

FREE PRO-PLAN! TOP QUARK - WARREN WINGER

VOL. 67 NO. 6 JUNE 2024

www.modelflying.co.uk



RCME

RADIO CONTROL MODELS AND ELECTRONICS

DHC-6 TWIN OTTER

FOCUS ON XFLY-MODEL'S 1.8M TWIN



BUILT WITH FLAIR

THE FLAIR PRODUCTS
STORY CONTINUES



LET IT GO
TEST FLYING A NEW MODEL



PLUS || GT V6 - COMPACT DC CHARGER ON TEST || ANTARES AIRBORNE - A CLASSIC AEROBAT TAKES OFF



Another great brand from J Perkins

Avanti 50mm EDF PNP Sport Jet with Vector Stabilisation

Arrows Avanti 3S PNP Jet
640mm span with Vector stabilisation
£179.99 SRP



SLICK SHIP

R/C pilots are forever telling us that their Arrows 50mm jets quickly become frequent flyers and when you consider the practicality and performance, it's not difficult to see why. The new Avanti is a prime example. Little can beat the locked-in, arrow-like flying characteristics of this striking sport jet, indeed with Arrows' turbine-like 50mm 11-blade fan and 2627 4500KV brushless motor combo, this 3S-fuelled slick ship will appeal to all who seek smooth, torque-free aerobatics, benign handling and 'go where you put it' positioning. That, coupled with portability and a modest price, is why you'll end up flying your Avanti more than any other model in your fleet, and if that's not value for money, we don't know what is.



**Hawk 50mm 3S EDF
Jet (PNP)**
660mm span with
Vector stabilisation
£174.99 SRP



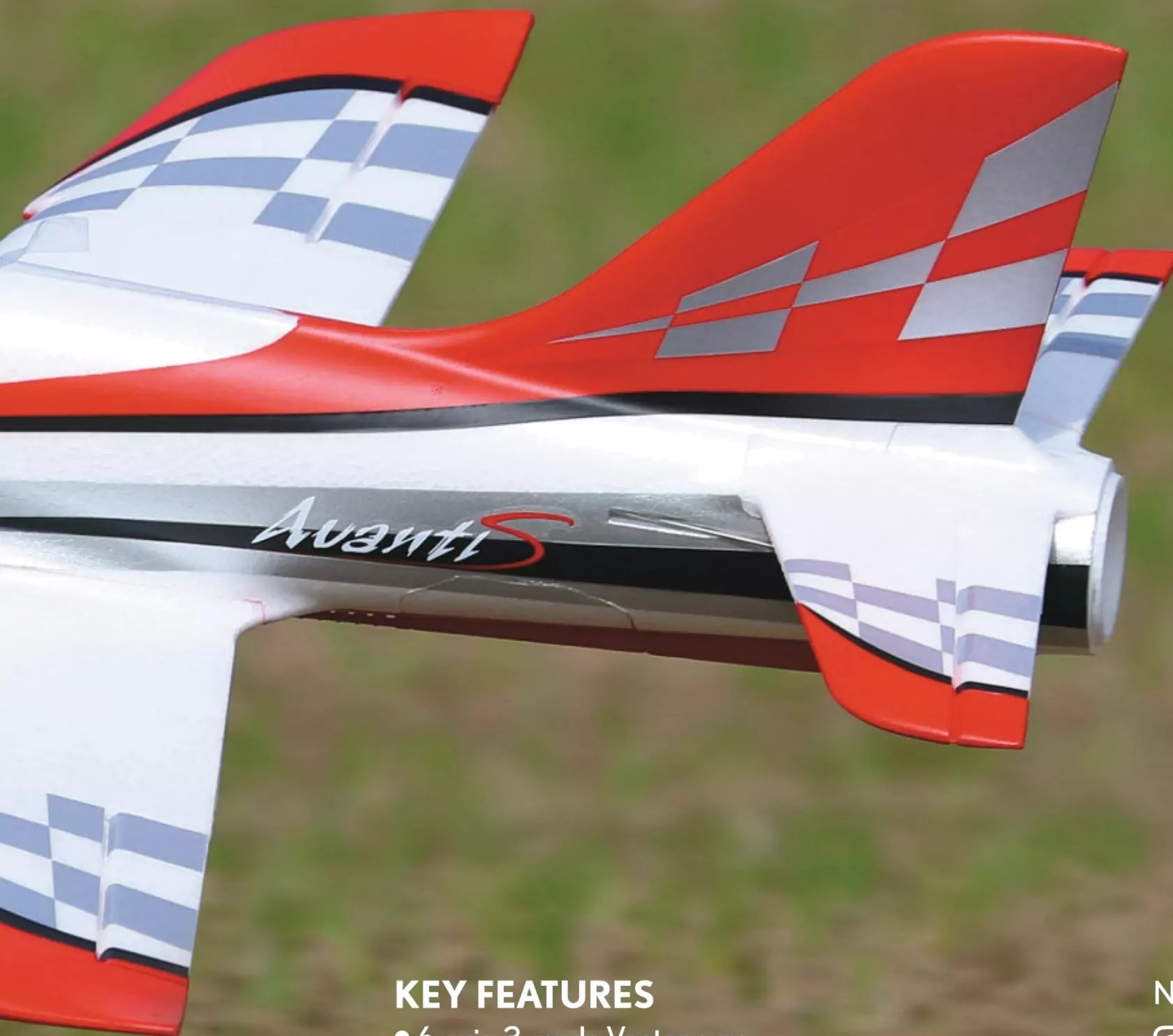
**Viper 50mm 3S EDF
Jet (PNP)**
770mm span with
Vector stabilisation
£169.99 SRP



**T-33 50mm 3S EDF
Jet (PNP)**
800mm span with
Vector stabilisation
£174.99 SRP



**L-39 50mm 3S EDF
Jet (PNP)**
660mm span with
Vector stabilisation
£174.99 SRP



KEY FEATURES

- 6-axis, 3-mode Vector gyro
- Impressive power-to-weight ratio
- Smooth 50mm 11-blade fan
- Powerful 4500KV brushless motor
- Outstanding 8-minute flight time
- Retract-free fly-anywhere simplicity
- Full spares availability

News, tips, videos & more

 /WeAreJPerkins

 /WeAreJPerkins

There's more to explore at
your local model shop

JPerkins.com/local



Find more great brands
at JPerkins.com

Welcome

It's been a long wait but at long last it looks like our run of terrible weather is starting to be replaced by drier conditions (that's jinxed it!) and I've finally managed to get a few flying sessions in, albeit mostly with hand launch models to avoid the need to take off from still soaking wet grass flying strips. It has been a real tonic for me as having to wait too long between flying sessions leaves me like feeling more than a bit grumpy.

I hope that you've been able to get out and make some use of the better weather. But if it all turns sour again what better way to spend few hours than reading a favourite magazine. Hopefully you have RCM&E to hand for such occasions, so let's see what we have in store for you in this issue, starting with our regular columnists.

Tim Hooper (Bench Blog) kicks thing off by test flying a new version of the RM Antares, his all-time favourite model design. If model building can be classified as an addiction, then Chris Williams (Scale Gliding) must have it bad (or good, depending on your point of view!) as this month he finishes off another scale glider, a fifth scale Pirat, which Chris sees safely into the air before immediately returning to his building board for his next project. You can't keep this traditional aeromodeller away from building for long! Next is Keith Jackson (Aerobatic Scene) whose column includes details of the UK leg of the FAI world cup league, the latest approach to contra drive propulsion, the long-awaited YS TZ240 CDi boxer engine and a summary of the new BJ Craft Anthem Elliptical. Finally, Dave Goodenough (One Man & His Shed) looks at some great looking scale models made from Depron. Love it or hate it, Depron has proven to be a versatile modelling material and Dave's article shows what can be done with it in expert hands.

On review, yours truly lines up XFly-Model's 1800 mm Twin Otter on the taxiway ready for when the sun shines and the local flying strip dries up, while Andrew James checks out the GT Power V6, a small DC battery charger that he stores in his car boot's side pocket so that it is on hand for him to charge his LiPos when out flying.



Our feature articles start with a third trip down memory lane escorted by Dudley Pattison for part three of his autobiographical series, A Company Called Flair, on his stewardship of Flair Products. This time Dudley recalls racing Club 20 Daras, having a mix up with UHF radios and dancing about with a Magnattila on ice. After describing his pre- maiden checks last month in Test Flying, Jeff Barringer offers up a follow up check list to run through during that nerve jangling first flight. We then conclude another two-part article, Striking The Right Balance, as Dick van Mourik finishes his feature on calculating a model's balance point. To wrap thing up nicely, heli and scale enthusiasts will be pleased to read how Peter Reinerth tackled a 600-size scale build of an Agusta A109A air ambulance.

But what about this month's pull-out Pro-Plan? Never fear, we have a cracker for you this month in the form of John Hutson's unorthodox sport electric model fitted with a diamond shaped Warren wing. John's eye-catching model is called the Top Quark.

I hope you enjoy reading it all.

Happy Flying!

Kevin Crozier

Editor: Kevin Crozier

Mortons Media Group, Media Centre,
Morton Way, Horncastle, Lincs LN9 6JR
kcrozier@mortons.co.uk

NEVER MISS AN ISSUE

Subscribe to get our best offer



Pre-order your next issue –
delivered direct to your door

www.classicmagazines.co.uk/issue/RCM

SUBSCRIBE



Save over £2.00 per issue –
delivered direct to your door

www.classicmagazines.co.uk/subscription/RCM

DIGITAL



Get your digital edition for just £3.99 per issue

www.classicmagazines.co.uk/subscription/RCM

PRINT AND DIGITAL

The whole package – just £5.50 per issue for a
printed and digital version

www.classicmagazines.co.uk/subscription/RCM

www.TonyNijhuisDesigns.co.uk

Phone Orders- 07563 518159

What's NEW

23" F-16 Mini Jets for 50mm EDF.
See web site for further details

Complete Pack- Plan, CNC Pack/Wood Pack and Vac Set	£89.00
---	--------

Our 50-70mm EDF Mini Jet Range



26" Span Sabre



25" & 36" Hunter



23" Span Phantom



28" & 37" Provost



26" Span MiG 15



25" & 33" Gnat



25" Span Hawk



23" Span Lightning



20" Span TSR-2



25" Span Cougar



32" Span Vampire



27" Span Panther

Complete Pack -Plans, CNC/Wood Pack and Vac set Starting at £89.00 Each

Our EDF /Turbine Range



42" Span BAE Hawk 70mm EDF

Plans	£25.00
VAC Set	£44.00
CNC Pack	£62.00
Wood Pack	£59.00
Complete Pack	£184.00



50" Span BAE Hawk 90mm EDF

Plans	£40.00
VAC Set	£55.00
CNC Pack	£78.00
Wood Pack	£80.00
Complete Pack	£243.00



78" Span Vulcan 2x90mm EDF

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



32" Concorde 4 x 50mm EDF

Plans	£35.00
VAC Set	£17.00
CNC Pack	£75.00
Wood Pack	£72.00
Complete Pack	£184.00



98" Span Turbine Vulcan (80-120 size)

Plans	£69.00
VAC Set	£95.00
CNC Pack	£172.00
Wood Pack	£311.00
Complete Pack	£627.00



49" Span Vulcan 50mm EDF/pusher

Plans	£25.00
VAC Set	£28.00
CNC Pack	£83.00
Wood Pack	£91.00
Complete Pack	£217.00



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



42" Span A10 twin 50mm EDF

Plans	£20.00
VAC Set	£25.00
CNC Pack	£65.00
Wood Pack	£55.00
Complete Pack	£160.00



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



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



67" A6M2 Zero Electric or 0.75 IC

Plans	£35.00
VAC Set	£45.00
CNC Pack	£72.00
Wood Pack	£94.00
Complete Pack	£236.00



62" Span Hurricane Electric or 0.65 IC

Plans	£25.00
VAC Set	£16.00
CNC Pack	£80.00
Wood Pack	£140.00
Complete Pack	£251.00



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



62" Span Typhoon Electric or 0.65 IC

Plans	£25.00
VAC Set	£41.00
CNC Pack	£80.00
Wood Pack	£135.00
Complete Pack	£271.00



66" Span Lysander 0.52 IC or Electric

Plans	£25.00
VAC Set	£70.00
CNC Pack	£86.00
Wood Pack	£69.00
Complete Pack	£240.00



66" Span Harvard 0.65 IC or Electric

Plans	£25.00
VAC Set	£40.00
CNC Pack	£81.00
Wood Pack	£103.00
Complete Pack	£239.00



63" Span MK9 Spitfire 0.65 IC or Electric

Plans	£25.00
VAC Set	£16.00
CNC Pack	£96.00
Wood Pack	£98.00
Complete Pack	£228.00



72" Span Mosquito 2xElectric

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



72" Span Dakota 2x 600w Electric

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



72" Span Lancaster 4x 200w Electric

Plans	£25.00
VAC Set	£35.00
CNC Pack	£80.00
Wood Pack	£125.00
Complete Pack	£255.00



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



103" Span Hurricane 62cc Petrol

Plans	£60.00
VAC Set	£90.00
CNC Pack	£173.00
Wood Pack	£296.00
Complete Pack	£609.00



72" Span Sunderland 4x 200w Electric

Plans	£30.00
VAC Set	£32.00
CNC Pack	£85.00
Wood Pack	£160.00
Complete Pack	£297.00



72" Span B-17 4x 200w Electric

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



134" Span Lancaster Electric or 4x0.52IC

Plans	£70.00
VAC Set	£85.00
CNC Pack	£162.00
Wood Pack	£349.00
Complete Pack	£646.00



Check our Web Site for a selective range of Pilots, Decals and Retracts



Building your very own model from plan is one of the most satisfying achievement any modeller can experience..... so go on, give it a try and don't miss out on this wonderfully therapeutic side to this great hobby...Tony Nijhuis

For more information on all our products, including free downloads of build articles and construction photos, please visit our web site- www.tonymijhuisdesigns.co.uk

Tony Nijhuis Designs Ltd
47 Baldslow Down, St Leonards, TN37 7NJ



18



48



34



64

On the cover

Photo: Kevin Crozier

Biding his time for half decent weather, the editor steps out between the showers with XFly-Model's latest scale twin, a neatly moulded example of the de Havilland Canada DHC-6 Twin Otter. At the time it was still too wet underfoot to fly but he could at least write up the assembly part of his review.



Contents

RCM&E

Volume 67 | Issue 06

Regulars

- 8 SWITCH ON**
Our latest round up of model flying news.
- 44 PILOTS' PICTORIAL**
Send us a picture of a new or favourite model and it could appear in our regular readers' models gallery
- 46 COUNTERPOINT**
A selection of new gadgets, kits and bits for you to buy
- 60 ALL WRITE**
Have your say in RCM&E's monthly chat room
- 92 GOING PLACES**
Our updated list of model shows, events and competitions for you to visit over the next few months
- 94 MARKETPLACE**
Sell off your unwanted airframes and engines or maybe buy a few new ones
- 95 NEXT ISSUE**
Take a look at what's coming in the July '24 issue of RCM&E
- 98 PARTING SHOT**
Derek Robertson rattles off a nice bomb run sequence to show off Mike Perie's Grand Slam modified Avro Lancaster

Reviews

- 22 DHC-6 TWIN OTTER**
Kevin Crozier lines up XFly-Model's 1800 mm Twin Otter on the taxiway ready for when the sun shines

80 G.T. POWER V6

Andrew James checks out a small DC battery charger that he stores in his car boot's side pocket

Features

- 30 A COMPANY CALLED FLAIR**
Join Dudley Pattison for part three of his autobiographical series on his stewardship of Flair Products
- 34 TEST FLYING - PART 2**
After describing his pre-maiden routine last month, Jeff Barringer offers up more checks to run through during that nerve jangling first flight
- 40 STRIKING THE RIGHT BALANCE - PART 2**
Dick van Mourik finishes his two-part feature on calculating a model's balance point
- 64 AGUSTA A109A**
Peter Reinerth tackles a 600-size scale build of an Agusta A109A air ambulance
- 72 SUBSCRIBE...**
... and receive Luftwaffe Fighters & Supermarine Secret Projects FREE!

Columns

- 10 BENCH BLOG**
Tim Hooper test flies a new version of Antares, his all-time favourite model design
- 18 SCALE GLIDING**
Chris Williams finishes off another scale glider. This time his fifth scale Pirat sees air under its wings for the first time
- 74 AEROBATICS SCENE**
Topics in Keith Jackson's aerobatic column include the latest approach to contra drive propulsion and the long-awaited YS Boxer engine
- 86 ONE MAN & HIS SHED**
Love it or hate it, Depron has proven to be a versatile modelling material. Dave Goodenough shows what can be done with it in expert hands

Free Pro-Plan

- 48 TOP QUARK**
John Hutson introduces his unorthodox sport electric model fitted with a Warren wing



SUBSCRIBE...

... and receive Luftwaffe Fighters & Supermarine Secret Projects FREE! See page 72 for details



FOKA ON FILM

We recently received a link from Chris Williams showing a video of his SZD Foka 4 in action. For the full story about this sleek Polish glider please read Chris' Pro-Plan articles in both the February and March issues of RCM&E.

To save time typing in the full link you can also access this video by typing 'Flying the Foka 4' into the YouTube search box.
<https://www.youtube.com/watch?v=jPsjF4trJu0>



SOS AIRBRUSH CLEANING KIT

The SOS (Save Our Spray) Emergency Cleaning Kit from Airbrushes.com includes ten key items as used by the airbrush specialist's own technician to clean and restore airbrushes to a perfect working condition. Priced at £10.00 rrp each kit is supplied in a clear flip top box and contains the following items:

Premi Air Liquid Reamer - a highly recommended end-of-session airbrush cleaner for extra thorough cleaning of solvent-based and oil-based paints. Use the straw to direct the aerosol spray at the airbrush nozzle and the front parts of your

airbrush, up into where the bottle attaches on a bottom-feed airbrush or down into the cup of a gravity feed airbrush. The cleaner softens and dissolves hardened paint deposits. Then flush through with your usual thinners or cleaner.

You can also remove the front-end parts of your airbrush and soak them in Reamer in the plastic cup provided. Paint can build up in the nozzle cap and obstruct the hole which the nozzle protrudes through.

Dental Brushes (1 x white 0.35mm and 1 x orange 0.45mm) - these fine and flexible brushes are solvent resistant and ideal for the narrowest of areas, including the nozzle. They have an extendable handle and an ergonomic design. Please note that these brushes should not be forced through the narrow end of an airbrush nozzle.

Micro-Brushes (2 x pink and 2 x black) - made of high quality microfibre, these brushes are soft, flexible and lint free. They are also ideal for narrow, hard to reach areas and can pick up particles of paint that have been dislodged by the dental brushes. Although not solvent resistant they are safe to use with all



other cleaners.

30ml Measuring Cup (x 2) - solvent resistant, these cups are ideal for soaking small parts in Liquid Reamer or other cleaners.

Microfibre cloth (colour may vary) - an ultra-soft and highly absorbent microfibre cleaning cloth which is lint free and machine washable. Ideal for absorbing fluids whilst cleaning airbrush parts.

You can learn more about this invaluable airbrush cleaning kit at: https://airbrushes.com/product_info.php?products_id=26653



LLEYN MAC BRING & FLY

Alan Williams of the Lleyn Model Aero Club writes:

The Lleyn Model Aero Club would like to invite RCM&E readers to join us for our Bring and Fly on the weekend of the 27th, 28th and 29th September. This event was a regular and popular occurrence before the pandemic upset the appcart, but we are now pleased to announce that it is back in the diary. The main theme of the weekend will be the opportunity for newcomers to the hobby, experienced and not so experienced flyers, to join us at our excellent power site at Penrhos.

To those new friends we haven't met yet, you can discover the hobby we love and gain some knowledge and help on how to get started from more experienced flyers. Hopefully we will be able to offer some buddy flying set ups for people to have a go. The more experienced can bring their favourite power models and fly with the beautiful backdrop of the Eryri Mountains or the view across Cardigan Bay toward Harlech,

excellent for that sought after photo opportunity to adorn your living room, hall, dining room or, as is most likely, your workshop. Spectators can also join us for a different day out watching some aerobatic antics.

Of course, we have not forgotten our friends who enjoy the slopes, so we will also be hosting visitors to our excellent sites on the Lleyn Peninsular. Those of you who are regular readers of this magazine will be familiar with the reports of the excellent days out held on the Lleyn Peninsular so weather permitting we would like to continue that tradition.

For more information about the event and details on how to find us please visit our website at lleynmac.org.uk/bring-and-fly-2024, where we plan to post more information about the weekend as we move closer to the date. Our site will also contain links to local accommodation websites

should you wish to make a weekend of it, which we thoroughly recommend.

We look forward to meeting our old friends and making new ones.



ROLLS-ROYCE (HUCKNALL) MODEL AIRCRAFT CLUB

Alan Randall, Treasurer of the Rolls-Royce (Hucknall) MAC has written in with details of this long-lived model club, now in its fifth decade:

The Rolls-Royce (Hucknall) Model Aircraft Club has been in existence for over 50 years and for much of that time members flew from the runway of the Rolls-Royce Flight Test Establishment at Hucknall where several world aviation firsts took place. Unfortunately, as often happens, the airfield is now a housing estate and the club has moved to the village of Underwood, a short distance north-west of Hucknall and approximately one mile from Junction 27 of the M1.

Like many clubs we now fly from a well mown grass patch in a rented farmer's field. The club is friendly and embraces all radio-controlled model flying disciplines and has instructors and examiners for them all. However, the field is not suitable for free flight models and very large models and jets.

For prospective members wishing to dip their toe into model flying the club has its own trainer models for them to learn on, buddied up to an instructor.

The club regularly holds fly-ins where BMFA members from other clubs can join us for the day/weekend and we can arrange for camping on site for the duration of these events. The club also holds Swap Meets locally in the Underwood Miners Welfare, where the club also meets on the first Thursday of the month to discuss club business and sometimes listen to talks on modelling etc.

The club is BMFA affiliated and all members must enrol with the BMFA, either through the club, as County Members or through any other club they may be a member of. Instructors and Examiners train and test to the BMFA competency schemes: A, B & C etc. Our Membership fee for the current year is £35 with no joining fee.



For full details of the club please visit <http://www.hucknall-mac.org> or <https://www.facebook.com/groups/hucknallMAC>

For applications to join please contact our Secretary, Alan Falconbridge, at: secretary@hucknall-mac.org





ANTARES AIRBORNE

Tim Hooper test flies a new version of his all-time favourite model design

Words & Photos: **Tim Hooper**

Last time out we'd started on my all-new Antares aerobat. This is a direct replacement for my old attic find, a 1970s Antares that I'd been campaigning for several years – right up until the disastrous moment when the ancient balsa cement that was holding the wing skins in place finally let go during a fast inverted low pass. Enough of the self-indulgent wallowing, so let's move on, eh?

Last time out we got that new, constant chord plank of a wing sorted and fully sheeted. A touch of dihedral was added purely for aesthetic reasons and the wing was put aside for the time being.

MOVING ON

The Antares' tailplane is of generous proportions and looks to be a slab of solid balsa at first glance. But it's slightly more sophisticated than that. There's a central core of 1/8" strip wood, then it's skinned both top and bottom with 1/16" sheet. If I'd been slightly more awake, I would have changed the parallel fore-to-aft bracing to diagonal bracing for rigidity. At least I did think about adding a little reinforcement to the central core, though.



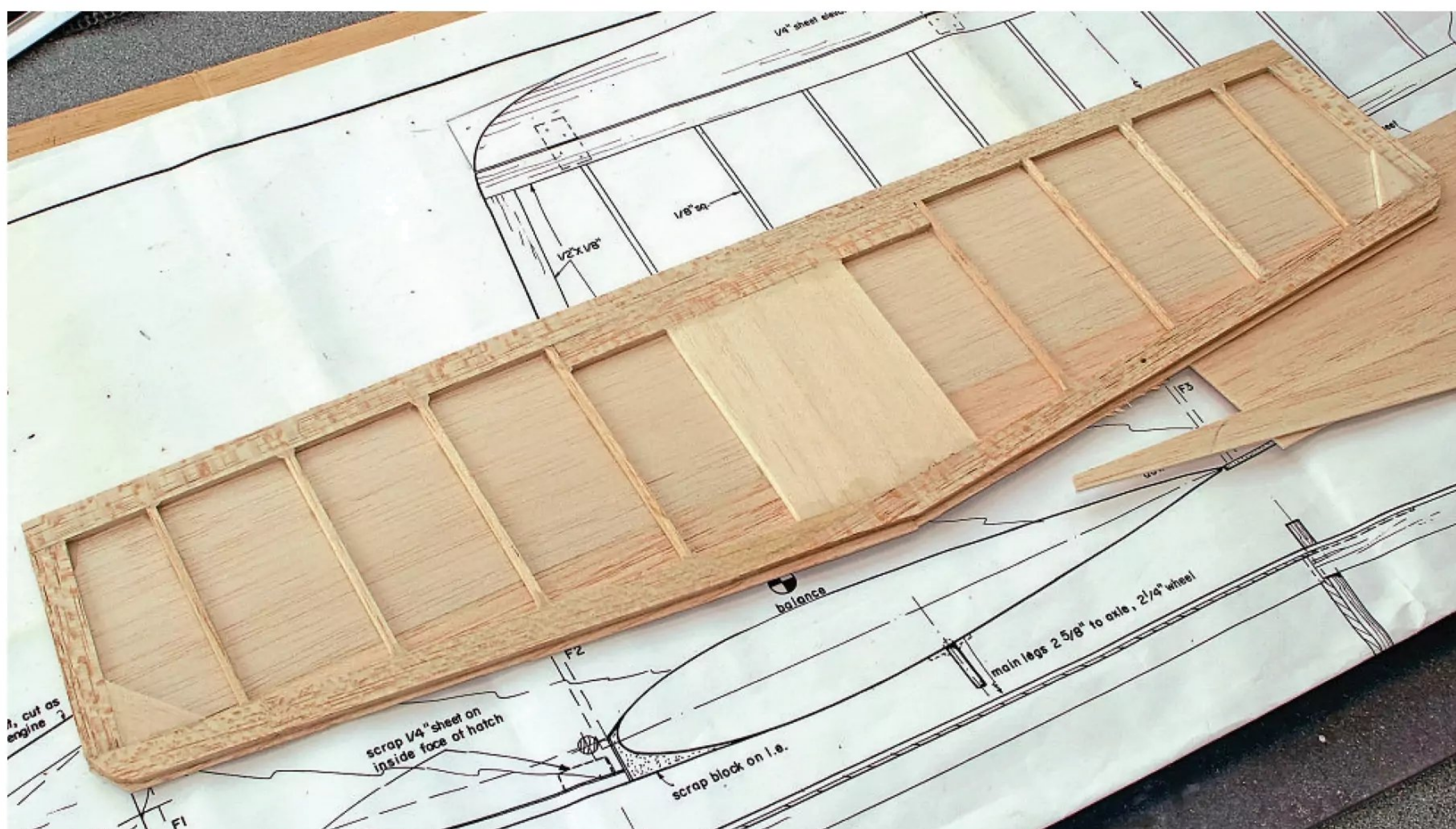
Antares is a purposeful machine with a generous tail area to compliment the plank wing.

Left: Despite being penned over 50 years ago the new Antares looks pretty slick as it awaits its maiden flight.

Right: Inside the tailplane there's a built-up structure that's probably stiffer than a simple slab of solid balsa. In retrospect I should have angled the crossstrips to create a Warren truss structure.

Middle: The elevator was built as a single piece with the joiner inset. Rudder clearance was added later.

Below: Ply formers are added to one fuselage side and checked for perpendicularity. That's a good word, isn't it?

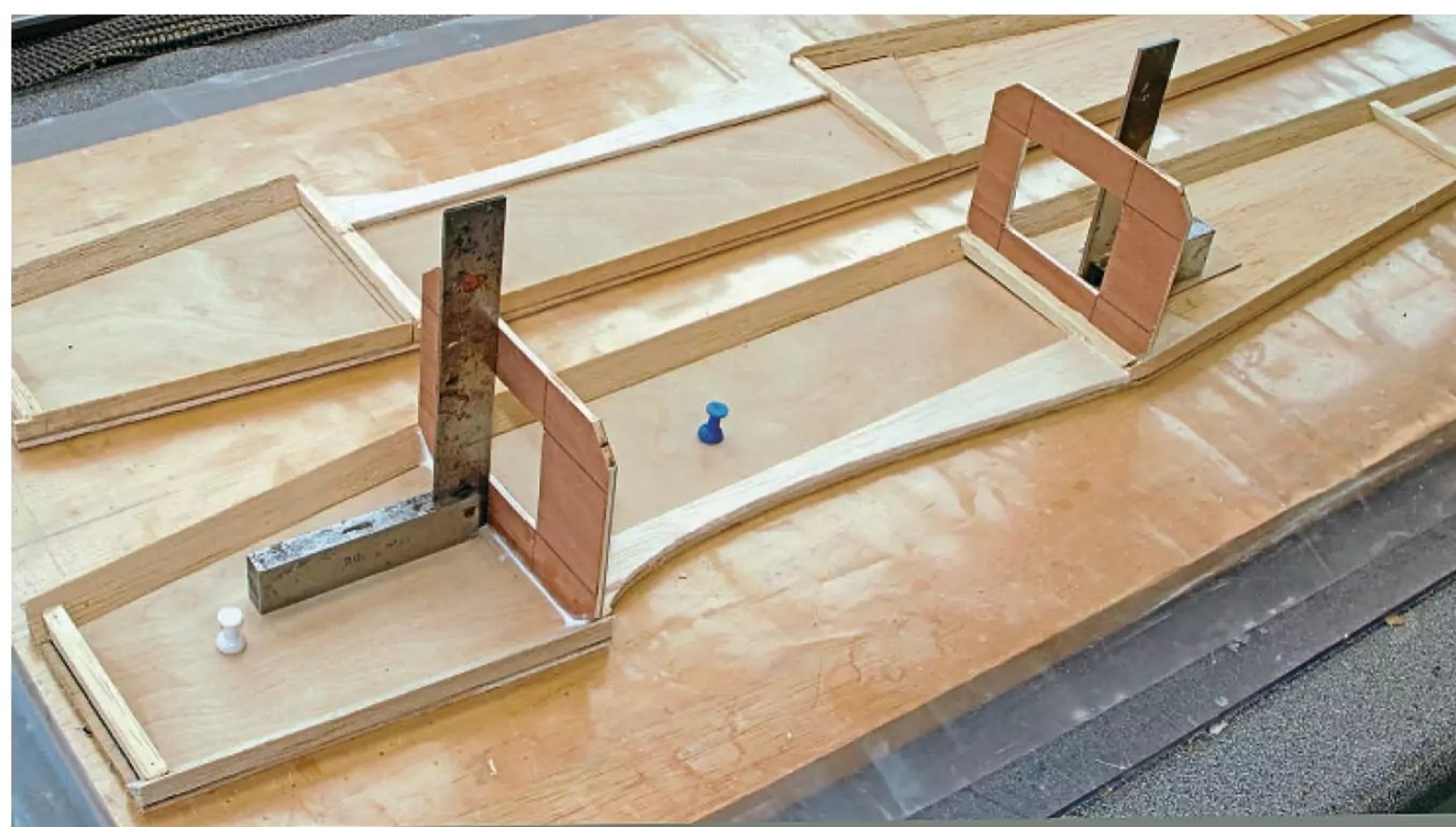
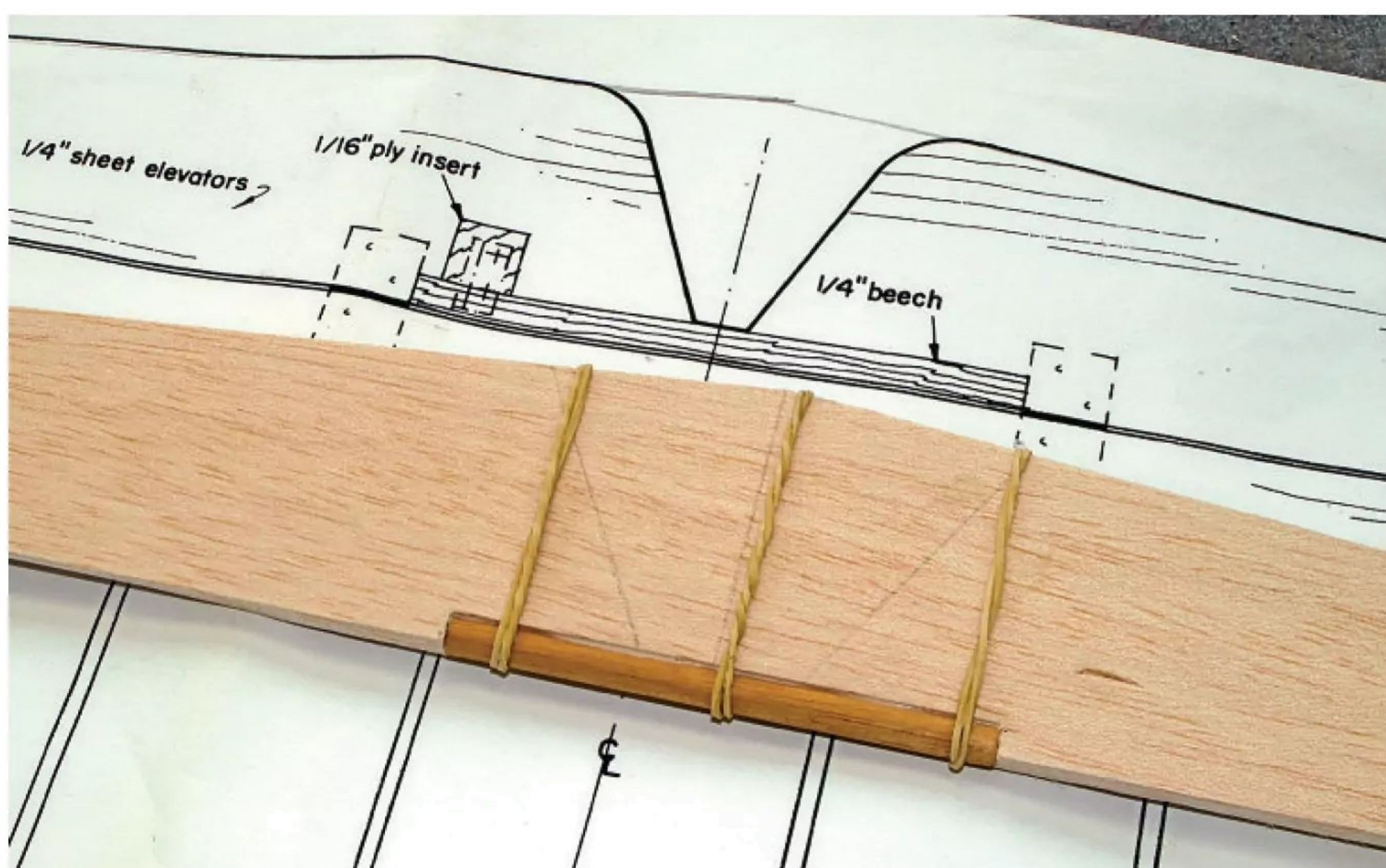


The simple two-piece elevator is from 1/4" sheet with a 1/4" dowel joiner. My way of ensuring a straight component is to knife it out as a single piece, then cut the notch for the joiner. Once the joiner has been installed, then it's time to carve the cut out for the rudder. I did enlarge the cut out slightly to allow the rudder more movement than was originally intended.

FINALLY, THE FUSELAGE

As usual with me, I tackled the fuselage last. The wing is usually the biggest chore in many builds so it's nice to get it out of the way first, I feel.

The fuselage has 3/32" sheet sides, which I marked up by taking measurements from the plan and then transferring these to the sheet balsa. Once knifed out and trued up to each other, I added the internal ply doublers. The plan specifies internal 1/16" ply doublers but as my model won't have a pulsating two-stroke up front I settled on thinner 1/32" ply instead.



The triangular longerons were added next. I chose to add some additional 1/4" square uprights to give the internal ply formers a decent foundation. In time honoured tradition F2 and F3 were cut from 1/8" ply and were added to one fuselage side, using a square to ensure that they were, well, square. Once dry the other fuselage side was added, again using squares to ensure the alignment of the sides to each other.

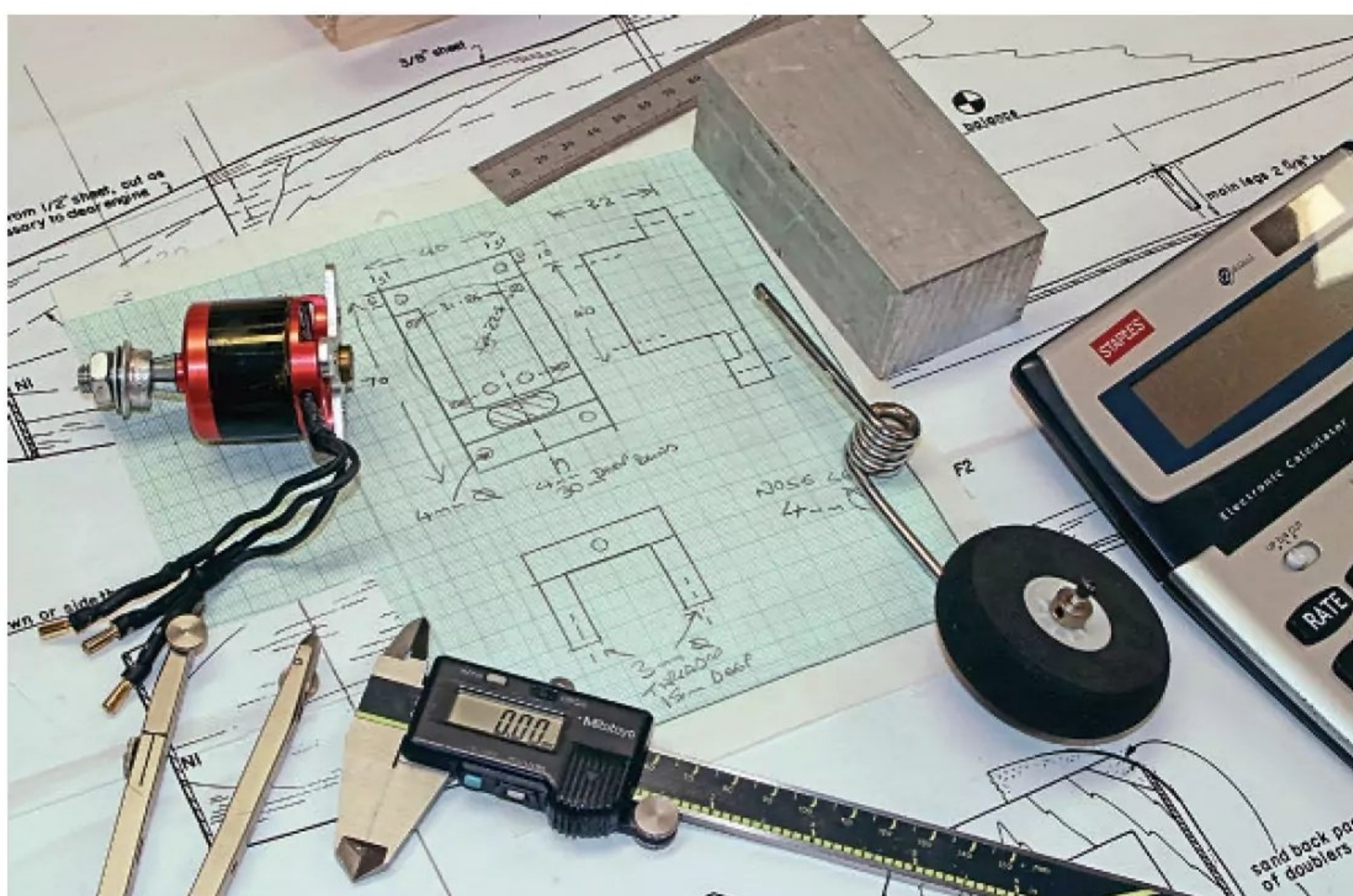
The following day I broke out my SLEC fuselage jig and with the assembly centred and weighted down accurately over the centre line, I sanded a chamfer on the insides of the sides (if you see what I mean) and joined them together at the rear.

Similarly, the fronts of the sides were drawn in and glued to F1. I used a higher quality of plywood for F1 as it is destined to take the loads imposed on the nose leg by my increasingly dodgy landings.

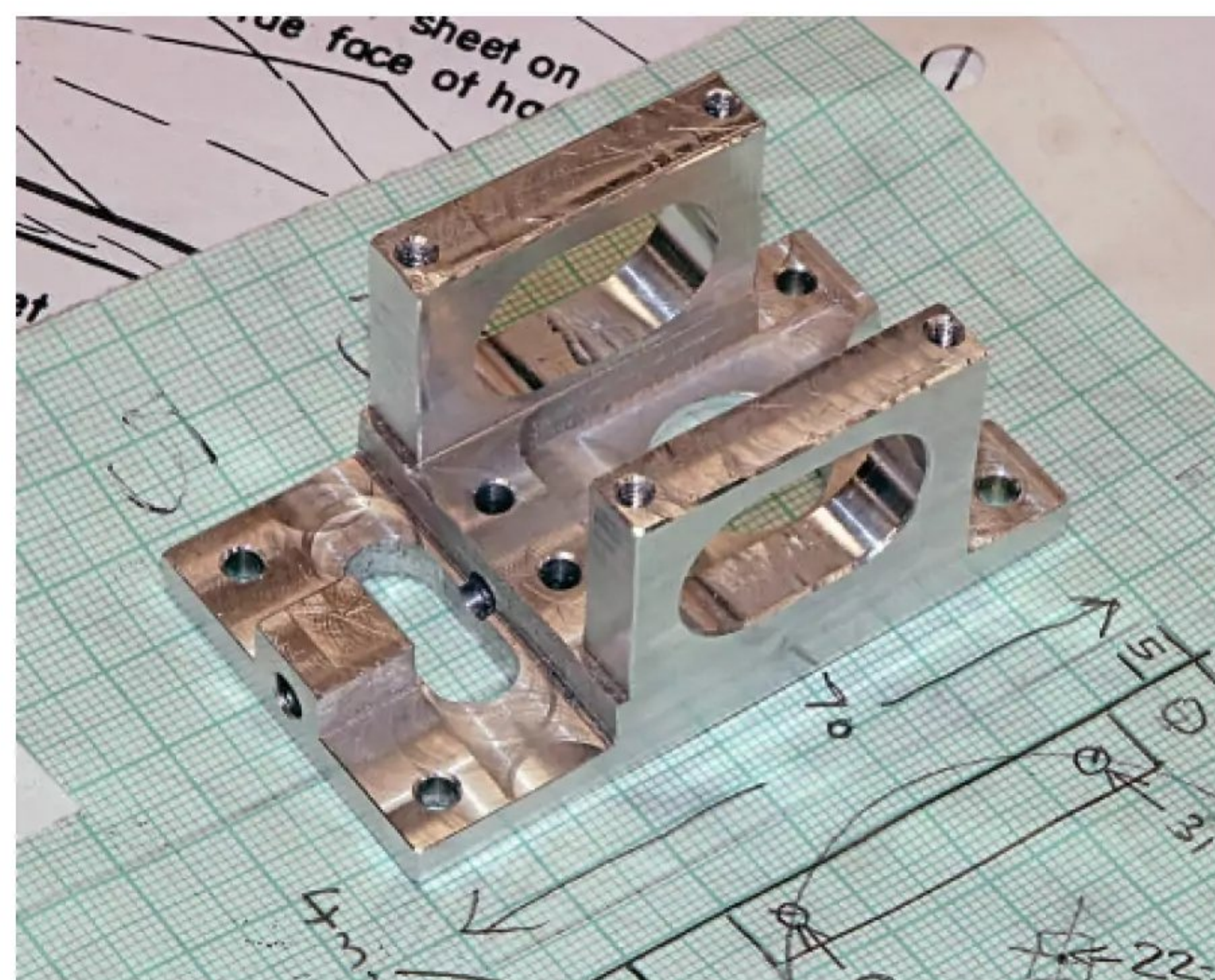




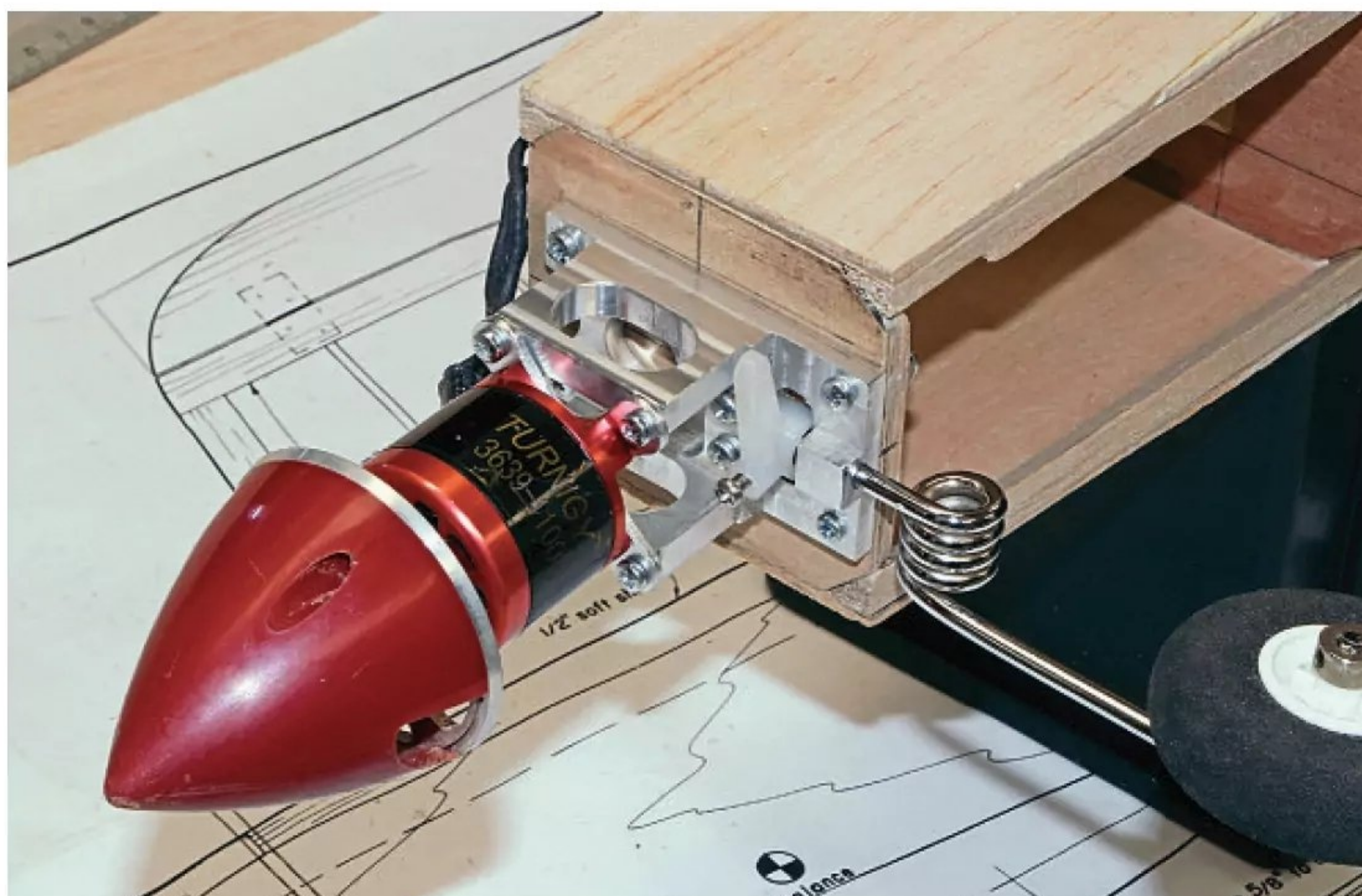
Fuselage sides are inverted and joined together within my SLEC based jig. The rear end is centred to avoid the dreaded banana syndrome.



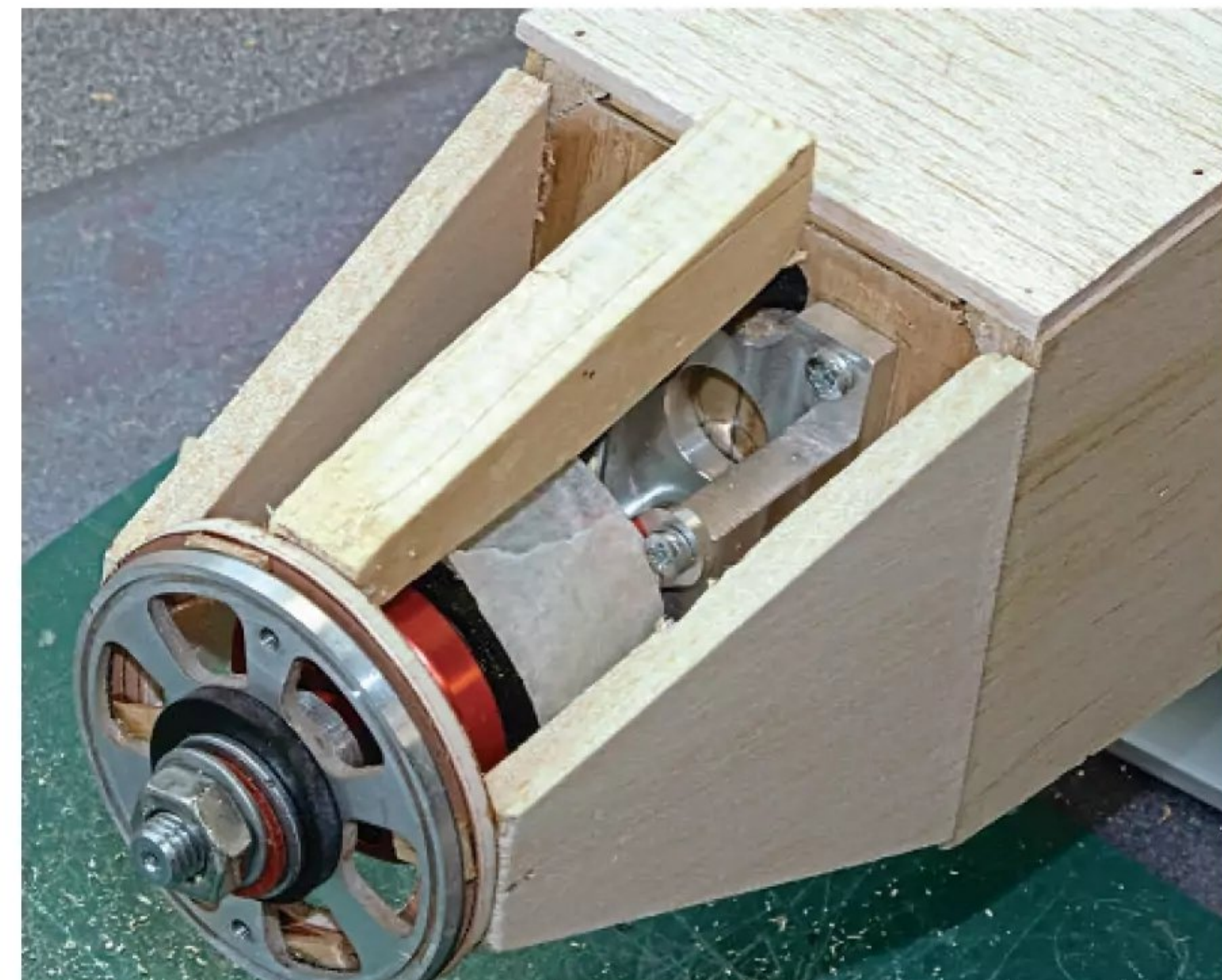
Here's where it gets sort of techy. I sketched up a motor / nose leg mount and found a suitable chunk of ali to mutilate.



The finished mount took a couple of days to complete and it taxed this fledgling machinist's skills to their limits.



Test fitting the mount to the fuselage. I still needed to bore a hole in F1 to allow passage for the steering push rod.



With a ply nose ring in place, I filled in the void with scraps of balsa to create the front of the cowl.

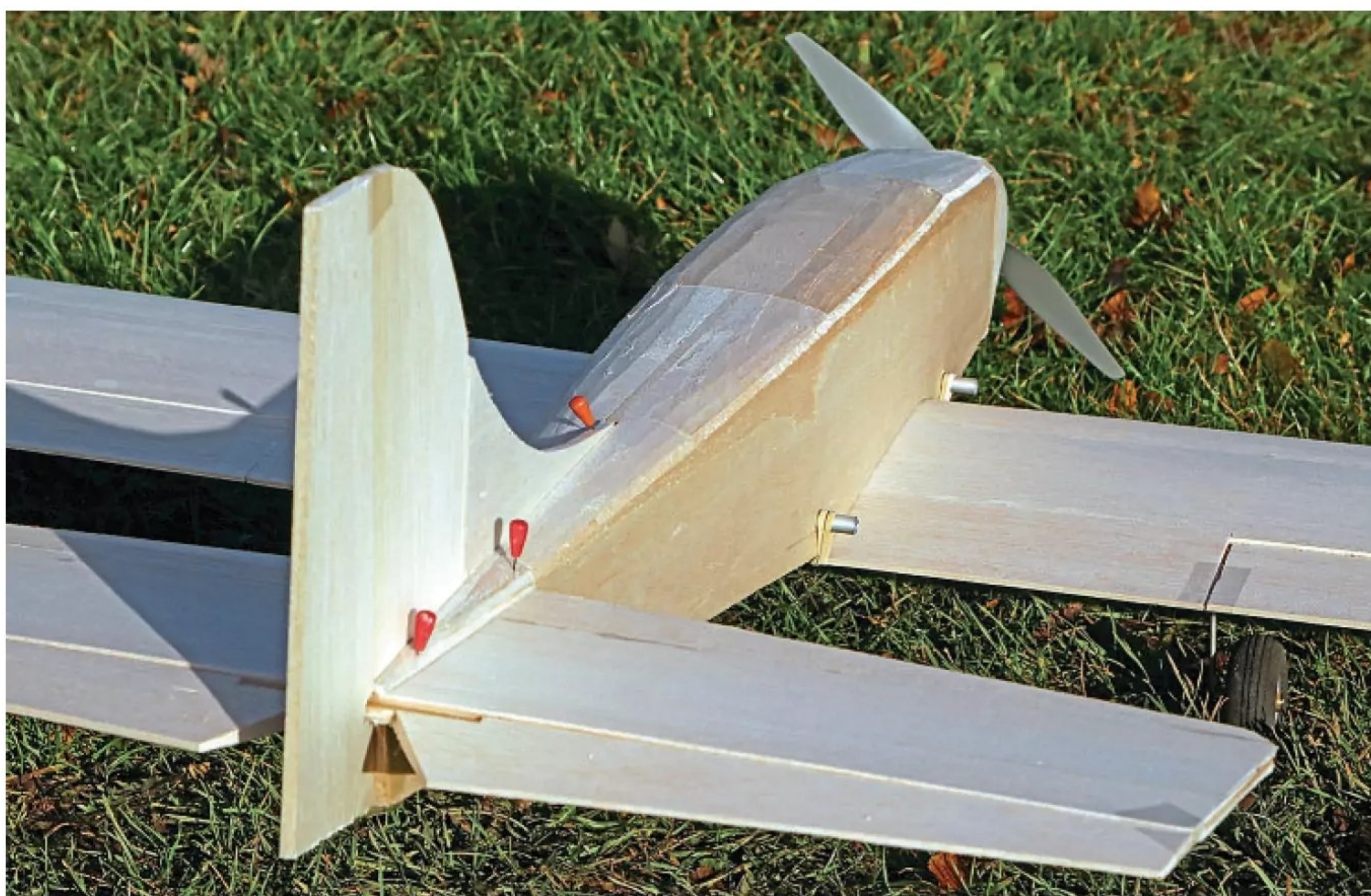
MOTOR MOUNT

Before I added any more wood to the fuselage, I figured that it was time to sort out the engine/motor bay. The nose was designed to accept a .40 glow engine and there's quite a distance between F1 and the nose ring to fill, so some kind of motor stand off looked to be required. The snag was that the motor's shaft is aligned with the dead centre of F1, which didn't leave a lot of room for the nose leg to mount below it. The original plan shows the nose leg mounted to the rear of F1 and accessible through the tank hatch beneath the nose. This wouldn't work for me as I wanted to have a sizeable battery hatch on top of the fuselage, so I needed the bottom of the nose to be permanently closed in to regain some rigidity there. This meant that I needed to have the nose leg affixed to the front of F1, where it would cheerfully clash with whatever I used to mount the motor there too.

I already had a motor mount and a nose leg in the spares box, but I couldn't see a way of getting them both on the front of F1. Looks like I'd need to fabricate my own single unit then, which was all just a feeble excuse to do a bit of machining. Well, there's no point in having a milling machine if you're not going to use it, is there?

Taking measurements from the plan, I needed to have the rear of my chosen motor standing some 32 mm forwards of F1, whilst allowing clearance for the top of the nose leg, and its steering arm, behind it.

What I have already discovered in my machining journey is that it's a slow and methodical process to produce any usable item. Whereas a piece of wood can be hacked to shape and glued in place in a matter of minutes, an equivalent metal item becomes a mini project in its own right and takes a large degree of planning and forethought. So, it's quite a mental sidestep to allocate several hours to fabricating a custom-made aluminium doodah.



Ready for final shaping, after which we can think about covering.

On a scrap of graph paper, I sketched in the dimensions of the motor mount, taking measurements from the motor's own rear X mount, and the intrusion of the top of the nose leg. What transpired was a flat backplate, some 10 mm thick, with two protruding 32 mm legs to marry up with the rear of the motor. There also had to be a horizontal slot in the lower part of the backplate to allow clearance for the nose leg's steering arm.

An engineering clubmate had already, very generously, donated a suitable chunk of aluminium to the cause so I had no excuse but to carry on. One of the joys of working with a soft metal like aluminium or brass is that the bulk of the task of metal removal can be carried out with a saw. In my case I'm lucky enough to

have access to a woodworking bandsaw, fitted with a decent Starret blade, which made short work of not only reducing my oversize billet of alu to a suitable, slightly oversize block (which was then milled to final dimension) but also to hew out the main features of the final shape.

The rough sawn block was secured in the mill with the rear face upwards. Six bolt holes were drilled, one in each corner and two central ones between the legs, together with the slot for steering arm. Turned upside down, I bored a 4 mm hole, 30 mm deep to accept the top of the nose leg. This hole passed through the centre of the slot to allow the steering arm to slide onto the top of the nose leg. This meant that the top section of the nose leg was then supported both above and below the steering arm. ✈

It's not every day I get to maiden two models but the tale about the vintage Ladybird can wait for another day.





Some might contend that the model might benefit from the addition of a bubble canopy, but I don't agree. So that's that.

Turned once again so the 'legs' were topmost, I used the 'bolt circle' facility of the mill's digital read out to plot the positions of the holes needed to receive the motor's mounting screws. These were drilled with a 2.5 mm drill and then hand threaded with a 3 mm tap to a depth of around 15 mm.

Despite having been sawn to rough shape it took a couple of hours of careful milling using a 10 mm end mill to bring the rest of the lump to something approaching its final form. At the end of this the motor fitted nicely on the front of the legs and the nose leg swivelled snugly in its lower hole. Whoopee, hey?

Triumphantly clutching my new creation, I rushed off to show Netty the result of a full day's work and she diplomatically suggested that I weigh it and then see if I could reduce its mass by a significant amount. Rather surprisingly it hefted in at a chunky 93 g, far more than I'd guessed.

The next day saw the ali mount back in the gentle caress of the mill's vice, where I thinned the 10 mm backplate down to 5 mm, except where the nose leg needed to pass through. This was followed by a 16 mm end mill, which cheerfully hacked some lightening holes in both the backplate and also through the front legs.

The weight was now reduced to 57 g, which is well over an ounce lighter. It looks whizzier, too.

BACK TO BALSA

Back to the balsa work. The top of the fuselage calls for a fair amount of balsa block to give it shape. Over the years I've collected some 'unusable' chunks of balsa from the budget bins at various model shows and these get ripped down to size on the bandsaw for situations like this. However, rather than rely on the block alone, I like to add a layer of 1/8" cross grain sheet across the top of the fuselage sides prior to any block work.

With the new ali mount fitted to F1 via 3 mm blind nuts and with the motor and spinner attached, I could now have a look at the overall shape of the Antares' front end. I cut a nose ring from 3 mm ply and using sacrificial 1/8" balsa spacers I CA'd this to the rear of the spinner's backplate. All I had to do then was to use bits of scrap balsa block to fill the void between the firewall and the nose ring.

I left the bottom of the cowl open, not only to provide cooling for the motor but also to allow for its removal if necessary. I had to file four indentations within the nose ring to allow screwdriver access to the motor's mounting

screws from the front. With the motor eased free of the cowl the ali motor mount could also be removed through the bottom of the cowl.

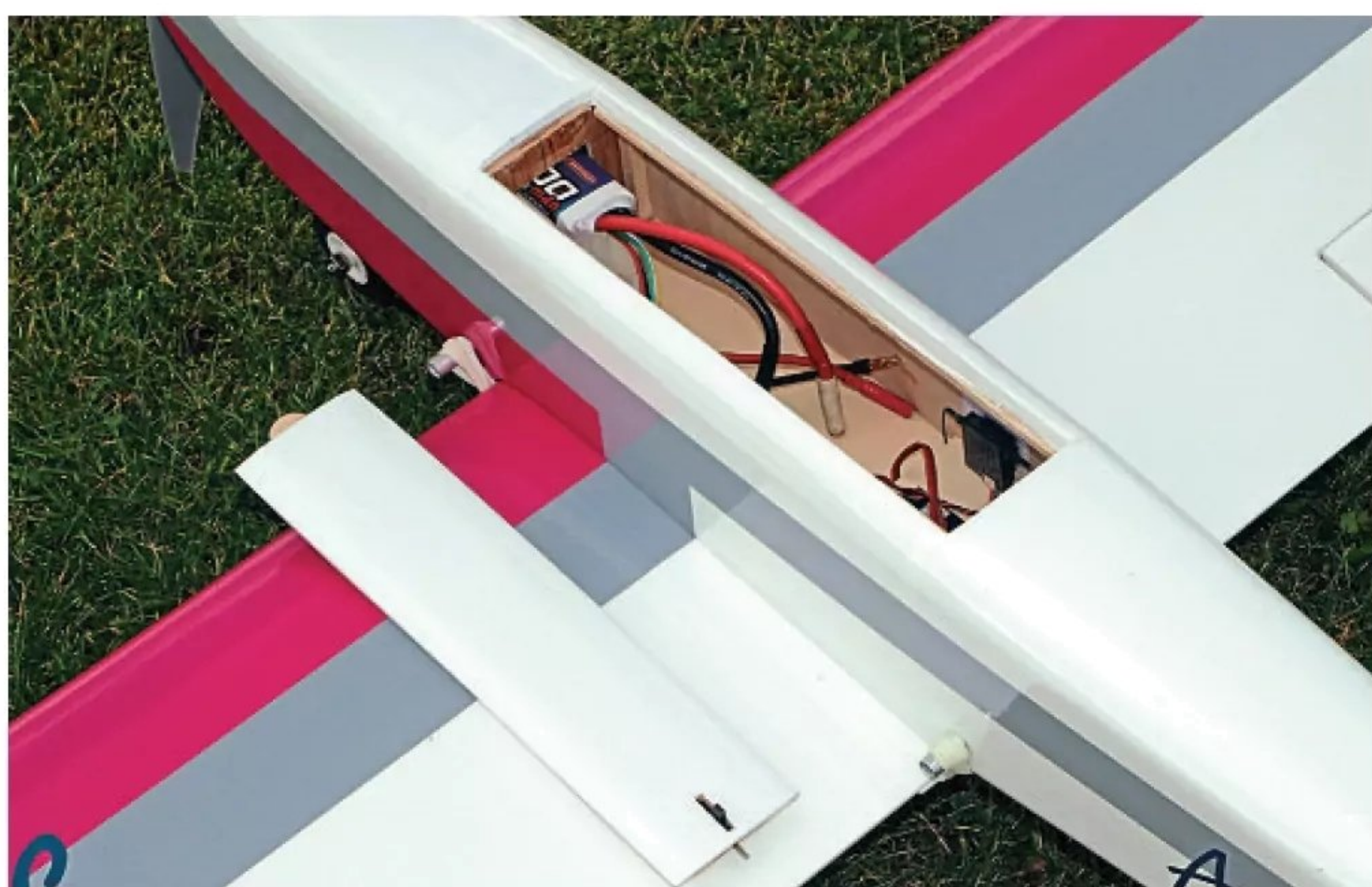
FREE THE HATCH

With the top of the fuselage roughly sanded to shape it was time to take a deep breath and to cut that big access hatch free. I held the scalpel at a bit of an angle to yield a tapering recess so the hatch can sit secure and level. A length of tongue depressor, inset at the front of the hatch, locates into a slot in F2, whilst a spring catch at the rear keeps the rear end snug and closed.

Given that the fuselage can lose a bit of torsional rigidity because of the gaping void in the top deck, I thought I'd redress the balance by adding an internal floor from lite ply. This would also act as a mount for the rudder servo and receiver, and the 4S 4000 battery itself.

FINISHING OFF

The entire airframe was sanded down, filled, sanded, sealed and then sanded again prior to covering. I had been briefly tempted to try to replicate the awful brown tissue of my original Antares, but a rare burst of common sense prevailed and I opted to raid my precious Solarfilm stock instead.



That big hatch allows easy access and scope for battery location. In practice the 4S 4000 pack goes as far forwards as it can.



Exposed servos tend to garner detractors but are supremely practical in a non-scale model.



From the rear Antares 2024 looks like it means business.

White, grey and pink were the chosen colours, accented by teal graphics courtesy of the Cricut machine. The overall result looks better than my expectations, I'll admit. The completed Antares hefted in at a slightly porky 5 lbs so I reckoned it would need a reasonable amount of airspeed to function properly. With the battery shoved as far forwards as it could go the model balanced on the front spar without needing any redundant ballast.

As is always the case fitting the hardware took far longer than it should do to just to screw a handful of servos in place, but that's how it goes. Closed loops wiggle the rudder, together with a spur to influence the steerable nose wheel. A wire pushrod connects the external rear mounted elevator servo.

The original 1970s design suggested a

central aileron servo, connected via pushrods and bellcranks, as our forefathers used. These days servos are small and cheap, so I took the easy way out and used twin units. Perhaps, surprisingly, I decided not to allocate a separate channel for each aileron but to go old school and use a Y-lead to control both servos from a single channel.

My thinking here is that with a symmetrically sectioned wing, which should perform the same when inverted as when it's right side up, there's no real need for any differential and so there should be no need for offset horns or electronic mixing. We'll have to see.

MUD LARKS

With the new Antares ready for its maiden outing, we then experienced the soggiest,

muddiest winter that I can recall and it was some weeks before the sun could finally coax me out of the house and down to the field.

