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AUGUST 2015

RC MODEL WORLD



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The R/C Modeller's Magazine

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RC MODEL WORLD

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PRE-FLIGHT

Welcome to the August issue of RC Model World.

Changes are afoot within the editorial team at Traplet and I am delighted to introduce you to our latest recruit, Vaughn Entwistle. Besides being a life-long aeromodeller, Vaughn is a published author, with two novels to his name and a third to be published soon. If you have a few minutes spare, Google him and read his website – he is an interesting guy. Yes, that's him in a top hat!

Modelling wise, he has a special interest in R/C gliders and he can be found tramping up the hills in his home county of Somerset for a weekly dose of slope soaring. And when the wind doesn't play ball he sends his models on their way via a brushless motor and a bunch of LiPo's!

As far as Traplet's magazines are concerned, Vaughn joins us as an Editor. But rather than being responsible for a single title his brief is to work across all three of our R/C aeromodelling titles, not only RC Model World but on Quiet & Electric Flight International and RC Jet International too. He will be joined in this endeavour by myself as Group Editor, and also Tony van Geffen as another Editor, whom long term readers will fondly remember as heading up this much loved publication before I stuck my oar in!

By having this group of aeromodelling editors working as a team across all our R/C aeroplane titles we hope to be able to bring you a more co-ordinated approach, with clear differentiation between each magazine. If you read RCJI then it's pretty clear that we will be covering jets, but for readers and advertisers of RCMW and Q&EFI the situation is far less clear-cut, as there are several areas of dual coverage. It will take a while but in the not so distant future we hope to make it worth your while to want to buy both magazines (or, even better, all three!) rather than just one.

Okay, that's enough about us for now. Let's see what is in RC Model World this month.

Vaughn has been kept very busy and he has contributed a review of the brand new Flash 8 radio from Hitec. He also visited the Weston Park Model Air Show, as well as finding time to write up an article on how to stop cyano bottles from clogging up.

Other event reports come to us from the Long Marston Model Show and the Shilton Vintage Fly-In. And we also have details of the action packed Multiplex Air Show, which was held near Heidelberg, Germany in early May.

Our flight tests this month include the refreshed 'plus' version of the popular Wot 4 Foam-E kit from Ripmax, as well as beating up the airstrip with Dynam's rendition of the Bf 110 twin bomber from WW2.

In the middle of the magazine you will find a free pull-out plan for a sport scale version of the Super Sytky pylon racer, and our feature plan this month is called Marlin, a sharp looking EP sports aerobat named after the big game fish!

Add the first in a new series of articles on building your first scale model, and more of Dave Bishop's recollections from the model show flight lines, and I hope you have plenty to read until I get back from my summer holiday!

Happy flying!

Kevin



Kevin Crozier

Editor | Radio Control Model World

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Warners plc

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Published by

Traplet Publications Limited,
Traplet House,
Willow End Park, Blackmore Park Road,
Malvern, WR13 6NN, UK
Tel: 01684 588599 Fax: 01684 578558
email: customerservice@traplet.com

Subscription

1 Year subscription prices:
UK £51.60 W/Wide £78.00 USA & Canada US \$134.64
Europe £74.40
2 Years subscription prices:
UK £103.20 W/Wide £156.00
USA & Canada US \$269.28
Europe £148.80

BACK ISSUES

UK £4.30/US \$9.99
Order Hotline: 01684 588599
Online Ordering: www.trapletshop.com

TRAPLET
PUBLICATIONS

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WILTSHIRE'S MINI AIR AMBULANCE

Two people who were airlifted by Wiltshire Air Ambulance (WAA) have helped aviation enthusiast Sean Devine make a model helicopter, which will help to raise money for the charity. Sean's model is identical to Wiltshire Air Ambulance's Bell 429 helicopter, complete in the yellow and Wiltshire green livery and even has paramedic figures inside.

Sean, from Upavon, has been building R/C models for the last 16 years and when he heard of WAA's brand new helicopter he decided to build a replica. He enlisted the help of former WAA patients, Dave Grace of Market Lavington, who spray painted the colours and Gareth Steele, who undertook the writing on the model. Dave was one of the first patients airlifted by WAA after a road traffic collision near Marden in April 1990. Gareth was airlifted by WAA following a motocross accident at Everleigh on Salisbury Plain about 12 years ago.

Sean is taking his model to display at events and shows to collect donations for WAA. He said: "Wiltshire Air Ambulance



is a fantastic service that needs to be supported. I've built many model helicopters over the years but there's something about this one that gives me goose bumps. I think the hardest part was the paint job. Dave has done an amazing job in spraying it. Thanks to everyone who supported me, including Quick UK, who supplied the helicopter at cost price."

Rebecca de la Bedoyere, Fundraising Manager at WAA, said: "The model Bell 429 is astonishing in its attention to detail and is a stunning replica of our helicopter. The work done by Sean, Dave and Gareth at their own cost is very generous. The people of Wiltshire often come up with innovative ways of raising money for Wiltshire Air Ambulance and this is one great example.

Seen here with the model Bell 429 helicopter in front of Wiltshire Air Ambulance are (l-r) Louise Cox, WAA Critical Care Paramedic, Gareth Steele, Sean Devine, Dave Grace, George Lawrence WAA Chief Pilot and Matt Baskerville, WAA Critical Care Paramedic.

MELTON & DISTRICT MODEL CLUB'S 50TH ANNIVERSARY



TEAM MEMBERS - LEFT TO RIGHT
ALAN J. SMITH | NICKY HODGSON | TREVOR MAIN | ARTHUR ASHBY | DEREK ASHBY



Ray Pinchin, PRO of the Melton & District Model Club, has sent in news about the club's 50th Anniversary celebrations. We offer our congratulations to all club members past and present for reaching this important milestone in the club's history:

"In 1965 a group of enthusiastic modellers in Melton Mowbray got together to form the Melton & District Model Club to cover all forms of modelling. Indeed many of the founder members are still active today, including serving on the club's committee and training new members. Today the club covers both fixed and rotary wing R/C models and slot car racing on a fixed 100 metre track.

The club has some 120 members, a purpose built club house and three flying sites – a grass field, a slope soaring site and part of the old WW2 Melton airfield runway.

Over the years the club has achieved some noticeable achievements. In 1995 the club entered the Guinness Book of Records for building and flying a quarter scale R/C Lancaster with a 25 ft 6 in (7.8 m) wingspan. The model is now on display at the Metheringham Airfield Visitor Centre. In 2000, Trevor Main, flying his own design TRAMP 2 diesel powered model achieved the British Duration record of 13 hr 48 min 51 sec, a record that still stands today.

For a number of years the club has organised, in association with local model engineering and model boat clubs, a two day free public entry annual show, with club members giving model flying displays, fly-pasts by BBMF aircraft and displays of model boats and miniature steam engines. It is planned to make this year's 50th anniversary show even better than previous ones. Visit the club on Facebook and at mdmc.co.uk"

The 50th Anniversary Show will take place on 12th and 13th September at Crossfield Drive Playing Field (next to Tesco).

NOVICE E GOES TO UNIVERSITY



Dr Alex Ellin, Senior Lecturer in Aerospace Engineering at Teesside University writes:

"I teach on a new aerospace engineering BEng course at Teesside University and I am trying to increase the amount we use models so the students can actually build something and fly it. The programme in the fourth year states that they have to build a UAV but we don't give them the skills to do it. I have managed to get them building a Kiel Kraft Wisp in year one but was looking for something for year two when your Novice E appeared in April's RC Model World.

To cut a long story short, I have drawn it up for our laser (I insisted they bought one when I took the job!) and have just finished the build. I had some E-Max 2822 1200 KV motors and so have fitted one of those, with a 20A ESC and just need to get some 2S LiPos to power it. I am very much a beginner at R/C myself and I thought that if I could build it, my students could as well.

Sid King asked to be informed of any changes – those I have made are just in the detail. I changed the shape of the fuselage internal

strengthening. By producing a ledge for the Rx floor I was able to build that in at the same time as F2 and it kept everything square at the early stages of assembling the fuselage. The supports for the servo tray are at the same height as shown on the plan and give a good datum from which to fit additional spacers when positioning the servo tray in the aircraft.

For the wings, rather than using the lite-ply spar I used two 3/16" square balsa spar caps with a 1/16" shear web in between, so the students could do some calculations on its performance as part of the exercise. I like Sid's idea of using 1/8" strips at the front of the trailing edge but always find that I damage the ribs when I sand down to them.

As a variation on a theme, I left these strips out. But once the wing panel was otherwise finished, I glued a strip of 1/16" balsa to the front edge of the trailing edge strips, and then sanded down to the wing surface when dry. I know it only goes from rib cap to rib cap and is therefore discontinuous but it still offers support to the trailing edge strips and certainly strengthens the assembly.

It is not often I build something as quickly as this but I have enjoyed the exercise and look forward to learning to fly it as soon as the batteries arrive. Many thanks."

Sid King, the designer of Novice-E replies:

"Hi Alex

Thank you for your comments. All your mods are acceptable, although simplicity was one of the parameters – as an engineer you will be more than familiar with the 'KISS' principle! It is a good trainer, however I recommend the use of a 'buddy box' system. Self-teaching is a bit old fashioned these days and sometimes wasteful.

From your photograph, you have built the Rudder/Elevator option, which is fine for instruction. For more advanced flying by all means continue with the aileron version later."

A DELIGHTFUL TRIO OF TRAPLET WOOD PACKS

Speaking of the Novice-E, this model is just one of three new, laser cut wood packs now available from Traplet Publications:



WP3743, Novice-E laser cut wood pack

£29.99/\$50.99/R539.82

Laser cut wood pack for this popular 40" span sport model, now updated to suit 2S – 3S electric power set ups. Designed by Sid King

WP2035, Corby Scarlet laser cut wood pack

£104.99/\$179.99/R1889.82

Laser cut wood pack for an attractive 82" wingspan scale aircraft that is a really smooth flyer and which is also highly aerobatic. Designed by Dennis Tapsfield

WP3734, VANS-RV8 laser cut wood pack

£49.99/\$85.99/R899.82

Laser cut wood pack for a 40" span low wing, sports scale aerobatic model for 600 watt brushless outrunner motors and five function R/C. Designed by Clive Spencer

LOUGHBOROUGH MODEL FLYING CLUB ARE ON THE MOVE!

Well the swapmeet that is! LMFC are moving their annual December swapmeet to a new venue at the Rawlins Academy VLE, Loughborough Road, Quorn, Leics. LE12 8DY.

This venue is just 2.5 miles from the previous site in Barrow-Upon-Soar, which they used for their swapmeets for 17 years. Unfortunately the club has been unable to negotiate further use of the premises, but they say they are extremely fortunate to have secured the use of Rawlins for 2015 and beyond, and look forward to welcoming patrons old and new.

Rawlins is about the same size and can accommodate around 100 tables. It is easily accessible, just off the A6, and boasts large car parking facilities.

The LMFC Swapmeet also has a new organiser, Richard Steane. Colin Monk is standing down after 17 years for a well-earned rest but will be assisting Richard every step of the way. The date for your diaries is Sunday, December 6th, 2015.

HAVERFORDWEST MODEL CLUB FLY-IN

Haverfordwest Model Club are holding a Fly-In on 23rd August, 2015 at Templeton Airfield, Pembrokeshire, a site owned by the MOD.

Flying starts at 10 am and finishes at 5 pm. The event is open to flyers of R/C planes – electric, IC or turbine – and model helicopters. Pilots are asked to bring their BMFA Membership Card.

A space will be set aside for people to sell their surplus planes, engines, spares etc. Refreshments will be catered for by a burger van and an ice cream van.

For further information please contact Greg Highfield on 01437 899843 or 07913 781150. Or email Greg at: greghighfield@hotmail.co.uk

If you have any news or special interest announcements to make, or even a recently completed RCMW plan design, then why not drop RCMW a line or email RCMW@traplet.com

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MAXFORD USA PT-17 STEARMAN ARF



This almost ready to fly radio control version of the PT-17 is based on the aircraft that is owned by John Mohr. The fuselage, wings and empennage are factory-built from laser-cut balsa and light plywood, plastic leggings cover the aluminium shock absorb main landing gear for true-to-scale looks and the wheels have treaded tyres, whilst the 'oversized' magnetic hatch is big enough for easy access to all fuselage-mounted components. £339.95 RRP



JR PROPO 28X TRANSMITTER

MacGregor Industries are glad to announce that the 28X transmitter and accessories are now back in stock, including the 28X DMSS Xbus Transmitter with 721BX Rx, Antenna Assembly and Angle Adjuster Bar Set.

For more info visit www.macgregor.co.uk

PHOENIX MODEL PRODUCTS SHINDIG



The 51" wingspan Shindig was designed to capture the spirit of models built in the 1950s and 1960s, so Phoenix Model Products make no apologies for the retro look or some of the construction techniques used from that era. The kit includes all materials and accessories, including purpose designed servo mounts, required to build Shindig, less glues, covering and airborne electrical equipment. Available soon. £74.95 www.phoenixmp.com

GRAUPNER COPTER PROP RANGE



The Copter Prop series are propellers that are designed primarily for multicopter

R/C models. But they are also excellent for slow-fly and sport models! The Copter Props are extremely quiet and are therefore ideal for aerial photography. They have high performance characteristics and great endurance. They are optimised for stable flight with an extremely thin blade profile, which also makes them extremely lightweight. Available in Black, White, Red and Yellow in sizes 5 x 3, 9 x 4 and 10 x 4, all with 5 mm, 6 mm and 8 mm centre bores. £7.50 – £9.99 RRP per pack. www.LogicRC.com



HACKER OUTRUNNER MOTOR

This outrunner electric motor package from Hacker is recommended for the Super Zoom (high power version), Sbach 1000, Extra 330 SC 1000 and Master Stick, and for use with 9" x 4" and 7"-10" x 5" props. The package includes: 980 KV electromotor with connectors, three

connectors for the ESC, an MC-22A ESC, mounting cross (pitch 34/34 mm), four screws for the mounting cross, and a prop shaft. www.zoomport.eu

New products for R/C aeromodellers



SCORPION HIGH PERFORMANCE TOOLS

Scorpion High Performance Tools are designed with the R/C enthusiast in mind. The hollow core with aluminium alloy design allows the tools to be made very lightweight without losing strength and durability. Included in the tool bag are the following Scorpion High Performance tools: hex drivers (1.5 mm, 2.0 mm, 2.5 mm, 3.0 mm,

and 4.0 mm), 5.5 mm and 7.0 mm nut drivers, a 4.0 mm flat screwdriver, a 5.0 mm Phillips screwdriver and a 2.0 mm round head hex driver.

www.climb-out.com

BLADE CHROMA AP COMBO WITH CGO2+



If you're looking for an easy way to jump into the exciting world of HD aerial photography, the Blade Chroma AP Combo has everything you need. The included CGO2+ combines a high-definition camera and stabilisation gimbal into a single unit that captures steady aerial video and stills in brilliant detail. Camera features include: 1080p/60fps video and 16MP photos. The package includes SAFE technology, a ST-10+ controller with built-in Android display, Micro SD card, 3S 5400 mAh LiPo, LiPo battery charger. The CGO2+ is priced at £1099.99 RRP – other packages available.

www.horizonhobby.co.uk

DYMOND HC BATTERIES



The HC Series battery is made for the cost and quality conscious modeller, who also has access to first-class service and support by Dymond and Staufenbiel. The HC batteries can withstand 40C and feature a compact size, low weight and a balance connector. The batteries are available in the following sizes: 2S 1800, 3S 2200, 4S 2400, 5S 3200, 5S 4000 and 6S 5000 mAh.

www.modellhobby.de

E-FLITE P-47D THUNDERBOLT BNF



Get a great warbird experience with the 1070 mm wingspan E-flite P-47D Thunderbolt. This aircraft comes out of the box fully equipped with operational flaps and retracts already installed. Z-Foam material not only makes this fighter tough but also lightweight, even with all the scale detail. Includes a brushless 15-size outrunner and 30 A ESC, clear canopy and detailed cockpit with pilot figure, Spektrum 6-channel Rx installed, dummy engine, gear doors, machine gun and panel line detail and factory applied graphics with authentic WWII markings. £209.99 RRP

E-FLITE UMX PT-17



Fully assembled right out of the box, you can be ready to fly the 388 mm wingspan PT-17 in the time it takes to charge the battery. From the distinct outline to the cylinder fins on the dummy radial engine, good scale detail can be seen throughout. The result is an impressive looking model that offers full four-channel control for great handling on the ground and the manoeuvrability in the air to perform scale aerobatics. AS3X stabilisation is built-in, along with ultra micro linear servos. Includes a 150 mAh LiPo. £83.99 RRP

BLADE 360CFX 3-BLADE HEAD CONVERSION



Until now, finding out what it was like to fly a high-performance helicopter with a 3-blade head has been a significant investment. But now the all-new

Blade 360 CFX high-voltage heli is available. Once converted the 360 CFX becomes a completely different 3-D machine. Apart from the exhilarating sound the 360 CFX makes, running three blades also means increased stability at lower head speeds. By using most of the existing head parts on the 360 CFX the kit features only what you need to go from two blades to three.

For more info visit www.horizonhobby.co.uk

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Kevin Crozier spends a pleasant afternoon slotting together the latest version of Ripmax's top selling foam ARTF kit



WOT4 FOAM-E MK2+

Blimey! This fabulously popular high wing aerobat, penned on Chris Foss' drawing board several decades ago, has almost seen as many varieties as a certain brand of baked beans! Ok, that's exaggerating things by a fair bit, but there have certainly been many versions of the good old WOT 4 over the years. And, like many modellers, I have had the pleasure of owning quite a few.

My last encounter with this aeroplane was back in July of 2013, when we reviewed Ripmax's previous moulded foam version of the design, the WOT 4 Foam-E Mk 2. This was the FTR (Futaba Transmitter Ready) variant, which came ready fitted with a Ripmax branded Futaba FHSS compatible receiver. I had great fun flying this agile model over the summer of that year, including one very memorable

thermal soaring flight – it's amazing what a lightweight foam model can do! But it came to a sad end when the FTR failed to pull out of a steep landing approach when being flown by one of my sons (a far better pilot than me!) To this day I have no explanation for its demise, as the radio continued to work fine after the event and all the linkages were still connected. And apart from crash damage the airframe appeared to be intact, so the poor old FTR was consigned to the bin and the crash was filed mentally as being 'just one of those things'.

So I was delighted when Ripmax kindly offered us one of their brand new WOT 4 Foam-E Mk 2+ kits to review, as it would allow me to reacquaint myself with one of my favourite foam models.

Wot's +?

The plus sign is indicative of several improvements over the original Foam-E kit. These include:

- The tailplane has improved styling with solid tips and inset elevators to give a better elevator response. And they follow the design of the original wooden model more closely
- The aileron servo extension socket is trapped in the aileron compartment so that it is not lost inside the wing if the servo is serviced or replaced. Ripmax report that this was something that owners did not like if they upgraded the servos
- The tail wheel has been re-designed to be bolted on, allowing easy removal if accidentally broken
- The control surfaces use 'live' moulded foam hinges with mylar inserts to re-inforce the foam and to prevent any cracks from progressing along the hinge line
- Features a new 'easy to apply' colour scheme in the yellow, orange and red colours that are synonymous with a classic Chris Foss design. Ripmax's reasons for this are that the stickers follow the original wooden scheme a little more, they are easier to fit, and there's now no need to paint the battery hatch if you want to use one of the optional colour schemes. It also identifies the model as one of the new version



A fine day, glorious scenery and a classic R/C model – wot's not to like?

The 'plus' version retains the same powerful 820 KV brushless outrunner

Generous tail surfaces give a great aerobatic performance. Stall turns are a delight



motor as the original kit and comes with a matching 40 A brushless electronic speed controller and four factory fitted 9 g micro servos – two for the ailerons and one each for the rudder and elevator.

And just as before the 'plus' version only requires minor assembly using simply a cross-headed screwdriver to bolt on the tail and a 10 mm spanner to nip up the propeller adapter. No glue is required.



Above & Below: The almost complete airframe comes in a long, slim box

Quick Build

As with previous Foam-E kits the colourful box proclaims that the model can be 'Flight Ready In Under 30 Minutes'. And while this could well be true for the basic assembly, which involves little more than slotting together and bolting on the tail assembly, screwing on the ready made undercarriage and bolting on the fully completed wing, it doesn't really cover the time needed to apply the stickers, even in their new 'easy to apply' format, and also to sort out a neat battery and receiver installation. But if you are a 'slap it together and throw in the Rx' sort of person then I guess you could finish it in the advertised time. But if that's your attitude to R/C aeromodelling then please fly it far away from me!

I would much prefer to take my time to apply the stickers neatly and also to work out a neat way of housing the 3S LiPo, as well as properly securing the receiver and making sure that its aerials are correctly orientated. Even so the work required is not very onerous and even the fussiest of modellers (like your truly!) should have it ready to fly in little more than an hour or two.

If you don't like the classic Chris Foss styled stickers supplied then you can customise your model using alternatively coloured optional decal kits, which are available from your local Ripmax stockist.



A 'plus' feature are the new classic Foss stickers



The decals are pre-cut to shape. A sharp knife helps to separate the backing sheet



A small accessory box contains the tailwheel assembly, fixing screws and a butterfly shaped rudder reinforcement sticker



Left:
First job is to connect the rudder horn to the Z-bend of the wire pushrod



Right:
Tail parts are supplied in two parts. Here you can see the carbon spar and the 'live' moulded foam hinges with plastic hinge re-reinforcements for extra security



The fin simply plugs into the tailplane



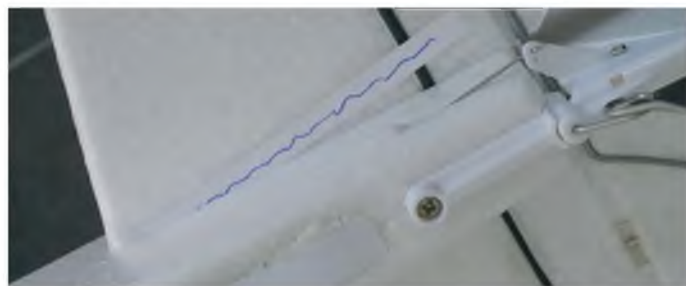
Neat inboard elevator hook up, also via a Z-bend in the pushrod



When first assembled the tailwheel had a large offset. But this was easily bent back in to line with the rudder



Fixing the small rudder retaining screw is a fiddly business. The old trick of using a short piece of fuel tubing to hold it onto the screwdriver worked a treat!



A thin piece of card was used to pack up the tailplane – look for the squiggly blue line!

A Few Notes On Assembly

This model comes in a long, slim box, with the pre-finished one-piece wing slotted down one side and the nearly complete fuselage resting alongside. The tailplane and fin/rudder are supplied as separate flat foam components and the undercarriage is fully assembled using curved metal legs and lightweight foam wheels that rotate freely on their axles. All airframe parts are well protected and wrapped in sheets of thin foam. A small accessory box contains a pack of screws, as well as the bolt-on tail wheel assembly and a re-inforcement sticker for wrapping around the base of the rudder.

The eight page colour manual is well illustrated and easy to follow. The recommended sequence is to assemble the model and then apply the stickers, but I always find it easiest to apply the stickers to the individual parts before they are bolted together. The new style decals went

on easily and even when they started to pucker up it was easy to peel them back a bit and to rub them down a bit more carefully to avoid wrinkles.

Assembly proper begins with the attachment of the tailwheel assembly to the rudder pushrod, as this also acts as the bottom rudder hinge. The fin plugs on to the top of the tailplane and this assembly is then slid into position on the tail mount at the rear of the fuselage, making sure that the base of the fin is engaged in the matching slot in the tailwheel moulding. It's easier to do than to describe – and faster too! A single long bolt holds the tail assembly in place, backed up by a generous tongue moulded into the front of the foam structure. But before nipping this up tightly I decided to make another detour from the instructions...

I have built many foam models in recent years and most have required a small

amount of packing under the tailplane to make sure that it sits level with the wings. And the Wot 4 proved to be no exception. I usually find that a thin strip, 5 mm or so wide, cut from an old business card does the trick to lift the tailplane up on its lowest side.

The tailplane screw was then nipped up tight and a small retaining screw was inserted across the rudder slot in the rear of the tailwheel assembly. Inside the accessory box you will find a pre-cut sticker that is shaped a bit like a butterfly's wings. It is not mentioned in the instructions but Ripmax told me that this is to provide additional security between the plastic moulding at the base of the rudder and the foam rudder itself. When offered up and folded around the bottom of the rudder it is obvious where it goes.

The next job is to lock the wire pushrods in position using the screw lock connectors



All level now!



Lolly sticks are used as splints top and bottom to hold the elevator at neutral. The same tip can be used when setting up the rudder



WOT 4 Foam-E comes pre-fitted with four 9 g micro servos. Two for the tail, seen here, and two for the wing. (Right) There's plenty of room in the front bay for a modern receiver such as the R2006GS used for this review (not supplied in the kit)



Left:
The aileron servos are factory fitted. It would be nice to have screwed down covers rather than glued ones for maintenance and adjustment purposes



WOT 4 has a tendency to ground loop if you turn it too fast when taxiing so the wingtip plates help them from getting scuffed



A loose Velcro strap holds the ESC in place



Left:
I did away with the strap and Velcro'd the ESC to the fuselage side so that it could be kept above the LiPo with a good flow of cooling air



Right:
It's all kept neat and tidy using a foam hatch, retained by a twist latch

pre-fitted to the rudder and elevator servo arms. I used a pair of lolly sticks as splints across the width of both the tailplane and fin to 'lock' the rudder and elevator at neutral, with the sticks held in position with clothes pegs. This holds the control surfaces at neutral while the screw locks are being tightened.

The wing is fully assembled and the aileron servos are fixed and connected to the control surfaces so you can just plug the aileron leads in to your chosen receiver using the Y-lead supplied. Alternatively you could use two separate channels to set up each aileron individually. I used a Futaba R2006GS receiver so we could fly it on the T6J transmitter used with the FTR version. And since I already had the Wot 4 Foam-E set up programmed in from the previous review all the controls were found to be working in the correct directions. However I did make sure to remove all the trims

from the old set up, as well as making sure that the control movements matched the recommended throws shown in the instructions, at least in the Normal flight mode. FM1 was programmed to give a little more movement! I should also mention that like the previous version the control surfaces have carbon fibre re-inforcements for improved control authority.

The other good thing about using the existing set up on the Tx was that the throttle channel had been reversed and the failsafe function was correctly enabled too. For those modellers who may be using a Futaba set for the first time it is important to note that the throttle channel is reversed compared to some other brands, like JR and Spektrum. So do make sure to perform a motor check before you fit the spinner.

A couple of self tapping screws are used to fix the undercarriage to the bottom of the fuselage, after which the prop

adapter is fitted and the 12" x 6" propeller is tightened up. After re-attaching the spinner nose cone the assembly is complete.

R/C Notes

I secured the Rx using a piece of self-adhesive Velcro tape. Short lengths of nylon tubing were used to house the ends of the aerials, with the tubes gently skewered into the inner walls of the fuselage to hold them in the correct orientation.

The battery bay is designed to accept a popular 3S 2200 mAh size LiPo. The hatch is retained using a simple twist latch. Inside you will find a 40 A brushless speed controller that is already connected to the motor. The ESC is loosely mounted between two long strips of Velcro. When fitting a LiPo for the first time I noticed that the ESC was being pushed down so that it rested alongside the battery, thus restricting cooling airflow around both the speed



Stylish, ready made undercarriage needs to be fitted with a forward sweep



The prop, adapter and spinner assembly are the final parts to be fitted



It's a WOT 4! Despite being designed many years ago this fabulous model aeroplane still manages to look contemporary, helped by Ripmax's clever integration of modern materials and construction techniques



New stickers are an easy way to get the classic Foss styling

controller and the LiPo itself. After applying a small patch of self-adhesive Velcro to the back of the ESC, I was able to have the LiPo sitting at the bottom of the battery bay, with the ESC just above it and fixed to the side of the fuselage using the Velcro. I have to gently hold the ESC in place whilst pushing the LiPo past it, but it is now sitting in clear air rather than being sandwiched tight against the battery pack. A small but worthwhile modification I think.

With the battery secured it was time to check the Centre of Gravity. In our previous review of the FTR version we noted that the balance was spot on at 60 mm. But this time the C of G was shown at 70 mm back from the leading edge, however the new WOT 4 had a definite backward tilt, indicating an even more rearward C of G. I calculated it to be a more like 80 mm.

I was just about to fire off an email to my contacts at Ripmax to query this when

I noticed a notice at the end of their webpage advertising the Wot 4 Foam-E Mk 2+, which said:

"The manual states the 'Centre of Gravity' should be 70 mm. It should say 80 mm back from the leading edge. A standard Wot4 Foam-E Mk 2+ should balance with no extra weight."

So it turns out that the C of G of the new version was pretty much spot on too, although I'm not sure what in the design has changed to shift it rearwards. I suspect that nothing has really changed, apart from the revised instructions indicating a more realistic C of G position for a more agile aerobatic performance. (Confirmed by Ripmax since writing this review!)

A quick check with my wattmeter revealed that the motor was drawing just over 30 amps at full throttle, so the ESC was operating well within its capabilities. And a quick check on the scales revealed a



A propped up T-square was used to hold up a lolly stick marked off with the recommended control throws. Not terribly precise but good enough for setting up a sports model



The 'Plus' version retains a good rate of climb – and she's not really trying here!

flying weight of 1200 grams, just over the advertised weight of 1.1 kg.

Wot's It Fly Like?

It will not come as a big surprise to anyone who has owned a WOT 4 to find out that this one performs really well too. I took off mindful of the revised balance point but as soon as the wheels cleared the ground I realised that I would have no worries on that score. She was a pussycat. I needed to dial in some up trim and a bit of aileron too, but these were well within acceptable limits.

Being a review model our priority was to get some good flying shots in the can so I began the slightly tedious task of parading her up and down the strip at various angles of bank. I noted the need to flick the Flight Mode switch to gain more control movement for knife-edges passes, but other than that all the



Looking good on a camera pass



Chequerboard stickers on the underside help with orientation



Inverted circuits are a breeze



Thanks to the thick wing, good handling and a responsive motor the WOT 4 is easy to land



No problems in a STOL dive this time!

turnaround manoeuvres such as reversals and wingovers were easy to accomplish at the recommended settings.

I'm no expert at 3-D flying but I still like to have a play at hanging from the prop from time to time and the WOT 4 does vertical stunts really well. It would be very interesting to see what she can do when fitted with a 3-axis gyro. Hmm – watch this space!

All club style aerobats are well within the model's capabilities, such as loops, rolls and stall turns. Inverted flight is a pleasure and thanks to the powerful rudder she can be guided around figure of eights and circuits with ease.

When performing slow flypasts for the camera I was reminded just how slow a WOT 4 can be made to fly, so on the next flight I opened the tap and pointed her vertically. The rate of climb is very good and she was soon at a good altitude. Time

MODEL WORLD DETAILS

MODEL INFORMATION

NAME:	Ripmax WOT4 Foam-E Mk 2+ ARTF
MANUFACTURER:	Ripmax
DISTRIBUTOR:	Ripmax
WEBSITE:	www2.ripmax.net/ (search for: A-CF020A)
PRICE:	£134.99 SSP
MODEL TYPE:	Sports aerobatic
CONSTRUCTION:	Moulded foam with carbon reinforcements
PARTS SUPPLIED:	Airframe, brushless motor, ESC and servos
PARTS REQUIRED:	Receiver and 3S 2200 mAh LiPo

R/C FUNCTIONS

1: Ailerons	3: Throttle
2: Elevator	4: Rudder

MODEL SPECIFICATIONS

WINGSPAN:	1205 mm (47.4 in)
LENGTH:	1050 mm (41.33 in)
WEIGHT:	1100 g (2.43 lb)
SERVOs:	4 x 9 g micro
RADIO:	4 – 5 channel
MOTOR:	536 brushless outrunner, 820 KV
SPEED CONTROLLER:	40 A Brushless
LIPO:	3S 2200mAh
PROPELLER:	12" x 6"

DISLIKES

LiPo access is still a bit tight and fiddly
Aileron servos are noisy

LIKES

Fast and easy to assemble • It's a WOT 4!

to test the stall, which is a non event really; just a gentle wing drop in either direction and easily recovered. How about a spin? Even on the maximum throws available she is reluctant to get involved with such shenanigans, so it would be worth experimenting with moving the balance point a bit more rearward if you want to do this reliably. Recovery once in a spin is, however, rapid and predictable.

All this was leading up to the big question: Could I hook another thermal? The conditions were certainly perfect, with billowing white clouds. All that was missing was a big bird of prey to guide me in, like the one I followed with the FTR. However, this time I was out of luck and I had to content myself with stooging her around, maintaining a slow glide with generous amounts of up elevator. She took a long time to circle down to circuit height though, so I am confident that she will be

able to take advantage of a strong updraft or two over the summer months.

With the down timer sounding the end of each flight (I had four six minute flights that day) the WOT 4 Foam-E was brought into the circuit and eased down for some easy landings. The low speed handling and responsive electric motor make for satisfying touch-downs.

In summary the Ripmax WOT4 Foam-E Mk 2+ carries on the strong reputation of this classic sports aerobatic design in fine style. I can highly recommend it, especially for those club aerobatic pilots who are looking for a quick build model, maybe following the crash or damage to a favourite aerobat, and who are looking to get back into the air as quickly as possible. It will also fit into my car in one piece, so it looks like it is going to get plenty of use as our preferred 'pick up and go' model for those long summer evenings that have just arrived! **RCMW**

TALES FROM THE FLIGHT LINE

'The Gremlin' files the first in an occasional series of light hearted observations from the flying field

A few of us were sat around in our comfortable folding chairs, metaphorically holding up our scorecards for each flight from the guys out on the flight line. The flasks were out, and sandwiches and cakes had been largely scoffed. Comments such as 'He's improved' and 'Just how long has he been flying?' had been bandied about. Typically, when not flying many of us do have a tendency to

from us by approximately ten feet of water. 'There's no excuse,' said one of the more knowledgeable (self-professed) and experienced flyers, 'for landing off the patch.'

I felt a bit uncomfortable about this, since I had done something similar a few days before, just after having forgotten to start my timer! Running out of puff, my model staggered back in the general direction

preparation for take-off routine.

Feeling a degree of empathy for the hapless improver, I got up and went across to help the retrieval process. This included donning of lifejackets, and following the safety procedure, which was not a process anyone would find easy on their own. After a successful venture into the neighbouring field, we all returned safely and carried out the usual post mortem. Damaged but repairable was the verdict, and the improver thanked us and began the packing up process, assuring us he'd be back with the model ready to rock n'roll next week.

