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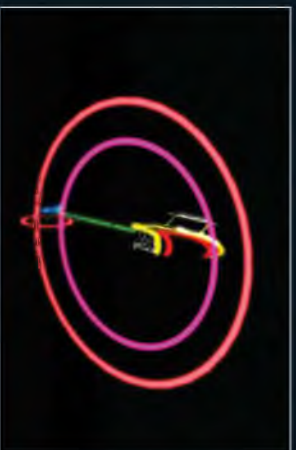
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RocHobby has modified its design of the Bell P-39 into the Thompson Trophy racer, Cobra II. The 1946 race was won by Alvin "Tex" Johnston flying Cobra II. Being able to achieve a true airspeed of 420 MPH at sea level, it was simply unbeatable that day. FMS has replicated Cobra II in its 980mm Series for those that want a truly different high speed aircraft to fly.

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E&OE

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RC
**MODEL
WORLD**

JUNE 2015 • ISSUE #377



FRONT COVER

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PRE-FLIGHT

Welcome to the June issue of RC Model World. Finally the weather seems to have taken a turn for the better. The sun is out, the wind has dropped and there's plenty of spring flowers and lush green growth to put a smile back on our faces. Best of all I've been able to make it out to the local flying fields and to catch up with some test flying of review models (although the weather still has a bit of a knack of turning a bit sour when the weekends come and it's time for some personal flying!).

During a test flying session recently a couple of local flyers were also present. During a coffee break the banter turned towards developments in the hobby. I should just mention that the flying field in use that day is used by a group of R/C helicopter enthusiasts, but who generally fly just as many fixed wing planes as rotary types. So with their main interest being helis, I was somewhat taken back to detect some antipathy to the most recent 'next big thing' type of R/C model – multi-rotor drones!

As the type of modeller who likes to fly anything with wings or rotor blades, the latest drones give me the chance to not only fly another type of model aircraft, but also to engage a little bit in another of my passions, which is photography (although there's still some way to go though before the cameras supplied with hobby level quads can match a decent hand held camera).

Of course, with my job I am very fortunate to be able to try out some of the latest multi-rotor machines, but even so I find it interesting that these guys, whose own preference towards helicopters led them to want to break away from predominantly fixed wing local model clubs to form a group of like-minded individuals, should have formed negative opinions about what are, after all, another form of rotary models, albeit ones that arguably take far less skill to pilot. There's little doubt that they probably received their own share of disapproving comments from less tolerant fixed wing pilots, whose attitude to helis has only recently softened after trying their hand at small helis during club indoor flying sessions and realising just how much fun they can be. Ironically those same 'nimby' types are now probably more tolerant of drones than our heli buddies as they also get to have fun with the small versions when indoor flying. Life's funny like that!

Talking of aerial photography, there is another way apart from using planes and drones – attach your camera to an R/C paraglider! This month one of our reviews covers a versatile radio controlled parapilot called Max, who can either be flown as a standalone glider from the slope, or fitted with an electric powered backpack, in which guise we have tested him for this month's magazine.

Our other reviews include the sleek Smoove aerobatic model from Dynam. And whilst in the aerobatic groove we catch up on flight trimming with the recently tested Monolog 70 F3A practice plane by BJ Craft. If you want a model that offers freestyle and 3-D performance, how about the Weston UK Capiche 52, which is the model that we flight tested when the weather finally broke. We also take a close look at the Sanwa Aquila-6 as the latest in our reviews of club level sport radars.

Features this month start with the low down on piano wire; Peter Miller shows how to bend it to make undercarriage legs and how it can be used to make some useful tools. Derek Small visits the new home of DB Sport & Scale in South Wales, and Bill Bowne continues his short series on model design with a look at DIY biplanes.

Talking about biplanes, if you fancy building one but don't want to be bothered with interplane struts then look no further than Peter Miller's latest design, the Floozy. And if you like to fly fast and low then you will want to pullout our free plan and get cracking with the sleek E-Bandit from Graham Dorschell.

Add a smattering of regular columns and we hope you will enjoy another bumper read.

Happy Flying!

Kerin

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Kevin Crozier

Editor | **Radio Control Model World**

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RC MODEL WORLD

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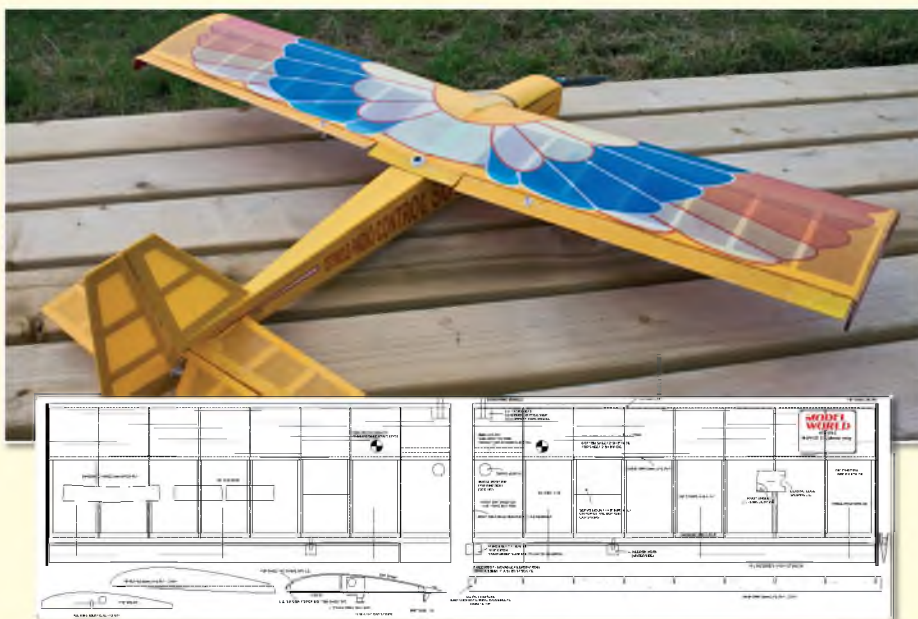
NOVICE E AILERON WING PLAN

Some readers who were quick off the blocks when starting to build their own Novice E models from the Free Pullout Plan in the April 2015 issue found that their builds came to a premature halt when they found out that we had inadvertently missed off details to build the aileron wing. Our original intent was to show one wing panel with an aileron, and the other without for those wanting to build a simple 3-channel version. Instead the published wing is all of the non-aileron type.

Our apologies go out for any inconvenience that this may have caused. To enable regular readers to build an aileron equipped version of the Novice E we have placed a PDF drawing of the full wing on our website. Please visit the following link:

<http://www.rcmodelworld.com/article.aspx?a=6422>

Alternatively, you can request a copy of the PDF file from Customer Services by telephoning 01684 588599, or email: customerservice@traplet.com



FPV QUADCOPTER RACING

Warren Sherman, Chairman of the Bury Metro Model Flying Club, writes with details of an exciting new type of R/C competition:

"The Bury Metro Model Flying Club are delighted to announce that we have secured what we believe is the first permanent, purpose made FPV quadcopter racing site in the North West of England, if not the entire UK."

In co-operation with the Forestry Commission an area of Drinkwater Park, Prestwich has been approved for regular race meetings on an area which offers a challenging yet safe course over a mixture of scrubland and wooded landscape.

Alongside the course is a large concrete

area for parking, pits and spectators. The site is secluded and yet easily accessible by well-maintained roads and footpath.

Additionally, at our Simister site, we have acquired an additional field for occasional use as a flat field obstacle course for FPV quadcopter racing.

Bury Metro MFC is affiliated to the British Model Flying Association and together we hope to bring the sport to as many people as possible.

We are also preparing for launch a new website called the 'British FPV Racing League' to promote a nationwide league to cater for FPV Racing."

In a later letter, Warren also adds:

"In co-operation with Nigel Tomlinson, Chairman of the newly formed British FPV Racing League, which aims to bring together racing groups from all around the UK, we will be holding a Grand Opening Festival at our site on 25th July."

We have pledges from a number of sponsors and will be putting on exhibition races, as well as our first competitive race. There will also be trade stands and entertainment throughout the day."

For further details about the Drinkwater Park site and the club's plans please contact Warren at this email address:

chairman@bmmfc.com

ACCURC LAUNCHES FIXED WING UPDATE



Following the successful launch of AccuRC in July 2014 the team behind this advanced flight simulator have announced the release of a Fixed Wing update. This provides customers with 10 fixed wing aircraft, with many more on the way.

AccuRC was originally launched as a

dedicated helicopter only simulator aimed at providing high levels of realism. It uses real time aerodynamics and physics to provide users with a powerful simulation experience.

The introduction of Fixed Wing aircraft now provides a much broader experience for a wider range of R/C flyers and provides them

with the same unique benefits regarding realism that existing helicopter flyers have enjoyed.

Updates are freely available to existing customers, along with new model and component content, which is released on a continuous basis. Customers can adjust model parameters, change components and learn to fly exact replicas of real model aircraft.

AccuRC is aimed at both advanced pilots wishing to practice complex manoeuvres and novice R/C pilots wishing to familiarise themselves with model flying in a meaningful and effective way.

AccuRC is available through a broad range of R/C retailers or directly from www.accuarc.com

For more information please contact Roger Hamilton: Email: roger@trasnatech.com

Telephone: 07764 533992

MORE ON FPV RACING

Hot on the heels of the Bury Club's announcement we received this information about the newly formed British FPV Racing League from the League's Chairman, Nigel Tomlinson:

"Rarely does a new sport or hobby capture the imaginations of so many people worldwide as FPV Multirotor Racing has. America, Australia, Canada and Europe are all forming leagues and competing in this very exciting sport. In the UK the same is starting to happen, from small groups of friends putting on informal race meets to larger, better organised groups such as FPV Scotland, with over 170 members. Inevitably all have different race rules and are trying to make their way independently of each other.

Now a group of FPV pilots have come together to form the British FPV Racing League, made up of pilots from FPV Scotland, Multi-Rotor UK and from across the country. The British FPV Racing League has one clear mission: to promote and protect the sport of FPV racing by bringing together all the independent groups and giving them one voice.

Setting out race rules will ensure that the sport is safe, legal, challenging but above all fun.



A key aim of the League is to keep the sport accessible to all. Race classes and rules have been designed to prevent the situation where those with the most money win the most races; we want the sport to be about the flying, where practice and skill are the pilots' best tools.

The British FPV Racing League will offer help and guidance to any group wanting to start their own racetrack or club, with practical assistance such as risk assessments, written proposals etc.

Key to the success of the sport will be permanent FPV race tracks where pilots can meet and race on a carefully designed course that is safe, challenging and fun, and where

teams will form to represent each race track and inter-club competition will flourish. We hope this will lead on to the first official British Championships in 2016.

With the opening of the Drinkwater Park track, and two further tracks in Scotland and the Midlands in the pipeline, our dream is now becoming a reality.

The British FPV Racing League is non-profit and is open to all. We encourage other groups to join us and have a say in how this amazing sport is moulded for the future. The British FPV Racing League website is full of information and advice to assist groups in starting their own clubs. There is a list of the current pilot approved race rules, as well as a calendar promoting race meets around the country.

The British FPV Racing League is also committed to promoting the safe use of multi-rotors and the website reflects this."

For more information on the British FPV Racing League please visit their website at: www.bfpvrl.org

*Or you can email the following contacts:
Chairman, Nige Tomlinson: Nigetomlinson@bfpvrl.org
General Secretary, Eamonn Faulkner: Eamonn@bfpvrl.org
Scottish Secretary, Graham Strachan: Grahamstrachan@bfpvrl.org*

BMFA EXAMINER AND INSTRUCTOR WORKSHOPS

The BMFA have also been active with regards to multi rotor aircraft, and other emerging technologies. Duncan McClure, Controller of the BMFA's R/C Power and Silent Flight Achievement Scheme gives more details:

"With the introduction of more and more technology into our hobby the BMFA Achievement Scheme Review Committee has been very busy over the winter period. Notable amongst recent developments has been the introduction of A and B tests for Multi-Rotor aircraft, and the development of a new R/C Flight Training Manual, 'A Flying Start', which now covers Power and Electric Fixed Wing (including electric gliders) and replaces the old power and electric versions of the Up & Away booklet.

The technology challenges that multi-rotor craft and modern helicopters present to Examiners can be quite significant, primarily because of the many modes of stabilisation that can be used. In order to assist both Examiner and Instructor understanding of new technologies, and also to help improve consistency, the BMFA are promoting a national programme of Examiner and Instructor workshops. These are being organised and run by each of the 14 BMFA Areas.

The Examiner and Instructor workshops that have been run so far have been universally acknowledged as being of great benefit. They provide an opportunity to share experiences and learn how others tackle some of the challenges the tests can throw up, as well as giving a chance to learn about, then discuss and debate the new technologies, changes to the tests and any experiences or issues with the achievement scheme in general.

This year will also see 'A Flying Start' discussed at the workshops, which should be of particular interest to the many Instructors who are, after all, the unsung heroes of our hobby. They work tirelessly to help newcomers to make the best and safest start they can, and ultimately help individuals prepare for Achievement Scheme tests.

The availability of ready to fly models, of all kinds, is bringing a new breed of modellers to our hobby and collectively this is an important opportunity for us to help them become responsible and talented model aircraft operators.

If any of your readers are Examiners/Instructors/Club Officials or just interested in becoming involved in model flying instruction and or examination, then please contact your local BMFA Area (details on the BMFA website) to check on when your Area's workshop will be held."

JOIN THE TRAPLET AERO TEAM

Why not turn your passion in to your profession and become a part of our model aircraft editorial team?

We are seeking a well-organised person with a passion for R/C aeromodelling who has an excellent knowledge of the hobby. The ideal candidate would be someone with a keen interest in R/C Jets but who also has

good experience of a wide range of other R/C model aircraft disciplines. We are looking for highly literate person with a good command of the English language, a sound working knowledge of MS Word, Excel and a good understanding of social media. This is a part time position and involves working within a team. We would prefer a candidate who

is able to work from our offices in Malvern; however, for the right candidate, this is flexible.

If you are interested in this role please send your CV and a covering letter to: tom.stephenson@traplet.com

Or if you're simply interested in writing for us please contact: barry.atkinson@traplet.com

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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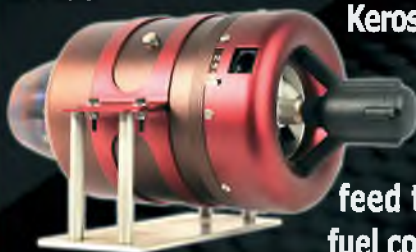
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BLADE MACH 25 BNF



The Blade Mach 25 racing drone makes getting into 250-class quad-racing easy. Thick carbon fibre plate construction with robust aluminium supports makes this

fully assembled drone both lightweight and durable. Brilliant LED lighting helps with orientation and identification. The powerful motors are canted forward help give you an edge in performance, while the protected ultra micro FPV camera is soft mounted for the best view. SAFE technology is built in, with three flight modes provided. Four 2300 KV motors are installed and a 1350 mAh 3S 11.1V LiPo is provided. FPV ready.

HOBBYZONE STRATOCAM



Join the growing community of R/C pilots recording HD video of their high-flying adventures with the 1070 mm wing span HobbyZone Stratocam. Ideal for the aspiring aerial photographer this aircraft comes with everything needed to capture hassle-free aerial footage. Integrated SAFE technology makes the Stratocam easy to pilot so you can focus on capturing the aerial action using the compact EFC-721 HD camera included with the aircraft. £209.99 RRP

For more info visit www.horizonhobby.co.uk

HACKER MODEL LUNAK ARF



This semi-scale glider comes in several attractive colours, with full-colour full printing on all main parts. The glider is part of a series of SKG (simple known gliders) models from

Hacker Model Production. A strong, lightweight and durable construction of expanded polypropylene (EPP) contributes to excellent flight characteristics. The wings are covered with HACKERCOVER foil, which also provides good resistance to minor accidents. The model can fly on a slope or be fitted with a switchable tow hook for aerotowing.

www.zoomport.eu

HOBBICO BO-105 RTF EDITION



Hobbico, distributed by Revell, are now able to offer the Flitework BO-105 500 size pre-painted fuselage complete with

the necessary hardware, including a belt drive for the tail rotor for installing on mechanics such as the T-Rex 500E. An optional 4-blade rotor head is also available. Length 990 mm, flying weight approx 2750 g.

Available from Hobbico stockists and all good model shops or Email: uk@hobbico.de

FMS P-40B



The second of FMS's big 980 mm series aircraft has arrived! The P-40B is, like the 980 mm P-47, definitely a head turner. If you love warbirds and

enjoy the excitement of flying at high speeds, this aircraft will satisfy both of your desires. The stock 3-bladed props, a 3648 brushless outrunner, 4-cell battery and 70 A ESC means that the P-40B can attain speeds of up to 100 mph plus. The realistic scale appearance includes a hand painted pilot, detailed cockpit, authentic graphics, a three-bladed prop, wing stabilisers and an air scoop. £184.99 RRP

www.cmldistribution.co.uk

Our pick of the latest R/C kits and accessories

DJI PHANTOM TRAINER 1



The Phantom 1 Trainer is DJI's first-generation platform for learning to fly a quadcopter. It offers great performance and is ready-to-fly.

The Phantom 1 Trainer features an integrated GPS enabled DJI flight control system, enabling easy control while providing safe, stable flights of up to 15 minutes flight time. Features include a rechargeable battery, fail-safe and low battery warnings, and Intelligent Orientation Control. And with an additional GoPro camera mount you can start taking some fine footage from the sky.

www.dji.com



THUNDER TIGER RAPTOR E550

The Raptor E550 is now available as a kit version and has been approved by Thunder Tiger Team international

pilots, Nick Maxwell and Alon Barak. Also, the new sleek speed fuselage makes it more attractive than before. Engineered for top performance it features a two-piece lower carbon fibre airframe, ABS canopy with decals applied and requires one battery. It accepts the same size as E700 and E720 machines and has an easy to install fibreglass fuselage and a CNC machined metal rotor head. £399.99 RRP

www.amerang.co.uk

DYNAM HAWKSKY



The Dynam HawkSky V2 is constructed from durable but lightweight EPO foam. It only requires a small amount of assembly and is ready-to-fly within minutes. The power comes from a 1900 KV brushless motor, which will get you in the air with little effort. Of 1370 mm wingspan, it comes with a brushless 30 A ESC and a brushless motor. £109.99 RRP

www.cmldistribution.co.uk

STAUFENBIEL AQUILA



Whether fast or slow, in aerobatics or in thermals, or flying from a slope, the quality construction of the Aquila leaves nothing to be desired. The 2000 mm wingspan

Aquila has carbon fibre reinforced wings on the exposed areas to help achieve maximum stability. It features a two-piece wing and a two-piece tailplane. It is available as a pure glider or an electric glider.

STAUFENBIEL FLY BABY



Classic lines and great flight characteristics make this a faithful example of the full size. The 1400 mm wingspan Fly Baby is

a ready-made model from EPO foam material with a built-in 800 KV motor. Thanks to the high degree of pre-fabrication and the built-in servos you can have this model in the air in less than one hour. The detailed engine compartment, scale chassis, the included wooden propeller and the realistic flight characteristics will make this model a joy to own.

STAUFENBIEL QUANTUM



Just when you thought you had seen it all... Here comes a 1260 mm wingspan double-decker jet! The 90 mm 11-blade impeller unit and 1450 KV motor provides plenty of thrust and a great sound. The Quantum is constructed from a durable EPO-flex rigid foam and has built-in retractable landing gear. The flap equipped wings detach for fast and easy transport. In the PNP version nine metal gear digital servos and a 90 mm fan are pre-installed.

For more info visit www.modellhobby.de

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While I have been flying since the days of 27 MHz, never mind 35 MHz and 2.4 GHz, and have owned many sports aerobatic models – Chris Foss Wot 4, Dave Smith Models Saphir and the like – I'd never flown a F3A type aerobatic model. So when the editor asked me if I'd like to review Dynam's new Smoove aerobatic model I was very pleased.

I've flown several of Dynam's foamies previously and very good they have been, but this is a new departure for Dynam, as far as I am aware, being a fully built up ply and balsa model. The model is supplied with a motor and is ready covered, with a selection of user applied decals, leaving the user to provide the servos, ESC and radio.

If The Box Is Anything To Go By

The first thing that strikes you on receiving the model is the packing box. This is of a substantial reinforced cardboard construction, which should ensure the model is well protected during shipping. The individual components are packed in their own plastic bags for further protection. Initial inspection showed that

Finished model with undercarriage fairings fitted



Frank Skilbeck gets in the aerobatic groove after building and flying Dynam's F3A style pattern ship



Dynam must have studied the competition very closely as the overall construction was well thought out and well built. The covering was to a similar high standard and the ready painted cowl is very robust, with a lovely glossy paint finish and all the cooling vents already cut in.

Supplied with model is a Topcat G601 400 KV motor with a nice 17" x 12" carbon propeller and good quality plastic spinner. Although the model is supplied with an electric motor, and the instructions were written for this option, the kit also included a set of engine mounts and a fuel tank!

The instructions are supplied on three A3 sheets, which have step-by-step assembly photographs. But they do not give any information on the Centre of Gravity position or recommended control throws. There is, however, a warning not to fly the model at high speeds as the design, being a compromise between an aerobatic and 3-D model, incorporates large control surfaces and may suffer from flutter at high speeds.

On With The Assembly

Following the instructions I started by fitting the ailerons. These are taped in position for shipping but require hinging. Supplied for this are some hinges with fully pinned joints, which make for a secure control surface which moves smoothly and accurately. The instructions recommend installing these with cyano but I used epoxy as I feel this is more secure on this type of hinge and it also allows more working time. I applied a small amount of grease to the hinge point to stop this from becoming gummed up with epoxy.

Once the epoxy had set I installed the aileron servos and control horns. Each wing is supplied with two hatches to allow the servo to either be installed inside the wing or protruding. I went for the latter option, which is that shown in the instructions.

For the aileron servos I used some Savöx SH1350 digital servos with 3.7 kg/cm torque at 4.8 V (4.6 kg/cm @ 6 V) and these fitted easily in the opening in the supplied hatch. I secured the servo using cap head servo screws, which can be obtained from Model Fixings. If you haven't used these before I suggest you check them out; I find them much better than the normal crosshead screws.

The control horns supplied are very nice fibre board items, which are designed to

go in pre-cut slots in the ailerons. However they are supplied slightly too long and I had to cut them back a little to stop them protruding through the top of the ailerons. I also drilled a couple of extra small holes in the gluing area to provide more grip for the glue. Again I used epoxy for these rather than cyano, which is my personal preference. The control horn is connected up to the servo with a short direct control arm, with ball joint connections at each end giving a smooth and slop free linkage. Dynam also provide fibreboard control arms that can be attached to the servo control disk if you wish. But as the Savöx servos come with good quality control arms, I used those.

The wings slide onto a carbon fibre wing joiner, with alignment pins at the front and rear, and are retained by ply tabs and cap screws that thread into captive nuts in the fuselage. I added some washers under the cap screws to prevent them from deforming the ply tab.

The elevators were next and again these use the same hinges as the ailerons so the same procedure was used. One thing to note here is that the counterbalance is angled and if you install this with a very small gap this will restrict elevator movement, hence it's important that you check the elevator movement when gluing in the hinges. The elevator control horn is similar to the aileron control horns and again it had to be trimmed, this time to miss the elevator hinge at the slot position. Elevator control uses two elevator servos, with one installed inside each half of the horizontal stabiliser. These are fitted before the stabilisers are permanently fitted to the fuselage, so make sure you are happy with their operation before finally gluing the horizontal stabilisers to the fuselage.

The elevator servos are installed through the tailplane roots, and are screwed into the next rib in. Again, I used Savöx SH1350 servos, which were slightly too large for the cut outs. A little work with a PermaGrit file soon remedied this. Note that the use of separate servos means that your radio system will have to support dual elevator servos or a reversing 'Y' lead will be required. Having a transmitter that allows you to adjust each elevator servo separately means that you can get equal throws and



Components were well packed for shipping. The box is of a substantial construction

not introduce any unwanted roll. The control hook-up was identical to that used on the ailerons.

The rudder uses the same type of hinges as the other control surfaces, but on a trial fit I discovered that two of them wouldn't go fully into the rudder post on the fin. Rather than try and open up the slots in the rudder post and risk damaging some underlying structure, I trimmed the hinge tabs to achieve a good fit. Before fitting the rudder the tailwheel has to be fitted to the rudder. This gives the tail wheel quite a long standoff below the fuselage and gives the Smoove a very flat profile when sat on the ground, as noted in the flight test later. I would shorten this if I was building another so that the tail wheel can come up on take-off and allowing the Smoove to be rotated for lift off. The control horn is, again, a fibre board, which is fitted into the slot in the rudder. Control is via a closed loop system, with the rudder servo being installed under the canopy.

As for the other controls a fibre board control arm is supplied, which can be fitted to the servo disk to provide the required movement for the closed loop system. But I used a large Savox dual alloy arm, which fitted directly onto the Savox SC1258 servo I was using. Immediately behind the servo is a deflector plate, which directs the motor, ESC and battery cooling air out of vents that have to be cut out on the underside of the fuselage. This makes working on this servo a little fiddly; also threading the closed loop and elevator servo wires down the fuselage is a little tricky, but with some patience it all goes together quite well.

I installed the elevator and rudder servos in the positions shown in the photo assembly manual, but closer inspection of the fuselage showed that there were cut outs for elevator and rudder servos in the rear of the fuselage should you decide to go that way. It may be that they are provided for use if the Smoove is to be fitted with an I/C engine?

Fitting The Power Train

The instructions show fitting the undercarriage next. But due to the confined space in my workshop I decided to fit the electric motor. As the model seems to be designed for either electric or I/C power a spacer box is provided to ensure the correct standoff for the supplied motor. This standoff box is attached to the main fuselage motor mount using the already fitted captive nuts. These are slightly offset, so were a little fiddly to fit. But when attached the motor support provides the required right thrust and offset to ensure the propeller driver is accurately centred. The cowl was then fitted to provide clearance from the spinner. I used the masking tape method to mark the position of the screw supports on the structure and then transferred these positions to the cowl and drilled the cowl accordingly. The cowl was then fitted using self-tapping screws, with some slithers of fuel tubing to cushion the cowl and prevent it from cracking around the hole.

The undercarriage was slotted into its respective slots in the fuselage and



Above: Wings were well constructed, like the rest of the model



Left: Optional servo mounts are provided for the aileron servos



Below: Elevator servos are fitted into the horizontal stabilisers before they are attached to the fuselage. I opened the mounts to accept the Savox SH1350 servos that I used



Aileron and elevator control rods have ball connectors at each end for smooth, slop free, precision linkages



Control horns, rudder closed loop horn and servo adaptors are made from carbon fibreboard. Control rods are short and direct with ball joints at each end. Hinging is by high quality pinned hinges



Control horns had to be trimmed to fit the slots in the ailerons (left) and elevator (right)



High quality 400 KV motor with stand-off box to provide correct spacing with the cowl



Motor mounting has side thrust and offset built-in



The review model came with an electric motor, but included parts for mounting an I/C engine



Fibreglass wheel spats have ply reinforcement where they are secured to the undercarriage



Cowl comes ready painted and with cooling holes already sculptured in



Wheel spats are a good fit on the undercarriage. Note the supplied plastic spacer to provide wheel alignment

attached using machined screws into the preinstalled blind nuts inside the fuselage. The model comes with some fairly small wheels and very nice spats, which are retained on the undercarriage with a self-tapping screw. The undercarriage is a fairly slender metal affair, and it is assumed to be made from an aluminium alloy as it wasn't magnetic. There was quite a bit of spring under the model's weight. As our strip is not in the best of condition at this time of year it was decided to do the test flights with the spats fitted and leaving off the undercarriage fairings, which can be glued to the undercarriage legs.

The motor has a substantial prop driver, with a 17 mm retention nut. The spinner is a good fit on the 17" x 12" carbon fibre propeller and it has some tabs on the rear face that slot into grooves on the motor prop driver. It is all very secure and easy to fit.

My first run using an existing 80 amp Opto ESC was not very successful as the ESC played up and the motor wouldn't pull more than 20 amps and ran very rough. I obtained a 70/80 A Beatles ESC from Bondaero and that did the trick, but using my 5000 mAh 6S LiPo's I found that on the 17" x 12" prop it was pulling 75 amps at only 70% throttle. That's over 1600 watts and as the completed model weighed 3.4 kg, or 7.5 lb, that gives over 200 watts per lb – some pretty serious power. As this was close to the limit of the ESC a 17" x 10" APC E prop was fitted and this pulled 63 amps at full throttle, which is still over 1400 watts.

The final job was to install the decals. Dynam provide a large amount of very colourful decals for this but as the basic airframe is very classy I opted not to fit the full complement of decals but to keep it more restrained. However, the decals I did apply went on very easily and the finished model looks very smart.

Into The Air

While I normally maiden my own models, as I haven't flown this type of model before I wouldn't be able to pass constructive judgement on its capabilities. So I handed it over to Gary, a club mate who regularly flies aerobatic models of a similar type and size. Before flight testing we did a brief nose up test and this showed that the model had a 1:1 thrust ratio at half throttle, and 30 amps, on the 17" x 10" propeller.

When satisfied we lined the model on the strip and Gary opened up the throttle. The first thing we noticed was that it was reluctant to leave the ground, which we put down to the long tail wheel keeping the model level and restricting rotation. However, once off the ground it was up and away and flying very positively on half throttle. Just a few clicks of elevator trim were required for level flight. On the first flight, Gary put the Smoove through a few manoeuvres but mainly concentrated on flying for the photographer. After some 12 minutes of flying the battery had used 3300 mAh so we lined the model up for landing. Although the Smoove doesn't want to slow down it is easy to land with no drama.

SMOOVE

A few tweaks on the control settings and Gary put the Smoove through its paces. Rolls are very axial, loops can be as big as you like, knife-edge is pretty easy, inverted only needs a smidgen of down, stall turns need a largish rudder deflection and it will pro hang.

After the flight I flew the model a few days later and found it very easy to handle and it is by far the easiest model I have flown to do aerobatics with. It really does flatter the pilot. The only issue I found was that I couldn't get a stable harrier out of

the Smoove, but normal aerobatics are very smooth.

As noted earlier the instructions don't give a centre of gravity position or any recommend control movements. We settled on having the Centre of Gravity on the wing joiner, about 205 mm behind the wing leading edge at the fuselage. We also ended up with the following control throws:

Note that during the testing we didn't really explore the 3-D settings and possibly for 3-D the Centre of Gravity needs to go back a little and the throws need to be increased. But these are good starting points.

With the 17" x 10" propeller we recorded a maximum of 55 amps in flight. A flight with the 17" x 12" propeller on a different day gave a maximum of 75 amps.

	Normal		Acro		3D	
	Movement	Expo	Movement	Expo	Movement	Expo
Aileron	+/- 25 mm	-30.00%	+/- 33 mm	-60.00%	+/- 42 mm	-85.00%
Elevator	+/- 25 mm	-40.00%	+/- 40 mm	-50.00%	+/- 47 mm	-60.00%
Rudder	+/- 33 mm	-30.00%	+/- 40 mm	-45.00%	+/- 50 mm	-60.00%



Rudder assembly. Note the modifications to the lower hinges to prevent them fouling on the fin's internal structure



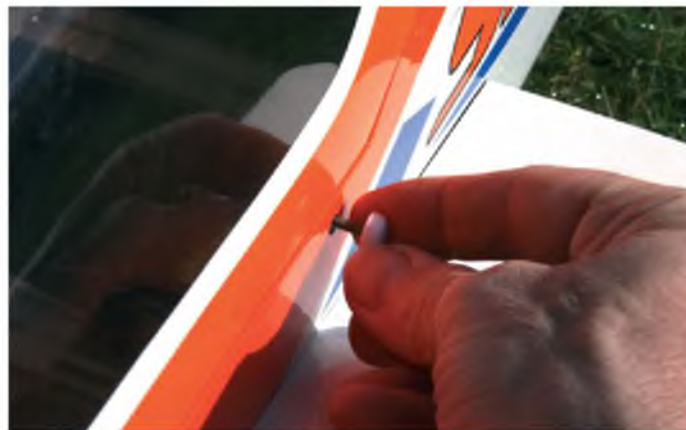
Rudder control uses a closed loop system. Note positive dual ball link control to elevator



Colourful self-adhesive decals are easy to apply



Plenty of room under the canopy for a 5000 mAh 6S battery. I made a small plate to mount the receiver above the wing joiner tube so that the battery could be moved further back if required



Canopy is secured by machined screws into captive nuts on either side of canopy. A very secure fitting, but gives slow access to the battery and electronics



Author poses with the Smoove before handing over maiden flight duties to the club's aerobatic supremo!



