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VOL.67 NO.7 JULY 2024

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Welcome

I can't quite believe it, but some fine weather has finally appeared and I've enjoyed quite a bit of flying in recent weeks, including test flights of several review models. One of those was the Pilot RC Extra NG, quite a sizeable beast by my standards, so I was a bit twitchy before flying her. But all went well and she's proven to be a bit of a pussycat. I have some nice pictures, courtesy of my mate Barry, so I'll be writing a bit more about the Extra when time and space allows.

This month's reviews have also fallen to me, so I'll start this issue's introduction with those. First into the air was the JP MB-339, a one-piece mini jet from J. Perkins with which I've been having a lot of fun. Last time I introduced you to the XFly Models Twin Otter, but this chunky transport plane was left grounded due to the ongoing wet weather and soggy flying fields. However, just a couple of weeks later she was airborne for the first time and I've just loved my time with her, dropping the powerful flaps for bumps and circuits. She also aerobats with ease but that does look a bit naughty with such a scale ship.

Our regular columns start with Shaun Garrity and Retro Ramblings. This month Shaun doesn't take us back too far as he builds a new reincarnation of a favourite slope soarer, the SAS Wildthing. Next up is Danny Fenton, who sets the scene at the 2024 Scale Indoor Nationals, a highlight of the scale modelling calendar. Danny reports from the R/C event held at the University of Wolverhampton in late April. Our final column this month is John Stennard's 'The Insider' in which John test flies his newfound Ares Sopwith Pup and looks at some favourite small biplanes for prop hanging and other agile indoor aerobatics.

I know that many of you enjoy turning to the middle of the magazine to see which new pull-out Pro-Plan awaits in each issue. This time Peter Miller lays down drawings for a Russian powered glider to satisfy an urge to design something different. And the MAK15 is certainly that!

As for feature articles, R/C conversions of favourite free flight models are nothing new,



but Alex Maxfield has done a fine job with his new Sans Egal, a modern take on an A2 glider design from the 1950s. Then it's over to Dudley Pattison, who signs off with the last instalment of his 'A Company Called Flair' articles. When this popular series started back in the May issue, I asked for your help to illustrate Dudley's tales with pictures of your Flair models and, boy, did you take that to heart. Those Flair Scouts, Fokkers and SE5a biplanes just kept on coming. So, a big thank you for that and we ended up with far more pictures than we could use. But waste not, want not and we've put the rest to good use in a jumbo edition of our Pilots' Pictorial readers' models picture gallery.

To wrap things up our waterplane correspondent Mike Roach makes a welcome return, this time reporting on the joys of flying off the water of his favourite local water park, Longham Lake. Then, in a final flourish, Graham Ashby files his latest Kick The Tyres column. After years of squeezing large aeroplanes into small cars, Graham finally snaps and buys himself a van.

I hope you enjoy reading it all.

Happy Flying!

Kevin Crozier

Editor: Kevin Crozier

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On the cover

Photo: Bob Fletcher

Our cover star this month is a fine example of a Flair SE5a built by ex-Flair sales agent Bob Fletcher. Bob also ran a model shop. It's just one of many excellent examples of Flair models built by him over the years.



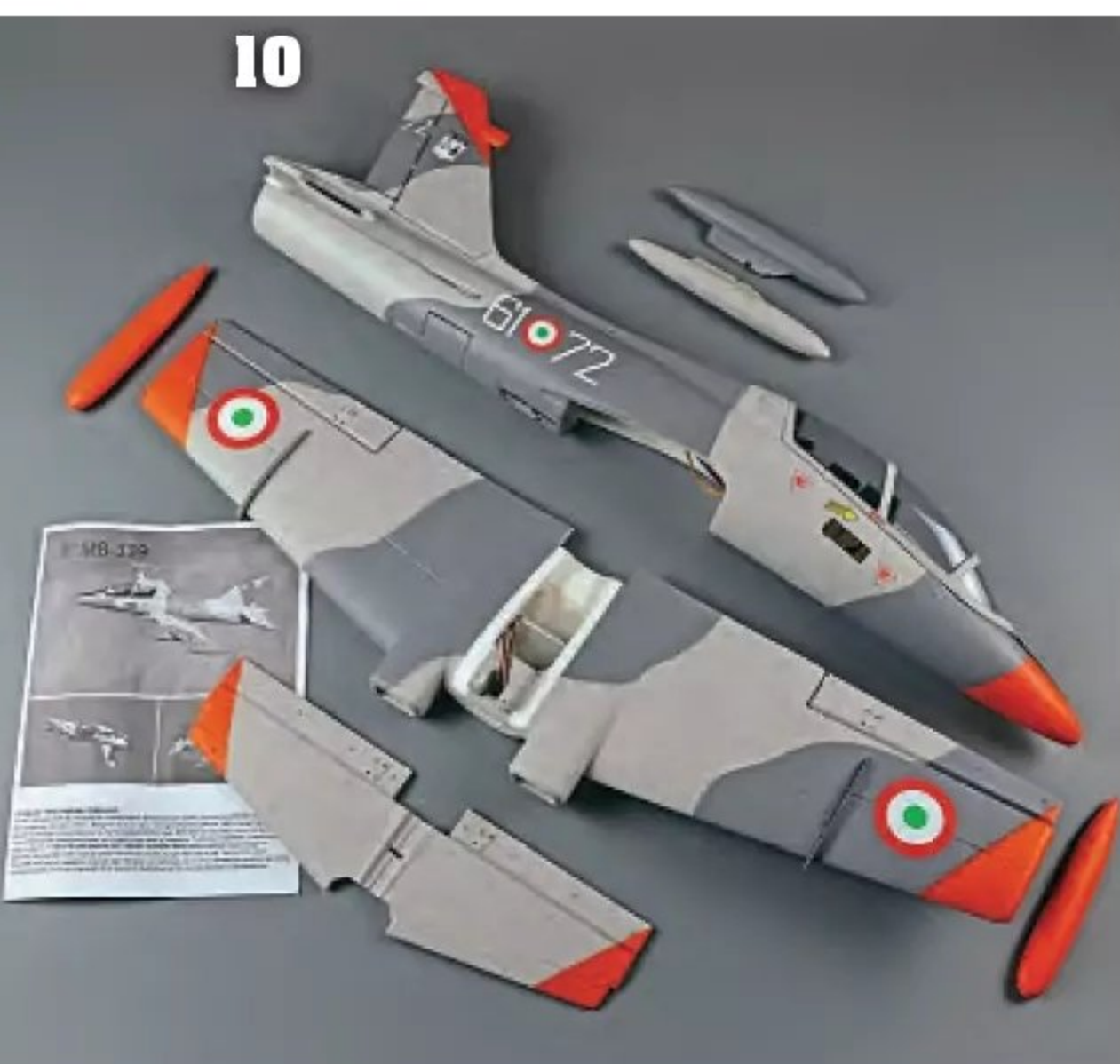


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ADVANCED PRECISION AEROBATICS

Kevin Caton (a long-time member of the UKF3A Team) and Peter Jenkins (author of Model Aircraft Precision Aerobatics) have got together to produce a new book called Advanced Precision Aerobatics. The new title covers:

- Basic and Advanced Trimming
- Aircraft and Transmitter Set-up
- Countering Wind Effects
- Practice and Training Flying

Plus, aspects of Judging and how to fly the A25 and P25 schedules manoeuvre by manoeuvre with copious diagrams.

Adorned by a cover photo that shows the best ten pilots at the last FAI F3A World Championships this book is for those who are new to, or attempting to improve, their performance of the FAI Model Aircraft Aerobatic Schedules A25 and P25. The FAI P25 or Preliminary Schedule is flown in all Continental and World Championships and is usually used in National competitions. The FAI A25 or Advanced Schedule is the precursor to the P25 and has the same manoeuvre geometry but with fewer in-manoevre elements. The object of flying A25 is that it enables an easier transition to P25 as the overall geometry

remains the same. In the UK both A25 and P25 are used in the National League competitions.

The book is available as either a Kindle or Paperback from Amazon - <https://www.amazon.co.uk/dp/BoD4JBRRS6> - for £25.99 plus delivery or free delivery with Prime for the paperback or just £9.99 for the Kindle. Click on the 'Read Sample' button and you will see the full table of contents and the first few pages of the book for free.

Kevin is the longest serving member of the UK F3A R/C Aerobatics international team. He has flown in 19 World and European Championships. He has been UK National Champion twice and still competes regularly in the UK and at open international aerobatic competitions. As well as being an active competition pilot and judge, he serves on various committees within the National and International F3A organising bodies.

Peter has self-published a book entitled 'Model Aircraft Precision Aerobatics' aimed at beginners and improvers that has sold in ten countries around the world. He has also written a couple of articles in Keith Jackson's Aerobatic Scene column in RCM&E and, on

Advanced Precision Aerobatics

A Guide to Flying the FAI A25 and P25 Schedules

Kevin Caton & Peter J Jenkins



behalf of the UKF3A association, he writes in the BMFA News on aerobatics. He has been flying model aircraft since he was a teenager and the FAI P schedule since 2015.

LAST CALL FOR FLAIR

Following our requests in the first couple of 'A Company Called Flair' articles in the April and May issues, asking for pictures of your own Flair models, we have received numerous submissions, many of which we have used to illustrate Dudley Pattison's final two features in his well-received series.

In fact, we've received so many pictures and details of Flair models from our readers (with more arriving almost daily!) that we've not been able to use them all. So, we've decided to finish the Flair series by using most of the unused pictures in a bumper four-page edition of our Pilots' Pictorial readers' models picture gallery

which starts on page 80 of this issue.

Please note that after this issue any future submissions of Flair model pictures, whilst still most welcome, will be spread across future issues, again most likely in Pilots' Pictorial.

Shown here is one such model, received from Barry Banks, who writes:

I'm not sure if I have already sent these over by Facebook but it's of my Saito FG-33 R3 powered Flair Dr.1.

Barry's mention of Facebook has prompted the following response from the Editor:

Thanks for sending pictures of your eye-catching Flair triplane, Barry. It has reminded me to let our readers know that I'm a bit slow

on catching up with things on social media. The best way to reach me is by email at KCrozier@Mortons.co.uk which should bring you a pretty fast response. If you use Facebook etc. then you could be waiting a long time!

Also, it's not the best way to send pictures because any images that have been made smaller for use online will invariably be too small to use in the printed magazine. We've just about got away with these ones! Ideally pictures need to be at least 3000 pixels wide or, if unsure, as taken by your camera or phone before resizing. If pictures exceed your email providers file size limit, then please send using a free file transfer website such as WeTransfer.com (preferred) or Dropbox - KC



BEST OF BRITISH

Have you tried reading Best of British magazine yet? Now published by Mortons Media, home to RCM&E, Best of British is the UK's favourite nostalgia magazine.

Every issue is packed with features that celebrate classic entertainment, transport, food and drink, and the great British countryside.

Simon Stabler, the magazine's Editor, writes:

'Our readers are at the heart of what we do. As well as taking their suggestions on board, their voices are heard through our Yesterday Remembered memoir section, as well as the Postbag and Question Time pages.'

Best of British has a loyal and enthusiastic readership that has remained strong throughout the years. Our readers are predominantly based within the UK, followed by our international subscribers in Australia, New Zealand and the US and Canada. The magazine celebrates heritage and times past, making Best of British the title of choice for readers and advertisers alike.'

The June issue is likely to be of interest to many RCM&E readers with a feature called

'On a Cushion of Air' to celebrate 65 years of Sir Christopher Cockerell's great invention - the hovercraft.

Today, whilst still used in a variety of military and rescue situations, there is only one scheduled domestic hovercraft service in the world. It's a marked contrast to the days when several operators were running cross-channel hovercraft services.

Staying with the theme of wonder transport, BoB June also looks at the Chitty Bang Bangs - Louis Zborowski racing cars that inspired Ian Fleming's famous children's story - and the midget submarines' role in D-day. Elsewhere, Liverpool's International Garden Festival is remembered, Britain's spa towns are visited, plus the magazine spins a few discs from budget record labels such as K-tel, Embassy and Pickwick.

For the July issue, which goes on sale from 27th July, Best of British takes a look back at Hammer Films' comedy output, remembers On the Buses actor Bob Grant and recalls the UK mainland's first theme park, plus an affectionate look at maps of Britain and some of the treasures they reveal.



ADVERTISING FEATURE | Foam hinge repair

HEAL THAT HINGE

Andy Sephton shows how to rebond a split hinge on a typical moulded foam model

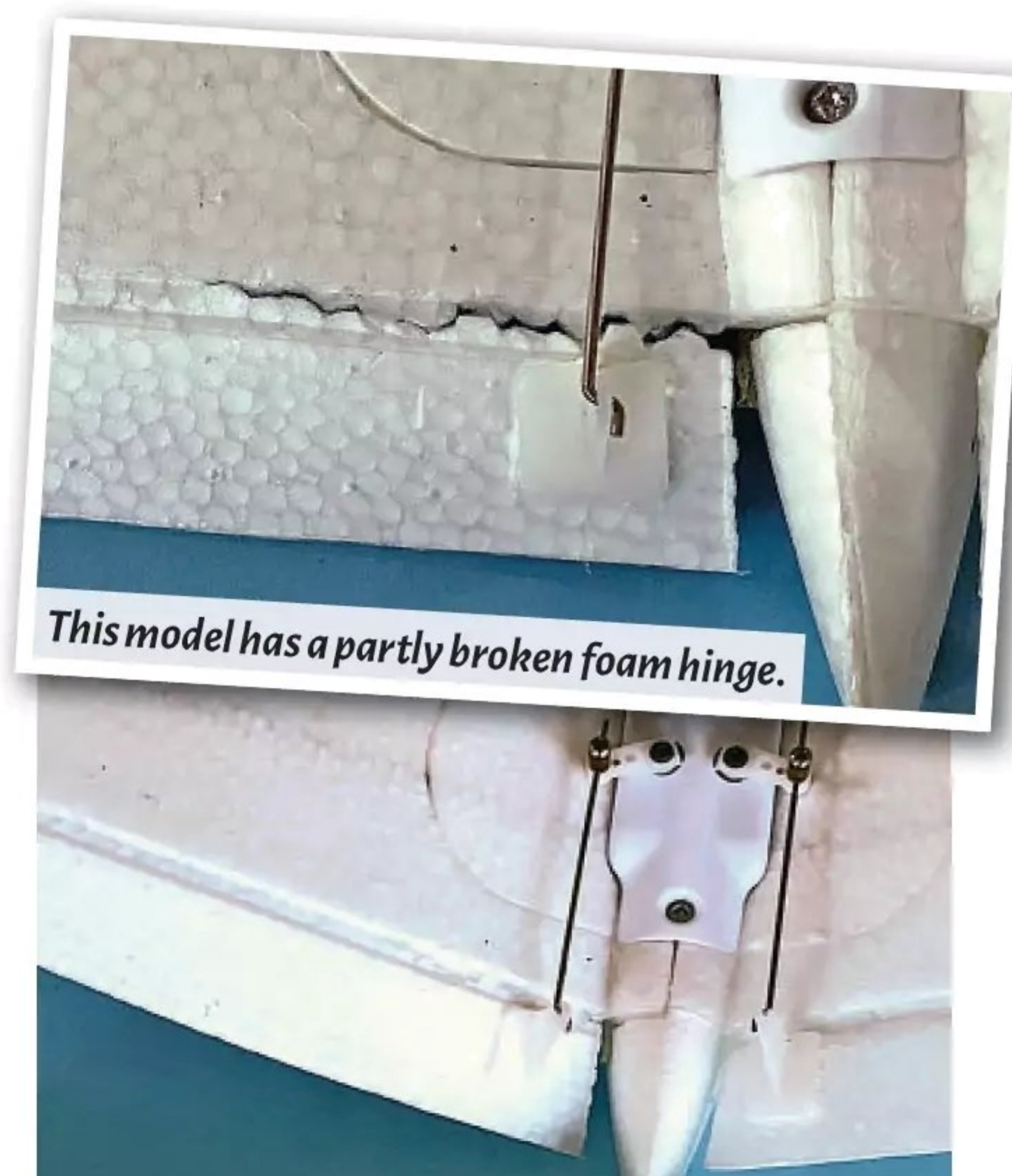
Words & photos: Andy Sephton



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HYPERFLIGHT VACANCY

Neil Stanton of R/C glider specialists HyperFlight Ltd. writes:

'Can I ask for your help please? We are looking for an extra staff member at HyperFlight Ltd to help with packing and customer support. Could

you possibly mention this in RCM&E please?'

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JP MB-339

The Editor glues together a handy sized 3S electric jet for some smile inducing mini jet fun

Words: **Kevin Crozier**
Photos: **Kevin Crozier, Barry Atkinson**



Just before Christmas, I was chatting to my old chum Graham Ashby at J Perkins (yes, RCM&E's very own editor emeritus and Kick The tyres columnist – don't worry, he'll be back soon) when I happened to let slip that I was interested in adding a small mini jet to my flying fleet for the New Year. Many of our readers will be well aware of the Arrows range of small EDF jets that J Perkins

distribute to model shops across the UK and we discussed the merits of the various models in that range. But time slipped by and what with one thing and another I never did place an order for my new Christmas toy.

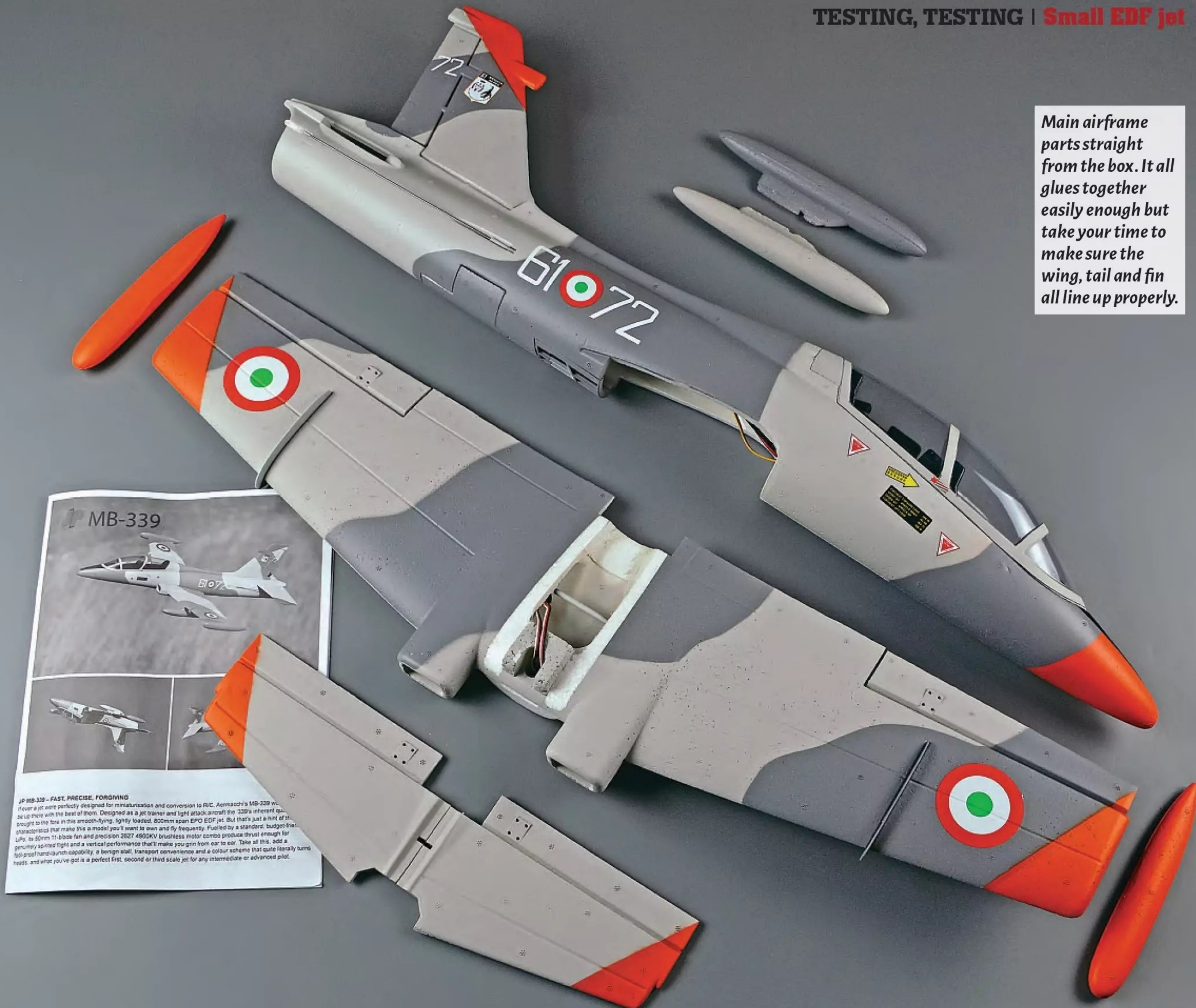
Roll on a few months and Graham contacted me, saying he had a new model that I might be interested in. The kit in question was the JP MB-339 which at a compact 800 mm wingspan was just the

type of small jet that I was looking for. An ongoing shoulder injury also dictated that it should be capable of getting away following a gentle underarm hand launch and the nicely rounded fuselage and low wing configuration of Aermacchi's jet trainer / light attack aircraft looked to tick all those boxes. It also helps that the MB-339 is quite an attractive aeroplane in its own right, especially when decorated in the high viz livery of the Italian Air Force training wing, the 61° Stormo.

Discovering that this pretty little model was powered by a quiet but efficient 50 mm, 11 blade fan unit driven by a 2627 4900KV brushless motor, the deal was sealed, especially when I realised that the battery of choice was a 3S 2200 mAh LiPo which I have several examples of. The 3S 2200 pack has become pretty much the 'standard' LiPo for sport electric models these days so it's good to know that it doesn't require anything special or expensive in the battery bay. If you only have smaller capacity 3S packs to hand then the MB-339 will also fly on 1600 or 1800 LiPos but with a commensurate drop in flying times.



Main airframe parts straight from the box. It all glues together easily enough but take your time to make sure the wing, tail and fin all line up properly.



KIT SPREAD

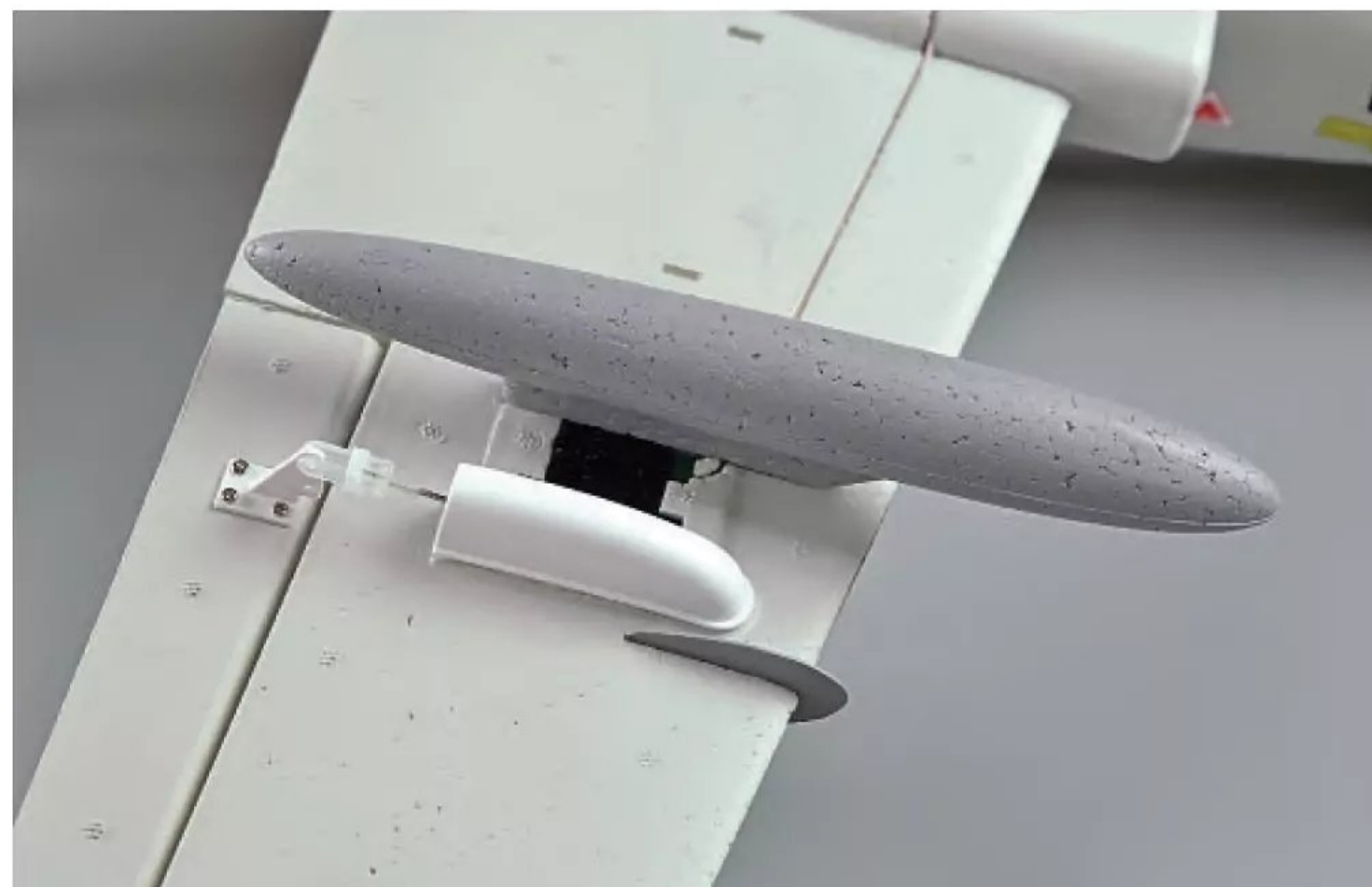
As you can see from the nearby kit contents photo the airframe is largely complete. I do like a nice box and that one that this model comes in is a particularly nice example as it has a carry handle and so could double up as a small carry case for a pull apart model. But, sadly, not this one as the MB-339 is largely glued together. The only screws are four tiny ones used to secure each of the nylon control horns to the ailerons and elevators; this is the first job detailed in the instruction pamphlet, which is well illustrated with a mixture of photos and sketches.

Next up is centring the aileron servos (a servo tester is handy for this) and fitting the aileron pushrods, after which the booklet tells you to glue on the servo covers. These bullet shaped plastic mouldings are designed to protect the servo output arms when belly landing so it's best not leave them off. However, I decided to wait until my receiver had been installed to do this just in case some further adjustments were necessary.

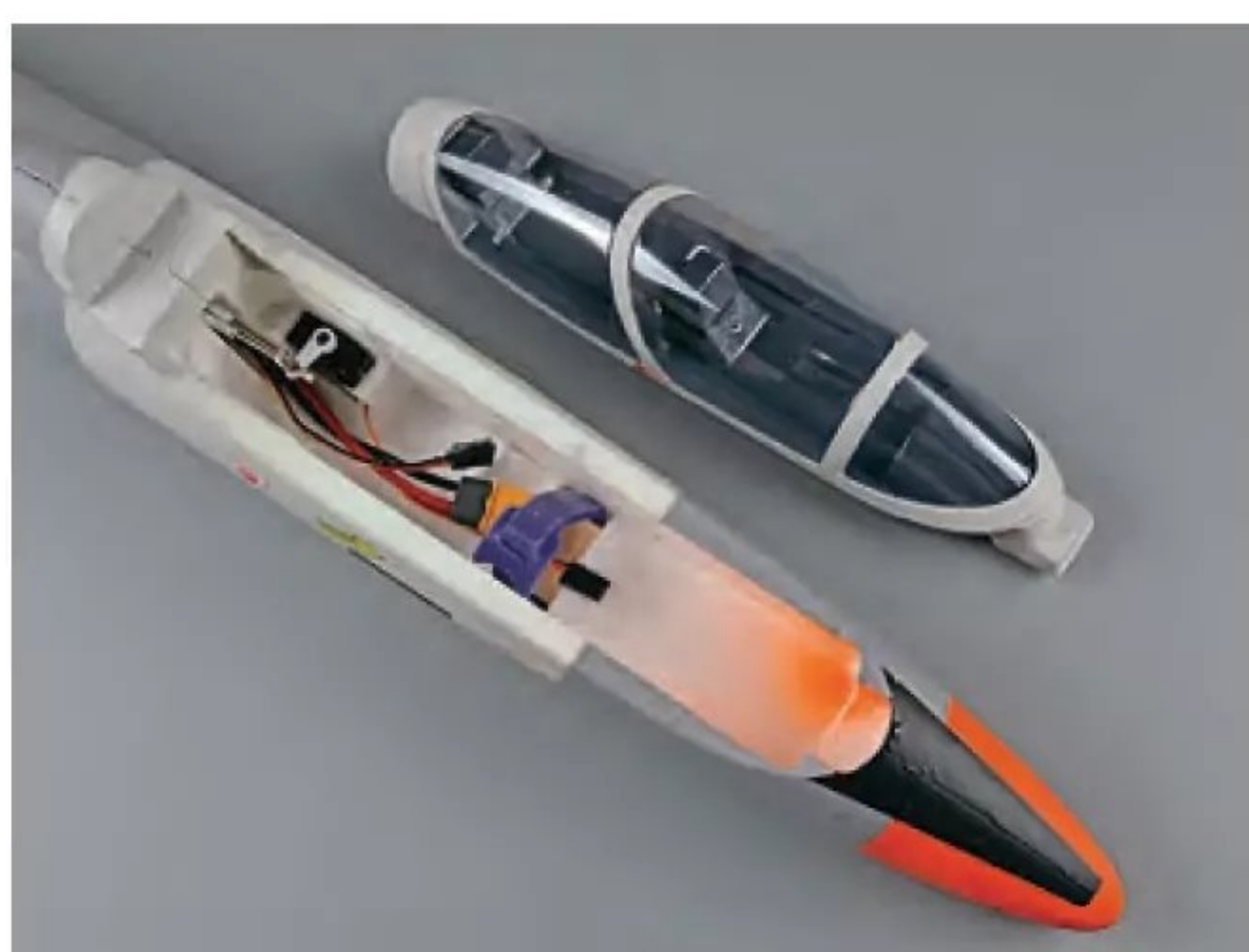
Fitting the wingtip tanks and the drop tanks are next in the book but as with the servo covers I elected to do this after assembling the airframe to minimise any 'hangar rash' when 

Accessory pack contents.





Wing tip and drop tanks are meant to be glued on early in construction but I left mine off until near the end to save them from hangar rash.



Some may want to squeeze in a 4S pack, but this little jet doesn't need it. A healthy 3S LiPo gives it plenty of thrust.



Inside the thrust tube showing the close fitting 50mm, 11 blade fan. Quiet and efficient.



A generous air inlet is fitted to the underside just before the fan unit.

“The joiner sits deep in its recess underneath each tailplane half, so I filled the gap with some slivers of thin balsa”

swinging the model around on the workbench. The tip tanks are moulded with recesses that push onto matching ‘tongues’ protruding from each wingtip, ditto the drop tanks but in reverse, the tongues now being on the weapon pylons and fitting into recesses in the underside of each wing. The fit is a bit sloppy so I used a pair of short cocktail stick rods pushed into the foam to support each of the tanks whilst the glue set.

The instructions call for EPO-friendly glue and while I do have some foam friendly adhesive, I elected to use 30-minute epoxy instead to ensure a strong bond. This was my glue of choice for the whole airframe as I reasoned that it would give me plenty of time to make any small adjustments, especially when lining the tail up with the wings.

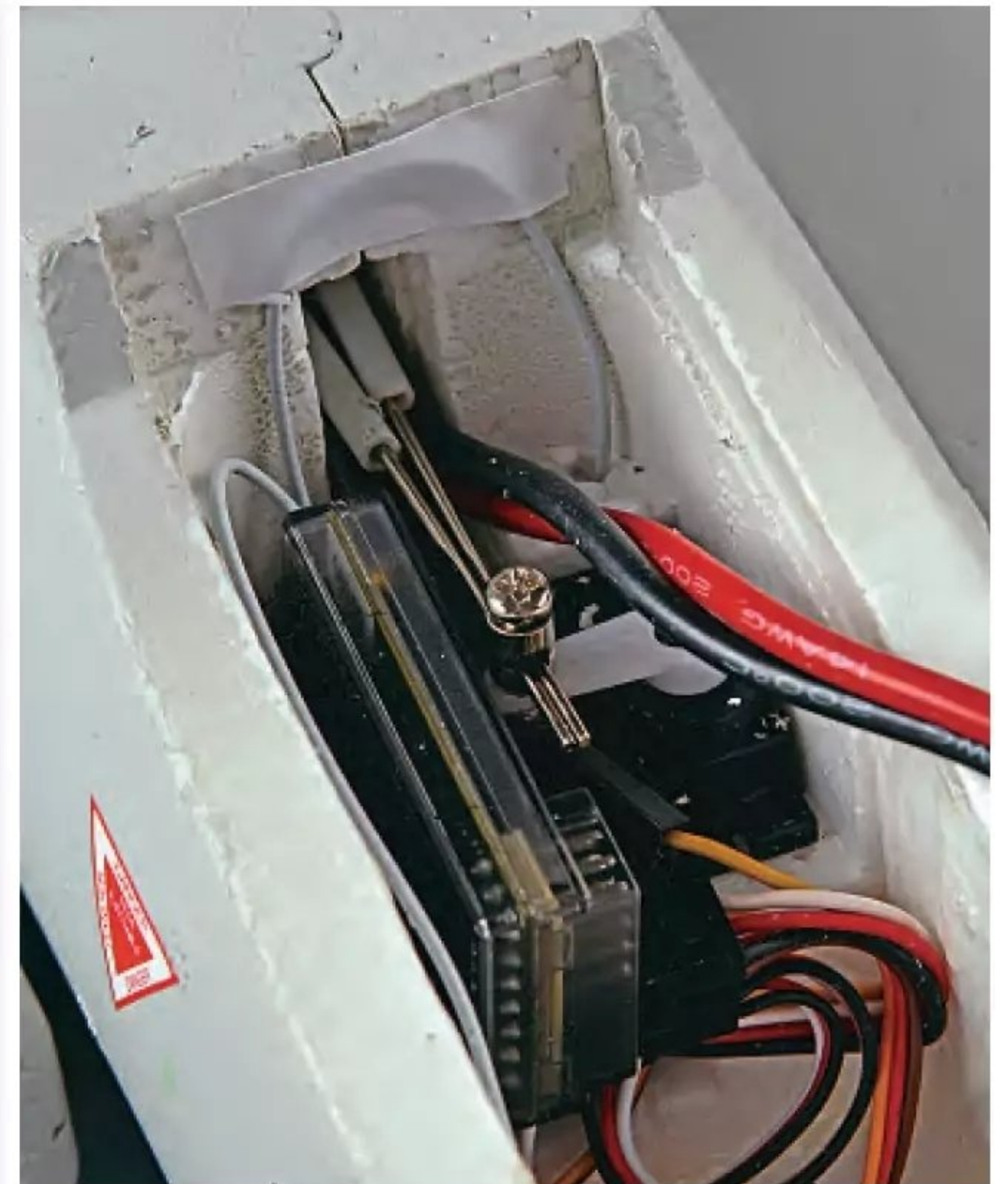
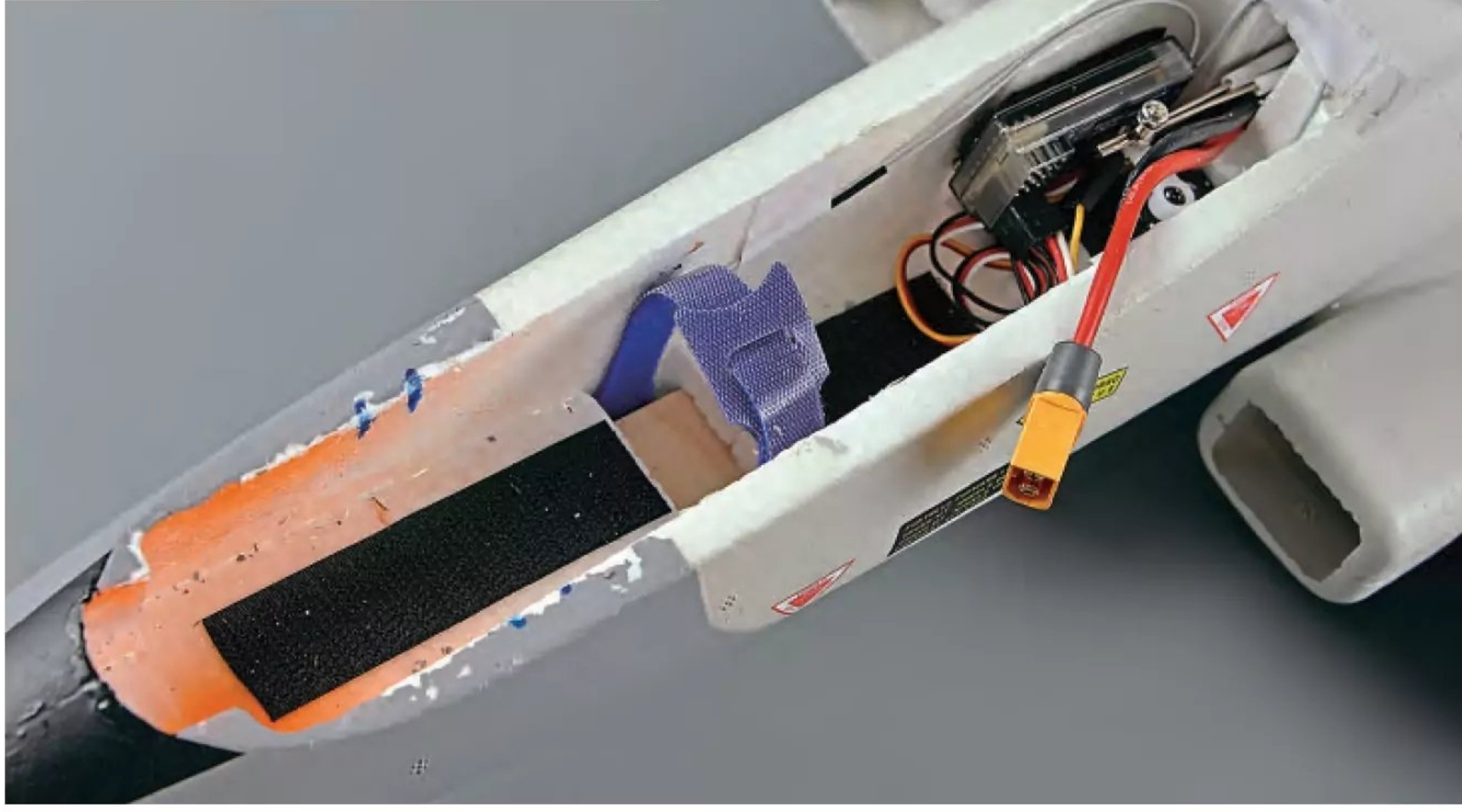
FIN FIRST

The first main part to be fitted is the fin with its moulded-on rudder. This is attached using a similar tongue & groove mounting as used for the tip and drop tanks. Again, the fit is quite loose but it is imperative that the fin is glued on absolutely vertically so I made up another couple of short cocktail sticks to act as internal braces while the glue set.

In truth this is also another area where I went out of sequence with the instructions as I reasoned that I needed the tailplane to be solidly mounted before fitting the fin in order that I could prop the fin up between two 90-degree squares made from blank postcards, with the corners cut away to clear the fuselage on either side. So, my next job was to fit the carbon joiner in one tailplane half, where it



A hook and loop strap is pre-fitted to secure the LiPo but the instructions also recommend the use of additional Velcro strips, as seen here.



It's tight at the back but my standard size 6-channel Futaba receiver went in easily enough.

was left to set before sliding that half through the tailplane mounting slot in the rear of the fuselage and then gluing on the other half. The joiner sits deep in its recess underneath each tailplane half, so I filled the gap with some slivers of thin balsa, intending to cover the slots with short lengths of grey insulating tape when the model was finished. A simple job but it's still on the 'To Do' list!

With the fin and tailplane glued on and all square the next job was to centre the elevator servo and connect the two wire pushrods to each elevator. The pushrods are clamped together at the servo arm using an adjustable screw lock connector.

WING INSTALLATION

We are nearly there, with just the wing to glue in place, making sure that it sits square to the tail and the aileron servo leads are fed up into the canopy area. The wing on my kit lined up just fine with no packing required.

NO GYRO, NO PROBLEM

The Arrows range of mini jets that J Perkins distribute have proved to be very popular and all now come with a gyro installed. Hence, I was a bit surprised when I popped the canopy off the MB-339 to not see a gyro underneath – and then it clicked!

You see, this is not an Arrows kit but is instead

a JP branded model, the first EDF jet in their own range. The good news is that foregoing a gyro means that the MB-339 is cheaper than any of the Arrows jets and it doesn't really need one if your flying skills are at the level when you might want to consider buying a model like this.

RADIO BAY

As you can see in a nearby photo the radio / battery bay is quite small, especially with a 3S 2200 mAh LiPo installed, so the only available space for the receiver is in the small space adjacent to the elevator servo. Hence my words of caution about fitting a gyro, although where there's a will, I am sure there is a way...



The nicely moulded canopy doubles up as the radio/battery bay hatch and is secured with magnets at the rear.



The factory fitted 40A ESC is fitted with an XT60 connector, my favourite type. However, most of my 2200 packs are fitted with EC3 connectors but this is no problem as the two types are compatible, at least with an XT plug on the ESC and an EC socket on the LiPo. A hook and loop strap is supplied to secure the battery but I also laid a couple of strips of Velcro along the length of the battery tray for extra security. With a 3S 2200 LiPo strapped in, the battery needs to be placed to the rear of the bay to achieve the recommended balance range. I have found that the battery/ESC wires are best secured underneath the battery strap because if they are left loose then they can flex

upwards just enough to stop the magnets at the rear of canopy from securing properly.

Regarding radio set up and CG location then just follow the recommended settings and all will be fine. You can adjust things to suit your personal preference if required after the maiden flights.

JETTING OFF

Although the JP MB-339 went together very quickly it had to join an ever-growing squadron of review models, all waiting for their maiden flights due to weeks of wet and windy weather. Eventually the rain stopped and the wind died down – a little bit! So JP's

little jet joined a couple of other models in the back of my car ready for its first outing. One of the attractions of a little model like this is that while it's not short of performance, its small planform and light weight means that it can be popped into a suitable clear space above or below your other models, making it a useful back up plane.

After a range check, my friend Barry, with his camera in one hand and the MB-339 in the other, stepped forward and gave the small jet a firm launch into the brisk wind. A small amount of right trim was needed along with a fair few clicks of down elevator and then it was time to swish the small Aermacchi past

Inverted passes are especially pleasing to perform. Photo: Graham Ashby



DATAFILE

Model:	JP MB-339
Model type:	ARTF mini jet
Manufacturer:	JP
UK distributor:	J Perkins https://www.jperkins.com/products/JPDF1201
RRP:	£159.99
Length:	32.5" (825 mm)
Wingspan:	31.4" (800 mm)
Flying weight:	20.8 oz (590 g)
Motor size:	2627 4900KV
ESC:	40A with XT60 connector EDF unit: 50 mm, 11 blades
Servos:	3 x 9 g analogue
Functions (servos):	Ailerons (2), elevator (1), throttle (ESC)
CG:	55 - 65 mm from leading edge at air inlets
LiPo:	3S 1600 - 2200 mAh, 30 - 50 C

MB-339 in its element doing a low, fast fly-past.



“...here we have a stylish small rendition of a great looking military jet which not only flies very well but is also kind to LiPos”

Barry's telephoto lens for a series of low speed and fast flypasts. The small jet handled all this abuse with aplomb, although as with all jets its best to not slow her up too much in tight turns. If I did then the MB-339 gave me due warning, waffling slightly and urging me to put my foot down. But she never tip stalled, which is better than some EDFs I have flown, which can bite if slowed up too much when arcing around for the camera.

With electric jets I always set a relatively short time on my Tx timer as some models can be very power hungry and can run down a LiPo to a dangerously low capacity in just a short amount of time. I reasoned that five minutes would be a good start with the MB-339 so I was quick to line her up for landing when the Tx buzzer started to sound.

Before this first flight I have to admit that I had concerns about ripping off the underslung drop tanks when landing so I deliberately chose to fly her from a club site with short mown grass (not easy to find so early in such a

wet season) but I should not have worried as the MB-339 slid in for a smooth landing. It was almost as if she was landing on an inflatable hovercraft like skirt - nice! This has been replicated during subsequent landings, even over slightly longer, bumpy grass. The only thing I have noticed is that the drop tanks are starting to lose some paint on their undersides so I might add strips of clear tape to help protect them - and maybe cover up the tail joiner slot too!

SUMMARY

The JP MB-339 has flown many times now in a wide range of conditions and it has proven to be a joy to fly. Whilst you don't need to hare it around all the time, like most jets it looks its best grooving around at pace. All the usual jet style aerobatics are possible and she looks particularly good on an inverted pass. Pulling up for loops and steep climbs is effortless, rewarding the pilot with a sparkling vertical performance. Speaking of which...

Some may think that the 50 mm fan unit may benefit from the use of a 4S LiPo, but I think that's probably overkill, especially as a fresh 30 - 50C 3S pack provides such good performance. The extra weight and possible balance issues, not to mention the difficulty of squeezing in a bigger pack, is likely to override the advantage from any possible increase in thrust. You're on your own with that one!

As for flying times, my 5-minute timer has proved to be a tad too conservative and so I'll be adding more time in small increments until my LiPos start showing below 30% capacity after each flight.

To sum up, here we have a stylish small rendition of a great looking military jet which not only flies very well but is also kind to LiPos whilst offering reasonably long flight times. You won't want to overdo things of course, but with the JP MB-339 and a decent LiPo you are sure to enjoy more than just a handful of fast passes before needing to land. ■

A grey model flown on a grey day is usually a recipe for poor orientation but not with this one with her bright orange extremities!



The compact size of HOTA's D6 Pro charger is apparent when compared to a small apple.



HOTA D6 PRO CHARGER

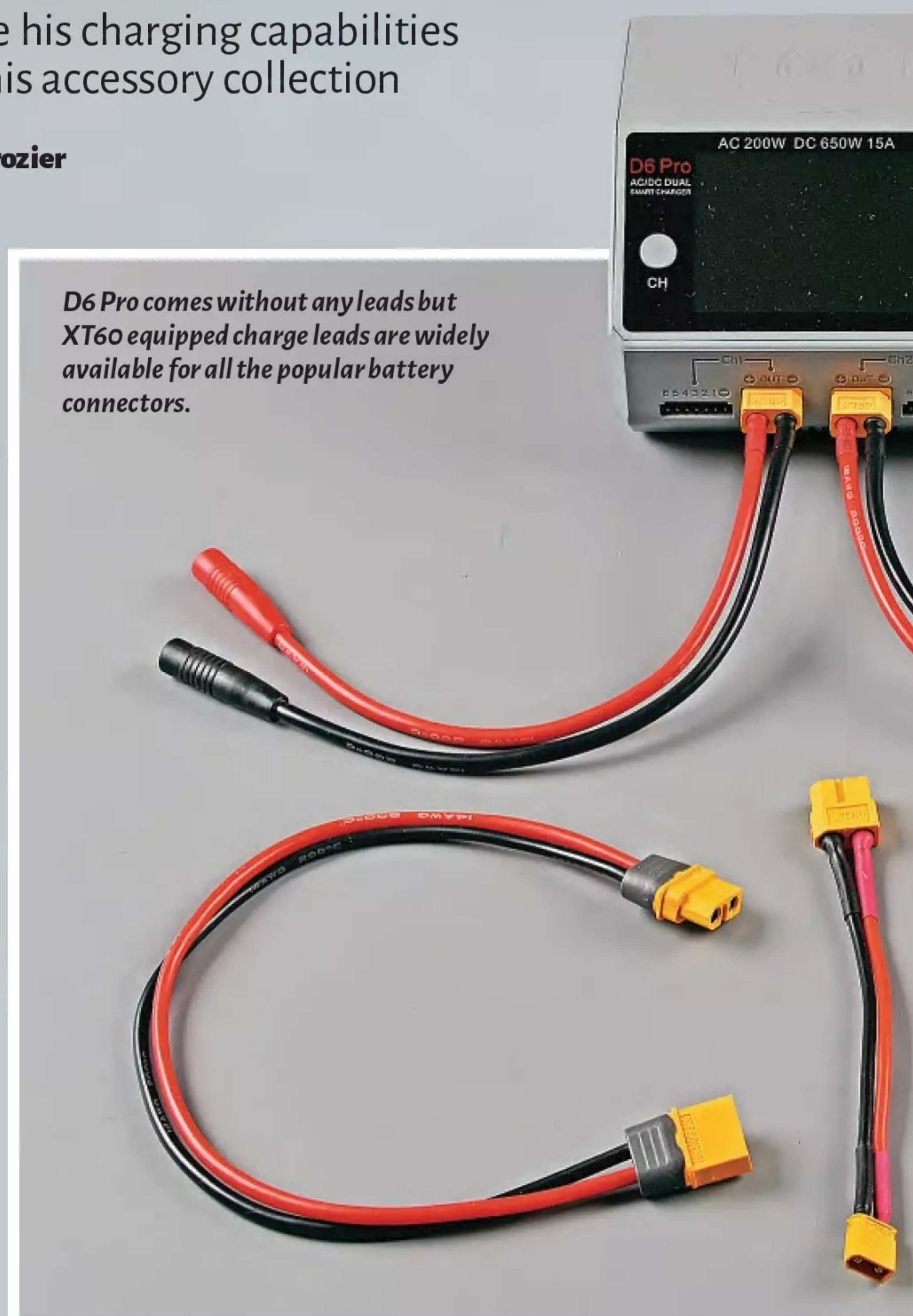
Andrew James continues his quest to modernise his charging capabilities by adding a state-of-the-art dual charger to his accessory collection

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



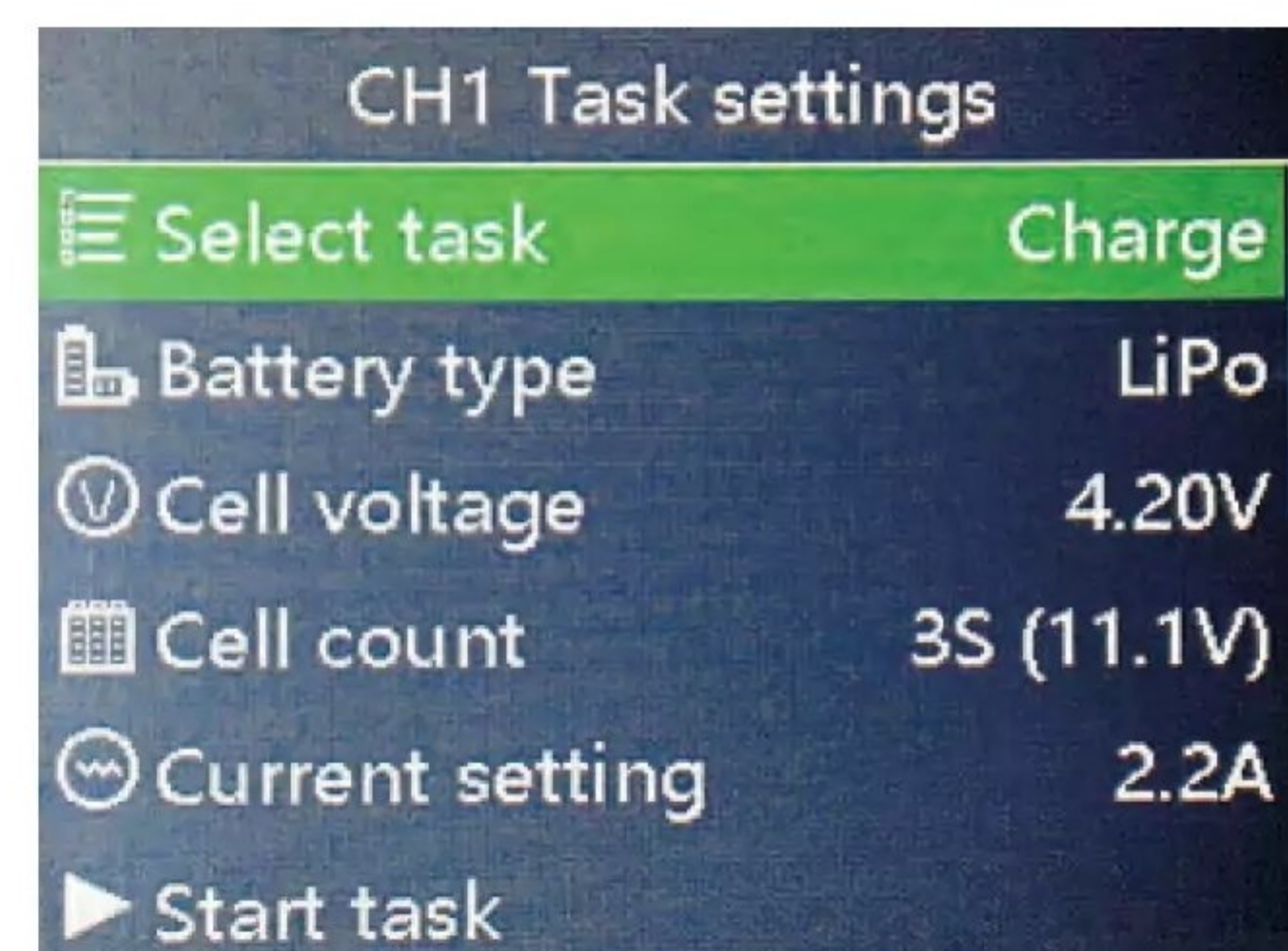
Front of the cubist box shows a neat sideline - wireless charging of a mobile phone.

D6 Pro comes without any leads but XT60 equipped charge leads are widely available for all the popular battery connectors.

