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RCME

VOL.63 NO.9 SEPTEMBER 2020

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**TERRY SAUR &
BEDE ACROSTAR**

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**SCALE FLYING
PLAN A FLIGHT SCHEDULE**

**FENTON'S FURY
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RETURN TO THE ROCK

POWER SCALE SOARING ON THE GREAT ORME





J Perkins

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WELCOME

Editor: Kevin Crozier. MyTimeMedia Ltd. Suite 25S, Eden House,
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Regular readers of RCM&E may have noticed that, as a result of the Covid crisis, some of our columnists have been taking the opportunity to have a well-deserved break. On the other hand, quite a few of our regular writers have been soldiering on and I, for one, am most grateful to them for doing that.

One such constant contributor is David Ashby, who has been submitting his 'Just For Fun' column, come what may. But nothing lasts for ever and I'm sad to say that this issue sees the last of David's words of wisdom, collated from the club fields and slope soaring sites around his home patch in Kent. As a past Editor of this magazine, David had a firm handle on what he believed our readership would enjoy consuming over the pages dedicated to his sport flying column. He was also appreciative of my position too, so his articles were always handed in on schedule, in the preferred format and complete with well-focused and well-exposed pictures - in short his material was always a pleasure to work with.

Behind the scenes, David has also taken on the mantle of providing us with our Going Places and Marketplace pages, as well as continuing to look after the Model Flying website and RCM&E's social media. Thankfully, he will be continuing to do all of that, so he will still have a big presence within the RCM&E team.

Recently I have been enjoying getting to grips with my new Infinity Pro thermal soarer, the build of which is summed up in this issue. It's a stunning performer, but I won't say anymore so as not to spoil the final part of my short series on this fully moulded marvel. However, I did take the opportunity to try to adapt to a new transmitter layout by following many glider guiders' preference of using the throttle stick to deploy flaps, with the throttle (this being an electric glider) activated by either a slider or a switch. I chose a switch as with this type of model the motor is just needed for launch and climbing to height. More finesse is required when deploying a glider's flaps for landing, hence the preference of many pilots to use the throttle stick.

I spent quite a time practicing, staring at the ceiling whilst reaching for the throttle switch, then flicking it off before imagining my model on approach, at which time I gradually pulled in more flap using the now repurposed throttle stick, before pulling off the perfect landing - in my mind's eye at least! I even sheathed the throttle switch in a short length of coloured fuel tubing so that I could feel (and see) which one was needed from

the others on the right shoulder of my Tx. Finally, I copied the model memory of the Phase 5e that I reviewed in the last couple of issues and used it to adapt this glider to the same throttle and flap configuration. This allowed me to get some real time practice with a familiar model before my maiden flight with the Infinity Pro. All went well and a couple of nice flights followed, with my fingers finding the right power switch and the flaps deploying as I used the old throttle stick to guide the Phase 5e in for landing.

Test flight day for the Evo finally arrived and after having the glider checked out by a very experienced F5j pilot it was my turn. After a bit of gliding it was time to hit the power and gain some altitude. Except, in my somewhat overexcited frame of mind, I didn't! Instead all those years of flying in my usual Tx configuration kicked in and I yanked on the throttle stick - never mind that it was operating the wrong way around for power! With flaps that powerful and no elevator compensation (an oversight that I will explain in the forthcoming review report) the Evo suddenly went inverted. I can't recall what happened next as my mind blanked, but my instincts must have kicked in and, somehow, I wrestled the large glider the right way up. I also had enough wherewithal to tuck the flaps away and find the correct throttle switch before powering away to enjoy the rest of the flight.

Back on the ground I found the cause of the errant flap/elevator mix and so all was set for a second go. And wouldn't you know it, I did it again! Only this time, with the correct down elevator compensation, pulling flap simply slowed the model down, giving me ample time to recognise my mistake and correct things.

I guess that the moral of this story is to not be in too much of a rush to change the habits of a lifetime when it comes to transmitter configurations. I've flown many gliders and electric gliders using side sliders to operate the flaps with no prior problems at all, so I chide myself for risking my lovely new model by trying to fly it in an unfamiliar fashion.

Happy Flying! (But do it your way...)

Kevin Crozier

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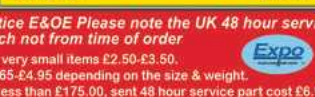
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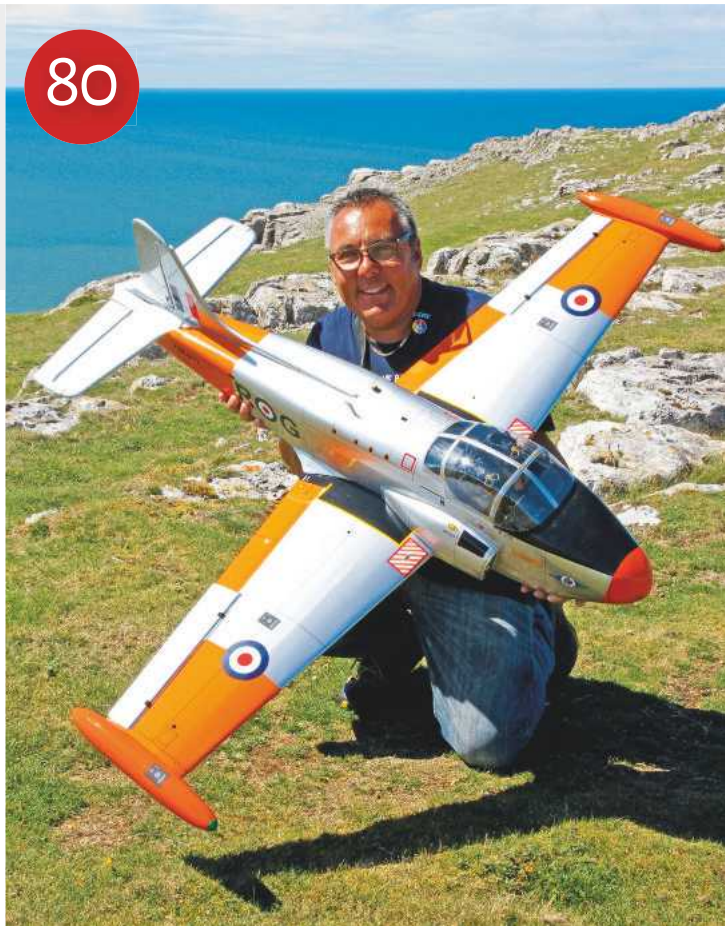


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Photo: Phil Cooke

Power Scale Soaring Association member Steve Kemp poses with his new 1:8 scale Hunting Percival Jet Provost, built from enlarged plans by Andy Blackburn. The model spans 57", has an AUW of 6lbs and flew superbly in the conditions enjoyed at July's PSSA gathering on the Great Orme - see the full report by Simon Cocker in his regular column.

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Simon Cocker makes his first post-lockdown trip to Wales for the PSSA's inaugural gathering of 2020 on the Great Orme

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EASTBOURNE DMFC UPDATE



Nigel Philpott, Webmaster of the Eastbourne District Model Flying Club has sent in some details of the South coast club's latest activities:

"For us the flying season has just started. Our facilities have only been available for a few weeks and now we want to make the best of what is left of the summer. As avid readers of RCM&E, we attach some pictures of an impressive build - a 1/4 scale Mick Reeves Spitfire, powered by a DA 85 with proper working side exhaust stacks. The model is immaculately built and flown by Kevin Powling, who loves building large scale warbirds.

Last weekend Kevin delighted us with its 33rd flight, with a model that has taken over a year to build. Clearly it exudes realism, the silver panel effect and weathering exemplify the dedication to achieve a fantastic and impressive

model. We were all delighted to be present to see it fly and it was a great start to a somewhat shorter flying season.

Eastbourne District Model Flying Club is unusual in the way that it co-exists with a private airfield, Deanland. Supported by fantastic facilities, both have operated like this for many years. The airfield itself was once a World War II forward operating base for the Normandy Invasion and was responsible for helping keep the Doodlebugs at bay. The airfield is steeped in history.

We are a small club that promotes modelling through our enthusiasm and a website which I have custom made. I regularly update the website with photos of members builds or weekend flights: hwww.edmfc.co.uk

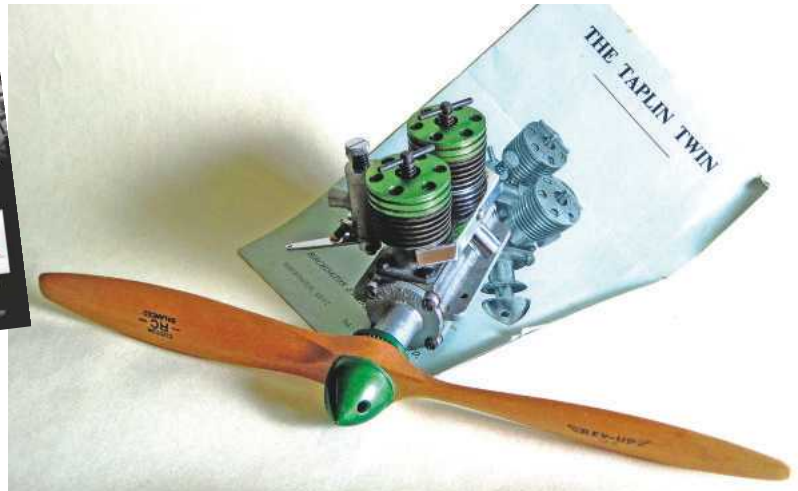
I attach some images I took of the Mick Reeves Spitfire, QUF MJ250, built and flown by Kevin Powling at Deanland. It could be mistaken for the real thing!"



TAPLIN TWIN

When the national lockdown was first introduced it hit publishing companies really badly, especially those with publications that relied on the newstrade for a sizeable chunk of their sales. Hobby titles like RCM&E were not immune as large retailers like WH Smiths had to shut their shops. Some magazines were harder hit than others and some were forced to close, whilst others were shut down temporarily. An example of the latter is our sister magazine, *Model Boats*, which ceased publication for a while, stopping the publication of the June and July issues.

A further complication was a change of Editor for *Model Boats*, and whilst plans were being made to re-launch the magazine for its August cover date, your Editor was asked to get the ball rolling and to collate some content. This brought him into contact with Dave Wiggins, who for many issues has been writing a series called Memory Lane, recalling some of the older R/C systems that have been used for controlling marine models.



Knowing that RCM&E readers enjoy a dip into the past too, Dave sent in this picture of a famous twin aero engine for us to enjoy. Says Dave, "I collect Taplin's and an aero engine was the last to be added."

PS: The August issue of *Model Boats* (see cover image) went on sale at the same time as the last issue of RCM&E, thanks to the sterling efforts of everyone involved at MyTime Media, not least the new Editor, Lindsey Amrani. The September issue should be available when you read this.

WESTON PARK AUTUMN SHOW

Whilst many popular model shows have been forced to cancel for 2020, the popular Weston Park International Air Show in Shropshire has managed to hang on and has now managed to find itself a new date for later in the year.

The show's hard-working organiser, Steve Bishop, told us:

"We are pleased to announce that the Weston Park Model Air Show is now set to go ahead on the 17th and 18th of October 2020."

Working closely with the local council and adhering to all the government guidelines, we want to bring you a fantastic family open air event with plenty of space to social distance."

The event will be capped, so we are asking all tickets to be purchased in advance as much as possible. There may be the option to pay on the gate, although we cannot guarantee this just yet."

You can book your weekend camping tickets now at:

www.westonparkmodelairshow.co.uk

Day tickets are available at: westonpark.seetickets.com/tour/international-model-air-show

We look forward to seeing you."

If you can't wait until October to get a taste of what visiting Weston Park is like, then turn to page 40 to see Alex Whittaker's pictures taken at past events.

More details of the October event can also be found in Going Places on page 91 of this issue.



Large display teams and fast jets are regular fare at Weston Park. Photos by Alex Whittaker.



SAVOIA-MARCHETTI SM.79

Alex Whittaker admires Ken Sheppard's ex-ARTF cartoon scale Italian trimotor

words & photos » Alex Whittaker

The Savoia-Marchetti SM.79 Sparviero (Sparrowhawk) first flew in September 1934. It was a low-wing, triple-engine cantilever monoplane of wood and metal construction. Operated as a medium bomber it was easily recognisable by its distinct fuselage hump. Indeed, its crews, who generally seemed to like the aircraft, dubbed the design 'il gobbo maledetto', or damned hunchback. It required a crew of five, or six in the bomber version. Conceived as a fast passenger transport, it was a very quick aeroplane and at one time held 26 speed records. The Fascist Italian Government quickly recognised the design's military potential and for a time she became the fastest bomber in the world. The SM.79 saw active service in the Spanish Civil War and became the key bomber in the Italian Air Force. There was also a torpedo bomber variant, which operated with some success against the Allies. Its wooden structure meant that if it ditched in the Mediterranean Sea it could stay afloat for about half an hour thus giving its crew ample time to evacuate. There was even a radio-controlled drone version.

No other WWII Italian bomber was built in such numbers and overall about 1300 of the type entered service. Both Yugoslavia and Romania bought examples. Examples remained in service in Italy until 1953.

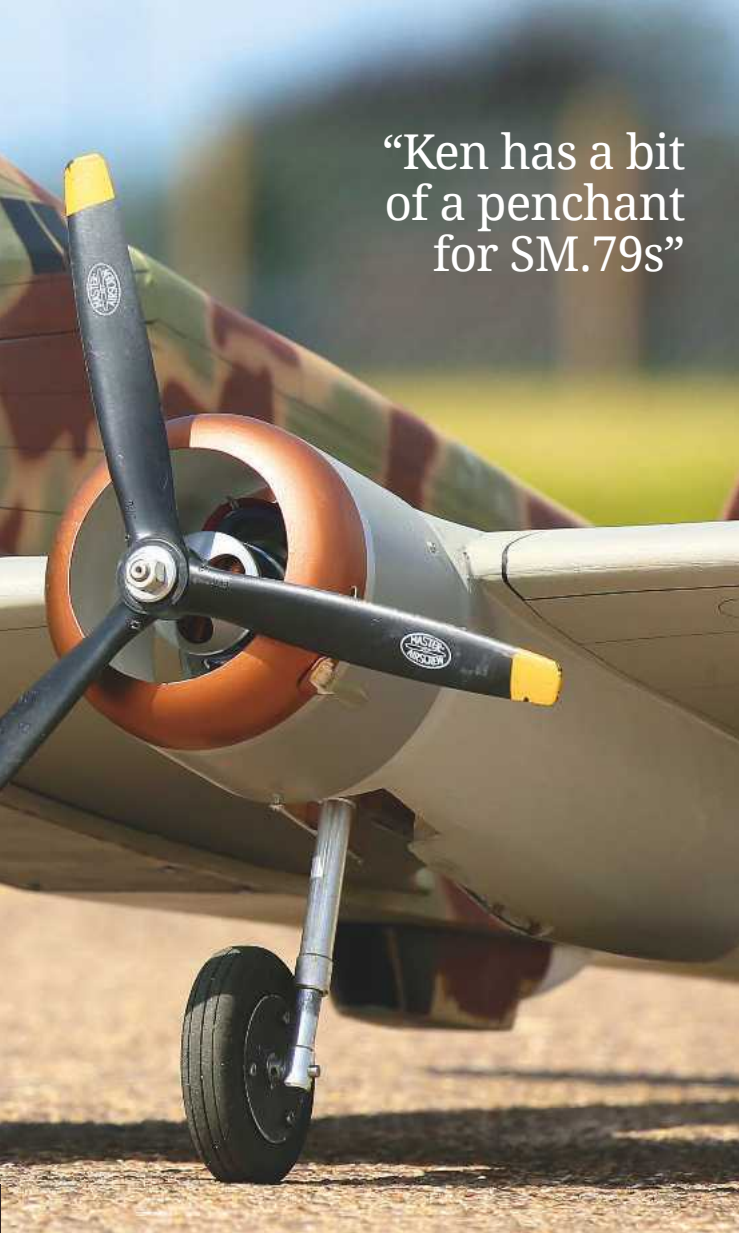
THE MODEL

Although he is Editor Emeritus of Aviation Modeller International magazine, noted scale modeller Ken Sheppard is these days probably best known as organiser of the very popular ModelAir events at Old Warden. However, Ken has a bit of a penchant for SM.79s. After all he has built three! The first was an electric powered own design of about four-foot span. He then constructed a larger one, built from a greatly modified ARTF twin. Ken notes that both had high wing-loadings and quick arrival speeds. Indeed, one was lost in a tip-stall on the final turn onto a landing approach. At this point Ken decided that his third SM.79 should have a lower wing loading! This third SM.79, covered here, has its own interesting history, as Ken relates:

"Quite a few years ago I received a large kit to review, the Seagull Models Miles Sparrowhawk, a 30cc powered ARTF, spanning about 80. This flew very well for a couple of seasons until, as it was looking quite tatty and I needed the engine and radio for another project, it ended up stored in my shed. I had ear-marked it for a makeover sometime in the future.

Last year, carrying out an infrequent 'clear out' of the shed, the sadly neglected, but perfectly sound airframe came to the fore and the decision to 'move it on' or 'do something with it' was made. At the same time, I happened to find my copy of

“Ken has a bit of a penchant for SM.79s”



Ken gives scale to his 100" (2.45m) span Savoia Marchetti SM.79.

CLUBMAN SCALE

When I first saw Ken's model, I really liked her quirky style. I'd have said she was Clubman Scale. At a push, perhaps even Character Scale. However, Ken prefers the term Cartoon Scale. That notwithstanding, there is no doubt his re-imagining does capture the character of the prototype. Ken's SM-79 attracted many favourable comments at the early season scale meeting where I first saw her fly a few years ago. She looks very good in the air and just as pleasing on the ground.

Like all who saw her, I was fascinated at Ken's highly creative recycling of an old ARTF airframe. Indeed, I suspect that most of us have such relics lurking in our shed. The model uses the ARTF wings (with tip extensions to increase the span), the tailplane (modified tips and new elevators) and the fuselage (narrowed and reshaped with profile-altering inserts). Ken then fabricated a completely new fin and rudder.

the Signal-Squadron Publications 'In Action' series for the S.79 in a pile of old mags. I have to say that I'm a great believer in co-incidences and thumbing through the book, the fact that the name Sparviero means Sparrowhawk and that I had a Sparrowhawk airframe, albeit the Miles variety, was too much of a co-incidence to ignore.

Getting out the tape measure and calculator, a few quick measurements and calculations gave me the idea that I could have my larger, lighter SM.79. It meant major surgery, but it would still be quicker than building from scratch – and it would give new life to the old, tatty ARTF...



Right: A rear view of the SM.79's humpback, thus the 'Damned Hunchback' nickname.
Below: Ken calls her Cartoon Scale, but she is an attractive flying scale model.





At 100" span this is not a small model. Note ailerons and the dummy flap line.



This side view shows off the varied thrust lines.

“...his re-imagining does capture the character of the prototype”

WINGS

The donor Seagull Sparrowhawk kit was a one-off pre-production model. It featured plug-in wing panels (the production kit featured a bolt-on wing), which means the model breaks down into three pieces for transportation. The joiner tube was replaced with a longer one to allow it to pass through the full width of the nacelles to take the landing loads.

MOTORS & BATTERY

Ken soon decided that electric power was the way to go. He chose three .60-sized out-runners. The three motors develop more than enough power whilst giving the necessary up front ‘weight’ to help balance the model at the correct Centre of Gravity.

Twin 6S 5000mAh LiPos connected in parallel are used to give a useful flight duration.

BELLY HATCHES

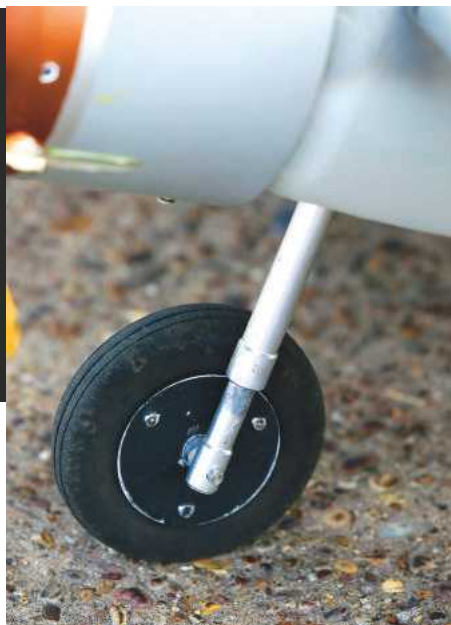
Two hatches in the belly allow access to the nylon wing retaining bolts and allow routing of the motor power cables



The electric powered SM.79 uses three 500kV outrunners.

Trimotors are always fascinating.





Ken's SM.79 has spring/air retracts in the nacelles.



The top front fuselage is quite a complex shape. Note the gun - there's another at the rear!



Cowls were supplied by Vortex Vacforms.



Ken's rendition of the tail. Note dual struts and the slim rudder.

forward to the fuselage nose, where the harness connectors are fitted. Ken's good friend, Graham Iredale made up the harnesses to Ken's specification.

NACELLES AND RETRACTS

Getting the nacelles and retracts correct formed a significant part of the conversion, since the wing-mounted nacelles have to carry the main undercarriage. These comprise a pair of pneumatic and sprung oleo retracts.

CANOPY & COWLS

Ken intended to mould a canopy/top hatch from acetate but ended up

carving one from blue foam and painting on the glazing. As Ken points out it is cartoon scale after all...

The cowls are stock items supplied by Vortex Vacforms.

FINISHING & DECALS

The model is covered in Solartex, then spray-painted using Tamiya Acrylic paints. Ken then sprayed a coat of satin fuel proofer to give a neat finish. Dirtying up was kept to a minimum, just a little 'black finger' application on the sides of the fuselage to highlight those fabric-covered stringers.

Pyramid Models supplied the decals at a very reasonable price, with a very quick turnaround.



The SM.79 is probably the best-known Italian aircraft of WWII.

“Ken did very well to complete the maiden flight without mishap”

FLYING NOTES

Ken told me that the first flight was a bit fraught. She was twitchy for a number of reasons, not least of which was swapping from Spektrum to Futaba transmitters. These use different ways of applying exponential, and the values applied were working the wrong way! Ken notes that pitch control was rather sensitive... In all, Ken did very well to complete the maiden flight without mishap. There were also additional issues with the thrust-lines, which he corrected. Ken remarks:

“It is a bomber after all, so aerobatics are not attempted, except for steeply banked turns, and figure of eights. It's hard to appreciate how the model looks when you are flying it, but club members' comments have been very complimentary, so I'm happy with that.

I keep the power down for take-off; full power is far too excessive for scale acceleration and climb out, but it is useful to have it in reserve. I know some people will decry the use of electric, as there is no substitute for the sound of three IC engines on song, but for me it is the only practical, reliable solution. The lack of vibration allows the weight to be kept down and lighter models - bigger, lighter models - fly better!” ✈️



DATAFILE

Model Name:	Savoia-Marchetti SM.79
Owned By:	Ken Sheppard
Donor Kit:	Seagull Sparrowhawk ARTF
Scale:	1/8 scale approx.
Span:	100" (2.45m)
Motors:	3 x 500kV outrunners
Battery:	2 x 6S 5000mAh Lipo
Functions:	5 inc. retracts, no flaps
Weight:	20lb (9kg) approx.

Left: Outboard engine nacelles are kept close to the centre-line.

Below: The model uses five channels and has retracts, but no flaps.





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GROOVY BABY

With a slope-themed round-up, David Ashby fixes a skid and succumbs to the inevitable

words & photos » David Ashby

I picked up a new model a few months ago, a 3.4m span, 1/3-scale Grunau Baby. It was built by John Harris from East Sussex, who was selling his remaining models in order to concentrate on R/C boats in retirement. He used the Cliff Charlesworth plan, covered it in Solartex and did a very fine job in the process. Finishing it in the mid-1990s, John flew his Baby from a hill using a bungee, then put it in a corner where it remained until I dropped by to collect it some 25 years later.

In one sense it was ready to fly when I got it home but, having sat idle for a long spell, full inspection and thorough testing was appropriate. Construction standards were very high; it seemed strong in the right places and light in the right places too. The covering and paint finish were superb, the small 1/6-scale pilot had to go but the electrics were my first priority. What was there reflected the period; Super-Tec mini servos (remember them?) with a JR 35MHz receiver and an old mechanical switch.

I left the servos, for now at least. They seemed fine in operation and, by its nature,

“The covering and paint finish were superb”



My new acquisition, this 3.42m span Grunau Baby oozes character. Covering is Solartex with painted trim. Don't you just love classic sailplanes?



Waiting for its first flight since the 1990s.



I landed out after the second flight, a broken skid being the only damage.

the gentle flying model wouldn't be straining them. A new switch and Rx battery were added, some of the internal servo extension leads replaced and a new Rx installed under the pilot seat.

Balancing and control throw deflections were going to be informed guesswork. The main wing spar seemed like a sensible starting point as far as C of G was concerned and 'what looked right' for the moving surfaces. With the C of G (and its subsequent effect on control sensitivity) untested, I decided against adding expo until after the first flight.

The day itself was sunny, with a light wind, strong passing thermals but strong sink of the sort that abruptly plants models well below the slope edge. There were no exceptions; at times even lightweight machines like DreamFlight Ahi's and Weasels were in danger of landing out.

An easy throw got it away, but a distinct downward trajectory followed, requiring frantically applied elevator trim. That done I could relax a little. The ailerons had a powerful effect, which came as a surprise. I'd added differential and had a switchable rudder mix in place, just in case adverse yaw problems were evident. That wasn't needed though, and the turning effect was quite severe without some gentle guidance at the sticks. It'll swivel on a sixpence using ailerons, but rudder has a calmer turning effect. I managed a loop but decided to leave anything else for another day.

Landing had been my biggest concern. Beautiful model that it is, John said he wished he'd built in air brakes and so did I. Would it be easy to get down or would I amuse my flying buddies with a string of



My skid repair job. Litho plate top and bottom did the trick to lend it that 'hangar workshop' aesthetic.

aborted landings? It certainly showed no enthusiasm to return to earth, but the slope's large landing area allowed space to fly downwind sufficiently to bleed off speed for a gentle touchdown. I've since programmed some spoiler (up ailerons) at the Tx, allocated to the throttle stick, in the hope that this will help kill a bit of lift when required. The thought of retrofitting air brakes, while not impossible, certainly holds no attraction.

So far so good. It flew well enough to convince me that it should have a permanent place in the collection. Oh, and it needs a



Steve prepares to give it a heave. My guesswork settings proved safe enough for starters.

pilot, of course. I had one more flight that day but found myself landing out when a chunk of powerful sink came through. Landing well below the edge can be tricky with height above ground and the flare is difficult to judge. It's easy to think you've got away with it only to discover some pretty serious damage when the model is retrieved. I didn't quite get away with it, but the broken landing skid was easily fixed and she's now ready for the next outing.

The skid was a warped piece of pine, so quite susceptible to breaking under strain. Someone suggested an ash wood replacement, but for now I've joined and strengthened the break with litho plate top and bottom secured with bolts. It has that 'small hangar repair' look about it and seems in keeping with the type.



Credit to John Harris, the model's builder. I know, it needs a pilot.





The SHK has seen more airtime and I'm very pleased.



Loops and Chandelles are the limit of its aerobatic prowess but that's not to criticise a very pleasant machine.

SHK

The winter project, my 4m span SHK glider built from the aero-naut kit, has notched up some more airtime. I've only flown it from the slope so far and remain in the tweaking and tuning phase, but the verdict for now is positive, it's a nice, well-behaved scale soarer. It's straightforward to launch and land, finds lift easily enough and thermals very well. Landing holds no fears thanks to the effective air brakes and a very composed and steady feel that helps deliver smooth arrivals.

It's no aerobat - perhaps the foam/veneer wing version would be a better choice in that respect - and rudder is required to ease it through some turns, but that's commonplace with scale gliders. I added tape to emulate the ruddervator trim tabs and that's become a feature to catch out the unwary with cries of 'those surfaces are a bit small' before the realisation dawns that the model uses an all-moving tail, just like the full-size.

I've gone back to the tail mechanism, just to check its integrity and make a few tweaks to negate a small amount of slop. Specifically, by wrapping a little tape around the moving incidence pins so they are tight in the cam

arm holes. And I replaced a servo arm where a clevis hole was just a little too big. They're things I should have done properly first time round but, by its nature, that tail mechanism, while not a weak point, is an area where regular inspection won't do any harm.

So far so good, although, as I said, it seems to be an easy flying scale thermal machine, not something to split the air molecules with fast passes across the slope edge.

PROTEUS V2

You don't see them very often, but those 3D-printed models are out there, and I recently spied another on the hill. Designed by Kit Adams, Proteus V2 is a flying wing downloadable at thingiverse.com. It spans 1040mm and uses an MH-45 profile



“...it penetrates well and can muster a decent lick of speed”

symmetrical wing section with two degrees of washout at each tip.

Matt Rueben printed the sections over a period of 60 hours using £20 of PLA+ filament. PLA+ is a little better than the standard PLA that, as 3D print flyers soon find out if they're not careful, has a nasty habit of distorting in strong sunshine. Tape holds the sections in place and the usual 3D traits, such as servo cutouts and control horns, form part of the design. There's plenty of room for a receiver and battery under the hatch cover too. Proteus uses two 9g micro servos and weighs around 570g (20oz) all-up to give a wing loading of 110oz. In the air it penetrates well and can muster a decent lick of speed with fast rolls and tight loops.

Left: Tape secures the sections. Note the printed horns and servo protector.



Above: Matt with his Proteus, a 3D-printed wing.

Right: As you can see launching is tricky. It needs a skid to grab hold of...





Proteus needs a decent breeze but slips along at a decent rate when it gets going.

Not bad for 20 quid's worth of PLA+

Launching is the hard part though, with nothing to provide a convenient grip - I had a couple of attempts and failed miserably. A landing skid is desperately needed as I assume finger cut-outs would likely compromise strength. Another caveat, this is no EPP foamie, so care is needed, especially when landing as the PLA's brittle nature means it's very easy to collect damage.

Some builders (printers?) add a pusher motor to improve the model's versatility and Kit has designed Proteus Plus, a 1.8m span version with flaps, for which some 74 print hours should be set aside.

IF YOU CAN'T BEAT 'EM...

Combat wings seem to be very popular at the moment on my local slope. Even dedicated lead sledders and scale aficionados bring one every time. The enthusiasm is partly because they're easy to fly, but mainly because it's fun to go head-to-head flying a model that's as indestructible as a model aeroplane can be. These impromptu sessions occupy a small piece of sky yet what's surprising is how few contacts there are, even when a good dozen are up.

I'm a bit fussy where my models are concerned and like to keep them spick and span but there has been too much enjoyment happening to resist; it was only a matter of time I suppose. Studying a bit of form and failure led me to the Wildfire, a 1.1m span model from MT Foamies (£54.99).



Despite a busy bit of sky there's often surprisingly little contact.



EPP wings are very popular at the moment where I fly.