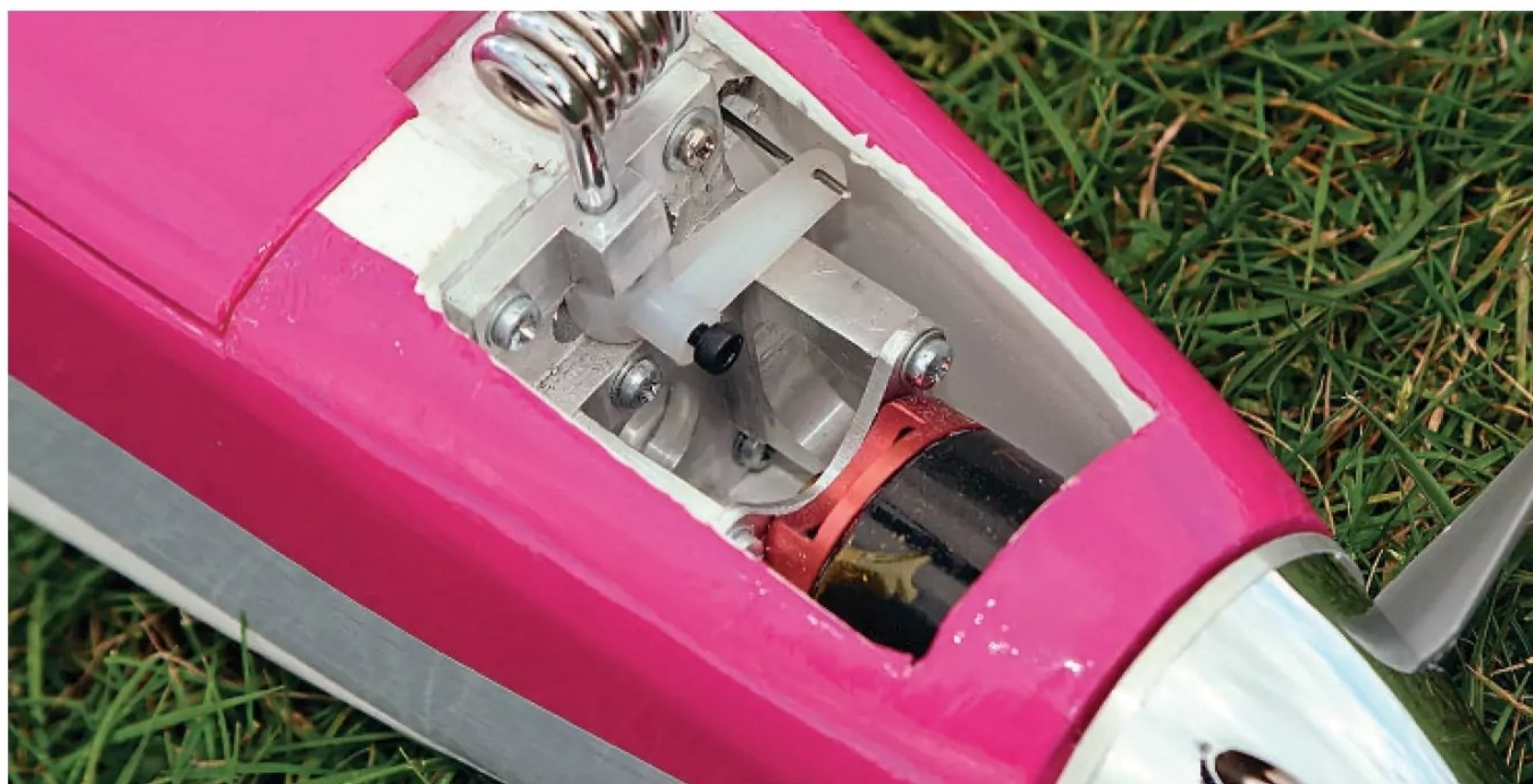
The damp grass was a little long and the first take off run was aborted as the end of the strip got too close for comfort. After finding a firmer stretch of turf the Antares was given a longer run to gain speed before hauling back on the stick. Like its predecessor this new model will not lift off by itself and must be actively commanded skywards. I've put this down to a very slightly nose down attitude when it's sat on the ground and the symmetrical wing needs a positive angle of attack to get it to unstick.

As the Antares climbed away, I dialled in a little bit of aileron and elevator trim to straighten it up and the rest was pure textbook. It's very directional in that it goes wherever it's pointed until further radio input makes it do something else.

Aerobatics are a piece of cake. Loops, bunts, axial and barrel rolls were included within the maiden flight and just came naturally with no nasty tendencies. Slowing it up, at a safe height, makes it become progressively mushy until the nose finally drops as it stalls, as you'd hope.

With very little headwind available to soften the landing, and not wanting to risk a stall too close to the deck, I brought the Antares in for quite a fast landing. Again, the negative incidence to the ground helps here, in that as soon as the nosewheel makes contact with the ground then that's where it stays, with no tendency to bounce into the air again. That's why I prefer a trike set up to a tail dragger.

So, I'm happy. My shiny new Antares 2024 has taken up its new home, hanging in the hangar, and I'm hoping for a long partnership with it. ■



The aperture beneath the cowl allows easy access to the power plant and nose leg.

Heat Shrinkable Polyester Film

5 Metres!

From £22.49 - Solid Colours

From £24.99 - Transparent Colours



Complete Electrical Setup For The Antares by J Patterson

www.4-max.co.uk/customermodels153.htm



Description	RRP
PO-3541-1070 Brushless Outrunner Motor	£33.49
4M-HESC50AV2 Brushless ESC and Programming Card	£57.94
APCE 10" x 5" Electric Propeller	£4.15
5x 4M-175AMG-030 17.5g Metal Geared 3Kg Servos 1x 250mm Y lead, 1x 150mm Y Lead, 1x 300mm Servo ext lead	£45.58
57mm Cooling Spinner in White	£9.89
4S, 14.8V, 60C, 3300mAh LiPo Battery	£49.00
4S, 14.8V, 60C, 3700mAh LiPo Battery	£55.00
PP-HATCH-LATCH-A - Hatch Latch/Catch	£1.99

For more information on all these products and hundreds of others, please visit our website



MODERN VINTAGE MODELS

This kit will be another MVM Rapid Build Kit taking about 2 days to assemble (plus covering), but does require some basic building skills. MVM has brought this plane up to date by using the latest building techniques, materials and electronics. As an example even the planking is pre-shaped and laser cut to ensure it fits together seamlessly.

This kit is still being finalised, developed and only when it is right will it be made available – which should be in May/June.

We are offering the first 25 pre-ordered kits "wood-pack and hardware" for just £89.00

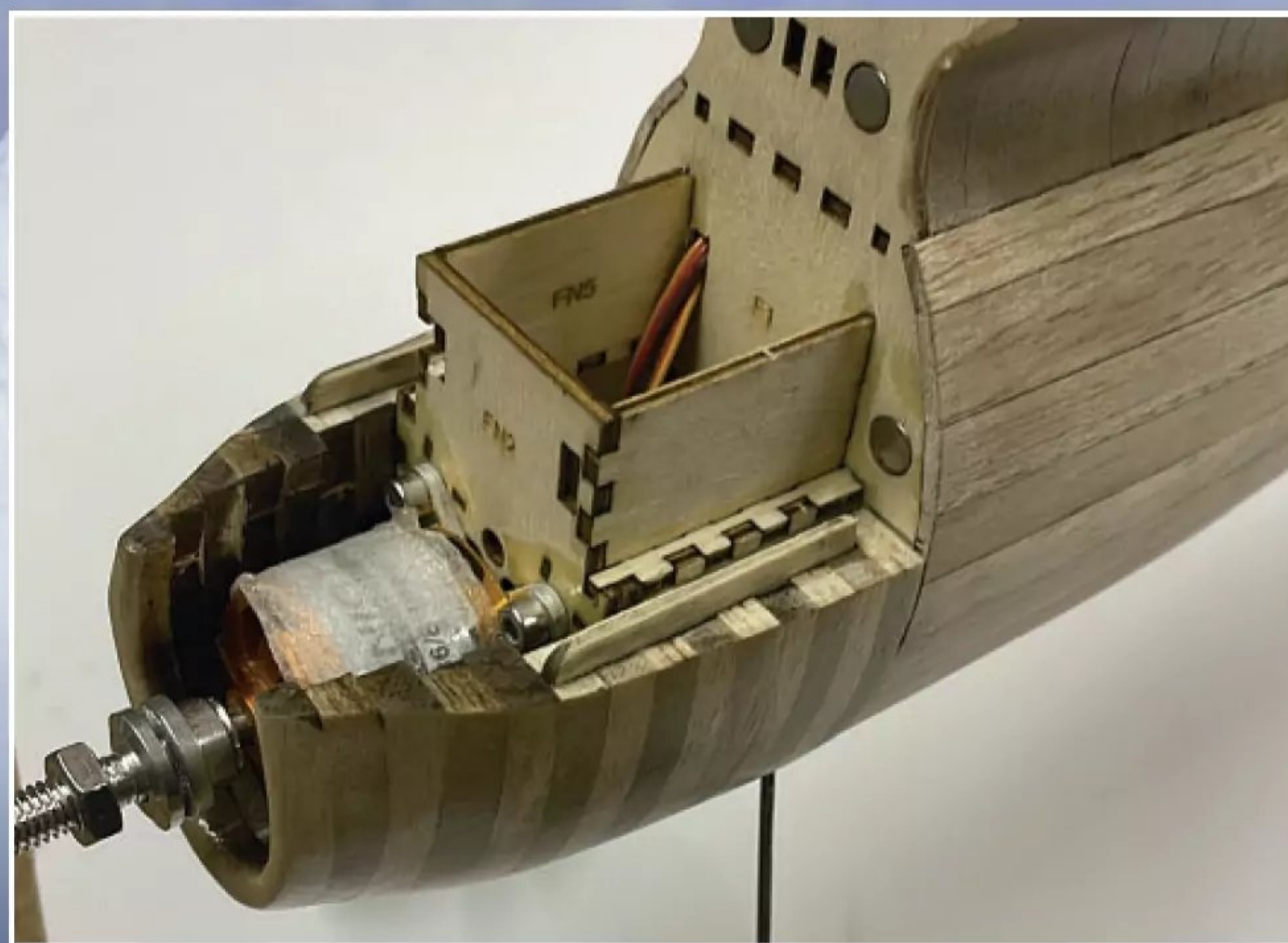
Funds only to be taken once it is ready to ship (limited availability now).



Don't miss out, book yours today at info@modernvintagemodels.co.uk.

MVM Boomer Bus *Rapid Build*

MVM is bringing you the 1941 Boomer Bus designed by Henry Struck of Connecticut



MVM Delta Rapier *Rapid Build*

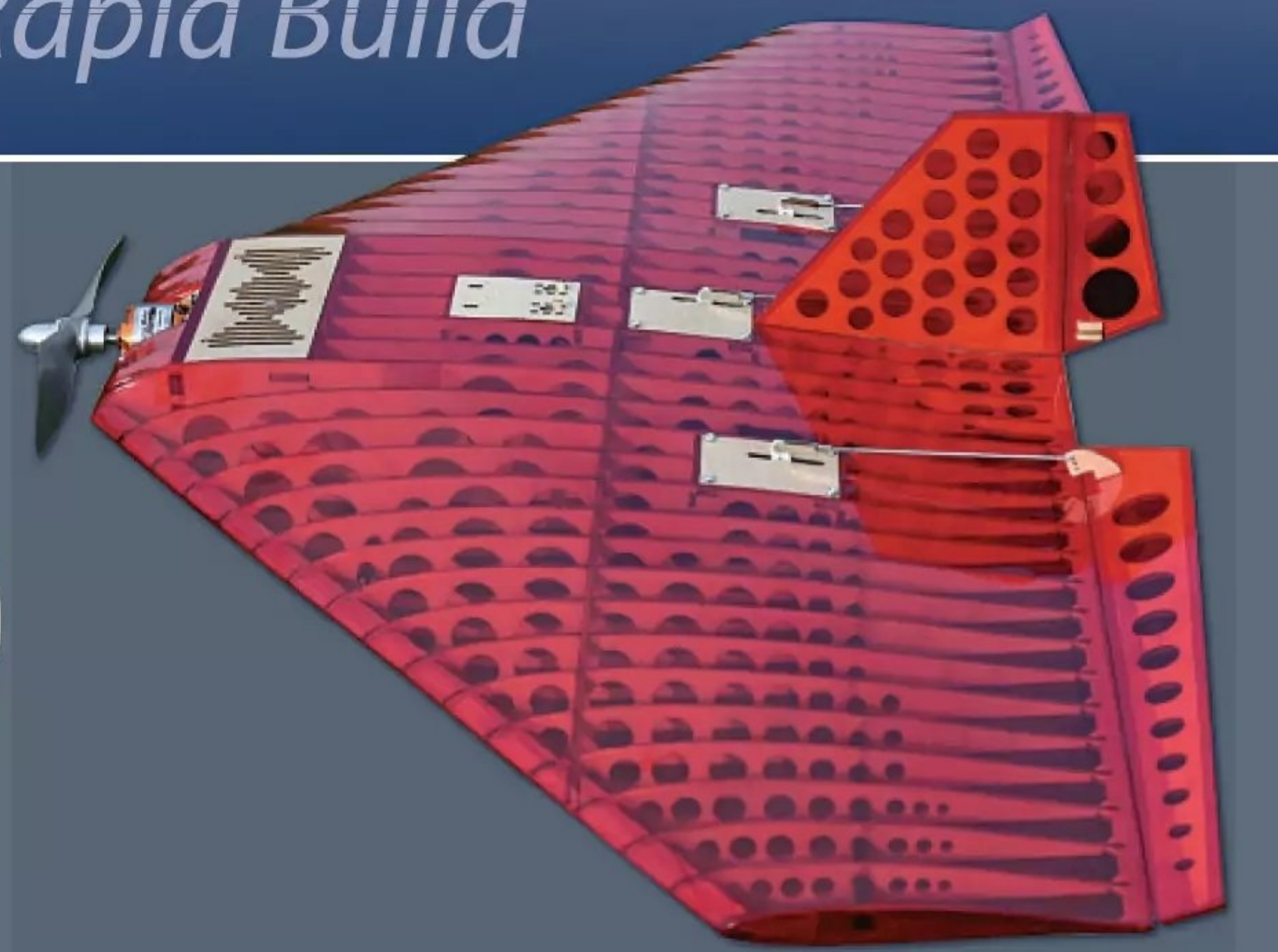
- 3-4 channels – Elevons, Motor, Rudder (optional)
- Wingspan 38" – ~965mm

Recommended Equipment – NOT INCLUDED

- Hardware
- Carbon tubes
- Power – D3635 - 1000-1450KV
- Battery – 2200 mAh 3 Cell Lipo
- 2 or 3 Servos – HS85MG or HS5058MG
- ESC 30 – 40Amp
- Receiver
- 9x6" propeller

Summer Special
£99.99
with Carbon and
Accessory Packs

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.



Fully designed & manufactured in England.

www.modernvintagemodels.co.uk

info@modernvintagemodels.co.uk

<https://www.facebook.com/groups/modernvintagemodels>

PIRAT AHOY!

Chris Williams finishes off another scale glider. This time his fifth scale Pirat sees air under its wings for the first time from his local slope

Words & Photos: **Chris Williams**

In the fullness of time the covering of the fifth scale Pirat was completed, leading to the inevitable long wait for the rain and gales to cease. The winning weather lottery ticket proved to be a day on one of our local Wessex Soaring slopes and you could cut the resulting anticipation into slices and sell them on eBay. The wind was light and, at times, forgetful, so we had to be on our mettle, which meant, first of all, flying the super-efficient Skylark 3's in order to remember how to actually fly.

Initially, the Pirat seemed a little sluggish, resulting in a recalculation of the Centre of Gravity. But it soon became evident that the model was vice-free, with the added bonus of being delightful in the landing phase. To my mind a good landing of any sort of aircraft can be described as the inability to determine the point at which the miracle of flight becomes mere perambulation. Thus, it is that the Pirat responds to ever greater inputs of up elevator by continuing to evade the ground at increasing angles of attack, therefore allowing the pilot to easily

choose the best moment for TFR (Terra Firma Reintegration).

Another agonising wait ensued for an aerotow maiden, partly because of the weather, but mostly because I kept forgetting the tailplane! As expected, there were no surprises, although thermalling ability will have to wait until later in the year as the ceiling on this occasion was a mere 500 feet.

You can see for yourself by Googling PIRAT PEREGRINATIONS II or with this link: <https://youtu.be/TNFgj4oqDo8?si=2apbUpws-aDDEEB6>

Author gives scale to the SZD Pirat before the maiden flight.





Murky conditions for the maiden aerotow.

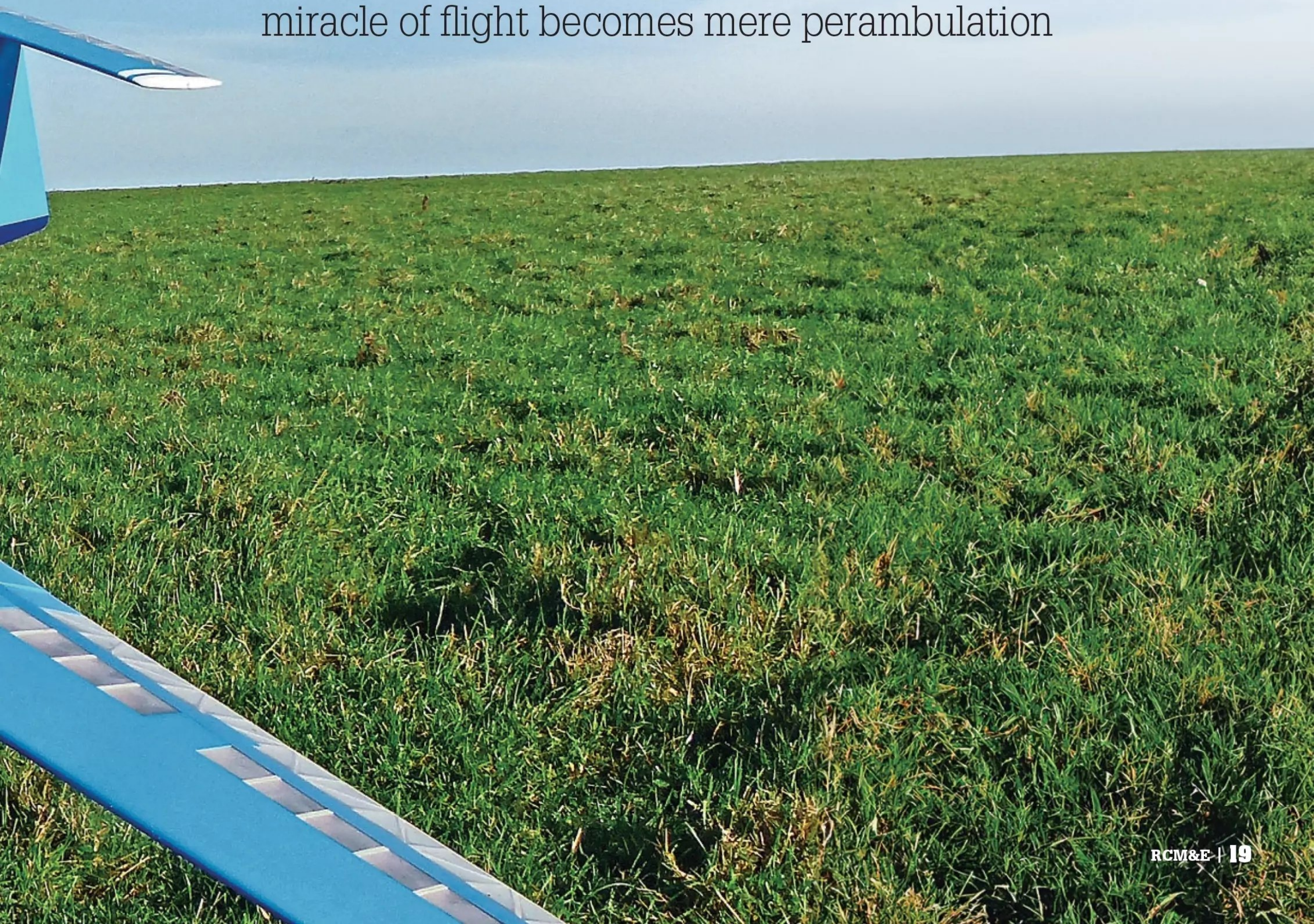


Pirat in action at White Sheet.



At 1/5th scale it's not a difficult model to launch.

To my mind a good landing of any sort of aircraft can be described as the inability to determine the point at which the miracle of flight becomes mere perambulation





Mike Wilson's version of the Kite 1 with e-power.



Completed airframe of the Slingsby T31 Tandem-Tutor.

KITE 1 BETA BUILD

Mike Wilson volunteered last year to build the Type 23 Kite from my completed drawings and just before this column's deadline he came up with the finished result. The electrification of the model looks as though it might make it a useful addition to Mike's hangar but at the time of writing the Kite is yet to be flown. For those that might be interested here are the stats:

DATAFILE

Scale:	1: 5.7
Weight:	3.5 lbs
Span:	2.5 m
Wing Section:	HQ 35/12
Motor:	E-max BL2220/08
ESC:	Hobbyking 30A with BEC
Folding prop:	10" x 8"



A big mistake. Embedded T31 ballast proved entirely unnecessary.



Setting up the front wing strut for the T31 with direct reference to the drawing.

I'm not sure if the weight of Mike's model includes the LiPo but it would seem to be no heavier than that of my original prototype, which is in the pipeline for being published in this very magazine.

PROJECT CONCLUSION

It has been many a year and much water under the bridge since I last produced a version of the iconic Slingsby T31 Tandem-Tutor, a glider of which many of my generation gawped at in wonder when we were still in short trousers. The average flight duration from a winch launch has been described as around three minutes - no wonder when you take a close look! As well as the drag of not just one but two open cockpits, four main struts with sub-struts and wire rigging, and an extra pair of struts on the tailplane to add insult to draggery, the T31 is pretty much a flying airbrake. (I nearly forgot: the open aileron and elevator gaps play their part as well.)

As I have no digital version of the third scale drawing it was going to have been drawn from scratch and, once again, I puzzled over the front

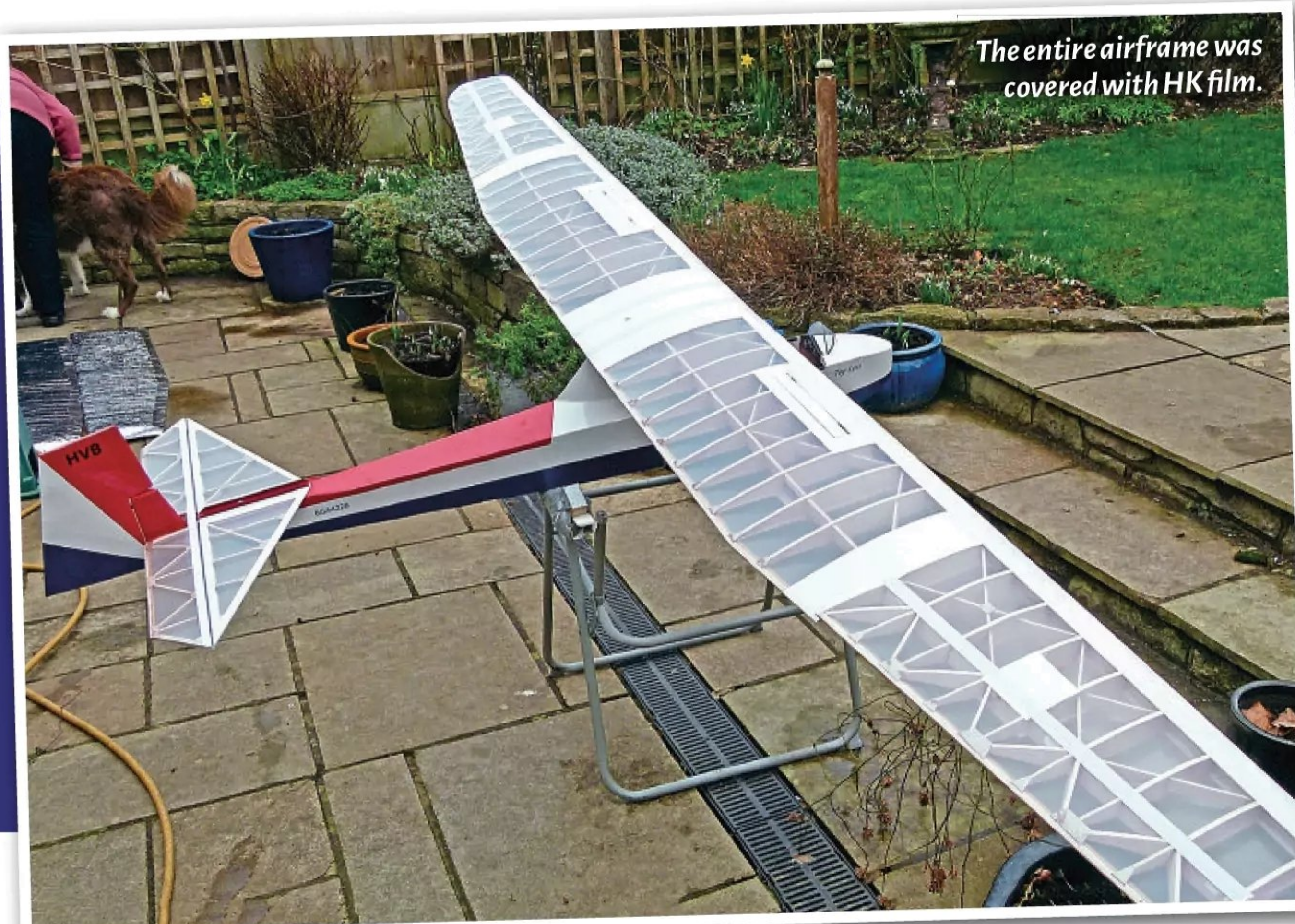
wing strut emerging from the front of the rear cockpit. Obviously, it was going to have a piano wire core, but how to set it up to the correct height knowing the wing/tail rigging angles depend on it? In the end the simple solution was to take a print-out from the drawing and offer up the wire strut and former directly to the paper to establish the correct places to drill.

Given the foregoing, it was obvious that a rigorous programme of drag reduction was going to have to take place and the Scale Police were going to have to just suck it up. To this end, the ailerons were top-hinged and the lower gap was covered in the usual fashion with Mylar strip. As with the Skylark 3, the elevator too had the lower gap Mylar covered. Missing from the scale line-up are sub struts for the main struts, rigging wires and the tailplane struts. The skid was represented as being covered, although this is not the case on the full-size of this particular example.

The wing is always a challenge with the Tandem-Tutor, having a miniscule D-section and needing diagonal bracing to keep it rigid, although the struts help in that regard.



Business end of the T31.



The entire airframe was covered with HK film.



Hi-speed construction. Status on a Monday morning...



...and status the following Sunday. Fin and tailplane are not included in this time frame.

My biggest mistake was to screw some lead plates to the front of the front former before adding the filler and it soon became evident that a rearward CG was not going to ever be a problem. In the end a couple of lead plates had to be screwed to the tailplane mount to restore a decent status quo.

The entire airframe is covered with film, a tricky but satisfying process, and the AUW ended up being a tad over seven pounds.

So, to be discovered: will the drag reduction work or will the T31 remain stationary over the ground in a ten mile per hour wind? Tune in to the next instalment to find out...

HIGH SPEED CONSTRUCTION

For more decades than I care to remember I have been planking the front of my fuselages with 1.5 mm ply. Thus it is that many of my published designs feature this method. But

I think I may have found a way to speed it up. The advantage of this process is a resulting fuselage front end as ding-proof as a titanium bathtub, the disadvantage being the difficulty in using such a hard product and bending it to your will. I have in the past covered the process of scoring up the planks in batches of three, but the problem is finding ever more ingenious ways to hold the planking to the fuselage formers whilst the PVA dries. (The recent arrival of a quick-setting PVA helps a little!) Recent experiments with the all-balsa fuselages on some of my smaller models have proven to work just as well on the hard stuff, too, and the process is very simple.

Having trimmed your tri-plank blank to fit you first mark up the formers to show where it will sit, then spray CA accelerator on the inside of the blank. Now apply a medium thickness CA to the formers and offer up the blank until

it has set, usually within ten seconds. Now, you can immediately repeat the process for the next blank, only this time you apply PVA along its length where it will butt up against the previously applied one. Obviously, you can now keep on applying the planking until you run out of space on your fuselage half-shell. As a consequence of this a process that could previously be spread over two or three days, as you wait for the PVA to dry each time, is now impressively reduced to how much time you can spend in one go at your workbench before you have to go and Hoover the stairs.

The first photo shows the start of the process one Saturday morning; the second, one week later. Although in the interests of accuracy I should point out that the fin was fashioned beforehand..! ✈

c_williams30@sky.com

Handsize of the T31 is evident here.



DHC-6 TWIN OTTER

Kevin Crozier lines up XFly-Model's 1800 mm Twin Otter on the taxiway ready for when the sun shines

Words & Photos: **Kevin Crozier**

Spring has well and truly arrived here in the West Midlands but sadly it hasn't brought with it many signs of milder, drier weather – quite the reverse in fact! However, there have been a few days of light winds and sunshine between the showers and it was on one of those rare days that I stepped out with XFly-Model's latest scale twin, a neatly moulded example of the de

Havilland Canada DHC-6 Twin Otter, to take a few pictures so that I could at least write up the assembly part of this review.

Unfortunately, the ground around here is still far too wet for many of the local model clubs to mow their flying strips, so I am having to bide my time waiting for suitable conditions in which to undertake the Twin Otter's maiden flight. Rest assured though, as soon as a few

flights have taken place and some nice flying pictures are available, I'll be back to conclude this report.

Anyway, that's enough about the weather. Let's take a look at how the Twin Otter goes together...

KIT DESCRIPTION

If you've read my past reviews of XFly-Model kits, then you'll know that I am a bit of a fan of this brand of ARTF moulded foam model aeroplanes and this kit looks set to continue the trend. The packaging is first class, cushioning the individual airframe parts in well matched 'shadow' foam trays, to ward off any damage whilst in transit during the long journey from the X-Fly factory in Dongguan, China.

The Otter's fuselage is in three parts, consisting of a magnetically attached nose, the main cabin and a plug-in fin and rudder unit. The cabin windows are glazed with clear mouldings, not just stickers, and the large windscreen is well suited to an FPV camera installation if you want to see the view from the cockpit.

The two-piece tailplane comes with ready fitted elevators. The hinge line is shrouded in a scale like manner and the surfaces offer full and free movement, ditto hinging of the large rudder.



From the box XFly-Model's new Twin Otter kit can be assembled very quickly despite being of an impressive size.





Tail section is a close fit in the rear of the main cabin.

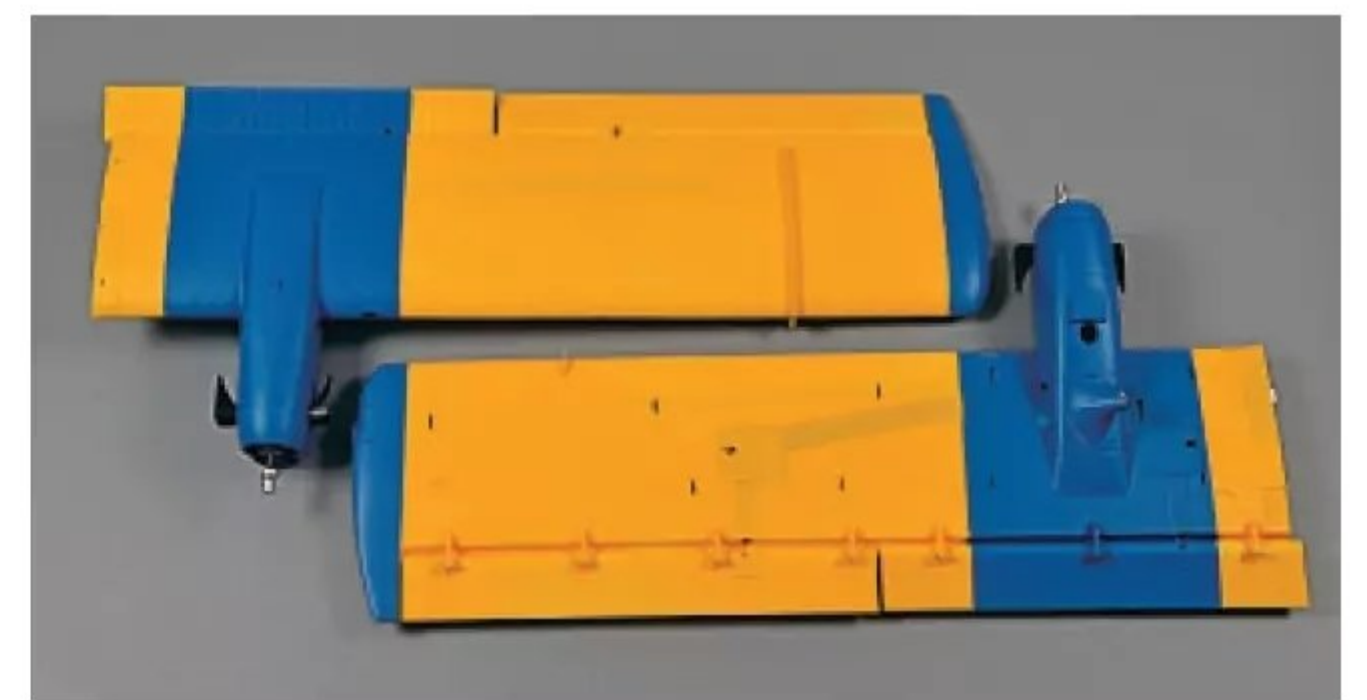
The wing panels are fully finished and like the tail controls the flaps and ailerons are shrouded and freely hinged in a scale like manner. Each flap is supported on three scale hinge arms, with four hinge arms used to support each aileron. Instructions in other flapped XFly models I have assembled have emphasised the need not to connect the flaps until after the radio has been set up to avoid overdriving the surfaces and possibly damaging the flap servos. But this is not possible in this case as the linkages are internal and covered in sprayed over panels, the same with the aileron linkages. So, the best way to proceed is to dial in very low travel for the wing servos at the transmitter so you can see what is happening to each surface, although barely moving, and increase the throws or reverse the servos as needed.

The root end of each wing panel is dominated by the elegant engine nacelles into which are fitted a 3541-KV550 brushless motor and a 40-amp ESC. At the back of each nacelle is a mounting point for the wing struts. A pair of three blade 10" x 7" propellers are supplied to fit to the Otter's motors, along with blue spinners, neatly colour matched to the band of colour on

each wing. The black props are painted with white bands and whilst on the full size this obviously provides an important visual clue whilst they are spinning, helping to stop people walking into them, I believe that the main function of the stripes is to reduce collisions with birds, especially gulls, bearing in mind that the Twin Otter is often used as a seaplane. This is definitely true of the Trans Maldivian Airways example replicated here, which neatly brings us onto the available undercarriage options.

FLOATS OR WHEELS

If you have discovered the joys of floatplane flying, then you'll realise that there's no going back – it's highly addictive! For likeminded model fliers the discovery of a pair of floats in an ARTF kit, as has become quite common in recent times, is a distinct bonus. But if you have no interest in flying from water (trust me, you'll love it!) then I can imagine it must irk somewhat to find yourself paying for additional parts that you will probably never need. Hats off then to XFly-Model for recognising this and for providing two options of this kit, both having wheels but with the floatplane version



Wing panels straight out of the box. Just fit the props and they are ready to go!



Scale hinge arms provide full and free movement. No flexing of stiff hinge lines needed with this one!



The 3-blade props are nipped up using a tommy bar through the prop nuts. A suitably sized screwdriver shaft does the job nicely.

also including a pair of long and nicely moulded floats, the port one of which also includes a water rudder with an internally coupled 9 g digital servo. ✈



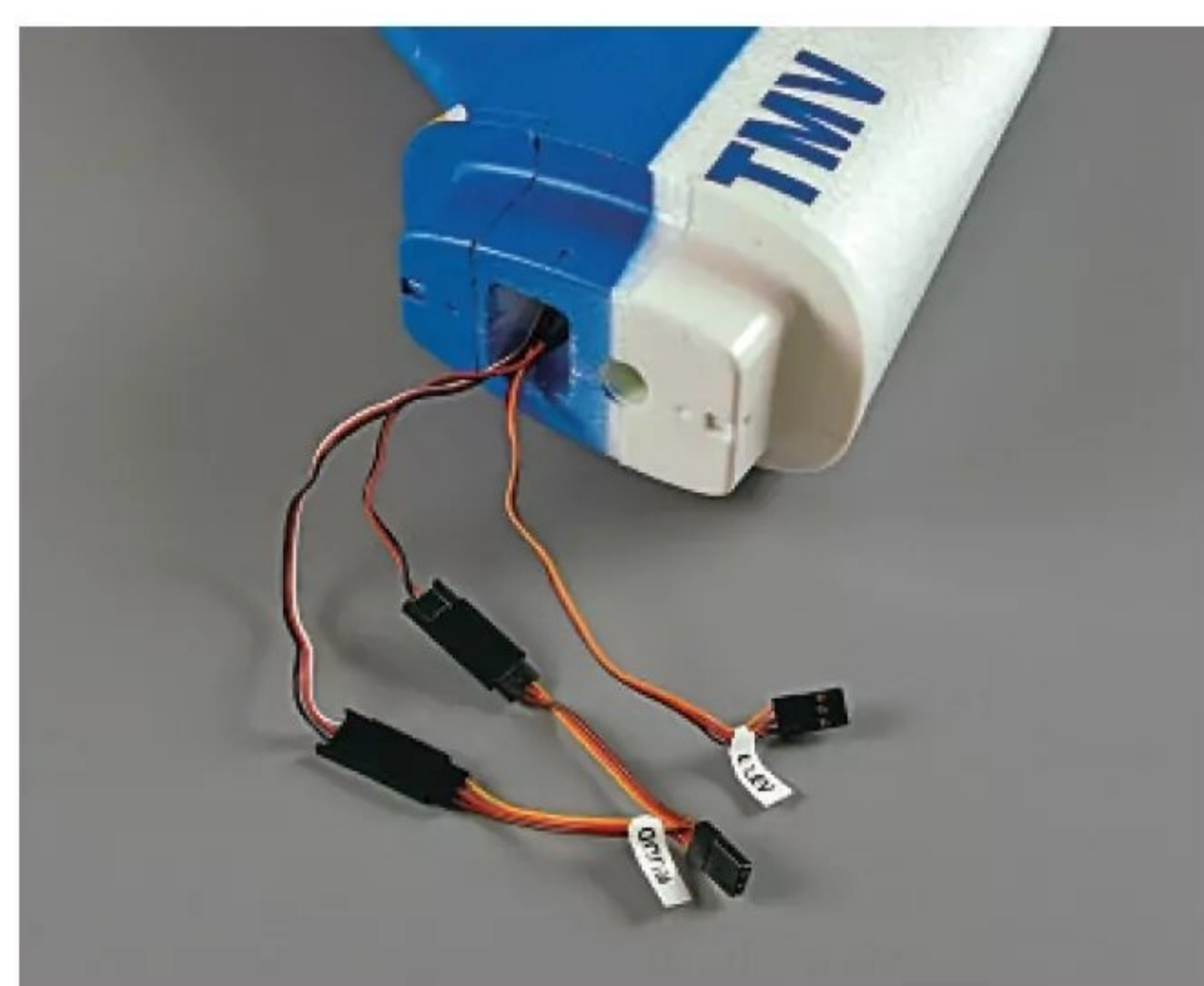
Wing root details showing the XT60 power connectors and the 9-pin D-connectors for the servo and lighting wires.



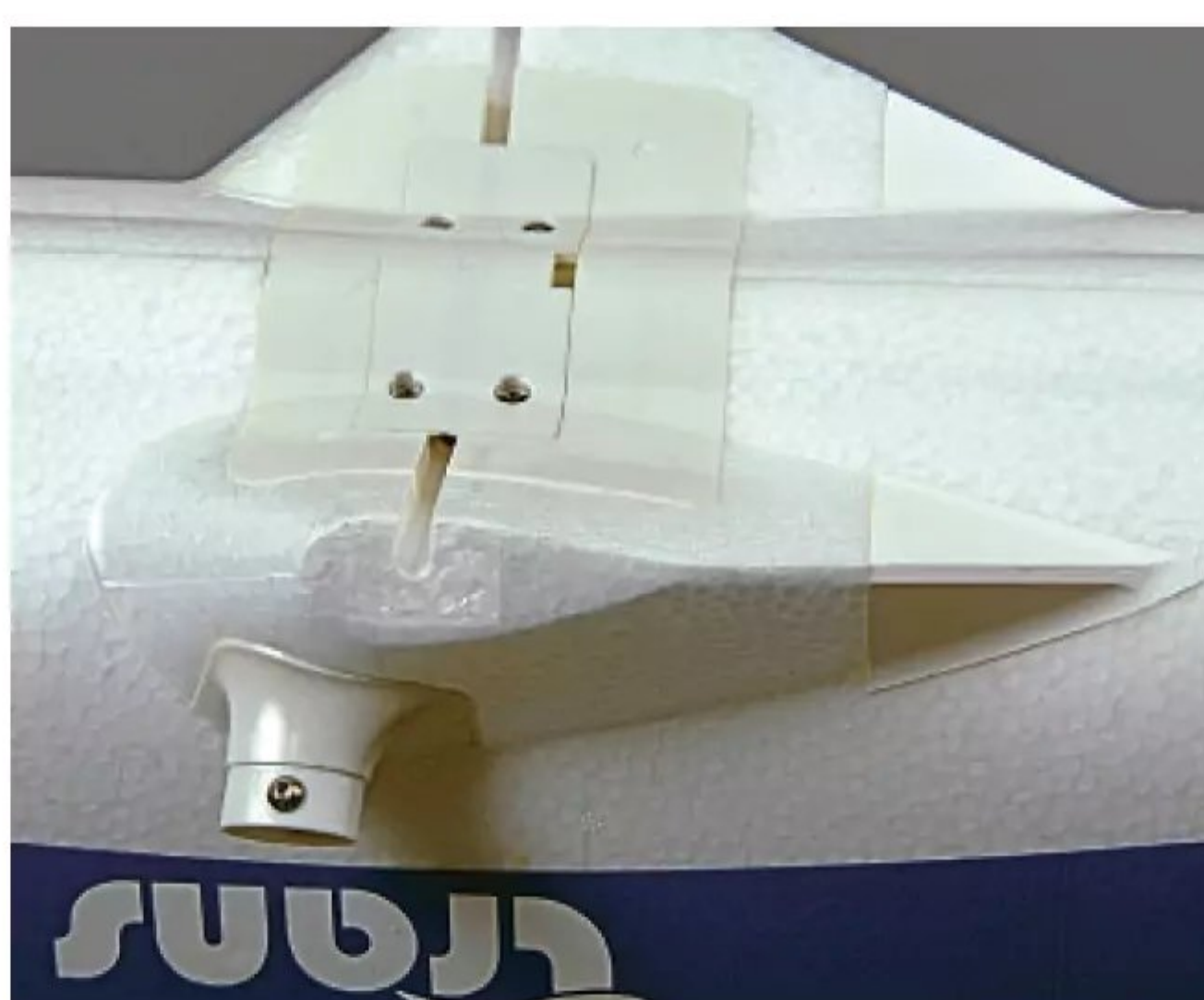


Accessory spread showing (clockwise) the illustrated manual, the two 'anti-seabird' painted props, steerable nose leg and wheel, hardware, wing struts and LiPo fixing strip.

"The steerable nose wheel comes as a ready to fit unit, complete with servo"



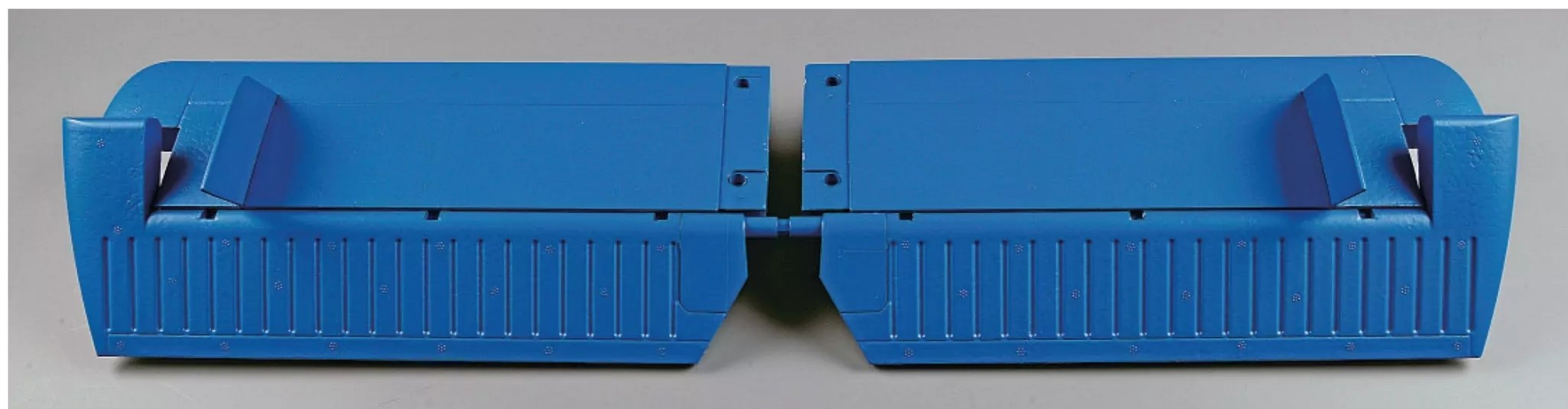
Tail servo leads are clearly marked ready for connection to matching extension leads waiting in the main cabin.



Teardrop undercarriage mounting fairing and central U/C fixing plate. Note the wing strut attachment point on the other side of the fairing.

As my local float flying lake must be approached over cow pasture, the sodden condition of which is not currently suitable for driving on, then this model's baptism from water will have to wait for another follow up article. It may coincide with the maiden flight report, but we'll have to wait and see. So, wheels it is for now...

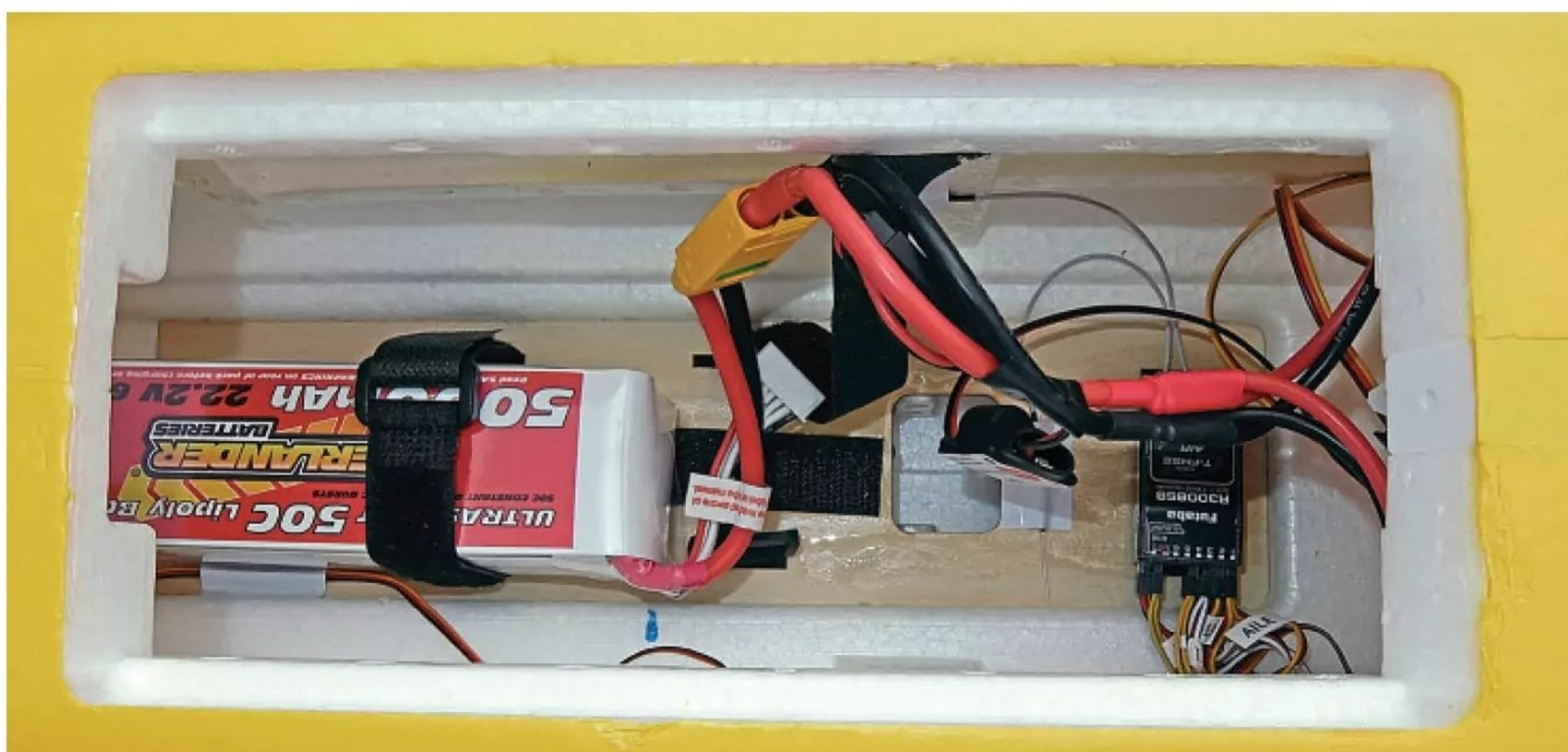
There are no squash flat foam tyres fitted to this model, each white wheel hub being enclosed by synthetic rubber tyres. The factory assembled main undercarriage includes a fairing on each leg that matches up with tear shaped mouldings on either side of the fuselage. The upper side of each tear shaped moulding also provides the mounting point for a wing strut. Between the tear shapes is the main undercarriage mount. The preformed U-bend in the wire legs simply drops into a deep slot where it is then covered by a broad plastic plate and secured with four 3 x 10 mm countersunk screws.



Like the rest of the model the tailplane halves show a good level of scale detail. The elevator joiners have square male and female ends which fit closely together.



Twin Otter is available in wheel only or floats and wheels options. I'll be testing her fitted with floats in a future issue.



All move forwards, please! My 5000 mAh LiPo needed to be placed at the front of the battery bay to balance the model.



The steerable nose wheel comes as a ready to fit unit, complete with servo, and this simply drops into a matching hole in the nose where it is secured with four small screws.

ASSEMBLY

This must qualify as one of the speediest foam models that I have ever assembled, which is especially notable because of its size. At just

over 57 inch span it is no tiddler! What little construction there is well detailed in the 17-page illustrated manual. (Actually, it's double that but the rest is in Chinese.)

First job is to attach the wings, which slide onto a 550 x 10 mm wing tube. Each panel is secured with a pair of 3 x 16 mm countersink hex headed screws. At first try it is a bit of a fiddle as whilst sliding on the wings you also

have to line up the wing struts. This is made easier if the struts are fixed to those tear shaped U/C mounting fairings mentioned earlier, leaving just the wing end of each oval shaped strut to be matched up with its corresponding fixture underneath each nacelle. You also have to connect the XT60 connectors that feed power to the ESCs and motors via a Y-harness. The XT60s



Walkaround views of the XFly-Model Twin Otter 1800mm. Check out the tail alignment from the front – all nice and square!





The banded 3-blade props have a noticeable amount of down thrust.



Navigation and landing lights are protected with scale like lens mouldings.



Although only fixed with two 20 mm screws the tail unit is very secure.

are a snug fit in matching holes in the wing roots so it's best to give them a head start by partially inserting them in their slots. Servo and navigation / landing light connections are taken care of by self-aligning 9-pin D-connectors.

Next, the landing gear is fitted, as already detailed above, before attention turns to the tailplane, both sides of which slide easily onto their 400 x 8 mm joiner tube. The elevators are kept lined up with each other thanks to square mating ends on each joiner. Another pair of small countersink screws secures each tail half in place.

With the horizontal stabiliser fitted the completed tail unit can be attached to the main cabin. An inner moulding extends a few centimetres into a matching hole in the back of the cabin where it is secured in place with two 3 x 20 mm screws. The fit is closely matched and there is no slop after the screws have been tightened, which is just as well as no-one wants a floppy tail! The line up of the horizontal stabiliser is thankfully spot on too (see the nearby picture looking over the wing), which is a big relief as there is no provision to adjust the tailplane. Good work, XFly-Model!

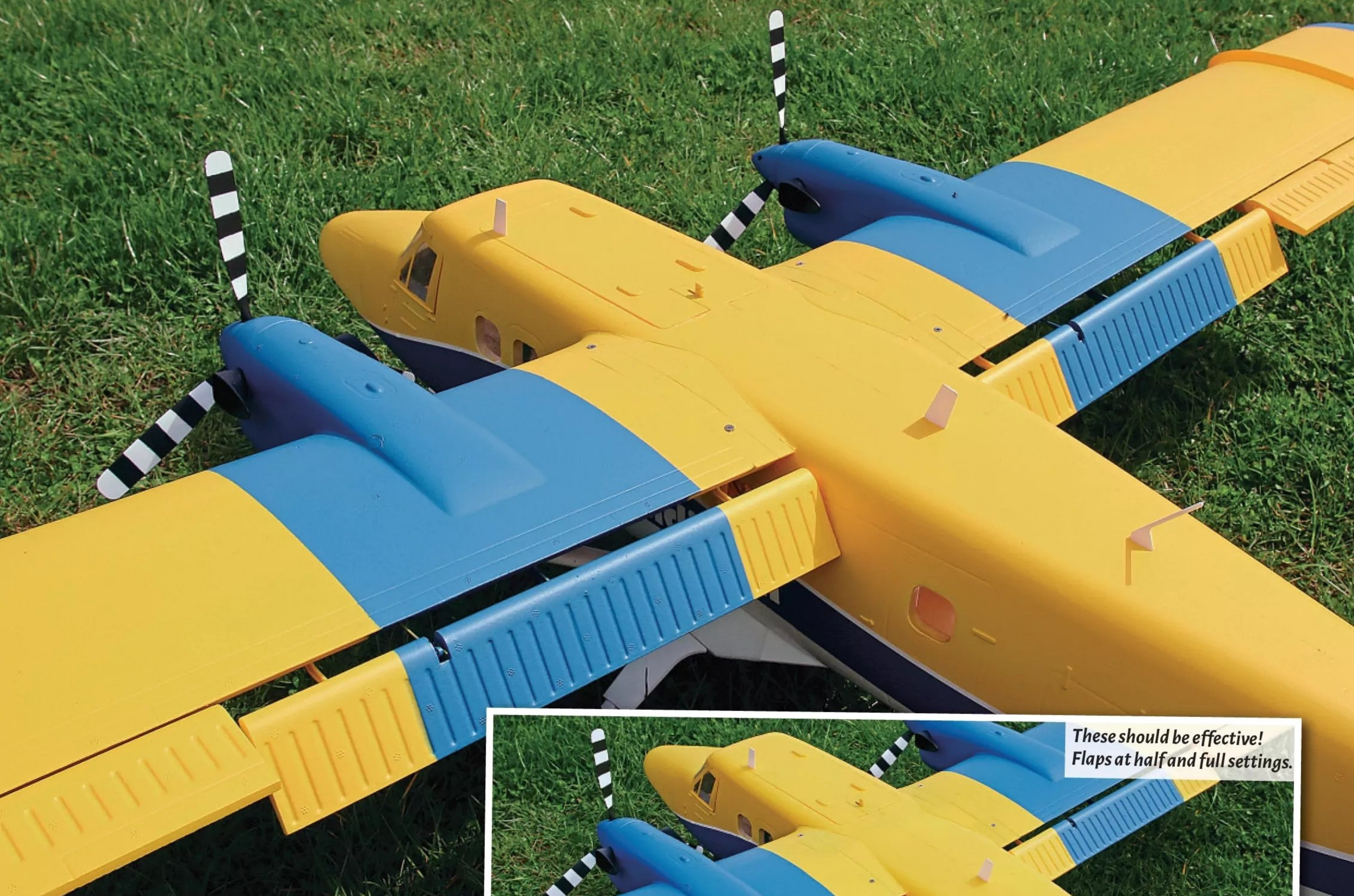
All that's left to do is to pop on the magnetic nose and fit the props and spinners.

SETTING UP

The rudder and elevator servos are located in the tail, just under each tailplane root. They can be quickly linked up using the pushrods provided. Only minor adjustments were necessary. The pushrods have Z-bends at the servo arm ends and pop on ball-links at the control surfaces. As stated earlier, the ailerons and flaps are operated via internal pushrods so there is nothing to do regarding the wing.

All controls were set up as per the manual and I also dialled in a two-stage flap to elevator mix, as suggested, to help stop the model from ballooning upwards when the flaps are deployed. The amount of mix will need to be fine tuned during flight testing but as with any mix it's best to start small and increase it in small steps if necessary. I also used my new Futaba Tx to slow down the flap servos so that they deploy in a more scale like fashion rather than just dropping instantly. I have no idea how fast the hydraulic flap actuators are on the real aeroplane but it's quite pleasing to see the flaps deploy in such a steady manner.

The recommended CG setting is 61 mm from the leading edge of the wing. I will be using 5000 mAh 6S packs for this model, which are at the bottom end of the 5000 – 6000 mAh range. Even so, I was a bit surprised to see these fairly hefty packs slowly disappear into the forward end of the battery bay. Eventually the model balanced at 61 mm, or thereabouts as I had to resort to 'fingers under the wings' as the nacelles were interfering with the arms on my balancer. This meant that I could only use the forward one of the two hook & loop straps provided to secure the LiPo. But as I always use additional Velcro strips to secure the battery packs in all my planes there's no danger of the LiPo moving, even if I find that the Twin Otter is capable of some mild but decidedly non-scale aerobatics!



*These should be effective!
Flaps at half and full settings.*

NEXT TIME

Hoorah! At long last it would seem that high pressure is on its way, if only briefly, so in the next couple of days I am hoping to make the journey to one of my clubs with a flyable strip. I'll be taking the Twin Otter along, hoping to maiden her if all goes well. Wish me luck! ■

DATAFILE

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

"I used my new Futaba Tx to slow down the flap servos so that they deploy in a more scale like fashion"

Stop Press! The Twin Otter has now flown so a full flying report will follow next time.





**EXPERTS IN
CHARGE!**



Find us
online & be the first
to find out about our offers:



Overlander Batteries



OverlanderBatts

UK'S LEADING MANUFACTURER FOR RC BATTERIES SINCE 1975.

LIPOS



SKU: 2567
2200mAh 11.1V 3S 35C **£18.99**

Overlander brings the buzz with our thrilling range of LiPo batteries! From tiny twirlers to grand UAVs, we've got the juice for every gadget in your arsenal. Packed with premium Fullymax cells, our batteries promise top-notch performance and durability!

NIMHS



SKU: 2866
2000mAh 4.8V 4S Eneloop **£19.99**

Charge up the excitement with our NiMH battery packs, ranging from the sleek 2/3AAA to the powerful SubC! Whether it's aerial flips or endurance runs, you can count on our Premium Sport, Low Self-Discharge (LSD) and Panasonic Eneloop packs.

LI-IONS



SKU: 3117
2200mAh 7.4V 2S Samsung **£17.99**

Explore our array of packs, featuring 18650 and 18500 cell sizes from renowned manufacturers such as Panasonic and Samsung. We're committed to going beyond the standard, providing customised pack builds tailored to your unique requirements.

What's New?

Explore the newest arrivals in our LiPo battery collection.

**500mAh 7.4V 2S 80C
LiPo**



Ideal for miniature fixed-wing aircraft and mini drones or quadcopters.

SKU: 3507 **£10.99**

**350mAh 11.1V 3S 40C
LiPo**



Perfect for small drones, helicopters, airplanes and gliders.

SKU: 3545 **£9.99**

**4000mAh 7.4V 252P
Digi-Power LiPo**



Specially constructed with a JR connector for receivers and servos.

SKU: 3533 **£33.99**

**650mAh 11.1V 3S 50C
LiPo**



Suitable for miniature aerobatic airplanes, racing drones and FPV quadcopters.

SKU: 3546 **£12.99**

RC6-VSR

£52.99

SKU: 3129

1-6S LIPO
1-15S NiMH

80W

7A

**BEST
SELLER**



Power up the fun with this 80W, 7A AC/DC charger! It's your top pick for charging all your favourite battery types. Featuring charge, discharge, balance, storage, and fast charge modes, it's the epitome of versatility and efficiency. What's more, it's loaded with safety features, including capacity, temperature, and time limits. It comes complete with a range of leads for various connectors, ensuring it's all set to team up with a diverse range of batteries.

RC-S65

£37.99

SKU: 3394

2-4S LIPO
6-8S NiMH

65W

6A

**COMPACT
CHARGER**



This sleek 65W, 6A AC charger is a must-have for RC hobbyists. With intuitive functions like dynamic balance charging for various battery types and robust safety features to maintain peak performance, this charger is a key addition to any RC toolkit. It accommodates multiple battery setups, making it a crucial piece of equipment for keeping your batteries charged and ready for use. Choose the RC-S65 for efficient and dependable charging solutions.

VSRmini

SKU: 3249

£39.99



A compact 60W, 6A AC charger for 2-4S LiPo and 6-8S NiMH. Small in size, yet mighty in performance, it's your trusted companion for efficient and dependable RC battery charging.

e455

SKU: 3425

£25.99



A 50W, 4A AC charger with a built-in balancer for 2-3S LiPo and 6-8S NiMH Batteries. Compact and versatile, it's your gateway to hassle-free battery charging for your RC adventures.

RC-3S

SKU: 2913

£16.99



Super compact 12W LiPo Charger for 2-3S batteries. Equipped with an LED indicator a built-in JST-XH balance port and provided with a setting card for effortless use. Simplify your charging experience!

Overlander Industrial

Join us to bring your unique ideas to life! No project is too small for us. We thrive on collaborating with innovators and DIY-ers who are passionate about their custom projects. We specialise in crafting bespoke battery packs using a variety of cell types, including LiPo, Li-Ion, LiFePO4, NiMH, and alkaline.

45 years experience



UK-based support



Quality guaranteed



Get in touch today, and let's explore how we can work together to power your project dreams into reality.

Powering your innovation

www.overlanderindustrial.co.uk

Scan to
explore our
custom battery
service website



A COMPANY CALLED FLAIR

Join **Dudley Pattison** for part three of his autobiographical series on his stewardship of Flair Products

Words: **Dudley Pattison** Photos: **Dudley Pattison, Flair model owners**

I have a few memories that will stay with me forever. The first concerns a Dara.A race meeting was organised in Switzerland.

The rules were different in that any engine could be used, unlike Britain where it had to be below a price set by Dave Boddington. Mick Wilshire of Super Tigre engines was furious with Dave as his ST .20 was over the allowed price. So, for the Swiss meeting I bought a piped OPS, just about the most powerful .20 on planet Earth. I fitted the pipe down the side of the

fuselage with two Terry clips. Keith and I went up to Wroughton aerodrome to test fly the model. The motor was started, set a little rich as lots of fuel is needed when the pipe cuts in and the revs increase dramatically. Keith launched it and it seemed to hover for a second like a scene from a Bugs Bunny cartoon (I bet there are some of you that don't know what I am talking about) and then it was gone. It screamed away at a phenomenal speed.

Within a few seconds I did a turn around an imaginary pylon. The G force on the pipe made it slip out of the Terry clips (I was stupid not to wire lock the open tabs together) and the engine calmed down and stopped. So I thought I would try it with the standard silencer. It was not as quick as with the pipe, but it was still very quick and I was happy to drag it off to the land of Toblerone.

This instalment begins with Bob Fletcher's lovely rendition of a Flair S.E.5a. Bob was a Flair sales agent and he has built many of the Scout and WW1 kits.

“Keith launched it and it seemed to hover for a second like a scene from a Bugs Bunny cartoon”





Above: Bob Shuttleworth's Club 20 Dara pylon racer which he built in the 1980s.

A BIGGER MUSTARD TIN

By the time I was on the start line I had flown it a few times to get to know it, but I had not flown a race, or flown it for as long as a race, which would have been a little over a minute with this missile.

So the flag went down and Keith launched my model. It ran out of fuel at the start of lap ten, the last lap. There was nothing I could do at this stage for the other races except attempt to start the engine in the last few seconds of the one-minute start time allowed. So that's what Keith and I did and for one race we got it right: the engine stopped as I went over the finish line. I won that race by quite a margin but as it was the only one that I finished I didn't come anywhere in the results. The Swiss were very kind and awarded me a gold Krugerrand for being the unluckiest loser.

If my stupidity had allowed me to check the flight time in the tank it would have been an easy task to increase the volume by ten or twelve percent. The tanks were simply two-ounce Colman's mustard tins soldered up with pipes fitted. Stretching one would have been easy. Oh, well.

MAGGIE ON ICE

The second memorable happening concerned my Magnattila on floats. It was powered by a Saito FA-45 four stroke and so was relatively quiet. I had been seeking permission to use a



Atmospheric shot of a Magnattila from Mark, a member of the Flair Facebook group.

gravel company's lake at Lechlade, just north of Swindon. The management said they would have no objection, but I would have to contact the local council to ensure it was not too noisy.

So I agreed to meet the council sound man at the lake. It was bitterly cold, and the lake was frozen over, but the ice wouldn't have been thick enough to walk on. I didn't see a problem as the Maggie floats were WWI style with flat bottoms. There was absolutely no wind on that day. So, the Maggie trundled across the ice and lifted off. To keep the noise down on the monitor I flew some distance from our position on the shore. The birds in the trees, and certainly the gravel trucks on the adjacent road, both made more impression on the noise monitor than the model.

At that point my stupidity was pointed out to me by the motor, which suddenly stopped. This ✈

Below: Nigel Watson from Martinez in California is in contention as owner of the furthest travelled Flair Scout. Unfortunately, his lovely Magnattila met an untimely end after an incorrect change to her programming.



This unattributed scan of an old print shows a Puppeteer on the sort of flat-bottomed floats that Dudley recalls in his 'Maggie on Ice' piece.



Right: Another beautifully built Flair Scout by Bob Fletcher. This one is his 91-inch span Hannibal, big brother to the 46-inch Attila and the 60-inch Magnattila. In the Flair catalogue, Dudley says about this design, 'Looks scale like, can be thrown around a bit, but forgives a shaky thumb.'



was one landing I had to get exactly right and no mistake. My immediate thought was that I would have to go home and bring a fishing rod to rescue it. The model was about 200 yards out but with sufficient height I aimed it straight at myself, crossed my fingers (difficult with a transmitter being tightly gripped!) and started praying. I made a good touchdown some 25 yards out and the model slid arrow straight toward me and stopped a half metre from the shore at my feet. I nonchalantly picked it up as if I did that sort of thing on a daily basis. I think the council official was taken in by that as no comment was made!