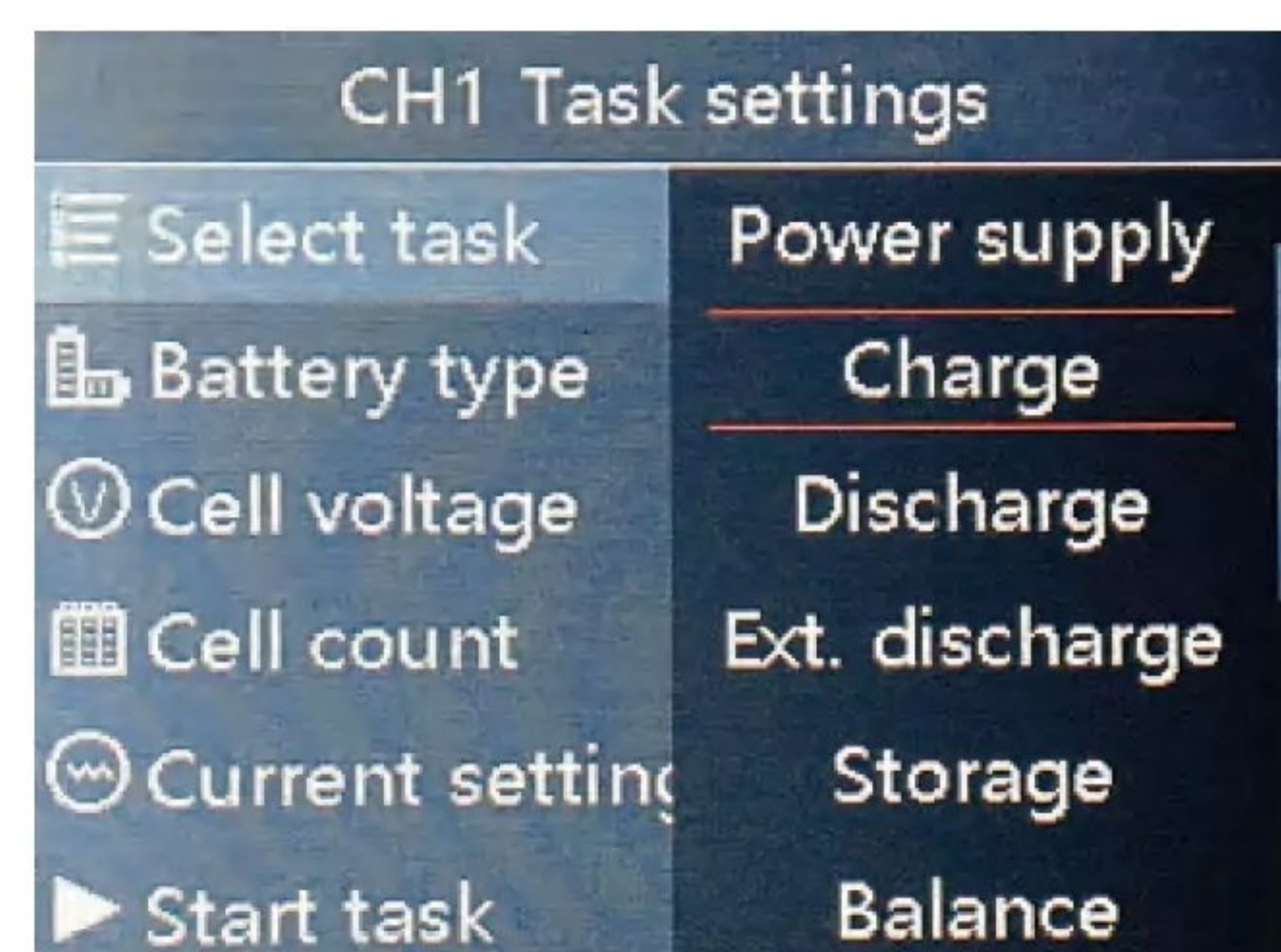




A full-colour 2.8" screen dominates the angled front panel.

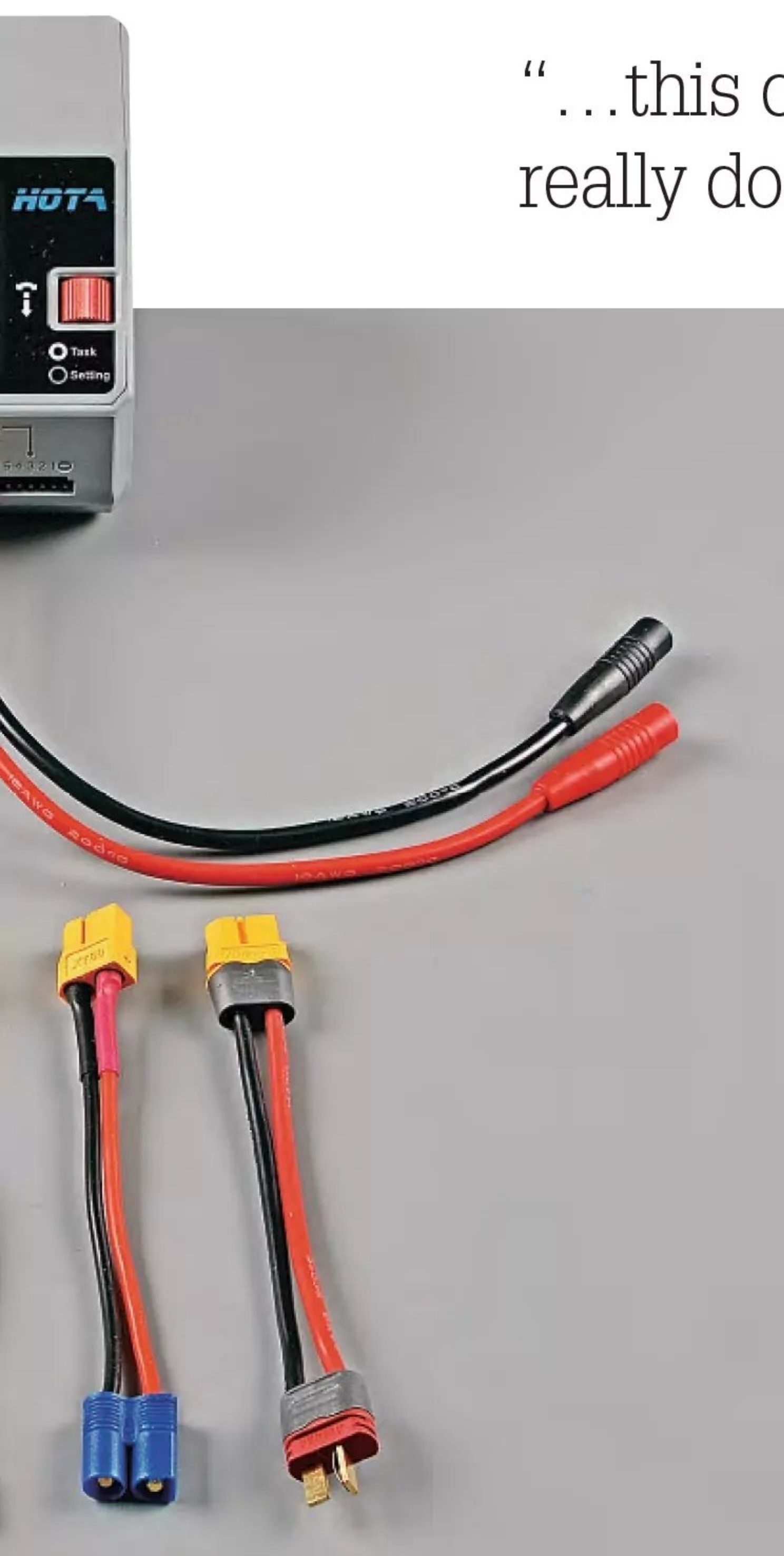


Task settings screen poised ready to click on the 'Select task' menu.



A wide range of charge and discharge options are available.

"...this charger is so easy to use that it really doesn't need much explanation"



In the June issue I reviewed a small DC powered single output charger, so ticking off a requirement from my 'charging wish list' to allow me to charge small LiPo packs for my electric powered gliders at the flying field. I was very impressed with the simple user interface that this, and many other modern chargers now use. So when the Editor offered me the Hota D6 Pro Smart Charger to test with similar displays, this time with two 325W outputs and AC/DC inputs, I was only too happy to oblige.

My usual 'at home' charger is a relatively modern affair, and it is easy to set up and use thanks to its dual touch screens. But it is quite chunky and takes up more than half the space in my outdoor charging cabinet (a small plastic garden storage cupboard) when two LiPos and their associated leads have been connected. This doesn't leave much space for another charger alongside, although I can squeeze in a small single output unit to boost the numbers of packs that I can get ready for a flying session. I was therefore very pleased to find that the Hota D6 has almost the same footprint as my single output unit, but offers two front panel outputs, effectively doubling my charging capabilities at any one time.

At home I power the Hota via its AC mains lead. This is the only lead supplied so you will need to source your own charge leads and balance boards, as well as an XT60 socket

equipped DC power lead should you wish to use it 'off grid'. But if you have other chargers then it's likely that you will have built up a small stock of leads already. If not, then they are readily available to buy to suit all popular connector types, not least from 4-Max, who supplied this Hota charger for review.

In some ways the lack of leads is a good thing as many of us will have built up a small mountain of wires with the wrong types of connectors that we've never used and which came with older chargers. So not having them supplied not only keeps the manufacturing costs down but also saves wasting precious materials.

OPEN THE BOX

Supplied in a black, cube shaped box, the D6 Pro measures 108 x 105 x 76 mm, so is just about palm sized. As previously mentioned, it comes with a mains power lead, fitted with a UK 3-pin plug when purchased from 4-Max. No manual is supplied, just a specification sheet which includes a drawing of the charger with labels showing all the ports and functions. I did find a slightly more in-depth manual online after a brief search but to be fair this charger is so easy to use that it really doesn't need much explanation – more on that later. There is now a link to the full Hota D6 manual on the 4-Max website should you wish to take a look.



Back panel showing the AC and DC inputs as well as the efficient cooling fan.

Let's start with a brief tour of the unit, starting with the angled 2.8-inch full colour screen. To the left is a channel select button for swapping between the two charging ports and to the right is a red scroll bar. This will be familiar from many radio control transmitters; scroll sideways to run through the menus and press down to select a particular function or to confirm a setting. For instance, the top menu (called a task by Hota) is Select Task. Roll the scroll bar until Select Task is highlighted in green then press down to see the drop-down menu. Roll the bar again to select the task that you require, most likely Balance Charge or Storage, and press to confirm. Other tasks available are:

Power Supply, Charge, Discharge, External Discharge and Sync Charge.

At the rear are the AC and DC inputs. AC is 100 - 240V whilst DC is 6.5 - 30V via an XT60 plug. This means that you can power it from a wide range of DC sources, not only 12V car or leisure batteries, but also regulated solar supplies and even other LiPos too. One thing you can do if you have a couple of fully charged large capacity LiPos spare whilst out flying is to use them to charge your smaller packs, hence reducing the risk of flattening your car's battery. The powerful cooling fan is also mounted in the back of the case so be sure to keep the fan's inlet vent unobstructed whilst in use, likewise the outlet vent on the underside of the charger.

On the right-hand side of the unit are a small USB update port and a 5V/2.1A USB port. This would be very handy to charge a radio transmitter that supports USB charging or other similarly charged devices such as cameras etc.



Side panel showing the two USB ports. The small one is used for updates whilst the larger one provides a conventional USB output.

The small front panel is where you will find the two outputs and their associated 6S balance ports. Each output is fitted with an XT60 plug, for which matching charge leads or adapters are commonly available. To make things even easier 4-Max give a full list of matching leads at the bottom of the D6 webpage: <https://www.4-max.co.uk/HOTA-D6-Pro-wireless-charger.html>

There's also a bonus charge function in the form of a wireless charging plate on top of the unit, which is perfect for topping up your mobile phone whilst at the flying field.

IN USE

The D6 Pro has to be one of the easiest chargers to set up and use, at least for LiPo charging and discharging, because once you have plugged in a pack and connected the balance lead it will automatically analyse the pack and set up most of the parameters for you. This leaves you just needing to check that all the settings are okay and then choose your favoured charge or discharge rate. Although modern packs are capable of extremely fast charging I still

DATAFILE

Name:	HOTA D6 Pro
Product type:	AC/DC Dual Channel Smart Charger
Supplied by:	4-Max https://www.4-max.co.uk
RRP:	£109.99
Compatible chemistries:	LiPo, LiFe, Lilon, LiHV, NiMH, NiCd, Pb, Eneloop
Lithium cell count:	1 - 6S
NiMH / NiCd cell count:	1 - 16S
Input voltage:	DC 6.5 - 30V
Charge current:	0.1 - 15A x 2
Discharge current:	0.1 - 3A x 2
Charge power:	DC 325W x 2 input voltage >24V, AC 200W
Discharge power:	Internal 15W x 2. External 325W x 2
Balance current:	1600 mA x 2
USB output:	5V / 2.1A
Screen size:	2.8", 320 x 240 260000 colours
Size:	108 x 105 x 76 mm
Weight:	575 g

stick to the old rule of thumb of charging and discharging at 1C. As an example, when charging my 5S 5200 mAh packs I will set the charge at 5.2A on each channel. The D6 takes this in its stride and it does a great job of charging two packs simultaneously, showing closely balanced cells when checked with a battery checker immediately after charging. It knocks the socks off my 'old' charger in this respect and I always thought that one did a pretty good job of balancing a LiPo's cells...

Each channel can support charge rates of up to 15 amps, but discharging is lower, with each channel allowing up to 3 amps discharge rate. I tend to use the Storage function (aka task) to do this and again the D6 provides a very well-balanced set of cells at the default 8.4V per cell setting. The cell voltage is adjustable should you wish to set it a bit higher.



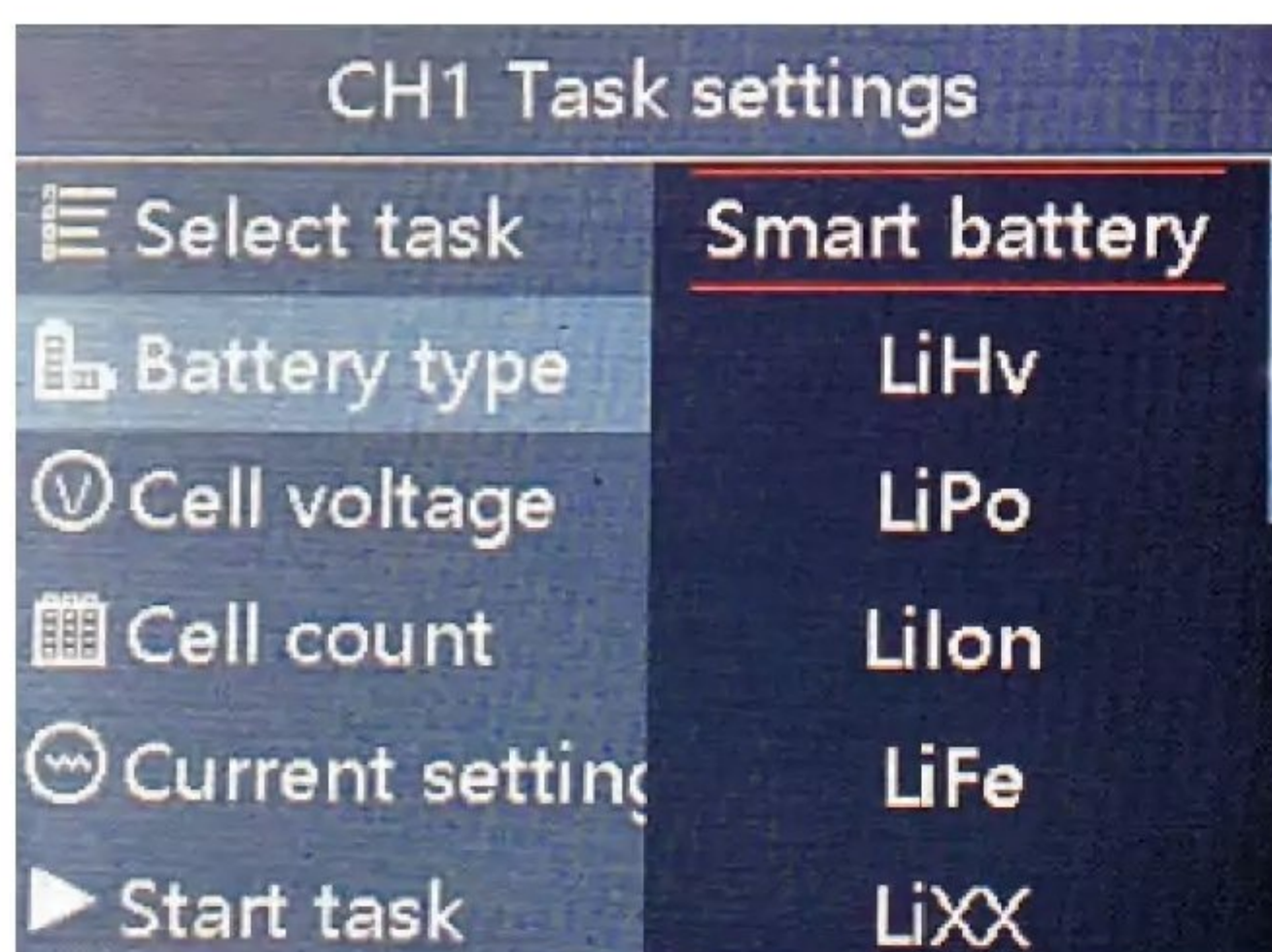
Power and balance connections to the two channels are made via the front panel.

BATTERY TYPES

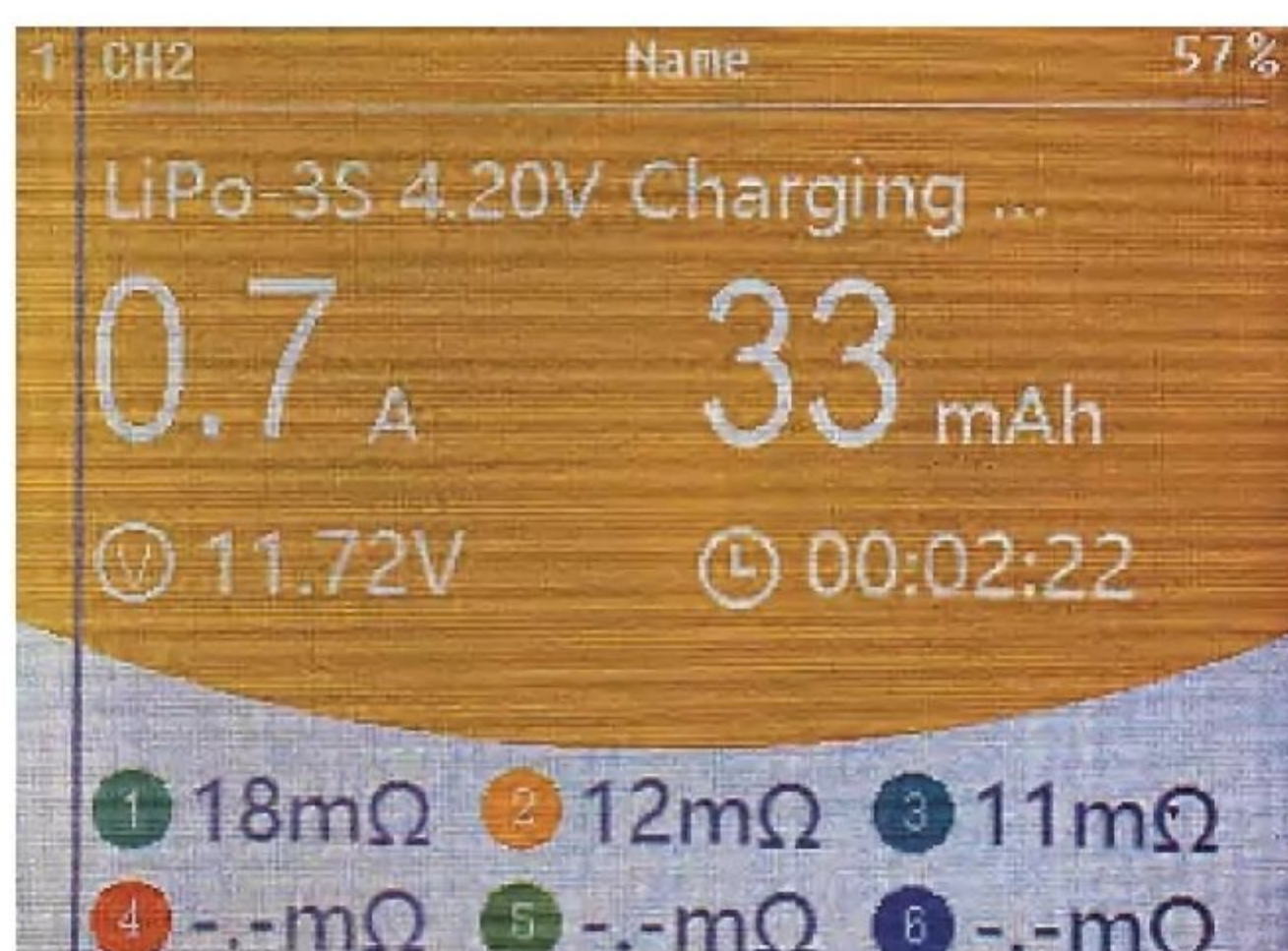
The D6 Pro supports a wide range of battery chemistries, including all the usual R/C types: LiPo, LiHV, Lilon, LiFe, Pb, NiCd, NiMh. There's even a separate task for charging Eneloop cells. There are also Smart battery, LiXX, and NiZn options.

LET'S CHARGE

When a channel is charging its display lights up orange. When charging is complete it will turn green, which indicates a cell difference of less than 20 mV. The pack can be used at this point, or you can leave it a bit longer to fully balance the cells to less than 10 mV difference. At this stage the display turns blue. So, it's green for go if at the flying field or just leave it to turn blue if you have a bit more time (maybe if chatting to clubmates or having a coffee!) or are charging at home.



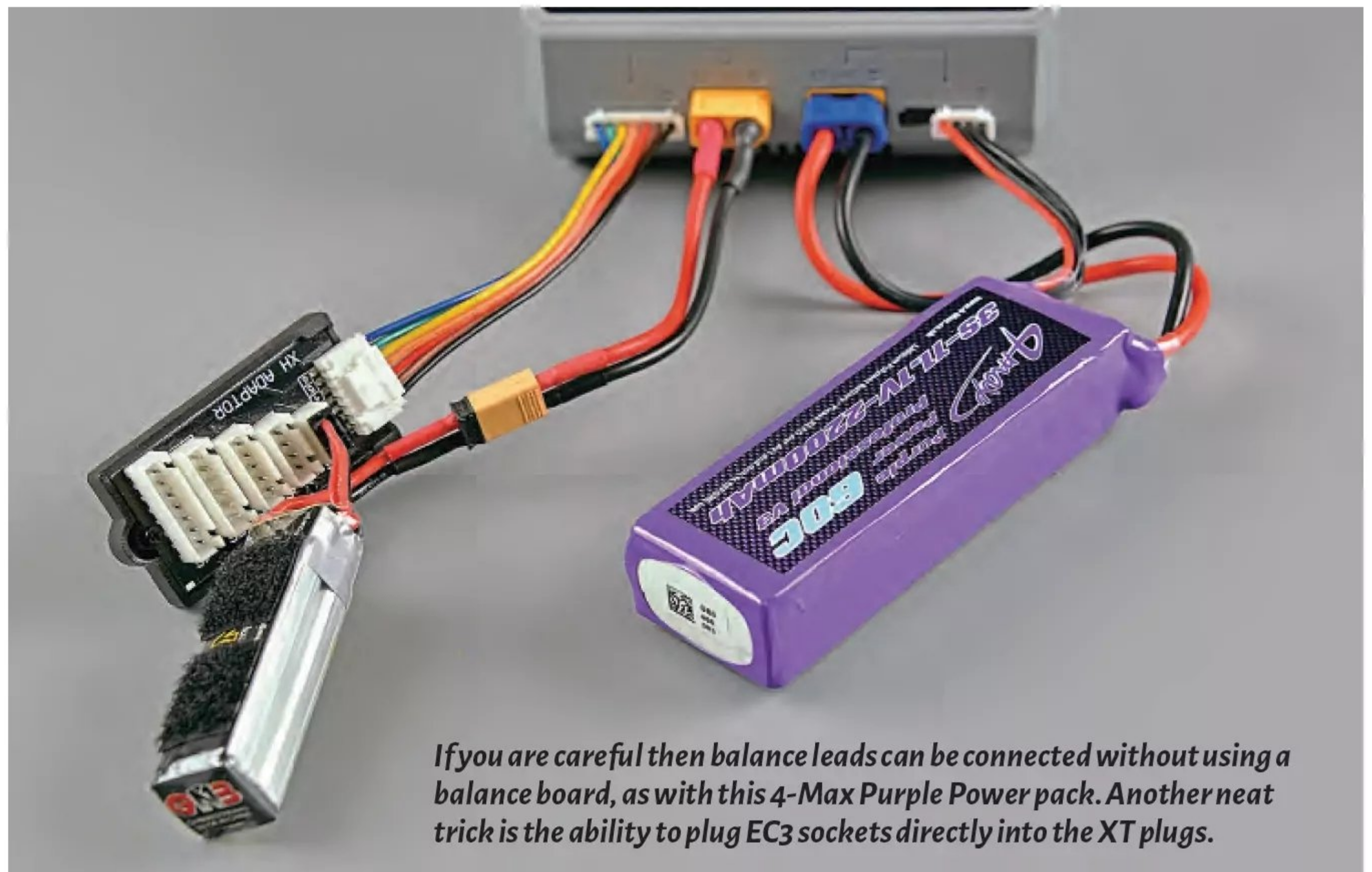
D6 Pro can charge all common battery chemistries, with NiCd, NiMh and Pb further along the scroll down list. There's even a dedicated Eneloop setting.



Channel displays turn orange during charging. This CH2 display also shows the Internal Resistance of each cell. It looks like cell one will need keeping an eye on!



When a pack is fully charged the screen turns green. The battery can be safely used at this stage or...



“It’s also clever enough to copy the settings across to the second channel “

Whilst charging, the display can be changed to showing the status of each channel or you can call up a split screen to show the two channels side by side. The screens also show several parameters of connected packs, including cell type, number of cells and the target cell voltage. You can also see individual cell data including voltage and internal resistance. It takes a couple of minutes for the IR values to appear, but they

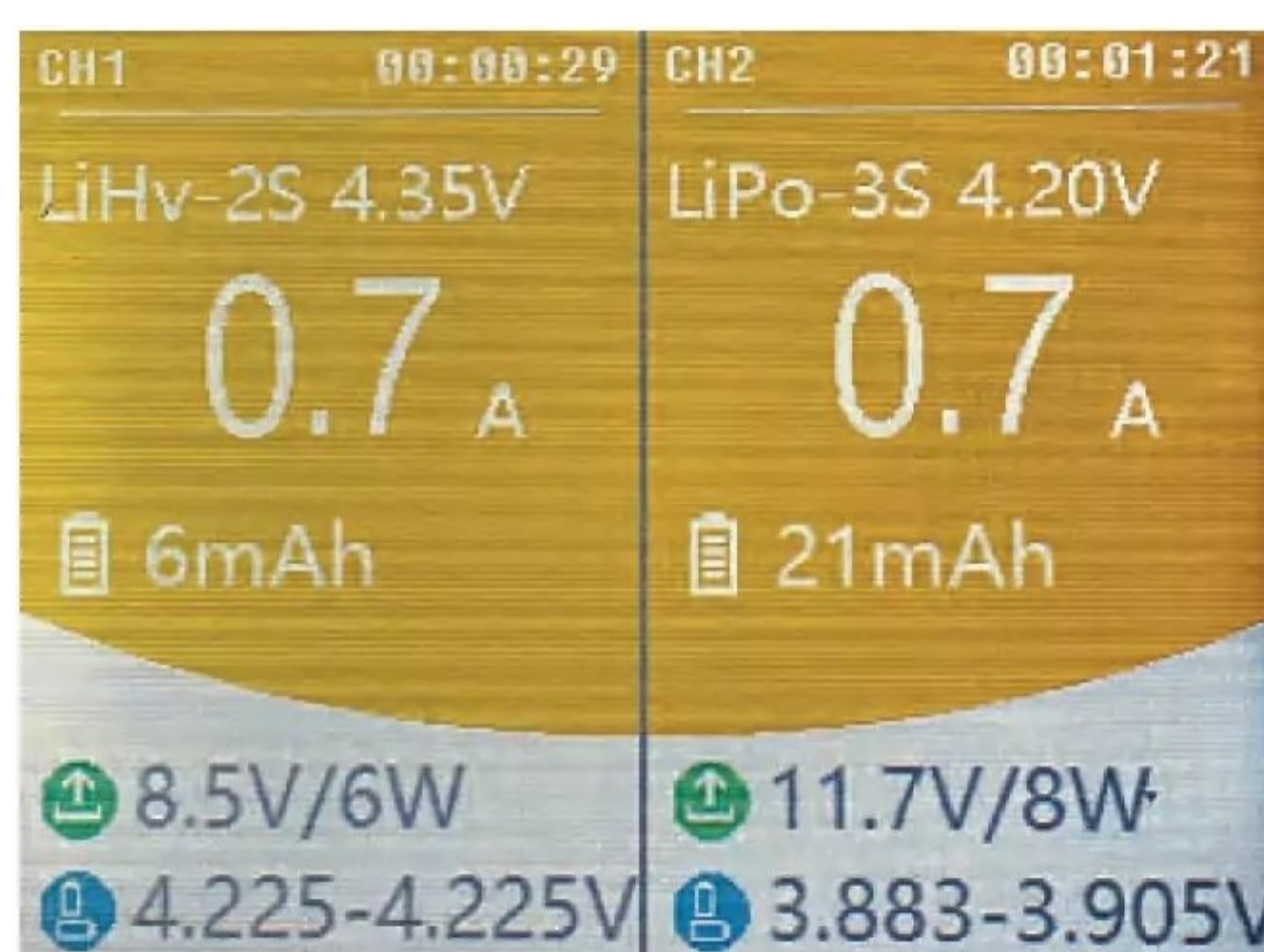
are worth keeping an eye on as any marked difference between cells will help show when a pack is starting to degrade.

When discharging, the display will light up purple, changing to an olive green when the task is complete.

SUMMARY

I have developed a real liking for this charger, mainly because of its small footprint and the speed at which it can be set up and used. It's truly a Smart Charger because after connecting a pack it does a great job of analysing the cells and setting up most parameters, just leaving you to do a quick check of the settings and to set your preferred charge rate.

It's also clever enough to copy the settings across to the second channel. So, if you are charging two packs of the same type and capacity then you will find everything is pre-set for you, ready to start charging the second pack. Easy!



Both channels can be displayed using the split screen function.



...wait a little bit longer and the display turns blue showing that the pack is fully balanced.



Different colours are used to show discharge status. Here channel one is purple showing a 2S LiHV pack being discharged using the Storage task, whilst channel two is olive green showing that the cells of a 3S LiPo are close to reaching their chosen Storage voltages.

Chargers, Wattmeters, Servo Testers and Power Supplies

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



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

New

£109.99

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



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

New

£199.99

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



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

New

£79.99

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



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

New

£169.99

ToolKitRC M4 Pocket - 80W O/P Charger



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

£24.99

ToolKitRC M4Q - 200W Quad Out Charger



The M4Q is a 4 in 1 charger that has 4x 50W charging circuits when powered by DC (4x 25W when powered by AC). Allowing you to balance charge 4 batteries at the same time. It features an internal power supply so you can just plug it into your nearest mains socket. It can also be powered by DC when at the field.

£84.99

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



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

£84.99

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



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

£49.99

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



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

£79.99

ToolKitRC M8P - Up to 20A (600W) Charging Power!



So many functions in a small charger! Battery internal resistance checker, wattmeter, servo tester, (Can output PWM/PPM/SBUS standard signal, accuracy up to 1µs) LiPo balancer. It also charges all the main types of rechargeable cells up to 20A (600W). It also features USB type A output so you can charge any mobile device.

£99.99

ToolKitRC M6DAC -



The M6DAC incorporates two high performance chargers that can be powered by AC or DC. It features 2x 2-6 cell 350W chargers and a 5V USB output that can be used to your phone or go pro at the field. Each output is normally 350W but if used in the asynchronous mode that doubles to a huge 700W!

£164.99

SKY High Power Discharger -



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

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Additional Wood Pack	AWP2618	£98.00
FG Cowl	CF2618CL	£25.00
Photo CD	FF26	£4.99

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Short Kit (Set) SET2618 **£244.00**

Short Kit (Set) Includes: Plan, FG Cowl, Focus File CD, Laser Cut Wood Pack & Additional Wood Pack



Plan & Articles	RC2259	£17.00
Laser Cut Wood Pack	WPRC2259	£95.00
Additional Wood Pack	AWPRC2259	£84.00

SAVE: Buy the set & save up to 15% on the component parts
Short Kit (Set) SETRC2259 **£176.00**

Short Kit (Set) Includes: Plan, Articles, Laser Cut Wood Pack and Additional Wood Pack.

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Atlas (65")	GP-RC1283
Curare (64")	GP-RC1323
Magic (62.5")	GP-RC1432



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Laser Cut Wood Pack	WPRC2257	£40.00
Additional Wood Pack	AWPRC2257	£42.00

SAVE: Buy the set & save up to 10% on the component parts
Short Kit (Set) SETRC2257 **£88.00**

Short Kit (Set) Includes: Plan, Article, Laser Cut Wood Pack & Additional Wood Pack



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Additional Wood Pack	AWP2902	£225.00
Canopy, ABS Cowl & Spinners	CA2902SET	£39.00

SAVE: Buy the set & save up to 10% on the component parts
Short Kit (Set) SET2902 **£405.00**

Short Kit (Set) Includes: Plan, Article, Laser Cut Wood Pack & Additional Wood Pack



Plan & Article	RC2238	£17.00
Laser Cut Wood Pack	WPRC2238	£50.00
Additional Wood Pack	AWPRC2238	£17.00

SAVE: Buy the set & save up to 10% on the component parts
Short Kit (Set) SETRC2238 **£75.00**

Short Kit (Set) Includes: Plan, Article, Laser Cut Wood Pack & Additional Wood Pack



Plan	MW2216	£14.50
Laser Cut Wood Pack	WP2216	£86.00
Additional Wood Pack	AWP2216	£93.00

SAVE: Buy the set & save up to 10% on the component parts
Short Kit (Set) SET2216 **£173.00**

Short Kit (Set) Includes: Plan, Laser Cut Wood Pack & Additional Wood Pack

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SAVE: Buy the short kit (set) & save up to 10% on the component parts

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Avro Avian (41")	SETRC2222	£161.00
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DCH-1 Chipmunk (68")	SET3444	£258.00
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DH.98 Mosquito (36.5")	SETRC2084	£167.00
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Hanger Monkey (56")	SETRC2165	£205.00
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Loaded Dice 30 EP (47.25")	SET3787	£205.00
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Rans S-9 Chaos (54")	SETRC2224	£167.00
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Renaissance (54")	SETRC2194	£202.00
Rusty Ferguson Crop Duster (65")	SETRC2229	£257.00
Slingsby T31M (86")	SETRC2062	£199.00
Slingsby Type 30 Prefect (2.3m)	SETRC2252	£202.00
Speedtwin ST2 (45")	SETRC2105	£163.00
Stampe SR-7 (53")	RETRC2228	£175.00
Stella Clipper (62")	SET3798	£201.00
Submarine S.6B (54")	SET3224	£198.00
Super Acro-Zenith (44")	SET3512	£180.00
Super Slinky (38")	SETRC2112	£169.00
Suzy Que MKI (67")	SETRM31	£169.00
T-Bird (71")	SET3803	£211.00
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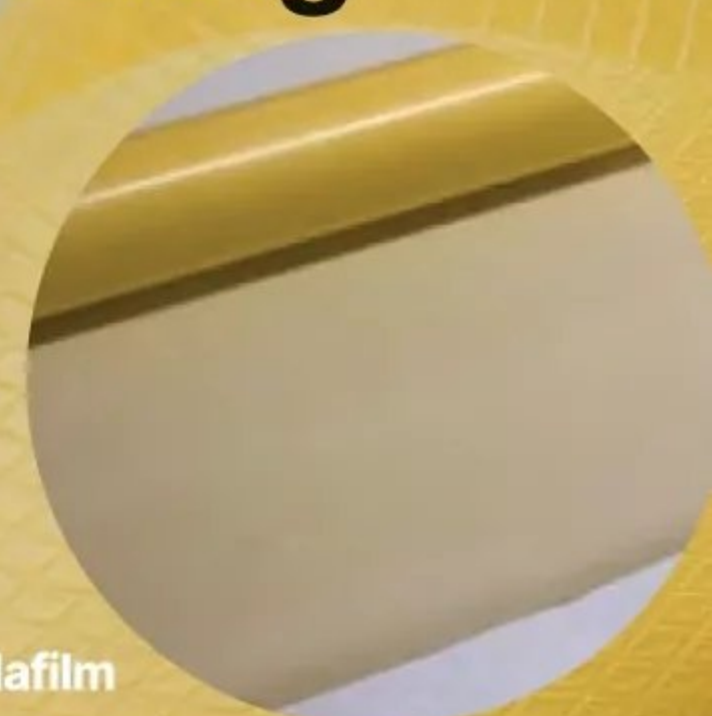
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The ubiquitous Veron Impala. Over 150,000 were sold world-wide and it is generally regarded as the first commercial UK slope soaring kit.



WIND POWERED FUN

Shaun Garrity looks back at a favourite slope soarer and its modern reincarnation

Words & Photos: **Shaun Garrity**

Slope soaring was happening well before someone decided to bung radio gear in a model. I remember reading that the first time modellers took to the hills was pre-World War 1. Inspired by Bleriot's crossing of the channel they started lobbing simple chuck gliders into the ether. Things progressed, models got larger and a magnet steering system was used to keep the model pointing into the wind to prolong the flight. Although magnet steering wasn't a mainstream part of the hobby, Trevor Faulkner was the UK's leading authority, writing numerous articles on the subject over the years.

So, when was the first R/C slope flight in the UK? Roland Scott (of Roland Scott Models in the North West of England) set up an international slope soaring record on Moel Famau (a mountain in Wales and a brilliant site) back in 1951. The time of the flight was 4 minutes

40 seconds using a ground-based valve (tube) carrier wave ED transmitter. The model looked like a modified tow line free flight glider and was much repaired. In fact, previous to the record flight the wings had folded, necessitating bracing to strengthen them; a spiral dive caused the failure.

Veron offered a purpose designed R/C model for slope soaring. Called the Impala, it was (certainly in the UK) acknowledged as the first mainstream slope soaring kit available, selling approximately 150,000 kits worldwide. Originally designed for rudder only, with the option of kick-up or kick-down elevator (but not both) from an Elmic Compact rubber powered escapement, it was the perfect introduction to this up-and-coming branch of the hobby. Kick down was the preferred option to help penetration on blustery days but kick up was more fun for aerobatics. As propo gear became

more affordable it became increasingly common to use this on rudder and elevator. In fact, the kit was modified on later production runs, with this detailed on the plan.

WILDTHING

During Covid, my interest in slope soaring was re-ignited, especially retro models from the 60s and 70s, with a few notable designs, one being the S.A.S. (Soar Ahead Sailplanes) Wildthing by Alan Head. Originally designed for the BMFA's slope combat rules, this model made a superb, almost indestructible slope hack; very aerobatic, very quick to build and easily repaired. Continuous development meant it was frequently tweaked as new ideas were tested, hence the changes in appearance. But sadly, it eventually went out of production, with un-built kits of all variants becoming highly prized and sought after. I managed to pick up an old kit



Above: Roland Scott was acknowledged as performing the first R/C slope soaring flight in the UK.

Right: Soar Ahead Sailplanes Wildthing. Every slope fan should own one.

Below: The Pathfinder was a clever electro-mechanical magnet steering unit for free flight gliders.

Pathfinder

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Actuator

The unique compass steering unit which gives your glider a brain of its own, eliminates that cross-country run, and makes O.C.S., O.O.D. (out of date). More and more enthusiasts are fitting "Pathfinder" and finding a new thrill in watching their model fighting it out with the elements. A real boon when flying in any breeze and an absolute necessity for slope soaring.

We would like to apologise for the slight delay in some cases in meeting initial orders. Production now however, is up to full capacity and all orders will be despatched immediately.

Specification: Actuator, coil formers machined from soft magnetic iron and bolted to paxolin base. Rudder bar drilled 16 gauge for hook-up to tab. Size: 1 1/2 x 1 1/2-in.; height 1 1/2-in.; weight 1 1/2-oz. Compass Switch Jewel mounted, highly sensitive sintered magnet. Silver contacts throughout. Size: 1 x 1-in.; weight 3/4-oz. "Pathfinder" equipment is easy to install. No extras are required other than battery and wire. Leaflet on request.

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from a club member, the intention being to get it in the air ASAP and relive my youth.

THE PHOENIX RISES

Visiting a model show last year I popped into The Balsa Cabin stand and was pleasantly surprised. Stewardship of this cracking EPP model, along with others from the range, are being reintroduced by Dave Hook, with Alan's guidance. Subsequently I've had a few interesting chats with Alan about the history of the company, so his story will be detailed in a future Ramblings column, along with an SAS Venom 48 I have waiting to be built.

You can see from the kit parts photo that due to prefabrication there is very little to stick together in order to get the airframe finished. Construction of Wildthing is very different to that of a traditional model, using EPP foam, Correx, glass reinforced cross weave tape



This ED ground-based transmitter is very similar to the one used by Roland. The blob on the end of the coiled lead was a simple push button for right or left rudder - that was your lot!

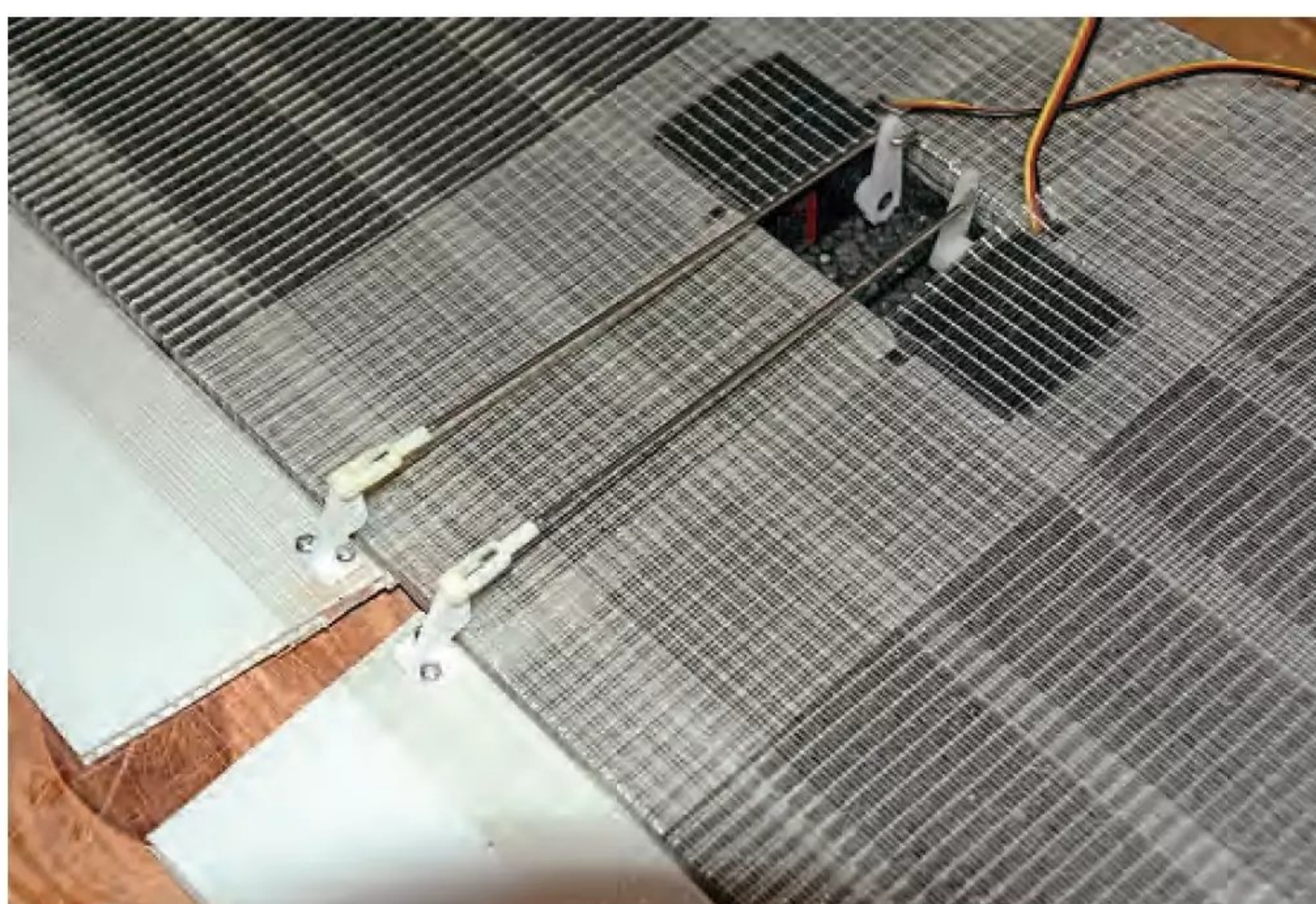




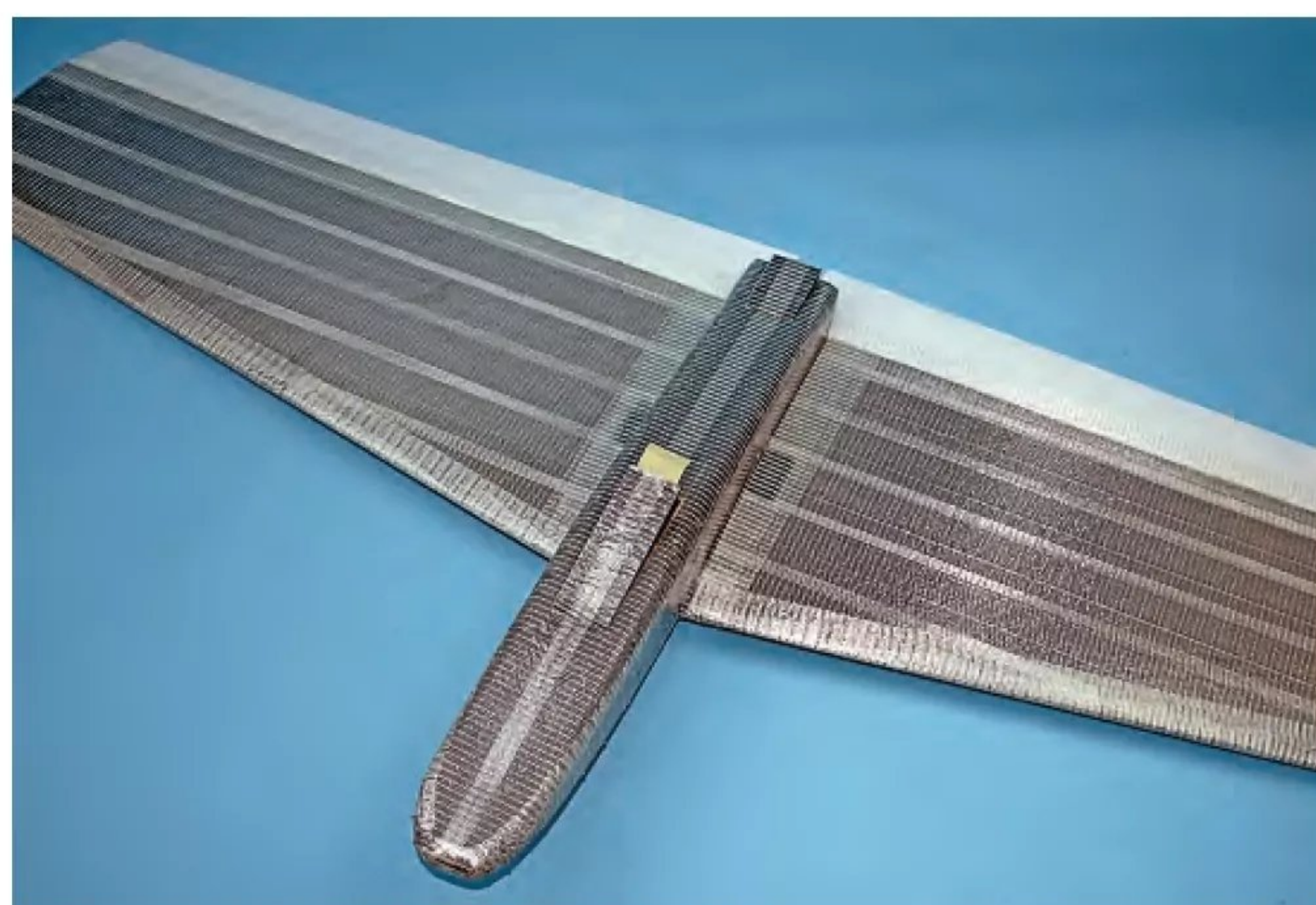
There are not many parts to assemble. The fuselage is pre-fabbed, with little finishing required.



Follow the instructions and you'll soon arrive at this point.



If you manage to get any slop or friction in this servo to pushrod connection be thoroughly ashamed of yourself. Don't forget to centre the servo horns before fixing in position.



It's important to lay the cross weave tape as directed to ensure maximum strength. I used UHU POR instead of double-sided tape to secure the fuselage pod in place.



My latest Wildthing on the left with an earlier version on the right.



DATAFILE 	
Model:	Wildthing 46
Model type:	Flying wing glider
Supplied by:	The Balsa Cabin www.balsacabin.co.uk
RRP:	£105.00
Length:	26" (1.46 m)
Wingspan:	46" (1.8 m)
Flying weight:	27 oz. (4 kg)
Functions (servos):	Elevons (2)
Other versions	
Wildthing 60	£115.00
Wildthing 30	£85.00
Venom 48	£105.00

Left: Unboxed Venom waiting to be assembled. Again, not many parts but quality components with excellently cut cores. I believe a CNC hot wire machine is used to ensure accuracy.

(CWT) and then coloured tape to dress it up. Wildthing, as mentioned, was designed for slope combat and needed to be extremely tough, quick to build and repair. The instructions are more than adequate to guide you on your way.

In the original kit the wings were manually cut using a hot wire so they required some light sanding to remove the odd crusty part or rough spot. This was achieved with some 80-grit paper fixed to the included foam block. Also, the leading edge and wing tips needed some attention to shape them (this isn't the case with the with the latest kits and little work is required to get them ready for covering). The instructions advise vacuuming the wings prior to covering with the cross weave tape to get a smooth finish. Now here is the only bit I couldn't do; it's recommended to cut the lugs off the servos so they will fit in the space provided, but all you need to do is cut (or melt out with an old soldering iron bit) slots for the lugs. Another point re servos: as they are built into the model and would take some effort to replace don't use cheap ones and preferably fit metal geared ones to save you from any potential future problems.

Now you need to cover the wing panels with CWT. The procedure is detailed in the instructions and it is important as it significantly strengthens the foam. Do follow the advice of not using spray mount or pulling the tape tight when applying. Also, you need to make several cuts to enable you to cover the compound curves, such as at the wing tips, and remember not to tape the wing roots. Very importantly, when taping up the wings place the panels back in the outer parts of foam (the saddles) they were cut from to prevent warping and only rub the tape down when each panel is covered on both sides. Regarding CWT, speaking with Dave the tape used in his kits is a quality product, just like Alan used. The tape adds significant strength and rigidity to the cores and cheap budget offerings wouldn't achieve this.

Now check the fit of the carbon rod in the wing panels and if loose add some masking tape at intervals to tighten up. For joining the foam cores some latex contact adhesive is included but because my kit was over 20 years

old it wasn't useable, so I substituted UHU POR instead. This worked perfectly but you need to ensure accuracy and don't introduce any twist. Bind around the joint with a strip of CWT.

The Correx elevons are cut to shape but are slightly over length so will need trimming. A neat feature, to reinforce where the horns fit, is to push short lengths of 1/8" square balsa down the flutes in the Correx prior to fixing the horns in place, as detailed in the instructions. The elevons are now hinged with two 1" strips of CWT. If you are applying colour trim tape to the elevons do it now as it's easier than after the horns have been screwed in place.

RADIO FIT

Set up an elevon mix in the transmitter, then push the servos into their relevant spaces, having centred them first (although a tight fit, I added a spot of UHU POR under each case just to be sure). Fix the Z-bend end of the pre-made pushrods into the servo arms.

To set the reflex, centre the transmitter trims so everything is neutral, then mechanically adjust the elevons so their lower surface is a continuation of the lower wing surface at the root. This amount of up should be a good starting point, assuming you have the C of G correct. While setting the radio up, 30% exponential is suggested.

FUSELAGE & FIN

First check the cut out in the centre spine is wide enough to clear the pushrods and horns, adjusting if necessary. Then, like the wings, sand smooth. Cover with CWT lengthwise, having at least 1/4" overlaps and cutting as necessary to go round any curves. That done, now it's time to bond the fuz to the wing. The instructions suggest using the included double-sided tape but like the latex glue my old kit tape was past its best. So, I used POR contact adhesive again to fix it in place, ensuring it was accurately positioned and that the pushrods didn't bind.

You now need to use 3" strips of CWT to form a fillet between the underside of the wing and the fuselage sides. Further taping is required but again this is detailed in the instructions.

The Correx fin needs a pre-cut balsa fillet

attaching to it first. Again, double sided tape is suggested for this and also for fixing it onto the wing; again, I used POR. If using colour tape to zhuzh it up, I would do it now as it's easier than when fixed in place on the wing.

ADD SOME COLOUR

There's a reason for taping over the CWT, other than personalising your model. It doesn't react well to ultraviolet light and over time it degrades and goes powdery, loosing adhesion. Alan suggests, as a minimum, you need to cover the upper surface of the wing, but the little extra weight by covering the whole wing makes little difference to its flight performance. I see no reason why heat shrink films couldn't be used instead, however care would be needed not to overheat the adhesive on the CWT.

GETTING SLOPE SIDE

The best part of any new kit build is flying the model and, even better in this case, I already knew how great the model was having owned one before. As long as the C of G is correct, the reflex is as suggested, and the wing is warp free it will soar like a homesick angel.

