. When I was considering my next build, I knew I wanted a Triplane, but at the time there were already several Fokker triplanes in the Spanish Dawn Patrol and I did not want to do 'just' another one. On the other hand, the Nieuport Triplane would be a wonderful challenge, not only for its peculiar layout but also the scant information available, just a few photos and drawings."

Mário continued, "The Triplane was also another first to me as it was the first time I've flown a model before it was finished. Even I was somewhat concerned about its flight qualities! After the model's first flight an Aussie friend sent me a message saying, 'Congratulations to the man brave enough to make this plane!'"

I must agree. Wholeheartedly.

LESS THAN A YEAR!

Mário took eleven months to draw up and build the model. Knowing CAD well (his plans are a work of art to anyone interested in technical drawing) he says drawing a plan usually takes longer than building the model itself as it is during this phase that construction techniques are decided and problems analysed and solved. Interestingly, that was not the case this



To say I was surprised when I became aware that Mário had modelled a Nieuport Triplane is an understatement.

time, the drawing taking some four months and construction the remaining seven. The fact A6686 was based on a Ni 17 fuselage helped very much as Ni 17 info is amply available on the internet. The most difficult part was determining the configuration of the rigging wires as this is specific to the Triplane. But by carefully studying the few available photos, plus a few educated guesses, it was done.

FUSELAGE

The construction is wholly traditional, with Nordic pine (a wood similar to spruce) being used to make the fuselage truss, with Finnish birch ply being used for the more stressed formers, such as the firewall, while lite ply was used for lightly stressed ones, such as the rear fuselage formers.

POWERPLANT

Like other models from Mário's workshop the Triplane is equipped with a DLE 85 two-stroke, an engine that Mário knows well.

"For models between 17 and 23 kg (38 to 51 lbs) it's my engine of choice", says Mário. "I've had many flight hours with them in my models and they have never failed me once. This engine has only one downside - it is noisy. It's great for Dawn Patrol flying but decidedly unpleasant when starting or while taxiing. But altogether it's a reliable, powerful and very cost-effective powerplant."

Having seen Mário's other DLE 85 equipped models flying and finding their noise level acceptable, what silencer was Mário using this



Upper port wing showing the aileron hinge details and rib tapes.



Mário restrains his Nieuport Triplane as his son António runs up the DLE 85 two-stroke engine before taking off for another flight.

time?" Well, the cowl is so large I used the original silencer that comes with the engine. The only drawback was that I had to eliminate a couple of cylinders from the dummy engine for proper cooling. But as the silencer is aluminium coloured, one hardly notices it."

As the exhaust exit would be too near the propeller and nose weight was needed anyway, Mário rerouted the exhaust via a Z-shaped



On the original the ailerons were actuated by centre section horns via torque tubes. In Mário's model they are moved by servos in the wing, but the ailerons are connected to the fake horns for a more realistic action.

tube that, after passing through the firewall, discharges through what was the carburettor air admission tube in the prototype. It did not help the noise problem much, but it certainly looks better.

WINGS

The wings are wholly conventional, as might be expected for a WWI model, and are mounted using 8 mm carbon fibre joining rods that enter aluminium tubes. These rods are not designed to take bending loads, as the flying and landing wires absorb those, but they are very useful during assembly.

The ribs were CNC cut from either lite or birch ply, depending on the stresses they would be subjected to.

The wing struts are made from a tropical wood called Marupa from Brazil, chosen because it is light and very close grained, looking the part when varnished. Most stresses are taken by the rigging wires, so the struts are there (mostly) to keep the wings in the correct position and are therefore



The Triplane's interplane struts were probably some of the most uncommon ever made. In the model they are made from Marupa, a closed grained tropical wood, with 1 mm steel plate laser cut fittings embedded in the ends.



comparatively lightly loaded. Laser cut 1 mm stainless steel fittings are used for the strut extremities which are bolted to the wing fittings during assembly.

COWL & DUMMY ENGINE

Original Nieuport 17 cowls were made from two moulded pieces of aluminium bolted together. The model cowl was spun in one piece from aluminium sheet, the joints being dummy ones.

The model has a Mick Reeves third scale vacuum-formed dummy engine. To achieve good cooling airflow, especially over the silencer, a couple of cylinders were cut away and others slightly trimmed. A little weathering gives it depth.

LANDING GEAR

The landing gear is made from beechwood struts with embedded laser-cut steel plates in the extremities. The wheel axle is an 8 mm steel tube, through which runs a 6 mm carbon rod, the suspension being by bungee cord as on the original. The wheels are from Toni Clark, to which Mário added linen covers to improve their scale look.



The original Ni 17 cowl was made from two aluminium pieces bolted together. Mário's was spun in one-piece, with dummy details added later. The finishing touch is the dummy engine from Mick Reeves Models.



Landing gear is made from beech with embedded steel plates at the ends. Suspension is by bungee cord as per the prototype.



Tail skid is made from Marupa and steel plates, glued to a ply former and faired with balsa wood.



Frontal view. Location of the rigging wires was determined by studying the few available photos and making some educated guesses.



Vickers .303 machine gun was 3D printed by Luis Vazquez.

MACHINE GUN

The dummy Vickers .303 was 3D printed by Luis Vazquez from Madrid and painted with Mário's usual colour mix of matt black with a dash of silver added to simulate the Parkerizing (anti-rust) treatment applied to firearms.

FITTINGS

The various fittings, such as the wire fixing plates and others, were also laser-cut from 1



Mário's Triplane was covered in 'Antique' Oratex fabric, sprayed with automotive paint but without a base coat to save weight.



Mário weathers his models using diluted wood varnish washes for oil, grime, etc. and acrylic paints and soft pastels to simulate rust.



Tail surfaces are built entirely from balsa strip, which is light but prone to warping. The elevator and rudder are actuated through pull-pull wires.

mm stainless steel. As already mentioned, with such scant information regarding the prototype the rigging wires' location was determined by studying the few available photos and also by making educated guesses when the photos did not give enough information.

"I cannot claim scale fidelity", says Mário, "but the weird geometry notwithstanding, flight wise

they do seem to work, with no wing showing signs of being under undue stress."

COVERING & PAINTING

The Triplane was covered in 'Antique' Oratex fabric, with wing rib tapes being applied before spraying with Robbialac automotive water-based paint matched to Mário's colour sample and applied directly over the fabric without a base coat to save weight. As already mentioned, he chose to depict A6686, the machine tested by the RFC in early 1917.

WEATHERING

Weathering certainly helps to bring the model alive and Mário always seems to enjoy this part, seeing it as both a way to improve the realism of his models, as well as to emphasise detail. He uses dilute exotic wood varnish washes for oil, grime, etc. and acrylic paints and soft pastels to simulate rust. But there are, apparently, other ways to 'simulate' wear due to operational conditions. Over to Mário...

"A few years ago, we went to Stow Maries Great War Aerodrome, near Maldon, Essex, to fly with the British Dawn Patrol, taking my then current model, an Albatros DVa. The weather was overcast and rainy. When flying ended we packed up the model, ready to return home by ferry. When I took it off its trailer at home, I noticed the lower wing undersides had been splashed with mud thrown up by the wheels during take-offs and landings. Mud that had, meanwhile, dried. They looked so realistic that I simply took my spray gun and covered the splashes with varnish. Never has one of my models had such a realistic weathering!" Unfortunately, the Albatros later crashed at Guadalajara (Madrid, Spain) due to a faulty receiver but Mário still has those wings, complete with their (very) realistic weathering!

CG LOCATION

I'm sure you will have been wondering how Mário calculated the Centre of Gravity location. "I used a program available on the internet." I must have looked a bit astonished, as he then added,



To test the calculated CG position António built this 3S LiPo powered eighth scale model. Not too shabby, especially for a guinea pig! (Photo: Mário Vilaça)



António prepares the Triplane for another sortie. Mário and António work well together. Long may they continue to do so.

"I'm sure you know the saying 'There are old pilots and there are bold pilots, but there are no old, bold pilots', so I bought a small-scale plan from the USA. António [his son] built it and that allowed us to run all the tests we needed, including checking the CG location suggested by the program, before venturing onto building the third scale model."

PILOT NOTES

Pilots who flew the full-size Nieuport Triplane did not like it. So, what is the model like to fly? Who better than António Vilaça to tell us...

"The Triplane is by far the most unusual model designed by my father. The weird layout notwithstanding, the Nieuport is not too dissimilar from his other third scale models as far as flying is concerned, being not much different from, for instance, the Pfalz D.IIa (see RCM&E, Feb' 2021).

Maybe due to the middle wing being so forward the Triplane feels a little more nose heavy than the Pfalz, so one cannot fly it as slowly. Having not had the chance to fly this model as much as the others, I feel I need more airtime to explore its flight envelope, especially slow flight, more fully. I can tell you it is well-behaved model though, with no tendency to drop a wing suddenly or suffering from adverse aileron yaw.

When taking off it rolls straight, with no tendency to veer to one side. The take-offs is therefore



Rolling the third scale model back to the pits after another successful flight gives a good indication of its size.

quite a smooth one. When landing one should be a bit careful, always bringing it in with a bit of power on and when the wheels touch the ground, one needs to be on one's toes, so it does not run away from you."

EPILOGUE

To say I was surprised when I became aware that Mário had modelled a Nieuport Triplane is an understatement. In fact, I have been pestering him to see it flying for some time. The bizarre configuration and the bad behaviour of the full-size prototype rang all sorts of bells. But the truth is it flies beautifully and looks the part. Maybe António's piloting skills have something to do with it or, quite simply, Mário has designed and built another wonderful large scale model aircraft.

As with any scale model the important thing

DATAFILE

Model	Nieuport Triplane (early 1917, Ni17)
Model type:	WWI fighter
Designer/builder:	Mário Vilaça
Scale:	1:3
Wingspan:	2.72 m (107")
Wing area:	173 dm ² (18.62 sq. ft.)
All-up weight:	18.5 kg (40 lbs 130z)
Wing Loading:	107 g/dm ² (35 oz/sq. ft.)
Engine:	DLE 85 two-stroke, 85 cc, 8.5 hp @ 7500 rpm
Propeller:	26" x 8" Graupner

is whether it looks the part. I believe it does. Please have a look at the photographs and judge for yourself. ■



'The landing is not completed until the aircraft has stopped so be on your toes!', says Antonio. Hardly new, but still sound advice.

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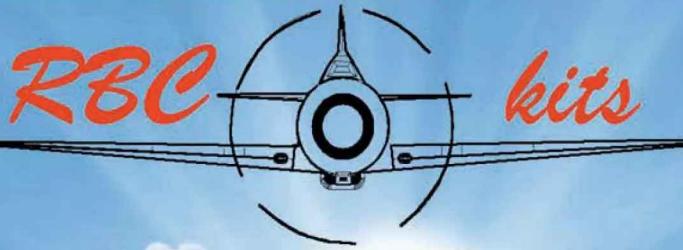
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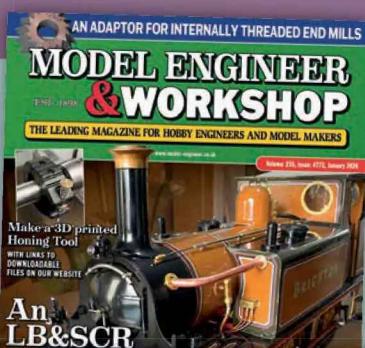
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RAF FE2b

Mats Johansson introduces the first part of his Pro-Plan feature about his Open Class R/C model for Indoor Scale. Part 2 and the FE2b plan will follow in the March issue

Words & Photos: **Mats Johansson**

Ahead of the BMFA RC Indoor Scale Nationals in England, 26-27 April 2025, I thought it was time for a new competition model.

Making an R/C scale model for indoor use is really like any scale model building but with the important exception that you have to be able to build light enough for the model to be able to fly slowly too. This adds an extra layer of complexity. Every tenth of a gram of unnecessary weight must be questioned and sometimes it is difficult to really understand what really weighs the most. As an example, a piano wire detail, i.e. pure steel, seems heavy but a piece of steel of 0.5 mm wire in a landing gear might add, say, two grams, while the paint on an entire model can add a whole six grams! There is a lot to learn about different materials here.

In the Open Scale class at Walsall, I have previously flown the DH.53 Hummingbird in 2023 and the Bleriot XI in 2024. I was now



Mats choose to replicate the PC10 khaki coloured 6341 'Zanzibar' of 25th Squadron RFC.

“I have always had a soft spot for a biplane with a pusher propeller!”

thinking about something different and maybe bigger - and I have always had a soft spot for a biplane with a pusher propeller!

On a visit to The Vintage Aviator Limited (TVAL, owned by 'Lord of the Rings' film director Sir Peter Jackson) in New Zealand in January 2020, I got to study a rather unusual flying machine up close. When it was rolled out of the hangar and set up outside, it was amazing. I could hardly believe my eyes! I just had to build this dinosaur into a model aircraft.

It is unconventional, it looks almost like nothing else and I have never seen a flying model of it, possibly for obvious reasons! You might not call it stylish right away, but it is as COOL as you can get.

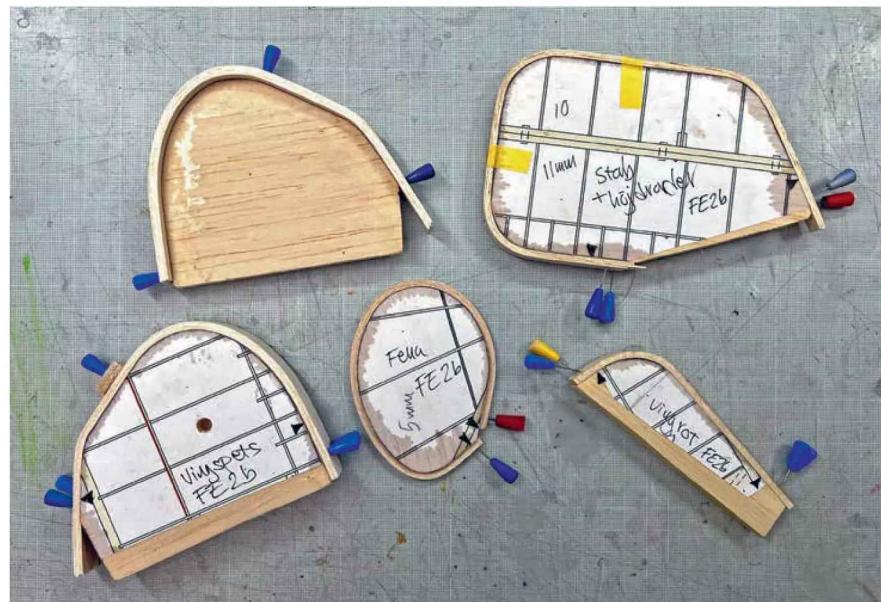
It is an FE2b!

PROTOTYPE FE2b

FE stands for Farman Experimental, which basically means a configuration with a pusher propeller. The aircraft was built by the RAF, but not the RAF as in the Royal Air Force, but as in the aircraft manufacturer, the Royal Aircraft Factory, at Farnborough in England, which later also became known for the successful SE5a fighter.

The FE2b is a large machine, with a wingspan of 14.5 metres and I was able to stand straight under the nose of it at Hood Aerodrome, which is the home base for the TVAL collections. It may look like a real antique, but it did good service throughout WW1 from 1914-18 as a reconnaissance, bomber and attack aircraft. Towards the end of the war, it was even used as a night bomber. A total of around 1,939 examples were built.

You may think that an FE2b was easy prey for German fighters but the facts show that



A kit of parts is assembled before starting the build, including making laminated outlines for the tail parts.

it was both manoeuvrable and the gunner had free fields of fire in many directions, so it was a very dangerous opponent. The famous German fighter pilot Max Immelman was shot down by an FE2b on 18th June 1916 (although one theory says that due to a problem with his aircraft's synchronisation mechanism, he shot off his own propeller). Manfred Von Richthofen was hit by a bullet in the head during combat with an FE2d on 6 July 1917, an injury that is said to have affected him until his death.

The Vintage Aviator has built two FE2bs with original 160 hp, six-cylinder Beardmore engines. The black night bomber 'Jess' is really cool, but I think that all black can be a bit difficult on a model. So, I choose to make the PC10 khaki coloured 6341 'Zanzibar' from 25th Squadron Royal Flying Corps as it looked in 1916. You can read more about these aircraft here: <https://thevintageaviator.co.nz/projects/aircraft/fe2b-0>

Good three-view drawings are contained in Windsock Datafile No 18 and I have lots of detailed pictures from my visit to NZ.

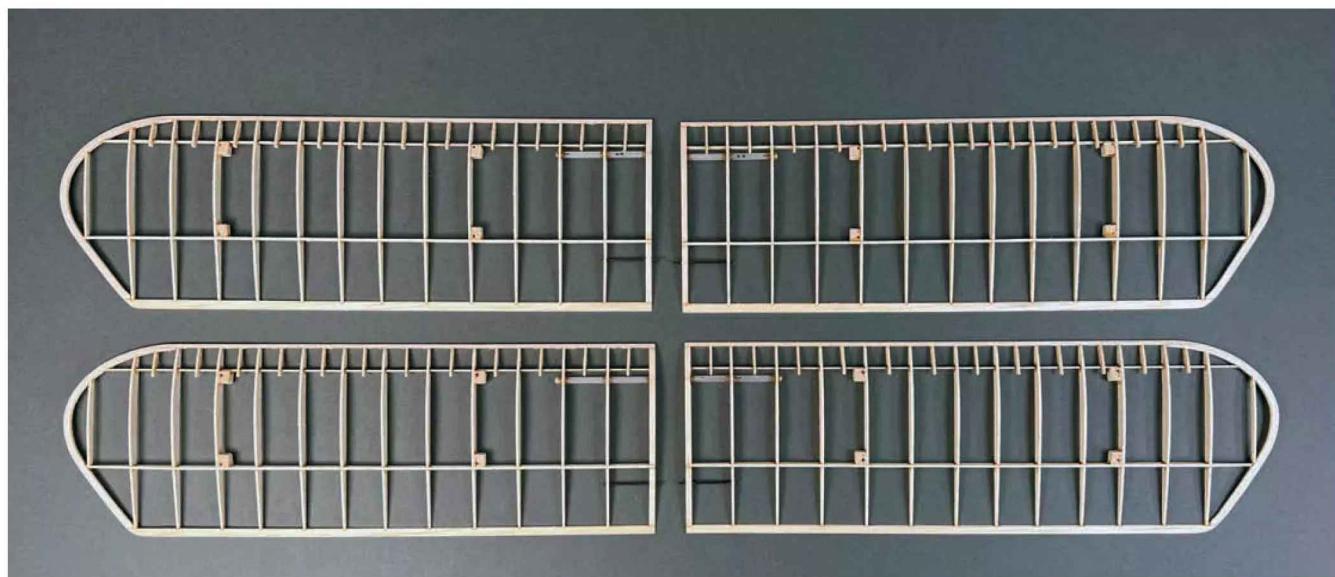
TIME TO BUILD

I usually start my builds by 'making my own kit'. The spars, frames, stringers and laminated contours for the wingtips, stabiliser and rudder are produced before I glue any parts together. This keeps the pace going at the beginning.

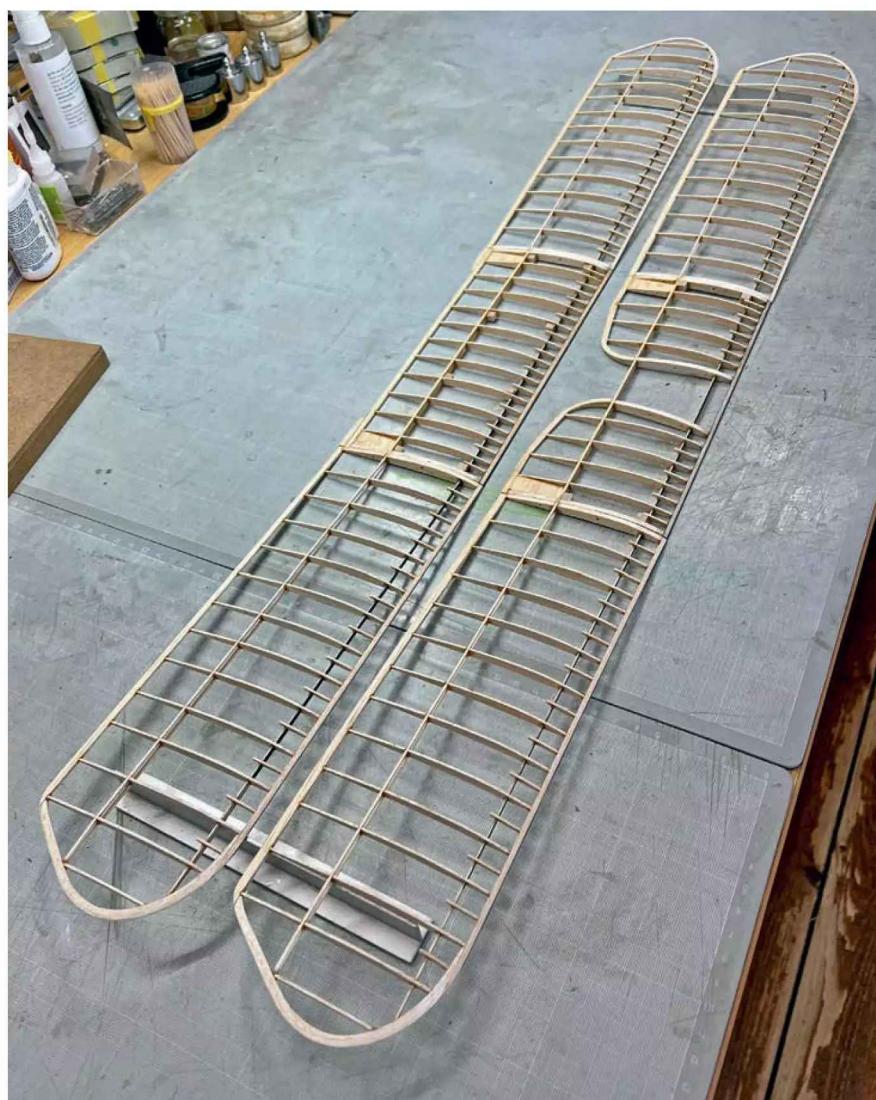
The wing ribs are made using the usual 'sanding blanks against plywood templates' method. There are 82 main ribs in total, most of them in 0.8 mm balsa, of which 10 root ribs are in 3 mm balsa. Now is also time to laminate the wingtips, rudders and contour blanks for the stabiliser. I glue these with white PVA after selecting strips of suitable hardness and deflection. Then I plane the trailing edges to a wedge shape of 4 x 1.5 mm from medium-hard balsa.



Full size at rest at Hood Aerodrome, Masterton in New Zealand.



Outer wing panels are removable so as to be able to break the model down for transport to events such as the Indoor Scale Nationals.



Wing ribs are made using the time honoured 'sanding blanks against plywood templates' method. There are 82 main ribs in total.



Dihedral joints are made using thin plastic tubes and one and two millimetre carbon fibre tubes.