My memory fails when I try to remember why I never used that lake again as the test had been passed with flying (literally) colours.

PIPED PULSAR

Another memory involving my innate stupidity concerned my Pulsar which was a beast. A nice beast, but a beast none the less.

A piped OPS .60 provided the motivation and provided it in spades. It was capable of a knife edge loop, but I didn't have the nerve to do the down going half. This ability was due the side area of the interplane struts, the central top wing pylon and the fuselage.

It was a quick machine and so I entered a

biplane race at Baldock. The next fastest plane there was a Lou Andrews Aeromaster, a lovely design that I had built before my Flair days. One rule of the race, and I cannot remember how many laps it involved, was that the aircraft must be landed and refuelled. Dave, the Aeromaster pilot, landed, refuelled for five seconds as he didn't really need fuel and took off again. I landed just after and because the OPS was so greedy I needed to fill the tank. All this time Dave was eating the laps. I eventually took off and was two laps behind. There was just enough time left for me to go past him twice and beat him over the line. For that I won an Irvine 20, an engine new the market and a very nice prize.

PULSAR DOWN

Yet another Pulsar story involves us having a stand at the Woodvale show near Liverpool, which was then an annual event. One year whilst there I decided to sell my Pulsar, complete with engine. I agreed a price of £110.00 with a customer but said we needed it for one more demonstration flight that afternoon.

The time slot came, and Keith and I took some models and equipment to the flight line.

I had started the Pulsar when Keith said, "Hey Duds, Kevin Caton is here. Why not let him fly the Pulsar?" I had always had a rule that I needed to see a pilot perform before I would let him display for me. But Keith knew Kevin well from the GB R/C Aerobatic Association and rated his ability highly. I agreed and watched Kevin take off and perform a perfect four-point roll, then I turned to fire up the Magnattila and display that. I had only turned the radio on for a few seconds when Keith came across to me and said, "Your Pulsar has just gone in, Duds!"

Cursing myself for breaking my own rule, it then dawned on me that it was my stupidity at work again. Both models were using Cotswold Controls UHF sets as Cotswold Controls sponsored me. And they were both on the same frequency! UHF in those days wasn't like today's sets; they had a set frequency and the fact that they were on the same one didn't normally matter as I can only fly one at a time. It really is a miracle that I have lived this long with the daft things I do at times. Luckily there was very little damage and although I offered the buyer his money back, he declined and took the model.

"...my Pulsar which was a beast. A nice beast, but a beast none the less"



When completing his Puppeter, Andy Whittaker opted to finish his model in the style of the Sopwith Dove in the Shuttleworth Collection at Old Warden. Built about six years ago, it flies really nicely on an SC 52 four stroke.



Wondering what the difference is between a Baronette and a Flair Fokker Triplane Dr.1? The former is smaller at 49-inch span for up to .40 two stroke or .50 four stroke engines, whilst the Dr.1, as shown here and built by Andrew Mawman, spans 73-inches and suits .90 minimum two-strokes or a .90 to 1.20 four stroke.



Flair produced a 73-inch wingspan Piper Cub with foam or built-up wing options. Paul Bennett says of his model, 'At the age of 60 it's the first model I've built - a late starter! I was gifted the kit by a gent who bought it many years ago and never got round to making it. The reg is G-ORDN as my nickname at the club is Gordon Bennett!'



Bob Shuttleworth has been busy again! His Puppeter is finished in a more traditional colour scheme.



Judging by the many S.E.5a pictures we have been sent then this design must be in the running for most popular Flair WW1 kit! Here's Peter Coxon's fine example on a low flypast.

WEBRA WOES

At one time I bought a Webra .20 to use in my Dara. In those days there were two ways that I ran a race motor in. One was to run just down off full power and pour a little Lustrax into the carb intake. Lustrax was an extremely fine grinding paste and it ran the engine in quickly. The other method, which I preferred, involved cutting the usual 8" x 6" Taipan propeller down to about 4-inch diameter. This was enough to produce a cooling airflow over the motor. The motor could then be run at about 20,000 rpm and still be four stroking. It was never leaned out on this size propeller - it probably would have exploded! The theory was, I think, that the piston would never travel up the bore quite as far in normal use, at about 12,000 rpm, so it would never meet the tiny ridge around the cylinder bore again.

I started winning races with this motor until one day it dropped off in power for a short time and then came back on song. This happened on a regular basis and was costing me races. The times I stripped it and found no problem were legion. At the Nationals one year I had a real

engine expert come into my caravan to take a look. He couldn't find any fault but when I picked up the silencer a nut rolled out of it. It was something like a 3 mm or maybe a 6 BA nut, just the right size to jam in the exhaust outlet and partially choke the exhaust. With the culprit removed I started winning races and race meetings again.

Then irony struck. I was Chairman of the CTA (Club Twenty Association) at the time and because the Webra either became obsolete and was removed from the market, or it became too expensive (I cannot remember which) I had to ban its use. Talk about a parrot being sick!

DIVE, DIVE!

At one stage I was invited by the Dublin Model Club, via Dave Bishop, famous for his commentary at model shows, to cut the ribbon and 'open' their new flying facility on the new Dublin Rugby Ground. It was a very posh affair with a nice bar overlooking the pitch and the flying area. So, myself, Keith Hart, Pete Nicholson and John Hodey piled into my Volvo,

pulling a 17' long caravan. I probably got 15 miles to the gallon!

It was a fantastic weekend. The chairman of the club was in a band which were present at a party he held on the Saturday night at his house. One modeller in the club built a model that he could eject the wings from and all day long he tried to make it happen without success. When he did succeed, he was over the sewage farm adjacent to the field! As I reversed my Volvo out of the chairman's drive, after the party, this same chap came out of the drive, just after me, on his push bike. He waved to us but lost his balance and slowly disappeared below the bonnet line with his waving arm still up, making him look like a submarine diving with its periscope already deployed! ■

"I started winning races with this motor until one day it dropped off in power for a short time and then came back on song"



Dudley says, 'The last model I designed for Flair was also one of the most complicated kits to produce but the Bristol F.2B Fighter built into a lovely model.' This one was built by Andrew Clarke and photographed by Mike Mennell.

TEST FLYING

Part 2

After describing his pre-maiden flight check list in the last issue, **Jeff Barringer** offers up a follow up check list to run through during that nerve jangling first flight

Words: **Jeff Barringer** Photos: **Bill Pilsbury**

In Part One we went through the procedure of checking out a model on the ground before its maiden flight. It can take a full 20 to 30 minutes, but, trust me, it's worth it. My partner in crime, Gareth Tilston and I have sent quite a few models home without performing the test flight, but with instructions on how to correct the faults we found. And in that way we've saved several models from destruction.

But now we are walking out to the patch with the model ready for the maiden. Before we launch it into the wild blue yonder there are some important points to consider:

WEATHER

We are looking for a day with a mild breeze blowing gently down the patch, good light and no-one else flying. Dream on!

Such conditions rarely exist and so we must define the conditions we will accept, or at least how we expect to cope with adverse conditions. I usually avoid flying if the windspeed is above 10 knots, is strongly crosswind for our long runway or is excessively gusty. It's a real help that our club patch is always kept in great condition and my clubmates react to the call 'Lining up for Maiden!' by either landing or getting out of the way. I don't know what's going

to happen, so why should they?

It's not possible to fully assess the aerodynamic characteristics of the airframe in a ground inspection and so we must suck it and see, which is the essence of test flying. But we can pre-condition ourselves to certain reactions before they occur, to get ahead of the situation so to speak. So, how are we going to take-off, what might go wrong and how are we going to cope?

AIRFRAME

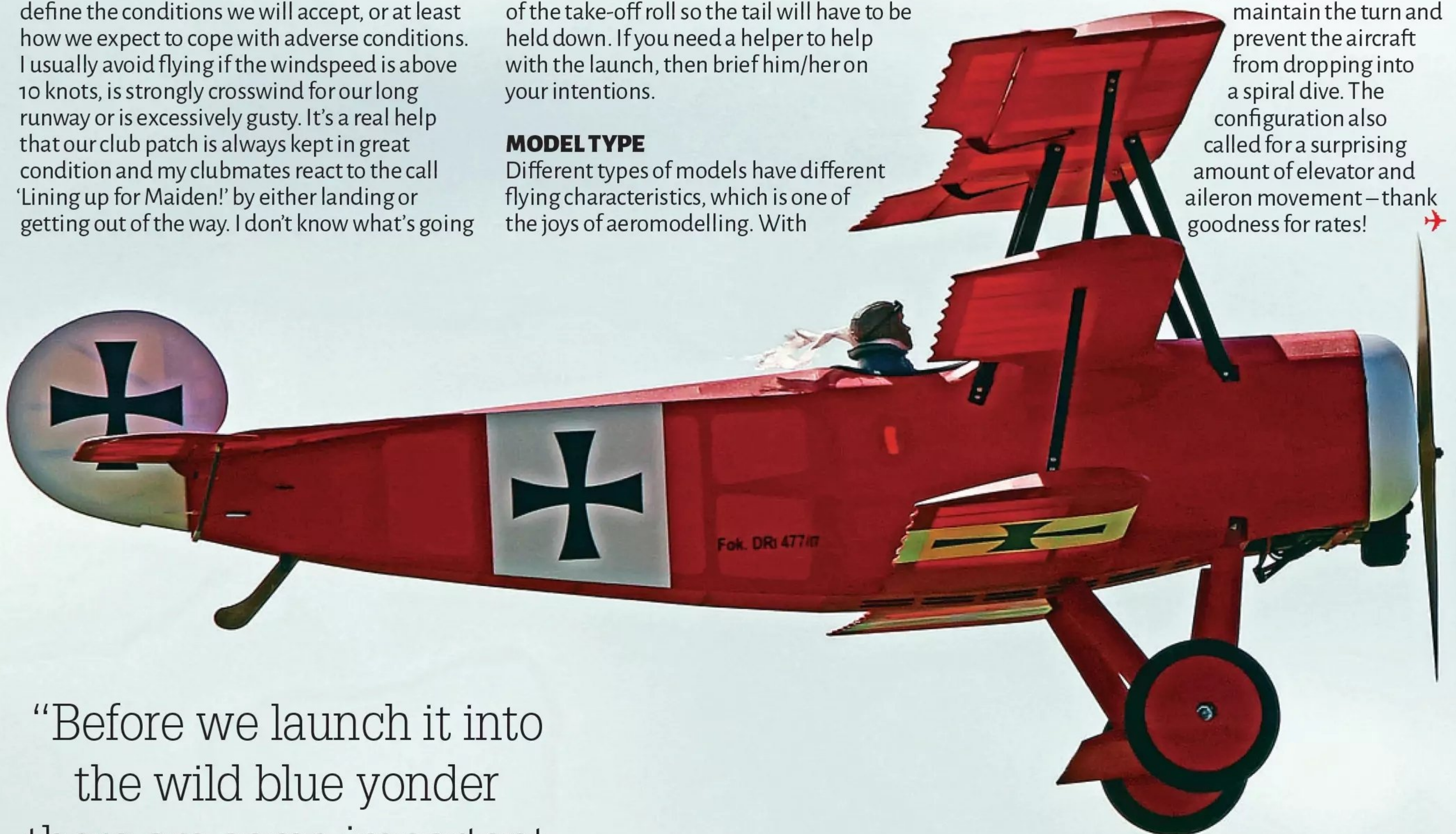
The airframe's construction will define our first take off. Will we need a hand launch? Is the model sufficiently large without an undercarriage that a dolly launch should be considered? Is the undercarriage tailwheel or tricycle configuration? Are the C of G and mainwheels close enough together that the model will nose over at the beginning of the take-off roll so the tail will have to be held down. If you need a helper to help with the launch, then brief him/her on your intentions.

MODEL TYPE

Different types of models have different flying characteristics, which is one of the joys of aeromodelling. With

due caution a model designed as a trainer ought to be benign and so your test should ensure that that is the case. EDF and jet type models often need fast take-off and landing speeds, and really burn through batteries. A WW1 or WW2 fighter often needs a lot of ballast in the nose to account for the heavy engines used in the full-size prototype. Despite this a WW1 fighter may be benign as a biplane with plenty of wing area, while a WW2 fighter may have to be flown fast to accommodate its relatively high wing loading.

To take a specific example, the Fokker Dr.1 triplane pictured has little in the way of vertical control surfaces, consisting only of a small all-flying rudder. After an initial brief lift-off and immediate landing to test for nasties, a careful flying technique was used for the maiden, rolling into a turn with aileron and rudder and then putting in opposite aileron to maintain the turn and prevent the aircraft from dropping into a spiral dive. The configuration also called for a surprising amount of elevator and aileron movement – thank goodness for rates!



“Before we launch it into the wild blue yonder there are some important points to consider”

By mentally preparing for things to go wrong before a maiden flight and how to cope if they do, you will be more likely to enjoy a successful first flight.



MAIDEN FLIGHT CHECKLIST

Action	Comments
	Weather, wing loading
Take-Off	Height is your friend
Establish Trims	Rates
Stall into wind	Severity
Low speed High G turns	Both directions
Low Pass	Full power, thrust angles
Pull up to Stall Turn / Wingover	Vertical descent, Rudder power
Half-loop / Immelmann	Elevator input, Aileron power
Aileron Rates	Barrel roll, Axial roll
Flaps (if fitted)	Trim change
Gear	Trim change
Approach and Land	Power
Full aircraft check	
Timer / Battery	Debrief



Off too soon! This contra-coax Sea Fury lifted off the dolly before proper flying speed was reached but very fortunately it survived.



Bugatti maiden flight. The coaxial propellor was lacking a front bearing, which caused severe vibration, leading the model to crash.



Fokker Dr.1 take-off starts with a helper holding down the tail.



A careful flying technique was used for the maiden flight of the Fokker triplane - see text.

WING LOADING

While walking out we will have tried to get a feel for the wing loading of the model because that will affect its behaviour. A very heavy wing loading will mean a fast take-off and will affect the stall, and probably will require a higher landing speed. For the purposes of comparison, I would consider 15 ounces per square foot lightly loaded and 30 ounces per square foot heavy for a normal sized club type model.

DOWN & SIDE THRUST

As mentioned in Part One, lack of side and down thrust can make a big difference to flying and take-off characteristics. In electric models they appear to be particularly pronounced due to the fact that maximum torque is generated at zero revs. It is very possible that the model will veer to the left in the take-off roll so you must be ready to counter with rudder while lack of down thrust will mean the nose rising dramatically when you least need it.

WHAT ELSE CAN GO WRONG?

Next, let's discuss what else can go wrong during a model's maiden flight...

FAILURE TO REACH FLYING SPEED

This may be caused by an inappropriate propeller or lack of power, undercarriage drag, long grass or inadequate battery power. But, whatever, don't be tempted to drag her off; abort the take-off and sort out the issue.

WING DROP

We may see a wing drop on take-off and this can be caused by a number of issues: too low take-off speed, asymmetric wing lift, wash-in, an aft balance point, reversed aileron control. Rather than try to figure out what the problem is you should pre-condition yourself to correct with rudder, not aileron, which will only make matters worse. Shut down or continue the flight, your choice depending on the severity of

the condition and the model's reaction to your rudder input.

All things considered that first take-off will be defined by the model and your readiness to react to whatever it throws at you. If I'm in doubt about a model's flying characteristics I've been known to make a deliberately aborted take-off roll, where I've just lifted the wheels off the ground and then immediately shut down. In this way, if it's going to drop a wing, swerve or roll over, damage will be minimised. If all goes okay, then the dummy run can be turned into a take-off or alternatively a backtrack for another go.

Now the model is lined up pointing directly into wind and we're ready to fly. It's really helpful to have a trusted helper alongside to read the intended manoeuvres off the checklist, but also to make helpful comments, keep a general lookout, monitor time, hit the trim buttons on a wayward model and to make suggestions. Failing that, the owner can read the checklist.

TAKE-OFF

Okay, all the thinking and pre-conditioning has been done. It's time to go for it!

For a normal rotate off ground (ROG) launch do not slam the throttle open but open it progressively and allow the speed of the aircraft to build, correcting any swing with rudder. If you've had to ask your helper to hold down the tail of the aircraft then you will have to apply back-elevator and build the revs before telling him to release. Unless you know and trust his abilities, a 'push' at this point is not helpful as your helper may well disturb the take-off equilibrium of the model. Once the model is running true you can release most or all of the back elevator and allow the tail to rise (in the case of a taildragger) until flying speed has been reached.

For a dolly launch, again open the throttle progressively and use rudder to control the run

of the model.

For each type of launch you have primed yourself to use rudder to correct a wing drop and to abort if you're not happy with what is happening.

If the model requires a hand launch, there are number of options. When launching IC models, the preferred method is to run the engine up to full revs and then have the helper launch the model with the nose horizontal or pointing slightly down. This is because the engine is more likely to cut after the jerk of a launch with the nose pointing up. The situation is different for an electric model and my preferred method is to hold the model and do an under-arm swing with the spare arm supporting the wingtip. This leaves the model in an upward flight path (but be very careful if the model has a pusher prop mounted at the rear). Some models have finger grooves moulded into the lower fuselage and these can also be used for an over-arm launch. Whichever method, a good briefing and a common understanding between the pilot and launcher works wonders.

Okay, one way or another the model has reached flying speed, as judged by you taking into consideration the variables discussed, and now throttle/elevator control becomes your priority. Ease the model off the ground and try to create a steady climb out. The nature of this will be model dependent, but it is not desirable to haul the model into a very steep climb, hanging on the propeller (or the fan if an EDF). If the model's nose rises sharply, ease in forward elevator and perhaps reduce power to maintain a steady climb out. If the model just about drags itself off the ground, don't be tempted to pull back elevator but attempt to establish a gentle climb out. Failing that, ease back the power and make an out landing. Do not attempt to fly back to the patch.

At this time, if the balance point is too far aft the model will be difficult to control, being extremely sensitive in pitch and probably

Spitfire take-off sequence showing a trusted helper holding the tail down prior to launch. Next, the pilot gradually reduces up elevator during the take-off roll before a wing drop is corrected with rudder.





This Cessna 310 provides a good illustration of an over-eager rotation.



Another over enthusiastic take-off, this time with a trainer.



roll. It's difficult to advise what actions to take as characteristics in these circumstances vary widely, but my aim would be to lower the nose, reduce power and try to steady the model. Then ascertain whether the problem is truly a C of G issue or simply over sensitive controls. Sometimes the best solution is to set up for a landing and doing so over long grass, if available, would be a good option to minimise damage.

STRAIGHT & LEVEL

Assuming balance is okay, it is quite likely that the model will require trimming, so your aim is to put the model into a position where you can assess its straight and level characteristics. At this point height is your friend and depending upon how much out of trim she is either you, or your helper, can apply the required corrections to the model to get her to fly straight and level.

By now you should also have a feel for the aileron and elevator authority, and you can change the rates cautiously if required. Should it be that you have run out of trim, or you do not have suitable rates to achieve a steady straight and level track, then it's best to consider landing the aircraft as best you can.

STALL

Talking of landing, at any time on a first flight something could go wrong and so my first check is a stall into wind with gear down so that I can assess the landing characteristics of the model.

Once trimmed, climb to a safe height and

“...do not slam the throttle open but open it progressively and allow the speed of the aircraft to build, correcting any swing with rudder”



A long lens makes the fog in this picture look closer and denser than it actually was. Not a test flight, but this shot of a Sopwith Pup illustrates a straight and level pass, which can be enjoyed as soon as a new model is properly trimmed.

point the model into wind. Reduce power and steadily ease in back elevator. On some models the aircraft will just mush with its wings level when full back elevator is reached, but others will stall and drop a wing at or before that point. Whichever, recovery is to release back elevator and re-establish power. Assuming

that the stall/wing drop is not too vicious, I will exercise the ailerons in both directions whilst in the stall, which will give me an indication of aileron response on landing. Should this cause an 'energetic' response I will know to avoid the overuse of ailerons during the landing, opting for a straight in, fast wheeler landing. ➔

Climbing back out after the stall test, I will put the model into low-speed high 'G' turns in both directions, the idea of which is to provoke a tip stall. If performed at height recovery from a tip stall is straightforward and I will know to avoid steep turns at low airspeed, the classic danger point, of course, being the turn from base leg to finals when landing.

All this time I am commenting for the benefit of the owner of the model so that after landing he can make any changes needed, and interacting with my buddy Gareth, who is also commenting, maintaining a view of the 'big picture' and watching all the time whilst I'm dealing with the minutiae.

The next test is a fly-by followed by full throttle. The fly-by is to establish the cruise characteristics and for the owner to have a relatively close view of his model in the air and possibly take a couple of pictures. As the model passes, application of full throttle will provide an indication of thrust lines. If the model veers left on application of power, more right thrust is required; if it climbs rapidly in a nose high attitude then more down thrust is required. Be wary of the model diving rapidly, i.e. too much down thrust. As mentioned, down and side thrust seem to be more of an issue with electric models. I've built a couple of models intended for IC power from plans where it is clearly stated that neither is required, only to find on the maiden of my electric version that both are certainly needed if the model is to be anywhere near pure.

STALL TURN & IMMELMANN

Back to our flight, the next two tests are designed to assess the balance (C of G) characteristics of the aircraft.

Starting at a safe height, apply power and pull the model up into a stall-turn. Without practice this will probably end up as a wingover, but it will give an indication of rudder power and the main aim is to observe how the model behaves in the subsequent power off vertical descent. With no elevator input, if the model descends vertically then the C of G is about right. A gentle pull out of the dive means a forward balance point and tucking under means an aft balance point. This latter is not necessarily a problem, but it does mean that the controls will be sharper.

For the next manoeuvre, an Immelmann Turn, the model is pulled up into a half loop and then the elevator is released when the model is inverted and under power. A tendency to

Thankfully a full-size tarmac runway was available from which to test fly this lovely Concorde.



“These check lists are reproduced on either side of a postcard sized sheet, with the pre-flight list on one side and the flight test list on the other”

climb indicates an aft C of G. Recover to upright flight with a half roll, giving an indication of aileron power.

Bearing in mind that the test pilot's job is to prove and trim the model rather than put it through a full aerobatic routine (this is where one of Gareth's, 'Do you think that's wise, Captain Mainwaring' warnings come into play) my job is pretty much over. But depending upon the model and the owner's willingness, I will fly a cautious aileron roll, a barrel roll and a loop. If flaps are fitted one can fly a medium height pass and lower them to observe any pitch change characteristics, after which I would normally just comment and leave the owner to sort that out during his own flights.

LANDING

If you're a regular RCM&E reader, you'll have read my treatise on landing in the November 2023 issue. Fundamentally, what we've learned from the test process above should put us in good stead for the landing, and the only remaining challenge is the prevailing weather conditions. As mentioned at the beginning of this article I prefer low windspeeds for test flying and would normally avoid gusty conditions because they can seriously affect the model at the low speed expected for a landing. Whatever, do a time check to establish if a go-around is possible and overfly the patch to check that the landing gear is down. My preference would be for a flap free landing as there's plenty of room at our patch.

If the model exhibited a benign stall and no

obvious tip stall characteristics then it's just a matter of performing a normal full elevator flare, touch down and roll out. A sharp stall and wing drop will require different treatment so expect to approach at a higher speed and squirt in a little power during the flare to keep the elevator energised; three pointers can wait. Assuming there's enough battery/fuel don't be afraid to perform a go-around if you feel you can do it better next time. And remember that conditions can change every few seconds on a gusty day. All being well you'll pull off your usual greaser.

After landing the model should be checked over and the owner briefed on your findings. If it was just a trimming flight then the owner should be encouraged to fly it himself, with you standing alongside to offer advice and encouragement. On some occasions, if the model was particularly good, I might be persuaded to wring it out with a subsequent aerobatic flight. But that's a bonus and not what test flying is about.

With this article I've included copies of the checklists. These are reproduced on either side of a postcard sized sheet, with the pre-flight list on one side and the flight test list on the other and are carried with me in my flight bag. Do bear in mind that the lists are ever evolving as models find new ways to catch us out and they are an entirely personal view of the test procedure for Gareth and me. Your own check lists may be different, but we hope ours help. ■

■ All pictures by Bill Pilsbury. My thanks to Gareth Tilston and other NMAC members for their forbearance.

The long runway was certainly appreciated during the Concorde's landing roll!



THE STRENGTH INSIDE YOUR MODEL



Roket
Fast setting
1-30 second CA glues.
AD 43-46



Aliphatic Resin
Fast grab, easy sanding
yellow wood glue.
AD8 & AD9



'NEW' Foam Finish
Finishing resin that enhances
& protects foam models.
Gloss BD82, Matte BD83



PowerModel Jet Oil
The world's first fully synthetic
environmentally friendly
turbine oil. LU02



Speed Epoxy
4, 20 & 60 minute epoxy
glues. AD65, AD68, AD71.
Add strength with
Milled Fibre. BD69



Model Lite
Easy sanding
lightweight filler for
balsa, fibreglass etc.
BD5, BD6



Eze Kote
Finishing resin for
balsa & foam.
BD37



Eze Dope
For shrinking & airproofing
tissue paper. BD42



R/C Modellers
Gap filling clear glue for
canopies, rivets. AD81



Super'Phatic!
Super-thin, non-fuming
alternative to CA for pre-assembled
joints & hinges. AD21



CELEBRATING 50 YEARS

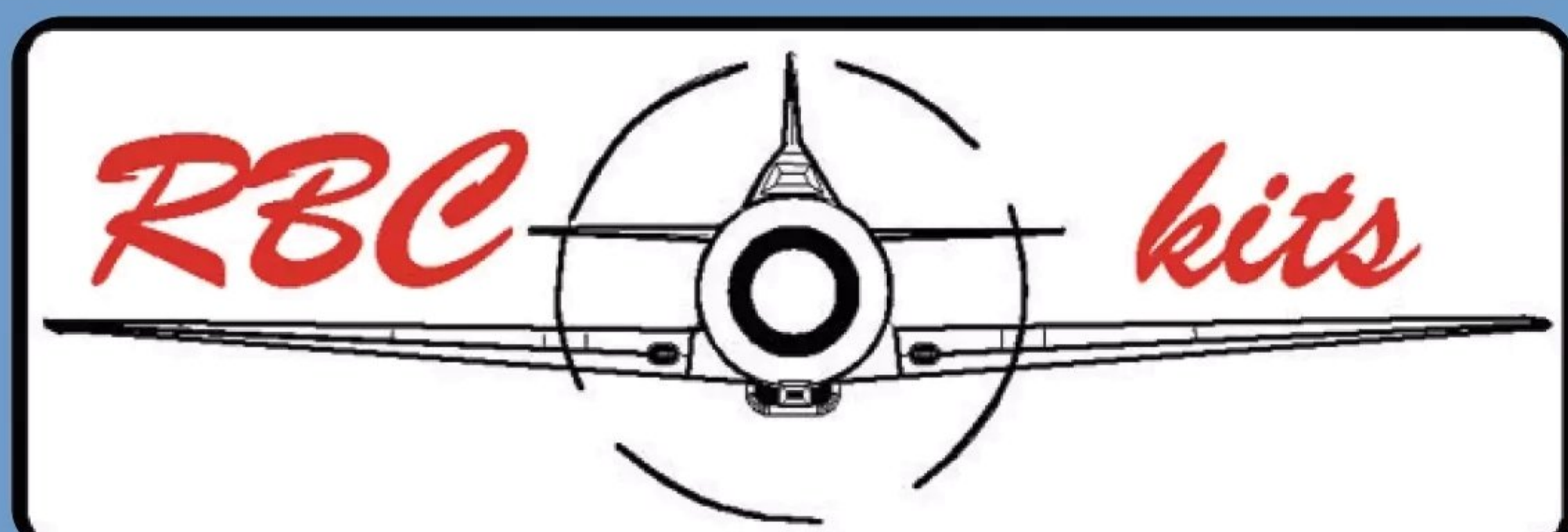
Available from all good model shops & through our network of international distributors: in UK ripmax.com
Australia by hobbiesaustralia.com.au In N. America horizonhobby.com
In case of difficulty: Consumer enquiries to deluxematerials.com T: 01529 455034



MADE IN UK

Download catalogue





WWW.RBCKITS.COM



TS11-Iskra
€293.-

Finest wood build kits superb cad design, high precision cnc cut clear cad drawings and download instructions Check the shop also , all build and flight proven

 P-47 1100 €103.-	 T33 €259.-	 Bearcat 1000 €103.-	 Mig15Uti €112.-
 Horten XII €149	 Jet Provost €259	 Mig29 €109.-	 Bobo Cat €99

Low shipping cost

Shipping worldwide

www.facebook.com/rbc.kits

I enjoy flying my Inverza 33. It is highly manoeuvrable but has neutral flying characteristics. I'll use this as my first example to show how to calculate the Balance Point.



Words & Photos: **Dick van Mourik**

STRIKING THE RIGHT BALANCE

PART TWO

Dick van Mourik finishes his two-part feature on calculating a model's balance point

In the first part of this article, we looked into the main factors connected with laterally balancing an aeroplane. We have seen that there are several factors contributing to the actual position of the balance point such as the shape of the aerofoil section, fuselage length, stabiliser area, MAC and centre of pressure.

When it comes to providing the correct location of the balance point some manufacturers are casual, to put it mildly. Needless to say, this could well prove to be fatal. Also, when buying a pre-loved model (it sounds so much better than second-hand!) the new owner is often left to guess where to find the correct balance point. This is why I would strongly encourage our readers to ALWAYS double check the manufacturer's recommendations by using the simple calculation shown below.

The following formula, presented by Gordon Whitehead many moons ago, takes all of the factors mentioned above into consideration:

$$BP = \text{average chord} / 6 + (3 \times \text{tail area} \times \text{moment arm}) / (8 \times \text{wing area})$$

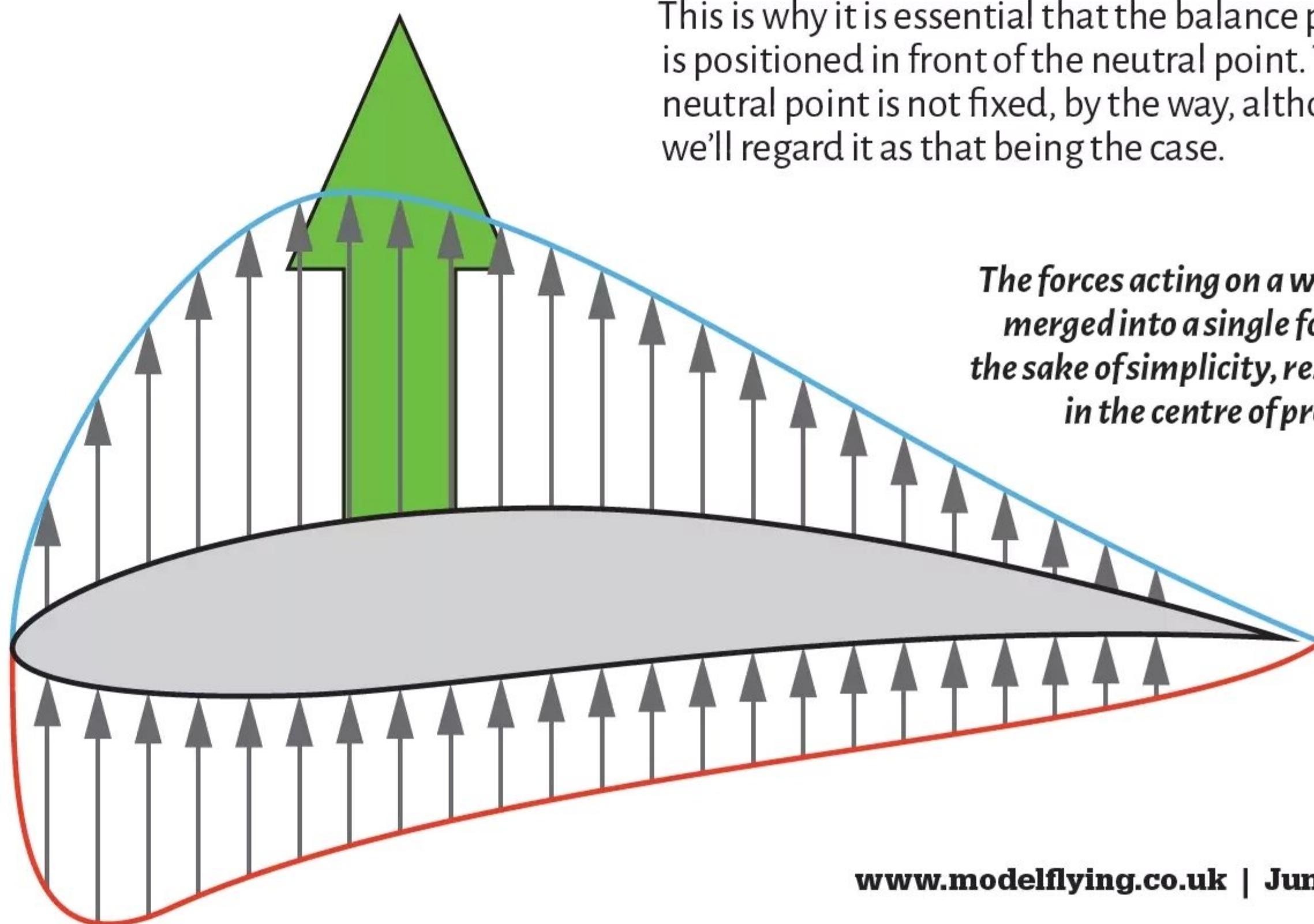
THAT NEUTRAL POINT AGAIN

Let's briefly return to the neutral point of the aeroplane as a whole, mentioned in the first part of this article. Analog to the way the forces acting on the wing are merged into a single force for the sake of simplicity, resulting in the centre of pressure, the position of the

neutral point now needs to be considered. It is the average location of all forces acting on the aeroplane. Should we balance the model at this point it will have inherent stability. It has NOTHING to do with aerodynamics but is purely weight related.

As written at the start of this series, our models require a certain amount of stability. This is why it is essential that the balance point is positioned in front of the neutral point. The neutral point is not fixed, by the way, although we'll regard it as that being the case.

The forces acting on a wing are merged into a single force for the sake of simplicity, resulting in the centre of pressure.



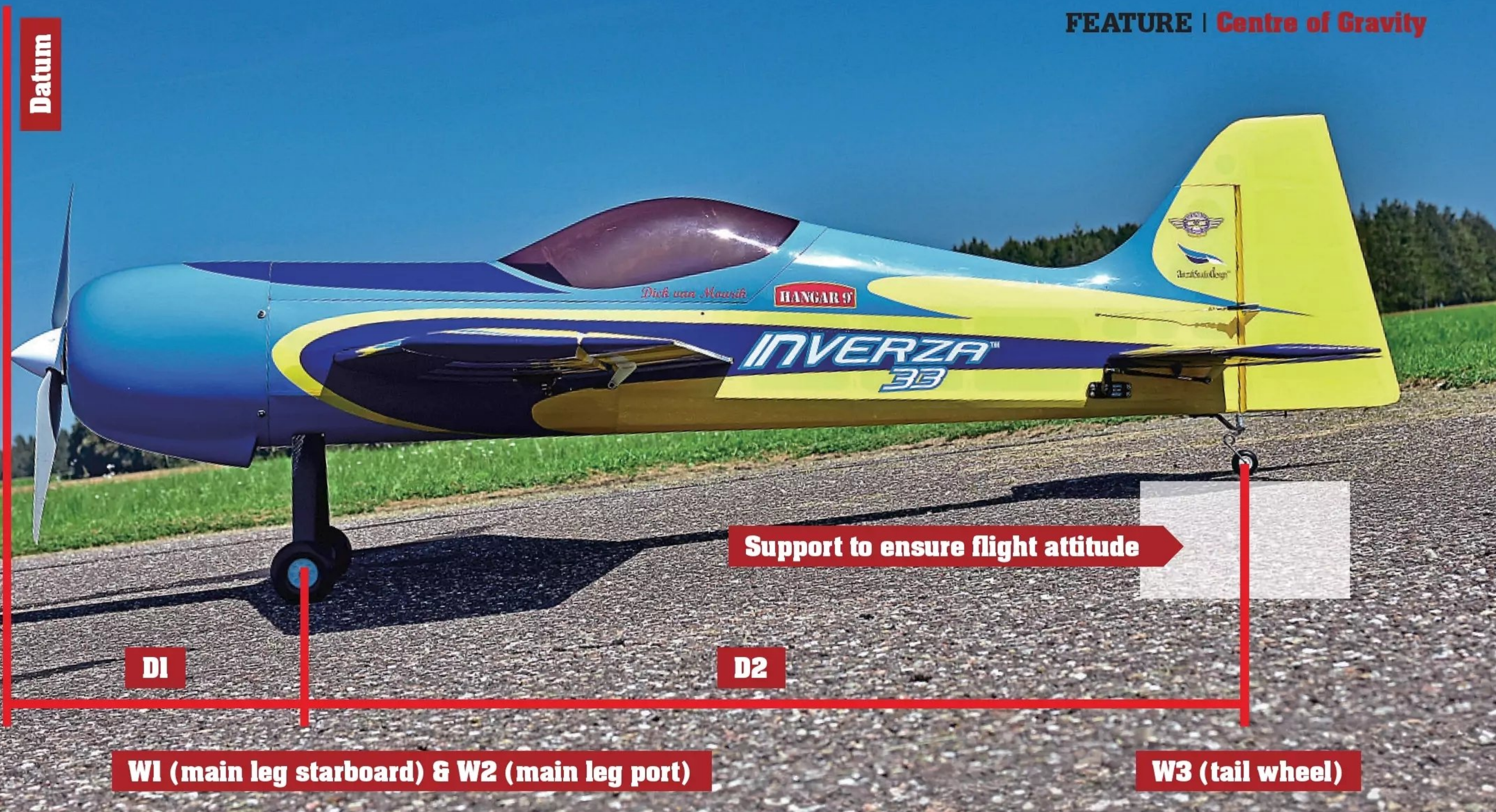


Figure 1: The basics for calculating the correct position of the balance point are straightforward. The Inverza combines the best of both worlds.

LET'S DO THE MATHS

One of the models I really enjoy flying is my Hangar 9 Inverza 33, as designed by Quique Somenzini. It is highly manoeuvrable but will not bite when slowed down. It also has very neutral flying characteristics, which is a real asset when doing aerobatics. Let's take this as our first example:

Average chord: 40 cm
Tail area: 700 cm²
Fuselage moment arm: 87 cm
Wing area: 3400 cm²

So:
 $BP = 40 / 6 + (3 \times 700 \times 87 / 8 \times 3400)$
 $BP = 6.7 + 182700 / 27200$

$$BP = 6.7 + 6.7$$

$BP = 13.4$ cm, or 33.5 percent of the MAC chord, measured from its leading edge at that location.

Although this position may seem rearward at first, given the fact that this model has a more than generous tail area and a long fuselage arm, it is exactly on par with the manufacturer's recommendations (Figure 1).

In this case, by the way, I have used metric dimensions, but this is of no importance. This simple formula will work in both metric and imperial measurements as long as you stick to one type of measurement, i.e. don't mix centimetres and millimetres in the same formula.

FLYING WING

Let's do another example based on my Dactyl flying wing, a modern rendition of an original design by Dennis Bryant (Figure 2). As this model has a non-tapered wing the MAC is positioned exactly halfway between the root and tip rib. Due to the model's 26-degree sweepback there is a significant rearward shift in the position of the MAC. Now, when the formula is used, we find that:

$BP = MAC / 6$ as there is no fuselage and/or empennage.

Easy as pie! No need to get confused, just determine the position of the MAC, divide it by six and transfer the position found to the fuselage centre line. That is all there is to it.

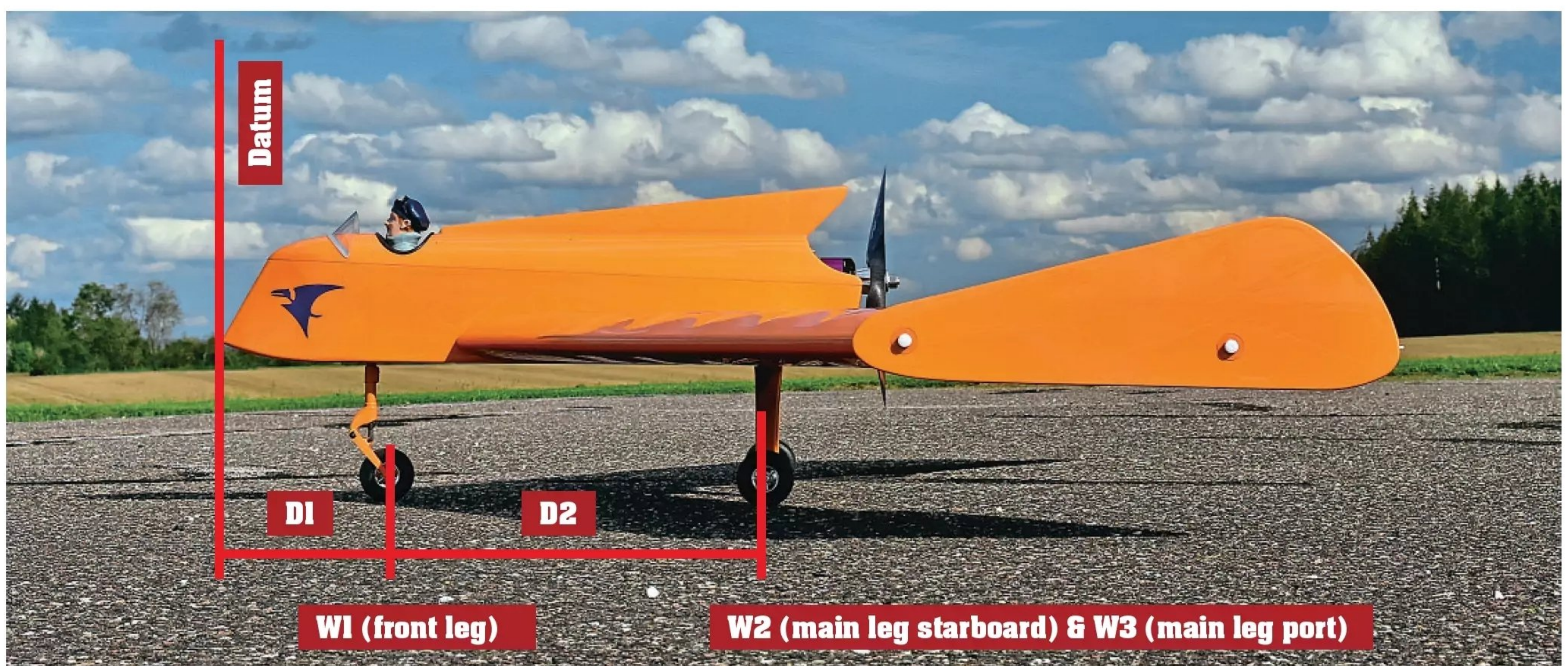


Figure 2: Is it really as simple as that? The balance point of any flying wing, such as the Dactyl, is very straightforward to calculate. The drawback is that this type of aeroplane has a very small balance point range in comparison with conventional aircraft.

A word of advice here: flying wings are interesting to fly and stable by nature, but they are much more critical when it comes to the position of the balance point than a conventional aeroplane.

BP ON TOP

Please note that although the location of the balance point is generally shown at the centre of the aircraft when viewed from the side in most manuals, the calculated balance point position is actually to be considered from the TOP view of the design. Then it can be transferred to, for instance, the centre line of the model and measured from a reference, such as a bulkhead (Figure 3).

Using this formula, the outcome will provide you with a balance point position that is on the safe side. The exact location always needs to be determined by flying your model, just the same as you would with the movements of the flying surfaces and finding the optimal propeller.

This way however, you can be sure that the first flight will not end prematurely because of a too rearward balance position – another point to be crossed of your list of potentially lethal factors!

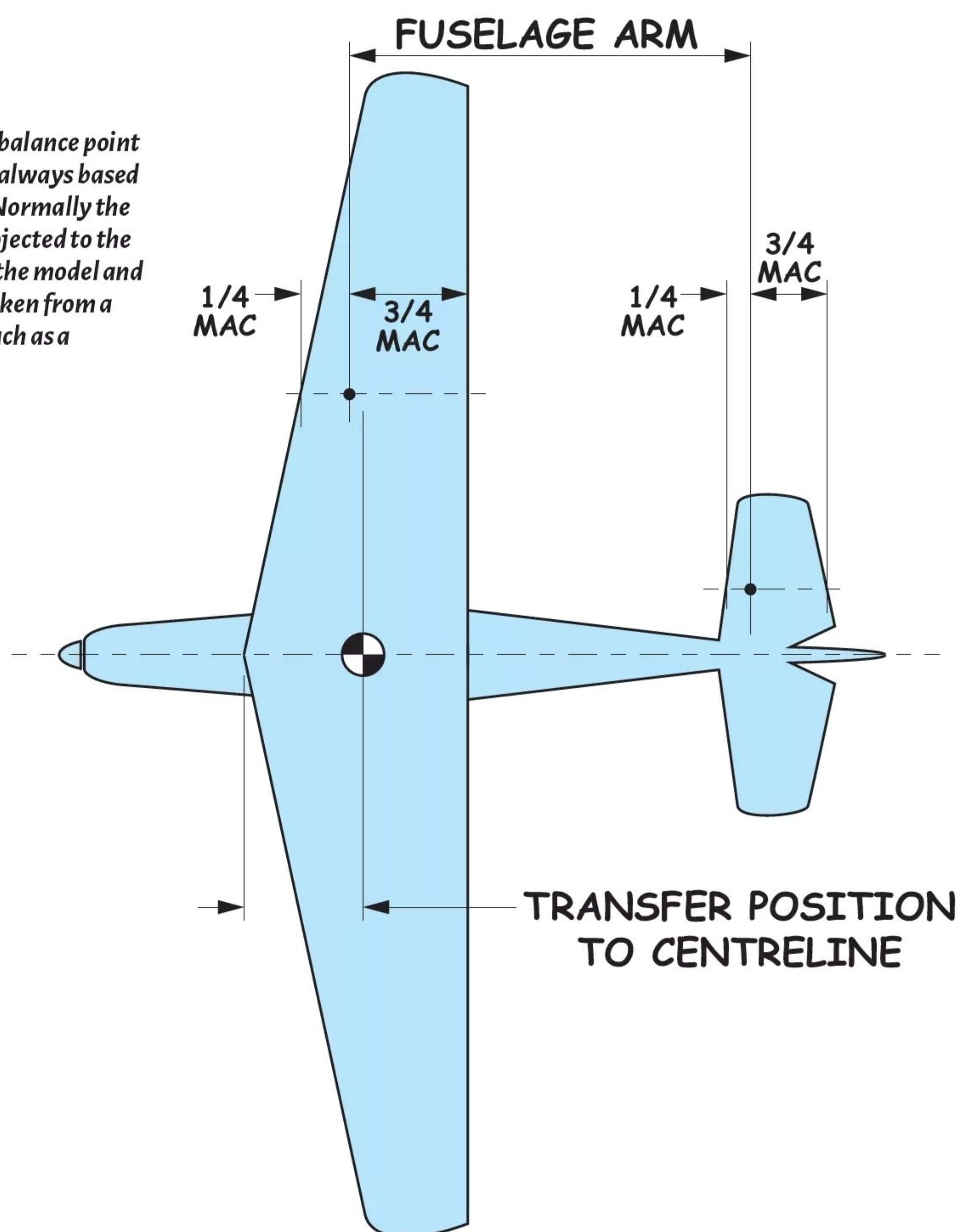
Whenever removing ballast or altering the position of the battery, **take small steps only** and check the results through flight. There is a small range of more or less uncritical positions. Generally speaking, the position of the BP has a leeway of about five percent of the MAC before things get hairy. Also, please keep in mind that the further away the actual balance point is from the optimum the more pronounced its effect will be, especially when dealing with a tail-heavy model.

CHECKING THE BALANCE POINT

Now, having calculated and/or checked the correct location of the balance point, we come to the final and equally important step - checking if the model does balance at the required position.

There are numerous ways of balancing a model but in all fairness, I have never been very keen on the prospect of having to balance a model on my fingertips or using one of those contraptions like a ‘vanessa rig’ or flimsy and unstable supports. In my experience these are cumbersome devices to use and they could also

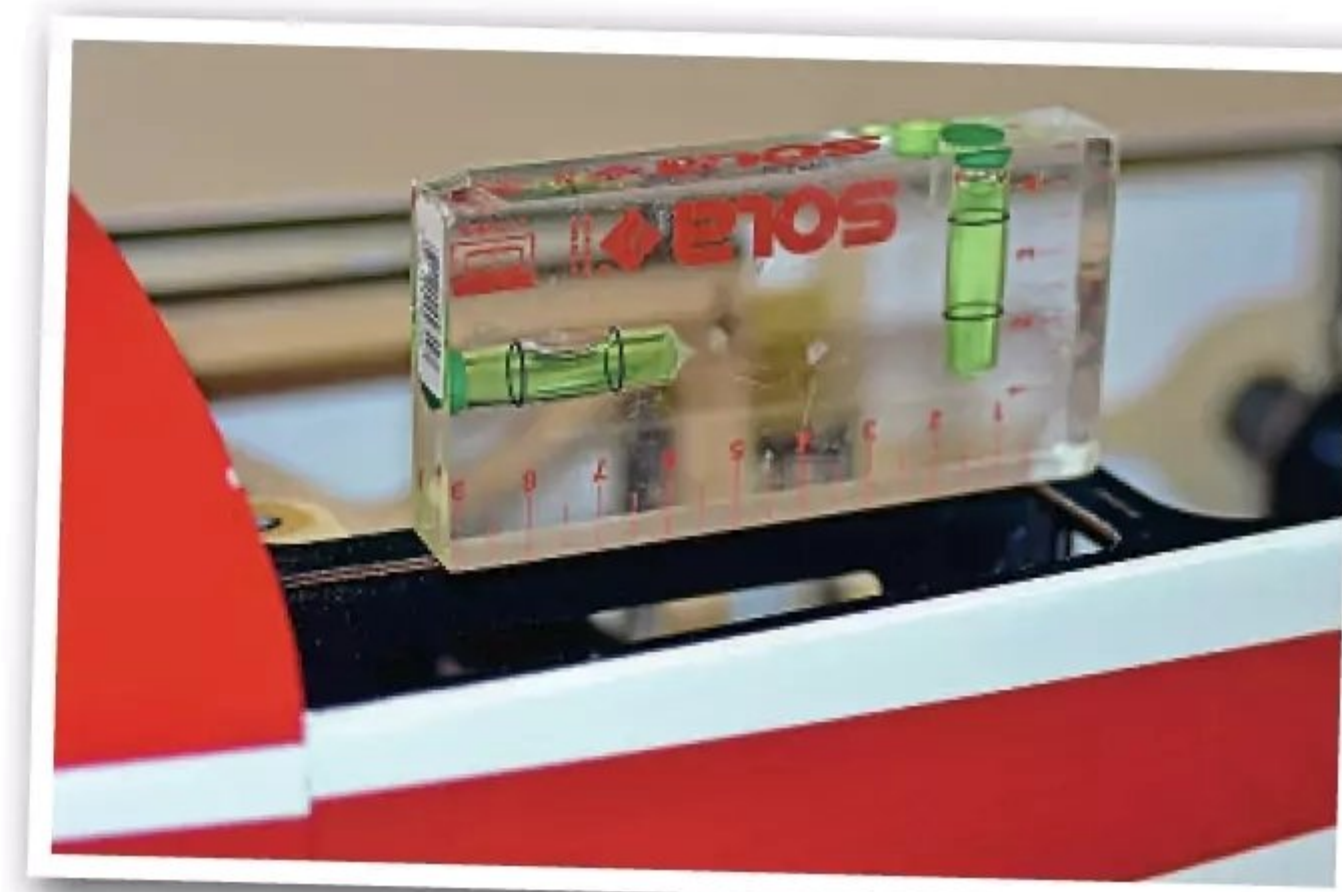
Figure 3: Any balance point calculation is always based on the MAC. Normally the location is projected to the centre line of the model and a reference taken from a fixed point, such as a former.



“Using this formula, the outcome will provide you with a balance point position that is on the safe side”

damage my latest pride and joy. This is why I have left all of that behind me and nowadays I only use kitchen scales and a simple balance sheet, with totally predictable results. This method is also known as a weight and balance calculation, and all it takes are three simple steps and some basic calculations. It will reward you with an exact position of the balance point.

My scales are ordinary electronic kitchen scales with a weight limit of 10 kilograms and a one gram accuracy, which you can buy for little money. These are more than sufficiently accurate for our purposes. Three scales of this kind are ideal, but two will suffice - and even one will do when used with a little imagination.



To ensure the model is in a flight attitude the use of a spirit level is a great help. Do not forget to remove it and put the canopy back on before weighing the model though!

EXAMPLE BALANCE POINT TABLE

	Weight	Distance from reference	Weight x Distance
Nosewheel	0.5 kilogram	20 centimetres	10 kg.cm
Main starboard	2.0 kilogram	80 centimetres	160 kg.cm
Main port	2.1 kilogram	80 centimetres	338 kg.cm
Total weight	4.6 kilogram		338 kg.cm

So, BP position = $338 / 4.6$
= 73.48 cm from the reference point

Basic budget scales are fine for our purposes. This one has a 10-kilogram range and a one gramme accuracy.

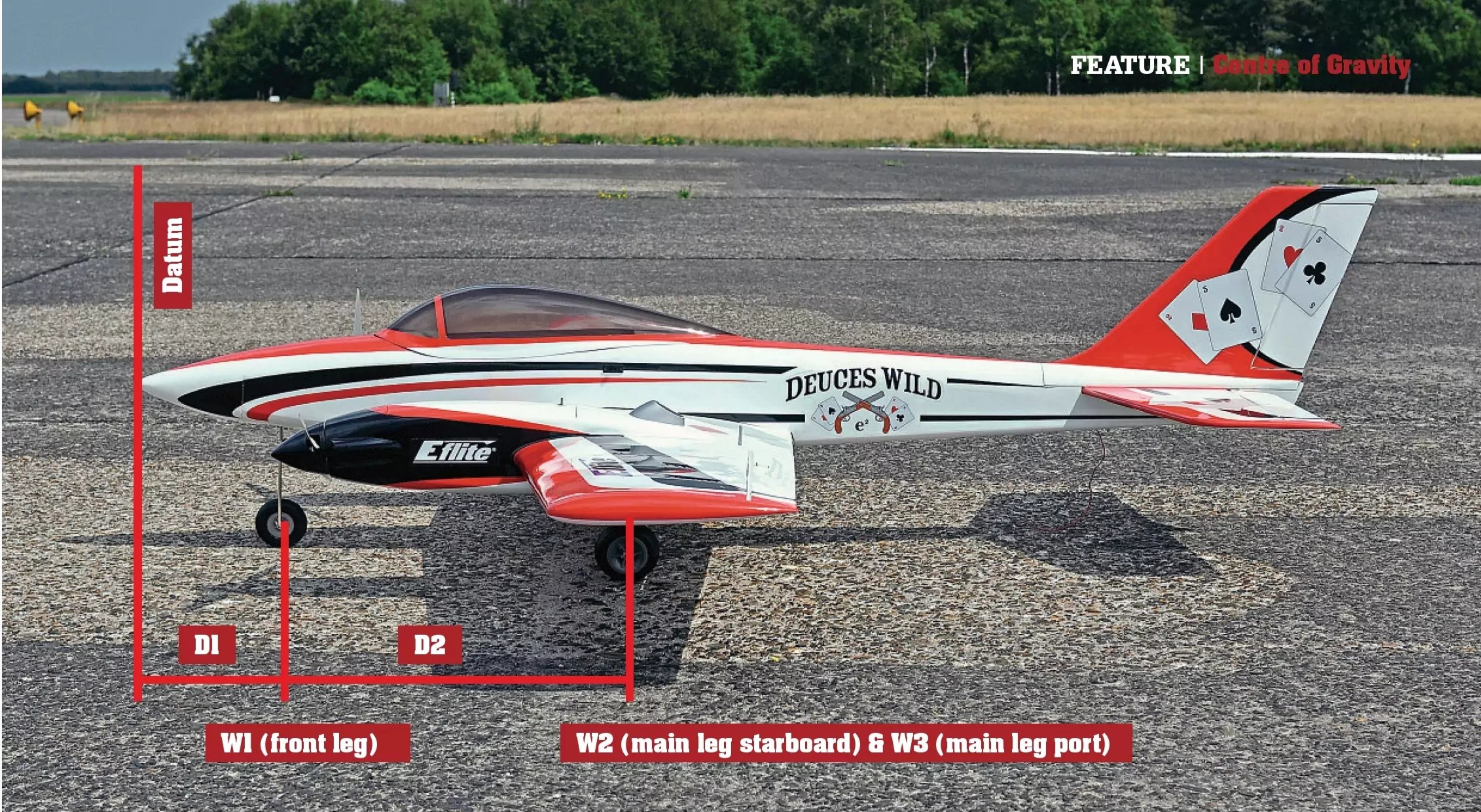


Figure 4: Another example, this time using my Deuces Wild electric twin.

“It only takes about fifteen minutes to know if your model is perfectly balanced in pitch”

When on the ground, the total weight of the model is supported by the U/C. Our first aim needs to be to determine how much weight each leg supports. To enable us to do so we need to support the model in its flight attitude, which basically means that the wing and stabiliser are parallel to the ground. Generally speaking, a model with a tailwheel U/C will be at an angle when on the ground, whilst a tricycle U/C model will normally be supported in its flying attitude. When dealing with a taildragger, a method that works well is to use a spirit level placed on either the stabiliser (if it's a flat plate) or any other suitable flat surface, such as the top of the canopy cutout, the battery tray or another similar item. Depending on the number of scales you have available, supports of similar height to the scale will need to be organised, to keep the model in its desired attitude. Here, as well, you need to be accurate, but there is no need to go overboard.

The whole idea behind this method of determining the BP is to establish the weight on each leg and the distance from a given reference. Once this has been completed, this amount is then divided by the total weight, which gives the average distance from the reference point, or in other words, the location of the balance point.

LET'S GET GOING

To be fair, I do not make much fuss about the location of the reference to be used and so I just position my models in such a way that the point of the spinner touches a wall in the attic where I build my models. That is about as complex as it is going to get. My fleet

consist mainly of tail draggers, so that is used in the example described, but the system works equally well for models with a tricycle (nosewheel) configuration such as the Deuces Wild shown nearby.

First, I put a scale under both mainwheels and then lift the tail to such a position where the fuselage is level when supported at the rear scale. A small spirit level is a great help here. Next, the scales are switched on and their respective values taken down. Normally, there is a slight difference between the weight supported by the port and starboard leg and this is perfectly normal.

Next, take a tape measure and determine the distance between the wall and the centre of the main wheels. This should be equal within a few millimetres. If it is not, the model is not being placed perpendicular to the wall. Adjust the position of the model and measure again if required.

Then, measure the work distance between the wall and the centre of the tailwheel. A drawing triangle might come in handy here to ensure your measurements are accurate.

With the weights and distances known, fill out the values in the balance sheet that is shown nearby in this article. The resulting distance will be the position of the balance point in relation to the wall. That is all there is to it. It only takes about fifteen minutes to know if your model is perfectly balanced in pitch.

If the balance point is off, try to avoid using ballast if possible. With the majority of models now being electrically powered the main item to be used to change the position of the BP will be the LiPo battery pack. For the first flights, I

HOW TO MAKE A WEIGHT & BALANCE SHEET

1.

Put the model on the scales in flying attitude. Take down the weights of the starboard main wheel, the port main wheel and the tail wheel. Fill them in as W1, W2 and W3 respectively in the table. *Weights 1 & 2 might differ slightly. This is normal and is no cause for concern.*

2.

Measure the distance from your reference to the centre of the starboard main wheel. This is Distance 1.

3.

Measure the distance from your reference to the centre of the port main wheel. This is Distance 2. *Distances 1 & 2 should be equal within 5 mm.*

4.

Measure the distance from your reference to the centre of the tail wheel. This is Distance 3.

5.

Write down all three distances in the table.

6.

Add up the weights. This gives the total weight of the model.

7.

Multiply weight 1 by distance 1. Put the outcome in the right-hand column of the table.

8.

Repeat with weights 2 & 3.

9.

Add up the values found in the right-hand column.

10.

Divide this outcome by the total weight. The result will be the location of the balance point, measured from your reference.

This table works with either metric or imperial measurements. Choose whatever you are comfortable with.

would advise to secure the pack in such a way that it is possible to shift it backwards at a later stage. Some ply plates, acting as stops and temporarily secured with hot melt glue, work wonders in that respect. Also, when there is a need to use ballast, do make sure it is possible to remove at least half of it without having to butcher the model. Safe flights! ■

With this month's selection of readers' models, we commemorate the 80th anniversary of D-Day and pay our own small tribute to the bravery and sacrifices made by so many brave airmen and others serving in the Allied armed forces on the 6th June 1944.



D-DAY DUO

Regarding your request in March RCM&E for D-Day pics here are a couple I took of my mate Dave Banting's FlightLine Spitfire Mk. IX with D-Day invasion stripes. Although a foamie, Dave has skilfully weathered it. We are both members of the Sussex Radio Flying Club.

Also, I'm not sure if you allow Photoshop manipulated pics (not usually Grahame, but we'll make

an exception for commemorating this historic event - KC) but if you do then this is my E-flite 1120 mm foamy Mustang 'Dallas Doll' complete with invasion stripes doing a 'sweep' over Normandy, 1944. It's deliberately grainy and sepia to look like a wartime photo. The 'wingman' is the same plane but reduced and slightly faded. Photo by Dave Banting, Photoshop by me.

Grahame Pearson



SUPERMARINE FAVOURITE

My contributions to the D-Day theme are my two 48" span Depron own design Spitfires. The first, photographed in the air by Alan Butterworth, represents a Spitfire XIV, the first of the Griffon engine production aircraft. The model on the grass is a Spitfire IX, based on the restored example at Comox, BC Canada.

Mike Roach

Mike's model represents MK 304 of 442 Squadron RCAF as flown by Flight Lieutenant Arnold Roseland, who was shot down and killed over Normandy in 1944. The restored aircraft on which Mike based his model is part of the Michael U. Potter Historic Aircraft Collection at Vintage Wings of Canada. It is a Supermarine Spitfire Mk IX, which was built at Castle Bromwich with the serial number TE 294 - KC



UTAH BEACH BOMBER

This is my Martin Marauder B-26B-55-MA 'Hamilton Hey Maker II' of the 558th Bombardment Squadron / 387th Bombardment Group. It

is the 59-inch span Dynam model and I tidied up some aspects of the airframe and repainted it in different tones of acrylic silver, finishing it with

markings from Callie Graphics. It flies on a single 4S 3700 or 4000 mAh LiPo. Flight times are 8 to 10 minutes.

Dan Lester

SHORT STERLING

Steve Parker has been a longstanding member of Amman Valley Radio Control Club. He's a modest guy who doesn't publicise his building and designing talents, typified by his own designed Short Stirling. The model is balsa built and electric powered.

Jon Walter

The Short Stirling was one of several aircraft that are not as widely associated with the D-Day landings as they probably should be. The Sterling was found to be well suited to towing heavy transport gliders such as the GA Hamilcar and the

Airspeed Horsa, while other bombers of this type were also converted for dropping paratroops. On D-Day several Stirlings were also used in Operation Glimmer to drop 'Window' to produce radar images of a decoy invasion fleet - KC





JP MB-339 EDF JET

£159.99 | www.jperkins.com

Scoring highly in terms of performance, colour scheme and convenience, the JP MB-339 is a real head-turner and the perfect everyday flyer for any intermediate or advanced pilot. Supplied complete with factory fitted 3 x 9 g servos, 50 mm 11-blade fan, a precision 2627 4900 kV brushless motor and a 40A ESC, this smooth flying, lightly loaded, 31.4" (800 mm) span hand-launch EPO PNP jet delivers a rewarding flight performance with impressive vertical capability. Supplied 90% pre-assembled, the '339 requires 4-ch 2.4 GHz Tx / Rx, a 3S 1600 - 2200 mAh LiPo and EPO friendly adhesive to complete.



XFLY TWINLINER

£179.99 | www.cmldistribution.co.uk

Fresh from XFly Model, this twin EDF features a fully painted scale outline and typical details of a classic airliner (including dual-wheel landing gear) that give the model great presence both on the ground and in the air. Fuelled by a 4S LiPo, the factory installed power system - twin 40 mm fans with 1413-KV5000 brushless motors and twin 20A brushless ESCs - delivers plenty of thrust for vertical climbs, rolls, loops etc. Sensible throttle management enables potential flight times of 5 - 10 minutes. Quick and simple to assemble without any adhesive required, the 39.75" (1010 mm) span Twinliner's convenient size makes transport a breeze. It's available in two versions: one has decals pre-applied, the other has the decals included in the box should you wish to add any further painting or customising prior to fitting them. Supplied with factory-fitted servos, your choice of Tx, Rx & 4S 1300-2600mAh LiPo are required for flight readiness.

DPR AVIATOR TRAINER

£99.99 (Kit) | £139.99 (ARTF) | www.jperkins.com

The best grassroots R/C trainer is one that's gentle, sedate and forgiving. Spanning 45.7" (1160mm) the DPR Aviator ticks all the boxes that beginners need to consider, the most crucial being the ability to engender a relaxed atmosphere to training; an aspect that will see a new pilot's ability and confidence grow

exponentially. Available in both kit and ARTF formats quality is exceptional throughout with beautiful wood selection, tidy hardware and illustrated step-by-step instructions. With a crisp, neatly covered airframe and striking graphics the ARTF will suit those with a more immediate need to get airborne, whilst

those with a desire for ultimate 'build & fly' satisfaction can opt for the traditional (kit) route. Both versions require 4-ch R/C, 4 x Hitec HS-55 servos, 1250 kV brushless motor, 8" x 4" EP prop, 30A ESC and 3S 1800 – 2200 mAh LiPo to complete. The kit also requires a roll of heat-shrink film covering.



TS11-ISKRA

£293 | www.rbckits.com

If you're in the market for a 'builders' EDF but looking for something a little different, then check out the PZL-Mielec TS11 Iskra from RBC kits. Introduced in 1964 and the first jet aircraft to be developed and built in Poland, the Iskra was the principal training aircraft for the Polish Air Force and was retired as recently as 2021.

Suitable for 90 mm or 100 mm Midi Evo fans

(different kit versions) and 8S (or 2 x 4S) 5000 mAh LiPo, the kit for this 65" (1650 mm) span model is an absorbing, traditional build that includes 248 CNC-cut balsa and ply parts and all the required supplementary balsa and plywood, plus spruce and balsa stringers. Vac-formed canopy, nose cone, wing tips, ducting and paper inlet and outlet ducts are included, along with full-size rolled CAD plans, with instructions and

construction pictures available for download from RBC's website. No hardware is included so you'll need to source control horns, hinges, control runs etc. For 6-channel R/C - ailerons, elevators, flaps, throttle, retracts, rudder and nosewheel steering – time invested in building this unusual EDF will be rewarded with a superb flight performance and more than a few 'What's that?' comments on the flight-line!