You can be very brave (not reckless please) with your Wildthing. I've had mine plant itself into the slope at around 35 mph (dumb thumbs) and it was back in the air less than 10 minutes later after checking it over and making a minor repair to the nose. Having this level of robustness will let you push the envelope and quickly expand your piloting skills.

Excellent outcome, little effort, max enjoyment - again!

CHARGING MAYHEM

I've recently been somewhat limited in my modelling endeavours due to shoulder surgery. If old Shaun could have a chat with teenage Shaun, he would definitely advise him that his hobbies of cliff diving and downhill skiing would not be without consequences, specifically dislocating his shoulder eight times over the years.

Yep, when you get it wrong, it goes epically wrong. Still, on the upside, I've had a couple of free trips in mountain rescue helicopters



Early NiCad chargers were simply a bunch of resistors fixed to a heat sink. Slightly more sophisticated ones used a clockwork timer. Both could be dangerous in the wrong hands.



My early attempt at an all-in-one field starting / charging station. It included a 12-volt gel-cell but could also be mains powered for shed use. A great idea - until you tried carrying it!



Several companies offered easily constructed charging widget kits for field use. Every one I built worked well and they were relatively inexpensive.



Above: This was my pride and joy, the kit-built Ampere Flyer NiCad charger. 2–24 cell capable, with peak or thermal cut off. Sold in the UK by Gordon Tarling, it was designed by members of the 1982 Benelux Electro Team.

Left: SM Services sold these ready to use Tx / Rx, multi charger units. Wanting all the toys, I bought the Multi Charger, Cyclor and Capacity Meter. It cost a fortune but worked well and looked impressive with all the LEDs and LCD illuminated.

Below: Hopefully this will now provide everything I need charging wise. Still looks OTT though.



This is my 'laughably' reduced pile of copper spaghetti. There's another stack of shame currently shoved in a drawer.



and was able to enjoy the Alpine vista from a new perspective, even when pumped full of strong pain killers. The last dislocation I wasn't even involved in any adrenaline pumping endeavours; I was in bed asleep, my arm under the pillow and I inadvertently twisted round and out it popped yet again.

Anyway, post-surgery, with one good arm and one in a sling for five weeks, I decided to sort out my lifelong collection of chargers and leads. After digging out four cases full of accumulated electronic detritus, I knew it was time to get sorting. The chargers ranged from simple resistors, clockwork timers, multi-port charger / discharger / capacity measuring set ups to kit built Ni-Cad chargers and a raft of multi-function, NiCad, NiMh, PB, LiPo, Lilon, LiHv, LiFe boxes of electronic wizardry.

The clockwork NiCad chargers generally worked fine, as long as you only tried charging flattened batteries. But if the timer stuck and the battery overcharged it would explode and rip open, sending shards of metal and chemical rubbish in all directions. The resultant bang would have shocked Oppenheimer!

And then there were the dozens of leads and converters I'd fashioned over the years. It made me realise that laziness had played a large part in this ridiculous collection of copper spaghetti. Yes, if I needed a lead / converter it was quicker to make up a new one than root through all the boxes and that's the reason I ended up with multiples of the same lead. So, after sorting them all out, side-lining the ones I will never use again, the reminder were put in zip-lock bags, suitably labelled with my new label printing toy.

Now for the chargers. What to dispose of and what to keep? Modern multifunction chargers are brilliant in comparison to models available only five years ago and they are so compact. I recently bought a pocket sized ToolkitRC 500W, 15A, twin output, 6S Lithium capable, multifunction unit that seemingly does everything; you can even recycle the energy from a battery when taking it down to storage charge, using the excess electrons to fill another one up - brilliant. Two of these will do everything I need and they only cost around £75.00 each.

I'm finally sorted now, with everything I require in one small aluminium case - or so I thought... I've just had to make up yet another adaptor for a LiPo Killer I recently purchased - a simple inexpensive device to safely flatten LiPo's prior to disposal.

ANGEL WINGS

If you're a fan of indoor aerobatics then I'm sure you will have heard of Andy Whitehead, who set up the BMFA English Electric Masters, F3P / F3P-AM competitions and designed and kitted contest winning models. Andy has now started a full-time business making essentially sub 250g Flying Wings, DLG and powered models.

Recently, whilst on the slope, I bumped into him and the result was ordering a couple of his models. The Smash is a compact 800 mm flying wing, highly manoeuvrable, designed for combat and sport flying. It's exceptionally quick to build (eight parts), very robust but can fly in minimal wind conditions that would down most slope soarers. Smash retails at £39.99

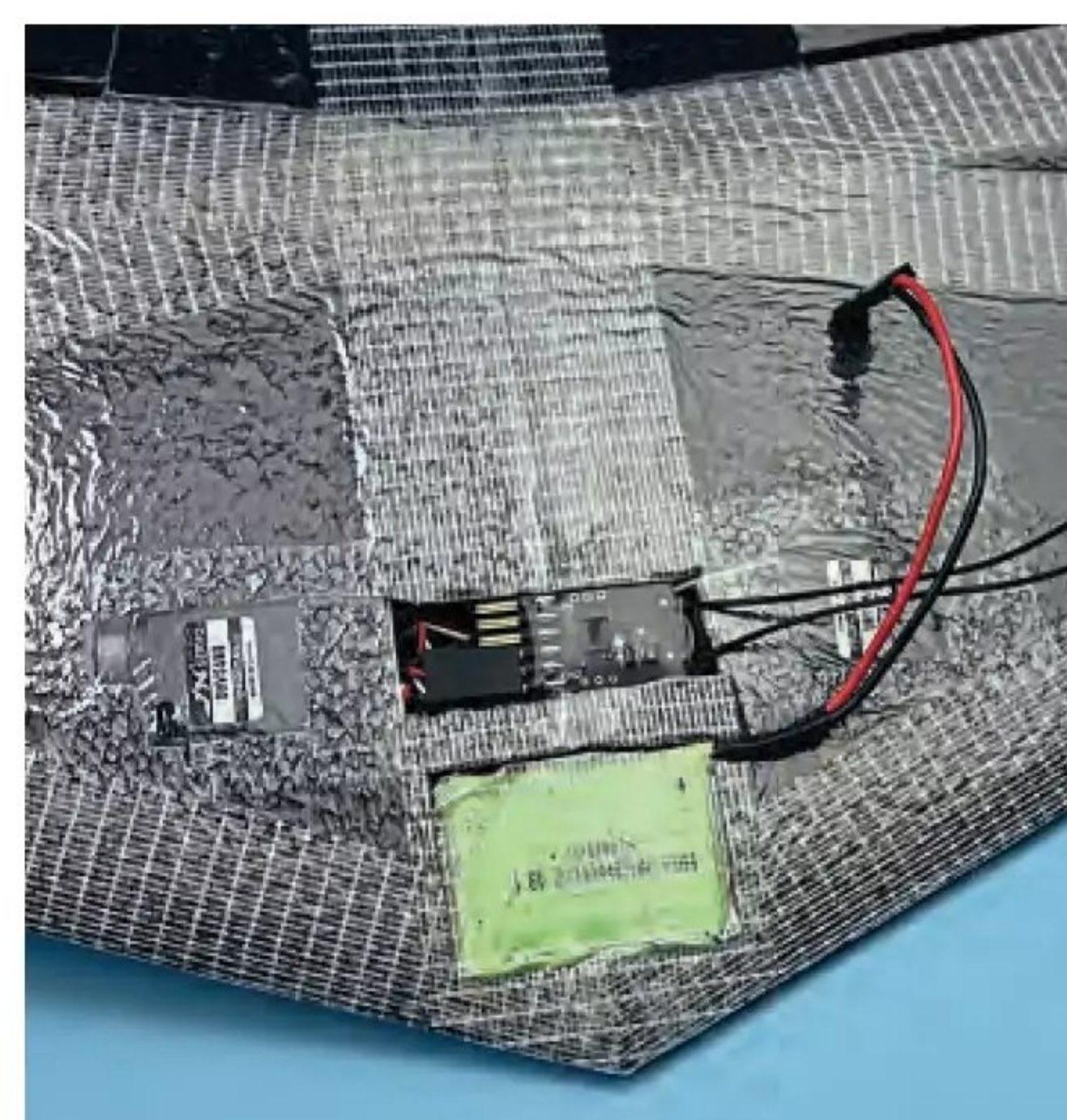
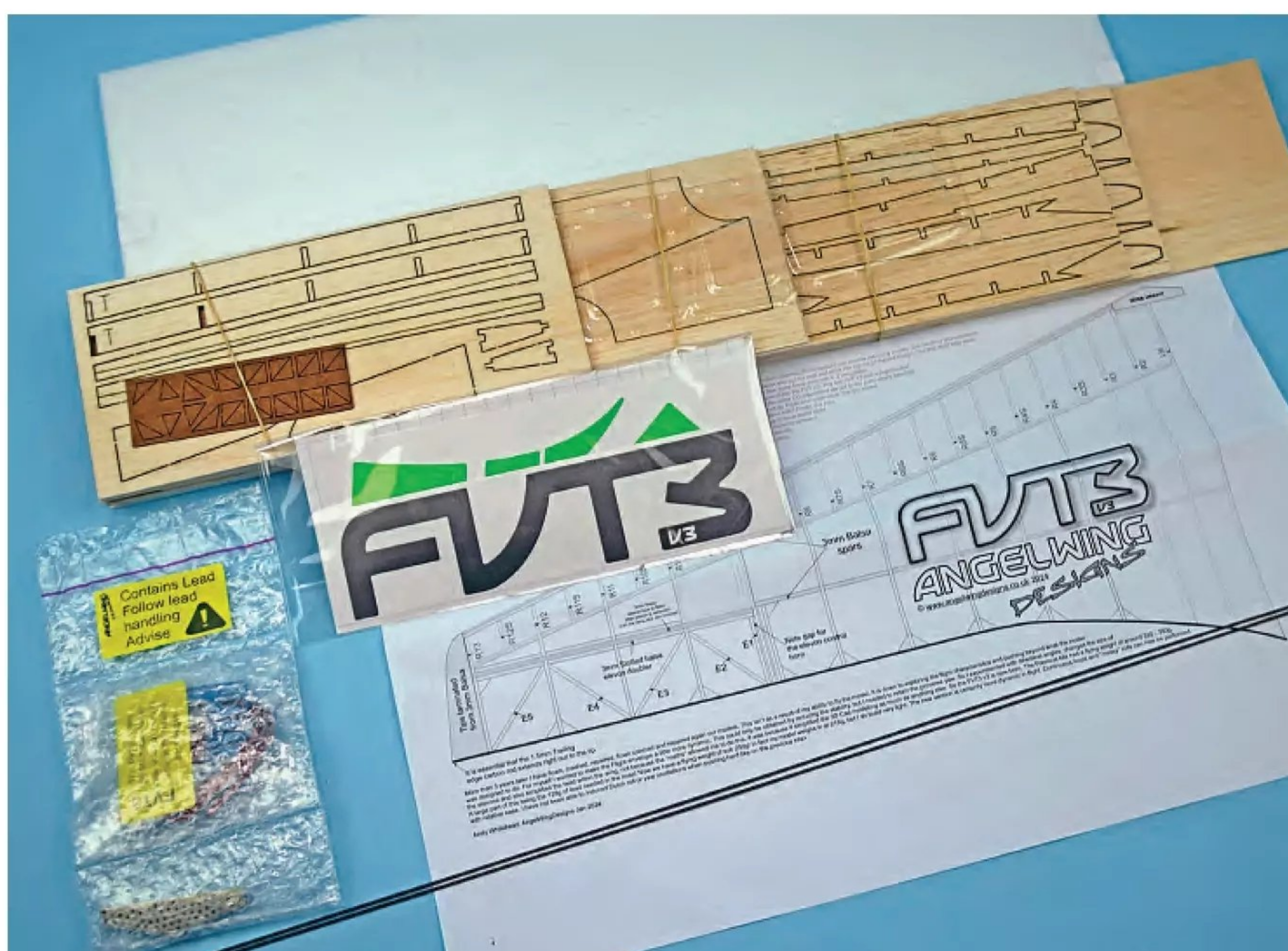
The other model is truly unique. FVT3 is a 1200



Angel Wings SMASH. Very few parts are the reason it takes little time to get in the sky. The decal was knocked up by my mate, just to be a little different.



Finished and ready to go. You can see the cross weave tape (as used on the Wildthing) under the Doculam covering. Again, a bespoke decal was used to jazz it up.



Above: Servos, battery and Rx are a push fit in the foam.

Left: Angel Wings FVT3 Prandtl wing. The kit includes a Depron jig to form the unique trailing edge shape. Another one in the build stack, but it should go together quickly due to the quality laser cutting and great instructions.

mm flying wing with no vertical stabilisers, drag rudders or wing fences and simple elevons for control. What makes this aircraft very different is its Prandtl wing form, having a Bell Shaped Lift Distribution pattern. It can perform in almost no wind but doesn't like turbulence. I'll also be covering the build of this model in a future column. More info is available on Angel Wing website (www.angelwingdesigns.co.uk) detailing the science and development of the model, plus their other offerings. FVT3 costs £79.99.

MYSTERY ITEM

Well, I've finally managed to win one. Nobody solved what the last item was.

Richard Dowsett had an educated guess with a servo tester, possibly manufactured by Skyleader (because it was yellow); close but no cigar. Actually, it was a D.S.C (Direct Servo Controller) unit manufactured by Kraft and offered with their Concept 76 series of radios. It plugged into the receiver charge jack on the switch harness and allowed you to actuate

the retracts and run the engine up without switching on your Tx, as favoured by aerobatic and scale competition flyers and extremely useful on busy flying fields. Back in the day (1976) it cost \$35.00 (US), equivalent to approximately \$190 today or around £150.00. Kraft's popular KP-7C, seven channel Tx/Rx, four standard servo set up would now cost approximately £2,400 (according to an online inflation calculator). Wow, it makes you realise how relatively inexpensive our hobby is today.

Don't forget the 12th Ponte Electro and Retro Meet is getting closer, on July 20th & 21st. If you haven't started getting ready, now's the time to get a wiggle on so you can join in the fun. Details in Going Places near the back of this issue or visit www.singlechannel.co.uk. There's also a discussion thread on www.mode-zero.uk ■



Last column's mystery item was the Kraft DSC unit. It allowed Direct Servo Control of a model's throttle and retracts without switching your transmitter on. Perfect for busy flying sites.



Andrew White entertained us with a very enthusiastic flight with his VC10. Tyrell from the University staff was so taken with the activities he swapped his shift to come back on Sunday!

SCALE INDOOR R/C NATIONALS

The 2024 Scale Indoor Nationals is a highlight of the scale calendar. Danny Fenton reports from the R/C event held at the University of Wolverhampton in late April

Words & Photos: **Danny Fenton**



Andrew White's Vickers VC10 during a demo flight at lunchtime.

This year's Scale Indoor Nationals took place over the weekend of the 20th and 21st April. The STC (Scale Tech Committee) have used the Walsall campus of Wolverhampton University as the venue for the Indoor Free Flight Nats since 2015. For the last three years the STC have managed to incorporate the Indoor R/C Nats on the Saturday, with Sunday's Free Flight competition, creating a full weekend of scale aeromodelling. This makes it easier to justify the travel from Europe and is therefore attractive to some of our international friends. Many visit the events at Walsall and Nijmegen, Holland and see the two weekends as 'book ends' to the season.

As an added incentive, this year we arranged a trip to the Royal Air Force Museum Midlands at RAF Cosford. Nine modellers jumped into cars and assembled at the Museum just before midday on the Friday, finally being thrown out at 5 pm. I think we could all have stayed for a further few hours!



What a motley crew! L to r: Danny Fenton, Dawn Hawkins, Peter Evers, Mats Johansson, Caroline Simon, Paul's sunglasses, Hari Simon, Mike Stuart, Andrew White, Colin and Brian Seymour.



The English Electric Lightning on display at Cosford. We were fortunate the exhibits had recently been given a scrub and looked fabulous!

The weekend also includes a very convivial meal at a local eatery on Friday evening. This is a relaxed way for everybody to get into the spirit of the weekend. Saturday evening also includes a meal, when many of us gather at a well-known, and probably one of the best, curry houses in Walsall. The evening was terrific, and it was interesting introducing Caroline and Hari Simon to an Indian curry. Caroline is from Australia and Hari is from Germany, where they both live. The look on Hari's face after his first taste of lime pickle was priceless.

If you haven't been to the event, you really must join us in 2025. April 26th and 27th are the provisional dates, with a possible trip to RAF Cosford on the 25th.

FLY IN REVERSE ORDER

The competitors fly in the reverse order to their entries being received. This gets entries in early and allows the flight and static judging forms to be pre-filled with the competitors data.

To give an idea of the camaraderie between the competitors, Andrew White kindly swapped his flying position with Hari Simon. Hari's entry was one of the later ones and as such he was due to fly first. Hari was flying at the Nats for the first time, so he was unfamiliar with the set up at Walsall. This camaraderie was carried through to my flights, where a dodgy battery prematurely ended my contest. Several competitors offered 1S cells for me to use. Competitors we may be, but first and foremost we are friends. ➔



Andrew White's glorious Avro Vulcan. Andrew opened the event with his Flying Only entry.



Peter Evers lovely little DH.82 Tiger Moth.



Antonin Alfery's delightful Cessna Bird Dog. This model would have been at home in Open Scale. It flew very well.

Eric Strefford has been campaigning this scratch built SE5a for a while. I have seen it fly beautifully at St Helens and RAF Shawbury but it always goes to pot at Walsall. Eric is a hugely enthusiastic aeromodeller. Your day will come, Eric!



We run the R/C Nationals slightly differently at Walsall. The rounds are flown consecutively rather than a round of each class. This has several benefits: static judging is easier as all the models are available to be judged, also the modellers don't have to keep swapping static and flying props and moving models from the judging table back to the pits to prepare for flying. It does mean the spectators have to stay until after 2 pm to see the Kit and Open classes but it works well and the competitors prefer doing this.

FLYING ONLY

The 'Flying Only' class is open to all scale models and these can be ARTF foamies, provided they are based on a real aircraft. There are just four manoeuvres that are flown, plus take-off and

landing. All the manoeuvres are scored from a possible 10 points and this score is then multiplied by what we call a 'K' factor. The 'K' is different depending on the manoeuvre. For example, take-off and landing have a 'K' factor of 15, as do the two mandatory manoeuvres 'Figure of Eight' and 'Descending Circle'. The two optional manoeuvres, chosen by the competitor, have a 'K' of just 10. These manoeuvres were typically 'Overshoots' or 'Procedure Turns'. There are several to choose from and studying the rule book is a must.

There is one more area of the flight that is judged and that is 'Realism in Flight'. This has a weight, or 'K', of 20 and is where the judge assesses how realistic the model appeared throughout the flight, taking

into consideration speed, smoothness and manoeuvre selection. You can see that a good take-off, landing and a smooth flight will get you 50% of your marks.

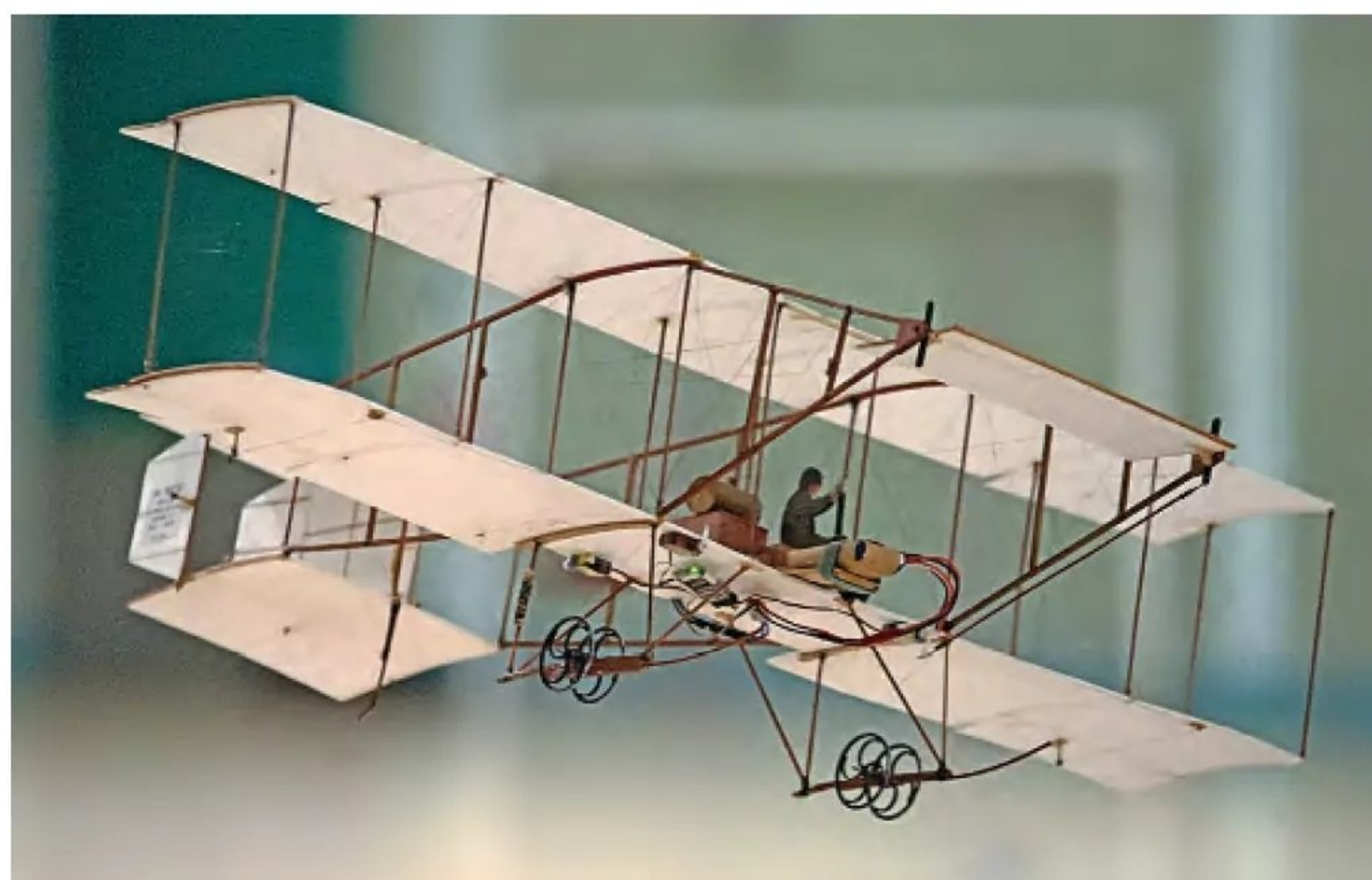
Many of the models you will see in all the classes are scratch built from a variety of materials; Depron (foam), Vector Board (foam), some are carved from blue foam, as well as traditional balsa and tissue airframes. Eric Strefford and Antonin 'Tonda' Alfery have been making heat and vac-formed foam models for a while and they are very successful. The ingenuity of the modellers is amazing and Andrew White's superb Handley Page HP 42 is a case in point. Depron and Vector Board, as well as carbon fibre, are all used in this impressive model.



This lovely SE5a was built and flown by Mat Dawson.

Liam Strefford's lovely Veron 150% Chipmunk produced by VMC.





Al Foot flew his Bristol Boxkite in Flying Only.



Andy Bowman campaigned his 1/18th scale Westland Widgeon in Kit Scale.

The standard of flying, if you ignore my rubbish efforts, was really high and the effort to stop our Scandinavian friends winning all the trophies was valiant. However, three of the top five in 'Flying Only' were from across the Channel. A huge shout out to Nathan Strefford, flying a Spacewalker, for winning silver, a brilliant achievement. If Nathan and his brother Liam start competing in outdoor scale then everybody had better watch out!

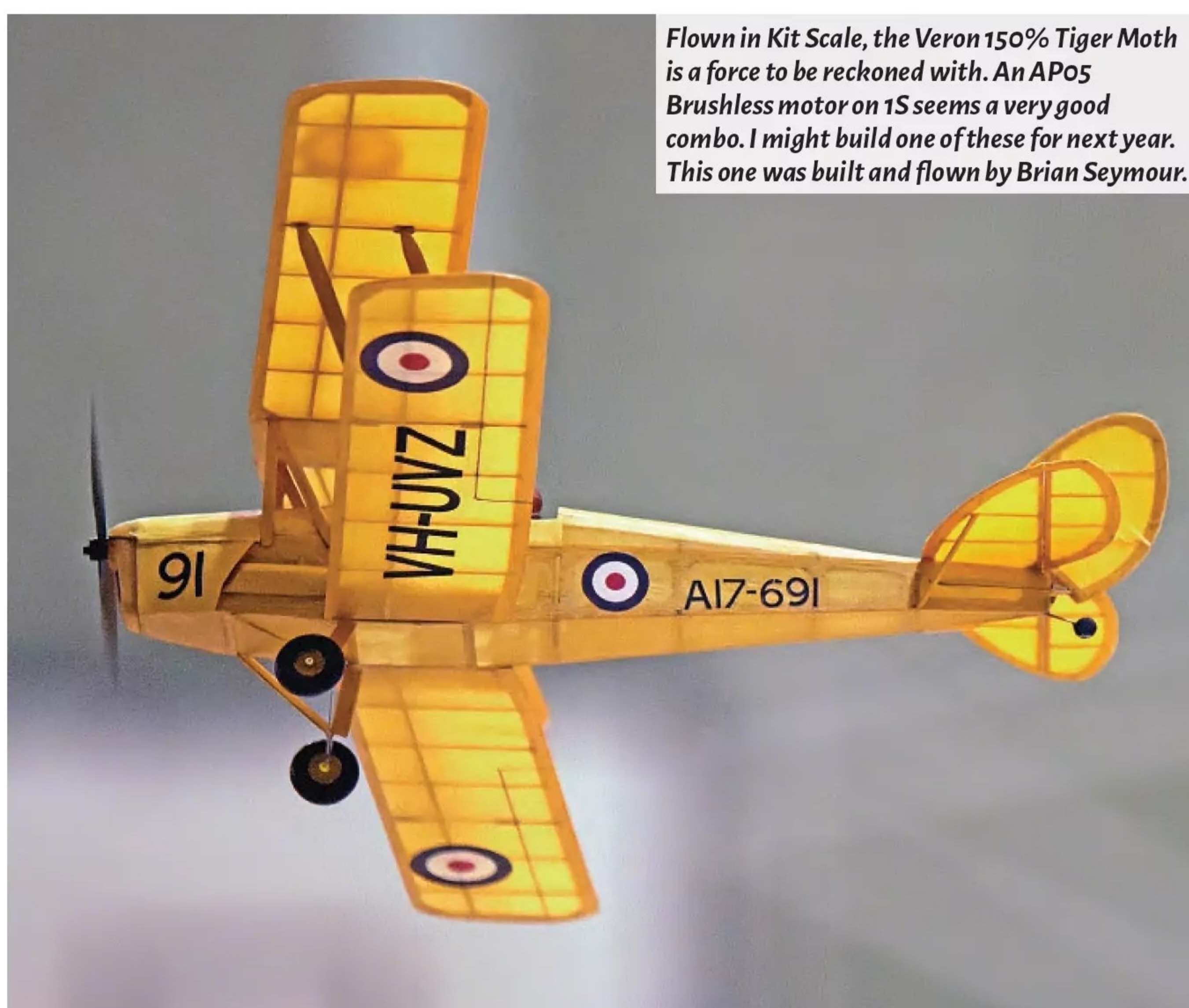
Several flyers opted for Microaces kits in the 'Flying Only' class. These models are fun to build and are a lot more involved than they first appear. They all build into lovely replicas of the full size. Jon Porter has done a fantastic job bringing these all to life and they fly really well. ✈



Andrew White built and flew this glorious Handley Page HP42 'Hannibal'.



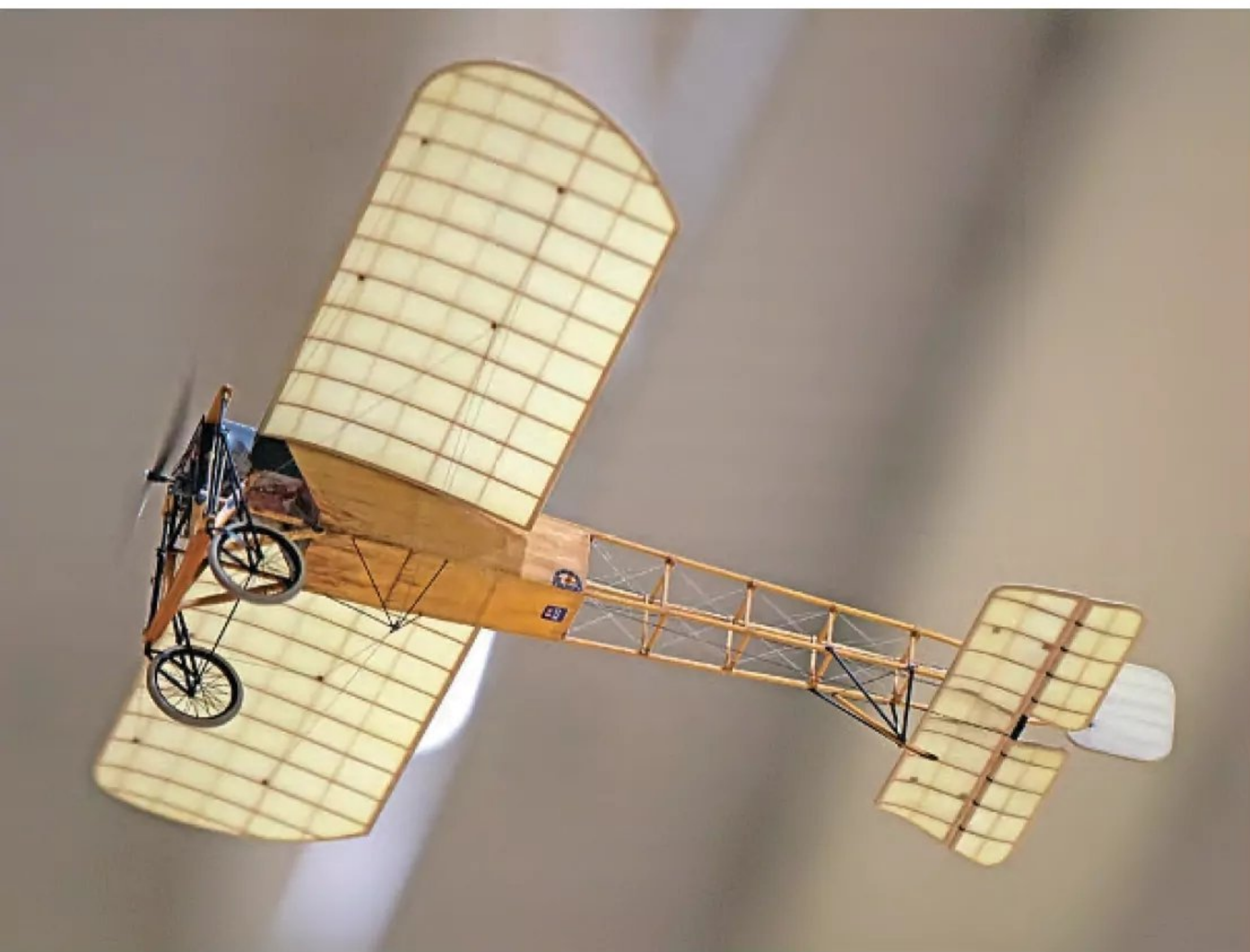
Hari Simon came over from Germany to campaign a lovely Sig Antoinette in the Flying Only class.



Flown in Kit Scale, the Veron 150% Tiger Moth is a force to be reckoned with. An APO5 Brushless motor on 1S seems a very good combo. I might build one of these for next year. This one was built and flown by Brian Seymour.

The Strefford table with an impressive collection of moulded Depron 'Reno' racers. The Super Corsair 57", a Rare Bear and a F7F Tiger Cat from 1976. They flew like they were on rails.





This delightful Bleriot XI was built and flown by Mats Johansson in the Open Scale class.

KIT SCALE

For 'Kit Scale' I saw several Vintage Model Company (VMC) aircraft. The Veron 150% Tiger Moth is probably the best model to dip your toe in the water. VMC very kindly donated some rather splendid trophies and vouchers for the class.

Hari Simon was still covering his SIG Antoinette just days before the event, but you would not know. It was as though he had been flying it for years.

Hari and Caroline were great company throughout the weekend, and there was much discussion around building more of 'Those

Magnificent Men in their Flying Machines' type aircraft. I am quite keen on a 1/10th scale Blackburn Monoplane or Demoiselle. These events are important to stoke the fires and get the enthusiasm going for the year.

PYLON RACE

The usual lunch break was interrupted with a casual Pylon Race. This is good fun. It is supposed to be relaxed but several competitors take this event very seriously. Eric Strefford and the Strefford twins, Nathan and Liam, flew some amazing Vector Board moulded models just for the pylon race. The eventual winner



This delightful 1/20th scale Spitfire Mk IX was built and flown by Atonin Alfery. This looked like the 24th scale Airfix Spitfire except it flies! A stunning model.

of the Pylon Race was a local Greenacres flyer, Mark Travers, flying a UMX P-51 Mustang.

OPEN SCALE

The Open Scale class was not as large as usual, with several of the regular stars unable to attend. We really missed Graham Smith, Rob Wardale and Graham Green, amongst others. But the standard of modelling was very high and what we didn't have in numbers we made up for in quality. Mats Johansson's lovely Bleriot was a joy to watch float by. In fact, they were all beautifully made.

Another shot of Tonda's fabulous Spitfire IX.





Another view of Mats Johansson's delightful Bleriot XI.

Andrew White's lovely HP 42 was a delight to see. This model just oozes character and Andrew flew it really well. The lower two propellers are freewheeling. I think I overheard Andrew say that the twin motor set up was taken from the E-flite A10 Warthog.

A BIG THANK YOU

For this year we created a new scoring system and a new method for collating and entering the results. This system worked very well and it meant that Dawn and Jill had an easier day than they usually have. Without the team of helpers this event couldn't happen. We are lucky to have an amazing team of organisers, helpers, judges and, of course, sponsors.

The university staff were great, with nothing being too much trouble. A slight hiccup at the start meant we kicked off a little later than usual. But we made up time as the day went on so it was no problem at all. One member of the university team was so enthralled by the aeromodelling that he swapped his shift and came back in on the Sunday!

The people are what make this event special and it is safe to say that everywhere I looked people were smiling. No matter how their competition was going, smiles were firmly stuck on faces.

ON THE PODIUM

Big congratulations to the winners:

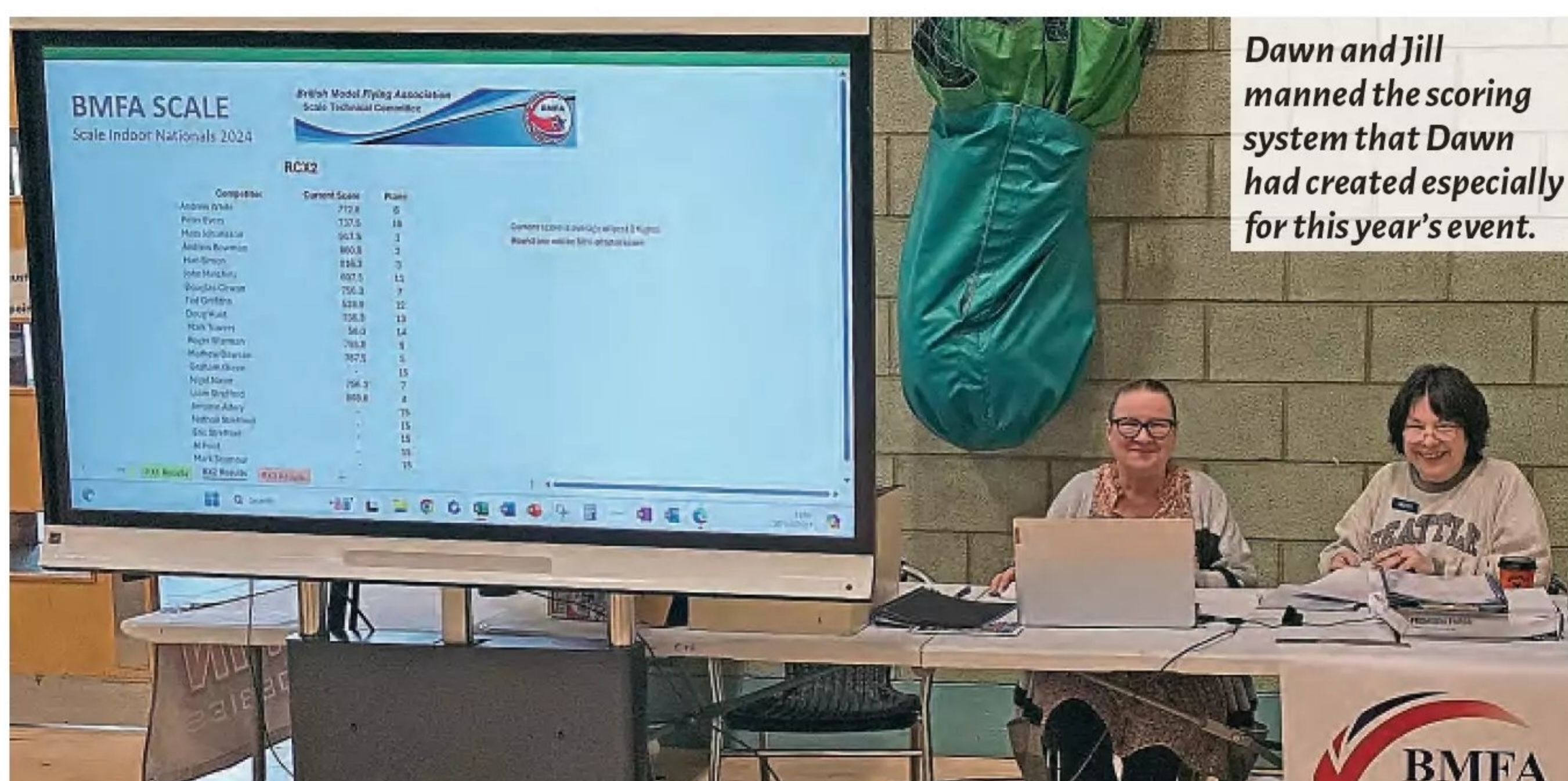
Flying Only: 1st Mats Johansson, 2nd Nathan Strefford, 3rd Antonin Alfery.

Kit Scale: 1st Brian Seymour, 2nd Ian Palliste, 3rd Andrew Bowman.

Open Class 1st Mats Johansson 2nd Antonin Alfery, 3rd Andrew White.

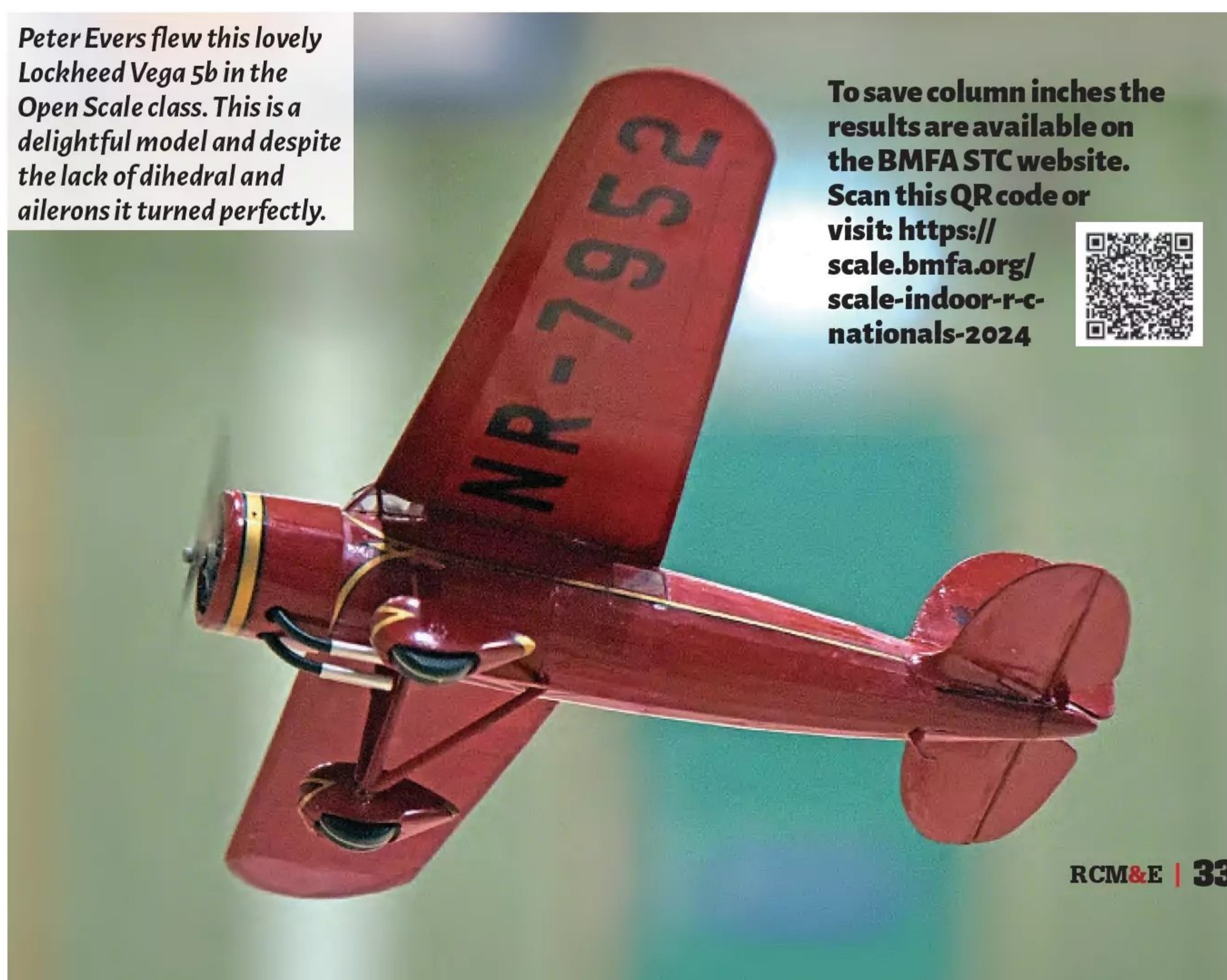
I think that just about wraps it up from me for today.

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



Dawn and Jill manned the scoring system that Dawn had created especially for this year's event.

Peter Evers flew this lovely Lockheed Vega 5b in the Open Scale class. This is a delightful model and despite the lack of dihedral and ailerons it turned perfectly.



To save column inches the results are available on the BMFA STC website. Scan this QR code or visit: <https://scale.bmfa.org/scale-indoor-r-c-nationals-2024>



SANS EGAL

Alex Maxfield converts an A2 free flight glider to radio control - with a few modern tweaks!

Words & Photos: **Alex Maxfield**



Alex displays his Sans Egal. A classic shape with a few modern touches.



“I would strongly recommend the 2M RES class of model for all who might be considering trying thermal soaring”

Sans Egal is best left flying itself in lazy circles with a little up elevator and occasional rudder input.

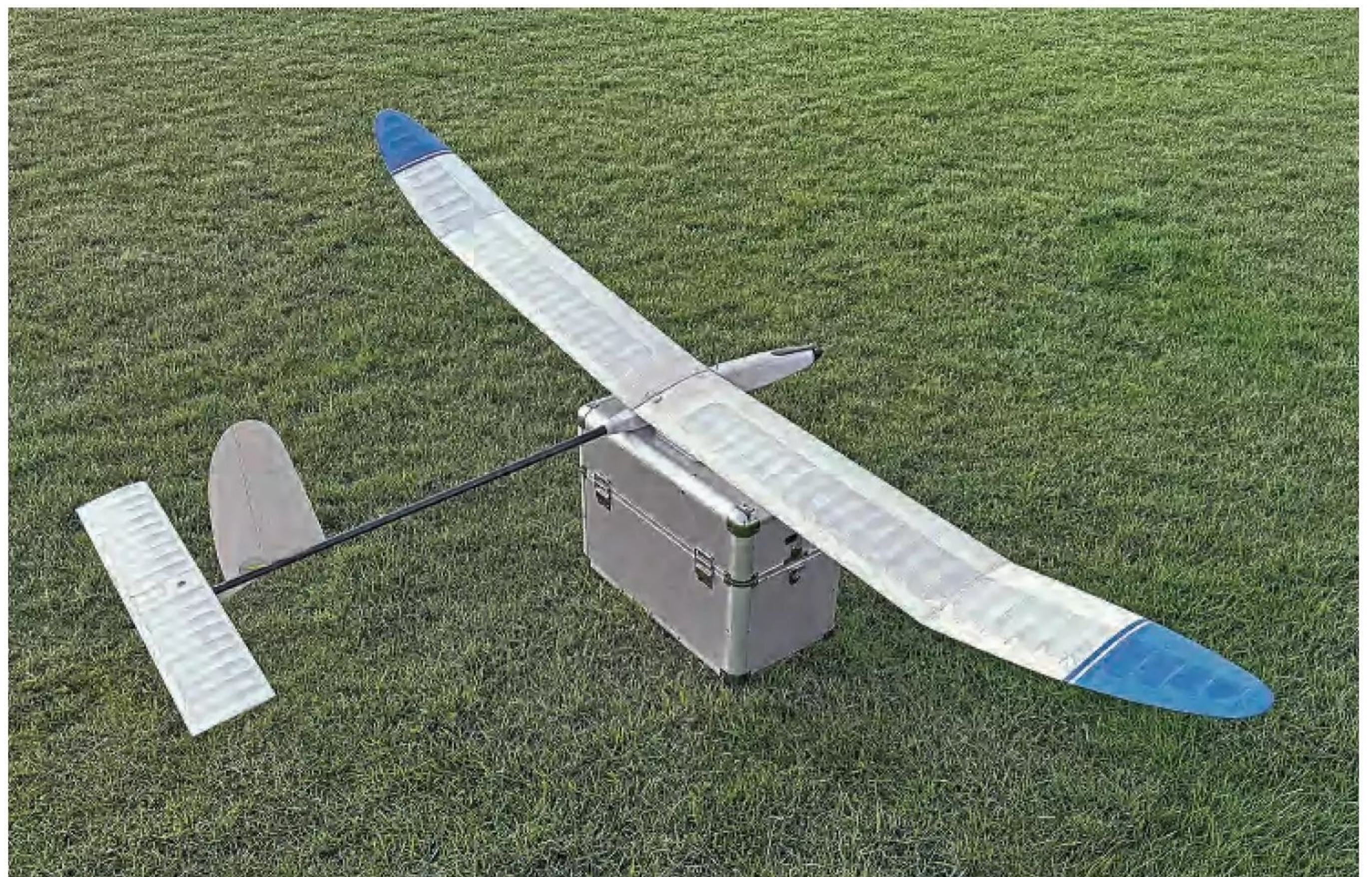
Last time I wrote for RCME it was in 2023, a two-part build of an F5J competition electric motor launched thermal soarer; I was preparing to attend the 2023 F5J World championships in Bulgaria. That event came and went. I attended, I competed, I did badly. The event itself was heavily dominated by the French team, with Adrien Gallet taking the overall World Championship title, his brother Romain taking the junior title and his teammate Marie-Ange Groz taking the female title. New Zealand took the team title. My teammate Simon Haley flew very well and was best placed Brit.

Anyway, winter arrived and faced with a few days off work over Christmas, I started to get the itch to build something glider-ish. For a while I was considering a Leprechaun, a large open construction and very low aspect ratio old floater that would be a nice challenge to build. My flying buddy Brian Johnson talked me out of it. Instead, he suggested a 1950s A2 class free flight glider called Sans Egal.

SANSE GAL

The Sans Egal was designed by Reino Hyvarinen in the 1950s. Reino came from Finland and since I work for a Finnish company there seemed to be a connection. Sans Egal can be translated to mean ‘without equal’ and Reino had some very good competition results with his model. I’ve also seen the Sans Egal called the ‘Kiuru’ which is Finnish for Skylark. The plan was published by Aeromodeller and is still available from Sarik Hobbies: <https://www.sarikhobbies.com/product/g725-sans-egal/>

The as designed Sans Egal weighed 440 g and had a 2,032 mm (80”) wingspan. I wanted to



Tissue and dope are an appropriate way to cover this lovely glider.

add rudder / elevator R/C and be able to fly it in the 2M RES (Rudder Elevator Spoiler) thermal soaring competition class with an electric motor launch, although I had no intention of fitting a spoiler or air brake as it was not used on the original.

I would strongly recommend the 2M RES class of model for all who might be considering trying thermal soaring. Visit the BARCS (British Association of Radio Control Soarers) website for more information on this class and many other glider classes. For those of you who might be shy when it comes to competing, remember

that thermal soaring is always a competition against gravity, so why not fly alongside other glider flyers and develop your skills with a friendly bunch of people.

Much has changed in the range of building materials since the 1950s and I planned to make the most of what was available these days. But I wanted to try and keep the original look and feel of the original model as much as possible, so maintaining the planform, span, aspect ratio, flying surface moments etc. I also wanted to keep the weight close to the original design.



Left: Holes in the ply/balsa sandwich formers were cut so that the boom would slide into the fuselage and be well aligned down its length.



Below: The front fuselage pod has balsa sides with spruce longerons and balsa fillets in the corners to allow for rounding when sanding to shape.

THE FUSELAGE

The original fuselage is very skinny with a long tail moment. Construction is largely a balsa clad spruce framework. I was concerned about its stiffness and durability and decided early on to switch the rear end of the fuselage from the spruce/balsa combination to a pre-manufactured carbon tapered boom. I bought a 900 mm long carbon wrapped boom that tapers from around 18 mm diameter to 12 mm diameter with very good stiffness/strength to weight properties. These booms are readily available for use with today's free flight gliders. I shortened the length from the thick end of the boom, sizing it to extend under the wing to 50% of the wing chord (to comply with the 2M RES rules) and be the same length as the original Sans Egal. Apologies to the classic model aircraft purists for this decision - in addition to a few other decisions I took...

I designed and built a balsa front part of the fuselage, trying to keep the same look and feel whilst being just big enough for the R/C gear, launch motor, ESC and battery. I took care to

build ply/balsa sandwich formers with holes cut so that the boom would slide into the fuselage and be well aligned down its length. The fuselage was made from 1/8" balsa sheet sides with some spruce longerons, sheeted top and bottom with balsa fillets in the corners to allow a rounded section to be shaped so that the folding propellor would fit well.

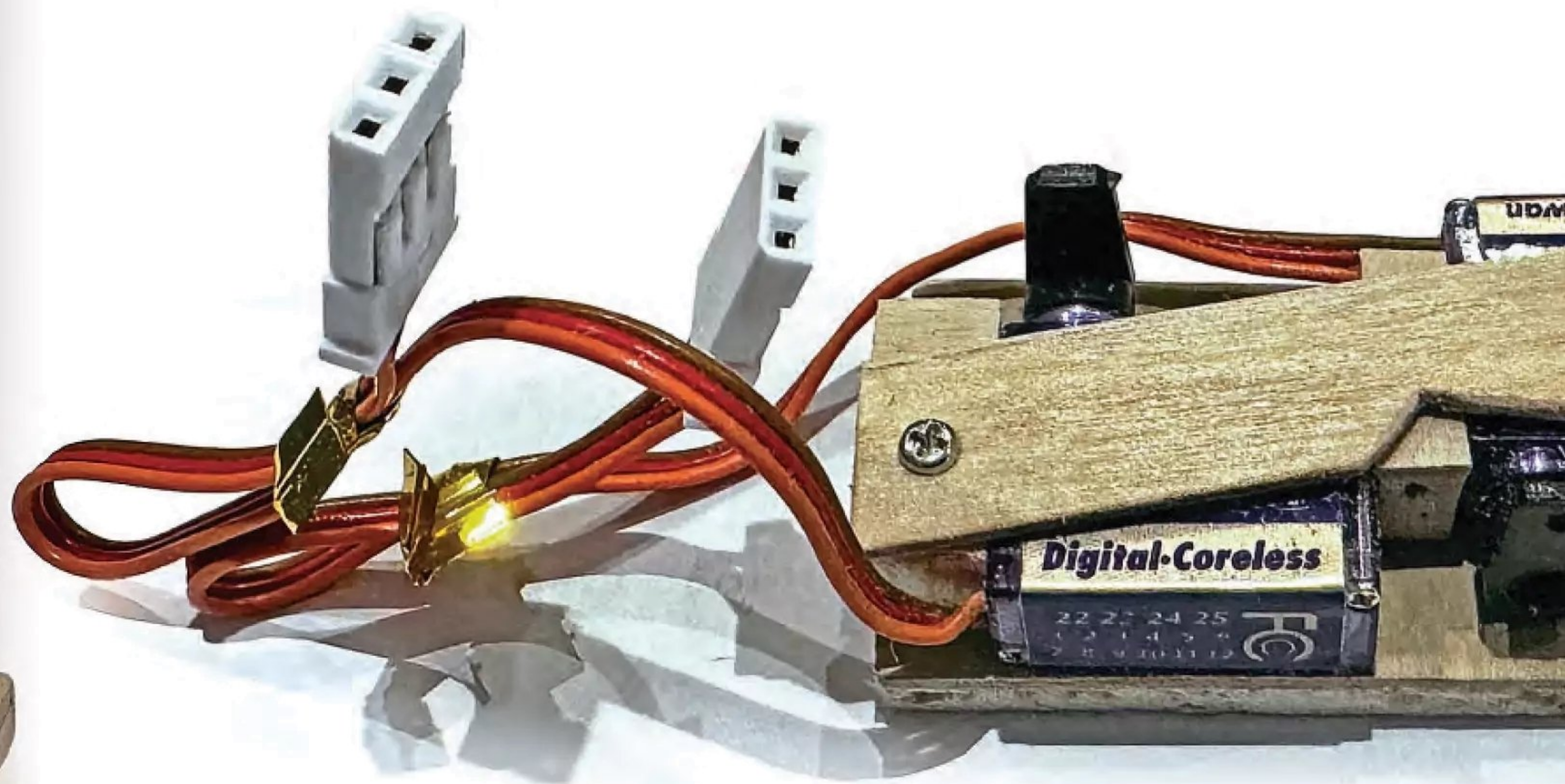
I used two small servos, laying on their sides, to drive the rudder and elevator through 1 mm carbon pushrods inside PTFE tubes tacked to the inside of the boom using thin cyano. Instead of clevises I used 1 mm piano wire formed to an L shape and glued to the pushrods with some thin fibreglass filament wrapped around the wire and carbon rod, all treated to a dousing in cyano. Careful set up of control surface neutral is required since there is no length adjustment available using this method.