We'd spared the poor fellow any comments about his failings, since most of us had done something similar in the past. Having no illusions of adequacy, we had recognised he felt a bit foolish anyway, and our contributing to this would add no value. He wasn't yet at that level that ribbing, sledging or any other kind of banter would be appropriate.

However, on the way back to the club hut and parking area the aforementioned 'expert' came across, having had no part in the rescue, and gave our poor club-mate the benefit of his years of experience. After a series of 'What you should have done...' style comments from our expert, the poor lad felt extremely disheartened, so we helped him away to pack his gear and inserted ourselves between him and the resident 'expert', enabling him to get away without any more discouragement.

The following weekend heralded great flying weather and we had a fantastic time. There were many of us on the field and the improver got a goodly few flights in and did what it says on the tin – he improved. However, our expert who had voiced off to him in such a negative manner, had an engine cut some way out and tried to stretch his glide back to the strip. Not only did he not make it, he put his 'Oh so reliable model' into the water. We, of course, helped in its recovery, and didn't 'sledge' or 'rib' him. This was for a very different reason. He just wasn't the sort who could take it.

And the moral of the story is...

By all means take your model flying (and safety) seriously. But if you don't want people to relish your discomfort when you make a bit of a fool of yourself, be nice to other modellers. Never, but never, take yourself too seriously, and make your comments constructive not destructive. The world has a way of coming back and biting you in the butt! **RCMW**



sit in judgement on our fellow modellers, hopefully not in a disparaging way, but it is hard not to make some assessment of our flying mates.

It was just then that an 'improver' landed short. Now at most clubs that means that the model is in the rough and the undercarriage has probably been damaged. At our club it meant he was in the next field as well! This meant landing in a field that was separated

of the field, but fell lamentably short. Thankfully it didn't struggle quite as far as the water! This would have meant a major drying out exercise, and potentially some damage to the electronics.

I thanked my lucky stars and went through the laborious process of retrieving the model. It was undamaged and I felt I had learned a valuable lesson. Next time I would have 'press the go button for the timer' re-enforced as part of my

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Servo	Dimensions	Type	Voltage	Speed Seconds/60°	Torque	Weight	Motor	Gears	Case	Price
P-QZ101	23 x 12 x 27mm	Digital	4.8 - 6.0V	0.08 sec @ 4.8V 0.06 sec @ 6.0V	2.54 kg/cm @ 4.8V 3.11 kg/cm @ 6.0V	20.3g	Regular	Aluminium with TiCn +brass	Aluminium	£25.99
P-QZ201	30 x 10 x 35.5mm	Digital	4.8 - 6.0V	0.16 sec @ 4.8V 0.13 sec @ 6.0V	5.85 kg/cm @ 4.8V 7.21 kg/cm @ 6.0V	26.2g	Regular	Aluminium with TiCn +brass	Aluminium	£22.99
P-QZ202	30 x 10 x 30mm	Digital	4.8 - 6.0V	0.13 sec @ 4.8V 0.11 sec @ 6.0V	4.51 kg/cm @ 4.8V 5.56 kg/cm @ 6.0V	23.1g	Regular	Aluminium with TiCn +brass	Aluminium	£21.99
P-QZ203	30 x 10 x 30mm	Digital	4.8 - 6.0V	0.13 sec @ 4.8V 0.11 sec @ 6.0V	4.51 kg/cm @ 4.8V 5.56 kg/cm @ 6.0V	22.5g	Regular	Aluminium with TiCn +brass	Aluminium	£21.99
P-QZ301	36 x 15 x 32.4mm	Digital	4.8V	0.06 sec @ 4.8V	2.54 kg/cm @ 4.8V	25.32g	Coreless	Plastic	Plastic & Aluminium	£14.99
P-QZ302	36 x 15 x 32.4mm	Digital	4.8 - 6.0V	0.11 sec @ 4.8V 0.09 sec @ 6.0V	5.5 kg/cm @ 4.8V 6.6 kg/cm @ 6.0V	26.32g	Coreless	Aluminium with TiCn +brass	Plastic & Aluminium	£19.99
P-QZ303	36 x 15 x 32.4	Digital	4.8 - 8.4V	0.06 sec @ 4.8V 0.04 sec @ 8.4V	3.54 kg/cm @ 6.0V 4.52 kg/cm @ 7.4V	26.32g	Coreless	Aluminium with TiCn +brass	Plastic & Aluminium	£21.99
P-QZ304	35.5 x 15 x 28mm	Digital	6.0 - 7.4V	0.07 sec @ 6.0V 0.05 sec @ 7.4V	4.83 kg/cm @ 6.0V 6.25 kg/cm @ 7.4V	34.1g	Coreless	Aluminium with TiCn +brass	Plastic & Aluminium	£44.99
P-QZ501	40.5 x 20.2 x 38mm	Digital	4.8 - 6.0V	0.15 sec @ 4.8V 0.13 sec @ 6.0V	8.65 kg/cm @ 4.8V 9.35 kg/cm @ 6.0V	62g	Regular	Aluminium with TiCn +brass	Plastic & Aluminium	£12.99
P-QZ502	40.5 x 20.2 x 38mm	Digital	4.8 - 6.0V	0.16secs @ 4.8V 0.14secs @ 6.0V	17.25 kg/cm @ 4.8V 20.32 kg/cm @ 6.0V	62g	Regular	Aluminium with TiCn +brass	Plastic & Aluminium	£13.99
P-QZ503	40.5 x 20.2 x 36.5mm	Digital	4.8 - 6.0V	0.08 sec @ 4.8V 0.06 sec @ 6.0V	3.71 kg/cm @ 4.8V 4.45 kg/cm @ 6.0V	49.4g	Coreless	Plastic	Plastic & Aluminium	£29.99
P-QZ504	40.5 x 20.2 x 36.5mm	Digital	4.8 - 6.0V	0.12 sec @ 4.8V 0.10 sec @ 6.0V	11.53 kg/cm @ 4.8V 13.83 kg/cm @ 6.0V	61g	Coreless	Aluminium with TiCn +brass	Plastic & Aluminium	£31.99
P-QZ505	40.5 x 20.2 x 36.5mm	Digital	4.8 - 6.0V	0.07 sec @ 4.8V 0.05 sec @ 6.0V	6.62 kg/cm @ 4.8V 6.73 kg/cm @ 6.0V	72g	Coreless	Aluminium with TiCn +brass	Aluminium	£49.99
P-QZ506	40.5 x 20.2 x 36.5mm	Digital	6.0 - 8.4V	0.062 sec @ 6.0V 0.048 sec @ 8.4V	5.71 kg/cm @ 6.0V 7.22 kg/cm @ 8.4V	58.4g	Coreless	Aluminium with TiCn +brass	Plastic & Aluminium	£32.99
P-QZ507	40.5 x 20.2 x 36.5mm	Digital	6.0 - 8.4V	0.095 sec @ 6.0V 0.072 sec @ 8.4V	8.75 kg/cm @ 6.0V 11.25 kg/cm @ 8.4V	59.3g	Coreless	Aluminium with TiCn +brass	Plastic & Aluminium	£32.99
P-QZ508	40.5 x 20.2 x 36.5mm	Digital	6.0 - 8.4V	0.12 sec @ 6.0V 0.10 sec @ 8.4V	17.25 kg/cm @ 6.0V 20.32kg/cm @ 8.4V	59.3g	Coreless	Aluminium with TiCn +brass	Plastic & Aluminium	£32.99
P-QZ509	40.5 x 20.2 x 36.5mm	Digital	6.0 - 8.4V	0.12 sec @ 6.0V 0.10 sec @ 8.4V	19.25 kg/cm @ 6.0V 23.93 kg/cm @ 8.4V	72g	Coreless	Aluminium with TiCn +brass	Aluminium	£49.99
P-QZ601	60 x 29 x 57.1mm	Digital	6.0 - 7.2V	0.20 sec @ 6.0V 0.18 sec @ 7.2V	28.56 kg/cm @ 6.0V 30.35 kg/cm @ 7.2V	154g	Regular	Brass	Plastic	£34.99

SHAKESPEARE SHOWDOWN!

Despite strong winds the Long Marston Model Air Show had a good turnout of visitors and continued to garner good support from the model trade



Steve Elias was one of the stalwart pilots who kept the flying display going despite strong crosswinds and showers during Sunday's show. Steve used his Airworld Cougar to put on a fine display of beautiful scale flying

Taking place over the weekend of 30th and 31st May 2015, the Long Marston Model Air Show, held at the former RAF airfield near Stratford-upon-Avon, was affected by the strong winds that have plagued model flying for a considerable part of this year, particularly on the Sunday.

However, the weather on the Saturday was fine for flying, if a little breezy, and the show line pilots put on a full display with a wide variety of models, including jets, large warbirds and aerobatic aircraft. The strong wind and showers did make flying more difficult on the Sunday and it was left to a few stalwarts flying their larger, heavier and faster models to keep some aircraft in the air for the visitors to see, encouraged as always by Dave Bishop from his commentary box atop his van.

As is usual at this Midlands model show a large number of model traders were present, enabling visitors to stock up with anything from a few accessories to large model kits. As well as the excellent trade line there was a ring of varied vendors selling food and drink around the show's food court.

Our thanks go to Tony Stephenson and Barry Atkinson for their pictures from this event.

RCMW



The highly detailed Cougar rolls back towards the pilots' box



Fast! The only word that is needed to describe Jason Fletcher's sleek ZN Line 'Wizard' jet



Large models like this twin petrol powered Dakota were still able to put on a good show despite the blustery conditions



Above & Right: Tony Hooper (in the high viz jacket) and helpers wheel back his mighty Avro Lancaster



Steve and Matt Bishop were giving their famous red Hawks a rest and flew a pair of SebArt Avanti jets instead for their synchronised aerobatic display, powered by Jet-italia turbines



A pair of Panic biplanes line up prior to a mass display of manic fun-flying!



Saturday saw a good turnout of display models. One half of the long trade line can also be seen leading off to the food court



Douglas C-47 captured at rest during Saturday's display



Geoff White (right) put on a fine display of scale jet flying with his Airworld Hunter



Ali Machinchy did not fly this year (as far as we know) but used the time instead to catch up with other show pilots and members of the model trade



Ferris flew with the Leamington Hobby Centre heli team. His model accurately replicates an Aerospatiale AS350B Ecureuil operated by Italian heli services company, Heliduebi



Tony Hooper concentrates on flying his big bomber during one of the warbird slots



Above & Right: We look forward to seeing something new from Peter Illiffe at LM each year. This time he brought along his Messerschmitt Me 334, which spans 52 inches. A Hacker H30 motor powers the 4 lb model, via a 60 A ESC and 3S 2700 mAh LiPo. Traditional balsa/tissue/dope construction



If you want to see the view from Mike Brewer's selfie stick then visit LHC's Facebook page!



A fitting tribute to the Vickers Wellingtons that were based at Long Marston in 1942 (but maybe not in this livery!)



Neil Tidey's Laser Twin powered Stearman battles the stiff crosswind during a landing approach



Rob Gardner pulls his Sukhoi SU26-MM into the vertical for a spot of prop hanging



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MESSERSCHMITT Bf 110



This realistic twin comes fitted with electric retracts, working gear doors and flaps

The Messerschmitt Bf 110 was used in the early part of WW2 as a heavy fighter bomber. Known as the *Zerstörer* (German for 'Destroyer'), it was used by the Luftwaffe and served with considerable success in the early campaigns over Poland, Norway and the early part of the Battle of France. The Bf 110 suffered with its lack of agility and this proved to be its primary weakness. This flaw was exposed during the Battle of Britain, when some Bf 110 equipped units were withdrawn from the battle after they suffered very heavy losses and were redeployed as night fighters, a role to which the aircraft was well suited.

Dynam's model comes in a huge box, since the nacelles are ready fitted to the wings and the fuselage is 1100 mm long. The Messerschmitt Bf 110 assembles into a large model too and it's not very practical to assemble it at the field, although I guess you could engineer a solution. There is a lot of wiring coming out of the wings and the fuselage cross section is quite small. However, battery access could not be easier; the nose cone locates on three keyway slots, so less than a quarter turn and the

nose, including guns, removes revealing a rectangular battery pocket. The size of this limits battery capacity and the maximum I could make fit without major surgery was a 4S 2700 mAh. But really the space was designed around the popular 2200 mAh capacity packs. This limits flight time and flying in a scale way for seven minutes is just possible. I know people have managed to open the space and cram a 3000 mAh 4S pack in the nose. If using a lighter pack you will be required to add weight.

Dynam has captured the lines pretty well and details like the three-bladed props, spinners, full gear doors and twin crew add to the overall quality. An Internet search brings up some colour images of this version; the markings seem correct but the colours don't really match. Personally this does not matter as the scheme looks authentic!

The instruction sheet is Dynam's usual single sheet with pictures and minimal text. The bare minimum of information is provided. I'd say that although the Bf 110 is not difficult to fly, it's not really suitable for beginners from an assembly point of view.

Assembly

Before starting assembly I decided to balance the props. Previous experience with this type of model has shown the plastic moulded propellers often need balancing. I use a Dubro wheel type balancer and either put spare decals on the rear face of the light blade or paint.

Much of the assembly is factory done. The undercarriage units are pre-installed and the sprung operation gear doors are fitted. Plenty of thought has obviously gone into the design; the doors feature twin moulded cams that drive the doors open off the legs. The operation is smooth and throughout the review period they remained reliable.

Each motor has its own ESC. Before installing these need programming to suit the motors installed in the Messerschmitt Bf 110. I expected the controllers to be factory ready so I was a little surprised to find that neither of the motors would start consistently. It was possible to get both motors running together, but multiple attempts at opening the throttle would be needed and once running you could not shut the throttle completely! Having a high throttle trim would work but it was far from ideal.

The use of moulded foam to replicate famous aircraft has evolved to the stage where the major manufacturers are now able to offer some pretty amazing aircraft. Dave Wilshere takes a close look at one such model from the Dynam stable, as distributed by CML



Scale details are nicely done and include a neat pair of aircrew



Plastic covers hide the tail linkages



Flaps have limited movement and are more about increasing lift than adding any real drag

Changing the timing cures this. The easiest way to achieve this is to use an ESC programming card. Dynam don't seem to list one but I'm told that the Jeti one works. It's also possible to use manual programming with the throttle stick.

I had a spare 8-channel JR DMSS Rx available so I decided to use that. Trouble is the fuselage cross section is quite small and the fuselage depth is limited, with the long cockpit tub eating into the space. Fitting two ESC's and an 8-channel Rx, plus a nest

of wiring takes some patience! I removed various sections of foam from the wing seat area with a Dremel sanding drum.

Even doing this the wires needed bunching up and holding. As space is so limited I found small cable ties were about the only thing that would fit. The wing is secured with four screws, but fully tightening them still does not achieve a perfect wing fit.

The tail end screws together and is very neat, with no external linkages. The twin

rudders work well, with little play in the system. A plastic cover plate on top of the tailplane hides access to the linkage.

Flying

The first day of flying was perfect, with a light wind and sunny. Our patch is manicured so the Messerschmitt taxied quite happily and showed no tendency to nose over. The steerable tailwheel allows you to back track and turn into wind. The lack of side area will stop weathercocking in stronger winds.

Starting the take-off run with low power and full up elevator allowed the Bf 110 to gain enough speed so that releasing the elevator a little saw the tail rise. And with a continued increase in power it accelerated until it floated off. With the retracts tucked away the gear doors closed without any trouble (it has been the same for every flight since), and a small amount of rudder trim was fed in before completing the first turn. Unless you fly bank and yank circuits you will find the need to coordinate rudder and ailerons to get nice smooth turns.

The Bf 110 does not have much fin area, so Dynam's decision not to employ counter rotating props seems a little strange. That said, the torque is quite manageable and



The cowlings hide a pair of 850 KV brushless motors



Cam operated gear doors have proved to be very reliable



Aileron hook up is standard foam fighter fare



The colour scheme is accurate in style, if not of the correct shades. But for a club scale model it suits the aircraft well

it does not lead to any untoward handling characteristics. Even though the twin Messerschmitt was primarily a bomber it looks great beating up the strip. Power is ample and allows for large wingovers during turn-around turns. Again, it's not really meant to be aerobatic but loops and barrel rolls look great. It's not an airframe to fly slowly; it becomes a little 'woolly' and you could easily over control it. Smooth and fast is good.

The flaps don't do a huge amount. The Bf 110 has plenty of wing area and the available flap angle is quite small, so really it's more about increasing lift than adding any real drag.

When extending the gear there is little trim change, maybe a small pitch down. I tried various landing techniques. The best is to run it in level and do a 'roller' landing on the main gear, reduce the power and feed in up till the tail drops. Three point landings

are much more hit and miss with timing the stall speed.

The balance position is best kept forward. It's never going to be a pattern plane, so slightly nose heavy is favourite, at 70-75 mm from the leading edge.

Overall Dynam's Messerschmitt Bf 110 looks great. The scheme is not a perfect copy of the full scale, but I think it suits the type well. Most of my fellow club members were favourable in their comments. **RCMW**



Our thanks go to Colin Ellis for the flying pictures of the Bf 110



Bf 110 excels at low beat ups of the club strip



When extending the gear there is little in the way of trim change



The best way to land the Messerschmitt is to run it in level and do a 'roller' landing on the main gear. Three point landings are more hit and miss!



THE MODEL WORLD DETAILS

MODEL INFORMATION

NAME:	Dynam Messerschmitt Bf 110 1500 mm ARTF Warbird w/o TX/RX/Battery
MANUFACTURER:	Dynam
DISTRIBUTOR:	CML Distribution
WEBSITE:	www.cmldistribution.co.uk/
PRICE UK:	£219.99 RRP
ESC:	40 amp brushless x 2
MOTORS:	850 KV brushless x 2
SERVOs:	9 g x 6

R/C FUNCTIONS

1: Aileron	3: Rudder
2: Elevator	4: Gear and Flaps

MODEL SPECIFICATIONS

WINGSPAN:	1500 mm (59.06 in)
LENGTH:	1122 mm (44.17 in)
WING AREA:	34.8 dm ²
WING LOADING:	54.5 g/dm ²

LIKES

Quality of mouldings and engineering design

DISLIKES

ESC programming, limited battery size



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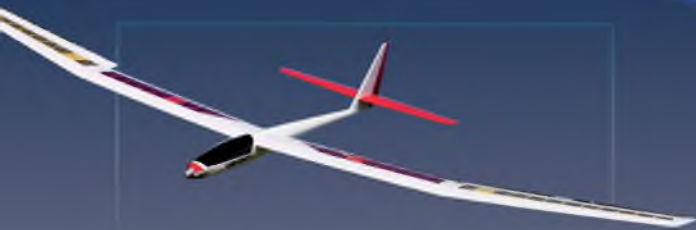
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BOMB GONE!

Bill Bowne describes a simple, reliable payload release. Besides dropping bombs, you can also use it to dispatch parachutes and other fun items. But watch out below!



Here's a simple, reliable, payload release, which is suitable for dropping bombs, fuel tanks, parachutes and other fun payloads. All it takes is a bit of scrap lite ply, some left over hardwood stock, and a few odd hardware bits. Depending on the spring you use the complete payload release (without fairings) will be about 1 1/2" long and weigh only a few grams.

The wire pin holds the payload in place. When the pin is pulled, the payload falls. Relaxing the pull lets the spring push the pin back into place and avoids having a loose pin flopping around. It's important that you use a flexible cord to activate the release; if you use a rigid pushrod it can jam and stall your servo, leading to an excessive current drain on your radio battery, with potentially fatal results for your model.

I've used shackles like these to drop balsa 'bombs', parachutes and other paraphernalia. Want a treat? Go up high and release a loosely coiled streamer of crepe paper and try to cut it as it falls. It's a lot harder than you might think!

RCMW

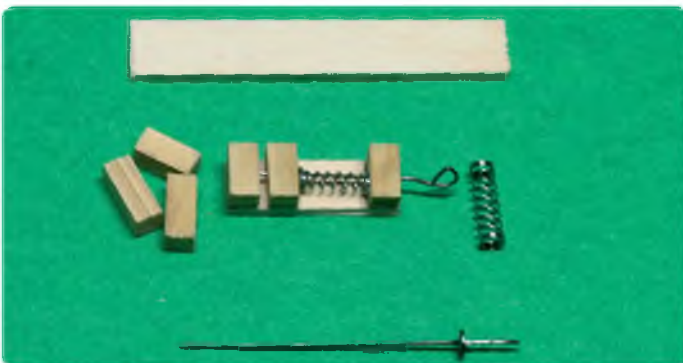
Please Be Safe!

Remove the prop from an electric model before adjusting its servo throws and directions.

Don't drop anything you aren't willing to have hit you on the head without a helmet!

Always have a spotter to make sure the target area is clear before you drop, and to watch where the payload lands. Don't try to watch it yourself or else your model may 'drop' in next to it!

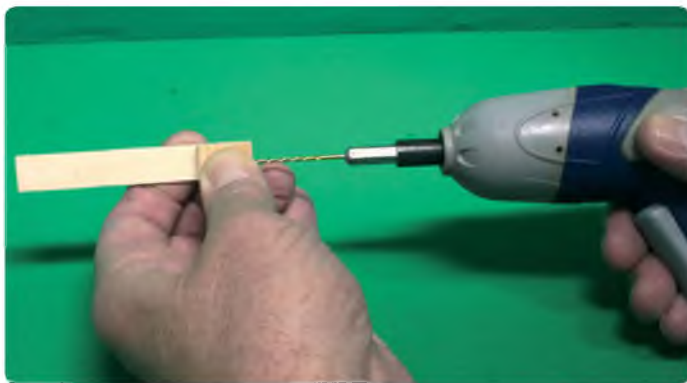
Don't be a slob. If you drop and chop a streamer, clean up as much of it as you can find.



Surrounding a completed release are the parts needed (clockwise from top): 1/2" wide length of 1/8" lite ply, approximately 1.5" long, a spring from a ballpoint pen, about 2" of .051" music wire (with a 3/32" outer diameter washer soldered to it) and three 1/2" lengths of 1/4" square bass or spruce



Glue the front bit of 1/4" square bass to part 1



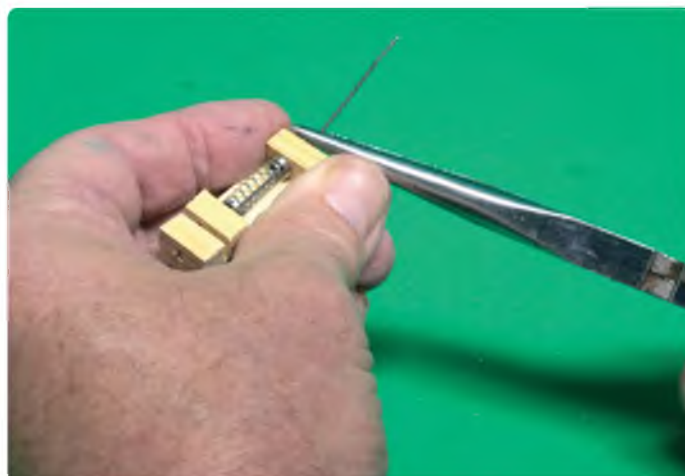
Place the second and third bits of 1/4" square against the first two and drill a 1/16" hole through the middle of all three bits. You may want to use a clamp to hold the pieces in line, so you can keep your hand away from the drill



Using a bit of 1/16" scrap balsa as a spacer, glue the second 1/4" square piece of bass 1/16" behind the first



Put the spring on the wire, then slide the third piece on behind the spring and check the tension. If it's too strong for your servo trim the spring, then stretch it out to reduce tension. When you're satisfied with spring tension glue the third piece on and trap the spring/wire combo in place



Bend a loop in the end of the wire and trim the excess wood from the sides and ends of the mechanism



Mount your servo with the release in place and attach a pull cord. Kevlar fishing line does a good job here. Do NOT use a solid push/pull rod as it can stall your servo if not set exactly right. I used an old rigging coupler left over from a long ago project, but a bit of threaded rod with a loop on one end will make an acceptable substitute on the servo end

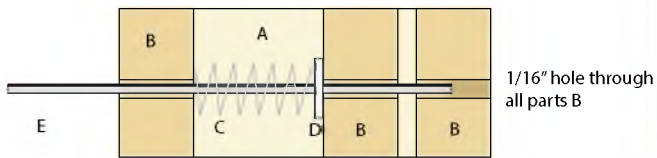


Make payload lugs from bits of thin music wire and firmly embed them into the payload. Note that they're on a (roughly) 45 degree angle to the fins, to ensure that the fins clear the model's belly. Keep your bombs light enough to not be a safety hazard!

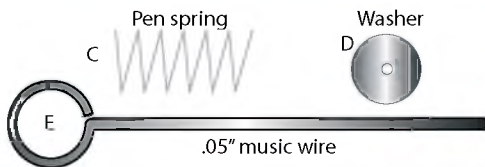
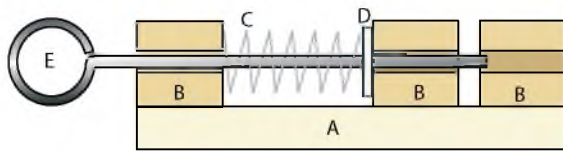


Pull back on the spring to release the catch for easy bomb loading

Basic Shackle



A - 1/8" x 1/2" x approximately 1.5" lite ply
 B - 1/4" square by 1/2" spruce or bass (3 required)



Climbing up to launch height



After levelling out the pin is pulled



Senior Sassy pulls away to clear the falling bomb. Turn to page 122 for more info on this simple to build sports model

SUPPLIES LIST

- 3 x 1/2" lengths of 1/4" square spruce or bass
- 1/8" x 1/2" lite ply, approximately 1 1/2" long
- .051" music wire (approx. 2" long)
- 3/32" diameter washer; solder the washer approximately 5/16" from one end of the wire
- Spring from a ballpoint pen, etc.
- Thin music wire (i.e. under .032")

TOOLS

- Razor saw • 1/16" drill bit • Soldering iron

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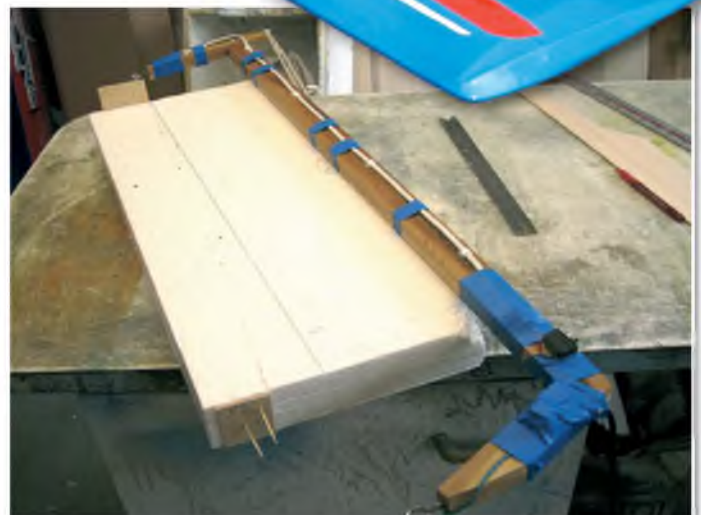
MARLIN



Roger Wheddon introduces a sharp-looking 52" wingspan electric powered aerobat



F2 and F3 in position on the fuselage side



Hot wiring the foam blocks for the rear fuselage. I used Copydex to join the polystyrene

Many reasons encouraged me to venture to the 'dark side' and design my first model specifically for electric power. I have discovered the advantages of 'plug and play flying' provided by electric powered models. As I get older and feel the cold a bit more I've realised that although a sport/hobby, R/C flying is mainly about standing in a field for hours. Having a nice electric model makes winter flying enjoyable again, rather than getting cold, wet and muddy trying to start a reluctant IC engine.

So, get to the field, connect a battery, have a flight, get back in the warm for a coffee - great! Yes, I was slow on the

uptake, but I was a hard-core, fly in all weathers IC man. But not anymore!

Now, foam has its place, don't get me wrong. For instance, for making affordable EDF models. I have a couple, and there are also some very nice scale jobs. But those mass-produced sport models just don't do it for me. I enjoy the design and build process, which allows style development and a choice of colour scheme. You get something individual.

I called my design Marlin after the spectacular fish. However, the only problem I had with the prototype was due to the colour scheme, which was based on the fish, using dark blue, black and silver.

After about two months flying I got disorientated in the downside of a vertical eight and contacted fully grown artichokes opposite our flying field. They're like small trees! I had to rebuild the fuselage and add some serious underside visibility!

Since then I've built version two, which incorporates minor mods, a wider fin and rudder, improvements to the undercarriage mount giving better ESC cooling, bringing the wheels forward, side and down motor thrust and a tail wheel.

'How does she fly?', I hear you shout. Well, with a certain amount of blowing my own trumpet, I reckon beautifully!

Marlin can perform all the usual stuff



Recess snakes or make tunnels? See text



The foam fuselage core, seen from the rear



Ready to round the corners



Epoxy in F1 and clamp until set



Simple tailplane parts



After cutting out the wing rib blanks, mark their centrelines



Start building the wing upside down at the centre section



Align the rib centres

and the wing loading means she has a stunning glide. Don't approach too short as she will glide through the field. She has a good turn of speed and is nice and stable in gentle flybys. With a fresh battery you can pull vertical soon after take-off, if that's your thing?

All in all very pleasing! Marlin is my best work so far, so I thought I'd share it with you.

Electrickery

I enlisted the expertise of Mr Ian James, one of our electrocuted club members, to work out the power set up for this size

of model, giving me the performance I wanted. I'm a rookie in this field.

His advice was, as Guy Martin would say, spot on!

The 4240, 740 KV motor turning a 12 x 8 EMP prop works very well. However, I have always liked fast IC models and my E throttle management is still in the learning stage. Marlin 1 usually gets just about 4 minutes 30 seconds out of a 45 3000 LiPo. I've moved up to 4000 capacity LiPo for the new Marlin and though I'm still a bit heavy handed I can manage enjoyable flights of around 6 minutes. Accepting higher capacity batteries would require

compartment changes and I suspect some tail weight. Feel free, or take advantage of the glide.

The control surfaces are moved by Emax servos, a standard for the elevator and es3104s for ailerons and rudder. Good value servos for this type of model, all from Airtek Hobbies.

Hypocrite - Moi?

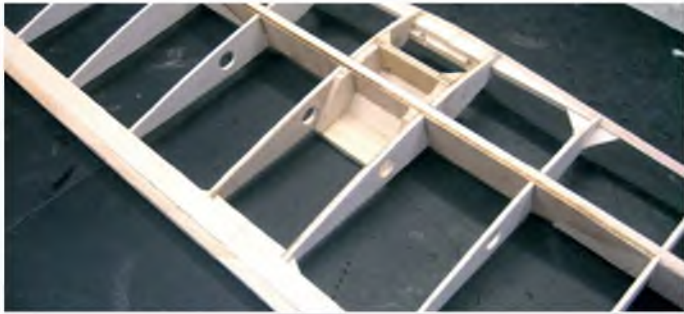
The build is almost traditional; I would call it 'light'ish IC type'. I have owned a precision built ARTF but I can't replicate that build quality as my skills don't include working with Graphene, fairy spit and magic!



Strong wing down plates form part of the undercarriage mount



U/C mounting plate and gussets



Remember to make holes for the servo cables



I prefer these servo holders for the ailerons, mounted to sturdy rails



Adding the leading edge sheeting



Construction of the simple wing tips



Wire U/C's are resilient and are cheap and easy to make

Now an admission after knocking foam! Some time ago, as an experiment, I covered a 2 x 2 x 8" white foam block with 3/32 balsa. This is very strong, light and stiff. With the addition of some holes and slots it's now my small tool holder. If Carlsberg made tool holders this would probably be the best in the world!

I decided that one day I would use this method for a fuselage. The rear section of the Marlin fuselage is balsa-covered foam, between F3 and the tail, instead of formers and snake supports! It works well. I used copydex to glue the foam core to the balsa sides.

The Build

I consider Marlin to be just into the intermediate build range. I don't think you will find any tricky bits, apart from maybe routing the snakes through the foam block, or perhaps building the top decks and canopy/hatch? The photos should help.

Make the canopy and deck facings, four in all, and the spines first. Fix these in place with the canopy facings using just a tiny tack to hold; they will be separated later. Pin or tack-glue the large main canopy former to the fuselage top.

Fit the canopy and turtle deck tops, lightly mark where the joints are, angle the edges

then fix the sides. Do not glue the canopy sides along the bottom edge! With a new scalpel blade cut through the top and sides at each end to release the canopy area. You should, of course, have a canopy facing in each end.

Make canopy locating side rails and fit and blend in between the front and rear turtle decks just outside the canopy edge line.

I used a 2" (50 mm) thick white polystyrene insulation panel for the rear fuselage block. Cut two slightly oversize blanks and glue together. The joint should be vertical. Make end templates as you



Bind the joints with copper wire and then solder



Air outlet and wing bolt access



Turtle deck spine and top decking



Construct the canopy in the same way as the front and rear turtle decks



Strengthen the canopy's inner edges with micro-ply



Yep, it all looks OK!



Adjust the LE and F2 to suit the LiPo pack being used



Underbelly, showing the aileron servo mounts and U/C leg infills. Note the string for pulling the servo cables through

would for cutting a foam wing, fix these centrally at each end of the block and cut the taper with a foam-cutting bow. Somebody in your club will have one.

When the front fuselage formers and triangle longerons are glued in, and before the top and bottom sheeting is added, relieve the corners and cut the angle on the block where it will butt F3.

Mark the snake exit and routes on the ends, top and side with a felt tip. Then, with a heated 10 swg 24" piano wire, 'eye' the line of the snake routes through the block and with a confident quick thrust push the wire from mark to mark.

The resulting tunnels will probably be large enough for the snake tubes.

You could just slot the foam core and sink the tubes in place. I've used both methods, and they are equally as good. When you're satisfied with the fit 'Copydex' the snake tubes and then the foam block in place.

My brother is building a Marlin and he has chosen to go with traditional formers instead of the foam block. I suggested he use 1/8th instead of 3/32nd balsa sides to maintain stiffness.

Be sure to build the wing topside down on the board. Use the sandwich method to make the rib blanks and mark the

centreline on both sides. This will help you align them horizontally during wing construction.

As an alternative to laminating the centre ribs you could use 1/8th lite ply. I've tried both. There's no real gain, it's just that you only make two ply ribs instead of four.

Scarf joint the spars at opposite ends. Do not omit the shear webbing or the big U/C mounting plate gussets.

I always use 3/32" balsa for sheeting. It is more resistant to my clumsy fingers and you get more scope for sanding to a nice smooth finish.

Marlin has a little side and down motor



Snake tunnel tool – push through when hot!