TOP QUARK

John Hutson introduces his unorthodox sport electric model fitted with a Warren wing

Words & Photos: John Hutson



“Top Quark emerged from a challenge to design, build and fly an electric model in seven days”

The Top Quark emerged from a challenge I set myself to design, build and fly an electric R/C model in seven days, as featured in RCM&E, December 2023. The initial plan, drawn on wall lining paper, was scant but sufficient to improvise the construction of a prototype. After it proved to be a practical flying model, I committed to drawing a comprehensive plan and built a second model, which is featured here. In this article I linger more on the important parts of the build and glide over some of the easier, more mundane aspects.

Despite the unorthodox wing layout of this model the construction is deceptively simple. I used medium CA for the most part, with 5-minute epoxy for the front fuselage formers, wing braces and retaining plates, and the wing tip carbon tube joiners. This made for a rapid build.

Begin with the fuselage as this will form the foundation for later alignment of the wings. Accuracy is the order of the day. A nice square and true fuselage will reward you with a good symmetrical wing geometry and balanced flying characteristics. Although the fuselage tapers in very little at the front and rear, do select two balsa sheets with matching stiffness and bending characteristics to mitigate against a bowed fuselage. If reasonable care is taken a jig really isn't necessary. I hope you are excited by the design and are longing to build your own. So, without further ado...

FUSELAGE STAGE 1

Cut out the fuselage sides from 3 mm (1/8") medium balsa sheet. Mark the locations of the fuselage formers onto the inside face of each fuselage side, ensuring you have a left and right side.

Glue 12.5 mm (1/2") triangular strips along the top and bottom inside edges, leaving a 10 mm overhang at the nose and tail. Ensure the triangular strips are perfectly flush with the edges all the way around.

Cut out all the formers from 3 mm (1/8") lite ply. F1a can be cut a little oversize because it will be trimmed and sanded to its final shape later. Glue F2 and its doubler F2b together and drill a 6.5 mm (1/4") diameter hole which will later take the front wing fixing dowel. Glue F2 (with F2b facing forward) and F3 square to the inside of one fuselage side.

Join the second fuselage side to F2 and F3 and ensure the whole assembly is square and straight. Sit the fuselage on a flat surface and ensure it rests nice and square along its bottom edges with the fuselage sides perfectly vertical. I prefer to wick CA into the former-fuselage joints once I have everything held in position. Pull the



Make a handed pair of fuselage sides with triangular strips glued flush along the top and bottom edges. Glue F2 & F3 square to the first side.



Scrap spacer
30mm wide

Pull the rear fuselage together with a scrap spacer piece and fit F4 & F5.



Battery tray, comprised of a base and two side pieces, is glued between F3 & F4, as viewed from above.

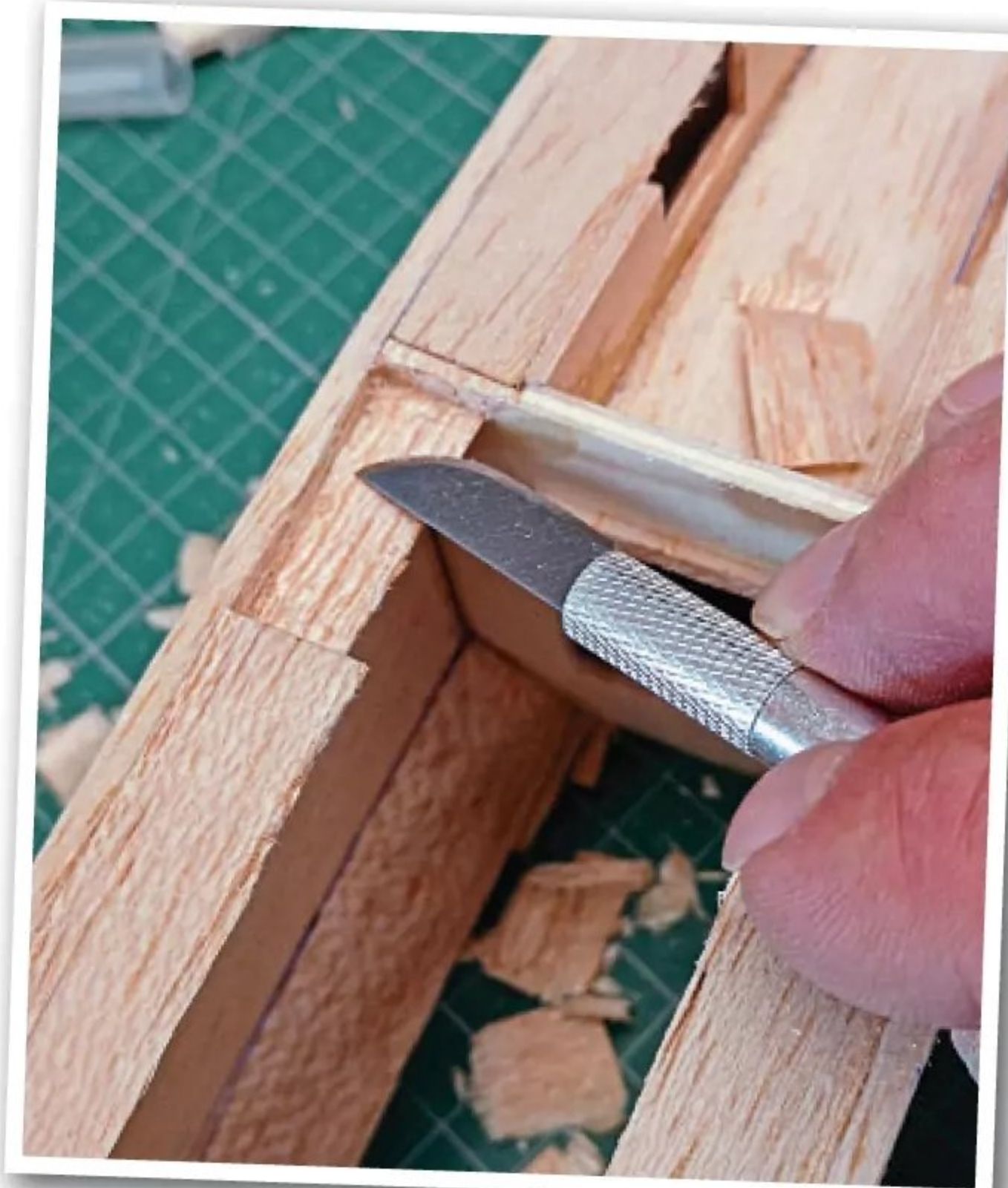
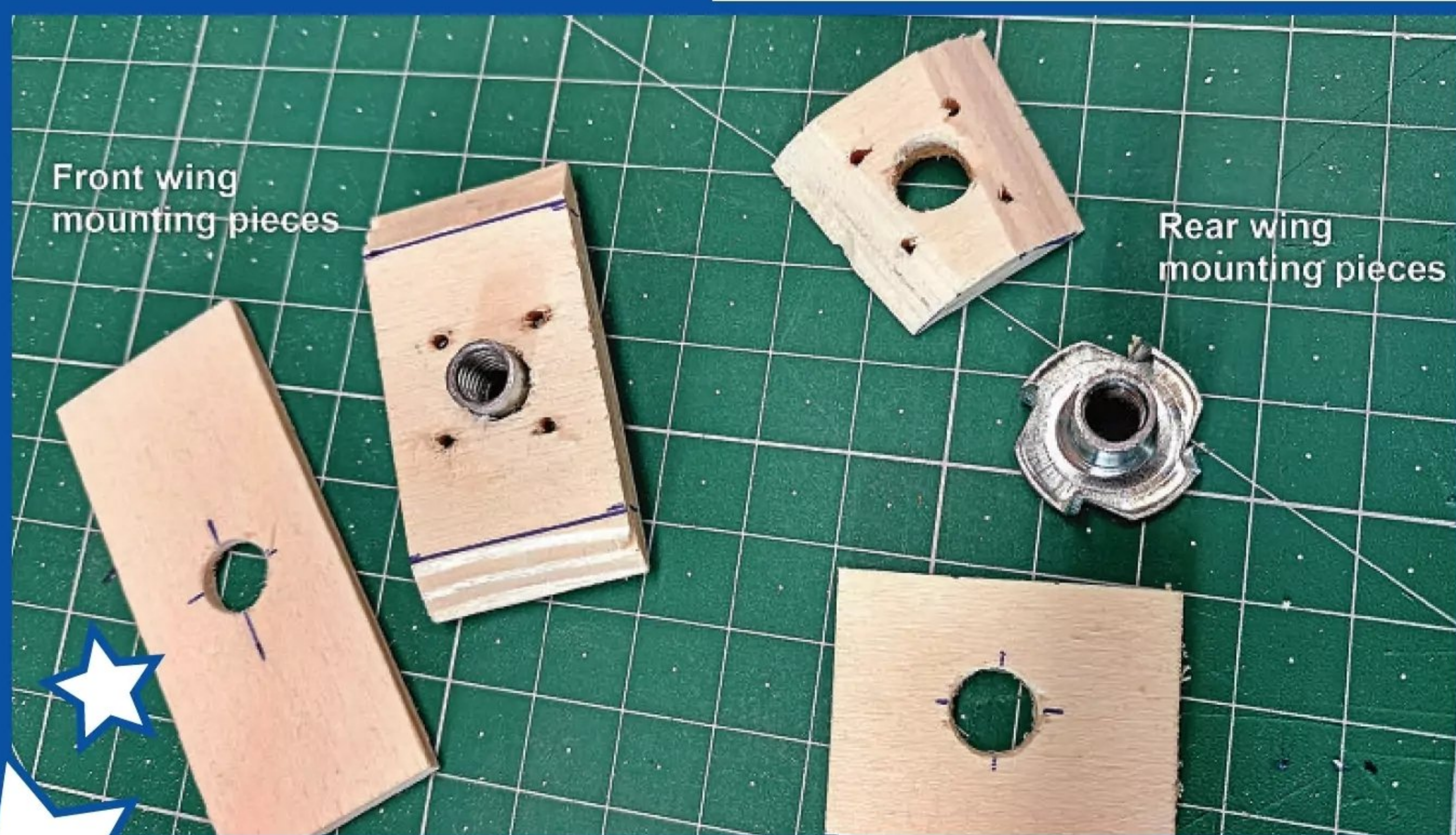
nose of the fuselage together and glue in F1 with zero side and down thrust.

Pull the rear together and place a 30 mm wide scrap of 6.5 mm (1/4") balsa in between the sides at the tail end. Hold together with a rubber band or masking tape. Formers F4 and F5 can then be dry fitted into position such that the springiness of the fuselage sides will hold them by friction. Align them with the drawn positions and use rubber bands or masking tape to help pull the rear sides tightly together. Ensure the rear sides taper equally and adjust as necessary before wicking CA glue into the former-fuselage joints.

Cut the battery tray base from 3 mm (1/8") medium balsa and glue it to the top inside edge of the cut-outs in formers F3 and F4. Cut and fit the battery tray side pieces from 2 mm lite ply and glue on top of the base so they are at right angles and touch the edge of the triangular strips along the top of the fuselage.

Silver film makes her sparkle like a jewel in the clear blue sky.





Cut a recess in the triangular strips ahead of F3 for the front wing mounting plate.

Finished lite ply wing mountings before epoxying into the fuselage.

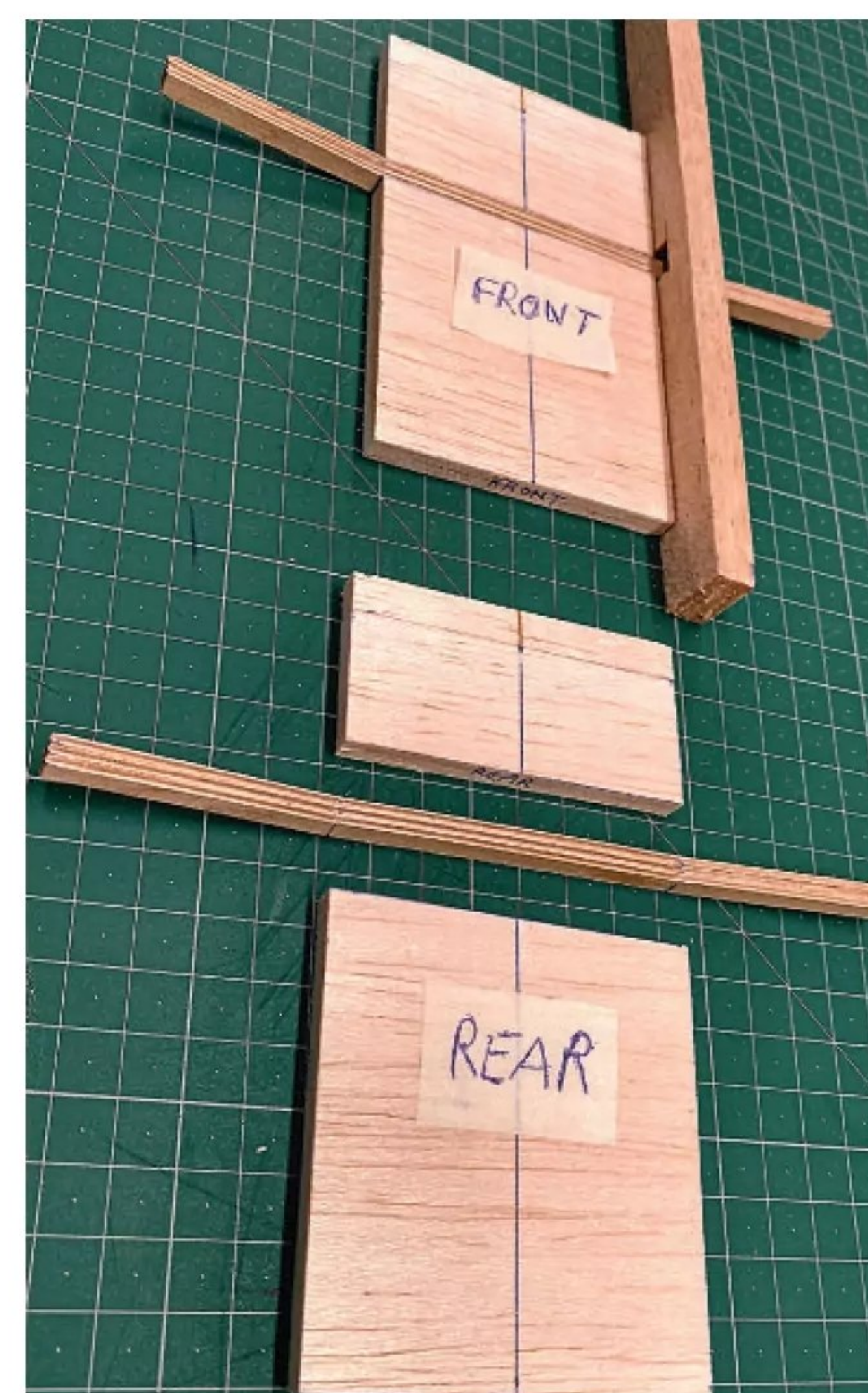
WING MOUNTINGS

The front and rear wings are secured with a single bolt and a dowel or tongue piece. Each employs a T-nut fixed to a mounting plate made from three laminations of lite ply. One lamination is recessed into the triangular strips along the edge of the fuselage. The other two laminations are mitred so as to 'clamp' behind the slope of the triangular strips. These follow the same design for the front and rear wings but are different sizes and therefore not interchangeable. Study the plan, especially the relevant cross-sectional views and look at the photographs.

Clean up the top and bottom edges of the fuselage with 100+ grade sandpaper and a flat pad or block. You should now have a straight and square fuselage, open along the top and bottom, ready for trial fitting the wings once made. Set the fuselage aside. DO NOT be tempted to add top and bottom sheeting or to shape the fuselage until the wings are constructed and trial fitted!

WINGS

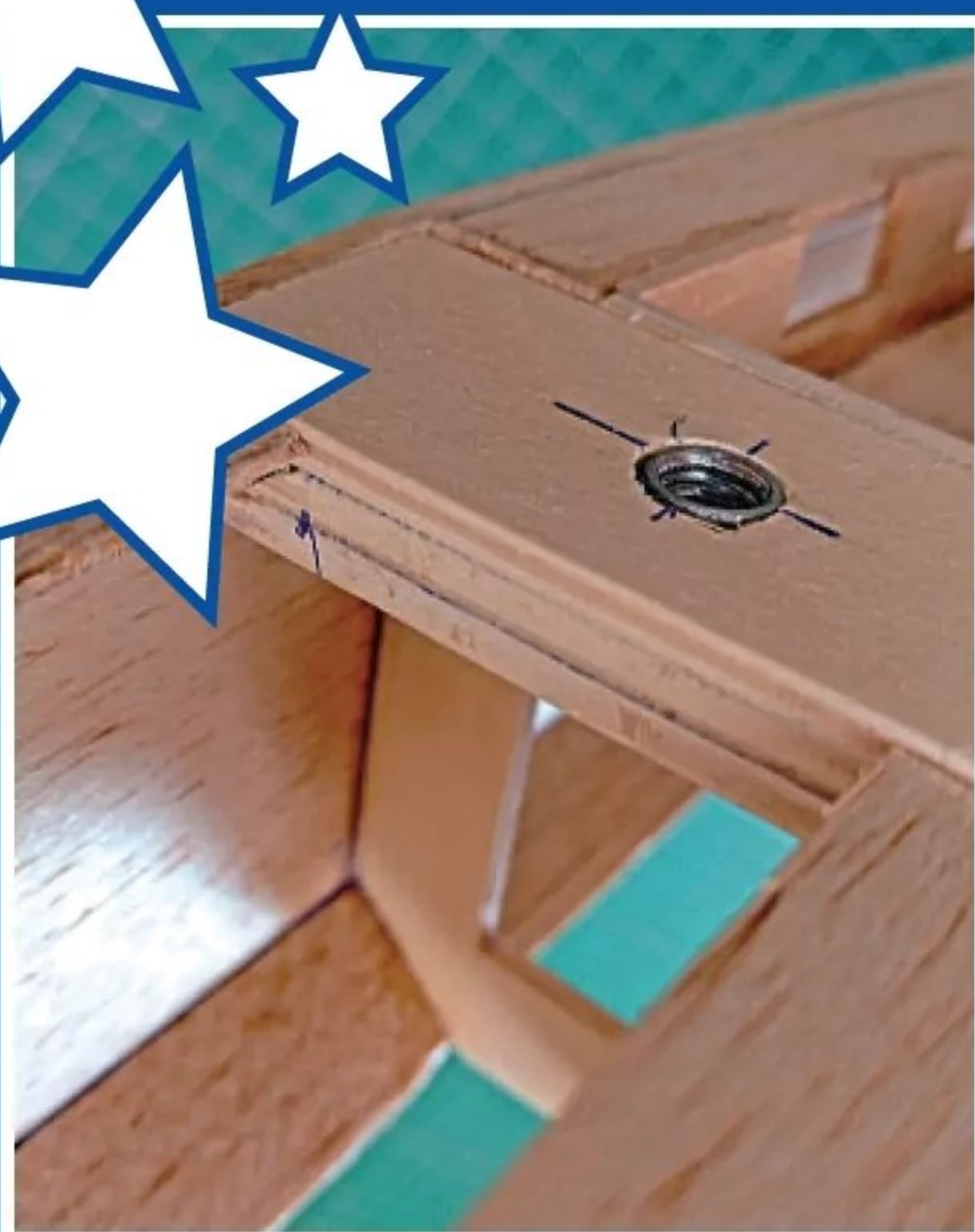
Front and rear wings are made from medium balsa 6.5 mm (1/4") thick and 102 mm (4") wide. They have the same constant chord and the same, but opposite, sweep angles. They also have the same, but opposite, anhedral/dihedral angles. For these reasons the parts have identical outlines. Cut out the swept wings and straight centre sections but refrain from cutting out the slots for the braces or the elevons from the rear wings at this stage. Cut a pair of identical anhedral/dihedral braces from good quality 'hard' ply of thickness of 6.5 mm (1/4").



Use a notched straight piece of scrap balsa to align the centre section pieces either side of a brace. Label the wing parts to avoid mistakes.

From this point on be sure to form a pair of swept-back front wings and a pair of swept-forward rear wings. It's worth writing some labels and sticking them to the corresponding wing parts to reduce the chance of making errors.

Glue 6 mm x 3 mm (1/4" x 1/8") spruce strips to the leading edges of the swept wings leaving an overlap of 5 mm or so at the roots and tips. Plane and sand each swept wing piece individually to a nominal aerofoil, keeping the trailing edges at least 3 mm (1/8") thick and the spruce leading edges to around 4 mm thick. DO NOT sand the centre sections to an aerofoil shape, only the swept wing parts. Now trim the overhanging spruce leading edges to match the wing sweep at the roots and tips.



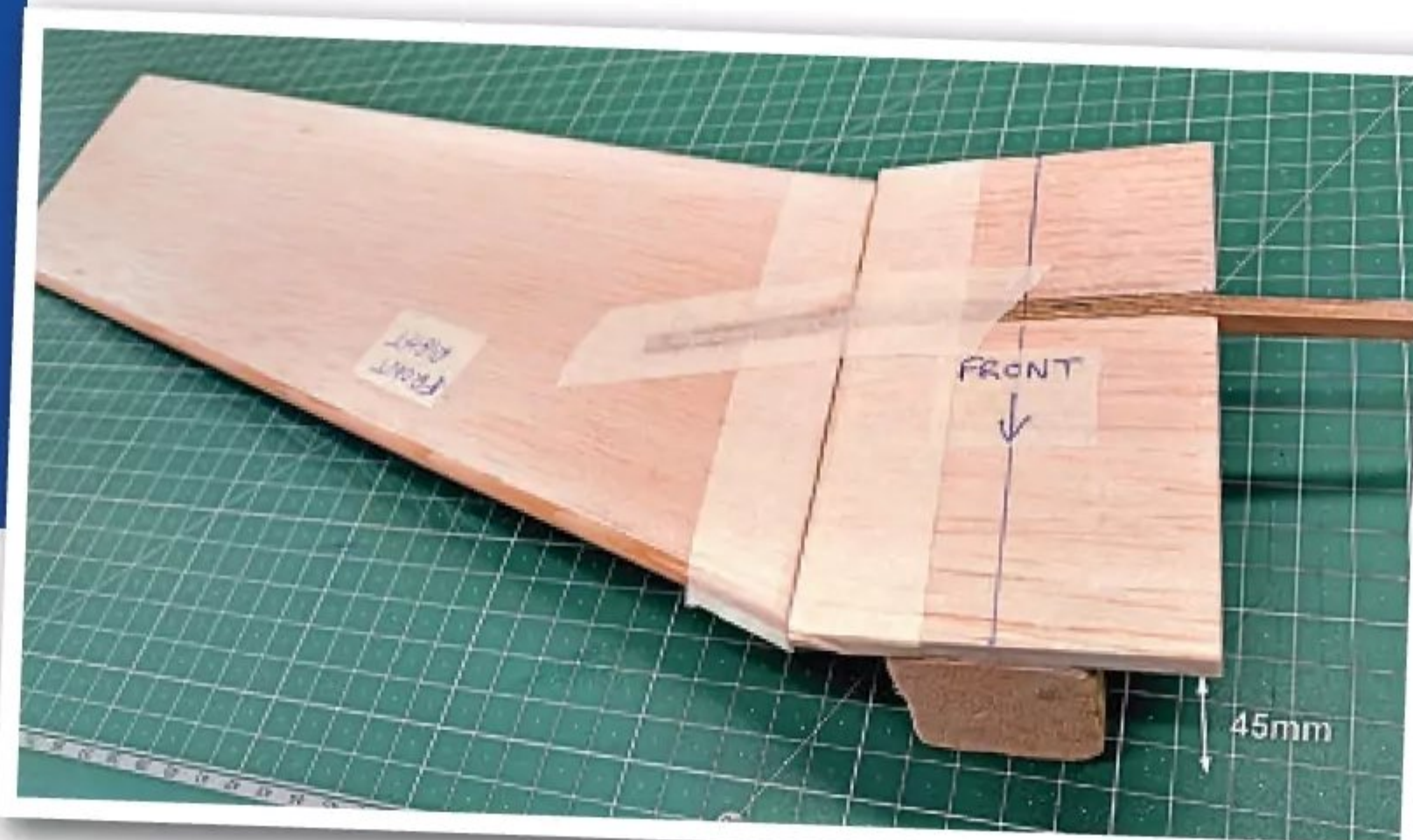
Fit the mitred wing mounting pieces behind the triangular strips.



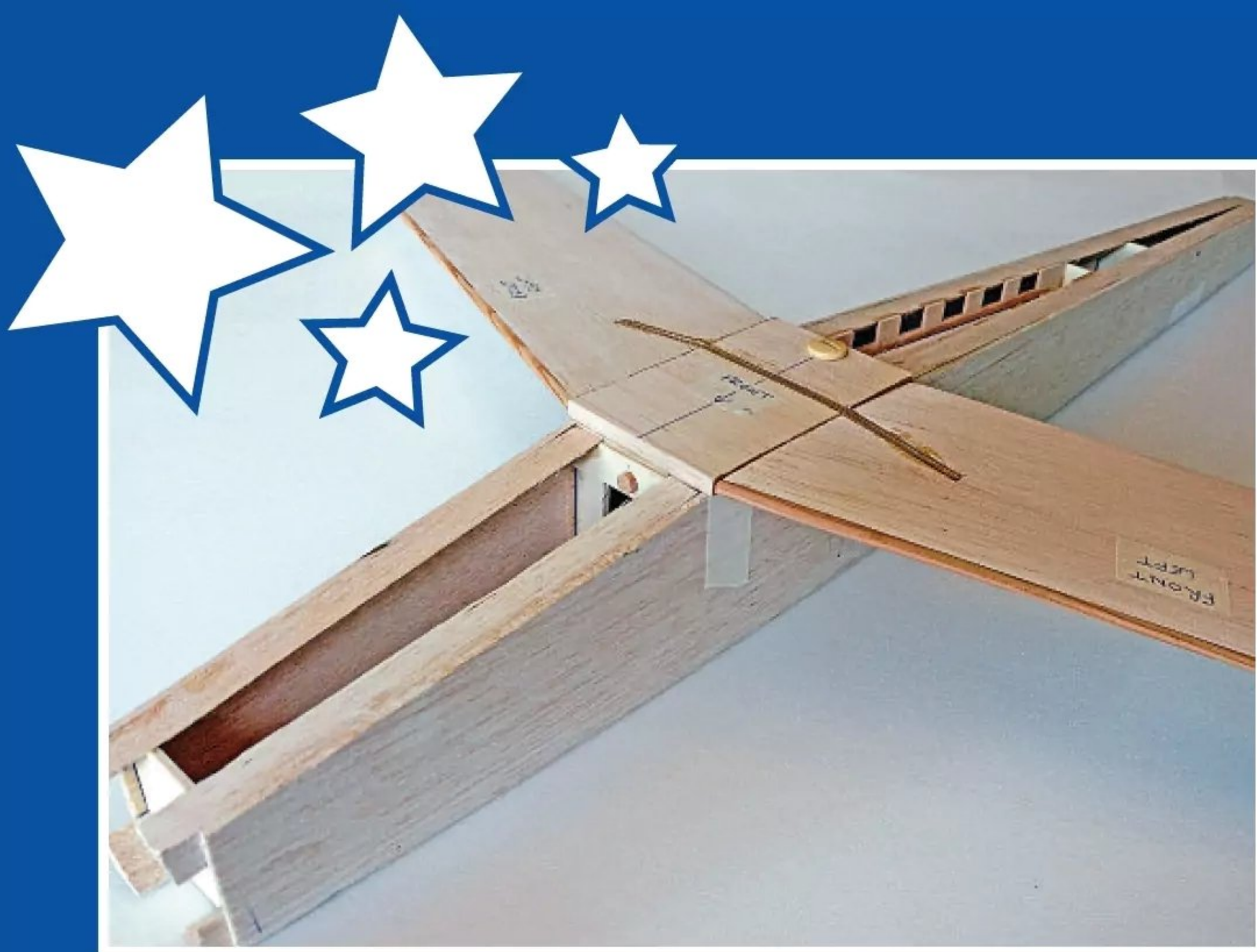
Fit the rear wing mitred support pieces in through the open rear of the fuselage.



Fuselage stage 1 completed, ready for trial fitting the wings. F1 is glued in with zero side thrust and down thrust.



Right: Use 45 mm high packing to achieve the correct anhedral/dihedral angles when making the front and rear wing assemblies.



Carefully align the front wing assembly symmetrically on the fuselage before drilling for the locating dowel and wing retaining bolt.



With the front wings already bolted in position and the fuselage inverted, fine tune the position of the rear wings before drilling for the wing bolt.

Cut the wing centre sections into the two pieces to fit either side of the corresponding wing brace. Note that the 'split' is different for the front and rear wing centre sections, so refer to the plan. Glue the braces in between their respective front and rear wing centre section pieces. The front centre section can be inverted on the board at this stage.

The front and rear wing assemblies are built in a similar way. Offer up each swept-wing piece to its corresponding centre section assembly then mark and cut a slot for the ply wing brace. Use 45 mm blocks to achieve the desired anhedral/dihedral angle and sand the root of each swept-wing piece to match the angle at the joint. Glue with epoxy. Fit the dowel and support block under the front wing centre section and the lite ply tongue piece above the rear wing centre section.

Temporarily secure the front wing assembly into position on the fuselage with tape or elastic bands. Ensure equidistance between

each trailing edge wing tip and a reference point at the rear of the fuselage. Use a pencil through the hole in the front of F2/F2b to mark the centre of the wing dowel on the front face of the support block. In a similar manner, mark the centre position of the wing bolt hole from the underside of the fuselage through the T-nut. Remove the wing assembly and drill and dry fit the wing dowel into the support piece. Also drill a hole through the centre section for the wing bolt. Before gluing the dowel in position check that it locates into F2/F2b with the centre section seating perfectly flat on the top of the fuselage. Fit the 1.5 mm (1/16") ply reinforcing ring around the wing bolt hole.

Place the fuselage inverted on a flat surface with the front wings bolted in position and prop up the rear fuselage so the underside is approximately horizontal. Offer up the rear wing assembly by slotting the ply locating tongue between the triangular strips then adjust until the wing tip leading edges line up with the trailing edges of the front wings. Temporarily secure the rear wing assembly in position with tape or elastic bands. Use a pencil to mark the centre for the wing bolt through the T-nut. Remove the rear wings and drill a suitable hole then bolt the rear wings in position.

There should be a slight crossover at the wing tips which, when the front and rear wing tips are joined together, should twist in the direction of washout.



Above: Gently clamp the front and rear wing tips in alignment. Sand straight and level before fitting the carbon joiner tubes.

DATAFILE

Name:	Top Quark
Model type:	Unorthodox Sport Electric
Designed by:	John Hutson
Wingspan:	800 mm (31.5")
Length:	920 mm (36.2")
Weight:	700 g (25 oz) - 760 g (27 oz)
Wing loading:	14 oz. / sq. ft.
Functions (servos):	Elevons (2), Rudder (1), Throttle (ESC)
Motor:	Brushless out-runner 2826 2200kV (circa 300W)
Propeller:	APCe 6 x 4
ESC:	30A
Battery:	3S LiPo, 1300 - 2200 mAh

CONTROL THROWS

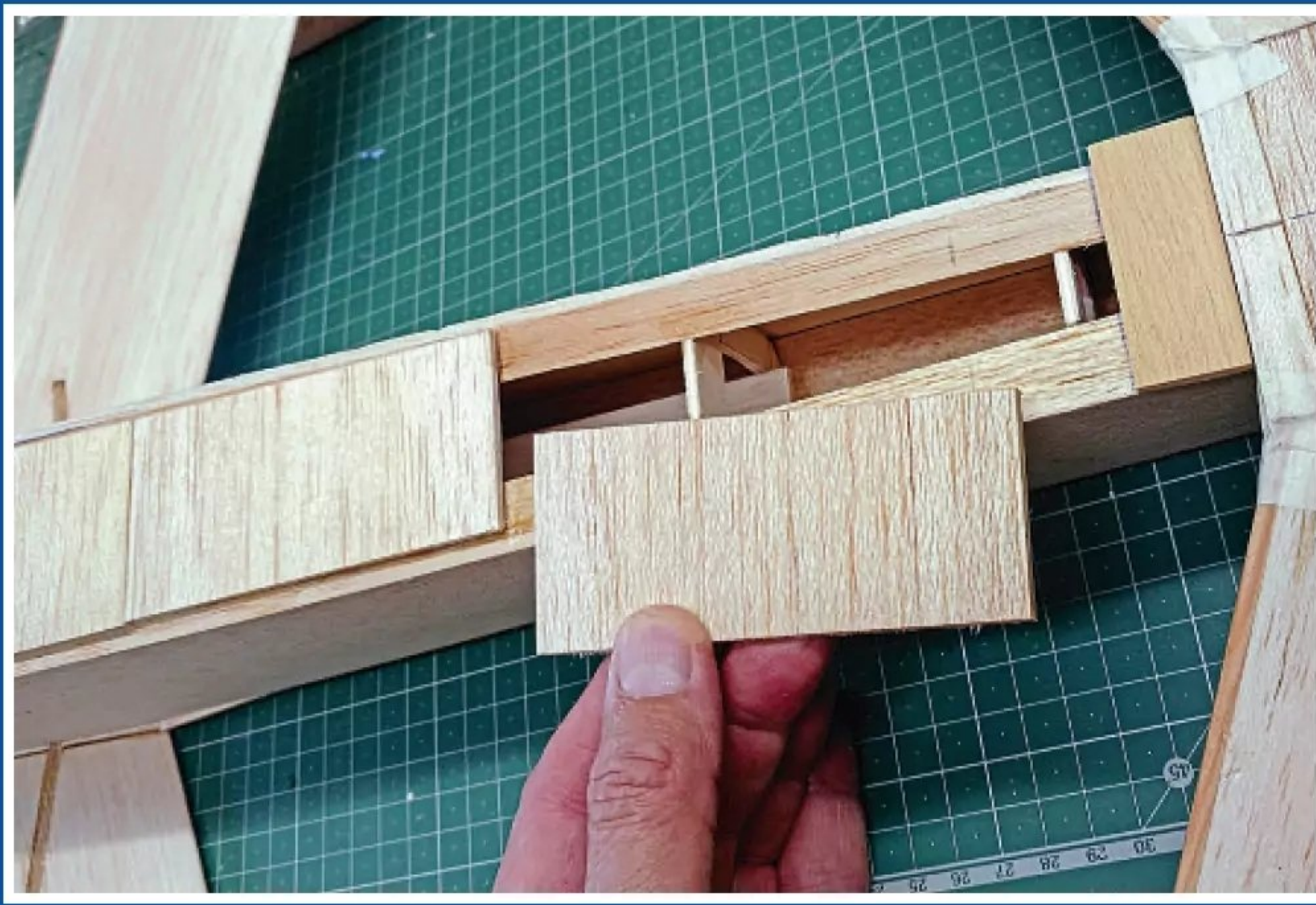
Elevons:	Up 15 mm, down 12 mm
Elevons expo:	Pitch 70%, roll 30%
Rudder:	+/- 25 mm

WING TIP ALIGNMENT

Temporarily join the wing tips using scraps of soft balsa held in place top and bottom with three clamps. Block sand the tips to form a straight edge then wrap some 180-grit sandpaper around a 6 mm (1/4") dowel and sand a concave groove chord-wise front to back. Epoxy the carbon joiner tubes (6 mm O/D) in place.

Below: Eyeball the fuselage from each side. The carbon tube wing joiners should be inclined slightly downwards at the front, parallel with the sloping underside of the rear fuselage.





Sheeting the fuselage underside after fitting the lite ply support for the rear wing tongue. Leave the wings in situ and dry abut to the wing centre sections.



Above: Carve, plane and sand the fuselage to a curvaceous shape. Be brave and take full advantage of those corner triangular strips.



Right: Rear underside fuselage carved and rough sanded to shape.

“Do not sand the centre sections to an aerofoil shape, only the swept wing parts”

Once rigidly joined at the tips the wings should twist a little resulting in a small amount of washout. Aim to have the carbon joiner tubes parallel with the sloping rear underside of the fuselage. If necessary, soak the wings with hot water and prop up with a little more twist/washout. After drying they will relax back a little. Repeat as necessary to achieve equal port and starboard washout. When you are fully satisfied with the washout the joiner tubes can be cut so the wings may be separated and later removed. They may subsequently be joined using smaller inner carbon tube pieces. Carefully mark and cut out the elevon control surfaces from the rear wing trailing edges then bevel their leading edges in accordance with your preferred hinge method.

FUSELAGE STAGE 2

With the wings in position, sheet the top and bottom of the fuselage from nose to tail with medium 3 mm (1/8") balsa, cross-grained. Abut the sheeting to the front and rear of both wing centre sections with a hairline gap for removing the wings. Don't forget the lite ply support for the rear wing tongue.

Remove the wings then carve, plane and sand the fuselage to a curvaceous section, taking full advantage of the corner triangular strips. Be guided by the cross sections on the plan and keep the corners square where the wings are seated. Offer the wings back in position and simultaneously blend the wing centre sections

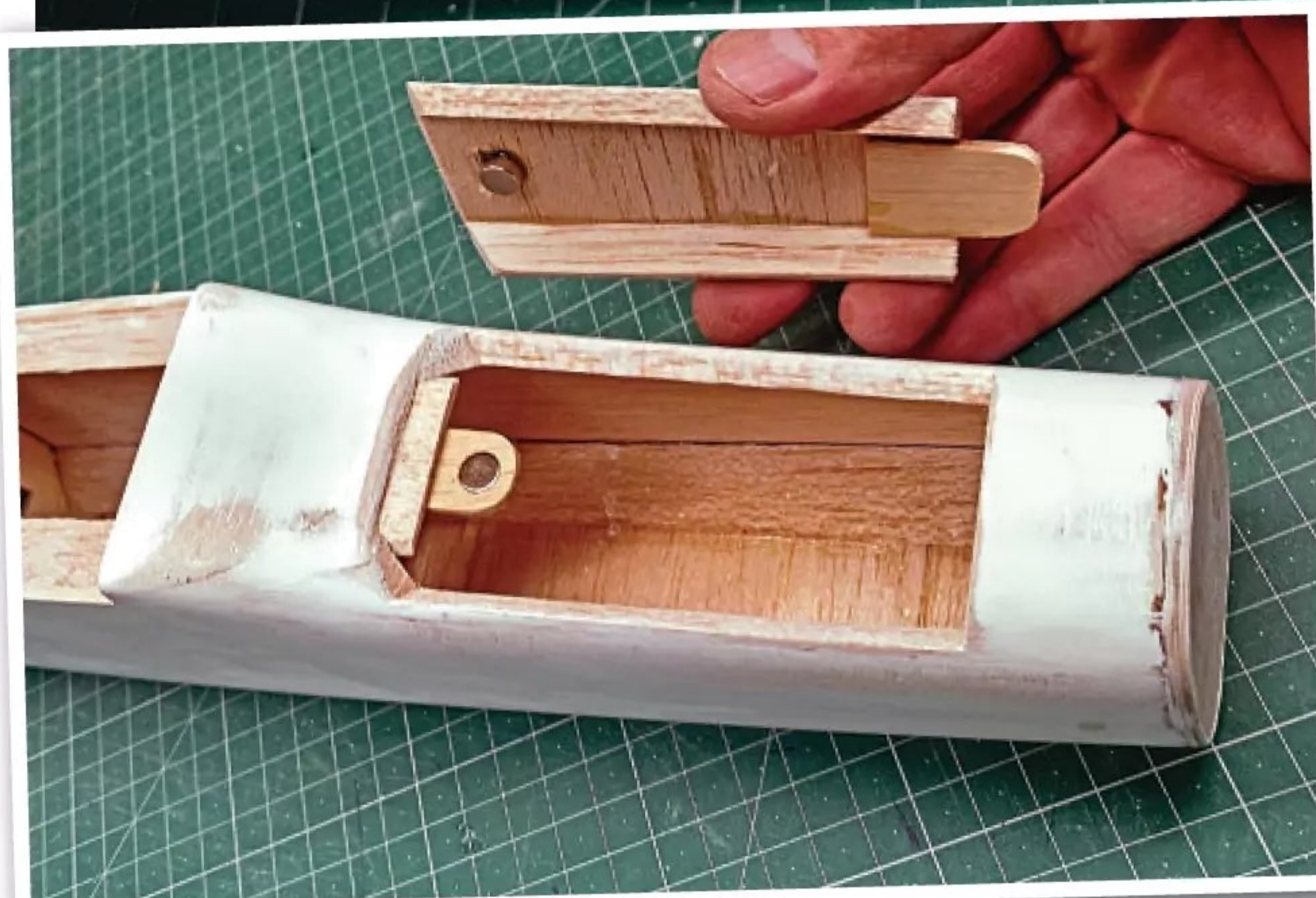
into the curved fuselage shape and the aerofoil profile of the swept wings. Gently trim and sand as necessary and remove and refit the wings until a neat junction is achieved. The triangular strip overhangs can be trimmed front and rear and F1b can be epoxied in place. Sand F1b to match the front fuselage then mark and drill holes for cooling and for mounting the motor.

HATCHES

Carefully mark and cut the front and rear hatches using a razor saw and a Stanley knife. Cut at an angle using a steel ruler as a guide to create a bevelled seating for each hatch. Fit the tongues and magnets which will hold the hatches in place.



Above: Cut the ends of the hatch at an angle using a razor saw, then cut the hatch sides at an angle using a knife. This creates a bevelled seating.



Left: Fit the tongue, magnets and support pieces. Repeat for the rear underside hatch.



TAIL END

Cut out the servo mounting holes in the rear fuselage to accommodate the rudder and elevon 9 g servos. Construct the fin and rudder from 6.5 mm (1/4") medium balsa sheet. Carefully mark and cut out a slot in the top rear fuselage sheeting to accommodate the fin and epoxy it in place. Finally, don't forget the ply skids under the rear wing centre section.

COVERING & FINISHING

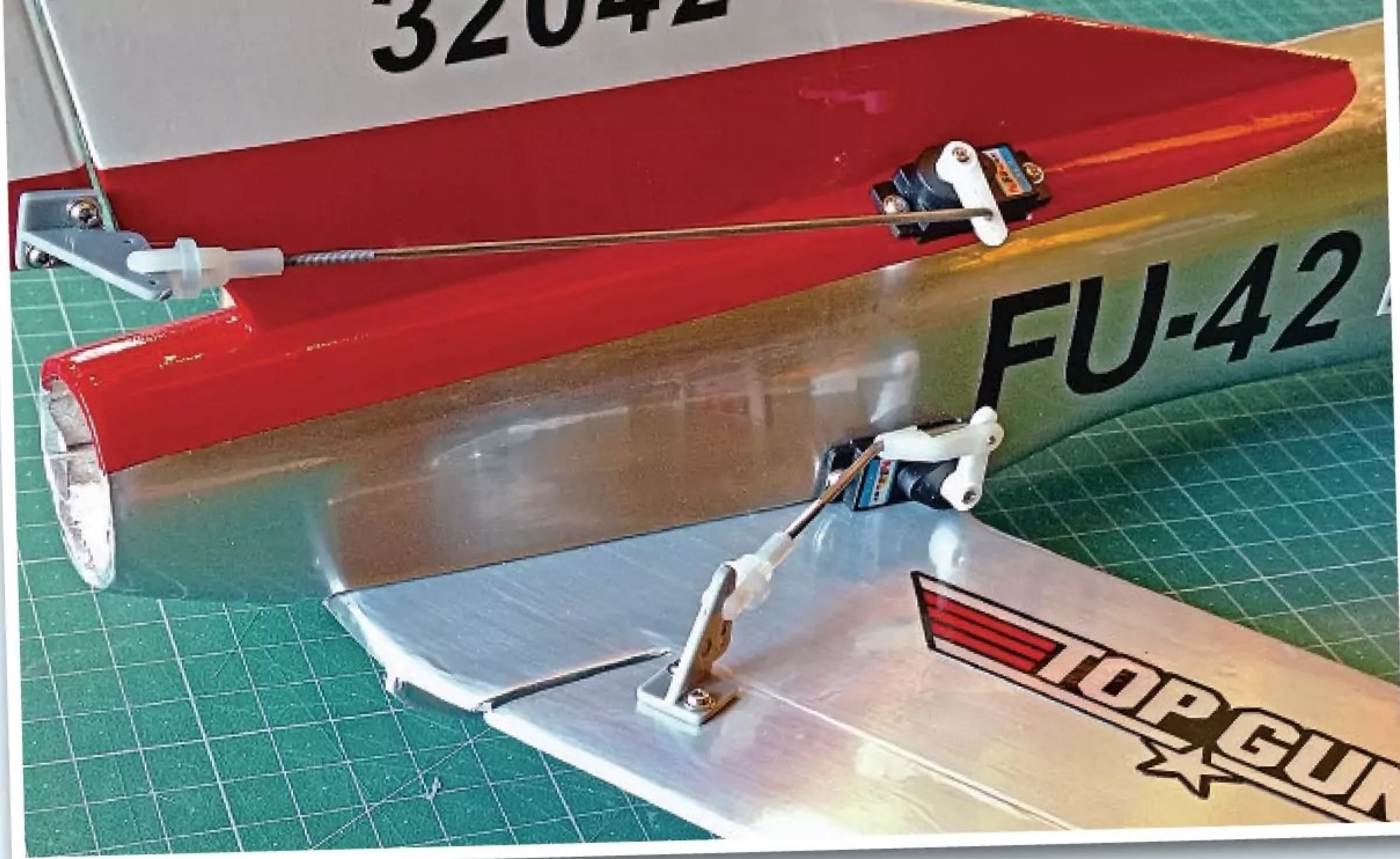
This striking model deserves an ambitious colour scheme. Both prototypes were covered in various brands of heat shrink film according to the colours I already had. Film hinges were used for the elevons and Mylar hinges for the rudder.

The motor cowling is optional, but I think it's a worthwhile finishing touch to the model. I fashioned mine using a heat gun to shrink a plastic drinks bottle over a blue foam plug. This was trimmed and secured with three screws into the edges of F1/F1b and finished off with a 35 mm aluminium spinner.

Both prototypes weighed 695 g ready to fly with a 3S 1300 mAh LiPo and no ballast, or 760 g with a 2200 mAh LiPo. I am not the lightest of builders so this should be achievable for the average modeller. Be mindful that additional weight at the back end will need around double in the nose to maintain the Centre of Gravity.

Above: Rear end of the finished model showing the servos and linkages. The tail end is left open for cooling air to exit.

Below: Prelude to the maiden flight. Love it or hate it, Top Quark certainly turns heads.



FLYING

The published performance of the motor/propeller combination suggests a power-to-weight ratio close to one. This is borne out by the spritely vertical climb and huge power loops starting from full throttle in level flight. It really doesn't need more than 300 watts at its design weight.

Hand launches are a non-event at around half to two-thirds throttle, in a breeze or dead calm, respectively. The Top Quark fits nicely in the hand, so I prefer to hand launch it myself at a slight upwards incline of 10-20 degrees. With the wings level and properly trimmed it will climb straight and true until you place your fingers on the sticks. Those of a nervous disposition may choose to employ a trusted launcher, at least for that maiden flight.

The rudder is a worthwhile addition for stall turns, Farnborough passes and knife edge flight. Axial rolls and

inverted flight are no problem, requiring a little rudder correction and down elevator.

The stall is benign and with the prescribed washout there has been no tendency to flick or tip stall. High alpha descents are possible but lower the nose at a safe height to gain speed for the final approach and flair for landing.

Both prototypes have flown well with no deliberate down thrust or side thrust, hence the plan shows none. If you find this not to be the case then simply adjust by placing washers behind the motor mount as required.

The wing configuration seems to make the Top Quark a little more sensitive in pitch than a conventional wing and tail aircraft. This, combined with the low wing loading, means I would not endorse 'upgrading' the powertrain much over 300W or going to 4S. I think you will be satisfied by the performance and duration as standard. It's not meant to be a speed





First balsa prototype was based on a colourful Panther 9F Navy scheme. The second model, featured here, was inspired by the F-86 Sabre Skyblazers scheme.



Nose detail showing the motor and cowling mounting. The cowling was made by shrinking a plastic drinks bottle over a blue foam plug using a heat gun.

demon but it's no slouch either. Just watch the Centre of Gravity, especially if you mix LiPo sizes in a single flying session like I do. Oh, and follow the recommended control throws and exponential settings.

Last, but not least, you may need to concentrate on the model's orientation until you are accustomed to its unorthodox shape. A contrasting top and bottom scheme will help. Happy landings!

For further information you can message my user Futura57 online at the Model Flying forum: <https://forums.modelflying.co.uk> ■

Right: Distinctive diamond outline of the 'Warren Wing' is evident from below.

Below: Approaching knife edge flight.



"With the wings level and properly trimmed it will climb straight and true"



Performance EDF's at Affordable Prices

These EDF units are a new generation of performance EDF units at an affordable price.

The prices include a brushless outrunner specifically designed and developed to work with these units. All of the fans are dynamically balanced at the factory and are therefore vibration free and very efficient. All fans have either 11 or 12 blades which gives them a great "turbine" like sound which adds to the experience of owning a "jet" model.

The 50mm FMS and 70mm PowerFun fans are those as used in the Tony Nijhuis "Mini and Midi Jet" series, as recently published in the RCM&E.

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



Complete Electrical Setup For The Top Quark by John Hutson



www.4-max.co.uk/customermodels152.htm



Description	RRP
PO-2826-2200 Brushless Outrunner Motor	£22.99
4M-HESC30A Brushless ESC and Programming Card	£30.99
APCE 6" x 4" Electric Propeller	£2.95
3x 4M-100AMG-022 Analogue 9g Metal Geared 2.2Kg Servos	£22.47
PP-HATCH-LATCH-A - Hatch Latch/Catch	£1.99
3S, 11.1V, 60C, 1,800mAh LiPo Battery	£21.75
3S, 11.1V, 60C, 2,200mAh LiPo Battery	£23.50

For more information on all these products and hundreds of others, please visit our website

Motors, ESC's, LiPo's, Chargers, Servos, Props



High Quality, High Performance, Large Range, **60/120C, 3S 2,200mAh Only £23.50!**



We stock: Motors, Motor Mounts, ESC'S, UBEC'S, Plastic Props, Wooden Props, Folding Props, 3 Bladed Props, Prop Balancers, Spinners, LiPo's, Ni-Mh, Spektrum Radio's & Receivers, Servos, Simulators, Connectors, Cables, Heatshrink, Chargers, Watt Meters, LiPo Balancers, Tools, Soldering Equipment, EDF Units, Electric Retracts, Undercarriages, LED Lights, Lost Model Alarms, Pilots, Servo Testers, Tachometers, Glue, plus many other items. Please have a look at our easy to use website for more information. www.4-Max.co.uk



2S 4000mAh
LiPo Battery for
Spektrum
Transmitters



Approved by The BMFA
for the Payload and
Egg Challenges

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



Purple Power Professional LiPo's (JST-XH)

PPL-25C2S-0350	25C/50C, 2S (7.4V) 350mAh	£4.10
PPL-60C2S-0450	60C/120C, 2S (7.4V) 450mAh	£4.70
PPL-60C2S-0800	60C/120C, 2S (7.4V) 800mAh	£7.80
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	£14.23
PPL-60C2S-2200	60C/120C, 2S (7.4V) 2200mAh	£18.25
PPL-40C2S-2600	40C/80C, 2S (7.4V) 2600mAh	£19.45
PPL-40C2S-3300	40C/80C, 2S (7.4V) 3300mAh	£24.60

PPL-25C3S-0350	25C/50C, 3S (11.1V) 350mAh	£5.70
PPL-60C3S-0450	60C/120C, 3S (11.1V) 450mAh	£7.50
PPL-60C3S-0800	60C/120C, 3S (11.1V) 800mAh	£11.00
PPL-60C3S-1000	60C/120C, 3S (11.1V) 1000mAh	£14.75
PPL-60C3S-1300	60C/120C, 3S (11.1V) 1300mAh	£16.25
PPL-60C3S-1800	60C/120C, 3S (11.1V) 1800mAh	£21.75
PPL-60C3S-2200	60C/120C, 3S (11.1V) 2200mAh	£23.50
PPL-60C3S-2600	60C/120C, 3S (11.1V) 2600mAh	£30.00
PPL-60C3S-3300	60C/120C, 3S (11.1V) 3300mAh	£38.00
PPL-60C3S-3700	60C/120C, 3S (11.1V) 3700mAh	£43.00
PPL-60C3S-4500	60C/120C, 3S (11.1V) 4500mAh	£55.50
PPL-40C3S-5000	40C/80C, 3S (11.1V) 5000mAh	£56.49
PPL-60C3S-6000	60C/120C, 3S (11.1V) 6000mAh	£70.00

PPL-60C4S-1800	60C/120C, 4S (14.8V) 1800mAh	£30.00
PPL-60C4S-2200	60C/120C, 4S (14.8V) 2200mAh	£33.50
PPL-60C4S-2600	60C/120C, 4S (14.8V) 2600mAh	£39.50
PPL-60C4S-3300	60C/120C, 4S (14.8V) 3300mAh	£49.00
PPL-60C4S-3700	60C/120C, 4S (14.8V) 3700mAh	£55.00
PPL-60C4S-4500	60C/120C, 4S (14.8V) 4500mAh	£70.00
PPL-60C4S-5000	60C/120C, 4S (14.8V) 5000mAh	£77.50
PPL-60C4S-6000	60C/120C, 4S (14.8V) 6000mAh	£96.00

PPL-60C5S-3300	60C/120C, 5S (18.5V) 3300mAh	£63.00
PPL-60C5S-3700	60C/120C, 5S (18.5V) 3700mAh	£71.00
PPL-60C5S-4500	60C/120C, 5S (18.5V) 4500mAh	£86.50
PPL-60C5S-5000	60C/120C, 5S (18.5V) 5000mAh	£96.00
PPL-60C5S-6000	60C/120C, 5S (18.5V) 6000mAh	£118.00

PPL-60C6S-3300	60C/120C, 6S (22.2V) 3300mAh	£79.00
PPL-60C6S-3700	60C/120C, 6S (22.2V) 3700mAh	£85.00
PPL-60C6S-4500	60C/120C, 6S (22.2V) 4500mAh	£103.00
PPL-60C6S-5000	60C/120C, 6S (22.2V) 5000mAh	£115.00
PPL-60C6S-6000	60C/120C, 6S (22.2V) 6000mAh	£139.00

Prop Drivers/Adapters

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



Brushless Electronic Speed Controllers

4M-HESC12A	12A, Burst 15A, 5.5V 1A BEC	£16.49
4M-HESC20A*	20A, Burst 25A, 5V 1A BEC	£18.99
4M-HESC30AV2*	30A, Burst 40A, 5V 5A BEC	£22.99
4M-HESC40AV2*	40A, Burst 50A, 5V 5A BEC	£31.95
4M-HESC50AV2*	50A, Burst 70A, 5V 5A BEC	£45.95
4M-HESC60A35V2*	60A, Burst 80A, 5V 7A BEC	£47.95
4M-HESC60A40V2*	60A, Burst 80A, 5V 7A BEC	£47.95
4M-HESC80AV2**	80A, Burst 100A, 5V 5A BEC	£62.00
Fly Fun 110A HV	110A, Burst 140A, OPTO, 6-14 LiPo	£129.99
Fly Fun 130A HV	130A, Burst 160A, OPTO, 6-14 LiPo	£141.99
Fly Fun 160A HV	160A, Burst 200A, OPTO, 6-14 LiPo	£189.99

* XT60, ** XT90 on battery side



UBEC's (Voltage Stabilisers/Regulators)

4M-UBEC5A	5A UBEC, 7A Peak, 6-29.4V I/P	£14.99
4M-UBEC-7A	7A UBEC, 7.5A Peak, 6-29.4V I/P	£19.99
HW-UBEC10A	10A UBEC, 15A Peak, 3-25V I/P	£34.99
4M-UBEC-15A	15A UBEC, 28A Peak, 9-51V I/P	£29.99
HW-UBEC25A	25A UBEC, 50A Peak, 3-75.6V I/P	£64.99
5A UBEC	With Switch and Digital Display	£16.99
15A UBEC	With Switch and Digital Display	£29.99

Outrunners - Professional Black Series

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

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



Great Value Quality Servos **From £3.28**

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

For more information on all these products and hundreds of others, please visit our website



BIY (Build it Yourself) Kits



£424.99

Fokker DVII

Wingspan 2100mm/83"

Battery 6S 5000mAh

Weight 6000g/13.2lbs

(Supplied Separately)



£499.99

DH82a Tiger Moth

Wingspan 2360mm/93"

Battery 6S 6000mAh

Weight 8700g/19.2lbs

(Supplied Separately)



£439.99

Miles 2.H Hawk Major

Wingspan 2480mm/98"

Battery 10S 5000mAh

Weight 9300g/20.5lbs

(Supplied Separately)



£109.99

Cloud Clipper

Wingspan 1800mm/71"

Battery 3S 2200mAh

Weight 1800g/4lbs

(Supplied Separately)



£99.99

Cloud Walker

Wingspan 1650mm/65"

Battery 3S 2200mAh

Weight 1250g/2.75lbs

(Supplied Separately)



£139.99

Super Sinbad

Wingspan 2500mm/98"

Battery 3S 2200mAh - 3S 3700mAh

Weight 1900g/4.2lbs

(Supplied Separately)



£169.99

Leprechaun

Wingspan 2600mm/102"

Battery 3S 2200mAh - 3S 3700mAh

Weight 1650g/3.6lbs

(Supplied Separately)



£299.99

Schneider Grunau Baby

Wingspan 3400mm/134"

Battery 3S 2200mAh - 3S 3700mAh

Weight 2200g/4.86lbs

(Supplied Separately)



£49.99

Micro Sinbad

Wingspan 1230mm/48.4"

Battery 2S 350mAh

Weight 190g/6.7oz

(Supplied Separately)



£169.99 Kit
£299.99 ARTF

VP2600 Glider

Wingspan 2600mm/102"

Battery 3S 2200mAh

Weight 850g/1.9lbs

(Supplied Separately)

For more information on all these products and hundreds of others, please visit our website

Top letter

For his letter this month Nigel Argall wins a compact e455 multi chemistry AC input charger courtesy of Overlander Batteries – www.overlander.co.uk



TRANSMITTER CHECKS

I enjoyed Jeff Barringer's excellent Test Flying article in the last edition on setting up for first flights. I would like to add two other things well worth adding to the list:

1. As well as checking the stick movements (e.g. aileron rises up to meet the stick), check trim movements in the same way. With modern radios, it is quite possible to (accidentally) set up the trims to work in

the opposite way, which of course makes trimming in flight impossible.

2. Check whether the trim movement has a range of options. My FrSky Taranis allows coarse, medium and fine settings, and just to add to the danger it comes factory set on fine. You can be flying an out of trim model, be rapidly nudging the trim switches and find later that it was only

making microscopic movements to the controls; you most definitely need trims set on coarse for a first flight.

Modern radios are in many ways great, but both these issues are a result of computer transmitters allowing you to 'adjust everything'. In both cases, you can of course ask me, 'How did you discover this?' And the answer is, 'The hard way!'

Nigel Argall

FAMOUS FACES

With reference to your request in the April 2024 RCM&E about famous faces involved in our hobby, one such person is Vernon Kay of BBC Radio 2.

Ray Pinchin

Thank you, Ray. Vernon's interest in aeromodelling is quite well known, I believe. But the author of the 'Famous Contributors' letter, Neville Marsh's main intention was to encourage the 'youth of today'. So even a relatively young Radio 2 presenter like Vernon is likely to not be very high on the radar of young children and teenagers, even though their parents and grandparents will probably be well aware of him.

But thank you for your response. It will be interesting to see if any more famous names are supplied by other readers, even if they are ones from the world of social media and online that old codgers like me have never heard of!

KC



SIMPLE GLIDER HOLDER

I've been meaning to publish these pictures for a while, which show a clubmate's simple solution to holding his glider for assembly and for taking it apart again at the end of a soaring session. It's basically a pair of tick shaped pieces cut from firm foam into which he rests the leading edges of his model's wings whilst he attaches the fuselage, with the fold up seat supporting the glider's nose. Support rods fashioned from wooden strips are inserted into pre-existing holes in each arm of the chair. But if no holes already exist in your own 'flying chair' then some can easily be drilled and cut out for this purpose.

The nice thing is that the model can be put together and the wing servo wires connected all at a comfortable height. Take a bow, Andrew Holmes.

Kevin Crozier



SERVO NOMOGRAPH

The 'Servo Calculations' letter from Henkjan Louman in All Write, May 24 reminded me that for many years I have used the attached nomograph, published in RCM&E a very long time ago. It also agrees fairly well with some NASA (or NACA) research many years back on low-speed controls.

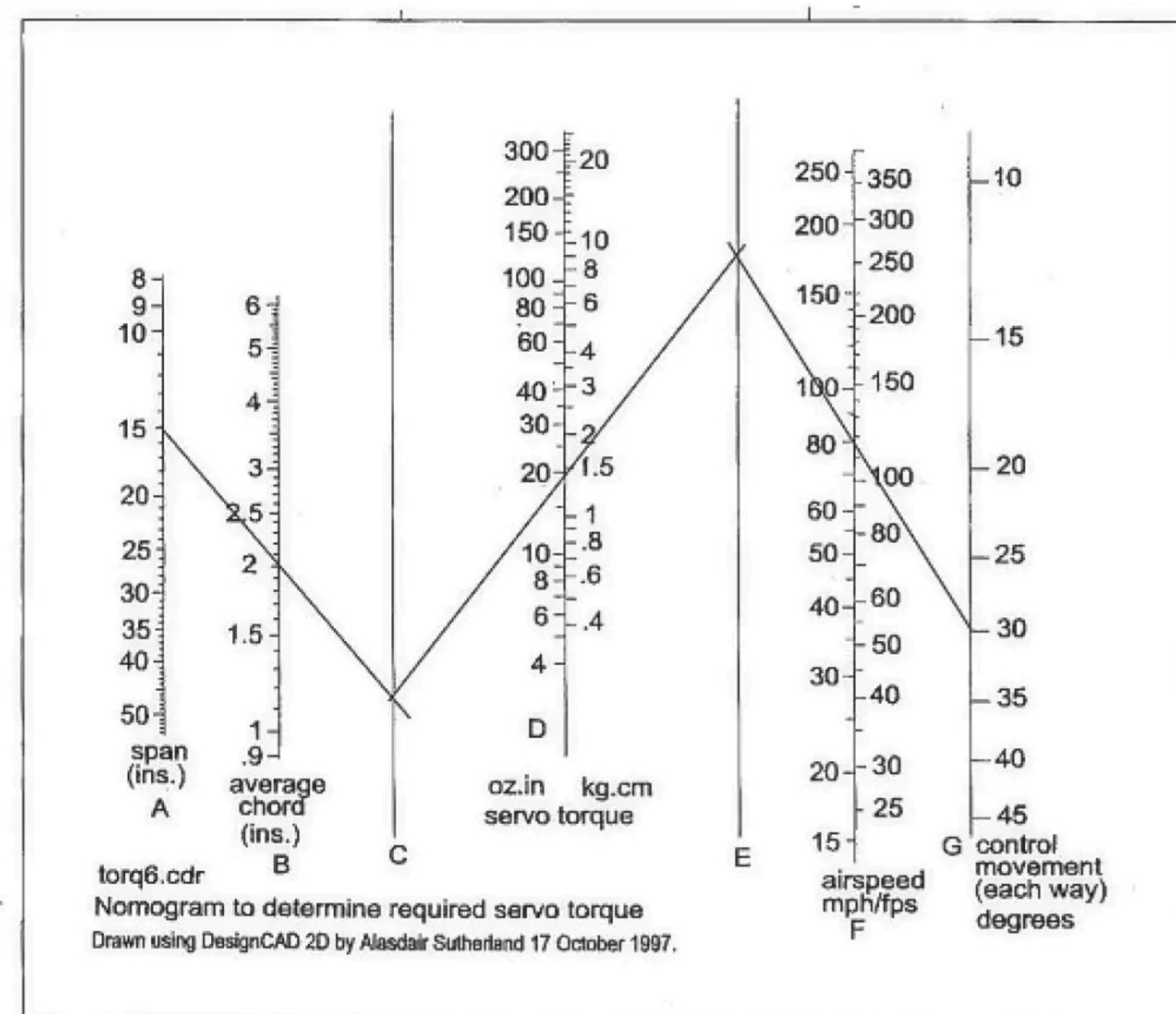
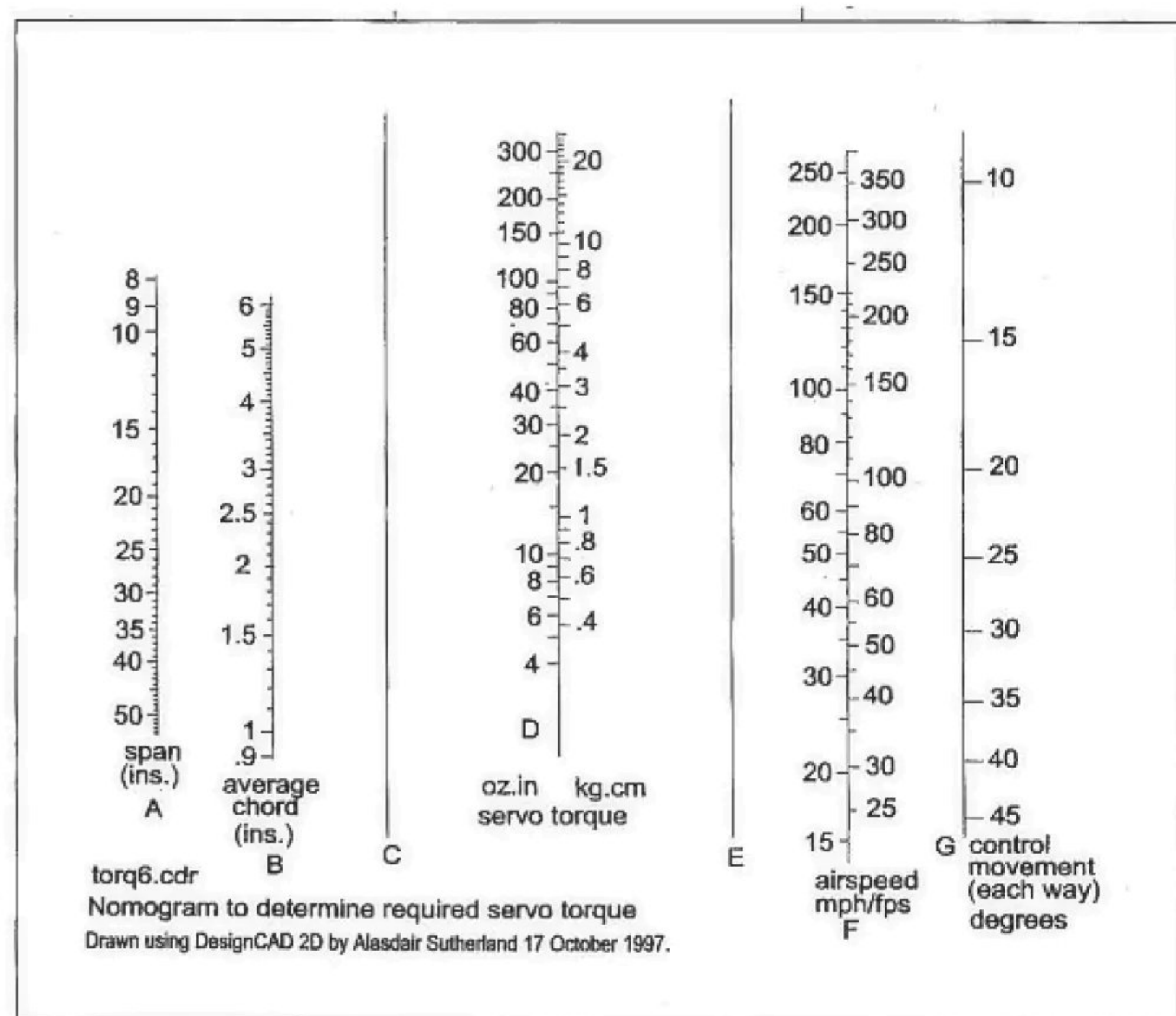
Alan Simmons

Thank you for reminding us of Alasdair's nomograph, Alan. However, I do not believe that it was originally published in RCM&E but was instead included in Alasdair's 'Aerodynamic Forum' column in the August 1998 issue of RC Model World, although I do not have a copy easily to hand to verify this. Anyway, we have included both the

blank version that you supplied, plus the one with your own lines as an example. Larger versions are available online, which may be easier to read for any readers interested in making their own servo calculations. This search term should bring up a couple of results, including a printable version: Alasdair Sutherland servo nomograph

Servo selection also needs several other factors to be considered, including servo arm length, the possibility of over optimistic specifications from manufacturers, differing input voltages and variations in product quality. Not all servos of the same size and type are manufactured to the same standards!