The fin on the original free flight Sans Egal was tiny. And I mean really tiny. I was concerned about having enough directional control and thermal turn stability (flying the model in a

"Sans Egal wing has quite a high aspect ratio, thin and highly cambered wing section with elliptical wing tips"



Left: Sizing the hole in a former using sandpaper wrapped around the carbon boom.



Above: Two small servos, lying on their sides, drive the rudder and elevator through 1 mm carbon pushrods inside PTFE tubes.



The wings attach to the fuselage using nylon bolts that thread into custom made aluminium plates. The servo mount is situated below.

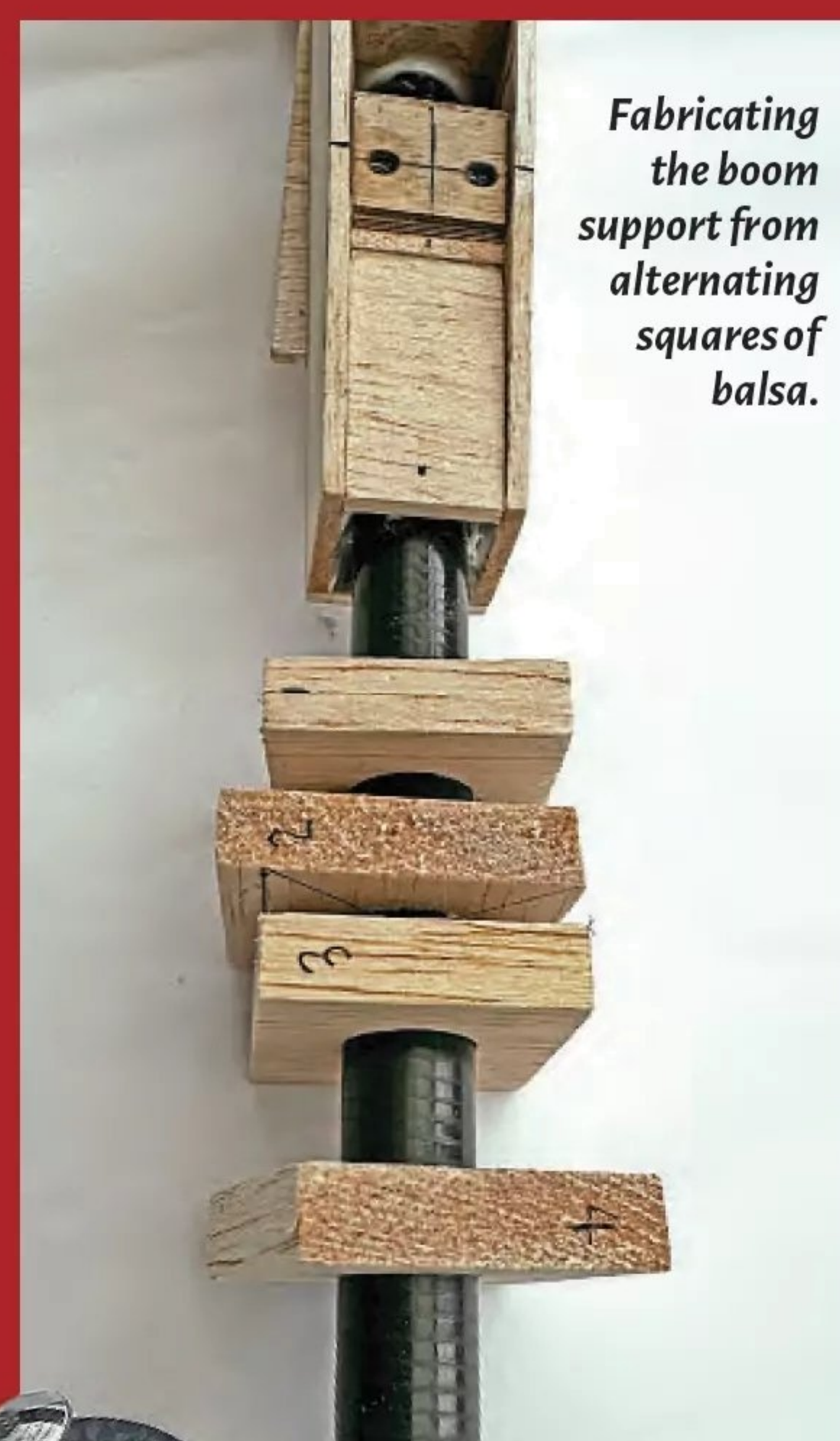
relatively tight circle) with such a small fin but I knew changing the size would be a big departure from the original look and feel. I decided I could not compromise on control and went for a bigger fin but tried to make it follow a similar shape to the original. I also enlarged the tail skid to get a bit more vertical area at the back of the fuselage. The fin and tail skid were made from medium 3/16" balsa, suitably rounded at the leading edge and tapered at the back. I used some thin fibreglass sheet to make a custom rudder horn.

TAILPLANE & WING

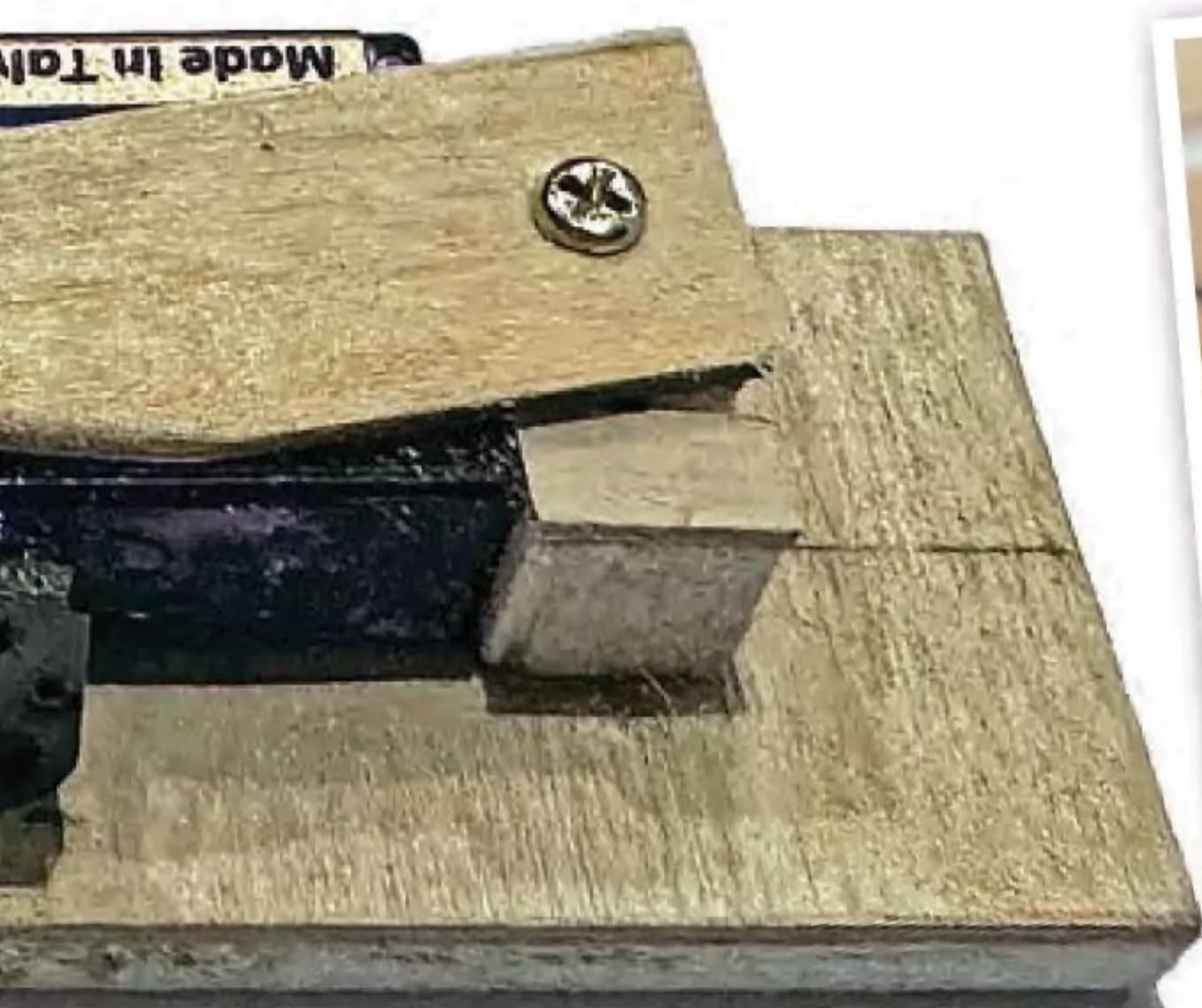
The original Sans Egal had a flip-up tail to act as a dethermaliser - a way of getting a free flight model safely back on the ground after a timed flight. The easiest way would be to keep the same tailplane and position it on top of the fuselage boom. But I didn't like the thought of cutting into that one-piece tailplane to create a fixed part and a moving elevator. By chance I stumbled upon a 'for sale' advert on the BARCS website for an 'all moving tail' mount. This is

a carbon fibre assembly that slides onto the back of the circular tail boom and allows the tailplane to be fastened to it such that the tailplane moves 'as one'. Although using non-period technology, the result looked close to the original.

The Sans Egal wing has quite a high aspect ratio, a thin and highly cambered wing section, with elliptical wing tips. Although the electric motor launch doesn't unduly stress the wings, they should be strong enough for normal flight and have reasonable bending strength and torsional stiffness. I decided to switch the spar material from 1/8" square spruce sections to carbon fibre pultruded strips and use a full D-box leading edge, helping to maintain the wing section and providing good torsional stiffness. A few calculations of likely flying forces helped me size the spar to be a 6 mm by 0.6 mm carbon strip top and bottom with a vertical grained balsa web on the inner panel and a 3 mm by 0.6 mm carbon strip in the tips. These pultruded strips give great tensional strength in bending but need to be well glued ➔



Fabricating the boom support from alternating squares of balsa.



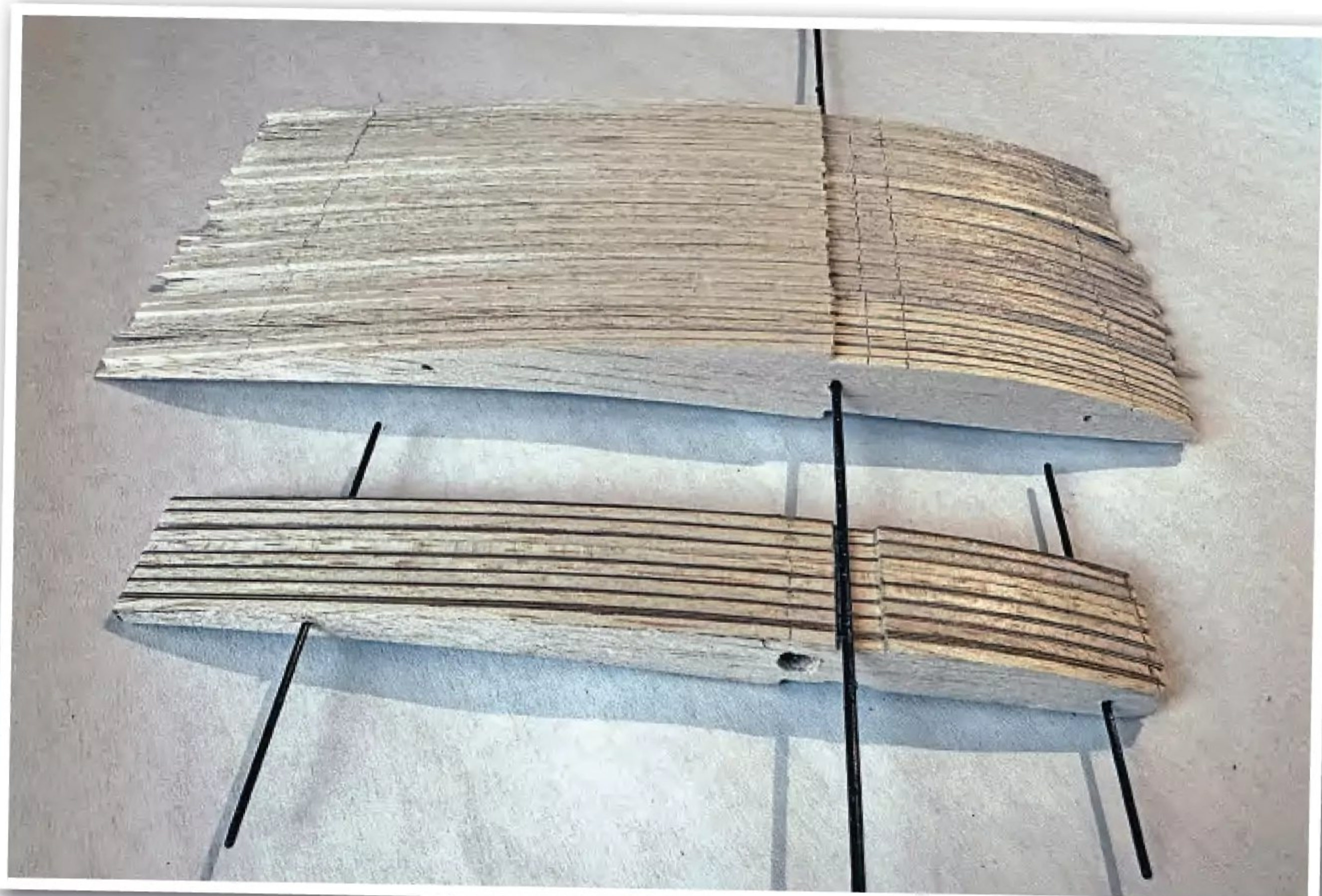
The 'all moving tail' mount is a carbon fibre assembly that slides onto the back of the circular tail boom.

in place so appropriate surface roughening and cleaning would be required.

The original wing and tail sections are very thin and highly cambered. Wing section design has evolved since the 1950s and converting free flight to R/C might make those old sections sub-optimal for the sort of flying I was planning. I took some advice from John Cuthbert (a very accomplished free flight designer and builder) on what sections to use and he suggested a slight compromise: an undercambered Verbitsky section on the wing (7% thick and 5% camber) and a flat bottomed AG38 section on the tail. I was strongly warned off a highly cambered tailplane section due to its effect on pitch throughout the flying envelope. Both chosen sections are thin for home building and covering, and I knew I was in for a challenge.

Attention turned to the wing and tailplane build, and, most importantly, the manufacture of the ribs. I decided to do it the hard way and make the ribs by hand. The tailplane and inner panels had a constant width chord (around 160 mm) and so the traditional sandwich method, using ply templates either side of a stack of balsa ribs worked well. I used 1 mm diameter carbon rods to align the rib pack and I also used these in the wing and tailplane build to give some more strength to the ribs. I cut the elliptical tip ribs by hand, printing the wing section on paper, gluing it to balsa sheet, then cutting and sanding until the shape was correct. It all sounds a bit rudimentary, but the final rib set looked good and closely matched the wing section. It took a while and a better way by far would have been to pay someone to laser cut a set.

Tailplane build was straightforward using a small diameter carbon tube as a main spar.



Tailplane and inner wing panels are constant width so the traditional sandwich method, using ply templates either side of a stack of balsa ribs, works well.

The tailplane build was very straight forward. A small carbon tube was used as a main spar and two carbon rods for alignment allowed the ribs to line up perfectly before adding the trailing and leading edge balsa. I used medium thick cyano for the build. I used some plywood to create the seating for the 'all moving tail' mounting system to give strength.

Wing inner panels were built in a similar way to the tailplane, gluing the carbon spars to the bottom sheeting, followed by the ribs. Careful packing of the ribs, between each rib and building board, was needed to maintain the undercambered wing section. I added the vertical grain balsa webbing and then the top spar. The spar to web interfaces were glued using thin epoxy resin mixed with a small amount of micro balloon filler; a heavy choice but I wanted to make sure it was well stuck together. At the root of the inner panel, I used

1 mm ply faced balsa ribs; they get very thin at the back, under the sheeting, and the ply reinforcement also to help carry the load from the wing joiner into the spar.

The wing was so thin that I couldn't angle the brass joiner tube in the ribs for the dihedral (a straight carbon rod into angled tubes would have been ideal) so I had to make a bent joiner. The wing thickness meant I was limited to a 5 mm diameter joiner and from my wing strength calculations I knew that a regular aluminium joiner would be too weak. A piano wire joiner would be strong enough but heavy. The compromise was to use a titanium rod for the joiner; strong and light, and not too expensive at around £6.

The top sheeting was stuck in place using the same mix of epoxy and micro balloons, then heavily weighed down onto the top surface of the ribs and spar during the curing process using strips of square steel rod to make sure all the sheeting was stuck well in place.

The elliptical tips were built the same way as the inner panels, the main difference being the leading and trailing edges. The leading edge was made from three laminations of 1/8" balsa (the inner panel used 3/8" balsa), each lamination stuck in turn to the partly finished tips using thick cyano. The trailing edge was cut in two pieces from 1/4" balsa, allowing the grain to approximately follow the curve.

Once the leading edges and trailing edges of the wing and tailplane were stuck in place there followed the slow process of shaping them. I used a razor plane to get within 1 mm of the desired section and then I used home-made sanding blocks to finalise the section. The wing trailing edge was the most difficult but careful alignment of the trailing edge lower surface (using shaped balsa guides) to follow the wing section profile meant there was only the top surface to shape.



Inner panel construction started by gluing carbon spars to the bottom sheeting, followed by the ribs.



Wingspars are made from carbon fibre pultruded strips and use a full D-box leading edge, helping to provide good torsional stiffness.



Left: Webs and top sheeting were glued on using thin epoxy resin mixed with a small amount of micro balloon filler.

Above: Top sheeting was weighed down onto the ribs and spars using strips of square steel rod. Many more rods were used than are seen here!

Right: After the leading edges and trailing edges were stuck in place a razor plane was used to get close to the desired section. Home-made sanding blocks were used to finalise the section.



Wing tip blocks were carefully fashioned from 3/8" balsa with their grain following the spar line and sanded to keep the undercamber. The original Sans Egal had a small amount of washout in the tips but I kept mine neutral, hoping that my piloting skills might be able to cope with any tip stalls that the washout was originally designed to counter. I glued the finished tips to the inner panels using a plywood joiner that fitted between the top and bottom spars on each side, all fixed in place using the epoxy and micro balloons mix.

The wings are attached to the fuselage using nylon bolts that thread into custom made aluminium plates rather than captive nuts. The original design used elastic bands; a slightly more forgiving system but not quite as aerodynamic!

COVERING

So, what should I cover the Sans Egal with? Iron on film would have been a good choice but I was concerned how well it would stick and follow the undercambered wing surface. I decided to use tissue and dope - at least that is what would have been used back in the 1950s. Not having used tissue and dope for 40 years, I did a bit of

research with my brother Alastair, who is still an avid builder of all sorts of models and a regular user of tissue paper. In the end I selected light weight Japanese tissue for the wings, tailplane and fuselage. I used tissue paste to stick the tissue paper to the wing and tail, and thinned dope to stick the tissue to the fin and fuselage. I carefully shrank the tissue on the wings and tailplane using water vapour from a house plant watering sprayer and then finally coated the tissue with many coats of dope thinned with cellulose thinners. The whole process took a (very smelly) week, with careful restraint of the wings and tailplane during the drying process to prevent warping. But I'm very happy with the result.

Some people use thin mylar under the tissue to provide extra puncture resistance. A useful addition that I will consider using next time.

POWER TRAIN

I selected a 22 mm diameter Dualsky outrunner and a combined 40A ESC and BEC unit for receiver power and speed control. The prop was a folding 9 x 5 item made by GM and the LiPo was a GNB 3S 500 mAh. This combination yields around 180W and provides enough juice for three or four six-minute flights from 100 m launches, as per the FxRES competition rules. The finished model weighed in at around 460 g, close to my target, and the 180W of power is enough to haul the airframe around the sky in search of lift.



Sans Egal is clamped together for the obligatory pre-covering garden picture.



Left: Looking resplendent in its simple but elegant tissue and dope finish.

Below: Close up on the wing tip trim.



Sans Egal is easy to launch, the wooden pod giving ample grip underneath the wings.



Compared to modern thermal soarers the flight envelope of Sans Egal is quite different, the highly cambered and thin wing making it a relatively slow flyer.

“Seeing the sunshine through the tissue covered open wing structure as the Sans Egal floats through the sky is a real joy to watch”

CENTRE OF GRAVITY

The original Sans Egal had a C of G position around 55% of the chord, which seems quite far back. But when you consider the long boom and large tailplane it starts to make sense. My battery positioning allowed a C of G range of 50 - 60% by sliding the battery fore and aft in the fuselage.

FIRST FLIGHT

I'm a season ticket holder at BMFA Buckminster, just up the road from me. A weather window opened and the mid-February 2024 forecast was spot on with cloud, some sun and very light winds.

I arrived at the flying site, assembled the model, did the appropriate pre-flight checks and took some photos of the model before the maiden flight. I thought I was alone at the field and was pondering whether to hand launch with power or not, but one of the BMFA Buckminster site keepers arrived and walked over to see what I was up to. He offered to launch the model, keeping my hands free for any elevator correction.

With the CG positioned at 50% and about 25% power the model flew away steadily from the hand launch - it looked wonderful! After a few flights it was clear the CG was too far

forward as it 'porpoised' in straight flight. There was also far too much 'up trim' in the elevator. I corrected the elevator trim and moved the battery back to give a C of G around 60%. Sans Egal responded well to the changes.

The pitch of the model under power was quite dramatic and varied as the speed changed. I programmed in a throttle / elevator compensation mix curve and that helped significantly, but it still required close attention. Most probably the flat bottom tailplane section was lifting significantly at speed, causing the model to try and tuck under. There is no answer for that except to apply throttle carefully, pay close attention and be ready on the sticks.

The airframe seems robust enough and only marginal wing bending is visible during tight turns. Certainly, there's no wing flutter at speed, so the D-box wing structure and tissue/dope combination are doing their job.

The flight envelope of my Sans Egal was quite different to my usual modern thermal soarers, its highly cambered and thin wing

section making it a relatively slow flyer. It will pick up speed but at the detriment of soaring performance. It flies best close to the stall and yes, it does tip stall easily, so probably would be better with the wing washout as designed - it's more like piloting a leaf falling from the sky! It indicates lift well, sometimes being violently moved in the air by thermal activity because of its light weight. It turns well and can stay in small bubbles of lift but is best left flying itself in lazy circles, with a little up elevator and occasional rudder input. With some careful trimming I'm sure it would be possible to put the transmitter on the ground and watch the Sans Egal in free flight mode. Seeing the sunshine through the tissue covered open wing structure as the Sans Egal floats through the sky is a real joy to watch.

The whole adventure of design, build and flight has been very rewarding. I'd encourage others to dig out some old free flight plans, convert them to radio control and get the same satisfaction as I have had. ■



Left: A 22 mm diameter Dualsky outrunner and a combined 40A ESC and BEC unit fit inside the rounded nose.

Right: Balsa fillets in the corners of the fuselage pod allow for a well-rounded section to be shaped, ensuring that the folding propeller fits well.



Finished wing root showing the thin, undercambered Verbitsky section and the titanium rod joiner.



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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.



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DHC-6 TWIN OTTER

Kevin Crozier takes a rare break between showers to test fly XFly-Model's 1800 mm Twin Otter

Words: **Kevin Crozier** Photos: **Barry Atkinson**



“...the fuselage, complete with its plug/screw in fin and tail unit, fits easily in one half of the back of my estate car”



XFly's Twin Otter is an easy model to pilot.

Last time I introduced you to XFly-Model's latest twin electric model, the 1.8 metre wingspan Twin Otter. But the appalling spring weather had put a stop to undertaking the model's maiden flight. However, recently things have improved slightly on the met front and my local model flying clubs, like many in the UK, have been busy mowing their strips and welcoming back larger aircraft with conventional size wheels. (Yes, I too have had lots of fun flying a bush aeroplane fitted with jumbo donuts. But the time comes when you just want things to get back to normal and to fly without all the mud!)

It was on one such brighter day that I arranged to meet at a local patch with my flying buddy and ace cameraman, Barry Atkinson. But, predictably, by the time we had arrived for our afternoon session the sun had decided it wanted to play peek-a-boo with the rapidly increasing cloud cover. Hence, the Twin Otter was quickly assembled, and the obligatory range and noise tests performed.

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



Taking off for another short haul flight. Deepest Gloucestershire has its attractions, but it isn't quite the Maldives!

QUICK FIT

At 1800 mm wingspan (almost 71") and with quite a chunky near one and a half metre (57.4") long fuselage the Twin Otter assembles into an impressively sized model. Despite this the fuselage, complete with its plug/screw in fin and tail unit, fits easily in one half of the back of my estate car with the wings propped up against the carpeted wheel arch. If you have a smaller car then it might well fit as the tail unit can be removed, simply being held in place with two 20 mm screws. The fuselage can be further shortened by taking off the magnetically attached nose cone.

Transporting the wings safely is actually the biggest concern, or rather making sure that their weight is not being borne on those striped 3-bladed props and possibly distorting them. To this end I have found that a cardboard washing capsule box (step forward Fairy EcoClicc) provides the perfect support for the nacelles, covered in a wad of bubble wrap. The same box is used to support the nacelles and take the weight off the props when the wings are put away and stored vertically on their wing roots.

Assembly at the field is speedy thanks to the self-aligning D-connectors used for the wing

servo and lighting wiring looms. The XT60 connectors used for the power supplies in each wing are also quick to hook up and they nestle in neatly moulded recesses in the wing roots. Finally, the wings are nipped up tight on their 10 mm joiner tube using a pair of 8 mm hex head screws on each side. It's at this stage that you find out that you've forgotten to fit the wing struts on each side, but these are easily popped into position if each wing is separated from the fuselage by a centimetre or so. It soon becomes second nature to fit the struts to their fuselage mounts before plugging in the wings! ✈



In the cruise and trying to not give the passengers a rough ride.

CLOUDED OVER

With the clouds gathering and the wind picking up I wasted no further time and carried the Twin Otter out to the patch. Lining her up into the strengthening breeze I selected half flap and smoothly opened the throttle stick. This particular flying field has been re-sown in the past couple of years and whilst it has now developed in a to a finely cut and rolled turf (with due credit to those club members who do such a grand job looking after it) the westerly wind necessitated a take off across the grain of the newly knitted together grass, in which direction it is still slightly lumpy. However, the sprung nosewheel absorbed all the shocks in its stride, not that it needed to do so for long as the Twin Otter was airborne in fairly short order and well before maximum throttle had been reached.

A few clicks of up elevator trim and a lesser amount of right aileron trim soon had her flying straight and level – or as best as I could assess in the bumpy conditions. Barry was keen to start taking pictures, so I started to run the Otter past him in a variety of low passes, both with and without flaps. Despite being hauled around at relatively low speeds and being buffeted as she passed the strip crosswind the Twin Otter proved to be an easy model to fly with good

control authority. All this was done on low rates although I did take the opportunity to flick to high rates and perform a couple of loops and rolls whilst Barry was checking his shots. With such an abundance of power from its twin 3541-KV550 motors the Twin Otter proved to be surprisingly aerobatic and I'm sure I will succumb to giving her more such abuse over the coming summer months.

CALM CIRCUITS

Of course, a model of a passenger carrying aircraft like this one really deserves to be flown calmly and carefully, trying to emulate the full size. A clubmate of mine, well versed in flying twin engine light aircraft, recently told me of his annoyance at seeing replicas of full size machines being hauled off the ground and then thrown around just like any other sport model, when really the pilot should be taking the opportunity to calm things down and think about how any passengers inside the cabin would be feeling and minimising the chance of them becoming airsick. So, with that in mind I'm going to try my best to cut out all the hooning around with the Twin Otter and concentrate on flying touch and goes, and proper circuits, as best I can.

A gentle kiss on the main wheels and she's safely down.



I think half flap is likely to become my default setting for approach and landing.

A big part of this is in using the flaps in a sensible way and recently I have been able to fly her in calmer conditions. This allowed me to make good use of those large scale-like flying surfaces. Half flap is all she needs for some sedate flying, both during take off and on approach for landing. Full flap allows for

Flaring out for another smooth landing.





“At half flap she looks every bit the part as she runs in on the approach”

Scan this QR code for kit shots, plus ground and flying shots of XFly-Model's Twin Otter. Or use the following link: <https://bit.ly/44uRCio>

noticeably steeper approaches and it's great fun to fly a high circuit, throttle back when downwind and pull full flap, turning on short finals and aiming for a spot on the runway. The flaps will be very useful when the Otter is flown from water, so I will report on this further in the next instalment of this review when her float set has been fitted.

One last thing regarding flaps and that is that I took the time to programme my Tx with the small amounts of flap to elevator mix suggested in the instructions. At both half and full flaps these settings appear to have been well thought out and the Otter resisted the temptation to rear up whenever flaps were selected. I also programmed in some servo slow for the flap servos, which may help stabilise any trim changes instead of letting the flaps bang down when their switch is selected

LOVELY LANDINGS

Let's conclude this part of the review with a look at how the Twin Otter tackles landings. The honest answer is very easily, despite the less-than-ideal conditions in which she maidenied in. At half flap she looks every bit the part as she runs in on the approach and just above the deck she can be held off in the flare with ease before the wheels gently kiss the ground.

What a lovely model aeroplane! ■

Part three of this review will cover the Twin Otter's flight from water - weather willing!



MAK 15

Peter Miller lays down plans for a Russian powered glider to satisfy an urge to design something different

Words & Photos: **Peter Miller**



Peter shows off the unusual planform of his new semi-scale powered glider.



Every few years I suddenly get an irrational urge to design something really unusual. In the past I have designed a couple of the Stits World's Smallest aircraft, one of which did fly quite well but crashed three times out of six take-offs. Another was a strange French aircraft called the Payen. This time I decided on a little known Russian powered glider called the MAK 15 PM. At least I knew this one would fly because many years ago I designed a CO₂ powered free flight model that flew like a dream. It also had the advantage of lots of wing area.

ENTER THE MAK

In the 1950s the Russians had a glider called the MAK 15. I was lucky enough to buy a CD about it on eBay, with works drawings, photos and even a video of the aircraft.

In 1956 a powered version was built to test the practicality of a powered version to save money on aerotows. It had a 25 hp five-cylinder radial engine. This was apparently a two stroke. Work that one out! Apart from the engine the main difference was that the fuselage pod was mounted higher on the wing.

I will say that even with the help of the works drawings designing the model was a bit of a pain in the neck.

FLYING

Well, with such a strange shape I know the most important question is 'How does it fly?' The answer is, 'Very well.'

Mind you, the first flight was terrifying. I attempted a take-off but one of the outriggers near the wingtips dug in and the model swung around. (The outriggers have been modified and work well now.) The model was then hand launched and it went away fast but the elevators were so sensitive that it was a frantic case of 'up, down, up, down' in wild oscillations until my flying buddy Stuart Pickett yelled, 'Cut the power!' The model instantly settled down and I was able to circle it back and land on the field. I took the model home and added lead in the cowl. I also reduced the elevator throws and removed the exponential.

With the CG now very close to the leading edge we tried again and the model was transformed. It took off from short grass and flew around with no problems. As I was still getting over my first cataract operation I handed it over to Stuart, who flies my models for the camera, and he flew it for the rest of the flight. His verdict was that it would benefit from a little more lead in the nose, so some stick-on lead was added.

On the next flight Stuart flew for the camera, which was in the hands of Michael Morris and some good photos were taken. Stuart is always allowed to play after flying for the camera and so he looped and rolled the model. He also had a close encounter with the local resident Red Kite but no contact was made. The glide was very impressive; not a real floater but a very steady shallow glide and I am sure that the model will thermal easily.

“...this one would fly because many years ago I designed a CO2 powered free flight model that flew like a dream”

It was decided that a touch more lead in the nose was needed. It was found that a little coupled rudder with ailerons made the model nicer to handle and, most of all, that the best control throws are those given as high rates in the installation section of this article. After these alterations had been made the model was really nice to handle. Rolls and loops were positive and easy. It even flew inverted nicely. Of course, it is not really an aerobatic aircraft but the video that I have of the gliders do show one doing loops at an airshow.

CONSTRUCTION

Construction is not hard but there are several unusual techniques and some complicated areas. It is quite important to follow the sequence that I worked out. You can go your own way but at least I know that my way works well, even if some of it is a little unconventional in places.

Start by cutting out all the wing ribs and drill the various holes. 6mm holes for the carbon fibre rods should be drilled in CS5 and R-1 with the ribs held together. Then open the holes in CS5 out to take the 8 mm carbon fibre tubes. The holes in the centre section ribs need to be 8 mm and a very good fit on the tubes. The holes for the carbon fibre rods in wing ribs R-2, 3 and 4 should be slightly over size. This is to allow for the adjustment of the dihedral angle later. ✈

On approach giving a good view of the outriggers near the wingtips.

DATAFILE 

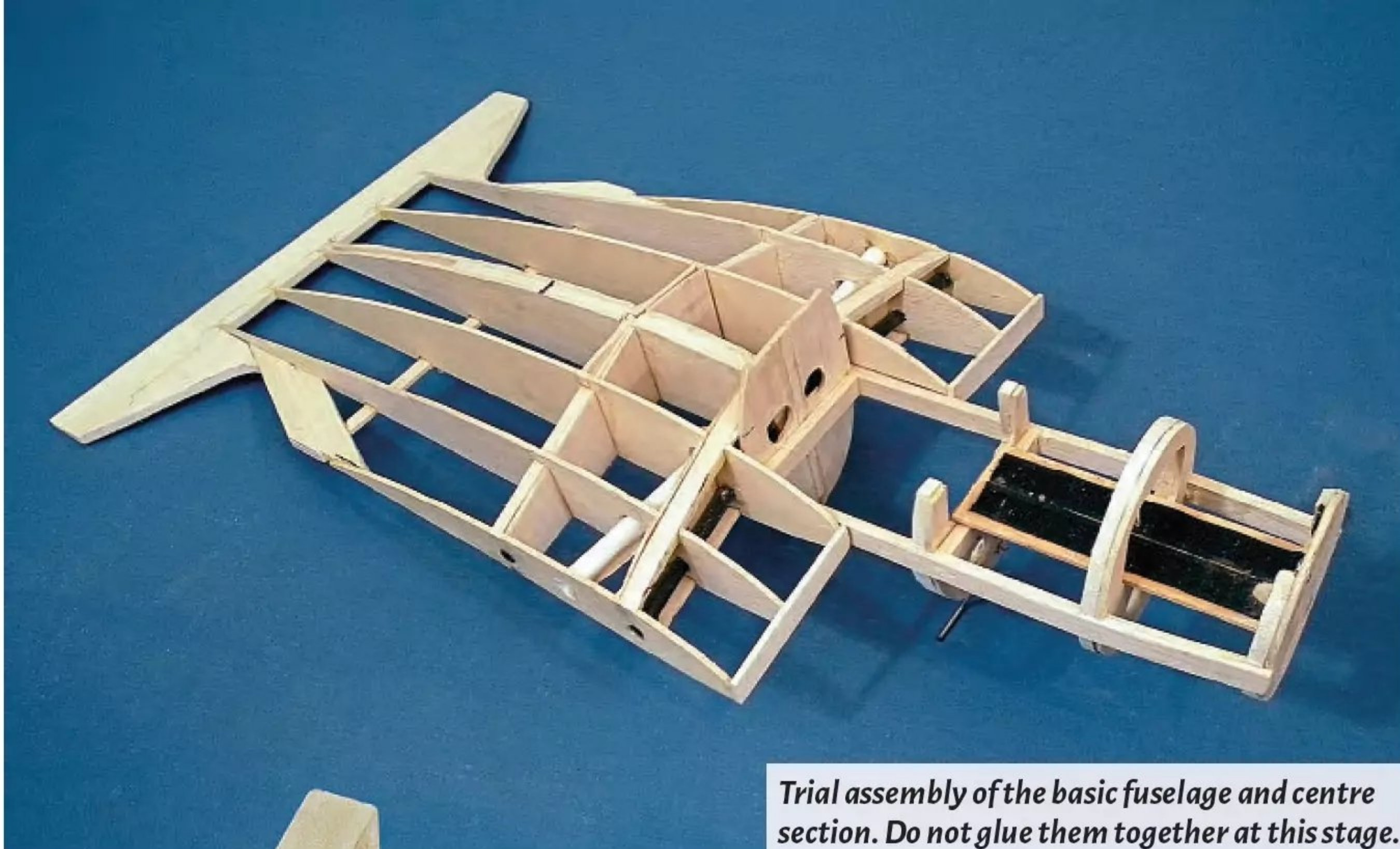
Name:	MAK 15 MP
Model type:	Semi-scale powered glider
Designed by:	Peter Miller
Wingspan:	1,778 mm (70")
Length:	889 mm (35")
Weight:	1,360 g (48 oz)
Wing Area:	616 sq. in. (4.27 sq. ft.)
Wing loading:	11.24 oz. / sq. ft.
Functions (servos):	Ailerons (2), Elevator (1), Rudder (1), Throttle (ESC)
Motor:	4-Max PO-2834-910
Propeller:	JFX 10 x 5
ESC:	25A
LiPo:	3S 2200 mAh

Underside view. The white patch hides a small repair after Peter had run out of the original red film.

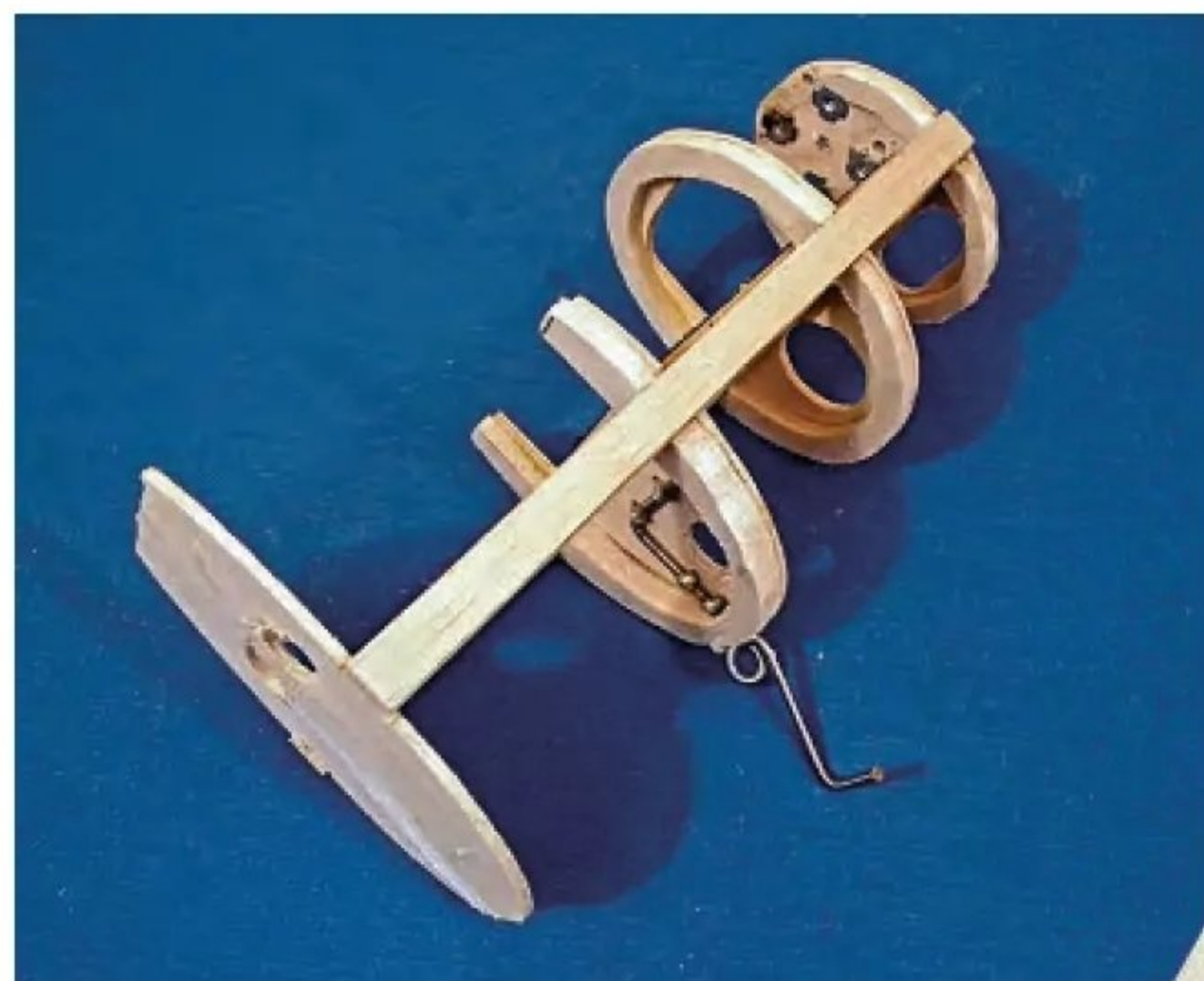




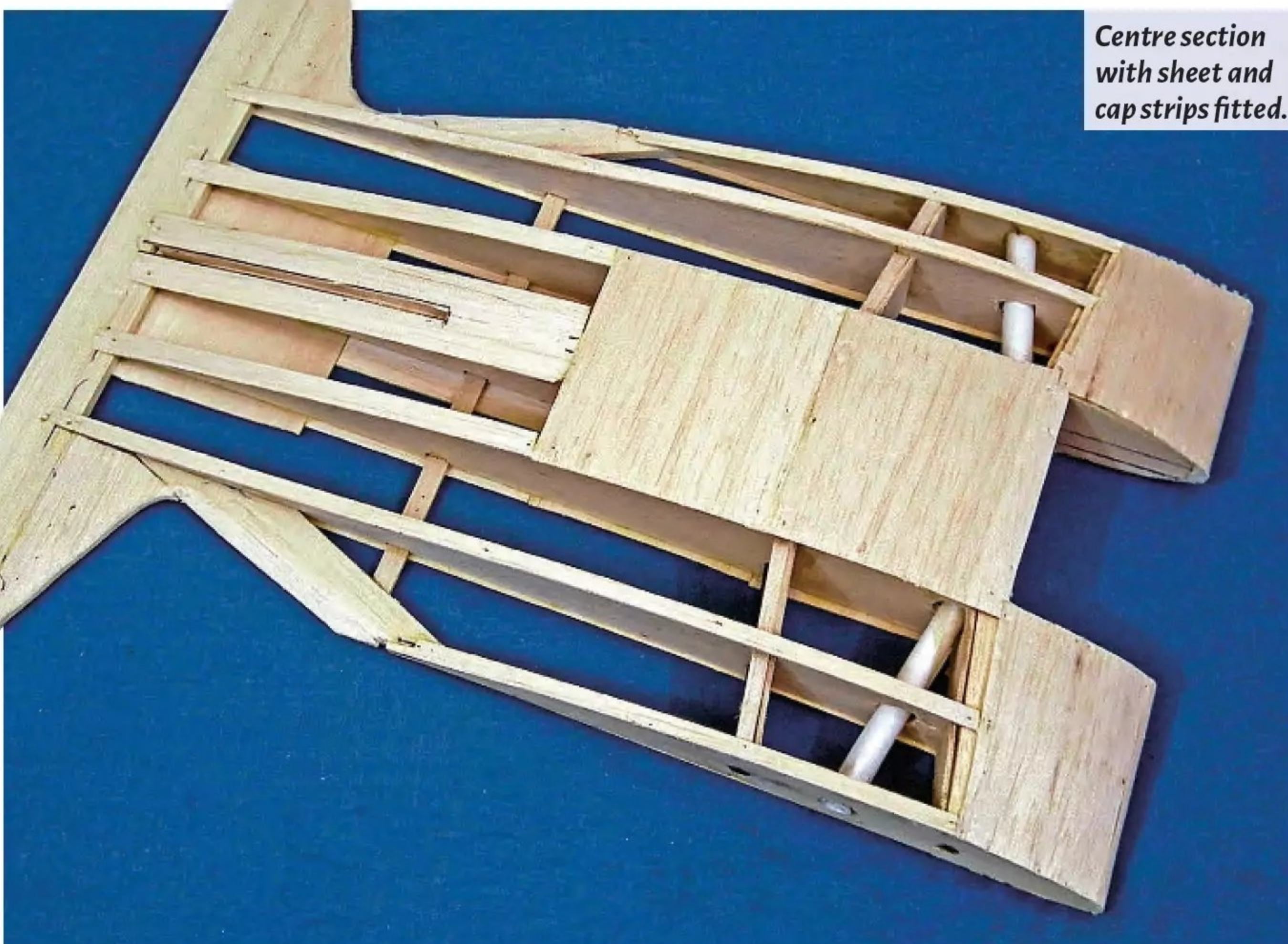
Basic centre section construction.



Trial assembly of the basic fuselage and centre section. Do not glue them together at this stage.



Fuselage crutch with formers added and undercarriage leg fitted.



Centre section with sheet and cap strips fitted.

Laminate the central centre section rib from CS-1 and the CS-2s. Mark the inside faces of the CS-3s with the crutch location. This is important as it could affect the thrust line which must be parallel with the chord line of the wing. You can now build the centre section over the plan. Note that the CS-3s must be spaced exactly to match the fuselage crutch.

With the basic centre section built fit the carbon fibre tubes in place and glue securely, then add the webs to the spars. You can add paper tubes for the servo leads now. These will need a short addition at the front to help them feed into the radio bay.

It is a good idea to build the basic fuselage crutch at this stage to make sure that it is a really good fit. The centre section can now be completed with all the sheet and cap strips.

THE WING

Start by laying down the leading edge sheet which should be pre-cut to shape from 1/16" sheet. Also lay down the 1/16th sheet under the rear spar in the aileron location.

Pin down the front spar, noting the change in size at the bend. Cut the splice for the inner section of the rear spar on the balsa section over the aileron area. Pin the lower inner spruce section of

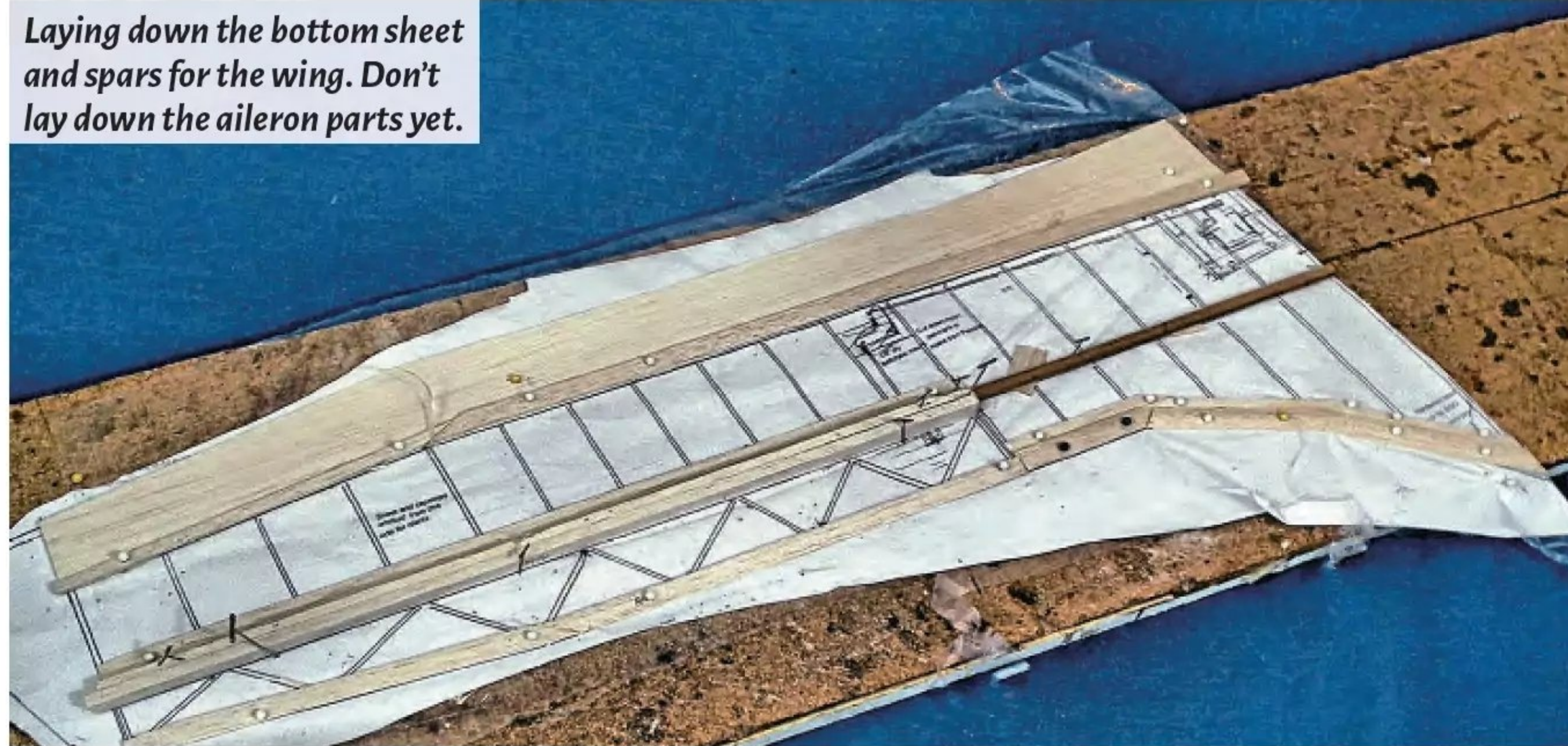
the spar, supporting it on scrap 1/16" sheet, and the outer balsa section. Pin down the 1/16th sheet and trailing edge at the inner section of the wing. Do not pin down the aileron spar and trailing edge shown in the photos at this stage.

Fit all the ribs and the top spars. Glue on the 1/8" sheet leading edge. When this is dry bring the lower leading edge sheet up and glue it to the leading edge and ribs. It is a good idea to fit the hardwood block for the outrigger now and leave the assembly to dry thoroughly.

Now comes the fiddly, clever part. There is only 1/2" dihedral under the wing tip and you have the carbon fibre rods to set up. Tricky!

Slide the rods into the tubes in the centre section and then feed them into the wing. When the centre section is fully home against R-1, prop up the opposite side of the centre section by 1/8th of an inch. This why the holes for the rod in rib R-2, R-3 and R-4 are made slightly oversize. Now carefully fill in between the rods and the spars with plenty of glue, also filling in the oversized holes in the ribs. Leave the assembly to dry thoroughly. You could use epoxy for this job, but I used aliphatic resin. You can now slide the centre section away from the wing. Add the top leading edge sheet, the aileron spar cap and the top trailing edge sheet at the root.

Laying down the bottom sheet and spars for the wing. Don't lay down the aileron parts yet.



10 SW6 U/C FROM
COMMERCIAL NOSE LEG

MAK 15 MP

BY PETER MILLER

PLAN No. RC2184 No. OF SHEETS: 1 OF 2
A 70" WINGSPAN SEMI-SCALE
RUSSIAN POWERED GLIDER

MAK 15 MP

DESIGNED BY PETER MILLER

RUDDER BUILT UP
FROM 1/4" SHEET & STRIP

ASSEMBLE FORMERS TO CRUTCH. PLANK UP TO F4
TO INDICATED LEVEL. ADD SQCAP INFILL & BOARD
TO FIT WING GAP. GLUE ASSEMBLY INTO WING
WHEN DRY CONTINUE PLANKING BACK TO F5

BUILD CRUTCH SIDE MEMBERS FROM 1/4" Balsa
CROSSMEMBERS ARE 1/8" Balsa

RUDDER BUILT UP
FROM 1/4" SHEET
& STRIP

FIN FROM 1/4" SQ. &
1" x 1/4" SHEET

HOLLOWED
SOFT BLOCK
BEHIND F5

1/8" SHEET
PLANKING

1/8" LITE PLY
BATTERY PLATFORM

HOLLOWED
SOFT BLOCK
BEHIND F5

BUILD COWL FROM
1/2" SHEET

CRUTCH FROM LAMINATED
1/8" x 1/2" HARD STRIP
& HARD 1/4" x 1/2" STRIP

1/8" x 1/4"
SPRUCE SPARS
TOP & BOTTOM

1/16" SHEET WEBS
GRAIN VERTICAL

1/8" SHEET
L.E. & CAP STRIP

1/16" SHEETING
TOP & BOTTOM

3/8" x 1/8"
AILERON T.E.

A 70" SPAN SEMI-SCALE MODEL
OF THE RUSSIAN POWERED GLIDER

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BUILD COWL FROM
1/2" SHEET

Ø1 3/4" SPINNER

1/8" LITE PLY
NOSE RING

ADD 1/4" Balsa
ROUND
EDGES OF T.E.

PAPER TUBE

1/8" x 3/8" HARD Balsa
SPARS TOP & BOTTOM

RIBS FROM 1/4" SHEET
1/8" SHEET & 3/32" SHEET

Ø8mm CARBON
JOINER TUBES

1/4" SHEET

ELEVATORS BUILT UP
FROM 1/4" SHEET
& STRIP

1/8" LITE PLY
BATTERY
PLATFORM

1/8" LITE PLY
SERVO TRAY



Close up of the curved trailing edge.



Top spars added, centre section lined up and gluing the infill that holds the carbon fibre rods in place.



Underside view showing the aileron control setup.



Aileron construction shown next to the wing and getting ready for hinging.

The wing can now be lifted from the building board. It is a good idea to install the aileron bellcrank and make up the hatch for the servo. Temporarily fit the 9-gram metal geared servo and make up the pushrod to the bellcrank.

Add all the remaining sheet and cap strips. Make up and fit the wing tip. Then repeat the whole process for the other wing.

AILERONS

The ailerons are also built over the plan. Lay down the aileron leading edge and trailing edge. Inset the 1/16" sheet as shown, then glue

the 1/8" ply section where the control horn will be glued in. The ribs are cut from 1/16" sheet as rectangular pieces to suit the length of the rib and then cut diagonally. The ribs where the sheet goes will need to be thinned down. The ailerons look rather flimsy but once covered they are stiff enough.