“I am strongly influenced by many talented scale model builders, both in F/F and R/C scale”

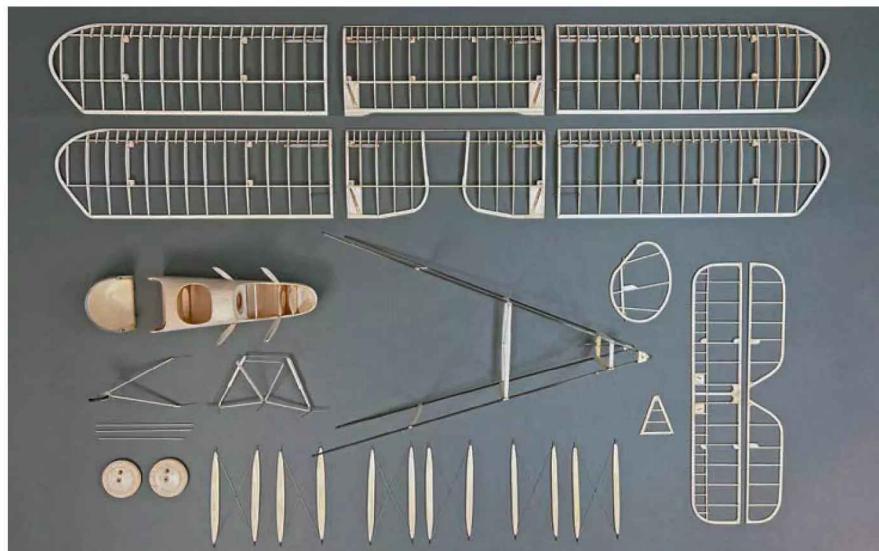
WINGS

Now begins a fun process - building the wings!

It's always fun when you see the result grow. After a full day's work all four outer wing panels can be built. You know how it is: the first two, three weeks of a build are usually very stimulating; the structure grows quickly and life is enjoyable...

One of the challenges on the FE2b is building the delicate and thin wings and keeping them straight. The wing profile is only about 5 mm high. The leading edges, spars and centre sections have carbon fibre reinforcements to give the wing stability.

One of the good features of this model is that it is relatively easy to make parts detachable at natural joints. For example, the outer wing panels and the rear fuselage can be easily disassembled to make the model transportable, a necessity for me to be able to bring it as luggage on the flight over to England.



Kit of airframe parts ready for covering, painting and assembly. Control is by rudder and elevator with no ailerons.

Check that the joint between the outer panels and the centre of the wing is at the right dihedral. The joint is made using thin plastic tubes and one and two millimetre carbon fibre tubes.

INSPIRATION & DESIGN PHILOSOPHY

I am strongly influenced by many talented scale model builders, both in F/F and R/C scale, such as:

- Master builder Antonin Alfery from the Czech Republic, with his knowledge of aerodynamics and advanced construction technology.
- Richard Crossley from England and his way of simplifying and highlighting a model's overall impression with selected details such as credible pilots and things that trick the eye.
- George Kandylakis in Greece has a unique ability to build both super detailed and light. How does he do it?

■ Mike Stuart from England has given me many tips on how to design and build light free flying scale models, including via his content-rich website: www.ffscale.co.uk

■ Lars Tolkstam in Sweden is a top level builder and the absolute best at tuning free flight scale models. He has given me invaluable tips on how to think at the design stage.

These are just a few of many innovative builders that you can be inspired by and learn from.

KEEP IT SIMPLE

The principle for this model is basically 'KISS - Keep It Simple Stupid' (as much as possible). I am aiming for an R/C guided, light, free flight model rather than a regular R/C aircraft, i.e. with no ailerons. Why? Well, because scale flying indoors should be done at as low an

airspeed as possible to look realistic. This means that you are often close to stalling the inner wing in turns due to low Reynolds numbers. The problem, simply put, is that we have a small chord on a wing flying slowly in relatively thick air. A lowered aileron at the wrong moment can cause a tip stall that is difficult to save. Stalling is only linked to angle of attack and not airspeed. We often fly at a high angle of attack to extract maximum lift from the wing profile, to be able to fly as slowly and scale-like as possible.

I have chosen a scale of 1:18 which gives a span of 808 mm. The wing area is about 16 dm². With a target of wing loading of less than 9 grams/dm² that would correspond to a maximum of about 144 grams of flying weight. Is that really possible? Hmm, we'll see...

Low weight equals strength. But that is easier said than done. Free flight scale builders usually say, *'Just add lightness...!'*

PLAN THE CG POSITION

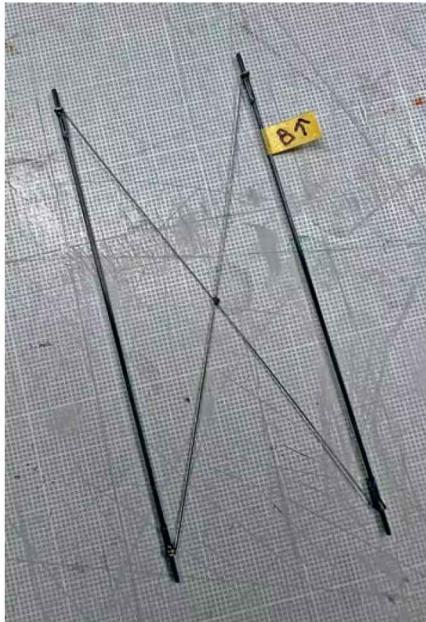
In recent years I have started to learn more and more about the importance of 'Centre of Gravity planning' of my models, i.e. from the very beginning, designing, for example, them to be extra light in the rear fuselage to try to minimise the amount of lead in the nose.

The FE2b is a bit tricky here because the engine is behind the CG position. But, on the other hand, the battery can be placed at the very front.

I usually look at the moment arm on a model. The length of the nose in front of the CG and the length of the rear fuselage behind the CG, and the ratio between them. 1:3 is usually common but a short-nosed model can have a CG/length ratio of up to 1:5 or more, which means 1 gram saved at the rear corresponds to 5 grams in nose weight. 1 + 5 grams = 6 grams total weight increase! As an example, on a model with a total weight of, say, 60 grams, 1 gram too much at the rear means a total weight increase of 10%!



FE2b is tricky regarding the CG position because of the rear mounted motor. But the battery can be placed at the front. Consideration also needs to be made of the moment arm, i.e. the length of the nose in front of the CG and the length of the rear fuselage behind the CG, and the ratio between them.



There are six pairs of interplane struts of identical length. Once assembled the strut pairs are almost completely stiff, helping to keep the wing cells true.

WING CENTRE SECTIONS

The centre sections of the wings look a little different but are built up in the same way. I laminate thin carbon fibre to the spars to increase stability since these components also form the attachment for the rear fuselage.

To get the dihedral right I built a simple jig when gluing the wing tubes in place.

STABILISER & RUDDER

These parts are easy to build but difficult to keep straight. Since thin or flat surfaces basically have no height there is no bending resistance against the forces of the covering



A wing jig ensures that both the dihedral and the installation angles are correct. The jig is made from MDF board with balsa uprights.



Test assembly of all the airframe parts. In the next issue Mats completes and covers his F.E.2b ready for its maiden flights.

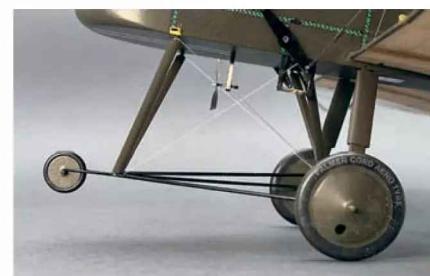
when tensioning the Japanese paper. It can go out in any direction! I try not to build in any tension from the start and I will also be very careful when tensioning the covering later.

WING STRUTS

The outer wing panels are very soft, so one thing I have realised is that I have to try to make the wing cells as torsionally stiff as possible. I have solved the torsional stiffness by making the strut itself from 1 mm carbon fibre rod with a 1.5 mm balsa blank. The cross struts that provide stability are made from 0.3 mm piano wire attached with small pieces of heatshrink tubing and CA glue. Everything is mounted in - yes, you guessed it - another jig!

There are a total of six pairs of 'interplane struts' and they must be identical in length. Once assembled these strut pairs are almost completely stiff, which is good for keeping the wing cells true.

A funny story in this context, told at TVAL in NZ, was that they have a person looking for real parts for WW1 aircraft and who sits and scans eBay full time! One day a set of wing



struts appeared for sale, which had been in an attic in the UK for almost 100 years. They had the same length on all 12 struts but with three different widths. It turns out, after purchasing them, that they were the interplane struts for an FE2b they had found. And they are now, after checking and reviewing, mounted on 6341. Absolutely incredible!

WINGS ARE READY

The jig needed to rig the wings took a while to build, but it ensures that both the dihedral, and the installation angle, are correct. The jig is based on an MDF board with CA-glued balsa pieces.

Now it's time to celebrate this milestone by enjoying a glass of wine and thinking about upcoming challenges in this build. For example, how to build the rear fuselage so that it is stable but light and how to make up the control lines to the control surfaces?

“Everything is mounted in - yes, you guessed it - another jig!”

This is one of the best things I know about model building - figuring out solutions and sketching ideas...

NEXT TIME

Join Mats as he finishes the build of his FE2b and offers some handy flying and trimming tips for indoor scale flying. Our pull-out Pro-Plan for the model will also be included in the March issue.

In the meantime, let's finish Part 1 with

a gallery showing some of the fine scale details that Mats has added to his wonderful lightweight scale model. ■

DATAFILE

Name:	RAFFE2b
Model type:	1/18th scale for R/C Open class
Designed by:	Mats Johansson
Wingspan:	31.8" (80.8 cm)
Wing area:	16 dm ²
All-up weight:	5.2 ounces (148 grams)
Wing loading:	9.25 g/dm ²
Battery:	2S LiPo 300 mAh
Radio:	Spektrum DX-8
Servos:	2 x Dymond D-47
Motor:	Brushless outrunner 9 grams
Propeller:	6 x 4 pusher

MICRO SCRAPPY

Bush planes are popular subjects for R/C models, but can the format succeed in small model format. We put E-flite's new micro version through its paces to find out.

Words: **RCM&E**

Photos: **RCM&E, Barry Atkinson**

E-flite's Micro Scrappy is an eye-catching little thing. Members of the model club where we do a lot of test flying and photography are used to us turning up with new models and whilst most get a positive response we don't think we remember an aeroplane that has garnered quite so much praise on the walk out to the flightline. Quite remarkable really for a small model that spans just over 800 mm.

Perhaps it's the format as who doesn't love a bush plane? It's a scale model to boot, being an officially licensed scale replica of Mike Patey's one-of-a-kind backcountry aircraft complete with jumbo sized flaps and ailerons, and a full suite of navigation and landing lights. Mike built the full-size Scrappy using parts from a crashed Carbon Cub airframe, hence its somewhat Cub like appearance, especially at the tail.

PILOT AIDS

Micro Scrappy is a BNF Basic model. Bind-N-Fly means that it is factory fitted with a Spektrum 2.4 GHz receiver, with an integrated ESC, servos



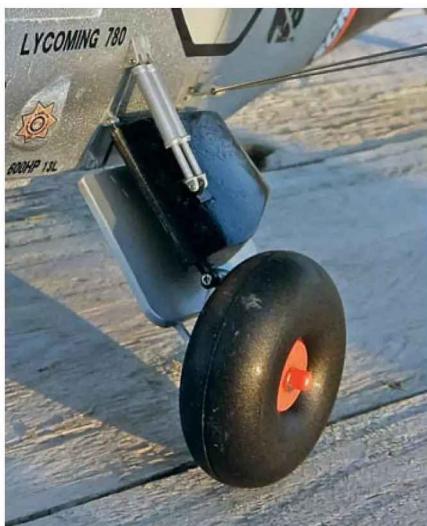


Look familiar? That's because the full-size Scrappy was built using parts from a Carbon Cub.

"Bind-N-Fly means that it is factory fitted with a Spektrum 2.4 GHz receiver, with an integrated ESC, servos and power system"



Four blade prop is well suited to the power system and is a good example of the time taken with the model's product development.



The long travel undercarriage of the full size Scrappy is neatly replicated but is not sprung.



The steerable tail wheel closely resembles the full-size affair and is operated by a separate, thinner pushrod. Note the sturdier gauge wire used to operate the tail surfaces.

and power system, so it is ready to bind to a compatible transmitter as soon as it has been assembled

It also incorporates AS3X and SAFE technologies. Both are well proven, the former providing gyro assisted flight controls to smooth out the model's flightpath and the latter limiting pitch and bank angles and providing automatic self-leveelling. AS3X is turned on all the time but works so well that it would be silly not to use it even if you could switch it off, whilst SAFE can be turned off as it is really aimed at novice pilots. Micro Scrappy is classed as a 'Skill Level 2' model, meaning that

some model flying experience is required to fly her, so whilst SAFE may be of some use if this is, say, a second model for a learner pilot, most experienced pilots will simply turn off SAFE so that they can enjoy the full range of control options offered by this versatile little model.

ONE SCREW ASSEMBLY

Supplied in an attractive flip top carry case, which is worth keeping for taking Micro Scrappy on holiday, the airframe consists of just two main parts, the fuselage and wing.

The fuselage is fully assembled, complete with its Cub like fin and tailplane, and with a

1412-1500 kV brushless outrunner installed in the fully cowled nose. An efficient 128 x 85.4 mm (5.04 x 3.36 inch) four blade prop, with matching spinner, neatly finishes the front end.

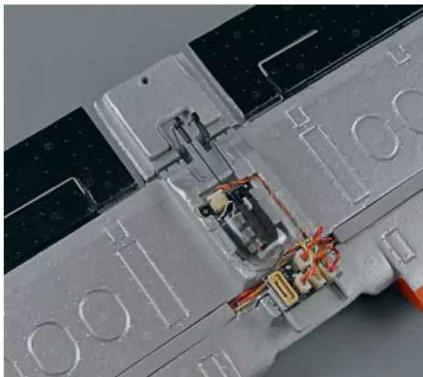
Mike's Scrappy sports a distinctive undercarriage with large tundra tyres and twin shock absorbers on each side, plus twin U/C arms and long travel suspension. This gives Scrappy very impressive prop clearance. This set up, although not sprung, is neatly replicated on the model.

The long travel, sprung tailwheel of the full size is also neatly shown but again is fixed. ↗

It is however steerable, connected by a separate pushrod to the linear rudder servo.

The second main airframe part is the one-piece wing. This is ready to fit to the wing seat on top of the fuselage where it is secured by a single M2 x 18 mm Phillips headed screw. The wing comes complete with long throw linear servos in each panel to operate the large ailerons and a centrally mounted 2.3g long throw offset linear servo to droop the equally large flaps. There are also wingtip and nav lights, with the wiring running underneath the carbon wing spars, with everything neatly capped with full span grey plastic strips.

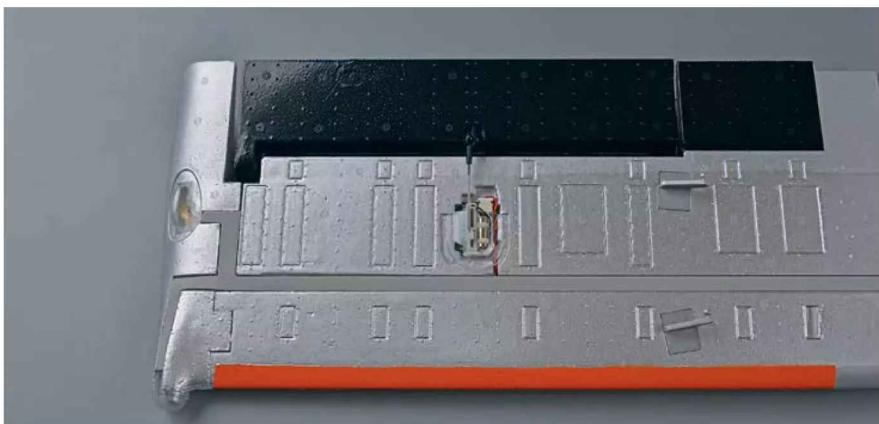
The front edge of the grey plastic strips corresponds with the 35 mm Centre of Gravity position, measured from the leading edge, which with its +/- 4 mm leeway means that the simplest way to balance Micro Scrappy is on two fingertips resting in the centre of those long plastic strips. Easy!



Lower wing centre section showing the linear flap servo and wiring distribution board.



Each wingtip houses two lights with the wiring covered by neat full-span plastic covers. These covers are handily placed at the CG point, giving an easy reference for balancing.



End of a wing panel showing one of the jumbo ailerons connected to its long throw linear servo. Note also the two small ball mounts to the right-hand side for connecting a V-strut.



V-strut fuselage fixtures proved a bit tricky to fit. An ideal job to pass over to someone with slender fingers!



V-strut wing fixings are much easier. Simply pop on the ball links!

Inside view of the fuselage mounted avionics.

Combined receiver and ESC at the top and two long throw linear servos for the rudder and elevator below. The black ribbon cable connects to the wing mounted distribution board.

V-STRUTS

After attaching the wing, the final assembly task is to fit a V-strut under each panel. The wire ends are fitted with micro size ball links which press onto two plastic balls mounted around mid-span on the underside of each wing half. But first you need to slide the plastic tabs, that retain each strut to the sides of the fuselage, into position. It looks easy but we found it a bit fiddly, especially with chunky fingers. This is one of those jobs that might be best passed on to anyone with slender fingers in your household!

SETTING UP

Besides sending us a Micro Scrappy kit to test, Logic RC, Horizon Hobby's UK distributor,

also sent us a Spektrum NX8+ transmitter to use with this model and subsequent review kits. We will be taking a closer look at this stylish 20 channel transmitter very soon but first we needed to programme it to fly the Micro Scrappy.

This model comes with a well-illustrated multilingual manual, the front section of which is written in English. Straight after the Model Assembly section are found Transmitter Setups for NX, DX and iX series Spektrum transmitters. The NX set up is described in 11 simple steps which we followed to the letter, so despite not having had any experience with this new type of Spektrum Tx, Micro Scrappy was ready to fly in just a few minutes. Everything worked as it

should, complete with a very high degree of aileron differential and ready mixed flap to elevator compensation. Very impressive!

BATTERY CHOICE

Micro Scrappy can be flown very nicely using a 3S 300 mAh LiPo or you can fit a 4S 300 mAh pack for improved vertical performance and punchier aerobatics. The difference in thrust from the prop is quite noticeable when the model is held in the hand but in flight things even out and the 3S pack holds its own very well.

The difference in weight is also minimal so popping either pack into the battery bay close to the back of the motor mount allows Micro Scrappy to balance on the grey strip under the wing.

"Everything worked as it should, complete with a high degree of aileron differential and ready mixed flap to elevator compensation"



Micro Scrappy flies well on either a 3S or 4S 300 mAh LiPo but needs to be fitted with a red JST-RCY connector to match the power lead inside the battery bay.



Cowl hatch pops off to reveal the motor mount and battery bay. Plenty of room inside for either a 3S or 4S Lipo.



Just a few minutes work and Micro Scrappy is ready to fly, including setting up the transmitter.



Black and orange colours scheme stands out really well.

IN THE BACKCOUNTRY

With Micro Scrappy fully assembled we headed to the bush. Well, darkest Gloucestershire to be honest! At the patch she was given the obligatory range and failsafe tests before being hoisted aloft by clubmate Rob for a fuss free hand launch. Fitted with the 3S pack she powered away with ease and to our amazement she required no trimming. This shows how well the model has been developed by Horizon's product developers.

After a few easy circuits to take some flying photos Micro Scrappy was taken up high to see the effect of those jumbo size flaps but again everything was as it should be, with 



Looking good on a low banked pass.



Drifting past with full flap deployed.

the pre-programmed elevator compensation smoothing out any pitch changes. We did however find the two second speed setting a bit ponderous so for later flights we cut this to one second.

Even fitted with the 3S LiPo Micro Scrappy is no slouch and she will loop and roll with ease. But it is when performing low, slow passes that she really excels, making full use of those large flaps as she wafts serenely by.

Landing Micro Scrappy is easy, with or without flaps, but she does exhibit a trait that we have noticed with an older AS3X equipped model we still fly, in that as she is flared for landing and maybe held off for a bit too long for the AS3X system's liking, it responds by

“Micro Scrappy is so easy to hand launch that this is sure to be the most popular way to get her airborne”



Beware of holding off for too long when landing otherwise AS3X might interpret it as a stall and dump in some down elevator!

inputting down elevator to prevent what it thinks is an impending stall. As the model is invariably very close to the ground at this point, this results in an instant heavy arrival! So, the

best way to land is to avoid holding her off for too long, using a bit of power all the way down the approach until the wheels almost touch the ground.



Testing her Rise Off Ground capabilities.



The editor displays E-flite's diminutive backcountry bush plane after its maiden flight.

RISE OFF GROUND

The winter grass at our favourite test flying site is kept well cropped so following one landing we simply opened the taps and were delighted to see Micro Scrappy rise off ground and head skywards. Despite being commendably short for the season the grass is not bowling green standard, so it speaks

been able to fly Micro Scrappy in the small sports hall, but fate worked against us and we eventually pushed things too hard, with the little high winger stalling out during a fatal last turn and sliding wingtip first into the grass.

Damage assessment revealed a large crack close to the wing's centre section and a couple of other hairline cracks, all since easily fixed

volumes of the model's ROG capabilities that it managed to take off so easily from grass at this time of the year. However, Micro Scrappy is so easy to hand launch that this is sure to be the most popular way to get her airborne.

TOO MUCH OF A GOOD THING?

Pop the flaps away, select high rates and Micro Scrappy can be turned on a sixpence. We spent a very enjoyable few minutes honing around with at low level, pulling increasingly tight turns and figures of eights. There was method in our madness as that same evening we wanted to fly her indoors at our usual 4-court venue. Being able to turn so tightly we probably would have

using brushed on 30-minute epoxy. However, we think we will save Micro Scrappy for the great outdoors from now on, although she would no doubt make an excellent indoor model for those of you lucky enough to fly from a larger venue with football pitch size facilities.

SUMMING UP SCRAPPY

We have thoroughly enjoyed flying E-flite's Micro Scrappy. Assembly and setting up is truly the work of just a few minutes so if you are short of time to do much, if any, modelling then she would be an excellent choice.