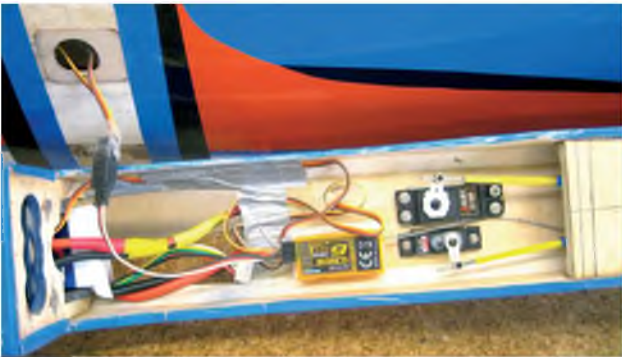
I was so pleased I forgot my shadow when taking a picture!



Cooling air enters the large inlet, runs over the ESC and through the underbelly



There's space for a 4S 4000 LiPo - or maybe more?



With the wing off there's plenty of room for the Rx and wiring



The ESC gets plenty of draft from the inlet in the lower cowl



I love the Gulf colour scheme. Landing on that table was tricky...



Marlin gets airborne

thrust, which helps counter prop torque. Start with 1/2 to 1 degree. Adjust by packing the motor back plate.

The wing and tailplane have no incidence: Zero - Zero.

Finishing Touches

My current preferred method is Solarfilm Polyurethane Supershink. Although the pigment can separate if you don't follow the rules, it works very well if you tack and tension prior to shrinking and work the curves with heat and persuasion as directed. If all else fails read the instructions!

As you see I have gone for one of my favourite schemes, Gulf Oil blue and orange. Supershink Lux Blue, suited as the Gulf blue, has varied over the years. The advantages of Supershink are that it's almost half the price of the Teutonic cover and it's made in GB.

I've made sure with the new Marlin that the top and underside schemes are different and hi-viz. It's all Solartrim. I found the Gulf logo on eBay.

Make a piano wire undercarriage, if only to keep your bending and soldering skills up to par. Finally, I changed to a tail wheel

rather than the original skid to improve the taxiing.

If you build Marlin, I hope you enjoy the process as much as I have. Alternatively, copy some ideas and design something of your own. It's a very rewarding experience.

Thanks as usual to club mates for advice, flight evaluation and in-flight photos. And, of course, to RCMW for publication.

You can email me questions if anything is unclear: rogerwheddon@btinternet.com

RCMW



The only drawback with using a blue colour scheme is on those seemingly rare days when there's not a cloud in the sky!



Use orientation stripes so there's no mistaking which way is up!



Marlin can perform all the usual stuff



The wing loading means she has a stunning glide but don't approach too short as she will glide on through the strip

RC MODEL WORLD DETAILS

MODEL SPECIFICATIONS

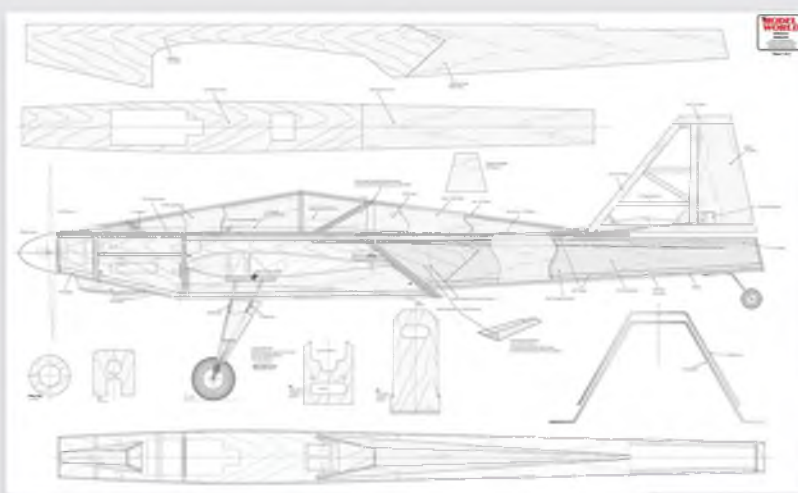
PLAN NAME:	MARLIN
WINGSPAN:	52" (1321 mm)
LENGTH:	45" (1143 mm)
WEIGHT:	3 lb 12 oz (1,701 g)
MOTOR:	4240 brushless, 740 W
ESC:	70 A
PROP:	12 x 8 E
BATTERY:	4S 4000 mAh LiPo
RADIO FUNCTIONS:	Throttle, Ailerons, Elevator, Rudder
BASIC CONSTRUCTION	
MATERIALS:	Balsa, foam block, spruce, beech and lite ply
COVERING MATERIAL:	Solarfilm Polyurethane Supershrink
CONTROL SURFACE THROWS:	
Ailerons +/-	1/2" (13 mm)
Elevator +/-	3/4" (19 mm)
Rudder +/-	1.1/4" (32 mm)

PLAN DETAILS

NAME:	Marlin
BUILD CATEGORY:	Intermediate
PLAN NUMBER:	MW3752
PLAN PRICE:	£15.99 (\$27.99)

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MULTIPLEX AIRSHOW

2015

The 2015 Multiplex/Hitec Air Show was a superlative event



Krill Extra 330 SC in Martini colours, as flown by 19 year old Oliver Gräff. His model spans 3.1 m and is powered by a ZDZ 180. R/C is via a Multiplex PROFI TX 16 operating 12 Hitec 7990 servos



Florian Vogelmann, German Unlimited Class Champion in 2014, stands beside his 2.4 metre span Weiershäuser Pitts S1. Powered by a King 140 and controlled with a MPX Profi 16 Tx and MPX Titan servos



This model features stunning airbrush work by Austrian artist, Daniel Hirscher



Multiplex team pilots displayed a wide range of the company's model aircraft kits during the mass launch slots



That's the way to carry an extra large glider!

This year's Multiplex Air Show took place at the LSV Bruchsal airfield near Heidelberg in Germany over the weekend of 9th and 10th May. Basking in superb weather, some of the world's best R/C pilots put on a spectacular air show, complemented by flying at dusk and fireworks, all provided with free admission to visitors. World Champions, European Champions and Regional Champions from the world of model flying offered non-stop action over the whole weekend.

The pilots at the flight line were all connected in some way with Multiplex and Hitec, and all fly the products made by those companies. The result was a very impressive demonstration of the quality of the Bretten-made components.

A breathtaking flight schedule was given by stars such as Gernot Bruckmann, Martin Brandmüller, Nils and Peer Brückner, Thomas Höchsmann, Werner Kohlberger, Christian Lohwasser, Günther and Daniel Mayr, Josef Mögen, Matthias Paul, Alfred Rachner, Ulf Reichmann, Uwe Rihm, Alex Schiegg, Florian Vogelmann and many

more, as well as a great display by lady flyers Claudia Zimmer and Daniela Frank.

The German Model Flyers Association (Deutscher Modellfliegerverband) was represented with its new information stand. 'Meet The Multiplex Stars' was the 2015 airshow's advertising slogan, and Luger Katemann, Vice-President of the DMFV, offered this opinion: "In terms of quality it would be difficult to improve on what Multiplex offered at this event. That was the cream of the cream at the flight line!"

The array of model aircraft on display ranged from well-known scale models, jets, large-scale gliders and warbirds to aerobatic machines and even racing models with top speeds of up to 500 km/hr. The mass launch of Elapor models was spectacular every time it happened, while the indefatigable commentators, Bernd Beschorner and Lukas Nakir inspired the pilots to fly fantastic performances, with very impressively staged displays.

The Multiplex Air Show had the true atmosphere of a public festival. Almost

10,000 visitors attended and enjoyed a great choice of food stands, an MPX bargain shop, and there was free flying for everyone: it was even possible to test-fly the new Elapor FunGlider, which was the new Multiplex product introduced at the show.

The dusk flying show and fireworks on the Saturday evening were amongst the highlights of the event, and the hangar party which followed went on for a long time, giving visitors the chance to enjoy themselves and talk even more about modelling!

The final flying slot came to an end around 5 pm on the Sunday, but many spectators stayed in their seats because they were so enthralled by this great exhibition of the fascinating world of model flying.

Warmest thanks go to the host club – LSV Bruchsal – as well as all the Multiplex and Hitec sponsored pilots, and the Multiplex staff and assistants. After all, a great air show is only possible with so many willing hands! **RCMW**



Oliver also flew this 2.5 m Futura jet. The Tomahawk Design kit is powered by a Turbine IQ Hammer 220+ and is controlled using Hitec 7954 servos



An unusual subject in the form of this Miller-Bohannon JM-2 Pushy Galore. The 2.38 m pusher was flown by Michael Sommer



Mind the greenery! A pair of Viper Jets race past the trees



The blue Paritech Viper Jet MK2 XXL of French pilot, Pierre Grosse lays a trail of smoke as it flies past the large and appreciative crowd. Jetcat P180RX power and controlled by a MPX Profi TX 16 – what else!...



Ulf Reichmann from Hessen is a four times German Aerotow Champion. Decorated in an unusual colour scheme, his Blanik L-13 is to 1:2.83 scale and has a wingspan of 5.8 metres. Manufactured by HB-Model (Heiko Baumgärtner), the near 25 kg glider is hauled aloft by a pylon mounted Hacker C50-13 XL, via a 6.7:1 gearbox. Ulf uses an M-Link Multiplex Royal Pro 16 Tx to operate the control surfaces, including extendable Fowler flaps for increased lift

MULTIPLEX AIRSHOW



As is common at a German model airshow there were plenty of large scale gliders and quite a number of big aerotow tugs too



Overnight storage for the display models was available in the LSV Bruchsal hangars



Flying entertainment continued even when it got dark



Matthias Paul flew this impressive Natrix from the Paritech stable. Beautiful finish!



Mexican wave from the Multiplex crew and pilots



The 'German Aerobatic Team' of Ingo Brauer, Randolph Bromer and Andreas Merhout flew synchronised displays with their Krill Extra 330SC's. The 3.1 metre span models are powered by MVVS 175 NP Twinspark engines, with flight controls operated by Hitec HS-M7990 Digital servos





GAT used their Extra's to draw smoke patterns in the sky



The German Model Flyers Association (Deutscher Modellfliegerverband) was represented with its new information stand



A view of the Vector Thrust Control fitted to the back end of Oliver Gräff's Futura jet



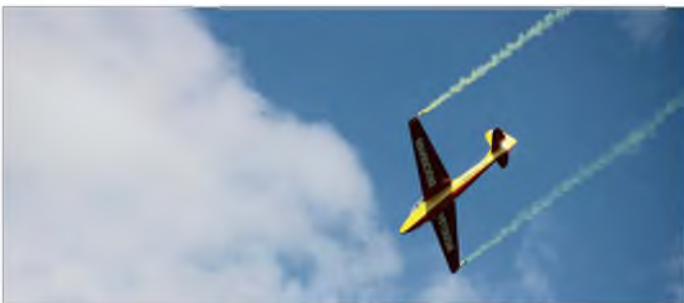
Many of the glider tugs are fine scale models in their own right, typified by this smart Turbo Beaver



Josef Mögn wheels his 3.5 metre wingspan Viper Jet MK II back to the pits



Thomas Faigle waits to fly his 3 metre span Clipped Wing Cub, built from blueprint plans. The model has a host of fine details, such as the flip up engine access panels on each side of the cowling



SVC Mačka scale glider by Gerhard Bruckmann trails smoke as it dives during its aerobatic display. Built to 1:2.2 scale it has a five metre wingspan



With the ROCKSTAR 4S power system (RR version) the model has great vertical climb and prop hang capabilities



Multiplex display pilots line up in preparation to fly their ROCKSTAR biplanes. These MPX kits span 1050 mm and are built using a combination of Elapor foam, carbon fibre, aluminium and M-Frame technology

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CYANOACRYLATE: A CHEMICAL ROMANCE!

Superglues! You either love them or hate them. Vaughn Entwistle gives some tips on how to make the most out of these modelling mega adhesives

I have to begin with a confession. In all my years of modelling I have never used up an entire bottle of cyanoacrylate. I have, however, thrown away many partially used bottles due to clogged nozzles and full bottles that inexplicably set rock hard overnight. I admit, I am a born bodger and have made just about every mistake there is to make with this glue, but I am trying to reform. Here, then, are some pitfalls and practical tips I have collected on the use of this ubiquitous wonder glue.

The latest cyanoacrylate adhesives are truly super glues and a little goes a long way. But with a little care each bottle can be made to last a lot longer



long, strong chains that bond surfaces together. Simply put, cyano uses moisture in the air to set, so the more humid your workshop is the faster the glue will set. CA is frequently used in conjunction with an accelerant (what we commonly refer to as 'kicker') to make it bond in seconds.

The accelerant is a mixture of alcohol and petroleum products such as xylene, ethylbenzene, and other things you probably don't want to know about. Kicker formulations vary between manufacturers, which is important to note since some accelerants will dissolve the wings off your foam RTF while others won't. Some accelerants identify themselves as 'foam safe' but with all the different foams currently in use (Elapor, EPO, EPP, Depron, etc.), it is wise to proceed with caution. Try it on a test piece first, if possible.

Pitfall #1: Why Won't This *@!%! Cap Come Off?

CA bonds very quickly, holds with great strength and is lighter than glues such as epoxy. But one of the most common problems is a bottle cap that gets 'glued' on to the nozzle. This is my personal number one grievance. Often I have snatched up a bottle for a quick repair only to spend half an hour trying to wrestle a welded-on cap using pliers (not recommended), back molars (highly not recommended) or a shop vice (now that's just plain stupid). On one

occasion I used a pair of large Vice-Grips and managed to torque the entire bottle into a mangled pretzel without succeeding in removing the cap.

One simple solution to this problem is a careful smear of Vaseline on the nozzle to prevent the cap from bonding to it – but beware of transferring Vaseline to the parts you're trying to glue or tears may follow. The other drawback is that you may be hard pressed to explain to your wife why you have jars of Vaseline and rubber gloves in your hobby den.

Pitfall #2: Clogged Nozzles

Following on to Pitfall #1 is the hated clogged nozzle. Often, no matter how carefully one applies CA, the nozzle of the bottle gradually turns into a gnarled stalagmite of dried glue. This is often fatal, as globs of glue on the nozzle prevent the bottle from being tightly capped. Air then sneaks in and causes the whole bottle to set rock solid. A common solution is to reach for a pin or nail to reopen the nozzle, or use a craft knife to further whittle the nozzle down. A big problem with the pin solution is that metal ions from the pin also react with cyano and sometimes the pins glue themselves permanently into the nozzle hole. (Once again, ask me how I know!) Furthermore, cutting down the nozzle often results in an oversized hole that floods the job with too much glue.



Storing your Cyano in poly bags keep moist air out and helps catch any spills

It's A Bird, It's A Plane... It's Superglue!

Cyanoacrylate – or cyano or CA as I'm going to refer to it from now on – is one of the most popular glues in the modern modellers' tool kit. Cyano's main advantages are fast set times and terrific strength. The CA used by hobbyists is an acrylic that polymerises in the presence of water (remember that for later), forming

CYANO

Pitfall #3: An Attack Of The Vapours

Another vital lesson I've learned through painful experience is to never store my bottle of accelerant in the same container as my bottles of cyano, as even the vapours from accelerant can cause cyano to 'kick off'. Whilst working I keep the bottle of accelerant at arm's length and only uncap the CA immediately prior to using it. I then recap the bottle before I hit the glue joint with kicker. This is to avoid overspray from landing on the nozzle tip. Once the pieces are glued together I replace both caps as soon as possible. When I'm done for the day I store the cyano and kicker in poly bags and keep them widely separated.

For long-term storage I keep my glues vaulted in a cheap plastic toolbox, with the bottles stored upright and tightly wrapped in poly bags to keep air out, vapours in, and also contain any leaks. I admit these steps are bordering on OCD but through them I am gradually overcoming the 'hardened bottle syndrome'.

Many modellers choose to store their cyano in the fridge but this only works if the bottle has not already been opened. (Yet again, ask me how I know that?) I swore off doing this because it requires too much forethought (the CA must be allowed to warm up to room temperature before using), plus the woman who walks on the ground I worship would not tolerate having superglue stored next to her salad cream.

Pitfall #4: Allergic Reactions

A fellow club member recently acquired a CA sensitivity that has forced him to stop using it altogether. As it is difficult to reverse allergic reactions the only real solution is prevention. Only using cyano in the semi-mythical 'well-ventilated room' is one. (I'm sure most of the sheds/attics/basements that modellers are building in fail miserably on this count.)

My own partial solution is to use a small, battery powered desk fan affixed to the building board at my elbow. The fan is



These special fine tips allow you to metre out glue precisely. Just chuck them after one use and your nozzle will remain pristine



A section of capillary tubing is included in the packet. As small piece in the nozzle works very well, allowing precise control over the amount of glue delivered

gentle and virtually silent, and allows me to stay 'upwind' of the cyano fumes. Still, it's pretty much impossible to avoid getting the occasional, eye-watering hooterful of CA fumes now and then. Paint respirators with activated charcoal filters are the best defence and you should really invest in one if you're a serious builder (what with all the paint, solvents, etc., that we use in our hobby). The downside is that they can be hot and sweaty to work in for extended periods.

Another solution is to switch to the 'odour-free' varieties of glue. And I have

used these without noticing any major differences in efficacy (although you are still breathing in the vapours). Many hobbyists attempt to mitigate long term exposure by employing a variety of glues in their builds, ranging from aliphatic resins to epoxies, or polyurethane glues such as Gorilla Glue. (How many gorillas does it take to make a bottle of this stuff?) However, most glues are toxic to varying degrees and the only perfect solution is to avoid exposure altogether (take up knitting, instead?).



A cheap plastic toolbox makes a dark, dry, home for all my glues. Note: do not store accelerant in the same box!

Alternatives To Knitting

Okay those are the pitfalls of cyano.

Here's some tips on how to avoid them.

First, keep your glue bottles in a dark, dry, and cool place. As I said, I keep all my glues in a cheap plastic toolbox. (The accelerant has to live somewhere else. Preferably in another postcode.)

The best solution to clogs is to keep your nozzle clean and pristine. (I managed to write that line with a straight face!) When opening a new bottle of CA slice off the nozzle tip using a sharp blade and keep the opening as small as possible. A straight cut seems to work best. Thereafter, restrain yourself from employing anything that will scratch, gouge or degrade the surface of the nozzle. Cyano typically comes in polythene bottles that have been given a fluorocarbon treatment to repel water. The nozzles are slick and slippery. Gouging or scratching them creates tiny nooks and crannies where glue collects and hardens. This is probably the number one reason why the !\$#&*!! cap won't budge. Similarly, drilling out a blocked nozzle (be honest, we've all done it) to reopen it can damage the coating inside the bottle and drop bits of set glue, plastic, etc. into the CA, causing the whole bottle to kick off.

To help prevent clogs, after dispensing glue tap the bottle on a hard surface. This drives excess glue back down the nozzle.

Then give the bottle a gentle squeeze to ensure the nozzle is not clogged with glue. If your nozzle does end up covered in layers of goo, let the glue fully harden and then crack it loose by wrapping the nozzle with a piece of poly bag and giving it a sharp twist. In the past I have mistakenly used a tissue or paper towelling to do this, but remember the Catch 22 about cyano? Even cotton dust from tissues works as a catalyst for CA.

A wise move is to invest in replacement bottle caps, nozzle tips and capillary tubes. (Really, it's not cheating!) I have finally accepted my ineptitude and I always order a set of replacement caps whenever I purchase glue. A nice option are the micro glue spouts and Teflon capillary tubes glue that many manufacturers offer. I've tried the capillary tubes and they work very well, allowing precise control over the amount of glue delivered. Plus, it's difficult for rogue gangs of moisture-laden air molecules to crowd down that tiny tube and do their mischief. But if a clog should occur, a quick snip with the scissors and you're back in the gluing business. The only downside is that I usually run out of the things long before I use up the bottle of CA. Note to self: must order more!

Helpful Hints

Here are some other helpful hints I have picked up along the way:

- Accelerator. To save money, keep a small spray bottle (easier to wield) and refill it from a jumbo-size bottle that you store in a cool, dark space, separate from the glues.
- If your glue joints aren't super tight, voids and cracks can be filled with baking powder. Caution – once the CA hits it will exotherm (get hot) but it forms a strong, rock hard joint that may need to be filed to shape.
- A thin smear of Vaseline on the nozzle can help the dreaded 'cap glued on' syndrome, but use with caution.
- If you don't enjoy peeling dried cyano off your fingers you can wear gloves. But make sure they are polythene, not nitrile or latex.
- Invest in a bottle of debonder. Yes, I know you never make mistakes, but debonder can help you out of a jam if you accidentally stick your fingers together or glue a small child to the sideboard.

Cyano can be a tricky beast, but hopefully by following these tips you won't come unglued.

RCMW

A summary of important tips for grief-proof gluing

1. Store glue bottles upright in a cool, dark, and dry place.
2. Keep your nozzles clean.
3. Tap the bottle and then squeeze after every application.
4. Never store accelerant and cyano together.
5. Provide good ventilation when working with glues.
6. Purchase spare nozzles, caps and capillary tubes at the same time you buy glue.



To my great shame, this is an actual nozzle from one of my glue bottles. After butchering it with pliers, etc. it is a gnarly mess



Same bottle with a slick new replacement nozzle and cap. This is not only easier to use, but the replacement cap set can help prevent 'rock solid' bottle syndrome



Left & below: Many glue manufacturers now offer replacement bottle caps and nozzles. Buy a set when you buy your cyano and save yourself a lot of grief

COUNTRY CAPERS



SAM 35 Gate Guardian!

Forgive me for waxing a tad lyrical but having visited the Shilton Vintage Fly-In, for some reason I was struck with a feeling of nostalgia. A song title – Mambo No 5 – popped into the brainbox, where the chorus ran along the lines of ‘A little bit of Monica by my side...’ and so on, listing things that made the singer happy!

My mind strayed into the realms of wondering what makes this type of event different and, adjusting the lyrics to ‘A little bit of history in flight, a little bit of banter in the sun, a historic flying site adds up to plenty of fun.’

You have to hum it to get it, but you get my drift!

The Event

Right, waffle over – on to the event. Set on the former RAF Broadwell site, this vintage fly-in is only in its second year. It came about because the famed Cocklebarrow event was thought to be ending (it hasn't) and it was to be an alternative event. The prime mover was Nick Blackwell, who managed to convince his ‘Mum’ to let him have a field on the farm to run it. With a dedicated but small team it proved to be a winner. And the fact that most of the participants at that first show returned for more confirms that fact.

The Site

RAF Broadwell was a short-lived but essential cog in the war effort in the 1940s. It seems odd that this sizeable airfield has long been returned to agriculture and now also sports an enormous array of solar panels.

It opened in 1943 and became home to 512 and 517 squadrons. Operating Dakotas, they took part in many training drops with paratroopers in the spring of 1944. They took part in the famous June 5/6th D-Day parachute drop. And also on June 6th they were airborne again, towing Horsa gliders bound for Arnhem. The scale of the operation can be gauged by the fact that over 400 sorties were logged.

The airfield, which closed its gates in March 1947, lies only a couple of miles from Brize Norton and about nine miles from RAF Fairford, both still very much active airfields.

Informality Reigns

To fly at Shilton BMFA membership is required, as is the possession of an ‘A’ or ‘B’ proficiency certificate. The event is over two days and camping or caravanning is allowed on site for a small pitch fee. Pilots are required to sign in and pay the entry fee, and that's all the formality there is. From then on it's a case of rig your model, stroll out to the newly mown patch and fly.

A large proportion of the models are now electric powered versions of the originals, with a couple sporting vintage diesel power and one with a rare Laser diesel. A single trade stand was there, but I suspect Derek and Val were there as much for the craic and the flying as the trade!

Interesting models abounded but a couple that caught the eye were scaled up control line stunt Mars models. Being fairly short coupled, though slightly lengthened, the performance was excellent. One had electric power, the other I/C, but performance was fairly equal. Take-off runs were short and the aerobatic qualities were as you would expect from former hot control line models.

Characters

If you belong to a club (or as I am, a chairman of one) you will appreciate there is an abundance of ‘characters’ to be found. Shilton was no exception and Derek Foxwell won't mind being nominated. He is a former European scale champion, in the days when large, heavy models were not allowed in this country. He delights in saying: “In one competition in Germany we



A bit short on the flare! Rural setting for a Popsie, plan built by Richard Preston

(the UK) were called 'the salt in the soup' as our attendance meant the event was truly international." As you might expect from a modelling heritage such as that, and a background as a 'technical consultant' on Robot Wars, he now runs the Oldschool Model Aeroplane Factory.

When a good age is reached it is assumed that wisdom and skills accrue over the years. Now Dick Blenkinsop has plenty of both. He was flying an unnamed model that was very attractive. He designed and built it aged 16 in 1947! Originally powered by an early Mills 1.3 diesel, which many of us must have used, the latest version is electric powered.



David Lovegrove from Wallingford flew an Aeronca C3 Collegian. Acquired as a wreck, it is rebuilt and converted to electric. E-Max 35 motor with a 6-cell 5000 mAh LiPo power supply

To Summarise

There is an air of days gone by in the atmosphere of a Sam 35 event. The models are not often scale, but are examples of flying machines designed to do just that – fly. As a result shapes and indeed size vary enormously, making a visit to one of these events a real pleasure. There are not many rules, not a lot of noise, but there is a lot of reminiscing. And, above all, the camaraderie and mutual assistance between fellow modellers is never more prevalent.

Now should I build a new model for the next event at Shilton? Better hurry – that would be the 12th and 13th September, 2015.

For details contact Nick Blackwell: nick@nickblackwell.co.uk or Derek Foxwell: derekfoxwell@btinternet.com

RCMW



Brian Brundell from Melksham launches his tiny Buttercup, built from an American plan. Designed for a Cox 020, it is powered by a Hyperion HP21705 electric motor



In full miniature majesty the Buttercup looks right at home over the meadow



A pair of Mars models, scaled up to 67 inch span from a control line stunt plan. John Mellor's is electric powered and Mike Spencer's has glow power



Derek Beale's Queen Bee in suitable colour scheme!



The all black finish on the Mars gives it a sinister look



Richard Preston has this Keil Kraft Chief, modified to electric power. Built from a plan from an original kit this was once the 'high end' of model gliders



Heigh-ho, heigh-ho! It's off in search we go! These two look for a model that 'strayed' into the meadow hinterland. A misaligned wing caused it to wander off course



Back from their search, Richard Preston and Brian Brundell take a breather



Dick Blenkinsop designed and built the first version of his anonymous model when he was 16 in 1947 (see text)



Gordon and Derek Parker sort out the wiring for the Graupner Amigo, adapted to electric power with a pod on the wing, after which Gordon gives it a sedate launch



Not seen, but this Irvine Mills diesel sported a wooden fuel tank! No, not a joke. Although the model's name means Clown in German!





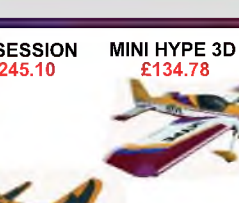










Mike Spencer's Privateer, built from plans, has an AXI 2820 turning a 2:1 belt driven gearbox. RAF Broadwell WW2 control tower in the background



Elegance personified. This Popsie was flown by Derek Foxwell (inset), the man behind The Oldschool Model Aeroplane Factory, where superb laser cut kits of vintage style models are available and who were sponsors of the show



Nick Blackwell about to fly his Tomboy, but not for long as, "Tx battery low! Landing!" was yelled. Behind him is Malcolm Davies, about to maiden his Junior 60 ARTF. He claims the record for the longest ARTF build – six years! But the wait was worth it – it's a good performer (inset)

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SUPER SYTKY

Christian Moes designs and builds a .15 cu in glow powered Quarter Midget pylon racer and lays down a challenge to see how fast it goes compared to a modern EDF jet. The race is on!

Fly Fast, Turn Left!

According to the National Model Pylon Racing Association (NMPRA), the sport of R/C pylon racing got its start in the USA during the late 1950s. The first AMA sponsored event was flown in 1957 and won by Howard Bonner with a semi-scale Bonzo. In subsequent decades, thanks to ongoing miniaturisation of R/C equipment and improved functionality and reliability, pylon racing continued to grow in popularity.

Numerous 'classes' were established over the years, including Formula 1 and F.A.I. for

.40 size aeroplanes, and two smaller classes: 1/2-A (200 sq in) and Quarter Midget (300 sq in), which became very popular during the seventies and eighties. These latter categories were aimed at the 'sport flyers' of the day, and a multitude of plans and kits were available at the time. Whether the intention was to race or not, many R/C modellers gave these smaller models a go, just for the fun of it!

Aside from having a minimum wing area of 300 sq in, Quarter Midget rules also specify a minimum flying weight of

2.5 lb (1.1 kg) and a maximum engine size of .15 cu in (2.5 cc). The model must also be a recognisable 'scale' replica of a full size racer.

Today, there are numerous disciplines of pylon racing, as technology continues to improve; notably with the arrival of efficient electric power, which was unheard of when Quarter Midgets were in their prime. Likewise, those noisy, oil spewing 2.5 cc glow engines so commonplace back then are seldom seen at the flying field nowadays!



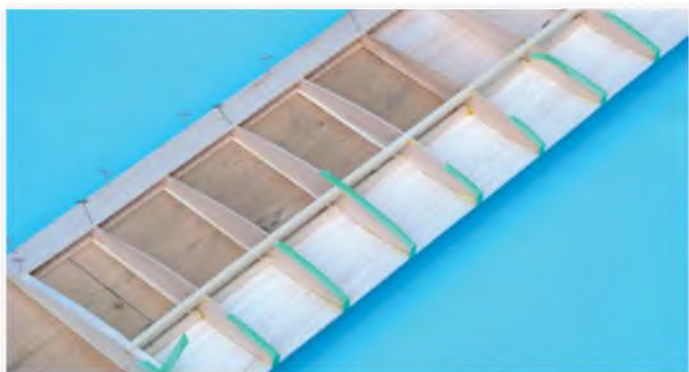
Don't get too racy! Super Sytky is intended as a sport model and is not intended for competitive pylon racing



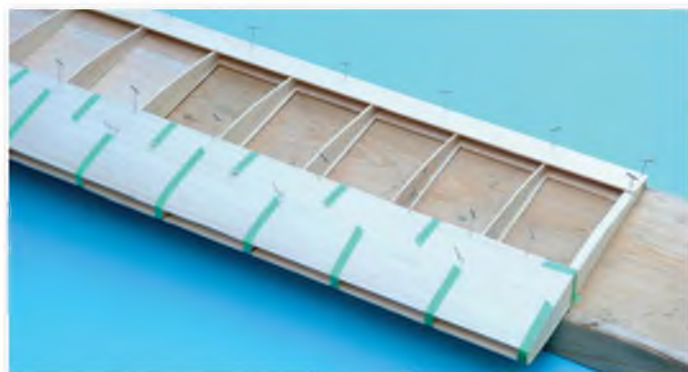
Stack ribs and sand smooth with a sanding block – preferably a Perma-Grit!



Bottom sheeting, capstrips, spar and trailing edge pinned flat and placement of ribs in progress. Don't glue ribs to leading edge sheeting yet



With top spar and TE sheeting installed curve the LE sheeting upward and glue to bottom of ribs



Add the top LE sheeting



Don't forget the shear webs before closing in the centre section. Old school model cement is used for joints that require sanding, such as sheeting seams



Sand LE sheeting flush with ribs prior to attaching LE

Time Warp

Over the past few years, and with the encouragement and advice of John Stennard (the guru on such matters) we've had great fun with several small (50-70 mm) EDF powered models. All very high tech of course... made of 'crash resistant' foam, with metal shroud fans and high capacity battery packs. Some of these EDF models fly quite briskly, further accentuated by their small size, and are a real blast making high speed passes low over the field.

With the memories of those old Quarter Midget racers now ancient history, we can't help but wonder how the sight, sound, and performance of one of these 'old school' glo-fueled racers compares to a modern EDF?

There's only one way to find out, of course – build one!

First off, we need to choose a prototype. Like R/C models, full size racing aeroplanes have also evolved over the years. Most modern racers have rather curvaceous lines, well suited for pre-moulded foam and composites, but not so easy to replicate with built-up balsa wood. Perhaps an

older prototype, one that's also made of 'traditional' materials would be more suitable? But every conceivable racer, from Steve Wittman's aforementioned Bonzo to the Spirit of St. Louis, has been modelled already. So what to choose?

The PIK (Polyteknikkojen Ilmailu Kerho) model 21 Super Sytky was designed by Kai Mellén in conjunction with the Polytechnic Aviation Club of Finland. It made its maiden flight in May 1981. Of all-wood construction and with a modified VW engine, the design conforms to the Formula V class racing rules of that time.

As a flying model, the simple lines and high aspect ratio of the Super Sytky also appealed to the renowned and prolific US aeromodeller Walt Mooney, who designed and built a lovely peanut scale version. But that's another story altogether...

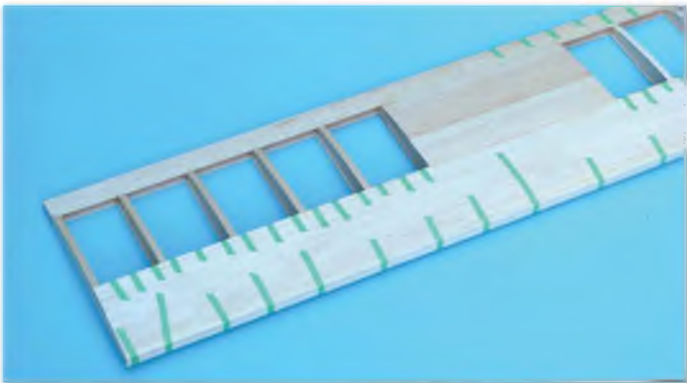
Let's Get Started!

As always, we like to start construction with the wing. With neither dihedral nor tapered chord, the Super Sytky wing goes together quickly. It is built as a single panel, to which a pair of strip ailerons are

attached. There are only fourteen ribs in total, all the same contour, plus two tip ribs, which are slightly larger than the standard ribs to account for sheeting and capstrips (top and bottom).

Try as we might, we couldn't fit a 34" span wing onto a 32" wide piece of paper. This leaves the builder with two choices: 1) Photocopy the left wingtip plan view from the drawing, align and paste/tape on the match lines or... 2) Paste a blank piece of paper, extend a few lines and draw in a couple of ribs at the dimensions shown.

The aerofoil is flat bottom from the spar rearward. Thus all lower sheeting, including the leading edge, trailing edge, capstrips and centre section sheeting are pinned flat to the board. The lower spar and pre-shaped trailing edge are then glued and pinned in place, using a few ribs to establish the spacing between. The rest of the ribs, the top spar and upper trailing edge sheeting can be added in turn, but do not glue the ribs to the lower leading edge sheet yet. Sight down the ribs at the leading edge to ensure they are all in a straight line before the glue sets.