What particularly drew me to it was the way the R/C gear and servo push rods have been neatly hidden by the underwing fuselage that also provides something to grab hold of when launching.

They're made to order but should arrive in seven days, when you'll receive a very nice kit with nicely milled EPP components, balsa elevons, Corex wing tips, some hardware, stick-on weights and glass weave tape. A wing spar is pre-installed, so assembly is just a case of joining the wings, making cut-outs for the R/C gear, covering and balancing.



My Wildfire from MT Foamies awaits. It's a nicely made product. Let's hope my fellow combaters play nicely.

My wing is nearly ready and, generously, the lads have promised to allow me a good twenty seconds for trimming and acclimatisation before becoming fair game.

Incidentally, MT Foamies is a UK manufacturer selling a nice range of EPP and EPS foam wings, along with indoor shockie aerobats using EPP and Depron. The Depron kits range from sportsters right up to competition standard F3P machines. There's much else too including custom made graphics making mt-foamies.co.uk well worth a visit.



I like the way the underside fuselage protects everything and provides something to grab hold of for launching.





Ah, the good ol' IC/leccy debate.

THE GREAT DEBATE

I rounded up some post-lockdown maiden flights last month, but what I didn't mention were the number of accidents and broken models resulting from the return to flying activities. The first week back at my club after lockdown was carnage. It was as if flyers had been saving up their mistakes during lockdown and rolled them out alongside their new models. Anecdotally, I know my club wasn't unique.

Each case was nothing more than dumb thumbs, or a brain unfamiliar with the safe routines required to operate the model or start an engine. I saw some fingers get sliced in an IC prop - a test for the club's first aid box - and at some point in the emergency someone came out with the old line that electric motors are far more dangerous than IC engines. You know the one, 'an internal

combustion (IC) engine stalls and stops when it meets a fleshy obstruction, while an electric motor tries to keep spinning and chopping'. Ergo, electric motors are far more dangerous.

For several reasons I've never really subscribed to that. Partly since all engines and motors can be dangerous in the wrong hands and also because every accident I've seen or heard about has been IC related. That's not to say electric motors haven't cut hands - I'm sure they have - although my own 'electric accident' happened as I tried to coax a sharp APC-e prop from its packet. Still, when you consider...

- IC engines must be adjusted using a needle valve (usually) close to the spinning prop.
- Most IC powered models must be carried or pushed to the flight line with their engine running.



I've always thought IC to be a little more prone to 'moments' simply because fingers and moving props are in close proximity.

“The first week back at my club after lockdown was carnage”

...you might quickly draw the conclusion that IC engines are a little more dangerous while accepting the potential hazards of both types. After all, with electric power you don't need to go near the prop at any stage, which has to be better? Then again, perhaps a noisy engine commands respect, while a silent, seemingly innocuous electric motor drives complacency?

Then there's the argument that not all electric motors keep spinning when an object gets in the prop's way. Something along the lines that a brushless ESC tends to lose synchronisation when suddenly interrupted, so won't restart without going through the arming process. I think that can be discounted, after all, we've all heard an ESC/motor trying to turn the prop after a model noses over when landing where throttle hasn't been shut down quickly enough.

I could go on and, let's be frank, there are counter arguments and counter counter arguments for every point. We'd be here all night. The list is so long that you quickly come to realise the risk lies with human interference, not the power plant.

BLOOD SHED

While we're on the subject for potential bloodshed, like a lot of people I take blood thinning tablets, so I leak well after even the slightest of cuts. I nicked my finger on the slope the other day trimming some wing retention tape. Apart from decorating every model with a few splashes of red it was nothing to stop the flying, although it prompted me to add some steri strips to the first aid kit I keep in the car. It's funny but that little box has dispensed more to other flyers than me over the years to the extent that heading to the flying field without it seems complacent. That every flyer should have some basic first aid items in the shed and car seems a no-brainer to me. Besides, sticking plasters can be very handy when the CA glue runs out.

That's me done for this time but, as always, I'm at justforfunrcme@gmail.com so do drop me a line with your news and views. ✈️



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“Terry-Saur has provided more than a few Jurassic larks, smiles and enquires from passers-by”

Although not a beginner's model, Terry-Saur is easy to fly if you keep it within a sensible flight envelope.

TERRY-SAUR

Lindsay Todd dips into his imagination to bring us his caricature based interpretation of a slope soaring 'winged lizard' words & photos » Lindsay Todd

Pterosaurs are a thing of TV documentary or Hollywood feature film stuff, but if you are anything like me then there is that childish mind-set that says, 'wouldn't it be fun to build a flying replica'? Well, I looked at that and thought 'ooh, that's complicated' and so, keeping it simple, I came up with a bit of alternate evolutionary design. So here I present Terry-Saur, a more caricature-based design, with hopefully more than a passing resemblance to one or two of those creatures

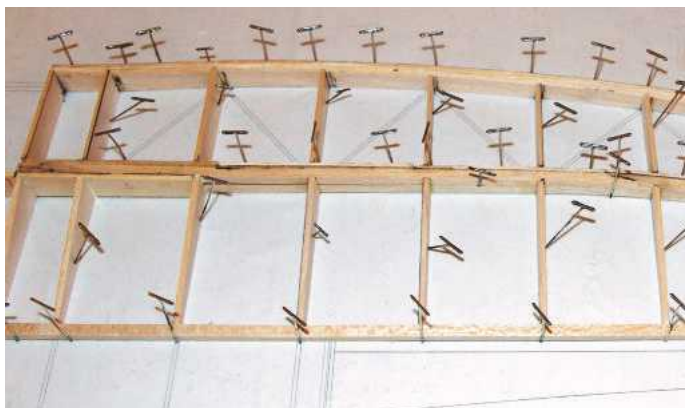
that inhabited the earth so many years ago. Of course, I leave the final look and finish to your own artistic interpretations, but Terry-Saur has provided more than a few Jurassic larks, smiles and enquires from passers by when out on the slopes, both in the air and on the ground.

Based on a more conventional layout, allowing for a profile in character, Terry-Saur flies remarkably well. The construction is not too complicated, although the wing has a more unconventional build due to the curved

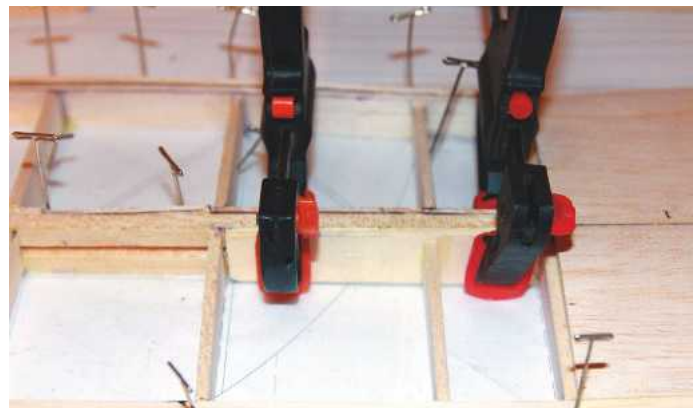
spar arrangement, which has proven to be quite robust. And the central ply keel of the body has prevented any damage other than a few scuffs during landings. So, if you fancy something a little out of the ordinary, clear the building board and have some fun.

CURVED WING

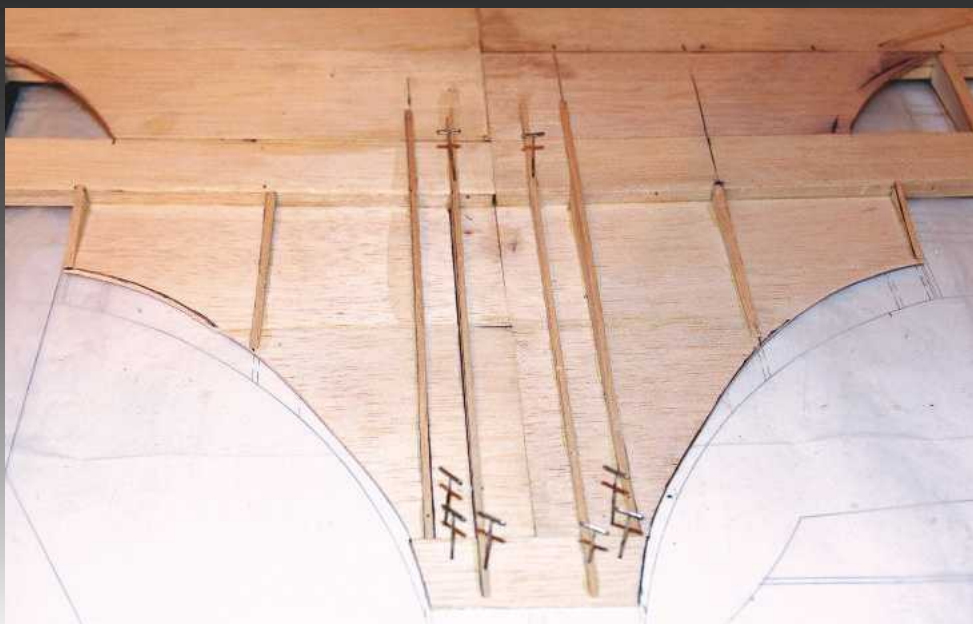
The wing is made in two halves due to the dihedral. Start by soaking the 6mm square medium density balsa spars and then fix the



Wing construction is done one panel at a time. Ribs are in two sections, front and aft of the main spar.



Ply spar braces are added during construction of the second wing panel.



Rear rib extensions give strength to the extended wing planform.

lower spar over the plan with pins either side or through the side to fix its position. When dry add a 6mm square x 15mm spacer to the top at the centre section. We can then glue the top spar in place using occasional spacers and a ruler to keep the spars straight. Then add the 1.5mm vertical spar web bracing along the front edge of the spar.

The next job is to add the main spar ply brace to the rear face of the spar, ensuring it aligns on the centreline of the wing. We can then add the rear wing rib sections and the 6mm square trailing edge. Include the 3mm x 6mm ply plates for the servo hatch fixings.

The front ribs can now be added to the front of the spar and when dry two strips of 3mm balsa can be glued on to form the laminated leading edge. I did these one at a time, each being moistened on the outer edge to aid with the curve.

Now add the 25mm x 1.5 trailing edge sheeting. When dry this will stop the wing from warping under tension. Make a template for the leading-edge sheeting, which needs to extend from the leading edge to the rear edge of the curved spar. Cut out, then glue and pin in place until dry. Now add the centre and tip sheeting, again from 1.5mm balsa, and the 6mm wide cap strips to the top of the ribs.

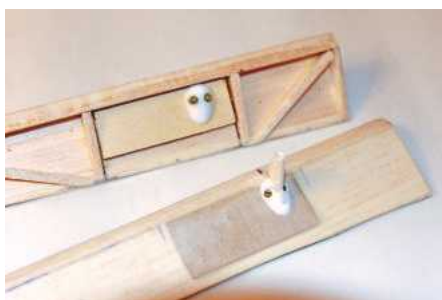
When dry the wing will be stable to move and we can trim the centre line and tip sheeting to size. The second wing panel is made using the same process, other than when we come to glue the spar brace; we are of course gluing the two wing panels together. To help, use a scrap of timber to support the first panel such that the brace sits against the spar in the correct position and clamp until dry. The remaining build follows the same sequence.



Wing sheeting cut to shape before being glued in place.

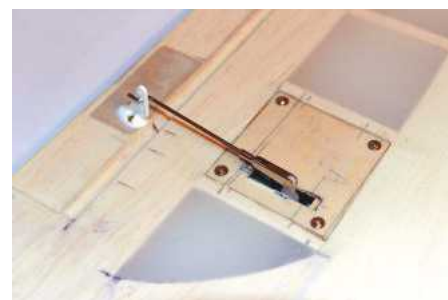


Aileron lower sheet shown fitted with riblets and curved to the rear edge.



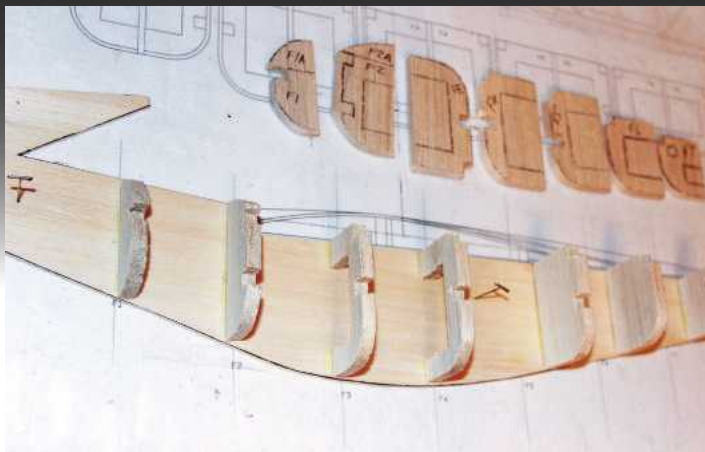
Simple 1mm ply facings for aileron horn fixings. Triangulated ribs add stiffness.

When dry start sheeting the underside. Start by making a paper template of the underside trailing edge sheeting that extends back from 25mm forward of the trailing edge back to the fuselage joint line, including the curves. Glue sections of 1.5mm balsa together and then cut

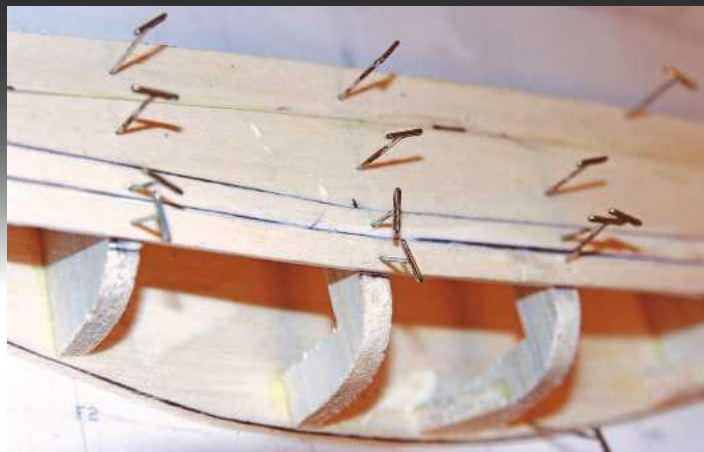


Ailerons are operated by mini servos fixed to ply plates, with short connecting rods.

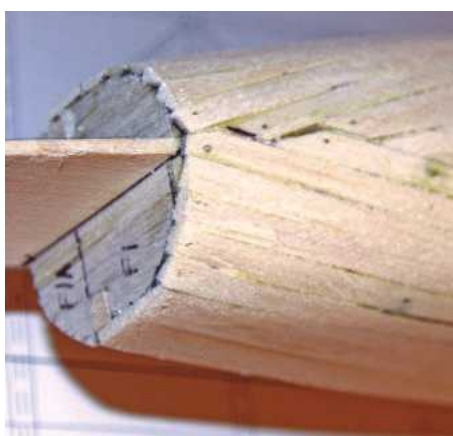
to shape. The wing can then be glued down onto the sheeting one side at a time and the 2mm balsa extension ribs can be glued on top, locating against the trailing edge. A thin 10mm wide strip of 1.5mm sheet glued onto the top surface will aid the centreline joint.



Fuselage keel profile with half formers in place.



Fuselage planking in progress.



Main fuselage planking completed, using a little bit of filler and sanded to shape.



I used blue foam insulation for the sides of the head, but soft balsa would work just as well.

“The neck and head were made up of two pieces of blue foam”



Keep the carving simple, using guidelines to show you where to cut.

to do and sheeting the centre section adds significant strength.

Round the leading edge by careful use of a razor plane. The wing tips can then be cut from 6mm balsa, laminated together and glued in place. The front dowel plate and dowels will be added later to ensure alignment with the fuselage.

The ailerons are simply a full depth 6mm balsa leading edge with 1.5 balsa sheet glued to the lower edge, cut to shape. 3mm balsa ribs are then added, together with ply plates for horn fixing, top and bottom, from 1mm ply at the appropriate rib position. Leading edges are then sanded to a 'V' section for the hinge line.

BODY WORK

For the fuselage start by cutting out from 3mm lite-ply or hard balsa the fuselage profile. Then mark the positions on each side for the formers F1 through to F8. The formers are cut from 6mm balsa and one half of each is glued and aligned each side. I did this by fixing one side first, together with the two 6mm balsa longerons, ensuring that the wing seat area was flush with a set square. Then I sat the fuselage on a raised piece of plaster board, covered with a plastic

sheet, to keep the head clear from damage and then added the second side so the wing seat area stays square. It's more difficult to describe than to do, so hopefully the photos will speak a thousand words. Again, add the two side longerons and when dry start building up the sides from strips of 2mm balsa, working from the base up and around the body. I started at around 12mm wide for the first couple of strips and then reduced to 6mm wide strips, with occasional trimming to fit. Basically, take your time and pin each part until dry; the accuracy does not need to be 100% as we will sand and fill any gaps later. Eventually, with a bit of trimming here and there, you should have the basic body covered and it can be trimmed flush with the front face of F1 and the rear face of F8. A general sand all over will smooth out any major imperfections, aided by a bit of filler as required. At this stage we can trim the top strip of the fuselage profile and formers to open up the fuselage. We can also add the wing bolt plate made from a laminate of 3mm ply and 6mm balsa.

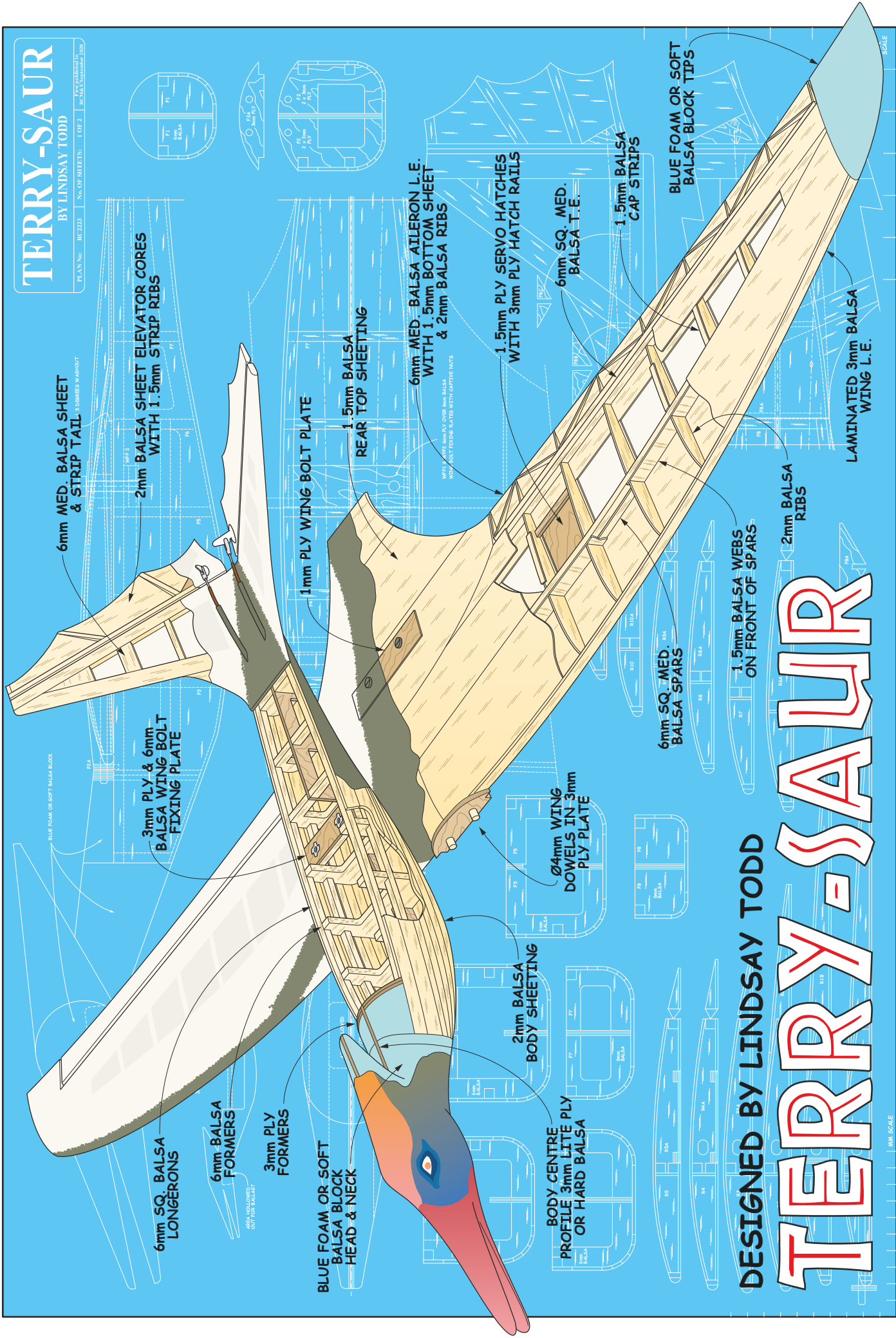
Sit the wing onto the fuselage and align such as to fix the front dowel plate to the wing.



TERRY-SAUR

BY LINDSAY TODD

PLAN No. RC-2223 1 OF 2 1/8" SCALE

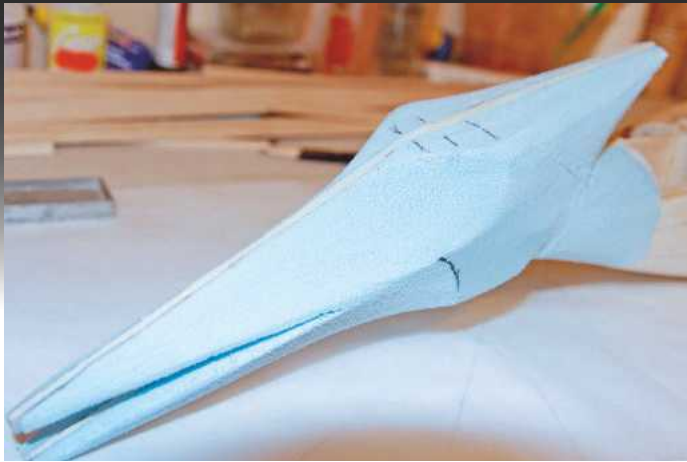


DESIGNED BY LINDSAY TODD

TERRY-SAUR

1/8" SCALE

SCALE



A little while later, following the use of various grades of sandpaper.



Details can be added with a mix of PVA glue and micro balloons applied with a pipette.



TERRY-SAUR IN 3D

Lindsay's 3D graphics of Terry-Saur show how the wing and body components fit together.

Ensure the wing is square, then mark and cut the leading edge such that the 3mm ply dowel plate slots into position flush with F2 and glue it in place. When dry the holes can be carefully drilled back to the front spar brace and you can fix two lengths of 4mm dowel in place so that they locate into the corresponding holes in F2.

Now measure and mark the positions of the two wing bolt holes and drill down through

the wing and through the bolt fixing plate in the wing. Open up the holes in the fuselage fixing plate to take captive nuts and the wing should now fix securely to the fuselage. The wing bolt ply plate is then drilled and glued onto the top surface of the wing and sanded, then blended with a little filler.

The neck and head were made up of two pieces of blue foam that I had in the workshop.

However, laminates or blocks of soft balsa or foam would be equally good. These were cut to match the shape of the centre profile from F1 forward and then glued each side.

Once dry, mark out and start carving and sanding the head and neck to shape. My method was to draw lines and carve back with a razor saw and razor plane before using a series of sandpapers wrapped around dowels. Some artistic merit will be of benefit here but if you take your time and use the approach that any mistakes can be made good, then the result should be something similar or better.

It proved to be a lot of fun creating a largely fictitious creature head; I did refer to a few internet images to try and keep it believable, with regards to the general shape of the beak and the crown to the head, and the position of the eyes.

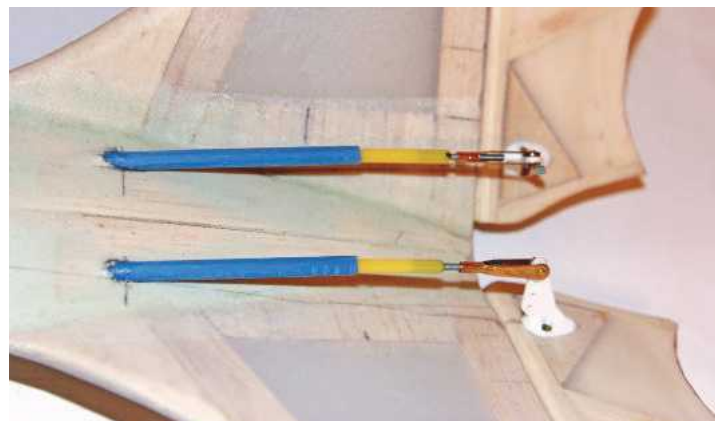
V-FEET

This is nice and simple - a V-tail made in two halves from 6mm balsa sheet and strip for the tail, and 3mm, with 1.5mm x 6mm wide strips, for the elevators. Cut to shape, glue and pin, and when dry sand the leading edge to a round section.

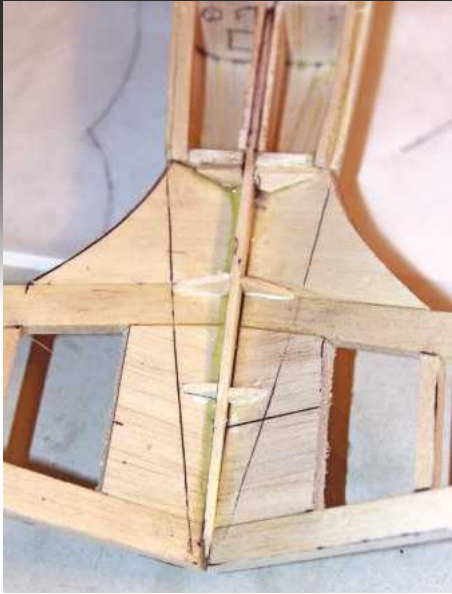
The elevators are produced from 3mm sheet with strips of 1.5mm balsa top and bottom, with a 'V' section sanded to the leading edge and a general taper to the trailing edge. I also added a couple of 1.5mm ply inserts top and



V-tail uses all balsa traditional construction.



V tail, with top sheeting and control rods fitted.



A correctly sanded root angle, slot and braces fix the angle of the V-tail.



Nobody likes to add nose weight, but the short nose and head dictate its use in this case.

bottom for the horn fixings.

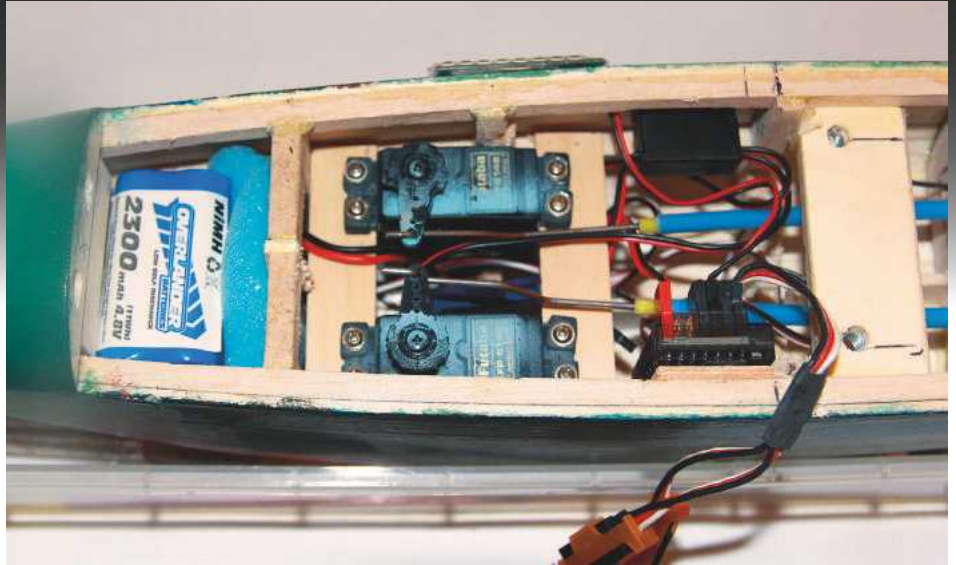
The tailplane halves now need to be joined together at the correct angle. I did this by using a card template and marking to lines on the top of each tail section to identify a line with which to sand the centre line to the correct angle of 120 degrees. The two halves can then be glued together at the joint.

Add F8A to the rear of F8. When dry the tail assembly can be glued into the slot in the fuselage's central profile. Check with the wing in position and adjust for square before gluing it into place with epoxy. Strengthening webs can then be added to the top on each side before the 1.5mm sheeting is added. The underside is then filled with soft block balsa or blue foam and sanded to shape.

FINISHING TOUCHES

I used heat shrink text material for the main flying surfaces, V tail, elevators and ailerons. For the body, including a 6-10mm overlap of the V-tail, I used an acrylic resin to bond 24-gram glass cloth.

The next job is to drill the holes in the rear of the fuselage for the control snakes to the



Radio installation is compact but there is enough room for everything.

V-tail. This is operated via two servos and a mix on my transmitter. Horn positions can then be measured and fitted to the elevators, and then they can be fitted with hinges and assembled to the tail.

Aileron servos are fitted directly to 1.5mm ply covers and screwed into the underside of the wings, with extension leads passing through and exiting through two holes in the centre region of the wing. The ailerons were then fitted to the wing and nice short straight wire links made to each aileron horn.

BALANCE CHECK

Terry-Saur's body has plenty of space for the receiver and battery. I went with a 4.8V 2300mAh NiMH positioned well forward, however with the small head some ballast will be required. Next job was to check the balance against the calculated C of G; I found I needed to add five ounces of ballast to the head, which was no great surprise really. So, it was out with the Dremel to carve a hole into the underside of the head large enough to take a folded amount of lead (or fishing weight, had I had some!) Glue in place with epoxy and then fill over the top. You would never realise that the ballast was there!

FIND YOUR INNER ARTIST

Now for the fun bit - painting! Being conscious that paint can add weight to the tail, I kept most of my artwork forward of the CG. I created a few scales around the head using droplets of PVA, a little like making rivets, with some thicker details around the eyes and on the top of the head.

I made a few teeth in the open jaw from PVA mixed with micro balloons. Once dry, I did all the artwork by hand with just a couple of brushes and a set of artist's acrylic paints, using a stippling technique to build up the colour tones and a bit of artistic licence here and there. I deliberately went for bold colours and referred to a few internet pictures for reference, but it is really all from my own head in terms of what I felt looked good. Once the acrylic paint had dried it was covered with an acrylic satin varnish to seal.

I made a final check of the CG, set on the main spar rear brace, and all was still okay, so it was now time to set up the control throws and do a few pre-maiden flight checks. The ailerons were set with 25% differential (more up than down) to get a crisp response and the V-tail was set via a mix on my transmitter. A battery level indicator was added to the side, under the wing for convenience, together with the on/off switch.

A few final checks to linkages and Terry-Saur was ready for its maiden flight.