It is also very clear that a large amount of product development has taken place with this model as providing you stick to the Spektrum set-ups shown in the manual it simply works and works really well. We honestly cannot fault her, save perhaps for that little niggle if AS3X takes over when landing. ■

DATAFILE

Model:	Micro Scrappy 800mm
Model type:	Bush plane
Manufacturer:	E-flite
Distributed by:	Logic RC https://www.logicrc.com
RRP:	£229.99 BNF Basic
Wingspan:	821 mm (32.32")
Length:	512 mm (20.16")
Weight:	224.4 g (7.92 oz)
Motor:	1412-1500 kV brushless outrunner, 12-Pole
Functions (servos):	Ailerons (2), Elevator (1), Rudder (1), ESC
LiPo:	3S - 4S 300 mAh



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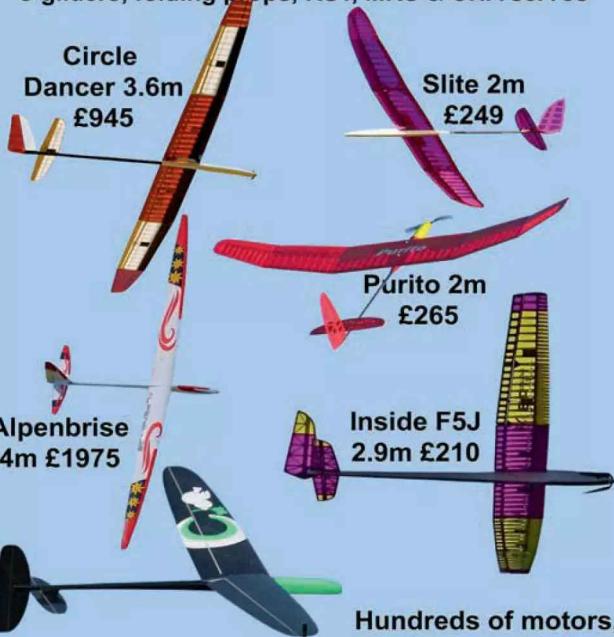
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LMAC BRING & FLY

Dubbed locally as the Lleyn International Air Tattoo, **Alan Williams** reports from Lleyn Model Aero Club's annual fly-in

Words & Photos: **Alan Williams**

Why international? Not only did we have local Welsh lads at our event, but we also had Andy Johnson and his buddies from Liverpool, Dave Fettes from Glasgow and, to really stretch the international bit, the carer for the farmer's mother, who drives her down to see the flying (even on non-B&F days) hails from the Emerald Isle. So, tenuous, yes, but truly international!

We at Lleyn MAC consider that this may be a unique event as we host slope soaring as well as powered flying during the weekend, focused on our excellent flying field on the old Penrhos airfield just outside Pwllheli on the Lleyn Peninsula in North Wales.

PREPARATION DAY

Thursday 25th September 2025 dawned bright and warm. Club members set about putting up rope lines, roadside sail-flags, signs, a portable toilet and other things ready for the weekend. Later that afternoon the guys from Liverpool arrived so they could store some of their aircraft in our lock up and club house, which we were more than happy to help them with, leaving their gliders in their vehicles ready for visiting the slopes at the weekend.

Then, over a panad (cup of tea), we sat outside our clubhouse and discussions took place on what the weather forecast was for the weekend and which would be the best slope to soar from. Decisions were made and farmers

were called to double check availability, then the slope soaring was all set to go for Friday and Saturday morning.

At this point I must extend our thanks to the farmers whose land we use. They uncomplainingly put the effort in to move any livestock before the weekend, allowing us and our guests easy and unrestricted access.

DAY 1

Friday dawned bright and breezy, which was ideal for the slopes. Registrations were completed, accompanied by a bacon butty and tea supplied by our caterer, Terry Coles. With formalities completed and the Anglesey lads joining the troupe, off they went to the slopes,



One of the Hercules on a slow pass with flaps and loading bay door deployed.



Another large cargo plane on display was this impressive C-17.



An ASW20 glider powers up for take-off from its dolly.

leaving us local guys to get our models out to zoom across the sky at Penrhos.

To be honest Friday was a very quiet day in terms of any public interest. A couple of people who were staying at the local camp site visited and a potential new member came over to chat and get advice. But we did get some enjoyable flying in.

DAY 2

Saturday was a completely different story. The slope soarers called to say they were going directly to the slopes as the weather forecast had rain arriving late morning and they wanted to maximise their time gliding. We couldn't agree more.

The rest of us then stomped around at our Penrhos field, sheltering out of the wind with a panad and a bacon butty whilst looking out at the rain clouds slowly edging towards us across the Irish Sea.

We duly set about packing away or tying

down anything that had the potential to blow away, leaving our models snug in our cars and the lock up. Just as forecasted, at midday the rain came as it does quite often here on the North Wales coast.

DAY 3

On Sunday the contrast to Saturday's weather was immense, being sunny with a gentle breeze and almost straight down our landing strip. It had the makings for a good day, which it then proved to be.

Terry set to providing the obligatory bacon butty and panad as the guys set about unpacking, assembling and checking out their aeroplanes for the day's flying. Some of us with easy build electrics trotted out to the flying strip and had a quick whizz round the sky before taking up our duties during the Bring & Fly. 



This pair of electric powered Hercules were seen slowly flying in formation, piloted by Andy Johnson and James Darby.



Adam Johnson prop hangs his Extreme Flight Extra.



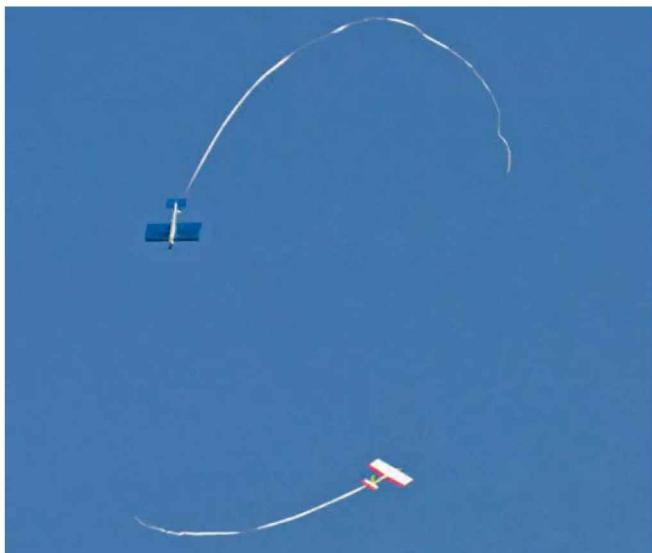
A Hercules on a banked pass before making a smooth landing.

From mid-morning the day was a continuous stream of demonstration flying led by Andy Johnson, his son Adam with his Extreme Flight Extra and Laser EXP, and the other flyers. I was especially impressed with Andy's RAAF Vampire FB-31, the Vampire being the very first 'real' aircraft I worked on when I started my apprenticeship at Hawker Siddeley in Broughton, Chester as a 16-year-old in the early 1970s.

Throughout the day we had a steady stream of public visitors and a few potential new members, plus several 'oohs', 'ahhs' and 'wows' from the public who had not been exposed to this style of aerobatic model flying before.

The flying was of exceptional quality throughout the day, from the glider demonstration, people flying 'off the shelf' models with gusto and flair, the ribbon chasing, 3D flying by Adam and the Vampire taking every





Follow me! Fun fly models looping with ribbons.



A Titan's engine gets in the swing of things.



Model storage area.



Andy Johnson's Vampire fighter bomber takes off.

inch of our mown strip for take-off and landing. There was also a pair of electric powered Hercules lumbering through the sky in formation, adeptly piloted at scale speed by Andy Johnson and James Darby, reminding us oldies of the days when we used to see the real thing overhead in the valleys of Snowdonia practicing their low flying. Another 'ahhh' moment!

FLAGGED UP

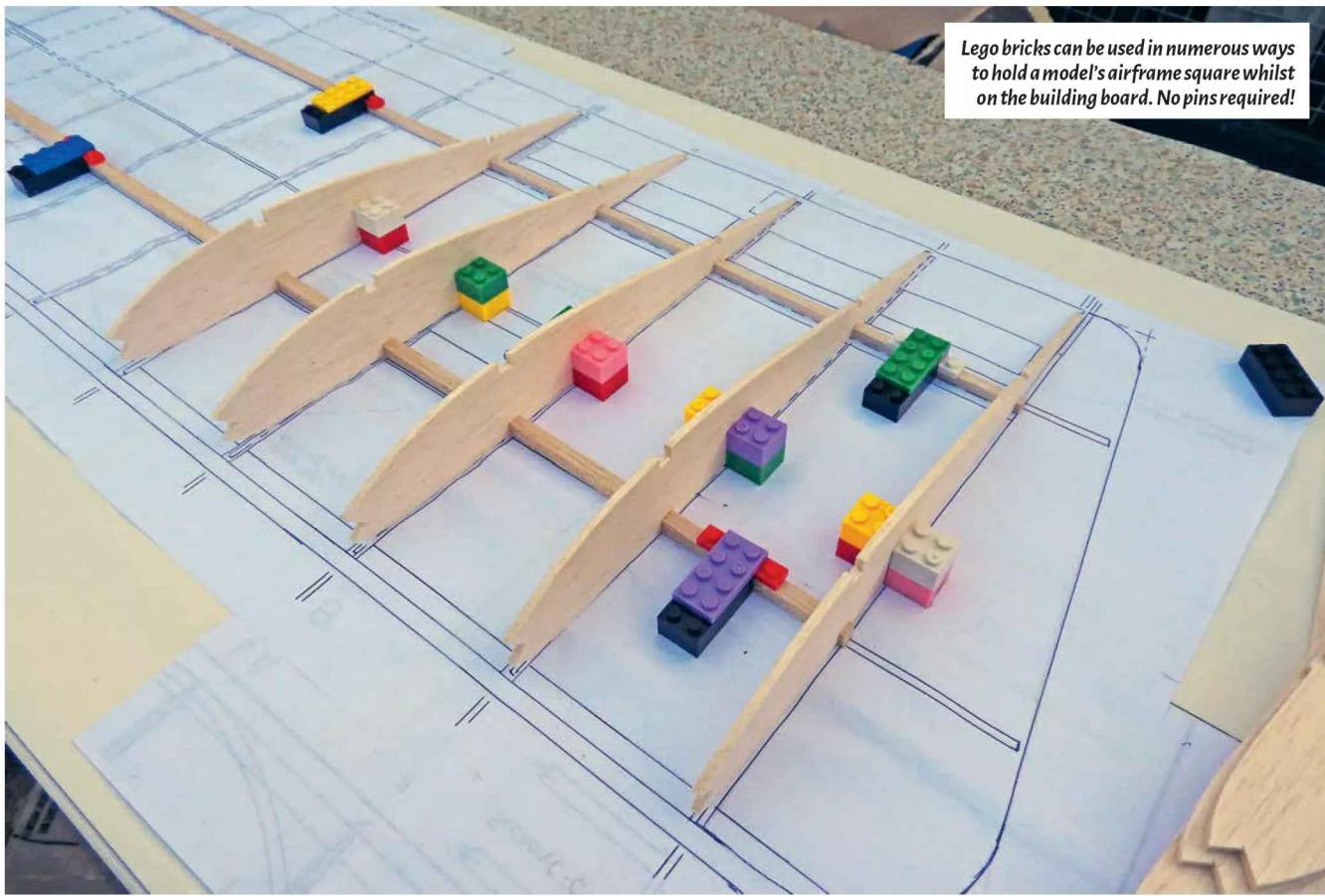
As for next year, we have not made a final decision yet, but the success of the slope day on Friday and the field day on Sunday lends the committee to lean towards hosting the event again next year, with a possibility of bringing it forward to earlier in September to reduce the weather risk. (Hah, I hear you say!)

Something else that may be of interest to other clubs holding events is that we decided to invest in some sail-flags, supported by BMFA Cymru, to advertise the event at the turn off the main road into the campsite and onward to our field. As it was the first time that we had used these flags, and it was a bit of an experiment, I took some time out to talk to the public visitors. The feedback was very positive and as a minimum they said that the flags helped them to easily identify the turning off the main road. One visitor told me he didn't even know the event was on until he drove past the flags on the Friday! ■



An impressive Avro York seen in the pits and after taking to the air.





SIMPLE BUILDING AIDS

Steve Nash offers up a couple of ideas for simple building aids that can be made from just a few household items

Words & Photos: **Steve Nash**

MAGNETIC BUILDING BOARDS

One advantage of using a magnetic building board is that models that are built on them do not end up with any pinholes in their structures. Another advantage is that the fixtures are used to hold the pieces square as well as firmly to the board.

I have seen some pictures online where modellers have crafted some wonderful magnetic creations by using a 3D printer. It's a great idea if you have one of those at your disposal, but I do not own a 3D printer. This set my mind ticking about what materials were available that could be modified to use on my own version of a magnetic board. I thought about maybe using nicely squared and sanded wooden blocks with magnets in, which do work, and I did try a couple. However, one day I was playing with my son and his Lego and a lightbulb suddenly flickered on inside my head. The solution to my quest for suitable materials was right in front of me all the time! Why didn't I notice these earlier...

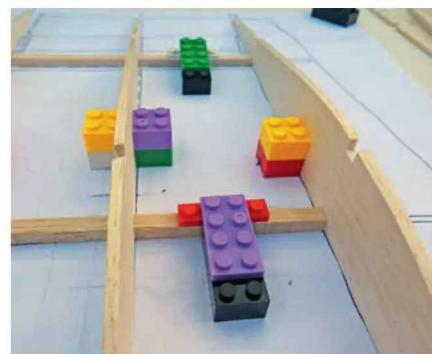
Standard Lego building bricks are all exactly vertically square. They can be arranged in an



Drill out the underside of each brick at a suitable size to accept a single neodymium magnet.



Place the magnets on a piece of steel so that they are in the correct magnetic orientation before gluing inside each brick. Be sure to cover the steel plate in cling film before applying any glue!



Bricks can be stacked to hold wing ribs square or placed over spars to hold them tight to the steel lined building board.

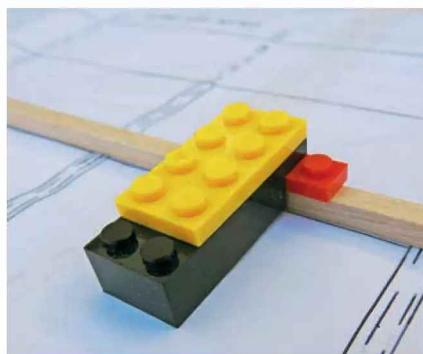
infinite number of different ways and they are available all over the world. I also discovered on a visit to a local toy shop that they sell a cheaper version of plastic building bricks in a Pick 'n' Mix display where you can fill up a tub with the bricks of your choice for around £4.00 to £5.00. If you can't find the cheaper versions, then sellers on eBay frequently advertise job lots of second-hand bricks.

Next, I needed some magnets, so I ordered a load of different strong neodymium magnets from the same auction site mentioned above.

MAGNET FIT

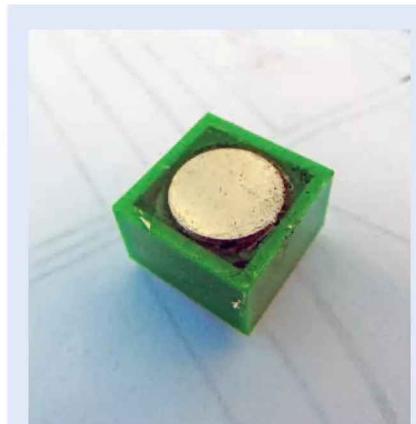
First stage is to drill slightly into the inside of the blocks from underneath until there is enough clearance for the magnet to fit inside. After that, place a piece of cling film over the top of a flat piece of steel and place your magnets on top. Mix up some 5-minute epoxy and put some inside your bricks. You don't need to fill them right up, just use several big blobs of glue. Then just place the glue filled bricks over the magnets and weigh them down until they are set. The blobs of glue will run down around the magnets and fix them into place. After the glue has cured simply lift them off the cling film and they are ready to use.

Your finished bricks can be adapted in many ways according to what you need to build. As these bricks are all completely square, they can be built up in lots of different ways. Simply add



Close up on some bricks being used to hold down a wing spar, using a thin top piece over the top of the wood to act as a clamp.

“As these bricks are all completely square, they can be built up in lots of different ways. Simply add other standard bricks onto the magnetic ones”



Standard square and rectangular bricks with magnets epoxied in place.

other standard bricks onto the magnetic ones as you require.

My building board is simply a piece of flat 18 mm ply with a sheet of thin steel sheet fixed on top. You can either glue or screw it on. It's up to you. Or you can just lay a thicker piece of steel sheet on top of your bench. Either way, just ensure that it is completely flat.

I hope you enjoy making this little project and get many years of use out of it. I have used it loads since I made mine.

SOLDERING HELPER

Here is a little gadget that I use in my shed a lot. It is a simple third hand for holding wires while I solder them together.

It is easy to make. You just need a piece of stiff earth wire about six to eight inches long and a couple of crocodile clips. Simply bare the ends of the wire and solder the clips onto the end. Just coil the wire around like the picture and it's ready to use. I wouldn't be without it now! ■





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Geoff Crew prepares to launch his 1/7th scale E-K18.



MOUSTACHES ON WHITE SHEET

Chris Williams and his scale soaring chums enjoy another fine White Sheet Scale Day thanks to the widespread use of some prop equipped gliders

Words & Photos: **Chris Williams**

After a long period of inclement weather conditions, the forecast for Saturday the 8th of November last year stood out for its apparent lack of rain, along with a lull in ever present gales. On the downside there was going to be an uncharacteristic lack of draught from a less than favourable direction.

A change to the club's rules some years ago means that the use of sustainers is now permitted, although for the purpose of height gain only. Hotliners need not apply! So, it was no surprise that when your author turned up at the hill 'moustaches' were much in evidence.

To those poor souls not steeped in the art and application of gliding, poling a model though smooth air in an utterly predictable

manner is absolute balm to the soul. You supply the inputs, the glider responds exactly as you planned and, if not, then the buck stops with you. Consider then the demographics of age amongst those of us in this particular corner of the Modelverse, of whom limbs are nowhere near as supple as they once were. The most commonly uttered prayer amongst us is 'please don't let me land out' and such is the power of this plea that, without the use of sustainers, we simply wouldn't be able to summon the courage to fly at all.

SO, TO THE EVENT

Grahame Mahoney, once not to be found outside the realms of F3F, has in recent years developed a taste for the modern scale glass

machinery now freely available for those whose wallets, if carelessly dropped, would surely break several toes. His latest acquisition, a GP15, was to be put through its paces during the day, after which he pronounced himself well satisfied. (I got the distinct impression that the diameter of the propeller exceeds the span of the tailplane!) For those who are hungry for details, it's a Baudis GP15 Jeta at 1:3.5 scale. The 4.3 metre span model is powered by a Leomotion L3631-2050 motor and a 6S 3300 mAh LiPo.

For Motley and I this was to be the long-awaited chance to fly our new E-K18s on the slope and the conditions could not have been more beneficent. With enough lift to fly unpowered for significant lengths of time,



Keith Groombridge launches the Swift at the WS scale event.

I found that the single 3S that provides the electrickery lasted the whole day, with many climbs to altitude. At 1:5.3 scale and weighing very little, this is an ideal model for light wind



Nick Whittaker's PS Models LS10 in action.



Your author's diminutive E-K18 was ideal for the conditions.



Antonia Gigg launches her ASW28.

flying, both from the hill and from the flat. As usual, drawings etc. can be made available. (Yes, please, Chris! – Ed)

Keith Groombridge's green 2.8 metre PS Models Swift provided a nice counterpoint

to the CP15, its muscular drive train ensuring that landing out was but a distant threat. Regular visitors to this event, husband and wife team Antonia and Mel Gigg, showed their usual enthusiasm for the sport with



Some dramatic cloudscapes were evident throughout the day.



Graeme Mahoney's GP15 in action at the White Sheet event

many energetic launches throughout the day. Showing equal amounts of enthusiasm, Event Director Nick Whittaker's PS Models LS10 was rarely out of the air, its presence reinforcing the trend that the glass slippers now outnumber the woodies at these events.

Thus ended the last White Sheet scale event of the year. The good luck we had enjoyed with the weather on this day was emphasised by the fact that it started to rain on the way home.

Congratulations to Nick for the many scale events run in 2025 and may the same be true of this year.

BACK AT THE WORKBENCH

Completion and testing of the 1:4.5 scale Flamingo has left a lasting impression that the world definitely needs more models of this size. Hardly had she completed her maiden landing, the plan was already forming to perform the same transformation to the Slingsby Petrel, a

subject of which I have already built in several different sizes. Having finished off the little ASK18, the drawing for the quarter scale version of the Petrel was quickly pulled up on the PC and the process of re-scaling applied. Ain't technology wonderful!

Building models at this size brings up some interesting challenges, one of which involves the dimensions of longerons and spars. Standard sizes for spruce strip jumps from 3



Motley's quarter scale K8 was one of the few to brave the conditions without a sustainer.



The 1:4.5 scale petrel airframe ready for covering.

mm square to 5 mm square, the former really seeming too weak and the latter too large at this size. Ideally, 4 mm square would do the job admirably and a phone call to those nice people at the Balsa Cabin elicited the information that, yes, they could cut some strip especially for me. This made for a more comfortable build for the Petrel, especially as the fairly sharp bends

at the front of the fuselage were more than susceptible to persuasion. Work proceeded apace and before long the Petrel was maiden ready. Alas, at the time of writing she is still gathering dust in the hangar, the Weather Gods having decided that having too much of a good thing will only render us weak.

Indeed, such has been the strength of the

Monsoon that I'm already three quarters of the way through the next project!

THINGS I WISH I'D KNOWN ABOUT SOONER

There are some things that it would be unimaginable to find missing from my workbench, such as, say, the humble Stanley



All film covered Petrel ready for its maiden.



Shokunin flush cut saw. A workbench enhancer!



Canvalite emery boards are ideal for reaching those awkward places.

Knife, despite it attacking my fingers on many occasions this last fifty years or so.

Two things have lately been added to this list of tools so useful that they never end up in the tool drawer during a regular tidying process.

The first came to me recently via the auspices of Bicycle Bill and is a saw of Japanese origin that has proven to be super-useful. The Shokunin Japanese Flushcut Saw has a very thin blade, the teeth of which have no set, thus making for a very narrow cut. As the name suggests this makes it useful for cutting off the ends of spars and longerons flush to any necessary surface. But it can do more than that...

Say you want to trim off spruce spar to length, but the spar is too long to comfortably get alongside your scroll saw. (If you swung a cat in my bijou workshop you would immediately render it unconscious!) Resting the wood on a convenient object, such as a roll of tape, thanks to the sharpness of the blade you can very quickly make the cut without any tearing of the wood when you get to the finish. Also, if you have a block of balsa glued to a wingtip and it's a bit oversize, a bit of free sawing will quickly whittle it down to a more convenient size. The Shokunin Flush Cut Saw is available from Axminster tools, priced around £11.00.

The second set of objects might at first seem a little girly but, fear not, your masculinity is not at risk...

There was a time when a nail file was a slim metallic object with a limited abrasive quality. But times have changed. The Canvalite nail file offers a choice of 100 and 120 grit surfaces either side of a flexible base and, like the saw, has a myriad of uses. From finishing off the inside of a spoiler aperture to just about any other sanding job where access is limited. Once the job is done you can even file your nails! 10 pieces of this double-sided emery board are available on Amazon, priced £3.99, and should last over many projects.

So, whatever the state of my workbench, you will always find these two objects ready for use. It makes me wonder what else is out there upon which I am missing out... ■

c_williams30@sky.com



BOWERS FLY BABY

£225 | www.rbckits.com

Designed by Pete Bowers, the Fly Baby is a single-seat, open-cockpit homebuilt that first flew in 1962. Built from plans, this easy to build and fly design required no more than a garage, basic handyman skills and tools to create. More than 500 have been completed to date, many examples of which are still flying today.

Easy to fly and capable of mild aerobatics, this 1790 mm span model from RBCkits is a very faithful representation. Designed for electric power (type 34 or 41 motor, 35-50A ESC and 4S 3200 to 5000 LiPo recommended), the

kit includes CNC cut 'tab lock' ribs and formers that assemble to form the core of an extremely accurate three-piece airframe, with removable wings making for easy transport and storage. Vac-formed windshield, cowl and headrest are also supplied, along with a pre-bent U/C and full-size rolled CAD plans. Building instructions and construction pictures are available for download from RBC's website. No hardware is included so you'll need to source control horns, hinges, control runs etc. Four channel R/C required for aileron, elevator, rudder and throttle.