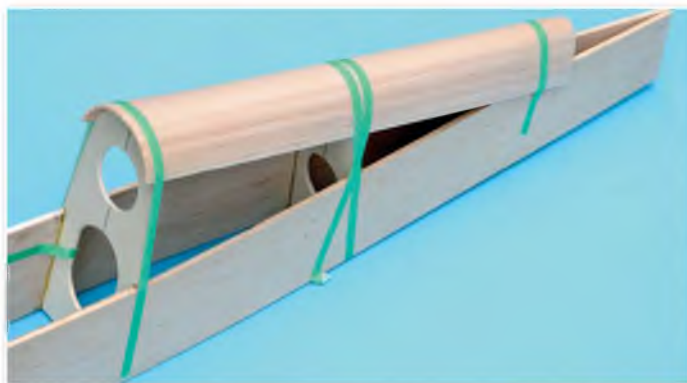
LE and shear webs in place. The wing is almost complete!



Major fuselage components



Fuselage construction underway, with rear portion flat on the board



Start with a single sheet on top, then fill the triangular areas on each side



Temporary packing sets the location of the rear wing mounting block to clear linkages prior to installing in the fuselage

Remove the panel from the board, then lift and glue the lower leading edge sheeting to fit the curvature of the ribs. We used slow drying glue (aliphatic resin), held with narrow tape at each rib, then pinned the panel back on the board whilst the glue sets. Install soft block 'fill' at the mounting bolt locations. The top leading edge sheeting is added next, taped in place, then the panel is pinned back on the board again to ensure no warps are introduced.

Add the shear webs, the centre section sheeting and bevel the upper and lower LE sheeting flush with the ribs using a sanding block. The best tool for this job is by Perma-Grit, and it will outlast countless pieces of sandpaper. Install and shape the leading edge, add the tips (full contour ribs) and strip ailerons (with hinges and linkages).

The fuselage assembly is straightforward, so we won't bore you with every step. The photos tell all!

Note that the front edges of the 1/32" ply doublers are flush with rear face of the firewall (F1) and provide 'ledges' to assist alignment. Former F2 is comprised

of two pieces, the lower portion (Lite-Ply) and upper portion (balsa) which is angled forward at ten degrees. Test fit the wing between F2 and F3 before fuselage assembly. Also note that the lower edges of the fuselage sides are straight from F3 rearward. This portion can be pinned flat to the board and directly over the top view on the plans, which helps maintain proper fuselage alignment and symmetry during assembly.

The curved rear turtle deck is installed in three pieces – a centrepiece wrapped around the top of the formers and triangular pieces on each side. These are cut and bevelled to suit then gently 'wedged' in place, resulting in near seamless joints. This is a good application for old school model aeroplane cement, being lightweight and easily sanded.

The cheek cowls can be either built up (as we did) or carved from block and hollowed with a rotary tool. When installed, the inside curve of these blocks also sets the curve of the fuselage sides ahead of the wing. Clamp these in place temporarily before adding the lower chin block.

Double check engine and engine mount installation for clearances. When the glue has set, remove the cheek cowl blocks, then shape and sand the chin, which is easier to do with the cheeks removed.

Install the front wing hold down block (basswood) securely between the fuselage sides, but do not drill and tap it yet.

Equipment Installation And Final Assembly

Extra care must be taken with the installation of servos, linkages, and the rear wing hold down block, as there are minimum clearances in this area.

Before closing in the bottom of the fuselage we installed the rudder and elevator servos as low as possible, along with their pushrods back through the slots in the fuselage sides.

Cut the rear wing hold down block so that it fits snug between the fuselage sides, and drill and tap for the bolt, ensuring the wing is centred side-to-side on assembly. Now bolt the wing to the block using temporary packing each side to set the clearance for the aileron linkages. Finally, slide the



Install servos and linkages before closing in rear fuselage



Cheek cowlers are built up from 1/4" sheet



Centre section formers in place on top of wing. Front fuselage curvature is set by the cheek cowlers



Temporary brace holds W4 as sheeting is applied



It's starting to look like an aeroplane now



Ready for covering

block down and glue in place between the fuselage sides with the wing properly seated and aligned.

Line drill the front wing hold down block (previously installed). Don't disassemble until the glue has set.

The cockpit portion of the fuselage is now completed by installing the formers with the wing bolted in place, then sheeting with 1/16" balsa. Note the 'blocking' installed at the front wing hold down to withstand the compression load of the bolt. A temporary brace was installed to support the rearmost former (W4) until after covering and installation of the canopy.

Like all Quarter Midgets this aircraft is capable of very tight turns at high speed, thereby subjecting the wing mounting arrangement to very high 'G' loads. Compared to a low winger the Super Sytky's shoulder wing arrangement has the advantage of being easy to hand launch. There's a downside, however. Whereas a low wing is supported by the fuselage itself during high rate turns (snug in the saddle), a shoulder or high mounted wing is essentially 'hanging on the bolts' in the turns.

Our prototype uses a pair of 1/4-20 nylon bolts, which are 'adequate' for sport flying with a 'modest' O.S. Max .15. For those who wish to push the envelope, steel bolts and reinforced mounting blocks may be in order.

After a thorough fuel proofing of the engine and fuel tank bays the model was covered in Super Monokote and trimmed with vinyl race numbers. This is a major deviation from the 'good old days' of Quarter Midgets when a typical silk and dope finish required fifteen or more coats, meticulously sanded between coats, then waxed and polished to a mirror-like shine.

Flying Super Sytky

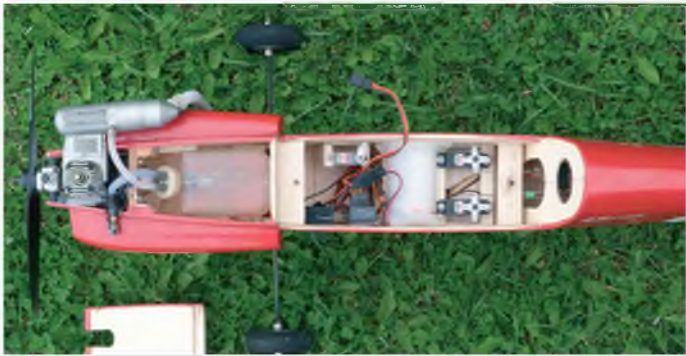
Wise words: "an aeroplane with its centre of gravity (C of G) too far forward may fly poorly, but an aeroplane with its C of G too far back flies only once."

That said, locate the on-board equipment (battery, Rx, throttle servo) to achieve the balance point shown on the plans. Install the switch on the opposite side of the exhaust.

And speaking of such, we also used a short exhaust extension. Although some power is lost, and not suitable for actual 'racing', it does a superb job of directing the exhaust residue away from the aircraft.

Although some previous tail dragger experience is recommended, take-off from smooth grass is stress-free. Similarly, it has the feel of a typical sport model on climb-out and as you make the first 180 degree turn. It's on that return pass, as the Super Sytky accelerates up to 'flying speed' that you realise you have something special here!

The Super Sytky is not a beginner's aeroplane. At full throttle it is fast and goes where you point it. Our control throws are set as indicated in the specifications, with 40% exponential on ailerons (unheard of in the good old days of Quarter Midgets) and seems 'about right'. This will vary depending on pilot preferences. Our prototype model has less than a dozen flights to date, with no known vices, and behaves well taking off and landing from grass.



Rx battery is wrapped in foam and nestled behind a reinforced ply bulkhead



Aileron servo and linkages



Above & below: After a thorough fuel proofing of the engine and fuel tank bays the model was covered in Super Monokote and trimmed with vinyl race numbers



Author included here for size comparison. Take-off, eh!

To be clear, the Super Sytky project is intended as a sport model and is not intended for competitive pylon racing.

In the UK there are presently several 'modern' classes for both electric and I/C powered pylon racing, that cover a wide range of complexity, cost, skill, and flying speeds. At the highest levels the sport is as competitive as it ever was, with the premiere event being held each year at the BMFA Power Nationals to determine the National Champion.

Unless there's a sudden resurgence in this now 'obsolete' 2.5 cc racing discipline it's not likely the Super Sytky will see much 'true' competition. Which brings us back to our original impetus behind the project. Which is faster: a modern high tech EDF or an old school glo-powered Quarter Midget racer?

Here's your chance to build one and find out!

As always, if you have any queries, comments, or photos please contact me – via the editor. **RCMW**



Super Sytky is not a beginner's aeroplane. At full throttle it is fast and goes where you point it



With neither dihedral nor tapered chord, the Super Sytky wing is easy to build and behaves well in flight



Take-off from smooth grass is stress free and it has the feel of a typical sport model on climb-out

In the hands of an experienced pilot Super Sytky behaves well when taking off and landing from grass



MODEL WORLD DETAILS

MODEL SPECIFICATIONS

PLAN NAME: Super Sytky
WINGSPAN: 34" (864 mm)
LENGTH: 33 5/8" (854 mm)
WING AREA: 306 sq in (1974 sq cm)
WEIGHT: 39 oz (1100 g)
WING LOADING: 18.3 oz/sq ft
ENGINE: O.S. Max .15 LA
PROP: 8 x 4 (Master Airscrew G/F 3 Series)
RADIO FUNCTIONS: 4
RECEIVER: Spektrum AR6200

SERVOs: Hitec HS-85BB (x3) and HS-45BB (throttle)
BASIC CONSTRUCTION MATERIALS: Balsa & plywood
COVERING MATERIAL: Super Monokote
CONTROL SURFACE THROWS:
 Ailerons +/- 5/16" (9 mm)
 Elevator +/- 3/8" (9.5 mm)
 Rudder +/- 3/4" (19 mm)

Above: Who will be first to build a Super Sytky and try out Christian's challenge: Which is faster – a modern high tech EDF or an old school glow powered Quarter Midget racer?

CONTACTS

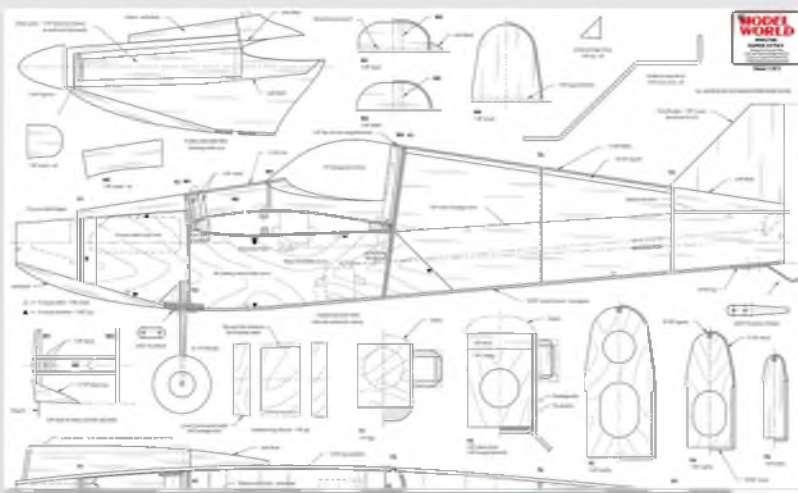
US National Model Pylon Racing Association
www.nmpr.a.net
Quarter Midget Pylon Racing video (1986)
www.youtube.com/watch?v=_6LEgdBmW5c
PIK-21 Super Sytky (Full Size)
www.dlc.fi/~jmpaaso/experimental/Eng/index.htm

PLAN DETAILS

NAME: Super Sytky
BUILD CATEGORY: Intermediate
PLAN NUMBER: MW3760
PLAN PRICE: £11.99 (\$20.99)

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RCMW11/06/15

CONNECT

In this month's small model column, John Stennard tests an updated EDF jet and finds an easy way to enjoy formation flying

Sporting the US Navy colour scheme usually seen on a T-45 Goshawk, the new Habu is really pretty



LIGHT FLIGHT

A spell of fantastic flying weather back in April gave me a chance to dust off the outdoor models for some regular flying. Although I thoroughly enjoy the indoor season I take any chance I can to get outside whenever there's an opportunity.

An early must was to test fly the new Habu 180 S, which is an upgraded version of the original Habu 180. The difference between the two models is not just skin deep (and here I'm referring to the new military type colour scheme) but also includes new avionics. The military trainer scheme is very attractive, although perhaps not quite so eye-catching as the original yellow and black scheme. Something to consider if flying small models at a distance is a problem for you.

In addition to the different flight modes the avionics now include SAFE technology (Sensor Assisted Flight Envelope). In 'beginner' mode the control response is very limited and releasing the sticks should 'self-level' the model. The 'intermediate' mode allows more movement and the 'experienced' mode gives an unrestricted flight envelope with AS3X stabilisation.

A further option is 'Panic Recovery' mode, whereby in the event of losing control pressing and holding the Panic Recovery button will return the aircraft to upright flight. There are precautions listed regarding sufficient height, particularly if the model is inverted! I hope that a model of this type would not be flown by anyone requiring a 'Panic Recovery' button but, of course, the SAFE technology is incorporated in the receiver, which is used in a number of models where a recovery system may be more appropriate.

A rather rough concrete farm road is our only access to a hard surface. And while the narrowness causes headaches when landing bigger EDF models, the Habu 180 is perfectly at home. It is very satisfying to land the little Habu, as it's so beautifully stable at slow speeds, and then taxi back. This model is huge EDF fun in a small package.



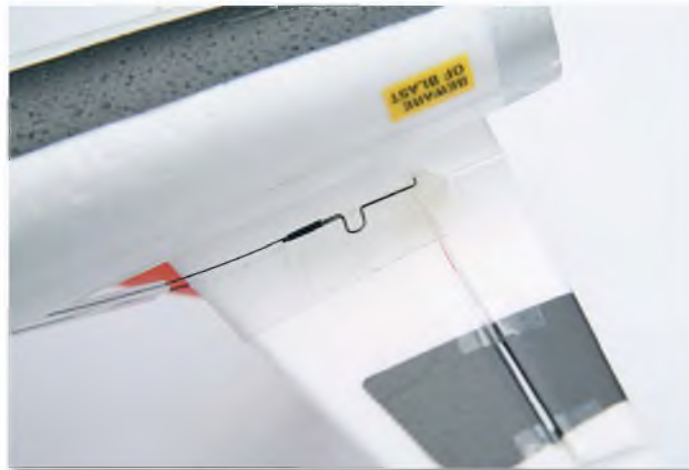
Posing next to the original Habu 180, the changes in the new version are not just cosmetic



Close-up the detail is good and we have a pilot. Hurrah!



My flight pack of choice is a Turnigy 2S 300 LiPo



The tailplane actually has anhedral but is a touch flimsy near the fuselage join. I used a strip of Blendederm tape to reinforce this area



Banking around and looking good. The UC can be easily removed for hand launching and belly landings



Non-scale underside helps with orientation. A little beauty!



Skyangel Nano Hawk is also a great little micro scale EDF model

Testing Times

So how did the test flight of the new Habu S 180 go? Well, nearly disastrously! Although I had carefully set up my DX9 to tell me audibly which flight mode it was in, I was so keen to take advantage of a chilly but sunny day I did not reset the flight mode switch. Hmm! So after take-off I started to wonder why full aileron control was having so little effect on the model. It then dawned that the flight mode switch was set to 'beginner'. Overjoyed by this revelation I promptly flicked the switch to 'experienced' mode. Unfortunately I was still holding full aileron and some up elevator. The result was dramatic as in the blink of an eye the model did several twinkle rolls and dived towards terra firma. Luckily it was reasonably high so I managed to get the model under control and start breathing again!

I was then able to start enjoying the superb handling of this cracking little model. More extreme manoeuvres are always best done early in the flight when the flight pack is fresh and I have found that inverted flight requires quite a lot of elevator input to keep the nose up. Being so small it's clearly better to keep the model just that bit closer, but a size advantage is that you can perform very close in fly-pasts at any speed.

And the 'Panic Recovery'? I have to say this was very impressive as whatever attitude the model was in pressing the button immediately recovered the model to level flight. This included recovery from zoom climbs, spiral dives and inverted flight. Most impressive.

So if you're an EDF enthusiast, or just fancy having one to fly occasionally, the Habu 180 S is just the job. I use a Turnigy 2S 300 LiPo in mine and this gives an excellent performance.

Another great little micro EDF, which is even more 'scale-like', is the SkyAngel Nano Hawk. This model has been around a while but it may still be available from some online sources. This model is virtually the same size as the Habu 180 and uses the same 2S 300 LiPo. I fitted a finger grip to mine and this makes hand launching so much easier as this model likes a firm and fast launch. It is nicely aerobatic and really looks suitably 'Red' in the air. A really great little model.

Altogether - One, Two, Three!

The correct name for this trio of aircraft is 'Three In Formation' and it was designed by Dick Sarpolus. The concept of linking a number of models together and using one motor is not new, but two things appealed to me about this one. Firstly, it was electric powered. And secondly, the information with the plan said that it was capable of mild aerobatics.

Another attraction was that 6 mm Depron was used for all of the construction and I always have a supply of this material available. It uses carbon fibre tube to link the aircraft and, again, I already had plenty of this in stock.

I believe that most of the earlier linked models were a 'four ship' unit, so with three aircraft this one is different and makes for a lighter structure. Obviously there is lots of drag from all the tubes and wires so the airframe efficiency is reduced. The designer describes it as 'an inefficient delta wing with a bunch of holes in it!' He has balanced it as a delta wing and to take the place of the reflex trailing edge the elevators are set up at an angle of 20°.



'Three In Formation', designed by Dick Sarpolus



This is the hard bit - making the basic airframes. A club project, perhaps?



A number of very long extension leads are required



Using a motor that would swing a large prop was the best option



The underside received a more complex colour scheme, all applied using Zig Posterman pens

The model uses four servos and these are situated in the outer models to control the elevators and the outer aileron. The central model has no operating control surfaces but houses the motor, Rx, ESC and the battery pack.

Once all the Depron parts had been cut, using the first set as a template, I had to decide what motor to use. A comparatively powerful motor is required to haul the model(s) around the sky. The designer had used an Axi 2212/20 with a GWS 9 x 5 prop but he mentioned that more power would be an advantage in aerobatic manoeuvres. I fitted an AXI Silver Line 2212/26 and this

proved to be the right choice. I fitted a Spectrum AR 6100 Rx and four Hitec HS-55 servos, as their longer leads are useful, plus a 20A ESC.

There were two choices for the wiring loom - either make up leads or modify standard extension leads. I chose to do the latter and used four 1000 mm leads cut and soldered to achieve the required lengths.

If you are used to building with Depron this is a very easy model to construct. I used 5 mm CF rod for the crosswise linking struts and solid 4 mm rod for the forward to rear struts. Decorating three models at a go was going to be time consuming so I used the

excellent ZIG Posterman pens and keep the decoration to a minimum. In fact, as can be seen by the photos, the results are very effective and the models show up well in the sky.

For the initial flight I fitted a 9 x 6 APC E prop, with a 3S 1500 LiPo pack. This was certainly one of my most unorthodox models so I was a little apprehensive before the first flight, although the model 'felt right'. I need not have worried as following a hand launch the model climbed away and proved both stable and easy to fly.

What was obvious was that I needed more power, as although the model climbed quite well it would not loop and the roll was very ragged. For the second flight I switched to a 10 x 5 APC E and this immediately improved both the roll, and following a gentle dive the model would loop. There is a great deal of drag and the model does not glide well. Power has to be held on for landing and it's best to slow it up and try to 'drop' it onto the ground.

The final and most successful configuration was to use a 3S 1800 LiPo pack and a 10 x 7 APC E prop. With this combination the model climbed more steeply, rolled very smoothly and looped from level flight. Using the heavier 1800 pack slightly further rearwards and the larger prop has given the improvement. The duration is now slightly shorter but the model will fly for 6 to 8 minutes.

When viewed in the air at a distance it certainly appears that three independent models are flying in formation. The design includes dummy rotating props on the outer aircraft, but I thought that the slightly increased realism was not worth the additional drag so I removed them.

Bearing in mind the model's slightly different flying characteristics it is a good idea to have a 'flight plan' in your mind before each manoeuvre, as sharp recoveries are not possible. Yet again a brushless motor, a LiPo and Depron have been combined to produce an unusual and interesting aircraft – sorry, three aircraft! Obviously the basic idea could be used to produce a variety of 'formations' and could work indoors with the latest lightweight R/C gear and micro servos.



Up and away. The dummy props were removed after the first flight but dummy spinners would have looked good



No yank and bank here. Flying needs some careful flight planning. Basic aerobatics were possible with a fresh flight pack



One crash equals three damaged models!



This photo gives an idea of the size of the Durafly Me 163. Note the smiling test pilot!

Tail End

I had just finished reading the history of Jagdgeschwader 400, which was a special squadron whose pilots flew the Me 163 rocket interceptor, when amazingly an advert for the Durafly Me 163 popped up on the PC. Even taking into account the tremendous trials and tribulations of flying the original aircraft, I just had to have one!

Delivered in the morning and flown in the afternoon with plenty of excitement thrown in. Well it was nearly the end of the war so I had to get a move on! At least my

remaining fuel was not going to blow up on landing... More information, perhaps, about this exciting experience in the next Light Flight feature?

Information and photos are always welcome to;
john@stennard.orangehome.co.uk

I am available for talks/demos on indoor R/C within my 50 mile range of Bristol. And as the BMFA Western Area Education Coordinator I am also happy to talk to school pupils and youth groups in the region. **RCMW**



'Sharp' take-offs were not without some drama. More details later!

SOARERS' SLOT

Time for a little Spring Euphoria and some sunny views, with Mike Proctor



Andy Nelson looks euphoric after test flights of his new 4m Euphoria in glorious Easter weather in North Yorks

Andy Nelson from Harrogate acquired a 4 m Euphoria during the latter half of 2014 and has finally, in spring 2015, got all the important bits installed and flown it.

As the pre-launch picture shows the weather in North Yorkshire at the time, Easter, was more akin to the West Coast USA. But tis all an illusion. That light blue line on the horizon, which looks like the ocean, is in fact the slight heat haze on the Plain of York. Whatever, the conditions were perfect for first trimming flights, which went well.

The colour scheme is 'interesting'. The yellow/orange top surface wing has black

with pink stripes on the underside. The fuselage pod is bright orange but the fin is pink! If you can't find a colour out of that lot, which you can see in most sky conditions, you are probably in the wrong hobby.

Weight is just over 2 kg. Prop is a 16" x 10" with a 1600 4-cell LiPo powering a Hacker B40 on a 4.4:1 gearbox. This is probably a bit more motor than necessary but as he was going to have to add weight in the front to get it to balance, a bigger motor and no lead was considered a better option!

At the time of writing only a few flights have been made and reports of handling characteristics are very favourable.

What's Watt?

A little while ago there was a reader request for more information to be supplied with regard to power in electric models and I thought it might be worthwhile mentioning my own method for determining power requirements in electric gliders. It isn't difficult or I would keep falling at the first hurdle!

It starts by requiring that you know the weight of the finished model and although that may sound odd, most models will have a 'known weight', or quite simply a 'published weight'. This is the equivalent of Mrs Beeton's "first catch your rabbit". Then you simply work on the original eSoaring formula of 200 W per kilo. This amount of



More than 20 entrants at East Worldham for the eSoaring league event on a superb day, where excellent soaring conditions welcomed everybody to the new season. Quite a range of models on view – I like manufacturers who include a name in big letters on the wing!



4 m models can be a handful to launch, even in flat calm. You might think that a pink fin does not go with an orange wing on the Euphoria, and who could argue? The plus side is that you get lots of different colours to see in skies like these – should they return!

power will lift most gliders to at least 200 metres in just under 30 seconds.

So, for example: the Magic 2M mentioned in a recent Soarers' Slot weighs 600 g and therefore needs a miserly 120 W (200 x 0.6). In fact, as 2M models are allowed 40 seconds' climb, I prop down a bit in calm conditions, probably to around 100 W and up to 140 W in a breeze to allow for both climb and being able to get a forward position from launch.

You need to obtain a motor to suit your model from the myriad available these days and I picked a 70 g, 200 W, 750 KV outrunner. For use on 3S LiPo with a 10" x 8" prop this suits my flying style and the model's performance. Less slippery airframes

might need a bit more power, so a bigger prop would be used until the maximum motor power was reached. After that you need to move to a 300 W motor.

If you are using a faster motor with a gearbox you need to work on the 'final KV'; therefore 3,300 KV with a 4.4 gearbox will also give 750 KV at the output shaft.

In all this testing of motors and props, a Wattmeter is an invaluable tool. Other than by hearing distressed noises, or smelling burning insulation, I know of no other way of telling that your motor is approaching the death zone! Manufacturers' limits may look a bit conservative at times but stray beyond them at your peril. Incidentally, I have an ancient little book in which I write

prop and battery tests done on each motor that I have tested. It is also an interesting reference manual, showing how efficiencies have changed over the years.

Tales From The Flight Line

17th May saw two eSoaring competitions take place about 200 miles apart and in entirely different conditions, as the pictures clearly show!

East Worldham in Hants had a splendid entry of 24 and they enjoyed an equally splendid day of low wind and cloud-dotted blue skies. Those, like me, at Wetlands in Nottinghamshire, had a cold and blustery day, which produced some interesting conditions and a steady stream of incidents



17th May again. Yes, this is the same day as the East Worldham event but 200 miles to the north. At Wetlands the weather was nowhere near as kind. Flying conditions were not too bad. It was the landings and the cold fingers that caused the problems



Bill Haley is ready to fly his Maxa 3.5 m, assisted by Brian Johnson on his first flying outing after a recent brush with a brain surgeon. I don't think they go in where Brian is pointing to insert stents! But however they did it, it clearly works and it is good to see him back!



Simon Haley, one of far too few juniors in eSoaring, was in the midst of taking his GCSE's but managed to find time to take second place at Wetlands flying this 3.5 m Electra



This is the damage to Dave Worrall's Ascot soarer, which occurred after a large portion of prop blade came off about 70 m into the climb. The huge out-of-balance force thus created twisted open the fuselage and threw out the battery, stopping the motor very quickly. See the text for the likely cause of the blade breakage



The prototype Claymore 3.6 m sitting on its balancing jig. This first version weighed around 2 kg and the subsequent development for 2015, detailed here, was produced in composite materials with the aim of a lighter flying weight of around 1800 g

that 'disabled' a few models. Most of these incidents occurred on, or as a result of, landing. Surely the same thing, you might think? But not quite so in one case, which serves as a cautionary tale...

Although launching on this breezy day was not particularly difficult, and most people got away without much trouble at all, landing was a different proposition. Two things contributed to this problem; turbulence, which was considerable, and the ground being hard and well cropped by the sheep, provided no grass cushioning effect.

Slow, careful approaches nearly always fell short and were often to be thrown about in the wind, causing damage on arrival. More positive means – coming in high and faster, using full flap to slow the descent – worked better but meant that arrival onto the concrete like soil was harder and needed to be done with care! Inevitably either process can go wrong, the wind being a fickle thing. Several bumps were heard on landing but most lived to fly again, as was the case with Dave Worrall's Ascot.

Picking it up after a fairly loud arrival he checked it over for any damage and was pleased to see that the airframe was undamaged. A few minutes later he was out on the flight line ready for another flight. This time all had gone well for a few seconds from launch, when the plane went slightly berserk and the motor stopped at maybe 50 m. The model 'progressed' rather than flew away downwind, with 'something' – thought to be the battery – hanging from the canopy area. The whole lot finally landed, remarkably unscathed, about 200 m away in the next field.

Those parts at the landing site were returned to the pits and later a group walked the field to recover those that were spilled en route. It then became clear that what was thought to be the cause was indeed so.

A propeller blade had broken just out from the root and the clear-up squad was so efficient that the end had been found, as the photograph shows. The position of the break was such that, had the blade been folded directly under the nose on landing, the (considerable in this case) impact would most likely have been focused there and this particular propeller profile has a distinct 'corner', which would probably have taken the hit. That was the exact location of the break.

It is rare to get away with so little damage to the nose after a blade break, probably in this case because the battery was thrown out very quickly when the twist ripped open up the canopy area. The model, having had its C of G moved aft a long way, flopped away to a safe arrival downwind, rather than perform a nice aerodynamic crash!

So after any kind of questionable arrival, when you are checking over your airframe and internal parts fixings before the next flight, do remember to check the one part that is always out there in harms way on an electric glider – the propeller!

Claymore Strikes Back

There are those who would have you believe that nothing much is produced in Britain and that could well include moulded models. Not so! Trackers, excellent well known gliders, almost ubiquitous in 100S competition, are moulded within these shores. But they are not the only ones, as this news from Ian Coutts shows.

The 3.6 m Claymore which, unsurprisingly with a name like that, was born and developed in Scotland, was pulled from the moulds minutes before the copy date for this edition. So, I am much indebted to Ian for supplying pictures and comprehensive details quickly enough for them to be included.

The picture of the fully assembled model shows the first prototype, made mainly to test the wing, and using one of the CML fuselage pods the complete weight was 2 kg. The model flew well and the Claymore project moved to the next stage, which was to produce a moulded version of around 1800 g. This weight was, very sensibly in my opinion, chosen rather than trying for a very light model made of 'eggshells', only for use unballasted on rare flat calm days.

The quality of the moulding is everything when it comes to making a light model, which must combine strength in all the right areas and that means the ones that get bumped on landing, just as much as those stressed in flight! Clearly Rick Lloyd has done an excellent job in this respect.

Construction And General Details

Wing: Span 3.6 metres; area 77.63 dm²
 Centre Section: Made with 59 gram triple spread tow carbon with a Herex core and then 25 gram glass cloth on the inner layer
 Tips: Made with 39 gram, 30 deg spread tow carbon on Herex core and 25 gram glass cloth on the inner layer. The rear sub spar is made from foam with a carbon sock which makes the surface very strong compared to a balsa spar
 Main Spar: Is 15 mm wide at the root and tapers to 5 mm in the tips; it also tapers in thickness from 2 mm to 0.6 mm in the tips. They are made using Pre-Preg Uni-Directional carbon and with the joiner boxes done as part of the construction so that there are no glue joints to fail
 Tail and Fin: Both use the same construction but with 26 gram spread to carbon and Rohacell as a core. The areas of the tail and fin are slightly over sized compared to similar models for better handling in the air
 Fuselage: The pod is made from carbon/glass/Kevlar in two pieces so that a bladder can be used in both parts. The boom is made with seats for the tailplane and rudder, which is a plug on design

The whole thing is cured at a pressure of 80 psi and at temperatures of between 40 deg C to 80 deg C, except the spar and joiners, which are cured at 120 deg C. The pictures should give a good indication of the latest Claymore build quality. And the build details quoted here show how much work goes into producing moulded models with modern materials.

Hopefully we will be able to have airborne shots next time. Until then, good flying!

RCMW



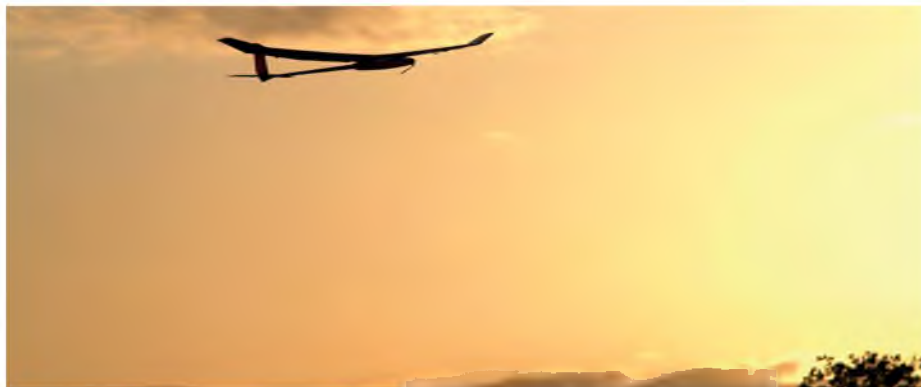
Centre panel from triple spread tow carbon on Herex core and tips using the same technique but a lighter lay-up. These are the latest Claymore mouldings from Rick Lloyd



Two-piece Claymore fuselage, made in carbon/glass/Kevlar with radio friendly front section, before joining. The tailplane is from 26 g spread tow carbon on a rohacell core. High quality of construction is apparent in all these components made in the UK



The start of British Summer Time heralds the beginning of the club evening competitions. York MAS were lucky to have excellent conditions for their 2015 series opener and with a gentle easterly drift, launching was done with the sun on the pilots' backs. Ian Cowe launches another of his home-built 2 m series of models towards the Yorkshire Wolds



Only 10 minutes after the launch into a clear blue, easterly sky, this 2 m model returns to land from the West, in the last few minutes of daylight. Odd to think that only six weeks remained until the longest day, as this picture was taken

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AN ITCH TO SCRATCH?

Last time we announced Bill Bowne's article on scratch building to be the penultimate in his short series. But in response to some readers' queries, Bill kindly wrote a further article on thrust lines and incidence. Here then is the true penultimate 'Itch To Scratch'!



Three degrees down thrust proved just right for the Morane-Saulnier 'N' and its flat-bottomed wing

Down Thrust, Side Thrust And Incidence

We've been calling the reference line running down the fuselage centre line the 'thrust line'. That works when the motor is lined up along it, but now we're going to

split the motor centre line (the true thrust line) away from that centre line. We'll keep the centre reference line as a handy reference but we'll be diverging from it for three important settings: Incidence, side thrust, and down thrust.

Incidence

Incidence is the angular difference between the centre reference line and a wing or tail surface's mean chord line (Figure 1). Incidence is positive when the leading edge of the surface points above the centre reference line; negative is when it points below.

Exactly how much incidence to use is in a league with downwind turns. That is, everyone has an opinion and few agree. My preference is to use a 0 degree incidence on wing and tail with symmetrical airfoils, and +2 degrees on the wing (with 0 degrees on the tailplane) with flat-bottomed airfoils. (Here's a sneaky designer trick: Since most flat bottomed airfoils already have 2-3 degrees positive angle of attack built into them, as long as the rib bottoms are at 0 degrees with reference to the thrust line then the result is an automatic 2-3 degrees positive incidence. That makes setting up the model much easier!)

For biplanes I prefer to give both wings the same angle of incidence (Figure 2). There are theories that you should increase the incidence angle of the forward wing of a negative or positive stagger biplane so that wing stalls first, making the plane effectively nose-heavy and causing it to nose down, gain speed and come out of the stall. But if you do that you'll be changing the amount of lift that wing generates, which can require more trimming, increase sensitivity to speed changes, etc, etc. You also have to consider that if the wing that stalls first has all of the ailerons, you'll lose your roll control when it stalls. I prefer to keep my models simple, easy and fun to fly. So, yes, I cheat and avoid that mess!