WEATHER WAIT

Typically, there was no wind for days, so I had to make do with a few simple test glides from a local slope, as I was keen to see the model in the air. This gave me a chance to do some basic trim checks and take a view on the CG position, all of which seemed okay. It was a couple of weeks before a proper opportunity arrived.

Finally, a decent flying day for the local slope arrived, with a 15 to 20mph breeze blowing straight onto the hillside. So, with few excuses remaining, and indeed a certain degree of excitement, the model was launched, and it fairly leapt away, gaining height quickly. A couple of clicks of down trim saw Terry-Saur penetrating nicely into the wind and proving rather steady. Across the slope the model held track well and showed good speed and manoeuvrability, which actually took me a little by surprise. But then, I guess, it is quite a 'slippy' shape.

The V-tail worked well, with good elevator authority and the rudder function was nice and progressive, without any noticeable roll effect. The ailerons were quite sensitive, and I may increase the exponential a little, so that it is better harmonised with the elevator. But it was not uncomfortable.

The model is quite aerobatic and it loops and rolls without a problem, however the swept taper and narrow tips may catch you out as she will tip stall if provoked, although the ailerons, being so powerful, allow you to catch anything



A cheap set of artist's acrylics were used to paint the dino details.

before it becomes a problem. Low, fast passes across the face of the slope really shows off the lines and it does look rather good, if I say so myself.

Yes, I am rather pleased with how this little model has turned out. I would venture that

Terry-Saur is for someone with some experience and not a beginner's model yet is easy to fly if you keep it within a sensible flight envelope. Landing is pretty straightforward, just don't let the speed drop off too soon and you should be fine. ✈️



The paint scheme is minimised to save weight. Note the 'arms' painted onto that distinctive wing shape.

“The model is quite aerobatic, and it loops and rolls without a problem”



Sandra with Terry-Saur prior to the maiden flight.



Ready for the maiden launch. Your scribe adds some scale.



First flight shot offers rather a unique view.

DATAFILE

Model Name:	Terry-Saur
Model:	Sports aerobatic slope soarer
Designed by:	Lindsay Todd
Span:	55" (1400mm)
Wing Area:	377 sq.in. (24.3 sq.dm.)
Weight:	2lb 2oz (964g)
Wing loading:	13oz/sq.ft (40g/sq.dm)
Servos:	2 x Hitec HS85MG mini (ailerons) 2 x Futaba 148 Standard (V-tail)
Receiver:	Futaba FASST Rx, switch & battery monitor
Battery:	4-cell, 4.8V 2300mAh NiMH
Control movements:	Ailerons - 20mm up, 15mm down, 25% expo V-tail - 20mm each way, 10% expo

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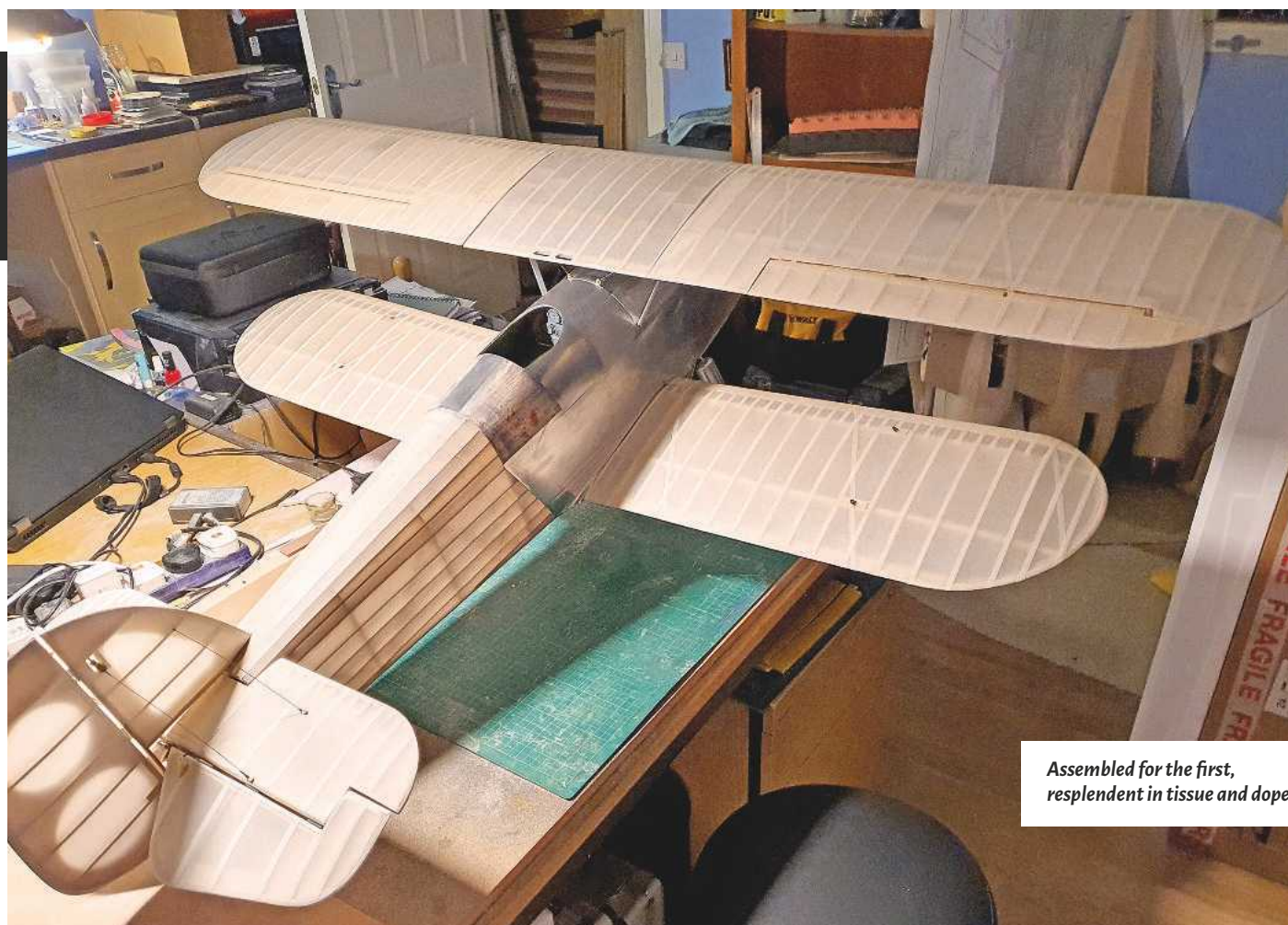
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Assembled for the first,
resplendent in tissue and dope.

FURY ON WHEELS

Danny Fenton returns to the workshop after a lockdown break and adds the finishing touches to his Hawker biplane. words & photos » Danny Fenton

Another few weeks have flown by. Many modellers have welcomed the lockdown as an opportunity to get all their projects finished and several have a queue of models ready to maiden as soon as it is safe to do so.

Not so much for me; work is as busy as ever as I work from home. Besides, I really did not feel in the mood to get into the workshop.

My mojo has left the building before and it is important that sometimes you do focus on other things in life. If, like me, modelling has been a part of your world since childhood, then you know it is not going to go away for long. So, I enjoyed the sunshine. I did some gardening and caught up on some of the jobs I had been meaning to do around the house.

I was following along with the Masterclass builders on modelflying.co.uk and after a fair bit of cajoling by the crew, I was tempted

back into the workshop to look at my Hawker Fury and to check some things.

The model is being built from the Dennis Bryant plan. I have modified the plan a fair bit, but aerodynamically it is the same. Needless to say, checking a few things led me to picking up some tools...

FURY RECAP

When we last looked at the build, I explained the RDS set up that I had used for the ailerons. I have had several comments about the system, where the servo rotates a stiff length of piano wire. The piano wire has a 30-degree (ish) bend in it on the surface hinge line; this twisting rod is trapped in a rigid box in the control surface and the twisting action deflects the surface up and down. It is a very neat solution and means all the linkages are hidden. Please look at the March issue for more information.

The silk over tissue, as I explained last time we shared a coffee, was not a great success and I decided on a double layer of medium tissue, applied with dope and banana oil, which has worked well and is much more durable than I expected. The model, as can be seen from the nearby shot, was completely covered and looks translucently magic.

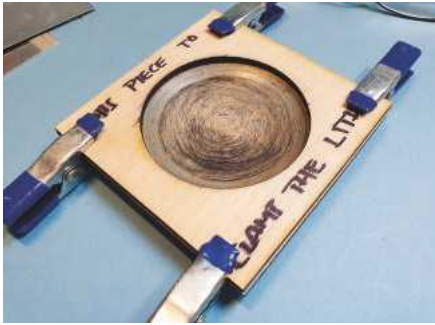
WHEEL TIME

I took a break from sniffing dope fumes to look at the wheels. These are made from ply discs laminated together. The tyre is made from a neoprene chord, cut precisely and joined using thin CA. These can be rolled onto the wheels. I fitted small roller bearings as I am a firm believer in making the rolling-resistance as low as possible on my taildragers.

For the wheel covers I used dished litho plate. Martin Fane kindly sent me the laser



Wheels are made from half a dozen laser cut disks, laminated together.



More laser cut discs from SLEC were used to create the litho plate wheel covers.

cut ply disks he used to shape his covers. As you can see from the accompanying pictures, I did manage to create a similar set, both front and rear.

I like to tease litho plate rather than use brute force. The metal I used was 0.3mm thick, which is the thickest material I have. I anneal the litho first, then using a little Vaseline on a rounded metal tool I rub/press over the clamped metal and gradually the dish forms. With these I had to anneal the metal a second time half-way through. There are slightly different shapes to the inner and outer, requiring slightly different sized formers.

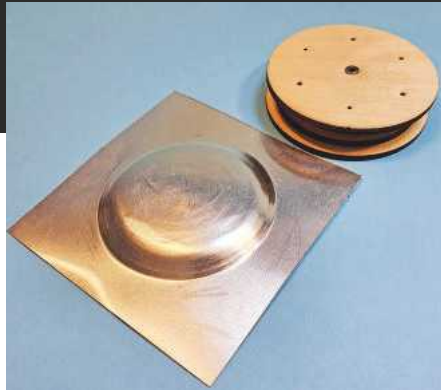
I will come back to these at a later stage to add more detail and paint them.

MILLING MACHINE

Staying with the undercarriage, I looked at the oleos. I had already modified some units found in my bits box, but I needed to increase the travel. I am extremely fortunate that I have a Myford ML-7 lathe in the workshop and this next exercise proved to be a real milestone in its use for me.



Myford ML7 with the vertical slide fitted. The collet replaces the normal chuck for rigidity.



Rough shaping of the disks is complete.



A trial fit proves that everything is well. I have made a hole for access to the tyre valve.



Front and rear covers ready to fit.

I have always wanted a small mill. I knew the Myford could be used as a vertical mill but had never been able to cobble together all the parts to make it work; there was always missing something. Every time I venture near my lathe my credit card is involved! Anyway, I needed to extend the milled slots in the oleos, so my hand was forced.

After several (very pleasant I might add) hours messing around, I found I had all the bits to achieve my goal and, to my

amazement, I was able to lengthen the slot in the oleos. Looking ahead this will now allow me to machine my own undercarriage parts in the future. A successful outcome.

I fitted the oleos to the piano wire undercarriage and added balsa packing to make it look more substantial. The effect of the doped binding fabric is achieved by spiral wrapping tissue around the balsa and piano wire, followed by several coats of dope.

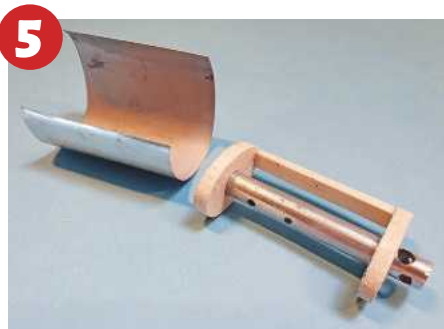


Completed modified oleos.



Undercarriage wire work assembled to check that it functions as expected.





TEARDROP SHROUDS

The full-size Hawker Fury has some beautifully formed aluminium shrouds to hide the inner workings of the oleos and I thought it would be nice if I could fashion something similar. This turned into something of an epic journey, but interesting none the less.

I fashioned the covers from litho plate, the top teardrop shape being formed in the same way as the wheels, using a ply former, but very deeply dished. The sides needed to be nearly vertical and this proved a real test for my forming skills:

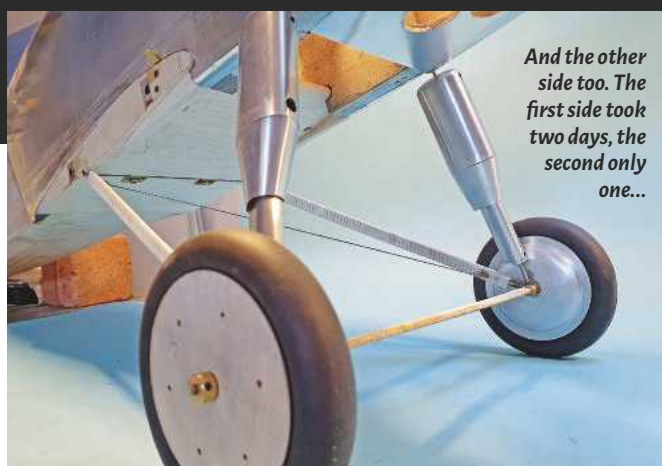
1. First step is to clean the ink from the litho-plate. If you do not, then this can stop the tool from sliding easily. A secondary reason is that it seems to
2. make CA glue inert! It is easily removed with acetone.
3. I use petroleum jelly as a lubricant, which in this case was in the form of a lip balm.
4. The alloy is worked slowly and re-annealed if required.
5. The shaped teardrop is then mounted on one of the balsa formers with CA. Clean litho glues extremely well with CA!
6. More bits are fashioned from the metal. The tricky part is that this must be removable, and the lower section slides inside the upper. All a bit of a minefield and it took some thinking. I started with a set of three balsa formers to form the body.
7. This section of oleo is not attached to the balsa formers, just slid in place.
8. I was quite pleased with myself at this point, though mindful of the fact that I was going to have to repeat all this for the other side.
9. The oleo lower section has some litho wrapped around it to form a more aerodynamic shape. This is glued to the oleo outer with silicone (Juwel Silexo is the best).

The upper shroud is locked to the upper oleo section and the whole assembly has a grub screw to clamp to the piano wire undercarriage.

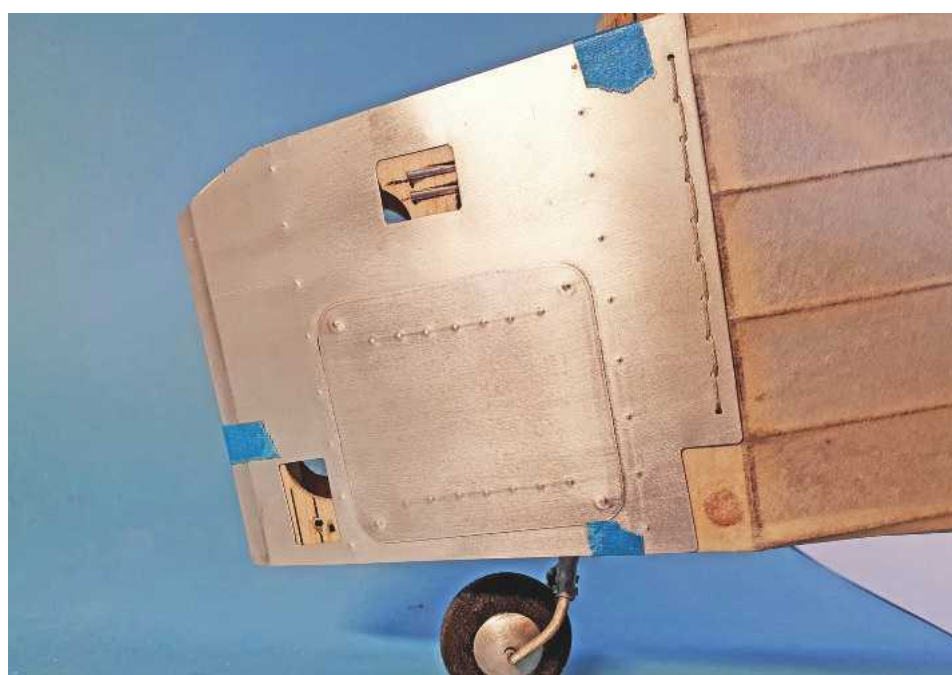
After I had patted myself on the back several times and drunk a couple of cups of coffee whilst admiring my work, I knuckled down to spend a further eight hours creating its sister for the other side. Who says scale is easy?



First oleo assembled to test fit and function. The large access hole was unnecessary.



And the other side too. The first side took two days, the second only one...



Left: Starboard rear fuselage panels made, and trial fitted. Note the lacing - that was fun!



TAIL PANELS

Before fitting the tailplane and while I was still buoyant with my plate forming skills, I tackled the port and starboard side panel, positioned under the tailplane. This could not be attached until the elevator was fitted. Both the rudder pull-pull and the elevator pushrod are accessed through here.

I could not avoid this any longer and mounted the tailplane to the fuselage. Lots of measurements were taken to ensure it was true to the centreline, and a visual and electronic check ensured that everything was level. Slow epoxy was used here, followed by constant visits to the modelling room to check that nothing had moved.

A great deal of discussion regarding the tailplane incidence has been had. It looks as though the three view upon which the plan is based was drawn with the adjustable tailplane incidence (trim) wound all the way. Normal protocol is to mount the tailplane at a much lower incidence or even zero degrees. Indeed, Gordon Whitehead's book on scale modelling (my bible) confirms this. So...

It would appear to be an error on the plan. However, talking to builders that have already flown their models, specifically asking them about the elevator trim, they have reported back that the elevator is in line with the tailplane, with zero trim needed. This goes against the wise sages, but I have followed Dennis' plan, so we shall see.

Left: Slow epoxy was used and nervously checked every 10 minutes!



A level, as well as many measurements, were made to check that the tailplane was true.



WORLD CHAMPS UK?

I was asked to distribute this to you from the Scale Tech Committee. I think it is a wonderful opportunity and we should all back this initiative in any way we can. I would buy a camping ticket today!

"This year marks the 50th anniversary of the first F4C World Championship. The UK was the host for the inaugural event, which was held at Cranfield in 1970 and saw Mick Charles become individual F4C World Champion. Eight years later, in 1978, the Championship returned to the UK. The venue was Woodvale and Mick Reeves won the individual F4C Championship. Since then we have had two F4C World Champions, Terry Manley in 1982 and Pete McDermott in 1992. But 42 years on, the UK have failed to host another Scale World Championship.

The issue has been one of finance. Competition fees are fixed by the FAI and will not cover all the expected running costs. Before they will support such an initiative, the BMFA require a budget that does not show a loss.

During a recent visit, the CIAM Scale Technical Committee Chairman, Pål Anthonisen, declared an interest in holding a Scale World Championship in the UK at BMFA Buckminster in 2024. The BMFA Scale Technical Committee have investigated the suggestion, decided to fully support it, and have produced a budget.

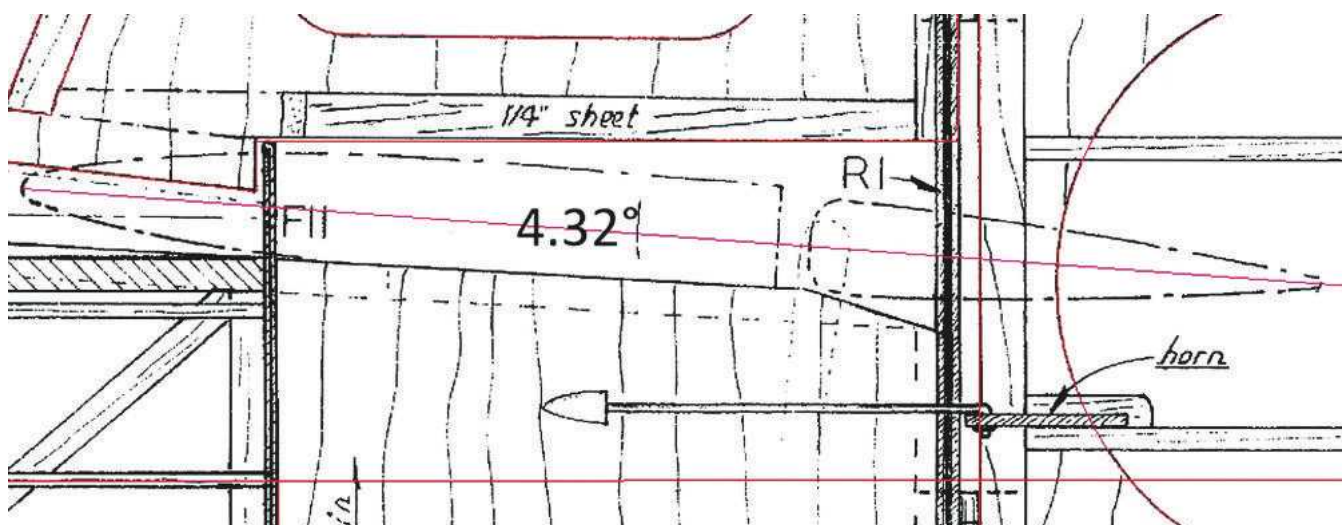
This is where we need your help. We need to find between £20,000 and £40,000 to balance the books.

The main advantages of holding such a competition in the UK would be to really put aeromodelling on the map, which can only be a good thing for all disciplines, not only scale. What we need are suggestions on how this amount can be raised and/or promises of sponsorship. Anything will be considered. If you have any input at all, please get in touch: andrewjsephton@gmail.com

And on that note, I think it is safe to say that my mojo has returned!

I will carry on the Hawker Fury saga the next time we share a coffee and biccys.

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



The section of the plan annotated with the tailplane incidence (see previous page).



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*Dawn Patrol Team's
1/3rd scale Sopwith
Pup on close fly-by.*

DREAMING OF WESTON PARK

Whittaker can't control Covid, but he can dream that he evaded lockdown

words & photos » Alex Whittaker

Weston Park is known as 'The Friendly Show'. It combines that British 'Country House Show' vibe with an international model event. Individual pilots, and indeed whole show teams, arrive at Weston

Park every summer from all over the world. It is beloved of both pilots and punters and is noted for its vast trade presence. It is also the only model air show held within the confines of an arboretum. Pilots have to contend with flying

around the trees, flying through trees, or hitting them. It is that simple. Of course, this rough-and-tumble also makes for great spectator appeal. If have never hit at tree at Weston Park you are not trying hard enough...



Rudder strike! Markus Rummer's astounding Pilot Extra 330 SC grazes the turf.



Ian Redshaw's 1/3rd scale Fokker Triplane ended up in a tree but survived unscathed.



Dartford's Finest! The Fabulous TJD Models Team - ever reliable...



Azza's AeroSports team in action.



PB Models Bullet Team, aka Team Renegade. Bardoe likes getting value for money!



This snap reminds us of what we have missed this year.

LOCKDOWN LETHARGY

So, here am I, at the due calendar date, all dressed up and nowhere to go. I am ready to hit the road, but the coronavirus lockdown forbids it. Where I live in Wales, we are currently restricted to five miles travel. However, Covid cannot stop me daydreaming. So, for your further delight and delectation, I decided to sift through some existing Weston memories and photos. In this way I hope to avoid us both feeling cheated by Covid. Join me on a Virtual Visit to Weston Park.

TRADE TEAMS

Weston is one of the few remaining shows where traditional Trade Teams do their stuff in some numbers. This means that you really can watch a new model fly, be inspired, and then slip over to the trade stand and buy it.

Teams like TJD Models always astound me with their sheer enthusiasm. However, their constant ribald banter whilst they are flying always make me laugh out loud. Of course, the crowd is too far away to hear it, so next year I might just secretly mike it up over the PA.



Funfighters fill the air every year at Weston! Daren Graham and his Zero.

Having so many Teams also means that there is great camaraderie between them, as well as their normal healthy rivalry. Everyone wants to put on a good show for the ticket-buying public. I am also always greatly amused how our group of gifted 'Teen and Twenties' pilots are members of a variety of Teams, all at the same time. I think they call it permeable boundaries. So, the young lads flying, in say, Team Renegade will also fly with Azza Stephens and his Team, and then slip seamlessly into Team Optipower, or Paul Bardoe's PB Models Team.

I like all these Teams, but as an Old Lag, I particularly enjoy the PB Models Team since it flies classic glow models that you can buy as kits. I love the vast Cambria Funfighter mass-swarm every year at Weston for the same reasons. Everyone can afford a Funfighter and it matters not if it is glow or 'leccy powered. I have to admit, I do enjoy a bit of aerial carnage and then there is the inevitable 'natural wastage' due to the trees.



Eyes closed in ecstasy, the pilot on this Fokker looks like he's listening to Beethoven's Ninth.



Scale Maestro and Dawn Patroller, Pat Cuss flew his new and outstanding Albatros D.Va. 1/3rd scale, 118" span, 36 lbs.

Of course, not all teams have a commercial context. As a lover of hand-crafted third scale WWI models, Dawn Patrol's massive flying circus is at the top of my 'gawp list'. The thing is, the wind direction at Weston is often not up-and-down the runway. Now, on an immensely wide runway like say Cosford, that might not matter so much. However, at Weston you are taking off next to an unyielding wall of wood. If you don't get that bootful of rudder kicked in at the right moment, you might need fishing out of a tree!

INTERNATIONAL STARS

Weston's Head Honcho, Steve Bishop has patiently built an international reputation for Weston Park Model Show. Most years we get to see new US pilots, as well as renewing ties with



Florian Keilwitz's transmitter was awash! Still worked well. Note switches on the stick ends.



Andreas from Legendary Fighters showed me the impressive twin exhausts and his very clever close-fitting air-cooling ducting on his Me 109.



Jan Hirschmann and Harald Jezek flew their utterly gorgeous Howard Hughes H-1 Racers.



Dutch Pulse Jet just leaving the ramp.



A truly awesome noise as a very fast pulse jet model scythes through the rain.



Christopher Hemming's immaculate vintage Graupner Bell Huey UH-1.



As usual the late afternoon 'Weston Air War' was stunningly loud and impressive.

our fab flying friends from Europe. Last year we had flyers all the way from Israel. I have also noticed that visiting young stars from the USA really directly influence our younger pilots, and that the visiting European teams, who tend to fly scale models, really do influence our older scale flyers. Competition does seem to improve the breed.

PULSE JETS

Since we all beheld them at the beloved Woodvale Rally all those years ago I am delighted to say that ultra-high speed pulse jets are still top of the flying order at Weston. An indescribable listening and viewing experience, so don't miss them later on this year - see below...

TRADE VILLAGE

For many years, I have spent serious money on modelling goodies from Weston's vast Trade Village. On a hot high-summer day you can't beat it, and they also have a vast Bring and Buy. On a wet day you can really get into all the Trade offerings, so Weston is a win-win show, no matter what the weather. In addition, because of the breadth of interesting non-modelling things to buy, it is probably the best family show on the summer circuit. Miraculously, besides my



Weston always has full-size movements during the day, including this nifty AutoGyro Europe MT-03.

own goodies, I always come away with something fine for the Blonde Person, too.

SCALE CHOPPERS

Weston is one of the few shows where you will see scale choppers headlining a slot. I love their engineering complexity, coupled to the special nature of the scale challenge with rotary wings. I adore seeing a fine scale chopper flown correctly. Weston never disappoints with its first-rate scale helicopters displays. I have never owned a big scale chopper, but there is time.

THE BIG WAR

Every year the late afternoon part of the show is topped off by a pyrotechnically enhanced 'Air War'. With Dave Bishop (DB Sound) on the PA, the quick-fire commentary is relentlessly amusing. Of course, when you have radio models flying through monster explosions - and flash flames - the attrition rate is wonderfully high. A huge spectacle, and you can



David Bishop (DB Sound) and wife Jan. Note VHF radio Tx. David always announces the day's airband frequencies.

feel the heat of the blasts on your cheek. I love this end of the day spectacle, but of course the Trade stalls and Beer Tent remain open.



Sukhoi Trio Team had rockets as well as wing lights, smoke and pyrotechnics.

IN THE DARK

Finally, on this virtual visit, let us not forget that Steve Bishop pioneered night flying at UK shows, and that Weston Park In The Dark was an inspired idea. I remember the first one, when I could not wait for the sun to go down to try getting some shots. Also, the heady atmosphere of a summer night show is something else entirely.

WESTON PARK LATEST

I have just spoken to Weston's famously resourceful organiser, Steve Bishop. Steve says



Christoph Hemming flew computer-controlled displays on his heli rotors.

that, subject to Government decisions, Weston Park 2020 is now booked for 17th/18th October 2020.

Steve has other dates as early as 4/5th September 2020 available, so if it suddenly becomes safe, he has already secured a venue. Steve and his team are even thinking of a Drive-In Air Show! Says Steve:

"I fear all these restrictions will be in place next year as well, so I think we all have to look at new ways of running events. I doubt it will ever be the same..." ✈️



No Weston is complete without the massed ranks of Dawn Patrol.



Ouch! Martin Pickering removes his rudder.



Weston would not be Weston without the Hawks of The Reds Duo.



Skip Model Designs Bulldog wowing the crowd.



Luke Oliver's Extreme Flight MXS EXP. Needs a pilot, though!



Callum Setter (left) and his very smart Demonstrator. Dean Coxon (right) and his 104" span Extreme Flight MXS.

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BEDE BD-5

This month Shaun Garrity updates a plan for a small pusher, jet style model that doubles up as a stiff-wind slope soarer

words & photos » Shaun Garrity



What has a Jaguar XJ6 (with the roof cut off), a steel pole and Octopussy got to do with this month's free plan? Back in 1967 Jim Bede and his chief designer Paul Griffin sharpened their pencils and started creating a design for an aircraft that would become the BD-5, also referred to as the Micro. At the time Jim was working on the BD-4, which was essentially the world's first homebuilt aircraft offered in kit form and a traditional looking light aircraft. It is still one of the most popular home-built planes in the USA (and many other countries), with thousands of plans sold, and with many hundreds built and flying.

The BD-5 however was another kettle of fish with its single seat, fighter jet inspired design, large Plexiglas canopy and pusher propeller. The BD-5 project was revisited in 1970 with a view to build a prototype by the year end. The design brief was again to produce an easy to construct, home build aircraft that required no welding or specialised tools. It was essentially an aluminium frame skinned with fibreglass panels and because the wings were easily removable the aircraft could be stored in a garage and transported on a small trailer. The

Elegant shapes can be replicated with balsa, proving that jets are not just the domain of foam or fibreglass models!