In flight Smoove looks, well... smooth! Only 20 amps or so are required to zip around in level flight



As expected loops are a real pleasure with this model



Smoove is stable in knife-edge flight



Slow and quick rolls are very axial. On low throws long, slow rolls are easy

Summary

The Smoove is a very well built aerobatic model. It has no apparent bad habits and flies pretty true. It is an ideal model for learning or improving your aerobatics. It seems to excel at traditional F3A type aerobatics and while the large control surfaces hint at 3-D capability it is a compromise in this area compared to a dedicated 3-D model.

The wheels and spats may not suit every flying site and I'm currently flying mine without the spats and with some slightly larger wheels until our strip improves.

As stated in the introduction this is the first Dynam model I am aware of to use a conventional built up construction. And if this model is anything to go by I hope they have more in the pipeline.

I'm really looking forward to getting some more aerobatic practise in with the Smoove. It really does live up to its name!

RCMW

MODEL WORLD DETAILS

MODEL INFORMATION

NAME:	Smoove
MANUFACTURER:	Dynam
DISTRIBUTOR:	CML Distribution
WEBSITE:	www.cmldistribution.co.uk/ (search for Smoove)
PRICE UK:	£329.99 RRP
MODEL TYPE:	F3A aerobatic
MOTOR:	G601 5030 400 KV
CONSTRUCTION:	Film covered ply and balsa

R/C FUNCTIONS

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

MODEL SPECIFICATIONS

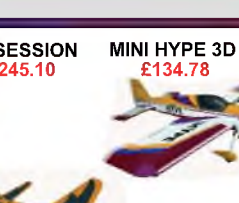
WINGSPAN:	1600 mm (63")
WING AREA:	4870 sq cm (5.24 sq ft)
LENGTH:	1660 mm (63")
QUOTED WEIGHT:	2,400 – 2,500 g (84 – 88 oz)
ACTUAL WEIGHT:	3,400 g (120 oz) with 5000 mAh 6S LiPo

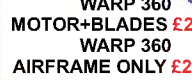
DISLIKES

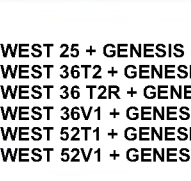
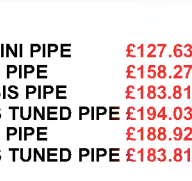
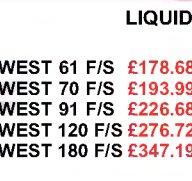
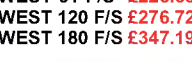
17" x 12" prop supplied is larger than required
 • Canopy screw fixings means that emergency access to LiPo is compromised
 • Instructions show no Centre of Gravity position or recommended control throws
 • Long tail wheel makes for extended take-off runs

LIKES

Well built and covered • Flying performance
 Smooth operator!

 CAPICHE 50CC £510.60	 OBSSESSION £245.10	 MINI HYPE 3D £134.78	 HYPE 3D £194.99	 CAPICHE 52 £239.99
 COUGAR 2000 £124.95	 VELOCITY 50 SIZE OR ELECTRIC £119.95	 MINI MAGNUM .30 SIZE OR ELECTRIC £102.09	 MAGNUMR £119.95	 DEPRON PLANES AVAILABLE IN 3MM OR 6MM WING SECTION £20.38
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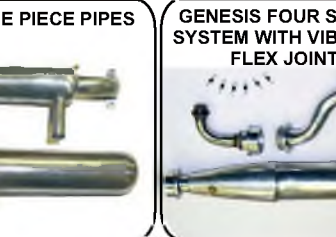
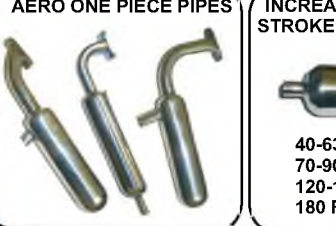
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SOME NOTES ON PIANO WIRE

Peter Miller shows how to avoid uneven undercarriages, lost wheels and sloppy holes

Peter puts the advice given here to good use when building his own design models such as the Scoville Stardust (Traplet Plan MW3721)

Piano wire, also known as music wire in the USA, is a very strong, springy wire. It is most commonly used on the undercarriages on our models but may also be used in the control system and for struts etc.

When used for undercarriages on average sized radio control models the most usual size is 8 Standard Wire Gauge (SWG from now on), which is a fraction over 4 mm. When used in control systems the more common size is 16 SWG, which is just over 1/16" or 1.5 mm. However, depending on use and size of model any of the sizes may find an application.

I prefer a wire undercarriage to an aluminium or carbon fibre unit because it allows for backward movement, which absorbs the shock of landing.

A club member made a slightly heavy landing with his ARTF and ripped the undercarriage out, a very common type of damage as anyone in any club will know. Since the nose turned out to be fuel soaked I built a new front-end on his model and modified the undercarriage to a wire one, in this case 6 SWG as the model was quite large.

In a later landing, where the wheels hit the edge of the runway and the model was forced onto its nose so hard that an aluminium spinner was smashed, the undercarriage was not damaged.

I know that some people have difficulty bending undercarriages, and especially, bending them accurately, so the first thing to look at is how to make a good, accurate piano wire undercarriage.

Bending Piano Wire

It is quite possible to bend wire up to 12 SWG with a big pair of pliers or a small vice but after that it becomes much harder. 8 SWG wire needs serious effort to get a good, accurate bend and for this you need the proper tools.

The best tool is a wire bender. These are quite expensive but they make life quite easy. And if you are planning to build a lot of models it will repay the cost many times over.

The other way to bend the wire is in a big solid vice mounted on a solid bench and with the aid of a hammer. This method is not perfect because the bend will be much sharper and there is a risk of actually cracking the wire on the bend.

The perfect bend will have a radius on it. The wire bender will give about a 1/8" radius to the bend. Using a vice will make it a sharp bend, unless you clamp a piece of round bar between the jaw and the wire. However, this is liable to slip and is not recommended. If the vice is your own you could file a radius on one jaw right at the end.

I have heard people suggesting heating the wire to red heat to soften it. Do not try this. Oh, you will soften it, but you can never get the original strength or spring back into the wire. Attempts to re-harden the wire will make it brittle.

If you don't believe me, try it. You will almost certainly end up with undercarriage legs like wet spaghetti or, even worse, like uncooked spaghetti!



This wire bender will handle 8 SWG with ease and can bend coils. It has even been used to bend 6 SWG wire, although it protested by snapping three of the stop bolts

Accurate Bending

I must admit that it took me a long time to develop a method of marking out the bending so that I got two identical undercarriage legs. In the end it was so simple that I felt embarrassed at not having thought about it before.

The system depends on the radius of the bend and the rod on the bending tool. I mark the start of each bend on the plan. Then I lay the wire on the plan and mark it with a thin felt tip marker where the mark is on the plan.

I then make the first bend and lay the

wire back on the plan and mark the start of the next bend, and make that bend. By marking and making each bend in sequence you end up with an accurate undercarriage leg. Repeat for the second one and you will end up with two identical legs.

It may be necessary to leave the first section over length to make sure that it engages with the stop screw. This can be cut off later when the axle is trimmed to length.

It is a good idea to make each bend a bit beyond the exact angle needed and then

bend it back a fraction to the final shape. This takes out a fraction of the stress in the bend.

Any rake needed between the leg and the mounting in the wing or fuselage can be put in later with the leg in a vice. This is easier and more accurate than trying to incorporate the rake while making the other bends.

When bending a one-piece undercarriage, such as might be used on a vintage model, start in the middle and work out towards the axles. Don't try working from one end to the other.



Making the first mark on an undercarriage leg. Note that the mark on the plan is at the start of the bend



Position the mark on the wire touching the bending post



Making a bend is simply a matter of pulling on the lever



Marking the second bend. By marking each bend after the previous one has been bent you get better accuracy



The completed leg shown against the plan

Cutting Piano Wire

Thinner gauges of piano wire can be cut with heavy-duty pliers but even 16 SWG can ruin the cutting edges of most pliers very quickly.

From experience I know that good, thicker piano wire can ruin a junior hacksaw blade before it makes any real impression on the wire.

The best method is to use a cutting disc in a Dremel mini drill set at high speed. I find that the Dremel heavy-duty discs are the best. The thinner ones are far easier to break so the extra expense is justified.

Never use a cutting disc without wearing safety goggles!



A cutting disc is the best way to cut thicker wire to length

Joining Piano Wire

When you need to join two wires the only safe way is to bind the two together with copper wire and solder them.

When I worked as a technician in a school one of the pupils was building a model and needed the front and rear legs of his undercarriage joined. I saw his teacher busy brazing the legs together. As the model was going to be a camera plane and was quite heavy I pointed out just how much the undercarriage had been weakened. As it happened the model was never finished so it didn't matter.

You can buy reels of 26 SWG tinned copper wire quite cheaply on eBay and one reel will last you for years.

Wrap the wire closely round the two pieces to be joined and then flood it with lead based solder. If you use cored solder you should not need any extra flux but if you are using non-cored solder you will need one of the fluxes. Good old Baker's Fluid is a recommended type.

You will need a good, hot iron for soldering. If you do not have enough heat the solder will not flow and take to the metal. I have a 40 Watt Weller iron that works well, surprisingly enough, but I also have a big 60 year old Henley Solon iron that holds the heat much better, even if it does take ages to heat up.

You will know a good joint when the solder flows smoothly over the joints and forms smooth fillets. Blobs that look like water on a non stick pan are not good joints and will fail.



The neat way to join two pieces of piano wire. Note how the solder has flowed right into the wire wrapping

Fitting The Wheels

Wheels can be held on by various methods. The common ones are collets or those push on spring washer type clips. But I have seen more wheels fall off using those methods than I have had hot dinners.

I have never seen a properly soldered on wheel fall off a model. Simply fit a washer and then wrap a few turns of copper wire round the axle and apply solder. That wheel is on for life.



This wheel will never come off until you want it to. A washer and a few turns of wire and some solder



This method is very scale of vintage aircraft. Works well for models

If you want to remove the wheel easily there is another neat method. Take a piece of brass tube that is the right size for the wire and drill a hole across one end.

Solder the tube onto the wire, leaving the cross drilled hole beyond the end of the wire. To solder the tube on first tin the wire. This means applying a coating of solder over the wire and then sliding the tube on; because of the solder you will have to apply heat to the whole thing and this will melt the solder between the tube and wire. This is known as 'sweating'. Once cooled make sure that the tube cannot come off.

Slide a washer over the tube and position at the inner location of the wheel and solder it. A few turns of copper wire will hold it in place.

Drill the wheel out to match the tube and slide it over the axle. Another washer and a small split pin will hold the wheel on very securely but it can be removed easily.

'Z' Bends

The most secure method of connecting a pushrod to a servo is with a 'Z' bend. There

are other methods but for perfect security at one end of the pushrod a 'Z' bend is better.

You can use a clevis or quick link at each end but that could allow the pushrod or snake to rotate and eventually unscrew at one end. Unlikely but if it can happen, it will one day.

You can also use those pushrod connectors with a hole and a screw that clamps the pushrod. They can come loose. I only use them on a Bowden cable to the throttle.

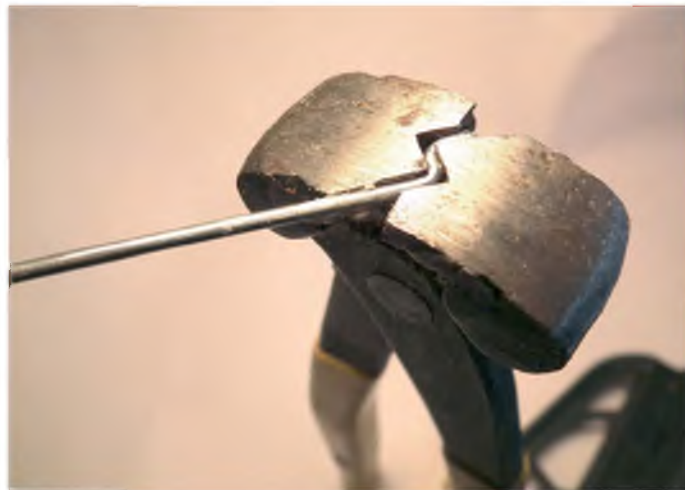
Many years ago making a decent 'Z' bend was a work of art. Now we have special pliers that do the job with one squeeze.

I have two types, one which just looks like a pair of pincers with zigzag jaws. They work very well on 16 SWG and smaller sizes of wire.

My other pair came from a friend in the USA. They form a really perfect 'Z' bend in 16 SWG wire and 2 mm pushrods but are not very good for smaller sizes of wire. They will also cut wire very easily. If you ever see a pair of these, buy them.



The normal 'Z' bend pliers. Position the wire and...



...one squeeze and you have a 'Z' bend



These American 'Z' bend pliers produce an really excellent 'Z' bend but are not so good for thinner gauges



They also have cutters for cutting piano wire

Drills And Reamers

Piano wire is often used in applications where it has to go through a hole. Finding the perfect drill to match the wire can be difficult. This is particularly important in control runs as an oversize hole will allow the control surface to be sloppy.

It is quite possible to shape the end of a piece of wire to make a simple drill. It is a good idea to flatten the end of the wire very slightly as this will give a very slight clearance hole.

The end of the wire is ground to a shape just like a normal drill. Just remember to make the cutting edges at about the same shape and angle. In use these drills would only be used to open out an under size hole so getting the central point is not so critical.

Once again, when grinding your wire with a Dremel or other mini drill wear safety goggles.

Reamers

When a really accurate hole is needed one can make very effective reamers from the appropriate size of wire. The method is very simple.

Take the piece of wire and cut the end to a sharp angle. If you are working with thicker wire the basic cutting can be done with a cutting disc. For smaller sizes just use a grinding wheel in a mini drill. If you have access to a workshop grinding wheel you can use that for the larger sizes of wire.

There is a strong possibility that when using a grinding wheel the wire will get red

hot which will soften it. If this happens wait until the reamer is finished and then heat to red heat and plunge it into water. This will harden it. We are not worried about keeping the spring in a reamer.

The next stage is to smooth off the cut surface so that it is completely flat. This can be done with a file first and then an oil stone. It is important that it is perfectly flat as this makes the cutting edges along the side of the flat. The final stage is to use a really fine oil stone. If you have had to harden the reamer the final polish can be done after the hardening. The other end of the reamer can be bent over to provide a grip for turning it.

In use you drill a fractionally under size hole and then push the reamer in while turning it. The cutting edge will remove exactly the right amount of material and you end up with a perfect hole.

Now you have no excuse for uneven undercarriages, lost wheels and sloppy holes.

RCMW



This drill is made from 8 SWG wire. Similar drills can be made with any gauge of wire



This reamer will work on most materials and will open up holes to a perfect fit for the wire

VIDEO QUAD X-SPY

With dual roles as a photo and video platform, or as a lively aerobatic quad, this new Revell Control multicopter makes a great, but small multi-function machine. John Stennard puts it to the test

Coloured LEDs and prop colours help you tell the nose from the tail, as does the camera view!

I've been reviewing models from Revell Control for some while and have been increasingly impressed by their range of R/C models. The build quality is always commendably high and the actual model designs are often innovative and suitably 'hi-tech'. This time I'm looking at a quadcopter that sets a particularly high standard for performance. This new quad's full title is the Video Quad X-Spy, but from now on I will just refer to it as the X-Spy.

The full title gives a hint that this is

more than just a mini quad and once the very attractive model and transmitter are unpacked all can be revealed and examined. Quads have come a long way in a short time and it will be interesting to see what a very up to date version can do.

As usual the attractive packaging both protects and displays the model while also giving plenty of information about the contents. I've definitely passed the 14+ age recommendation so I can move on! In addition to the usual 6-axis gyro and two 'speed' mode, other highlights are that it can 'loop', it can be controlled via a Tx or an Android and iOS 7 app, it has a WiFi link to stream live video or to take photos and it can be flown in FPV mode.

In the case of FPV it means flying via the smart device's screen. Revell Control's recommendation is that the X-Spy sits between the 'advanced' and 'professional' level of operation. The packaging clearly states 'This product is not a toy', so let's unpack the Video Quad X-Spy and see if I am up to the advanced-professional level to match the quad!

X-Spy Close Up

The X-Spy quad is a really attractive looking quad and it is accompanied by a 4 channel 2.4 GHz transmitter with additional function buttons, which is powered by four AA dry batteries. The Tx is a bit different

The X-Spy with its transmitter and smart device in place (you have to supply this!)



Smart looking box tells you all you need to know and gives a glimpse of the model inside



Transmitter and quad are safely transported on a plastic tray

than usual with this size of quad and it includes a very effective smart device holder. This can be rotated and stored at the back of the Tx or rotated and locked in position. A spring-loaded clamp holds a standard size mobile device in place. With the device in situ the Tx feels nicely balanced and easy to handle.

The X-Spy quad uses a 1S 700 mAh LiPo and a USB type charger rated at 4.2 V up to 500 mA is included. The suggested charge time is 100 minutes and the flight time is 5 minutes. Extra flight packs are clearly desirable and can be purchased, but the flight pack is a common size and many modellers are likely to have similar packs. It

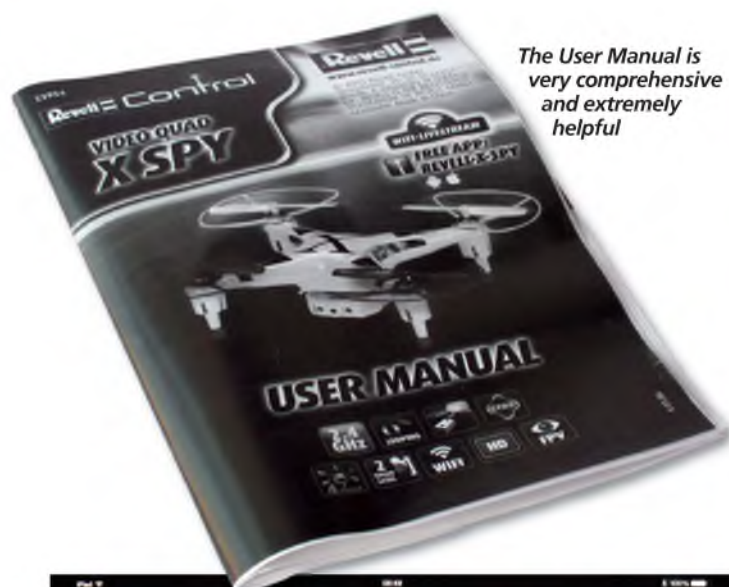
is recommended that the battery is allowed to cool before charging and the motors also rested for 10 - 15 minutes between flights. An accessory pack of spare props and a screwdriver is provided.

The camera clips under the hull and a lead from it is plugged into the PC board. It is recommended that the camera is removed if you do not want to record anything and intend just to go flying and performing 'flips'. The flight image of the camera is 640 x 480 pixels, while the video recording resolution is 320 x 280 pixels. The WLAN antenna is clipped to the camera but it can be unclipped and left to hang down for better signal transmission.

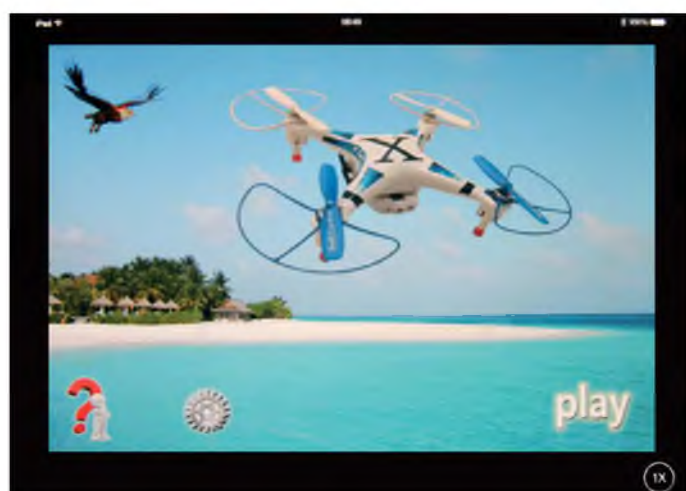
What Next?

Well, if you are like me you put the flight battery on charge and fit the batteries in the Tx to check it works, before sitting down to do some essential reading. However, it would be a big mistake to try to fly the X-Spy before reading the multi-lingual User Manual. Page 3 is important as it shows the control functions of the Tx. And looking at page 16 you find that buttons 2D and 2C do nothing, while button 2L is the 'Turbo' button and 2J the 'flip' button – all worth knowing!

The User Manual is very comprehensive and helpful, and you may be tempted to stop reading and go fly when you find out



The User Manual is very comprehensive and extremely helpful



Start up screen on the device



The switching icons, control sticks and trims are very easy to use



The ON/OFF icon removes the control sticks from the screen



When flying using the 'sticks' on the device your fingers can obscure the camera view a little



My garden view is seen more clearly without the control sticks



X-Spy is extremely stable and easy to handle

that you do not need a downloaded app if you want to fly using the Tx. You simply fit the flight battery and plug it in. Red and blue lights will then come on to show that the X-Spy is alive. The Tx is now switched on and when the X-Spy responds with two audible signal tones you are ready to fly. And here comes the fun!

The X-Spy is really delightful to pilot. The controls and responses are very smooth and both in normal and 'turbo' mode the X-Spy is very satisfying to fly. I tested the flip and even with the camera in place this worked fine. As usual flips should be done when the battery is fresh and at a safe height. Once the flip button has been pressed very little stick movement triggers the flip, so this manoeuvre must be done with care and in a safe situation.

Moving On

With the first test flights completed I set about finding the Revell Control X-Spy app for my Samsung Galaxy phone and iPad Mini. The phone was easy and Google sent the app to the phone straight away. The situation with the iPad was different as the instructions say 'under certain circumstances iPad users do not see this app. To show this app select the iPhone apps option'. This proved to be the case but as soon as I opted for phone apps I was able to download the app onto my iPad Mini.

The opening screen provides you with 'Flight Attitude Parameters' via the settings icon and the chance to PLAY; the same information now applies to both the phone and the iPad Mini. Once the X-Spy's battery has been connected the WiFi signal must be selected in 'Settings' before a device can be used to control the X-Spy or provide the camera view.



Dual roles as an excellent photo and video platform, or a lively aerobatic quad makes the X-Spy a great, mini multi-function machine

With the link established the X-Spy can be flown directly from the device using the on screen control sticks or tip and tilt. The throttle stick is still used for height. You, of course, see the camera view but it is slightly obscured by your fingers if you use the sticks. The camera view is very clear and sharp, and obviously the bigger the screen the better.

If a smart device is used for control there are three flight speed options: 30%, 60% and 100%, while the Tx offers just normal and 'turbo'. As an alternative you can fly the X-Spy using the Tx with a device clipped onto the holder. The X-Spy has to be paired with the Tx first and then the WiFi link selected on the device. The ON/OFF icon removes the sticks from the screen but all the screen commands are retained and, of course, you see the unobstructed camera view. The icons have specific functions and these are all shown in the Manual.

Another option is to fly the X-Spy with the Tx and let someone hold a larger device, like the iPad Mini or an iPad, so they can see the camera view. This is a good idea if

you want to take accurate photos or video as the person holding the device can use the camera and video on-screen icons whilst directing the flight position. If the X-Spy is allowed access to your photographs then photos or video that are taken are recorded on your device.

Of course flying via the camera view on the screen is FPV without the total immersion but it can still be very satisfying. The streamed picture is very clear and very smooth. The excellent stability of the X-Spy makes piloting via the screen view quite easy.

Conclusion

After trying some early small quads fitted with cameras, the X-Spy is an absolute revelation. With an SRP of £99.99 or less it is an extremely good value piece of kit. The X-Spy is very satisfying to pilot and everything is worked perfectly. This is a really top quality model that will provide loads of fun and plenty of good quality photos and video.

RCMW



Revell Control models are available from www.amazon.co.uk and all good toy and model retailers. For details visit www.revell.de/en

Left: X-Spy photo shot taken at our final indoor flying session of the season

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A NEW BEGINNING

Derek Small travels to Gorseinon, near Swansea to visit the new home of DB Sport and Scale

Chris Bowler covered the construction of the DB Sport & Scale Auster in the September and October, 2014 Issues of RC Model World



The workshop is dominated by an uncovered Blackburn monoplane, which clearly shows the quality of the kits and their design



When a famous British institution comes up for sale it often creates a great deal of worried comment. This was certainly so when Eddie and Judy, of DB Sport and Scale, advertised their business for sale. Many of the traditional kit builders of the country went weak at the knees. Cries of woe and despair were heard around the shows, and I certainly overheard a few folks questioning Eddie and Judy very earnestly. Eddie's show stand was one I always stopped at for a chat whenever I could. He would usually regale me with information about further quality improvements he had made to the accuracy and design features of what always had been great kits. He continually worked to improve the breed and undoubtedly set the standard for real builders' kits. He came up with a whole host of innovations that made constructing complicated aircraft (and assembling them at the field) very much less of a chore. This was all driven by a promise he had made to David Boddington when he bought the company.

It's probably worth saying a little about the history of the business, since when I mentioned the sale of the business to a couple of club members there was a definite split between those who knew about it and those who didn't. Some had little or no knowledge of the genetics of this significant chunk of British modelling history. When I mentioned the name

David Boddington their eyes either misted over with emotion or went blank with puzzlement. Those that knew the name seemed to yearn for a nostalgic look back to better days and those that didn't know what I was talking about seemed quite curious as to just what the fuss was all about!

David was one of those people who were responsible for turning our hobby from just frustrating toys for boys into a serious attempt at helping our efforts turn into something that could be viewed of as producing successful flying model aircraft. David was designing ground breaking and innovative prototypes right from the early days, and during the war years he had come up with something not so very different in layout to the then unheard of (and top secret) De Havilland Vampire. I think he is worth an article on his own, but to do him justice would make this piece more of a book than an article. His work in designing models that were more than likely to fly, creating bigger models because they fly better, and using models in films are all things worthy of mention. But here we are concerned with his modelling business.

A Different Hobby

When I started modelling at the ripe old age of about 12 the hobby was so very different to today. You could go into

several local shops and buy kits made by Keil Kraft, Frog, Veron and Contest, and a just a couple of American companies such as Veco and Topflite. The going price for a rubber powered scale (ish) model was about 3/9d. If you don't know what that is ask your Gran or Granddad. Actually it might be better to ask your Great Granddad!

After cutting your hands to pieces with a bit of old razor blade (laughingly referred to as a safety razor) and a tube of balsa cement you ended up with a vague representation of the prototype, with a bit of a 'starved horse' look about it. And if you were lucky with your pocket money you could afford either the dope, or some paints (not usually both), and the thing might or might not give you something vaguely reminiscent of flight. The model's more likely to fly OK were those free flight rubber powered and glider models costing a bit more. In fact, in the early days, one of the main variables defining your success was just how well you could carve a propeller from a chunk of balsa! The choice then was: did you want a model of a real aeroplane (usually a Spitfire), or did you want it to fly well?

Control line models were becoming more influenced by the American approach with what we considered in those days to be big glow engines (.35s were big and .61s were massive!). They were usually constructed somewhat lighter than the British 'bricks on a string' powered by diesel engines, and flew rather more slowly. Radio control was holding the space now occupied by the jets, large ARTF composite models, large models and big composite gliders and required pretty deep pockets, or electronic assembly skills. Kit built radio control came along and then the early consumer targeted proportional radios.

Then along came David and his contemporaries. These men were the pathfinders, the innovators in our hobby, and they designed better, often bigger models that were pretty much guaranteed to fly. A man who loved aviation in all its forms, he was a model designer and pilot to his very core. There is a story, I don't know how apocryphal, that after having trained as an architect he began to design a house, which ended up being a biplane! His activities in building and flying models for filming, and his work with the flying circus, will be covered in another article. Suffice it to say his practical and straightforward designs introduced many of us oldies to successful model building and flying. Indeed, many of them are still available and a huge number are still flying today. The hobby owes him a great debt. He had been a model press columnist from an early age, but saw the need for a kit production business for his proven designs. This became the genesis of DB Sport and Scale.

Fifty Tyro Kits

The business started with the almost guaranteed to fly Tyro and from a humble beginning, with a production run of just 50 kits, DB S&S grew in both range and scale to become what it is today – a highly



Richard Bristow, the new owner, slaving over his computer controlled laser cutting machines



Just a small selection of the huge number of small components that Richard has to both source and keep control of in order to ensure ongoing production



All fibreglass mouldings are currently fabricated in-house. The moulds themselves are constantly being refurbished to ensure a quality product

respected kit and plan-pack manufacturer, as well as component supplier. It's worth making the comment that a model that was almost foolproof in those early days had to be pretty special, since those early radios, such as galloping Ghosts and the old escapement driven controls, were pretty scary. I suspect that many of today's modellers would be incredibly intimidated by the way they functioned.

My earlier comments about the way things were kitted in those days gave some interesting challenges. Younger modellers, who have never built a kit where you have

to cut out the parts, or have to make the best of components produced by the old die cutting and stamping methods, would find it hard to believe how rough some of the old kits used to be. The edges of some die stamped ribs were quite likely to be crushed for almost a sixteenth of an inch, giving huge variations in the finished dimensions. Modern laser cutting techniques have transformed the accuracy and overall standards of most of today's offerings.

In those early days, when the Ghost Rider 38 and Ghost Rider 50 were the offerings,

the expectation of quality was, by today's standards, not too great. The quality of the wood available was sometimes pretty problematical too, and we often saw difficulties in finding matching pieces of wood for such things as wing spars and rib sets.

Despite the materials challenge the business thrived, partly thanks to David's helper, David Toyer, who was a key part of the success in the early days of DB S&S, supporting David until the talented Mr Boddington found other external pressures interfering with this part of his busy life. When he realised that there was not enough time in the day, David sold the business on. For a while it was in the hands of Derek Cox, and then Bill Harding, sometimes helped by Roger Brown, followed by a brief spell under the control of Chart International before returning to the control of Bill. The business continued, however, and the range of models grew, adding the well known Spitfire and Hurricane kits over this period. Eventually it was put up for sale again and Eddie and Judy Stocker 'bit the bullet' and became both the faces and developers of the business. They worked hard to live up to a promise they made to David that they would keep alive the concept of kit built models, a commitment they have certainly kept. But they have done much more than that.

Developing The Breed

Eddie was forever developing the breed, and laser cutting technology was just one of the major innovations that saw the quality of the kits move with the times. It was far more complicated than that and Computer Aided Design required much more than mere scanning of original plans. These changes ensured that the fit of components kept step with the expectations of a more demanding marketplace, as did so many of Eddie's engineering developments, not the least of which was his innovative wing brace rigging systems, which has made significant differences to the speed at which a complex aircraft can be prepared for flight. He also developed some neat little kits for things like wing attachment.

While DB had always had a good mail order business, Eddie and Judy also upped the profile by their presence on the show circuit. Their stand was always a good place to see a wide offering of traditional kits that you knew would fly, would go together well, with bits that would fit! The developments didn't stop with quality enhancements, but new designs found their way into the range. The Vampire designed for ducted fans or small gas turbines was a case in point. I saw the prototype fly, and it certainly lived up to all expectations that we had from the traditions of the breed.