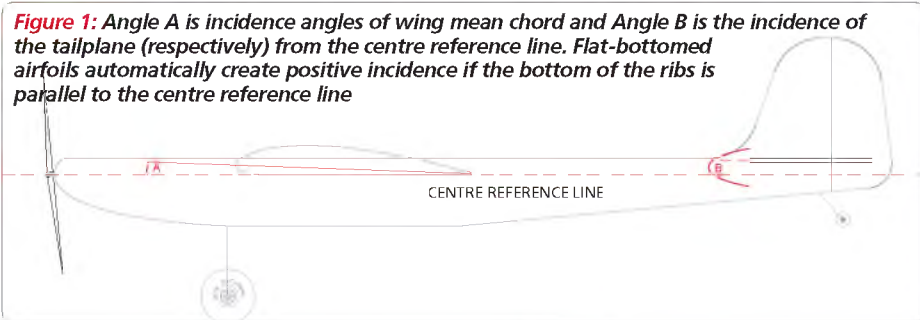


Figure 1: Angle A is incidence angles of wing mean chord and Angle B is the incidence of the tailplane (respectively) from the centre reference line. Flat-bottomed airfoils automatically create positive incidence if the bottom of the ribs is parallel to the centre reference line

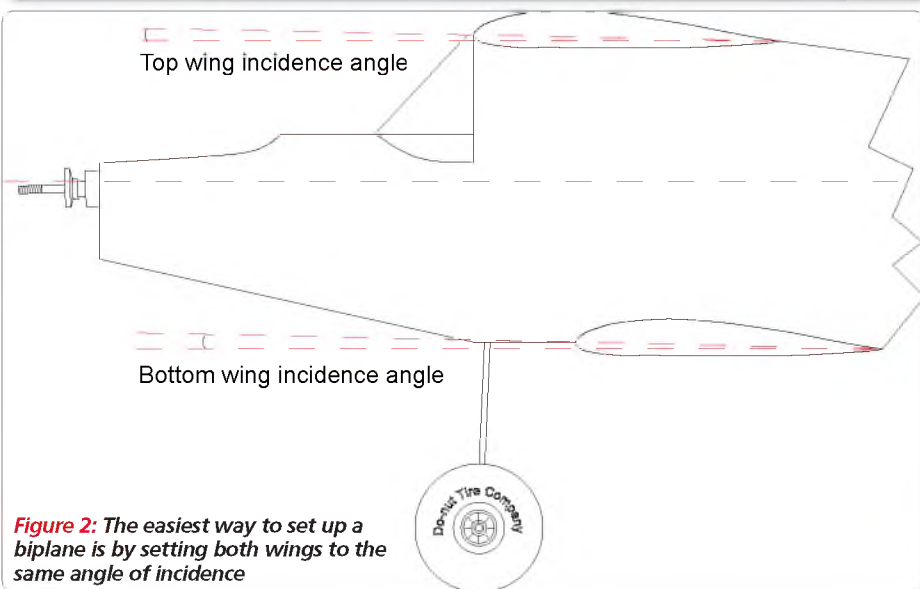


Figure 2: The easiest way to set up a biplane is by setting both wings to the same angle of incidence



The Sunfish flying boat needs no down thrust on the motor

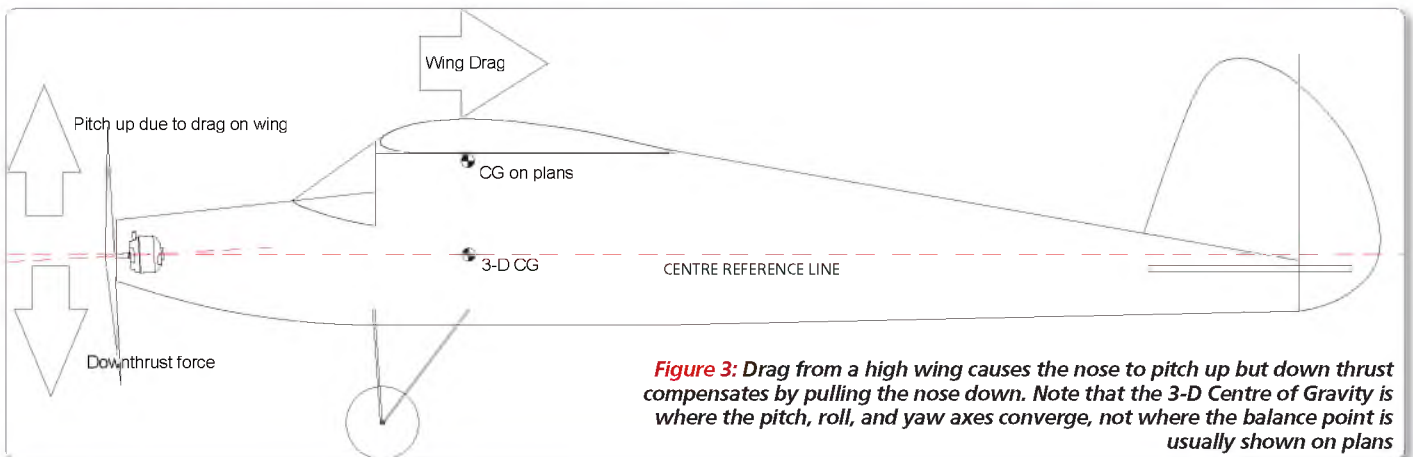


Figure 3: Drag from a high wing causes the nose to pitch up but down thrust compensates by pulling the nose down. Note that the 3-D Centre of Gravity is where the pitch, roll, and yaw axes converge, not where the balance point is usually shown on plans

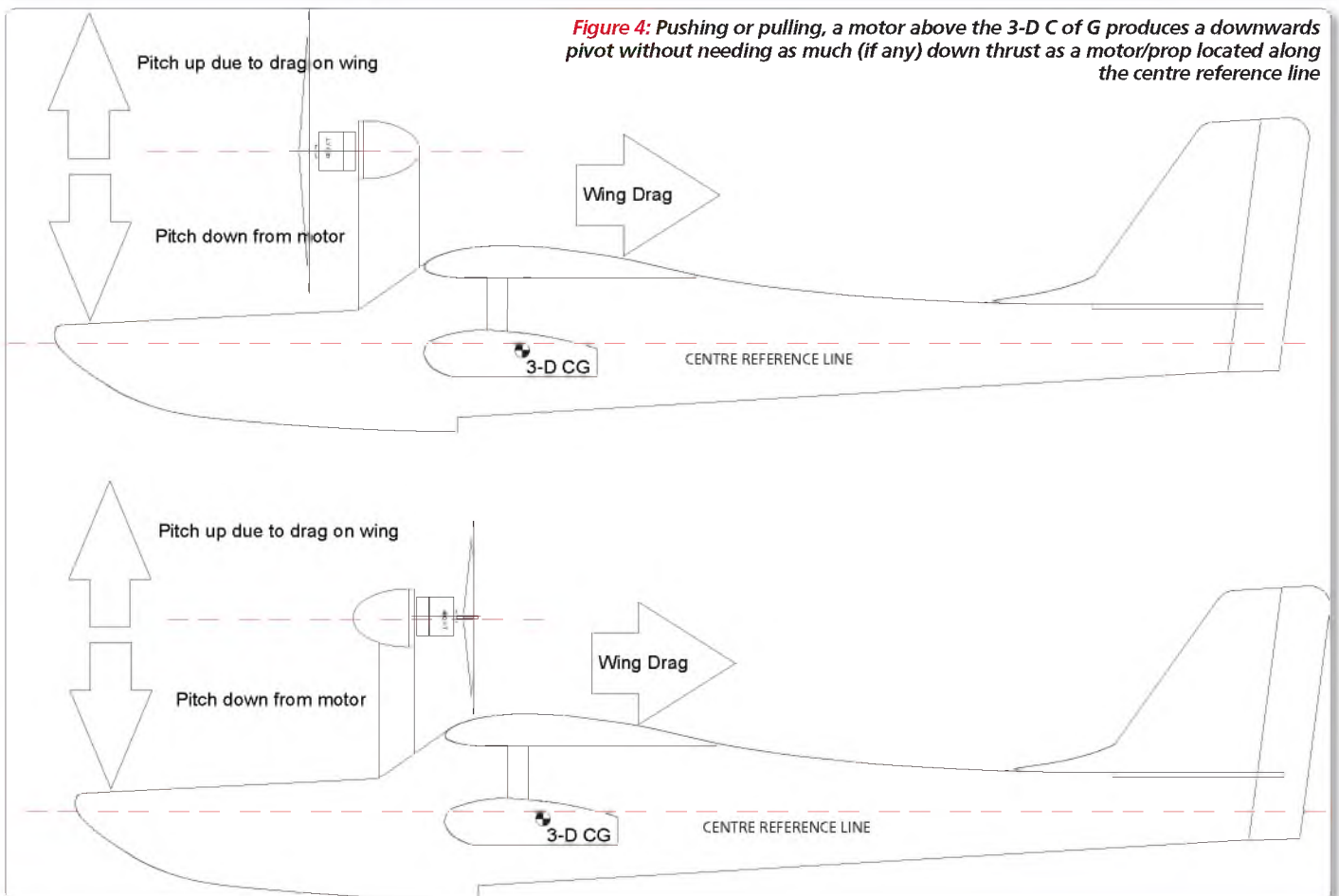


Figure 4: Pushing or pulling, a motor above the 3-D C of G produces a downwards pivot without needing as much (if any) down thrust as a motor/prop located along the centre reference line



The low winged Ulu started out with two degrees down thrust but that was later reduced to around a half a degree

Side Thrust

Side thrust compensates for some of the effects of a spinning prop (and, with outrunners, spinning motors). For most motors angling the shaft 2-3 degrees to the right of the centre reference line counters the yaw produced by a spinning propeller.

Armchair aerodynamicists will argue exactly why right thrust works but for us ordinary modellers the important fact is that it does work. Of course, if you have a counter-rotating (contra-prop) system, or if you set up a twin with opposite rotating motors, you'll eliminate the need for right thrust under most conditions.

As a side note, if you substitute a pusher prop for a tractor prop and reversed the motor rotation you'll need left thrust instead of right... As I discovered when I did just that!

To test the amount of right thrust make a steep climb and watch which side the plane drifts off to as it slows down. If it drifts left then you need more right thrust; if it drifts right you have too much.

Down Thrust

What seems to cause a lot of confusion is the relationship between down thrust and incidence in the wings and tail. Most designs include some down thrust, but many use combinations of positive and negative incidences in the wings and tail. Some full-scale planes use no down thrust in the engine, but include positive incidence in the wings and tail. If you think about it, that's the same as down thrust with no positive incidence (the Grumman F6F Hellcat is a good example of this). Why did they do it? So the plane would fly nose-low, giving the pilot a better view ahead (especially in a turning fight, when the enemy fighter could otherwise be out of sight below the nose in a tight turn).

Good for full-scale dogfighting but irrelevant for R/C.

So, how do we decide how much down thrust to use? I start by considering where the wing and motor are in reference to the 3-Dimensional Centre of Gravity. (Uh-oh, where did that come from?)

Let's take a moment to refer back to Part 2 of this series, when we defined the Centre of Gravity as the three-dimensional balance point at the intersection of the roll, pitch, and yaw axes. A plane will balance on that point, no matter what attitude it's in. The 'C of G' shown on model plans only shows where to balance the model along the pitch axis. It doesn't show where the yaw and roll axes meet the pitch axis. Usually the true 3-D C of G is more likely to be along the aircraft's centre reference line, not where we're told to put our fingers. Forces acting on the model will act as levers, pivoting on that 3-D C of G.

Imagine a high-winged model as being 'thumbtacked' into the sky at its 3-D C of G. Drag on the wing creates a pivoting motion and causes the nose to pitch up. But some down thrust creates a downwards pitch and compensates for the wing drag (Figure 3).

What happens when we move the motor upwards? Let's look at the picture of the Sunfish flying boat. The forces acting on the 3-D C of G are both above it; as the wing drag pulls backwards and pivots the model nose up, the forwards pull of the motor pivots around the 3-D C of G and pivots the nose back down (Figure 4). If we were to replace the motor and prop with pusher prop, producing a 'push' at the same location instead of a 'pull', we'd get exactly the same response.

How about low wings? Now, the wing drag is below the 3-D C of G, so it tends to make the model nose down. The net result is that less (or no) down thrust is needed.

So, what do I use? Three degrees of down thrust on the engine (in addition to the three degrees of right thrust), with no incidence on the stab for high-wings. For low wings I reduce the down thrust to 1 or 2 degrees. I've done this with symmetrical, semi-symmetrical and flat-bottom airfoils. In no case have I ever had to go back and revise the incidence.

Now, the big caveat! I always leave room to stick a washer or two behind a motor, so I can adjust the down and side thrust. No matter how hard you try to prepare a model before flight, it's perfectly normal to have to do some tweaking. And this is one good way to 'tweak'.

Top Tip

For a motor with a mount from 1" to 2" wide (i.e. a 450 through to .25 motor) a 1/32" (0.8 mm) washer will provide just about a one degree angle.

Here's how I tell if a model has too much (or too little) down thrust. (Balance the model before you try this!):

Climb to the traditional 'two mistakes high' altitude, trim for level flight, then abruptly chop the power. If the model sharply noses up, then your model has too much down thrust and has been depending on up elevator trim to keep it level. If it noses sharply down, then you could use some more down thrust.

Finally

I'd like to remind readers that I'm not a professional aerodynamicist. These rules and suggestions are the result of years of modeling experience. So whilst I may not know the 'correct' reason for doing things, I do know that my methods work. **RCMW**

Starting a short series on building and flying the 30 cc Laser 200 ARF QB kit from Aeroworks, we take the opportunity to expand on some of the techniques involved in assembling a modern petrol powered aerobatic kit



LASER 200



Parts spread. Despite the comparatively large size of the components it goes together much like any other built up ARTF kit

With the rapidly growing interest in large petrol powered model aircraft we thought it would be a good idea to assemble a representative type of the breed (commonly a scale aerobatic ship) and use it to pass on some tips and advice for building a large petrol powered model. So rather than a quick one or two part review we will be taking our time with this particular aeroplane and covering its construction over the next few issues.

The model chosen for this exercise was the 30 cc Laser 200 ARF QB, which is part of Aerowork's 'Quick Build' series of aircraft. The kit was kindly supplied by UK distributor, Ladbroke Hobbies

(www.ladbrokehobbies.co.uk). Allan Ballard from Ladbroke Hobbies suggested that a Saito FG-40 would be a good choice to power this agile aeroplane, and our thanks also go to Saito's UK distributor, MacGregor Industries for supplying one of these truly impressive four stroke petrol engines (www.macgregor.co.uk/saito/fg40.htm).

Before we start the series proper we thought it would be a good idea to kick things off with a short introduction to the kit.

Full Size Background

The Aeroworks kit is based on the Laser 200 exhibited at the Boeing Aviation Hangar at

the Steven F. Udvar-Hazy Center, Chantilly, VA, in the USA, as featured in the June issue of RC Model World. With this Laser 200, Leo Loudenslager won seven U.S. National Aerobatic Championship titles between 1975 and 1982. He was also crowned World Champion in 1980. The aircraft was originally a Stephens Akro but Loudenslager highly modified the aeroplane, giving it a new forward fuselage, wings, tail and cockpit. The Laser 200 that emerged in 1975 was lighter, stronger and more powerful, and was capable of sharper and more difficult manoeuvres.

Loudenslager's tumbling and twisting style of precision aerobatics is still flown by



Follow our lead in a future article as we attempt to emulate the neat radio and engine installation of this Aeroworks display model. All finished model pictures courtesy of Aeroworks and Ladbroke Hobbies



Previewed in the May 2015 issue of RC Model World, this impressive Saito FG-40 petrol four-stroke engine will be used to power the Laser 200

aerobatic pilots and air show pilots. His Laser 200 heavily influenced the look and performance of the next generation of aerobatic aircraft, including the Extra, which dominates both the full size and model aerobatic scenes.

Model Laser

Aerowork's Laser 200 is instantly recognisable as a miniature replica of Loudenslager's aeroplane, complete with 'True Red' Ultracote covering and white 'shooting star' trim, outlined in gold. 'Midnight Blue' Ultracote is used to cover the underside of the wings and elevators. In place of the original sponsors logo the model comes with a set of Aeroworks stickers in a similar style.

Supplied in a large, stout box, the airframe parts are well packaged and protected from damage in transit. The airframe is of balsa and ply construction, built up from laser cut parts. It features a two-piece wing, a scale fibreglass cowl and wheel spats, as well as an impressive collection of good quality hardware. In addition, flying wires are supplied to support the tail group, and this helps make the model look just like the original.

Other features include:

- Factory fitted and tinted canopy hatch assembly
- Pre-installed and fuel proofed engine box
- Laser cut engine mounting templates
- Ready assembled petrol fuel tank
- Double bevelled control surfaces for maximum throws
- Pre-hinged wing, ready to fly, with no gluing
- Carbon fibre wing tube
- Painted landing gear from 7075 aluminium
- Adjustable pushrods with centring nuts
- 'CG Buddy' to find the correct Centre of Gravity
- Detailed instruction manual on CD
- Extra Ultracote covering is provided for small repairs

Eight to ten hours assembly time is quoted, but with magazine deadlines and other editorial jobs to complete it is taking



The model is pre-covered in neatly applied Ultracote, red on top, with blue undersides. Next time we show how to check over the covering and apply some additional stickers

us a fair while longer than that! But with a clear workbench and having all the correct adhesives, tools, servos, leads, engine and fuel tubing etc. ready beforehand there's no reason to doubt the manufacturers claim for a fairly speedy build time.

The 30 cc Laser 200 is sure to impress with both its scale looks and outstanding flight

performance, and we are already itching to finish the last little jobs and to get her into the air.

Next time we will begin the review proper, starting with a look at checking over the covering and adding additional decals – in our case an impressive array of Ladbroke Hobbies stickers! **RCMW**

RC MODEL WORLD DETAILS

MODEL INFORMATION

NAME:	30 cc Laser 200 ARF QB
MANUFACTURER:	Aeroworks
DISTRIBUTOR:	Ladbroke Hobbies
WEBSITE:	www.ladbrokehobbies.co.uk/Aeroworks-Aircraft.aspx
PRICE:	P.O.A.
MODEL TYPE:	Scale aerobatic
CONSTRUCTION:	Built up from laser cut parts
PARTS SUPPLIED:	Airframe and extensive accessories
PARTS REQUIRED:	Radio equipment and petrol engine

R/C FUNCTIONS

- 1: Throttle (Hitec HS-5625MG recommended)
- 2: Aileron (2 off Hitec HS-5645MG recommended)
- 3: Elevator (2 off Hitec HS-5645MG recommended)
- 4: Rudder (Hitec HS-5645MG recommended)

MODEL SPECIFICATIONS

WINGSPAN:	76" (1930 mm)
LENGTH:	64" (1626 mm)
WING AREA:	1121 sq in
WEIGHT:	11.5 – 12.5 lb (5216 g)
COWL WIDTH:	8.75" (222 mm)
ENGINE:	30 cc – 35 cc petrol
SPINNER:	3.5" (89 mm)
RADIO:	6-channel minimum

MULTICOPTER

HEXATRON FPV

Craig Hughes tries his hand at 'First Person View' flying using Revell Control's latest drone technology

This larger than normal drone is easy to see at higher altitudes



Multicopter Hexatron FPV casts a flower shaped shadow on the ground

have to do was rush to my 'man drawer' to get some fresh batteries for the transmitter.

Included in the box, which by the way is very well packed and laid out (not to mention enormous!), was the Hexatron multicopter, complete with a 720p HD camera, spare propellers, a 2S 1500 mAh 7.4 V LiPo battery and a matching charger. Also supplied was a rather funky looking 2.4 GHz transmitter with a clip-on viewing screen, a light shield and a USB charger for the viewing screen. I also found in this box of delights a micro SD card, a USB card reader and a manual with all the relevant user instructions needed to get you flying safely and responsibly.

Up Close!

Now it's time to take a closer look at the Hexatron and all of its accessories. After removing the contents from its box I could see that this was not your average size, run of the mill drone - it is huge! The model is approximately 800 mm in diameter and stands at 120 mm in height. The drone is nice and light, considering it is quite a large model, weighing in at an impressive 410 g.

The colour scheme has been kept to a very respectful grey and blue centre with a black carbon effect outer shell. Hexatron FPV has six propellers and uses brushed motors that are designed to give stable flight and controllability. The propellers are colour coded, four black and two blue; the blue props indicate the front of the model. The drone also comes with various flashing LED lights to aid optical positioning when in flight and is made of very sturdy EPO (Expanded PolyOlefin) foam.

Mounted on the underside of the hexacopter is a compact 720p HD camera with a built-in video transmitter and SD card slot, together with a battery compartment mounted via six solid arms for stability.

The Hexatron is powered by a 2S 1500 mAh 7.4 V LiPo battery and it can be recharged using the accompanying mains charging unit. The manual states that the charging time for the battery should be



You'll need lots of wrapping paper if you are giving someone this large box as a present!

After reading so much in the press and watching numerous television programmes that have used various types of quadcopters and drones, I wanted to see what all the fuss was about and to get some 'airtime' with one of them. A year or so ago I was lucky enough to fly a Revell Control quadcopter and I enjoyed this immensely. Although this previous model had no on-board camera or camera platform built in, I was very surprised by just how stable these quadcopters can be.

This time around I wanted to test the

latest technology available and to give a quadcopter with an on-board camera platform (known as First Person View or FPV) a chance to prove itself to me.

After reading about the Hexatron drone with FPV on the Revell Control website, I decided this would best suit my needs.

What's In The Box?

After hearing on the grapevine that Revell Control literally supply everything needed to get you going with their products, I could clearly see that all I would



Hexatron is powered by a 2S 1500 mAh LiPo, for which a mains powered balance charger is supplied



Other accessories include spare props (blue ones for the front motors) and a USB lead for charging the viewing screen



Two screw on aerials are supplied, one for the viewing screen and the other attaches to the drone. Alongside is the USB micro SD card reader for transferring images to a computer

around 90 minutes (via a balancer lead) to gain 5 to 7 minutes of flight time. I would at this point suggest obtaining an additional battery or two in order to make best use of a flying session. In order to help extend the brush life of the brushed motors it is recommended that you allow the battery and the Hexatron to cool down for 10 - 15 minutes between flights.

I was very impressed with the sleek looking silver and grey 2.4 GHz transmitter. This can be switched from Mode 1 to Mode 2. It has a large, high resolution, clear display panel and a one-for-all button that lets you switch between the model, camera, lights and available photo settings. You'll need four AA size batteries to power it.

For added 'fun time' you can also clip the included screen to the transmitter to get FPV (First Person View). This is where you can observe in real time the images that the on-board camera is picking up. In order to stay safe whilst using this screen don't lose sight of the drone in flight and don't take it past the recommended 50 metres of transmitter range.



The big 800 mm diameter drone sits in a protective foam tray

Multicopter Hexatron FPV is capable of various speed levels and is described as an 'advanced to professional' level model. However, I should say that this should not deter newbies to the hobby from picking it up and having a go.

Lets Have Some Fun!

Before attempting to get the Hexatron into the air, I made sure that the main flight battery was fully charged. The manual states that a charge time of around 90 minutes should give around 7 - 10 minutes flight time. You must also remember to charge the viewing screen via the USB cable, which takes around 60 minutes. And don't forget to also put the batteries into the transmitter! With these tasks completed it was time to find a safe flying site.

I was very lucky that I had access to a small field that does not have too many buildings or people nearby, and which was perfect for allowing me to get used to the model. After attaching the view screen to the transmitter, I screwed in the larger of the two aerials to the transmitter and the smaller one to the underside of the Hexatron.

Before turning on the transmitter or connecting the main flight battery, I made sure that all of the controls were set to the lowest settings. With all my pre-flight checks completed it was time to get this monster drone in the air!



Craig concentrates on flying the Hexatron in quite a stiff breeze

The day was bright and sunny, with very light winds of around 3 - 6 mph. On take-off I discovered that the Hexatron did move forward a bit on its own, but after making a few trim adjustments I managed to get better control of the model. With the control sensitivity set at 40% I made a few left and right turns and then gained some altitude (around 15 metres) in order to obtain some pictures and do a spot of filming.

Both the filming and taking of photos is very easy with this model, as you have a one push button on the transmitter that does it all for you. I was very impressed with the end results and the pictures, together with the video footage, were to a very high standard.

I would recommend the Hexatron FPV to anyone who would like to take their drone flying to the next level. And, of course, you can have some great fun along the way with that built-in camera!

RCMW

Multicopter Hexatron FPV is priced at £175.00 SRP. Revell Control models are available from www.amazon.co.uk and all good toy and model retailers. For details visit www.revell.de/en

The FPV viewing screen slots into the top of the main transmitter



PARK LIFE

The Weston Park International Model Air Show is a perennial favourite on the modelling circuit and never fails to be anything less than spectacular. Held in the beautiful grounds of Weston Park in Shropshire, this year's event was run over three days from June 19-22. Vaughn Entwistle reports



That classic elliptical silhouette. Spitfire on a fast flyby

This year the British climate blessed the three-day event with a mix of weather, ranging from balmy to "this is summer?" But the show must go on and each day showcased some stunning model aircraft being flown by amazing pilots. Friday had the best weather of the event and the sunshine attracted a healthy turnout of spectators, as well as a flight line packed with a drool-worthy cornucopia of jets, warbirds, aerobatic models, giant gliders and even a few helicopters.

Throughout the day the skies above Weston reverberated to the snarl of propellers, the whoosh of jet engines and the guttural roar of pulse jets, while demonstrations by jets, gas powered aerobats and gliders – both full size and model – scribbled the skies with smoke trails. During the intervals, visitors had time to lighten their wallets by ducking into an Aladdin's den of vendors' tents stocked

with every kind of model, accessory and modelling tool, ranging from balsawood to full-blown bind-and-fly models.

As usual, the Traplet tent was on hand, selling magazine back issues, plans and woodpacks, and sending many happy modellers home with a car boot crammed with their next building project.

While the event was chock full with astounding airplanes and amazing pilots, one notable standout was the pulse jet team. Like a scene from the sixties movie, Operation Crossbow, the pulse jets were catapulted into the air from an inclined ramp powered by a bungee cord that required two strong men to tension it. When the two other pulse jets flamed out early and glided to a landing, it was left to 13 year old Mikey to put on a stunning solo performance with cloud-piercing climbs and 250 mph passes (some inverted) that threatened to suck the eyeballs out of spectators.

From the loud to the proud followed later that day, as the father-son team of Tim and Andi Schaerer towed up their giant Red Bull Swift gliders behind a single tug and treated the crowd to a synchronized aerial ballet set to music, complete with red smoke trailing from the Swifts' wingtips.

Weston typically includes a full size aircraft display and this year featured an MDM-1 Fox aerobatic glider performing aeros. The tow plane was a Piper Pawnee tug and their on-tow smoke trail performance was a thrilling part of the show. For modellers out there who are currently building or refurbishing a Fox and looking for graphic inspiration, the paint scheme on this glider was truly stunning.

What more can I say? If you weren't there, you missed it. I recommend you make a note in your calendar to attend next year's show. It's the possibly the greatest thing in Shropshire. **RCMW**



Grumman Hellcat blurs by the camera



A flight line full of gorgeous models



The J10, owned by Rob Gardener and flown by Martin Pickering from Spain, put on an amazing demo



WWI aircraft were also well represented



Sonny Millgate preps his JetCat P20 powered Opus glider. Slightly overpowered? Yipes!



Shot of just part of the flight line. Winged gorgeousness as far as you could see



This Krill aerobat fitted with a Smoky L smoke system seems to be trailing ectoplasm vortices



Team Schaerer. Tim and Andi, father and son acro team pose with their gorgeous Red Bull Swifts



Yes, the pulse jets were there! Thirteen year old Mikey stole the show with a face-melting display of flame and fury



A mighty MiG jet awaits its turn to fly



Embarrassed to say this is the only in-focus shot I snatched of the 250 mph pulse jet. Reflexes aren't what they used to be!



Swallowed by a Warthog. Great cockpit detail in this jet A-10 tankbuster



£10,000 J10 jet owned by Rob Gardner, seen here being piloted by Martin Pickering from Spain



Full size Piper Pawnee tugs up the full size MDM-1 Fox



This classic Spit was a masterpiece of realistic weathering. Terrific nose art



The big Krill model doing its skywriting thing



Never fly with a naked cockpit. A Prop Guy jet pilot complete with bone dome and Thunderbirds insignia



Sorry chaps, can't quite catch your banter. Lifelike pilots waiting to scramble on the Prop Guy stand



Horizon's gorgeous new ASW 20 glider, fitted with an electric ducted fan for self-launching



WWII warbirds awaiting their turn



Gorgeous full size Fox comes whistling across the flight line. Luuuuuve that paint scheme!



Eurofun with custom paint job. I want my car painted like this!



Flaps and wheels down, a Douglas Skyraider greases one in



A pulse jet powered Funjet? Hot foam coming up!



Hellcat going up!



Wheels down, a Spit comes in for landing



Whewwwww! See you all next year. Full size Fox whizzes by on tow

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HITEC FLASH 8

Vaughn Entwistle reviews Hitec's newest addition to its mid-range radio control systems

As recently as March of this year RC Model World featured a review of Hitec's new Flash 7 transmitter. Never a company to let the grass grow under their feet, Hitec is now releasing the Flash 8. So why is a new radio being released so soon after the Flash 7, and what's different about it? Well, the name is a dead giveaway as to one of the major changes. But the Hitec Flash 8 is more than just one channel up on the Flash 7, as this review will show.

Fresh Out Of The Box

Like the Flash 7 the Flash 8 bucks the modern trend of a form-fitting foam box and comes packaged like a Waitrose Avocado in a black plastic lower tray and a clear plastic upper lid (for freshness?). As ours was a sample and amongst the first off the production line, we were missing the outer box, as well as some of the other bits and pieces normally included (heavy-duty switch harness, etc.) But the review kit did include the very nice Optima 7 receiver with BODA aerial and holder (more of that later).

Face To Interface

The look and feel of a transmitter is always a major factor in deciding to buy a new radio. The Flash 8 is surprisingly light in the hands, yet does not look or feel cheap or flimsy – kudos to Hitec's engineers. Looks are always subjective, but as with an automobile the 'face' of a transmitter has a definite emotional appeal. I find that a few modern transmitters have an 'angry robot' look and I half expect them to transform into a Decepticon at the flip of a switch.

By contrast the Flash 8 has a clean, smooth appearance with a satin-brushed metal upper fascia that would make a Cyberman blush. Tastefully applied red anodising effect on the control sticks and bezels adds contrast and eye appeal.

Power On

The Flash 8's On/Off switch is different than any I had encountered before. Set in a deep recess just above the neck strap loop, it is a push-on, push-off button. Push the button and the Flash 8 wakes up instantly. And I mean, like – wow – it's fast! My immediate concern was the possibility of accidentally prodding the On/Off switch while groping for a trim switch and turning the transmitter off while flying a model. Thankfully, that's highly unlikely as the On/Off switch must be depressed and held down for a number of seconds before the Flash 8 goes to sleep.

Right: Clean and uncluttered, the satin silver finish on the Flash 8 would make a Cyberman blush



The 1400 mAh LiFe battery pack is accessed through a panel at the rear of the transmitter



The top trim switches, marked LT and RT, are for additional channels



The left hand side has a slider and two 2-position and two 3-position switches. All switches are assignable



Flash 8 features the usual digital trims. Push the power button and the Flash 8 wakes up instantly



The right hand side features a slider, plus three 3-position switches and a temporary switch



The Flash 8 has a super bright LCD screen. The radio is programmed via the Jog Dial and Back Button at the right of the screen

Like the Flash 7, the Flash 8 has a super-bright LCD screen and a back-lit Hitec badge at the top of the tranny which changes colour from blue (if it's on standby) to green (to show that the Tx is transmitting). Like many modern computer radios the Flash 8 simplifies programming by providing templates for Acro, Glider or Helicopter models. (Although I wish radio manufacturers would provide a template for electric sailplanes, as this type of model is becoming increasingly popular and requires a conventional throttle capability, as well as advanced glider functions, such as butterfly/crow braking, trailing edge camber control, etc.)

The transmitter is programmed using only two buttons: a Jog Dial and a Back Button. The Jog Dial rotates to scroll through menus and also functions as a button push. Model templates are selected by turning the Jog Dial and then pushing to select. I did have a few initial problems when trying to access the System List in order to bind the Flash 8 to the Optima 7. The manual instructs users to press both

the Back Button and the Jog Dial at the same time to enter the System List. After some frustration, I found that I was hitting both buttons with a quick stab, whereas the correct method is to depress and momentarily HOLD both buttons down. Once I figured that out, I never had a problem again.

Pressing and momentarily holding the Jog Dial brings up the usual functions such as Servo Reverse, Sub Trim, Dual Rates and Exponential, EPA (End Point Adjustment) and three Programmable mixes. Delving deeper into the menus brings up Flight Modes and butterfly/crow braking for gliders or Pitch and Throttle curves for helicopters. Curves are also provided for some airplane functions.

A Whole Lotta Shakin'

The Flash 7 is equipped with audible warnings for situations such as low transmitter battery or switching on with the throttle stick above idle. Big brother Flash 8 has the same audible warnings but goes one further with a vibrate feature

that reminded me of a 'stick shaker' on a commercial airliner. The vibrate feature makes warnings even harder to ignore.

Choice Of Receivers

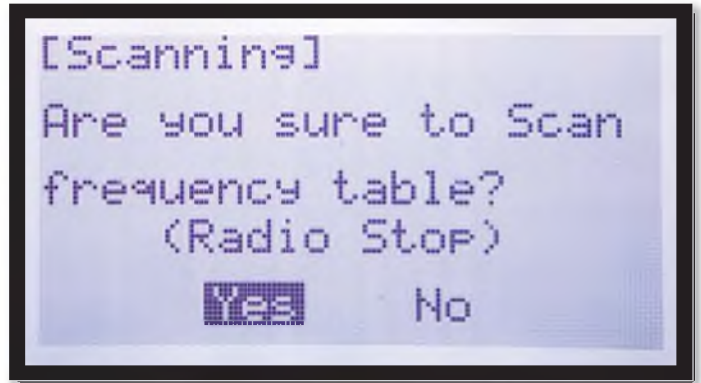
The Flash 8 can be configured to work with either Optima or Maxima receivers. (Maxima receivers work only with all-digital servos.) Our review Flash 8 came with the Optima 7 receiver. This slim-line, seven channel receiver is perfect for the narrow fuselages of gliders and small electrics and brings multiple telemetry capabilities, including a low Rx battery warning.

I was at first puzzled to find what I thought was a bind plug in the Optima 7, but it is actually a jumper in an SPC (Supplementary Power Connection) port. The receiver normally gets its power from a receiver battery (4.8 – 6.0 V), BEC or ESC. However, the jumper can be removed and the receiver powered separately from the servos by a dedicated receiver battery of up to 35 V. Clever.