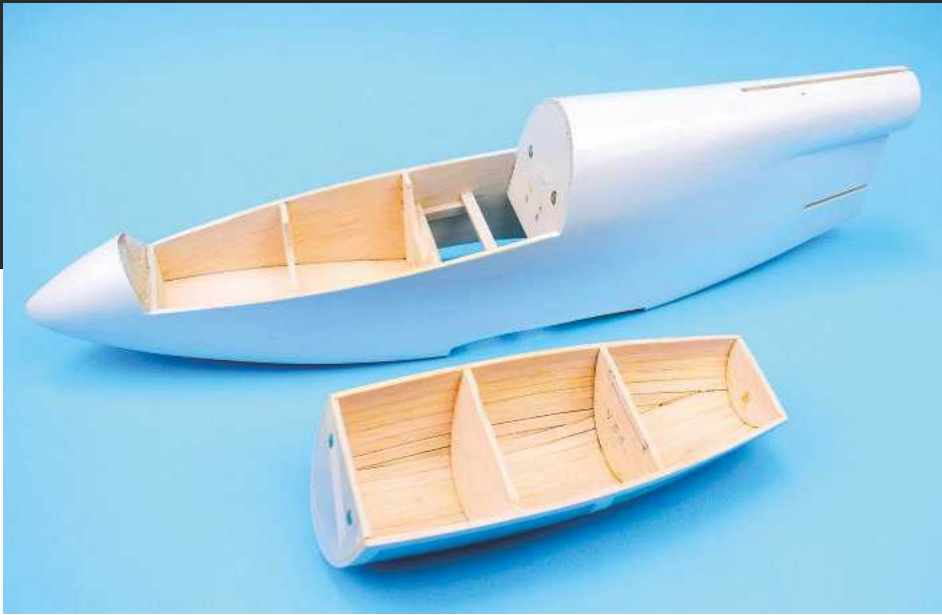
low drag design could achieve almost 200mph on the 40hp engine, with a range of over 1000 miles; it was cheap to run as well being very frugal, achieving around 30mpg and available in two wingspans of 21 ft 6 in and 14 ft 3 in. The smaller wing was intended for aerobatic pilots. During 1971 the company received over 4,000 orders making it one of the most popular kit-built aircraft ever.

JAG AND CEPHALOPOD

Jim also developed a 17-foot wingspan, jet powered version of the BD-5. Called the BD-5J (aka the Acrostar Jet) and powered by a Sermel TRS-18-046 turbojet it could achieve 300mph. Unfortunately, this variant didn't have a great

safety record, with a number crashing, but pilot error was generally the cause not structural - wrong fuel, incorrectly assembled wing panels to name but a few. It did hold the honour of being the world's smallest jet for 25 years, according to the Guinness book of Records, so what has a Jag and an eight-legged Cephalopod got to do with the Bede?

The answer is James Bond, 007, licensed to kill. Roger Moore is seen in the opening scene of Octopussy flying through a hangar in a Bede BD-5J. Obviously, this didn't really happen; some of the flying scenes were done with the real thing, but the rocket attack was simulated using a third scale R/C model (with fireworks simulating the rockets) and entry and exit flying

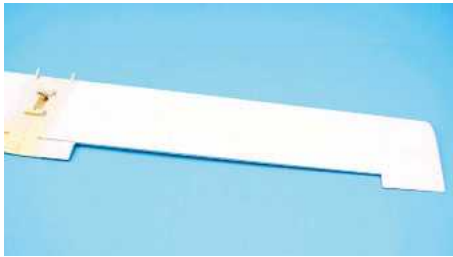


The sleek fighter jet style fuselage isn't that difficult to build.

“The design brief was to produce an easy to construct, home build aircraft”



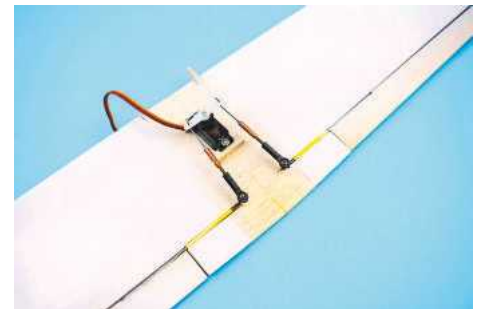
Planking isn't difficult but take time to ensure each strip accurately fits without any gaps.



An all sheet wing can be completed in next to no time...



...as will the tail group and ailerons.



Slop free aileron connections. Simply solder the ball joint balls to the piano wire torque rods.



My model was simply finished in sanding sealer and rattle can paint. Don't forget to mark out the canopy lines when building the fuselage otherwise you will regret it later when trying to cut it free.

scenes from a third scale hangar door. The internal hangar shot involved some out of the box, special effects thinking...

Butcher a Jaguar XJ6 by chopping the roof off, weld a vertical steel pole to it with a tilting mechanism, bung a full-sized Bede atop the pole, then you can safely drive it through the hangar without fear of it crashing - simple, eh? Oh, and don't forget to shoehorn Roger Moore in the cockpit for the cameras. The car and pole were cleverly disguised by placing props, objects and actors in the foreground - there was no CGI back then!

THE MODEL

In the 1980s John Rutter designed a number of great looking, quick build models that followed a common theme - they had solid balsa wings. John's inspiration to model the Bede came from one he saw on static display at Farnborough in the late 1970s, but he didn't (in his words) *“get the bit between his teeth”* until he bought a 1/72nd scale plastic kit early in 1986, when he *“dusted off a Cox TD 051 and got busy.”* I'll let him describe his prototype:

“My models are invariably pretty simple to build so a week later it was ready to fly. I had one or two

problems with it at first caused by that fat (for the size of model) fuselage and the high mounted engine. It was distinctly tricky to launch, the motor pushing the nose into the floor. So, rather than break it, I chucked it off the local cliffs! The problem became immediately apparent; the CG was too far aft. The other problem was tip-stalling but twisted-in washout soon cured that. The model was now transformed into an exciting and acrobatic power/slope soarer depending on the strength or direction of the wind. The only deviations from scale that I know about are that the motor fairing is a little fatter than it should be to hide the fuel tank and the wing has 1/2" more chord to give a little more area. The real aircraft has strip ailerons and used a tail plus elevator set-up experimentally, though it now has an all-moving tail.”

WING BUILD

I would start with the wing because it's quick and easy to fashion. It's basically a sheet of medium 1/4" x 4" balsa with a couple of triangular off-cuts added to get the correct wing shape. The whole wing can be made from a single sheet. Make sure the sheet is straight grained and warp free. Before cutting out the ailerons you need to carve and sand the washout into the end 6" of each wing; this is important as it's necessary to prevent your Bede wanting to spin when you don't and it needs

“...start with the wing because it’s quick and easy to fashion”



A balsa blister covers the bottom of the servo protruding through the wing. A fibreglass or ply plate prevents the wing bolt from pulling through the wing if you have an unintentional arrival.

doing before you carve and sand the wing to an aerofoil section.

Once this is done cut the wing into two halves and liberate the ailerons. You will need to make the torque rods from 16g piano wire and brass tube. To connect the servo, I soldered the brass balls from a ball joint connector to the piano wire - have a look at the photo. Alternatively, you could solder on some brass tube, flattened and drilled to take a quick link. On John's model the ailerons were top hinged, so you'll need to profile the edge to allow for the correct movement. Since I modified the original design for e-power and four functions (ailerons and elevator are the minimum required) and used 9g servos, I repositioned the servos to be mounted as shown. You will need to make a small hollowed out balsa blister under the wing to cover the bottom of the servo. If you are going to cover the model in heat shrink film, then leave out the wing locating dowels until after this has been done. A small fibreglass (or ply) plate is fixed on as shown after covering to prevent the wing bolt from pulling through on any less than perfect arrivals.

TAIL GROUP

Use medium 1/8" balsa here and just run sandpaper over the edges to remove the sharp corners. I hinged the rudder and elevator with Mylar (roughened), glued in place with slower setting cyano. Old school stitching or film/tape hinges would also work fine. I added a rudder, but it flies perfectly well without it.

Again, if you are film covering the model then do it now but don't forget to remove the film where the glue joints are.

FUSELAGE

Although this is a simple model there's some old school aeromodelling involved in the build, as the fuselage top, including the canopy, are planked. If you've not tried this technique before there are options if you don't fancy having a go but it's not hard. You could alternatively shape it from hollowed out blue foam, covered in glued on copier paper or skinned in 1/16" balsa. Or add a few stringers and sheet in sections of soft 1/16" balsa - just don't make the rear end heavy.

Another issue highlighted by John in his original article was that there isn't a straight line on the fuselage so you could build it in two



ESC is simply fixed in place with Velcro on the fuselage side.



I chose the E-Max motor purely because the back plate was the correct diameter for the fuselage without modification.

halves (top and bottom) then join, but as long as you draw a reference line down the building board and make some basic jig pieces it shouldn't be problematic.

This Bede was built for me using John's method by my good friend, Gary 'the ex-Australian' on his narrow boat. Start by marking the former positions on the inner fuselage sides, then glue F3 and F4 in place and when set draw the tail end together, checking everything is square and true, then the nose, fixing F1 in place. Now glue in F2, F4a and F5 and *tack glue* the canopy formers in place.

Time to plank, so strip some medium soft 1/8" x 3/16" from a sheet. Start at the top and work your way down, trimming the planking strips as required to produce a good fit with no gaps. I would suggest a combination of cyano to stick them to the formers and aliphatic for the edge joints because aliphatic sands well when dried. Don't forget to fit the rudder and elevator pushrod outers in place before planking.

You can now add the lower fuselage 1/2" front, 1/4" rear balsa sheets (not forgetting the ply reinforcing plate for the wing mount) and nose block, then start attacking it with sandpaper etc. to get the desired shape. Please use a mask when sanding. You can then cut away the canopy, but if you forgot to mark out the position then it may be an interesting exercise...

RADIO INSTALL

It was luck that the C of G came out correct with the LiPo I intended to use but if you follow my install it should work out for you as well without resorting to any nose weight. The E-Max motor on my model is a little heavier than some similar examples but the rear mount was the perfect diameter for the model



Receiver located opposite the ESC, again with Velcro.



LiPo mounting tray is 1/16" lite-ply glued onto the fuselage floor with balsa packing places to prevent any bending. Seal by spreading with cyano and let dry to ensure maximum adhesion from the Velcro strip.

as designed. 9g analogue servos have plenty of power; just ensure none of the control links bind when operated and the aileron linkages don't foul the motor or servo leads with the wing located. I used a wooden coffee stirrer glued on a spacer to keep the motor leads out of the way on the fuselage side.

POWER TRAIN

As mentioned, I chose an E-Max CF2812, primarily because the motor mount was the correct diameter for the model without any modification. This will give around 120 watts of go on a 3S set up and a 5" x 4.5" three bladed prop (well, it did on my watt meter) and is more than the TD 051 could produce, so you should have power to spare.

You could get more oomph by using a larger diameter propeller, but I didn't want mine to clip at the rear when landing. These are great motors but check the grub screws that locate the motor to the mount are secure, but don't over tighten them as they can distort the bearing if you go all Incredible Hulk on them. A spot of weak threadlock will keep them in place.

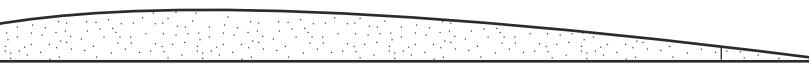
A 4-Max 22A ESC and 1500mAh 3S LiPo completed the set up.

COVER UP

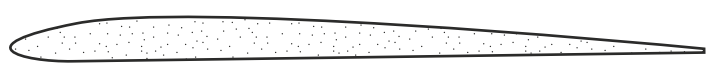
You have a number of options with this all sheet model.

The simplest is to just to sanding seal everything, then use rattle can paint. A quick Google search will provide inspiration for colour schemes. Instantly recognisable would be the Octopussy, Bede BD-5J jet and there's no reason why you can't choose this for the prop version featured here, or it would be perfect for the slope soarer.

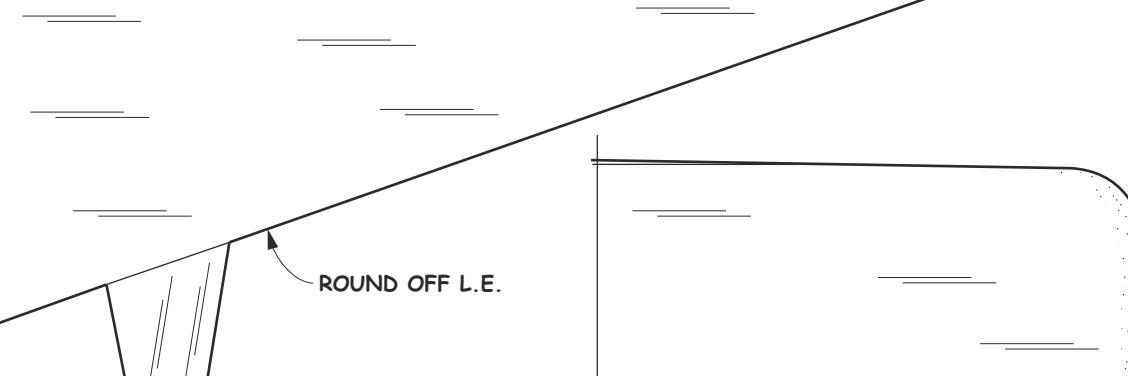
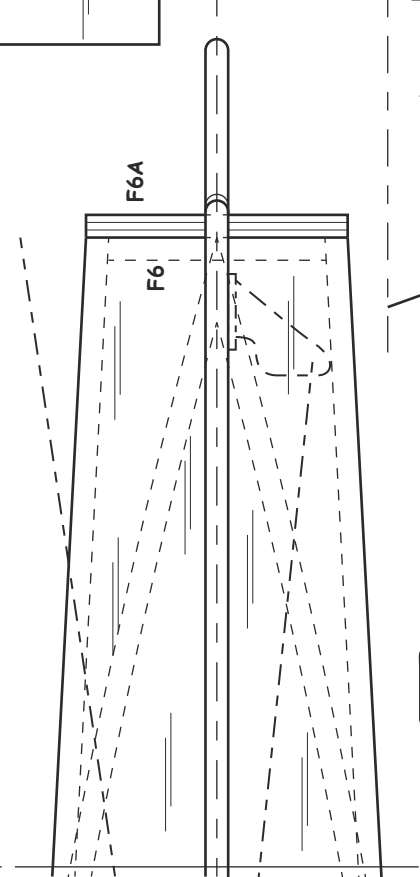
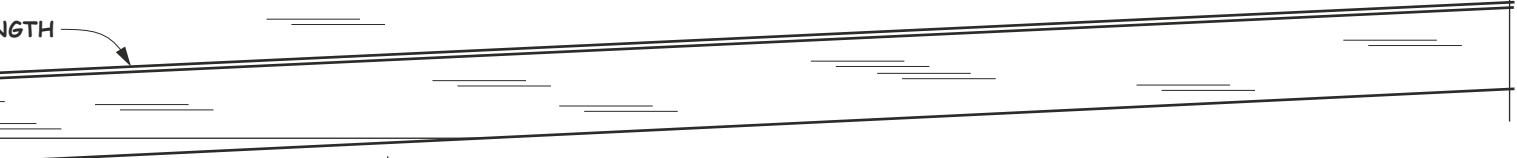
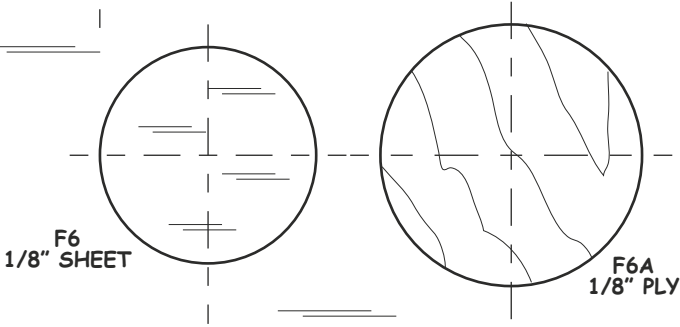
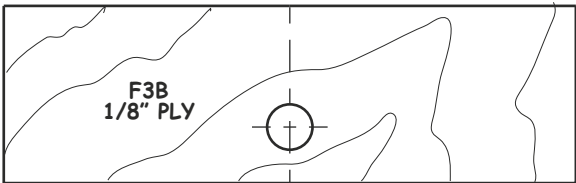
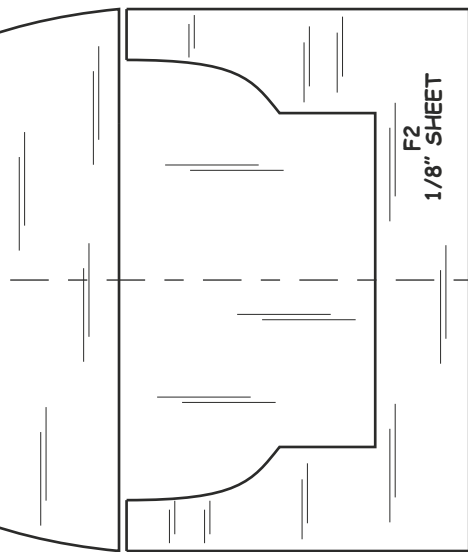




ROOT SECTION



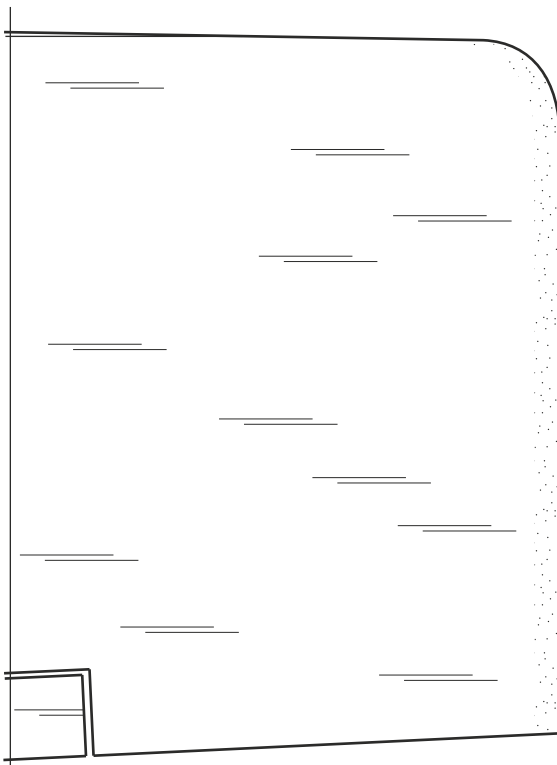
TIP SECTION

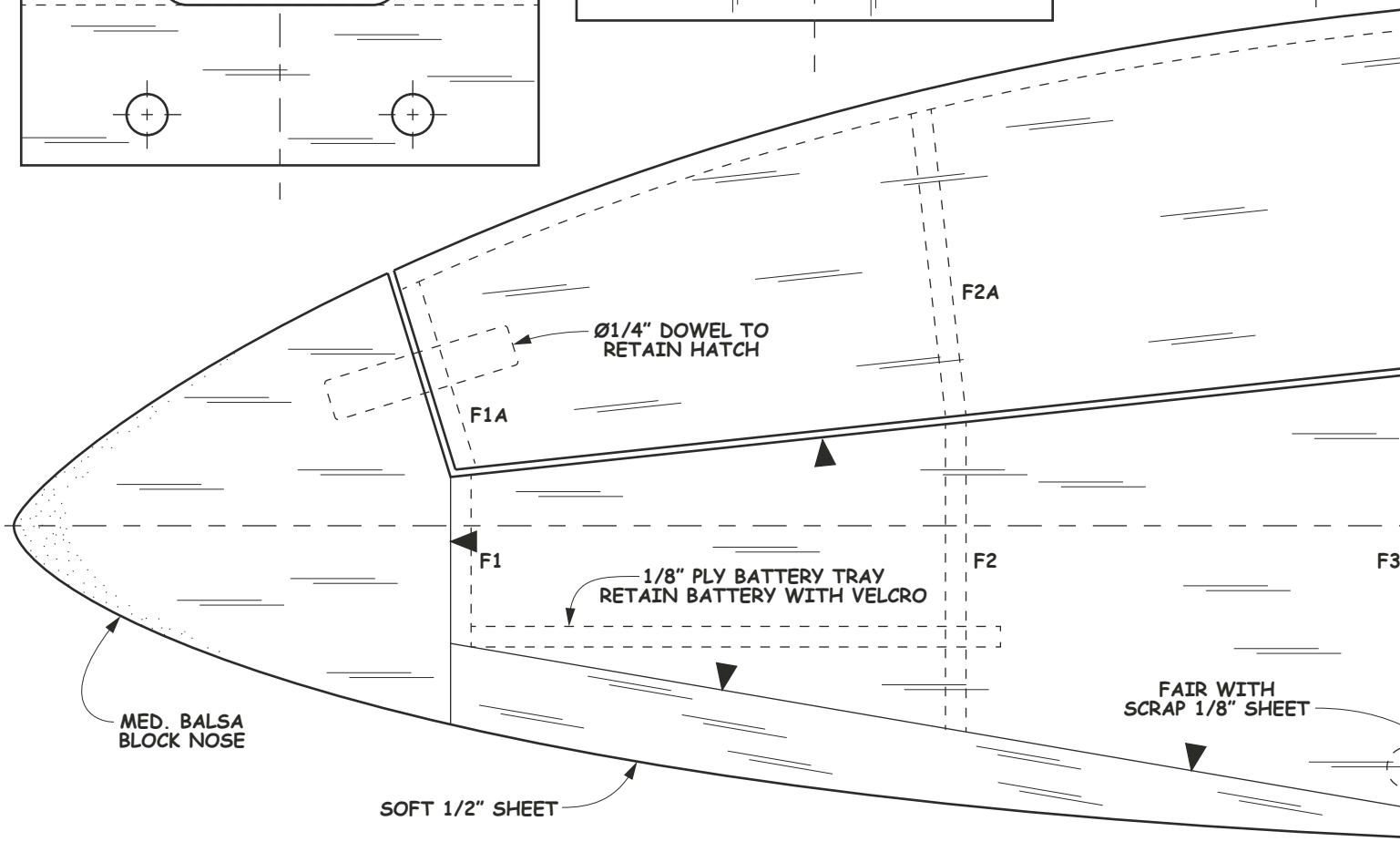
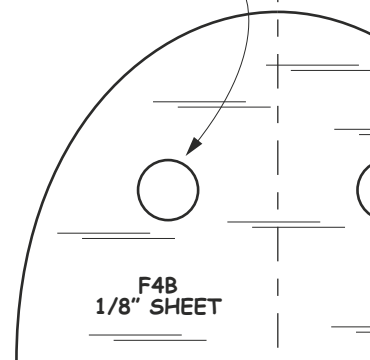
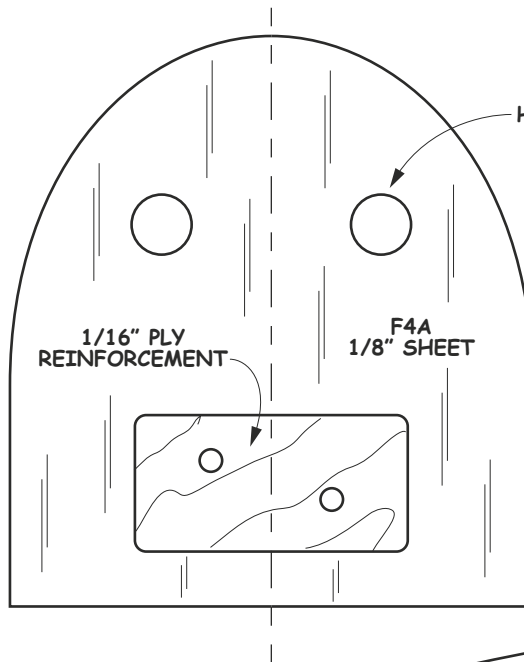
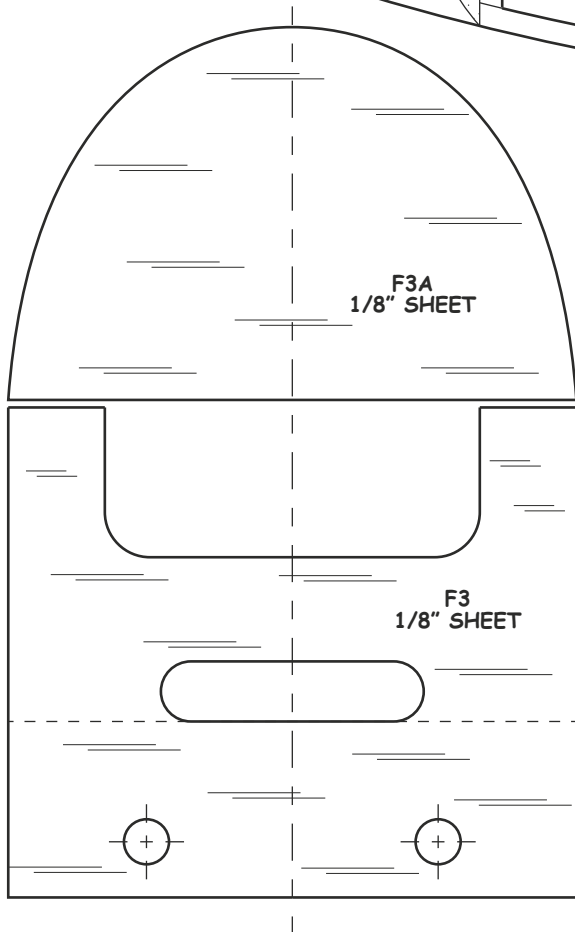
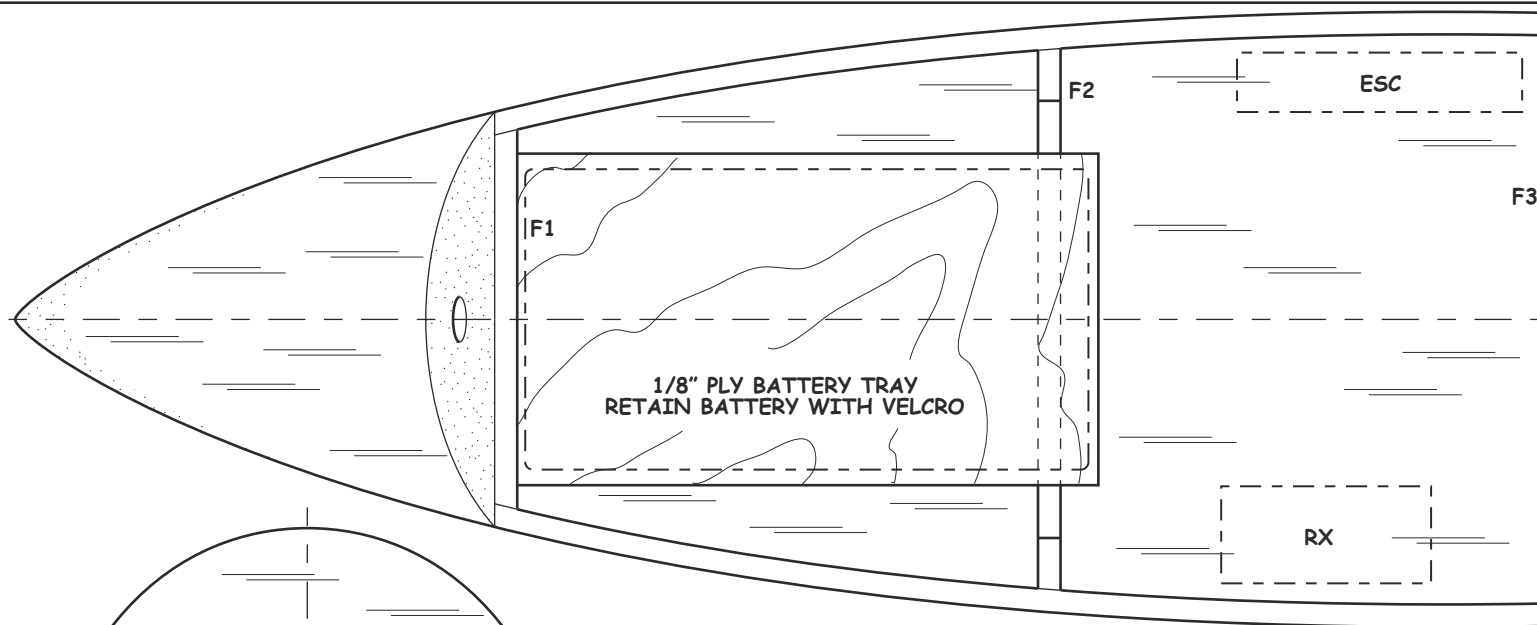


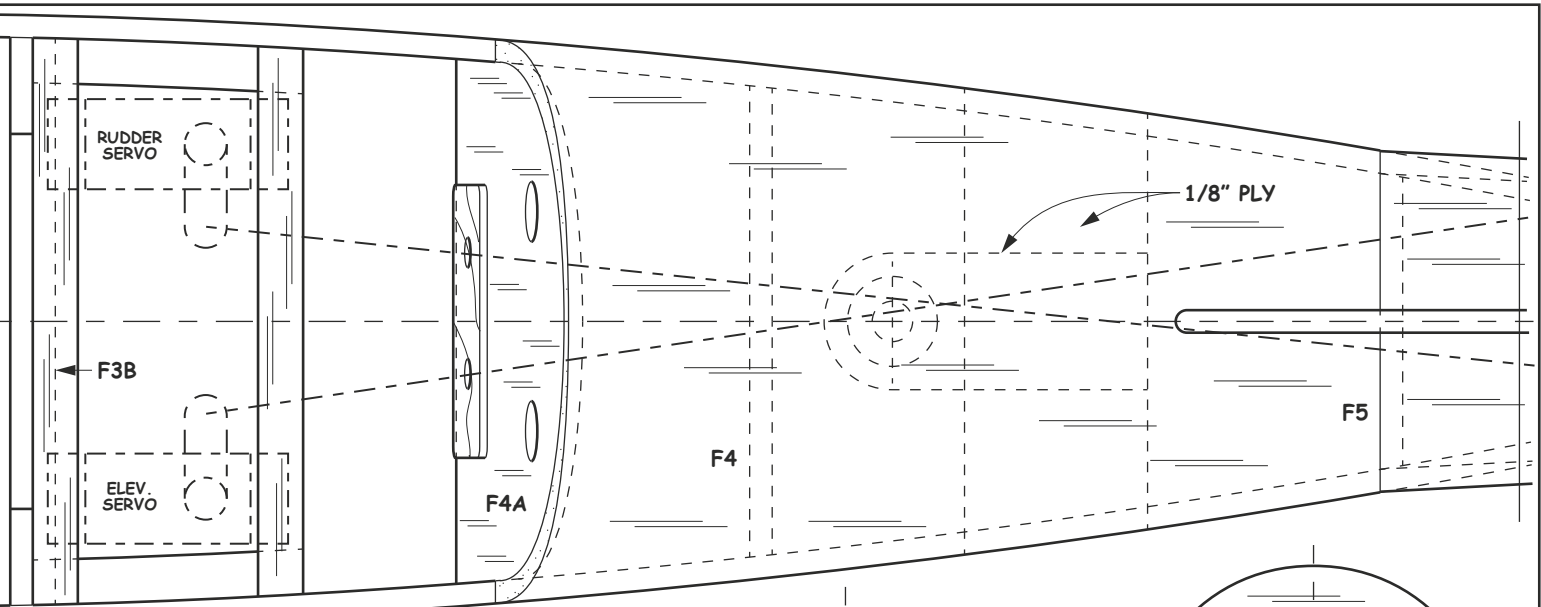
ROUND OFF L.E.