One thing that was clear, when they put DB S&S up for sale after fifteen years of running and growing the business, there were more than a few doom-sayers out there heralding the death knell of DB Sport and Scale. In fact, the opposite is true.



Two halves of an 80" Spitfire cowling just out of the mould



This Nieupoit cowling is also just finished. The Stanley knife next to it gives it scale

A New Home

Last year, Richard Bristow decided to reject the bright lights of Reading and move back to his spiritual home in Wales. Making a significant lifestyle change from being something important in computer systems support, he opted for being his own boss in a small manufacturing business related to his hobby. The words he used to me were 'living the dream'. He found himself a small unit in Gorseinon, near Swansea, and has spent the last few months learning the trade from Eddie and Judie, while also bringing his computer skills to the party, thus enabling the business to compete in the modern world of e-commerce. His personal mission is to make DB Sport and Scale fit for the future, as well as the present and to continue growing the business.

I visited him when he was in the transition period. He was busy re-creating the company website, learning to operate the (new to him) equipment, sorting out stock, re-creating relationships with a long list of suppliers for the future, learning just what went into which kits and a myriad other things that we just take for granted when we buy our boxes to smuggle past the missus. Eddie and Judy were on hand to make sure that he got it right!

I don't know what images you have of a small kit making business, but I'd have to say that it's a bit more than just a cottage industry. Merely keeping control of the stock of everything from clevises, pieces of wire and decals, to having sufficient stock of good quality balsa and plywood is a major task. It will be vitally important in



The components on this electric Sopwith Pup are clearly well made and a good fit. They certainly fired my enthusiasm!



Richard is being very active in building stock for the new show season



OK, so the roof of a workshop and extraction pipes are not the most beautiful of visions, but the Jodel is likely to be seen around the shows this coming season

maintaining the reputation of the business, which is serving a world wide market. Richard is determined to follow in Eddie's steps and continue to improve the breed.

His commitment to quality and living up to a hard earned reputation is total, and he is determined to not just maintain, but to grow the business. When you are supplying kits and plan packs that people have used to start their modelling career in the numbers that DBS&S have done, that is so important.

Just to give something of an idea of the numbers we are talking about, while David was still with the business, the sales of just one model, the Tyro Major had beaten 8,000 worldwide. When you are sitting at your modelling bench putting together one of these delightful models, just spare a thought for those who have created this business, and kept it, not just alive, but thriving. This is a company that provides

an ongoing opportunity to learn from the satisfaction of building beautiful kits, and enjoy the pride of making something that you can truly say is your own. You are able to customise it to your own specification with the ability to make sure that it is not just another model clone, just the same as all of the others that come out of the moulds. The understanding of the structure and what makes a successful flying model that you get from building these kits is something that is totally different to the experience that one gets from the ARTF and foamy world.

I am sure we all wish Richard well in his new venture. We can give him encouragement from the fact that he is following in the footsteps of others whose love of modelling and traditional skills was total.

RCMW

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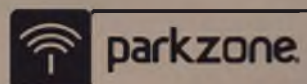
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Give your ultra micro fleet the boost it deserves.



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560mm (22.0 in)
Wingspan

E-FLITE UMx B-17G FLYING FORTRESS

Respect for the scale outline of the original B-17G Flying Fortress makes this fully-assembled 1/48-scale ultra micro airplane a thrill to fly. Plus, its three-blade propellers complement its authentic "Man O War II" trim scheme.

BNF (EFLU5380)



405mm (15.9 in)
Wingspan

E-FLITE UMx F4U CORSAIR

An authentic paint scheme, clear canopy and moulded panel lines make this ultra micro easy to appreciate. Decals are provided to finish your model as either the ace Corsair flown by Gregory "Pappy" Boyington or Ira "Ike" Kepford.

RTF/BNF (EFLU2600/EFLU2680)



410mm (16.2 in)
Wingspan

PARKZONE UMS P-51D MUSTANG

Moulded panel lines, clear canopy, gun and exhaust details, pilot figure, instrument panel details, 4-bladed prop—you get it all. Even the trim scheme is that of a full-scale Mustang that flew with the 334th Fighter Squadron during World War II.

RTF/BNF (PKZU2400/PKZU2480)

FLOOZY



Peter Miller designed this simple to build, small aerobatic biplane for .40 four strokes or .32 two strokes

Floozy was designed for several reasons. I wanted a biplane but I hate doing all the cabane struts and interplane struts. I also wanted a model that would go in the car in one piece - important in the winter.

I had designed a model with a similar layout about 10 years ago, which was a great aerobatic model. This model was a scale up of an even earlier design. I knew that it would work.

The fuselage is completely new and the wings use a better wing section. One or two other improvements have been made to the construction and the control system.

The engine chosen was an OS 40 FS Surpass. This provides plenty of power for all normal aerobatics. The wing area is over 600 square inches, which, combined with a light model, means that it can be flown slowly if you want and it will not turn round and bite you if you try and get too clever.

Flying

I know that we all want to know how the model flies before we even think about building it. After over a month of waiting we had a calm, sunny Sunday that was a few degrees above freezing so I was able to do the test flights.

The first flight was quite good but the ailerons seemed to lack authority. However, we did do most aerobatics. It was only after landing that I found that the ailerons on the bottom wing had not been plugged in!

This was a result of the model being assembled over a month before and not taken apart again. Had I assembled it on the field this would not have happened. Of



Floozy is very agile – provided that you connect up both sets of aileron servos!

course, I should have seen it when checking control directions but I obviously only looked at the top wing. However, it did prove that the model will fly OK with only one set of ailerons.

Take-offs were smooth and positive with no squirrely habits. Just a straight roll and gentle lift off.

Once all the controls were moving the model was transformed. On low rates it flew beautifully and all aerobatics were easy. With the ailerons on high rates the roll rate was incredible, faster than most flick rolls.

Testing the stall showed that it just does not want to stall. I throttled right back and applied full up elevator and nothing happened. She just flew along. She will spin but only if you really force it and at no time did she want to drop a wing.

Inside and outside loops are easy with no tendency to screw out of the loop. I also did a lot of avalanches, a loop with a flick roll at the top - simple. Inverted flight is also very easy and you can fly around upside down all day long.

I handed control over to Stuart Pickett, who flies while I take the pictures. He was soon enjoying himself trying to tie the model in knots and his opinion agreed with mine. Landings are smooth and easy, and Stuart pulled off two greasers. Mine wasn't quite as smooth but it was still a proper landing.

Just one comment. The model is quite small so make sure that the colours on the top and bottom are really different and don't let it get too far away.

Building Floozy

Construction is pretty easy. In fact it is very easy for a biplane. The only slight complication is in the cabin area but if you follow the instructions even this will not present any problems.

Start off by cutting out all the parts and gluing the doublers to the fuselage sides.



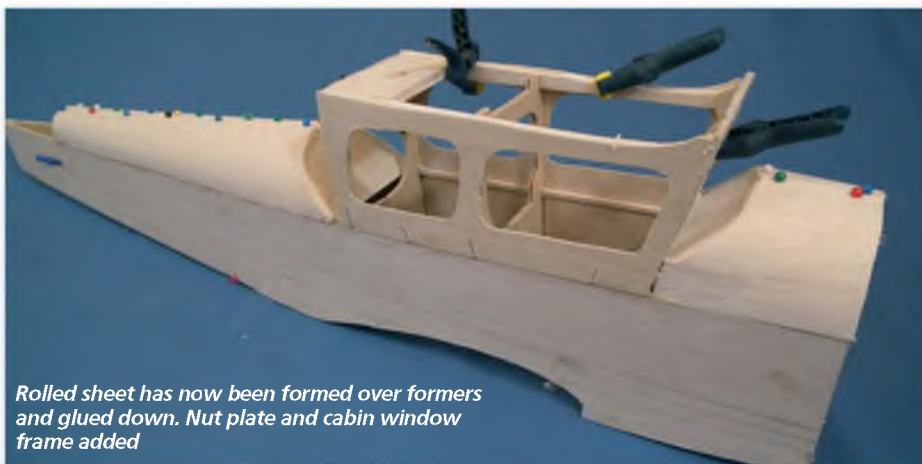
Glue the first four formers to one fuselage side. Triangles make sure that they are vertical



Pull in the sides at the rear and add remaining formers



Glue the turtle deck sheets on vertically and leave to dry. Note 1/4" sheet cabin top member and ply window frames. Also the 1/8" sq forming rebate where the ply joins the sides



Rolled sheet has now been formed over formers and glued down. Nut plate and cabin window frame added

I use a small doubler at the tail end as this prevents any damage in a tumbled landing. Use impact adhesive for this job. I used to use Thixofix but now have found a spray impact adhesive called Ever Built Stick 2. However, it is important to mask off areas where you do not want the spray to reach. You could use Evostik but not the water based version.

It is a good idea to install the blind nuts for the engine mount before assembling the formers to the sides.

Lay one side down and glue on the formers back to F-4. I use carefully cut 90° triangles of scrap balsa to hold them vertical. Use a drop of CA to hold the triangles in place. Once the formers have dried glue on the other side and leave to dry.

Pull in the sides at the rear and join with the scrap wood which is shaped like short piece of trailing edge. Add the rear formers. Also the sloping formers at the cabin area. Fit the 1/4" sq spines.

Add the 1/8" square strips just above the sides in the cabin area. These should overlap the sides by 1/16". This leaves a 1/16" rebate to seat the bottom of the 1/16" ply cabin sides/window frames.

Select 3/32" balsa that bends easily across the width and glue these vertically to the side and leave to dry. When these have dried wet the outside of the sheets and apply heat with a covering iron or heat gun and bend them over to match the formers. Trim along the centre of the spine and glue them in place. I find that map pins are best for this as the heads hold the sheet down.

The snake outer tubes can be installed now. You can also fit the 1/8" sheet tailplane platform as well.

Going back to the cabin, fit the 1/4" sheet pieces along the top. Add small scraps of triangular stock at the joint between F-2 and the 1/4" sheet pieces.



Stage one of building the wing. All blocks etc. added. LE sheet raised to leading edge



Top sheet and rear spar capstrip added



Lower wing lifted from the board and ready for fitting controls, centre section sheet and capstrips etc.



Close-up of centre section before sheeting is added

Now make and install the ply plates for the blind nuts. The top plate is recessed into the 1/4" balsa cabin top pieces. Fill in between the plate and the actual wing seat with 1/2" sheet. This makes a very strong joint. Now you can fit the 1/16" cabin sides. These need to be a good fit as they provide a lot of the strength and rigidity to the cabin area.

It is helpful if you have built the wings as you can check the mounts for accuracy.

The undercarriage mounting is made with two pieces of 1/4" ply glued to the side and front of F-2. These have slots to take the piano wire uprights. Note that these slots must be staggered by the thickness of the wire. Another piece of 1/4" ply goes across the bottom of the fuselage to take the saddles and related screws. Study the side view, plan view and F-2 for the location of the mount. You can now cover the bottom of the fuselage. Use 1/16" sheet behind the lower wing and 1/8" sheet in front of the wing.

Add the fairings at the front and rear of the top of the cabin. These will support the clear plastic windscreen etc.

The cowling is built in my usual lazy way. Mount the engine and its mount on F-1. Glue the spinner backplate to the nose ring with scrap 1/16" balsa spacers. I use spots of CA for this. Mount this assembly on the engine. (I keep an old propeller hub to act as a spacer especially for this job.)

Now build up the cowl between F-1 and

the nose ring with 1/2" sheet and scraps of triangular stock where needed. Once this has dried remove the engine and carve and sand the cowling to shape.

That takes care of the fuselage.

Wing Construction

The wings are exceptionally easy to build. Being small, 37" x 8 1/2", they can be built on a small building board. I have two melamine shelves covered with cork tiles so I can build them both together.

Cut out all the parts. Note that the only parts that are different between the top and bottom wing are the R-1 centre ribs. This is because of the different positions of the dowel slot and the servo mounting.

Laminate the R-1s and R-1As to form the hole for the wing dowels. I fit 1/4" bore brass tube down this hole as this allows the 1/4" dowels to be replaced easily.

Pin down the lower leading edge sheet and rear spar capstrip, and glue down the bottom main spar. Now you can glue all the ribs in place and add the rear spar. Finally, add the top spar and leave to dry.

Chamfer the bottom of the 1/8" sheet leading edge to match the underside of the ribs and glue it in place.

Now raise the leading edge sheet and glue it in place. I use aliphatic resin along the leading edge and then run Superphatic along each rib.

If you build the wing with the leading edge overhanging the board you can pin

the lower LE sheet to the leading edge with map pins. Otherwise you will have to wedge it up with scraps of old leading edge stock.

Add all the hinge blocks and sheet infill at the rear where the wing bolt will go. Also add all the 1/16" spar webs in front of the spars.

The top leading edge can now be fitted. I clamp this to the spar with masses of clamps. Clothes pegs work well. The front of the sheet is pinned down with map pins. Use aliphatic resin for the whole of the area. Also glue on the rear spar top capstrip. The wing can now be lifted from the board.

We can now install the controls. Start off by fitting the 1/8" ply servo mounting plates. I use plastic servo mounting brackets.

The bell cranks are mounted on 1/8" ply plates.

This is Important!

The bell cranks must be reversed on the top wing compared to the bottom wing. This is because the output from the top aileron servo is pointing down while that on the bottom servo is pointing up.

You could have both servo outputs pointing the same way but there is not really enough room. You could also use a reversing 'Y' lead, however this is not recommended.



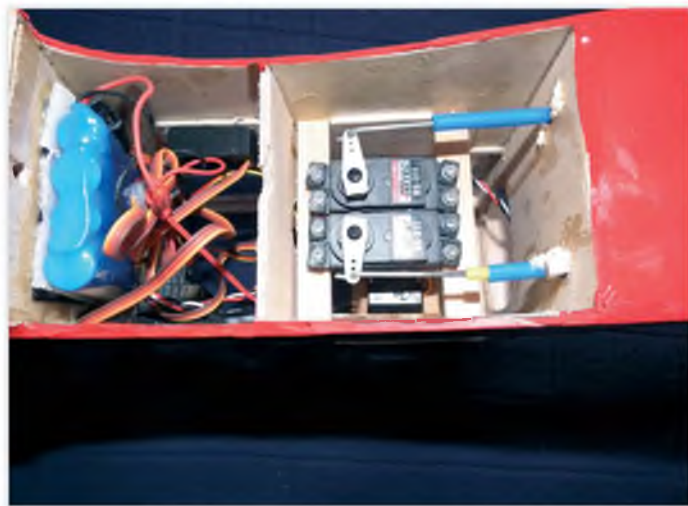
The bell cranks are mounted. Note that the orientation of these needs to be reversed on one wing



Typical mounting of bell crank showing slot and reinforcement



Typical connection of pushrods to servo



View into the belly of the model. The receiver is just beside the battery



Left: Top view showing tank and battery, with the receiver on the left. Throttle servo is in the next bay along

The pushrods are 16 SWG wire and are joined in the middle with brass tube, which also hold the connection to the servo.

The underside of the bell crank bays are covered with 1/16" sheet and a slot is made for the pushrod to the ailerons. Reinforce the slot with some 1/32" ply.

The centre section sheet and all the capstrips are then added. Also fit the 1/2" sheet wingtips.

The ailerons are made from 3/8" x 1" balsa. This is a non-standard size so you will have to shape them from 3/8" sheet.

Glue the fixed part to the trailing edge of the wing and then add the 1/16" ply plate. This transmits the load from the bolt to the main part of the wing.

The wings are now complete. You did make a top and bottom wing, didn't you?

Tail Parts

These are so simple that they are hardly worth a paragraph. Use medium grade 1/4" sheet. Use a 14 SWG elevator joiner.

I have a simple way of shaping the fairing blocks each side of the fin. I spot glue scrap

1/4" sheet down to the fuselage in place of the tailplane and then spot glue another piece to represent the fin. I then spot glue blocks of balsa on each side. These may have to be laminated up from scrap balsa. Once the glue has dried just carve and sand the whole assembly to match the fuselage and then separate the parts and you have two fairing blocks that will be a perfect fit when doing the final assembly.

Covering

I always use Solarfilm Supershink Polyester. This covering is superb. It covers well and goes round compound curves really well. It is much more tolerant of over enthusiastic application of heat and it does not sag in hot sunlight. It is also lighter than a lot of coverings.

The colour scheme is up to the builder. However, it is very important that the top and the bottom are very different. This model is aerobatic and you really do want to know which way up it is.

I have made the top basically white with just red wingtips. The underside is all red. This dark colour shows up against blue sky and also those rather yellow, hazy skies, which can make any lighter colours vanish.

Installation

The installation of the radio etc. is a little on the cramped side but is not difficult. I suggest that you do not fit the glazing to the cabin area until the installation is complete.

I used one of my Spektrum receivers. With the main receiver stuck to the right hand cabin wall in the front compartment, the satellite receiver is stuck to the rear window shelf. This has the advantage that you can see if it has locked on properly. You can buy longer leads to connect the satellite Rx to the master.

The switch is a big one that incorporates a charging socket. It is fitted to the left side of the fuselage. I felt that this was important as I will probably leave the model fully assembled most of the time.

The main servos are fitted through the bottom in the rear bay. This allows the best access. The throttle servo is a metal geared micro servo, which is fitted on a small plywood mount level with the rear window frame.

The battery is held to the rear of F-2 with Velcro. It could go under the fuel tank easily but my model ended up with the balance point exactly on the designed point. If yours is tail heavy the battery could go under the tank.

The tank is a 6 ounce Radio Active unit. I buy small, cheap tubes of silicone sealant and apply this round the neck of the tank. This holds the tank in place and prevents any fuel seepage into the tank bay. I use three pipes on the tank. The fuel feed to the engine and the filler pipes both have clunk weights. This allows complete emptying of the tank without having to turn the model over on its back.

The engine is mounted on a long nylon engine mount. Its position along the mount is not too critical. Not too far forward or it will make the model nose heavy. Not too far back or you will have trouble getting at the fuel pipes.

Wheels are 2¾" items. I prefer to retain them by wrapping wire round the axle and soldering the wire. I have yet to lose a wheel fixed in this way!

Control throws are:

Ailerons high rate 3/8",

low rates 1/4" each way

Elevator high rate 1/2", low rate 3/8"

Rudder high rate 1½", low rate 3/4"

Note that low rates are advised for take-offs and landings. Elevator low rate seems adequate for all normal flight. These are starting settings and can be adjusted to suit your own preferences.

C of G should be 3" back from the leading edge on the top wing.

Summary

So here we have a compact model that can be transported in most cars fully assembled, which is great on those cold winter days. It looks different and flies really well.

What more do you want?

RCMW



Floozy makes up into a pretty cabin biplane



She is quite small so make sure that the top and bottom colours are really different and don't fly too far away



You can fly around upside down all day long!



Here we have a compact model that is easy to transport, looks different and flies really well



Lining up for finals after an engine cut

RC MODEL WORLD DETAILS

MODEL SPECIFICATIONS

PLAN NAME:	Floozy
WINGSPAN:	37" (939.8 mm)
WING AREA:	629 sq in (4057.873 sq cm)
WING LOADING:	16.48 oz/sq ft
LENGTH:	38" (965.2 mm)
WEIGHT:	72 oz (2075 g)
RADIO FUNCTIONS:	Throttle, Ailerons, Elevator, Rudder
RECEIVER:	Spektrum
SERVOs:	Hitec HS322
BASIC CONSTRUCTION MATERIALS:	Balsa, Ply
COVERING MATERIAL:	Solarfilm Supershink Polyester
CENTRE OF GRAVITY:	3" (75 mm) from leading edge of TOP wing
CONTROL THROWS:	Ailerons – High rate 3/8", Low rate 1/4" each way Elevator – High rate 1/2", Low rate 3/8" Rudder – High rate 1 1/2", Low rate 3/4"
ENGINE RANGE:	.40 cu in four-stroke or .32 - .40 cu in two-stroke
ENGINE USED:	OS FS 40 Surpass
PROP:	J Perkins 11" x 6"



The author's well used OS 40 FS Surpass provides plenty of power for all normal aerobatics

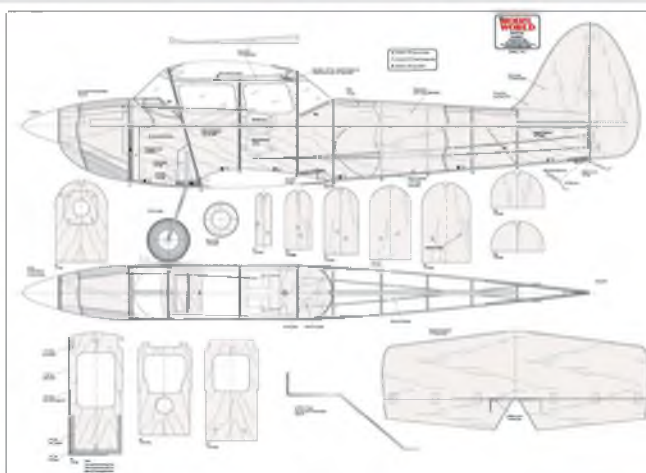


This compact aeroplane is perfect for a quick flying session as it can be put in the car in one piece

PLAN DETAILS

NAME:	Floozy
BUILD CATEGORY:	Intermediate
PLAN NUMBER:	MW3745
PLAN PRICE:	£15.99 (\$27.99)

Plans and parts (if available) are subject to Postage and Packing charges at standard rates.
Copies of plan number MW3745 are available from RC Model World (Plans Service), Traplet Publications Limited, Traplet House, Traplet Publications Ltd, Traplet House, Willow End Park, Blackmore Park Road, Welland, Malvern, WR13 6NN, UK.
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The Editor knuckles down to fine-tune and trim the BJ Craft Monolog 70, which he reviewed in the April issue of RC Model World

FLYING THE MONOLOG 70

It has been a couple of issues since my original review of the BJ Craft Monolog 70 F3A practice model, which doubles up as an excellent introductory model for precision aerobatic flying.

The original review finished after the first session of test flights, which were very impressive. But they revealed the need to investigate some slight horizontal movement in the wings. I also wanted to find an alternative method of fixing the canopy so that the flight battery could be removed single-handedly at the flying

field. And last, but most importantly of all, I wanted to see if I could improve on the already outstanding flight characteristics of this fine model by running through the 'Basic Trimming For Aerobatics' check list that can be found on the Great Britain R/C Aerobatic Association's (GBRCAA) website: <http://www.gbrcaa.org/acrobatfiles/Trim.pdf>

Return To The Workshop

Initially the slight amount of wing rock was thought to be as a result of the triple

tab wing fixing not quite being secure enough, allowing the panels to move ever so slightly. The wing bolt hole in the central tab is slightly elongated, so my first thought was to pin the two ply locating tabs on either side using a pair of 4 mm lantern style battery connectors to prevent the panels from pulling outwards if the wing bolts were not nipped up tight enough.

It was a quick and easy job to drill out the holes in the outer wing locating tabs to push fit a pair of 4 mm connectors.



Monolog's large canopy is now retained using R/C helicopter canopy screws to provide faster access in case of battery problems



The original 'curved wire' retention system works well but is a two man job to get off quickly in an emergency

These fit close to the inside skin of the fuselage sides and help to secure both wing panels tight against the fuselage. To make sure that I wouldn't misplace the connectors I linked each pair using a length of wire, with their ends soldered into the buckets at the ends of each connector.

Although these improvised 'pins' did help stiffen up the wing fixing a bit, I was disappointed to see that the wing rock had not been eliminated altogether. I then checked the fit of the carbon wing joiner tube inside the glass fibre tubes glued into each wing and found them to be a good fit. By chance I also decided to check the joiner tube that spans the width of the fuselage and, to my surprise, I found that this was of a slightly larger internal diameter. This was the source of most of the wing movement.

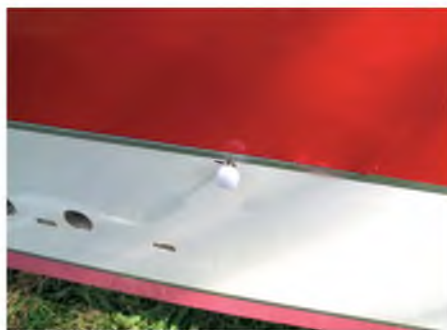
To cure it I carefully measured the wing tube to mark the area where it sits across the fuselage. I then wrapped a single ring of electrician's tape around the outer edges of the marked area and retested it for fit. The fit of the tube was greatly improved but there was still some slight movement, so I applied another layer of tape. But this was too much as the tube would not now slide in place. A thinner tape was required for the second layer, which came in the form of 'Magic Tape'. This time the fit was perfect.

With both wing panels bolted back in place and 'pinned' using the 4 mm connectors there was no sign of any unwanted movement, either horizontally or fore and aft.

My attention then turned to replacing the ingenious 'curved wire' canopy retaining system. This is simple to fit and works very well in practice. But, arguably, it works a little too well as I found that it was difficult to remove the canopy without having someone else pull back the ends of the retaining wire by equal amounts. With a helper this would not normally be an issue but I did have visions of struggling to release the canopy in an emergency, especially if a LiPo started to 'smoke'!

I have another 50-size electric model where the canopy is retained by two 3 mm hex headed bolts. To gain swift access to the inside of this particular model, I replaced the hex bolts with R/C helicopter canopy screws and this works a treat. I note that Frank Skilbeck, in his review of the Dynam Smoove, is none too keen on using similar bolts to retain his canopy. But it is my experience that while they may be a bit fiddly to fit, their large diameter heads are easy to grip and they can be unscrewed in a jiffy should I need to gain speedy access to the battery bay.

I therefore removed the canopy retaining wire from the Monolog and carefully drilled out the tabs that extended from the canopy frame to take a pair of 3 mm blind nuts. I used the knurled variety rather than the claw type as there is not enough 'meat' left in the tabs to accept the claws. After epoxying the nuts in place my attention turned to opening up the thin slots in the fuselage sides, which had housed each end of the canopy retaining wire, so that the canopy nuts could pass through. A bit



Replacing the wire with canopy screws means that the battery can be accessed a lot quicker, and single handed too!



There's not a lot of meat left after drilling out the canopy lugs for the blind nuts so proceed with care



Two rings of tape were wrapped around the middle of the wing tube. The carbon joiner tube is now a close fit within the fuselage tube

of fettling with round and flat PermaGrit needle files soon had the canopy lifting on and off one-handed – a great improvement in terms of speed of access when operating the model on my own.

It Takes Two

Although I could now prepare the model single-handedly, I still needed a bit of help when running through the GBR/CAA's trimming chart. For this I gratefully accepted the assistance of my colleague, and our regular photographer of kit review planes, Barry Atkinson. After printing off a copy of the 'Basic Trimming For Aerobatics' sheet we headed for a local flying field.

Step 1 is called 'The Basics' and simply requires the model to be trimmed for straight and level flight with the motor at just over half throttle. While the Monolog was in the workshop I had taken the precaution of dialling out the electronic trims that were needed during the first flying session and replacing them with mechanical adjustments using the clevises,

so my digital trims could all be reset to zero. I was therefore very pleased to see that no trims were needed on this first trimming flight to set the model up as described in the trimming sheet.

I had also increased the control movements to better suit my own personal preference as the minimal control throws shown in the Monolog's instructions for high altitude F3A flying had almost caused the model's demise when I inadvertently pulled the first loop at too low an altitude. The Monolog only just pulled out in time!

Step 2 is titled 'Engine Thrust Line' and requires you to hold straight and level flight at half throttle, and then to smoothly increase power to full throttle. If the model climbs then you need to increase the motor's down thrust. Conversely, if the model dives then you need to decrease the amount of down thrust. Monolog 70 passed this test with ease.

Step 3 is an extension of the Engine Thrust Line checks and requires you to fly the model straight and level, and then pull it into the vertical. If the model pulls to the right then it's time to decrease any right thrust that has been built into the motor mount; with an F3A style model like this one there is sure to be some degree of built in side thrust.

Conversely, if the model starts to pull to the left when climbing vertically then it is time to add a bit more right thrust. The Monolog 70, despite already having quite a

large amount of right thrust built into the motor mount, exhibited a definite pull to the left, so a bit more right thrust will be required.

At this stage the transmitter's down timer had started to go off, so the Monolog was brought in for another easy landing, all of which have been a pleasure with this 1.5 m span aerobatic beauty.

A Fresh Pack

After loading up a fresh 6S LiPo it was time to check the Centre of Gravity. This is covered under Step 4 of the GBR/CAA trimming chart and involves flying straight and level, and then increasing the throttle to full power and pulling the model into a 45 degree climb. Whilst holding the 45 degree climb, roll the model inverted. When the model is climbing upside down you need to assess what direction of elevator is needed to maintain the 45 degree line. If the model climbs then the model is tail heavy and you need to add weight to the nose.

I, however, always prefer to test fly a model at or near to its forward C of G position, preferring to deal with a slightly more sluggish initial aerobatic performance rather than trying to tame a twitchy model that has a too rearward C of G. So with this in mind it did not surprise me when Baz noted the need for me to apply some down elevator to keep the model pointing skywards at 45 degrees. This is easily cured by adding more weight to the tail and the easiest way to do this with the Monolog 70, with its cavernous battery bay, is simply to move the battery back by a couple of centimetres.

With a couple of more minutes left on the timer I flew out the rest of the pack with some of the large, graceful rolling and looping manoeuvres that the Monolog 70 excels at. She really is a pleasure to pilot.

Last Pack

With our final LiPo pack strapped in a couple of centimetres back from the starting position, Monolog was sent skywards once more. When I pulled up and rolled her into a 45 degree climb it was noticeable that much less down elevator was required to hold the line. But the pack still needs to come back a bit more, so that all of the down elevator compensation can be done away with altogether. I need to try it again a centimetre at a time until I reach the sweet spot.

This flying session was, however, nearly at an end as sadly I do not have an unlimited supply of 6S LiPo packs.

So, to recap, my jobs before the next trimming session are to add a little bit more right thrust, and to mount the battery a little bit more rearwards to find a neutral Centre of Gravity. Trimming Steps 1 to 4 will then be repeated and further minor adjustments made until the model is ready to check the lateral balance.

Wing Incidence

Steps 6 and 7 of the GBR/CAA trimming chart relate to checking the wing and tailplane incidence. Top line F3A models are fitted with incidence adjusters at the wing and/or tail but such models can cost many hundreds, if not thousands of pounds. The Monolog 70 is a comprehensive aerobatic model, but although it represents very good value for money the specification does not include such items.

So, as with most aerobatic kits of a similar price and specification the wing and tail positions are fixed and there's not a lot that can be done to alter the incidence settings. However, it may be of interest to see how close your favourite model is to the optimum incidence settings by flying it through the tests described in the trimming chart.

Start up high and reduce throttle to tick over. Then dive the model in a straight line. If the model pulls towards the canopy then the wing incidence is too high. But if the model pulls towards the canopy then this indicates that there is not enough wing incidence.

Wing incidence is related to tailplane incidence so the same dive test can be performed to check the tail, but this time



A spare pair of lantern connectors are used on each side to pin the wing locating tabs to the sides of the fuselage. The rear tab only is shown here for clarity. The black wire is purely a mechanical link to connect it to the front 'pin' to save them from being mislaid

the effects are reversed. For example, if the model pulls to the canopy then the tailplane incidence needs to be increased, and vice versa. While I don't think I'll be taking a saw to any part of the Monolog to change incidence settings it certainly should be possible to change the tailplane incidence of, say, the bolted on tail of a moulded foam model by the use of fore or aft packing pieces between the tail unit and the tailplane mount.

Lateral Balance

The next group of trim tests can, again, be performed on all types of aerobatic models, not just F3A types. It involves flying the model towards you and pulling a tight loop. If a wing drops on the exit of the loop then weight should be added to the tip of the high wing.