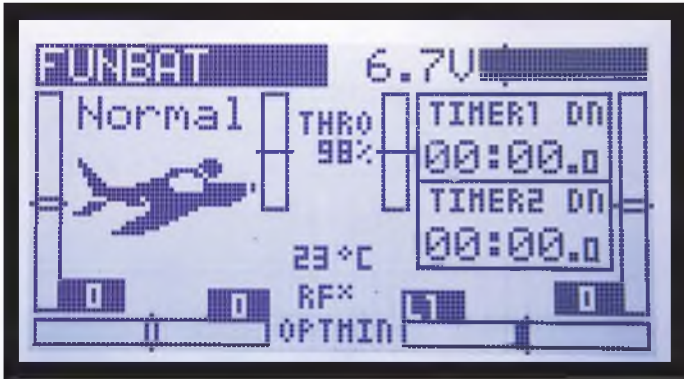
Rather than the usual twin aerials found on most 2.4 receivers the Optima 7 features



Rear ports for PC Data Interface (top), Trainer Socket (middle) and DCS port (bottom) for powering accessories like FPV goggles



The scanning screen lets you see which frequencies are the most congested



The Normal screen for an aeroplane. At a glance you can see the model name (up to 8 characters) and which model type (Acro/Glider/Heli) has been selected. Timers and trims are also displayed here



Aileron differential screen with curves

Hitec's BODA (Boosted Omni Directional Antenna System), where the thick end of the single aerial houses the BODA wizardry. Once again, by eliminating the need to set two aerials positioned at 90 degrees to one another (often difficult to achieve in the narrow fuselages of moulded gliders) the single BODA aerial simplifies installation. Hitec even thoughtfully includes an antenna holder for mounting in the model.

(STOP PRESS – J.Pekins have just informed us that they will be selling the Flash 8 with an Optima 9 receiver)

SLT

Following Horizon's successful Bind-N-Fly series of models, SLT (Secure Link Technology) is being used by companies such as Hobbico to produce a line of Tx-ready models that are ready to fly straight out of the box (after binding to a compatible transmitter). On the Flash 8, the SLT mode can be accessed by entering the System Menu List, selecting Spectra, and then scrolling through the list of compatible receivers to find and select SLT. The transmitter must then be bound to the SLT receiver following the procedure in the manual.

Scan Mode

Like its Flash 7 cousin, the new radio boasts a unique scan feature that allows the Flash 8 to monitor frequencies in use at a flying site and choose the least busy. Scan Mode is a highly useful capability at flying sites with frequency congestion, such as indoor model meets and FPV events where the air is sizzling with signals. The only downside is that you will then have to rebind the transmitter to the receiver. Still,

I hope other radio manufacturers follow Hitec's lead on this one.

Breathing LiFe Into The Flash 8

I must admit that I groaned when I read the Flash 7 review and found that it came with just an empty battery box. While this does allow Flash 7 owners to choose their own battery chemistry, it reminded me of my first radio transmitter purchased back in the 1980s, which also came with just an empty battery box. The battery box was sized for AA disposables and it was difficult to squeeze in rechargeable nicads. Because of that experience, selling a radio without a battery seemed like a step backward to me.

However, I was ecstatic to learn that the Flash 8 comes with a charger and a 1400 mAh 6.4 V LiFe pack already installed! Owners have the option of swapping the LiFe pack for other battery types, but will then have to program the radio accordingly through the System Menu.

I'm a big fan of LiFe batteries and am slowly transitioning my large sailplanes from NiMH batteries to LiFe packs. LiFe batteries are one of the newest battery choices available and the advantages are many. LiFe packs charge up quickly and have a low self-discharge rate so they hold a charge between flying sessions. And LiFe's are less pyrotechnically inclined than LiPo cells.

Modern computer radios with LCD screens really guzzle the electrons, especially during a programming session, so the extra oomph provided by the LiFe pack is a welcome advance. During a normal flying session power consumption is much less, as the LCD backlight shuts off to prolong battery life.

I was impressed by the thought that went into the Flash 8 battery compartment. Easily accessible through a panel on the back of the radio, the 1400 mAh LiFe is restrained by a foam pad that provides shock absorption and keeps it firmly in place. This is a big change from some of my early transmitters, where the NiCad pack lounged unrestrained in acres of empty space and would ominously clunk from side to side as I walked across the flying field.

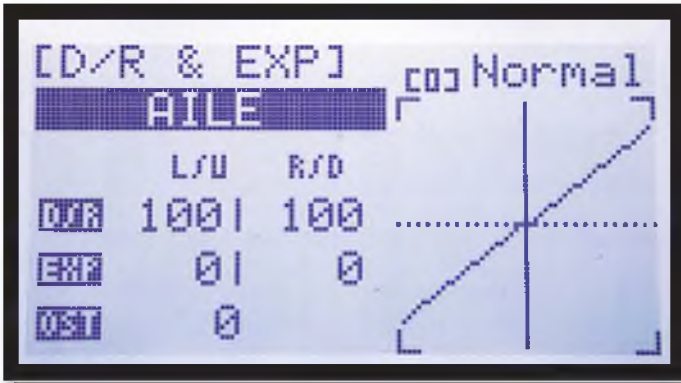
A Nice Manual

I would be remiss if failed to mention the manual that accompanies the Flash 8. Clear, concise and easy to follow, I liked the format and simple line art drawings of the programming screens. As computer radios become more complex and increasingly capable, a decent manual is greatly appreciated. As I typically end up sitting on the lounge floor, model set up in front of me, transmitter at my knees, it's very nice to have a real printed manual to page through rather than trying to squint at a laptop or pad device (plus a paper manual better tolerates coffee stains and drips!)

System List

Like many other modern radios the Flash 8 uses two menus to program a model: System List and Function List.

System List is accessed by pressing the Jog button and Back Button at the same time. As I already mentioned, I had difficulty with this because I was pouncing on the buttons and expecting the System List to appear (based on prior experience with other manufacturers' radios). To get to the System Menu you have to press both buttons simultaneously and HOLD until



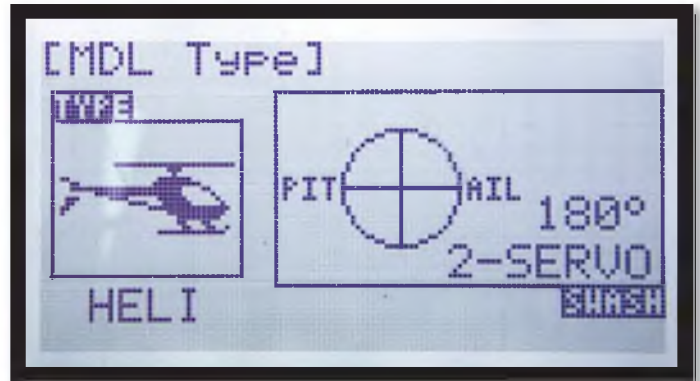
A similar screen displays Dual Rates and Exponential



The Flash 8 also supports programming for delta/flying wing models



Templates, such as this one for glider wings, help speed up programming



Flash 8 supports all the popular swashplate types for model helicopters

the System Menu appears. I noticed that the Flash 7 reviewer had the same problem with that radio, so I feel less of a nonce.

After turning on the radio, press both buttons to enter the System List where a model memory can be selected and named. Here you can also copy, reset, or delete a model. The Flash 8 has a 30 model memory capacity, up ten from the Flash 7. (Does anyone really have 30 flight-ready models at one time?)

The Flash 8 has three basic templates (Acro/Glider/Helicopter) to help speed programming. Choose your wing type (number of flaps, ailerons, spoilers, etc.) and then your tail type (V-tail, X-tail, ruddervators, etc.) The helicopter template provides a list of popular swash plate types.

Function List

The Function List is accessed by a single push of the Jog Dial (quicker to access because it will be used more often).

For Acro and Glider models the Function List includes the usual basic set up functions such as Servo Reverse, Sub Trim, EPA (End

Point Adjustment), Dual Rates, Exponential and three Programmable Mixes.

Without regurgitating the entire manual, scrolling further through the Function List takes you to things like Aileron/Rudder mixing, Throttle Curve, Flight Conditions (what most people call Flight Modes), etc. The use of only two buttons and the clear menus help simplify the programming experience and, unlike some radios I have owned, I never felt like I was getting irretrievably lost in a maze of menus and sub-menus.

The Final Word

The Flash 8 is a lot of transmitter for a reasonable price. It's suitable for a beginner but has enough channels, programming capabilities and telemetry to take a modeller from beginner to advanced, and it can handle any model from a two-channel foamie to a jet. With its eight channels and thirty model memory, it will take a long time to outgrow. I think it's going to find a home in a lot of flight boxes.

RCMW

MODEL WORLD DETAILS

PRODUCT INFORMATION

NAME: Flash 8
MANUFACTURER: Hitec
DISTRIBUTOR: J Perkins
WEBSITE: www.jperkins.com
PRICE: £229.99 SRP

(inc. an Optima 9 Rx)
PARTS SUPPLIED: Optima 9 receiver, switch harness, charging adapter, manual, LiFe battery

OPERATING FREQUENCY: 2.4 GHz
CHARGING ADAPTER: 9 Volt 600 mAh
TRANSMITTER BATTERY: 6.4 V, 2-cell 1400 mAh LiFe

FEATURES:
 Generation 2 AFHSS/SLT flexibility
 4096 resolution
 7ms frame rate with Maxima receivers
 30 model memory
 10 character model names
 Acro/Glider/Helicopter programming

DISLIKES

Manual could be clearer about pressing and holding both Jog Dial and Back Button to enter System Menu

LIKES

Lightweight • Quality feel • Clean styling • Clear manual



An Optima 7 receiver was supplied with the sample radio, but just before this issue went to print JP informed us that their sets will be supplied with an Optima 9 Rx

Do you want to step up from sport models and try your hand at building a scale model but are not sure how to start? Peter Maw begins a short series packed full of useful advice

SCALE MODEL BUILDING FOR FUN



In this series we will be building this 54" wingspan Fokker D.VIII, which is an ideal subject for constructing and flying as your first scale model



Still available on the web. Profile Publications give a wealth of information and colour schemes

OCD?

My wife regularly suggests I have OCD when it comes to model planes. She bases this on the fact that whenever we change car, I bring a tape measure to the dealer to see how much space there is behind the driving seat. Doesn't everybody? How else would I know if I can get my quarter-scale biplane to the field; it isn't practical on the bus!

No such worries with this gem. The 54" wingspan Fokker D.VIII will fit onto the back seat of a Fiesta.

Our editor asked me to do a few articles on building and flying a first scale model, and this is an excellent choice. The articles

concentrate on the D.VIII, however the techniques employed on this model will be useful for many scale models.

The world of model aircraft kits is almost entirely devoid of Fokker D.VIII kits. There is a very nice sixth scale version available in the US from Arizona Models for around \$500, a Balsa USA version at around £300 or a cartoon-scale 43" version converted from a free flight design in the UK for £20. Traplet are the only company to offer a reasonably sized and reasonably priced version – visit www.trapletshop.com and search for MW3599. The great beauty of building your own scale plane is there is little likelihood of anyone in your club

having the same machine, which is always a bonus when you turn up at the field with a new model.

What will we learn over the next few issues? Why losing weight is an essential skill; making shrouded aileron hinges; bending metal accurately to make the undercarriage and cabane struts; setting the plane up; using a gyro; silver soldering; why we need fuse wire and much more.

If you built the Renegade after reading my articles last year then you have all the basic building skills to make the airframe. And you can pick up new techniques on new aspects of model making.

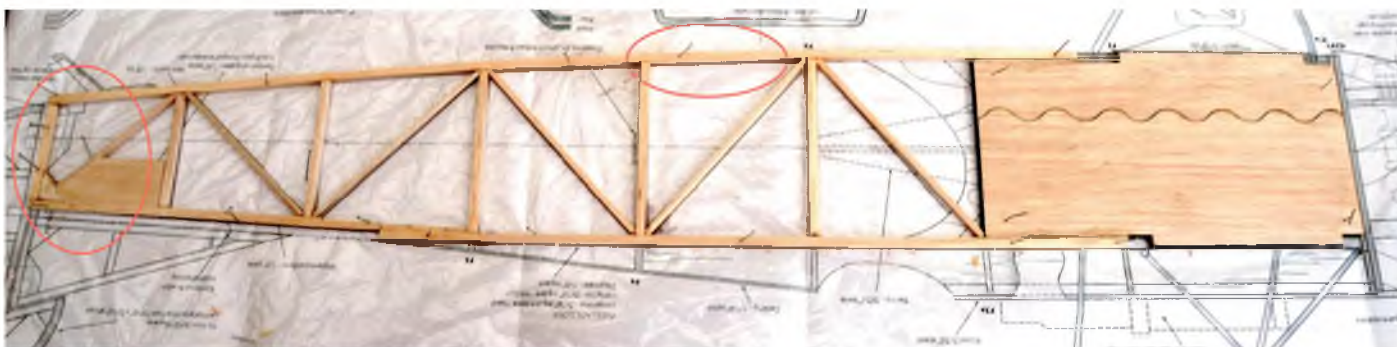
What you won't have is the way scale



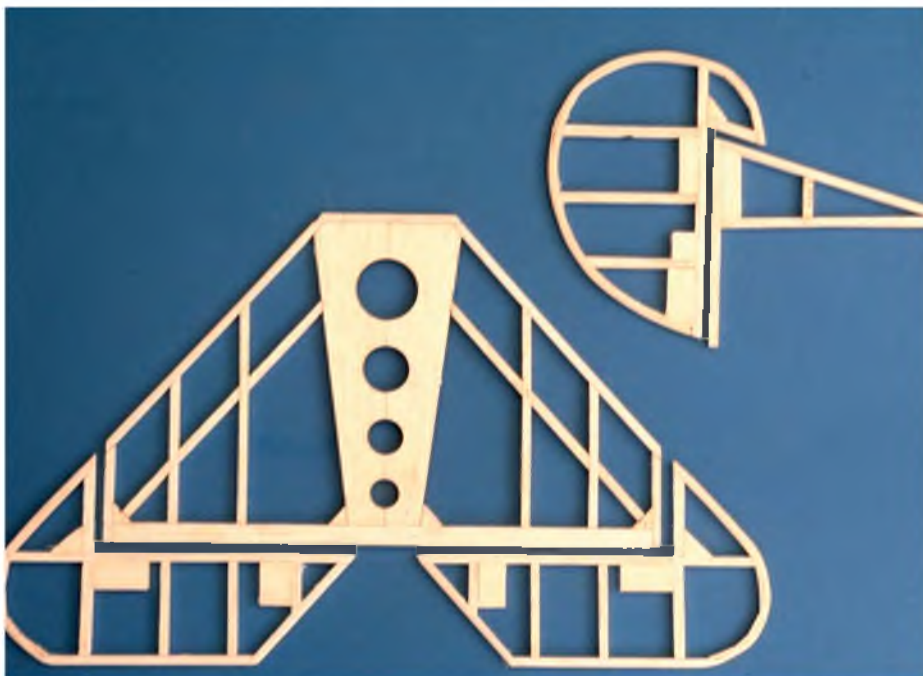
You've paid for the wood, so use it! The holders for the laser cut parts are perfectly cut, which means that they can be used to build other parts of the plane, like the fin



Wet balsa can be formed to virtually any shape if the pins are in the right place



Low tech pins also keep the fuselage sides warp free



The whole fin/stabiliser assembly weighs less than 25 grammes (1 oz) and takes about an hour to build

models can change your attitude to models and get obsessive. Airframes are cheap because they are often made mostly from strip material, but accessories are often mega-expensive. This plane will cost less than £200 to make. My local model shop relieved me of £107 for materials to complete the model, including the Williams Bros scale wheels that alone cost £34, and three metres of Solartex. However, it is a brilliant excuse for not going anywhere near a shopping mall for a few months as you will be exercising your creative juices and keeping your mind active.

Back Story

One of the nice things about building a scale model is researching the plane when it is too cold to go and work in the shed or garage.

The D.VIII arrived on the scene in mid 1918, when 20 planes were delivered by Fokker Flugzeugwerke to the German Air Force, a mere three months after the D.VII biplane was first flown in combat.

Despite the advances of the Internet much of the information about 100-year-old planes comes from research conducted in the 1960s and '70s. As with many planes

virtually all the information on the web comes from a Profile Publication from 1966. These small pamphlets can be found on the web at very reasonable prices for hundreds of different types of planes and will give you plenty of options for colour schemes, as well as fascinating background information to help you bore fellow club mates rigid.

Designed by Reinhold Platz for Dutch aircraft manufacturer, Anthony Fokker, the D.VIII was close to the ideal scale model, if only he had known it! The wing was sheeted with plywood, so it was strong if built properly and wing tapes were not needed, making detailing easier. Like many current day models the wing was built in one piece and the ailerons were cut out from the wing. The range of power plants used in the short life of the D.VIII was immense, going from around 100 horsepower to over 200 horsepower in the D.VIII's variant. This means we can use quite a lot of different power sources for the model.

However, like the earlier Fokker Triplane the D.VIII was plagued by lax production standards when it was outsourced, which caused a number of fatal crashes as wings fell to bits in the air, and production was stopped. Once the production problems had been attended to pilots found the plane interesting to fly, with excellent visibility. It is thought that no more than 36 D.VIII's saw active service in World War 1, compared with around 3,000 D.VIII's.

Rather than select a standard factory finished machine I trawled the web and found the machine you can see in these articles. The provenance is a bit 'iffy', as your local art dealer might say. A WWI ace, Ernst Udet acquired a surplus D.VII and D.VIII after the war, which he used to earn

FOKKER D.VIII

money as a stunt pilot for displays and film work. Re-painting them for display work, the LO logo was a reference to his wife Eleanor 'Lo' Zink.

This Is Not In The Kit

We are talking about the fin and tail here. Although to be fair there is almost enough scrap material in the laser cut woodpack to make the fin. The part holders can be used to make some of the 3/16th square strip; after all you have paid for it, so use it. This is a nice starting point – you will build the trademark Fokker tailplane shapes with their distinctively curved balance arms within a few hours.

There is only one tail component supplied in the kit. The rest will introduce you to the world of building models from strips of wood. Build over the plan and make sure everything stays flat by pinning the components to the building board. The curved outlines of the rudder and elevators are made from laminations of 1/16" balsa. Wet the balsa until it is giving a good impression of cooked spaghetti, then make the curve shape by forming it around strategically placed pins. Leave to dry overnight. You will do a lot of waiting for things to dry with scale models so get used to it early on.

Weight Issue

It is perfectly possible to make all the tail surfaces from solid flat sheet, which is quick to do, but has a major disadvantage. They will weigh an enormous amount. Why is that a problem? Lots of reasons... A heavy plane needs more power than a light plane, it has a worse glide and will stall at a higher speed. It also has worse landing characteristics and hits the ground harder than a light plane. Flying a model with all these characteristics can cause an early crash. Scale planes are generally not designed to be the most efficient model flying machines, so reduce the odds of an early demise by building light.

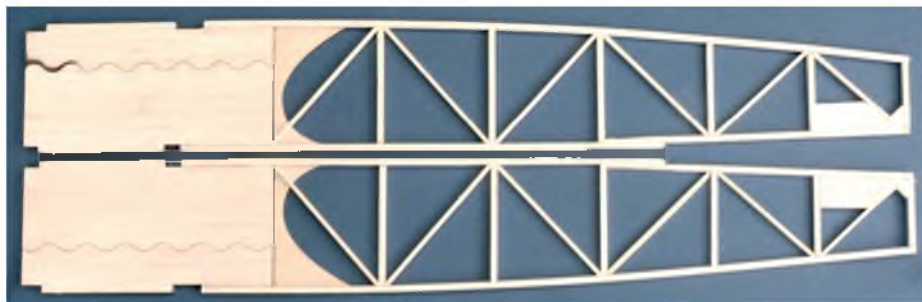
And because the tail surfaces are four times further away from the Centre of Gravity than the nose of the plane, every gram of extra weight at the back of the plane will need four grams in front of the Centre of Gravity to maintain the balance point. Building the tail surfaces from strip material gives an overall weight of around 25 grams for the components. If this was built from sheet the weight would be around 80 grams, meaning around an extra 220 grams would have to be put in front of the Centre of Gravity – an impressively detrimental amount of weight to carry around for no reason.

Plan Ahead

The fuselage sides are straightforward and are built in the same way as the tailplane. Don't join them together before planning the radio and power installation. As can be seen from the photograph, holes have been cut into the fuselage sides for servo supports before they are joined. Having servo rails supported by the plywood side doublers is substantially safer than just butt joining them to a piece of plywood. I have used standard sized servos



A standard ready built elevator joiner is fine for this size of aeroplane



Identical fuselage sides built over the plan. Don't forget to make right and left fuselage sides, which should be a mirror image of each other



Pre plan the electrical installation. Servo bearers that are held in place with a straight through joint (through the square holes) are better than butt joints against the fuselage side



If the fuselage is built over the plan and pinned down it must end up being accurate when it is finished. Much cheaper than a fuselage jig

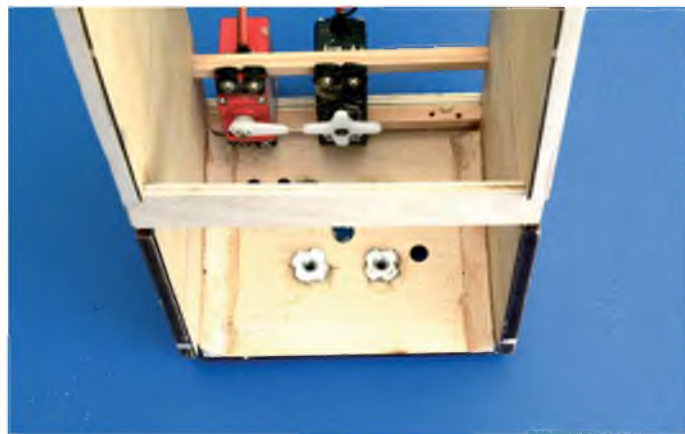
on this model, which are placed as far forward as possible to keep the majority of their weight in front of the Centre of Gravity.

When Peter Miller built his original he ended up using a 0.40 size four-stroke engine with a tiny fuel tank. However, this size plane and its configuration are ideally suited to an electric power plant. The motor and controller can be fitted to the

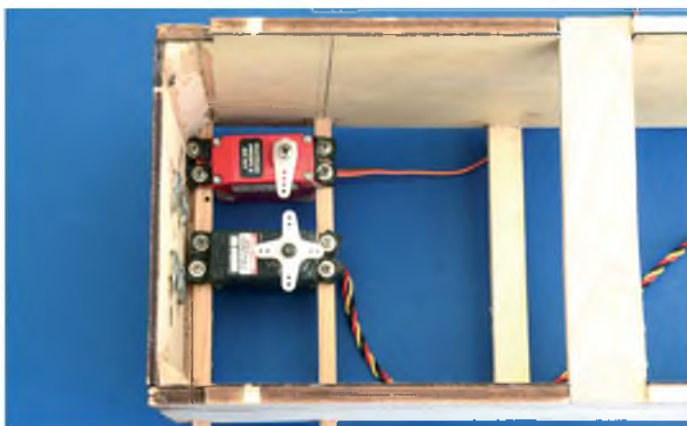
front of former F1 and will have wonderful cooling. The motor battery can be fitted in the space behind F1 and can be cooled by large holes in the front former. Hot air can be diverted out of the fuselage using the scale exhaust position. If you decide to go electric with any model then there is no need to have heavy-duty formers behind F1 as vibration virtually disappears and a seal against oil and fuel is not needed. Centres



Use string as an alternative to a clamp. You don't have to have hi-tech equipment to build a model



Triangular fillets are an essential part of the fuselage/front bulkhead joint on any model



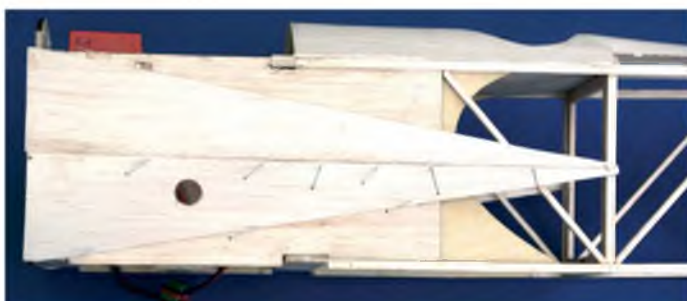
While the fuselage is easy to handle and can be laid flat, it is easy to install the servos



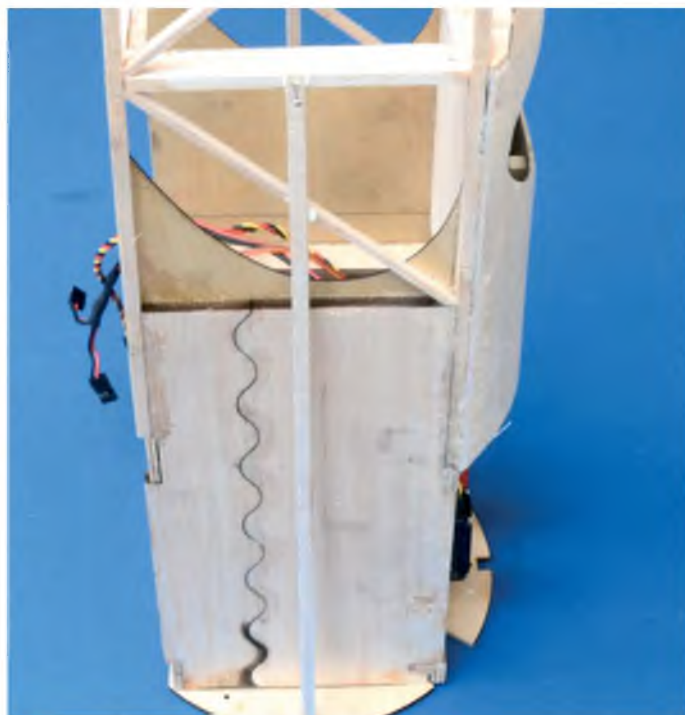
Receiver battery box in place



Plenty of space for battery cooling holes in the front former on the electric version



Side sheeting goes from curved to flat. The large hole is the position of the ic exhaust and is used as a cooling aid in the electric version



This stringer helps to make the fuselage shape

can be cut out of the mid-fuselage formers, freeing up loads of space for equipment installation and reducing weight behind the C of G.

If you are investing quite a lot of hours in building your first scale model it does not really make sense to power the receiver with the motor battery, therefore provision should be made to have a separate receiver and servo battery in the front of the plane.

A 2S 2200 mAh will provide enough power for a dozen flights. Details of the power train are shown at the end of this article, and more information will be included later on in the build series.

A plane like this would be spoiled by having aileron servo wires hanging down from the parasol wing. And as a result we have created a top hatch. This allows servo wires to run down the cabane struts

and give access to a receiver battery – two problems solved in one go!

When a fuselage is constructed from sheeting and balsa strip it can be assembled with a fuselage jig (expensive) or it can be built upside down and pinned to the building board (cheap). Go for whatever you feel comfortable with. Virtually all scale models of early aircraft are built using a simple box shaped central fuselage with

FOKKER D.VIII

curved sides and top formers. Simply attach formers with portions that go outside the box (such as F2 in this kit) once the fuselage shape has been removed from the building board. Remember to mark up the motor position on the F1 former, drill the mounting holes and press the Tee-nuts into the back of the former before joining it to the fuselage sides.

The plan does not show any side thrust but it will be essential to incorporate a couple of degrees into the final build. Offset the power plant position to arrange for the propeller to be on the centre line. Down thrust proved to be irrelevant during the flying trials. If you don't do these things before joining to the fuselage sides lots of expletives may be uttered and there is little chance of keeping things accurate in the final build.

The plan shows the F1 former joined to the fuselage side with a simple butt joint. This is obviously an omission as it is not safe to rely on such a flimsy joint to hold any power plant onto the fuselage.

That's almost it for the basic fuselage construction. It really is that simple and quick. There is some top and side sheeting to add, which changes shape from curved to triangular section along its length. The scale exhaust position is really useful for conducting warm air out of the battery box and helping to ensure a cool airflow over the motor battery.

What you will notice from the pictures is that virtually all the radio and ancillary stuff is in place before the fuselage is finished or covered. That's a big plus factor in building your own plane. You know the installation is strong and secure and it is easy to get at all the linkages sorted without problems.

Wood/Parts List For MW3599 Fokker D.VIII

- 4 off 36" x 1/16th x 4" soft sheet for wing sheeting
- 1 off 36" x 1/16th x 3" soft sheet for fuselage decking
- 1 off 36" x 1/8th x 3" hard sheet for leading edge
- 1 off 36" x 3/16th x 3" soft sheet for tail/fin, to be cut into strips
- 1 off 36" x 3/16th x 3" hard sheet for fuselage, to be cut into strips
- 1 off 36" x 1/4 x 4" hard sheet for spars
- 1 off 36" x 3/8th x 3 soft sheet for wingtips

PLAN DETAILS

NAME:	Fokker D.VIII
BUILD CATEGORY:	Intermediate
PLAN NUMBER:	MW3599
PLAN PRICE:	£20.99 (\$33.99)
WOODPACK PRICE:	£50.99 (\$86.99)

Plans and parts are subject to Postage and Packing charges at standard rates.

Copies of plan number MW3599 are available from RC Model World (Plans Service), Traplet Publications Limited, Traplet House, Willow End Park, Blackmore Park Road, Welland, WR13 6NN, England, Telephone: + 44 (0) 1684 588599, Fax: + 44 (0) 1684 578558, Email: orders@traplet.com or order online at www.trapletshop.com

For more information on the Traplet Publications Plans Service see our advertisement in this issue.



Traplet's woodpack comes with a metric conversion chart, so it is easy to order the correct wood. Most model shops still talk in imperial measurements for balsa supplies.

1 square foot of 1/4" marine ply will be needed for undercarriage mounts and wing mounting components, which have surprisingly been left out of the woodpack.

Some 1/2" balsa and one square foot of 1/64" ply will be needed for the cowl assembly.

Other items required are:

- 2 off 8 swg (4 mm dia) piano wire
- 1 pc brass tube with 8 swg i.d.
- 3 off 12 swg (2.5 mm) piano wire

The plane will also need two metres of covering material for the wing and one metre for the fuselage. Extra material will be needed for the fin and tail if they are a different colour from the wing. **RCMW**

CONTACTS

Wood Supplies: Blackburn Models
www.balsamart.co.uk 01254 265358
Axi Motors: Electric Wingman
www.electricwingman.com

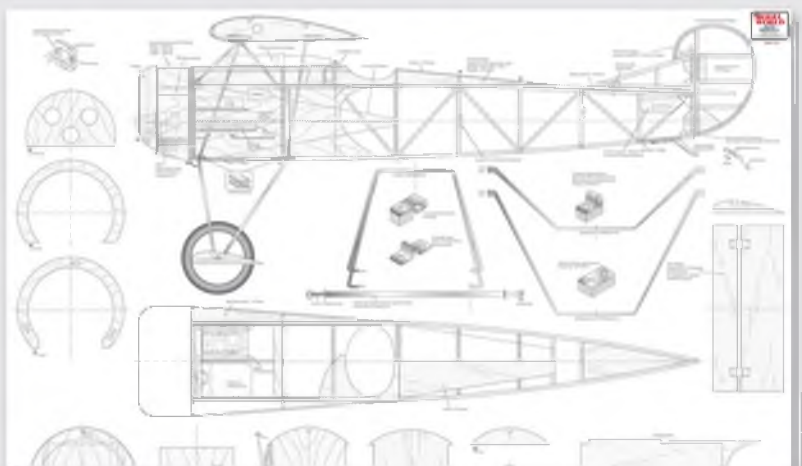
RC MODEL WORLD DETAILS

MODEL INFORMATION

MODEL TYPE:	Parasol wing, near scale monoplane
WINGSPAN:	54" (1.37 m)
WING AREA:	437 sq in (0.28 m ²)
WING LOADING:	26 oz/sq ft (7.9 kg/m ²)
ENGINE/MOTOR:	0.40 cu in 4-stroke or equivalent electric motor (Axi 2826/12 used with 12" x 6" prop and 40 amp ESC)
CONSTRUCTION:	Balsa and ply
WEIGHT:	5 lb flying weight, including a 4S 3300 mAh LiPo (no weight difference compared to a 0.40 cu in 4-stroke)

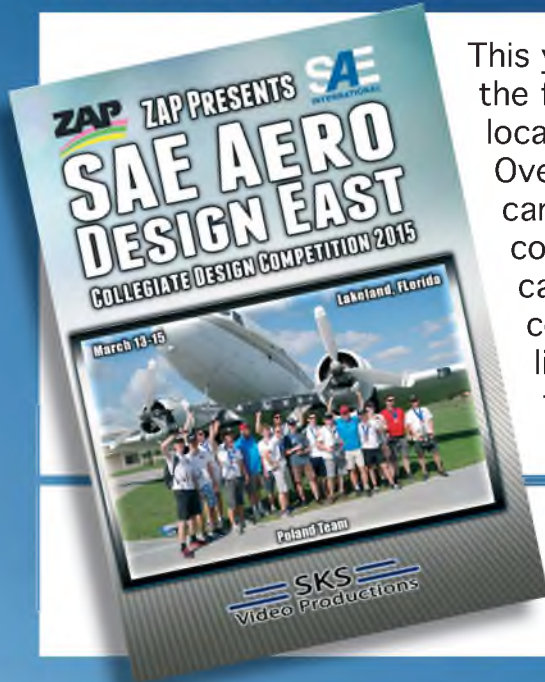
R/C FUNCTIONS

1: Throttle	3: Elevator
2: Rudder	4: Aileron (2 servos)



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SAE Aero Design East 2015..



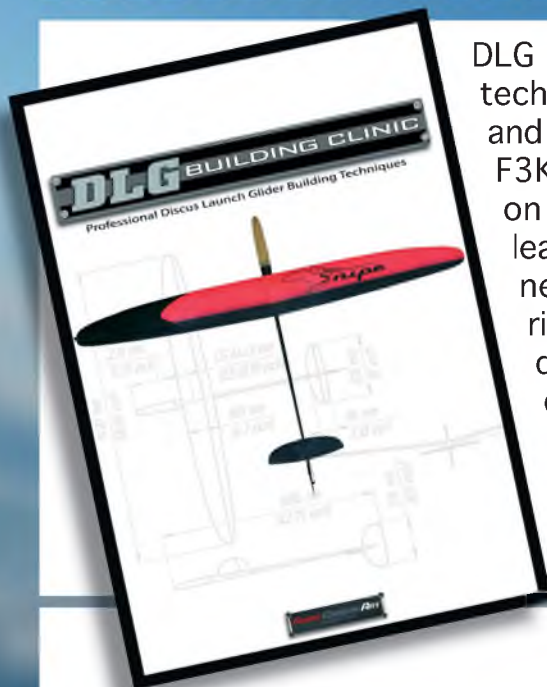
This years SAE Aero Design East competition was held for the first time in Lakeland, Florida at the Sun & Fun facility located on the grounds of the Lakeland/Linder airport. Over 70 teams from 58 universities and 7 countries came to demonstrate there engineering prowess and compete for the top awards. Teams competed in three categories, Regular, Micro and Advanced. This is a payload competition with extra points given for the most weight lifted in each class. An additional challenge was given to the advanced class to deliver the payload to a specific area. Who can lift the most weight ? Tune in to find out.