MINI UGLY STICK

£79 | www.rbckits.com

Simple and durable, RBCkits' one-metre span take on Phil Kraft's legendary 1960s design is a joy to fly and the perfect all-round fun fly hack. Featuring straightforward, accurate construction thanks to CNC-cut 'tab lock' ribs and formers, this is an ideal choice for a first traditional build. The kit includes a full-size rolled CAD plan and pre-bent

U/C, with photo instructions available from RBC's website. No hardware is included so you'll need to source wheels, control horns, hinges, control runs etc., as well as an electric powertrain (2814/8 1000 Kv motor, 8" x 6" prop and 3S 1300 mAh LiPo recommended) and four channel R/C for aileron, elevator, rudder and throttle control.

GEE BEE R-2

£359.99 (BNF) £329.99 (PNP) | www.logicrc.com



Instantly recognisable, the Granville Brothers Gee Bee R-2 racer oozes 'Golden Age' 1930s style, replicated beautifully on E-flite's one-metre span model that boasts a high level of realism and technologies that deliver a superb flying experience. Capable of fast, smooth flying (up to 100 mph in a dive) along with a variety of aerobatics, slow-speed handling is unexpectedly stable, making life easier and more enjoyable for intermediate and experienced pilots.

Scale details include moulded-in panel lines, simulated radial engine, flying wires and a pilot figure, with shock-absorbing U/C and wheels and a steerable tailwheel combining to ease ground handling. The one-piece wing includes hands-free connections, although the model's EPO airframe is sufficiently compact to store and transport without disassembly. Factory-installed digital and metal-gear servos provide precise and reliable control. The power system includes a Spektrum outrunner motor and Avian 70A Smart Lite ESC, suitable for use with 4S 3200-5000 mAh LiPos (not supplied). The BNF Basic Version is also equipped with a factory-installed Spektrum AR631+ Rx that provides exclusive and enhanced AS3X+, along with optional-use SAFE Select technologies.

iMARS D1000 PLUS G-TECH DUAL SMART CHARGER

£254.99 | www.logicrc.com

Delivering 1000W of total power and up to 25A per channel, the iMars D1000 Plus is a high-performance dual-output charger that's compatible with LiPo, Li-Ion, LiFe, LiHV, and NiMH batteries. Its advanced G-Tech system provides automatic detection and optimised, safe charging for Gens Ace batteries, while standard balance ports support manual charging of other battery types. A 3.5-inch LCD and Bluetooth app integration offer an intuitive interface and convenient mobile control. Check out Logic RC's website for more information on this extremely powerful and versatile charger.



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VAC Set	£70.00
CNC Pack	£86.00
Wood Pack	£69.00
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63" Span MK9 Spitfire
0.65 IC or Electric

Plans	£25.00
Canopy	£16.00
CNC Pack	£96.00
Wood Pack	£98.00
Complete Pack	£228.00



61" Span P-51B & D
900w Electric

Plans	£30.00
VAC set	£35.00
CNC Pack	£82.00
Wood Pack	£108.00
Complete Pack	£245.00



72" Span
Mosquito

Plans	£40.00
VAC Set	£32.00
CNC Pack	£142.00
Wood Pack	£135.00
Complete Pack	£339.00



78" Span Vulcan
2x 90mm EDF

Plans	£65.00
VAC Set	£35.00
CNC Pack	£132.00
Wood Pack	£245.00
Complete Pack	£467.00



72" Span MK 5 Spitfire
1.20 IC or Electric

Plans	£35.00
VAC Set	£35.00
CNC Pack	£124.00
Wood Pack	£132.00
Complete Pack	£316.00



98" Span Turbine
Vulcan (80-120 size)

Plans	£69.00
VAC set	£95.00
CNC Pack	£172.00
Wood Pack	£311.00
Complete Pack	£580.00



86" RetroJet Turbine
Trainer (80 size)

Plans	£45.00
Nose cone	£16.00
CNC Pack	£188.00
Wood Pack	£102.00
Complete Pack	£341.00



72" Span Avro York
4x 200w Electric

Plans	£30.00
VAC Set	£31.00
CNC Pack	£135.00
Wood Pack	£107.00
Complete Pack	£293.00



60" Span FW-190A
Electric or 0.75 IC

Plans	£30.00
VAC Set	£47.00
CNC Pack	£82.00
Wood Pack	£105.00
Complete Pack	£254.00



72" Span DC3 Dakota
2x 600w Electric

Plans	£25.00
VAC Set	£40.00
CNC Pack	£82.00
Wood Pack	£99.00
Complete Pack	£236.00



78" Span Turbine
Vampire (80 size)

Plans	£60.00
VAC Set	£35.00
CNC Pack	£198.00
Wood Pack	£171.00
Complete Pack	£454.00



103" Span Hurricane
62cc Petrol

Plans	£60.00
Can. / cowls	£90.00
CNC Pack	£173.00
Wood Pack	£296.00
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Wood Pack	£139.00
Complete Pack	£317.00

Plans	£25.00
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CNC Pack	£80.00
Wood Pack	£135.00
Complete Pack	£271.00

72" Span Boeing B-17
4x 200w Electric

Plans	£25.00
VAC Set	£35.00
CNC Pack	£86.00
Wood Pack	£107.00
Complete Pack	£243.00



TORNADO GR4

Tony Nijhuis returns with the third model in his latest series of EDF jets

Words: **Tony Nijhuis**

Photos: **Tony Nijhuis, David Ashby**

This is the third and final model in a tranche of three offerings and, yet again, it pays homage to a classic British jet fighter of the 1960s and 70s. Although the Tornado didn't enter service until 1979 its design was embedded in the 1960s.

FOUR PROTOTYPES

The Tornado has always been a favourite of mine, but it did require four prototypes to get right. The model originally started as a twin 50 mm EDF version with a wingspan of 40". This first prototype was a little overweight and used a plastic electric retract unit. Although the concept was sound and the principles of the swing-wing geometry was almost mastered, it crashed when the power-hungry model ran out of battery on a low pass and planted itself into a small tree.

The opportunity of redesigning and rebuilding the model didn't take too long as I knew the model was a 'good un'. So, the Mark Two was made smaller and came out a tad lighter, but still with the twin fan set up. On this version, I experimented with internal weight shifting of the batteries to maintain the correct Centre of Gravity for both forward and swept wing configuration. Unfortunately, the C of G had to move forward and back by almost 50 mm and no matter where the batteries were positioned, you could only achieve one or the other. Notwithstanding this the mechanism was becoming too complicated and too heavy.

I was just about to give up the idea of weight shift when my son suggested putting weight in the wing tips - he is a clever so and so! Although



Tony shows off his swing-wing Tornado, the last in the current series of TND plans. What's next, Tony?



the tip weights couldn't quite achieve the correct forward and rearwards C of G it was a cracking idea. I ended up putting around 30 g on each tip. For the first flight the model got away cleanly. The concept seemed to work and allowed me to keep the same elevator movements for both forward and swept wing positions.

The second flight, unfortunately, revealed a problem. On hand launching, I didn't quite get the model away cleanly and the wing dropped slightly. When trying to correct it with ailerons the model was reluctant to straighten and because of the heavy wing tips the model began to Dutch roll from side to side, with me over-correcting and making things worse. Maybe a gyro would have been the saviour, but I really didn't want to go down that route to make this project work.

The final issue that saw the second prototype's demise was a sharp turn. The aileron response was poor, the elevator ran out of puff, and she slipped into the ground.

SINGLE FAN

Not wanting to give up, I had to go back to basics. The model, although now smaller at 38", was still power hungry with the two 50 mm EDFs. Having recently designed the 37" Harrier and having been impressed with the 4S Powerfun 70 mm fan, I decided to try this option in the next prototype. The unit gives a good amount of static thrust so hand launching it should be much easier. The cost difference will also save money as the setup is 40% cheaper than the twin fan option.

So, prototype number three was duly built with a single 70 mm 4S unit, with the swing

wing controlled by a 35 kg standard servo. The servo can be slowed on the transmitter, so the wing sweep time can be adjusted, making the transition smoother when operated from a two-position switch.

The other change was to set up the C of G at the forward wing position and then re-adjust both the elevator and aileron trim positions and make any adjustments in the throws needed for the swept wing position. Again, the trim positions and deflections were programmed into the same two position switch that operates the swing wing. The timing of the trim and deflection changes reflected the three second sweep time. The result was amazing; the Tornado remained straight and level, turning it from a high wing sport model into a ballistic missile. You really have two models for the price of one!

I was really pleased with the way the model was performing now. Launch power is great and with a hefty javelin launch the model will not drop and always gets away cleanly. In flight I was amazed just how well it performed, knowing there was no gyro installed, just simple radio control. For this luddite it suited me.

Now, I did say four prototypes, didn't I. Unfortunately, pilot error saw the demise of number three. A launch into the evening sun is not to be recommended... On a positive note the wings were salvageable and I can now confirm that the model has been thoroughly crash tested!

As a final note, I would only recommend the Powerfun fan unit, principally because they have excellent static thrust and will accelerate the Tornado to flying speed with very little 'sink' on launch. 



Beating up the strip with its wings swept. All in flight pictures by David Ashby.



Swing wing pivot set is available to buy from TND Ltd.

One further point. If you are put off by the complexity of the swing wing there is nothing stopping you from making the Tornado with the wings in a fixed position of your choice. I think a half swing position would be a nice compromise.

WOOD PACK & OTHER PARTS

To assist the builder I have once again made available a vac-form set and CNC wood pack for those who wish to make the building process a little easier and quicker. Also available is the swing-wing pivot kit, which will include the 35 kg servo. These parts will ONLY be available through Tony Nijhuis Designs Ltd (TND) and not via Kelsey. The plan itself will only be available in this print edition of RCM&E, with future copies only being available through TND Ltd.

The battery used in the prototype was a 4S 4000 mAh 60C LiPo. The servos were metal geared 6g, 1 kg/cm torque for the ailerons and 12g, 2.2 kg/cm servos for each elevator. For the ESC a 60-amp 4S controller was used. Make sure you set the timing to High to suit the EDF unit.

Lastly, a photographic build log is available as a free download to print out from [www.tonyrijhuisdesigns.co.uk](http://tonynijhuisdesigns.co.uk). These photos will be invaluable and I would suggest downloading these so you can familiarise yourself with the build before you start.

WINGS

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

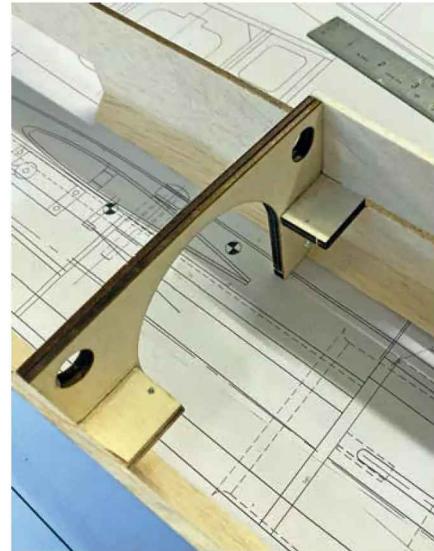
Begin by taking the 6 mm x 3 mm obechi lower forward spar and pinning over the plan. Now fit all of the wing ribs. The top obechi spar can be glued into position.

Fit the inner leading edge, made from 3 mm sheet balsa. Make up the trailing edge using 4.5 mm sheet balsa that fits between W5 and W9. Then fit the top wing pivot support PS1 between W1 and W3.

Using 1.5 mm sheet balsa sheet the wing from the leading edge back.



Swing wing mount installed in the fuselage.



Fan mounts fitted and ready for the Powerfun unit.

Remove from the plan and add the 1.5 mm balsa shear webbing between ribs. Glue in the second PS1 to the under wing. Trim the angled trailing edge as shown and line the inside edge with a piece of 6.5 mm x 9.5 mm strip of balsa. Chamfer flush between PS1 and the trailing edge.

Before sheeting the underside remove the jig tabs from the underside of each rib and sand smooth. Make up the servo mounts and fit the servo wiring. The lower sheeting can then be applied in the same sequence as the top sheeting.

Finally, add the outer leading edge made from 9.5 mm balsa and make the wing tips from 12.5 mm balsa sheet. Reveal the two holes on PS1.

Make up the opposite wing panel to the same standard, then make each aileron to fit the wings as shown. These are simple affairs using 6 mm x 25 mm standard trailing edge stock

Insert the nylon pivot bearing to the correct depth as shown on the plan. Do not secure with the self-tapping screw yet.

Install the push/pull M3 horns into PS1. Make sure these are secure and when happy that the height positioning on both wings is identical apply some thin cyano to PS1 around the bolt to secure and strengthen the joint.

REAR FUSELAGE

On the assumption you have bought the CNC pack number all the parts to avoid any confusion later.

Begin by marking the vertical positions of the formers onto fuselage sides FS1 and 2. Glue the sacrificial former pieces F3A and F4A to their respective formers. Now make up the wing support plate WSP1 from 6 mm lite ply. Add the 1.5 mm birch ply wing nut spacers to the underside of WSP1. This plate allows a standard M6 captive nut to sit flush and not create a shoulder on the top side.

Apply some 30 min. epoxy to the captive nuts and press home using a bench vice. It is very important the nuts both sit flush but also straight and true. I would suggest once they are pressed home that you screw in a 200 mm



EDF unit and ESC fitted and tested for correct rotation.

length of 6 mm studding and visually compare the straightness of the captive nuts to each other. This process is very important as any deviation will result in an imbalance in wing incidences. When happy remove any excess glue and leave to dry.

Using a strong wood glue fit the servo mounts onto WSP1. Note that each mount is a sandwich of two SM1. WSP1 has been designed to accept a standard 35 kg size servo which are plentiful and cheap. Make sure the servo sits through WSP1 and flush with the top side.

Make up twin push rods from 3 mm studding with quick link and ball joint ends. Refer to the build photos for clearer detail.

Using an M8 shoulder bolt, washers and the cross brace CB1, put the wing mechanism together as a test rig, as shown in the build photos. Connect the servo to the receiver and set the transmitter up on a two-position switch. Make sure ATV movements are set to only 30% and the servo is slowed to around three seconds; this will allow you to slowly gauge the end points. Adjust the ATV so you achieve full movement of the wing without stalling or



View of the critically sized air intakes, two on the sides and one at the bottom.

overloading the servo. Dismantle the test rig (but leave the servo in position) and continue with the fuselage build.

Begin by lining the bottom inside edge of the fuselage between F5 and F7 with 12.5 mm triangle. Saw cuts in the triangle will aid bending of the fuselage sides. Glue F6 to one fuselage side and fit the other fuselage side. You may wish to use a SLEC building jig for this operation to make sure all is straight and true.

Add the fan mounts FM1 and the former F7. Then add formers F4 and F5 followed by wing seat doubler WSP1; this may need small amounts of adjustment. Now glue into position WSP1.

Position the fan unit and mount this to the plates with two retaining screws. Make up the thrust tube, using the template shown on the plan, made from an A3 sheet of 140-micron thick acetate, normally available from a stationery supplier or eBay.

Install the ESC and check that the fan rotates in the correct direction.

FRONT FUSELAGE

Make up the front fuselage sides and line the bottom and top inside edges with 12.5mm triangular balsa. Saw cuts will have to be made to aid bending of the fuselage sides.

You may wish to use a SLEC building jig again for the next process. Begin assembling the fuselage, adding F2 and F3 first, checking squareness as you proceed. Then add F1. Glue the front and rear fuselage sections together using the centre openings of formers F3 and F4 as an alignment guide. Now fit FS3, remembering to chamfer the edge where it meets FS1.

Make up the under sheeting from sheets of 4.5 mm balsa and butt glue together. Mark and cut out the air intake hole in the under-sheets in the position shown. Remove the sacrificial formers F3A and F4A and discard. This will allow the battery to sit cleanly onto the internal bottom sheeting.

The internal edge on the fuselage tailplane slot will need to be strengthened to support the tailplane. Cut four lengths of 6.5 mm square balsa to fit between F6 and F7. Glue to the top



Carve, sand and profile the fuselage to a smooth, flowing shape.



Dummy air intakes made up before gluing against F4 and the fuselage sides.

and bottom inside edge of the slot. Use a scrap piece of 4.5 mm balsa as an alignment tool for the support strips. Now sheet the top fuselage between F6 and F7, leaving a gap of 4.5 mm for the fin to slot into.

I would suggest at this stage that the bottom front and rear fuselage is razor planed and sanded to the profiles shown on the plan.

Add the forward top sheeting and make up the nose cone using a sandwich of 12.5 mm and 9.5 mm balsa. Shape the cone and profile the fuselage to a smooth, flowing shape.

Air intakes can now be made using pieces A11 and former F8. Refer to the website build photos for a clearer picture. When done the intakes can be glued against F4 and the fuselage sides. Sheet, using 3.2 mm balsa, the bottom of the intakes back to F5. When complete use a sanding block to blend the intakes to a smooth, flowing profile.

Finally, add the elevator servo opening reinforcement plates and the tail fairing pieces TF1. Two pieces are sandwich together for each side. Blend these into the fuselage smoothly.



Put the fin aside for gluing into position when the model nears completion. All pictures of the finished model are by David Ashby.



Underside air intake hole can be used to gain access to the swing-wing links.

FIN & TAILPLANE

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

Make up the tailplane and elevator parts. Round off the tailplane leading edge and chamfer the elevator leading edge ready for hinges to be fitted.

FINISHING OFF

Reinstall the wings onto the fuselage and retest the swing-wing action. The 3 mm quick links that connect to the wing horns can be a little bit tricky to access so using a flat bladed screwdriver to open the links will help. The bottom air intake hole also gives access to the links.

Check the clearance of both wings against the top fuselage edges; about 0.5 mm to 1 mm gap should do. When happy all is square and true secure the nylon pivot bearings in the top of PS1 with a small 2 mm x 12 mm self-tapping screw at an angle of 45 degrees.

The top turtle deck can be adjusted and trimmed so it sits flush with the top of the fuselage at F4 and F6. Add two small pieces of scrap spar obechi to the top inside edge of WS1 and fit a retaining pin to the rear of the turtle decking. When happy with alignment and that the wings move forward and back without rubbing on the turtle decking, drill and fix the decking with two M2 screws.

The battery is accessed through a removable



Canopy and pilots for the Tornado are amongst parts available for this model from TND Ltd.

canopy. Make up the canopy floor and detail the inside of the cockpit. Cut out the battery access hole in the top of the fuselage but leave the insert in. Put some glue on top of the insert and then locate the canopy back on to the fuselage in the correct position. Once the glue has dried the canopy will then have a locating point. On the prototype I used two 10 mm dia. x 2 mm magnets and washers, recessed into the surfaces of the canopy floor and the top of the fuselage to secure the canopy.

The fin and tailplane can now be fitted along with the fin doubler FD1. The top outside edge of FD1 should be profiled round to match the turtle deck. Once happy, glue these into position.



With the wings swept the short and direct aileron and elevator linkages can clearly be seen.



A view of one of the louvred side air inlets.



Finished detail of one of the dummy air inlets.



Hand launching the Tornado is easy using the javelin technique. The powerful throw and projection of the model upwards gives more time to get your fingers back on the Tx sticks.

COVERING & SET UP

The prototype was covered using light grey Oracover from J Perkins. The vac formed turtle deck was painted in matching Orapaint. A decal set, air intake vents and a pilot are available from www.tonynihuisdesign.co.uk.

Fit the control surfaces with SLEC flat flock hinges and secure with glue. Fit all servos and control horns. I made the control horns from 2 mm birch ply slotted into the control surfaces.

The C of G position should be achieved by positioning a 4S 4000 mAh LiPo with the wings in the FORWARD position. Do not be tempted to move the C of G back from the stated position. It has been thoroughly tested and where shown is the correct position. The LiPo is secured using self-adhesive Velcro.

As I mentioned near the beginning, no gyros or other stabilisation were used on this model, but you will have to set up trim settings for the swept wing position as detailed on the plan. In short, as the wings slowly move back the elevator will need to deflect up by 5 mm, matching the timing of the wings, to counteract the now forward C of G. The elevator deflection will also need to increase because of the forward C of G. Aileron movements will not have to change but be prepared to set up a slightly different trim position for the swept position. This was all done via mixing functions within the transmitter.

FLYING

The Tornado's wing loading is quite high at 33 oz./sq. ft. but hand launching the model remains easy as long as the javelin technique is used. As I mentioned in previous articles, what a revelation this technique is. You get a more powerful throw and the projection of the model upwards gives you time to get your fingers back onto the controls. However, I suggest for its maiden flight you get a trusted helper to launch the model, with the wings forward.

I wouldn't suggest flying the model in windy conditions and in anything more than 10 mph. It is far happier on a calm evening than a windy afternoon!

Once the Tornado gets away and is trimmed for level flight at half power ask your trusted helper to take a photo of the trim settings on your Tx. Flying the Tornado with the wings forward the model will not feel jet like, more like a fan powered sport model. I suggest you get use to flying the model in this format before attempting to go into swing wing mode.

On the assumption you have followed the earlier guidelines and the set up stated on the plan, take the model up to a reasonable height and bring it back into wind at around 2/3rds power, then flick the two-position switch. The model will hopefully stay relatively level but be prepared to input some aileron trim and, possibly, some elevator trim. If your trusted helper is still available ask them to take another photo of your changed trim settings.

Once trimmed the Tornado will turn into that fast jet you really wanted to see but the



Tony suggests getting used to flying the Tornado with its wings in the forward position before attempting to go into swept wing mode.

model will require more power to fly in swept mode. But what a joy it is. Returning to its forward swing mode you must slow the model down otherwise the model will be going too fast for forward wing flight. You can land the model in swept mode, but the landing speed will be quite high!

If there is trim difference between the two flight modes then use the photos to adjust your transmitter to the swept wing mixed conditions to mimic the trim setting that you adjusted in flight. It took me about three flights to get the mixed trims correct but I was doing it from memory. Once done the Tornado should transition smoothly, staying straight, level and true.

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

Landings are very straightforward with the wings forward. Do be careful though and



This should be a popular model as the Tornado is such an iconic aircraft. Fitted with the swing wing it's two models for the price of one!

make sure a wing doesn't drop as this can easily damage the swing-wing mechanism.

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

The 4S,11-bladed Powerfun EDF unit does give an amazing punch and flight times are surprisingly good. So, expect a good 3 to 4 minutes depending on throttle use.

MISSION OVER

I have to say the Tornado has been a challenge to design and get right, but what a lovely model it has turned out to be. It has far outweighed my expectations, especially as there are no clever electronics on board. I'm certain some of you will install gyros etc. and I'm sure this will improve the flying performance and the whole experience. I'm really looking forward to hearing of your clever add-ons.

I think this really will be a popular model as it is such an iconic aircraft. I do hope you enjoy both building and flying a Tornado - it really is two models for the price of one! ■

ADDITIONAL PARTS

Additional plans, a vac-form set, combined CNC / wood pack, wing pivot kit, pilots and decal set are available from: www.tonyrijhuisdesigns.co.uk
Email: sales@tonyrijhuisdesigns.co.uk or telephone 07563 518159, 9am to 4pm.