BEDE B.D.5

A 35 1/2" SPAN SCALE MODEL

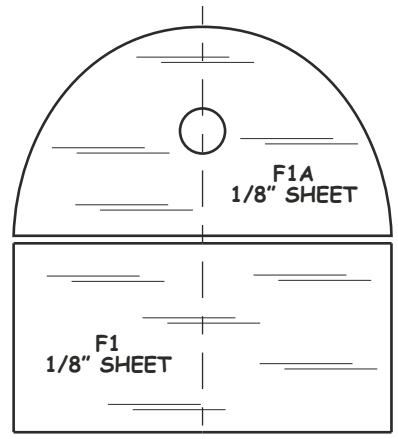
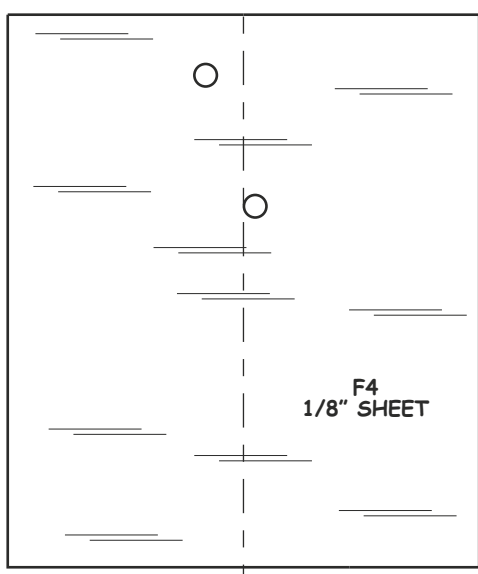
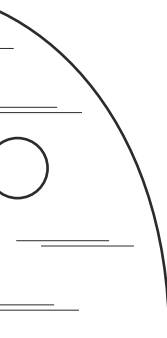




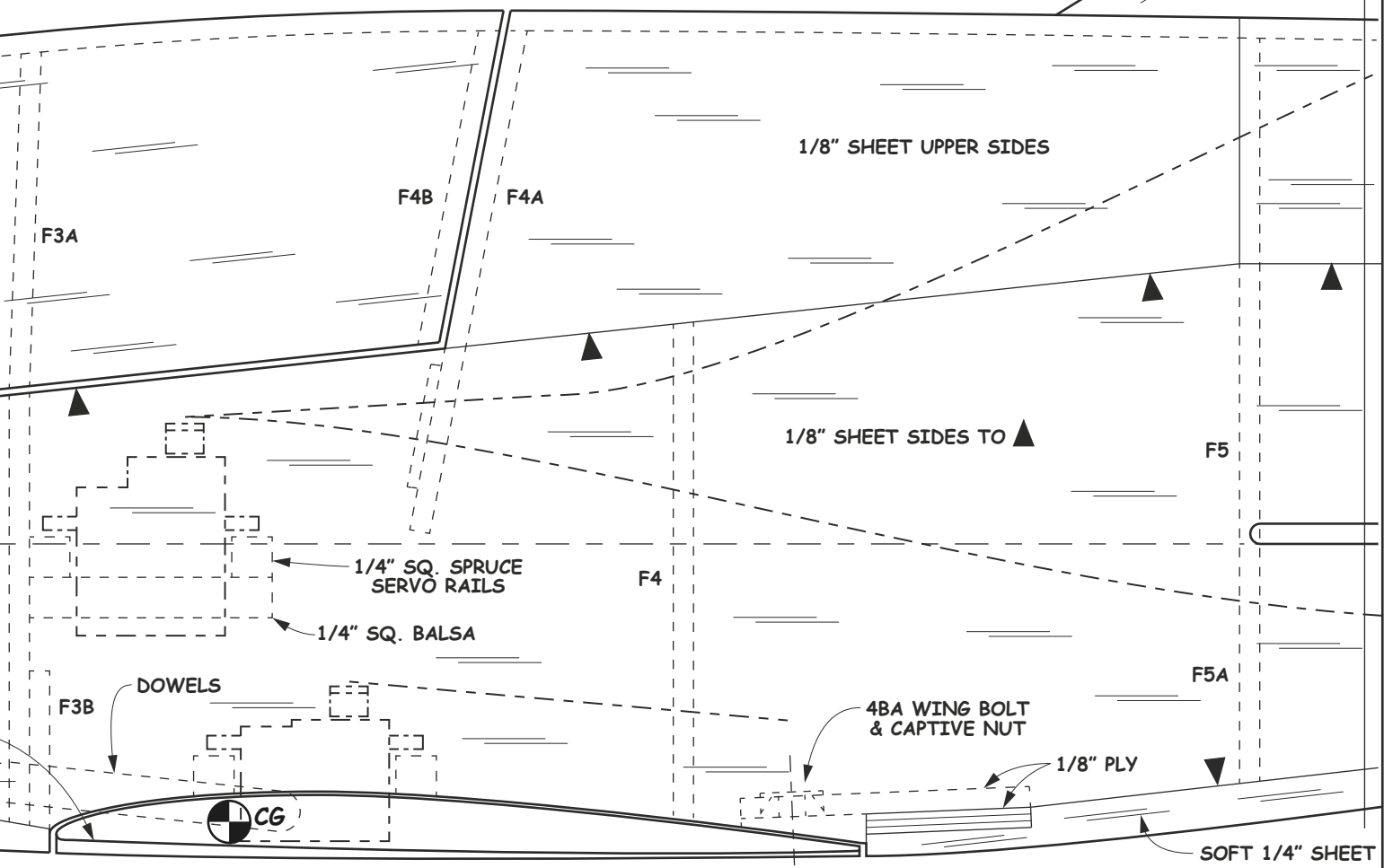


BEDE B.D.5

A 35 1/2" SPAN SCALE MODEL



PLANK TOP WITH
1/8" SHEET STRIPS



DO NOT FORGET TO CARVE WASHOUT INTO THE WINGS AS SHOWN; START 6" FROM THE TIP
THIS NEEDS DOING PRIOR TO SHAPING THE AEROFOIL SECTION

2 OFF Ø1/4" BIRCH DOWELS LET IN

1/4" MED. SHEET WING
SAND TO SECTIONS SHOWN

AILERON SERVO ON
1/4" SQ. SPRUCE RAILS

JOIN LINES FOR 4" WIDE SHEET

ADD HARD 1/8" SHEET ON TOP
& SHAPE TO ALLOW WING TO
SEAT CORRECTLY

FILM HINGE, FULL LENGTH

1/32" PLY PLATE
ON UNDERSIDE

18g PIANOWIRE HORNS IN PLASTIC TUBES
EPOXIED INTO SLOTS IN UPPER SURFACE

F5
1/8" PLY

HARD 1/8" SHEET FIN
& RUDDER

F6A

F6

“...don't pile the weight on as it flies fast enough as designed”



Servos are simply screwed in place. The canopy is held firm with two circular neodymium magnets glued in as shown and a dowel peg at the front.

To give it a little more ding resistance, doped on tissue would be preferable over a simple sanding sealer and paint finish, or just go with good old heat shrink film. Whatever you do, don't pile the weight on as it flies fast enough as designed.

TIME TO FLY

Check all the usual stuff - C of G, surfaces move in the correct direction and don't bind; 1/8" each way was recommended by the designer and although this doesn't seem a lot it is adequate. I had a little more but did dial in some expo. Range the ESC (to ensure full power) and make sure the motor and the propeller combination you've used is spinning correctly, blowing not sucking the air forwards. For a new receiver a range test would also be sensible and don't forget to set the failsafe.

As mentioned the high mounted motor and fat fuselage causes some strange aerodynamic behaviour, hence the C of G being so far forward. You will probably need to experiment a little with the motor thrust lines to prevent it pushing the nose down as you open it up. This can catch you off guard as the model needs to achieve flying speed for the elevator to become truly effective. For the first flight, long grass will be your friend.

John offered some pointers in his original article:

“The power model needs a healthy motor run and a firm push into wind to take off. The elevator



Rudder pushrod is terminated by bending at 90 degrees with a plastic tube retainer glued on to keep it in place.

doesn't have a lot of effect until flying speed has built up. I hold the model just behind the trailing edge to launch. Once in the air the model is fast and aerobatic, and this is where the bright colour scheme comes in useful - it stops you losing sight of the thing! It will do all the aileron/elevator manoeuvres I can think of.

The slope soarer version is obviously lighter than the power job, so needs a 20mph wind to fly well, on our slope at least. I launch by holding the model just in front of the wing and usually just need to let go. (Our slope site is a 200 ft or so sheer cliff). The model performs well enough for a scale job, though it's somewhat 'draggy' and loses speed a bit quickly compared to the 'kippers'. Both versions were prone to tip stall in very hard turns. Should this happen to your model the cure is to warp in some extra washout or reduce elevator movement.

A wind of about 35-40 mph seems to be about the limit for the soarer, with the motor and balance weight as ballast - after that, penetration is zero!”

Is this the perfect quick build model for all wannabe secret agents? I don't know, but it is certainly different from the more common scale models seen on the patch.

Next time there's a new sport model, with options that many modellers may not have seen to control it. Sarik have also produced a kit to speed things along for time poor modellers or ones who prefer flying to building. ✈



Simple and direct elevator connection - but don't forget to ensure the grub screw is tight!



On my model a 3S 1500mAh LiPo balanced things up perfectly. No battery strap is used as the Velcro is good quality and sticks together well.



You will probably need to experiment a little with the motor thrust lines to prevent it pushing the nose down as you open it up.

The Bede looks like it's doing 200mph when stood still!



DATAFILE

Model type:	Sport Scale Power or Slope Soarer
Wingspan:	35.5" (902mm)
Length:	22" (559mm)
Weight:	1302s (369g) exc. LiPo
Functions:	Elevator, Aileron, Throttle and Rudder
Power (Electric):	Brushless 120 - 150 watts (E-Max CF2812 on featured model)
ESC:	4-Max 20A
LiPo:	3S 1500mAh



Add fresh interest to your flying by practicing and competing in a BMFA R/C scale flying competition.
Photo: Alex Whittaker.

SCALE FLYING

Andy Sephton describes his flight planning process for putting together a sequence for BMFA R/C scale flying competitions

words » Andy Sephton

photos » Andy Sephton & Alex Whittaker

I'm building a Dennis Bryant Fury with the intention of entering the new BMFA Light Scale class. It's progressing slower than I would have liked (don't they all!), so I've decided to prepare my RTF FMS Mustang for my first entry into BMFA scale R/C outdoor competition flying. BMFA Light Scale is a flying only competition for scale models up to 5kg maximum weight. The purpose of this article is to explain how I'm going about it.

READ THE RULES

First off, I had a good study of the latest BMFA Scale Rule Book, the BMFA Scale Judges Guide and the BMFA Scale RC score sheets. All are available for free download on these BMFA websites:

BMFA Scale website - <http://scale.bmfa.org>

BMFA website - <https://bmfa.org>

Fundamentally, the requirement is to demonstrate ten separate manoeuvres to the judges. Each judge awards a mark out of 10 for each manoeuvre and after the flight they award marks out of 10 for realism in respect of manoeuvre selection, flight schedule/display presentation, power management/sound, speed of the model aircraft and smoothness of flight.



Andy intends to use his FMS Mustang for his first entry into BMFA scale R/C outdoor competition flying.



The judges await... Photo: Alex Whittaker.



A well-executed take off gets things off to a good start. Photo: Alex Whittaker.

Each manoeuvre or realism heading has a K factor of between 2 and 11. The judge's score is then multiplied by the K factor for the respective manoeuvre or heading and the end result summed to give a final score. The K factors add up to 100, so with the two judges each giving a score out of 10, the total marks available per flight are 2000.

The ten manoeuvres to be flown include a Take Off, an Approach and Landing, two mandatory manoeuvres, being the Figure of Eight and a Descending Circle, and six optional manoeuvres chosen by the competitor from a list of 24 options. The last one in the list gives the option of a manoeuvre defined by the competitor that is appropriate for the subject model that is not included in the previous 23 options.

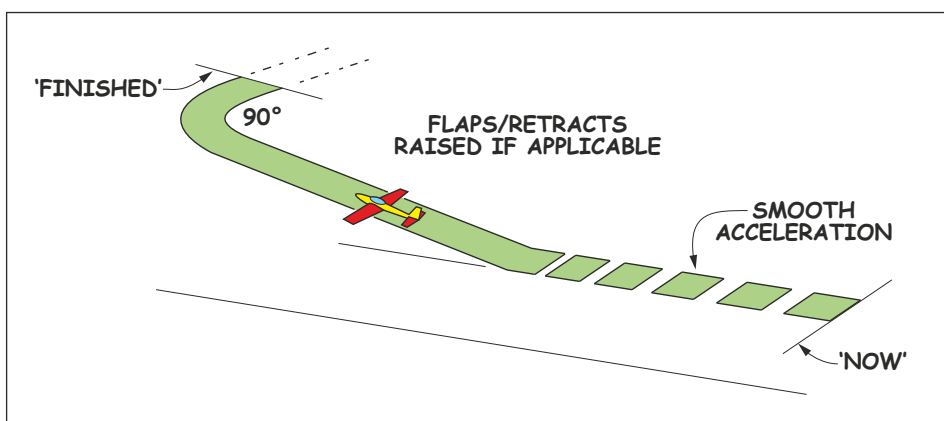
WHICH MANOEUVRES?

My first challenge was to choose which manoeuvres to fly. I want to fly the same schedule with both the Fury and the Mustang, so I made the choice with the Fury in mind. The manoeuvres need to be appropriate to the type, achievable within my flying skills and the model's capability, and have what I call a high-scoring factor. The latter comes from my experience as a judge. Assessing numerous modellers, with skills varying from beginner to World Championship level, has given me a very good idea of which manoeuvres consistently score well and those that don't. Bearing all the above in mind, I looked through the manoeuvres and gave each a score from 1 to 4:

- 1= A manoeuvre I find easy to fly, is appropriate to type and is easy to achieve.
- 2= Either a manoeuvre I can fly but not as well as a number 1, is appropriate to type and/or is difficult to achieve in practice.
- 3= Either a manoeuvre I am not confident to reproduce, is inappropriate to type and/or is challenging to score well.
- 4= A manoeuvre that is inappropriate to type.

Going through all the manoeuvres in the Rule Book in turn I came up with the following conclusions:

1. *Inside loop.* This is a straightforward manoeuvre that's highly appropriate to type and should score well (score = 1)
2. *Roll - Variation 1.* An aileron roll is easily flown, appropriate to type and should score well (score = 1)
3. *Roll - Variation 2.* A barrel roll has a similar potential to the aileron roll (score = 1)
4. *Roll off the Top/Immelman turn.* With the high drag and limited roll power of the Fury, plus the full-size aircraft's lack of negative G performance, this one is inappropriate to type. It may also be difficult to fly with the limited roll power of the model (score = 3)
5. *Split 'S'/Reversal.* This one is easily flown, is appropriate to type and should score well (score = 1)
6. *Stall Turn.* This is an appropriate manoeuvre, which should score well if demonstrated properly. It'll need some practice (score = 1)
7. *Normal Spin (Three Turns).* Whilst not a combat manoeuvre, it's an appropriate manoeuvre for a fighter, it's easy to achieve and, if done properly, it should score well (score = 1)
8. *Cuban Eight (variation 1).* This is appropriate to type and relatively easy to fly. However, it is extremely challenging to get both sides of the manoeuvre symmetrical and therefore it doesn't have the high-score factor (score = 2)
9. *Cuban Eight (Variation 2).* As above (score = 2)
10. *Lazy Eight.* This manoeuvre is more appropriate for non-aerobatic models (score = 3 or 4)
11. *Derry Turn.* This one requires a lot of energy and good roll and pitch control. It's more appropriate for models of jet powered aircraft (score = 3 or 4)
12. *Inverted flight.* The engine would cut on the full-size, so this one is not appropriate (score = 3)
13. *Wingover.* This manoeuvre is more appropriate for non-aerobatic models (score = 3 or 4)



Take Off. Besides a ribbon diagram the Scale Rule Book lists a description of the manoeuvre and a list of errors, not shown for clarity.

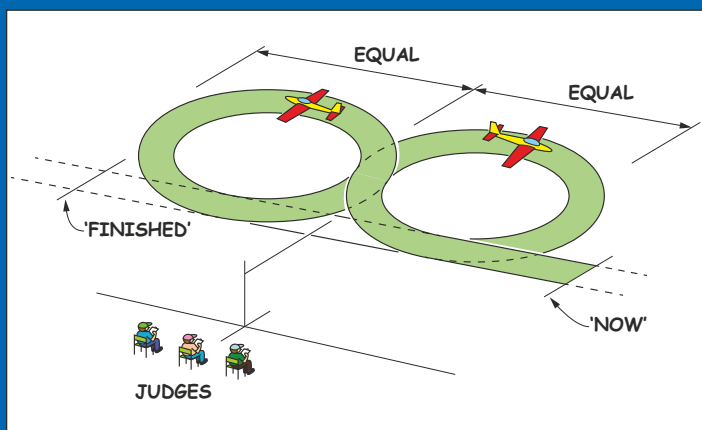
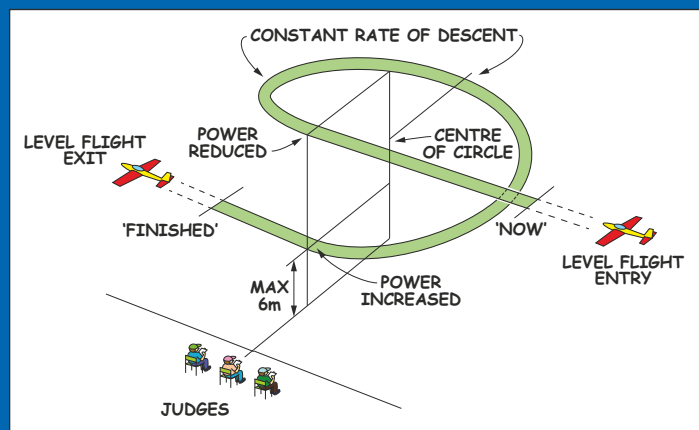


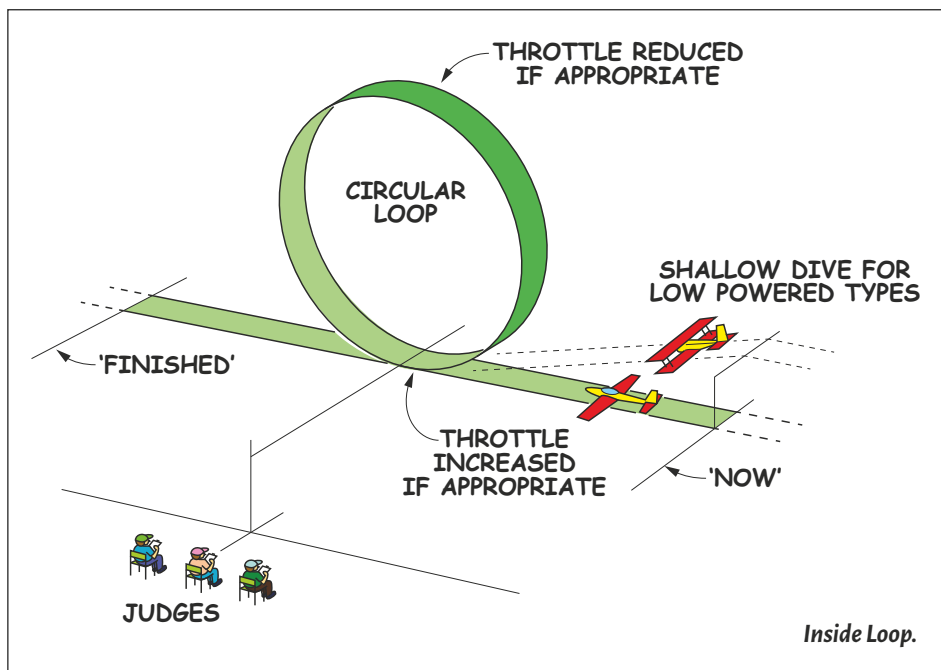
Figure Eight.



Descending Circle.

14. *Sideslip*. On first sight, this is highly appropriate to the Fury, but it's a challenging manoeuvre to fly consistently in front of the judges (score = 2)
15. *Touch and Go*. This is an appropriate manoeuvre, but again, it's challenging to re-produce, especially in gusty winds (score = 2 or 3)
16. *Extend and Retract Landing Gear or Flaps*. Not appropriate for the Fury (score = 4)
17. *Drop bombs or parachute demonstration*. Not appropriate for the Fury (score = 4)
18. *Flight in straight line with one engine throttled*. Inappropriate (score = 4)
19. *Chandelle*. This manoeuvre is more appropriate for non-aerobatic models (score = 3 or 4)
20. *Flight in a Triangular circuit*. This manoeuvre is more appropriate for non-aerobatic models (score = 3 or 4)
21. *Straight Flight at Low Speed*. This is possible in the Fury, but it would be difficult to achieve smoothly (score = 3)
22. *Overshoot or go-around*. This is an achievable and appropriate manoeuvre - but it's not very spectacular (score = 2)
23. *Procedure turn*. This manoeuvre is more appropriate for non-aerobatic models (score = 3 or 4)
24. *Non-listed manoeuvres*. These are not required for my demonstration (score = 4)

The above gave me six manoeuvres scoring a 1 and five scoring 2. The six scoring a 1 will form the basis of my practiced demonstration, with the five scoring a 2 giving a list of reserve manoeuvres.



Inside Loop.

STITCH IT TOGETHER

The next task was to decide in what order to fly the manoeuvres. The BMFA Rules have recently changed in that the presentation of the whole flight is also marked. The next task was how to stitch the manoeuvres together in a logical, smooth and appropriate sequence.

Following my full-size display practice, I listed the manoeuvres with entry and exit criteria. I also listed the turn-around manoeuvres that I could use at the end of the display line, and again, I included entry and exit conditions. The latter produced:

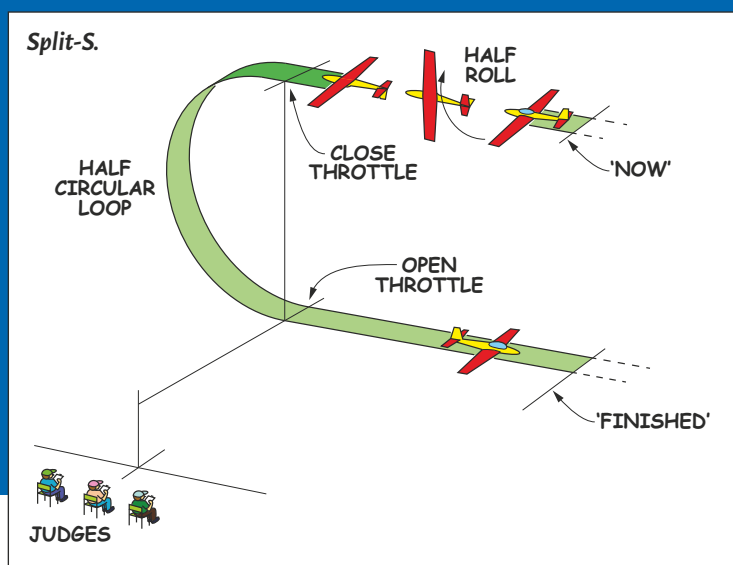
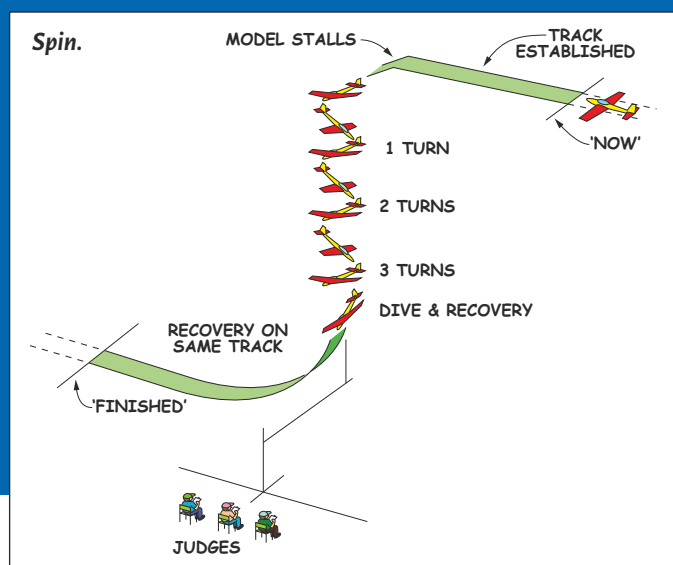
- Level, climbing or descending turn. Entry and exit either high or low and speed either low or high.
- Wing-over. High or low entry, speed at entry and exit appropriate to height, high/low or low/high.
- Half-loop and roll or pull up, half roll and pull

through. Low or high entry, low or high on exit with speed high or low.

- Stall turn. Low entry and exit, speed high.

To fully understand the following it may be worthwhile looking at the diagrams in the BMFA Scale rule book. I've included those that I will be using in this article. The Rule Book lists a description of the manoeuvre, a ribbon diagram showing how it should be flown and a list of errors. There is also a start and stop position marked.

As a flyer, I need to call each manoeuvre to the judges before I fly it. I also need to call 'Now' at the start point indicated on the ribbon diagram and 'Finished' at the end. Note that making the calls early or late, as well as not positioning the manoeuvres as shown, will incur penalties to the final score. It's also worth noting that the order of the manoeuvres is my choice; they do not have to be in the order presented in the Rules.



ENTRY & EXIT

Looking at the manoeuvres themselves, the following list gives the entry and exit criteria:

Take off: Entry - static on ground. Exit - high and flying away from the end of display line at 90 degrees to the line, medium speed.

Figure 8: Entry - left or right of line, medium height and speed. Exit - right or left of line, medium height and speed.

Descending circle: Entry - left or right of line, high height, low speed. Exit - low height, right or left of line, medium speed.

Inside loop: Entry - left or right of line, low height, high speed. Exit - right or left of line, low height, high speed.

Aileron roll: Entry - left or right of line, low height, high speed. Exit - right or left of line, low height, high speed.

Barrel Roll: Entry - left or right of line, low height, high speed. Exit - right or left of line, low height, high speed.

Split S: Entry - left or right of line, high height, low speed. Exit - right or left of line, low height, high speed.

Stall Turn: Entry - left of line, low height, high speed. Exit - left of line, low height, high speed.

Spin: Entry - left or right of line, high height, low speed. Exit - right or left of line, low height, high speed.

Approach and landing: Entry - left or right of the line, low speed, medium height, heading 90 degrees to the line. Exit - static, on ground, right or left of the line.

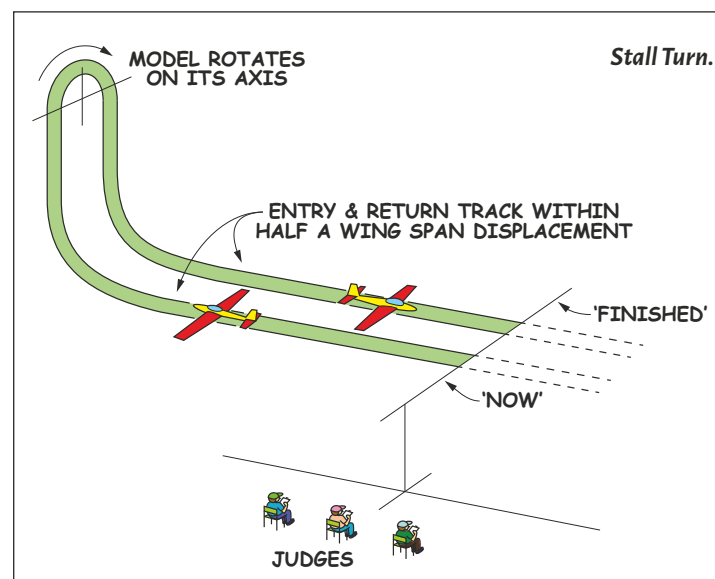
Note that apart from the stall turn, the manoeuvres can be carried out and should be

practiced in either direction. The stall turn, however, must be carried out with the model turning away from the judges. As I will be stall turning with the torque of the motor, it will be to the left and will be positioned at the right end of the line.

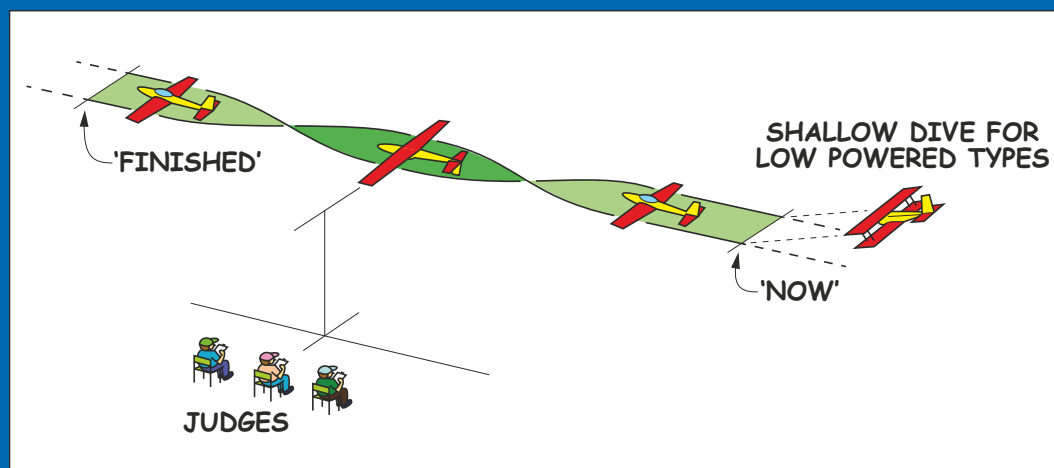
FLYING ORDER

Putting it all together, the plan will be to fly the manoeuvres in the following order. The main manoeuvre is listed first, followed by the turn-round manoeuvre that I'll be using to set up for the next event:

- **Take off, then:** Turn downwind, turn in at other end of display line. Maintain medium speed and height.
- **Figure 8, then:** Accelerate, turn away from line, wingover back towards line, return along line, high height, low speed.
- **Descending Circle, then:** Maintain high speed, pull up to about 60-degree climb, half-roll, pull through, set up high speed and low height.
- **Inside Loop, then:** Pull up into half-loop, half-roll maintaining high height, low speed.
- **Spin, then:** Pull up into half-loop, half-roll, maintain height and low speed.