The wings are now complete, only needing holes to be made for the elevator and rudder snakes in the centre section.

FUSELAGE

The fuselage is simple. True, you do have to plank it, but that is not hard, just a bit tedious.

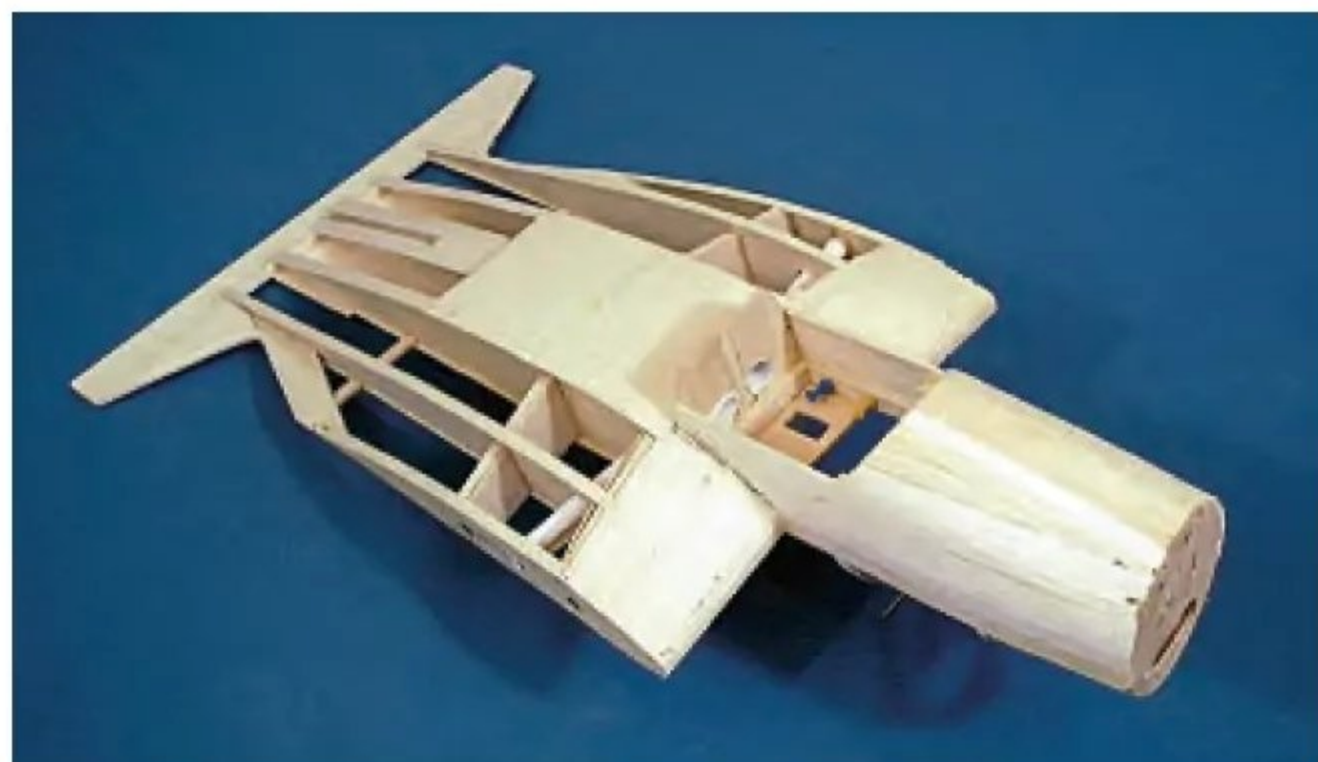
Make up the crutch over the plan. I laminated 1/2" x 1/8" strip for the side members to allow for the curve at the front.

Check it for fit between ribs CS-3. Cut out all the formers with the relevant holes. Add 1/4" sheet outlines to the ply ribs as shown on the plan; these outlines should be about 3/8" wide. They provide extra gluing area and a good grip for the pins that hold the planking down.

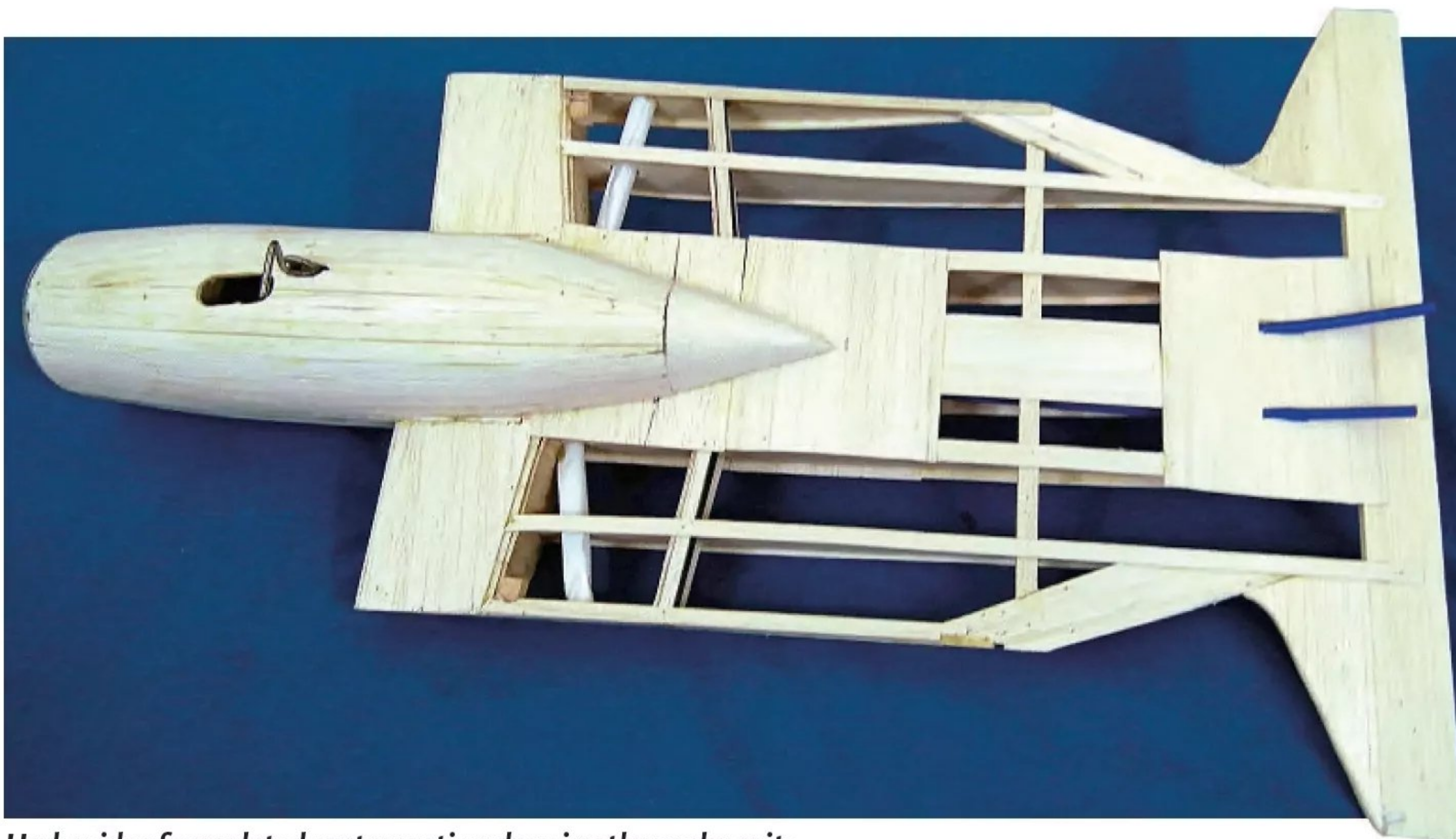
Bend up and attach the undercarriage leg. I bent mine up from 10 SWG wire but you could modify a commercial nose leg. The leg is held to the former by binding with tinned copper wire and soldering it. I drill 3/32" holes and then I double the wire up to about four or six strands and bend it into a 'U' shape. I feed it through the holes over the leg and then twist it together on the other side of the former and solder the whole thing.



Fuselage with top planking fitted. Note the marked wing location.

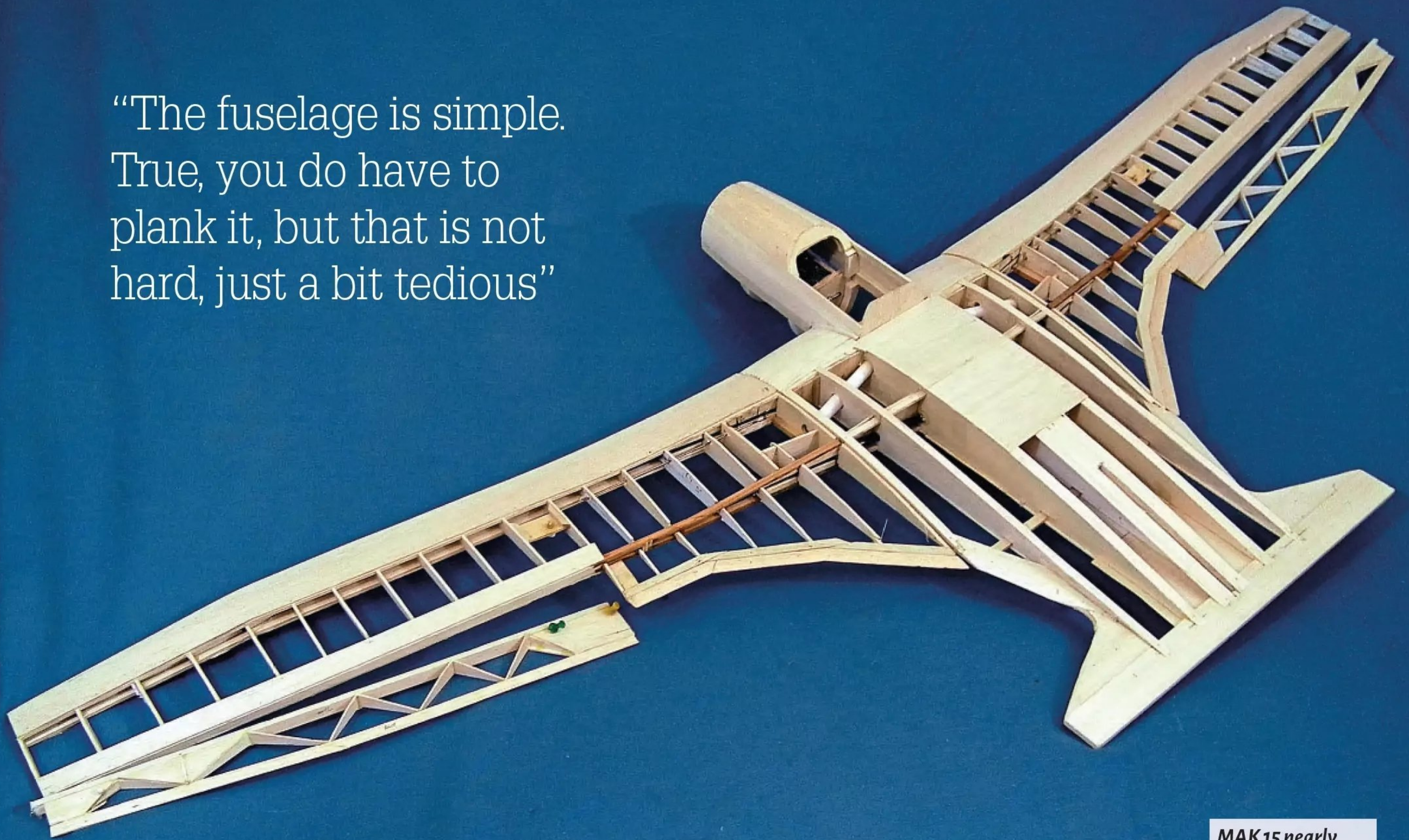


The fuselage after being glued to the centre section.



Underside of completed centre section showing the snake exits.

“The fuselage is simple. True, you do have to plank it, but that is not hard, just a bit tedious”



MAK15 nearly ready for covering.

Glue the formers to the crutch, then plank the top of the fuselage. Working from the top of the crutch add strips to alternate sides. Chamfer each strip to match the previous one. This is more important as the curve gets tighter. Also taper each strip as needed.

Very carefully align the bottom of the crutch with the lines drawn inside the CS-3s when you cut them out. You did remember to do that, didn't you? Then mark the shape of the wing on the crutch. Cut some scrap 1/8" sheet to the shape of the rib and glue it to each side of the fuselage. When dry, sand this to fit in the gap. Now glue the fuselage into the gap in the centre section. Make very sure that the bottom of the crutch lines up with the line on CS-3s or you will get some unwanted thrust line variations. Not good!

Fit the two sections of F-5 and leave to dry. Then you can plank the rest of the fuselage. Once dry you can shape and smooth the planking. I always find this so satisfying. You have this thing with rough planks and ridges, and five minutes with a razor plane and sandpaper and it changes into a smooth, sleek shape.

Cut the hole for the cooling air exit just in front of the undercarriage leg. Also glue on the 1/16" ply facing to F-1.

The rear of the fuselage is made from small blocks. Carve and sand them to shape and hollow them out. Glue in place for final shaping.

The cowl is shaped from 1/2" and 3/8" sheet. Screw the rear 1/16" ply ring to F-1 with three self-tapping screws. Mount the motor with the prop driver the correct distance from F-1 and clamp the 1/18" ply spinner ring in

place. Then build up the cowl with sheet. Leave grooves at the screw locations. Make sure that there is plenty of space around the motor and down at the bottom; you will almost certainly need to glue lead into the bottom of the cowl. Carve and sand the cowl to shape.

I only have one very poor photo of the aircraft and the engine is hard to see. It is a tiny engine anyway, so I have not shown it. If you want to add it the cylinders are tiny and there will be no rocker boxes or anything as it is a two stroke.

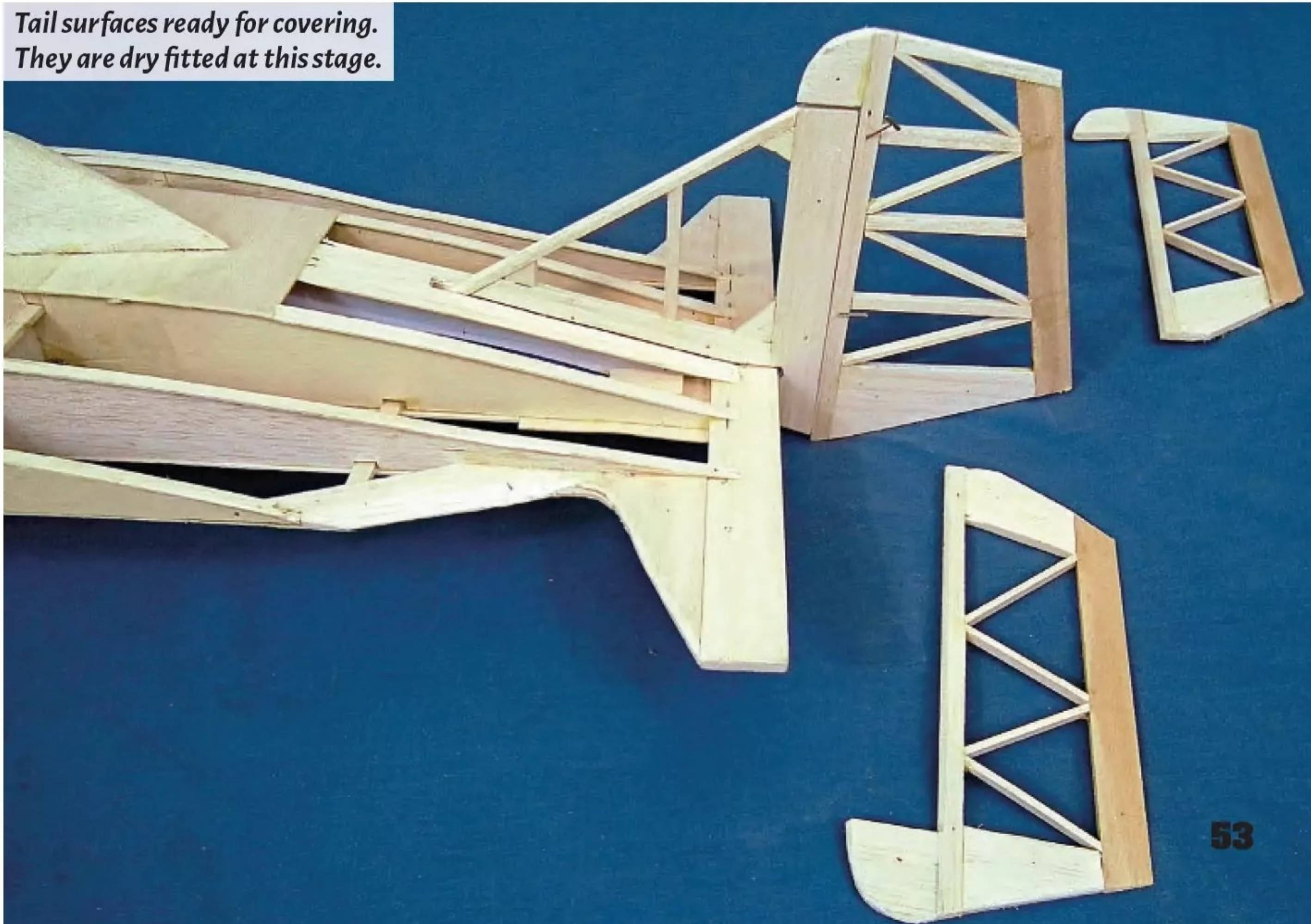
The fuselage is now complete.

COCKPIT CANOPY

Cut out a piece of lite ply the same shape as the sloping top of F-3 and another the shape of the cockpit opening. Put them in place and glue them together, making sure that you do not glue them to the fuselage.

Drill a hole through the 'instrument panel' into the top of F-3 and also at the rear. Glue short lengths of dowel into these holes. I used 3/16" dowel but you can use whatever size you have. They are only for location purposes.

Tail surfaces ready for covering. They are dry fitted at this stage.





Peter knew the unusual planform would fly after designing a CO2 powered free flight model that flew like a dream.



Some white trim was added to make the model stand out better.



The wing retaining system, engaged and disengaged.



Buy some strong magnets and inset them into the rear of the canopy base and the top of the fuselage. I used the strongest 10 mm diameter magnets because I have wandered across too many fields searching for other people's hatches that have come off.

Hopefully, you should be able to buy a preformed canopy but if not, you will have to get a large block of balsa or laminate one up from 1/2" sheet, then carve and sand it to shape. Then get a large lemonade bottle (actually, buy about three as the first never works!), cut the bottom off and wedge the pattern inside. Heat the whole lot up with a hot airgun or other heat source and it will shrink down over the pattern. Trim to shape and fit.

TAIL SURFACES

The fin, rudder and elevator are simple structures, but it pays to be selective when choosing the wood to build them. The cross members can be soft, whilst the control surfaces leading and trailing edge can be medium soft. Only the fin post and under fin need to be harder stock. I say this to try and save adding more weight than you need to at the nose.

After gluing the fin and under fin in place I ran a long drill through the under fin and into the base of the fin. I then inserted dowels right through this area.

COVERING

The original aircraft was all one colour. I have seen two photos; one showed it as a dark colour, the other showed it as light. Different types of black and white films can show the same colour as dark or light. I chose Solarfilm Supershink Polyester Red and added some colour trim to make the model stand out better. You will need just a bit more than two metres. Cover the fin and under fin before gluing them in place.

INSTALLATION

The receiver can be held to the cockpit side with Velcro. The servos are all 9 gram metal geared units. I fitted a ply plate across the fuselage, just in front of F-4, and fitted the elevator and rudder servos there.

After discussion with George at 4-Max I fitted a PO-2834-910 outrunner in the nose. You will need to pack this forward from F-1 to get the scale cowl shape. My cowl is too short for scale. The speed controller is a PP-TESC25AU 25 amp unit and the propeller is a JFX10 x 5. The speed controller slides in through the hole in F-1 and F-2. The LiPo is a 2200 3S unit. This power combination provides long flights and a really good scale flight performance. Take off from smooth grass is positive. The model climbs out in a firm and steady way.

Fit the outriggers to support the wing tips. These are bent from 18 SWG wire as shown on the plan; they are strong enough to support the wings but flexible enough to allow them to bend if they encounter an obstruction in the grass.

The wing rods slide into the tubes. Insert the servo leads through the paper tubes and they should come out in the cockpit area with a little fiddling. You should only need a short Y-lead on the receiver.

The wings are held in place by a very simple method. Cut a piece of brass strip. I used K&S 1/4" x 1/32". Drill two holes as shown on the plan. Screw the strip down with one of the screws that hold the servo hatch on, then drill through the other hole into a hardwood block which is glued to the inside of CS5 and the rear face of the front spar. Slide the wing back out a bit and screw a suitable screw into the hole and then cut the head off with a cutting disc in the Dremel. The wing is retained by sliding it on until the hole in the brass strip engages with the headless screw. No more dropped screws on a freezing winter's day - the KISS principle at work!

SET UP

Control throws were set at:

Ailerons - 1/2" each way on high rates, 5/12" each way at low rates.

Elevators - 3/8" each way on high rates, 1/4" each way at low rates. Rudder - lots at high rates, 1" on low rates.

Originally, I set up aileron differential. However, the model showed no tendency to tip stall, so I removed that.

MAK 15 MP is a different model that flies well and is sure to generate a lot of interest at your local flying field.

You can be fairly certain that you will never see one of these as an ARTF!

"Construction is sufficiently different to be interesting without being too challenging"



Phew! Just over the threshold and about to make another safe landing.

The CG is 5/8" behind the leading edge where it joins the fuselage. I find that inserting a map pin at this point helps as otherwise the wings tend to slip off your fingers. The battery should be mounted well forward on the battery platform.

All up ready to fly weight is around 3 lbs after adding the nose weight.

SUMMARY

The MAK 15 MP is a different model that flies well and will generate a lot of interest wherever it is flown. Construction is sufficiently different to be interesting without being too challenging.

You can be almost certain that you will never see one of these as an ARTF. If you do, I want royalties! Build one and you'll have a really different model. ■

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Complete Electrical Setup For The MAK 15MP By Peter Miller



www.4-max.co.uk/pm-mak-15mp.html



Description	RRP
PO-2834-910 Brushless Outrunner Motor	£27.49
4M-HESC30A Brushless ESC and Programming Card	£32.98
APCE 12" x 6" Electric Propeller	£5.50
4x 4M-100AMG-022 Analogue 9g Metal Geared 2.2Kg Servos	£29.96
45mm (1.75") Spinner - Red	£6.60
63mm (2.5") Wheels	£3.60
3S, 11.1V, 60C, 2,200mAh LiPo Battery	£23.50

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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
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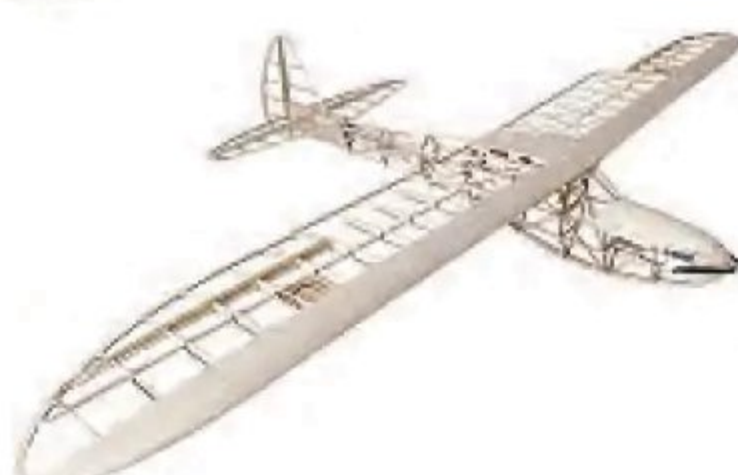
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7.4V – 52.9kg.cm, 0.13sec/60°
8.4V – 60kg.cm, 0.11sec/60°

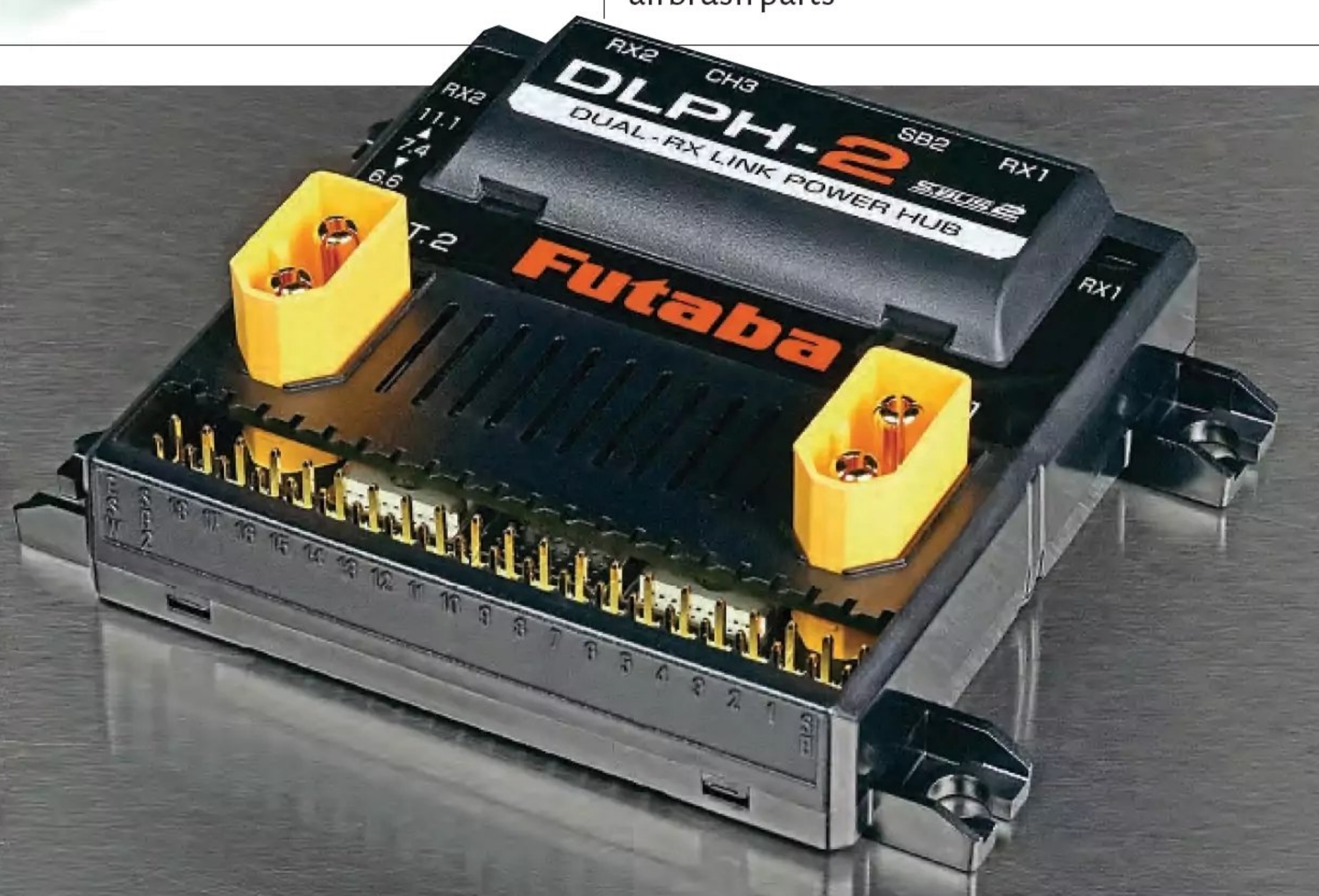
This servo is fitted with a 300 mm lead. Check out Deeforce's website for more information.



FUTABA DLPH-2 INTELLIGENT POWER HUB

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Futaba's second generation Dual (Rx) Link Power Hub is an intelligent device that allows dual receivers and dual batteries to be connected, offering both Rx and power supply backup. Should one battery fail, or its voltage drop, power is supplied by the second pack; similarly, if the main Rx loses its signal, the second Rx will seamlessly take over. This latest generation of the DLPH includes an option to add Futaba's powerful GYA553 6-axis gyro using the S.Bus2 system. With the ability to PWM connect 18 high voltage, high performance servos and handle the attendant high current draw (up to 60A) the DLPH-2 is an all-in-one solution, managing the distribution of power, telemetry and current whilst supplying a stabilised voltage to your receivers and allowing them to maintain a rock-solid and dependable transmission link.





A COMPANY CALLED FLAIR

Dudley Pattison wraps up his autobiographical series on his stewardship of Flair Products

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

To keep the kids attending the trade shows amused I designed a toffee bomber. Keith's wife, Anne was a real Mrs. Malaprop and called it Sweet Machine which, although unintended, was a brilliant name and it stuck. John Hodey, a good friend and member of the Flair display team, built it for me. The longerons were 3/8" square balsa and had to be bent into the nose. So, John put the fuselage structure nose down in the bath to soak the wood for bending. The problem was that he had used white glue to build the fuselage, but white glue and water don't mix, and the forward section of the fuselage came apart!

It was quite large, initially was powered by two Fox .36s, and would happily lift a pound of toffees. Jane and our two girls would spend an hour in our caravan Sellotaping a 500 mm long crepe paper streamer to each toffee. This slowed up the descent of the toffees and made for more of a spectacle.

Talking of the two girls and trade shows, I had a T-shirt printed for them both which read, I AM A FLAIR PRODUCT. I don't think they have ever forgiven me for that.

I would not have got a position in the Dambusters. My aim, at times, was appalling. A bomb drop at a school landed on the roof, which meant kids climbing up drainpipes to

get them. Another one, at the Herefordshire show held at Canon Frome Court, I believe, dropped the other side of the wall in the cabbage patch resulting in dozens of kids clambering over the wall and trampling the cabbages.

CRUSADER CAPERS

To celebrate the 50th anniversary of Britain winning the Schneider Trophy a model contest was organised at Calshot, the site of the actual race. The rules called for a team of three, with a maximum engine size of 10 cc. Boddo turned up with a 32 cc Quadra powered Gloster 6 and was miffed when he wasn't allowed to enter.



I misunderstood the 'team of three' business. It meant three people involved with one model. (Pilot? Builder? Don't know..?) I thought it meant three models, so I got Pete Nicholson and John Hodey involved and Solarbo sponsored us with the balsa wood. I designed the Crusader and we all built one. Mine was ready to fly one week ahead of the contest. I took it to a local lake, took off and found it uncontrollable. I had placed the C of G at about 28% of mean chord, somewhere near the usual, not knowing that with a floatplane the floats fly as well. I badly bent it upon landing (for landing read crashing) and I burnt some midnight oil rebuilding it. I test flew it a day before the contest with a C of G at 10% and it flew perfectly. I came fourth in the contest and Pete came fifth. John didn't enter as he had written his model off. Perhaps I shouldn't have beaten Pete as I borrowed the scale propeller he had made for the static judging. Without that, it may have made the difference and we may have swapped places.

The following year I entered the Italian Schneider trophy event held on Lake Varese. Brian Peckham went with his wife and Jane accompanied me. We had a fabulous weekend and I got second place, behind a chap called Bergamacci who had won the previous year at Calshot with his Macchi.

At Calshot, Pete had worked out that the only judging that took place was the take-off, flying the course and the landing. So, after flying the course and before landing, he did a slow roll down the crowd line which went down well. At Lake Varese there was a long, low stone wall with thousands of Italians sitting on it watching the spectacle. I thought it may go down well if



Left: Dudley's final instalment of the Flair story begins with Arjen Boogaart's Flair Fokker DVII decorated in the livery of the emerging Dutch air force just after WW1.

Above: Dudley and Jane pose with the aptly named Sweet Machine toffee bomber. Photo: Swindon Advertiser

Right: Dudley designed the Crusader to compete in a model contest organised at Calshot to commemorate the 50th anniversary of Britain winning the Schneider Trophy.



"To keep the kids attending the trade shows amused I designed a toffee bomber"

I copied Pete and rolled past them. To say the Italians are excitable is an understatement. They went wild and although it shouldn't have affected my score, I have a sneaking feeling that it did.

FULL SIZE RACING

In 1983 I won the Schneider event sponsored by Farrow Construction and in 2000 I won the Schneider Trophy handicap race in my Robin DR400, making me, I think, the only person to win it with a model and a full-size aeroplane. My 'course director' was a modelling friend called Barry Conway. Barry had been on Hunters, Phantoms and 'heavies' in the RAF and then flew airliners. We were issued with the course marked on an inch to the mile ordnance survey

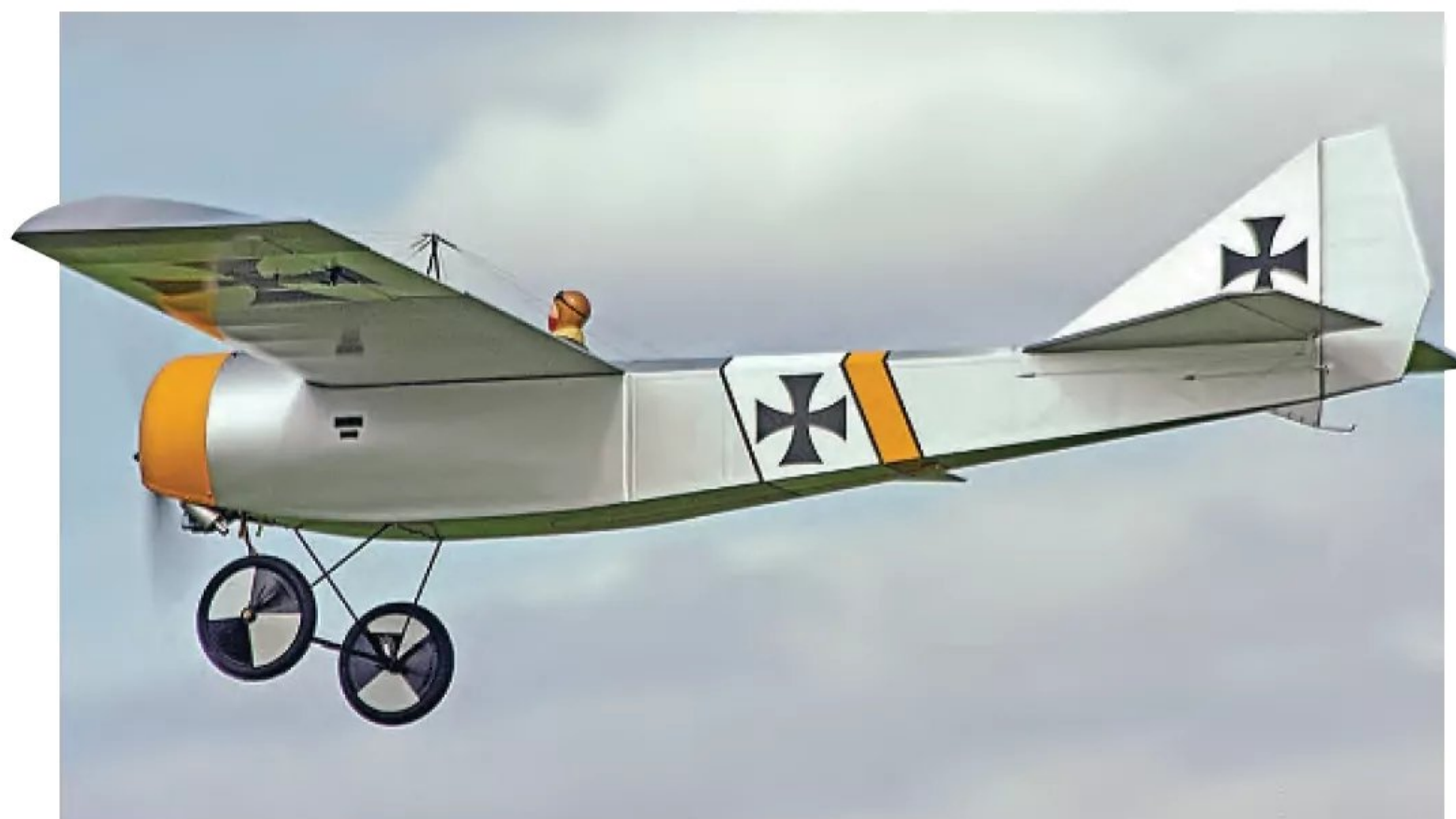
map and Barry would give instructions such as 'next field, left hand gate post' as the race was all about accuracy of flying as opposed to speed. The Robin, firewalled, would do 141 knots at 500 feet, the minimum allowable height and I asked Barry how he could navigate at that height and at that speed. He said it was not a problem as he used to do it in a Hunter at 400 knots!

INTERESTING PHONE CALLS

At times I got interesting phone calls. I had one once from a chap building a Baronette. He said, 'I have worked out from the linkage system that when one of the flappy bits on the back edge of the wing goes up, the other one goes down. That can't be right, can it?' I said, 'You are a beginner, aren't you?' He said, 'How do you know?' 



Flair Scouts are great models for more experienced modellers but they are not meant for beginners. Stephen Farmer's Baronette, pictured here in the 80s, had an OS 40 four stroke up front and it flew very realistically.



Hannibal had a 10 1/4-inch diameter engine cowling for .60 - .120 cu.in engines. Smaller engines would look a bit lost! Here's Bob Fletcher's example.

"I often had a call from a builder of a Scout saying he didn't like the way the engine was mounted"



Hannibal formation. Bob Fletcher says, 'The yellow Hannibal belongs to my buddy Steve Wood. We often try formation flying but usually with vintage models and with varying success.'

I asked him how he was getting on with the build and he said fine, he was enjoying it. I told him to finish it and put it on top of the television to admire it, and then go out and buy a trainer and learn how to fly before attempting to fly the Baronette. Some retailers were very short sighted but to be fair sometimes the customer was adamant that he wanted a particular kit, even though it may have been explained to him by the retailer that it wasn't for him just yet.

Another one was from a chap building a Hannibal, the 91" wingspan version of the Magnattila. The Hannibal had a 10 1/4-inch (255 mm) diameter engine cowling. He said,

'The label says .60 - .120 engines. I have a .75 but it doesn't seem to be right.' I couldn't think of a manufacturer that did a .75 at the time and asked him who the manufacturer was. He said, *'I will go and get the box.'* He came back and said, *'Mills.'* *'Ah, you are right'*, says I, *'it isn't suitable.'* I had a Mills 75 diesel and knew at best it would swing an 8" x 4" prop and I imagined one of those inside a 10 1/4-inch cowl! I explained that it was for engines of .60 to 1.2 cubic inches and that his Mills was .75 cubic centimetres.

I often had a call from a builder of a Scout saying he didn't like the way the engine was mounted as he didn't think it was strong enough. We supplied a 10 SWG plate of

aluminium, about 60 mm square. The idea was that you bolted this onto the backplate of the engine, counterboring the screws slightly if they were short. Then a No. 6 self-tapping screw was put in each corner of the plate and into the plywood firewall. It was this bit that some modellers doubted. I asked then to put one screw in a piece of plywood properly, that is by drilling a pilot hole the diameter of the core of the screw, leaving the head above the surface and then put pliers or mole grips on the screw head and try pulling it out. I doubt that anyone is strong enough to do it. And the static thrust of the motor fixed this way? Something between, say, three and six pounds.



Here's another Hannibal, this time in the classic 'Red Baron' colours, sent in by Ray Jerrad. Ray writes, 'This is Bob Trotter with his Hannibal, always expertly flown and always a pleasure to be with. Happy days!'



Scout engines were designed to be mounted on a square plate of aluminium about 60 mm square. In this case, the engine in Bob Shuttleworth's Puppeteer is hidden by a well detailed dummy rotary.



Special trepanning tools were made to produce round firewalls for the Scouts, Attila, Hannibal and Fokker Dr.1. This fabulous Flair Fokker Triplane is the work of RCM&E's scale columnist Danny Fenton.



From California, Nigel Watson's SE5a is now 35 years old and is still flown frequently.

DIE STAMP PRESS

Another step change occurred in the production of our kits when I purchased a four-ton platen press. This thing sat on the floor like a wide mouthed frog (for those who know the joke, 'You don't see many of those about, do you?'), opening and closing its mouth on about an eight or ten second cycle. The operator put a panel to be die-stamped against stops on the bottom panel as it started its upward journey and took out the stamped panel on the downward journey. A good operator, and Chris Cuss was one, would produce a panel per cycle.

I found a company in Bristol called Bristol Formes and Stereos, who made the tools for us. I, or Richard Smart, would draw the panel on Megacard and send the file to them. They had a CNC jigsaw that would follow the lines of our drawing, cutting the shapes in 1/2" plywood. The clever thing was the width of the cut, which matched the 1" wide blade that hammered into it. This was a blade that would cut lite-ply and was relatively soft and could be bent to 90 degrees if need be. Balsa was a different matter. The blade was much harder (and sharper) and could not be bent to anything but a curve.

When the blade was in the ply panel it was used to cut its own ejection foam rubber. With the rubber in place the sharp edge was hidden just below the surface. When a panel was stamped, the rubber would compress as the blade passed through the panel and would then push the panel off the tool as the platen retreated. I think the first model to get the die stamp treatment was the Vulture, so named by Dick Thrush, my Production Manager. It was a glider/electric powered model. (So far in these ramblings I have omitted to speak of Michael Thrush, known universally as Dick. Would those that don't understand please go to the back of the class...)

Dick had been an engineer at Vickers Supermarine and he was a keen modeller. As



Other special tools included a V-block and blade for Flair's fly press to bend Dural into cabane struts for the Puppeteer, SE5a and Legionnaire. This SE5a was built by Andy Brown.

an engineer he possessed many useful skills and he made several bespoke tools for model component production. Things like a V-block and blade for the fly press with which we bent 1/8" x 1/2" Dural to form the cabane struts for the Puppeteer, SE5a and Legionnaire. The same tool was also used to bend the little wire undercarriage leg joiner for the Scout series. Dick also made trepanning tools to produce the round firewalls for the Scouts, Attila, Hannibal and Fokker Dr.1. I remember a visit by a local health and safety officer who took one look at our Meddings bench drill and said, 'That must have a guard on it.' I said, 'That isn't possible as we use it for trepanning.' That was the end of the conversation as the officer didn't have a clue what a trepanner was but wasn't about to admit it.

Dick also made a wire bender which made thousands, literally, of bends in 10 SWG piano wire to form undercarriage legs. We would produce 100 kits in a run for the most popular designs, the Puppeteer and Magnatilla,



Flair Scouts were widely copied. Dudley says, 'The number of times that someone had had an 'accident' and needed a cowl, undercarriage set and cabane struts were legion.' Here's an underside view of Bob Shuttleworth's Puppeteer showing some of the difficult to copy parts.



To run a successful business, you need competent and reliable staff. Here's Dudley and his employees raising a glass in celebration of a milestone event.

dropping to a 50 or 25 run for less popular models. He was also instrumental in setting up the very second hand four-ton platen press I bought to start die stamping components.

To run a successful business you need competent and reliable staff members and Dick certainly fell into that category, as did so many others at Flair.

PULLING A FAST ONE

With our experience of the Vulture it made sense to design Mk.II Puppeteers and Magnattilas using die-stamped lite-ply extensively. There was no real weight penalty as lite-ply could happily take lightening holes. The isometric drawings for construction were easier for the builder to understand, the kits were quicker to produce and the bonus for us was it was next to impossible to build a model without a kit. The number of times that someone had had an 'accident' and needed a cowl, the undercarriage wire set and the aluminium cabane struts were legion. But I did price the items accordingly.



Another common 'complaint' came in the form of missing parts from an SE5 kit after a modeller had built two sides of the same hand. There was a drawing and a note in each kit reminding the builder to make two sides of opposite hand. Martin Hughes had no such problem when building his silver biplane.

Another common complaint came in the form of missing parts from an SE5 kit. The first instruction is for the builder to glue a forward fuselage outer side to an inner side. The outer was in balsa, which is easier to cover than the inner lite ply. These two parts were numbered 1 and 2. We were called on dozens of occasions with a complaint that there was only one of each in the kit instead of two. I would say no, there were two and you built two sides of the same hand. The drawing showed, I think, a right

hand side being put together. There was a note by the side reminding the builder to make the other one the opposite hand. The conversation always ended with me saying, 'Send £2.50 and I will send them to you.' Not one person argued.

We were very careful to ensure that kits were complete when packed. The components would be counted out before going onto the packing tables. The more popular kits were produced a hundred at a time, so for a kit requiring, say, four items the same, then four hundred would

be counted out so that when the person putting those items in each kit box got to the end, there should have been none left over.

A GREAT SUCCESS

So why was Flair so successful? My Dad had imparted to me a certain business sense that stood me in good stead, but it was more than that. I had a secret weapon called Jane.

Apart from looking after me and bringing up two children that have turned into proper adults (Sheila is a very successful business accountant and Rachel has her own dog training company and is presently involved with setting up a secure dog walking field), Jane ran the office in a very efficient way. She also organised all the order picking and packing for despatch to our four hundred trade customers and, with the help of Sheila Harrison, did the invoicing. It was a brilliant partnership as I hate paperwork, so I stayed out of her way. She knew little, if anything about production, so she stayed out of my way.

Talking kit numbers, at the time I sold the company in August 1997, twenty and a half years after starting it, we had sold 11,000 Magnattilas and 15,000 Puppeteers. Not bad for a company that started in an 11' x 14' shed. Kit sales only represented about 20% of turnover, which in my last year was about £1.25 million, making us, I think, the third largest UK company in the model trade at the time.



By the time Dudley sold Flair in August 1997 they had sold 11,000 Magnattilas and 15,000 Puppeteers. Here's Chris Corrin's 'Maggie' and Bob Fletcher's Puppeteer.



A fine example of a Flair SE5a built by ex-Flair sales agent Bob Fletcher. It's just one of many excellent examples of Flair models built by Bob over the years.





Let's finish with a Roll Call gallery showing more Flair models, starting with Dan Lester's Fokker DVII. From the numbers of pictures received this has to be a contender for your favourite Flair model.



It's that man again! Bob Fletcher has done another fine job, this time with a Flair Harvard.

FLAIR ROLL CALL

I have a copy of the last catalogue that was produced whilst the company was still in my possession. The model kits contained therein are:

Puppeteer, Attila, Magnattila, Baronette, SE5a, Fokker D7, Legionaire, Fokker DR1 Triplane, Etrich Taube, Piper Cub, Fledgling, Volture, Heron, Sunrise, Hooligan, Patriot, Dara 20, RM Racer (parts only), Shark, Super Lightning, Harvard, Junior 60, Black Magic, Hawker Hunter and English Electric Lightning.

I then designed the Bristol FB2 in my consultancy period. ■



Many Flair models are long lived but Richard Leech finished his electric powered Piper Cub just last year.



Stephen Farmer's Dara 20 was powered by an Enya 19BB and although not the most powerful .20 size motor the model was still pretty fast.

"Talking kit numbers, at the time I sold the company in August 1997 we had sold 11,000 Magnattilas and 15,000 Puppeteers"



Dudley designed the Bristol FB2 in his consultancy period after selling the company. Here's Bob Fletcher's fine example, before and after covering.



Dudley in his workshop working on another full-size aeroplane. He has written another set of articles about his self-build hobby, which we hope to publish in short parts soon. Picture courtesy of Ed Hicks, Editor of LAA Light Aviation.

THE INSIDER

John Stennard's 'new' Ares Sopwith Pup feels air beneath its wings for the first time

Words & Photos: **John Stennard**

I was very pleased with the Ares Pup 'spare parts' deal as the parts were all fresh and perfect in their original spare part boxes. I thought that something that seemed quite simple, the wing struts, might cause me the biggest problem but otherwise I could see the way forward. I was fortunate in that I had a Mini Vapor Rx module and the geared motor unit from the same model. The underside of the cockpit floor was a perfect base for the receiver (Rx) module, so I looked at installing this and the tail parts first.

Carbon fibre (CF) pushrods are in the spares package, however here I made an error. The rudder and elevator linear servos appeared to be on the wrong sides to match the control horns on the rudder and elevator. My mind was

fixed on the pushrods running straight from the servos to the control horns, parallel to each other. I changed the servo inputs over using the transmitter channel assignment function and started the installation. With the Rx module in place and pushrods connected, I realised that all was not well and I needed the pushrods to run diagonally across the fuselage. So, it was back to square one with the Rx module channel assignment. I could now glue the tail parts in place and connect everything up.

I found that I could fit the geared motor behind the cowl but unfortunately the output shaft was just a bit short. Strangely, the spare parts package included a gear box shaft and this not only fitted the existing gear box but increased the length by 5 mm. I could, of course,

have cut a hole in the centre of the cowl and moved the motor forward, exposing the gear. A 2 mm ply mount was made to fit inside the cowl to hold the motor and gear box in place.

On the original model the 1S70mAh LiPo was held in place under the front fuselage with a small magnet. I tried this method, although I thought I might need to use a larger capacity LiPo. I unearthed some aged 70 mAh LiPos but they proved to be too weary.

On the original the undercarriage and wings were held in place with self-adhesive paper strips and these are included in the spares package. I had luck with the wing struts as a fellow flier at our indoor meeting has an original Ares Pup. He lent me a strut and I was able to use this to get the correct length. The wing struts

My Ares Pup, ready to fly after a couple of changes.



Ares' Pup is a sweet little model to fly and looks good in the air.



have tiny magnets on their ends to link up with the magnets on the wings. I used 1mm plywood for the struts and after carefully checking the polarity I carefully cut out a recess in the end of each strut and glued the magnets in place. As anticipated, this was a very fiddly job, but I only got one magnet the wrong way around!

With the Pup straining at the leash a weigh-in showed the airframe weight to be 20 g, so 22 g with a 70 mAh LiPo. The original model had a listed weight of 24 g with the 1S 70 LiPo. Even with a 1S 150 LiPo the AUW is only 24 g.

The first test showed that the Pup was both severely tail heavy and underpowered. The original R/C module would have been further forward. A larger motor of the size used in the

Microaces models and matching prop was installed which I hoped would solve the power issue and possibly the tail-heavy scenario. The Pup now weighed 24 g without the LiPo. A quick test showed that the model was still tail-heavy and a 1S 380 mAh LiPo was fitted. This is quite large but actually fitted quite neatly using micro-Velcro rather than magnets.

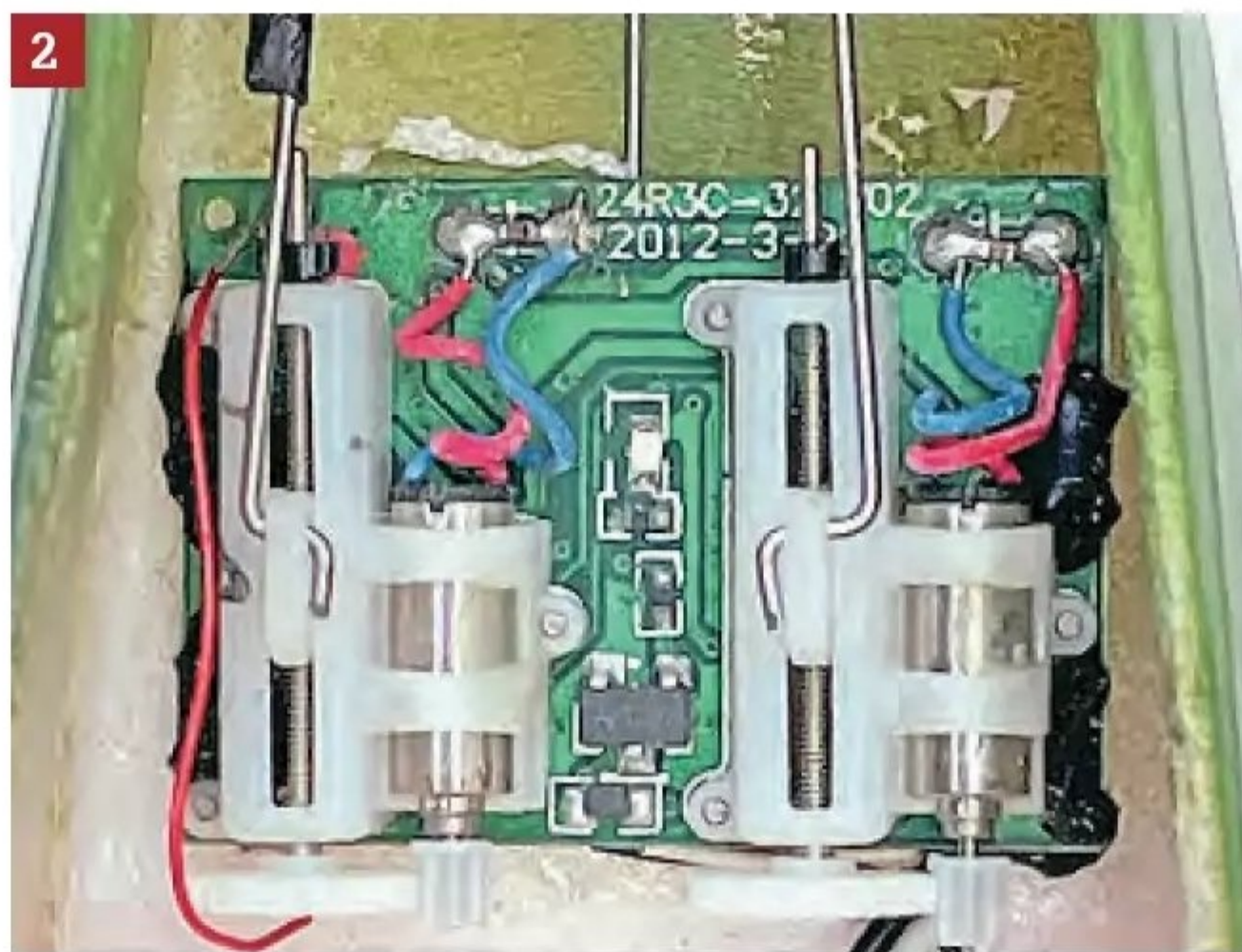
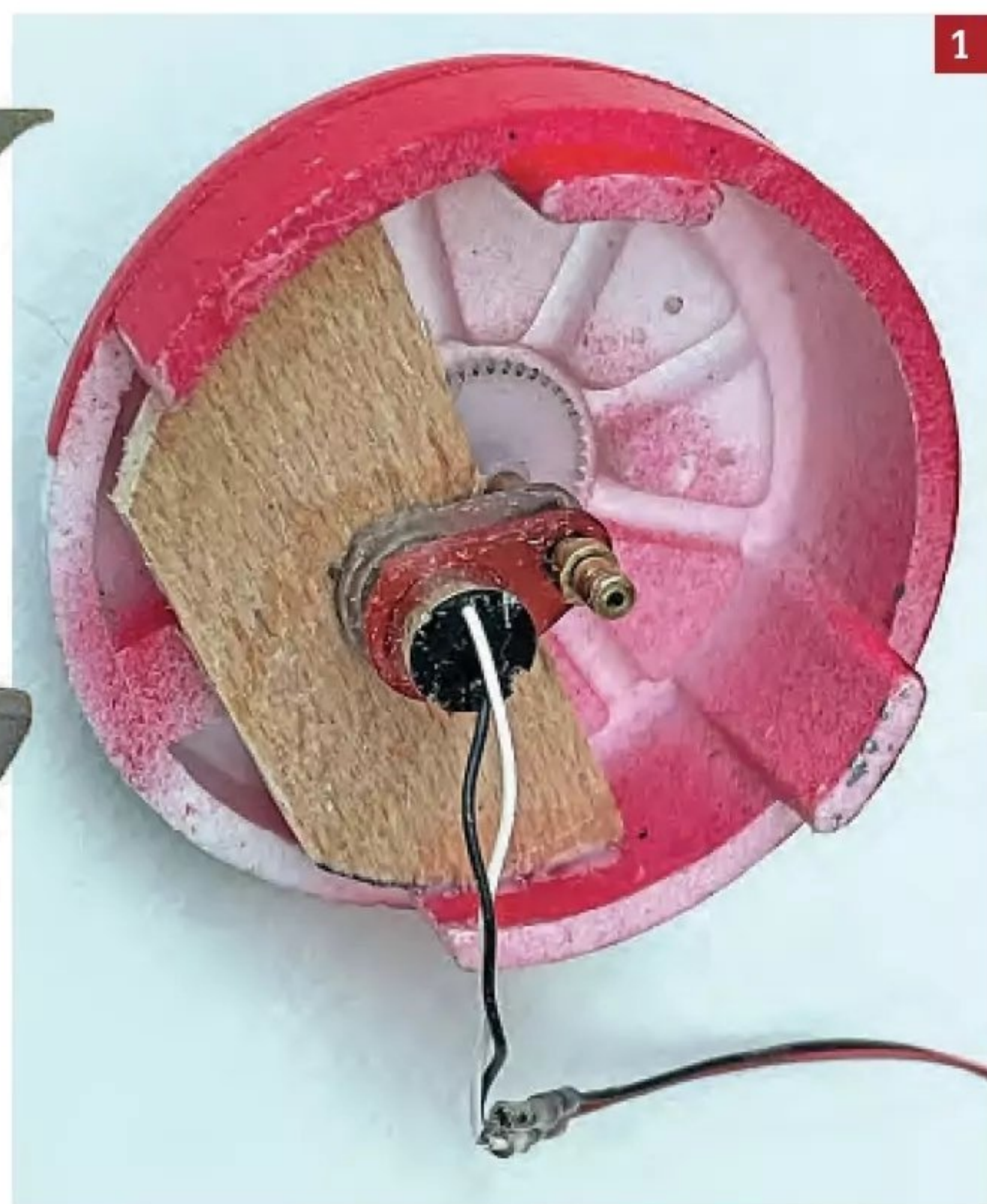
What a difference! The Pup now flew superbly and suitably slowly to suit its scale appearance. The flying weight is now 31 g but there is plenty of wing area and one has much more control with the extra motor power; it's actually more agile than the original, which verged on the 'dainty' and had to be flown cautiously. So, the Ares Pup is indeed back in

the air and has provided an interesting and very satisfying micro project.