Alternatively, the same check can be performed by rolling the model inverted at half throttle and noting if a wing drops. This will be the heaviest wing, so tip weight needs to be added to the other side.

Aileron Differential

This is another check that would be beneficial to all models, and which helps them to achieve axial rolls.

As with the previous test, fly the model towards you but then pull it into a vertical climb. Then perform a half roll. If, following the roll, the model changes heading in the same direction as you rolled (i.e. right roll, then the model heads right) then you need to increase the aileron differential by making the up aileron move further than the down aileron.

But if, after the half roll, the model heads off in the opposite direction to the roll command, then you need to decrease the amount of aileron differential.



KC performs a final check before the first trimming session begins



The spats are tolerant of a bit of long grass



Up and away with no further trim required. It really is worth resetting the devides to replicate any digital trims required during test flying

Dihedral Check

The final check on the GBR/CAA basic trimming chart is for dihedral. As with wing incidence this is a setting that is hard to alter on most models without some serious modifications, although it can be compensated for to some degree by some clever control mixing.

The flight test involves flying the model straight and level, and then rolling to knife-edge, whilst holding top rudder to maintain level flight. If the model tries to roll towards inverted then you need to increase the dihedral, but if it tries to roll upright then you need to decrease the dihedral.



Monolog is a perfect choice for starting out in competition flying with the GBR/CAA, but you will be encouraged to fly higher and further away than when sport flying. The pink undersides provide excellent contrast when flying at longer distances

However, rather than chopping your model about you may want to try using some of the powerful mixes that are built into all but the cheapest radio control transmitters these days.

Since a secondary effect of holding in rudder is that the model will start to roll in the same direction, a good starting point is to set up a Rudder/Aileron mix to give a very small amount of aileron in the opposite direction. So at full right rudder the ailerons should go left by, say, 1%, and vice versa. The important thing is to start with small amounts so that the handling of the model does not exceed your capabilities, even if you go slightly too far with the mix values.



Monolog 70 is such a smooth performer



To check lateral balance roll to inverted from straight and level and check for any wing drop. No problem with the Monolog!



She is an easy aeroplane to land but I was a bit too wide on this occasion and nearly landed in the rough. Time to go around!

When you have eliminated any tendency for the model to roll when in knife-edge you may find that it pulls to the canopy or vice versa. To cure this you may wish to use a Rudder/Elevator mix so that a small amount of opposite elevator is input to allow to track the model in a straight line. Again, start with low values of 1 or 2% so that if you've inadvertently put the mix in the wrong direction it won't make the model too hard to handle.

In Conclusion

The simple flight checks described can be performed on any aerobatic model, not just F3A types, so it is well worth visiting the GBR/CAA website and printing off a few copies of their trimming chart. While you are there have a good look round the rest of the website, as there is a wealth of other information about precision aerobatics. If you are really hooked you may decide to join the Association and to take your flying to the next level by attending your first aerobatic competition.

If you do, I can highly recommend the BJ Craft Monolog 70 as a great choice for your first serious aerobatic machine.

RCMW

MODEL WORLD DETAILS

MODEL INFORMATION

NAME:	Monolog 70
MANUFACTURER:	BJ Craft
SUPPLIER:	Bondaero
WEBSITE:	www.bondaero.co.uk/product/monolog70
PRICE:	£179.99
MODEL TYPE:	F3A Aerobatic
CONSTRUCTION:	Built up from balsa and ply, with epoxy glass mouldings
PARTS SUPPLIED:	Airframe, basic hardware for assembly
PARTS REQUIRED:	Servos, extension leads, receiver, batteries, brushless motor and ESC or glow engine and fuel tank

R/C FUNCTIONS

1 Throttle	3 Elevator
2 Ailerons	4 Rudder

MODEL SPECIFICATIONS

WINGSPAN:	1500 mm
LENGTH:	1600 mm
WEIGHT:	2500 g with LiPo
POWER:	1000 W brushless motor/ .70 cu in four-stroke
BATTERY:	5S – 6S
ESC:	45 A – 70 A

LIKES

Looks fabulous • Super smooth in flight
Stable covering over a wide range of temperatures • Easy to build if you have previous ARTF experience

DISLIKES

Wing retention lugs benefit from pinning to prevent slight wing flex • Top of cowl needed trimming to be able to fit canopy • Canopy latching system is difficult to operate single-handed

AN ITCH TO SCRATCH?

In the fifth instalment of his short series on designing and scratch building your own models, Bill Bowne turns his attention to biplanes



This Hot Dawg biplane used a cabin fuselage to avoid all those pesky struts

Designing a biplane (biplane) isn't much different from designing a monoplane, with the exception that we have to deal with two wings and their struts instead of one. So let's assume we're going to create a biplane of the same size as the monoplane we've been working on. For this, our first biplane design, we're going to stick with two wings of equal area and leave sesquiplanes etc. for another time. So, sorry, but no Nieuport 17's for now!

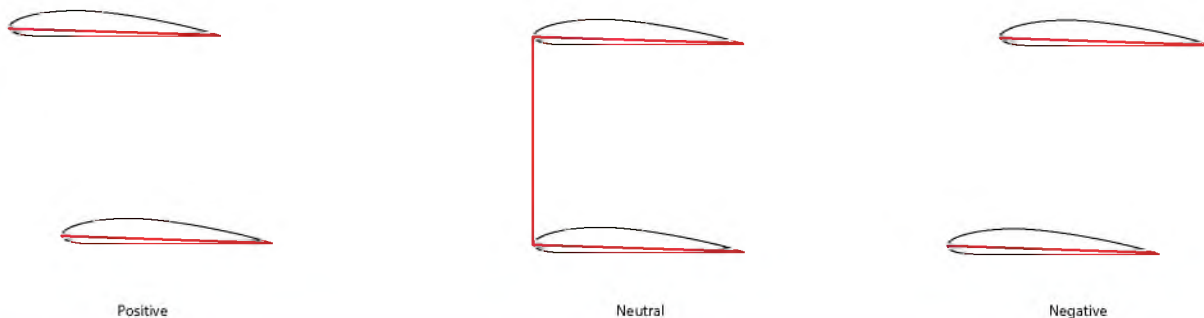
Since interplane struts and interference between the wings makes a biplane's wings only about 70-odd percent as efficient as a monoplane's, we have to start by giving our biplane 140% of the monoplane's area. So, our 360 square inch monoplane becomes a 504 square inch biplane.

Each wing uses the same aspect ratio (A/R) as a monoplane wing of the same area would, and follows the same aileron area rules as that monoplane wing (i.e., each

should be 6% of the total wing area). Yes, you can combine the ailerons onto one wing and make them larger, that is two 12% ailerons instead of four 6% ones. Two larger ailerons may not look as pretty as four but it is easier to set up the linkages that way.

Separate the wings by one AVERAGE chord, using the mean chord line as the minimum distance. If you don't, you may run into some nasty aerodynamic effects!

Fig. 1: The three flavours of wing stagger – Positive, Neutral and Negative. The wings must be separated by at least the full average chord (measured from the centre-line of each airfoil). Best stagger is around 25% of the average chord



Stagger?

Our next consideration is wing stagger. There are three types of stagger: Positive, Negative and Neutral (i.e., none). Simply put, positive stagger puts the top wing's LE ahead of the bottom wing; negative stagger puts the top wing's LE behind the bottom wing, and neutral stagger puts them on the same vertical line. Full scale aircraft usually use positive

stagger, to aid the pilot's view out of the cockpit. Even though we aren't in our models' cockpits we are going to stick with a positive stagger of about 25% of the average chord (Fig. 1).

Another point to consider is the effect of stagger on stalls. Adding positive incidence to a wing (i.e., raising the LE vice the TE) increases the stall speed. If our biplane has

wing stagger we want the forward wing to stall first, not the rear wing. If the rear wing stalls first the model suddenly becomes tail heavy and will snap into a spin.

The situation is even worse if the rearmost wing is the one with ailerons. So, I always set up my bipes with the same incidence, or I set up the forwards wing with a degree or two more.

Golden Rules

We set up our biplane's tail feathers the same as a monoplane's, i.e., the horizontal stabiliser (including the elevators) should have a 3:1 aspect ratio, its area should be about 18% of the wing's total area,

and the elevator should have 20% of the tailplane's area. Likewise, the vertical stab area (including the area under the tailplane and the rudder) should be about 8.5% of the wing area and the rudder should take up 40% of that fin area.

Average Wing Chord	Square root of (wing area divided by aspect ratio) (Important! Divide the area by the AR first and then take the square root!)
Span	Aspect ratio times average chord
Aileron Area (@)	6% of the total wing area per aileron
Total Fuselage Length	80% of the span
Tail Length	37.5% of the total fuselage length
Nose Length	21% of the total fuselage length, from the wing LE to the back of the propeller
Horizontal Stab Area	20% of the wing area (this includes the elevator)
Elevator Area	20% of the horizontal stabiliser area
Horizontal Stab Avg Chord (Aspect Ratio of 3:1)	Square root of the horizontal stab area divided by three
Horizontal Stab Span	Three times the horizontal stab average chord
Vertical Stab Area	8.5% of the wing area (this includes the rudder) (Important! This includes the area of the fuselage side that is under the horizontal stab!)
Rudder Area	40% of the vertical stab area



Above & Below: Perky shows her stuff. Another non-scale cabin biplane drawn up using the rules described. I slightly lengthened the nose by half an inch, expecting her to build nose-light



Biplane C of G

Finding the C of G of a biplane is a bit trickier than for a monoplane. The easiest is for two wings of equal area and zero stagger. There, the C of G for the top wing alone will work for both (i.e., at 25 to 30% of the chord). If we add positive or negative stagger to those equal wings then we'll set the C of G at 25 to 30% of the total distance from the forward wing's LE to the trailing wing's TE.

For wings of two different areas the math gets a bit more complex. The best way I've found to do it is by taking the separate C of G's of the top wing and the bottom wing, then averaging them out by weighting the averages per their relative sizes. We'll do this by using the following formula:

Top wing area =	At
Bottom wing area =	Ab
Top wing C of G =	25% of top wing chord = C of Gt
Bottom wing C of G =	25% of bottom wing chord = C of Gb
Total C of G =	(AtC of Gt + AbC of Gb) / (At + Ab)

You may note that we've set up the C of G using 25% for both top and bottom, whilst the range we normally consider is 25 to 30%. That's so we start with a conservative, forwards C of G. After our test flights we can move the C of G back and make the airplane more responsive. But for the first flights we will go with the safer route.



Above & Below: Scale this time, a big Waco YKS-6 that I built circa 1992. Powered by an Astro geared cobalt 40 she was a delight to fly and capable of just about any aerobatic manoeuvre I wanted her to do. Someday I'll build another one for brushless, but not just yet!





Fairey Flycatcher has two equal area/equal span wings, so the landing gear axle sits under what would be the LE of the averaged wing. Red lines show the top and bottom wings' leading edges

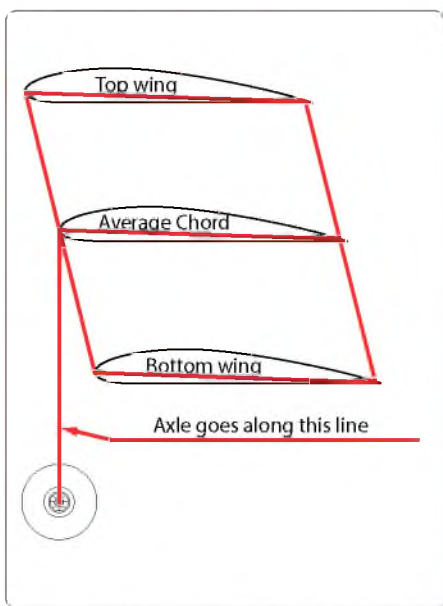


Fig. 2: A taildragger's axle goes best under, or just in front of, a line drawn straight down from the leading edge of the average chord

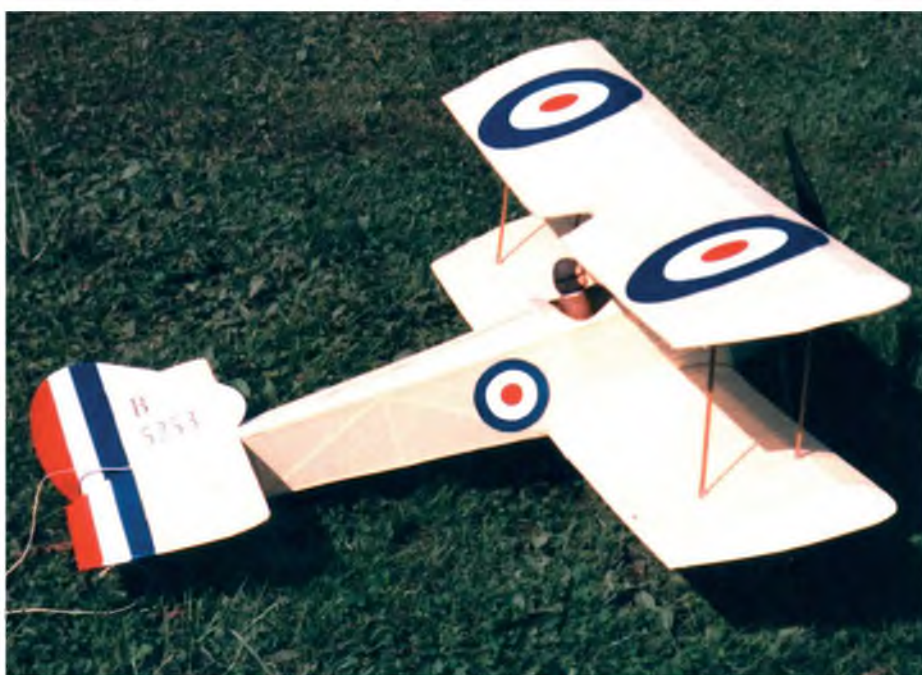
Wheel Location

Landing gear set up is a fairly easy choice for our biplane. Although there have been a few, rare (and sacrilegious!) tricycle landing geared bipes, the vast majority have been taildraggers. So, we'll go with conventional gear and put the axles under where the leading edge of a monoplane with the same average chord would be, adjusting for wing stagger (Figure 2).

Remember, these numbers aren't hard and fast. We can adjust them a bit, depending on how we want our model to fly and how hard we want it to be to build. For example, if we plan to use a lighter than average engine (or motor) for power, we can lengthen the nose a bit to improve the balance and reduce or eliminate the need for any nose weight.

That's it for sport models. Next, we tackle building stand-off scale models. See you for the next chapter!

RCMW



This Sopwith Pup flew great on a geared Speed 400



Fokker D-VII, stablemate to our Pup and another fun flyer on a geared Speed 400. Being a sesquiplane, the D-VII's C of G had to be computed based on the two different wing areas and a bit of stagger

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OPALE PARAMODEL

For your next model do you fancy something a bit different, but are not interested in going down the drone route? This easy to fly R/C paramotor could be just what you are looking for

The chap sitting underneath this paraglider is called Max and we spotted him during our tour of the 2015 Nuremberg Toy Fair. He was sitting alongside his chums, Willy and Lucas, along with a selection of kite like parafoils and paramotor frames. After chatting to Mathieu Charles, the standholder and CEO of Boulogne sur mer based Opale Paramodels it was agreed that Max should be sent over the Channel to show what he could do to RC Model World readers, along with an Oxy 1.5 wing and a matching backpack.

We had barely finished our Nuremberg report when a box arrived from France. Inside were a couple of bubble wrapped packages, the largest of which contained a Max pilot figure already strapped to a small paramotor backpack. The smaller

pack contained the wing, which comes in a pull string carry bag, along with a shoulder strap. A repair kit is also included, which contains some patches if you accidentally rip the fabric.

Our Max was fully finished and strapped to a backpack that was pre-fitted with a Dualsky XM2830EA-8 brushless motor, a 25 A ESC and an 8" x 3.8" APC Slow Flyer prop. This package is designed to be used with a 3-cell LiPo (not supplied); a 2200 mAh pack is a perfect fit inside Max's backpack. Since most of our packs have blue EC3 connectors we cut off the lantern connectors supplied and spliced on an EC3 plug.

No instructions were supplied but after visiting Opale's comprehensive website (<http://www.opale-paramodels.com/>) we were able to quickly print off instruction sheets for both Max and the Oxy 1.5 wing.

Mad About Max

Sized to 1/5 scale, Max can either be purchased as a naked torso, into which you need to fit two 10 kg cm torque servos. The servo arms are bolted to the pilot's actual arms to push and pull the riser wires attached to the wing. Another couple of servos can be fitted to his thighs; these operate an optional Speedbar System that changes the incidence of the wing, much like the foot operated speedbar of a real paraglider. After the servos have been fitted the pilot is clothed in a neatly sewn, bright red jumpsuit.

However, if you want to get Max into the air as quickly as possible he is also available ready built, as per our example. He comes pre-fitted with two high torque (10 kg cm) metal-gearred servos to operate his arms and he is supplied strapped into his harness,



The ready to fly version of Max comes fitted with a high torque servo fitted to each shoulder, while the RTF Backpack S is complete with a Dualsky brushless motor, ESC and an 8-inch prop



A carry bag is supplied to store and transport the wing



The neatly folded parafoil comes with a repair kit



The wing bag can be clipped to a strap to carry it to your flying site

which felt surprisingly heavy. When we unzipped it we found out why – there is a set of ballast plates inside, which weigh 700 grams in total. If required Max can be fitted with up to 3 kg of ballast to aid penetration in stronger winds.

Whist Max can be fitted with the optional speedbar system, his 1/5 scale friend, Willy cannot. Instead he relies on just using his arms to steer and brake the wing (as does the non-speedbar version of Max reviewed here). Alternatively, for increased realism, you can give the 1/4 scale Lucas a home. Max's big brother requires 24 kg cm servos and pilots the impressive 3.2 metre span Spiral wing. As well as a speedbar system, Lucas sports a more scale-like harness and comes with a damper system for his arms that protects the servos in the event of a bad crash.

As with Max, both Willy and Lucas can be purchased ready to fly and fitted with appropriate servos, ballast and harnesses.

Backpacks

When fitted to his harness, Max is ready to be connected up to one of a number of different types of wings, from beginner to advanced types. He can be flown in this fashion as a standalone paraglider at your favourite R/C slope soaring sites.

However, to fly him from a flat field you will need to purchase one of four different sizes of backpacks. These not only provide

a strong mounting point for your chosen motor and ESC but it also includes a robust wire cage to save the delicate riser lines from getting tangled up with the prop.

As with the pilots, the various backpacks can be supplied either as naked frames that need to be fitted out, or as ready to fly versions with the motor, ESC and prop pre-fitted. Our Backpack S was of the latter type.

There is also a Trike version, fitted with wheels. Capable of supporting up to 12 kg payloads, the broad load area of this makes it an excellent alternative to using a drone for aerial photography.

Oxy Wing

The full range of pilots and backpacks are shown in Opale Paramodel's comprehensive English language catalogue, as well as on their website. There you can also view the company's wide range of parafoils. Max will fly using the Oxy 1.0 or 1.5 wings; these are single skin types and are the best choice for beginners, and they suit light to moderate winds. When you have got your hand in you can upgrade to the Pulse 1.4 for flying in stronger winds. However, ultimate paragliding performance is provided by the competition level Fox GT 1.5, whose broad 6.2 aspect ratio wing is fitted with miniribs; in experienced hands this wing can even be looped!

Incidentally, the number after the name refers to the wing's area and not its span. In the case of the Oxy 1.5 wing sent for review, it has a flat area of 1.5 square metres and a flat wingspan of 2.74 metres. It has 23 cells and comes complete with riser lines fitted and ready to fly.

We should also mention that smaller wings and backpacks are also available for indoor flying too!

Setting Up

Inside the pilot's harness there is plenty of room for any modern receiver. You only need three channels to fly these models (without using the speedbar). Since we had the Tactic 6 radio handy in the office, following its review in the last issue, we decided to use that. This radio is supplied with a TR624 six channel Rx and in the review we made the comment that the short, single aerial may not be that appealing to owners of larger models. But for this application that short aerial is an absolute boon!

To save the aerial from getting bent as the LiPo was inserted or withdrawn we made up a thin ply plate to separate the receiver from the LiPo. Velcro is used to fix the Rx to the plate, and a short piece of plastic tubing at the top protects the aerial when it is inside the harness.

To tidy up the installation further we bound the spare loops of servo wires from

the pilot's arms to the plate using nylon tie-wraps.

The transmitter requires a Delta Wing option so that the arms can be mixed to rise and fall together to provide braking of the canopy (using the elevator function), whilst also being able to travel in opposite directions to steer the wing (using the aileron function). To turn right the right arm goes down while the left arm goes up, and vice versa. And to brake the canopy, by pulling down on its trailing edge (using up elevator), both arms move downwards. The delta mix allows the servos to perform both operations at the same time, and if you apply a small amount of brake whilst steering the turn will sharpen considerably. But be careful not to do this too near to the ground or Max might crash! (Says the voice of experience...)

In normal flight the brake lines, which are attached to the hands of the pilot, need to be in the up position. This equates to full down elevator, so how do you keep the spring-loaded Tx stick fully forward while you gently steer Max around the sky? The answer is to use a rubber band! We found that we need to try a few different strengths of band in order to get the right amount of tension to keep the stick in the forwards position, but not so strong that pulling it back was uncomfortable when we wanted to use the brakes.

Flying As A Paraglider

With all systems double-checked and the radio range checked it was time to fly Max and the Oxy 1.5 wing for the first time. We waited for a calm day to give us the best chance of learning how to control this unusual machine. In truth the conditions were a little too calm as there was little or no wind to help inflate the canopy.

After watching one of the videos on the Opale website we expected to simply tug the wing forwards and for it to inflate and rise up. In light winds this does happen to a greater or lesser degree, but with barely any puff at all we found it best to rotate slightly as we pulled the chute to gain a bit more momentum. The wing would then inflate slightly sideways, and if it happened to catch a gust at the right time it would rise overhead and we could let go of the backpack.

The ease of inflation is also governed by the brake lines, if they are too taut then the trailing edge is pulled down and the chute collapses before it has a chance to inflate. So before the first flight you have to experiment to find the sweet spot where the brake lines are left loose enough to not disturb the trailing edge as you inflate the wing for take-off.

The bright orange brake lines are tied to the pilot's hands using a reef knot, while the main risers are connected to support arms that project from the backpack on either side of his head. The risers are quick to rig using U-shaped brackets secured to the support arms using small wing nuts. When slope soaring the risers are connected to loops in the harness on either side of Max's chest.

As discussed the position of the knots in the brake lines is critical and they need to



Max is firmly strapped into the backpack by three strong bungee cords



The cage is essential in order to stop the riser lines from tangling with the prop



Oxy 1.5 wing laid out and ready for the test flight

be tied at equal lengths to avoid braking the chute more on one side than the other. A black dot is marked on each one and we started out by having these immediately above Max's hands. However, it was soon apparent that the brakes were operating prematurely, so we progressively let out more line until the chute was able to inflate. Our final position was with the black dots level with the top of the risers.

It is also important to note that the brake lines need to pass through the ring sewn into the back arm of the Y shaped riser before they are attached to the pilot's hands.

After we had got the knack of inflating the wing it was allowed too rise overhead, at which time we released the backpack and applied power. The natural instinct is to apply a burst of full power but this has the effect of swinging the pilot/backpack forwards without adding much forward speed. We soon learnt that for normal cruise flying a medium range throttle setting is best, with extra power being applied slowly and smoothly if required.

Using just 'aileron' stick alone the turns are quite slow, but they speed and tighten up quite considerably if you use a bit of braking at the same time by gently pulling against the rubber band. But don't go too mad, or suddenly try to turn in the opposite direction, or you run the risk of initiating a pendulum effect where the pilot starts swinging in the harness. If Max starts swinging wildly then just release the sticks and the parafoil's inherent stability will soon dampen it down.

This model is great fun and is quite challenging to fly accurately. The Oxy 1.5 wing gives the greatest pleasure when it



Side view in flight showing how the brake lines at the rear need some slack for normal flight



Coming in to land. Pulling against the rubber band on the Tx causes the arms to drop, thus pulling on the brake lines and drooping the trailing edge of the wing



Arms up – no brakes



Arms down – full brakes



Right arm down, left arm up – turn right



Left arm down, right arm up – turn left



A deft bit of throttle work lines Max up for a low pass

is flown gently and the whole experience then becomes most relaxing. When you have become adept at controlling the paraglider then we are sure that you will want to start flying in a more aggressive manner, and maybe try out some of the aerobatics shown in the videos linked to the Opale Paramodel website. To really give Max a thrill you will need to purchase either the Pulse or Fox wings to really start throwing him around.

One of the great things about Opale's models is that they are dual purpose, as they can also be flown as paragliders from your favourite slope soaring sites. We will be doing just that in the coming weeks and then we will let you know how Max performs as a paragliding pilot. **RCMW**



A rubber band maintains full down 'elevator' and keeps the arms up for cruise flying



This side profile gives a good shot of the single skin wing and its 23 cells



The model turns quite steeply if you apply some braking whilst steering. Just don't try it too low!



Well caught! Barry landed Max at his feet and was able to grab the canopy. Informal spot landing competitions would be great fun with these models



Barry Atkinson, Editor of RC Jet International, tries a more sedate form of flying

RC MODEL WORLD DETAILS

MODEL INFORMATION

NAME:	Max (pilot), Backpack S (paramotor frame), Oxy 1.5 (wing)
MANUFACTURER:	Opale Paramodels
WEBSITE:	www.opale-paramodels.com
PRICE:	Max (pilot) – 149 Euros Backpack S (paramotor frame) – 299 Euros Oxy 1.5 (wing) – 149 Euros
MODEL TYPE:	Paramotor and Paraglider
PARTS REQUIRED:	Transmitter, 3-channel minimum receiver, 3-cell LiPo

R/C FUNCTIONS

1: Throttle 2: Steering 3: Brakes

MODEL SPECIFICATIONS

MAX	
SCALE:	1/5
LENGTH:	35 cm
OXY 1.5	
FLAT AREA:	1.5 sq m
FLAT WINGSPAN:	2.74 m
ASPECT RATIO:	5
CELLS:	23
WEIGHT:	140 g
BACKPACK S	
MATERIAL:	Epoxy Coated Steel
WEIGHT:	750 g
DIMENSIONS:	21 x 26 x 26 cm
PROPELLER SIZE:	8 inch

DISLIKES

Instructions are a bit vague when connecting brake lines

LIKES

A quality product throughout • Ready To Fly version of pilot and backpack can be flight ready in minutes • Easy to fly and relaxing too!
A real eye-catching model at either flat field or slope sites



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Graham Dorschell offers up a quick build, and even faster flying jet-style foam fun-flyer



E-BANDIT

This is a fast to build, easy to fly model with crisp flying characteristics and having the ease of construction of a foam build. It can fly very fast on larger KV motors, and on larger voltage and higher watt motors it can be made into a rocket ship. It can be flown at almost zero altitude and is very stable.

The model makes use of a relative new idea of folding a 5 mm Depron foam sheet, covered in vinyl (or heatshrink film) over on itself using a 5 mm Depron spar. I looked at various YouTube videos to help with this new method, instead of using a traditional hot wire cut foam core, which is balsa sheeted.

I made several attempts to make the wing. But, as Edison once said, although he found 1000 ways of how not to make a light bulb, he only had to find one that worked!



You don't need much space to build this one!



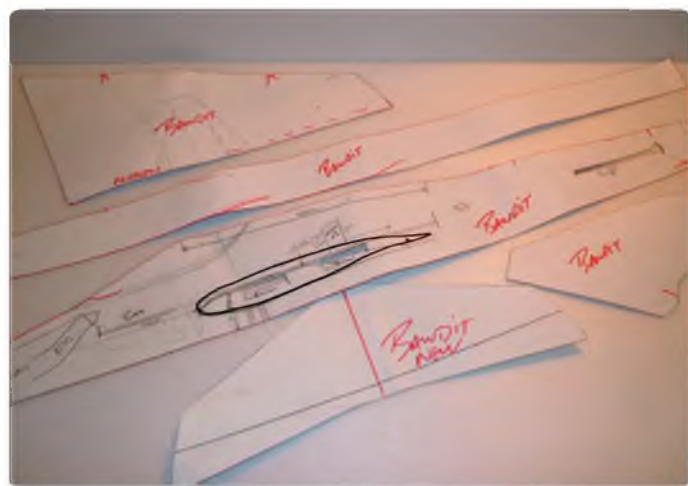
Using the quick build method described it is easy to produce multiple 'kits'. A perfect club night building project?



Adhesives used include UHU-Por, foam safe glue, spray adhesive, hot glue sticks and a pot of water based varnish



You will also need a few simple tools



Make up and cut out a set of templates

Wings

First, I made a cardboard template to the size of the wings I wished to make. This makes it easy to draw two folded sides by, first, drawing one side and then turning it over. Then draw around it again on top of the Depron sheet. Next, cut the wing from the foam, leaving some spare just in case you run off line when folding it.

Depron seems to have a waxy side to it and treating it with varnish is a very wise thing to do, especially if you live in a hot country, as the vinyl, or Solarfilm, may bubble up after exposure to direct sunlight, or when heat is applied. At this point I coat the foam with a varnish; any quick drying, water based varnish will do. My thanks to Richard Hughes of Falcon Aviation for this idea. You can also use M77 spray adhesive on the foam to give a better grip.

Next, cut a vinyl sheet to size, hold it down and peel off the backing. Lay this flat on the building board. Place the foam onto of the sticky backed vinyl and turn it over. Then, using a credit card or spare bit of balsa, gently squeeze out the wrinkles and bubbles. There is a YouTube video to help with this process. Search for 'How to fold Depron wings'.

Make a fold on the centre line and mark it with a pen. Then, using a scalpel score along the line, cutting by no more than one millimetre and being careful not to go all the way through. This is now your fold line. With one side of the wing held flat, and marked as the bottom section of the wing,

pick up the top side and fold it over using a long steel ruler on the score line that you made earlier. Fold it flat with hand pressure and then place the card template on top. Now, using a large box cutter blade and steel rule, cut the waste material away.

The 5 mm spar can be glued in with UHU-POR contact glue, after which you can reduce the trailing edge down to 5 mm. Since you have folded the wing over it is now 10 mm thick and it is necessary to reduce the thickness to match the balsa aileron.

You can add end caps from foam but, living in the Far East for part of the year, I leave the wingtips open to let hot air out and it does not affect flight performance.

Fuselage

This again is simple in construction and it is a lamination of two of the same 5 mm Depron foam sheets. They are simply cut using a template and then M77 spray adhesive is used to glue them together to make 10 mm thick parts. The top and bottom panels are made in the same way and only the motor bay is left open at the bottom for access and cooling. Glue in the battery tray, fitted out with a Velcro strap and a non-slip grip, like those that you can find in a pound shop to hold your mobile phone in your car, which work very well.

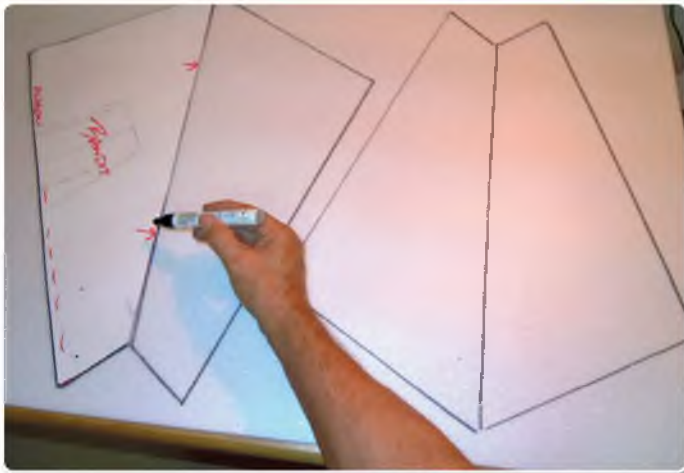
The whole fuselage is then glued together with, first, the sides going on. As they are 10 mm thick there is no need for strengtheners down the length of the

fuselage. The bulkhead and 4 mm ply motor mount are backed up using spare foam glued in with hot glue from my trusty 6 mm glue gun.