KC



FAST CLIMBING JET

I reckon that your readers may be able to guide me forward, please.

I still have the Aeromodeller Annual containing the feature on ram jets. Like many of us I started to think about model turbine power maybe 15 years ago. I failed to engage but not before I had visited Wren on one of their open days. For quite small money I managed to fit into my car an eight-foot span airframe, which I thought I recalled at the time had gained a splendidly odd record: time to 1,000 metres in one minute, nine seconds. The very well-built airframe has no engine, no gear and no undercarriage. The achievement is displayed on the fin and rudder.

To my mind this is an aeroplane which is worthy of a new life. I have had it all protected in bubble wrap for eight to ten years and done nothing with it. Sorry!

I would love to be able to confirm the message on the model and my own memory but so far, I have failed. Can you help?

Slater Reynolds.

Let's see if any of our readers can recall seeing your turbine model, Slater, the fin and rudder of which is shown here. It looks like a twin boom jet to me.

KC



RECYCLED HOLE CUTTERS

It is always a problem when you need to create a neat, round hole in thin balsa or other flimsy materials such as covering film. You hunt around for the right size piece of tube, often having to compromise. Then the tube you find has not got a thin enough wall and does not cut very neatly.

The other day we were replacing an old telescopic handled brush and as I took it to the bin, I realised that the telescopic handle could be converted into a multi diameter piercing tool. Some quick work with the Dremel followed to cut off the handle and the mop top. I then squared off the ends on the grinding wheel, followed by another touch of the Dremel to put chamfers and a sharp edge on the cutting faces.

So, there we are, seven balsa punches that all neatly store inside the largest tube.

Graham Moore



RCM&E BACK ISSUES

**£6.35
EACH**
(inc p&p)

For EU and ROW, please see
www.classicmagazines.co.uk

Whether it's recent releases or vintage copies, step back in time and browse through the ages with the *RCM&E* back issue collection.

**AVAILABLE TO ORDER TODAY AT
CLASSICMAGAZINES.CO.UK**



OCTOBER 2023

- Waterman Arrowbile
- Swift Multi Role Glider
- Cloud Walker



NOVEMBER 2023

- Fighting Falcon
- Alpha Jet
- La Senorita



DECEMBER 2023

- British Scale Nationals
- Lovely Lyra
- Popham delights



JANUARY 2024

- Hot Stuff - Chilli Breeze goes electric
- Pettigrew's Planes
- Dactyl



FEBRUARY 2024

- Foka 4
- Chilli Breeze EP
- Avanti!



MARCH 2024

- Power Scale Soaring
- Pilot-RC Extra NG
- Dutch P-47



APRIL 2024

- Precision Aerobatics
- Designed with Flair
- Oodalally EP



MAY 2024

- Heinkel-like
- Preparing for Ponte
- Fun Flying Nationals

OTHER ISSUES ALSO AVAILABLE – ORDER YOUR BACK ISSUES NOW!

2 EASY WAYS TO ORDER

CALL: 01507 529529 **ONLINE:** www.classicmagazines.co.uk/issue/rcm



We are a well-stocked **UK Aerobatic Aeromodelling specialist** run by three UK F3a competition pilots. If you are grappling with loops and rolls or you are a seasoned international competition pilot or anything in between we can help you.



- Quality detailed free advice •
- Great precision airframes and associated parts •
- Full or partial custom builds • Training days •
- Laser airframe set ups •

Visits by appointment

Birmingham

Adrian@Bondaero.co.uk
07976 244004

Crewe

Keith@Bondaero.co.uk
07780 844170

Leicester

Chris@Bondaero.co.uk
07811 196418

www.bondaero.co.uk



Hyperflight.co.uk

For RES, DLG, Slope & F5J electric gliders
folding props, geared & direct drive glider motors

Eli 2m £189

Medina 2m
Kit £248
ARF £465

Slite 2m
£245

Alien 1.2m
slope & electric
£340

Inside F5J
2.9m £210

Mini Dart 2
1m DLG £179

100s of glider motors,
folding prop blades,
spinners and glider
accessories in stock.

Go to hyperflight.co.uk or phone 07821 351341



ONLY
£16.99

F-16 Fighting Falcon

by Bertie Simmonds

The F-16 was born from the crucible of the air war over Vietnam and the need for cheaper, simpler, and more maneuverable fighter aircraft.

Luftwaffe Fighters: Combat on all Fronts Vol 2

by Neil Page

Renowned researcher and historian Neil Page looks at the German Jagdflieger throughout the conflict, covering campaigns, unit histories and ace pilot biographies, illustrated with more than 250 rare images.

ONLY
£9.99



ONLY
£35

American Interceptor: US Navy Convoy Fighter Projects

by Jared A. Zichek

Dive into the 'paper projects', the unbuilt studies submitted to the Navy.



ONLY
£39.99

Secret Projects of the Luftwaffe in Profile

by Daniel Uhr & Dan Sharp

Read about the competitions and requirements which produced innovative and unusual designs during WW2 and view the original German construction sketches.



ONLY
£30

Messerschmitt ME 262 Development & Politics

by Dan Sharp

Discover the real history of the Messerschmitt ME 262 with research involving thousands of wartime documents spread across archival collections in three countries.



ONLY
£16.99

Fleet Air Arm Legends: Fairey Swordfish

Discover the story of the Swordfish's service across most theatres in WW2, with never-before published accounts from veteran aircrews.

MORTONS
BOOKS

ORDER NOW: www.mortonsbooks.co.uk Or call 01507 529529

WANT TO HEAR ABOUT OUR LATEST BOOKS?

Mortons Media Group is preparing to launch a new range of non-fiction books - from railway, military and aviation history to consumer issues, hobbies, crime, and politics.

If you would like to hear more about our upcoming book releases and special offers, sign up to our newsletter.

JOIN OUR BOOK CLUB! AND RECEIVE 10% OFF!

To view the privacy policy of MMG Ltd (publisher of Mortons Books) please visit www.mortons.co.uk/privacy

AGUSTA A109A

Peter Reinerth tackles a 600-size scale build of an Agusta A109A air ambulance

Words & Photos: **Peter Reinerth**



Peter wanted the option to install the tail rotor on the left and to make scale retractable landing gear. He also built a four bladed main rotor.

After my first 600 size scale helicopter, using a ready painted Bell 206 fuselage, I wanted to make a more detailed model. Funkey's Agusta A109 fuselage seemed to be a realistic shape. I liked the option to install the tail rotor on the left and to make scale retractable landing gear.

Before I ordered the fuselage I had to build a four bladed main rotor head for this project. I wanted to use the Blade 550X/600X mechanism because I was already familiar with it.

MAIN ROTOR

Since I had never made a main rotor before I thought I would make it similar to the main rotor that the Blade 550X/600 is equipped with. I drew a four-bladed centre hub in CAD in order to be able to use the Blade feathering shafts, dampeners and blade grips. The feathering



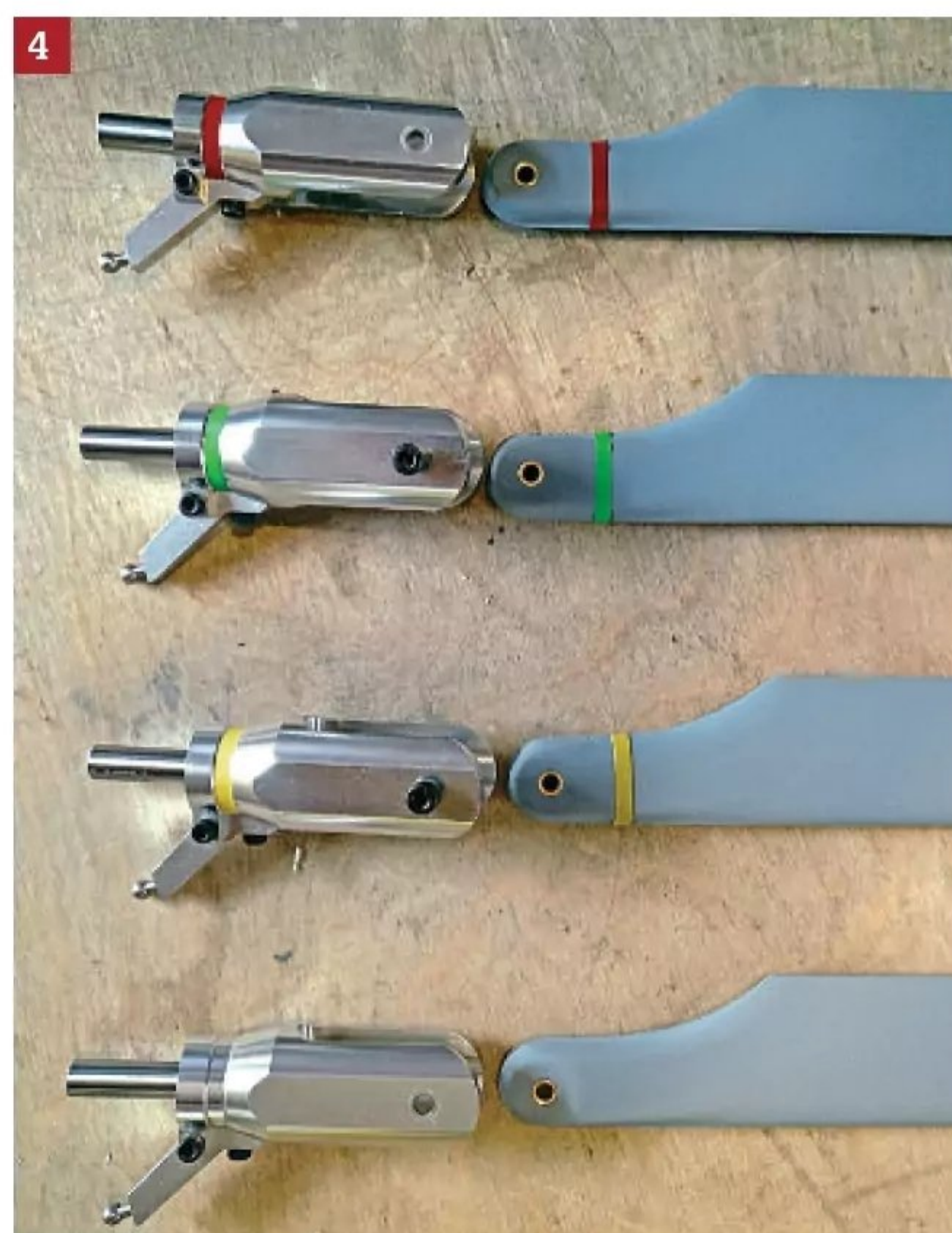
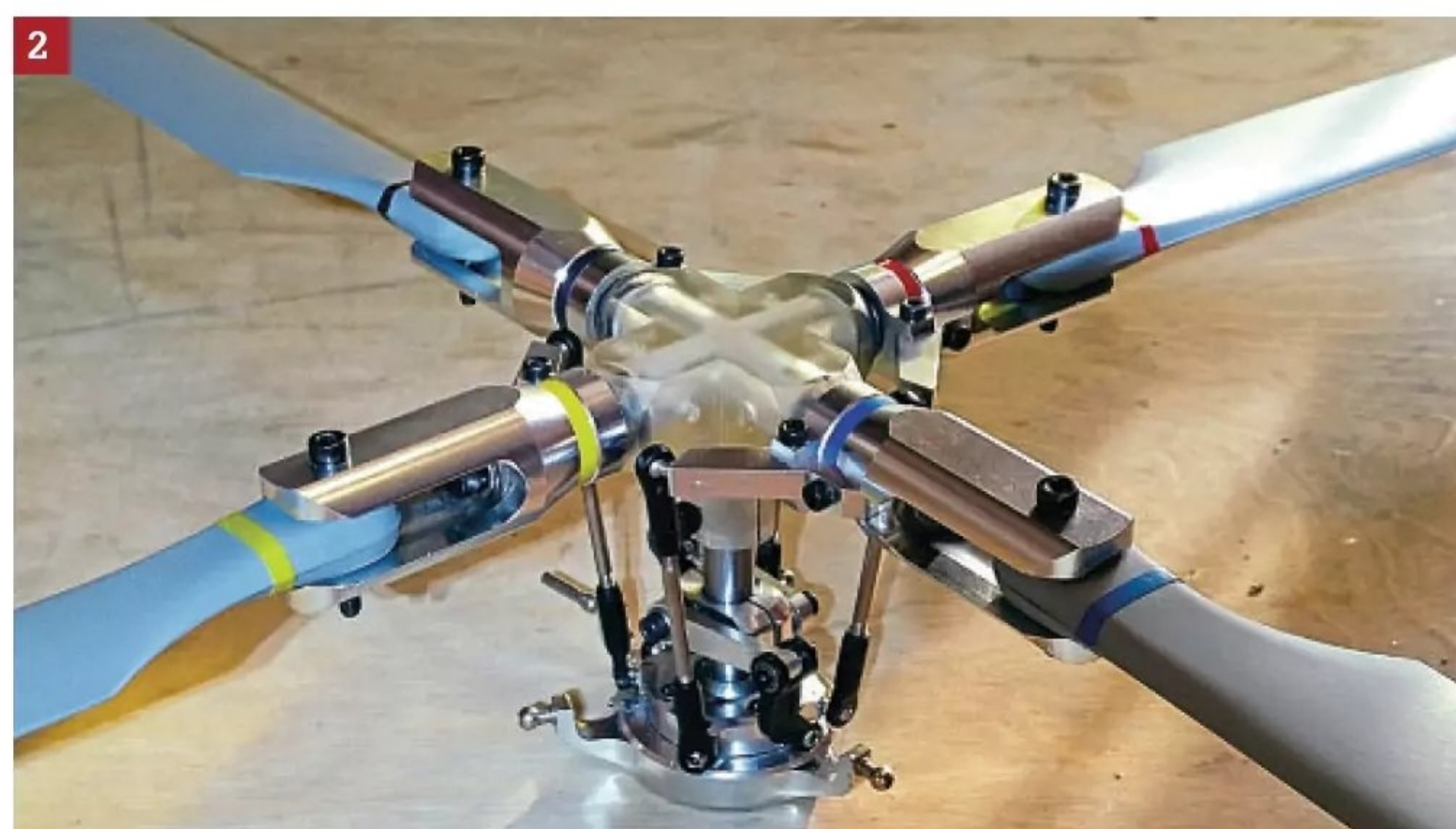
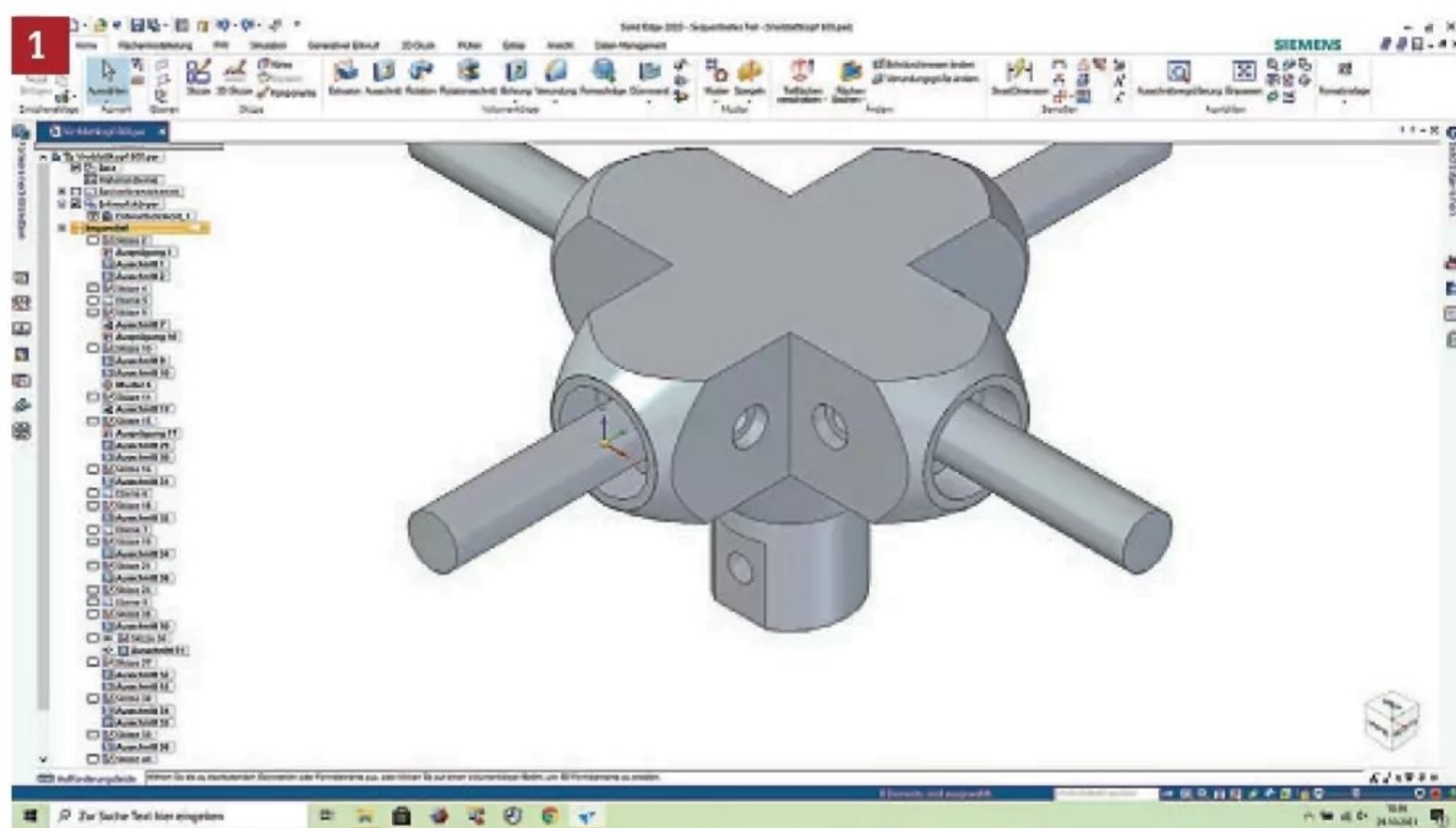
“When I installed the head and test flew it the heli was powerful and responsive, but also calm and quiet. It topped all my expectations”



Akkon Rostock on the pad and ready for take-off.

DATAFILE

Model name:	A109A 'Akkon Rostock'
Fuselage:	Funkey A109 600 size
Mechanism:	Blade 550X/600X 6S
ESC:	YGE 95 LVT
Motor:	Align 730MX 960kV
Receiver:	Spektrum AR7210BX inc. BeastX V5 Pro
Main blades:	Spinblades scale semi-symmetrical 600 mm / 35 mm
Tail blades:	Spinblades semi-symmetrical 95 mm
Lighting:	Optotronix Aurora LCU
Battery:	2 x 6S 2700 mAh 30C
Length:	1250 mm
Width:	340 mm
Rotor diameter:	1300 mm
Tail rotor dia:	280 mm
Take-off weight:	6000 g
Head speed:	1280 RPM



- 1:** The main rotor hub was designed in CAD.
- 2:** To test the main rotor assembly the centre hub was first printed from resin.
- 3:** After checking the fit of parts, the hub was then milled from aluminium.
- 4:** 550X blade grips and feathering shafts.
- 5:** Front landing gear doors.
- 6:** Clear bottom windows leave the pedals visible.
- 7:** Flat windows were made from clear PET sheet.





8: Upper and lower wishbones.

9: Shock absorbers and axles were made from brass tubing.

10: Assembled main landing gear leg.

11/12: Upper and lower bay door opening sequences.



shaft had to be cut to length and a bolt hole was drilled to hold the shaft in the centre hub. I 3D printed it and assembled the centre hub to see how it fitted. Then a friend of mine machined the hub from aluminium for me. I didn't change the swashplate but set up the phasing in the BeastX flight controller.

When I installed the head and test flew it using 600mm Spinblades the heli was powerful and responsive, but also calm and quiet. It topped all my expectations.

FUNKY FUSELAGE

I ordered the unpainted 600 size Agusta 109A fuselage from Funky because I wanted to replicate the 'Akron Rostock', an air ambulance maintained by Rotorflug at Rostock in Germany.

The landing gear would have to work like the real mechanism does, so I first cut out the bay doors and headlight opening. I used the pieces I had cut out for the front gear bay doors and the lower main gear bay doors. The upper doors turned out to be too flimsy so I replaced them with aluminium panels which I had to cut and bend to shape.

The wooden frames inside the fuselage had to be removed and in doing this I noticed that Funky really know how to glue them in! I then realised that the tinted windshield and roof windows would hide the detailed interior I was

planning to make so I sent the parts to Heli Scale Quality, a company who make moulds and PET fuselages for small scale helicopter models. They made a set of vac-formed clear windows for my A109A.

RETRACTABLE LANDING GEAR

After the cut-outs for bay doors were done, I drew the section of fuselage that housed the landing gear in CAD. I 'virtually' installed some vertical mounting plates and designed the main and nose retract mechanisms. I could use the tyres that came with the kit, but I designed more realistic wheels. Then I assembled all the parts in CAD, animated them and did a simulation to get the right length and position for all the rods. This mechanism has to close the upper bay doors every time the landing gear goes in or out, but also must close the lower bay doors only when the undercarriage is in. Since all this is done by a single servo the levers, joints and rods have to be exactly in the right position and with the correct rod lengths.

The hardest thing were the lower bay doors. They have to get out of the way of the wheels immediately, because the wheels come out horizontally first before the landing gear goes down.

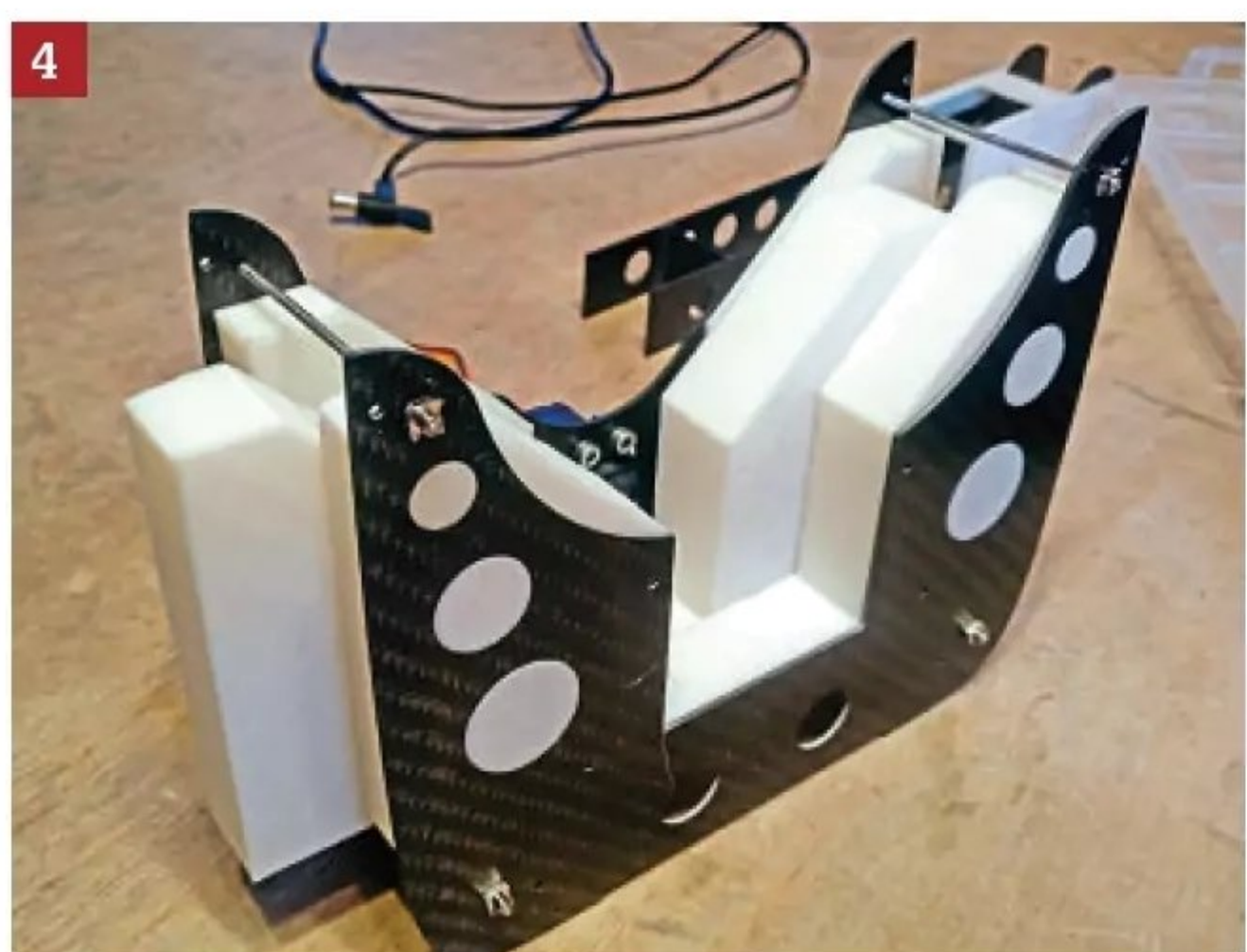
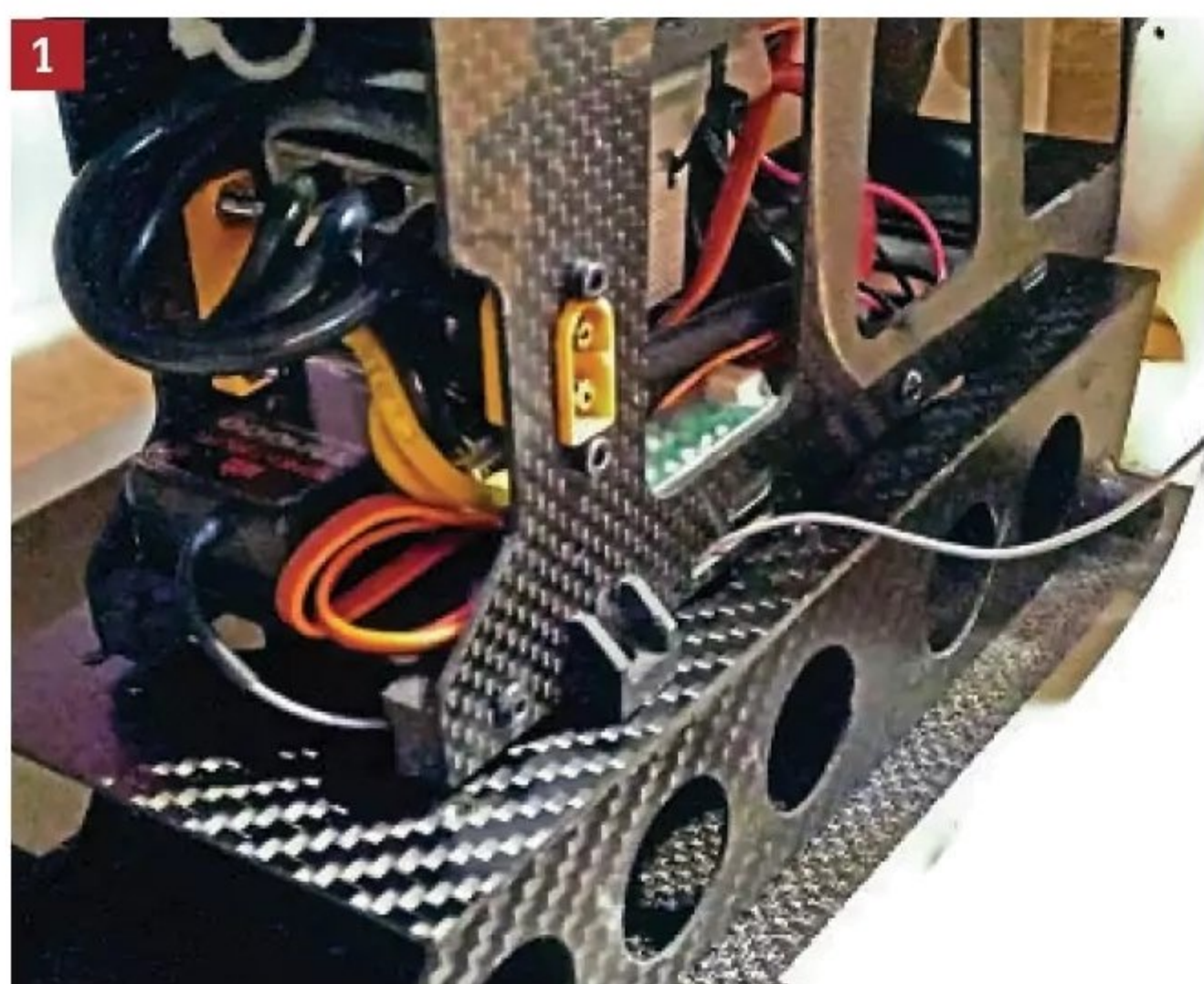
Once it was working in CAD, I printed all the parts from PA-12 (Nylon) at Shapeways, a 3D

print shop. The upper wishbones, vertical shock absorbers and the axles were made from brass tubing to resist hard landings. I installed a 22 kg retract servo to make sure that the retracts will come out even when something is blocked - it will rather break then stay in. I made the joints and supports from aluminium later. The visible and realistic shaped parts I kept as PA-12. I was surprised how close to the CAD simulation the assembly was - it worked really well! My transmitter's sequencer was used to control the retract servo; it moves realistically, being slow and quiet, and I have programmed the Tx to give voice reports when it is activated and when the endpoint is reached.

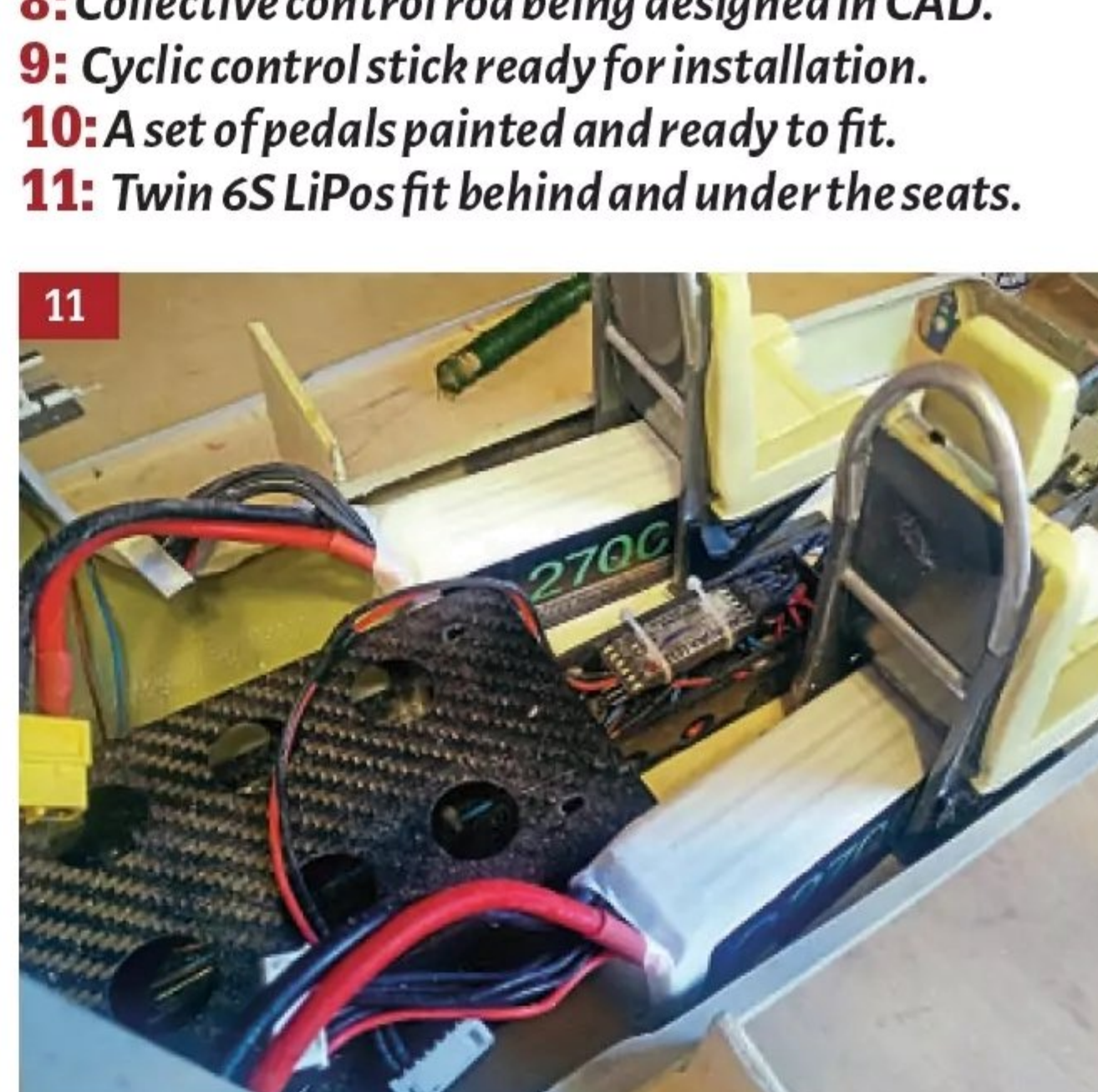
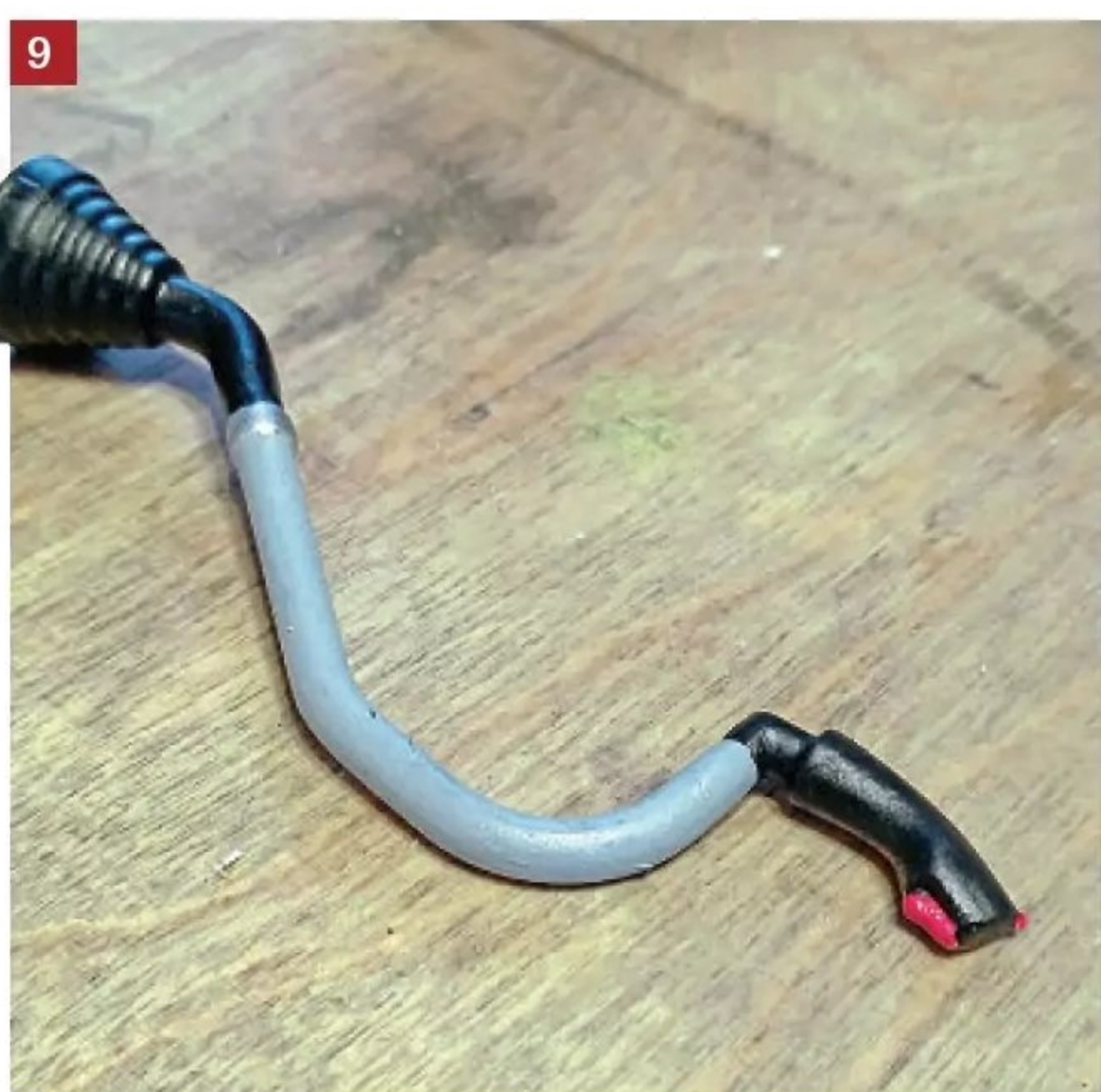
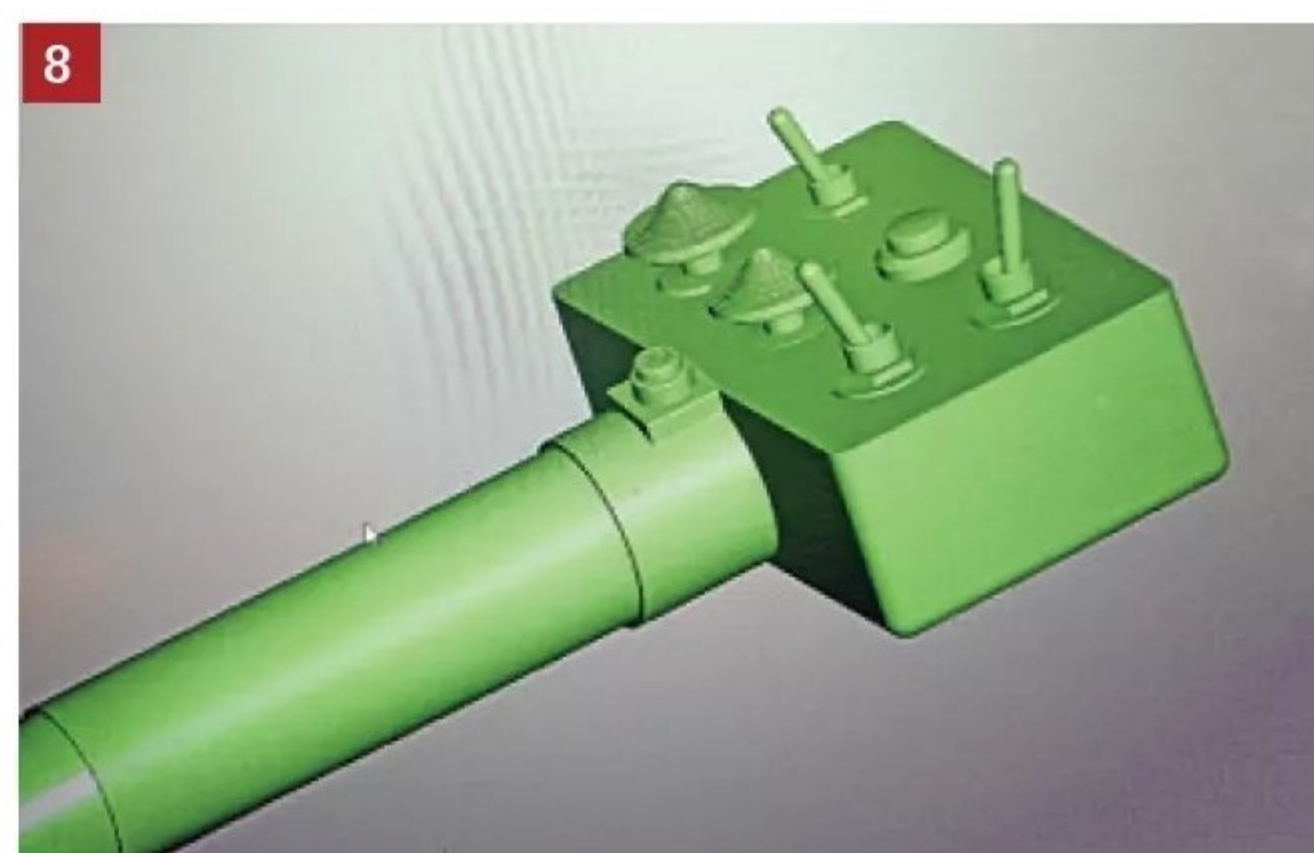
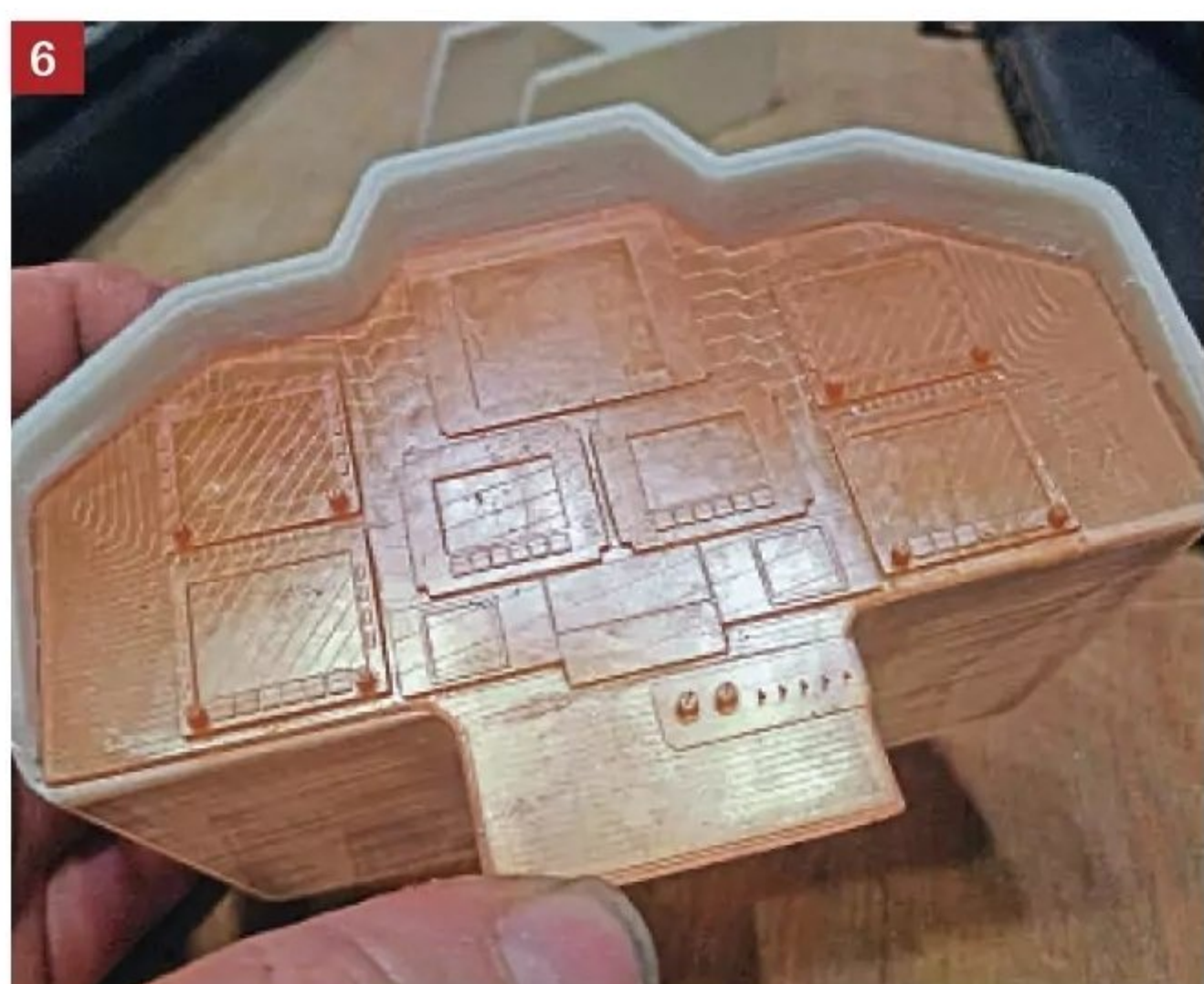
INSTALLATION

I made a base from carbon plates to raise the main mechanics into the desired position. I knew I had to keep an eye on the weight because the landing gears would add some extra weight anyway. Then I installed vertical frames for the main landing gears and some smaller frames for the front landing gear. They had to be parallel and straight, so I printed a removable support for gluing the frames into the fuselage. I assembled the landing gear, then fitted them inside the fuselage and installed the mechanism.

The upper wishbone joints are supported



- 1:** A carbon base was fabricated for the main mechanics to sit on.
2: Front landing gear frame.
3: Front landing gear down and bay doors open. Note the twin headlights.
4: A removable tool was made to ensure that the frames were installed upright and parallel.
5: Installing the carbon fibre frames using the spacing tool.



against the side plates of the mechanism. It all seemed to be sufficiently sturdy and so I dared to give it a try. The first take-off, retraction, then dropping the gear and landing, went fine.

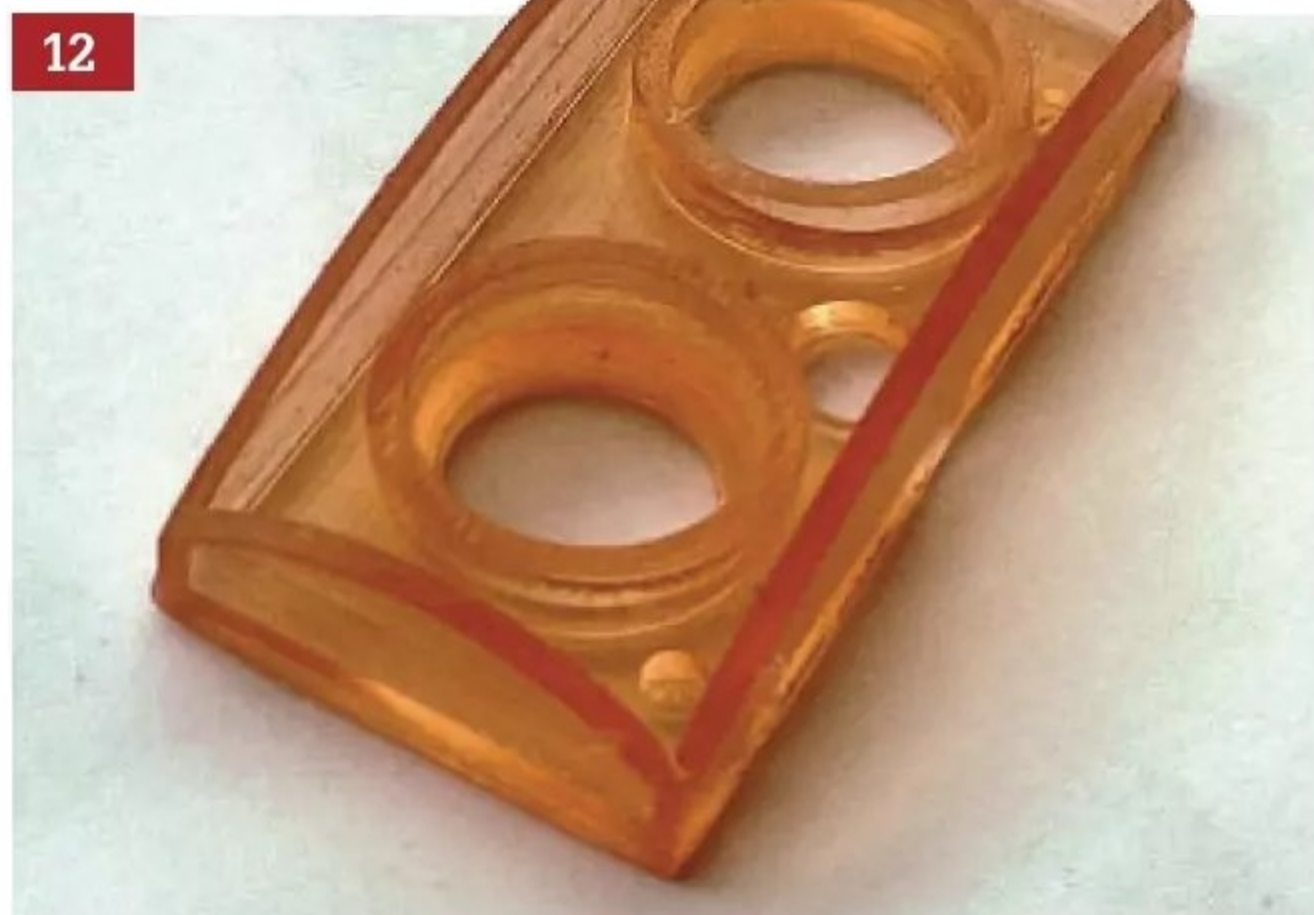
THE INTERIOR

I bought a set of A109A CAD files from the CG Trader website. I was able to print the seats, seat base and dashboard housing from PLA filament myself.

The instrument panel I also printed myself, at high resolution, from resin. Pedals and control rods were printed from PA-12 at Shapeways. I managed to find a place for two 6S 2700 mAh 30C LiPos under the seats, keeping them invisible and safe.

I designed and printed a tunnel to hide the front retract rod and the retract mechanism. I then installed safety belts from a kit by Teremonia using etched metal parts. The instrument screens were made by photo printing them and applying them to the instrument panel.

- 6:** Instrument panel was printed from resin.
7: Instrument panel finished and painted. The screens were made from printed photographs.
8: Collective control rod being designed in CAD.
9: Cyclic control stick ready for installation.
10: A set of pedals painted and ready to fit.
11: Twin 6S LiPos fit behind and under the seats.



12: Headlight housing was printed from resin.

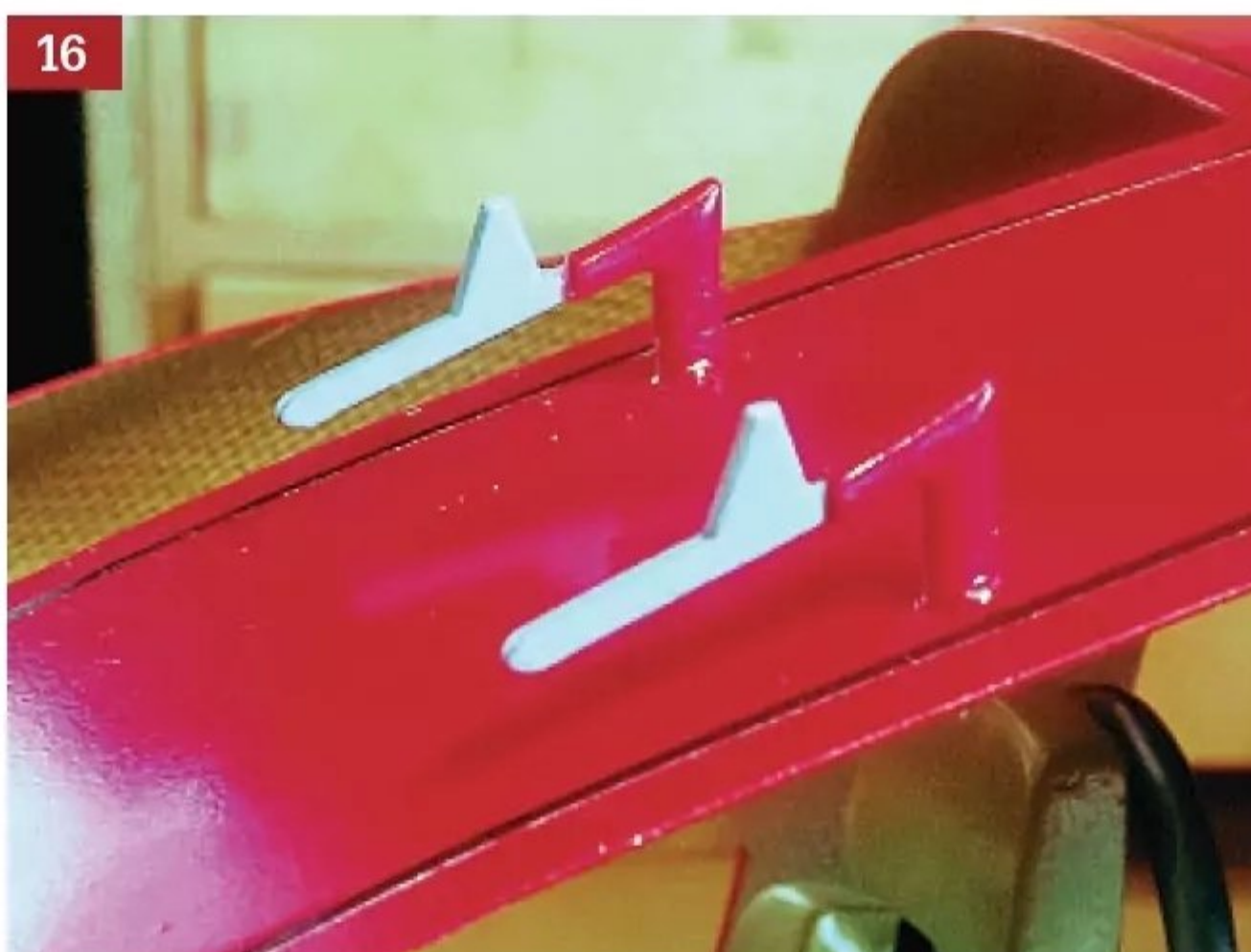
13: The headlight is very effective, as you can see!

14: Spring loaded connector pins are used to connect the lights to the detachable cabin.

15: Surface mount LEDs were used as position lights in the stabiliser.

16: Roof antennas were printed from PLA filament.

17: Underside details are 3D printed. Note the folding light which also houses a satellite receiver.



LIGHTING

The headlight is a double design, being a travelling and landing light. I drew it in 3D and printed it from resin. Then I installed two 1W LEDs and an aluminium heat sink, which I milled. Heli Scale Quality made the protective glass for the headlight as well. The cables run through the front bay and give it a technical look. Electrical connections between the detachable cabin and body are made by spring loaded contact pins.

The dome and tail anti-collision lights (ACL) are 1W LEDs, again fitted with heatsinks. I had to draw and 3D print the sockets but that was

easy. The position lights in the stabiliser are surface mounted downlight LEDs, 3.2 x 2 mm in size. There's also a 3 mm white LED at the tail as well.

An Optotronix Aurora light control unit controls the lights, offering soft starting headlights and some nice ACL patterns. I use a second sequencer in my radio to operate them.

ADDITIONAL DETAILS

Although the kit from Funkey is of a realistic shape and is of good quality, and the exhaust pipes can be used, it is missing not only serious landing gears but some characteristic antennas.

So, I designed them in CAD and printed them from PLA. Windshield wipers were provided with the kit.

Since I used a lot of carbon plates for the landing gear mechanism base and the landing gears, I had to install my satellite DSMX receiver on the outside. To hide it, I drew and printed a folding light.

PAINTWORK

I sprayed filler on all the 3D printed parts. Then I sprayed all the retract parts with gloss aluminium silver. The fuselage was sprayed with white gloss, then I masked it for the

The self-made dampened four blade main rotor head adds that final scale touch. The model is sprayed to replicate the 'Akkon Rostock' air ambulance.

"I dared to give it a try. The first take-off, retraction, then dropping the gear and landing, went fine"





“I had to change the direction of the tail rotation. I made a gearbox using three bevel gears and parts of the tail gears I already had”

red paint and sprayed that using Tamiya TS-8 Italian Red. The decals were made by Heli Scale Quality, a scale fuselage kit manufacturer based in Germany. Before installing the windows, I applied a 2K clear coat to cover the paint and decals.

AN UNEXPECTED ISSUE

Since I had a successful maiden flight when I tried the retractable landing gears, and before installing the detailed interior and finishing the paintwork, I didn't expect any issues. So I was very surprised when I lifted the heli off, only to lose control of the tail immediately. The wind was blowing from the right, supporting the main rotor's torque against the tail rotor and the heli was spinning at low altitude. I thought I could try full left yaw the next moment the heli was pointing nose-in, hoping the wind from the right side would support the tail rotor. It worked and I was able to land with no damage.

I figured out that the additional weight I

had added since the maiden flight, which was performed in calm conditions, was affecting my set up. So I decided to fit 95 mm semi-symmetrical tail rotor blades from Spinblades. Unfortunately, they are only available to suit one direction, so I had to change the direction of the tail rotation. I made a gearbox using three bevel gears and parts of the tail gears I already had, which I installed at the front of the tail boom. This solved the problem and the tail is now powerful in any wind and regardless of any manoeuvres.

SUMMARY

The A109A Akkon Rostock model is awesome. Equipped with a BeastX Pro V5 flight controller it is stable and safe. The self-made retractable landing gear has turned out to be reliable, whilst telemetry reports from the YGE 95LVT ESC have never exceeded 65°C and 50A. I have enjoyed about 200 flights now and I love it.

A few months after finishing the model a



Tail rotor is fitted on the left side.



Tail rotor rotation was reversed using a homemade gearbox fitted with bevel gears.

friend of mine needed some CAD support and in exchange offered to CNC mill all the retract parts from aluminium. So, it's all finished in metal and carbon fibre now. All the CAD work on the retractable landing gear was well worth it.

Here's a link to a free download of the CAD files that this model uses: <https://www.thingiverse.com/thing:5338570/files> ■



On approach for landing with the main gear just starting to unfurl from the fuselage.



MAKING HISTORY



scan to visit
microaces.com

MICRO SCALE KITS FOR RADIO CONTROL



Bristol F.2b



Fokker D.VII



R.A.F SE5a



Nieuport 17



R.A.F SE5a



Nieuport 17



Fokker Dr.1



Sopwith Camel



Hansa Brandenburg W12



Sopwith Pup



View the complete range of Microaces electronics, kits, spares & accessories at:

www.microaces.com

Designed, manufactured, supported and warrantied in the UK.

Microaces Ltd, The Factory, 14 Alder Hills, Poole, Dorset. BH12 4AS email: support@microaces.com

SAVE 32%

RCME

Subscribe and receive Supermarine Secret Projects and Luftwaffe Fighters FREE!*

UK only



WORTH
£18

SUPERMARINE PROJECTS:

Supermarine Aviation built the Spitfire but it had previously made its name building a range of seaplanes and flying boats - particularly racers such as the S.6 (from which the Spitfire was developed). Historian Ralph Pegram, who has spent years researching the company and its aircraft, has unearthed dozens of previously unknown designs created by the company and in this bookazine illustrated with his own line

SECRET

drawings he explores the company's top secret seaplane and floatplane designs - some straightforward, others bizarre-looking by today's standards. Vol. 2 will look at fighters and bombers.

LUFTWAFFE FIGHTERS: The Messerschmitt Bf 109 and Focke-Wulf Fw 190 were at the forefront of the action as the Luftwaffe battled the combined might of the Allied air forces across Western Europe and beyond during the Second World

War. Flying in every front, from desert sands to frozen tundra, they featured a hugely diverse range of markings and colour schemes which have fascinated aviation enthusiasts ever since. Luftwaffe Fighters offers more than 200 highly detailed full colour profiles from world renowned artist Claes Sundin, covering not just the two most famous types but also front line single-seaters such as the Me 262, Me 163, Ta 152 and He 162 plus the two-seater Bf 110 and night fighter

versions of the Ju 88, Do 17, Do 215, Do 217 and the dedicated night fighter He 219. The markings of aircraft piloted by aces such as Erich Hartmann, Gerd Barkhorn and Otto Kittel are meticulously reproduced, based on original photographs, alongside a wide range of schemes from every year of the war and every front where the Luftwaffe saw action. Offering a host of different colour schemes and detailed notes, this is indispensable reading for enthusiasts and modellers alike.



Great reasons to subscribe

- >> Free UK delivery to your door or device >> Save money on shop prices
- >> Never miss an issue >> Receive your issue before it goes on sale in the shops

PRINT ONLY

- 1 year direct debit for **£52***
- 1 year credit/debit card for **£57***
- 2 years credit/debit card for **£108***

PRINT + DIGITAL

- 12 issues direct debit for **£62***
- 12 issues credit/debit card for **£65***

DIGITAL ONLY

- 12 issues credit/debit card for **£39**

Any digital subscription package includes access to the online Archive dating back to January 2007



classicmagazines.co.uk/RCMEDPS



01507 529529 and quote **RCMEDPS**

Lines are open from 8.30am-5pm weekdays

TERMS & CONDITIONS: Offer ends December 31, 2024. Subscriptions will start with the next available issue. Direct Debit payments will continue every 12 months unless you tell us otherwise. To view the privacy policy for Mortons Media Group Ltd, please visit www.mortons.co.uk/privacy. Please visit www.classicmagazines.co.uk/terms for full terms and conditions

YS BOXER ENGINE

Topics in this month's aerobatic column by **Keith Jackson** include the latest approach to contra drive propulsion and the long-awaited YS Boxer engine

Words: **Keith Jackson** Photos: **Keith Jackson, Bryan Hebert, Kevin Crozier**

The Ashbourne F3A event, held on 20th August last year, was a relatively small event with just six entries in FAI P-23 and one in the Masters category flying the A-23 schedule. It was held late last summer at the Ashbourne site in Derbyshire, which was an achievement as this site was due to close due to re-development of the airfield on which one of the flying sites of the Derbyshire RCF are based. Thankfully the site has had a reprieve from the

developers meaning that this long standing F3A event can continue for another two years at least.

Although the entry was small the flying standard was high with three ex UK team members attending, including Matthew Hoyland and current team member Brandon Ransley. Due to the low entry numbers four rounds were flown and the eventual winner was Brandon, flying his lovely Skyleaf Leader g / Adverun XS2 contra drive.

Position	Competitors	Total
1	RANSLEY Brando (344)	1381.75
2	JACKSON Keith (351)	1381.00
3	HOYLAND Matt (44)	1362.75
4	FALLOWFIELD James (75)	1242.25
5	HARRISON Adrian (54)	1174.25
6	POLE Mike (64)	1130.50



Left: Final scores for FAI P-23 class.





YS BOXER

YS engines are probably the most enduring brand of internal combustion engine ever used in F3A circles. Famous initially for their short stroke 10 cc two stroke engines in the late seventies, then the long stroke version of the same engine in the early eighties, Yamada then branched into high power four stroke engines using the same bespoke pressurised fuel system, coupled with a unique crankcase supercharging system, to significantly outperform any four-stroke engine of comparable displacement. Starting initially at the 120 size, which turned 13"/14" props with similar pitches, the base engine has been developed right up to the 200 size (or 33.3cc), adding CDI spark ignition and indirect high pressure fuel injection. These features allowed the single cylinder engine, with essentially the same crankcase, crankshaft and bearings, to turn the monster propellers we see in modern F3A of 21" - 22" diameter with 10" - 11" pitch at speeds of around 6500 - 7000 rpm.