- **Split S, then:** Pull up into wing over away from judges, return with low height and high speed.
- **Barrel Roll, then:** Pull up into 60-degree climb, half-roll, pull through, maintain high speed and low height, ensure flying left to right on exit of turn round manoeuvre. If not, fly a low pass into a wing over to reverse the direction.
- **Stall turn, then:** Model should be immediately set up for next manoeuvre at high speed and low height. If judges not ready, flypast level, pull up into 60-degree climb, half roll, pull through.
- **Aileron Roll, then:** Pull up into rectangular circuit, fly downwind, medium height, medium speed. If in wrong direction for wind, procedure turn to change direction.
- **Approach and landing**



Left: Aileron Roll.
Below: Approach and Landing.

PRACTICE, PRACTICE

I now have a plan. I'll be practicing it with a four-channel aerobatic model to start with to see how it goes together. My current hack model is an ancient electric powered Pulse, which will do very nicely for the initial tests. It's not in any way scale, but it'll give me some idea as to how the plan is working before I chance it with a 'proper' scale model.

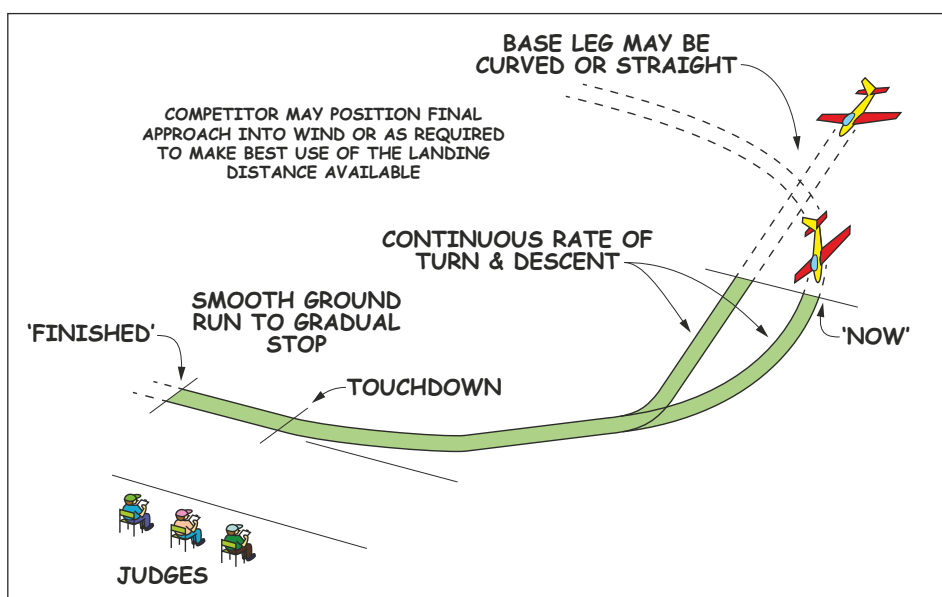
Assuming I get past the first stage, I'll introduce the plan to a scale model, which will probably be my FMS Mustang. The only issue I can see with the flight plan is that the judges sometimes take time over deciding how many marks to give to a specific manoeuvre. A turn-round display, such as the one I've planned, will progress quite quickly, so at times the judges may not be ready when I'm positioned for the following manoeuvre. I'll need to look at the practicalities of various delaying solutions that can be inserted into the plan when, and if, required. These will include a level turn and/or a straight flypast and appropriate turn around at the other end of the line. The issue with the latter may be that the model ends up high when it should be low and vice versa; the speed will also have to be monitored... Maybe two passes will be required to get back to the original initial conditions.

The only thing to do is to try out the various options during the practice sessions.

I may also have some issues with the Mustang in that although it is 56" span, it only weighs 2kg. This is well within the Light Scale limit of 5kg, but it will mean the model will be highly affected by wind and turbulence. Depending on how the practice sessions progress I may be fitting a gyro. It will lose me marks in the realism section of the scoresheet, but hopefully the marks gained during the manoeuvres will outweigh the loss.

UPDATES

Finally, I must add a 'Health Warning' concerning the Rules. They are a living document that may be updated during the season. Before you decide what you are going to do in respect of BMFA Scale R/C, I strongly recommend that you download and study the latest copy of the Rules, which will be on the



BMFA and BMFA Scale websites. If you would like warning of new amendments and/or BMFA Scale notifications, then subscribe to

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Andy will be practicing his plan with this four-channel aerobatic model to see how it goes together before chancing it with a scale model.

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*That feeling you have after a good flight!
DMFC's Brian Meredith Evans.*

BACK IN THE SADDLE

Whittaker finally gets to fly, but only because the field is five miles away

words & photos » Alex Whittaker

I have read about cabin fever. I have read about being stir crazy. I have read about how long-term incarceration breeds listlessness and institutional dependency. Even so, when the Welsh Government allowed us to travel five whole miles, I had trouble raising a smile. Even though The Singing Kettle International Field is a mere 4.2 miles from my house, I could not rejoice. This was because I knew that only seven of maybe 70 club members live within that five-mile radius of the field. Therefore, I did not rush up to The Kettle on the first day of the lifting of prohibition. Nor the next day. Not until the next week, in fact. Somehow it looked like breaking faith with my flying chums who lived six or more miles away. Anyway, one hot morning I drove past the field and it was empty. So, I rang Spanish Pete, Delyn Model Flying Club's Field Access Booking Manager (unpaid) and got my permission. What followed was a comedy of errors on my part.

*DMFC has Free Flighter Blighters too!
Gold Award in P30 for David Norwood.*





DMFC member, Ron Maddox striding out to the oche.



Flying up the field with your clubmates is a big part of radio modelling.

After fifty years usage we recently have had to use a different gate to access the field. When I got there, I had to tackle the combination lock on the gate. After twenty minutes fruitless endeavour, I gave up and rang Pete back. He confirmed the number and I tried again. No go. I rang long-suffering Pete a third time and we chatted and laughed about what might be wrong. We hung up. After another failed attempt, I rang and told Pete I'd had enough, and decided to drive home. Just as I was about to leave, resourceful Pete rang back. He had tracked down the Contractor. Apparently, we had been switched back to the original field gate, but no one had thought to tell us. I was tackling not only the wrong gate, but also the wrong combination lock! Ten minutes later I was on a beautiful but deserted Kettle field, in a slight breeze, under a hot sun. Perfect summer flying weather. Since no one else had booked (maximum two), I now had the prospect of the field to myself for the best part of three hours. I flew one model and instantly realised that I was really not doing that well. My simple clubman aerobatics were okay-ish, but my positioning up and down wind was pitiful. I was crabbing in on all my lines, my height upwind and downwind varied too much, turns were too tight, and I was using too much elevator. My approaches were frankly dodgy, and my first landing occurred some distance from the transmitter. I drank a bottle of ice-cold water, applied some sun cream, and chastised myself.

I got airborne again. This time was a little better until I tried a Half Cuban Eight. My exit line bore absolutely no relationship to my entry line. I was glad I had entered said manoeuvre 'three mistakes high', as we used to say. I tried an inverted circuit and completely lost the plot somewhere near our control-line circle. I shouted to myself to get a grip, hauled her around far too steeply, and brought her into land. She arrived a bit crosswind, I over-corrected and she tipped over. Nothing hurt but my vanity.

SECOND MODEL

Sometimes in radio flying, when things are not going well, it is the Universe's way of telling you to give up and go home. However, after the long lay-off, I knew going home now would only compound the problem. I had to get back into the saddle.

I swapped to a faster, much more agile aerobatic model and took my chances. The wind was straight down the strip, so I decided to take off, set a slightly steeper than normal climb-out, and then - for a bit of flash - flip her inverted. I did so, and to my utter astonishment, it all went like clockwork. I maintained the sexy inverted climb-out, and then pushed up and over into a half loop. I then tuned downwind and tried a double roll. By the second half of the second roll I was losing bit of momentum, but I kept her nose up. At last I was flying the model rather than let it get me into trouble. I flew around reasonably smoothly for another five minutes, and then decided to land. No point in losing my concentration. I brought her in over the control-line circle and she lined up nicely and touched down about five yards from the transmitter. I had that idiot grin on my fizzog. I walked back to the pits with that spring you have in your step when a flight



Mike 'Crash' Parry, one of DMFC's doxy control-line enthusiasts.

goes well. After all these months of drab lockdown, I was a radio man again!

Shortly after, Spanish Pete arrived unexpectedly, and we had a brilliant morning of socially distanced camaraderie. All that was missing was our other clubmates.

SHOW STOPPERS

As I write this, all the big shows have been cancelled. Others have been rescheduled, subject to Government edict. Most encouragingly, Modelair's Old Warden Scale Weekend is rescheduled for the autumn, as is



Getting out to see how the other half models is a big part of radio modelling.





You are uniquely to see such a big show beast down at your local field!



The big summer shows are under threat.

glorious Weston Park. For the commercial shows, the Covid lockdown has been a financial disaster. In some cases, the extended lockdown may threaten their future viability. At least two show organisers have said to me they can't see how shows will return to 'normal' for a good while, if ever.

Now, we are very lucky in radio modelling, in that we are used to great shows offered at superb venues at fair entrance fees. One wonders if that happy state of affairs can ever resume. On another matter, I wonder how many of my fellow modellers with young families will get on,

trying to eke out what they can on 80 percent furloughed pay. One wonders if they will be able to afford to attend shows at all. For them, buying the odd new model or transmitter may be out of the question this year. Aye, the knock-on effect on our already battered and bruised model shops, and the modelling trade in general, is hardly worth thinking about.

SIT AND WAIT

Sitting here in my shed, a self-employed but far-from starving pensioner, a good part of my day job has stopped. My magazine

routine of working weekends away at shows, balanced by mid-week scribbling, has gone out the shed window. Now every day is much like the other. I cannot get out to visit modellers up and down the country to get shots of their models for my Model Magics. I cannot attend test flights of new models, or check out new engines, and radios. Nor can I write show reports of non-existent events. 'Tis a puzzlement.

As is my practice at the of the financial year, in February I invested heavily in new photographic equipment. Paradoxically, I have not used my press cameras in anger



Clubman models are great, but it is good to see conspicuous scale achievement.



Other people pushing their performance envelope encourages the rest of us.



Evening scale at the end of a long Nats day is good for the soul.



Summer shows give us an insight into other modelling disciplines.



Early model Meteor .40 glow engine. Redefines the word agricultural!



This astounded me when I was shown it - a NIB Meteor .40 glow engine Mk.II

since! Also, Command Module II is still in her winter storage. The good news is that ancient Big Suzy has passed her MOT and is ready to report for towing duty to the shows, but frankly everything is on hold. We all need the summer shows to meet other modellers, see new products, and catch up with the new modelling techniques. Most significantly, shows allow us to appreciate the art and craft of other modellers. I reckon many of us need that third-party impetus to grow as modellers.

Like I said, the way forward is a puzzlement.

METEOR GLOW ENGINES

Many moons ago, keen RCM&E reader, Andy Brown walked into our Spring Swapmeet and showed me two very interesting British glow engines. These were a .40 and .60. They both bore strong resemblance to a rare low-production .60 glow engine I knew I had nestling in my shed. It turned out that all three were indeed Meteors from the late Sixties or early Seventies. Long time readers may remember that I wrote about these Meteors here in 2008.

Now Meteors are nowhere near as well-known as their British contemporary, the Merco. Early Meteors also lacked the Merco's comparative refinement, but

Meteors certainly had better silencers. Now to many Old Lags, hearing Whittaker using the word 'refinement' in the same sentence as 'Merco' will raise a giggle. Those of us who own and run old Mercos know that they are a bit agricultural. Still, at the time, when it came to big British glows, Mercos were all we had. My own old Merco .61 is certainly more powerful than my sand-cast Meteor .60, which, truth be told, is a bit of a slogger. My Meteor always needs an electric starter, but the carburettor and throttling are surprisingly good. My Meteor still runs after 50 years and is reliable and steady. I have her in my ancient eight-foot Telemaster.

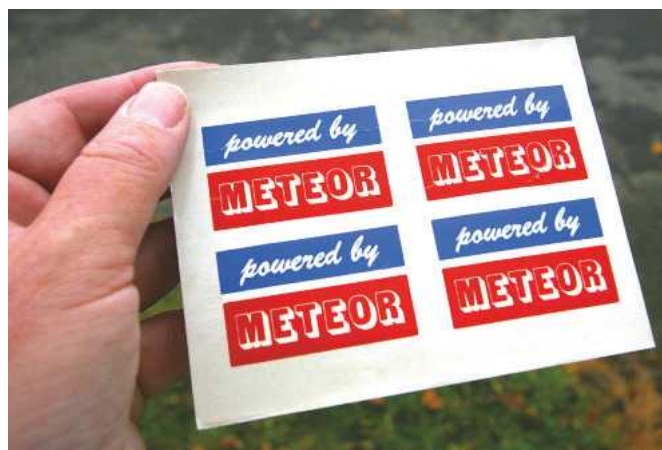
Anyhow, at the time in question, in my first Meteor article, I was convinced that the Meteor .60 was directly related to the British Jones .602 engine. This engine started out as a constructional project that could be built from commercial plans and castings. I decided that the Jones and the Meteor were directly related, mainly due to their basic similarity, but also due to the fact that both engines were associated with mysterious Mr Joneses. Or perhaps, as I thought at the time, a single Mr Jones. It turns out I was wrong. They were not the one and the same chap. I had to abandon that line of enquiry. However, another very helpful RCM&E reader, Martin McIntosh, did



Simple blue box for the Mk. II Meteor .40 glow engine

inform me that Mr Jones died in about 1992. Apparently, this Mr Jones had dealt with models and engines from his house. I began to think that Mr Jones might also have been associated with Ian Yule of Yulon Engines fame, of Sutton Coldfield. Perhaps this Mr Jones was also linked with the Flightlink model shop in Dudley? There was even some gossip about pilots souping up their Meteor engines by putting Rossi pistons and liners in their cranks (as an unashamed engine anorak, I found this latter notion astoundingly interesting).

Anyway, after I ran what I knew of the story, I was contacted again by helpful Mr McIntosh. Here is one of Martin's really interesting notes to me at the time:



Rare, unused decal set for Meteor .40 Mk. II



Five fierce reasons that will void your Meteor Glow Engine Guarantee!





The un-run Meteor .40 Mk.II on the left, with the agricultural Mk.I on the right.

"In the early 70s, I started flying F3A aerobatics under the guidance of my fiercely competitive friend, and later best man at my wedding, Terry Cooper. He went on to be a three times British Team member and one-time National Champion: me, a two times Team member and Maiden Aunt at the Nats for four consecutive years.

He was initially using the Meteor 60 produced by Dennis Rowe of Wisemore engineering in Erdington, Birmingham, and I used HP61s, which were slightly more powerful but ate bearings.

Dennis asked me if I would evaluate one of his motors. Terry said that I would certainly earn the motor at the end of the day, since he had had a similar experience. I believe that these were conceived by Keith Jones, a model dealer who seemed to have his finger in every pie and had a shop in Dudley. He was the marketing force behind the project and produced the initial design and spec.

The test motor had one major failing - the piston ring was not round! Several rings and iron liners later, I asked for an uncut liner, which I could drill and file out to porting as I saw fit. The result was a motor as sweet as a nut to operate, which I used for a long time before selling it on to a fellow club member of the Sutton Coldfield RCAC. This club produced some other nuggets, notably the Yulon British glow produced by Ian Yule, who ran a car engine recon business, and the revolutionary TK (Terry and Keith) fuel pressure regulator, which I still use to this day. I wish I had kept my super reliable Meteor!"

Ian, of course, is spot on. I know this because yet another RCM&E reader had assured me that the Meteor factory had indeed been situated in a small lock-up in Station Street, Erdington, Brum. My further research at the time indicated that, without doubt, the Meteor .60 was originally produced and distributed by a Mr James Herbert and a certain Mr Keith Jones. I also found out that

that their business was taken over by Wisemore Engineering in 1973. The thick plottens, since Wisemore Engineering were certainly based at Erdington, Birmingham. Directors Mr JD Rowe and Mr FR Follis then formed the new Meteor Company. Without Martin McIntosh we would not have known all this in any detail, which just proves the investigative power of the RCM&E readership!

The Meteor company then also instituted a much more developed design than the .60. Thus, began the new blood line of the Meteor .40. I only know this due to my swapmeet mate, Andy Brown. He told me that there had been a later production run of about 150 such new Meteor .40s. This latter news utterly fascinated me. However, I confess I was a bit sceptical, until Andy casually put a brand-new boxed example into my grubby little hands! The new M 40 is a much sleeker design, with a bold M 40 moulded into a much finer-finished crankcase. It almost has that upright Irvine .40 look. The warranty card in its box lists five conditions that will void the M 40's guarantee:

1. Six months after date of purchase.
2. If any part of the engine has been altered, modified, or improperly handled.
3. If not operated and handled in accordance with the maker's instructions.
4. If damage has been caused by accident, crash or sudden stopping of the engine.
5. If damage has been caused to piston or cylinder by a broken glow-plug filament; glowplugs are not guaranteed.

Pretty fierce, eh? Customer Care was obviously still in its infancy all those years ago.

MOVING ON

Anyway, under lockdown I have been revisiting my Meteor research. All this came



Andy turned up at our DMFC Swapmeet with two Meteor .40s. Is there a Twin out there? We should be told!

flooding back last week when I saw an unknown engine for sale on t'internet. I instantly recognised it as an unboxed Meteor .40.

Now then, Gentle Reader, I have a task for you, should you choose to accept it. I firmly believe that there was a Meteor Twin .40. Do you perchance have an example of this fabled but disputed Meteor .40 Twin in your shed? Have you ever seen one? You see, despite much mocking by one or two British engine aficionados, I firmly believe there to be such a beast. However, I have never actually beheld one.

I did once see what looked like two Meteor .40s in-line at a model engineering show yonks ago, but sadly did not follow it up the time. Incidentally, any other light you might shed on the whole Meteor saga, and Messers Jones and Yulon in particular, will be gratefully received. I may have an old Yulon in my shed... ✈



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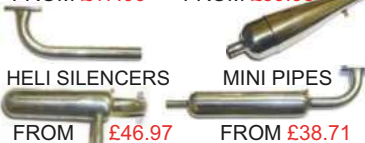
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AN AFFORDABLE

Dave Batchelor describes his modifications whilst building a 98" Vulcan V-bomber to the Tony Nijhuis plan

words & photos » Dave Batchelor



“I had to work out where was I going to build it and how was I going to transport it”

Following the demise of my MB339 back in 2016, I was left with (thankfully) a spare Jetcat P100 turbine looking for a home. I could not afford an ARTF model to put it in at the time so the idea of building something came to mind. I wanted something scale and with a light wing loading as tearing around at 200mph is not really my thing. I wanted something that would look nice, fly in a scale manner and be affordable - not much to ask! Looking in the magazines I came across Tony Nijhuis' advert for a 98" Vulcan, which would suit my turbine and flying style fine. I had not built anything from wood for some years and, funnily enough, the last plane I did build was from a free plan in RCM&E for a small pusher, also from the pen of Tony Nijhuis, called a Can-Do. Before this it was rubber powered models from Keil Kraft years ago!

Looking at the size of the finished model, which is about 2.5m long, I had to work out where was I going to build it and how was I going to transport it? Armed with a tape measure I went into my workshop and found no practical surface to build it on and, out in the van, I found that I could not get it in the back of there either - not a good start. I then found a thread on RC Universe, started a few years back by a guy in Norway on building the

TN Vulcan. This gave me a lot of inspiration, as he had built his with a removable nose, so if I could do the same it would at least mean I could transport it in the van. Other people were following his lead and starting writing about their own Vulcans.

Back in the workshop I looked at the current layout and began to formulate a plan whereby I could move the milling machine and produce a large enough space to build the model. I built an L-shaped flat bench top onto which I could sit a large solid fire door, on which I could build the plane. As the door was not fixed down, I could (just about) slide and rotate it so that I could work on either side. Happy with the knowledge that it was all feasible and only a lack of building experience could hold me back, I placed the order for the plans, wood pack and vac-moulding set.

The full-size Vulcan has two engines on either side of the fuselage. The model uses a single turbine, centrally mounted, with the outlet in the rear fuselage extension that on the full size is the ECM (Electronic Countermeasure Module). A bit of a cheat, but this is not a super scale version and whilst four engine Vulcan's have been modelled, they are much bigger and cost a fortune. In the sky, it takes a keen eye to spot the difference.

The plans arrived first and the full-size drawings were on two 3m rolled up sheets. When I first saw them unrolled on the living room floor, I wondered if I had bitten off a bit more than I could chew! But as the fuselage is built up from lots of formers and some interlocking pieces it quickly becomes a solid shape built on the bench, with only frequent reference to the plans. On Tony's website is a sequence of build photos, which provided me with an invaluable insight as to what lay ahead.

MAKING A START

I cut out and cleaned up all the laser cut formers for the fuselage and began gluing. Cyano was used extensively in the build photos but I used Super Aliphatic and epoxy on the central and stressed areas, especially around the turbine and undercarriage mounts.

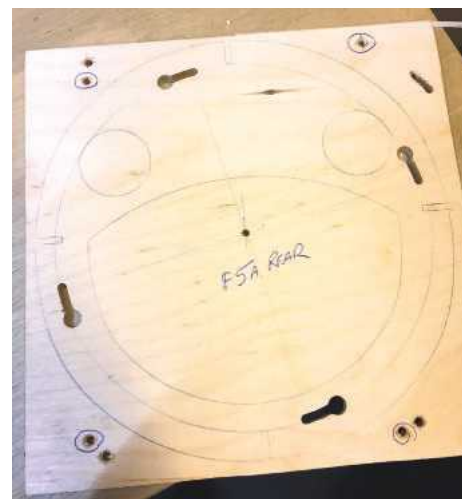
The fuselage is built initially over the plan and very quickly builds into a skeletal Vulcan shape. The nose and tail section parts fit together nicely. When I put it all together for the first photo, I remember commenting that this should be a quick build... Wrong!

Before long, the build photos have you covering the top and bottom with sheet balsa, including the area of the two fuel tanks.

AVRO

Right: Separating the parts from the extensive wood pack.

Below: A skeletal frame is quickly assembled.



Making an additional F5, with neat keyholes courtesy of the rotary table on Dave's milling machine.



Focus on the removeable nose.

The two tanks are shown on the drawing but no details of how they are mounted are given. It seems that the tanks on the prototype are built into the fuselage and are not removable. But I do not like anything that is not accessible, so I made the two tank installations removable before covering them with hatches.

Looking at Tony's prototype photos, I was wondering just where and how everything inside gets fitted and how it is serviced. Having already planned a removable nose, I decided to make an inner frame cantilevered off of the front of the strong nose wheel area. This would be covered by the nose section and only be as long as needed to keep the overall length short enough for the van. I emailed Tony about my plans and he said that the front is not structural, so no problems. I made an additional former by copying the one I planned to have as the final forward fuselage former. Attaching it had me scratching my head, but I settled on four cap screws in the fuselage front, with corresponding curved slots in the rear former of the nose, with the



The JetCat P100 was fitted with a large thrust tube to help prevent heat build-up and recirculation of exhaust gases.

“The prototype was built around a Wren 80 turbine... I was going to use my P100”

nose cone fitting in a bayonet fashion. This was an easy job, thanks to having a rotary table for my milling machine, which enabled the four curved slots to be accurately cut so that the screw heads engage through the holes, then the entire nose rotates and locks into place with a sprung hatch release at the bottom. Although a rotary table is nice to have and made the job easier, careful measuring and drilling and filing will do the same job.

With this part done, I continued with sheeting the fuselage and nose area. The nose and tail sections are covered using dozens of individually cut tapered pieces of sheet, which took ages. They are then sanded to leave a round smooth shape.

TAIL TALK

The prototype was built around a Wren 80 turbine, though the model is claimed to fly on 60 to 120 size turbines. I was going to use my P100, so I spoke to Dave Wilshire at Motors and Rotors about the thrust tube, which needed building in at this stage. The one Tony Nihhuis recommends for the Wren 80 was a lot smaller than Dave recommended for the P100, so I went with Dave's suggestion as a smaller one was likely to cause heat build-up and recirculation of exhaust gases due to pressure at the outlet (apparently!) A bespoke twin wall tube was ordered from Germany and when it arrived it seemed enormous. I had to remove a lot of material from the tail section bulkheads to accommodate it and I built back the strength with carbon tows glassed inside the tail cone.

The tail fin is supposed to be built as one part with the fuselage and while transporting the model with the tail on is

no problem, moving the fuselage around in the workshop was going to be tricky and hangar rash was inevitable. So, again, I took the lead of RCU contributors and decided on a plug-in tail.

By this time, I had made contact with another RCU Vulcan builder, John, who lives in Harlington, just off the M1. He was about a year in front of me on his build and we met up for a very interesting talk. He was able to help me with a few areas, including the plug-in tail, and saved me valuable thinking time. I had incorporated some ideas that he liked but had already gone down a different route.

The tail fin as designed simply sits on top of the top sheeting, with part of the tail going through the skin and around the top of the spine. One of TN's build photos shows the tail ripped off in an incident, so I incorporated some additional glass fibre and ply formers that extend down through the turtle deck and inside the main frames to carry the stresses further down into the structure.

BOGIE ON DOWN

The recommended landing gear is electric retracts, with custom four-wheel bogies for the mains and twin wheels for the nose leg. We found later, when John was ready to do taxi trials, that the suspension in the main legs bottomed out completely with the take-off weight of his model (the springs were too weak) and he managed to crack one casting.

I also wanted brakes on my model. The TN gear did not have brakes and when flying from grass, as Tony does, I would agree. But when flying from a hard runway there is often the need to hold before entering the runway and also the idle thrust would carry



Dave's plug-in tail mod helps prevent hangar rash.



Tail reinforcements include additional glass fibre and ply formers that extend down inside the main frames.



Parts for one set of main undercarriage leg, oleo and bogie.



Main undercarriage leg fully assembled.

it a long way before being slow enough to turn after landing.

I know you can get very nice electric retracts with brakes from the likes of Electron, but I already had a couple of wheels with air brakes from the MB339 (sob), which were almost the right diameter and so I decided to use these as the nose wheel pair. The tyres were too thick, so these were turned down on the lathe and then had the tread re-cut. My thoughts were that with twin wheels on each leg of the main gear to brake (the trailing wheels are not really load bearing, so are more for show really) if these were individually braked, the force on one side would be halved if one of a pair broke contact with the ground over bumps etc, causing a slew to the other side. With twin nose wheel brakes, they are so close to the centre line that a brake imbalance would not be noticed. Dave Wilshire at Motors and Rotors rooted around in his box of legs and supplied me with a set of Behotec legs, which needed slight modifications, but proved perfect and I built two bogies to suit them using eight 'jet' wheels from HobbyKing. The bogies themselves are simple aluminium frames, which pivot around the front axle.

The nose leg brakes worked a treat, but I still had a problem to solve with the suspension on the main gear bogies. The bogies are pushed down when in the air on the full size, for the simple reason that when they retract forward, they end up horizontal within the thickness of the wing. Mine had to do the same and the original solution is to have sprung 'shock absorber' units mounted behind the main oleos that push the bogies down when off the ground. These are attached to the top of the oleo at one end and the bogie at the other. The travel on these has to be very long to fully extend down enough to allow the gear to retract properly, but also to absorb the travel of the oleo when it is compressed. John had struggled with the springs for his as any springs that were strong enough to hold the weight of the bogie when retracted were too strong for the travel involved.



Steerable nose-leg retracted...



...and extended.

I thought long and hard about this as I too was faced with the same issue with my home-made legs. What was needed was a suspension unit that was fixed to the moving lower part of the oleo, but this just couldn't be. Suddenly it came to me that a torsion spring, wound up on the front axle, could do all the holding of the bogie in the retracted position without being affected by the oleo travel. I made several springs from piano wire, wrapped around a mandrel in the lathe (rotated by hand) and soon had two springs per bogie, one left hand and one right hand, which worked perfectly. My suspension 'shock absorber' units on the bogies are simply a tube in a tube and are only there for decoration.

NOSE WHEEL STEERING

The next issue was nose wheel steering. By design the servo is directly connected to the nose leg by wires (pull-pull) and sits just under the retracted nose oleo. Lack of space and a central frame former at the front dictated that this would need to be a micro servo but there were two things I did not like about this:

1. The wires were going to be very slack when the leg was retracted, and the confined space made dealing with this slack difficult
2. When running fast on the ground it is very likely that one nose wheel or the other will lose contact and cause a side load on the nose oleo. The shock of this would be taken directly by the servo, and if it failed...

I tried lots of different ideas of remote mounting a larger servo and eventually settled on what seems to be a complicated solution, but it deals with both problems at once. A standard servo is mounted perpendicular to the pull of the steering wires. The servo arms are connected to the nose leg via two bell-cranks to change the pull direction. The bell-cranks are mounted on a frame that pivots backwards as the nose leg retracts, keeping the wires tight. When the leg is extended the wires pull the frame forward onto a fixed stop. The final nose leg wires have expansion springs in them to absorb any shock loads. On the ground the servo moves but the nose wheels remain still due to the springs, but when moving the wheels steer fine.

To make all this, rather than struggle inside the fuselage through the nose wheel well, I made a mock-up of the internal structure and built it all outside of the fuselage before finally fitting it in the model once it worked.

RETRACT POWER

Worried about the power required to retract the main legs with their heavy bogies forward into the airstream, I made another test bed to mount all three retract units and check the power available. This was rather disappointing as I found that with 100psi in the air tank the main legs would only just retract in still air, and after a drop of 15psi they would not retract



Port wing being fitted.



Ready to skin.



Almost fully sheathed.

at all. It was clear that a more powerful pair of main retract units would be required.

The next size up of Behotec units turned out to have the same size rams, so they would not help. Dave Wilshire had enough spare parts to put together one unit from Jet 1A and he lent it to me to try. The ram was far bigger, and the entire unit was more robust than the Behotec one. It was fitted to my test bed and proved to work really well, so an additional unit was ordered from Jet 1A. When this came the test rig was once again assembled, along with two air tanks to increase the volume available for the bigger rams. These worked very well and in still air I could get six cycles of the gear from an initial charge of 100psi.

MAKING THE DELTA

The wings were built on the plan. The plans say that the main and trailing edge spars must remain flat on the board until the ribs are all glued in. The ribs are supposed to have a flat underside section from the main spar backwards and sit flat on the board between the main and trailing edge spars. But it turned out that three of the ribs had a curved section top and bottom, so they could not sit flat on the board. The front and rear of the offending ribs all lined up on the upper surface, so they were glued in like this, leaving the bottom curved section of the three ribs clear of the base board. Subsequently the underside of these ribs had a piece of wood glued on and then sanded to make the entire bottom behind the main spar flat.

The rest of the wing build went well but the elevator servos would not fit where they were shown on the plan as they had to lay down on their sides. The servos were mounted on ply hatches and these were mounted in a ply frame strung between two ribs. The two servos and the homemade retracting landing light were fitted to the wing before covering.



Be brave! Using a pad saw to separate the outer wing.



Wing parts after sawing in two.