JOHN'S PLANES

Over our years of indoor flying fellow flier John has been a maxi inspiration for micro aircraft designs. He has produced a bewildering number of 'own designs' based on one, two and even four 6 - 8 mm coreless motors. His latest is a Lancaster and he has used Depron foam in a number of ways to build the wing, tail surfaces and fuselage.

John has fitted an interesting control system as he is using rudder and elevator, plus proportional motor control. I saw the first test flights and the model showed promise; at



1: This first motor was replaced with a more powerful one.

2: Mini-Vapor Rx module fits in with room to spare.

3: The Pup has no problem with the 380-power pack!



1

this stage the proportional motor control/rudder needed some 'fine tuning'.

The model has a wingspan of 770 mm and a flying weight of 98 g. It is powered by four 7 mm coreless motors driving 65 mm 3-blade props (ex-quad) and uses a 1S 380 mAh LiPo. The Rx is from Microaces and has two 5A ESCs which provide throttle control, plus differential thrust; this is mixed with the rudder control. Two 1.7 g servos are used for the rudder and elevator.

The Lancaster has now passed its flight tests and John has given her a coat of paint and all the trimmings. More information and photos to follow.

BLUE FOX

I was enjoying flying the renovated micro 4-Site biplane when I had a sudden recall. Small biplanes rang a bell and I remembered that I had previously built and flown two micro biplanes.

Both are now out of production, but they were delightful little models. The first was the Ghost, a really lightweight little model, and the other the slightly larger Dual Storm, also a sweet little aeroplane.

So where is this going? Well, I noticed an interesting model on the Robotbirds/Align T-Rex website. This was a small and attractive little biplane by King Tech called the Blue Fox. Although this model is no longer in production it was in stock and was being offered at a very affordable price. By now my renovated 4-Site biplane needed even more renovation so my cunning plan was to just swap the R/C gear from this model to a new Blue Fox. The Blue Fox has a wingspan of 440 mm, a length of 480 mm and a listed flying weight of 38 - 39 g. The model was designed around micro-R/C gear, but not as micro as I intended using. The R/C gear lists a Tiger 1302 brushless motor, a 1S 3A ESC, a GWS 5030 prop, 3 x 2.1 g servos, a Spektrum Rx and a 1S 120 - 150 LiPo.

My immediate thought was that all of the R/C gear was asking a lot from a 1S 120 - 150 LiPo. I intended using the Rx module with its two integrated linear servos, two 1.7g linear servos for the ailerons, the geared 'hot Microaces' motor from the 4-Site and a 1S 380 LiPo. I was anticipating that my Blue Fox would be noticeably lighter than the original version. To my surprise she turned out at 35 g, so with a 1S 380 g LiPo, an AUW of 43 g. I suspect the original quoted weight of 38 - 39 g was a touch optimistic!



2



3

1: John's quite complex foam Lancaster for indoor flying.

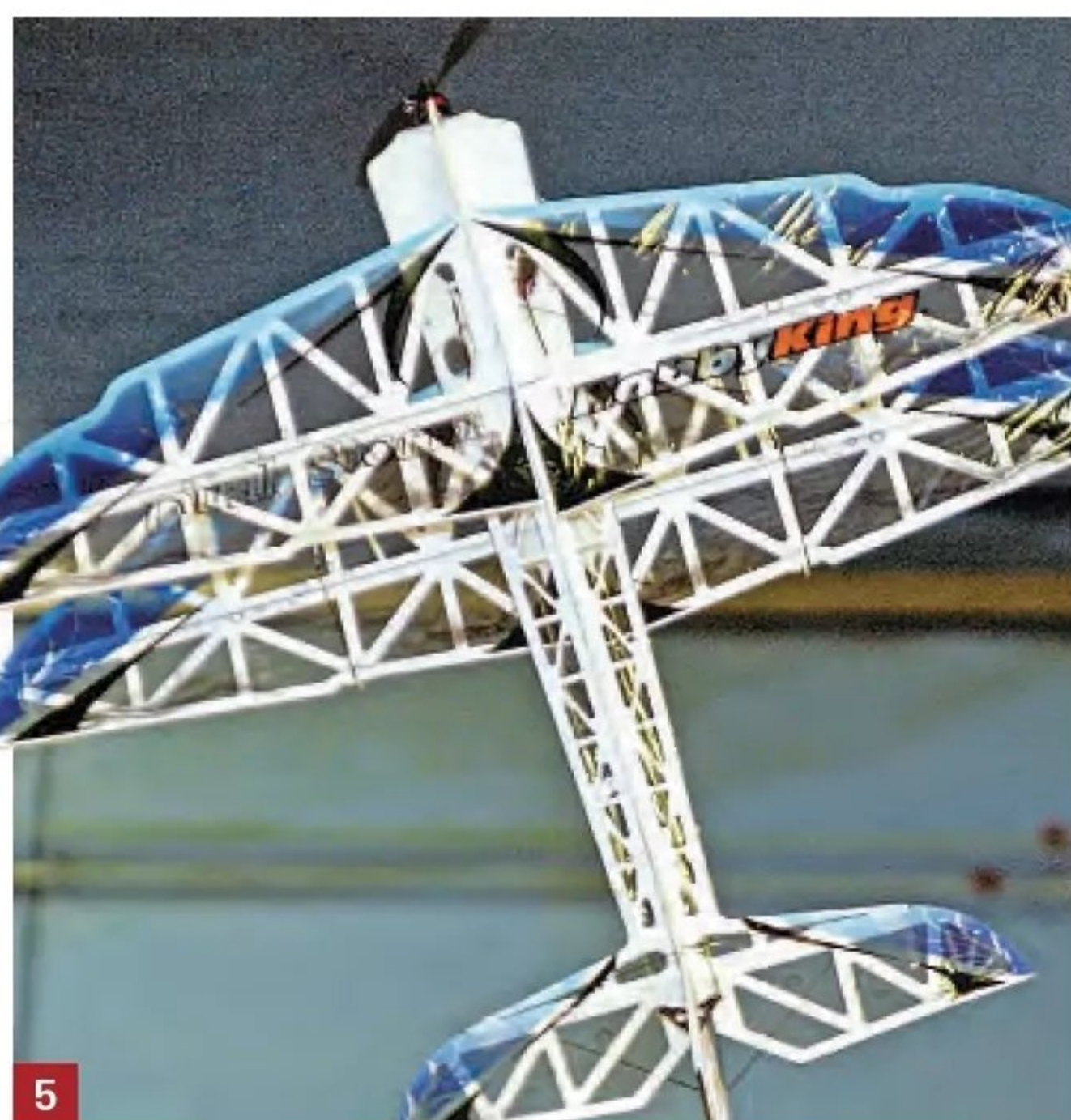
2: Two of John's crazily aerobatic SU-27s.

3: Unintentional, honestly!

4: John's indoor Mosquito with two micro brushless motors.



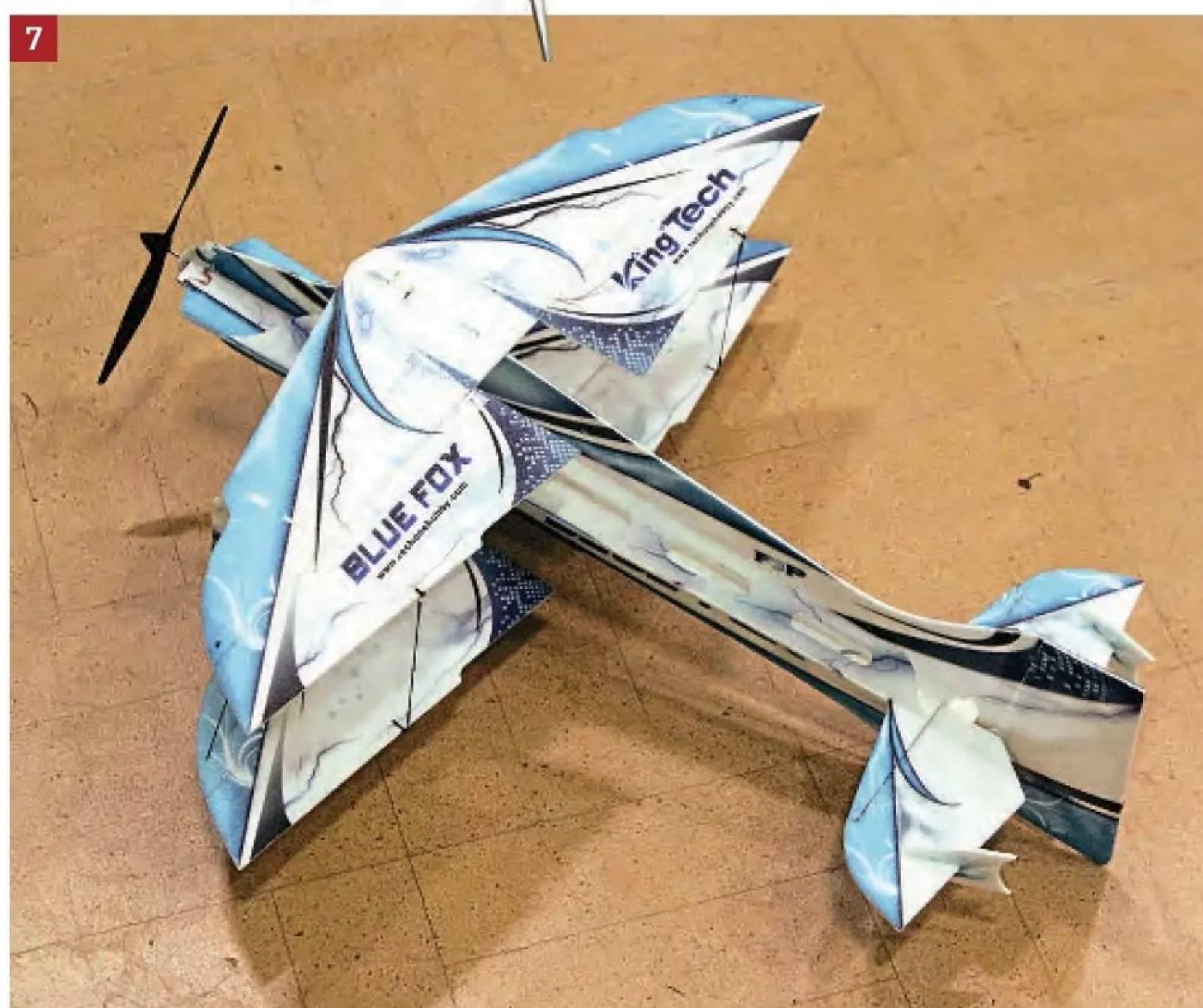
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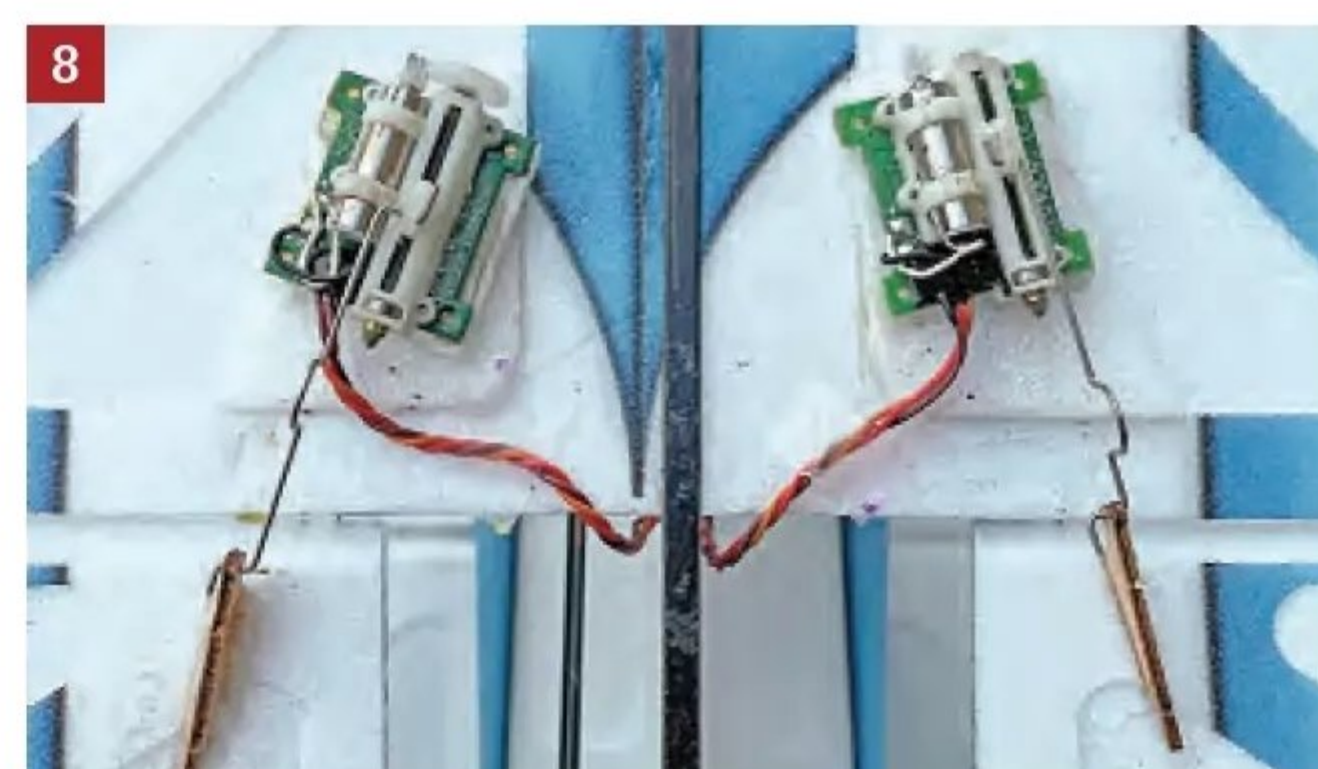
5: HK Dual Storm. This type of structure demands precise flying!

6: The tiny Ghost biplane is very nice to fly outdoors with its transparent covering.

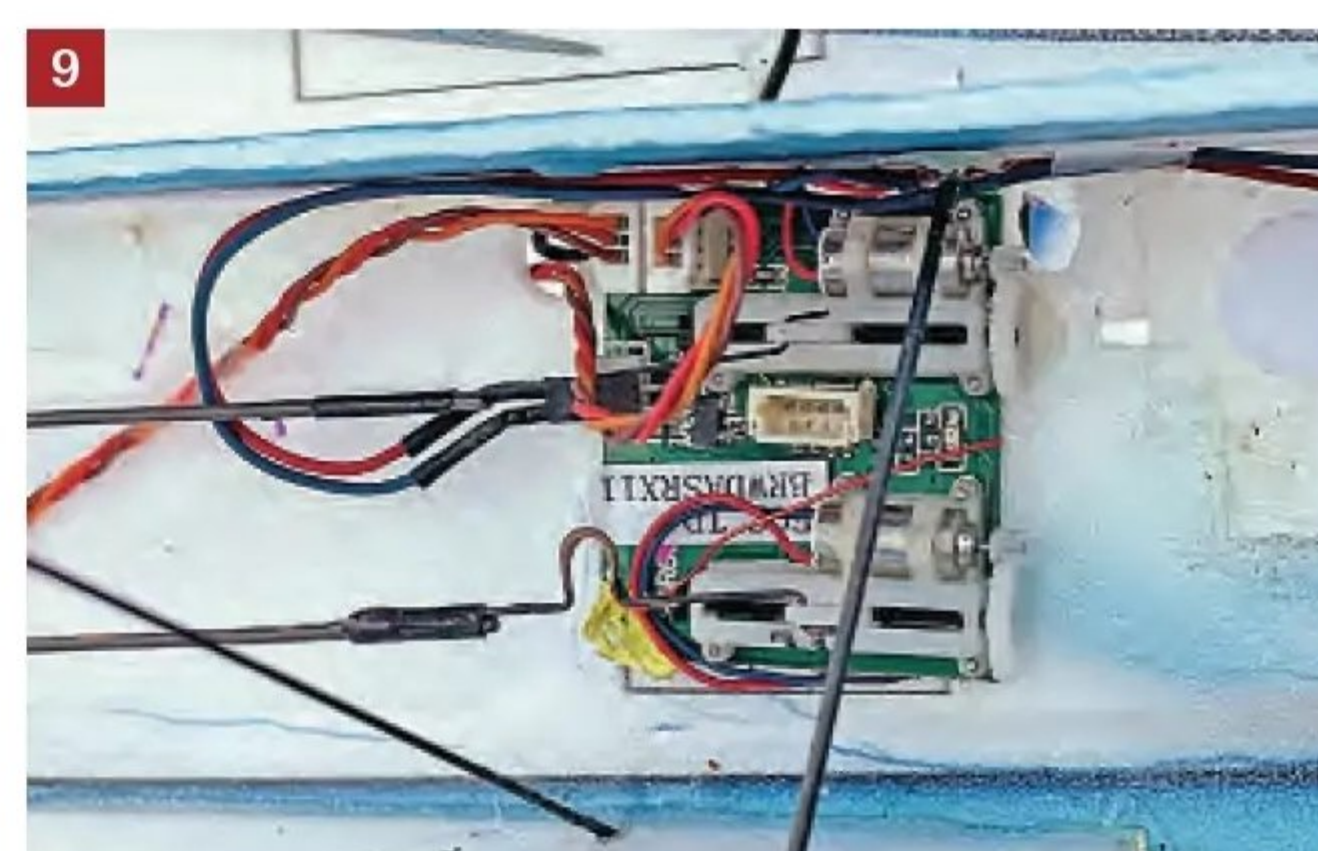
7: The Blue Fox, a Depron foam biplane.

8: I used recycled R/C gear and two 1.7 g linear aileron servos.

9: The R/C module supplies the rudder, elevator and motor control.



8



9



Blue Fox ready for some lively flying. Four ailerons give plenty of roll power and need careful handling.



A head on view of the model shows the attractive curved wing shape.

After a few tweaks my Blue Fox is flying extremely well, with a particularly good knife edge performance. There is something about biplanes that makes them attractive aircraft to model and this month, with the Pup and the Blue Fox, it's a bit of a biplane celebration.

CRAZY OR WHAT?

Over the years I've tested and flown a few weird machines and I have included photos of just two of them. The Flying Truck was sold by Maplins. (What a loss. Maplins, not the truck!) Once the correct launching technique was learnt it actually flew well. However, it suffered from 'integral battery' syndrome which always curtailed the fun you had flying it.

The second is the quite amazing Parrot Mambo Hydrofoil. The Mambo, now sadly out of production (but it occasionally appears on eBay) is a super stable little quad. It's our first choice for giving students quad airtime. Anyway, Parrot decided to increase the appeal of the Mambo by offering a 'two finger' grab, a BB cannon, an FPV option and a Hydrofoil. I test drove a Hydrofoil and have to say it worked extremely well. It rose readily out of the water and was easy to steer. The only disadvantage was the short duration of this exciting experience.

INSIDER BEDTIME & TINY THOUGHTS

Incredibly tiny magnetic actuators are readily available. Yes, 0.12 g! Although the amazing



Using a 1S 380 LiPo a five minute plus flight is possible.

DelTang micro receivers are no longer in production there are alternatives and there might be a UK one coming soon. What is available makes R/C models in the 4 – 6 g AUW entirely practical. More on this tiny topic soon.

The Insider feature was intended to run during the indoor season (although some indoor venues run throughout the year) so will be resting up while we enjoy months of light winds and sunny weather. Hopefully, the Insider will return when indoor flying is again a firm fixture on club calendars.

As far as our club is concerned our indoor sessions see more members meeting and flying together than we ever get at our outdoor fields which has to be a very good thing.

(Insider may return quicker than that as I've asked John to consider reporting on small models

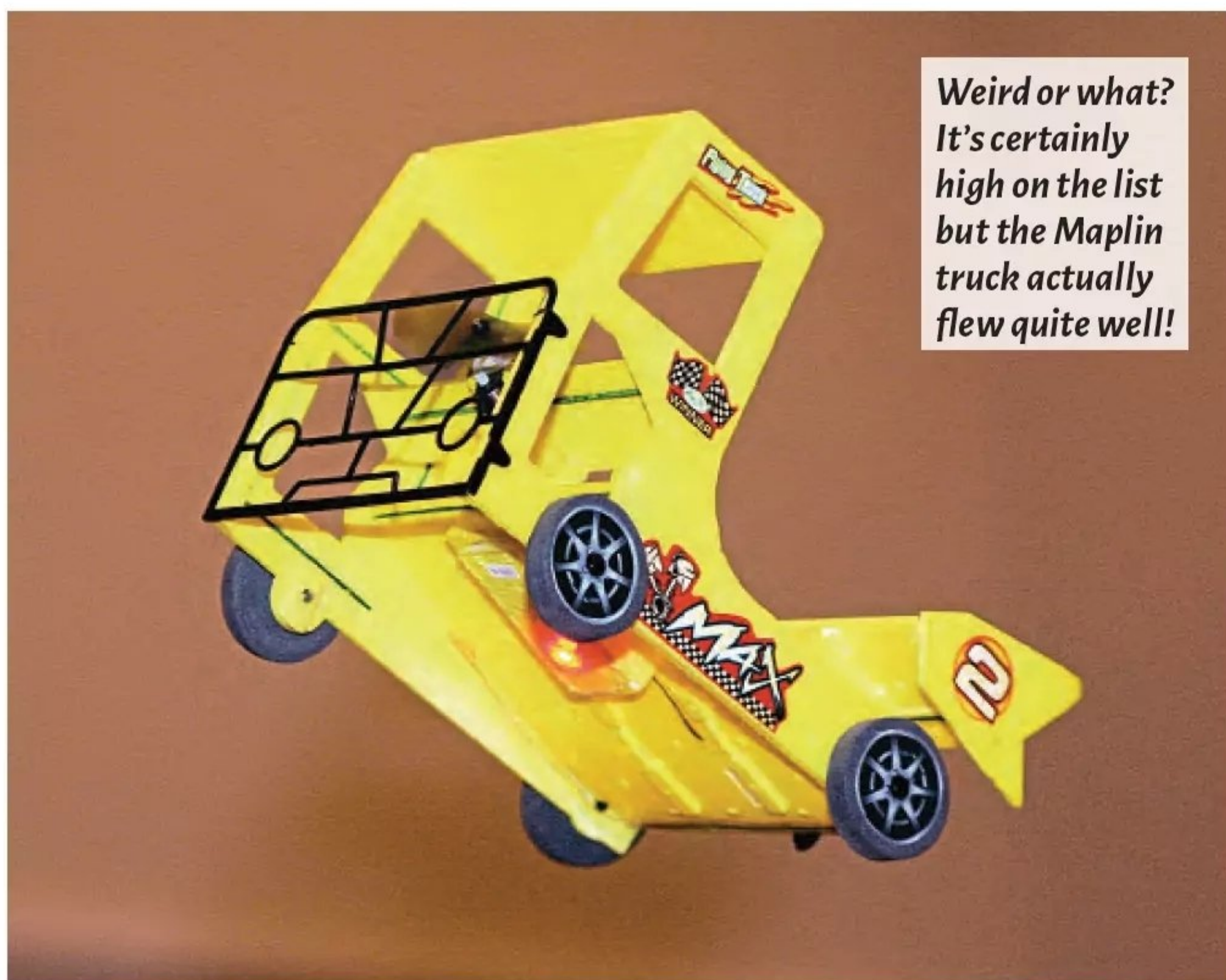
that can crossover between indoor and outdoor flying, especially those suited to taking to the air on still summer evenings. And, as he says, some clubs carry on flying indoors throughout the year—KC)

POSTSCRIPT

Just before shutting up the shop, I received a really interesting email from John Collister. John lives in the Midlands area and is a very active indoor flier, twice a week in the winter and once a week in the summer. Lucky guy! John sent info about what's happening in his area and when we start up again in the Autumn, I'll be including more details.

On finals, over and out.

Any photos and information from your indoor flying activities can be sent to: johnstennard@me.com ■



Weird or what? It's certainly high on the list but the Maplin truck actually flew quite well!



Parrot Mambo Hydrofoil. Again, very different, but the model was exciting to sail.

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FLYING OFF WATER AT LONGHAM LAKE

Mike Roach lets the uninitiated amongst our readers into a loosely-kept secret – flying R/C planes from water is fabulous fun!

Words: **Mike Roach** Photos: **Mike Roach, David Bintcliffe**

Flying models off water has been part of the hobby since the very early days. My ancient plan of the Tomboy has a float option and there were rubber and IC powered 'rise off water' planes well before that. Access to cheap radio control gear spread the net very wide but I think it was the move to electric power that made flying boats and floatplanes a realistic possibility. IC engines have a habit of falling silent in the middle of the lake, but electric motors just keep going.

My first waterplane was the Ivan Pettigrew Catalina which had many flights off Christchurch Harbour, using the sailing club safety boat as an aircraft carrier. Salt water in the model and

the electronics was not a good recipe for a long life and the search began for a freshwater site. Christchurch clubmate Trevor Hewson and I drove to various tree lined lakes marked on the OS map but by far the best option was the very large gravel pit at Longham, a few miles north of Bournemouth, which was being filled with water from the River Stour in order to give seven days' worth of water storage for the local conurbation. Jon Morley, the leisure manager, and Ian Haywood, the warden, met us and we pitched a proposal for us to use the new lake as a water flying site in conjunction with the other water users. These were a local kayaking club and Poole Radio Model Yacht Club.

One aspect which concerned all of us was the perceived impact on the bird population, both migrant and local. Fortunately, even the bird watchers seem to have agreed that we pose no threat, in line with a BMFA study which found the same.

The author's Short S26 'Golden Hind' over the lake. Picture by David Bintcliffe.



From the Schneider Trophy races in 1919, a Savoia S13 by Colin Low of the Basingstoke MFC flies above the Longham Lakes.





Poole Radio Model Yacht Club becalmed on a quiet day.



The car park is extensive and has a grass area for setting up models.

TWO LAKES

There are two lakes at Longham, owned by Bournemouth Water and South West Water, with the South West Lakes Trust managing the environmental, recreational and educational activities on the site. The northerly one is for fishing and our very rare demonstration flying on the management's open days. The second lake - 'ours' - is larger, about 700 x 400 metres with a maximum depth of eight metres and contains well over a million cubic metres of water. We have three flying points on the lake. Those on the eastern side are the most popular and with the wind anywhere from north through west to south they give good onshore conditions with your back to the sun until late morning, when the sea breeze will usually make flying rather more adventurous. The westerly flying point is further away but is useful when the wind is in the east.



Although we have access to the management's rowing dinghy on our Open Days, it is normally locked up. In the inevitable event of a flip, or worse, we wait until the model has drifted back to shore before putting on a pair of waders and recovering it by hand and foot. Other options are available and although membership of the Longham Lake Swimming Club is strictly ill-advised, it has been occasionally necessary and a few of us are members. Though not the author, obviously...

Flying started in December 2011 and has been recorded on the RC Groups Longham thread ever since. First flight photos are added to the front page and they reached 144 by the end of 2023. Flying is limited to members of the Christchurch and District Model Flying Club and visitors are welcome as members' guests or at our Open Days, as advertised at the end of the article.



Model 'Flying Points' are a short walk from the car park.



There's plenty of space on the grass behind the nearest FP for the pits and spectators.



David Bintcliffe recovering a submarine Supermarine S4 after a flip. Note the waders and a supporting pole to avoid a swim.

FLOAT PLANES OR FLYING BOATS?

For immediate and cheap access to waterplane flying adding a pair of floats to a favourite sport model - a Fun Cub, WOT4 or pretty much anything else - is the simplest option. For stability and ease of flying floats should be wider apart than a wheeled undercarriage and the bow of the float should be a prop radius in front of the nose and the stern half the distance of the wing trailing edge to the tailplane leading edge, with the step a little way behind the CG. Twins seem to get away with shorter floats than single engine models.



Trevor Hewson's Lazy Bee. Floats attach to the stub axle and need to be secured fore and aft to avoid sudden and unnerving changes in attitude.



The WOT4 makes an excellent sport model on floats but needs an additional alloy U/C and reinforcement for the rear mount. The floats are from an ST Models Beaver.



Scott Wallis converted this Ivan Pettigrew Druine Turbulent with a neat pair of floats.



Right: It never got past a mock-up in real life, but the author's Islander is a superb flier.



Float planes, particularly high wing ones, are more prone to capsize than flying boats in crosswind conditions or when turning away from the wind, and most rescues and recoveries involve them. But they seem to be easier to launch and recover, they tend to track straight on take-off and can do lovely skimming touch and goes and very smooth landings ('alightings' to the aficionado). Steering by a water rudder, operated by a servo in one of the floats, is easy to arrange, although my WOT4 on floats steers well enough by rudder alone.

Flying boats are inherently more stable and it is very rare for one to be blown over or fall into the water, even after a poor landing. The 'flat hull v scale deep V' debate rumbles on; my preference for sport models is for a flat hull with a hardwood strip along the centre line to give directional stability and reduce wear when operating off grass. ✈

Above: Flying boats can be tiny! This is Scott's Mini Drake.

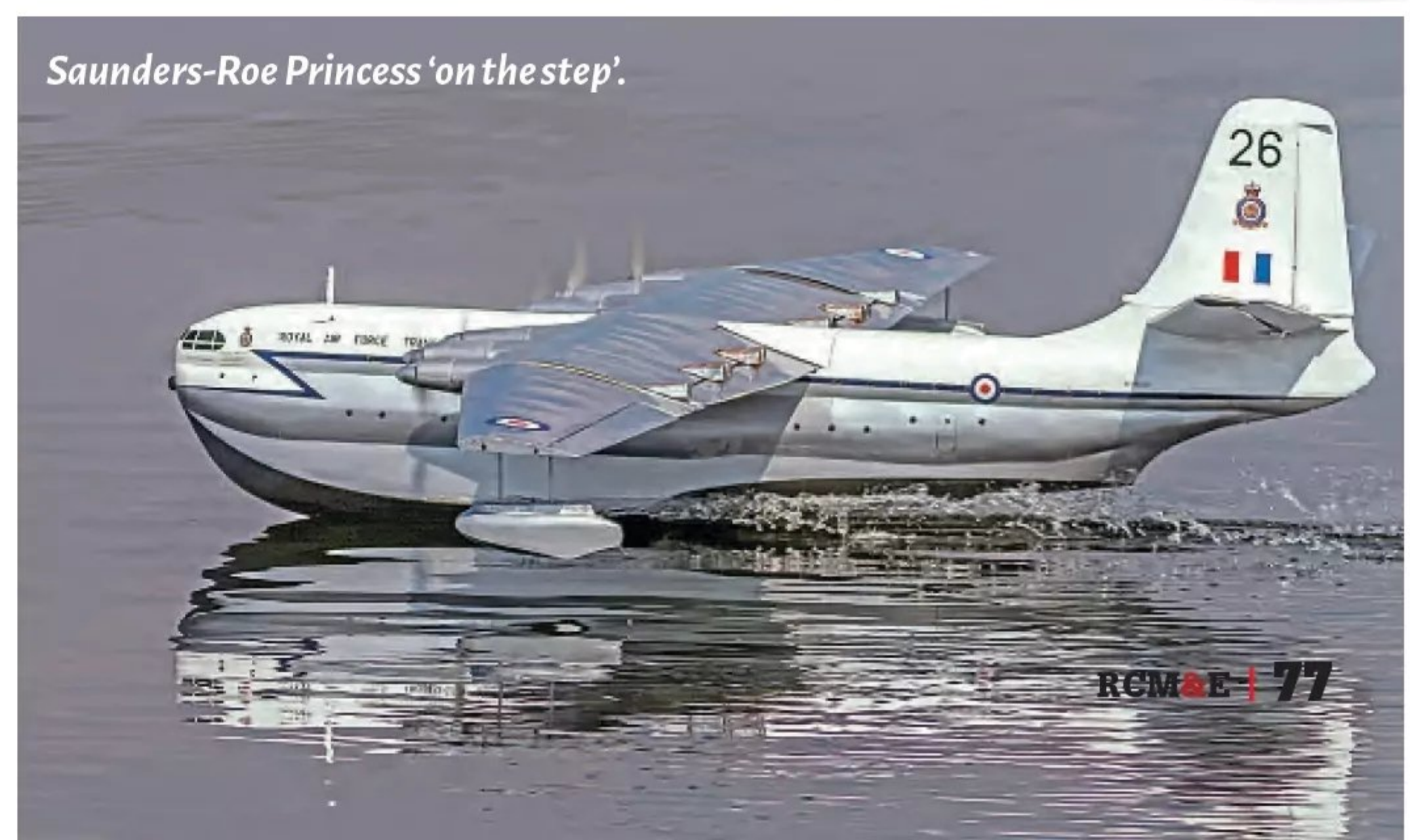
Right: George Worley's Dornier Super Wal on a sunny afternoon.

Right: Here George demonstrates the hands-on recovery method when the reeds catch the boat.

Below: Supermarine Walrus from the old Aeromodeller plan. A complete failure, despite looking the part.



Saunders-Roe Princess 'on the step'.



FLYING REVIEW

Despite the saying that water is as hard as concrete, experience at Longham has shown that even quite dramatic arrivals result in far less damage than the same thing on grass (and especially on concrete!) Even after making a full submarine impression a model can be restored by carefully draining out all the water and leaving it in the airing cupboard, if you have one, or in a warm workshop if SWMBO decrees that to be the best solution. Once dried out, batteries, speed controllers, motors and servos seem unaffected by fresh water. Just don't try to throttle up when the prop is submerged; the speed controller will burn out with the huge extra load.



A HobbyKing Skipper (other clones are available) with the kit decoration removed and the Royal Navy proudly aboard. Markings are by Tim Calvert.



Despite flipping over this Fun Cub flew shortly afterwards. The electrics and the motor are well clear of the water.

Flying off water is different from a grass strip and in some ways easier. Taking off is simple: just taxi out, motor to idle and the model will weathercock into wind. Open the throttle slowly over a couple of seconds and the model should gently rise off water. Some up elevator will be needed on most models. The popular Hobbyking Skipper, with its long, flat waterline and step in front of the CG takes longer to ROW

than typical floatplanes.

Landing is not quite as easy and does need practice if you are to avoid skipping and bouncing. The Schneider Trophy pilot, Flight Lieutenant D'Arcy Greig said in his book that as long as you touched the water with the heel of the floats first then all would be well. Coming in too fast and flat is a great way to see how far the model can bounce...



Jan Basset's Kyosho model of the 1925 Maachi M23.



Author's Supermarine S4, also from the 1925 Baltimore Schneider races.



Another David Bintcliffe model, the Maachi M39, winner of the 1936 competition.



Supermarine S5, winner of the 1927 contest held at Venice.



Clive Spencer's 1929 race winning Supermarine S6.



This Grumman Albatross is a Depron version. There is a Pettigrew plan and a commercial model available of this aircraft.

SCALE OR SPORT?

A fraction under half the models first flown at Longham are scale and about half of these were built rather than bought. This is a much higher proportion than at our grass field and I suppose the reason is that although it is easy enough to fit floats to a sport model, the sheer beauty of many flying boats is the chief attraction to both manufacturers, designers and builders.

The particular emphasis on form and function of the Schneider Trophy racers has generated a small fleet of miniatures, whilst the 'Golden Age' flying boats of Shorts and Boeing have a large following and the WWII and post-war boats, the Grumman Albatross, Consolidated Catalina and the like have also proved very popular. But by far the most numerous scale model is the Icon A5 in various sizes, with eight versions currently active. This is exceeded only by the various iterations of the Laddie Mikulasko 'North Star' design, adapted to the HK Skipper and many other similar fun-fly designs. Laddie also designed the extraordinary Aquabird, which has often been seen at Longham.



One of many Icon A5 models flown at Longham.



A Laddie Mikulasko Aquabird on its toes. Tricky to keep orientated when flying, but a startling and impressive shape in the sky.

For sport models, manufacturers such as Multiplex have floats as an optional extra and the Fun Cub family are well represented and make an excellent introduction to off-water flying. Venerable designs such as the Junior 60 have been seen pottering gently round the lake and

performing elegant touch and goes, although they are very prone to tipping over if at all sideways when landing. One member, retired GP David Bintcliffe, has made a speciality of converting older designs - a Super Sunbug, a 1948 free flight glider, for example, as well as a resurrecting a

Berkley Sea Cat, a single-engined Catalina-alike - into very capable flying boats with superb light wind performance. He also designed and built a hugely complicated model of the De Havilland #1 biplane which has had several successful flights with, said David, his bicycle clips well tightened!



David Bintcliffe and his own design De Havilland No. 1 biplane having successfully flown off water.



Cycle clips fully tightened, it's throttle-up time!

COME AND FLY

Our Open Days this year are on Saturday 20 July and Saturday 14 September. Everyone is welcome but BMFA membership is essential if you want to fly. Models must be fixed wing, electric powered and propeller driven, although modern EDFs with that 'whooshy' sound can be flown; it will be a first as so far no one has ventured into that territory!

Please see our website www.cdmfc.org for details. Come on in, the water's lovely! ■



A Sopwith Schneider from the author's plan. Most floatplanes can be flown off grass with some discreet wheels added just before the CG.



The author and his own-design Bombardier CL415 'Super Scooper'.

In this special edition of our regular readers' aircraft picture gallery, we are featuring a selection of Flair models which didn't make it into one of our recent 'A Company Called Flair' articles or which have been used but which came with an interesting story that couldn't be covered in a brief picture caption. Let's start with more photos from Bob Fletcher, who has a large album of Flair kit pics...



FROGGY'S FOKKER

I can't resist sending just two more Flair pics of a stunning Fokker Dr.1, built and flown by club member Dave (Froggy) Lucas.

Bob Fletcher



CUB TRAINER

I've really enjoyed reading your articles on Flair Products.

In 1991 I joined the Marquis MFC (Weymouth) and was advised to build

a Flair Cub as a trainer and my first R/C aircraft. It was a joy to build and it flew for many years.

Ray Jerrard



SUNRISE CITY

A bit of Flair nostalgia for you. Moi with my 100" Flair Sunrise sailplane on the Ashdown Forest circa 1990 (note the Fleet gear). We call this spot on the Forest 'Sunrise City' because at that time nearly everyone who flew on the Forest had a Sunrise. They used to say, 'If Sunrise won't go, nothing will go!' I recall occasions when three or four hand-launched Sunrises would be sedately circling overhead while Flamingos, Algebras and Alpinas sulked on the grass below. My Sunrise will be among the trove of relics in our loft. I may get it down and electrify it. Sunrise City here we come!

John Norman



LOZENGES BE GONE!

Here are some photos I took just before the maiden of my Flair Fokker D.VII some 15 years ago. To my joy it survived the maiden and I still have it. The livery I chose is that of the emerging Dutch Airforce, just after the war. This is a model of one of the machines that Anthony

Fokker smuggled out of Germany on a train to the Netherlands. The reason I chose this machine has not so much to do with the fact that I am Dutch but has more to do with the paint scheme, which I favoured over that darned lozenge paint scheme!

Arjen Boogaarts

FOKKER REBORN

Please find attached a photo of my Fokker Dr.1. My original Dr.1 was built from a Flair kit back in the 1980s and flown at RAF Swinderby, Lincolnshire, where it flew so well. I have built this one from the original plan, plus some

small mods, i.e. a shorter nose and with a cutaway in the centre of the middle wing at the cockpit area. Power is an Enya 40 four stroke. I am just waiting for the weather to change to test fly it.

Barry Richards



AS FLOWN BY ALI

I have been a fan of Flair kits since the 1990s.

Here's my Enya 53 FS powered Fokker DVII on its test flight, flown by a 16-year-old Ali Machinchy - an amazing pilot, even back then! I still have it but it's now a bit of a hangar queen.

My recent build is an O.S. 48FS powered Legionaire in the colours of a Belgian ace. Chairman Matt in the photo is our test pilot at WLMFC and he says it is a pussycat.

Michael Powell



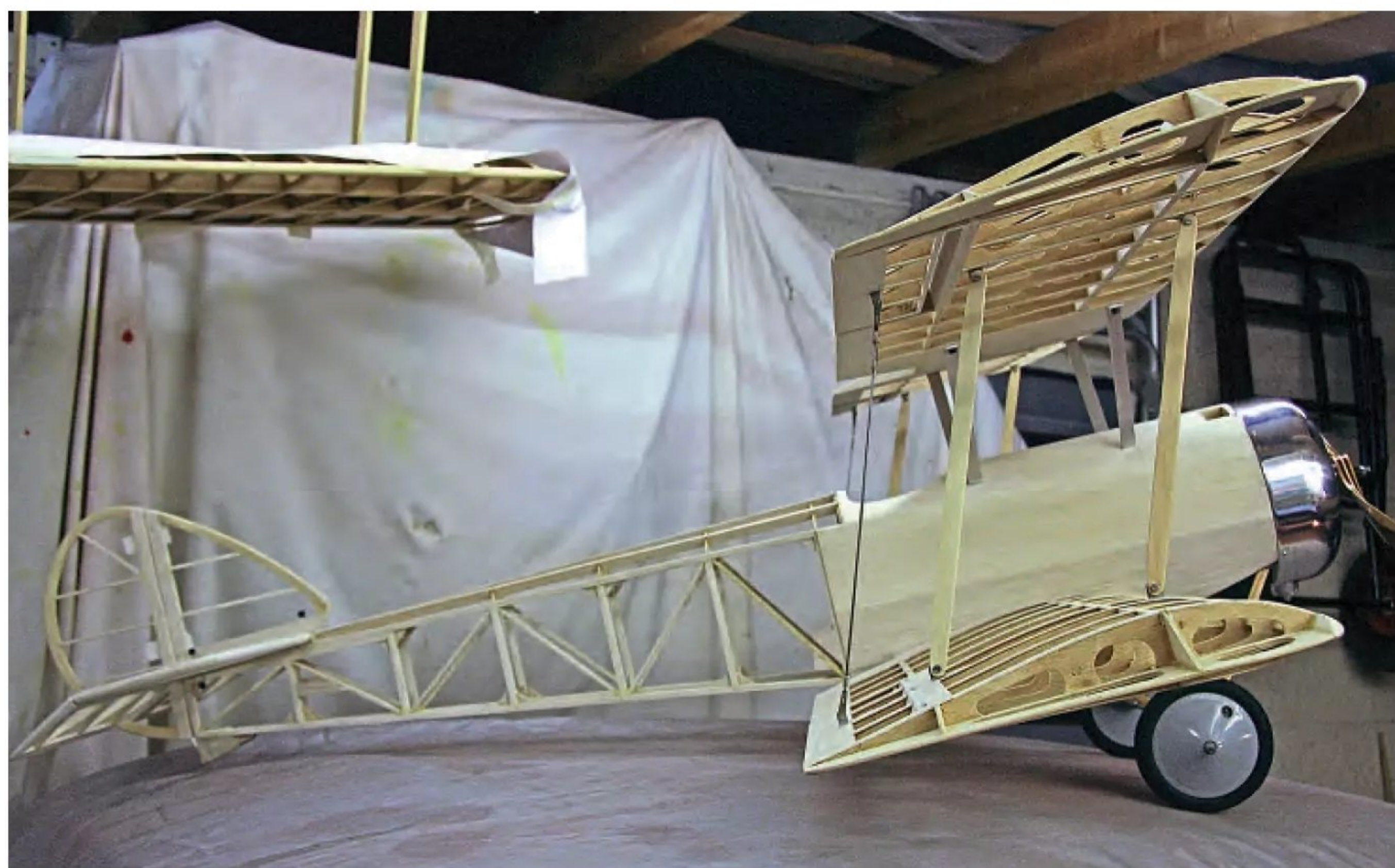
FIRST ELECTRIC BARONETTE?

My late father Len Hamilton read RCM&E for as long as I can remember. He was also the first to build and fly an electric powered Flair Baronette in the late nineties and demonstrated it to Dudley himself. It was powered by two brushed 21 turn buggy motors using a Dave Chinery geared system to run the two motors at once. It was powered by 14 NiCad cells. Dad was a good friend of Dave, who has written many articles for RCM&E.

I'm sure if he were with us today, Dad would love to share pictures of this model in the magazine. He was a member of the Hayes & District MFC in West London.

Isobel Hamilton





MORE FROM BOB

I was a Flair sales agent, representing them over a large part of the country, until 2006. Before that I ran a model shop. I also used to take pictures at the BMFA Nationals on the scale flight line, where I used to do the report for another magazine. I am also a keen builder and flyer, plus a camera wielder. I can send you quite a few photos - here's some of my Puppeteer and a Flair Fokker D.VII.

Bob Fletcher



LOZENGES ARE BACK!

Here's my Flair Fokker D.VII at our club field in October. I bought the kit, my first R/C build, in 1996. It still flies with its original O.S. 70 Surpass. Finished in Solartex, the markings and lozenge camo are all airbrushed in Flair Spectrum paint, and it uses Hitec radio gear.

It's still my favourite aircraft that I own!

Dan Lester

KITE TRAINERS

To answer your request for Flair pics here are some of my several electric powered Kite models. It's a superb model, if a little on the heavy side, but able to withstand the rigours of British weather conditions, rough flying sites and equally (cough!) 'rough' pilots!

My Kites have been nose-wheel and tail-dragger variants,

all equally good. A good 400-500 kV motor on a five or six cell LiPo and using a 60-80A ESC gives a sprightly performance and the model glides forever!

I was fortunate to spend some time with Paul Heckles at his model flying school near Swindon. Paul used several Kites for training.

Dave Durnford



CATALOGUE MODELS

Here's my Fokker Dr.1 and my son Robert's D.VII. Then aged 15, Robert had built the D.VII by himself.

We sent the pictures off to Dudley and Richard at Flair in March 1999. They loved them and Richard asked if they could use them in their advertising and catalogue. As a thank you

Richard sent me some Flair bits and bobs to use; the 1/4 scale wheels are about to be used again.

We were also the winners in RCM&E's Pilots' Pictorial, volume 42, issue 7 and I have the original flying shots that were used.

Ian Perry





ANOTHER LONG LIFE D.VII

Here are a couple of photos taken around 1998 of my Flair Fokker D.VII. I bought the kit from Oxford Model Centre in 1995. It is powered with an O.S. 70 FS Surpass. I flew her many times at Old Warden in the late 90s and early 2000s. The motor needs an overhaul now, but I still fly her at the North Berks club to this day.

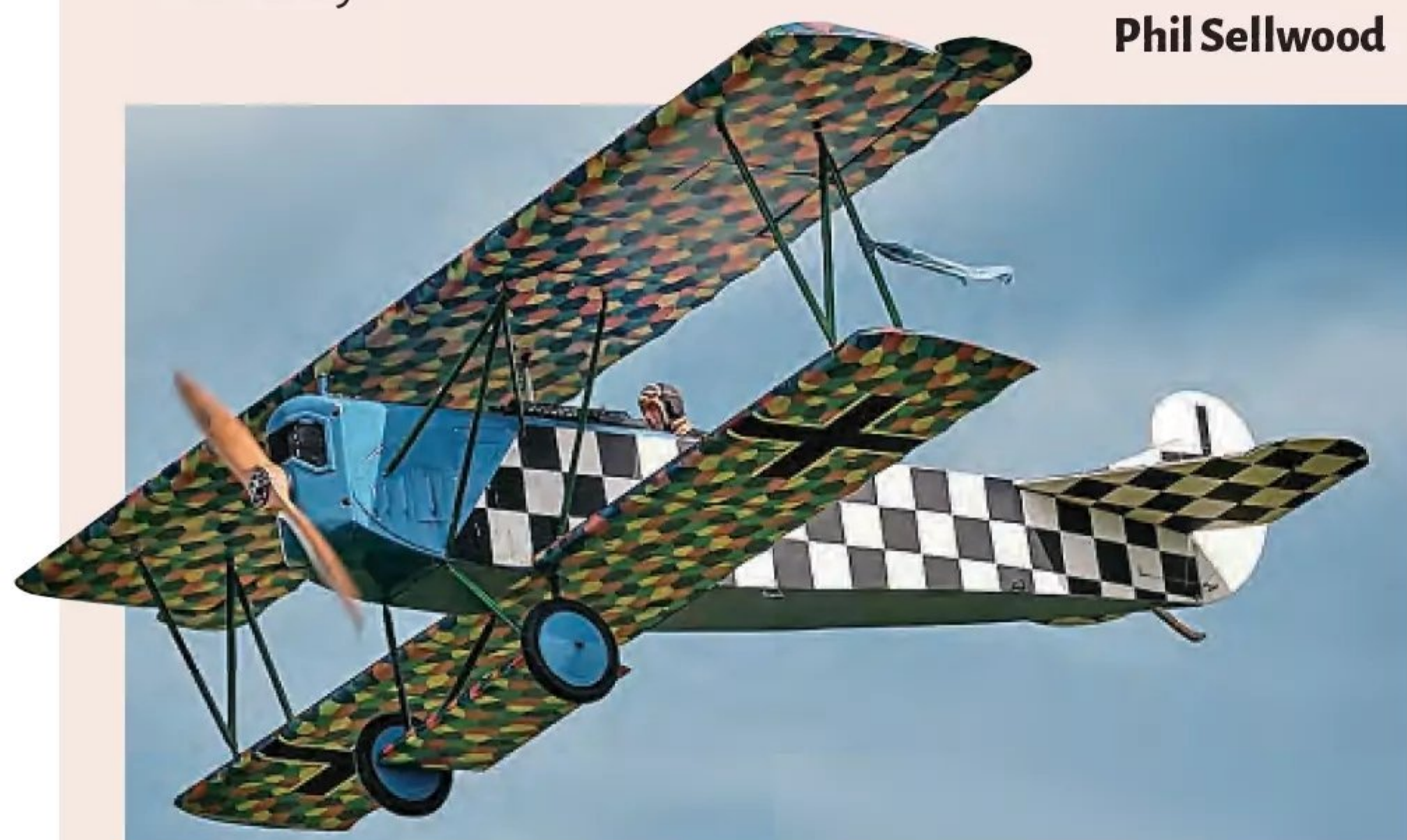
Peter Kirby



LOZENGES ARE BACK - AGAIN!

I enclose pictures of my Fokker D7 built in 2016. It is electric powered from a 5S 4000 mAh LiPo. Lozenges were airbrushed through a stencil in sections - it took forever! But it's an absolute dream to fly.

Phil Sellwood



AND FINALLY...

Here are three lovely Flair models for which we don't have any more details. The atmospheric flying shot shows a Dr.1 owned by Stuart Willis. The red triplane is by Martin Hughes and Peter Coxon's SE5a peels away during a low pass.

That's all folks! Please keep your Flair pictures coming but please note that any future contributions will be used in standard Pilots' Pictorial features.