DATAFILE

Name:	Tornado GR4
Model type:	Hand launch EDF jet
Designed by:	Tony Nijhuis
Wingspan:	38" (964 mm)
Length:	42" (1072 mm)
Weight:	51 oz (1.45 kg)
Wing loading:	33 oz /sq. ft. (10 kg /sq. m)
Functions (servos):	Ailerons (2), Elevators (2), Throttle (ESC)
EDF unit:	70 mm, 11 blade, 4S Powerfun
ESC:	60A 4S, set timing to High
LiPo:	4S 4000 mAh 60C



If you are put off by the swing wing you can make the Tornado with its wings in a fixed position. A half swing position would be a nice compromise.

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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 and 70mm PowerFun fans are those as used in the Tony Nijhuis "Mini and Midi Jet" series, as recently published in the RCM&E.

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



Complete Electrical Setup For the GR6 Tornado by Tony Nijhuis



www.4-max.co.uk/tn-midi-jet-Tornado.html



Description	RRP
PowerFun 70mm, 4S EDF Unit with motor	£47.50
4M-HESC60A35V2 Brushless ESC and Programming Card	£59.94
2x 4M-053HVDMG-010 and 2x 4M-100AMG-022 Servos	£37.18
PP-HATCH-LATCH-A - Hatch Latch/Catch	£1.99
4S, 14.8V, 60C, 4,500mAh LiPo Battery	£70.00

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PPL-60C2S-0800	60C/120C, 2S (7.4V) 800mAh	£8.50
PPL-60C2S-1000	60C/120C, 2S (7.4V) 1000mAh	£9.25
PPL-60C2S-1300	60C/120C, 2S (7.4V) 1300mAh	£11.00
PPL-40C2S-1800	40C/80C, 2S (7.4V) 1800mAh	£14.50
PPL-60C2S-2200	60C/120C, 2S (7.4V) 2200mAh	£18.25
PPL-40C2S-2600	40C/80C, 2S (7.4V) 2600mAh	£20.00
PPL-40C2S-3300	40C/80C, 2S (7.4V) 3300mAh	£25.00
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PPL-60C3S-0800	60C/120C, 3S (11.1V) 800mAh	£12.00
PPL-60C3S-1000	60C/120C, 3S (11.1V) 1000mAh	£15.00
PPL-60C3S-1300	60C/120C, 3S (11.1V) 1300mAh	£17.00
PPL-60C3S-1800	60C/120C, 3S (11.1V) 1800mAh	£21.75
PPL-60C3S-2200	60C/120C, 3S (11.1V) 2200mAh	£24.00
PPL-60C3S-2800	60C/120C, 3S (11.1V) 2600mAh	£30.00
PPL-60C3S-3300	60C/120C, 3S (11.1V) 3300mAh	£38.00
PPL-60C3S-3700	60C/120C, 3S (11.1V) 3700mAh	£43.00
PPL-60C3S-4500	60C/120C, 3S (11.1V) 4500mAh	£55.50
PPL-40C3S-5000	40C/80C, 3S (11.1V) 5000mAh	£56.50
PPL-60C3S-6000	60C/120C, 3S (11.1V) 6000mAh	£70.00
PPL-60C4S-1800	60C/120C, 4S (14.8V) 1800mAh	£30.00
PPL-60C4S-2200	60C/120C, 4S (14.8V) 2200mAh	£33.50
PPL-60C4S-2600	60C/120C, 4S (14.8V) 2600mAh	£39.50
PPL-60C4S-3300	60C/120C, 4S (14.8V) 3300mAh	£49.00
PPL-60C4S-3700	60C/120C, 4S (14.8V) 3700mAh	£55.00
PPL-60C4S-4500	60C/120C, 4S (14.8V) 4500mAh	£70.00
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PPL-60C4S-6000	60C/120C, 4S (14.8V) 6000mAh	£96.00
PPL-60C5S-3300	60C/120C, 5S (18.5V) 3300mAh	£63.00
PPL-60C5S-3700	60C/120C, 5S (18.5V) 3700mAh	£71.00
PPL-60C5S-4500	60C/120C, 5S (18.5V) 4500mAh	£86.50
PPL-60C5S-5000	60C/120C, 5S (18.5V) 5000mAh	£96.00
PPL-60C5S-6000	60C/120C, 5S (18.5V) 6000mAh	£118.00
PPL-60C6S-3300	60C/120C, 6S (22.2V) 3300mAh	£79.00
PPL-60C6S-3700	60C/120C, 6S (22.2V) 3700mAh	£85.00
PPL-60C6S-4500	60C/120C, 6S (22.2V) 4500mAh	£103.00
PPL-60C6S-5000	60C/120C, 6S (22.2V) 5000mAh	£115.00
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4M-HESC50AV2*	50A, Burst 70A, 5V 5A BEC	£45.95
4M-HESC60A35V2*	60A, Burst 80A, 5V 7A BEC	£47.95
4M-HESC60A40V2*	60A, Burst 80A, 5V 7A BEC	£47.95
4M-HESC80AV2**	80A, Burst 100A, 5V 5A BEC	£62.00
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* XT60, ** XT90 on battery side



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4-Max	4M-037AH-0045	Sub Micro	3.7g	0.45Kg @ 4.8V - 0.10sec/60° 0.55Kg @ 6.0V - 0.08sec/60°	Analog, Light Weight, High Speed	1pcs £6.84ea 5pcs £6.16ea
4-Max	4M-045DH-005	Sub Micro	4.5g	0.5Kg @ 4.8V - 0.10sec/60° 0.6Kg @ 6.0V - 0.08sec/60°	Digital, Light Weight, High Speed	1pcs £4.72ea 5pcs £4.25ea
EMAX	ES9051	Sub Micro	4.1g	0.8Kg @ 4.8V - 0.09sec/60°	Digital, High Torque, High Speed	1pcs £7.69ea 5pcs £6.92ea
4-Max	4M-056DHVMG-009	Sub Micro	5.6g	0.90Kg @ 4.8V - 0.14sec/60° 1.05Kg @ 6.0V - 0.12sec/60° 1.20Kg @ 7.4V - 0.10sec/60°	Digital, High Voltage, Metal Geared, 8mm Thick	1pcs £9.94ea 5pcs £8.95ea
4-Max	4M-053HVDMG-010	Sub Micro	5.3g	1.0Kg @ 4.8V - 0.09sec/60° 1.5Kg @ 6.0V - 0.08sec/60° 1.8Kg @ 7.4V - 0.07sec/60°	Digital, High Voltage, Metal Geared, 8mm Thick, High Speed	1pcs £11.10ea 5pcs £9.99ea
EMAX	ES9052MD	Sub Micro	5.5g	1.1Kg @ 4.8V - 0.11sec/60° 1.3Kg @ 6.0V - 0.09sec/60°	Digital, Metal Geared, Coreless Motor	1pcs £13.83ea 5pcs £12.45ea
4-Max	4M-094DMGB-014	Wing	9.4g	1.4Kg @ 4.8V - 0.12sec/60° 1.9Kg @ 6.0V - 0.10sec/60°	Digital, Metal Geared, Ball Raced, Wing, 8mm Thick	1pcs £11.54ea 5pcs £10.39ea
EMAX	ES08A II	Micro	8.6g	1.5Kg @ 4.8V - 0.12sec/60° 1.8Kg @ 6.0V - 0.10sec/60°	Analog, Light Weight, Great Value	1pcs £5.34ea 5pcs £4.81ea
EMAX	ES08MA II	Micro	12g	1.2Kg @ 4.8V - 0.12sec/60° 1.8Kg @ 6.0V - 0.10sec/60°	Analog, Metal Geared	1pcs £8.35ea 5pcs £7.52ea
4-Max	4M-090AH-017	Micro	9.0g	1.7Kg @ 4.8V - 0.09sec/60° 1.9Kg @ 6.0V - 0.07sec/60°	Analog, Basic 9g Servo	1pcs £3.99ea 5pcs £3.59ea
EMAX	ES3301	Micro	10.6g	2.0Kg @ 4.8V - 0.12sec/60° 2.2Kg @ 6.0V - 0.10sec/60°	Analog, Metal Geared, 9mm Thick	1pcs £8.79ea 5pcs £7.91ea
4-Max	4M-100AMG-022	Micro	10g	2.2Kg @ 4.8V - 0.12sec/60° 2.5Kg @ 6.0V - 0.10sec/60°	Analog, Metal Geared, High Torque	1pcs £7.49ea 5pcs £6.74ea
4-Max	4M-100DMG-022	Micro	10g	2.2Kg @ 4.8V - 0.12sec/60° 2.5Kg @ 6.0V - 0.10sec/60°	Digital, Metal Geared, High Torque	1pcs £9.05ea 5pcs £8.15ea
4-Max	4M-125HVDMG-028	Micro	12.5g	2.8Kg.cm @ 4.8V - 0.144sec/60° 3.4Kg.cm @ 6.0V - 0.11sec/60° 4.5Kg.cm @ 7.4V - 0.105sec/60°	Digital, High Voltage, Metal Geared, High Speed, Dual Ball Raced	1pcs £12.21ea 5pcs £10.99ea
4-Max	4M-130HVDMG-040	Micro	13g	3.8Kg.cm @ 5.0V - 0.112sec/60° 4.0Kg.cm @ 6.0V - 0.096sec/60° 4.5Kg.cm @ 7.4V - 0.083sec/60°	Digital, High Voltage, Metal Geared, High Speed, High Torque, Very Low Play in Gears	1pcs £11.10ea 5pcs £8.15ea
4-Max	4M-094DHVMG-026	Mini	9.4g	2.0Kg @ 6.0V - 0.09sec/60° 2.6Kg @ 7.4V - 0.07sec/60°	Digital, High Voltage, Metal Geared, Ball Raced, 8mm Thick	1pcs £14.99ea 5pcs £14.17ea
4-Max	4M-160AH-027	Mini	16g	2.7Kg @ 4.8V - 0.13sec/60° 3.0Kg @ 6.0V - 0.11sec/60°	Analog, Great Value Mini Servo	1pcs £6.29ea 5pcs £5.66ea
4-Max	4M-175AMG-030	Mini	17.5g	3.0Kg @ 4.8V - 0.13sec/60° 3.5Kg @ 6.0V - 0.11sec/60°	Analog, Metal Geared	1pcs £8.73ea 5pcs £7.86ea
4-Max	4M-175DMG-030	Mini	17.5g	3.0Kg @ 4.8V - 0.13sec/60° 3.5Kg @ 6.0V - 0.11sec/60°	Digital, Metal Geared	1pcs £9.99ea 5pcs £8.99ea
4-Max	4M-183HVDMG-044	Mini	18.3g	4.4Kg @ 4.8V - 0.101sec/60° 6.5Kg @ 6.0V - 0.078sec/60° 7.3Kg @ 7.4V - 0.059sec/60°	Digital, High Voltage, Metal Geared, High Speed, High Torque	1pcs £14.99ea 5pcs £13.49ea
4-Max	4M-253AB-028	Standard/Mini	25.3g	2.8Kg @ 4.8V - 0.12sec/60° 3.3Kg @ 6.0V - 0.10sec/60°	Analog, Ball raced	1pcs £6.79ea 5pcs £6.11ea
EMAX	ES3004	Mini	17g	3.0Kg @ 4.8V - 0.15sec/60° 3.5Kg @ 6.0V - 0.13sec/60°	Analog, Metal Geared, Ball Raced	1pcs £12.09ea 5pcs £10.88ea
EMAX	ES3054	Mini	17g	3.0Kg @ 4.8V - 0.15sec/60° 3.5Kg @ 6.0V - 0.13sec/60°	Digital, Metal Geared, Ball Raced	1pcs £17.59ea 5pcs £15.83ea
4-Max	4M-455AH-033	Standard	45.5g	3.3Kg @ 4.8V - 0.15sec/60° 4.0Kg @ 6.0V - 0.12sec/60°	Analog, Great Value Standard Servo	1pcs £6.99ea 5pcs £6.29ea
EMAX	ES3001	Standard	37g	3.5Kg @ 4.8V - 0.17sec/60° 4.8Kg @ 6.0V - 0.14sec/60°	Analog, Ball Raced	1pcs £7.69ea 5pcs £6.92ea
4-Max	4M-410ABH-052	Standard	41g	5.2Kg @ 4.8V - 0.20sec/60° 6.5Kg @ 6.0V - 0.16sec/60°	Analog, High Torque	1pcs £4.73ea 5pcs £4.26ea
4-Max	4M-556AMG-087	Standard	55.6g	8.7Kg @ 4.8V - 0.15sec/60° 9.4Kg @ 6.0V - 0.13sec/60°	Analog, Metal Geared	1pcs £12.59ea 5pcs £11.33ea
4-Max	4M-556DMG-087	Standard	55.6g	8.7Kg @ 4.8V - 0.15sec/60° 9.4Kg @ 6.0V - 0.13sec/60°	Digital, Metal Geared	1pcs £15.74ea 5pcs £14.17ea
4-Max	4M-490AMG-108	Standard	49g	10.8Kg @ 4.8V - 0.13sec/60° 13.8Kg @ 6.0V - 0.11sec/60°	Analog, Metal Geared, Waterproof	1pcs £17.76ea 5pcs £15.98ea
4-Max	4M-620DHVMG-112	Standard	62g	9.35Kg @ 6.0V - 0.15sec/60° 11.2Kg @ 7.4V - 0.13sec/60°	Digital, High Voltage, Metal Geared, Dual Ball Raced	1pcs £18.89ea 5pcs £17.00ea
EMAX	ES3005	Standard	42g	10Kg @ 4.8V - 0.16sec/60° 12Kg @ 6.0V - 0.14sec/60°	Analog, Ball Raced, Waterproof	1pcs £27.49ea 5pcs £24.74ea
4-Max	4M-556AMG-118	Standard	55.6g	11.8Kg @ 4.8V - 0.20sec/60° 13.2Kg @ 6.0V - 0.18sec/60°	Analog, Metal Geared	1pcs £14.69ea 5pcs £13.22ea
4-Max	4M-556DMG-173	Standard	55.6g	17.3Kg @ 4.8V - 0.18sec/60° 20.4Kg @ 6.0V - 0.16sec/60°	Digital, Metal Geared	1pcs £17.84ea 5pcs £16.06ea

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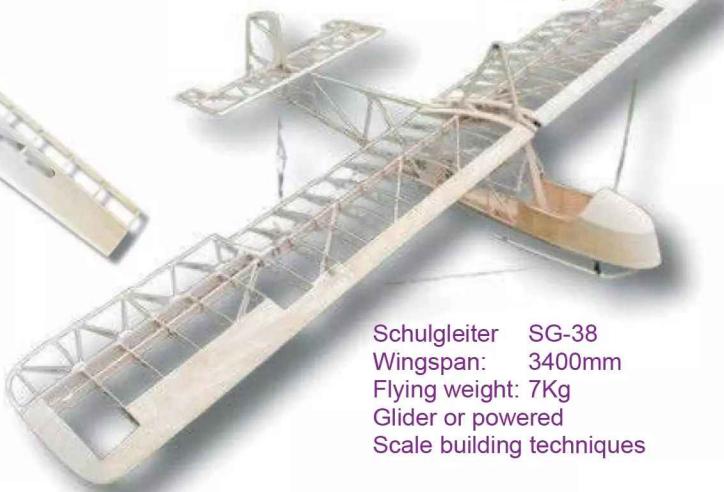


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INTERNATIONAL MODEL GLIDER FAIR PART 2

Thorsten Häss concludes his report from the 'Segelflugmesse 2025' held in Schwabmünchen, southern Germany

Words: **Thorsten Häss**

Photos: **Thorsten Häss, Fynn Häss**



1 PHILIPP SCHNEIDER MODELLBAUSERVICE

This company presented wooden constructions of various models from their Friendly series, including the Loop, a lively motorised all-rounder for aerobatics, leisure soaring or glider towing, plus the WoodRay and various flying wing models. There is certainly something interesting in their range for the woodworkers among us model builders.

2 POWERBOX SYSTEMS

Model aircraft telemetry and display in special heads-up glasses is not entirely new, not even for users with PowerBox CORE transmitters. However, with the latest transmitter software version 3.8 what is new is that only the special glasses themselves are required and no other hardware is necessary. Otherwise, visitors could find out about a wide range of PowerBox products from Richard Deutsch and his team.



3 PS MODELS

The quality and performance of the Kobuz 3.0, Swift 3.34 and Swift 2.8 from PS Models are well known. The Kobuz 2.2 and Swift 2.2 (scale 1:5.7, 2.18 m wingspan) as gliders, with FES or with MigFlight E60 EDF power have been given a completely new wing design and profile in cooperation between PS-Models, Chocofly and MigFlight. This has further improved the performance of these small models and ensures excellent thermalling characteristics and good-natured handling.

1

4 RCMODELPROJECTS.EU

This company offers the GP15 Jeta in 1:2.5 with a wingspan of 6.0 m, the GP14 SE Velo in 1:2.5 with a wingspan of 5.38 m and the SZD-55 Nexus in 1:3.5 with a wingspan of 4.29 m, as well as related accessories.

5 REMEC DESIGN

Matjaz Remec once again brought along his Jonker Sailplane models. The JS-4 and JS-5 models are both designed at a scale of 1:2 and have a wingspan of 9 metres and an almost unbelievable 12.1 metres respectively. These are truly impressive R/C models.

The Jonker JS-5 used by Uwe Neesen is powered by a Hacker C54-3D XL with 6.7:1 gearing in a FES drive. The energy for this is provided by 2 x 6S batteries (12S). The model comes fully equipped with a Jeti Central Box, 2 x REX 3 receivers, RSAT 900 NG backup system, comprehensive telemetry with TEK-Vario, 

receiver batteries and weighs in at just under 25 kg. To fly this huge sailplane Uwe relies on the latest transmitter from Hacker JETI, a DS24 II.

6 STICH & FADEN

Many of Simona Gardemin's products, such as backpacks, model transport boxes and hood protectors have become standard bestsellers amongst soaring enthusiasts. New additions include sun and rain covers. Individual advice and customisation are still available at Stich & Faden's high-quality manufacturing facility.

7 TEIL-Q

Christian Janda has optimized his Centre of Gravity scales, resulting in the new CG Pro. In addition to this new product and Teil-Q's well-known transport, assembly and construction brackets, a new product, the 'Workshop Trolley', was presented at the Gliding Fair. The trolley can be expanded using a modular system with clamps, brackets and drawer boxes, etc.



upper side of the fuselage's nose using a special mechanism. This means that, despite the FES, a tow coupling can be installed in the nose or, depending on the model, special FES landing gear can be dispensed with. Smaller models can be equipped with the SKY HIGH4Pro (for 1:2.5 scale, with 10S, approx. 50A on a 23 x 12 prop) or the SKY HIGH4 (for 1:3 scale, with 8S, approx. 50A on an 18 x 10 prop). However, Tobcon presented its new Sky Lift 1 and Sky Lift 2 FES landing gear at the gliding exhibition. Compared to other FES landing gear, the gear can be raised by up to 35 mm for take-off using a servo without having to manually relieve the landing gear of the model's weight. The landing gear can thus move to all positions without any additional manual support.

8 TOBCON

Hans Ulrich Tobuschat is already well known for his special FES drive concept, the SKY HIGH5 for 1:2 scale glider models (10S, approx. 50A on a 23 x 12 prop). Unlike classic FES drives the drive unit is extended and retracted via small flaps on the

9 TOMAHAWK

Tomahawk presented their wide variety of glider models. Brand new and recently unveiled, the ASH-30 Mi with a wingspan of 5.87 m (scale 1:4.5) was also on display and is shown here. The FES version has a take-off weight of approx. 7.3 kg. The model is delivered with a high degree of prefabrication. Customer orders are already being accepted, with delivery scheduled for later in 2026.

The Duo Discus and ASC32, both of 4.44 m wingspan, and the Arcus (4.48 m wingspan) were also on display. The well-known Kobuz (3.2 m wingspan) in a new colour design was also presented. Towplane models from Tomahawk, such as the Bonanza V35 with a wingspan of



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3.55 m or the Wilga with a wingspan of 3.2 m or 3.7 m, were also on display and were actively demonstrated in many glider slots.

10 TORCMAN & FEMA

Klaus and Steffen Kraft from Torcmann had a new product in their portfolio. 'Zyklo by Torcmann' is a customisable spinner manufactured using a resin casting process whereby the shape and function of the spinner can be customised according to model and customer requirements and is perfectly matched to Torcmann Slim drives. Currently there are three different versions: Zyklo Scale (true to scale and with a classic appearance), Zyklo Air (with integrated cooling opening) and Zyklo FES-Ex for Torcmann's own FES Ex system.

Sailplane aerobatics with music and smoke in the CHAServo show slot.

11 UNILIGHT

In addition to gliding accessories, such as an electronic tow winch and Kingmax servos, Ullrich Rockstroh offers high-quality, bright ACL, position lights and spotlights, as well as control electronics at unilight.at. This allows a

wide variety of models, including large aircraft, to be professionally equipped with lighting. The wide variety of designs (size, installation depth, etc.) of Unilights also allows for a variety of installations, including in the fuselage, in the vertical stabiliser or even in servo covers. 



A fast flypast by the Ceflix GP15.



Tomahawk Kobuz at launch.



Marvin Kannenberg starts his Wilga for the next glider tow.



Team Schärer with their Swift S1s from Bruckmann Modellbau in Red Bull livery. 8.5 metre wingspans and a take-off weight of 55 kg. It is always impressive witness the precision and spectacle of these large models when flown by their talented pilots.



12 UT-MODELLTECHNIK

Ulrich Treyz already offers JT80-B2 and JT160-B4 motors, but these will be supplemented in the future by the JT240-B6, a six-cylinder boxer engine for 2-blade 32 x 13 props or 3-blade 30 x 13 props (approx. 6.7 kg with 2 x ignition and pump). The prototypes are currently being prepared for series production and customer orders will soon be accepted. Products from UT-Modelltechnik are now complemented by accessories such as fuel tubing, refuelling valves and a new high-quality fuel pump.

13 WEMO RETRACTS

Wemo presented an evolution of its products at the fair, the new Evolution FES

Hybrid Retractable Landing Gear. This is a further development of the proven Hybrid Retractable Landing Gear. With the new evolution set the FES start position of the landing gear no longer must be set manually. Instead, the various positions of the landing gear for take-off, landing and retracted can be controlled using a single 120-degree HV servo (not included). To do this the model is lifted by the nose and the take-off landing gear position is selected via the transmitter. Once the landing gear is locked in the take-off position the model can be placed on the landing gear as normal. The whole system works via a (replaceable) complex guide track in the side sections. The guide track ensures

that all three positions are mechanically locked in place. The new landing gear can also be expanded with familiar accessories: wheel brackets, wheel covers, wheel brakes, rubber swing bearings, limit switches for telemetry and display of the landing gear position, etc.

OTHER EXHIBITORS

Other exhibitors at the gliding fair were Aufwind Magazin, Balsabar, Fräsfreude, Graupner, Kohler / Jet Central, Landeschutzfolien, PAF Flugmodelle and Ploberger / KOLM Engines.

To conclude this report from the Gliding Fair here are a few extra pictures. ■



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This is MvM's first foray into a scale model, and we are more than a bit proud of this elegant model.