“The wings are built with part of the fuselage attached”

The wings are built with part of the fuselage attached. There are two ribs with a 1mm gap where eventually the wing will be parted, leaving one part as an extension to the fuselage on each side. The wing is supported during construction by the wing tube outer and once this is started it will remain as one piece with the entire fuselage until fully covered and sawn off. There is no way I could do this in my workshop as the assembly would have to be moved about and also turned over to skin the other side. So, I decided to build it vertically, with the fuselage sitting on its side and the wing (with the fuselage extension) above it. Once one side was covered with 3mm balsa sheet it could (with some difficulty) be turned around to cover the other side. After this, a saw blade was run through the 1mm gap between the two ribs to separate the wing. They say that getting married and moving to a new house are the most stressful things you can do. But anyone who says this has never sawn the wing from his Vulcan! However, there was nothing to be concerned about and once apart the inner wing tubes were trial fitted, and the wing fitted back in place perfectly.

When it came to finishing the wings and fuselage it became clear that the end grain of the balsa sheet at the saw joint was going to be next to impossible to make a clean edge of. To overcome this, I bought some thin veneer to cover each side of the joint. Having cut holes to match the tube holes and other lightening holes, glue was applied, and two pieces of veneer were sandwiched between the wing and the fuselage. When dry, with the wing fitted and the waste sticking out on either side, the outer part was carefully sanded to the wing section and the joint was a perfect fit; any gaps between the end grain and the veneer were easily filled.

By design the wing joiner tube is held in place by self-tapping screws fitted through the main gear wells. But I had already decided that when at the field I would not be turning the model over or laying under it to do anything, so all assembly had to be done from the top. The main wing tubes go into the fuselage from each side and cannot go right through because the turbine is in the way. I borrowed another idea from John to make the tubes screw into the main fuselage; a threaded



Sandwiching the wing root veneers before gluing.

bush is fitted into the end of the wing tube, which screws onto a bolt located inside the fuselage in the end of the outer tube.

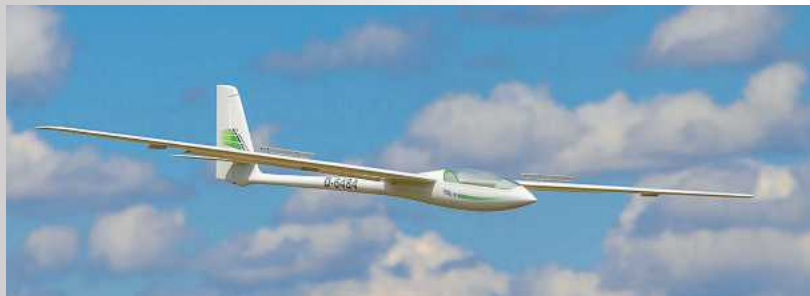
This left only the outer wing panel to be secured to the tube. Here I borrowed an idea from my Xcalibur jet, where the wings have an internal 'P' clamp, which is tightened from above with a single screw once the wing is fitted. This all worked to plan, resulting in a very secure wing fitted entirely from above.

Next time, Dave finishes the build of his Vulcan and goes on the hunt for a suitable colour scheme. ✈️



The final colour scheme will be revealed next time (no peeking at page 66!)

COUNTERPOINT



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characteristics it feels like a much larger aircraft that will absorb all the aerobatic demands made upon it thanks to a wood and composite hybrid construction that affords exceptional strength to the airframe, which is beautifully finished using Oracover. Highly prefabricated, the model can be flight-ready in a day and is quick to rig/de-rig thanks to a new quick assembly system that's been adopted for the wings and tailplane.

The hardware set includes a carbon fibre main U/C, axles, wheels and spats, tail gear assembly, wing tubes, fibreglass control horns and wheel spats. Hinges are pre-installed, and the canopy is pre-fitted; the fuel tank and fuel tubing are pre-prepared and come complete with a fuel dot and breather valve. Pull-pull wires and pushrods (with ball links) are also pre-prepared, and a carbon spinner finishes the ensemble off very nicely.

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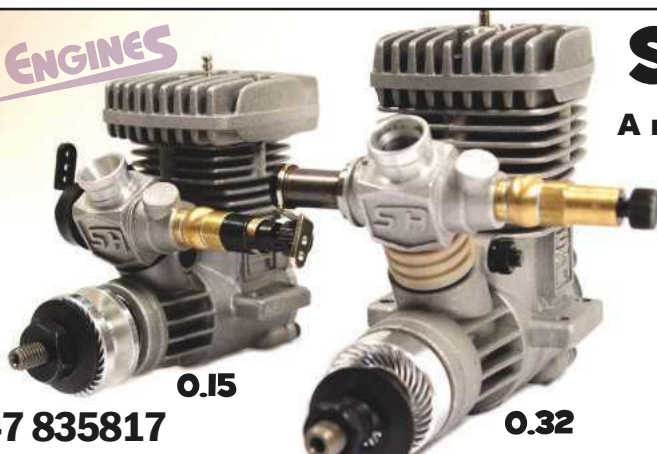
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TOP LETTER

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

LET US BROWSE

I was having a scan through a few previous issues of RCM&E the other day and came along a letter in 'All Write' by Alan Dixon, where he received welcome help from his local model shop, Steve Webb Models at Frodsham. I'm happy to report that since I used to live near there (in my forces days) that they were then, too, a welcoming model shop.

Flash forward to a Covid world and during lockdown we were all chomping at the bit to get out and about. We modellers, who had been exhausting our stocks of materials whilst hibernating in our sanctuaries, were now desperate to stock up!

Now, I've been frequenting my local shop (who shall remain nameless) for something like 40 plus years. Even when away working, I can remember 'bigging up' them as the best I'd come across. And so, I'm now finding it extremely frustrating that I can't go in and browse all the goodies like we used to, as they've re-jigged the shop in a way that doesn't allow the browsing modeller to look and feel the parts that he or she may want to add to their latest creation. The reason given was that it's easier for them to manage for sorting online orders and to stop the occasional 'lifter', which has been an issue since time dot.

But a spinner or a wheel, for example, are not just one diameter, and they come with different cones or tyres. The lovely comprehensive stock of tubing and wire that was once available to try for size for wing dowels etc. is no more - you have to ask the bloke behind the counter to try and find the thing that you think you need, but you're not sure what size... Phew, it's difficult.

Okay, I'm guilty of sending for things from 'Timbuktu' when needed, but I long to browse my local store and spend my precious coin on things that I might need, or that I know will suit a particular design, because as I browsed I was inspired. But without browsability the coin will simply not be spent! I'm hearing the same concerns from my fellow modellers. In these days of promoting 'Support your local model shop', I believe they are going the wrong way.

You'd laugh, but when I voiced my concern in the shop the other day, the reply from one assistant was, "Oh, it's all done online now-a-days". So why were there five modellers in the shop at that time? I do believe that with this mentality the local model shop is going down the wrong street.

Come on local model shops. Keep your shops browser friendly - and by that, I mean browsable with our feet!

Paul Blakeborough

CAKE STANDS & IRONING BOARDS

Being long in the remaining teeth I can get to my knees on the flying field but can't get up again! I needed a remedy ASAP and I found a solution in the house, which was simple and cheap... By hook or by crook obtain an ironing board - cheap to buy if you can't 'steal' one. Undo the screws holding the board to the base and replace it with white melamine board from the DIY store. Now go to town sizing it up with uprights, peg holes, etc. Folded up it fits in any hatchback and is a handy spare building board in the workshop.

This winter I decided to go small for my building as there was no floor space in the shed. I could probably get away with using some space on the dining table but needed a building base for the nitty gritty. Taking our granddaughter around HobbyCraft for craft items one day, I happened on the cake bases. They looked promising so I bought two and took them home to try. They take pins readily, will stand a lot of knife cuts and are reversible. At 16-inches square, two gaffer taped boards will take a reasonably sized model and fold in half for tidiness. At less than four quid each they are a bargain.

Phil Shinn

IN PRAISE OF LI-ION

I was pleased to see Lee Schofield's feature on Li-ion batteries in the May issue of RCM&E. I have been using Li-ion packs made by a UK supplier for two or three years without any problems whatsoever. They are simply 3S packs in a triangular configuration with a stated capacity of 3120 mAh and to me seem ideal for those slow flying vintage type models that I so dearly love. I have three models kitted out with 3S packs - a Junior 60, a Super 60 and, dare I say, a foamy glider.

At full throttle, e.g. for take-off, the amps are in the mid 20s but simply cruising around uses less than 10A, and in the case of the glider about 4A. I have a spare pack destined for a Frog Centurion, also featured in your magazine.

I believe the UK supplier, 3DXR, will still supply these batteries and make bespoke packs to order. Not only are they free from the puffing problem, which can affect LiPo's, they are considerably lighter too. My 3S 3120 mAh packs, at 160g each, are about 30g lighter than a 3S 2200 mAh LiPo pack, a real advantage when building vintage models.

Stuart Crooks

WOOD STOCK

After reading Alex Whittaker's article in the April issue, I got to thinking about his remarks on DIY subjects. A few years before I retired, in 1990, I periodically bought large supplies of balsa from Balsa USA and had them delivered for free by the US Forces PO., which brought them into Bahrain on a C6. I also bought large bundles from Balsa Cabin. I eventually amassed 47 cu.ft. of 36 and 48-inch timber and on one occasion Balsa Cabin sent me a box of 53-inch 3/16" stock! Like Alex, I too saw up most of my own strip stock.

Alex mentions diesels and fuel. Can you still buy ether to mix your own? I still have a nearly full one gallon can and some of the small cans on the shelf. Many years ago, I bought a diesel head for an OS.61 FSR, which was a real beast, swinging a 14" x 7" wooden prop. The smell brought fliers from all over the patch wanting to know what I was running and the low growl from the exhaust was magnificent. I later went on to convert a ST 3000 and a Fox 15.

About this time, 1986-7, I also converted a ST4500 to spark ignition, (as yet un-run) and had a roller bearing con-rod made up, which never was fitted. I still have them in their box and un-run. I seem to think that I also did a diesel head for that one too, which would be a real, real beast of the first water.

As for Alex's OS 40 FS Mk1, I too have one which comes out into the air once in a while, together with an OS 1.20 FS Mk1, together with a broken one bought on the internet some years ago as spares.

Mention is also made of the CAA intrusion into model aeronautics and the unnecessary registration of our models and where and how we fly them. Living on the Isle of Man we are very lucky that these draconian measures have not been implemented and we are, dare I say it, free to fly as long as we apply what few rules there are, which are mostly safety ones - and there's no £9 to pay!

Mike White

STATIC DISPLAYS

Last October my club had a display at our local shopping centre, and I had my somewhat complete TND 134" Lancaster on display. A good crowd was on hand and as I was talking to interested passers-by I could not help but hear a gentleman telling his wife that they were looking at a very nice model of a B-52! I gently corrected him so as to not dent his ego and he looked at me with a blank expression and asked me if I was sure as to the identity of the aircraft. My reply to the affirmative had him confused and he took his wife by the arm and walked away, at the same time explaining to his wife, "That bloke has no idea to what he is talking about. It is definitely a B-52!"

Now I was confused. Years of research and a couple of thousand hours to the point of display and I thought I was building a Lancaster. I was thinking about a quick email to Tony Nijhuis about sending me the wrong kit, but I remembered that Tony did not have a B-52 on his books.

About an hour later, I managed to bump into the same gentleman. Again, I was gentle, but much firmer about the model being a Lancaster. It took the voices of several others to finally convince him. Well, we think we did...

It is one of many funny moments while having models on display. Firing the 'machine guns' on my sound equipped FMS 1400mm Mustang while two older gentlemen were making a very close inspection comes to mind. Mind you, you do have to pick the right 'targets' to make it funny. They walked away laughing.

I can really advise any club to try a static display. It is fun to meet people and a lot of fun to see their reaction to having a go on the fright (yes, I did spell it how I wanted!) simulator.

To add one final note, we have never had a model damaged doing a display. In fact, we have found that the people coming to us are very respectful of us and our equipment.

Daryl Woolfe

VAPOUR BLASTING

I recently had to replace an exhaust stub on our Rotax aircraft engine, and I was pointed in the direction of a guy named Mike Dagg, who sorted me out a reconditioned stub. Mike's firm in Cannock goes by the novel title 'Peaky Blasters Engineering' and among the services they offer is vapour blasting for the non-invasive cleaning of parts.

Like many modellers, I have gradually built up an engine collection and recently I inherited some from a pal that had passed away. One of these engines, an OS 35, was in a disgusting state - just a castor residue coated mess. I sent this and another couple of engines to Mike and after a few days they came back transformed. Please see before and after pictures of the nasty one!

Richard Wademan



ENGINE BITS KIT

Over the lock down period of Covid 19 here in New Zealand I have been keeping myself busy with re-reading the many RCM&E magazines I have purchased. Over the years I have built many aircraft from the great range of plans that have been available in them. I enjoy the construction detail and accuracy of the plans and all of the planes have flown beautifully off the board.

The only thing I haven't built yet is a glow engine. I see that Alex Whittaker has plans for a Firefly .46 engine build but I don't have the necessary skills or the tools to be able to consider such a task.

However do you think that model aero engine manufacturers like OS, Saito, DLE would be prepared to offer a kit of engine parts that could be assembled, just like the model aircraft kits that are available?

I wouldn't even mind if a kit engine was a bit more expensive than

a commercial engine. They could range from a simple two stroke up to more complex four stroke and petrol engine, depending on your skill and knowledge.

Receiving a box with all the relevant parts needed to construct an engine would be great to gain a fuller understanding of the workings and function of a glow or nitro engine. I would enjoy putting the piston and the liner together, screwing on the head, attaching the carburettor and assembling the engine in a sequence that ensures its ability to run.

I think to be able to put a kit engine together and attaching it to a recently completed air frame would be the ultimate in showing a sense of pride, adaptability and achievement in all things building.

To be able to say I have built the whole aircraft including assembling the engine from scratch would be sublime.

Howie Walsh

“Mini Bolero is designed to fly freestyle and 3D aerobatics”



MINI BOLERO

David Ashby enjoyed his big Bolero, right up to the moment he ran out of talent, but finds consolation in this new compact version words & photos » David Ashby

A laser-cut balsa/ply ARTF model, this mini version of the freestyle and 3D aerobat spans 950mm, flies from smaller fields and is compact enough to be easily stored and moved about in one piece. Designed and developed in-house by Alan Wood and Nigel I'Anson at Ripmax, Bolero and this new mini version were clearly influenced by the Bossanova, an ARTF that gained popularity some 17 years ago.

Like its big brother, Mini B' is designed to fly freestyle and 3D aerobatics, the large control surfaces, shorter coupling and thicker symmetrical wing being obvious pointers. Saving weight without compromising strength has been the aim, yet while that means dispensing with side force generators (and looking better for it), I think they've achieved their goal. Unlike some of the distinctly light and fragile bespoke 3D machines I've seen, with care this one is strong enough to serve as an aerobatic hack or club Sunday flyer.

I think it's attractive too.



Weight saving was the remit so Mini Bolero dispenses with the Side Force Generators.



I just happened to have the servos suggested so in they went. The long canopy hatch means everything is to hand.

BUILD

Assembly should be straightforward, especially for anyone who has put an ARTF model together, the full colour manual guiding the process step-by-step. In summary, it's really no more than a case of hinging up the control surfaces, dropping in the servos, adding wheels, bolting on a motor and fitting the cowl.

- starboard wing was misaligned. It's impossible to get to, so removal of some material from both the wing and fuselage to create the necessary clearance was necessary.

-

The hardware is fine - fit and forget.



The battery bay. Anything in the 1300 - 2200mAh 3S range will fit, although I prefer the smaller, lighter packs.



Colour matched it may be but my spinner backplate was poorly balanced. I've since replaced it.



Servo holes need a bit of trimming to fit the recommended New Power units.

Small enough to stay in the back of the car, the model...



“Even the low rate deflections deliver a snappy response”

SYSTEM CHECK

Swinging a 10" x 5" prop, my wattmeter revealed 170W and 17A peak. An 11" x 5.5" records 190W and a 12" x 6" prop 210W and 19A. That's around 100W/lb for the bigger props. I've stuck with the 12" x 6" as although the power increase is modest, the larger prop's braking effect is a quality I prefer.

FLYING

ROC's are fine from short grass but if your field is bumpy or the grass is long then be reassured that a full power hand launch is easy and safe thanks to the model's benign nature and wide speed range. If you're new to agile aerobats like this then it's important to realise that it'll take a few flights to get comfortable, while taking the time to tweak and trim to suit your flying style.

Pilots who prefer a more 3D-influenced flying style will simply max out the deflections, dial in

...is a pretty little thing.



Full power hand launches are safe and easy when the grass gets a bit too long.

Knife-edge is pretty straightforward.





A contrasting scheme helps during aerobatics.



There's power for a prop hang and enough to pull away vertically too!

the exponential and fly with the battery back as far as it'll safely go. Those who fly with a more traditional aerobatic remit in mind will do the opposite and flyers who like a bit of both... something in-between.

Even the low rate deflections deliver a snappy response in roll and inverted flight needs a smidgeon of forward stick pressure when the C of G sits at the forward end of the suggested range. That won't be the case when the C of G is further back and the model feels neutral, but I tend to prefer the former; it's nice to feel needed by the model when it's the wrong way up.

The elevator has a powerful effect, so the expo suggested (50% across elevator and



It's a pleasant freestyle aerobat, but one that's better in calmer conditions.

ailerons) is essential as a way of taming the response. The same goes for rudder. Knife-edge flight is straightforward with a modest amount of coupling evident. Spins are easily entered and finished.

Stalls are benign; you certainly won't find a rapid response, wing drop or flick, just a mushy nod at best. That means landing should be uneventful and I've found that the nose can be raised without fear to let the wing blunt the speed where required. Harriers do exhibit a little wing rock, just a tad, but transitioning to a vertical prop-hang is straightforward enough.

FREESTYLER

Prop-hanging does expose the system's power limitations. The model isn't under-powered but dedicated 3D pilots will certainly want more than there is. It'll hang about easily enough and fly away slowly upwards from the vertical, but no less than full throttle is required to achieve that, and the result is far from punchy.

So, 3D or Freestyler? Which is it?

It's the latter, although that's not to criticise the model. It's a nice little aerobat, a perfect back-of-the-car machine that any intermediate

or experienced pilot will enjoy. Flying duration will depend on your flying style and power system set-up, especially the battery size you prefer. I've settled on 3S 1400mAh and 1800mAh packs as a 3S 2200mAh battery just seems a shade too heavy for my taste. Accordingly, the 1400mAh packs provide for a good five minutes of stick banging.

I loved the big Bolero, right up to the point where I ran out of talent, and they're impossible to find these days, so it's great to have this new version. It's light, so not a model that flies on windy days, but in calmer conditions you'll have fun. If you're looking to move up from a park-fly aerobat - a WOT4 foam-e or similar - to something that offers greater precision and a wider aerobatic repertoire then Mini Bolero should be on your short list. ✈️

DATAFILE

Name:	Mini Bolero
Model type:	ARTF 3D/Freestyle sportster
Manufactured by:	Ripmax
UK distributor:	Ripmax www.ripmax.com
RRP:	£139.99
Wingspan:	950mm (37.5")
Fuselage length:	950mm (37.5")
All-up weight:	870g (30oz) with 3S 1800mAh LiPo
Wing area:	Approx. 340 sq.in.
Wing loading:	12oz./sq.ft.
Suggested power:	Quantum II 400, 1100kV outrunner, 10" x 5" prop, 30A ESC, 1300-1800mAh 3S LiPo
Suggested servos:	New Power XLD-09HMB (11g) or Quartz P-QZ102 (12.6g)
Functions (servos):	Ailerons (2), rudder (1), elevator (1), throttle (via ESC)

"It's a nice little aerobat, a perfect back-of-the car machine"



This one is staying in the collection!



This brightly finished DH88 Comet was a new aircraft that Andy Meade pressed into service and which flew well on the Sunday.

PSSA ORME OUTING

Post lockdown, the Power Scale Soaring Association host a scale weekend on the Great Orme at Llandudno. Simon Cocker reports words » Simon Cocker | photos » Simon Cocker & Phil Cooke

Despite some misgivings and a degree of paranoia from a minority, Phil Cooke, the leader of the PSSA movement, has proved that an outdoor flying event can be successfully hosted in safety. Out on the hills space is our saviour and with the use of the supplied nitrile gloves and industrial strength sanitiser we all protected ourselves from contact in the process of launching each other's aircraft. With these measures in place we managed to conduct ourselves in line with common-sense guidelines and the excellent flying fun continued as usual. The omission of group shots was the only other noticeable departure from the normal proceedings.

The main south westerly slope that we prefer stood abandoned on Saturday as we danced up and down the precipitous, smaller rock face just around the corner. The wind was from the north west and this rocky outcrop provided reliable lift throughout the day, enough to support most of the aircraft in

our PSS air force. The heavy-duty aircraft were left in the cars as there is no room for error on this cliff edge beside the 'Rest and Be Thankful' coffee shop, also perched very close to the rocky escarpment. A large number of visitors passed by all day, some of whom expressed their fascination in our flying activities, and this provided a continual opportunity to interface with the public and spread the word about silent flight.

BOMBING AROUND

Chris Collis is a gentleman I have known since the beginning of the PSS movement. He appeared out of the blue from his Geordie clan to finally share the epic Welsh lift. Chris is as charming and fun as ever, and still flying some of his original vintage models, including his venerable Ju 88, Lancaster and Wellington. The walkers and joggers were most perplexed when the big old Lanc flew low over Marine Drive to make some practice landing approaches. It was indeed a



Chris Collis with his old Lanc and Wimpy bombers. He had a wonderful weekend flying with the lads.



Chris Collis' venerable Lancaster is an oldie but goldie and it was delightful to see her traversing the Welsh sky.



Dave Worrton launches Simon's superb DH Venom for a long, fun flight.

wonderful sight, as executing a scale approach was quite challenging on the narrow space between the road and the rock lined slope edge. There is another sharp rise behind the road and a car park area, as well as the brutal looking dry-stone wall bordering this area. Lift was all around this landing zone, so having descending aids such as flaps, crow-brakes or airbrakes was the only way of arriving in perfect control into the confined space. Without any aerodynamic braking the choices involved a long shallow approach from the direction of the parking area, or a cross wind low level pass, with a sharp turn into wind at the last moment.

TWIN BOOMER

I had a great time messing about with the Venom, which resolutely refused to come out of the sky and land. This lovely model was built by the late John Braithwaite, who also built an M-55 Mystic, which I will be flying in his memory as the season unfolds. The Venom is remarkably efficient and proved to be the perfect choice for this slope in these pleasantly buoyant conditions. I just could not slow her down, even with reflexed ailerons on a negative flap setting. By this time, I was enjoying using the back of the slope to fool around with the model, providing some aerial entertainment for the myriad of spectators. The secondary slope rising sharply behind the road was generating smooth, consistent lift, which provided height to dive back down into the LZ (Landing Zone) and pass through with ample energy, to zoom back onto the cliff edge to collect a sea salt flavoured lift boost before gaining extra height to swing right round onto the back slope once more and repeat.

After an hour of airtime, I decided to try much harder to place the DH Venom back onto terra firma as the capacity of the 2000 mAh NiMH pack was being rapidly consumed by the hard-working servos. I opted to bleed off the height and energy in the airframe using the lower part of the left-hand side of the front face and crab the Venom onto the low compact gorse bushes.

SPY PLANE

I enjoyed once more watching the Lockheed U2 cruising menacingly all around this region of the Orme. It is truly a perfect all-round PSS design, which oozes cold war menace and Andy Meade flies the model in a smooth scale fashion. This aircraft has a six-servo wing with extended flaps, so that full crow braking power can be deployed to bring the large model down exactly where intended and Andy, of course, did just that. An unhurried arrival to a spot landing was amusingly compared to the fuss the rest of us made of a simple landing!

Later Andy flew his scratch-built Sea Hawk, which is a compact aircraft with excellent aerodynamic properties. With its low drag and smooth lines, the model was delightfully groovy. This simple chuck around version did not sport any landing aids and Andy enjoyed the challenge of arresting its efficiency whilst sitting it back on the famous rock from where it was deployed. That was eventually achieved but a smaller piece of the same big rock removed a portion of the rear belly skins! Even the most experienced of PSS pilots have their moments of bad luck. We patched up the gaping opening with white strapping tape to return the model to the skies later in the day.



Lockheed spy plane displays all its menace. It's a perfect all-round PSS model to have in your fleet.



Hawker Sea Hawk speeds past to show those clean lines, care of some lovely flying by Andy Meade.



The rock's teeth caught out even the best of us! Andy had a big gash on his mini Sea Hawk, but it was soon fixed for flight.

MASS BUILD MODELS

Phil Cooke flew his diminutive but perfectly formed orange Jet Provost, built from the Andy Blackburn plan. Considering that Phil had not flown a model this year until this day he was incredibly brave and inspiringly confident with his style. The JP was pushed out to the extremes of the slope on either side of the launching point - at one point I wondered if the tiny airframe was going to run into the cafe car park! I did not dare to travel that far across the void with the Venom, which is twice the size of the JP. Phil was darting about the sky and executing ultra-low-level passes and having a ball with this newfound freedom; I could feel him unwinding with every wild moment.

His landings were simply awesome as he lined the JP up across the top of the slope, where he placed the model onto the slender grass area, bringing it to a stop beside him each time. I loved Phil's cool swagger as he nonchalantly plucked the JP from the grass and pretended that this perfection occurs all the time!

Phil also flew his stunning A-4 Skyhawk and Hawker Hurricane with equal aplomb, also models from the PSSA Mass Build programmes of recent years.

BIG JETS

A few of the bigger versions of this Jet Provost design have emerged from the batch of twelve or so laser cut kits that were produced last year. Jess Billington test flew his immaculate rendition, only to discover on the moment of release that his model was tail heavy, and he had a challenge to face. The aircraft immediately dropped away after stalling viciously, and we all gasped in disbelief as Jess exclaimed in his panic. Luckily the JP recovered so Jess could fly his delightful aircraft over to the left side of the slope, where the topography is green and soft. The Centre of Gravity was not too



Little and large Jet Provosts all fly so well. But bigger proved better and more impressive, of course.



The Hawker Hurricane from a previous PSSA Mass Build has proved to an outstanding design as they all fly so well.

far misplaced so we were all mightily relieved to witness a safe and well executed landing in the gorse without any damage. A well-deserved outcome for such a dedicated and passionate PSS enthusiast, particularly after losing his imposing AW52 flying wing at the previous meeting.

Steve Kemp also had completed his 50% bigger version of the JP but elected to save his time heavy investment for the main slope in stronger conditions, a theme of safety also adopted by many other pilots, including the newly completed Fouga Magister by Bob Jennings. This stunning example in French high viz tiger stripe livery was far too perfect to place in any doubt on a slope so unforgiving. The type, however, when well-trimmed is most efficient and would have flown in the 20mph wind perfectly well, as proven by Andy Meade and Jess Billington, who flew their perfectly trimmed versions.

The top-quality building standards and exquisite level of investment in finishing PSS models these days makes them valuable and worthy of careful risk assessment, that's for sure.

CARE FREE IN FOAM?

It is imperative to own a number of PSS aircraft that can be flown without worrying about the outcome; the 'I don't care models', which can provide good sport even though the flight performance is not particularly



Hurricanes come in white too! Phil Cooke's example gave a spirited display.



Big Jet Provost and cool looking Jess Billington - but trouble lay ahead...

thrilling. Harry Twist, for example, enjoyed a stress-free ride with a foamy SU-27, while Chris Barlow flew with impunity his lovely Catalina mini flying boat, which was surprisingly smooth and convincing considering its drag laden shape.

Meanwhile Andy Gough appeared with his supportive wife, Jacki to join in the throng and immediately launched his semi-scale, svelte Vulcan to soar with the gulls, who were bobbing along and showing interest in the odd shapes that had appeared in their airspace. Andy also



Jess likes to add lights as his main PSS feature. Brilliant they are too!



It's on fire! Stunningly attractive Fouga Magister newly completed by Bob Jennings.



Harry Twist popped his ultra-lightweight SU27 into the light lift to enjoy a bouncy cliffhugging flight.

enjoyed flying his Mitsubishi Zero in the smooth lift, such a revitalising experience compared to the inland rough air we are accustomed to at our own sites at Leek in Staffordshire. I derive satisfaction and amusement when I see the joy in the pilots' expressions as they absorb themselves in the rewarding process of steering their scale aircraft around the skies and also avoiding each other's models. Andy takes this to another dimension, with his inane ear to ear grin combined with his unique body language, as he cuddles his Tx to the left hand side of his body in an oddly asymmetric posture and steers his model with some corresponding body swerving, as if he is weight shifting in a hang glider.

SABRE RATTLING

Gordon Studley and Martin Gay presented their F-86 Sabre designs, each exquisitely finished in every detail. The lift was becoming less favourable as the afternoon progressed so by this point there was insufficient breeze to contemplate their launching, but this provided the opportunity to chat in depth with the lads about their lock down projects and future aspirations.

Both PSS addicts are absorbed and fascinated by German WW2 experimental aircraft designs, which are so captivating



Our irrepressible Stokey boy, Andy Gough had a ball with his Zero - always fun to be around.



Above: Chris Barlow flew his lightweight models in the later afternoon sessions. The Catalina went amazingly well.

Left: John Hey with his foamy light lift model, which was flitty but fine. His Aermacchi was grounded as it was too heavy.



Above: Martin Gay with an experimental bomber design that Gordon has built.

Left: Martin Gay and Gordon Studley, designers of the F-86 Mass Build project, display their beautifully crafted models.



Gordon Studley with his tiny and lively German experimental design. A brave choice but Gordon is still taming the flight profile.

and well documented in specialist publications. I frequently look longingly at many of the designs on my short list and promise myself that I will build a few of them one day soon. Whilst I am dreaming, I find that Gordon has just got stuck in and simply committed to building some on his list and two of them were sitting there in the balsa flesh - wow!

AFTERNOON DELIGHT

Sunday was becalmed in the morning, with a light wafting breeze. So much chatting ensued and lobbing of DLGs. However, at 2pm on the nail, as the tides in the bay turned, so the wind also gathered and switched on. A force of nature as strong as the tide can affect the microclimate around the Menai Straights in this way. Those who had the patience to wait were rewarded with a south westerly breeze that gathered in force as layer upon layer of excited air built up quickly to produce a solid lifting air mass of 28mph. The main slope came alive with energy sufficient to propel all manner of heavy-duty airframes aloft.

The energy provided on this epic slope is legendary, as I have mentioned so many times before, but it warrants the repetition. It is like no inland slope as it is just so smooth, even right down to sea level. It is the life blood of PSS and injects an enhanced performance boost to any

aircraft - whether you want it or not! You have to experience this phenomenon to understand the feeling that overwhelms you, transforming your sampling of slope soaring and driving your flying to new heights. This is where the motivation to build better performing, more scale looking PSS models is derived, even though to enjoy that potential most of us have to drive all the way to Wales to realise the experience. But it is worth the effort and we will keep returning there to catch the big wave until we are too old and frail to withstand the wind force ourselves!