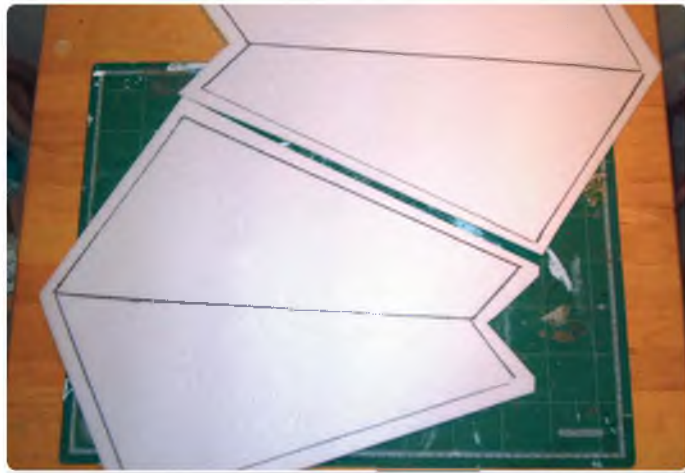
Now, using the plan, make all the necessary guide holes for the 5 mm hardwood spars to fit the wings, and the slots for the fin and tailplane. Make sure that the fin fits right through so that it touches the top of the tailplane, then use wood glue to join the tail together.

The whole body is then shaped and rounded off down the length of the fuselage. Add scrap foam to the motor compartment to round off the nose and to accommodate the size of motor that you have selected. Offering up the motor to the model is a good idea at this point to check the clearance and fit for the 40 mm diameter electric spinner. I tried a larger 50 mm spinner on a 1500 KV motor but I seemed to get a lot of resonance and vibration; for some reason the smaller diameter spinners worked better across the range of models and at all rpm's.

I recommend covering the whole fuselage first and then cutting the vinyl through where you can see the cuts that you made earlier, then open the hatch with a large knife blade and steel ruler. The hatch is best made of Corex plastic as it can be cut slightly oversize and then almost push fitted in the hole, using glass tape as a hinge and latched at the front end.



Use the templates to draw out the airframe parts



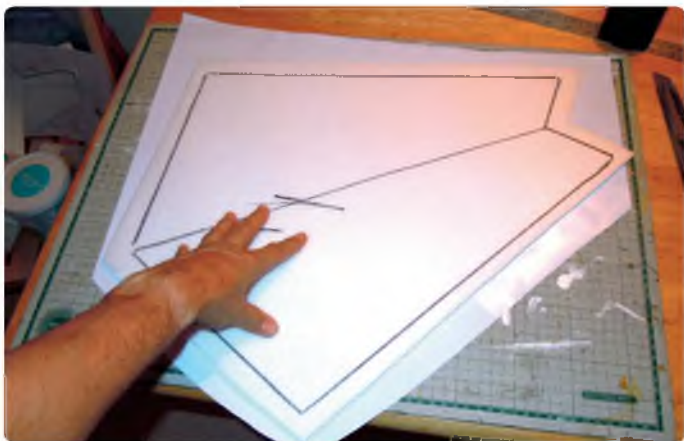
Leave a margin around the wings



Coat the outer surfaces of the wings with water based varnish



The varnish provides a good base for the adhesive spray



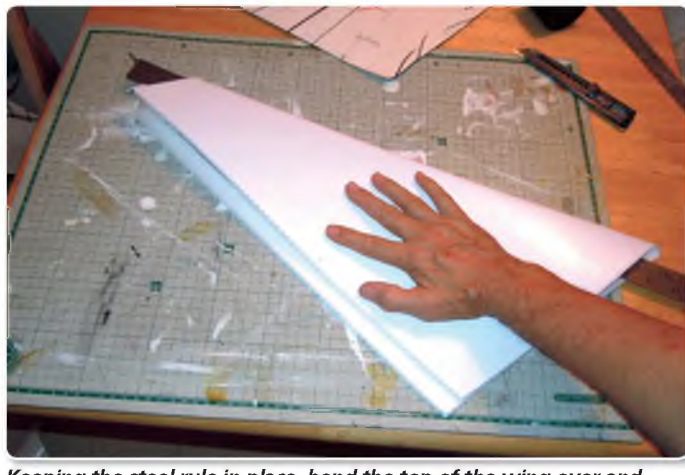
Place the wing sheet onto the precut vinyl or Solarfilm



A small steel ruler is used to tease out any air bubbles



Lightly score along the leading edge line



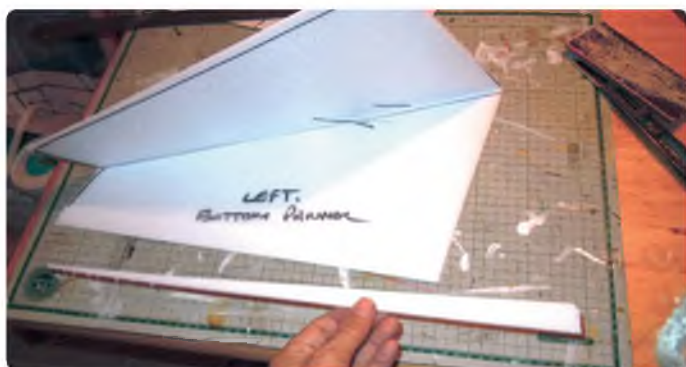
Keeping the steel rule in place, bend the top of the wing over and press flat



Use the template to trim off excess material around the edges of the wing



Carefully chamfer the trailing edge of the bottom sheet and sand smooth



Cut out the tapered Depron spar



Mark the spar location and glue in place



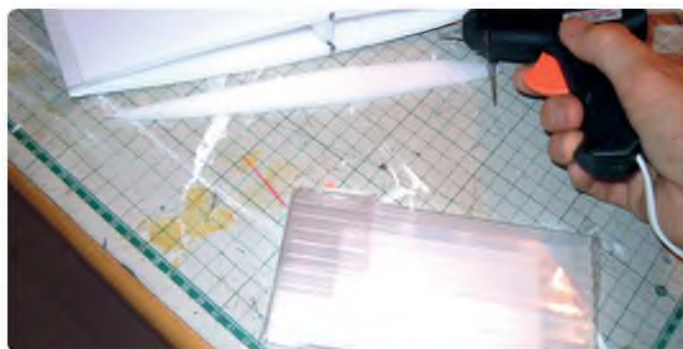
Trim the end of the spar



Cut a piece of glass tape to fit along the trailing edge and apply glue to the top of the spar and the T.E. chamfer



Fold the wing shut and roll the tape over the trailing edge to secure it



Hot glue in foam ribs at the root and tip



Use another strip of glass tape to attach the aileron to the wing panel



Fold the aileron back onto the top sheeting and use another strip of tape to seal the underside of the hinge line

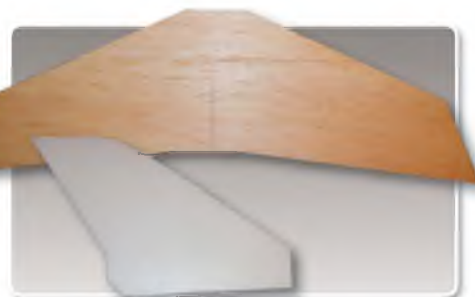
Wing To Body Fit

This is fiddly and demands that care is taken to ensure that the wing is positioned square and true on the fuselage. Mark where the wing is to be placed and remember to pack some spare foam on the wing spars. The spars are pushed through and centred before being secured with a hot glue gun. Mount foam on the top and bottom of the spar and shape it down to match the shape of the tapered wing.

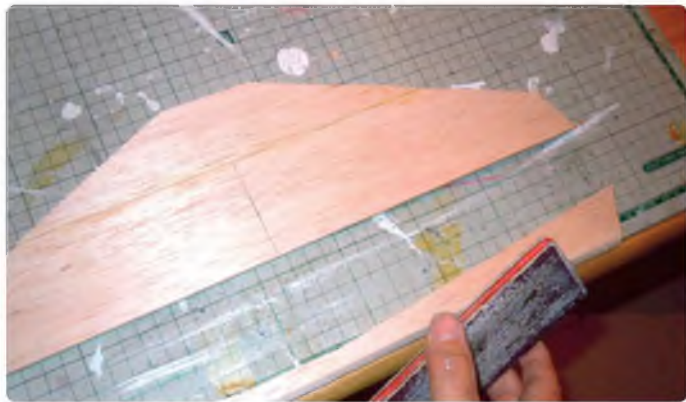
Now offer up one wing at a time. When you're satisfied that the wing is in the

correct position, and being very quick and efficient with the hot glue gun, apply glue to the top and bottom of the spar and pinch the wing into position and hold. Alternatively, fast curing epoxy can be used to glue the wing to the spars. I use 5-minute Devcon. Repeat for the second wing, checking that your work is straight and at 90 degrees to the fuselage.

At this point you can go ahead with positioning the tailplane and tail fin, again making sure that they are straight and in line.



The tailplane is best made from balsa sheet. Use Correx fluted sheeting for the fin to save weight



After cutting away the elevator, chamfer the leading edge



Use more strips of glass tape to hinge the elevator



Cut out and prepare the fuselage parts. Note the groove in the top sheeting to allow it to bend over the canopy hump



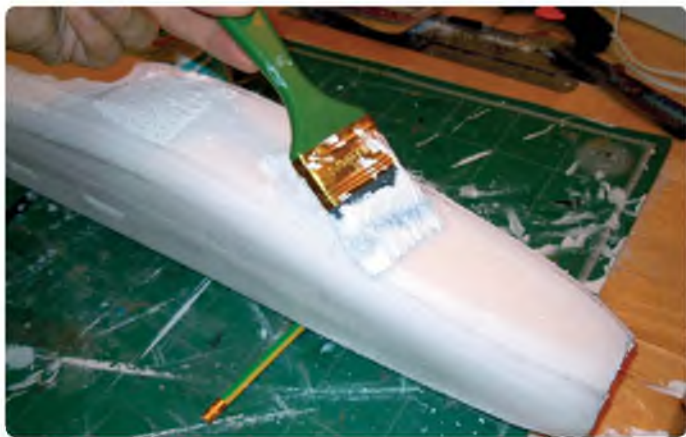
Above & below: Add the ply firewall and reinforce behind with rectangles of foam



Glue in the battery mount. Line this with a piece of non-slip mat and fit a hook and loop strap



After gluing on the remaining fuselage side, round off the sharp edges with a sanding block



Apply more varnish to seal the foam ready for covering



Reinforce the fuselage joints with strips of glass tape

Covering

In the country where I make the models there is a scarcity of covering materials. And so I chose to cover the whole model in white sticky back vinyl as it is relatively cheap. However, conventional heat shrink coverings, such as Solarfilm or Solartex

would be a bit more time consuming but would yield a better finished product over all.

Tail

My tail fin was made of 4 mm Corex, with a balsa tailplane for rigidity as the flight

surfaces benefit from traditional materials. The fin could be made from balsa, especially if a rudder is required. I prefer to go for performance and try to make the model as light as possible; leaving off the rudder means no extra servo and wiring.



Cut out a hole for cooling air to reach the battery



Next, mark and cut out the battery hatch



Glue in a piece of Correx or ply to act as a stop for the hatch



Hinge the front edge of the hatch using glass tape



A tab of tape at the rear of the hatch gives you something to grip when pulling it clear to reach the battery



Cut out holes for the two wooden wing joiners. Glue the joiners in place using hot glue and face the protruding pieces with foam strips top and bottom



Chamfer the foam strips to match the inside profile of the wing roots



Test fit the wing panels before gluing in place



The tailplane and fin can be hot glued in place after making sure that they are square to the wings



Tape the motor wires to a stick so that the ESC can be fed down inside the nose.



Feed the stick through the hole in the firewall and pull through until the motor wires appear



Use a short piece of fuel tubing over the screwdriver blade and motor mounting screws. This makes it much easier to keep the blade in place as you nip the screws up tight



With the spinner and prop to hand, trim the nose to give a close fit

Motor Installation

The motor I chose was a 35 mm outrunner, GT2815/05, 1500 KV with an 8" x 6" APC prop and 60 amp ESC. The motor is simply screwed to the ply plate using self-tapping motor screws and with a slight amount of right side thrust. The ESC wires are fed through the ply bulkhead, through the top hatch of the model, and then coupled up to the three motor wires. The motor's direction is tested before all four screws are tightened up and the motor is fully installed. Many times I have screwed the motor in and not correctly tested the direction of rotation of the motor, only to waste time in taking it back out because I couldn't get to the wires to swap them around. So always test the motor direction, but without a prop for safety.

Installation

The motor and ESC were straightforward, and the servos were simply fitted after cutting an appropriate size hole in the sides of the fuselage. The servos are fitted there for a reason, so be careful to not cut any part of the wings when placing your servos as cutting the wing open will deform them, as the folding process depends on the stress forming them into a uniform wing shape.

The elevator servo is fitted under the tailplane and, as with the aileron servos, it is simply fitted by applying a small amount of hot glue and pushing it into place. The fixing is very strong in the 10 mm deep Depron. I used wire pushrods and clevises, and all worked well. I fitted my Spektrum 500 receiver and produced a Y-lead for the ailerons.

It is a neat and tidy installation as all the wiring is in-board of the fuselage and there are no holes that need to be punched through.



Use a ply template to mark out the cut-outs for the elevator and aileron servos



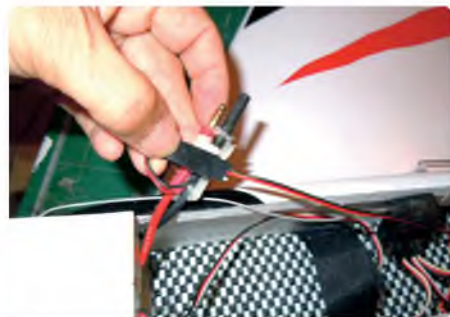
Fit the aileron servos above the wing and link up using short wire pushrods



The elevator servo also uses a short wire pushrod



A strip of yellow LEDs are used to simulate an afterburner in the tailpipe



Pigtail the LED wiring to the relevant battery wires



Fix the LED strip in place using the hot glue gun



Plug in the flight battery for instant jet effect!



There's plenty of room for the LiPo and the receiver



Mark the CG points on the underside of the wings. Note the sandpaper strips glued to the fuselage sides to give extra grip when hand launching

Set Up

The C of G works out very well on this design as the balance point is centred around the mid-point of the wing. It is 12 mm to 12.5 mm from the LE, and it can easily be obtained by repositioning your chosen LiPo battery.

Aileron and elevator movement is around 7 to 8 mm up and down, depending on individual preference.

Flying

Usually it is a good idea to get a club member to give your new model a throw for its first flight. I use strips of emery paper or sandpaper, stuck on either side of the fuselage at the CG point under the wing, to give a good grip.

This model is very stable and it can be flown to its limits. A good model pilot can make good use of this airframe. There is no rudder on my design, although many pilots' preference would be to utilise it in knife edge or stall turns and flick rolls. However, keeping things simple sometimes pays and my preference is for more performance with less weight. I can open the throttle fully and the E-Bandit gets low and fast down the strip. If you have any wing whistles handy those fast passes are very crowd pleasing! Climb vertically, roll into a reversal, and push her flat out into a dive, straighten out and blast down the runway again. It's great when there's a few of you making these manoeuvres.

Landing E-Bandit on her belly is a doddle – and getting more than three feet from yourself to pick her up is the walk of shame!

Conclusion

Well, all in all, this is probably my favourite design yet using Depron. The learning curve has been steep and it has taken me a long time to achieve the results that I wanted. The real trick was not only making the model affordable but also tough enough so that the E-Bandit would

be able to fly at high speed without pulling its wings off – as some of my earlier efforts did!

This model is a hoot! I am proud to say that it is a great flyer and it is a cheap and simple design with which to turn up at the club and just have some fun. As one member said, "It goes fast, and turns left!" – but some of us like that kind of thing!

RCMW



Showing off the finished model

Another variation of colour scheme. Let your imagination run free!



E-Bandit is easy to hand launch



This model is very stable and it can be flown to its limits

MODEL WORLD DETAILS

MODEL SPECIFICATIONS

WINGSPAN:	35" (889 mm)
WING AREA:	128 sq in (8.258 sq cm)
LENGTH:	37" (940 mm)
WEIGHT:	34.2 oz (969 g)
RADIO FUNCTIONS:	Throttle, Ailerons, Elevator
RECEIVER:	Spektrum 500
SERVOs:	E Max minis
MOTOR:	E Max 1500 KV
PROP:	8" x 6"
BASIC CONSTRUCTION MATERIALS:	Balsa, Ply, Depron foam
COVERING MATERIAL:	Solarfilm or self - adhesive vinyl
CENTRE OF GRAVITY:	4.6" (120 mm) from Leading Edge
CONTROL THROWS:	Ailerons: 6 mm Elevator: 8 mm Rudder: none



If you have any wing whistles handy those fast passes are very crowd pleasing



Following a reversal, dive, straighten out and blast down the runway again...

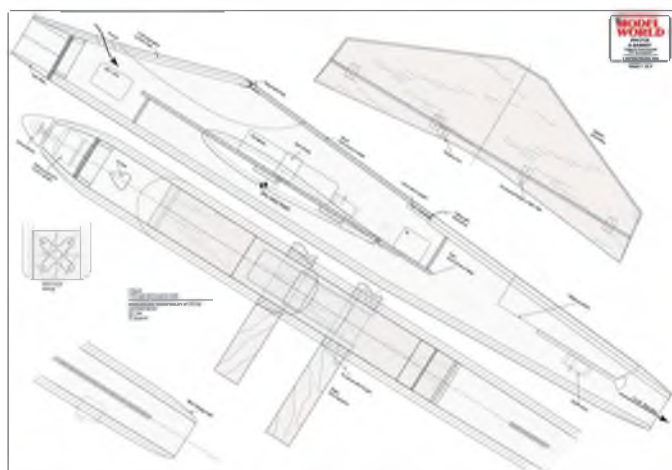
PLAN DETAILS

NAME:	E-Bandit
BUILD CATEGORY:	Intermediate
PLAN NUMBER:	MW3728
PLAN PRICE:	£11.99 (US \$20.99)

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

Copies of plan number MW3728 are available from RC Model World (Plans Service), Traplet Publications Limited, Traplet House, Willow End Park, Blackmore Park Road, Welland, Malvern, WR13 6NN, UK. Telephone: + 44 (0) 1684 588599, Fax: + 44 (0) 1684 578558, Email: orders@traplet.com or order online at www.trapletshop.com

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Alec Barber discusses the planning issues affecting our hobby, and the threats and opportunities that they bring



View of club field now with wind turbines in the background

After many years of flying from our field, five years ago we were faced with the prospect of the erection of three 100 metre tall wind turbines, the nearest being only 200 metres from our boundary. Our immediate reaction was opposition at all costs but in almost all instances this should be a last resort. There is so much a club can lose if they go down the total opposition trail and the energy company still happens to obtain planning approval. Threats of this nature can usually be turned into opportunities.

My background is that of a Local Authority Quantity Surveyor and I was heavily involved with grant work for people with disabilities that almost always required the preparation of planning applications. Having therefore some knowledge of planning procedures I became involved, on behalf of the club trustees, in negotiating with the energy company and subsequently with the submission of our own planning application. In the end, I believe, by talking to all parties and involving others as we went through all the processes we finished up in a better and stronger position than we started from.

28 Days

Is planning a requirement to fly at all?

Any club who flies more than 28 days in a year from a site requires planning permission to carry out its activities. This is a necessary whether you rent or own the site. The likelihood is that your site is designated green belt, is probably agricultural land and you most likely rent it. Irrespective of who



One of a thousand plants required by the planners

owns the site you need to make a case for your hobby/sport (and, yes, a recognised countryside pursuit) to take place there. This is where the BMFA can bring its expertise into play in preparing your application and providing historical back-up and present legislation for the planning officer to digest.

Having submitted an application this is not the point where you sit back and wait for a result. Your submission will, in all likelihood, be looked at by only one planning officer who will, after considering your application together with any letters of support or complaint, make a recommendation to the councillors on the planning committee. His judgement can only be made on the facts presented to him.

The key to a successful application is definitely in the hands of the councillors on the committee and not the planning officer, who only makes a recommendation to the panel. It is absolutely essential that you lobby the councillors representing the area where you fly. With luck one or more will be members of the planning committee and you should endeavour to get them on your side. Irrespective of your politics, or even if you voted or not, these people represent all their constituents. Try to meet them as informally as possible and explain what you need and are trying to achieve. I cannot stress more strongly that local councillors are elected to represent individuals and groups such as ours operating in their areas and lobbying them to obtain support for your group is your right.

MODEL FLYING



To emphasise the above point, 25 years ago our club was in a position to buy our flying site. Before we could commit ourselves to the purchase we had to know what restrictions, if any, would be imposed on us when we, hopefully, were successful with a planning application. The application went before the council with a recommendation from the planning officer that it should be approved but with flying hours restricted to four hours one day per week and the same on Saturday and Sunday; obviously not enough to justify the expense of purchasing the field. Prior to our application being submitted and during the consultation period we talked informally to two councillors on a number of occasions. These gentlemen both stood up at the meeting and spoke on our behalf. They influenced the rest of the committee to the extent that the hours granted were 10 am to 8 pm every weekday and 10 am to 6 pm Saturdays and Sundays.

Clubs who rent land and who have been flying without any problems or planning permission may think that all these permissions are unnecessary. This could be true until the closest dwelling changes hands and the new owners take exception to the 'noisy' models disturbing their peace and quiet. A complaint to the council puts the club immediately in breach of planning, as well as having an environmental complaint levied against it. If you have operated from the site for more than 10 years it would pay any club to guard against the planning issue by applying for a Certificate of Legal Use. The cost of this



Our new car park is named after a deceased member



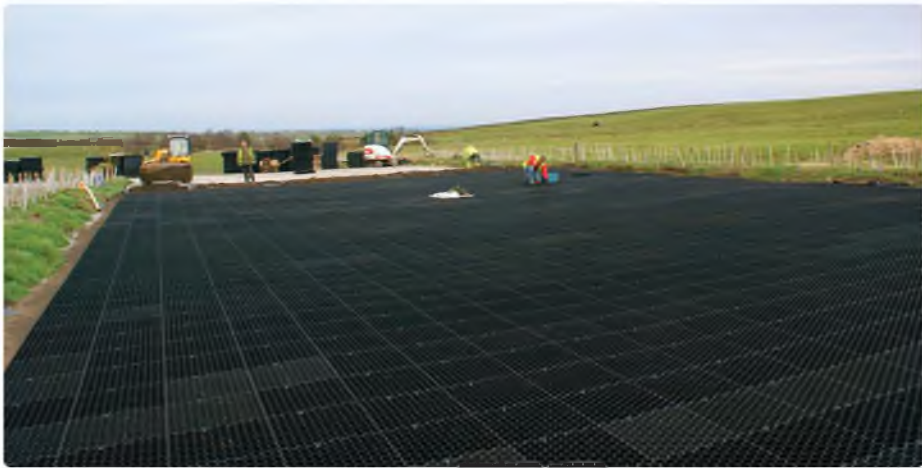
In the midst of everything we managed to run a dawn to dusk continuous fly-in for Help For Heroes

and the procedure to obtain one is very similar to a planning application, with one very important exception; if you can satisfactorily prove that you have flown from the site over a period of 10 years without problems then the certificate is automatically issued. Even if situated in the green belt your site is then recognised as an area where model flying is permitted. If documentation is difficult to obtain to back-up the 10 years on site an acceptable proof would be a sworn affidavit by a club member that he had flown from the site for more than the required time. Most solicitors will provide this for a relatively small fee.

Turbines Are Coming – Or Not!

Twenty years on from owning the site we discovered that one of the 'Big Six' energy companies had proposed a wind farm within 200 metres of our field and smack in the middle of our flight path. Though the initial response was to organise opposition it was felt that more information was needed about the development. We contacted the energy company who, we learned, didn't know of our existence. Someone who prepared their very expensive environmental study missed out badly. The development department were very keen to enter into discussions with the club to see if we could co-exist. They did stress, however, that they would continue to press ahead with their plans for the wind farm as designed.

The way our flying was arranged at that time we flew over the proposed turbines



Laying the green car park – a planning requirement! Note the screen planting by the members



The local undertaker helps clear up



Looking East



Looking North

but, as in most, if not all clubs, we did not fly behind the pit area. We, in other words used about 270 degrees of the available 360 degrees of sky. By moving the pit to the opposite side of the field as close to the turbines as possible and positioning pilots with their back to them we created a new dead air space which covered the whole of the wind farm but still left us with 270 degrees of open air space. The downside to this was that we already walked 200 metres with all our kit to the pit and the new arrangement would mean a further 200 metres for our ever aging members. This solution and the difficulties it presented to us were put to the company, who agreed to provide funds to purchase some land for a car park and to pay for its construction. It was felt that the presence of the big turbine behind the pilots may lose us members so a compensation fee equivalent to about 25 members' subscriptions was agreed to be paid annually to the club for the life of the turbines, estimated at 25 years.

What did we have to do in return for all this? The trustees made a verbal promise not to oppose their application as a group, though no restraints were put on any individual club member. We had to obtain our own planning consent and organise the contractor ourselves to build the car park. If we hadn't had the skills amongst our members then architects and surveyors fees amounting to four or five thousand pounds would also have had to be found. The planners also required an environmental study, which would have cost at least another £2,000, but as there was already another study in existence for the turbines, prepared by experts and probably costing tens of thousands of pounds, we borrowed the relevant content for our application. It is worth remembering, especially if you go down the opposition route, that all documents, drawings, letters of support or opposition are, once submitted to the planning department, in the public domain. Anyone can obtain copies, including your landlord or neighbours, so any objection needs to be cool and considered, and based on facts.

In Opposition

What would we have gained if we had opposed the application?

If we had swayed public opinion to the extent that that the application for the turbines failed, we would have gained and lost nothing but there would still be the threat of an appeal by the developer. Appeals are taken out of the local government's hands and approximately one third of appeals are found in favour of the appellant. International companies almost always appeal against a local rejection and are able to bring far more resources to uphold their case than those people affected by the development.

If the opposition to the application failed and the developer won then the club would be left in the situation of having to fund any changes in order to fly safely. They would also find themselves with a powerful neighbour and one that they had already been in dispute with. Not the best start to long-term relations.

Our application went through without too much trouble, though the help of a councillor was again much appreciated. The developer's application was also passed and by the time development started on the site, about four years later, we had our car park up and running and were operating from the other side of the field. There was a moment of concern when the construction started because the developer's name was not the one with which we had negotiated. It is quite common for one company to go as far as a successful planning application then sell the development to another party. Concern was expressed for our annual compensation but the new firm was bound by the original agreement as written when he purchased the site, just as he would be bound by the rental agreement the original company had made with the landowner.

On a practical note there is very little turbulence, if any, when flying downwind of a 60 metre diameter windmill. Though the tip speed looks quite fast they only revolve at about 15 revolutions per minute. If further proof were needed, watch our American cousins on YouTube flying through the blade arc of some enormous turbines. Not something to be proud of but it shows that there is little coming off the back that would affect a model.

Conclusions

To sum up we found that involving the councillors to represent our views and concerns, particularly when we purchased the site, paid off handsomely. In the case of the very close development we also received support from the councillor but in this instance the most benefit was achieved by engaging the energy company in constructive dialogue.

If you are faced with a situation like ours talk first to everyone – the BMFA, councillors, developers – and club members who, if you have to get involved in your own development, may have the skills and the will to slash the cost of the professional help you may require.

Alternatively, if opposition is the only option, then to increase your 'rating' with the planner write a detailed letter from the club committee stating every possible reason why the proposal should be rejected, but then persuade your members all to write individually. Do not go down the route of collecting signatures on a petition. Letters of objection and support are weighed evenly against each other and a petition, even if it contains hundreds of signatures, only rates the same as one letter. Remember also to lobby your local councillor; his/her voice can be just as strong in opposing a development as in support.

This article only reflects how we approached a perceived threat and turned it into an opportunity. Other cases will inevitably vary in detail but the underlying principal of negotiation achieving more than confrontation will almost always apply. Seek help from every possible source, including the BMFA and club members with professional and practical skills. Even the developer will help if they appreciate you are trying to accommodate their



Members moving the club cabin to the other side of the field



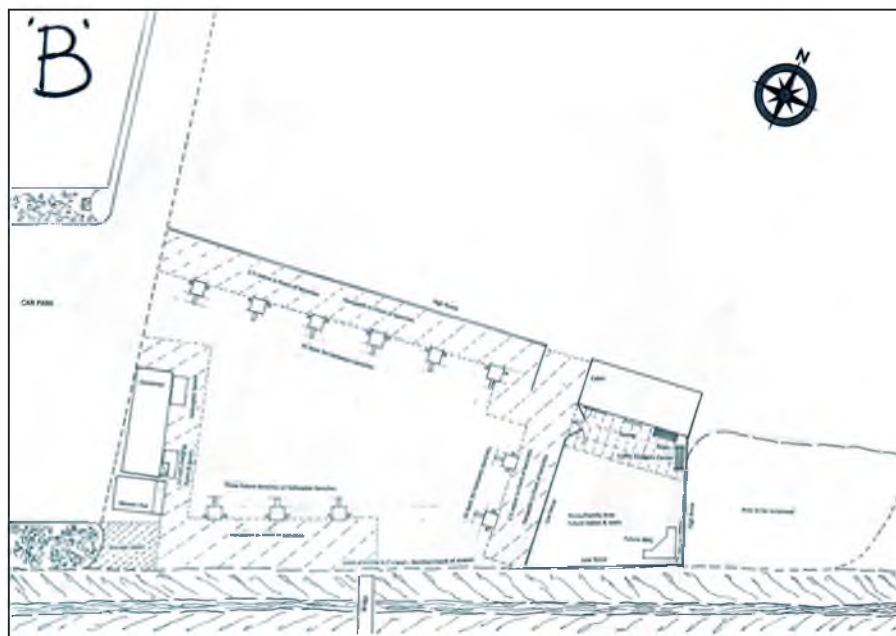
New track to car park, with the pit in the old position



Turbine under construction

needs together with your own. When planning approval is required remember that the Planning Committee, all of which are Councillors, have the final say and, if convinced of your worth to the community, it is not uncommon for them to modify or ignore the recommendation of the Planning Officer.

As a footnote I believe the threat of onshore wind farms to our hobby is decreasing, but not gone away, due to changes in government policy. The route of HS2 could be a threat to a number of established flying sites. Here again I believe negotiation, even if this means relocation, would be more productive than outright opposition. The purchase of a new field for a club in the path of the line would probably hardly register on the funds available to remove all the obstacles to the development. Don't, however, expect any company to find a new site for you (we had to negotiate with our neighbour to purchase the land for the car park). You will have to find the site and organise the development of it. Their interest will only be how much it will cost them to move you out of the way!



Plan of pit area that was rejected as being too large

Noise Testing

The issue that most affects model aircraft flying, probably more than planning consent, is the noise that powered aircraft make, be they glow, petrol, jet or large electric motors. Many clubs will argue that they follow the BMFA guidelines to the letter and some may go as far as to operate noise level tests in accordance with the guide. The method of measuring the noise of a model engine, motor or propeller combination is to take four dBA readings around the model running at full bore. There is a little more to it than what I have described but for our purposes it is the distance we measure the noise from the model that is important, not the reading obtained. If the separation of the flying site to a potential noise sensitive area is also within the distances recommended in the guidelines you would assume that there would be no major problem to operating these types of aircraft within reasonable hours. As support to a planning application, quoting the guidelines and undertaking to monitor them from time to time, this is definitely the route to follow. In the event of a noise complaint it is helpful if you can demonstrate that, as responsible flyers, you are following accepted practice.