- Wingspan 40"
- 4 Channel – Elevator, Rudder Ailerons, Throttle



MvM Oldtimer Rapid Build **£69.99**



MvM Oldtimer IC Rapid Build **£69.99**



The **MvM Oldtimer** makes for a brilliant training plane, flies very well in even a stiff wind – We've flown them in 15mph wind, and this little plane has handled it supremely. Great for both novices and the experienced pilot, for the SAM community, and is a thoroughly fun plane to fly.

Electric Version

Full Kit – no electrics

Wingspan 42" – 1067mm

3 Channel – Elevator, Rudder, Throttle

Internal Combustion (IC) Engine

Full Kit – no electrics or engine

Wingspan 42" – 1067mm

2 or 3 Channel – Elevator, Rudder, (Throttle)

MvM Delta Rapier Rapid Build



£120.00

1948 Bernard Gross Flying Wing Rapid Build



£240.00

MvM Boomer Bus Rapid Build



£140.00

MvM's mission is to breathe new life into some fascinating vintage models, redesigning them to better accommodate modern building techniques, materials and electronics while still maintaining the characteristics of these original models.

Dick has designed and built a new version of the Mäxi which you can read about after this short introductory article. Image by Hansjörg Baumann.



THE ORIGINAL MÄXI

Dick van Mourik relates the history of a German competition aerobatic model, modified and kitted by Robbe

Words: **Dick van Mourik**

Pictures: **Dick van Mourik, Hansjörg Baumann**

The sixties were a time of several major developments in building and flying of radio controlled aeroplane models. Radio equipment was still in its infancy, with many home-made transmitters. What was available from the various manufacturers at the time could be very unreliable. In the second half of the decade proportional radio was introduced, but at horrendous prices.

Competitions, then as now, were used to test new developments. Competitors in the UK, Germany and the USA really paved the way to what is available nowadays and we regard as standard.

A CHAMPIONSHIP DESIGN

The German National Championships in R/C aerobatics had been dominated by the same names for several years, when in 1968 a young man called Heinz Elsässer became the new German Champion in what was then known as RC-1 (currently F3A) with his model. This model, the Mäxi, was the culmination of several earlier designs; it was a low-wing aerobatic model, straightforward to build and to repair, with ample power.

As could be expected, German manufacturers were keen on kitting the design

and Heinz handed over his model to the Robbe company in exchange for the first Futaba radio set to be imported into Europe.

Now, manufacturers being manufacturers, the Mäxi kit, which was released sometime later, only vaguely resembled the model Heinz had flown. The wing section was changed and its thickness increased to a hefty 17 percent as Robbe probably already had a set of dies lying around for a model that more or less fitted the bill. Also, the canopy was taken from a small Piaggio 149 or similar. Not being hindered by the fact that the optimised competition model supplied by Heinz already weighed around 3.5 kg, Robbe optimistically advertised the model as being in the range of 2.8 to 2.9 kg (about 7 lbs).

As can be expected these changes did not go down well with the designer. The successor to the Mäxi, aptly named Mäxi II, was changed considerably compared to the model



A young Heinz Elsässer with his Mäxi II. This picture was taken at the 1969 World Championships in Bremen where he managed a very respectable seventh place in a field of 64 entries. (Image courtesy of Giuseppe Chisleri via www.classicpattern.com)

supplied to Robbe. The Mäxi II also proved to be a very successful design, earning Heinz a very respectable seventh place in a field of 64 entries at the World Championships near Bremen in 1969.

Despite the changes the altered Robbe Mäxi proved to fly well though and was a real cash cow for Robbe in term of sales. It sold for



Robbe did well with their production of the Mäxi and had it listed in their catalogue for many years. (Catalogue page via Philip Avonds, reproduced courtesy of Modellbau Lindinger.)



A further development of the Mäxi were the 'F' and 'FH' versions. Both models sported a GRP fuselage, including fin and fairings. The 'F' version had veneered foam wings whilst the 'FH' retained the lighter built-up wing of the original Robbe version. (Catalogue page via Philip Avonds, reproduced courtesy of Modellbau Lindinger.)

many years. Originally released as a classic kit or 'Schnellbaukasten', along the line Robbe decided to offer it in other versions as well. The Mäxi 'F' was a version with a GRP (a new development at the time) fuselage of slightly refined shape and foam wings sheeted in balsa. The kit for the Mäxi 'FH' also comprised this type of fuselage but retained the original wooden wing as supplied with the original kit. Oddly enough, a nose leg was never included in the kit but had to be purchased separately.



The author's Mäxi, built during the mid-eighties. Covered in nylon, with the front of the fuselage sprayed in an attractive translucent blue, gradually fading into the white base colour. Note the enlarged Mäxi logo on the starboard upper wing.

THE NAME MÄXI

At first glance you might assume that the name Mäxi is derived from Max, with Mäxi meaning something like 'little Max'. The provenance of this model's name, however, is quite different.

As previously said the Mäxi was used extensively in aerobatic competitions. In certain types of car racing, a helper, i.e. a mechanic who cares for the car, is known as a 'gas monkey' or a 'Schmiermaxe' in German. Mäxi is an abbreviation for the female equivalent of this term and the design was named after Heinz's girlfriend at the time as a thank you gesture for her help and assistance.

MY MÄXI

Being born and bred in The Netherlands the majority of our modelling goods were imported from Germany. Big brand names such as Carrera, Graupner, Multiplex, Robbe and Simprop, as well as many smaller manufacturers like Wik, Hegi, Kavan and Krick, to name just a few, supplied Dutch modellers with a wide array of models and accessories.

It must have been around the early 1980s that I fancied building something 'hotter' than the aileron trainers I had flown up until then. Stacked among my father's kits, which he no doubt acquired to build 'someday', there was a pristine kit of the Mäxi, already out of production at the time, but untouched. In addition to 'borrowing' this kit, I remember also 'taking care' of an OS Max .60 cu. in. two-stroke

engine from one of his other models. Mind you, in those days a .60 two-stroke engine was about as big as you could get, petrol engines apart. To me, the power of such a big engine seemed mind-boggling.

At the time items like retracts were virtually unknown and power-boosting tuned pipes were very expensive and definitively out of my league as a schoolboy.

I remember that my model had a nylon/dope finish and was sprayed white. As a special feature the front part of the fuselage was also sprayed with a translucent blue paint, gradually fading into the white rear section. This looked really classy but alas it doesn't show well on the few remaining photographs. A large Mäxi logo was cut out by hand from black plastic film to adorn the starboard upper wing half. The striping on the canopy was made using the same material.

Designing the new, upgraded version brought back many fond memories, admittedly not only of perfect flights, but also including some really hairy escapes. I flew the model for several years until, one day, it fell victim to some aerobatics which were just too low to recover from. Since then many models have been built and or designed by yours truly. But deep down the Mäxi design always kept a special place in my mind. And the rest, as they say, is history...

COMING NEXT

Turn the page to read about Dick's new version of the Mäxi. ■



MÄXI+

Dick van Mourik updates and enlarges a classic German aerobatic design from the late 1960s

Words: **Dick van Mourik**

Photos: **Dick van Mourik, Hansjörg Baumann**

One cannot help but wonder how this hobby has changed over time. With pre-built foamies or wooden airplanes, available with factory installed servos, gyros and who-knows-what, life has certainly become easier for the novice model pilot. However, I feel that we also need to be conscious of the fact that with the separation between building and flying, much of what used to be common knowledge in model aeroplane design and maintenance has now disappeared. I will leave it up to our readers to decide if they consider that to be a good development or not. Personally, designing and building a model and then see it take to the air gives me so much more satisfaction than flying an ARF.

In recent years, I have enjoyed the process of successfully converting several 'old school' designs for 21st century equipment. However, it was more or less by chance that I came across a report on the German RC Network site in 2022 about a Mäxi construction project to support the local youth. Apart from the fact that I have every respect for such an initiative, this reawakened my interest in the Mäxi.

GENERAL CONSIDERATIONS

What follows are my general considerations for the Mäxi+.

Please take my word for it, describing this part of the process in even sparse details would

easily fill the entire content of this issue so I'll try to keep things brief.

When trying to trace the origins of this design it was a most fortunate discovery to stumble across the original designer, Mr. Heinz Elsässer. Not only that, but as it turned out Heinz and his wife Hilde are still very much involved in both full-size and model aviation. Over the months in which the design evolved we had many conversations and an open exchange of ideas on how to improve the design whilst retaining its character. The result described here most definitely is to be regarded as a team effort.

With its 1460 mm (just over 58") wingspan the original Mäxi is not very large by today's standards and I pondered over enlarging the model. Here, I tried to find a reasonable compromise between flight characteristics (the bigger, the better) on the one hand and a model that can still be transported in a normal estate car on the other. With a fifteen percent increase in size compared to the original, the Mäxi+, as it was now unofficially called, ended up with a wingspan of 1680 mm or a fraction over 66". To aid transport both the wing and the stabiliser have been constructed as separate plug-in panels. The typical Mäxi wing fairings were also dispensed with. They certainly have aerodynamic advantages but are prone to damage, especially with a plug-in wing.

The lower half of the fuselage has been made slightly deeper over its entire length. Due to the placement of the battery plate and



wing joiner tube this was deemed necessary, if changing the height of the wing position in relation to the centreline was to be avoided.

The stabiliser and fin were going to have an aerofoil section in the new design, contrary to the flat plate used on the original. Also, the rear end of the turtle deck (what a name!) has been raised by about 10 mm to reduce turbulence at the transition towards the empennage.

Another consideration was the installation of a retractable taildragger undercarriage instead of the nose gear type used on the original design. Nose gear undercarriages do have their advantages during take-off and, above all, landing. There are, however, also substantial disadvantages, like additional weight. The fact that the nose leg is placed in an area of the model where space is already very limited also doesn't work in its favour. Fitting retracts was a personal preference, although I'd be the first to advocate that this design looks really good with the wheels neatly tucked away.

It was important to me that all major components were to be easily accessible and that changing the battery would not involve substantial time or effort. That's why the entire upper fuselage, from the rear of the cowling to a point just behind the canopy, has been designed to be easily removable.

WEIGHT REDUCTION

A major factor had to be weight reduction, as lighter models are considerably less critical in terms of flight behaviour.

Like many competition models from the era the original Mäxi was designed to allow any repairs to be carried out quickly and without too much effort. This generally boils down to the use of relatively thick wood, which is exactly what I wanted to avoid. By using contest grade balsa, lightening holes wherever feasible and minimising the amount of plywood used, substantial weight saving should be possible.

An estimated weight for this design was about 4000 grams without a battery. My Extreme Flight models of roughly the same size are also in this weight range and do fly very well indeed.

DRAWN IN 3D

As with many designs nowadays the model was drawn in 3D. Individual parts were then either laser cut or CNC milled, depending on the material and their intended purpose. Despite this, what might seem to be a futuristic approach to some, construction of the model itself remained completely conventional. Modern cutting/milling machines provide an accurate base and take the hassle out of tedious jobs like cutting substantial amounts of holes in parts. Other than that, it is still up to the builder to make a decent job of it.

With all that in mind, construction started with the wing panels.

AEROFOIL SECTION

As Heinz informed me, the original aerofoil section used in his Mäxi models (there were several) was kind of a 'shoe sole aerofoil section' rather than the result of extensive aerodynamic testing. Having said that a 17 percent thick section, like the one supplied by Robbe, was never used on the original Mäxi design. Attempts to find the original aerofoil section after so many years failed and so the search for a suitable alternative began.

The original choice for the model was the NACA 63-012, a well proven and uncritical aerofoil section with a thickness of some 12 percent, used in many aerobatic models. However, as mentioned, this model was to be equipped with a retractable undercarriage, making aerofoil thickness a precious commodity. At a mere twelve percent things

are tight - very tight indeed in this respect. Another feature of the design, which did not help at all, is the fact that the mechanisms are to be raked forward at a five-degree angle. This is required to ensure correct positioning of the main legs in both retracted and extended positions.

In the end I settled for the Eppler 168, which has its maximum thickness slightly further forward than NACA 63-012. This provides a few precious extra millimetres to accommodate the retract unit whilst retaining the 12 percent thickness. Towards the tip the section changes towards Selig 9026. Although its thickness is a smidge under 10 percent, it has a slightly blunter leading edge compared to the Eppler section. I have been told that keeping the LE radius as constant as possible should aid in keeping the stall behaviour largely consistent over the wing's span. Experience has shown that these considerations were very close to the mark indeed.

Of course, being sensible in choosing an appropriate aerofoil section helps in achieving good flight characteristics. In my experience, however, it is just as, or maybe even more important, try to and save weight in the wing wherever it makes sense. This aids tremendously with a model's rolling behaviour, allowing more precise aerobatics to be flown.

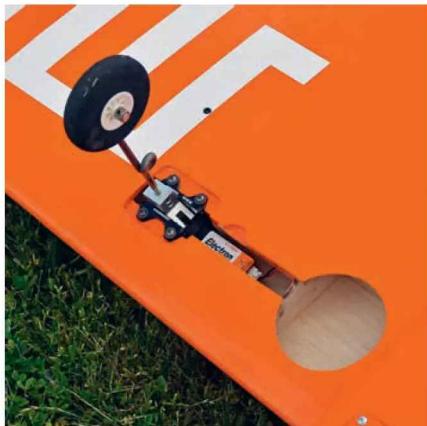
RETRACTS

The Mäxi design is from an era when competition models still looked like real airplanes and not like the flying buses seen today. With its sleek appearance this elegant model simply calls for a retractable U/C. Being a trained engineer myself, I am not at all keen on using plastic parts from the Far East, so a set of ER-30 Classic retracts by Electron were installed, supplied by Modellbau Jantsch. The 5 mm steel struts were custom made by Mr. Kenner (www.ezfw.de) at a fair price and in perfect quality. In hindsight 4 mm would have sufficed but, as they say, it's better to be safe than sorry.

Installing the retracts proved to be no easy task. To ensure things would fit well, first a mock-up was made to test the layout



Mäxi+ uses a retractable taildragger undercarriage instead of the tricycle gear used on the original design.



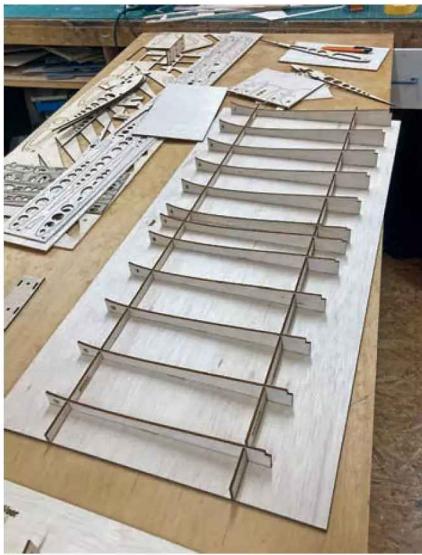
Electron ER-30 Classic retracts are used in the Mäxi+. The black dot in the 'M' of the Mäxi logo is the head of the M3 screw securing the wing joiner tube.

before the construction of the actual wing commenced. Additionally, the mountings require to be quite solid, as the undercarriage is located in the wing and transfers forces to the root rib. These can be substantial in the event of a less than perfect landing. Not that I have many, of course...

My solution to keep things light but practical was to make the first four ribs out of 3 mm (1/8") birch plywood, with their grain at a 45-degree angle. Some of these ribs hold the bearers for the retract unit; these have been additionally reinforced locally with 0.8 mm (1/32") plywood. The bearers themselves are made from 6 mm (1/4") aircraft grade plywood. Also, the webbing in this part of the wing is 0.8 mm plywood instead of the usual 1.5 mm (1/16") balsa.

WING CONSTRUCTION

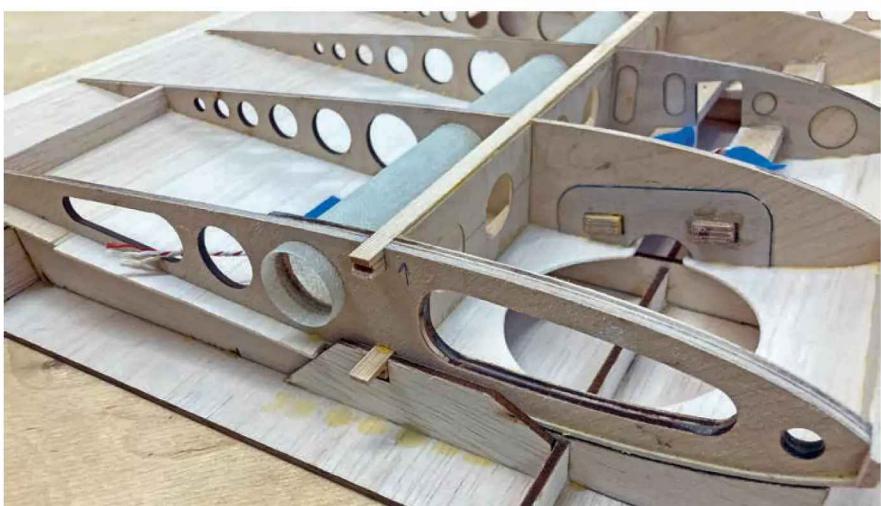
The root rib has been doubled from the main spar forward. In this part a home-made aluminium bushing is inserted, serving as a locking pin. The fuselage sides have also been locally reinforced with plywood. These ribs not only hold the retract bearers but also support



It's always nice to start a new project. Here's the jig for the wing, ready for building.



The wing is built inverted as the top of the wing is flat. The only dihedral comes from the tapering of the ribs.



Detailed image of the wing root. Note the laminated wing spar and the 0.8 mm ply reinforcements on the ribs holding the undercarriage mounts.



With the upper spar in place the ribs are kept in place against the plywood jig using small pieces of acrylic glass and lots of glue clamps. The lower spar is kept in place by a long metal ruler.



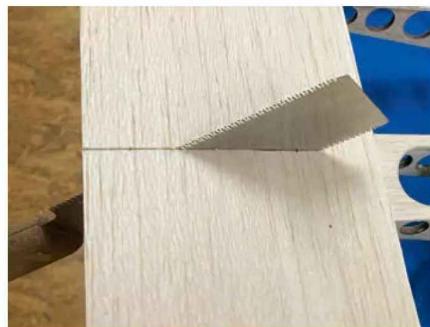
Close up view showing the epoxy wing tube sleeve at the rear and construction of the undercarriage bearers. Note the plywood webbing in this part of the wing for additional rigidity.



First half of a wing panel completed, as it comes out of the jig. Lower sheeting, wing tips and LE still need to be added. Weight at this stage is a mere 180 grammes.



Placed in another jig, sheeting is applied with slow-drying PVA and left to dry for at least 24 hours whilst being weighed down with bags of sand.



Ailerons are cut out after building is complete to ensure a good fit. I use a small Japanese Ryobi saw for this job.

the epoxy wing joiner sleeves. The joiner tube is made of carbon and measures 22 x 20 mm. Despite serious attempts it still hasn't broken in flight.

All other ribs are made of 2.5 mm balsa wood, adorned with holes wherever sensible to save further weight.

The wing spars are made from close-grained Sitka spruce, its growth rings orientated vertically. This adds significantly to the bending resistance of the wing without any weight penalty. Also, the spars in my models (with the exception of very small ones) are always tapered in three steps. Most of the forces acting on the wing are concentrated near the wing root; the loads on the wing tip are relatively low. Tapering



Basic fuselage construction complete. The next step will be to add the front half of the bottom sheeting.



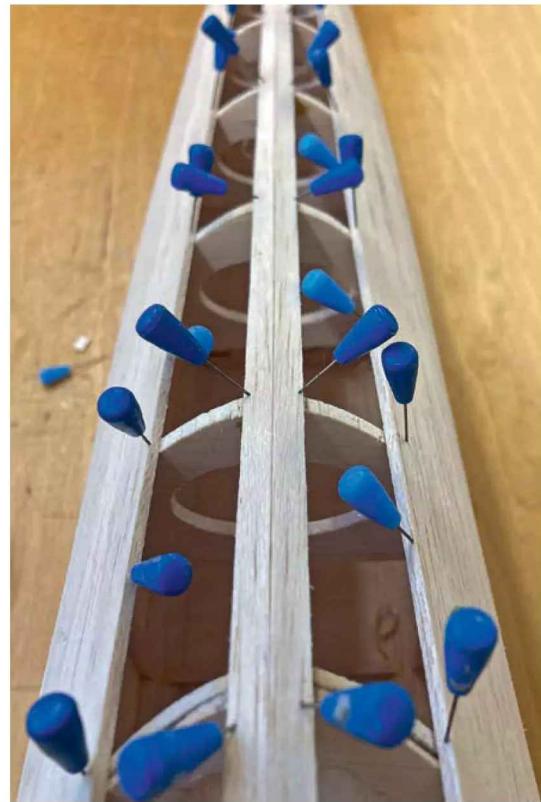
Front half of the fuselage and the battery plate are constructed from 2 mm aircraft grade plywood. Note the stiffeners underneath the central plate which ensure a solid platform for mounting the rudder servo.

the spars saves about a third of the total weight, in this case around 16 grams per wing half.

The original Mäxi was equipped with so-called strip ailerons, as was the norm at that time. With the exception of small, slow flying models, I find it best to avoid this type of aileron. They are prone to flutter at higher speeds and are ineffective. That's why classic, barndoors type ailerons were used in this model. As a guide, it was decided to keep their area equal to the original strip ones. Being located near the wing tips they were going to be more effective anyway. My original intention was to use strips of covering film as hinges, but this proved to be unsatisfactory, so I settled for cyano type hinges. The gap between the wing and aileron was sealed with a narrow strip of film to minimise air leaks.



Fuselage sheeting on its way. Strips of 2.5 mm (3/32") wood were used, glued with balsa cement to avoid issues with sanding.



Always apply sheeting in a symmetrical way, starting from the outside inwards to avoid a warped fuselage. In the final stages of sheeting, ensure that the top of the turtle deck fits well before gluing the last remaining strips. It is important to use sufficient formers to avoid the starved horse look. The number of formers depends on the thickness of the sheeting. Here they are spaced some 65 mm (2.1/2") apart.



The front half of the fuselage is basically a square box. It is clamped tightly to the workbench and multiple aluminium sections are temporarily attached to ensure it remains straight during initial sheeting. Once the glue has dried the fuselage becomes so stiff that it is nearly impossible for it to go banana shaped.



Find out how well the Mäxi+ flies in the second part of Dick's report in the next issue of RCM&E.

As is standard nowadays, each aileron is equipped with a separate servo. After considering the pros and cons of various servo installation options I decided to mount low profile servos in an upright position between two reinforced ribs, as can be seen in the photographs.

The first wing built was a straight enlargement of the original design, with the exception of the features described above. As building progressed it was decided to redesign the wing structure, adding two ribs and increasing the thickness of the planking from 1.5 mm to 2 mm. This made the panels much stiffer at a marginal weight penalty.



All flying images are courtesy of Hansjörg Baumann.

In some of the images the jig in which the wings were constructed can be seen. This was laser cut out of 3 mm poplar ply. On a design like this, where each small discrepancy will immediately affect flying performance, it really pays to use a building jig.