Steve Kemp adjusted the balance point on his virginal half again sized Jet Provost with an additional 40 grams of lead ballast. Learning from the fright Jess endured with his maiden flight the previous day, this tweak paid off and the new model was epic in the big lift. Steve was immediately comfortable with the model and was soon confidently buzzing the back of the huge landing area and running through the smooth air at low level back onto the front of the slope. The presence and reward of the bulkier



Underside of the German jet.



Jet Provost in motion and mightily impressive it was at the larger scale. Steve Kemp has made a beautiful job of the aircraft.

airframe is worth double the extra trouble it takes to build, so it was smiles all round and a certain buzz pervaded through the camp and also quickly online to those other PSS activists who are in build with this size of JP. There will be more striking examples of this aircraft type very soon, poised and eager to launch from the Orme.

The day was perfect for PSS and the lift was still strong and continuous at 7pm, by which time the boys had to reluctantly drag themselves away to return home. This magical setting has a draw which is not easy to reconcile; there is a natural high when the weather is so perfect up there.

Thank you to Phil Cooke for his resolve and commitment to bringing us all together to celebrate the freedom of flight in the fight back against this dreadful pandemic. Happy landings to all of you. ✈️



Neat little Canberra gets a Meade two handed launch prior to a lively sortie.



Emirates are finally back in the skies. Steve Kemp's stunning A-380 was sublime.



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THE INFINITY PR



The Editor finishes off the
Infinity Evo airframe

words & photos > Kevin Crozier

Garden shot of the finished glider - looks good!

Last time we looked at installing the servo mounts in the Evo's thin carbon wings. So, this month it's time to finish the whole thing off.

To be honest, for an almost mouldie tyro like me, it all looks a bit daunting, but when you knuckle down to finishing such a model then it doesn't really take much time or effort at all.

This time we'll take a look at installing the servo plate in the fuselage, fitting the wing servo harnesses and installing the radio gear...

MOTOR FIRST

Before all that though we need to install the motor mount. To complement this model, Neil Jones at Flightech offers the HET Typhoon EDF 2W-4600KV motor with a Reisenauer 'Micro Edition Light' 5:1 gearbox bolted to the front. My model came with two motor mounts - a pre-drilled epoxy plate version and a neat turned aluminium affair that plugs into the



Left: Impressive compact HET motor with its equally slim 5:1 gearbox.

Above: Push fit motor mount. The fuselage opening is pre-cut with the correct thrust lines.

PROJECT PART 3



Masking around the radio bay stops any wayward drips of epoxy from attaching to the pristine carbon fuselage.



Fine marker lines, just visible, showed where I needed to place the servo plate when it was all glued up.

front of the fuselage. It was obvious that the metal version was going to be much easier to line up and fit - just open up the nose a bit with a large diameter round Perma-Grit tool and epoxy in place (just a few strokes mind, test fitting as you go. Sandpaper wrapped dowel would do the job okay too.) The epoxy plate version would need to be accurately marked up and held in position while the glue sets.

However, the metal version does need to have the three mounting holes drilled out; the epoxy version can be used as a guide for this.

SERVO PLATE

The carbon effect servo plate is pre-cut for a pair of small V-tail servos. Neil informed me that any good servo of around 2kg torque would be adequate, so I used a couple of King Max DCS0925H 2.6kg units to complement the King Max servos that he had supplied for operating the flaps and ailerons. These were a snug fit in the ready-made hole and there was no room for the wires and grommets to go through, so some small half-moon cut-outs were filed at one end for the wires to pass through without risking damage to them.

With the servos screwed in place I was able to make a dummy run of the plate in the fuselage, during which I made sure that they were sitting flat and not at an angle. I used a fine marker pen to draw guidelines on the inside of each fuselage side, so I knew exactly where to place the plate again when its sides were covered in epoxy - not the best time to be fiddling about!

It's also important to know where to place the servo plate fore and aft, so I installed the motor and gearbox, connected to the ESC. There's just enough room for a 1000mAh 3S LiPo to sit next to the ESC and it's the back end of this pack that defines the front edge of the plate, leaving a few millimetres of clearance to allow the LiPo to be fitted easily when completed.



After wetting out the inside of the fuselage and the servo plate it was time to wait for the glue in the orange dish to reach that magic 'soft toffee' consistency.

The plate was epoxied in using the same method described last time, only this time I used 30-minute ZAP epoxy. First, the area around the cockpit opening was covered in masking tape to fend off any wayward drips of glue. After mixing the epoxy I used a small paintbrush to wet out the insides of the fuselage along the marked lines. I did the same along the edges of the servo plate. After waiting until the unused glue reached a toffee like consistency, I then applied a bead of the



A dummy install of the motor and ESC, together with a LiPo (not connected), showed the forward position of the servo plate.

“The carbon effect servo plate is pre-cut for a pair of small V-tail servos”

“As expected, the Rx passed with flying colours”

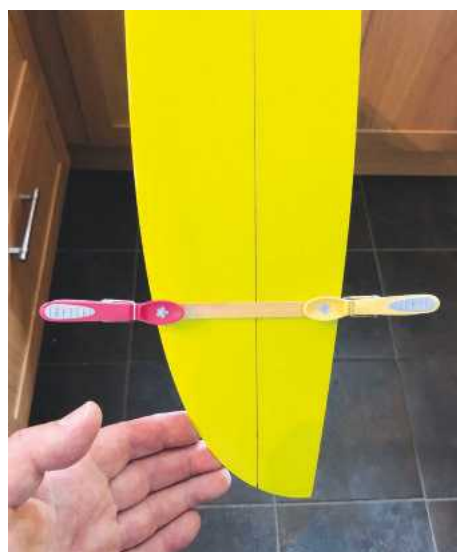
mixture along all the gluing edges. I fitted the plate, checking that it matched the guidelines I had drawn, and it was also in the correct position fore and aft. It was then left to set.

WIRING HARNESES

Right and left-hand harnesses are supplied to connect the receiver to the servos in each wing. These consist of normal plugs at the Rx end and terminate in a male Deans connector (not the usual T-type) at the fuselage to wing root. A matching female connector is factory fitted at each wing root.

I was a bit dubious about fitting these connectors as they simply sit in holes in the sides of the fuselage with no support apart from the epoxy used to glue them in place. I had visions of the glue giving way as the wing was pushed in place, maybe leading to only a partial connection and disconnecting in flight... Neil reassured me, saying this had never happened in his experience, so I mixed up another dollop of 30-minute and fitted them in place, making sure that they were sitting square to the moulded wing root and flush with each fuselage side.

Before fitting these connectors, you'll need to file the ready-made holes open a little bit as they need to be a snug fit. It's tempting to test them in the holes the wrong way around as you fettle things, but this proved to be a big mistake. I did so and was obviously close to a nice tight fit when the connector on the first side that I was fitting popped into its hole, nice and snug. But...



Holding the ruddervators at neutral.



Above: The wing servo plug sits flush against the fuselage side. I'd caution against testing it for fit the 'wrong way' around!

Right: Finished radio install - it's a tight fit. Note the fishing hook aligners used as aerial exits.

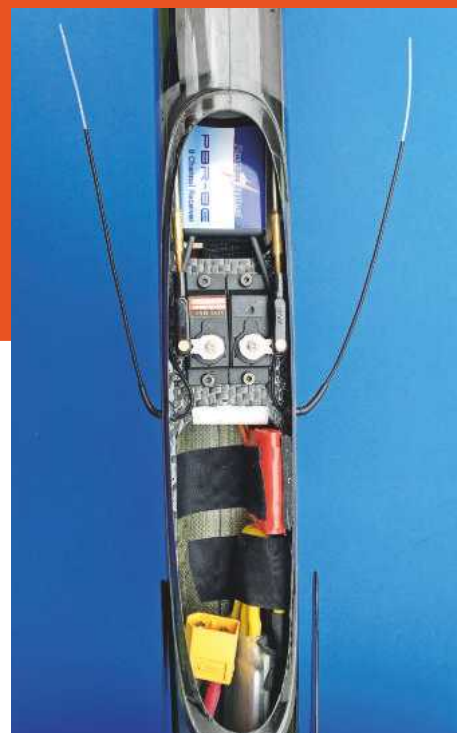
Try as I might I could not get it out, so I was stuck with the pins inside the fuselage and the wires outside rather than in! I then compounded my error by pushing the block back out using the blunt end of a needle file. I couldn't believe how tight it was, despite having dropped in so easily, but a good push with the file soon dislodged it. I was then dismayed to see that one of the pins was bent at 90 degrees. I bent it back as best I could, but it was never going to be dead straight again. However, after another telephonic cry on Neil's shoulder, he assured me that he too had bent these pins in the past and they worked fine afterwards, thanks to the high quality of the connectors involved, so after testing the offending connector in its matching wing socket I set to and fitted the harnesses, taking good care not to repeat my mistake on the other side!

RECEIVER IN

Time now to set up the V-tail servos, so I unboxed the new Powerbox PBR-8E eight channel Rx that I was intending to use. A quality piece of equipment like this should be fault free, but I was taking no chances with such an expensive model and decided to test



Parting off a pushrod to length. The peg lifts it just clear of the fuselage sides.



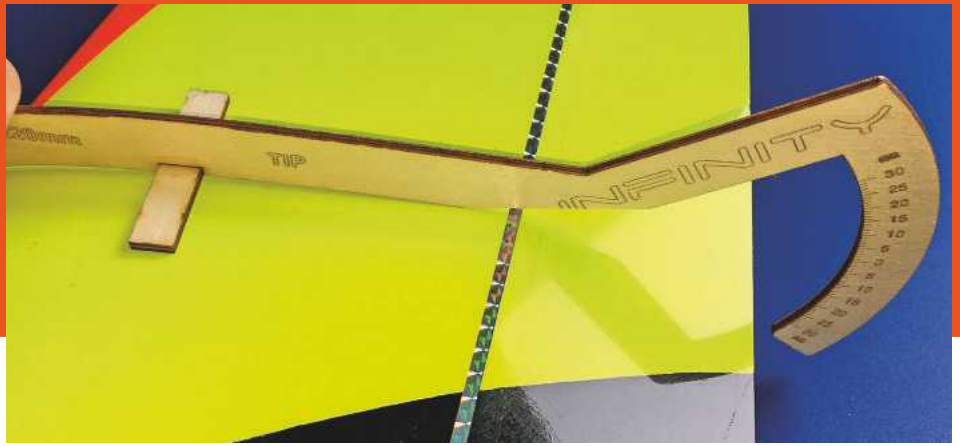
fly it in a hack foamie. As expected, the Rx passed with flying colours, so I made up a short ply plate to Velcro it to, which was then glued into the back of the radio bay, immediately behind the V-tail servos. The Rx sits on top, with the wires running underneath and looping back into the receiver's connector block.

But what to do with the two long receiver aerials? Powerbox recommend running them outside the model, which is especially important with a carbon fibre fuselage such as this one.

On Facebook there is an Infinity F5J group, which I was keeping an eye on. There are several R/C installations on there to provide inspiration, and I also had pictures of Neil's own model to refer to. Neil uses teardrop shaped mouldings to neatly exit his aerials, but on the FB group I noticed a post by the model's designer, Bohuslav Majerčík in Slovakia, who showed a pack of anglers' 'Bent Hook Aligners', with the caption: 'A clever solution for antenna output.' A quick search on eBay revealed many such products, so I ordered a pack of 10 to see what they looked like. When they arrived they were just what I needed. Made from soft tubing, at one end



V-tail pushrods are a press fit - no keepers required.



Above: Centre, tip and tail deflection guides are provided to set up the control throws. The centre one needs extending to cater for full flap - I taped on a small crescent cut from card.
Left: My sole IDS horn of the correct length was used as a guide to drill out and cut down a set of longer horns. Holes were drilled undersize and then reamed out with fine pin files - no slop needed here!

there is a larger diameter tube with flanges, perfect for passing through the exit holes that need to be drilled in the fuselage sides. The flanges provided a good key for the small amount of silicone sealant that I used to fix them in place, whilst the relatively thick tubing prevents the Rx aerials from chaffing caused by rubbing directly against the sharp edges of the holes. At the other end the aligners bend at about 45 degrees and taper off, directing the aerials backwards, whilst giving them plenty of support.

Nice one, Bohuslav!

HOOK UP THE TAIL

With the V-tail servos fitted I could now cut the wire pushrods to length. I used a threaded adapter at the servo end, onto which I screwed an MP Jet plastic clevis. These are short and slim, a crucial consideration in the tight confines of the Evo's sleek fuselage; a brass pin is pushed in place to secure them to the servo horns.

After centring the servos, I attached the clevis and adapter assemblies to each horn. I also fitted the tail panels and connected their short, factory fitted metal control horns to

each of the pushrod wires. The pushrods come with a short bend at their ends and this simply locates in the hole in each control horn, helped along with a pair of snipe nosed pliers. There is practically no sideways play, so no keeper is required.

To keep the ruddervators centred I locked them in position by sandwiching each tail half between two lolly sticks, held in place by a clothes peg at each end. Back at the servo end, I could now lay the centred pushrod wires against each of the adapters and mark each with a parting off point. An initial test with a spare bit of wire informed me that the hole at the end of each adapter went to a depth of 10mm, so I added this to where the end of each adapter lay against each pushrod and made my marks. I then used another peg to lift each pushrod clear of the fuselage sides as best I could before parting off their ends using a cutting disk in my cordless Dremel. 30-minute epoxy was used to secure the adapters on the end of each pushrod.

BACK TO THE WINGS

Although I had fitted the wing servos, I had yet to connect them up properly to the IDS

(Integrated Drive System) pushrods.

Although Neil had supplied me with plenty of matching IDS servo horns for the King Max wing servos, most were either too short or too long to provide the correct throws that were required. The sprues were devoid of the correct sized horns. Although I could have asked Neil for some horns of the correct size, I was so close to finishing the model that the thought of waiting another couple of days for them to arrive in the post was too much. So, I experimented with cutting down one of the longer horns and using the one correct length horn that I had as a drilling guide. This went well, so I made up a complete set.

I should also add that I set up the wings before gluing the servo harnesses in place; had I done so then the sheer size of the model would have overwhelmed the room I was using - aka the kitchen!

So, the harnesses were plugged into the wing and then connected to the receiver. The servos all worked fine, so that proved the integrity of the harnesses. I used a foam cradle to hold each panel whilst I set up each



KC settles back for an impromptu balance check.



Tesa cloth 'guard' tape was used to prevent the LiPo packs from chaffing on the radio bay lip.

“The tail on the Evo is a very long way back”

of the flaps and ailerons, making good use of the laser cut deflection guides supplied, one for the centre panels and another for the tip panels. These guides need a cross piece gluing on to keep them upright, and which I also taped over to keep them sitting close to the wing skin. A similar, smaller deflection guide is supplied to help set up the tail panels.

Using the guides, I was able to quickly set up the control surfaces according to Neil's verbal instructions. This would give me a good basic set-up for the test flights, he said, and (spoiler alert) he was dead right:

Ailerons	+30mm, -20mm (note differential)
Elevator	+12mm, -15mm
Rudder	+10mm, -10mm
Flaps	-75mm full, -35mm half (no crow with aileron)
Flap to Elev Compensation	-7mm full flap, -5mm half flap

Once all the wing servos were fettled, I covered them with the pre-cut carbon hatches supplied and used wide greenhouse tape to secure them.

THAT'S ABOUT IT

All that remained to do was to do a final radio check, including failsafe, making sure that the throttle cut, before bolting on the neat folding prop assembly and checking the



Look closely and you'll see a band made from clear sheet plastic wrapped around the front of the radio hatch cover. This stops the prop from catching on the cover as it powers up.

Centre of Gravity. Neil recommended 118mm back from the leading edge as a good starting point.

The tail on the Evo is a very long way back (at least in my experience!), so I approached this with some trepidation. With a 3S 1000 mAh LiPo squeezed in next to the ESC cables, I began my check and was pleased to see that she was almost there - marginally tail heavy perhaps, but nothing that a couple of 50p sized slugs of lead roofing flashing wouldn't cure. I made up a couple of extra slugs just in case, each wrapped in red insulating tape.

I taped the flat slugs to the side of the fuselage in the only place available, immediately behind the ESC wires, using some woven 'guard' tape from my helicopter toolbox. I had this to hand simply because I used pieces of it to wrap the front end of each



The fuselage is specially designed to allow the carbon GM 14" x 7" folding prop to lay flat.

LiPo to stop them chaffing against the sides of the radio hatch. For R/C helicopters such tape is used to cover the edges of carbon fibre frames, especially where servo leads etc. pass by, so I knew it would be perfect for this job - see picture.

With that the Infinity Evo build was complete. After just a couple of days my phone pinged with a message that the local model gliding club would be gathering for their next thermal soaring session. Evo's time to fly had arrived... ✈️



KC holds up the Evo to show the white underwing bands. The first flight was just minutes away and will be covered next time.

DATAFILE

Name:	Infinity Evo V-tail
Model type:	F5j class electric glider
UK importer:	Flighttech www.flighttech.co.uk
RRP:	£1450.00
Length:	697mm
Wingspan:	3500mm
Aspect ratio:	16.4
Airfoil:	Dirk Pflug special
Wing area:	74.6 dm. sq.
V-tail area:	7.52 dm. sq.
Functions:	Ailerons (2), flaps (2), rudder (1), elevator (1)

GOING PLACES

Diary dates for the coming season

SEPTEMBER 2020

September 6 **Wessex Soaring Association Slope Fly-In**, first Saturday or Sunday of the month. Various slopes approx. 5 miles east of Shaftesbury. Non-powered gliders and e-soarers permitted. All welcome but must have BMFA insurance. Contact Pete Carpenter for more details, email pete.carpenter12@gmail.com or call 07919 903742.

September 13 **GBRCAA F3A National League competition**, Knettishall, 12 miles NE of Bury St Edmunds, Suffolk. All schedules. See gbrcaa.org 'Competition Entry Form' for fees and payment and 'forum' 'Competition News' for details. Visitors welcome but please contact Contest Director, Peter Jenkins on 07725 314950 for details before travelling.

September 18 **UK Classic Aerobatic Association (UKCAA) Fly-in** at BMFA Buckminster, Lincs. Usual format with a fly-in all day and Pick5, Pick7 and 1979 rules over lunch. Standard Buckminster day charges will apply: ukcaa.org.uk/events. Contact Martyn Kinder on 079890 25198 or email ukcaa2013@gmail.com

September 19-20

ModelAir Festival of Flight at Old Warden Aerodrome, near Biggleswade, SG18 9EP. For lovers of model flying, pilots and spectators alike, ModelAir Festival of Flight offers the chance to enjoy radio control (10kg max weight and B-Cert), free flight, and control line flying on one site. All pilots must show BMFA insurance. Various competitions on Sunday. Gates open 9am. Flying 10am-5pm. Tickets: BMFA Members £8.50, SVAS Members £8.50, Spectators £13 (no concessions), Children free. All tickets include the Museum Collection and Swiss Garden. Camping on site, £12 advance booking via camping@shuttleworth.org or 07538 485843. Trade Line, Car-boot, Restaurant, Jubilee Playground. Traders/Car-boot please contact modelair.oldwarden@gmail.com. For more information visit www.modelair.info and www.facebook.com/ModelairAtOldWarden or contact Sheila 07799 132999. Please note that Shuttleworth plans to go ahead with all their events unless advised otherwise by government guidelines. Please check before travelling.

September 19-20

GBRCAA Championships. BMFA Team Selection and National League. All schedules. BMFA Buckminster. Visitors very welcome. See gbrcaa.org and 'forum' 'Competition News' or contact CD Matt Hoyland on 07739 840498 for more details.

September 26 - 27

Hastings MFC Autumn Fly-in and Swapmeet. Open to all BMFA and LMA members. For a longer stay, camp and fly on our site off the A259 at Middle Bridge near Pevensey from 23rd September to 2nd October, £10 for the week (subject to ground conditions). To fly pilots must have min A-cert, and B-cert. for models over 7kg and turbines. Free open air Swapmeet on the Sunday. Bring your own table. To book camping or swapmeet phone Kevin on 01323 849032. All other inquiries phone Bob on 01892 852137.

September 25, 26 & 27

Lleyn Model Aero Club Bring & Fly at Pen-y-Berth, Pwllheli, North Wales. All types of flying welcome, from our fantastic power site to some of the most amazing slope sites in the country. Camping and caravanning on the adjacent site complete with cafe/bar where most meet in the evenings. Why not do what a lot of others do and make it a week or more to enjoy the flying sites and surrounding area. We have on-site catering for a bacon buttie and brew amongst other refreshments, you can even order your butties to be

NOTICE:

Due to the continued effects of the Coronavirus we recommend that you check with the organisers before travelling to any of these events in case of last-minute changes or cancellation.

OCTOBER 2020

October 3 **UK Classic Aerobatic Association Fly-in** at Loughborough MFC, Northants. This is a Saturday Fly-in and 1-round contest to UKCAA Pick5, Pick7 and 1979 schedules. Visitors welcome but pre-registration is required at ukcaa.org.uk/events. Contact Martyn Kinder on 079890 25198 or email ukcaa2013@gmail.com

October 4 **GBRCAA F3A National League** competition, Hurley, Warwickshire. All schedules. See gbrcaa.org 'Competition Entry Form' for fees and payment and 'forum' 'Competition News' for details. Visitors welcome but please contact Contest Director, Adrian Harrison on 07976 244004 for details.

October 4 **Wessex Soaring Association Slope Fly-In**, first Saturday or Sunday of the month. Various slopes approx. 5 miles east of Shaftesbury. Non-powered gliders and e-soarers permitted. All welcome but must have BMFA insurance. Contact Pete Carpenter for more details, email pete.carpenter12@gmail.com or call 07919 903742.

October 11 **Beverley and District Model Aircraft Club Spring Swapmeet** at Tickton Village Hall, Tickton, near Beverley, HU17 9RZ. From 9am till 12 noon. Entry £1, tables £5. Contact Brian Jenkins, via 2bee.jays@live.com, call 07970 959875 or visit www.badmac.btck.co.uk

October 17 - 18

Weston Park International Model Airshow at West-under-Lizard, Shifnal, Shropshire, TF11 8LE. Fantastic trade support, top display pilots from around the World, three days of non-stop flying, pyrotechnics display and Sunday/Saturday evening night show. On-site camping from Thursday till Monday. Full size displays all three days, evening entertainment Friday and Saturday. Helifest and quad fair, swapmeet plus cars, boats and much more. Something for all the family. Contact Steve Bishop for more info on 01952 587298 or 07758 895068. www.westonparkmodelairshow.co.uk

October 25 **King's Lynn Aero Model Club Swapmeet** at West Winch Village Hall, Watering Lane, West Winch, King's Lynn, PE33 0Y. From 9am to 12 noon. Our favourite trade stands have been invited to attend! Jumbo raffle. Hot bacon butties, teas and coffee will be available. Book in advance, good sized tables supplied at £5 each or take a chance on the day for £7.50. This includes admission of one stall holder. Entry and setting-up for stall holders from 8.15am to 8.45am. Open to buyers from 9am till 12 noon only £2. Under 15s accompanied by a paying adult are free. For further information and booking form call 01945 582023 or email klamc.2009@btinternet.com.

NOVEMBER 2020

November 1 **Wessex Soaring Association Slope Fly-In**, first Saturday or Sunday of the month. Various slopes approx. 5 miles east of Shaftesbury. Non-powered gliders and e-soarers permitted. All welcome but must have BMFA insurance. Contact Pete Carpenter for more details at pete.carpenter12@gmail.com or call 07919 903742.



For more events go to modelflying.co.uk

FOR SALE

SUPER TIGRE 25cc with silencer, little used by late friend - £50. Call Alan on 01248 681466 (Conwy).

MULTIPLEX FUNCUB XL, Futura Jet, FMS Corsair, FMS Mustang, SBAC 342. All foam for 4S. Good condition. Must sell, downsizing - £65 each. 01424 752131 (E.Sussex).

PLANS AND PARTS for Dennis Bryant 1/6-scale, 94" span Fieseler Storch. Glass fibre cowl, sprung u/c (Unitracts) - £150. Email Ron at ronval10@btinternet.com or call 01954 210593 (Cambs).

WESTLAND LYSANDER from Seagull with Evolution 40cc petrol engine. Winter project, never flown, engine never started. Includes servos etc. Very good condition - £450. Call Barrie on 07741 479490 (Kent).

CONTROL LINE PLANS - Mirabilis, 35" span stunt. Kirin flying wing, 30" span. Pulstar power launch glider, 26" span. Three stunt fuel tanks - £5 inc. P&P. Call Roy on 079148 21682 (Kinross).

GOTHA twin boom 82" span copy of the powered glider. Two electric motors, two ESCs, finished splinter camo fuselage from Russian campaign. Good flyer, requires 4S 4200mAh LiPo and separate battery for servos - £250. Call Steve on 01522 533147 (Lincs).

WACO HADRIAN, 70" span copy of the powered glider. Two electric motors and two ESCs. Finished in olive drab invasion stripes. Good flyer, requires 4S 4200mAh LiPo and separate battery for servos - £150. Call Steve on 01522 533147 (Lincs).

90-SIZE tuned exhaust pipe Vario for old helicopter - £0 plus postage. Call Roy on 01424 752131 (E.Sussex).

SC1.08 engine, new in box - £50. Super Tigre 25cc, little used with quiet silencer - £50. Turbulent, 6" span with SC.32 glow engine and quiet silencer - £80. 01248 681466 (Conwy).

2.1M ELECTRIC GLIDER. Ply and balsa, converted to electric with 35mm outrunner, EnErg Pro SBEC 40A controller, 10" x 6" folding prop and Futaba S148 servos. Elevator/rudder control. Covering has been patched in places. Flies well. Buyer to collect - £59. Call Alan on 07941 929576 (Surrey).

THUNDER TIGER WINDSTAR 2m span electric glider. Converted to electric with 1550 kV motor, 30A ESC, 9" x 5" folding prop and Hitec HS300 servos. Just needs receiver to fly. Flies well, patches to covering, Rudder fin reinforced. Buyer to collect - £59. Call Alan on 07941 929576 (Surrey).

VQ TIGER MOTH, balsa/light ply construction, fitted out for electric flight using a Turnigy 4248 Prodrive motor. Turnigy 1000A ESC, servos for ailerons elevator and rudder just add your Rx and 4S LiPo - £150. Call Steve on 07790711060 (Warks).

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PILATUS PORTER. Electric model for 6-channel R/C. Complete with motor, ESC and all servos. Just needs a radio system. Ailerons, flaps, motor control, elevator and rudder with fully steerable tail wheel. Wings easily detachable for transportation. All up weight with 3S Lipo battery, 1.7Kg This model has not actually been flown, I just enjoy building them - £350 ono. 07980 015991 (Somerset).

STRATON 5M span motor glider from Staufenberg. Little flown, never damaged, excellent condition. With Dymond motor and all servos (Hitec HS 625MGs). Just needs your ESC and Rx. Excellent slope or flat field performer. Large, imposing and very strong. Two-piece wing and detachable T-tail - £500 or £600 with Revoc wing bags. 07860 312025 (Kent).

AUSTRIAN MADE retractable glider tow winch. Designed to be fitted to the glider tug and reel in the line in flight before the whole unit retracts into the fuselage. Brand new in box. Bought by me in error. Cost €250. Accept - £150 ono. Call John on 01622 871942 (Kent).

SPEKTRUM DX8, Gen 2, brand new international version. Binds to DSMX and DSM2 receivers - £300 plus postage or collect. 0777 9897033 (Notts).

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FRSKY RECEIVER, TFR6 or TFR6A. Used or preferably new in box. Call David on 01332 812146 (Derby).

ALL R/C MODELS wanted, new or old planes, engines, radios. Countrywide collection, no hassle cash buyer. Email David at deserteagle357@hotmail.com or call 07940 791959 (Essex).

ROB MILLINSHIP 63" span Spitfire cowl for plan number RC1513. Please email Gary at gary63major@gmail.com or call 07779 897033 (Notts).

FOX 15 R/C engine, any condition considered. Preferably with muffler. Call Robert on 00496773 9597697 (Germany).

PARKZONE WARBIRDS, Me109, P-47, P-51, Mosquito, SE5a but anything considered. Call Stuart on 07981 743527 (Durham).

DIESEL OR GLOW fuel cans from the 1940s, 1950s and 1960s. Email Roger at robar2@btinternet.com or call 01604 890925 (Northants).

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RCME

October 2020
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RANS S-9 CHAOS

For his next plan feature, Peter Miller has chosen the Rans S-9 Chaos, an amazing microlight stressed to +9 and -6 G for aerobatics. Built like a model the full size offers a huge variety of schemes and like most home built aircraft each builder has added their own variations, so there's no need for any two models to be the same. Peter's model is about 1/5th scale, with a wingspan of 54" and is powered by a 4-Max 3541 1070 brushless motor, a 40A ESC and a 3000mah 3S LiPo.



JUMBO JUMBO!

Whoever said 'size doesn't matter' has obviously never heard of Perth modeller, Andrew Herzfeld. Andrew has scratch built not just one, but two enormous turbine-powered scale model airliners. Bruce Corfe caught up with Andrew to check out one of these mega-models, the awe-inspiring four engine 747-400 'Queen of the Sky', which Andrew claims is the largest flying model Jumbo Jet in the World.



PACK, STACK & RACK

Whilst tidying his loft, Shaun Garrity unearthed some PVC overflow pipe, elbows and T-pieces. Looking at the pile of wings and fuselages that he also had stored in the loft an idea came to mind - build some model racking. After a few tentative sketches and a quick measure up, Shaun had a parts list for a trip to the local plumbers' merchant.



ADVENTURES IN ELECTRIC AEROTOW

Electric glider towing is not a new phenomenon and as far back as a decade ago we started to see some very muscular electric tugs towing up some pretty large, scale gliders. But the expense of the large LiPo packs required, and the time required to charge them, set Chris Williams and his chums on the search for a smaller, lower cost alternative.

RCME

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PARTING SHOT



DROP SHOT!

Mike Freeman caught this dramatic shot of Pete Searle's YT International Fw190 in a bit of bother at the White Horse Model Club. Mike recalls the flight:

"Pete had recently acquired the model and checked it over before these first flights. But it turned out that the top bolts holding the engine mount to the bulkhead had vibrated loose and dropped out; the bottom ones were on their way too! Pete got the model down safely, but the dropped motor (DLE 30cc) had eliminated the prop's ground clearance, ripping the motor out and breaking the 19" x 8" prop."



Photo: Mike Freeman

Camera: Nikon D7500

Aperture: F/6.3

Focal length: 300mm

Shutter speed: 1/1600

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ISO: 250

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LENGTH:

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MOTOR:

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SPECIFICATIONS:

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Flying Weight: 2500g (approx.)
Wing Area: 20.56dm²
Radio: 6 channel

NEEDED TO COMPLETE:

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- 4400mAh 6S 22.2V 45+C LiPo battery with EC5™ connector
- LiPo battery charger

FEATURES:

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