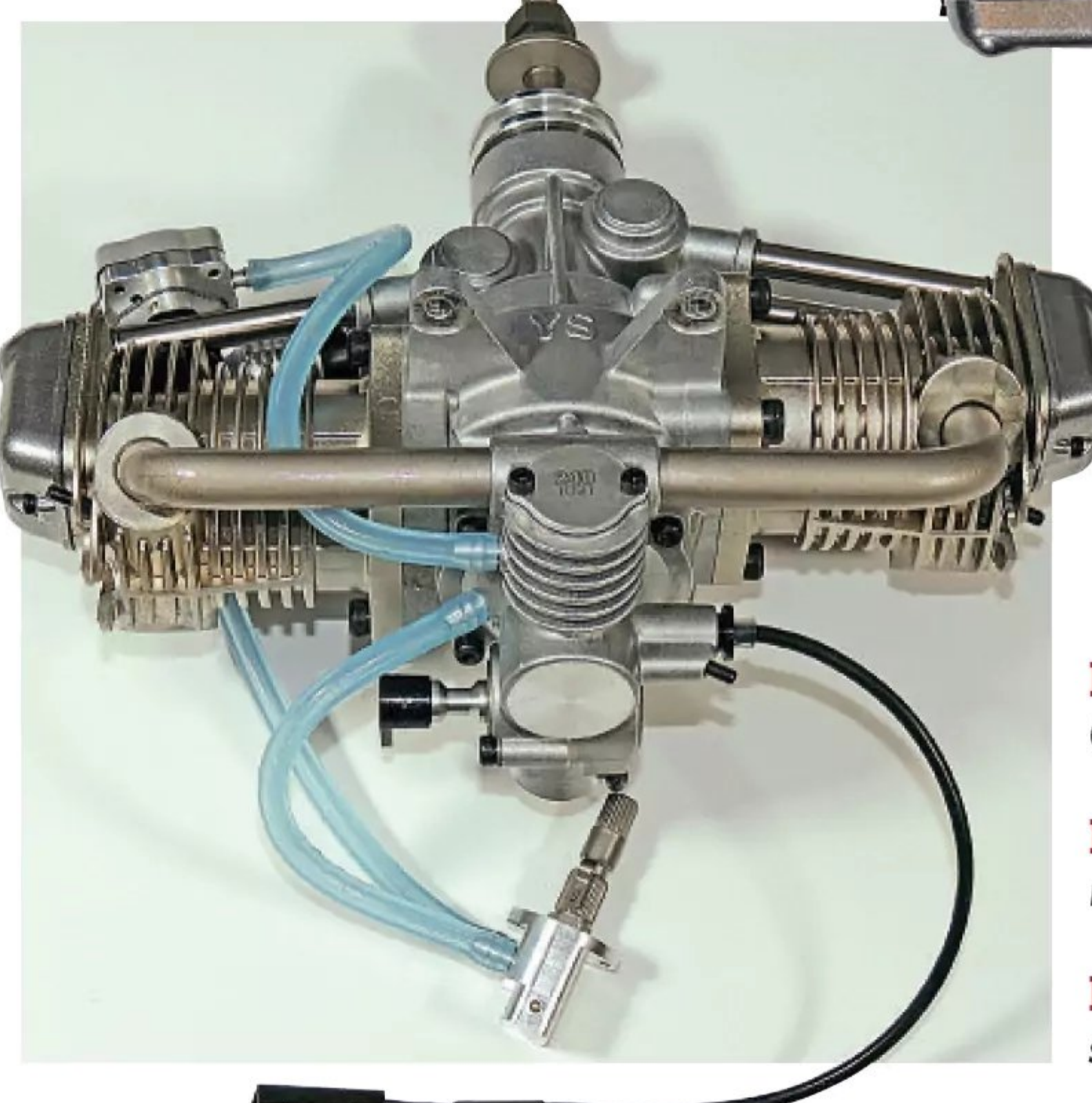
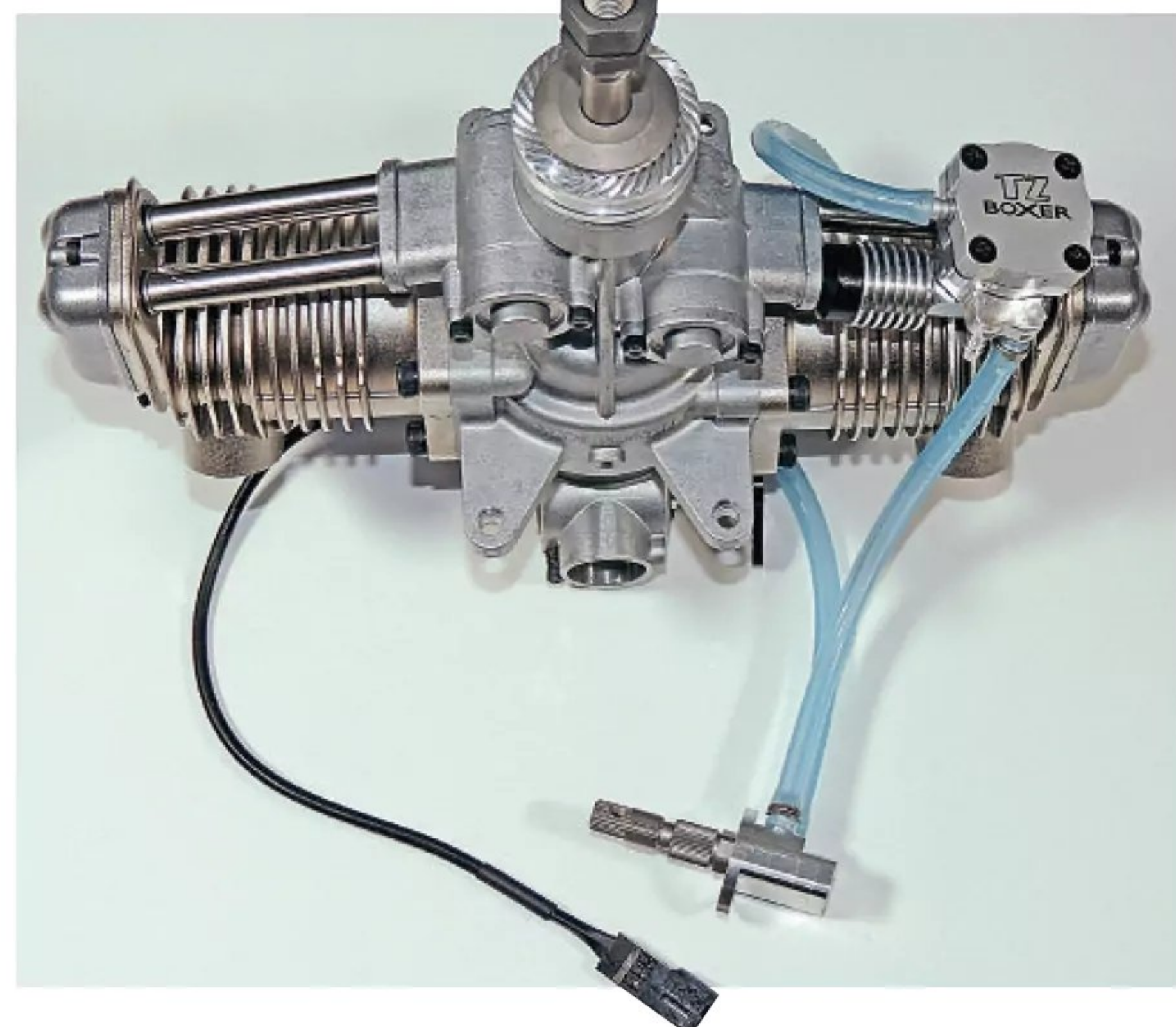
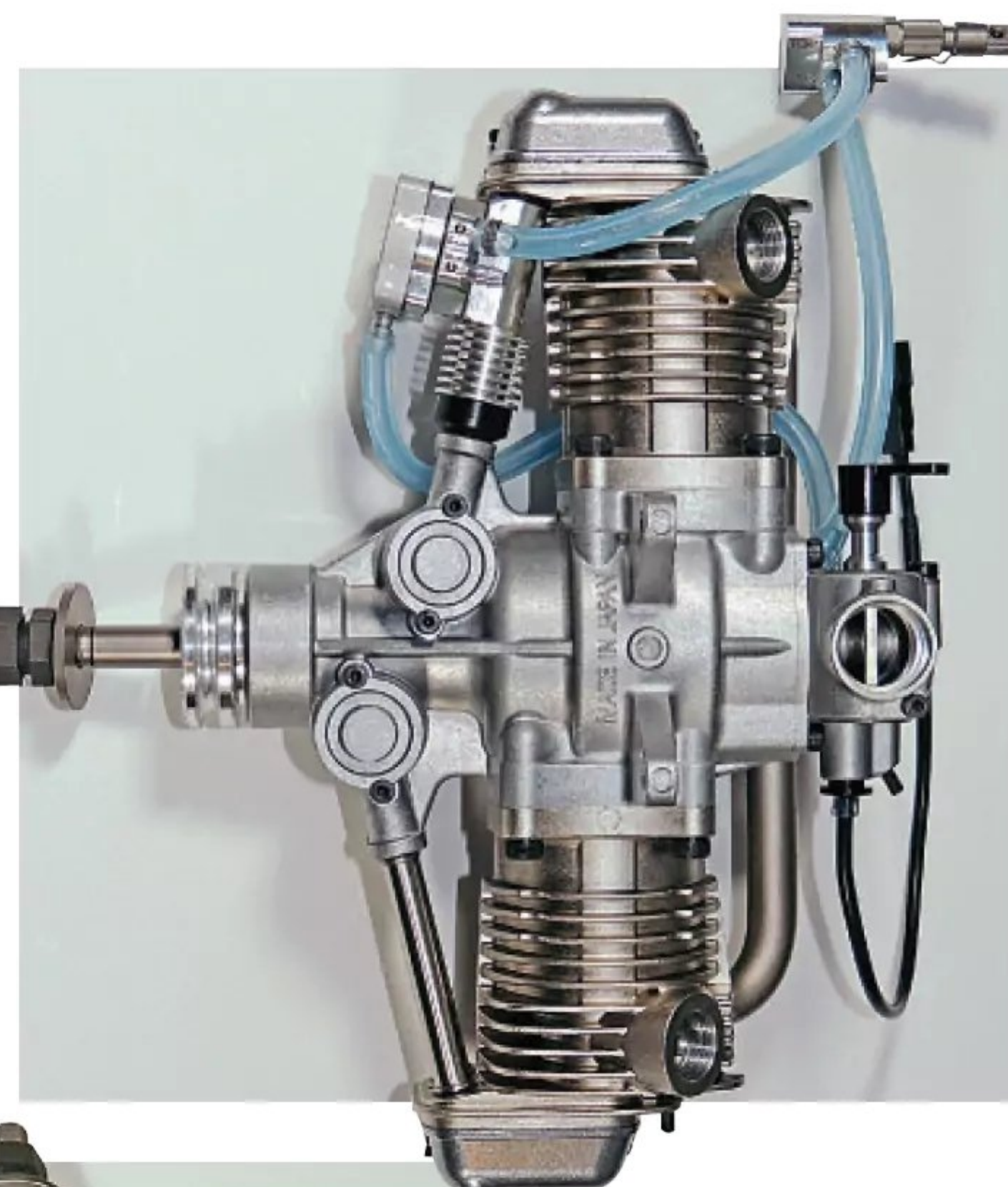
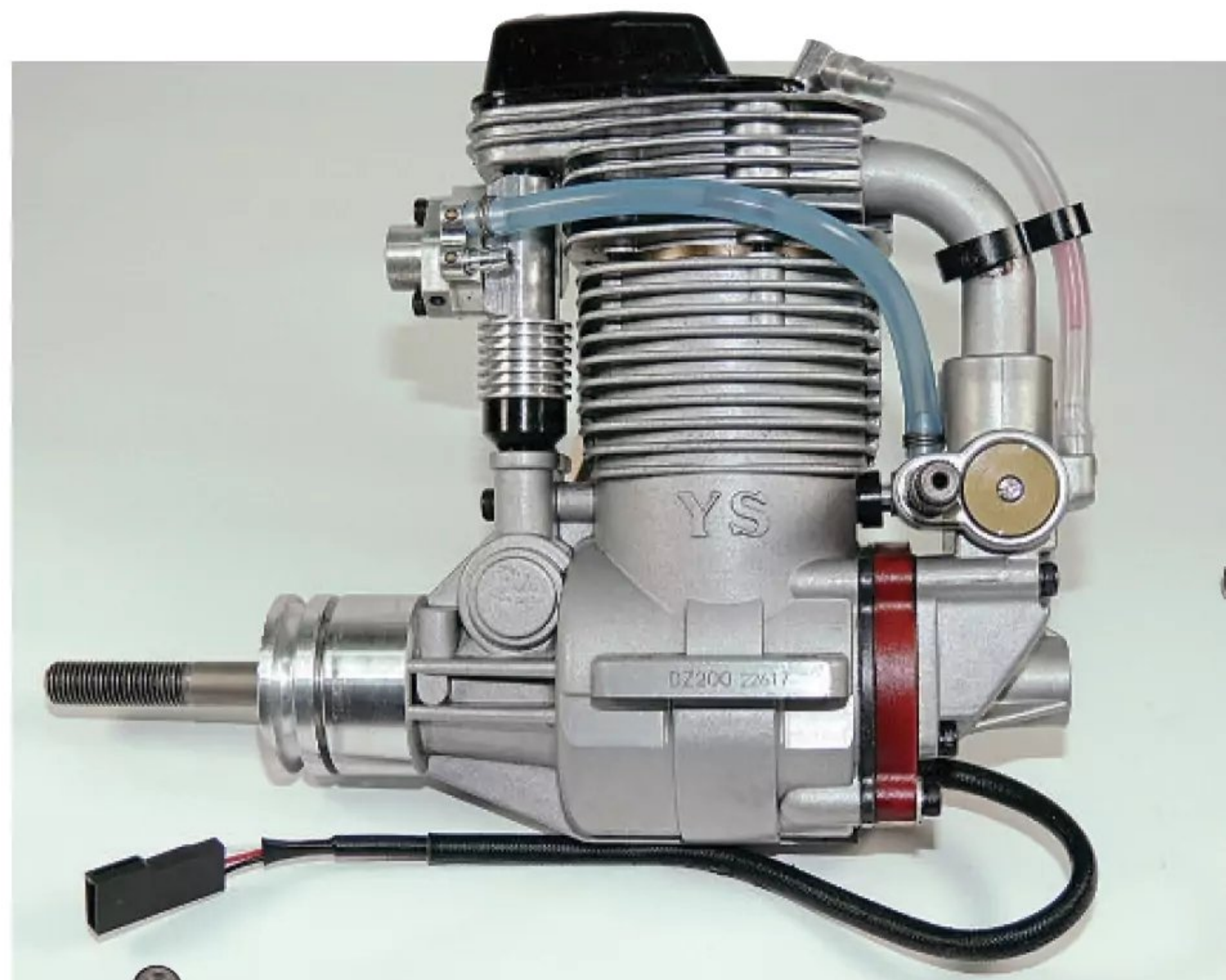
Above: A lovely picture of Brandon's winning Sky Leaf Reader g biplane.

Left: YS 60FR. Re-released due to popular demand!

Far Left: Tiny group photo of the entrants at the Ashbourne competition last summer.

Right: YS200 CDi.
Current powerhouse of
the YS range

Far right: The YS
TZ240 CDi Boxer -
finally!



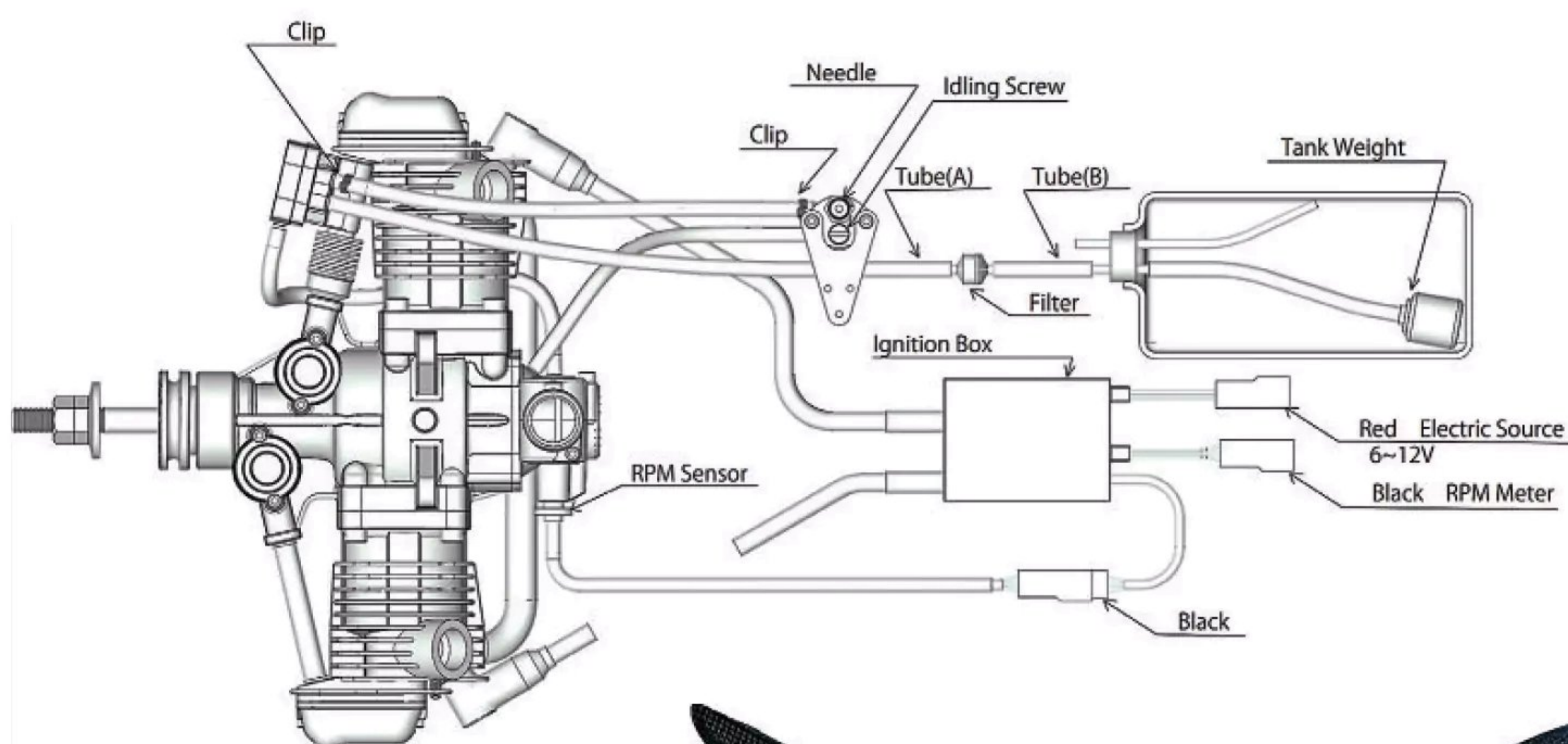
Far left: YS TZ240
CDi front view.

Left: YS TZ240 CDi
rear view.

Below: YS Boxer
schematic.

Not wanting to second guess Mr. Yamada but it appears that the single cylinder engine may now been bored and stroked as far as it can to attain the 200 size, given the physical constraints of the base engine components. Additionally, since F3A has become completely dominated by electric power systems, the demand for these engines has dropped away, thereby making it a risky proposition to invest in developing the engine further. Saying this, however, YS have gone ahead with a new design partly aimed at F3A and partly at the sport applications such as large scale, warbirds etc. Enter the YS TZ 240 Boxer!

This is an opposed twin cylinder engine featuring the YS cam driven, positive displacement fuel pump system and CDi electronic ignition. A nice additional feature is the remotely mountable needle valve which makes the adjustment of the fuel mixture a risk-free affair. The cylinders are created in a similar manner to the smaller YS four strokes in that the entire cylinder assembly can be unbolted from the crankcase, making disassembly a much simpler task. Indirect injection has not been offered with this engine, though it surely remains an option for YS to introduce this as an upgrade in the future. Fuel delivery appears to be via the carburettor and transfer tubes as per the original YS 120F. According to the instructions this engine will turn between 21" to 23" propellers with 10" - 11" pitch. I understand that CK Aeros in the USA are also marketing a three-blade propeller for this engine so are



actively trying to re-grow this IC offering for F3A models in the future.

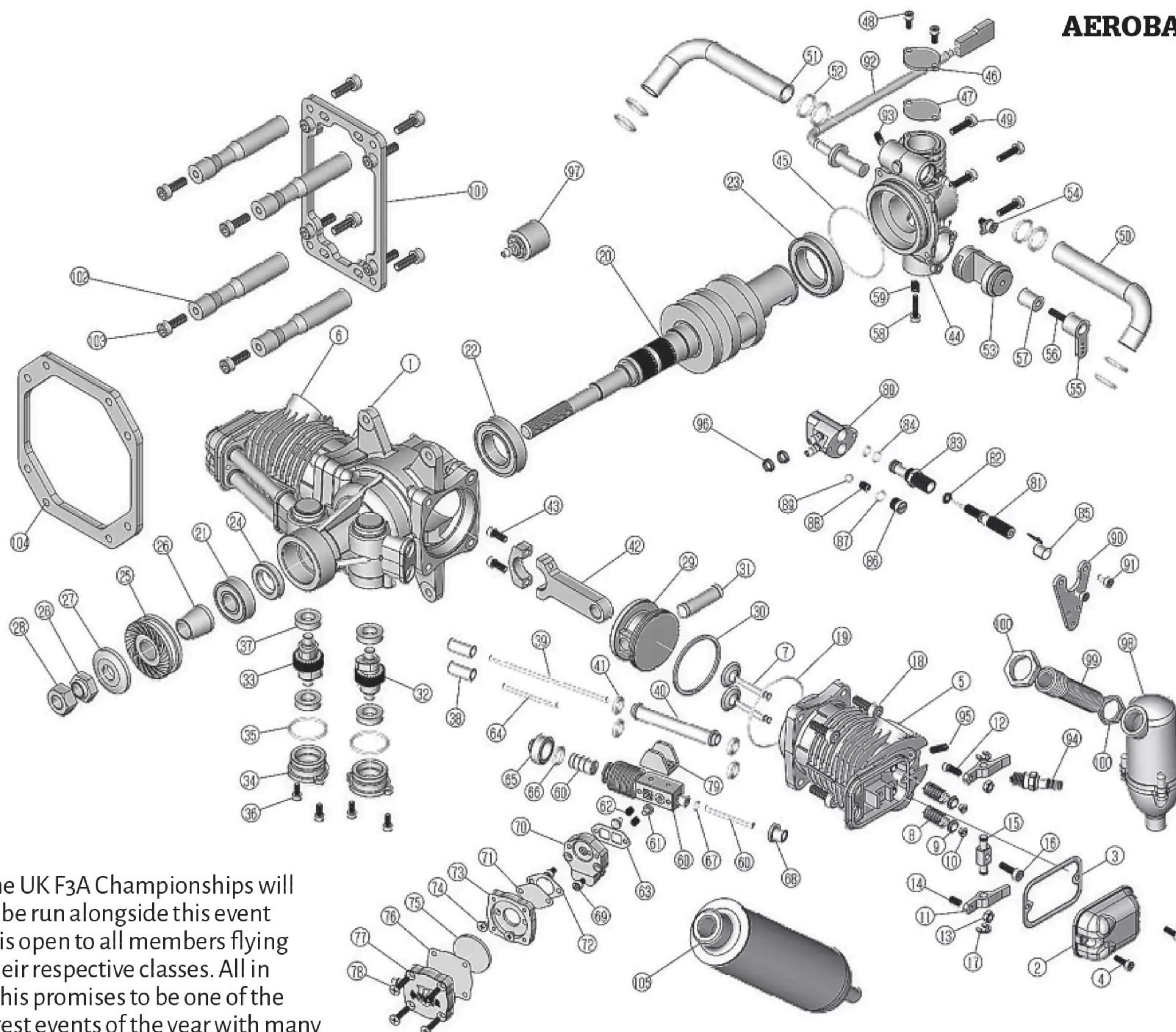
Currently I know of two TZ240 engines in the UK destined for F3A use, hopefully emerging sometime over the summer - if we ever have one!

FAI WORLD CUP

The UK leg of the FAI World Cup league will be held at BMFA Buckminster on 22nd and 23rd June this year. Entries are open now for FAI P-25 and F-25 schedules, with the organisers anticipating two rounds of the preliminary schedule on the Saturday and one preliminary and one finals schedule to be flown on the Sunday.



Three blade
propeller from
CKAero for the
YS TZ240 CDi.



Left: YS Boxer parts assembly diagram.

Below: DxG drive by Flyer Lin.

Bottom: DxG drive as received without motor or front propeller driver fitted.

The UK F3A Championships will also be run alongside this event and is open to all members flying in their respective classes. All in all, this promises to be one of the biggest events of the year with many top pilots from the world of F3A attending including new world champion Lassi Nurila. More information and entry forms for this event can be found at: www.gbrcaa.org/smf

CHARGING WITH AN LED POWER DRIVER

I was trying to source a power supply for my LiPo chargers and wanted an inexpensive 24V supply that could operate without the need for a cooling fan during charging as these can get quite noisy under load.

Following a protracted search into the various possibilities the answer lay in the unusual electrical application of outdoor LED lighting power supplies and a relatively cheap 24V 400W switching power supply obtained via Amazon. This unit can provide up to 16.6A DC at 24V and comes in a compact, perforated metal frame with screw connectors for both the AC power input and DC power output.

I was sceptical whether this unit would work out but with the low cost I felt it was worth a try and was very pleasantly surprised that it could handle charging four of my 5S 6000 mAh packs with ease, drawing a maximum of just under 12A. With the power supply only employing ambient cooling I was concerned about how hot the unit would get but so far it has only ever

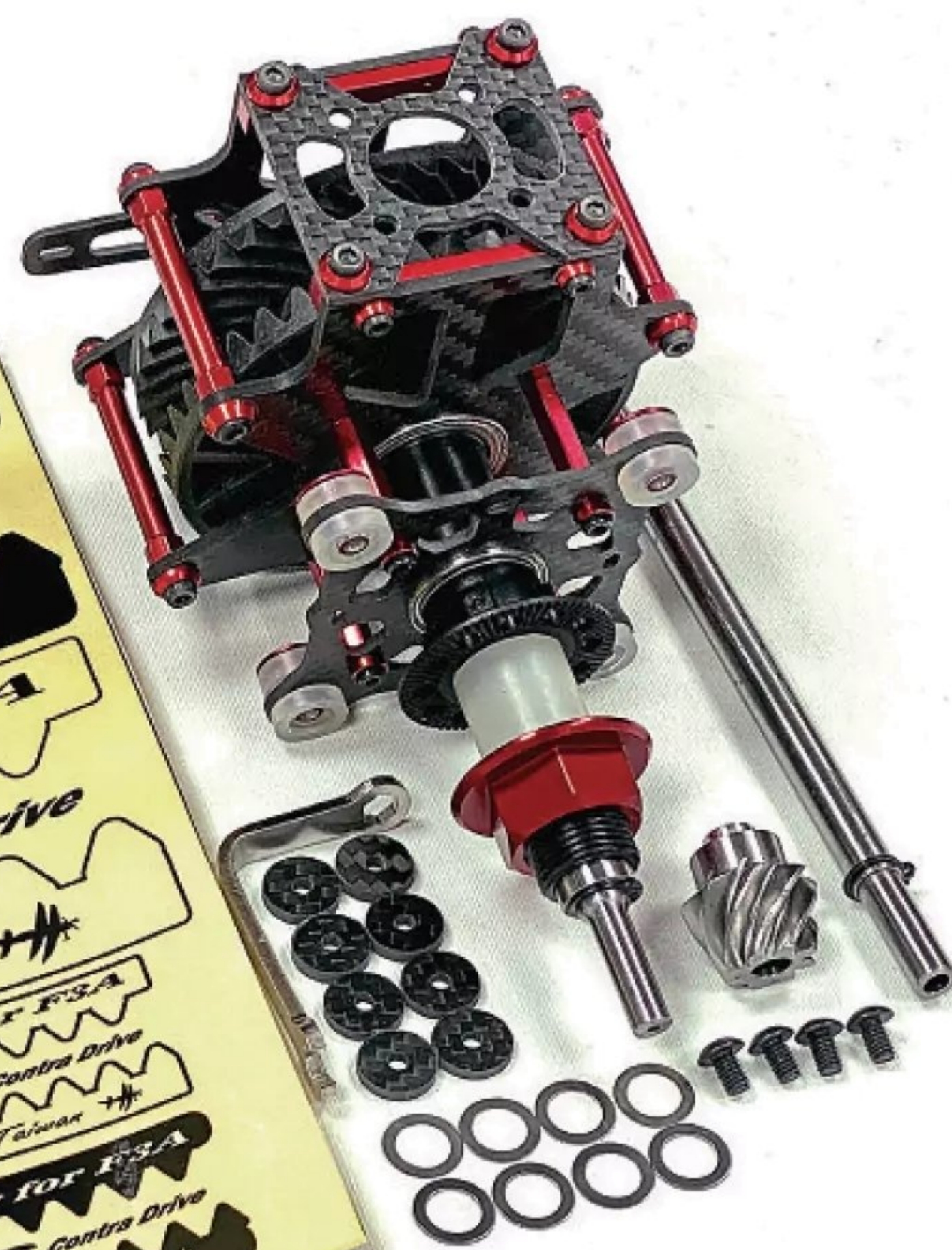
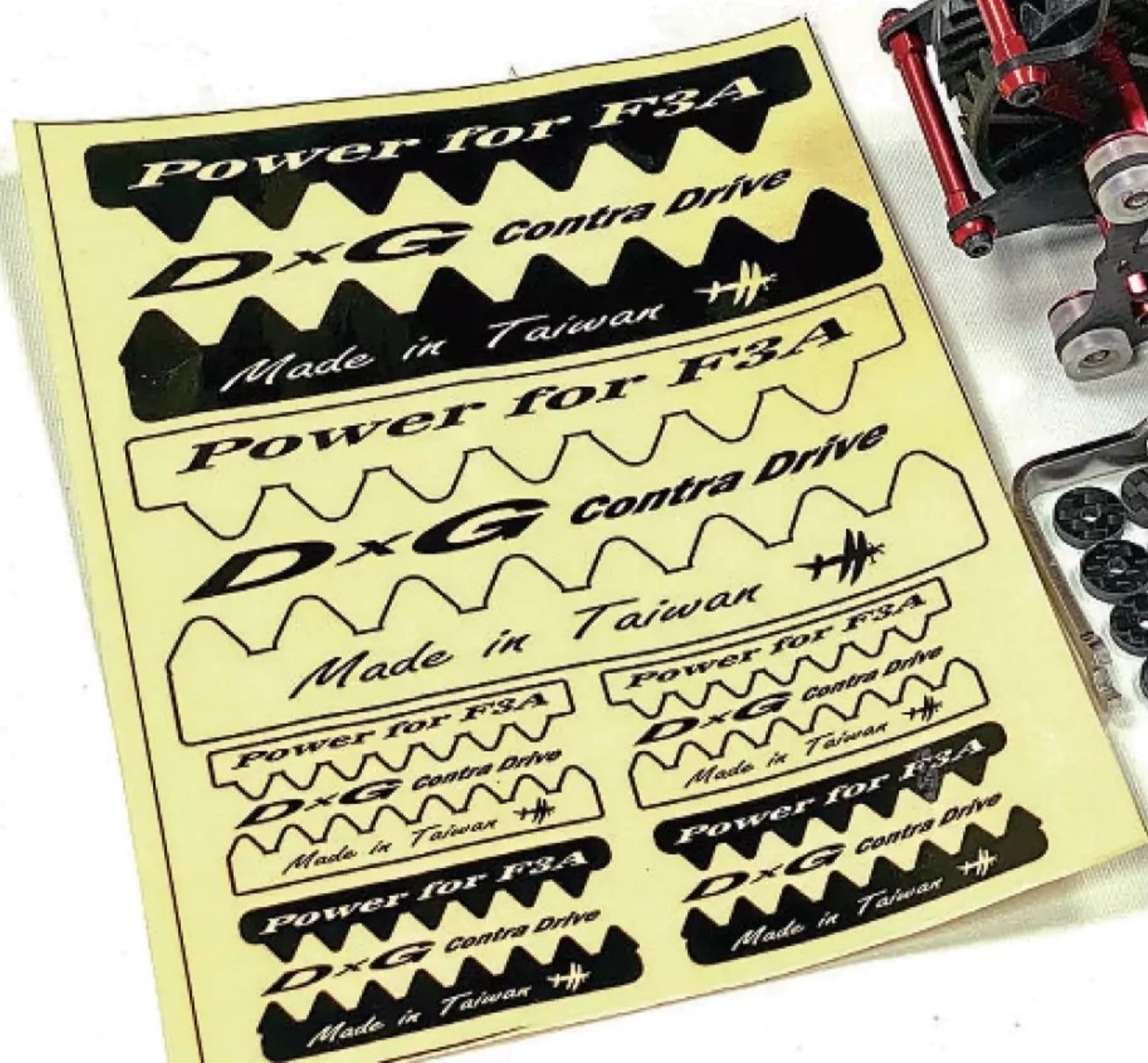
got slightly warm, though this is based on my garage ambient temperature which would be about 20°C. At the time of writing, these units have been in constant use without any issue whatsoever for about eight months now.

DxG DRIVE

As readers of my column will know I am quite a fan of contra drives and the various technologies used to achieve this form of propulsion. Several mechanisms have been used over the years, from two motors mounted concentrically (first used in F3A by Team Korea in the Argentina WCs held in Santa Fe, 2007), epicyclic gear boxes, gear and belt, and double and triple belt arrangements. A wide variety of motors have been used to power the various drives, involving in-runners such as the Neu F3A and Hacker C50/C54 motors, and outrunners, mostly including a selection from the Kontronik Pyro series of motors in 530 - 780 kV versions. ✈



LED powersupply repurposed for LiPo charging.



The evolution of the contra drive has seen the belt and gear drive arrangement emerge to become the most popular solution due to its overall efficiency, weight and robustness. Of these the most popular design is currently the Adverun XS2, which is the third revision of this German design. Several Adverun copies have been produced around the world, the latest from VLV International, utilising an Ergodrift 4020 650 kV helicopter motor. Subtleties in these designs allow different weights, gear ratios, motor kVs etc to be considered according to the pilot's requirements.

A different approach has been recently developed, similar to one used in F3P indoor aerobatic models. The DxG drive, developed by Taiwanese pilot Flyer Lin, comprises two large, bevelled gears, each having 39 teeth, driven at the circumference by a vertically mounted motor via a bevelled eight tooth pinion gear, giving a drive ratio of 4.875:1. This very unusual arrangement uses no belts and can be reasonably assumed to be particularly robust,

hence perfectly suited for the repetitive nature of F3A practice. The large gears are a composite material whereas the pinion gear is steel. Despite these rather large gears the weight of the drive when fitted with the recommended motor, a Kontronik Pyro 650-65 unit, is only 70 g heavier than the top of the range Adverun drive at 592 g, which includes the mounting brackets and front propeller driver. Comparable weights are shown in the table below for a variety of commercially produced contra drive units. Performance measurements were conducted using Falcon 22 x 22 propellers front and back, using the same LiPo pack (Optipower 2 x 5S 25C 6000 mAh), preconditioned between each test run.

The results show that the DxG drive is just 100 rpm lower than the Adverun XS2 drive, whilst drawing a slightly lower current. However, the recommended propellers for the DxG drive are 23" – 24" diameter with 20" pitch, which represents a significant increase in aerodynamic loading. Given that F3A appears

to be moving to these very large propellers it seems likely the DxG drive has been optimised to accommodate this trend.

Commercially the DxG drive is supplied without the motor or the front propeller drive and spinner, allowing the end user to source these items at a lower cost. The £823 price quoted above is indicative and includes a cost for the Kontronik 650-65 motor for reference and overall represents one of the cheapest contra drive packages currently available.

BJ CRAFT ANTHEM ELLIPTICAL

This is a slightly more traditional version of the very successful Anthem design, released by BJ Craft in late 2022. The original version featured quite a swept wing profile and was claimed to not require right thrust on the motor, regardless of whether traditional mono prop or contra drive were used. This is one of the BJ Craft designs I haven't flown yet so I cannot really comment on this claim. However, with it being a very popular design both in the UK, Europe and beyond, I think there must be credibility to these claims. The model certainly flies well, with several top English and Scottish pilots using it at the Triple Crown event held last summer.

Despite this the looks of the swept wing version are not to everyone's taste and to accommodate this BJ Craft have released a second version of the Anthem with a more traditional wing planform, albeit with an elliptical leading edge. To my mind this makes for a very attractive model and I have had the opportunity to build up two of these models in recent months. In terms of this build there was nothing out of the ordinary and the work followed the traditional approach to assembling BJ Craft models.

Ideally it is best to start with the messy bits first, i.e. mounting the powertrain, in this case an R220 Hurricane direct drive outrunner, carbon reinforcing the undercarriage for UK grass flying strips, and then cutting out all the air inlet and outlet holes, according to the BJ template. This work must be done carefully as any mistakes in the model's outer surface would badly affect the appearance of the airframe going forward.

	Voltage (V)	Current (A)	Power (W)	Speed (rpm)	Weight (g)	Cost
AP Drive	39.5	110.8	3913	3900	550	£1,123
Adverun XS2	40.6	111.8	3846	3850	522	£1,279
Akiba	40.2	97.9	3476	3850	694	£1,700
DxG	40.7	101.4	3522	3750	592	£823
Adverun XS	40.1	105.5	3739	3600	570	N/A



Above: Kevin Caton's BJ Craft Anthem SB version with custom colour scheme

Right: BJ Craft Anthem with elliptical wing.



Anthem radio installation.



Left: Anthem nose showing R220 and D3 ESC locations.



Right: Removable battery tray.

Right: Aileron linkage.

Below: Rear end servo installations.

Bottom: Air cooling vents underneath the fuselage.



After this I mounted the rear servo extensions, which for two elevator and one rudder servos mounted in the rear, necessitates a five-wire cable loom: positive supply, negative supply, plus three separate signal leads. This is a bit fiddly as at 130 cm long it is quite tricky to secure in place at the rear end of the fuselage. The rudder, its servo, the tailwheel and then tailplanes follow before returning to the front of the model.

I choose to mount the receiver as far away as possible from the ESC to reduce any EM interference, though whether this really does help it's hard to say without objective measurements. This also means the switch and Rx LiPo are similarly mounted more rearwards and this helps leaves lots of space when it comes to mounting the ESC and the main LiPo tray.

I have to say the consistency of these kits has improved over the years and the finish is now very good, with no sharp paint edges and the colours being well defined over the entire fuselage. The wings, rudder and tailplanes are covered in film and are immaculate; it is hard to imagine them being covered any better.

I was very fortunate to have a couple of test flights with first of the Elliptical Anthems and have to say I was very impressed, with the model needing just three clicks of down trim from my initial set up to fly perfectly straight and level. Good vertical tracking up meant the down thrust and wing incidence was correct. A very gentle pull to the canopy on a vertical dive meant the CG was also in the right place and would need just a slight Throttle to Elevator mix to make vertical dives scarily vertical! A very slight roll to canopy with rudder in sustained knife edge could be fixed with a rudder to aileron mix, though the main LiPo could be mounted slightly lower in the fuselage to help with this also.

All in all, it was an absolute pleasure to build and fly this model. I really look forward to seeing the Anthem Ellipticals, and their pilots, competing throughout the coming year. ■





G.T. POWER V6 INTELLIGENT CHARGER

Andrew James checks out a small DC battery charger that he stores in his car boot's side pocket

Words: **Andrew James** Photos: **Kevin Crozier**

In the February issue you may recall my review of Overlander's e455 battery charger. This single output mains powered unit has proved to be a very useful addition to my growing selection of chargers and being so small and easy to set up it has become my go to charger if I want to charge a couple of small LiPo packs at short notice. I

remember thinking that it would make a perfect choice to use from the back of my car when out flying if only it had a DC input. I mentioned this to our editor and was thrilled when only a few weeks later he presented me with an even smaller charger to test, with the bonus that it was DC powered. Measuring just 80 mm square and 32 mm deep, and just a tad bigger than that when boxed, it's perfect for dropping into the rear side pocket of my estate car, where it now has its permanent home.

Above: G.T. Power's V6 charger small size is readily apparent when compared to this small apple.

Left: I keep it in its box in the side pocket of my car, ready for action at the flying field.

BOX CONTENTS

The V6 charger is supplied with a small instruction booklet, which can also be downloaded from the Overlander website. Since the text is quite small, and as it is quite a versatile charger, you might want to consider downloading the manual to your phone for easy reference at the flying field. However, I have found the V6 to be quite easy to set up, so after a few uses the manual is likely to be left untouched at the bottom of the box. It's still handy to have though and what with the current trend of doing away with physical manuals, I'd still prefer to have one to hand rather than not at all.

The box also contains a short input cable, with an XT60 female connector on one end and bare tinned wires at the other for you to fit suitable connectors to match your DC source, whether that's your car's 12-volt supply or a separate battery. More on this later.

“...it's perfect for dropping into the rear side pocket of my estate car, where it now has its permanent home”





Box contents.

INPUTS & OUTPUTS

As can be deduced from the female XT60 input lead supplied, the V6 is fitted with a matching XT60 male connector on its left-hand side. This can be connected to any DC source from 7 to 28 volts. The obvious source is a 12V car or leisure battery, but it also opens up the possibility of using another type of battery such as a spare LiPo pack. If, like me, you have a couple of LiPos that are still serviceable but which you have retired from flying duty then they would be perfect for this job, providing that they are of sufficient size and capacity to support the type of pack that you want to charge and, of course, the number of charges that you will usually require.

Next to the XT60 input is a small PC port for connecting a computer to 'upgrade' the charger. I couldn't find any information on any such updates, but I am sure that Overlander will make them available in the Downloads section

Left side showing the XT60 input connector and the PC port.



of their website should any become available.

In the middle of the unit, just below the colour screen is a roller switch which is used to select functions and change values.

On the right-hand side is the output connector, another XT60 male, so battery packs with matching yellow connectors can

DATAFILE

Name:	G.T. Power V6 Intelligent Charger
Product type:	Balance Charger / Discharger
Supplied by:	Overlander overlander.co.uk
RRP:	£49.99
Compatible chemistries:	LiPo, LiFe, Lilon, LiHV, NiMH, NiCd, PB
Lithium cell count:	1 – 6S
NiMH / NiCd cell count:	1 – 16S
Input voltage:	DC 7 – 28V
Input current:	Max. 15A
Charge current:	0.1 – 16A
Discharge current:	0.1 – 3A
Charge power:	300W max.
Discharge power:	5W max.
Balance current:	1A max.
Pb battery voltage:	2 – 24V
Size:	80 x 80 x 32 mm
Weight:	120 g

The power cable supplied is fitted with a large ferrite bead to suppress any RF noise. A bit of Googling reveals that beads are often fitted in order for charging devices to pass stringent testing. In practical terms, I have used a much longer input lead without a bead to reach from the 12V outlet in the back of my car without any issues.





It is important to connect a battery's balance lead correctly, but any such concern is easily avoided by attaching a 6S balance board (not supplied).



This roller dial is a quick and easy way to select functions and change values.



Right side showing the XT60 output connector and the balance port.

be plugged straight in, as can those with blue EC3 sockets. Other connectors can be used too by attaching them via a suitable adapter lead, which are widely available for all the popular battery connector types, not least from Overlander themselves. Just take a look at the 'Leads' drop-down menu at <https://www.overlander.co.uk> and take your pick!

Alongside the output connector is found the balance port, which supports 2S to 6S lithium packs.

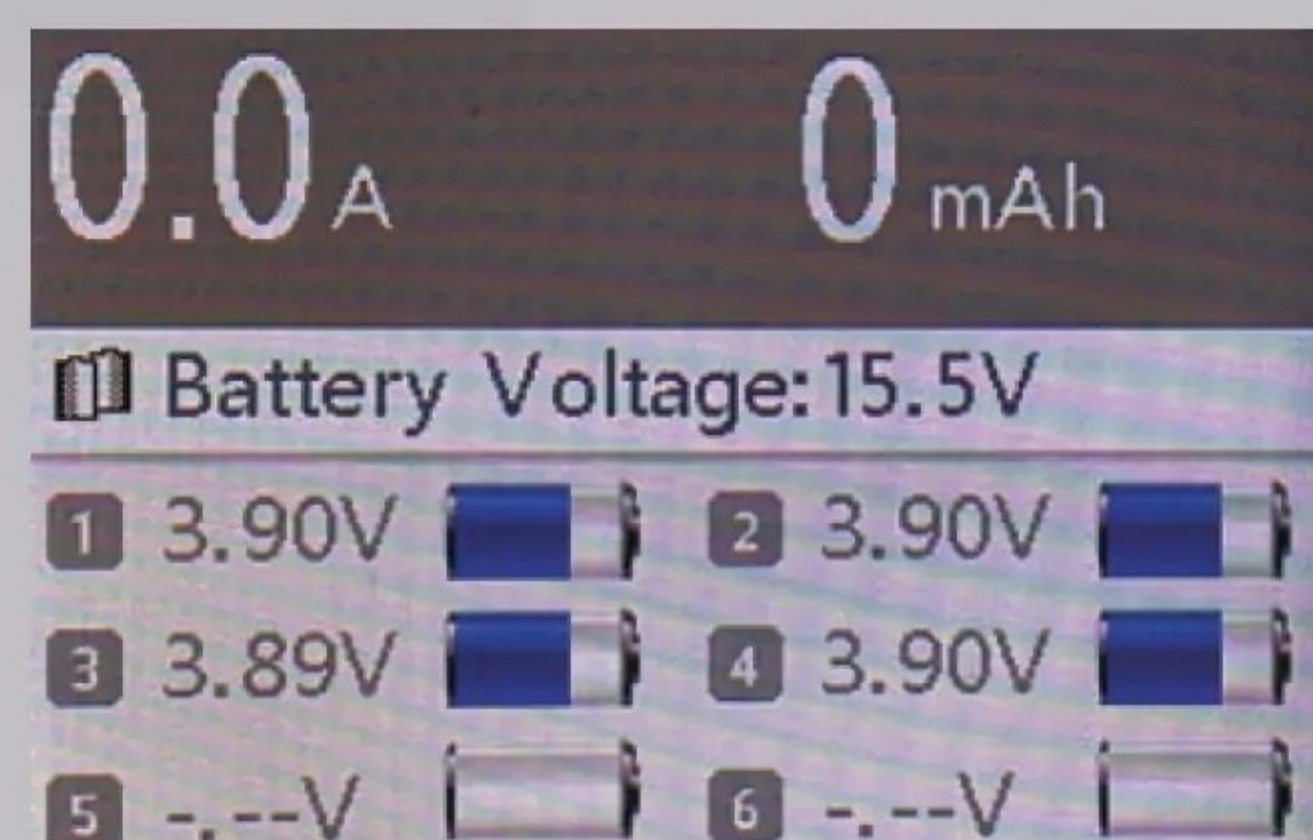
EASY TO USE

After plugging in the charger, it quickly wakes up with the G.T. Power logo and a couple of beeps. The first screen shows the overall Battery Voltage of the pack to be charged, plus a graphical display of each individual cell if you have connected it to the balance port.

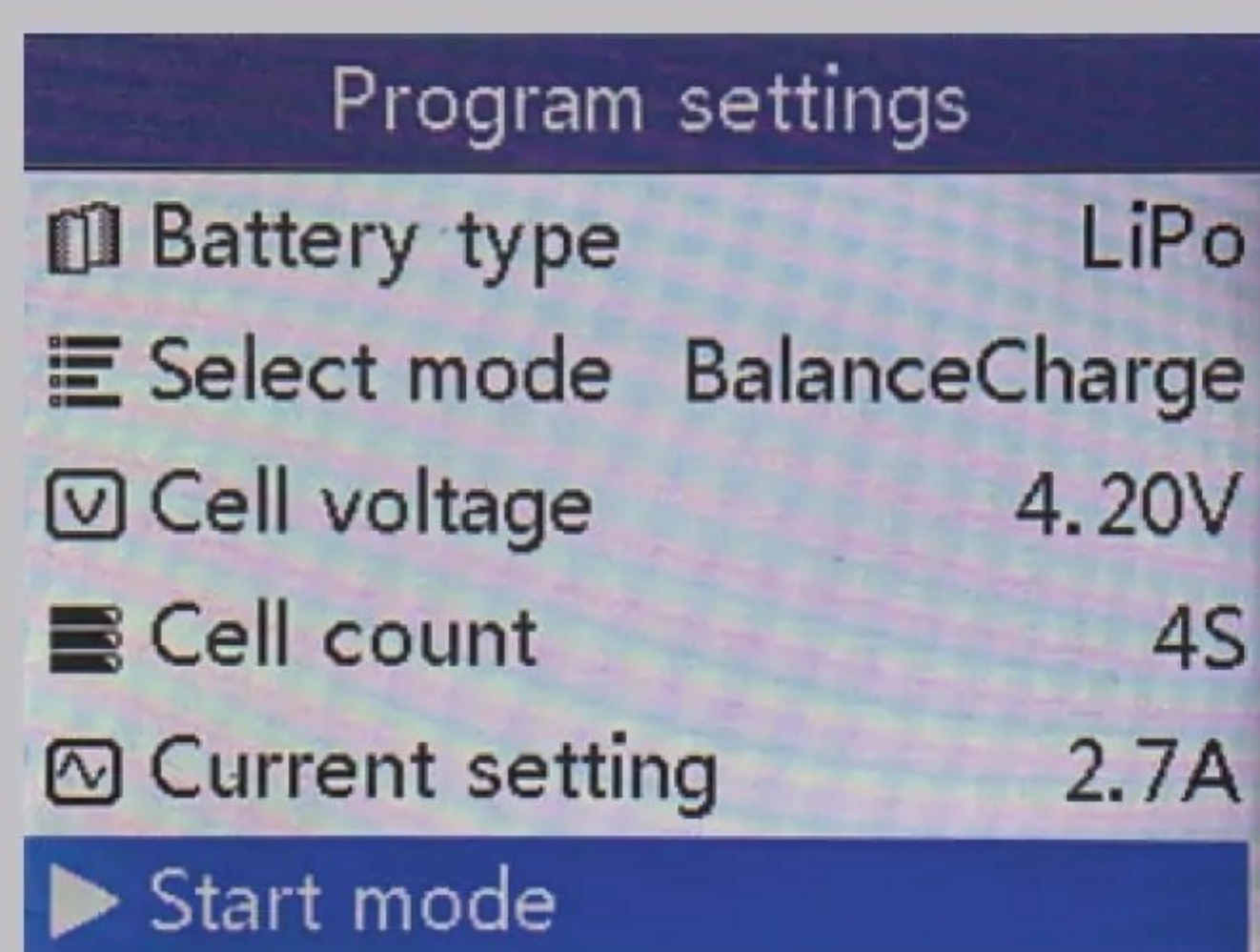
The negative pin of the balance port is pretty much aligned with the bottom of the screen, so it is important to connect the balance lead correctly with this in mind. Alternatively, if you are concerned about making a misconnection you can simply attach a 6S balance board (not supplied) and plug the balance lead into that. There's just enough room in the bottom of the box to store a balance board so I always have one to hand. The balance port suits XH leads.

A press of the roller dial brings up the Program Settings page, which is where you set up the V6 to suit the battery pack that you wish to charge or discharge.

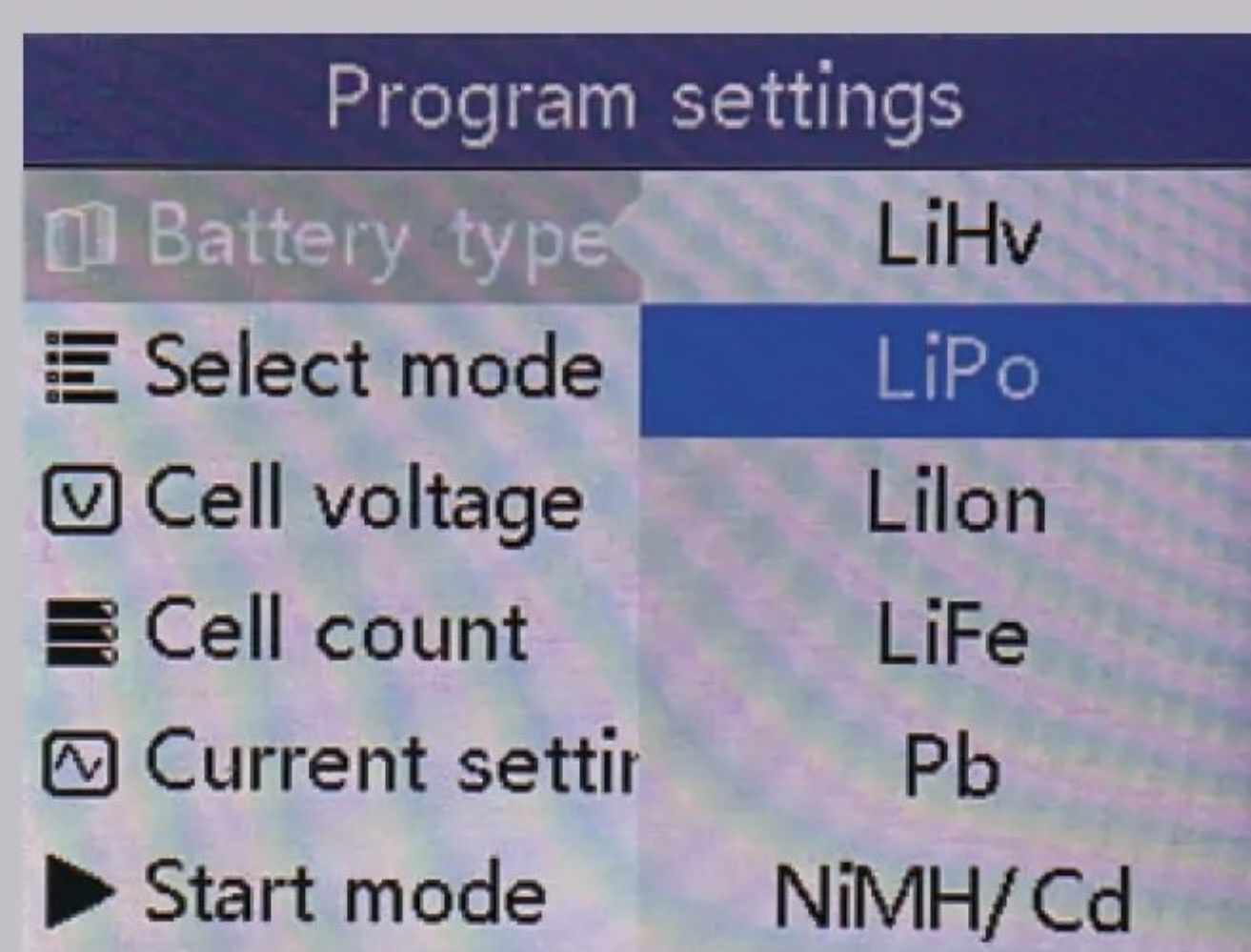
First in the menu is Battery Type. Although I mostly use this charger to charge LiPo and LiHV packs, it can also deal with NiMH and NiCd packs, as well as LiFe, Lilon and Pb batteries too. Lithium cell count is 1 – 6S and the Nickel



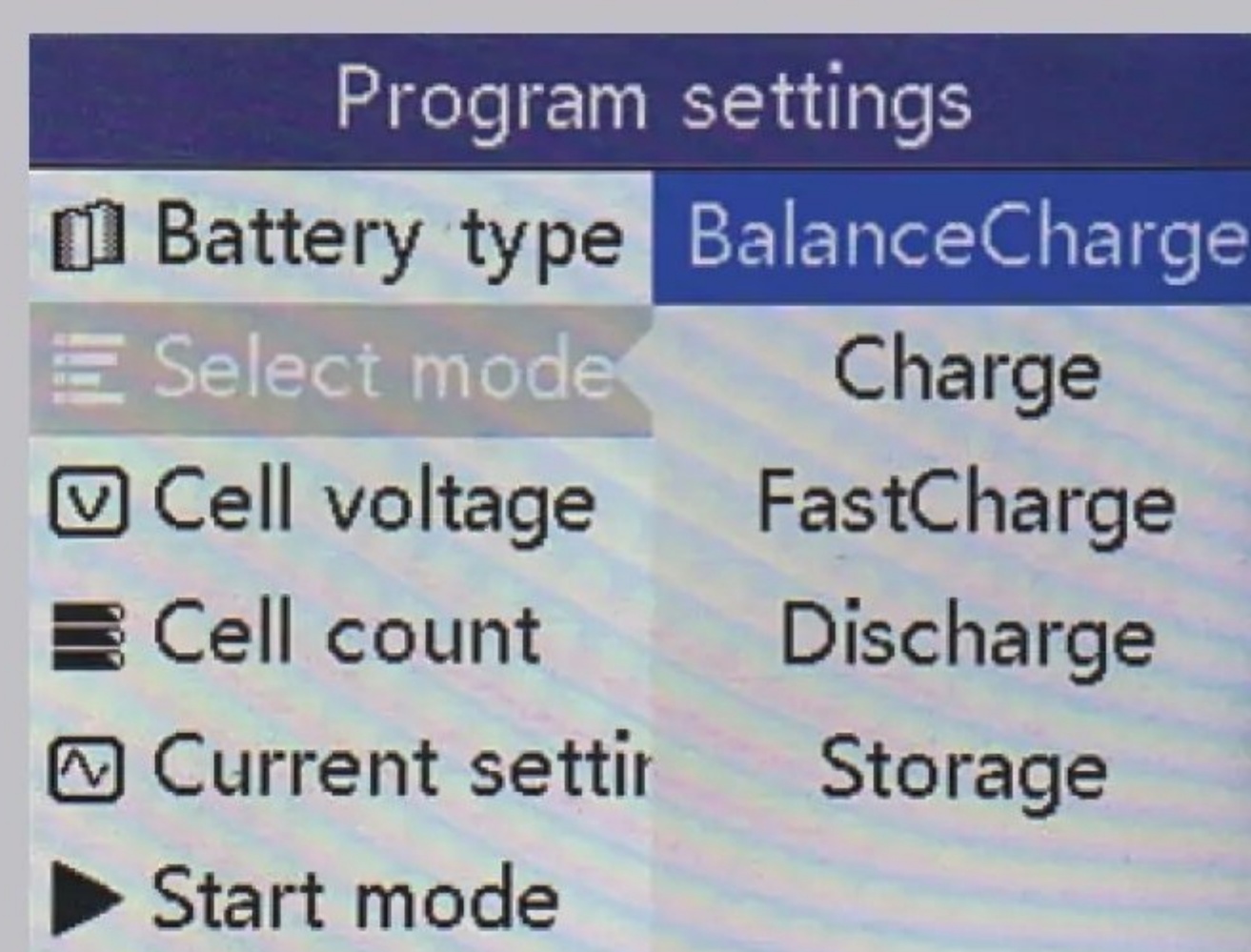
Plug in a battery to see its total voltage and a graphical representation of the individual cells.



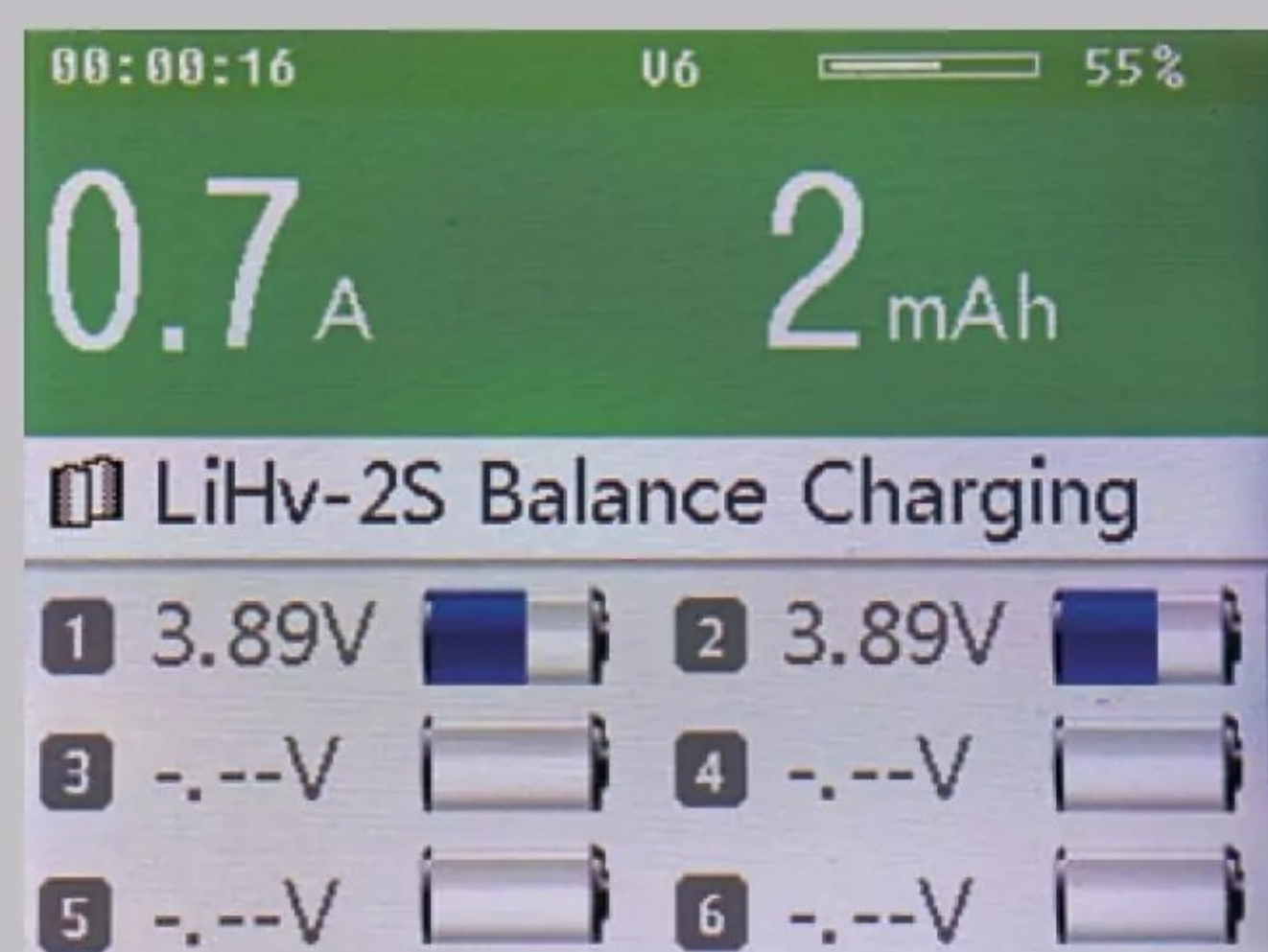
Program Settings page, which is easily altered to suit popular types of battery packs prior to charging or discharging.



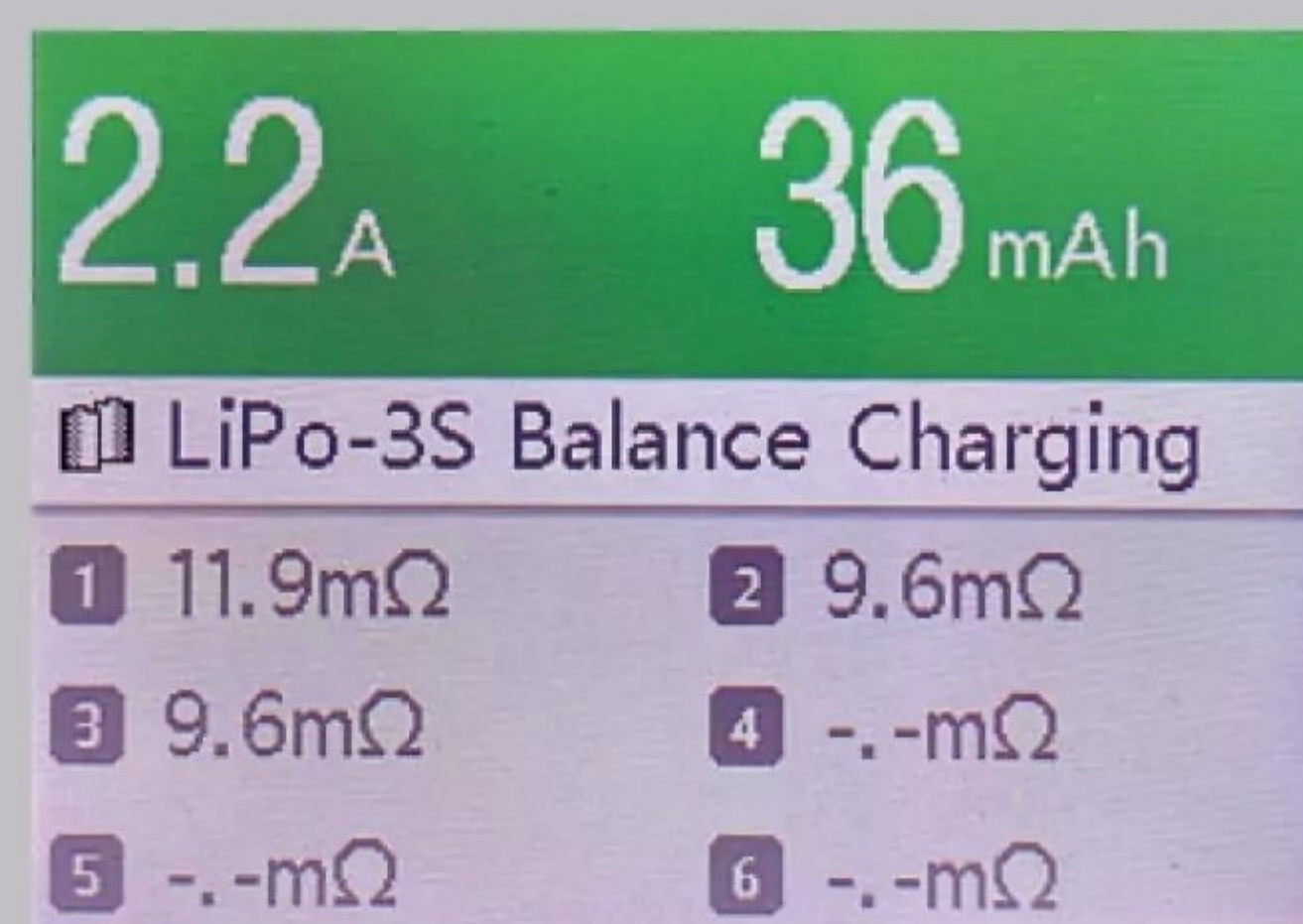
Battery Type showing the many types of battery chemistry that this versatile charger supports.



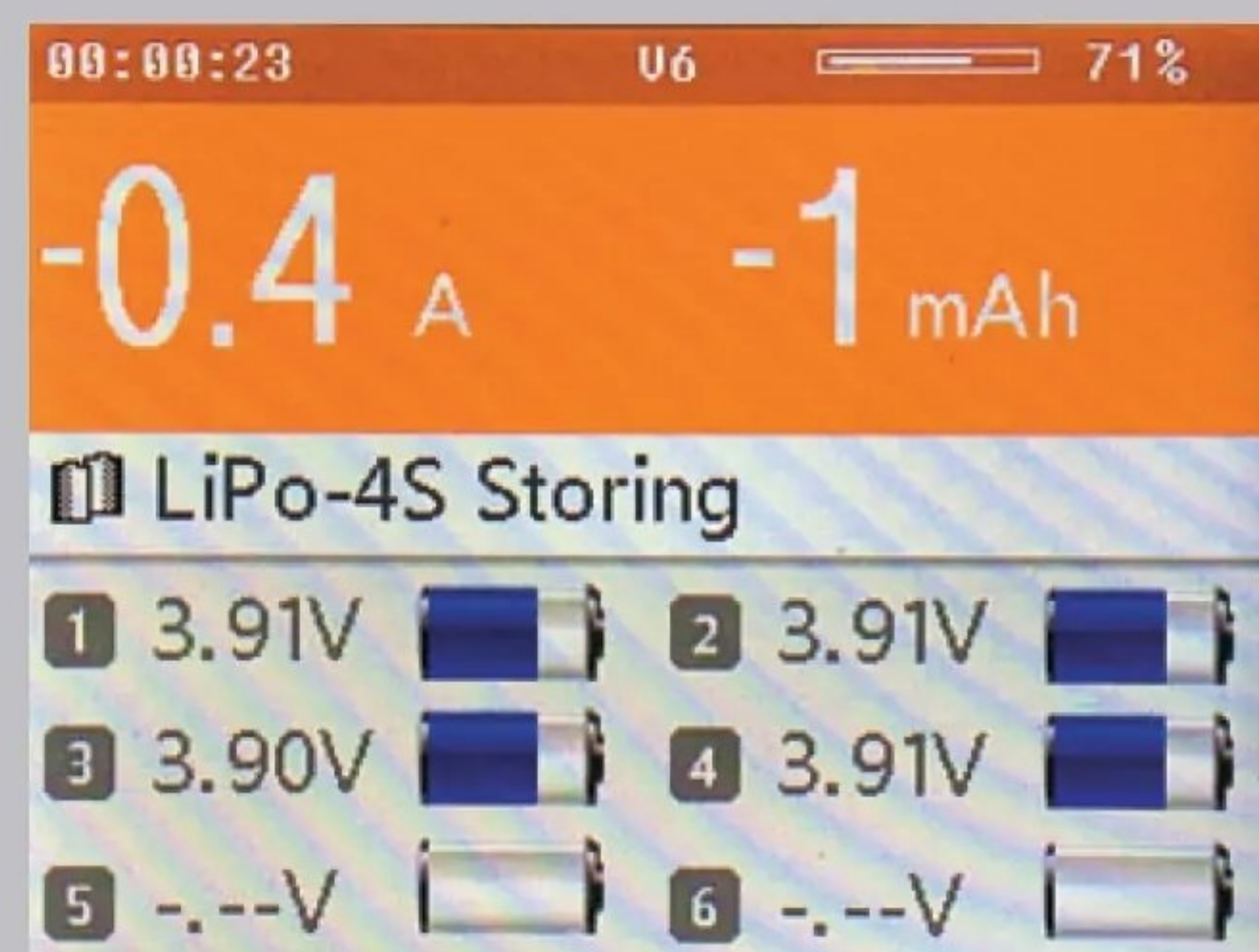
Select Mode showing several charge and discharge functions.