Let us suppose that the Environmental Health Department of the Local Authority receive a noise complaint about your site. The first thing they probably will not do is contact the club. They will visit the complainant and if they think there is a problem they will probably do two things. First they will ask the person to keep a diary noting the frequency of the disturbance and the Environmental Health Officer will make a number of random visits to the address where the complaint is coming from and will record noise levels at that point. Before he has been in touch with the club he will have his report written and a string of noise level readings at the

point where the noise is perceived as a nuisance. This could quite easily be up to a kilometre away from the flying site and certainly not seven metres away from the offending model. As can be easily seen clubs are measuring one thing and the Local Authority is measuring something completely different. This doesn't mean that our readings are irrelevant, just that they can really only be used as an argument that the club is maintaining a policy of trying to reduce noise to an acceptable level.

The Environmental Health Officer, while taking his readings, will have determined the ambient noise level at the address when flying takes place and when no aircraft are being operated. He will also take note of other background noise such as traffic, factories in the area, full size aircraft and even the local wildlife. From all these readings an estimate of how much the operation of model aircraft increases the background noise can be assessed. And if he feels this is unacceptable he would then make contact with the club. Sometimes a more fair-minded officer will have made contact earlier while he was preparing the report but he is under no obligation to do this. Usually he will enter into discussions with the club and will then check what measures are in place to limit noise at source. He will probably make recommendations that will help the club limit noise emissions. But usually this is down to the club unless the Environmental Health Officer has had previous experience with model aircraft. Assuming that a noise reduction is required he will probably warn the club that a Noise Abatement Notice could be served on the committee or trustees but he will almost always allow the club a period of grace to put any measures in place to meet his recommendations. This could take various forms such as further silencing of engines, limiting powered

models to specific hours or even restricting the type of model that can be flown.

If the flying field is in a particularly noise sensitive area and the complainant is close then irrespective of what it says in any planning application approved for the site then the problem is not an easy one to address. However, the further away from the source of the noise the property is located it becomes much harder for the Environmental Health Officer to record an increase in the background noise level.

I personally know of an incidence where a person made a complaint and when the measurements were taken other things in the area, such as cattle, farm machinery and even birdsong were all recorded louder than the models. His ruling was that though the models could just be heard they didn't raise the existing noise levels so the club need take no further action.

The Environmental Health Officers working in the way they do by taking measurements at the location of the complaint does save the club from having to fight malicious anonymous complaints. They cannot and won't act unless they have a location and name and address of the person bringing the complaint.

Flying groups can only work to the guidelines set out by the National body, though it might be practical, though possibly counter-productive, to take readings outside all the properties within say 1500 metres of the flying site. These guidelines are a useful tool demonstrating that a club is trying to limit noise but in the end they are not what the Local Authority is looking at. They are only interested in how the noise is perceived by your neighbours. The perception from the flying field is that a model starts noisy and gets quieter once it takes off. For the residents surrounding the site the opposite is true and it is up to us reduce this as much as possible. **RCMW**

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SOARERS' SLOT

Mike Proctor shows how to get an electric motor down inside a glider's long nose, attends a Kapa's first flights and solves a couple of maintenance issues

Kapa 35 F5J ready for testing on a fine day and showing its spring-like colour scheme. Yes, the fin is as big as it looks! Aspect-ratio is over 20:1 and the slim airfoil is of unknown parentage. Who cares – it works well!

Letterbox Problems

We were flying on a foggy day, which we thought had the potential for clearing at any moment into a super sunny one, like the previous day. But this is the Vale of York, where weather persists and it didn't!

However, climbing to the 175 m required for the postal series was possible with a little care. I was flying the 3.7 AVA and the air was splendid – well capable of doing 10 minutes plus every flight, and flat calm.

I was doing a fast (for an AVA!) circuit,

losing the last few excess metres before landing, when I heard a yell asking if I had started the motor. As I was trying to come down, not go up, this was unlikely, even for me, and I couldn't hear any noise.

The landing went well and a quick check



The solid red area here is a letterbox brake on an AVA 3.7. Look beyond the silver tape, to the film covering. Can you see a problem?



The problem skewered! The brake was holding down the film at any speed just above normal gliding. Any faster and it was sucked out, making a loud buzzing! Tricky to find but easy to fix with an iron

of the controls and flying surfaces revealed nothing untoward. So AVA was dispatched to take advantage of the good air. This time I could just hear a high frequency buzzing as the climb speed increased, but again the flight went well and subsequently three of us could not find anything wrong on the airframe. The 'belt-and-braces' rubber band securing the canopy was even suspected (and rejected), then all the film covering was checked for loose edges, without any result.

The final flight revealed the same noise, but louder, on the climb and then silence during the glide until I speeded up for the landing circuit, when it started again. I got carried away listening to it and nearly made a mess of the landing, which perversely provided the vital clue.

Having to descend quicker than normal, I used the brakes sooner than usual. And as soon as I started to raise them the noise stopped. On landing it still took a minute or two to locate the cause of the trouble, which was that the covering film had come adrift from the wing where it touches the back of the brake.

It turns over the spar edge to finish and does not appear as an 'edge' at that point. But it could be lifted with a cocktail stick (see picture) and must have been sucked out once the AVA was going fast enough, causing the edge to vibrate and the wing structure to act as a sounding board. I solved the problem by re-ironing the troublesome edge, and its twin, for safety.

A Nose For This Kind Of Thing

The noses in question are long and thin, and becoming more prevalent on many models. As motors get lighter a longer lever is needed for balance. So what? Well the problem is a simple one and I have covered it before, but as it has recently surfaced, twice in a week, amongst local modellers I think it bears repeating.

How do you get the motor from the nearest access point, usually the canopy hatch, out to the nose? And sometimes, rarely, it can be a very long way via an under-wing cut out...

OK, so you can hold it nose down and drop it in, but the shaft nearly always goes into a corner and you end up bouncing it up and down hoping the shaft will eventually go through the centre hole. Sometimes it does but the wires that stick sideways out of an outrunner tend to push motors sideways and they need proper guidance to get the shaft through the firewall.

The solution is simple. Get a pick-up-tool, the type with 'fingers' that pop out of a wire-wound shaft when the button on the end is pushed in (see pictures). The wire-wound shaft diameter is about 10 mm and, therefore, it goes nicely through the centre hole in a firewall. From there it can be pushed in to wherever the motor shaft can be gripped and pulled through the firewall – job done!

Don't forget not to do the final motor installation before you have connected the ESC wires if you can't reach them easily through the canopy, which is often the case!



The handle end of a 'pick-up tool', which is a useful piece of modelling kit and not just for those with a bad back



The prongs on the business end have a fair amount of grip and can easily hold the shaft of much bigger motors than this small, geared outrunner when they need to go into a longish nose



With the tool inserted into the nose ring the motor can be pulled into place and the hold down screws secured quite easily. But don't forget to connect the ESC as well if the motor wires won't reach a convenient opening!

Off goes the Kapa on its first flight. The big fin and horizontal joint in the fuselage moulding are both evident here, as is the slight 'banana' shape



Kapa 35 F5J

The chance to be present at the first flight of Barry Flude's Kapa 35 F5J was eagerly accepted, but with slight apprehension as it was around the Ides of March at the time. However, we were luckier than Caesar, and after having had a good day out we returned home without a scratch! A quick overview then...

The Kapa follows the latest trend in F5J models, being of very light construction and available in three different weights depending on the lay-up materials chosen. At its lightest it can be ready to fly at under 1300 g, although Barry's meatier version is nearer 1750 g (having used a light motor, he needed both a heavy battery and the addition of some lead to get the G of C right for the first flights).

As you can see from the pictures the overall design could be best described as minimal. The wing comes with all the



The nose has taken the hump! Useful when installing an outrunner. With the addition of a yellow hollow-nose spinner the resemblance to a Messerschmitt Bf 109 is quite noticeable!

fittings for the aileron and flap drives pre-made and installed. All the builder needs to do is put the servos in. Its fairly high aspect ratio wing (20.4:1) comes in three pieces and the colour of this particular model is light green on top and black/red underneath. (Other colours are available... As they say!)

The fuselage is slim and is made in an unusual way. Instead of splitting the moulding in the vertical plane, Kapa has the joint in the horizontal one. The moulding is all in carbon and the bottom is left in 'natural' black, with the top section being coloured. This is not a 2.4 GHz friendly fuselage and it is recommended that the aerials exit the fuselage, which was



Unusual drives to the rudder and elevator are shown here, as is the horizontal moulding line on the fuselage. Text has more detail

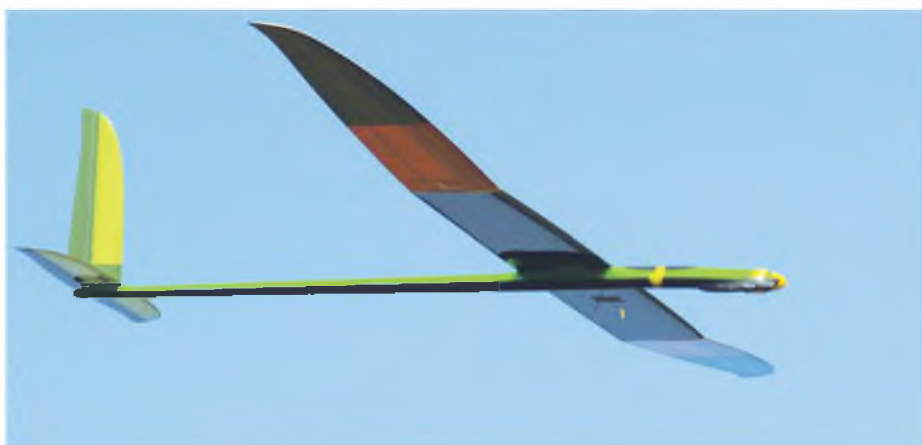
done on this model, of course.

The wing is screwed down in the normal manner and the canopy hatch is quite long. But it still leaves a fair journey to the nose for the installation of the motor and ESC. In this case a geared (4.7:1) Mega 16.15.3, sold as a Red Fox RF520.

This motor sounds particularly smooth and quiet, giving a good indication of the quality of the gearbox. The nose is interesting and it would be a tight fit for



The nose (as is most of the fuselage!) is slim but the canopy will allow in an 35-1800 in this case, but others may want to try a lighter, smaller pack. Note that the fuselage is all carbon and 2.4 aerials should be routed outside



Cruising by, the underside black/red colours can be seen, as can the absence of external flap and aileron drives, which are ready moulded and pre-installed

anyone wanting to install an outrunner, but for the fact that a convenient bulge has been incorporated, just above the spinner, to make such an installation easier.

The test model is equipped with a yellow spinner having a central ventilating hole; this produces an interesting sight, making the nose remarkably reminiscent of a Messerschmitt Bf 109!

At the tail end the size of the fin usually attracts attention – it is big! A look at the pictures reveals that it is virtually just half of the tailplane, which is itself not small. However, it should guarantee good control and we looked forward to finding out.

The rear control surface 'horns' are slightly unusual, being made from tube, which has been flattened and drilled for the wire control snakes. The servos live under the wing. 'Z' bends in the wire ends connect to the rudder and elevator 'horns', and the tail and fin are bolted to the fuselage top, with access being through the fuselage bottom. This all makes for a neat arrangement but removing the tail feathers for transport might be a bit a fiddle, if that is a concern.

By the time we had assembled and checked the model on a perfect, slightly hazy, flat calm day, the buzzards had already turned up so we knew it was time to start flying. We had added lead to get the C of G to 90 mm from the leading edge, this being nicely in the middle of the recommended range. And after a peaceful launch the quiet Redfox pulled the Kapa steadily to 200 m, needing just a touch of up elevator en route.

When the motor cut it was also evident that the glide needed some up for a nice level trim and this too was added, suggesting that we could go further aft with the C of G in later flights. The conditions were quite splendid and very quickly the buzzard count had risen to four; quite who was following who was impossible to determine, but everybody was happy.

The Kapa had a lot of up aileron differential and the response was quite quick (no flap/aileron mix was used), so this might be reduced later. I thought at first that the large fin, using coupled rudder/aileron, was producing this amount of turn. But use of rudder alone produced only a gentle turn. Handling in either direction was good, with little indication of any tendency to drop the nose.

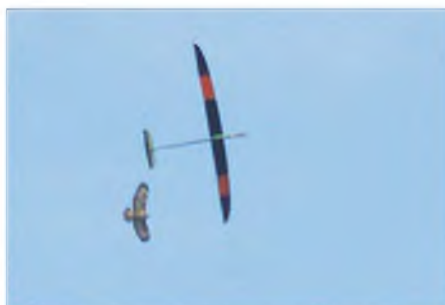
For the initial flights only the brake function was checked and trimmed, as time was limited by the need to return to work. From the first it was clear that considerably more down elevator compensation was needed. It took two more flights to get the right nose down attitude in flight with full flap, after which the model settled down to land very well and with good control right to the ground.

After the last landing we were surprised to find that the C of G, which we had carefully re-set to the mid range, had mysteriously moved and was in fact beyond the maximum aft recommendation of 93 mm!

The Kapa had shown no tendency to tuck under, recovering quite normally from a



Head-on and ready to land. If the flap was not deployed there would be little of this slim model to see



One of several thermal spotters on the test day. This one was keen to get the best view possible



Ever had the feeling that you can be followed by something ahead of you?

steady dive, and we think the C of G could go further back. But that has to be the task for another day, along with fine-tuning the thermal and speed flight modes.

All in all a very good series of flights. Kapa was very stable and predictable, and it handled the light lift extremely well. Its owner was looking forward to another session asap!

And Fin-ally...

Following the AVA being searched for the buzzing noise and discovery of the offending loose covering, I discovered that the rudder was a bit floppy and so I resolved to check out the clevis. I would have done so but only having room for a very short control link, no actual clevis was used – just a bent wire link! I assumed, therefore, that the epoxy board control horn had worn over four years of flying.

Wrong again! A careful check revealed that it was the bottom pivot, made with a 2.5 mm screw going through a piece of epoxy-board into the rudder, which was causing the trouble. At first it seemed that the hole in the board had worn but taking the screw out revealed that the opposite was the case – the board had worn the threads off the screw! Replacing the screw solved the case of the floppy rudder.

RCMW



This simple wire drive into a piece of epoxy board, on the rudder of the AVA, was suspected of having worn over four years, and to be the cause of a floppy connection. But it was innocent!



This lower pivot, made by a 2.5 mm screw, which goes through the fixed plate and up into the rudder, was the next suspect. Had the metal screw worn the hole in the board and caused looseness? No!



Inspection of the offending screw revealed the true source of the problem – the epoxy board had worn the threads off the screw! At least it was an easy fix

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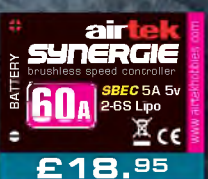
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Hawk and Hunter – the two real stars of my indoor EDF fleet so far

For our club members the indoor season is now a fond memory. But as the Diary Dates pages show some groups carry on throughout the year. We rent our flying fields and treat our indoor sessions as one more flying field. We take the view that, like the outdoor fields, the indoor facility is there for those who wish to use it.

The 24 indoor sessions between September and April are well supported by the membership, who fly a variety of aircraft, helicopters, an increasing number of multirotor machines and Airbug hovercraft. Interestingly we manage to have a slot for helicopters, multirotor models and Airbugs but the range of non-compatible aircraft requires as many as five slots, ranging from Vapor floating time to foam aerobatic gyration time. When flying in our bigger sports hall we can mix aircraft a little if the pilots are prepared to take the risk.

Two interesting new models this year are the twin pusher prop SU-27 and F-22. The SU-27 has proved the easier model to fly and has provided us with plenty of excitement – more later.

Most members now have models to cover several categories, so can pack in plenty of action. Everyone believes that the indoor sessions are extremely valuable for keeping piloting skills honed through the period of unpredictable outdoor flying weather.

Observing other clubs start up their indoor flying meetings a pattern emerges. Once a venue is found – and a huge sports hall is not essential – club members soon realise that expenditure on suitable models gives a big return in fun and satisfaction.

The trend now is that every member who attends our sessions has a helicopter and/or quad and more than 50% also have aircraft and Airbugs.



The F-16 and Skyray were my first indoor EDF models

One Cell EDF

Julian at Micromodeldrome has continued to develop his range of indoor EDF models that use a 1-cell LiPo. They also use Julian's own micro 30 mm EDF unit, which uses a very high revving coreless motor and a 6-blade impeller. An essential part of the set up is the flight battery and an E-flite 150 45C LiPo seems to give the best results.

Also needed is a Spektrum Rx module and both Julian and Steve Webb Models have the Parkzone Super Lite DSMX 3ch available at a very reasonable price, £24.99 at the time of writing.

Looking at weights the models really need to be in the 23 – 27 g range for the best performance. The fan unit weighs 5.2 g, the Super Lite RX Module 2.8 g and the battery 4.4 g, all according to my precision digital scales. So these essentials, plus some leads and pushrods, are going to come to around 13 – 14 g. This leaves around 10 g for the airframe and Julian's use of milled 2 mm Depron makes this achievable.

Using a Jedelsky wing and, on some models, a neat aileron system, results in models with a really excellent performance.



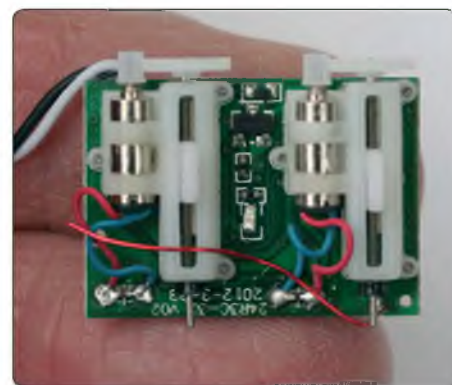
The F-16 with its non-profile fuselage looks really nice in the air



Three Micro EDF essentials from Micromodeldrome



The Hunter is a real star act and is easy to fly and is very agile



The PK Super Lite DSMX Rx module will help to keep the AWW down



The Viggen is not an easy aircraft to model or fly but this one performs well



Once trimmed, Peter's scratch built A-7 looks great and flies beautifully

I've now built and flown the F-16 (a top weight model as it uses a semi 3D fuselage), the Hunter, Hawk, Viggen and Skyray.

At first I was reluctant to add colour but I've now painted all except the Skyray using Humbrol Matt Acrylic with no loss in performance. I've fitted the Skyray with an undercarriage and this has worked well, pointing the way to future developments. Sadly, not retracts!

The Hunter and Hawk are exceptional flyers. Both cruise on 50% power, can pull really tight turns on higher power and will loop! After seeing my models fly, Peter Smart, a superb designer and builder, came along with his own-design A-7. This has ailerons and all-moving tailplane. After a few trimming and handling issues this model is performing well and I can't wait to see what Peter will come up with next!

Sukhoi Rescue Mission

Before leaving my indoor reflections the following happened on one of our last session in the sports hall. You could never say that indoor flying is boring!

With only five minutes flying time left the call went out for a final Sukhoi session. Andy was quick off the mark and audibly airborne by the time I fired up my model. Before I had a chance to launch the sound of an impact was heard, followed closely by several expletives. Andy had unfortunately jammed the nose of his SU-26 into the wire grille covering one of the ceiling lights. All

attempts with the throttle and controls merely pushed the model further into the grille.

Now we have a very cooperative and friendly caretaker but even his long ladder, previously used to retrieve 'netted' models, would be useless. Combined brains now switched on and it was decided to call out the quads. Two quads succeeded in altering the shape of the model but did nothing to dislodge it.

Hmm! Ok, the next idea was to try using our profile foamies and the quads. A Crack Yak and Hellboy joined the quads

and made lots of contacts, but apart from chewing even more foam off the poor Sukhoi, they did not dislodge it. Enter the caretaker to lock up the hall, accompanied by four teenagers, who quickly appraised the situation and called for missiles!

The stock room was unlocked and yellow spherical missiles quickly distributed. Within 30 seconds a direct hit dislodged the sad looking SU-27, which fluttered to the floor. All indoor fliers are pragmatists and with a, "Well, it could have been worse," Andy took his model home for some TLC. Apart from Andy the rescue team were all worn out with laughing!



John's SU-27 was the prototype



Mine was the second and is so exciting to fly



Number three was made by Andy and is shown here in happier times!



Whoops! A quad has a go but only manages to reduce the weight of the SU-27



Any plane in the hand is better than one stuck in a grille!

E-flite Pico QX Quad

Micro, Pico, Nano are all names regularly applied to models and particularly multirotors. Strictly speaking the order is Micro, a millionth, Nano, a billionth and Pico, a trillionth. The E-flite Pico QX is not actually the smallest quad I have; the smallest so far is the Neon-X. Interestingly, in their description E-flite, under size/scale, refer to it as a 'Micro'! However, the Pico QX, with a width of 75 mm and flying weight of 8 g, is plenty small enough.

A bonus is that it can carry a slightly larger flight pack that gives flights of around 5-7 minutes; from experience reckon on the lower end. This tiny quad is fitted with SAFE (Sensor Assisted Flight Envelope) technology and the experience level is listed as 'beginner'. Everyone I know who has the quads of this size, and there are quite a few around, has the same problems. The first is handling the tiny sticks, the second is orientation, and the third is the fact that they are rarely available on Mode 1.



The E-flite Pico QZ is plenty small enough for easy handling



Neon X is even smaller and is quite tricky to fly well



The Tx is almost as small as the quad and tricky for big fingers

The orientation issue is helped to some degree by the very bright and distinctive light display. When your front-end/nose is flashing bright green it's hard to think it's the rear-end/tail! The Pico QX also has other very visible red and blue LEDs. The stick and mode issues, however, remain and I was determined to do something about the Tx sticks.

But not before I had test flown the Pico QX and experienced this quad's suitability for 'beginners'. 'Low' and 'high' control modes can be selected via the right stick of the Tx. In my opinion even in the 'low' flight mode the quad needed a very steady hand and eye, and I'm not sure a beginner would find it easy at all. In 'high' mode it is lively to pilot, with a very fast pirouette.



My lengthened sticks definitely help me with more precise piloting

The instructions are incorrect as they say that the 'high' setting, with the solid light, is the default and 'low' is a flashing light. In fact the default is 'low' with a solid light.

The Pico QX has a 'flip' facility and the left stick is pressed once for one flip and twice for two. This makes the light flash on the Tx. Once in flip mode a movement of the stick in pitch or roll is followed by a flip. This needs to be done at quite a high altitude as I found there was a considerable height loss after flipping, and a quick response with the throttle is required to regain lost height.

The real issue with any model of this size is the battery

capacity and therefore the flight duration. Certainly, a beginner would not have much time to practice.

I also have difficulty with the size of the control sticks and decided to do something about this. I found that the knob at the end of the tiny stick pulled off easily and I was able to insert a length of CF rod. It has proved much easier to fly the Pico QX using the longer sticks. There is no doubt at all that the Pico QX flies well and it is a good example of this type and size of model.

Tail End

A number of 'good gadgets' I have recently featured have been one-cell models, which tend to point towards indoor flying. Of course, most of the E-flite, Hobbyzone, Flyzone and Ares models are perfectly capable of performing very well outdoor. Models like the E-flite B-17, Hobbyzone Super Cub, Flyzone P-38 Lightning and Ares Taylorcraft 130 are not worried by surprisingly high wind strengths.

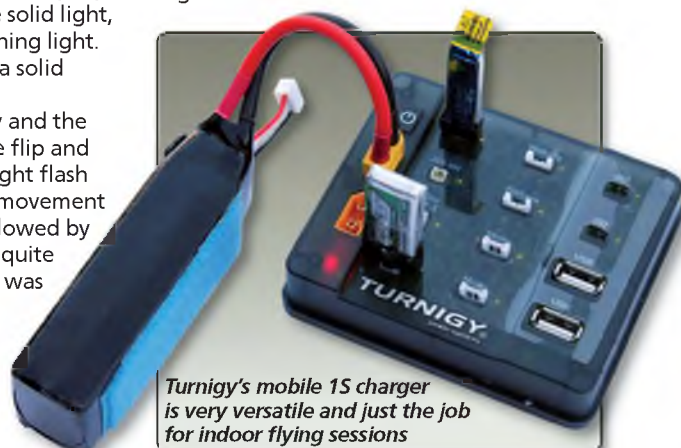
Turnigy has introduced a neat portable Micro Battery Charger and this is ideal for home or field use. It can be powered by any 12 V AC/DC source or by using a 3S LiPo. The 3S LiPo connects to the board via the integral XT60 sockets. Two outputs for five different types of commonly used 1S connectors are provided, plus two 5 V 1 A USB outputs. This means that you can also charge models that use a dedicated charging lead requiring a USB connection; this applies to many micro helicopters and quads.

Alternatively, you can plug in one of the E-flite USB 1S LiPo's that are now supplied with many E-flite models. My Micro Battery Charger has proved extremely useful at indoor flying meetings for a quick pre-flight boost charge (particularly in cold halls!) or charging after flying.

A quick count showed that I have about 15 models that use a 1S LiPo for power and that's just the planes! This charger has impressed all the other indoor flyers and I'm sure it will become a 'must have' item.

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

I am available for talk/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**



Turnigy's mobile 1S charger is very versatile and just the job for indoor flying sessions

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Peter Kraus tours the Smithsonian Air and Space Museum's extended collection of historic airframes held at The Udvar-Hazy Center in Chantilly, Virginia



Built in Canada in 1942 this Eysander is painted in the colours of 138 Sqn RAF

UDVAR-HAZY CENTER

There is something special about being a modeller. It's in your DNA.

A modeller is a miniature engineer, a scavenger, a hoarder, an innovator and a craftsman. An aeromodeller also loves aircraft and aircraft come in all shapes and sizes and from a variety of historical eras. Thus scale modelling is something special. Even if not building a scale model most modellers try and make their creations look like a real aircraft, so aircraft museums hold a special place for all aircraft lovers and especially modellers.

One of the best collections anywhere is that owned by the Smithsonian Air and Space Museum in Washington DC, USA. Their facility in Jefferson Drive, Washington

DC can hold only a small part of their collection, but a \$66 million grant from Budapest born American businessman Steven F Udvar-Hazy enabled them to build a facility at Dulles Airport that houses a lot more and is growing. Many of these aircraft are unique or extremely rare examples, and many of the more common types have a significant history. Most are in pristine condition while some have significant original weathering. All are beautifully displayed.

Many of these rare aircraft would translate very easily into scale models, making a change from the beloved but commonly seen types to be found at so many rallies and flying fields. A little

research will be well worth the effort.

Even for those modelling more common prototypes the examples on display illustrate colours and markings of special individual aircraft and are thus of great value to the scale modeller. Whether your interest is civilian or military, pre WWI or the space age, gliders or record breaking aircraft, you will find something there worth modelling and everything there to leave you awestruck.

Incidentally, while weathering models is all the rage, replicating many of these exhibits will allow the modeller to leave his/her model in pristine condition and still be scale.

RCMW



Loening OM 1A of the Pan American flight. I first saw a model Loening in a 1950's Aeromodeller Annual



Virgin Atlantic Global Flyer. Designed by Burt Rutan, as was his earlier round-the-world-nonstop-unrefuelled aircraft 'Voyager', which is in the main Smithsonian building in Washington, this jet powered aircraft broke the records set by Voyager and then some when flown by Steve Fossett in 2005



Laird-Turner Meteor Thompson Trophy winner. As with all these aircraft a good deal of detail is available on the Internet



Daryl Greenamyre broke a 30-year-old world speed record for propeller driven aircraft in this highly modified F2F Bearcat



Above & below: The only example left in the world of a Dornier 335A Pfeil (Arrow)



The space shuttle Enterprise, now replaced by the Discovery



Boeing FB 5 Hawk. Great modelling potential! That would be a sesquiplane, surely



Very neat Bird Dog is ideal for a simple scale model



Farman FF65 Sport of 1919. Why haven't we seen this modelled?



Captain Eddie Rickenbacker's Spad restored to pristine condition



A different and very attractive colour scheme for this P51C. Initially owned by A. Paul Mantz, who added further tanks for long range racing after it was spared from being scrapped with virtually no combat history, it set several records. Then, under the control of Capt. Charles F. Blair, it again set records, being flown from Norway to Alaska over the North Pole, using revolutionary methods of navigation



Hawker Exchange

I just bought a copy of a magazine called Classic Wings, Vol. 21 No. 2, 2014, Issue 95. Classic Wings is an Oz/NZ production and is quite good. I bought it for the article on Spitfires currently under restoration down under. The front cover and centre spread is of Australia's two flying Spitfires, owned by the Temora Aviation Museum. The Mk XVI, TB 863, is the aircraft in which I sat when I finished my working life on 9th Dec 2013.

However what is prompting this billet doux is an article in that issue on the Hawker Typhoon. Apparently there is only one surviving specimen. The story is that when they were hot off the assembly line one ended up going to America and ended up in the Smithsonian. In 1967 the RAF Museum requested return of this aircraft. This was agreed to and it was exchanged for a Hurricane, which is the one shown in my photo.



Pristine Hawker Hurricane. Northrop Black Widow behind with paintwork, especially the lettering, somewhat worse for wear



1917 French Caudron G 4 twin engine reconnaissance and bomber aircraft. The other aircraft in the picture also have histories worth checking (hint: the Spad)



Curtiss Gulfhawk, a 'one of a kind' civilian version of a military fighter



You can see another well displayed B-29 in the American Hall at Duxford but this one is the actual Enola Gay, which dropped the atomic bomb on Hiroshima. A truly historic aircraft



W.W. 'Woody' Edmondson thrilled the crowds in the 1940s with this Monocoupe 110 Special



The first Mignet Flying Flea built in the US. When being restored the original engine couldn't be found so a wooden replica was fashioned for display. Reminiscent of a current version of the old Ugly Stik with an electric motor and dummy glow engine!



Bell Textron tilt rotor research aircraft. Surely a model engineering challenge for helicopter fans?



Fulton Airphibian roadable aircraft of 1946.
Note the propeller attached to the right side of the rear fuselage for storage while the front becomes a car



Departing Columbus, Ohio in 1964, Jerrie Mock became the first woman to fly around the world in this C180



Another flying car, the Waterman Aerobile, actually received FAA certification in 1957 but a market did not eventuate. It is an improved version of a 1930's design



In 1947 this PA 12 Super Cruiser, 'City of Washington', in company with its sister ship 'City of the Angels', (now in the Piper Museum at Lock Haven, Penn.) circled the globe, the first time this had been done by private light aircraft



Mooney Mite, the first Mooney, with the prototype Boeing 707 below



Vought OS2U-3 Kingfisher. It had many innovative features and was a mainstay of the US carrier borne fleet in WW2. Another exhibit in pristine condition



The Arrow Sport A2-60 was innovative. It had a tandem dual control cockpit and cantilever wings. The N struts were added as pilots felt insecure without them!



Some interesting Japanese WW2 aircraft, among others



The Atomic Energy Commission used this Super Cub for uranium exploration in the 1950s



Me 163 Komet. Like the example in the Australian War Memorial in Canberra, this one is in its original and rather weathered paint



Art Scholl's modified Chipmunk Pennzoil Special, amid more modellers' miscellany



Majestic Lufthansa Ju 52



Billy Mitchell piloted this Spad XVI over the front lines many times in WW1



The famous P-40 needs no introduction. This is another potential scale model that would need no weathering



Great detail of the flaps and gear of a Corsair



Bellanca C.F.22 monoplane of 1922

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After assembling Weston UK's fast build ARTF aerobat in double quick time, Neville Hill had a long wait to see his creation take to the sky. Kevin Crozier picks up the story

FLYING THE CAPICHE 52

In the last issue Neville Hill described the build of the Capiche 52 freestyle aerobatic model from Weston UK. He built it very quickly; a bit too quickly as it turned out because the model was delivered back to the editorial office for final set up checks just before Traplet Publications moved offices. Neville then had to endure a long wait for the company move to be completed and for yours truly to catch up after the chaos that inevitably follows such an upheaval.