There are different schools of thought on the ideal thickness of the trailing edge. On a scale model, the aim is to keep it as thin as possible,

often sacrificing strength or adding weight in the process. On the other hand, many ARFs feature really thick, up to 6 mm (1/4") trailing edges, which does not seem to have much effect on flying behaviour. Adhering to the results of many experiments by noted designer Andy Lennon in the eighties and nineties, I settled for about 4 mm thickness, sanded to a semi-circular section.

As there was very little, if any room, for a wing locking mechanism within the fuselage, the wing joiner tube was secured at both its ends using a short M3 screw in each wing panel.

FUSELAGE CONSTRUCTION

The front fuselage frame which houses the electric motor, wing attachment, ESC and some of the radio equipment is made from 2 mm aircraft plywood. Certainly, 1.5 mm would suffice but plywood is expensive and I still had a 2 mm sheet available. All formers are made of 2 mm beech plywood (also known as Ceiba) which is lighter. 2 mm Poplar plywood would be an alternative, but this seems to be almost unobtainable. The firewall was constructed from two panels of 3 mm birch plywood. All stringers are 4 x 4 mm hard balsa.

To reduce weight even further towards the rear of the fuselage the fuselage sides from behind the canopy were made from 2 mm balsa. The underside of the fuselage is also sheeted with 2 mm balsa with its grain perpendicular to the direction of flight. Lightening holes were made where possible after the sheeting was complete. The turtle deck, and the removable front part, are both planked with strips of balsa, in this case 2.5 mm medium density to allow for some sanding.

NEXT TIME

In the next issue Dick concludes the build of his updated Mäxi+ and reports on its flying characteristics. ■



The Gulf-based colour scheme looks great but the logos were replaced with yellow patches after the model's initial flights to aid visibility.

Andy Gough's Frank Zaic 'Thermic 100' that's now been donated to me.
It's rather lovely, don't you think? (Andy Gough photo.)



OLD FOR NEW

Dave Goodenough adds a pair of second-hand models to his already expansive flying fleet

Words & Photos: **Dave Goodenough**

Okay, that sounds back-to-front, but ever more reliable radio control over the past few decades has resulted in many models surviving, where once they would have been re-kitted 'with extreme prejudice'. A great many of these models remain in flyable order, only being 'retired' through lack of space or builder/pilot boredom with the device. There's nothing to be ashamed of in acquiring an older model, especially if you have limited time to assemble or build aircraft, or even - perish the thought! - dislike the process.

As a reckless gatherer of various motley models, I was recently gifted a gorgeous old design that mate Andy Gough had collected as a dilapidated wreck and lovingly renovated. He no longer flies it and as it would no longer fit within his own crowded 'man cave', he asked if I would give it a home.

JASCO GEM

The Frank Zaic 'Thermic 100' was kitted back in the days when radio control was at best



Thermic as Andy was previously gifted it. The tissue was badly faded and rotted yet the underlying structure was sound. (Andy Gough photo.)



Thermic's fuselage is very distinctive.



I previously used the Lilienthal 40 as a 'How To' model. It's now been sold on to provide experience to would-be pilot Ian.

variable and pilots accepted the hit-and-miss control of old 'valve sets' as being normal, like the oft crunching arrivals and subsequent regular model rebuilding. Kitted by the Jasco company, this distinctive glider is now often downloaded from online plan sites by vintagists, keen to recreate this curious beauty. Andy's kind donation came with some

old, pre-renovation photos that showed the dreadful age-and-UV rotted state of the tissue covering when he acquired it. He had done a lovely job of bringing the model back from the brink, but his hard work of several years back was beginning to suffer. Once again ageing of the tissue was causing it to become brittle, and to split and curl. Much as I'm a traditionalist

modeller, I fell out of favour with tissue and dope open structures for that very reason; ageing tissue covering has a limited life when exposed to daylight.

The age of the 'Thermic 100' design places it back in the oiled silk covering days, easily recreated with a modern 'tex' covering. But that's a bit heavy for this relatively lightweight old bird. Modern films will impart a beautiful finish but for preference light tissue is still the correct 'look'. But how to achieve it without the inherent fragility of the covering? Let's look at a book...

LAMINATION

Well, not the book but its laminated cover. I recently watched a 'How To' video on YouTube that showed how to use Doculam film to cover open structures before doping tissue over the taughtened film. The process was shown as being simple, easy to follow, cheap and gave the double benefit of both a tough film covering with the traditional 'look' of tissue, minus the drawback of fragility. It's an obvious 'must do' for the Thermic 100. If you can comfortably cover your aircraft with ordinary model covering film and have used tissue and dope to give colour, reinforcement and weatherproofing to all-balsa structures like the Lilienthal 40, using Doculam and tissue is simply marrying the two.

Other stuff is in the bench queue at the moment, but I'll be onto this novel covering method soon. Once again, I'll document my trials and tribulations and air them here.

TIDDLER TRANSFER

Needing space and not having flown it for some time, I decided to sell the Lilienthal 40 I'd used in the 'One Man...' beginners' section to illustrate tissue covering of sheeted structures and motor conversion in small models, etc.

The flurry of questions and bids on eBay were quite a surprise and eventually Ian came to collect his prize. He'd not flown before and had wisely done a heap of research before deciding that the resilient '40' would suit his needs as a would-be pilot making the first steps into flat land/slope flying. He's promised to keep in touch and it'll be good to see how he progresses.



'The Bigger Ship' has its first test assembly. At six-foot wingspan it's quite a lump but not all that heavy.



'Big Red', my ancient Senior Telemaster, has gone to pastures new. But will its engine power 'The Bigger Ship'? We shall see.

No, I've not cast him adrift without help; he's able to contact me to offer advice on his first foray into pilothood. If all goes well, I'll add some catch-up notes here.

SHIPPING FORECAST

A short while before the late model maestro Peter Miller left us all for flying fields beyond the pearly gates, we'd discussed the 125% enlargement I'd proposed of his and Dick Schumacher's design 'The Big Ship'. With the bench in a rare 'clear of encumbrance' condition, I began the process of fretting seemingly acres of plywood and ordering the product of a small stand of balsa trees. It may be 'only' a 72" (1830 mm) span model, but the fuselage is some 60" (1520 mm) long and all sheeted. It's quite a lump in the making.

With all parts prepped, the initial build was quick and I needed to decide on a suitable motive device. I realised that if I used electric power I would be ostracised from society, polite or otherwise, so infernal confusion was the only other option. Thankfully, my perverse passion for older engines has blessed me with a random pile of suitable two and four stroke motors and it just remains to decide on which one to volunteer for the task ahead.

It may well be the big Webra .61 I recently rebuilt, but in the background and crying for attention is the Profi .75 that I refurbished and used for several years in the 96" (2400 mm) span Senior Telemaster 'Big Red' I used to teach tyros with. Both have lashings of grunt - torque, not horsepower - and may prove too powerful for a vintage model design.



Parachutist extraordinaire, Clarence 'Le Petomane' Thunderbutt, is daunted by the loss of his 'Big Red' ride and the possibility of swapping to 'The Bigger Ship'.

Perhaps the spare ASP .52 four stroke will be enough? I'll have a mither about it and will select something.

A PLANETAIL

'The Bigger Ship' has a large tailplane that is made detachable, simply because it gets in the way for transportation and is safer when detached. As with the wing, the unit is rubber

band secured in keeping with the original model design. But therein lies a hiccup that 'painted me into a corner'.

I wanted to fit a steerable tailwheel to keep this lump on the straight and narrow whilst taxiing, but there's nowhere sensible to put it on the fuselage whilst linking it mechanically to the rudder. The tailplane mounts under the rear fuselage where you'd normally clag the



The Bigger Ship tailplane shows the ply tailwheel mount inset and one of the rounded location 'keys'.



Under 'The Bigger Ship' tailplane showing the steerable tailwheel option. If the tailwheel turns in opposition to the rudder, I'll simply swap the pushrod from one servo arm to the other.



The recommended adhesive for attaching polyester dress lining is 'Mod Podge' but there will be other adhesives available.

skid or tailwheel. The solution I came up with this time round (there's always another way) was to inset ply plates into the tailplane, using the tailwheel unit's tiller arm to link to a small metal gear servo, yet remain demountable.

But what happens when the tailwheel hits a divot and skews the tailplane? Easy - don't let it!

A dim recollection from my youth and free flight models floated to the top, so I followed the thread... Also set into the tailplane's centre, I glued in two 'keys', protuberances that would locate with two recesses cut into the tailplane mount. The keys have a rounded top so that if a sideways/rotational force greater than a small knock occurs, the rounded key will ride up out of its recess, hopefully preventing too much damage. The fuselage recesses are hardened with a little soaked-in thin cyano to prevent wear.



Ripmax covering film worked well on my Nippon Tombo glider, especially around the fiddly bits like stretching around the cockpit rear 'hump'.



The test frame I made to check out polyester cloth as a covering material.

Yes, I could have secured the tailplane with a couple of nylon screws of around M5 size (3/16") but being more strongly held than the rubber bands it would have left the low mounted unit prone to greater torsional damage.

I'm not the first to use the 'key location' idea and certainly won't be the last. Sometimes the old free flight wheezes resonate with today's models.

BEGINNERS' BUNDLE

Model covering has become an expensive pastime of late. I used to use only Oracover

and Oratex when building models and flying in France. But since my return the prices have risen from grumble levels to full-on 'having a touch of the vapours' costs. I'm using up my old Ora stock and have been looking for decent alternatives, one of which is Diacov, a textured covering that's becoming popular due to its relatively reasonable price.

The Vintage Model Company 'Cinnabar' glider kit I recently built comes with two rolls of Kavan film, which I found to be very good, if a little reluctant to pull/stretch around curves. I tried Ripmax film on my Nippon



If you're going to do a test piece for new covering, document all the weights for later calculations.



'Tombo' scale glider and reckon it's a little more forgiving around curves and 3D stretching, but all commercial films are relatively pricy when covering a larger model, where on a single model the cost may differ by £20 or even more. A case in point is the previously mentioned 'Bigger Ship', where I would need four rolls of two-metre long film to give me a two-colour finish. Is there another way?

SUITS YOU, SIR!

Dressmaking. There, that got your attention!

I've read about and discussed with my ex-seamstress wife the possibility of using cheap and freely available polyester materials, in a range of colours greater than those advertised by model film suppliers. Others have covered

models with this material (YouTube has videos of it) and other than a specific glue to first adhere it to the model structure, they report that it goes on easily and shrinks well with care, plus it can be sealed with simple acrylic (water based) or polyurethane varnish to become fully fuel proof. The clincher is that if you shop around for the lightest grades of the material it has a weight from 40 to 80 g/m², so is similar to Oratex or Diacon.

The question is, am I brave enough to try it on a large, new airframe as a wholly untested method? My engineering background says no, so I'll try a test piece first to 'prove' the wheeze for myself. Whatever happens, whether I gird up my loins or 'lose my bottle', the result will land here for your edification or, more likely, amusement.

This leads to a knock-on...

Languishing up in the loft, I have a VQ models quarter-scale Fly Baby that suffered badly from UV degradation. The covering had become hardened and brittle, splitting at the merest hint of a bouncy landing. I miss flying it as despite its size it was a super model, proving the adage that 'bigger models fly better'. I didn't re-cover it because of the cost but if the polyester cloth test works it would be the perfect device to do a simple full covering checkout. We shall see...

OLD FAVOURITES

Channel coast mate Glyn has been performing a cull upon his extensive and eclectic collection of kits and IC engines (read: he's got no storage space left!) and he e-squirted a picture of one kit that stirred the memory pot.

The Balsa Cabin have been stalwarts of the model trade for many a year and still purvey their own designs for us to enjoy. But one had drifted into obscurity over the years, the Cliff Goater designed 'Overture', a parasol winged sweetie of some 56" (1420 mm) wingspan for .29 to .35 cu.in. IC engines.

The Mk.1 memory clattered a bit and spat out ancient 'mind images' of this decades-old design. I remembered it as being quite a nice model, a tad staid but 'workmanlike' and tough enough for not-quite-raw beginners to refine their flying skills upon and able to tolerate the vagaries of our local weather patterns. With my 'not another kit' glands enlivened, I pressed Glyn for a price. With a 'fair to both' value agreed, coin of the realm was duly transferred, and the kit wended its way up-country to my moorland bothy. I awaited with bated breath and trembling fingers.



I loved flying my old 1/4 scale VQ Fly Baby but the covering suffered from UV degradation and splitting on even relatively mild arrivals. Time for re-covering.



It may be old but it's in perfect order. The wood selection within the kit is superb.



My 'Overture' ready for the off. It's quite a workmanlike model, isn't it?

USEFUL LINKS

Thermic100 video clip: <https://www.youtube.com/watch?v=H26WvIcQTgw>
 Doculam/tissue covering: <https://www.youtube.com/watch?v=oSi81sbQQK4>

I shouldn't have worried. It arrived in the one piece originally sent and, when opened, proved to be just as well-prepared as all the other Balsa Cabin kits of yesteryear. I just need to add several hours more to each day and a spare extra day to the week, to catch up with all the stuff I've got going on!

As I write Autumn and cobwebs are decorating the garden, meaning that the 'building season' approacheth. With lots to be getting on with in the workshop, and with the drawing board needing some love and attention upstairs, my supposed 'relaxed golden years' will have to take a back seat!

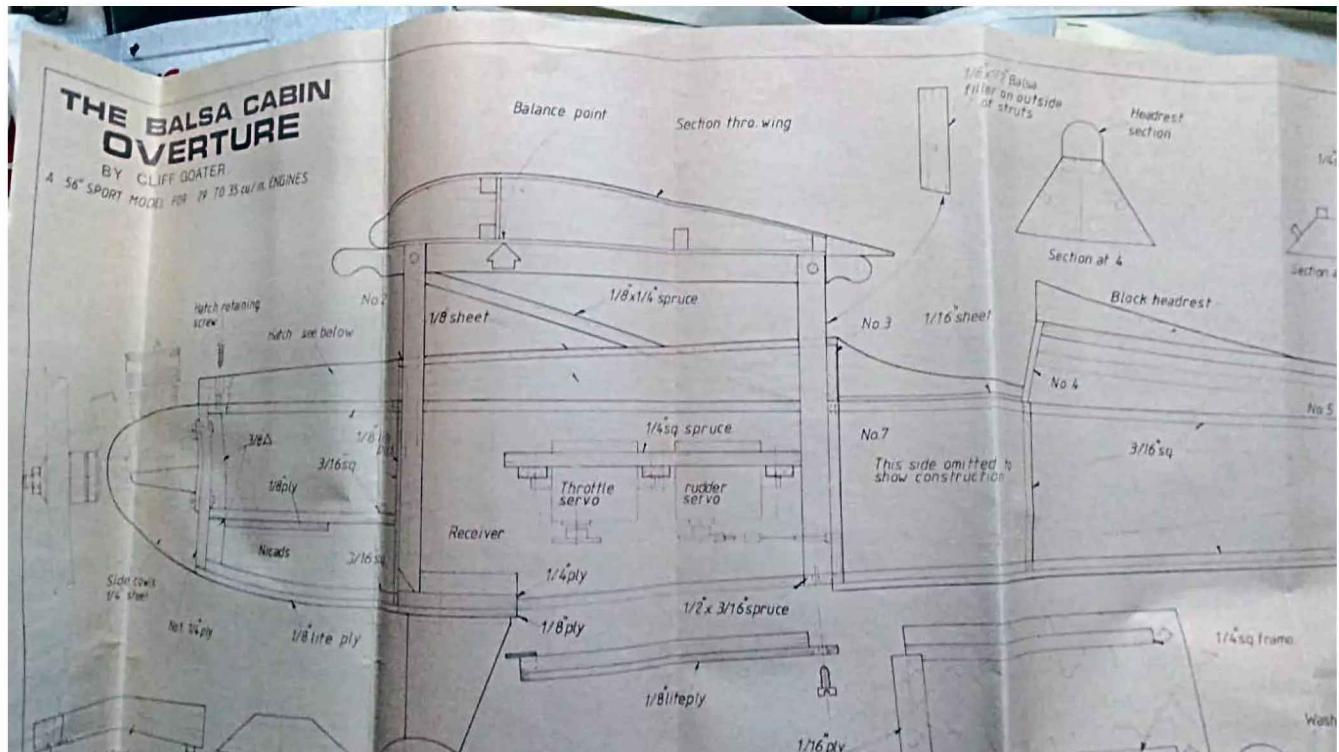
DECISIONS, DECISIONS

This epistle seems to have resulted in lots of questions needing near-future decisions, but such is life. So many times, you begin something with the best of intentions, plan for an outcome that seems initially obvious, then it all goes wonky and forces a rethink or complete change of direction. I won't dwell on it; it's better to do something than nothing as mentally sitting on your hands and pondering gets you nowhere.

Amelia Earhart, the famous 1930s long-distance pilot, had a phrase that covered the conundrum well, *"The most difficult thing is the decision to act, the rest is merely tenacity."*

She wasn't wrong.

Send me an email: coetquidan@yahoo.com



Now there's an oldie! The Balsa Cabin 'Overture' from decades ago, acquired from mate Glyn's collection. I'm going to enjoy this one.

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Night Vapor. An ideal choice for slow, relaxed flying in a small sports hall. See 'A Touch of the Vapors'.

NEW YEAR RESOLUTIONS

Kevin Crozier lays out his plans for the modelling year ahead

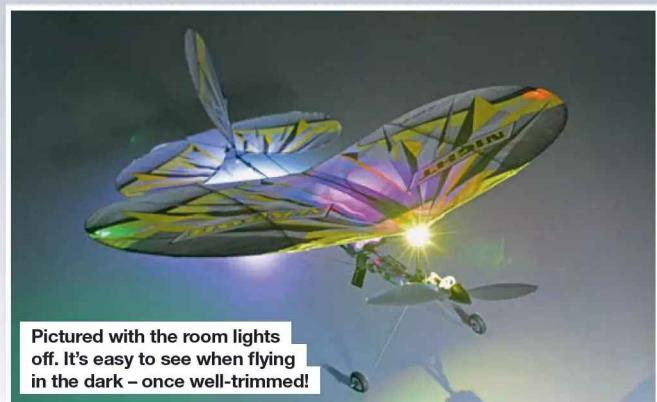
Words & Photos: **Kevin Crozier**

Despite the title of this month's article, I'm not usually a slave to making myself all sorts of promises come the first day of the New Year. It would be pointless as I'd only break most of them in pretty short order. But here's a short list of some of the things I'd like to do in the months ahead...

STORAGE WOES

A much-needed task is to tidy up my storage unit. Located in a nearby industrial estate, this is where I keep my models and some of the paraphernalia connected to RCM&E that I don't need access to quickly. It's also the place where I keep archive copies of the magazine.

It's only a small lock-up, say the size of a small box bedroom, but, boy, it's getting crowded in there, mostly caused by leaving models with their wings on. If you take the wings off aeroplanes for storage, then they can be stacked quite neatly. But stick in a few fully assembled models and the space soon disappears. I'm also a fusspot



Pictured with the room lights off. It's easy to see when flying in the dark – once well-trimmed!



An upright engine installation in a model such as Seagull's Swift trainer is ideal for getting one's hand back in when operating an IC engine for the first time after a long lay-off.



A collection of 'project' boxes heading for temporary storage. These ones had almost taken root in our hallway much to the annoyance of my long-suffering wife!

"I'm also a fusspot about making sure that tailplanes and control surfaces are not put under any strain"

about making sure that tailplanes and control surfaces are not put under any strain, i.e. in danger of being deformed if resting against anything, so that means spacing them out a bit.

To help my spring clean I've taken on a short term let of another small unit, hardly bigger than a large cupboard really, which

I've crammed with the boxes of models awaiting construction. Model boxes, even the smaller ones containing one-piece BNF micro models, take up a surprising amount of space. Anyway, this little room is almost full now too but at least I have cleared a small space in my main unit where I can put the wings and fuselages of the models that I intend to disassemble.

IN A BIND

I also need to bring the RCM&E archive to the front of the unit. I have placed the bound versions on two shelving racks, one on each side of the room. When I first laid things out the logical place for the shelving was at the back. But, of course, when things get busy in there with models then the archive copies become very difficult to get to. So those shelves need bringing forward so I can open the door and have the library of bound volumes of RCM&E at my fingertips.



Our Swift will be well powered by a new-in-box SC 46 two stroke glow engine.



SC.46 ready to go!



Coming soon! Our VQ Tiger Moth is almost ready for its maiden flight under electric power before re-equipping with a trusty four stroke. The model being tested is the alternative red version.



The rear mounted needle valve, shown next to the decent sized silencer, will ensure that our fingers stay well away from the SC engine's spinning prop!



Since my existing glow fuel is over ten years old (but still worked well a couple of years ago in an R/C truck!) I have invested in some fresh Pro Synth bottles to minimise any problems when I return to bench starting my IC engines.

PROJECT COMPLETION

As I have explained before, I classify models that come my way into two categories. First are the review models, which are supplied for testing free of charge by manufacturers and distributors. These have to take preference in the magazine so I try to process them as quickly as I can, aided by a small team of trusted, mostly local, modellers.

The second set are those that I class as my own 'project' models. These have been paid for and are models of my choosing. Hopefully, you will find them of interest too whenever I

write articles about them, but these have to be slotted in when work and family life allow. In this respect they are no different from all the models that many of you, dear readers, are trying to complete. Some of you, with the kind of modelling work ethic that I am amazed by, manage to finish models very quickly, whilst others, like me, take your time and get there in the end. So, one thing I would like to do in 2026 is to speed up my own model building (maybe even start a proper wooden build!) and find, hopefully, a middle ground between fast and slow model construction.

GO FOR GLOW

After seeing many of my clubmates enjoying a resurgence of use of old (and some new) glow engines, I have a hankering to join in the fun. With that in mind I have tasked a couple of flying buddies to build two review models both of which will be IC powered.

The Seagull Swift trainer will be hauled aloft by a brand-new SC 46 engine whilst the VQ Tiger Moth will begin its flying career under electric power but will then be converted to IC with a well-used four stroke engine. I hope that by getting stuck in and



Solid British engineering! Sold as a pair, this robust engine test stand comes complete with a folded sheet metal fuel tank mount. The large, black SLEC tank was also included.



Accessories include the tank fittings, mounting screws, an Allen key for tightening the crankcase lug clamp bolts and a Bowden cable style throttle linkage.

helping these guys start their engines it will ease that strange yearning that I have (and which I know is afflicting many of our readers too!) of wanting to fly a glow powered model once again after many years of relying on electric motors to pull our aircraft skyward. (Yes, I know that some of you have never been drawn to electric power, but I bet most have in some way or another.)

But the rose-tinted area of my glasses only goes so far and for my own use I'm planning to ease back into my glow adventures by setting up a dedicated engine test stand. I'm hoping that by doing this I can still get some satisfaction from bringing back a few of my model

“...when he replied I was sad to read that he was in the process of winding down his business”

engines to life whilst still enjoying the fuss free, oil free and largely dead-stick free flying that I've enjoyed in all the years since I have been flying electric models.

This will definitely be a summer project as I have no desire to try flicking a recalcitrant engine into life on a cold winter's day, let alone stand behind it trying to adjust the needle valve with fingers being numbed by an icy blast from a prop spinning just millimetres from my knuckles! Been there, done that, so my IC adventures can wait for a nice warm day.