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GET



Sometimes, when it is not possible to find a servo extension lead of the right length or wire size, the answer is to make your own. Mark Beacham guides us through the tools and techniques required to make sure of professional standard connections

The one essential item is a suitable crimping tool

CONNECTED

The humble servo extension lead is a crucial accessory in virtually every R/C model aircraft build. I remember a few years back feeling pretty impressed with myself that I was on track to put together my latest aerobatic wonder model in just 24 hours. As a result, I was convinced that the guys down at the club were likely to regard me as some sort of modelling master when I turned up and maiden it just a day after first opening the box. Unfortunately, I was brought down to earth with a bump when I realised I'd messed up; the two long extension leads required for the elevator

and rudder servos were about 50 mm too short. So near, but yet so far from 'legend' status amongst my peers!

My only hope of rescuing the situation was to use some gear from a friend to make up my own leads. All it took was a quick lesson from him and I had learnt a new skill that has been very useful ever since. Therefore, in this article I'd like to share how, with a couple of simple tools and a bit of patience, you can make extension and other leads to the exact specifications you need.

The first question many people ask is,

"Why bother?" Mainly, there is the issue of convenience. No longer do I have to agonise over what length extensions I need when I buy a new model (and risk getting the wrong length!). As long as I have a range of wire types I can make heavy or lighter duty, twisted or flat, long or short leads and so I'm not going to get caught out during a build. And, it might just be me, but I hate the tangled spaghetti of over long extension leads inside my nice neat installation, so being able to have leads of exactly the required length pleases the slight obsessive in me!

Crimping Tools

As mentioned above, some tools are needed to complete the job. The one essential item is a suitable crimping tool. These come in a range of sizes, designed for different types of connectors, but many modelling suppliers carry the right size for servo leads. Prices start at around £20 for

a tool of reasonable quality that will serve the average modeller well.

Whilst on the subject of crimping tools it's worth pointing out a couple of features that you will need to be aware of when using the tool. First thing to note is the presence of two slots, in this case marked '30' and '50'. As can be seen in the photo

these slots are slightly different sizes when the jaws are closed (different brands of tool may have different number labels).

If you look inside these slots you will see that the tool is also handed. On one side, the bottom of the slot is smooth and on the other there is a small central ridge. The reasons for both of these features will become clear later.



The jaws have two slots and both have important uses when making a good crimp

Another tool that is recommended is a pair of wire strippers. Whilst by no means essential, a set of strippers will make the removal of insulation from the ends of the servo wires much easier and will help prevent damage to the copper strands.

As well as these tools you will, of course, need connectors and some servo wire. Exactly what to buy will depend on your

requirements and budget. Connectors vary in price from less than 10p per plug for the basic galvanized type up to about 40p each for fully gold plated versions (recommended). Servo wire comes in different gauges. For an electric 3-D aerobatic model with small servos you might want to save weight and go with a small gauge wire, whereas in a large model

with powerful digital servos, heavy-duty wire would be more appropriate. I like to use three strand twisted servo wire as I find it easier to bunch together when I have a large number of wires running alongside each other, but for many people standard flat wire is just fine. That's the beauty of making your own; you decide what you want!



Component parts of a servo plug and servo socket

Let's Crimp!

So now that we know what we need, let's get on with it! We'll start by looking at the fitting of the female servo connectors (the plug part that is found on servos). Please note that when reference is made to male or female connectors I am referring to the metal contacts and not the plastic plug/socket. The first step is to prepare your servo wire. The end of the wire should be cut square so that all three strands are the same length and the strands should then be separated using a sharp hobby knife or

scalpel. Over what length the individual wires are separated is down to personal preference; too little and it becomes difficult to crimp each individual connector, too much and the finished extension will look untidy. I have found that around 10 mm is a good compromise.

Having separated the three wires the insulation must now be stripped from the ends. The amount that is stripped is important as it can affect the quality of the finished crimp, 4 mm is ideal. Once stripped the ends should be twisted to prevent the occurrence of stray copper strands.

Top Tip

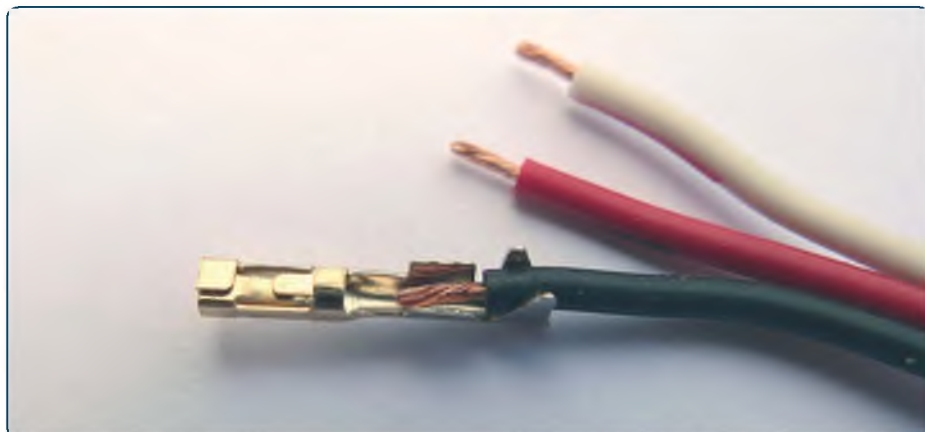
The first time I tried to crimp on a servo connector it seemed that the only way it could be done was to have surgery to attach a third hand. The following tip, however, should prevent the need for such drastic measures! In order to keep the connector and wire together before closing the crimping jaws, squeeze the long outer tangs together, as shown on the left hand side in the picture nearby. How close the tangs need to be will depend on the gauge of wire being used, but until approximately parallel usually does the trick. The idea is that when the wire is inserted into the connector the long tangs should grip the insulation and keep the two parts together whilst you insert them into the crimping tool.



Use a sharp blade to separate the wires



Strip back the insulation by equal amounts and twist the wire ends



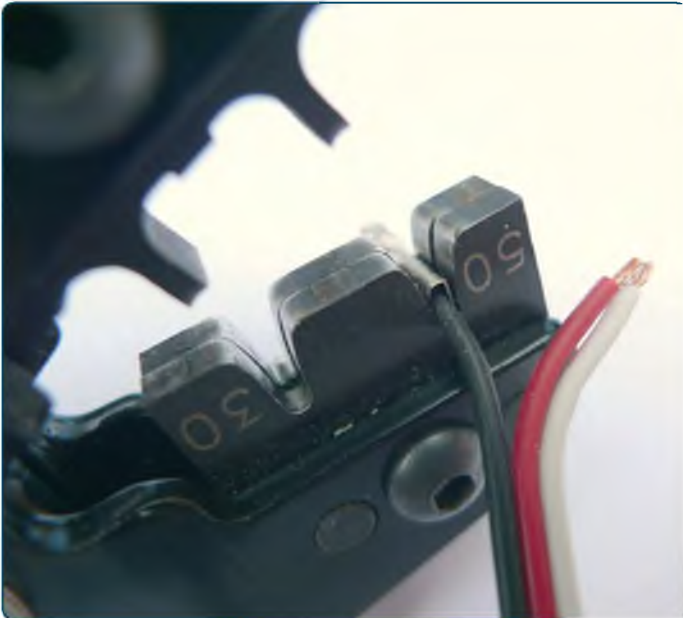
This wire is correctly aligned for crimping



Folding up the tangs will help them to grip the insulation

It is very important to note the position of the wire in the connector. The longer rear tangs should grip the insulation, whilst the inner shorter tangs should line up with the stripped copper strands. If you get this part wrong the inevitable result will be a poor crimp that will either be weak or have a poor electrical connection, so pay attention!

Once you are happy with the position of the wire within the connector it's time to get out your shiny new crimping tool. Again, the position of the connector in the tool is very important so look at the pictures closely. We are going to start by using the larger of the two slots. I also mentioned earlier that the crimping tool is handed, so the connector must be put in from the correct side. The longer outer



The larger slot is used to make the initial crimp, which attaches the connector to the wire

tangs should be on the side of the slot that is smooth, which causes the tangs to be bent in a hoop around the insulation. The short inner tangs should be on the side of the slot with the ridge, which acts to bend the tangs together into an 'm' shape. Place the connector in the slot with the tangs pointing down and with the back edge of the connector in line with the side face of the crimping jaws, i.e. in this case, the face with the numbers on it. As you've been so careful to get the wire in the correct position in the connector, be careful not to move it! If you've squeezed those rear tangs together enough it should stay in place.

Once the connector/wire are in position we can close the jaws of the crimping tool until the upper jaw just starts to push down on the connector. To help ensure that everything stays in the right place do this slowly and carefully. Do a final check that the connector hasn't moved and then smoothly apply heavy pressure to close the jaws fully and then release – your first crimp is almost done!

I say almost done because there is still another step to go. Remember, we noted that the crimping tool has two slots? The reason for that is that the slots have different jobs. The larger slot is used to make the initial crimp, which attaches the connector to the wire. The smaller slot is then used to further tighten the crimp to make it fully secure. Therefore, to complete the job, firstly remove the crimped connector from the larger slot you have just used. It may be quite tight, in which case it will need a bit of a wiggle to pull it free. Sometimes this can cause the connector to come out a little bent. If this happens it's no problem – just use your fingers to gently straighten it out again. Do not use pliers for this as it is easy to squash the connector and ruin it. Once the connector is out you need to insert it into the smaller slot, the same way up as before. Also, as before, the back edge of the connector should be level with the side face of the crimping tool jaws. Close and squeeze the handles again and then remove the connector from the tool and you are done!



The smaller slot is then used to further tighten the crimp to make it fully secure

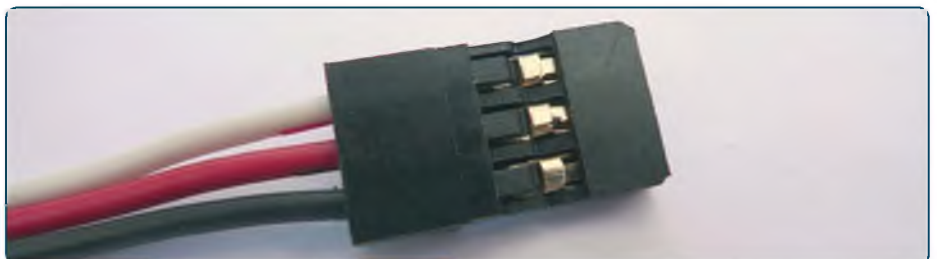
Fit The Plug

At the end of this article are some photos that show what a good and bad quality crimps look like. Once you have fitted three connectors and are happy with the quality, the plastic plug can be fitted. The connectors are inserted as shown in the photo. The underside of the plug and the bent tangs on the connectors should all be facing upwards. The signal wire is at the top (in this case coloured white, but on other types of wire it may be yellow or orange) and the negative wire is at the bottom (here it is black but on some wire it is brown).

Insert each connector until the plastic retaining tabs 'click'. It is wise to give each one a light tug to make sure it is secure. If you are using heavy-duty wire a small flat-bladed screwdriver may be required to persuade the insulation to fit inside the plug!



The underside of the plug and the bent tangs on the connectors should all be facing upwards. The signal wire is at the top and the negative wire is at the bottom



Insert each connector until the plastic retaining tabs 'click'

Male Connectors

The process for fitting the other end of your extension lead with male servo connectors (the plastic socket end) is virtually identical to that just described. The only difference is that the connectors will be long pins instead of sockets and there is an extra plastic part. The plastic plug in the middle of the photo opposite is identical to that used for the female connectors and is fitted in exactly the same way.

The plastic sleeve fits onto the plug but care must be taken to ensure it is fitted the right way around. The way to get this right is to look inside the sleeve. You should see a plastic tab like in one of the pictures (sometimes there are three separate smaller tabs). The end of the sleeve with the tab(s) is the end where you should insert the plug containing the male connectors. However, it is also important to get the sleeve the right way up! The side with the tab(s) should be uppermost with the underside of the plug facing up. When you slide the sleeve onto the plug you should hear a 'click' as the tab engages with the recess on the underside of the plug.

Again, after fitting give the sleeve a tug



The only difference for male plugs is that the connectors will be long pins instead of sockets and there is an extra plastic part. The plug in the middle is fitted in exactly the same way

to ensure it is secure. I cannot stress enough how important it is to make sure that the sleeve is fitted correctly. If the tab is at the wrong end, the sleeve will not lock onto the male connector plug and may come away causing the extension lead to come undone. If the sleeve is the wrong way up the female plug will also be the wrong way up when the extension lead is fitted. This will mean that the signal and negative wires on the male and female sides will be cross-connected. At best, your servos won't work and, at worst, they may go up in smoke!



The sleeve fits onto the plug but needs to be fitted the right way around. Inside the sleeve is a plastic tab (sometimes there are three smaller tabs). The end of the sleeve with the tab(s) is the end where you should insert the plug

Some Examples

The pictures will help you decide whether you have crimped the connectors to the wires correctly. The first picture shows a poor crimp. The wire is not in the correct position so the long outer tangs are not gripping the insulation. As a result the wire could easily be pulled out.

In the second picture the short inner tangs have not been bent around properly when being crimped. This can happen if the connector is twisted in the tool so that the tangs are not facing down. This could result in a poor electrical connection.

The third picture shows a good quality crimp. The long outer tangs are wrapped firmly around the insulation so the connector cannot easily be pulled off. The short inner tangs are folded tightly over the bare copper wire in an 'm' shape, creating a good electrical connection.

Connected Up

So there we have it! With a modest investment in tools and your new knowledge there's no excuse to not go 'crimp crazy' on your next build! Seriously though, once you have mastered them these simple skills will also come in useful for other applications.

Need an extension lead for a receiver battery that uses the common red JST type plug? Or maybe, you want to fit some 6-pin locking Ashlok type connectors to speed up wing servo connections at the field? No problem! With the same tools and knowledge these other types of connectors can also be fitted.

Best of all, when you're pushing hard to get your latest pride and joy finished so you can maiden it at the weekend in front of your envious flying buddies, you'll never again end up grounded because you haven't got the right length servo lead!

RCMW



A poor crimp. The wire is not in the correct position so the long outer tangs are not gripping the insulation



Here the short inner tangs have not been bent around properly when being crimped, which can happen if the connector is twisted in the tool so that the tangs are not facing down

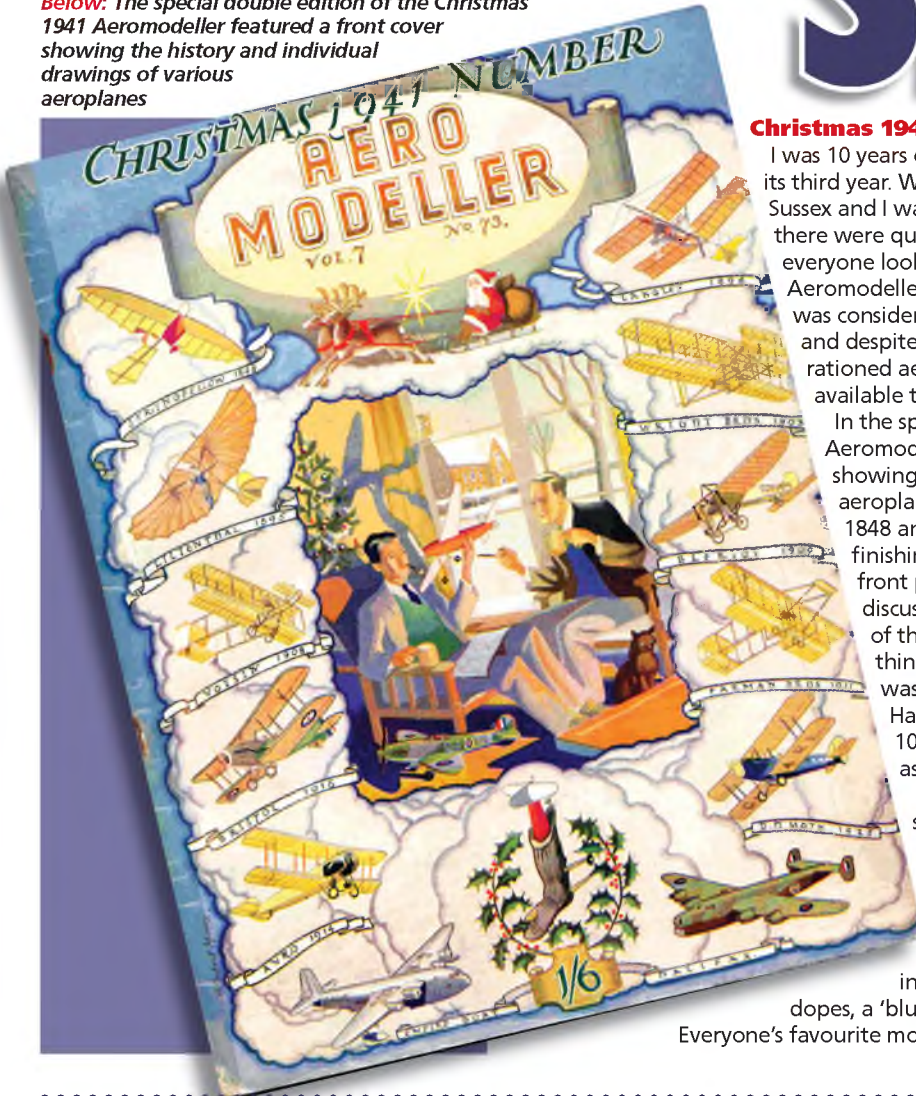


A good quality crimp. The long outer tangs are wrapped firmly around the insulation and the short inner tangs are folded tightly over the bare copper wire in an 'm' shape

ON WITH THE SHOW

Dave Bishop takes us back to 1941, when he was a ten year old with a passion for all things aviation

Below: The special double edition of the Christmas 1941 Aeromodeller featured a front cover showing the history and individual drawings of various aeroplanes



Christmas 1941

I was 10 years old in 1941 and the Second World War was in its third year. We lived on the south coast at Littlehampton in Sussex and I was a very keen scale aeromodeller. Surprisingly there were quite a few model aeroplane kits about for sale and everyone looked forward to the end of the month when the Aeromodeller was published, which cost one shilling (5p). It was considered to be the 'must read' book for us modellers, and despite food and almost everything else being severely rationed aeroplane kits, both static and free-flight, were available to buy from many advertisers.

In the special double edition of the Christmas 1941 Aeromodeller there was a fully coloured front cover showing the history and individual drawings of various aeroplanes. The first aeroplane was a Stringfellow dated 1848 and there were others painted in date order, finishing with a Halifax bomber of 1941. The centre of the front page was filled with a painting of two modellers discussing their hand-held free-flight aeroplanes. One of the chaps was smoking a pipe, which was the 'done thing' in those days. On the full coloured back cover was an advert of many Keil Kraft Kits, with a large Hawker Hurricane diving down onto a Messerschmitt 109. The 109 had flames and smoke pouring out of it as was the British norm.

The average trader's wage was about £2, 2 shillings (£2.10p) and a solid model aircraft kit at 1/72 scale model could be bought for one shilling and four pence (7p.) A larger 1/48 scale model (a quarter inch to the foot) would cost about seven shillings and sixpence (35p), with all parts (mostly white Obechi wood) being cut to shape. Also included in the kit was a tube of cement, transfers, dopes, a 'blue print' and a complete set of instructions.

Everyone's favourite model (and full size aeroplane) was a Spitfire.

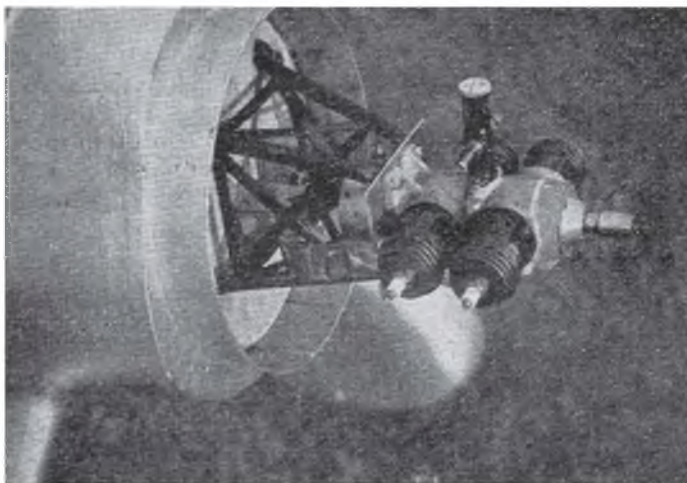


D A Russell and his nearly completed Lysander. Do any readers know if this model actually ever flew?

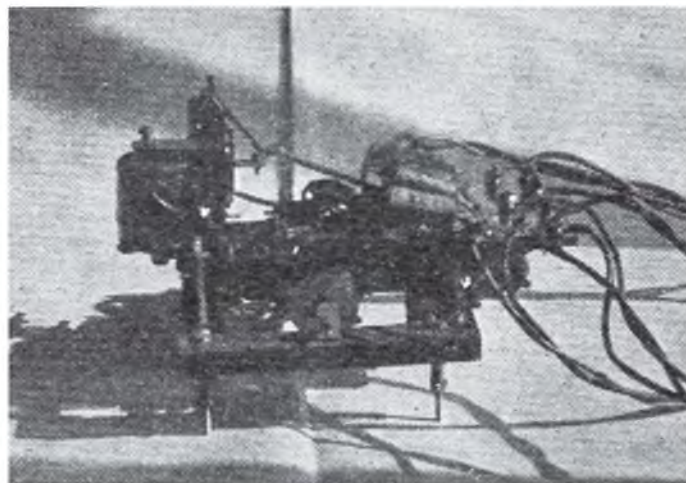
The Aeromodeller In 1941

For many years the top people editing the Aeromodeller were Douglas A Russell, AMI Mech.E., the Managing Editor, and the Editor, C S Rushbrooke. My Christmas copy of it, dated 1941, is in mint condition, which I treasure. It had 75 pages and I have found that today these elderly copies of Aeromodeller can fetch as much as £20 each on eBay.

Opening the first article of fourteen, there was an 'interim report' on D A Russell's Lysander, which he had started building before the war started. I was surprised at how many other people were involved in its construction. The engine was a four-cylinder horizontally opposed spark ignition job rated at a calculated 40 cc. The three bladed propeller was constructed by a Mr W Morgan and the radio control



The Westland model was powered by a 40 cc four-cylinder, horizontally opposed spark ignition engine



The five function radio control receiver and escapement was built by a Flt Lt Hunt

receiver and escapement was built by a Flt Lt Hunt to operate five controls. The controls were: elevators – up and down, rudder – right and left, engine – half to full throttle, with a clockwork time switch to finally cut off the engine.

Some years later, after the war had ended, I saw D A Russell's Lysander hanging up on the wall at the Model Engineering Exhibition at Dorland Hall in Lower Regent Street in London. To my knowledge, and after a lot of research into some of the

2,000 plus aeroplane books in my office, I just cannot find any reference of that particular Lysander ever flying. I would be grateful if anyone knows if it did eventually take to the skies, under radio control.

Schooldays And Showbiz

"AAAhhaarr", I shouted out at the top of my loud voice. And if it had been 10 years later, after the film of Treasure Island had been brought to the cinemas, it would have been followed by "Jim Lad!" But with my hollering I now had the school's audience eating out of my hand, and they hollered back, "Kill him, Robin Hood!"

The stage was mine and the sweating, kneeling Friar Tuck (alias Fatty Hill) got what he deserved when I shoved Little John's six foot long wooden staff where the sun didn't shine. This was done to deafening applause and a smug smirk on my face.

Living on the south coast we were right in the place where the Battle of Britain was taking place and most of the male teachers were away in the Services. Consequently the overworked teachers that were left to educate us had the problem of substituting different things to occupy the time we youngsters were at school. One of them was Miss Chapman (Arts, Crafts and Hobbies) and above everything else she really fancied herself as an actress. She encouraged us school children to act out plays with much gusto and enthusiasm. As a 10 year old, I found this thespian pastime to be a great deal of fun and enjoyment, and in no time at all I was one of her leading actors. I suppose even then I was a bit of an extrovert and loved the limelight of being in front of an audience and seeing their reactions when things went right. I simply enjoyed being on the stage and I was particularly good at 'adlibbing' when my fellow actors forgot their words. Whilst waiting to go on the stage in the wings I would engage myself by whittling away on my latest model aeroplane for my 'hobbies' curriculum. So between performing Robin Hood, I chose to build a 1/72 scale Spitfire on a small table behind the stage curtains. The kit had been bought from CMA

(Chingford Model Aerodrome) and cost five shillings and three pence - about 26p.

One other person, my co-star in the story, was a large person named Friar Tuck, and the chap who got the part was 'Fatty' Hill. Sadly Fatty Hill wasn't a very nice 11 year old. Miss Chapman had written her own arrangement of Robin Hood. Her story went that I was walking through Sherwood Forest to 'rescue' Maid Marion from the nasty Sheriff of Nottingham. I was to be confronted by a fat Friar named Tuck (Fatty Hill) and his 'minder' Little John (Lofty Jackson). I was supposed to have an easy, quick fight and teach them both a lesson in manners and then onto Maid Marion (Josie Jelly). Little John was the first to be dispatched, followed by the Friar. Unfortunately Miss Chapman changed the story and the new deal was that the Friar was really going to beat the living daylights out of me, by using Little John's 'borrowed' staff as a weapon. As a reward for my submission I was supposed to carry the fat Friar on my back across a deep stream, which ran right across the length of the stage. According to Miss Chapman, I was supposed to act as if I was in great pain. The pain turned out to be real and no acting was necessary on my part.

Little John (Lofty), had forgotten all of his lines and so I acted both scripts, and although he was dumbstruck he wasn't too pleased to let go of his staff very easily. This led to a bit of a wrestling match, with me eventually giving a stage whisper, "You are supposed to give the blasted thing to me – idiot!" Lofty's indignant reply sounded like 'rowlocks', or something like that, which the audience clearly heard and they all fell about laughing. At this stage I could see that Miss Chapman was getting a bit worried.

Now it was my time to give Friar Tuck a lesson in manners. Having finally gotten hold of Little John's broom handle, I stood

facing Tuck. The snag was that Tuck also fancied himself as a thespian and he could also play to the audience. I was wearing my bow at an angle across my shoulders and somehow the end of it got caught up in Friar Tuck's long cassock. I was totally unaware of being hooked up to this brown smock thing. Tuck hollered out, "I am undone!" and there, with me walking away from him, I saw his outer garment dangling on the end of my bow. The blooming audience loved him and I was very annoyed at his taking over my leading star part. Stap me! He was getting the laughs that should have been mine. Undoing his smock from my bow, I started whirling it around my head and, with a flourish, I threw it across the stage away from Tuck. He lowered his head and with the broom handle fully locked into his massive rear cheeks, charged off the set and disappeared back stage to a roar of approval and massive cheers from the audience. Following his disappearance there was an enormous crash, at which I raised my hands above my head and I punched the air as well. Miss Chapman quickly closed the stage curtains and, to terrific applause, I smiled my delight at being the top man.

Looking at me through the curtains from the back of the stage was Fatty Hill, holding in his hands my Spitfire. It was smashed beyond recognition and with a silly smirk on his face he shrugged his shoulders and told me that when he ran away from me, he had lost his balance and had crash landed on my new aeroplane. Miss Chapman came on stage and said that we had to go back on stage for some more applause and she made us line up, hold hands and bow. The grip I gave Fatty whilst I smiled at the audience was designed to crush his hand to pulp.

The A.B.A.

Aeromodeller's Douglas A Russell was quite a chap and he set up a rival association to the SMAE (Society of Model Aeronautical Engineers, forerunner of the BMFA), because he was keen to get the Government to ease the restrictions on petrol model flying. According to him

the SMAE was getting nowhere with this request. The organisation he started was called the Association of British Aeromodellers (ABA). This ABA group was later used in the 'National Aerodrome for Aeromodellers' publicity blurb written in Aeromodeller magazine for a totally new and dedicated flying site. It was going to be

especially for us modellers at a place called Eaton Bray, which was near to Leighton Buzzard. Eaton Bray opened in September 1939, just at the start of the war. The Air Ministry eventually lifted restrictions on powered flying and the ABA and SMAE merged back together in 1947.



Paul and fellow members of the Southern Radio Control Club gather for an indoor session to fly quadcopters and small helicopters

Show Times

My stage career started at Wick Village Hall when I was 5 years old and there was a play written by Agatha Christie titled 'Ten Little *****'. Later it was changed to 'And Then There Were None'. I was first on stage as 'number one'.

Today the Wick Village Hall is used every Wednesday afternoon by the Southern

Radio Control Club, headed by my nephew Paul Moore, where they all fly quadcopters and small helicopters.

Many years later, in my DB Sound business, I used to play a tune on my PA system when it started raining at airshows. The title was 'The Sun Has Got Its Hat On' and it was played for a laugh. It was a BBC recording by Henry Hall and his orchestra,



My nephew, Paul Moore with his aerobatic Chipmunk

and sung by Val Rosing. And it was only last year, in 2014, that I listened to the words that were sung. I can never play that tune in public again as a result... **RCMW**

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E-Mail: public-camping@largemodelassociation.com

All Other Enquiries Contact: 07860 345613 E-Mail: chairman@largemodelassociation.com

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* Image shows finished replica of model. Additional parts are required.



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WINGSPAN	54"

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TRAPLET
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SLINGSBY T-45 SWALLOW



Designer: Tony Slocombe		Difficulty ***
SCALE	01:04	
RADIO FUNCTIONS	4	
WEIGHT	10 LB 8 OZ / 4.7 KG	

PLAN MW2320	£20.99 / \$33.99
WOODPACK WP2320	£98.99 / \$168.99
FULL SET SET2320	£107.99 / \$182.99
SAVE £11.99 / \$19.99	

EXTRA 300



Designer: Tony Slocombe		Difficulty ***
SCALE	01:04	
RADIO FUNCTIONS	4	
WINGSPAN	72" / 1830 MM	

PLAN MW2381	£18.99 / \$30.99
WOODPACK WP2381	£56.99 / \$96.99
COWL CF2381CL	£24.99 / \$41.50
FULL SET SET2381	£133.58 / \$252.84
SAVE £21.37 / \$31.64	

FOURNIER RF5 (90")



Designer: duncan hutson		Difficulty ****
SCALE	01:06	
RADIO FUNCTIONS	3 - 6	
WINGSPAN	90" / 2285 MM	

PLAN MW2535	£20.99 / \$33.99
WOODPACK WP2535	£89.99 / \$152.99
COWL CF2535CL	£16.99 / \$27.50
FULL SET SET2535	£127.99 / \$214.48
SAVE £13.97 / \$22.50	

JODEL D112



Designer: Duncan Hutson		Difficulty ***
SCALE	1:4.8	
RADIO FUNCTIONS	4	
WINGSPAN	68" / 1727 MM	

PLAN MW2537	£15.99 / \$25.99
WOODPACK WP2537	£101.99 / \$173.99
COWL CF2537CL	£17.99 / \$29.00
FULL SET SET2537	£134.99 / \$228.98
SAVE £14.97 / \$29.00	

SPACEWALKER



Designer: Dennis Tapsfield		Difficulty ***
SCALE	1:3.4	
RADIO FUNCTIONS	4	
WINGSPAN	91" / 2311 MM	

PLAN MW2222	£20.99 / \$33.99
WOODPACK WP2222	£97.99 / \$166.99
PG SPATS CF2222ST	£21.99 / \$35.50
FULL SET SET2222	£126.88 / \$212.85
SAVE £14.09 / \$23.63	

BREGUET FAUVETTE



Designer: Mike Trew		Difficulty ****
RADIO FUNCTIONS	2 - 3	
WINGSPAN	118" / 3000 MM	

PLAN MW2214	£18.99 / \$30.99
WOODPACK WP2214	£63.99 / \$108.99
CANOPY CA2214CY	£4.99 / \$7.50
FULL SET SET2214	£79.99 / \$132.99
SAVE £7.98 / \$14.99	

PILATUS



Designer: Mike Trew		Difficulty ****
SCALE	01:05	
RADIO FUNCTIONS	2 - 3	
WINGSPAN	118" / 3000 MM	

PLAN MW2210	£20.99 / \$33.99
WOODPACK WP2210	£89.99 / \$152.00
CANOPY CA2210CY	£4.99 / \$7.50
FULL SET SET2210	£104.79 / \$204.79
SAVE £11.18 / \$22.69	

SCHEMPP-HIRTH STANDARD



Designer: Mike Trew		Difficulty ****
SCALE	01:05	
RADIO FUNCTIONS	2 - 3	
WINGSPAN	118" / 3000 MM	

PLAN MW2204	£20.99 / \$33.99
WOODPACK WP2204	£89.99 / \$152.00
CANOPY CA2204CY	£4.99 / \$7.50
FULL SET SET2204	£104.99 / \$174.99
SAVE £10.98 / \$18.50	

MINIMO A (167")



Designer: Chris Williams		Difficulty ****
RADIO FUNCTIONS	4	
WINGSPAN	167" / 4240 MM	

PLAN MW2669	£21.99 / \$35.50
WOODPACK WP2669	£119.99 / \$203.99
FULL SET SET2669	£127.79 / \$215.59
SAVE £14.99 / \$23.90	

MINIMO A (191")



Designer: Chris Williams		Difficulty ****
SCALE	1:3.5	
RADIO FUNCTIONS	4	
WINGSPAN	191" / 4850 MM	

PLAN MW2665	£21.99 / \$35.50
WOODPACK WP2665	£145.99 / \$248.99
FULL SET SET2665	£151.18 / \$256.04
SAVE £16.80 / \$28.45	

JABBERWOCK III



Designer: Don Stothers		Difficulty ***
WINGSPAN	44" / 1118 MM	
RADIO FUNCTIONS	4	
POWER SOURCE	.40 - .60 2 STROKE	

PLAN MW2613	£13.99 / \$22.99
WOODPACK WP2613	£83.99 / \$142.99
COWL CF2613CL	£12.99 / \$21.50
FULL SET SET2613	£99.89 / \$168.79
SAVE £11.08 / \$18.69	

JABBERWOCK IV



Designer: Don Stothers		Difficulty ***
WINGSPAN	54" / 1370 MM	
RADIO FUNCTIONS	4	
POWER SOURCE	.75 2-STROKE / 1.20 4-STROKE	

PLAN MW2614	£17.99 / \$28.99
WOODPACK WP2614	£124.99 / \$212.99
COWL CA2614CL	£14.99 / \$25.00
FULL SET SET2614	£159.27 / \$194.99
SAVE £17.67 / \$20.99	

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WESTLAND LYSANDER

Difficulty ****



Designer: Duncan Hutson

WINGSPAN	70" / 1778 MM
RADIO FUNCTIONS	3 - 6
POWER SOURCE	40 2-STROKE/40 - .48 4-STROKE

PLAN MW2545	£20.99 / \$33.99
WOODPACK WP2545	£40.99 / \$69.99
COWL CF2545CL	£19.99 / \$33.00
FULL SET SET2545	£104.39 / \$172.39
SAVE £11.56 / \$19.09	

PITTS SPECIAL S-2A

Difficulty ****



Designer: Duncan Hutson

SCALE	1:4.3
RADIO FUNCTIONS	3 - 6
WINGSPAN	55" / 1396 MM

PLAN MW2538	£17.99 / \$29.99
WOODPACK WP2538	£79.99 / \$135.99
COWL CF2538C	£14.06 / \$23.65
FULL SET SET2539	£126.89 / \$212.86
SAVE £4.14 / \$8.27	

JET PROVOST T.3/T.4

Difficulty **



Designer: Andy Blackburn

SCALE	01:12
RADIO FUNCTIONS	3
WEIGHT	24 OZ / 672 G

PLAN MW3182	£11.99 / \$19.99
WOODPACK WP3182	£64.99 / \$110.99
COWL CA3182CY	£6.99 / \$9.95
FULL SET SET3182	£75.57 / \$126.83
SAVE £8.40 / \$14.10	

HAWKER HUNTER FGA9 (48")

Difficulty ****



Designer: Chris Golds

SCALE	1:11.5
RADIO FUNCTIONS	7 - 8
WINGSPAN	48" / 1220 MM

PLAN MW3241	£30.99 / \$49.99
WOODPACK WP3241	£130.99 / \$222.99
CANOPY CA3241CY	£8.99 / \$14.00
FULL SET SET3241	£153.87 / \$28.70
SAVE £17.10 / \$14.99	

HAWKER TEMPEST MK.V (61.5")

Difficulty ****



Designer: Brian Taylor

POWER SOURCE	.60 CU. IN. 2-STROKE
RADIO FUNCTIONS	4
WINGSPAN	61.5" (156.21CM)

PLAN MW3328	£20.99 / \$33.99
WOODPACK WP3328	£86.99 / \$147.99
COWL CF3328CL	£40.99 / \$68.50
FULL SET SET3328	£159.25 / \$265.93
SAVE £17.70 / \$29.55	

SLINGSBY T-41 SKYLARK 2

Difficulty **



Designer: Keith Humber

SCALE	1:5.3
RADIO FUNCTIONS	3 - 4
LENGTH	53" / 1345 MM

PLAN MW3274	£20.99 / \$33.99
WOODPACK WP3274	£58.99 / \$100.99
CANOPY CA3274CY	£6.99 / \$11.50
FULL SET SET3274	£78.27 / \$131.84
SAVE £8.70 / \$14.64	

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www.rcmodelworld.com

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A FREE service, advertise your club's event, show, fly-in, bring and fly, swapmeet, sale or whatever. Simply send in the details to: 'Diary Dates', RC Model World, Traplet Publications Ltd., Traplet House, Willow End Park, Blackmore Park Road, Malvern, WR13 6NN, UK. Or Email to RCMW@traplet.co.uk Traplet Publications Ltd. are unable to take responsibility for event cancellations. Check before you go.