Green is for go! Here one of my 2S LiHV packs is being charged for a gliding competition flight.



The Internal Resistance display is very useful to highlight when a cell in a pack (or cells) is starting to degrade. This shows a well-used LiPo, with cell one starting to show its age more than the others. I'll be keeping an eye on this pack!



A 4S LiPo well on its way to its storage charge. Storage is so easy with a charger like this that it always surprises me to hear when people don't bother to do so when returning from a flying session.

cell count is 1–16S. Next is Select Mode, where you can set the charger to perform a Balance Charge, Charge only, Fast Charge, Discharge or Storage charge. The charger defaults to the recommended Cell Voltage for each selection but you can change this if you wish. Next in the list is Cell Count followed by Current Setting; I always use 1C as it's the recommended charge rate for many LiPos.

When ready simply press the roller again after which the V6 will perform a quick battery check and then begin charging or discharging. After a couple of minutes of balance charging a quick scroll of the roller will bring up the Internal Resistance of each cell, which is very useful to show when a cell in a pack (or cells) is starting to degrade.

AT THE FIELD

The V6 is capable of outputting up to 300 watts and it does a quick job of filling one of my LiPos or LiHV packs to flight ready status. This compact and versatile charger is sure to come in handy in case if I need to charge up any LiPo packs when sport flying at the flying field. It will also be invaluable if I am on any trips away to keep my transmitter packs in good condition, whether they be NiMH or LiFe powered.

However, its main job will be to keep me topped up with fully charged packs when I am competing in my club's summer evening electric soaring competitions, for which we all use the same commonly available 2S powered glider. This consists of several trimming flights, followed by six rounds of 'all up, last down' flying, which in the past has pushed my limited 2S battery collection to the limit. I have two LiPos for test flights and to get my somewhat limited 'thermal eye' in with, plus four LiHV packs for the competition flights. With a bit of

juggling, I could just about make it to the end of an evening session but now, thanks to the V6, all the worrying about not having enough battery capacity will be a thing of the past. Phew!

Although I have a suitable power cord to connect the charger to a 12V outlet in the back of my car, this requires having the ignition switched on, which is not really convenient for long periods during a flying session and it also risks flattening the car battery. So, more recently, I have taken to using a LiPo, retired from flying duty, to power the G.T. Power

V6. This means I can also set it up on a table well away from the back of my car should anything go wrong during charging. Better safe than sorry!

CONCLUSION

I love this little charger. It's so versatile and it is very easy to set up and use. The ability to use another LiPo to power it is a game changer for me, so battery charging at the flying field is now a risk-free option, whereas before I could only really use pre-charged battery packs or risk ending a flying session with a flat car battery. For that reason alone, it gets top marks from me! ■



Using another LiPo as the power supply for the V6 charger means that you can charge your packs anywhere, well away from your home or car.



“It’s so versatile and it is very easy to set up and use”

A 4S LiPo is ready to charge with its balance lead connected via a balance board.

Steve Webb Models
Servo Shop .co.uk

One of the UK's leading RC specialists
 Stocking all Major Brands
 World Wide Mail Order
 Secure Online Shopping

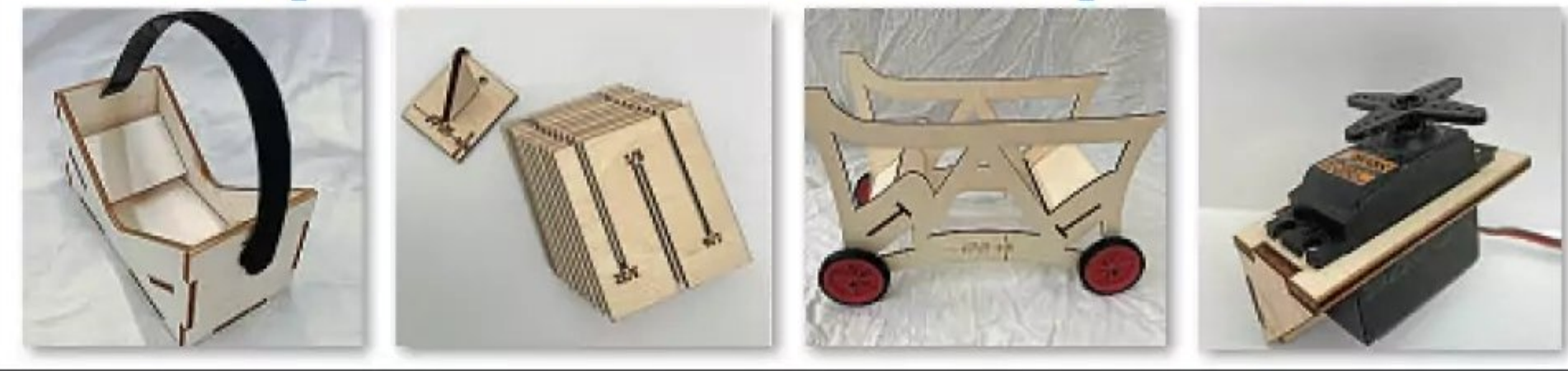
01928 735225
 01928 735252
www.servoshop.co.uk
sales@servoshop.co.uk

Steve Webb Models Ltd
 80 Church Street
 Frodsham
 Cheshire
 WA6 6QU
 England UK



Flightplan
Models

Bespoke CNC laser cut products



07562 999 844 • flightplanmodels@yahoo.co.uk
www.flightplanmodels.co.uk

CHRIS FOSS designs Manufacturer of Quality Kits since 1976

Try one of our fantastic ARTB
 (almost-ready-to-build) R/C Aircraft Kits
 Just open the box and within minutes you are ready to start gluing



Mark Three

CHRIS FOSS DESIGNS, Dept RCME, Unit 1, Freehold Street,
 Shoreham, W Sussex BN43 5TQ. Telephone/Facsimile 01273 452642
 VISIT OUR WEBSITE: www.chrisfoss.co.uk TRADE AND EXPORT ENQUIRES WELCOME

WOODSPRING WINGS 2024 MODEL AIR SHOW

The South West's Premier Model Air Show
 Saturday 6th & Sunday 7th July 2024, 10am to 4.30pm



FREE Car Parking, Trade Stands, Food Court & Bar, Fun for ALL the family

Adults £12 in advance, £15 on the gate, accompanied children under 16 FREE

Camping available (£60 for the w/e in advance, £75 on the gate)

Claverham Drove, Yatton, Nr Bristol BS21 6TZ

woodspringshow.co.uk



Composite RC Gliders

E-Versions available

Option Ready to Fly in stock

Newsletter sign up:

inter-tellur box

COMPOSITE RC GLIDERS

KST[®]
DIGITAL SERVO
Official Seller

D-6484

+49 (0)152 31 700 200
compositercgliders
composite_rc_gliders
@compositercgliders
info@composite-rc-gliders.com
www.composite-rc-gliders.com

PIC CREDIT: WWW.SHUTTERSTOCK.COM

RCME

TO ADVERTISE HERE CALL
KAREN ON
01732 442144
EMAIL: [KAREN@TALK-MEDIA.UK](mailto:karen@talk-media.uk)

Latest booking deadline for the next issue is Tuesday 4th June 2024

APOB... A Plane Olde Bargain

THE RADIO CONTROL SPECIALIST

Looking to sell your Model Goods?

We are Professional
Cash Buyer Specialists of both new and pre-owned Model Goods,
including Engines, Store Stock, Radio Controlled (R/C) Equipment Models and more.
Being well-established within our industry, we can provide you with the best service to sell
both your new and old, Full Models and Sets of Engines, Toys, R/C Model Kits and R/C
Accessories.

If you need assistance with selling your Model Goods or Collections, then call
APOB
on **01276 862551** or **07944986430**
or email apobenquiries@yahoo.com
and let our welcoming team quickly help you through a reliable, confidential, high quality service.

Nationwide Coverage



PLASTIC FANTASTIC

Love it or hate it, Depron has proven to be a versatile modelling material.
Dave Goodenough shows what can be done with it in expert hands

Words: **Dave Goodenough** Photos: **Dave Goodenough, Scott McKie, Lutz Nagel**



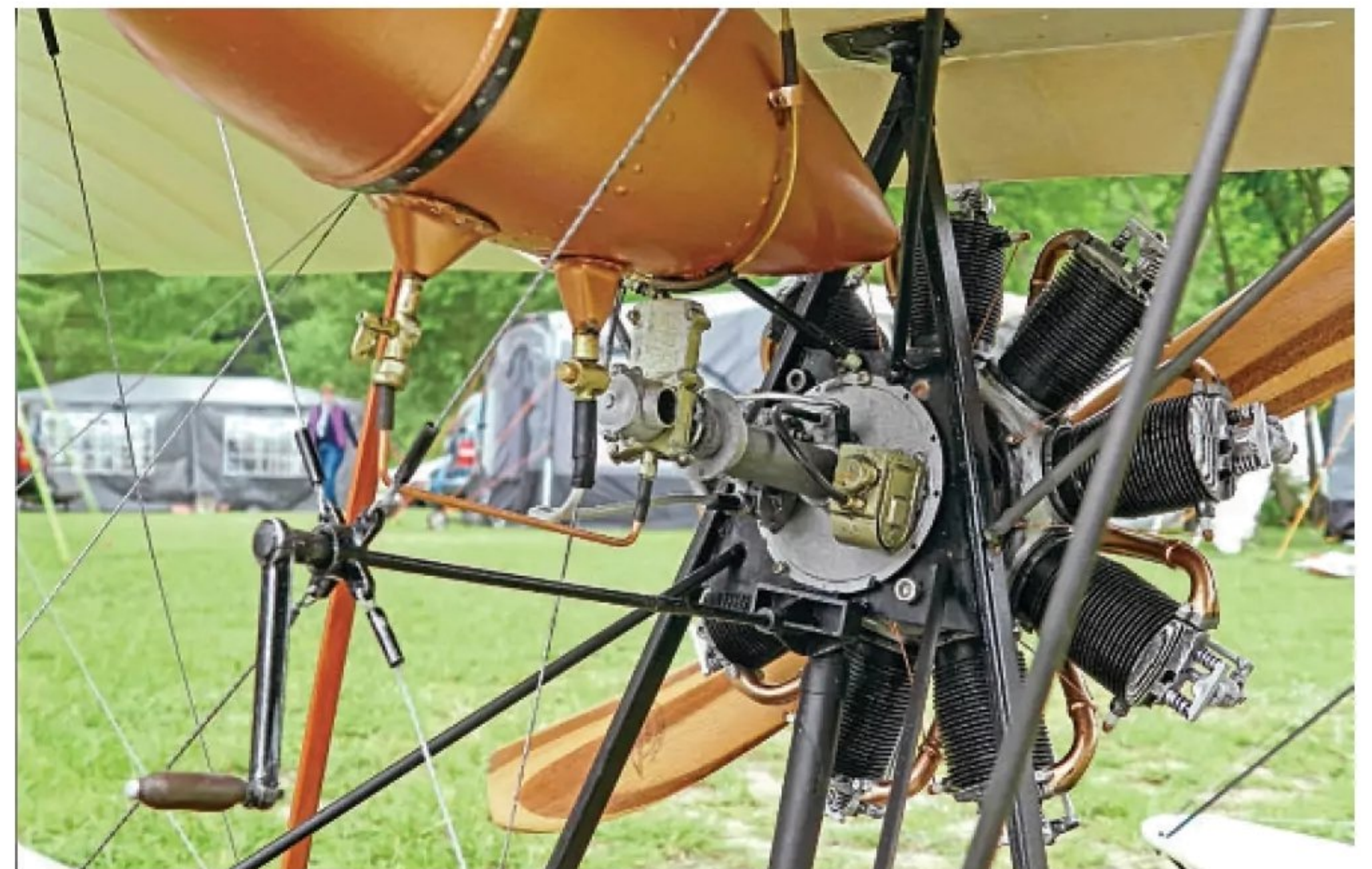
Scott McKie is also building an all Depron Tigercat, an admirable project that has thrown up some conundrums.



Above: Lutz Nagel presents his magnificent Tigercat. Incredible finishing skills are readily apparent.



Lutz Nagel's incredible flying boat confection. You would hardly believe that, in part, it's made from Depron.



Superb detail on the Nagel flying boat. You could be looking at the engine of the original waterplane.

From time to time, I receive emails from all points of the compass and both hemispheres. Many are requests for information and model build methodology and others show me what other shed dwellers are up to. The materials used are as varied as the builders' imaginations, whilst the results are, in many cases, quite stunning. I had previously waxed reluctantly, but enthusiastically, about the use of Depron for model building and will return to the material later once I sort out a few plans for indoor/outdoor tinies. If I can beg your indulgence, I'd like to detail a couple of my recent contacts here...

Entente Cordiale! Franco-British Aviation (FBA) was established in 1913, with a HQ in London and producing aircraft around Paris.





SCOTT & LUTZ

'Across the pond' is an ex-pat waver of the Saltire, a returnee to the fold of model aircraft. Scott the Scot is treading the plastic path after seeing what his friend Lutz has been crafting - more of him in a bit. Scott is constructing a fairly large rendition of the Grumman 'Tigercat' but was at an impasse; how to give rigidity to an inherently 'soft' airframe like the Depron 'T-Cat', with its Depron formers that give shape but not strength. Back in France I was friendly with a Breton modeller who only built models from composites. Wood in any form was anathema to him. Said chap moulded Depron sheets in his self-constructed heated vacuum former to manufacture the various parts. Then, once the main components were assembled, he covered the parts with ultra-light fibreglass cloth of around 18 g/sq.m. The result was a stressed skin airframe that was both incredibly light and quite rigid. His models sold well and were very popular with the Gallic buyers.



Scott has taken the idea on board for the continuing work on the Tigercat and may try the 'glass skinning' idea or possibly doping on tissue with solvent-free acrylic, but he also accepted that localised reinforcing is needed in highly stressed areas. He mentioned carbon rods glued in, but I related how yacht builders (amongst others) use carbon or glass fibre cloth laid over stressed areas, dissipating the imposed forces over a larger area and reducing the likelihood of stress cracking. Of course, you can only use epoxy resin on Depron as using anything else risks seeing your model dissolve! Us traditional 'woodie' builders have been doing it for decades, gluing in 'doublers' where strength is demanded, or 'skinning' with very thin ply to add strength and rigidity. The old adage applies: "Same meat, different gravy", as my old engineering foreman would say.

Top left: Another Depron masterpiece by Lutz Nagel, the Monocoupe 70.

Top right: Giving scale to his model, Lutz poses with his lovely rendition of the Monocoupe 70.

Above: Monocoupe on a low pass.

Left: The Monocoupe's scale engine is another masterpiece by Lutz Nagel.

Lutz has taken Depron model building to another level. His models, both large and small, are fabulous. You'd never know that these models are largely made of that adaptable, yet oh so light material. For their size they must have a strong basic structure but using suitably sculpted Depron achieves quite a remarkable finish. I hope our editor can use some of the photos that Scott supplied. Master builder Lutz has crafted the most gorgeous confections; it shows what a bit of ingenuity can do. Don't for one minute think, 'I can't do that!' 'The journey of a thousand miles starts with one step' - you just have to take it.

HATCHING IDEAS

Whilst building my 2.6m rendition of the Luton LA-3 'Buzzard MkII', I decided that although tubes and sleeves were the obvious wing mounting method, simple magnets wouldn't be enough to hold the wings in place, so I decided to use wing bolts. For ease of assembly the wing centre section root rib on each side would have a 'Tee' nut fitted, with the nylon thumbscrew wing bolt passing through the mating wing root rib - a nice solid attachment. But that would mean an access hole, not something you want to see, even on the wing underside.

Having seen other 'disguised' access covers and hatches, I opted to invoke 'Occam's Razor'. To paraphrase, 'When faced with various options for a problem's solution, it's usually the simplest that is 'right'. I like simple, it's my standard mental state!

Adjacent to the root rib wing bolt access I lined the rib bays with balsa strip, recessed 2 mm from the wing underside surface. 2 mm balsa covers were made to fit the hole and covered with the same wing material and a Solartex hinge attached the cover on the upwind side of the hole (so it won't blow open during flight) and small magnets hold the covers closed. Tidy, successful and they even look sort of 'right'. Any light aircraft 'of an age' appears to have similar odd access patches and hatches. If you do it, I won't tell - it'll be our secret!

SIMPLE SUSPENSION

Many models use a simplified wire undercarriage that is practical but imparts a shock loading on a light airframe. So why not add suspension? I've built it into several models now, in the 30 to 50-inch (750 to 1250 mm) wingspan range. Most bent wire U/C units are of two pieces; the front one fixes to a



Luton Buzzard under wing hatch with its Solartex hinge (bottom) and pull tag (top). It's a simple but effective way of disguising wing bolt access.



With the hatch open the Buzzard's wing bolt is easy to access, while the magnets and Solartex hinge ensure that the hatch doesn't blow open in flight.

fuselage former and usually carries the axles for the wheels, whilst the secondary piece forms a rearward brace, again, fixed to the fuselage. All well and good, we've all been doing it that way for ages. The only drawback is that a rough landing can, and sometimes does, cause damage to the model structure. Time to look back some 100+ years...

WW1 aircraft mostly used 'alighting gear' that relied on wraps of bungee cord to give resilience and suspension. If you look at the wheels of those old-timers, they often look a bit 'bandy', with the tops of their wheels several inches within the spread of the bottom. Later ultralight aircraft of the 1920s sometimes used 'axle in a vertical slot' wheel support, again supported by bungee cord.

Having broken yet another fuselage stringer in my Caudron 11 with a less-than-perfect arrival, I pondered the conundrum of keeping the existing undercarriage - and came up with a small addition; a separate axle only secured/soldered part way out from the model's centre line. (The photos show this better than I can describe.) Yes, it adds a few grams of wire, binding and solder, but you'll be surprised just how much damage this simple wheeze prevents. If you really 'pile one in' and bend the axle then it's only a few minutes work to replace it, rather than the hours to repair a fuselage. ✈️



The 1923 EE 'Wren' at the Shuttleworth Collection shows its 'axle-in-slot' and bungee cord suspension.

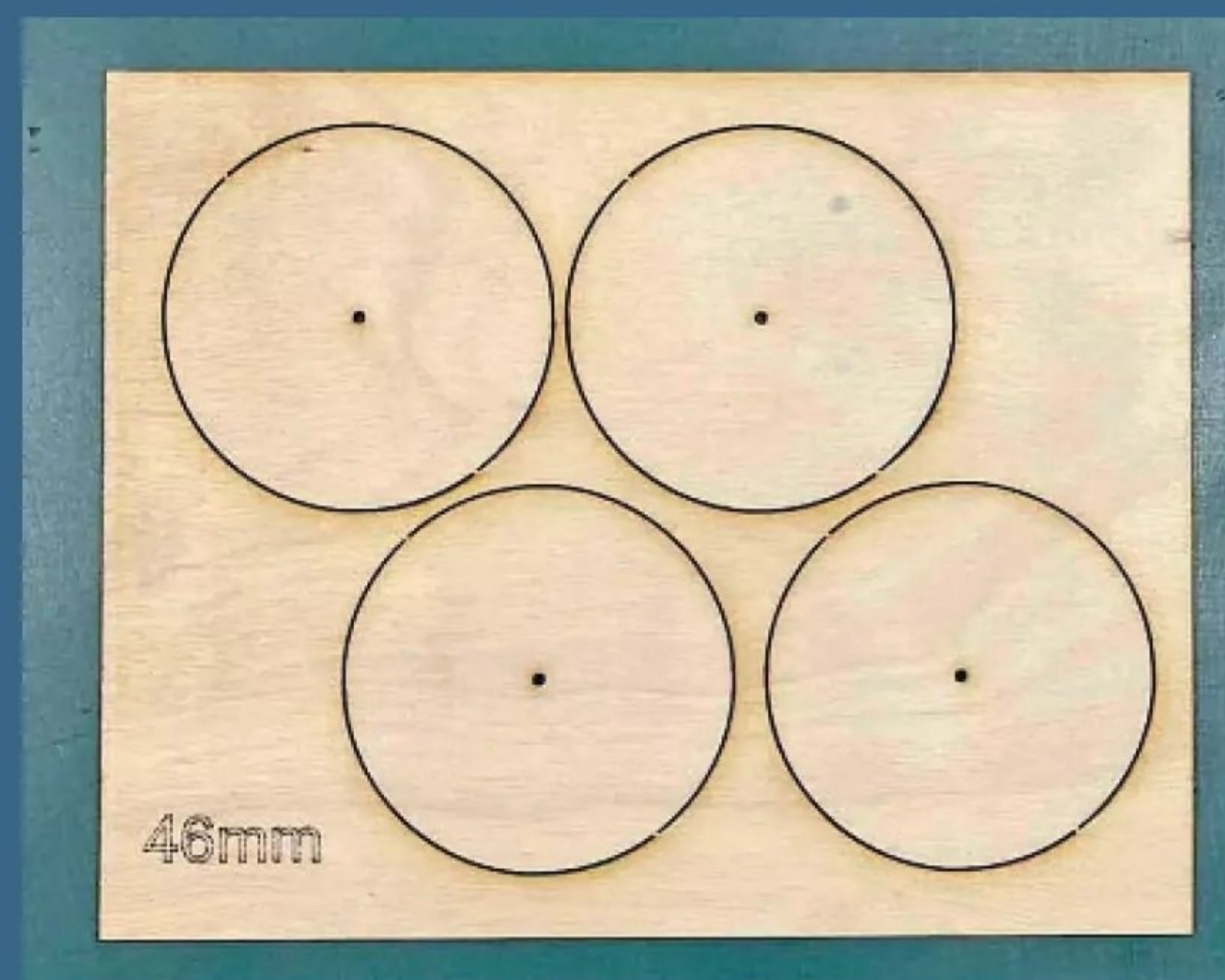
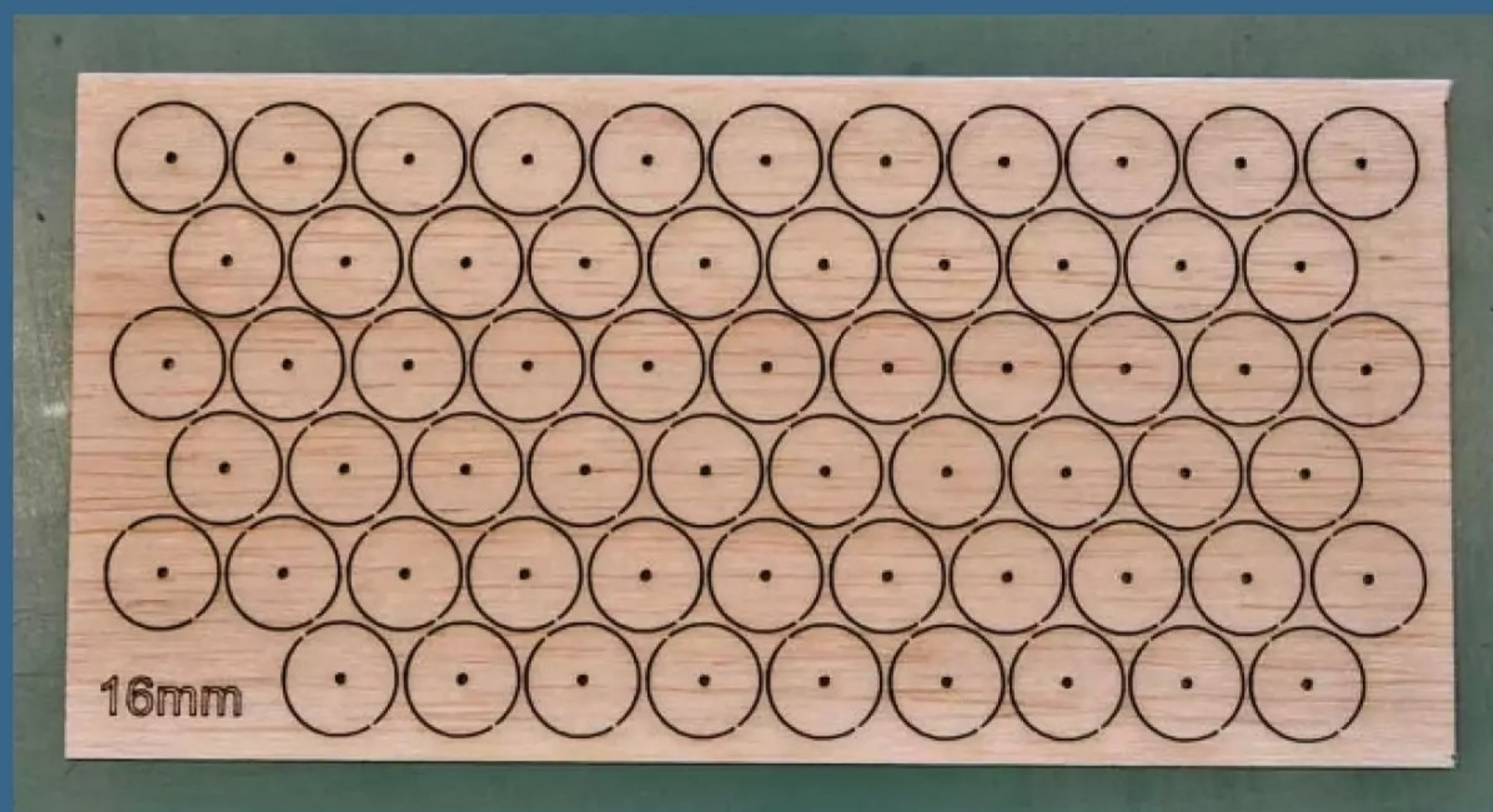
Right: The knot is a bit untidy, but you can see the axle suspension slot and bungee cord that provide scale suspension to my English Electric 'Wren' model.



Left: The little Caudron 11 used to have a solid axle that imparted fuselage damage in less than perfect landings.

Right: With a separate axle secured part-way inside the undercarriage framework the little Caudron now sports simple suspension.





The Vintage Model Company now supply laser cut wheel blanks in both balsa and ply. 16 mm dia. balsa and 48 mm dia. ply sets shown here. (Photos courtesy of VMC)



These simple nose buttons are for rubber powered models, but they are equally useful as wheel hubs when making your own wheels. (Photo courtesy of VMC)

WHEELY?

Still on the subject of undercarriage bits, I noticed a recent addition to the range of accessories offered by The Vintage Model Company – laser cut wheel blanks in various sizes, in both balsa and ply, from 16 to 46 mm diameter. You can ‘sandwich’ the blanks to make a specific thickness of wheel, then sand a tyre profile around the periphery. Or fit slightly larger outer discs to form a rim. Said recessed rim will allow the fitting of an appropriate O-ring or a light, soft tyre made from round section EPDM foam.

To stop the wheel centre from wearing rapidly in use it’s a simple job to fit a brass bush of the type supplied by Free Flight Supplies or glue an aluminium or brass tube into it. Alternatively use the aluminium nose buttons (again from VMC), originally manufactured for rubber powered free flight models.

These solid disc wheels can also have a ‘Chinese hat’ cone glued to one side, to emulate WW1 through to ‘Golden Age’ wheels. Currently in the preparation stage of cutting the kit of myriad pieces, my Allen A-4 light monoplane needs a pair of 3.15” (80 mm) diameter 1930s style wheels so I’ll most probably be using this wheel construction method if an ‘off the shelf’ pair of lightweight wheels cannot be sourced.

Another method I used on the little 30” span Caudron 11 that I built from an old and awfully inaccurate US kit, is to disguise ultralight ‘indoor’ plastic wheels with covering film over light card discs.



O-ring kits offer a huge range of useful sizes. Model ‘tyres’ are but one option.

DIY CLOSED LOOP HORNS

To detail a small but crucial part and moving on with the Allen A-4 model build, I photocopied the tail feather closed loop control horns on the plan, then cut out and ‘Pritt-stuck’ the shapes onto a piece of black 1.5 mm thick fibreglass sheet. Not very many minutes later, after exercising a saw, drill and files, I had the two horns ready for use. Yes, the material does wear small saw blades quickly, but a blunt junior hacksaw blade is a small price to pay for a bespoke pair of very strong control horns. The photo on the next page shows a coil of Dacron braided fishing line that I’ll use for the closed loop line; it may look insubstantial, but that line has a breaking strain of 9 kg. You’ll destroy your servo gears and tear the horns from their control surface before that line will break. After covering the model, the horns will be epoxied in place after first roughening the fibreglass gluing surface with a rub of fine glass paper to give a ‘key’ for a solid bond.



An ‘indoor’ lightweight 50 mm dia. wheel has film covered thin card discs added to emulate ‘Golden Age’ wheels. Simple and cheap.

ANGRY HOLE?

Sometimes we need to make a surface recess to fit the countersunk head of a screw or bolt, giving a clean and 'flush' finished surface. How many times have you used a drill to make that recess and then cursed yourself when the drill 'chattered' around the hole and made a mess, or had the thing 'snatch' and rip right through the workpiece? That'll be lots of you then!

Similarly, a 'proper' 90-degree countersink, though supposedly made for the job, will often 'rattle' around the hole, leaving ribs or striations in the surface, even lifting torn hole edges. In short, they are mass produced to be sold 'cheap as chips', not to give the best finish. Once blunt they are about 'as much use as Elsie's glass eye', i.e. an ornament.

Thankfully there exist far better hole countersinks, or hole deburring bits – it all depends on the depth they cut. A light 'lick' at the surface of a drilled hole will take the rough edge off (deburring) or by cutting deeper will form a clean countersink. These items are often known as cross-hole deburring/countersink bits and will give the cleanest possible countersink in metals, plastics and wood. The angled cross-hole through the tool leaves a single cutting edge that shaves, rather than hacks at the workpiece. The smooth outer finish ensures that the tool can't skip or chatter and that results in a clean, smooth countersink surface. Unlike ordinary countersinks that are 'blunt it and bung it' items, the cross-hole bits can be sharpened (with care) by using a diamond needle file. I've owned a set of four for the last 35 years and have only needed to sharpen the largest two once. They are not 'cheap' but begin to look quite cost effective when you look back over the ruined model parts you've knackered through the years. I've seen a set of three sizes for sale on eBay at under a fiver.

INTERIOR DECORATIONS?

Following the indoor model photos I used in the March 2024 issue, I received several emails about smaller models and a notification regarding an upcoming indoor event at Poynton, just South-East of Manchester. Being a nosy devil and having been heavily into the indoor R/C scene back in France, I went along to 'black my nose' and see what the fuss was about.



Left: Closed loop control horns made for the Allen A-4 are strong, light and 'scale'. The Dacron line is incredibly strong and weighs almost nothing.

Below: This young lad flew his ARTF warbird around the hall with aplomb. It was great to see him, and others, having a whale of a time.



Countersinks: the three on the left work but can leave a poor 'sink'. The four on the right are cross-hole countersink bits that cut a far superior and smooth recess.

Quelle surprise! The leisure centre has a large-ish hall of around 35 x 45 metres, with a decent height and I'd arrived to find many already flying anything and everything you can think of, either with or without wings. Not only that, but there were several youngsters there, a few being coached into the intricacies of flight.

Talking to the organisers, John Summerville and Neil Harrison of Superfly Models, it was a pleasure to hear that they are 'giving something back' to model flying by encouraging young people into this thoroughly absorbing hobby. To see pilots from ages in single figures to those seemingly in their ninth decade, all flying together and helping each other, was a revelation. From the simplest BMFA flying devices to those incredibly detailed and tiny ARTF R/C models, all were having a whale of a time. Personally speaking, I think the Superfly



chaps have got it just right; encouragement and help for the beginners and youngsters, while offering support and expertise wherever needed to get tyros of any age to fly competently.

TAILSKID

Okay, I've been banging the drum about beginners and indoor flying. But if you check 'Going Places' events listings in RCM&E and online at the magazine's website <https://www.modelflying.co.uk> you'll find several regular indoor flying sessions around the country, just right for flying whenever the season and weather are against you from getting outside and flying in comfort. Most meetings will be only too happy to see new pilots of any level and age coming along to gain experience. With luck, and maybe a reasonable drive, you will find a venue near you. Pop along, soak up the atmosphere and be enthused. You won't regret it. ■

Send me an email: Coetquidan@yahoo.com

USEFUL LINKS

Wheel blanks & nose buttons:

<https://www.vintagemodelcompany.com>

Brass bushes:

<https://www.freeflightsupplies.net>

Round section EPDM foam:

online purchase

O-ring kits: online purchase

Cross-hole countersink bits:

online purchase



Left: Young Madison Summerville is introduced to the intricacies of indoor flight by dad John, one of the meeting organisers.

Right: Young Ukrainian, Herman Parkhomenko, readies his Fokker DVII for flight. It's great to see young new incomers to the hobby.



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@dhpub.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.

MAY

May 16

Waltham Chase Aeromodellers Indoor R/C Small Models Meeting at Wickham Community Centre, Mill Lane, Wickham, Hants, PO17 5AL. From 7pm till 9.30pm. Hall is suitable for smaller indoor R/C models. See Apr 18 event listing for more information or contact Alan Wallington on 01489 895157, email indoor@wcaero.bmfa.club or visit <https://wcaero.bmfa.club>

May 18-19

Old Warden Modelling Weekend at Old Warden, Biggleswade, Beds. This year we're inviting other forms of modelling to join us to reflect R/C flying of all types, helicopters, free flight and radio assist, control line, R/C cars, boats, tanks, drone racing, rockets and trains. Trade line, swapmeet/car boot area, bring and buy, R/C trial experience flights, tethered cars, children's build and fly competition, R/C simulator. Weekend camping, available, excellent cafe not forgetting the Shuttleworth Collection and Swiss Garden. For more information visit shuttleworth.org and search 'ModelAir'.

May 18-19

Wings Over South Wales Valley Flyers 2024. The FPV Wing Racing League is back again with another fun packed weekend of racing, fun flying and camping hosted by the South Wales Valley Flyers at their cracking BMFA club site. We'll be blowing up the big purple race gate, throwing up the race flags and lighting up the night again with over 2k LEDs on the Saturday night. Bring your race wings, sports wings and LOS gear, and if you have a certain heli fetish then bring them as well. Tickets are a measly £35 for the whole weekend (Friday evening till Sunday) and gates open on the Friday evening for any early birds. For more info see <https://wrl-uk.com/index.php/wrl-events/wings-over-valley-flyers-2024/>

May 18-19

PSSA Fly for Fun and D-Day event at The Great Orme, Llandudno, North Wales. Meet at the 'Tank Track' car park for pilots brief 10am each day. Proof of BMFA (or equivalent) insurance and Pilot Competency certificate required. All models to be fitted with compliant CAA OpID number. Event will be run with a D-Day theme commemorating the 80th Anniversary of the D-Day landings with a collection of models from the period adorned with the Allied invasion stripes. For more information contact Phil Cooke on 07772 224719, email webmaster@pssaonline.co.uk or go to www.pssaonline.co.uk/about-us/events/

May 25-27

1940s Spring Bank Holiday Fly-in Rolls Royce Hucknall MAC at NG16 5GA. 5 mins Junction 27 M1. what three words—laws.wasp.upgrading. Come fly your Spitfires and foamies with a prize for the best aircraft. All BMFA members welcome. Camping available but must be pre-booked. Contact Terry at 079717 07585 or terry.33cway@hotmail.com

May 25

PPMFC Scale Model Helicopter Fly-in & BBQ near Oxenton, Gloucestershire. A relaxed scale helicopter event. Non competitive. Scale helicopters only please. £10 per pilot. Pilot briefing at 10am. BMFA Membership and CAA Flyer/Operator ID required. Electric, piston engine and turbine power permitted. BMFA 82dB noise limit applies (except for turbines). Organisers may exclude excessively noisy models. No requirement for A or B certificate but you must fly safely. What3Words: glad.thatched.lads. Entrance is off B4079, Pamington Road, near Oxenton, GL20 8FG; 2.7 miles from M5 J9. Email ppmfcscaleheliflyin@gmail.com for details.

May 25

Waltham Chase Aeromodellers Medium Hall Indoor R/C Meeting at Crofton Community Centre, Stubbington Lane, Stubbington, Hants, PO14 2PP. From 6.30pm to 9pm. The sports hall is four-badminton court size and particularly suitable for lightweight indoor R/C models. See Apr 27 event listing for more information or contact Alan Wallington on 01489 895157, email indoor@wcaero.bmfa.club or visit <https://wcaero.bmfa.club>

May 30

Waltham Chase Aeromodellers Indoor R/C Small Models Meeting at Wickham Community Centre, Mill Lane, Wickham, Hants, PO17 5AL. From 7pm till 9.30pm. Hall is suitable for smaller indoor R/C models. See Apr 18 event listing for more information or contact Alan Wallington on 01489 895157, email indoor@wcaero.bmfa.club or visit <https://wcaero.bmfa.club>

JUNE

June 1-2

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

Jun 1-2

Large Model Association Teeside Show at the Teesside Model Flying Club, Stockton-on-Tees. See www.largemodelassociation.com for full details.

Jun 8

Vintage Fly-in hosted by Ilminster & District Radio Control Club at RNAS Merryfield, Ilton, Somerset, TA19 9HN. Super 60 Pylon Race for the Ernie Webster Shield, Junior 60 Pylon race, Class A, B & CVPD, control line circuit and flying off the peg. Free registration on the day. Contact Louis Hawkins on 07768 862630 or email louis@louishawkins.plus.com

Jun 8

Tonbridge Gassers and Rubber Fanciers Indoor Flying at Kings Sport Centre, 601 Maidstone Road, Rochester, ME1 3QJ. From 6:30pm until 10:00pm.

Free flight, lightweight R/C and 3DR/C timed flying sessions throughout the evening. For more information contact Steve on 0208 942 5000 or Eric on 07763 398 416.

June 9

Bickley MFC Aerobatics/Aerobatics Training Day at Bickley MFC, Church Road, Sutton at Hone, Dartford, Kent, DA4 9EX. Anything Aerobatic! A chance to fly your aerobatic models at the superb Bickley Club's field. Pattern style aerobatic training from UKF3A available. Toilets on site. Camping available if booked in advance at admin@bickleymfc.org. For more information, visit <https://bickleymfc.org/> or contact James Gordon on 07966 439835

June 13

Waltham Chase Aeromodellers Indoor R/C Small Models Meeting at Wickham Community Centre, Mill Lane, Wickham, Hants, PO17 5AL. From 7pm till 9.30pm. Hall is suitable for smaller indoor R/C models. See Apr 13 event listing for more information or contact Alan Wallington on 01489 895157, email indoor@wcaero.bmfa.club or visit <https://wcaero.bmfa.club>

June 14-16

Weston Park Airshow International at Weston Park, SHifnal, Shropshire, TF11 8LE. Full details at airshowinternational.co.uk

June 22

Waltham Chase Aeromodellers Medium Hall Indoor R/C Meeting at Crofton Community Centre, Stubbington Lane, Stubbington, Hants, PO14 2PP. From 6.30pm to 9pm. The sports hall is four-badminton court size and particularly suitable for lightweight indoor R/C models. See Apr 27 event listing for more information or contact Alan Wallington on 01489 895157, email indoor@wcaero.bmfa.club or visit <https://wcaero.bmfa.club>

June 27

Waltham Chase Aeromodellers Indoor R/C Small Models Meeting at Wickham Community Centre, Mill Lane, Wickham, Hants, PO17 5AL. From 7pm till 9.30pm. Hall is suitable for smaller indoor R/C models. See Apr 18 event listing for more information or contact Alan Wallington on 01489 895157, email indoor@wcaero.bmfa.club or visit <https://wcaero.bmfa.club>

June 29-30

Wings and Wheels Model Spectacular at Stanford Hall, Stanford Rd, Lutterworth, LE17 6DH. See <https://wingsnwheels.net/> for full details.

JULY

Jul 5-7

PSSA Fly for Fun event with the Lleyen MAC Nr Abersoch, North Wales. Meet at the Londis car park in Llanbedrog for 9:30 am each day. Slope map will be left in shop window for late arrivals. Proof of BMFA (or equivalent) insurance and Pilot



Competency certificate required. All models to be fitted with compliant CAA OpID number. For more information contact Phil Cooke on 07772 224719, email webmaster@pssaonline.co.uk or go to www.pssaonline.co.uk/about-us/events/

Jul 6

Flair Fly-in Day at the Banbury Model Flying Club (postcode NN11 3SN). Starts at 9 am, briefing at 9.45 am. Tickets can be purchased for free on Eventbrite, but please note that there is a limit of 40 places. Go to <https://www.eventbrite.co.uk> and search for Flair Fly In Day. It's £10 payable on the day, with an A-certificate needed for flying. BMFA insurance is also required and proof of insurance is needed. Spectators are welcome, there is no charge for them. Limited overnight parking for camping vans also available—first come, first served. Tea and coffee will be available on the day, however packed lunch, chair and flask would be a good idea. Electric, nitro and petrol engines welcome. Petrol engines must be suitably baffled/silenced and petrol contained in an appropriate canister. Contact Alex Webb at webb.alex@rocketmail.com.

Jul 6–7

Woodspring Wings Model Aircraft Show at their club site, Nr Yatton, North Somerset. From 10:00am until 4:30pm both days. Once again, we have a great line up of model displays, traders and a full food court and bar. Our bring and buy stand is really popular and just keeps getting bigger. We also hope to have a very special full-size guest with four engines! A great show for all the family set in the wonderful Somerset countryside. Admission £12 in advance, £15 on the day and camping £60 in advance (inc. two show entries), £75 on the day. Booking via <https://www.woodspringshow.co.uk> and <https://www.facebook.com/woodspringshow>

Jul 6–7

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

Jul 7

Bickley MFC Avicraft / Fun Fly Competition Open Day at Bickley MFC, Church Road, Sutton at Hone, Dartford, Kent DA4 9EX. From 10:30am to 17:00pm. One of our most popular events of the year. A light-hearted competition day with your favourite club style Fun Fly competitions plus a few new ones! Any club sport models or Fun Fly models welcome to join in the fun! Event and prizes supported by the London and South East BMFA areas, Avicraft and the British Fun Fly Association. Toilets on site and camping available if booked in advance at admin@bickleymfc.org. For more information, visit <https://bickleymfc.org/> or contact James Gordon on 07966 439835.

Jul 9

S.M.A.M. Flying Club Table Top Sale at The Ecko Club, Therefore Gardens, Southend on Sea, Essex, SS26 6PU. From 8:00pm until 10:00pm. Table setup from 19:30pm. Entry £1 and tables £5. Refreshments available from the bar. Please book tables in advance with Den on 07745 219443

Jul 13

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

Jul 14

Classic Gliders at The Hole of Horcum, North Yorkshire, YO18 7NR. A relaxed fun day for all types of traditionally built R/C model gliders. BMFA membership required. £5 for non club members. Location: What3Words—snowmen. ordinary.caps. Walk to slope by 10am. Call Michael Kitchen on 01347 810685 for details.

July 14

Cocklebarrow Vintage R/C, signposted from Aldsworth, Glos. on the B4425 between Cirencester/Burford and off the A40 between Northleach and Burford (follow SAM35 signs). What 3 words: positives arrival calculate. All types of R/C up to 1975, sport flying, no competitions. BMFA insurance essential. For more information, please contact Tony Tomlin on 07767 394578 or 02086 413505 or email pjt2.alt2@btinternet.com

July 20–21

Pontefract Annual Fly-In at Pontefract Park, southwest corner of junction 32 of the M62, WF8 4QD. Saturday has all-electric, any R/C model type, fun fly (the exception being IC / Electric control line which can be flown on both days). Sunday has Single Channel and Retro Fly-In for all age appropriate IC and electric powered vintage and retro models (ideally up to the late 1970s but we are flexible as long as they fit in with the general theme of the day). To fly you must have insurance and CAA documentation plus any model over 7.5 kg requires BMFA B, LMA proficiency or equivalent certification. Feel free to display your models if you don't want to fly. Free entry, further details and updates at www.singlechannel.co.uk. Further details on finding the site, see map on pandas.bmfa.org. Limited free camping available, contact Phil Green on philg@talk21.com or Shaun Garrity on aeromodeller@gmail.com

Jul 27–28

Old Warden Modelling Weekend at Old Warden, Biggleswade, Beds. This year we're inviting other forms of modelling to join us to reflect R/C flying of all types, helicopters, free flight and radio assist, control line, R/C cars, boats, tanks, drone racing, rockets and trains. Trade line, swapmeet/ car boot area, bring and buy, R/C trial experience flights, tethered cars, children's build and fly competition, R/C simulator. Weekend camping, available, excellent cafe not forgetting the Shuttleworth Collection and Swiss Garden. For more information visit shuttleworth.org and search 'ModelAir'.

Jul 27–28

Large Model Association Sleep Large Model Airshow at Sleep Airfield, Shrewsbury, Shropshire, SY4 3HE. See www.largemodelassociation.com for full details.

AUGUST

Aug 3–4

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

Aug 3–4

PSSA Fly for Fun event at The White Horse, Westbury, Wiltshire. Meet at the White Horse car park. Pilots brief at slope location at 10.30am each day. Proof of BMFA (or equivalent) insurance and Pilot Competency certificate required. All models to be fitted with compliant CAA OpID number. Note this meeting will only run with locally forecast winds from West through to North. For more information contact Phil Cooke on 07772 224719, email webmaster@pssaonline.co.uk or go to www.pssaonline.co.uk/about-us/events/

Aug 3

Bickley MFC Boot Sale at Bickley MFC, Church Road, Sutton at Hone, Dartford, Kent DA4 9EX. From 9:00am to 17:00pm. Boot sale for all your modelling bits and pieces. Also, a perfect place to grab a bargain! Non club members £5 to sell. Toilets on site. Camping must be pre-booked at admin@bickleymfc.org. For more information, visit <https://bickleymfc.org/> or contact James Gordon on 07966 439835.

Aug 4

Bickley MFC Scale Open Day at Bickley MFC, Church Road, Sutton at Hone, Dartford, Kent DA4 9EX. From 10:30am to 17:00pm. Scale models of all types welcome except turbines. Informal, relaxed scale fly-in. Toilets on site and camping available if booked in advance at admin@bickleymfc.org. For more information, visit <https://bickleymfc.org/> or contact James Gordon on 07966 439835.

Aug 10–11

Elvington Large Model Airshow at Elvington Airfield, Elvington, York, YO41 4AU. See www.largemodelassociation.com for full details.

Aug 17–18

British Fun Fly Association Nationals at BMFA Buckminster, Lincs. While this is a formal National Championship, first timers and novices are still very much welcomed and encouraged. To find out more about Fun Fly, the rules and the different classes, take a look at <https://funfly.bmfa.org/> and keep an eye out on the BFFA Fun Fly Facebook group for the latest news.

Aug 17–18

PSSA Fly-In at The Bwlch, Nant-y-Moel, Bridgend, South Wales. Kindly supported by the SWSA—<http://a470soaring.blogspot.co.uk/>. Meet at the 'Ice-Cream' car park for 10am each day. Proof of BMFA (or equivalent) insurance and Pilot Competency certificate required. All models to be fitted with compliant CAA OpID number. For more information contact Phil Cooke on 07772 224719, email webmaster@pssaonline.co.uk or go to www.pssaonline.co.uk/about-us/events/

To use our **FREE READERS' AD SERVICE** simply fill in the coupon provided and we'll print your advert here, in Britain's best-selling R/C flying magazine

FOR SALE

WOT 4 XL with OS95 AX. Acro WOT with OS55 AX. Both models in decent condition—£90 each. Call Reg on 01242 672479 (Glos).

AEROMODELLER ANNUALS 1948-1989 inclusive. SAM 35 yearbooks x 11. Miscellaneous Sam 35 speaks—£70 ono. Raising funds for Museum of Berkshire Aviation. 01494 445636 (Bucks).

FUTABA 6J 6-channel transmitter with charger—£45. Slope soarer available with electrics free of charge, Orion and charger with Futaba. 01903 237494 (East Sussex).

FW190 Tony Nijhuis design, 60" span, very detailed, new electrics from 4-Max. Electric retracts. Never flown, just taxied down the drive—£250 ono. Call Keith on 07546 418978 (York).

CLEAR OUT due to ill health. R/C models, wings, fuselages, tools, spare parts, some foam wings, not used. Many RCM&E and Radio Modeller magazines too. Call Nick on 01252 676461 (Hants).

APACHE AVIATION FAIRCHILD PT19, 75" span, 80 ASP and flaps, in mint condition and unflown. US Army colours, pro-built—£230. Buyer to collect. 07921 919383 (Essex).

SAITO 82B Brand new in box, never been run or fitted to a model—£240 + £10 postage. 01709 540976 (Rotherham, S.Yorks).

NEW MINI BIPE, requires fitting out. New Easy Pigeon electric. Used Easy Pigeon electric. New Filip electric brushless motor. Futaba transmitter, 6 EX AP charger with only 2 battery charges. Job lot—£100. 01623 400534 (Mansfield).

B17 FLYING FORTRESS, wingspan 2m (79 ins), 4 brushless motors. 2 x 14.8-volt batteries. Undercarriage, retracts and wing lights. Needs 8 channel Tx and Rx. Collection only—£350. 07806 816434 (Birmingham).

A10 WARTHOG 53", DH Rapide 62", Catalina 53", Canadair Water Bomber 55", SEEBEE 56" and more. All with motors and speed controllers—very reasonable prices. Call for details 01242 680659 (Glos).

SPECTRUM DX6i Tx & Rx—£60. Spectrum AR400 RX—£15. Laser Hitec R/C system—£30. GT15 OS Petrol N.I.B—£50. Vintage spark ignition, Super 60—£90. All plus P&P. Call Peter on 07739 545444 (Cheshire).

WANTED

ALL R/C MODELS WANTED, new or old, planes, gliders, kits, engines, boats, cars, radios, complete collections or job lots, countrywide collection. No hassle, cash buyer. Call David on 07940 791959 or email deserteagle357@hotmail.com (Clevedon).

ALL R/C MODELS, planes, boats, cars, kits, engines, radios etc. Complete collections wanted. Cash buyer, will collect countrywide. Email dorsetmodel@aol.com or call Michael on 01747 229725 (Dorset).

ALL UNMADE plastic aircraft kits; Frog, Airfix, Revell etc. Also aviation and military books, diecast aircraft etc. Please call 07973 885754 (Kent).



Post to: RCM&E, Marketplace, PO Box 99, Horncastle, Lincs, LNP 6LZ

FREE READERS' ADVERTISING

Please write your details in CAPITALS in the grid below, including a contact name and address or telephone number in the word count. Please also enter your full details in the address box below the grid.

PLEASE TICK: FOR SALE ☐ WANTED ☐

Free Readers' Ads will only be accepted on the coupon supplied.

Terms and conditions

We will endeavour to print your details in the next available issue of RCM&E. **Free Readers' Ads will only be accepted on the coupon supplied.** Coupons received after the copy date may be held over until the next issue. No responsibility can be accepted for misprints. Please comply with the Trade Descriptions Act when detailing goods for sale. This service is only available for private sales. Other services and trade advertisers must use the pre-paid classified section at the end of the magazine. Under 'The Business Advertisements (Disclosure) Order 1977', consumers must be able to differentiate between an advertisement for a private or trade sale.

Name

Address

..... Postcode

Tel. No.

Signature Date

Next issue



MAK15

Every few years Peter Miller gets the urge to design something really unusual. This time he decided on a little known Russian powered glider called the MAK 15 PM. He knew this one would fly because many years ago he designed a CO₂ powered free flight model that flew like a dream. It also had the advantage of lots of wing area.

Before designing his model, Peter had only ever seen two black and white photos of the machine. One was all over a dark colour while the other showed it as very light coloured. So, even with the help of the works drawings designing the model was a bit of a pain. But despite its strange shape, the most important question is, 'How does it fly?' We are pleased to report that Peter's answer is, 'Very well.'



A COMPANY CALLED FLAIR

It doesn't seem hardly any time at all since we started Dudley Pattison's autobiographical series, in which he recalls the events leading up to the establishment of Flair Products in 1975. But all good things must come to an end, so in the next issue we reach the conclusion of Dudley's tales from the Holdcroft Works factory floor, plus a special edition of Pilots' Pictorial which will be dedicated to some of the many pictures that our readers have sent in and which we have been unable to use to illustrate Dudley's articles.

Editor: Kevin Crozier
kcrozier@mortons.co.uk

Publisher: Steve O'Hara,
sohara@mortons.co.uk

Publishing director: Dan Savage,
asavage@mortons.co.uk

Art Editor: Kelvin Clements

Design: Charlotte Fairman, Mike Baumber,
Tracey Markham, Fran Lovely, Tim Pipes

Group Advertising Manager:
Sue Keily

Advertising: Mason Ponti - mason@
talk-media.uk - 01732 920499

Karen Davies - karen@talk-media.uk - 01732
442144

By post: RCM&E Advertising, Mortons Media
Group Limited, Media Centre, Morton Way,
Horncastle, Lincs, LNP 6JR

Sales and Distribution Manager:
Carl Smith

Marketing Manager: Charlotte Park

Commercial Director: Nigel Hole

Editorial address:
RCM&E, Media Centre, Morton Way,
Horncastle, Lincolnshire LN9 6JR

Website: www.modelflying.co.uk

General enquiries and back issues:
Tel: 01507 529529 24 hour answer phone
help@classicmagazines.co.uk
www.classicmagazines.co.uk

Subscription: Full subscription rates (but see
page 72 for offer): (12 months 12 issues, inc
post and packing) - UK £76.20. Export rates
are also available - see page 72 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: Seymour Distribution Ltd, 2
East Poultry Avenue, London, EC1A 9PT

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

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

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

Next issue: 21st June 2024

Advertising deadline: 4th June 2024

Pre order the next issue
www.classicmagazines.co.uk

Scan



Or call 01507 529 529

SANSE GAL

The Sans Egal was designed by Reino Hyvarinen in the 1950s as an A2 free flight glider. Join Alex Maxfield as he converts this 80" wingspan soarer to rudder and elevator R/C control, so as to be able to fly it in the 2M RES (Rudder Elevator Spoiler) thermal soaring competition class using an electric motor to launch it, albeit without spoilers.

Much has changed regarding the choice of building materials available since the Sans Egal was originally designed and so Alex planned to make the most of what was available these days but keeping the original look and feel of the original model as much as possible. Therefore, his version retains the same planform, span, aspect ratio, flying surface moments etc. He also wanted to keep the weight down to close to the original design.



RCM&E

July 2024

**Issue on sale
21st June**

© Mortons Media Group Ltd. All rights reserved. No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording, or any information storage retrieval system without prior permission in writing from the publisher.
ISSN 0269-8307

The Publisher's written consent must be obtained before any part of this publication may be reproduced in any form whatsoever, including photocopies, and information retrieval systems. All reasonable care is taken in the preparation of the magazine contents, but the publishers cannot be held legally responsible for errors in the contents of this magazine or for any loss however arising from such errors, including loss resulting from negligence of our staff. Reliance placed upon the contents of this magazine is at reader's own risk.

RCM&E, ISSN 0269-8307 (USPS 25434) is published monthly by Mortons Media Group Ltd, Media Centre, Morton Way, Horncastle, Lincolnshire LN9 6JR, UK.

MORTONS
MEDIA GROUP LTD

Independent publisher since 1885

recycle
When you have finished with
this magazine please recycle it.

RCM&E Web Directory

 Mail Order Service for: **Composite Materials**

Bucks-Composites Tel. No. 01903 765918
www.bucks-composites.com Mobile No. 07762 882378

 80 Church Street
Frodsham
Cheshire
WA6 6QU

01928 735225
www.stevewebb.co.uk

 Supplier of new electric RC Gear 2.4ghz receivers, servos, speedcontrollers, motors, batteries & other RC equipment. I buy used radio gear both 35mhz and 2.4ghz Contact me for details

www.flyingwidgeesupplies.com
Tel: 07795363634 (After 6pm Please) email: Charliewidget@aol.com

 **www.mantua-model.co.uk** ops
179 Dedworth Road Windsor Berks SL4 4JN Tel: 01753 856321

For all your modelling needs.
Metric and imperial Balsa. Plywood and Spruce. Radio Control - Accessories - Adhesives - Finishing Materials - Modellers Tools - OPS engines and spares
Distributor for Mantua Model of Italy - Mantua & Aviomodelli kits fast mail order service

 Email: info@motorsandrotors.com
www.motorsandrotors.com

www.phoenixmp.com
The On-Line shop of Phoenix Model Products
Famous for: • Balsa Kits • Realistic Prices
• Excellent Services and Sound Advice
email: sales@phoenixmp.com Tel: 01626 332287

 Designs by Stan Yeo

 **Just Kits**
R/C MODELS AND HOBBIES

Hull and East Yorkshire Premier Model Shop ~ For all your modelling needs
194 Hessle Road, Hull HU3 3BE • Tel: 01482 618001 • www.justkits.co.uk

ModelFixings.co.uk
also the home of **ModelBearings.co.uk**

ALWAYS IN STOCK: Huge range of miniature fixings, including our socket servo screws.

- Taps, Dies & Drills • Adhesives
- Engine & Miniature bearings • Circlips, etc. etc.

Tel/Fax +44 (0)115 854 8791 Email: info@modelfixings.com

 realmodelpilots@btinternet.com
www.realmodelpilots.co.uk

Please mention **RCM&E** when responding to adverts

MODELLING MAGAZINES YOU'LL LOVE

 THE ATMOSPHERIC ENGINE
Vol. 2022 No. 4742 3 - 16 May 2024
Join our online community www.model-engineer.co.uk
MODEL ENGINEER
THE ORIGINAL MAGAZINE FOR MODEL ENGINEERS

 FREE Pilot boat pull-out plan & instructions
model Boats
MAKING PROGRESS
WIN a pre-production factory sample of Billing Boats' newly updated & soon to be relaunched

 No. 339
A THREAD INDICATOR DIAL
Paul Tiney's accessory for s pre-war Myford MLA.
MODEL ENGINEERS' WORKSHOP
THE MAGAZINE FOR HOBBY ENTHUSIASTS

 FREE PRO-PLAN!
SHIFTY PUSHER PAIR WORTH £17.00
VOL. 67 NO. 4 APRIL 2024
www.modelflying.co.uk
RCM&E
RADIO CONTROL MODELS AND ELECTRONICS
PRECISION AEROBATICS
AT THE F3A NATIONALS

GREAT OFFERS AVAILABLE ACROSS THE RANGE

SUBSCRIBE TODAY AND SAVE UP TO 49%

VISIT: WWW.CLASSICMAGAZINES.CO.UK/MODELLING24

CALL: 01507 529529 QUOTE: MODELLING24 EXPIRES 31/12/24

RCM&E Classified

Tom's Traditional RC Building Service



Top Flite Cessna Skylane 182

Tel: 0208 423 3509
Mobile: 0794 164 1440
Email: r.thomas74@btinternet.com



Cambrian Model Company

Manufacturer of RC Plane Kits



- Family run business
- All of our models come in kit form
- Laser cut ply and balsa parts with all the wood and accessories
- Full plans and instructions
- From the 42" Funfighter to the 100" Gliders
- We manufacture all the kits ourselves and everything is done onsite



Check out the website for our full range

E: cambrianplanes@outlook.com • W: www.cambrianplanes.co.uk • T: 01384 825 374

Perma-Grit®

Tungsten Carbide Grit Abrasives



www.permagrit.com
01529 455034

D.B. SPORT & SCALE LTD

RADIO CONTROLLED MODEL AIRCRAFT KITS & ACCESSORIES



ORDER ONLINE AT **DBSPORTANDSCALE.COM**
 TEL: +44 (0)1656 514950 EMAIL: **SALES@DBSPORTANDSCALE.COM**

LIGHTING FOR AEROMODELLERS

High intensity lights, flasher units and circular LED arrays for fixed wing, helicopter and UAVs.

See **www.lightingforaeromodelleurs.co.uk** and request PDF showing many more items.



GUARANTEE YOUR COPY

PRE-ORDER YOUR NEXT ISSUE

3 GREAT REASONS

- Delivered straight to your door
- Free postage and packaging
- Buy direct from the publisher

Pre-order today: **www.classicmagazines.co.uk/issue/preorder**

RCM&E

Shop Guide

Take advantage of this inexpensive way of promoting your business in the best-selling r/c magazine and reach over 45,000 loyal hobbyists!

ESSEX

ACTIVE SCALE MODELS

Unit 22 Foundry Business Park,
 Station Approach, Hockley, Essex SS5 4HS
Tel: 01702 202155
Email: sales@activescalemodels.co.uk
 Open Mon, Tues, Thurs, Fri & Sat 9.30am - 6pm
 www.activescalemodels.co.uk

GREATER LONDON

AVICRAFT Ltd

15 Chatterton Road, Bromley, BR2 9QW
Tel: 0208 460 0818
 Open Tuesday, Thursday, Friday and Saturday
 10am until 5pm
 One of the longest standing British Model Shops.
 Specialists in Remote Control Equipment, Remote Control Planes and all associated accessories.

LINCOLNSHIRE

MASONS MODELS

20 New Road, Spalding, Lincs PE11 1DQ
Tel: 01775 722456
 Monday, Tuesday, Friday & Saturday 9am-4pm;
 Wednesday 9am-2pm; Thursday & Sunday Closed.
 www.masonsmodels.co.uk
 All major credit cards accepted. Mail Order.

KENT

MODELWORLD

1 Anchor Business Park, Castle Road,
 Sittingbourne, Kent ME10 3AE
Tel: 01795 410630
 Open Mon, Tues, Wed, Thurs, Fri, Sat 9.30am-6pm
 www.modelworlduk.com

KENT

RAPID RC MODELS

Unit 5 A, Wallend Farm, Lower Road,
 Minster, Kent ME12 3RR. **Tel: 01795 870414**
www.rapidrcmodels.com
 Open 7 days a week: Monday-Friday 10am-7pm,
 Saturday 10am-4pm, Sunday 10.30am-4pm
 Suppliers of RC Model Aircraft and RC Accessories.

RCM&E



Talk Media
 in association with



To advertise please
 contact Karen
 on 01732 442144
karen@talk-media.uk

RCM&E
www.modelflying.co.uk

Partingshot



Grand Slam Lanc

Based on the Ivan Pettigrew plan, my Grand Slam Lancaster first flew in 2003 and after 20 years it still gets an annual outing. The model is of the Avro Lancaster B Mk.1 'Special', developed to carry Sir Barnes Wallis' bouncing bomb and, later, his 22,000 lb 'Grand Slam' bomb. Painted in the 'daylight scheme' it was used by No. 15 Squadron when it was involved in trials conducted against the reinforced German U-boat pens at Brest just after the war.

Regarding modifications, apart from the bomb bay itself, the main structural mod was the beefing up of the wheel box areas

to transfer the main spar loads round the box. Also, the fuselage was built in one piece. The 130 g bomb, made from foam and balsa, then covered with glass cloth and epoxy, releases using a dedicated servo, which withdraws a length of piano wire from the supporting ring.

§The model was originally powered by buggy motors, but it now has four PO3547-700 motors and 30A ESCs with opposite hand Master Airscrew three-blade props. Power is from two 3S 5000 mAh batteries.

Mike Pirie

Photo by	Derek Robertson
Camera	Nikon D7200
Aperture	f/7.1
Focal length	165mm (in 35mm: 257mm)
Shutter speed	1/1000 sec.
ISO	200
Settings	Aperture priority, pattern metering

Pilot

AEROBATIC PERFECTION

PITTS S2B ▽



Blue/White
(Scheme 02)

Orange/White (Scheme 01)



Bulldog
(Scheme 03)

NEW

73in (1.8m) - 50~76cc - **£999.95**

EDGE 540 V3 ▽



Red/White
(Scheme 01)



Yellow
(Scheme 02)

NEW

103in (2.63m) - 80~120cc - **£1449.95**

LASER ▽

60in - **£399.95**

67in - **£469.95**

73in - **£599.95**

88in - **£899.95**

103in - **£1299.95**



Orange
(Scheme 08)

Blue/White/
Silver/Red
(Scheme 09)



Red/Blue/ Silver
(Scheme 07)



Yellow/
Silver/Black
(Scheme 06)

EXTRA NG ▽

60in - **£399.95**

67in - **£469.95**

78in - **£599.95**

90in - **£899.95**

103in - **£1299.95**



SLICK ▽

Green/White/Red
(Scheme 04)



Red/White/Yellow
(Scheme 05)

60in - **£399.95**

67in - **£469.95**

74in - **£594.95**

84in - **£769.95**

89in - **£989.95**

DECATHLON ▽



Yellow/Black/Red
(Scheme 10)

NEW

107in (2.7m) - 30~60cc - **£1149.95**

122in (3.1m) - 50~85cc - **£1349.95**

SKY WOLF V2 ▽

NEW

67in - **£469.95**

73in - **£599.95**

88in - **£699.95**



Orange/White
(Scheme 05)

Blue/Green
(Scheme 04)



MATRIX ▽

NEW

1.8m with Retracts - **£2399.95**

2.2m with Retracts - **£3049.95**



Visit www.macgregor.co.uk to see the full range Pilot-RC Kits & Accessories. All Pilot-RC products are available to purchase from all good MacGregor Stockists.

MACGREGOR INDUSTRIES OFFICIAL SOLE UK DISTRIBUTOR OF PILOT-RC

HOBBYPLASTIC.co.uk
AIRCRAFT | RADIO | ENGINES | ACCESSORIES | MATERIALS
YOUR ONE-STOP ONLINE HOBBY SHOP

MacGregor Industries
World Class Products • Excellent Service

TEL: 01628 760 430 | EMAIL: SALES@HOBBYPLASTIC.CO.UK

WWW.HOBBYPLASTIC.CO.UK • WWW.MACGREGOR.CO.UK

TWINLINER

NEW!