VAN MAN

After years of squeezing overly large aeroplanes into stupidly small cars, **Graham Ashby** finally snaps

Words & Photos: **Graham Ashby**

After three months of very happy ownership I've come to the conclusion that I should have bought a van years ago. For decades I've been squeezing overly large aeroplanes into stupidly small cars and making do. The straw that broke the camel's back, however, was my increasing propensity to drive long distances in pursuit of flying jets and, allied to that, the very real problem of being able to fit more than one jet into the car at any one time. Taking just one jet on a four hour round trip is all very well if said aeroplane happens to acquit itself perfectly, but alas it only takes a

small mechanical problem to put a complete kibosh on a lot of time, preparation and energy, and sabotage a whole day. I was just about managing to make things work when I owned my fabulous Mondeo estate, with its tardis-like load space, but it all went horribly wrong when, in a moment of heart ruling head, I sold that superb model transporter and bought a faster, sexier, yet totally impractical replacement. Ultimately, this left me with just my run-around for model transport duties – an ageing Vauxhall Corsa – and a huge challenge when it came to transporting larger models. Anyway, I made the best of the Corsa until late

last year when, finally, I snapped. With this, my little red two seat, mid-life crisis rag-top was sold, as was the Corsa, both to be replaced with a 10-year old but very tidy Transit Custom. And, to cut a long story short, I love it to bits and will let you know how I get on with it as the year progresses and I gradually kit it out. In essence its role has been defined as a model, kayak, bike and 'stuff' transporter, so I have no plans to turn it into a pseudo camper or anything overly elaborate. It will serve me far better with its inherent (and intended) ability to swallow copious amounts of stuff and get it from A to B.

HSD's T-45 Goshawk represents a significant shot at goal for me.





Left: How did I manage without one of these things for so long. My 2014, 98,000 mile Transit was once a builder's van but you wouldn't know it now she's been tidied up a bit.

Below left: Never before have I been able to take this much hardware to the flying field. Imagine what I'll be able to carry when the mezzanine goes in! Oh, and there's an empty three-seater cab in front of that lot, don't forget.



CAPTAIN'S LOG

In the February issue I whimsically scribbled a few lines about the very basic yearly flight log that I keep, explained why I keep it and suggested that I may not be alone in recording such data. I also declared that others may well pursue more elaborate record keeping procedures and invited a response. Blimey! To say that those few lines resulted in more correspondence than any previous prompt for feedback is something of an understatement. You sad old lot.

Above: One's old Corsa packed to the gunnels yet with only two aeroplanes aboard and one available seat!



“Richard’s comprehensive log would make Captain Kirk sit up and ponder his future”

Seagull Low Wing 46 ✓
 Futaba 8FG 2.4 FASST ✓
 OS 46 AX / 12% Optifuel ✓
 Propeller: 11" x 6"
 Last Flown: AMAC
 Date: 21/11/23
 No of flights: 2, 2, 3, 2, 2, 1, 3, 2,
 Notes:
 Dual rates - aileron - switch A (off/on/on)
 - elevator- switch D (off/on/on)
 Throttle Cut: Switch H
 Timer: 10 mins (RTN Button)

John Bottomley’s embellished version of my own flight log effort on the iPhone Notes app. I like the useful Tx information that John includes and will likely copy him.

Richard Honeywell was first to reassure me that I’m not the only one who partakes in clandestine data logging. Actually Richard’s comprehensive log would make Captain Kirk sit up and ponder his future. Here, then, not only does Richard record the flight number, he notes the date and time, the duration, battery used, start and end voltage, remaining capacity, volts per minute, plus wind strength and wind direction, the whole underpinned by pertinent comments. Given my humble record of a model’s accumulated flights over the year and throughout its life, I couldn’t help feeling that I needed to try harder. Then, as if to add insult to injury, a ‘ping’ from my laptop announced the arrival of another email from John Bottomley, writing to make me feel even more inadequate with his embellished version of my effort using the identical iPhone Notes app. Here, as you’ll see, John adds useful info relating to the model set-up and Tx functionality. This is entirely sensible for, even now, I have to think very hard

to ensure that the retract switch for the air system of my Xcalibur jet is set correctly when I switch on. It’s not funny when you get it wrong and unceremoniously dump all that polished paintwork onto a scrap of tarmac. Meanwhile on the same subject David Jowers writes:

“I too have always kept a log book of my sorties since I started R/C flying all those years ago. Quite nostalgic it is when looking back in the logs to reminisce on those enjoyable days long ago and up to the present day. How times have changed... As one of the first in the seventies to experiment with electric power, they were pioneering, challenging and exciting times. There are models in the log book that still fly on a regular basis which have been around for a very long time. Totting up the hours flown as noted in the log for each model I get taken aback by some that have had just a few airborne minutes in several years... To sell or not to sell? That is the question.”

Phil Catherall, Kevin Murray, and Rob (no surname) also wrote to confirm that I’m not alone, indeed Phil suggested that we ‘flight recorders’ need to stick together, presumably as there’s safety in numbers. Just as interesting was the feedback generated on the forum over at modelflying.co.uk kicked off by a gentleman known only as LeccyFlyer who, on reading this column, submitted his own comprehensive Excel spreadsheet-hosted flight log that extends to recording everything except the flavour of the filling in his midday sandwich. It’s pretty impressive record keeping which, in the three page thread that followed, was applauded, ridiculed and defended in equal measure. Says ‘Futura57’, represented on the forum by a spitting image of Blofeld’s moggy - and all the more sinister for it:

“No, I don’t log flight or LiPo charges any more than I would visits to the WC, despite being the place where I spend most time on this forum [crying with laughter emoji]. Life’s too short”

That made me chuckle and, evil though he may well be, you can see his point. Most interesting, perhaps, was the news that the same topic on an international R/C forum gave rise to an overwhelmingly anti-logging response which, presumably, follows the train of thought that someone in authority – CAA or FAA for example – might latch onto the idea, see that some are already keeping records, and impose it on everyone behind the oft deployed smokescreen of accountability, anti-terrorism and defence of the realm.

RARE FIND

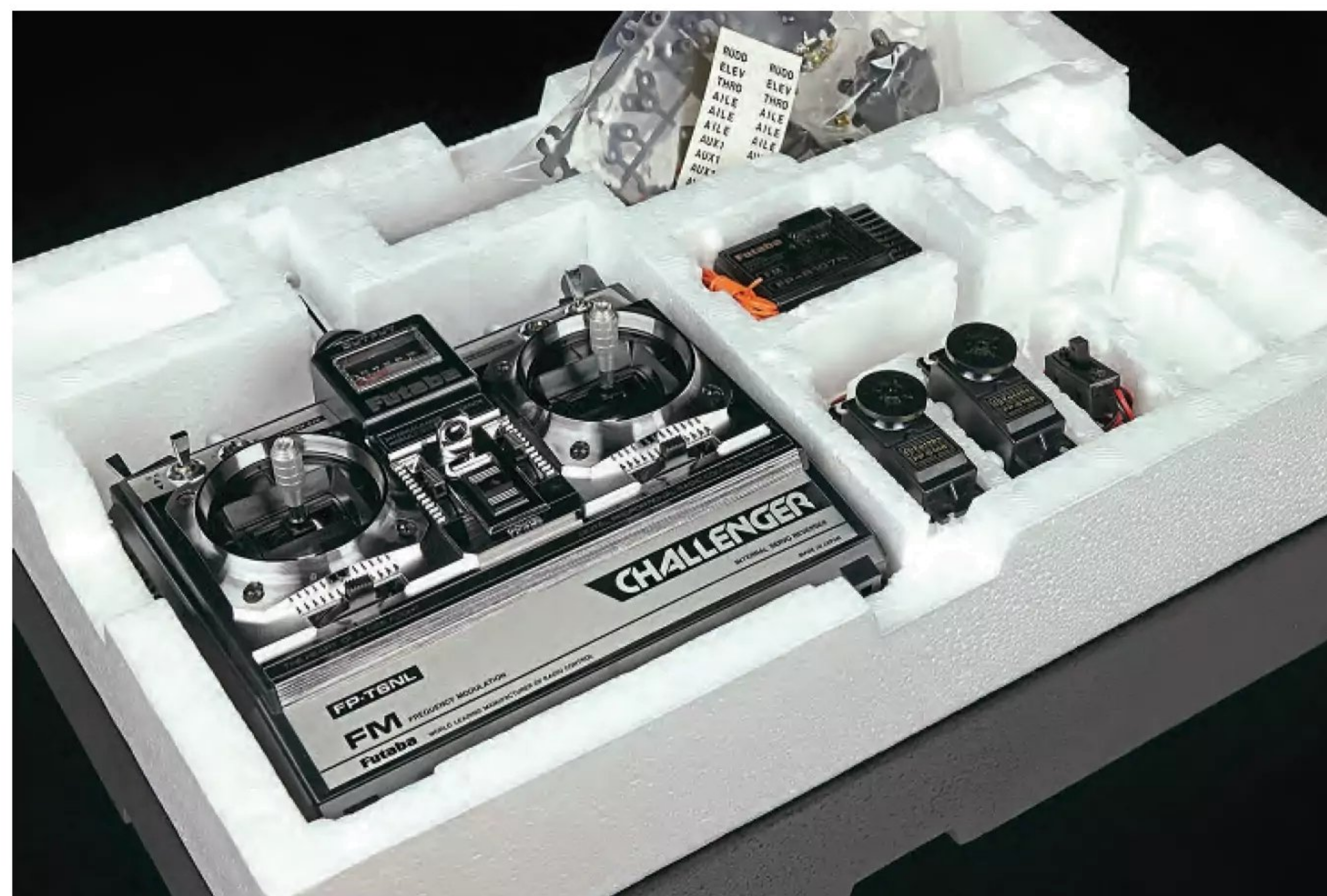
While we’re on the subject of feedback, in the very same issue I touched on nostalgia and what it is in our R/C past that engenders those wonderful feelings of satisfaction and renewed desire. In doing so I mentioned the aeroplane that taught me to fly, a Bowman Mini Escort trainer, and that, one day, I’d love to have another and fly it using exactly the same engine and radio combination, especially as I already have the engine, an O.S. 15FP (new in box). The radio I flew it on was the incredible Futaba Challenger which I loved and cosseted for years before upgrading to the equally amazing Field Force 7 Super.



Look what turned up in the post. I was like a kid at Christmas when I opened this.



Tim’s Challenger hasn’t been out of the box since December ‘89. Yikes! That’s a whole 35 years!



What an absolute joy it was to see and hold one of these again. Clock those ever-dependable 148 servos.



I've always loved that little slogan.

Tim Marvell read my throw-away comment about wishing I'd got a mint Challenger kicking around, said that he'd got one, and wasted no time making contact and suggesting that I might like to take it off his hands. In truth I can't thank him enough for I did just that and, true to his word, the Challenger set he sent me is as new as the day it left the factory. On doing so, of course, it passed through Ripmax (Futaba's distributor of the day), ended up on a shelf at Antics – The Model Shop (Stroud) and was purchased by Tim in December 1989 for the princely sum of £109.75, along with a magazine (presumably RCM&E) for £1.40.

Truly, when the package arrived I was instantly reminded of the excitement I used to feel when buying a new transmitter, heightened on opening the box by that heady whiff of cardboard, polystyrene and brand new electronics. I can't quite fathom why but a transmitter purchase seemed a much bigger deal back in the '80s and '90s. Maybe because it really was a bigger deal, certainly in financial terms. In the mid '80s I was not long out of school and earning £47 a week. That would pitch the Challenger at about three weeks salary, before I'd even thought about putting £5 of Four Star in my Cortina. Happy memories which, thanks to Tim, came flooding back as I fondled the 148s, marvelled at the factory wound trademark orange aerial on the FP-R107N receiver and caressed that iconic Challenger for the first time in 35 years. To say I'm made up is an understatement and my desire to now source a plan or kit of that elusive Bowman Mini Escort is no longer a flight of fancy. ✈



With gimbals and switches as tight as the day it was made, my new Challenger feels solid and reliable.



I've owned a few of these in my time, too. 7-channels was a lot back in '89.



The receiver crystal - one half of the pair that made it all possible and, arguably, the weakest link in the chain.



RC Flying Bootcamp's first student intake along with their instructors. I'll leave you to work out which are the instructors.

REAL-WORLD EXPERIENCE

With the ever rising popularity of interactive entertainment and the seemingly unstoppable march of the gaming industry – boosted by Covid and a common desire to find something to relieve the tensions of the pandemic, connect with friends and enjoy increased leisure time – BMFA membership has been falling. It's a worrying trend that we should all be aware of and keen to reverse, not least the scary-low number of junior flyers that the BMFA now has on its books. Concerned by the trend, life-long aeromodellers Dan Humphries and Dave Napper shared the view that model flying is something young people, especially those with a talent for gaming, would really enjoy, if only they had access to it. Of course, most of us would probably come to that conclusion pretty quickly as well, then just shrug our shoulders, dig a head-size hole in the sand and pop it in. But Dan and Dave didn't. Instead they decided to try and do something about it and set to work establishing an R/C training centre where people of all ages can experience the real world joy of flying an R/C model without having to invest hundreds of pounds before knowing if it's really for them.



Above: Training in full swing; everyone totally absorbed and having a great time.

Far left: RCFlying Bootcamp operates Futaba radio and teaches on Mode 2.

Left: Simulators are used for initial control familiarisation and to bolster real stick time.



The concentration on the faces of the students was a sure sign that they were engrossed in what they were doing and very keen not to make a mess of it.

The result is R/C Flying Bootcamp, a Kent-based operation that aims to provide everything needed to help newcomers gain their R/C wings, this through a choice of 1/2-day, full day or weekend sessions. Calling on the skills of experienced local instructors, using properly set-up aircraft and buddy systems, backing it all up with simulator practice and offering proper advice on how to capitalise on the experience, groups of up to 16 can be accommodated, making it an ideal activity for any number of youth organisations such as scouts, guides, cadets and even school and university clubs and societies.

It's a cracking initiative and something I was keen to see at first hand, so I took myself along to watch the first intake (a group of Explorer Scouts) go through the training. An introduction to the hobby plus some principles of flight and basic aircraft control preceded a simulator session and, finally, some hands-on buddy box experience with an instructor. The concentration, the excitement and the achievement were palpable and, as you might have hoped, one or two enjoyed it far more than they ever imagined they would.

R/C Flying Bootcamp is located at a private airfield near Paddock Wood in Kent and is available to all, with a minimum age of 6 years. If you want to do your bit to help secure the future of our hobby, you could start by passing on the web address to a club or society that might benefit – www.rcflyingbootcamp.com



Arrows Hobby's Bigfoot is a perfect, versatile buddy-box trainer. Bootcamp has six in its fleet.



Bert Baker is one of the many experienced instructors whose services Bootcamp calls upon. Bert developed this neat training aid that replicates a model's response to any given stick input. Simple, but cunning.

A SHOT AT GOAL

Back when I built my Ripmax Xcalibur in 2016 I knew that I desperately wanted a jet but I wasn't sure whether my flying skills were up to it or whether the model would last long enough to properly repay the investment. It was a concern but one I had to put to the back of my mind for

fear of never actually taking the plunge. Eight years and 79 flights later my dear old first jet is still repaying my 3K investment with, arguably, the best flying experience of any aeroplane I've ever owned. Those 79 sorties equate to a trifling (and ever decreasing) £38 per flight which, in jet terms at least, ain't too shabby.

Gotta love a Goshawk, especially that striking colour scheme. Note the scale touches such as operational speed brakes, dummy arrestor hook, lights, leading edge slats and wing turbulators.



Now, love my Xcalibur as I do, one of the fundamental reasons for getting a jet in the first place was to satisfy a burning desire to own a scale one. Quite why it's taken so long to get close to realising this ambition is complex but, finally, I feel I'm within striking distance. The catalyst that's now brought about my shot at goal is the HSD range of turbine-ready foam jets. Yep, ready-to-fly (almost) foamies that are made specifically for turbines. It's a concept that could easily have you imagining smoking pools of melted foam, peppered with Festo fittings and laced with molten digital servos. I get it! The reality, however, is that EPO foam and turbine engines are a hugely successful combination, albeit with the usual caveat regarding the durability of foam and a propensity for it to get easily scuffed. For me it's not really an issue because I tend to mollycoddle my airframes in a way that keeps even the foamies pristine for some considerable time, but I can certainly understand the reluctance to spend a sizable chunk of money on a foam jet. That is, until you realise what you're actually getting for your hard-earned pennies and that the foam used is, in fact, not your average EPO.

In the interests of investigative journalism I delved into it a little deeper and, accordingly, my understanding of the material's composition is this. The foam used in HSD's turbine fleet is described as '20 times EPO' as opposed to regular EPO which is known in manufacturing circles as '30 times EPO'. What's the difference? Well, to understand that it's important to appreciate that EPO is a polyethylene (PE) / polystyrene (PS) composite. Regular EPO comprises 30% polyethylene and

70% polystyrene. It's described as '30 times EPO' due to the 30% polyethylene content and, during manufacture, PE is distributed mainly in the outer layer of particles to promote plasticization (flexibility) and binding (strength). Polystyrene, then, is distributed mainly in the internal structure of the foam and acts to support the exterior surface. All things considered it follows that regular 30 times EPO is a more flexible, less rigid material, whilst 20 times EPO, as used in HSD turbine aircraft, is less flexible and more rigid whilst offering a tougher harder-wearing outer skin and a slightly heavier airframe. It's possibly more heat resistant, although whilst it sounds feasible, in truth I made that bit up.

Anyway, this isn't the time to justify why I took a leap of faith and invested in an HSD jet, but invest in an HSD jet I did and we're fast approaching the occasion of the second flight. See what I did there? Aye, there's been a first flight already. Let's rewind a little to 2022 when a big HSD box arrived on my doorstep containing an utterly fabulous T-45 Goshawk.

Fact is, getting one of these models from box to flight-ready condition is alarmingly quick. With absolutely everything pre-installed, save the turbine and batteries, a very comfortable couple of days is all it need take to be sat at the field contemplating a maiden flight. When I consider how long it took me to put my Xcalibur together - learn what everything did, work out the plumbing on the retract and brake air systems, mount servos, tidy wires, fit tanks, add receiver, switch and other ancillary bits, then take it all out, spray the internal woodwork and put it all back in again - the HSD experience is as good as cheating. Servos, fuel tanks (main



Cockpit detail is slight but very effective from a few feet back. Mind you, I still need to find a decent pilot or two.

and smoke), UAT, jet pipe, electric retracts, electromagnetic wheel brakes, root-mounted wing connector blocks, Festo fittings, extension leads, a fully integrated dual redundancy control system, lights and even working speed brakes and leading edge slats are all done for you. As is my way, I made a meal out of screwing my T-45 together by painting the internal woodwork, tidying wires and making a nicer job of a few external details, but even I couldn't make it last more than a few weeks.

CLIFFHANGER

At 60" (1500 mm) span the Goshawk is designed for an 80-size turbine and here I treated myself to a jewel-like Swiwin 80, which is perfectly suited to the model, fits like a glove and offers ample power. The omens were good and with the kind of hesitation that can only be attributed to a test-flight that holds within it your aspirations of fulfilling a decades-old dream, I made my way to the flying field...

BACK SOON

That's it, I'll leave you to ponder all that's gone before and contact me with insight, observation or comment if you feel you've anything to add. It's always lovely to hear from you, indeed an email to ashby75@btinternet.com will elicit a speedy reply. ■

"It's possibly more heat resistant, although whilst it sounds feasible, in truth I made that bit up"



Interestingly the all-moving tailplane is composite rather than foam. That's a nice, and reassuring, touch.

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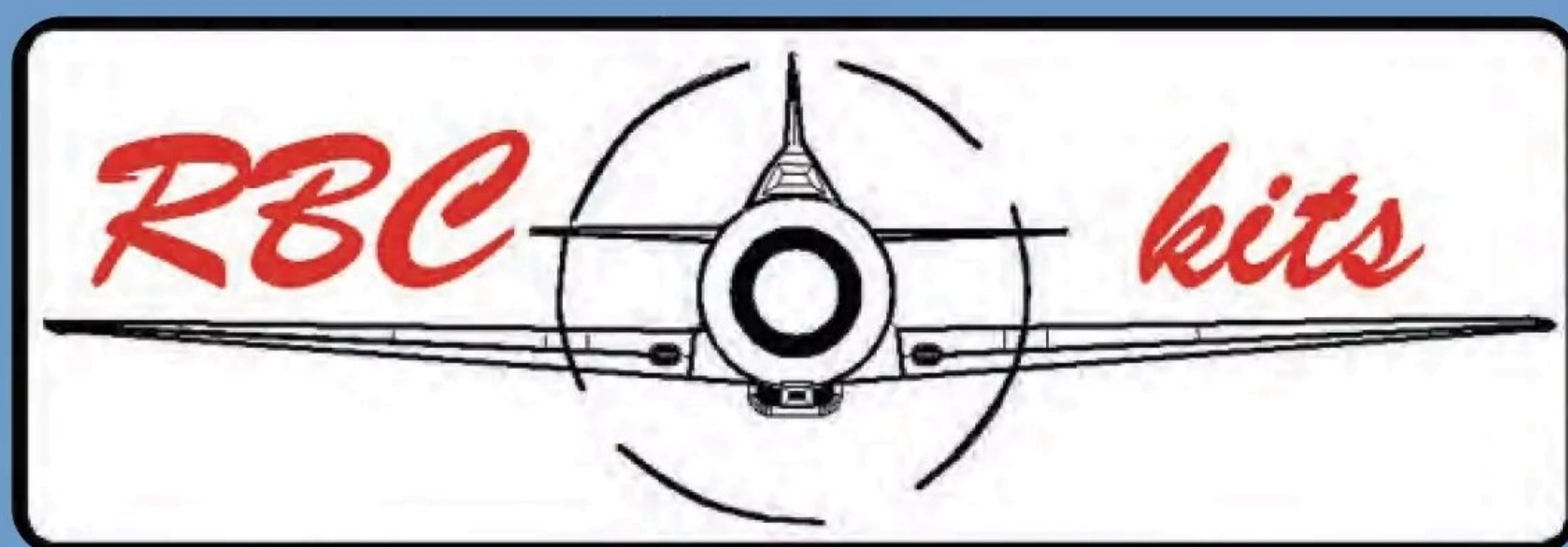
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If you are planning an aeromodelling event over the next few months, then please send details – **up to 100 words maximum** – to **Beth Ashby** at: **Beth.Ashby@dhpab.co.uk** If you intend to visit any events listed, then please check with the organisers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

JUNE

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>

Jun 22–23

Greenacres June Fun Fly at WS9 oQQ, off Bosty Lane, in Aldridge near Walsall and follow signs onto the park. Campers and caravans can arrive after 1:00 pm on the Friday before. Water, Portaloos, raffle and catering are all available for a small donation. Visiting pilots fly for £10 on Saturday and £5 on Sunday, but spectators and the public are free! If you have any special requests or requirements please contact Jim Mchugh at jim.mchugh@greenacresmac.co.uk. For more information please visit the club website: <http://www.greenacresmac.co.uk> or Facebook: <https://www.facebook.com/GreenacresMAC>

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 Lley 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 Ecco 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 Gassers and Rubber Fanciers Indoor Flying at Kings Sport Centre, 601 Maidstone Road, Rochester, ME1 3QJ. From 6:30pm until 10:00pm. Free flight, lightweight R/C and 3D R/C timed flying sessions throughout the evening. 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). What3 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

Longham Lake Fly-in, Christchurch & District MFC are hosting a waterplane fly-in at Longham Lakes. All fliers welcome but prop driven electric fixed wing only - no IC or turbines. EDF by agreement. Details of the lake, directions and local rules are at <http://cdmfc.org/html/longham.html>. Flying from 9:00 am – 16:00 pm but weather dependant. Contact Mike on roachfoxwood@aol.com the day before for final confirmation.

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 aroomodeller@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 Sleaf Large Model Airshow at Sleaf 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 11

Skelmersdale MFC Scale Day at 68 White Moss Rd South, Skelmersdale WN8 9TH. Weather permitting we hope to commence around 10 am. This is a low-key event designed around a day of fun. There are prizes for the winners in the categories on the day. You must have your own insurance and be competent to fly to A certificate standard. For more information please contact the organisers on 07811 224286.

Aug 17

Melton & District Open Flying Day & Swap Meet at Long Field Academy, Ambleside Way, Melton Mowbray, LE13 0BN. From 10:00 am to 16:00 pm.

Free entry to flying display. Competition is £2 per competitor. Swap meet tables £5 each (4' x 2'). Entry to Swap Meet £3 per person. Visiting pilots are welcome to the open flying event if they hold at least a BMFA 'A' Certificate and insurance and show proof on the day. For further details or for booking a table, please contact meltonmodelclub@virginmedia.com

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/

Aug 17 - 18

Greenacres August Fun Fly at WS9 0QQ, off Bosty Lane, in Aldridge near Walsall and follow signs onto the park. Campers and caravans can arrive after 1:00 pm on the Friday before. Water, Portaloos, raffle and catering are all available for a small donation. Visiting pilots fly for £10 on Saturday and £5 on Sunday, but spectators and the public are free! If you have any special requests or requirements please contact Jim Mchugh at jim.mchugh@greenacresmac.co.uk. For more information please visit the club website: <http://www.greenacresmac.co.uk> or Facebook: <https://www.facebook.com/GreenacresMAC>

Aug 18

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

Aug 24 - 26

August Bank Holiday Fly-in Rolls Royce Hucknall MAC at Underwood, NG16 5GA. What three words - laws.wasp.upgrading. 5 mins Junction 27 M1. Come fly your scale models. All BMFA members welcome, with a competition for best scale model. Camping available but must be pre-booked. For more information contact Terry at 07971 707585 or email terry.33cway@hotmail.com.

Aug 31 - Sep 1

Southern Model Show at Headcorn Aerodrome, Headcorn, Kent, TN27 9HX. Full flying display both days with Saturday evening fireworks, model boat

pond, car racing, bring-and-buy stall, full trade and catering village. Details at www.facebook.com/p/Southern-Model-Show and on-line ticket sales to follow soon.

SEPTEMBER

Sept 7 - 8

Popham Model Show at Popham Airfield, just off the A303, Coxford Down, SO21 3BD. Full flying display on both days, 10am - 4pm. Jets, large models and top class pilots. Supported by traders and a catering village. Model boating lake, Off road R/C car racing, FPV drone racing. Book online at popham-airfield.co.uk

Sept 7 - 8

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

Sept 7 - 8

Much Marcle Large Model Airshow 2024 at the Much Marcle Steam Show, Ledbury, Herefordshire, HR8 2LX. See www.largemodelassociation.com for full details.

Sept 8

Scale Gliders at The Hole of Horcum, North Yorkshire, YO18 7NR. A relaxed fun day for all types of traditionally built R/C scale 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.

Sept 8

Vintage Fly-in hosted by SAM35 at RNAS Merryfield, Ilton, Somerset, TA19 9HN. Super 60/ Junior 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.

Sept 14

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

Sept 14

Longham Lake Fly-in, Christchurch & District MFC are hosting a waterplane fly-in at Longham Lakes. All fliers welcome but prop driven electric fixed wing only - no IC or turbines. EDF by agreement. Details of the lake, directions and local rules are at <http://cdmfc.org/html/longham.html>. Flying from 9:00 am - 16:00 pm but weather dependant. Contact Mike on roachfoxwood@aol.com the day before for final confirmation.

Sept 15

Basingstoke Model Aero Club Electric Fly-In 24 at Harrow Way & Manor Farm Lane, Basingstoke.

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HANGAR 9 FOKKER DVII untouched, complete ARTF, 63" span, electric or IC—£150 plus P&P. Hangar 9 Jackal 50 with West 52 VI and Mini Pipe, includes servos, in immaculate condition—£150. Buyer to collect. 07300 835793 (Suffolk).

PITTS SPECIAL, 52" span from the Radio Modeller plan. Covered in white Solarfilm, includes Futaba servos and Turnigy motor. Requires your ESC, LiPo and receiver—£75. Buyer to collect. 07866 661269 (Wales).

SEAGULL PC6 PORTER with servos and Irvine .53 engine. No crashes and only a few flights—£200. Hangar 9 Pulse XT40, only two flights, with servos and SC .46 engine—£160. Call Mike on 07875 501354 (Lancs).

CARL GOLDBERG BUCKER JUNGSMANN kit, 68" span, .40–.60 engines or equivalent four-stroke—£375. 07800 871829 (Haverfordwest).

ARROWS EDGE 540 foam aerobat. Comes with LiPo battery with only three flights. Originally cost £300 plus, will accept £100. Call Reg on 01242 672479 (Glos).

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).

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SEBART KATANA 30E canopy wanted in any colour. Call Ian on 07908 972026 (Stockport).

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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).



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Next issue



SLINGSBY TYPE 23 KITE

The Type 6 Kite has been much modelled over the years, small wonder with its attractive appearance and gull wings. Slingsby decided to modify the design by extending the pylon to render the wings further away from the fuselage. This is a model of the Type 23, as it was named, of which one only was built. Scaled to the same dimensions as Chris Williams' previous rendition of the Prefect, this is a handily sized 2.5 metre scale glider. The airframe is almost entirely built from balsa, other than the longerons and spars.

As with Chris' other designs, this Pro-Plan is too large to fit on the pull-out sheet in just one issue so it will conclude in the September issue.



TA-TA, TIM

Some years ago, Tim Hooper bought a replica Keil Kraft Ladybird airframe at the much-missed Nats swap meet. He fitted an electric motor and although test glides were successful a house move saw the Ladybird stashed in a corner, where it sat idle and forgotten for several years. With the advent of his fledgling machining journey, Tim needed a model to house his retro throttled .75cc DC Merlin and the Ladybird seemed ripe for conversion.

Sad to say, this will be Tim's final Bench Blog column, having provided his absorbing workbench-based articles for RCM&E over the past nine years. Thanks for everything, Tim. We'll be sorry to see you go.

RCM&E
August 2024
Issue on sale
19th July

BICKLEY GLIDER DAY

David Ashby files a report from the Bickley MFC's first glider themed get-together. It was difficult not to be struck by the diversity on display at Bickley's late Spring open glider fly-in. The large North Kent Club holds a number of themed get-togethers every year attracting flyers from across the South-East. Go back 18 years or so and their electric meets were de rigueur, helping fuel enthusiasm for what was then an up-and-coming genre. The more recent EDF day was memorable too, but gliders, soarers or sailplanes if you prefer, hadn't featured until earlier this year when a warm and sunny May Sunday provided perfect conditions.



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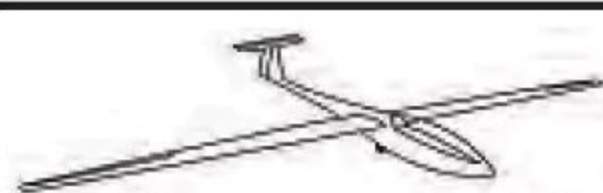


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(Scheme 03)

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)



60in - **£399.95**

67in - **£469.95**

74in - **£594.95**

84in - **£769.95**

89in - **£989.95**



Red/White/Yellow
(Scheme 05)

SKY WOLF V2 ▽▽

NEW

67in - **£469.95**

73in - **£599.95**

88in - **£699.95**



Orange/White
(Scheme 05)

Blue/Green
(Scheme 04)



DECATHLON ▽▽



Black/Red/White
(Scheme 09)



Yellow/Black/Red
(Scheme 10)

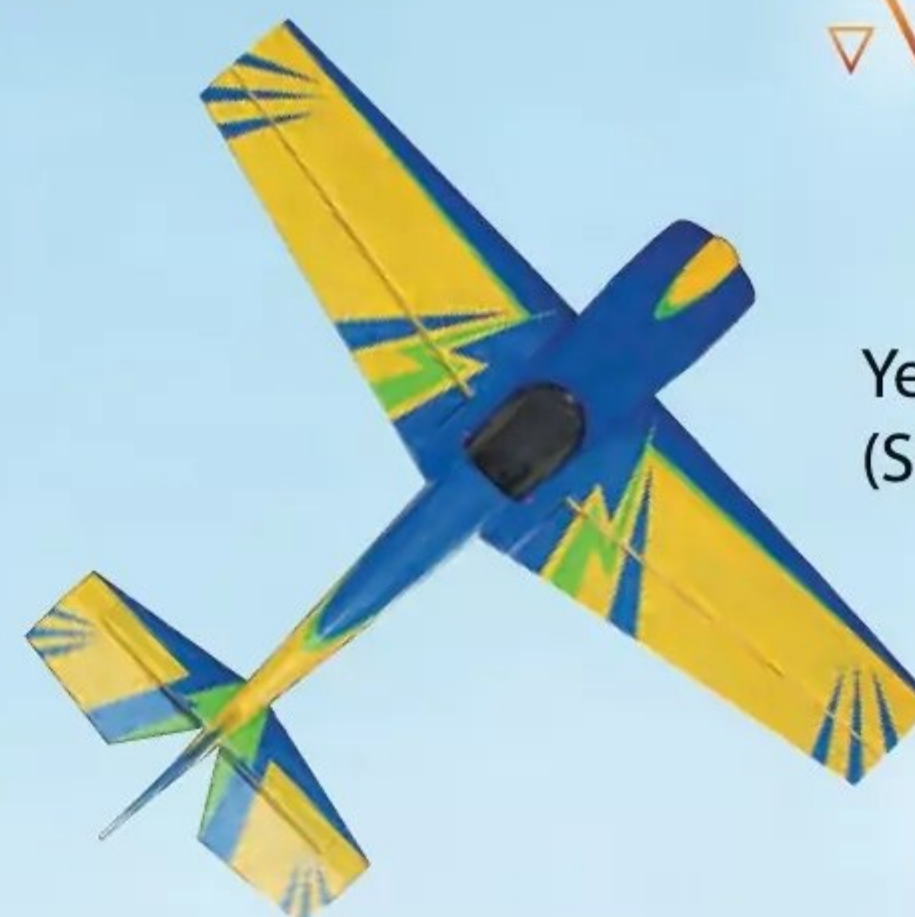
NEW

107in (2.7m) - 30~60cc - **£1149.95**

122in (3.1m) - 50~85cc - **£1349.95**

EDGE 540 ▽▽

Yellow/Blue
(Scheme 02)



BACK IN STOCK

74in (1.88m) - 30~40cc - **£499.95**

MATRIX



Blue/Silver (Scheme 01)



Orange/Yellow (Scheme 02)



Green/Blue (Scheme 03)



Red/Silver (Scheme 04)

NEW 1.8m Composite Jet with Electric Retracts
£2399.95

2.2m Composite Jet with Electric Retracts
£3049.95

▽ PREDATOR



Scheme 17

1.8m Composite Jet with Electric Retracts
£1949.95

▽ VIPERJET



Red/Black/White
(Scheme 09)

2.2m Composite Jet with Electric Retracts
£2649.95

▽ BAE HAWK



Red Arrows
(Scheme 01)

1.8m Composite Jet with Electric Retracts
£2149.95

ACCESSORIES

NEW



RC Airplane Storage Rack
18 x 32 x 71in - **£189.95**

RC Airplane Storage Rack
33.5 x 32 x 71in - **£189.95**



Electric Starter for Saito
FG-90RG/FG-84R3
£329.95



Wing Bags in
Various Sizes
from **£54.95**



Jet Fuselage Bags
from **£74.95**



Sun Covers in
Various Sizes
from **£69.95**



Transmitter Case (Will
hold two Transmitters)
£99.95



Transmitter Neck Strap/
Harness
£34.95



Fuel Tanks with Filters in
Various Sizes
from **£17.95**



Aluminium Servo Arms
- 0.8in ~ 2in
£6.95 ~ £11.95



Power Pack for 60in
Aerobatic Aircraft
£269.95



Power Pack for 67in
Aerobatic Aircraft
£299.95

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to purchase from all good
MacGregor Stockists.

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UK DISTRIBUTOR OF PILOT-RC**

CESSNA 182



The FMS 1500mm Cessna 182 breaks the limits of degree of realism that aircraft of the same size and type can achieve, meticulously replicating exterior details from cockpit windows and cabin interiors to skin lines, antennas, exhaust ports, propellers, navigation lights and more.



Features:

- Functional flaps.
- Ultra-short takeoff distance.
- Integrated servo connectors.
- Large-size battery compartment.
- Authorized by Textron Innovations Inc.
- Powerful 3541-KV840 brushless motor, 40A brushless ESC.
- Pre-installed high-intensity LED navigation lights.
- Simple assembly structure (snappers+screws).
- Superior low-speed maneuverability.
- Ball head control surface linkage to reduce surface vibrations and achieve smooth steering.
- Rich in realistic details, such as cockpit interior (instrument panel, steering wheel, pilot), antenna, navigation lights, etc.
- Metal shock-absorbing landing gear set, with strong adhesion damping silicone oil, smooth travel and even cushioning force.
- Tough and efficient nylon and fiber-reinforced three-blade propeller.



SPECIFICATIONS:

- Wingspan: 1500mm / 59 in
- Overall Length: 1250mm / 49.2 in
- Flying Weight: 2000g
- Flying Duration: 6 minutes
- Motor Size: 3541 KV840
- EDF: 64mm, 11 blades
- ESC: 40A
- Servo: 9g x 7pcs
- Wing Load: 60 g/dm² (0.12oz/in²)
- Wing Area: 33.3 dm² (515.7 sq.in)
- Experience Level: Beginner
- Assembly time: 10 minutes
- Recommended Battery: 14.8V2200mAh - 3200mAh 25c

REQUIRED TO COMPLETE:

- Receiver • Transmitter • Battery • Charger



Part No: FMS148PBU - Blue (FMS148PRD - Red)
FMS 1500MM CESSNA 182 PNP

W/O TX/RX/BATT/LIPO CHARGER £314.99 RRP

Fms

Beautifully Crafted Foam ARTF Models

CML

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WWW.CMLDISTRIBUTION.CO.UK



E&OE

28

24

500

R1

BUILD COWL FROM
1/2" SHEET

Ø1 3/4" SPINNER

CAN
LOCATING

1/8"
BATT

1/8" LITE PLY
NOSE RING

AIR
INLET

1/16" PLY COWL
REAR FACING

1/8" SHEET
(PLANKS
FOR C

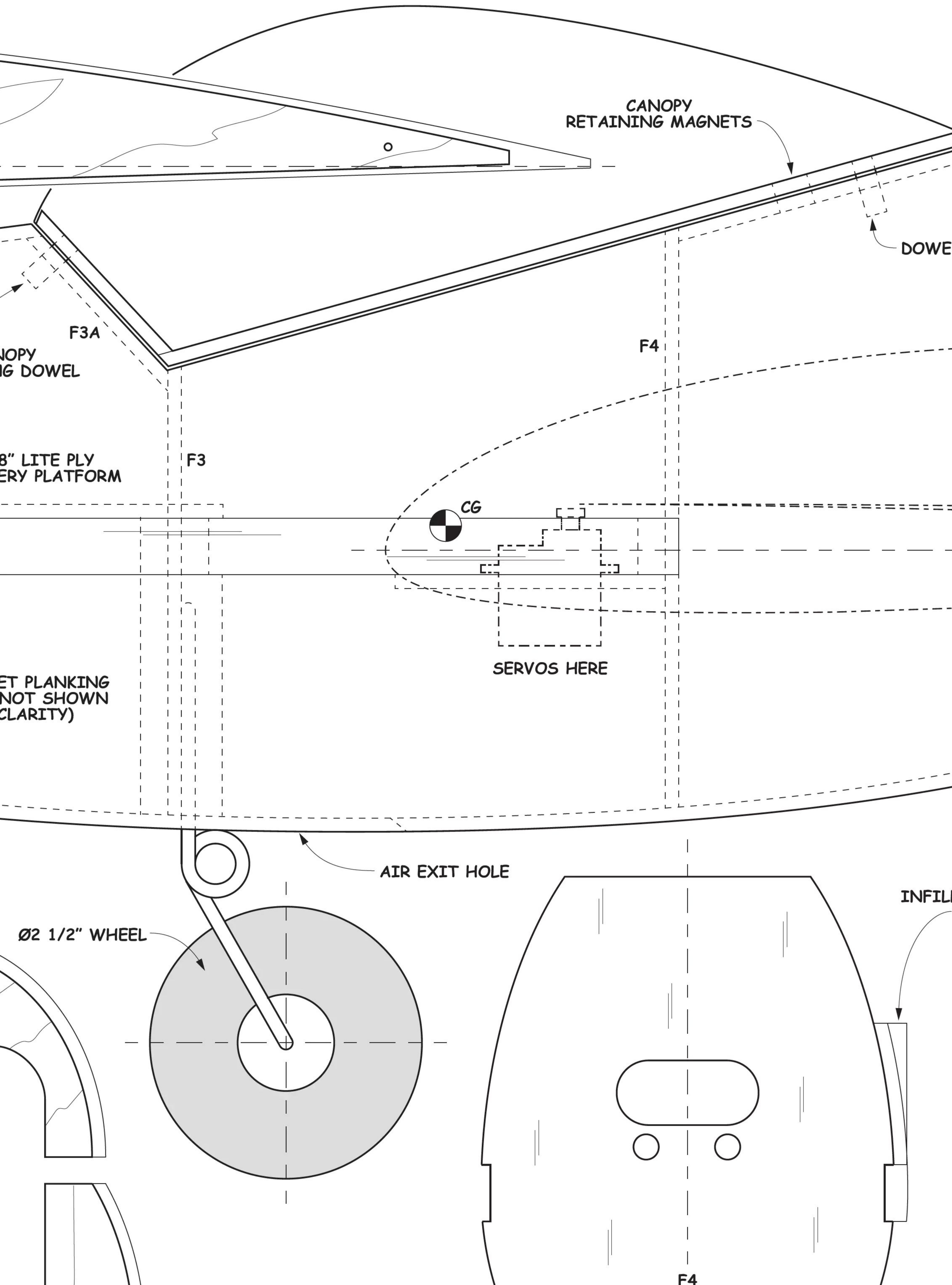
1/16" PLY FACING

F1
1/8" PLY

F3A
1/8" LITE PLY

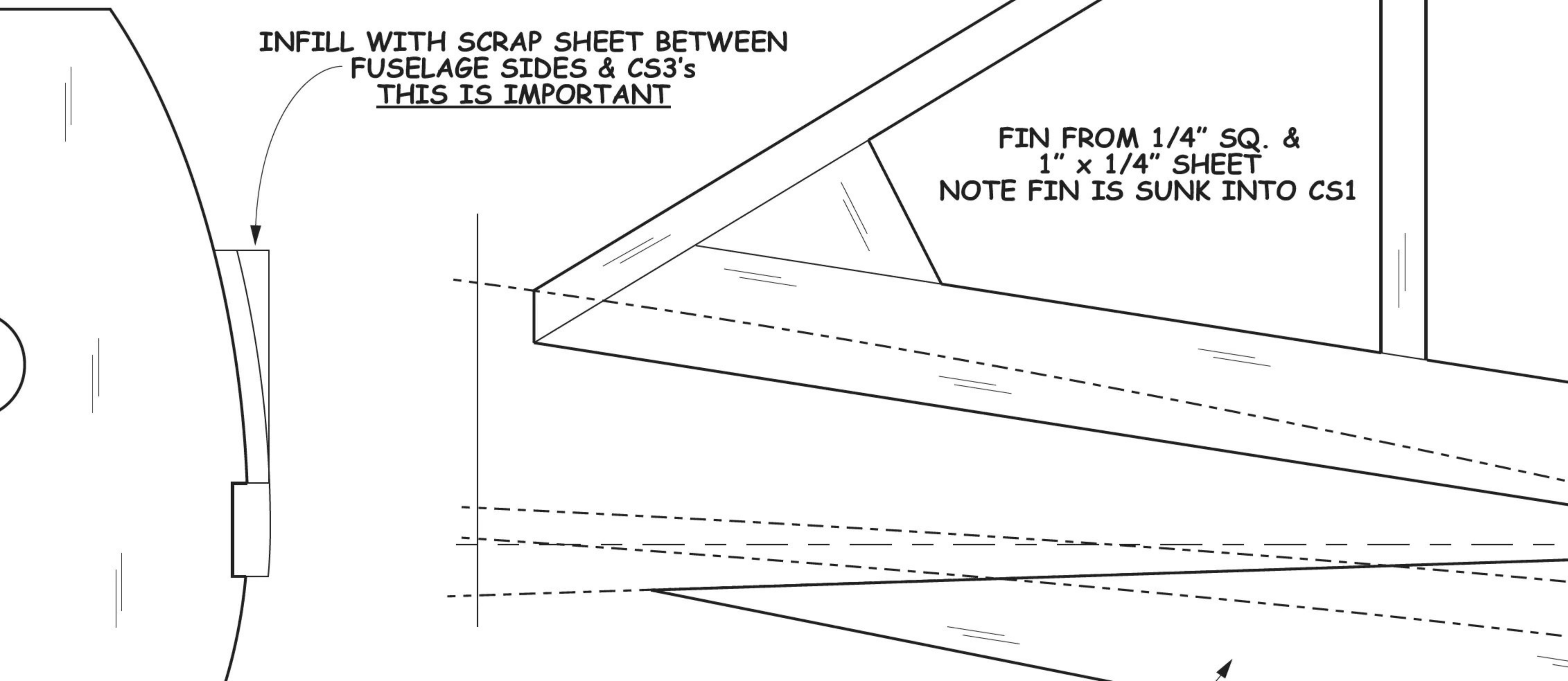
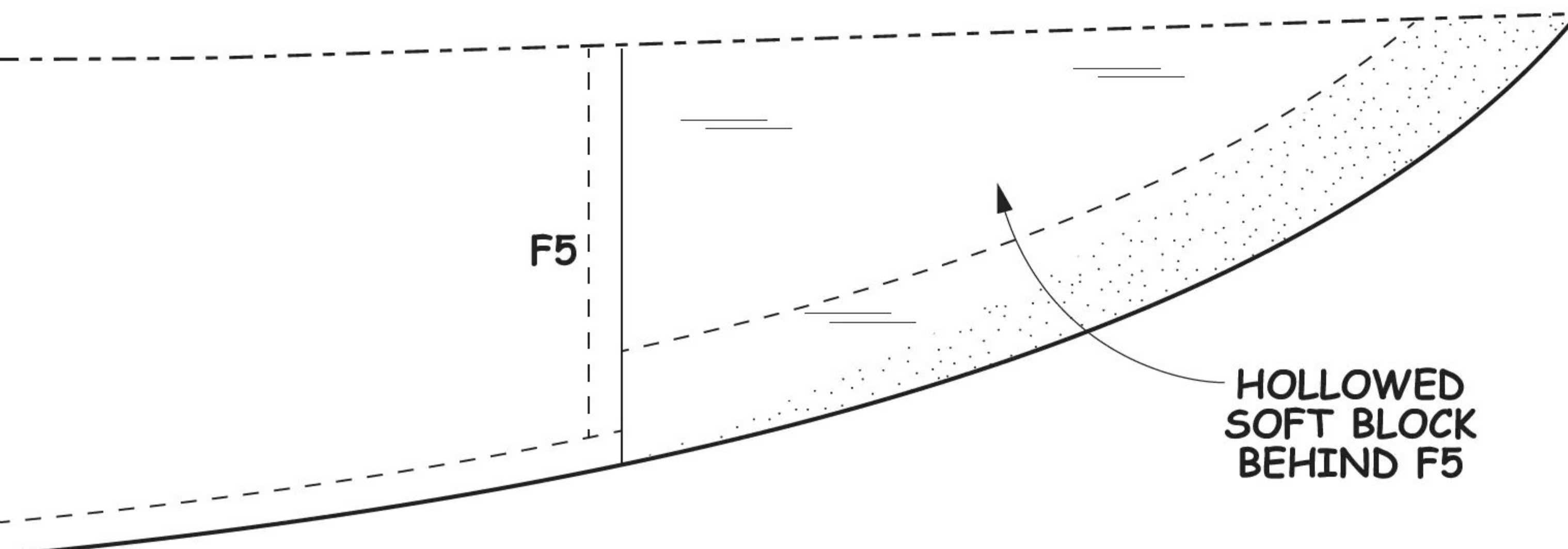
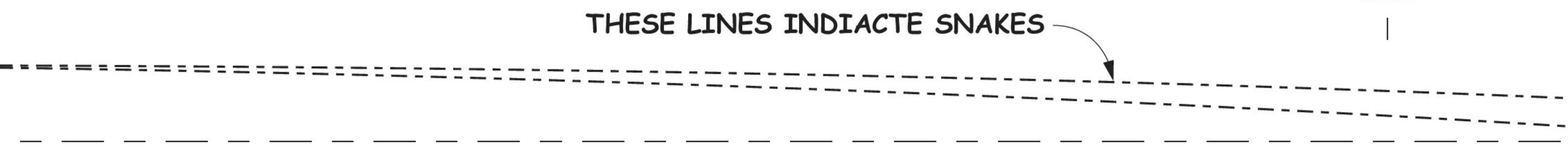
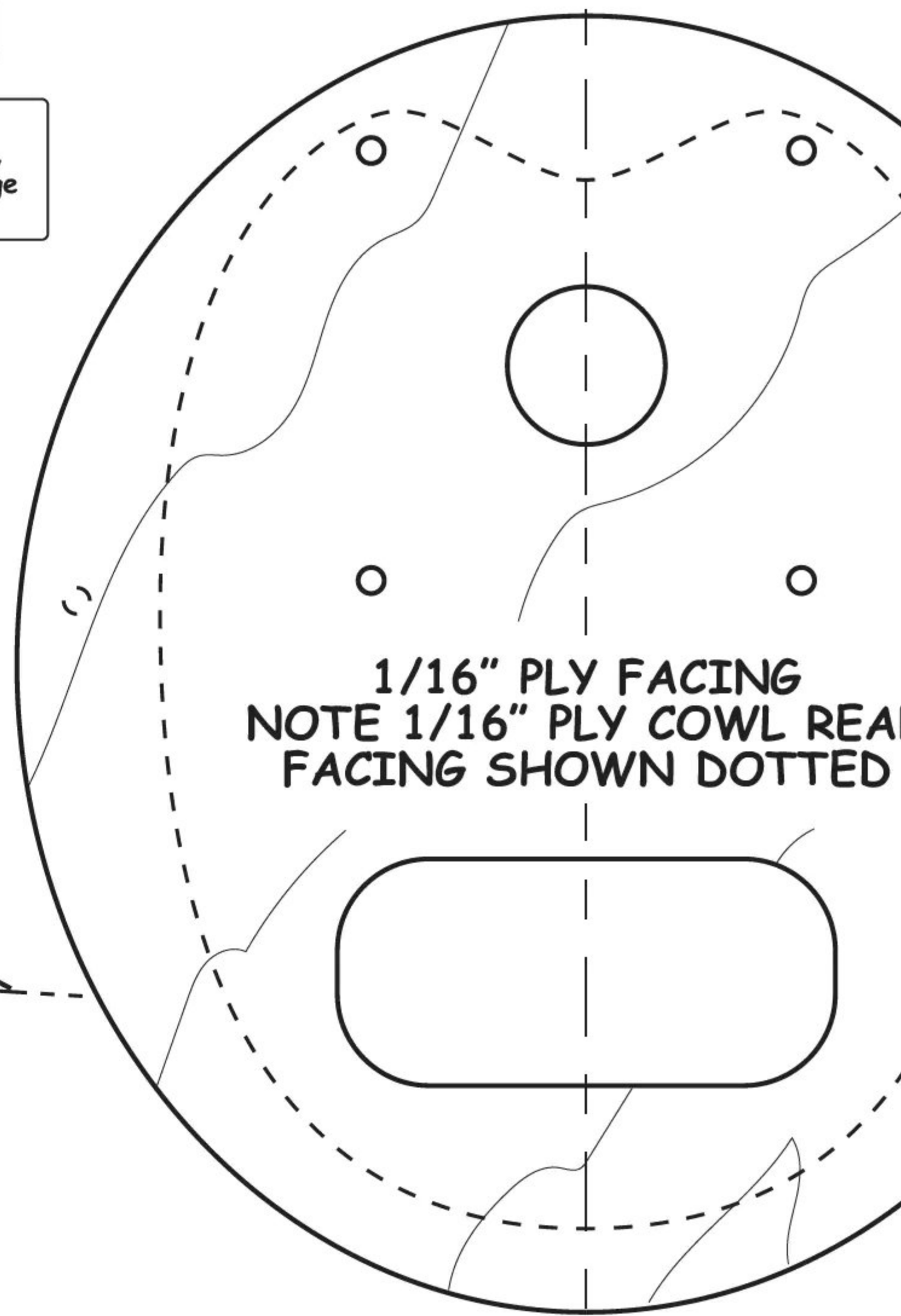
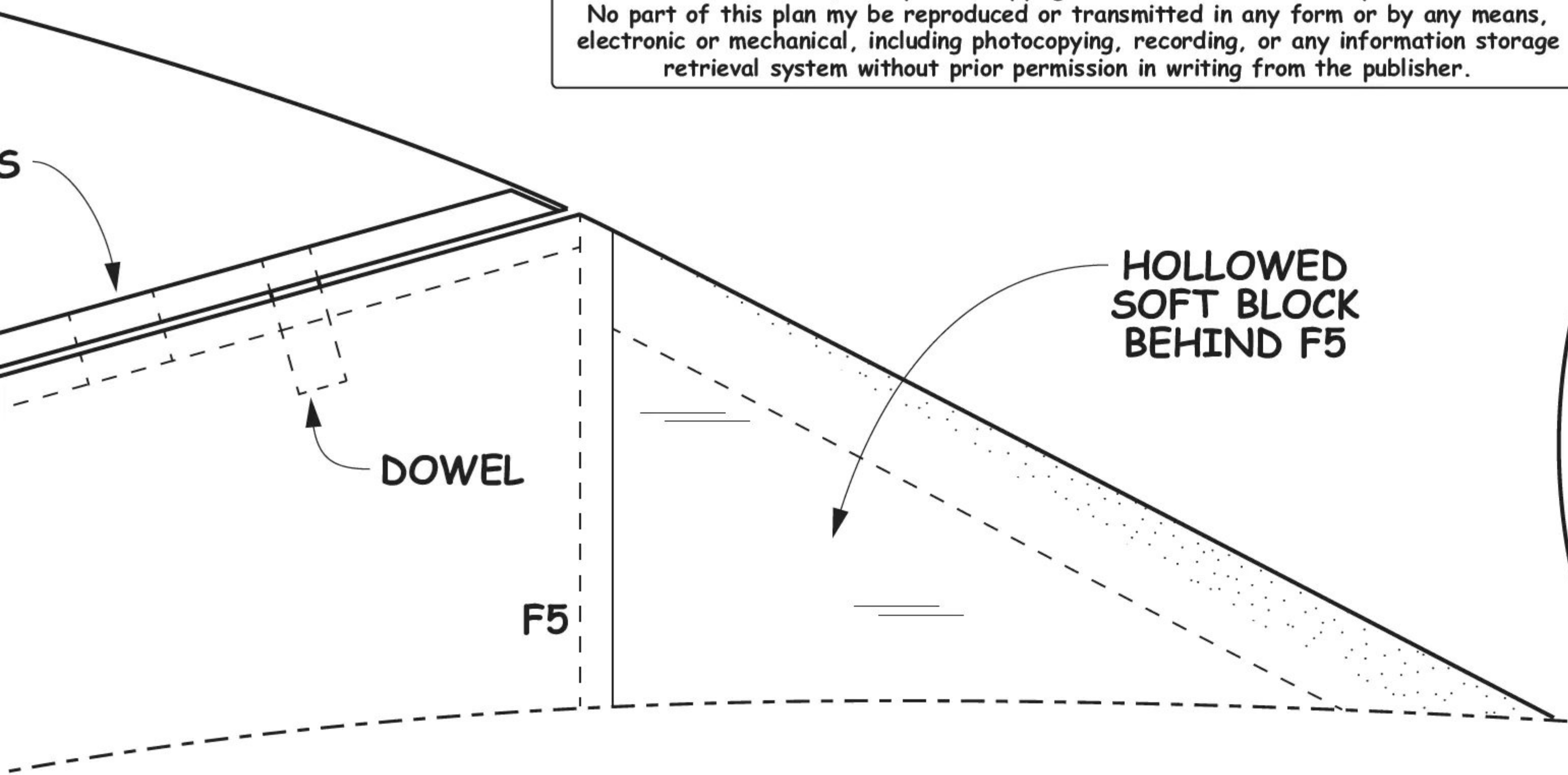
ADD 1/4" Balsa AROUND