INDOOR

25/26th Jul, 30th Aug, 26/27th Sep, 17/18th Oct '15

BMFA F3B League Events (plus Speed Comp & Nationals). For more information and entries to Clive Needham, 0161 2843143, Email: l.needham7@ntlworld.com

3rd & 17th Aug '15

Indoor Flying at Crewkerne Sports Centre (south west of Yeovil, Somerset). Times are 7 pm to 9 pm, cost is maximum of £10 per adult, juniors half price, Insurance required. We have a big 4 court hall with some power points. Typically meeting all the year round, on 1st & 3rd Mondays in each Month, except Bank Holidays. Contact Jack Mitchell 01935 445311 or Email: jack@home9999.plus.com or check out website www.yeovilrcflyers.org.uk/index.php

3rd Oct, 7th Nov, 5th Dec '15

Indoor Fun Flying at Furzeffield 2015. Furzeffield Sports Centre, Mutton Lane, Potters Bar, Herts EN6 3BW. 6 pm until 10 pm. Flyers £8, spectators £2. Contact Mike Quille, Tel: 020 8500 3549 or Email: mp.quille@live.co.uk

10th Oct, 14th Nov, 12th Dec '15

North London MFC Indoor Radio Control Meetings 2014. Furzeffield Sports Centre, Potters Bar, Hertfordshire EN6 3BW. Saturdays, 6 pm to 10 pm. All up weight for fixed wing 225 g, 36" span and helicopters 400 g. BMFA insurance required. Flyers £9, spectators £2.50. Contact Peter Elliot, Tel: 01707 336982

GENERAL

5th Jul, 2nd Aug, 6th Sep, 4th Oct, 1st Nov, 6th Dec '15

Wessex Soaring Association monthly slope fly-in, first Sunday of each month wind-dependent. Non-powered gliders and e-soarers permitted, all welcome. Slopes located in south Wiltshire, east of Shaftesbury. Contact Pete Carpenter for details Email: pete.carpenter@yahoo.co.uk/, Tel: 07919 903742

11th/12th Jul '15

IMAC UK Competition, Rhyl, North Wales. Contact Mal Green: mgreen65@hotmail.com

12th Jul '15

F3A. 4th BMFA GBR Team Selection Event. Oxford. FAI 'P' and 'F' schedules. Also GBR/CAA League competition. All Schedules. See gbrcaa.org then forum 'Competition News' for details and 'Competition Entry Form' for fees and payment. Team Selection competitors have priority entry if competition is over subscribed. Visitors welcome but please contact Contest Director, Peter Brett on 07795 061145 for details

12th Jul '15

Wolves Scale Glider Fly-in, Long Mynd, Church Stretton, start 9.30 am. £3.00 entry fee, proof of insurance cover required. More details, Mark H. Richards, 6, Saxon Road, Penkridge, Stafford, ST19 5EP. Tel: 01785 712445. Mobile 07921 210629. Email: markhrichards@yahoo.co.k

18th/19th Jul '15

LMA Cosford, Shropshire (TF11 8UP), further details from Paul Needham 07949 214282, Email: mail@paulneedham.plus.com

19th Jul 15

GBR/CAA F3A League competition. Grimsby. All schedules. See gbrcaa.org then forum 'Competition News' for details and 'Competition Entry Form' for fees and payment. Visitors welcome but please contact Contest Director, Peter Scoles on 01472 507039 for details

19th Jul '15

The Balbedie Warbirds Open Fly-In, at Balbedie Aeromodelling Club, Balbedie Farm Nr Kinglassie, Fife, KY5 0UE Scotland. Open Event all warbirds and scale aircraft welcome. BAC's great BBQ and refreshments available all day. Toilets provided. Bring your friends and family. Proof of Insurance to fly please. Balbedie Aeromodelling Club www.balbedie-aeromodelling-club.co.uk, contact club secretary Colin Morrison at secretary@balbedie-aeromodelling-club.co.uk for more info

25th/26th Jul '15

'Scale Weekend', includes David Boddington Memorial Day (Sunday). All disciplines of scale models are encouraged, and non-scale can also fly (10 kg max weight). Informal competition trophies are awarded on the Sunday, including: Flight Director's Trophy (Best of Show), RCMW Trophy (Best In Scale), Shuttleworth Trophy (Best Shuttleworth replica), Britannia Trophy. Directions: Old Warden Airfield, Beds.SG18 9EP. BMFA 'B' certificate to fly on the R/C flightline at these events. All pilots are required to show proof of insurance and BMFA membership, which shows 'B' certification. Please carry these documents with you on the airfield, as you will not be allowed to fly without them. This is a requirement of the Shuttleworth management. All types of model are welcome at all events (maximum weight 10 kg). Contact: Ken and Sheila Sheppard; Email: modelair.oldwarden@gmail.com or phone 07799 132999

25th/26th Jul '15

IMAC UK Competition, Edisford Bridge, Nr Clitheroe, Lancs. Contact Mal Green: mgreen65@hotmail.com

26th Jul '15

GBR/CAA F3A League competition. Warboys. All schedules. See gbrcaa.org then forum 'Competition News' for details and 'Competition Entry Form' for fees and payment. Visitors welcome but please contact Contest Director, Clive Whitwood on 01487 832195 for details

1st/2nd Aug '15

24th Annual Summer Show hosted by Redruth & District Model Flying Club, start times 10 am to 5 pm. Both days along with our club pilots there will be again a number of local club pilots and guests, a small number of trade stands, we can cater for a small number of campers wishing to make a week or weekend holidaying visit, there will also be barbecue catering on site. Contacts, Steve Polkinghorne on 01209 313263 or Email: stevewings55@tiscali.co.uk, Phil Shorlan, Email: p.shorland@mac.co.uk or check out the club website at: www.rdmfc.co.uk

2nd Aug '15

GBR/CAA F3A League competition. Ashbourne. All schedules. See gbrcaa.org then forum 'Competition News' for details and 'Competition Entry Form' for fees and payment. Visitors welcome but please contact Contest Director, Adrian Harrison on 07976 244004 for details

2nd Aug '15

BMFA South East Area Scale Day, hosted, with the kind permission of the Hastings MFC, at their Middle Bridge site off the A267 Pevensey to Bexhill Road, the South East Area will be holding their annual scale competition, in conjunction with the club's summer fly-in weekend. Relaxed stand off competition open to all BMFA members, with two classes, scratch built and ARTE, with prizes in each. The Area cup awarded to the highest placed SE area member. Further details can be obtained from Bob Hart on 01892 852137

2nd Aug '15

Bath SPARCS All Electric Fly-In, at RAF Colerne Wiltshire. Airfield site with grass and tarmac runways. Proof of BMFA insurance required. Regret no facilities for spectators. Pilots briefing at 10 am. Contact: Bob Partington, 01225 891441, Email: grpartington@gmail.com

8th/9th Aug '15

PSSA Fly-In, Lleyn MAC, Abersoch area, Lleyn Peninsula, meet at Llanbedrog Llandis car park for 10 am each day. NOTE – A map showing the chosen slope each day will be posted to the phone box outside the shop for latecomers. Open to non-PSSA members – proof of insurance required. Usual 'Fly for Fun' format. For more information contact Phil Cooke on 07772 224719 or email: webmaster@pssaonline.co.uk

8th/9th Aug '15

The Robert Mahoney Memorial Electric Fly-In, at Middle Wallop, 9 am to 5 pm. Entry via Museum gate. Electric models and gliders only, NO free flight. More more information contact Email: davidchinery@aol.com or 07702 455777

8th/9th Aug '15

LMA Elvington, Yorkshire Air Museum, York (YO41 4AU), further details from Paul Needham 07949 214282, Email: mail@paulneedham.plus.com

9th Aug '15

Traplet Scale Day, at the Bickershaw MFC site (WN2 5TD), event start sat 10 am. Flying schedules and further information can be obtained by contacting Peter Maw by email at secretary@bickershawmfc.co.uk

6th to 16th Aug '15

F3A World Championship,

Switzerland. See website at www.f3a-wc2015.ch or Contact Ashley Hoyland on 0114 2873432 for more details

22nd/23rd Aug '15

The Balbedie Loch Leven Splash-

In, at Kirkgate Park, Loch Leven, Kinross Scotland, from 10 am till 4 pm. Probably the best Waterplane event in the UK!

All Waterplanes and visitors welcome. BAC's great BBQ and refreshments available. Bring your friends and family. Toilets provided. Proof of Insurance to fly please. Balbedie Aeromodelling Club www.balbedie-aeromodelling-club.co.uk, contact club secretary Colin Morrison at secretary@balbedie-aeromodelling-club.co.uk for more info

23rd Aug '15

Haverfordwest Model Club Fly-In,

at Templeton Airfield, Pembrokeshire at the site owned by the MOD, starting at 10 am and finishing at 5 pm. The event is open to flyers of radio control model planes, electric, IC or turbine, and model helicopters. Flyers please bring your BMFA Membership Card with you; you will be afforded a warm welcome by our members to our popular flying site. A space will be set a side for people to sell their surplus planes, engines, spares etc. There will be refreshments available in the way of a burger van and an Ice Cream Van. There will be limited toilet facilities available. For further information please contact Greg Highfield on 01437 899 843 or 07913 781 150, or by email at greghighfield@hotmail.co.uk

23rd Aug '15

Woodspring E-fly 2015.

Come and check out the latest developments in electric powered aircraft flown by some of the best pilots around. We are hoping to get more E-traders this year, but the event will be, as previously, about meeting e-flyers like yourself, showing your best electric models and having a really great time! More info please check out www.woodspringwings.co.uk/

29th to 31st Aug '15

F3A at the BMFA British National Championships, Barkston Heath. F3A P and F schedules and GBR/CAA league competition for 'P' Only, Masters, Intermediate and Clubman schedules. Entries to BMFA. Contact F3A Flight Line Director Matt Hoyland on 0773 9840498 or Ashley Hoyland on 0114 2873432 for more details

29th to 31st Aug '15

IMAC UK Nationals, Barkston Heath, Nr Grantham, Lincs. Contact Mal Green: mgreen65@hotmail.com

1st/2nd Sep '15

Hastings Model Flying Club show/fly-in at Middle Bridge (A259) between Bexhill and Pevensey, East Sussex. Includes

BMFA scale competition. All types of aircraft welcome including turbines. Camping available from Monday 27th August. Charge to non-HMFC members £25 includes unlimited flying, non-campers £5. Public also welcome, programme £5 per car. Trade space available. To book contact Les Eagle on 01634 327228. See us on Facebook and HMFC.org

4th to 6th Sep '15

Scale Gliderfest 2015, hosted by the Clywd Soaring Association, centring around the picturesque town of Llangollen, amongst the magnificent scenery of North Wales. Proof of insurance required. ALL FLYERS please book in at the Ponderosa Café at the top of the Horseshoe pass before proceeding to the flying sites. The agenda for the weekend is available on the club's website, www.clywdsouaring.co.uk, or for more information contact vicsteel@modelmaker.orangehome.co.uk or tel: 01516 786920, mobile 07742 727881

5th/6th Sep '15

LMA Much Marcle, Herefordshire (HR8 2LX) further details from Paul Needham 07949 214282, Email: mail@paulneedham.plus.com

6th Sep '15

GBR/CAA F3A League competition. Grimsby. All schedules. See gbrcaa.org then forum 'Competition News' for details and 'Competition Entry Form' for fees and payment. Visitors welcome but please contact Contest Director, Peter Scoles on 01472 507039 for details

12th Sep '15

Wolves Scale Glider Fly-in, Long Mynd, Church Stretton, start 9.30 am. £3.00 entry fee, proof of insurance cover required. More details, Mark H. Richards, 6, Saxon Road, Penkridge, Stafford, ST19 5EP. Tel: 01785 712445. Mobile 07921 210629. Email: markhrichards@yahoo.co.uk

12th/13th Sep '15

F3A Triple Crown. Invitational team competition: England, Ireland, Scotland, Dumfries Scotland. Visitors welcome but please contact Contest Director Adrian Harrison on 07976 244004 for details

12th/13th Sep '15

Shilton Vintage event, for further details contact Nick Blackwell, Email: nick@nickblackwell.co.uk, Tel: 01285 657610

12th/13th Sep '15

The Southern Model Show, at Headcorn Aerodrome, for more information and ticket details visit www.headcornevents.co.uk

13th Sep '15

North London MFC Electric Day, Warren Lane, Baldock, Herts, SG7 6RR. Flying from 10 am. BBQ and drinks available. All pilots need BMFA A certificate or LMA proficiency, those flying >7 kg models need BMFA B certificate or LMA proficiency. Proof of insurance required. £5 pilots entry fee. Contact Maurice Northcott on 07866 105721 or Email: mail@mpnld.fsnet.co.uk

18th to 25th Sep '15

Devon 2015 Modelling Holiday, Ladram Holiday Centre. A weeklong residential pre-bookable event – only persons booked through the MAA and staying at Ladram able to participate. All types of models are welcome and power flying will take place on a full size airfield in the locality. All participants must be covered by adequate third party insurance. Caroline Scoles, Tel: 01472 322874, Email: carolinescoles@hotmail.co.uk

19th/20th Sep '15

The Balbedie Funfly Event, hosted by the Balbedie Aeromodelling Club, Balbedie Farm Nr Kinglassie, Fife, KY5 0UE Scotland. Open Event all aircraft welcome. BAC's great BBQ and refreshments available, bring your friends and family. Toilets provided. Proof of Insurance to fly please. Balbedie Aeromodelling Club, www.balbedie-aeromodelling-club.co.uk, contact club secretary Colin Morrison at secretary@balbedie-aeromodelling-club.co.uk for more info

26th Sep '15

GBR/CAA F3A League competition. Skelbrooke. All schedules. See gbrcaa.org then forum 'Competition News' for details and 'Competition Entry Form' for fees and payment. Visitors welcome but please contact Contest Director Bob Rowland on 07969 456441 for details

26th/27th Sep '15

Festival of Flight including the Vic Smeed Memorial Day (bring and fly one of his designs). Vintage R/C models welcome, all disciplines of sport flying also welcome. Directions: Old Warden Airfield, Beds.SG18 9EP. BMFA 'B' certificate to fly on the R/C flightline at these events. All pilots are required to show proof of insurance and BMFA membership, which shows 'B' certification. Please carry these documents with you on the airfield, as you will not be allowed to fly without them. This is a requirement of the Shuttleworth management. All types of model are welcome at all events (maximum weight 10 kg). Contact: Ken and Sheila Sheppard; Email: modelair.oldwarden@gmail.com or phone 07799 132999

3rd Oct '15

Huddersfield & District MAC Swap

Meet, at Shepley Methodist Church Hall, Penistone Road, Shepley, Nr. Huddersfield, West Yorkshire HD8 8DB, 9 am to 12 pm. The Church Hall is situated on the A629, approximately half a mile North of Sovereign crossroads (A629 and A635), on the outskirts of Shepley village. Entrance Fee £3, tables FREE to sellers, 20 tables, plus bring your own camping tables. No table bookings. Parking for 30+ cars to rear of Church Hall. Refreshments available; tea, coffee and bacon sandwiches! Contct: 01226 766636, Mobile (3rd Oct. ONLY) 07790 647827

4th Oct '15

GBR/CAA F3A League competition. Hurley. All schedules. See gbrcaa.org then forum 'Competition News' for details and 'Competition Entry Form' for fees and payment. Visitors welcome but please contact Contest Director Adrian Harrison on 07976 244004 for details

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THE SPORT CHANNEL

KK Bandits, ultrasonic engine cleaning and the American 'Hotbox' are amongst the topics revisited this month by our ever popular sport model columnist, Gray

This Month's Wise Words

Whenever we run an item on expat British modeller, designer and author, George Stringwell in France, and his growing fleet of electric conversions, mail inevitably comes in from around the world, full of admiration at his craftsmanship and often asking how he does it. The latest project off George's board is as distinctive and attractive as any in his 'Technostalgia' fleet but it has a special poignant and personal significance.

George explains: "My first Keil Kraft Bandit, built in 1954, was also my very first power model, so the design has special significance for me. I had been building and flying from the age of six, but my progress improved dramatically after my older sister met her future husband, Eric, when I was ten.

He was a great aviation enthusiast and soon became involved with me in building models; strangely enough, with my four years experience of rubber and glider models it was I who taught him how to build but his help was invaluable in providing transport and financial assistance to supplement my pocket money, all of which was spent on modelling.

He bought me the E. D. Bee for that first Bandit – and for the next twenty years we explored all types of modelling together, up to and including radio control, until I married and moved away.

Above: George Stringwell's latest, the Keil Kraft 'Bandit'. The seventh he's built since the 1950s, when the design was his first power model. George's electrified R/C update represents a nostalgic tribute to his early years in the hobby

"TIME IS A BANDIT..." (COUNTRY SONG LYRIC)



George's faultless tissue over mylar covering continues to attract a great deal of interest. KK Bandit's artwork is all created from doped-on tissue cut outs. Inset: The Bandit's nose art tells a story – see text

Just a few days after deciding it was high time I built another Bandit and starting work on this electric RIC version, I heard that Eric had passed away at the age of 89, a sad coincidence which immediately lent great significance to the model. And this is why the model carries the individual name 'Spirit of '54' on the nose.

The new Bandit has turned out well; at 16.5 ounces it is 4 ounces heavier than that first free-flighter, but that's no problem – at least I won't have to chase it and it shouldn't get stuck in a tree as in 1954! Power is a 28 mm outrunner with 12 amp ESC and 1300 2S LiPo, rudder/elevator/throttle control.

The model is covered in document laminating film with Esaki Liteflite tissue on top. Finish is nitrate clear dope and apart from the spray painted nose cowl all the colour trim, lining and lettering is tissue.

Full throttle gives 55 watts, which is plenty and I expect most of the flying will be carried out at half throttle. I can report it is an excellent performer. It now has a 9 x 4.7 APC slowly prop, which has upped the full throttle watts to 70. Less than half throttle is required for cruising, whilst a bit more gives a nice climb. And at full throttle it goes into a lovely left hand spiral climb at about 45 degrees without any interference from me, just like my later FIF ones, which had Frog 150 power and certainly faster than the 1954 E.D. Bee powered one - just exactly what I wanted."

Thanks, George. A beautifully created model as ever, and a very touching background story that many readers



Following George Stringwell's lead, another master modeller is about to try mylar/tissue covering. Sid King chose the ever reliable Mercury Matador for his first attempt. Beautiful woodwork as ever. As Sid says: "Here's the sticks, now for the tissue..."

will identify with. George's covering and finishing techniques have attracted a lot of interest, with readers planning building projects specifically to try tissue over mylar covering. Respected Gloucestershire modeller Sid King has just built our old favourite, the Mercury 'Matador' and at the time of writing he was about to give it 'the treatment'.

Heatshrink document laminating film, as used by George, is readily obtainable

from office and art supplies outlets, whilst specialist model good suppliers can offer mylar in various weights and grades. We can recommend Mike Woodhouse's Free Flight Supplies website (address in 'Contacts') in which you can also find many other unusual and useful modelling items.

For anyone wishing to have a crack at this covering method, I can send you a helpful 'how to' article, if you just email me at my address at the end of this column.

How Did I Think Of That? Astonishing...

One of the most popular handy hint items that we've run in the past few years was on the modelling uses for an ultrasonic cleaner. I was lucky to pick up mine, a James 'Ultra 7000' in a closing-down sale at a local store for a bargain price. And I would say that it's repaid that many times over.

Small units like this, aimed at the consumer market, tend to be used for cleaning the likes of jewellery, watches, specs, CD's/DVD's, shaver heads and printer cartridges and do an excellent job. Ultrasonic sound passes through a bath of warm water, creating bubbles that break down dirt and deposits of all kinds.

The most obvious modelling application is cleaning engines and I've managed to get several solidly gummed-up specimens looking very respectable and running fine, using repeated long cleaning cycles with a little washing-up liquid added to the water.

Just recently my own cleaner was pressed into service in its jewellery cleaning mode. A friend who works in a trendy Cotswold fashion house arrived at work to discover, to her horror, that the shop's main window had sprung a leak in overnight rain, soaking everything on display on the windowsill, including some smart costume jewellery.

Two expensive necklaces were looking decidedly rusty after spending the night in a puddle. When my friend called her boss, he sniggered, "Well, that's the problem with this 'solid silver'!"

Soon after she asked if I could try the ultrasonic treatment on them as a last resort. And sure enough a couple of long dunks in the Ultra 7000 had them in saleable condition again!

Then, by another of those quirks of coincidence, longtime contributor and friend of the column, Chris Atkins, got in touch to pass on the following: "One of my club members, Terry Letchford, came up with the info that the 'Astonish' brand of dishwasher powder is great for shifting congealed castor from engines! I've tried

it and it works well. Previously I'd used Dreft or Tide – once only, each to discover that they reacted with the aluminium in the crankcases and turned them black. No reaction with Astonish. Combined with a higher temperature in the ultrasonic bath the stuff just floats off!"

Thanks to Chris and Terry for that. I can only find Astonish dishwasher detergent in tablet form, so I presume this is the same stuff. I'll give it a try. (Trying this at home? Please experiment first using a scrap engine part – KC)



Your author's James 'Ultra 7000' ultrasonic cleaner is back in action! Just recently gave 'Sterling' service in shock fashion house scam! Seen here in its more regular line of work, cleaning sorry looking, gummed up engines. Inset: a new secret weapon – Astonish dishwasher detergent!

A Hot One From '77...

It was good to see that our piece last time on the outstanding 'Aquila' thermal soarer of the 1970s and 80s stirred some memories. I've been pleased to send out details of the plan to existing fans and potential new converts.

In 1977, the year in which I built my Aquila, I built another extraordinary model, prompted by my voracious consumption of American model publications. My favourite mag, Model Builder, ran a plan feature for a class of free flight rubber model called a 'P-30'.

I'd never heard the term before and it turned out that the P-30 concept had been devised as simple rubber power duration competition class. It was for small models with no dimension larger than 30", a minimum empty airframe weight of 40 g, maximum rubber motor weight of 10 g, using a commercially available 9" diameter plastic prop.

Reports of P-30 events sounded fun and the models looked like an exercise in building and careful weight-saving.

The model featured in MB was the 'Hotbox' by the prolific F/F designer, photographer and artist John Oldenkamp (who passed away just last year), who coincidentally had earlier designed my favourite chuckie, the 'Lunchbox'!

The Hotbox incorporated a lot of Oldenkamp's trademark inventiveness. For a start, its structure consisted almost entirely of 3/32" square balsa. Even the wing structure was a strip framework, with ribs made from short sticks, cracked and glued over a vertical spar, giving a triangular airfoil. Then, another square section spar was laid across the forward section, raising the tissue covering into a more conventional section and providing a turbulator effect. I remember taking a long time over my Hotbox, but it was a real pleasure to build and it was, at that time, the best covering job I'd done with Jap tissue. I was even able to get hold of the correct prop, a Peck Polymers 9" free-wheeler as, at the time, the long-gone and much-missed Modeller's Den was importing them.

Although this little comp ship seemed rather specialised, I did manage to get some great flying in with it. And even in the late 70s people were starting to ask, "How do you fly without radio?" Nothing is new, apparently.

Of course, there was no comp scene for P-30's back then. But it was the respected British authority on all things F/F, John O'Donnell who got the class moving in this country and published the first Brit P-30, the 'Teacher's Pet' the following year. As a class, P-30 has come into its own over the past decade or so, but has long outgrown its simple roots with the incorporation of high tech materials, and all round sophistication.

When US reader Raymond Lefrancois rediscovered the Hotbox recently, it reminded me what neat little sport flyers they can make for small fields. I even dug out a rather tatty photo from my album of a gaggle of my models on my lawn in 1980, showing the Hotbox still intact. I recall that

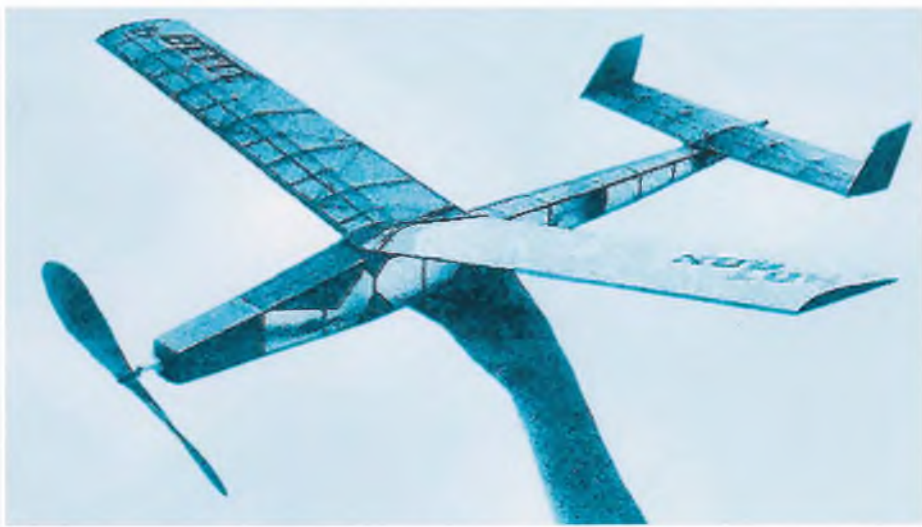
it actually survived into the 1990s but met its end when someone not accustomed to small models, and completely oblivious to its presence in a club display, trod on it!

If you'd like to try this design for yourself, select some of your best 3/32" sq and send me an email for a free download of the plan and article. Usual terms and conditions

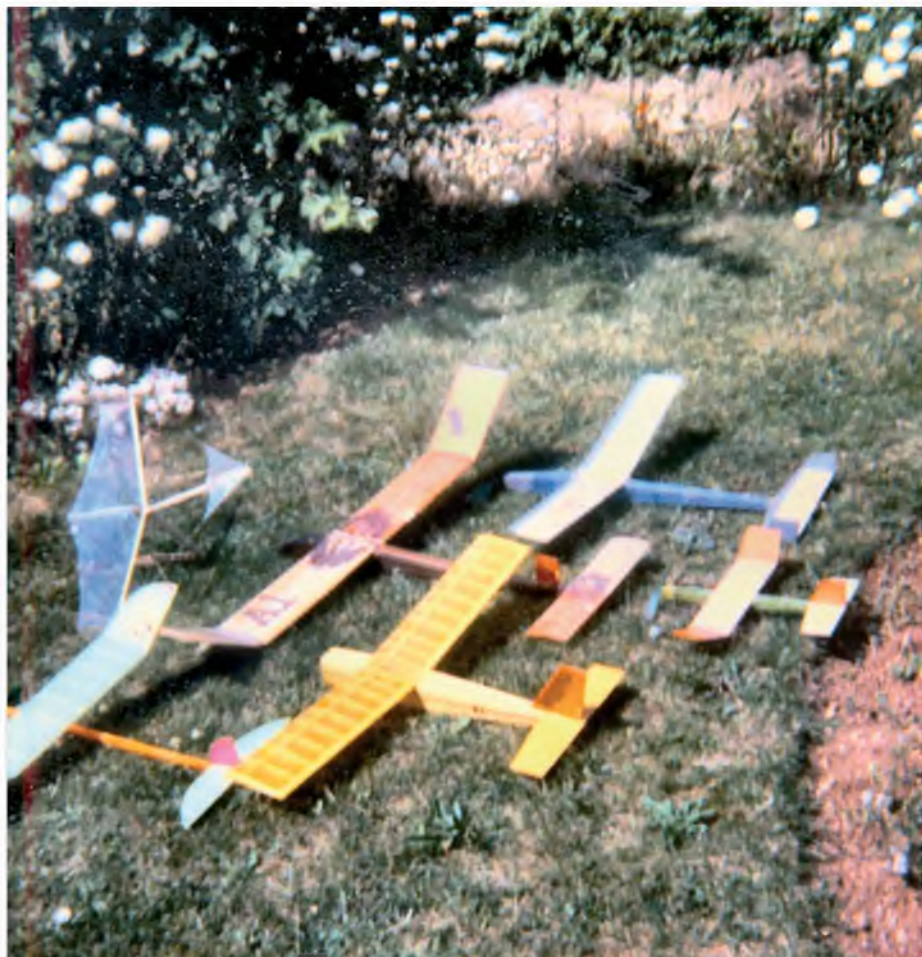
apply though – if you build it, you send us the pics and story. Everybody wins.

Contributions, please to The Sport Channel, c/o the Traplet Publications address.

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This one cropped up unexpectedly in our memories of 1977 last time. The 'Hotbox' P-30 rubber model appeared in print that year - the first example of this comp class model we'd seen. Built one, too! (Photo acknowledgement and credit: Bill Northrop/MB)



An attempt at a 'fleet shot' by your author shows that the Hotbox P-30 (blue and white model at rear) was still around in 1980. Also in there is an ex-Andy Crisp A1 F/F glider converted to single channel R/C and a foldaway, flex-wing CO2 microlight!

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NEXT ISSUE



Senior Sassy

Bill Bowne has upsized his popular Sassy design to bring us Senior Sassy, a 48.5 inch span sports aerobat for 3S motor set ups. An E-flite Power 25 brushless motor powers the prototype 'big sister'! Since the little Sassy worked so well as an advanced trainer, sport model and all-round utility design, scaling it up made sense. Just as the little Sassy is a dependable, comfortable, yet acrobatic flyer, so is the Senior Sassy. Plus, the Senior Sassy is decidedly less vulnerable to the wind and is a bit easier for older eyes to see!



Days Of Speed And Thunder 2015

Every year the town of Rothenburg on the German/Polish border, East of Dresden, reverberates with the awesome sound of multiple pulse jets, some being flown in ultra-fast R/C models, but some also powering weird and wonderful jet propelled machines like man-size trikes! This adrenalin soaked festival of flame and noise is appropriately called 'Days Of Speed And Thunder'. Steve Dorling was there to report - and fly - at the 2015 event.

SEPTEMBER 2015 ISSUE ON SALE THURSDAY 20TH AUGUST



WW1 Scout

Graham Wren guides us through the build of his detailed replica of S.E.5a E5808. The S.E.5a is a very popular subject for scale modellers. It has ideal proportions for a model and there are many plans and kits available but Graham couldn't find a plan that was both true scale and suitable for a Laser 70. So he bought a larger plan and had it reduced to give a wingspan of 54", and then traced the outline and redesigned all the internal structure so that he could add oodles of fine scale details.

PLUS...

More features, columns and reviews from across the complete spectrum of the R/C model-flying hobby

All contents are subject to change without notice

THE SEPTEMBER ISSUE WILL BE ON SALE THURSDAY, AUGUST 20TH, 2015.

Order your copy TODAY from your newsagent or model shop. Alternatively check out the Subscription Offers in this issue and be among the first to take advantage of our FREE classified advertisement service

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The Acro Wot has been an amazingly popular model for many years now and we decided the best thing we could do to improve it was to make it larger! So here it is, combining the superb aerobatic abilities of the original model with the increased docility brought with the larger wing area and weight, this being particularly noticeable in the windy weather. Primarily developed for petrol engines of 25 - 35cc, the Acro Wot XL can also be powered by suitable larger glow engines if preferred.

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