So it was a fair few weeks before I had the chance to grab a spare hour or two to set up the model to my liking. I would be making the test flights, during which the Capiche would also be photographed for this review. Weston UK kindly supplied a Hitec Aurora 9 radio set with which to fly the model. This is a very capable R/C transmitter and is well suited to a lively aerobatic model such as the Capiche.

I spotted that some large sub trims had been used to centre the main flight controls, so I returned them to zero and spent some time readjusting the aileron pushrods and the two closed loops that operated the tail surfaces to minimise the amount of sub trims that the model required by as much as possible.

Neville also likes to use Dual Rate switches to vary the effectiveness of the controls but I much prefer to use a single three-position switch to dial up several flight modes. Hitec call them Flight Conditions but simply put it just means using one switch to initiate several programming options depending on the phases of the flight.



Capiche 52 is an excellent freestyle aerobatic model. It would make a great everyday aircraft for sport flying too

My basic set up is to use Flight Condition 1 (switch back) to bring in enough control throws and exponential for relaxed flying. I also use FC1 to tame things down for take-off and landing, and if flying a taildragger from tarmac I also use it to restrict the movement of the tailwheel when the model is running along the ground.

FC2 brings in slightly higher control throws, and maybe some mixing, and is used for general aerobatic flying. I used this function to match the control throws to those recommended in the Capiche's assembly instructions.

Finally, FC3 was used to deflect all the controls to their maximum amounts without binding the servos or linkages. This Flight Condition would be used for 3-D flying.

Regarding the throttle, I wanted to be sure to use the Aurora 9's comprehensive safety features. These include the ability to set up a throttle cut switch, for which I assigned the long switch at the back of the left hand bank of switches. I was also pleased to be able to set up a throttle activated timer, which automatically starts the first time the throttle is raised. No more forgetting to operate a timer switch!

And finally, the Aurora 9 has a great throttle hold feature, which is engaged



by pressing the model icon on the main display (aeroplane shaped for this model); this means that the throttle can be kept at idle while the model is carried out to the flightline and it will not move even if the throttle stick is accidentally knocked. When the model is safely on the ground simply hold the throttle stick back and press the model icon again to release the throttle hold – a great idea!

My last check before returning the model to Neville for the engine run-ups was to check the failsafe settings. These were left at the default settings of throttle back and with the other controls at neutral.

West Eurotech 52T1

After Neville returned home with the Capiche, he wasted no time in starting the West Eurotech 52 T1 engine for the first time. This engine is a special development of the West Eurotech 52 V1 and features a larger head with an increased fin area to maximise cooling during slow and hovering 3-D manoeuvres. Engine cooling is further enhanced by the large, finned backplate.

To ensure best performance from this very nicely made engine Weston also supplied a carton of matching Prosynth 2000 fuel. This distinctive model fuel features a high visibility blue dye and includes anti-foaming agents. With the fuel tank full of Prosynth 2000, the engine started promptly and by the time of the test flights he had it very nicely tuned.

After a final failsafe check, and a range check, the cowl was reattached and we performed one last check of the C of G.

She's Off!

The first take-off was quite long and the Capiche appeared reluctant to unstick. But when she did eventually clear the grass the reason was immediately apparent and I called Neville to my side to put in a few clicks of up trim. I was now able to take full control of the trims and to settle her down into straight and level flight. A click or two of aileron and she was motoring around quite nicely.

Although I was still using Flight Condition 1, I decided to see what she would do and some well proportioned loops and smooth axial rolls followed. Another loop followed, but upon throttling back the engine cut, as it was still a bit rich. So I turned the Capiche into wind and she sailed serenely over the strip and landed quite a long way upwind, but rather than trying to hit the patch for the sake of it! Thankfully the grass in the outfield was fairly short and the Capiche trundled to a safe stop.

Following the next take-off the pipe responded as I brought her round into a high circuit and the model built up some good speed for another batch of conventional aerobatics. This time I engaged Flight Conditions 2 so that I could assess the model at Weston's recommended control settings. There were no problems handling her with the slightly more agile controls, and the rudder was certainly working much better. I was really starting to get into the groove with some long knife-edge passes. Inverted flight was also especially pleasing and the Capiche felt



Neville prepares the Capiche for its maiden flight



With the cowl and canopy off there's a good view of the engine mounting, showing how the Genesis mini pipe sits in a hole in the firewall



Specially developed for 3-D flying, the West Aerotech 52 T1 sports large fins on the cylinder head and a finned backplate for extra heat dissipation in slow manoeuvres



The Genesis mini pipe is a compact and well made item

nicely balanced, with barely any elevator needed to keep her running straight and true.

With our usual photographer, Barry Atkinson, being otherwise engaged I asked a clubmate and fellow kit reviewer, John Lewnes, to do the honours with the Canon 400 mm lens. John was doing a grand job of capturing the action, following the model nicely as it performed low passes for the camera.

Our first flying session ended with more camera passes, this time turning away to reveal the Capiche 52's black and white cheque underside. You will have no orientation problems with this one!

More To Come

I am confident that the performance from this great model aeroplane can only improve as the West 52 gets more running time and is leaned out fully for peak performance. Circumstances prevented us from really exploring the Capiche's 3-D potential during the time available in the first flying session, so I have asked Neville to report back on that side of the flying when the weather improves.

But for now I can leave you with my initial impressions of the conventional aerobatic potential of the Capiche 52, which is pretty much unlimited and only constrained by the pilot's capabilities. For my part, I love to fly big, smooth aros and for this style of flying, on reduced throws, the Capiche is ideal. But with those large control surfaces and the big throws available from the closed loop tail linkages she is sure to get a big thumbs up from the 3-D crowd too.

Besides the excellent flight characteristics the Capiche 52 looks very stylish, with some parts like the big canopy, the shapely cowling and the generous sized fin having a hint of the CAP series of full size aerobatic aircraft. So if you are looking for a model that builds quick and easily, and looks like the real thing, with aerobatic performance to match, the Weston UK's Capiche 52 deserves to be at the top of your shopping list. **RCMW**



A few clicks of up and a bit of aileron trim soon had the Capiche flying straight and level



Routine aros like loops and rolls are easy with this aeroplane



Inverted flight is a pleasure, with barely any need to touch the elevator



Deadstick! Photographer, John does well to capture the Capiche as she glides past for a long upwind landing. Still, it gives us a chance to show you the chequered underside



Above & below: The long awaited spring sunshine glints off the smoked bubble canopy



MODEL WORLD DETAILS

MODEL INFORMATION

Name:	Capiche 52
Supplier:	Weston UK
Website:	westonuk.co.uk/westonuk2_248.htm
Model Type:	High performance for freestyle aerobatics and 3-D
Price:	£239.99 – Kit only £409.99 - With West 52 engine & pipe
Engine Recommended:	West Eurotech 52TI and Genesis pipe
Engine Used:	West Eurotech 52TI and Genesis pipe
Radio Required:	5 channel minimum
Radio Used:	Hitec Aurora 9 X
Servos:	Hitec HS5625MG & HS311 (throttle only)

Construction: Parts Supplied:

Built up balsa and ply Airframe, hardware and accessories, Hitec Aurora and servos (not supplied with the kit), plus optional West Eurotech 52TI and Genesis pipe

Parts Required:

None for this review – Weston UK had thought of almost everything!

MODEL SPECIFICATIONS

Wingspan:	1575 mm
Length:	1650 mm
Flying Weight:	2.8 kg

R/C FUNCTIONS

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

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- Anthony Greco shows off his scratch built Honda HA-420 HondaJet business jet powered by two Jet Central Rabbit turbines
- Bob Fiorenze flies his complex Yellow Aircraft Grumman F-14 Tomcat powered by twin Jets-Munt VT-80 turbines and featuring a self-designed swing wing mechanism
- Ali Machinchy burns up the skies with his new AirWorld Lockheed F-104 Starfighter
- Bob Pannell brought his scratch built twin EDF powered Douglas DC-10
- Pablo Fernandez shows us the new Pirotti Models Rebel Pro sport jet powered by a KingTech K-210 turbine
- Rich Millers new Feo Bao Dolphin S sport jet powered by a Jet Central Cheetah turbine
- Randy Clark's Jet Legends Yakovlev Yak-130 powered by two Jet Central Cheetah turbines
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spiros@rchotel.com • www.rchotel.com

Inside the flip top box you will find a comprehensive instruction manual



SANWA AQUILA-6

We take a tour of Sanwa's latest 6-channel sports level radio set

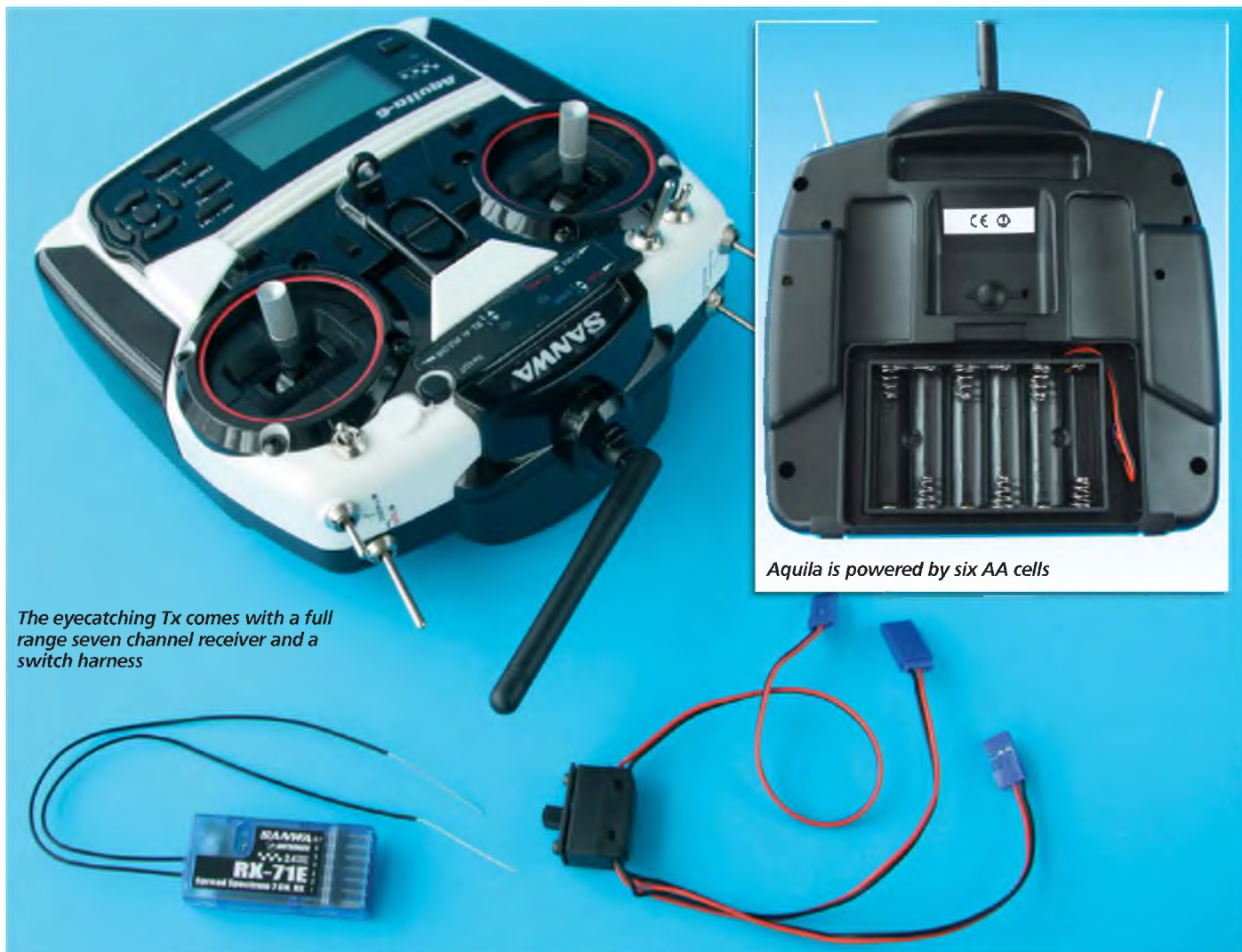


Last month we reviewed the very capable Tactic 6 radio and promised to take a look at some other radio systems of a similar ilk as they make ideal, but often overlooked, clubman radios.

Here, then, is the 6-channel offering from Sanwa (aka Airtronics, especially in the USA). A couple of things come immediately to mind when you first open the small flip top box:

There is no wasteful packaging here. The transmitter sits underneath a protective cardboard tray, with two rings of cardboard protecting the sticks and keeping them in an upright position. A smaller card box at the base of the Tx contains a 7-channel RX-71E receiver and a switch harness, both individually bagged. A comprehensive 92-page manual is also provided.

The front case of the Tx is moulded in white plastic, with a black central bezel around the sticks and digital trims. The LCD display also has a black surround. Fans of a soon to be released sci-fi film will appreciate its resemblance to the uniforms worn by a certain class of Imperial soldier!



The eyecatching Tx comes with a full range seven channel receiver and a switch harness

Aquila is powered by six AA cells

Transmitter Tour

Power is supplied by six AA alkaline batteries, although an optional rechargeable pack can be fitted if required. This is charged via the jack on the side of the Tx but there is no indication of the polarity of the connections. So if you go this route then it is advisable to purchase a genuine Sanwa charger and battery pack, or you can work it out if you have suitable test equipment. It is also quite common for modellers to use individual NiMH cells in dry battery boxes, such as the 6-cell item found in the battery compartment. But there is no indication in the instructions of whether this is acceptable or not. There is, however, a Low Voltage Alarm that will warn you when the batteries reach 6.7 volts, and this is an indication that you should land immediately.

As you would expect from an R/C manufacturer with a long heritage of producing good quality aero sets the Aquila sits very nicely in the hands. A secure grip is provided by indents for your fingertips in the back of the case. Up front the sticks feel appropriate for a radio of this class and the set is supplied in Mode 2, with a ratchet fitted to the throttle stick and a moderate amount of return spring applied to the other main controls.

The stick ends are quite long but they sit at the bottom of the adjustment range and so we would be happy to use them as supplied straight from the box. If short

sticks are your preference then you may want to source some shorter stick ends, but those who prefer long sticks (finger and thumb pilots) will have no trouble adjusting the sticks to suit personal preference. Aquila features all digital trims.

The Tx has a conventional swivel mounted 2.4 GHz aerial that can be rotated and folded for storage. The shoulder mounted switches fall easily to hand but are a bit unusual in being thin round types rather than the more conventional broad bladed types. Unusually for a modern set the switches are not assignable, but they are fitted in fairly standard positions so it should not take long to acclimatise to their positions. For safety's sake there is also a handily placed throttle cut button just above the right hand stick unit.

Power and RF Output is confirmed by two LED's mounted in the switch name plate just below the Sanwa logo. Low power mode can be initiated for range testing, during which the RF Output LED will flash. Down below is an easy to read LCD display, with programming keys and a four-way Navigation Pad situated to the right of the screen. Confirmation of settings is made by pressing the Enter button in the centre of the nav pad. To the left of the screen is the Bind button and a green Bind LED.

There's not much to see round the back, save for the battery compartment and the Trainer port, which is protected by a plastic cover. The trainer socket uses a

multi-pin connector so a special trainer lead is required to link it to another Sanwa transmitter. You will also need an adapter if you wish to plug it into an R/C simulator.

The transmitter does not feature a carry handle. Instead it has a four finger wide recess just behind the aerial. However, this does not feel that it gives as good a grip as a conventional handle so care should be taken when picking it up to prevent the Tx from taking a fall.

Accessories

As noted the accessories include a lightweight switch harness and an RK-71E FHSS-1 seven channel receiver. The Rx has a see through blue case and dual aerals. As is normal the two aerals should be mounted at 90 degrees to each other in the model; the coaxial parts of the wires can be gently curved but the exposed cores at the ends should be kept straight to avoid damage and to maximise signal reception. The instructions give some sensible tips for installing the Rx and its aerals. Servo and battery lead connections are made via the pin array at the opposite end of the case to the aerals, making for a slim-line installation in small diameter fuselages, such as in a glider. The receiver will usually be powered by either a 4.8 volt (4-cell) or 6 volt (5-cell) NiCd or NiMH battery pack. However, a 2-cell LiFe or LiPo can also be used provided that a voltage regulator is used to drop the voltage to 6 volts.



Switch functions are clearly marked. Note the two Flight Mode switches



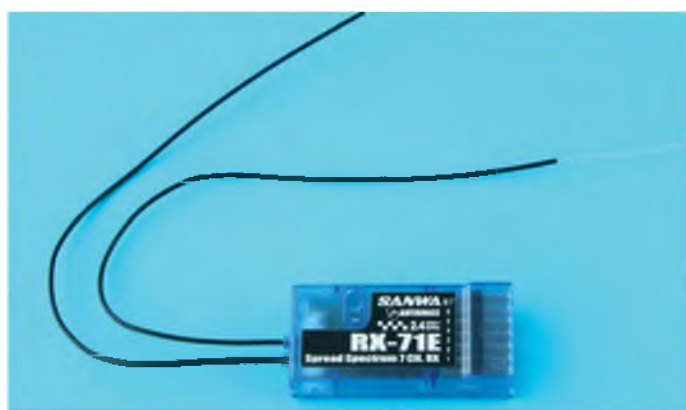
Programming is via a navigation pad and the buttons alongside



Top half of the Tx showing the main stick units. The Power and RF Output LEDs are nice and bright!



A plastic lid covers the multi-pin trainer socket



The full range 7-channel receiver is suitable for use in models of a wide range and size

On Display

The LCD screen is clear and easy to read but it is not back lit. The top line shows the current model number (1 to 10) and its name (up to eight characters). To the right is a bracketed symbol showing the active Flight Mode.

Writ large across the middle of the screen are large numerals showing the status of the Stopwatch timer. This can be programmed as either a Count Up or Count Down timer and shows the time in minutes, seconds and even tenth's of a second. If you set a value of, say, six minutes and press the top programming button (next to the nav pad) then the time will automatically count down; this allows you to time your flights so that you can avoid running out of fuel or battery power. And if you set the values all to zero the Stopwatch function will automatically start running as a Count Up timer when you press the same button.

Unfortunately this set does not feature one of the most useful of all modern functions, a throttle activated timer, so you have to remember to press the right button very time that you start a flight.

Below the time is the model type icon, either aeroplane or helicopter. Alongside is the battery voltage, as well as a battery capacity indicator showing a bar from full to empty.

Finally, surrounding the bottom and sides of the screen are the digital trim indicators for the main controls.

Flight Modes

In common with other modern R/C sets the Aquila-6 can be set up to give three Flight Modes. These modes allow you to set up a model in three different ways such that flicking the FM switch initiates different control settings and/or mixes for different phases of flight. Our preference

is to use Normal (FN on the display) so that the Dual Rates and Expo are set to moderate values for take off and landing, whilst flicking to F1 gives more control throws on all main channels for aerobatics. And F2 is used for very large control throws for 3-D, if required.

On this radio you can also flag programming options as either Common or Separate; the former means that they operate across all Flight Modes, while separate means that they only operate during flight modes of your choosing. A good example of a common setting would be to select it for the trims, so that you only have to trim the model once and then the same trims are repeated across all the flight modes.

All this is conventional stuff, but the switch layout is not. Rather than operating all three flight modes from a single switch, the Aquila uses two. These are labelled

F-Mode 1 and F-Mode 2, and they are the short switches on the top of each shoulder of the Tx. With both switches pushed back the model is in Normal flight mode. To engage F1 you need to flick F-Mode 1 forwards. And to engage F2 you then need to flick the other switch forwards. If F-Mode 1 is left off and you only operate F-Mode 2 then it is possible to jump straight from Normal to Flight Mode 2, which could be a bit hairy if you have set it to maximum control throws! Now Sanwa have been at this game for a long time, so there must be a good reason for this, but none that we can think of... So we would prefer to see a single three position switch to operate this very useful function.

24 Item Menu

The programming menu covers 24 items. We will quickly run through the aero functions, only stopping to highlight areas of particular interest.

Model Select and Model Name are self-explanatory, as is Type, which can either be an aeroplane or helicopter. Trainer is next and simply selects if the Tx is to be used as either a master or slave when buddy boxing.

Stopwatch has already been discussed, then comes Data Copy and Data Reset for model memory maintenance, followed by servo Reverse.

Item nine, Center (sic) caught our eye, but this is Sanwa's take on sub trims. As with other sets, sub trim needs to be used with restraint and should not exceed +/- 40%. After basic trimming it is wise to rest the mechanical links to take out as much of the digital and sub trims as possible.

EPA (End Point Adjustment, or travel adjust) is next on the list, followed by Throttle Cut, which is operated by a black button above the RH stick. We would recommend setting this up carefully so that you can chop the throttle in an emergency.

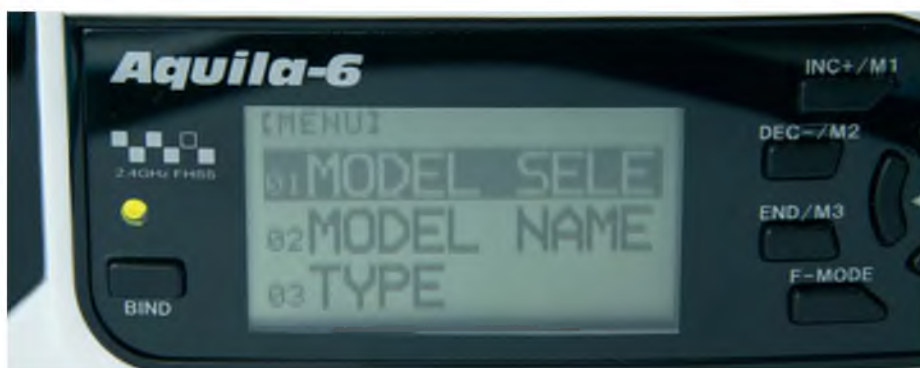
Onto Dual Rates and Exponential; we usually program the different flight modes to take care of this. But if you prefer to do things the old fashioned way then you will be pleased to learn that a separate Dual Rate switch is provided. However, there is only one D/R switch which operates across all three Elevator, Aileron and Rudder channels, which rather makes it an alternative flight mode switch. To add to the flexibility (or some might say confusion!) of the D/R and Flight Mode functions it is possible to get them to work together to give even more permutations.

Throttle Curve is next; this is a relatively new function to low and middle range aero sets, although it has been a standard function in heli sets for many years. But it can be very useful in helping to make the throttle of an IC engine powered model work in a much more linear fashion, so that giving half throttle on the stick really does give around half throttle from the motor.

The next batch of menu items cover trimming and mixing functions, starting with Aileron Differential. Next comes Flaperon mixing, which allows you to use a model's ailerons to give additional flap effect. It can also be programmed to initiate camber changes by moving both



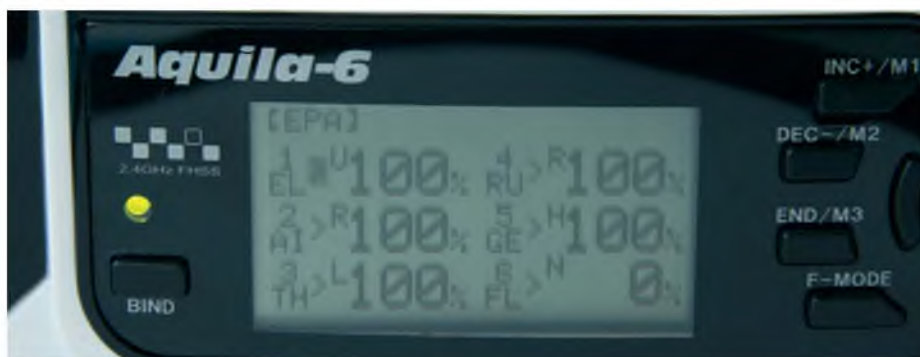
View of the normal screen



The 24 item aero menu starts with the usual model memory settings



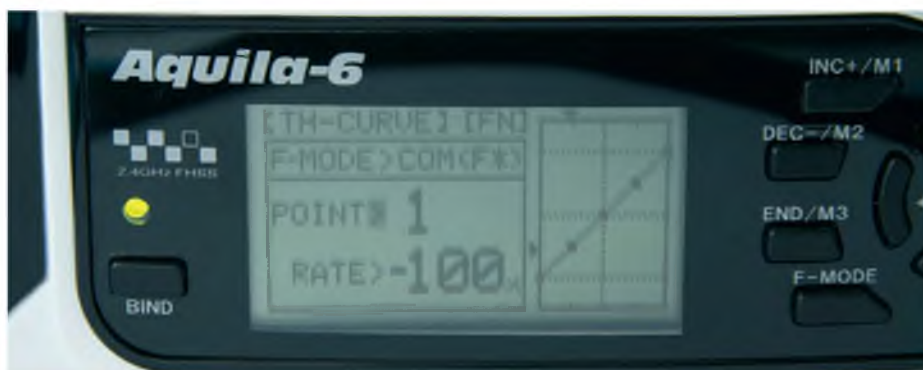
If you input a time then the Stopwatch function automatically works as a Count Down Timer. If you leave it at zero then it works as a Count Up timer



End Point Adjustment screen, otherwise known as Travel Adjust



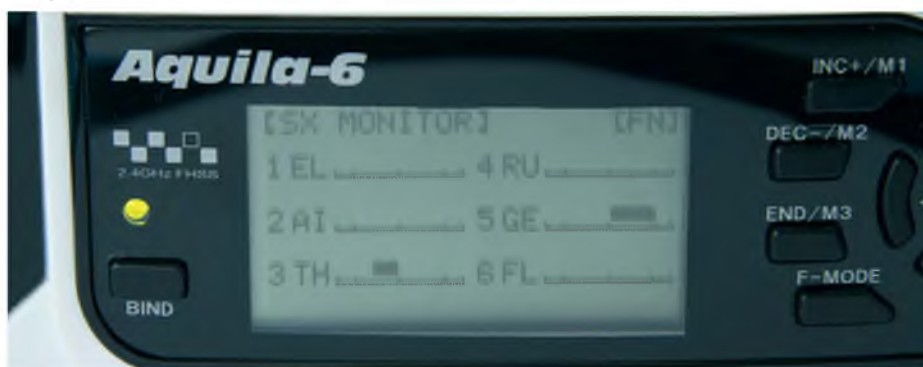
Dual Rates and Exponentials are easy to set. The two numbers on the left show the position of the single D/R switch



Throttle curve can be used to make sure a carburettor operates in a truly linear fashion



Wing and tail mixes are offered for Ailvator (taileron), V-Tail and Delta (elevon) set ups



Servo monitor is useful for double checking that the controls are working as planned, especially when sorting out a complicated free mix

A white case!
You'll either like
it or loathe it,
but there's no
denying that it is
eyecatching



aileron by the same amount, which can be used to alter a model's speed; this is popular with advanced gliding enthusiasts.

Onwards to Flap to Elevator Mixing, and Dual Elevator mixing; with models that use two servos to operate individual elevators the latter function allows you to ensure that both servos move by equal amounts. Then we have Ailvator/Taileron Mixing, which allows you to have both roll and pitch control on the elevators, and separate from the ailerons. Commonly known as tailerons, this is a method often used to control jet aircraft.

At menu numbers 20 and 21 we arrive at V-Tail and Delta (elevon) mixing, and then there is C-Mix 1 and C-Mix 2, which is Sanwa's terminology for freely programmable mixers. These allow you to mix any channel to another of your choice.

Last but not least we come to Servo Monitor. This displays the output levels of each channel as a bar graph and is very useful to check that each channel is operating as expected, especially if you have lost your way a bit when setting up a complicated mix. A similar 22 item menu is provided

when you select a helicopter as the model type. All are very common functions and they are more than adequate for setting up club level R/C helicopters.

In Conclusion

Sanwa were among the first of the major Japanese manufacturers of radio control systems and in the days of 27 MHz and 35 MHz radios they enjoyed a large following amongst UK model flying enthusiasts. They then went through a period where they found great success amongst R/C car drivers and their popularity with aeromodellers waned somewhat.

This coincided with a change in UK distributor and also the advent of 2.4 GHz radios, but to their credit Sanwa were among the first of the Japanese manufacturers to develop their own spread spectrum protocols. Therefore the FHSS-1 technology used in this set is nicely mature and is well proven to provide a very reliable radio link.

Having been Sanwa users back in the AM/FM days, it gives us a lot of pleasure to have the chance to look at one of their latest aero sets. It does have some unusual features, especially the Flight Mode set up and the white finish, but in all other respects it is a fine example of a modern 6-channel radio. As such it is well worth considering the next time you are shopping for a sport level radio set, especially if you were one of those many modellers who came to value Sanwa's reliability in the pre-2.4 age of radio control systems.

RCMW

MODEL WORLD DETAILS

PRODUCT INFORMATION

NAME:	Aquila-6
MANUFACTURER:	Sanwa
UK DISTRIBUTOR:	Spire Model Distribution (via LRP)
WEBSITE:	www.smddirect.co.uk (search for Aquila)
REVIEW ITEM	
SUPPLIED BY:	LRP
WEBSITE:	www.lrp.cc/en/products/
PRICE:	£164.99
PRODUCT TYPE:	6-channel, 2.4 GHz, FHSS-1 spread spectrum radio system
PARTS SUPPLIED:	6-channel transmitter, 7-channel RX-71E receiver, switch harness
PARTS REQUIRED:	Batteries, servos

DISLIKES

Two switch Flight Mode set up • White fascia is sure to get dirty if used for IC power flying
• We would like to have a throttle operated timer

LIKES

OK, it might need cleaning more often but the white case is eye-catching! • Comfortable to hold, easy to program • Comes with a full range receiver with dual aerials • It's a Sanwa! A long standing manufacturer of top quality radios

Fantastic Jet sport model plans from the Traplet Plans & Parts Service



WILD WASP

Difficulty ★★

Designed by Stephen Wheeler

The fast & ferocious Wild Wasp has an all sheet construction – even the wings have a flat plate section – for the shortest possible time from starting to guild to getting in the air

PLANE SPECIFICATIONS	
WINGSPAN	30"
RADIO FUNCTIONS	3 FUNCTION
ENGINE	.15 - .20 2 STROKE

PLAN REF MW2071

£11.99 / \$19.99 + P&P/S&H



FLASHFIRE

Difficulty ★★★

Designed by Peter Button

This Eurofighter-esque design features foam wings and sheet fuselage for quick construction and maximum fun!

PLANE SPECIFICATIONS	
WINGSPAN	35"
RADIO FUNCTIONS	4 FUNCTION
ENGINE	.20 - .32 2-STROKE

PLAN REF MW2601

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Difficulty ★★★★★



Plane specifications

WINGSPAN	88"
RADIO FUNCTIONS	5
LENGTH	82.57"

Designed by Phil Noel

An impressive scale model using four electric motors for power. Retractable under carriage can also be incorporated.

INCLUDED IN THE SET

PLAN MW3663 £29.99 / \$37.99

LASERCUT WOODPACK WP3663 £159.99 / \$271.99

ABS COWL CA3663CL £21.99 / \$47.99

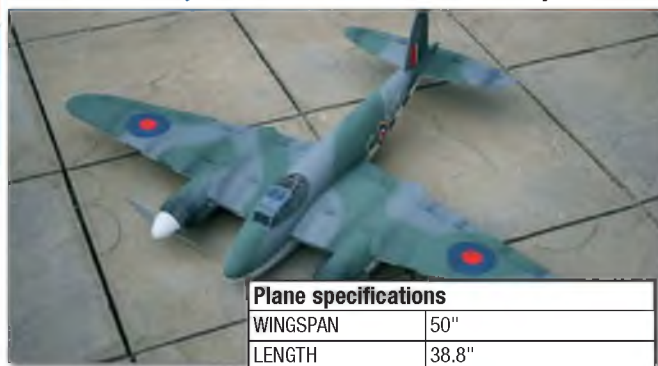
SET REF SET3663

RRP OF FULL SET £190.78 / \$319.50 + P&P/S&H

SPECIAL PRICE £162.99 / \$271.99 + P&P/S&H

DH MOSQUITO

Difficulty ★★★★★



Plane specifications

WINGSPAN	50"
LENGTH	38.8"
ELECTRIC POWER MOTOR	2 X SPEED 480 OR BRUSHLESS EQUIVALENT

Designed by Phil Noel

Using lightweight design featuring balsa, spruce and ply construction along with a single piece wing.