300



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10 SWG U/C FROM
COMMERCIAL NOSE LEG

MAK 15 MP

BY PETER MILLER

PLAN No: RC2264

No. OF SHEETS: 1 OF 2

First published in
RCM&E July 2024

A 70" WINGSPAN SEMI-SCALE
RUSSIAN POWERED GLIDER

1/4" x 1/8"
RIBS

RUDDER BUILT UP
FROM 1/4" SHEET & STRIP

1/8" LITE PLY

ADD 1/4" BALSA AROUND
EDGES OF FORMERS

F3
1/8" PLY

F2
1/8" BALSA

F1

F2

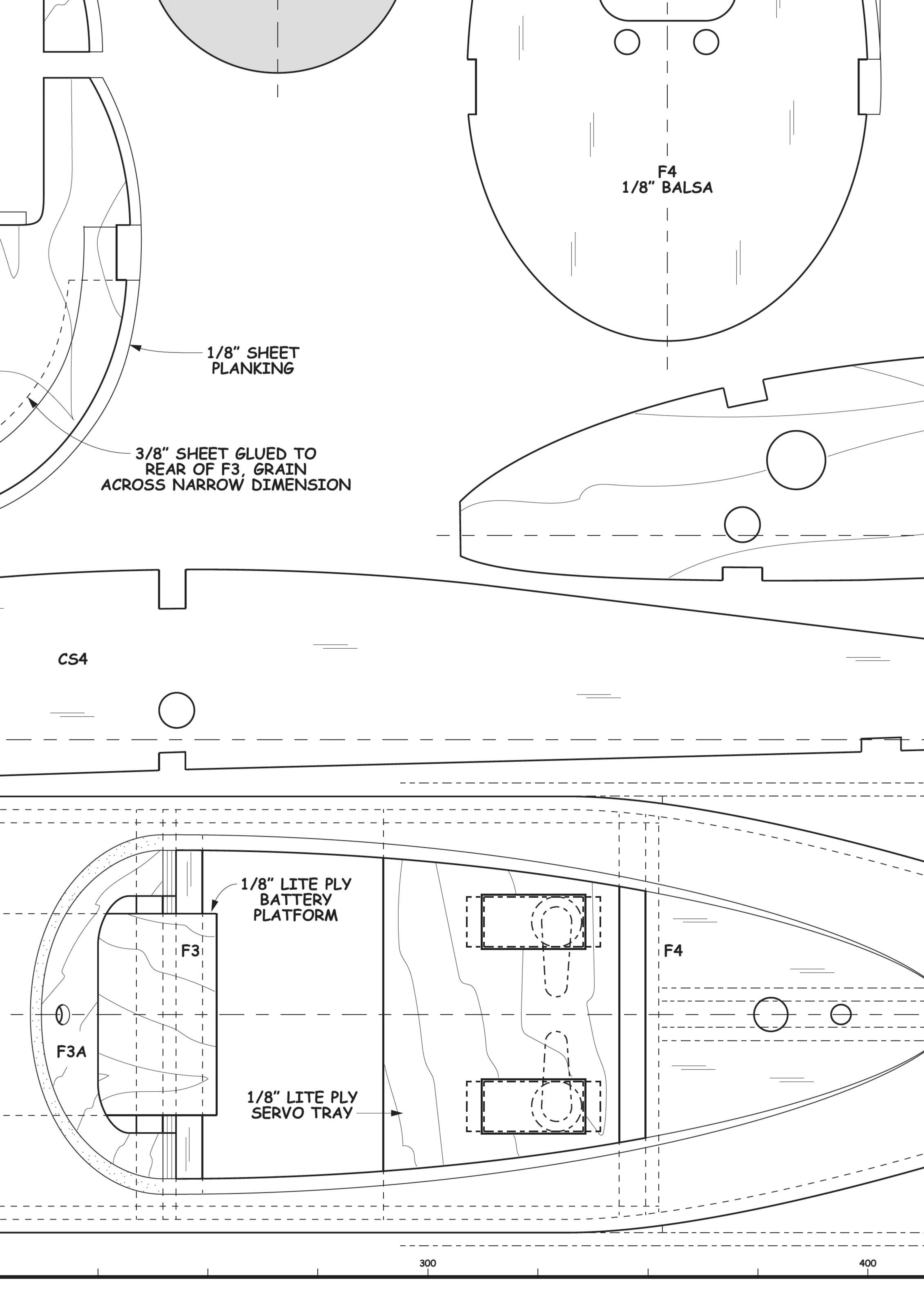
200

100

SCALE
MM

100

200



F4
1/8" Balsa

1/8" SHEET
PLANKING

3/8" SHEET GLUED TO
REAR OF F3, GRAIN
ACROSS NARROW DIMENSION

CS4

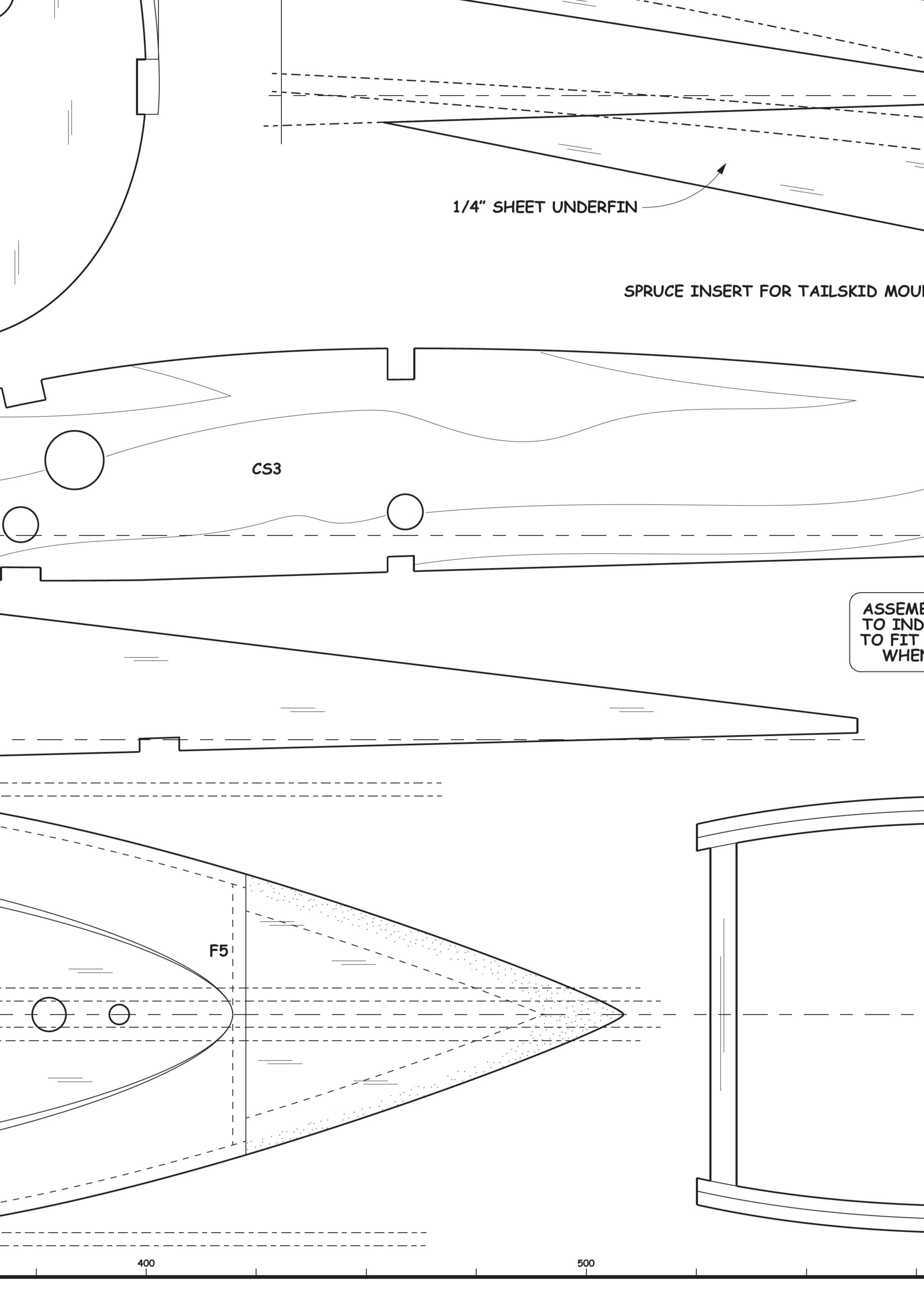
1/8" LITE PLY
BATTERY
PLATFORM

F3

F3A

1/8" LITE PLY
SERVO TRAY

F4



1/4" SHEET UNDERFIN

SPRUCE INSERT FOR TAILSKID MOUNT

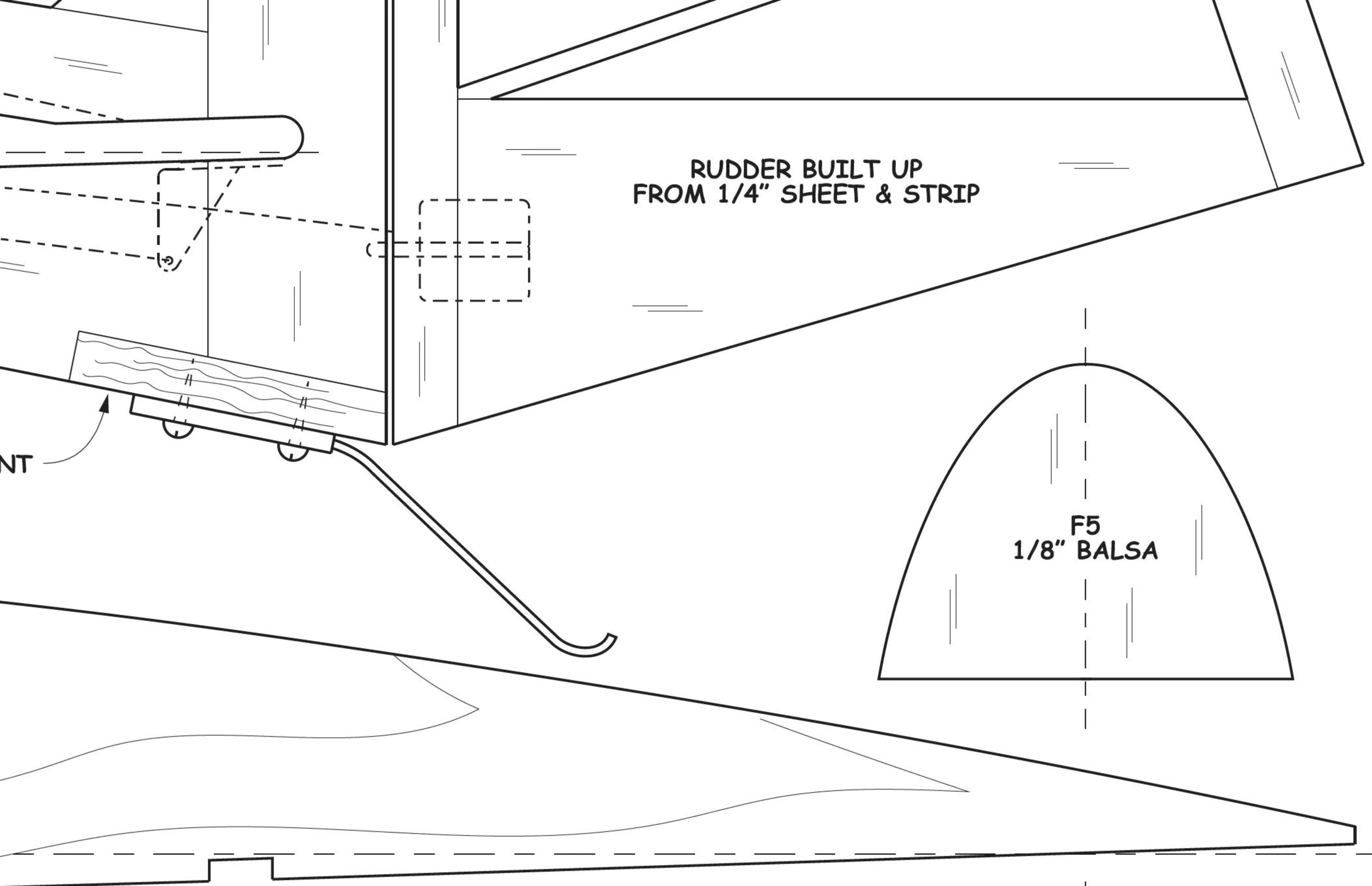
CS3

ASSEMBLY
TO INDICATE
TO FIT
WHEN

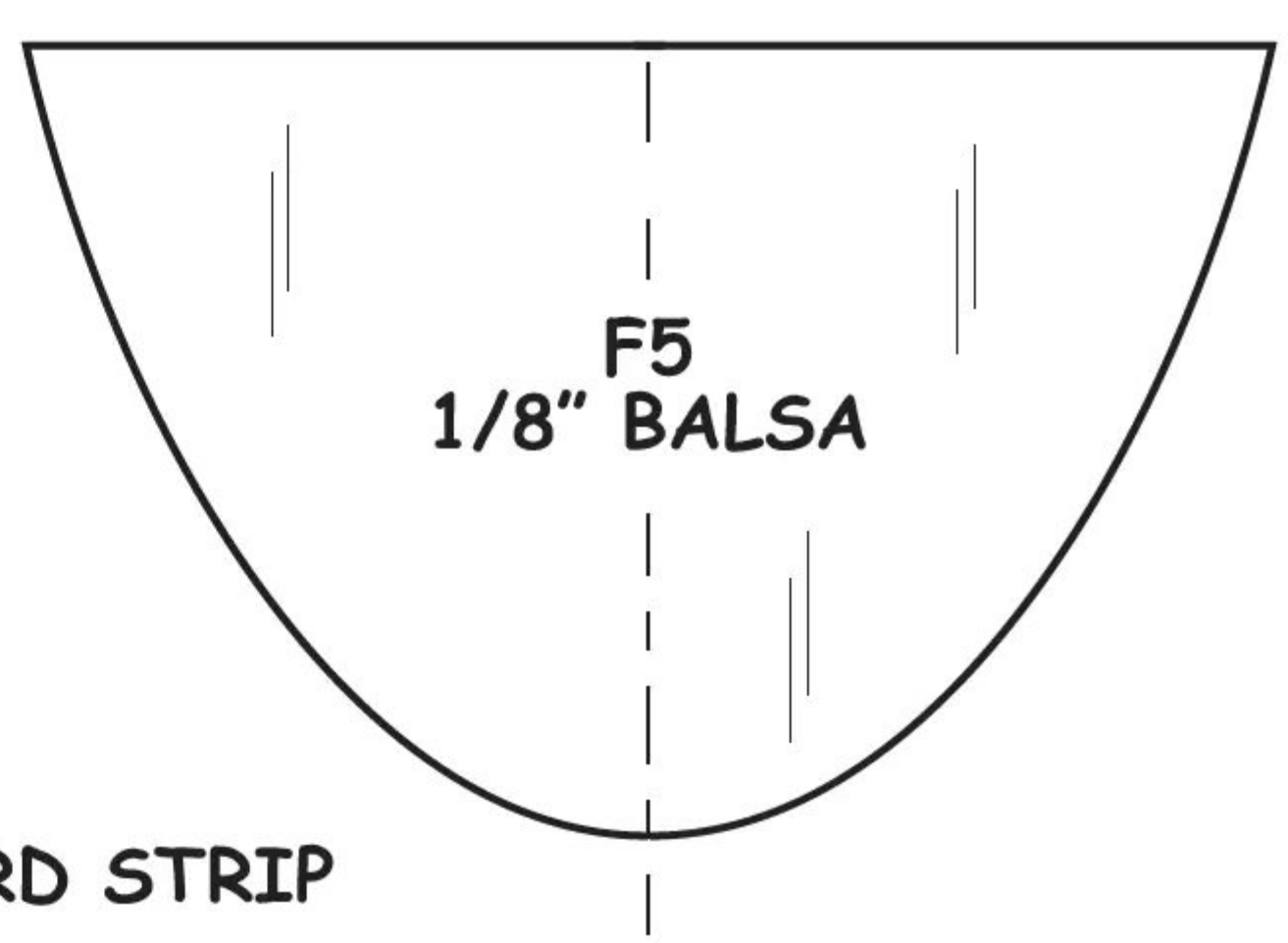
F5

400

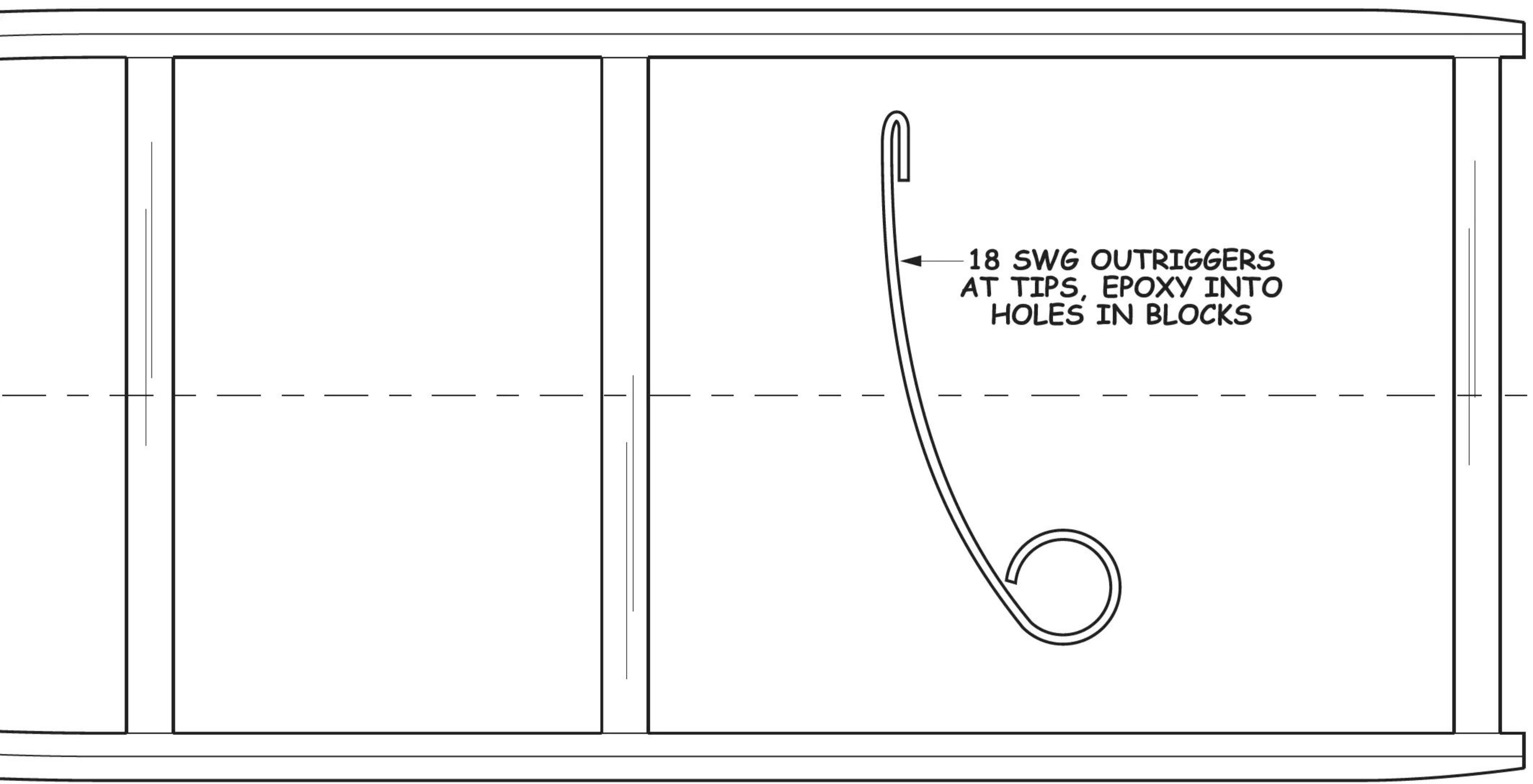
500



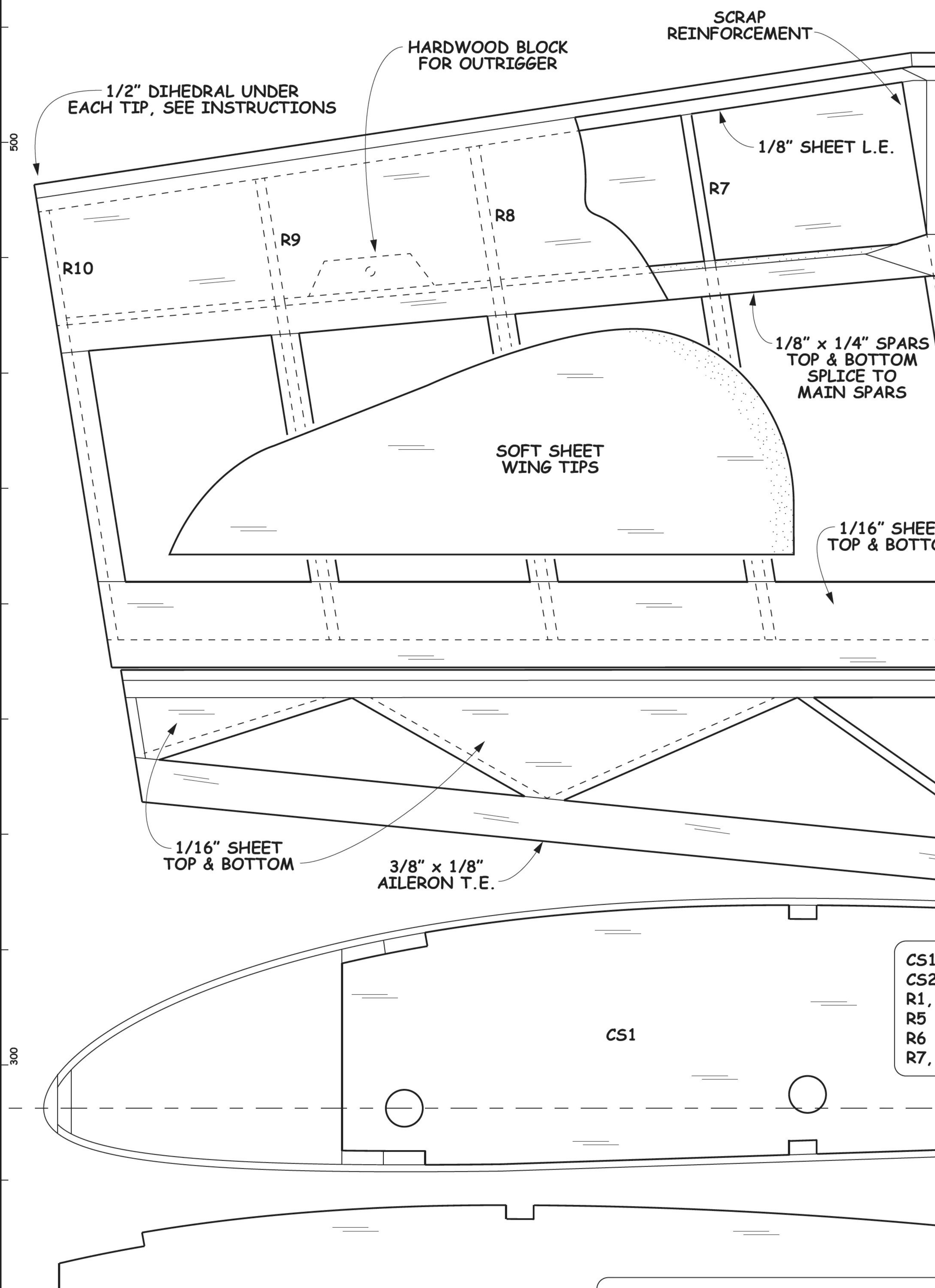
BLE FORMERS TO CRUTCH, PLANK UP TO F4
ICATED LEVEL. ADD SCRAP INFILL & SAND
WING GAP. GLUE ASSEMBLY INTO WING &
N DRY CONTINUE PLANKING BACK TO F5



BUILD CRUTCH SIDE MEMBERS FROM LAMINATED 1/8" x 1/2" HARD STRIP
CROSSMEMBERS ARE HARD 1/4" x 1/2" STRIP



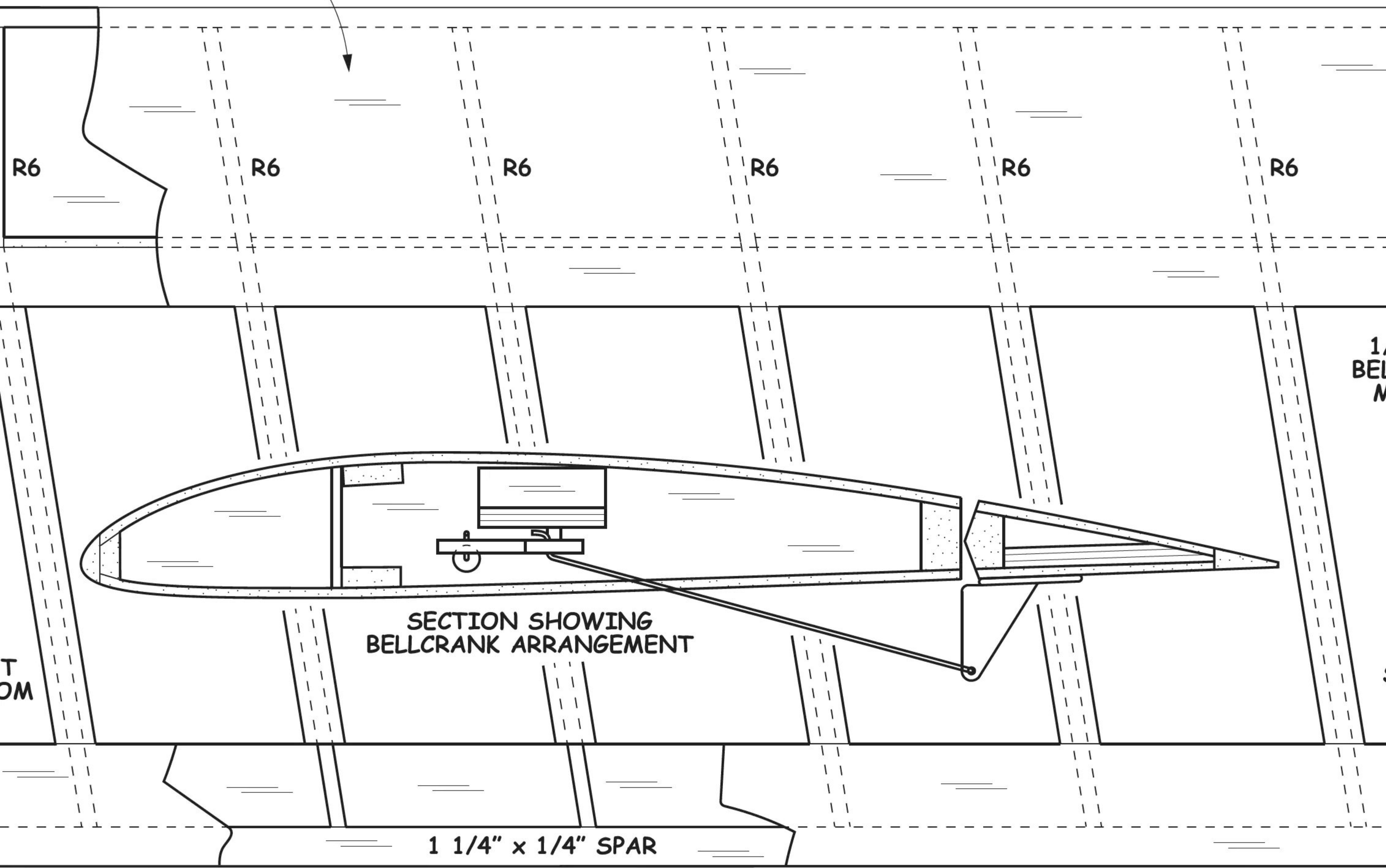
12
16
20



NOTE: COMPLETE CENTRE SECTION

1/16" SHEETING
TOP & BOTTOM

1/8" SHEET L.E. CAP STRIP



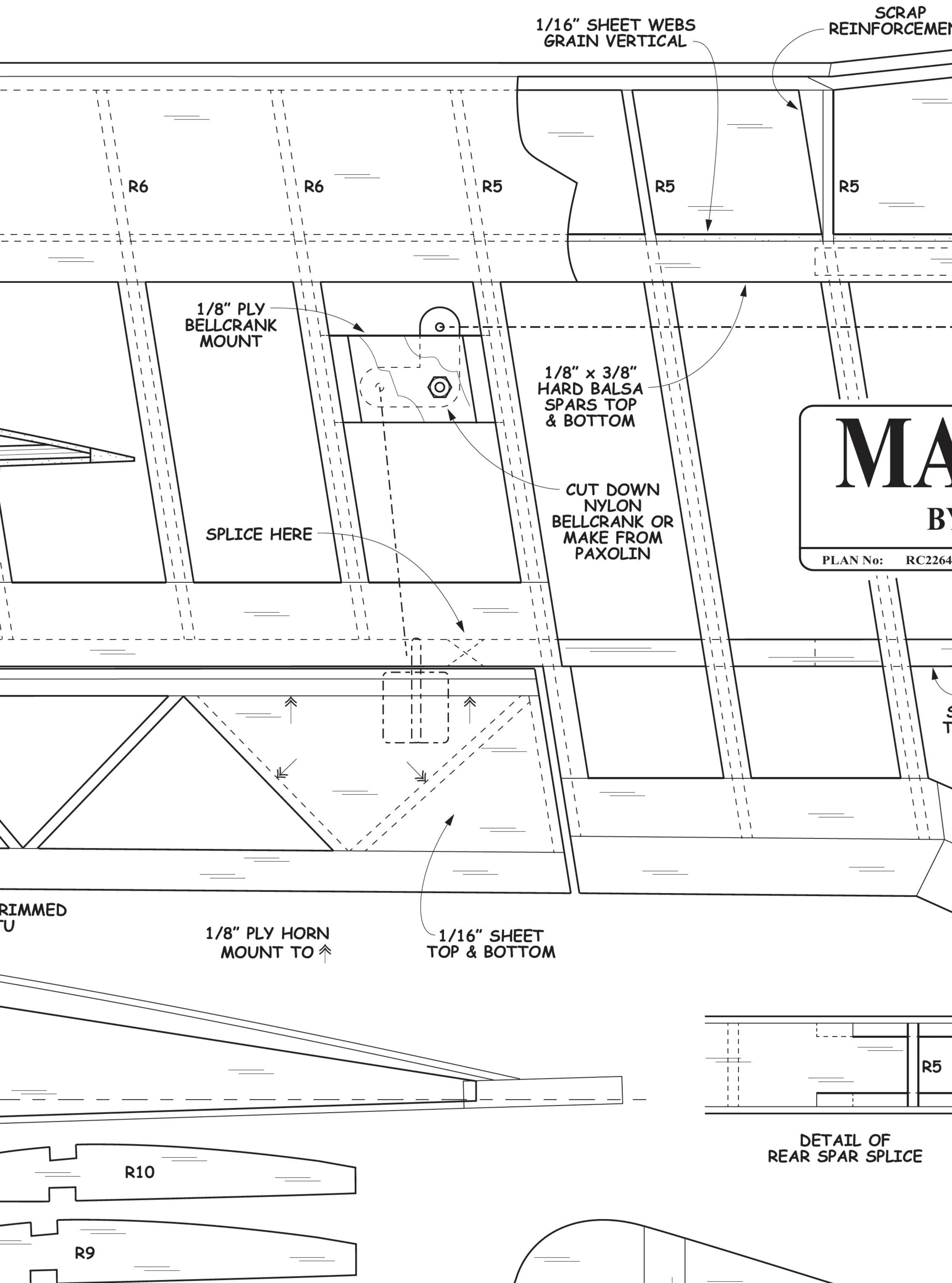
1/4" SHEET
AILERON L.E.

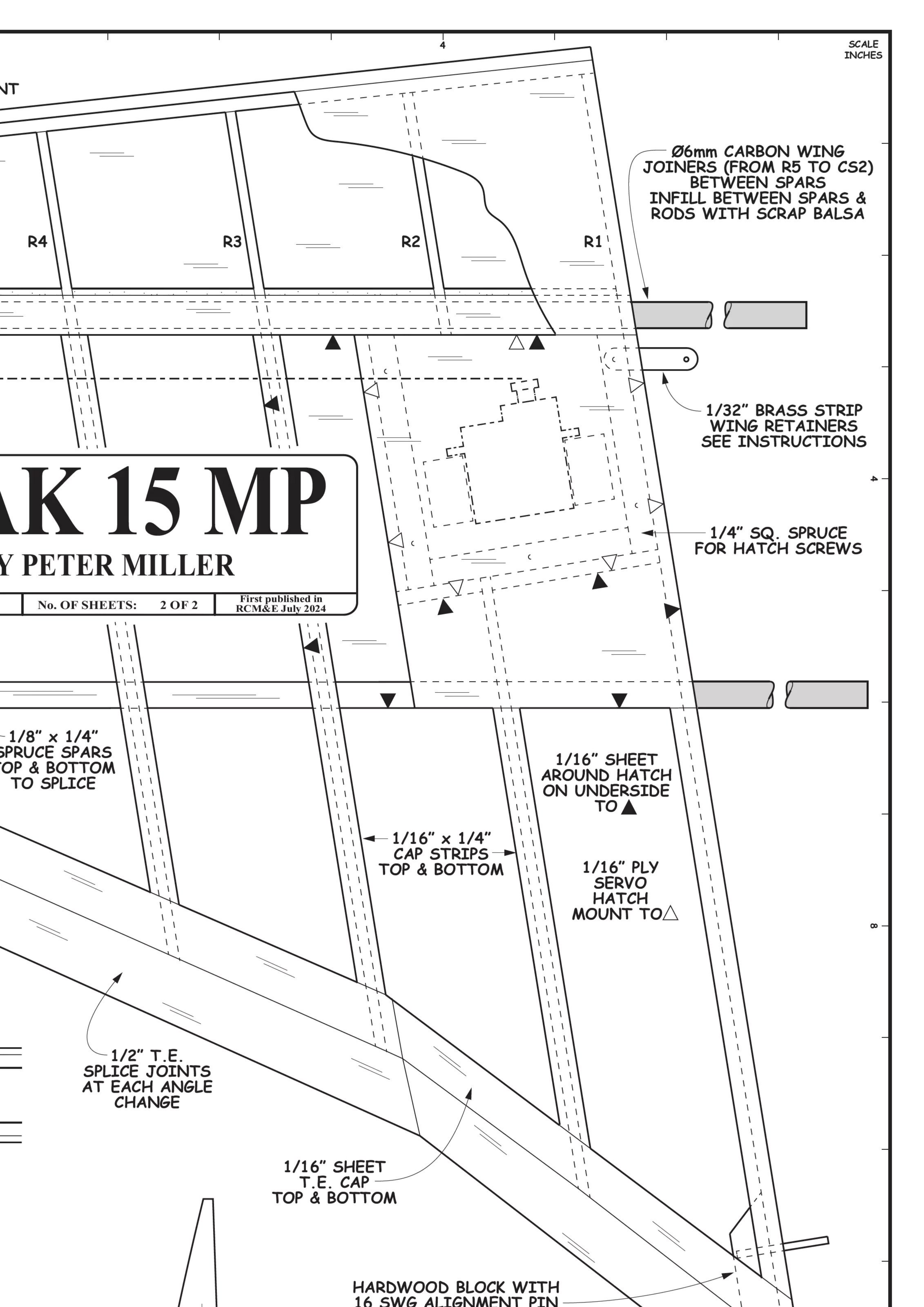
AILERON RIBS CUT & TRIMMED
TO SHAPE IN SITU

- 1 OFF
- CS3, CS4, CS5 - 2 OFF EACH
- R2, R3, R4 - 2 OFF EACH
- 6 OFF
- 14 OFF
- R8, R9, R10 - 2 OFF EACH

R10

R9





Ø6mm CARBON WING JOINERS (FROM R5 TO CS2) BETWEEN SPARS
INFILL BETWEEN SPARS & RODS WITH SCRAP BALSA

1/32" BRASS STRIP WING RETAINERS
SEE INSTRUCTIONS

1/4" SQ. SPRUCE FOR HATCH SCREWS

AK 15 MP

BY PETER MILLER

No. OF SHEETS:	2 OF 2	First published in RCM&E July 2024
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1/8" x 1/4" SPRUCE SPARS
TOP & BOTTOM
TO SPLICE

1/16" SHEET AROUND HATCH
ON UNDERSIDE
TO ▲

1/16" x 1/4" CAP STRIPS
TOP & BOTTOM

1/16" PLY SERVO HATCH
MOUNT TO △

1/2" T.E. SPLICE JOINTS
AT EACH ANGLE CHANGE

1/16" SHEET T.E. CAP
TOP & BOTTOM

HARDWOOD BLOCK WITH
16 SWG ALIGNMENT PIN

NOTE: COMPLETE CENTRE SECTION &
ASSEMBLE FLAT ON BOARD & FINALLY
TUBES & WING JOINERS IN PLACE.
INFILL BETWEEN SPARS

CS2

CS5

1/16" SHEET WEBS
GRAIN VERTICAL

1/16" SHEETING
TOP & BOTTOM

1/8" SHEET
L.E. CAP STRIP

1/8" SHEET
L.E.

PAPER
TUBE

1/4" x 1/8" S
SPARS TO
BOTTOM

1/16" SHEET
GRAIN VER

3/8" x 1/8" SPRUCE
SPARS TOP &
BOTTOM

R1, CS3, CS5 - 1/8" LITE PLY
CS1 - 1/4" SHEET
CS2 - 1/8" BALSA
CS4 - 3/32" SHEET
ALL REMAINING RIBS - 3/32" SHEET
LAMINATE CS1 & CS2's

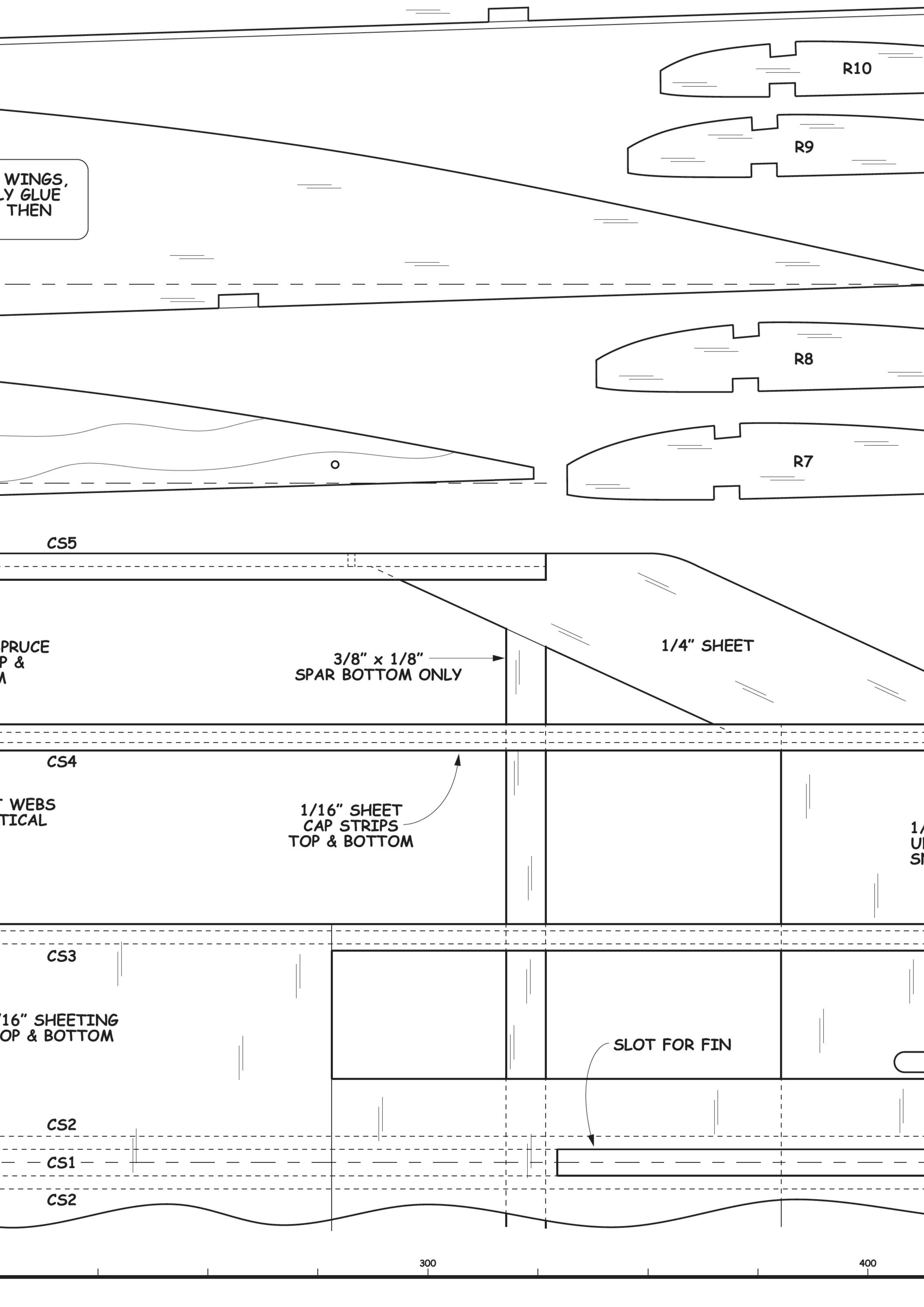
Ø8mm CARBON TUBES
BETWEEN SPARS, INFILL
WITH SCRAP BALSA
EITHER SIDE

1/8" SPRUCE JOINERS
TOP & BOTTOM

SCALE
MM

100

200



WINGS,
LY GLUE
THEN

R10

R9

R8

R7

CS5

PRUCE
P &
A

3/8" x 1/8"
SPAR BOTTOM ONLY

1/4" SHEET

CS4

WEBS
TICAL

1/16" SHEET
CAP STRIPS
TOP & BOTTOM

1/
U
S

CS3

16" SHEETING
OP & BOTTOM

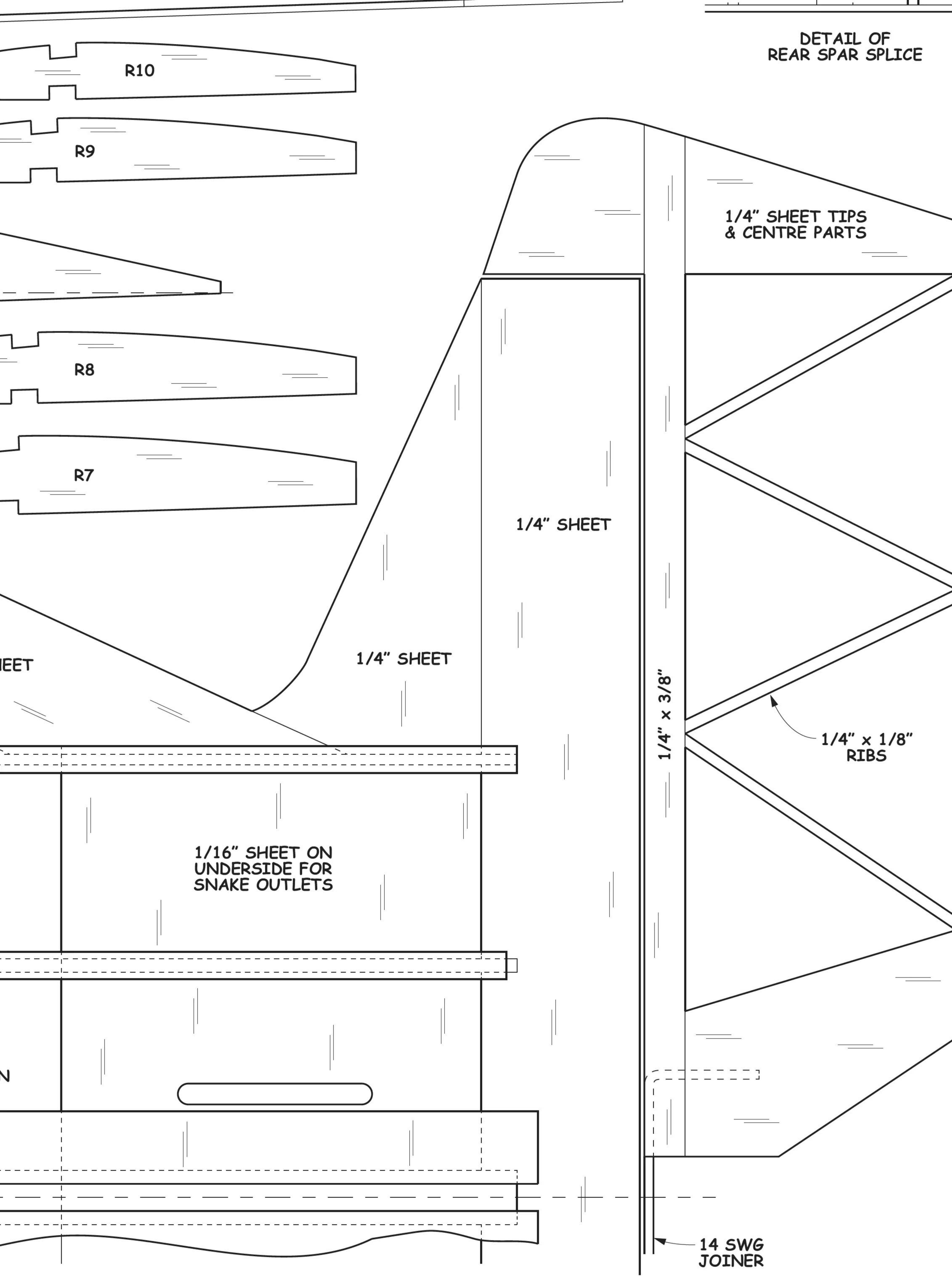
SLOT FOR FIN

CS2

CS1

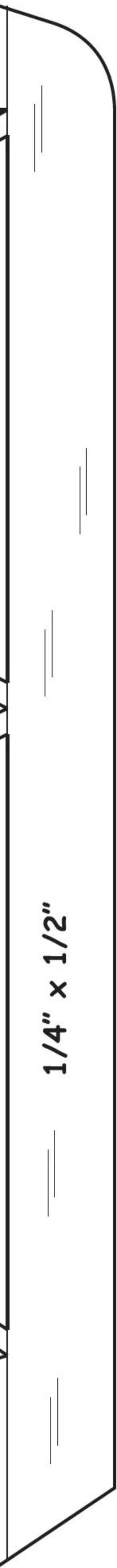
CS2

DETAIL OF
REAR SPAR SPLICE

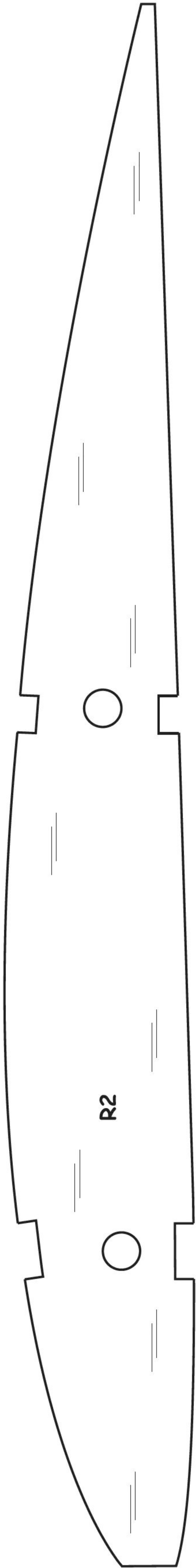


1/16" SHEET
T.E. CAP
TOP & BOTTOM

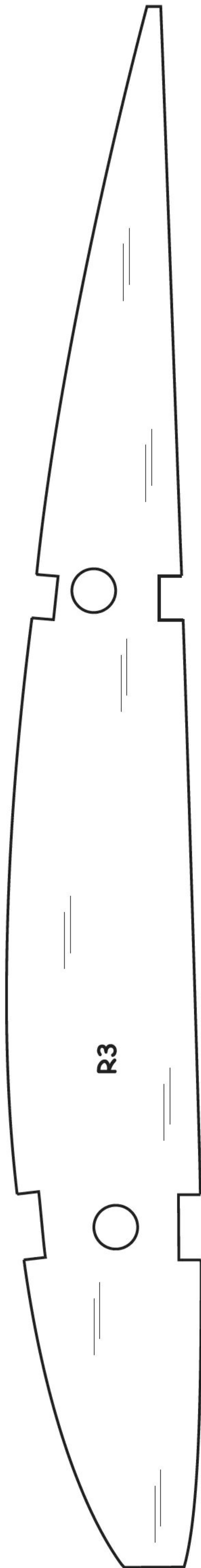
HARDWOOD BLOCK WITH
16 SWG ALIGNMENT PIN



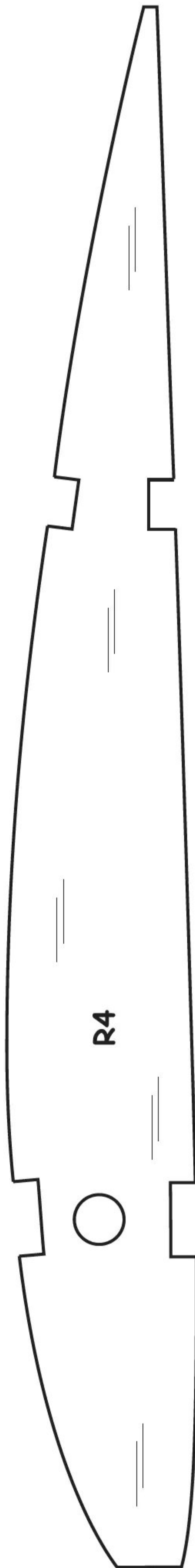
1/4" x 1/2"



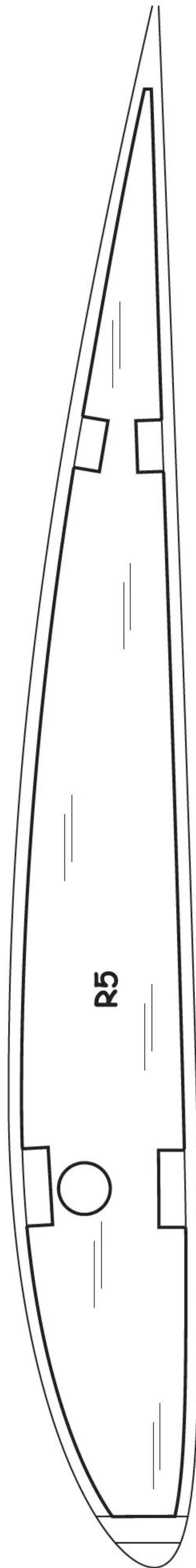
R2



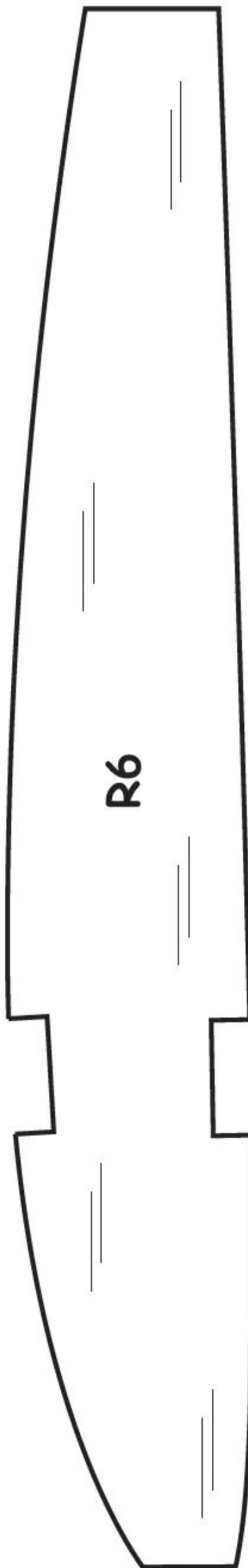
R3



R4



R5



R6

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