DELUXE TEST STAND

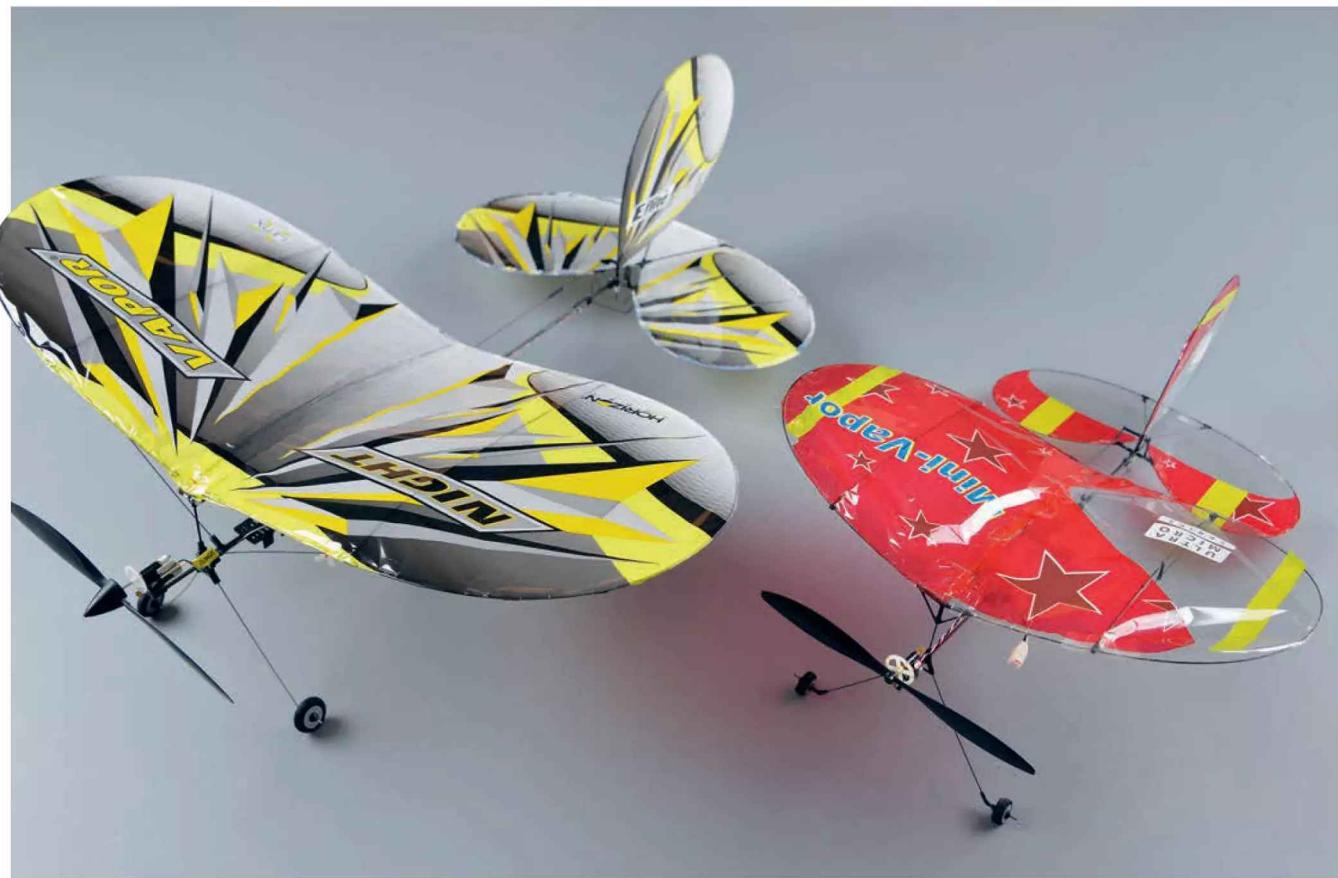
My engine test stand will be based on a 'middle aisle' fold-up workbench into which I can clamp a piece wood screwed to the underside of a square of laminated or varnished plywood. On top of the plywood will be mounted my new engine test stand and fuel tank mount.

I was very close to buying one of those Chinese-made, red anodised engine test stands that are so widely available. I always prefer to buy from a UK supplier if I can, even if the product is made overseas. But all the engine test stands that I could see were only available direct from the Far East.

However, my search then revealed a very nice-looking model engine test stand of Great British origin. It was of bare metal finish but was none the worse for that and came with a folded metal fuel tank mount, complete with a large 'black' SLEC fuel tank secured by a thick rubber band.

Yes, the price was a bit higher than the Chinese stands, but they didn't come with a fuel tank and mount. The UK version also came with a ready-made Bowden cable style throttle linkage, with a plastic throttle arm clevis mounted on one end and a simple red pull-knob at the other, allowing the throttle to be adjusted at a safe distance from the prop. What was not to like! So, my order was placed and after just a few days a neatly packed brown box arrived at my front door.

The contents were just as described and of very high quality too. I was so pleased that I contacted the seller to tell him that I would be giving his stand a favourable mention in RCM&E, to prepare him for a possible increase in orders. But when he replied I was sad to read that he was in the process of winding down his business, citing difficulty in accessing European and US markets, plus the costs of selling online and increased postage, all of which had taken a toll on his sales. A great pity. 



Night Vapor alongside my ageing Mini Vapor. The bigger model can carry larger 1S batteries, which are relatively easy to obtain, whilst the tiddler flies best on small 70 mAh cells which seem a rarity these days. Mine are well past their best!

His pictures of the stand and tank mount show them mounted on a square of thick plywood with a laminated top surface. I'll be copying this idea as it will provide an easy to wipe down surface from which to clean up the inevitable drips of fuel and exhaust oil that will accumulate when an engine is run.

A TOUCH OF THE VAPORS

I started this article with a picture of an E-Flite Night Vapor. One of the things I am excited about for 2026 is that we have reestablished a fresh working relationship with Logic RC. This long-established model distributor sells many products of interest to aeromodellers, not least a wide range of Belair construction kits. But they are probably best known as the UK distributor of Horizon Hobby products from the USA. So not only do we welcome Logic RC back as highly valued advertisers, but they have also resumed providing Horizon kits and other products for us to review too.

You will probably have already read the review of the E-Flite Micro Scrappy earlier in this issue and other reviews in the pipeline include the impressive NX8 radio system from Spektrum which we hope to bring to you shortly.

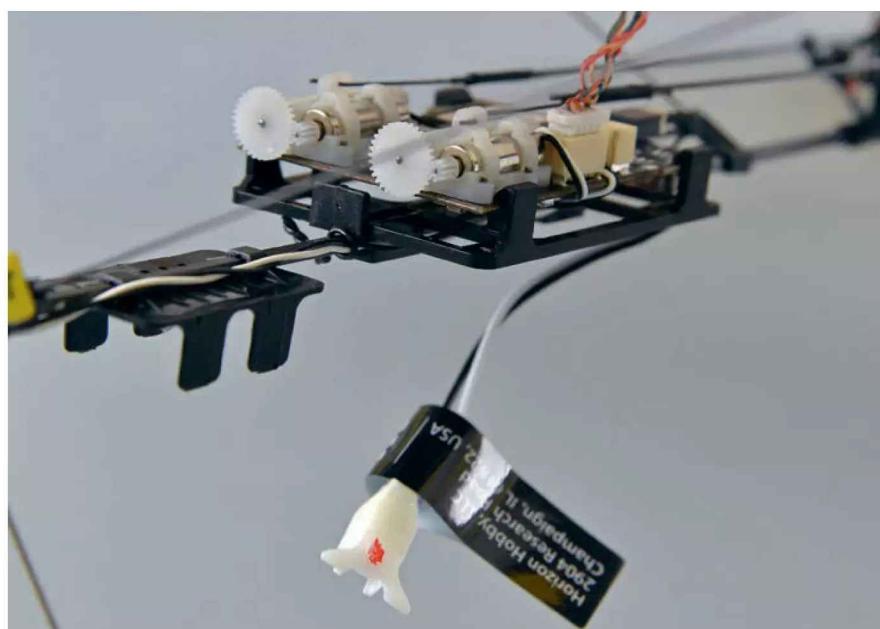
However, the Night Vapor is not a review item and was purchased from Logic RC to begin a much-needed revamp of my indoor model fleet. Just a few years ago the supply of RTF (Ready To Fly) models for indoor use was quite



Night Vapor comes with this simple 'gamer' style transmitter. It is more than adequate to operate the slow flying model.



Night Vapor is supplied with a 150 mAh one-cell LiPo and matching USB charger.



At the heart of the Night Vapor is a combined dual linear servo and 2.4 GHz receiver board.



One pack is never enough so I ordered another 1S LiPo. Unfortunately, the LiPo supplied with the aeroplane was out of stock, so Logic RC sent this slightly larger 210 mAh battery instead. Thankfully the Night Vapor takes carrying the slightly larger battery in its stride.

comprehensive but more recently the availability of such models has dwindled. As a time poor modeller, I am currently unable to spend the time needed to build a nice indoor model from scratch, either from a plan or from one of the very nice wooden kits that are currently available from the likes of the VMC or Microaces etc. So, RTF models are a godsend to me at the current time. But where to find one at short notice?

With Logic RC back in the magazine the answer was obvious and a quick look at their website showed the Night Vapor as an ideal solution to my immediate needs. This model, and others of its ilk, have been widely reported on in the past, especially by our indoor model flying correspondent John Stennard, so I won't bore you with any in-depth details about the butterfly style aircraft and will let the captions attached to the nearby pictures tell the story of what you will find inside the model's handy carry case.

As the owner of a very well-used Mini Vapor, I had a good idea of what flying the Night Vapor would be like and I was looking forward to floating her around inside the local 4-court hall in a similar fashion. She took off nice and slowly as expected but needed a bit of trimming so I busied myself pressing the appropriate trim buttons on the small transmitter that came with the aeroplane. Those small buttons seem to take a lot longer to take effect than a traditional trim switch and I was still busy making them beep as the model slowly made its first 'downwind' leg of the hall. Unbeknown to me one of my flying chums had craftily sidled up to the hall's light switch bank and suddenly we were all plunged into darkness! Fortunately, the Night Vapor is such a gentle beast to fly that even whilst still a bit out of trim I was able to guide her gingerly around in the gloom, only partially lit by the hall's exit lights, until a short while later the lights came back on. Thanks, JF – I'll get you back somehow...

A few more tweaks to the trims soon had her fully trimmed and circling gently, just as I had intended. It was a lovely end to another fun and banter filled Friday night. ■

Top letter

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



FOLDING STAND

I attach photos of a very cheap and simple stand that I use constantly as a work piece support for building and fettling various models. It consists of a folding music (keyboard) stand, which is available in several forms cheaply and easily online. To this I have added quarter inch ply plates cut to have square and rounded openings which

accommodate varying shapes and sizes of model. Some pipe insulation softens the edges against which the fuselage lies. The ply plates are fixed by drilling and bolting to the frames. As the stands are adjustable in height by design this makes work in a standing or sitting position easy.

You will notice they are well worn, arising

from constant use in the shed and the field over the course of a couple of years. If used on the flying field in windy conditions a couple of tent pegs or U-bolts hammered into the ground over the foot bars avoid any risk of it blowing over.

Edward Routledge



FLYING GOES ACE



Barry Atkinson

As a died-in-the-wool fixed wing R/C pilot, after reading the extensive write up of the Flywing Bell 206 GPS helicopter in the September and October editions of RCM&E, I was moved to dig deep into my modelling budget and ordered one from Flywing. It sounded a far cry from the Micro Mold Lark, which was my only previous attempt at heli flying, back in the 1980s, which I never got close to mastering.

The 206 has more than fulfilled my expectations and I'm really enjoying flying it! The review mentioned a couple of issues with the 206 which the reviewer didn't like - the rather automaton-like way that it flew when in GPS mode, with unrealistic flat turns,

and the fact that when switching to 3D mode for flying manually the heli tended to drop suddenly. To counteract this, it had to be flown around with constant 'up' on the collective as the self-centring collective stick is zeroed for zero blade incidence.

The good news is that my 206 came with the latest ACE controller which comes with an Attitude mode replacing the 3D mode, in which the heli keeps height automatically with the collective centred and, unlike in 3D mode, the gyros actively stabilise it about all three axes. Attitude mode provides balanced, banked turns in a most realistic fashion. Attitude mode is also a much safer bet than 3D

as a means of recovering control of the model if the GPS signal is lost. The 'Return To Home' switch position remains as a last resort!

The ACE set-up does away with the gimmicky switchable automatic circle and figure of eight flight paths and instead uses the three-position switch to select three levels of sensitivity from 'Beginner' to 'Expert'. For those wishing to fly it like a normal flybarless heli it's still possible by changing a setting.

Either the guys at Flywing have taken RCM&E's comments to heart or 'Great minds think alike'. Well done, Flywing!

Francis Donaldson

ANTEATER ACCURACY



Mike Freeman

It was with great pleasure that I read about the 'Alpine Anteater' C-3605 model from my home country. However, allow me to point out a slight inaccuracy.

F+W does not in fact stand for Farner Werke. That company, located in Grenchen, did a lot

of overhaul and maintenance works for the Swiss Air Force but did not build the C-3605. F+W stands for the Eidgenössisches Flugzeug Werk or Swiss Federal Aircraft Works located in Emmen, the plus sign symbolising the cross of the Swiss flag. This government owned factory

did a lot of building for the Swiss Air Force (and spacecraft building like the Ariane payload cover), starting in the 1920 and continuing right up to the final assembly of the ordered F-35s.

Lorenz Müller

MOTH MEMORIES

I was delighted to see in December's magazine Danny Fenton's model of Tiger Moth G-ANSM.

In the mid 1960s the real aircraft was based at Exeter airport and, I believe, may have been used at Dunkeswell for glider towing. It was then painted red and blue. We lived nearby and I used to cycle over to the airport to take photos of it. Nobody worried about a lad

wandering around the hangars. I then scratch built a 42" free flight model of it.

I always wondered where the aircraft was and whether it still existed. In 2007, I eventually tracked it down at Sibson near Peterborough. I rang them up and arranged for a flight!

Denis Welchman

MY BUCKET LIST

I've been reading RCM&E magazine for over fifty years and I have to say your 'My Bucket List' struck a real chord with me, being honest, relatable and written by someone who clearly understands what keeps us hooked on this hobby. The mix of nostalgia, practical insight and quiet humour made it a

genuine pleasure to read from start to finish.

My thanks to you, Kevin, for such a fine piece and to your team for continuing to produce a magazine that still feels worth sitting down with.

Please do an article on the electric Chief.

Jeff Robb

If you are planning an aeromodelling event over the next few months, then please send details - up to 100 words maximum - to Beth Ashby at: beth.ashby-njiiri@kelsey.co.uk

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

FEBRUARY

Feb 7

Chobham Common Model Flying Association Swapmeet at Tringham Hall, Benner Lane, West End, Woking, Surrey, GU24 9JP. What3words: ruler.pipe.cake. Hall open for sellers at 08:15 am. Hall open for buyers at 08:45 am. Table(s) must be booked in advance. Table(s) £7 each, includes 1 entry. Buyers £3 per person. Please contact Jordan Smith for table bookings: ccmfswapmeet@hotmail.com

Feb 22

Sale Model Flying Club Swapmeet at Merseyside Valley Sports Club, Banky Lane, Sale, M33 5SL. From 12 noon to 3 pm. Doors open to stall holders at 11.30 am. 10 round tables, 5 trestle tables. Entry £3.00 pp or Table £10.00 including entry. To book a table contact Brian Dorricott at secsalemf@gmail.com

Feb 22

White Sheet Radio Flying Club F3F. For more information visit <https://whitesheet.bmfa.club/>

MARCH

March 7

Wrexham RC Model Swap Meet at Gresford Trust Memorial Hall, Off High Street, Gresford, LL12 8PS. What3words: stubborn.scripted.nothing. All types of flying models, engines, R/C equipment, building materials and associated model flying paraphernalia. There will be 25 plus large tables at a cost of £6.00 each. Entry for stall holder from 9:00 am. Entry for buyers

strictly from 10:00 am. Admission £3.00. Tea/coffee and biscuits will be available. For info/booking contact Malc on 07886 288371 or email malcolm@bmfa.club

March 8

White Sheet Radio Flying Club Open Slopes. For more information visit <https://whitesheet.bmfa.club/>

March 15

White Sheet Radio Flying Club Scale Event. Back up date 29th March. Weather call will be the Friday before. For more information visit <https://whitesheet.bmfa.club/>

March 22

White Sheet Radio Flying Club F3F. For more information visit <https://whitesheet.bmfa.club/>

March 22

Southern Counties Spring Swapmeet at Mountbatten School, Romsey, Hampshire, SO51 5SY. One of the largest swapmeets in Southern England with over 50 tables. Sellers with a booking admitted from 8:00am. Buyers from 8:30am onwards. Noon finish. Admission only £4, under 16s free. First table costs £10 (including one admission), additional tables cost £6 each. Refreshments will be available. More details at hmfa.bmfa.org/. To pre-book tables only call Mike Stokes on 07702 742647.

APRIL

April 3

Watton Radio Model Club Bring & Buy. Good Friday at Hingham Social Club Watton Rd, Hingham, NR9 4HB. Sellers from 5.30pm. £6 per table to include 1-person additional

helpers £1. Doors open 6 pm, entry £1, under 16s free. To book tables please contact, Martin Pawsey 01953 883892 or email martin.pawsey@btinternet.com

April 3

White Sheet Radio Flying Club Scale Event. Back up date 26th April. Weather call will be the Friday before. For more information visit <https://whitesheet.bmfa.club/>

April 11 - 12

The Great Cornish Model Show at Pool Academy, Church Road, Pool, TR15 3PZ. A celebration of modelmaking talent in Cornwall featuring working model train layouts, model aircraft (radio-controlled and miniature), model boats and ships, radio-controlled trucks and cars, military modelling, model engineers, miniature figure painting, paper modelling, plastic kit modelling, Lego models, wargamers, miniature room sets and dolls houses, modelling demonstrations. Full trade support. Sat 10.00 am - 5.00 pm, Sun 10.00 am - 4.00 pm. Adults £9.00, U-16s £6.00, Family £18.00, U-5s free. Free parking, easy access, hot food and refreshments all day.

April 18

CADMAC Swapmeet at Stannington Village Hall, Stannington, Northumberland, NE61 6EL. Aeromodelling items only. Sellers fee £7 per table plus the entrance fee, all tables are provided. Admission £2, ladies and under 16s free. Sellers set up at 12:00 pm. Buyers enter at 12:30 pm. Doors close at 3:00 pm. All proceeds go to Northumbrian Air Ambulance. Please contact Bob Brown on rwbrown17@gmail.com or 07515 682543 to book a table.



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Next issue

RAFFE2b

March issue's pull-out Pro-Plan is a bit of a treat and something a little bit different. As promised in Mats Johansson introductory article about building his amazing lightweight scale model for Indoor Open Scale events (see page 18 of this issue) we will be publishing a copy of his detailed plans so that you too can build your very own WWI pusher biplane. Although designed for flying indoors in large sports halls the FE2b can also be flown outdoors in calm conditions as Mats relates when testing it for the first time, *"I test flew the model outdoors in the middle of the Swedish winter, when we had a snowless December, in completely calm but cold weather at minus 7 degrees C! The take-off took place on a plastic roll laid out on the frozen but slightly long grass at my small airfield. My first impressions? It is absolutely the slowest scale model I have ever flown! I was surprised by how nice this model is."*



FLOATING ON AIR

Mike Freeman, our ace show reporter, always checks the Weston Park Model Show's Facebook pages before the event to see what treats are in store and one post in the 2025 build-up caught his eye. The Model Hovercraft Association (MHA) was inviting visitors to pop over to the pond situated between the food

outlets and the fairground to see their model hovercraft in action. Like many aeromodellers, Mike has long been interested in hovercraft and he even built a few in his youth, so he made sure to nip over for a peek. He was really glad he did, capturing several of these low-flying (ahem...) craft in action.

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Subscription: Full subscription rates (but see page 74 for offer): (12 months 12 issues, inc post and packing) - UK £76.20. Export rates are also available - see page 74 for more details. UK subscriptions are zero-rated for the purposes of Value Added Tax.

Customer services:
Tel: 01507 529529

Lines are open:
Monday-Friday 8.30am-5pm

Distribution: Frontline Distribution Solutions,
2 East Poultry Avenue, London, EC1A 9PT

Subscription agents:
RCM&E, Media Centre, Morton Way,
Horn castle, Lincolnshire LN9 6JR

Printed: Acorn Web Offset Ltd, Loscoe Close,
Normanton Industrial Estate, West
Yorkshire, WF6 1TV

Published date: RCM&E is published on the
third Friday of every month

Next issue: 20th February 2026

Advertising deadline: 2nd February 2026

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RCM&E ISSN 0269-8307 (USPS 25434) is published monthly by Kelsey Media Group Ltd, The Granary, Downs Court, Yalding Hill, Yalding, Maidstone, Kent. ME18 6AL

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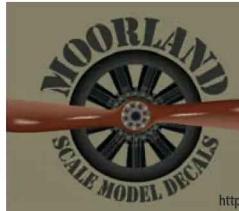
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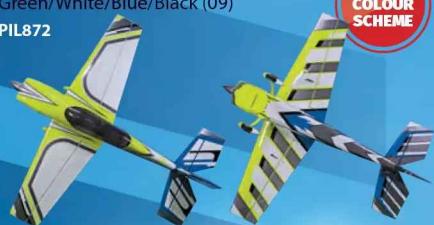
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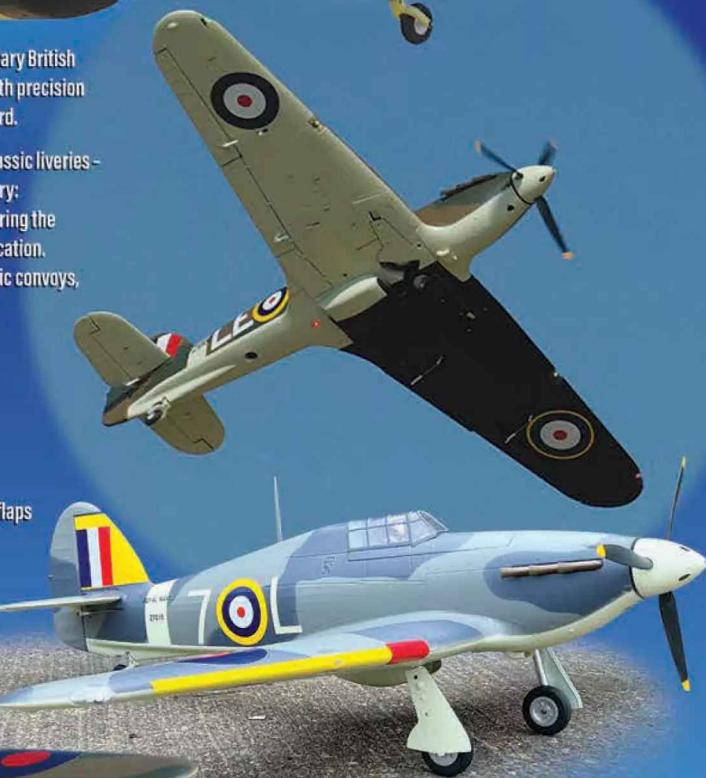
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