*XFly Model is excited to announce its first passenger EDF jet Twinliner
in the twin 40mm EDF lineup*

FEATURES:

- Scale outline and great presence in the air
- Efficient twin 40mm EDF power system delivering an abundance of thrust for vertical climbs, rolls, loops and other maneuvers
- Landing gears with dual wheels designed for grip ability, accuracy and stability
- Battery compartment reasonably designed to easily achieve a proper C.G.
- Extended flight time of 5-10 mins when using recommended 4S 1300-2600mAh LiPo battery
- Quick and simple assembly without glue needed
- Available in another version that arrives full painted without decal pre-applied for any further painting or customizations



The Twinliner features a scale outline and most details of a classic airliner including twin efficient engines and landing gears with dual wheels. The factory-installed power system, twin 40mm fans with 1413-KV5000 brushless motors and twin 20A brushless ESCs, paired with a 4S LiPo battery, delivers an abundance of thrust for vertical climbs, rolls, loops and other maneuvers. With sensible throttle management, the Twinliner features a potential flight time of 5-10 minutes.

Both front and rear landing gears are fitted with dual wheels, which equips the plane with grip ability to maintain accuracy and stability while taxiing on the ground before takeoff or after landing. The battery compartment is located in the middle of the fuselage, which allows the plane to easily achieve a proper Center of Gravity. Assembly is quick and simple without glue required. The model is conveniently sized for flying at large parks, sports fields, or traditional RC flying fields and so it can be stored and transported without disassembly. It can fit fully assembled in just about any vehicle. The Twinliner is fully painted and available in two versions, decals pre-applied or NOT pre-applied (but included in the box) which is ready for any further painting or customizations.



SPECIFICATIONS:

- Length: 990mm/39in
- 4CH- aileron, elevator, throttle, rudder/steering
- Wingspan: 1010mm/39.8in

- ESC: 20A x2
 - Flying Weight: 750g
 - Motor: 1413-KV5000 x2
 - Servos: 9g servos x2, 4.3g servo x2
 - EDF size: 40MM EDF 12-Blade x2
 - Skill Level: Intermediate
 - Recommended Battery: 4S 1300-2600mAh
 - Approximate Flying Duration: 5-10 mins
 - Fixed main landing gear, steerable nose gear
- Requires: Radio, battery and charger to complete

Part No: XF118PR – TWINLINER EDF W/DECALS APPLIED
Part No: XF118PW – TWINLINER EDF W/O DECALS (BASE WHITE)

RRP: £179.99

IN ACTION!



E&OE.



XFLY-MODEL

CML

CML PRODUCTS ARE AVAILABLE IN ALL GOOD MODEL & HOBBY SHOPS. CHECK OUR WEBSITE FOR FULL DETAILS
WWW.CMLDISTRIBUTION.CO.UK



OPTIONAL COWLING FROM
PLASTIC WATER BOTTLE MOULDED
OVER POLYURETHANE FOAM
CARVED BLOCK WITH HEAT GUN

Ø35mm ALUMINIUM
SPINNER (ROBOTBIRDS)

28-26 2200kV
BRUSHLESS OUTRUNNER
6x4 APC PROP

3mm LITE PLY
HATCH TONGUE

3mm BALSA SHEET
SPACER PIECE

F1

F2b

F2

F1b

MAGNETS - Ø8mm
3mm THICK

TOP HATCH OUTLINE

3mm LITE PLY
TONGUE

DRILL HOLES FOR
COOLING & MOTOR MOUNT
AFTER EPOXYING TO F1

6mm x 3mm SPRUCE
LEADING EDGES

F1b
3mm LITE PLY

EPOXY TOP MAGNET TO
UNDERSIDE OF HATCH

3mm BALSA SHEET

F2b IS 'DOU
TOP PART

500

300

SEE 2nd SHEET FOR
ANHEDRAL BRACE &
TRUE WING SHAPE

BATTERY TRAY
3mm B

3mm LITE PLY
HATCH TONGUE

FIXING BLOCK

F3

12.5mm TRIANGLE
BALSA

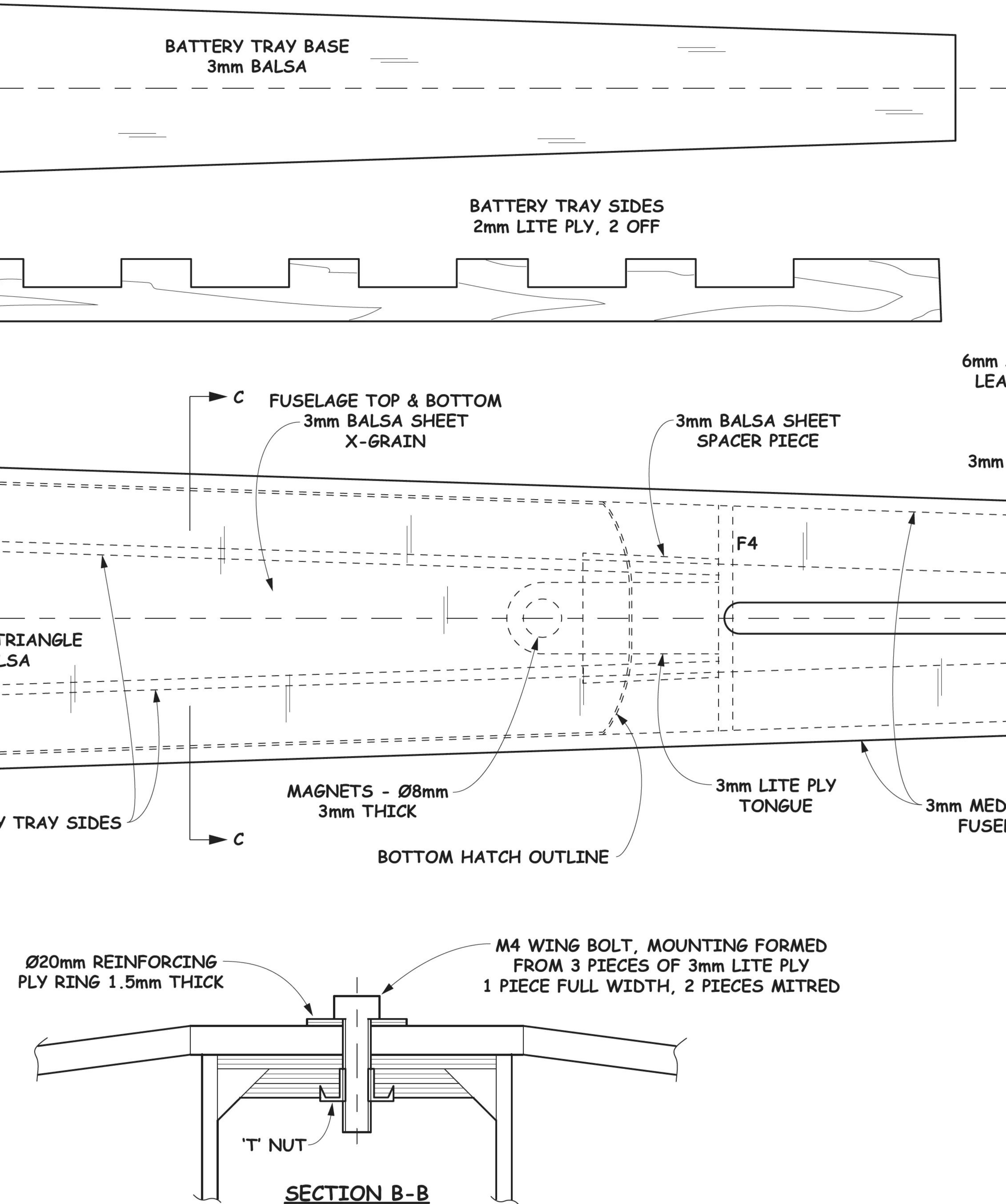
Ø6.5mm DOWEL

BATTERY TRAY SIDES

Ø20mm REINFORCING
PLY RING 1.5mm THICK

ASSEMBLER' TO
OF F2

SECURE Li-Po TO BATTERY
VELCRO PADS AND/OR VEL



Please note, this plan is copyright of Mortons Media Group Ltd.
This plan may be reproduced or transmitted in any form or by any means,
mechanical, including photocopying, recording, or any information storage
system without prior permission in writing from the publisher.

TOP QUARK

BY JOHN HUTSON

PLAN No: RC2263

No. OF SHEETS: 1 OF 2

First published in
RCM&E June 2024

SEE 2nd SHEET FOR
DIHEDRAL BRACE &
TRUE WING SHAPE

3mm SPRUCE
EDGING EDGES

LITE PLY SUPPORT

F5

WING
TONGUE

SKID
UNDERNEATH

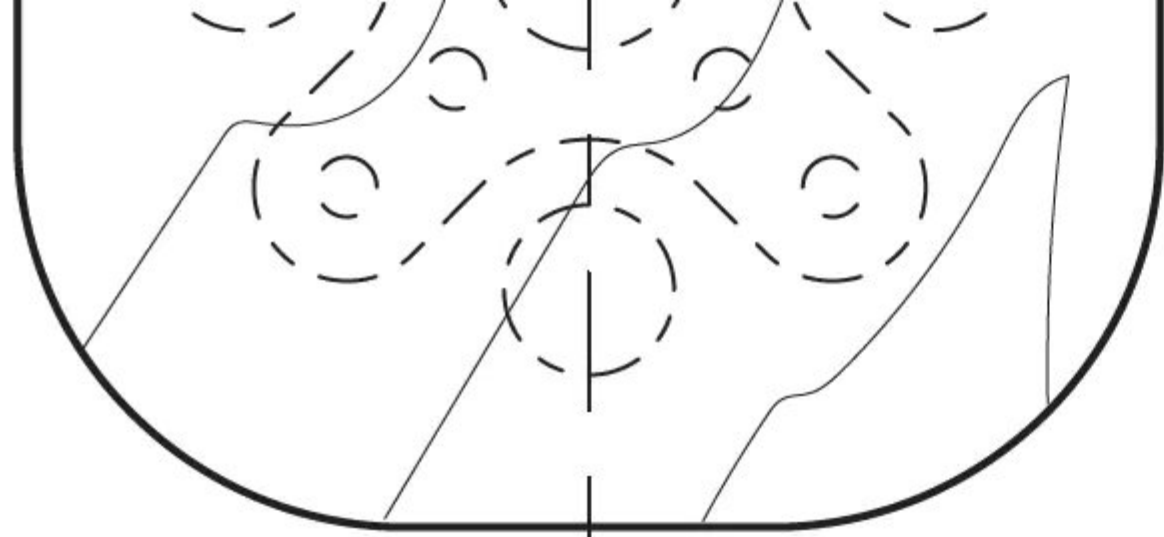
E

BALSA SHEET
LARGE SIDES

SKID
UNDERNEATH

E

ALL SERVOS 9g



F1b
3mm LITE PLY

EPOXY TOP MAGNET TO
UNDERSIDE OF HATCH

3mm BALSA SHEET
SPACER PIECE

HATCH
CUT LINE

CUT

F1
3mm LITE PLY

LOWER MAGNET
EPOXIED TO FIXED
3mm LITE PLY TONGUE

ESC SECURED
WITH STICKY
FOAM PAD

SECTION A-A

F2b IS 'DOU
TOP PART

F2
3mm LITE PL

CUT OUT TOP HATCH
AFTER SANDING
FUSELAGE TO SECTION

A →

3mm BALSA SH
X-GRAIN

F2b

F1b

3mm LITE PLY
HATCH TONGUE

F1

30A ESC

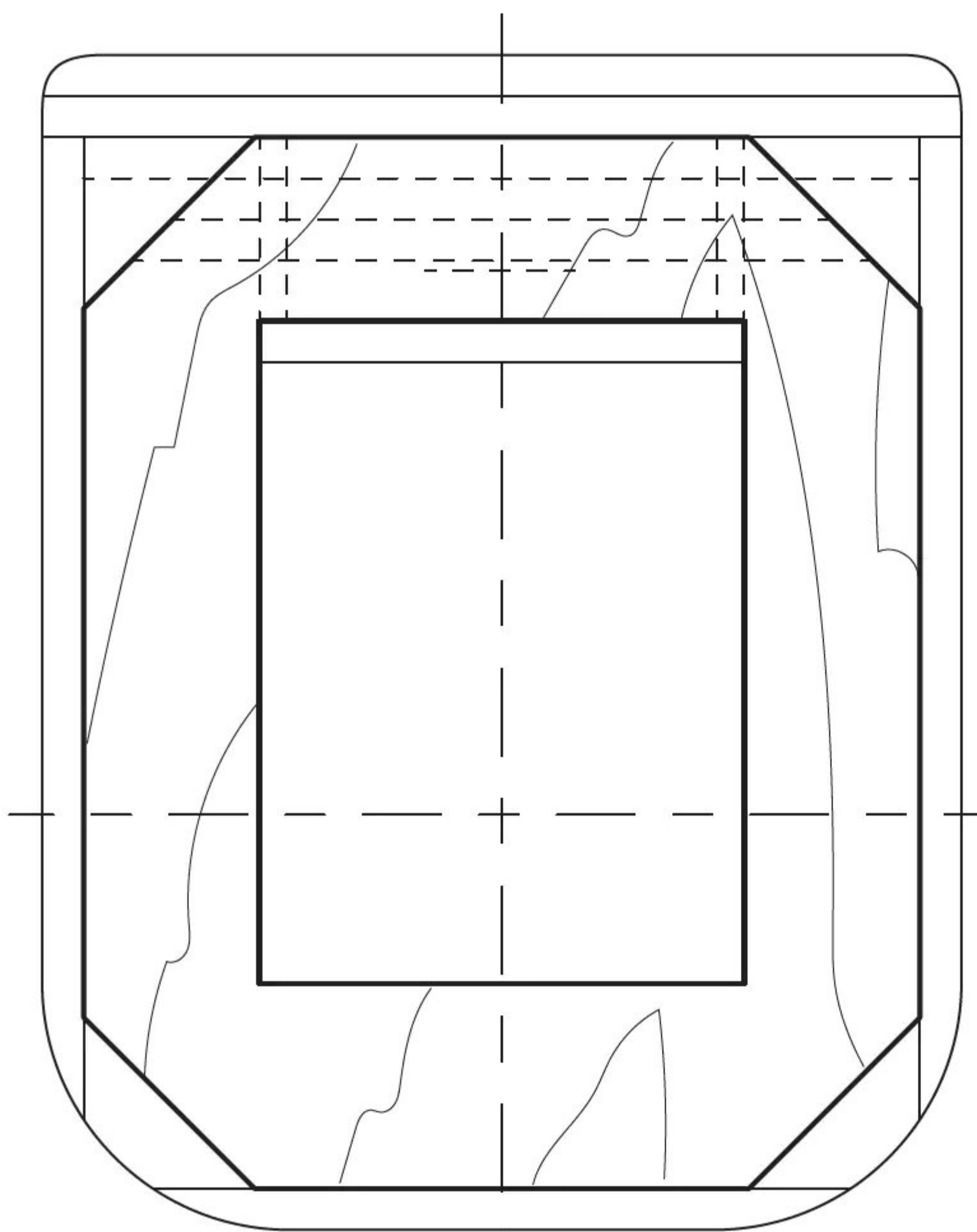
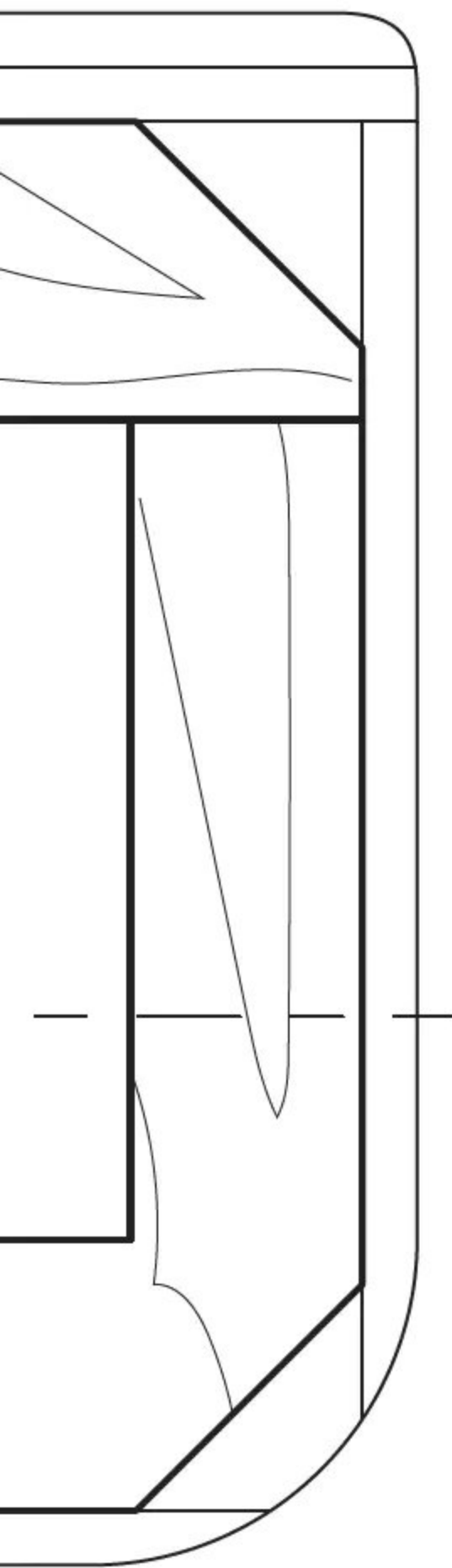
12.5mm TRIANGLE
BALSA

F2

A →

3mm BALSA SHEET
X-GRAIN

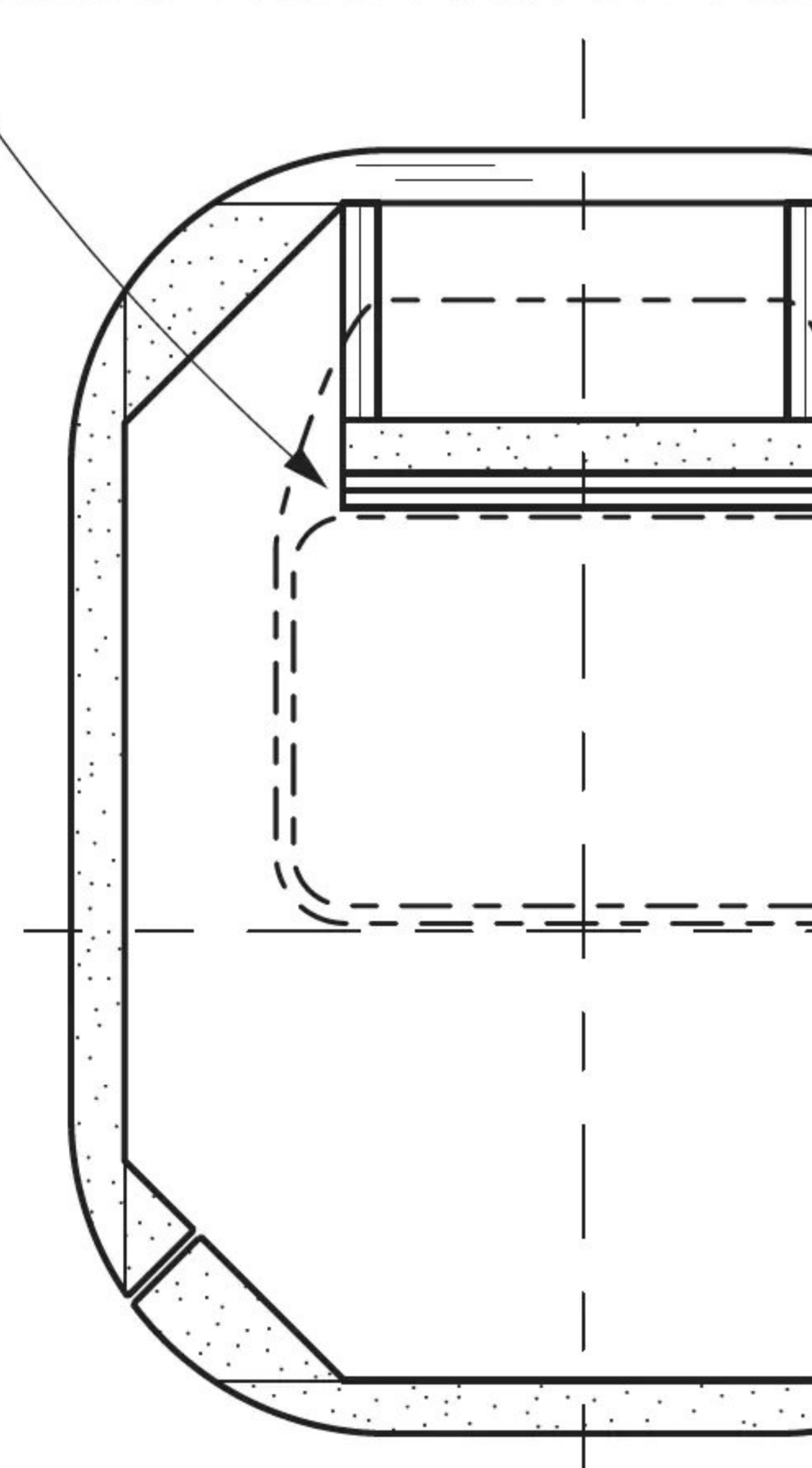
BLETER' TO
OF F2



CURVE TRIANGULAR CORNERS
GENEROUSLY EXCEPT AT
WING JUNCTIONS

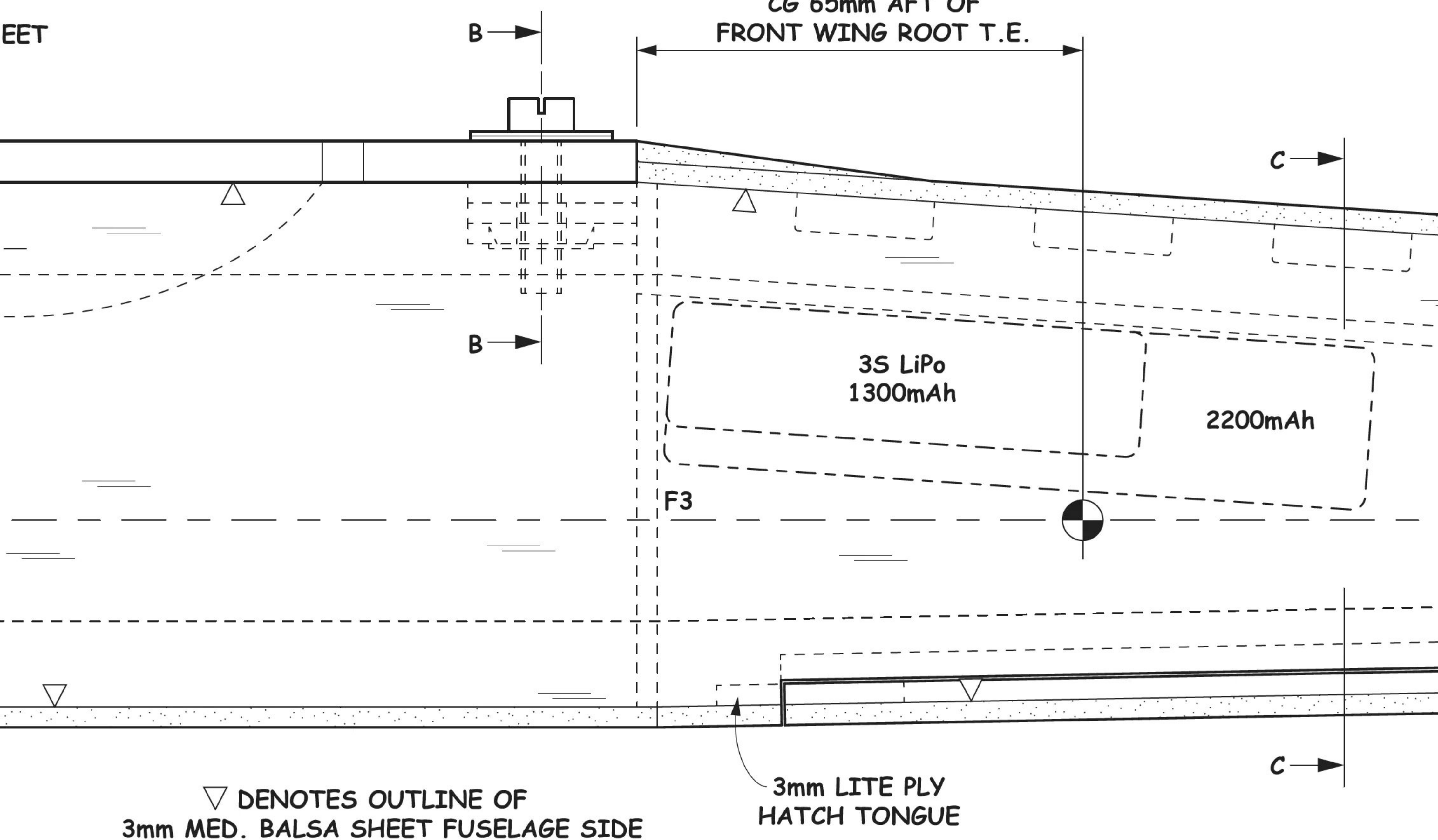
F3
3mm LITE PLY

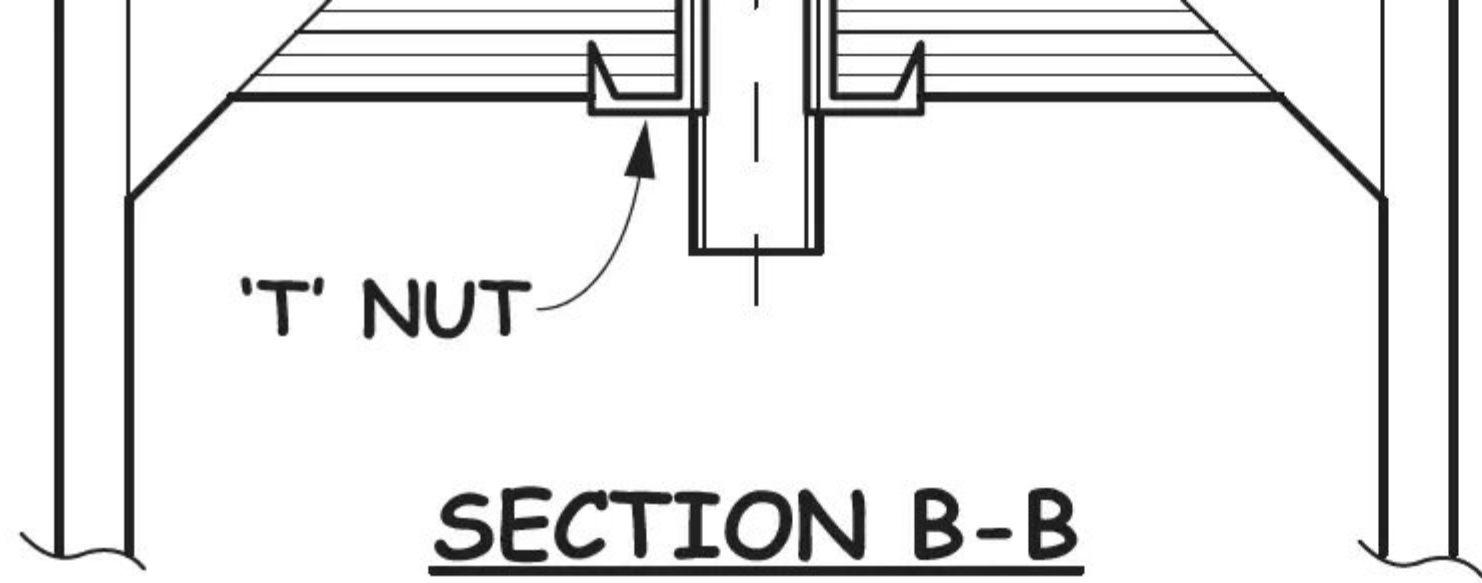
SECURE Li-Po TO BATTERY
VELCRO PADS AND/OR VEL



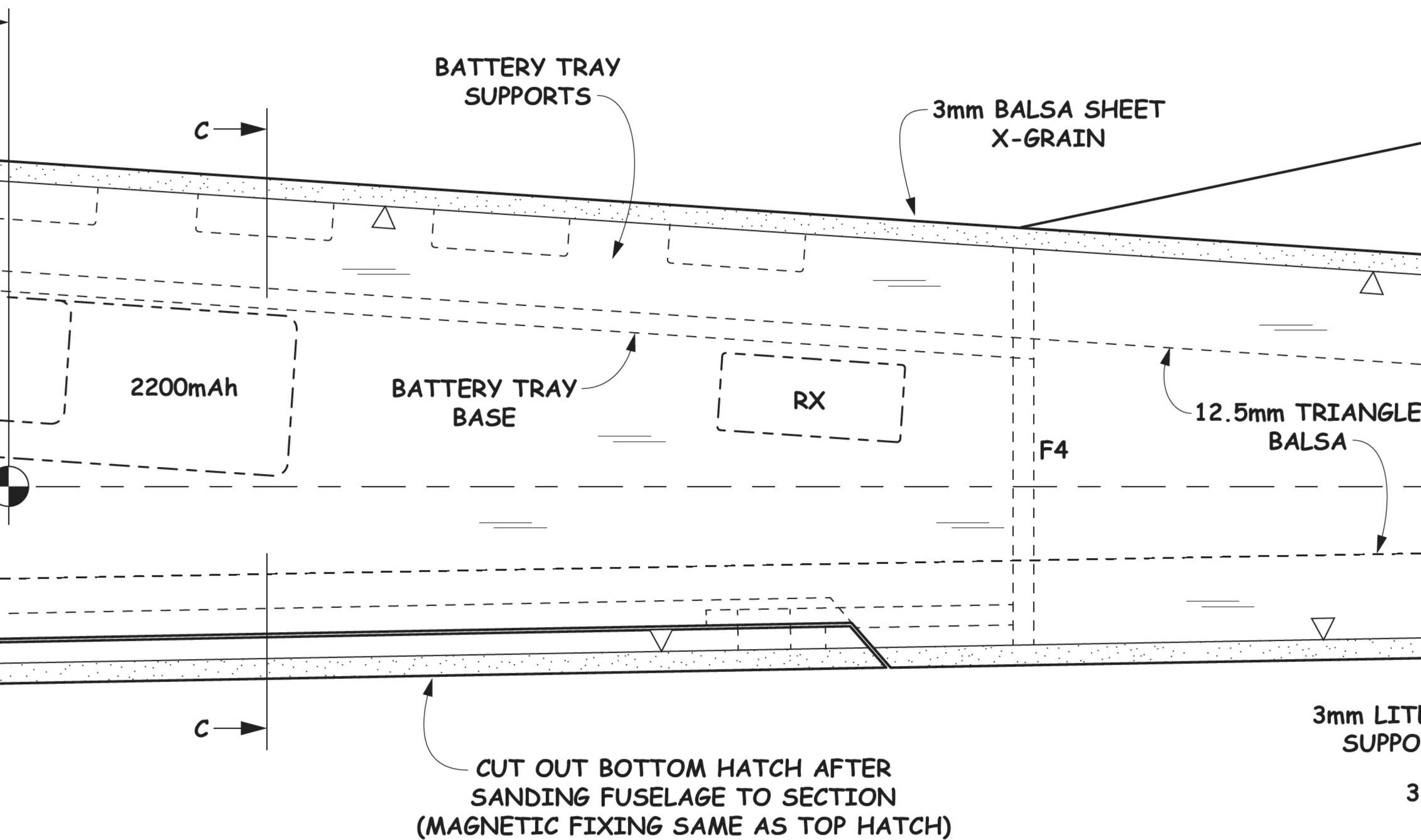
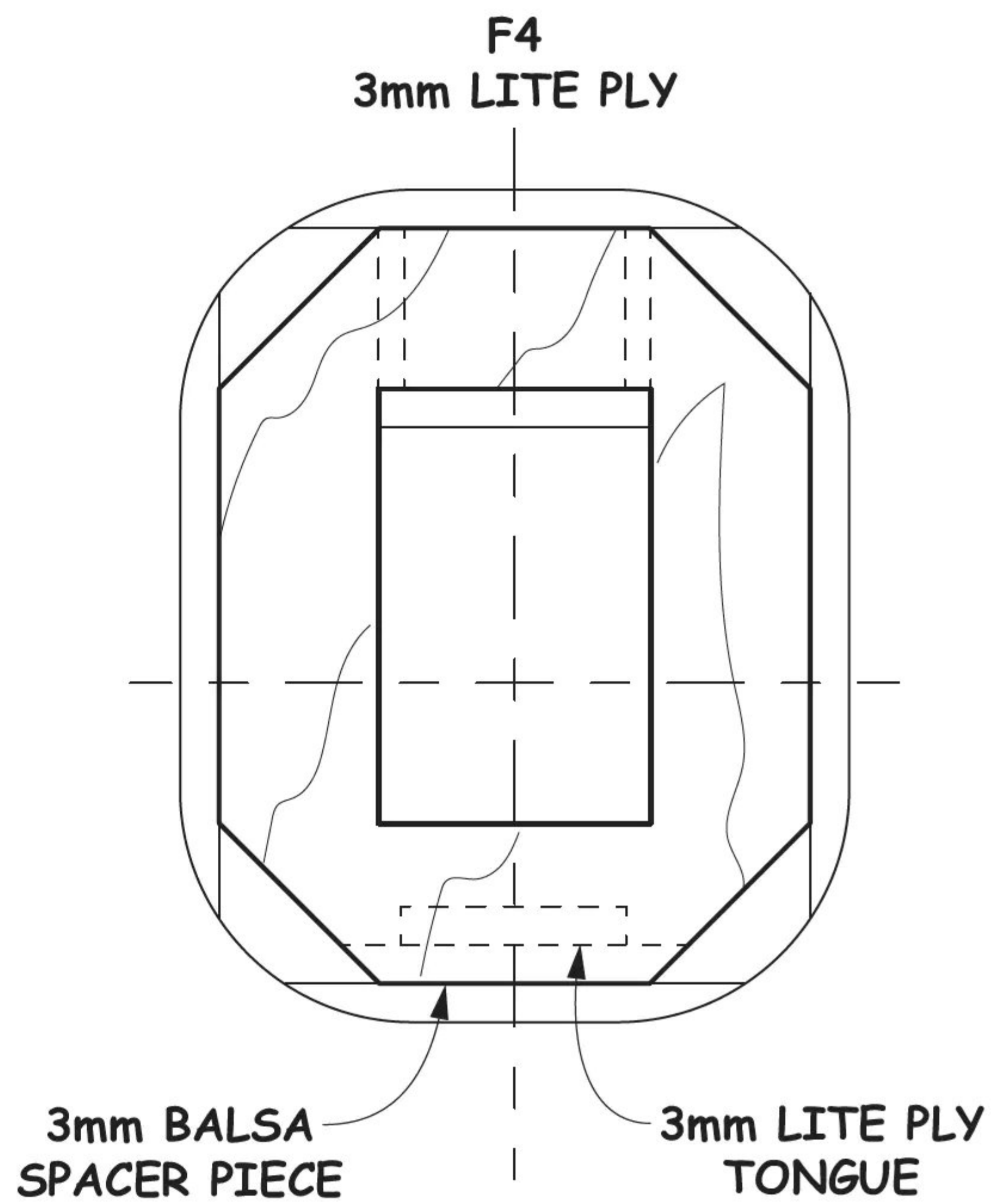
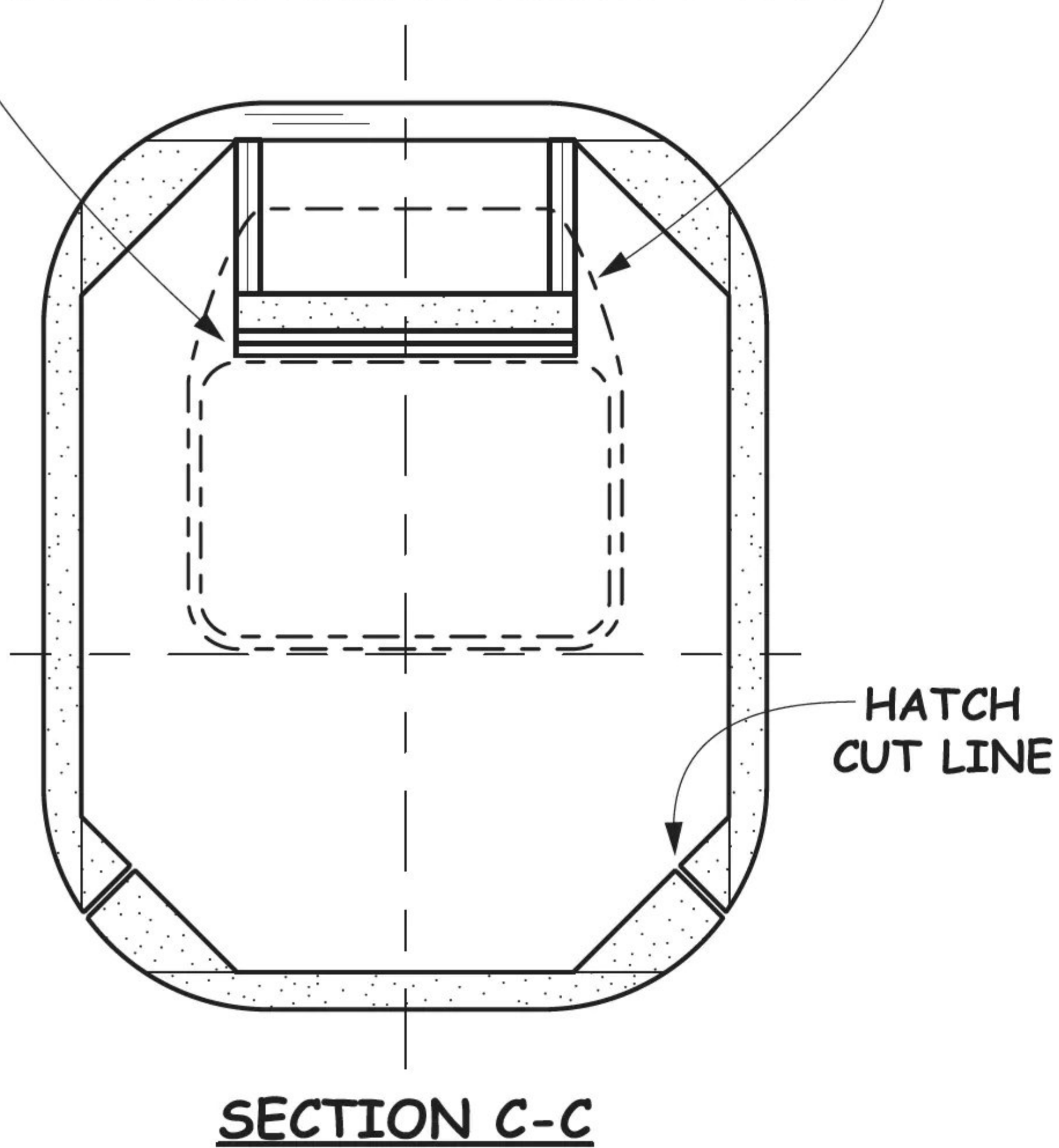
SECTION C-C

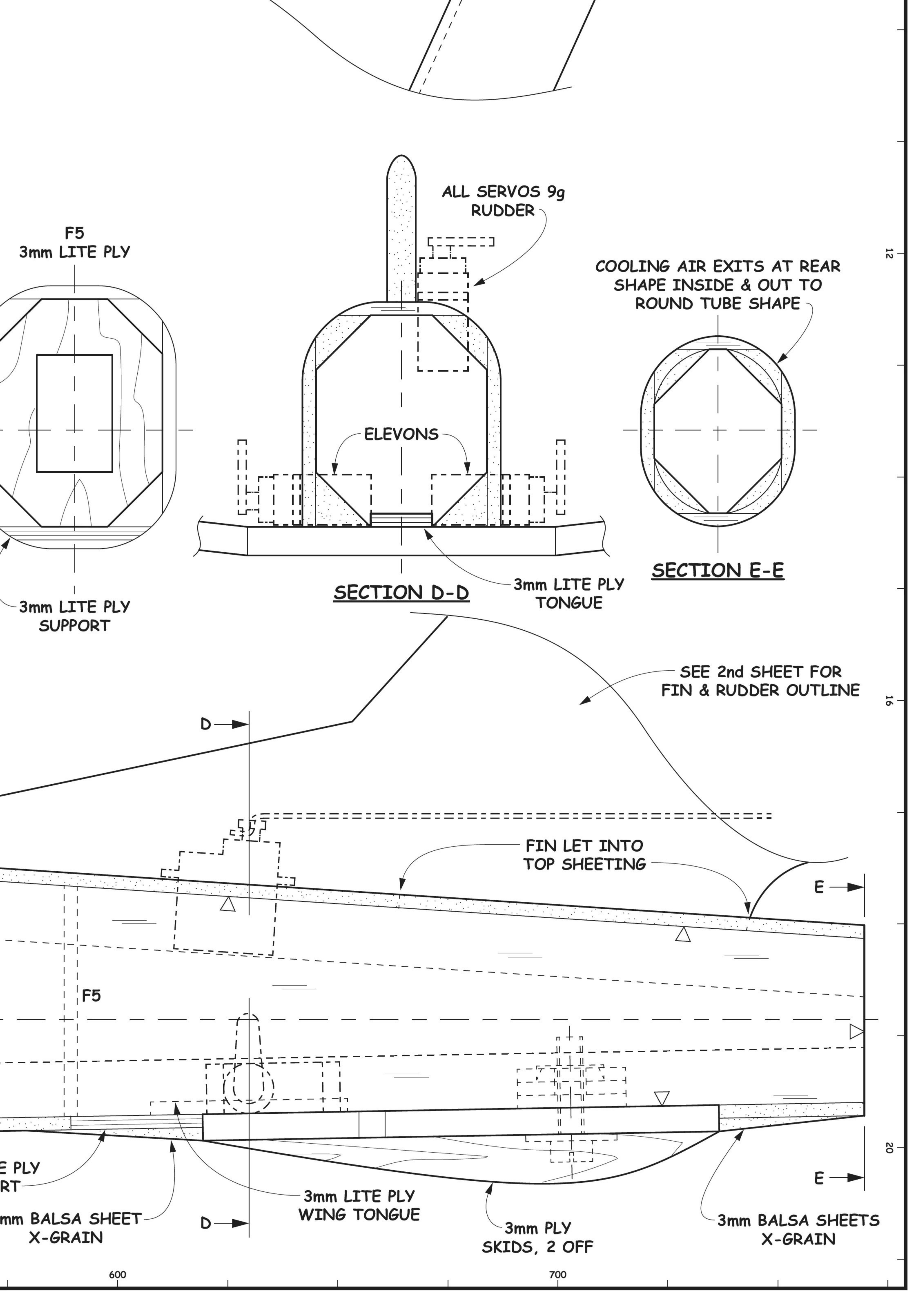
EET

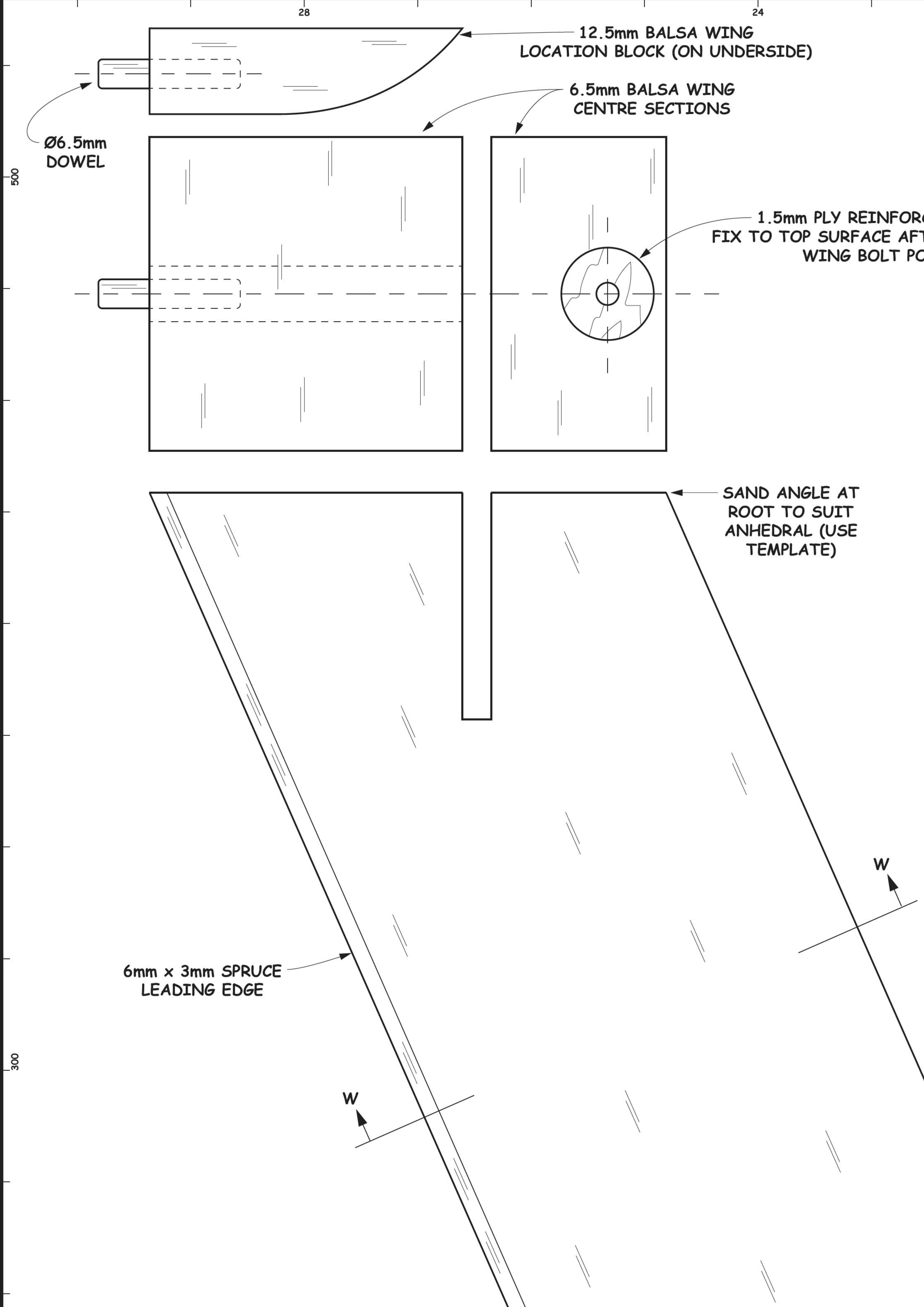




SECURE Li-Po TO BATTERY TRAY WITH VELCRO PADS AND/OR VELCRO STRAPS

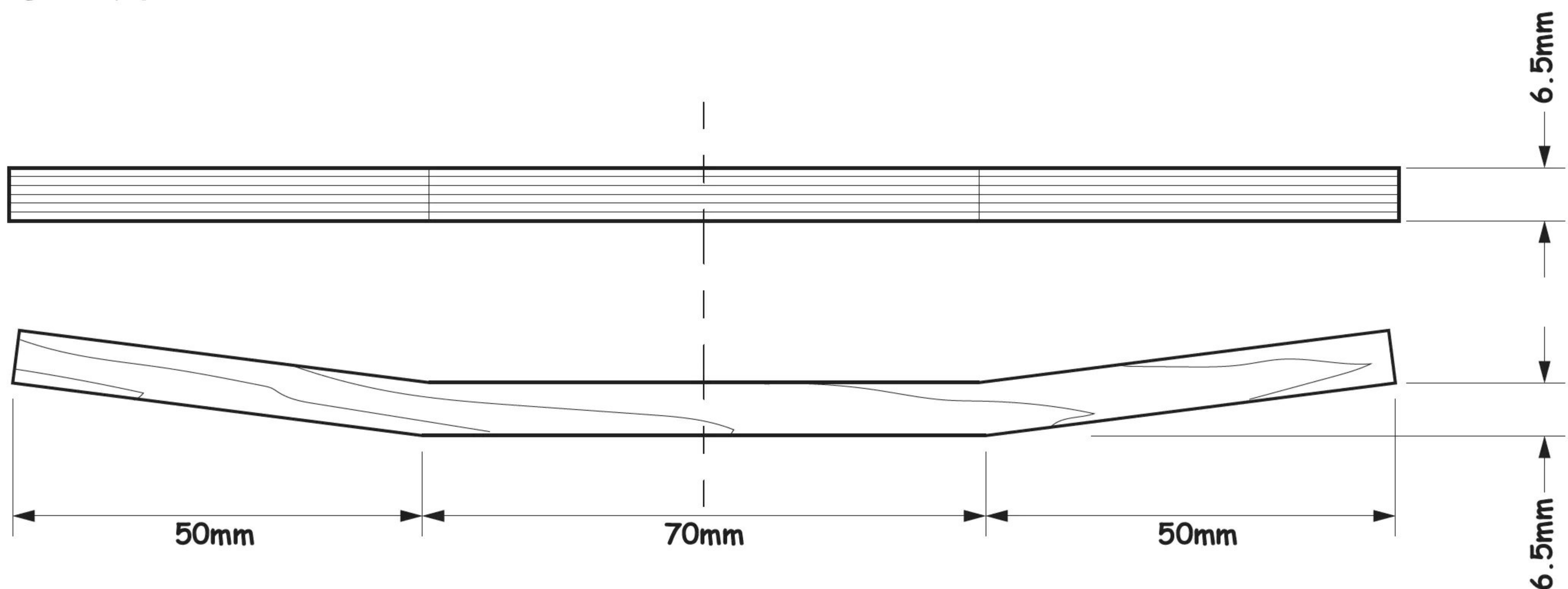






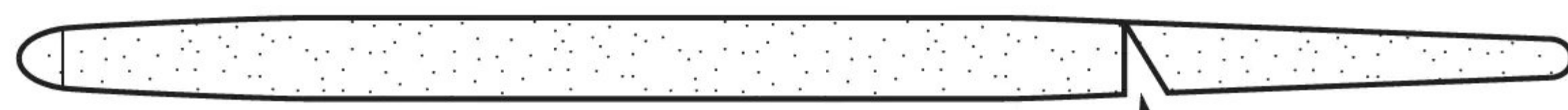
CEMENT RING
TER ESTABLISHING
POSITION

3mm LITE PLY WING
ADJUST WIDTH TO F
BACK-TO-BACK ELEV



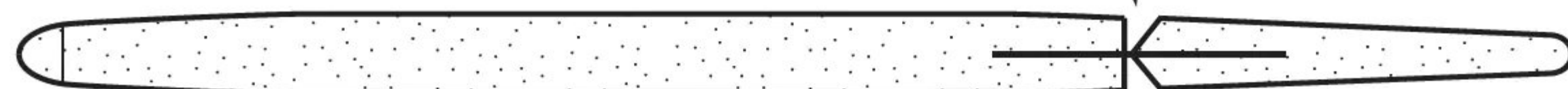
IDENTICAL DIHEDRAL & ANHEDRAL (INVERT) BRACES, 1 OFF EACH
FROM SINGLE 6.5mm QUALITY PLY, OR MULTIPLE LAMINATIONS OF THINNER PLY

SECTION W-W

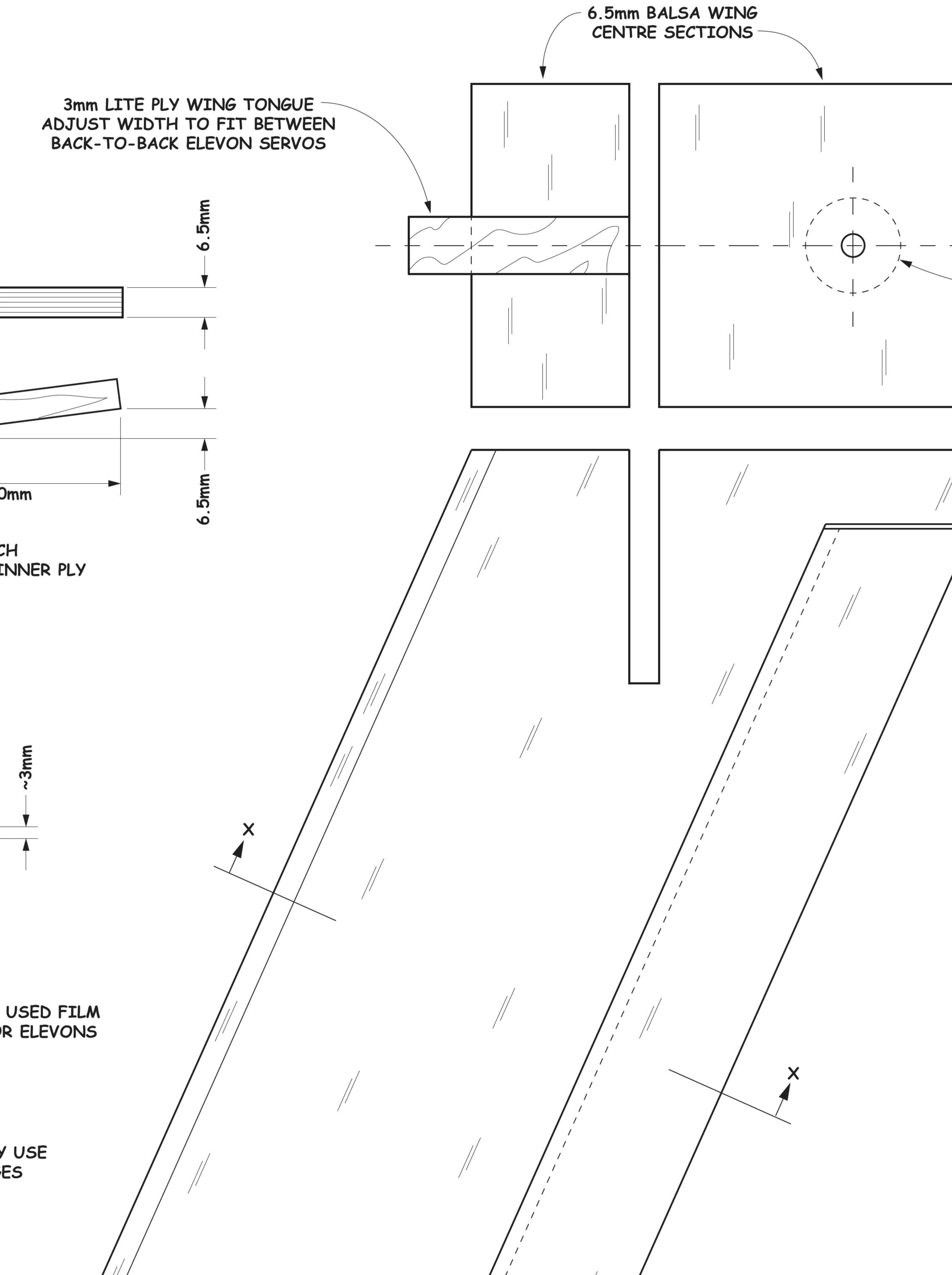


PROTOTYPE USED FILM
HINGES FOR ELEVONS

SECTION X-X



ALTERNATIVELY USE
MYLAR HINGES



TOP QUARK

BY JOHN HUTSON

PLAN No: RC2263	No. OF SHEETS: 2 OF 2	First published in RCM&E June 2024
-----------------	-----------------------	------------------------------------

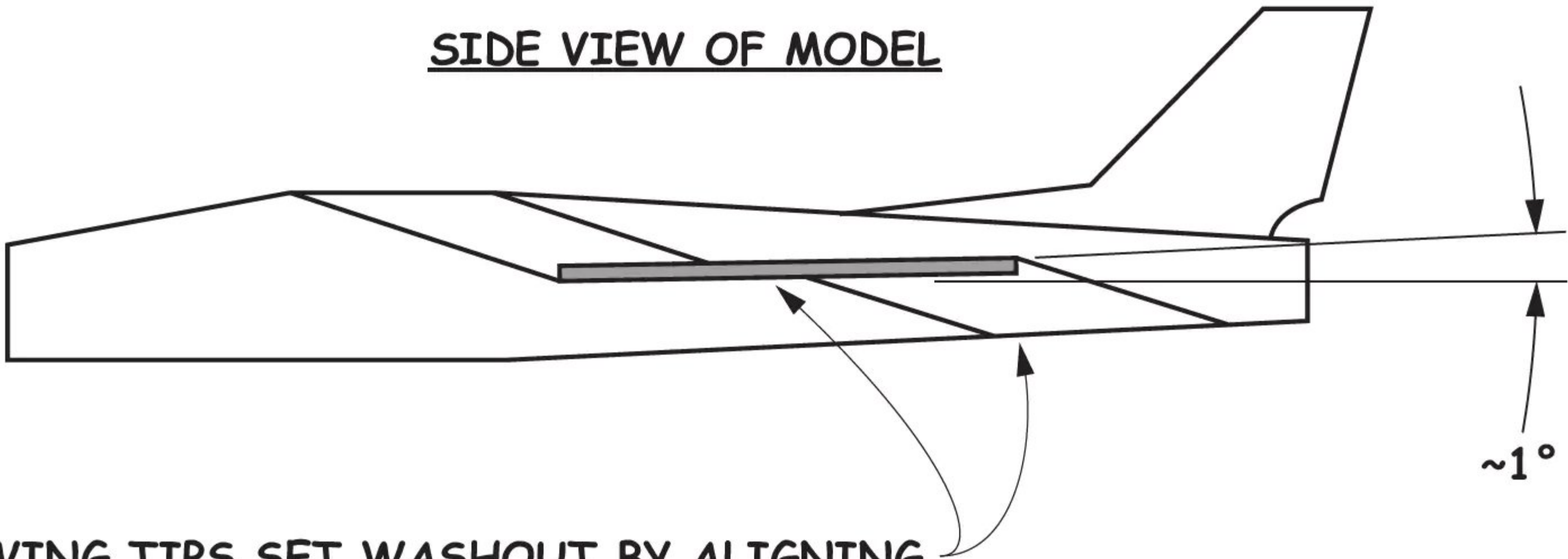
1.5mm PLY REINFORCEMENT RING
FIX TO TOP SURFACE AFTER ESTABLISHING
WING BOLT POSITION

Please visit www.sarikhobbies.com to view all available plans

SAND ANGLE AT
ROOT TO SUIT
DIHEDRAL (USE
TEMPLATE)

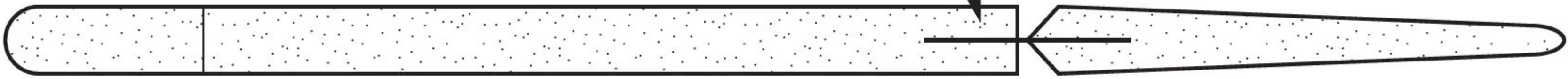
Please note, this plan is copyright of Mortons Media Group Ltd.
No part of this plan may be reproduced or transmitted in any form or by any means,
electronic or mechanical, including photocopying, recording, or any information storage
retrieval system without prior permission in writing from the publisher.

SIDE VIEW OF MODEL



AFTER JOINING WING TIPS, SET WASHOUT BY ALIGNING
CARBON ROD JOINERS WITH
UNDERSIDE OF REAR FUSELAGE (I.E. PARALLEL)

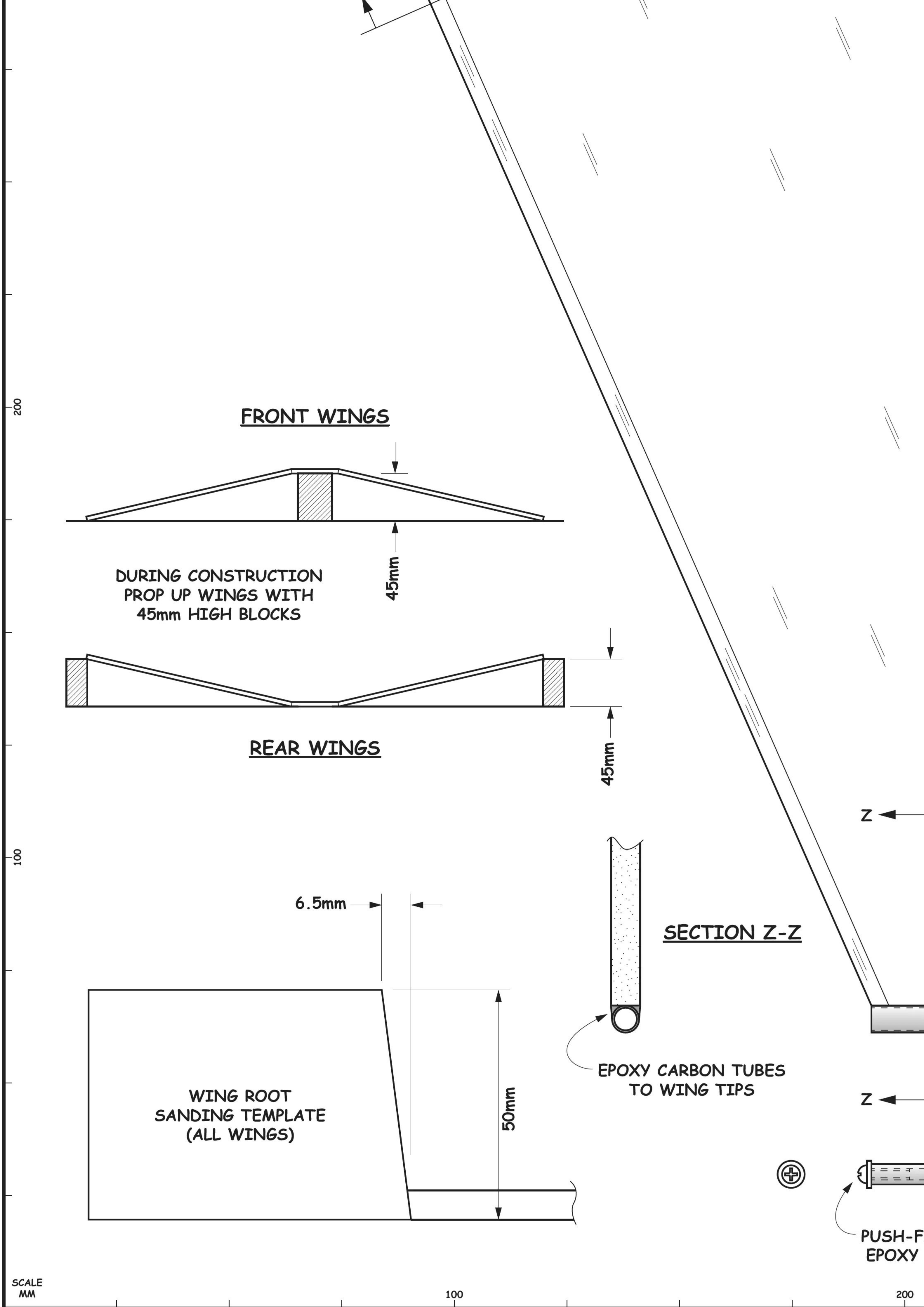
MYLAR HINGE

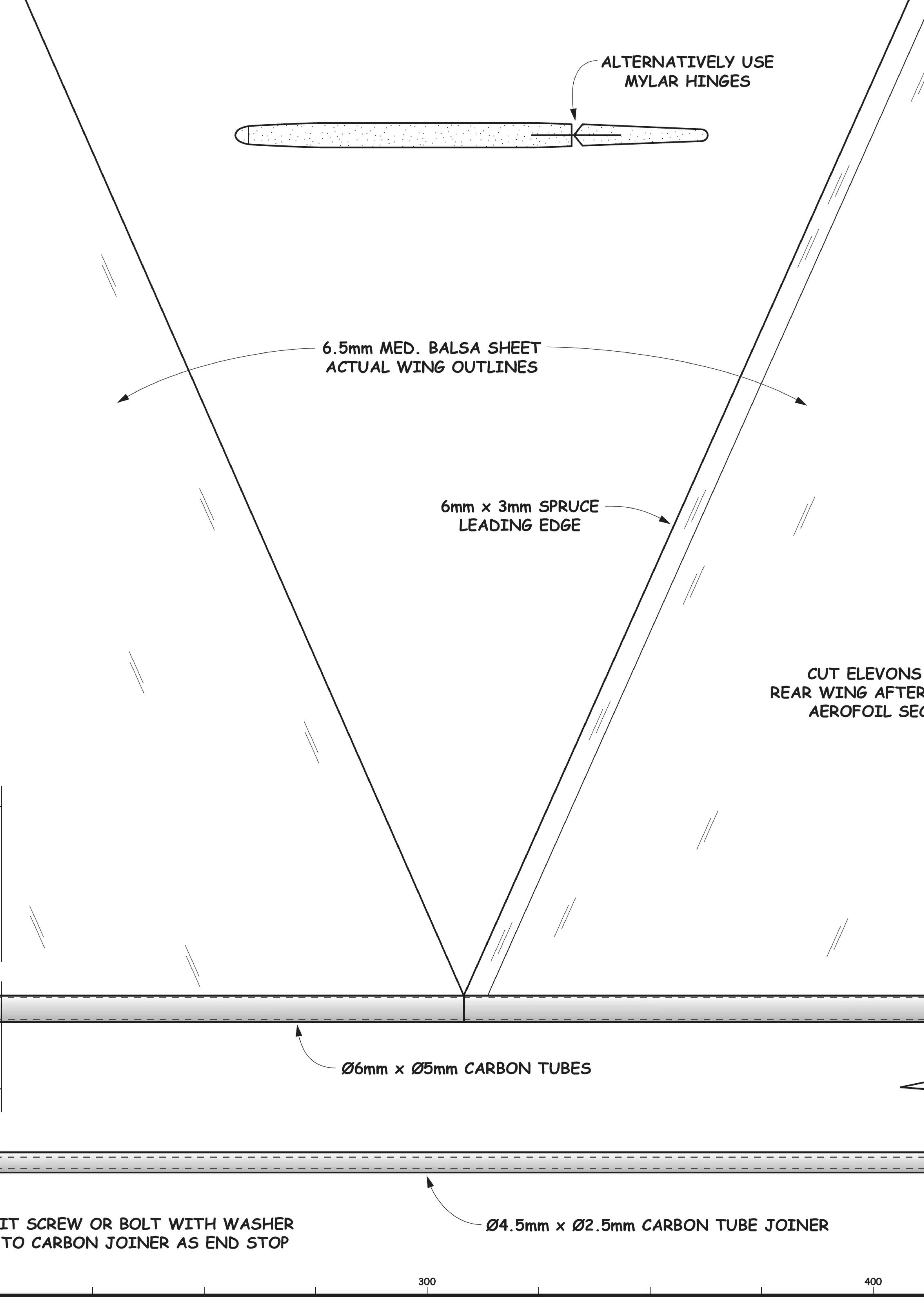


SAND RUDDER TO
TAPERED SECTION

BEVELLED L.E.
OF RUDDER

ROUND OFF
FIN L.E.





Y USE
ES