INCLUDED IN THE SET

PLAN MW3661 £20.99 / \$34.99

LASERCUT WOODPACK WP3661 £105.99 / \$180.99

CANOPY CA3661CY £5.99 / \$10.99

SET REF SET3661

RRP OF FULL SET £119.68 / \$202.49 + P&P/S&H

SPECIAL PRICE £101.99 / \$172.99 + P&P/S&H

MIRAGE 2000C



Plane specifications

WINGSPAN	39"
POWER	GAS TURBINE
LENGTH	62.25"

Designed by Phil Noel

Construction is from conventional, but lightweight use of balsa and ply. The plan shows retract information and details of under-wing pylons and stores.

INCLUDED IN THE SET

PLAN MW3668 £20.99 / \$34.99

LASERCUT WOODPACK WP3668 £88.99 / \$151.99

CANOPY CA3668CY £9.99 / \$16.99

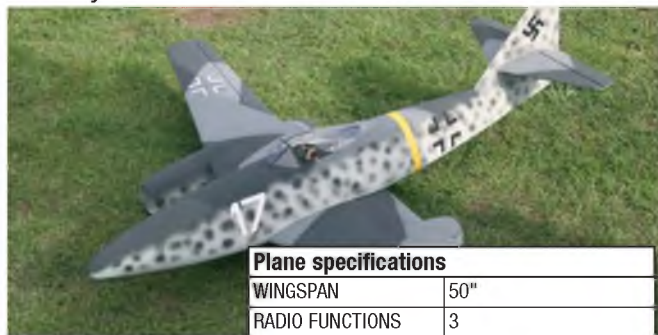
SET REF SET3668

RRP OF FULL SET £116.99 / \$197.09 + P&P/S&H

SPECIAL PRICE £99.99 / \$167.99 + P&P/S&H

MESSERSCHMITT ME 262

Difficulty ★★★★★



Plane specifications

WINGSPAN	50"
RADIO FUNCTIONS	3
LENGTH	42.5"

Designed by Phil Noel

Phil Noel designed the 50" span model around two 70mm fan units using lightweight construction and featuring a single piece wing.

INCLUDED IN THE SET

PLAN MW3666 £20.99 / \$34.99

LASERCUT WOODPACK WP3666 £85.99 / \$146.99

CANOPY CA3666CY £5.99 / \$10.99

SET REF SET3666

RRP OF FULL SET £101.67 / \$171.85 + P&P/S&H

SPECIAL PRICE £86.99 / \$146.99 + P&P/S&H

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RAZOR 90

Difficulty ★★



Plane specifications

WINGSPAN	50"
RADIO FUNCTIONS	5
LENGTH	54"

Designed by Shane Harding
A classic sports jet design

designed for 90mm fan units and a 5s 500mAh LiPo. A straight forward, build, making this a cost effective entry into the high-speed world of EDF jets.

INCLUDED IN THE SET

PLAN MW3636 £17.99 / \$29.99

LASERCUT WOODPACK WP3636 £79.99 / \$135.99

CANOPY CA3636CY £7.99 / \$13.99

JET INTAKES CA3636INT £15.99 / \$27.99

SET REF SET3636

RRP OF FULL SET £92.69 / \$154.80 + P&P/S&H

SPECIAL PRICE £79.99 / \$131.99 + P&P/S&H

DH TIGER MOTH

Difficulty ★★



Plane specifications

WINGSPAN	36"
RADIO FUNCTIONS	3

Designed by Dale Tattam

A scale model for electric motors. All built-up lightweight construction makes this an ideal summer evening flyer.

INCLUDED IN THE SET

PLAN MW2675 £12.99 / \$20.99

LASERCUT WOODPACK WP2675 £60.99 / \$103.99

SET REF SET2675

RRP OF FULL SET £66.58 / \$112.49 + P&P/S&H

SPECIAL PRICE £56.99 / \$95.99 + P&P/S&H

SPITFIRE MK.IX

Difficulty ★★



Plane specifications

WINGSPAN	27"
RADIO FUNCTIONS	3
MOTOR SPEED	400

Designed by Adrian Britton

Arguably the best of all the Spitfires, the Mk.IX. This all-wood replica for economy electric motors, look superb and flies even better than it looks.

INCLUDED IN THE SET

PLAN MW3034 £11.99 / \$19.99

LASERCUT WOODPACK WP3034 £29.99 / \$50.99

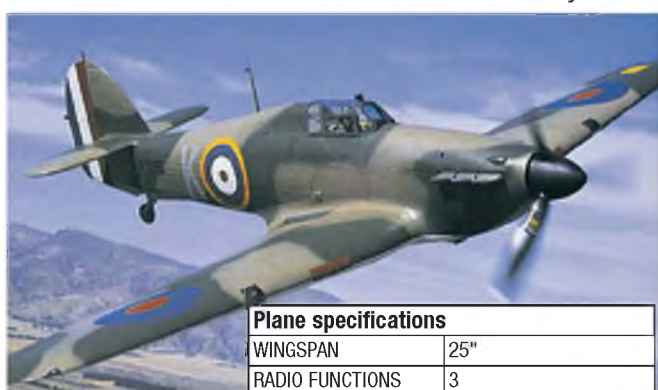
SET REF SET3034

RRP OF FULL SET £47.78 / \$63.34 + P&P/S&H

SPECIAL PRICE £40.99 / \$53.99 + P&P/S&H

HAWKER HURRICANE

Difficulty ★★



Plane specifications

WINGSPAN	25"
RADIO FUNCTIONS	3
MOTOR SPEED	400

Designed by Fred Holdstock

All wood construction 'could be scale' sports model. This model is best suited to modellers with previous building and flying experience.

INCLUDED IN THE SET

PLAN MW3021 £11.99 / \$19.99

LASERCUT WOODPACK WP3021 £36.99 / \$62.99

SET REF SET3021

RRP OF FULL SET £44.09 / \$74.68 + P&P/S&H

SPECIAL PRICE £37.99 / \$63.99 + P&P/S&H

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INDOOR

30th May '15

Tonbridge Gassers and Rubber Fanciers, Indoor Flying, 6.30 pm until 10 pm, at King's Rochester Sports Centre, 601 Maidstone Road, Rochester, Kent ME1 3QJ. Free flight and also lightweight R/C timed flying sessions throughout the evening. Contact Steve on 0208 942 5000 or Eric on 01622 737814 before travelling to confirm

4th Jun '15

Waltham Chase Aeromodellers Indoor R/C Small Models Meetings. Wickham Community Centre, Mill Lane, Wickham, Hants PO17 5AL. 7 pm to 9.30 pm. £4 for flyers and £1 for spectators. Flyers will be required to show proof of insurance. All models will be weighed before flight, and judged on their suitability for the venue on the evening. Alan Wallington, Tel: 01489 895157 or www.wcaero.co.uk

6th Jun, 4th Jul, 3rd Oct, 7th Nov, 5th Dec '15

Indoor Fun Flying at Furzefield 2015. Furzefield 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

30/31st May, 27/28th Jun, 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

10th Oct, 14th Nov, 12th Dec '15

North London MFC Indoor Radio Control Meetings 2014. Furzefield 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

23rd/24th May '15

F3A World Cup League Event. Criterium International du Hainaut Grandrieu, Belgium. Please contact Ashley Hoyland on 0114 2873432 for details

23rd/24th May '15

Shilton Vintage event, for further details contact Nick Blackwell, Email: nick@nickblackwell.co.uk, Tel: 01285 657610

30th/31st May '15

Hastings Model Flying Club Fly-In, at Middle Bridge (A259) between Bexhill and Pevensey, E.Sussex. All types of aircraft welcome including turbines. Camping available from Monday 25th May. Charge to non-HMFC members £25 includes unlimited

flying, non campers £5. Trade enquiries welcome. Contact Les Eagle on 01634 327228 to book

30th/31st May '15

Langar MAC Fly-In, Langar Airfield, Nottingham NG13 9HQ. The annual Langar Fly-in is back, concrete runway, all fixed wing aircraft welcome, proof of insurance please. Free camping on mown grass from Thursday. Catering van over the weekend. Toilet facilities on site. Flyers £5 per day £10 max. Visit www.langarMAC.co.uk for more details

30th/31st May '15

Electric Fly-In Weekend, this event is not open to the general public, but will include a 'Swapmeet' on the Sunday (Donations to the club welcome) – Open to anyone holding current BMFA membership, and their car full of guests. A minimum of an 'A' Certificate is required to fly. Flying a 'Large' model requires the pilot to hold a 'B' certificate. An entry fee is just £2 per pilot taking part to cover the rental of toilets. Camping is available Friday afternoon until Monday morning (Donations to the club welcome). Access is via the Rolls-Royce No.2 Gate on the B6009 Watnall Road, Hucknall NG15 6FQ. The Airfield gates open for Sellers and Pilots - 09:00 'Fly-in visitors' & 'Swapmeet customers' – 10:00. More details on the BMFA 'Classified Ads and Events' and on the club Website and Facebook pages nearer the date of each event. Contact Reg Lowe 01773 716786 or r-low2@sky.com Trade Enquiries to Alan Randall 0115 8401873 or alan.randall23@ntlworld.com

30th/31st May '15

IMAC UK Competition, Tholthorpe, Nr York. Contact Mal Green: mccgreen65@hotmail.com

5th to 7th Jun '15

UK F3A World Cup League Event. Near Ashford, Kent. International entry. Visitors welcome. See www.gbrcaa.org/ World Cup/ or contact Contest Director Matt Hoyland on 0773 9840498 or Ashley Hoyland on 0114 2873432 for more details

6th/7th Jun '15

David Prosser Memorial Fly In, Scale and Vintage Weekend, Charlton Park near Malmesbury, Wiltshire. All scale and vintage flyers welcome, must have 'A' cert to fly. Camping available £8 per night. Transmitter fee £5. Contact Keith Simpkins on 07906 373480. Email: tigermoth99@hotmail.co.uk

7th Jun '15

North London MFC Scale Day, Warren Lane, Baldock, Herts, SG7 6RR. Flying from 10am. 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. No noisy models please. £5 pilots entry fee. Contact Maurice Northcott on 07866 105721 or Email: mail@mpnltd.fsnet.co.uk

7th Jun, 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

13th/14th Jun '15

PSSA Fly-In, The Great Orme, Llandudno, meet at the 'Tank Track' car park for 10 am each day. 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

14th Jun '15

F3A. BMFA 3rd GBR Team Selection Event. Ashbourne, Derbyshire. FAI 'P' and 'F' schedules. Also GBR/CAA League competition. All Schedules. See [gbrcaa.org/forum/Competition News/](http://gbrcaa.org/forum/Competition%20News/) for details and 'Competition Entry Form' for fees and payment. Team Selection competitors have priority entry if competition is over subscribed. Visitors by prior arrangement, please contact Contest Director, Adrian Harrison on 07976 244004 for details

14th Jun '15

BMFA Northern Area and Pontefract & District Aeromodellers announce the Annual 'Free For All' Electric Fly-In at Pontefract Park. Entrance ONLY from junction 21 M62 head towards Ponte and look for white gates on right. BMFA members can fly any electric model in this grass field. Gates open 9.30 am, admission FREE! Boot sale, traders welcome. A PANDAS member will win the Club Electric trophy. Further details from John Thompson, 01924 515595 johnthy99@ntlworld.com or www.pandas aero.co.uk

14th Jun, 19th July, 20th Sept, 27th Dec '15

Devon Glider Days, at Little Haldon, on the B3192 adjacent to the Teignmouth Golf Course. Please note reserve days are set for a week after scheduled event, apart from the December date, which has a reserve date of 28th. For further info contact Joe Speirs on 01662 834014 or Stan Yeo 01626 332287

19th to 21st Jun '15

The Balbedie Midsummer Extravaganza Open Event, at Balbedie Aeromodelling Club, Balbedie Farm Nr Kinglassie, Fife, KY5 0UE Scotland. Open Event all aircraft welcome. BAC's great BBQ and refreshments available all day. Saturday Night entertainment with live band and bar. Camping and caravan facilities available. 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

19th/21st Jun '15

Weston Park International Model Air Show organised by Wrekin MFC. Weston Park, Weston Under Lizard, M54 Junction 3 and 8 miles off M6 Junction 12. Full size display both days, Top pilots, on site camping, over 100 traders. Contact Steve Bishop, Tel: 01952 587298, Email: stevenbishop@blueyonder.co.uk or www.westonparkmodelairshow.co.uk

20th Jun '15

IMAC UK Competition, Fradley, Nr Lichfield, Staffs. Contact Mal Green: mcgreen65@hotmail.com

20th/21st Jun '15

F3A World Cup League Event, France. Please contact Ashley Hoyland on 0114 2873432 for details

20th/21st Jun '15

The Sumners Ponds Model Show based in Barns Green, West Sussex, 10 am – 5 pm each day. Open-air show with display areas exhibiting boats, planes, heli's, trains, cars, kites and much more with have-a-go areas, bring and buy, traders, food and drink plus other activities including archery & air rifle shooting range. See www.sumnersponds.co.uk for more information and download an exhibitor or trader form for entry. Craft stalls and other refreshment vendors also welcome this year by application only. Entry Fee: Adults £7.00/Child & Concession £5.00. Further information from Kimberley Pratt, Events Coordinator, Tel: 01403 732539, bookings@sumnersponds.co.uk www.sumnersponds.co.uk

21st Jun '15

West Yorkshire Aeromodellers Swap Meeting, part of the Keighley & District Model Aircraft Club 24 hour Charity Challenge, 7.30 till 11.30, to book your spot and for more information please check out the event website www.24hrcharitychallenge.co.uk

21st Jun '15

Deeside M.A.C. Open Day, the site at Broken Bank off the A548. Open to all R/C classes, a take-off strip is available which is suitable for large models, gas turbines etc. Open to all clubs and individuals, but proof of insurance MUST be shown. Minimum qualification is a B.M.F.A. 'A' certificate, models over 7 kg require a B. An L.M.A certificate of competence will be accepted. Max model weight 20 kg. The site is a secure site, the gates will be open from 8.30 am until 10.30 am. Latecomers can contact via the mobile number displayed on the gate. Toilet facilities will be available. Hope to see you and yours. Contact G.H Robson for any further information and travel information (prefer Email), zen219506@zen.co.uk. Phone 01352761814

27th/28th Jun '15

Wings & Wheels Model Spectacular, North Weald Airfield, Essex, CM16 6AR. With some of the best exhibits, models, pilots and trade presence to be found anywhere in the world, this is a show you cannot afford to miss. No price increases for 2015! admin@wingsnwheels.net or Tel: 01242 604126

27th/28th Jun '15

F3A World Cup League Event, Netherlands. Please contact Ashley Hoyland on 0114 2873432 for details

27th/28th Jun '15

IMAC UK Competition, Nr Wrexham, North Wales. Contact Mal Green: mcgreen65@hotmail.com

28th Jun '15

Wealden Warbirds, at Berwick Flying site, nr Drusilla's on the A27. Flying from 10.30 am, pilots briefing at 10 am. Noise testing will be available on the day. Proof of insurance and BMFA 'A' min req'd to fly. £5 to fly, raffle and refreshments. Prop warbirds only, sorry no jets. Contact: mark@wealdenflyers.co.uk or 01825 765296 (day). Or bob@wealdeanflyers.co.uk or 01892 852137

4th Jul '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

4th/5th Jul '15

Woodsprings 2015, the South West's biggest Model Airshow featuring an exciting programme of model aircraft with full model trade support. Held at Claverham Drove Airfield, Yatton. Just follow the signs J20 or J21 from M5. See website: www.woodspringshow.co.uk Email: towarren@westgatesystems.net or phone: 07970 473717. For general enquiries Email: spitfire@woodspringwings.co.uk

5th Jul '15

North London MFC Glider Day, Warren Lane, Baldock, Herts, SG7 6RR. Flying from 10 am. BBQ and drinks available. All pilots need BMFA A certificate or LMA proficiency. Proof of insurance required. No noisy models please. £5 pilots entry fee. Contact Maurice Northcott on 07866 105721 or Email: mail@mpnlt.d.fsnet.co.uk

11th/12th Jul '15

IMAC UK Competition, Rhyl, North Wales. Contact Mal Green: mcgreen65@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.uk

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 and Jet Weekend, at Hucknall Airfield once again combines all types of R/C Scale models with the addition of any Gas Turbine powered model. A BMFA 'B' Certificate is required to fly any model, as this is open to the general public to attend. Pilots fly free, but there is an entry fee of just £5 per car for non-flying visitors to cover the rental of toilets. This event will include a 'Swapmeet' on the Sunday (Donations to the club welcome). Camping is available Friday afternoon until Monday morning (Donations to the club welcome). Access is via the Rolls-Royce No.2 Gate on the B6009 Watnall Road, Hucknall NG15 6FQ. The Airfield gates open for Sellers and Pilots - 09:00 'Fly-in visitors' & 'Swapmeet customers' - 10:00. The Battle of Britain Memorial Flight 'Fly-pasts' have been requested for all of this year events. More details on the BMFA 'Classified Ads and Events' and on the club Website and Facebook pages nearer the date of each event. Contact Reg Lowe 01773 716786 or r-low2@sky.com Trade Enquiries to Alan Randall 0115 8401873 or alan.randall23@ntlworld.com

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. 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: mcgreen65@hotmail.com

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THE SPORT CHANNEL

Gray offers up another fine selection of sport flying treats, past and present



As you read this, that ice and snow was still around only last month! Our Canadian designer Chris Moes' popular Skygipsy Twin camera plane now looks even more like a Ray Malmström design with those huge SIG floats!

This Month's Wise Words

My thanks to longtime correspondent and ace US designer Ron for his wry comment on the trials and tribulations of my recent relocation. At the time of writing this I still don't have any dedicated workshop space in my new home so I may have to resort to the time-honoured kitchen table after all.

To everyone who's had to update their address book yet again – sorry! And to all those who've sent cards to my new place, your kind thoughts are much appreciated.

**"IF IT WEREN'T FOR
BACK LUCK, YOU'D
HAVE NO LUCK AT ALL!"
(RON BADDORF)**

Anyone Remember 'Air-mindedness' ...?

Following Ian Peacock's recent obituary piece on Air Commodore Eric Baddeley and his work for the Royal Air Force Model Aircraft Association, we're hoping that readers may like to share some of their own reminiscences of the RAFMAA. My late predecessor and friend, Derek Woodward had been an active member and always had some entertaining tales.

Mention of the RAFMAA reminded me of a small oddity that I must pass on. A former employer of mine had served in the RAF and in a long career he had worked on an impressive list of aircraft types and travelled the world. He was a fascinating character

to talk to (it's a wonder I ever got any work done!), with a wealth of stories.

He'd briefly done a little aeromodelling in his teens, but hadn't continued in the hobby. When I mentioned the RAFMAA to him, he looked puzzled. In all his time in the RAF he'd never encountered the organisation nor seen any of its flyers.

But, stranger still, he couldn't understand how anyone involved with full size aircraft, in any capacity, could take an interest in models! When I informed him that model flyers could be found in all ranks in the RAF and in every imaginable capacity in civil aviation, he truly thought that the world had gone mad! If you're involved with the 'Big Stuff', your thoughts would be welcome...

Models In The Media

The subject of another obit, Bob Symes-Schutzmann and his much-admired TV series 'Model World' and 'Model Magic'. It must be a real 'generational thing' that readers seem to agree that when Bob's shows were broadcast, to see our hobby portrayed intelligently in the mass media was an uncommon treat.

The almost saturation coverage that any hobby can receive today is a world away from those days. Online, we can now watch virtually anything we wish, relating to any aspect of our particular interest. Production and values range from the slickly professional to the clumsily haphazard, but model flying enjoys exposure in the public domain that we could once have scarcely

imagined. (But do tell me that I'm not the only one who cringes at video posting comments that read 'Duh-like wher cn I buy one of dem, LOL?')

Just pre-Internet, the home video revolution promised to give our hobby a presence on the telly via the VHS player (of fond memory!). Manufacturers and the model press back in the day brought out masses of material, which, viewed today, is like a time capsule of a lost era.

Just recently an entire series of a VHS R/C magazine has been posted up on YouTube. The episodes run from the mid 1980s to the 1990s and they seem to represent an

attempt to showcase the hobby using the methods and style of mainstream TV shows of the day.

You have to be prepared to give up many hours of free time to watch these videos, as they're hopelessly addictive. The content comprises event and competition reports, product reviews, 'how to' tutorials and skilfully made adverts for modelling goods.

In the 80s, I and a few pals read the American model press avidly and devoured whatever magazines came our way. I now vaguely recall having seen ads for this video mag in the pages of my old favourite, 'Model Builder'.

Strangely, watching these videos have brought to life models and personalities that we studied from afar through print at the time, but thirty years after the event! Over the years covered by this series you can see the changes that were waiting just around the corner for modelling. Electric power was established and just awaiting the pushes in technology that would revolutionise it, and the expansion of commercialisation in RTF models was on the way. Whether you see it as an historical curio or a magnificent piece of nostalgia, follow the link at the end of this column, watch the whole series and report back!

D/T Pops Up Again

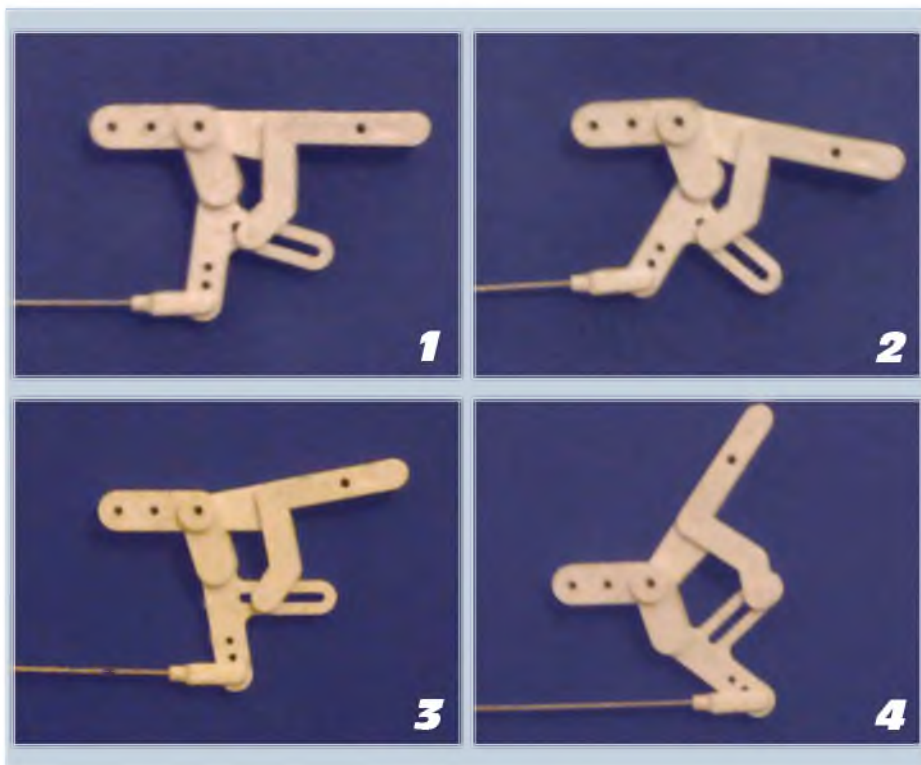
Our item last time on Gustav Rubitschka's R/C dethermaliser-equipped Graupner Dandy glider proved unexpectedly popular. Several readers commented on our mention of D/T's being used in the early days of R/C thermal soaring and recalled that there was quite a bit of cross-fertilisation of radio and free flight practice at the time.

Dethermalisers were not ultimately adopted into R/C competition soarers, as models became more rugged and capable of getting out of strong thermal lift unaided. None of this though accounts for an anomalous and extraordinary item in my collection of 'stuff that will come in handy one day', which I have to admit is probably my favourite modelling accessory of all time.

Back in the 1980s the British manufacturer Micro Mold, famous for their vast range of model hardware, produced their R/C All-Moving Tail Dethermaliser Crank! This exquisitely designed gadget could be fitted in place of a regular AMT bellcrank within the fin root of a glider, with the tailplane halves' wire joiners passing through the front pivot and rear crank arm as per standard.

Elevator stick inputs gave normal throws for flying, but with a sudden application of full 'up' stick and full trim, the crank's sliding link would drive the tailplane to around 45° and the model would rear up into the classic D/T deep stall attitude and sink sedately to the ground. Returning everything to neutral would restore elevator control instantly.

But, if R/C D/T's had fallen by the wayside in the days of single channel gliders, why did Micro Mold produce this strange device in the 80s? I mentioned this to a wise pal and he suggested that at the time there



Your author's favourite model accessory in action. Micro Mold's R/C Dethermaliser crank for gliders. 1 - neutral, 2 - down, 3 - up, 4 - full up, plus full up trim: going down! Clever stuff, see text

was a trend towards simple contest classes for 2-channel gliders and MM, being ahead of the game, may have anticipated this extra degree of control being desirable in comp conditions.

Despite the ongoing chaos from my move, I dug out my accessories box and found my MM D/T Crank and I set it up for you to appreciate its unashamed mechanical niftiness. A modern computer radio would handle such an application

with a few simple throw settings, but I find the engineer's and modeller's art in Micro Mold's D/T Crank just irresistible. I could play with it for hours. Fit it in a model? Probably not!

And whilst delving for this treasure, I found yet another classic accessory, which can wait for another suitable occasion. Meantime, if you have a particular fondness for a piece of modelling hardware, of any vintage, let us know what it is and why.

Stop Press For The Model Press!

This just in. Launching any new model magazine today is a rare and brave venture. More so for a publication specialising in balsa construction, scratch and kit building, micro R/C and free flight! Nonetheless, fully formed from the U.S.A appears 'Balsa Builder' magazine, which may well appeal to some SC readers.

From the little we've so far gathered, BB's editorial staff seem to be drawn from the much missed 'Flying Models' mag and there's a connection to the Stevens Aero kit company.

I don't know if it will be still active as you read this, but the first issue of BB was made available to sample as a free download. We welcome Balsa Builder and wish it well.

Right: Cool launch graphic for new model mag on the block, Balsa Builder. Aimed at the traditional and contemporary ends of 'real' model building



New Bird Off The Board

Each time we've featured a new addition to the ever-expanding fleet of 'Technostalgia' reworks of traditional-style models by George Stringwell it usually results in a steady stream of enquiries. Such is George's taste in models from the Oldtimer/Nostalgia era that it's never possible to second-guess his next choice.

I was pleased to see that George's latest project is by Paul Plecan, a prolific US designer whose work is reaching a new audience thanks to plan download websites. I'm convinced that in my plans files (still waiting to be unpacked!) I have a print copy of this one to refer to. But, no matter, George writes:

"Here's the electric R/C version of the 1951 Plecan 'Hummingbird' I have just finished. At just under 7 ounces all up (including 10 grams of lead in the nose - curses!) and with the little BRC 1811 producing 40 watts from a 2S 320 LiPo, there's no lack of urge, which at around 90 watts per pound should certainly be the case.

Thanks to an outbreak of spring weather here the Hummingbird has flown and as expected, proved to be a real performer, with ample power and pleasant handling, plus a surprisingly good glide for such a small model. I'm well pleased with it.

As you can see, the structure is classic 1950s, with an extra touch of elegance and interest added by the overlaid side stringers. The colours were chosen to match the abstract hummingbird graphic I found on the Net. This was traced onto the white Esaki tissue before covering, and after doping coloured in with fine point artist's water colour pens.

As someone who is definitely not an artist I am very happy with the final result. The model is first covered in 10 micron mylar, then white Esaki Liteflite tissue with the red, yellow and green panels overlaid; finish is four thin coats of nitrate dope.

Don't you just love the fact that electric power and modern light weight radio make it possible to enjoy all these lovely little vintage sport models in a restricted space?

I'm currently engaged with another electric R/C conversion, this one a Keil Kraft Bandit. This is very much a personal nostalgia exercise as I certainly have 'previous' with this design. In fact this will be my seventh Bandit, the last of the previous six (all E.D. Bee or Frog 150 powered free flights) was built in 1958! Where did the intervening fifty seven years go?!"

Where indeed? Seven KK Bandits is not bad going though, on anyone's terms. It's another of those kit designs that I just missed out on, so it'll be good to see George's take on it.

Contributions, please to The Sport Channel c/o the Traplet Publications address. All email correspondence to: gray_rcmag@hotmail.com

RCMW

CONTACTS

Ben Buckle Kits: www.benbucklelvintage.com

Bob Symes DVD's: www.sprucestudios.com



George Stringwell's latest masterpiece is Paul Plecan's 'Hummingbird' from the 1950s



George's splendid hand-inked Hummingbird logo. Looks great with his trademark tissue on mylar finish



The Plecan Hummingbird on its test flight from George's field in the French countryside

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Bergfalke IV



The Bergfalke IV was the last in the line of two-seater Bergfalques from the German Scheibe company. It was built, like its predecessors, with a steel tube framed fuselage and wood and fabric wings at a time when all-glass machines were becoming the main choice for serious glider pilots. Chosen by Chris Williams as the subject for his latest scale glider design, this model is designed to 1/4 scale with the express intention of making it suitable for flying off the hill in light conditions. Top mounted airbrakes are fitted, as a hurried landing on rough ground could easily cause lower mounted airbrakes to be damaged

SWARMS Scale Rally



Once a year the South West Associated Radio Modellers Society (SWARMS), a small but thriving club situated deep in dairy farming country in the South West of Western Australia, hosts a Scale Rally Weekend, a fly for fun event in which all comers are welcome. Despite the smallish membership the club has excellent facilities – a large flying area with a big mown area and concrete runways, a sizeable club building with catering and coffee making facilities – and a fire! It gets cold down there in winter!

The members, including Club President, Ron Waller and Secretary, Brady Goff go out of their way to make visitors feel at home, as Bruce Corfe found out when he visited the SWARMS Scale Rally to file a report for RC Model World

JULY 2015 ISSUE ON SALE THURSDAY 18TH JUNE

Rise Of A DB Autogyro!



Like most of us, Alec Barber has his fair share of old kits to 'get around to' one day. In this article he describes the build of a pre-production version of the DB Autogyro that he bought at one of the old Sywell shows almost forty years ago! Having survived two house moves with no damage to the balsa and fittings he was all set to go until he unrolled the plans. Even in the box the old prints had faded until they were almost invisible, so he dug out his old drawing board to try and resurrect the ghostly images from the original. Having run off a few prints he was all set to stick things together.

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The colour scheme has been changed from the previous blue, black and white scheme to a new modern 'easy to apply' scheme in the yellow, orange and red that are synonymous with Chris' classic designs. Buried inside the structure there are numerous changes to the internal design. The tailplane has been re-designed for improved styling with solid tips and inset elevators. The tailwheel has also been re-designed to be bolted on. If you want your Wot4 Foam-E to really stand out, then you can customise it using one of our option decal kits.

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- Removable Tail Wheel

Optional Schemes



Z-CF020/12B Wot4 Foam-E Mk2+ Decals Blue/Black

£9.99



Z-CF020/12C Wot4 Foam-E Mk2+ Decals Yellow/Red/Black

£9.99

